

G-P Gypsum
a Georgia-Pacific company



Product Selection Guide and Architectural Assemblies



**Mold
and Moisture
Resistant
PAPERLESS
SOLUTIONS**

The G-P Gypsum Product Line



G-P Gypsum constantly monitors and controls the manufacturing process to ensure gypsum product reliability and consistency. To support this commitment to customer satisfaction, G-P Gypsum warrants its gypsum products to be free of manufacturing defects. Products are certified through testing procedures with established designations for:

ASTM Product Standards
ASTM Application Standards
CSA Standards

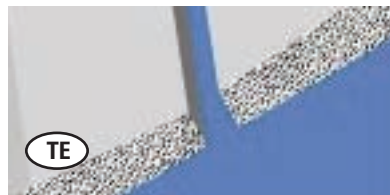
Additional testing has been performed on certain products indicated as:

UL Classified **CTC Tested**
ULC Classified **TPI Tested**
WHI Classified **FM**

Other classifications, designations and testing, which may have been performed on particular products, have been indicated where applicable in this directory.

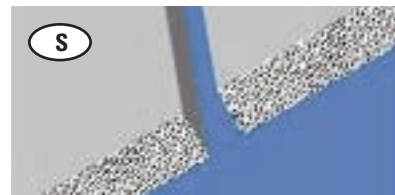
** The information contained in this directory is intended to be informative and accurate. However, it is to be used as a technical guideline and does not replace the judgments and designs of a qualified architect and/or engineer. G-P Gypsum is not responsible for product damage or defects resulting from incorrect application, storage, handling or abuse.*

Gypsum Board Edge Details



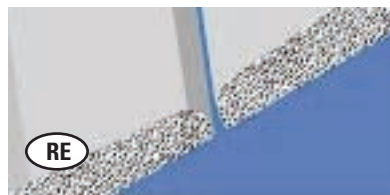
Tapered

The tapered edge was originally called the "recessed edge." This taper allows space for tape and joint treatment to be applied, so the completed job will be flat, smooth and monolithic. Width of taper is about 2".



Square

Square edge was the original wallboard edge. Initially designed to be a base with a final covering such as wallpaper, paneling or tile. Now used primarily as sheathing and backer board.



Tapered with Round Edge

Round edge is designed to reduce the beading and ridging problems commonly associated with standard-type gypsum board. This edge formation provides a stronger joint when ToughRock® Setting Compound is used for all joint finishing steps.



Double Beveled

ToughRock® Shaftliner and DensGlass Ultra™ Shaftliner panels are produced with double beveled edges to allow a quick, easy fit into the supporting grooves of metal shaftwall, stairwell and area separation walls.

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Note: The data relating to fire and sound-tested assemblies is based on the characteristics, properties and performance of materials and systems obtained under controlled test conditions as set forth under the appropriate ASTM standard, such as E 119 (fire), E 90 (sound) or E 72 (structural).

For fire safety information, visit www.gp.com/gypsum/firesafety

ToughRock® Gypsum Board

Product	Dimensions			Edge					Standard		
	TH	W	L	TE	S	RE	B	DB	ASTM	FEDERAL	CSA
ToughRock® Gypsum Board – For interior walls and ceilings. Accommodates wide range of decorative treatments.	1/4" 3/8" 1/2"	4' 4' 4'	8' to 12' 8' to 12' 8' to 12'	• • •	• • •				C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M
ToughRock Fireguard™ – Noncombustible gypsum core. Interior wall, floor and ceiling applications. Can be used in fire-rated assemblies. Meets basic Type X requirements.*	5/8"	4'	8' to 16'	•	•	•	•		C 36 Type X C 1396	SS-L-30d Type III Grade X	A82.27 M
ToughRock Fireguard C – Use as described above. Appropriate for commercial applications requiring extended fire endurance ratings.	1/2" 5/8"	4' 4'	8' to 16' 8' to 16'	• •	• •	• •	• •		C 36 Type X Premium C 1396	SS-L-30d Type III Grade R	A82.27 M
ToughRock Moisture-Guard® (Greenboard) – Water-resistant gypsum core and paper surfacing.	1/2"	4'	8', 10', 12'	•					C 630 C 1396	SS-L-30d Type VII Grade W	A82.27 M
ToughRock Fireguard Moisture-Guard – Use as described above. Available in 1/2" and 5/8" with fire-resistant Type X core.	1/2" 5/8"	4' 4'	8' to 12' 8' to 12'	• •					C 630 Type X C 1396	SS-L-30d Type VII Grade W, X	A82.27 M

ToughRock® Specialty Products

Product	Dimensions			Edge					Standard		
	TH	W	L	TE	S	RE	B	DB	ASTM	FEDERAL	CSA
ToughRock Fireguard Shaftliner – For use with metal stud shaftwall, stairwell or area separation wall systems. Type X fire-resistant core. Beveled edges facilitate fit into metal components.	1"	23-7/8"	8' to 12'					•	C 442 C 1396	SS-L-30d Type IV	—
ToughRock 54"-Wide Gypsum Board – For interior walls and ceilings. Accommodates wide range of decorative treatments. Eliminates filler strip.*	1/2" 5/8"	54" 54"	8' to 12' 8' to 12'	• •					C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M
ToughRock CD® Ceiling Board – Specially formulated core and paper ceiling board designed for water-based, textured ceiling applications. Sag resistant.	1/2"	4'	12'	•					C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M
ToughRock MH CD Ceiling Board – Ceiling board with specially formulated core and paper designed for water-based textured ceiling in manufactured housing. Sag resistant.	1/2"	4'	12'	•					C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M
ToughRock MH Gypsum Board – For interior walls and ceilings in manufactured housing.	1/2"	4'	8' to 12'	•	•	•			C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M
PreDec® Gypsum Board – Designed to receive decorative finish by other manufacturers. For use in manufactured housing.	5/16"	4'	Cut-to-size		•				C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M
ToughRock Soffit Board – Soffit board with treated paper face bonded to specially formulated core designed to resist sag and moisture. For exterior use such as outdoor building soffits, carports and outdoor applications where there is no direct exposure to weather.	1/2" 5/8"	4' 4'	8', 9', 10' 8', 9', 10'	• •					C 931 C 1396		A82.27 M
ToughRock Sound Deadening Board – Use with 1/2" or 5/8" ToughRock Fireguard to meet requirements for sound and fire resistance.	1/4"	4'	8'		•				C 442 C 1396	SS-L-30d Type IV Grade R	A82.27 M
ToughRock FlexRoc® Gypsum Board – High flex gypsum board designed for inside and outside radius curve installations including archways, columns, curved columns, curved partition walls and curved stairways.	1/4"	4'	8'	•					C 36 C 1396	SS-L-30d Type III Grade R	A82.27 M9

Note: Some products are not available at all plants or locations. Call sales office listed on back cover for specific product availability.

*For fire safety information, visit www.gp.com/gypsum/firesafety

Dens™ Technology Glass Mat Gypsum Boards

Product	Dimensions			Edge					Standard		
	TH	W	L	TE	S	RE	B	DB	ASTM	FEDERAL	CSA
DensArmor Plus™ Interior Panel – Glass mat gypsum interior panel consisting of moisture-resistant gypsum core with coated glass mat noncombustible facings front and back. Offers superior resistance to moisture and mold.* DensArmor Plus Fireguard (5/8") is UL Classified.	1/2" 5/8"	4' 4'	8' to 12' 8' to 12'	• •					Applicable Sections of C 630 and C 1177	—	A82.27 M
DensArmor Plus Fireguard™ C Interior Panel – Noncombustible Fireguard C gypsum core with glass mat facings on front and back. Use as described above. Appropriate for commercial applications requiring extended fire endurance ratings and for added protection against mold growth in the wall cavity. UL Classified.	1/2"	4'	8' to 12'	•					Applicable Sections of C 630, C 1177 and C 1396	—	A82.27 M
DensGlass Silver™ – Glass mat exterior residential structural wall sheathing. Provides thermal barrier between siding and the framing. Resists moisture and mold growth.* Meets applicable sections of ASTM C 79.	1/2"	4'	8', 9'		•				C 1177		
DensShield® Tile Backer – Tile backer board for installing tile on interior walls, ceilings, floors and counter-tops. Superior moisture protection for permanent tile installations. Easily installed, lightweight and outperforms cement board. Lifetime limited warranty on residential tile installation when properly applied over DensShield tile backer.**	1/4" 1/2" 1/2" 1/2"	4' 32" 4' 4'	4' 5' 8' 5'		• • • •				C 1178	—	—
DensShield Fireguard Tile Backer – Use as described above. Patented tile backer with noncombustible core. Can be used in fire-rated assemblies. Meets ASTM C 36 Type X fire resistance. UL Classified. Lifetime limited warranty.**	5/8"	4'	8'		•				C 1178 Type X	—	—
DensDeck® Roof Board – Superior, nonstructural thermal barrier roof board for commercial roof and re-roof applications. Glass mat facings with water-resistant treated core.	1/4" 1/2" 1/2"	4' 4' 4'	8' 4' 8'		• • •				C 1177	—	—
DensDeck Prime® Roof Board – Premium, non-structural roof board engineered with a proprietary, non asphaltic coating to enhance bonding in commercial roofing systems. Glass mat facings with water-resistant, treated core.	1/4" 1/4" 1/2" 1/2"	4' 4' 4' 4'	4' 8' 4' 8'		• • • •				C 1177	—	—
DensDeck DuraGuard® – A new, more enhanced roof board incorporating a low perm, integrated coating for self-adhesive and built up roofing systems with all the features of DensDeck roof board.	1/4" 1/4" 1/2" 1/2"	4' 4' 4' 4'	4' 8' 4' 8'		• • • •				C 1177	—	—
DensDeck, DensDeck Prime and DensDeck DuraGuard Fireguard Roof Board – Use as described above. Can replace 5/8" Type X gypsum board under prefix "P" in UL Fire Resistance Directory. Qualifies for numerous 1- and 2-hour fire-rated constructions.	5/8" 5/8"	4' 4'	4' 8'		• •				C 1177 C 1177	— —	— —
DensGlass Gold® Exterior Sheathing – Glass mat exterior substrate panel for walls, ceilings and soffits. Ideal for EIFS, brick and other exterior cladding applications.	1/2"	4'	8', 9', 10'		•				C 1177	—	—
DensGlass Gold Fireguard Exterior Sheathing – Use as described above. Can replace 5/8" Type X sheathing in fire-rated wall assemblies. Qualifies for numerous 1- and 2-hour fire-rated assemblies. UL Classified.	5/8"	4'	8', 9', 10'		•				C 1177 Type X	—	—
DensGlass Ultra™ Shaftliner Panels – For use with metal stud shaftwall, stairwell or area separation wall systems. Glass mat facings increase weather resistance and resist the growth of mold.* Patented product with moisture-resistant, treated, Type X core. Beveled edges facilitate fit into metal components.	1"	23-7/8"	8' to 12'					•	C 442	—	—

Note: Some products are not available at all plants or locations. Call sales office listed on back cover for specific product availability.

*When tested, as manufactured, per ASTM D 3273.

**For complete warranty details, visit www.gypsum.com or call 1-800-225-6119.

Veneer Board

Product	Dimensions			Edge					Standard		
	TH	W	L	TE	S	RE	B	DB	ASTM	FEDERAL	CSA
ToughRock® Veneer Plaster Base (Blue Board) – Gypsum wallboard with high-suction face paper. Use in conjunction with DensArmor Plus Cote Interior Veneer Plaster.	1/2"	4'	8' to 16'	•					C 588 C 1396	SS-L-30d Type VI Grade R	A82.27
ToughRock Fireguard™ Veneer Plaster Base – Use as described above. Increases fire rating to same level as ToughRock Fireguard gypsum board. UL Classified.	5/8"	4'	8' to 16'	•					C 588 C 1396 Type X	SS-L-30d Type VI Grade X	A82.27 M

Textures and Plaster

Product	Package Size	Coverage	Standards
			ASTM
DensArmor® Cote Interior Veneer Plaster – A one-coat plaster application designed for commercial or residential use on walls or ceilings to resist abrasion or damage while maintaining moisture and mold resistance (when tested, as manufactured, per ASTM D 3273). Ideal for use over DensArmor Plus™ Interior panels for additional mold resistance.	50-lb. bags	150 sq. ft. per bag	C 587
ToughRock Ceiling Textures/Vermiculite – For spray application only. As decorative finish on gypsum wallboard or concrete ceilings. Not recommended for high-moisture areas such as bathrooms.	40-lb. bags	Varies from 300 to 400 sq. ft. per bag	
PearlCote™ Interior Veneer Plaster – A one-coat plaster application designed for commercial or residential use on walls or ceilings to resist abrasion or damage while maintaining moisture and mold resistance (when tested, as manufactured, per ASTM D 3273). Ideal for use over DensArmor Plus Interior panels for additional mold resistance.	50-lb. bags	150 sq. ft. per bag	C 587
ToughRock Regency Ceiling Textures/Polystyrene – For spray application only. A high-quality aggregate finish with superior ceiling coverage. For use with gypsum board or concrete ceilings. Not recommended for high-moisture areas such as bathrooms.	35-lb. bags 40-lb. bags 50-lb. bags	250 sq. ft. per bag 285 sq. ft. per bag 350 sq. ft. per bag	
ToughRock Wall and Ceiling Texture – A decorative spray application for both walls and ceilings. Commonly used for splatter application, knock-down and orange peel type textures.	50-lb. bags	Up to 2,000 sq. ft. per bag approximately 400 sq. ft. per bag for other applications	

Joint Treatment Systems

Product	Package Size	Coverage	Standards
			ASTM
ToughRock All-Purpose Powder Compound – Use for bedding tape, finishing joints, filling corner bead, spotting, skim coating and texturing.	25-lb. bags	25-lbs. per 400 sq. ft. for joints; 15-50 lbs. per 1,000 sq. ft. for texturing	C 475
ToughRock Setting Compounds – Use for all bedding and topcoats. Allows complete taping and finishing in one day. Recommended for cold weather and slow drying conditions. Hardens by setting, not drying. Available 45- and 90-minute. Ideal products for patch and repair jobs.	33-lb. bags 15-kg. bags	1,800 sq. ft. per 33-lb. bag	C 475
ToughRock Sandable Setting Compounds – Same use as ToughRock Setting Compounds. Applies and sands easier, shrinks less than ToughRock Setting Compounds. Available in 20-, 45- and 90-minute.	18-lb. bags 24-lb. bags 11-kg. bags	1,000 sq. ft. per 18-lb. bag 1,300 sq. ft. per 24-lb. bag	C 475
ToughRock Ready-Mix All-Purpose Joint Compound – Pre-mixed, ready to use for bedding tape, finishing joints and skim coating and texturing.	12-lb. pails 61.7-lb. pails 48-lb. ctn. 20-kg. pails 28-kg. pails 27-kg. ctn.	61.7 lbs. per 500 sq. ft.	C 475

Joint Treatment Systems *continued next page*

Note: Some products are not available at all plants or locations. Call sales office listed on back cover for specific product availability.

Joint Treatment Systems continued from previous page

Product	Package Size	Coverage	Standards
			ASTM
ToughRock® Lightweight Joint Compound – Pre-mixed, ready to use for finishing joints and cornerbead. Shrinks less and is easier to sand than All Purpose.	4.5-gallon cartons 1-gallon pail 17-liter cartons	4.5 gallons per 500 sq. ft.	C 475
ToughRock Semi-Light Joint Compound – Pre-mixed, ready to use for bedding tape, finishing joints, cornerbead and skim coating.	4.5-gallon cartons and pails 23-kg. cartons	4.5 gallons per 500 sq. ft.	C 475
ToughRock Ready-Mix Topping Compound – Pre-mixed and ready to use. Finish applications only. Very white in color, easy to sand.	61.7-lb. pails 48-lb. cartons	40 lbs. per 500 sq. ft.	C 475
ToughRock Fire-Halt® Sealant – A noncombustible fast-setting compound for use as a firestop sealant for penetrations such as pipes, conduit and telephone cables in fire-resistive assemblies; and as filler for the flutes in steel decks. Listed with Warnock Hersey International.	15-lb. pails 33-lb. bags	1 lb. powder mixed will fill 30 cubic inches	C 475
ToughRock™ Tape – Special 2-1/16" wide paper tape. Reinforces gypsum joints. Pre-creased for ease of application.	75-ft. rolls 250-ft. rolls 500-ft. rolls	400' per 1,000 sq. ft. of gypsum board	C 475

Abbreviations

CTC	Commercial Testing Co.	OSU	Ohio State University
DRC	Domtar Research Centre	PCA	Portland Cement Association
FM	Factory Mutual Research Corporation	RAL	Riverbank Acoustical Laboratories
GA	Gypsum Association	STC	Sound Transmission Class
G&H	Geiger and Hamme	SWRI	Southwest Research Institute
IIC	Impact Insulation Class	UC	University of California
KAL	Kodaras Acoustical Laboratories	UL	Underwriters Laboratories Inc.
NBS	National Bureau of Standards	ULC	Underwriters' Laboratories of Canada
OC	Owens Corning	WEAL	Western Electro Acoustical Laboratory, Inc.
OR	Ohio Research Corporation	WHI	Warnock Hersey International (ITS)

The following information in this catalog for wall partitions/wood studs, wall partitions/metal studs, and floor/ceiling assemblies has been organized for ease of reference. Installation details and technical data are located adjacent to each other.

“Est.” in the following information means estimated results. Check with local code jurisdictions or design authority before using or including in plans. For fire safety information, visit www.gp.com/gypsum/firesafety.

Wood-Framed Wall Assemblies

45-Min. Fire Rating

Test Reference: UL U317



Partition Thickness: 4-5/8", Weight per Sq. Ft.: 6.0

1/2" ToughRock® Fireguard™ C gypsum board applied parallel or at right angles to each side of 2 x 4 wood studs 16" o.c. with 1-5/8" cement coated nails spaced 7" o.c. Joints staggered.

1-Hour Fire Rating

Test Reference: UL U305, ULC W301, GA WP 3605



30-34 STC Sound Trans.

Test Reference: OR 64-8

Partition Thickness: 4-7/8", Weight per Sq. Ft.: 7.0

5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to each side of 2 x 4 wood studs 16" o.c. with 1-7/8" 6d coated nails spaced 7" o.c. Joints staggered.

1-Hour Fire Rating

Test Reference: FM WP90, GA WP 3520



35-39 STC Sound Trans.

Test Reference: G&H NG-246FT

Partition Thickness: 4-7/8", Weight per Sq. Ft.: 7.0

5/8" ToughRock Fireguard* gypsum board or 5/8" DensArmor Plus™ Fireguard gypsum board applied parallel to each side of 2 x 4 wood studs 24" o.c. with 1-7/8" 6d coated nails 7" o.c. at joints and top and bottom plates and 3/8" beads of adhesive at intermediate studs. Joints staggered.

1-Hour Fire Rating

Test Reference: UC, 1-12-66, GA WP 3620



30-34 STC Sound Trans.

Test Reference: G&H IBI-35FT

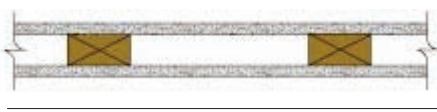
Partition Thickness: 4-7/8", Weight per Sq. Ft.: 7.0

Sound Tested without gypsum veneer plaster

1/2" veneer base Type X applied at right angles to each side of 2 x 4 wood studs 16" o.c. with 1-3/4" 5d etched nails 8" o.c. 1/16" Cameo Veneer Plaster applied over each face. Vertical joints staggered 16" and horizontal joints 12" on opposite sides.

1-Hour Fire Rating

Test Reference: UL U338, GA WP 3640



Partition Thickness: 2-7/8", Weight per Sq. Ft.: 7.0

5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to each side of 2 x 3 or 2 x 4 wood studs, turned flatwise 24" o.c. with 1-7/8" 6d cement coated nails 7" o.c. (non load-bearing)

1-Hour Fire Rating

Test Reference: UL U312, ULC W300, GA WP 3340



45 STC Sound Trans.

Test Reference: G&H 27-FT





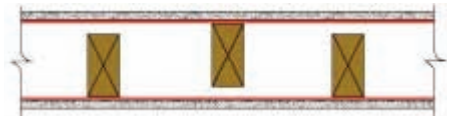
Partition Thickness: 5", Weight per Sq. Ft.: 8.0

Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to each side of 2 x 4 wood studs 16" o.c. with 1-7/8" 4d coated nails 12" o.c.

Face Layer: 1/2" ToughRock Fireguard C gypsum board on each side applied parallel to studs with 1/2" beads of adhesive 16" o.c. and 1-7/8" 6d coated nails 6" o.c. at top and bottom plates only. Stagger base layer joints 16" o.c. each side. Stagger face layer joints 24" o.c. from base layer joints.

*For fire safety information, visit www.gp.com/gypsum/firesafety

Wood-Framed Wall Assemblies continued

<p>1-Hour Fire Rating Test Reference: UL U312, ULC W300</p> 	<p>47 STC Sound Trans. Test Reference: G&H 28-FT Partition Thickness: 5-1/4", Weight per Sq. Ft.: 8.3 Base Layer: 1/4" ToughRock® Sound Deadening Board applied parallel to each side of 2 x 4 wood studs 16" o.c. with 1-1/2" 4d coated nails 12" o.c. Face Layer: 5/8" ToughRock Fireguard™* gypsum board on each side applied parallel to studs with 7/8" beads of adhesive 16" o.c. and 1-7/8" 6d coated nails 6" o.c. at top and bottom plates only. Stagger base layer joints 16" o.c. each side. Stagger face layer joints 24" o.c. from base layer joints.</p>
<p>1-Hour Fire Rating Test Reference: UL U312, ULC W300</p> 	<p>50-54 STC Sound Trans. Test Reference: G&H 35-FT Partition Thickness: 5-1/4", Weight per Sq. Ft.: 8.3 Sound Tested cavity filled with 2" glass fiber insulation, friction fit Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to each side of 2 x 4 wood studs 16" o.c. with 1-1/2" 4d coated nails 12" o.c. Face Layer: 5/8" ToughRock Fireguard* gypsum board on each side applied parallel to studs with 7/8" beads of adhesive 16" o.c. and 1-7/8" 6d coated nails 6" o.c. at top and bottom plates only. Stagger base layer joints 16" o.c. each side. Stagger face layer joints 24" o.c. from base layer joints.</p>
<p>1-Hour Fire Rating Test Reference: OSU T-3127</p> 	<p>50-54 STC Sound Trans. Test Reference: RAL TL77-138 Partition Thickness: 5-1/4", Weight per Sq. Ft.: 7.0 Sound Tested with 3-1/2" glass fiber insulation 5/8" ToughRock Fireguard* board applied parallel to resilient channels 24" o.c. with 1" Type S drywall screws at edges 6" o.c. and center row 12" o.c. at intermediate studs. End joints back-blocked with resilient channels. Resilient channels attached at right angles to 2 x 4 wood studs 16" o.c. with 1-7/8" 6d coated nails. 1/2" x 3" gypsum board filler strip attached to plate at floor line with 6d nails 16" o.c. 1-1/2" glass fiber 0.8 pcf attached to studs in stud space with 1/2" long staples. On opposite side, one layer 5/8" ToughRock Fireguard* gypsum board applied at right angles to studs with 6d nails, 8" o.c. Stagger end joints 48" o.c. each side.</p>
<p>1-Hour Fire Rating Test Reference: UL U305, ULC W301, GA WP 5515</p> 	<p>40-44 STC Sound Trans. Test Reference: Est. Partition Thickness: 7-3/4", Weight per Sq. Ft.: 8.0 5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to each side of 2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2 x 6 wood plates with 1-7/8" 6d coated nails 7" o.c. Wallboard nailed to top and bottom plates 7" o.c. Stagger joints each side.</p>
<p>1-Hour Fire Rating Test Reference: UL U312, ULC W300</p> 	<p>45-49 STC Sound Trans. Test Reference: G&H 29-FT Partition Thickness: 8", Weight per Sq. Ft.: 8.8 Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to each side of 2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2 x 6 wood plates with 1-1/2" 4d coated nails 12" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board on each side applied parallel to studs with 1/2" beads of adhesive 16" o.c. and 1-7/8" 6d coated nails 6" o.c. at top and bottom plates only. Stagger base layer joints 16" o.c. each side. Stagger face layer joints 24" o.c. from base layer joints.</p>

*For fire safety information, visit www.gp.com/gypsum/firesafety

Wood-Framed Wall Assemblies continued

1-Hour Fire Rating

Test Reference: UL U312, ULC W300



50-55 STC Sound Trans.

Test Reference: G&H 30-FT

Partition Thickness: 8", Weight per Sq. Ft.: 8.8

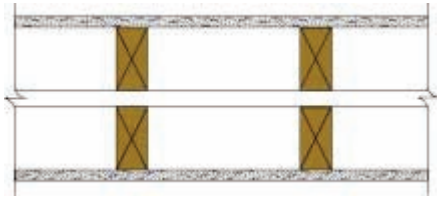
Sound Tested with 2" glass fiber insulation in stud cavity

Base Layer: 1/4" ToughRock® Sound Deadening Board applied parallel to each side of 2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2 x 6 wood plates with 1-1/2" 4d coated nails 12" o.c.

Face Layer: 1/2" ToughRock Fireguard™ C gypsum board applied parallel to studs with 1/2" beads of adhesive 16" o.c. and 1-7/8" 6d coated nails 6" o.c. at top and bottom plates only. Stagger base layer joints 16" o.c. each side. Stagger face layer joints 24" o.c. from base layer joints.

1-Hour Fire Rating

Test Reference: UL U305, ULC W301, GA WP 5512



45-49 STC Sound Trans.

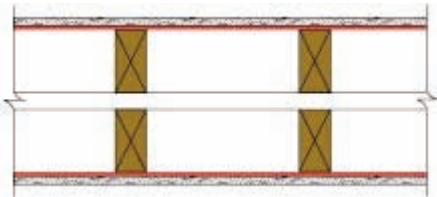
Test Reference: Est.

Partition Thickness: 9-1/2", Weight per Sq. Ft.: 8.0

5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to each side of double row of 2 x 4 wood studs 16" o.c. on separate plates 1" apart with 1-7/8" 6d coated nails 7" o.c. Wallboard nailed to top and bottom plates 7" o.c. Stagger joints each side.

1-Hour Fire Rating

Test Reference: UL U312, ULC W300



50-55 STC Sound Trans.

Test Reference: G&H 31-FT

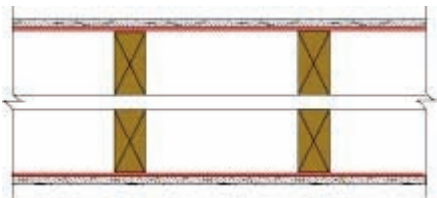
Partition Thickness: 9-3/4", Weight per Sq. Ft.: 9.2

Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel using 1-1/2" 4d coated nails 12" o.c. to each side of double row of 2 x 4 wood studs 16" o.c. and minimum 1-1/4" apart.

Face Layer: 1/2" ToughRock Fireguard C gypsum board laminated to base layers parallel to studs with 3/8" ribbons of adhesive 16" o.c. and 1-3/4" 5d coated nails 16" o.c. to top and bottom plates. 1-1/2" 4d finish nails at 45° angle 16" o.c. horizontally, 24" o.c. vertically. Stagger base layer joints 16" o.c. and face layer joints 24" o.c. each layer and side.

1-Hour Fire Rating

Test Reference: UL U312, ULC W300



55-59 STC Sound Trans.

Test Reference: G&H 32-FT

Partition Thickness: 10", Weight per Sq. Ft.: 9.0

Sound Tested with 11/2" glass fiber insulation in stud space

Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel using 1-1/2" 4d coated nails 12" o.c. to each side of double row of 2 x 4 wood studs 16" o.c. and minimum 1-1/4" apart.

Face Layer: 1/2" ToughRock Fireguard C gypsum board laminated to base layers parallel to studs with 3/8" ribbons of adhesive 16" o.c. and 1-3/4" 5d coated nails 16" o.c. to top and bottom plates. 1-1/2" 4d finish nails at 45° angle 16" o.c. horizontally, 24" o.c. vertically. Stagger base layer joints 16" o.c. and face layer joints 24" o.c. each layer and side.

2-Hour Fire Rating

Test Reference: UL U301



40-44 STC Sound Trans.

Test Reference: NGC-2363

Partition Thickness: 6-1/8", Weight per Sq. Ft.: 12.0

Sound Tested with studs 16" o.c. and with nails for base layer spaced 6" o.c.

Base Layer: 5/8" ToughRock Fireguard gypsum board applied vertically or at right angles using 1-7/8" 6d coated nails 6" o.c. to each side of 2 x 4 wood studs 24" o.c.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied vertically or at right angles to studs over base layer with 2-3/8" 8d coated nails 8" o.c. Stagger joints 24" o.c. each layer and side.

*For fire safety information, visit www.gp.com/gypsum/firesafety

Wood-Framed Wall Assemblies continued

2-Hour Fire Rating

Test Reference: FM WP 360, GA WP 3910



50-54 STC Sound Trans.

Test Reference: NGC-2377

Partition Thickness: 8", Weight per Sq. Ft.: 13.0

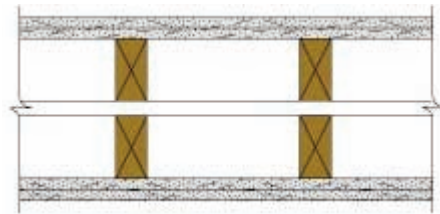
Sound Tested with nails for base layer spaced 6" o.c.

Base Layer: 5/8" ToughRock® Fireguard™ gypsum board applied at right angles to each side of 2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2 x 6 wood plates with 7/8" 6d coated nails 24" o.c.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied at right angles to studs with 2-3/8" 8d coated nails 8" o.c. Stagger vertical joints 16" o.c. each layer and side.

2-Hour Fire Rating

Test Reference: FM WP 360, GA WP 3820



55-59 STC Sound Trans.

Test Reference: NGC-3056

Partition Thickness: 10-3/4", Weight per Sq. Ft.: 13.0

Sound Tested with 3-1/2" glass fiber insulation stapled to studs in stud spaces on one side.

Base Layer: 5/8" ToughRock Fireguard gypsum board applied at right angles to each side of double row of 2 x 4 wood studs 16" o.c. on separate plates 1" apart with 1-7/8" 6d coated nails 24" o.c.

Face Layer: 5/8" ToughRock Fireguard gypsum board or 5/8" DensShield® Fireguard Tile Backer applied at right angles to each side with 2-3/8" 8d coated nails 8" o.c. Stagger vertical joints 16" o.c. each layer and side.

Steel-Framed Wall Assemblies

1-Hour Fire Rating

Test Reference: UL U448, ULC W412



45-49 STC Sound Trans.

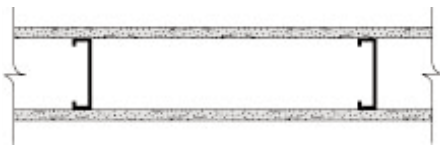
Test Reference: RAL TL69-42

Partition Thickness: 3-1/2", Weight per Sq. Ft.: 5.0

1/2" ToughRock Fireguard C gypsum board applied parallel to each side of 2-1/2" steel studs 24" o.c. with 1" Type S drywall screws 8" o.c. at vertical joints and 12" o.c. at intermediate studs. 1-1/2" mineral fiber insulation, stapled to board in stud space. Joints staggered.

1-Hour Fire Rating

Test Reference: UL U465, ULC W415, GA WP 1081



45-49 STC Sound Trans.

Test Reference: RAL TL99-103

Partition Thickness: 4-7/8", Weight per Sq. Ft.: 6.0

Sound Tested with 3" mineral fiber, 2.5 pcf, in stud space.

5/8" ToughRock Fireguard* gypsum board applied vertically to each side of 3-5/8" steel studs 24" o.c. with 1" Type S drywall screws 8" o.c. at edges and 12" o.c. at intermediate studs.

1-Hour Fire Rating

Test Reference: UC 12-28-65, GA WP 1090



45-49 STC Sound Trans.

Test Reference: ACI 7-115 2019c



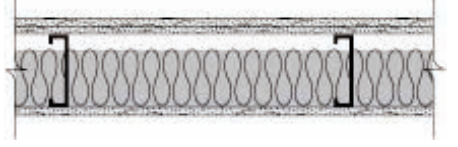

Partition Thickness: 3-1/8", Weight per Sq. Ft.: 7.0

Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to each side of 1-5/8" steel studs 24" o.c. with 1" Type S drywall screws 24" o.c. at vertical joints and 36" o.c. at intermediate studs.

Face Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side with 1-5/8" Type S drywall screws 12" o.c. Stagger joints.

*For fire safety information, visit www.gp.com/gypsum/firesafety

Steel-Framed Wall Assemblies continued

<p>1-Hour Fire Rating Test Reference: UL U410, ULC W400, GA WP 1050</p> 	<p>50-54 STC Sound Trans. Test Reference: G&H BW-17FT Partition Thickness: 4", Weight per Sq. Ft.: 7.0 Sound Tested with 2" glass fiber insulation, friction fit Base Layer: 1/4" ToughRock® Sound Deadening Board applied parallel to each side of 2-1/2" steel studs 24" o.c. with 1" Type S drywall screws 12" o.c. Face Layer: 1/2" ToughRock Fireguard™ C gypsum board applied parallel to each side with 3/4" beads of laminating compound 12" o.c. to full field of face layer and 1-3/8" Type S drywall screws 8" o.c. at floor and ceiling runners only. Stagger joints.</p>
<p>1-Hour Fire Rating Test Reference: FM WP 152-1, GA WP 1015</p> 	<p>55-59 STC Sound Trans. Test Reference: CK 684-14 Partition Thickness: 4-1/4", Weight per Sq. Ft.: 8.0 Sound Tested with 1-1/2" mineral fiber insulation, 3.0 pcf, friction fit in stud space Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to each side of 2-1/2" steel studs 24" o.c. with 1" Type S drywall screws 12" o.c. Face Layer: 5/8" ToughRock Fireguard* gypsum board applied parallel to each side with 1-1/4" Type S drywall screws 12" o.c. Stagger joints.</p>
<p>1-Hour Fire Rating Test Reference: WHI 495-0614, GA WP 1023</p> 	<p>50-54 STC Sound Trans. Test Reference: RAL TL88-54 Partition Thickness: 5-1/8", Weight per Sq. Ft.: 7.0 1/2" ToughRock Fireguard C gypsum board applied at right angles to one side of 3-5/8" steel studs 24" o.c. with 1" Type S drywall screws 8" o.c. to vertical joints and 12" o.c. to intermediate studs. Studs attached to top and bottom runner with Type S pan head screws. Opposite Side: 1/2" ToughRock Fireguard C gypsum board applied at right angles to studs with 1" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to framing with 1-5/8" Type S drywall screws 8" o.c. at end joints and 12" o.c. at perimeter and intermediate studs. Stagger vertical joints 24" o.c. Stagger horizontal joints 24" o.c. each layer and side. Glass fiber insulation, 2-3/4" thick, 0.30 pcf, friction fit between studs.</p>
<p>1-Hour Fire Rating Test Reference: OSU T-1770, GA WP 1052</p> 	<p>50-54 STC Sound Trans. Test Reference: NRCC 817-NV Partition Thickness: 5-1/2", Weight per Sq. Ft.: 8.0 Sound Tested with 3-1/2" glass fiber insulation friction fit in stud space 5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to each side of 3-5/8" steel studs 24" o.c. with 1" Type S drywall screws 8" o.c. at vertical joints and 12" o.c. at wall perimeter and intermediate studs. Studs attached to top and bottom runner with Type S pan head screws. Face Layer: 5/8" ToughRock gypsum board or gypsum veneer base applied parallel or at right angles to one side with 15/8" Type S drywall screws 12" o.c.</p>

*For fire safety information, visit www.gp.com/gypsum/firesafety

Steel-Framed Wall Assemblies continued

1-Hour Fire Rating

Test Reference: UL U410



45-49 STC Sound Trans.

Test Reference: G&H 33-ST

Partition Thickness: 7-1/2", Weight per Sq. Ft.: 7.0

Base Layer: 1/4" ToughRock® Sound Deadening Board applied parallel to a double row of 1-5/8" steel studs 24" o.c. and 6" apart with 1" Type S drywall screws 12" o.c. 1/2" gypsum board pieces 12" wide x 9-1/2" long located at 1/3 points used as cross braces fastened to stud pairs with three 1" Type S drywall screws at each end of brace.

Optional 25-gauge, 9-1/2" long runner pieces may be used as cross braces and attached with two No. 8, 1/2" self-drilling steel screws at each end.

Face Layer: 5/8" ToughRock Fireguard™ C gypsum board applied parallel to studs with 1-5/8" Type S drywall screws 8" o.c. at joints and top and bottom runners, 12" o.c. in field. Stagger joints.

2-Hour Fire Rating

Test Reference: UL U411



50-54 STC Sound Trans.

Test Reference: WHI 218-1

Partition Thickness: 5", Weight per Sq. Ft.: 12

Sound Tested with 2-1/2" glass fiber insulation

Base Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side of 2-5/8" steel studs 24" o.c. with 1" Type S screws 16" o.c.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side with drywall adhesive or secured with 1-5/8" Type S screws 12" o.c. at top and bottom track, 16" o.c. at edge joints and intermediate framing. Stagger joints 24" each layer and side.

2-Hour Fire Rating

Test Reference: UL U411



60-64 STC Sound Trans.

Test Reference: RAL TL 99-106

Partition Thickness: 5-1/2", Weight per Sq. Ft.: 12

Sound Tested with 2-1/2" glass fiber insulation

Resilient channels 24" o.c. attached at right angles to one side of 2-1/2" steel studs 24" o.c. with one 1/2" Type S drywall screw at each stud.

Base Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side of 2-1/2" steel studs 24" o.c. with 1" Type S screws 16" o.c.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side with drywall adhesive or secured with 1-5/8" Type S screws 12" o.c. at top and bottom track, 16" o.c. at edge joints and intermediate framing. Stagger joints 24" each layer and side.

1-Hour Fire Rating

Test Reference: UL U420, GA WP 5015



50-54 STC Sound Trans.

Test Reference: RAL TL76-155

Partition Thickness: 10-3/4", Weight per Sq. Ft.: 5.5

Sound Tested with 3-1/2" glass fiber insulation, stapled to one side in cavity

5/8" ToughRock Fireguard* gypsum board applied parallel to a double row of 1-5/8" steel studs 24" o.c. and 1/4" apart with 1" Type S drywall screws 8" o.c. at edges and top and bottom runners, 12" o.c. in field. Stagger joints 24" each side. 5/8" gypsum board pieces 12" wide x 9-1/2" long located at 1/3 points used as cross braces fastened to stud pairs with three 1" Type S drywall screws at each end of brace. Optional 25-gauge, 9-1/2" long runner pieces may be used as cross braces and attached with two No. 8, 1/2" self-drilling steel screws at each end. Optional 5/8" self-drilling steel screws at each end.

2-Hour Fire Rating

Test Reference: UL U411



55-59 STC Sound Trans.

Test Reference: NRCC 818-NV

Partition Thickness: 6-1/8", Weight per Sq. Ft.: 12.0




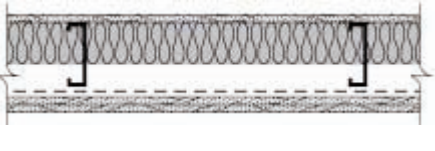
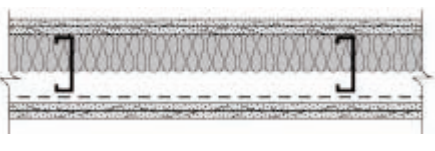
Sound Tested with 3-1/2" glass fiber insulation, friction fit in stud space

Base Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side of 3-5/8" steel studs 24" o.c. with 1" Type S screws 16" o.c.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side with drywall adhesive or secured with 1-5/8" Type S screws 12" o.c. at top and bottom track, 16" o.c. at edge joints and intermediate framing. Stagger joints 24" each layer and side.

*For fire safety information, visit www.gp.com/gypsum/firesafety

Steel-Framed Wall Assemblies continued

<p>2-Hour Fire Rating Test Reference: UL U412, ULC W414</p> 	<p>45-49 STC Sound Trans. Test Reference: NGC 2250 Partition Thickness: 4-1/2", Weight per Sq. Ft.: 9.0 Base Layer: 5/8" ToughRock® Fireguard C gypsum board applied parallel to each side of 2-1/2" steel studs 24" o.c. with 1" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard™ C gypsum board applied parallel to each side with 1-5/8" Type S drywall screws 12" o.c. Joints staggered 24" each layer and side.</p>
<p>2-Hour Fire Rating Test Reference: UL U412, ULC W414</p> 	<p>50-54 STC Sound Trans. Test Reference: NRCC 798-NV Partition Thickness: 4-1/2", Weight per Sq. Ft.: 9.0 Sound Tested with 2-1/2" glass fiber insulation stapled in stud space Base Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side of 1-5/8" steel studs 24" o.c. with 1" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side with 1-5/8" Type S drywall screws 12" o.c. Joints staggered 24" each layer and side.</p>
<p>2-Hour Fire Rating Test Reference: ULC W404, GA WP 1505</p> 	<p>55-59 STC Sound Trans. Test Reference: DRC 70-18-2 Partition Thickness: 4-3/4", Weight per Sq. Ft.: 10.0 Sound Tested with adhesive attachment and 2-1/2" glass fiber insulation, friction fit in stud space Base Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to each side of 2-1/2" steel studs 24" o.c. with 1" Type S drywall screws 12" o.c. Face Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to each side. Vertical joints midway between studs. Face layer attached to base layer only with 1-1/2" Type G drywall screws 12" o.c. at vertical joints and center line of face layer gypsum board. 3/8" to 1/2" diameter adhesive beads around the perimeter of face board, 2" from each edge and end, and in the form of an X joining the corners of the perimeter beads are optional. Joints staggered 24" each layer and side.</p>
<p>2-Hour Fire Rating Test Reference: UL U453, GA WP 1520</p> 	<p>55-59 STC Sound Trans. Test Reference: RAL TL83-215 Partition Thickness: 5-7/8", Weight per Sq. Ft.: 9.0 25-gauge resilient channels 24" o.c. attached at right angles to one side of 3-1/2" 20-gauge steel studs 24" o.c. with one 1/2" Type S-12 drywall screw at each stud. Base Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to channels with 1" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to channels with 1-5/8" Type S drywall screws 12" o.c. 3" mineral fiber insulation, friction fit in stud space. Opposite Side: One layer 1/2" ToughRock Fireguard C gypsum board applied parallel to studs with 1" Type S-12 drywall screws 12" o.c. Joints staggered 24" each layer and side.</p>
<p>2-Hour Fire Rating Test Reference: UL U454, GA WP 1470</p> 	<p>55-59 STC Sound Trans. Test Reference: RAL TL83-214 Partition Thickness: 6-1/2", Weight per Sq. Ft.: 12.0 Resilient channels 24" o.c. attached at right angles to one side of 2-1/2" 20-gauge steel studs 24" o.c. with one 1/2" Type S drywall screw at each stud. Base Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to channels with 1" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to channels with 1-5/8" Type S drywall screws 12" o.c. 3" mineral fiber insulation, 2 pcf, friction fit in stud space. Opposite Side Base Layer: 1/2" ToughRock Fireguard C applied parallel to studs with 1-5/8" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to studs with 1-5/8" Type S drywall screws 12" o.c. Joints staggered.</p>

Steel-Framed Wall Assemblies continued

2-Hour Fire Rating

Test Reference: UL U420, GA WP 5105



55-59 STC Sound Trans.

Test Reference: RAL TL76-156

Partition Thickness: 12", Weight per Sq. Ft.: 10.0

Sound Tested with 3-1/2" glass fiber insulation, stapled to one side in cavity

Base Layer: 5/8" ToughRock® Fireguard™ gypsum board applied parallel to a double row of 1-5/8" steel studs 24" o.c. and 6-1/4" apart with 1" Type S screws 8" o.c. at edges, 12 o.c. in field. Stagger joints 24" each side. 5/8" gypsum board pieces 12" wide x 9-1/2" long located at 1/3 points used as cross braces fastened to stud pairs with three 1" Type S drywall screws at each end of brace. Optional 25-gauge, 9-1/2" long runner pieces may be used as cross braces and attached with two No. 8, 1/2" self-drilling steel screws at each end. Optional 5/8" self-drilling steel screws at each end.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied parallel to studs with 1-5/8" Type S screws 8" o.c. at joints and top and bottom runners, 12" o.c. in field. Stagger joints each layer and side.

2-Hour Fire Rating

Test Reference: OSU T-1339



35-39 STC Sound Trans.

Test Reference: NGC 2359

Partition Thickness: 2", Weight per Sq. Ft.: 9.0

1/2" ToughRock Fireguard C gypsum board applied parallel to each side of 1" ToughRock Shaftliner with laminating compound combed over entire surface. Floor and ceiling track of wood or steel runners. Joints staggered.

3-Hour Fire Rating

Test Reference: UL U435, GA WP 2922



50-54 STC Sound Trans.

Test Reference: WEAL 87-118

Partition Thickness: 4-5/8", Weight per Sq. Ft.: 13.0

Sound Tested with 1-1/2" glass fiber insulation, friction fit in stud space

Base Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side of 1-5/8" steel studs 24" o.c. with 1" Type S drywall screws 36" o.c.

Second Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side with 1-5/8" Type S drywall screws 24" o.c.

Face Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel or at right angles to each side with 2-1/4" Type S drywall screws 12" o.c. and 1-1/2" Type G drywall screws midway between studs 1-1/2" above and below horizontal joints. Joints staggered.

4-Hour Fire Rating

Test Reference: UL U435, GA WP 2961



55-59 STC Sound Trans.

Test Reference: WEAL 87-119

Partition Thickness: 5-5/8", Weight per Sq. Ft.: 6.0

Sound Tested with 1-1/2" glass fiber insulation, friction fit in stud space

Base Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side of 1-5/8" steel studs 24" o.c. with 1" Type S drywall screws 48" o.c.

Second Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side with 1-5/8" Type S drywall screws 36" o.c.

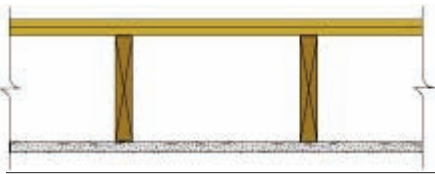
Third Layer: 1/2" ToughRock Fireguard C gypsum board applied parallel to each side with 2-1/4" Type S drywall screws 24" o.c. and 1-1/2" Type G drywall screws midway between studs 36" o.c. vertically.

Face Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to each side with 2-5/8" Type S drywall screws 12" o.c. and 1-1/2" Type G drywall screws midway between studs 1-1/2" above and below horizontal joints. Joints staggered 24" each layer and side.

Floor/Ceiling Wood-Framed Assemblies

1-Hour Fire Rating

Test Reference: UL L501, ULC M500, GAFC 5420



35-39 STC Sound Trans.

IIC 32 Test Reference: NGC 5032

Weight per Sq. Ft.: 2.4

5/8" ToughRock® Fireguard™** gypsum board applied at right angles to 2 x 10 wood joists 16" o.c. with 1-7/8" 6d nails 6" o.c. Joists supporting 1" nominal wood sub and finish floor, or 19/32" plywood finished floor with long edges T&G and 15/32" interior plywood with exterior glue subfloor perpendicular to joists with joints staggered.

1-Hour Fire Rating

Test Reference: UL L503, ULC M502, GA FC 5410



35-39 STC Sound Trans.

IIC 32 Test Reference: NGC 4024

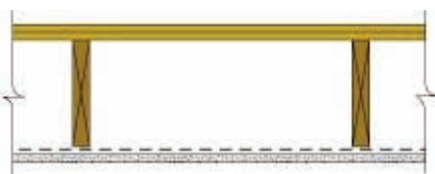
IIC 66 w/carpet and pad Test Reference: NGC 5032

Weight per Sq. Ft.: 2.0

1/2" ToughRock Fireguard C gypsum board applied at right angles to 2 x 10 wood joists 16" o.c. with 5d nails 1-5/8" long, 0.099" shank, 1/4" heads, 6" o.c. supporting 1" nominal T&G wood sub and finish floor, or 19/32" plywood finished floor with long edges T&G and 15/32" interior plywood with exterior glue subfloor perpendicular to joists with joints staggered. Nails placed 3/4" from board end joints and 1/2" from board end joints.

1-Hour Fire Rating

Test Reference: UL L502, ULC M501, GA FC 5250



45-49 STC Sound Trans.

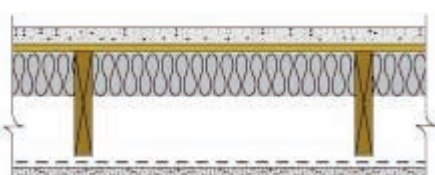
IIC 39 Test Reference: RAL TL64-155

Weight per Sq. Ft.: 2.0

1/2" ToughRock Fireguard C gypsum board applied at right angles to resilient channels 24" o.c. with 1" Type S drywall screws 12" o.c. Gypsum board end joints located midway between continuous channels and attached to additional pieces of channels 60" long with screws 12" o.c. Resilient channels applied at right angles to 2 x 10 wood joists 16" o.c. with 2" 6d coated nails. Wood joists supporting 1" nominal wood subfloor and 1" nominal wood finish floor, or 19/32" plywood finished floor with long edges T&G and 15/32" interior plywood with exterior glue subfloor perpendicular to joist with joints staggered.

1-Hour Fire Rating

Test Reference: UL L516



50-54 STC Sound Trans.

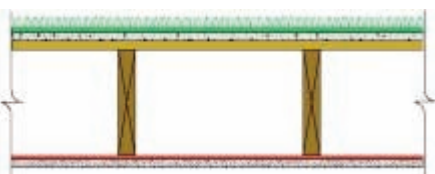
IIC 74 Test Reference: KAL L224 27-65

Weight per Sq. Ft.: 2.5

5/8" ToughRock Fireguard C gypsum board applied at right angles to resilient channels with 1" Type S drywall screws 12" o.c. Gypsum board end joints located midway between continuous channels and attached to additional pieces of channels 54" long with screws 12" o.c. Resilient channels applied at right angles to 2 x 10 wood joists 24" o.c. with 1-1/4" drywall screws. Wood joists supporting 5/8" interior plywood with exterior glue subfloor and 1-5/8" perlite-sand concrete reinforced with No. 19 SWG galvanized hexagonal wire mesh. 3" glass fiber insulation 0.90 pcf in joist space stapled to subfloor.

1-Hour Fire Rating

Test Reference: UL L503, ULC M502



41 STC Sound Trans.

IIC 75 Test Reference: G&H OC-2MT

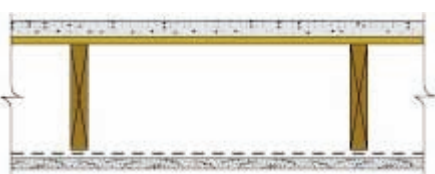
Weight per Sq. Ft.: 3.5

Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to 2 x 10 joists 16" o.c. with 1" 4d nails 12" o.c.

Face Layer: 1/2" ToughRock Fireguard C gypsum board applied to framing with drywall adhesive and 1-5/8" 5d nails 6" o.c. Wood joists supporting 5/8" CD plywood subfloor surfaced with 1/2" particleboard underlayment, carpet and pad.

1-Hour Fire Rating

Test Reference: UL L502, GA FC 5105



55-59 STC Sound Trans.

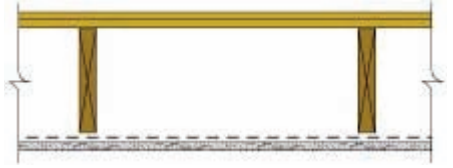
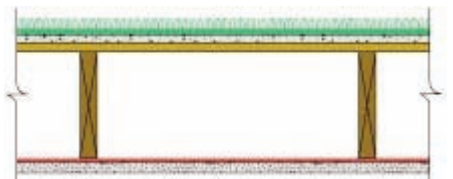

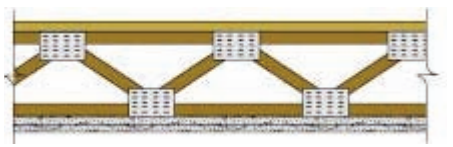
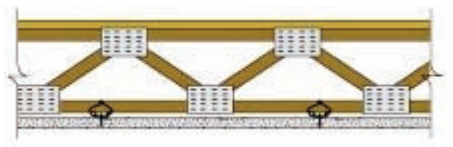
Test Reference: G&H BW-10 MT

Weight per Sq. Ft.: 2.0

Sound Tested with 3-1/2" glass fiber insulation in joist spaces and with carpet and pad 1/2" ToughRock Fireguard C gypsum board or gypsum veneer base applied at right angles to resilient channels 24" o.c. with 1" Type S drywall screws 12" o.c. Gypsum board end joints located midway between continuous channels and attached to additional pieces of channels 60" long with screws 12" o.c. Resilient channels applied at right angles to 2 x 10 wood joists 16" o.c. with 6d coated nails. Wood joists supporting 19/32" plywood and 1" proprietary sanded gypsum underlayment.

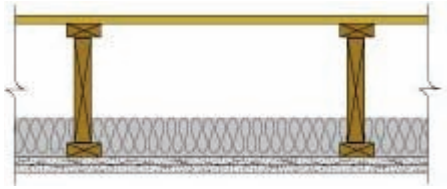
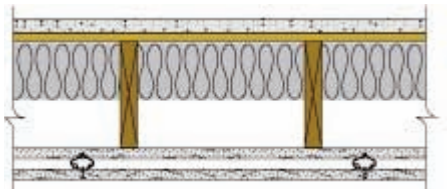

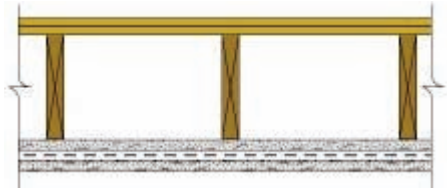
*For fire safety information, visit www.gp.com/gypsum/firesafety

Floor/Ceiling Wood-Framed Assemblies continued

<p>1-Hour Fire Rating Test Reference: UL L514, GA FC 5240</p> 	<p>45-49 STC Sound Trans. IIC 39 IIC 67 w/ carpet and pad Test Reference: CK 6512-6, 7 Weight per Sq. Ft.: 3.0 1/2" ToughRock® Fireguard™ C gypsum board applied at right angles to resilient channels 24" o.c. with 1" Type S drywall screws 12" o.c. Gypsum board end joints located midway between continuous channels and attached to additional pieces of channels 54" long with screws 12" o.c. Resilient channels applied at right angles to 2 x 10 wood joists 16" o.c. with 1-1/4" Type W drywall screws. Wood joists supporting 1" nominal T&G wood subfloor and 1" nominal wood finish floor, or 19/32" plywood finished floor with long edges T&G and 15/32" interior plywood with exterior glue subfloor perpendicular to joists with joints staggered.</p>
<p>1-Hour Fire Rating Test Reference: UL L501, ULC M500</p> 	<p>41 STC Sound Trans. IIC 75 Test Reference: G&H OC-2MT Weight per Sq. Ft.: 4.0 Base Layer: 1/4" ToughRock Sound Deadening Board applied parallel to 2 x 10 joists 16" o.c. with 1-1/2" 4d nails 12" o.c. Face Layer: 5/8" ToughRock Fireguard* gypsum board applied perpendicular to joists with drywall adhesive and 2" 6d nails 6" o.c. Wood joists supporting 5/8" CD plywood subfloor surfaced with 1/2" particleboard underlayment, carpet and pad.</p>
<p>1-Hour Fire Rating Test Reference: FM FC172, GA FC 5406</p> 	<p>35-39 STC Sound Trans. Test Reference: Est. Weight per Sq. Ft.: 5.0 Base Layer: 5/8" ToughRock Fireguard* gypsum board applied at right angles to 2 x 10 wood joists 24" o.c. with 11/4" drywall screws 24" o.c. Face Layer: 5/8" ToughRock Fireguard* gypsum board applied at right angles to joists through base layer with 1-7/8" Type S screws 12" o.c. at joints and intermediate joints. Face layer joints offset 24" from base layer joints, 1-1/2" Type G drywall screws placed 2" back on either side of face layer end joints 12" o.c. 1/2" plywood with exterior glue applied at right angles to top of joists with 8d nails. Ceiling provides one-hour fire-resistance protection for framing, including trusses.</p>
<p>1-Hour Fire Rating Test Reference: FM FC214, GA FC 5512</p> 	<p>Weight per Sq. Ft.: 4.0 Ceiling Base Layer: 1/2" ToughRock Fireguard C gypsum board applied perpendicular to wood trusses 24" o.c. with 1-1/4" Type S drywall screws 24" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied perpendicular to trusses with 1-7/8" Type S drywall screws 12" o.c. and 1-1/2" Type G drywall screws 12" o.c. placed 3" back from either side of end joints. Joints offset 24" from base layer joints. Trusses: Chord and web members fabricated from 2 x 4 lumber with 20-gauge steel connector plates having a minimum tooth length of 5/16". Plate design values based upon safety factor of 4. Trusses have a minimum depth of 12". Flooring: 19/32" T&G plywood with exterior glue applied at right angles to top of trusses with 6d common nails 6" o.c. Plywood end joints staggered 48".</p>
<p>1-Hour Fire Rating Test Reference: UL L528, GA FC 5515</p> 	<p>Weight per Sq. Ft.: 3.0 5/8" ToughRock Fireguard C gypsum board applied at right angles to rigid furring channel 24" o.c. with 1" Type S screws spaced 12" o.c. and located a minimum of 1-1/2" from edges and end joints. Wallboard end joints located midway between continuous channels and attached to additional pieces of channel 60" long with screws at 12" o.c. Continuous channels spaced 24" o.c. and secured with double strand of 18-gauge galvanized steel wire 48" o.c. perpendicular to 12" deep parallel chord wood trusses 24" o.c. supporting 3/4" nominal interior plywood with exterior glue, T&G edges, perpendicular to trusses, joints staggered 4" with construction adhesive and 6d ring shank nails 12" o.c. Adhesive applied to each top chord and grooved edges of plywood.</p>

*For fire safety information, visit www.gp.com/gypsum/firesafety

Floor/Ceiling Wood-Framed Assemblies continued

<p>1-Hour Fire Rating Test Reference: WHI 694 0090</p> 	<p>Weight per Sq. Ft.: 4.0 Base Layer: 1/2" ToughRock® Fireguard™ C gypsum board applied perpendicular to 11-3/8" deep, W143, wood I joists 24" o.c. with 1-1/4" Type S screws 16" o.c. Face Layer: 1/2" ToughRock Fireguard C gypsum board applied perpendicular to joists with 1-7/8" Type S screws 12" o.c. at all joists. Stagger joints 24" o.c. At end joints place additional 1-1/2" Type G screws 12" o.c. and 2" in from each side of end joints. Wood I joists support 3/4" T&G plywood perpendicular to joists with 1/4" bead construction adhesive and 2-1/2" 8d nails 8" o.c. Cavity at lower chord filled with 3-1/2" glass fiber insulation supported by wire rods.</p>
<p>1-1/2"-Hour Fire Rating Test Reference: UL L532, GA FC 5600</p> 	<p>Weight per Sq. Ft.: 5.0 Base Layer: 5/8" ToughRock Fireguard gypsum board applied at right angles to 25-gauge drywall rigid furring channels 16" o.c. with 1" Type S screws 12" o.c. Drywall end joints located midway between continuous channels and attached to additional pieces of channel 60" long with 1" Type S screws 8" o.c. Rigid furring channels 16" o.c. at right angles to 2 x 10 wood joists 16" o.c. attached with 1-7/8" 6d cooler or box nails or 1-7/8" Type S screws, two per joist. Face Layer: 5/8" ToughRock Fireguard gypsum board applied at right angles to resilient channels through base layer with 1-7/8" Type S screws 12" o.c. Face layer wallboard end joints attached to continuous channels through base layer with 1-7/8" Type S screws 8" o.c. Face layer wallboard edge joints staggered 18" minimum from base layer edge joints; end joints staggered 8" min. from base layer joints. 2 x 10 wood joists supporting 5/8" interior plywood with exterior glue subfloor and 1-1/2" lightweight concrete reinforced with galvanized hexagonal wire mesh over film or felt or 1" sanded gypsum floor underlayment. 3-1/2" unfaced glass fiber insulation, nom. 0.6 pcf, R-11 supported against subfloor by wire rods 12" o.c. Alternately, insulation may be 3-1/2" faced glass fiber insulation stapled in place against subfloor.</p>
<p>2-Hour Fire Rating Test Reference: UL L538</p> 	<p>Weight per Sq. Ft.: 8.0 Base Layer: 5/8" ToughRock Fireguard C gypsum board applied at right angles to I-shaped wood joists or wood and steel trusses, spaced 19.2" o.c. maximum, with 1-5/8" Type S drywall screws, 8" o.c. Resilient channels attached 16" o.c. through base layer at right angles to joists or trusses with 1-7/8" Type S drywall screws. Middle Layer: 5/8" ToughRock Fireguard C gypsum board applied at right angles to resilient channels with 1" Type S drywall screws 8" o.c. Face Layer: 5/8" ToughRock Fireguard C gypsum board applied at right angles to channels with 1-5/8" Type S drywall screws, 8" o.c. Joints in the face layer are offset 16" from those in the middle layer. 5/8" T&G plywood floor at right angles to joists with adhesives and 8d cement coated nails 12" o.c.</p>
<p>2-Hour Fire Rating Test Reference: UL L511, GA FC 5710</p> 	<p>Weight per Sq. Ft.: 6.0 Base Layer: 5/8" ToughRock Fireguard C gypsum board applied at right angles to 2 x 10 wood joists 16" o.c. with 2-1/2" 8d cement coated nails 7" o.c. Resilient channel 24" o.c. applied at right angles to wood framing through base layer with 1-7/8" long screws. Double channel installed at face layer end joints. Face Layer: 5/8" ToughRock Fireguard C gypsum board applied at right angles to resilient channels with 1" Type S screws 12" o.c. Wood joists supporting 15/32" plywood subfloor and 19/32" plywood finish floor applied at right angles to joists with joints staggered.</p>

*For fire safety information, visit www.gp.com/gypsum/firesafety

Floor/Ceiling Steel-Framed Assemblies

1-Hour Fire Rating

Test Reference: UL L524, GA FC 4502



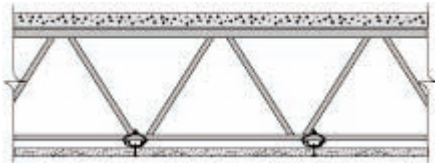
Weight per Sq. Ft.: 4.0

Base Layer: 1/2" ToughRock® Fireguard™ C gypsum board applied at right angles to channel, minimum 7" deep, 18-gauge galvanized steel joists 24" o.c. with 1" Type S-12 drywall screws, 8" o.c. at butt joints and 12" o.c. at intermediate joists.

Face Layer: 1/2" ToughRock Fireguard C gypsum board applied at right angles to joists with 1-1/2" Type G drywall screws at butt joints between joists and 1-5/8" Type S-12 drywall screws 12" o.c. at intermediate joists. Joints offset from base layer joints. Steel joists supporting 5/8" T&G plywood floor applied at right angles to joists with 1-15/16" screws 6" o.c. at floor perimeter and end joints and 10" o.c. at intermediate joists.

1-1/2-Hour Fire Rating

Test Reference: UL G502, ULC I510, GA FC 1110



Weight per Sq. Ft.: 2.0

1/2" ToughRock Fireguard C gypsum board applied at right angles to rigid resilient channels 24" o.c. with 1" Type S screws 12" o.c. in field. Drywall end joints located midway between continuous channels and attached to additional pieces of channel 52" long with screws 8" o.c. Furring channels wire tied to open web steel joists 24" o.c. supporting 3/8" rib steel lath or 9/16" deep 28-gauge corrugated steel and 2" concrete slab measured from top of flute. (Passed 90-minute fire test restrained and unrestrained.)

2-Hour Fire Rating

Test Reference: FM FC 224-2, GA FC 2116



Weight per Sq. Ft.: 5.0

Base Layer: 5/8" ToughRock Fireguard gypsum board applied at right angles to channel, minimum 7-1/4" deep, 18-gauge galvanized steel joists 24" o.c. with 1" Type S-12 drywall screws 12" o.c. End joints located midway between joists and staggered between rows.

Face Layer: 5/8" ToughRock Fireguard gypsum board applied at right angles to joists with 1-7/8" Type S-12 drywall screws 12" o.c. placed 2" from edges and 1-1/2" Type G drywall screws 12" o.c. placed 2" back on either side of end joints. End joints located midway between joists and all joints offset 24" from base layer joints. Joists supporting 28-gauge corrugated steel deck and 2-1/2" concrete slab measured from the bottom of the flutes. Joists braced at midspan with continuous 2" wide, 18-gauge, galvanized steel straps attached to the bottom flange of each joist with one 3/8" Type S-12 panhead screw.

2-Hour Fire Rating

Test Reference: PCA 1281-1, GA FC 2120

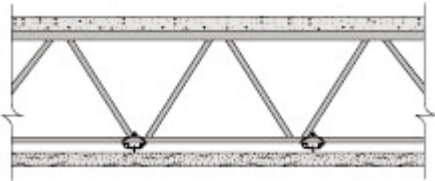


Weight per Sq. Ft.: 3.0

5/8" ToughRock Fireguard gypsum board applied at right angles to resilient channels 24" o.c. with 1" Type S drywall screws 8" o.c. Gypsum board end joints located over continuous channels and attached to additional pieces of channel 54" long located midway between continuous channels at end joints. Resilient channels 24" o.c. suspended from 2-1/2" precast reinforced concrete joists 35" o.c. with 21-gauge galvanized steel hanger straps fastened to sides of joists. Joist leg depth, 10".

2-Hour Fire Rating

Test Reference: UL G505, ULC I512, GA FC 2130

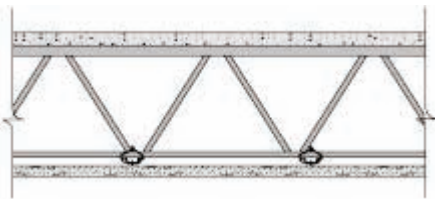


Weight per Sq. Ft.: 2.5

5/8" ToughRock Fireguard C gypsum board applied at right angles to rigid furring channels 24" o.c. with 1" Type S drywall screws 12" o.c. Drywall end joints located midway between continuous channels and attached to additional pieces of channel 62" long with screws 12" o.c. Furring channels attached with 18-gauge wire ties to open web steel joists 24" o.c. supporting 3/8" rib steel lath and 2" concrete slab.

2-Hour Fire Rating

Test Reference: UL G504, ULC 1507

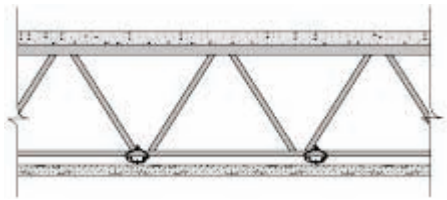
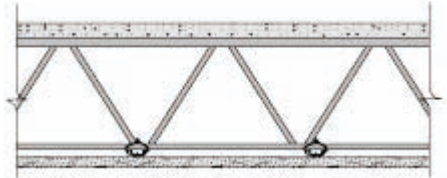


Weight per Sq. Ft.: 2.0





1/2" ToughRock Fireguard C gypsum board applied at right angles to resilient channels 24" o.c. with 1" Type S drywall screws 12" o.c. in field. Drywall end joints located midway between continuous channels and attached to additional pieces of channel 54" long with screws 8" o.c. Resilient channels wire tied 24" o.c. to open web steel joists supporting 3/8" rib steel lath or 9/16" deep 28-gauge corrugated steel and 2-1/2" concrete slab measured from top of flute.

*For fire safety information, visit www.gp.com/gypsum/firesafety

Floor/Ceiling Steel-Framed Assemblies continued

<p>2-Hour Fire Rating Test Reference: ULC I511, GA FC 2030</p> 	<p>50-54 STC Sound Trans. Test Reference: NGC 4075 Weight per Sq. Ft.: 2.0 1/2" ToughRock® Fireguard™ C gypsum board applied at right angles to rigid furring channel 24" o.c. with 1" Type S drywall screws 12" o.c. Gypsum board end joints located midway between continuous channels and attached to additional pieces of channel 54" long with screws at 12" o.c. Furring channels 24" o.c. attached with 18-gauge wire tied 48" o.c. to open web steel joists 24" o.c. supporting 9/16" deep 28-gauge corrugated steel and 2-1/2" concrete slab. Furring channels may be attached to 1-1/2" cold rolled channels 48" o.c. suspended from joists by 8-gauge wire hangers not more than 48" o.c.</p>
<p>3-Hour Fire Rating Test Reference: UL G512, GA FC 3012</p> 	<p>50-54 STC Sound Trans. Test Reference: NGC 4075 Weight per Sq. Ft.: 3.0 5/8" ToughRock Fireguard C gypsum board screw-attached with 1" Type S screws 12" o.c. at right angles to furring channels 24" o.c. (double channels at end joints). Furring channel wire tied to open web steel joist 24" o.c. supporting 2-1/2" concrete slab over 3/8" rib steel lath. 5/8" x 2-3/4" ToughRock Fireguard gypsum board strips over butt joints. (Three hours restrained and unrestrained.)</p>

Exterior Wood-Framed Wall Assemblies

<p>2-Hour Fire Rating Test Reference: UL U302, ULC U302, GA WP 8410</p> 	<p>Weight per Sq. Ft.: 10-1/8 Interior Base Layer: 5/8" ToughRock Fireguard gypsum board applied parallel or at right angles to 2 x 4 wood studs 16" o.c. with 1-7/8" 6d coated nails 8" o.c. Face Layer: 5/8" ToughRock Fireguard gypsum board applied parallel or at right angles to studs with 2-3/8" 8d coated nails 8" o.c. Exterior Base Layer: 1/2" DensGlass Gold® Exterior Sheathing applied at right angles to studs with 1-3/4" galvanized roofing nails 6" o.c. Face Layer: 2" x 4" x 8" clay brick with 1" air space between brick and exterior sheathing. 20-gauge galvanized wire ties attached to each stud with 8d coated nails as described above, located at every sixth course of bricks.</p>
<p>1-Hour Fire Rating Test Reference: UL U337</p> 	<p>Partition Thickness: 4-3/4, Weight per Sq. Ft.: 7.5 Exterior Side: 5/8" DensGlass Gold Fireguard Exterior Sheathing applied parallel to 2 x 4 wood studs 16" o.c. with 1-3/4" galvanized roofing nails 8" o.c. Exterior surface covered with weather exposed cladding or finish system. Interior Side: One layer 5/8" ToughRock Fireguard* gypsum board applied parallel to studs with 1-7/8" 6d coated 7" o.c. Stagger joints each side.</p>
<p>1-Hour Fire Rating Test Reference: UL U305</p> 	<p>Partition Thickness: 4-3/4, Weight per Sq. Ft.: 7.5 Exterior Side: 5/8" DensGlass Gold Fireguard Exterior Sheathing applied parallel or at right angles to 2 x 4 wood studs 16" o.c. with 1-3/4" galvanized roofing nails 8" o.c. Exterior surface covered with weather exposed cladding or finish system. Interior Side: One layer 5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to studs with 1-7/8" 6d coated 7" o.c. Stagger joints each side.</p>
<p>1-Hour Fire Rating Test Reference: UL U309, GA WP 8109</p> 	<p>Partition Thickness: Varies, Weight per Sq. Ft.: 7.0 Exterior Side: DensGlass Gold Fireguard Exterior Sheathing applied parallel or at right angles to 2 x 4 wood studs 24" o. c. with 1-7/8" galvanized roofing nails 7" o.c. Joints of gypsum sheathing may be left untreated. Exterior cladding to be attached through sheathing to studs. Interior Side: 5/8" ToughRock Fireguard* gypsum board applied parallel or at right angles to studs with 1-7/8" 6d coated nails 7" o.c.</p>

*For fire safety information, visit www.gp.com/gypsum/firesafety

Exterior Steel-Framed Wall Assemblies

1-Hour Fire Rating

Test Reference: SWRI 01-4409-003, GA WP 8122



Partition Thickness: 6"-7" Varies based on insulation thickness, Weight per Sq. Ft.: 7.0
 Exterior Side: DensGlass Gold® Fireguard™ Exterior Sheathing applied parallel to 3-5/8" 18-gauge steel studs 16" o.c. with #6 x 1-1/4" self-drilling, corrosion-resistant, bugle head, drywall screws 8" o.c. at edges and ends and 8" o.c. at intermediate studs. Proprietary polymer modified exterior insulation and finish system applied over sheathing. 2" maximum foam-plastic thickness.

Interior Side: 5/8" ToughRock® Fireguard* gypsum board applied parallel to studs with #6 x 1-1/4" self-drilling, bugle head drywall screws 8" o.c. at edges and ends and 12" o.c. at intermediate studs.

1-Hour Fire Rating

Test Reference: SWRI 01-4409-001, GA WP 8123



Partition Thickness: 6"-7" Varies based on insulation thickness, Weight per Sq. Ft.: 7.0
 Exterior Side: DensGlass Gold Fireguard Exterior Sheathing applied parallel to 3-5/8" 18-gauge steel studs 24" o.c. with #6 x 1-1/4" self-drilling, corrosion-resistant, bugle head drywall screws 8" o.c. at edges and ends and 8" o.c. at intermediate studs. Polymer-based exterior insulation and finish system applied over sheathing. 4" maximum foam-on-plastic thickness.

Interior Side: One layer 5/8" ToughRock Fireguard* gypsum board applied parallel to studs with #6 x 1-1/4" self-drilling, bugle head drywall screws 8" o.c. at edges and ends and 12" o.c. at intermediate studs.

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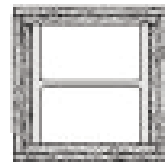
Column Fire Protection Assemblies

ToughRock Fireguard C gypsum board provides a fast, efficient and economical method of protecting steel columns. Fire-resistant assemblies with two-, three- and four-hour ratings are obtainable for heavyweight columns and a four-hour rating for lightweight columns, depending upon the number of layers of 5/8" or 1/2" ToughRock Fireguard C gypsum board used. These layers are held in place by a combination of screws and steel studs. The fire-rated assemblies have passed fire tests conducted by Underwriters Laboratories.

- Fire Resistant – For three-hour fire rating, two layers of 1/2" ToughRock Fireguard C gypsum board can be used. Design No. X513 3-hour. Two-hour fire rating can be obtained using one layer of 1/2" ToughRock Fireguard C gypsum board. Design No. X520 2-hour. These are for heavyweight columns (14 WF 228).
- Lighter – Compared to other types of fire protection, a dead-load savings from 50% to 75% can be realized with ToughRock Fireguard gypsum board column fire protection.
- Faster to Erect – ToughRock Fireguard gypsum board can be installed quickly and easily when used for column fire proofing following G-P Gypsum details. Minimum amount of wire and adhesives are used.

1-Hour Fire Rating

Test Reference: NBS 303

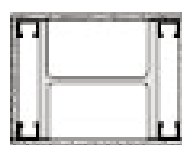


Base Layer: 1/2" ToughRock gypsum board tied to W10 x 49 column 1 hr. with 18-gauge wire 15" o.c.

Face Layer: 1/2" ToughRock gypsum board applied with laminating compound over entire contact surface.

2-Hour Fire Rating

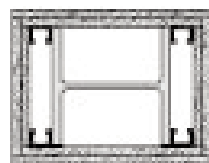
Test Reference: UL X520, GA CM 2110



1/2" ToughRock Fireguard C gypsum board attached to 1-5/8" steel studs with 1" Type S drywall screws 12" o.c. Studs located at each corner of heavy steel W14 x 288 column. 1-1/4" steel corner bead crimp-attached at 6" intervals.

2-Hour Fire Rating

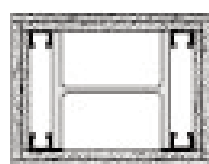
Test Reference: UL X517, ULC Z503



Two layers of 5/8" ToughRock Fireguard gypsum board screw-attached to 1-5/8" steel studs located at each corner of W10 x 49 column with 1" Type S screws 24" o.c. for base layer and 1-5/8" Type S drywall screws 12" o.c. for face layer. 1-1/4" steel beads at corners attached with 6d coated nails 1-3/4" long, 0.0915" shank, 1/4" heads, 12" o.c.

3-Hour Fire Rating

Test Reference: UL X513, GA CM 3130

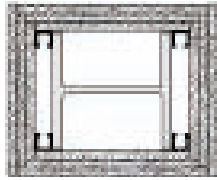


Two layers of 1/2" ToughRock Fireguard C gypsum board.
 Base Layer: Screw-attached to 1-5/8" steel studs located at corners of heavy steel W14 x 228 column with 1" Type S screws 24" o.c.
 Face Layer: Attached with 1-5/8" Type S drywall screws 12" o.c. into studs. 1" corner bead applied each corner with 1-3/4" 4d coated nails 12" o.c.

Column Fire Protection Assemblies continued

3-Hour Fire Rating

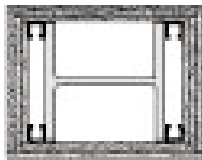
Test Reference: UL X509, ULC Z502



Three layers of 5/8" ToughRock® Fireguard™ C gypsum board, screw-attached to 1-5/8" steel studs located at each corner of W10 x 49 column.
Base Layer: Attached with 1" Type S drywall screws 24" o.c.
Second Layer: Attached with 1-5/8" Type S drywall screws 12" o.c. and 18-gauge wire tied 24" o.c.
Face Layer: Attached with 2-1/4" Type S drywall screws 12" o.c. and 1-1/4" corner bead at each corner nailed with 17/8" 6d coated nails 12" o.c.

3-Hour Fire Rating

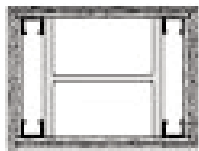
Test Reference: UL X528



Three layers of 1/2" ToughRock Fireguard C gypsum board, screw-attached to 1-5/8" steel studs located at each corner of W10 x 49 column.
Base Layer: Attached with 1" Type S drywall screws 24" o.c.
Second Layer: Attached with 1-5/8" Type S drywall screws 24" o.c.
Face Layer: Attached with 2-1/4" Type S drywall screws 12" o.c. and 1-1/4" corner bead at each corner nailed with 4d coated nails. Joint compound 1/16" thick applied over corner bead and entire outer layer of drywall.

4-Hour Fire Rating

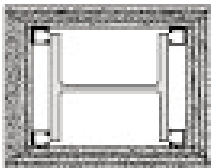
Test Reference: UL X507, GA CM 4322



Base Layer: 1/2" ToughRock Fireguard C gypsum board applied to 1-5/8" steel studs with 1" Type S drywall screws 12" o.c. Studs placed at the outside of flange edge of heavy steel W14 x 228 column.
Face Layer: 1/2" ToughRock Fireguard C gypsum board applied to studs through base layer with 1-5/8" Type S drywall screws 12" o.c. 1-1/4" corner bead, each corner, attached with 1-3/8" 4d coated nails long 12" o.c.

4-Hour Fire Rating

Test Reference: UL X501

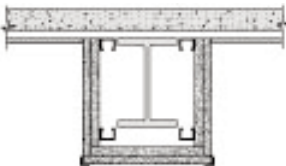


Four layers of 5/8" ToughRock Fireguard C gypsum board covering W10 x 49 steel column.
Inner Layer: Attached to steel studs with 1" long self-drilling, self-tapping screws spaced vertically 24" o.c.
Second Layer: Attached to steel studs with 1-5/8" long self-drilling, self-tapping screws spaced vertically 24" o.c.
Third Layer: Attached to sheet-metal angles with 1" long, self-drilling, self-tapping screws spaced vertically 12" o.c.
Outer Layer: Gypsum board attached to the sheet metal angles with 1-5/8" long self-drilling, self-tapping screws spaced vertically 12" o.c.

Beam Fire Protection Assemblies

2-Hour Fire Rating

Test Reference: UL, N502, ULC O502, GA BM 2130



Two layers of 5/8" ToughRock Fireguard C gypsum board around beam.
Base Layer: Attached with 1-1/4" Type S drywall screws 16" o.c.
Face Layer: Attached with 1-3/4" Type S drywall screws 8" o.c. to horizontally installed U-shaped steel channels (25-gauge steel 11-1/16" wide with 1" legs) located not less than 1/2" from beam flanges. Upper channels secured to steel deck units with 1/2" Type S pan-head screws spaced 12" o.c. U-shaped brackets formed of steel channels spaced 24" o.c. suspended from the upper channels with 1/2" Type S pan-head screws and supported steel channels installed at lower corners of brackets. Outside corners of gypsum board protected by 0.020" thick steel corner beads crimped or nailed. (Two-hour restrained or unrestrained beam.)

3-Hour Fire Rating

Restrained Beam

2-Hour Fire Rating

Unrestrained Beam

Test Reference: UL N505



Three layers of 5/8" ToughRock Fireguard gypsum board around minimum W 8 x 24 beam.
Base Layer: Attached with 1" Type S drywall screws 16" o.c.
Middle Layer: Attached with 1-5/8" Type S drywall screws 12" o.c.
Face Layer: Attached with 2-1/4" Type S drywall screws 5/8" o.c. to horizontally installed steel channels (25-gauge steel 11-1/16" wide with 1" legs) located not less than 1/2" from beam flanges. Upper channels secured to steel deck units with 1/2" Type S pan-head screws spaced 12" o.c. Brackets formed of steel channels spaced 24" o.c. suspended from the upper channels with 1/2" Type S pan-head screws and supported steel channels installed at lower corners of brackets. 20-gauge hexagonal steel mesh fitted between middle and face layers of gypsum board along bottom and extending 1-1/2" onto sides. Outside corners of gypsum board protected by steel corner beads crimped or nailed to the gypsum board. 1-1/2" fluted steel deck units welded to top of beam and supporting minimum 2-1/2" concrete. (Three-hour restrained or two-hour unrestrained beam.)

Architectural Specifications

Part 1 – General

1.0 Description of Work

Types of Work: The types of work herein specified include the following:

Gypsum drywall applied to steel stud framing system.

Gypsum drywall applied to wood framing.

Gypsum drywall backing board as substrate for other finishes.

Gypsum drywall applied to solid substrates.

Gypsum drywall applied to ceiling and soffits.

Gypsum drywall finishing including joint tape and compound treatment.

1.1 Quality Assurance

Fire-Resistance Ratings: Where gypsum drywall assemblies with fire-resistance ratings are indicated, provide G-P Gypsum system that provides the required rating.

Provide fire-rated assemblies identical to those indicated by reference to GA File Nos. in GA Fire Resistance Design Manual or to design designations in UL Fire Resistance Directory, Warnock Hersey (WHI) listing, or in listing of other testing and agencies acceptable to authorities having jurisdiction. For fire safety information, visit www.gp.com/gypsum/firesafety.

1.2 Qualifications

All gypsum and joint treatment materials shall be manufactured by G-P Gypsum Corporation, unless otherwise indicated. All materials shall be installed in accordance with printed installation instructions from G-P Gypsum.

1.3 Submittals

Product Data: Submit G-P Gypsum product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.

1.4 Delivery, Storage and Handling

Deliver materials in original packages, containers or bundles bearing G-P Gypsum Corporation brand name and identification. Remove the plastic shipping covers immediately upon receipt of delivery.

Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.5 Project Conditions

Environmental Requirements General: Comply with requirements of gypsum board application standards and recommendations of G-P Gypsum for environmental conditions before, during and after application of gypsum board.

Cold Weather Protection: When outdoor temperature is below 50°F, maintain building working temperature of not less than 50°F for a period of 48 hours prior to, during and following application of gypsum board and joint treatment materials or bonding of adhesives. Note: The use of forced air heaters creates volumes of water vapor which, when not properly vented, can condense on building materials. The use of these heaters and any resulting damage is not the responsibility of G-P Gypsum. Consult heater manufacturer for proper use and ventilation.

Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

Part 2 – Products

2.0 Materials – G-P Gypsum

ToughRock® 5/8" Fireguard™ Type X gypsum board. (For fire safety information, visit www.gp.com/gypsum/firesafety.)

ToughRock 1/2" Fireguard C gypsum board.

ToughRock 5/8" Fireguard C gypsum board.

ToughRock 1/4" Sound Deadening board.

1/2" DensGlass Gold Exterior Sheathing.

5/8" DensGlass Gold Fireguard Exterior Sheathing.

5/8" DensShield® Fireguard Tile Backer.

1/2" DensArmor Plus™ Type C

5/8" DensArmor Plus Type X

2.1 Metal studs

Track, resilient channels, screws and other components including insulation as recommended by G-P Gypsum. Provide studs and tracks of dimension and gauge for required assembly and fire rating.

2.2 Trim Accessories

General: Provide standard trim accessories as recommended by G-P Gypsum of types indicated for drywall work. Provide galvanized steel unless otherwise indicated.

2.3 Joint Treatment Materials

Joint Tape: ToughRock™ tape

Joint Compound: ToughRock® Ready-Mix All-Purpose Joint Compound or setting- type joint compound.

2.4 Miscellaneous Materials

General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by G-P Gypsum to include screws, nails, adhesives, sealants, sound blankets and insulation, including ToughRock Fire-Halt® Sealant Setting Compound.

2.5 Texture Finish Materials

ToughRock Wall Texture: Non-aggregated compound.

ToughRock Ceiling Texture: Vermiculite, medium or coarse texture.

ToughRock Ceiling Texture: Fine, medium or coarse perlite aggregate.

2.6 Gypsum Drywall System

System Type: Provide G-P Gypsum Corporation drywall system complying with requirements indicated.

Part 3 – Execution

3.0 Installation

General: Follow G-P Gypsum recommendations for installation of metal support systems to include ceiling suspension system, direct hung metal support system and wall support system.

3.1 Installation of Gypsum Board

General: Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216, Application and Finishing of Gypsum Board.

Install sound attenuation blankets where indicated.

Install ceiling boards in the direction that will minimize the number of end-butt joints. Stagger end joints at least 1'.

Install gypsum board on walls to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

Install gypsum board with face side out. Do not install damaged or damp boards.

Locate edge or end joints that are parallel to supports over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.2 Gypsum Drywall Application

Apply gypsum board per appropriate fire test report or as outlined in ASTM C 840 and GA-216, Application and Finishing of Gypsum Board.

Exterior Soffits and Ceilings: Install exterior gypsum board perpendicular to supports; stagger end joints over supports. Install with 1/4" gap where boards abut other work.

3.3 Installation of Accessories

General: Use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with G-P Gypsum instructions and recommendations.

3.4 Drywall Finishing

General: Apply treatment at gypsum board joints, flanges of trim accessories, penetrations, fastener heads and surface defects. Prefill open joints and rounded or beveled edges using type of compound recommended by G-P Gypsum.

Levels of Finish: The recommended levels of finish of gypsum board for walls and ceilings are contained within GA-214: Levels of Gypsum Board Finish and ASTM C 840.

3.5 Application of Texture Finishes

Finish Application: Mix and apply finish to drywall and other surfaces in strict accordance with G-P Gypsum instructions.

3.6 Protection of Work

Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

DensArmor Plus™ Paperless Interior Drywall

DensArmor Plus is a new generation paperless drywall designed as a replacement for paper-faced drywall for building interiors. DensArmor Plus drywall incorporates glass mats on the surfaces of the drywall panel instead of paper facings found on traditional drywall. The combination of paperless surfaces and a moisture resistant core provides superior moisture- and mold-resistance when compared to traditional paper-faced drywall. G-P Gypsum offers a **three-month in-place exposure warranty** which means DensArmor Plus can be hung before installing doors and windows. DensArmor Plus installs using the same steps as traditional drywall.

DensGlass Gold® Exterior Sheathing

DensGlass Gold exterior sheathing is a moisture-resistant gypsum panel that can be used for exterior walls, ceilings and soffits. Its paperless, glass-mat facings and moisture-resistant core resist the effects of surface water exposure while providing resistance to mold. With a long established track record, DensGlass Gold sheathing is so weather resistant that it is backed with a **six-month in-place exposure warranty**. DensGlass Gold is the preferred sheathing for use under brick, stone, stucco and EIFS siding materials. DensGlass Gold sheathing is so widely used that its bright GOLD™ color is recognized throughout the industry.

DensShield® Tile Backer

DensShield tile backer is a patented substrate for floor, wall and ceiling ceramic tile installations. Designed with a built-in moisture barrier, DensShield protects tile installations and the wall cavity from the effects of moisture in damp areas such as bathrooms and kitchens. Incorporating glass-mat facings and a moisture resistant core, DensShield is lighter and easier to install than heavy, hard-to-work-with cement board tile backers. The combination of moisture and mold resistance, along with potential labor savings, makes DensShield the superior substrate for ceramic tile in the industry. Georgia-Pacific backs DensShield tile backer with a **lifetime limited warranty when used in residential tile installations**. In addition, DensShield offers a **20 year limited warranty** for its use in commercial applications.

DensGlass Ultra™ Shaftliner

DensGlass Ultra Shaftliner is the ideal component for gypsum board shaft wall/stairwell and area separation wall systems when a fire rating is required. DensGlass Ultra Shaftliner incorporates a moisture and mold resistant, non-combustible gypsum core with paperless glass-mat facings to resist exposure to the elements during the early stages of the construction cycle. Backed by a **six-month in-place exposure warranty**, DensGlass Ultra Shaftliner is the perfect substitute for heavy, expensive masonry construction. It also offers superior moisture and mold resistance compared to traditional paper-faced shaftliner wallboard products.

DensDeck® Roof Board

Versatile DensDeck roof board is utilized in a wide variety of roofing systems for new and re-roofing applications as cover boards, overlays, underlayments and separator boards. Featuring a combination of fire resistance, strength, moisture resistance and dimensional stability, DensDeck roof board enhances the overall performance of most roofing assemblies and is widely respected and specified by leading roofing system manufacturers. DensDeck roof board, with its paperless glass-mat facings, has been shown to withstand delamination, deterioration, warping and job site damage far more effectively than paper-faced gypsum board or other conventional roofing products, such as wood fiberboard and perlite.

DensDeck Prime® Roof Board

DensDeck Prime roof board from G-P Gypsum combines the superior features of DensDeck roof board, including fire resistance, strength, moisture resistance and dimensional stability, with an enhanced surface treatment. The coated surface of DensDeck Prime provides an ideal substrate for a wide variety of adhered roofing systems by allowing a uniform spread of adhesives, which results in a strong, consistent bond. DensDeck Prime can be used in cold mastic, torch applied modified bitumen as well as fully-adhered, single-ply systems.

DensDeck DuraGuard® Roof Board

DensDeck DuraGuard roof board from G-P Gypsum combines the superior features of DensDeck roof boards, including fire resistance, strength, moisture resistance and dimensional stability, with a durable, low perm, integrated coating. This coating provides an ideal substrate for a wide variety of adhered roofing systems, including self-adhered, hot-mopped membranes, and torched asphaltic systems. The coating assures more uniform spreading of adhesives, an excellent coverage rate, and it enhances the bond strength of membrane system-to-board without the need for field priming with a number of systems.



SALES INFORMATION AND ORDER PLACEMENT

U.S.A. Midwest: **1-800-876-4746** West: **1-800-824-7503**
South: **1-800-327-2344** Northeast: **1-800-947-4497**

CANADA Canada Toll Free: **1-800-387-6823**
Quebec Toll Free: **1-800-361-0486**

G-P Gypsum Technical Hotline: U.S.A. and Canada: **1-800-225-6119**



Some of our products have been certified by Scientific Certification Systems (SCS). SCS is an internationally recognized third-party evaluation, testing and certification organization. Its program spans a wide cross-section of the economy, including manufacturing and retailing, consumer products, the energy industry, and the home improvement and construction sectors. For details on specific G-P Gypsum products and plants, please contact our Technical Hotline at 800-225-6119.

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LIMITATION OF REMEDIES AND DAMAGES Unless otherwise stated in our written limited warranty for these products, our sole liability for any product claim shall be limited to reimbursement of the cost of repair or replacement of the affected product, up to a maximum amount of two times the original purchase price for the affected product. We shall not be responsible under any circumstances for lost profits, damage to a structure or its contents, or indirect, incidental, special or consequential damages. Claims shall be deemed waived if they are not submitted to us in writing within ten days after discovery.

SAFETY CAUTION: Some products contain fiberglass. Fibers and dust may be released from these products during normal handling and may result in skin, eye and respiratory irritation. Avoid breathing dust and contact with the skin and eyes. Follow these standard work practices: Wear a loose-fitting, long-sleeved shirt and long pants, protective gloves and eye protection (goggles or safety glasses with side shields). Wear a dust mask when sanding. Additional protection may be needed when very dusty. Do not use a power saw. For Material Safety Data Sheet or additional information, call 1-800-225-6119 or visit our website.