GYPSUM BOARD

AREA SEPARATION WALLS

GA-290

Construction Methods for a New Century

GYPSUM ASSOCIATION
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GYPSUM BOARD AREA SEPARATION WALLS...

Townhomes, apartments, and condominiums are popular choices for dwellings. Their unique design demands special methods of construction to provide safe, fire resistant, 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 code-compliant, lightweight, efficient, and cost effective assemblies for builders and owners. These wall systems have the additional advantages of all-weather, stable, sturdy construction, and they curtail the delays associated with temperature sensitive, labor intensive, and cumbersome masonry materials. The inherent risks associated with 25-30 feet tall unstable masonry walls are 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** have rapidly grown as contractors and architects discover the efficiency, simplicity, and cost-effectiveness of these systems. They are safe and easy to install, provide high performance, and comply with model building codes.

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 (STC) information on specific systems.

Code Acceptance. Model code documents that address area-separation-type walls typically identify such assemblies as a "fire wall," "party wall," or "townhouse separation wall." This language is found in the Building Officials & Code Administrators International, Inc. (BOCA) *National Building Code*, the *Standard Building Code*, the *International Building Code,* and the *International Residential Code*. Each designation has essentially the same structural requirements, i.e., 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* (UBC) of the International Conference of Building Officials (ICBO) contains somewhat different, yet similar, requirements relative to walls separating dwelling units. Generally, the UBC requires that each individual dwelling unit must have a one-hour rated exterior wall with no openings if it is within three feet of a property line. It also allows a two-hour area separation wall to be used to separate portions of a structure if the areas are to be considered separate buildings. Gypsum board area separation walls detailed in the Gypsum Association's *Fire Resistance Design Manual* (GA-600) satisfy the requirements of the listed model codes as well as the prerequisites contained in the *National Building Code of Canada* and the new NFPA 5000, *Building Construction and Safety Code.*

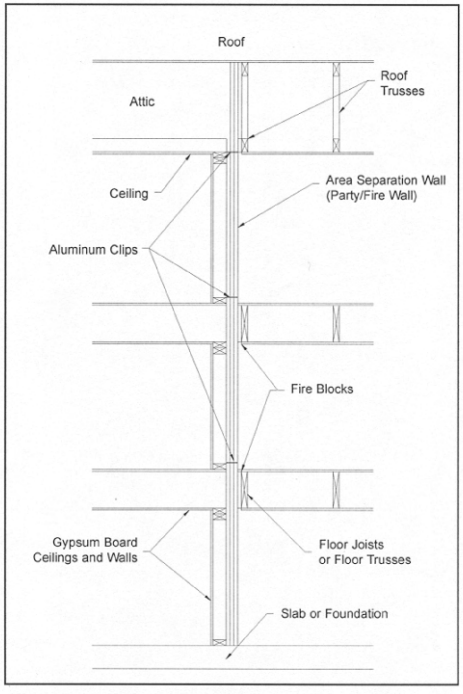
GYPSUM - THE MIRACLE MINERAL

Physical Properties of Gypsum. The overwhelming success of gypsum board as an effective fire barrier is based on its physical and chemical properties. Gypsum is a noncombustible material by nature and has been used successfully as a building material for over a hundred years as Plaster of Paris, gypsum plaster, and gypsum board. The core of gypsum board is calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$), a naturally occuring mineral that contains approximately 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.

HOW TO BUILD

Assembly Characteristics. Gypsum board **area separation walls** have three basic components: (1) one-inch thick, noncombustible type X gypsum liner panels; (2) metal framing; and (3) "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 stages of the building. The aluminum 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 a 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**.

The current edition of the Gypsum Association's *Fire Resistance Design Manual* (GA-600) contains a section devoted specifically to **area separation walls** which are very appropriate for use where one-, two-, or three-hour noncombustible construction is required by the codes.



TYPICAL GYPSUM BOARD AREA SEPARATION WALL CONSTRUCTION

GYPSUM BOARD
AREA SEPARATION WALLS
ADVANTAGES

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 framing 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 materials costs are more economical than alternative types of construction; **area separation walls** are at least 50 percent lighter; heavy footings are typically not required.

Fire resistive as tested in accordance with ASTM E 119 or CAN/ULC-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 60-64 when tested in accordance with ASTM E 90.

Meet model code requirements for **area separation walls**, fire walls, party walls, and townhouse separation walls.

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GYPSUM BOARD
AREA SEPARATION WALLS
FEATURES

Provide multi-family housing units with essential and economical fire -wall (party-wall) separation.

Adaptable for use in commercial construction as fire walls, fire separation walls, fire partitions, shaft enclosures, and similar systems.

Three basic components designed for fast, easy installation by carpenter or drywall installer.

Install one floor at a time as the building is constructed; divide the building into separate fire-protected units.

Weight of eight to nine pounds per square foot.

Provide up to a three-hour fire rating; all components are considered noncombustible by the codes. (Gypsum board meets NFPA limited combustible definition requirements.)

Provide superior sound attenuation.

Provide choice of cavity or solid systems.

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