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Standard Guide for Development of Waste Management Plan for Construction, Deconstruction, or Demolition Projects¹

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1. Scope

1.1 The purpose of this guide is to facilitate development of a waste management plan for construction, deconstruction, or demolition projects (hereafter, construction waste management (CWM) plan).

1.2 This guide applies to CWM plans developed for construction, renovation, deconstruction, and demolition of buildings, factories, parking structures, and any other structure, as well as above- and below-ground infrastructure.

1.3 This guide includes CWM plan guidance for the wastes generated on-site during construction, deconstruction, and demolition projects.

NOTE 1—For example, included is any waste generated during these activities such as structural and finish materials and construction chemicals; construction product and materials packaging; construction office waste, including paper documents; wastes from site development work, such as excavated soils, rocks, vegetation, and stumps; and other ancillary items, such as broken tools, safety materials/personal protective equipment, and food and beverages and their packaging. The list of items above is offered for illustration purposes only; it is not intended to be fully inclusive of all materials from a construction, deconstruction, or demolition project that are suitable for reuse, repurposing, manufacturer reclamation, composting, or recycling.

1.4 Waste generated in the manufacture, preparation, or fabrication of materials before delivery to the job site are not in the scope of this guide.

1.5 This guide does not change or substitute for any federal, state, or local statutory or regulatory provisions or requirements including, but not limited to, those related to the handling, control, containment, transport, or disposition of any particular material.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

¹ This guide is under the jurisdiction of ASTM Committee E60 on Sustainability and is the direct responsibility of Subcommittee E60.01 on Buildings and Construction.

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1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standard*.²

E2114 [Terminology for Sustainability Relative to the Performance of Buildings](#)

3. Terminology

3.1 *Definitions*—For definitions related to sustainability related to the performance of buildings, see Terminology E2114.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 *comingle, v*—to blend multiple types of waste into a single container.

3.2.1.1 *Discussion*—In the case of comingled materials, a third party will sort and quantify the amount of each material or group of material types, with the goal of sending each stream for reuse, recycling, or other disposition. Material type may be paper, recyclable plastics, unrecyclable plastics, and so forth, and may vary with the local capabilities to recycle, reuse, or carry out other dispositions. Even with comingling, some on-site separation may be required.

3.2.2 *construction waste management (CWM) plan, n*—document that describes the intended actions to manage discarded materials based on consideration of the type and volume of materials, region, infrastructure available, and life-cycle analysis (when available) and tracks the materials to be managed.

3.2.2.1 *Discussion*—End-of-life material pathways may include landfilling, combustion (waste to energy, invasive species control, and biomass production) reuse, repurposing, manufacturer reclamation, composting, recycling, and other methods.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2.3 *recycling facility, n*—facility performing recycling operations in compliance with federal, state/provincial, and local regulations or third-party, independent certification.

3.2.3.1 *Discussion*—The purpose of the third-party, independent certification is to verify and validate the operations of the facility, including the rate at which materials are being diverted, as well as to bring consistency to how recycling rates are calculated and reported across facilities.

3.2.4 *sort on-site (source-separation), v*—sorting of wastes according to material classification at the construction site.

3.2.4.1 *Discussion*—Waste is often sorted on-site to allow quantification of each general type of material that is removed from the site.

4. Significance and Use

4.1 There are many reasons to implement a CWM plan. The focus of this guide is development of CWM plans that describe intended waste management methods and preconstruction and construction procedures to facilitate the optimal management of discarded materials.

4.2 A CWM plan includes, but is not limited to, requirements for documentation of the types and amounts of material generated, final disposition of the materials, and supporting evidence or statements as to the disposition (see 3.2.2).

4.3 The users of this guide can include contractors, architects, engineers, building owners or their representatives, consultants, and government agencies, all of whom may have an interest in reducing construction site waste.

4.4 Project teams should ensure they use recycling facilities (see 3.2.3) to recycle materials generated in their construction, deconstruction, or demolition projects.

5. Procedure

5.1 *CWM Plan*—The CWM plan is included in the construction documents to ensure that it is both defined and integrated as part of the scope of the project. The CWM plan should include the elements found in 5.2 – 5.4. Potential submittal requirements, such as an anticipated material diversion report, progress material diversion reports, and the summary report, can be organized in a table format. A sample is shown in Fig. X1.1 in Appendix X1.

5.2 *Performance Requirements*—Potential performance requirements include:

5.2.1 A diversion rate that the contractor should meet or exceed;

5.2.2 Examples of materials that can and should be diverted;

5.2.3 Examples of diversion activities:

5.2.3.1 Manufacturer reclamation (take-back) in which the manufacturer does not then dispose of the materials;

5.2.3.2 Salvage for on-site or off-site reuse, sale, or donation;

5.2.3.3 Repurposing;

5.2.3.4 Composting;

5.2.3.5 Sorted on-site waste; and

5.2.3.6 Comingled waste;

5.2.4 Condition requirements for recovered materials that make them conducive to their reuse.

5.3 *Submittal Requirements*—Potential submittal requirements include:

5.3.1 Anticipated material diversion report including, but not limited to:

5.3.1.1 Estimate of types and quantities of materials generated with backing data for the estimated calculations;

5.3.1.2 Diversion goals for the different types of materials and anticipated diversion methods; and

5.3.1.3 Names of take-back programs, local recyclers, salvage and reuse companies, or material exchanges, or combinations thereof, that will be used;

5.3.2 Potential material diversion reports include:

5.3.2.1 Material category;

(1) Amounts of materials salvaged, donated, sold, reused, repurposed, reclaimed by manufacturers with take-back programs, composted, or recycled;

(2) Records of donations, sales, recycling, waste to energy, invasive species control, combustion and landfill manifests, weight tickets, hauling receipts, and invoices;

(3) The summary report that documents the results of the project and includes, but is not limited to, the items listed under progress material diversion reports; and

5.3.2.2 Letter from the recycling facility(ies) confirming the facility can divert the discarded materials and the diversion rate, or third-party diversion certificate, where applicable.

5.4 *Quality Assurance Requirements*—Potential quality assurance requirements:

5.4.1 Name and contact information for the person on the job site responsible for developing and implementing the CWM plan;

5.4.2 Plans for training, meetings, and communication;

5.4.3 Reporting and record-keeping provisions; and

5.4.4 Troubleshooting instructions and contact information.

5.5 *Preconstruction Meeting*—Before construction, have a construction waste management meeting with the construction team, including the owner’s representative, all contractors, all subcontractors, and if possible, representation from the chosen recycling facilities that will be handling the waste. The meeting objective will be to review the CWM and determine the final implementation method.

5.6 *Implementation Strategies*—The following strategies should be considered as part of the implementation:

5.6.1 *Procedure 1: Comingle*—Use a waste management service that allows all types of excess construction materials to be deposited into a single container or small set of containers without finite sorting. The materials (be they en masse or partially sorted) will then be taken to an establishment or establishments for disposition, including recycling, reuse, or repurposing. The plan will be dependent upon a service to sort, separate, and weigh a calculated, quantifiable volume for each type of material or grouping of materials. Where such finite quantification is not available, all materials going through the comingling facility are assumed diverted at the facility’s average diversion rate. Organic/biobased materials, including land-clearing materials, lunch trash, or food scraps, should then be taken to an establishment for processing, which may include practices such as composting or digestion.

NOTE 2—Invasive species control may include incineration on-site.

NOTE 3—If the comingled procedure is not within the capabilities of available construction and demolition (C&D) material service providers, sort on-site can be a more appropriate method.

5.6.2 Procedure 2: Sort On-Site—The construction team is responsible for the sorting of materials on the construction site by designating a team or individual to manage the plan implementation, efforts, and materials on-site. Each type of material that is to be recycled will be placed in its own specific bin or designated area. The bin or designated area should be clearly labeled with signs or pictures, or both, to limit undesired cross contamination of materials or material types. The materials will be collected and stored in containers adequate for the estimated generated volume and transportation to the recycling facility. The materials removed from site will be weighed or quantified in terms of volume. The materials that may be reused or reworked will be taken to the appropriate establishment and documented.

5.6.3 Procedure 3: Project Oversight – Waste Minimization—Teams should consider how specified materials will be ordered, and how they will ultimately be removed. The construction team should work with the waste management team, contractors, and subcontractors to anticipate the rates at which materials will be generated, how often they should be removed, and how they will be transported. For better control over amounts of waste generated, project teams can use purchasing agreements with waste reduction provisions to prevent excess materials from arriving at the site, and detailed material estimates to limit waste generated.

6. Keywords

6.1 construction waste; recycle; refurbish; reuse; waste management

APPENDIX

(Nonmandatory Information)

X1. TYPICAL CWM PLAN

X1.1 In pursuit of the CWM plan, the following documentation should be provided, retained, and submitted to the designated CWM manager on request. These include, but are not limited to:

X1.1.1 *Progress Material Diversion Reports*—Weight tickets and receipts from designated recyclers, manufacturer take-back programs, donations, purchasing agreements, and receipts for materials sold to recyclers (see Fig. X1.1 for sample report);

X1.1.2 *Execution Documents*—Project executive summary, detailed material estimates, source separation procedures, comingling procedures, CW removal schedule, and handling and

transportation procedures, including designated container locations and labeling; and

X1.1.3 *Quality Assurance Requirements*—Name and contact information of the specific project resident manager responsible for the on-site coordination, documentation, periodic reports, and the contract execution of the CWM plan; training, meetings, and communication plan; weekly or monthly reporting and troubleshooting instruction and complete contact information (name, company, phone number(s), and e-mail) for all parties to the CWM plan inclusive of the owner, construction manager, general contractor, individual trade subcontractors, waste management subcontractor, hauling subcontractors, waste facilities, and recycling contractors.