



For interior applications and exterior curtain wall assemblies

Drywall/Steel Framed Systems

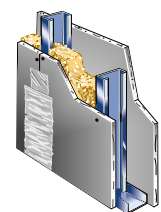
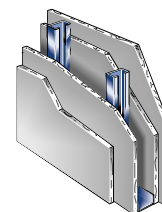
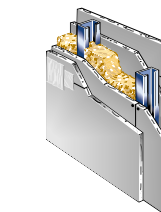
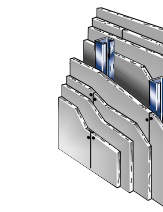
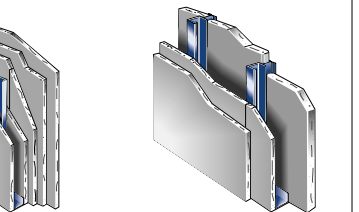
Drywall/Steel Framed Systems

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NOTICE: Steel studs, runners and accessories in this catalogue are referenced by Canadian Gypsum Company as integral components of its gypsum board systems. Refer to framing manufacturer's technical information for specific data on steel framing components.

The material contained in this catalogue concerning steel framing systems including, but not limited to, test data, technical data, details, specifications, and Good Design Practices, portray construction methods in use at the time this catalog went to press. They are not intended to replace or supersede specific specifications and construction documents for a given building.

Drywall/Steel Framed Systems

Partitions	<p>Description</p> <p>These lightweight, fire- and sound-resistant assemblies consist of SHEETROCK brand Gypsum Panels screw-attached to steel framing. A specially designed self-tapping steel screw with rust inhibitive coating attaches panels to framing. The systems are completed with a Canadian Gypsum Company joint system. Pre-decorated TEXTONE Vinyl-Faced Panels do not require any further finishing (eliminating the joint finishing step).</p> <p>Systems using SHEETROCK brand Gypsum Panels, FIRECODE Core, FIRECODE C Core, or ULTRACODE Core, obtain higher fire ratings than regular gypsum panels. Panels are applied to steel studs, RC-1 Resilient Channels, or metal furring channels to meet design requirements for fixed interior partitions.</p>			
Single-Layer Partitions	<p>Single-layer 15.9 mm (5/8") SHEETROCK brand Gypsum Panels, FIRECODE Core, applied to steel studs, set in runners, provide economical 1-hour fire-rated partitions. Exclusive creased THERMAFIBER Sound Attenuation Fire Blankets (SAFB) systems offer 51 to 55 STC ratings and 1-hour fire ratings at lower in-place costs of other single-layer assemblies. A 1-hour rating is also available with 12.7 mm (1/2") thick SHEETROCK brand FIRECODE C Core panels and 38 mm (1-1/2") THERMAFIBER SAFB installed in the stud cavity.</p> <p>The new 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, provide a 2-hr. fire rating with single-layer construction when ULC Design W440, UL Design U419 or U491 is specified. Panels are attached to 90 mm (3-1/2") min. steel studs and 76 mm (3") thick THERMAFIBER SAFB is installed in the cavity. The system has a 50 STC.</p>			
Double-Layer Partitions	<p>Double-layer 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, attached to 64 mm (2-1/2") min. studs spaced 600 mm (24") o.c. provide a 2-hour fire rating plus sound control suitable for party walls.</p> <p>SHEETROCK brand Gypsum Panels, ULTRACODE Core, provide a 4-hr. fire rating with double-layer construction when ULC Design W441, UL Design U419 or U490 is specified. Panels are attached to 64 mm (2-1/2") steel studs and 51 mm (2") thick THERMAFIBER SAFB is installed in the cavity. The system has a 56 STC.</p> <p>In addition, two layers of 19.1 mm (3/4") ULTRACODE Core panels may be substituted for three layers of 12.7 mm (1/2") FIRECODE C Core panels in both UL Design U435 and UL Design U436 and still achieve the 3-hr. fire-resistance rating.</p>			
Multi-layer Partitions	<p>Multi-layer 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, assemblies offer 3- and 4-hour fire ratings and up to 62 STC, yet are much lighter weight and thinner than concrete block. These assemblies also provide a 3-hour fire-resistant enclosure for steel trusses in staggered truss systems. Where added partition width is required, double rows of studs are erected to provide chase walls with up to 508 mm (20-3/4") net pipe chase width (see page 8). For high-attenuation partitions to isolate low-frequency noise, see page 11.</p>			
Shaft Walls	<p>Gypsum panels, assembled with gypsum shaft wall liner and specially shaped CGC C-H Studs, offer systems ideally suited for enclosing elevator shafts, stairwells and other vertical shafts in core areas of multi-story buildings (see <i>CGC Cavity Shaft Wall Systems</i>, SA926 for applications).</p>			
<p>ULC Des. W408 UL Des. U419 or U448 1-hour 1 layer FIRECODE C Core</p> 	<p>ULC Des. W406 UL Des. U412 or U419 2-hour 2 layers FIRECODE C Core</p> 	<p>ULC Des. W441 UL Des. U419 or U490 4-hour 2 layers ULTRACODE Core</p> 	<p>ULC Des. W417 UL Des. U419 or U435 4-hour 4 layers FIRECODE C Core</p> 	<p>ULC Des. W506 UL Des. U438 2-hour</p> 
Features	<p>When properly selected and constructed in a workmanlike manner, systems are adaptable to virtually every type of new construction—commercial, institutional, industrial, and residential—or in modernization to provide smooth, durable interior surfaces.</p>			
Fire Resistant	<p>Established fire ratings available to meet design requirements; partitions up to 4 hours, ceilings up to 3 hours, beam and column up to 4 hours.</p>			
Sound Isolation	<p>STC ratings up to 62 for multi-layer, 55 for double-layer, and 55 for single-layer resilient partitions; 54 for single-layer ceilings. THERMAFIBER SAFB improve sound control.</p>			

Drywall/Steel Framed Systems

Lightweight	These thin drywall assemblies weigh only 24.4 to 83.0 kg/m ² (5 to 17 psf); reduce dead load and save floor area.
Economical	Low material cost and speed of erection provide realistic and competitive construction costs.

Limitations

- 1 Exposure to excessive or continuous moisture and extreme temperatures should be avoided.
- 2 Maximum frame spacing is 600 mm (24") o.c.; exception: when single-layer ceiling panels are applied with long edges parallel to joists and used as a base for spray-applied texture finish, max. frame spacing is 400 mm (16") o.c.
- 3 In ceiling design, certain precautions concerning construction, insulation, and ventilation are necessary for good performance (see Good Design Practices, page 38).
4. Variable wind pressure can cause a high-rise building to drift or sway. This can result in movement of the non-load-bearing partitions, thus causing noise. Canadian Gypsum Company assumes no responsibility for the prevention, cause, or repair of this job-related noise.

Screw locations and spacing— fire-rated steel stud drywall partitions

Hourly rating	UL Test number	Face layer			Base layer			
		Screw		Spacing and location	Screw			Spacing and location
		Length	Type		Length	Type	Position	
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				
	ULCW408	1"	S	8" o.c. on panel edges; 12" o.c. in field of panel				
	ULCW407	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
	ULCW406	1-5/8"	S	12" o.c.	1"	S		12" o.c. on edges of panel; 12" 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.
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.
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				

Drywall/Steel Framed Systems

Metric Conversion The table below provides metric equivalents for the dimensions of Canadian Gypsum Company products. "Soft" conversions merely apply a conversion factor that translates feet and inches (according to which the products were manufactured) into metric units; "hard" metric measurements are given for products actually manufactured in metric sizes.

Metric Equivalents	Dimension	Conversion Type ⁽¹⁾	Ft./In.	mm ⁽²⁾
SHEETROCK Gypsum Panels				
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
			48"	1200
Length	Hard		8'	2400
			10'	3000
			12'	3600
Steel Stud Framing				
Thickness (gauge)	Soft		.0179 (25)	0.45
			.0270 (22)	0.69
			.0329 (20)	0.84
Width	Soft		1-5/8"	41
			2-1/2"	64
			3-1/2"	89
			3-5/8"	92
			4"	102
Length	Hard		8'	2400
			10'	3000
			12'	3600
THERMAFIBER Insulation				
Thickness	Soft		1"	25
			1-1/2"	38
			2"	51
			3"	76
			4"	102
			6"	152
Width	Hard		16"	400
			24"	600
Length	Hard		48"	1200

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

(2) Conversion factors: Inches x 25.4 = mm; Feet x 304.8 = mm.

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

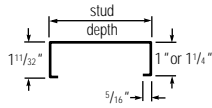
Lengths: Shown on SHEETROCK Gypsum Panels and steel stud framing for illustration purposes only.

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

Drywall/Steel Framed Systems

Typical physical properties—interior stud framing

table 1



Stud depth—in.	Depth (mm)	Stud ga.
1-5/8	41	25
2-1/2	64	25
3-5/8	92	25
6	152	25
1-5/8	41	20
2-1/2	64	20
3-5/8	92	20
6	152	20

Notice: The limiting height tables on the following pages are based primarily on typical minimum physical and structural properties (I_x and S_x). The physical and structural properties may vary by region and by manufacturer. Request actual physical and structural property data from your local steel framing manufacturer.

Drywall/Steel Framed Systems

Typical limiting heights—Interior partitions

table 2

Stud width	Stud spacing	Allow. defl.	Partition, one layer	Partition, two layers	Furring, one layer
25-gauge stud (.0179 min.)					
41 mm	400 mm	L/120	3277 f	3277 d	3124 d
		L/240	2896 d	3200 d	2515 d
		L/360	2515 d	2743 d	2210 d
	600 mm	L/120	2667 f	2667 f	2667 f
		L/240	2515 d	2667 f	2210 d
		L/360	2210 d	2438 d	1095 d
64 mm	400 mm	L/120	4191 f	4191 f	4191 d*
		L/240	3810 d	4191 d	3353 d
		L/360	3277 d	3581 d	2972 d
	600 mm	L/120	3429 f	3429 f	3429 f
		L/240	3277 d	3429 f	2972 d
		L/360	2896 d	3124 d	2591 d
92 mm	400 mm	L/120	5105 f	5105 f	5105 f*
		L/240	4877 d	5105 f	4420 d*
		L/360	4267 d	4496 d	3886 d*
	600 mm	L/120	4115 f	4115 f	4115 f*
		L/240	4115 f	4115 f	3886 d*
		L/360	3734 d	3962 d	3353 d
152 mm	400 mm	L/120	6096 f	6096 f	6096 f*
		L/240	6096 f	6096 f	6096 f*
		L/360	6096 f	6096 f	5715 f*
	600 mm	L/120	4572 v	4572 v	4572 v*
		L/240	4572 v	4572 v	4572 v*
		L/360	4572 v	4572 v	4572 v*
20 gauge stud (.0312 min.)					
64 mm	400 mm	L/120	5282 f	5462 f	5029 d*
		L/240	4215 d	4901 d	3962 d*
		L/360	3658 d	4267 d	3505 d
	600 mm	L/120	4444 f	4444 f	4420 d*
		L/240	3658 d	4090 f	3505 d
		L/360	3200 d	3758 d	3048 d
92 mm	400 mm	L/120	6882 d	7215 f	6629 d*
		L/240	5462 d	6148 d	5258 d*
		L/360	4749 d	5386 d	4572 d*
	600 mm	L/120	5892 f	5892 f	5791 d*
		L/240	4749 d	5386 f	4572 d*
		L/360	4167 d	4724 d	4039 d*
152 mm	400 mm	L/120	10034 d	10339 f	9805 d*
		L/240	7949 d	8687 d	7772 d*
		L/360	8959 d	7596 d	7087 d*
	600 mm	L/120	7696 f	7696 f	8534 d*
		L/240	6956 d	7596 d	6782 d*
		L/360	6072 d	6654 d	5944 d*

Notice: The Limiting Heights tables are based primarily on typical minimum physical and structural properties (I_y and S_y). Physical and structural properties may vary by region and manufacturer. Request actual physical and structural property data from your local steel framing manufacturer. Limiting criteria: d-deflection; f-bending stress; v-end reaction shear.

* Studs exceeding 3660 mm (12 ft.) require mid-height anchor to exterior wall. See detail p. 33.

Drywall/Steel Framed Systems

Chase Wall





Chase walls provide vertical shafts where greater core widths are needed for pipe chase enclosures and other service installations. They consist of a double row of steel studs with gypsum panel cross braces between rows. Double-layer 12.7 mm (1/2") SHEETROCK brand Gypsum Panels are screw-applied on both sides of studs. A 2-hour fire-resistance rating can be obtained when 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, are used. As an alternative, 64 mm (2-1/2") steel stud cross braces screw-attached to chase wall studs may be used. When chase wall studs are not directly opposite, steel stud cross braces 600 mm (24") o.c. are anchored to horizontal 64 mm (2-1/2") runners screw-attached to chase wall studs.

Limiting thickness is max. 600 mm (24") with gypsum board braces; brace spacing 1200 mm (48") o.c. max. vertically; limiting heights are shown above. Other chase walls providing greater height may be constructed with wider or heavier steel studs.

In addition, two layers of 19.1 mm (3/4") ULTRACODE Core panels may be substituted for three layers of 12.7 mm (1/2") FIRECODE Core panels in UL Design U436 and still achieve the 3 hr. fire-resistance rating.

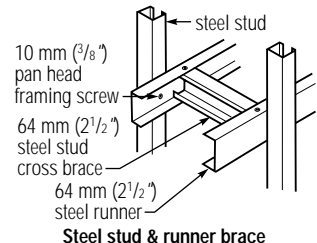
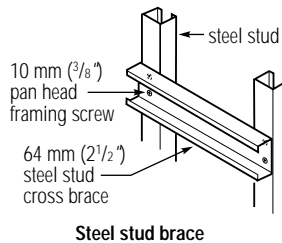
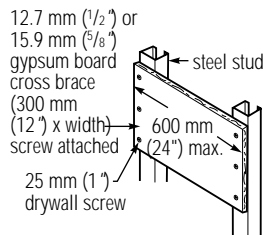
Typical limiting heights—Chase wall partitions

table 3

Stud width	Stud ga.	Stud spacing	Allow. defl.	one layer		two layers	
							
1-5/8" 41 mm	25	16" 400 mm	L/120	15'3" f	4648 f	15'3" f	4648 f
			L/240	13'3" d	4039 d	14'6" d	4120 d
			L/360	11'6" d	3505 d	12'9" d	3886 d
		24" 600 mm	L/120	12'6" f	3810 f	12'6" f	3810 f
			L/240	11'6" d	3505 d	12'6" f	3810 f
			L/360	10'0" d	3048 d	11'0" d	3353 d
2-1/2" 64 mm	25	16" 400 mm	L/120	19'6" f	5944 f	19'6" f	5944 f
			L/240	17'6" d	5334 d	19'0" d	5791 d
			L/360	15'6" d	4724 d	16'6" d	5029 d
		24" 600 mm	L/120	16'0" f	4877 f	16'0" f	4877 f
			L/240	15'6" d	4724 d	16'0" f	4877 f
			L/360	13'6" d	4115 d	14'6" d	4420 d
3-5/8" 92 mm	25	16" 400 mm	L/120	23'6" f	7163 f	23'6" f	7163 f
			L/240	22'9" d	6932 d	23'6" f	7163 f
			L/360	19'9" d	6020 d	21'3" d	6477 d
		24" 600 mm	L/120	19'3" f	5867 f	19'3" f	5867 f
			L/240	19'3" f	5867 f	19'3" f	5867 f
			L/360	17'3" d	5258 d	18'6" d	5639 d

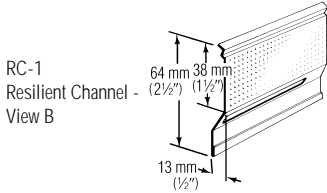
Limiting height for 12.7 or 15.9 mm (1/2" or 5/8") thick panels and 240 Pa (5 psf) uniform load perpendicular to partition. Assemblies require cross braces 1200 mm (4 ft.) o.c. max. Use two-layer heights for multi-layer assemblies. Limiting criteria: d—deflection, f—bending stress. Consult local code authority for limiting criteria.

Notice: The Limiting Heights tables are based primarily on typical minimum physical and structural properties (I_x and S_x). Physical and structural properties may vary by region and manufacturer. Request actual physical and structural property data from your local steel framing manufacturer.



Drywall/Steel Framed Systems

Resilient Channel Partitions



Resilient attachment of gypsum panels with RC-1 Resilient Channels provides low-cost, highly efficient assemblies for increased privacy in corridor and party wall applications. The steel channels float the panels away from the studs and provide a spring action that decouples the board from the framing. When combined with THERMAFIBER SAFB in the framing cavity, highly effective sound attenuation is obtained.

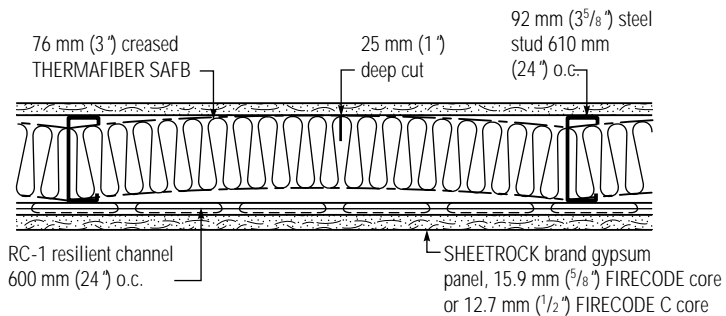
In these thin, lightweight assemblies, horizontal RC-1 Resilient Channels, 600 mm (24") o.c., are screw-attached to one side of 90 mm (3-5/8") steel studs spaced 600 mm (24") o.c. and set in runners. Gypsum panels are screw-attached to these channels on one side and directly attached to the steel stud flanges on the opposite partition side. THERMAFIBER SAFB, 76 mm (3") thick and 635 mm (25") wide, are inserted and creased in the partition cavity. Because the blanket is wider than the cavity, it presses against the panels, thereby damping sound vibrations more effectively and offering 55 STC sound rating. (Use of a filler strip at the base may reduce STC rating.) Limiting heights for these assemblies are shown in the table below.

Typical limiting heights—Resilient channel assemblies	Stud depth	Stud depth	Stud ga.	Stud spacing	Allow. defl.	one layer resilient partition	
						mm	mm
	92mm	3-5/8"	0.45 mm (25)	400 mm (16")	L/120	16'7" f	5054 f
					L/240	13'4" d	4063 d
				600 mm (24")	L/120	13'6" f	4115 f
					L/240	11'8" d	3557 d

(1) Limiting height for 15.9 mm (5/8") thick gypsum panels and 240 Pa (5-psf) uniform load perpendicular to partition.

Studs attached to top and bottom runners on resilient side. Limiting criteria: d—deflection, f—bending stress; consult local code authority for limiting criteria.

Notice: The Limiting Heights tables are based primarily on the typical minimum physical and structural properties (I_x and S_x). Physical and structural properties may vary by region and manufacturer. Request actual physical and structural property data from your local steel framing manufacturer.



Curved Partitions

Curved partitions are an attractive way to soften the hard lines of flat wall dimensions. They create a flowing dimension that offsets the rigidity of flat wall lines, add appealing depth, and enhance overall decor. Versatile SHEETROCK brand Gypsum Panels can be formed to almost any cylindrically curved surface. In addition, using SHEETROCK brand Gypsum Panels, FIRECODE C Core, will permit 1-hour to 4-hour fire-resistance ratings.

Gypsum panels are applied either dry or wet depending on the radius of curvature desired. To prevent flat areas between framing, shorter bend radii require closer than normal stud spacing.

Panels are horizontally applied, gently bent around framing and securely fastened to achieve the desired radius. When panels are applied dry, the minimum radius of curvature meets many applications (see table for dry gypsum panels). By moistening the face or back paper thoroughly prior to application and replacing the panels in a stack for at least one hour, the panels can be bent to still shorter radii (see table for wetted panels). When panels dry thoroughly, they regain original hardness.

Cutouts for electrical boxes are not recommended in curved surfaces unless they can be made after boards are installed and thoroughly dry.

Minimum bending radii of dry gypsum panel		Panel applied with long dimension perpendicular to framing				Panel applied with long dimension parallel to framing	
		Panel thickness		ft	m	ft	m
in	mm						
3/8	9.5			7-1/2	2.3	25	7.6
1/2	12.7			10	6.1	—	—

Minimum bending radii of wetted gypsum panel ⁽¹⁾		Radius ft./mm	Inside length of arc ⁽²⁾		Outside length of arc ⁽²⁾		No. of studs on arc including those at tangents ⁽³⁾	Approximate stud spacing c. to c. ⁽⁴⁾	Maximum stud spacing ⁽⁴⁾		Ounces/Litres of water required per panel side ⁽⁵⁾			
Panel thickness in./mm	ft./mm		ft./mm	ft./mm	in./mm	in./mm			in./mm	in./mm				
3/8"	9.5	3'0"	915	4.71'	1436	62.8"	1595	9	7.85"	200	8"	200	35	1.0 L
3/8"	9.5	3'6"	1067	5.50'	1676	72.2"	1834	11	7.22"	183	8"	200	35	1.0 L
1/2"	12.7	4'0"	1219	6.28'	1914	81.6"	2073	8	11.70"	297	12"	300	45	1.3 L
1/2"	12.7	4'6"	1372	7.07'	1255	91.1"	2314	9	11.40"	290	12"	300	45	1.3 L

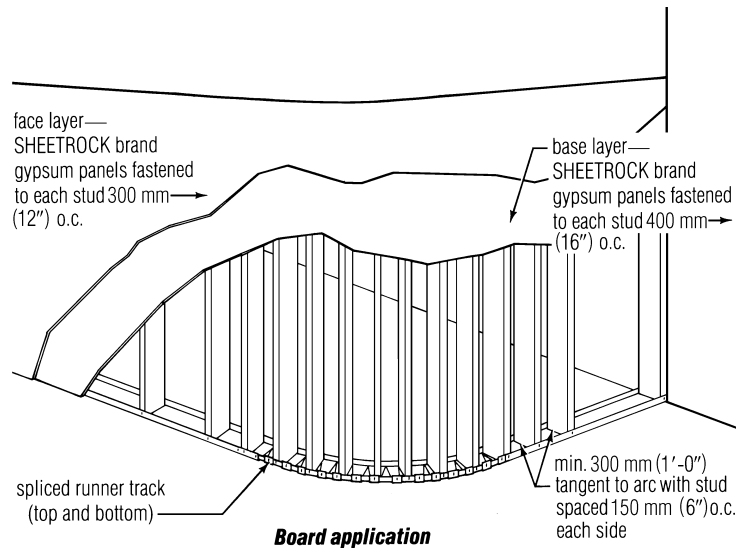
(1) For gypsum board applied horizontally to a 102 mm (4") thick partition.

(2) Arc length = $\frac{3.14 \cdot R}{2}$ (for a 90° arc)

(3) No. studs = outside arc length / maximum spacing + 1 (rounded up to next whole number).

(4) Stud spacing = outside arc length / no. of studs - 1 (measured along outside of runner).

(5) Wet only the side of panel that will be in tension. Water required per panel side is based on a 1200x2400 mm (4'x8") panel.



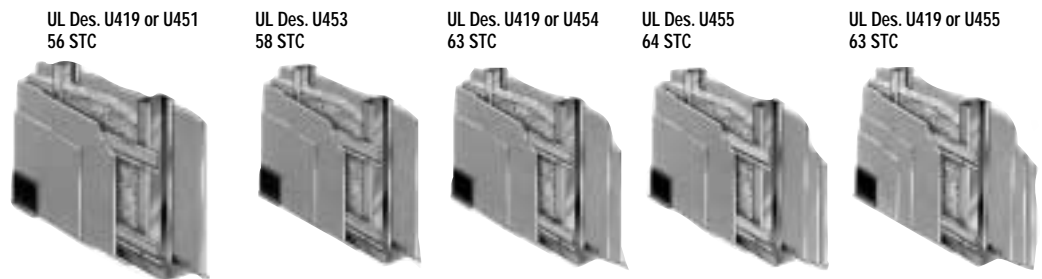
Drywall/Steel Framed Systems

High Performance Sound Control Horizontal RC-1 Resilient Channels are screw-attached 600 mm (24") o.c. to the narrow flange side of SJ steel studs which also are spaced 600 mm (24") o.c. SHEETROCK brand Gypsum Panels, FIRECODE C Core, are screw-attached directly to the studs on one side and to the resilient channels on the other side. THERMAFIBER SAFB are friction-fitted in the partition cavity. The SAFB are pressed against the direct-applied gypsum panel, leaving a minimum 13 mm (1/2") space between the resilient channel and the SAFB. All resilient channels are installed with mounting flange down. Acoustical Sealant is applied between the gypsum panel and the floor. Acoustical Sealant is also used where a resilient channel mounted gypsum panel intersects a wall plane that is not resilient channel mounted, where a gypsum panel meets a dissimilar material, where outlets and other penetrations need to be sealed, and where expansion or other joints need to be sealed.

Features	Versatile	Partition can be designed to meet a specific requirement. Or a single-layer design which meets an acoustic code requirement can be easily and economically upgraded, for example, party walls in apartments or condos.
	Fire Resistant	Up to 4 hr. fire ratings are available. See page 19.
	Sound Isolating	Efficient sound insulation at all frequencies. The multilayer designs provide exceptional isolation at low, mid and high frequencies making them ideal for isolating loud music, mechanical equipment and amplified speech sound sources.
	Lightweight, Thin	Allows for the most efficient use of materials and space to meet the needs of a specific project. Structural systems provide means for high acoustic performance, double construction with tall, relatively thin, lightweight partitions.
	Economical and Convenient	Low cost, readily available materials install simply and easily; provide highly competitive costs and superior value for the performance offered.

Limitations

- 1 Exposure to excessive or continuous moisture and extreme temperatures should be avoided.
- 2 The fire resistance ratings and exceptionally high sound ratings are predicated upon use of specific components and installation procedures. This includes proper application of Acoustical Sealant and installation of THERMAFIBER SAFB spaced away from the resilient channels.
- 3 Maximum stud spacing: 600 mm (24"); maximum resilient channel spacing: 600 mm (24"). Ceramic tile is not recommended for application to single layer panels on the resilient channel side.
- 4 Variable wind pressure can cause a high-rise building to drift or sway. This can result in movement of the non-load-bearing partitions, thus causing noise. Canadian Gypsum Company assumes no responsibility for the prevention, cause or repair of this job-related noise.



Drywall/Steel Framed Systems

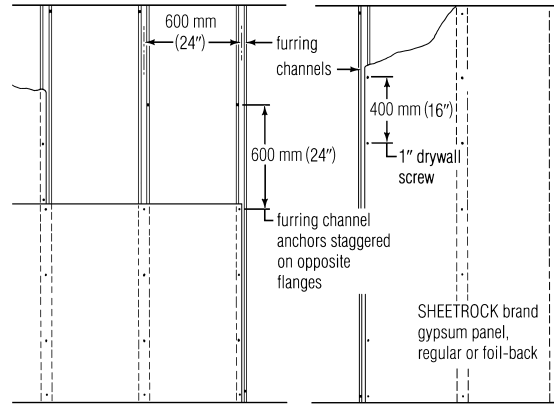
Wall Furring

Interior and exterior walls are readily furred using 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, Foil-Back, screw-attached to steel framing erected vertically. In these systems, any of three different framing methods may be used to provide a vapour retarder, thermal insulation, and chase space for pipes, conduits and ducts.

With Metal Furring

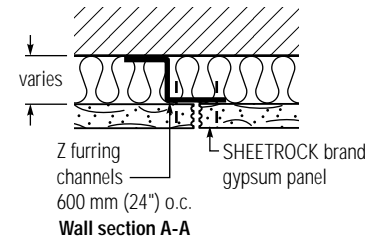
These furring channels, erected vertically 600 mm (24") o.c., are fastened directly to interiors of exterior walls of monolithic **Channels** concrete and virtually any type of masonry—brick, concrete block, tile. Channels may be furred using adjustable wall furring brackets and 19 mm (3/4") cold-rolled channels to provide additional space for pipes, conduits or ducts.

Wall elevation



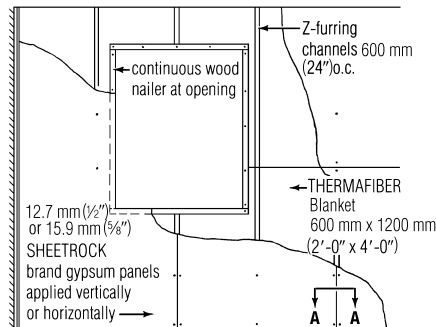
Perpendicular application

Parallel application



Wall section A-A

Wall elevation



Counterclockwise from upper right:
 Installing insulation
 Attaching Z-furring channel
 Erecting gypsum panel
 Screw attaching panel



Drywall/Steel Framed Systems

With Z-Furring Channels In this assembly, Z-Furring Channels are spaced 600 mm (24") o.c. THERMAFIBER Blanket or rigid foam insulation is friction-fit to interiors of exterior walls. Gypsum panels are screw-attached to channel flanges to provide a drywall surface isolated to a great degree from the masonry wall. In new construction and remodeling, this system provides a highly insulative self-furring solid backup for SHEETROCK brand Gypsum Panels. See construction details on page 34.

With Steel Studs Free-standing furring consists of steel studs erected vertically between floor and ceiling runners. Studs are attached to runner flanges with metal lock fastener tool and screws and lateral bracing on the back-side. SHEETROCK brand Gypsum Panels, Foil-Back, screw-attached to one side of studs, serve as an easily decorated interior surface. This free-standing furring system provides maximum clear chase space and minimizes possibilities for photographing or shadowing to occur over fasteners and furring members.

This assembly consists of stud framing which is secured to the exterior wall with brackets. The adjustable wall furring bracket is anchored to the exterior wall and attached to each stud web with a pan head framing screw. Furring providing greater height may be constructed with wider or heavier steel studs (see tables, page 6).

With CGC C-H Stud Framing An alternative framing system uses CGC C-H Studs, J-Runners and SHEETROCK brand Gypsum Shaftwall Liner Panels, quickly erected from one side to provide sturdy fire-rated backup curtain walls. Studs and runners are available in 64 mm, 102 mm and 150 mm (2-1/2", 4" and 6") widths. SHEETROCK brand Gypsum Shaftwall Liner Panels have a special fire-resistant core encased in water-resistant paper. System provides wall heights to 4648 mm (15'3"), wind loads to 1.92 kPa (40 psf). All components except curtain wall skin may be erected from inside the building.

**With CGC C-H studs—
limiting heights with
interior and exterior
facing⁽¹⁾**

Design criteria	Defl. limit	stud spacing (in/mm o.c.)		Limiting heights for steel studs by size and gauge					
				2-1/2"	212 CH22	2-1/2"	212 CH20	4"	400 CH20
15 psf 720 Pa	L/240	12"	300 mm	11'9"	3581 mm	13'0"	3962 mm	15'3"	4648 mm
		24"	600 mm	10'3"	3124 mm	10'9"	3277 mm	12'6"	3810 mm
	L/360	12"	300 mm	10'3"	3124 mm	11'3"	3429 mm	13'6"	4115 mm
		24"	600 mm	9'10"	2996 mm	9'6"	2896 mm	11'0"	3353 mm
20 psf 960 Pa	L/240	12"	300 mm	10'6"	3200 mm	11'9"	3581 mm	14'0"	4267 mm
		24"	600 mm	9'0"	2743 mm	9'9"	2972 mm	11'6"	3505 mm
	L/360	12"	300 mm	9'3"	2819 mm	10'3"	3124 mm	12'3"	3734 mm
		24"	600 mm	8'3"	2515 mm	8'6"	2591 mm	10'0"	3048 mm
25 psf 1.2 kPa	L/240	12"	300 mm	9'9"	2972 mm	11'0"	3353 mm	13'0"	3962 mm
		24"	600 mm	8'0"	2438 mm	9'0"	2743 mm	10'6"	3200 mm
	L/360	12"	300 mm	8'6"	2591 mm	9'6"	2896 mm	11'3"	3429 mm
		24"	600 mm	—	—	8'0"	2438 mm	9'3"	2819 mm
30 psf 1.44 kPa	L/240	12"	300 mm	9'3"	2819 mm	10'3"	3124 mm	12'3"	3734 mm
		24"	600 mm	—	—	8'3"	2515 mm	9'6"	2896 mm
	L/360	12"	300 mm	8'0"	2438 mm	9'0"	2743 mm	10'6"	3200 mm
		24"	600 mm	—	—	—	—	8'9"	2667 mm
35 psf 1.68 kPa	L/240	12"	300 mm	8'9"	2667 mm	9'9"	2972 mm	11'6"	3505 mm
		24"	600 mm	—	—	—	—	8'0"	2438 mm
	L/360	12"	300 mm	—	—	8'6"	2591 mm	10'0"	3048 mm
		24"	600 mm	—	—	—	—	8'0"	2438 mm
40 psf 1.92 kPa	L/240	12"	300 mm	8'6"	2591 mm	9'3"	2819 mm	11'0"	3353 mm
		24"	600 mm	—	—	—	—	—	—
	L/360	12"	300 mm	—	—	8'3"	2515 mm	9'9"	2972 mm
		24"	600 mm	—	—	—	—	—	—

(1) Any independently supported exterior treatment; interior is two layers of 12.7 (1/2") SHEETROCK brand Gypsum Panels. Stress based on capacity of studs alone. Deflection based on composite wall assembly without exterior finish.

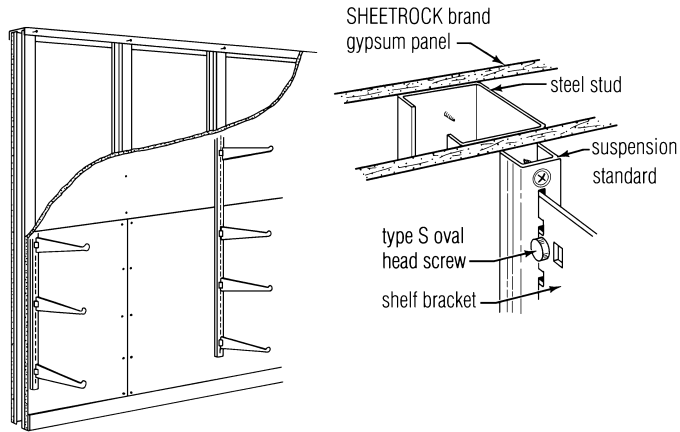
Drywall/Steel Framed Systems

Shelf-Wall

This system provides load-carrying walls for shelving in stores, offices, schools and other applications. Incorporating simple, quickly erected, economical steel stud components with shelf brackets, standards and accessories, the assembly offers advantages of steel stud-drywall construction plus structural strength to support shelving and merchandise.

In this assembly, 92 mm (3-5/8") steel studs spaced no more than 600 mm (24") o.c. are securely fastened to floor and ceiling runners and surfaced with either single- or double-layer SHEETROCK brand Gypsum Panels. Slotted standards are screw-attached through gypsum board to studs or steel reinforcing inserted between layers.

Although this system has been evaluated for moderate eccentric loads, an engineer should be consulted for evaluation of specific conditions.



Drywall/Steel Framed Systems

Column and Beam Fire Protection

Drywall systems for fire protection of structural steel columns and beams consist of SHEETROCK brand Gypsum Panels, FIRECODE C or FIRECODE Core, screw-attached to 41 mm (1-5/8") steel studs at column corners. DUR-A-BEAD or No. 800 Corner Bead concealed with a Canadian Gypsum Company joint compound resists damage from impact at exterior corners.

These systems are easily and quickly installed without waiting for adhesives to dry. They provide lightweight, thin, compact steel column and beam fire protection of up to four hours depending on the construction. Increased fire protection of primary structural framing members usually permits lower insurance premiums.

In these assemblies, a hard and abrasion-resistant surface may be obtained with a thin veneer (2 to 2.4 mm [1/16" to 3/32"] thick) of specially formulated, high-strength veneer finish. IMPERIAL Veneer Plaster is applied over GRAND PRIX FIRECODE C or FIRECODE Veneer Plaster Base.

In addition, two layers of 19.1 mm (3/4") ULTRACODE Core panels achieve a 2 hr. fire rating, and three layers achieve a 3 hr. fire rating, when applied as specified in UL Design X528. UL Design X526 also allows for ULTRACODE Core panels.

Soffits

This assembly consists of galvanized steel studs and runners faced with SHEETROCK brand Gypsum Panels, screw-attached. It is a lightweight, fast and economical method of enclosing areas over cabinets or lockers and for housing overhead ducts, pipes or conduits. By adding bracing, spacing can be increased from 600 x 600 to 1200 x 1800 mm (24" x 24" to 48" x 72").

Maximum width and depth dimensions ⁽¹⁾	Gypsum board thickness ⁽²⁾		steel stud size		Maximum width		Max. depth for max. width shown	
	in	mm	in	mm	in	mm	in	mm
	1/2	12.7	1-5/8	41	60	1500	48	1200
1/2	12.7	2-1/2, 3-5/8	64, 92	72	1800	36	900	
5/8	15.9	1-5/8	41	60	1500	30	750	
5/8	15.9	2-1/2, 3-5/8	64, 92	72	1800	18	450	

(1) The construction is not designed to support loads other than its own dead weight and should not be used where it may be subjected to excessive abuse.

(2) The double-layer system and 9.5 mm (3/8") thick gypsum panels are not recommended for this construction.

Floor/Ceilings

Framing systems can be designed to carry both live and dead loads. These floor/ceilings consist of SHEETROCK brand Gypsum Panels, FIRECODE or FIRECODE C Core, screw-attached to metal furring channels clipped or wire-tied (required to meet fire ratings) to suspended runner channels or wire-tied to supports. Panels may also be screw-attached below a direct suspension system. For long spans to accommodate large ducts or pipes in the ceiling space, the steel stud is used as ceiling furring or in a separate system (see page 34.)

The steel stud framing system is ideal for ceilings over office areas in pitched-roof buildings and in modular buildings where ceiling framing is independent of the floor above; accommodates light troffers, ducting and electrical services.

Gypsum panels for these assemblies are available in 12.7 and 15.9 mm (1/2" and 5/8") thicknesses and in five types. SHEETROCK brand Gypsum Panels, Foil-Back, offer an effective vapour retarder, when appropriately sealed as determined by the architect and when installed in a workmanlike manner. Regular gypsum panels provide a firm base for acoustical tile adhesively applied. SHEETROCK brand Exterior Ceiling Board is suitable for exterior ceilings and soffits with indirect weather exposure.

When water-based spray texture paint will be applied, 12.7 mm (1/2") SHEETROCK brand Interior Ceiling Board Sag-Resistant is ideal because it supports both the sprayed texture and insulation like 15.9 mm (5/8") thick panels but at less cost.



Drywall/Steel Framed Systems

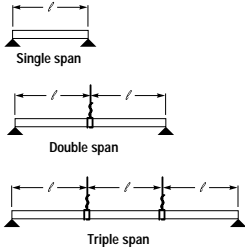
Limiting Spans of Metal Furring Channels Between Structural Supports ⁽¹⁾	(Limiting Span Between 38 mm Channel is 1200 mm o.c. max.)	Type furring member	Member spacing (mm o.c.)	Single layer panels (120 Pa max.)		Double layer panels (240 Pa max.)	
				1-span	3-span	1-span	3-span
				DWC-25 (hemmed)	400	1753 mm	2158 mm
	600	1524 mm	1881 mm	1219 mm	1500 mm		
DWC-20 (unhemmed)	400	2109 mm	2591 mm	1652 mm	2057 mm		
	600	1829 mm	2262 mm	1448 mm	1804 mm		

(1) Limiting spans for 12.7 mm and 15.9 mm thick panels, max. L/240 deflection and uniform load shown. Investigate concentrated loads such as light fixtures and exhaust fans separately.
Note: Contact specific manufacturer for actual spans.

(Limiting Span Between 1-1/2" Channel is 4'0" o.c. max.)	Type furring member	Member spacing (in. o.c.)	Single layer panels (2.5 psf max.)		Double layer panels (5.0 psf max.)	
			1-span	3-span	1-span	3-span
			DWC-25 (hemmed)	16	5'9"	7'1"
	24	5'0"	6'2"	4'0"	4'11"	
DWC-20 (unhemmed)	16	6'11"	8'6"	5'5"	6'9"	
	24	6'0"	7'5"	4'9"	5'11"	

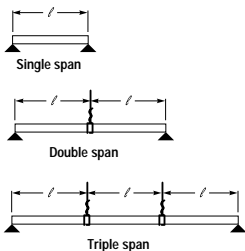
(1) Limiting spans for 12.7 mm and 15.9 mm (1/2" and 5/8") thick panels, max. L/240 deflection and uniform load shown. Investigate concentrated loads such as light fixtures and exhaust fans separately.
Note: Contact specific manufacturer for actual spans.

Limiting spans (l)—Steel stud ceiling system ⁽¹⁾ (interior only)	Stud style	Stud spacing-mm.	64 mm 25-ga.			92 mm 25-ga. ⁽²⁾			64 mm 20-ga.			92 mm 20-ga.			152 mm 20-ga.			
			300	400	600	300	400	600	300	400	600	300	400	600	300	400	600	
			Single span	Uniform load —Pa	240	3328	3024	2643	4444	4039	3560	4014	3633	3176	5334	4852	4243	8000
		480	2643	2414	2057	3530	3200	2210	3176	2896	2515	4243	3862	3353	6349	5462	5029	
		720	2310	2082	1448	2947	2210	1448	2768	2515	2210	3709	3353	2947	5538	5029	4243	
		960	2057	1625	—	2210	1652	—	2515	2286	1929	3353	3048	2539	5029	4496	3658	
	Double and triple span	Uniform load —Pa	240	4115	3758	3100	5310	4471	3405	4977	4520	3938	6629	6020	5386	9906	8992	7849
		480	3100	2643	2109	3405	2795	2033	3938	3581	3072	5258	4776	4039	7849	6654	5130	
		720	2490	2109	1753	2539	2033	1448	3453	3048	2490	4572	4039	3301	6172	5130	4215	
		960	2109	1753	1320	2033	1600	—	3048	2667	2158	4039	3505	2844	5130	4215	3100	



(1) Based on L/240 allowable deflection. Bracing of top flanges is required and must not exceed 1200 mm o.c. (2) Stud end stiffening required. Additional hangers are necessary when span area exceeds 1.5 m².
Note: For exterior applications, consult engineer for actual design.
Notice: The Limiting Span tables are based primarily on typical minimum physical and structural properties (I_y and S_x). Physical and structural properties may vary by region and manufacturer. Request actual physical and structural property data from your local steel framing manufacturer.

Limiting spans (l)—Steel stud ceiling system ⁽¹⁾ (interior only)	Stud style	Stud spacing-in.	2-1/2" 0.45 mm 25-ga.			3-5/8" 0.45 mm 25-ga. ⁽²⁾			2-1/2" 0.9 mm 20-ga.			3-5/8" 0.9 mm 20-ga.			6" 0.9 mm 20-ga.			
			12	16	24	12	16	24	12	16	24	12	16	24	12	16	24	
			Single span	Uniform load —psf	5	10'11"	9'11"	8'8"	14'7"	13'3"	11'7"	13'2"	11'11"	10'5"	17'6"	15'11"	13'11"	26'3"
		10	8'8"	7'11"	6'9"	11'7"	10'6"	7'3"	10'5"	9'6"	8'3"	13'11"	12'8"	11'0"	20'10"	18'11"	16'6"	
		15	7'7"	6'10"	4'9"	9'8"	7'3"	4'9"	9'1"	8'3"	7'3"	12'2"	11'0"	9'8"	18'2"	16'6"	13'11"	
		20	6'9"	5'4"	—	7'3"	5'5"	—	8'3"	7'6"	6'4"	11'0"	10'0"	8'4"	16'6"	14'9"	12'0"	
	Double and triple span	Uniform load —psf	5	13'6"	12'4"	10'2"	17'5"	14'8"	11'2"	16'4"	14'10"	12'11"	21'9"	19'9"	17'8"	32'6"	29'6"	25'9"
		10	10'2"	8'8"	6'11"	11'2"	9'2"	6'8"	12'11"	11'9"	10'1"	17'3"	15'8"	13'3"	25'9"	21'10"	16'10"	
		15	8'2"	6'11"	5'9"	8'4"	6'8"	4'9"	11'4"	10'0"	8'2"	15'0"	13'3"	10'10"	20'3"	16'10"	13'10"	
		20	6'11"	5'9"	4'4"	6'8"	5'3"	—	10'0"	8'9"	7'1"	13'3"	11'6"	9'4"	16'10"	13'10"	10'2"	



(1) Based on L/240 allowable deflection. Bracing of top flanges is required and must not exceed 48" o.c. (2) Stud end stiffening required. Additional hangers are necessary when span area exceeds 16 ft².
Note: For exterior applications, consult engineer for actual design.
Notice: The Limiting Span tables are based primarily on typical minimum physical and structural properties (I_y and S_x). Physical and structural properties may vary by region and manufacturer. Request actual physical and structural property data from your local steel framing manufacturer.

Drywall/Steel Framed Systems

Curtain Walls	Description
	<p>Non-load-bearing exterior curtain wall systems with steel framing have been in use for over 20 years and adapt easily to basic design concepts using conventional materials, methods and equipment. These systems have been specified in all parts of the world for office buildings, schools, shopping centres, motels, hotels and apartments.</p> <p>Versatile Designs—Exterior stucco surfaces offer textural expression of smooth monolithic surfaces or random sculptural relief. Colour and texture can be varied by addition of coarse colored aggregates which contrast boldly with brick, glass and concrete.</p> <p>Surface Finishes—Interior and exterior facings in various combinations meet specific functional and aesthetic needs.</p> <p>Fire Resistant—2-hour rating, other ratings available. See page 27.</p> <p>Sound Isolation—The attenuating effect of air space and insulation within the framing cuts noise transmitted to the interior.</p> <p>Thermal Performance—Systems will accommodate energy design requirements for heated and air-conditioned buildings. Greater insulation values are attainable in less wall thickness with steel framing than can be attained with block or concrete.</p> <p>Lightweight—Systems cut weight of brick masonry walls by 25%, of textured panel assemblies by up to 66%, to reduce structural foundation requirements.</p> <p>Air and Water Infiltration—Watertight construction is ensured when gypsum sheathing is covered with No. 15 asphalt felt or Grade D 60 min. Building Paper; airtight construction when sealants are used in appropriate locations (see Good Design Practices, page 38).</p>

Drywall/Steel Framed Systems

Framing Systems

Steel studs are roll-formed from steel with corrosion-resistant coating and provide wall framing members suitable for attachment of interior drywall, veneer plaster bases and conventional plaster systems. They are an ideal back-up for stucco and synthetic stucco assemblies, reducing dead load 25% in comparison to concrete block backings. The wide choice of stud sizes and spacings accommodates insulation requirements, allows wall heights to 9.7 m (32'), wind loads to 1.9 kPa, 40 psf, and a variety of building modules. Requirements for greater wall heights and wind loads can usually be met. Consult architect and/or structural engineer for details.

Studs are anchored by screws or welds at top and bottom to specially designed runners, and THERMAFIBER Insulation is inserted in the cavity. Special deep leg runner, when left unattached to studs, accommodates floor slab deflection without imposing an axial load on the studs. Studs are braced laterally by screw-attached gypsum sheathing on the exterior and gypsum panels or base on the interior side. Alternatively, studs may be braced with straps or cold-rolled channels designed according to AISI Specifications.

Interior Surfaces

Interior surfaces may be gypsum drywall or high-strength veneer finish. Hundreds of variations in finishes ranging from smooth trowel to oriental-style textures, painted or fabric covered, are available for interior design.

With gypsum drywall, where a vapour retarder is required on the interior side, SHEETROCK brand Gypsum Panels, Foil-Back, 12.7 or 15.9 mm (1/2" or 5/8") thick, are screw-attached to the steel studs. SHEETROCK brand Gypsum Panels, FIRECODE Core, provide additional resistance to fire exposure, and are used in assemblies where a fire rating is required.

Veneer plaster finish interiors that require a vapour retarder on the interior side have Foil-Back GRAND PRIX Veneer Plaster Base screw-attached to steel studs. IMPERIAL Veneer Plaster or DIAMOND Veneer Plaster is applied 2 to 2.4 mm (1/16" to 3/32") thick over this 1200 mm (4') wide base.

Exterior Surfaces

Exterior surfaces may be unit masonry, portland cement-lime stucco or various decorative panels or siding materials. Brick or other masonry units are laid with a portland cement mortar and secured with brick anchors screw-attached through the sheathing to steel studs. This system offers speedier building enclosure with the protection of a double-cavity wall and greater variety of insulation options.

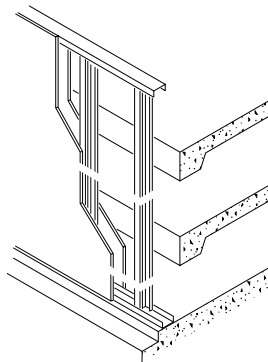
Portland cement stucco is applied in three coats to a nominal 25.4 mm (1") thickness over 3.4 lb. galvanized metal lath. Self-furring metal lath is screw-attached to steel studs through SHEETROCK brand Gypsum Sheathing.

Ceramic tile, thin brick, aggregated or porcelain-enameled panels, prefinished siding and metal panels, aluminum-framed glass and exterior insulation systems may be used over this framing. These surfaces and other dry exterior facings weighing up to 39 kg/m² (8 psf) are applied over sheathing and screw-attached to studs.

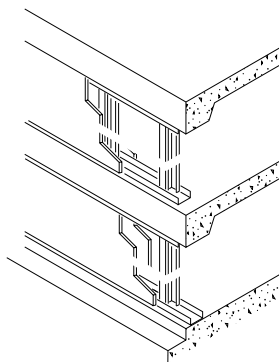
Limitations

- 1 All details, specifications, and data computations contained in this publication concerning Exterior Framing Systems are intended as a general guide for use in wall construction. NO PRODUCT SHOULD BE SPECIFIED OR USED IN ANY DESIGN OR CONSTRUCTION OF ANY STRUCTURE WITHOUT COMPLETE AND DETAILED EVALUATION BY A QUALIFIED STRUCTURAL ENGINEER AND/OR ARCHITECT TO VERIFY THE SUITABILITY OF THE PRODUCT DESCRIBED HEREIN FOR USE IN A GIVEN STRUCTURE.
- 2 Canadian Gypsum Company assumes no liability for failure resulting from use of alternative materials or improper application or installation of any exterior framing system as selected by the design professional.
- 3 All systems must be flashed and weeped to create a water-managed system.

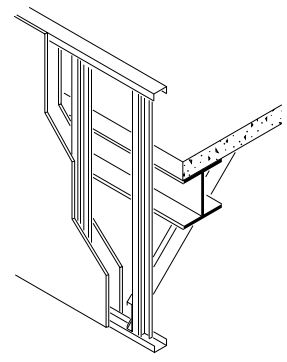
Continuous stud wall system



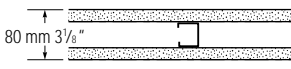
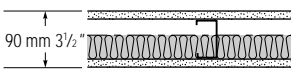
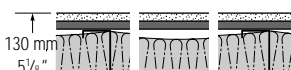
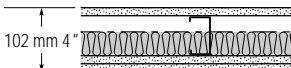

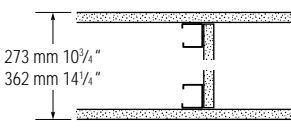

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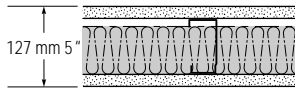
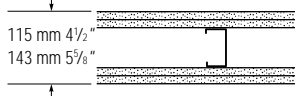
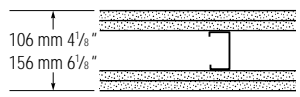
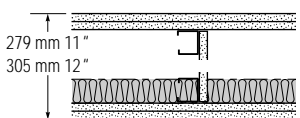
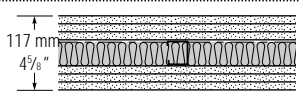
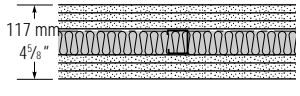
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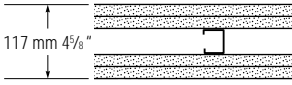
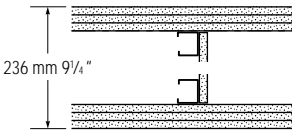
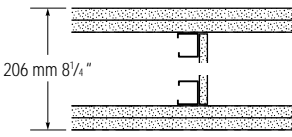
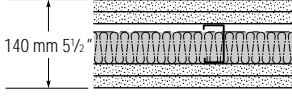
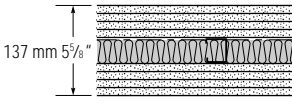
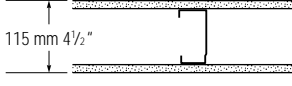
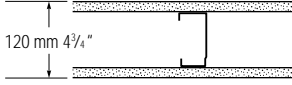
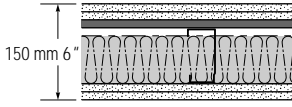
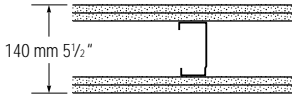
Drywall/Steel Framed Systems

Construction Selector	Fire-rated Construction		Acoustical Performance			
Non-Load-Bearing Partitions	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
	1 hr.		Steel Stud—19.1 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core—41 mm (1-5/8") studs 600 mm (24") o.c.—panels screw att with 38 mm (1-1/2") Type S screws 200 mm (8") o.c. perim, 300 mm (12") o.c. field—joints stag & fin— UL Des U419 or U496			A
	1 hr.		Steel Stud—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—64 mm (2-1/2") studs 600 mm (24") o.c.—single layer panels ea side screw att—38 mm (1-1/2") THERMAFIBER SAFB—joints fin—perimeter caulked— ULC Des W408, UL Des U419 or U448 wt 24 kg/m ² (5 psf)	45 48	TL-69-42 Based on 92 mm (3-5/8") studs & 51 mm (2") SAFB— SA-800422	B
	1 hr.		Steel Stud—resil partition—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, or 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core—92 mm (3-5/8") studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB 635 mm (25") wide creased to fit cavity—RC-1 chan 600 mm (24") o.c. screw att one side—panels screw att—joints stag & fin—perimeter caulked— UL Des U419 or U451 wt 29 kg/m ² (5 psf)	55 54	Based on 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core & 635 mm (25") wide creased SAFB— SA-850415 Based on 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE core— SA-850415	D
	1 hr.		Steel Stud—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—64 mm (2-1/2") studs 600 mm (24") o.c.—single layer panels one side screw att—38 mm (1-1/2") THERMAFIBER SAFB—2 layers opp side—panels screw att—joints stag & fin—perimeter caulked— ULC Des W408, UL Des U419 or U448 wt 34 kg/m ² (7 psf)	50 41	SA-800504 Based on same construction without SAFB— TL-69-148	E
	1 hr.		Steel Stud—15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core—92 mm (3-5/8") studs 600 mm (24") o.c.—panels screw att—joints stag & fin—perimeter caulked— ULC Des W407, UL Des U419 or U465 wt 29 kg/m ² (7 psf)	40 49 51	USG-860808 Based on 76 mm (3") SAFB in cavity— SA-870717 Based on FIRECODE C core panels and 76 mm (3") SAFB 635 mm (25") wide, creased to fit cavity— TL-90-166	G
	1 hr.		Steel Stud Chase Wall—15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core, ea side—41 (1-5/8") studs 600 mm (24") o.c. in 2 rows spaced 160 mm (6-1/4") apart—15.9 mm (5/8") gypsum panel gusssets or steel run braces spanning chase screw att to studs—panels screw att—joints stag & fin— UL Des U420 wt 34 kg/m ² (6 psf)	52	Based on 90 mm (3-1/2") insulation on one side— TL-76-155	J
	1 hr. (truss 3 hr.)		Steel Stud—15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—fireproofed steel truss—64 mm (2-1/2") studs 600 mm (24") o.c. in 2 rows spaced 200 mm (8") apart—15.9 mm (5/8") gypsum panel gusssets spanning chase att to stud at qtr & ctr points—panels appl vert & screw att—joints stag & fin— UL Des U805 wt 34 kg/m ² (6psf)	N/A		K

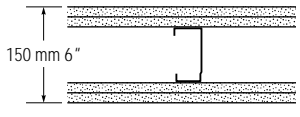
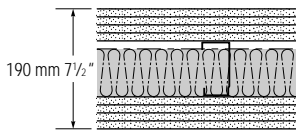
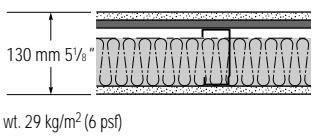
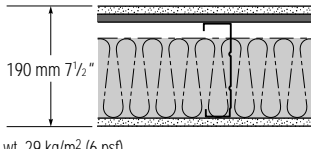
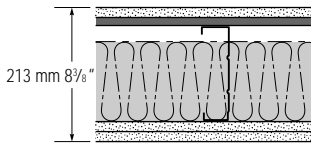
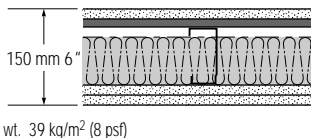
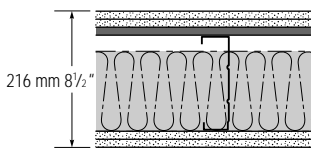
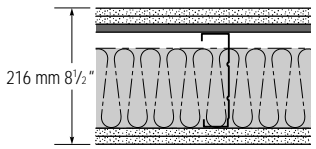
Drywall/Steel Framed Systems

Non-Load-Bearing Partitions	Fire-rated Construction		Acoustical Performance			
	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
	2 hr.		Steel Stud—19.1 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core, ea side—90 mm (3-1/2") studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—panels screw att 200 mm (8") o.c. perim, 300 mm (12") o.c. field—joints stag & fin—perimeter caulked— ULC Des W440, UL Des U419 or U491	50	USG-910617	L
	2 hr.		Steel Stud—2 layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—64 mm (2-1/2") studs 600 mm (24") o.c.—joints stag—base layer screw att—face layer strip lamin or screw att—joints fin—perimeter caulked— ULC Des W406, UL Des U412 or U419 wt 49 kg/m ² (10 psf)	50 55 52 54	Based on 92 mm (3-5/8") M stud assembly without SAFB— USG-840817 Based on 92 mm (3-5/8") studs and 38 mm (1-1/2") SAFB— SA-800421 Based on lamin, face layer, 38 mm (1-1/2") SAFB and 64 mm (2-1/2") studs— SA-860932 Based on 64 mm (2-1/2") studs, screw att. face layer and 38 mm (1-1/2") SAFB— CK-654-40	
	2 hr.		Steel Stud—2 layers 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core, plain or vinyl faced ea side—41 mm (1-5/8") studs 600 mm (24") o.c.—base layers screw att—face layer lamin or screw att—joints stag & fin or unfin—perimeter caulked— UL Des U411 or U419 wt 59 kg/m ² (12 psf)	48 51 56 56	Based on 92 mm (3-5/8") studs and 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C core— BBN-770408 Based on 64 mm (2-1/2") SAFB in cavity— GA-WP-1548 Based on 51 mm (2") SAFB in cavity— USG-840819 Based on 92 mm (3-5/8") studs and 76 mm (3") SAFB— USG-840818	N
	2 hr.		Steel Stud Chase Wall—2 layers 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c. in 2 rows spaced 160 mm (6-1/4") apart—15.9 mm (5/8") gypsum panel gussets or steel run braces spanning chase screw att to studs—panels screw att—joints stag & fin— UL Des U420 wt 63 kg/m ² (13 psf)	52 57	TL-76-162 Based on 90 mm (3-1/2") insulation one side— TL-76-156	O
	2 hr.		Steel Stud Chase Wall—2 layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c. in 2 rows spaced 146 mm (5-3/4") apart—12.7 mm (1/2") gypsum panel gussets spanning chase att to studs at qtr points—panels screw att—38 mm (1-1/2") THERMAFIBER SAFB—joints stag & fin—perimeter caulked—est. fire rating based on UL Des U412 and U420 wt 54 kg/m ² (11 psf)	55	SA-860907	P
	3 hr.		Steel Stud—3 layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c.—panels screw att with joints stag and fin—perimeter caulked—rating based on assembly with or without SAFB— ULC Des W417, UL Des U419 or U435 wt 63 kg/m ² (13 psf)	59	Based on assembly with 38 mm (1-1/2") SAFB in cavity— SA-830112	Q

Drywall/Steel Framed Systems

		Fire-rated Construction		Acoustical Performance		
Non-Load-Bearing Partitions	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
	3 hr.		Steel stud—2 layers 19.1 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c.—panels screw att with joints stag and fin—perimeter caulked— UL Des U419 or U435			R
	3 hr.		Steel Stud—3 layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c. in 2 rows spaced 76 mm (3") apart—steel truss member—gypsum panel gussets or steel run braces spanning chase screw att to studs—panels screw att—joints stag & fin—2 hr. rating applies with 2 layers panels ea side—1 hr. rating applies with single layer 15.9 mm (5/8") panels ea side— UL Des U436			S
	3 hr.		Steel stud chase wall—2 layers 19.1 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c. in two rows spaced 51 mm (2") apart—steel truss member—gypsum panel gussets or stl run braces spanning chase screw-att to studs—panels screw att—joints stag & fin— UL Des U436			T
	4 hr.		Steel Stud—2 layers 15.9 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core, ea side—64 mm (2-1/2") studs 600 mm (24") o.c.—51 mm (2") THERMAFIBER SAFB—panels screw att with joints stag and fin— ULC W441, UL Des U419 or U490	56	USG-910907	U
Notes: Where thermal insulation is shown in assembly drawings, the specific product is required in the assembly to achieve the stated fire-rating. Fiberglass insulation cannot be substituted for THERMAFIBER Insulation. Steel stud 25-ga. will provide above fire and sound ratings.	4 hr.		Steel Stud—4 layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—41 mm (1-5/8") studs 600 mm (24") o.c.—panels screw att with joints stag & fin—perimeter caulked—rating based on assembly with or without sound atten fire blankets— ULC Des W417, UL Des U419 or U435	62	Based on assembly with 38 mm (1-1/2") SAFB in cavity— SA-830113	V
					wt 63 kg/m ² (13 psf)	
						wt 83 kg/m ² (17 psf)
		Fire-rated Construction		Acoustical Performance		
Load-Bearing Partitions	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
	45 min.		12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—90 mm (3-1/2") 20-ga. structural studs 600 mm (24") o.c.—panels screw att—joints fin— load bearing up to 100% allowable stud axial load—UL Des U423 or U425	47	Based on engineering evaluation using 76 mm (3") SAFB in cavity	A
	1 hr.		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE core—90 mm (3-1/2") 20-ga. structural studs 600 mm (24") o.c.—panels screw att—joints fin— load bearing up to 100% allowable stud axial load—UL Des U423 or U425	40	USG-810519	B
	1-1/2 hr.		DbL layer 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—90 mm (3-1/2") 20-ga. structural studs 600 mm (24") o.c.—THERMAFIBER SAFB optional—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—panels screw att—joints stag and fin—rating also applies with GRAND PRIX FIRECODE C base and veneer plaster surface— load bearing up to 100% allowable stud axial load—UL Des U423 or U440	61	Based on 90 mm (3-1/2") 16-ga. structural studs, 15.9 mm (5/8") thick panels, lateral bracing and 76 mm (3") SAFB cavity— SA-830628	C
	1-1/2 hr.		DbL layer 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—90 mm (3-1/2") 20-ga. structural studs 600 mm (24") o.c.—panels screw att—joints stag and fin— load bearing up to 100% allowable stud axial load—UL Des U423 or U425	49	Based on 51 mm (2") SAFB— USG-811009	D
				49	Based on 51 mm (2") SAFB and 152 mm (6") 20-ga. structural studs— USG-810940	

Drywall/Steel Framed Systems

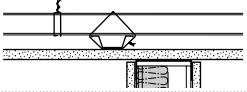
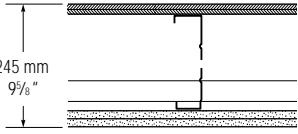
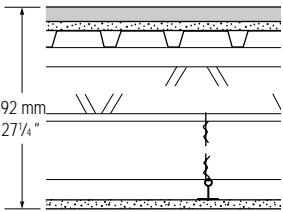
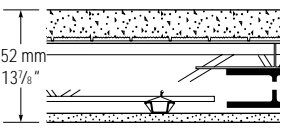
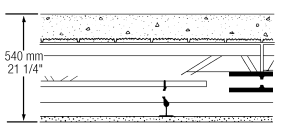
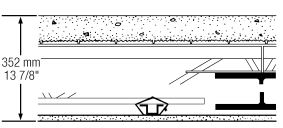
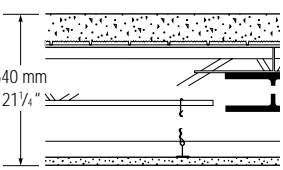
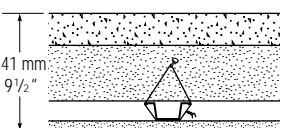
Load-Bearing Partitions	Fire-rated Construction			Acoustical Performance		
	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
	2 hr.		Dbl layer 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core—90 mm (3-1/2") 20-ga. structural studs 600 mm (24") o.c.—panels screw att—joints stag and fin— load bearing up to 100% allowable stud axial load—when min. 51 mm (2") THERMAFIBER SAFB is used in stud cavities; otherwise load-bearing up to 80% allowable stud axial load—UL Des U423 or U425	48 49	Based on 51 mm (2") SAFB in cavity— USG-811006 Based on 51 mm (2") SAFB and 152 mm (6") 20-ga structural studs— USG-810937	E
	3 hr.		Four layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, ea side—90 mm (3-1/2") 20-ga. structural studs 600 mm (24") o.c.—THERMAFIBER SAFB optional—panels screw att—joints stag and fin—rating also applies with IMPERIAL FIRECODE C base and veneer finish surface— load bearing up to 100% allowable stud axial load—UL Des U426			F
High Performance Sound Control—Non-Load-Bearing Partitions	1 hr.		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—92 mm (3-5/8") 20-ga. studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—single-layer gypsum panels screw-att to studs & RC-1 chan—joints stag and fin—perimeter caulked— UL Des U419 or U451	50 54	RAL-TL-87-156 Based on 15.9 mm (5/8") thick panels— RAL-TL-83-216	A
			Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—152 mm (6") 20-ga. studs 600 mm (24") o.c.—127 mm (5") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—single-layer gypsum panels screw-att to studs & RC-1 chan—joints stag and fin—perimeter caulked— UL Des U419 or U451	56 56	RAL-TL-87-139 Based on 15.9 mm (5/8") thick panels— RAL-TL-84-141	B
	1-1/2 hr.		Resil Stud Drywall—15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C Core—152 mm (6") 20-ga. studs 600 mm (24") o.c.—127 mm (5") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—2 layers gypsum panels screw-att to studs, 1 layer screw-att to chan—joints stag and fin—perimeter caulked— UL Des U452	59	RAL-TL-84-140	C
	1-1/2 hr.		Resil Stud Drywall—15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C Core—92 mm (3-5/8") 20-ga. studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—2 layers gypsum panels screw-att to studs, 1 layer screw-att to chan—joints stag and fin—perimeter caulked— UL Des U452	58	RAL-TL-83-215	D
	2 hr.		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—152 mm (6") 20-ga. studs 600 mm (24") o.c.—127 mm (5") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—double-layer gypsum panels screw-att to studs & joints stag and fin—perimeter caulked— UL Des U419 or U454	63 62	RAL-TL-87-141 Based on 15.9 mm (5/8") thick panels— RAL-TL-84-139	E
	2 hr.		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—92 mm (3-5/8") 20-ga. studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—double layer gypsum panels screw-att to studs and chan—joints stag and fin—perimeter caulked— UL Des U419 or U454	60 61	RAL-TL-87-154 Based on 15.9 mm (5/8") thick panels— RAL-TL-83-214	F

Drywall/Steel Framed Systems

High Performance Sound Control—Non-Load-Bearing Partitions	Fire-rated Construction		Acoustical Performance			
	Fire Rating	Detail & Physical Data	Description & Test No.	STC	Description & Test No.	System Reference
2 hr.	150 mm 6"		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—92 mm (3-5/8") 20-ga. studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—single-layer gypsum panels screw-att to studs, double layer screw-att to chan—joints stag and fin—perimeter caulked— UL Des U453	58	Estimated sound test Based on 12.7 mm (1/2") thick panels, 152 mm (6") 20-ga. structural studs, 127 mm (5") SAFB— RAL-TL-87-140 Based on 15.9 mm (5/8") thick panels, 152 mm (6") 20 ga. structural studs, 127 mm (5") SAFB— RAL-TL-84-136	G
				60		
				59		
				wt. 44 kg/m ² (9 psf)		
3 hr.	170 mm 6 5/8"		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—92 mm (3-5/8") 20-ga. studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—3 layers gypsum panels screw-att to studs, double layer screw-att to chan—joints stag and fin—perimeter caulked— UL Des U455	61	RAL-TL-87-153 92 mm (3-5/8") Based on 15.9 mm (5/8") thick panels— RAL-TL-83-213	H
				62		
3 hr.	230 mm 9"		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—152 mm (6") 20-ga. studs 600 mm (24") o.c.—127 mm (5") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—stud, double layer screw-att to chan—joints stag and fin—perimeter caulked— UL Des U455	64	RAL-TL-87-142 Based on 15.9 mm (5/8") thick panels— 3 layers gypsum panels screw-att to RAL-TL-84-138 Based on 15.9 mm (5/8") thick panels, acoustical sealant bead between panels and studs, dabs 200 mm (8") o.c. between panel layers on stud side— RAL-TL-84-150	I
				63		
3 hr.	181 mm 7 1/8"		Resil Stud Drywall—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core—92 mm (3-5/8") 20-ga. studs 600 mm (24") o.c.—76 mm (3") THERMAFIBER SAFB—RC-1 chan one side spaced 600 mm (24") o.c. screw-att to studs—3 layers gypsum panels screw-att to studs, 3 layers screw-att to chan—joints stag and fin—perimeter caulked— UL Des U419 or U455	63	RAL-TL-87-152 152 mm (6") 20-ga. structural studs, 127 mm (5") SAFB— RAL-TL-87-143	J
				65		
Note: Assemblies with RC-1 Resilient Channel require lateral bracing.		wt. 59 kg/m ² (12 psf)	wt. 59 kg/m ² (12 psf)	wt. 68 kg/m ² (14 psf)		

Wall Furring	Detail & Physical Data	Description	Comments	System Reference
		Metal furring channels 600 mm (24") o.c., 12.7 mm (1/2") SHEETROCK brand gypsum panels, foil-back, screw-attached, joints finished	Provides good vapour resistance; no limiting height	A
		Z-furring channels applied vertically 600 mm (24") o.c., THERMAFIBER blankets between channels, 12.7 mm (1/2") SHEETROCK brand gypsum panels, foil-back, screw-attached to channels, joints finished	System with mineral fiber insulation; suitable for up to 76 mm (3") thick insulation; good vapor retarder; no limiting height	B
		Steel studs 600 mm (24") o.c., set in runners, 12.7 mm (1/2") SHEETROCK brand gypsum panels, foil-back, screw-attached to studs, joints finished	Free-standing; allows for pipe chase clearance; good vapor retarder	C
		Z-furring channels applied vertically 600 mm (24") o.c., rigid plastic foam insulation between channels, 12.7 mm (1/2") SHEETROCK brand gypsum panels, foil-back, applied vertically and screw-attached to channels, joints finished	Suitable for up to 76 mm (3") thick insulation; no limiting height	D

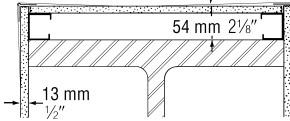
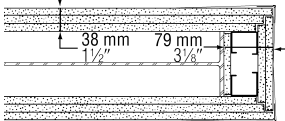
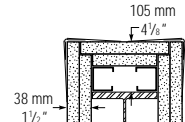
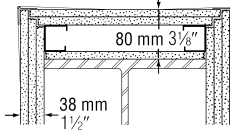
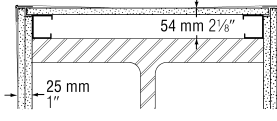
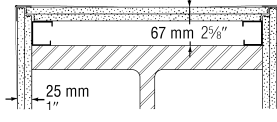
Drywall/Steel Framed Systems

Floor-Ceiling Assemblies	Fire-rated Construction		Acoustical Performance				
	Fire Rating	Detail & Physical Data	Description & Test No.	STC	IIC	Description & Test No.	System Reference
	N/A		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE core—38 mm (1-1/2") chan 1200 mm (4') o.c.—met fur chan 600 mm (24") o.c.—panels screw att 300 mm (12") o.c.—joints fin clg wt 14 kg/m ² (3 psf)	N/A			A
	1 hr. (beam) 1 hr.)	 245 mm 9 7/8"	12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—177 mm (7") 18-ga. structural steel joists 600 mm (24") o.c.—dbl layer gypsum panel clg att to joists with Type S-12 screws—dbl layer gypsum panels around beam—joints stag— UL Des L524 clg wt 19 kg/m ² (4 psf)	39		Based on 241 mm (9-1/2") 16 ga. structural joists— USG-760105 Based on 241 mm (9-1/2") 16 ga. structural joists and 76 mm (3") SAFB*— USG-760310	B
				56		Based on 241 mm (9-1/2") 16 ga. structural joists and carpet & pad— USG-760106	
				60		Based on 241 mm (9-1/2") 16 ga. structural joists and carpet & pad with 76 mm (3") SAFB— USG-760405	
	1-1/2 hr.	 692 mm 27 1/4"	15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C core—susp grid with main run 1200 mm (4') o.c. and cross tees 600 mm (2') o.c.—gypsum panels screw-att to grid—joints stag and fin—min 25 mm (1") roof insul and 15.9 mm (5/8") gypsum bd on steel deck over bar joists—1-hr. rating based on assembly with 12.7 mm (1/2") thick panels— UL Des P510 clg wt 19 kg/m ² (4 psf)	N/A			C
	2 hr. (beam) 2 hr.)	 352 mm 13 7/8"	12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—met fur chan 600 mm (24") o.c.—panels att with 25 mm (1") Type S screws 300 mm (12") o.c.—joints exp or fin—64 mm (2-1/2") conc on riblath or corrugated steel deck over sbar joist— ULC Des I507 and UL Des G515 clg wt 14 kg/m ² (3 psf)	N/A			D1
	2 hr.	 540 mm 21 1/4"	12.7 mm (1/2") SHEETROCK FIRECODE C Gypsum Panels screwed to Rigid X Suspension System—concrete 64 mm (2-1/2") thick on metal lath, pan or steel floor units over bar joists—includes 3 hour unrestrained beam, air ducting and recessed lighting fixtures— ULC Des I517	N/A			D2
	2 hr.	 352 mm 13 7/8"	12.7 mm (1/2") SHEETROCK FIRECODE C Gypsum Panels screwed to furred or suspended channel—concrete 70 mm (2-3/4") thick on Hambro Structural system steel joist H601, H675, TC or RTC spaced 1200 mm (48") o.c.—includes air ducting— ULC Des I518	N/A			D3
	2 hr. (beam) 3 hr.)	 540 mm 21 1/4"	12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—susp grid with main run 1200 mm (4') o.c. and cross tees 600 mm (2') o.c.—gypsum panels screw-att to grid—joints fin—64 mm (2-1/2") conc on riblath or corrugated steel deck over bar joist— UL Des G529 clg wt 14 kg/m ² (3 psf)	N/A			E
	2 hr.	 241 mm 9 1/2"	15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C core—met fur chan 600 mm (24") o.c.—panels att with 25 mm (1") Type S screws—joints fin—51 mm (2") prestressed reg or lightwt conc units with 150 mm (6") deep stems 1200 mm (48") o.c.— UL Des J502 or J503 clg wt 14 kg/m ² (3 psf)	N/A			F

Drywall/Steel Framed Systems

Floor-Ceiling Assemblies		Fire Rating	Detail & Physical Data	Description & Test No.	STC	IIC	Description & Test No.	System Reference
		3 hr. (beam 3 hr.)		12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—susp grid with main run 1200 mm (4') o.c. and cross tees 600 mm (2') o.c.—gypsum panels screw-att to grid—joints fin—83 mm (3-1/4") conc on riblath or corrugated steel deck over bar joist—rating also applies with 15.9 mm (5/8") panels and 70 mm (2-3/4") conc slab— UL Des G529	N/A			G
		3 hr.		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C core—met fur chan 600 mm (24") o.c.—panels att with 25 mm (1") Type S screws—joints fin—prestressed 70 mm (2-3/4") reg or 64 mm (2-1/2") lightwt conc units with 152 mm (6") deep stems 1200 mm (48") o.c.— UL Des J502 or J504	N/A			H
		3 hr. (beam 3 hr.)		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C Core—met fur chan 600 mm (24") o.c.—panels att with 25 mm (1") Type S screws 300 mm (12") o.c.—joints exp or fin—76 mm (3") conc on corrugated steel deck or on riblath over bar joist— ULC Des G512	N/A			I
		Fire-rated Construction			Acoustical Performance			
Floor or Roof Ceiling Assemblies		Fire Rating	Detail & Physical Data	Description & Test No.	STC	IIC	Description & Test No.	System Reference
		1 hr.		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C core—190 mm (7-1/2") 18 ga. structural steel joists 600 mm (24") o.c.—64 mm (2-1/2") conc fir on corrug steel deck—gypsum panel ceiling att to joists with 25 mm (1") Type 300 mm (12") o.c. joints fin—est. fire rating based S-12 screws on witnessed laboratory test	45	70	Based on RC-1 resil chan 600 mm (24") o.c.— KAL-443536 Based on carpet & pad— KAL-443535	A
		1-1/2 hr.		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C Core—238 mm (9-3/8") 16 - ga. structural steel joists 600 mm (24") o.c.—19 mm (3/4") T&G plywd flooring att to joists with Type S-12 screws 600 mm (24") o.c.—dbl layer gypsum panel clg att to RC-1 chan screw att to joists 400 mm (16") o.c.—joints fin— UL Des L527	48	51	USG-771101 Based on carpet & pad—SA-781110	B
		2 hr.		12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C core—184 mm (7-1/4") 18 ga. structural steel joists 600 mm (24") o.c.—51 mm (2") conc fir on corrug steel deck—met fur chan 600 mm (24") o.c. clip-att joist—25 mm (1") THERMAFIBER insul w jlaid over chan below joists—panels screw-att to chan—joints fin— UL Des G533				C
		2 hr.		15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE C core—190 mm (7-1/2") 18 ga. structural steel joists 600 mm (24") o.c.—64 mm (2-1/2") conc fir over corrug steel deck—dbl layer gypsum panel ceiling—base panels att with 25 mm (1") Type S-12 screws 300 mm (12") o.c.—face panels att with 48 mm (1-7/8") Type S-12 screws 300 mm (12") o.c.—joints stag and fin—est. fire rating based on witnessed laboratory test	44	73	KAL-443533 Based on carpet & pad— KAL-443680 Based on RC-1 resil chan 600 mm (24") o.c.— KAL-443534	D
		Fire-rated Construction						
Columns	Fire Rating	Column Type	Detail & Physical Data	Description & Test No.	Comments		System Reference	
	2 hr.	W10 x49		Gypsum Drywall Fire Protection—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, around col—double layer over ea flange end—double layer on flange faces separ by 41 mm (1-5/8") 25-ga. steel studs & screw att—met beads on corners—joints fin— ULC Des X518, UL Des X518			A	
			Fire-rated Construction					

Drywall/Steel Framed Systems

Columns	Fire Rating	Column Type	Detail & Physical Data	Description & Test No.	Comments	System Reference
	2 hr.	W14 X228		Gypsum Drywall Fire Protection—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, around col—panels screw att to 41 mm (1-5/8") 25-ga. steel studs at col corners—met corner beads—joints fin— ULC Des X521, UL Des X521		B
	2 hr.	$\frac{W}{D} \geq 0.27$		Gypsum Drywall Fire Protection—3 layers 12.7 mm (1/2") to SHEETROCK brand gypsum panels, FIRECODE C Core, around col—triple layer over ea flange end—inner layers on flange face separ by 41 mm (1-5/8") 25-ga. steel studs & screw att—met beads on corners—joints fin— UL Des X524	Rating applies tapered or constant-section prefabricated metal building columns	C
	2 hr. & 3 hr.	W4x13 W6x15.5 W10x49		2 hr. Gypsum Drywall Fire Protection—2 layers 19.1 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core, around col—panels screw att to 41 mm (1-5/8") 25-ga. steel studs at corners—met corner beads—joints fin— UL Des X528		D
	3 hr.	W10 x49		3 hr. Gypsum Drywall Fire Protection—3 layers 19.1 mm (3/4") SHEETROCK brand gypsum panels, ULTRACODE core, around col—panels screw att to 41 mm (1-5/8") 25-ga. steel studs at corners—met corner beads—joints fin— UL Des X528		E
	3 hr.	W14 X228		Gypsum Drywall Fire Protection—12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, around col—double layer over ea web face—panels screw att to 41 mm (1-5/8") 25-ga. steel studs at col corners—met corner beads—joints fin— UL Des X514		G
	4 hr.	W14 X228		Gypsum Drywall Fire Protection—2 layers 12.7 mm (1/2") SHEETROCK brand gypsum panels, FIRECODE C Core, around col—panels screw att to 41 mm (1-5/8") 25-ga. steel studs at col corners—met corner beads—joints fin— UL Des X507		H

Drywall/Steel Framed Systems

Fire-rated Construction

Columns	Fire Rating	Column Type	Detail & Physical Data	Description & Test No.	Comments	System Reference																																																														
	1 to 3 hr.	Varies		<p>One of four layers 12.7 mm (1/2") SHEETROCK FIRECODE C and/or 15.9 mm (5/8") SHEETROCK FIRECODE or 19.1 (3/4") SHEETROCK ULTRACODE Core Panels around column to attain total thickness necessary for applicable fire rating, column shape and size (see table below) 41 mm (1-5/8") steel studs at column corners. Steel angle corner supports and tie wire used for 3 and 4 layer construction—1 to 3 hours UL Design X528</p> <table border="1"> <thead> <tr> <th>Column shape and minimum size</th> <th>Fire rating</th> <th>Total thickness of panel layers</th> <th>Gypsum panel layers (see note)</th> <th>Corner details</th> </tr> </thead> <tbody> <tr> <td rowspan="3">W4X13</td> <td>1 hour</td> <td>25.4 mm (1")</td> <td>2 layer 12.7 mm (1/2")</td> <td>B</td> </tr> <tr> <td>2 hour</td> <td>38 mm (1-1/2")</td> <td>3 layer 12.7 mm (1/2")</td> <td>C</td> </tr> <tr> <td>3 hour</td> <td>57 mm (2-1/4")</td> <td>or 2 layers 19.1 mm (3/4") 2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")</td> <td>B D C</td> </tr> <tr> <td rowspan="3">W6X15.5</td> <td>1 hour</td> <td>25.4 mm (1")</td> <td>2 layer 12.7 mm (1/2")</td> <td>B</td> </tr> <tr> <td>2 hour</td> <td>38 mm (1-1/2")</td> <td>3 layer 12.7 mm (1/2")</td> <td>C</td> </tr> <tr> <td>3 hour</td> <td>57 mm (2-1/4")</td> <td>or 2 layers 19.1 mm (3/4") 2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")</td> <td>B D C</td> </tr> <tr> <td rowspan="3">W10X49</td> <td>1 hour</td> <td>12.7 mm (1/2")</td> <td>2 layer 12.7 mm (1/2")</td> <td>A</td> </tr> <tr> <td>2 hour</td> <td>28.6 mm (1-1/8")</td> <td>1 layer 12.7 mm (1/2") + 1 layer 15.9 mm (5/8") or 2 layers 19.1 mm (3/4")</td> <td>B C</td> </tr> <tr> <td>3 hour</td> <td>47.6 mm (1-7/8")</td> <td>3 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")</td> <td>C C</td> </tr> <tr> <td rowspan="3">Tube 4x4x0.188</td> <td>1 hour</td> <td>25.4 mm (1")</td> <td>2 layer 12.7 mm (1/2")</td> <td>B</td> </tr> <tr> <td>2 hour</td> <td>40 mm (1-5/8")</td> <td>2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8")</td> <td>C</td> </tr> <tr> <td>3 hour</td> <td>64 mm (2-1/2")</td> <td>4 layer 15.9 mm (5/8")</td> <td>D</td> </tr> <tr> <td>Tube 8X8X0.250</td> <td>1 hour</td> <td>15.9 mm (5/8")</td> <td>1 layer 15.9 mm (5/8")</td> <td>A</td> </tr> </tbody> </table>	Column shape and minimum size	Fire rating	Total thickness of panel layers	Gypsum panel layers (see note)	Corner details	W4X13	1 hour	25.4 mm (1")	2 layer 12.7 mm (1/2")	B	2 hour	38 mm (1-1/2")	3 layer 12.7 mm (1/2")	C	3 hour	57 mm (2-1/4")	or 2 layers 19.1 mm (3/4") 2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")	B D C	W6X15.5	1 hour	25.4 mm (1")	2 layer 12.7 mm (1/2")	B	2 hour	38 mm (1-1/2")	3 layer 12.7 mm (1/2")	C	3 hour	57 mm (2-1/4")	or 2 layers 19.1 mm (3/4") 2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")	B D C	W10X49	1 hour	12.7 mm (1/2")	2 layer 12.7 mm (1/2")	A	2 hour	28.6 mm (1-1/8")	1 layer 12.7 mm (1/2") + 1 layer 15.9 mm (5/8") or 2 layers 19.1 mm (3/4")	B C	3 hour	47.6 mm (1-7/8")	3 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")	C C	Tube 4x4x0.188	1 hour	25.4 mm (1")	2 layer 12.7 mm (1/2")	B	2 hour	40 mm (1-5/8")	2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8")	C	3 hour	64 mm (2-1/2")	4 layer 15.9 mm (5/8")	D	Tube 8X8X0.250	1 hour	15.9 mm (5/8")	1 layer 15.9 mm (5/8")	A		
Column shape and minimum size	Fire rating	Total thickness of panel layers	Gypsum panel layers (see note)	Corner details																																																																
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W10X49	1 hour	12.7 mm (1/2")	2 layer 12.7 mm (1/2")	A																																																																
	2 hour	28.6 mm (1-1/8")	1 layer 12.7 mm (1/2") + 1 layer 15.9 mm (5/8") or 2 layers 19.1 mm (3/4")	B C																																																																
	3 hour	47.6 mm (1-7/8")	3 layer 15.9 mm (5/8") or 3 layers 19.1 mm (3/4")	C C																																																																
Tube 4x4x0.188	1 hour	25.4 mm (1")	2 layer 12.7 mm (1/2")	B																																																																
	2 hour	40 mm (1-5/8")	2 layer 12.7 mm (1/2") + 2 layer 15.9 mm (5/8")	C																																																																
	3 hour	64 mm (2-1/2")	4 layer 15.9 mm (5/8")	D																																																																
Tube 8X8X0.250	1 hour	15.9 mm (5/8")	1 layer 15.9 mm (5/8")	A																																																																
<p>NOTE (1) 12.7 mm (1/2") thick panels are SHEETROCK FIRECODE C brand 15.9 mm (5/8") thick panels are SHEETROCK FIRECODE brand 19.1 mm (3/4") thick panels are SHEETROCK brand ULTRACODE Core</p>																																																																				

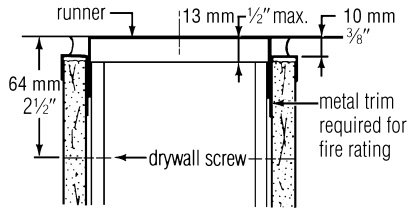
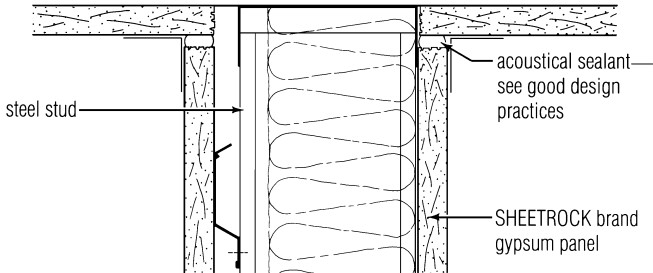
Fire-rated Construction

Beams	Fire Rating	Beam Type	Detail & Physical Data	Description & Test No.	Comments	System Reference
	2 hr. (beam only)	W8 x24		<p>Gypsum Drywall Caged Beam Fireprfg—41 mm (1-5/8") steel run chan brackets 600 mm (24") o.c.—35 x 22 mm (1-3/8" x 7/8") corner angles att to chan brackets—dbl layer 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core, att with Type S screws—met beads on corners—joints fin—64 mm (2-1/2") conc deck on fluted steel fir—ULC Des 0503-0504, UL Des N501, UL Des N502</p>		A
	2 hr. (beam only)	W8 x24		<p>Gypsum Drywall Caged Beam Fireprfg—41 mm (1-5/8") steel run chan brackets 600 mm (24") o.c.—35 x 22 mm (1-3/8" x 7/8") corner angles att to brackets— 3 layers 15.9 mm (5/8") SHEETROCK brand gypsum panels, FIRECODE Core, att with Type S screws—25 mm (1") 20 - ga. hex mesh on bottom over middle layer —met beads on corners— joints fin—64 mm (2-1/2") conc deck on fluted steel fir—UL Des N505</p>		B

Drywall/Steel Framed Systems

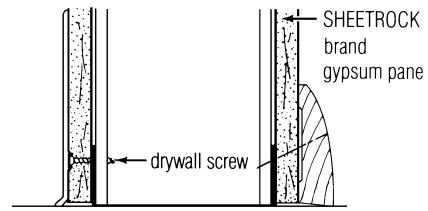
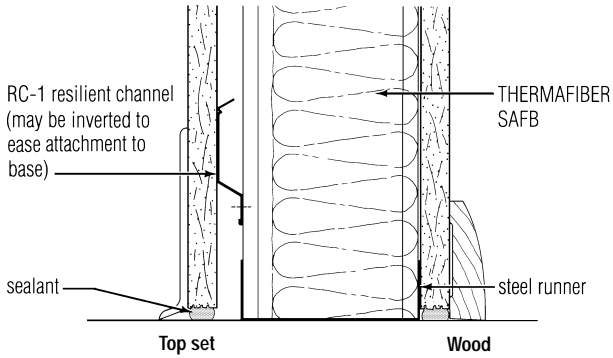
Partitions

Ceiling attachment



Perimeter relief ceiling intersection

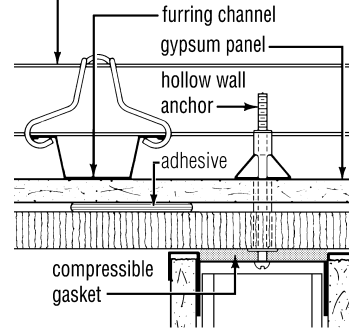
Floor attachment



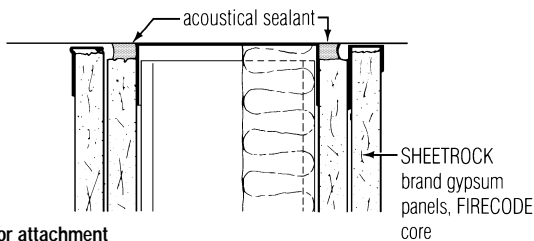
Top set

Wood

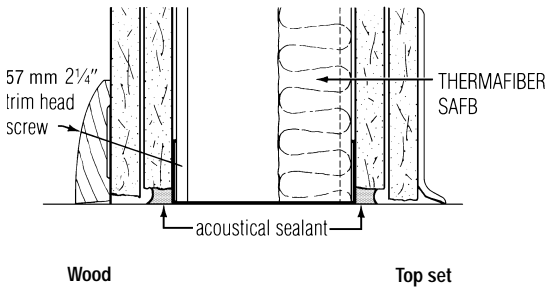
Attachment of partition to ceiling



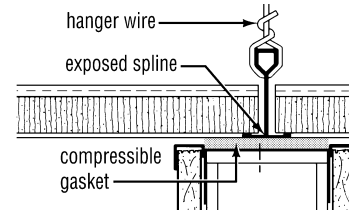
Ceiling attachment



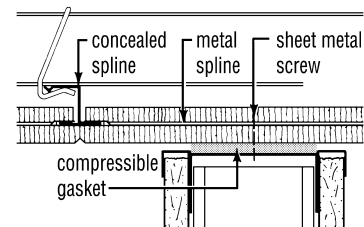
Floor attachment



Adhesively applied acoustical tile



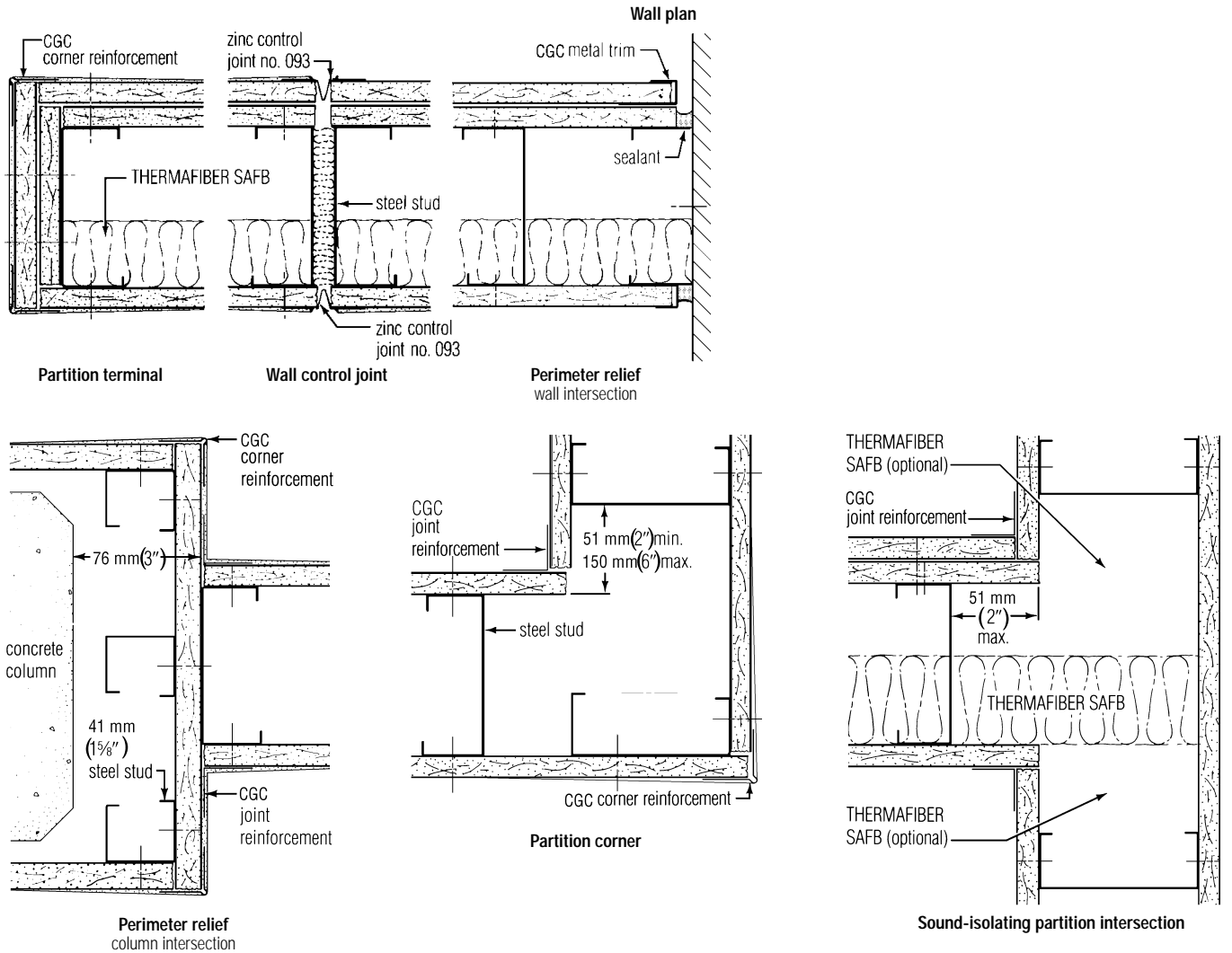
Exposed grid system for acoustical tile and board



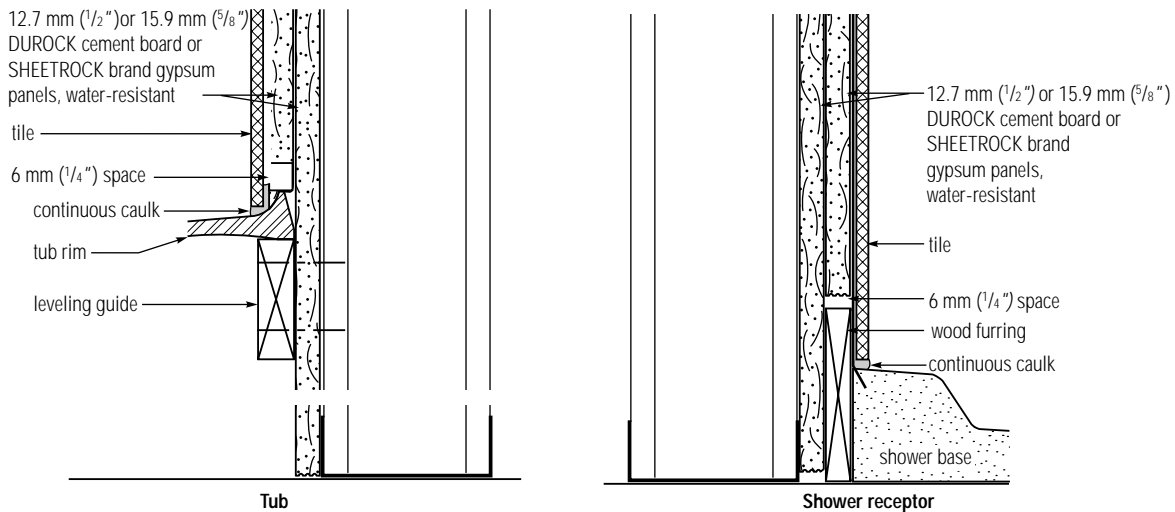
Concealed grid system for acoustical tile and board

Drywall/Steel Framed Systems

Partitions

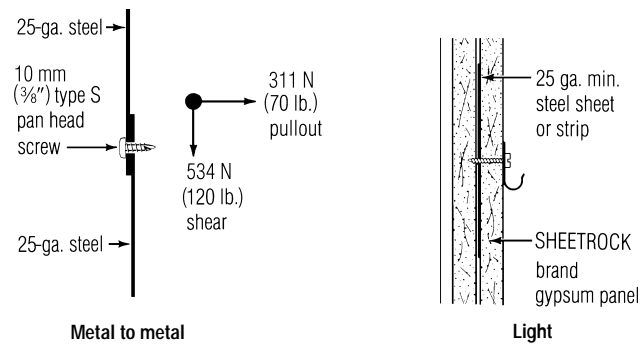
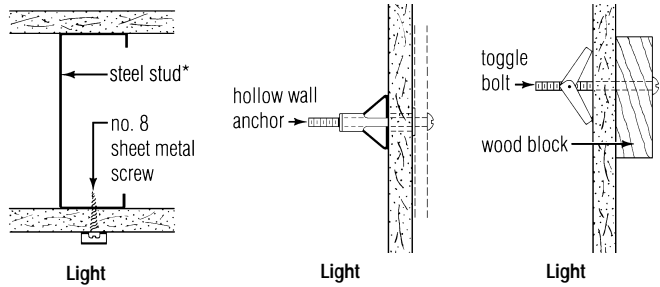
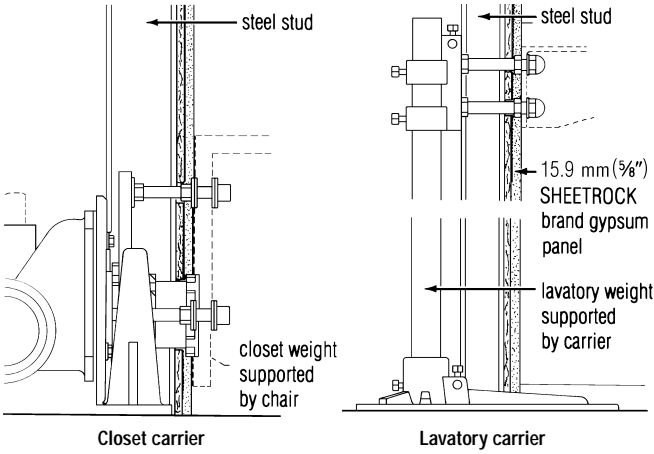


Double-layer panels



Drywall/Steel Framed Systems

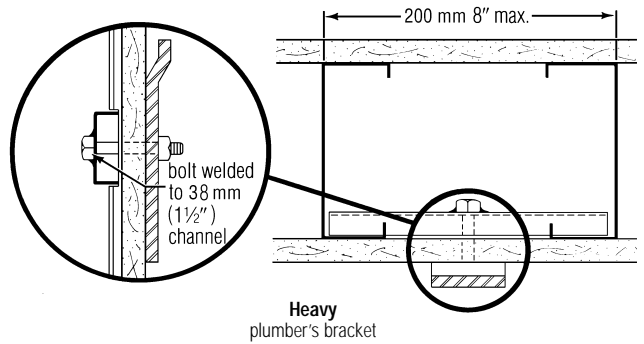
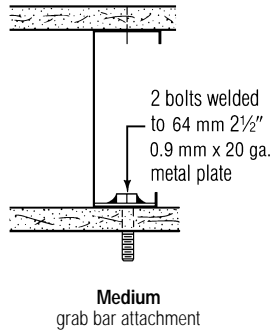
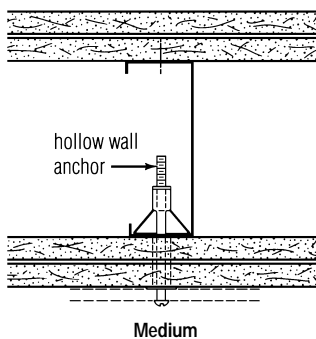
Fixture Attachment



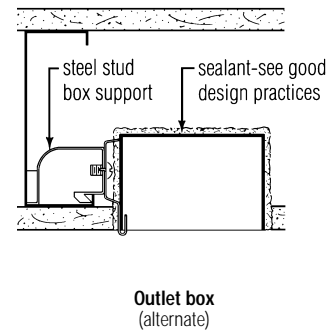
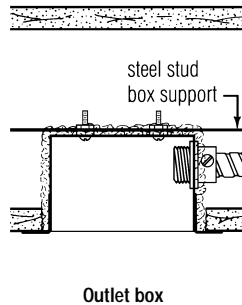
Load table

fastener	size		base assembly	allowable withdrawal resistance		allowable shear resistance	
	in	mm		lb	N ⁽¹⁾	lb	N ⁽¹⁾
toggle bolt or hollow wall anchor	1/8"	3	12.7 mm (1/2") gypsum panel	20	89	40	178
	3/16"	5		30	133	50	222
	1/4"	6		40	178	60	267
no. 8 sheet metal screw	1/8"	3	12.7 mm (1/2") gypsum panel & 25-ga. steel stud	70	311	100	445
	3/16"	5		80	356	125	556
	1/4"	6		155	689	175	778
Type S bugle head screw			12.7 mm (1/2") gypsum panel & 25-ga. steel stud or 25-ga. steel insert	50	222	80	356
				60	267	100	445
Type S-12 bugle head screw			12.7 mm (1/2") gypsum panel & 20-ga. steel stud or 20-ga. steel insert	85	378	135	600
9.5 mm (3/8") Type S pan head screw			25-ga. steel to 25-ga. steel	70	311	120	534
Type S-12			20-ga. steel to 20-ga. steel	53	235	133	591
two bolts welded to steel insert	3/16"	5	see grab bar attachment below	175	778	200	890
	1/4"	6		200	890	250	1112
bolt welded to 38 mm (1 1/2") chan.	1/4"	6	see plumber's bracket below	200	890	250	1112

(1) Newtons

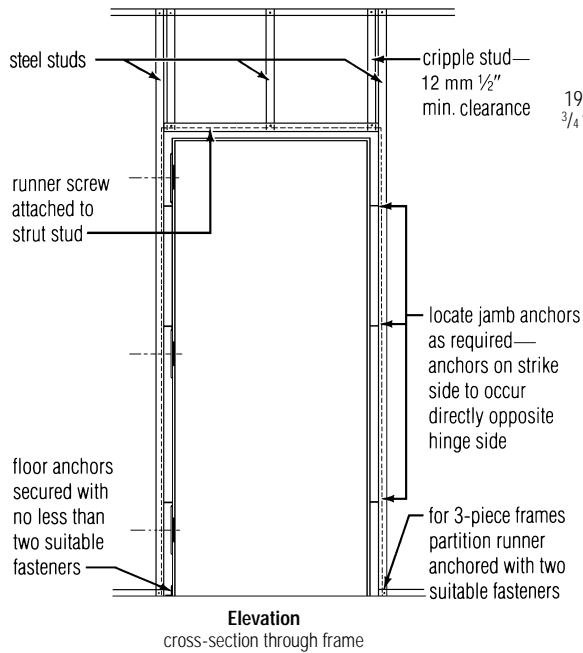


Outlet Boxes

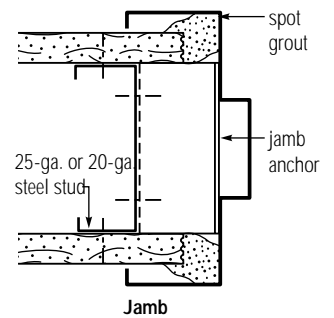
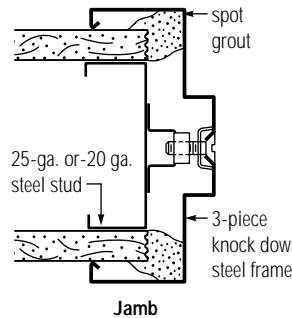
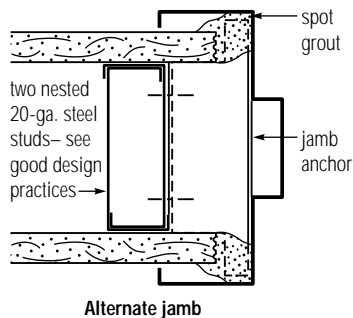
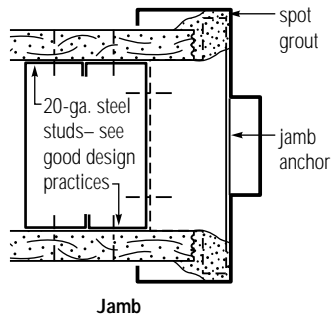
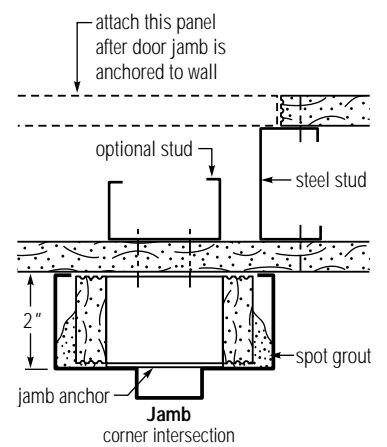
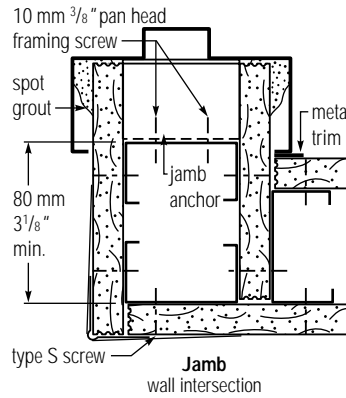
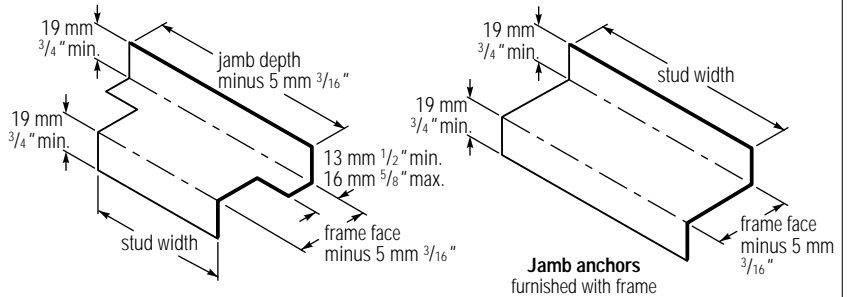


Drywall/Steel Framed Systems

Door Frames and Control Joints



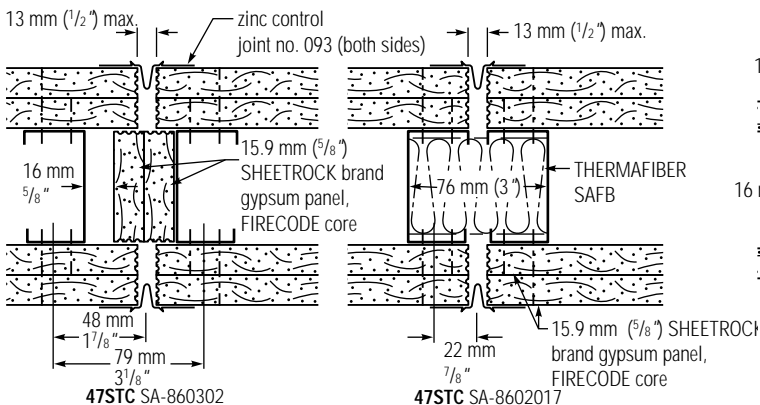
Note: In long runs treat window openings in same manner as doors



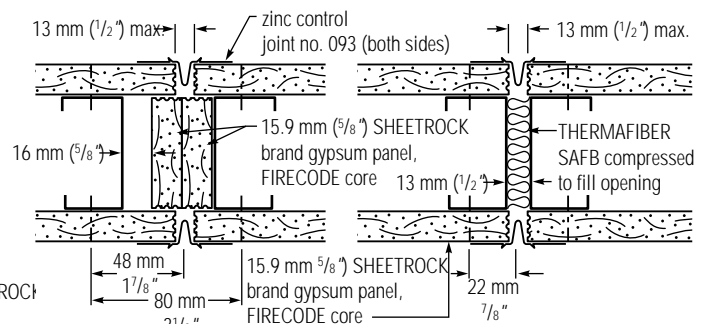
Fire-rated Control Joints

(WHI-495-PSV-0824, 0824A)

Two-hour rated steel stud partitions

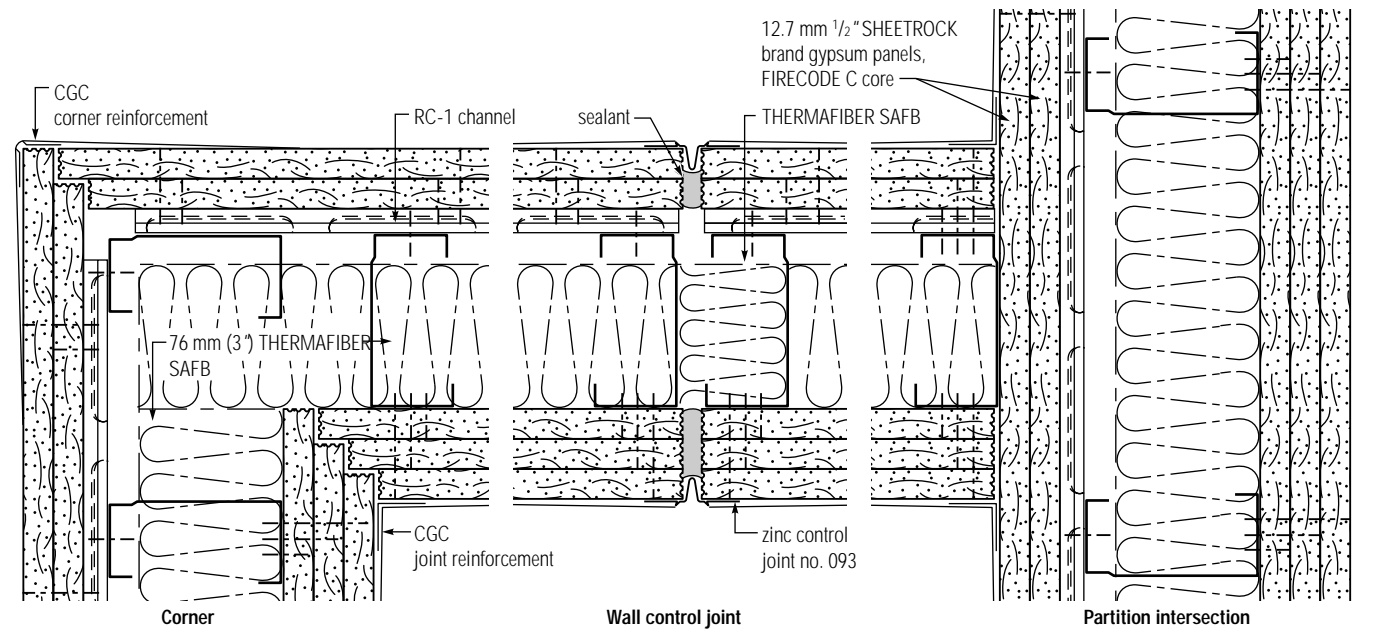
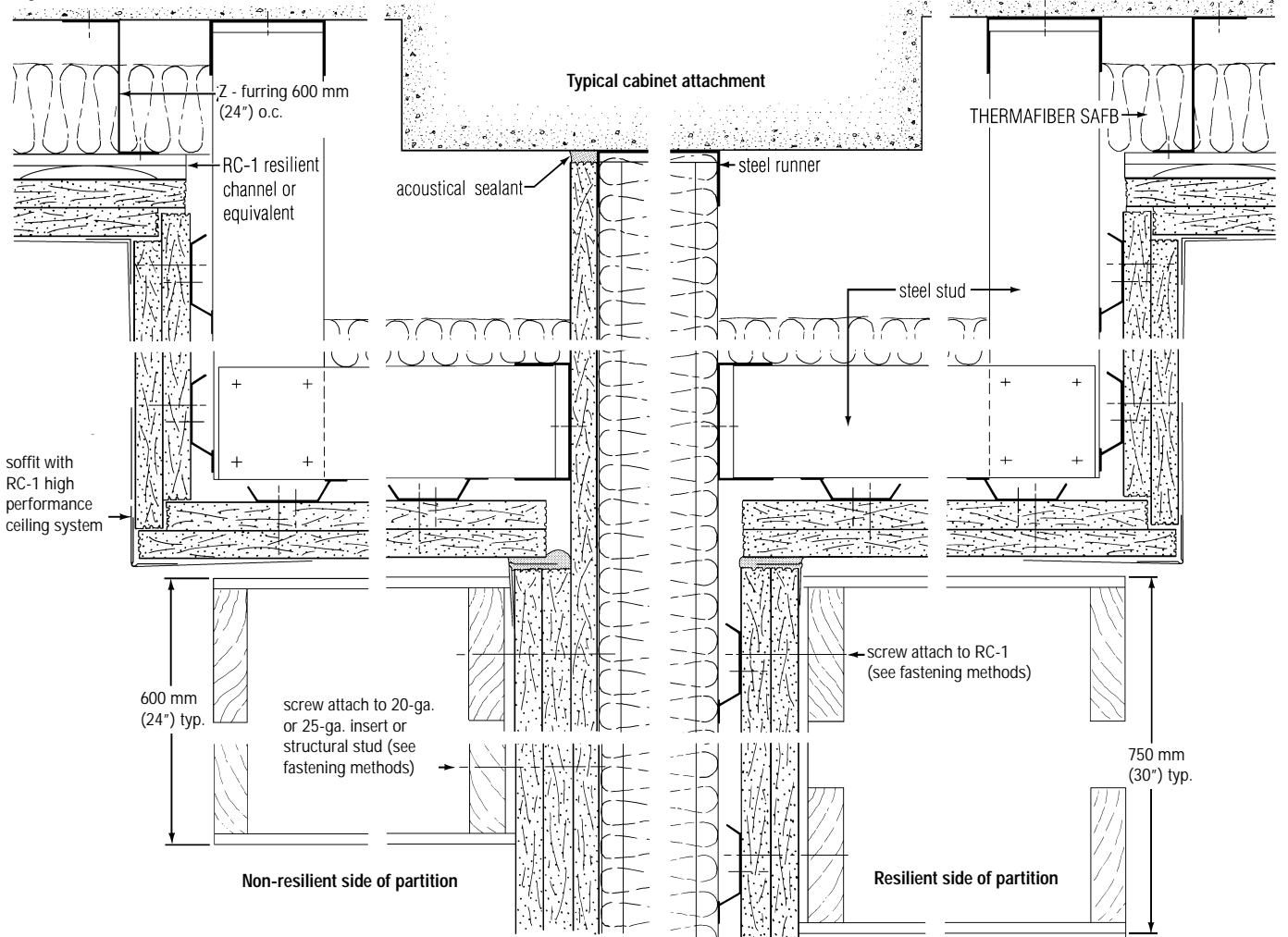


One-hour rated steel stud partitions



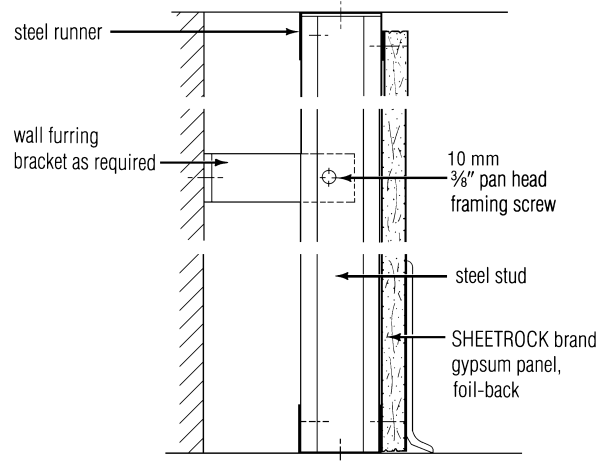
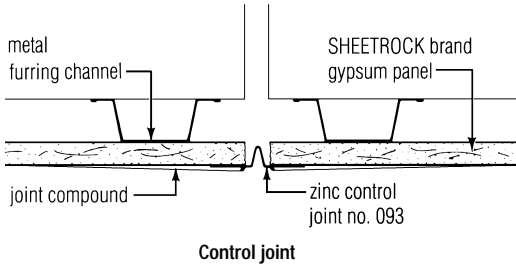
Drywall/Steel Framed Systems

High Performance Sound Control

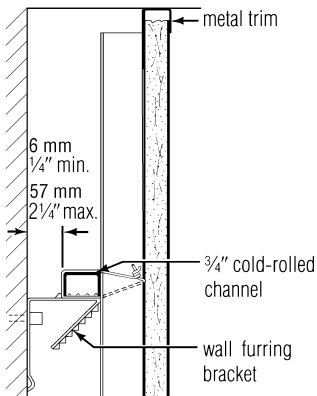


Drywall/Steel Framed Systems

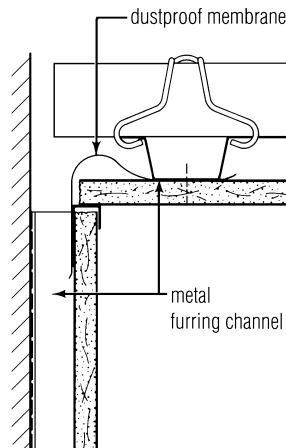
Wall Furring



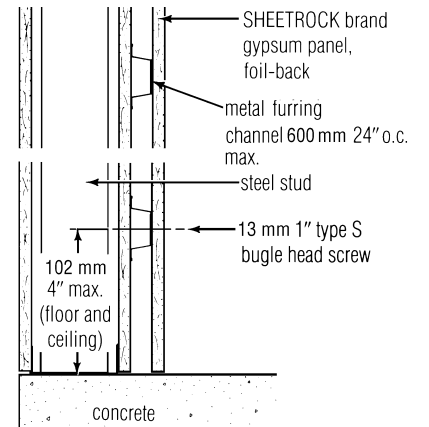
Ceiling attachment



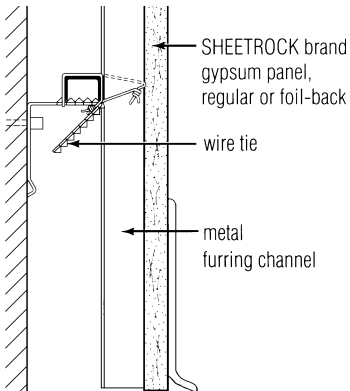
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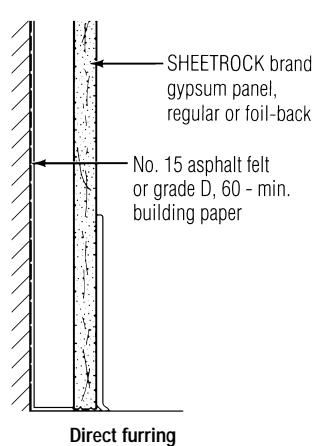
Free standing furring



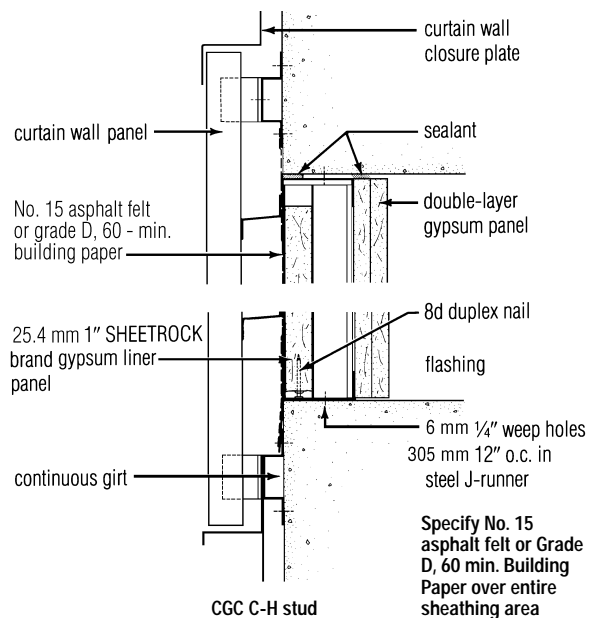
Floor attachment



Floor attachment

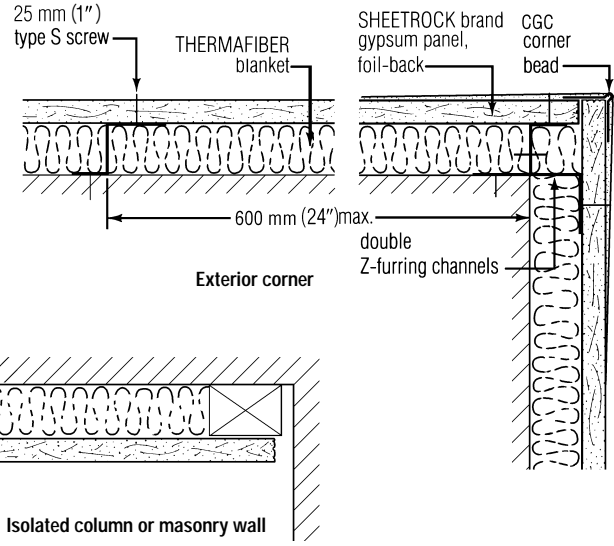
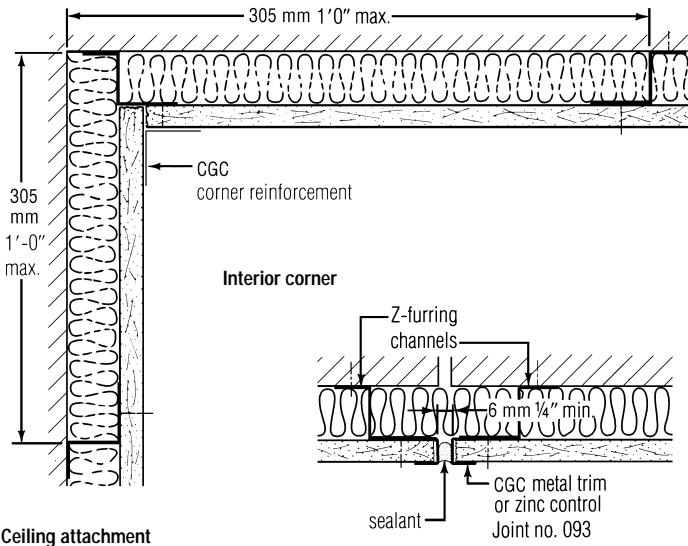


Furred wall (for reduced shadowing and spotting)

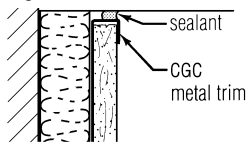


Drywall/Steel Framed Systems

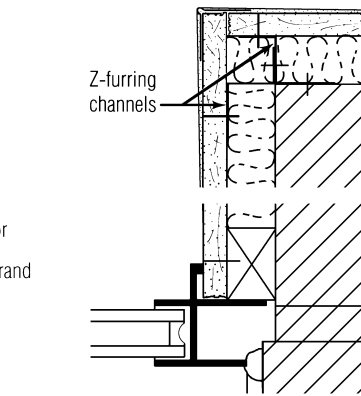
Wall Furring



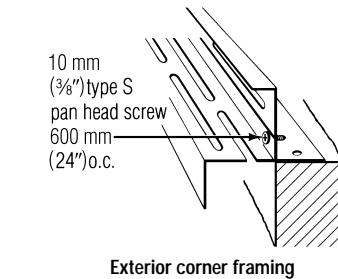
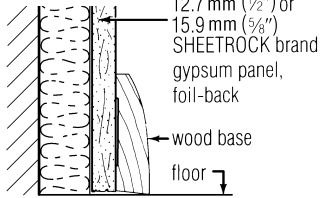
Ceiling attachment



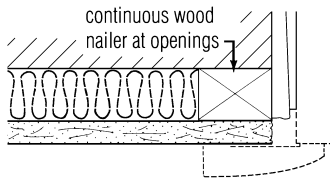
Wall control joint



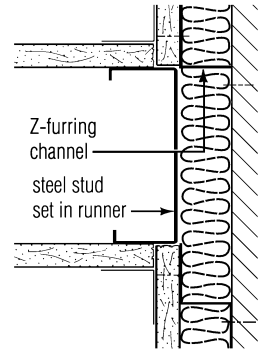
Floor attachment



Exterior corner framing

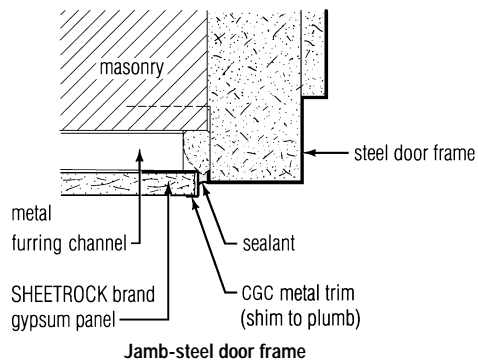


Jamb cross-section

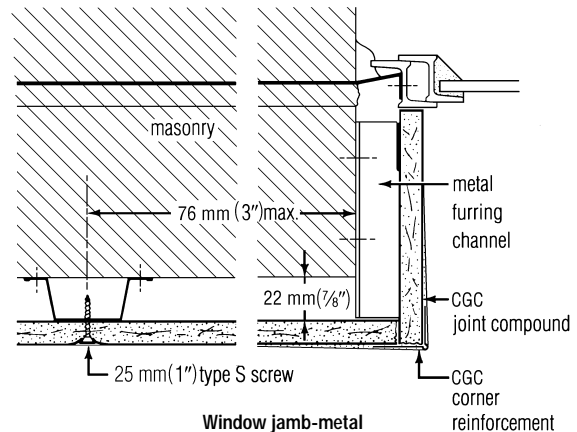


Partition wall intersection

Note: Details apply to rigid foam insulation and THERMAFIBER fire safety FS-15 blanket



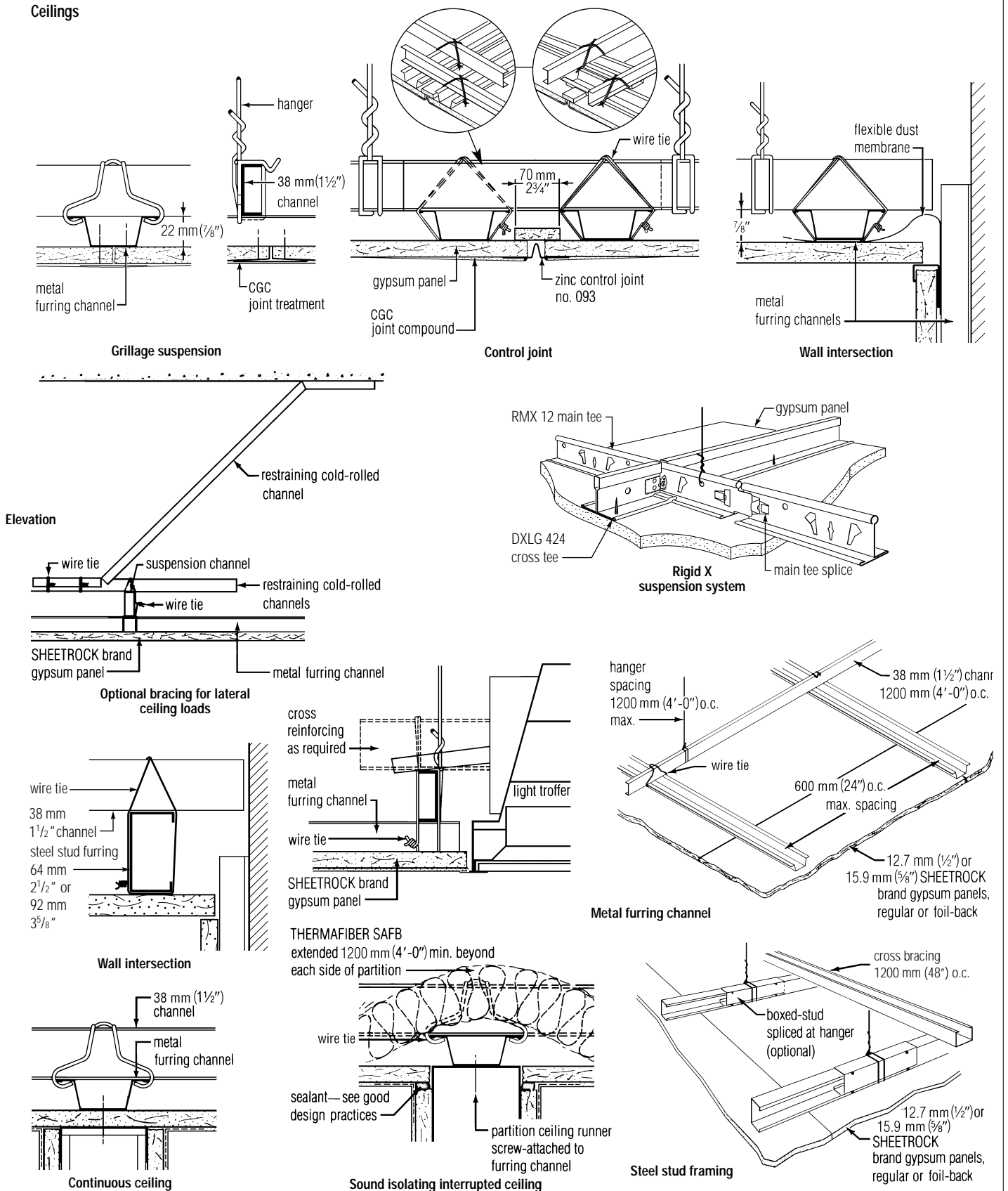
Jamb-steel door frame



Window jamb-metal

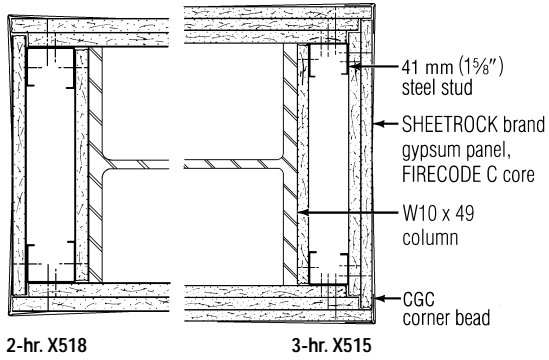
Drywall/Steel Framed Systems

Ceilings

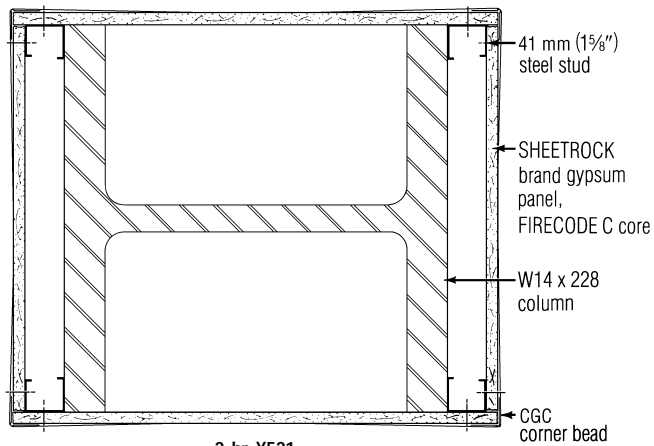


Drywall/Steel Framed Systems

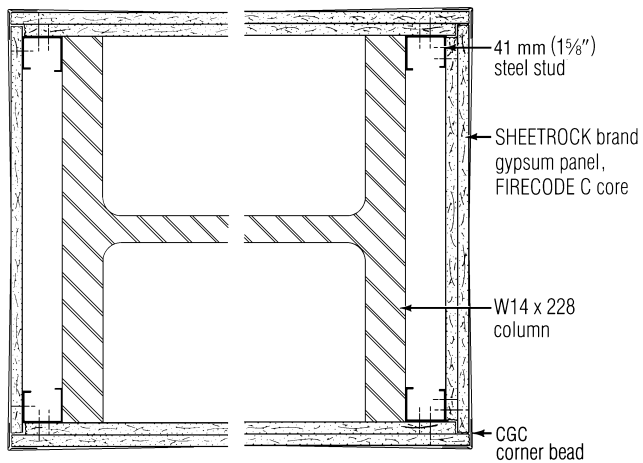
Column Fireproofing



UL designs



2-hr. X521
UL design



UL designs

Drywall/Steel Framed Systems

**Good Design
Practices—
Interior Steel
Framed Walls
and Ceilings**

<p>1 System Performance</p>	<p>Canadian Gypsum Company will provide test certification 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 substitution of materials or compromise in assembly design cannot be certified; failure may result under critical conditions.</p>
<p>2 Shadowing and Spotting</p>	<p>Temperature differentials on the interior surface of exterior walls may result in collection of airborne dirt on the colder surface areas. Consequently accumulated dirt in the form of shadowing and spotting may occur at locations of fasteners or framing where surface temperatures usually are lowest. This is a natural phenomenon which occurs through no fault of the products.</p> <p>Where temperature, humidity and soiling conditions are expected to cause objectionable shadowing and spotting, one of the following alternatives should be considered:</p> <ul style="list-style-type: none"> A The interior facing of SHEETROCK brand Gypsum Panels, Foil-Back, should be furred from the exterior wall studs using a base layer of panels screw-attached to the studs and horizontally applied metal furring channels spaced 600 mm (24") o.c. (see detail, page 33). B On exterior masonry walls, install rigid or semi-rigid insulation between Z-Furring Channels affixed to interior side of wall and finish with SHEETROCK brand Gypsum Panels, Foil-Back (see detail, page 34). C For maximum resistance to shadowing and spotting, a separate free-standing wall construction is recommended using studs that are independent of the exterior wall.
<p>3 Control Joints</p>	<p>Location of control joints is the responsibility of the design professional/architect. Gypsum panel surfaces should be isolated with control joints or other means where:</p> <ul style="list-style-type: none"> A partition, furring or column fireproofing abuts a structural element (except floor) or dissimilar wall or ceiling; B ceiling or soffit abuts a structural element, dissimilar wall or partition or other vertical penetration; C construction changes within plane of partition or ceiling; D partition or furring run exceeds 9 m (30'); E ceiling dimensions exceed 15 m (50') in either direction with perimeter relief, 9m (30') without relief; F exterior soffits exceed 9 m (30') in either direction; G wings of "L," "U" and "T"-shaped ceiling areas are joined; H expansion or control joints that occur throughout the building itself. I Less-than-ceiling height frames should have control joints extending to the ceiling from both corners. Ceiling height door frames may be used as control joints. Treat window openings in same manner as doors. <p>Zinc Control Joints, when properly insulated and backed by gypsum panels, have been fire-endurance tested and are certified for use in one- and two-hour fire-rated walls (see page 31 for construction details).</p>
<p>4 Metal Door and Borrowed Light Frames</p>	<p>Should be at least 18-ga. steel, shop primed, and have throats accurately formed to overall thickness of partition. They should be anchored at floor with 16-ga. steel plates welded to trim flanges, with provision for two power-driven anchors or equal per plate. Jamb anchors should be 18-ga. steel welded in each jamb (see details, page 32). Stud reinforcing described below is screw-attached to jamb anchors. Three-piece frames may also be used with these partitions provided end of partition floor runner is anchored with two suitable fasteners.</p> <p>For standard doors up to 915 mm (3'0") wide weighing not more than 45 kg (100 lb.), 25-ga. steel studs and runners may be used for framing the opening. For doors 815 to 1200 mm (2'8" to 4'0") wide 90 kg (200 lb. max.) rough framing should be 20-ga. studs (92 mm [3-5/8"] min.) and runners. For heavy doors up to 1200 mm (4'0") wide 135 kg (300 lb. max.), two 20-ga. studs should be used (see details, page 31). For doors over 1200 mm (4'0") wide, double doors and extra-heavy doors (over 135 kg (300 lb.)), framing should be specially designed to meet load conditions.</p> <p>For added door frame restraint, spot-grouting at the jamb anchor is suggested but not required. Apply SHEETROCK or DURABOND Setting-Type Joint Compound just before inserting board into frame; do not terminate gypsum panel against trim return. Consult with door frame manufacturer for other requirements.</p>
<p>5 Pipe and Conduit Chases</p>	<p>Additional chases can be provided in steel studs by cutting round holes up to 3/4 of stud width, spaced 300 mm (12") apart.</p>
<p>6 Ceramic Tile</p>	<p>SHEETROCK brand Gypsum Panels, Water-Resistant, or DUROCK Cement Boards are recommended as a base on walls for adhesive application of ceramic and plastic tile and plastic-faced wall panels. Double-layer panels are required for resilient systems.</p>
<p>7 Fixture Attachment</p>	<p>Lightweight fixtures should be installed with toggle bolts or hollow wall anchors inserted in the panel and, preferably, also through the stud. Wood or metal mounting strips for cabinets and shelving should be bolted to the stud framing (see page 30).</p>

Drywall/Steel Framed Systems

8 Wood Base	Apply with trim head screws placed at each stud and midway between studs (300 mm [12"] o.c.).
9 Sound Tests	Are conducted under ideal laboratory conditions per ASTM procedures. Comparable field performance depends on building design and careful attention to detailing and workmanship. Where these partitions are used for sound control, seal the partition perimeter with a 6 mm (1/4") min. round bead of Acoustical Sealant. Seal around all cutouts for lights, cabinets, pipes and plumbing, ducts and electrical boxes. Back-to-back penetrations of the diaphragm, flanking paths, door and borrowed-light openings should be avoided.
10 SHEETROCK Vinyl-Faced Gypsum Panels	<p>For adhesive applications, only water-based adhesives are recommended; other adhesives may not be compatible with the vinyl surface.</p> <p>Where high humidity and temperature conditions predominate, the use and location of a vapour retarder should be determined by a qualified mechanical engineer to prevent moisture condensation within the wall and the resultant damage to the vinyl covering.</p>
11 Ceilings	<p>Spacing of hangers and channels is designed to support only the dead load. Heavy concentrated loads should be independently supported. Lighting fixtures or troffers, air vents and other equipment should be separately supported from the ceiling grid or structure above: gypsum panels will not support these items.</p> <p>To prevent objectionable sag in new gypsum panel ceilings, the weight of overlaid unsupported insulation should not exceed 6.5 kg/m² (1.3 psf) for 12.7 mm (1/2") thick panels with frame spacing 600 mm (24") o.c.; 11 kg/m² (2.2 psf) for 12.7 mm (1/2") panels on 400 mm (16") o.c. framing (or 12.7 mm [1/2"] SHEETROCK brand Interior Ceiling Board on 600 mm (24") o.c. framing) and 15.9 mm (5/8") panels 600 mm (24") o.c. A vapour retarder should be evaluated by a qualified architect/engineer for installation in exterior ceilings, and the plenum or attic space should be properly vented.</p> <p>During periods of cold or damp weather when a polyethylene vapour retarder is installed on ceilings behind the gypsum board, it is important to install the ceiling insulation before or immediately after installing the ceiling board. Failure to follow this procedure may result in moisture condensation on the back side of the gypsum board, causing the board to sag.</p> <p>Water-based textures, interior finishing materials and high ambient humidity conditions can produce sag in gypsum ceiling panels if adequate vapour and moisture control is not provided. The following precautions must be observed to minimize sagging of ceiling panels:</p> <p>A Where vapour retarder is required in cold weather conditions, the temperature of the gypsum ceiling panels and vapour retarder must remain above the interior air dew point temperature during and after the installation of panels and finishing materials.</p> <p>B The interior space must be adequately ventilated and air circulation must be provided to remove water vapour from the structure.</p> <p>Most sag problems are caused by the condensation of water within the gypsum panel. The placement of vapour retarders, insulation levels and ventilation requirements will vary by location and climate and should be reviewed by a qualified engineer if in question.</p>
12 Fire-Rated Ceilings	To comply with UL Floor-Ceiling Designs G512 and G515, ULC I507, and G512 gypsum panel end joints should be aligned and backed by 51 mm (2") or 69.8 mm (2-3/4") wide face panel strips respectively laid over the joints. Face panels should be fastened to continuous furring channels centered 51 or 76 mm (2" or 3") either side of joints. For UL Designs J502, J503, J504 and ULC Des I518, end joints should be backed by 76 mm (3") wide strips and furring channels centered 83 mm (3-1/4") either side of joints.
13 Back-Blocking	Back Blocking of ceiling end joints is recommended when construction occurs during adverse job or weather conditions. Float end joints between furring channels and back-block joint with a continuous 200 mm (8") face panel strip adhesively applied, or screw-attach floated ends to a 1500 mm (5') channel centered over joint.
14 Acoustical Tile	Treatment of joints and screwheads with joint compound may be omitted where gypsum panels serve as a base for adhesively applied acoustical tile.
15 SHEETROCK brand Exterior Ceiling Board	Exposed surfaces should receive two coats of good quality exterior paint. First coat: oil-based primer; second coat: either alkyd or latex exterior paint.
16 Furring Systems	Shallow electrical outlet boxes are recommended when insulation less than 38 mm (1-1/2") thick is used.
17 Warning: Combustible.	Rigid foam (cellular plastic) insulation will ignite if exposed to fire of sufficient heat and intensity. Use only as directed by the specific instructions accompanying the product.

Drywall/Steel Framed Systems

18 High-Rise Buildings	Variable wind pressure can cause a structure to drift or sway. This can result in movement of the non-load-bearing partitions, thus causing noise. Canadian Gypsum Company assumes no responsibility for the prevention, cause, or repair of these job-related noises.
19 Additional Information	For additional information and product limitations, see technical folders in this series: <i>Construction Selector</i> SA100 for fire and sound-rated systems; <i>Gypsum Panels and Accessories</i> Folder SA927 for information on system components; <i>Texture and Finish Products</i> Folder SA933 for finishing product specifications; <i>Plaster Systems</i> Folder SA920 for information on veneer plaster products; <i>DUROCK Cement Board</i> Folder SA932 for data on ceramic tile base.
Part 1: General	<p data-bbox="296 562 344 583">1.1 Scope</p> <p data-bbox="539 562 823 583">Specify to meet project requirements.</p> <hr/> <p data-bbox="296 653 395 695">1.2 Qualifications</p> <p data-bbox="539 653 1362 701">All materials described in this Folder manufactured by or for Canadian Gypsum Company shall be installed in accordance with its current printed instructions.</p> <hr/> <p data-bbox="296 741 440 804">1.3 Delivery and Storage of Materials</p> <p data-bbox="539 741 1485 846">All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises. WARNING: Store all SHEETROCK brand Gypsum Panels flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized.</p> <hr/> <p data-bbox="296 888 400 951">1.4 Environmental Conditions</p> <p data-bbox="539 888 1485 1020">In cold weather during gypsum panel joint finishing, temperatures within the building shall be maintained within the range of 13 to 21 °C (50 to 70 °F). Adequate ventilation shall be provided to carry off excess moisture. DURABOND and SHEETROCK Setting-Type Joint Compound and CGC Paper Joint Tape shall be used on all joints and internal corners and allowed to set and dry thoroughly before plaster application when used in conjunction with veneer plaster over steel framing.</p>
Part 2: Products	<p data-bbox="507 1062 647 1083">A Gypsum Panels</p> <p data-bbox="539 1087 632 1108"><i>Interior Panels</i></p> <ul style="list-style-type: none"> <li data-bbox="539 1115 1461 1171">—12.7 mm (1/2") (15.9 mm [5/8"]) thick, 1200 mm (48") wide, SHEETROCK brand (Regular) (FIRECODE) (FIRECODE C) Gypsum Panels, lengths as required. <li data-bbox="539 1178 1437 1199">—19.1 mm (3/4") thick 1200 mm (48") wide, SHEETROCK brand Gypsum Panels, ULTRACODE Core, lengths as required. <li data-bbox="539 1205 1445 1255">—9.5 mm [3/8"] (12.7 mm [1/2"]) (15.9 mm [5/8"]) thick, 1200 mm (48") wide, SHEETROCK brand Foil-Back (Regular) (FIRECODE) (FIRECODE C) Gypsum Panels, lengths as required. <li data-bbox="539 1262 1453 1312">—12.7 mm [1/2"] (15.9 mm [5/8"]) thick, 1200 mm (48") wide, SHEETROCK brand Water-Resistant (Regular) (FIRECODE) (FIRECODE C) Gypsum Panels, lengths as required. <li data-bbox="539 1318 1350 1339">—12.7 mm (1/2") thick, 1200 mm (48") wide, SHEETROCK brand Interior Ceiling Board, lengths as required. <li data-bbox="539 1346 1445 1396">—12.7 mm [1/2"] (15.9 mm [5/8"]) thick, 1200 mm (48") wide, SHEETROCK (Regular) (FIRECODE C) Vinyl-Faced Gypsum Panels, lengths as required. <p data-bbox="539 1409 632 1430"><i>Plaster Bases</i></p> <ul style="list-style-type: none"> <li data-bbox="539 1436 1485 1486">—Foil-Back GRAND PRIX Gypsum Base (for veneer plasters) 12.7 mm (1/2") thick in Regular and FIRECODE C, 15.9 mm (5/8") in Regular, FIRECODE, and FIRECODE C. <p data-bbox="539 1499 632 1520"><i>Exterior Panels</i></p> <ul style="list-style-type: none"> <li data-bbox="539 1526 1485 1577">—GYPLAP brand Gypsum Sheathing—12.7 mm (1/2") thick, (1200x2400 mm [4'x8"]); GYPLAP brand FIRECODE Core Gypsum Sheathing—15.9 mm (5/8") thick, (1200x2400 mm, [4'x8']). <li data-bbox="539 1583 1485 1633">SHEETROCK brand Gypsum Liner Panels—25.4 mm (1") thick, 600 mm (2') x lengths to 4267 mm (14'), (for use with C-H Stud Infill Panel System). <li data-bbox="539 1640 1358 1661">—12.7 mm (1/2") thick, 1200 mm (48") wide, SHEETROCK brand Exterior Ceiling Board, lengths as required. <p data-bbox="507 1673 600 1694">B Plasters</p> <p data-bbox="539 1701 1046 1722">(specify plasters for interior surfaces from <i>Plaster Systems</i> SA920).</p> <p data-bbox="507 1734 616 1755">C Steel Studs</p> <p data-bbox="539 1761 1485 1812">CGC Steel C-H Studs: 212CH25 (64 mm [2-1/2"]), 212CH22 (64 mm [2-1/2"]), 212CH20 (64 mm [2-1/2"]), 400CH20 (102 mm [4"]), 400CH25 (102 mm [4"]), 600CH20 (152 mm [6"])</p> <p data-bbox="539 1818 1302 1839">CGC Double E Studs: 600ES25 (152 mm [6"]), 600ES20 (152 mm [6"]) (102 mm [4"]) (64 mm [2-1/2"])</p> <p data-bbox="507 1852 632 1873">D Steel Runners</p> <p data-bbox="539 1879 1461 1929">CGC J-Runners: 212JR24 (64 mm [2-1/2"]), 212JR20 (64 mm [2-1/2"]), 400JR24 (102 mm [4"]), 400JR20 (102 mm [4"]), 600JR24 (152 mm [6"]), 600JR20 (152 mm [6"]),</p>

- E Screws**
Size: (9.5 mm [3/8"]) (11 mm [7/16"]) (12.7 mm [1/2"]) (25.4 mm [1"]) (31.7 mm [1-1/4"]) (38 mm [1-1/2"]) (40 mm [1-5/8"]) (51 mm [2"]) (57 mm [2-1/4"]) (64 mm [2-1/2"]) (76 mm [3"])
Style: (framing—Type S or S-12)(drywall—Type S)(self-drilling—Type S-12)(laminating—Type G) (coarse thread—Type W)
head: (bugle)(pan)(trim)(pancake)(low-profile)(mod. truss head) *coating:* (reg)(corrosion-resistant).
- F Adhesives**
 DURABOND or SHEETROCK Setting-Type Joint Compound or CGC Ready-Mixed Joint Compound (All Purpose) (Taping) for double-layer application and column fireproofing
- G Insulation**
 THERMAFIBER Sound Attenuation Fire Blankets—(38 mm [1-1/2"])(51 mm [2"])(76 mm [3"]) thick, x(400 x 1200 mm [16"x48"])(600 x 1200 mm [24"x48"]). (Specify foil-back interior gypsum or foil-back GRAND PRIX Veneer Plaster Base panels for vapour retarder.)
- H Metal Furring Materials**
 Metal Furring Channel (DWC-25)(DWC-20)
 Z-Furring Channel (25 mm [1"])(38 mm [1-1/2"])(51 mm [2"])(76 mm [3"])
 RC-1 Resilient Channel or equivalent
 19 mm (3/4"), 38 mm (1-1/2") Cold-Rolled Channel (ptd)(galv)
- I Trim Accessories**
 SHEETROCK Paper Faced Metal Bead and Trim: (Tape On Bead and Trim)
 Corner Angles: Metal Angles, 64 x 64 mm (2-1/2" x 2-1/2") x 24-ga. corrosion-resistant steel, lengths as required.
 Corner Reinforcement: (DUR-A-BEAD Corner Bead No. 103) (No. 800)
 Control Joint: Zinc Control Joint No. 093
- J Hanger Wire**
 Galvanized Hanger Wire, 8-ga.
- K Tie Wire**
 18-ga. Galvanized Tie Wire
- L Joint Treatment**
 Specify Joint Treatment Systems for interior surfaces from *Gypsum Panels & Accessories SA927*.
- M Runner Fasteners**
 4 mm (5/32") dia. power-driven type with penetration into 3,000 psi concrete, lengths as required.
- N Housewrap Sheet**
 No. 15 Asphalt or Grade D 60-min. Building Paper.
- O Sealants**
 Architectural and/or vapour sealants specified by architect.

**Part 3:
Interior Steel
Framed Wall
and Ceiling
Erection**

**3.1
Partition Installation**

3.1.1 Stud System Erection

Attach steel runners at floor and ceiling to structural elements with suitable fasteners located 51 mm (2") from each end and spaced 600 mm (24") o.c. To suspended ceilings, use toggle bolts or hollow wall anchors spaced 400 mm (16") o.c.

Position studs vertically, with open side facing in same direction, engaging floor and ceiling runners, and spaced 600 mm (24") o.c. When necessary, splice studs with 200 mm (8") nested lap and two positive attachments per stud flange. Place studs in direct contact with all door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are installed directly against exterior walls and a possibility of water penetration through walls exists, install asphalt felt strips between studs and wall surfaces.

Anchor all studs for shelf-walls and those adjacent to door and window frames, partition intersections, corners and free-standing furring to ceiling and floor runner flanges with metal lock fastener tool or screws; see details for general perimeter relief. Securely anchor studs to jamb and head anchors of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flange bend at each end, and secure to strut-studs with two screws in each bent web. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header. When attaching studs to steel grid system, structural adequacy of grid to support end reaction of wall must be determined.

3.1.2 Resilient Channel Erection

Position RC-1 Resilient Channel at right angles to steel studs, space 600 mm (24") o.c. and attach to stud flanges with pan head framing screws driven through holes in channel mounting flange. Install channels with mounting flange down. (Channel may be inverted at floor to accommodate attachment of base.) Locate channels 51 mm (2") from floor and within 150 mm (6") of ceiling. Extend channels into all corners and attach to corner framing. Cantilever channel ends no more than 150 mm (6"). Splice channel by nesting directly over stud; screw-attach through both flanges. Reinforce with screws located at both ends of splice.

3.1.3 Sound Attenuation Fire Blanket Installation

Install THERMAFIBER Sound Attenuation Fire Blankets after gypsum panels are applied to the resilient channel and before panels are applied to other side of studs. Insert the 635 mm (25") wide blanket in the stud cavity, by bowing the blanket slightly. After inserting, make a vertical cut between the studs. Slit the blanket with a sharp utility or hook-bill knife to ease the pressure of the blanket against the gypsum panels when they are installed. Butt ends of blankets closely together and fill all voids.

3.1.4 SHEETROCK brand Gypsum Panels, Erection

Apply gypsum panels (parallel to studs) (perpendicular to studs). Position all edges over studs for parallel application; all ends over studs for perpendicular application. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together. Stagger joints on opposite sides of partition.

Screw spacing that follows is for non-rated construction. For fire-rated construction, obtain screw spacing from fire test report or table on page 4.

For single-layer parallel application of gypsum panels, space screws 400 mm (16") o.c. in field of panels and along vertical abutting edges. For perpendicular panel application, space screws 400 mm (16") o.c. in field and along abutting end joints.

For single-layer adhesive application, pre-bow panels and attach vertically to studs using 10 mm (3/8") continuous adhesive beads applied to face of studs. Apply one bead to intermediate studs and two beads to studs occurring at panel joints. Secure panel at top and bottom with 25 mm (1") Type S screws spaced 400 mm (16") o.c. Impact panel along each stud to insure good contact at all points.

For double-layer screw attachment, space screws 600 mm (24") o.c. in base layer and 400 mm (16") o.c. in face layer. Apply both layers of gypsum panels vertically with joints in face layer offset from base layer joints by at least one stud. On tall walls, offset end joints also. For 12.7 and 15.9 mm (1/2" and 5/8") panels, use 25 mm (1") screws for base layer and 41 mm (1-5/8") screws for face layer.

For double-layer laminated construction, attach base layer with 25 mm (1") screws spaced 200 mm (8") o.c. at joint edges and 300 mm (12") o.c. in field. Apply face layer vertically with specified SHEETROCK or DURABOND Setting-Type Joint Compound or CGC Ready-Mixed Joint Compound spread on back side, joints staggered approx. 300 mm (12") and fastened to base layer with 38 mm (1-1/2") laminating screws. Drive screws approx. 600 mm (2') from ends and 1200 mm (4') o.c. in field of panel, 300 mm (1') from ends and 900 mm (3') o.c. along a line 51 mm (2") from vertical edges. Temporary shoring or support installed 400 to 600 mm (16" to 24") o.c. until adhesive is dry may be used in place of screws.

For double-layer laminated non-rated construction, attach base layer with 25 mm (1") Type S screws spaced 400 mm (16") o.c. at joint edges and in the field of panel. Apply laminating adhesive in strips to centre and along both edges of gypsum face panel. Apply strips with a notched metal spreader having four 6 x 6 mm (1/4" x 1/4") min. notches spaced max. 51 mm (2") o.c. Position wall panels vertically, press into place with firm pressure to ensure bond and fasten top and bottom as required. For ceiling panels, space fasteners 400 mm (16") o.c. along edges and ends; install one permanent field fastener per framing member at mid-width of panel.

For resilient construction, apply gypsum panels with long dimension perpendicular to resilient channels and fasten with 25 mm (1") Type S screws spaced 300 mm (12") o.c. along channels. Where channel resiliency makes screw placement difficult, the next longer screw may be used but do not drive screw directly over stud.

- A Fire Rated 3 Hour Assembly, Steel Stud Partition, UL Design U419 or U435**—Three layers of 12.7 mm (1/2") SHEETROCK brand Gypsum Panels are required on both sides of the metal stud. Vertical joints centred over studs. Panels installed either horizontally or vertically. The first layer is attached with 25 mm (1") Type S screws. The second layer is attached with 41 mm (1-5/8") Type S screws. The third layer is attached through the first two layers and into the studs with 57 mm (2-1/4") Type S screws. The first and second layers start their screw spacing 100 and 75 mm (4" and 3") respectively from the top and bottom of the wall, with a maximum spacing of 1200 mm (48") on center. The third layer starts its screw pattern 51 mm (2") from the top and bottom of the wall, and maintains a 300 mm (12") on-center screw spacing. Each third-layer horizontal panel end joint shall be centred and secured to the stud with Type S screws spaced 13 mm (1/2") from end joint and 300 mm (12") on centre. The third layer is also secured to the first and second layers with 38 mm (1-1/2") Type G screws located midway between studs and 25 mm (1") from the horizontal joint. All gypsum panel end joints and edge joints shall be staggered.

B Fire Rated 4 Hour Assembly, Steel Stud Partition, UL Design U419 or U435—Four layers of 12.7 mm (1/2") SHEETROCK brand Gypsum Panels are required on both sides of the metal stud. Vertical joints staggered over the studs. Panels installed either horizontally or vertically. The first layer is installed to the studs with 25 mm (1") Type S screws. The second layer is attached to metal studs through the first layer with 41 mm (1-5/8") Type S screws. The third layer is attached to the metal studs through the first and second layers with 57 mm (2-1/4") Type S screws. The fourth layer is attached to the metal studs, through the first, second, and third layers, with 67 mm (2-5/8") Type S screws. The first layer starts its screw pattern 125 mm (5") from the top and bottom of the wall, with a maximum spacing of 1200 mm (48") on center. The second and third layers start 100 and 75 mm (4" and 3") from the top and bottom of the wall, respectively, and maintain the same vertical spacing as the first layer. The fourth layer is located 51 mm (2") from the top and bottom of the wall and is spaced 300 mm (12") o.c. Each fourth layer horizontal board end joint shall be attached to the studs with screws spaced 13 mm (1/2") from panel joint and 300 mm (12") o.c. vertically. The fourth layer is also attached to the second and third layers with 38 mm (1-1/2") Type G screws located midway between adjacent studs and 25 mm (1") from the joint. All gypsum panel end joints and edge joints are to be staggered.

3.1.5 SHEETROCK brand Gypsum Panels, ULTRACODE Core, Erection

A Fire Rated 2 Hour Assembly: Steel Stud Partition, UL Design U419 or U491—Install steel stud framing system as described in Section 3.1.1 using minimum 90 mm (3-1/2") studs and friction fit 76 mm (3") THERMAFIBER SAFB as described in Section 3.1.3. When 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, are applied vertically, wrapped edges shall be installed parallel to and fully supported by steel framing. Attach panels to studs using 32 mm (1-1/4") long (Type S) (Type S-12) drywall screws spaced 200 mm (8") o.c. along panel edges and ends and 300 mm (12") o.c. along intermediate framing. Stagger horizontal board joints a minimum of 300 mm (12") on opposite sides of the partition.

B Fire Rated 3 Hour Assembly: Steel Stud Partition, UL Design U419—Install steel stud framing system as described in Section 3.1.1 using minimum 41 mm (1-5/8") 25 ga. studs. When base layer of 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, is applied vertically, wrapped edges shall be installed parallel to and fully supported by steel framing. Attach panels to studs using 32 mm (1-1/4") long (Type S) (Type S-12) drywall screws spaced 600 mm (24") o.c. along all framing. Stagger horizontal board joints a minimum of 300 mm (12") on opposite sides of the partition. Face layer of 19.1 mm (3/4") thick SHEETROCK brand Gypsum Panels, ULTRACODE Core, is applied horizontally with wrapped edges perpendicular to steel framing. Stagger horizontal panel end joints minimum 300 mm (12") from base layer panel joints. Attach panels to steel framing using 57 mm (2-1/4") long (Type S) (Type S-12) screws 300 mm (12") o.c. along all framing. Offset face layer screws from base layer screws by 25 mm (1"). Secure face panel to base panel along the horizontal joints of the face layer with 38 mm (1-1/2") long Type G screws located midway between steel framing 600 mm (24") o.c. and 25 mm (1") from horizontal joint. Stagger face panel joints a minimum of 300 mm (12") on opposite side of the partition.

C Fire Rated 3 Hour Assembly: Steel Stud Chase Wall, UL Design U436—Align two parallel rows of floor and ceiling runners spaced 51 mm (2") apart. Attach to concrete slabs with concrete stub nails or power-driven anchors 600 mm (24") o.c. Position steel studs vertically in runners, 600 mm (24") o.c. with flanges in the same direction, and with studs on opposite sides of chase directly across from each other.

Cut cross bracing made from gypsum panels, 300 mm (12") high by chase wall width. Place between rows of studs. Space braces 600 mm (48") o.c. vertically and attach to stud webs with six 25 mm (1") Type S screws per brace. If larger braces are used, space screws 200 mm (8") o.c. max. on each side.

Bracing of 64 mm (2-1/2") steel studs may be used in place of gypsum panels. Anchor web at each end of steel brace to stud web with two 10 mm (3/8") pan head screws. When chase wall studs are not opposite, install steel stud cross braces 600 mm (24") o.c. horizontally and securely anchor each end to a continuous horizontal 64 mm (2-1/2") runner screw-attached to chase wall studs within the cavity.

Apply base layer of 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, with vertical joints parallel to and fully supported by steel framing. Attach panels to studs using 32 mm (1-1/4") long (Type S) (Type S-12) drywall screws spaced 600 mm (24") o.c. along all framing. Stagger board joints a minimum of 300 mm (12") on opposite sides of the partition. Apply face layer of 19.1 mm (3/4") thick SHEETROCK brand Gypsum Panels, ULTRACODE Core, horizontally with wrapped edges perpendicular to steel framing. Stagger panel end joints 600 mm (24") from base layer panel joints. Attach panels to steel framing using 57 mm (2-1/4") long (Type S) (Type S-12) screws 300 mm (12") o.c. along all framing. Offset face layer screws from base layer screws by 25 mm (1"). Secure face panel to base panel along the horizontal joints of the face layer with 38 mm (1-1/2") long Type G screws located midway between steel framing 600 mm (24") o.c. and 25 mm (1") from horizontal joint. Stagger face panel joints by 600 mm (24") on opposite side of the partition. Alternatively, face panels may be installed vertically with wrapped edges parallel to and fully supported by framing. Attach face panels to steel framing using 57 mm (2-1/4") (Type S) (Type S-12) screws spaced 300 mm (12") o.c. Stagger joints in face and base layer by a minimum of 300 mm (12").

D Fire Rated 4 Hour Assembly: Steel Stud Partition, UL Design U419 or U490—Install steel stud framing system as described in Section 3.1.1 using minimum 64 mm (2-1/2") 25 ga. studs and friction fit 51 mm (2") THERMAFIBER SAFB as described in Section 3.1.3. Apply base layer of 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, with vertical joints parallel to and fully supported by steel framing. Attach panels to studs using 32 mm (1-1/4") long (Type S) (Type S-12) drywall screws spaced 600 mm (24") o.c. along all framing. Stagger board joints a minimum of 300 mm (12") on opposite sides of the partition. Apply face layer of 19.1 mm (3/4") thick SHEETROCK brand Gypsum Panels, ULTRACODE Core, horizontally with wrapped edges perpendicular to steel framing. Stagger panel end joints a minimum of 300 mm (12") from base layer panel joints. Attach panels to steel framing using 57 mm (2-1/4") long (Type S) (Type S-12) screws 300 mm (12") o.c. along all framing. Offset face layer screws from base layer screws by 25 mm (1"). Secure face panel to base panel along the horizontal joints of the face layer with 38 mm (1-1/2") long Type G screws located midway between steel framing 600 mm (24") o.c. and 25 mm (1") from horizontal joint. Stagger face panel joints by a minimum of 300 mm (12") on opposite side of the partition. Alternatively, face panels may be installed vertically with wrapped edges parallel to and fully supported by framing. Attach face panels to steel framing using 57 mm (2-1/4") (Type S) (Type S-12) screws spaced 300 mm (12") o.c. Stagger joints in face and base layer a minimum of 300 mm (12").

3.1.6 SHEETROCK brand Gypsum Panels, Water-Resistant, Erection

A Framing—If necessary, fur out studs so inside face of shower receptor is flush with gypsum panel face. Install appropriate blocking or headers to support tub and other plumbing fixtures, and to receive soap dishes, grab bars, towel racks and other hardware. When studs are more than 400 mm (16") o.c., or when ceramic tile over 8 mm (5/16") thick will be used, install suitable blocking between studs. Place blocking approximately 25 mm (1") above top of tub or receptor and at midpoint between base and ceiling.

B Gypsum Panels—After tub, shower pan or receptor is installed, place temporary 6 mm (1/4") spacer strips around lip of fixture. Pre-cut panels to required sizes and make necessary cut-outs. Before installing panels, brush thinned tile adhesive over all cut or exposed panel edges at utility holes, joints and intersections.

Install panels perpendicular with paperbound edge abutting top of spacer strip. Fasten panels with screws 300 mm (12") o.c. max. Where ceramic tile more than 8 mm (5/16") thick will be used, space screws 200 mm (8") o.c. max.

In areas to be tiled, treat all fastener heads with SHEETROCK or DURABOND Setting-Type Joint Compound. Fill tapered edges in gypsum panel with this SHEETROCK OR DURABOND Setting-Type Compound, embed CGC Joint Tape firmly and wipe off excess compound. Follow immediately with a second coat over the taping coat, being careful not to crown the joint. Fold and embed tape properly in all interior angles to provide a true angle.

In areas not to be tiled, embed tape and treat fasteners with SHEETROCK or DURABOND Setting-Type Joint Compound applied in the conventional manner. Finish with at least two coats of setting-type joint compound applied according to directions.

Prior to tile erection, seal cut panel edges of all openings around pipes, fittings and fixtures with thinned tile adhesive. Remove spacer strips, but do not caulk gap at bottom of panels.

Note—Using an adhesive approved by the tile manufacturer, install tile down to top edge of shower floor or tub and overlapping lip or return of tub or receptor. Fill all tile joints with an unbroken application of grout. Apply caulking compound between the tile and shower floor or tub.

**3.2
Chase Wall Erection**

Align two parallel rows of floor and ceiling runners spaced apart as detailed. Attach to concrete slabs with concrete stud nails or power-driven anchors 600 mm (24") o.c., to suspended ceilings with toggle bolts 400 mm (16") o.c., or to wood framing with suitable fasteners 600 mm (24") o.c.

Position steel studs vertically in runners, 600 mm (24") o.c. with flanges in the same direction, and with studs on opposite sides of chase directly across from each other. Except in fire-rated walls, anchor studs to floor and ceiling runner flanges with metal lock fastener tool or screws per paragraph 3.1.1.

Cut cross bracing made from gypsum panels, 300 mm (12") high by chase wall width. Place between rows of studs. Space braces 1200 mm (48") o.c. vertically and attach to stud webs with six 25 mm (1") Type S screws per brace. If larger braces are used, space screws 200 mm (8") o.c. max. on each side.

Bracing of 64 mm (2-1/2") steel studs may be used in place of gypsum panels. Anchor web at each end of steel brace to stud web with two 10 mm (3/8") pan head screws. When chase wall studs are not opposite, install steel stud cross braces 600 mm (24") o.c. horizontally and securely anchor each end to a continuous horizontal 64 mm (2-1/2") runner screw-attached to chase wall studs within the cavity.

<p>3.3 Curved Partition Installation</p>	<p>3.3.1 Framing Erection Cut top and bottom runner through leg and web at 51 mm (2") intervals for arc length. Allow 300 mm (12") uncut straight runner at each end of arc. Bend runners to uniform curve of specified radius. Clinch a 25 mm (1") x 25-ga. steel strip to inside of cut leg using metal lock fastener. Attach steel runners at floor and ceiling to structural elements with suitable fasteners located 51 mm (2") from each end and spaced 600 mm (24") o.c. To suspended ceilings, use toggle bolts or hollow wall anchors spaced 400 mm (16") o.c. Position studs vertically, with open side facing in same direction and engaging floor and ceiling runners. Begin and end each arc with a stud and space intermediate studs equally along outside of arc. Secure studs to runners with 10 mm (3/8") pan head framing screws. On tangents, place studs 150 mm (6") o.c. leaving last stud freestanding. Install balance of stud system in normal manner according to specifications.</p> <p>3.3.2 Gypsum Panel Preparation Select length and cut panel so one unbroken panel covers curved surface and 300 mm (12") tangents at each end. Outside panel must be longer than inside panel to compensate for additional radius contributed by studs. When wet panels are required, evenly spray water per manufacturer's directions on the surface to be in tension when panels are hung. Panels, while wet, should be bent to desired radius. They should be allowed to set in this shape prior to installation.</p> <p>3.3.3 Gypsum Panel Erection Apply gypsum panels horizontally with the wrapped edges perpendicular to studs. On the convex side of the partition, begin installation at one end of the curved surface and fasten panel to studs as it is wrapped around the curve. On the concave side, start fastening panel to the stud at the centre of the curve and work outward to the panel ends. Fasten single-layer panels with 25 mm (1") Type S screws spaced 300 mm (12") o.c. For double-layer application, apply base layer horizontally and fasten to stud with 25 mm (1") Type S screws spaced 400 mm (16") o.c. Centre face layer panels over joints in the base layer and secure to studs with 41 mm (1-5/8") Type S screws spaced 300 mm (12") o.c. Allow panels to dry completely before applying joint treatment.</p>
<p>3.4 CGC High-Performance Sound Control Systems</p>	<p>Attach steel runners at floor and ceiling to structural elements with suitable fasteners located 51 mm (2") from each end and spaced max. 600 mm (24") o.c. Position studs vertically, engaging floor and ceiling runners, and spaced 600 mm (24") o.c. Place studs with open side facing in same direction. Position resilient channels horizontally with mounting flange down and attach to narrow stud flange with 10 mm (3/8") Type S-12 pan head screws. Locate channels 38 mm (1-1/2") from floor, within 150 mm (6") of ceiling and max. 600 mm (24") o.c. Friction fit sound attenuation fire blankets between studs with min. 10 mm (3/8") space between blankets and resilient channels. Butt blanket ends tightly and fill all voids. Cut gypsum panels 13 mm (1/2") shorter than floor-to-ceiling height and apply vertically with 6 mm (1/4") gap at floor, ceiling and abutting intersections. Use 6 mm (1/4") thick shims at the floor to support the panels on the resilient channel side until all screws are installed. Remove shims so gypsum panels are supported by the resilient channels. Channels will deflect when properly loaded. Position panel edges over studs on the direct applied side. Stagger joints in adjacent layers. For direct-application side, apply first layer to studs with (25 mm [1"])(32 mm [1-1/4"]) Type S-12 Screws (300 mm [12"])(600 mm [24"]) o.c., apply second layer with 41 mm (1-5/8") Type S-12 Screws (300 mm [12"])(600 mm [24"]) o.c. and apply third layer with 60 mm (2-3/8") Type S-12 Screws 300 mm (12") o.c. For resilient side, install gypsum panels vertically. Fasten first layer to channel flanges with (25 mm [1"])(29 mm (1-1/8")) Type S Screws spaced (300 mm [12"])(600 mm [24"]) o.c., apply second layer with 41 mm (1-5/8") Type S Screws spaced 300 mm (12") o.c. Screws fastening the gypsum panels to channels must not come in contact with a stud. To avoid this possibility, screws shall not be spaced closer to the centerline of a stud than 76 mm (3").</p>
<p>3.5 Drywall Soffit Erection</p>	<p>Attach steel runners 600 mm (24") o.c. to concrete slabs with concrete stub nails or power-driven anchors, to suspended ceilings with toggle bolts or to wood framing with suitable fasteners. On stud walls, space fasteners to engage each stud. On ceilings, place fastener close to outside face runner. Fasten vertical face panel to web of face corner runner and flange of ceiling runner with 25 mm (1") screws spaced 300 mm (12") o.c. For braced furring, insert steel studs between face corner runners, sidewall and ceiling runners and attach studs to runners with metal lock fastener tool or pan head framing screws. Attach face panels to steel studs and runners with 25 mm (1") screws spaced 300 mm (12") o.c. Space screws in corner runner at least 25 mm (1") from gypsum panel edge.</p>

3.6
Ceiling
Installation

3.6.1 **Grillage Erection**

Space 8-ga. hanger wires 1200 mm (48") o.c. along carrying channels and within 150 mm (6") of ends of carrying channel run. In concrete, anchor hangers by attachment to reinforcing steel, by loops embedded at least 51 mm (2") or by approved inserts. For steel construction, wrap hanger around or through beams or joists.

Install 38 mm (1-1/2") carrying channels 1200 mm (48") o.c., and within 150 mm (6") of walls. Position channels for proper ceiling height, level, and secure with hanger wire saddle-tied along channel. Provide 25 mm (1") clearance between runners and abutting walls and partitions. At channel splices, interlock flanges, overlap ends 300 mm (12") and secure each end with double-strand 18 ga. tie wire.

Erect metal furring channels at right angles to 38 mm (1-1/2") carrying channels or main supports. Space furring (400 mm [16"] (600 mm [24"])) o.c. and within 150 mm (6") of walls. Provide 25 mm (1") clearance between furring ends and abutting walls and partitions. Secure furring to carrying channels with clips or wire-tie (as appropriate for fire-rating) to supports with double-strand 18 ga. wire. At splices, nest furring channels at least 200 mm (8") and securely wire-tie each end with double-strand 18 ga. wire.

At light troffers or any openings that interrupt the carrying or furring channels, install additional cross reinforcing to restore lateral stability of grillage.

3.6.2 **Steel Stud Framing System Erection**

Attach runners at ceiling height, through gypsum panels, to each partition stud with two screws. Insert steel studs in runners and attach each end with one pan head framing screw. Install 41 mm (1-5/8") stud cross-bracing over stud framing, space 1200 mm (48") o.c. and attach to each framing stud with two pan head framing screws. At hangers, install 300 mm (12") long stud section for box reinforcing or lap studs 300 mm (12") and secure each end with two pan head framing screws.

At light troffers or any openings that interrupt the ceiling, install additional cross reinforcing to maintain structural integrity of framing.

3.6.3 **Gypsum Panel Erection**

Apply gypsum panels of maximum practical length with long dimension perpendicular to furring channels. Position end joints over channel web and stagger in adjacent rows.

Fit ends and edges closely, but not forced together. Fasten panels to channels with 25 mm (1") Type S screws spaced 300 mm (12") o.c. in field of panels and along abutting ends and edges.

3.7
Caged Beam
Fireproofing

Position ceiling runners at least 13 mm (1/2") from and parallel to beam and fasten to floor units with 13 mm (1/2") Type S-12 pan head screws spaced 300 mm (12") o.c. Fabricate hanger brackets from 41 mm (1-5/8") steel runners allowing (13 mm [1/2"] (25 mm [1"])) clearance at bottom of beam. Space brackets 600 mm (24") o.c. along beam and attach to ceiling runners with 13 mm (1/2") Type S-12 screws. Install lower corner runners parallel to beam and fasten to brackets with 13 mm (1/2") Type S-12 screws.

Attach (two) (three) layers of 15.9 mm (5/8") SHEETROCK brand Gypsum Panels, FIRECODE Core, to channel brackets with screws. Install vertical panels first, with bottom panels overlapping lower edges of panels in each layer. Attach panels to channel brackets with (25 mm [1"] (32 mm [1-1/4"])) Type S screws 400 mm (16") o.c. for base layer, 41 mm (1-5/8") Type S screws 300 mm (12") o.c. for middle layer and (48 mm [1-7/8"] (57 mm [2-1/4"])) Type S screws 200 mm (8") o.c. for face layer. For 3-hour assembly, install wire mesh over bottom middle layer panel, extend 38 mm (1-1/2") up each side and fasten with 41 mm (1-5/8") screws used to fasten panels.

3.8
Column
Fireproofing
Installation

3.8.1 **UL Design X518-2 hr.**

Attach inner layer 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, to 41 mm (1-5/8") steel studs with 25 mm (1") Type S screws spaced 600 mm (24") o.c. and place assembly with gypsum panel next to column flange. Install gypsum panel layer vertically around column using 25 mm (1") Type S screws to attach base layer to stud web 600 mm (24") o.c. and face layer to stud flange 300 mm (12") o.c. Apply face layer vertically over web face side of column and fasten through base layer to web of studs with 41 mm (1-5/8") Type S screws spaced 300 mm (12") o.c. and staggered from screws in base layer. Apply corner bead at all corners, fasten with 25 mm (1") Type S screws 230 mm (9") o.c. and finish with joint compound.

3.8.2 **UL Design X524-2 hr.**

Provide fire protection to all columns with three layers 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, screw-attached to 41 mm (1-5/8") steel studs positioned at column corners. Cut studs 13 to 19 mm (1/2" to 3/4") less than column height. For columns having depth of 910 mm (36") or less, apply panels vertically and stagger joints between layers at least 762 mm (30").

When column depth exceeds 910 mm (36"), install additional 41 mm (1-5/8") studs in each web recess inside and along column flanges and at the web center. Set studs in runners placed horizontally, parallel to web between column flanges and spaced max. 2400 mm (8') o.c. vertically. Fasten studs to runners at top and bottom with 13 mm (1/2") Type S-12 pan head screws. Apply gypsum panels horizontally and stagger joints between layers at least 300 mm (12").

3.8.3 UL Designs X521-2 hr. & X514-3 hr.

For all W14 x 228 steel columns, provide fire protection with 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, applied vertically over 41 mm (1-5/8") steel studs positioned at corners. Attach panels to studs with 25 mm (1") Type S screws spaced 300 mm (12") o.c. For 3-hour rating install additional layer over web surface and attach to studs with 41 mm (1-5/8") Type S screws spaced 300 mm (12") o.c. Apply corner bead at all corners and finish with joint compound.

3.8.4 UL Design X528-2r. & 3 hr.

Provide 2 hr. fire protection to all listed columns with two layers 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, screw-attached to 41 mm (1-5/8") steel studs positioned at column corners. Provide 3 hr. fire protection to all listed columns with three layers 19.1 mm (3/4") SHEETROCK brand Gypsum Panels, ULTRACODE Core, screw-attached to 41 mm (1-5/8") steel studs positioned at column corners. Cut studs 13 to 19 mm (1/2" to 3/4") less than column height. For columns having depth of 910 mm (36") or less, apply panels vertically and stagger joints between layers at least 760 mm (30"). For 3 hr. rating wrap second layer of gypsum board with No. 18 SWG steel wire spaced 600 mm (24") o.c.

When column depth exceeds 910 mm (36"), install additional 41 mm (1-5/8") studs in each web recess inside and along column flanges and at the web center. Set studs in runners placed horizontally, parallel to web between column flanges and spaced max. 2400 mm (8') o.c. vertically. Fasten studs to runners at top and bottom with 13 mm (1/2") Type S-12 pan head screws. Apply gypsum panels horizontally and stagger joints between layers at least 300 mm (12").

3.8.5 UL Design X515-3 hr.

Attach inner layer 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, to 41 mm (1-5/8") steel studs with 25 mm (1") Type S screws spaced 300 mm (12") o.c. and place assembly with gypsum panel next to column flange. Install two additional layers to stud flange and three additional layers to stud web over web face side of column. Fasten base layers with 25 mm (1") Type S screws, middle layers with 41 mm (1-5/8") screws and face layers with 57 mm (2-1/4") screws. Space all screws 300 mm (12") o.c. vertically. Apply corner bead at corners; finish with joint compound.

3.8.6 UL Design X507-4 hr.

For all W14 x 228 steel columns, provide fire protection with double-layer 12.7 mm (1/2") SHEETROCK brand Gypsum Panels, FIRECODE C Core, applied vertically over 41 mm (1-5/8") steel studs positioned at corners. Attach base layer to studs with 25 mm (1") Type S screws spaced 300 mm (12") o.c. and attach face layer with 41 mm (1-5/8") Type S screws spaced 300 mm (12") o.c. and staggered 150 mm (6") from base layer screws. Apply corner bead at corners; finish with joint compound.

**3.9
Wall Furring
Installation**

3.9.1 Direct Furring Channel Attachment

Attach metal furring channels (vertically) (horizontally), spaced 600 mm (24") o.c., to interior of masonry or concrete surfaces with hammer-set or power-driven fasteners or concrete stub nails staggered 600 mm (24") o.c. on opposite flanges. Where furring channel is installed directly to exterior wall and a possibility of water penetration through walls exists, install asphalt felt protection strip between furring channel and wall.

Apply gypsum panels (parallel to channels) (perpendicular to channels). Position all edges over furring channels in parallel application; all ends over framing in perpendicular application with joints staggered in successive courses. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together. Fasten panels to channels with 25 mm (1") Type S screws spaced 400 mm (16") o.c.

3.9.2 Mechanical Application—Z-Furring Channels

Erect insulation vertically and hold in place with Z-Furring Channels spaced 600 mm (24") o.c. Except at exterior corners, attach narrow flanges of furring channels to wall with concrete stub nails or power-driven fasteners spaced 600 mm (24") o.c. At exterior corners, attach wide flange of furring channel to wall with short flange extending beyond corner. On adjacent wall surface, screw attach short flange of furring channel to web of attached channel. Start from this furring channel with a standard width insulation panel and continue in regular manner. At interior corners, space second channel no more than 300 mm (12") from corner and cut insulation to fit. Hold mineral-fiber insulation in place until gypsum panels are installed with 250 mm (10") long staple field-fabricated from 18-ga. tie wire and inserted through slot in channel. Apply wood blocking around window and door openings and as required for attachment of fixtures and furnishings.

Apply gypsum panels parallel to channels with vertical joints occurring over channels. Use no end joints in single-layer application. Attach gypsum panels with 25 mm (1") Type S screws spaced 400 mm (16") o.c. in field of panels and at edges, and with 32 mm (1-1/4") Type S screws spaced 300 mm (12") o.c. at exterior corners. For double-layer application, apply base layer parallel to channels, face layer either perpendicular or parallel to channels with vertical joints offset at least one channel. Attach base layer with screws 600 mm (24") o.c. and face layer with 41 mm (1-5/8") screws 400 mm (16") o.c.

Drywall/Steel Framed Systems

3.10 Accessory Application	<p>A Joint System—Finish all face panel joints and internal angles with a Canadian Gypsum Company joint system installed according to manufacturer's directions. Spot exposed fasteners on face layers and finish corner bead, control joints and trim as required, with at least three coats of joint compound, feathered out onto panel faces and sanded smooth.</p> <p>B Laminating Adhesive—Spread to provide 13 mm (1/2") adhesive beads 115 mm (4-1/2") o.c. for full sheet lamination. For strip lamination, apply adhesive in vertical strips to centre along both edges of face panel with metal spreader having 6 x 6 mm (1/4"x 1/4") min. notches spaced max. 51 mm (2") o.c.</p> <p>C Corner Bead—Reinforce all vertical and horizontal exterior corners with corner bead fastened with 14 mm (9/16") galvanized staples 230 mm (9") o.c. on both flanges along entire length of bead.</p> <p>D Metal Trim—Where assembly terminates against masonry or other dissimilar material, apply metal trim over panel edge and fasten with 14 mm (9/16") galvanized staples 230 mm (9") o.c.</p> <p>E Screws—Power-drive at least 10 mm (3/8") from edges or ends of panel to provide uniform dimple 1 mm (1/32") deep.</p> <p>F Control Joints—Break panel behind joint and back by double framing members (and 51 mm [2"] wide gypsum panel strip). Apply acoustical sealant to fill gap and attach control joint to face layer with 14 mm (9/16") galvanized staples spaced 150 mm (6") o.c. on both flanges along entire length of joint.</p>	
Part 4: Exterior Steel Framed Wall Erection	4.1 Erection	<p>4.1.1 Studs and Runners</p> <p>A Align runners accurately according to exterior wall layout and secure to base and head with power-driven fastener spaced () o.c.</p> <p>B Position studs vertically in runners and space no greater than (300 mm [12"]) (400 mm [16"]) (600 mm [24"]) (choose spacing from Technical Data tables). Securely anchor each stud to runner with four (10 mm [3/8"]) (13 mm [1/2"]) Type S-12 pan head or 16 mm (5/8") Type S-12 low-profile head screws, two at top and two at bottom, with one screw in each flange.</p> <p>C For the slip track system, allow 13 to 19 mm (1/2" to 3/4") clearance between top of studs and deep leg runner. Do not fasten studs to deep leg runner. Install 38 mm (1-1/2") cold-rolled channel lateral bracing within 250 to 300 mm (10" to 12") of tops of studs. Connect bracing to each stud using welded or screw-attached clip angle.</p> <p>4.1.2 Exterior Sheathing Screw-attach GYPLAP brand Gypsum Sheathing to exterior of each stud with 25 mm (1") (drywall) (self-drilling) corrosion-resistant screws spaced 10 mm (3/8") from ends and edges and approx. 200 mm (8") o.c. Apply sealant around sheathing perimeter at interface with other materials and install flashing as indicated on the drawings. (Install asphalt felt or Grade D 60-min. Building Paper horizontally with 51 mm (2") overlap and 150 mm (6") endlap and fasten with corrosion-resistant staples as specified.)</p> <p>4.1.5 C-H Studs and Runners</p> <p>A Position J-Runners at floor and ceiling with short leg toward inside of wall and secure with power-driven fasteners spaced () o.c.</p> <p>B Cut infill panels 25 mm (1") less than floor-to-ceiling height. Drive two 8d duplex nails into bottom of gypsum liner panel, 100 mm (4") from each edge, to support panel above runner. Install first gypsum liner panel, position C-H Stud on free end of panel, then continue alternate gypsum liner panel and stud applications to complete wall.</p> <p>4.1.7 Exterior Facings Follow manufacturer's recommendations for application.</p> <p>4.1.9 Drywall Interior</p> <p>A Position SHEETROCK brand Gypsum Panels, Foil-Back, FIRECODE Core, vertically or horizontally and attach to studs with 25 mm (1") screws spaced 200 mm (8") o.c.</p> <p>B For furred interior construction, apply SHEETROCK brand Gypsum Panels vertically or horizontally and attach to studs with 25 mm (1") screws 200 mm (8") o.c. Over the first panel layer, apply metal furring channels horizontally 600 mm (24") o.c. and screw-attach through panels into steel studs. Attach each channel attachment flange to each stud with 25 mm (1") screws. Screw-attach a second layer of foil-back panels to furring channels with 25 mm (1") screws spaced 300 mm (12") o.c.</p> <p>C Install drywall accessories, finish joints, accessories and screw heads per Folder SA927.</p> <p>4.1.10 Veneer Plaster Interior</p> <p>A Apply Foil-Back GRAND PRIX Gypsum Veneer Plaster Base vertically or horizontally and attach to stud with 25 mm (1") screws 200 mm (8") o.c. Install veneer base interior immediately following gypsum sheathing application to properly resist design wind loads.</p> <p>B Install lathing accessories and apply IMPERIAL Veneer Plaster per Folder SA920.</p>

Additional Information

**Product Information
and Literature**
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