

**HSS.  
LESS WEIGHT EQUALS  
LESS COST.**



# USING COLUMNS MADE OF HSS SAVED THIS BUILDER \$80,000

When Richard Weber, Chief Architect for M. E. Osborne Building Co. in Mentor, Ohio, set out to design a 161,000 square-foot warehouse, assembly and distribution center for Buyers Products, he had no doubts as to what type of steel structurals to use for the building's 43-foot-tall columns.

Osborne's experience in designing similar structures had shown, conclusively, that steel Hollow Structural Sections (HSS) provide a significant cost savings over wide-flange structural shapes.

"At prevailing prices, each wide-flange column of the same height would have cost as much as \$500 more," says Brian Bennett, President of Columbia Steel, which served as the fabricator for the project. That means that the use of HSS lowered the cost of the building by as much as \$80,000.

## High Strength/ Weight Ratios A Significant Advantage

This savings, Weber points out, comes from the fact that pound-for-pound, HSS has greater strength-to-weight ratios than structural wide-flange shapes.

"With HSS, you need significantly less steel, by weight, to do the job," he said. "That weight advantage is more than enough to counter the slightly higher cost-per-pound of HSS."

The savings cited by Weber and Bennett confirm the results of a study conducted by Fred Palmer, P.E., technical consultant to the Steel Tube Institute of North America (STI). The study compares the capacities of HSS with structural wide-flange shapes and shows that the weight savings using HSS, rather than wide-flange structurals in long columns, is greater than 50 percent.

## HSS: Less Weight, More Load — Bearing Capacity

For example, Palmer's analysis shows that a 32-foot long, 8-inch square column of HSS has a greater load-bearing capacity than a 32-foot long, 12-inch x 8-inch wide-flange structural. The HSS column weighs 19.6 pounds-per-foot; the wide-flange structural weighs more than twice as much, 40 pounds-per-foot. The weight savings by using HSS as the column is 51 percent!

The Buyers Products warehouse has 160 43-foot-high columns. Most are 12" square HSS, with 5/16" walls; some are 14" squares, with 5/16" walls. Those, Weber says, are in areas where wind resistance is a particular factor.

While their greater strength-to-weight ratios were the principal reason for the choice of HSS for the Buyers Products warehouse, that wasn't the only reason.

## HSS Adds Aesthetic Dimension to Design

"As an architect," Weber said, "I like HSS members. They're smooth and clean, easy to paint. When exposed, they add an aesthetic dimension to a building's design."

In the Buyers Products warehouse, Weber employed exposed HSS in the two-floor, 20,000 square-foot office wing that wraps around one corner of the warehouse. All of the columns in this area are exposed 8" square HSS.

"They're attractive, and I can place them right against the window system and paint them, so they're an integral part of the design," he said. Another reason for leaving the columns exposed is to make better use of space. "The 8" square columns take up less space than wide-flange and because of the aesthetic





appeal of HSS I don't have to wrap it. So, we get lots more floor space."

M. E. Osborne is a design-build contractor and construction manager. The fabricator for the Buyers Products warehouse, Columbia Steel, is located in Olmsted Falls, Ohio.

### **The Steel Tube Institute**

The Steel Tube Institute was founded in 1930 and sponsors cooperative member efforts to improve manufacturing techniques in the welded steel tubing industry and informs customers and fabricators about the product's utility and versatility. It is headquartered in Coral Gables, Florida.

### **What Is HSS?**

Hollow Structural Sections (HSS) is high-strength welded steel tubing used as structural elements in buildings and other structures and a variety of manufactured products. It is produced in round, square and rectangular shapes and a broad range of sizes. Benefits include aesthetic appeal, high strength-to-weight ratios, uniform strength, cost effectiveness and recyclability.

