Shaftwall & Stairwell Systems

Fire protection & sound isolation for shafts & stairwells

PABCO® Gypsum

what the job demands™

Shaftwall & Stairwell Systems

Fire protection & sound isolation systems for elevator shafts, stairwells & other shafts

Shaftwall systems are key components to multi-story buildings' safety systems; preventing fire from entering elevator shafts and provide egress through stairwells should an emergency evacuation become necessary. Though these systems are non-load bearing, they are designed to provide strength necessary to withstand lateral loads and needed fire protection. Gypsum Shaftwall & stairwell systems use a 1" thick shaftwall panel. PABCO® Gypsum produces 3 shaftwall products that can be used in these systems that allow you the flexibility to choose the type of features that the job demands.

Gypsum Shaftwall systems have replaced traditional masonry due to several advantages: lightweight assembly, thinner walls, ease and speed of installation from a single side—no need for scaffolding within the shaft, and a cost effective solution.

PABCO® Gypsum Shaftwall Products

Product	Thickness	Width	Length	Edge Type	Weight	Mold Resistance (ASTM D 3273)	ASTM Standard	UL Core Type
1" PABCORE® Shaftliner, Type X 	1" (25.4mm)	24" (610mm)	8' (2428mm) 10' (3048mm) 12' (3658mm)	Double Beveled	4.1 lbs/ft²	N/A	C 1396	PG-10
1" MOLD CURB® Plus Shaftliner, Type X 	1" (25.4mm)	24" (610mm)	8' (2428mm) 10' (3048mm) 12' (3658mm)	Double Beveled	4.1 lbs/ft²	10 (Highest Rating)	C 1396	PG-10
1" PABCO GLASS® Shaftliner, Type X 	1" (25.4mm)	24" (610mm)	8' (2428mm) 12' (3658mm)	Double Beveled	4.1 lbs/ft²	10 (Highest Rating)	C 1658	PG-10

Other PABCO® Gypsum Products used in Shaftwall Assemblies

Product	Thickness	Width	Length	Edge Type	Weight	Mold Resistance (ASTM D 3273)	ASTM Standard	UL Core Type
1/2" FLAME CURB® Super C	1/2" (12.7mm)	4' (1219mm)	8' (2428mm) 9' (2743mm) 10' (3048mm) 12' (3658mm)	Tapered	2.0 lbs/ft²	N/A	C 1396	PG-C
5/8" FLAME CURB® Type C	5/8" (15.8mm)	4' (1219mm)	12' (3658mm)	Tapered	2.4 lbs/ft²	N/A	C 1396	Type C

See Product Submittals for additional details

C-T Stud &
J-Tabbed Track

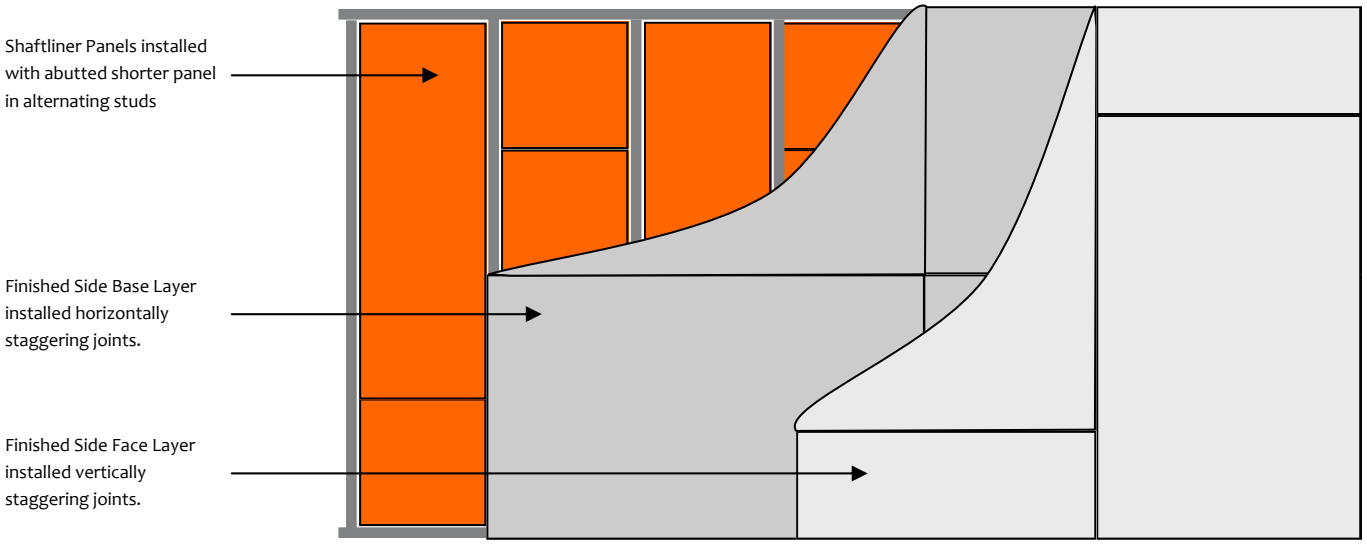
2 Hour C-T or C-H Shaftwall and Stairwell Systems

Installation Procedures

1. Layout per construction drawings. Secure J-Track as a perimeter framing on floor, sides and ceiling; plumb to ceiling. Attach suitable fasteners 24"o.c. maximum. Apply a bead of flexible sealant to the perimeter.
2. Pre-plan the stud layout 24"o.c. and adjust the spacing at either end so that the terminal stud will not fall closer than 8" from the end.
3. Erect the first PABCORE® Shaftliner or PABCO GLASS® Shaftliner panel (cut ¾" to 1" less than the total height of wall) by inserting between the flanges of the top and bottom J-Track at one end of the wall. Plumb the pane against the web of the J-Track and secure panel with bent out tabs in the track or with 1-5/8" Type S screws 12"o.c. into the wide flange of the track.
4. Fit the C-T or C-H Stud (cut ¾" less than the overall height of the wall) to the edge of the previously installed PABCORE® or PABCO GLASS® Shaftliner panel; allow equal clearance at top and bottom.
5. Install the next Shaftliner panel inside the J-Track and within the tabs of the C-T or C-H Stud . Secure all Shaftliner panels, top and bottom with either tabs in J-Track or with 1-5/8" screws midway between studs.
6. Progressively install succeeding C-T or C-H Stud and Shaftliner panels as described above until wall section is completed. Secure the end panel to the side J-Track with Tabs of 1-5/8" screws 12"o.c.

Notes:

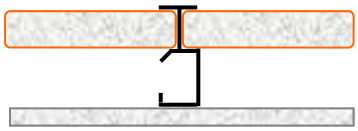
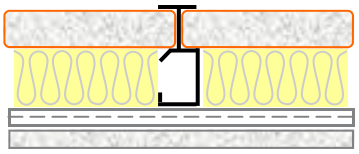
- Where wall heights exceed the available length of the PABCORE® Shaftliner or PABCO GLASS® Shaftliner panel, the panels may be cut and stacked with joints occurring within the top or bottom third of the wall. The shorter panel should be a minimum of 24" length, or sufficient to engage two stud tabs on each panel edge. Horizontal joints must be staggered alternating from top to bottom to avoid adjacent horizontal joints.
- For Doors, Ducts or other large penetrations or openings, install J-Track as perimeter framing as detailed. Use 20-gauge track with longer leg for elevator doors and block (fill) cavity with 12" wide gypsum filler strips for doors exceeding 7' 0" in height.
- Designs allow the use of J-Track or J-Tabbed Track

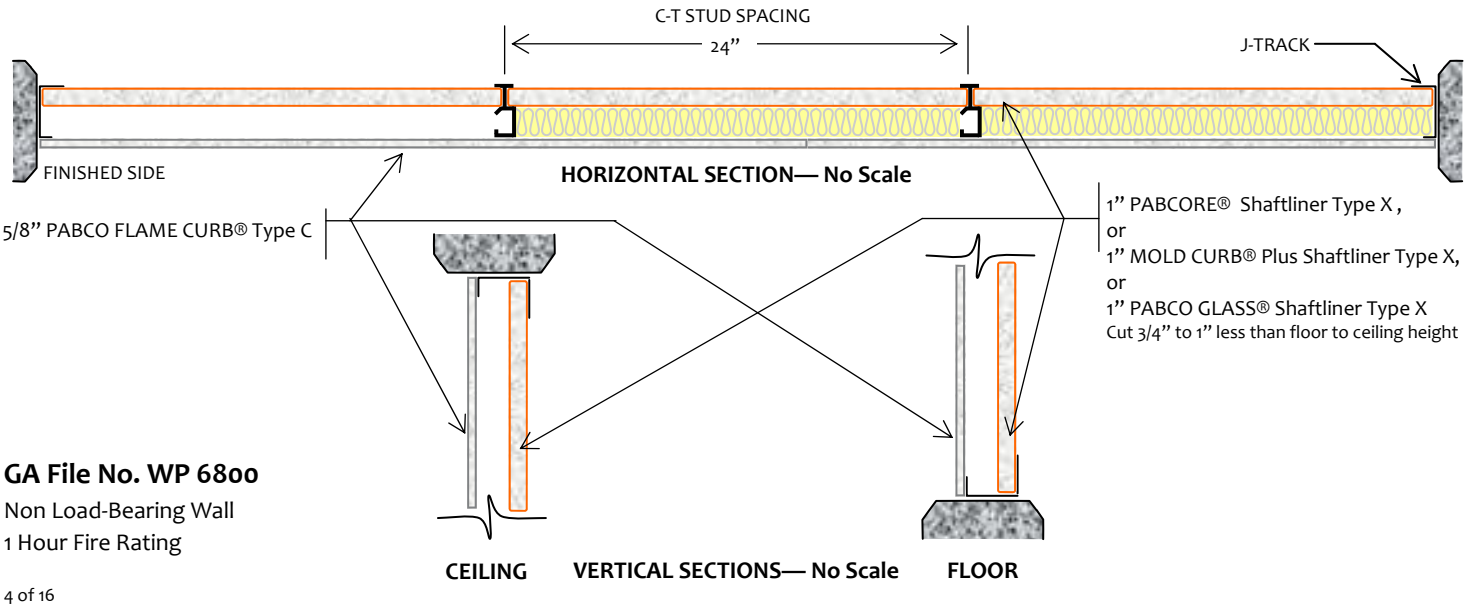


Wall Assembly diagram of 2-Hour Shaftwall System
UL Design No. 428, GA WP-7051

GA WP-6800

1-Hour C-T Stud Shaftwall Assembly—finished one side

Fire Rating	STC Rating	Construction Detail	Description	Test Report Numbers
1HR			1-hour fire resistance, non load-bearing, noncombustible Shaftwall partition design to enclose shafts, elevators, ducts, piping, air shafts, and similar construction applications. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X, or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between floor and ceiling J-Track on T section side of 2-1/2", 4" or 6" C-T studs. Opposite Side Face Layer: 5/8" FLAME CURB® Type C applied at right angles to studs with 1" Type S Screws 12" o.c. Face Layer joints covered with tape and a minimum of 2 coats of joint compound.	Fire Tests: WHI-495-1303
	48 STC		Sound Tested Assembly per above with horizontal resilient channel spaced 24" o.c. and 2-1/2" glass fiber insulation batts friction fit in stud cavity	Sound Test: RAL TL96-28

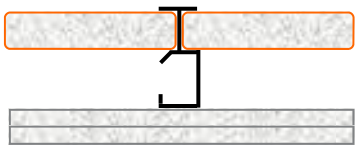
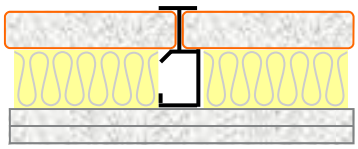


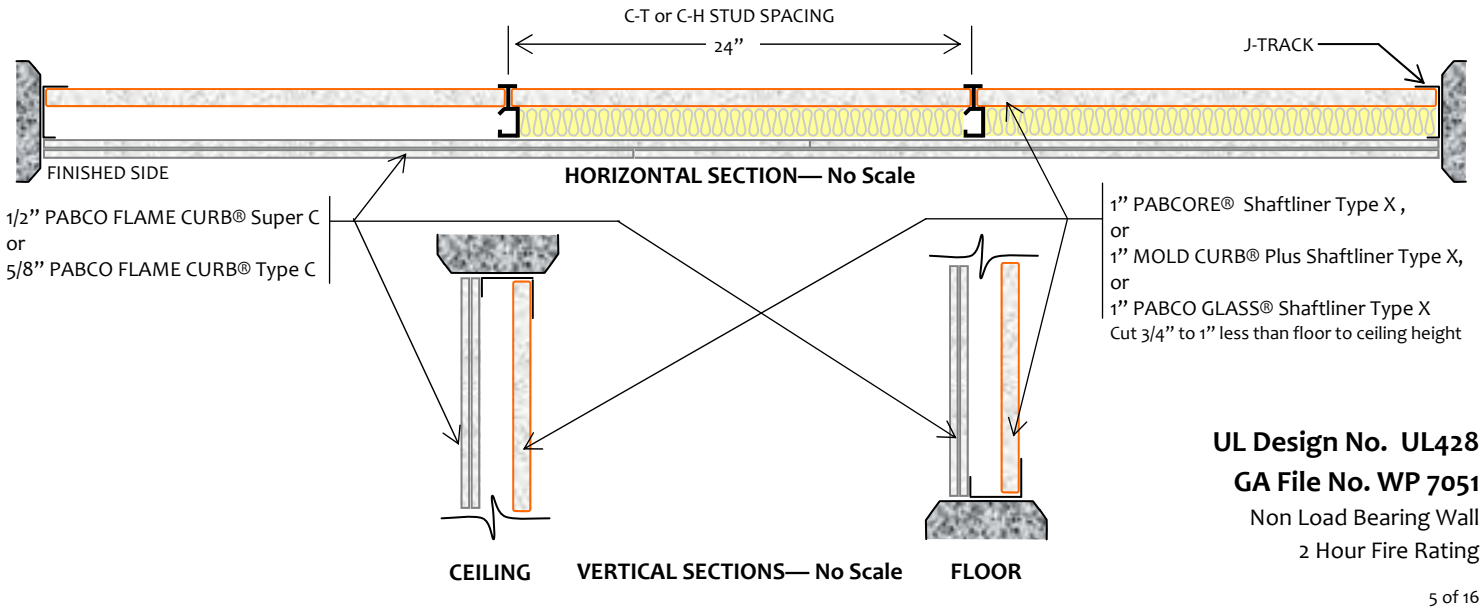
GA File No. WP 6800
Non Load-Bearing Wall
1 Hour Fire Rating

Shaftwall System Details

U428, GA WP-7051

2-Hour Shaftwall Assembly—finished one side

Fire Rating	STC Rating	Construction Detail	Description	Test Report Numbers
2HR			2-hour fire resistance, non load-bearing, noncombustible Shaftwall partition design to enclose shafts, elevators, ducts, piping, air shafts, and similar construction applications. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X, or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between floor and ceiling J-Track on T section side of 2-1/2", 4" or 6" C-H or C-T studs Faced on opposite side with two layers of 1/2" FLAME CURB® Super C, type PG-C or 5/8" FLAME CURB® Type C, 4' wide. Base Layer applied horizontally to studs and side J-Track with 1" Type S Screws starting 2" from floor and ceiling runners and spaced 24" o.c. along vertical edge and field of the boards. Face Layer applied vertically to studs and side J-Track with 1-5/8"Type S Screws starting 3" from floor and ceiling runners and spaced12" o.c. along vertical edge and field of the boards. Face Layer joints and screw heads finished as required on the	Fire Tests: UL R7094 93NK8151 UL R3660 07NK229922 UL Design U428
	51 STC		Sound Tested Assembly per above with 1-7/8" glass fiber insulation batts in stud cavity.	Sound Test: RAL TL93-181

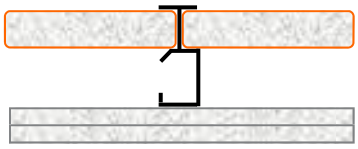
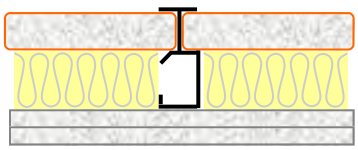


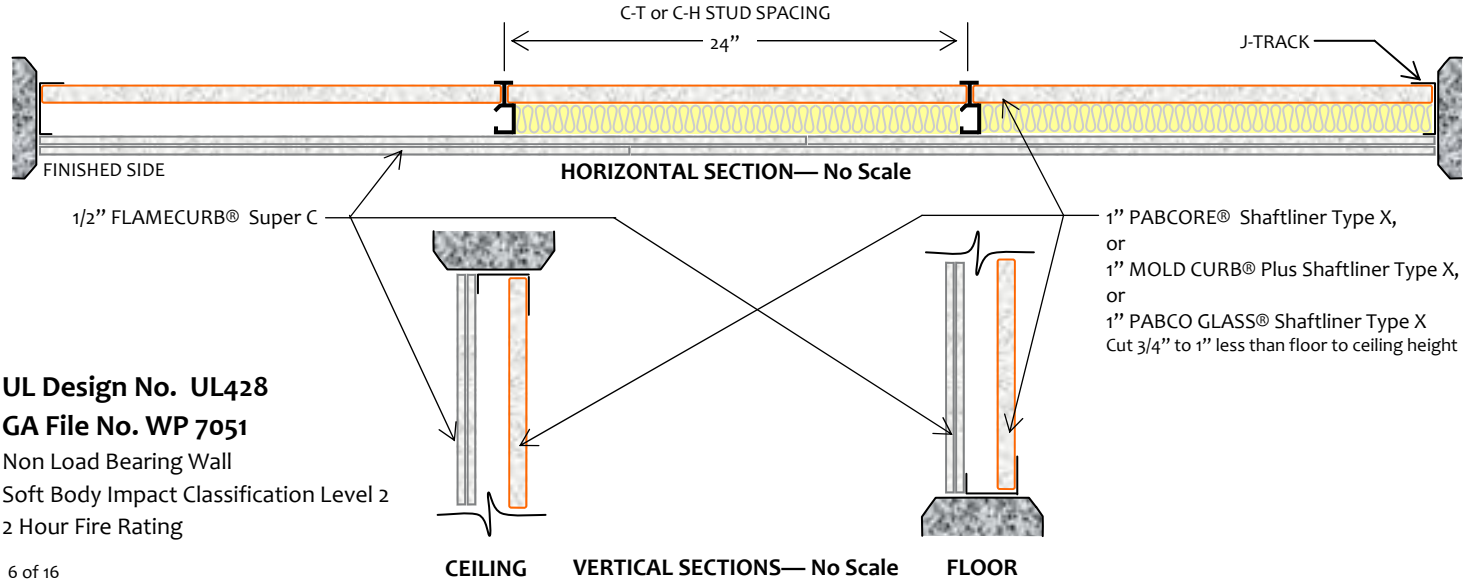
UL Design No. UL428
GA File No. WP 7051
Non Load Bearing Wall
2 Hour Fire Rating

U428, GA WP-7051

2-Hour Shaftwall Assembly—Soft Body Impact Classification Level 2—finished one side

Certification of Assembly in Conformance to IBC 403.2.3.1

Fire Rating	STC Rating	Construction Detail	Description	Test Report Numbers
2HR			2-hour fire resistance, non load-bearing, noncombustible Shaftwall partition design to enclose shafts, elevators, ducts, piping, air shafts, and similar construction applications. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between floor and ceiling J-Track on T section side of min. 20 gage (0.33 mil) C-T studs. Faced on opposite side with two layers of 1/2" FLAME CURB® Super C. Base Layer applied horizontally to studs and side J-Track with 1" Type S Screws starting 2" from floor and ceiling runners and spaced 24" o.c. along vertical edge and field of the boards. Face Layer applied vertically to studs and side J-Track with 1-5/8"Type S Screws starting 3" from floor and ceiling runners and spaced12" o.c. along vertical edge and field of the boards. Face Layer joints and screw heads finished as required on the job (minimum level 2).	Fire Tests: UL R7094 93NK8151 UL R3660 07NK229922 UL Design U428 Soft Body Impact: IBC 403.2.3.1 SB-1402 (9/18/14)
	51 STC		Sound Tested Assembly per above with 1-7/8" glass fiber insulation batts in stud cavity.	Sound Test: RAL TL93-181

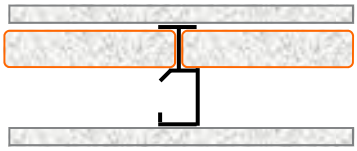
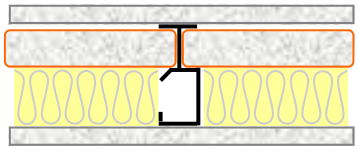


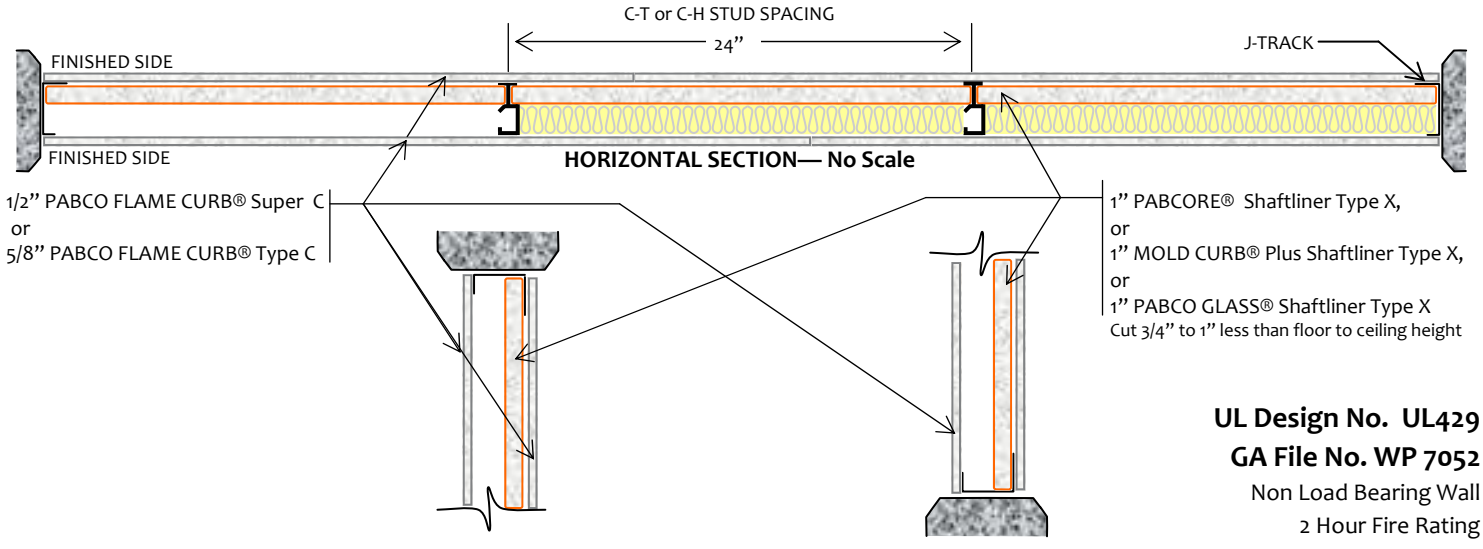
UL Design No. UL428
GA File No. WP 7051
Non Load Bearing Wall
Soft Body Impact Classification Level 2
2 Hour Fire Rating

Stairwell System Details

U429, GA WP-7052

2-Hour Stairwell Assembly—finished two sides

Fire Rating	STC Rating	Construction Detail	Description	Test Report Numbers
2HR			2-hour fire resistance, non load-bearing, noncombustible Stairwell enclosure finished both sides. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between floor and ceiling J-Track on T section side of 2-1/2", 4" or 6" C-H or C-T studs. Face Layers: 1/2" FLAME CURB® Super C, applied parallel to studs with vertical joints midway between studs and laminated to Shaftliner panel with 4" wide strips of taping compound at wallboard perimeter and vertical centerline. 1-1/2" type G drywall screws 24"o.c. located 1-1/2" back from wallboard edges and at vertical centerline. Opposite Side: 1/2" FLAME CURB® Super C, applied at right angles to studs with 1" Type S screws 24" o.c. UL Design U 429 allows use of 5/8" FLAME CURB® Type C, 4' wide; in place of 1/2" FLAME CURB® Super C.	Fire Tests: UL R7094 93NK8151 UL Design U429
	51 STC		Sound Tested Assembly per above with 1-7/8" glass fiber insulation batts in stud cavity.	Sound Test: RAL TL93-181

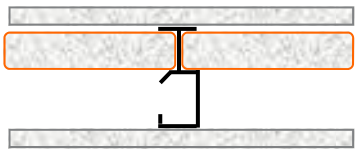
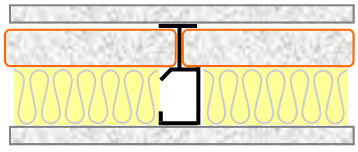


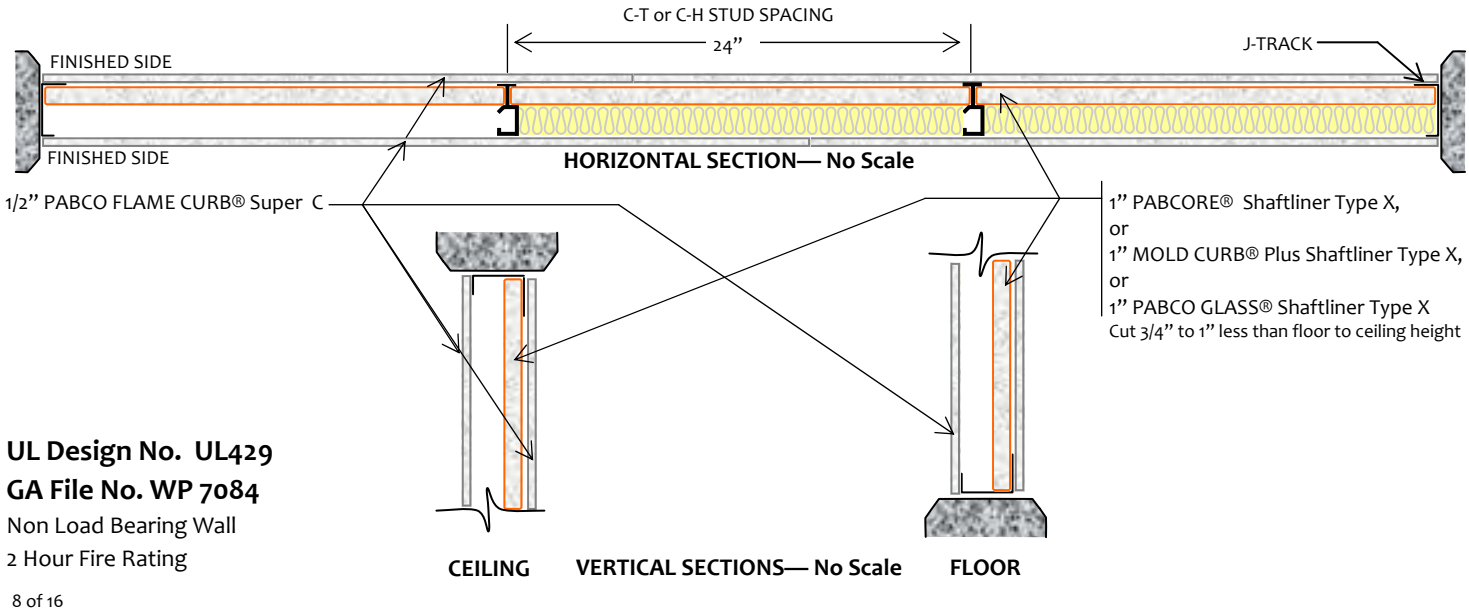
UL Design No. UL429
GA File No. WP 7052
Non Load Bearing Wall
2 Hour Fire Rating

Stairwell System Details

U429, GA WP-7084

2-Hour Stairwell Assembly—finished two sides

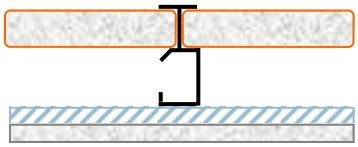
Fire Rating	STC Rating	Construction Detail	Description	Test Report Numbers
2HR			2-hour fire resistance, non load-bearing, noncombustible Stairwell enclosure finished both sides. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X , or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between floor and ceiling J-Track on T section side of 2-1/2"C-H or C-T studs Face Layer: Face Layer: 1/2" FLAMECURB® Super C applied parallel to studs with 1" Type S Screws 12" o.c. Opposite Side: 1/2" FLAMECURB® Super C applied parallel to studs with 1" Type S Screws 12" o.c. Stagger joints each side. Outer Layer joints covered with tape and a minimum of 2 coats of joint compound.	Fire Tests: UL R7094 93NK8151 UL Design U429
	51 STC		Sound Tested Assembly per above with 1-7/8" glass fiber insulation batts in stud cavity.	Sound Test: RAL TL93-182 WEAL 84-108

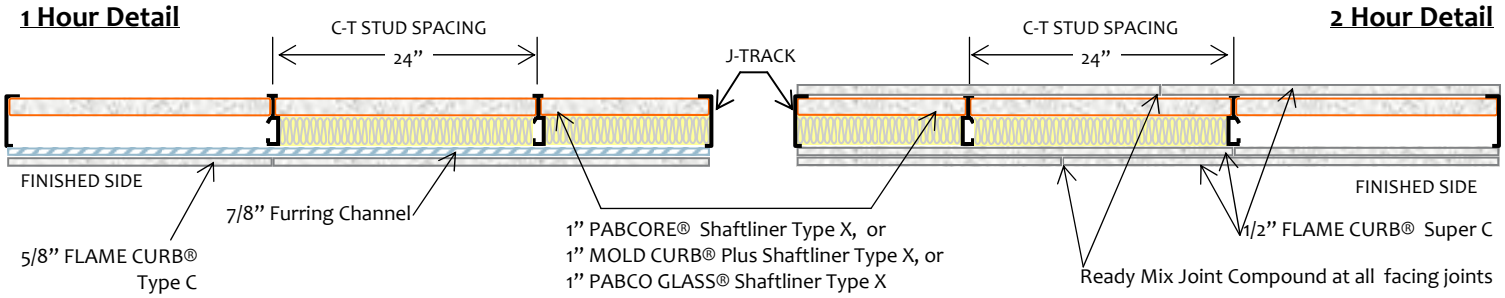


UL Design No. UL429
GA File No. WP 7084
Non Load Bearing Wall
2 Hour Fire Rating

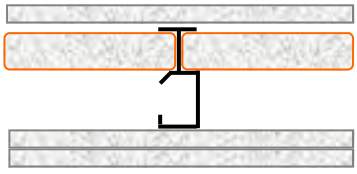
Horizontal Corridor Systems Details

1-Hour Horizontal Assembly—finished one side

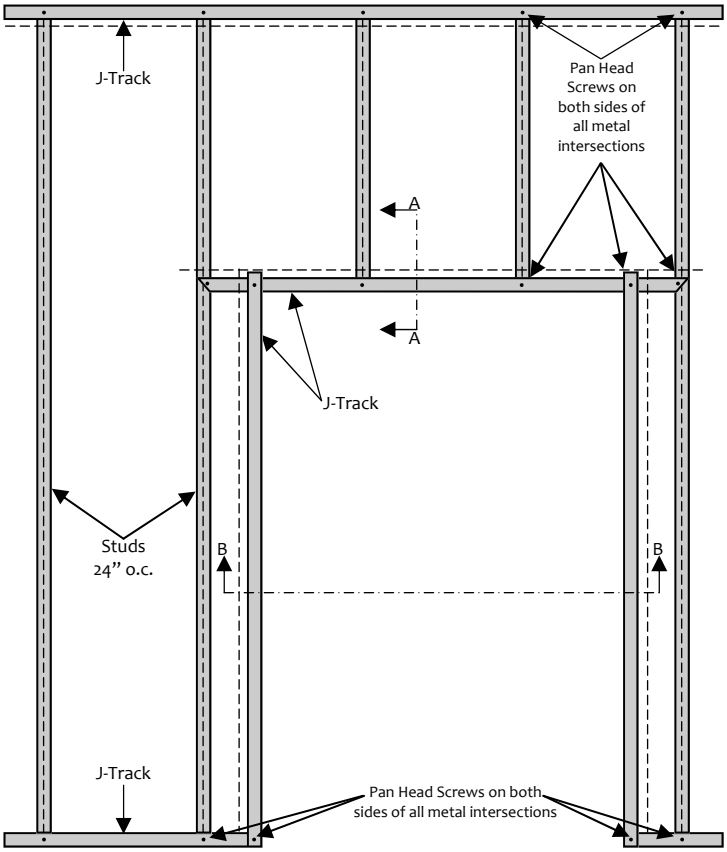
Fire Rating	Construction Detail	Description	Test Report Numbers
1HR		1-hour fire resistance, noncombustible horizontal corridor system finished one side. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X , or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between J-Track on T section side of 2-1/2" C-T studs Attach 7/8" furring channels perpendicular to C-T studs on the cavity side with two 3/8" pan head screws at each intersection with studs; spaced 24" o.c. Face Layer: Face Layer: 5/8" FLAMECURB® Type C applied perpendicular to furring channels with 1" Type S Screws 12" o.c. Edge joints of 5/8" FLAMECURB® Type C offset from C-H or C-T stud line. Face Layer joints covered with tape and 2 coats of joint compound.	Fire Tests: WHI-495-PSH-0210



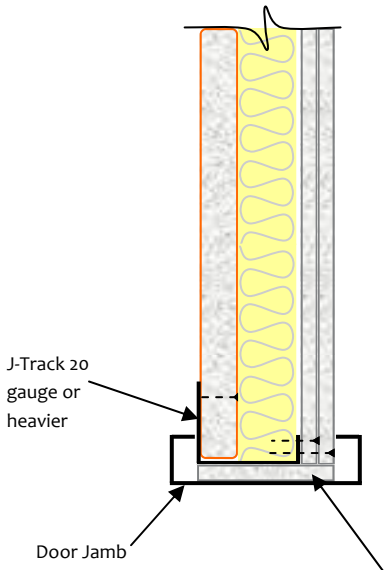
2-Hour Horizontal Assembly—finished one side

Fire Rating	Construction Detail	Description	Test Report Numbers
2HR		2-hour fire resistance, noncombustible horizontal corridor system finished one side. CONSTRUCTION: 1" Shaftliner Panel: 1" PABCORE® Shaftliner Type X or 1" MOLD CURB® Plus Shaftliner Type X, or 1" PABCO GLASS® Shaftliner Type X Inserted between J-Track on T section side of 2-1/2" C-T studs. Use 3/8" pan head screws to attach the ends C-T Stud to the 1" flange of the J Track. Secure the gypsum with 1-1/4" Type A drywall screws 12" o.c. into the 2-1/2" flange of the J-Track around the perimeter of the assembly. Face Layer: Face Layer: 1/2" FLAMECURB® Super C applied to 1" Shaftliner. 6" from stud centerline, with 1--1/2" Type G Screws 12" o.c. Opposite side: Base Layer: 1/2" FLAMECURB® Super C secured to studs with 1" Type S drywall screws 12" o.c. Face Layer: 1/2" FLAMECURB® Super C secured to studs with 1-5/8" Type S drywall screws 12" o.c. Staggering joints. Both sides: joints covered with tape and 2 coats of joint compound.	Fire Tests: WHI-495-PSH-055

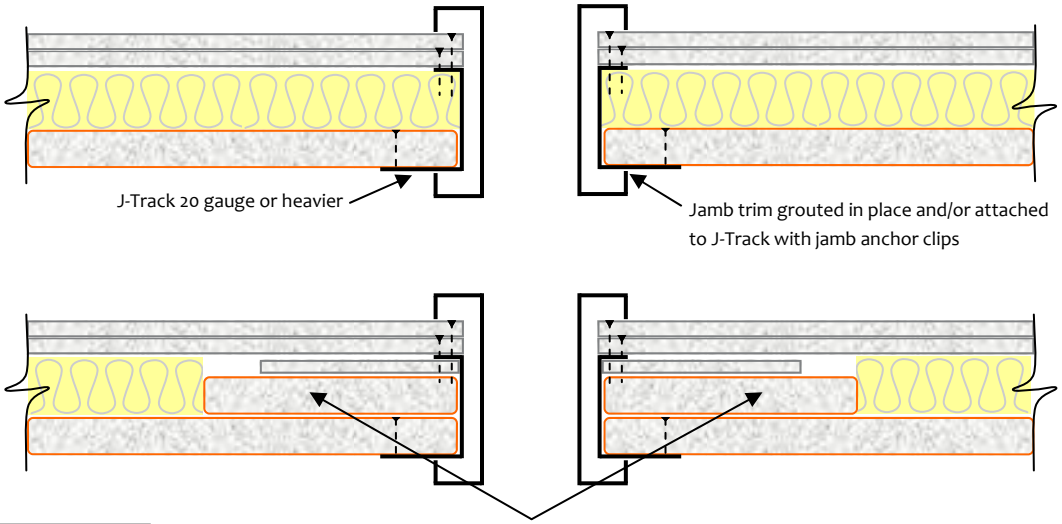
Framing Details—Doors



HEADER DETAIL A-A

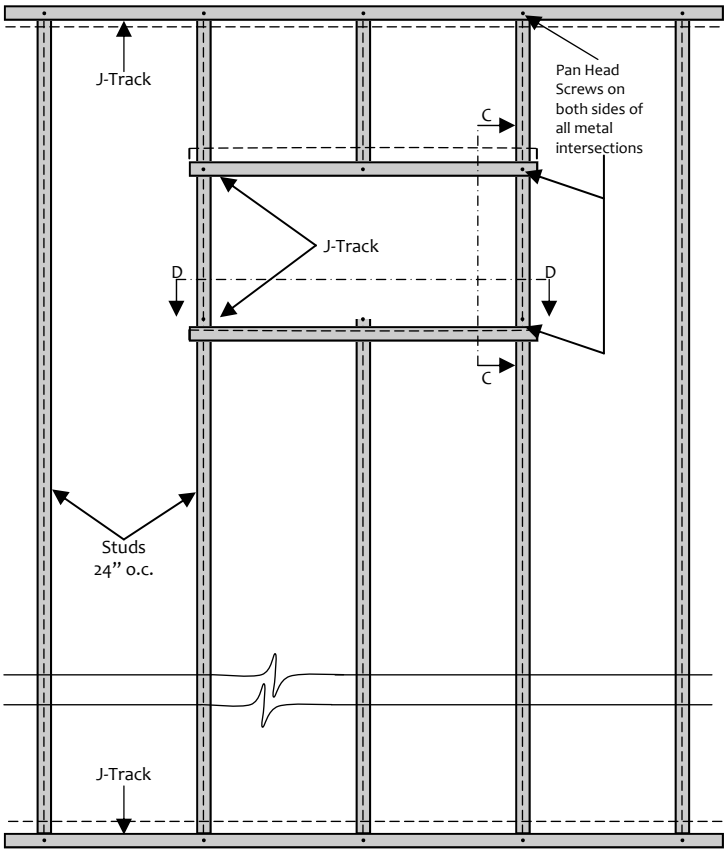


CROSS SECTION B-B

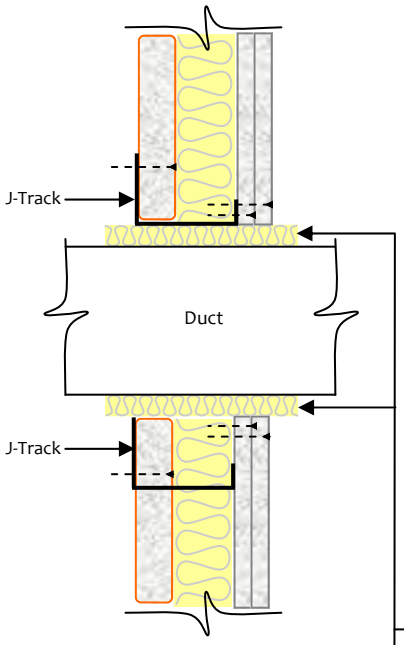


Details contained in this brochure are representative of general conditions. Specific job conditions may require modification.

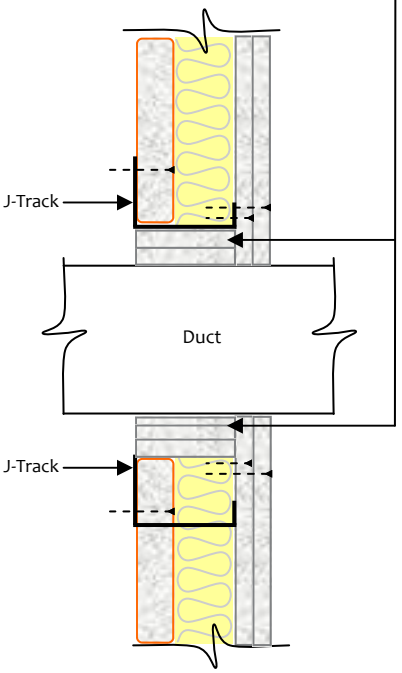
Framing Details—Mechanical Penetrations



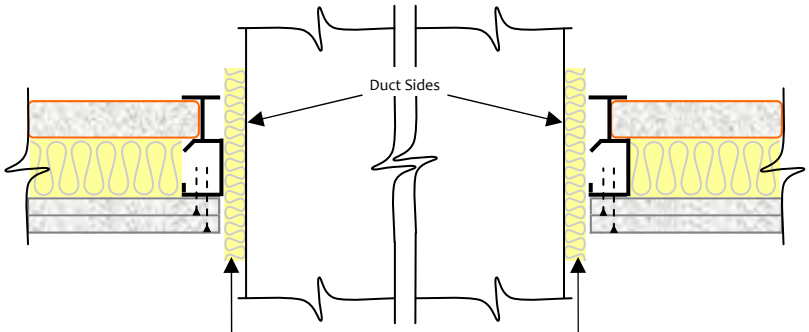
DUCT DETAIL C-C



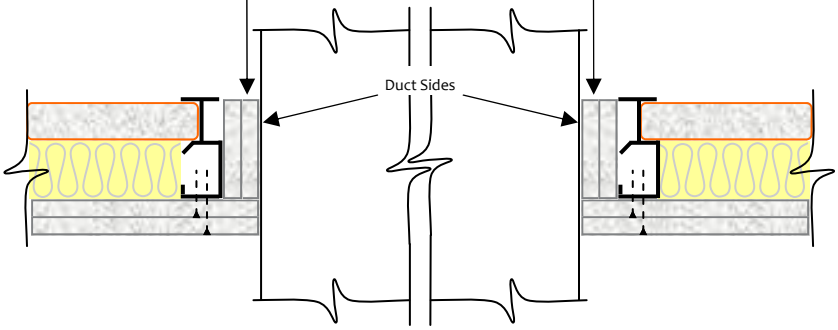
ALTERNATE DUCT DETAIL



DUCT DETAIL D-D



ALTERNATE DUCT DETAIL D-D



ALTERNATIVE DUCT NOTES:
Some codes require duct penetrations to be surrounded with same wall surfacing material where rated dampers are required.

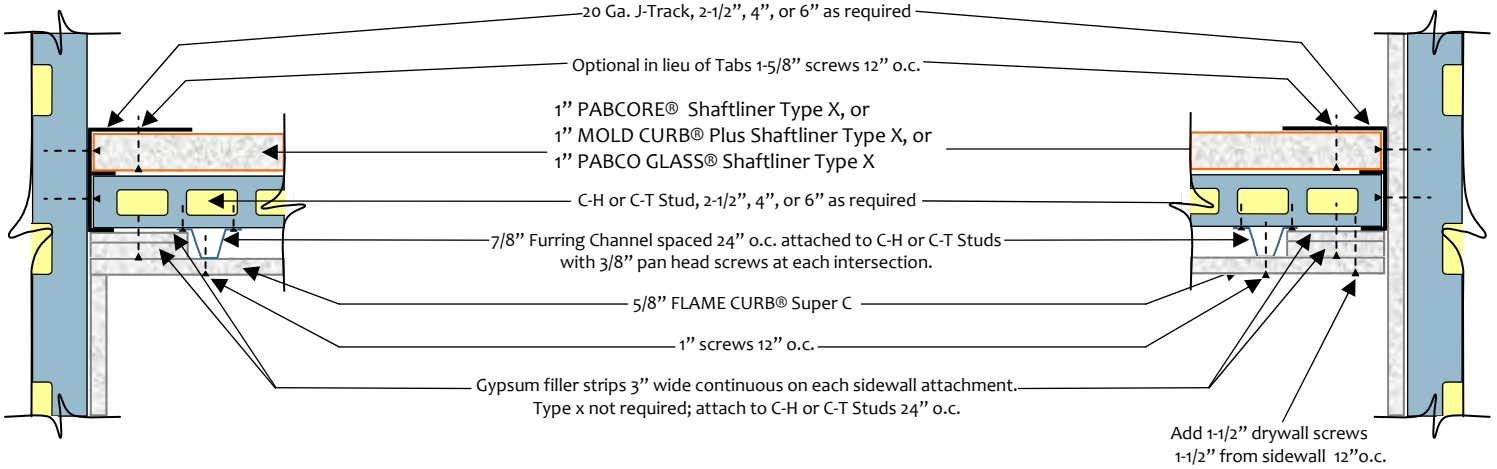
Details contained in this brochure are representative of general conditions. Specific job conditions may require modification.

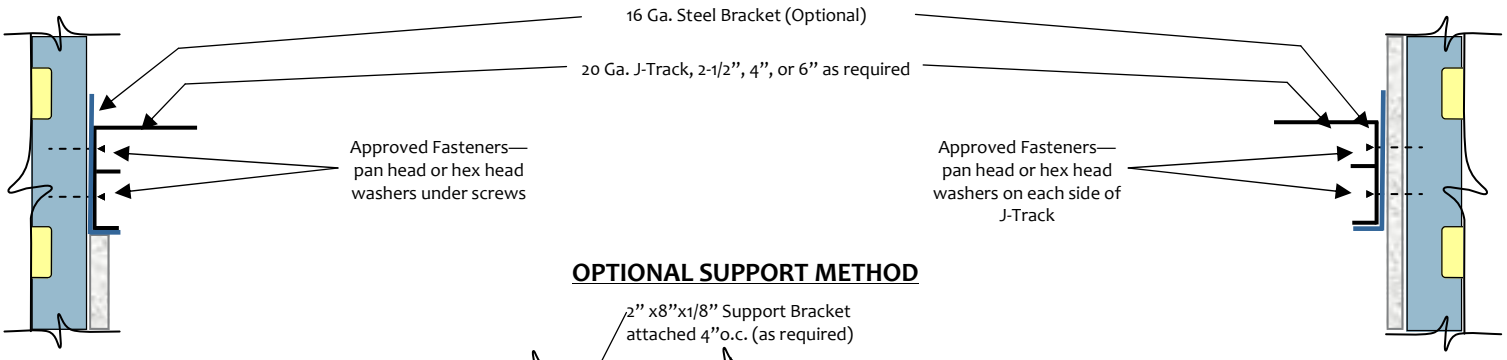
Horizontal System Details

ATTACHMENT DETAILS

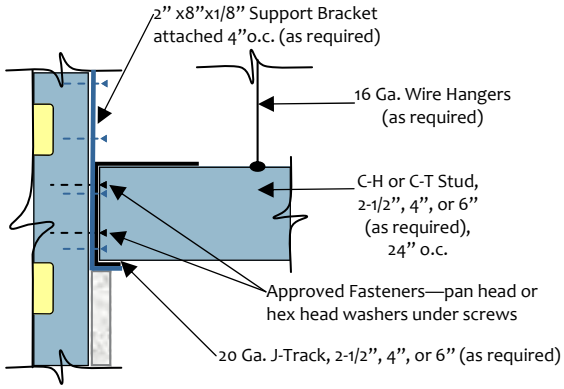
DIRECT TO STUD—METAL TO METAL ATTACHMENT

ATTACHMENT THROUGH GYPSUM BOARD



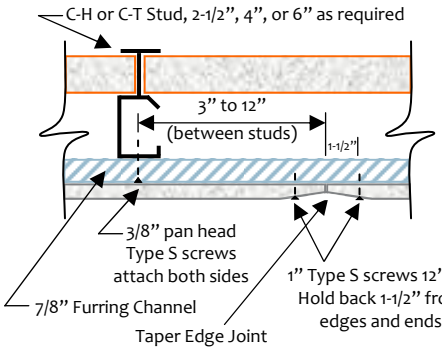


OPTIONAL SUPPORT METHOD

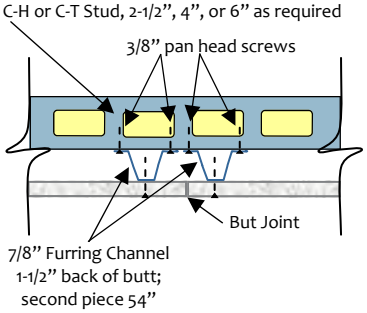


JOINT DETAILS

TAPPERED JOINT DETAIL



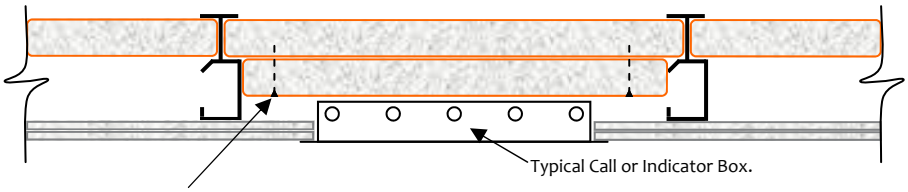
BUTT JOINT DETAIL



Typical Details

FLOOR INDICATOR BOX

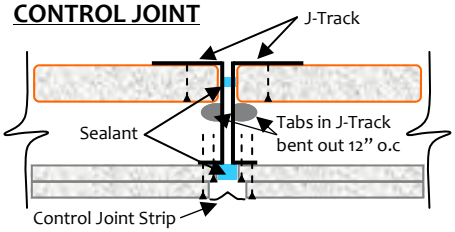
SERVICE PENETRATING DETAILS
(exceeding 16 sq.in. surface area)



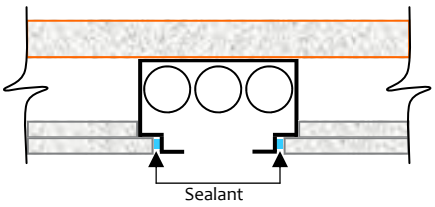
24" minimum height attach 1" PABCORE Shaftliner behind box to 1" PABCORE Shaftliner in the C-T of C-H Stud with Type G screw 24" o.c.

NOTE: Cavity depth requirements may vary according to the services being installed.

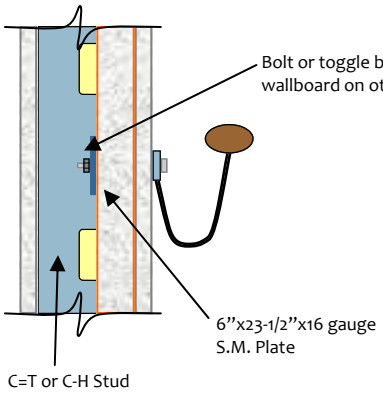
CONTROL JOINT



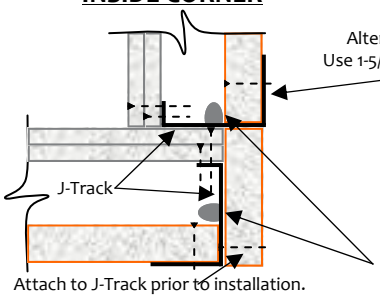
CALL BOX ■ OUTLET BOX ■ MAIL CHUTE



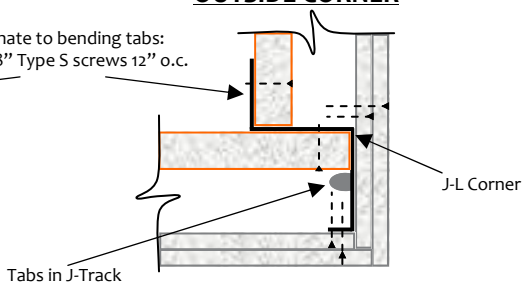
HAND RAIL ATTACHMENTS



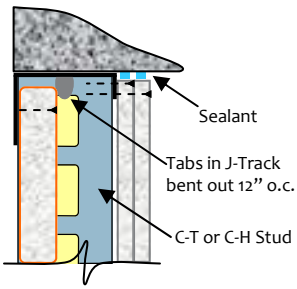
INSIDE CORNER



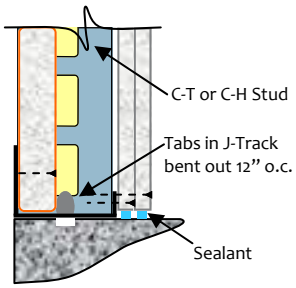
OUTSIDE CORNER



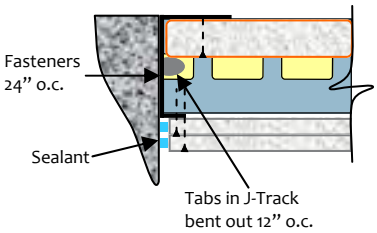
HEAD OF WALL



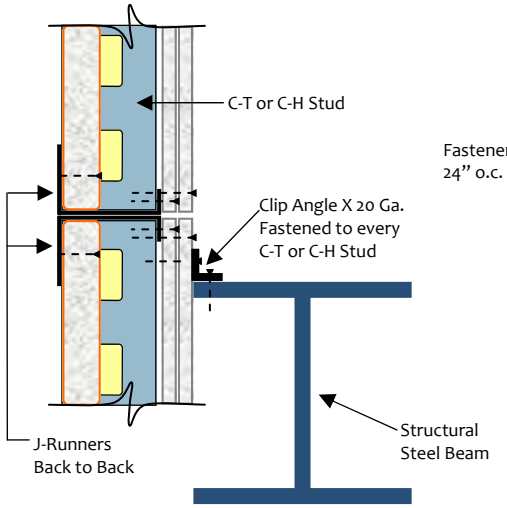
BASE OF WALL



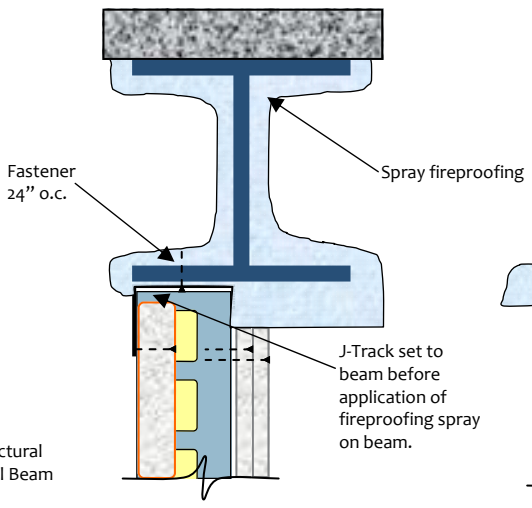
END OF WALL



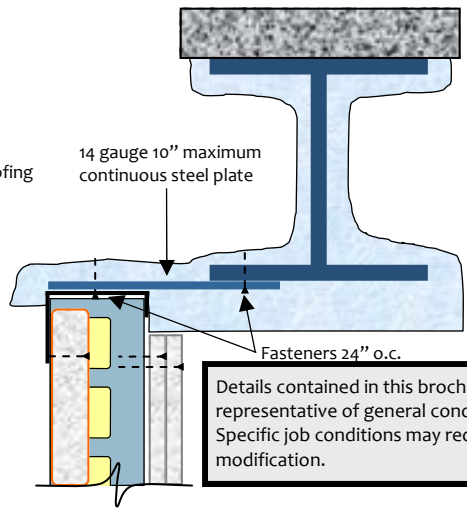
BACK TO BACK J-TRACK



STEEL BEAM



STEEL BEAM OFFSET



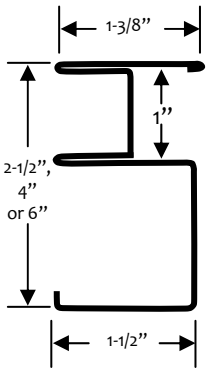
Details contained in this brochure are representative of general conditions. Specific job conditions may require modification.

Structural Properties

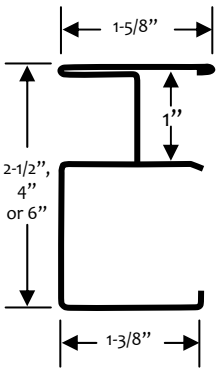
C-T or C-H Stud Limiting Heights: per ICC-ES AC 86 1995

Framing Depth	Minimum Steel	Limiting Height				
		Design Deflection Limit	Design Pressure (psf)			
			5	7.5	10	15
2-1/2"	0.0231" 33,000psi	L/120	16'10"	13'8"	11'10" *	8'6" *
		L/180	13'8"	11'3"	9'10"	8'3"
		L/240	11'10"	9'10"	8'8"	7'3"
		L/360	9'10"	8'3"	7'3"	6'2"
	0.0346" 33,000psi	L/120	16'10"	14'4"	12'11"	11'1"
		L/180	14'4"	12'4"	11'1"	9'6"
		L/240	12'11"	11'1"	9'11"	8'7"
		L/360	11'1"	9'6"	8'7"	7'5"
4"	0.0231" 33,000psi	L/120	21'8"	16'6" *	12'5" *	8'3" *
		L/180	18'1"	15'3"	12'5" *	8'3" *
		L/240	16'0"	13'7"	12'1"	8'3" *
		L/360	13'7"	11'6"	10'4"	8'3" *
	0.0346" 33,000psi	L/120	23'0"	21'0"	18'7"	15'5"
		L/180	21'0"	17'9"	15'10"	13'6"
		L/240	18'7"	15'10"	14'1"	12'1"
		L/360	15'10"	13'6"	12'1"	10'4"
	0.0451" 50,000psi	L/120	25'7"	22'2"	20'0"	17'4"
		L/180	22'2"	19'2"	17'4"	15'1"
		L/240	20'0"	17'4"	15'8"	13'7"
		L/360	17'4"	15'1"	13'7"	11'10"
6"	0.0346" 33,000psi	L/120	30'3" **	24'9" **	20'6" *	13'8" *
		L/180	30'3"	24'9" **	20'6" *	13'8" *
		L/240	26'6"	22'2"	19'7"	13'8" *
		L/360	22'2"	18'8"	16'7"	13'8" *
	0.0451" 50,000psi	L/120	36'5"	30'8"	27'3"	23'2"
		L/180	30'8"	26'0"	23'2"	19'9"
		L/240	27'3"	23'2"	20'8"	17'8"
		L/360	23'2"	19'9"	17'8"	---

1. * Reduced for End Reaction Capacity.
   ** Reduced for Flexural Strength Capacity
2. The values in this table are based on testing per ICC-ES AC86 and ASTM E72 and represent the limiting height capacity for strength using a 1.5 Safety Factor.
3. Minimum base steel thickness is 95% of design thickness.
4. Limiting Height values shown, were assessed from the **lowest** Flexural Strength value of Gypsum tested.



C-H Stud



C-T Stud

Maximum Horizontal Spans for Corridor and Stairwell Soffits

Stud Depth	Reference Gauge	Minimum Steel (psi)	Design Thickness (in)	2 Hour (2) 1/2" Type C + (1) 1" Shaftliner				2 Hour (2) 5/8" Type X + (1) 1" Shaftliner			
				L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
2-1/2"	25	33,000	0.0231"	8'8"	8'8"	8'6"	7'5"	8'2"	8'2"	8'2"	7'2"
	20	33,000	0.0346"	10'6"	10'6"	9'10"	8'7"	9'11"	9'11"	9'11"	8'3"
4"	25	33,000	0.0231"	11'8"	11'8"	11'8"	10'8"	11'0"	11'0"	11'0"	10'3"
	20	33,000	0.0346"	14'3"	14'3"	14'1"	12'4"	13'6"	13'6"	13'6"	11'10"
	18	50,000	0.0451"	19'1"	16'8"	15'2"	13'3"	18'5"	16'1"	14'7"	12'9"
6"	20	33,000	0.0346"	18'9"	18'9"	18'9"	16'10"	17'9"	17'9"	17'9"	16'3"
	18	50,000	0.0451"	22'9"	22'9"	20'9"	18'2"	20'5"	20'5"	20'0"	17'6"

1. Dead Load of assembly ONLY considered.
2. Not designed to carry any live loads, mechanical equipment, storage loads or lighting.
3. Studs must be one piece, full span.
4. Minimum base steel thickness is 95% of design thickness.

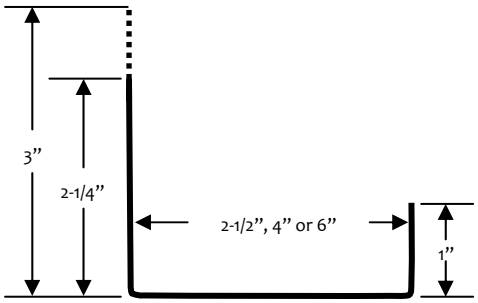
C-T or C-H Framing Components

Stud Depth	Gauge	Design Thickness (in)	Average Weight (lbs/lin ft)*	Area (Sq in)	Lx (in ^{4})	Sx (in ^{3})
2-1/2"	25	0.0231"	0.514	0.165	0.164	0.144
	20	0.0346"	0.805	0.248	0.241	0.168
4"	25	0.0231"	0.622	0.199	0.480	0.209
	20	0.0346"	0.974	0.298	0.710	0.309
	18	0.0451"	1.310	0.386	0.911	0.397
6"	20	0.0346"	1.200	0.367	1.858	0.547
	18	0.0451"	1.620	0.467	2.392	0.705

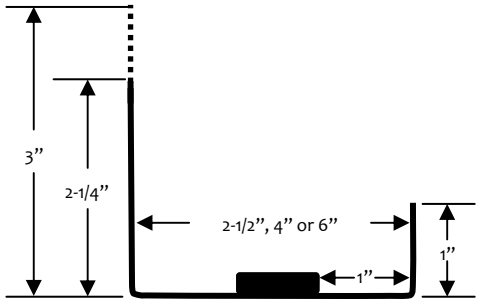
* Weight based on minimum delivered thickness.

J-Tabbed Track/J-Runner Framing Components

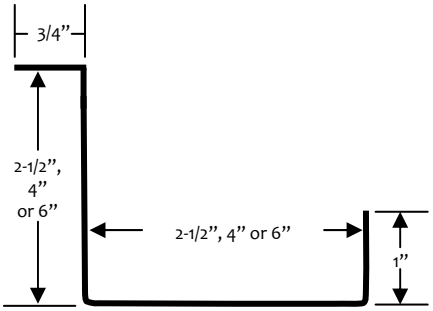
Gauge	Mils	Minimum Thickness (in)	Design Thickness (in)	Width (in)	Length (in)
25	22	0.0219	0.0231	2-1/2"	2-1/4"
					3"
				4"	2-1/4"
					3"
				6"	2-1/4"
					3"
20	33	0.0329	0.0346	2-1/2"	2-1/4"
					3"
				4"	2-1/4"
					3"
				6"	2-1/4"
					3"
18	43	0.0428	0.0451	2-1/2"	2-1/4"
					3"
				4"	2-1/4"
					3"
				6"	2-1/4"
					3"



J-Track



J-Tabbed Track



J-L Corner

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PO Box 419074, Rancho Cordova, CA 95741

Technical Services support by phone: 866-282-9298
By email: TechServices@PABCOgypsum.com