

Comprehensive test 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

	Pages	
Understand Your System	4	Fire Protection Selector Overview Test Certification
Select Your System	7	Cross-reference of USG Panels and UL Fire Ratings Legend Selector
Design Your System	61	Screw Spacing and Location Good Design Practices Design Details
Specify Your System	67	Standards and Reports UL Type Designations Metric Conversions Index to Fire-Resistive Designs
For More Information		Technical Service 800 USG.4YOU Web Site www.usg.com

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 web site at www.ul.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	9-21	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	22-42	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	43-49	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	50	Shaft wall used in a horizontal plane.
E	Structural Fireproofing	51-53	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	54-56	Steel-framed, including loadbearing and non-loadbearing; and wood-framed, including loadbearing. Includes exterior curtain wall assemblies.
G	Through-Penetration Firestops	57-60	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. These data have 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.


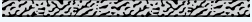


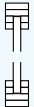



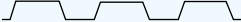

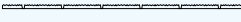

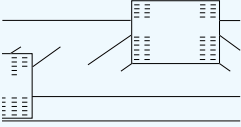






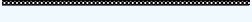


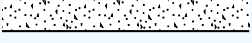


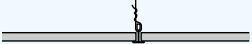

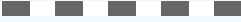
acoust	acoustical	fin	finish or finished	oz	ounce
alt	alternate	fireprfg	fireproofing	partn	partition
alum	aluminum	fixt	fixture	pcf	pounds per cubic foot
appl	applied	flr	floor	perim	perimeter
att	attached	freq	frequency	plywd	plywood
atten	attenuation	ft	foot or feet	prot	protected or protection
betw	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

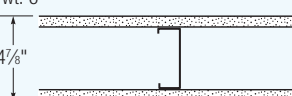

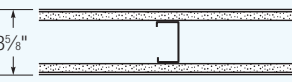
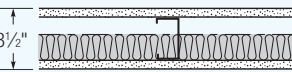
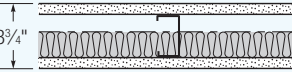
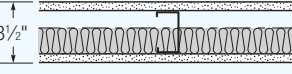
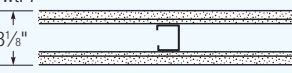
	USG Panels		USG Panels		USG Panels	
	UL Design Number		UL Design Number		UL Design Number	
The following table lists the USG panels that are appropriate to use for different UL fire-resistive Designs.	5/8" IMPERIAL Gypsum Base or SHEETROCK FIRECODE Core or HUMITEK FIRECODE Core Gypsum Panels		P501, P503,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

Legend

	Architectural Elements			Architectural Elements		
	Component	Cross Section	Profile	Component	Cross Section	Architectural Material Symbols
<p>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.</p>	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					

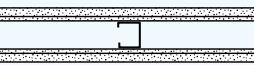
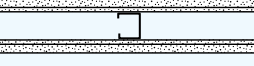
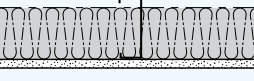
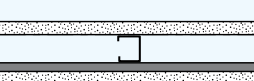
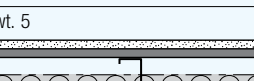
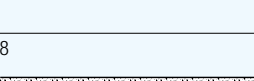
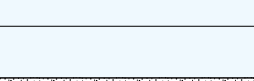
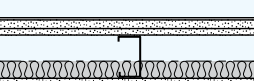
Steel Framed



1 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
<div>wt. 6</div> <div></div> <div>4 7/8"</div>	<ul style="list-style-type: none">• 5/8" SHEETROCK® Brand FIRECODE® Core Gypsum Panels or IMPERIAL® Brand FIRECODE Core Abuse-Resistant Gypsum Base, or FIBEROCK® Brand Panels– 3-5/8" 25 gauge steel studs 24" o.c.– joints finished• optional veneer plaster	UL Des U419 or U465	40	USG-860808	SA700 SA920	A-1	
			49	SA-870717 Based on 3" SAFB in cavity			
			51	RAL-TL-90-166 Based on 5/8" FIRECODE C Core panels and 3" SAFB, and veneer finish surface SAFB 25" wide, creased to fit cavity			
<div>wt. 6</div> <div></div> <div>2 7/8"</div>	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels– 1-5/8" 25 gauge steel studs 24" o.c.– joints finished– perimeter caulked	U of C 7-31-62	38	USG-860809		A-2	
<div>wt. 6</div> <div></div> <div>3 5/8"</div>	<ul style="list-style-type: none">• veneer plaster only (not drywall) 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base and veneer finish or 5/8" FIBEROCK Brand 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	SA920	A-3	
<div>wt. 5</div> <div></div> <div>3 1/2"</div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 2-1/2" 25 gauge studs 24" o.c.– 1-1/2" THERMAFIBER SAFB– joints finished	UL Des U419 or U448	47	SA-831001		A-4	
<div>wt. 6</div> <div></div> <div>3 3/4"</div>	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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 Brand FIRECODE C Core Gypsum Panels, panels and joints finished– CEG 5-9-84 rating also applies with IMPERIAL Brand FIRECODE Core Gypsum Base and veneer finish surface	CEG 8-11-83 CEG 5-9-84	45	RAL-TL-69-42		A-5	
			48	SA-800422 Based on 3-5/8" studs and 2" mineral wool batt			
<div>wt. 7</div> <div></div> <div>3 1/2"</div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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	41	RAL-TL-69-148 Based on same construction without THERMAFIBER SAFB	SA920	A-6	
			50	SA-800504			
<div>wt. 7</div> <div></div> <div>3 3/8"</div>	<ul style="list-style-type: none">• Face layer 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 1-5/8" 25 gauge steel studs 24" o.c.• base layer 1/4" SHEETROCK Brand 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	

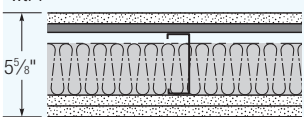
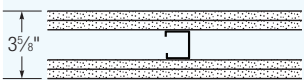
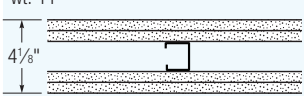
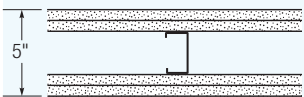
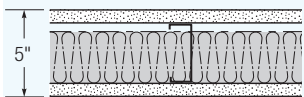
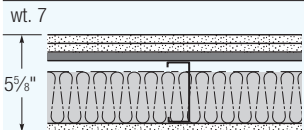
Steel Framed



1 Hour Fire-rated Construction	Non-loadbearing	Acoustical Performance			Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<div>wt. 7</div> <div></div>	Alternate based on 2-1/2" 25 gauge steel studs and 1/2" face layer laminated	GA-WP-1051	53	NGC-2318 Based on 2" glass fiber		A-8
<div>wt. 7</div> <div></div>	<ul style="list-style-type: none">Alternate based on 2-1/2" 25 gauge steel studs and base layer of 3/8" SHEETROCK Brand Gypsum Panels	GA-WP-1053	54	CK-8104.02 Based on 2" glass fiber		A-9
<div>wt. 5</div> <div></div>	<ul style="list-style-type: none">1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels3-5/8" 25 gauge steel studs 24" o.c.3" THERMAFIBER SAFBRC-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	SA920	A-10
<div>wt. 7</div> <div></div>	<ul style="list-style-type: none">3/4" SHEETROCK Brand ULTRACODE® Core Gypsum Panels1-5/8" 25 gauge studs 24" o.c.joints finishedUL Des U451 has panels applied over RC-1 channel or equivalent one side	UL Des U496 or U451				A-11
<div>clg. wt. 5</div> <div></div>	<ul style="list-style-type: none">1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels6" 20 gauge steel studs 24" o.c.5" THERMAFIBER SAFBRC-1 chan or equiv one side spaced 24" o.c.	UL Des U419 or U451	56 56	RAL-TL-87-139 RAL-TL-84-141 Based on 5/8" thick SHEETROCK Brand FIRECODE C Core Gypsum Panels	SA920	A-12
<div>wt. 18</div> <div></div>	<ul style="list-style-type: none">1/2" DUROCK Brand Cement Board3-1/2" 20 gauge steel studs 16" o.c3" ROXUL mineral wool AFB5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, one side	U433			SA934	A-13
<div></div>	<ul style="list-style-type: none">2" solid metal lath and plaster3/4" cold rolled channel 16" o.c.2.5 lb. metal lath wire-tied to channel100:2-100:2 gypsum sand plaster	OSU-T-129	37	NBS-523 F45	SA920	A-14
<div></div>	<ul style="list-style-type: none">3/8" ROCKLATH® Brand FIRECODE Core Plaster Base2-1/2" 20 gauge steel studs 16" o.c.1" THERMAFIBER SAFB7/16" plaster base coat, 1/16" plaster finish coat	UL Des U488			SA920	A-15

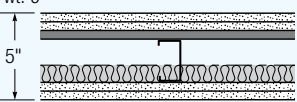

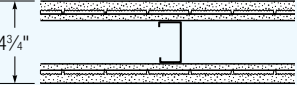

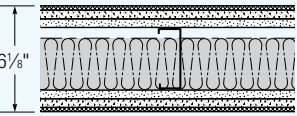
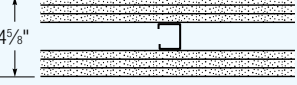
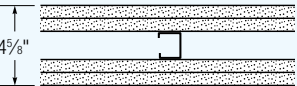
Steel Framed



1-1/2 Hour Fire-rated Construction	Non-loadbearing	Acoustical Performance			Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<div>wt. 7</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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.– 2 layers gypsum panels– face layer joints finished• optional veneer plaster	UL Des U452	58	RAL-TL-83-215	SA920	A-16
			59	RAL-TL-84-140 6" 20 ga struc studs and 5" THERMAFIBER SAFB		
2 Hour Fire-rated Construction						
<div>wt. 11</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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	SA920	A-17
			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		
<div>wt. 11</div> <div></div>	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, or FIBEROCK Brand 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 Brand FIRECODE Core Gypsum Panels	SA920	A-18
			56	USG-840818 Based on 3-5/8" studs and 3" mineral wool batt		
<div>wt. 11</div> <div></div>	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, or FIBEROCK Brand 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	SA929	A-19
			56	USG-840819 Based on 2" mineral wool batt in cavity		
<div>wt. 7</div> <div></div>	<ul style="list-style-type: none">• 3/4" SHEETROCK Brand 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-20
<div>wt. 7</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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	SA920	A-21
			60	RAL-TL-87-140 Based on 1/2" thick panels, 6" 20 gauge structural studs, 5" mineral wool batt		

Steel Framed



2 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
<div>wt. 9</div> <div></div> <div>5"</div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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, 2 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	SA920	A-22	
			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			
<div>wt. 12</div> <div></div> <div>2 1/2"</div>	<ul style="list-style-type: none">– 2-1/2" metal lath and plaster– 3/4" ch chan 16" o.c.– 3.4 lb. metal lath wire-tied to chan• 1:2-1:3 gypsum-perlite plaster	GA-WP-1930				A-23	
<div>wt. 21</div> <div></div> <div>4 3/4"</div>	<ul style="list-style-type: none">• 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			SA920	A-24	
<div>wt. 45</div> <div></div> <div>4"</div>	<ul style="list-style-type: none">• STRUCTOCORE™ 18 gauge steel panels attached to 18 gauge steel perimeter angles• 3/4" minimum coverage STRUCTO-BASE Gypsum Plaster sanded at 2:1 by weight in two coats• IMPERIAL Brand Finish Plaster applied 1/16" thick	UL Des U476			SA1119 SA920 SA929	A-25	
<div>wt. 18</div> <div></div> <div>6 1/8"</div>	<ul style="list-style-type: none">• 1/2" DUROCK Brand Cement Board and 1/4" ceramic tile• base layer 1/2" SHEETROCK Brand 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 Brand FIRECODE C Core Gypsum Panels, one side	UL Des U443	56	SA-851016 Based on alternate design	SA934	A-26	
			58	SA-851028			
3 Hour Fire-rated Construction							
<div>wt. 13</div> <div></div> <div>4 5/8"</div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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	SA920	A-27	
<div>wt. 13</div> <div></div> <div>4 5/8"</div>	<ul style="list-style-type: none">• 3/4" SHEETROCK Brand 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-28	

Steel Framed



3 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
<div>wt. 11</div> <div><div>6 5/8"</div></div>		<ul style="list-style-type: none">1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels<ul style="list-style-type: none">3-5/8" 20 gauge studs 24" o.c.3" THERMAFIBER SAFBRC-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	SA920	A-29
				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		
<div>wt. 13</div> <div><div>7 1/8"</div></div>		<ul style="list-style-type: none">1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels<ul style="list-style-type: none">3-5/8" 20 gauge studs 24" o.c.3" THERMAFIBER SAFBRC-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-30
			65	RAL-TL-87-143 6" 20 gauge structural studs, 5" THERMAFIBER SAFB			
<div>wt. 55</div> <div><div>5"</div></div>		<ul style="list-style-type: none">STRUCTOCORE 18 gauge steel panels attached to 18 gauge steel perimeter anglesSTRUCTO-BASE Gypsum Plaster sanded at 2:1 by weight in two coatsIMPERIAL Brand Finish Plaster applied 1/16" thick	UL Des U476			SA1119 SA920 SA929	A-31
4 Hour Fire-rated Construction							
<div>wt. 17</div> <div><div>5 5/8"</div></div>		<ul style="list-style-type: none">4 layers 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, each side<ul style="list-style-type: none">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	SA920	A-32
<div>wt. 13</div> <div><div>5 1/2"</div></div>		<ul style="list-style-type: none">2 layers 3/4" SHEETROCK Brand ULTRACODE Core Gypsum Panels, each side<ul style="list-style-type: none">2-1/2" 25 gauge steel studs 24" o.c.2" THERMAFIBER SAFBface layer joints finished	UL Des U419 or U490	56	SA-910907		A-33

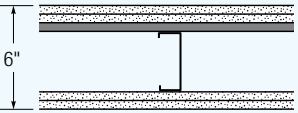
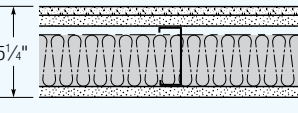
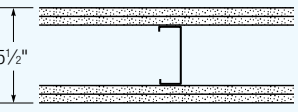
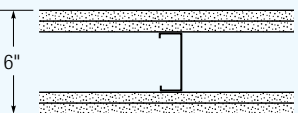
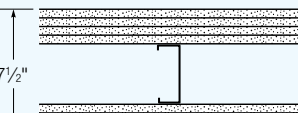
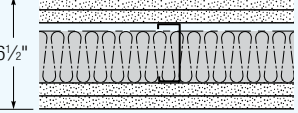
Steel Framed



1 Hour Fire-rated Construction		Chase Walls		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
wt. 6 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, each side or FIBEROCK Brand Panels – 1-5/8" 25 gauge steel studs 24" o.c. in 2 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	SA920	A-34	
2 Hour Fire-rated Construction							
wt. 12 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, each side or FIBEROCK Brand 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	RAL-TL-76-162		A-35	
			57	RAL-TL-76-156 Based on 3-1/2" insulation one side			
3 Hour Fire-rated Construction							
wt. 13 	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand 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 2 layers panels each side – 1 hr. rating applies with single layer 5/8" panels each side 	UL Des U436				A-36	
wt. 13 	<ul style="list-style-type: none"> • 3/4" SHEETROCK Brand 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-37	
45 Minute Fire-rated Construction							
wt. 5 	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels or 5/8" FIBEROCK Brand Aqua-Tough Interior Panel or 5/8" FIBEROCK Brand AR Gypsum Interior Panel – 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-38	
1 Hour Fire-rated Construction							
wt. 6 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels – 3-1/2" 20 gauge steel structural studs 24" o.c. • optional veneer plaster 	UL Des U423 or U425	40	USG-810519	SA920	A-39	
			41	USG-810518 Based on 2" mineral wool batt in cavity	SA700		

Steel Framed



1 hour Fire-rated Construction		Chase Walls		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
<div>wt. 9</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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 ga struc studs and lateral bracing	SA920	A-40	
			61	SA-830628 Based on 3-1/2" 16 ga struc studs, 5/8" thick panels, lateral bracing and 3" mineral wool batt			
<div>wt. 9</div> <div></div>	<ul style="list-style-type: none">• face layer 1/2" DUROCK Brand Cement Board• base layer 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or sheathing, or FIBEROCK Brand Panels– 3-1/2" 20 gauge struc studs 16" o.c.– 3" mineral wool batt• 5/8" SHEETROCK Brand FIRECODE Core opposite side	UL Des U473			SA934	A-41	
1-1/2 Hour Fire-rated Construction							
<div>wt. 9</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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-42	
			49	USG-810940 Based on 2" mineral wool batt and 6" 20 ga struc studs			
2 Hour Fire-rated Construction							
<div>wt. 11</div> <div></div>	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels– 3-1/2" 20 gauge steel structural studs 24" o.c.– face layer joints finished– <i>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)</i>– <i>loadbearing up to 100% allowable stud axial load (UL Des U423)</i>• Alternate based on three layers 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, each side	UL Des U423 or U425	48	USG-811006 Based on 2" SAFB in cavity		A-43	
			49	USG-810937 Based on 2" SAFB and 6" 20 gauge structural studs			
3 Hour Fire-rated Construction							
<div>wt. 17</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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 with IMPERIAL Brand FIRECODE C Core Gypsum Base, and veneer finish surface– <i>load-bearing up to 100% allowable stud axial load</i>	UL Des U426			SA920	A-44	
<div>wt. 13</div> <div></div>	<ul style="list-style-type: none">• 3/4" SHEETROCK Brand 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-45	

Wood Framed



45 Minutes Fire-rated Construction		Loadbearing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
wt. 7 	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels 2x4 wood stud 16" o.c. joints finished 	UL Des U317				A-46	
1 Hour Fire-rated Construction							
wt. 7 	<ul style="list-style-type: none"> 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base, veneer finish only (not drywall) 2x4 stud 16" o.c. joints finished 1/16" veneer finish 	U of C 10-27-64			SA920	A-47	
wt. 7 	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels 2x4 wood stud 16" or 24" o.c. joints finished optional veneer plaster 	UL Des U305, U314	34	USG-30-FT-G&H Based on 16" stud spacing and screws 6" o.c.	SA920	A-48	
			37	USG-860807 Based on 24" stud spacing			
			46	BBN-700725 Based on 24" stud spacing and 3" mineral wool batt			
wt. 8 	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels 2x4 16" o.c. base layer 1/4" SHEETROCK Brand Gypsum Panels face layer joints finished 	GA-WP-3341	45	RAL-TL-69-52		A-49	
wt. 7 	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels 2x4 wood stud 16" o.c. RC-1 or equivalent channel one side joints finished 	OSU-T-1396	41	USG-860802		A-50	
wt. 7 	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels 2x4 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-51	
wt. 7 	<ul style="list-style-type: none"> 3/8" ROCKLATH Base 2x4 wood stud 16" o.c. 1/2" 1:2 gypsum-sand plaster 	GA-WP-3430			SA920	A-52	

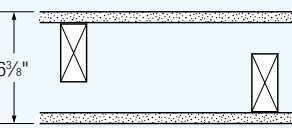
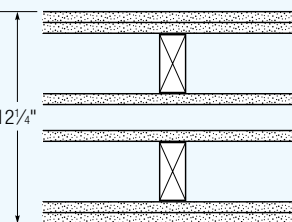
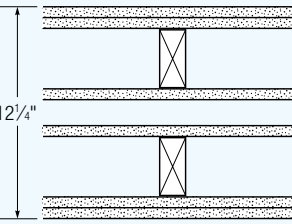
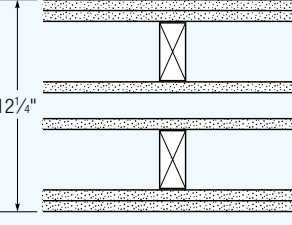
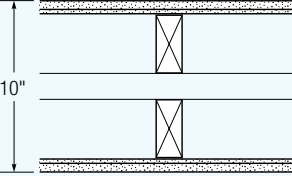
Wood Framed



1 Hour Fire-rated Construction		Loadbearing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
 5"	<ul style="list-style-type: none">• 1/2" DUROCK Brand Cement Board and 1/4" ceramic tile– 2x4 wood studs 16" o.c.– 3-1/2" THERMAFIBER SAFB– joints taped• alternate design 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, one side	UL Des U329	37	USG-840404		A-53	
			40	USG-840314 Based on alternate design			
 5 7/8"	<ul style="list-style-type: none">• 1/2" DUROCK Brand Cement Board– base layer 15/32" plywood– 2 x 4 wood studs 16" o.c.– 3" THERMAFIBER SAFB– joints taped and treated• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, other side	UL Des U303			SA934	A-54	
 5 3/8"	<ul style="list-style-type: none">• 5/8" IMPERIAL Brand 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	SA-830702		A-55	
			49	CK-664-4 Based on 1/2" gypsum base			
2 Hour Fire-rated Construction							
wt. 12 6"	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or SHEETROCK Brand Water-Resistant FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels– 2x4 wood studs 16" o.c.– joints finished• optional veneer plaster	UL Des U301	52	USG-810218 Based on same assembly (non-fire rated) with RC-1 channel and without mineral wool batt	SA920	A-56	
			58	USG-810219 Based on same assembly with RC-1 channel and 2" mineral wool batt			
wt. 13 6 1/2"	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 2x4 wood studs 16" o.c.– 2" THERMAFIBER SAFB– RC-1 channel or equivalent one side– joints finished	UL Des U334				A-57	

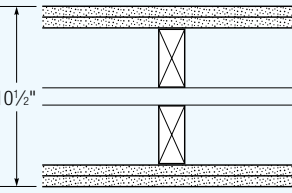
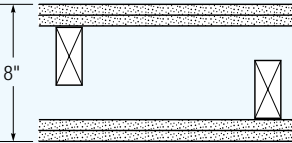
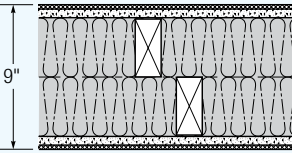
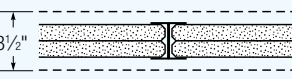
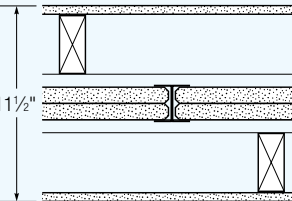
Wood Framed



1 Hour Fire-rated Construction		Chase Walls		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 2x4 staggered wood stud 24" o.c. on 2x6 common plate– joints finished• optional veneer plaster	UL Des U340			SA920	A-58
		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBROCK Brand Panels, outside• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or FIBROCK Brand Panels– 2x4 wood studs 24" o.c.	UL Des U342				A-59
		<ul style="list-style-type: none">• Alternate based on 1/2" SHEETROCK Brand 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-60
		<ul style="list-style-type: none">• Alternate based on 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, outside both walls double layers <i>only</i>	GA-WP-3812	57	TL-73-224 3-1/2" glass fiber		A-61
		<ul style="list-style-type: none">• base layer 1/4" SHEETROCK Brand Gypsum Panels• face layer 1/2" SHEETROCK Brand FIRECODE Core Gypsum Panels, laminated to base layer– 2x4 wood studs 16" o.c.	GA-WP-5510				A-62

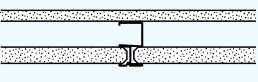
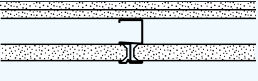

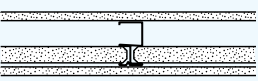
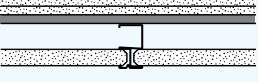
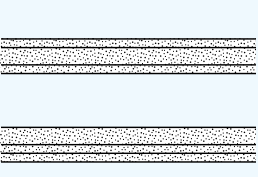
Wood Framed



2 Hour Fire-rated Construction		Chase Walls		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, or FIBEROCK Brand Panels– 2 rows 2x4 wood studs 16" o.c. on separate plates 1" apart– joints finished	GA-WP-3820	51	RAL-TL-69-214		A-63	
			56	USG-710120 Based on 3-1/2" thick insulation in one cavity			
			58	GA-NGC-3056			
	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels or FIBEROCK Brand Panels– 2x4 wood studs 16" o.c. on 2x6 common plate– joints finished	GA-WP-3910	47	RAL-TL-69-211		A-64	
			51	GA-NGC-2377			
	<ul style="list-style-type: none">• 1/2" DUROCK Brand Cement Board and 1/4" ceramic tile– 2 rows 2x4 16" o.c. on 2x8 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	SA934	A-65	
	<ul style="list-style-type: none">• 1" SHEETROCK Brand Gypsum Liner Panels• 2" USG H-Studs 24" o.c.– minimum 3/4" air space both sides separating liner panels from adjacent construction	UL Des U336			SA925	A-66	
	<p>Separation wall (non-loadbearing)</p> <ul style="list-style-type: none">• 1" SHEETROCK Brand 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 Brand Gypsum Panels	UL Des U336	46	RAL-TL-88-353	SA925	A-67	
			54	RAL-TL-88-348 Based on 2" mineral wool batt on one side			
			57	RAL-TL-88-351 Based on 2x4s and 3" mineral wool batt one side			
			58	RAL-TL-88-347 Based on 2x4s and 2" mineral wool batt on both sides			
			60	RAL-TL-88-350 Based on 2x4s and 3" mineral wool batt on both sides			
Note These systems do not provide a fire rating for adjacent wood- or steel-framed walls.							

Shaft Wall Systems



1 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
<div>wt. 8</div> <div></div>		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand Gypsum FIRECODE Core Panels, joints finished• 2-1/2" USG C-H Studs 25 gauge 24" o.c.• 1" SHEETROCK Brand Gypsum Liner Panels	UL Des U415, System A or U469	39	USG-040901 Based on 4" C-H studs 25 gauge	SA926	A-68
2 Hour Fire-rated Construction							
<div>wt. 9</div> <div></div>		<ul style="list-style-type: none">• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, face layer joints finished• 2-1/2" USG C-H Studs 25 gauge 24" o.c.• 1" SHEETROCK Brand Gypsum Liner Panels	UL Des U415, System B or U438	38 43 48 50	USG-040917 USG-040912 Based on 4" C-H studs 25 gauge RAL-OT-04-022 Based on 1" sound batts in cavity RAL-OT-04-019 Based on 4" C-H studs 25 gauge with 3" mineral fiber insulation	SA926	A-69
<div>wt. 8</div> <div></div>		<ul style="list-style-type: none">• 3/4" SHEETROCK Brand ULTRACODE Core Gypsum Panels, joints finished• 4" USG C-H Studs 25 gauge 24" o.c.– 3" THERMAFIBER SAFB• 1" SHEETROCK Brand Gypsum Liner Panels	UL Des U415, System C	51	RAL-OT-04-020 Based on 4" C-H studs with 3" THERMAFIBER SAFB insulation	SA926	A-70
<div>wt. 9</div> <div></div>		<ul style="list-style-type: none">• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels• 2-1/2" USG C-H Studs 25 gauge 24" o.c.• 1" SHEETROCK Brand 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	SA926	A-71
<div>wt. 10</div> <div></div>		<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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 Brand Gypsum Liner Panels	UL Des U415, System F	53 58	USG-040909 Based on 4" C-H studs 25 gauge with 3" mineral fiber insulation USG-040910 Based on 4" C-H studs 25 gauge with additional layer on liner panel side and 3" mineral fiber insulation	SA926	A-72
<div>wt. 8</div> <div></div>		<ul style="list-style-type: none">– 1" x 2" perimeter angles 25 gauge• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, fastened to angles• 1" SHEETROCK Brand Gypsum Liner Panel• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, joints finished	UL Des U529			SA926	A-73

Shaft Wall Systems



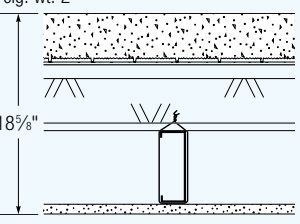
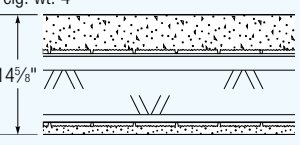
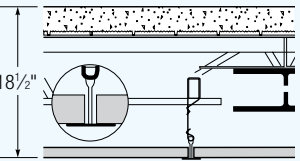
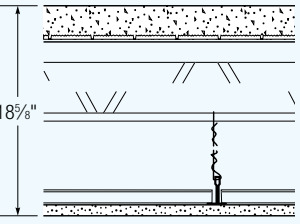
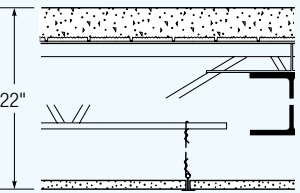
2 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, face layer joints finished • 4" USG C-H Studs 20 gauge 24" o.c. run horizontally and attached to vertical USG J-Runners, 20 gauge • 1" SHEETROCK Brand Gypsum Liner Panels 	UL Des U437			SA926	A-74	
3 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" SHEETROCK Brand Gypsum Liner Panels 	UL Des U415, System G	45	USG-040903 Based on 4" C-H Studs 25 gauge	SA926	A-75	
			51	RAL-0T04-018 Based on 4" C-H Studs with 3" mineral fiber insulation			
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" SHEETROCK Brand Gypsum Liner Panels • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, joints finished 	UL Des U415, System H	49	USG-040902 Based on 4" C-H Studs	SA926	A-76	
4 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 3/4" SHEETROCK Brand ULTRACODE Core Gypsum Panels, on furring channel 24" o.c., over 2 layers • 3/4" SHEETROCK Brand ULTRACODE Core Gypsum Panels, face layer joints finished • 2-1/2" USG C-H Studs 25 gauge 24" o.c. • 1" SHEETROCK Brand Gypsum Liner Panels – base layer over furring channel applied vertically 	UL Des U415, System I			SA926	A-77	
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels – concrete block (UL Classified) – 7/8" deep met fur chan 24" o.c. – joints finished • optional veneer finish 	UL Des U914			SA920	A-78	
4 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels – concrete block (UL Classified) – 7/8" deep metal fur channel 24" o.c. – joints finished • optional veneer finish 	UL Des U910			SA920	A-79	
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

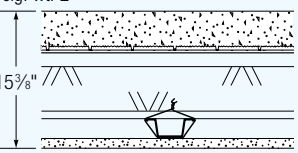
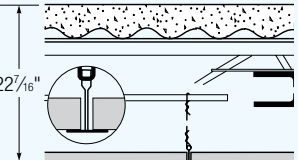
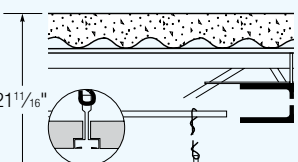
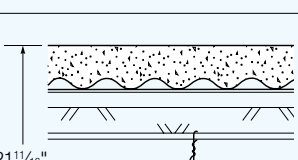
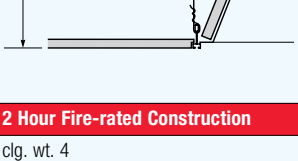
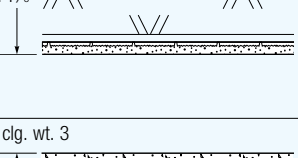
Steel Framed



1 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
		<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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
		<ul style="list-style-type: none">• 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			SA920	B-2
		<ul style="list-style-type: none">• 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 Syst– light fixture and speakers optional– 2" concrete on riblath over bar joists	UL Des G201			SC2000	B-3
1-1/2 Hour Fire-rated Construction							
		<ul style="list-style-type: none">• USG DGL Drywall Suspension System• 1/2" or 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– joints finished– 2-1/2" concrete on riblath over bar joist	UL Des G528			SC2000	B-4
		<ul style="list-style-type: none">• 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			SC2000	B-5

Steel Framed



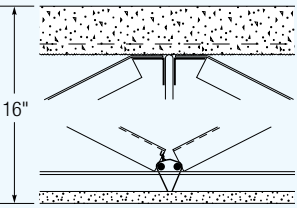
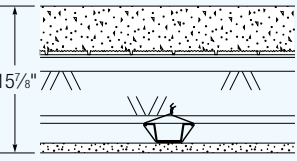
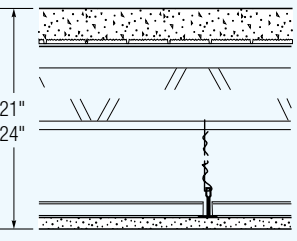
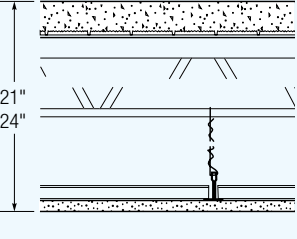
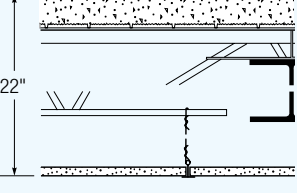
1-1/2 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
<div>clg. wt. 2</div> <div></div>	<ul style="list-style-type: none">• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels– metal furring channel 24" o.c.– joints finished– 2" concrete on riblath or steel deck over joist	UL Des G502				B-6	
<div></div>	<ul style="list-style-type: none">• 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-hr. in DXLT, DXLTA, DXLTZ and DXLTZA steel framing members only	SC2000	B-7	
<div></div>	<ul style="list-style-type: none">• 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-hr. 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-hr.	SC2000	B-8	
<div></div>	<ul style="list-style-type: none">• 5/8" or 3/4" FR-83 or 3/4" AP-3 or FR-X1 acoust 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			SC2000	B-9	
2 Hour Fire-rated Construction							
<div>clg. wt. 4</div> <div></div>	<ul style="list-style-type: none">• 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			SA920	B-10	
<div>clg. wt. 3</div> <div></div>	<ul style="list-style-type: none">• 1/2" or 5/8" SHEETROCK Brand 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	SA920	B-11	

B

Floor/Ceilings

Steel Framed

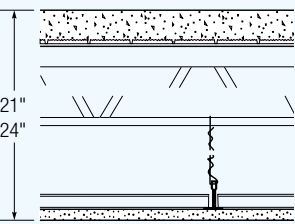
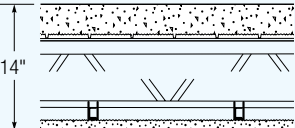
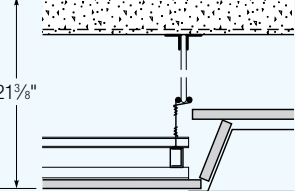
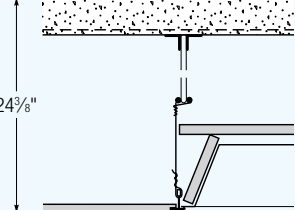
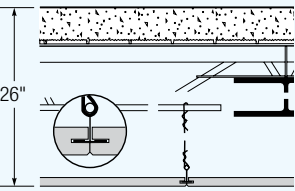


2 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
 <p>clg. wt. 2 16"</p>		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels– steel bar joists 24" o.c.– metal furring channel, 12" o.c.	UL Des G503	53	NGC-4075		B-12
 <p>15 7/8"</p>		<ul style="list-style-type: none">• 1/2" SHEETROCK Brand 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
 <p>21" 24"</p>		<ul style="list-style-type: none">• 1/2" or 5/8" SHEETROCK Brand Gypsum Panels, FIRECODE C Core• USG DGL Drywall Suspension System– joints finished– 2-1/2" concrete on riblath or steel deck– steel bar joists, 24" o.c.– 3 hr. rating with 5/8" panels and 3" thick concrete• optional veneer plaster	UL Des G523			SC2000	B-14
 <p>21" 24"</p>		<ul style="list-style-type: none">• USG DGL Drywall Suspension System• 1/2" or 5/8" SHEETROCK Brand 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			SC2000	B-15
 <p>clg. wt. 2 22"</p>		<ul style="list-style-type: none">• 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			SC2000	B-16

B Floor/Ceilings

Steel Framed



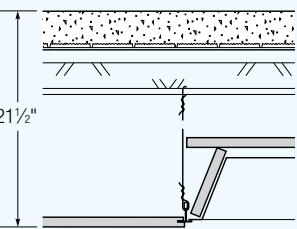
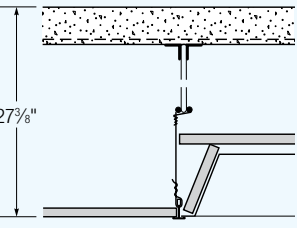
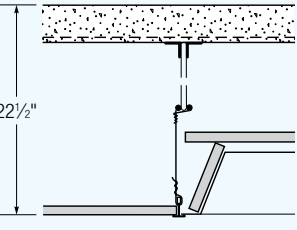
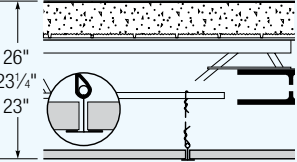
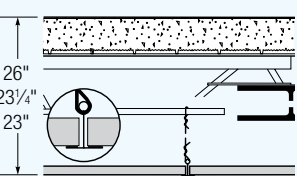
2 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panel• DGLW Drywall Suspension System<ul style="list-style-type: none">– 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	
	<ul style="list-style-type: none">– 3.4# 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			SA920	B-18	
	<ul style="list-style-type: none">• 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			SC2000	B-19	
	<ul style="list-style-type: none">• 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			SC2000	B-20	
	<ul style="list-style-type: none">• 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			SC2000	B-21	

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.	ARL	Index	
	<ul style="list-style-type: none">• 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			SC2000	B-22	
	<ul style="list-style-type: none">• 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			SC2000	B-23	
	<ul style="list-style-type: none">• 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 Syst may be used instead, but fire rating is limited to 1-1/2-hr.	SC2000	B-24	
	<ul style="list-style-type: none">• 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			SC2000	B-25	
	<ul style="list-style-type: none">• 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			SC2000	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	ARL	Index
<p>21 3/8"</p>	<ul style="list-style-type: none">• 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<ul style="list-style-type: none">– 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-hr.	SC2000	B-27	
<p>22 1/2"</p>	<ul style="list-style-type: none">• 3/4" AP or AP-3 acoustical ceiling panels• DXL, DXLZ or SDXL Susp Exp Grid System<ul style="list-style-type: none">– light fixture and air duct optional– 2-1/2" concrete deck on riblath– steel bar joists, 24" o.c.	UL Des G228			SC2000	B-28	
<p>21 3/8"</p>	<ul style="list-style-type: none">• 1/2" LEVELROCK Brand Floor Underlayment<ul style="list-style-type: none">– 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<ul style="list-style-type: none">– 2" T&G building units– steel bar joists, 4' o.c.– W8x31 beam	UL Des G230			SC2000 SA305	B-29	
<p>26"</p> <p>23 3/4"</p> <p>23"</p>	<ul style="list-style-type: none">• 3/4" FR-83 acoustical ceiling panels• DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA Susp Exp Grid System<ul style="list-style-type: none">– light fixture and air duct optional– 2-1/2" concrete deck on riblath– steel bar joists, 24" o.c.	UL Des G231			SC2000	B-30	
<p>20 1/2"</p>	<ul style="list-style-type: none">• 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<ul style="list-style-type: none">– 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

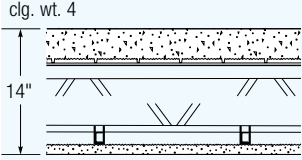
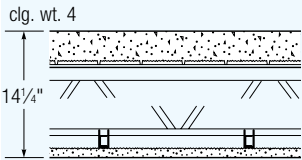
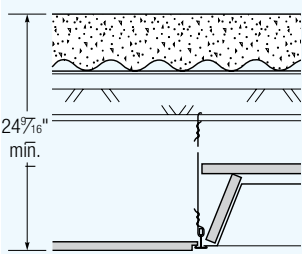
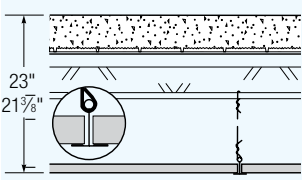
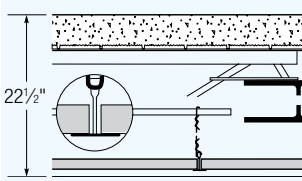
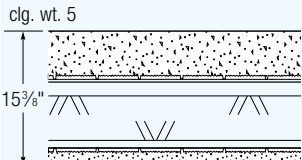


2 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none"> • 3/4" FR-83 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck on riblath – steel bar joists 	UL Des G252				B-32	
	<ul style="list-style-type: none"> • 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			SC2000	B-33	
	<ul style="list-style-type: none"> • 1/2" LEVELROCK Brand Floor Underlayment – 2" deep T&G building units – W8x20 steel beam – steel bar joists, 4" o.c. • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels 	UL Des G516			SA305	B-34	
2-1/2 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> – 3.4# 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			SA920	B-35	
3 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – metal fur 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			SA920	B-36	
	<ul style="list-style-type: none"> • USG DGL Drywall Suspension System • 1/2" or 5/8" SHEETROCK Brand 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			SC2000	B-37	

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	ARL	Index	
 <p>clg. wt. 4 14"</p>	<ul style="list-style-type: none"> 3/4" cold rolled channel furred or suspended 3.4# 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			SA920	B-38	
 <p>clg. wt. 4 14 1/4"</p>	<ul style="list-style-type: none"> 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			SA920	B-39	
 <p>24 7/8" min.</p>	<ul style="list-style-type: none"> 5/8" or 3/4" FR-83, FR-2 or FR-X1; or 1/2" or 5/8" FR-4; or 1/2" FC-CB; or Astro-FR acoustical ceiling panels DXL, DXLA, DXLT, DXLTA, DXLTZ, DXLTZA, DXLZ, DXLZA, SDXL or SDXLA Susp Exp Grid System light fixture and air duct optional 3-1/2" concrete deck on riblath steel bar joists, 4' o.c. 	UL Des G205		DXLA, DXLZA, or SDXLA Susp Exp Grid Syst may be used instead, but fire rating is limited to 2-hr.; DXLT, DXLTA, DXLTZ or DXLTZA Susp Exp Grid Syst may be also used, but fire rating is limited to 1-1/2-hr.; 1/2" FC-CB gypsum panels may be used as a ceiling panel for fire ratings of 1 or 1-1/2-hr. When the FR-2 ceiling panels are used, the fire rating is limited to 2-hr.	SC2000	B-40	
 <p>23" 21 3/8"</p>	<ul style="list-style-type: none"> 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-hr.; 1/2" on riblath steel bar joists, 24" o.c. 	UL Des G211		DXLA, DXLZA, SDXLA, or ZXLA Susp Exp Grid Syst may be used instead, but fire rating is limited to 2-hr.; 1/2" FC-CB gypsum panels may be used as a ceiling panel for fire rating of 1-hr. When FR-2 ceiling panels are used, the fire rating is limited to 2-hr.	SC2000	B-41	
 <p>22 1/2"</p>	<ul style="list-style-type: none"> 5/8" FR-81; 5/8" or 3/4" FR-83 or FR-2; 3/4" FR-X1; or 1/2" FC-CB; or 5/8" FR-4; or 3/4" Astro-FR acoustical ceiling panels DXL, DXLZ or SDXL Susp Exp Grid System light fixture and air duct optional 3-1/2" concrete deck on riblath or steel deck (increase concrete 1/2") steel bar joists, 24" o.c. 	UL Des G213		When FR-4, FR-2 or M clg panels are used, the fire rating is limited to 2-hr.; 1/2" FC-CB gypsum panels may be used as a ceiling panel for fire ratings of 1- or 1-1/2-hr.	SC2000	B-42	
4 Hour Fire-rated Construction							
 <p>clg. wt. 5 15 3/8"</p>	<ul style="list-style-type: none"> 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			SA920	B-43	

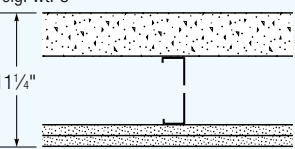
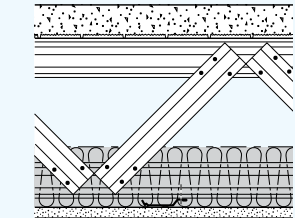
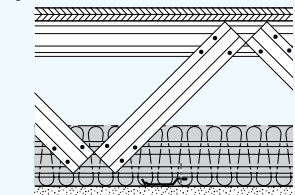
Steel Framed



1 Hour Fire-rated Construction		Steel C-joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	IIC	Test Number	ARL	Index
	<ul style="list-style-type: none"> • 2 layers 1/2" SHEETROCK Brand 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		
	<ul style="list-style-type: none"> – 15/32" wood subfloor – 7" 18 gauge steel joist, 24" o.c. • 2 layers 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panel • 3/4" LEVELROCK Brand Floor Underlayment • optional SRM-25 or SRB sound mat • USG DGL Drywall Suspension System 	UL Des L524				SA305	B-45
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – 7-1/2" 18 gauge steel joists 24" o.c. – 2-1/2" concrete floor on corrugated steel deck – joints finished 	Estimated fire rating based on witnessed laboratory test	45		KAL-443536 Based on RC-1 channel or equivalent 24" o.c.		B-46
				70	KAL-443535 Based on carpet and pad		
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand 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							
	<ul style="list-style-type: none"> • 2 layers 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – 3/4" T&G plywood floor – 9-3/8" 16 gauge steel joists 24" o.c. – RC-1 channel or equivalent – joints finished 	UL Des L527	48		USG-771101		B-48
			51		SA-781110 Based on carpet and pad		

Steel Framed



2 Hour Fire-rated Construction		Steel C-Joist Framing		Acoustical Performance			Reference	
Construction Detail		Description	Test Number	STC	IIC	Test Number	ARL	Index
<div>clg. wt. 5</div> <div></div>		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 7-1/2" 18 gauge steel joists 24" o.c.– 2-1/2" concrete floor over corrugated steel deck– joints finished	Estimated fire rating based on witnessed laboratory test	44		KAL-443533		B-49
					73	KAL-443680 Based on carpet and pad		
				47		KAL-443534 Based on RC-1 resilient channel or equivalent 24" o.c.		
1 Hour Fire-rated Construction		Steel Truss						
<div>clg. wt. 3</div> <div></div>		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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
<div>clg. wt. 3</div> <div></div>		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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	ARL	Index
clg. wt. 3 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, ceiling – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – joints finished • optional LEVELROCK Brand 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	SA305 SA920	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 	<ul style="list-style-type: none"> • 1/2" or 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, ceiling – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – joints finished • optional 3/4" LEVELROCK Brand Floor Underlayment • optional SRM-25 or SRB sound mat • optional veneer plaster 	UL Des L512				SA305 SA920	B-53
clg. wt. 3 	<ul style="list-style-type: none"> • 1/2" or 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – RC-1 channel or equivalent spaced 24" o.c. – joints finished • optional veneer plaster 	UL Des L514				SA920	B-54
clg. wt. 3 	<ul style="list-style-type: none"> • 1/2" or 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – 1-1/4" nominal wood sub and finished floor – 44 oz carpet and 40 oz pad atop flr – 2x10 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 Brand FIRECODE C Core Gypsum Panels		B-55
			48	66	CK-6412-9 Based on 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels		
clg. wt. 3 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – 1-5/8" perlite-sand concrete – plywood subfloor – 2x10 wood joists 16" o.c. – RC-1 channel or equivalent – joints finished • optional veneer plaster 	UL Des L516	59		USG 740704 Based 3" mineral wool batt, 3/4" gypsum concrete and 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels	SA920	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		

B

Floor/Ceilings

Wood Framed



1 Hour Fire-rated Construction		Dimensional Lumber		Acoustical Performance		Reference	
Construction Detail		Description	Test Number	STC	Test Number	ARL	Index
<p>clg. wt. 5</p> <p>11"</p>		<ul style="list-style-type: none">• two layers 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels,– 2x10 wood joists 24" o.c.– face layer joints finished– Floor: 1/2" plywood with extending glue <p><i>Also for roof-ceilings, including trusses</i></p>	GA-FC-5406 and RC-2601				B-57
<p>clg. wt. 3</p>		<ul style="list-style-type: none">• 1/2" or 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, ceiling– 1" nominal wood sub and finished floor– 2x10 wood joist 16" o.c.• USG DGL Drywall Suspension System– joints finished• optional LEVELROCK Brand Floor Underlayment in lieu of second layer of plywood• optional SRM-25 or SRB sound mat	UL Des L525			SC2000 SA305	B-58
<p>20 1/4"</p>		<ul style="list-style-type: none">• 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– 2x10 wood joists 16" o.c.	UL Des L006			SC2000	B-59
<p>22 5/8"</p> <p>21 3/8"</p>		<ul style="list-style-type: none">• 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			SC2000	B-60
<p></p>		<ul style="list-style-type: none">• 3/4" LEVELROCK Brand 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– 2x10 wood joist 16" o.c.	UL Des L206			SC2000 SA305	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	ARL	Index
	<ul style="list-style-type: none"> • 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 – 2x10 wood joists 16" o.c. 	UL Des L212				SC2000	B-62
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels – joints finished – damper optional – 19/32" T&G wood subfloor – 2x10 wood joist 16" o.c. • optional SRM-25 sound mat 3/4" LEVELROCK Brand Floor Underlayment 	UL Des L501				SA305	B-63
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels – 2x10" 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 Brand Floor Underlayment 	UL Des L502, L514				SA305	B-64
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panel • 3/4" LEVELROCK Brand 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				SA305	B-65
	<ul style="list-style-type: none"> • 1/2" or 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panel joints finished – 9" "1" wood joist 24" o.c. – 26 gauge metal furring channel – Nom 1" thick THERMAFIBER SAFB – 23/32" T&G wood subfloor • optional SRM-25 or SRB sound mat • 3/4" minimum LEVELROCK Brand Floor Underlayment 	UL Des L531				SA305	B-66

B Floor/Ceilings

Wood Framed



1 Hour Fire-rated Construction		Dimensional Lumber		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
<p>clg. wt. 4</p> <p>13 1/2"</p>	<ul style="list-style-type: none">• 2 layers 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 1" nominal wood sub and finished floor– 2x10 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.	SA920	B-67	
<p>clg. wt. 4</p> <p>11 1/4"</p>	<ul style="list-style-type: none">• 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– 2x10 wood joists 16" o.c.• optional veneer plaster	GA-FC-5470			SA920	B-68	
<p>clg. wt. 4</p> <p>11 1/4"</p>	<ul style="list-style-type: none">• 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– 2x10 joists 16" o.c.	GA-FC-5490			SA920	B-69	
<p>clg. wt. 4</p> <p>11 1/4"</p>	<ul style="list-style-type: none">• 5/8" 1:2-1:3 sanded Red Top Gypsum Plaster over 3.4# diamond lath– 1" nominal T&G sub and finish floor– 2"x10" wood joists 16" o.c.	GA-FC-5510			SA920	B-70	

B

Floor/Ceilings

Wood Framed

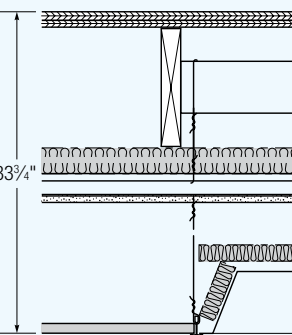
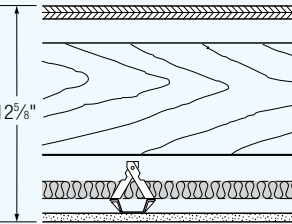
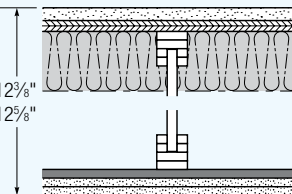


2 Hour Fire-rated Construction		Dimensional Lumber		Acoustical Performance			Reference	
Construction Detail	Description	Test Number	STC	IIC	Test Number	ARL	Index	
 clg. wt. 5 13 3/4"	<ul style="list-style-type: none">• 2 layers 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 1" nominal wood sub and finished floor– 2x10 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-71	
 13 3/4"	<ul style="list-style-type: none">• 2 layers 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 8" x 8" ceramic tile• 1/2" DUROCK Brand Exterior Cement Board• 1" SHEETROCK Brand Gypsum Liner Panels– 1/2" plywood– 2x10 wood joist 16" o.c.– 3" mineral wool batt– RC-1 channel or equivalent	UL Des L541		52	RAL-IN-89-5	SA934	B-72	
			58	RAL-TL-89-145	Based on vinyl tile over oriented board in place of ceramic tile and cement board			
			51	RAL-IN-89-7				
			59	RAL-TL-89-146	Based on carpet/pad over oriented strand board in place of ceramic tile and cement board			
			60	RAL-TL-89-141				
			62	RAL-IN-89-8				
 13"	<ul style="list-style-type: none">• 2 layers 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 2x10 wood joists 16" o.c.– 3" mineral wool batt– RC-1 channel or equivalent	UL Des L541	59		RAL-TL-90-40		B-73	
			69	RAL-IN-90-5				
			59	RAL-TL-90-40	Based on vinyl tile in place of carpet/pad			
			37	RAL-IN-90-6				
 13"	<ul style="list-style-type: none">• 2 layers 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panel• optional SRM-25 or SRB sound mat– 19/32" wood subfloor– 2x10 wood joist spaced 16" o.c.– 3" THERMAFIBER SAFB– RC-1 channel or equivalent• 1-1/2" LEVELROCK Brand Floor Underlayment	UL Des L541	66	59	RAL-020602	SA305	B-74	
			67	52	RAL-020503	LEVELROCK and SRB – no flooring		
			67	53	RAL-020701	LEVELROCK, SRB and ceramic tile		
 12 1/4"	<ul style="list-style-type: none">• 2 layer 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels– 15/32" T&G wood subfloor– 2x10 wood joist– RC-1 or equivalent– joints finished• optional 3/4" LEVELROCK Brand Floor Underlayment• optional SRM-25 or SRB sound mat	UL Des L511				SA305	B-75	

B Floor/Ceilings

Wood Framed



2 Hour Fire-rated Construction		Dimensional Lumber		Acoustical Performance			Reference	
Construction Detail		Description	Test Number	STC	IIC	Test Number	ARL	Index
		<ul style="list-style-type: none">• 5/8" FR-4; or 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoust ceiling panels• DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXL Susp Exp Grid System<ul style="list-style-type: none">– light fixture and air duct optional• USG DGL Drywall Suspension System• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels<ul style="list-style-type: none">– 1" nominal wood subfloor	UL Des L211				SC2000	B-76
1 Hour Fire-rated Construction		Engineered Joist						
<p>clg. wt. 3</p> 		<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, ceiling<ul style="list-style-type: none">– 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 Brand 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	SA305	B-77
		<ul style="list-style-type: none">• 2 layers 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels• optional SRM-25 or SRB sound mat<ul style="list-style-type: none">– 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 Brand Floor Underlayment	UL Des L570	64	58	RAL-OT03-05/06 1" LEVELROCK, vinyl, SRM-25, 3-1/2" insulation	SA305	B-78
				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	ARL	Index	
clg. wt. 5 	<ul style="list-style-type: none"> • 2 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 Brand Floor Underlayment 	UL Des L544			SA305	B-79	
2 Hour Fire-rated Construction clg. wt. 8 	<ul style="list-style-type: none"> • base layer: 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – RC-1 channel or equivalent • Double face layer: 5/8" SHEETROCK Brand 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 Brand Floor Underlayment • optional veneer plaster 	UL Des L538			SA920	B-80	
1 Hour Fire-rated Construction clg. wt. 3 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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 Brand 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			SA305	B-81	
clg. wt. 5 	<ul style="list-style-type: none"> • 2 layers 1/2" SHEETROCK Brand 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			SA920	B-82	
clg. wt. 3 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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 <p><i>RC-1 Resilient Channel or equivalent may be used in place of metal furring channel</i></p>	UL Des L528			SA920	B-83	

B

Floor/Ceilings

Wood Framed



1 Hour Fire-rated Construction		Truss		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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 Brand Floor Underlayment • optional veneer plaster 	UL Des L529			SC2000 SA920	B-84	
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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 Brand Floor Underlayment 	UL Des L528			SA305	B-85	
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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 Brand Floor Underlayment 	UL Des L555			SA305	B-86	

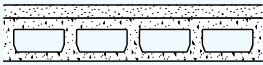
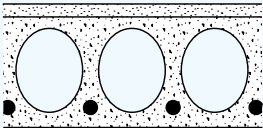
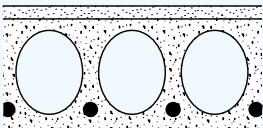
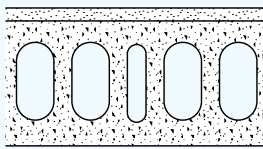
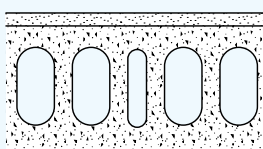
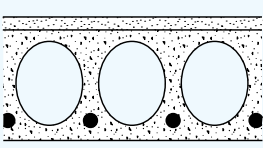
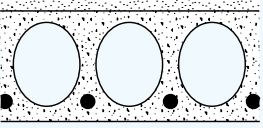
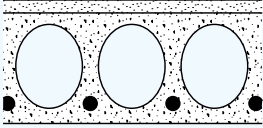
Structural Concrete



1-1/2 Hour Fire-rated Construction		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL Index
	<ul style="list-style-type: none"> • 5/8" FR-4, M or FR-81; 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoust 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-87
2 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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			SA305 B-88
	<ul style="list-style-type: none"> • 1/2" LEVELROCK Brand Floor Underlayment • optional SRM-25 or SRB sound mat – 8" minimum thick normal weight precast concrete units 	UL Des J991			SA305 B-89
	<ul style="list-style-type: none"> • 1/2" LEVELROCK Brand Floor Underlayment – 8" minimum thick light weight precast concrete units 	UL Des J994			SA305 B-90
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels – metal furring channel 24" o.c. – joints finished – joist leg 10" deep 	GA-FC-2120			SA305 B-91
	<ul style="list-style-type: none"> • 3/4" FR-83 acoust ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – light fixture and air duct optional – 2-1/2" concrete deck deck on fluted or cellular steel floor 	UL Des D215			SC2000 B-92

Structural Concrete



2 Hour Fire-rated Construction			Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
	<ul style="list-style-type: none"> • 1" LEVELROCK Brand 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			SA305	B-93
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand 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			SA305	B-94
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand Floor Underlayment – precast concrete units 	UL Des J920			SA305	B-95
	<ul style="list-style-type: none"> • 1" LEVELROCK Brand 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			SA305	B-96
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand 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			SA305	B-97
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand 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			SA305	B-98
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand 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			SA305	B-99
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand 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			SA305	B-100

B

Floor/Ceilings

Structural Concrete



2 Hour Fire-rated Construction			Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
	<ul style="list-style-type: none"> • 3/4" LEVELROCK Brand 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			SA305	B-101
3 Hour Fire-rated Construction						
clg. wt. 3 	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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-102
	<ul style="list-style-type: none"> • 5/8" or 3/4" FR-83 acoustical ceiling panels • DXLP (with Types PSS, PSSP, PSR & 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			SC2000	B-103
	<ul style="list-style-type: none"> • 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-hr.; DXLT or DXLTZ Susp Exp Grid System may be also used, but fire rating is limited to 1-1/2-hr.	SC2000	B-104
	<ul style="list-style-type: none"> • 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 hr.	SC2000	B-105
	<ul style="list-style-type: none"> • 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-106

C

Roof/Ceilings

Steel Framed



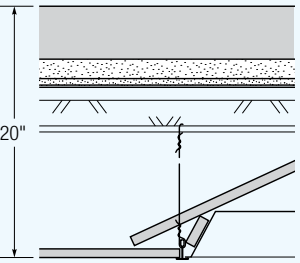
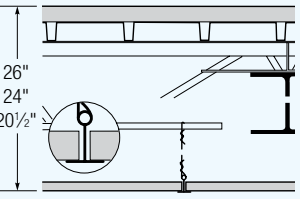
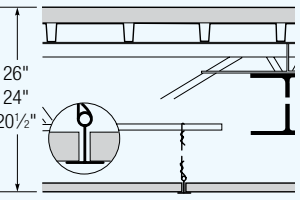
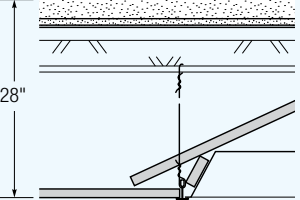
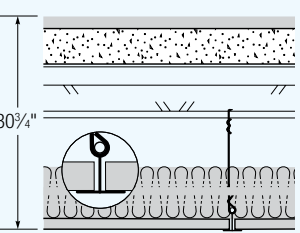
3/4 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
<p>22 1/4"</p>	<ul style="list-style-type: none"> • 5/8" M; 5/8" or 3/4" FR-83 or FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ 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			SC2000	C-1	
1 Hour Fire-rated Construction							
<p>21 5/8"</p> <p>21 3/4"</p>	<ul style="list-style-type: none"> • 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			SC2000	C-2	
<p>22"</p> <p>22 5/8"</p>	<ul style="list-style-type: none"> • 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			SC2000	C-3	
<p>26"</p> <p>24"</p> <p>20 1/2"</p>	<ul style="list-style-type: none"> • 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			SC2000	C-4	
<p>23 1/2"</p>	<ul style="list-style-type: none"> • 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid Syst – 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	ARL	Index
	<ul style="list-style-type: none">• 3/4" FR-83 or FR-X1 acoustical ceiling panels• DXL, DXLZ or SDXL Susp Exp Grid Syst<ul style="list-style-type: none">– 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
	<ul style="list-style-type: none">• 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<ul style="list-style-type: none">– light fixture, air duct and speakers optional• 1-1/2" steel roof deck and 1/2" SHEETROCK Brand Gypsum Panels and insulation– steel bar joists	UL Des P235				SC2000	C-7
	<ul style="list-style-type: none">• 5/8" FR-4 acoustical ceiling panels• DXL, DXLZ or SDXL Susp Exp Grid System<ul style="list-style-type: none">– 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				SC2000	C-8
	<ul style="list-style-type: none">• 5/8" FR-4 acoustical ceiling panels• DXL, DXLZ or SDXL Susp Exp Grid System<ul style="list-style-type: none">– 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
	<ul style="list-style-type: none">• 5/8" FR-4 acoust ceiling panels• DXL, DXLZ or SDXL Susp Exp Grid Syst<ul style="list-style-type: none">– 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				SC2000	C-10

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	ARL	Index	
	<ul style="list-style-type: none"> • 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 Brand Gypsum Panels and insulation – steel bar joists 	UL Des P254			SC2000	C-11	
	<ul style="list-style-type: none"> • 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			SC2000	C-12	
	<ul style="list-style-type: none"> • 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			SC2000	C-13	
	<ul style="list-style-type: none"> • 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			SC2000	C-14	
1-1/2 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • USG DGL Drywall Suspension System • 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels – joints finished – min 1" roof insul and 5/8" gypsum board on steel deck • 1 hr. rating based on assembly with 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels – steel bar joists • optional veneer plaster 	UL Des P510			SA920	C-15	

Steel Framed

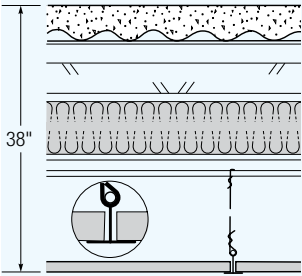
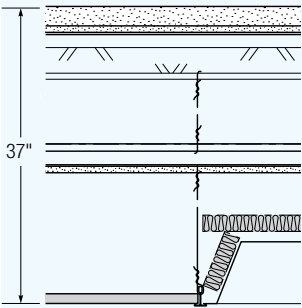
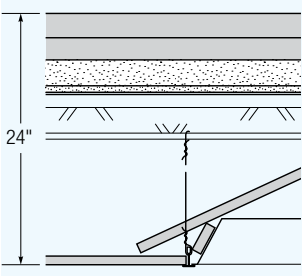
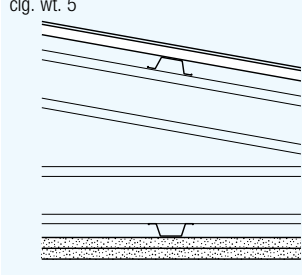


1-1/2 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none"> • 5/8" or 3/4" FR-83 or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLZ or SDXL Susp Exp Grid System – 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	
	<ul style="list-style-type: none"> • 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-hr. rating) acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA, ZOLA, DXLT, DXLTZ or DXLP (with Types PAR, PARP, PAS, PASP, PSR, PSRP, PSS and PSSP metal ceiling panels) • USG DGL Drywall Suspension System – light fixture, air duct and speakers optional • 1-1/2" steel roof deck and 5/8" SHEETROCK Brand 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 hr. When the FR-2 ceiling panels are used the fire rating is limited to 1-hr.	SC2000	C-17	
2 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 3/4" FR-83 or FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA, ZOLA, DXLT, DXLTZ or DXLP (with Types PAR, PARP, PAS, PASP, PSR, PSRP, PSS and PSSP metal ceiling panels) – light fixt, air duct and speakers optional – 2" precast concrete units and 3/4" noncombustible insulation – steel bar joists 	UL Des P213			SC2000	C-18	
3 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 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 Brand 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			SC2000	C-19	

C Roof/Ceilings

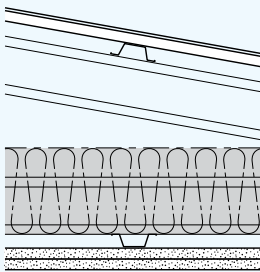
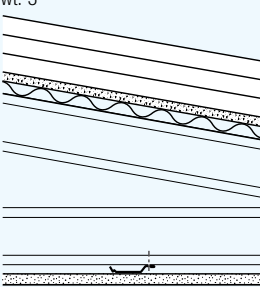
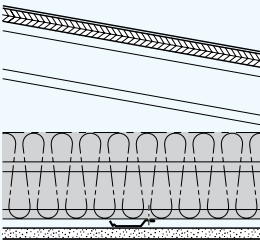
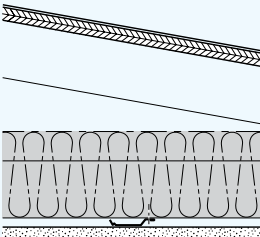
Steel Framed



3 Hour Fire-rated Construction		Steel Bar Joist Framing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none"> • 5/8" FR-4; 5/8" or 3/4" FR-83; or 3/4" FR-X1 acoust 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			SC2000	C-20	
	<ul style="list-style-type: none"> • 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 Brand 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			SC2000	C-21	
	<ul style="list-style-type: none"> • 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			SC2000	C-22	
1 Hour Fire-rated Construction		Steel Truss					
	<ul style="list-style-type: none"> • 2 layers 5/8" SHEETROCK Brand 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	ARL	Index	
<div>clg. wt. 3</div> 	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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	
<div>clg. wt. 3</div> 	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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 Brand Cement Board or 1/2" SHEETROCK Brand Gypsum Panels	UL Des P521, P525, P527, P529				C-25	
<div>clg. wt. 3</div> 	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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	
<div>clg. wt. 3</div> 	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand 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



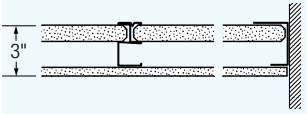
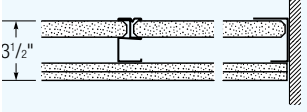
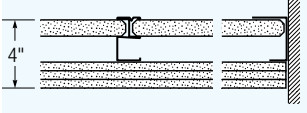
1 Hour Fire-rated Construction		Steel Roof Deck		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none"> • 5/8" or 3/4" FR-83; 5/8" or 3/4" FR-2; or 3/4" FR-X1 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, ZXL 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			SC2000	C-28	
1-1/2 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> – suspended 3.4# diamond mesh metal lath • 3/4" 100:2-100:3 gypsum-sand plaster – rib type steel roof deck – 1" wood-fiber insulation 	NBS-57			SA920	C-29	
	<ul style="list-style-type: none"> – suspended 3.4# diamond mesh metal lath • 1" 100:2 gypsum-sand plaster – rib type steel roof deck – 1-1/2" wood-fiber insulation 	NBS-58			SA920	C-30	
3 Hour Fire-rated Construction							
	<ul style="list-style-type: none"> • 5/8" FR-4; or 3/4" FR-83 or FR-81 acoustical ceiling panels • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXL 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			SC2000	C-31	
	<ul style="list-style-type: none"> • 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			SC2000	C-32	

D

Horizontal Membrane

Steel Framed



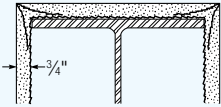
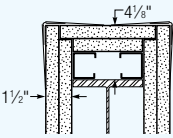
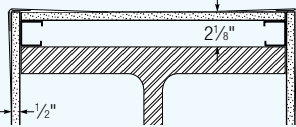
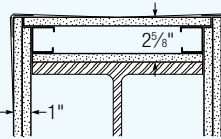
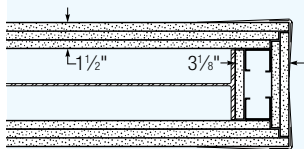
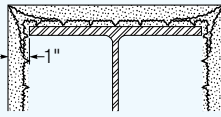
1 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
	<ul style="list-style-type: none">– corridor ceiling, and stair soffit• 1" SHEETROCK Brand Gypsum Liner Panels• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels• USG steel C-H stud spanning horizontally 24" o.c.• USG steel J-runner– joints finished	NER-258			SA926	D-1	
2 Hour Fire-rated Construction							
	<ul style="list-style-type: none">– corridor ceiling, and stair soffit• 1" SHEETROCK Brand Gypsum Liner Panels• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels• USG steel C-H Stud spanning horizontally 24" o.c.• USG steel J-runner– joints finished	NER-258			SA926	D-2	
	<ul style="list-style-type: none">– horizontal membrane or metal duct enclosure• 1" SHEETROCK Brand Liner Panels• 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels• USG Steel C-H stud spanning horizontally 24" o.c.– joints finished	WHI-495 PSH0154/0167			SA926	D-3	

E

Structural Fireproofing

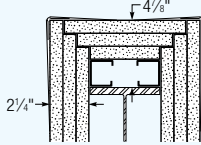
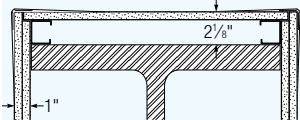
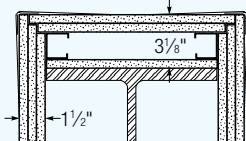
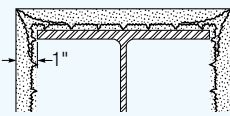
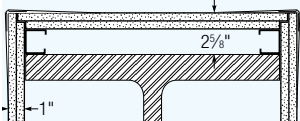
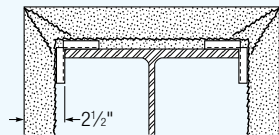
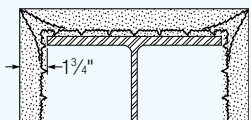
Column



1 Hour Fire-rated Construction				Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
	<ul style="list-style-type: none"> – 3.4# 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	SA920	E-1
2 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> • 3/4" SHEETROCK Brand ULTRACODE Core Gypsum Panels – 1-5/8" 25 gauge steel studs at corners – joints finished 	UL Des X528	Structural member tested: W4x13 W6x15.5 W10x49		E-2
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand 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	SA920	E-3
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand 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	SA920	E-4
	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand 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	SA920	E-5
	<ul style="list-style-type: none"> – 3.4# self-furring diamond mesh metal lath wrapped around column • 1" 100:2-100:3 gypsum-perlite plaster or STRUCTO-LITE® Brand Plaster – perlite aggregate bearing UL Label 	UL Des X402	Structural member tested: W10 x 49	SA920	E-6

Column



3 Hour Fire-rated Construction				Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
	<ul style="list-style-type: none"> 3/4" SHEETROCK Brand ULTRACORE Core Gypsum Panels second layer wrapped with no. 18 SWG steel wire spaced 24" o.c. joints finished 	UL Des X528	Structural member tested: W4 x 13 W6 x 15.5 W10 x 49		E-7
	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand 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	SA920	E-8
	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand 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	SA920	E-9
	<ul style="list-style-type: none"> 3.4# 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: W10x49	SA920	E-10
4 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand 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-11
	<ul style="list-style-type: none"> 3.4# diamond mesh metal furred 1/2" from face of column 1-7/8" STRUCTO-LITE Brand Plaster perlite aggregate bearing UL Label 	UL Des X405	Structural member tested: W10x49	SA920	E-12
	<ul style="list-style-type: none"> 3.4# self-furring diamond mesh metal lath 1-3/4" STRUCTO-LITE Brand Plaster or 100:2-100:3 gypsum-perlite plaster perlite aggregate bearing UL Label 	UL Des X402	Structural member tested: W10x49	SA920	E-13

E

Structural Fireproofing

Beam



2 Hour Fire-rated Construction		Test Number	Comments	Reference	
Construction Detail	Description			ARL	Index
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand 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)	SA920	E-14
3 Hour Fire-rated Construction		UL Des N505	Structural member tested: W8 x 24 (beam only) Fire rating for restrained assembly; 2 hr rating for unrestrained assembly	SA920	E-15
	<ul style="list-style-type: none"> – 1-5/8" steel run channel brackets 24" o.c. – 7/8" x 1-3/8" corner angles attached to brackets • 5/8" SHEETROCK Brand 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 style="list-style-type: none"> – 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 Brand 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 				
4 Hour Fire-rated Construction		UL Des D403	Structural member tested: W12 x 58 Suitable for protection of beams and girders	SA920	E-17
	<ul style="list-style-type: none"> – 3.4# self-furring diamond mesh metal lath enclosing beam • 1-1/2" 100:2 gypsum-perlite plaster 				

F Exterior Walls

Steel Framed



1 Hour Fire-rated Construction		Non-loadbearing		Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
wt. 6 	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand FIRECODE Core Gypsum Sheathing, FIBEROCK Brand AQUA-TOUGH Exterior Sheathing or SECUROCK Glass-Mat Sheathing, exterior side 3-1/2" 20 gauge structural studs 24" o.c. 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, interior side <p>— load-bearing up to 100% allowable stud axial load</p>	UL Des U419	Rating also applies with SHEETROCK Brand MOLD TOUGH FIRECODE Core Gypsum Panels, exterior	SA700	F-1
	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand Gypsum Sheathing or 5/8" FIBEROCK Brand AQUA-TOUGH Exterior 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 Brand FIRECODE C Core Gypsum Panels, interior side joints finished 	CEG 12-7-79		SA700	F-2
wt. 6, wt. 5 	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand FIRECODE Core Gypsum Sheathing, FIBEROCK Brand AQUA-TOUGH Sheathing, or SECUROCK Glass-Mat Sheathing, exterior side 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, interior 3-5/8" steel studs 24" o.c. 	UL Des U419, U465		SA700	F-3
2 Hour Fire-rated Construction					
wt. 11 	<ul style="list-style-type: none"> 1/2" DUROCK Brand Cement Board base layer 1/2" SHEETROCK Brand 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 Brand FIRECODE C Core Gypsum Panels, interior 	UL Des U474		SA700	F-4
wt. 12 	<ul style="list-style-type: none"> layer 5/8" SHEETROCK Brand FIRECODE Core Gypsum Sheathing, 5/8" FIBEROCK Brand AQUA-TOUGH Sheathing or SECUROCK Glass-Mat Sheathing, exterior side 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, interior side 2-1/2" studs 24" o.c. joints stag and finished or unfinished 	UL Des U411, U419		SA700	F-5
	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand 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	SA700	F-6

F Exterior Walls

Steel Framed

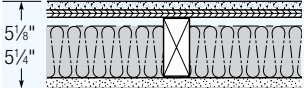
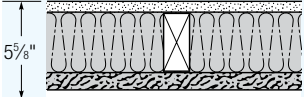

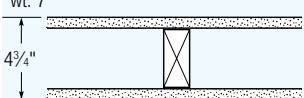
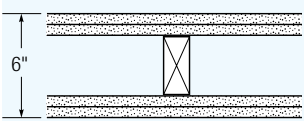
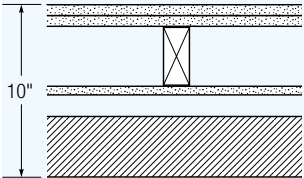


2 Hour Fire-rated Construction		Non-loadbearing		Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
	<ul style="list-style-type: none"> 1" SHEETROCK Brand Gypsum Liner Panels or SHEETROCK Brand Enhanced Gypsum Liner Panels – steel C-H studs 24" o.c. 2 layers SHEETROCK Brand FIRECODE C Core Gypsum Panels or SHEETROCK Brand HUMITEK Gypsum Panels, screw attached on interior – joints finished 	U of C 4-2-75	Rating also applies with IMPERIAL Brand FIRECODE C Core Gypsum Base, and veneer finish interior	SA700	F-7
45 Minute Fire-rated Construction		Loadbearing			
wt. 5 	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand FIRECODE Core Gypsum Sheathing – 3-1/2" 20 gauge structural steel studs 24" o.c. 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, interior side <p><i>load-bearing up to 100% allowable stud axial load</i></p>	UL Des U423 or U425		SA700	F-8
1 Hour Fire-rated Construction					
wt. 9 	<ul style="list-style-type: none"> 1/2" DUROCK Brand Cement Board base layer 5/8" SHEETROCK Brand MOLD TOUGH FIRECODE Core Gypsum Panels – 3-1/2" 20 gauge steel load-bearing studs 16" o.c. 3" THERMAFIBER SAFB 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, interior side 	UL Des U473		SA700	F-9
1-1/2 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> 1/2" SHEETROCK Brand FIRECODE Core Gypsum Sheathing or FIBEROCK Brand AQUA-TOUGH Exterior Sheathing, exterior side – 3-1/2" 20 gauge structural studs 24" o.c. 1/2" SHEETROCK Brand FIRECODE Core Gypsum Panels, interior side <p><i>load-bearing up to 100% allowable stud axial load</i></p>	UL Des U423 or U425		SA700	F-10
2 Hour Fire-rated Construction					
wt. 12 	<ul style="list-style-type: none"> 5/8" SHEETROCK Brand FIRECODE Core Gypsum Sheathing, FIBEROCK Brand AQUA-TOUGH Sheathing, or SECUROCK Glass-Mat Sheathing exterior side – 3-1/2" 20 gauge structural steel studs 24" o.c. 5/8" SHEETROCK Brand FIRECODE Core Gypsum Gypsum Panels, interior <p><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 80% allowable steel axial load</i></p>	UL Des U423 or U425	Rating also applies with SHEETROCK Brand FIRECODE Core MOLD TOUGH Gypsum Panels	SA700	F-11

F Exterior Walls

Wood Framed



1 Hour Fire-rated Construction		Loadbearing		Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
<p>wt. 9 psf</p> 	<ul style="list-style-type: none">• 1/2" DUROCK Brand Cement Board, interior side<ul style="list-style-type: none">– 15/32" plywood– 2 x 4 wood studs 16" o.c.– 3" THERMAFIBER SAFB– joints finished• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, FIBEROCK Brand AQUA-TOUGH Exterior Sheathing or SECUROCK Glass-Mat Sheathing, other side	UL Des U303		SA700	F-12
	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels, interior side<ul style="list-style-type: none">– 2x4 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		SA700	F-13
<p>wt. 15</p> 	<ul style="list-style-type: none">• 1/2" DUROCK Brand Cement Board and 1/4" ceramic tile exterior<ul style="list-style-type: none">– 2 x 4 wood studs 16" o.c.– 3-1/2" THERMAFIBER SAFB• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels<ul style="list-style-type: none">– optional veneer plaster	UL Des U329		SA700	F-14
<p>wt. 7</p> 	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand Type X Exterior Sheathing or 5/8" FIBEROCK Brand AQUA-TOUGH Exterior Sheathing or SECUROCK Glass-Mat Sheathing• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels or SHEETROCK Brand MOLD TOUGH FIRECODE Core Gypsum Panels, interior side<ul style="list-style-type: none">– 2x4 wood studs 16" o.c.– joints exposed or finished	UL Des U305, U314		SA700	F-15
2 Hour Fire-rated Construction					
<p>wt. 12</p> 	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand Type X exterior sheathing, FIBEROCK Brand AQUA-TOUGH Exterior Sheathing or SECUROCK Glass-Mat Sheathing, on exterior side• double layer 5/8" SHEETROCK Brand FIRECODE Core Gypsum Sheathing or SHEETROCK Brand MOLD TOUGH FIRECODE Core Gypsum Panels on interior<ul style="list-style-type: none">– 2x4 wood stud 16" o.c.	UL Des U301		SA700	F-16
	<ul style="list-style-type: none">• 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels, interior side<ul style="list-style-type: none">– 2x4 wood stud 16" o.c.• 1/2" FIBEROCK Brand AQUA-TOUGH Exterior Sheathing or SHEETROCK Brand Gypsum Sheathing or SECUROCK Glass-Mat Sheathing<ul style="list-style-type: none">– joints finished– 4" nom. masonry	UL Des U302		SA700	F-17

Steel/Iron Metallic



Penetrating Item and Diameter	Floor, Roof or Wall Type	Firestopping Material Minimum Depth	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	—	1/4"	1/2"	2	1	W-L-5043	SA727	G-24
Insulated steel pipe up to 3-1/2"	GW	1" Type FC or RFC	—	1/2"	5/8"	2	3/4	W-L-5044	SA727	G-25
Insulated steel or iron pipe up to 4"	GW	1" Type IA	Foam Backer ^{a,c}	0"	3/8"	2	1/2	W-L-5114	SA727	G-26
Insulated steel or iron pipe up to 8"	GW	1/2" Type IA	Foam Backer ^{a,c}	1/4"	1-1/8"	1-2	1/2-1	W-L-5115	SA727	G-27
Insulated steel or iron pipe up to 8"	GW	1" Type IA	Foam Backer ^c	0"	1/2"	2	2	W-L-5116	SA727	G-28

Conduit

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

G

Through-Penetration Firestops

Copper



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

Cables

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

Air Ducts

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

G

Through-Penetration Firestops

Glass Pipe



Penetrating Item and	Floor, Roof or Wall	Firestopping Material	Forming	Annular Space		Rating		UL System	Reference	
Diameter	Type	Minimum Depth	Material	Minimum	Maximum	F	T	Number	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
-----------------------------------------	--------	-------------------	----------------	---	----	---	-----	-----------	-------	-------------

Construction Joint System



	Floor, Roof or Wall	Firestopping Material	Forming	Joint	Move-ment	Comp-ression/	Assembly	UL System	Reference	
	Type	Minimum Depth	Material	Width	Class	Extens.	Rating	Number	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 Brand Acrylic Firestop Sealant (regular)

Type SA*—FIRECODE Acrylic Firestop Spray Sealant (Type SA)

Type AS—SHEETROCK Brand Acoustical Sealant

Type IA—FIRECODE Brand Intumescent Acrylic Firestop Sealant Type IA

Type FC—FIRECODE Brand 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-hr. wall.

(f) 2-hr. (two layers 7/8" backer rod); 1-hr. (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

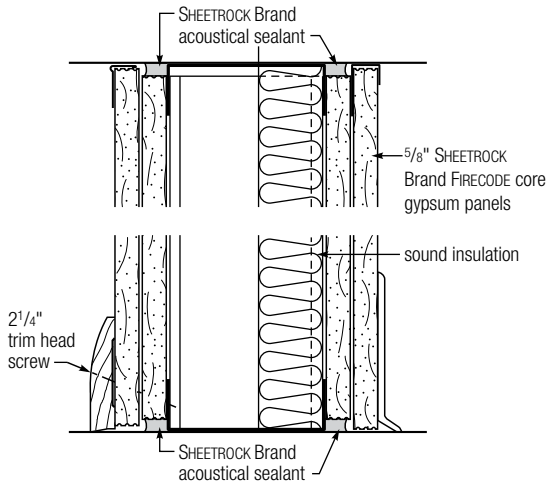
Use this section as a reference if questions arise.

1	Horizontal or Vertical Orientation	Two recent tests permit SHEETROCK Brand Gypsum Panel products and IMPERIAL Brand 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 Brand Cement Board, it is permissible to substitute 5/8" DUROCK Brand 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 Brand FIRECODE Core Gypsum Panels or 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels, it is permissible to substitute 5/8" FIBEROCK Brand Abuse-Resistant Gypsum Interior Panels or 5/8" SHEETROCK Brand MOLD TOUGH FIRECODE Core Gypsum Panels without compromising the fire rating.
5	Sheathing Substitution	Note that in partitions indicating the use of SHEETROCK Brand Exterior Sheathing or DUROCK Brand Cement Board for sheathing applications, it is permissible to substitute 5/8" FIBEROCK Brand AQUA-TOUGH Sheathing 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	Multilayer Applications	In multi-layer applications, only the joints of the face layer need be finished.
9	Perimeter Caulking	Use SHEETROCK Brand 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 Brand Gypsum Base should also be specified. Where a fire-resistive rating is required, use the appropriate IMPERIAL Brand Gypsum Base as tested.
12	More Information	For specific information regarding the assemblies shown in this folder, consult the current UL Fire Resistance Directory.

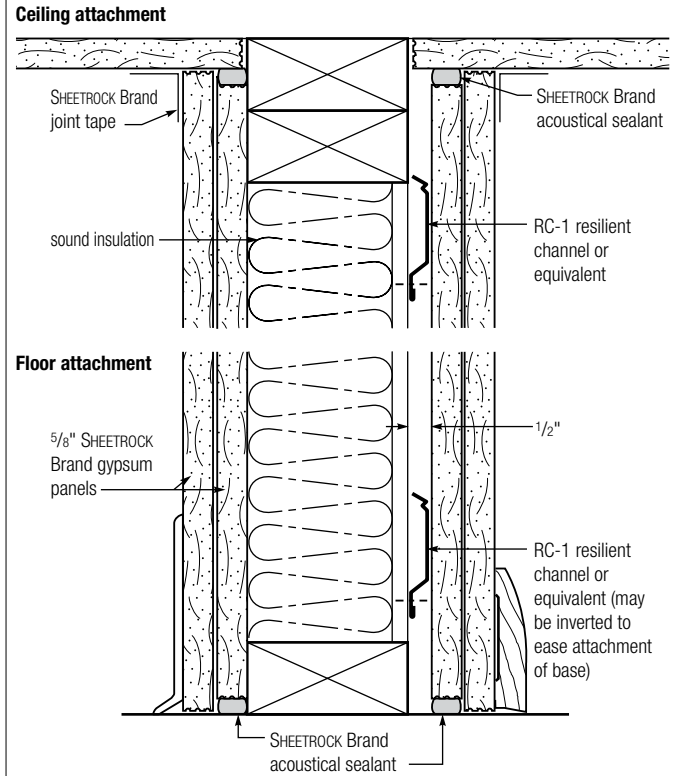
Design Details

Wood Framed

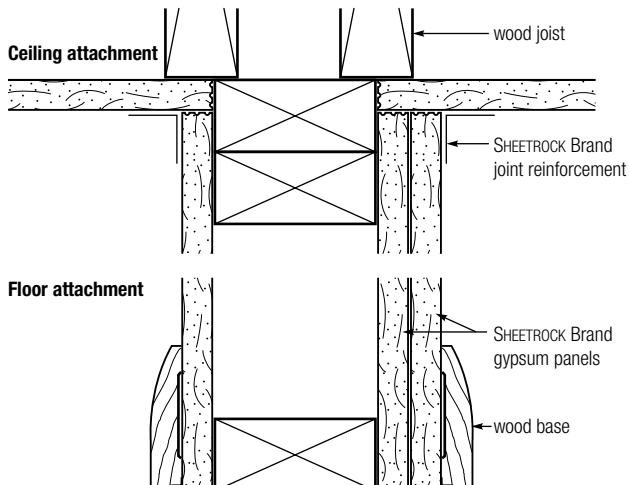
1 hr. partitions



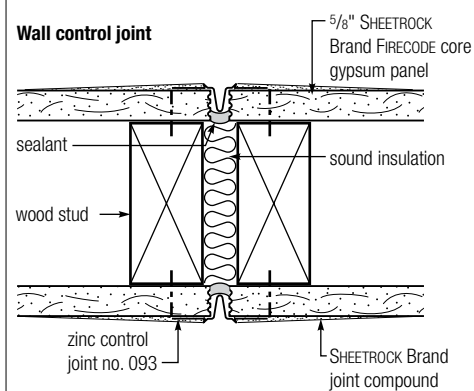
2 hr. partitions



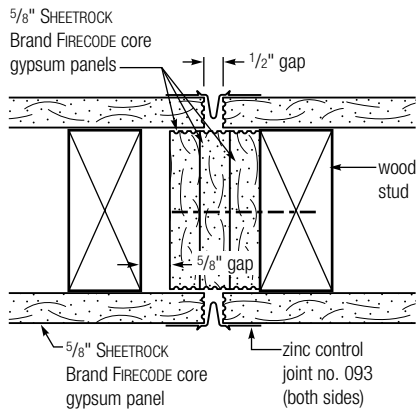
1 hr. ceiling/floor attachment



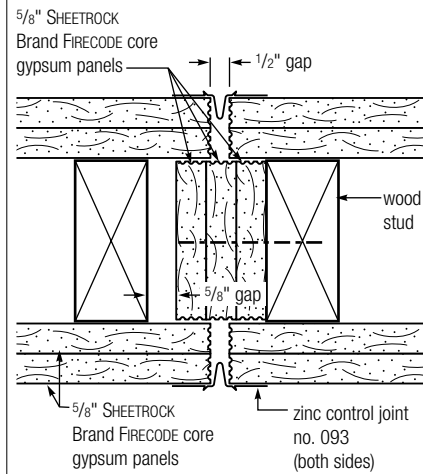
1 hr. wall control joint



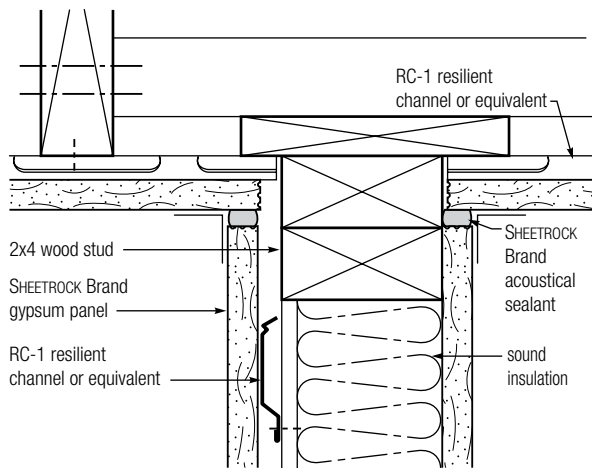
1 hr. fire resistive control joints (Estimated based on WH-651-0318.1)



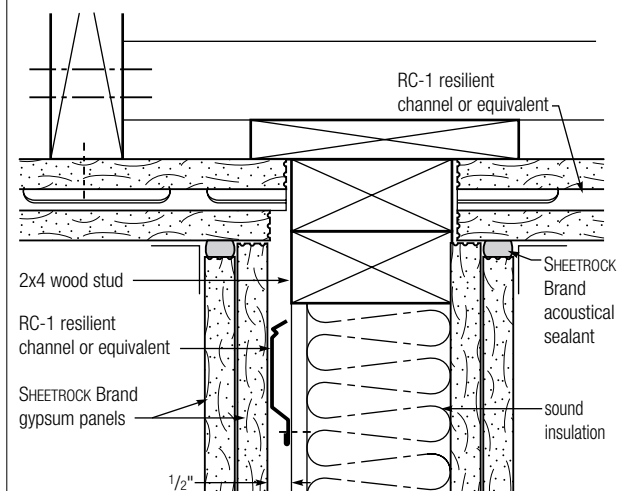
2 hr. fire resistive control joints (Estimated based on WH-651-0318.1)



Single-layer panels with RC-1 channel



Double layer panels with RC-1 channel

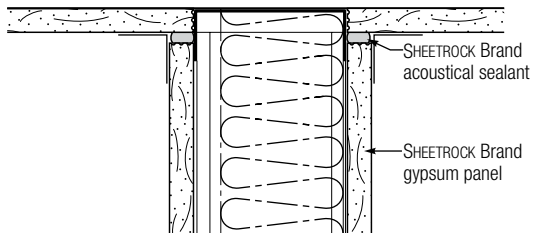


Design Details

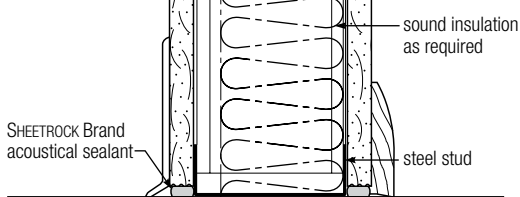
Steel Framed

Partition — Section

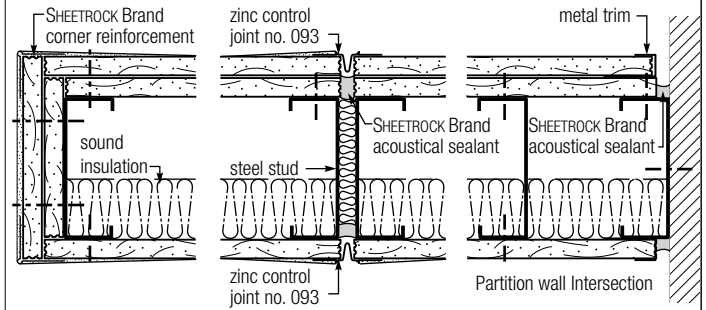
Ceiling attachment



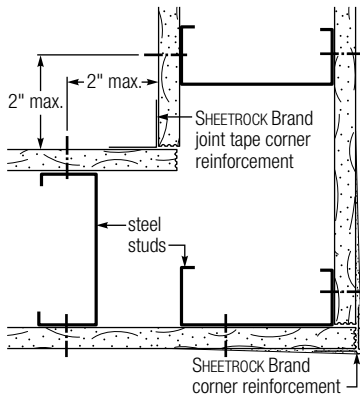
Floor attachment



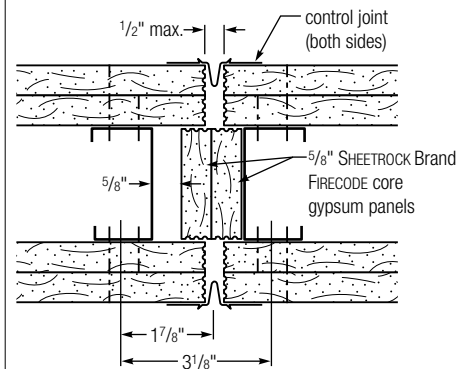
Control joints and partitions with perimeter relief



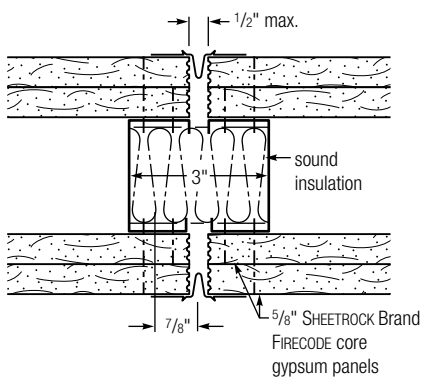
Partition — Corner



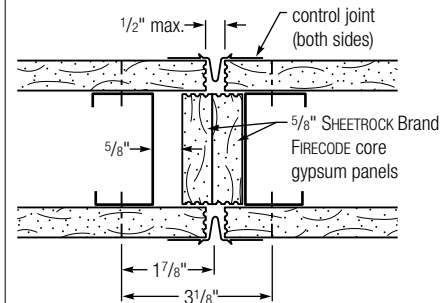
2 hr. steel stud partitions with control joints



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



1 hr. steel stud partitions with control joints



1/2" max.

1/2"

sound insulation
compressed
to fill opening

7/8"

5/8" SHEETROCK Brand
FIRECODE core
gypsum panel

Diagram illustrating the staggered joint configuration for a gypsum panel. The diagram shows two trapezoidal joints in a horizontal line, separated by a distance of $2\frac{3}{4}$ " (2 and 3/4 inches). The joints are labeled "zinc control joint no. 093". The material filling the joints is labeled "SHEETROCK Brand joint compound". The panel is labeled "gypsum panel". A "wire tie" is shown securing the panel. Two circular insets at the top show close-up views of the joint compound being applied to the joint.

Diagram illustrating the installation of a SHEETROCK Brand gypsum panel in a suspended ceiling system. The diagram shows the main tee, cross tee, and fire expansion notch, along with the 12 ga. hanger wire and main tee splice.

Diagram illustrating the components of a suspended ceiling system:

- 12 ga. hanger wire
- SHEETROCK Brand gypsum panel
- main tee
- main tee splice
- fire expansion notch
- cross channel

Standards and Reports

Applicable ASTM Standards

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

Evaluation Reports

	Report	Report	Report	Report
	Number	Subject	Number	Subject
<p>This list contains relevant evaluation reports for USG products and systems. These reports indicate building code compliance.</p>	ER-1602	USG Regular and Resilient Gypsum Construction	ER-5885	LEVELROCK Brand Poured Gypsum Floor Underlayments
	ER-5050	USG Fire Stop Penetration Systems	ER-1939	USG Acoustical Ceiling Tiles and Panels
	NER-258	USG Shaft Wall Systems	ER-1994	USG Drywall Suspended Ceiling Systems
	NER-458	SHEETROCK Brand Interior Ceiling Board	ER-2244	USG DOWN and SIMPLICITEE® Ceiling Suspension Systems
	NER-684	FIBEROCK Brand Gypsum Panels		

Note

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

UL Type Designations

	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	DXLTA	CENTRICITEE™ Suspension System (9/16" wide aluminum cap)
	SCX	SHEETROCK Brand FIRECODE Core Gypsum Panels	DXLF	FINELINE® Suspension System (9/16" wide)
	SCX	SHEETROCK Brand MOLD TOUGH FIRECODE Core Gypsum Panels	SDXL	SIMPLICITEE Suspension System (15/16" wide, retail)
	C	SHEETROCK Brand FIRECODE C Core Gypsum Panels	SDXLA	SIMPLICITEE Suspension System (15/16" wide, retail, aluminum cap)
	C	SHEETROCK Brand MOLD TOUGH FIRECODE C Core Gypsum Panels	DGL	USG Drywall Suspension System (15/16" wide)
	AR	SHEETROCK Brand Abuse-Resistant Gypsum Panels	DGLW	USG Drywall Suspension System (1-1/2" wide)
	SLX	SHEETROCK Brand Gypsum Liner Panels	DXLP	PARALINE® Linear Metal Ceiling System
	SLX	SHEETROCK Brand MOLD TOUGH Gypsum Liner Panels	PAR, PARP	PARALINE Linear Metal Ceiling System (linear metal panels)
	ULTRACODE	SHEETROCK Brand ULTRACODE Core Gypsum Panels	PAS, PASP	PARALINE Linear Metal Ceiling System (linear metal panels)
	SHX	SHEETROCK Brand FIRECODE Core Gypsum Sheathing	PSR, PSRP	PARALINE Linear Metal Ceiling System (linear metal panels)
	USGX	SECUROCK™ Glass-Mat Sheathing Firecode Core	PSS, PSSP	PARALINE Linear Metal Ceiling System (linear metal panels)
	FRX-G	FIBEROCK Brand Panels		
	IP-X1	IMPERIAL Brand FIRECODE Core Plaster Base		
	IP-X2	IMPERIAL Brand FIRECODE C Core Plaster Base		
	DCB	DUROCK Next Gen		
	UC	ULTRAWALL Brand Gypsum Panel		
	RLX	ROCKLATH Brand FIRECODE Gypsum Lath		
	LEVELROCK	LEVELROCK Brand Floor Underlayment Mixtures		
	AS	SHEETROCK Brand Acoustical Sealant		
	FC	FIRECODE Brand Compound		
	RFC	FIRECODE Brand Ready Mixed Compound		
	A	FIRECODE Brand Acrylic Firestop Sealant		
	IA	FIRECODE Brand Intumescent Acrylic Firestop Sealant		
	SA	FIRECODE Brand Acrylic Firestop Spray Sealant		
		Acoustical Tile and Panel Products		
	AP	SANDRIFT™, FROST™, GLACIER™, FISSURED Ceiling Panels		
	AP-1	SANDRIFT, FROST, GLACIER, "F" FISSURED Ceiling Panels		
	FC-CB	SHEETROCK Brand Lay-In Ceiling Panels CLIMAPLUS™		
	FR-2	FISSURED, RADAR™, RADAR Illusion, RADAR CLIMAPLUS,		
	FR-83	RADAR CLIMAPLUS Illusion, Aspen, Pebbled, 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™ CLIMAPLUS Ceiling Panels		
	ASTRO-FR	ASTRO™ CLIMAPLUS Ceiling Panels		
		Acoustical Suspension Products		
	CM	CELEBRATION™ Metal Ceiling Panels (metallic)		
	CP	CELEBRATION Metal Ceiling Panels (painted)		
	DXL	DONN Brand DXL Suspension System (15/16" wide)		
	DXL	DONN Brand DXL Concealed Suspension System (15/16" wide)		
	DXLA	DONN Brand DXLA Suspension System (15/16" wide, aluminum cap)		
	ZXLA	DONN Brand ZXLA Suspension System (15/16" wide, environmental)		
	DXLT	CENTRICITEE Suspension System (9/16" wide)		

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 Brand Gypsum Panel products will be available from designated manufacturing plants throughout the United States. Metric length DUROCK Brand 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 Brand 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

THERMAFIBER Insulation

Dimension	Conversion Type ^a	ft./in.	mm ^b
Thickness	Soft	1"	25.4
		1-1/2"	38.1
		2"	50.8
		2-1/2"	63.5
		3"	76.2
		3-1/2"	88.9
		4"	101.6
		5-1/4"	133.3
Width	Hard	16"	400.0
		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 Brand 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

Index to Fire-Resistive Designs

	Test	Reference	Test	Reference	Test	Reference
	Number	Index	Number	Index	Number	Index
<p>This Index lists the fire-resistive Designs that contain United States Gypsum Company and USG Interiors products. Test numbers appear with the corresponding references within this brochure. 'UL Dir' indicates that the assembly does not appear in this brochure, but in the UL Fire Resistance Directory.</p> <p>For example, UL Design D209 can be found at B-88, or test no. 88 in Section B, Floor/Ceilings. A003 is found only in the UL Fire Resistance Directory.</p>	A		F-C-2181	G-88	G264	B-8
	A003	UL Dir	F-C-2182	G-89	G265	B-33
	A202	UL Dir	F-C-2183	G-90	G267	B-9
	A210	UL Dir	F-C-3054	G-68	G501	UL Dir
	A211	UL Dir	F-C-5042	G-15, G-55	G502	B-6
	B		F-F-S-0028	G-100	G503	B-12
	BMS-92	B-18, B-38, B-43, E-1	G		G512	B-36
	C		G002	B-19	G515	B-11
	C-AJ-0032	G-99	G007	B-20	G516	B-34
	C-AJ-1020	G-1, G-2, G-29, G-30	G008	B-21	G520	UL Dir
	C-AJ-1081	G-3, G-4, G-31, G-45, G-46	G011	UL Dir	G521	UL Dir
	C-AJ-1347	G-5, G-6, G-32, G-47	G017	UL Dir	G523	B-14
	C-AJ-1348	G-7, G-33, G-48	G018	UL Dir	G525	UL Dir
	C-AJ-2295	G-81	G020	UL Dir	G526	B-15
	C-AJ-2296	G-82	G022	UL Dir	G527	UL Dir
	C-AJ-2301	G-79	G036	UL Dir	G529	B-17, B-37
	C-AJ-2304	G-80	G037	UL Dir	G530	UL Dir
	C-AJ-3045	G-65	G040	B-22	G531	UL Dir
	C-AJ-3174	G-66	G201	B-3	G533	UL Dir
	C-AJ-3175	G-67	G202	B-23	G534	UL Dir
	C-AJ-5146	G-8, G-49	G203	B-24	G540	B-50
	C-AJ-5147	G-9, G-50	G204	B-25	G541	UL Dir
	C-AJ-5148	G-10	G205	B-40	G542	B-50
	C-AJ-5149	G-11, G-34, G-51	G208	UL Dir	G543	B-50
	C-AJ-7062	G-73	G209	UL Dir	G544	B-50
	C-AJ-7063	G-74	G210	UL Dir	GA-FC-1105	B-1
	CEG 12-7-79	F-2	G211	B-41	GA-FC-1145	B-47
	CEG 5-9-84	A-5	G213	B-42	GA-FC-1180	B-2
	CEG 8-11-83	A-5	G214	UL Dir	GA-FC-2030	B-13
	D		G215	B-26	GA-FC-2120	B-91
	D010	UL Dir	G217	UL Dir	GA-FC-2160	B-10
	D205	UL Dir	G218	UL Dir	GA-FC-3140	B-39
	D209	B-87	G222	B-16	GA-FC-5406	B-57
	D215	B-92	G227	B-27	GA-FC-5470	B-68
	D216	UL Dir	G228	B-28	GA-FC-5490	B-69
	D218	B-103	G229	UL Dir	GA-FC-5510	B-70
	D219	B-104	G230	B-29	GA-RC-2601	B-57
	D302	UL Dir	G231	B-30	GA-WP-1051	A-8
	D403	E-17	G234	B-31	GA-WP-1053	A-9
	D501	UL Dir	G236	UL Dir	GA-WP-1090	A-7
	D502	UL Dir	G241	UL Dir	GA-WP-1240	A-3
	F		G243	UL Dir	GA-WP-1930	A-23
	F-A-1020	G-12, G-35, G-52	G244	UL Dir	GA-WP-3341	A-49
	F-A-2062	G-83	G248	UL Dir	GA-WP-3430	A-52
	F-A-2063	G-84	G249	UL Dir	GA-WP-3810	A-60
	F-A-2064	G-85	G250	UL Dir	GA-WP-3812	A-61
	F-A-5014	G-13, G-53	G252	B-32	GA-WP-3820	A-63
	F-C-1069	G-14, G-36, G-54	G256	UL Dir	GA-WP-3910	A-64
	F-C-1070	G-37	G258	B-4	GA-WP-5510	A-62
	F-C-2179	G-86	G259	B-5	H	
	F-C-2180	G-87	G260	UL Dir	HW-D-0001	G-101
			G262	B-7	HW-D-0002	G-102

Index to Fire-Resistive Designs

	Test	Reference	Test	Reference	Test	Reference
	Number	Index	Number	Index	Number	Index
	HW-D-0009	G-103	L518	UL Dir	P210	UL Dir
	HW-D-0158	G-104	L520	UL Dir	P211	UL Dir
	HW-D-0159	G-105	L521	B-81	P213	C-18
	HW-D-0160	G-106	L523	UL Dir	P214	C-4
	HW-D-0161	G-107	L524	B-44, B-45	P215	UL Dir
	HW-D-0262	G-108	L525	B-58	P216	UL Dir
	HW-D-0372	G-111	L526	UL Dir	P217	UL Dir
	HW-S-0001	G-109, G-110	L527	B-48	P224	UL Dir
	HW-S-0032	G-112, G-113	L528	B-83, B-85	P225	UL Dir
	HW-S-0035	G-114, G-115	L529	B-84	P227	UL Dir
	J		L530	B-65, B-77	P228	C-5
	J201	B-105	L531	B-66, B-77	P229	C-6
	J202	B-106	L532	UL Dir	P230	C-17
	J501	UL Dir	L534	UL Dir	P231	UL Dir
	J502	B-88, B-102	L535	UL Dir	P235	C-7
	J503	B-88	L536	UL Dir	P237	C-19
	J504	B-102	L537	UL Dir	P238	C-8
	J917	B-93	L538	B-80	P239	C-21
	J919	B-94	L539	UL Dir	P240	UL Dir
	J920	B-95	L541	B-72, B-73, B-74	P241	C-20
	J924	B-96	L542	B-82	P242	C-22
	J927	B-97	L543	UL Dir	P244	C-9
	J931	B-98	L544	B-79	P245	C-10
	J957	B-99	L545	UL Dir	P246	C-12
	J966	B-100	L548	UL Dir	P251	UL Dir
	J991	B-89	L549	B-51	P253	UL Dir
	J994	B-90	L550	B-81	P254	C-11
	K		L551	B-51	P255	C-13
	K906	B-101	L552	B-51	P257	C-28
	L		L553	B-51	P259	UL Dir
	L003	UL Dir	L555	B-86	P260	UL Dir
	L006	B-59	L563	B-81	P261	UL Dir
	L202	B-60	L570	B-78	P262	UL Dir
	L206	B-61	N		P267	C-14
	L208	UL Dir	N501	E-14	P268	C-31
	L209	UL Dir	N502	E-14	P269	C-32
	L210	UL Dir	N505	E-15, E-16	P501	UL Dir
	L211	B-76	NBS-57	C-29	P502	UL Dir
	L212	B-62	NBS-58	C-30	P503	UL Dir
	L501	B-52, B-63	NER-258	D-1, D-2	P504	UL Dir
	L502	B-64	O		P505	UL Dir
	L504	UL Dir	OSU-T-129	A-14	P506	UL Dir
	L505	UL Dir	OSU-T-1396	A-50	P507	UL Dir
	L506	UL Dir	OSU-T-4851	F-6	P508	UL Dir
	L508	UL Dir	P		P509	UL Dir
	L510	B-67	P002	UL Dir	P510	C-15
	L511	B-71, B-75	P201	C-2	P512	UL Dir
	L512	B-53	P202	C-3	P513	UL Dir
	L513	UL Dir	P203	C-1	P514	UL Dir
	L514	B-54, B-55, B-64	P204	UL Dir	P515	C-23
	L515	UL Dir	P206	UL Dir	P516	UL Dir
	L516	B-56	P207	C-16	P517	UL Dir

	Test	Reference	Test	Reference	Test	Reference
	Number	Index	Number	Index	Number	Index
	P518	UL Dir	U324	UL Dir	U426	A-44
	P519	UL Dir	U325	UL Dir	U432	UL Dir
	P521	C-25	U326	UL Dir	U433	A-13
	P522	C-27	U327	A-51	U435	A-27, A-28, A-32
	P523	C-26	U329	A-53, F-14	U436	A-36, A-37
	P524	C-24	U330	F-13	U437	A-74
	P525	C-25	U332	UL Dir	U438	A-69
	P526	C-26	U333	UL Dir	U439	UL Dir
	P527	C-25	U334	A-57	U440	A-40
	P528	C-26	U335	UL Dir	U443	A-26
	P529	C-25	U336	A-66, A-67	U446	UL Dir
	P530	C-26	U338	UL Dir	U448	A-4, A-6
	P676	UL Dir	U339	UL Dir	U449	UL Dir
	P711	UL Dir	U340	A-58	U451	A-10, A-11, A-12
	P713	UL Dir	U341	UL Dir	U452	A16
	P714	UL Dir	U342	A-59	U453	A-21
	P717	UL Dir	U344	UL Dir	U454	A-22
	P719	UL Dir	U345	UL Dir	U455	A-29, A-30
	P722	UL Dir	U346	UL Dir	U456	UL Dir
	P724	UL Dir	U348	UL Dir	U460	UL Dir
	P728	UL Dir	U349	UL Dir	U465	A-1, F-3
	P739	UL Dir	U350	UL Dir	U466	UL Dir
	P740	UL Dir	U351	UL Dir	U467	A-71
	P803	UL Dir	U353	UL Dir	U468	UL Dir
	P807	UL Dir	U354	UL Dir	U469	A-68
	P826	UL Dir	U355	UL Dir	U472	UL Dir
	P904	UL Dir	U359	UL Dir	U473	A-41, F-9
	P909	UL Dir	U402	UL Dir	U474	F-4
	P912	UL Dir	U410	UL Dir	U475	UL Dir
	P915	UL Dir	U411	A-18, F-5	U476	A-25, A-31
	U		U412	A-17	U477	UL Dir
	U of C 10-27-64	A-47	U415, Sys. A	A-68	U478	UL Dir
	U of C 4-2-75	F-7	U415, Sys. B	A-69	U484	A-24
	U of C 7-31-62	A-2	U415, Sys. C	A-70	U488	A-15
	U017	UL Dir	U415, Sys. E	A-71	U489	UL Dir
	U023	UL Dir	U415, Sys. F	A-72	U490	A-33, A-45
	U026	UL Dir	U415, Sys. G	A-75	U491	A-20
	U032	UL Dir	U415, Sys. H	A-76	U493	UL Dir
	U033	UL Dir	U415, Sys. I	A-77	U495	UL Dir
	U204	UL Dir	U418	UL Dir	U496	A-11
	U301	A-56, F-16	U419	A-1, A-4, A-6, A-10, A-12, A-17, A-18, A-19, A-20, A-21, A-27, A-28, A-29, A-30, A-32, A-33, F-1, F-3, F-5	U497	UL Dir
	U302	F-17			U504	UL Dir
	U303	A-54, F-12			U505	UL Dir
	U304	UL Dir			U506	UL Dir
	U305	A-48, F-15			U507	UL Dir
	U311	A-55	U420	A-34, A-35	U512	UL Dir
	U314	A-48, F-15	U421	UL Dir	U513	UL Dir
	U317	A-46	U422	UL Dir	U526	UL Dir
	U320	UL Dir	U423	A-38, A-39, A-40, A-43, F-8, F-10, F-11	U528	UL Dir
	U321	UL Dir			U529	A-73
	U322	UL Dir	U425	A-38, A-39, A-42, A-43, F-10, F-12, F-13	U601	UL Dir
	U323	UL Dir			U602	UL Dir

Index to Fire-Resistive Designs

	Test	Reference	Test	Reference
	U603	UL Dir	W-L-1027	G-17, G-18, G-39, G-57
	U604	UL Dir	W-L-1039	G-19, G-40, G-58
	U605	UL Dir	W-L-1063	G-20, G-41, G-59
	U606	UL Dir	W-L-1064	G-21, G-42
	U608	UL Dir	W-L-1065	G-22, G-43
	U609	UL Dir	W-L-1087	G-23, G-44
	U611	UL Dir	W-L-1087	G-60
	U613	UL Dir	W-L-2220	G-92
	U615	UL Dir	W-L-2221	G-93
	U617	UL Dir	W-L-2222	G-94
	U618	UL Dir	W-L-2223	G-95
	U619	UL Dir	W-L-2224	G-96
	U620	UL Dir	W-L-2225	G-97
	U622	UL Dir	W-L-2226	G-98
	U623	UL Dir	W-L-2227	G-78
	U625	UL Dir	W-L-3023	G-69
	U626	UL Dir	W-L-3034	G-70
	U627	UL Dir	W-L-3162	G-71
	U633	UL Dir	W-L-3163	G-72
	U634	UL Dir	W-L-5043	G-24, G-61
	U635	UL Dir	W-L-5044	G-25, G-62
	U637	UL Dir	W-L-5114	G-26, G-63
	U639	UL Dir	W-L-5115	G-27, G-64
	U640	UL Dir	W-L-5116	G-28
	U642	UL Dir	W-L-7001	G-75
	U643	UL Dir	W-L-7002	G-76
	U645	UL Dir	W-L-7057	G-77
	U647	UL Dir	WW-S-0036	G-116
	U910	A-79	X	
	U912	UL Dir	X402	E-6, E-10, E-13
	U914	A-78	X405	E-12
	UL Report	B-35	X502	UL Dir
	R5429-1		X504	UL Dir
	U452	A-16	X507	E-11
	V		X508	UL Dir
	V402	UL Dir	X514	E-8
	V403	UL Dir	X515	E-9
	V404	UL Dir	X516	UL Dir
	V405	UL Dir	X518	E-4
	V409	UL Dir	X521	E-3
	V410	UL Dir	X522	UL Dir
	V411	UL Dir	X523	UL Dir
	V413	UL Dir	X524	E-5
	V414	UL Dir	X526	UL Dir
	V415	UL Dir	X527	UL Dir
	W		X528	E-2, E-7
	WHI-495	D-3	X530	UL Dir
	PSH0154/0167		X531	UL Dir
	WHI-495-0505	A-65		
	WHI-495-0508	A-65		
	W-J-1091	G-16, G-38, G-56		
	W-J-2068	G-91		

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

©David B. Seide: Defined Space, Chicago



Technical Service
800 USG.4YOU

Web Site
usg.com

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.

Trademarks

The following trademarks used herein are owned by USG Corporation or its subsidiaries: ACOUSTONE, ASTRO, AURATONE, BEADEX, CENTRICITEE, CELEBRATION, CLEAN ROOM, CLIMAPLUS, DIAMOND, DONN, DUROCK, ECLIPSE, FIBEROCK, FINELINE, FIRECODE, FROST, GLACIER, IMPERIAL, LEVELROCK, MILLENNIA, PARALINE, RADAR, RC-1, RED TOP, ROCK FACE, ROCKLATH, SANDRIFT, SHEETROCK, SIMPLICITEE, STRUCTOCORE, STRUCTO-GAUGE, STRUCTO-LITE, ULTRACODE, ULTRAWALL and USG. TYPE S and TYPE S-12 are trademarks of ITW Buildex. MASTERFORMAT is a trademark of the Construction Specifications Institute. IVORY and GRAND PRIZE are trademarks of GenLime Group L.P. TJI is a trademark of TrusJoint MacMillan. WSI is a trademark of Willamette Industries, Inc. THERMAFIBER is a trademark of Thermafiber LLC.

Patents

Patents pending.

Notice

We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

Safety First!

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



Manufactured by
United States Gypsum Company
550 West Adams Street
Chicago, IL 60661

SA100/rev. 3-09
© 2009, United States Gypsum Company
Printed in U.S.A.