

# The Sustainable Materials Management Webinar Series

## Ceiling Tile Recycling

Tuesday March 15, 2016/1:30 – 2:45PM EDT

### **Presenter:**

Allen Jackson, Recycling Coordinator  
Armstrong World Industries



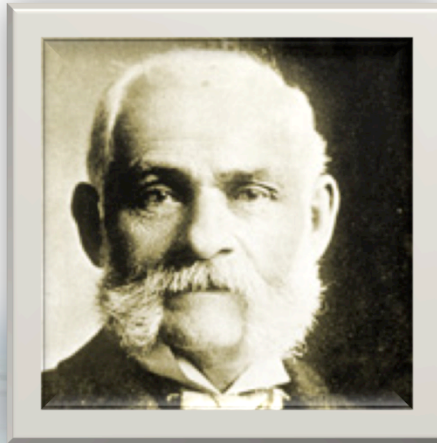
- A Global Leader In The Design & Manufacture Of Commercial And Residential:
  - Standard and Custom Ceiling Panels
  - Ceiling Installation Systems (grid)
- Operates 32 manufacturing facilities
- \$2.4 billion in Sales in 2015
- 7,600 team members worldwide
- Environmentally-responsible products, programs & operations
- Founding Member of USGBC, CaGBC and GBC's globally
- Member of the Energy Star and EPA Green Power Partnership
- Corporate Headquarters in Lancaster, PA - LEED EB Platinum certification



Green Building Council®  
founding member



# From Corks to Flooring and Ceiling Systems



## Over 150 Years and Counting...

Armstrong leads in sustainability as we design and manufacture floors and ceilings globally. Our portfolio of commercial products and services was developed to inspire our customers to deliver the exceptional interiors they envision for themselves and their clients. At work, in hospitals, classrooms, stores, and restaurants, Armstrong offers innovative sustainable interior solutions that help to enhance comfort and productivity, save time, improve building efficiency and overall performance, creating beautiful spaces, from Dubai to Shanghai, New York to São Paulo.

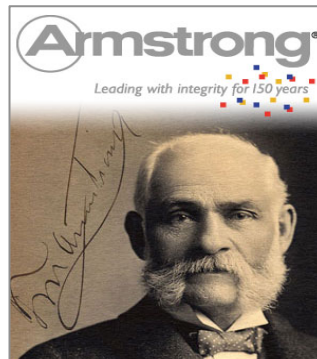




# End of Life Solutions - Recycling



First of its kind closed loop ceiling recycle program in the commercial market.  
Over 190 million sf diverted from landfills.



- **Mandates Required**
  - Recycling Goals (State and Government)
  - Disposal Bans
  - GSA requirements for C&D
- **Building Codes**
  - California Green Building Code (CalGreen)
  - International Green Construction Codes (IgCC)
  - Whole Building Design Guide
- **Building Rating Systems**
  - Leadership in Energy and Environmental Design (LEED)
  - Green Globes – Building Environmental Design and Management Tool



**Market Drivers for recycling of C&D waste are increasing**

## What products to include in your Construction Waste Management Plan?

- Woody and plant materials
- Concrete
- Gravel, aggregate, stone and rock
- Masonry and rubble
- Metals (ferrous and non-ferrous)
- Wood
- Plastic
- Glass
- Doors and windows
- Asphaltic roofing
- Gypsum board
- Ceiling tiles
- Carpet and pad
- Cardboard and paper
- Plumbing fixtures
- Lighting fixtures

### ***Products and Systems:***

Federal Green Construction Guide for  
Specifiers:

[01 74 19 \(01351\) Construction Waste Management](#)

[02 41 13 \(02220\) Selective Site Demolition](#)

[31 10 00 \(02230\) Site Clearing](#)

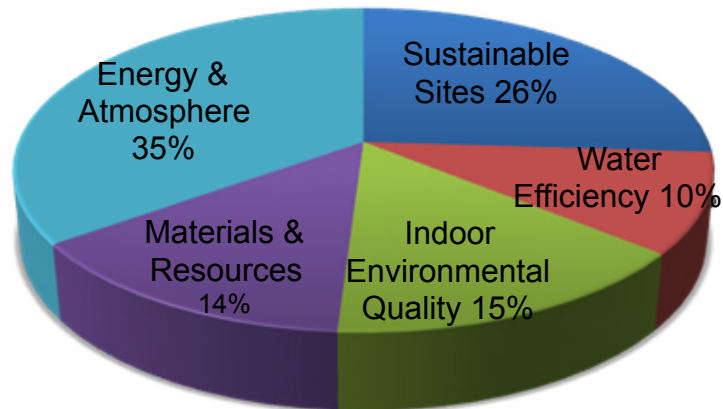


**The key is Source Separation to maximize diversion rates and reduce landfill costs.**

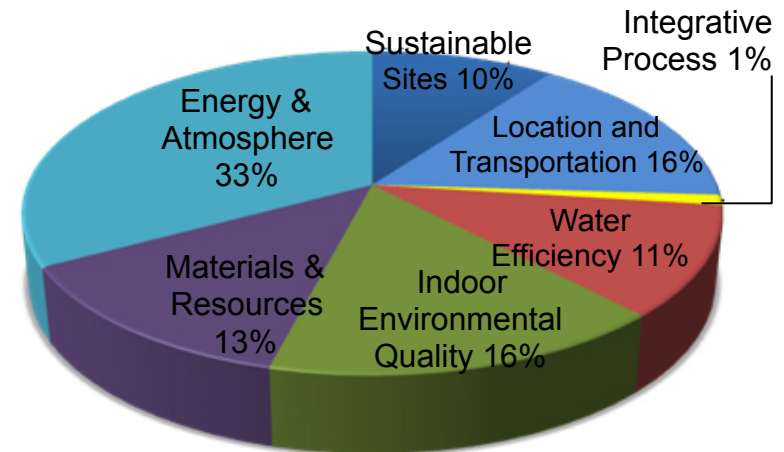




## LEED v3 (2009)



## LEED v4



## What's changed?

- Split Location and Transportation from Sustainable Sites
- Integrated Process - encourage early analysis of the interrelationship of systems
- Materials and Resources - more holistic & integration of human health
- Indoor Environmental Quality- more low VOC requirements, added Acoustics.



<b>Materials and Resources</b>		<b>v3</b>	<b>v4</b>
	Prerequisite: Storage and Collection of Recyclables	X	X
 new	Prerequisite: Construction and Demolition Waste Management Planning		X
	Building Reuse	X	
	Construction and Demolition Waste Management	X	X
	Materials Reuse	X	
	Recycled Content	X	
	Regional Materials	X	
	Rapidly Renewable Materials	X	
	Certified Wood	X	
	Building Product Disclosure and Optimization - Environmental Product Declarations		X
	Building Product Disclosure and Optimization - Sourcing of Raw Materials		X
	Building Product Disclosure and Optimization - Material Ingredients		X
	Possible Points	14	13

- \* Includes: Recycled content, biobased materials, and FSC wood

Intent: To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

There is 1 PR and 1 Credit:

## PREREQUISITE

Establish waste diversion goals & ID at least 5 materials for diversion.

1. Specify whether materials will be separated or commingled and describe diversion strategies.  
Describe where the material will be taken and how it will be processed.

AND

## CREDIT

Meet Diversion Goals for Identified Material Streams (50% and 75%)



# Armstrong Ceiling Recycling Program



- We started the program in 1999 ...
  - Over 180 million square feet of ceilings have been recycled nationwide
  - 90,000 tons of construction waste was been diverted from landfills
- Our Closed loop process makes ceilings one of few interior finishes where 100% of what is returned is made into a new product.
- Year on Year the program grows. We are constantly looking at new ways to expand and improve the program.

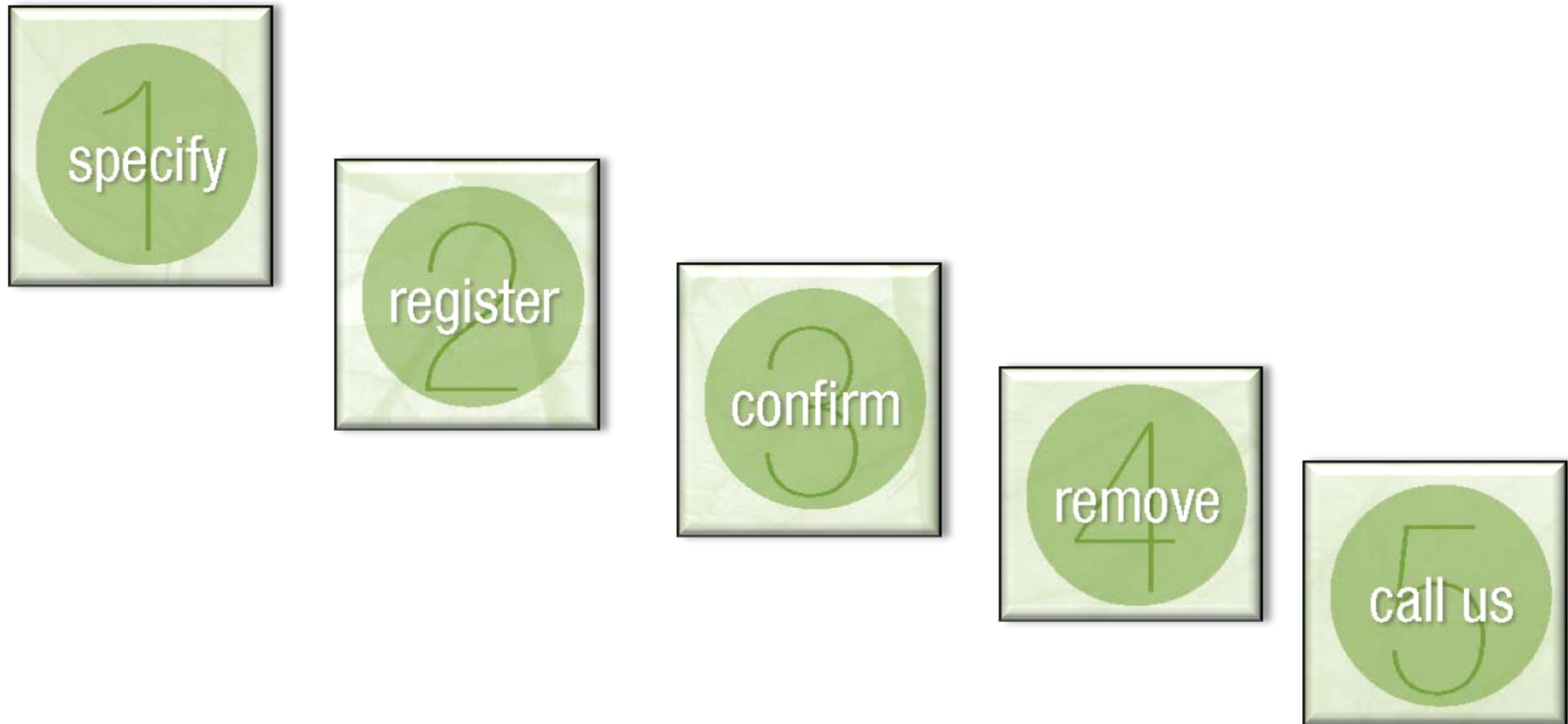






# Ceiling Recycling Process – How it Works

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1. Develop a Construction Waste Management Plan. Include ceiling recycling in your project specifications.  
**Download a guide specification at [armstrong.com/recycling](http://armstrong.com/recycling)**
2. Register your ceiling recycling project with the Armstrong Recycling Center.
3. Information needed:  
Details of the building: Name, address, date of the structure, square footage, contractors information.  
An Asbestos Survey for building older than 1980.  
If original building date is after 1980 and no asbestos was used, we can accept a signed letter from the owner.
4. Choose Recycling Method: Palletize or place ceiling tiles in a container
5. Coordinate pick-up with Armstrong Recycling Coordinator.

## What ceiling tiles are acceptable for recycling?

### Acceptable for recycling

- All brands of dry, pulpable mineral fiber ceiling panels or tiles. All metal splines must be removed from tiles (12" x 12").
- All brands of dry fiberglass panels. Facing must be easily removable.
- All vinyl or scrim-faced mineral fiber panels.

### Acceptable case-by-case for recycling

- Glue-up or adhesive ceiling tiles.
- Foil-backed ceiling tiles.
- Any vinyl or scrim-faced fiberglass panels.
- Any polyester film-faced mineral fiber panels.
- Ceiling tiles with dark or metallic paint (applied by manufacturer).
- Ceiling tiles with paint not applied by manufacturer.
- Armstrong WoodWorks™ Ekos® wall panels.
- Armstrong Soundsoak® mineral fiber or fiberglass wall panels.
- Fabric-faced ceiling tiles.
- Cast ceiling panels (with or without foil).
- Armstrong Sanserra™.
- Armstrong Mylar.
- Fully-packaged ceiling tiles meeting the above criteria.

### Not acceptable for recycling

- Asbestos-containing ceiling tiles.
- Ceiling tiles installed below friable asbestos or contaminated with any other hazardous material.
- Red- or pink-backed ceiling tiles.
- Wet, moldy, or weathered ceiling tiles.
- Ceiling tiles or pallets/bales which contain visible debris (garbage, construction waste).
- Ceiling tiles not packaged according to Armstrong specifications.
- Gypsum ceilings or board.
- Ceiling tiles with visible wood pulp.
- Armstrong Artran (cardboard-like face).
- Armstrong Ceramaguard®.

Check with your local Armstrong representative or call the Armstrong Recycling Center at 1 877 276 7876 (select option 1, then 8) to approve material and for assistance to facilitate recycling. We are continually updating the types of ceiling panels we can recycle and methods we can receive them in.

## Acceptable for recycling:

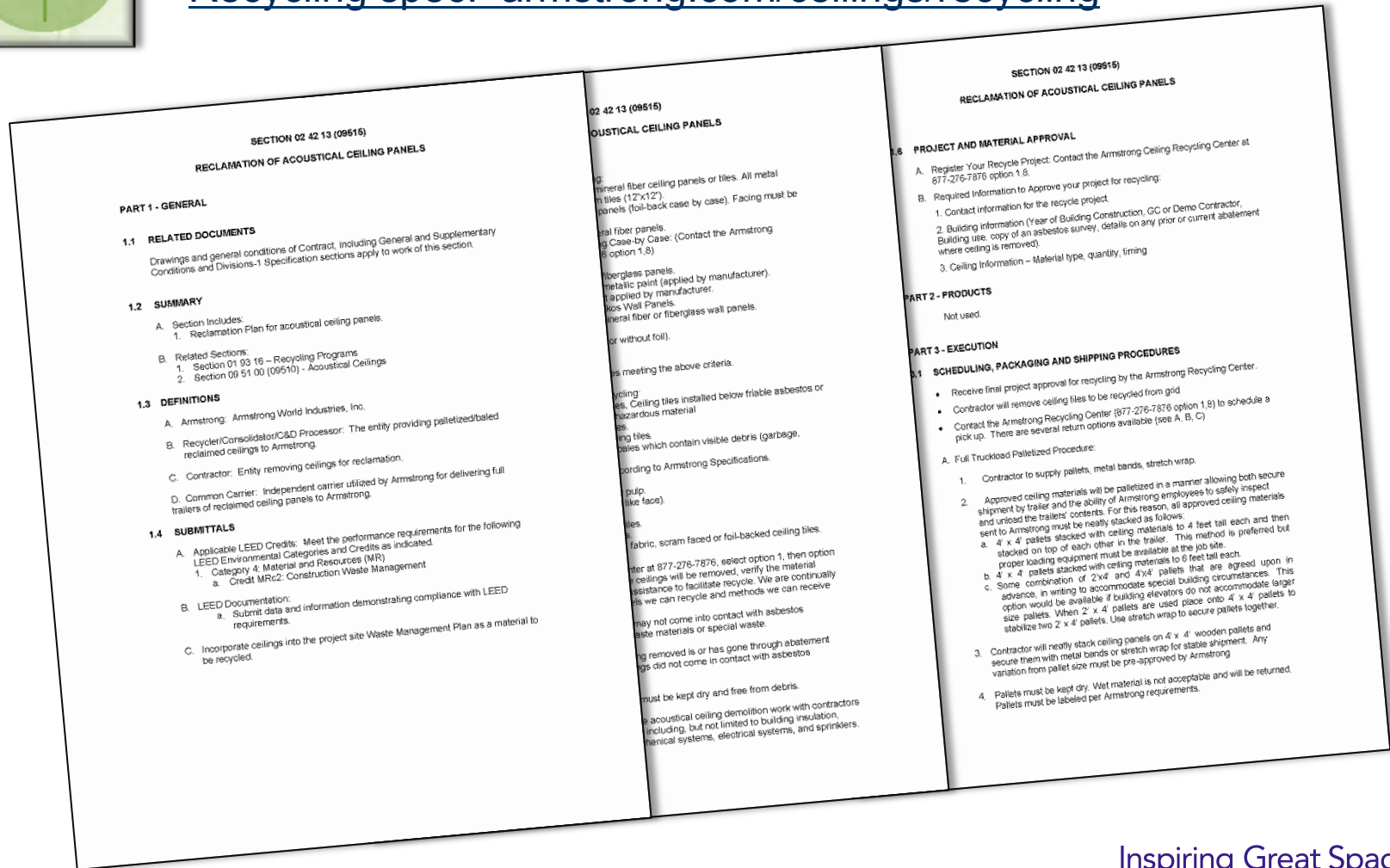
- All brands of dry, pulpable mineral fiber ceiling panels or tiles.
- All metal splines must be removed from tiles (12" x 12").
- All brands of dry fiberglass panels. Facing must be easily removable.
- All vinyl or scrim-faced mineral fiber panels.

# Step One: Specify



Develop a construction waste management plan. Include provisions for ceiling recycling in your project specifications. **Download a guide specification at [armstrong.com/recycling](http://armstrong.com/recycling)**

[Recycling spec: armstrong.com/ceilings/recycling](http://armstrong.com/ceilings/recycling)



## Step Two: Register



- Register your ceiling recycling project with the Armstrong Recycling Center at
- 1- 877-276 -7876 (press option 1, then 4).
- Refer your customer directly to the Recycling Center.
- They will handle the approval, processing and scheduling of the shipment.



## Step Three: Confirm



### Confirm with the Armstrong Recycling Center:

- A. Contact information for the project
- B. Building information – (Year of Building Construction, General Contractor or Demolition Contractor, Building use, a copy of an asbestos survey, details on any abatement)
- C. Ceiling information – Material type, quantity, timing
- D. Asbestos Survey for the building:  
 Buildings constructed before 1990. Details of any asbestos abatement  
 If a newer building (after 1980) and no asbestos was used in construction , then a signed letter from the building owner must be obtained.



## Step Three: Confirm



After returning documentation:

1. Carrier Arrangements will Be made – allow 3-5 days to set up
2. Receive a PO outlining details of carrier pickup
3. Receive a Return Authorization Label - Return labels will be emailed for your use. These labels must be attached to each pallet of material to be returned.

### Return Authorization # \_\_\_\_\_

Please Secure to Each Pallet of Ceiling Material Returned to Armstrong

Issue Date: \_\_\_\_\_ PO# \_\_\_\_\_

Project Name: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

**How should the used tiles be packaged for shipment to Armstrong?**

4' L x 4' W x 4' H  
pallet double stacked

Vertically stacked two (2) 4 ft. high pallets to maximize trailer loads

4' L x 4' W x 6' H  
pallet single stacked

Vertically stacked 6 ft. high pallets to maximize trailer loads

Recycled ceiling materials shall be placed neatly on 4' x 4' or 2' x 4' shipping pallets with bottom slats. Material must be kept in a dry environment at all times.

Pallets may be stacked 4' high when double stacked in trailer or may be stacked up to 6' high when a single stack loading configuration is used. All pallets stacked with ceiling material must be stretch wrapped tightly for stability during transit.

**How do I load the trailer?**

When using 2' X 4' pallets make sure to place two side by side to create one 4' X 4' pallet and shrink wrap tightly.

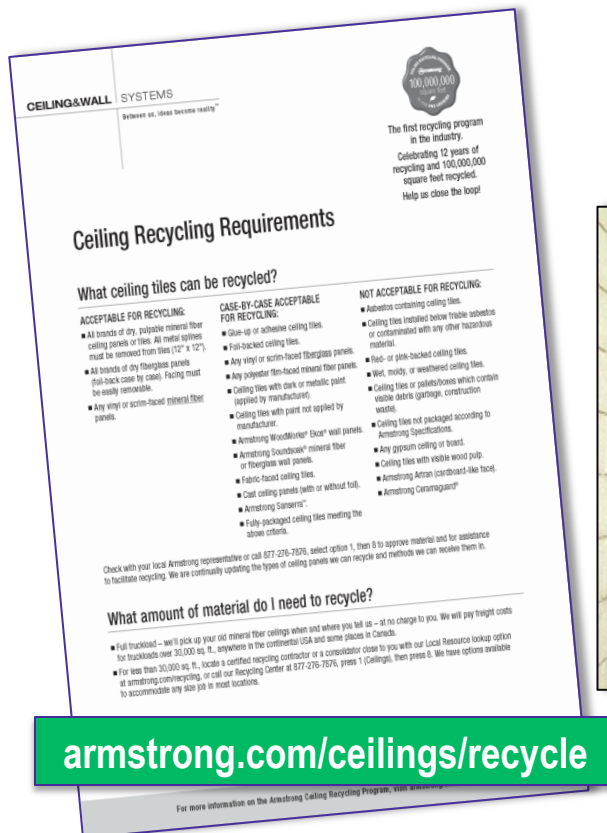
Blocking is required between pallets to prevent them from shifting.

# Step Four: Remove

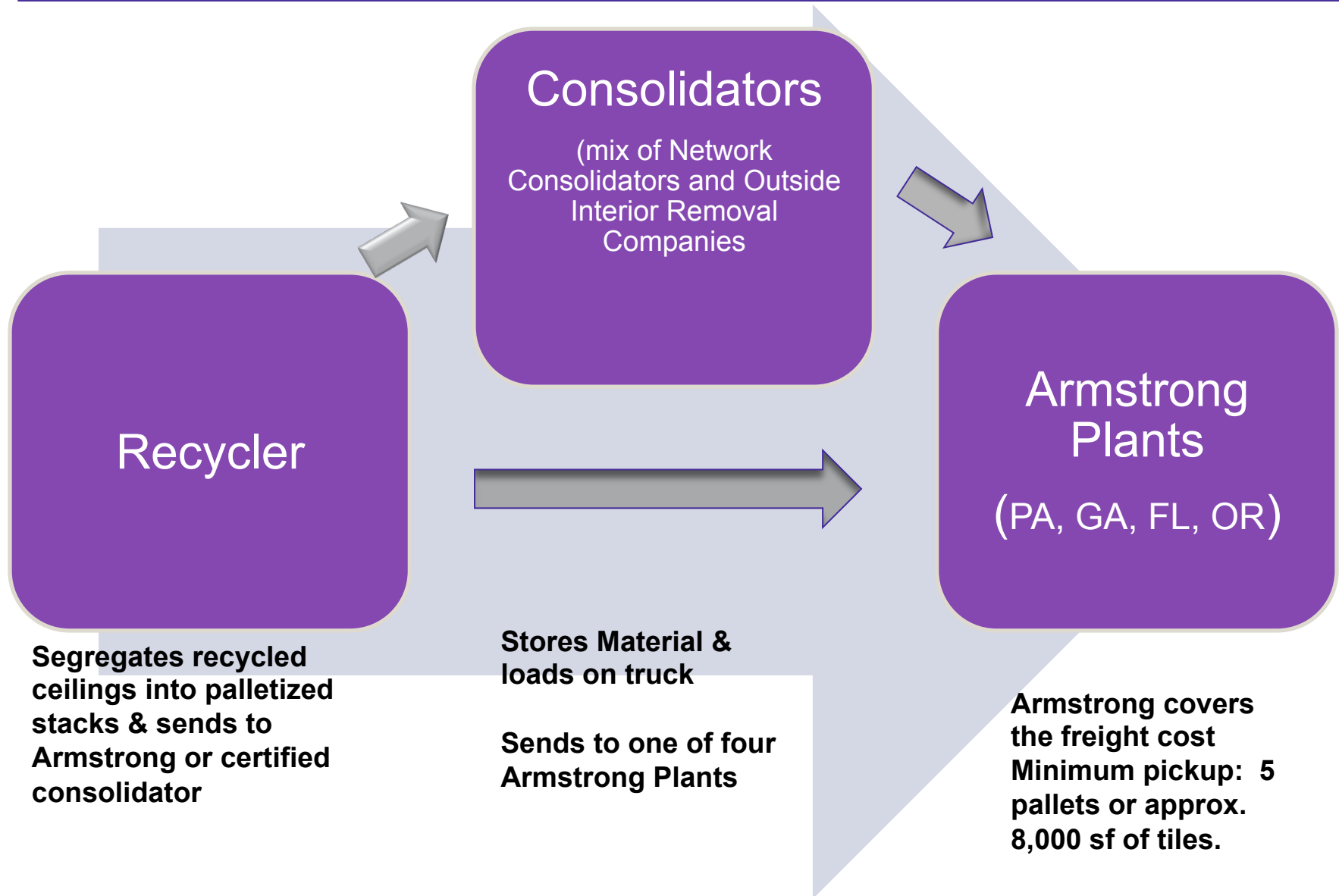


## Palletize

- Stack the old panels on pallets, label, and stretch wrap or tightly band them.
- Coordinate on-site storage and logistics. Review the section on preparing recycled ceilings for shipment



## Palletized Recycled Ceiling Model



## Step Four: Remove



- Container
  - Separate ceiling tiles from other construction debris.
  - Place loose panels in designated recycling container. Keep contents dry.
  - Coordinate removal of container with your local C& D partner
  - Consolidator bales ceilings and sends back to Armstrong

**CEILING SYSTEMS**  
Between it, West 30000 testing™

**RECYCLE NOW**  
Call the Armstrong Recycling Center  
1-877-276-7876

### Ceiling Recycling Requirements

**Return Method: Container**

**What ceiling tiles can be recycled in containers?**

**ACCEPTABLE FOR CONTAINER RECYCLING:**

1. All brands of poplite mineral fiber ceiling panels or tiles.
2. All metal splices must be removed from tiles.
3. Container contains only loose ceiling tiles.

**NON-ACCEPTABLE FOR CONTAINER RECYCLING:**

- Asbestos-containing ceiling tiles
- Ceiling tiles installed below friable asbestos or contaminated with any other hazardous material (i.e., asbestos, lead, cadmium, PCBs)
- Red or pink-backed ceiling tiles
- Wet, moldy, or water-damaged ceiling tiles
- Ceiling tiles with glue or adhesive
- Ceiling tiles with visible wood pulp
- Ceiling tiles with paint not applied by manufacturer
- Ceiling tiles with dark or metallic paints
- Gypsum ceiling or board
- Fiberglass ceiling tiles
- Any vinyl-faced ceiling tile
- Fabric or scrim-faced ceiling tiles
- Foil-backed ceiling tiles
- Armstrong ClearGuard™
- Armstrong Artran™ (air-board-like foam)

**How should the used tiles be packaged for shipment?**

- Material must be clean, dry, and in the listed acceptable category and contain only loose ceiling tiles.
- No wood, metal, construction debris, trash, or hazardous materials of any kind can be included. If C&D waste is included with ceilings, possible charges can be incurred for disposal. Contractors should police what is placed in the covered container.
- Material should be placed in an appropriate collection container. Material must stay dry and should not be loaded above the top of the container.
- Container should be labeled in English and Spanish, "Acoustical Ceiling Tile Only - No Trash." "Sólo para Placas Acústicas de Techo - No desperdicio." 24" x 36" sign board at a minimum should be used.
- If you have special loading or removal circumstances, please contact the Armstrong Recycling Center or your local C&D partner. We will be as flexible as possible to accommodate your project needs. We also accept palletized tiles directly as an option.

**Where should the used ceiling tiles be sent?**

Project registration, material approval, and verification are required prior to accepting any material.

Materials should be sent to an Armstrong approved construction and demolition waste processor or recycle center.

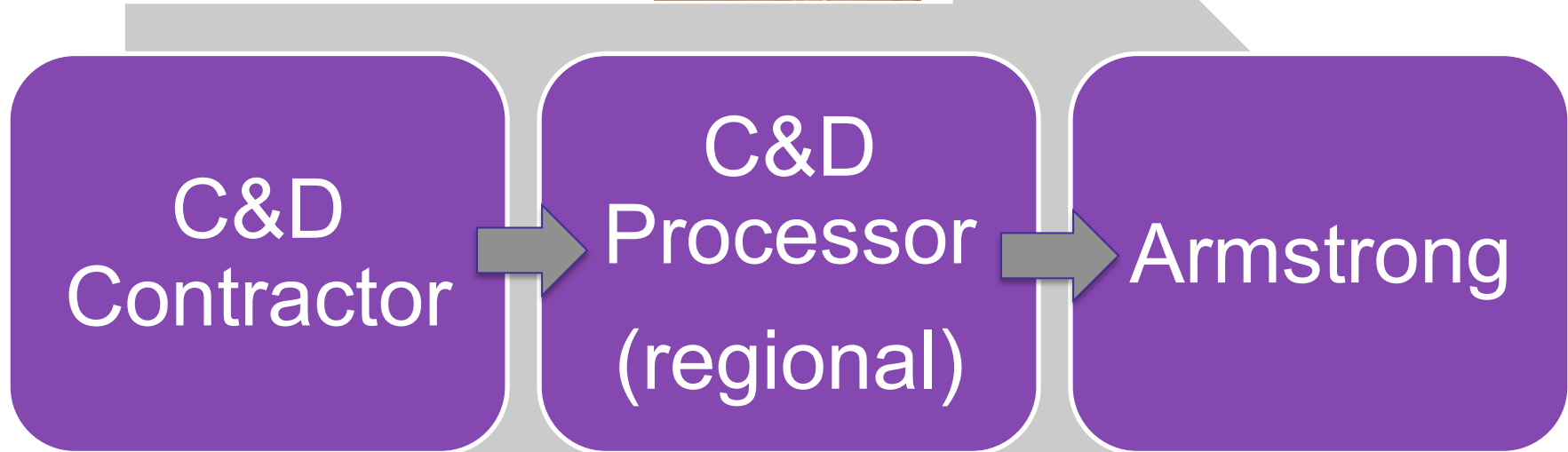
For a local list of approved C&D processors, call Armstrong at 1-877-276-7876, option 1, then 8, or visit [armstrong.com/recycling](http://armstrong.com/recycling)

**armstrong.com/ceilings/recycle**

For more information on the Armstrong Ceiling Recycling Program, call the Armstrong Recycling Center at 1-877-276-7876, option 8, or visit [armstrong.com/recycling](http://armstrong.com/recycling)



## Bulk/Baled Recycled Ceilings Model



**Contractor site separates the ceiling tiles at the job site and throws the tiles into a designated 30 yard roll-off container**

**C&D Processor bales the ceiling tiles and prepares them for shipping**

**Armstrong covers the freight cost from the C&D Processor to our plant**



## Case Study of Chicago Project



101 E. Erie St. Chicago, IL  
Armstrong Ceiling Recycling Project  
CBRE Development Project

[http://www.armstrong.com/commceilingsna/video-library.jsp?  
mediaId=c1eb45ed076c4b0faf91aa9d5366764e](http://www.armstrong.com/commceilingsna/video-library.jsp?mediaId=c1eb45ed076c4b0faf91aa9d5366764e)



## **Armstrong Certified Recycler Network**

Companies trained on details of the Armstrong recycling program: best local resource to get job done. They are also Armstrong acoustical ceiling installers.



## **Armstrong Recycling Program Consolidation Partner**

Companies who are Armstrong Ceiling Recycling Program Partners in consolidating ceilings in your local areas. Some locations are also Armstrong Distributor locations.



## **Armstrong Certified C&D Processor**

Certified C&D Processor Companies that will consolidate ceilings in your local areas. They are able to receive and process material in bulk form from your job sites

Don't have a full truckload of recycled ceilings or need to remove smaller quantities from a larger project? Our North American network of recyclers, consolidators and C&D processors can assist with less-than-full truckload situations.

[FIND A RECYCLING PARTNER, CONSOLIDATOR, C & D PROCESSOR](#)

- **Asbestos Surveys**

- Getting the survey from the Contractor
- Approving the Survey
- We do not accept any cross contamination issues.

- **Palletizing the ceiling tiles**

- We ask that the pallets be stacked 6' high shrunk wrapped

- **Landfill & Tipping Fees**

- The rates that are being charged for dumping vary quite dramatically across the country
  - Lowest amount is in Utah at \$24.29 to as high as \$91.00 in Maine. Georgia comes in around \$40.00.

- **Material & Moisture**

- The ceiling tiles must remain dry, we at times get them back and they are moldy
- There are a few types of tiles that we cannot recycle

- Industry's highest level of recycled content from a closed loop, post-consumer process
- The only ceilings made from reclaimed ceilings.
- Highest Post Consumer LEED® Contribution %

Ceiling-2-Ceiling products include:

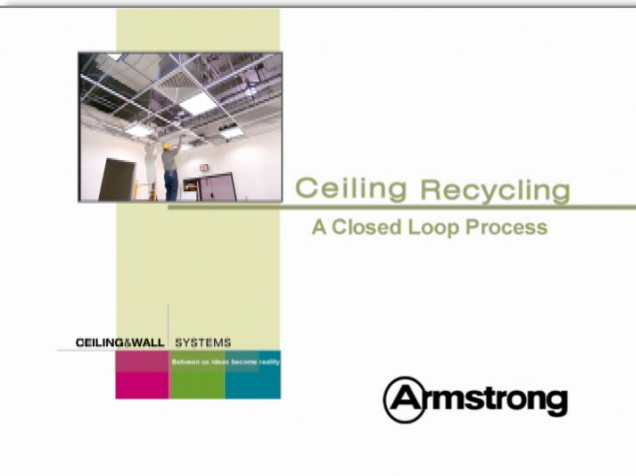
- Ultima®
- Cirrus®
- Dune™



**Ceiling-2-Ceiling products have the highest recycled content in the industry**



[www.armstrong.com/ceilings/recycling](http://www.armstrong.com/ceilings/recycling)



Armstrong Recycling Program Video



Environmental Impact Calculator



See the Savings!  
Recycling/Diversion Calculator

[Recycling Website - Click to take a tour](#)

**Recycling is part of the Armstrong cradle-to-cradle process (closed loop) designed to reduce environmental impact of our products.**

## Environmental Sustainability Manager

Anita Snader

[alsnader@armstrong.com](mailto:alsnader@armstrong.com)

717-396-6486



## Recycling Coordinator: Allen H. Jackson

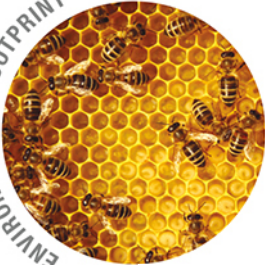
Recycling Coordinator

T: 1-877-276-7876 (press option 1, then 4)

F: 717-396-4154

E: [ahjackson@armstrongceilings.com](mailto:ahjackson@armstrongceilings.com)

ENVIRONMENTAL FOOTPRINT



END OF LIFE - RECYCLING



HEALTH & WELLBEING

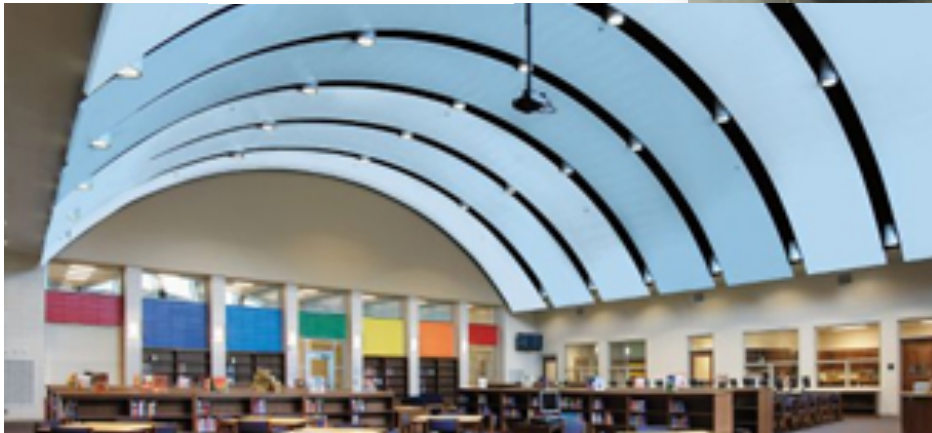


MATERIAL TRANS.



ENERGY & OPTIMIZATION

BUILDING EFFICIENCY



# QUESTIONS?

PLEASE USE THE GO TO WEBINAR DIALOGUE BOX

