USG Interior Panel & Finishing Solutions

USG SHEETROCK® BRAND ECOSMART PANELS

SOUND PERFORMANCE SELECTOR GUIDE

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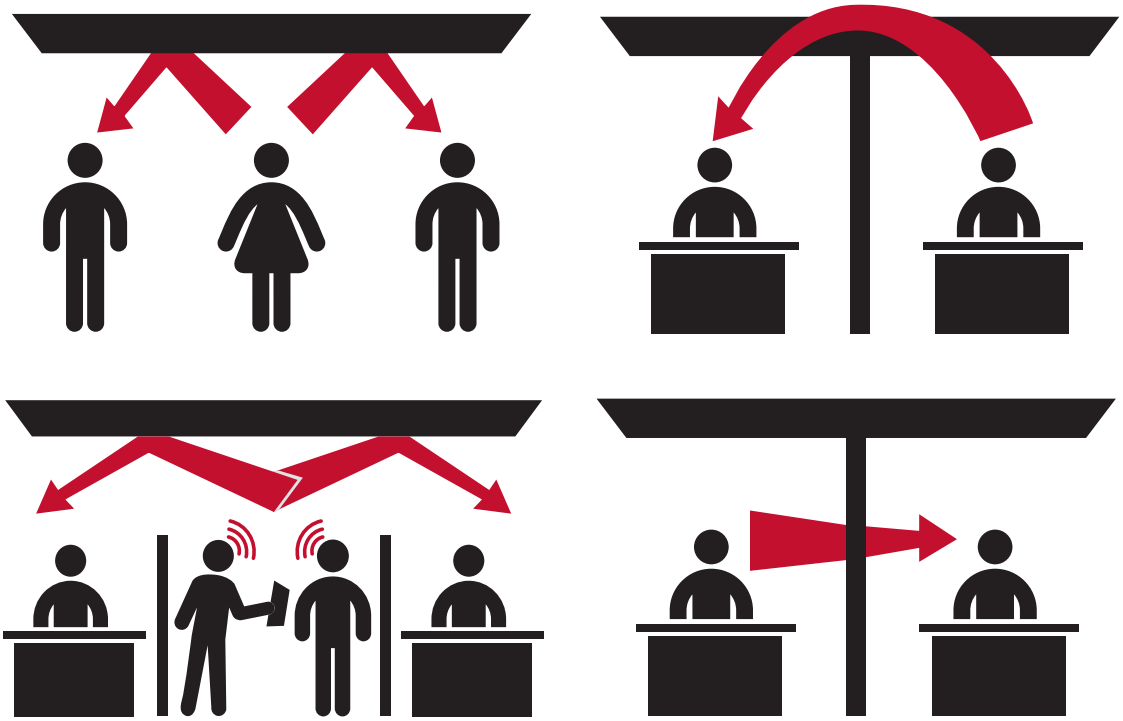
THE WAY SOUND TRAVELS THROUGH SPACES

Sound travels as a vibratory wave in an elastic medium. At a molecular level, sound is generated when a vibrating object (such as a loudspeaker or human vocal cords) pushes against particles of the medium (such as air) adjacent to it, back and forth, creating an alternate compression and rarefaction of the medium. These disturbances move away from the source in a wave motion, much as a ripple moves along the surface of water when a stone is dropped in.

Airborne sound generally travels in a straight path from its source. However, when sound interacts with other objects and materials, the wave may bounce off partitions, bend around barriers, and squeeze through small openings. Air, like water, is adept at sneaking through and around barriers. Consequently, sound traveling through air will exploit the weakest points of a barrier and transfer through even the smallest openings quite efficiently.

The more elastic a substance, the better it can conduct sound. Elasticity is the ability of a material to resist distortion and to return to its original shape after having been subjected to a force. Highly elastic materials, such as steel, are excellent conductors of sound, while inelastic materials, such as gypsum board, can help resist transmission of sound. In the design of sound-rated construction assemblies, the introduction and combination of elastic and inelastic materials can be tailored to meet specific needs of a system.



CONTROLLING AIRBORNE SOUND[1]

The control of airborne sound in any building is determined by the applicable building codes. Among the most important factors used for sound control are:

- **Mass:** Sound waves must overcome the mass (weight) of a medium before the particles of the medium can be set into motion to transmit sound. Mass may be a factor in the reduction of impact sound transmission. It is most effective—though unpredictable—in the lower frequencies.
- **Isolation:** The retardation of the flow of airborne and structure-borne sound through an assembly or use of special materials, methods of construction and designs. Decoupling is one isolation method, in which the elements of a partition are separated to retard transmission of structure-borne sound.
- **Damping:** When the full capabilities of mass and isolation have been utilized, the next logical step is damping. A method of damping is the process of introducing fibrous sound-absorbing material into the partition to increase the transmission loss. (Damping in floor-ceiling construction has a wider application for impact sound than for airborne sound.) There are several ways to introduce damping beyond just insulation.
- **Leaks:** Any leak in a partition that will allow air or light to pass will also leak sound. Small holes in a wall, openings for electrical boxes and plumbing, cracks around doors are all leaks that will allow sound to pass, destroying the noise reduction effectiveness of the assembly.
- **Limpness:** A limp member (such as a lead sheet) does not vibrate easily. As a result, sound is dampened.
- **Flanking Paths:** Sound waves have sufficient energy to set any construction (assembly) in motion. That means that sound can bypass a sound partition by activating the floor on which the partition rests. Flanking paths are as important to impact sound as to airborne sound.
- **Masking Level:** Background noise (such as from air conditioning or human activities), also known as masking level, plays an important part in the apparent acoustical performance of a partition. A partition for an apartment located in an area that has considerable amount of outside or "street" noise may prove quite satisfactory, while the same partition in a quiet neighborhood would be unsatisfactory. The difference is the background noise, which "masks" the sound being transmitted through the partition.
- **Impact Sound Isolation:** Impact sound is also transmitted by vibration, but the energy setting the floor, ceiling or wall into vibration is supplied by a physical act, such as footsteps, a bouncing ball, dropping a toy or a frying pan, moving furniture or slamming a door.

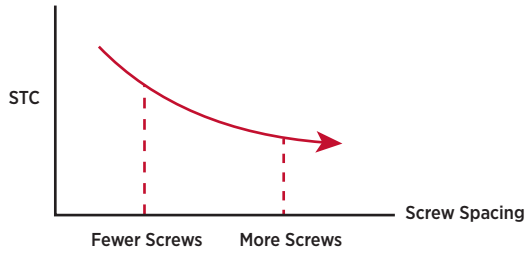
Note:

1. Excerpted with permission from the publisher, Wiley, from *The Gypsum Construction Handbook*—Seventh Edition by USG Corporation. Copyright © 2014.

KEY FACTORS THAT CONTRIBUTE TO STC

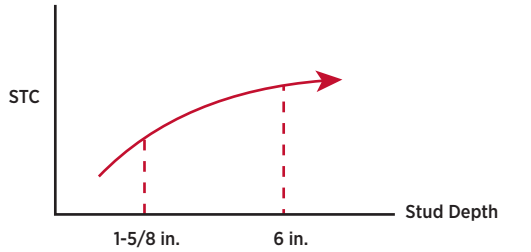
SCREW SPACING

Screws spaced closer together will decrease STC and sound isolation.



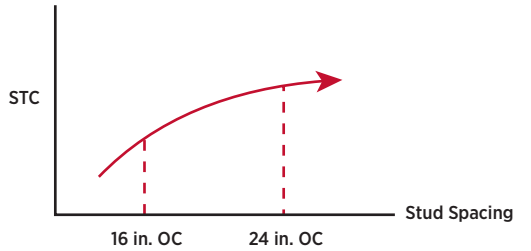
STUD DEPTH

Greater stud depth allows for more airspace and increased performance.



STUD SPACING

Wider stud spacing creates larger air cavities and decreased stiffness for better sound isolation.

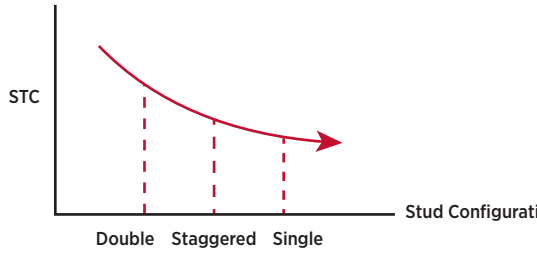


STUD TYPE

Steel studs allow greater flexibility and sound isolation without reducing structural integrity.

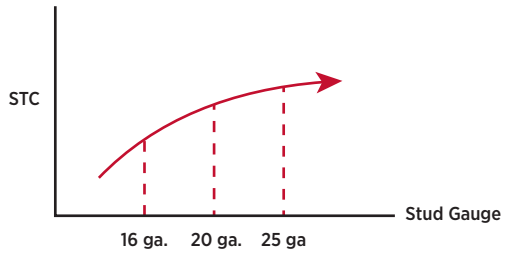
STUD CONFIGURATION

Separating stud frames adds decoupling and increased air space, increasing sound transmission loss.



STUD GAUGE

Light gauge studs provide better sound isolation than heavy gauge studs.



SOUND TRANSMISSION LOSS TESTING AND BEST PRACTICES

To ensure the highest performing gypsum panels, sound transmission loss tests were conducted by an accredited laboratory for acoustical performance under laboratory conditions in accordance with ASTM E90 and ASTM E413. It is important to follow best practices for sound control design and installation in order to obtain optimal installed acoustical performance. A basic rule is that sound performance is compromised any place where air can pass. Best practices include, but are not limited to:

- All perimeters not covered with joint compound and tape shall be sealed with USG Sheetrock® Brand Acoustical Sealant, including between the floor and the base of the gypsum panels.
- The number and size of penetrations in a partition should be minimized and all openings should be completely sealed.
- Electrical boxes installed on opposite sides of a partition should not be back-to-back or in the same stud cavity. Any unused openings in boxes should be sealed.
- Solid wood or mineral core doors with gasketed frames can help the acoustical performance of the system.
- Use of lightweight steel framing instead of wood studs, because they transmit less sound energy.
- Addition of fiberglass or mineral wool sound control insulation in the stud cavities.
- Use of resilient channels to structurally isolate the gypsum panels from the framing.

More specific information regarding sound control design and construction can be found in the *USG Gypsum Construction Handbook* and Gypsum Association publication, *Fire Resistance Design Manual* (GA-600).

GENERAL ACOUSTIC PERFORMANCE GUIDELINES

While some differences in Sound Transmission Class (STC) value may be seen in the comparison data for wall assemblies, the differences are minimal and likely due to standard variations[2] in laboratory testing. Additionally, it has been found that the human ear cannot detect variances in sound levels that are less than 3 dB, as shown in the following chart.

Change in Sound Level	Change in Apparent Loudness
1-2 dB	Indiscernible
3 dB	Just perceptible
5 dB	Clearly noticeable
10 dB	Twice as loud (or quiet)
20 dB	Four times as loud (or quiet)

Note:

2. Based on an inter-laboratory comparison, the reproducibility standard deviation for reference specimens tested per ASTM E90, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element*, was found to be 2 dB or less in the test frequency range.

U.S. GREEN BUILDING COUNCIL LEED® 4.0 ACOUSTIC PERFORMANCE CREDIT

Intent: To provide occupied spaces, offices and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.

Requirements: All occupied spaces in new construction must meet the following requirements, as applicable, for HVAC background noise, sound isolation, reverberation time, and sound reinforcement and masking.

Sound Transmission: Meet the composite sound transmission class (STC) ratings listed in the below table, or local building code, whichever is more stringent.

Minimum STC For Adjacent Spaces		STC Minimum[3]
Multifamily residence, hotel and motel	Residence, motel or motel	**55**
Residence, hotel or motel	Common hallway, stairway	**50**
Residence, hotel or motel	Retail	**60**
Standard office	Standard office	**45**
Executive office	Executive office	**50**
Conference room	Conference room	**50**
Office, conference room	Hallway, stairway	**50**
Mechanical room	Occupied area	**60**

Note:

3. Excerpted from *LEED® v4.0 Building Design and Construction Rating System Guide* by U.S. Green Building Council. Published April 14, 2017.

USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE® X (UL TYPE ULIX™)

USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE® X (UL TYPE ULIX™)

The first wallboard to meet the Architecture 2030 Challenge for Products, USG Sheetrock® Brand EcoSmart Panels Firecode® X (UL Type ULIX™) represent a revolution in wallboard manufacturing, significantly reducing the need for natural resources and impact on the environment.

- Meet Architecture 2030 Challenge for Products
  - Up to 25% less global warming potential (GWP)[4]
  - Up to 25% less water used in the manufacturing process[4]
  - Up to 22% less weight reduces transportation fuel energy by up to 20%
- Living Building Challenge Compliant
- Up to 94.6% recycled content (regionally available)
- Achieved GREENGUARD Gold Certification and qualify as a low VOC emitting material (meets CA 01350)
- USGBC® LEED® v4.0—may assist in achieving 1-1/2 additional credits (up to 10 total credits)
- Underwriters Laboratories Inc. (UL) Classification as to fire resistance, surface-burning characteristics and noncombustibility
- Comply with ASTM C1396 specification for 5/8 in. Type X gypsum wallboard
- Offer comparable sound, strength, sag and impact resistance to standard 5/8 in. Type X
- Listed by UL in the most widely specified wall, column, floor-ceiling and roof-ceiling assemblies (refer to specific UL designs for complete details)

USG Sheetrock® Brand EcoSmart Panels Firecode® X (UL Type ULIX™) are ideal for use in:

- Commercial or residential applications where 5/8 in. Type X panels are required
- New or repair and remodel construction
- Load-bearing and non-load-bearing wood- or steel-framed fire-rated walls
- Any UL design in which UltraLight Innovation Type X (ULIX™) panels are listed

Note:

4. Compared to standard 5/8 in. Type X gypsum panels as presented in the Gypsum Association's *5/8 in. Type X Environmental Product Declaration* (FPI/GA/01/2014) with fresh water usage updated to be in accordance with ISO 14046.

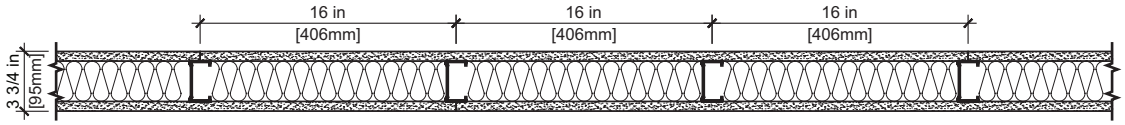
USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE® X (UL TYPE ULIX™)

ACOUSTICAL PERFORMANCE

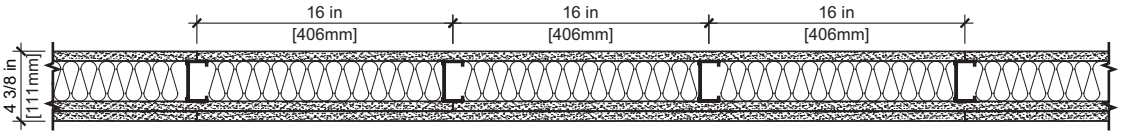
Product	UL Type Designation
USG Sheetrock® Brand EcoSmart Panels Firecode® X	ULIX™
USG Sheetrock® Brand Firecode® X Panels (traditional)	SCX

2-1/2 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U419)

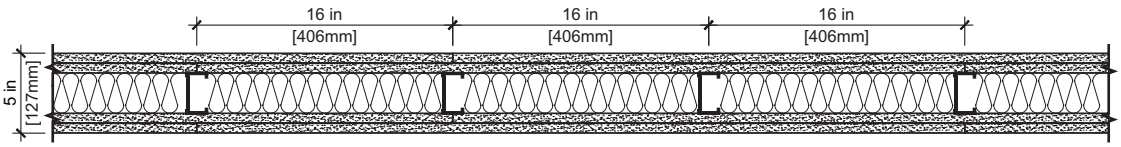
Partition Description	System Thickness	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ



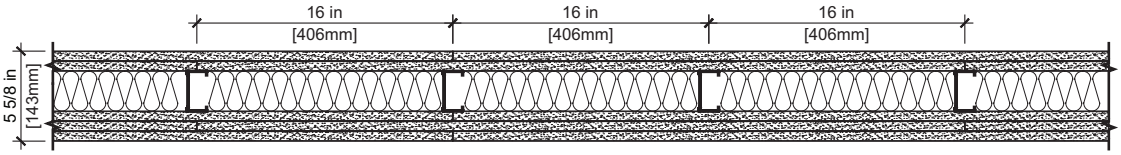
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2-1/2 in. Steel Studs • 2-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	3-3/4 in.	**40** USG-170410	**41** USG-170407



SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2-1/2 in. Steel Studs • 2-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	4-3/8 in.	**44** USG-170402	**44** USG-170411

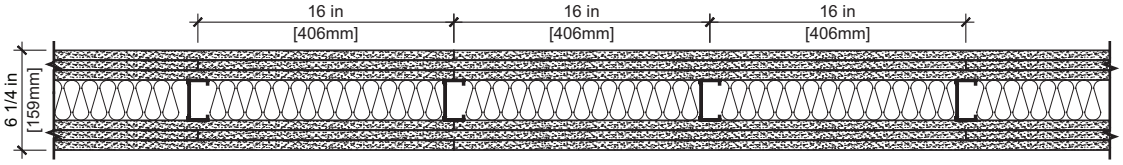


SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2-1/2 in. Steel Studs • 2-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5 in.	**49** USG-170403	**48** USG-170412



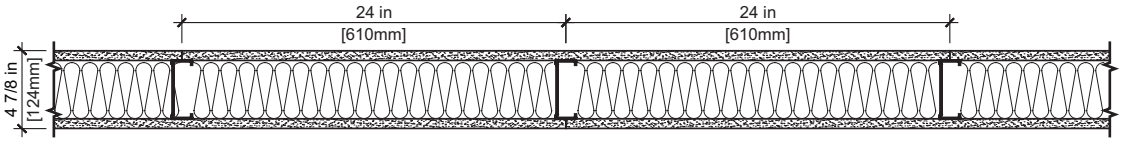
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2-1/2 in. Steel Studs • 2-1/2 in. Fiberglass Insulation SIDE B: (3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-5/8 in.	**52** USG-170404	**52** USG-170413

2-1/2 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U419) CONT.

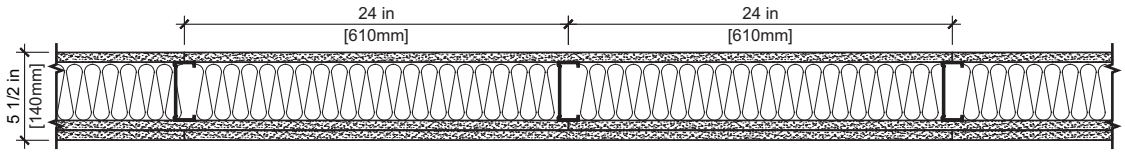


	Partition Description	System Thickness	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A	(3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-1/4 in.	**52** USG-170407	**53** USG-170416
MID	• 2-1/2 in. Steel Studs • 2-1/2 in. Fiberglass Insulation			
SIDE B	(3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels			

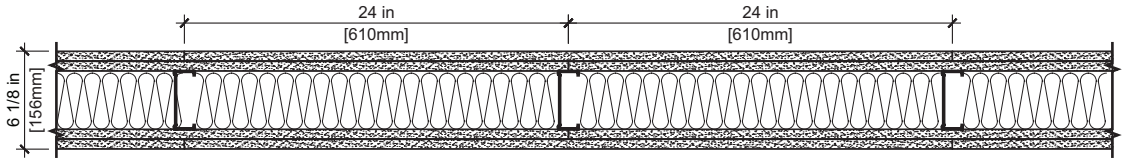
3-5/8 IN. STEEL STUDS SPACED 24 IN. OC (UL DESIGN U419)



	Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	4-7/8 in.	**48** RAL-TL15-064	**48** RAL-TL11-074*	**48** USG-150923	**45** RAL-TL12-202
MID	• 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation					
SIDE B	(1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels					



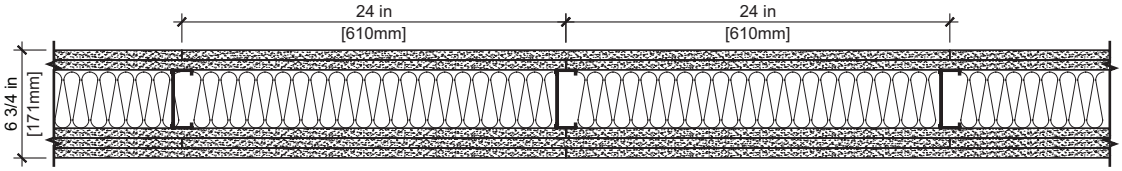
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-1/2 in.	**51** RAL-TL15-041	**52** RAL-TL11-075*	**50** USG-160727	Not tested
MID	• 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation					
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels					



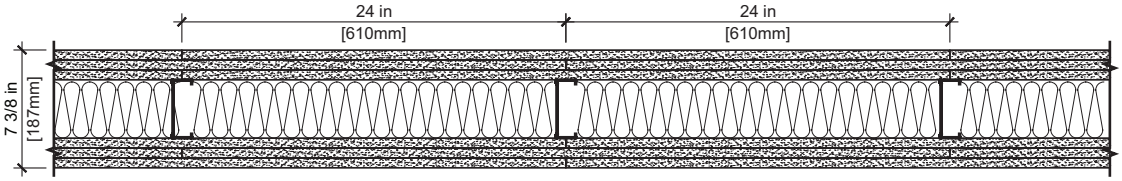
SIDE A	(2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-1/8 in.	**54** RAL-TL15-042	**53** RAL-TL11-126*	**52** USG-160730	Not tested
MID	• 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation					
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels					

* Sound tests were conducted on traditional gauge studs. Performance on EQ studs will meet or exceed listed STC rating.

3-5/8 IN. STEEL STUDS SPACED 24 IN. OC (UL DESIGN U419) CONT.

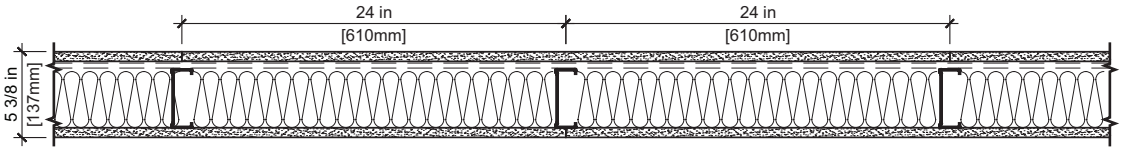


Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-3/4 in.	55 USG-160723	Not tested	54 USG-160731	Not tested

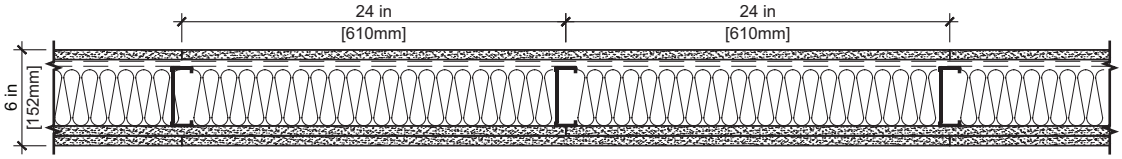


Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A: (3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	7-3/8 in.	56 USG-160724	Not tested	55 USG-160732	Not tested

3-5/8 IN. STEEL STUDS SPACED 24 IN. OC AND RESILIENT CHANNEL (UL DESIGN U419)



Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-3/8 in.	51 USG-151202	52 RAL-TL11-073*	50 USG-151203	51 RAL-TL12-203

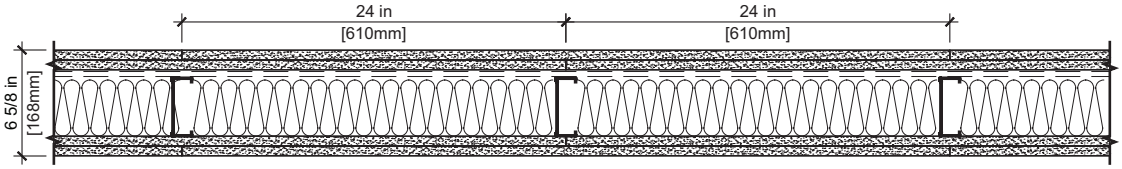


Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6 in.	54 USG-151201	Not tested	53 USG-151206	Not tested

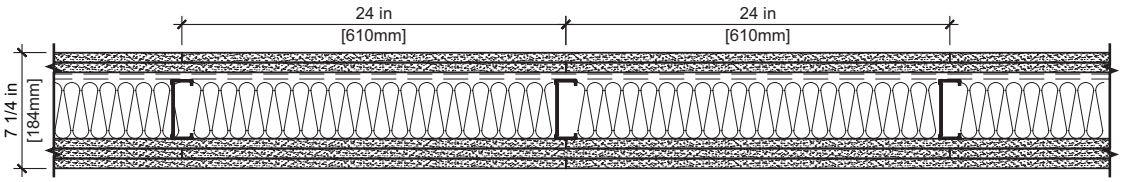
* Sound tests were conducted on traditional gauge studs. Performance on EQ studs will meet or exceed listed STC rating.

3-5/8 IN. STEEL STUDS SPACED 24 IN. OC AND RESILIENT CHANNEL (UL DESIGN U419) CONT.

Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ



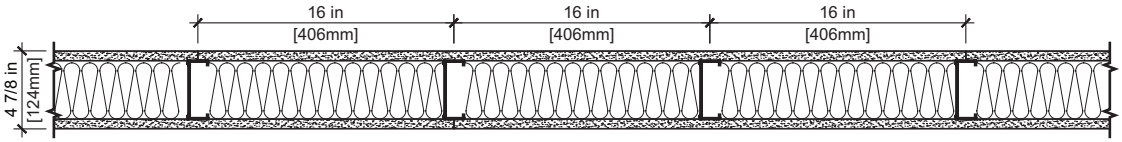
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-5/8 in.	**57** USG-161006	Not tested	**57** USG-160839	Not tested



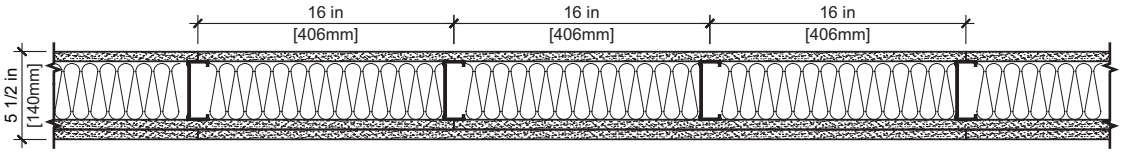
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (3) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	7-1/4 in.	**57** USG-161007	Not tested	**58** USG-160843	Not tested

3-5/8 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U419)

Partition Description	System Thickness	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ

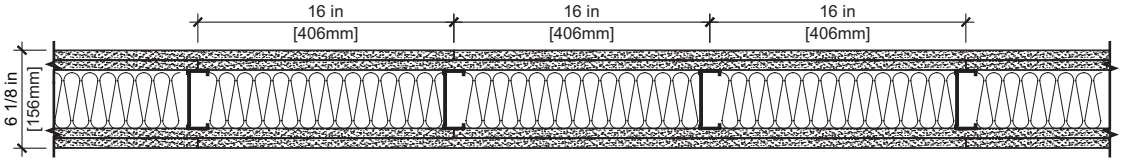


SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	4-7/8 in.	**44** USG-150919	**45** RAL-TL12-194

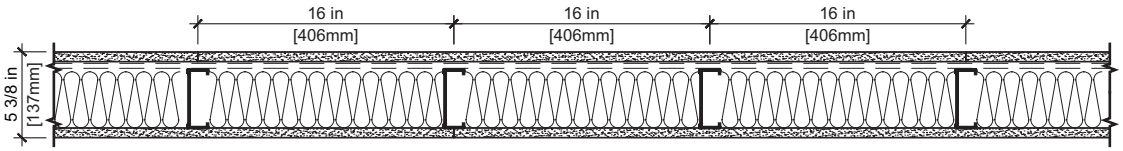
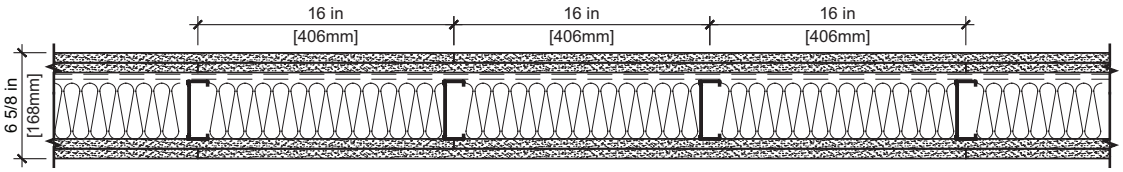


SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-1/2 in.	**46** USG-150807	**47** RAL-TL12-195

3-5/8 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U419) CONT.

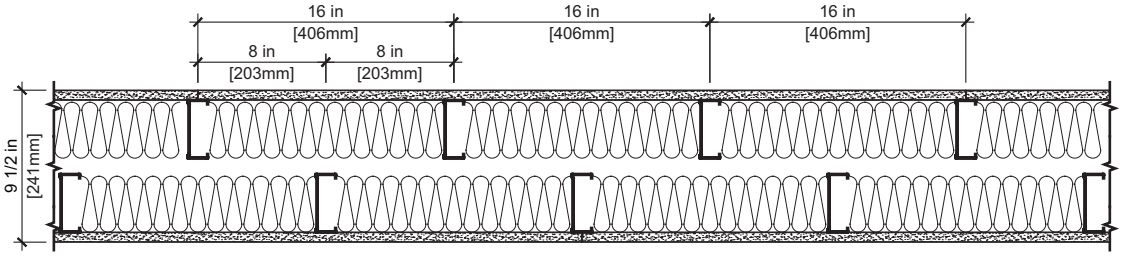
Partition Description	System Thickness	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
			
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-1/8 in.	**51** USG-161222	**53** USG-170104

3-5/8 IN. STEEL STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U419)

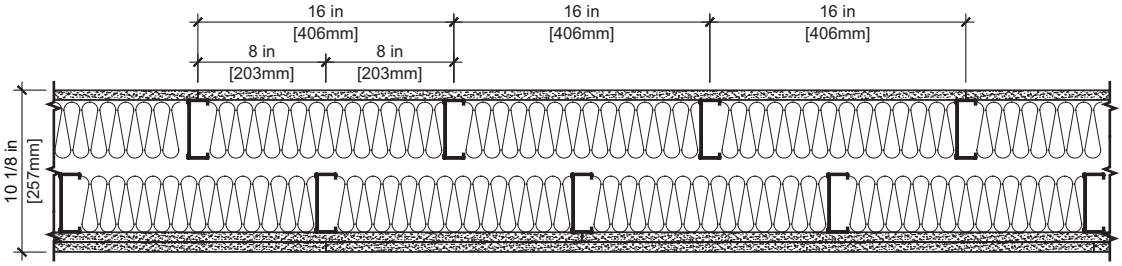
Partition Description	System Thickness	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
			
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-3/8 in.	**49** USG-151205	**50** RAL-TL12-197
			
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-5/8 in.	**56** USG-161223	**58** USG-161225

3-5/8 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U493)

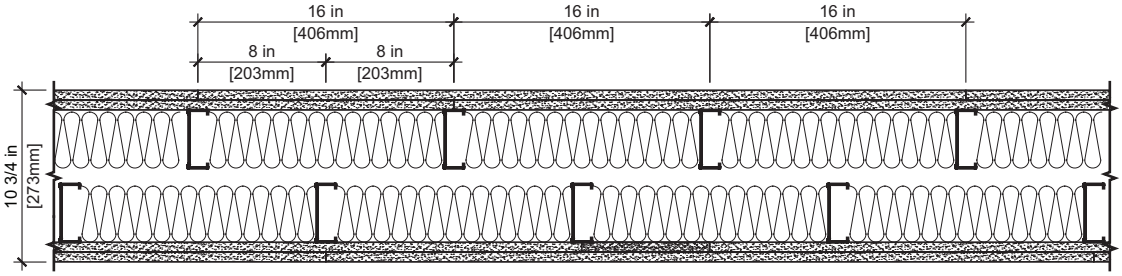
Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ



	Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	9-1/2 in.	**58** USG-160904	**61** USG-160912	**59** USG-160848	**60** USG-160901
MID	• 3-5/8 in. Steel Studs, Offset • 3-1/2 in. Fiberglass Insulation in Both Cavities • 1 in. Air Space					
SIDE B	(1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels					

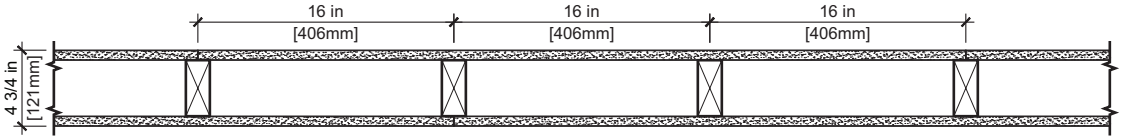
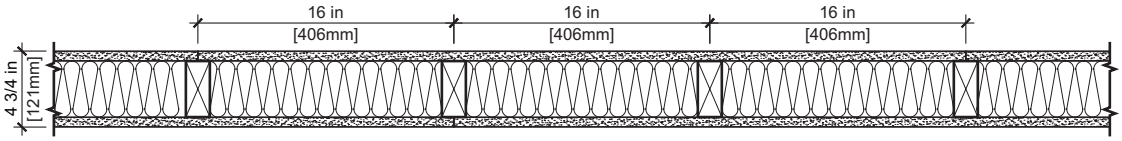
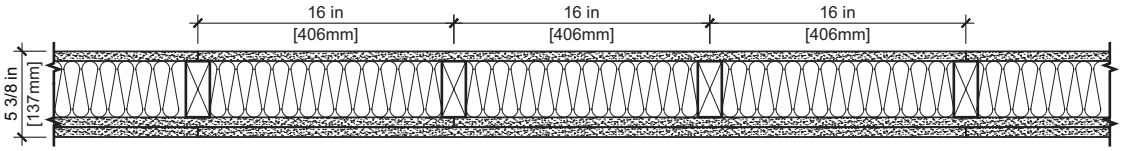


	Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	10-1/8 in.	**62** USG-160905	**64** USG-160915	**62** USG-160849	**63** USG-160902
MID	• 3-5/8 in. Steel Studs, Offset • 3-1/2 in. Fiberglass Insulation in Both Cavities • 1 in. Air Space					
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels					

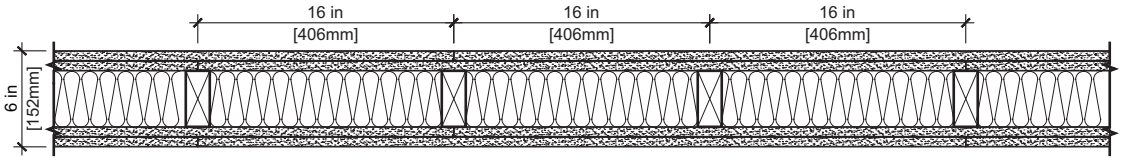


	Partition Description	System Thickness	ULIX™ 25 Gauge EQ	SCX 25 Gauge EQ	ULIX™ 20 Gauge EQ	SCX 20 Gauge EQ
SIDE A	(2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	10-3/4 in.	**65** USG-160906	**66** USG-160918	**64** USG-160850	**65** USG-160903
MID	• 3-5/8 in. Steel Studs, Offset • 3-1/2 in. Fiberglass Insulation in Both Cavities • 1 in. Air Space					
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels					

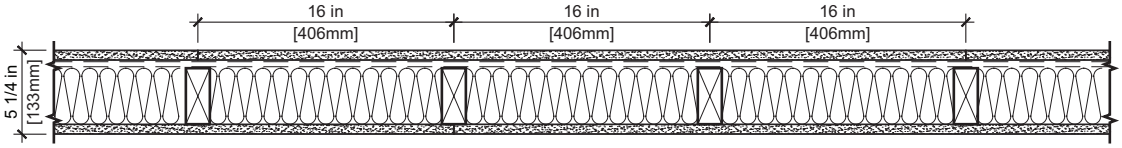
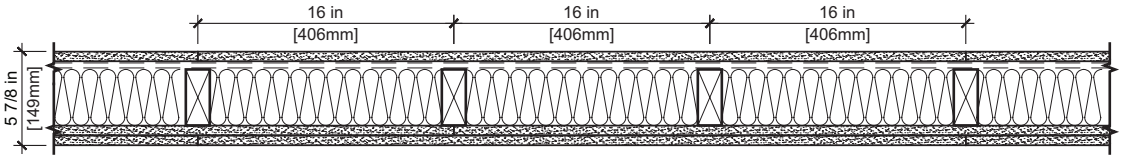
2X4 WOOD STUDS SPACED 16 IN. OC (UL DESIGN U305)

Partition Description	System Thickness	ULIX™ 2x4 Wood	SCX 2x4 Wood
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: 2x4 Wood Studs SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	4-3/4 in.	**33** USG-151234	**32** RAL-TL11-129
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	4-3/4 in.	**36** USG-151235	**34** RAL-TL11-130
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-3/8 in.	**38** USG-151236	**37** RAL-TL11-084

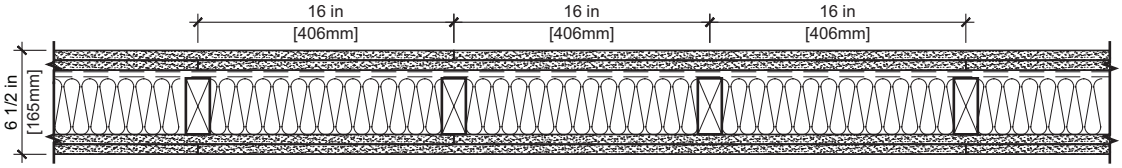
2X4 WOOD STUDS SPACED 16 IN. OC (UL DESIGN U301)

Partition Description	System Thickness	ULIX™ 2x4 Wood	SCX 2x4 Wood
 SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6 in.	**40** USG-151237	Not tested

2X4 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U305)

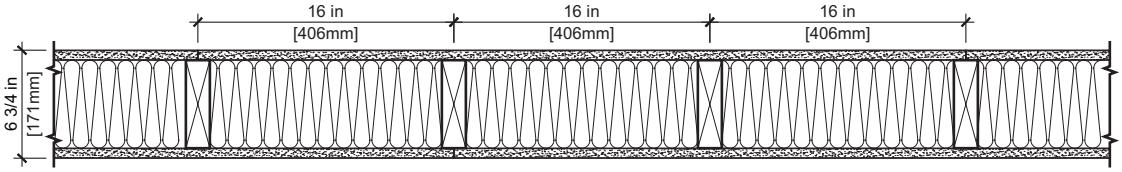
Partition Description	System Thickness	ULIX™ 2x4 Wood	SCX 2x4 Wood
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-1/4 in.	**47** USG-151240	**48** RAL-TL11-083
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	5-7/8 in.	**50** USG-151238	Not tested

2X4 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U301)

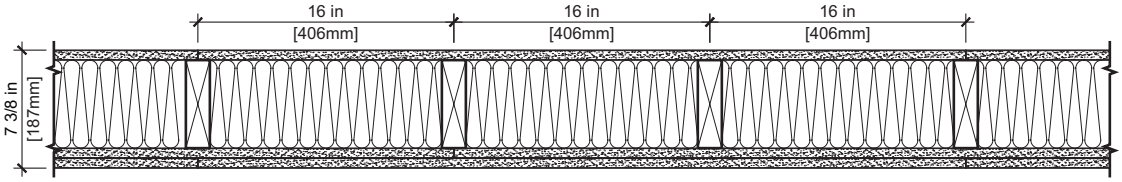
Partition Description	System Thickness	ULIX™ 2x4 Wood	SCX 2x4 Wood
 SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-1/2 in.	**54** RAL-TL15-063	Not tested

2X6 WOOD STUDS SPACED 16 IN. OC (UL DESIGN U305)

Partition Description	System Thickness	ULIX™ 2x6 Wood	SCX 2x6 Wood



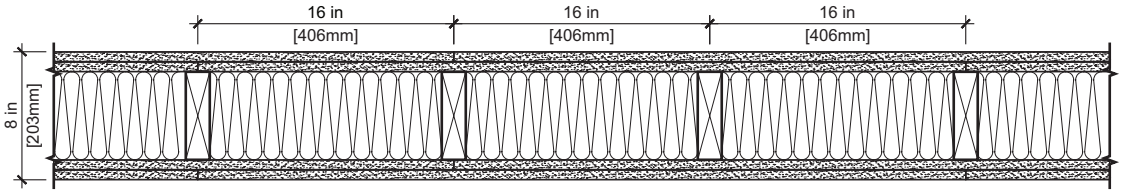
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2x6 Wood Studs • 6-1/4 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	6-3/4 in.	**36** USG-161208	**35** USG-161214



SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2x6 Wood Studs • 6-1/4 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	7-3/8 in.	**38** USG-161207	**40** USG-161215

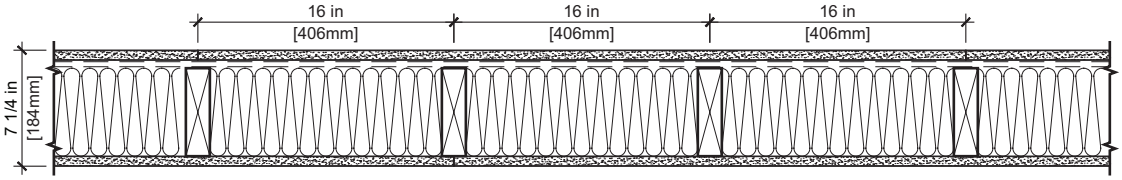
2X6 WOOD STUDS SPACED 16 IN. OC (UL DESIGN U301)

Partition Description	System Thickness	ULIX™ 2x6 Wood	SCX 2x6 Wood

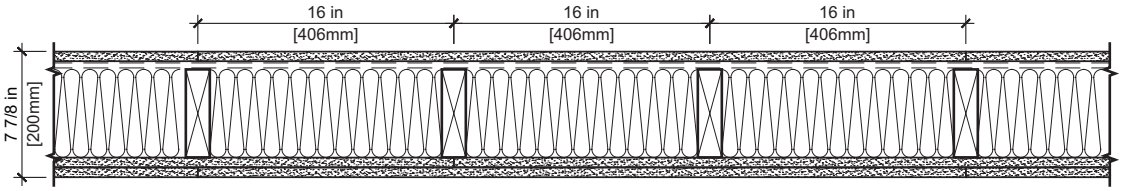


SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels MID: • 2x6 Wood Studs • 6-1/4 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	8 in.	**40** USG-161206	**42** USG-161216

2X6 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U305)

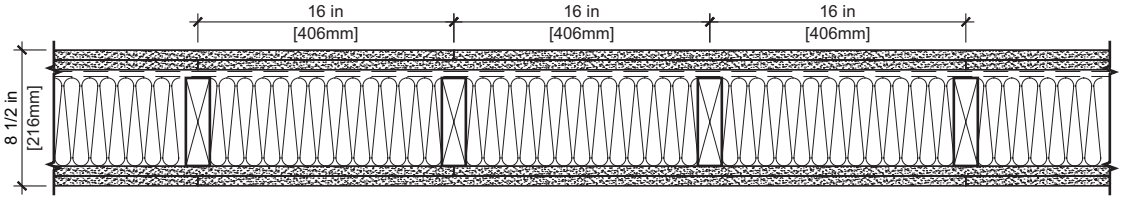


Partition Description	System Thickness	ULIX™ 2x6 Wood	SCX 2x6 Wood
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 2x6 Wood Studs • 6-1/4 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	7-1/4 in.	**49** USG-161201	**51** USG-161127



Partition Description	System Thickness	ULIX™ 2x6 Wood	SCX 2x6 Wood
SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 2x6 Wood Studs • 6-1/4 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	7-7/8 in.	**53** USG-161202	**53** USG-161213

2X6 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U301)



Partition Description	System Thickness	ULIX™ 2x6 Wood	SCX 2x6 Wood
SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels, RC Deluxe® MID: • 2x6 Wood Studs • 6-1/4 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand Type X Gypsum Panels	8-1/2 in.	**56** USG-161205	**56** USG-161212

FLOOR-CEILING SOUND TRANSMISSION REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE®

The International Building Code® (IBC®) is the foundation of the complete Family of International Codes®, which addresses the design and installation of materials that meet or exceed public health and safety goals.

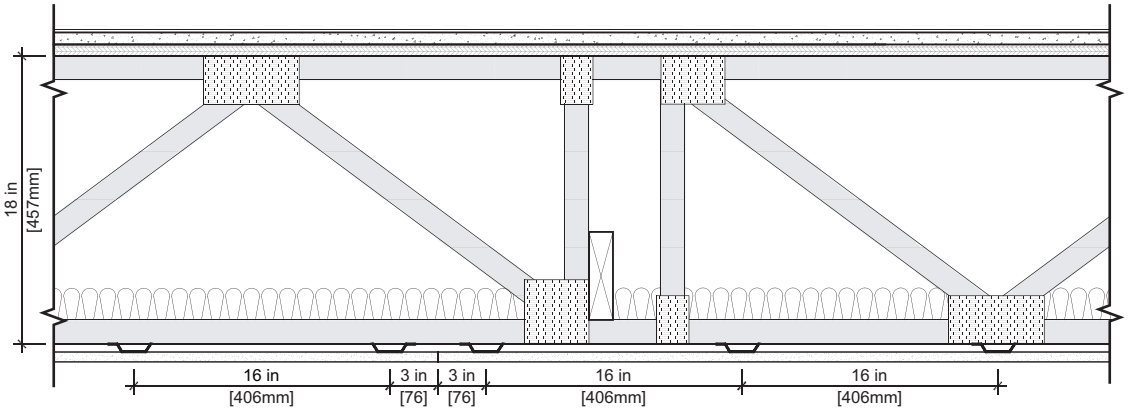
One such component of the IBC® are STC and IIC requirements for floor-ceiling assemblies.

Per section 1207 of the IBC®, airborne sound of floor-ceiling assemblies shall have an STC of not less than 50, or not less than 45 if field tested, when tested in accordance with ASTM E90.

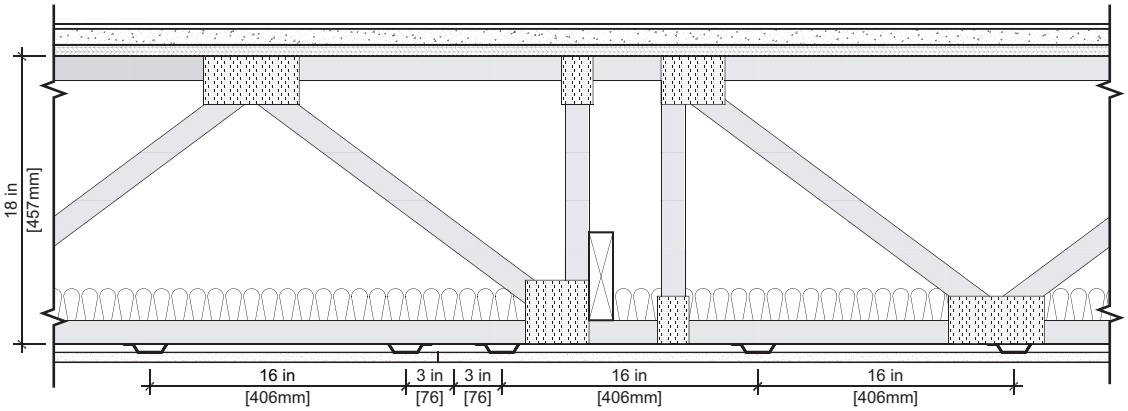
For structure-borne sound, floor-ceiling assemblies shall have an impact insulation class rating of not less than 50, or not less than 45 if field tested, when tested in accordance with ASTM E492.

For more information, visit iccsafe.org.

18 IN. OPEN-WEB WOOD TRUSS AND RESILIENT CHANNEL (UL DESIGN L521, L550, L563)

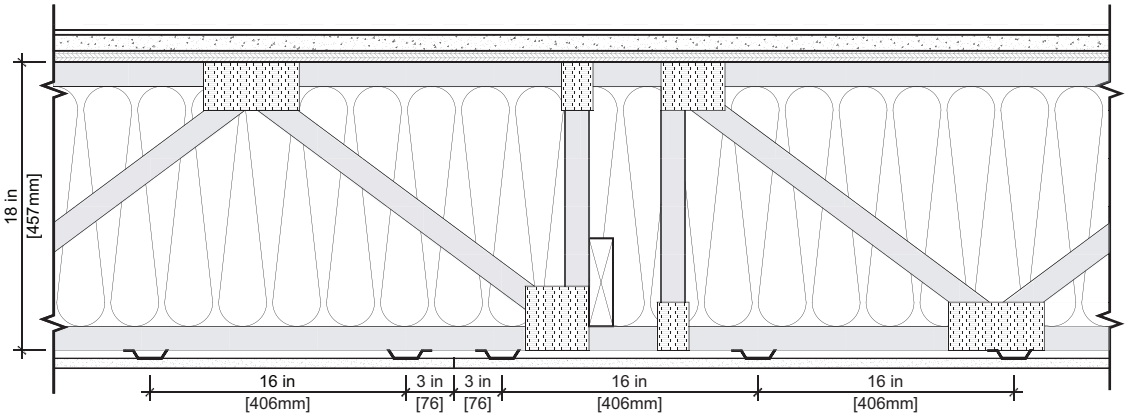


System	Floor Covering	ULIX™ STC	ULIX™ IIC
• 1/8 in. USG Levelrock® Brand SAM-N12™ Sound Attenuation Mat • 3/4 in. USG Levelrock® Brand Underlayment • 18 in. Open-Web Wood Truss • 3-1/2 in. Fiberglass Insulation • RC Deluxe® Spacing 16 in. OC • (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X	Bare Floor	59 G9876.01	48 G9876.01
	Luxury Vinyl Tile	58 G9876.02	50 G9876.02
	Sheet Vinyl	58 G9876.03	50 G9876.03
	Engineered Hardwood	59 G9876.04	52 G9876.04
	Ceramic Tile	59 G9876.05	51 G9876.05
	Carpet and Pad	59 G9876.06	70 G9876.06



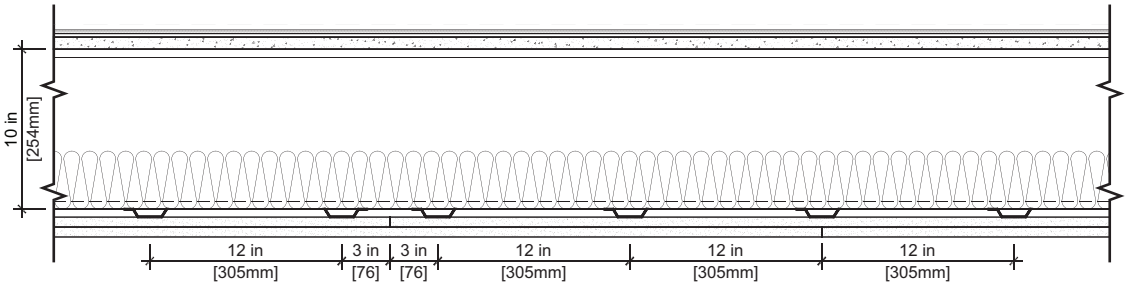
System	Floor Covering	ULIX™ STC	ULIX™ IIC
• 1/4 in. USG Levelrock® Brand SAM-N25™ Sound Attenuation Mat • 1 in. USG Levelrock® Brand Underlayment • 3-1/2 in. Fiberglass Insulation • RC Deluxe® Spacing 16 in. OC • (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X	Bare Floor	58 G9877.01	50 G9877.01
	Luxury Vinyl Tile	58 G9877.02	50 G9877.02
	Sheet Vinyl	58 G9877.03	51 G9877.03
	Engineered Hardwood	58 G9877.04	51 G9877.04
	Ceramic Tile	59 G9877.05	51 G9877.05
	Carpet and Pad	58 G9877.06	69 G9877.06

18 IN. OPEN-WEB WOOD TRUSS AND RESILIENT CHANNEL (UL DESIGN L521, L550, L563) CONT.



System	Floor Covering	ULIX™ STC	ULIX™ IIC
• 1/4 in. USG Levelrock® Brand SAM-N25™ Sound Attenuation Mat • 1 in. USG Levelrock® Brand Underlayment • 18 in. Open-Web Wood Truss • 18 in. Fiberglass Insulation • RC Deluxe® Spacing 16 in. OC • (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X	Bare Floor	61 G9878.01	54 G9878.01
	Luxury Vinyl Tile	60 G9878.02	56 G9878.02
	Sheet Vinyl	60 G9878.03	56 G9878.03
	Engineered Hardwood	61 G9878.04	57 G9878.04
	Ceramic Tile	61 G9878.05	57 G9878.05
	Carpet and Pad	60 G9878.06	79 G9878.06

10 IN. DEEP STEEL JOIST AND RESILIENT CHANNEL (UL DESIGN G557)



System	Floor Covering	ULIX™ STC	ULIX™ IIC
• 1/4 in. USG Fiberock® Brand Tile Backerboard • Pliteq GenieMat® RST02/RST05 Rubber Underlayment • 3/4 in. USG Structural Panels • 10 in. Deep Steel Joist • 3-1/2 in. Fiberglass Insulation • RC Deluxe® Spacing 12 in. OC • (2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X	Sheet Vinyl (with RST02)	**57** H0466.14-113-11	**50** H0466.14-113-11
	Luxury Vinyl Tile (with RST05)	**58** H0466.10-113-11	**50** H0466.10-113-11
	Cushioned Sheet Vinyl (with RST02)	**57** H0466.12-113-11	**50** H0466.12-113-11
	Engineered Hardwood (with RST05)	**59** H0466.08-113-11	**50** H0466.08-113-11

USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE 30®
(UL TYPE FC30)

USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE 30® (UL TYPE FC30)

USG Sheetrock® Brand EcoSmart Panels Firecode 30® (UL Type FC30) represent a revolution in wallboard manufacturing, significantly reducing the need for natural resources and impact on the environment.

- Meet Architecture 2030 Challenge for Products
  - Up to 27% less global warming potential (GWP)[5]
  - Up to 28% less water used in the manufacturing process[5]
  - Up to 30% less weight reduces transportation fuel energy by up to 20%
- Living Building Challenge Compliant
- Up to 97.3% recycled content (regionally available)
- Achieved GREENGUARD Gold Certification and qualify as a low VOC emitting material (meets CA 01350)
- USGBC® LEED® v4.0—may assist in achieving two additional credits (up to 11 total credits)
- Underwriters Laboratories Inc. (UL) Classification as to fire resistance—30-minute and 1-hour fire-rated walls
- Meet or exceed ASTM C1396 for 5/8 in. non-Type X
- Offer comparable strength, sag and impact resistance to standard 5/8 in. Type X

USG Sheetrock® Brand EcoSmart Panels Firecode 30® (UL Type FC30) are ideal for use in:

- Commercial or residential applications where 5/8 in. Type X panels are not required
- New or repair and remodel construction
- Non-fired-rated steel- or wood-framed wall and ceiling assemblies
- Single-layer wood- or steel-framed 30-minute fire-rated wall assemblies
- Double-layer gypsum panel steel-framed 1-hour fire-rated wall assemblies
- Any UL design where UL Type FC30 panels are listed

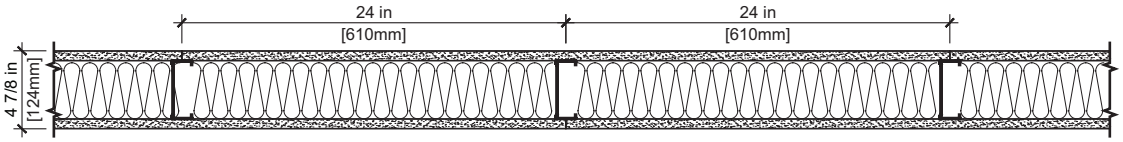
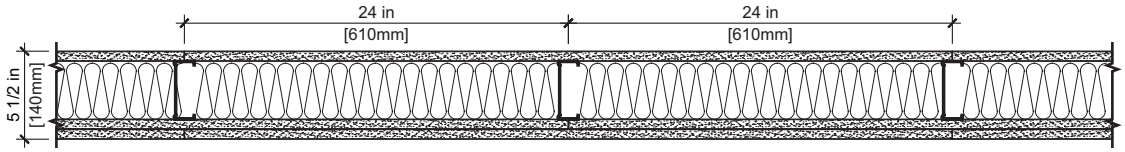
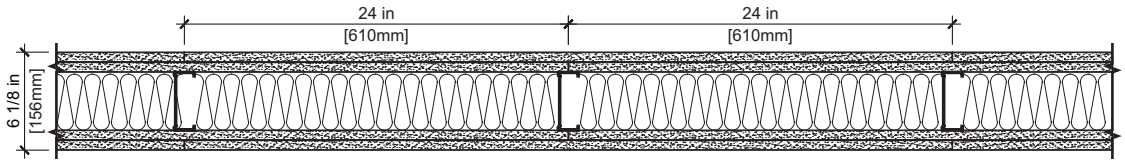
Note:

5. Compared to standard 5/8 in. Type X gypsum panels as presented in the Gypsum Association's *5/8 in. Type X Environmental Product Declaration* (FPI/GA/01/2014) with fresh water usage updated to be in accordance with ISO 14046.

USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE 30® (UL TYPE FC30)
ACOUSTICAL PERFORMANCE

Product	UL Type Designation
USG Sheetrock® Brand EcoSmart Panels Firecode 30®	FC30

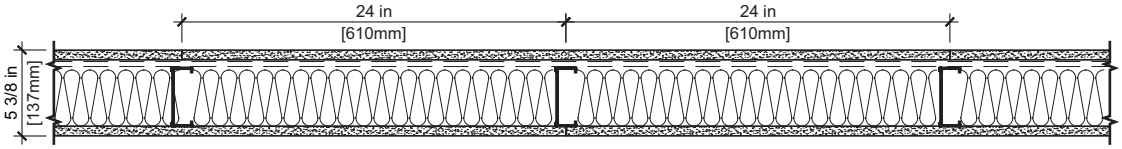
3-5/8 IN. STEEL STUDS SPACED 24 IN. OC (UL DESIGN U407)

Partition Description	System Thickness	FC30 25 Gauge EQ	FC30 20 Gauge EQ
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	4-7/8 in.	**47** USG-170144	**46** USG-170203
 SIDE A: (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	5-1/2 in.	**49** RAL-TL11-128*	Not tested
 SIDE A: (2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30® MID: • 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation SIDE B: (2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	6-1/8 in.	**52** RAL-TL11-080*	Not tested

* Sound tests were conducted on traditional gauge studs. Performance on EQ studs will meet or exceed listed STC rating.

3-5/8 IN. STEEL STUDS SPACED 24 IN. OC AND RESILIENT CHANNEL (UL DESIGN U407)

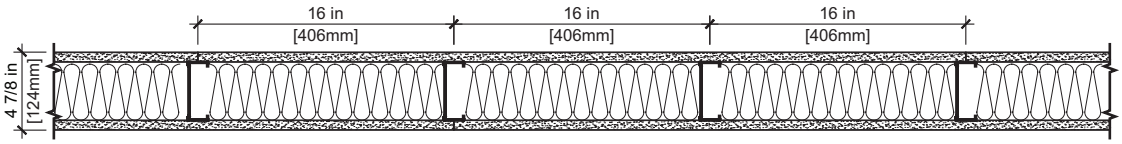
Partition Description	System Thickness	FC30 25 Gauge EQ	FC30 20 Gauge EQ



SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®, RC Deluxe®	5-3/8 in.	**50** USG-170201	**47** RAL-TL12-204
MID	• 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation			
SIDE B	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®			

3-5/8 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U407)

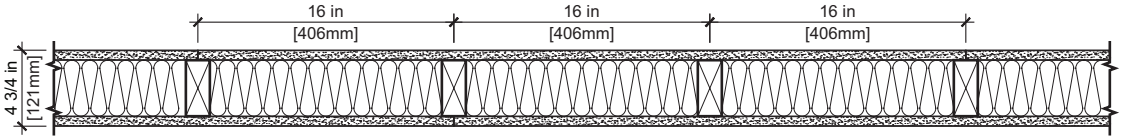
Partition Description	System Thickness	FC30 25 Gauge EQ	FC30 20 Gauge EQ



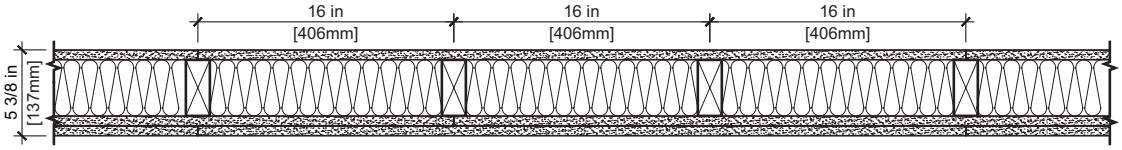
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	4-7/8 in.	**44** USG-170202	**39** USG-170204
MID	• 3-5/8 in. Steel Studs • 3-1/2 in. Fiberglass Insulation			
SIDE B	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®			

2X4 WOOD STUDS SPACED 16 IN. OC (UL DESIGN U407)

Partition Description	System Thickness	FC30 2x4 Wood



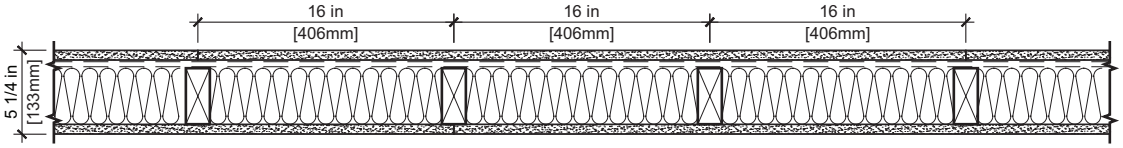
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	4-3/4 in.	**33** RAL-TL11-086
MID	• 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation		
SIDE B	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®		



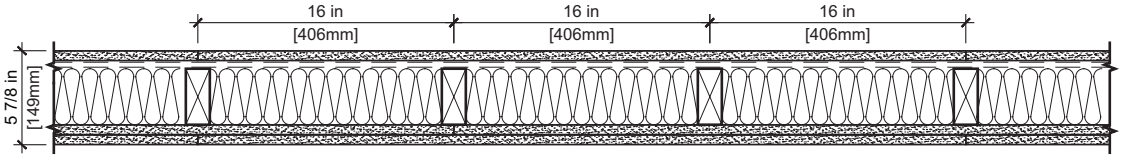
SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	5-3/8 in.	**35** RAL-TL11-087
MID	• 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation		
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®		

2X4 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U407)

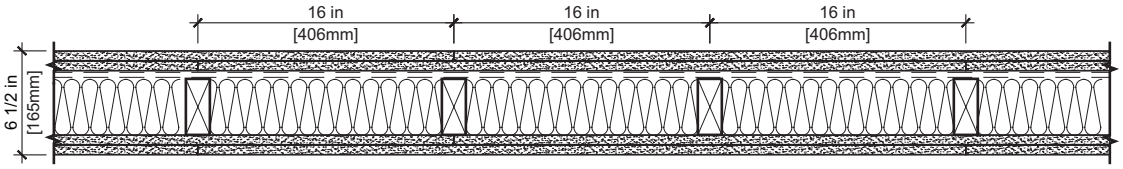
Partition Description	System Thickness	FC30 2x4 Wood



SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®, RC Deluxe®	5-1/4 in.	**45** RAL-TL11-085
MID	• 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation		
SIDE B	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®		



SIDE A	(1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®, RC Deluxe®	5-7/8 in.	**49** RAL-TL11-131
MID	• 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation		
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®		



SIDE A	(2) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®, RC Deluxe®	6-1/2 in.	**52** RAL-TL11-132
MID	• 2x4 Wood Studs • 3-1/2 in. Fiberglass Insulation		
SIDE B	(2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®		

CONTACT INFORMATION

Manufactured by
United States Gypsum Company
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Chicago, IL 60661

PRODUCT INFORMATION

See usg.com for the most up-to-date product information.

GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.

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