



**GYPSUM ASSOCIATION**

# **GYPSUM AREA SEPARATION FIREWALLS**

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# GYPSUM AREA SEPARATION FIREWALLS

## Introduction

Gypsum Area Separation Firewall systems provide the advantages of both fire-resistance and noise reduction between neighboring townhouses and other attached dwelling units. Gypsum Area Separation Firewalls are efficient, nonload-bearing, 2-hour fire resistance rated drywall systems that easily provide code complying STC ratings. Some of these walls achieve STC ratings of 60-64.

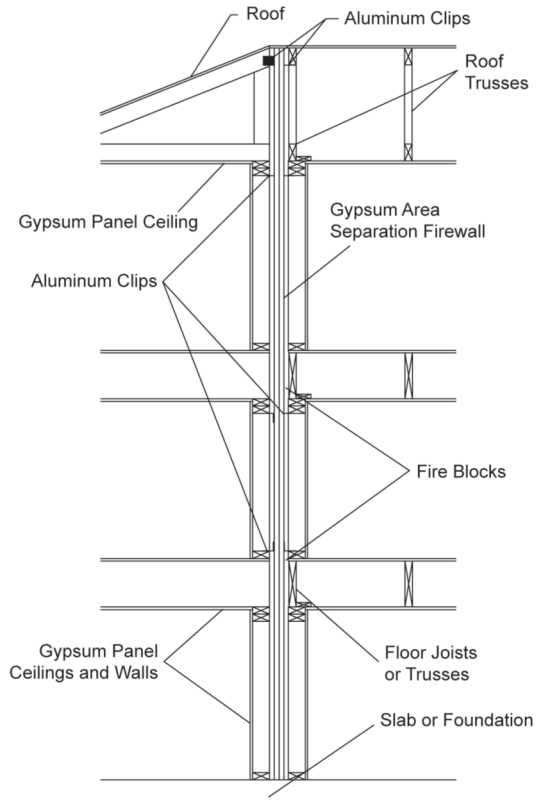


Fig 1 - Typical Gypsum Area Separation Firewall Construction

Gypsum Area Separation Firewalls are the walls of choice for townhouses up to four stories in height and are compatible with all common floor-to-ceiling heights. Gypsum Area Separation Firewalls offer numerous advantages over other materials historically used in these applications and are rapidly becoming the “standard” method for separating units in multi-family townhouse construction. Their thinner profile allows up to 6 in. (150 mm) more of usable floor space than a typical concrete block wall and reduced footing requirements.

Gypsum Area Separation Firewalls improve construction site safety and efficiency because they are installed one floor at a time, just like the rest of the building. No expensive scaffolding is required and the risk of a toppling masonry wall is completely eliminated. Gypsum Area Separation Firewalls are designed to be fast and economical to install. Large panels accelerate construction and can be installed by trades already

on the job; concerns and scheduling problems related to bringing in another trade are eliminated. Gypsum Area Separation Firewalls can be installed year-round without costly cold weather provisions for drying because there is no mortar to freeze.

Performance properties of gypsum components are maintained and product quality is assured for every gypsum shaft-liner panel by independent third party certification and labeling. The materials come to the job site ready to install without the need for mixing or preparing components onsite. Simply measure, cut, and install.

Gypsum Area Separation Firewalls are designed and recognized as being code compliant. These systems are specifically engineered to remain in place during a fire, even if the structure on the fire side collapses. The aluminum clips used to attach the steel studs to the wall separating the units will soften on the fire side and release if the burning unit collapses. The clips on the non-fire side are protected by the Gypsum Area Separation Firewall and will continue to support the Gypsum Area Separation Firewall, allowing it to remain intact, protecting the neighboring unit.

## Handling and Storage

All materials shall be delivered bearing the brand name, applicable standard designation, and name of manufacturer or supplier for whom the product is manufactured. The plastic packaging used to wrap gypsum panel products for rail and/or truck shipment is intended to provide temporary protection from moisture exposure during transit only and is not intended to provide protection during storage after delivery. Such plastic packaging shall be removed immediately upon receipt of the shipment.

*NOTE: Failure to remove protective plastic shipping covers can result in condensation which can lead to damage, including mold.*

All materials shall be kept dry. Gypsum panel products shall be neatly stacked flat with care taken to prevent sagging or damage to edges, ends, and surfaces. Gypsum panel products and accessories shall be properly supported on risers on a level platform, and fully protected from weather, direct sunlight exposure, and condensation. During installation, the bottom panels shall not be subjected to contact with standing water. Temporary pumps or drainage shall be provided as needed to protect the gypsum panels from water prior to the completion and startup of a permanent sump and/or drainage system after the building has been properly closed and dried in.

Gypsum panel products shall be stacked flat, rather than on end or edge. Gypsum panel products stacked on end or edge can be unstable and present a serious hazard in the workplace should they accidentally topple. Refer to *Handling and Storage of Gypsum Panel Products*, GA-801, for proper storage and handling requirements.

## Components

Gypsum Area Separation Firewalls consist of steel H-studs, steel C-runner, two layers of 1" (25.4 mm) thick gypsum shaftliner panels, and aluminum angle clips. (Figs. 2 and 3)

## Cutting

Gypsum panel products shall be cut either by scoring and breaking, working from the face side; or by sawing, working from the face side when using a hand saw. When scoring, a sharp knife shall be used to cut through the facer and into the core. The gypsum panel product shall then be snapped back away from the cut face. The back of the panel shall be cut or shall be broken by snapping the gypsum panel product in the reverse direction.

## Installation

In general, Gypsum Area Separation Firewalls are installed progressively beginning at one end and working toward the other. They are generally installed either a) from the foundation floor (slab) to or through the roof deck or b) from the above grade top of masonry or concrete footings to or through the roof deck. The Gypsum Area Separation Firewalls are installed one course (or floor) at a time with succeeding courses stacked on top of the preceding course.

1. Align the 2" (51 mm) C-runner that will serve as the floor track of the Gypsum Area Separation Firewall so that the completed wall will be positioned not less than  $\frac{3}{4}$ " (19 mm) from the framed walls of the units being separated. As an alternate to the  $\frac{3}{4}$ " (19 mm) air space the steel components are permitted to be covered with either (a) 6" (150 mm) wide batten strips of  $\frac{1}{2}$ " (12.7 mm) gypsum panel screw attached to the framing with 1" (25 mm) Type S drywall screws or (b) 1" (25 mm) mineral fiber insulation.

2. Space ends of adjacent sections of C-runner a minimum of  $\frac{1}{4}$ " (6 mm) apart. (Fig 4)

3. Attach the 2" (51 mm) C-runner to the foundation floor or to the top of the footing with power-driven fasteners spaced 24" (610 mm) o.c. and apply acoustical sealant along edges of C-runner to seal the juncture between the C-runner and foundation or footing.

4. Install a vertical C-runner to the wall at one end of the Gypsum Area Separation Firewall where the wall abuts either a foundation wall or an exterior wall.

5. Begin erecting the Gypsum Area Separation Firewall by inserting two thicknesses of 1" (25.4 mm) gypsum shaftliner panel vertically into the floor and vertical C-runner. Shaftliner panels and studs may be installed either from the basement floor or fed down from the floor above through the space between the wood framing.

6. Make sure the first two shaftliner panels are seated all the way into the floor and vertical C-runners and that their edges are flush, insert an H-stud into the floor runner and engage the H-stud legs over the long edges of the shaftliner panels. Seat the H-stud fully so the panel edges contact the stud web. Attach each leg of the vertical C-runner to the floor C-runner with one  $\frac{3}{8}$ " (10 mm) Type S pan head screw. Install the vertical C-runner, H-studs,

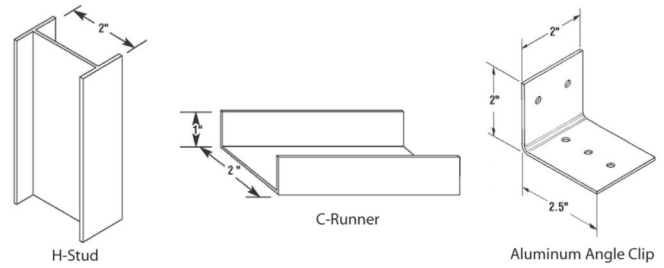
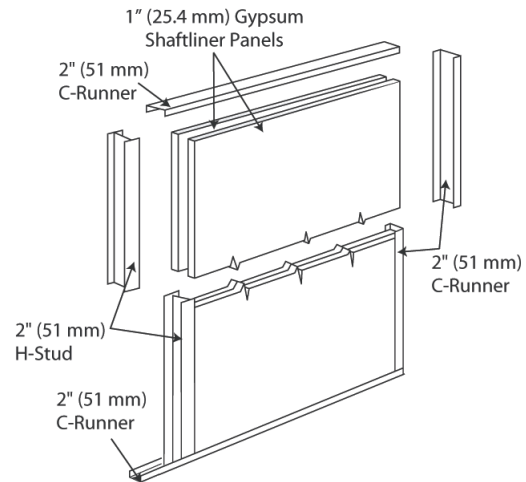


Fig 2 - Framing Components

Fig 3 - Primary Components of Gypsum Area Separation Firewall (Aluminum Clips Not Shown)

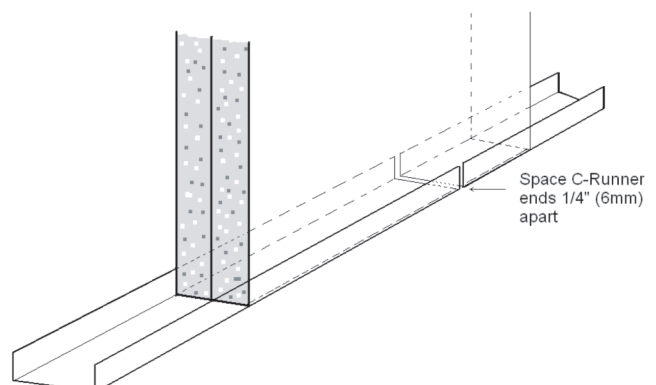


6" (150 mm) wide type X gypsum panel battens are not required when a minimum  $\frac{3}{4}$ " (19 mm) air space is maintained between the Gypsum Area Separation Firewall and adjacent wood framing or other combustibles.

and shaftliner panels to not more than 24" (610 mm) above the floor line of the floor above.

7. Continue in this manner, progressively erecting two thicknesses of full-width shaftliner panels followed by an H-stud until the first course of the wall is completed to within 24" (610 mm) of the end point of the wall. Cut the final two shaftliner panels to the necessary width and install them in the floor runner. Use a vertical 2" (51 mm) C-runner to finish the end of the wall. Make sure all

Fig 4 - C-Runner Spacing



studs, C-runner, and shaftliner panels are tightly nested and attach the H-studs and the vertical C-runner to the floor runner on alternate sides with 3/8" (10 mm) Type S pan head screws.

8. If the Gypsum Area Separation Firewall terminates at an existing or previously constructed foundation wall or exterior wall, the last two shaftliner panels will need to be inserted from the floor above into the channel formed by the final H-stud and the vertical C-runner before attaching the vertical C-runner to the floor runner.

9. Install a 2" (51 mm) C-runner (legs down) over the top of the studs and shaftliner panels to cap off the wall.

10. Secure one aluminum clip to each side of every H-stud (two per stud) with one 3/8" (10 mm) Type S pan head screw through the short leg of the clip. Secure the long leg of the clip to wood framing with one 1 1/4" (32 mm) Type W screw.

11. The recommended point of attachment of the aluminum clips to the wood framing varies. Refer to the gypsum shaftliner manufacturer for specific attachment location details.

12. When the total height of the Gypsum Area Separation Firewall exceeds 23' (7000 mm) but not more than 44' (13 400 mm), the vertical spacing between rows of aluminum clips shall not exceed 5' (1500 mm) o.c. for the lower 23' (7000 mm) and 10' (3000 mm) o.c. for the portion above 23' (7000 mm).

**NOTE: Refer to manufacturer's installation instructions for specific limiting heights and clip spacing requirements for walls exceeding 44' (13 400 mm) in total height.**

13. Begin the next course of the Gypsum Area Separation Firewall by attaching a 2" (51 mm) C-runner (with legs up) to the previously installed top C-runner of the lower course. This back-to-back C-runner installation allows for the progressive erection of the Gypsum Area Separation Firewall one floor at a time. Secure the two C-runners together with two 3/8" (10 mm) Type S pan head screws 24" (610 mm) o.c. Stagger back-to-back C-runner joints a minimum of 12" (300 mm).

**NOTE: Always use back-to-back C-runners between courses in Gypsum Area Separation Firewalls. Do not substitute a single H-stud for the specified back-to-back C-runners.**

14. Erect shaftliner panels and H-studs in the same manner as for the first section of wall, except that starting and ending procedures may vary depending on the exterior wall intersection detail.

15. At roof intersection the walls are capped-off with C-runners.

16. Install code approved fire blocking on both sides of the Gypsum Area Separation Firewall at each floor.

17. At top floor, the Gypsum Area Separation Firewall may either extend to the top of a parapet wall or terminate at the underside of the roof deck.

### Limitations and Special Conditions

- Gypsum Area Separation Firewalls are specifically

designed to be 2-hour walls separating townhouses. They are not intended to be used for shear walls.

- Gypsum Area Separation Firewalls are designed to be laterally supported with aluminum clips spaced at specified intervals. Consult the manufacturer for specific clip placement and maximum allowable wall heights.

- Penetrations and openings are not permitted in Gypsum Area Separation Firewalls.

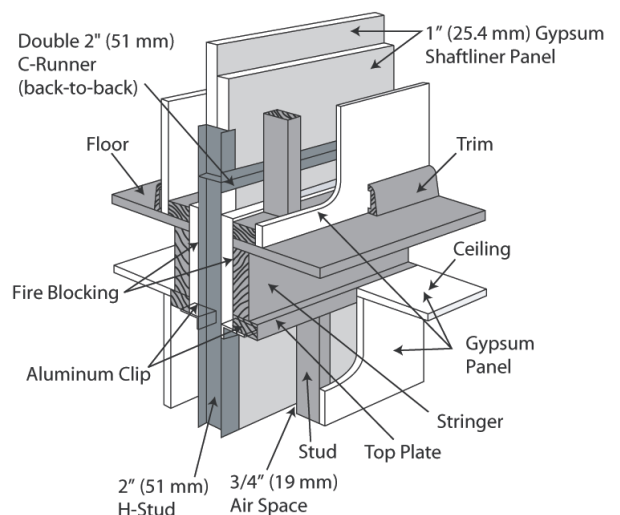
- Do not install insulation in the wall system until the building has been properly closed or dried in.

- The exterior side of Gypsum Area Separation Firewalls, including offsets, parapets, and wall extensions (wing walls), must be protected by appropriate weather resistant materials.

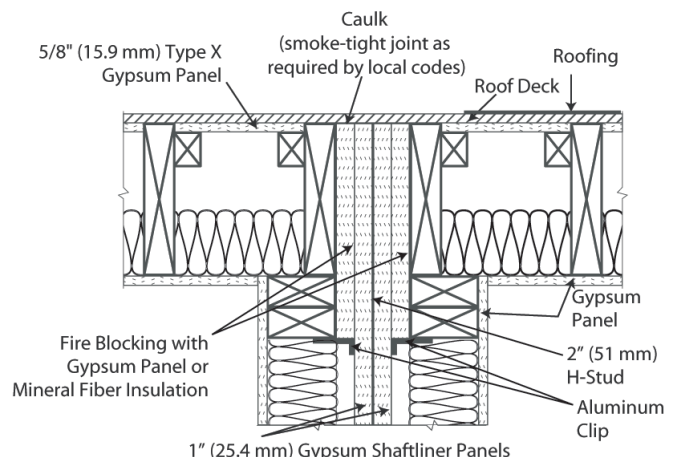
- Gypsum panel products shall not be used where there will be direct exposure to water or continuous high humidity conditions. Gypsum panel products shall not be installed in direct contact with concrete, masonry, or other materials that have high moisture content.

- Gypsum panel products shall not be used where they will be exposed to sustained temperatures of more than 125°F (52°C) for extended periods of time.

**Fig 5 - TYPICAL FLOOR/CEILING JUNCTURE**

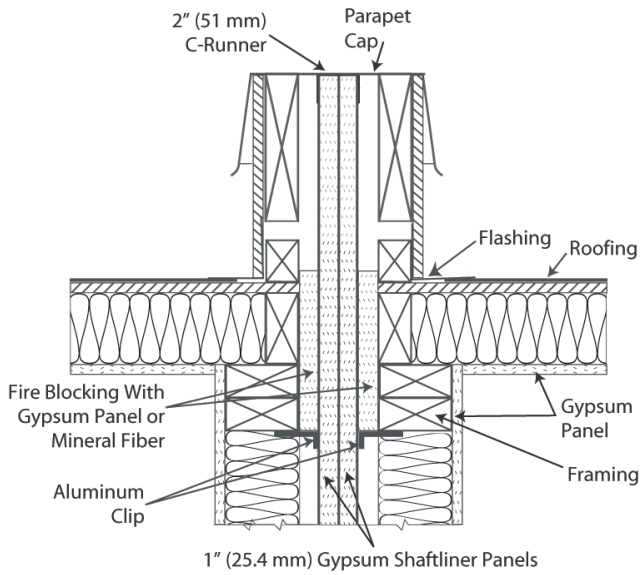


**Fig 6 - TYPICAL ROOF JUNCTION DETAIL**

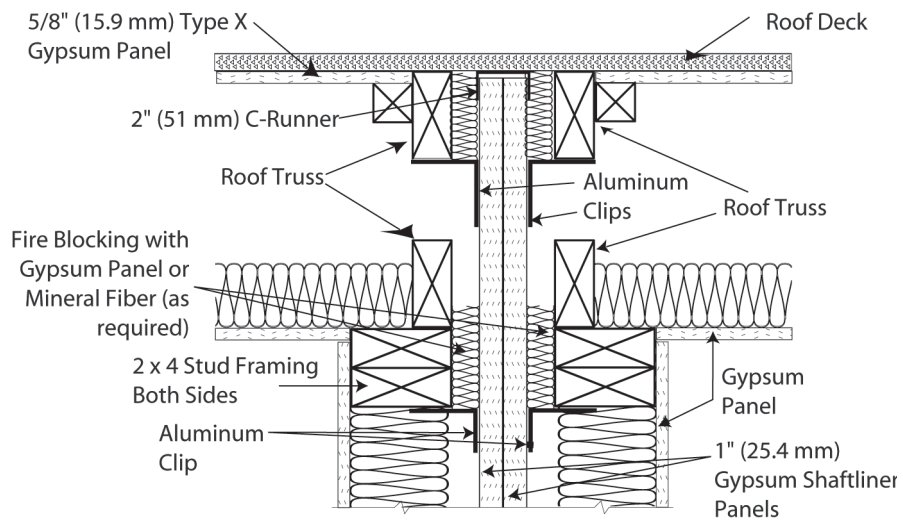


**Fig 7 - TYPICAL ROOF PARAPET DETAIL**

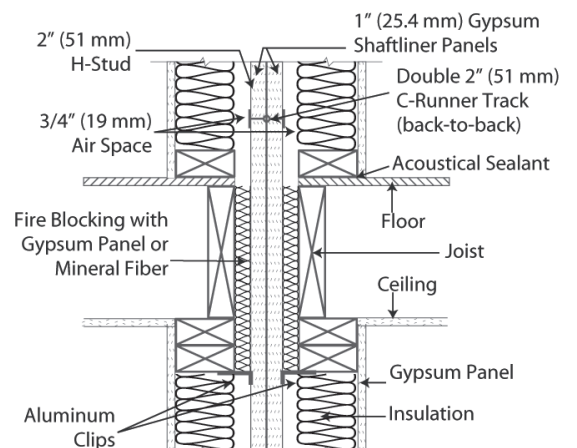
Parapet height as required by code



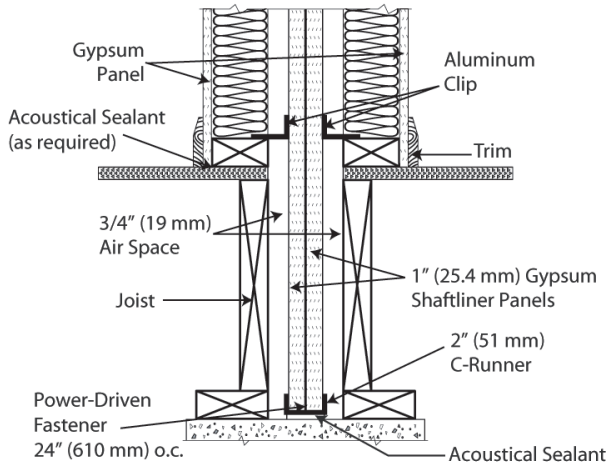
**Fig 8 - Roof Intersection with Parallel Roof Trusses**



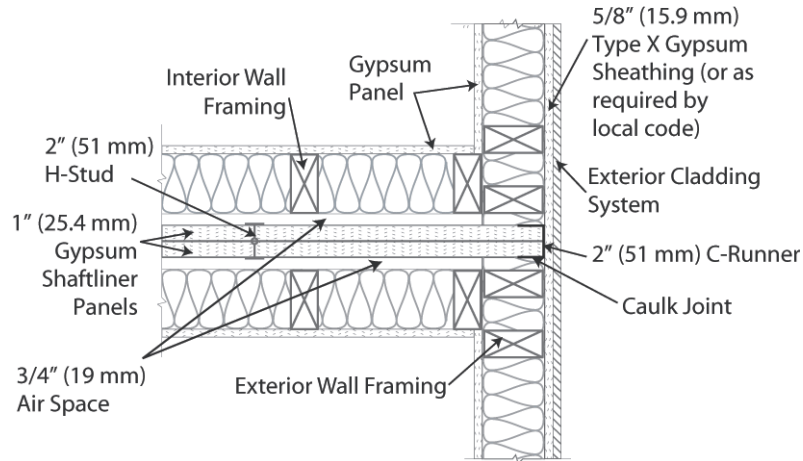
**Fig 9 - INTERMEDIATE FLOOR INTERSECTION**



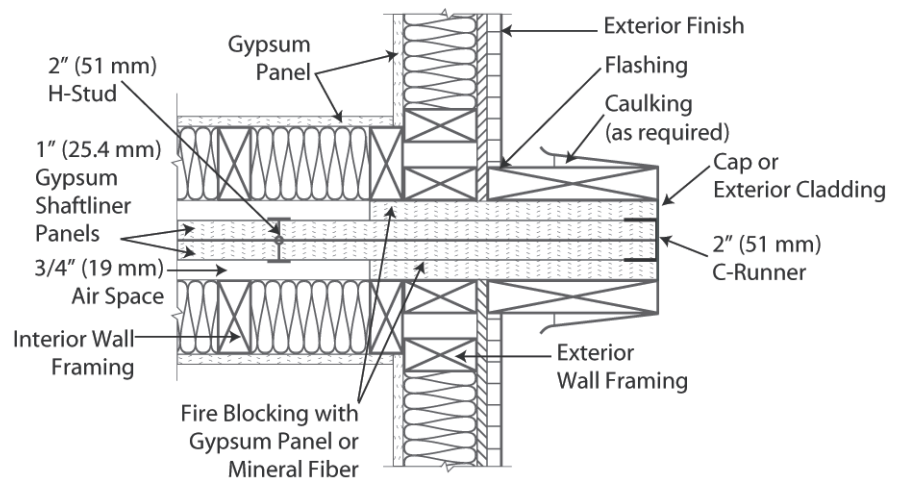
**Fig 10 - FOUNDATION**



**Fig 11 - EXTERIOR WALL INTERSECTION**



**Fig 12 - PROTRUDING EXTERIOR WALL**



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