Taking out the trash

Regulations for construction waste removal have become more complex

by Glen Clapper, AIA, LEED AP

As the roofing industry moves toward more sustainable practices, dealing with construction waste is becoming more than placing discarded materials in a bin to be hauled off to a landfill. Regulatory agencies, building owners and designers are requiring minimization of new construction waste along with recycling demolition waste. Many times, this requires contractors to develop a construction and demolition waste management plan.

ASTM E3073, "Standard Guide for Development of Waste Management Plan for Construction, Deconstruction, or Demolition Projects," is available to assist in this task. Roofing contractors should know what is required for a project and the options available to them.

IgCC

Jurisdictions that have adopted the International Green Construction Code® or ASHRAE 189.1, "Standard for the Design of High-Performance Green Buildings Except

Low-Rise Residential Buildings," enforce requirements for handling construction waste.

IgCC Section 901.6–Construction and Demolition Waste Management details the requirements for handling the disposal of building materials on a project.

Section 906.6.1–Diversion states a minimum of 50% of nonhazardous construction, demolition or deconstruction waste must be diverted from landfills and incinerators by recycling, reuse, repurposing and/or composting. Diversion of material waste to waste-to-energy incineration is not permitted to be included in the 50%. The calculation of 50% is based on material weight.

Section 906.6.2–Total Waste pertains to new construction only and requires the total amount of construction waste generated on a project must not exceed 20 lbs/ft² of the new building floor area before issuance of the certificate of occupancy. This requirement applies to all waste whether hauled to a landfill, incinerated, diverted or disposed. However, any demolition waste is not permitted to be included in the 20 lbs/ft² calculation. In addition, the waste must be tracked throughout the construction process following a project's waste management plan.

IgCC's Section 906.6.3–Construction and Demolition Waste Management Plan requires a construction and waste management plan to be made available to the building owner and authority having jurisdiction before the start of construction, demolition or deconstruction. The plan must include the following:

- Identification of construction and demolition waste expected to be diverted
- Any materials or building elements to be deconstructed
- An explanation of whether the waste is to be source-separated or comingled
- Identification of service providers and designation of the destination facilities for construction and demolition waste that is generated
- The average diversion rate for the facility(ies) that accepts or processes comingled construction and demolition debris. This must include separate percentages for construction and demolition waste that is used as alternative daily cover and incineration
- The method of waste tracking that will be used
- How all items will be reported to the building owner and authority having jurisdiction

Other programs

Points are available toward attaining a specific level of achievement for projects performed under LEED® requirements. For new buildings and major renovations, the current version is LEED V4.1, BD+C. For a building to be certified to a specific level, a minimum number of points must be attained. Certified requires 40 points, Silver 50, Gold 60 and Platinum 80. The LEED program awards one to two points under Construction and Demolition Waste Management. The intent of the credit is to reduce construction and demolition waste hauled to landfills or incineration facilities.

To achieve the credit point(s), a construction and waste management plan must be developed that identifies the strategies to reduce waste generation during a project. The plan also must identify the materials to be diverted and where those materials will be taken including the anticipated diversion rate for each material.

The diversion rate may be calculated either by weight or volume. One point is awarded for diverting a minimum of 50% of the total construction and demolition waste. A second point may be achieved by generating less than 10 lbs/ft² of waste from all new construction activities in addition to meeting the 50% diversion criteria.

Several LEED plan requirements mimic IgCC requirements. The construction and waste management plan must have a method for tracking waste and recyclable material generated during any demolition activity. For new construction projects, waste and recyclable materials must be tracked separately. Facilities that accept materials for recycling must be regulated by a local or state authority. In addition, third-party verification for recycling facilities must be noted.

For construction waste diversion, collection containers should be located on-site. If the waste management plan specifies certain materials destined for specific facilities, separate bins are recommended. If the facility accepts comingled waste materials, separate bins are not necessary.

Note LEED considers manufacturers' take-back programs as project waste diversion rather than waste prevention. An additional strategy that can contribute to waste prevention on LEED projects is using products with minimal packaging material.

For U.S. projects, LEED does not consider converting waste to energy as an acceptable method for diverting construction and demolition waste. However, this may be permitted for projects

outside the U.S. where waste-to-energy conversion is more common.

LEED, V5 BD+C, ID+C and O+M contains a few revisions to the construction waste management criteria. To achieve one point, a project still must divert 50% of construction and demolition waste. However, for LEED V5, in addition to the 50% diversion, a minimum of 10% of diverted materials must be salvaged or source-separated and delivered to a single-material recycler(s). To achieve two points, 75% diversion is required, an increase from 50% from LEED V4.1, and a minimum of 25% of diverted materials must be salvaged or source-separated and delivered to a single-material recycler(s).

Similar to LEED, the Green Building Initiative's Green Globes® rating program awards points toward achieving a specific level of certification for construction waste management.

For additional specific requirements for LEED or Green Globes, go to professionalroofing.net.

Local requirements

Although a project may not have been specified to meet the requirements of voluntary certification programs such as LEED or Green Globes or be in a jurisdiction that has adopted IgCC, a local jurisdiction may have its own criteria for addressing construction and demolition waste.

For example, Orange County, Calif., has a Construction and Demolition Program that requires 65% waste diversion for nonhazardous materials. The program applies to new buildings and demolition projects that require a permit, all permitted additions or alterations for nonresidential buildings, and a few other project types.

The Orange County program offers three options for compliance: tracking the material diverted, method of diversion and material otherwise disposed; use of an approved waste management facility; or waste reduction, which is not allowed for demolition-only projects. All options require a final report and a paper trail (receipts, tickets, etc.). Failure to comply with the Orange County diversion policy could result in a fine up to $1,000 per day.

In addition to state or county construction waste disposal requirements, local municipalities may have their own construction waste disposal criteria. Irvine, Calif., which lies within Orange County, has an ordinance similar to the county's construction waste program but also requires a waste diversion fee deposit equal to $1/ft² of the building area for the project not to exceed $50,000 for a single project.

Discarded policy

The days of disposing tear-off materials at a local landfill may be on the way out. So you should familiarize yourself with state and local laws or ordinances regarding the proper disposal of roofing materials.

GLEN CLAPPER, AIA, LEED AP is an NRCA director of technical services.

Study of safety data sheets finds inaccuracies

When it comes to accurately listing engineered nanomaterial composition, a majority of safety data sheets for construction materials need improvement, according to a study conducted by CPWR–The Center for Construction Research and Training.

A team led by researchers studied 33 safety data sheets and product data from "a public database of nano-enabled construction products." The researchers then sought to confirm the composition of nanoparticles–which are potentially hazardous to human health–in construction materials using an electron microscope.

Their analysis "revealed several discrepancies between the actual product composition and what was listed in the safety data sheets." Seventy percent of the safety data sheets were deemed "in need of significant improvement," and another 12% "were in need of improvement."

Currently, more than 50 kinds of engineered nanomaterials are used in construction products.

"There has been significant progress investigating risks to construction workers posed by engineered nanomaterials, but safety data sheets need major improvements," the researchers say.

The study was published in the *American Journal of Industrial Medicine*.