Gypsum and Insulation Systems Manual

Fire Resistance and Sound Control Design
The walls you build are constructed with precision and hard work. The products you use need to bring that same level of performance. That’s why we offer a full range of reliable drywall and finishing solutions that make installations faster and simpler, all while helping you keep pace with demand — no matter the size, complexity, or location of the project.

Our drywall solutions are manufactured with quality and consistency, and our products are readily available, no matter where you are in the country. Plus, our in-house technical support team is at the ready to help you through even the most demanding installations. We have your back, so you can easily stay on schedule, within budget, and keep your projects running smoothly.

**BIM/CAD INFORMATION**
The BIM and CAD UL fire rated assemblies and sound assemblies can be found on CertainTeed’s BIM and CAD Design Studio at bimlibrary.saint-gobain.com/certainteed. CertainTeed’s BIM and CAD Design Studio provides BIM and CAD details to many UL fire rated assemblies and sound assemblies in an easy to view experience. Plus, downloadable Revit and DWG and PDF CAD Details are available.

**SUSTAINABILITY**
Can contribute to the U.S. Green Building Council’s LEED Credit Qualification in several credit categories to assist in obtaining LEED certification. Sustainable documentation, including recycled content, EPD’s, HPD’s, VOC Certifications, can be found at saintgobain.ecomedes.com.
Gypsum Panel Systems Manual

INTRODUCTION

GENERAL
This manual is intended to provide architects, builders, contractors and engineers with reference data on Gypsum Panel Systems incorporating CertainTeed Gypsum Panel products. It contains sections on Partitions, Exterior Walls, Chase Walls, Shaft Walls, Horizontal Systems, Area Separation Walls, Floors/Ceiling Systems, Roof/Ceiling Systems, Column and Beam Protection, Head of Wall, Base of Wall and Through Wall Penetrations. Each section lists the systems in ascending order of fire rating and includes sound ratings and basic construction details.

TECHNICAL CONTACT INFORMATION
The Gypsum Panel Systems Manual is available on our web site at certainteed.com. Further assistance regarding the application of CertainTeed Gypsum in Gypsum Panel Systems or Sound Systems can be obtained by contacting CertainTeed Gypsum Technical Services by email at gypsumtechnicalsupport@saint-gobain.com or by phone at: 1-800-446-5284.

CONTENT DISCLAIMER
Any product information, data or specifications contained in this Manual have been prepared with information available to CertainTeed Gypsum at the time of printing and every effort has been made to ensure that all information, data and specifications are complete and accurate. Anyone making use of, or relying on, any information, data or specifications contained in this Manual, for any purpose whatsoever, expressly assumes any and all liability that may arise from such use or reliance. CertainTeed Gypsum does not assume any responsibility for any errors or omissions that may be contained in this Manual. Any information, data or specifications contained in this Manual supersede any and all previous information, data or specifications prior to this manual and are subject to change without notice.
# Gypsum Panel Systems Manual

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FIRE RESISTANCE

Gypsum panel is the most commonly used fire resistive material and is equally well known as a reliable and economic surfacing material. When used in combination with other products, excellent fire resistive and sound control properties can be achieved.

Gypsum is a naturally occurring mineral mined or quarried in many locations throughout North America and in other parts of the world. When processed into gypsum panel products the chemically combined water (about 21 percent by weight) contributes to its effectiveness as a fire barrier. When gypsum protected structural members are exposed to fire, the water is slowly released as steam, effectively retarding heat transmission and acting as a fire barrier until most of the chemically combined water is eliminated, a process known as calcination. The temperature directly behind the plane of calcination is only slightly higher than that of boiling water (212°F), and that is considerably below the temperature at which steel begins to lose its strength or lumber ignites. Once the gypsum is completely calcined, the residue acts as an insulating barrier to the flames.

DSG, or desulphogypsum, is high purity gypsum that is produced instead of mined. Traditionally, the gypsum raw material in the core of drywall has been mined from natural deposits. There are numerous underground and surface mines producing this gypsum for drywall manufacturing plants across North America. DSG is fundamentally the same raw material as mined gypsum, with a higher degree of purity.

As a result, its properties are virtually the same as mined gypsum.

TYPE X GYPSUM PANEL

Gypsum Panel Type X, designates gypsum panels, except gypsum lath, gypsum coreboard and gypsum shaftliner panel, complying with ASTM specification that provides not less than 1 hour fire-resistance rating for panels 5/8” thick or 3/4 hour fire-resistance rating for 1/2” thick, applied parallel with and on each side of load bearing 2”x 4” wood studs spaced 16” on center with 6d coated nails, 1-7/8” long, 0.0915” diameter shank, 1/4” diameter heads, spaced 7” on centers with gypsum panel joints staggered 16” on each side of the partition and tested in accordance with ASTM E119.

Type X gypsum panels manufactured by CertainTeed Gypsum are described as either GlasRoc®, GlasRoc® Shaftliner, or Type X and these products are classified/listed by Underwriters Laboratories.

All CertainTeed Type X, M2Tech®, Extreme Abuse, Extreme Impact, Veneer Plaster Base and Gypsum Sheathing Treated Core, CertainTeed Type C, M2Tech® Shaftliner, GlasRoc® Sheathing Type X, GlasRoc® Shaftliner and GlasRoc® Tile Backer Type X products meet ASTM definitions of Type X gypsum panel.

CertainTeed Type C products are proprietary products which meet the requirements of Type X and have further enhanced fire resistive properties. These products are often referred to as “Type C” gypsum panel, although there is no industry definition for “Type C” gypsum panel.

FIRE RESISTANCE TESTS

There are a number of independent testing authorities capable of conducting fire tests to establish fire resistance classifications according to procedures outlined in: ASTM E119 Fire Tests of Building Construction and Materials or UL 263 Standard for Fire Test of Building Construction and Materials. The conditions for tests are thoroughly detailed and the time of failure is the time at which there is excessive heat transmission, passage of flame or structural failure. In addition, failure may result because of penetration by a pressurized hose stream required in the fire test procedure for walls. Comprehensive research by fire protection agencies has determined the average combustible content to be expected.
FIRE RESISTANCE

for a given occupancy; also the time required for the contents to be consumed by fire and the resulting temperature. Thus, the average fire load may be predicted for a given occupancy, and fire resistance classifications are assigned accordingly in building codes and similar regulations.

In ASTM E119 or UL 263 fire tests, various wall, floor, roof, column and beam assemblies are exposed in a furnace which reaches the indicated average temperatures at the time stated in the standard time-temperature curve. All of the walls and partitions tested and classified must be at least 100 ft² with no side dimension less than 9 feet. Temperatures are measured at a minimum of nine points on the unexposed surface of the assembly. When testing load bearing walls and partitions the superimposed load applied shall simulate the working stress of the construction components.

The wall or partition must also stop flame or hot gasses capable of igniting cotton waste. The average temperature of the unexposed surface cannot increase more than 250°F above ambient nor shall the temperature rise at any individual point exceed 325°F. It is also required that a duplicate of the assembly be fire tested for half the specified resistance period, after which it must withstand the impact, erosion and cooling effect of water under high pressure from a fire hose.

Floor and roof assemblies tested and classified have to be a minimum of 180 ft² with neither dimension less than 12 feet. The assemblies must sustain the design load throughout the test and not allow either flame or hot gasses, capable of igniting cotton waste, to pass through. The unexposed surface temperature may not rise more than an average of 250°F above the initial temperature nor shall the temperature rise at any individual point exceed 325°F.

SURFACE BURNING CHARACTERISTICS

Flame spread ratings are intended as a guide in the selection and use of finishing materials and are obtained by measuring the extent and rapidity with which flames spread over their surfaces under test conditions.

Under certain circumstances some building codes may require the use of interior finish materials with a flame spread rating of not more than 25. The laboratory test generally used to establish a material’s flame spread characteristic is referred to as the tunnel test: ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials or UL 723 Standard Method for Surface Burning Characteristics of Building Materials.

These test measures relative flame spread, fuel contribution and the amount of smoke developed from the material being tested.

A method of numerical classification to permit comparison of a given material’s flame spread performance with that of another has been established (see table).

<table>
<thead>
<tr>
<th>Material</th>
<th>Flame Spread</th>
<th>Smoke Developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos Cement Board</td>
<td>0</td>
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<tr>
<td>Gypsum Plaster</td>
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<td>CertainTeed Type X, Type C, Easi-Lite®, Easi-Lite® 30, Extreme Abuse, Extreme Impact, Exterior Soffit and M2Tech Type X</td>
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<td>CertainTeed M2Tech® Shaftliner</td>
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<td>0</td>
</tr>
<tr>
<td>SilentFX® QuickCut™</td>
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<td>0</td>
</tr>
<tr>
<td>Heptane</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>
SOUND CONTROL

THE PROBLEM OF NOISE IN THE BUILT ENVIRONMENT

It’s a noisy world. Twenty-four hours a day, seven days a week, we are exposed to sounds we do not want, need, or benefit from. There are few places on the planet where in our daily lives we are free from unwanted sounds.

Noise from many outdoor sources assails our hearing as it invades our homes and workplaces: traffic, aircraft, barking dogs, neighbors’ voices. Noise within the workplace — from office machines, telephones, ventilating systems, unwanted conversation in the next cubicle — distracts us from our work and makes us less productive.

Noise from within the home — from appliances, upstairs footsteps, TV sound traveling from room to room — keeps our homes from being the restful refuges they ought to be. Noise in the classroom impedes the learning process and threatens our children’s educational experience. Noise can frustrate and impede speech communication. It can imperil us as we walk or drive city streets. It can be a physical health hazard as well: Exposure to high noise levels can cause permanent hearing loss. In short: Noise is unwanted sound.

SOUND TRANSMISSION CLASS (STC)

Drywall construction systems are tested to establish their sound insulation characteristics and airborne sound insulation is reported as the Sound Transmission Class (STC).

ASTM Standard E90 “Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions” outlines a procedure for measuring sound transmission loss which is the difference between the sound energy in a source room and a receiving room when the two rooms are separated by the assembly being tested. The sound transmission loss is measured at different test frequencies and this data is used to obtain a single number known as the STC rating calculated in accordance with ASTM E413.

SOUND ISOLATION

STC values stated are based on laboratory tests. The actual STC ratings of assemblies as constructed may be significantly less due to deviations from the design or specified materials, flanking paths or poor workmanship. A first essential for airborne sound insulation using any assembly is to close off air leaks and flanking paths by which noise can go around the assembly. Hairline cracks or small holes will increase the sound transmission at the higher frequencies. This can have a detrimental effect on the overall acoustical performance and the STC particularly for higher rated assemblies.

Assemblies should be airtight. Recessed wall fixtures such as medicine cabinets, or electrical, telephone and television outlets, which perforate the gypsum panel surface, should not be located back-to-back or in the same cavity. In addition, any opening for such fixtures and for piping outlets should be carefully cut to proper size and caulked. The entire perimeter of a sound insulating assembly must be made airtight to prevent sound flanking. An acoustical caulking compound or acoustical gasket should be used to seal between the assembly and all dissimilar surfaces. Taping gypsum panel wall and wall-ceiling intersections provides an adequate air seal at these locations. Details of some typical problem areas and their recommended treatments are shown in the accompanying illustration.
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SOUND ISOLATION CONSTRUCTION

"NORMAL CONSTRUCTION"
Not suitable for good sound control.
Arrows show flanking paths

"SELECT CONSTRUCTION"
Caulking of relief detail at perimeter of
partition to prevent sound leakage

"PRE-DESIGN" CONSTRUCTION
Simulating laboratory conditions

Wood Stud
System

Steel Stud
System

Caulk
Wood Stud

Caulk
Metal Stud

1/4" Perimeter relief
and caulking to seal
against leaks

Gasket impedes structural
flanking through floor

Elevation
Under and Over Partitions

Elevation
Typical Floor-Ceiling or Roof Detail

Plan
Through Partitions, Openings,
Outlet Boxes

Plan
Indicating Caulking of Openings
Through Partitions

Plan
Outlet Box Detail
Offset boxes minimum of one stud
space and caulk openings

Elevation

Window Mullion

Plan
Around Flanking Partition Ends

Plan
Typical Partition Mullion Intersection

Plan
Intersection With Exterior Wall

Wood Stud
Caulk

Metal Stud
Caulk

Electrical box with
extension ring

Caulk or Tape

Caulk or Tape

Caulk or Tape

Caulk or Tape

Void between box and
wallboard caulked

Plan
Metal Stud
Around Flanking Partition Ends

Plan
Intersection With Interior Wall

Plan
Typical Partition Intersections
TESTING COMPANIES

DEFINITIONS
Definitions of “Fire Resistance Rating” and “STC” as used in this manual are as follows:

**Fire Resistance Rating:** The degree to which construction assemblies resist the passage of heat and flame is indicated by ratings determined by full scale fire resistance tests conducted in accordance with ASTM E119.

**STC:** Sound Transmission Class, a single number which represents the overall performance of an assembly at all sound frequencies. As per ASTM E90 and E413, the higher the STC, the more efficient the system for reducing sound transmission.

TESTING AUTHORITIES
Abbreviations for the testing authorities cited in this manual are as follows:

- **Fire Resistance Ratings**
  - FM - Factory Mutual
  - ITS - Intertek Testing Services (Formerly Warnock Hersey International)
  - OPL – Omega Point Laboratories, Inc.
  - OSU - The Ohio State University
  - SWRI – Southwest Research Institute
  - UC - University of California
  - UL - Underwriters Laboratories

- **Sound Ratings**
  - NGC - NGC Testing Services
  - NOAL – North Orbit Acoustic Laboratories
  - OL - Orfield Laboratories, Inc.
  - RAL - Riverbank Acoustical Laboratories

BUILDING CODES
Building Codes govern among other items, the type, use and application of construction materials. Therefore, it is important that the user, when determining the suitability of products and assemblies outlined in this manual, ensure that the requirements of the applicable Building Code(s) have been met.

MATERIAL AND APPLICATION STANDARDS
Gypsum panel products and many of the accessories that are utilized in the construction and/or finishing of gypsum panel are covered by standards. These standards set forth minimum requirements for their physical and/or performance characteristics, limits of use and methods of application.

The following major Standards Writing Authorities are cited in this manual.
- ASTM – American Society for Testing and Materials
- UL – Underwriter Laboratories

PRODUCTS AND STANDARDS
CertainTeed Gypsum panel products are manufactured to meet or exceed the following standards.

<table>
<thead>
<tr>
<th>Gypsum Panel Product</th>
<th>Standard(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular - 1/4&quot;, 3/8&quot;</td>
<td>ASTM C1396</td>
</tr>
<tr>
<td>Easi-Lite® - 1/2&quot;</td>
<td>ASTM C1396</td>
</tr>
<tr>
<td>M2Tech® - 1/2&quot;</td>
<td>ASTM C1396</td>
</tr>
<tr>
<td>Interior Ceiling - 1/2&quot;</td>
<td>ASTM C1396</td>
</tr>
<tr>
<td>Type C - 1/2&quot;</td>
<td>ASTM C1396</td>
</tr>
<tr>
<td>SilentFX® QuickCut™</td>
<td>ASTM C1766</td>
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<tr>
<td>Easi-Lite® Veneer Plaster Base - 1/2&quot;</td>
<td>ASTM C1396</td>
</tr>
<tr>
<td>GlasRoc® Interior - 1/2&quot;</td>
<td>ASTM C1658</td>
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<tr>
<td>GlasRoc® Sheathing - 1/2&quot;</td>
<td>ASTM C1177</td>
</tr>
<tr>
<td>GlasRoc® Tile Backer - 1/2&quot;</td>
<td>ASTM C1178</td>
</tr>
<tr>
<td>Type X, Type C - 5/8&quot;</td>
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<td>M2Tech® Type X - 5/8&quot;</td>
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<td>M2Tech® Extreme Abuse - 5/8&quot;</td>
<td>ASTM C1396, C1629</td>
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<td>SilentFX® QuickCut™ Type X - 5/8”</td>
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<td>Veneer Plaster Base Type X - 5/8”</td>
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<td>Exterior Soffit Type X, Type C - 5/8”</td>
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<tr>
<td>GlasRoc® Interior Type X - 5/8”</td>
<td>ASTM C1658</td>
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<tr>
<td>GlasRoc® Sheathing Type X - 5/8”</td>
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<td>M2Tech® Shaftliner - 1”</td>
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<tr>
<td>GlasRoc® Shaftliner - 1”</td>
<td>ASTM C1658</td>
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</tbody>
</table>
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STANDARDS

ACCESSORY MATERIALS
The materials used in conjunction with CertainTeed Gypsum panel products are manufactured to meet or exceed the following standards.

<table>
<thead>
<tr>
<th>Material</th>
<th>Standard(s)</th>
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<tbody>
<tr>
<td>Steel Stud</td>
<td>ASTM C645, ASTM C955</td>
</tr>
<tr>
<td>Steel Track</td>
<td>ASTM C645, ASTM C955</td>
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<tr>
<td>Steel Furring Channel</td>
<td>ASTM C645</td>
</tr>
<tr>
<td>Wood Framing Members</td>
<td>CAN/CSA O141</td>
</tr>
<tr>
<td>Drywall Screws</td>
<td>ASTM C1002, ASTM C954</td>
</tr>
<tr>
<td>Drywall Nails</td>
<td>ASTM C514</td>
</tr>
<tr>
<td>Adhesives</td>
<td>ASTM C557</td>
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<tr>
<td>Sealants</td>
<td>ASTM C920</td>
</tr>
<tr>
<td>Joint Compounds</td>
<td>ASTM C475</td>
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<tr>
<td>Joint Tape</td>
<td>ASTM C475</td>
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<tr>
<td>Gypsum Plaster</td>
<td>ASTM C28</td>
</tr>
<tr>
<td>Accessories</td>
<td>ASTM C1047</td>
</tr>
</tbody>
</table>

APPLICATION STANDARDS
IBC International National Building Code
ASTM C840 Application and Finishing of Gypsum Board
ASTM C844 Application of Gypsum Base to Receive Gypsum Veneer Plaster
ASTM C1280 Application of Exterior Gypsum Panel Products for Use as Sheathing
Gypsum Association, GA-216, GA-253, and GA-214

UL TYPE DESIGNATIONS

Type X-1: 5/8” CertainTeed Type X, M2Tech®, Extreme Abuse, Extreme Impact, Veneer Plaster Base and Gypsum Sheathing Treated Core Gypsum Panels

Type Easi-Lite 30: 5/8” Easi-Lite® 30 Gypsum Panels

Type SilentFX: 5/8” CertainTeed SilentFX® QuickCut™ Gypsum Panels

Type GlasRoc: 5/8” GlasRoc® Sheathing, GlasRoc® Interior and GlasRoc® Tile Backer Gypsum Panels

Type C: 5/8” CertainTeed Type C Gypsum Panels

Type C: 1/2” CertainTeed Type C Gypsum Panels

Type Shaftliner: 1” CertainTeed M2Tech® Shaftliner

Type LGFCSL: 1” GlasRoc® Shaftliner
GENERAL DESIGN NOTES

1. Screws meeting ASTM C1002 can be substituted for the prescribed nails, one for one, when the length and head diameter of the screws equal or exceed those of the nails specified in the tested system, and the screw spacing does not exceed the spacing specified for the nails.

2. Unless specified, the face layers of all systems, except those with exterior gypsum sheathing panels, shall have joints taped with either paper tape or glass fiber mesh tape (minimum Level 1 as specified in GA-214 Recommended Levels of Finish for Gypsum Panel, Glass Mat and Fiber-Reinforced Gypsum Panels) and fastener heads treated. Base layers in multi-layer systems shall not be required to have joints or fasteners taped or covered with joint compound.

3. Unless otherwise stated in the detailed description, joints shall be staggered as follows:
   a. Horizontal butt joints on opposite sides of a partition in a single layer application shall be staggered not less than 12 inches.
   b. Horizontal butt joints in adjacent layers on the same side of a partition in multi-layer applications shall be staggered not less than 12 inches.
   c. Vertical joints on opposite sides of a partition in single layer applications shall not occur on the same stud.

4. Partitions Extending Above the Ceiling — When a fire-resistance rated partition extends above the ceiling, the gypsum panel joints occurring above the ceiling need not be taped and fasteners need not be covered when all of the following conditions are met:
   a. The ceiling is part of a fire-resistance rated floor-ceiling or roof-ceiling system;
   b. All vertical joints occur over framing members;
   c. Horizontal joints are either staggered 24 inches o.c. on opposite sides of the partition or are covered with strips of gypsum panel not less than 6 inches wide; or the partition is a two-layer system with joints staggered 16 inches or 24 inches o.c.; and
   d. The partition is not part of a smoke or sound control system. Where joint treatment is discontinued at or just above the ceiling line, the vertical joint shall be cross taped at this location to reduce the possibility of joint cracking.

5. When not specified as a component of a fire rated wall design, either faced or unfaced mineral fiber, glass fiber, or cellulose fiber insulation of a thickness exceeding the cavity depth shall be permitted to be added within the stud cavity.

6. In floor-ceiling or roof-ceiling systems, the addition or deletion of mineral or glass fiber insulation in ceiling joist spaces could possibly reduce the fire-resistance rating. The addition of up to 16-3/4 inches of 0.5 pcf glass fiber insulation (R-40), either faced or unfaced batt, or loose fill to any 1 or 2 hour fire-resistance rated floor-ceiling or roof-ceiling system having a cavity deep enough to accept the insulation is permitted, provided one additional layer of either 1/2" Type C or 5/8" Type X gypsum panel is applied to the ceiling. The additional layer of gypsum panel shall be of the same type specified in the original design and applied to the face layer of the tested system, except the fastener length shall be increased to by not less than the thickness of the additional layer of gypsum panel.

7. Additional layers of any type of gypsum panel are permitted to be added to any system.

8. Insulation in the fire-resistance system shall be built using the type specified.

9. Stud sizes in metal or wood stud systems are minimums and can be increased. Metal studs of greater mil thickness than those tested for fire performance shall be permitted.

10. Stud spacing are maximums and maybe reduced.

11. Specified floor-ceiling and roof-ceiling framing sizes or truss dimensions are minimums.

12. Specified floor-ceiling and roof-ceiling spacing are the maximums.

13. When not specified as a component of a fire-resistance rated wall or partition system, cementitious backer units and/or wood structural panels shall be permitted to be added to one or both side as a base or face layer.
Gypsum Panel Systems Manual

GA-600 2021 KEY

- Gypsum Plaster
- Gypsum Floor Underlayment
- Gypsum Panel Product

- Concrete Slab
- Cementitious Backer Unit
- Cement Board

- Glass Fiber or Mineral Wool Insulation

- Wood Structural Panel
  (OSB, Plywood, Etc.)

- Rigid Insulation
  Rigid Polyisocyanurate Insulation
  Rigid Polystyrene Insulation
  Foamed Plastic Insulation

- Rigid Furring Channel
  (Section)

- Resilient Channel
  (Plan)

- Rigid Furring “Hat” Channel
  (Plan)

- Resilient Channel
  (Section)

- Brick

- Exterior Wall Coverings
## STEEL STUD PARTITIONS

### 1 Hour Fire Rating – Non-Loadbearing

#### UL Design V450, V486

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
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<tbody>
<tr>
<td>• 5/8” CertainTeed Gypsum Panels</td>
<td>3-5/8” 25EQ (15 mil) steel studs at 24” o.c., Type X both sides, 3-1/2” FG insulation</td>
<td>49</td>
<td>NOAL 19-0932</td>
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<td>3-5/8” 25EQ (15 mil) steel studs at 24” o.c., SilentFX QC one side, Type X other side, 3-1/2” FG insulation</td>
<td>56</td>
<td>OL 17-0221</td>
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<tr>
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<td>3-5/8” 25EQ (15 mil) steel studs at 24” o.c., SilentFX QC both sides, 3-1/2” FG insulation</td>
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#### UL Design W440

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<tr>
<td>• 1/2” or 5/8” CertainTeed Gypsum Panels</td>
<td>2-1/2” 25ga (18 mil) steel studs at 24” o.c., 1/2” Type C both sides</td>
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<td>NOAL 18-0644</td>
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#### UL Design W423

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<tr>
<td>• 5/8” CertainTeed Gypsum Panels</td>
<td>3-5/8” 25EQ (15 mil) steel studs at 24” o.c., 2 layers Easi-Lite 30 each side, 3-1/2” FG insulation</td>
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#### UL Design W443

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<tbody>
<tr>
<td>• 5/8” CertainTeed Gypsum Panels</td>
<td>3-5/8” 25EQ (15 mil) steel studs at 24” o.c., 2 layers Type X with laminating compound between layers one side, 3-1/2” FG insulation</td>
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<td>NOAL 21-0703</td>
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<tr>
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<td>3-5/8” 25EQ (15 mil) steel studs at 24” o.c., 3 layers Type X one side, 3-1/2” FG insulation</td>
<td>41</td>
<td>NGC 2017065</td>
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## STEEL STUD PARTITIONS

### 1 Hour Fire Rating – Non-Loadbearing

**UL Design**

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<th>Gypsum Panel Types</th>
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<tbody>
<tr>
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<td>M2Tech Type X</td>
<td>Ul Design U465</td>
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<td>NOAL 21-0652</td>
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<td></td>
<td>SilentFX QuickCut Type X</td>
<td>3-5/8” 20EQ (18 mil) steel studs at 24” o.c., SilentFX QC both sides, 3-1/2” FG insulation</td>
<td>55</td>
<td>NOAL 21-0653</td>
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<tr>
<td></td>
<td>GlasRoc Interior Type X</td>
<td>3-5/8” 25ga (18 mil) steel studs at 24” o.c., SilentFX QC one side, Type X other side, 3-1/2” FG insulation</td>
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<td>OL 19-0719</td>
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### 2 Hour Fire Rating – Non-loadbearing

**UL Design**

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<th>STC</th>
<th>Report #</th>
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<td>Min. 2-1/2” 25EQ (15 mil) steel studs at 24” o.c.max</td>
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<td>M2Tech Type X</td>
<td>6” 16ga (54 mil) steel studs at 16” o.c., first layer SilentFX QC and second layer Extreme Abuse both sides 3-1/2” FG insulation</td>
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<td>NOAL 18-1238</td>
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<td>SilentFX QuickCut Type X</td>
<td>2-1/2” 25EQ (15 mil) steel studs at 24” o.c., two layers of Type X both sides, 2-1/2” FG insulation</td>
<td>56</td>
<td>NOAL 19-0603</td>
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<tr>
<td></td>
<td>GlasRoc Interior Type X</td>
<td>3-5/8” 25ga (18 mil) steel studs at 24” o.c., first layer Type X and second layer of M2Tech Type X each side, 3-1/2” FG insulation</td>
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### UL Design

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<td>Min. 1” mineral wool insulation</td>
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### Gypsum Panel Types Acoustical Details

- Type X
- Type C
- M2Tech Type X
- SilentFX QuickCut Type X
- GlasRoc Interior Type X
# STEEL STUD PARTITIONS

## 2 Hour Fire Rating – Non-loadbearing

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<tr>
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<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
</table>
| W440      | • 1/2" or 5/8" CertainTeed Gypsum Panels  
• Min. 2-1/2" 25ga (18 mil) steel studs at 24" o.c. max | • Type X  
• M2Tech Type X  
• 1/2" or 5/8" Type C  
• SilentFX QuickCut Type X  
• GlasRoc Interior Type X | 2-1/2" 25ga (18 mil) steel studs at 24" o.c., two layers 1/2" Type C both sides, 2-1/2" FG insulation | 51 | NOAL 18-0647 |
|           |                     |                    | 3-5/8" 25ga (18 mil) steel studs at 24" o.c., two layers Type X both sides, 3-1/2" FG insulation | 56 | NOAL 19-0602 |

<table>
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<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
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</thead>
</table>
| U454      | • 1/2" CertainTeed Gypsum Panels  
• Min. 2-1/2" 25ga (18 mil) steel studs at 24" o.c. max  
• Resilient channel  
• Min. 1" mineral wool insulation | • 1/2" Type C | 3-1/2" 20ga (33 mil) steel studs at 24" o.c., RC one side at 24" o.c., two layers Type C both sides, 3" MW insulation | 60 | OL 20-0205 |

<table>
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<tr>
<th>UL Design</th>
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<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
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</table>
| W442      | • 5/8" CertainTeed Gypsum Panels  
• Min. 3-1/2" 25ga (18 mil) steel studs at 24" o.c.max | • Type X  
• M2Tech Type X | 1/2" Type C | 1-5/8" 25ga (18 mil) steel studs at 24" o.c., three layers Type C both sides, 1-1/2" FG insulation | 55 | NGC 2019096 |

## 3 Hour Fire Rating – Non-loadbearing

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<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
</table>
| U435      | • 1/2" CertainTeed Gypsum Panels  
• Min. 1-5/8" 25EQ (15 mil) steel studs at 24" o.c. max | • Type C | 1-5/8" 25ga (18 mil) steel studs at 24" o.c., three layers Type C both sides, 1-1/2" FG insulation | 55 | NGC 2019096 |
## STEEL STUD PARTITIONS

### 3 Hour Fire Rating – Non-loadbearing

**UL Design W440**

**Fire System Details**
- 1/2" or 5/8" CertainTeed Gypsum Panels
- Min. 1-5/8" 25ga (18 mil) steel studs at 24" o.c. max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
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<tbody>
<tr>
<td>• Type X</td>
<td>1-5/8&quot; 25ga (18 mil) steel studs at 24&quot; o.c., 3 layers 1/2&quot; Type C both sides, 1-1/2&quot; FG insulation</td>
<td>53</td>
<td>NOAL 18-0704</td>
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<td>• M2Tech Type X</td>
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<td>• SilentFX QuickCut Type X</td>
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<tr>
<td>• GlasRoc Interior Type X</td>
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</tr>
<tr>
<td>• 1/2&quot; or 5/8&quot; Type C</td>
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### 4 Hour Fire Rating – Non-loadbearing

**UL Design W440**

**Fire System Details**
- 1/2" or 5/8" CertainTeed Gypsum Panels
- Min. 1-5/8" 25ga (18 mil) steel studs at 24" o.c. max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
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<tbody>
<tr>
<td>• Type X</td>
<td>1-5/8&quot; 25ga (18 mil) steel studs at 24&quot; o.c., four layers 1/2&quot; Type C both sides, 1-1/2&quot; FG insulation</td>
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<td>NOAL 18-0703</td>
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<tr>
<td>• M2Tech Type X</td>
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<tr>
<td>• SilentFX QuickCut Type X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• GlasRoc Interior Type X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 1/2&quot; or 5/8&quot; Type C</td>
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</table>

### 1 Hour Fire Rating – Loadbearing

**UL Design U425**

**Fire System Details**
- 1/2" or 5/8" CertainTeed Gypsum Panels
- Min. 3-1/2" 20ga (33 mil) steel studs at 24" o.c. max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Type X</td>
<td>6&quot; 20 ga (33 mil) steel studs at 16&quot; o.c., Extreme Abuse one side, Type X other side, 6&quot; FG insulation</td>
<td>45</td>
<td>NGC 2018017</td>
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<tr>
<td>• 1/2&quot; or 5/8&quot; Type C</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• M2Tech Type X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Extreme Abuse Type X</td>
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<td></td>
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<tr>
<td>• SilentFX QuickCut Type X</td>
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<td></td>
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<tr>
<td>• GlasRoc Sheathing Type X</td>
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<tr>
<td>• GlasRoc Interior Type X</td>
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<tr>
<td>• GlasRoc Tile Backer Type X</td>
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<tr>
<td>• 3-5/8&quot; 16 ga (54 mil) steel studs at 16&quot; o.c., SilentFX QC one side, Type X other side, 3-1/2&quot; FG insulation</td>
<td>48</td>
<td>OL 17-0324</td>
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<tr>
<td>• 3-5/8&quot; 20 ga (33 mil) steel studs at 16&quot; o.c., SilentFX QC one side, Type X other side, 3-1/2&quot; FG insulation</td>
<td>56</td>
<td>OL 17-0229</td>
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<tr>
<td>• 3-5/8&quot; 20 ga (33 mil) steel studs at 16&quot; o.c., SilentFX QC both sides, 3-1/2&quot; FG insulation</td>
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<td>OL 17-0301</td>
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<tr>
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<td>OL 17-0228</td>
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**Report #**
- NOAL 18-0704
- NOAL 19-0706
- NOAL 18-0703
- NOAL 18-0706
- NGC 2018017
- OL 17-0324
- OL 17-0229
- OL 17-0301
- OL 17-0228
## STEEL STUD PARTITIONS

### 1 Hour Fire Rating – Loadbearing

**UL Design**

**W445**

**Fire System Details**

- 5/8” CertainTeed Gypsum Panels
- Min. 3-1/2” 20ga (33 mil) steel studs at 24” o.c.max
- Min. 3” mineral wool insulation

**Gypsum Panel Types**

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<tr>
<th>Acoustical Details</th>
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<td>Extreme Impact Type X</td>
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### 2 Hour Fire Rating – Loadbearing

**UL Design**

**U425**

**Fire System Details**

- 5/8” CertainTeed Gypsum Panels
- Min. 3-1/2” 20ga (33 mil) steel studs at 24” o.c.max

**Gypsum Panel Types**

<table>
<thead>
<tr>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1/2” 20ga (33 mil) steel studs at 24” o.c., Type X both sides, 3” MW insulation</td>
<td>45</td>
<td>NOAL 17-1005</td>
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<tr>
<td>3-5/8” 16ga (54 mil) steel studs at 16” o.c., one layer Type X and one layer SilentFX QC both sides, 3-1/2” FG insulation</td>
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<td>OL 18-0813</td>
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<tr>
<td>6” 16ga (54 mil) steel studs at 16” o.c., two layers Type X both sides, 5-1/2” FG insulation</td>
<td>51</td>
<td>OL 18-1012</td>
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<tr>
<td>3-1/2” 20ga (33 mil) steel studs at 24” o.c., two layers Type X both sides, 3-1/2” FG insulation</td>
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<td>OL 19-0712</td>
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<tr>
<td>3-5/8” 20ga (33 mil) steel studs at 16” o.c., resilient channel at 24” o.c. one side, two layers Type X both sides, 3-1/2” FG insulation</td>
<td>60</td>
<td>OL 18-1015</td>
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<tr>
<td>6” 20ga (33 mil) steel studs at 16” o.c., resilient channel at 24” o.c. one side, one layer Type X and one layer SilentFX QC both sides, 5” FG insulation</td>
<td>63</td>
<td>OL 18-1228</td>
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### 2 Hour Fire Rating – Loadbearing

**UL Design**

**W445**

**Fire System Details**

- 5/8” CertainTeed Gypsum Panels
- Min. 3-1/2” 20ga (33 mil) steel studs at 24” o.c.max
- Min. 3” mineral wool insulation

**Gypsum Panel Types**

<table>
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<td>GlasRoc Interior Type X</td>
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### Gypsum Panel Types Acoustical Details

- **Type X**
- **Type C**
- **M2Tech Type X**
- **Extreme Abuse Type X**
- **Extreme Impact Type X**
- **SilentFX QuickCut Type X**
- **GlasRoc Sheathing Type X**
- **GlasRoc Interior Type X**
STEEL STUD – CHASE WALLS

1 Hour Fire Rating – Non-loadbearing

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<th>UL Design</th>
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<td>V469</td>
<td>5/8” CertainTeed Gypsum Panels, Min. 2-1/2” 25ga (18 mil) steel studs at 24” o.c. max</td>
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Gypsum Panel Types | Acoustical Details | STC | Report # |
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<tbody>
<tr>
<td>Type X</td>
<td>GlasRoc Interior Type X</td>
<td>58</td>
<td>NOAL 18-0651</td>
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<tr>
<td>M2Tech Type X</td>
<td>SilentFX QuickCut Type X</td>
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2 Hour Fire Rating – Non-loadbearing

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<tr>
<td>U420</td>
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Gypsum Panel Types | Acoustical Details | STC | Report # |
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<tbody>
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<td>Type X</td>
<td>GlasRoc Interior Type X</td>
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<td>SilentFX QuickCut Type X</td>
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2 Hour Fire Rating – Non-loadbearing

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<th>Fire System Details</th>
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<tr>
<td>V469</td>
<td>5/8” CertainTeed Gypsum Panels, Min. 2-1/2” 25EQ (15 mil) steel studs at 24” o.c. max</td>
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Gypsum Panel Types | Acoustical Details | STC | Report # |
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<tbody>
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<td>Type X</td>
<td>GlasRoc Interior Type X</td>
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<td>NOAL 18-0643</td>
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<td>M2Tech Type X</td>
<td>SilentFX QuickCut Type X</td>
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<td>SilentFX QuickCut Type X</td>
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<td>NOAL 18-0643</td>
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# Gypsum Panel Systems Manual

## ASSEMBLIES

### STEEL STUD PARTITIONS – EXTERIOR

#### 1 Hour Fire Rating – Non-loadbearing

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
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</table>
| W440      | • 1/2” or 5/8” CertainTeed Gypsum Panels  
• Min. 2-1/2” 25ga (18 mil) steel studs at 24” o.c. max  
• 1-1/2” Mineral wool insulation | • Type X  
• 1/2” or 5/8” Type C  
• M2Tech Type X  
• GlasRoc Sheathing Type X  
• SilentFX QuickCut Type X  
• Extreme Abuse Type X  
• GlasRoc Interior Type X |

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<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| V482      | • 5/8” CertainTeed Gypsum Panels  
• 3-5/8” 18ga (43 mil) steel studs at 16” o.c. max  
• 1/2” – 3” (max.) rigid polyisocyanurate insulation  
• Exterior facing | • Type X  
• Type C  
• M2Tech Type X  
• SilentFX QuickCut Type X  
• Extreme Abuse Type X  
• GlasRoc Sheathing Type X  
• GlasRoc Interior Type X |

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| U465      | • 5/8” CertainTeed Gypsum Panels  
• 3-5/8” 25ga (18 mil) steel studs at 24” o.c. max | • Type X  
• Type C  
• M2Tech Type X  
• SilentFX QuickCut Type X  
• Extreme Abuse Type X  
• Extreme Impact Type X  
• GlasRoc Sheathing Type X  
• Sheathing TC Type X  
• GlasRoc Interior Type X |

#### 2 Hour Fire Rating – Non-Loadbearing

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| W440      | • 1/2” or 5/8” CertainTeed Gypsum Panels  
• Min. 2-1/2” 25ga (18 mil) steel studs at 24” o.c. max | • Type X  
• 1/2” or 5/8” Type C  
• M2Tech Type X  
• SilentFX QuickCut Type X  
• GlasRoc Interior Type X |
## STEEL STUD PARTITIONS – EXTERIOR

### 2 Hour Fire Rating – Non-loadbearing

**UL Design U474**

**Fire System Details**
- 1/2” or 5/8” CertainTeed Gypsum Panels
- 3-5/8” 20ga (33 mil) steel studs at 16” o.c. max
- 1/2” Cement Board

**Gypsum Panel Types**
- Type C
- GlasRoc Sheathing Type X

### 3 Hour Fire Rating – Non-loadbearing

**UL Design W429**

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Min. 3-5/8” 20ga (33 mil) steel studs at 24” o.c. max
- 3-1/2” FG insulation
- 35 mil air and weather barrier
- 4” (max.) foamed plastic insulation
- 4” wide brick and accessories

**Gypsum Panel Types**
- Type C
- Type X
- M2Tech Type X
- SilentFX QuickCut Type X
- GlasRoc Interior Type X

### 1 Hour Fire Rating – Loadbearing

**UL Design U425**

**Fire System Details**
- 1/2” or 5/8” CertainTeed Gypsum Panels
- Min. 3-1/2” 20ga (33 mil) steel studs at 24” o.c. max

**Gypsum Panel Types**
- Type X
- 1/2” or 5/8” Type C
- GlasRoc Sheathing Type X

**Acoustical Details**

<table>
<thead>
<tr>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>NGC 2018020</td>
</tr>
<tr>
<td>45</td>
<td>NOAL 21-0662</td>
</tr>
<tr>
<td>54</td>
<td>NOAL 21-0663</td>
</tr>
</tbody>
</table>
STEEL STUD PARTITIONS – EXTERIOR

1 Hour Fire Rating – Loadbearing

UL Design V454

Fire System Details
- 5/8” CertainTeed Gypsum Panels
- 3-1/2” 20ga (33 mil) steel studs at 24” o.c. max
- 4” rigid polyisocyanurate insulation
- Exterior facing

Gypsum Panel Types
- Type X
- Type C
- M2Tech Type X
- GlassRoc Sheathing Type X
- Sheathing TC Type X
- SilentFX QuickCut Type X
- Extreme Abuse Type X

2 Hour Fire Rating – Loadbearing

UL Design U425

Fire System Details
- 1/2” or 5/8” CertainTeed Gypsum Panels
- Min. 3-1/2” 20ga (33 mil) steel studs at 24” o.c. max

Gypsum Panel Types
- Type X
- 1/2” or 5/8” Type C
- M2Tech Type X
- GlassRoc Sheathing Type X
- SilentFX QuickCut Type X
- GlassRoc Interior Type X
- Extreme Abuse Type X

WOOD STUD PARTITIONS

1 Hour Fire Rating – Loadbearing

UL Design U305

Fire System Details
- 5/8” CertainTeed Gypsum Panels
- Nominal 2x4 wood studs at 16” o.c. max

Gypsum Panel Types
- Type X
- Type C
- M2Tech Type X
- SilentFX QuickCut Type X
- GlassRoc Interior Type X

Acoustical Details
- Resilient channel at 24” o.c. one side, one layer Type X and one layer SilentFX QC over RC, one layer Type X other side, 3-1/2” FG insulation
- Resilient channel at 24” o.c. one side, Type X both sides, 3-1/2” FG insulation

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type X</td>
<td>SilentFX QuickCut Type X</td>
<td>55</td>
<td>OL 18-0820</td>
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<tr>
<td>Type C</td>
<td>GlassRoc Interior Type X</td>
<td>50</td>
<td>OL 18-1233</td>
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</table>
## WOOD STUD PARTITIONS

### 1 Hour Fire Rating – Loadbearing

#### UL Design U309

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8” CertainTeed Gypsum Panels</td>
<td>2x4 wood studs at 24” o.c., Type X both sides, 5” FG insulation</td>
<td>44</td>
<td>U309</td>
</tr>
<tr>
<td>2x4 wood studs at 24” o.c., one layer Type X one side, one layer SilentFX QC other side, 5” FG insulation</td>
<td>51</td>
<td>U319</td>
<td></td>
</tr>
<tr>
<td>Resilient channel at 24” o.c. one side, one layer Type X both sides, 3-1/2” FG insulation</td>
<td>52</td>
<td>U329</td>
<td></td>
</tr>
<tr>
<td>Resilient channel at 24” o.c. one side, one layer SilentFX QC both sides, 3-1/2” FG insulation</td>
<td>55</td>
<td>NOAL 21-0657</td>
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</table>

#### UL Design U311

<table>
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<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8” CertainTeed Gypsum Panels</td>
<td>2x4 wood studs at 24” o.c., Type X both sides, 3-1/2” FG insulation</td>
<td>50</td>
<td>U311</td>
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</table>

#### UL Design U344

<table>
<thead>
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<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8” CertainTeed Gypsum Panels</td>
<td>2x4 wood studs at 24” o.c., one layer Type X over plywood, one layer SilentFX QC other side</td>
<td>45</td>
<td>U344</td>
</tr>
<tr>
<td>15/32” plywood one side</td>
<td></td>
<td>51</td>
<td>NOAL 18-0316</td>
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#### UL Design W306

<table>
<thead>
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<th>Report #</th>
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</thead>
<tbody>
<tr>
<td>5/8” CertainTeed Gypsum Panels</td>
<td>2x4 wood studs at 16” o.c., one layer Type X over plywood, one layer SilentFX QC other side</td>
<td>41</td>
<td>W306</td>
</tr>
<tr>
<td>3-1/2” FG insulation</td>
<td></td>
<td>41</td>
<td>OL 19-0715</td>
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</table>
# WOOD STUD PARTITIONS

## 2 Hour Fire Rating – Loadbearing

**UL Design**

<table>
<thead>
<tr>
<th>U301</th>
</tr>
</thead>
</table>

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Nominal 2x4 wood studs at 16” o.c. max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type X</td>
<td>SilentFX QuickCut Type X</td>
<td>56</td>
<td>NOAL 18-0713</td>
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<tr>
<td>Type C</td>
<td>GlasRoc Interior Type X</td>
<td></td>
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</tbody>
</table>

## WOOD STUD – CHASE WALLS

## 1 Hour Fire Rating – Loadbearing

**UL Design**

<table>
<thead>
<tr>
<th>U340</th>
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</thead>
</table>

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Nominal 2x4 staggered wood studs at 24” o.c. max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type X</td>
<td>SilentFX QuickCut Type X</td>
<td>51</td>
<td>OL 18-1017</td>
</tr>
<tr>
<td>Type C</td>
<td>GlasRoc Interior Type X</td>
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</table>

**UL Design**

<table>
<thead>
<tr>
<th>U341</th>
</tr>
</thead>
</table>

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Double row nominal 2x4 wood studs at 24” o.c. max
- 3-1/2” FG insulation max.

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type X</td>
<td>SilentFX QuickCut Type X</td>
<td>58</td>
<td>NOAL 18-0714</td>
</tr>
<tr>
<td>Type C</td>
<td>M2Tech Type X</td>
<td></td>
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<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
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</thead>
<tbody>
<tr>
<td>One layer Type X both sides</td>
<td></td>
<td>60</td>
<td>NGC 2019097</td>
</tr>
<tr>
<td>One layer Type X one side, one layer SilentFX QC other side</td>
<td></td>
<td>65</td>
<td>NOAL 18-0715</td>
</tr>
</tbody>
</table>

- **Gypsum Panel Types**
  - Type X
  - Type C
  - M2Tech Type X

- **Acoustical Details**
  - Resilient channel at 24” o.c. one side, two layers of Type X both sides, 3-1/2” FG insulation
  - One layer Type X both sides, 5-1/2” FG insulation
  - One layer Type X both sides
  - One layer Type X one side, one layer SilentFX QC other side
  - Two layers Type X one side, one layer Type X other side
## WOOD STUD – CHASE WALLS

### 2 Hour Fire Rating – Loadbearing

**UL Design: V342**

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8” CertainTeed Gypsum Panels</td>
<td>• Type X</td>
</tr>
<tr>
<td>Nominal 2x4 staggered wood studs at 16” o.c. max</td>
<td>• Type C</td>
</tr>
<tr>
<td>4” MW insulation min</td>
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</table>

**Gypsum Panel Types**

- Type X
- Type C
- M2Tech Type X
- SilentFX QuickCut Type X
- GlasRoc Interior Type X

### Wood Stud Partitions – Exterior

### 1 Hour Fire Rating – Loadbearing

**UL Design: W307**

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8” CertainTeed Gypsum Panels</td>
<td>• Type X</td>
</tr>
<tr>
<td>Nominal 2x4 wood studs at 16” o.c. max</td>
<td>• Type C</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Gypsum Panel Types**

- Type X
- Type C
- M2Tech Type X
- SilentFX QuickCut Type X
- GlasRoc Sheathing Type X
- Sheathing TC Type X
- GlasRoc Interior Type X

**Acoustical Details**

- Two layers Type X both sides

**STC**

- 69

**Report #**

- TL-93-283
## WOOD STUD PARTITIONS – EXTERIOR

### 1 Hour Fire Rating – Loadbearing

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
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</thead>
<tbody>
<tr>
<td>U337</td>
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<tr>
<td></td>
<td>5/8&quot; CertainTeed Gypsum Panels</td>
<td>Type X</td>
</tr>
<tr>
<td></td>
<td>Nominal 2x4 wood studs at 16&quot; o.c. max</td>
<td>M2Tech Type X</td>
</tr>
</tbody>
</table>

- Type X
- M2Tech Type X
- GlasRoc Sheathing Type X
- GlasRoc Interior Type X
- SilentFX QuickCut Type X
- Sheathing TC Type X

### 2 Hour Fire Rating – Loadbearing

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
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<tbody>
<tr>
<td>U301</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5/8&quot; CertainTeed Gypsum Panels</td>
<td>Type X</td>
</tr>
<tr>
<td></td>
<td>Nominal 2x4 wood studs at 16&quot; o.c. max</td>
<td>Type C</td>
</tr>
</tbody>
</table>

- Type X
- Type C
- GlasRoc Sheathing Type X
- GlasRoc Interior Type X
- SilentFX QuickCut Type X
- Sheathing TC Type X
- M2Tech Type X
- GlasRoc Interior Type X
### SHAFT WALLS – NON-LOADBEARING

**1 Hour Fire Rating – Non-loadbearing**

#### UL Design U417

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
</table>
| • 1” CertainTeed Gypsum Panels  
• 5/8” CertainTeed Gypsum Panels  
• Min. 2-1/2” 25ga (18 mil) I, C-H, or C-T steel studs at 24” o.c.max | 2-1/2” 25ga (18 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, SilentFX QC attached to one side of studs | 40 | NOAL 19-0614 |
| • Type X  
• Type C  
• M2Tech Type X  
• GlasRoc Shaftliner  
• M2Tech Shaftliner  
• SilentFX QuickCut Type X  
• GlasRoc Interior Type X | 2-1/2” 25ga (18 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, SilentFX QC attached to one side of studs, 1-1/2” FG insulation | 49 | NOAL 17-1140 |

#### UL Design U469

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
</table>
| • 1” CertainTeed Gypsum Panels  
• 5/8” CertainTeed Gypsum Panels  
• Min. 2-1/2” 25ga (18 mil) C-H steel studs at 24” o.c.max | 2-1/2” 25ga (18 mil) C-H steel studs at 24” o.c., M2Tech Shaftliner inserted in the studs, Type X attached to one side of studs, 1-1/2” FG insulation | 45 | NOAL 19-0705 |
| • Type X  
• Type C  
• M2Tech Type X  
• GlasRoc Shaftliner  
• M2Tech Shaftliner | 2-1/2” 25ga (18 mil) C-H steel studs at 24” o.c., M2Tech Shaftliner inserted in the studs, Type X attached to one side of studs, 1-1/2” FG insulation | 45 | NOAL 19-0705 |

#### UL Design W453

| Fire System Details | Gypsum Panel Types  
|---------------------|-------------------|
| • 1” CertainTeed Gypsum Panels  
• 5/8” CertainTeed Gypsum Panels  
• Min. 4” 20ga (33 mil) C-H steel studs oriented horizontally at 24” o.c.max | Type X  
• M2Tech Type X  
• GlasRoc Shaftliner  
• M2Tech Shaftliner |
### SHAFT WALLS – NON-LOADBEARING

#### 2 Hour Fire Rating – Non-loadbearing

**UL Design U417**

**Fire System Details**
- 1” CertainTeed Gypsum Panels
- 1/2” or 5/8” CertainTeed Gypsum Panels
- Min. 2-1/2” 25ga (18 mil) I, C-H, or C-T steel studs at 24” o.c.max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
</table>
| • GlasRoc Shaftliner  
  • M2Tech Shaftliner  
  • Type X  
  • 1/2” or 5/8” Type C  
  • M2Tech Type X  
  • SilentFX QuickCut Type X  
  • GlasRoc Interior Type X | 2-1/2” 25 ga (18 mil) I steel studs at 24” o.c., GlasRoc Shaftliner inserted in studs, two layers Type X attached to one side of studs, 2-1/2” FG insulation | 48 | NGC 2017158 |
| | 2-1/2” 25 ga (18 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in studs, two layers 1/2” Type C attached to one side of studs, 1-1/2” FG insulation | 51 | NOAL 18-0808 |
| | 2-1/2” 25 ga (18 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, resilient channel attached to one side of studs at 24” o.c., two layers Type X attached to RC, 1-1/2” FG insulation | 53 | NOAL 18-0811 |
| | 4” 20 ga (33 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, two layers 1/2” Type C applied to one side of studs, 3-1/2” FG insulation | 53 | NOAL 19-0945 |
| | 2-1/2” 25 ga (18 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, resilient channel attached to one side of studs at 24” o.c., two layers 1/2” Type C attached to RC, 1-1/2” FG insulation | 54 | NOAL 18-0809 |
| | 4” 20 ga (33 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, two layers Type X applied to one side of studs, 3-1/2” FG insulation | 54 | NOAL 18-0816 |
| | 2-1/2” 25 ga (18 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, one layer Type X and one layer SilentFX QC attached to one side of studs, 3-1/2” FG insulation | 55 | NOAL 17-1141 |
| | 4” 20 ga (33 mil) C-T steel studs at 24” o.c., GlasRoc Shaftliner inserted in the studs, one layer Type X and one layer SilentFX QC attached to one side of studs, 3-1/2” FG insulation | 58 | NOAL 18-0815 |

**UL Design W453**

**Fire System Details**
- 1” CertainTeed Gypsum Panels
- 5/8” CertainTeed Gypsum Panels
- Min. 4” 20ga (33 mil) C-H steel studs oriented horizontally at 24” o.c.max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
</table>
| • GlasRoc Shaftliner  
  • M2Tech Shaftliner  
  • M2Tech Type X  
  • Type X | 4” 20ga (33 mil) C-H steel studs oriented horizontally at 24” o.c., GlasRoc Shaftliner inserted in the studs, 2 layers Type X attached to one side of studs, 2-1/2” FG insulation | 54 | NOAL 17-1202 |
## SHAFT WALLS – NON-LOADBEARING

### 3 Hour Fire Rating – Non-loadbearing

**UL Design**

**U417**

**Fire System Details**

- 1” CertainTeed Gypsum Panels
- 5/8” CertainTeed Gypsum Panels
- Min. 2-1/2” 25ga (18 mil) I, C-H, or C-T steel studs at 24” o.c.max

**Gypsum Panel Types**

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>GlasRoc Shaftliner</td>
<td>RC one side at 24” o.c., two layers Type C attached to RC, one layer Type C direct attached one side</td>
<td>55</td>
<td>NGC 2017079</td>
</tr>
</tbody>
</table>

### 4 Hour Fire Rating – Non-loadbearing

**UL Design**

**W471**

**Fire System Details**

- 1” CertainTeed Gypsum Panels
- 5/8” CertainTeed Gypsum Panels
- Min. 4” 25ga (18 mil) I, C-H, or C-T steel studs at 24” o.c. max
- Furring channels at 16” o.c. max

**Gypsum Panel Types**

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>GlasRoc Shaftliner</td>
<td>4” 25ga (18 mil) C-T steel studs at 24” o.c., 3 layers Type C attached to studs one side, furring channel attached between 3rd and 4th layers of Type C at 16” o.c., 2 layers Type C attached to furring channel, 2-1/2” FG insulation</td>
<td>54</td>
<td>NGC 2019098</td>
</tr>
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</table>

## AREA SEPARATION FIREWALLS

### 2 Hour Fire Rating – Loadbearing or Non-loadbearing

**UL Design**

**U366**

**Fire System Details**

- 1” CertainTeed Gypsum Panels
- Min. 2” 25ga (18 mil) steel H studs at 24” o.c. max
- Nominal 2x4 wood studs at 24” o.c. max
- 3/4” air gap between wood studs and area separation wall
- 70’ max height

**Gypsum Panel Types**

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>GlasRoc Shaftliner</td>
<td>2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, nominal 2x4 wood studs at 24” o.c. each side of H studs with 3/4” air gap, 1/2” SilentFX QC attached to both sides of studs</td>
<td>51</td>
<td>NGC 2017131</td>
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</tbody>
</table>

| | 2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, nominal 2x4 wood studs at 24” o.c. each side of H studs with 3/4” air gap, 3-1/2” FG insulation in both stud cavities, 1/2” Easi-Lite attached to both sides of studs | 66 | NOAL 19-0709 |

| | 2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, nominal 2x4 wood studs at 16” o.c. each side of H studs with 3/4” air gap, 3-1/2” FG insulation in both stud cavities, 1/2” Easi-Lite attached to one side of studs, 1/2” SilentFX QC attached to other side of studs | 70 | NOAL 17-1134 |
## AREA SEPARATION FIREWALLS

### 2 Hour Fire Rating – Loadbearing or Non-loadbearing

**UL Design**
- **U366**

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Min. 2” 25ga (18 mil) steel H studs at 24” o.c. max
- Min. 3-1/2” 25ga (18 mil) steel studs at 24” o.c. max (NLB)
- 3/4” air gap between wood studs and area separation wall
- 70’ max height

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>GlasRoc Shaftliner</td>
<td>2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, 3-5/8” 25ga (18 mil) steel studs at 24” o.c. each side of H studs with 3/4” air gap, 1/2” Easi-Lite attached to one side of studs, 1/2” SilentFX QC attached to other side of studs</td>
<td>49</td>
<td>NGC 2017122</td>
</tr>
<tr>
<td>M2Tech Shaftliner</td>
<td>2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, 3-5/8” 25ga (18 mil) steel studs at 24” o.c. each side of H studs with 3/4” air gap, 1/2” SilentFX QC attached to each side of studs</td>
<td>52</td>
<td>NGC 2017123</td>
</tr>
<tr>
<td></td>
<td>2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, 3-5/8” 25ga (18 mil) steel studs at 24” o.c. each side of H studs with 3/4” air gap, 3-1/2” FG insulation in both stud cavities, 1/2” Easi-Lite attached to one side of studs, 1/2” SilentFX QC attached to other side of studs</td>
<td>71</td>
<td>NGC 2017121</td>
</tr>
</tbody>
</table>

### 3 Hour Fire Rating – Loadbearing or Non-loadbearing

**UL Design**
- **W467**

**Fire System Details**
- 1” CertainTeed Gypsum Panels
- 5/8” CertainTeed Gypsum Panels
- Min. 2-1/2” 25ga (18 mil) I, C-H, or C-T steel studs at 24” o.c.max
- Furring channels at 16” o.c. max

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>GlasRoc Shaftliner</td>
<td>2” 25ga (18 mil) steel H studs at 24” o.c., GlasRoc Shaftliner inserted in H studs, one layer 5/8” Type C attached to both sides of H studs, nominal 2x4 wood studs at 16” o.c. each side of H studs with 3/4” air gap, 3-1/2” FG insulation in both stud cavities, layer of Type X applied to both sides of studs</td>
<td>70</td>
<td>NOAL 19-0947</td>
</tr>
</tbody>
</table>
HORIZONTAL MEMBRANE SYSTEMS

1 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>I515</td>
<td>• 1” CertainTeed Gypsum Panels</td>
<td>• GlasRoc Shaftliner • M2Tech Shaftliner • Type X • M2Tech Type X</td>
</tr>
<tr>
<td></td>
<td>• 5/8” CertainTeed Gypsum Panels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Min. 2-1/2” 25ga (18 mil) I, C-H, or C-T steel studs at 24” o.c. max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 8” max unsupported span</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>I507</td>
<td>• 5/8” CertainTeed Gypsum Panels</td>
<td>• Type X • M2Tech Type X</td>
</tr>
<tr>
<td></td>
<td>• Min. 6” 20ga (33 mil) steel studs at 24” o.c.max</td>
<td></td>
</tr>
</tbody>
</table>
HORIZONTAL MEMBRANE SYSTEMS

2 Hour Fire Rating

**UL Design I515**

**Fire System Details**
- 1” CertainTeed Gypsum Panels
- 5/8” CertainTeed Gypsum Panels
- Min. 2-1/2” 20ga (33 mil) I, C-H, or C-T steel studs at 24” o.c.max
- Resilient channel between 2nd and 3rd layers of Type C
- 8’ max unsupported span
- 4” MW insulation placed over top of studs

**Gypsum Panel Types**
- GlasRoc Shaftliner
- M2Tech Shaftliner
- Type C

**STEEL JOIST FLOORS AND CEILINGS**

1 Hour Fire Rating

**UL Design G502**

**Fire System Details**
- 1/2” CertainTeed Gypsum Panels
- Furring channels perpendicular to joists at 24” o.c.
- Open web steel joists at 24” o.c.
- 3/8” rib metal lath or 9/16” 28 ga corrugated steel
- 2” concrete slab

**Gypsum Panel Types**
- Type C
STEEL JOIST FLOORS AND CEILINGS

1 Hour Fire Rating

UL Design
G568

Fire System Details
• 5/8” CertainTeed Gypsum Panels
• Resilient channels perpendicular to joists at 12” o.c.
• 3-1/2” fiberglass insulation
• Min. 9-1/4” 54 mil galvanized steel joists at 24” o.c.
• 9/16” 22 ga corrugated steel deck
• 1” gypsum floor topping

Gypsum Panel Types
• Type C

UL Design
G501

Fire System Details
• 5/8” CertainTeed Gypsum Panels
• Furring channels perpendicular to joists at 24” o.c.
• Open web steel joists at 24” o.c.
• 3/8” rib metal lath
• 2” concrete slab

Gypsum Panel Types
• GlasRoc Sheathing Type X
• Type C
• Type X
• M2Tech Type X
• GlasRoc Interior Type X

1-1/2 Hour Fire Rating

UL Design
L527

Fire System Details
• 5/8” CertainTeed Gypsum Panels
• Min. 9-3/8” 16 ga (54 mil) steel joists at 24” o.c.max
• Resilient channel perpendicular to joists at 16” o.c.
• 3/4” plywood deck

Gypsum Panel Types
• Type C

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC / IIC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Type C</td>
<td>10” 16ga (54 mil) steel joists at 24” o.c., RC perpendicular to joists at 16” o.c., 2 layers Type C attached to RC, 3/4” plywood deck attached to joists</td>
<td>46 / 37</td>
<td>NGC 5020086 / NGC 7020104</td>
</tr>
<tr>
<td></td>
<td>10” 16ga (54 mil) steel joists at 24” o.c., RC perpendicular to joists at 16” o.c., 2 layers Type C attached to RC, 3/4” plywood deck, 1” gypcrete topping, 1/4” sound mat, 3/16” LVT over underlayment</td>
<td>56 / 51</td>
<td>NGC 5020084 / NGC 7020102</td>
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<tr>
<td></td>
<td>10” 16ga (54 mil) steel joists at 24” o.c., RC perpendicular to joists at 16” o.c., 2 layers Type C attached to RC, 3/4” plywood deck, 1” gypcrete topping, 1/4” sound mat, 3/8” engineered hardwood over underlayment</td>
<td>56 / 52</td>
<td>NGC 5020085 / NGC 7020103</td>
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<tr>
<td></td>
<td>10” 16ga (54 mil) steel joists at 24” o.c., RC perpendicular to joists at 16” o.c., 2 layers Type C attached to RC, 3/4” plywood deck, 1” gypcrete topping, 1/4” sound mat, carpet and pad</td>
<td>57 / 75</td>
<td>NGC 5020082 / NGC 7020100</td>
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</tbody>
</table>
### STEEL JOIST FLOORS AND CEILINGS

#### 2 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| G504      | • 1/2" CertainTeed Gypsum Panels  
• Open web steel joists at 24" o.c.max  
• Furring channel perpendicular to joists at 24" o.c.  
• 2-1/2" concrete slab | • Type C |
| G222      | • 1/2" CertainTeed Gypsum Panels – cut down to 2’x2’ panels  
• Ceiling grid  
• Open web steel joists at 24” o.c.  
• 2-1/2” concrete slab | • Type C |
| G503      | • 5/8” CertainTeed Gypsum Panels  
• Open web steel joists at 24" o.c.  
• Furring channels attached to joists at 12” o.c.  
• 2-1/2” concrete slab | • Type X |
| J503      | • 5/8” CertainTeed Gypsum Panels  
• Furring channels attached to concrete at 24” o.c.  
• 2” concrete slab | • Type C |
## STEEL JOIST FLOORS AND CEILINGS

### 3 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| G512      | 5/8” CertainTeed Gypsum Panels  
Open web steel joists at 24” o.c.max  
Furring channel perpendicular to joists at 24” o.c.  
2-1/2” concrete slab | • Type C |

### Gypsum Panel Types

- • Type C

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| J503      | 5/8” CertainTeed Gypsum Panels  
Furring channels attached to concrete at 24” o.c.  
2-1/2” concrete slab | • Type C |

### STEEL FRAMED, WOOD FLOOR - FLOOR AND CEILINGS

### 1 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Fire System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
</table>
| L524      | 1/2” CertainTeed Gypsum Panels  
Min. 7” 43 mil steel joists at 24” o.c.  
5/8” T&G plywood attached perpendicular to joists | • Type C |

### Gypsum Panel Types

- • Type C
STEEL FRAMED, WOOD FLOOR - FLOOR AND CEILINGS

1 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design M536</th>
<th>Fire System Details</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5/8” CertainTeed Gypsum Panels</td>
</tr>
<tr>
<td></td>
<td>Resilient channels perpendicular to steel trusses at 16” o.c. max</td>
</tr>
<tr>
<td></td>
<td>Light gauge steel trusses at 48” o.c. max</td>
</tr>
<tr>
<td></td>
<td>23/32” plywood deck applied perpendicular to trusses</td>
</tr>
<tr>
<td></td>
<td>15/32” plywood applied perpendicular to trusses</td>
</tr>
</tbody>
</table>

Gypsum Panel Types
- Type C

2 Hour Fire Rating

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<thead>
<tr>
<th>UL Design L556</th>
<th>Fire System Details</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5/8” CertainTeed Gypsum Panels</td>
</tr>
<tr>
<td></td>
<td>Hat channel perpendicular to joists between 3rd and 4th layers of gypsum panel at 24” o.c.</td>
</tr>
<tr>
<td></td>
<td>Min. 8” 43 mil steel joists at 24” o.c.</td>
</tr>
<tr>
<td></td>
<td>Minimum 23/32” wood structural panels</td>
</tr>
<tr>
<td></td>
<td>Min. 3/4” floor topping</td>
</tr>
</tbody>
</table>

Gypsum Panel Types
- Type C
- Type X
- M2Tech Type X

WOOD JOIST FLOOR AND CEILINGS

1 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design L501</th>
<th>Fire System Details</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5/8” CertainTeed Gypsum Panels</td>
</tr>
<tr>
<td></td>
<td>Min. 2x10 wood joists at 16” o.c.</td>
</tr>
<tr>
<td></td>
<td>15/32” plywood</td>
</tr>
<tr>
<td></td>
<td>19/32” T&amp;G plywood</td>
</tr>
</tbody>
</table>

Gypsum Panel Types
- Type C
- Type X
- M2Tech Type X

<table>
<thead>
<tr>
<th>UL Design L513</th>
<th>Fire System Details</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5/8” CertainTeed Gypsum Panels</td>
</tr>
<tr>
<td></td>
<td>Resilient channel perpendicular to joists at 16” o.c.</td>
</tr>
<tr>
<td></td>
<td>Min. 2x10 wood joists at 24” o.c.</td>
</tr>
<tr>
<td></td>
<td>3/4” plywood</td>
</tr>
<tr>
<td></td>
<td>3/4” floor topping</td>
</tr>
</tbody>
</table>

Gypsum Panel Types
- Type C
### WOOD JOIST FLOOR AND CEILINGS

#### 1 Hour Fire Rating

**UL Design**

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Acoustical Details</th>
<th>STC / IIC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L502</strong></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c.</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., 2-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 19/32&quot; T&amp;G plywood deck, carpet and pad</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., 1-1/2&quot; CT ceiling grid, 3-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 19/32&quot; T&amp;G plywood deck, carpet and pad</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 3-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 3/4&quot; floor topping, 1/8&quot; sound mat, carpet and pad</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 3-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 3/4&quot; floor topping, 1/8&quot; sound mat, 3/8&quot; engineered hardwood over underlayment</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 3-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 3/4&quot; floor topping, 1/8&quot; sound mat, 3/16&quot; LVT over underlayment</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 3-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 3/4&quot; floor topping, 1/8&quot; sound mat, 3/4&quot; floor topping, 3/8&quot; sound mat, 3/8&quot; engineered hardwood over underlayment</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 3-1/2&quot; FG insulation, 5/8&quot; Type C, 15/32&quot; plywood deck, 3/4&quot; floor topping, 1/8&quot; sound mat, 3/16&quot; LVT over underlayment</td>
</tr>
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**UL Design**

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>Acoustical Details</th>
<th>STC / IIC</th>
<th>Report #</th>
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</thead>
<tbody>
<tr>
<td><strong>M535</strong></td>
<td>5/8&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c.</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of Type X, face layer of 1/2&quot; Type C, 19/32&quot; plywood</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood</td>
<td>9-1/2&quot; I-joists at 24&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood, 3/4&quot; floor topping, 3/8&quot; sound mat, 3/8&quot; engineered hardwood</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood</td>
<td>9-1/2&quot; I-joists at 24&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood, 3/4&quot; floor topping, 3/8&quot; sound mat, 3/8&quot; engineered hardwood</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood, 3/4&quot; floor topping, 3/8&quot; sound mat, carpet and pad</td>
<td>9-1/2&quot; I-joists at 24&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood, 3/4&quot; floor topping, 3/8&quot; sound mat, 3/8&quot; engineered hardwood</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; CertainTeed Gypsum Panels</td>
<td>Nominal 2x10 wood joists at 16&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood, 3/4&quot; floor topping, 3/8&quot; sound mat, carpet and pad</td>
<td>9-1/2&quot; I-joists at 24&quot; o.c., RC at 12&quot; o.c., 9-1/2&quot;CT loose fill insulation, base layer of SilentFX QC, face layer of 1/2&quot; Type C, 19/32&quot; plywood, 3/4&quot; floor topping, 3/8&quot; sound mat, 3/16&quot; LVT over underlayment</td>
</tr>
</tbody>
</table>
WOOD JOIST FLOOR AND CEILINGS

1 Hour Fire Rating

**UL Design L562**

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Resilient channel at 16” o.c.
- Min. 18” wood trusses at 24” o.c.
- 15/32” plywood
- 3/4” floor topping

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC / IIC</th>
<th>Report #</th>
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</thead>
<tbody>
<tr>
<td>Type C</td>
<td>18” wood trusses at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation, 5/8” Type C, 15/32” plywood, 1” floor topping, 1/4” sound mat, carpet and pad</td>
<td>56 / 75</td>
<td>NGC 5019081 / NGC 7019107</td>
</tr>
<tr>
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<td>18” wood trusses at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation, 5/8” Type C, 15/32” plywood, 1” floor topping, 1/4” sound mat, 3/16” LVT over underlayment</td>
<td>56 / 56</td>
<td>NGC 5019083 / NGC 7019109</td>
</tr>
<tr>
<td></td>
<td>18” wood trusses at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation, 5/8” Type C, 15/32” plywood, 1” floor topping, 1/4” sound mat, 3/8” engineered hardwood over underlayment</td>
<td>56 / 54</td>
<td>NGC 5019084 / NGC 7019110</td>
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</tbody>
</table>

**UL Design M544**

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Resilient channel perpendicular to joists at 16” o.c.
- Min. 9-1/2” wood I-joists at 24” o.c.
- Min. 3-1/2” fiberglass insulation draped over RC
- 23/32” plywood

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC / IIC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type X</td>
<td>9-1/2” I-joists at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation draped over RC, two layers Type X, 23/32” plywood</td>
<td>50 / 43</td>
<td>NGC 5019080 / NGC 7019106</td>
</tr>
<tr>
<td></td>
<td>9-1/2” I-joists at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation draped over RC, two layers Type X, 23/32” plywood, 1” floor topping, 1/4” sound mat, carpet and pad</td>
<td>57 / 82</td>
<td>NGC 5019095 / NGC 7019125</td>
</tr>
<tr>
<td></td>
<td>9-1/2” I-joists at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation draped over RC, two layers Type X, 23/32” plywood, 1” floor topping, 1/4” sound mat, 3/16” LVT over underlayment</td>
<td>58 / 62</td>
<td>NGC 5019094 / NGC 7019124</td>
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<tr>
<td></td>
<td>9-1/2” I-joists at 24” o.c., RC at 16” o.c., 3-1/2” FG insulation draped over RC, two layers Type X, 23/32” plywood, 1” floor topping, 1/4” sound mat, 3/8” engineered hardwood over underlayment</td>
<td>59 / 61</td>
<td>NGC 5019093 / NGC 7019123</td>
</tr>
</tbody>
</table>

**UL Design M561**

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Nominal 2x8 wood joists at 16” o.c.
- 15/32” plywood

<table>
<thead>
<tr>
<th>Gypsum Panel Types</th>
<th>Acoustical Details</th>
<th>STC / IIC</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type X</td>
<td>2x8 wood joists at 16” o.c., 15/32” plywood, 1” floor topping, 1/4” sound mat</td>
<td>42</td>
<td>NGC 5021036</td>
</tr>
<tr>
<td>Type C</td>
<td>2x8 wood joists at 16” o.c., 15/32” plywood, 1” floor topping, 1/4” sound mat, 3/16” LVT over underlayment</td>
<td>42</td>
<td>NGC 5021035</td>
</tr>
<tr>
<td>SilentFX QuickCut</td>
<td>2x8 wood joists at 16” o.c., 15/32” plywood, 1” floor topping, 1/4” sound mat, carpet and pad</td>
<td>43 / 64</td>
<td>NGC 5021037 / NGC 7021046</td>
</tr>
<tr>
<td></td>
<td>2x8 wood joists at 16” o.c., 15/32” plywood, 1” floor topping, 1/4” sound mat, 3/8” engineered hardwood over underlayment</td>
<td>44</td>
<td>NGC 5021034</td>
</tr>
</tbody>
</table>
# Wood Joist Floor and Ceilings

## 2 Hour Fire Rating

### UL Design L505

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>5/8&quot; CertainTeed Gypsum Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resilient channel at 24&quot; o.c.</td>
</tr>
<tr>
<td></td>
<td>Min. 2x10 wood joists at 16&quot; o.c.</td>
</tr>
<tr>
<td></td>
<td>15/32&quot; plywood</td>
</tr>
<tr>
<td></td>
<td>19/32&quot; plywood</td>
</tr>
</tbody>
</table>

### UL Design L538

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>5/8&quot; CertainTeed Gypsum Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resilient channel at 24&quot; o.c.</td>
</tr>
<tr>
<td></td>
<td>Min. 9-1/2&quot; wood I-joists at 19.2&quot; o.c.</td>
</tr>
<tr>
<td></td>
<td>5/8&quot; plywood</td>
</tr>
</tbody>
</table>

### UL Design M500

<table>
<thead>
<tr>
<th>Fire System Details</th>
<th>5/8&quot; CertainTeed Gypsum Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resilient channel perpendicular to joists at 12&quot; o.c.</td>
</tr>
<tr>
<td></td>
<td>Min 12&quot; deep parallel chord wood trusses at 24&quot; o.c.</td>
</tr>
<tr>
<td></td>
<td>23&quot;32&quot; plywood</td>
</tr>
<tr>
<td></td>
<td>3/4&quot; floor topping</td>
</tr>
</tbody>
</table>

### Gypsum Panel Types

- Type C
ROOF-CEILING SYSTEMS

1 Hour Fire Rating

**UL Design** P538  
**Fire System Details**  
- 5/8" CertainTeed Gypsum Panels  
- Resilient channels perpendicular to trusses at 16" o.c.  
- Wood trusses at 24" o.c.  
- 15/32" plywood  
- Optional insulation  
- Optional ceiling damper

**Gypsum Panel Types**  
- Type C

2 Hour Fire Rating

**UL Design** P567  
**Fire System Details**  
- 5/8" CertainTeed Gypsum Panels  
- Resilient channels perpendicular to trusses at 16" o.c.  
- Min. 12" deep pre-fabricated light gauge steel trusses at 48" o.c.  
- Min. 1-1/2" metal roof deck panels  
- 1/2" gypsum panel  
- Optional insulation

**Gypsum Panel Types**  
- Type C
## COLUMNS AND BEAM PROTECTION

### 1 Hour Fire Rating

**UL Design X528**

**Fire System Details**
- Min. 1/2" combined thickness of CertainTeed Gypsum Panels
- Min. 1-5/8" 25 ga (18 mil) steel studs
- W10x49 column
- NO-COAT® or metal cornerbead

**Gypsum Panel Types**
- Type C
- Type X
- M2Tech Type X
- GlasRoc Interior Type X

### 2 Hour Fire Rating

**UL Design X528**

**Fire System Details**
- Min. 1-1/8" combined thickness of CertainTeed Gypsum Panels
- Min. 1-5/8" 25 ga (18 mil) steel studs
- W10x49 column
- NO-COAT® or metal cornerbead

**Gypsum Panel Types**
- Type X
- Type C
- M2Tech Type X
- GlasRoc Interior Type X
COLUMNS AND BEAM PROTECTION

2 Hour Fire Rating

UL Design N501

**Fire System Details**
- 5/8” CertainTeed Gypsum Panels
- Beam cage fabricated from 25 ga steel
- W8x24 steel beam
- Metal cornerbead

**Gypsum Panel Types**
- Type X
- M2Tech Type X
- Type C
- GlasRoc Interior Type X

3 Hour Fire Rating

UL Design X526

**Fire System Details**
- Min. 1-3/4” combined thickness of CertainTeed Gypsum Panels
- Min. 24 ga steel column cover
- TS4x4x0.188 tube steel column
- NO-COAT® or metal cornerbead

**Gypsum Panel Types**
- Type X
- Type C
- M2Tech Type X
- GlasRoc Interior Type X
## OTHER FIRE DETAILS

### 1-2 Hour Fire Rating

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Head of Wall System Details</th>
<th>Base of Wall System Details</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW-D-0633</td>
<td>5/8&quot; CertainTeed Gypsum Panels</td>
<td>5/8&quot; CertainTeed Gypsum Panels</td>
<td>• Based on UL Design</td>
</tr>
<tr>
<td>(1 or 2 Hr)</td>
<td>• Steel runners</td>
<td>• Steel runners</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Steel studs</td>
<td>• Steel studs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Drywall trim</td>
<td>• Drywall trim</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Flexible sealant</td>
<td>• Flexible sealant</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW-S-0013</td>
<td>• Based on UL Design</td>
</tr>
<tr>
<td>(1 or 2 Hr)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UL Design</th>
<th>Gypsum Panel Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-L-1042</td>
<td>• Based on UL Design</td>
</tr>
<tr>
<td>(1 or 2 Hr)</td>
<td></td>
</tr>
</tbody>
</table>

- Based on UL Design
OTHER FIRE DETAILS

1-2 Hour Fire Rating

**UL Design**

**W-L-1049**
(1 or 2 Hr)

**Base of Wall System Details**
- 5/8” CertainTeed Gypsum Panels
- Wood or steel studs
- Through penetrant
- Fire stop system

**Gypsum Panel Types**
- Based on UL Design

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**UL Design**

**W-L-2417**
(1 or 2 Hr)

**Base of Wall System Details**
- 1/2” and 1” CertainTeed Gypsum Panels
- Steel studs
- Through penetrant
- Fire stop system

**Gypsum Panel Types**
- Based on UL Design

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**UL Design**

**W-L-2356**
(2 Hr)

**Base of Wall System Details**
- 5/8” and 1” CertainTeed Gypsum Panels
- Steel studs
- Steel sleeve
- Through penetrant
- Fire stop system

**Gypsum Panel Types**
- Based on UL Design
CertainTeed provides innovative building products and systems for commercial, institutional and residential designs. With over 80 years of experience manufacturing and marketing in North America, CertainTeed Gypsum is committed to focusing on quality, service, and safety to provide a superior experience to its customers.

TEST STANDARDS
Fire resistance and sound tests are conducted in accordance with ASTM E119 (UL 263, CAN/ULC-S101) and ASTM E90, respectively, and no warranty is made other than conformance to the standard under which the assembly was tested. Minor discrepancies may exist in the values of ratings, attributable to changes in materials and standards, as well as differences between testing facilities.

Assemblies are listed as “combustible” (wood framing) and “noncombustible” (concrete and/or steel construction).

COMBUSTIBLE ASSEMBLIES
These include all wood stud walls, wood joist or truss ceilings and floors consisting of tongue-and-groove, plywood, or OSB sub-flooring and finish flooring or a poured gypsum floor underlayment over wood structural panel sub-flooring. Floor assembly may be used over the wood joists with ceilings as detailed in GA and UL/cUL/ULC references.

NONCOMBUSTIBLE ASSEMBLIES
These include steel studs, bar joist ceilings with poured concrete floors over metal lath or steel. Also included are steel beams and steel columns. Ceilings for all 1-hour, 1 1/2-hour, and 2-hour noncombustible floor and ceiling assemblies with 2” (51 mm) or 2 1/2” (63.5 mm) concrete floor or metal lath over steel bar joists, unless otherwise specified, may be directly attached or suspended as detailed in GA and UL/cUL/ULC references.

FIRE RESISTANCE
CertainTeed Type X and Type C, M2Tech® Type X, SilentFX® QuickCut™ Type X, GlasRoc® Tile Backer Type X, GlasRoc Shaftliner Type X, GlasRoc Interior Type X and GlasRoc Sheathing Type X products are Classified by Underwriters Laboratories Inc. and Listed by Underwriters Laboratories of Canada and carries the UL/cUL/ULC Label for 1-, 2-, 3- and 4-hour Fire Resistance in various designs. Underwriters Laboratories Inc. tests have proven that joint finishing is not required for the rating in certain assemblies using Type X and Type C products. For fire

SURFACE BURNING CHARACTERISTICS
CertainTeed® Gypsum Panels have Flame Spread ratings of 0 to 15 and Smoke Developed ratings of 0 to 5, and GlasRoc® products have Flame Spread Ratings of 0 and Smoke Developed Ratings of 0 in accordance with ASTM E84 (UL 723, CAN/ULC-S102).

SOUND CHARACTERISTICS
The degree to which assemblies block the passage of sound is measured by Sound Transmission Class (STC) per ASTM E90 and E413, which is a single figure rating derived from the sound transmission loss values over a range of sound frequencies. All sound-rated assemblies require acoustical sealant at assembly perimeters and penetrations, and other locations where sound leaks may develop. For sound characteristics, refer to the Gypsum Association Fire Resistance Design Manual GA-600.

STORAGE
Gypsum panels must be stored in an area that protects it from adverse weather conditions, condensation and other forms of moisture and direct sunlight. Panels should be neatly stacked flat with care taken to prevent sagging or damage to edges, ends, and surfaces. Storing panels lengthwise leaning against the framing is not recommended. Panels should be carried, not dragged, to place of installation to prevent damaging finished edges. Refer to “Handling and Storage of Gypsum Panel Products” GA-801.

MORE INFORMATION
Consult the Gypsum Association publication “Recommended Specifications for the Application and Finishing of Gypsum Panel,” GA-216, for detailed application and finishing procedures. For full details of fire and sound ratings, consult test references listed for system assemblies.

Characteristics, properties or performance of materials or systems manufactured by CertainTeed herein described are derived from data obtained under controlled test conditions. CertainTeed makes no warranties, express or implied, as to their characteristics, properties or performance under any variations from such conditions in actual construction. CertainTeed assumes no responsibility for the effects of structural movement. "™" CertainTeed is a trademark CertainTeed Corporation. All other trademarks are the property of its affiliates and related companies. NOTICE: The information in this document is subject to change without notice. CertainTeed assumes no responsibility for any errors that may inadvertently appear in this document.
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