Construction and Demolition Recycling 101

Grove City, Ohio
http://www.frankroadc-d.com/index.html

Michael Dinneen
Board Member

Construction and Demolition Association of Ohio
Treasurer
WEBINARS: Construction & Demolition Recycling
Join us for this 3-part series!

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**C&D Recycling 101**
- Gives an overview of the C&D recycling industry including LEED and other programs that are encouraging and influencing C&D recycling

**Asphalt Shingle Recycling 101**
- Builds on C&D Recycling 101, focusing on shingle recycling. An industry speaker will discuss the markets for recycling shingles and the regulatory and market barriers to recycling. A regulatory speaker will discuss the types of processing facilities, environmental concerns from their operations, and case studies.

**Wood Recycling 101**
- Builds on C&D Recycling 101, focusing on wood recycling. An industry speaker will discuss the markets for recycling wood and the regulatory and market barriers to recycling. A regulatory speaker will discuss the types of processing facilities, environmental concerns from their operations, and case studies.
Construction and Demolition Recycling 101

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C&D Recycling

- What is C&D?
- What is driving C&D Recycling?
- How is C&D Recycled?
- Factors of C&D Recycling.
What is Construction and Demolition Debris?

- Debris generated during the construction, renovation, and demolition of buildings, roads, and bridges.

- USEPA includes Construction and Demolition Materials as a Non-hazardous Industrial Waste

http://www.epa.gov/waste/nonhaz/industrial/cd/index.htm
**What is Construction and Demolition Debris?**

- USEPA
  - Concrete
  - Wood (from buildings)
  - Asphalt (from roads and roofing shingles)
  - Gypsum (the main component of drywall)
  - Metals
  - Bricks
  - Glass
  - Plastics
  - Salvaged building components (doors, windows, and plumbing fixtures)
  - Trees, stumps, earth, and rock from clearing sites

C&D Generation Estimates


- “C&D is a large waste stream of concern. Even if the material flow analysis estimates are high, examination of the materials consumed in the U.S. show there is a great potential for future C&D waste generation.”

  By Kimberly Cochran, Phd and Timothy Townsend, Phd

C&D Composition

- Concrete and mixed rubble 40-50%
- Wood 20-30%
- Drywall 5-15%
- Asphalt roofing 1-10%
- Metals 1-5%
- Bricks 1-5%
- Plastics 1-5%

² U.S. EPA
What is Driving C&DD Recycling?

- Economics
- Social Economics
- Resource Needs
- Experience
What is Driving C&DD Recycling?

- “LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects satisfy prerequisites and earn points to achieve different levels of certification. Prerequisites and credits differ for each rating system, and teams choose the best fit for their project.” [http://www.usgbc.org/leed](http://www.usgbc.org/leed)
What is LEED

- Integrative Process
- Location and transportation
- Materials and Resources
- Water efficiency
- Energy and atmosphere
- Sustainable sites
- Indoor environment quality
- Innovation
- Regional priority credits

http://www.usgbc.org/leed
What is LEED

- US Green Building Council LEED (Leadership in Energy and Environmental Design)
  - Currently requires a waste management plan in the Materials and Resource section.

- Management Plans
  - Current program includes 2 points, one for 50% recycling and one for 75% recycling.
  - Limit the waste generated from the site to 2.5 lbs./ft²
LEED Mandating Agencies
Federal

- U.S. Air Force
- U.S. Army
- U.S. DOE
- U.S. DOI
- U.S. EPA
- U.S. GSA
- U.S. Navy
- U.S. State Department
LEED Mandating States

States

- Arkansas
- California
- Colorado
- Connecticut
- Illinois
- Maine
- Maryland
- Massachusetts
- Michigan
- Missouri
- Nevada
- New Jersey
- New Mexico
- New York
- Oregon
- Pennsylvania
- Rhode Island
- Washington
- Wisconsin
LEED Michigan

- Excerpts from EXECUTIVE DIRECTIVE NO. 2005 - 4

- Currently all state-supported capital outlay projects over $1 million … must be designed and constructed in accordance with the Leadership in Energy and Environmental Design (LEED) Green Building Rating System developed by the United States Green Building Council. LEED certification ensures that all new state facilities are energy efficient and environmentally sustainable.

- …. [A]ll new construction and major renovation of state-owned facilities … shall be accomplished consistent with LEED guidelines and standards, and shall score a minimum of 26 points on the LEED scorecard, … which is the minimum score required for LEED-certified status.
LEED Mandating Agencies

Counties

- Arlington County, VA
- Cook County, IL
- Dane County, WI
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LEED C&D Recycling

- Use Opportunities for C&D in Construction
  - Reuse of materials on site
  - Sourcing recycled materials locally
- Future LEED
  - Recycling Facility Certification
    - LEED wants rates certified in order to provide consistency and is looking at requiring it.
Why Recycle C&D in LEED?

- Lazarus Building in Columbus, Ohio
- 92% Recycling Rate
- Building was not Demolished
- Saved over 50% in Construction $$$ because of Building Reuse
- Saved 5000 truck trips during construction
Green Points

- Green Building rating system
  - Points for C&D Recycling
  - Goals for Points
    - 65% C&D Diversion
    - Reuse of Recycled in Construction
C&D Recycling Mandates

- Massachusetts Disposal Ban
- City of Chicago
  - Mandates 50% Recycling
- City of San Diego
  - Mandates 50% Recycling
C&D Recycling Mandates
City of Chicago

- Under the Construction and Demolition site Waste Recycling Ordinance, contractors must:
  - Keep track of the amount of C&D debris that is generated on project sites.
  - Recycle at least 50% of the recyclable debris that is generated.
  - Submit a Recycling Compliance Form to the Department of Public Health at the end of each project, along with an affidavit from the waste hauler or recycler.

C&D Recycling Mandates
City of San Diego

- Under the Construction and Demolition (C&D) Debris Deposit Ordinance, the majority of construction, demolition and remodeling projects requiring building, combination and demolition permits must:
  - pay a refundable C&D Debris Recycling Deposit
  - divert at least 50% of their debris by recycling, reusing, or donating usable materials.

Other ways to Encourage Recycling

- Washington D.C.
  - Beginning January 1, 2015, any construction firm or business seeking credit for recycling construction and demolition waste under any part of the Green Building Act of 2006, . . . shall use a certified facility for waste disposal and materials recovery.
Company Directives

- Turner Construction
  - Committed in 2005 to recycle waste on every project.
  - Created an online program for tracking all waste from Turner construction sites.
  - Lead Turner to win CDRA Recycler of the year award in 2012.

http://cdw.epubxp.com/i/63059
Institution Directives

- The Ohio State University
  - Leadership in Energy and Environmental Design
    - The university is committed to developing new and renovated buildings that use resources efficiently and create healthy environments. Each new building or renovation with a budget of $4 million or more will strive for U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Silver-level certification or higher. Ohio State currently has five buildings that have been awarded LEED certification and Facilities Operations and Development has many LEED certified professionals on staff.
  - Ohio State's Green Build Policy stipulates that all new projects over $4 million must be LEED - Silver certified and recycle 50% of the construction materials.

- [http://footprint.osu.edu/green-building.html](http://footprint.osu.edu/green-building.html)
Where to Recycle
Directly from the Job

- Materials can be used on site
  - This is usually large amounts of material that are expensive to transport
  - i.e., crushed concrete

- Materials can be recycled directly from the site
  - Usually used for materials that are harder to handle with other wastes or come out segregated in volume
  - i.e., ceiling tiles or shingles
Comingled Materials to a Recycling Facility

- Usually used for all materials
- Is the least expensive for most general construction materials.
Recycling Facility Certification

o Driving Factors
  ➢ LEED is in the process of approving a pilot point for using a certified facility for recycling.
  ➢ Washington DC Ordinance
  ➢ StopWaste
    o Alameda County, Northern California
Recycling Facility Certification

- The Construction and Demolition Recycling Association has worked to help create the Recycling Certification Institute (www.recyclingcertification.org)
  - RCI is a 3rd Party Facility Certification process
    - Executive director is Stephen Bantillo
  - Follows ISO 9000 Process
  - Not Certifying the Rate but Certifying the Process Used to Create the Rate.
C&D Recycling
What makes it work?

- Generally C&D recycling is very locally driven.
  - Local disposal costs
  - Local recycling initiatives
  - Local markets for materials
    - C&D is heavy or light with value comparable to the initial products
    - Materials can be abundant such as wood
C&D Markets

- Metal
- Paper
- Glass
- Wood
- Shingles
- Plastics
- Concrete
- Screened Materials
C&D Composition

- Concrete and mixed rubble 40-50%
- Wood 20-30%
- Drywall 5-15%
- Asphalt roofing 1-10%
- Metals 1-5%
- Bricks 1-5%
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² U.S. EPA
Regulatory Impacts

- Use of shingles in pavements
  - Material specification requirements
  - Waste management requirements
- Use of wood as fuel
  - Material specification requirements
  - Waste management requirements
- Use and management of small particles from C&D recycling
  - Material specification requirements
  - Waste management requirements
Helping C&D Recycling Work

- How can a regulator help?
  - Understand where your area is in the process, just getting started or keeping the process going?
  - Understand the markets that local regulators have the greatest affect.
    - Regional markets
    - Lower value materials
C&D Recycling

Questions?

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