This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

B. This Section includes administrative and procedural requirements for the following:

Adjust list below to suit Project.

1. Salvaging non-hazardous demolition and construction waste.
2. Recycling non-hazardous demolition and construction waste.
3. Disposing of non-hazardous demolition and construction waste.

C. Related Sections include the following:

List below only procedures that the reader might expect to find in this Section but are specified elsewhere.

1. Document 01 35 20 "LEED™ Requirements" for additional LEED™ requirements.
2. Document 01 50 00 "Temporary Facilities and Controls" for environmental-protection measures during construction.

1.03 DEFINITIONS

D. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction
waste includes packaging.

E. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

F. 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.

G. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

H. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

I. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.2 PERFORMANCE [GOALS] [REQUIREMENTS]

Retain one of two options in title above to coordinate with selections made in this Article.

First option in paragraph below is requirement for LEED Credit MR 2.1; second option is for Credit MR 2.2.

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of [50] [75] <Insert number> percent by weight of total waste generated by the Work.

Retain paragraph above or one of two paragraphs and associated subparagraphs below.

B. Salvage/Recycle [Goals] [Requirements]: Owner's goal is to salvage and recycle as much non-hazardous [demolition] [and] [construction] waste as possible including the following materials:

Retain paragraph above or below. If retaining below, delete percentages in associated subparagraphs.

C. Salvage/Recycle [Goals] [Requirements]: Owner's goal is to salvage and recycle as much non-hazardous [demolition] [and] [construction] waste as possible. Owner has established minimum goals for the following materials:

Retain subparagraphs below with either paragraph above. Subparagraphs are examples of the most common demolition and construction waste that can be salvaged or recycled; adjust list or add other types of waste to suit Project; verify capabilities of local recycling facilities. If retaining last paragraph above, insert required percentages of waste to be salvaged or recycled to suit Project.
1. Demolition Waste:
   a. Asphaltic concrete 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.
   z. Plumbing fixtures.
   z. Piping.
   z. Supports and hangers.
   z. Valves.
   z. Sprinklers.
   z. Mechanical equipment.
   z. Refrigerants.
   z. Electrical conduit.
   z. Copper wiring.
   z. Lighting fixtures.
   z. Lamps.
   z. Ballasts.
   z. Electrical devices.
   z. Switchgear and panelboards.
   z. Transformers.
   z. <Insert other materials required.>

2. Construction Waste:
a. Site-clearing waste.
b. Masonry and CMU.
c. Lumber.
d. Wood sheet materials.
e. Wood trim.
f. Metals.
g. Roofing.
h. Insulation.
i. Carpet and pad.
j. Gypsum board.
k. Piping.
l. Electrical conduit.
m. Packaging: Regardless of salvage/recycle goal indicated 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.
7) Plastic pails.

n. <Insert other materials required.>

1.3 SUBMITTALS

A. Waste Management Plan: Submit [3] <Insert number> copies of plan within [7] [30] <Insert number> days of date established for [commencement of the Work] [the Notice to Proceed] [the Notice of Award].

See Evaluations for example of Progress Reports in paragraph below.

B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit [three] <Insert number> copies of report.[ Include separate reports for demolition and construction 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.
Submittals in first four paragraphs below document compliance with requirements for LEED Credits MR 2.1 and 2.2. Submittals are not required to be submitted to U.S. Green Building Council (USGBC) as part of LEED certification process but will be needed if Architect or Owner signs letter for LEED credits. If Contractor is required to sign letter, requiring these submittals will help ensure that Contractor has adequate records in case USGBC audits documents for Credits MR 2.1 and 2.2.

C. Waste Reduction Calculations: Before request for Substantial Completion, submit [three] copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

F. 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.

G. 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.

Retain paragraph below if Contractor rather than Architect or Owner is required to sign letter for LEED credits.

H. LEED™ Submittal: LEED™ letter template for Credit MR 2.1[ and 2.2], 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.

Coordinate first paragraph below with qualification requirements retained in "Quality Assurance" Article.

I. Qualification Data: For [Waste Management Coordinator] [and] [refrigerant recovery technician].

J. 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.

1.4 QUALITY ASSURANCE

LEED accreditation in first paragraph below is relatively new and availability of personnel with
this accreditation may be limited, especially among contractors' personnel.


B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

In paragraph below, identify specific participants not mentioned in Division 1.

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:

Delete subparagraphs below if not required. If retaining, insert additional requirements to suit Project.

   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.

1.5 WASTE MANAGEMENT PLAN

Retain option in first paragraph below if Project requires selective demolition or building demolition.

A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis.[ Include separate sections in plan for demolition and construction waste.] Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

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. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. 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.

2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.

If desired, list local charitable organizations such as Habitat for Humanity in first subparagraph below.

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 on Project site where materials separation will be located.

See Evaluations for example of cost/revenue analysis in paragraph below.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

If retaining paragraph below, insert sample forms at end of Section. See Evaluations or use forms required by Owner.

E. Forms: Prepare waste management plan on forms included at end of Part 3.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by [Architect] [Owner] [Construction Manager]. 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 Division 1 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

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 occurring at Project site.

1. Distribute waste management plan to everyone concerned within [three] <Insert number> 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 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. 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]: [Permitted] [Not permitted] on Project site.

C. Salvaged Items for Owner's Use:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area [on-site] [off-site] [designated by Owner].
   5. Protect items from damage during transport and storage.

Paragraph below is an example of additional requirements that can be added for salvaging materials. Insert other requirements to suit Project.

Leaving door hardware attached to doors can make it easier to reuse in another Project.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.3 RECYCLING [DEMOLITION] [AND] [CONSTRUCTION] WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

Paragraph and subparagraph below may be helpful for bidders with little or no previous experience with recycling. List of recycling and processing facilities is available from telephone directories and many local and state authorities.

B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:

1. <Insert names and telephone numbers of local recycling receivers and processors of recyclable materials.>

Allowing Contractor to accrue some portion of the recycling incentives in paragraph below could result in better recovery rates than if Owner accrues all of the incentives.

C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall [accrete to Owner] [accrete to Contractor] [be shared equally by Owner and Contractor].

Procedures in paragraph and subparagraphs below describe the "source separated" method for
handling recyclable waste. If space at Project site is limited, consider revising below to allow "co-mingled" method, which takes less space because it permits all recyclable waste to be placed in a single container that is separated later at the recycling facility.

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.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are 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 off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

Paragraphs and subparagraphs in this Article are examples only; retain or add other specific disposal, cleanup, or removal requirements to suit Project or recycling facilities. Ceramic tile is also often recycled.

A. Asphaltic Concrete Paving: Grind asphalt to maximum [1-1/2-inch ] [4-inch size.

Delete subparagraph below if recycled asphaltic concrete paving is not permitted in the Work. If permitted in the Work, add requirement to allow its use in Division 2 Section "Earthwork."

1. Crush asphaltic concrete paving and screen to comply with requirements in Division 2 Section "Earthwork" for use as general fill.

Retain paragraph above or first paragraph below; above can be used for general fill.

B. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.

C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

Option for larger size in subparagraph below can be used for general fill or riprap; option for smaller size can be used as satisfactory soil for fill or subbase.
1. Pulverize concrete to maximum \[1-1/2\text{-inch}] \[4\text{-inch}] size.

Retain subparagraph below if recycled concrete is permitted in the Work, if smaller size is retained in subparagraph above, and if crushed concrete is acceptable for fill or base material for roads. If permitted in the Work, add requirement to allow its use in Division 2 Section "Earthwork."

2. Crush concrete and screen to comply with requirements in Division 2 Section "Earthwork" for use as satisfactory soil for fill or subbase.

D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

Retain one of two subparagraphs and associated subparagraphs below. Option for largest size in first subparagraph can be used for general fill; brick masonry in smaller sizes can be used for landscape mulch; concrete masonry in smaller sizes can be used as satisfactory soil for fill or subbase.

1. Pulverize masonry to maximum \[3/4\text{-inch}] \[1\text{-inch}] \[1-1/2\text{-inch}] \[4\text{-inch}] size.

Delete first two subparagraphs below if recycled masonry is not permitted in the Work. If permitted in the Work, add requirement to allow its use in appropriate Division 2 Section.

a. Crush masonry and screen to comply with requirements in Division 2 Section "Earthwork" for use as \textbf{general fill} \textbf{[satisfactory soil for fill or subbase]}.

b. Crush masonry and screen to comply with requirements in Division 2 Section "Exterior 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 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.
1. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.

J. 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.

K. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

L. Plumbing Fixtures: Separate by type and size.

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. Lighting Fixtures: Separate lamps by type and protect from breakage.

O. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

P. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

Paragraphs and subparagraphs in this Article are examples of items that are common to normal construction operations; retain or add other specific disposal, cleanup, or removal requirements to suit Project or recycling facilities.

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.


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. Site-Clearing Wastes: Chip brush, branches, and trees [on-site] [at landfill facility].

Delete subparagraph below if recycled site-clearing waste is not permitted in the Work, which is practical only with first option above. If permitted in the Work, add requirement to allow its use in Division 2 Section "Exterior Plants."
1. Comply with requirements in Division 2 Section "Exterior Plants" for use of chipped organic waste as organic mulch.

C. 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.

Delete subparagraph below if recycled sawdust is not permitted in the Work. If permitted in the Work, add requirement to allow its use in Division 2 Section "Exterior Plants."
   a. Comply with requirements in Division 2 Section "Exterior Plants" for use of clean sawdust as organic mulch.

D. Gypsum Board: Stack large clean pieces on wood pallets 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.

Delete subparagraph below if recycled gypsum board is not permitted in the Work. If permitted in the Work, add requirement to allow its use in Division 2 Section "Exterior Plants."
   a. Comply with requirements in Division 2 Section "Exterior Plants" for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

Add other specific disposal, cleanup, or removal requirements to suit Project.

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 to 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.

Retain paragraph above or below; burning is usually not permitted.

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.

Retain paragraph below if disposal is permitted on Owner's property; revise, if applicable, to
indicate limits on type of materials that may be disposed of on-site.

D. Disposal: Transport waste materials and dispose of at designated spoil areas on Owner's property.

Delete paragraph above and retain paragraph below when disposal off Owner's property is required. Add specific requirements for off-site disposal to suit Project.

E. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF DOCUMENT