Comprehensive information on fire-rated assemblies incorporating USG products and systems

USG

Fire-Resistant Assemblies

One of the most critical issues for architects is ensuring that building design addresses fire-safety issues. This resource lists fire-resistant assemblies using USG products and systems, as well as the related evaluation reports. The results of acoustical tests are also included, where relevant.

Fire Safety

User's Guide

Use this brochure to determine fire ratings for USG products and systems. This brochure provides:

- Comprehensive information about fire-rated assemblies
- Product and system attributes to help you identify the system that meets your project requirements for life safety, structural performance and acoustics
- Easy access to USG's technical information or to specific data

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Fire Protection

USG is the undisputed leader among building material manufacturers in providing products and systems designed to keep people safe from fire.

Fire-safety properties are described in terms of fire resistance, surface-burning characteristics and noncombustibility.

Fire Safety	**Building assembly's fire resistance**	The period of time the assembly will serve as a barrier to the spread of fire and how long the assembly can function structurally after it is exposed to a fire of standard intensity as defined by ASTM E119. Sometimes this is also called the assembly's fire endurance.
	Flame spread	The measure of a material's relative burning behavior. Both the flame spread and smoke developed are measured in accordance with ASTM E84.
	Noncombustible material	A material that will not burn or contribute any appreciable amount of fuel to a fire, as determined through ASTM E136.
	Class A designation	Refers to material that may ignite but will not sustain a flame. Class A products will not generate excessive visibility-obscuring smoke, an important factor in designing safe egress for building occupants. Class A is not a fire-resistance designation.
Fire-Rated		Fire-resistance ratings have long been used by UL, ASTM and building codes to measure the performance of various constructions for fire containment purposes. As applied to elements of buildings, the fire-resistance rating classifies the ability of an assembly to confine and isolate fire within a zone comprised of fire-resistance rated walls, ceiling and floor assemblies. The ratings relate to fire tests designed to determine how quickly fire can raise the temperature to unacceptable levels. Fire-rated assemblies are tested and certified in their entirety. These designs are identified in the UL Fire Resistance Directory, which is updated yearly and can be referenced at the Underwriters Laboratories website at ul.com. For additional information on USG fire-rated assemblies, CAD, BIM content and specifications, visit USG Design Studio at usgdesignstudio.com.
For More Information		If you have additional questions regarding fire protection, use the following resources:
	USG Literature	USG Firestop Systems (SA727) USG *Gypsum Construction Handbook*
	Industry Resources	Underwriter Laboratories, Inc. Fire Resistance Directory, Volume One

Selector Overview

The sections listed below correspond to the different types of assemblies in which USG products are tested.

Each section is arranged sequentially according to fire ratings, the criterion that most often governs selection. Each entry within a section contains a reference to the source for more information within the Architectural Reference Library binder.

		Pages	
A	Partitions	9-23	Steel-framed, including non-loadbearing, loadbearing and chase walls; wood-framed, including non-loadbearing, loadbearing and chase walls; area separation walls; shaft walls; and masonry walls. Includes gypsum base and veneer finishes, gypsum drywall, cement board and conventional lath and plaster.
B	Floors/Ceilings	24-44	Steel-framed, including steel bar joist framing, steel C-joist framing, and steel truss; wood-framed, including dimensional lumber, engineered joist and truss; and structural concrete.
C	Roof/Ceilings	45-51	Steel-framed, including steel bar joist framing, steel C-joist framing, steel truss and steel roof deck; wood-framed, including dimensional lumber, engineered joist and truss; and structural concrete.
D	Horizontal Membrane	52	Shaft wall used in a horizontal plane.
E	Structural Fireproofing	53-56	Column, beam, through-penetration walls and floors, and joists. Basic methods of protecting columns and beams with gypsum base and veneer finishes, mineral fireproofing, and gypsum drywall.
F	Exterior Walls	57-59	Steel-framed, including loadbearing and non-loadbearing; and wood-framed, including loadbearing. Includes exterior curtain wall assemblies.
G	Through-Penetration Firestops	60-63	Mortar-, caulk- and intumescent-type materials that provide reliable firestops.

Test Certification

Test Conditions and Certification

Fire- and sound-tested assemblies listed in this Selector are based on characteristics, properties and performance of materials and systems obtained under controlled test conditions as set forth in the appropriate ASTM Standard in effect at the time of test. These listings are short summaries to serve as a compilation and guide of construction assemblies available in the selection process. For complete information on construction details and components used in these systems, refer to the individual Folder reference.

USG Corporation will provide information for published fire, sound and structural data, covering systems designed and constructed according to its published specifications. Tests are conducted on Company products assembled to meet performance requirements of established test procedures specified by various agencies. System performance following any substitution of materials or compromise in assembly design cannot be certified and may result in failure under critical conditions.

Sound tests are conducted under controlled laboratory conditions according to ASTM procedures. Comparable field performance depends on building design and careful attention to detailing and workmanship.

Certain sound tests, conducted in accordance with ASTM methods, measured sound transmission of 11 frequencies. This data has been retained in this Selector to serve as a guide to the designer. Based on experience, the STC values are very close to those obtained for the assembly under current methods at 16 frequencies.

Sound ratings shown for steel-framed partitions apply to systems constructed with 25 gauge steel studs 24" o.c., unless otherwise noted. Heavier gauge studs are more rigid and may not provide the same sound ratings.

Abbreviations

In the Selector, the following abbreviations may be used. Estimated fire ratings are based on an engineering evaluation by qualified professionals.

acoust	acoustical	fin	finish or finished	oz	ounce
alt	alternate	fireprfg	fireproofing	partn	partition
alum	aluminum	fixt	fixture	pcf	pounds per cubic foot
appl	applied	flr	floor	perim	perimeter
att	attached	freq	frequency	plywd	plywood
atten	attenuation	ft	foot or feet	prot	protected or protection
betw	between	fur	furring	qtr	quarter
bd	board	ga	gauge	recom	recommended
cem	cement	galv	galvanized	reg	regular
chan	channel	hex	hexagonal	rel	relocatable
clg	ceiling	horiz	horizontally	resil	resilient
col	column	hr	hour	run	runner(s)
com	common	ht	height	SAFB	sound attenuation fire blankets
conc	concrete	insul	insulating or insulation	sep	separate
contin	continuous	int	interior	separ	separated
conv	conventional	lamin	laminated	stag	staggered
corrug	corrugated	lbr	lumber	stl	steel
cr	cold rolled	lightwt	lightweight	struc	structural
ctd	coated	max	maximum	subflr	subfloor
dbl	double	met	metal	susp	suspended or suspension
Des	Design	min	mineral or minimum	T&G	tongue and groove
ea	each	nom	nominal	unfin	unfinished
equiv	equivalent	noncomb	noncombustible	vert	vertically
est	estimated	o.c.	on center	wd	wood
exp	exposed	opp	opposite	wt	weight (lb/sq ft)

Agencies	Fire
ASTM	American Society for Testing and Materials
CEG	Consulting Engineers Group
GA	Gypsum Assoc. (Fire Resistance Design Manual GA-600)
OSU	Ohio State University
U of C	University of California
UL	Underwriters Laboratories Inc.
WHI	Warnock Hersey International

Agencies	Sound
BBN	Bolt, Beranek and Newman
CK	Cedar Knolls Acoust. Laboratories
G & H	Geiger & Hamme
KAL	Kodaras Acoustical Laboratories
RAL	Riverbank Acoustical Laboratories
SA	Shiner & Assoc.
USG	USG Corporation

Sound Ratings	
CAC	ceiling attenuation class per ASTM procedures
IIC	impact insulation class per ASTM procedures
STC	sound transmission class per ASTM procedures

Cross Reference of USG Panels and UL Fire Ratings

The following table lists the USG panels that are appropriate to use for different UL fire-resistive Designs.

USG Panels

UL Design Number

5/8" Imperial® Gypsum Base or Sheetrock® Brand Firecode® Core or Mold Tough® Firecode Core Gypsum Panels

G503, G531, L501,	U451, U454, U458,
L508, N501, N502,	U459, U465, U466,
N505, P515, P516,	U467, U469, U473,
U026, U301, U302,	U485, U493, U504,
U303, U304, U305,	U505, U506, U506,
U308, U314, U321,	U512, U513, U603,
U329, U338, U342,	U606, U609, U615,
U344, U345, U354,	U617, U622, U625,
U355, U372, U404,	U640, V411, V417,
U408, U411, U415,	V419, V431, V433,
U419, U420, U423,	V439, V444, X508,
U424, U425, U430,	X516
U438, U442, U445,	

5/8" Sheetrock Firecode Core Gypsum Sheathing

L501, L508, N501,	U466, U467, U473,
N502, N505, U026,	U485, U504, U505,
U301, U302, U304,	U506, U512, U513,
U305, U308, U314,	U603, U606, U609,
U321, U338, U342,	U615, U617, U622,
U344, U354, U355,	U625, U637, U640,
U372, U404, U408,	V411, V417, V419,
U411, U415, U419,	V431, V433, V439,
U423, U424, U442,	V444, X508, X516
U430, U459, U465,	

5/8" Imperial Firecode C Core Gypsum Base, Sheetrock Firecode C Core or Mold Tough Firecode C Core Gypsum Panels

D301, D501, D502,	L559, L560, L563,
D503, G503, G512,	N501, N502, N505
G515, G516, G521,	P501, P503, P504,
G523, G525, G526,	P505, P506, P507,
G527, G528, G529,	P508, P509, P510,
G530, G531, G540,	P513, P514, P515,
G542, G543, G544,	P519, P521, P522,
G545, G546, J501,	P523, P524, P525,
J502, J503, J504,	P526, P527, P528,
L501, L508, L511,	P529, P530, P531,
L512, L513, L514,	P532, P534, P535,
L516, L520, L521,	P536, P537, P544,
L523, L525, L526,	U023, U301, U302,
L527, L528, L529,	U303, U305, U308,
L530, L531, L538,	U311, U327, U329,
L541, L545, L546,	U333, U334, U342,
L548, L549, L550,	U344, U354, U355,
L551, L552, L553,	U372, U404, U408,

USG Panels

UL Design Number

U411, U415, U419,	U618, U623, U626,
U423, U424, U430,	U627, U634, U635,
U442, U445, U457,	U639, U640, U642,
U458, U459, U465,	U643, U465, V414,
U466, U467, U469,	V417, V419, V431,
U473, U485, U504,	V433, V439, V444,
U505, U512, U528,	V448, X502, X504,
U602, U603, U605,	X508, X516, X536

5/8" Sheetrock® Brand Abuse-Resistant Gypsum Panels

U026, U301, U302,	U434, U438, U442,
U303, U304, U305,	U445, U450, U451,
U308, U314, U321,	U454, U458, U459,
U322, U223, U324,	U460, U465, U466,
U325, U326, U329,	U467, U473, U475,
U330, U332, U344,	U485, U493, U494,
U345, U354, U355,	U504, U505, U512,
U372, U411, U415,	U513, V417, V419,
U419, U420, U423,	V444
U424, U425, U430,	

1/2" Imperial Firecode C Core Gypsum Base, Sheetrock Firecode C Core or Mold Tough Firecode C Core Gypsum Panels

D502, G502, G515,	U436, U438, U440,
G523, G524, G526,	U441, U443, U444,
G527, G528, G529,	U448, U451, U452,
G530, G531, G533,	U453, U454, U455,
G534, G541, G545,	U467, U474, U478,
L502, L510, L512,	U497, U529, U601,
L514, L515, L524,	U603, U608, U611,
L525, L530, L531,	U613, U619, U620,
L542, L559, P237,	U910, U912, U914,
P510, P512, P520,	V410, V411, V418,
P532, P534, U307,	V433, X507, X514,
U317, U320, U345,	X515, X518, X521,
U406, U412, U415,	X522, X523, X524,
U419, U423, U424,	X530, X531
U425, U426, U435,	

5/8" Sheetrock UltraLight Panels Firecode X

U301, U302, U303,	U445, U451, U454,
U304, U305, U308,	U458, U459, U465,
U314, U321, U327,	U466, U467, U469,
U329, U338, U341,	U473, U485, U504,
U342, U344, U345,	U505, U506, U512,
U354, U355, U372,	U513, U609, U615,
U374, U379, U383,	U617, U622, V411,
U386, U391, U395,	V417, V419, V431,
U404, U408, U411,	V433, V444, V450,
U415, U419, U420,	V461, V467, V471,
U421, U423, U424,	V477, V478, V479,
U425, U430, U433,	V485, V486, V498,
U437, U438, U442,	V499, X508, X516

USG Panels

UL Design Number

Sheetrock® Brand Gypsum, Mold Tough or Glass-Mat Liner Panels

L541, U336, U408,	U492, U504, U505,
U415, U438, U441,	U529, V411, V433
U459, U467, U469,	

1/2" Sheetrock abuse-resistant gypsum panels

U317, U406, U423,	U424, U425

5/8" Fiberock sheathing, Aqua-Tough™ interior panels, abuse-resistance panels or VHI abuse-resistance panels

U301, U302, U303,	U445, U458, U459,
U304, U305, U308,	U465, U466, U467,
U314, U321, U329,	U469, U473, U485,
U342, U344, U345,	U493, U606, U609,
U354, U355, U359,	U615, U617, U622,
U372, U404, U408,	U625, U640, V411,
U411, U415, U419,	V417, V431, V439,
U423, U424, U430,	V444
U432, U438, U442,	

5/8" Securock® Glass-Mat Sheathing 5/8" Sheetrock Glass-Mat Panels Mold Tough Firecode X

U026, U057, U301,	U445, U450, U451,
U302, U303, U304,	U454, U458, U459,
U305, U308, U314,	U465, U466, U467,
U321, U327, U329,	U469, U473, U475,
U338, U339, U341,	U485, U493, U494
U342, U344, U345,	U504, U505, U506,
U354, U355, U356,	U512, U513, U603,
U357, U359, U360,	U606, U609, U615,
U368, U369, U372,	U617, U622, U625,
U374, U376, U377,	U640, V411, V417,
U379, U383, U386,	V419, V421, V431,
U391, U404, U408,	V433, V439, V444,
U411, U415, U418,	V450, V461, V465,
U419, U420, U423,	V467, V471, V477,
U424, U425, U430,	V478, V479, V485,
U432, U433, U434,	V486, X508, X516,
U437, U438, U442,	X526, X528

1/2" or 5/8" Durock® Cement Board

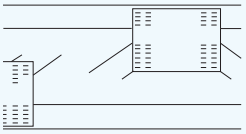
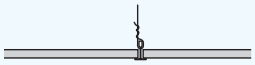
U303, U329, U433,	U541
U458, U473, U474,	

5/8" Sheetrock UltraLight Panels Firecode 30

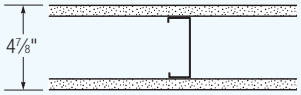
U407, U307	

Legend

This legend contains the symbols used throughout the Architectural Reference Library to represent various architectural elements. Profile and cross-section views are shown where appropriate, along with architectural material symbols.

Architectural Elements			Architectural Elements		
Component	**Cross Section**	**Profile**	**Component**	**Cross Section**	**Architectural Material Symbols**
C-H studs			Polystyrene insulation		
Z-furring			Blanket insulation		
Engineered joist			Solid wall		
Decking			Plywood		
Decking			Cement board		
Lath			Poured gypsum		
Wood truss			gypsum board or plaster		
Wood joist or stud			Veneer finish		
Steel joist or stud			Tile		
Steel truss			Concrete or precast concrete		
RC-1 channel			Ceiling panel		
Furring channel					

Steel Framed

30 Minute Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" Sheetrock UltraLight Panels Firecode 30 – 3-5/8" 25 gauge steel studs 24" o.c. – Optional insulation • Optional RC-1 channel	**UL Des U407**	44	**RAL-TL11-078** Based on R-11 Fiberglass Sound Bat	**A-1**
			45	**RAL-TL11-127** Based on 3" Mineral Wool Insulation	
			48	**RAL-TL11-089** Based on R-11 Fiberglass sound bat, RC-1 channel or equivalent, one side	
			49	**RAL-TL11-079** Based on double layer one side, R-11 fiberglass sound bat	
1 Hour Fire-Rated Construction	**Non-Loadbearing**				
wt. 6 	• 5/8" Sheetrock Firecode Core gypsum panels, or 5/8" Sheetrock UltraLight Firecode X panels or 5/8" Fiberock panels – 3-1/2" 25 gauge steel studs 24" o.c. – optional insulation – optional RC-1 channel	**UL Des U419**	40	**USG-860808** Based on 5/8" Sheetrock Firecode Core panels	**A-2**
			48	**RAL-TL-11-068** Based on 5/8" Sheetrock Firecode Core panels or 5/8" Sheetrock UltraLight Firecode X panels, R-11 fiberglass sound bat	
			49	**SA-870-717** Based on 5/8" Sheetrock Firecode Core panels, 3" mineral fiber insulation	
			52	**RAL-TL-11-071** Based on 5/8" Sheetrock UltraLight Firecode X panels, R-11 fiberglass sound bat, RC-1 channel	
			53	**RAL-TL-11-076** Based on 5/8" Sheetrock Firecode panels, R-11 fiberglass sound bat, RC-1 channel	
			54	**RAL-TL-11-076** Based on 5/8" Sheetrock Firecode panels, 3" mineral fiber insulation, RC-1 channel	
			52	**STC-120310** Based on 5/8" Sheetrock Firecode panels, 4" 20 gauge steel studs 12" o.c., 3" mineral wool insulation, RC-1 channel	
			52	**STC-120306** Based on 5/8" Sheetrock Firecode panels, 4" 20 gauge steel studs 16" o.c., 3-1/2" glass fiber insulation, RC-1 channel	
			54	**STC-120307** Based on 5/8" Sheetrock Firecode panels, 4" 20 gauge steel studs 16" o.c., 4" mineral wool insulation, RC-1 channel	
			53	**STC-120308** Based on 5/8" Sheetrock Firecode panels, 4" 20 gauge steel studs 16" o.c., 3" mineral wool insulation, RC-1 channel	

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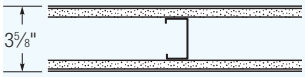
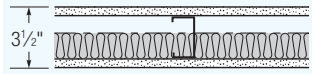
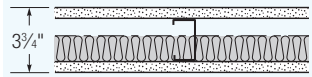
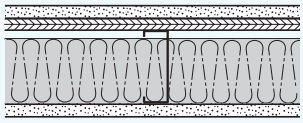
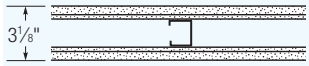
1 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 6 3⅝" 	• veneer plaster only (not drywall) 1/2" Imperial brand Firecode C Core gypsum base and veneer finish or 5/8" Fiberock panels – 2-1/2" 25 gauge steel studs, 16" o.c. – joints staggered and taped – 1/16" veneer finish	**GA-WP-1240**	45	**CK-664-1** Based on 3-5/8" studs 24" o.c. with 1" mineral wool batt in cavity	**A-3**
wt. 5 3½" 	• 1/2" Sheetrock Firecode C Core gypsum panels – 2-1/2" 25 gauge studs 24" o.c. – 1-1/2" Thermafiber SAFB – joints finished	**UL Des U419** or **U448**	47	**SA-831001**	**A-4**
			41	**RAL-TL-69-148** Based on same construction without Thermafiber SAFB	
wt. 6 3¾" 	• 5/8" Sheetrock Firecode Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. – 1-1/2" mineral wool batt – horiz joints directly opposite and finished – **CEG 8-11-83** rating also applies to assembly with 1/2" Sheetrock Firecode C Core gypsum panels, panels and joints finished – **CEG 5-9-84** rating also applies with Imperial Firecode Core gypsum base and veneer finish surface	**CEG 8-11-83** **CEG 5-9-84**	45	**RAL-TL-69-42**	**A-5**
			48	**SA-800422** Based on 3-5/8" studs and 2" mineral wool batt	
	• 5/8" Sheetrock Firecode Core gypsum panels – 3-5/8" 25 gauge steel studs 24"OC – joints finished – optional insulation – optional plywood or OSB for shear purposes	**UL Des U423**			**A-6**
wt. 7 3⅛" 	• Face layer 1/2" Sheetrock Firecode C Core gypsum panels – 1-5/8" 25 gauge steel studs 24" o.c. • base layer 1/4" Sheetrock gypsum panels – joints finished	**GA-WP-1090**	53	**CK-684-13** Based on 1-1/2" mineral wool batt and 2-1/2" studs	**A-7**

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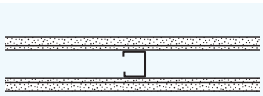
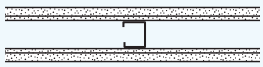
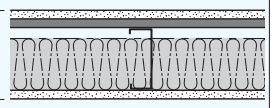
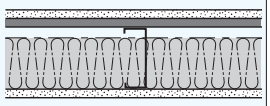
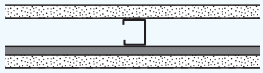
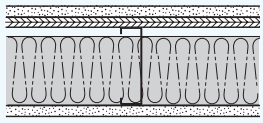
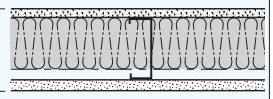
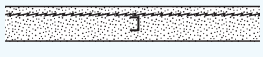
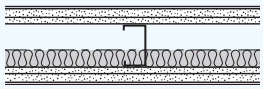
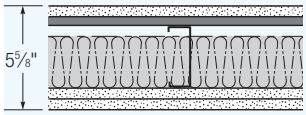
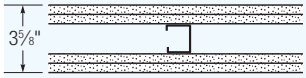
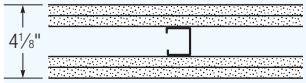
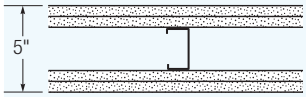
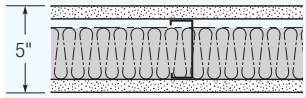
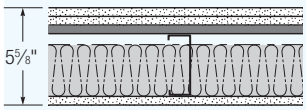
1 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 7 3⅛" 	• Alternate based on 2-1/2" gauge steel studs and 1/2" face layer laminated	**GA-WP-1051**	53	**NGC-2318** Based on 2" glass fiber	**A-8**
wt. 7 4¼" 	• Alternate based on 2-1/2" 25 gauge steel studs and base layer of 3/8" Sheetrock gypsum panels	**GA-WP-1053**	54	**CK-8104.02** Based on 2" glass fiber	**A-9**
wt. 5 5⅛" 	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-5/8" 25 gauge steel studs 24" o.c. – 3" Thermafiber SAFB – RC-1 channel or equivalent one side spaced 24" o.c. • optional veneer plaster	**UL Des U419** or **U451**	50 54	**RAL-TL-87-156** **RAL-TL-83-216** Based on 5/8" thick panels	**A-10**
6 1/8" 	• 5/8" Sheetrock UltraLight Panels Firecode 30 – 3-5/8" 25 gauge steel studs 24" o.c. – optional insulation	**UL Des U407**	52	**RAL-TL-11-080** Based on R-11 fiberglass sound bat	**A-11**
5¼" 	• 5/8" Sheetrock Firecode Core gypsum panels – 3-5/8" 25 gauge steel studs 24" o.c. – joints finished – optional insulation – optional plywood or OSB for shear purposes	**UL Des U419**			**A-12**
wt. 7 3⅝" 	• 3/4" Sheetrock Ultracode Core gypsum panels – 1-5/8" 25 gauge studs 24" o.c. – joints finished – UL Des U451 has panels applied over RC-1 channel or equivalent one side	**UL Des U496** or **U451**			**A-13**
clg. wt. 5 	• 1/2" Sheetrock Firecode C Core gypsum panels – 6" 20 gauge steel studs 24" o.c. – 5" Thermafiber SAFB – RC-1 channel or equiv one side spaced 24" o.c.	**UL Des U419** or **U415**	56 56	**RAL-TL-87-139** **RAL-TL-84-141** Based on 5/8" thick Sheetrock brand Firecode C Core gypsum panels	**A-14**
wt. 18 4⅝" 	• 1/2" Durock cement board – 3-1/2" 20 gauge steel studs 16" o.c – 3" ROXUL mineral wool AFB • 5/8" Sheetrock Firecode Core gypsum panels, one side	**U433**			**A-15**
2" 	– 2" solid metal lath and plaster – 3/4" cold rolled channel 16" o.c. – 2.5 lb. metal lath wire-tied to channel • 100:2-100:2 gypsum sand plaster	**OSU-T-129**		**NBS-523 F45**	**A-16**
4¼" 	• 3/8" Rocklath® brand Firecode® Core plaster base – 2-1/2" 20 gauge steel studs 16" o.c. – 1" Thermafiber SAFB • 7/16" plaster base coat, 1/16" plaster finish coat	**UL Des U488**			**A-17**

Steel Framed

1-1/2 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 7  	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-5/8" 20 gauge studs 24" o.c. – 3" Thermafiber SAFB – RC-1 channel or equivalent one side spaced 24" o.c. – two layers gypsum panels – face layer joints finished • optional veneer plaster	**UL Des U452**	58	**RAL-TL-83-215**	**A-18**
			59	**RAL-TL-84-140** 6" 20 gauge struc studs and 5" Thermafiber SAFB	
2 Hour Fire-Rated Construction					
wt. 11  	• 1/2" Sheetrock panels each side, Firecode C Core – 1-5/8" 25 gauge steel studs 24" o.c. – face layer joints finished • optional veneer plaster	**UL Des U419** or **U412**	50	**USG-840817** Based on 3-5/8" stud assembly without mineral wool batt	**A-19**
			52	**SA-860932** Based on lamin. face layer, 1-1/2" mineral wool batt and 2-1/2" studs	
			54	**CK-654-40** Based on 2-1/2" studs, screw-attached face layer and 1-1/2" mineral wool batt	
			55	**SA-800421** Based on 3-5/8" studs and 1-1/2" mineral wool batt	
wt. 11  	• 5/8" Sheetrock Firecode Core gypsum panels, or Fiberock panels – 1-5/8" 25 gauge steel studs 24" o.c. – face layer joints finished • optional veneer plaster	**UL Des U419** or **U411**	48	**BBN-770408** Based on 3-5/8" studs and 5/8" Sheetrock Firecode Core gypsum panels	**A-20**
			56	**USG-840818** Based on 3-5/8" studs and 3" mineral wool batt	
wt. 11  	• 5/8" Sheetrock Firecode Core gypsum panels, or Fiberock panels – 2-1/2" 25 gauge steel studs 24" o.c. – joints finished	**UL Des U419**	51	**GA-WP-1548** Based on 2-1/2" mineral wool batt in cavity	**A-21**
			56	**USG-840819** Based on 2" mineral wool batt in cavity	
wt. 7  	• 3/4" Sheetrock Ultracode Core gypsum panels – 3-1/2" 25 gauge steel studs 24" o.c. – 3" Thermafiber SAFB – joints finished	**UL Des U419** or **U491**	50	**USG–910617**	**A-22**
wt. 7  	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-5/8" 20 gauge studs 24" o.c. – 3" Thermafiber SAFB – RC-1 channel or equivalent one side spaced 24" o.c. – single-layer gypsum panels screw-attached to studs – double layer screw-attached to channel – face layer joints finished • optional veneer plaster	**UL Des U419** or **U453**	59	**RAL-TL-84-136** Based on 5/8" thick panels, 6" 20 gauge structural studs, 5" mineral wool batt	**A-23**
			60	**RAL-TL-87-140** Based on 1/2" thick panels, 6" 20 gauge structural studs, 5" mineral wool batt	

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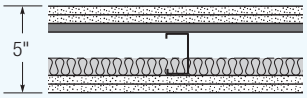
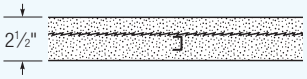
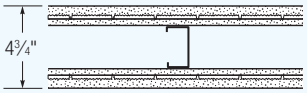
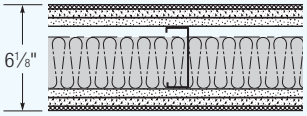
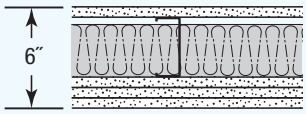
2 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 9  5"	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. – 1" THERMAFIBER SAFB – RC-1 channel or equivalent one side, spaced 24" o.c. – double layer gypsum panels screw-attached to channel, two layers screw-attached to steel studs – face layer joints finished • optional veneer plaster	**UL Des U454**	57	**USG-871207** Based on 5/8" thick panels	**A-24**
			60	**RAL-TL-87-154**	
			61	**RAL-TL-83-214** Based on 5/8" thick panels	
			63	**RAL-TL-87-141** Based on 6" 20 gauge structural studs and 5" mineral wool batt	
			62	**RAL-TL-84-139** Based on 5/8" thick panels, 6" 20 gauge structural studs and 5" mineral wool batt	
 6 1/8"	• 5/8" SHEETROCK FIRECODE core panels, or 5/8" SHEETROCK UltraLight Panels FIRECODE X – 3-5/8" 25 gauge steel studs 24" o.c. – optional insulation	**UL Des U419**	53	**RAL-TL-11-176** Based on 5/8" SHEETROCK FIRECODE panels, R-11 fiberglass sound bat	**A-25**
			51	**STC-120309** Based on 5/8" SHEETROCK FIRECODE core panels, 4" 20 gauge steel studs 16" o.c., 3" mineral fiber insulation	
			54	**RAL-TL11-176** Based on 5/8" SHEETROCK UltraLight Panels FIRECODE X, R-11 fiberglass sound bat	
wt. 12  2½"	– 2-1/2" metal lath and plaster – 3/4" cr chan 16" o.c. – 3.4 lb. metal lath wire-tied to chan • 1:2-1:3 gypsum-perlite plaster	**GA-WP-1930**			**A-26**
wt. 21  4¾"	• 3/8" ROCKLATH brand FIRECODE Core plaster base – 2-1/2" 20 gauge studs 16" o.c. – 3.4 lb. self-furring diamond mesh metal lath • 3/4" gypsum-sand plaster	**UL Des U484**	56	**SA-851016** Based on alternate design	**A-27**
			58	**SA-851028**	
wt. 18  6⅛"	• 1/2" DUROCK cement board and 1/4" ceramic tile • base layer 1/2" SHEETROCK FIRECODE C Core gypsum panels – 3-5/8" 20 gauge steel studs 16" o.c. – 3" THERMAFIBER SAFB – face layer joints taped • alternate design 2 layers 1/2" SHEETROCK FIRECODE C Core gypsum panels, one side	**UL Des U443**			**A-28**
 6"	• 5/8" SHEETROCK FIRECODE core gypsum panels, – 3-1/2" gauge steel studs 24" o.c. – face layer joints finished – optional insulation	**UL Des U408** Provides for upgrading existing 1 hour rated partitions with access to one side			**A-29**

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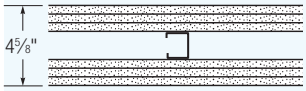
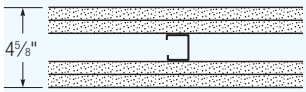
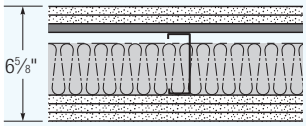
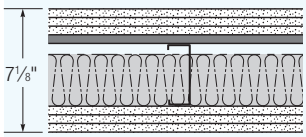
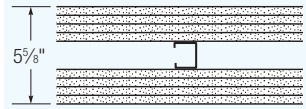
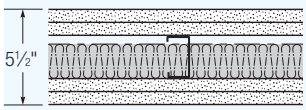
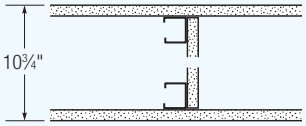
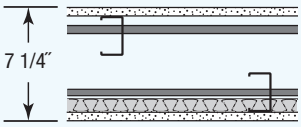
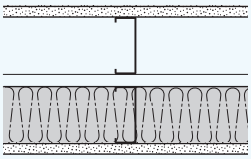
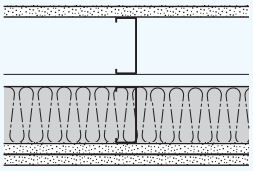
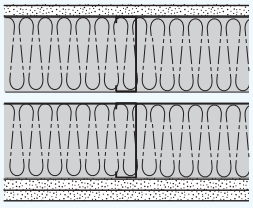
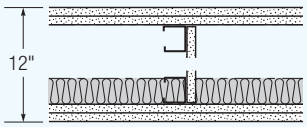
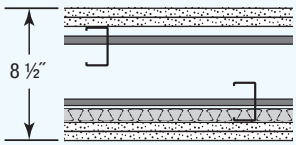
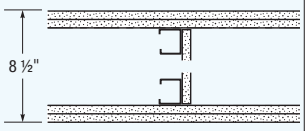
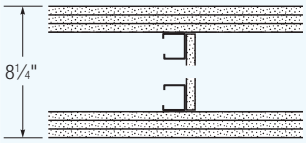
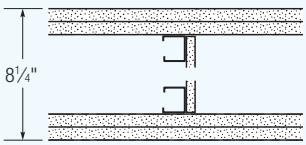
3 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 13  	• 1/2" Sheetrock Firecode C Core gypsum panels – 1-5/8" 25 gauge steel studs 24" o.c. • optional veneer plaster	**UL Des U419** or **U435**	59	**SA-830112** Based on assembly with 1-1/2" mineral wool batt in cavity	**A-30**
wt. 13  	• 3/4" Sheetrock Ultracode Core gypsum panels – 1-5/8" 25 gauge steel studs 24" o.c. – face layer joints finished • optional veneer plaster	**UL Des U419** or **U435**			**A-31**
wt. 11  	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-5/8" 20 gauge studs 24" o.c. – 3" Thermafiber SAFB – RC-1 channel or equivalent one side spaced 24" o.c. – face layer joints finished	**UL Des U419** or **U455**	61	**RAL-TL-87-153** Based on 5/8" thick panels	**A-32**
			62	**RAL-TL-83-213** Based on 5/8" thick panels	
			63	**RAL-TL-84-138** Based on 5/8" thick panels, 6" 20 gauge structural studs and 5" Thermafiber SAFB	
			64	**RAL-TL-87-142** Based on 6" 20 gauge structural studs and 5" Thermafiber SAFB	
			65	**RAL-TL-84-150** Based on 5/8" thick panels, 6" 20 gauge structural studs, 5" Thermafiber SAFB, acoustical sealant bead between panels and studs, dabs 8" o.c. between panel layers on stud side	
wt. 13  	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-5/8" 20 gauge studs 24" o.c. – 3" Thermafiber SAFB – RC-1 channel or equivalent one side, spaced 24" o.c. – face layer joints finished	**UL Des U419** or **U455**	63	**RAL-TL-87-152**	**A-33**
			65	**RAL-TL-87-143** 6" 20 gauge structural studs, 5" Thermafiber SAFB	
4 Hour Fire-Rated Construction					
wt. 17  	• 4 layers 1/2" Sheetrock Firecode C Core gypsum panels, each side – 1-5/8" 25 gauge steel studs 24" o.c. • optional veneer plaster	**UL Des U419** or **U435**	62	**SA-830113** Based on assembly with 1-1/2" mineral wool batt in cavity	**A-34**
wt. 13  	• 2 layers 3/4" Sheetrock Ultracode Core gypsum panels, each side – 2-1/2" 25 gauge steel studs 24" o.c – 2" Thermafiber SAFB – face layer joints finished	**UL Des U419** or **U490**	56	**SA-910907**	**A-35**

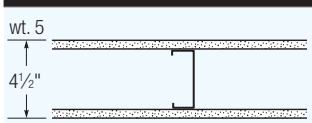
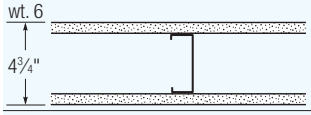
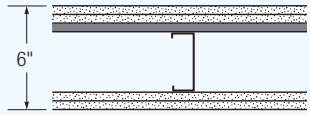
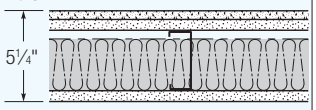
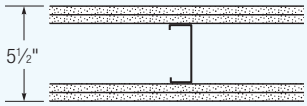
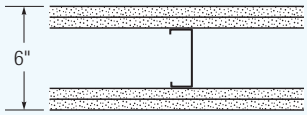
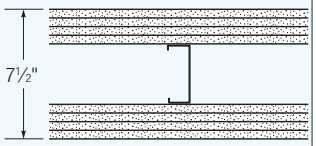
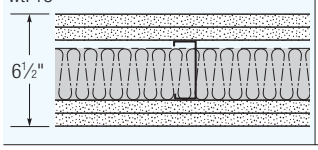
Steel Framed

1 Hour Fire-Rated Construction	Chase Walls		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 6  	• 5/8" SHEETROCK FIRECODE Core gypsum panels, each side or FIBEROCK panels – 1-5/8" 25 gauge steel studs 24" o.c. in two rows – 5/8" gypsum panel gussets or steel runner braces spanning chase screw-attached to studs • optional veneer plaster	**UL Des U420**	52	**RAL-TL-76-155** Based on 3-1/2" insulation one side	**A-36**
 	• 5/8" SHEETROCK FIRECODE Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. min. 1" apart, on separate runners – lateral bracing – optional insulation	**UL Des U493**	59	**USG-020241** Based on 2-1/2" glass fiber insulation in one row of studs	**A-37**
	• 5/8" SHEETROCK FIRECODE Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. min. 1" apart, on separate runners – bracing along same row of studs – optional insulation	**UL Des U493**	52	**USG-020239** Based on 2-1/2" glass fiber insulation in one row of studs	**A-38**
	• 5/8" SHEETROCK FIRECODE Core gypsum panels one side – 2-1/2" 25 gauge steel studs 24" o.c. min. 1" apart, on separate runners – bracing along same row of studs – optional insulation	**UL Des U493**	56	**USG-020240** Based on 2-1/2" glass fiber insulation in one row of studs	**A-39**
	• 5/8" SHEETROCK FIRECODE Core gypsum panels – 3-5/8" 25 gauge steel studs 24" o.c. min. 1" apart, on separate runners – lateral bracing – optional insulation	**UL Des U493**	64	**STC-050817** Based on 3-1/2" glass fiber insulation in both rows of studs	**A-40**

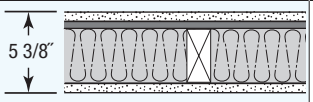
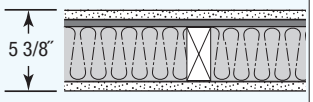
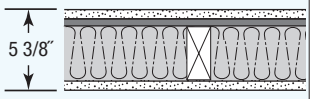
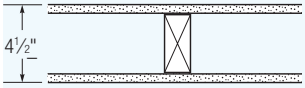
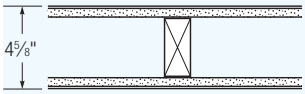
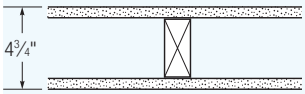
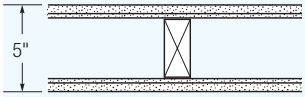
Steel Framed

2 Hour Fire-Rated Construction	Chase Walls		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index
wt. 12 	• 5/8" Sheetrock Firecode Core gypsum panels, each side or Fiberock panels – 1-5/8" 25 gauge steel studs 24" o.c. in two rows spaced 6-1/4" apart – 5/8" gypsum panel gussets or steel runner braces spanning chase screw-attached to studs – face layer joints finished	**UL Des U420**	52 57	**RAL-TL-76-162** **RAL-TL-76-156** Based on 3-1/2" insulation one side	**A-41**
	• 5/8" Sheetrock Firecode Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. min 1" apart on separate runners – bracing along same row of studs – optional insulation	**UL Des U493**			**A-42**
	• 5/8" Sheetrock Firecode Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. min 1" apart on separate runners – bracing along same row of studs – optional insulation	**UL Des U493**	66	**STC-050819** Based on 3-1/2" glass fiber insulation in both rows of studs	**A-43**
3 Hour Fire-Rated Construction					
wt. 13 	• 1/2" Sheetrock Firecode C Core gypsum panels – 1-5/8" 25 gauge steel studs 24" o.c. in two rows – steel truss member – gypsum panel gussets or steel runner braces spanning chase screw-attached to studs – face layer joints finished – 2 hr. rating applies with two layers panels each side – 1 hr. rating applies with single layer 5/8" panels each side	**UL Des U436**			**A-44**
wt. 13 	• 3/4" Sheetrock Ultracode Core gypsum panels – 1-5/8" 25 gauge studs 24" o.c. in two rows – steel truss member – gypsum panel gussets or steel runner braces spanning chase screw-attached to studs – face layer joints finished	**UL Des U436**			**A-45**

Steel Framed

45 Minute Fire-Rated Construction	Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 5  4½"	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-1/2" 20 gauge steel structural studs 24" o.c.	**UL Des U423** or **U425**	47	**SA-861001** Based on 3" mineral wool batt in cavity	**A-46**
1 Hour Fire-Rated Construciton					
wt. 6  4¾"	• 5/8" Sheetrock Firecode Core gypsum panels or Fiberock panels – 3-1/2" 20 gauge steel structural studs 24" o.c. • optional veneer plaster	**UL Des U423** or **U425**	40 41	**USG-810519** **USG-810518** Based on 2" mineral wool batt in cavity	**A-47**
wt. 9  6"	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-1/2" 20 gauge steel structural studs 24" o.c. – RC-1 channel or equivalent one side, spaced 24" o.c. – face layer joints finished • optional veneer plaster	**UL Des U423** or **U440**	51 61	**SA-840715** Based on 3-1/2" 16 gauge struc studs and lateral bracing **SA-830628** Based on 3-1/2" 16 gauge struc studs, 5/8" thick panels, lateral bracing and 3" mineral wool batt	**A-48**
wt. 9  5¼"	• face layer 1/2" Durock cement board • base layer 5/8" Sheetrock Firecode Core gypsum panels or sheathing, or Fiberock panels – 3-1/2" 20 gauge struc studs 16" o.c. – 3" mineral wool batt • 5/8" Sheetrock Firecode Core opposite side	**UL Des U473**			**A-49**
1-1/2 Hour Fire-Rated Construction					
wt. 9  5½"	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-1/2" 20 gauge steel structural studs 24" o.c. – face layer joints finished	**UL Des U425**	49 49	**USG-811009** Based on 2" mineral wool batt **USG-810937** Based on 2" mineral wool batt and 6" 20 gauge struc studs	**A-50**
2 Hour Fire-Rated Construction					
wt. 9  6"	• 5/8" Sheetrock Firecode Core gypsum panels or Fiberock panels – 3-1/2" 20 gauge steel structural studs 24" o.c. – face layer joints finished – *loadbearing up to 100% allowable stud axial load when min 2" Thermafiber mineral wool batt is used in stud cavities; otherwise load-bearing up to 80% allowable steel axial load* (UL Des U423 or U425) – *loadbearing up to 100% allowable stud axial load* (UL Des U423) • Alternate based on three layers 1/2" Sheetrock brand Firecode C Core gypsum panels, each side	**UL Des U423** or **U425**	51 61	**USG-81006** Based on 3-1/2" 16 gauge struc studs and lateral bracing **USG-810937** Based on 3-1/2" 16 gauge struc studs, 5/8" thick panels, lateral bracing and 3" mineral wool batt	**A-51**
3 Hour Fire-Rated Construction					
wt. 17  7½"	• 1/2" Sheetrock gypsum Firecode C Core panels, each side – 3-1/2" 20 gauge steel structural studs 24" o.c. – face layer joints finished • rating also applies to Imperial Firecode C Core gypsum base and veneer finish surface – *load-bearing up to 100% allowable stud axial load*	**UL Des U426**			**A-52**
wt. 13  6½"	• 3/4" Sheetrock Ultracode Core gypsum panels – 3-1/2" 20 gauge steel structural studs 24" o.c. – 3" Thermafiber SAFB – face layer joints finished	**UL Des U490**			**A-53**

Wood Framed

Construction Detail	Description	Test Number	STC	Test Number	Reference Index
30 Minutes Fire-Rated Construction	**Loadbearing**			**Acoustical Performance**	**Reference**
	• 5/8" Sheetrock UltraLight Panels Firecode 30 – 2x4 wood studs 16" o.c. – optional insulation – optional RC-1 channel	**UL Des U407**	45	**RAL-TL11-085** Based on R-11 fiberglass sound batt, RC-1 channel	**A-54**
	• 5/8" Sheetrock UltraLight Panels Firecode 30 – 2x4 studs 16" o.c. – optional insulation – optional RC-1 channel	**UL Des U407**	35	**RAL-TL11-087** Based on R-11 fiberglass sound bat	**A-55**
			49	**RAL-TL11-131** Based on R-11 fiberglass sound bat, RC-1 channel one side	
	• 5/8" Sheetrock UltraLight Panels Firecode 30 – 2x4 wood studs 16" o.c. – optional insulation – optional RC-1 channel	**UL Des U407**	52	**RAL-TL11-132** Based on R-11 fiberglass sound bat, RC-1 channel one side	**A-56**
45 Minutes Fire-Rated Construction	**Loadbearing**				
wt. 7 	• 1/2" Sheetrock Firecode C Core gypsum panels – 2 x 4 wood stud 16" o.c. – joints finished	**UL Des U317**			**A-57**
1 Hour Fire-Rated Construction					
wt. 7 	• 1/2" Imperial Firecode C Core gypsum Base, veneer finish only (not drywall) – 2 x 4 stud 16" o.c. – joints finished • 1/16" veneer finish	**U of C 10-27-64**			**A-58**
wt. 7 	• 5/8" Sheetrock Firecode Core panels, or 5/8" Sheetrock UltraLight panels Firecode X or 5/8" Fiberock panels – 2 x 4 wood stud 16" or 24" o.c. – optional insulation	**UL Des U305, U314**	32	**RAL-TL11-129** Based on 5/8" Sheetrock Firecode core panels, no sound bat	**A-59**
			33	**RAL-TL11-172** Based on 5/8" Sheetrock UltraLight Panels Firecode X, no sound bat	
			34	**RAL-TL11-173, RAL-TL11-130** Based on 5/8" Sheetrock Firecode core panels or 5/8" Sheetrock UltraLight Panels Firecode X with R-11 fiberglass sound bat	
			37	**RAL-TL11-081, RAL-TL11-084** Based on double layer one side 5/8" Sheetrock Firecode core panels or 5/8" Sheetrock UltraLight Panels Firecode X with R-11 fiberglass sound bat	
wt. 8 	• 1/2" Sheetrock Firecode C Core gypsum panels – 2 x 4 16" o.c. • base layer 1/4" Sheetrock gypsum panels – face layer joints finished	**GA-WP-3341**	45	**RAL-TL-69-52**	**A-60**
			53	**USG-221-ST-G-H** Based on 5/8" lamin face layers and 1-1/2" mineral wool batt	

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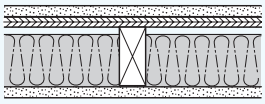
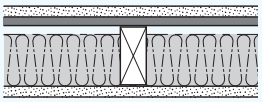
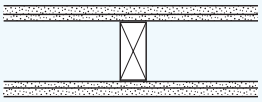
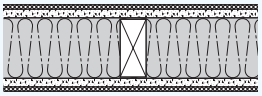
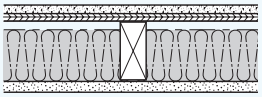
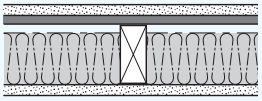
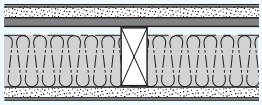
1 Hour Fire-Rated Construction	Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" Sheetrock Firecode Core gypsum panels – 2x4 wood studs 24" o.c. – joints finished – optional insulation – optional plywood or OSB for shear purposes	**UL Des U344**			**A-61**
wt. 7 5¼" 	• 5/8" Sheetrock Firecode C Core gypsum panels 2 x 4 wood stud 16" or 24" o.c. 3" Thermafiber SAFB RC-1 channel or equivalent one side joints finished	**UL Des U327**	50	**BBN-760903**	**A-62**
5¼" 	• 3/8" Rocklath Base – 2 x 4 wood stud 16" o.c. • 1/2" 1:2 gypsum-sand plaster	**GA-WP-3430**			**A-63**
5" 	• 1/2" Durock cement board and 1/4" ceramic tile – 2 x 4 wood studs 16" o.c. – 3-1/2" Thermafiber SAFB – joints taped • alternate design 5/8" Sheetrock Firecode Core gypsum panels, one side	**UL Des U329**	37 40	**USG-840404** **USG-840314** Based on alternate design	**A-64**
5⅛" 	• 1/2" Durock cement board – base layer 15/32" plywood – 2 x 4 wood studs 16" o.c. or 24" o.c. – 3" mineral fiber or fiberglass insulation – RC-1 channel or equivalent	**UL Des U303**			**A-65**
5¼" 	• 5/8" Sheetrock Firecode core panels, or 5/8" Sheetrock UltraLIght Panels Firecode X or 5/8" Fiberock panels – 2x4 wood studs 16" o.c. or 24" o.c. – 3" mineral fiber or fiberglass insulation – RC-1 channel or equivalent	**UL Des 327**	46 48 50 51	**RAL-TL11-082** Based on 5/8" Sheetrock UltraLight Panels Firecode X **RAL-TL11-083** Based on 5/8" Sheetrock Firecode core panels **BBN-760903** Based on 5/8" Sheetrock Firecode C Core panels **RAL-TL11-174** Based on 5/8" double layer Sheetrock UltraLight Panels Firecode X same side as RC-1 channel	**A-66**
5⅜" 	• 5/8" Imperial Firecode C Core gypsum Base – 2 x 4 16" o.c. – 3" mineral wool batt – RC-1 channel or equivalent one side • 1/16" veneer plaster finish both sides	**UL Des U311**	52 49	**SA-830702** **CK-664-4** Based on 1/2" gypsum base	**A-67**

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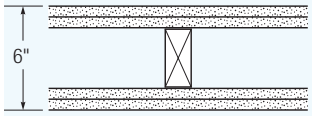
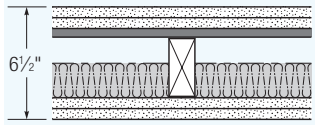
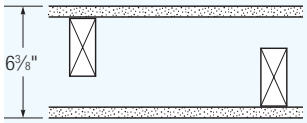
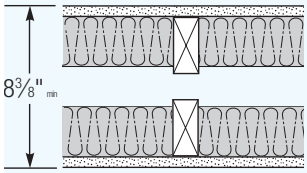
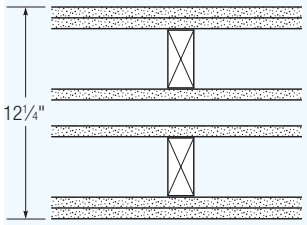
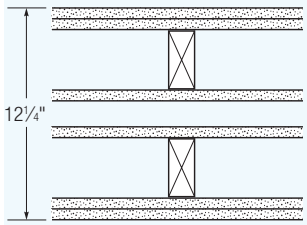
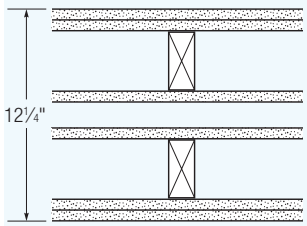
2 Hour Fire-Rated Construction	Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 12  	• 5/8" Sheetrock Firecode Core gypsum panels or Sheetrock water-resistant Firecode Core gypsum panels or Fiberock panels – 2 x 4 wood studs 16" o.c. – joints finished • optional veneer plaster	**UL Des U301**	52 58	**USG-810218** Based on same assembly with RC-1 channel and without mineral wool batt **USG-810219** Based on same assembly with RC-1 channel and 2" mineral wool batt	**A-68**
wt. 13  	• 5/8" Sheetrock Firecode C Core gypsum panels – 2 x 4 wood studs 16" o.c. – 2" Thermafiber SAFB – RC-1 channel or equivalent one side – joints finished	**UL Des U334**			**A-69**
1 Hour Fire-Rated Construction	**Chase Walls**				
 	• 5/8" Sheetrock Firecode C Core gypsum panels – 2 x 4 staggered wood stud 24" o.c. on 2 x 6 common plate – joints finished • optional veneer plaster	**UL Des U340**			**A-70**
 	• 5/8" Sheetrock Firecode Core gypsum panels – 2x4 woods studs 24" OC on separate plate, no minimum spacing between rows – joints finished – 3 1/2" glass fiber insulation	**UL Des U341**			**A-71**
2 Hour Fire-Rated Construction					
 	• 5/8" Sheetrock Firecode Core gypsum panels or Fiberock panels, outside • 5/8" Sheetrock Firecode Core gypsum panels or Fiberock panels – 2 x 4 wood studs 24" o.c.	**UL Des U342**			**A-72**
 	• Alternate based on 1/2" Sheetrock Firecode C Core gypsum panels, both outside, both walls double layer and inside single layer	**GA-WP-3810**	57	**RAL-TL-73-224** 3-1/2" glass fiber	**A-73**
 	• Alternate based on 1/2" Sheetrock Firecode C Core gypsum panels, outside both walls double layers *only*	**GA-WP-3812**	57	**TL-73-224** 3-1/2" glass fiber	**A-74**

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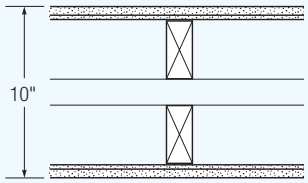
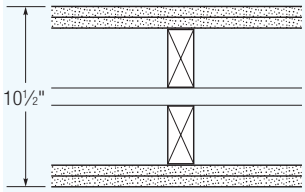
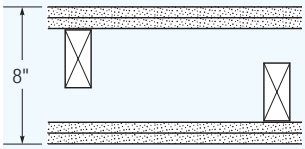
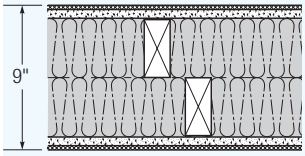
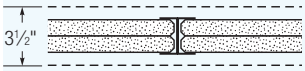
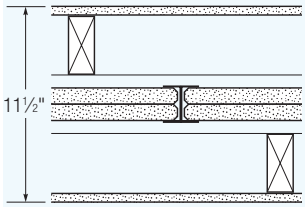
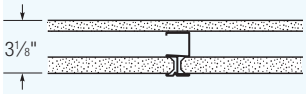
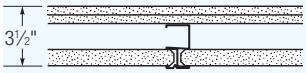
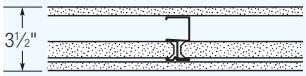
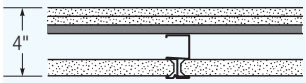
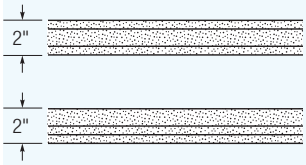
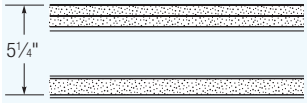
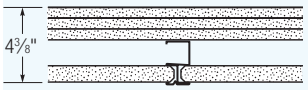
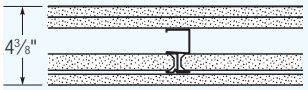
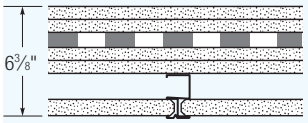
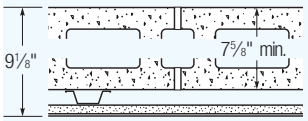
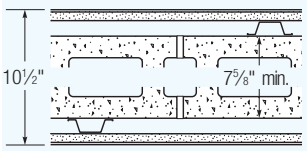
2 Hour Fire-Rated Construction	Chase Walls		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• base layer 1/4" Sheetrock gypsum panels • face layer 1/2" Sheetrock Firecode Core gypsum panels, laminated to base layer – 2 x 4 wood studs 16" o.c.	**GA-WP-5510**			**A-75**
	• 5/8" Sheetrock Firecode Core gypsum panels or Fiberock panels – 2 rows 2 x 4 wood studs 16" o.c. on separate plates 1" apart – joints finished	**GA-WP-3820**	51 56 58	**RAL-TL-69-214** **USG-710120** Based on 3-1/2" thick insulation in one cavity **GA-NGC-3056**	**A-76**
	• 5/8" Sheetrock Firecode C Core gypsum panels or Fiberock panels – 2 x 4 wood studs 16" o.c. on 2 x 6 common plate – joints finished	**GA-WP-3910**	47 51	**RAL-TL-69-211** **GA-NGC-2377**	**A-77**
	• 1/2" Durock brand cement board and 1/4" ceramic tile – Two rows 2 x 4 16" o.c. on 2 x 8 common plate – 3-1/2" Thermafiber SAFB both cavities – joints taped – *load-bearing up to 50% allowable design load*	**WHI-495-0505** and **0508**	50	**SA-840523**	**A-78**
2 Hour Fire-Rated Construction	**Area Separation Walls**				
	• 1" Sheetrock gypsum liner panels • 2" USG H-Studs 24" o.c. – minimum 3/4" air space both sides separating liner panels from *adjacent construction*	**GA-ASW-1000**			**A-79**
	Separation wall (non-loadbearing) • 1" Sheetrock gypsum liner panels • 2" USG H-Studs 24" o.c. – Protected wall (bearing or non-loadbearing) of wood or steel studs each side min 3/4" from liner panels • 1/2" Sheetrock gypsum panels **Note** These systems do not provide a fire rating for adjacent wood- or steel-framed walls.	**UL Des U336**	46 54 57 58 60	**RAL-TL-88-353** **RAL-TL-88-348** Based on 2" mineral wool batt on one side **RAL-TL-88-351** Based on 2 x 4s and 3" mineral wool batt on one side **RAL-TL-88-347** Based on 2 x 4s and 2" mineral wool batt on both sides **RAL-TL-88-350** Based on 2 x 4s and 3" mineral wool batt on both sides	**A-80**

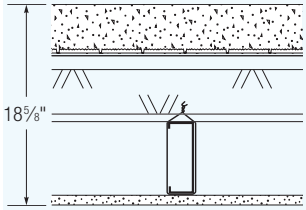
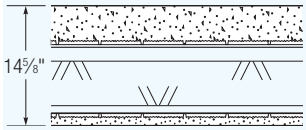
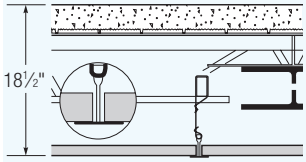
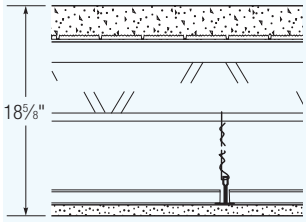
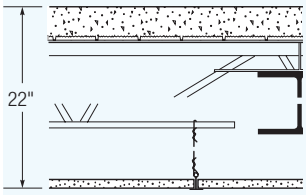
Shaft Wall Systems

1 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
wt. 8  	• 5/8" Sheetrock Firecode Core gypsum panels, joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels	**UL Des U415, System A** or **U469**	39	**USG-040901** Based on 4" C-H studs 25 gauge	**A-81**
2 Hour Fire-Rated Construction					
wt. 9  	• 1/2" Sheetrock Firecode C Core gypsum panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels	**UL Des U415, System B** or **U438**	38	**USG-040917**	**A-82**
			43	**USG-040912** Based on 4" C-H studs 25 gauge	
			48	**RAL-OT-04-022** Based on 1" sound batts in cavity	
			50	**RAL-OT-04-019** Based on 4" C-H studs 25 gauge with 3" mineral fiber insulation	
wt. 8  	• 3/4" Sheetrock Ultracode Core gypsum panels, joints finished • 4" USG C-H Studs 25 gauge 24" o.c. – 3" Thermafiber SAFB • 1" Sheetrock gypsum liner panels	**UL Des U415, System C**	51	**RAL-OT-04-020** Based on 4" C-H studs with 3" Thermafiber SAFB insulation	**A-83**
wt. 9  	• 1/2" Sheetrock Firecode C Core gypsum panels • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels – joints finished both sides	**UL Des U415, System E** or **U467**	44	**USG-040911** Based on 4" C-H studs 25 gauge	**A-84**
wt. 10  	• 1/2" Sheetrock Firecode C Core gypsum panels applied vertically, face layer joints finished – RC-1 resilient channel or equivalent 24" o.c. • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels	**UL Des U415, System F**	53	**USG-040909** Based on 4" C-H studs 25 gauge with 3" mineral fiber insulation	**A-85**
			58	**USG-040910** Based on 4" C-H studs 25 gauge with additional layer on liner panel side and 3" mineral fiber insulation	
wt. 8  	– 1" x 2" perimeter angles 25 gauge • 1/2" Sheetrock Firecode C Core gypsum panels, fastened to angles • 1" Sheetrock gypsum liner panels • 1/2" Sheetrock Firecode C Core gypsum panels, joints finished	**UL Des U529**			**A-86**

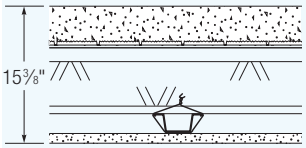
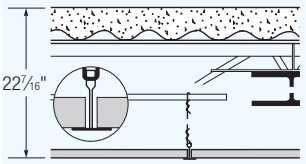
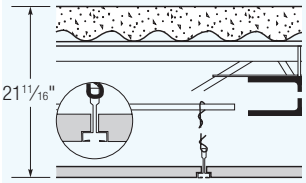
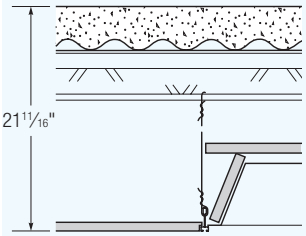
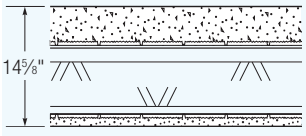
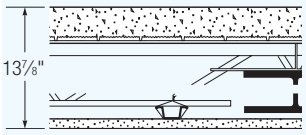
Shaft Wall Systems

2 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" Sheetrock Firecode Core gypsum panels, face layer joints finished • 4" USG C-H Studs 20 gauge 24" o.c. run horizontally and attached to vertical USG J-Runners, 20 gauge • 1" Sheetrock brand gypsum liner panels	**UL Des U437**			**A-87**
3 Hour Fire-Rated Construction					
wt. 13 	• 5/8" Sheetrock Firecode C Core gypsum panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels	**UL Des U415, System G**	45 51	**USG-040903** Based on 4" C-H Studs 25 gauge **RAL-OT04-018** Based on 4" C-H Studs with 3" mineral fiber insulation	**A-88**
wt. 13 	• 5/8" Sheetrock Firecode C Core gypsum panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels • 5/8" Sheetrock Firecode C Core gypsum panels, joints finished	**UL Des U415, System H**	49	**USG-040902** Based on 4" C-H Studs	**A-89**
4 Hour Fire-Rated Construction					
wt. 18 	• 3/4" Sheetrock Ultracode Core gypsum panels, on furring channel 24" o.c., over two layers 3/4" Sheetrock Ultracode Core gypsum panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" Sheetrock gypsum liner panels – base layer over furring channel applied vertically	**UL Des U415, System I**			**A-90**
3 Hour Fire-Rated Construction	**Loadbearing**				
	• 1/2" Sheetrock Firecode C Core gypsum panels – concrete block (UL-Classified) – 7/8" deep metal furring channel 24" o.c. – joints finished • optional veneer finish	**UL Des U914**			**A-91**
4 Hour Fire-Rated Construction					
	• 1/2" Sheetrock Firecode C Core gypsum panels – concrete block (UL Classified) – 7/8" deep metal furring channel 24" o.c. – joints finished • optional veneer finish **Note** Stud size and gauge shown are minimums. Possible panel alternatives shown on Cross Reference of USG panels and UL Fire Ratings on page 7.	**UL Des U910**			**A-92**

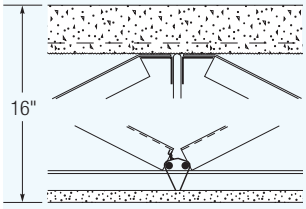
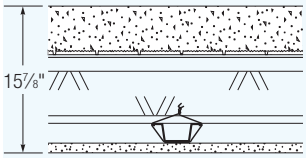
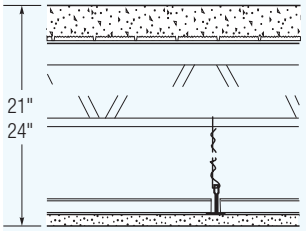
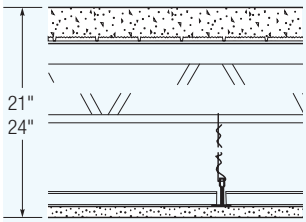
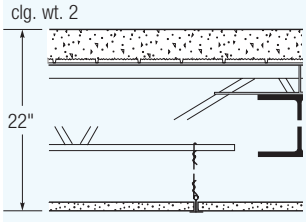
Steel Framed

1 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 2  	• 1/2" Sheetrock Firecode C Core gypsum panels – 3-5/8" 25 gauge steel studs 24" o.c. – studs wire tied to open web steel joists 24" o.c. – joints finished – 2-1/2" concrete on riblath over joist	**GA-FC-1105**			**B-1**
clg. wt. 4  	• 5/8" Red Top® brand gypsum plaster, sanded 1:2-1:3 – 3/8" riblath metal lath – 2" concrete on riblath over joist – steel bar joists 24" o.c.	**GA-FC-1180**			**B-2**
 	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and speakers optional – 2" concrete on riblath over bar joists	**UL Des G201**			**B-3**
1-1/2 Hour Fire-Rated Construction					
 	• USG™ DGL drywall suspension system • 1/2" or 5/8" Sheetrock Firecode C Core gypsum panels – joints finished – 2-1/2" concrete on riblath over bar joist	**UL Des G528**			**B-4**
 	• 1/2" x 2' x 4' FC-CB gypsum panels • DXL, DXLA, DXLH, DXLZ, SDLX, SDXLA, ZXLA Susp Exp Grid System – 2-1/2" concrete on riblath over bar joist	**UL Des G259**			**B-5**

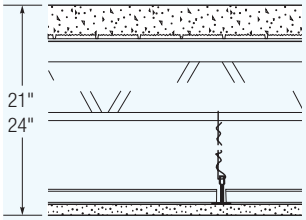
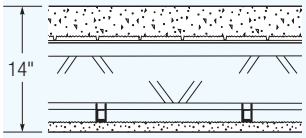
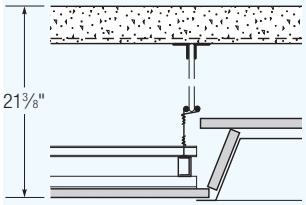
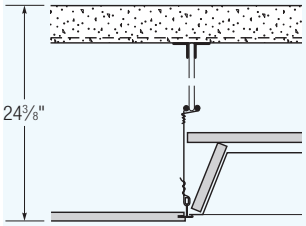
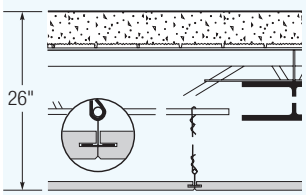
Steel Framed

1-1/2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 2 	• 1/2" Sheetrock Firecode C Core gypsum panels – metal furring channel 24" o.c. – joints finished – 2" concrete on riblath or steel deck over joist	**UL Des G502**			**B-6**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXLT, DXLTA, DXLTZ or DXLTZA Susp Exp Grid System – light fixture, air duct and speakers optional – 2-1/2" concrete on corrugated steel deck – steel bar joists	**UL Des G262**		When AP-1 ceiling panels are used, the fire rating is limited to 1 hour in DXLT, DXLTA, DXLTZ and DXLTZA steel framing members only	**B-7**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXLF (with CM or CP metal ceiling panels) Susp Exp Grid System – light fixture, air duct and speakers fire rating is limited to 1 hour optional – 2-1/2" concrete on corrugated steel deck – steel bar joists	**UL Des G264**		When AP-1 ceiling panels are used, the fire rating is limited to 1 hour	**B-8**
	• 5/8" or 3/4" FR-83; or 3/4" AP-3; or FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 2-1/2" concrete on corrugated steel deck – steel bar joists	**UL Des G267**			**B-9**
2 Hour Fire-Rated Construction					
clg. wt. 4 	• Alternate based on 5/8" Red Top brand gypsum plaster vermiculite or 7/8" Red Top wood fiber plaster – 3/8" riblath metal lath – 2" concrete on riblath over joist – steel bar joists, 24" o.c.	**GA-FC-2160**			**B-10**
clg. wt. 3 	• 1/2" or 5/8" Sheetrock Firecode C Core gypsum panels – metal furring channel 24" o.c. – joints finished – 2-1/2" concrete on riblath or corrugated steel deck – steel bar joists • optional veneer plaster	**UL Des G515**	54*	**ASTM E1414** *CAC value per ASTM E1414 test procedure for horizontally adjacent spaces	**B-11**

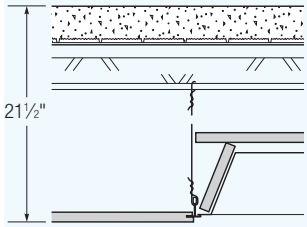
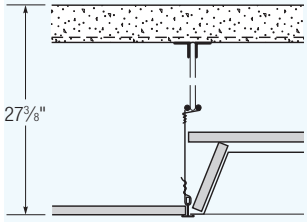
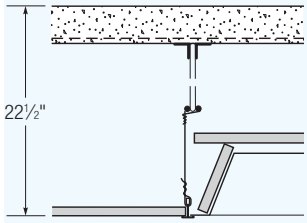
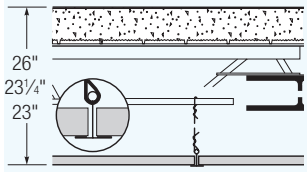
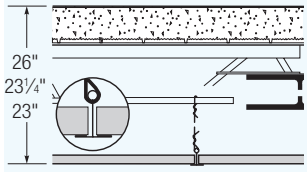
Steel Framed

2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 2  	• 5/8" SHEETROCK FIRECODE Core gypsum panels – steel bar joists 24" o.c. – metal furring channel, 12" o.c.	**UL Des G503**	53	**NGC-4075**	**B-12**
 	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – metal furring channel 24" o.c. – steel bar joists 24" o.c. – joints finished – 2-1/2" concrete on riblath or steel deck over joist • optional veneer plaster	**GA-FC-2030**			**B-13**
 	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panels • USG DGL Drywall Suspension System – joints finished – 2-1/2" concrete on riblath or steel deck – steel bar joists, 24".o.c. – 3 hour rating with 5/8" panels and 3" thick concrete • optional veneer plaster	**UL Des G523**			**B-14**
 	• USG DGL Drywall Suspension System • 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panels – joints finished – 2-1/2" concrete on riblath – steel bar joists, 24" o.c. • optional veneer plaster	**UL Des G526**			**B-15**
clg. wt. 2  	• 1/2" x 24" x 24" FC-CB gypsum panels • DXL, DXLA, DXLH, DXLZ, DXLZA, SDXL, or SDXLA Susp Exp Grid System – light fixtures and air ducts optional – 2-1/2" concrete deck on riblath or corrugated steel deck – steel bar joists, 24" o.c.	**UL Des G222**			**B-16**

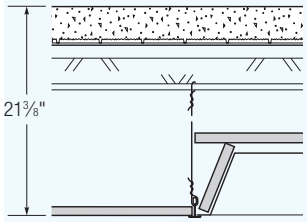
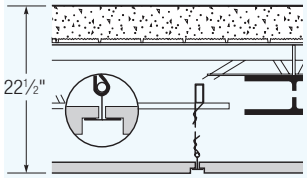
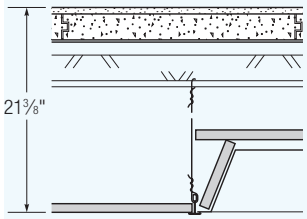
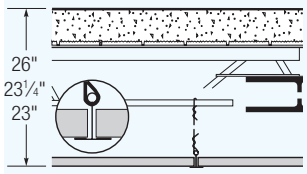
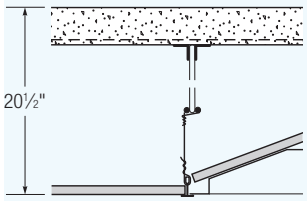
Steel Framed

2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" SHEETROCK FIRECODE C Core gypsum panel • DGLW Drywall Suspension System – light fixture and air duct optional – 3-1/4" concrete deck on riblath or corrugated steel deck – also applies to 5/8" panels and 2-3/4" concrete slab – steel bar joists, 24", o.c. • optional veneer plaster	**UL Des G529**			**B-17**
	– 3.4 lb diamond mesh lath and 5/8" 100:2-100:3 gypsum-sand plaster – 3/4" cold rolled channel furred or suspended – 2-1/2" concrete on riblath or 28 gauge corrugated steel deck – steel bar joist	**BMS-92**			**B-18**
	• 5/8" or 3/4" 12" x 12"; or 24" FR-83 acoustical ceiling panels in concealed Z-spline grid system – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G002**			**B-19**
	• 3/4" 12" x 12" or 24"; or 24" x 24" FR-83 acoustical ceiling panels • Concealed Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G007**			**B-20**
	• 5/8" or 3/4" 12" x 12"; or 24" x 24" FR-83 acoustical ceiling panels • DXL, DXLZ or SDXL Concealed Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath over – steel bar joists, 24" o.c.	**UL Des G008**			**B-21**

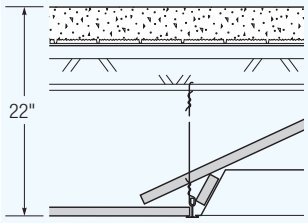
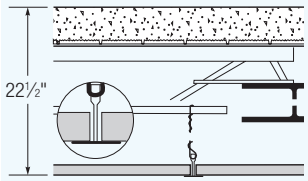
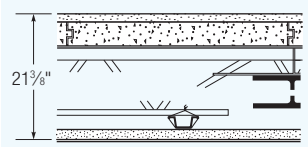
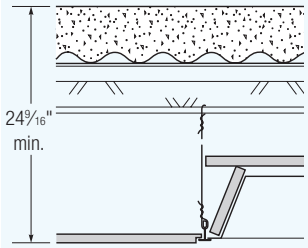
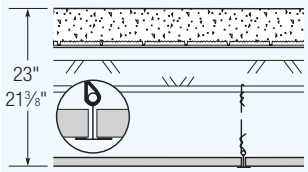
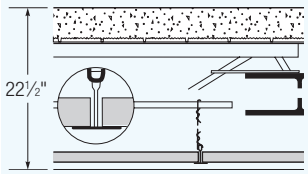
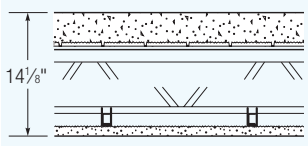
Steel Framed

2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number.**	**Index**
	• 3/4" 12" x 12"; or 24" FR-83 acoustical ceiling panels • DXL, DXLA, DXLZA, DXLA, DXLZ, SDXL, SDXLA or ZXLA Concealed Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G040**			**B-22**
	• 5/8" FR-81 or FR-4; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G202**			**B-23**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" Astro-FR acoustical ceiling panels • DXL, DXLZ, SDXL or DXLT Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G203**		DXLT Susp Exp System may be used instead, but fire rating is limited to 1-1/2-hour.	**B-24**
	• 5/8" FR-81, FR-4 or M; 5/8" or 3/4" FR-83 or FR-2; 3/4" FR-X1; or 3/4" Astro-FR acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or XLA Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 30" o.c.	**UL Des G204**			**B-25**
	• 5/8" FR-81 or FR-4; 5/8" or 3/4" FR-83 or FR-2; 3/4" FR-X1; or 3/4" Astro-FR acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G215**			**B-26**

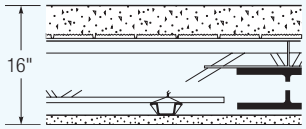
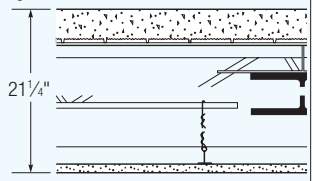
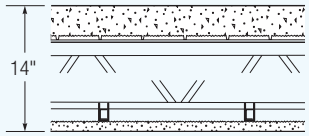
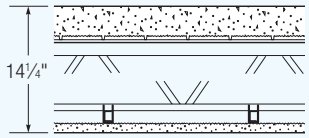
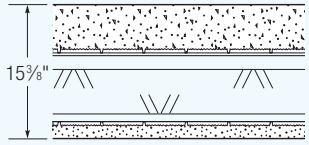
Steel Framed

2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" Astro-FR acoustical ceiling panels • DXL, SDXL or DXLZ or Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G227**		When the FR-2 ceiling panels are used, the fire rating is limited to 2 hours.	**B-27**
	• 3/4" AP or AP-3 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G228**			**B-28**
	• 1/2" LEVELROCK floor underlayment – type 10J2 steel joist spaced maximum 4' o.c. • 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; 3/4" FR-X1; or 3/4" Astro-FR • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – 2" T&G building units – steel bar joists, 4' o.c. – W8 x 31 beam	**UL Des G230**			**B-29**
	• 3/4" FR-83 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G231**			**B-30**
	• 5/8" or 3/4" FR-83, 5/8" or 3/4" FR-2, 3/4" FR-X1 or 3/4" Astro-FR acoustical ceiling panels • Susp Exp Grid System – light fixture optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G234**			**B-31**

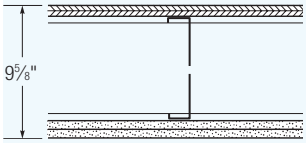
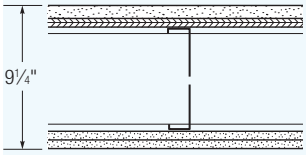
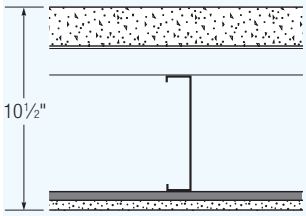
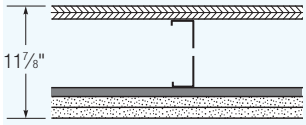
Steel Framed

2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 3/4" FR-83 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists	**UL Des G252**			**B-32**
	• 5/8" or 3/4" FR-2; 3/4" FR-83; or FR-X1 acoustical ceiling panels • DXLT, DXLTA, DXLTZ or DXLTZA Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists, 24" o.c.	**UL Des G265**			**B-33**
	• 1/2" Levelrock floor underlayment – 2" deep T&G building units – W8 x 20 steel beam – steel bar joists, 4' o.c. • 5/8" Sheetrock Firecode C Core gypsum panels	**UL Des G516**			**B-34**
	• 5/8" or 3/4" FR-83; FR-2 or FR-X1; or 1/2" or 5/8" FR-4; or 1/2" FC-CB; or Astro-FR acoustical ceiling panels • DXL, DXLA, DXLT, DXLTA, DXLTZ, DXLTZA, DXLZ, DXLZA, SDXL or SDXLA Susp Exp Grid System – light fixture and air duct optional – 3-1/2" concrete deck on riblath – steel bar joists, 4' o.c.	**UL Des G205**		DXLA, DXLZA, or SDXLA Susp Exp Grid System may be used instead, but fire rating is limited to 2 hours; DXLT, DXLTA, DXLTZ or DXLTZA Susp Exp Grid System may be also used, but fire rating is limited to 1-1/2 hours; 1/2" FC-CB gypsum panels may be used as a ceiling panel for fire ratings of 1 or 1-1/2 hours. When the FR-2 ceiling panels are used, the fire rating is limited to 2 hours.	**B-40**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1, Astro-FR or FR-4 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and air duct optional – 3" concrete deck used instead, but fire rating is limited to 2 hours; 1/2" on riblath – steel bar joists, 24" o.c.	**UL Des G211**		DXLA, DXLZA, SDXLA, or ZXLA Susp Exp Grid System may be used instead, but fire rating is limited to 2 hours; 1/2" FC-CB gypsum panels may be used as a ceiling panel for fire rating of 1 hour. When FR-2 ceiling panels are used, the fire rating is limited to 2 hours.	**B-41**
	• 5/8" FR-81; 5/8" or 3/4" FR-83 or FR-2; 3/4" FR-X1; or 1/2" FC-CB; or 5/8" FR-4; or 3/4" Astro-FR acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 3-1/2" concrete deck on riblath or steel deck (increase concrete 1/2") – steel bar joists, 24" o.c.	**UL Des G213**		When FR-4, FR-2 or M ceiling panels are used, the fire rating is limited to 2 hours; 1/2" FC-CB gypsum panels may be used as a ceiling panel for fire ratings of 1 or 1-1/2 hours.	**B-42**
2-1/2 Hour Fire-Rated Construction					
	– 3.4 lb diamond mesh lath and 3/4" 100:1-100:1 gypsum wood fiber-sand plaster – 3/4" cold rolled channel furred or suspended – 2-1/2" concrete on riblath or 28 gauge corrugated steel deck – steel bar joists	**UL Report R5429-1**			**B-35**

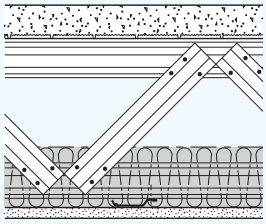
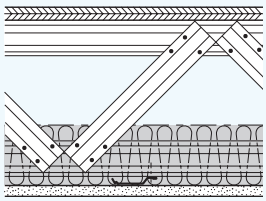
Steel Framed

3 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 3, clg. wt. 4  	• 5/8" Sheetrock Firecode C Core gypsum panels – metal furring channel 24" o.c. – joints finished – 2-1/2" concrete on corrugated steel deck or riblath – steel bar joists, 24" o.c. • optional veneer plaster	**UL Des G512**			**B-36**
clg. wt. 3  	• USG DGL Drywall Suspension System • 1/2" or 5/8" Sheetrock Firecode C Core gypsum panels – joints finished – 3-1/4" concrete on riblath or corrugated steel deck – steel bar joists, 24" o.c.	**UL Des G529**			**B-37**
clg. wt. 4  	– 3/4" cold rolled channel furred or suspended – 3.4 lb diamond mesh metal lath – 7/8" neat wood fiber gypsum plaster – 2-1/2" concrete on riblath or 28 gauge corrugated steel deck – steel bar joist	**BMS-92**			**B-38**
clg. wt. 4  	• Alternate based on 5/8" 1:2-1:3 Red Top gypsum plaster-vermiculite or 7/8" Red Top wood fiber plaster neat	**GA-FC-3140**			**B-39**
4 Hour Fire-Rated Construction					
clg. wt. 5  	– 3/4" cold rolled channel furred or suspended • 7/8" 1:2-1:3 Red Top gypsum plaster-vermiculite – 3/8" riblath metal lath – 2-1/2" concrete on riblath – steel bar joists, 24" o.c.	**BMS-92**			**B-43**

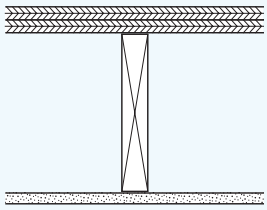
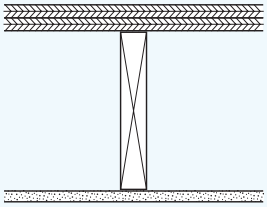
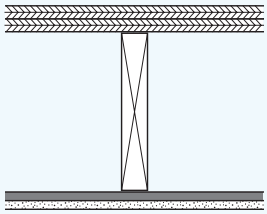
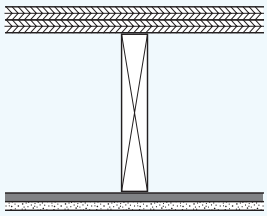
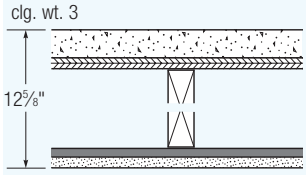
Steel Framed

1 Hour Fire-Rated Construction	Steel C-Joist Framing		Acoustical Performance			Reference
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**Index**
clg. wt. 4  9⅝"	• Two layers 1/2" Sheetrock Firecode C Core gypsum panels – 7" 18 gauge steel joists 24" o.c. • USG DGL Drywall Suspension System	**UL Des L524**	39		**USG-760105** Based on 9-1/2" 16 gauge steel joists	**B-44**
			43		**USG-760310** Based on 9-1/2" 16 gauge steel joists and 3" mineral wool batt	
			56		**USG-760106** Based on 9-1/2" 16 gauge steel joists and carpet pad	
			60		**USG-760405** Based on 9-1/2" 16 gauge steel joists and carpet pad with 3" mineral wool batt	
clg. wt. 4  9¼"	– 15/32" wood subfloor – 7" 18 gauge steel joist, 24" o.c. • 2 layers 1/2" Sheetrock Firecode C Core gypsum panel • 3/4" Levelrock floor underlayment • optional SRM-25 or SRB sound mat • USG DGL Drywall Suspension System	**UL Des L524**				**B-45**
clg. wt. 3  10½"	• 1/2" Sheetrock Firecode C Core gypsum panels – RC-1 channel or equivalent – 6" 18 gauge structural steel joists 24" o.c. – joints finished – 2" concrete on steel deck	**GA-FC-1145**				**B-47**
1-1/2 Hour Fire-Rated Construction						
clg. wt. 5  11⅞"	• Two layers 5/8" Sheetrock Firecode C Core gypsum panels – 3/4" T&G plywood floor – 9-3/8" 16 gauge steel joists 24" o.c. – RC-1 channel or equivalent – joints finished	**UL Des L527**	48		**USG-771101**	**B-48**
			51		**SA-781110** Based on carpet and pad	

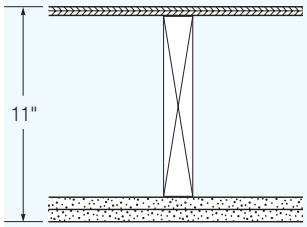
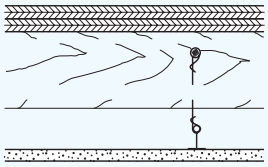
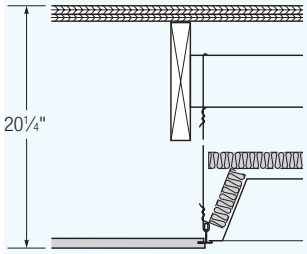
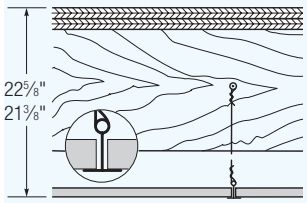
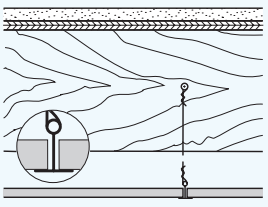
Steel Framed

1 Hour Fire-Rated Construction	Steel Truss		Acoustical Performance			Reference
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**Index**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channels or equivalent – joints finished – steel trusses – insulation optional in concealed space directly over gypsum ceiling membrane – concrete floor over riblath or corrugated steel deck	**UL Des G540, G542, G543, G544**				**B-50**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channels or equivalent – joints finished – steel trusses – insulation optional in concealed space directly over gypsum ceiling membrane – plywood flooring or floor topping mixture over plywood subflooring	**UL Des L549 L551, L552, L553**				**B-51**

Wood Framed

1 Hour Fire-Rated Construction	Dimensional Lumber		Acoustical Performance			Reference
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**Index**
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE Core gypsum panels, ceiling – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. – joints finished • optional LEVELROCK floor underlayment • optional SRM-25 or SRB sound mat • optional veneer plaster	**UL Des L501**	38	32	**CK-6412-7** Based on 1-1/4" nominal wood floor	**B-52**
			39	56	**CK-6412-8** Based on 1-1/4" nominal wood floor, 44 oz carpet and 40 oz pad atop flooring	
clg. wt. 3 	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panels, ceiling – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. – joints finished • optional 3/4" LEVELROCK floor underlayment • optional SRM-25 or SRB sound mat • optional veneer plaster	**UL Des L512**				**B-53**
clg. wt. 3 	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panels – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. – RC-1 channel or equivalent spaced 24" o.c. – joints finished • optional veneer plaster	**UL Des L514**				**B-54**
clg. wt. 3 	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panels – 1-1/4" nominal wood sub and finished floor – 44 oz carpet and 40 oz pad atop flr – 2 x 10 wood joist 16" o.c. – RC-1 channel or equivalent – joints finished	**UL Des L514**	47	67	**CK-6512-7** Based on 1/2" SHEETROCK FIRECODE C Core gypsum panels	**B-55**
			48	66	**CK-6412-9** Based on 5/8" SHEETROCK FIRECODE Core gypsum panels	
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE C Core gypsum panels – 1-5/8" perlite-sand concrete – plywood subfloor – 2 x 10 wood joists 16" o.c. – RC-1 channel or equivalent – joints finished • optional veneer plaster	**UL Des L516**	59		**USG 740704** Based on 3" mineral wool batt, 3/4" gypsum concrete and 1/2" SHEETROCK FIRECODE C Core gypsum panels	**B-56**
				47	**USG 740703** Based on 3" mineral wool batt, vinyl tile atop flooring	
				65	**USG 740705** Based on 3" mineral wool batt, 44 oz carpet and 40 oz pad atop flooring	

Wood Framed

1 Hour Fire-Rated Construction	Dimensional Lumber		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 5 	• two layers 5/8" SHEETROCK FIRECODE Core gypsum panels, – 2 x 10 wood joists 24" o.c. – face layer joints finished – floor: 1/2" plywood with extending glue *Also for roof-ceilings, including trusses*	**GA-FC-5406** and **RC-2601**			**B-57**
clg. wt. 3 	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panels, ceiling – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. • USG DGL Drywall Suspension System – joints finished • optional LEVELROCK floor underlayment in lieu of second layer of plywood • optional SRM-25 or SRB sound mat	**UL Des L525**			**B-58**
	• 3/4" FR-83 min acoustical tile • Concealed Accessible Grid System – light fixture and air duct optional – 1" nominal wood sub or 15/32" wood sub – 1" nominal or 19/32" finished floor or floor topping mixture – 2 x 10 wood joists 16" o.c.	**UL Des L006**			**B-59**
	• 5/8" FR-81, FR-4 or M; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical clearing panels • DXL, DXLZ, or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 1" nominal wood sub and finished floor – 2 x 10 wood joists	**UL Des L202**			**B-60**
	• 3/4" LEVELROCK floor underlayment • 5/8" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 lay-in acoustical panels • DXL, DXLA, DXLZ, DXLZA, SDXL or SDXLA Susp Exp Grid System or 1/2" FC-CB gypsum panels – 19/32" T&G wood subfloor – 2 x 10 wood joist 16" o.c.	**UL Des L206**			**B-61**

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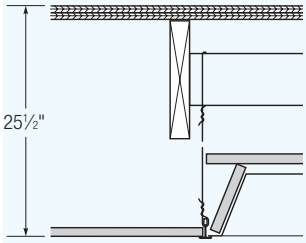
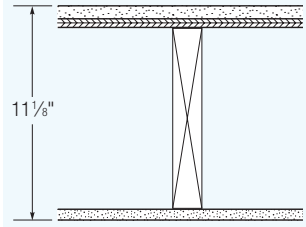
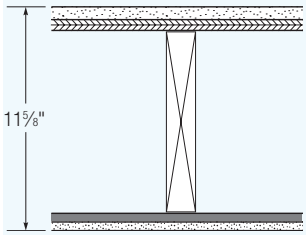
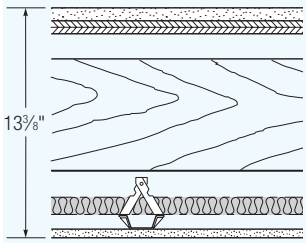
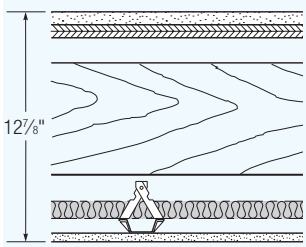
1 Hour Fire-Rated Construction	Dimensional Lumber		Acoustical Performance			Reference
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**Index**
	• 5/8" FR-4 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 1" nominal wood sub or 15/32" wood sub – 1" nominal or 19/32" finished floor or floor topping mixture – 2 x 10 wood joists 16" o.c.	**UL Des L212**				**B-62**
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE Core gypsum panels – joints finished – damper optional – 19/32" T&G wood subfloor – 2 x 10 wood joist 16" o.c. • optional SRM-25 sound mat • 3/4" LEVELROCK floor underlayment	**UL Des L501**				**B-63**
clg. wt. 3 	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 2 x 10 wood joist 16" o.c. – RC-1 or equivalent space 24" o.c. – 19/32" T&G wood subfloor perpendicular • optional SRM-25 or SRB sound mat • 3/4" LEVELROCK floor underlayment	**UL Des L502, L514**				**B-64**
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE C Core gypsum panel • 3/4" LEVELROCK floor underlayment – 3/4" plywood perpendicular – 9-1/2" "I" wood joist spaced max 24" o.c. – metal furring channel 24" o.c. – 1-1/4" THERMAFIBER insulation laid over channel below joist – joints finished	**UL Des L530**				**B-65**
clg. wt. 3 	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panel joints finished – 9" "I" wood joist 24" o.c. – 26 gauge metal furring channel – 1" nominal THERMAFIBER SAFB – 23/32" T&G wood subfloor • optional SRM-25 or SRB sound mat • 3/4" minimum LEVELROCK floor underlayment	**UL Des L531**				**B-66**

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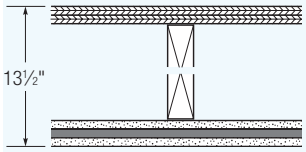
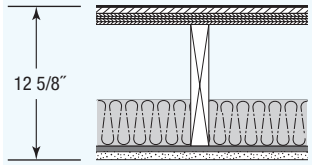
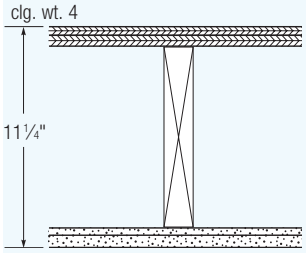
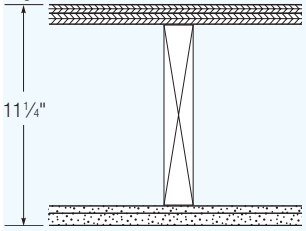
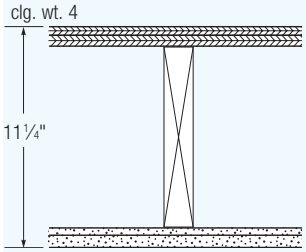
1 Hour Fire-Rated Construction	Dimensional Lumber		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 4  	• 2 layers 1/2" Sheetrock Firecode C Core gypsum panels – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. – RC-1 channel or equivalent – joints finished • optional veneer plaster	**UL Des L510**		Assembly not recommended when sound control is a major consideration	**B-67**
 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channel 24" o.c. – Optional insulation w/ RC-1 channels 12" o.c. max – 2x10 wood joists 16" o.c. – Nom 15/32" plywood or OSB subflooring – 1/2" min Levelrock floor underlayment	**UL Des L569**			**B-68**
clg. wt. 4  	• 5/8" 1:2 Red Top gypsum plaster-perlite over 3/8" type X Rocklath plaster base – 1" nominal T&G sub and finish floor – 2 x 10 wood joists 16" o.c. • optional veneer plaster	**GA-FC-5470**			**B-69**
clg. wt. 4  	• 1/2" 1:2 sanded Red Top gypsum plaster over 3/8" type X Rocklath plaster base – 1" nominal T&G sub and finish floor – 2 x 10 joists 16" o.c.	**GA-FC-5490**			**B-70**
clg. wt. 4  	• 5/8" 1:2-1:3 sanded Red Top gypsum plaster over 3.4 lb diamond lath – 1" nominal T&G sub and finish floor – 2 x 10 wood joists 16" o.c.	**GA-FC-5510**			**B-71**

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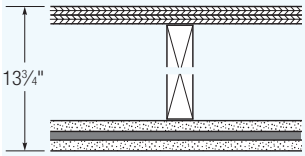
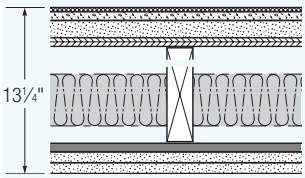
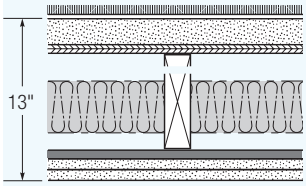
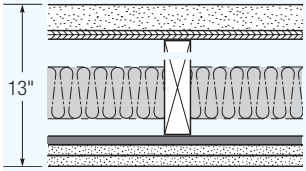
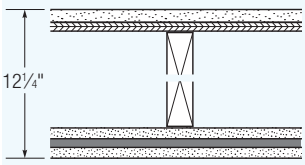
2 Hour Fire-Rated Construction	Dimensional Lumber		Acoustical Performance			Reference
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**Index**
clg. wt. 5  	• Two layers 5/8" SHEETROCK FIRECODE C Core gypsum panels – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. – RC-1 channel or equivalent – joints finished	**UL Des L511**			Assembly not recommended when sound control is a major consideration	**B-72**
 	• Two layers 5/8" SHEETROCK FIRECODE C Core gypsum panels – 8" x 8" ceramic tile • 1/2" DUROCK exterior cement board • 1" SHEETROCK gypsum liner panels – 1/2" plywood – 2 x 10 wood joist 16" o.c. – 3" mineral wool batt – RC-1 channel or equivalent	**UL Des L541**		52	**RAL-IN-89-5**	**B-73**
			58		**RAL-TL-89-145** Based on vinyl tile over oriented board in place of ceramic tile and cement board	
				51	**RAL-IN-89-7**	
			59		**RAL-TL-89-146** Based on carpet/pad over oriented strand board in place of ceramic tile and cement board	
			60		**RAL-TL-89-141**	
			62		**RAL-IN-89-8**	
 	• Two layers 5/8" SHEETROCK FIRECODE C Core gypsum panels – 2 x 10 wood joists 16" o.c. – 3" mineral wool batt – RC-1 channel or equivalent	**UL Des L541**	59		**RAL-TL-90-40**	**B-74**
				69	**RAL-IN-90-5**	
			59		**RAL-TL-90-40** Based on vinyl tile in place of carpet/pad	
				37	**RAL-IN-90-6**	
 	• Two layers 5/8" SHEETROCK FIRECODE C Core gypsum panel • optional SRM-25 or SRB sound mat – 19/32" wood subfloor – 2 x 10 wood joist spaced 16" o.c. – 3" THERMAFIBER SAFB – RC-1 channel or equivalent • 1-1/2" LEVELROCK floor underlayment	**UL Des L541**	66	59	**RAL-020602** LEVELROCK, SRB and vinyl	**B-75**
			67	52	**RAL-020503** LEVELROCK and SRB – no flooring	
			67	53	**RAL-020701** LEVELROCK, SRB and ceramic tile	
 	• Two layer 5/8" SHEETROCK FIRECODE C Core gypsum panels – 15/32" T&G wood subfloor – 2 x 10 wood joist – RC-1 or equivalent – joints finished • optional 3/4" LEVELROCK floor underlayment • optional SRM-25 or SRB sound mat	**UL Des L511**				**B-76**

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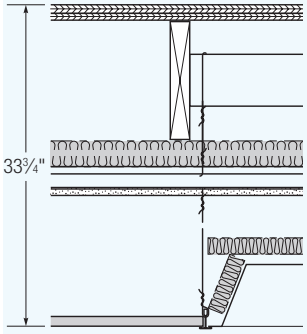
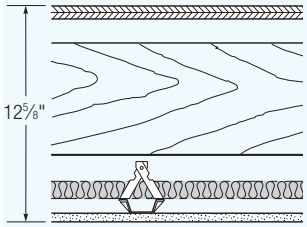
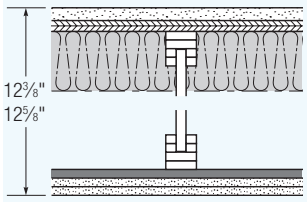
2 Hour Fire-Rated Construction	Dimensional Lumber		Acoustical Performance			Reference
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**Index**
	• 5/8" FR-4; or 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and air duct optional • USG DGL Drywall Suspension System • 1/2" Sheetrock Firecode C Core gypsum panels – 1" nominal wood subfloor	**UL Des L211**				**B-77**
1 Hour Fire-Rated Construction	**Engineered Joist**					
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels, ceiling – 3/4" T&G plywood – I-shaped wood joist 24" o.c. – metal furring channel 24" o.c. – 1-1/4" 8 pcf Thermafiber insulation (UL Des 531) – joints finished • optional 3/4" Levelrock floor underlayment • optional SRM-25 or SRB sound mat	**UL Des L530** based on 9-1/2" deep TJI® joists	47	40	**RAL-TL-81-87** **RAL-IN-81-16**	**B-78**
				54	**RAL-IN-81-17** Based on carpet and pad atop flooring	
				43	**RAL-IN-81-19** Based on cushioned vinyl atop flooring	
	• Two layers 1/2" Sheetrock Firecode C Core gypsum panels • optional SRM-25 or SRB sound mat – 19/32" wood subfloor – 9-1/2"deep "I" shaped wood joist 24" o.c. – 14" parallel chord wood truss 32" o.c. – RC-1 or equivalent • 3/4" Levelrock floor underlayment	**UL Des L570**	64	58	**RAL-0T03-05/06** 1" Levelrock, vinyl, SRM-25, 3-1/2" insulation	**B-79**
			64	62	**RAL-0T03-07/08** 1" Levelrock, engineered wood laminate, SRM-25, 3-1/2" insulation	
			66	54	**RAL-0T03-09/10** 1" Levelrock, ceramic tile, SRM-25, 3-1/2" insulation	
			65	54	**RAL-0T03-01/02** 3/4" Levelrock, vinyl, SRB, 3-1/2" insulation	
			66	51	**RAL-0T03-03/04** 3/4" Levelrock, ceramic tile, SRB, 3-1/2" insulation	

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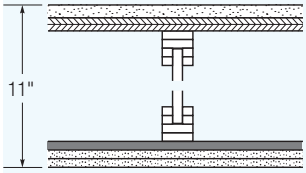
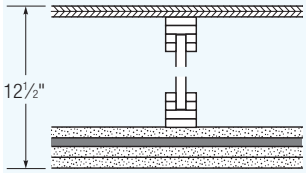
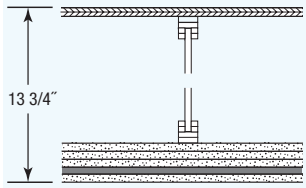
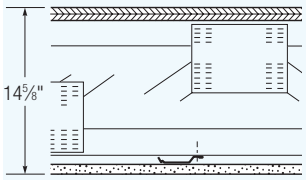
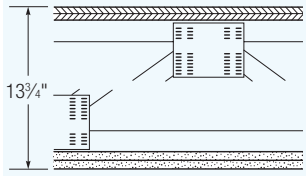
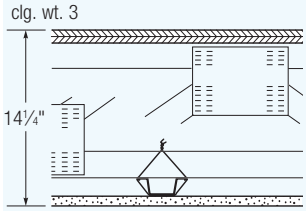
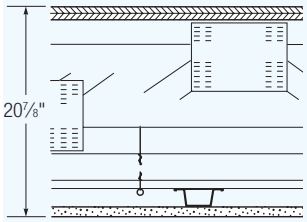
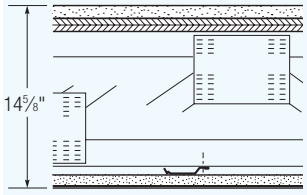
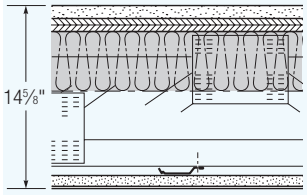
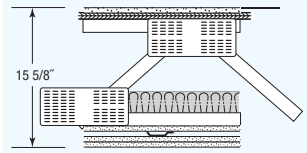
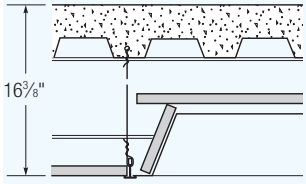
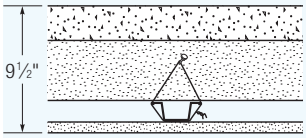
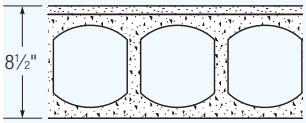
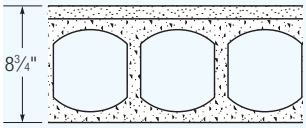
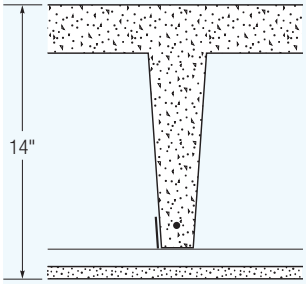
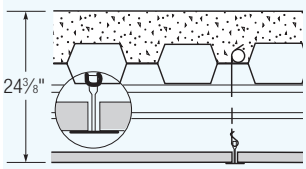
1 Hour Fire-Rated Construction	Engineered Joist		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 5 	• Two layers 1/2" Sheetrock Firecode C Core gypsum panels – 23/32" T&G wood subfloor – 8" "I" shaped wood joist 24" o.c. – RC-1 channel – joints finished • 3/4" Levelrock floor underlayment	**UL Des L544**			**B-80**
2 Hour Fire-Rated Construction					
clg. wt. 8 	• base layer: 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channel or equivalent • double face layer: 5/8" Sheetrock Firecode C Core gypsum panels – 9-1/2" wood truss joists 24" o.c. – joints finished – floor: 5/8" T&G plywood • optional 3/4" Levelrock floor underlayment • optional veneer plaster	**UL Des L538**			**B-81**
	• 5/8" Sheetrock Firecode Core gypsum panels – 25 gauge hat channels 24" o.c. – 9-1/4" deep "I" shape engineered wood joists 24" o.c. – Alternate 2"x8" wood joists 24" o.c. – Alternate 18" deep parallel chord wood trusses 24" o.c. – Alternate 8" 18 gauge steel channel joists – 23/32" structural plywood or OSB subflooring	**UL Des L556** Provides 2 hour finish rating			**B-82**
1 Hour Fire-Rated Construction	**Truss**				
clg. wt. 3 	• 5/8" Sheetrock gypsum panels, Firecode C Core, ceiling – parallel chord wood truss, 24" o.c. – 3/4" plywood floor – RC-1 channels or equivalent – joints finished – optional ceiling damper • optional 3/4" Levelrock floor underlayment • USG DGL Drywall Suspension System – insulation optional – check UL Directory for proper placement over gypsum ceiling membrane or under plywood subflooring	**UL Des L521, L550, L563**			**B-83**
clg. wt. 5 	• 2 layers 1/2" Sheetrock Firecode C Core gypsum panels – joints finished – 23/32" plywood – 12" parallel chord wood floor truss, 24" o.c. • optional veneer plaster	**UL Des L542**			**B-84**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – wood truss, 24" o.c. – 3/4" plywood floor – metal furring channel 24" o.c. – joints finished • optional veneer plaster *RC-1 Resilient Channel or equivalent may be used in place of metal furring channel*	**UL Des L528**			**B-85**

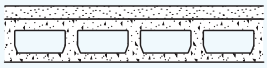
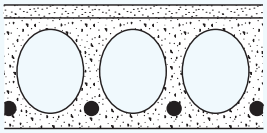
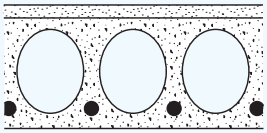
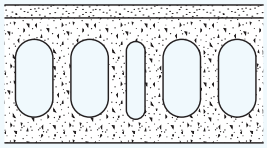
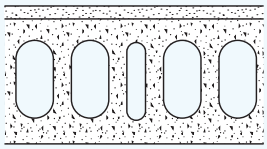
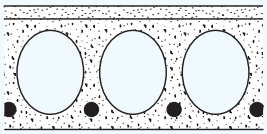
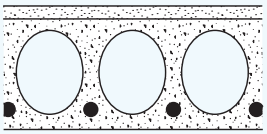
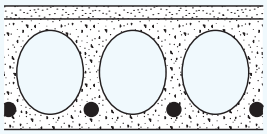
Wood Framed

1 Hour Fire-Rated Construction	Truss		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 3  	• 5/8" Sheetrock Firecode C Core gypsum panels – wood truss, 24" o.c. – 3/4" plywood floor • USG DGL Drywall Suspension System – joints finished • optional 3/4" Levelrock floor underlayment • optional veneer plaster	**UL Des L529**			**B-86**
 	• 5/8" Sheetrock Firecode C Core gypsum panels – 23/32" T&G wood subfloor – parallel chord wood truss 24" o.c. – RC-1 or equivalent 24" o.c. • 3/4" Levelrock floor underlayment	**UL Des L528**			**B-87**
clg. wt. 3  	• 5/8" Sheetrock Firecode C Core gypsum panel – 23/32" T&G wood subfloor – 11-7/8" parallel chord wood truss 24" o.c. – RC-1 or equivalent – 3-1/2" glass fiber insulation • 3/4" Levelrock floor underlayment	**UL Des L555**			**B-88**
2 Hour Fire-Rated Construction	**Truss**				
 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channel 16" o.c. – optional insulation – Min 12" deep parallel chord wood trusses 24" o.c. – 23/32" plywood or OSG subflooring – 1/2" min Levelrock floor underlayment	**UL Des L577**			**B-89**

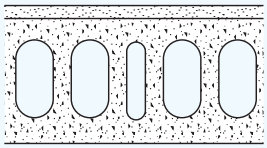
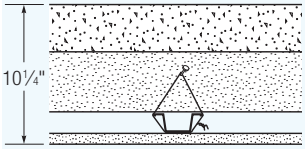
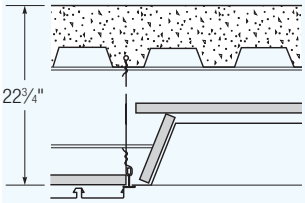
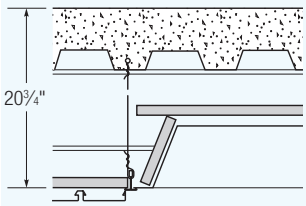
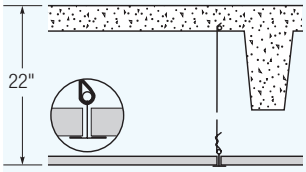
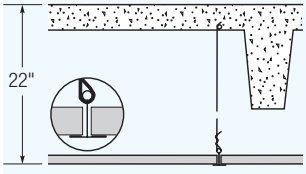
Structural Concrete

1-1/2 Hour Fire-Rated Construction			Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" FR-4, M or FR-81; 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoustical ceiling panels or 1/2" FC-CB gypsum lay-in tile • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and speakers optional – 2-1/2" concrete on fluted or cellular steel deck	**UL Des D209**			**B-90**
2 Hour Fire-Rated Construction					
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE C Core gypsum panels – metal furring channel 24" o.c. – joints finished – 2" precast normal weight (J502) or lightweight (UL Des J503) concrete units with 6" deep stems 48" o.c. • USG DGL Drywall Suspension System (UL Des J502)	**UL Des J502, J503**			**B-91**
	• 1/2" LEVELROCK floor underlayment • optional SRM-25 or SRB sound mat – 8" minimum thick normal weight precast concrete units	**UL Des J991**			**B-92**
	• 1/2" LEVELROCK floor underlayment – 8" minimum thick light weight precast concrete units	**UL Des J994**			**B-93**
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE Core gypsum panels – metal furring channel 24" o.c. – joints finished – joist leg 10" deep	**GA-FC-2120**			**B-94**
	• 3/4" FR-83 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck deck on fluted or cellular steel floor	**UL Des D215**			**B-95**

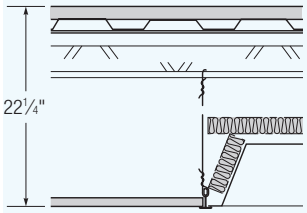
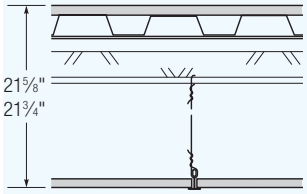
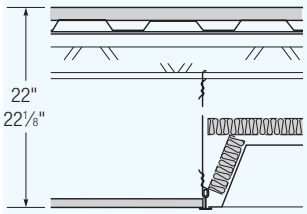
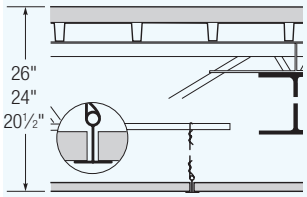
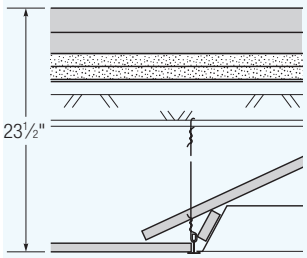
Structural Concrete

2 Hour Fire-Rated Construction			Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 1" LEVELROCK floor underlayment – 4' or 8' wide precast concrete units – grout 3500 psi • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J917**			**B-96**
	• 3/4" LEVELROCK floor underlayment – precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J919**			**B-97**
	• 3/4" LEVELROCK floor underlayment – precast concrete units	**UL Des J920**			**B-98**
	• 1" LEVELROCK floor underlayment – 8-10" thick precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J924**			**B-99**
	• 3/4" LEVELROCK floor underlayment – 6", 8", 10", or 12" thick precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J927**			**B-100**
	• 3/4" LEVELROCK floor underlayment – 8", 10", or 12" thick precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J931**			**B-101**
	• 3/4" LEVELROCK floor underlayment – 8", 10", or 12" thick precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J957**			**B-102**
	• 3/4" LEVELROCK floor underlayment – 8" thick precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des J966**			**B-103**

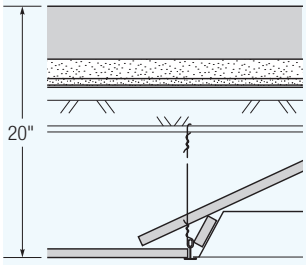
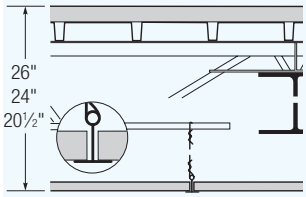
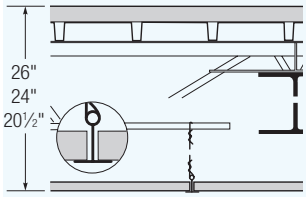
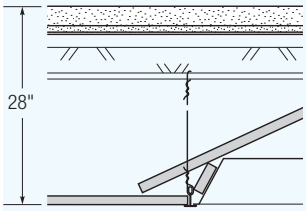
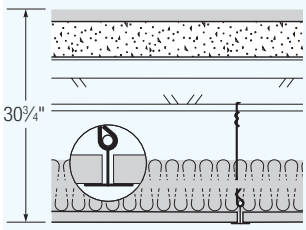
Structural Concrete

2 Hour Fire-Rated Construction			Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 3/4" LEVELROCK floor underlayment – 6", 8", 10", or 12" thick precast concrete units • optional SRM-25 or SRB sound mat – floor topping thickness should be a minimum of 1" if using sound mat	**UL Des K906**			**B-104**
3 Hour Fire-Rated Construction					
clg. wt. 3 	• 5/8" SHEETROCK FIRECODE C Core gypsum panels – metal furring channel 24" o.c. – joints finished – precast 2-3/4" normal weight (J502) or 2-1/2" lightweight (J504) concrete units with 6" deep stems 48" o.c.	**UL Des J502, J504**			**B-105**
	• 5/8" or 3/4" FR-83 acoustical ceiling panels • DXLP (with Types PSS, PSSP, PSR and PSRP metal ceiling pans), DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 3-1/4" concrete on 1-1/2" steel roof deck	**UL Des D218**			**B-106**
	• 5/8" or 3/4" FR-83 or FR-4 or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 3-1/4" concrete on cellular and 3-1/2" concrete on fluted steel floor units	**UL Des D219**		DXLA, DXLZA or SDXLA Susp Exp Grid System may be used instead, but fire rating is limited to 2 hours; DXLT or DXLTZ Susp Exp Grid System may be also used, but fire rating is limited to 1-1/2 hours	**B-107**
	• 5/8" FR-81, FR-4 or M; 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLT, DXLTZ, DXLZ, DXLZA, DXLTA, DXLTZA, SDXL or SDXLA Susp Exp Grid System – 2-1/2" concrete deck with 6" deep pan beam	**UL Des J201**		DXLTA or DXLTZA Susp Exp Grid System may be used instead, but fire rating is limited to 1-1/2 hours	**B-108**
	• 5/8" or 3/4" FR-83 or 3/4" FR-X1, AP, AP-1, AP-2 or AP-3 acoustical ceiling panels • DXL, DXLT, DXLTZ, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2" prestressed concrete units with 6" deep stems	**UL Des J202**			**B-109**

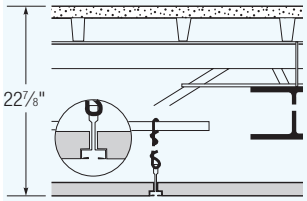
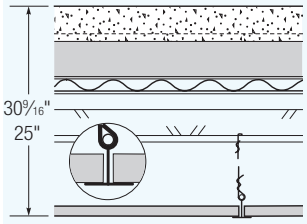
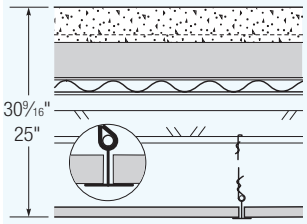
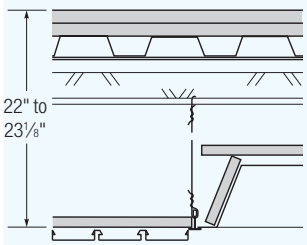
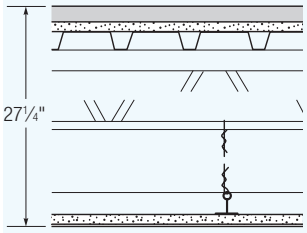
Steel Framed

3/4 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" M; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 7/8" steel roof deck and 1" noncombustible insulation – steel bar joist	**UL Des P203**			**C-1**
1 Hour Fire-Rated Construction	**Steel Bar Joist Framing**				
	• 5/8" M; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA, Susp Exp Grid System – 1-1/2" steel roof deck and 3/4" insulation – steel bar joist	**UL Des P201**			**C-2**
	• 5/8" M; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical ceiling panels • Susp Exp Grid System – light fixture and air duct optional – 7/8" steel roof deck and 1" insulation – steel bar joist	**UL Des P202**			**C-3**
	• 3/4" FR-83 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 1-1/2" steel roof deck and 1" noncombustible insulation – steel bar joist	**UL Des P214**			**C-4**
	• 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 2" laminated gypsum plank building units – 1-5/8" and 1-7/8" noncombustible insulation (two layers) – steel bar joists	**UL Des P228**			**C-5**

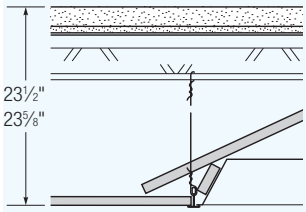
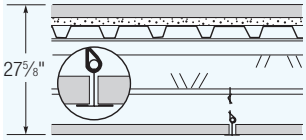
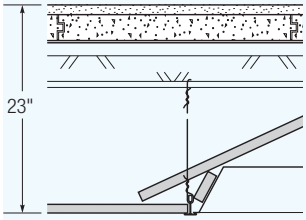
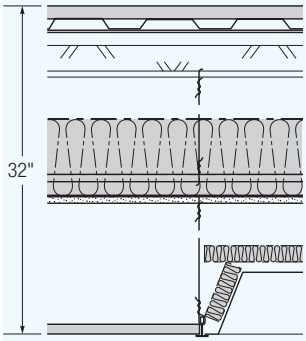
Steel Framed

1 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index
	• 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 1" to 8" rigid foamed plastic insulation – 1-1/2" poured gypsum roof deck – 1/2" gypsum form board or 2" laminated gypsum plank building units – steel bar joists	**UL Des P229**			**C-6**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional • 1-1/2" steel roof deck and 1/2" SHEETROCK gypsum panels and insulation – steel bar joists	**UL Des P235**			**C-7**
	• 5/8" FR-4 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 6" insulation batts over ceiling – 1" fluted steel roof deck and insulation – steel bar joists	**UL Des P238**			**C-8**
	• 5/8" FR-4 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 1-1/2" poured gypsum roof deck over 1/2" gypsum form board or 2" laminated gypsum plank building units – steel bar joists	**UL Des P244**			**C-9**
	• 5/8" FR-4 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 6" insulation batts over ceiling – 3/4" noncombustible insulation and 2" metal-edge concrete plank – steel bar joists	**UL Des P245**			**C-10**

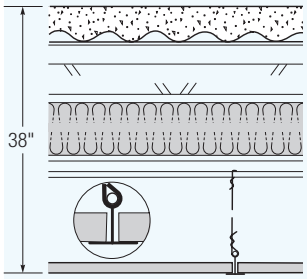
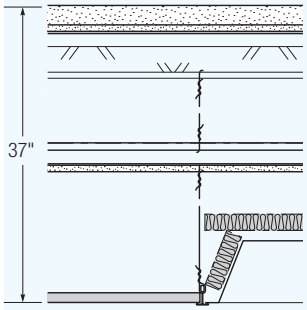
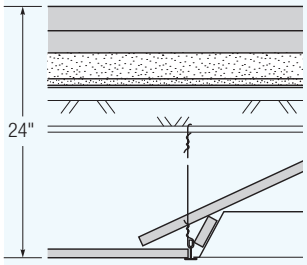
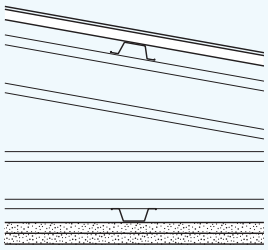
Steel Framed

1 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 3/4" FR-83 acoustical ceiling panels • DXLF (with CM or CP metal ceiling panels) Susp Exp Grid System – light fixture and air duct optional – 6" insulation batts over ceiling – 1-1/2" steel roof deck • 5/8" SHEETROCK gypsum panels and insulation – steel bar joists	**UL Des P254**			**C-11**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 2" vermiculite concrete and foamed plastic insulation corrugated steel roof deck over bar joist – steel bar joists	**UL Des P246**			**C-12**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, ZXLA or SDXLA Susp Exp Grid System – light fixture, air duct and speakers optional – 2" vermiculite concrete and foamed plastic insulation corrugated steel roof deck over bar joists – steel bar joist	**UL Des P255**			**C-13**
	• 5/8" M; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLP (with Types PAR, PARP, PAS, PASP, PSS, PSSP, PSR, and PSRP metal ceiling panels), DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and air duct optional – 1" to 2" noncombustible insulation (two layers) – 7/8" deep steel roof deck – steel bar joists	**UL Des P267**			**C-14**
1-1/2 Hour Fire-Rated Construction					
clg. wt. 4 	• USG DGL Drywall Suspension System • 5/8" SHEETROCK FIRECODE C Core gypsum panels – joints finished – minimum 1" roof insulation and 5/8" gypsum board on steel deck • 1 hour rating based on assembly with 1/2" SHEETROCK FIRECODE C Core gypsum panels – steel bar joists • optional veneer plaster	**UL Des P510**			**C-15**

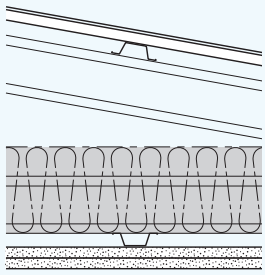
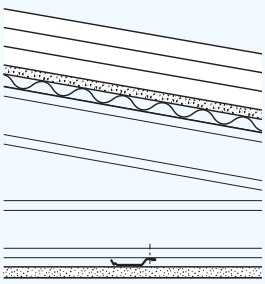
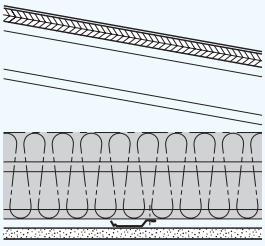
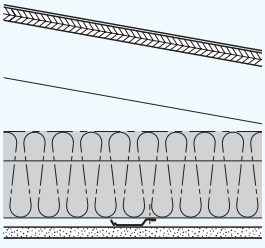
Steel Framed

1-1/2 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" or 3/4" FR-83 or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional • 1-1/2" poured gypsum roof deck over 1/2" gypsum form board or 2" laminated gypsum plank building units – steel bar joists	**UL Des P207**			**C-16**
	• 5/8" FR-4; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1, AP, AP-3, Astro-FR (1 hour rating) acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA, ZXLA, DXLT, DXLTZ or DXLP (with Types PAR, PARP, PAS, PASP, PSR, PSRP, PSS and PSSP metal ceiling panels) • USG DGL Drywall Suspension System – light fixture, air duct and speakers optional • 1-1/2" steel roof deck and 5/8" Sheetrock Firecode Core gypsum panels – steel bar joists	**UL Des P230**		DXLT or DXLTZ Susp Exp Grid System may be used, but fire rating is limited to 1 hour. When the FR-2 ceiling panels are used, the fire rating is limited to 1 hour.	**C-17**
2 Hour Fire-Rated Construction					
	• 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 2" precast concrete units and 3/4" noncombustible insulation – steel bar joists	**UL Des P213**			**C-18**
3 Hour Fire-Rated Construction					
	• 5/8" FR-4 or FR-83 or 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture, air duct and speakers optional – insulation ceiling membrane below joists • USG DGL Drywall Suspension System • 1/2" Sheetrock Firecode C Core gypsum panels – 6" glass fiber insulation installed on top of drywall suspension system – joints finished – 1" to 3" roof insulation – 1" deep steel roof deck – 8" deep steel bar joists • optional veneer plaster system	**UL Des P237**			**C-19**

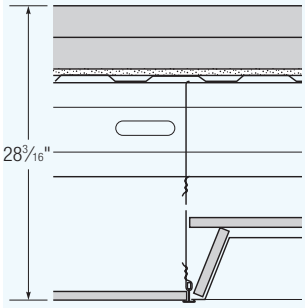
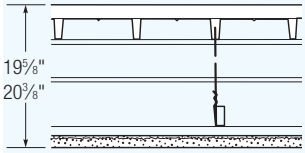
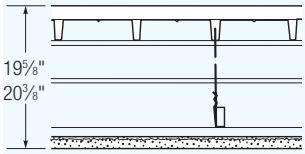
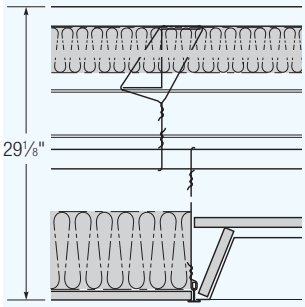
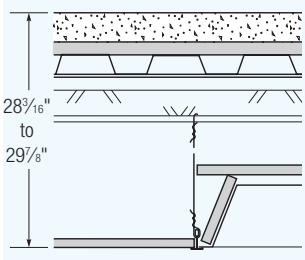
Steel Framed

3 Hour Fire-Rated Construction	Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" FR-4; 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture, air duct and speakers optional – insulation ceiling membrane below joists – 2" insulating concrete on 9/16" corrugated steel deck – steel bar joists	**UL Des P241**			**C-20**
	• 5/8" FR-4 or FR-83; or 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture, air duct and speakers optional – insulation ceiling membrane below joists • USG DGL Drywall Suspension System • 1/2" SHEETROCK FIRECODE C Core gypsum panels – 6" glass fiber insulation installed on top of drywall suspension system – joints finished • 1-1/2" poured gypsum over 1/2" gypsum form board – steel bar joists	**UL Des P239**			**C-21**
	• 3/4" FR-83 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture, air duct and speakers optional – 1-5/8" and 1-7/8" noncombustible insulation (two layers) • 2" poured gypsum roof deck or 2" laminated gypsum plank building units • 1/2" gypsum form board – steel bar joists	**UL Des P242**			**C-22**
1 Hour Fire-Rated Construction	**Steel Truss**				
clg. wt. 5 	• 2 layers 5/8" SHEETROCK FIRECODE Core gypsum panels, metal furring channel – RC-1 channels or equivalent – joints finished – roof covering and minimum 1" with no limitation on overall thickness of roof insulation over steel roof deck • USG DGL Drywall Suspension System – minimum 11-7/8" deep steel roof truss 48" o.c.	**UL Des P515**			**C-23**

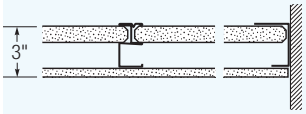
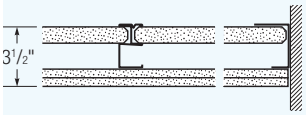
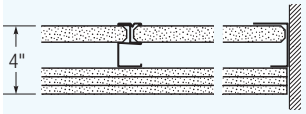
Steel Framed

1 Hour Fire-Rated Construction	Steel Truss		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channels or equivalent – joints finished – insulation optional in concealed space directly over gypsum ceiling membrane – roof covering and roof insulation – steel roof deck – minimum 11-7/8" deep steel roof truss 48" o.c.	**UL Des P524**			**C-24**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channels or equivalent – joints finished – steel roof deck – steel truss 48" o.c. • roof covering and roof insulation over 1/2" Durock cement board or 1/2" Sheetrock brand gypsum panels	**UL Des P521, P525, P527, P529**			**C-25**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – RC-1 channels or equivalent – joints finished – insulation optional in concealed space directly over gypsum ceiling membrane – 23/32" thick plywood decking – steel truss 48" o.c.	**UL Des P523, P526, P528, P530**			**C-26**
clg. wt. 3 	• 5/8" Sheetrock Firecode C Core gypsum panels – 1/2" plywood sheathing – pitched or parallel chord wood trusses, 24" o.c. – air duct – ceiling damper – optional insulation – RC-1 channel or equivalent, 16" o.c. without insulation, 12" o.c. with insulation • optional USG DGL Drywall Suspension System – joints finished	**UL Des P522**			**C-27**

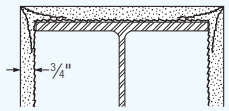
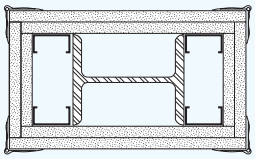
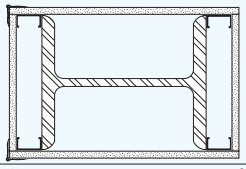
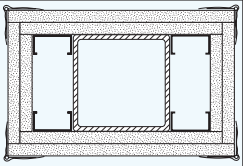
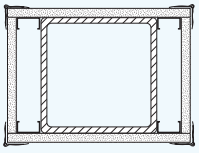
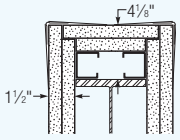
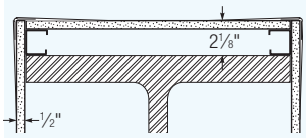
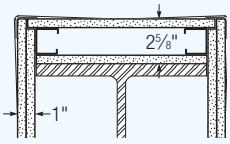
Steel Framed

1 Hour Fire-Rated Construction	Steel Roof Deck		Acoustical Performance		Reference
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**Index**
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, ZXLA or SDXLA Susp Exp Grid System – light fixture and air duct optional – 2-7/16" noncombustible insulation (two layers) • 1/2" gypsum sheathing – 9/16" deep steel roof deck – 7-1/4" deep steel C-joists	**UL Des P257**			**C-28**
1-1/2 Hour Fire-Rated Construction					
	– suspended 3.4 lb diamond mesh metal lath • 3/4" 100:2-100:3 gypsum-sand plaster – rib type steel roof deck – 1" wood-fiber insulation	**NBS-57**			**C-29**
	– suspended 3.4 lb diamond mesh metal lath • 1" 100:2 gypsum-sand plaster – rib type steel roof deck – 1-1/2" wood-fiber insulation	**NBS-58**			**C-30**
3 Hour Fire-Rated Construction					
	• 5/8" FR-4; or 3/4" FR-83 or FR-81 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System – light fixture and air duct optional – 6" glass fiber insulation – steel roof deck – 4" glass fiber insulation – 8" deep Z purlins	**UL Des P268**			**C-31**
	• 5/8" FR-4 or FR-83; or 3/4" FR-83 acoustical ceiling panels • DXL, DXLZ, or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/4" insulating concrete – 1" foamed plastic insulation – steel roof deck	**UL Des P269**			**C-32**

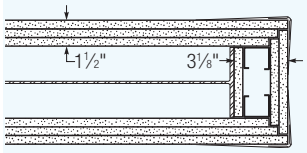
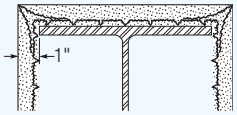
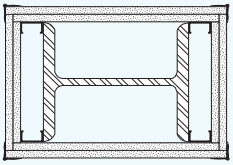
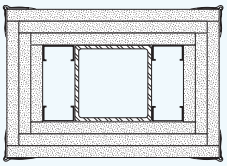
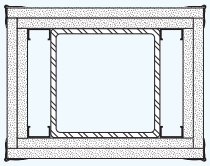
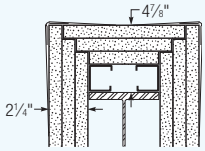
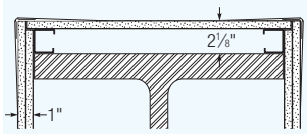
Steel Framed

1 Hour Fire-Rated Construction	Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	**Description**	**Report Number**	**STC**	**Test Number**	**Index**
	– corridor ceiling, and stair soffit • 1" Sheetrock brand gypsum liner panels • 5/8" Sheetrock Firecode C Core gypsum panels • USG steel C-H stud spanning horizontally 24" o.c. • USG steel J-runner – joints finished	**AER-09038**			**D-1**
2 Hour Fire-Rated Construction					
	– corridor ceiling, and stair soffit • 1" Sheetrock brand gypsum liner panels • 1/2" Sheetrock Firecode C Core gypsum panels • USG steel C-H Stud spanning horizontally 24" o.c. • USG steel J-runner – joints finished	**AER-09038**			**D-2**
	– horizontal membrane or metal duct enclosure • 1" Sheetrock liner panels • 1/2" Sheetrock Firecode C Core gypsum panels • USG Steel C-H stud spanning horizontally 24" o.c. – joints finished	**WHI-495** **PSH0154/0167**			**D-3**

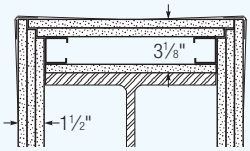
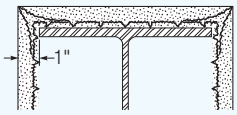
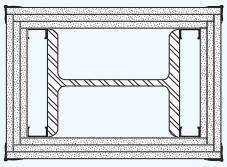
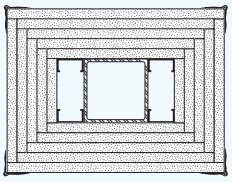
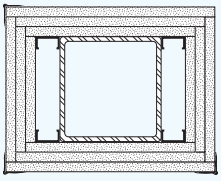
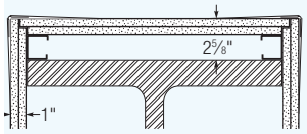
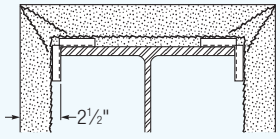
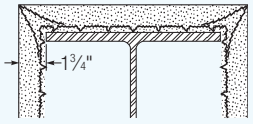
Column

1 Hour Fire-Rated Construction				Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
	– 3.4 lb self-furring diamond mesh metal lath wrapped around column • 3/4" 100:2-100:3 gypsum-sand plaster	**BMS-92**	Structural member tested: W10 x 49	**E-1**
	• 2 layers 1/2" Sheetrock Firecode C core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: W4 x 13 W6 x 15.5	**E-2**
	• 1 layer 1/2" Sheetrock Firecode C core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: W10 x 49	**E-3**
	• 2 layers 1/2" Sheetrock Firecode C core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: Tube steel column 4 x 4 x 0.188"	**E-4** **E-5**
	• 1 layer 5/8" Sheetrock Firecode core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: Tube steel column 8 x 8 x 0.25"	**E-6**
2 Hour Fire-Rated Construction				
	• 3/4" Sheetrock Ultracode Core gypsum panels – 1-5/8" 25 gauge steel studs at corners – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: W4 x 13 W6 x 15.5 W10 x 49	**E-7**
	• 1/2" Sheetrock Firecode C Core gypsum panels – 1-5/8" 25 gauge steel studs at column corners – joints finished • optional veneer plaster	**UL Des X521**	Structural member tested: W14 x 228	**E-8**
	• 1/2" Sheetrock Firecode C Core gypsum panels – double layer over each flange end – 1-5/8" 25 gauge steel stud – joints finished • optional veneer plaster	**UL Des X518**	Structural member tested: W10 x 49	**E-9**

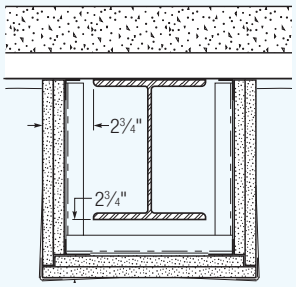
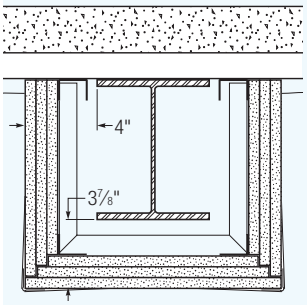
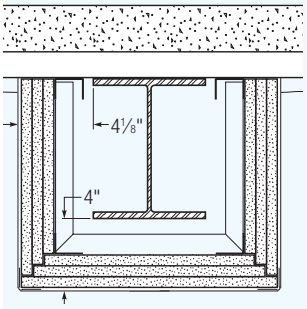
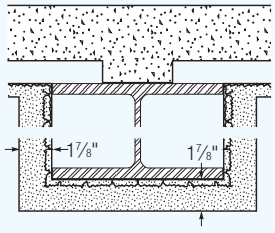
Column

2 Hour Fire-Rated Construction				Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 1-5/8" 25 gauge steel studs – joints finished • optional veneer plaster	**UL Des X524**	Varies Rating also applies to tapered or constant-section prefabricated metal building columns	**E-10**
	– 3.4 lb self-furring diamond mesh metal lath wrapped around column • 1" 100:2-100:3 gypsum-perlite plaster – perlite aggregate bearing UL Label	**UL Des X402**	Structural member tested: W10 x 49	**E-11**
	• 2 layers 5/8" SHEETROCK FIRECODE Core panels 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: W10 x 49	**E-12**
	• 3 layers 5/8" SHEETROCK FIRECODE Core panels 1-5/8" 25 gauge steel studs – No. 18 gauge SWG steel wire 24" o.c. wrapped around second layer – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: Tube steel column 4 x 4 x 0.188"	**E-13**
	• 2 layers 3/4" SHEETROCK ULTRACODE Core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: Tube steel column 8 x 8 x 0.25"	**E-14**
3 Hour Fire-Rated Construction				
	• 3/4" SHEETROCK ULTRACORE Core gypsum panels second layer wrapped with no. 18 SWG steel wire spaced 24" o.c. – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6 x 1" screws – joints finished	**UL Des X528**	Structural member tested: W4 x 13 W6 x 15.5	**E-15**
	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 1-5/8" 25 gauge steel studs at col corners – joints finished • optional veneer plaster	**UL Des X514**	Structural member tested: W14 x 228	**E-16**

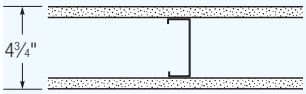
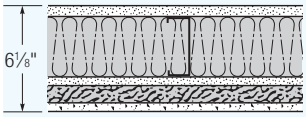
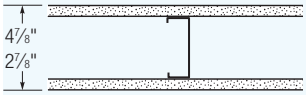
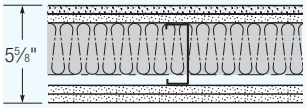
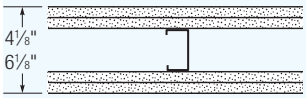
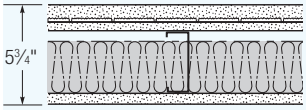
Column

3 Hour Fire-Rated Construction				Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 1-5/8" 25 gauge steel studs – joints finished • optional veneer plaster	**UL Des X515**	Structural member tested: W10 x 49	**E-17**
	– 3.4 lb self-furring diamond mesh metal lath wrapped around column • 1-3/8" 100:2-100:3 gypsum-perlite plaster or RED TOP gypsum plaster	**UL Des X402**	Structural member tested: W10 x 49	**E-18**
	• 3 layers 5/8" SHEETROCK FIRECODE core panels – No. 18 gauge SWG steel wire 24" o.c. wrapped around second layer – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: 10 x 49	**E-19**
	• 5 layers 5/8" SHEETROCK FIRECODE core panels – 25 gauge 2"x2" steel angles screw attached to studs over corners of second layer – No. 18 gauge SWG steel wire 24" o.c. wrapped around 4th layer – 1-5/8" 25 guage steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: Tube steel column 4 x 4 x 0.188"	**E-20**
	• 3 layers 3/4" SHEETROCK ULTRACODE core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished	**UL Des X528**	Structural member tested: Tube steel column 8 x 8 x 0.25"	**E-21**
4 Hour Fire-Rated Construction				
	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 1-5/8" 25 gauge steel studs – metal corner beads – joints finished	**UL Des X507**	Structural member tested: W14 x 228	**E-22**
	– 3.4 lb diamond mesh metal furred 1/2" from face of column • 1-7/8" STRUCTO-LITE plaster – perlite aggregate bearing UL Label	**UL Des X405**	Structural member tested: W10 x 49	**E-23**
	– 3.4 lb self-furring diamond mesh metal lath • 1-3/4" STRUCTO-LITE plaster or 100:2-100:3 gypsum-perlite plaster – perlite aggregate bearing UL Label	**UL Des X402**	Structural member tested: W10 x 49	**E-24**

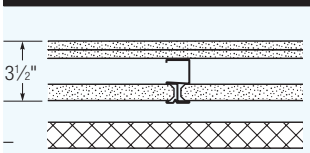
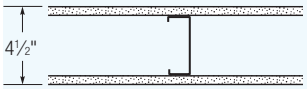
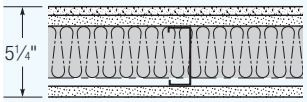
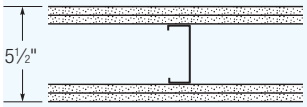
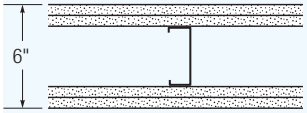
Beam

2 Hour Fire-Rated Construction				Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
	• 5/8" SHEETROCK FIRECODE Core gypsum panels – 1-5/8" steel run channel brackets 24" o.c. – 1-3/8" x 7/8" corner angles attached to channel brackets – joints finished – 2-1/2" concrete deck on fluted steel floor • optional veneer plaster	**UL Des N501, N502**	Structural member tested: W8 x 24 (beam only)	**E-25**
3 Hour Fire-Rated Construction				
	– 1-5/8" steel run channel brackets 24" o.c. – 7/8" x 1-3/8" corner angles attached to brackets • 5/8" SHEETROCK FIRECODE Core gypsum panels – 1" 20 gauge hex mesh on bottom over middle layer – joints finished – 2-1/2" concrete deck on fluted steel floor	**UL Des N505**	Structural member tested: W8 x 24 (beam only) Fire rating for restrained assembly; 2 hour rating for unrestrained assembly	**E-26**
	– 1-5/8" steel run channel brackets 24" o.c. – 1/8" x 1-3/8" corner angles attached to channel brackets • 5/8" IMPERIAL FIRECODE Core gypsum Base – 1" 20 gauge hex mesh on bottom over middle layer – metal beads on corners – joints taped • 1/16" veneer plaster finish – 2-1/2" concrete deck on fluted steel floor	**UL Des N505**	Structural member tested: W8 x 24 (beam only)	**E-27**
4 Hour Fire-Rated Construction				
	– 3.4 lb self-furring diamond mesh metal lath enclosing beam • 1-1/2" 100:2 gypsum-perlite plaster	**UL Des D403**	Structural member tested: W12 x 58 Suitable for protection of beams and girders	**E-28**

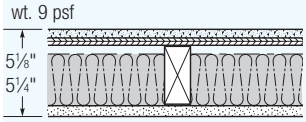
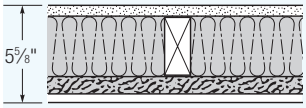
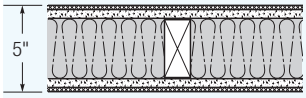
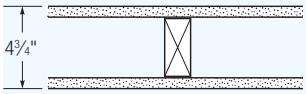
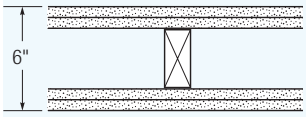
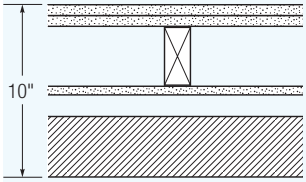
Steel Framed

1 Hour Fire-Rated Construction	Non-Loadbearing			Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
wt.6  4¾"	• 5/8" Sheetrock Firecode Core gypsum sheathing or Securock glass-mat sheathing, exterior side – 3-1/2" 20 gauge structural studs 24" o.c. • 5/8" Sheetrock Firecode Core gypsum panels, interior side – *load-bearing up to 100% allowable stud axial load*	**UL Des U419**	Rating also applies with Sheetrock Mold Tough Firecode Core gypsum panels, exterior	**F-1**
 6⅛"	• 1/2" Sheetrock gypsum sheathing – 1" extruded polystyrene insulation installed horizontally – 3-1/2" 20 gauge structural studs 24" o.c. – 1/2" cedar plywood exterior 3-1/2" insulating blankets between studs • 5/8" Sheetrock Firecode C Core gypsum panels, interior side – joints finished	**CEG 12-7-79**		**F-2**
wt. 6, wt. 5  4⅞" 2⅞"	• 5/8" Sheetrock Firecode Core gypsum sheathing or Securock glass-mat sheathing, exterior side • 5/8" Sheetrock Firecode Core gypsum panels, interior – 3-5/8" steel studs 24" o.c.	**UL Des U419, U465**		**F-3**
2 Hour Fire-Rated Construction				
wt. 11  5⅝"	• 1/2" Durock cement board • base layer 1/2" Sheetrock Mold Tough Firecode C Core gypsum panels, both sides – 3-5/8" 20 gauge minimum steel studs 16" o.c. – 3" Thermafiber SAFB • alternate design, double-layer 1/2" Sheetrock Firecode C Core gypsum panels, interior	**UL Des U474**		**F-4**
wt. 12  4⅛" 6⅛"	• layer 5/8" Sheetrock Firecode Core gypsum sheathing or Securock glass-mat sheathing, exterior side • 5/8" Sheetrock Firecode Core gypsum panels, interior side – 2-1/2" studs 24" o.c – joints stag and finished or unfinished	**UL Des U411, U419**		**F-5**
 5¾"	• 5/8" Sheetrock Firecode C Core foil-backed gypsum panels – 3-5/8" 20 gauge steel studs 16" o.c. – 1/2" gypsum sheathing – self-furring metal lath – 1" cement-lime stucco exterior side – 3" insulating blankets between studs • optional veneer plaster	**OSU-T-4851**	Systems offer wide selection of exterior and interior surfaces, using conventional materials	**F-6**

Steel Framed

2 Hour Fire-Rated Construction	Non-Loadbearing			Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
	• 1" Sheetrock gypsum liner panels – steel C-H studs 24" o.c. • two layers Sheetrock Firecode C Core gypsum panels or Sheetrock Mold Tough gypsum, panels, screw attached on interior – joints finished	**U of C 4-2-75**	Rating also applies with Imperial Firecode C Core gypsum base, and veneer finish interior	**F-7**
45 Minute Fire-Rated Construction	**Loadbearing**			
wt. 5 	• 1/2" Sheetrock Firecode Core gypsum sheathing – 3-1/2" 20 gauge structural steel studs 24" o.c. • 1/2" Sheetrock Firecode C Core gypsum panels, interior side *load-bearing up to 100% allowable stud axial load*	**UL Des U423** or **U425**		**F-8**
1 Hour Fire-Rated Construction				
wt. 9 	• 1/2" Durock cement board • base layer 5/8" Sheetrock Mold Tough Firecode Core gypsum panels – 3-1/2" 20 gauge steel load-bearing studs 16" o.c. – 3" Thermafiber SAFB • 5/8" Sheetrock Firecode Core gypsum panels, interior side	**UL Des U473**		**F-9**
1-1/2 Hour Fire-Rated Construction				
	• 1/2" Sheetrock Firecode C Core gypsum sheathing, exterior side – 3-1/2" 20 gauge structural studs 24" o.c. • 1/2" Sheetrock Firecode C Core gypsum panels, interior side *load-bearing up to 100% allowable stud axial load*	**UL Des U423** or **U425**		**F-10**
2 Hour Fire-Rated Construction				
wt. 12 	• 5/8" Sheetrock Firecode Core gypsum sheathing, Fiberock Aqua-Tough sheathing, or Securock glass-mat sheathing exterior side – 3-1/2" 20 gauge structural steel studs 24" o.c. • 5/8" Sheetrock Firecode Core gypsum panels, interior *load-bearing up to 100% allowable stud axial load when min 2" Thermafiber mineral wool batt is used in stud cavities; otherwise load-bearing or Securock glass-mat sheathing up to 80% allowable steel axial load*	**UL Des U423** or **U425**	Rating also applies to Sheetrock Firecode Core Mold Tough gypsum panels	**F-11**

Wood Framed

1 Hour Fire-Rated Construction	Loadbearing			Reference
Construction Detail	**Description**	**Test Number**	**Comments**	**Index**
wt. 9 psf 	• 1/2" Durock cement board, interior side – 15/32" plywood – 2 x 4 wood studs 16" o.c. – 3" Thermafiber SAFB – joints finished • 5/8" Sheetrock Firecode Core gypsum panels, Fiberock Aqua-Tough exterior sheathing or Securock glass-mat sheathing, other side	**UL Des U303**		**F-12**
	• 5/8" Sheetrock Firecode C Core gypsum panels, interior side – 2 x 4 16" wood studs o.c. – 3-1/2" Thermafiber SAFB – 1" extruded polystyrene insulating sheathing and 1/2" plywood siding – joints finished	**UL Des U330**		**F-13**
wt. 15 	• 1/2" Durock cement board and 1/4" ceramic tile exterior – 2 x 4 wood studs 16" o.c. – 3-1/2" Thermafiber SAFB • 5/8" Sheetrock Firecode Core gypsum panels – optional veneer plaster	**UL Des U329**		**F-14**
wt. 7 	• 5/8" Sheetrock® brand Type X exterior sheathing or 5/8" Fiberock Aqua-Tough exterior sheathing or Securock glass-mat sheathing • 5/8" Sheetrock Firecode Core gypsum panels or Sheetrock Mold Tough Firecode Core gypsum panels, interior side – 2 x 4 wood studs 16" o.c. – joints exposed or finished	**UL Des U305, U314**		**F-15**
2 Hour Fire-Rated Construction				
wt. 12 	• 5/8" Sheetrock Type X exterior sheathing, Fiberock Aqua-Tough exterior sheathing or Securock glass-mat sheathing, on exterior side • double layer 5/8" Sheetrock Firecode Core gypsum sheathing or Sheetrock Mold Tough Firecode Core gypsum panels on interior – 2 x 4 wood stud 16" o.c.	**UL Des U301**		**F-16**
	• 5/8" Sheetrock Firecode Core gypsum panels, interior side – 2 x 4 wood stud 16" o.c. • 1/2" Fiberock Aqua-Tough exterior sheathing or Sheetrock gypsum sheathing or Securock glass-mat sheathing – joints finished – 4" nominal masonry	**UL Des U302**		**F-17**

Through-Penetration Firestops

Steel/Iron Metallic

Penetrating Item and Diameter	Floor, Roof or Wall Type	Firestopping Material	Forming Material	Annular Space		Rating		UL System Number	Reference	
		Minimum Depth		Minimum	Maximum	F	T		ARL	Index
Steel or iron pipe up to 6"	CW, CF	1" Type AS	3-1/2", min 4 pcf	3/8"	3/4"	3	0	C-AJ-1020	SA727	**G-1**
Steel or iron pipe up to 6"	CW, CF	2" Type AS	2-1/2", min 4 pcf	3/8"	1"	3	0	C-AJ-1020	SA727	**G-2**
Steel or iron pipe up to 24"	CW, CF	1" Type FC or RFC	3", min 4 pcf	1/4"	1-15/16"	3	0	C-AJ-1081	SA727	**G-3**
Steel or iron pipe up to 10"	CW, CF	1" Type FC or RFC	3", min 4 pcf	1/4"	4"	3	0	C-AJ-1081	SA727	**G-4**
Steel or iron pipe up to 12"	CW, CF	1/2" Type A	4", min 4 pcf	1/4"	1"	2	0	C-AJ-1347	SA727	**G-5**
Steel or iron pipe up to 4"	CW, CF	1/2" Type A	4", min 4 pcf	0"	7/8"	2	0	C-AJ-1347	SA727	**G-6**
Steel or iron pipe up to 8"	CW, CF	1/2" Type IA	4", min 4 pcf	1/2"	1-3/8"	2	0	C-AJ-1348	SA727	**G-7**
Steel or iron pipe up to 8"	CW, CF	1/2" Type A	4", min 4 pcf[a]	1/2"	1"	2	1	C-AJ-5146	SA727	**G-8**
Insulated steel or iron pipe up to 2"	CW, CF	1" Type IA	Foam backer[a]	1/8"	1/4"	2	1	C-AJ-5147	SA727	**G-9**
Insulated steel or iron pipe up to 8"	CW, CF	1" Type IA	Foam backer	1/2"	0"-1-3/8"	2	1-1/2	C-AJ-5148	SA727	**G-10**
Steel or iron pipe up to 4"	CW, CF	1" Type IA	3-1/2", min, 4 pcf[a]	1/2"	1-1/2"	2	1/2-1	C-AJ-5149	SA727	**G-11**
Steel or iron pipe up to 8"	FSD	1/2" Type A	4", min 4 pcf	1/4"	1-5/8"	3	0	F-A-1020	SA727	**G-12**
Insulated steel or iron pipe up to 8"	FSD	1/2" Type A	4", min 4 pcf[a]	1/4"	5/8"	3	1	F-A-5014	SA727	**G-13**
Steel or iron pipe up to 8"	WF	1/2" Type IA	Foam backer[c]	0"	7/8"	1	1/4	F-C-1069	SA727	**G-14**
Insulated steel or iron pipe up to 4"	WF	1/2" Type IA	Foam backer[a]	0"	7/8"	1	3/4-1	F-C-5042	SA727	**G-15**
Steel or iron pipe up to 12"	CW, CF	1/2" Type IA	Foam backer	0"	1"	2	0	W-J-1091	SA727	**G-16**
Steel or iron pipe up to 4"	GW	1" Type FC	2-1/2", min 4 pcf	1/4"	2-1/4"	2	0	W-L-1027	SA727	**G-17**
Steel or iron pipe up to 6"	GW	1" Type FC	2-1/2", min 4 pcf	1"	1-5/8"	2	0	W-L-1027	SA727	**G-18**
Steel or iron pipe up to 4"	GW	1/2" Type FC or RFC	2-1/2", min 4 pcf	1/4"	1-5/8"	1	0	W-L-1039	SA727	**G-19**
Steel or iron pipe up to 3-1/2"	GW	1" Type FC or RFC	—	1/4"	1-5/8"	2	0	W-L-1063	SA727	**G-20**
Steel or iron pipe up to 4"	GW	1" Type AS	2-1/2", min 4 pcf	1/4"	1-1/4"	2	0	W-L-1064	SA727	**G-21**
Steel or iron pipe up to 1"	GW	1" Type FC or RFC	2-1/2", min 4 pcf	3/8"	1-5/8"	2	1-2	W-L-1065	SA727	**G-22**
Steel or iron pipe up to 4"	GW	1" Type FC or RFC	—	1/4"	1-1/4"	1	0-1	W-L-1087	SA727	**G-23**
Insulated steel pipe up to 4"	GW	1/4" Type FC or RFC	—	1/4"	1/2"	2	1	W-L-5043	SA727	**G-24**
Insulated steel pipe up to 3-1/2"	GW	1" Type FC or RFC	—	1/2"	5/8"	2	3/4	W-L-5044	SA727	**G-25**
Insulated steel or iron pipe up to 4"	GW	1" Type IA	Foam backer[a,c]	0"	3/8"	2	1/2	W-L-5114	SA727	**G-26**
Insulated steel or iron pipe up to 8"	GW	1/2" Type IA	Foam backer[a,c]	1/4"	1-1/8"	1-2	1/2-1	W-L-5115	SA727	**G-27**
Insulated steel or iron pipe up to 8"	GW	1" Type IA	Foam backer[c]	0"	1/2"	2	2	W-L-5116	SA727	**G-28**

Conduit

Nominal 4"	CW, CF	1" Type AS or SS	3-1/2", min 4 pcf	3/8"	3/4"	3	0	C-AJ-1020	SA727	**G-29**
Nominal 4"	CW, CF	2" Type AS or SS	2-1/2", min 4 pcf	3/8"	1"	3	0	C-AJ-1020	SA727	**G-30**
Steel conduit up to 6" or metallic tubing up to 4"	CW, CF	1" Type FC or RFC	3", min 4 pcf	1/4"	4"	3	0	C-AJ-1081	SA727	**G-31**
Nominal 4"	CW, CF	1/2" Type A	4", min 4 pcf	0"	7/8"	2	0	C-AJ-1347	SA727	**G-32**
Nominal 4"	CW, CF	1/2" Type IA	4", min 4 pcf	1/2"	1-3/8"	2	0	C-AJ-1348	SA727	**G-33**
Insulated nominal 4"	CW, CF	1" Type IA	3-1/2", min 4 pcf[a]	1/2"	1-1/2"	2	1/2-1	C-AJ-5149	SA727	**G-34**
Nominal 4"	FSD	1/2" Type A	4", min 4 pcf	1/4"	1-5/8"	3	0	F-A-1020	SA727	**G-35**
Nominal 4"	WF	1/2" Type IA	Foam backer[c]	0"	7/8"	1	1/4	F-C-1069	SA727	**G-36**
Nominal 2" flex. pipe	WF	1/2" Type IA	Foam backer[c]	0"	7/8"	1	3/4	F-C-1070	SA727	**G-37**
Nominal 4"	CW	1/2" Type IA	Foam backer	0"	1"	2	0	W-J-1091	SA727	**G-38**
Steel conduit or metallic tubing up to 4"	GW	1" Type FC	2-1/2", min 4 pcf	1/4"	2-1/4"	2	0	W-L-1027	SA727	**G-39**
Nominal 4" or metallic tubing up to 4"	GW	1/2" Type FC or RFC	2-1/2", min 4 pcf	1/4"	1-5/8"	1	0-1	W-L-1039	SA727	**G-40**
Steel conduit or metallic tubing up to 3-1/2"	GW	1" Type FC or RFC	—	1/4"	1-5/8"	2	0	W-L-1063	SA727	**G-41**
Steel conduit or metallic tubing up to 4"	GW	1" Type AS	2-1/2", min 4 pcf	1/4"	1-1/4"	2	0	W-L-1064	SA727	**G-42**
Nominal 1" or metallic tubing up to 1"	GW	1" Type FC or RFC	2-1/2", min 4 pcf	3/8"	1-5/8"	2	2	W-L-1065	SA727	**G-43**
Nominal 4" or metallic tubing up to 4"	GW	1" Type FC or RFC	—	1/4"	1-1/4"	1	0-1	W-L-1087	SA727	**G-44**

Through-Penetration Firestops

Copper

Penetrating Item and Diameter	Floor, Roof or Wall Type	Firestopping Material	Forming Material	Annular Space		Rating		UL System Number	Reference	
		Minimum Depth		Minimum	Maximum	F	T		ARL	Index
Pipe up to 6"	CW, CF	1" Type FC or RFC	3", min 4 pcf	1/4"	4"	3	0	C-AJ-1081	SA727	**G-45**
Tubing and pipe up to 4"	CW, CF	1" Type FC or RFC	3", min 4 pcf	1/4"	4"	3	0	C-AJ-1081	SA727	**G-46**
Tubing and pipe up to 4"	CW, CF	1/2" Type A	3", min 6 pcf [d]	0"	7/8"	2	0	C-AJ-1347	SA727	**G-47**
Tubing and pipe up to 4"	CW, CF	1" Type IA	4", min 4 pcf	1/2"	1-3/8"	2	0	C-AJ-1348	SA727	**G-48**
Insulated tubing and pipe up to 4"	CW, CF	1/2" Type A	4", min 4 pcf	3/8"	1-1/2"	1-1/2-2	1/2-1	C-AJ-5146	SA727	**G-49**
Insulated tubing and pipe up to 2"	CW, CF	1" Type IA	Foam backer	1/8"	1/4"	2	1	C-AJ-5147	SA727	**G-50**
Insulated tubing and pipe up to 4"	CW, CF	1" Type IA	3-1/2", min 4 pcf	1/2"	1-1/2"	2	1/2-1	C-AJ-5149	SA727	**G-51**
Tubing and pipe up to 4"	FSD	1/2" Type A	4", min 4 pcf	1/4"	1-5/8"	3	0	F-A-1020	SA727	**G-52**
Insulated tubing and pipe up to 4"	FSD	1/2" Type A	4", min 4 pcf	1/4"	5/8"	3	1	F-A-5014	SA727	**G-53**
Tubing and pipe up to 4"	WF	1/2" Type IA	Foam backer [c]	0"	7/8"	1	1/4	F-C-1069	SA727	**G-54**
Insulated tubing and pipe up to 4"	WF	1/2" Type IA	Foam backer [c]	0"	7/8"	1	3/4-1	F-C-5042	SA727	**G-55**
Tubing and pipe up to 4"	CW	1/2" Type IA	Foam backer	0"	1"	2	0	W-J-1091	SA727	**G-56**
Pipe up to 6"	GW	1" Type FC	2-1/2", min 4 pcf	1"	1-5/8"	2	0	W-L-1027	SA727	**G-57**
Pipe up to 4"	GW	1/2" Type FC or RFC	2-1/2", min 4 pcf	1/4"	1-5/8"	1	0	W-L-1039	SA727	**G-58**
Tubing up to 4"	GW	1" Type FC or RFC	—	1/4"	1-5/8"	2	0	W-L-1063	SA727	**G-59**
Tubing up to 4"	GW	1" Type FC or RFC	—	1/4"	1-1/4"	1	0	W-L-1087	SA727	**G-60**
Insulated tubing up to 4"	GW	1/4" Type FC or RFC	2", min 4 pcf [a]	1/4"	1/2"	2	1	W-L-5043	SA727	**G-61**
Insulated pipe or tubing up to 4"	GW	1" Type FC or RFC	1", min 4 pcf [a]	1/2"	5/8"	2	3/4	W-L-5044	SA727	**G-62**
Insulated tubing and pipe up to 4"	GW	1" Type IA	Foam backer [c]	0"	3/8"	2	1/2	W-L-5114	SA727	**G-63**
Insulated tubing and pipe up to 3"	GW	1/2" Type IA	Foam backer [c]	1/4"	1-1/8"	1-2	1/2-1	W-L-5115	SA727	**G-64**

Cables

Cables	CW, CF	1" Type FC or RFC	3", min 4 pcf	1/4"	4"	3	0	C-AJ-3045	SA727	**G-65**
Cables	CW, CF	1/2" Type IA	4", min 4 pcf	Varies	Varies	2	0-1/2-1	C-AJ-3174	SA727	**G-66**
Cables	CW, CF	1/2" Type IA	4", min 4 pcf	3/4"	3-3/16"	2	1/2	C-AJ-3175	SA727	**G-67**
Cables	WF	1/2" Type IA	Foam backer [c]	Varies	Varies	1	3/4	F-C-3054	SA727	**G-68**
Cables	GW	1" Type FC or RFC	3", min 4 pcf	1/4"	4-1/2"	2	0	W-L-3023	SA727	**G-69**
Cables	GW	1/2" Type FC or RFC	3-7/8", min 4 pcf	1/2"	3-7/8"	1	0-1	W-L-3034	SA727	**G-70**
Cables	GW	1/2" Type IA	Foam backer [c]	1/2"	1-1/2"	1-2	1/4-1/2	W-L-3162	SA727	**G-71**
Cables	GW	1/2" Type IA	Foam backer [c]	1/4"	1"	1-2	1/4-1/2	W-L-3163	SA727	**G-72**

Air Ducts

Steel duct, nominal 18" x 6"	CW, CF	1" Type IA	1", min 4 pcf	Varies	1"	3	0	C-AJ-7062	SA727	**G-73**
Steel duct, nominal 4"	CW, CF	1/2" Type IA	4", min 4 pcf	1/2"	1-3/8"	2	0	C-AJ-7063	SA727	**G-74**
Steel duct, 24 ga, up to 3" x 10"	GW	1/2" Type FC or RFC	2-1/2", min 4 pcf	7/16"	1-5/8"	1	0	W-L-7001	SA727	**G-75**
Steel duct, 28 ga galv, nom 4" x 6"	GW	1" Type FC or RFC	2-1/2", min 4 pcf	1/2"	1-5/8"	2	1/2	W-L-7002	SA727	**G-76**
4", 26 ga, galv steel vent duct	GW	1/2" Type IA	Foam backer [c]	0"	1"	1-2	0	W-L-7057	SA727	**G-77**

Through-Penetration Firestops

Glass Pipe

Penetrating Item and Diameter	Floor, Roof or Wall Type	Firestopping Material	Forming Material	Annular Space		Rating		UL System Number	Reference	
	Type	Minimum Depth		Minimum	Maximum	F	T		ARL	Index
Glass pipe, nom N	GW	1/2" Type IA	Foam backer[c]	1/2"	1-1/8"	1	0	W-L-2227	SA727	**G-78**

Plastic

1-1/2", 2", 3" or 4" sched. 40 PVC pipe	CW, CF	Wrap, Type A or Type IA[c]	—	Varies	Varies	2	1	C-AJ-2301	SA727	**G-79**
4" sched. 40 PVC or ABS pipe	CW, CF	Wrap, Type A or Type IA[c]	—	1/4"	Varies	2	2	C-AJ-2304	SA727	**G-80**
1-1/2" or 2" sched. 40 PVC pipe	CW, CF	1/2" Type IA	Foam backer	3/8"	3/4"	2	1-1/2	C-AJ-2295	SA727	**G-81**
or SDR17 CPVC pipe		1" Type 1A	Foam backer	1/4"	3/8"	2	1-1/2			
3/4" PEX tube or 1" ENT	CW, CF	1/2" Type IA	Foam backer[c]	1/4"	7/16"	2	1-1/2-1-3/4	C-AJ-2296	SA727	**G-82**
1" sched. 40 PVC pipe	FSD	1" Type IA	Foam backer	1/4"	7/16"	3	1-1/2	F-A-2062	SA727	**G-83**
4" sched. 40 PVC pipe or	CW, CF	1/2" Type IA	Foam backer[c]	0"	1-1/2"	1	1	F-A-2063	SA727	**G-84**
4" SDR17 CPVC pipe or										
4" sched. 40 PVC conduit										
6" sched. 40 PVC or 6" SDR135 CPVC pipe	CF	Wrap, Type A or Type IA[c]	—	Varies	Varies	2-3	1-1/2-2-1/2	F-A-2064	SA727	**G-85**
3" sched. 40 PVC or ABS pipe	WF	Wrap, 1/2" Type IA	Foam backer[c]	0"	1/2"	1	3/4	F-C-2179	SA727	**G-86**
1-1/2" sched. 40 PVC or ABS pipe	WF	1/2" Type IA	Foam backer[c]	0"	1"	1	1	F-C-2180	SA727	**G-87**
1-1/2" sched. 40 PVC or ABS pipe	WF	1/2" Type IA	Foam backer[c]	0"	1"	1	1	F-C-2181	SA727	**G-88**
3" sched. 40 PVC pipe or 3" SDR17 CPVC pipe or 3" sched. 40 PVC conduit	WF	1/2" Type IA	Foam backer[c]	0"	1/2"	1	1	F-C-2182	SA727	**G-89**
4" sched. 40 PVC or sched. 40 ABS or SDR17 CPVC pipe	WF	1/2" Type IA	Foam backer[c]	0"	1/2"	1	3/4	F-C-2183	SA727	**G-90**
2" SDR13.5 CPVC Pipe	CW	1/2" Type IA	Foam backer	1/4"	1-3/8"	2	0	W-J-2068	SA727	**G-91**
2", 3" or 4" sched. 40 PVC pipe	GW	Wrap, Type A or Type IA[c]	—	Varies	Varies	2	1	W-L-2220	SA727	**G-92**
Up to 4" sched. 40 PVC or 1-1/4" SDR135 CPVC pipe	GW	Wrap, Type A or Type IA[c]	—	Varies	Varies	1	0-1	W-L-2221	SA727	**G-93**
6" sched. 40 PVC pipe	GW	Wrap, 1/4" Type A or Type IA	—	0"	3/8"	2	1-1/2	W-L-2222	SA727	**G-94**
2" SDR13.5 CPVC pipe	GW	1/2" Type IA	Foam backer[e]	1/4"	1-3/8"	1-2	1-2	W-L-2223	SA727	**G-95**
3/4" PEX tube or 1" EMT	GW	1/2" Type IA	Foam backer[c]	1/4"	3/8"	1-2	3/4-1-1-1/2-1-3/4	W-L-2224	SA727	**G-96**
1-1/2" sched. 40 PVC pipe	GW	1" Type IA	Foam backer[c]	1/4"	5/8"	2	2	W-L-2225	SA727	**G-97**
2" sched. 40 PVC pipe	GW	1/2" Type IA	Foam backer[c]	0"	7/8"	1	0	W-L-2226	SA727	**G-98**

8" Blank (No Penetrant)

4-1/2" concrete floor, 5" concrete wall	CW, CF	1" Type FC or RFC	3", min 4 pcf	—	8"	3	0-1	C-AJ-0032	SA727	**G-99**

Construction Joint System

	Floor, Roof or Wall Type	Firestopping Material	Forming Material	Joint	Move-ment	Comp-ression/	Assembly	UL System Number	Reference	
		Minimum Depth		Width	Class	Extens.	Rating		ARL	Index
Floor joint	CF	1/2" Type A	4", min 2.5 pcf	max 2"	—	—	2	F-F-S-0028	SA727	**G-100**
Head-of-wall or roof assembly (slip track)	FSD/CF, GW	1/2" Type FC or RFC	1-1/2", min 4 pcf	max 5/8"	II & III	80%/ 60%	1	HW-D-0001	SA727	**G-101**
Head-of-wall or roof assembly (slip track)	FSD/CF, GW	2-1/2" Type FC or RFC	—	max 5/8"	II & III	80%/ 60%	2	HW-D-0002	SA727	**G-102**
Head-of-wall or roof assembly (slip track)	CW, CF	1" Type FC or RFC	min 4 pcf	max 1"	II & III	25%/ 12%	2	HW-D-0009	SA727	**G-103**
Head-of-wall, flat	CF, GW	1/2" Type A	(f)	nom 1"	II & III	25%	1-2	HW-D-0158	SA727	**G-104**
Head-of-wall, flat	CW, CF	1/2" Type A	(g)	nom 1"	II & III	25%	2	HW-D-0159	SA727	**G-105**
Head-of-wall perpendicular/parallel	FSD/CF, GW	1/8" Type SA	min 4 pcf	nom 1"	II & III	25%/ 25%	1-2	HW-D-0160	SA727	**G-106**
Head-of-wall perpendicular/parallel	FSD/CF, CW	1/8" Type SA	min 4 pcf	nom 1"	II & III	25%/ 25%	2	HW-D-0161	SA727	**G-107**
Head-of-wall perpendicular/parallel	FSD/CF, GW	5/8" Type A or AS	min 4 pcf (optional when Type A is used)	max 1/2"	II & III	25%/ 25%	1-2	HW-D-0262	SA727	**G-108**
Head-of-wall or roof assembly	FSD/CF, GW GW	1/2" Type FC or RFC	3-1/2", min 4 pcf	max 1/2"	—	—	1	HW-S-0001	SA727	**G-109**
Head-of-wall or roof assembly	FSD/CF, GW	1" Type FC or RFC	3-1/2", min 4 pcf	max 1/2"	—	—	2	HW-S-0001	SA727	**G-110**
Head-of-wall	FSD/GW	1" Type AS	min 4 pcf density mineral wool	max 5/8"	II & III	25%	2	HW-D-0372	SA727	**G-111**
Wall joint	CF	1/2" Type AS	—	max 1/2"	—	—	1	HW-S-0032	SA727	**G-112**
Wall joint	CF	1" Type AS	—	max 1/2"	—	—	2	HW-S-0032	SA727	**G-113**
Wall joint	CF	1/2" Type AS	min 4 pcf	max 1/2"	—	—	1	HW-S-0035	SA727	**G-114**
Wall joint	FSD/CF	1" Type AS	min 4 pcf	max 1/2"	—	—	2	HW-S-0035	SA727	**G-115**
Wall joint	CW	1/2" Type A	4", min 2.5 pcf	max 2"	—	—	2	WW-S-0036	SA727	**G-116**

Codes for Type of Floor, Roof or Wall
CF–Concrete Floor
CW–Concrete Wall
FSD–Fluted Steel Deck
GW–gypsum Wall
WF–Wood Floor

Codes for Firestopping Material
Type A–Firecode acrylic firestop sealant (regular)
Type SA*–Firecode acrylic firestop spray sealant (Type SA)
Type AS–Sheetrock acoustical sealant
Type IA–Firecode intumescent acrylic firestop sealant Type IA
Type FC–Firecode compound
Type RFC–ready mixed Firecode compound
Type SS–Thermafiber Smoke Seal compound
Wrap–TREMstop D intumescent wrap strips
*Formerly Type A–SP

Notes
(a) Pipe covering material
(b) Minimum depth dependent upon annular space dimensions
(c) Optional
(d) Ceramic fiber
(e) 2 hour wall
(f) 2 hour (two layers 7/8" backer rod); 1 hour (bond breaker tape)
(g) Two layers 7/8" backer rod

Screw Spacing and Location

Steel Stud Drywall Partitions

Hourly	Test	Face Layer Screw			Base Layer Screw			
Rating	Number	Length	Type	Spacing and Location	Length	Type	Position	Spacing and Location
1 hour	U419	1"	S	8" o.c. on panel edges; 12" o.c. in field of panel				
	U420	1"	S	8" o.c. on panel edges; 12" o.c. in field of panel				
	U448	1"	S	8" o.c. on panel edges; 12" o.c. in field of panel				
	U451	1"	S	12" o.c.				
2 hour	U411	1-5/8"	S	16" on edges and field; 12" along runner	1"	S		16" o.c. on edges of panel; 16" o.c. field of panel
	U412	1-5/8"	S	12" o.c.	1"	S		24" o.c. on edges of panel; 24" o.c. field of panel
	U419	1-5/8"	S	16" o.c. on edges and field	1"	S		16" o.c. on edges and in field of panel
	U420	1-5/8"	S	8" o.c. on panel edges; 12" in field of panel	1"	S		8" o.c. on panel edges; 12" o.c. in field of panel
	U453	1-5/8"	S	Channel side: 12" o.c.	1"	S		Channel side: 24" o.c.
		1"	S-12	Direct side: 12" o.c.				
	U454	1-5/8"	S	Channel side: 12" o.c.	1"	S		Channel side: 24" o.c.
		1-5/8"	S-12	Direct side: 12" o.c.	1"	S-12		Direct side: 24" o.c.
	U491	1-1/4"	S	8" o.c. on panel edges; 12" o.c. in field of panel				
3 hour	U419	2-1/4"	S	12" o.c. on edge and field	1"	S	1st layer	24" o.c.
		1-1/2"	G	Between studs at horizontal joint	1-5/8"	S	2nd layer	24" o.c.
	U435	2-1/4"	S	12" o.c.; 2" from top and bottom of stud	1"	S	1st layer	48" o.c.; 4" from top and bottom of stud
		1-1/2"	G	Between studs at horizontal joint	1-5/8"	S	2nd layer	48" o.c.; 3" from top and bottom of stud
	U455	1-5/8"	S	Channel side: 12" o.c.	1"	S		Channel side: 24" o.c.
		2-1/4"	S-12	Direct side: 12" o.c.	1"	S-12	1st layer	Direct side: 24" o.c.
					1-5/8"	S-12	2nd layer	Direct side: 24" o.c.
4 hour	U419	2-5/8"	S	12" o.c. to studs	1"	S	1st layer	24" o.c.
		1-1/2"	G	Between studs at horizontal joints	1-5/8"	S	2nd layer	24" o.c.
					2-1/4"	S	3rd layer	24" o.c.
	U435	2-5/8"	S	12" o.c.; 2" from top and bottom of stud	1"	S	1st layer	48" o.c.; 5" from top and bottom of stud
		1-1/2"	G	Between studs at horizontal joints	1-5/8"	S	2nd layer	48" o.c.; 3" from top and bottom of stud
					2-1/4"		3rd layer	48" o.c.; 3" from top and bottom of stud
	U490	2-1/4"	S	12" o.c. to studs	1-1/4"	S		24" o.c.
		1-1/2"	G	Between studs at horizontal joints				

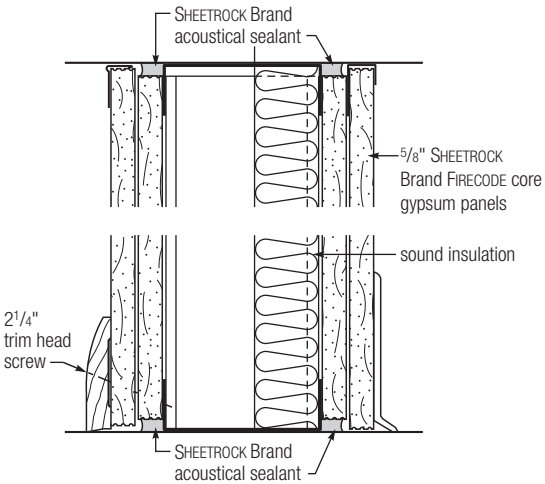
Good Design Practices

Use this section as a reference.

1	**Horizontal or Vertical Orientation**	Two recent tests permit Sheetrock gypsum panel products and Imperial gypsum base products to be applied horizontally or vertically in partitions without compromising the fire rating. These tests are UL Design U419 for non-loadbearing partitions and UL Design U423 for loadbearing partitions. When either of these tests are listed with a USG system, it means that the system can now be built with the panels oriented in either direction.
2	**Staggering**	The two fire tests indicated above also demonstrated that when Firecode or Firecode C Core products are used, the horizontal joints on opposite side of the studs need not be staggered (as was previously required).
3	**Durock Substitution**	In partitions indicating the use of 1/2" Durock cement board, it is permissible to substitute 5/8" Durock cement board without compromising the fire rating.
4	**Fiberock or Mold Tough Substitution**	In partitions or column protection indicating the use of 5/8" Sheetrock Firecode Core gypsum panels or 1/2" Sheetrock Firecode C Core gypsum panels, it is permissible to substitute 5/8" Fiberock abuse-resistant gypsum interior panels or 5/8" Sheetrock Mold Tough Firecode Core gypsum panels without compromising the fire rating.
5	**Sheathing Substitution**	Note that in partitions indicating the use of Sheetrock exterior sheathing or Durock cement board for sheathing applications, it is permissible to substitute 5/8" Fiberock Aqua-Tough sheathing without compromising the fire rating.
	Liner Panel Substitution	Note that in partitions indicating the use of Sheetrock gypsum liner panels, it is permissible to substitute Sheetrock Mold Tough gypsum liner panels or Sheetrock glass-mat liner panels without compromising the fire rating.
6	**Thermal Insulation**	Where thermal insulation is shown in assembly drawings, the specific product is required to achieve the stated fire rating. Glass fiber insulation cannot be substituted for mineral wool insulation.
7	**Ceiling Runners**	In fire-rated non-loadbearing partitions, steel studs should not be attached to ceiling runners.
8	**Multi-Layer Applications**	In multi-layer applications, only the joints of the face layer need be finished.
9	**Perimeter Caulking**	Use Sheetrock Acoustical Sealant to caulk perimeters for attenuation of sound. Proper use as perimeter caulking will not affect any intended fire-resistive ratings.
10	**Firecode C Core Substitution**	It is permissible to substitute 5/8" Firecode Core panels for 1/2" Firecode C Core panels. There is no permissible substitution for 5/8" Firecode C Core panels.
11	**Veneer Plaster**	Whenever veneer plaster is specified, Imperial gypsum base should also be specified. Where a fire-resistive rating is required, use the appropriate Imperial gypsum base as tested.
12	**More Information**	For specific information regarding the assemblies shown in this folder, consult the current UL Fire Resistance Directory.

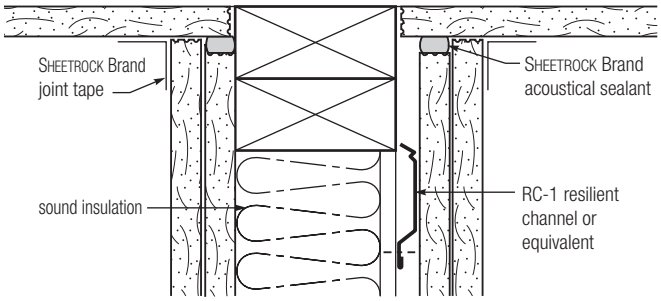
Wood Framed

1 hour partitions

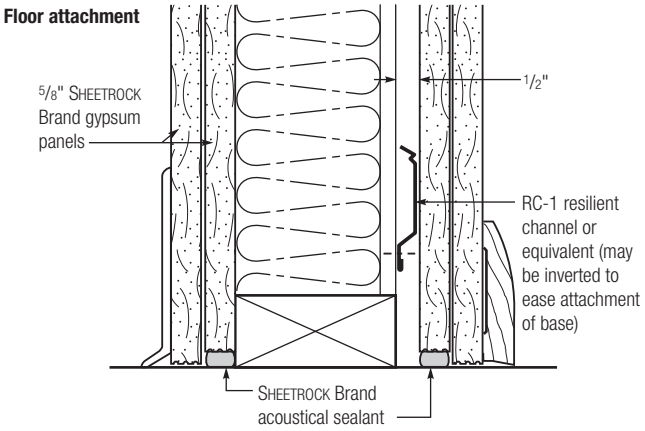


2 hour partitions

Ceiling attachment

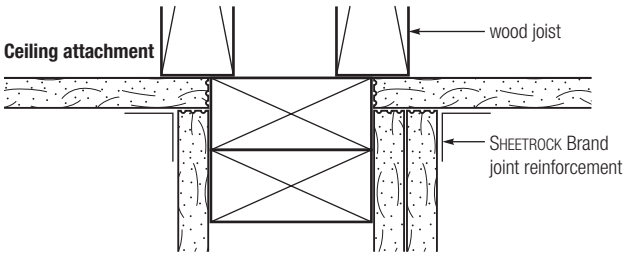


Floor attachment

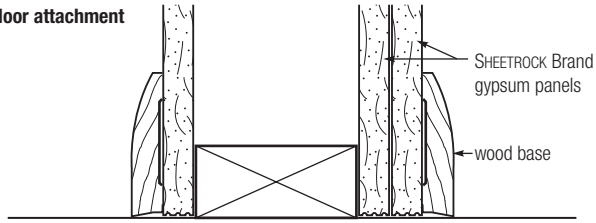


1 hour ceiling/floor attachment

Ceiling attachment

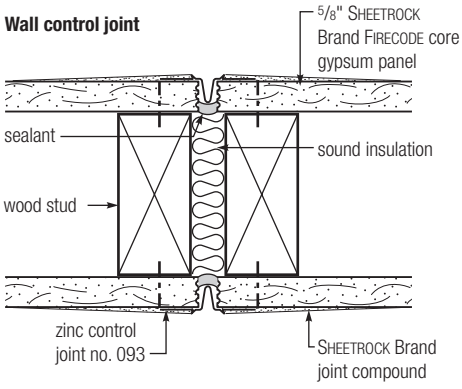


Floor attachment

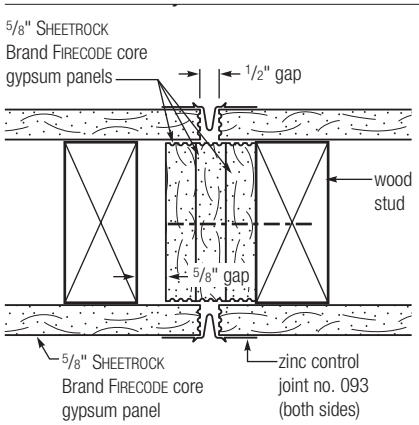


1 hour wall control joint

Wall control joint



1 hour fire resistive control joints (estimated based on WH-651-0318.1)



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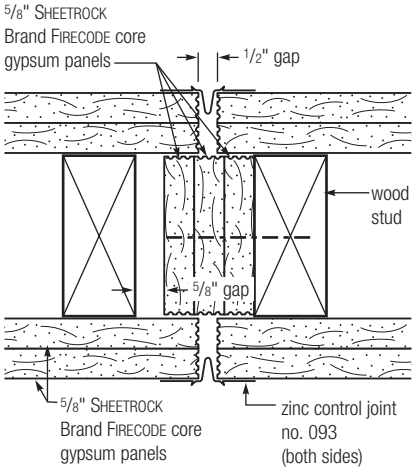
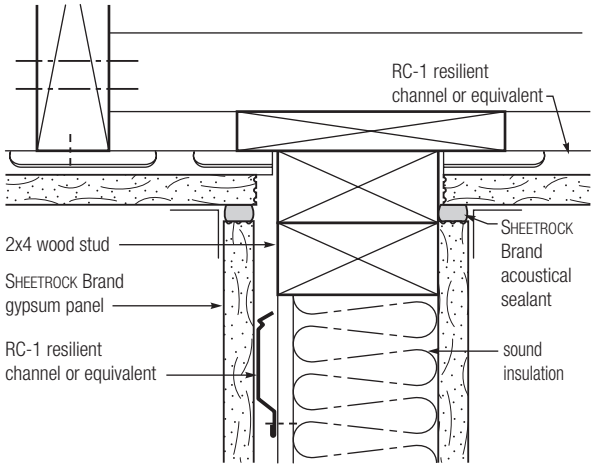
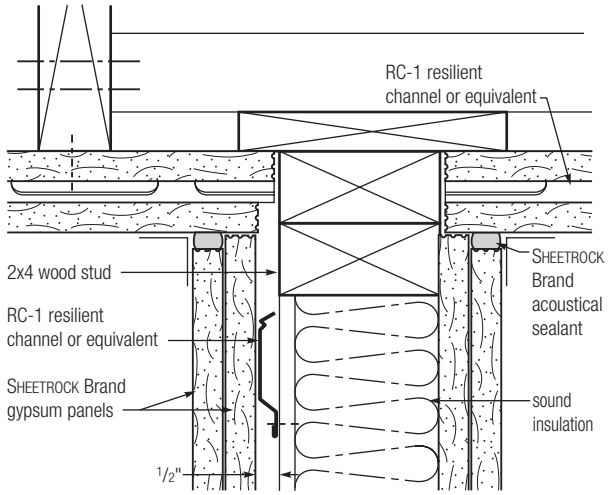


Single layer panels with RC-1 channel (joint per UL System HW-S-0089)



Double layer panels with RC-1 channel (joint per UL System HW-S-0089)

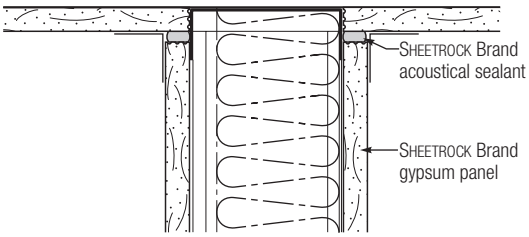


Design Details

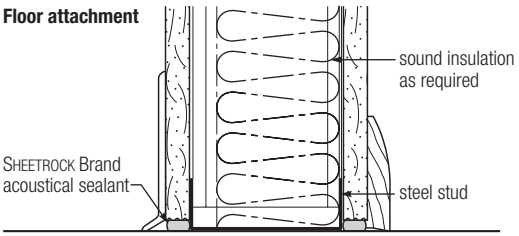
Steel Framed

Partition—section (joint per UL System HW-D-0262)

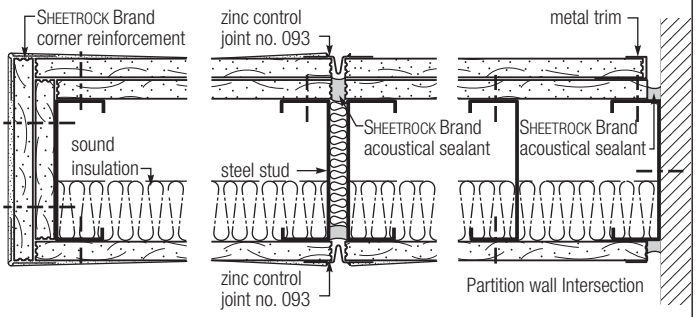
Ceiling attachment



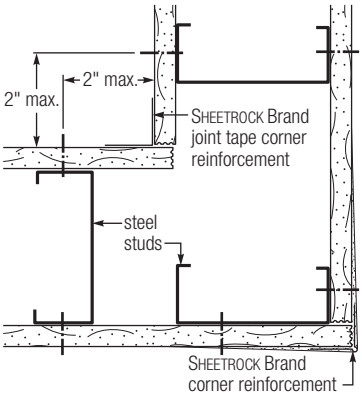
Floor attachment



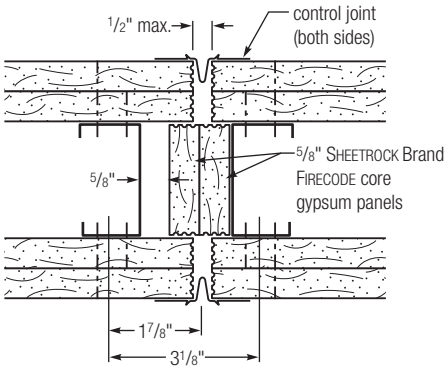
Control joints and partitions with perimeter relief



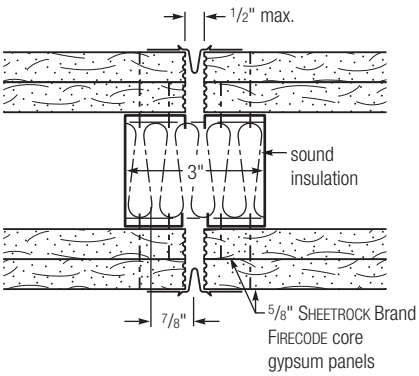
Partition—corner



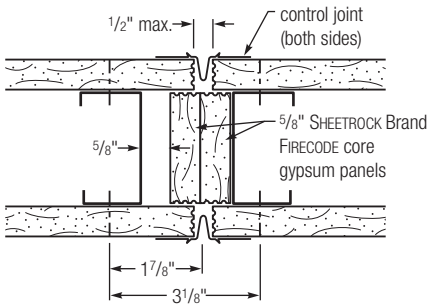
2 hour steel stud partitions with control joints



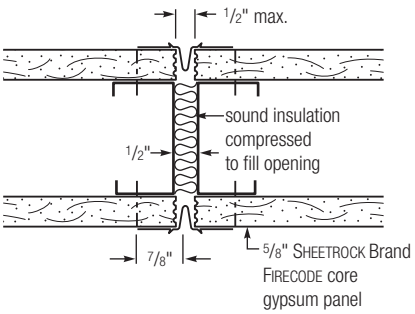
2 hour steel studs with control joints (47 STC SA-8602017)



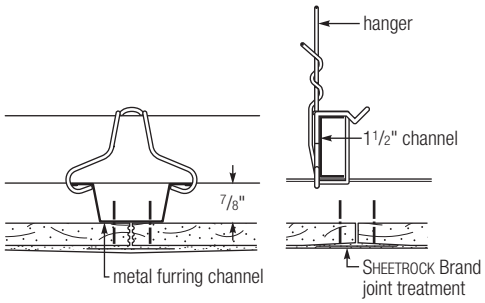
1 hour steel stud partitions with control joints



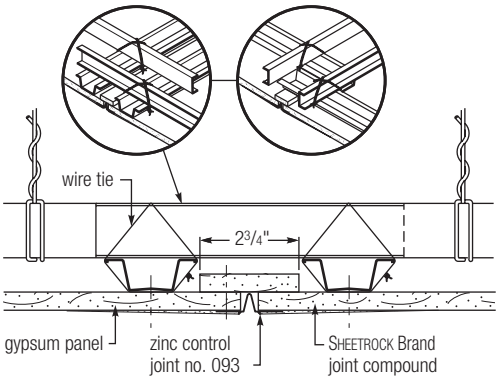
1 hour steel stud with control joint



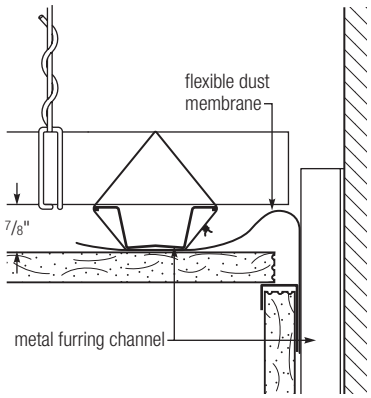
Ceilings—grillage suspension



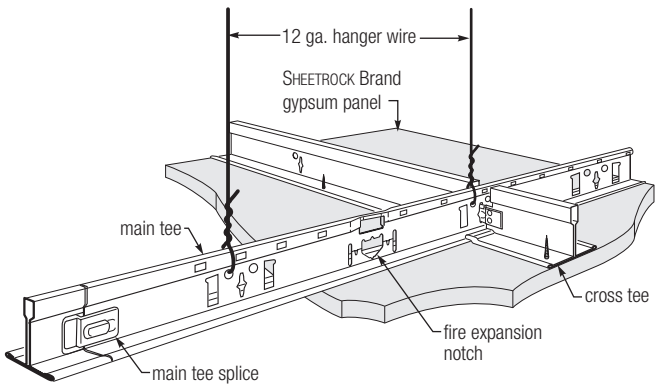
Ceiling control joint



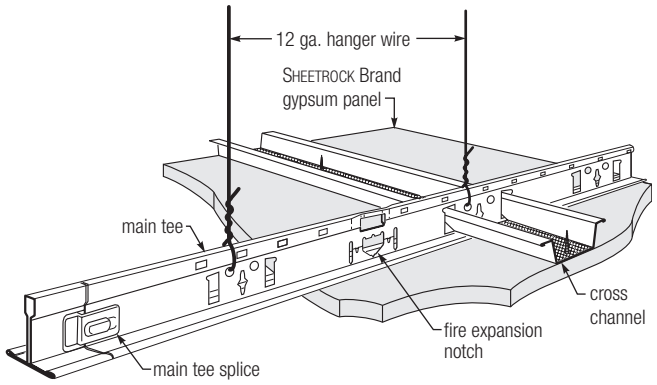
Ceilings—wall intersection



USG Drywall Suspension System with cross tee



USG Drywall Suspension System with cross channel



Standards and Reports

Applicable ASTM Standards

These listings contain existing ASTM standards which apply to USG Corporation materials. Upon request, United States Gypsum Company will provide product certification that these products comply with the applicable ASTM standards and meet the performance values identified therein.

ASTM Standard	Product/ Systems
	Gypsum Panels
C1396/C36	Sheetrock regular core
C1396/C36	Sheetrock Firecode Core
C1396/C36	Sheetrock Firecode C Core
C1396/C36	Sheetrock Ultracode Core
C1396/C36	Sheetrock Mold Tough regular core
C1396/C36	Sheetrock Mold Tough Firecode Core
C1396/C442	Sheetrock liner panels
C1396/C442	Sheetrock Mold Tough liner panels
C1396/C931	Sheetrock exterior gypsum ceiling board
C1396/C1395	Sheetrock interior gypsum ceiling board
C1396/C79	Sheetrock sheathing
C1396/C1658 C1177	Sheetrock glass-mat liner panels
C1396/C1177	Securock glass-mat sheathing
C1278	Fiberock abuse-resistant interior panels
C1278	Fiberock VHI abuse-resistant interior panels
C1278	Fiberock Aqua-Tough interior panels
C1278	Fiberock Aqua-Tough underlayment
	Gypsum Lath and Gypsum Base
C1396/C37	Rocklath plaster base
C1396/C588	Imperial gypsum base
C1396/C588	Imperial gypsum base Firecode Core
C1396/C588	Imperial gypsum base Firecode C Core

ASTM Standard	Product/ Systems
	Plaster and Lime
C28	Red Top gypsum plaster
C28	Red Top wood fiber plaster
C28	Structo-Lite plaster
C28	Red Top gauging plaster
C61	Red Top keenes cement
C28	Structo-Gauge® plaster
C28	Structo-Base® plaster
C587	Imperial veneer finish
C587	Diamond veneer finish
C206 type N	Red Top and Grand Prize finish limes
C206 type S	Ivory finish lime
	Cement Panels
C1325 (ANSI A 118.9)	Durock cement board
	Ceiling Components
E1264	Acoustone® ceiling panels/Tiles
E1264	Auratone® ceiling panels/Tiles
E1264	"X" Products ceiling panels/Tiles
C635, C645	Donn® ceiling suspension systems
	Other
C475	Sheetrock joint compounds
C645	Shaft wall and area separation wall studs and runners
C834	Sheetrock acoustical sealant
C1047	Beadex paper-faced metal bead and trim
C475	Beadex joint compounds

Evaluation Reports

This list contains relevant evaluation reports for USG products and systems. These reports indicate building code compliance.

Report Number	Report Subject
ESR-3206	USG Fire Stop Penetration Systems
AER-09038	USG Shaft and Stair Wall Systems
ESR-2062	Sheetrock sag-resistant interior ceiling board
NER-684 ER-5578	Fiberock gypsum panels
ER-5885	Levelrock poured gypsum floor underlayments
ER-1939	USG acoustical ceiling tiles and panels

Report Number	Report Subject
ESR-1222	USG Drywall Suspended ceiling systems
ESR-1222	USG Donn and Simplicitee® ceiling suspension systems
ESR-1792	Structo-Crete Concrete Panels
ESR-2208	Durock Cement Board Next Gen
ESR-3044	Securock Glass Mat Sheathing
PER-08029	Securock Glass Mat Sheathing
PER-01146	USG Sheetrock MH Gypsum Panels

Note
Evaluation report numbers may change. Contact USG for current report information.

UL Type Designations

These listings contain the UL Types assigned to USG products and systems by Underwriters Laboratories Inc.

UL Type Designation	Product/ Systems
	Gypsum Board and Related Products
SCX	Sheetrock Firecode Core gypsum panels
SCX	Sheetrock Mold Tough Firecode Core gypsum panels
C	Sheetrock Firecode C Core gypsum panels
C	Sheetrock Mold Tough Firecode C Core gypsum panels
AR	Sheetrock abuse-resistant gypsum panels
AR	Sheetrock Mold Tough Firecode AR
SLX	Sheetrock gypsum liner panels
SLX	Sheetrock Mold Tough gypsum liner panels
SLX	Sheetrock glass-mat gypsum liner panels
Ultracode	Sheetrock Ultracode Core gypsum panels
SHX	Sheetrock Firecode Core gypsum sheathing
USGX	Securock™ glass-mat sheathing Firecode Core
SGMRX	Securock glass mat roof board
GMIP	5/8" Sheetrock Glass-Mat panels Mold Tough Firecode X
FC30	Sheetrock UltraLight Panels Firecode 30
ULX	Sheetrock UltraLight Panels Firecode X
FRX-G	Fiberock panels
IP-X1	Imperial Firecode Core plaster base
IP-X2	Imperial Firecode C Core plaster base
DCB	Durock cement board Next Gen
UC	Ultrawall gypsum panel
RLX	Rocklath Firecode gypsum Lath
Levelrock	Levelrock floor underlayment mixtures
AS	Sheetrock acoustical sealant
FC	Firecode compound
RFC	Firecode ready mixed compound
A	Firecode acrylic firestop spray
IA	Firecode intumescent acrylic firestop sealant
SA	Firecode acrylic firestop sealant
SA	Firecode smoke-sound sealant
	Acoustical Tile and Panel Products
AP	Sandrift™, Frost™, Glacier™ ceiling panels
AP-1	Sandrift, Frost, Glacier ceiling panels
AP-2	Frost, Glacier, Sandrift ceiling panels
AP-3	Frost, Glacier, Sandrift
FC-CB	Sheetrock lay-in ceiling panels *ClimaPlus*™
FR-83 and FR-2	Fissured, Radar™, Radar Illusion, Radar *ClimaPlus*, Radar *ClimaPlus* Illusion, Radar *ClimaPlus* High NRC, Radar *ClimaPlus* High CAC, Radar *ClimaPlus* High NRC/High CAC, Touchstone *ClimaPlus*, Rock Face® *ClimaPlus* ceiling panels
FR-4	Radar Ceramic *ClimaPlus* ceiling panels
FR-X1	Eclipse™ *ClimaPlus*, Millennia® *ClimaPlus* ceiling panels
M	Clean Room™ Class 10M-100M, Class 100 *ClimaPlus* ceiling panels
Astro-FR	Astro™ *ClimaPlus* ceiling panels

UL Type Designation	Product/ Systems
	Acoustical Suspension Products
CM	Celebration™ Metal ceiling panels (metallic)
CP	Celebration Metal ceiling panels (painted)
DXL	Donn DXL suspension system (15/16" wide)
DXL (15/16" wide)	Donn DXL concealed suspension system
DXLA	Donn DXLA suspension system (15/16" wide, aluminum cap)
ZXLA	Donn ZXLA suspension system (15/16" wide, environmental)
DXLT	Centricitee suspension system (9/16" wide)
	USG Fire-resistant Assemblies
DXLTA	Centricitee® suspension system (9/16" wide aluminum cap)
DXLF	Fineline® suspension system (9/16" wide)
SDXL	Simplicitee suspension system (15/16" wide, retail)
SDXLA	Simplicitee suspension system (15/16" wide, retail, aluminum cap)
DGL	USG Drywall Suspension System (15/16" wide)
DGLW	USG Drywall Suspension System (1-1/2" wide)
DXLP	Paraline® linear metal ceiling system
PAR, PARP	Paraline linear metal ceiling system (linear metal panels)
PAS, PASP	Paraline linear metal ceiling system (linear metal panels)
PSR, PSRP	Paraline linear metal ceiling system (linear metal panels)
PSS, PSSP	Paraline linear metal ceiling system (linear metal panels)
	Poured Flooring Products
LRK	Levelrock 2500, Levelrock RH, Levelrock 2500 HY, Levelrock Pro, Levelrock 3500, Levelrock Commercial RH
CSD	Levelrock CSD, Levelrock CSD RH, Levelrock CSD Green, Levelrock CSD RH, Levelrock CSD EE, Levelrock CSD EE RH, Levelrock UltraArmor, Levelrock UltraArmor RH
HSLRK	Levelrock 4500, Levelrock 4500 NXG

Metric Conversions

USG Corporation Metric Policy

USG Corporation supports the intent of the metric conversion program. USG has manufactured metric-sized products for export for many years on a special-order basis. USG will make every reasonable effort to make metric products available to the federal market on a special-order basis.

USG interiors, Inc., is prepared to offer metric sizes in most of its acoustical panel and suspension systems.

From United States Gypsum Company, metric width and length SHEETROCK gypsum panel products will be available from designated manufacturing plants throughout the United States. Metric length DUROCK cement board products will also be available from designated manufacturing plants. Certain minimum-order quantities and service charges may apply, as determined by local market conditions.

Bag and pail products, including SHEETROCK joint treatment products, spray textures, gypsum plasters and other products carry soft metric designations for size and/or weight.

Important: The basic USG product line remains unchanged—standard foot/inch/pound products previously available from USG will still be readily available. The addition of metric length/width products will allow us to supply all job requirements, whether standard or metric.

USG Corporation will offer assistance to construction professionals with regard to design, specification and installation issues involving our metric products, just as we always have with our standard products.

Metric Equivalents

SHEETROCK gypsum panels

Dimension	Conversion Type[a]	ft./in.	mm[b]
Thickness	Soft	1/4"	6.4
		3/8"	9.5
		1/2"	12.7
		5/8"	15.9
		3/4"	19.1
		1"	25.4
Width	Hard	24"	600.0
		48"	1200.0
Length	Hard	8'	2400.0
		10'	3000.0
		12'	3600.0

Steel Stud Framing

Thickness (gauge)	Soft	.0179" (25)	.45
		.0270" (22)	.69
		.0329" (20)	.84
Width	Soft	1-5/8"	41.3
		2-1/2"	63.5
		3-1/2"	88.9
		3-5/8"	92.1
		4"	101.6
Length	Hard	8'	2400.0
		10'	3000.0
		12'	3600.0

Insulation

Dimension	Conversion Type[a]	ft./in.	mm[b]
Thickness	Soft	1"	25.4
		1-1/2"	38.1
		2"	50.8
		2-1/2"	63.5
		3"	76.2
		3-1/2"	88.9
		4"	101.6
		5-1/4"	133.3
		6"	152.4
Width	Hard	16"	400.0
		24"	600.0
Length	Hard	48"	1200.0

Notes

(a) Conversion Type: "Soft" is metric relabeling with no physical change of dimension; "hard" is a physical change to the metric dimension shown.

(b) Conversion factors: inches x 25.4 = mm; feet x 304.8 = mm.

Availability: Items above are not stocked in metric lengths or widths. Minimum quantity orders may be required. Leadtime should be determined; service charges may apply. Geographic availability may vary and should be verified for the project location.

Lengths: Shown on SHEETROCK gypsum panels and steel stud framing for illustration purposes only.

Framing Spacing: 16" o.c. converts to 400 mm o.c.; 24" converts to 600 mm o.c.

For More Information

Check current printed USG literature for more information on product sizing and availability. Information on specific metric product availability in your market area may be obtained from USG sales or customer service representatives. For information, call toll-free:

Samples/Literature
888 874.2450

Technical Service
800 USG.4YOU

Notes

Notes

About the cover:
Project
Soldier Field Stadium
Chicago, IL
Recipient of the 2004 AIA Chicago Design Award
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Chicago, IL
Wood + Zapata
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Product Information
See usg.com for the most up-to-date product information.

Note
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Safety First!
Follow good safety and industrial hygiene practices during handling and installation of all products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read material safety data sheets and related literature on products before specification and/or installation.

Manufactured by
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