

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



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) <i>USG Gypsum Construction Handbook</i>
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.

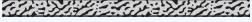
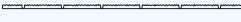
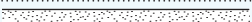
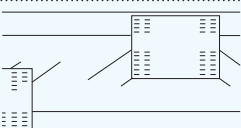
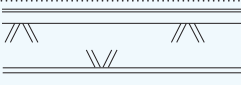
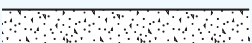
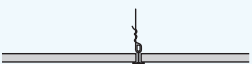
acoust	acoustical	fin	finish or finished	oz	ounce
alt	alternate	fireprfg	fireproofing	partn	partition
alum	aluminum	fixt	fixture	pcf	pounds per cubic foot
appl	applied	flr	floor	perim	perimeter
att	attached	freq	frequency	plywd	plywood
atten	attenuation	ft	foot or feet	prot	protected or protection
betw	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	Agencies	Sound	Sound Ratings	
ASTM	American Society for Testing and Materials	BBN	Bolt, Beranek and Newman	CAC	ceiling attenuation class per ASTM procedures
CEG	Consulting Engineers Group	CK	Cedar Knolls Acoust. Laboratories	IIC	impact insulation class per ASTM procedures
GA	Gypsum Assoc. (Fire Resistance Design Manual GA-600)	G & H	Geiger & Hamme	STC	sound transmission class per ASTM procedures
OSU	Ohio State University	KAL	Kodaras Acoustical Laboratories		
U of C	University of California	RAL	Riverbank Acoustical Laboratories		
UL	Underwriters Laboratories Inc.	SA	Shiner & Assoc.		
WHI	Warnock Hersey International	USG	USG Corporation		

Cross Reference of USG Panels and UL Fire Ratings

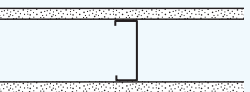
	USG Panels		USG Panels		USG Panels	
	UL Design Number		UL Design Number		UL Design Number	
The following table lists the USG panels that are appropriate to use for different UL fire-resistive Designs.	5/8" IMPERIAL® Gypsum Base or SHEETROCK® Brand FIRECODE® Core or MOLD TOUGH® FIRECODE Core Gypsum Panels		U411, U415, U419,	U618, U623, U626,	SHEETROCK® Brand Gypsum, MOLD TOUGH or Glass-Mat Liner Panels	
			U423, U424, U430,	U627, U634, U635,		
			U442, U445, U457,	U639, U640, U642,	L541, U336, U408,	U492, U504, U505,
	G503, G531, L501,	U451, U454, U458,	U458, U459, U465,	U643, U465, V414,	U415, U438, U441,	U529, V411, V433
	L508, N501, N502,	U459, U465, U466,	U466, U467, U469,	V417, V419, V431,	U459, U467, U469,	
	N505, P515, P516,	U467, U469, U473,	U473, U485, U504,	V433, V439, V444,	1/2" SHEETROCK abuse-resistant gypsum panels	
	U026, U301, U302,	U485, U493, U504,	U505, U512, U528,	V448, X502, X504,		
	U303, U304, U305,	U505, U506, U506,	U602, U603, U605,	X508, X516, X536		
	U308, U314, U321,	U512, U513, U603,	5/8" SHEETROCK® Brand Abuse-Resistant Gypsum Panels		5/8" FIBEROCK sheathing, AQUA-TOUGH™ interior panels, abuse-resistance panels or VHI abuse-resistance panels	
	U329, U338, U342,	U606, U609, U615,	U026, U301, U302,	U434, U438, U442,	U301, U302, U303,	U445, U458, U459,
	U344, U345, U354,	U617, U622, U625,	U303, U304, U305,	U445, U450, U451,	U304, U305, U308,	U465, U466, U467,
	U355, U372, U404,	U640, V411, V417,	U308, U314, U321,	U454, U458, U459,	U314, U321, U329,	U469, U473, U485,
	U408, U411, U415,	V419, V431, V433,	U322, U223, U324,	U460, U465, U466,	U342, U344, U345,	U493, U606, U609,
	U419, U420, U423,	V439, V444, X508,	U325, U326, U329,	U467, U473, U475,	U354, U355, U359,	U615, U617, U622,
	U424, U425, U430,	X516	U330, U332, U344,	U485, U493, U494,	U372, U404, U408,	U625, U640, V411,
	U438, U442, U445,		U345, U354, U355,	U504, U505, U512,	U411, U415, U419,	V417, V431, V439,
	5/8" SHEETROCK FIRECODE Core Gypsum Sheathing		U372, U411, U415,	U513, V417, V419,	U423, U424, U430,	V444
	L501, L508, N501,	U466, U467, U473,	U419, U420, U423,	V444	U432, U438, U442,	
	N502, N505, U026,	U485, U504, U505,	U424, U425, U430,		5/8" SECUROCK® Glass-Mat Sheathing 5/8" SHEETROCK Glass-Mat Panels Mold Tough FIRECODE X	
	U301, U302, U304,	U506, U512, U513,	1/2" IMPERIAL FIRECODE C Core Gypsum Base, SHEETROCK FIRECODE C Core or MOLD TOUGH FIRECODE C Core Gypsum Panels		U026, U057, U301,	U445, U450, U451,
	U305, U308, U314,	U603, U606, U609,	D502, G502, G515,	U436, U438, U440,	U302, U303, U304,	U454, U458, U459,
	U321, U338, U342,	U615, U617, U622,	G523, G524, G526,	U441, U443, U444,	U305, U308, U314,	U465, U466, U467,
	U344, U354, U355,	U625, U637, U640,	G527, G528, G529,	U448, U451, U452,	U321, U327, U329,	U469, U473, U475,
U372, U404, U408,	V411, V417, V419,	G530, G531, G533,	U453, U454, U455,	U338, U339, U341,	U485, U493, U494	
U411, U415, U419,	V431, V433, V439,	G534, G541, G545,	U467, U474, U478,	U342, U344, U345,	U504, U505, U506,	
U423, U424, U442,	V444, X508, X516	L502, L510, L512,	U497, U529, U601,	U354, U355, U356,	U512, U513, U603,	
U430, U459, U465,		L514, L515, L524,	U603, U608, U611,	U357, U359, U360,	U606, U609, U615,	
5/8" IMPERIAL FIRECODE C Core Gypsum Base, SHEETROCK FIRECODE C Core or MOLD TOUGH FIRECODE C Core Gypsum Panels		L525, L530, L531,	U613, U619, U620,	U368, U369, U372,	U617, U622, U625,	
D301, D501, D502,	L559, L560, L563,	L542, L559, P237,	U910, U912, U914,	U374, U376, U377,	U640, V411, V417,	
D503, G503, G512,	N501, N502, N505	P510, P512, P520,	V410, V411, V418,	U379, U383, U386,	V419, V421, V431,	
G515, G516, G521,	P501, P503, P504,	P532, P534, U307,	V433, X507, X514,	U391, U404, U408,	V433, V439, V444,	
G523, G525, G526,	P505, P506, P507,	U317, U320, U345,	X515, X518, X521,	U411, U415, U418,	V450, V461, V465,	
G527, G528, G529,	P508, P509, P510,	U406, U412, U415,	X522, X523, X524,	U419, U420, U423,	V467, V471, V477,	
G530, G531, G540,	P513, P514, P515,	U419, U423, U424,	X530, X531	U424, U425, U430,	V478, V479, V485,	
G542, G543, G544,	P519, P521, P522,	U425, U426, U435,		U432, U433, U434,	V486, X508, X516,	
G545, G546, J501,	P523, P524, P525,	5/8" SHEETROCK UltraLight Panels FIRECODE X		U437, U438, U442,	X526, X528	
J502, J503, J504,	P526, P527, P528,	U301, U302, U303,	U445, U451, U454,	1/2" or 5/8" DUROCK® Cement Board		
L501, L508, L511,	P529, P530, P531,	U304, U305, U308,	U458, U459, U465,	U303, U329, U433,	U541	
L512, L513, L514,	P532, P534, P535,	U314, U321, U327,	U466, U467, U469,	U458, U473, U474,		
L516, L520, L521,	P536, P537, P544,	U329, U338, U341,	U473, U485, U504,	5/8" SHEETROCK UltraLight Panels FIRECODE 30		
L523, L525, L526,	U023, U301, U302,	U342, U344, U345,	U505, U506, U512,	U407, U307		
L527, L528, L529,	U303, U305, U308,	U354, U355, U372,	U513, U609, U615,			
L530, L531, L538,	U311, U327, U329,	U374, U379, U383,	U617, U622, V411,			
L541, L545, L546,	U333, U334, U342,	U386, U391, U395,	V417, V419, V431,			
L548, L549, L550,	U344, U354, U355,	U404, U408, U411,	V433, V444, V450,			
L551, L552, L553,	U372, U404, U408,	U415, U419, U420,	V461, V467, V471,			
		U421, U423, U424,	V477, V478, V479,			
		U425, U430, U433,	V485, V486, V498,			
		U437, U438, U442,	V499, X508, X516			

Legend

	Architectural Elements			Architectural Elements		
	Component	Cross Section	Profile	Component	Cross Section	Architectural Material Symbols
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.	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 3/8"	• 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 4 7/8"	• 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		

Steel Framed



1 Hour Fire-Rated Construction		Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index	
wt. 6 	• 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 	• 1/2" SHEETROCK FIRECODE C Core gypsum panels – 2-1/2" 25 gauge steel studs 24" o.c. – 1-1/2" THERMAFIBER SAFB – joints finished	UL Des U419 or U448	47	SA-831001 Based on same construction without THERMAFIBER SAFB	A-4	
wt. 6 	• 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 SA-800422 Based on 3-5/8" studs and 2" mineral wool batt	A-5	
	• 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 	• 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	

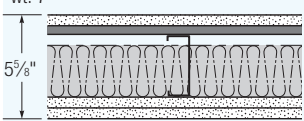
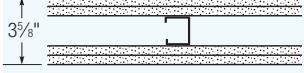
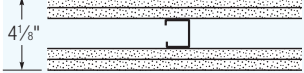
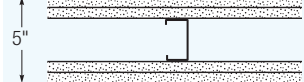
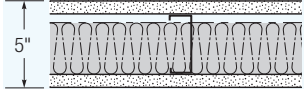
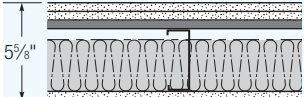
Steel Framed



1 Hour Fire-Rated Construction		Non-Loadbearing	Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index
wt. 7 	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 	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 	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
	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
	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 	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 	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" 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
	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

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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		

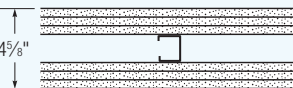
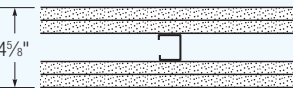
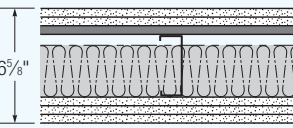
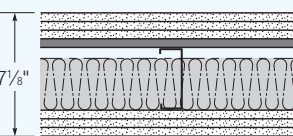
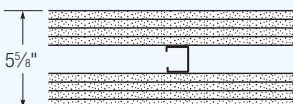
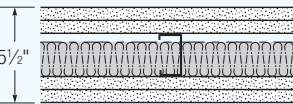
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2 Hour Fire-Rated Construction		Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index	
wt. 9 	1/2" SHEETROCK FIRECODE C Core gypsum panels 2-1/2" 25 gauge steel studs 24" o.c. 1" THERMAFIBER 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		
	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 	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 	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 	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	
	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	

Steel Framed



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

A

Partitions

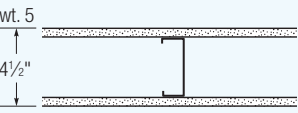
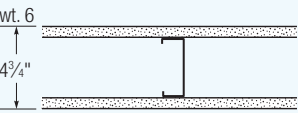
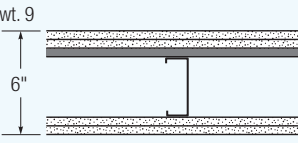
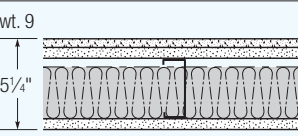
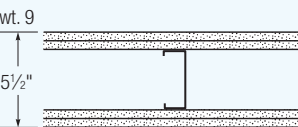
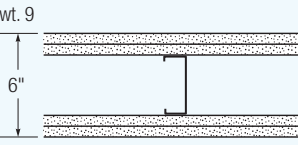
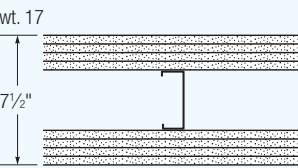
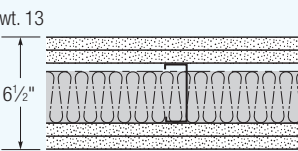
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2 Hour Fire-Rated Construction		Chase Walls	Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index
wt. 12 	5/8" SHEETROCK FIRECODE Core gypsum panels, each side or FIBEROCK panels 1-5/8" 25 gauge steel studs 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

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45 Minute Fire-Rated Construction	Loadbearing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index
	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 Construction					
	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	USG-810519	A-47
			41	USG-810518 Based on 2" mineral wool batt in cavity	
	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	SA-840715 Based on 3-1/2" 16 gauge struc studs and lateral bracing	A-48
			61	SA-830628 Based on 3-1/2" 16 gauge struc studs, 5/8" thick panels, lateral bracing and 3" mineral wool batt	
	- 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					
	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	USG-811009 Based on 2" mineral wool batt	A-50
			49	USG-810937 Based on 2" mineral wool batt and 6" 20 gauge struc studs	
2 Hour Fire-Rated Construction					
	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	USG-81006 Based on 3-1/2" 16 gauge struc studs and lateral bracing	A-51
			61	USG-810937 Based on 3-1/2" 16 gauge struc studs, 5/8" thick panels, lateral bracing and 3" mineral wool batt	
3 Hour Fire-Rated Construction					
	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
	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

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30 Minutes Fire-Rated Construction		Loadbearing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index	
	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 batt	A-55	
			49	RAL-TL11-131 Based on R-11 fiberglass sound batt, 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 batt, RC-1 channel one side	A-56	
45 Minutes Fire-Rated Construction		Loadbearing				
	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						
	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	
	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 batt	A-59	
			33	RAL-TL11-172 Based on 5/8" SHEETROCK UltraLight Panels Firecode X, no sound batt		
			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 batt		
			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 batt		
	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 	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	
	3/8" ROCKLATH Base 2 x 4 wood stud 16" o.c. 1/2" 1:2 gypsum-sand plaster	GA-WP-3430			A-63	
	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	
	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	
	5/8" SHEETROCK FIRECODE core panels, or 5/8" SHEETROCK UltraLight Panels FIRECODE X or 5/8" FIBROCK 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	
	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	USG-810218 Based on same assembly with RC-1 channel and without mineral wool batt	A-68	
			58	USG-810219 Based on same assembly with RC-1 channel and 2" mineral wool batt		
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 wood 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	

Wood Framed



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	RAL-TL-69-214	A-76	
			56	USG-710120 Based on 3-1/2" thick insulation in one cavity		
			58	GA-NGC-3056		
	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	RAL-TL-69-211	A-77	
			51	GA-NGC-2377		
	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	RAL-TL-88-353	A-80	
			54	RAL-TL-88-348 Based on 2" mineral wool batt on one side		
			57	RAL-TL-88-351 Based on 2 x 4s and 3" mineral wool batt on one side		
			58	RAL-TL-88-347 Based on 2 x 4s and 2" mineral wool batt on both sides		
			60	RAL-TL-88-350 Based on 2 x 4s and 3" mineral wool batt on both sides		

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						
	• 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	USG-040903 Based on 4" C-H Studs 25 gauge	A-88	
			51	RAL-0T04-018 Based on 4" C-H Studs with 3" mineral fiber insulation		
	• 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						
	• 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	UL Des U910			A-92	
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.						

B Floor/Ceilings

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 ZOLA 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, SDXL, SDXLA, ZOLA Susp Exp Grid System 2-1/2" concrete on riblath over bar joist	UL Des G259				B-5

B

Floor/Ceilings

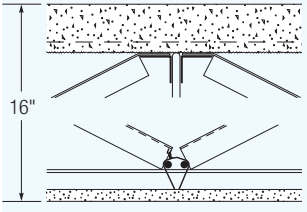
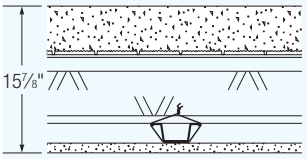
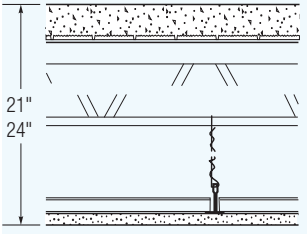
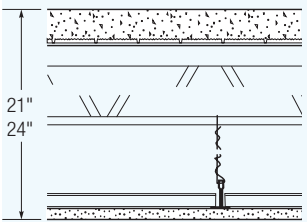
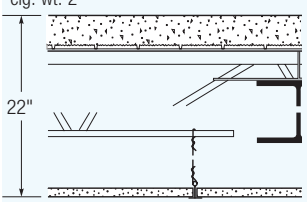
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1-1/2 Hour Fire-Rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number		Index
	1/2" SHEETROCK FIRECODE C Core gypsum panels - metal furring channel 24" o.c. - joints 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						
	- 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
	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	

B Floor/Ceilings

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	
2 1/2"	• 3/4" 12" x 12"; or 24" FR-83 acoustical ceiling panels • DXL, DXLA, DXLZA, DXLA, DXLZ, SDXL, SDXLA or XLA 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	
2 7/8"	• 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	
2 1/2"	• 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	
26" 23 1/4" 23"	• 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	
26" 23 1/4" 23"	• 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	

B

Floor/Ceilings

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	

B Floor/Ceilings

Steel Framed



2 Hour Fire-Rated Construction		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	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		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, DXLT, 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		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		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

B Floor/Ceilings

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

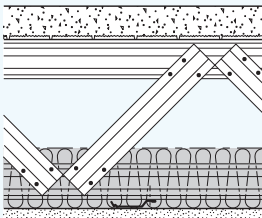
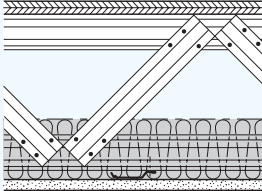


1 Hour Fire-Rated Construction		Steel C-Joist Framing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	IIC	Test Number	Index
clg. wt. 4 	- Two layers 1/2" SHEETROCK FIRECODE C Core gypsum panels 7" 18 gauge steel joists 24" o.c. - USG DGL Drywall Suspension System	UL 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 	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 	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 	- 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	

B Floor/Ceilings

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 12 5/8" 	• 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		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Index
clg. wt. 5 11"	• 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 <i>Also for roof-ceilings, including trusses</i>	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
20 1/4"	• 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
22 5/8" 21 3/8"	• 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

B

Floor/Ceilings

Wood Framed



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
	• 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
	• 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
	• 5/8" SHEETROCK FIRECODE C Core gypsum panel • 3/4" LEVELROCK floor underlayment – 3/4" plywood perpendicular – 9-1/2" 1" 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
	• 1/2" or 5/8" SHEETROCK FIRECODE C Core gypsum panel joints finished – 9" 1" 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

Wood Framed



1 Hour Fire-Rated Construction		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Index
clg. wt. 4 13 1/2"	• 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
12 5/8"	• 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 11 1/4"	• 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 11 1/4"	• 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 11 1/4"	• 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

Wood Framed



2 Hour Fire-Rated Construction		Dimensional Lumber		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	IIC	Test Number	Index
	- 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	
	- 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	
	- 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

B Floor/Ceilings

Wood Framed



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 ZXL 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				
	• 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-OT03-05/06 1" LEVELROCK, vinyl, SRM-25, 3-1/2" insulation	B-79
			64	62	RAL-OT03-07/08 1" LEVELROCK, engineered wood laminate, SRM-25, 3-1/2" insulation	
			66	54	RAL-OT03-09/10 1" LEVELROCK, ceramic tile, SRM-25, 3-1/2" insulation	
			65	54	RAL-OT03-01/02 3/4" LEVELROCK, vinyl, SRB, 3-1/2" insulation	
			66	51	RAL-OT03-03/04 3/4" LEVELROCK, ceramic tile, SRB, 3-1/2" insulation	

Wood Framed



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 <i>RC-1 Resilient Channel or equivalent may be used in place of metal furring channel</i>	UL Des L528				B-85

B

Floor/Ceilings

Wood Framed



1 Hour Fire-Rated Construction		Truss		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number		Index
	• 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
	• 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

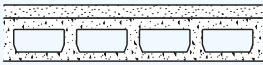
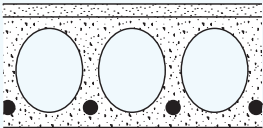
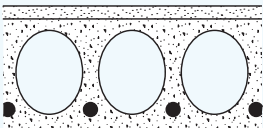
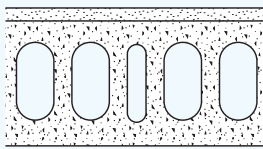
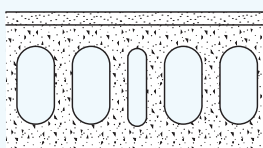
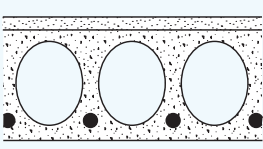
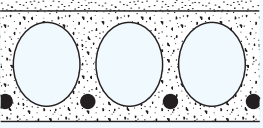
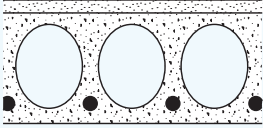
Structural Concrete



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					
	• 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
	• 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 on fluted or cellular steel floor	UL Des D215			B-95

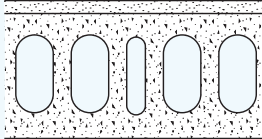
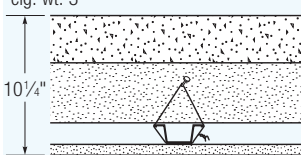
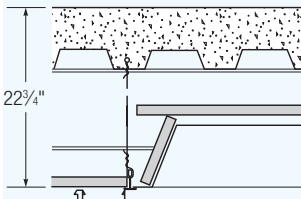
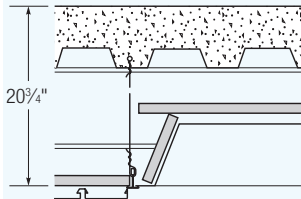
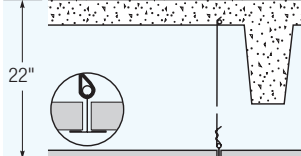
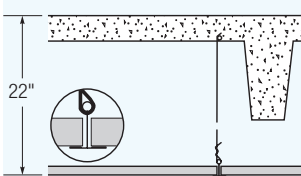
Structural Concrete



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

C

Roof/Ceilings

Steel Framed



3/4 Hour Fire-Rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number		Index
22 1/4"	• 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						
21 5/8" 21 3/4"	• 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 ZXL, Susp Exp Grid System – 1-1/2" steel roof deck and 3/4" insulation – steel bar joist	UL Des P201				C-2
22" 22 5/8"	• 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
26" 24" 20 1/2"	• 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
23 1/2"	• 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

C

Roof/Ceilings

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	

C

Roof/Ceilings

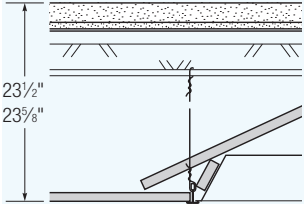
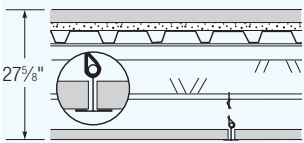
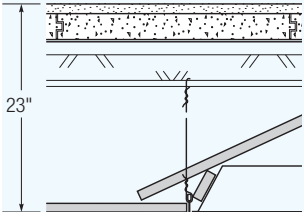
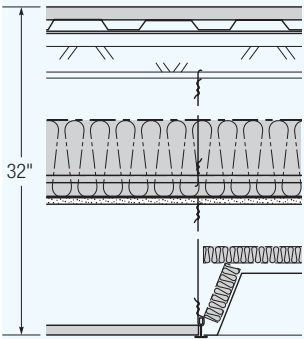
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1 Hour Fire-Rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number		Index
	• 3/4" FR-83 acoustical ceiling panels • DXLF (with CM or CP metal ceiling panels) Susp Exp 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						
	• 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, ZOLA, DXLT, DXLTZ or DXLP (with Types PAR, PAPP, 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, DXLA, DXLZ, DXLZA, SDXL, SDXLA, ZOLA, DXLT, DXLTZ or DXLP (with Types PAR, PAPP, PAS, PASP, PSR, PSRP, PSS and PSSP metal ceiling panels) – 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 ZOLA 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	

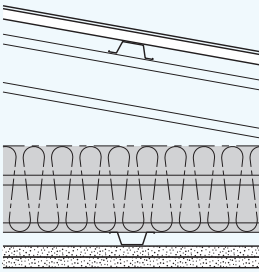
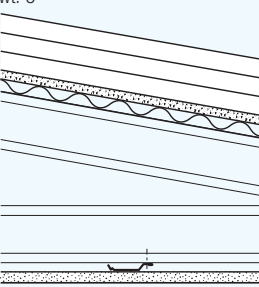
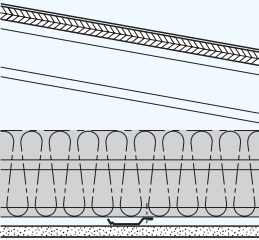
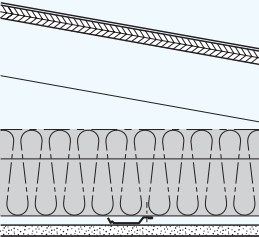
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3 Hour Fire-Rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number	Index	
	• 5/8" FR-4; 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, 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				
	• 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



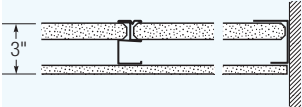
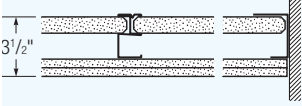
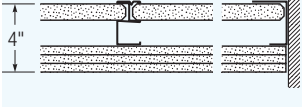
1 Hour Fire-Rated Construction		Steel Roof Deck		Acoustical Performance		Reference
Construction Detail	Description	Test Number	STC	Test Number		Index
	• 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, ZOLA or SDXLA Susp Exp Grid System – 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 ZOLA 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

D

Horizontal Membrane

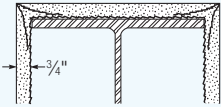
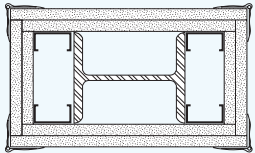
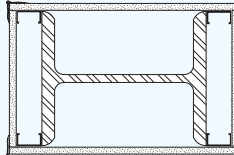
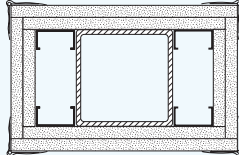
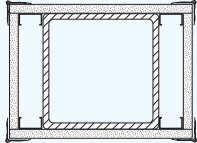
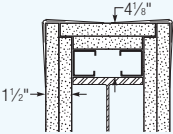
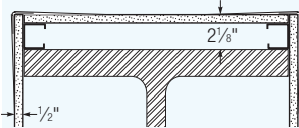
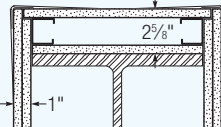
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1 Hour Fire-Rated Construction		Non-Loadbearing		Acoustical Performance		Reference
Construction Detail	Description	Report Number	STC	Test Number	Index	
	– corridor ceiling, and stair soffit • 1" SHEETROCK brand gypsum liner panels • 5/8" SHEETROCK 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	
	– 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	

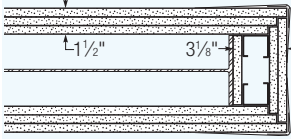
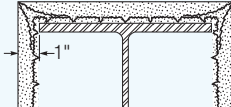
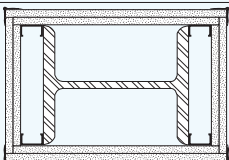
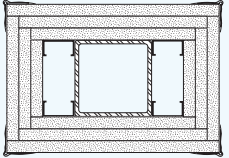
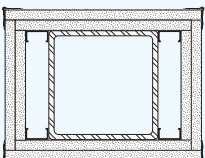
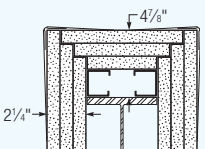
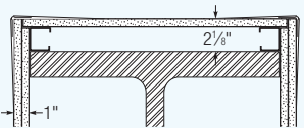
Column



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

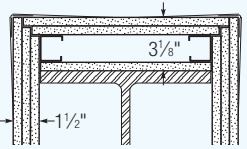
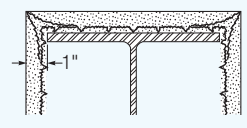
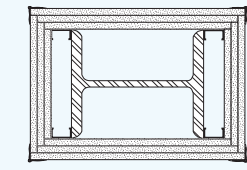
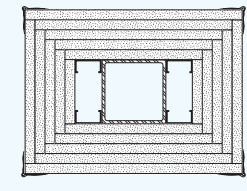
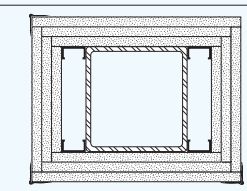
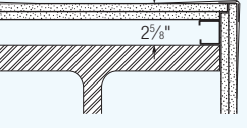
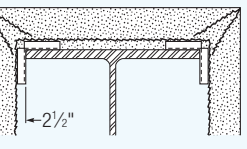
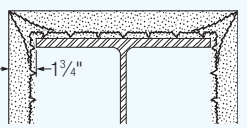
Column



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 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-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

E

Structural Fireproofing

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

F Exterior Walls

Steel Framed



1 Hour Fire-Rated Construction		Non-Loadbearing		Reference
Construction Detail	Description	Test Number	Comments	Index
wt. 6 	• 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 – <i>load-bearing up to 100% allowable stud axial load</i>	UL Des U419	Rating also applies with SHEETROCK MOLD TOUGH FIRECODE Core gypsum panels, exterior	F-1
	• 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 	• 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 	• 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 	• 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 stagg and finished or unfinished	UL Des U411, U419		F-5
	• 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

F Exterior Walls

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 <i>load-bearing up to 100% allowable stud axial load</i>	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 <i>load-bearing up to 100% allowable stud axial load</i>	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 <i>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</i>	UL Des U423 or U425	Rating also applies to SHEETROCK FIRECODE Core MOLD TOUGH gypsum panels	F-11

F Exterior Walls

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

Steel/Iron Metallic



Penetrating Item and Diameter	Floor, Roof or Wall Type	Firestopping Material	Forming Material	Annular Space		Rating		UL System Number	Reference	
				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	—	1/2"	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

G 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 ^e	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 ^e	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 ^e	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 ^e	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 ^e	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 ^e	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 ^e	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 ^e	0"	1"	1-2	0	W-L-7057	SA727	G-77

G

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 IA	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	CF	Wrap, Type A or Type IA ^c	—	Varies	Varies	2-3	1-1/2-2-1/2	F-A-2064	SA727	G-85
6" SDR135 CPVC pipe										
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	WF	1/2" Type IA	Foam backer ^c	0"	1/2"	1	1	F-C-2182	SA727	G-89
3" SDR17 CPVC pipe or										
3" sched. 40 PVC conduit										
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 ^c	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
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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	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

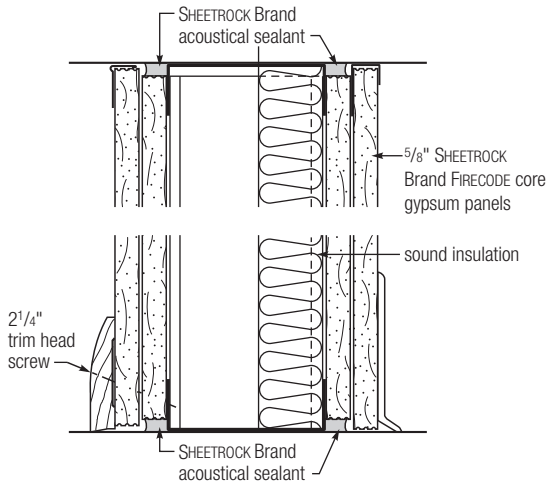
Use this section as a reference.

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.

Design Details

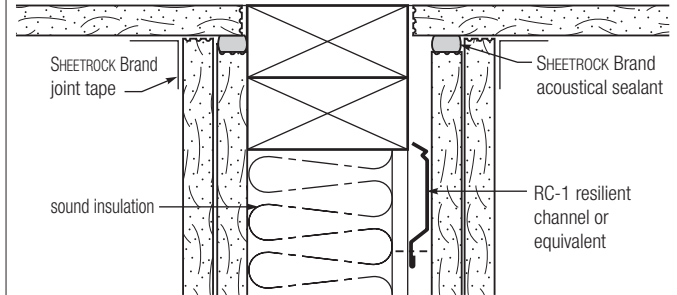
Wood Framed

1 hour partitions

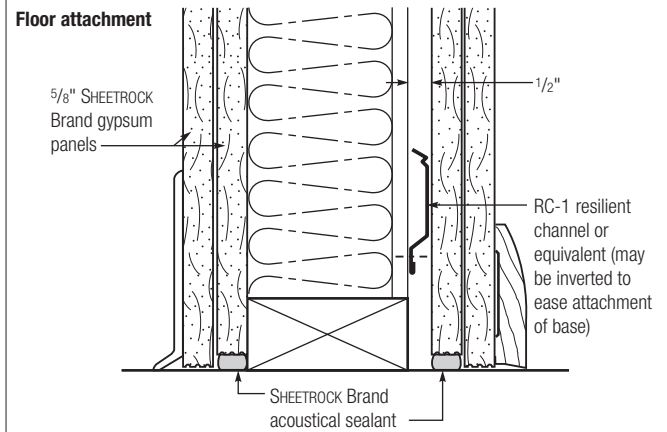


2 hour partitions

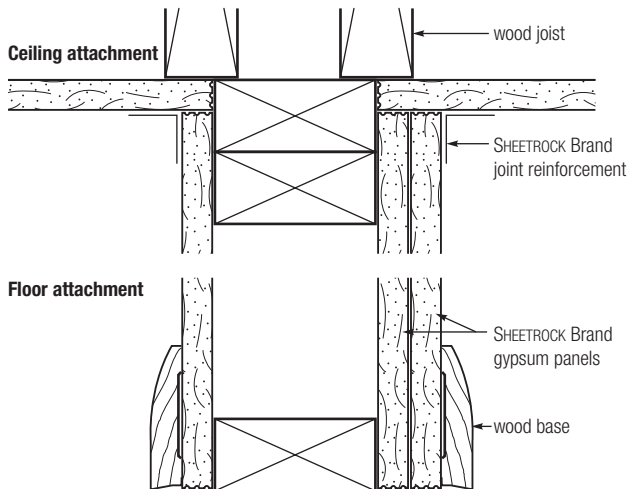
Ceiling attachment



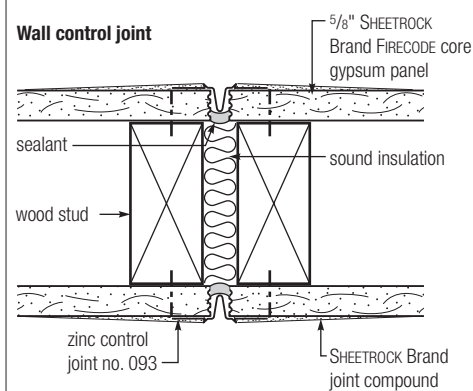
Floor attachment



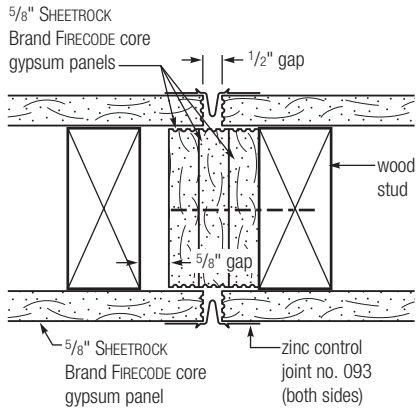
1 hour ceiling/floor attachment



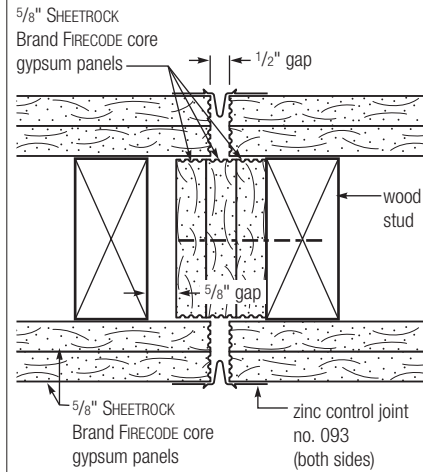
1 hour wall control joint



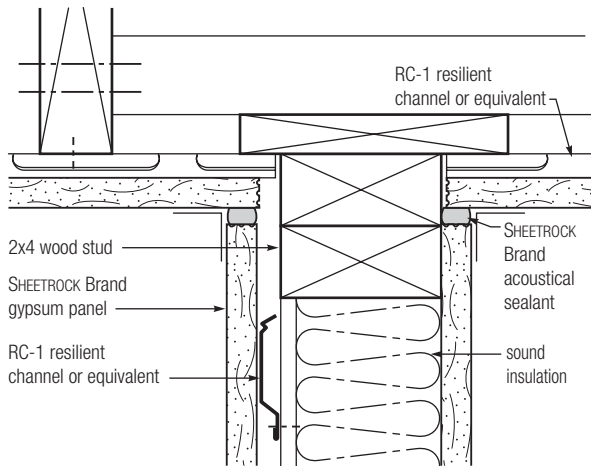
1 hour fire resistive control joints (estimated based on WH-651-0318.1)



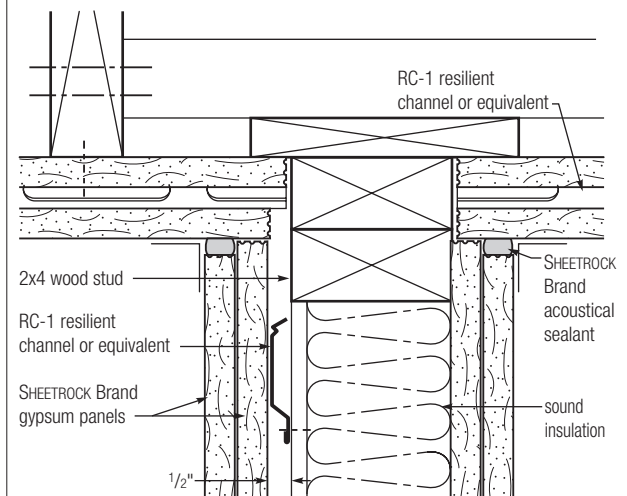
2 hour fire resistive control joints (estimated based on WH-651-0318.1)



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)

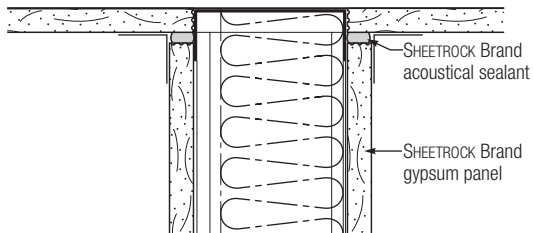


Design Details

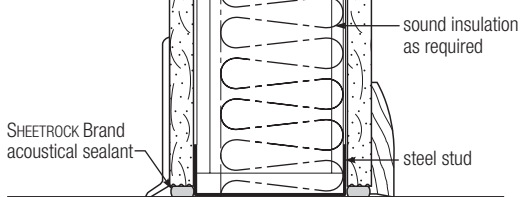
Steel Framed

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

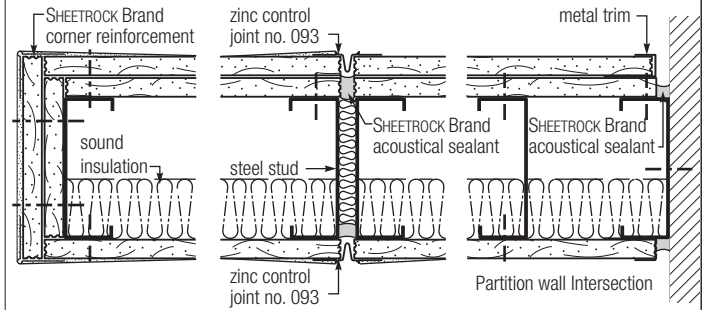
Ceiling attachment



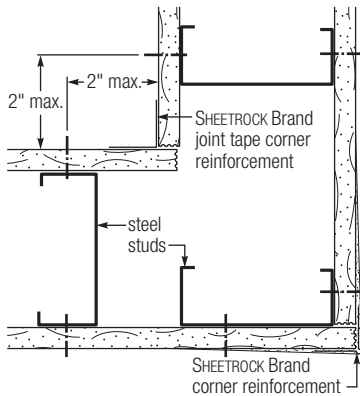
Floor attachment



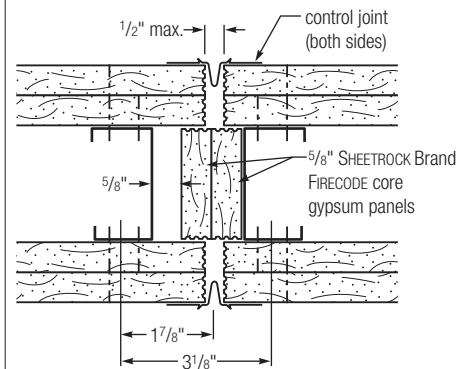
Control joints and partitions with perimeter relief



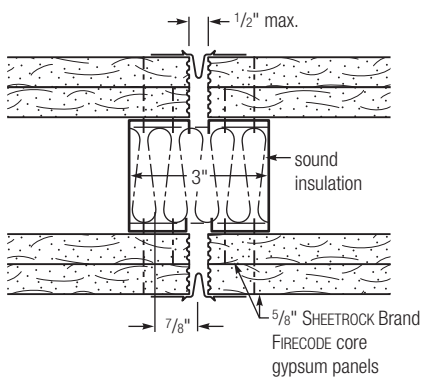
Partition—corner



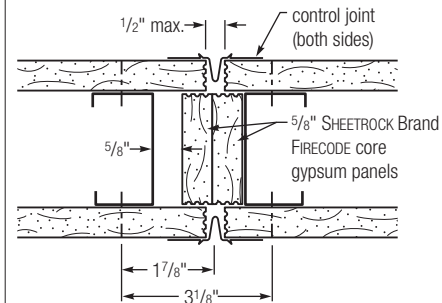
2 hour steel stud partitions with control joints



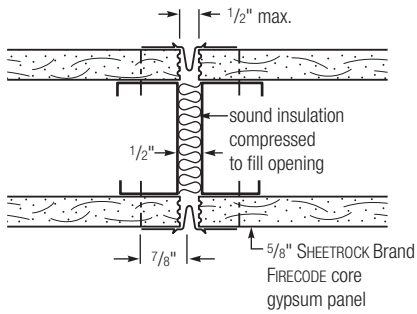
2 hour steel studs with control joints (47 STC SA-8602017)



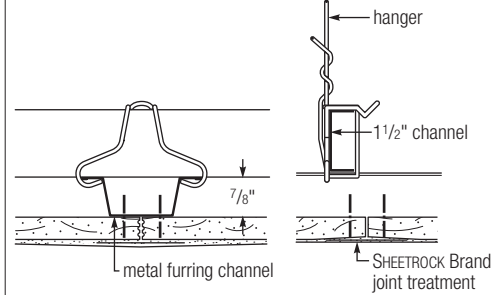
1 hour steel stud partitions with control joints



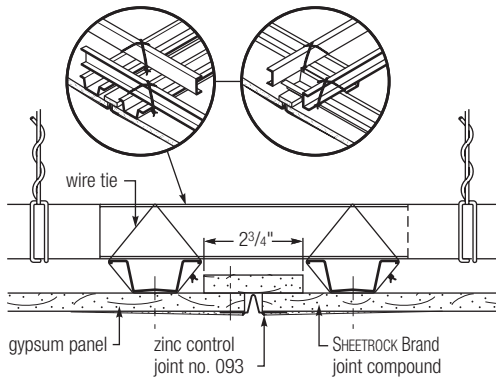
1 hour steel stud with control joint



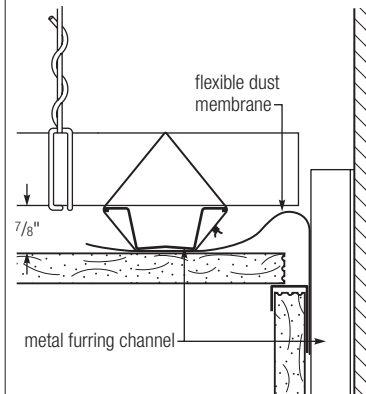
Ceilings—grillage suspension



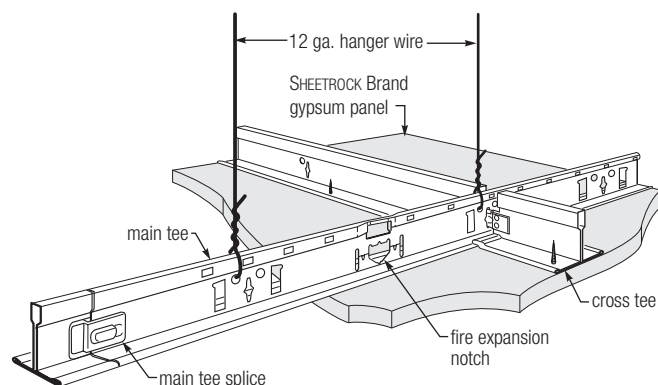
Ceiling control joint



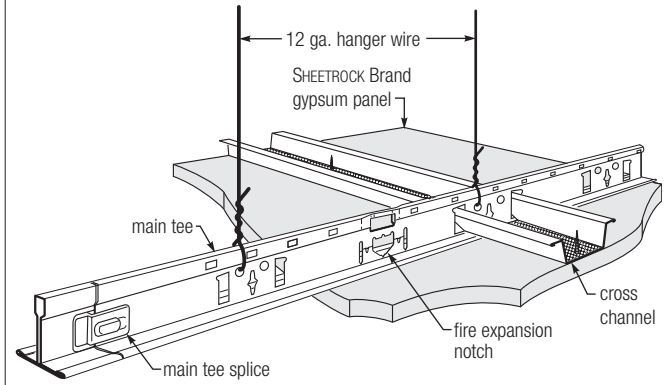
Ceilings—wall intersection



USG Drywall Suspension System with cross tee



USG Drywall Suspension System with cross channel



Standards and Reports

Applicable ASTM Standards

	ASTM	Product/	ASTM	Product/
	Standard	Systems	Standard	Systems
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.		Gypsum Panels		Plaster and Lime
	C1396/C36	SHEETROCK regular core	C28	RED TOP gypsum plaster
	C1396/C36	SHEETROCK FIRECODE Core	C28	RED TOP wood fiber plaster
	C1396/C36	SHEETROCK FIRECODE C Core	C28	STRUCTO-LITE plaster
	C1396/C36	SHEETROCK ULTRACODE Core	C28	RED TOP gauging plaster
	C1396/C36	SHEETROCK MOLD TOUGH regular core	C61	RED TOP keenes cement
	C1396/C36	SHEETROCK MOLD TOUGH FIRECODE Core	C28	STRUCTO-GAUGE® plaster
	C1396/C442	SHEETROCK liner panels	C28	STRUCTO-BASE® plaster
	C1396/C442	SHEETROCK MOLD TOUGH liner panels	C587	IMPERIAL veneer finish
	C1396/C931	SHEETROCK exterior gypsum ceiling board	C587	DIAMOND veneer finish
	C1396/C1395	SHEETROCK interior gypsum ceiling board	C206 type N	RED TOP and GRAND PRIZE finish limes
	C1396/C79	SHEETROCK sheathing	C206 type S	IVORY finish lime
	C1396/C1658 C1177	SHEETROCK glass-mat liner panels		Cement Panels
	C1396/C1177	Securock glass-mat sheathing	C1325 (ANSI A 118.9)	DUROCK cement board
	C1278	FIBEROCK abuse-resistant interior panels		Ceiling Components
	C1278	FIBEROCK VHI abuse-resistant interior panels	E1264	ACOUSTONE® ceiling panels/Tiles
	C1278	FIBEROCK AQUA-TOUGH interior panels	E1264	AURATONE® ceiling panels/Tiles
	C1278	FIBEROCK AQUA-TOUGH underlayment	E1264	"X" Products ceiling panels/Tiles
		Gypsum Lath and Gypsum Base	C635, C645	DOWN® ceiling suspension systems
	C1396/C37	ROCKLATH plaster base		Other
	C1396/C588	IMPERIAL gypsum base	C475	SHEETROCK joint compounds
	C1396/C588	IMPERIAL gypsum base FIRECODE Core	C645	Shaft wall and area separation wall studs and runners
	C1396/C588	IMPERIAL gypsum base FIRECODE C Core	C834	SHEETROCK acoustical sealant
			C1047	BEADEX paper-faced metal bead and trim
			C475	BEADEX joint compounds

Evaluation Reports

	Report	Report	Report	Report
	Number	Subject	Number	Subject
This list contains relevant evaluation reports for USG products and systems. These reports indicate building code compliance.	ESR-3206	USG Fire Stop Penetration Systems	ESR-1222	USG Drywall Suspended ceiling systems
	AER-09038	USG Shaft and Stair Wall Systems	ESR-1222	USG DOWN and SIMPLICITEE® ceiling suspension systems
	ESR-2062	SHEETROCK sag-resistant interior ceiling board	ESR-1792	STRUCTO-CRETE Concrete Panels
	NER-684	FIBEROCK gypsum panels	ESR-2208	DUROCK Cement Board Next Gen
	ER-5578		ESR-3044	SECUROCK Glass Mat Sheathing
	ER-5885	LEVELROCK poured gypsum floor underlayments	PER-08029	SECUROCK Glass Mat Sheathing
	ER-1939	USG acoustical ceiling tiles and panels	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	Product/	UL Type	Product/
	Designation	Systems	Designation	Systems
These listings contain the UL Types assigned to USG products and systems by Underwriters Laboratories Inc.		Gypsum Board and Related Products		Acoustical Suspension Products
	SCX	SHEETROCK FIRECODE Core gypsum panels	CM	CELEBRATION™ Metal ceiling panels (metallic)
	SCX	SHEETROCK MOLD TOUGH FIRECODE Core gypsum panels	CP	CELEBRATION Metal ceiling panels (painted)
	C	SHEETROCK FIRECODE C Core gypsum panels	DXL	DONN DXL suspension system (15/16" wide)
	C	SHEETROCK MOLD TOUGH FIRECODE C Core gypsum panels	DXL	DONN DXL concealed suspension system (15/16" wide)
	AR	SHEETROCK abuse-resistant gypsum panels	DXLA	DONN DXLA suspension system (15/16" wide, aluminum cap)
	AR	SHEETROCK MOLD TOUGH FIRECODE AR	ZXLA	DONN ZXLA suspension system (15/16" wide, environmental)
	SLX	SHEETROCK gypsum liner panels	DXLT	CENTRICITEE suspension system (9/16" wide)
	SLX	SHEETROCK MOLD TOUGH gypsum liner panels		USG Fire-resistant Assemblies
	SLX	SHEETROCK glass-mat gypsum liner panels	DXLTA	CENTRICITEE® suspension system (9/16" wide aluminum cap)
	ULTRACODE	SHEETROCK ULTRACODE Core gypsum panels	DXLF	FINELINE® suspension system (9/16" wide)
	SHX	SHEETROCK FIRECODE Core gypsum sheathing	SDXL	SIMPLICITEE suspension system (15/16" wide, retail)
	USGX	Securock™ glass-mat sheathing FIRECODE Core	SDXLA	SIMPLICITEE suspension system (15/16" wide, retail, aluminum cap)
	SGMRX	Securock glass mat roof board	DGL	USG Drywall Suspension System (15/16" wide)
	GMIP	5/8" SHEETROCK Glass-Mat panels Mold Tough FIRECODE X	DGLW	USG Drywall Suspension System (1-1/2" wide)
	FC30	SHEETROCK UltraLight Panels FIRECODE 30	DXLP	PARALINE® linear metal ceiling system
	ULX	SHEETROCK UltraLight Panels FIRECODE X	PAR, PARP	PARALINE linear metal ceiling system (linear metal panels)
	FRX-G	FIBEROCK panels	PAS, PASP	PARALINE linear metal ceiling system (linear metal panels)
	IP-X1	IMPERIAL FIRECODE Core plaster base	PSR, PSRP	PARALINE linear metal ceiling system (linear metal panels)
	IP-X2	IMPERIAL FIRECODE C Core plaster base	PSS, PSSP	PARALINE linear metal ceiling system (linear metal panels)
	DCB	DUROCK cement board Next Gen		Poured Flooring Products
	UC	ULTRAWALL gypsum panel	LRLK	LEVELROCK 2500, LEVELROCK RH, LEVELROCK 2500 HY, LEVELROCK Pro, LEVELROCK 3500, LEVELROCK Commercial RH
	RLX	ROCKLATH FIRECODE gypsum Lath	CSD	LEVELROCK CSD, LEVELROCK CSD RH, LEVELROCK CSD Green, LEVELROCK CSD EE RH, LEVELROCK UltraArmor, LEVELROCK UltraArmor RH
	LEVELROCK	LEVELROCK floor underlayment mixtures	HSLRK	LEVELROCK 4500, LEVELROCK 4500 NGX
	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		

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
Width	Hard	5-1/4"	133.3
		6"	152.4
		16"	400.0
Length	Hard	24"	600.0
		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

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Notes

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About the cover:

Project

Soldier Field Stadium

Chicago, IL

Recipient of the 2004 AIA Chicago Design Award

Architects

A joint venture of

Lohan Caprile Goettsch Architects

Chicago, IL

Wood + Zapata

New York, NY

Photographer

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Product Information

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

Note

All products described here may not be available in all geographic markets. Consult your local sales office or representative for information.

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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.

