Project Profile

USG® Area Separation Wall Systems

Application/Building Type:
Multi-Family Construction
Project Name:
Millrace
Location:
Gaithersburg, Maryland
Architect:
Roy, O'Brien and Creaser
Featured Products:
SHEETROCK® Brand Gypsum Panels, FIRECODE C Core
SHEETROCK® Brand Gypsum Liner Panels
USG® Steel C-H Studs

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Firewall Stands Up

The fire demonstrated the effectiveness of space-saving USG® area separation wall systems. Two types of USG area separation walls, cavity-type in sidewalls and solid-type in back walls, were used in each unit. "This was only the third project in which we had used the gypsum fire wall system," said Jay O'Brien, project architect for Roy, O'Brien and Creaser, of Gaithersburg, Md., designer of the project (which was constructed in 1981). "Formerly, we specified masonry construction for fire walls, but now, most of our clients prefer the gypsum system. You rely on the design and test data of the system, but you don't actually know if it works until an accident occurs," he continued.

Although the unit where the fire originated was completely destroyed, further tragedy was averted. Damage to the adjacent units was limited to a charred deck on one unit and some minor damage to the adjoining rooftops. While the unit destroyed will have to be rebuilt, further repair costs will be minimal. The key to the success of the USG area separation wall performance is a special aluminum clip that allows the damaged structure on the fire-exposed side of the occupancy-separation walls to fall away without pulling down the fire wall.

"The way this particular complex is built made it a difficult fire to fight," explained Chief James Magruder of the local Gaithesburg-Washington Grove Fire Department. "There are four units opening on a common courtyard. The fire was in a rear unit, which faces a lake and has only a narrow, grassy area behind it, limiting our working space.

"Station Eight is only a few minutes from the site, but the fire was really burning when we arrived. Actual firefighting lasted two hours. The fire destroyed the unit quickly, but the fire walls kept everything contained in that unit," he added. Surrounding townhomes suffered smoke and water damage, but only incidental fire damage.

Two different area separation systems, both providing fire-resistant walls from ground level to roof, were employed in the construction of the Millrace Townhomes. On the sides of the units, cavity-type USG area separation walls were used. Between back-to-back units, solid-type USG area separation walls were used.

Cavity-type area separation walls are used as commonly shared party walls and fire barriers with non-load-bearing framing. They consist of USG® Steel C-H Studs and 1-in. SHEETROCK® brand gypsum liner panels set in USG Steel C-Runners and faced both sides with 1/2-in. SHEETROCK Brand Gypsum Panels, FIRECODE® C core.

The solid system is built with two 1-inch SHEETROCK gypsum liner panels installed vertically between 2-inch steel H-studs and C-runners. For sound attenuation and added fire protection, special insulation can be added to both area separation wall systems.

Both systems function the same way. The fire-resistant gypsum panels provide a two-hour fire-rated performance. The steel studs holding the gypsum panels are attached to the unit's wood framing using aluminum angle clips. When exposed to fire, these clips melt and break on the exposed side, allowing the burning wood frame to fall away. The fire barrier remains intact to protect adjacent units. Through numerous building fires, properly installed USG area seperation walls ave never failed to function as designed and have protected adjacent areas as required.

"Our primary concern in this project was the complexity of the property lines which met in a common courtyard serving four separate units," O'Brien pointed out. "The USG area separation wall system allowed us to save space and put more square footage in each unit without compromising fire safety."

In addition to its function as a space saver, the USG area separation wall system's ease of assembly helped cut costs. "The material costs for the gypsum wall system versus conventional masonry were almost break-even in the early 1980s, but installation time and cost were significantly reduced with the gypsum system. The fire wall panels could be slid into place by the builder as each floor was constructed, rather than waiting to begin framing until masonry work was completed."

The Millrace fire demonstrated that USG area separation wall fire resistance is first-rate. "I am very impressed by this area separation system as a fire wall. It performed exactly as designed," O'Brien concluded.

Manufactured by
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