

# FOOTHILLS MALL REDEVELOPMENT

## CONSTRUCTION WASTE DIVERSION

### CASE STUDY





# PROJECT OVERVIEW

The Foothills Mall and Shopping Center, located in Midtown Fort Collins, CO underwent extensive demolition and redevelopment. This yielded a large volume of demolished concrete, concrete reinforcement, structural steel, and other recyclable and reclaimable materials. The Foothills Mall property owner, together with the project's contractor and developer, partnered with local waste diversion companies to recycle, repurpose, or reclaim as much of these materials as possible, in accordance with the City of Fort Collins development agreement and green building code.

## FOOTHILLS MALL HISTORY

Fort Collins-based Everitt Companies built the original Foothills Fashion Mall in 1973; with expansions occurring in 1980 and again in 1989. Increasing competition from larger and newer retail ventures in Northern Colorado resulted in declining sales and increasing vacancies. In 2003, Everitt sold the property to General Growth Properties, which failed to move forward on announced plans to redevelop the mall. Affiliates of Walton Street Capital, a private equity real estate firm, and Alberta Development Partners, a Denver-based real estate acquisition, development, and investment firm announced a joint-venture acquisition of Foothills Mall in July 2012. Alberta developed 660,000 square feet of retail space to preserve a portion of the enclosed mall, while including stores on the College Avenue perimeter. Also included are a 9-screen XD Cinemark all-digital movie theater and up to 800 multi-family housing units.

## THE CITY OF FORT COLLINS DIVERSION REQUIREMENTS

As part of the City of Fort Collins's Zero Waste Strategic Plan, the City outlined goals for waste diversion from landfills through composting, recycling, salvaging, and reuse that would help them to meet their goal of 2.8 pounds of trash per capita by 2025 and zero waste by 2030.

This plan had far reaching implications for demolition and construction projects like the Foothills Mall Redevelopment project. The City of Fort Collins has adopted the Green Building Code which requires that new construction/major renovation projects have a Construction Waste Management Plan (CWMP) to address waste prevention, reuse, deconstruction, and on/off site recycling of materials like concrete, metals, drywall, and even dirt. The Foothills Mall Redevelopment project diverted 100% by weight, of all concrete, rock, asphalt, dirt, bricks, and metals (excluding those containing hazardous materials). All other materials on the project, such as wood/lumber products or cardboard diverted at a rate of 70%, by weight. The Foothills Mall Redevelopment committed to achieving an overall diversion rate of 70%, by weight, meaning that 70% of all materials, by weight, will be diverted from the landfill and recycled back into the industrial and consumer material stream, or reused on-site.

## STATS

<b>Location</b>	215 E Foothills Pkwy #220, Fort Collins, CO 80525
<b>Site Area</b>	# acres
<b>Gross Sqft</b>	724,809
<b>Original Construction</b>	1973
<b>Expansions</b>	1980, 1989
<b>Project Team</b>	
Owner	Walton Foothills Holdings VI, LLC
Owner's Rep.	Ditesco
Developer	Walton Foothills Holdings VI, LLC
General Contractor	The Beck Group
Demolition	Alpine Demolition, American Demolition
Sitework	Bellaire Sitework Services
Waste Management and Recycling	Gallegos Sanitation
Carbon Impact Analysis	Brendle Group
Sustainability & Waste Diversion Verification	Institute for the Built Environment, CSU



# WHY WASTE DIVERSION?

Waste diversion reduces greenhouse gas emissions, provides local jobs and income, and protects the health of the residents and wildlife habitats. For example, according to the City of Fort Collins (2012), construction and demolition (C&D) activities account for 16% of the waste in the Larimer County Landfill. Diverting the waste will extend the life of the landfill, which will save the county \$20-80 million dollars in the next 12-15 years. Additionally, according to the EPA (2009), traditional waste management practices represent 1-5% of the U.S. carbon emissions from new product manufacturing, emissions from incinerators, methane gas emissions, and reduction trees for carbon storage. If 25% of the total construction and demolition (C&D) waste were recycled each year in the U.S. there would be a reduction of 40 million metric tons of carbon dioxide equivalent (EPA, 2009).

## CARBON IMPACT OF THE FOOTHILLS MALL REDEVELOPMENT

Fort Collins' City Council hired a local sustainability engineering firm, Brendle Group, to analyze the carbon footprint of the Foothills Mall Redevelopment project. Brendle Group's report outlines the carbon footprint of different redevelopment plans for the Foothills Mall in light of the City's adopted goal to reduce community-wide greenhouse gas emissions by 20% of 2005 levels by 2020 and 80% of 2005 levels by 2050. The results of the analysis suggest that the carbon footprint of the redeveloped mall operating at its full capacity is 5% lower than the carbon footprint of the existing mall under thriving conditions (2005 conditions). However, the carbon impact would be much greater on the City of Fort Collins' carbon footprint had they not chosen the redevelopment/infill approach at the Foothills location. The carbon footprint of the current redevelopment plan, including operations, is 36% lower than if the mall were developed on a greenfield site at the edge of Fort Collins. The redevelopment/infill development alone (not including operations) of the Foothills Mall in its current location results in 48% less greenhouse gas emissions than developing a new Fort Collins Mall on a greenfield site.

## DIVERSION STRATEGIES

The following strategies for diversion were used on the Foothills Mall Redevelopment. For a full list of potential strategies refer to the [City of Ft. Collins Construction Waste Management Plan \(2012\)](#):

**REUSE:** Set aside surplus or off-specification materials for use on other projects, or donate to architectural materials retailers, such as local furniture makers and/or non-profit organizations in Fort Collins.

**ON-SITE RECYCLING:** Use waste materials from the project by reprocessing them for other applications on the same site. One example for large projects is to process existing asphalt pavement and reuse as road base for new pavement.

**OFF-SITE RECYCLING:** Collect materials on site to haul to construction waste recycling facilities.



## BENEFITS OF ZERO WASTE

- Reduces greenhouse gas emissions, responds to urgency of climate change.
- Provides local jobs, income and wealth creation by conserving and using resources locally rather than landfilling them.
- Helps businesses and residents be more sustainable and efficient.
- Promotes local food cultivation and consumption by putting valuable nutrients back into the soil.
- Saves energy and produces local clean energy.
- Provides “green” marketing edge for local businesses.
- Protects health of residents.
- Decreases irrigation water use by applying compost to soils.
- Improves air quality and reduces mobile-source emissions by local use of resources.
- Reduces use of toxic products.
- Protects and restores habitat, biodiversity and open space through increased use of compost products and reduces the need for mining.

([Road to Zero Waste Plan, 2013](#))



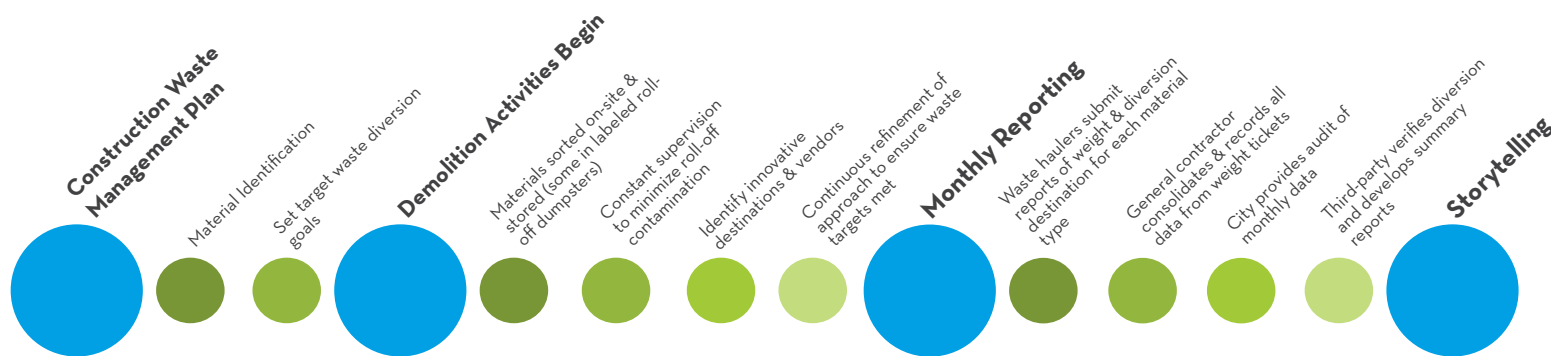
# WASTE MANAGEMENT AND TRACKING PROCESS

The Beck Group, the general contractor for the Foothills Redevelopment Plan, implemented the Construction Waste Management Plan (CWMP). Through a collaborative effort, they carefully managed diversion efforts (deconstruction and salvaging) and tracked/documentated recycling and reuse. The materials to be diverted were identified early in the project. Then during the demolition phase, they were deconstructed, sorted, and placed in designated collection and storage areas (recycling bins or roll-off dumpsters) that are labeled for each material (e.g. concrete, metal) on the site. During these efforts supervised by the contractor and sub-contractors, they took great care to not to mix the materials or place them in the incorrect containers.

The Beck Group identified potential destinations for the diverted materials. The materials were hauled off-site to the recycling facilities, where they are weighed, and the quantities of each material were recorded for use in determining the overall percentage of construction and demolition diverted and recycled.

This tracking and reporting information was shared with The Institute for the Built Environment, the sustainability consultant hired to audit and verify the diversion efforts. Monthly reports were created showing the diversion totals by material and the recycling facility/vendor that received the material.

## | TRACKING PROCESS





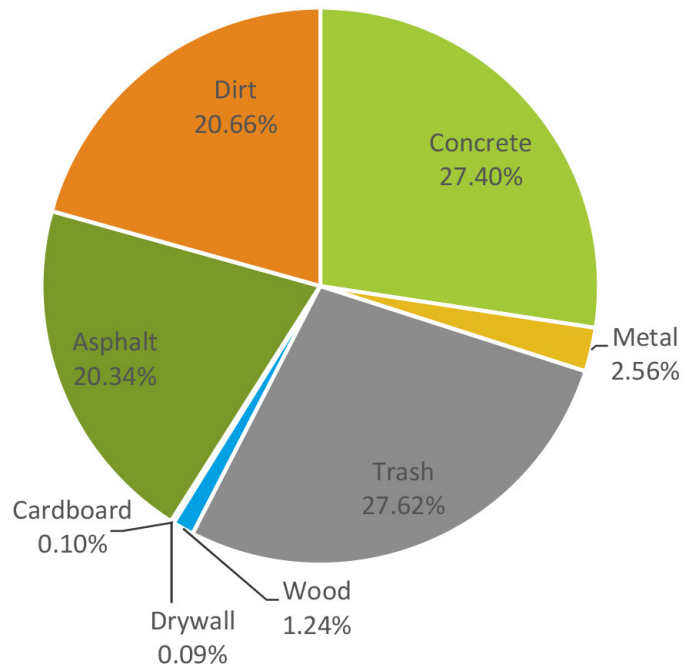
# DIVERSION SUMMARY

The pie chart and bar chart below show a breakdown of the material streams diverted and the percentages of the total overall and by quarter during the Foothills Mall Redevelopment.

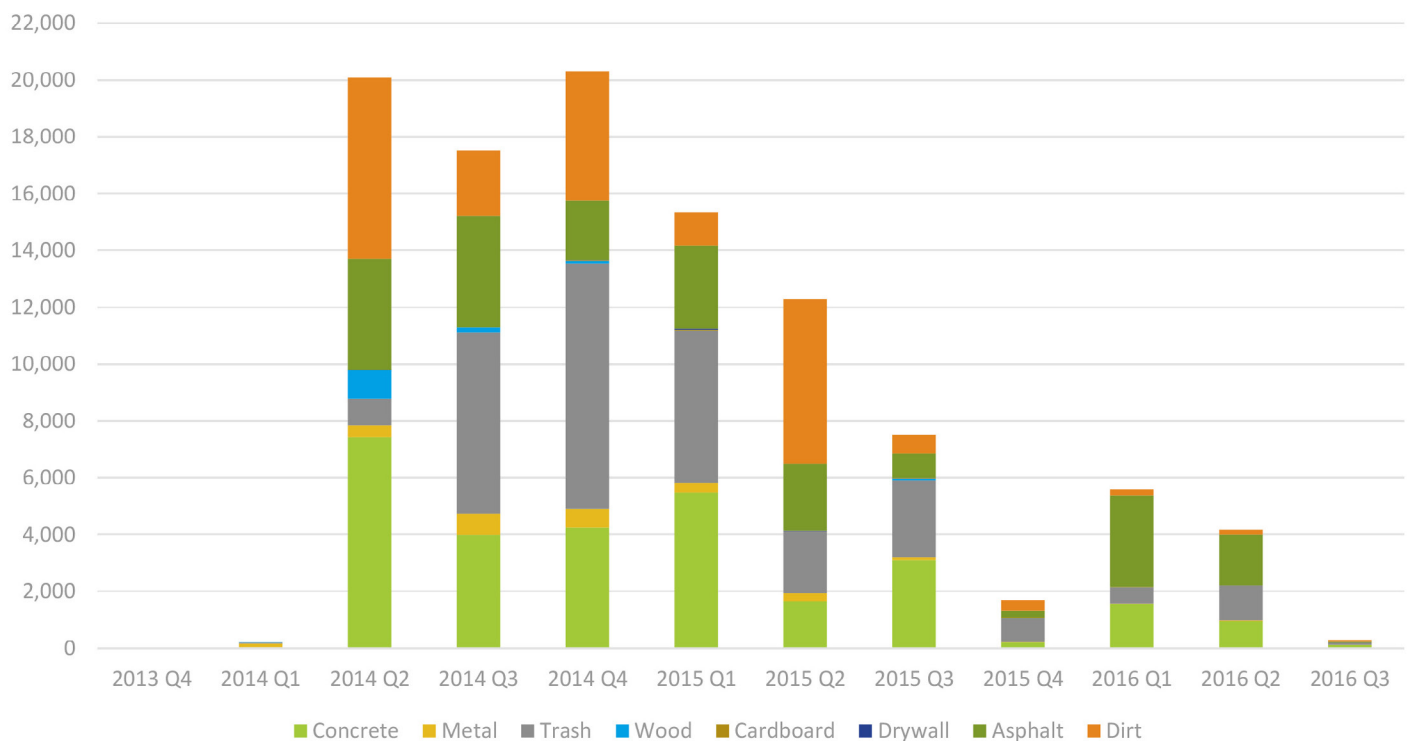


\*\*In these reports, "trash" is referring to the waste materials that were landfilled.

Waste Material by Weight



Waste by Quarters (Tons)





# WHERE DOES IT GO?

In order for waste materials to be diverted from the landfill, there needs to be a supplemental market with economic value for that waste material. These supplemental markets provide an avenue for the material to be reprocessed into the consumer cycle. For example, during the demolition process, when scrap metal is salvaged and diverted it is delivered to the Colorado Iron and Metal, Inc. facility. The material is processed immediately and metals are separated by grade of steel (light versus heavy gauge) and prepared for delivery to mill, where the metal is melted down into new steel. This minimizes the need to extract virgin resources, which has significant environmental benefits. In the case of commercial building demolition, many of the materials used in buildings can be deconstructed and/or demolished with reuse in mind. Foothills Mall Redevelopment found supplemental markets for the following waste materials: concrete, metal, wood, cardboard, drywall, and dirt. Some of these materials were simply repurposed for a new life and some are processed into a raw material to be manufactured for new consumer products.

## innovation case studies

# EXECUTIVE SUMMARY

The diversion of waste materials on the Foothills Mall Redevelopment project has inspired some innovative and creative ways to repurpose the materials salvaged during the demolition process. The following is an executive summary of each of the creative strategies. To see the full innovation case studies, click on the links below:

### [SALVAGED STEEL PURPLE CONEFLOWER TRIO SCULPTURE](#)

Made from 100% salvaged steel, the Steel Purple Coneflower Sculpture consists of salvaged rebar and galvanized metal wainscoting from the Foothills Mall Redevelopment demolition, in addition to 1/4" round bar and poly cart trash can axles from Gallegos Sanitation on recycled metal yard.

### [SALVAGED ROUGH LUMBER](#)

There were trees on the Foothills Mall site that were slated to be removed or declared unfit for survival and removed. Instead of being mulched, over 50 Honeylocust, Ash, and White Oak logs were felled and milled by a local furniture maker into dimensional lumber, sold to local woodworkers for projects, or made into countertops.

### [RECLAIMED WOOD TABLES](#)

A local furniture maker used the reclaimed gym flooring from the Youth Activities Center, a demolished building on the site of the Foothills Mall Redevelopment, to make tables and desks. 25 percent of the gym flooring was saved to be used in the new Foothills Activities Center for countertops and a break room table in the Fort Collins' City Hall. The remaining gym flooring will be directly reused as wood flooring by a local company who sells reclaimed materials for direct reuse or repurposing.

## | DESTINATION OF DIVERTED MATERIALS

ADI  
Alpine Demolition  
Alpine Demolition Milliken Site  
American Demo Yard  
Aragon Iron & Metal  
ARS Companies  
Barker Construction  
Bivens Trucking & Excavating  
City of Fort Collins  
Colorado Iron & Metal  
Connell Resources  
Hageman's Earthcycle  
Heimbuck Disposal  
J-2 Contracting Company  
Jake Kauffman & Sons  
Jordan's Tree Service  
Larimer County Landfill (Beneficial Secondary Use)  
Larimer County Recycling Center  
New Res. Dev. on Ziegler & Drake  
Rocky Mountain Recycling  
Ryan Baldwin  
Stored On-site for Reuse  
Tower Landfill  
The Gardens at Spring Creek  
North Weld Landfill (Beneficial Secondary Use)



Gardens volunteer preparing sculpture for display



Baldwin Hardwoods milling dimensional lumber



Reclaimed flooring table at Fort Collins City Hall

\*Photos courtesy of the Gardens on Spring Creek, Baldwin Hardwoods, and Wool Hat Furniture



## innovation case study

# SALVAGED STEEL PURPLE CONEFLOWER TRIO SCULPTURE

The diversion of waste materials on the Foothills Mall Redevelopment project has inspired some innovative and creative ways to repurpose the materials salvaged during the demolition process. An employee and sculptor from Gallegos Sanitation, Inc., Josh Jones, identified an opportunity to use salvaged steel from the demolition along with some steel scrap to create the Purple Coneflower Trio (2014) sculpture. Through multiple partnerships, namely Gallegos Sanitation, Inc., Alpine Demolition, The Beck Group, and the Gardens on Spring Creek, Jones was able to obtain the salvaged materials to create the sculpture. The Purple Coneflower Trio sculpture was the commemorative flower marking the Gardens on Spring Creek's 10th Anniversary and a part of their Garden of Lights holiday event that ran from December 5th, 2014 to January 4th, 2015. Over 20,000 visitors admired the Purple Coneflower Trio (2014) sculpture from all over Colorado that season.

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"The Beck Group gave us a tour of the mall redevelopment site to see what salvaged materials were available for the sculpture. We identified rebar and metal wainscoting would be applicable for the sculpture and they set it aside for us."

- Josh Jones, GSI Welding Supervisor/Sculptor

"Businesses like Gallegos often provide funding to organizations, but in addition to giving money, GSI has made an effort over the last five years to donate staff time, resources, and materials."

- Becca Walkinshaw, Sustainability Coordinator, Gallegos Sanitation, Inc.

\*Photos courtesy of the Gardens on Spring Creek





## innovation case study

# SALVAGED ROUGH LUMBER FROM FELLED TREES

The diversion of waste materials on the Foothills Mall Redevelopment project has inspired some innovative and creative ways to repurpose the materials salvaged during the demolition process. Although the plan called for most of the trees removed from the site to be turned into mulch, through the collaborative efforts of The Beck Group and Jordan's Tree Service, a sub-contractor for the project, the hand picked trees were felled, set off site and picked up by Baldwin Hardwoods. Baldwin Hardwoods then batch-milled and kiln dried the felled trees for dimensional lumber (e.g. 2x4, 2x6).



“While mulch is a great end use for some of the smaller trees felled from the site, some of the larger timber presented a great opportunity for making furniture or dimensional lumber.”

- Wade Davidson, The Beck Group, Construction Management/General Contractor

“As a woodworker, Baldwin also creates heirloom furniture pieces from some of the wood from the urban trees.”

- Baldwin Hardwoods, Wood Milling and Woodworking

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\*Photos courtesy of Baldwin Hardwoods & Custom Woodworking





## innovation case study

# RECLAIMED WOOD TABLES FROM GYM FLOORING

The diversion of waste materials on the Foothills Mall Redevelopment project has inspired some innovative and creative ways to repurpose the materials salvaged during the demolition process. The existing Youth Activities Center (YAC) was demolished to make way for the new Foothills Activity Center (FAC). The City of Fort Collins, Alberta Development Partners, and The Beck Group partnered with Danelle and Matthew Britt, the owners of Wool Hat Furniture, to reclaim the gym flooring. A portion of the gym flooring (25%) was used for the FAC for the reception desk and countertops, and the remaining wood flooring will be repurposed, court lines and all, into picture frames, table tops, desks, and benches. Most Big Al's Burger and Dog's in Fort Collins recently worked with Wool Hat to make custom-crafted tables made from the reclaimed flooring as they along with Wool Hat believe in "keeping it local" and "keeping history alive one piece at a time".

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"Wool Hat is committed to producing and selling furniture that is made from 80% reclaimed materials, the story of something, where it came from, what did it used to be, a really good example of that would be the basketball court tables and end tables that you can start a conversation around."

- Danelle Britt, Owner, Wool Hat

"We were looking to do some value engineering on the project and the salvaging of the wood floor was one of the options we identified."

- Ethan Cozzens, Facilities Project Manager, City of Fort Collins

\*Photos courtesy of Wool Hat Furniture

