Juvenile and Domestic Relations Courthouse, Lynchburg, Va.

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The City of Lynchburg, Virginia's, Juvenile and Domestic Relations Courthouse achieved LEED-NC Gold certification in August 2011. The 46,345 square-foot facility is part of the City's Facilities Master Plan that was produced by AECOM with a national justice consultant in 2005.

Pursuing LEED certification was not part of the original project requirements; however, following a LEED charrette that took place at the start of the construction document phase, the owner decided to pursue LEED-NC certification. The City's facility team expressed an interest in green roofs, which led to valuable credit synergies with the stormwater treatment system, the building envelope performance, and outstanding achievement toward maximizing the open space on this tight, urban site. The green roof is a first for civic buildings, or private buildings, in Lynchburg.

Since the City manages the water utilities their initial reaction to a reduction in potable water use did not seem to result in any benefits to the project and added to the initial costs; however thanks to the dialog that took place during the charrette they saw that this was a leadership opportunity and wide-spread adoption of water use reduction strategies in their jurisdiction that would result in win-win outcomes. The team achieved water use reduction by selecting appropriate plumbing fixtures resulting in 33 percent better performance than the baseline standard. A penthouse accommodates the post-charrette mechanical systems, which include total energy recovery systems (sensible and latent) with 85 percent efficiency to precondition minimum outside air to reach air handling units. The energy-use efficiency is anticipated to be 29.4 percent better than the performance baseline and result in a 26.8 percent cost efficiency.

More than 87 percent of construction waste was diverted from landfills, and construction and building materials include recycled content, regional materials, and FSC certified wood. Materials and finishes also contributed to a healthy indoor air quality with nine Indoor Air Quality credits that earned 15 points toward certification.

AECOM was the design architect and the mechanical, electrical, and plumbing engineer.

Increasing Construction and Demolition Recycling for LEED Certification

The goal of every recycling project or program is to retain, reuse, and recycle as much waste value as possible. Most general contracting companies now have a "Sustainable Construction," or Leadership in Energy and Environmental Design (LEED) Certification department, to help companies and clients achieve this goal. One of the key factors for a project to become LEED Certified is the proper management and recycling of its waste materials from the project site. Proper waste management and disposal can earn the project up to three of the points for Certification. The project receives one point if 50 percent of the waste is diverted from the landfill, two points if 75 percent is diverted from the landfill, and three points if 95 percent of the waste is diverted from the landfill.

HITT Contracting has worked on over 100 LEED projects and diverting waste from the landfill has been monitored on each project. Examples of some recent LEED projects with large volumes of diverted construction waste materials are:

- At Mayer Brown Legal Offices in Washington DC, HITT diverted 326 tons out of 393 total tons, or 83 percent, of all construction waste to recycling.
- At Polk Elementary School in Alexandria, HITT diverted 336 tons out of 410 total tons, or 82 percent, of all construction waste to recycling.

This was accomplished using one, or a combination of two, Waste Management Recycling methods; source separation or comingled recycling.

Source separation is the separation of multiple recyclable materials ***at the job site***. This is usually accomplished using separate containers on site where workers dispose of metals, wood, and other like

materials independently. Once full, these containers are then transported to different markets with no additional sorting required. The advantages to source separation are higher recycled material rates with lower costs. Disadvantages include having multiple containers on site, relying on workers to separate materials, and more complex logistics and varied locations to transport the waste.

Comingled recycling is the alternative to source separation. In this method, all waste materials are placed in a single container which is then transported to a recycling plant that provides inspection and separation services. Separation is usually performed by machines, as well as by hand. The advantages to commingled recycling are fewer containers on site, no need for workers to separate materials, and easier disposal logistics since waste goes to a single location. The disadvantages are lower recycling rates and higher costs.

For more information on this topic, please feel free to visit http://www.broadrunrecycling.com/index.html."

The Comingled recycling option is more popular since you just throw the debris into the same dumpster you always did. In larger metro areas the waste industry is sophisticated enough to have the proper sorting operation to yield more recyclable material due to the use of specialty equipment. Space constraints also make this a more popular option since all waste goes into the same dumpsters.

Smaller construction markets must use source separation since the waste management companies do not have the proper separating machinery and operation.

Below are some examples of construction waste and the new materials created through recycling:

- Asphalt, roofing shingles > new asphalt and other paving materials
- Cardboard, paper, plastics > similar new materials
- Scrap wood > mulch or compressed into large blocks for biofuel in power plant boilers
- Brick, block, concrete > gravel or dry aggregate for new concrete
- Metal, ferrous, and non-ferrous > new steel
- Gypsum drywall > soil amendment or farm waste absorption
- Ceiling tiles > if returned in bulk they can be recycled to new ceiling tiles
- Dirt, rock, sand > Alternative Daily Cover (ADC) used in landfills

The type of waste materials on a project depends on the construction project type. In northern Virginia and Loudoun County there is more new construction so the returned materials are lighter, comprised of extra metal studs and drywall. In DC and Maryland there are more demolition projects of older structures so the materials consist of brick, block, concrete, and asphalt. These materials cost more to transport and process since they weigh more.

The LEED recycling initiative began slowly in the residential markets, but with LEED Certification becoming so popular, it has boomed in the commercial construction market. Recycling used to be cost prohibitive for contractors and owners. Now it costs them if they do NOT recycle.