The Sustainable Materials Management Webinar Series

Asphalt Shingle Recycling

Tuesday October 21, 2014/1:30 – 2:45PM EDT

Presenter: Jason Haus, Chief Executive Officer, Dem-Con Companies, LLC
Asphalt Shingle Recycling
Sustainable Materials Management
Webinar Series
October 21, 2014
Hosted by:
Dem-Con Companies

- Third generation, family owned company;
- 5 Business Units
  - Dem-Con Landfill - Established 1985
    - 120 Acre Site
    - Liner with Leachate Collection
  - Recovery & Recycling - Established 1999
    - Process 90,000 TPY Mixed C&D
  - Shingle Processing - Established 2008
    - 1st facility to be granted MPCA approval
    - MnDOT QA/QC Certified
    - 25,000 TPY onsite, 45,000 TPY offsite
  - Material Recovery – Established 2013
    - 92,000 TPY Single Stream
    - 40,000 TPY Commercial Recyclables
Dem-Con Companies

- Landfill
- Shingle Recycling
- C&D MRF
- Single Stream MRF
- Office & Shop
Demolition & Construction Composition

NOTE: Information taken from Minnesota Construction, Demolition and Industrial Waste Study done by Foth Infrastructure & Environment, LLC

<table>
<thead>
<tr>
<th>C&amp;D Waste Stream Components</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>40-45%</td>
</tr>
<tr>
<td>Concrete &amp; Block (Brick)</td>
<td>15-20%</td>
</tr>
<tr>
<td>Roofing</td>
<td>15-20%</td>
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<tr>
<td>OCC/Paper</td>
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</tr>
<tr>
<td>Drywall</td>
<td>5-7%</td>
</tr>
<tr>
<td>Dirt, Gravel, Rock</td>
<td>2-7%</td>
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<tr>
<td>Rubber</td>
<td>2-6%</td>
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<tr>
<td>Metal</td>
<td>2-5%</td>
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<tr>
<td>Plastic</td>
<td>---</td>
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<tr>
<td>Asphalt</td>
<td>1-2%</td>
</tr>
<tr>
<td>Insulation</td>
<td>1-2%</td>
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<tr>
<td>Other</td>
<td>1-5%</td>
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</tbody>
</table>
Producing High Quality RAS

- Types of shingles available for RAS production:
  - Manufactured Scrap
    - Approx. 1,000,000 tons nationwide
  - Post consumer tear-off
    - Approx. 11,000,000 tons nationwide
Producing High Quality RAS

• Manufactured Scrap
  – Asphalt content can range from 15%-24% in fiberglass product
  – Organic based shingles can be 30% +
  – Typically less burdensome regulations for processing
  – Slightly more difficult to process due to softer asphalt
  – Higher % of granules in product
    • Increased equipment wear
    • Lower % of asphalt
  – Less contamination
  – Beware of the roll material from plants – difficult to process
Producing High Quality RAS

- Post Consumer Tear Off
  - Asphalt content typically 20%-25%
  - Less granules material due to wear and handling
  - Slightly stiffer asphalt in the mix due to oxidation
  - Added regulations – Varies widely by state
    - Permits for handling materials
    - Asbestos testing requirements
  - Requires more processing to eliminate contamination
Producing High Quality RAS
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Producing High Quality RAS

- Possible Regulatory Items – varies by state
  - Quality Assurance & Quality Control Documents
  - Specification certifications
  - Asbestos Testing
  - Air permits for equipment
  - Local zoning and conditional use requirements
Producing High Quality RAS

• QA/QC Plan Should Include
  – Inspection Requirements
  – Personnel Training Program
  – Process Management Plan
  – Sampling Procedures
  – Housekeeping Process
  – Contingency Action & Emergency Response Plan
  – Supplier Certification & Specification Documents
  – Facility Certification Letter
Producing High Quality RAS

• Minnesota Requirements – an example
  – Acceptance of Materials – Manufactured Scrap
    • Meets current beneficial reuse rules
    • Limited handling and storage restrictions
  – Mixed Post Consumer Tear Off Material
    • Solid Waste Permit is Required
    • Storm water management facilities in place
    • Inspected by MPCA
  – Source Separated (Clean) Post Consumer Tear Off Material
    • Beneficial Use Rules May Apply – No Solid Waste Permit Required
    • Difficult but not impossible to have material delivered completely separated
Producing High Quality RAS

• Specs for Sizing
  – 100% passing 1/2” or
  – 95% passing 3/8” or
  – 100% passing 3/8” or
  – 100% passing ½” and 90% passing #4

• Sizing is continually getting smaller
Producing High Quality RAS

• Specs for testing
  – Deleterious by weight
    • 3.0% or
    • 1.5% or
    • 0.5% Maximum
  – Asbestos Testing
    • Every load
    • 1:25 Ton
    • 1:50 Ton
    • 1:250 Ton of Material Processed
    • Onsite and 3rd Party Lab requirements
Producing High Quality RAS

- Asbestos
- Implement Procedures to minimize asbestos acceptance
  - Certified haulers
  - Single layer acceptance criteria
  - Single family home reroof only
  - Dem-Con testing results
    - Test once per 250 ton pre-grind
    - Nearly 2,000 data points
    - 1 occurrence of asbestos
    - MnDOT Required Certified inspector and 3rd party lab
Producing High Quality RAS

- Be prepared for change
  - Sizing changes
  - Asbestos testing changes
  - Acceptance criteria may change
  - Current Rules may not be the rules of tomorrow
- Find quality industry partners
  - HMA plants
  - Manufacturing suppliers
  - Grinding vendors
  - Roofing suppliers
Producing High Quality RAS

• Challenges in the Market
  – Fluctuating Market Conditions
  – Balancing recovered materials in HMA designs
    • Virgin asphalt requirements in HMA mixes
  – Recovered Shingles vs. Millings & RAP
    • Market goes in cycles
    • Current market is high inventory of Millings & RAP = low shingle demand
Producing High Quality RAS

Current Infrastructure

Process Flows:

• Shingles Tipped
• Asbestos Testing
• Pre-Sort
• Metering Equipment
• Sort Line
• Grind
• Screen
• Load Out
Producing High Quality RAS

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Producing High Quality RAS

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Producing High Quality RAS
CDRA
Construction & Demolition Recycling Association

• Shingle Recycling Committee
  • Over 40 interested parties in shingle recycling
  • Bi-monthly conference Calls
• Committee’s Initiatives
  • Current State Specs and Contacts
    • Important for adding new states for specifications
  • BMPs and Technical Papers
  • Asbestos and Air Quality Data Collection
  • Shingle Recycling Forum
• Updated website at www.shinglerecycling.org
CDRA
Construction & Demolition Recycling Association

• 7th Bi-Annual Shingle Recycling Forum
  • The best industry meeting place for shingle recycling
  • Premier program for those looking to enter the market
  • Designed for experienced as well as new comers
  • To be held in the fall on 2015 – Location: TBD
  • 300+ attendees
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QUESTIONS?

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