

HSS: DESIGNS FOR THE 21st CENTURY



Upper St. Clair High School expansion

COST EFFECTIVENESS LEADS TO CHOICE OF HSS COLUMNS IN \$29-MILLION SCHOOL EXPANSION



Efficiency of HSS Allows Lighter Sections to Be Used

“We simply feel it’s a more cost-effective way of building than using other structural shapes.”

That succinctly sums up the feeling of Charles Klee, Project Architect of the Ohio-based architectural firm, Fanning & Howey Associates Inc., in explaining why the architect selected steel Hollow Structural Sections (HSS) for the columns in a major expansion and renovation project at Upper St. Clair High School in suburban Pittsburgh.

“While the initial material cost of HSS columns may be a bit more than wide-flange sections,” Klee says, “we believe that the efficiency of the HSS allows the use of lighter sections and contributes to lower overall construction costs, particularly for braced frames and for columns with primarily axial loadings.”

“Basically it’s an economic consideration and a very efficient use of steel,” Klee concludes. He notes that his firm has designed a number of school buildings in the East and Midwest and that its selection of HSS for the Upper St. Clair High School project was based on a considerable amount of cost research.



Work Nearly Doubles Size of the School

Valued at about \$29 million, the Upper St. Clair project is providing 150,000 square feet of new construction and 160,000 square feet of renovation of existing school facilities. The new construction is basically classrooms, offices and a library, while the renovated areas include athletic facilities, an auditorium, art rooms and industrial technology workshops. The new facility will go into use in the fall of 1999, although some final work will be completed after classes have begun.

Fabricator Wilhelm & Kruse of Pittsburgh provided roughly 134 tons of HSS for the project's columns, according to Production Manager Rick Oliver. Most of this tonnage was 7" and 8" square HSS in wall thicknesses of 3/8" and 5/8". Columns ranged in height from 16' to 35'. A limited number of 10" x 10" square columns also were furnished.

Oliver says that Wilhelm & Kruse's work included welding of base and cap plates to each column, as well as connection plates



to allow bolting of beams. Some columns required slotting to permit connection plates to be inserted.

Visual Appeal Is Also a Key Factor

While the excellent load-bearing characteristics of HSS and its cost effectiveness were the primary factors in its selection for the project, Fanning & Howey's Klee noted that its pleasing visual appearance was also a factor.

"There are a number of areas where columns are exposed, with masonry butting up on either side," he says. "Other

types of columns would have had to be enclosed, for aesthetic reasons."

Klee also says that another area where the HSS structure was allowed to express itself visually was in the entrance to the school's auditorium, where a series of HSS columns extending above masonry piers form an attractive colonnade.

In addition to the architect and steel fabricator, other major participants in the Upper St. Clair High School project included the construction manager, P. J. Dick Inc., and the steel erector, Multi-Phase Inc., both of Pittsburgh.

