LIGHTWEIGHT CONCRETE UTILIZED IN 12-STORY DENVER CIVIC CENTER ADDITION

QUICK FACTS:

Project:
Denver Civic Center

Location:
Denver, CO

Notes:
The general contractor of this landmark project was Hensel Phelps Construction Company. Structural work was done by Martin/Martin Consulting Engineers, M/E/P, BCER Engineering and RK Mechanical. The Associate Architect was RNL Design.

Using more than 8,500 cubic yards of structural lightweight concrete produced with rotary kiln expanded shale, engineers constructed a 12-story addition with significant dead load reduction, reduced foundation size and more usable space per floor. Over 8,500 cubic yards of structural lightweight concrete, produced with expanded shale from Boulder, Colorado, was used to help construct an 860,000 square-foot office tower for the city and county of Denver.

This 12-story addition to Denver's Civic Center increased the complex's office space by 65%, and allowed Denver to consolidate most of the city and county offices from various locations throughout the city. The 12-story tower faces the Central Business District. A 4-story atrium is adjacent to the public plaza. Public art was fully integrated into the design of the structure.

Completed in 2002, the building was constructed using lightweight concrete over metal deck. This format provided the most economical building solution to match new floor heights with the existing structure. By making it easier to pump, the vacuum-saturation of expanded lightweight aggregate product from Boulder enhanced the placement of the concrete for this project. It also offered significant dead load reduction, reduced foundation size, and created more usable space per floor.

"One of the many benefits of using lightweight concrete on the floor decks of this project is that it helped save 1 1/4 inches per floor in the height of the building, which equates to a savings in the curtain wall alone of $55,000, " says Michael McAffrey.

"This allowed us to align the new building floor to floor with the existing 1950's structure. It also provided savings in the foundation, shaftwalls, and lateral system." Michael McAffrey, a principal at Martin and Martin Consulting Engineers.

TRINITY LIGHTWEIGHT

Trinity Lightweight is the largest producer of rotary kiln expanded shale and clay lightweight aggregate in North America and is a leading supporter of research, independent testing and field studies to improve the manufacturing process and expand the beneficial uses of the product.

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