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The ClarkDietrich CT Shaftwall System is distributed in Canada by Bailey Metal Products Limited. The CT Shaftwall System provides fully tested and approved assemblies for shaftwall construction. What makes this system unique is that it has been tested with almost every gypsum board and shaft liner manufacturer in the country. Unlike competing systems, this CT Stud and J-Tabbed Track system provide maximum flexibility to choose from a variety of board manufacturers. Other systems are only tested with one type of gypsum board and shaftliner. This unprecedented flexibility means quick availability of product at economical costs.

Shaftwall systems are nonloadbearing fire rated wall assemblies that provide critical, life safety, fire-resistant protection for elevator shafts, stairwells, vertical chases and mechanical enclosures. Shaftwalls in elevators and stairwells are one of the most important wall assemblies in a building. They provide the only means of evacuation from the building in an emergency. Vertical chases and mechanical enclosures keep vital communication, power, water, fresh air and exhaust systems intact when a fire occurs.





SHAFTWALL

Shaftwall System consists of 1" shaftliner panels supported by 2- $\frac{1}{2}$ ", 4" or 6" CT-Studs and faced on one side with two layers of $\frac{1}{2}$ " fire code board.

STAIRWALL

Stairwall Systems are designed to enclose stairwalls, this system is finished on both sides with a single layer of $\frac{1}{2}$ " fire code board.

The Shaftwall and Area Separation Wall Systems can accommodate many UL Classified gypsum liner boards for maximum versatility in design and construction.

ASTM & Code Standards Shaftwall System:

- Shaftwall products are produced to meet or exceed ASTM C645 and A1003
- UL Design No. U417, U428, U429, U497, U498 and V455
- PEI Assembly Evaluation Report AER-12061
- MSDS & Product Certification Information available

Descriptions and specifications in this brochure are proprietary to Science ClarkDietrich

- ASTM & Code Standards Area Separation Wall System:
- Area Separation products are produced to meet or exceed ASTM C645
- UL Design No. U336, U347, U366, U373 and U375
- · Galvanized sheet steel meets or exceeds requirements of ASTM A1003

Bailey supplies a complete portfolio of framing system materials to the industry, including the Dietrich product line. Please contact us directly if you have inquiries outside of the scope featured here. We would be happy to look into any applications, large or small!

CT STUD PROFILE

CT Cavity Shaftwall Studs are rigid high-performance members engineered to maintain shaftwall integrity. CT Studs are designed for use with 1" thick gypsum shaftliner panels. CT Studs are friction-fitted between top and bottom J-Tabbed Track.

Gypsum shaftliner panels are inserted into the stud flanges. The flanges provide an airtight friction fit along the length of the panel. Studs are automatically spaced 24" o.c. maximum. The system is finished with fire rated gypsum board to complete and achieve the designated fire rating.





J-TABBED TRACK PROFILE

J-Tabbed Track is used at the floor and ceiling in shaftwall assemblies. CT studs and gypsum shaftliner panels are friction fit between the top and bottom J-Tabbed Track. J-Tabbed Tracks have unequal legs. The longer leg (available in 2-1/4" and 3") is installed against the shaft. The leg provides a backstop for easy installation of the liner panel. Three-inch leg track is typically used as a jamb strut around closure details, including duct and door openings, abutments and intersections.









CT Stud Limiting Heights

Member	Deflection	5 PSF	7.5 PSF	10 PSF	15 PSF
2-½" 25ga (.022)	L/120	16'-10"	13'-8"	11'-10"*	8'-6"*
	L/240	11'-10"	9'-10"	8'-8"	7'-3"
	L/360	9'-10"	8'-3"	7'-3"	6'-2"
2-1⁄2" 20ga (.033)	L/120	16'-10"	14'-4"	12'-11"	11'-1"
	L/240	12'-11"	11'-1"	9'-11"	8'-7"
	L/360	11'-1"	9'-6"	8'-7"	7'-5"
4" 25ga (.022)	L/120	21'-8"	16'-6"*	12'-5"*	8'-3"*
	L/240	16'-0"	13'-7"	12'-1"	8'-3"*
	L/360	13'-7"	11'-6"	10'-4"	8'-3"*
4" 20ga (.033)	L/120	23'-0"	20'-12"	18'-7"	15'-5"**
	L/240	18'-7"	15'-10"	14'-1"	12'-1"
	L/360	15'-10"	13'-6"	12'-1"	10'-4"
6" 20ga (.033)	L/120	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"*

* Reduced for End Reaction capacity

** Reduced for Flexural Strength Capacity

Review all Shaftwall Installation Procedures & Product Limitations

CT-Stud Horizontal Spans

For Corridor Ceilings and Stairway Soffits

2 Hour Wall with (2) layers 1/2" Type C + (1) 1" Shaft Liner							
Member	Gauge	L/120	L/180	L/240	L/360		
2-1⁄2"	25ga	8'-8"	8'-8"	8'-6"	7'-5"		
	20ga	10'-6"	10'-6"	9'-10"	8'-7"		
			1		1		
4"	25ga	11'-8"	11'-8"	11'-8"	10'-8"		
	20ga	14'-3"	14'-3"	14'-1"	12'-4"		
	18ga	19'-1"	16'-8"	15'-2"	13'-3"		
6"	20ga	18'-9"	18'-9"	18'-9"	16'-10"		
	18ga	22'-9"	22'-9"	20'-9"	18'-2"		

2 Hour Wall with (2) layers 5/8" Type X + (1) 1" Shaft Liner								
Member	Gauge	L/120	L/180	L/240	L/360			
2-1/2"	25ga	8'-2"	8'-2"	8'-2"	7'-2"			
	20ga	9'-11"	9'-11"	9'-6"	8'-3"			
4"	25ga	11'-0"	11'-0"	11'-0"	10'-3"			
	20ga	13'-6"	13'-6"	13'-6"	11'-10"			
	18ga	18'-5"	16'-1"	14'-7"	12'-9"			
6"	20ga	17'-9"	17'-9"	17'-9"	16'-3"			
	18ga	20'-5"	20'-5"	20'-0"	17'-6"			

• Dead Load of assembly ONLY is considered.

• Not designed to carry any Live Loads, Mechanical equipment, Storage Loads or Lighting.

• Studs must be one piece, full span.

Review all Shaftwall Installation Procedures & Product Limitations

4

4 BAILEY METAL PRODUCTS LTD. SHAFTWALL & AREA SEPARATION WALL SYSTEMS

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H-STUD PROFILE

H-Studs are 2" wide vertical members used to secure two 1" thick pieces of gypsum shaft liner in Area Separation Wall assemblies. H-Studs are inserted into C-Runners and slid over gypsum panel liner edges. The process is repeated until the desired wall length is achieved. Once the wall is plumbed it is secured at the floor, roof and truss line with Aluminum Breakaway Clips. Area Separation Wall assemblies are limited to 50 feet in height (maximum).

- 2-hour fire-rated assembly
- 2" wide, 25 gauge (.018)
- Tested and approved with most major gypsum and shaftliner manufacturers
- Stock lengths are 8', 10' and 12'

C-RUNNER PROFILE

C-Runner, also referred to as H-Track, is used to secure H-Stud and gypsum shaftliner panels in area separation wall assemblies. C-Runner is attached to the foundation with power-driven fasteners. C-Runner is also used as top track to cap the H-stud and gypsum shaftliner panels. A second track is then screwed back to back, to the lower runner, to hold the next level of the area-separation wall assembly.

- 2-hour fire-rated assembly
- 2" wide, 25 gauge (.018)
- Tested and approved with most major gypsum and shaftliner manufacturers
- Standard 10' stock lengths

ALUMINUM BURN CLIP (AB)

Aluminum Burn Clips are used as part of the H-Stud Area Separation Wall assembly and are designed to melt and break away when exposed to fire. The clips are used to hold the area separation wall assembly in place at the floor, roof and truss line between adjacent units.

Should a fire break out in one unit, the Aluminum Burn Clips on the fire-ridden side of the area-separation wall will melt, allowing the wall structure for that side to collapse. The Aluminum Burn Clips on the non-fire side will remain intact and hold the area separation wall in place as a barrier to contain the fire within the unit of origin.

- Tested and approved with most major gypsum and shaftliner manufacturers
- Must be used in conjunction with H-Stud Area Separation Wall Assembly

ALUMINUM BURN CLIP

Prepunched for easy attachment



Area Separation Wall Systems

Area Separation Walls are non-load-bearing, 2-hour rated vertical wall assemblies that provide fire-resistant protection between adjacent living units in apartment buildings, condominiums and townhouses. Area Separation Walls are also referred to as party walls, firewalls, multi-family walls and H-Stud assemblies. Area Separation Wall assemblies are a great alternative to masonry construction. The H-stud system is at least 50% lighter than masonry walls, installs faster, is STC sound rated and increases valuable floor space compared to 8" – 12" wide masonry walls.





Installation Requirements

- In structural steel-frame construction, install perimeter J-Tabbed Track sections before applying spray-on fireproofing.
- Pre-cut C-T studs ¾" less than the opening's height between top and bottom J-Tabbed Track.
- Items to be anchored to the wall (cabinets, sinks, handrails, etc.) should be fastened to steel plates secured behind or between layers of 1/2" gypsum.
- Use Type-S screws for 25-gauge steel framing. Use type S-12 screws for 20-gauge (or heavier) steel framing.
- It is important that the job engineer approve the type, size, and maximum spacing of track fasteners to meet the design load requirements.

Installation Procedures – Vertical Shaftwalls

- Layout per construction drawings. Secure J-Tabbed Track as perimeter framing and plumb to ceiling, floor and sides. Attached with suitable fasteners, spaced not more than 24" o.c. Apply a bead of non-hardening, flexible sealant to the perimeter.
- 2. Pre-plan the stud layout 24" o.c. and adjust the spacing at either end so the end studs will not fall closer than 12" from the end.
- Erect the first 1" Shaftliner panel, cut 3/4"-1" less than the total height of the framed section. Plumb the panel against the web of the J-Tabbed Track and bend out tabs in J-Tabbed Track to secure panels in place.
- 4. Insert C-T Stud, cut ¾" less than overall height, into the top and bottom J-Tabbed Tracks and fit tightly over previously installed 1" panel. Allow equal clearance between top and bottom J-Tabbed Track.
- 5. Install the next 1" Shaftliner inside the J-Tabbed Track and within the tabs of the C-T stud.
- Progressively install succeeding studs and panels as described above until the wall section is enclosed. The final panel section may be secured with tabs from the J-Tabbed Track at 12" o.c.
- 7. Where wall heights exceed the standard or available length of Shaftliner panels,

the panels may be cut and stacked with joints occurring within the top or bottom third points of the wall. Joints of adjacent panels should be alternately staggered to prevent a continuous horizontal joint. Gypsum panels must engage a minimum of 2 tabs.

- 8. CT Studs cannot be spliced. They must be installed full height, one piece.
- 9. For doors, ducts or other large penetrations or openings, install J-Tabbed Track as perimeter framing. Use 20-gauge track with a 3" back leg for elevator doors and block cavity with 12" wide gypsum filler strips for doors exceeding 7'-0" height.

Location of Gypsum Board Joints

- Shaftliner panels may be abutted (spliced or stacked) within the cavity as shown in the drawing above. The shorter panel should be at least two feet long or of sufficient length to engage two stud tabs on each panel edge. NOTE: In addition, some local codes may also require that these splices be back-blocked with a 12" x 24" piece of gypsum even though the tests were preformed with these joints unblocked. Also , back blocking may be done with the CT Stud of proper length and placed horizontal. Please check with your local jurisdiction.
- For the shaftwall system, finished one side, install the first layer of ½" fire code board horizontally with 1" Type-S screws spaced 24" o.c. and 3" from all edges. The horizontal joints must be offset from any splice joints in the shaftliner panels by at least 12".
- 3. The face layer, also fire code board, installed parallel to framing with 1-⁵/₈" Type-S screws spaced 12" o.c. at all framing members maintaining a 6" edge distance. All edge and end joints should be offset from the base layer by 24".
- 4. For the stairwall system, finished both sides, each side must be installed vertically with 1" Type-S Screws spaced 12" o.c. maintaining a 3" distance from edge. Offset edges and ends on opposite sides 24" o.c.



- 5. Caulk all perimeter edges and abutments with dissimilar materials, and penetrations in the facing layers with a non-hardening flexible sealant.
- 6. All joints on face layers are to be taped and finished and fastener heads finished with joint compounds meeting ASTM C475 standard specification.

Installation Procedures – Horizontal Shaftwalls for Corridor Ceilings and Stairway Soffits

Two Hour Horizontal Shaft Wall Assembly Instructions – See Figures 8 - 9 below

- Horizontal ceiling applications are not designed for any live load, mechanical equipment, or for any storage load.
- 2. Maximum spans are as shown in Table 2.
- 3. The corridor ceiling or stair soffit horizontal assembly is constructed from the floor.
- J-track (Item ①) is first secured to all corridor walls or stair stringer framing around the perimeter of the ceiling or stair soffit to be protected.
- The J-track (Item ①) will be at a minimum:
 a. 33-mil, 0.0346-in (20-ga) thickness for 25-ga and 20-ga CT-studs. (Item ③)
 - b. 43-mil, 0.0451-in (18-ga) thickness for 18-ga CT-studs. (Item ③)
- 6. The J-track (Item ①) is positioned with the shorter 1-in long leg of the track facing the floor.
 - a. Fasteners are placed through the web of the J-track to the supporting structure
 - Mechanical fasteners shall be spaced a maximum of 24-in on-center along the length of the J-track to the supporting structure.
 - c. The track to perimeter wall connection (Item (5)) shall be detailed by the designer to provide a minimum of 200 lbs of shear capacity for every CT-stud location.
- 1-inch thick x 24-inches-wide gypsum shaft liner panels (Item ④) are inserted in the J-runners (Item ①) towards the ceiling (2-in leg of the J-runner).
 - a. Measure the overall dimensions of the opening and determine if the first 1-in shaft liner installed should be cut lengthwise so that the final shaft liner panel is not less than 8-in in width.
 - b. The first liner panel will be secured to the J-track by using #6 x 1-5%-in drywall screws 12-in on-center and at each end through the longer leg of the J-track.
- 8. CT-stud (Item ③) of the required depth and thickness will positioned so that it secures the free edge of the first shaft liner panel within the "T" portion of the CT-stud.

- 9. Do not splice CT-studs. Use only full length pieces of the proper length.
- Both ends of the CT-stud (Item ③) will be secured to both flanges of the J-runner using a minimum ½" long #8 pan-head screw (Item ⑥).
- The sequence of alternating placement of shaft liner panels (Item ④) and CT-studs (Item ③) will continue with each CT-stud engaging the long edges of the 1-in shaft liner panels.
- 12. The end of each 1-in shaft liner panel within the perimeter J-runner track is fastened to the J-runner track flange with three #6 x 1 ⁵⁄₈" Type S screws (12-in on-center).
- 13. Liner panels may be cut; butt the factory ends of the liner panels. The butt joints shall occur within the outermost one third points of the span. Joints in adjacent liner panels shall be alternately staggered to prevent a continuous joint.
- 14. Secure the last liner panel to the tabbed J-runner by using #6 x 1-5%-in drywall screws 12-in on-center and at each end through the longer leg of the J-track.
- 15. For a two-hour assembly two layers of ½" Type C or 5%" Type X gypsum board (Item (2)) should be installed at right angles to the framing members. Install the inner layer with #6 (Item (2)) x 1" Type S drywall screws, 24" o.c., starting 3" maximum from the ends of the C-T studs. Butt joint of adjacent panels should be centered on a stud flange. Install the outer layer of ½" Type C or 5%" Type X gypsum board with #6 (Item (7)) x 1-5%" Type S drywall screws, 12" o.c. in the field and at the perimeter. Offset the board joints a minimum of one stud spacing (24") between layers.
- Caulk the perimeter edges and abutments with dissimilar materials and any penetrations with a non-hardening flexible sealant (Item (8)).
- 17. All joints on the outer layer shall be taped and finished and fastener heads finished with joint compounds meeting ASTM C474.

Figure 8 – 2 Hour Assembly



Figure 9 – CT Stud to J-Runner Connection



Figure 8 & 9 descriptions

- ① J-Track
- (2) Corridor Side Gypsum
- (3) C-T Stud (full span length)
- (4) Liner Panel on top side. One seam only per stud bay allowed
- (5) Fastener thru J-Track into wall at 24" o.c. maximum spacing
 - a. Fastener must provide a minimum of 200 Lbs. of shear value per C-T Stud
- (6) Framing fastener thru J-Track top & bottom legs into C-T Stud
- ⑦ Gypsum fasteners thru gypsum into framing
- (8) Approved Fire-Resistance joint sealant system

The data contained in this document is intended to be informative and accurate. However, it is to be used as a technical guideline only and does not replace the judgments and designs of a qualified architect and/or engineer. Bailey and/or ClarkDietrich Building Systems reserve the right to change data, tables, or charts shown herein without notification.

Limitations of Use

- Shaftwall assemblies are designed as non-load-bearing partitions only.
- Do not install in areas which will be adjacent to occupancies of unusually high moister conditions.
- Provide control joints so that maximum length of continuous partition is 30 feet. Wherever possible, the partition control joints should coincide with those in the building structure.
- Elevator door frames should be supported

independently of the shaftwall. However, interfacing of elevator frame to shaftwall system may require attachment with jamb clips and/or grouting.

- Where penetrations occur in the partitions, additional reinforcement at corners may be necessary to distribute stresses if control joints are not used and if excessive loads need to be supported.
- To prevent air movement and resulting

whistling, the partition perimeters, as well as all penetrations, should be effectively sealed with a non-hardening sealant.

- Finishing of all joints in face layers should be done within temperature limitations of the specific joint treatment used.
- Not recommended for use as an unlined HVAC supply shaft or duct.
- Hollow cavities must be fire stopped at each floor.









SHAFTWALL & AREA SEPARATION WALL SYSTEMS

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Bailey Metal Products stocks all your framing needs. CT, CH and other Shaftwall Systems are available on request.



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