

## APPENDIX 4

### FIRE RESISTIVE WALL COVERINGS

When the one-hour rated fire-resistive exterior wall requirement for the Fire Safe Standards (Section 4) applies there has been some confusion in the industry over specific construction details. Chapter 7 of the 2007 California Building Code (Code) details the construction requirements for fire resistive construction in Tables 720.1(1), 720.1(2), and 720.1(3). Footnotes to the table allow for the installation of structural sheathing to the face of the studs under the fire-resistive elements and to fire-resistive rating in the "Fire-Resistive Design Manual" published by the Gypsum Association. In an effort to aid in design, construction and inspection of these fire-resistive assemblies, the attached diagrams are offered for review. Double layer floor ceilings are also detailed in this section. If approved, these diagrams can be formulated into an attachment for plan review.

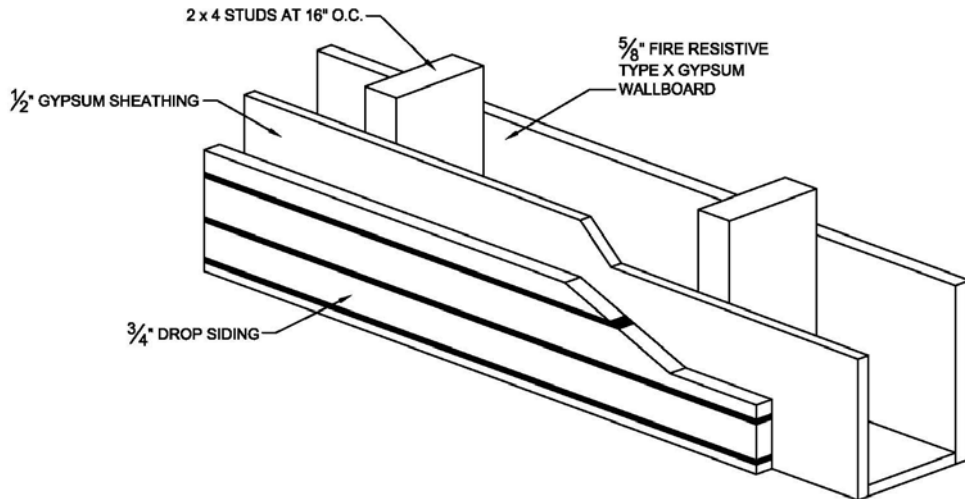
There is a special provision in the code regarding fire separation between a private garage and an attached dwelling unit. Residential construction allows for a modified fire separation between a private garage up to 3,000 square feet and an attached dwelling unit consisting of a minimum ½-inch gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than a ⅝-inch Type X gypsum board or equivalent. Note that these construction details are not appropriate for occupancy and area separation nor for the one-hour fire resistive exterior wall required under the provisions of Table 13-55, Protection Requirements of the Fire Safe Standards.

It should be noted that these details are general in nature. Proprietary assemblies of the Fire-Resistive Design Manual, other listed fire-resistive assemblies (UL, etc) or those approved under the provisions of alternate materials construction section of the CBC are also acceptable.

The full one-hour rated fire-resistive exterior wall should not be confused with the noncombustible or ignition resistant exterior wall requirements prescribed in Chapter 7A of the Code for new buildings located within the Wildland Urban Interface Area. Constructing a one-hour rated wall will not comply with the noncombustible or ignition resistant exterior wall requirements if the outer wall material or wall assembly is not listed as an approved material or assembly by the State Fire Marshall or is not noncombustible material. More information on the requirements of new buildings constructed within the Wildland Urban Interface Area may be found in Appendix 5 of this manual.

## Wall Systems

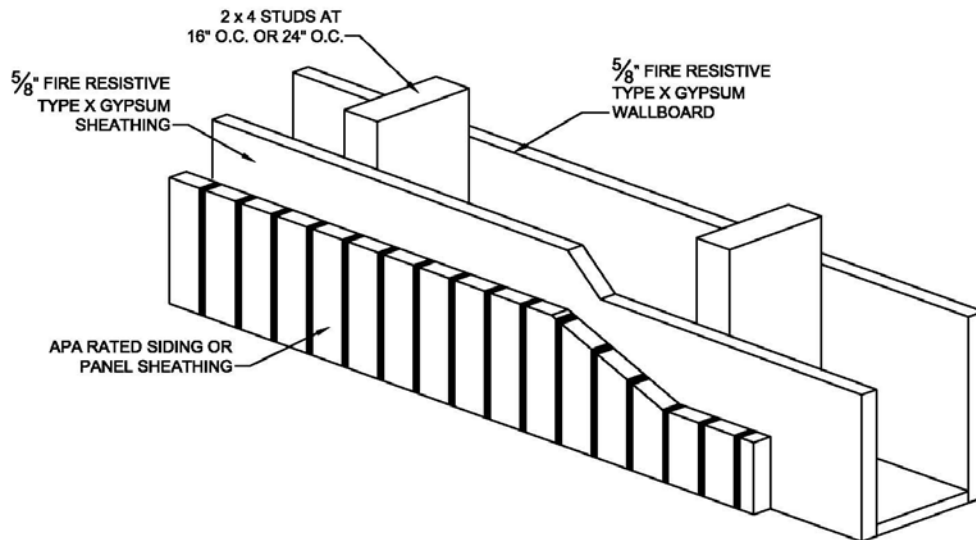
Either of the following details meets the 1-hour fire requirement.



### CBC Table 720.1(2) 15-1.1

1. Interior Side:  
One layer 5/8" type X gypsum wallboard applied vertically or horizontally to 2x4 wood studs 24" on center with 6d cooler or wallboard nails at 7" on center with end joints on nailing members. Stagger joints each side.
2. Exterior Side:  
3/4" drop siding over 1/2" gypsum sheathing on 2x4 wood studs, 16" on center with 1 3/4" No. 11 gage by 7/16" head galvanized nails at 8" on center. Siding nailed with 7d galvanized smooth box nails.

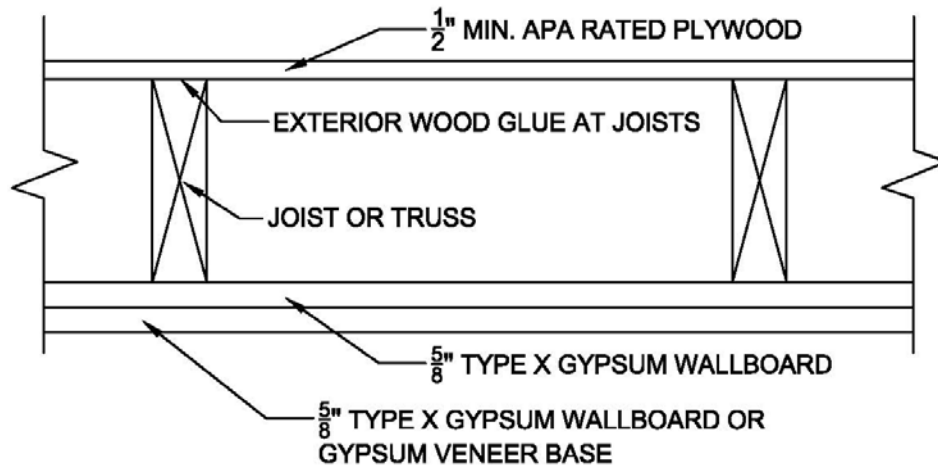
If installing structural sheathing to face of studs, increase the length of the fasteners for the gypsum sheathing by the thickness of the structural sheathing.



### GA File No WP 8105

1. Interior Side:  
One layer 5/8" type X gypsum wallboard, water resistant gypsum backing board or gypsum veneer base applied parallel or at right angles to studs with 6d coated nails, 1-7/8" long, 0.0915" shank, 1/4" heads, 7" on center. (Load Bearing)
2. Exterior Side:  
One layer 48" wide 5/8" type X gypsum sheathing applied parallel to 2x4 wood studs 24" on center with 1 3/4" galvanized roofing nails 4" on center at vertical joints and 7" on center at intermediate studs and top and bottom plates. Joints of gypsum sheathing may be left untreated. Exterior cladding to be attached through sheathing to studs.

## Floor-Ceiling System



### GA File No FC 5406

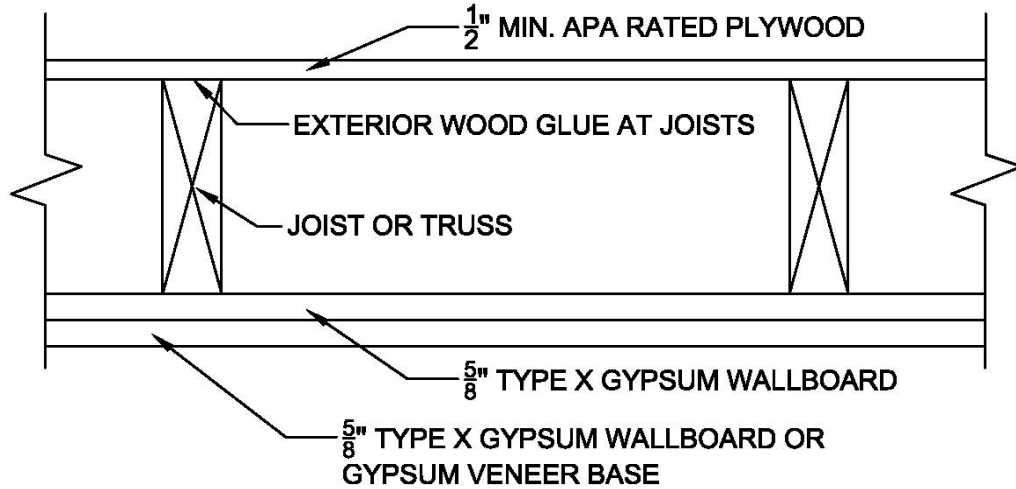
1. Ceiling Side (bottom):  
The base layer is  $\frac{5}{8}$ " type X gypsum wallboard applied at right angles to 2 x 10 wood joists 24" on center with  $1\frac{1}{4}$ " Type W or S drywall screws 24" on center. The face layer is  $\frac{5}{8}$ " type X gypsum wallboard or gypsum veneer base applied at right angles to joists with  $1\frac{7}{8}$ " Type W or S drywall screws 12" on center at joints and intermediate joists and  $1\frac{1}{2}$ " Type G drywall screws 12" on center placed 2" back on either side of end joints. Joints offset 24" from base layer joints.
2. Floor Side (top):  
Minimum  $\frac{1}{2}$ " plywood with exterior glue applied at right angles to joists with 8d nails.

NOTE: Ceiling provides one hour fire resistance protection for framing, including trusses.

### CBC Table 720.1(3) 21.

1. Ceiling Side (bottom):  
The base layer is  $\frac{5}{8}$ " type X gypsum wallboard applied at right angles to joist or truss 24" on center with  $1\frac{1}{4}$ " Type W or Type S drywall screws 24" on center. The face layer is  $\frac{5}{8}$ " type X gypsum wallboard or gypsum veneer base applied at right angles to joist or truss through base layer with  $1\frac{7}{8}$ " Type W or Type S drywall screws 12" on center at joints and intermediate joist or truss. Face layer Type G drywall screws placed 2" back on either side of face layer end joints, 12" on center.
2. Floor Side (top):  
Minimum  $\frac{1}{2}$ " wood structural panels with exterior glue applied at right angles to joists with No. 8 screws.

## Roof-Ceiling System



### GA File No RC 2601

1. **Ceiling Side (bottom):**  
The base layer is  $\frac{5}{8}$ " type X gypsum wallboard applied at right angles to 2 x 10 wood joists 24" on center with  $1\frac{1}{4}$ " Type W or S drywall screws 24" on center. The face layer is  $\frac{5}{8}$ " type X gypsum wallboard or gypsum veneer base applied at right angles to joists with  $1\frac{7}{8}$ " Type W or S drywall screws 12" on center at joints and intermediate joists and  $1\frac{1}{2}$ " Type G drywall screws 12" on center placed 2" back on either side of end joints. Joints offset 24" from base layer joints.
2. **Roof Side (top):**  
Minimum  $\frac{1}{2}$ " plywood with exterior glue applied at right angles to joists with 8d nails. Appropriate roof covering.

NOTE: Ceiling provides one hour fire resistance protection for framing, including trusses.

### CBC 720 15-1.1

1. **Ceiling Side (bottom):**  
The base layer is  $\frac{5}{8}$ " type X gypsum wallboard applied at right angles to 2 x 10 wood joists 24" on center with  $1\frac{1}{4}$ " Type W or S drywall screws 24" on center. The face layer is  $\frac{5}{8}$ " type X gypsum wallboard or gypsum veneer base applied at right angles to joists with  $1\frac{7}{8}$ " Type W or S drywall screws 12" on center at joints and intermediate joists and  $1\frac{1}{2}$ " Type G drywall screws 12" on center placed 2" back on either side of end joints. Joints offset 24" from base layer joints.
2. **Roof Side (top):**  
Minimum  $\frac{1}{2}$ " plywood with exterior glue applied at right angles to joists with 8d nails.

## NOTES

### **Structural Sheathing**

May be installed to face of studs with fire resistive membrane applied over the sheathing. Increase fastener length for thickness of structural sheathing.

### **Fasteners**

Screws may be substituted for proscribed nails, one for one, when equal to or exceeding the requirement for the nails used in the tested system.

For properties of cooler or wallboard nails, see ASTM C514, ASTM C547, or ASTM F1667.

### **Studs**

Indicated stud spacings are maximums. Greater stud sizes (depths) shall be permitted to be used.

### **Outlet Boxes**

Outlet boxes shall be permitted to be installed in 2 hour or less systems. The surface area of individual boxes shall not exceed 16 square inches. The aggregate surface of the boxes shall not exceed 100 square inches in any 100 square feet. Metallic or approved non-metallic outlet boxes shall be permitted.

### **Shower or Tub**

The gypsum board required for the fire resistive rating shall extend down to the floor behind fixtures. Other wall finishes may be applied for required fire resistive systems.

## DEFINITIONS

### **Gypsum Sheathing**

Is used as a protective, fire resistive membrane under exterior wall surfacing materials such as wood siding, masonry veneer and stucco. The non-combustible core is surfaced with firmly bonded water repellent paper; in addition may also have a water resistant core. It is available with type X core.

### **Type X Gypsum Board**

Similar to regular gypsum board. It has an improved fire resistance made possible through the use of special core additives. Type X gypsum board is used in most fire rated assemblies.