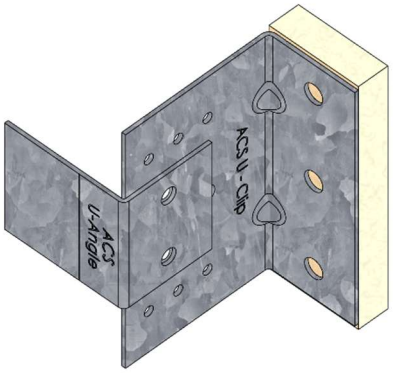
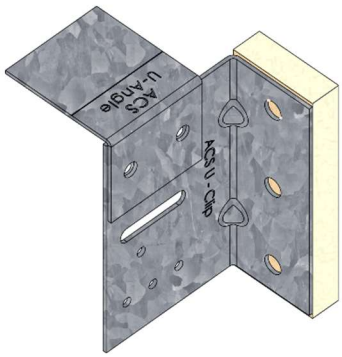
Composite Systems Inc.





ACS U-CLIP®

Structural Design Guide

Updated: 2026/03/24

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ACS Composite Systems Inc.

INTRODUCTION

This structural design guide is intended to aid with properly specifying the attachment and spacing of the ACS U-Clip® for supporting exterior cladding assemblies.

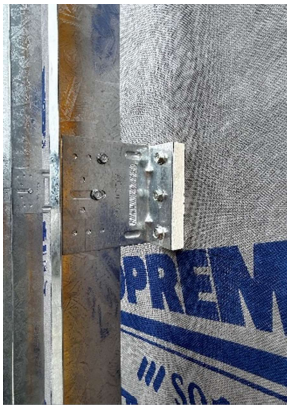
The ACS Universal Clip, or U-Clip®, creates a highly efficient attachment system that reduces the effects of thermal bridging. Composed of galvanized steel and utilizing the ACS Thermal Pad, the ACS U-Clip® provides a balance between performance, ease of use and cost.

The ACS U-Clip® is designed for use in wall assemblies with steel studs, concrete or wood and is available in the following sizes:

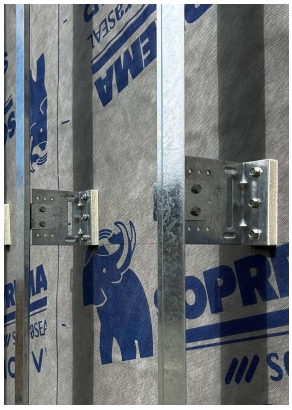
| 2" | 3" | 4" | 5" | 6" | 7" | 8" |

The primary function of the ACS U-Clip® is to support the exterior cladding. This is accomplished by attaching continuous girts (horizontal or vertical rails) to the U-Clip directly or by attaching the ACS U-Angle. There are four primary installation methods that dictate how these girts are configured with the U-Clips:

1) Vertical Angle: U-Angle is omitted. Angle-girt side-fastened directly to the U-Clip.
2) Vertical Z-Girt: Vertical z-girt fastened into the face of the U-Angle.
3) Horizontal Angle: Horizontal angle-girt fastened to the top of the U-Angle.
4) Horizontal Z-Girt: Horizontal z-girt fastened into the face of the U-Angle.



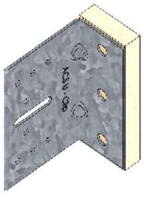
1 - Vertical Angle

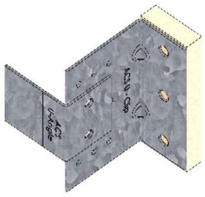


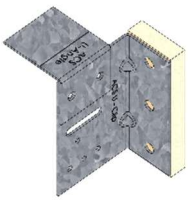
2 - Vertical Z-Girt

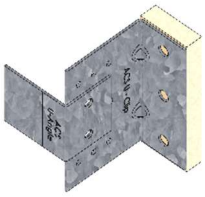
3 - Horizontal Angle

4 - Horizontal Z-Girt









*For the above cases, the continuous girt would either receive the specified cladding product, or in situations that call for another plane of girts (e.g. face-fastened systems where symmetric fastener layout is required), the inner girts attached to the thermal clips would support another plane of girts perpendicular to the first plane.

KOLOT STRUCTURAL ENGINEERING LTD.

24 March 2026

ACS Composite Systems Inc.
35 – 7450 Butler Road
Sooke, BC V9Z 1N1

Dear ACS Composite Systems,

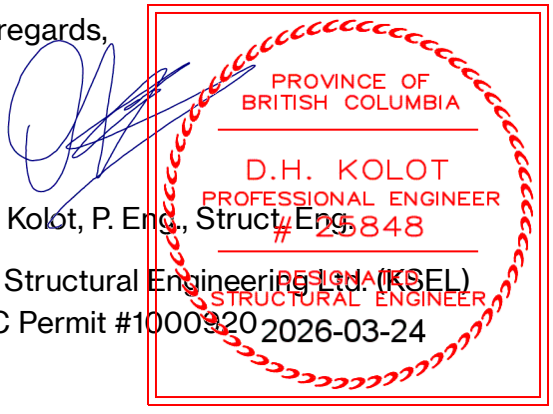
KSEL is pleased to provide the attached ACS Structural Design Guide. This document relates to the ACS Galvanized Steel Thermal Clips (U-Clips) installed on concrete, steel stud, wood stud, and plywood sheathed walls.

The thermal clip design has been based on a combination of analytical design, structural verification from an accredited third-party testing agency, as well as manufacturer data for fasteners for the above-mentioned structural backup assemblies.

It should be noted that due to the complexity of cladding/sub-girt types, local/national building codes, wind/seismic loads due to building location, shape, and size, the design of the complete wall assembly is outside the scope of this structural manual. Each project generally requires a cladding specialty engineer (structural engineer) independent of ACS and KSEL, competent in the design of cladding/wall assemblies, and registered in the region that the cladding assembly is to be installed.

ACS Thermal Clips must be installed in accordance with this Structural Design Guide and any amendments hereto. Failure to do so could lead to failure of the clips and/or damage to or loss of support of the cladding and, furthermore, would render void any warranty and liability of ACS or KSEL, including any liability for resulting loss, damage, or costs. Thus, it is very important for the installation to be carried out in accordance with the specifications and instructions herein and with reliance upon an independent project structural engineer as noted in the said Guide.

Best regards,



Doug Kolot, P. Eng., Struct. Eng.

Kolot Structural Engineering Ltd. (KSEL)
EGBC Permit #1000920 2026-03-24

STRUCTURAL CONCEPT

Structurally, the clips resist gravity load (cladding assembly self-weight), and transverse loads (wind/seismic). Clip length, spacing, and attachment to the substructure is determined based on the combination of thermal and structural requirements of the assembly.

Gravity load creates both a rotational force and a direct shear in each clip, while wind/seismic forces create a direct tension (or compression) force through each clip. The gravity rotational force is resisted by screw tension in the upper attachment screw and the lower compression region of the clip for the rotational force, and by both screws in direct shear/bearing in the case of direct shear, while wind/seismic forces are resisted by direct screw tension.

While the ACS Thermal Pad (thermal break between the ACS U-Clip and the structure) is a minimally compressive material when correctly installed, the overall system installation guidelines have been limited by permissible strain in the ACS Thermal Pad/clip rotation. Clip spacing is also limited by attachment screw capacity, steel clip capacity and U-Angle attachment screw capacity (see below for full definitions). These values were calculated and subsequently verified by an independent testing lab with the following tests:

Independent Testing:

- ICC-ES AC359, Acceptance Criteria for Exterior Wall Coverings of Steel-Backed Veneer Panels Attached to Walls Utilizing Steel Framing and Brackets, Approved October 2008 – Section 3.8.2 Gravity Loads
- ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- 6" and 10" ACS Thermal Clips – Stress-Strain Load Testing to Failure. Intertek Test Report dated 2024 01 22

The following structural design information is provided as a convenience for the user to determine the general suitability of the clips as part of an overall cladding system. Fastener values are based on one manufacturer's test data and are representative of that manufacturer's fasteners, steel section used, and test apparatus. These values may not be applicable for other screw manufacturers, or to different structural support members.

Due to the number of variables inherent in the design of exterior cladding, structural review of cladding installations is required on any project. These variables include, but are not limited to:

- Building Height
- Cladding Weight
- Design Wind Pressure
- Cladding Assembly Depth
- Substructure Construction Tolerances
- Building Exposure
- Cladding Flexibility / Brittleness
- Cladding Fastening Requirements
- Substructure Material Type

Additionally, cladding which is inherently prone to cracking such as stucco or some types of stone veneer, may require more onerous structural constraints or safety factors over and above those indicated here to reduce the probability of cracking during the design life of the wall assembly.

As a result of the large number of variables involved with cladding design, a project structural engineer (independent of ACS) is required to review and provide the necessary design/assurance that the overall system is structurally acceptable.

RECOMMENDED CLIP SPACING

Tabulated spacing indicated is based on least of:

- Maximum 1/8" (3.2 mm) deflection due to cladding gravity load (equivalent to 20 lbs of cladding weight on nominal 11" wall assembly depth)
- Screw pullout/tension, shear/bearing, and combined tension/shear interaction for relevant screws
- For U-Clip attachment screws (2 - #12-14 x ¾" TEKS, Vallow = 2 x 184 = 368 lbs)
- Other limiting conditions that must be addressed by the project specific engineer including, but not limited to: Sub-structure girt strength/deflection, cladding span/connections to sub-girt assembly, and all load-path screw connections.

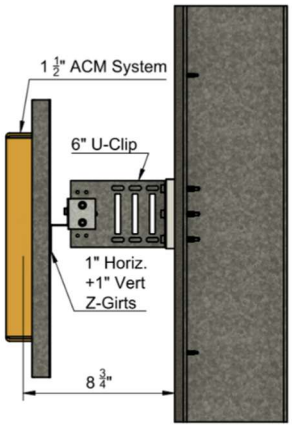
Charts Represent Wall Assembly Depth, which is defined as the distance from face of support wall/contact of ACS U-Clip to Center of Gravity (C.O.G.) of cladding *(*cladding C.O.G. is Typically ½ cladding product depth).

Wall Assembly Depth = [Clip Depth] + [Sub-Girt(s) Depth] + [Outer Girt to Cladding C.O.G.]

Example:

6" ACS Thermal Clip, 2x – 1" z-girts (vertical & horizontal girts), 1 ½" Composite Panel System

Total Wall Assembly Depth = (6") + (2 x 1") + (0.5 x 1 ½") = 8 ¾"



Use 9" Wall Assembly Chart

LOAD TABLES

STEEL STUD / CONCRETE WALL SUBSTRUCTURE

- ASD screw pullout/tension, shear/bearing, and combined tension/shear interaction (FS = 3).
- Steel Stud assemblies require **3x** *ACS-HWH MD2 screws (¼" x 2 ½" Hex Washer Head #2 Drill Point Carbon Steel NZF 3000 Leland Master Driller®).*
- Concrete assemblies require **2x** *Simpson Strong-Tie TITEN® TTN25214HSS screws (¼" x 2 ¼" Hex Washer Head 410 S/S)* installed in the outermost holes in the clip flange, omitting the center hole screw.
- For attachment to 18 ga. or 20 ga. steel studs, screw length must penetrate beyond the metal structure a minimum of 3 pitches of thread.
- Attachment to 4000 psi (28 MPa) concrete is based on ¼" x 2 ¼" Hex Washer Head Simpson TITEN® TTN25214HSS 410 S/S screw - minimum 1½" embed.
- Note: <u>Attachment to CMU Block Walls is not permitted</u>

UP TO 40 psf SPECIFIED WIND

12" Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16" (Horizontal)	24" (Horizontal)	16" (Horizontal)	24" (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	43	29	
5	41	27	38	26	
6	34	23	34	23	
7	29	19	29	19	
8	25	17	25	17	
10	20	14	20	14	
15	14	9	14	9	

Steel Stud **3x** ACS-HWH MD2

Concrete **2x** Simpson TITEN®

10” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	43	28	
6	41	27	38	26	
7	35	23	35	23	
8	30	20	30	20	
10	24	16	24	16	
15	16	11	16	11	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

9” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	45	30	
6	45	30	41	27	
7	39	26	37	25	
8	34	23	34	23	
10	27	18	27	18	
15	18	12	18	12	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

8” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	48	32	
6	48	32	43	29	
7	43	29	40	27	
8	38	25	37	25	
10	30	20	30	20	
15	20	14	20	14	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

7” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	48	32	
6	48	32	46	31	
7	48	32	43	29	
8	43	29	40	27	
10	35	23	35	23	
15	23	15	22	15	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

6” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	48	32	
6	48	32	48	32	
7	48	32	46	31	
8	48	32	43	29	
10	41	27	38	26	
15	27	18	27	18	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

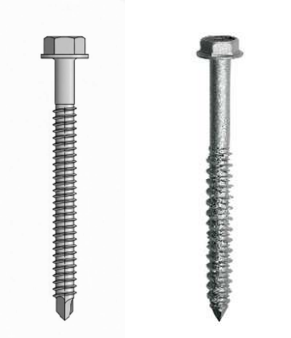
5” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	48	32	
6	48	32	48	32	
7	48	32	48	32	
8	48	32	48	32	
10	48	32	43	28	
15	32	22	32	22	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

4” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	48	32	
6	48	32	48	32	
7	48	32	48	32	
8	48	32	48	32	
10	48	32	48	32	
15	41	27	38	26	



Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

3” Wall Assembly

Cladding Weight (psf)	18 Ga. Studs / Concrete		20 Ga. Studs		
	16” (Horizontal)	24” (Horizontal)	16” (Horizontal)	24” (Horizontal)	
3	48	32	48	32	Vertical Clip Spacing (inches)
4	48	32	48	32	
5	48	32	48	32	
6	48	32	48	32	
7	48	32	48	32	
8	48	32	48	32	
10	48	32	48	32	
15	48	32	45	30	

Steel Stud **3x** ACS-HWH MD2 | Concrete **2x** Simpson TITEN®

WOOD STUD SUBSTRUCTURE

Attachment Spacing (HORIZONTAL x VERTICAL) of ACS U-Clips based on:

- Up to 40 psf specified wind
- All assemblies require **3x** *ACS-MT screws (#14-10 x 2 ½" Hex Washer Head Carbon Steel NZF 3000 Leland Master Gripper®)* with <u>at least 1 ½" penetration into studs.</u>
- Installation should be as per manufacturer's recommendations for installation.
- Wood species (DF/SPF) attachments have the same spacing, with most assemblies being deflection limited, not fastener capacity limited.

Note: Tables below are for use when attaching to wood studs only. See "Plywood Substructure" section for detailed tables on attaching directly to sheathing.

12" Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		Vertical Clip Spacing (inches)
	16" (Horizontal)	24" (Horizontal)	
3	48	32	
4	48	32	
5	41	27	
6	34	23	
7	29	19	
8	25	17	
10	20	14	
15	14	9	

Wood Stud
3x
ACS-MT

10" Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		Vertical Clip Spacing (inches)
	16" (Horizontal)	24" (Horizontal)	
3	48	32	
4	48	32	
5	48	32	
6	41	27	
7	35	23	
8	30	20	
10	24	16	
15	16	11	

Wood Stud
3x
ACS-MT

9” Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	Vertical Clip Spacing (inches)
3	48	32	
4	48	32	
5	48	32	
6	45	30	
7	39	26	
8	34	23	
10	27	18	
15	18	12	

Wood Stud
3x
ACS-MT

8” Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	Vertical Clip Spacing (inches)
3	48	32	
4	48	32	
5	48	32	
6	48	32	
7	43	29	
8	38	25	
10	30	20	
15	20	14	

Wood Stud
3x
ACS-MT

7” Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	Vertical Clip Spacing (inches)
3	48	32	
4	48	32	
5	48	32	
6	48	32	
7	48	32	
8	43	29	
10	35	23	
15	23	15	

Wood Stud
3x
ACS-MT

6” Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	
3	48	32	Vertical Clip Spacing (inches)
4	48	32	
5	48	32	
6	48	32	
7	48	32	
8	48	32	
10	41	27	
15	27	18	

Wood Stud
3x
ACS-MT

5” Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	
3	48	32	Vertical Clip Spacing (inches)
4	48	32	
5	48	32	
6	48	32	
7	48	32	
8	48	32	
10	48	32	
15	32	22	

Wood Stud
3x
ACS-MT

4” Wall Assembly

Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	
3	48	32	Vertical Clip Spacing (inches)
4	48	32	
5	48	32	
6	48	32	
7	48	32	
8	48	32	
10	48	32	
15	41	27	

Wood Stud
3x
ACS-MT

3” Wall Assembly

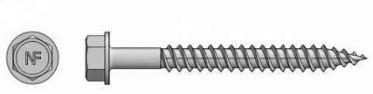
Cladding Weight (psf)	Douglas Fir (DF) / Spruce-Pine-Fir (SPF)		
	16” (Horizontal)	24” (Horizontal)	Vertical Clip Spacing (inches)
3	48	32	
4	48	32	
5	48	32	
6	48	32	
7	48	32	
8	48	32	
10	48	32	
15	48	32	

Wood Stud
3x
ACS-MT

PLYWOOD SUBSTRUCTURE

Attachment Spacing (HORIZONTAL x VERTICAL) of ACS U-Clips based on:

- Up to 40 psf specified wind
- Maximum 1/8” (3.2 mm) deflection due to cladding gravity load
- ¾”, $^{5}/_{8}$” or ½” Plywood
    - Must be exterior grade Douglas Fir Plywood (DFP) sheathing, Canadian Softwood Plywood (CSP) sheathing or equivalent
- **3x** - ACS-MT *(#14-10 x 2 ½” Hex Washer Head Carbon Steel NZF 3000 Leland Master Gripper®)* screws installed as follows:
    - Screw length must allow point to protrude past inside of plywood min ¼” and threads must engage entire plywood thickness.
- **2x** - U-Angle attachment screws *(#12-14 x ¾” Hex Washer Head #3 Drill Point Carbon Steel NZF 3000 Leland Master Driller®)*
    - Vallow = 2 x 184 = 368 lbs



Plywood Wall
3x
ACS-MT

9” Wall Assembly

Cladding Weight (psf)	¾” DFP		5/8” DFP		½” DFP		¾” CSP		5/8” CSP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	33	22	48	32	48	32	33	22	Vertical Clip Spacing (inches)
4	48	32	43	29	29	20	48	32	48	32	29	20	
5	48	32	39	26	26	18	45	30	43	29	27	18	
6	45	30	35	24	24	16	41	28	39	26	24	16	
7	39	26	32	22	22	15	38	25	36	24	22	15	
8	34	23	30	20	20	13	34	23	33	22	20	14	
10	27	18	26	17	18	12	27	18	27	18	18	12	
15	18	12	18	12	13	9	18	12	18	12	13	9	

8” Wall Assembly

Cladding Weight (psf)	¾” DFP		5/8” DFP		½” DFP		¾” CSP		5/8” CSP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	34	23	48	32	48	32	35	23	Vertical Clip Spacing (inches)
4	48	32	46	30	31	21	48	32	48	32	31	21	
5	48	32	41	27	28	19	48	32	45	30	28	19	
6	48	32	38	25	25	17	44	29	41	28	26	17	
7	43	29	35	23	23	16	40	27	38	25	24	16	
8	38	25	32	21	22	14	38	25	35	24	22	15	
10	30	20	28	19	19	13	30	20	30	20	19	13	
15	20	14	20	14	14	10	20	14	20	14	14	10	

7” Wall Assembly

Cladding Weight (psf)	¾” DFP		5/8” DFP		½” DFP		¾” CSP		5/8” CSP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	36	24	48	32	48	32	36	24	Vertical Clip Spacing (inches)
4	48	32	48	32	32	22	48	32	48	32	33	22	
5	48	32	44	29	30	20	48	32	48	32	30	20	
6	48	32	40	27	27	18	47	31	44	30	27	18	
7	48	32	37	25	25	17	44	29	41	27	25	17	
8	43	29	35	23	23	16	40	27	38	25	24	16	
10	35	23	30	20	21	14	35	23	33	22	21	14	
15	23	15	23	15	16	11	23	15	23	15	16	11	

6” Wall Assembly

Cladding Weight (psf)	¾” DFP		5/8” DFP		½” DFP		¾” CSP		5/8” CSP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	38	25	48	32	48	32	38	25	Vertical Clip Spacing (inches)
4	48	32	48	32	34	23	48	32	48	32	35	23	
5	48	32	47	31	32	21	48	32	48	32	32	21	
6	48	32	43	29	29	20	48	32	48	32	29	20	
7	48	32	40	27	27	18	47	31	44	30	27	18	
8	48	32	38	25	25	17	44	29	41	28	26	17	
10	41	27	33	22	23	15	39	26	37	24	23	15	
15	27	18	26	17	18	12	27	18	27	18	18	12	

5” Wall Assembly

Cladding Weight (psf)	¾” DFP		5/8” DFP		½” DFP		¾” CSP		5/8” CSP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	40	26	48	32	48	32	40	27	Vertical Clip Spacing (inches)
4	48	32	48	32	36	24	48	32	48	32	37	25	
5	48	32	48	32	34	23	48	32	48	32	34	23	
6	48	32	47	31	32	21	48	32	48	32	32	21	
7	48	32	44	29	30	20	48	32	48	32	30	20	
8	48	32	41	27	28	19	48	32	45	30	28	19	
10	48	32	37	25	25	17	43	29	41	27	25	17	
15	32	22	29	19	20	13	32	22	32	21	20	13	

4” Wall Assembly

Cladding Weight (psf)	¾” DFP		5/8” DFP		½” DFP		¾” CSP		5/8” CSP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	42	28	48	32	48	32	42	28	Vertical Clip Spacing (inches)
4	48	32	48	32	39	26	48	32	48	32	39	26	
5	48	32	48	32	36	24	48	32	48	32	37	25	
6	48	32	48	32	34	23	48	32	48	32	35	23	
7	48	32	48	32	32	22	48	32	48	32	33	22	
8	48	32	46	30	31	21	48	32	48	32	31	21	
10	48	32	41	27	28	19	48	32	45	30	28	19	
15	41	27	33	22	23	15	38	25	36	24	22	15	

3” Wall Assembly

Cladding Weight (psf)	¾” DFP		$^5/_8$” DFP		½” DFP		¾” CSP		$^5/_8$” CFP		½” CSP		
	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	16”(H)	24”(H)	
3	48	32	48	32	44	29	48	32	48	32	44	30	Vertical Clip Spacing (inches)
4	48	32	48	32	42	28	48	32	48	32	42	28	
5	48	32	48	32	40	26	48	32	48	32	40	27	
6	48	32	48	32	38	25	48	32	48	32	38	25	
7	48	32	48	32	36	24	48	32	48	32	36	24	
8	48	32	48	32	34	23	48	32	48	32	34	23	
10	48	32	46	31	32	21	48	32	48	32	31	21	
15	48	32	37	25	26	17	43	29	41	27	25	17	

FASTENER DATA

STEEL STUD SUPPORT SCREWS

ACS-HWH MD2 *(¼” x 2 ½” Hex Washer Head #2 Drill Point Carbon Steel NZF 3000 Leland Master Driller®)*			
Stud Gauge	**20**	**18**	**16**
Nominal Thickness (in)	0.0346	0.0451	0.0566
Allowable Tensile (lbs)	133	211	285
Ultimate Shear (lbs)	930	1442	2100
Allowable Shear (lbs)	271	403	566

Note: Shear & Tension values have been limited to:

1) Manufacturer Test Values to CSA S136/AISI S100 North American Specification for the Design of Cold-Formed Steel Structural Members K2.1.2. Tests for Special Cases with Calculated Safety Factors, or

2) CSA S136/AISI S100 North American Specification for the Design of Cold-Formed Steel Structural Members, J4.3 Shear and J4.4 Tension in Screw Connections with FS = 3

Fastener installation to meet the requirements of the Manufacturer & the referenced Code(s)

CONCRETE WALL SUPPORT SCREWS

SIMPSON Strong-Tie TITEN® 410 Stainless Steel *(¼" x 2 ¼" Hex Washer Head Simpson TITEN® TTN25214HSS 410 S/S)*		
1 ½" EMBEDMENT		
Concrete Strength (psi)	2500	4000
Concrete Tensile Capacity (lbs)	1040	1760
Allowable Tension (lbs)	260	440
Concrete Shear Capacity (lbs)	810	810
Allowable Shear (lbs)	200	200

Only applicable for attachment to concrete walls

NOT for CMU Block Walls

Note: Based on 2023 Simpson Strong-Tie Anchoring, Fastening, Restoration and Strengthening Systems for Concrete & Masonry, Uncracked Concrete, Non-Seismic Design, No Supplementary Reinforcement, Greater Than Critical Edge Distance/Spacing

WOOD STUD SUPPORT SCREWS

ACS-MT (#14-10 x 2 ½" Hex Washer Head Carbon Steel NZF 3000 Leland Master Gripper®)	
1 ½" EMBEDMENT	
Wood Species	SPF / DF
Allowable Tension (lbs)	232
Allowable Shear (lbs)	304

Note: Tension & Shear values are calculated based on Manufacturer Test Data to CSA S136/AISI S100 North American Specification for the Design of Cold-Formed Steel Structural Members K2.1.2. Tests for Special Cases with Calculated Safety Factors

Fastener installation to meet the requirements of the Manufacturer & CSA O86 - Engineering Design in Wood

PLYWOOD WALL SUPPORT SCREWS

ACS-MT (#14-10 x 2 ½" Hex Washer Head Carbon Steel NZF 3000 Leland Master Gripper®)						
Plywood Species	Douglas Fir Plywood (DFP)			Canada Softwood Plywood (CSP)		
Plywood Thickness	½"	$^{5}/_{8}$"	¾"	½"	$^{5}/_{8}$"	¾"
Allowable Tension (lbs)	78.2	115.6	168.5	78.8	127.1	135.0
Allowable Shear (lbs)	82.8	103.8	125.1	64.8	113.2	120.4

Note: Tension & Shear values are calculated based on Manufacturer Test Data to CSA S136/AISI S100 North American Specification for the Design of Cold-Formed Steel Structural Members K2.1.2. Tests for Special Cases with Calculated Safety Factors