Gypsum Area Fire Walls:
The Sensible Solution for Townhouse Fire and Sound Protection

By Michael Gardner

Gypsum board townhouse separation walls – also known as fire walls or party walls – are perhaps the most cost-effective and time-efficient systems available for providing fire protection and sound attenuation in multi-family construction.

Moreover, they provide these benefits while responding directly to the National Building Code of Canada 2006 requirements calling for individual townhouse units and similar multi-family dwellings to be separated by fire-rated construction.

Worker using gypsum liner board to ensure steel framing end cap stays in place.

Gypsum board townhouse separation walls can be installed in almost any weather condition and are typically used in townhouse, apartment, and condominium construction. They are also ideal for light commercial construction, providing fire protection and sound attenuation between commercial workspaces in strip malls.

Code Compliance

The National Building Code of Canada 2006 requires all area separation walls to meet the following design criteria:

- For Party Walls, they must be continuous from the foundation to the underside of the roof sheathing .
- For 2 hour Firewalls, they must be continuous from the foundation through the roof to form a parapet and they must allow for the collapse of the construction on the side of the wall exposed to fire while remaining intact to protect the structure on its opposite side.

The NBCC 2006 permits the use of gypsum area separation wall systems where 2 hour fire resistance and sound attenuation of 50 or greater are required.

The System:

Solid gypsum board area separation walls use three basic components:

- 25mm (1-inch) thick type X gypsum board liner panels that are 610mm (2-feet) wide and either 2440mm, 3050mm, 3660mm, or 4270mm (8-, 10-, 12- or 14-feet) long.
- Metal framing members, consisting of 50mm (2-inch) wide H-studs and U-shaped track.
- "Break away" L-shape aluminum clips that soften at relatively low temperatures.

The area separation wall is attached to the adjacent building's structural framework using L-shaped aluminum clips, which are fastened to the area separation wall's steel H studs and the structure of the townhouse. The clips connect each H stud on both sides with the adjacent floors or roof/ceiling intersections to keep the area separation wall in place between the two structures.

The aluminum L clips are manufactured to soften at about 600°C (1100 °F). Consequently, when they're exposed to the heat of a fire on one side of the area separation wall, they break away between the steel and the wood frameworks and allow the burning structure to fall away while leaving the area separation wall in place.

Worker attaching aluminum L-clip to steel framing on area separation wall.

Because the gypsum board panels prevent the heat on the "fire side" from reaching the opposite side, the aluminum clips supporting the wall on the non-burning side remain intact and prevent the fire from spreading.

Aluminum clips used to connect gypsum area separation walls to adjacent buildings must be specified in the tested design to ensure that they perform properly during a fire. Clips must be fastened and installed in conjunction with system directions.

In addition to defining fire-resistance requirements, the NBCC 2006 requires walls separating townhouse units to maintain a minimum Sound Transmission Class (STC) rating of 50 to ensure that proper sound attenuation occurs between individual units.

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