STEEL TUBE INSTITUTE

HSS

HOLLOW STRUCTURAL SECTIONS

CASE STUDY: BUILDINGS

Home Depot

COMPACT HSS COLUMNS GIVE HOME DEPOT STORES MORE VALUABLE SALES AND MERCHANDISING SPACE.

HIGH HSS STRENGTH ALLOWS COLUMNS TO BE SIZED SMALLER

Cost effectiveness helped dictate choice of HSS Atlanta-based Home Depot ranks as the world's largest home improvement retailer, with annual sales exceeding $30-billion. It's also one of the ten largest retailers in the United States and one of the fastest growing.

With more than 800 Home Depot stores in 46 U.S. states and five Canadian provinces, the company is increasing its outlets at a better-than-20% annual rate. It plans to continue that aggressive pace for the foreseeable future and to reach 1,300 stores by the end of 2001.

Since the company was founded in 1978, Home Depot has relied almost exclusively on steel Hollow Structural Sections (HSS) for the columns that support its stores. With stores averaging about 20 tons of columns, that's a lot of HSS!

"We've been using HSS for columns from the beginning," says Robert Mooney, the retailer's Corporate Architectural Manager. "About the only stores in which you wouldn't see these columns are a few that we've taken over from other firms." Home Depot stores average about 130,000 square feet in size, 110,000 under roof and an additional 20,000 square feet outdoors for their garden center.

"Each store in our five U.S. divisions and Canadian division is a little bit different," Mooney says. "While the site influences the design of a store to some extent, we basically try to mold it to accommodate the size of store we want."

‘IT’S THE MOST COST EFFICIENT SOLUTION’

Mooney says that the primary reason for the use of HSS columns is their high strength-to-weight ratio, which means they take up less space than columns made of other materials or in other shapes. That adds up to more valuable floor space for Home Depot. “It simply is the most cost efficient solution,” he says.

Elaborating on the space issue, Mooney says, “In a retail environment like ours, you want to get every inch of sales floor you can. Often, the greater distance between columns, using HSS versus wide-flange sections or I-beams, is enough to let us lay out and merchandise our products more effectively. The square tubular columns are more compact than other, horizontal-shaped structurals, and that suits our purpose well.”

Bob New, Corporate Vice President for Barry Levin & Associates of Atlanta, which has worked on about three-fourths of Home Depot’s stores, cites some other benefits of the HSS columns.

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PLEASING APPEARANCE A MAJOR BENEFIT

“One of the principal ones is aesthetics,” New says. “Early on, we experimented with wide-flange structurals for columns, but Home Depot simply didn’t like their appearance. Hollow structural sections have a simple, clean appearance, are easy to paint and don’t need any type of enclosure around them.”

He says that the inherent strength of HSS also makes columns more resilient and more resistant to damage from the forklifts that are used to move products throughout the stores. And outdoors, where HSS is used to support canopies across the fronts of stores, the smooth surface discourages birds from roosting and allows easy run-off of rain water so they resist rust damage.

EXTENSIVE STUDY LED TO HSS CHOICE

New says that Barry Levin & Associates conducted an extensive study of structural materials during its early years as the structural engineer for Home Depot, comparing HSS with such other structurals as wide-flange beams, steel joists and builtup beams made of metal studs. HSS won the competition.

Columns for Home Depot stores are 7" or 8" square HSS, approximately 26 feet in height and set on a 40-foot by 50-foot grid. The front canopies are supported by 10" x 4" or 12" x 6" rectangular HSS. Connections for the HSS columns are handled with a four-bolt base plate and a four-bolt cap plate, both of which are welded to the columns in the fabrication shop. These allow fast and simple bolt connections to foundation piers and to roof girders, which rest atop the columns.

New says that steel erectors like working with HSS. "The columns come from the tube mill straight and true, and they're easy to work with. And because the columns are so strong, crews don't have to worry as much about damaging them during erection."

In addition to Barry Levin & Associates, other professionals involved in the design of Home Depot stores include two architectural firms, Greenburg Farrow in Atlanta and Casco Architecture in St. Louis, each of which do roughly half of the work. Home Depot uses a number of steel fabricators, with SMI Joists of Houston and Vulcraft Steel of Florence, S.C. doing the largest portions.