

What's easy to install . . . good for residential construction . . . and cost-effective?

FOR HUNDREDS OF YEARS, THE ANSWER HAS BEEN *Gypsum Board Area Separation Walls*

By Robert A. Wessel

Townhomes, apartments and condominiums are popular choices of dwellings for the American public. Their unique design demands special methods of construction to provide safe, fire resistance and acoustical separation between dwelling units. Gypsum board area separation wall systems have been specially developed to protect the occupants of attached and multiple-unit residences. These walls also provide lightweight, efficient and cost-effective assemblies for the builder. These wall systems have the additional advantages of all-weather, stable, sturdy construction, and they curtail the delays associated with temperature-sensitive and cumbersome masonry materials. The inherent risk associated with tall (25-30 feet), unstable masonry walls is eliminated when gypsum area separation walls are used.

INDUSTRY AND PUBLIC ACCEPTANCE

Developers, builders and owners of apartments, condominiums and townhomes can benefit from the performance of gypsum board systems and at the same time realize substantial cost savings. Gypsum board manufacturers have developed construction methods that result in assemblies that are lighter in weight and are more easily and quickly built. Gypsum walls provide one-, two-, and three-hour fire resistance ratings that meet model building and fire code requirements.

The popularity of nonloadbearing gypsum board area separation walls has rapidly increased as contractors and architects discover the efficiency, simplicity and cost-effectiveness of these systems. They are safe and easy to install and provide high performance.

SOUND ATTENUATION

A high degree of sound isolation can also be obtained with gypsum board area separation walls. This feature is extremely important to designers, developers, builders and occupants to ensure privacy in adjacent units. Proper construction and attention to detail of the area separation

walls will provide a high degree of sound attenuation. Individual gypsum board manufacturers should be consulted for the most current installation details and Sound Transmission Classification information on specific systems.

CODE ACCEPTANCE

The two principal model code bodies that address the area-separation-type fire or party walls are Building Officials & Code Administrators International Inc. and Southern Building Code Congress International. These code bodies identify such assemblies in their codes as "fire wall," "party wall" or "townhouse separation wall." Each designation has essentially the same structural requirements: For example, the wall must be continuous from the foundation to the underside of the roof sheathing (or continue through the roof to form a parapet) and the wall must be designed to allow collapse of the construction on the fire side without collapse of the adjacent separation wall.

The Uniform Building Code of the International Conference of Building Officials contains somewhat different, yet similar, requirements relative to walls separating dwelling

Features of Gypsum Board Area Separation Walls

- Provide multifamily housing units with essential fire-wall (party-wall) separation.
- Adaptable for use in commercial construction as firewalls, fire separation walls, fire partitions, shaft enclosures and similar systems.
- Use only three basic components designed for fast, easy installation by a carpenter or drywall installer.
- Install progressively, one floor at a time, as the building is constructed; divide the building into separate fire-protected units.
- Practical weight of eight to nine pounds per square foot.
- Provide more space through a thin wall profile.
- Provide up to a three-hour fire rating; all components are considered noncombustible by the codes.
- Use dry construction methods.
- Provide superior sound attenuation.
- Provide choice of cavity or solid system.
- Meet a variety of code requirements.

Advantages of Gypsum Board Area Separation Walls

- Economical and efficient installation; no need for extensive scaffolding use dry construction, not wet; can be installed in any weather, thus eliminating costly winter delays.
- Gypsum board, lightweight steel framing (studs and tracks) and aluminum clips comprise the system and can be erected at the same time as framing by crew or drywall installer.
- Fast installation time; extra bracing not required; preferable to construction of stand-alone 25-30 feet high alternative material walls; large panels speed installation and can be used up to four stories; simplify job scheduling and avoid delays resulting from multiple trades.
- Labor and material costs are more economical than alternative types of construction area separation walls are at least 50 percent lighter, heavy footings are typically not required.
- Less than other types of walls — a thickness of 2 to 4 inches rather than 8 to 12 inches; increase usable space.
- Fire resistive as tested in accordance with ASTM E119 or CAN/ULS-S101-M.
- Eliminate delays for curing of cementitious materials and work stoppages during freezing conditions.
- Aluminum breakaway clips allow fire-engulfed unit to fall away, leaving area separation wall in place to protect occupants in adjacent areas.
- Provide STC ratings up to 50-54 when tested in accordance with ASTM E90.
- Cavity system can be finished on both sides for commonly shared party walls; solid systems can be used when adjoining units are independently framed adjacent to single septum wall.
- Meet BOCA, ICBO and SBCCI code requirements for area separation walls, fire walls, party walls and townhouse separation walls.

units. The National Building Code of Canada has similar requirements. Generally, the UBC requires that each individual dwelling unit have a one-hour rated exterior wall with no openings if it is within 3 feet of a property line. A parapet is not needed if there are less than 1,000 square feet per floor. Two-hour area separation walls are required to separate portions of a structure in order for the areas to be considered separate buildings.

The physical and chemical properties of gypsum board are what make it an effective fire barrier. Gypsum is a noncombustible material by nature and has been used successfully as a building material for over

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100 years as Plaster of Paris, gypsum plaster and gypsum board.

The core of gypsum board is calcium sulfate dihydrate ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$), a naturally occurring mineral that contains about 21 percent chemically combined water by weight. When gypsum board is exposed to extreme heat or fire, this water is slowly released as steam. This water-releasing process effectively retards the transmission of heat through the board and protects the area opposite the fire from high heat.

ASSEMBLY CHARACTERISTICS

Gypsum board area separation walls have three basic components: 1-inch thick, noncombustible type X gypsum liner panels; metal nailing; and "break away" aluminum clips that soften at relatively low temperatures. Gypsum liner panels and metal components are easily stacked to allow progressive construction of the separation wall during the framing stage of the building. The alumi-

num clips attach the area separation walls to the adjacent structural framing at each floor or roof /ceiling intersection providing lateral support for the wall.

If one side of the assembly is exposed to fire, the clips yield from the heat of the fire and break away as the floor or roof system deteriorates, thus allowing the structure on the fire side to collapse while the area separation walls remain intact and in place to protect the adjacent spaces.

Proprietary cavity shaftwall systems may also be used as area separation walls.

As you can see, the many advantages and features of gypsum board (*see sidebars*) are the why this product is one of the most popular materials used in construction today. □

About the Author

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