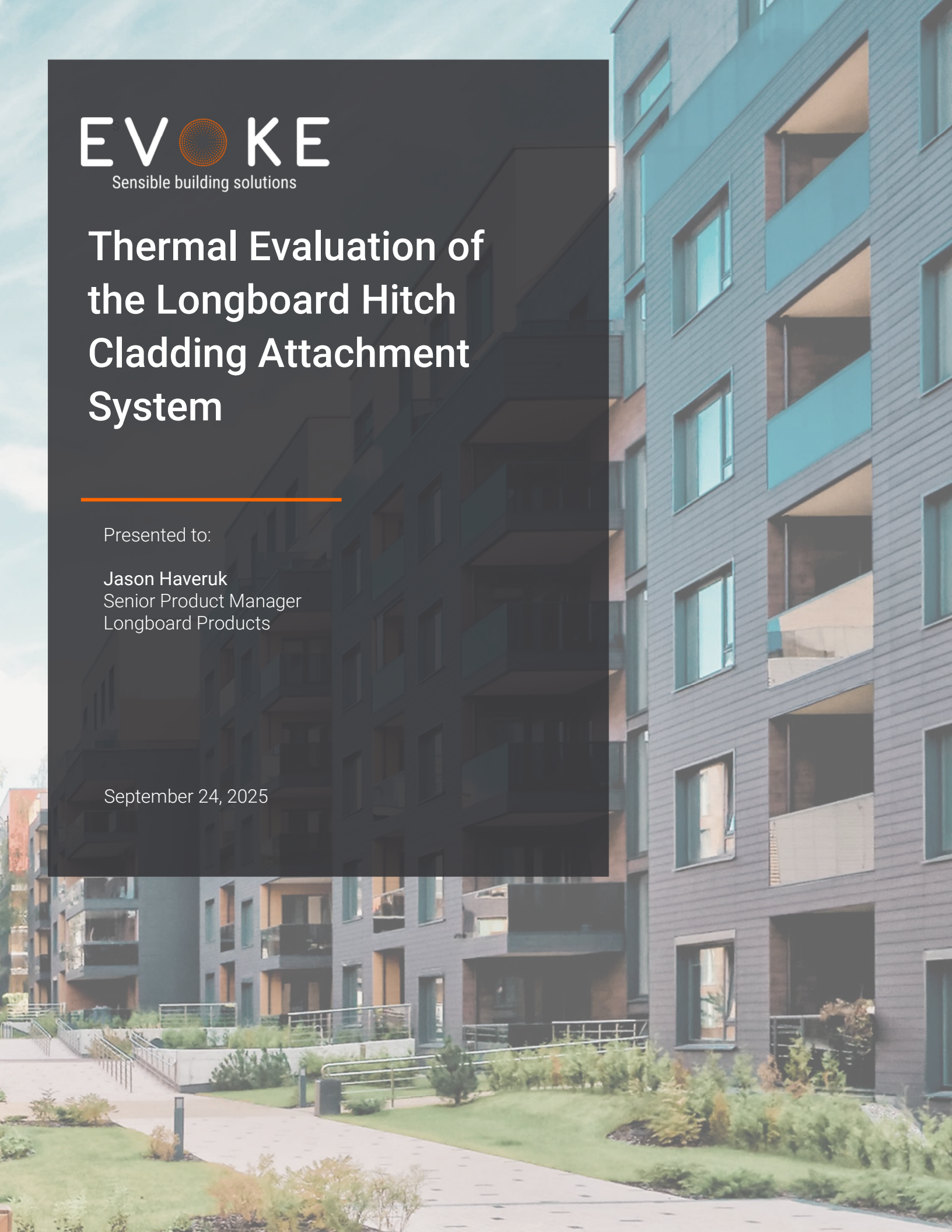


EVOKE
Sensible building solutions

Thermal Evaluation of the Longboard Hitch Cladding Attachment System

Presented to:

Jason Haveruk
Senior Product Manager
Longboard Products

September 24, 2025

Contents

Introduction

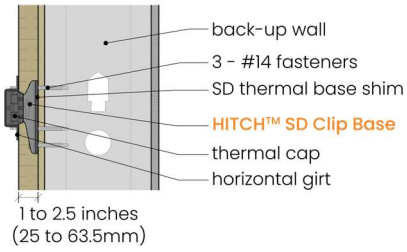
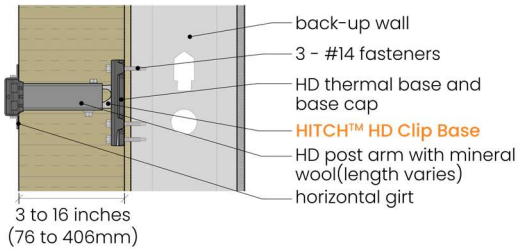
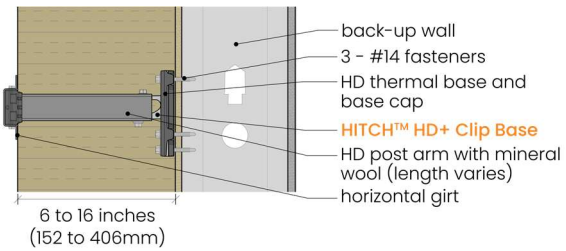
Evoke Buildings Engineering Inc. (Evoke) was contracted by Longboard Architectural Products Inc. (Longboard) for the thermal evaluation of the HITCH™ cladding attachment system for steel-framed wall assemblies.

The thermal evaluation considered a range of scenarios as follows:

- Exterior Insulation: 1 to 16-inches of mineral wool insulation (R-4.2/inch)
- Cavity Insulation: with and without R-20 insulation in the steel stud cavity
- Clip type: HITCH SD, HD, and HD+
- Backup Wall: 18 gauge 6" x 1-5/8" Steel-frame Wall at 16" o.c.
- Exterior Girt: horizontal 16 ga steel galvalume 3/4" HITCH Girt
- Clip fasteners: three galvanized fasteners #14 screws with 38 mm embedment
- Horizontal clip spacing: 32"
- Vertical clip spacing: 48"

There are differences in the materials for the HITCH clips as outlined in table 1. Selection of the most HITCH clips for a project depends on the exterior insulation thickness, type of cladding, and loading.

Table 1. **Longboard HITCH™ Cladding Attachment Overview**

	HITCH Clip	Clip Description	Evaluated Exterior Insulation Thickness
SD		16 ga stainless steel clip with polyamide thermal breaks	1, 2, 2.5 inches (25 to 64 mm)
HD		aluminum base, stainless steel tube, and polyamide thermal break	3, 4, 6, 8, 10, 14, 16 inches (76 to 406 mm)
HD+			6, 8, 10, 14, 16 inches (152 to 406 mm)

Methodology

The thermal simulation by Evoke was done using 3D thermal simulation using the Simcenter 3D software package from Siemens, which is a general-purpose computer aided design (CAD) and finite element analysis (FEA) package. The thermal solver and modeling procedures utilized for this evaluation were extensively calibrated and validated to within +/- 5% of hotbox testing[1,2,3].

The thermal analysis utilized steady-state conditions, published thermal data for materials, and information provided by Longboard is listed in Appendix A. Additional assumptions for the thermal analysis are provided in Appendix B.

Simulation Results

The clear field thermal transmittances and assembly effective R-values for the evaluated wall assemblies are presented per wall type in the following tables.

Example Temperature profiles for each configuration are provided in Appendix C.

Table 2. **Overview of Results for Evaluated Assemblies**

HITCH Clip	Wall Type	Result Table
SD	Exterior insulated steel-framed wall assembly with mineral wool	3
	Split insulated steel-framed wall assembly with mineral wool and R-20 batt	4
HD	Exterior insulated steel-framed wall assembly with mineral wool	5
	Split insulated steel-framed wall assembly with mineral wool and R-20 batt	6
HD+	Exterior insulated steel-framed wall assembly with mineral wool	7
	Split insulated steel-framed wall assembly with mineral wool and R-20 batt	8

[1] ASHRAE Research Project 1365-RP, Thermal Performance of Building Envelope Details for Mid- and High-Rise Construction, 2011

[2] AISI Research Report RP18-1, Thermal Analysis of Cold-Formed Steel Wall Assemblies, 2018

[3] Building Envelope Thermal Bridging Guide, Version 1.6, 2021

Exterior Insulated Steel-Framed Wall Assembly with HITCH™ SD Clip and Mineral Wool Exterior Insulation

Components

1. Interior
2. 1/2" (13 mm) gypsum wall board
3. Air cavity
4. 18-gauge steel studs
5. 1/2" (13 mm) exterior sheathing
6. Exterior mineral wool insulation (R-4.2/inch)
7. 16-gauge stainless steel SD Clip including:
   - Polyamide thermal shim
   - Polyamide thermal cap
   - 3 x #14 steel fasteners
8. 16-gauge galvanized hat track girt
9. Exterior

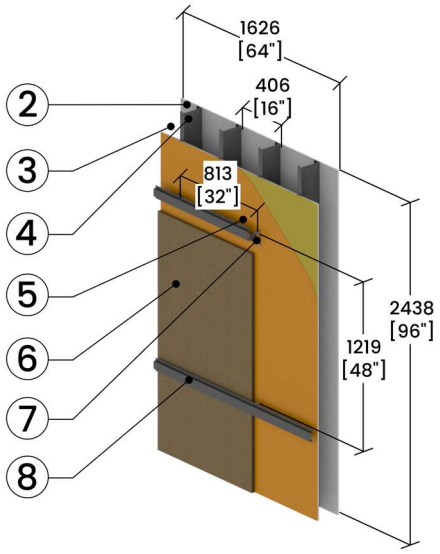


Table 3. Thermal Transmittance for Exterior Insulated Steel-Framed Wall Assembly with HITCH™ SD Clip and Mineral Wool Exterior Insulation

Exterior Insulation Thickness	Exterior Girt Orientation	Exterior Insulation 1D R-Value[4]	32" x 48" Clip Spacing	
			R-Value	Transmittance
		ft²·hr·°F/Btu (m²·K/W)	ft²·hr·°F/Btu (m²·K/W)	Btu/ft²·hr·°F (W/m²·K)
1 (25 mm)	Horizontal	4.2 (0.74)	7.4 (1.30)	0.135 (0.766)
2" (51 mm)	Horizontal	8.4 (1.48)	11.3 (1.99)	0.089 (0.504)
	Vertical		11.3 (1.99)	0.089 (0.503)
2 ½" (64 mm)	Horizontal	10.5 (1.85)	13.2 (2.32)	0.076 (0.431)

The sensitivity analysis of the exterior girt orientation shows that the differences in performance are minimal, as the girt is positioned entirely outboard of the exterior insulation. As a result, the simulated results can be used interchangeably for both orientations, assuming the same clip spacing.

[4] Exterior Insulation 1D R-Value does not include the impact of the back-up wall which adds R-3.2 to the overall nominal R-Value.

Split Insulated Steel-Framed Wall Assembly with HITCH™ SD Clip, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation

Components

1. Interior
2. 1/2" (13 mm) gypsum wall board
3. R-20 Batt Insulation
4. 18-gauge steel studs
5. 1/2" (13 mm) exterior sheathing
6. Exterior mineral wool insulation (R-4.2/inch)
7. 16-gauge stainless steel SD Clip including:
   - Polyamide thermal shim
   - Polyamide thermal cap
   - 3 x #14 steel fasteners
8. 16-gauge galvanized hat track girt
9. Exterior

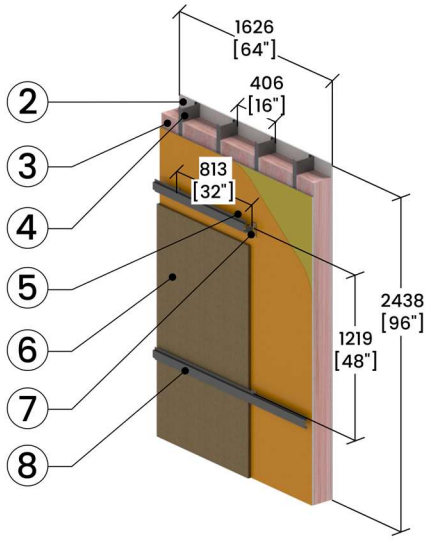


Table 4. Thermal Transmittance for Split Insulated Steel-Framed Wall Assembly with HITCH™ SD Clip, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation

Exterior Insulation Thickness	Exterior Girt Orientation	Exterior Insulation 1D R-Value[5]	32" x 48" Clip Spacing	
			R-Value	Transmittance
		$ft^2 \cdot hr \cdot °F/Btu$ ($m^2 \cdot K/W$)	$ft^2 \cdot hr \cdot °F/Btu$ ($m^2 \cdot K/W$)	$Btu/ft^2 \cdot hr \cdot °F$ ($W/m^2 \cdot K$)
1" (25mm)	Horizontal	4.2 (0.74)	16.7 (2.94)	0.060 (0.341)
2" (51 mm)	Horizontal	8.4 (1.48)	20.5 (3.62)	0.049 (0.276)
	Vertical		20.6 (3.63)	0.049 (0.276)
2 ½" (64 mm)	Horizontal	10.5 (1.85)	22.5 (3.97)	0.044 (0.252)

[5] Exterior Insulation 1D R-Value does not include the impact of the back-up wall which adds R-22.3 to the overall nominal R-Value.

Exterior Insulated Steel-Framed Wall Assembly with HITCH™ HD Clip and Mineral Wool Exterior Insulation

Components

1. Interior
2. 1/2″ (13 mm) gypsum wall board
3. Air cavity
4. 18-gauge steel studs
5. 1/2″ (13 mm) exterior sheathing
6. Exterior mineral wool insulation (R-4.2/inch)
7. HD Clip including:
   - Aluminum Clip base
   - Polyamide thermal shim
   - HD thermal base cap
   - 16-gauge stainless steel post arm
   - Polyamide thermal cap
   - 3 x #14 steel fasteners
8. 16-gauge galvanized hat track girt
9. Exterior

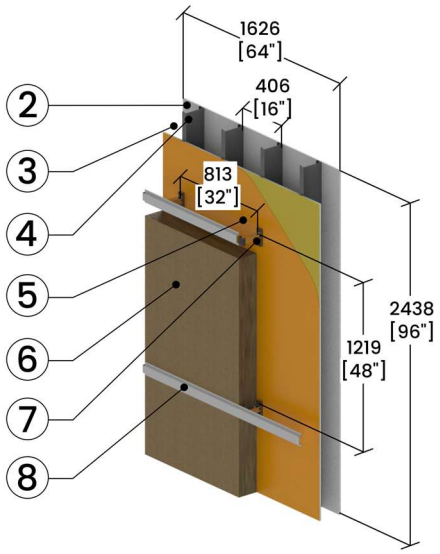


Table 5. Thermal Transmittance for Exterior Insulated Steel-Framed Wall Assembly with HITCH™ HD Clip and Mineral Wool Exterior Insulation

Exterior Insulation Thickness	Exterior Girt Orientation	Exterior Insulation 1D R-Value[6]	32″ x 48″ Clip Spacing	
			R-Value	Transmittance
		ft²·hr·°F/Btu (m²·K/W)	ft²·hr·°F/Btu (m²·K/W)	Btu/ft²·hr·°F (W/m²·K)
3″ (76 mm)	Horizontal	12.6 (2.22)	14.9 (2.63)	0.067 (0.380)
4″ (102 mm)		16.8 (2.96)	18.6 (3.27)	0.054 (0.306)
6″ (152 mm)	Horizontal	25.2 (4.44)	26.1 (4.59)	0.038 (0.218)
	Vertical		26.0 (4.59)	0.038 (0.218)
8″ (203 mm)	Horizontal	33.6 (5.92)	33.5 (5.90)	0.030 (0.170)
10″ (254 mm)		42.0 (7.40)	41.2 (7.26)	0.024 (0.138)
14″ (356 mm)		58.8 (10.36)	56.1 (9.87)	0.018 (0.101)
16″ (406 mm)		67.2 (11.84)	63.5 (11.19)	0.016 (0.089)

[6] Exterior Insulation 1D R-Value does not include the impact of the back-up wall which adds R-3.2 to the overall nominal R-Value.

Split Insulated Steel-Framed Wall Assembly with HITCH™ HD Clip, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation

Components

1. Interior
2. 1/2″ (13 mm) gypsum wall board
3. R-20 Batt Insulation
4. 18-gauge steel studs
5. 1/2″ (13 mm) exterior sheathing
6. Exterior mineral wool insulation (R-4.2/inch)
7. HD Clip including:
   - Aluminum clip base
   - Polyamide thermal shim
   - HD thermal base cap
   - 16-gauge stainless steel post arm
   - Polyamide thermal cap
   - 3 x #14 steel fasteners
8. 16-gauge galvanized hat track girt
9. Exterior

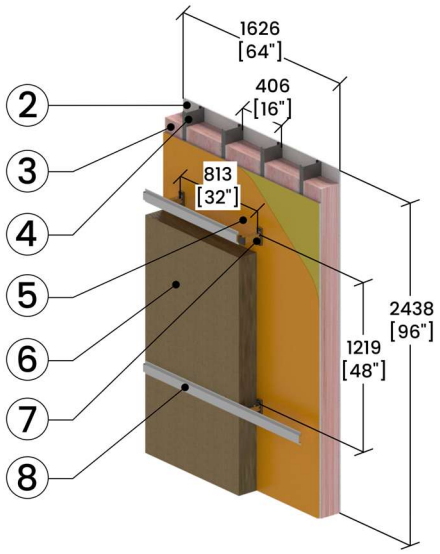


Table 6. **Thermal Transmittance for Split Insulated Steel-Framed Wall Assembly with HITCH™ HD Clip, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation**

Exterior Insulation Thickness	Exterior Girt Orientation	Exterior Insulation 1D R-Value[7]	32″ x 48″ Clip Spacing	
			R-Value	Transmittance
		ft²·hr·°F/Btu (m²·K/W)	ft²·hr·°F/Btu (m²·K/W)	Btu/ft²·hr·°F (W/m²·K)
3″ (76 mm)	Horizontal	12.6 (2.22)	24.0 (4.23)	0.042 (0.236)
4″ (102 mm)		16.8 (2.96)	27.6 (4.86)	0.036 (0.206)
6″ (152 mm)	Horizontal	25.2 (4.44)	35.0 (6.17)	0.029 (0.162)
	Vertical		35.2 (6.2)	0.028 (0.161)
8″ (203 mm)	Horizontal	33.6 (5.92)	42.3 (7.45)	0.024 (0.134)
10″ (254 mm)		42.0 (7.40)	50.0 (8.81)	0.020 (0.114)
14″ (356 mm)		58.8 (10.36)	65.0 (11.45)	0.015 (0.087)
16″ (406 mm)		67.2 (11.84)	72.5 (12.77)	0.014 (0.078)

[7] Exterior Insulation 1D R-Value does not include the impact of the back-up wall which adds R-22.3 to the overall nominal R-Value.

Exterior Insulated Steel-Framed Wall Assembly with HITCH™ HD+ Clip and Mineral Wool Exterior Insulation

Components

1. Interior
2. 1/2″ (13 mm) gypsum wall board
3. Air cavity
4. 18-gauge steel studs
5. 1/2″ (13 mm) exterior sheathing
6. Exterior mineral wool insulation (R-4.2/inch)
7. HD+ Clip including:
   - Aluminum clip base
   - Polyamide thermal shim
   - HD thermal base cap
   - 16-gauge stainless steel post arm
   - Polyamide thermal cap
   - 3 x #14 steel fasteners
8. 16-gauge galvanized hat track girt
9. Exterior

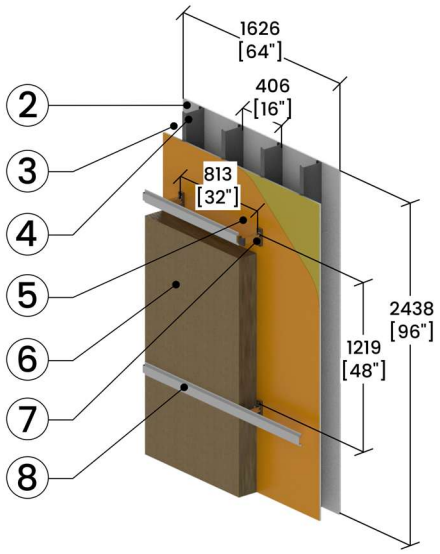


Table 7. Thermal Transmittance for Exterior Insulated Steel-Framed Wall Assembly with HITCH™ HD+ Clip and Mineral Wool Exterior Insulation

Exterior Insulation Thickness	Exterior Girt Orientation	Exterior Insulation 1D R-Value[8]	32″ x 48″ Clip Spacing	
			R-Value	Transmittance
		ft²·hr·°F/Btu (m²·K/W)	ft²·hr·°F/Btu (m²·K/W)	Btu/ft²·hr·°F (W/m²·K)
6″ (152 mm)	Horizontal	25.2 (4.44)	25.6 (4.51)	0.039 (0.222)
8″ (203 mm)		33.6 (5.92)	33.1 (5.83)	0.030 (0.171)
10″ (254 mm)		42.0 (7.40)	40.6 (7.15)	0.025 (0.140)
14″ (356 mm)		58.8 (10.36)	55.7 (9.81)	0.018 (0.102)
16″ (406 mm)		67.2 (11.84)	63.2 (11.12)	0.016 (0.090)

[8] Exterior Insulation 1D R-Value does not include the impact of the back-up wall which adds R-3.2 to the overall nominal R-Value.

Split Insulated Steel-Framed Wall Assembly with HITCH™ HD+ Clip, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation

Components

1. Interior
2. 1/2″ (13 mm) gypsum wall board
3. R-20 Batt Insulation
4. 18-gauge steel studs
5. 1/2″ (13 mm) exterior sheathing
6. Exterior mineral wool insulation (R-4.2/inch)
7. HD+ Clip including:
   - Aluminum clip base
   - Polyamide thermal shim
   - HD thermal base cap
   - 16-gauge stainless steel post arm
   - Polyamide thermal cap
   - 3 x #14 steel fasteners
8. 16-gauge galvanized hat track girt
9. Exterior

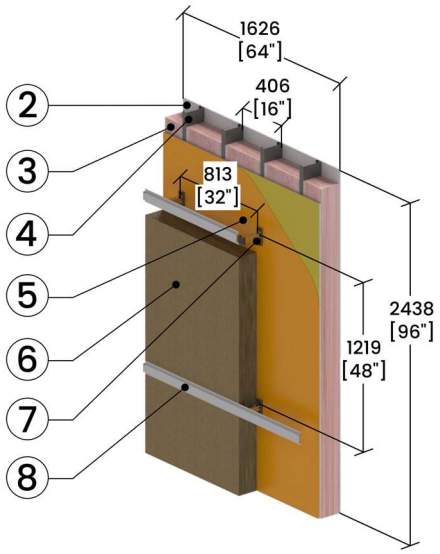


Table 8. Thermal Transmittance for Split Insulated Steel-Framed Wall Assembly with HITCH™ HD+ Clip, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation

Exterior Insulation Thickness	Exterior Girt Orientation	Exterior Insulation 1D R-Value[9]	32″ x 48″ Clip Spacing	
			R-Value	Transmittance
		$ft^2 \cdot hr \cdot °F/Btu$ ($m^2 \cdot K/W$)	$ft^2 \cdot hr \cdot °F/Btu$ ($m^2 \cdot K/W$)	$Btu/ft^2 \cdot hr \cdot °F$ ($W/m^2 \cdot K$)
6″ (152 mm)	Horizontal	25.2 (4.44)	34.4 (6.06)	0.029 (0.165)
8″ (203 mm)		33.6 (5.92)	42.0 (7.40)	0.024 (0.135)
10″ (254 mm)		42.0 (7.40)	49.6 (8.73)	0.020 (0.115)
14″ (356 mm)		58.8 (10.36)	64.7 (11.39)	0.015 (0.088)
16″ (406 mm)		67.2 (11.84)	72.2 (12.72)	0.014 (0.079)

[9] Exterior Insulation 1D R-Value does not include the impact of the back-up wall which adds R-22.3 to the overall nominal R-Value.

Closing

We believe that this report meets your request for our evaluation of the Longboard HITCH™ cladding attachment system. Please do not hesitate to contact us with any questions regarding this evaluation.

Evoke Buildings Engineering Inc.

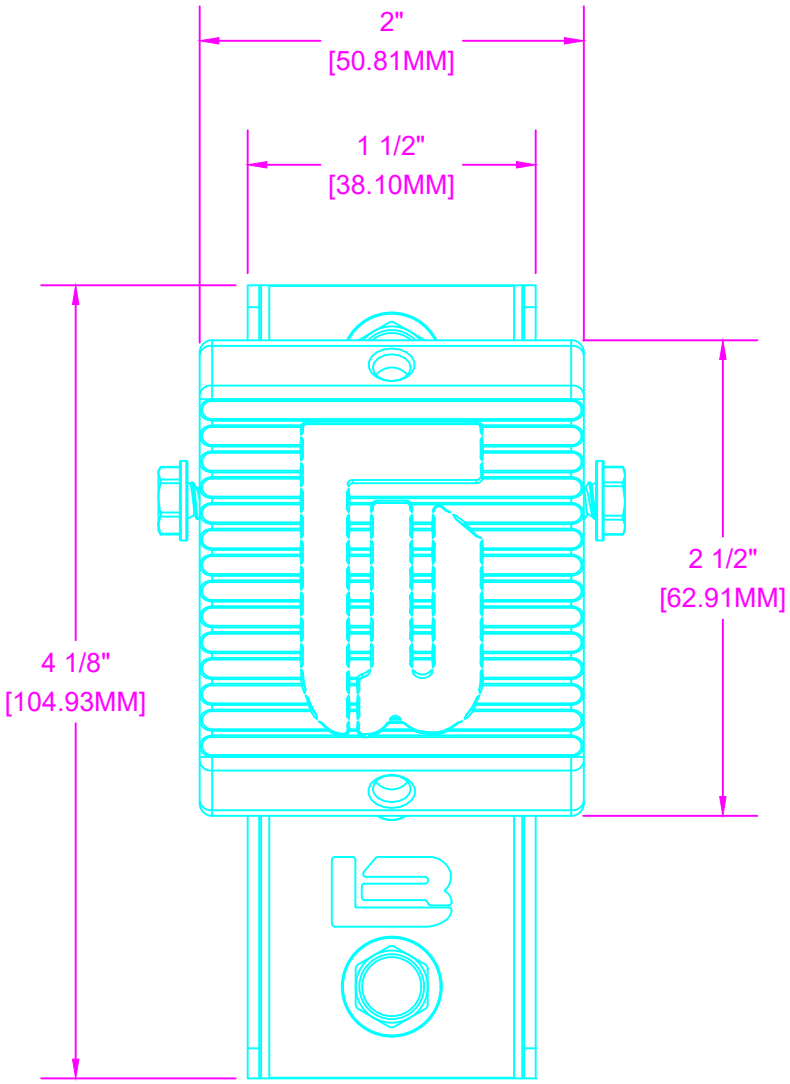
Permit to practice number: 1000299

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. J. ROPPEL
31048
2025-09-28

Farid Vahedi, M.A.Sc.
Building Science Analyst

Patrick Roppel, P.Eng.
Building Science Specialist

Appendix A: Detail Drawings



These drawings are published as an information guide only. These CAD drawings are intended as templates to assist the designer, they do not contain the full detail required for construction and must be read in conjunction with the installation instructions on www.longboardproducts.com. You should obtain architectural, engineering or other technical advice to assess the suitability of these drawings to the requirements of your particular project.
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SD CLIP 1.5 - FRONT VIEW

SCALE: 1:1

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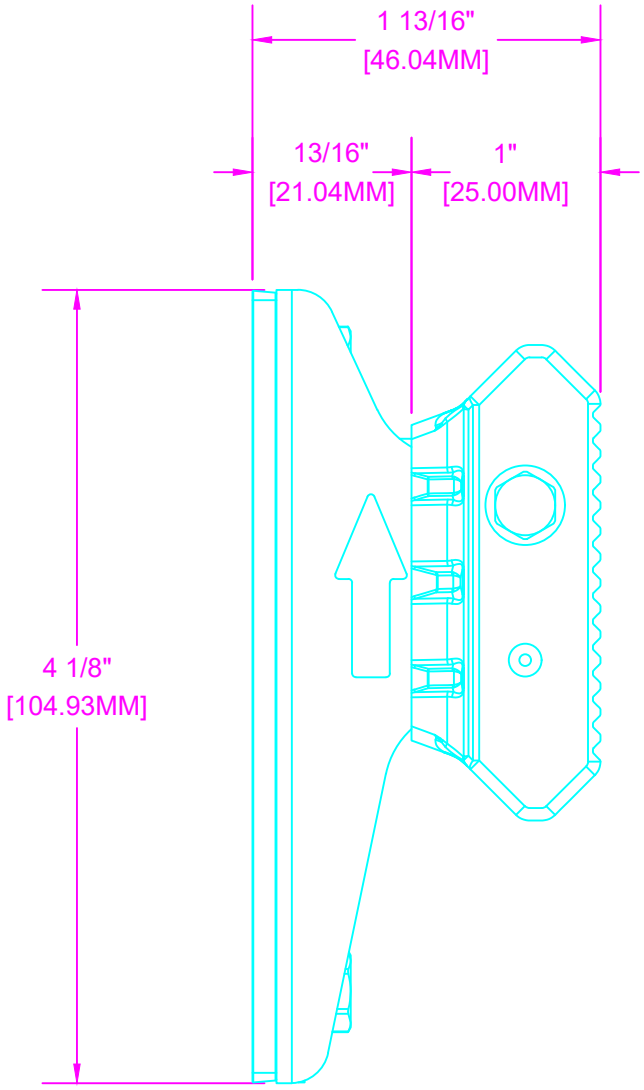
ISSUE DATE: 2023-01-13



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SD CLIP 1.5 - SIDE VIEW

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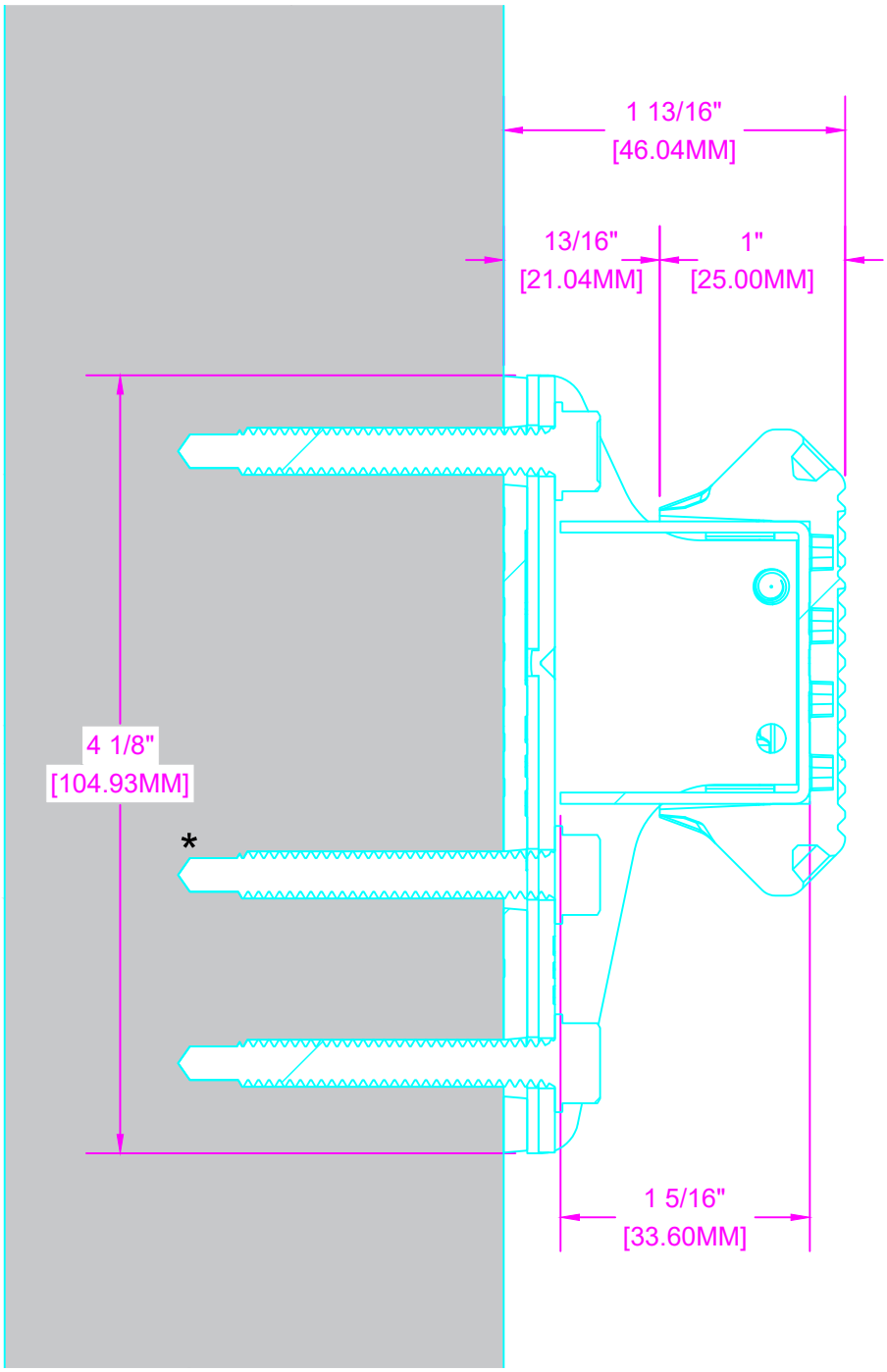

*Only two fasteners are needed for Concrete or CMU.

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SD CLIP 1.5 - SECTION VIEW

SCALE: 1:1

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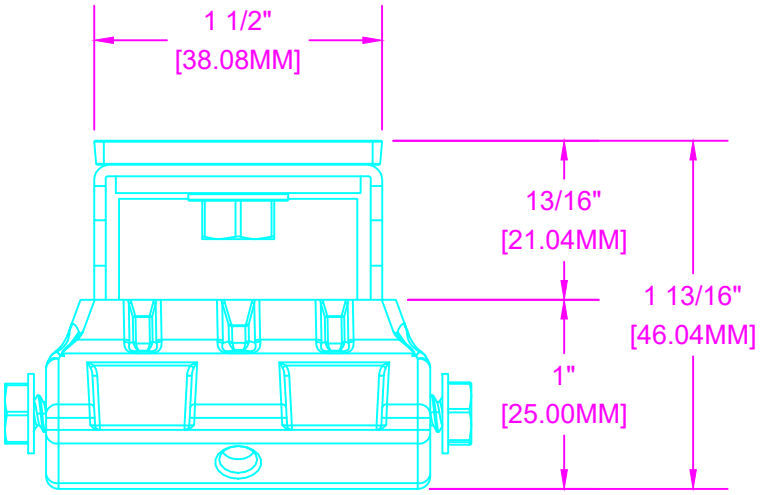

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SD CLIP 1.5 - TOP VIEW

SCALE: 1:1

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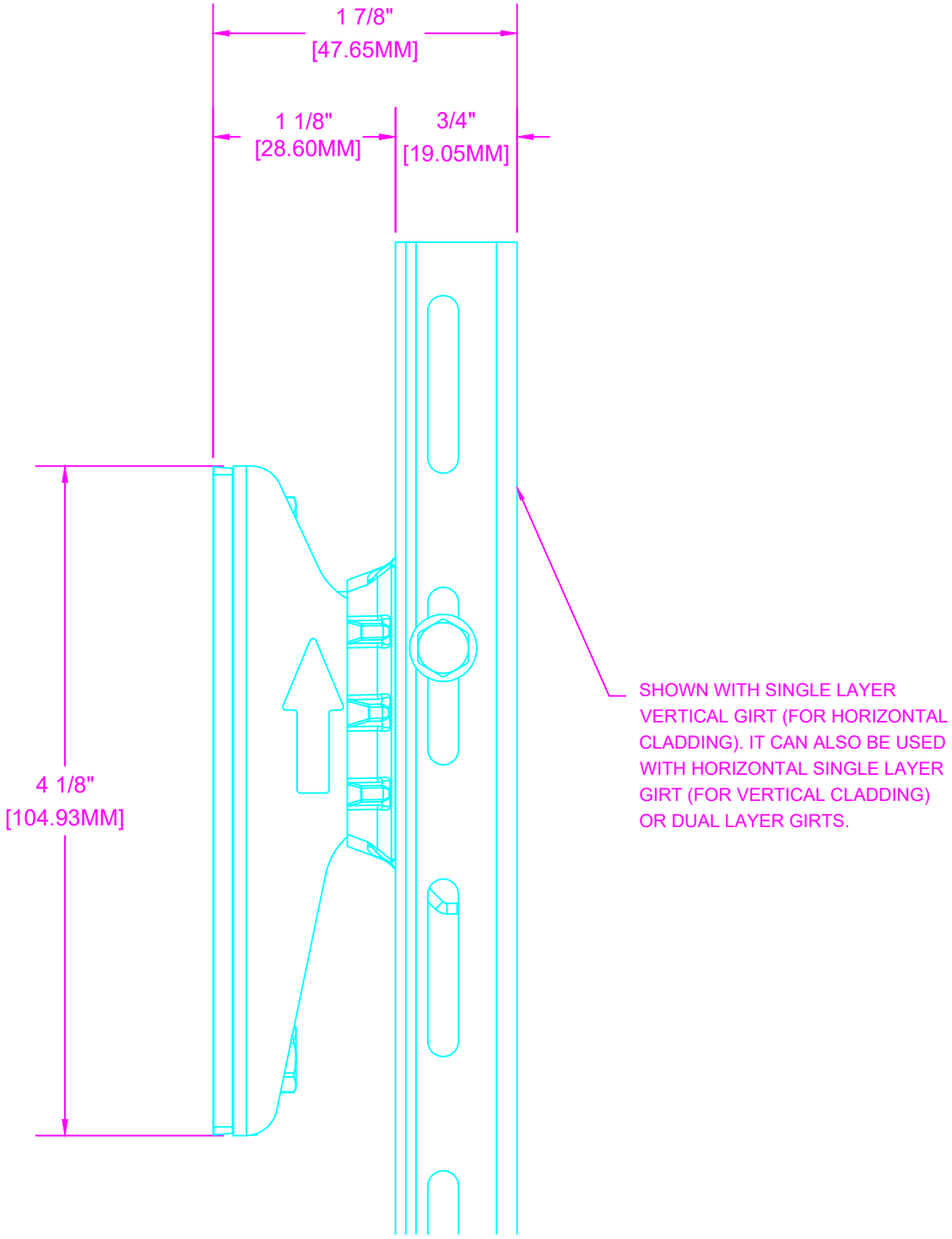

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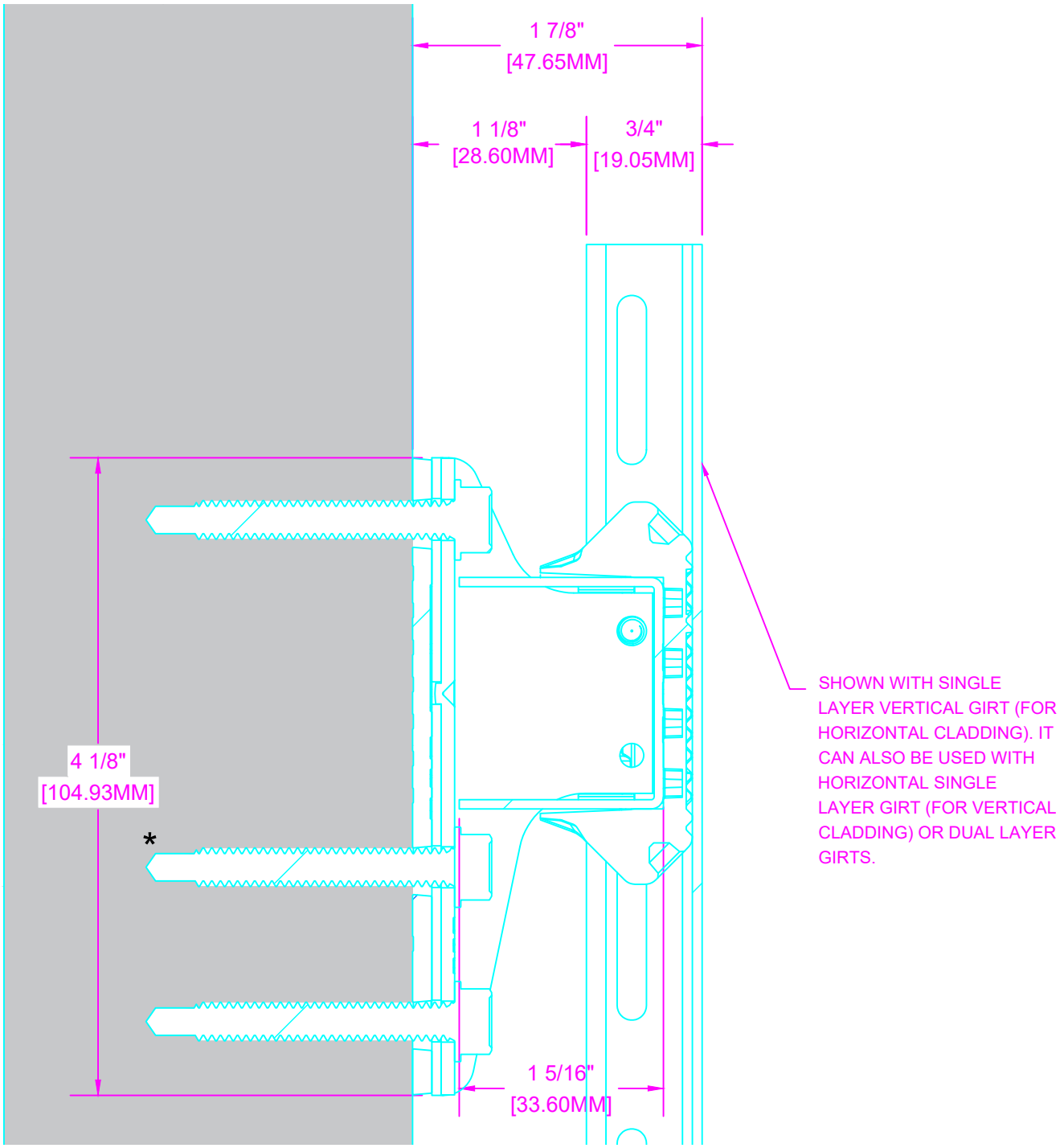
SD CLIP 1.5 WITH GIRT - SIDE VIEW

SCALE: 1:1

..\TEMPLATES\Longboard_logo_stacked_2022.png

ISSUE DATE: 2023-01-13



*Only two fasteners are needed for Concrete or CMU.

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SD CLIP 1.5 WITH GIRT - SECTION VIEW

SCALE: 1:1

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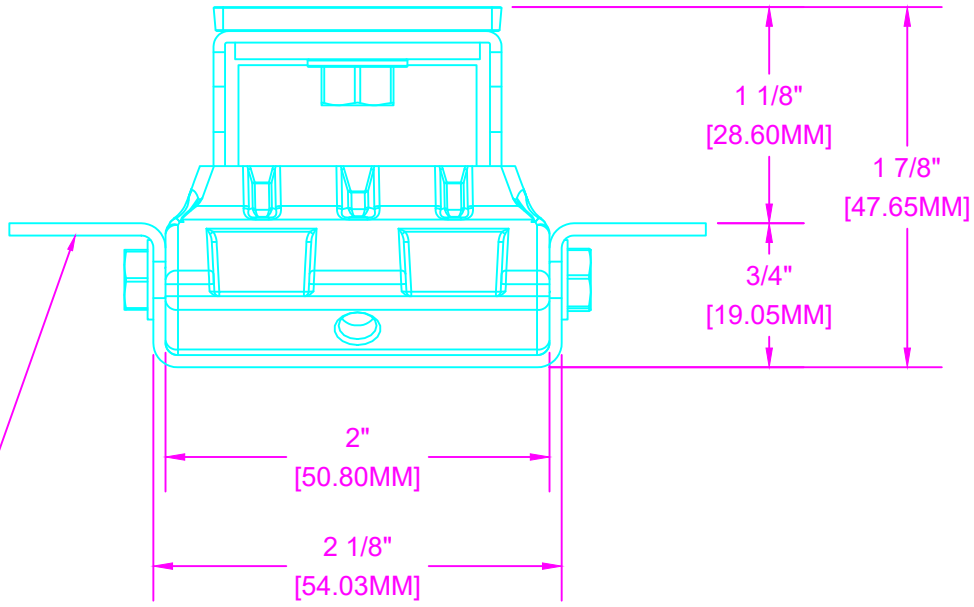

SHOWN WITH SINGLE LAYER VERTICAL GIRT (FOR HORIZONTAL CLADDING). IT CAN ALSO BE USED WITH HORIZONTAL SINGLE LAYER GIRT (FOR VERTICAL CLADDING) OR DUAL LAYER GIRTS.

SD CLIP 1.5 WITH GIRT - TOP VIEW

SCALE: 1:1

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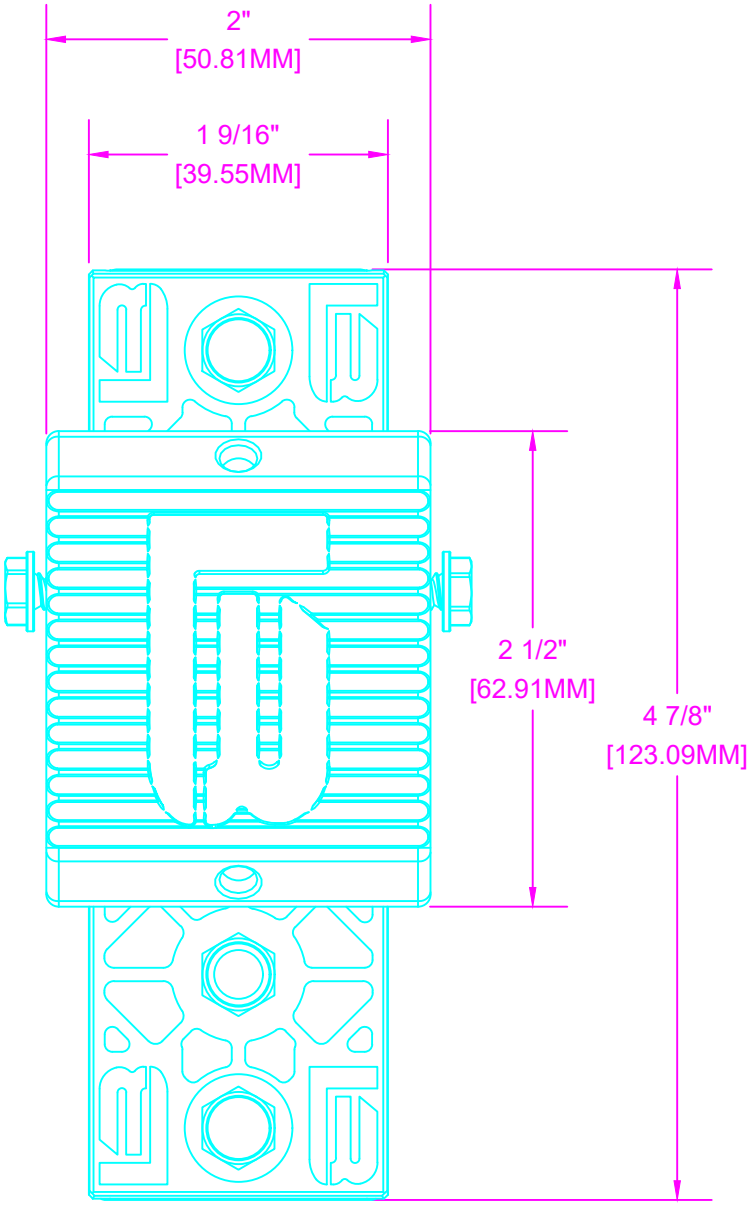
ISSUE DATE: 2023-01-13



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HD CLIP - FRONT VIEW

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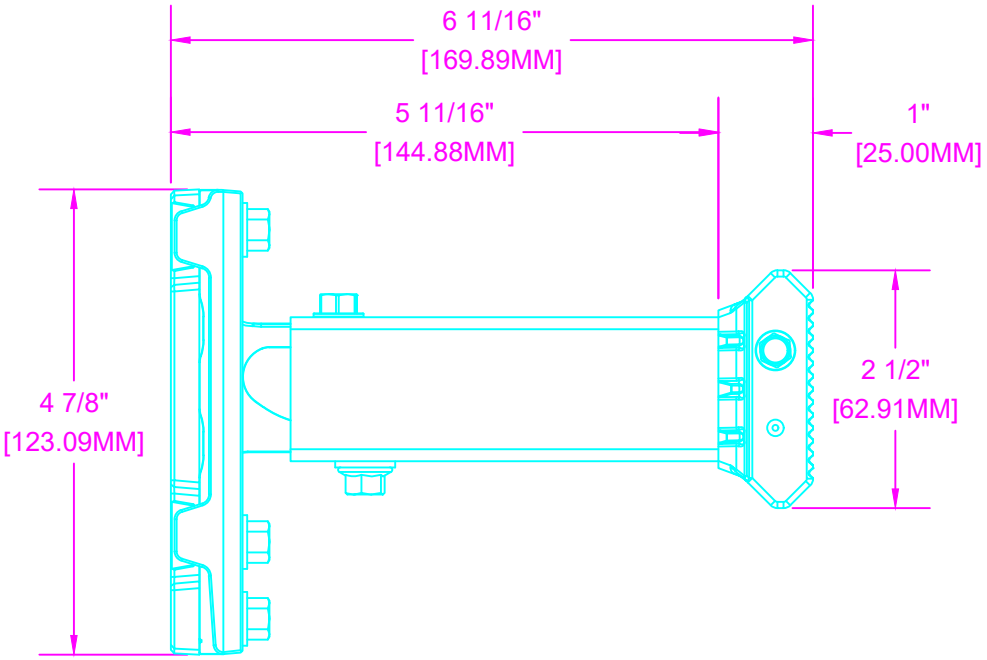
ISSUE DATE: 2023-01-13



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HD CLIP - SIDE VIEW

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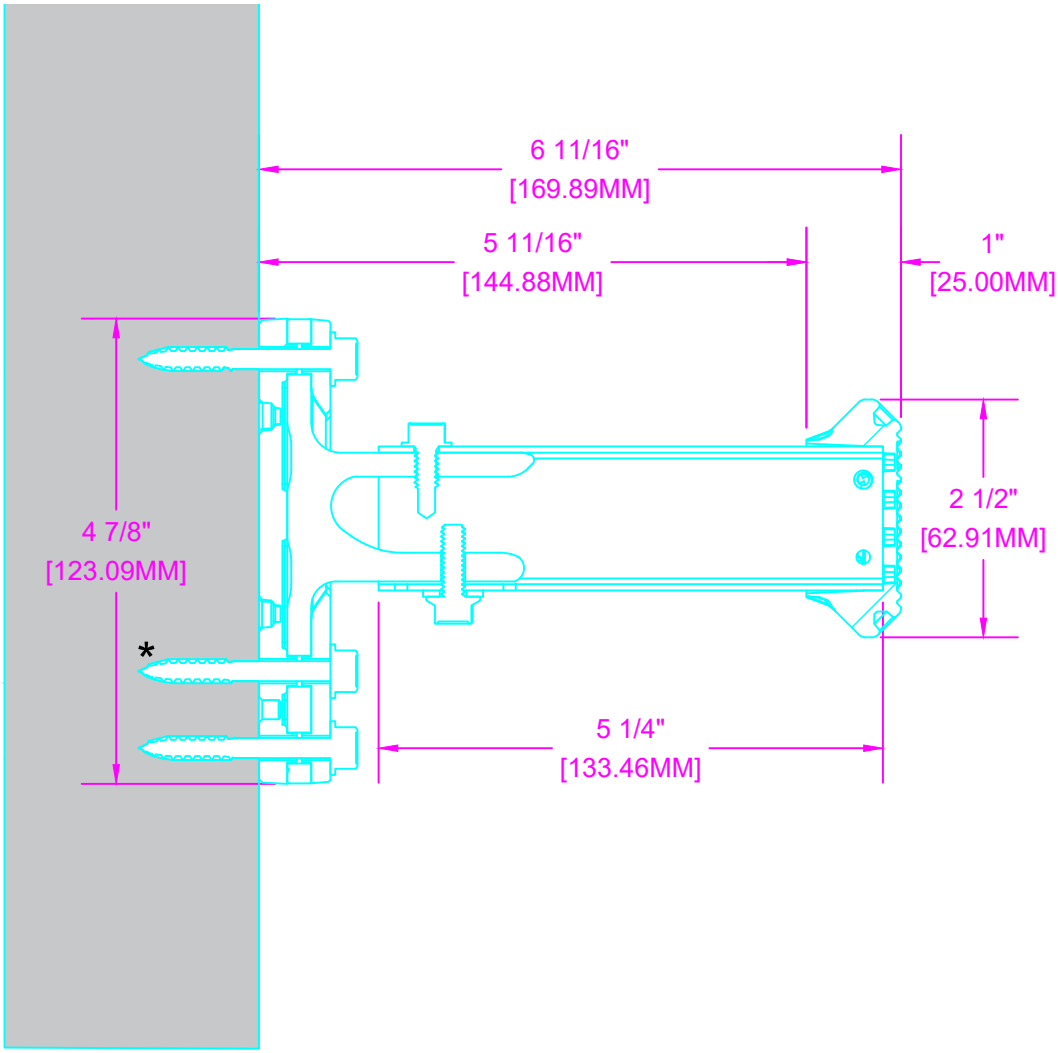

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HD CLIP - SECTION VIEW

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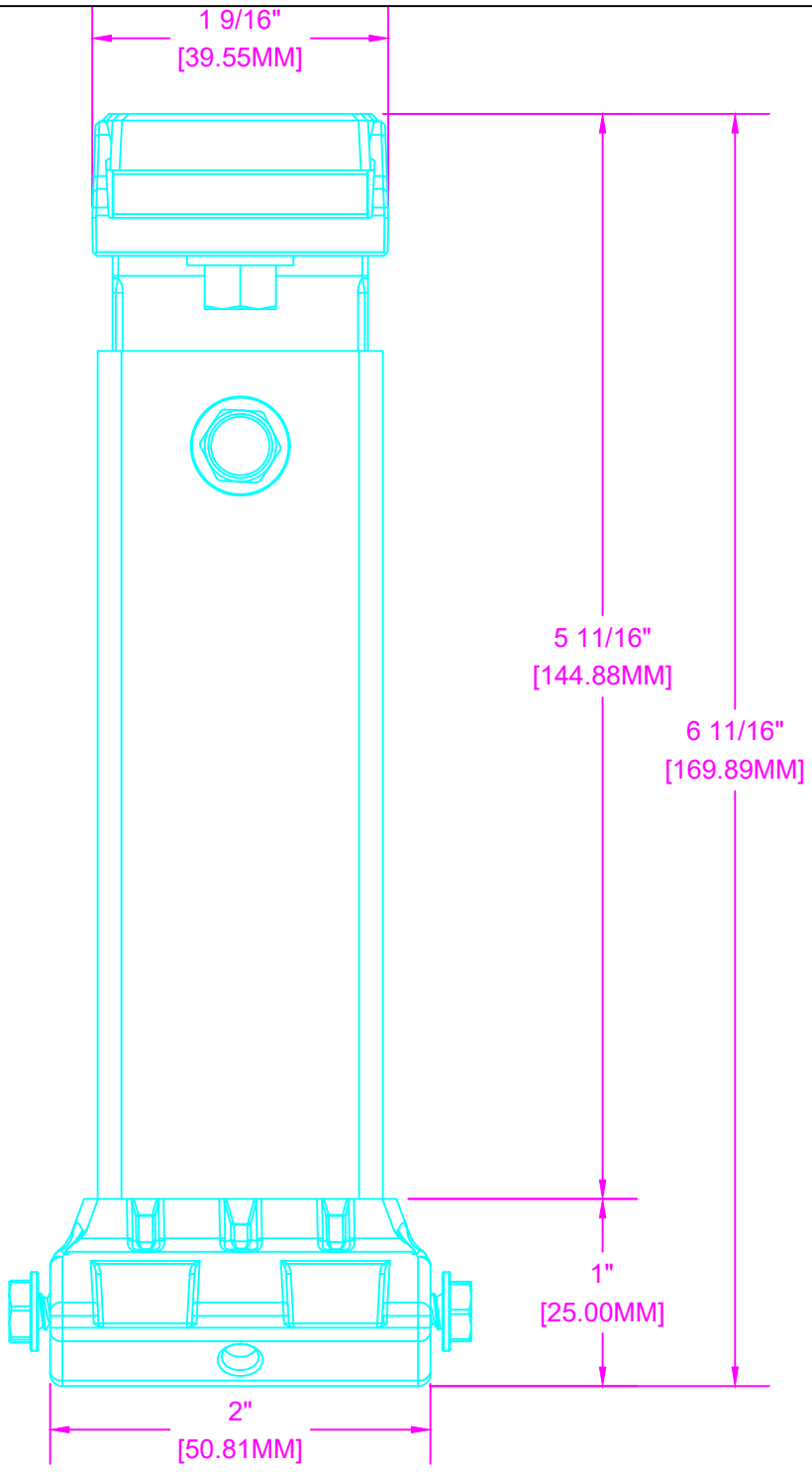

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HD CLIP - TOP VIEW

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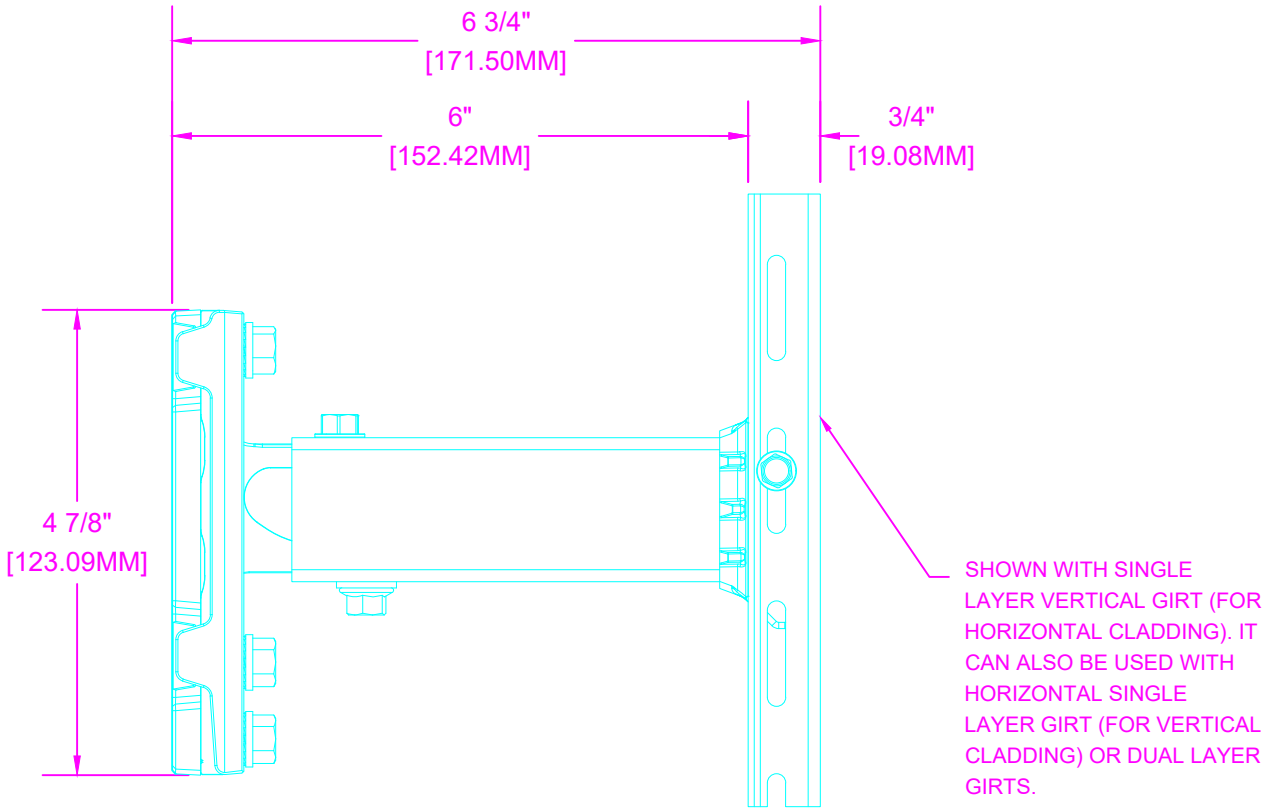

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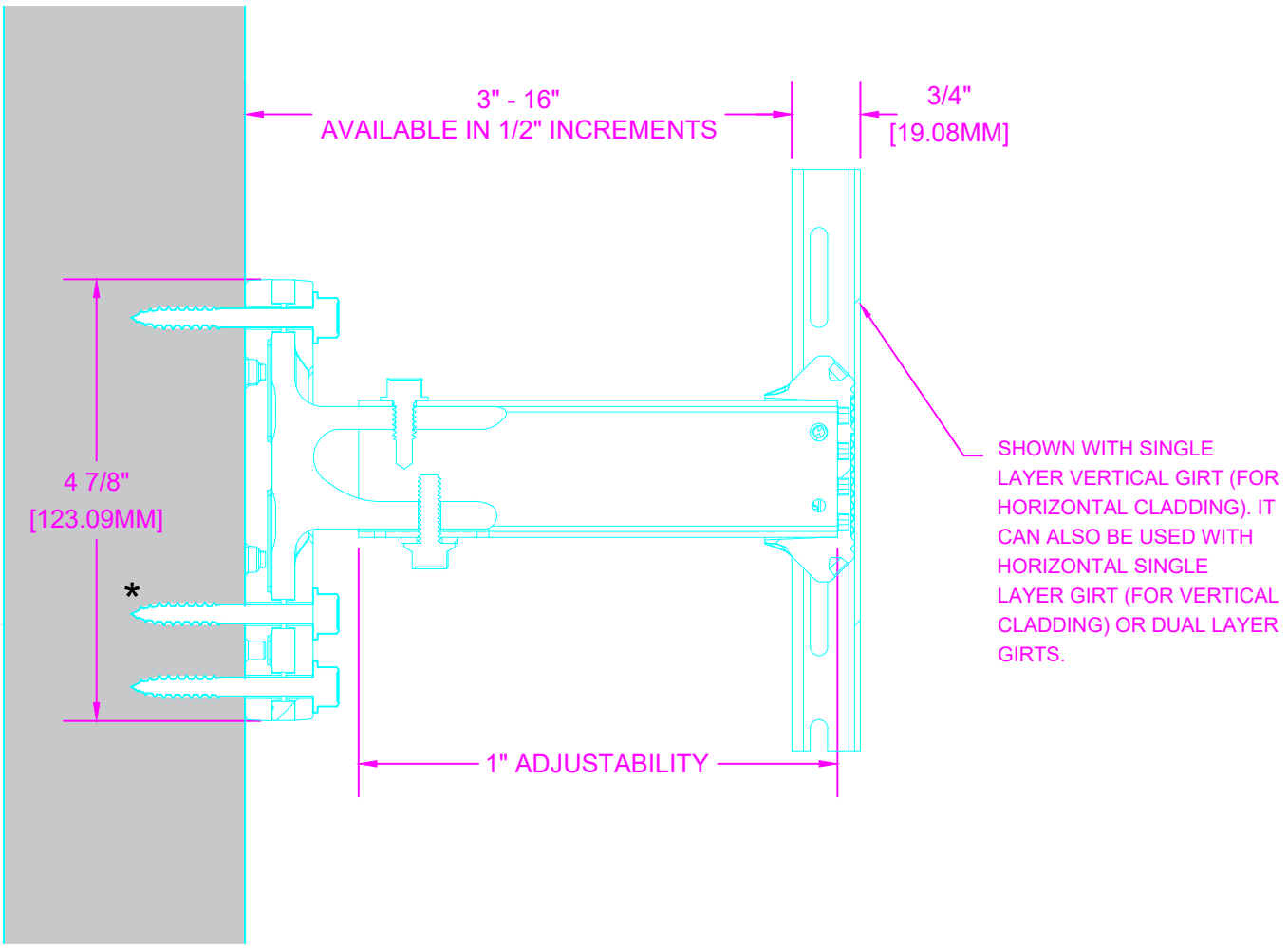
HD CLIP WITH GIRT - SIDE VIEW

SCALE: 1:2

..\TEMPLATES\Longboard_logo_stacked_2022.png

ISSUE DATE: 2023-01-13



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HD CLIP WITH GIRT - SECTION VIEW

SCALE: 1:2

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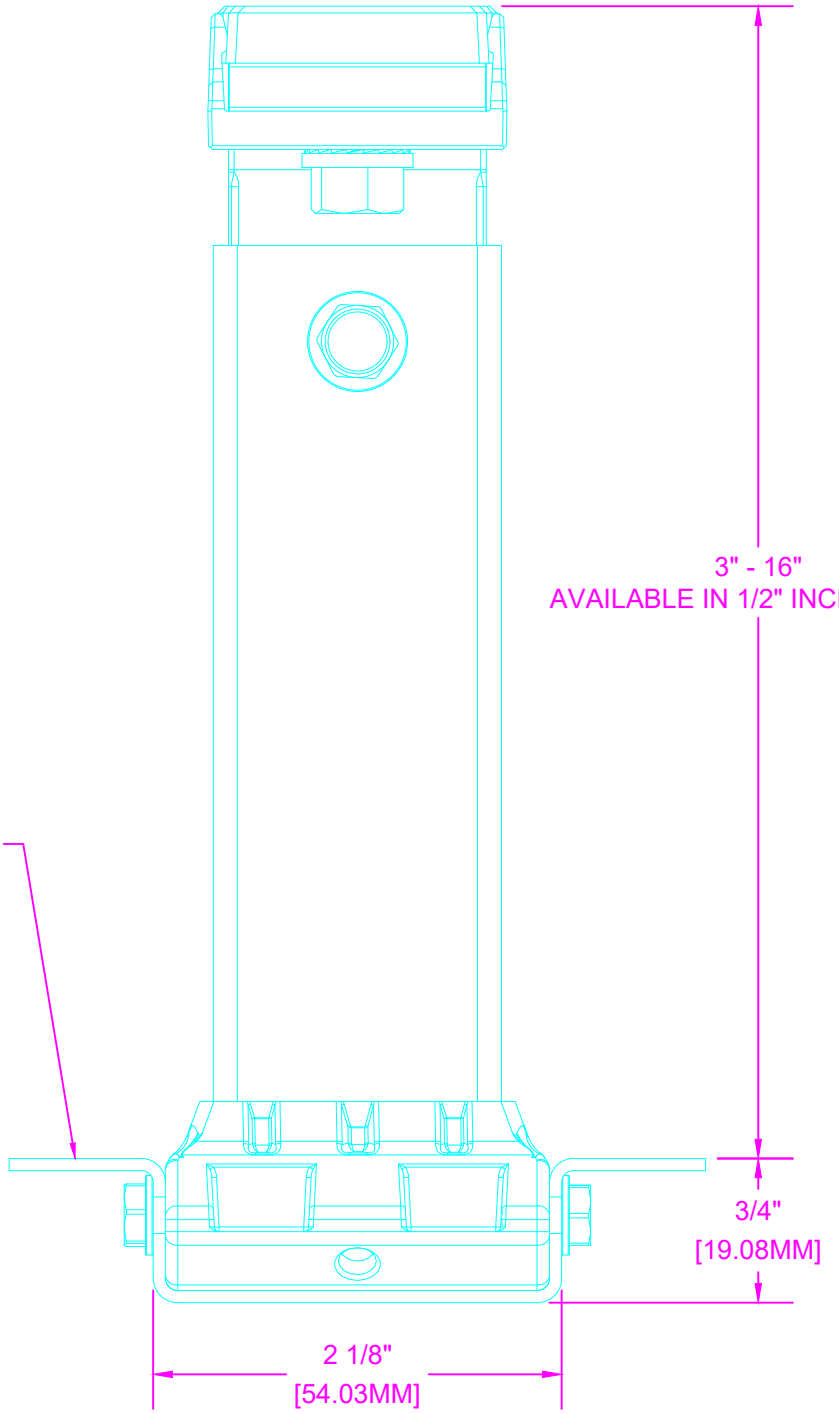

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HD CLIP WITH GIRT - TOP VIEW

SCALE: 1:1

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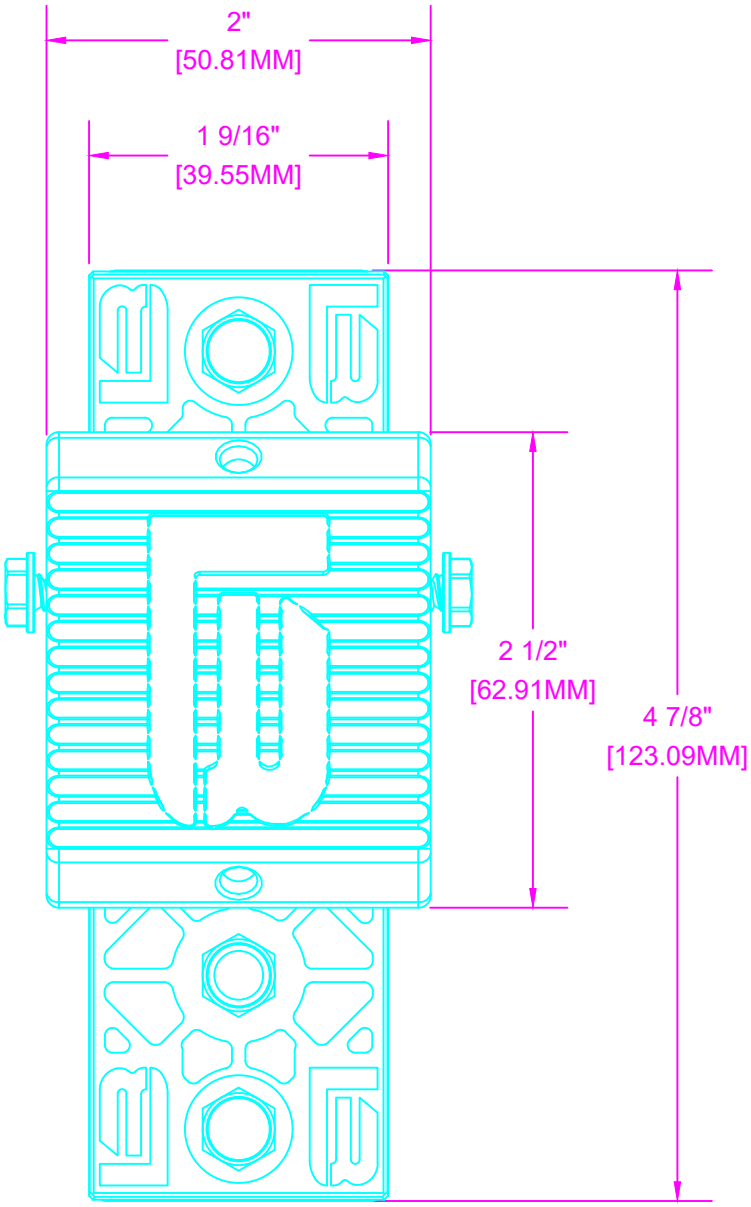

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HD+ CLIP - FRONT VIEW

SCALE: 1:1

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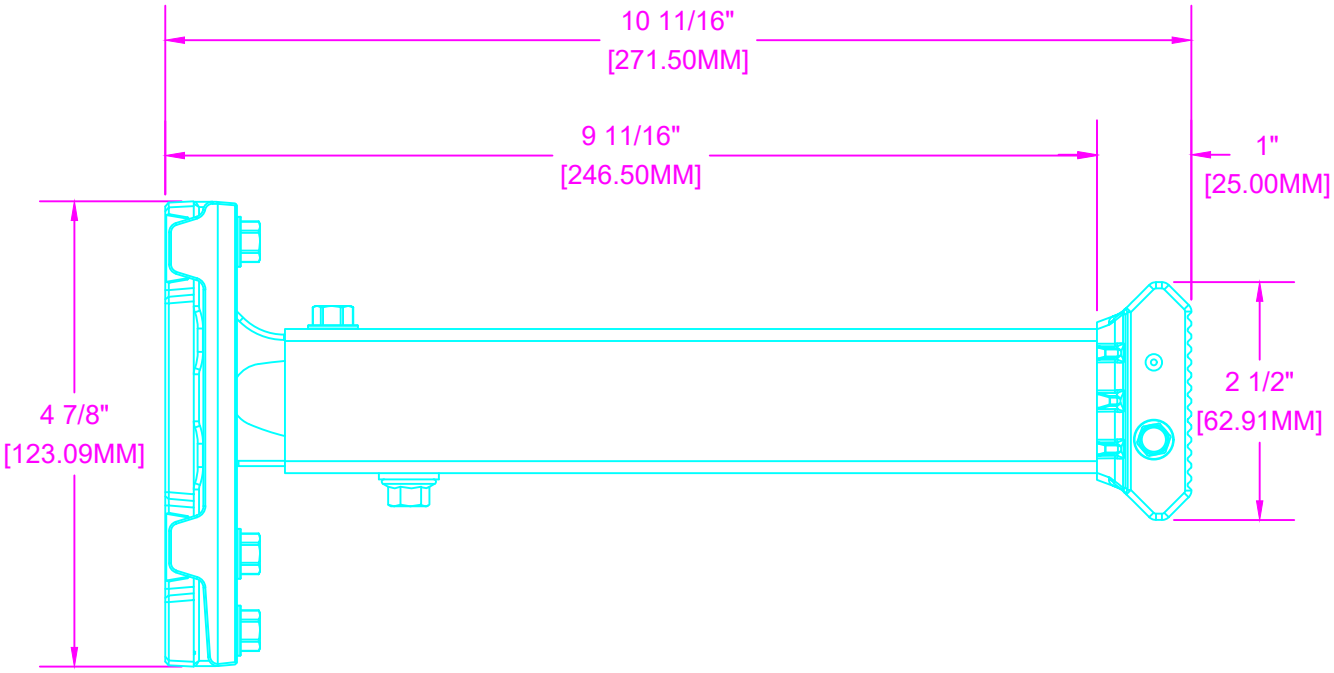
ISSUE DATE: 2023-01-13



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HD+ CLIP - SIDE VIEW

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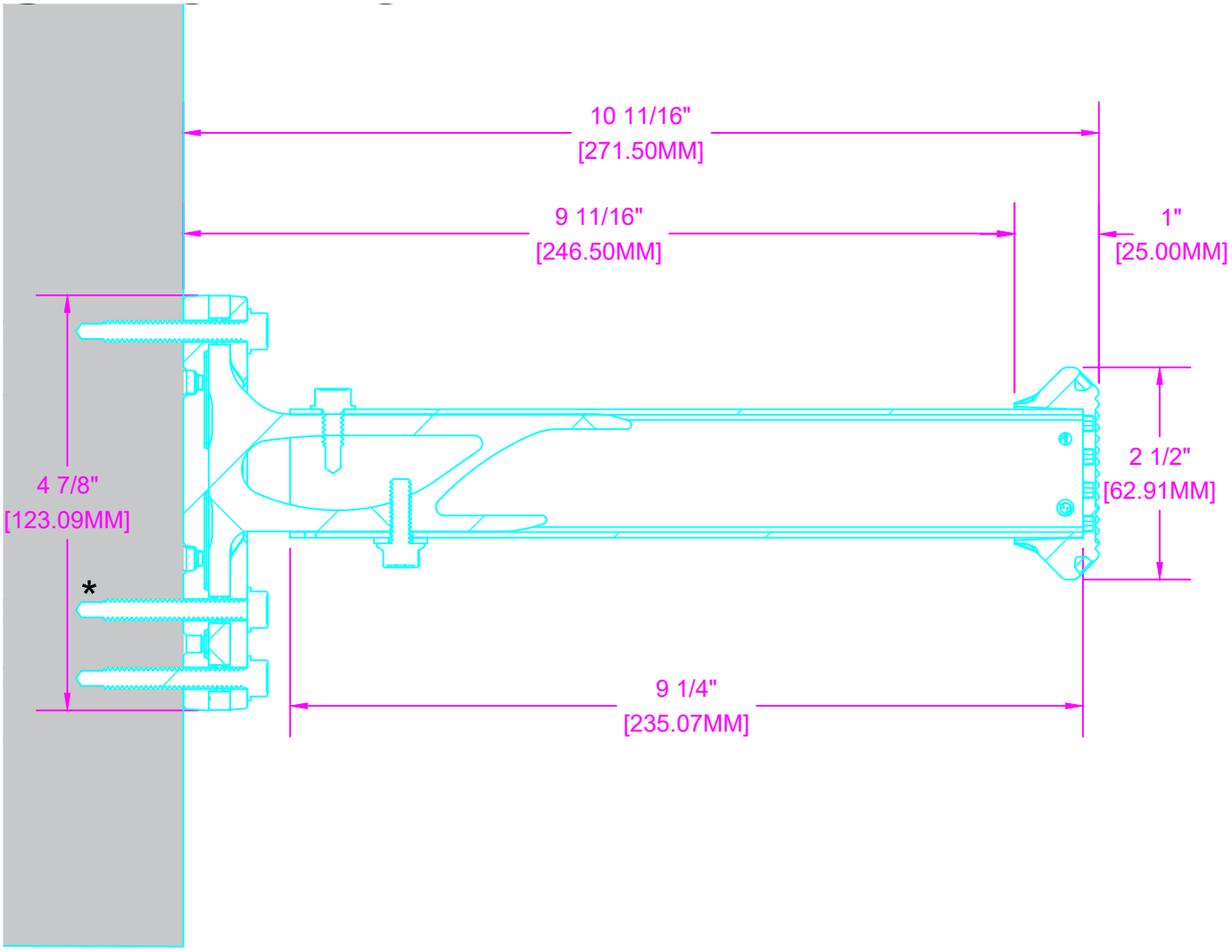

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HD+ CLIP - SECTION VIEW

SCALE: 1:2

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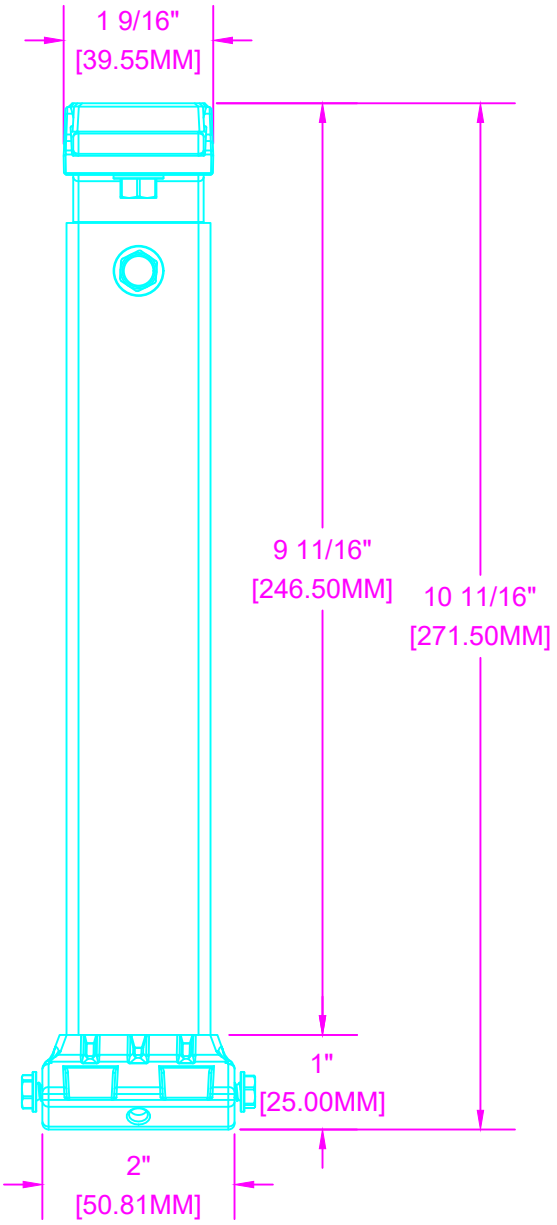

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HD+ CLIP - TOP VIEW

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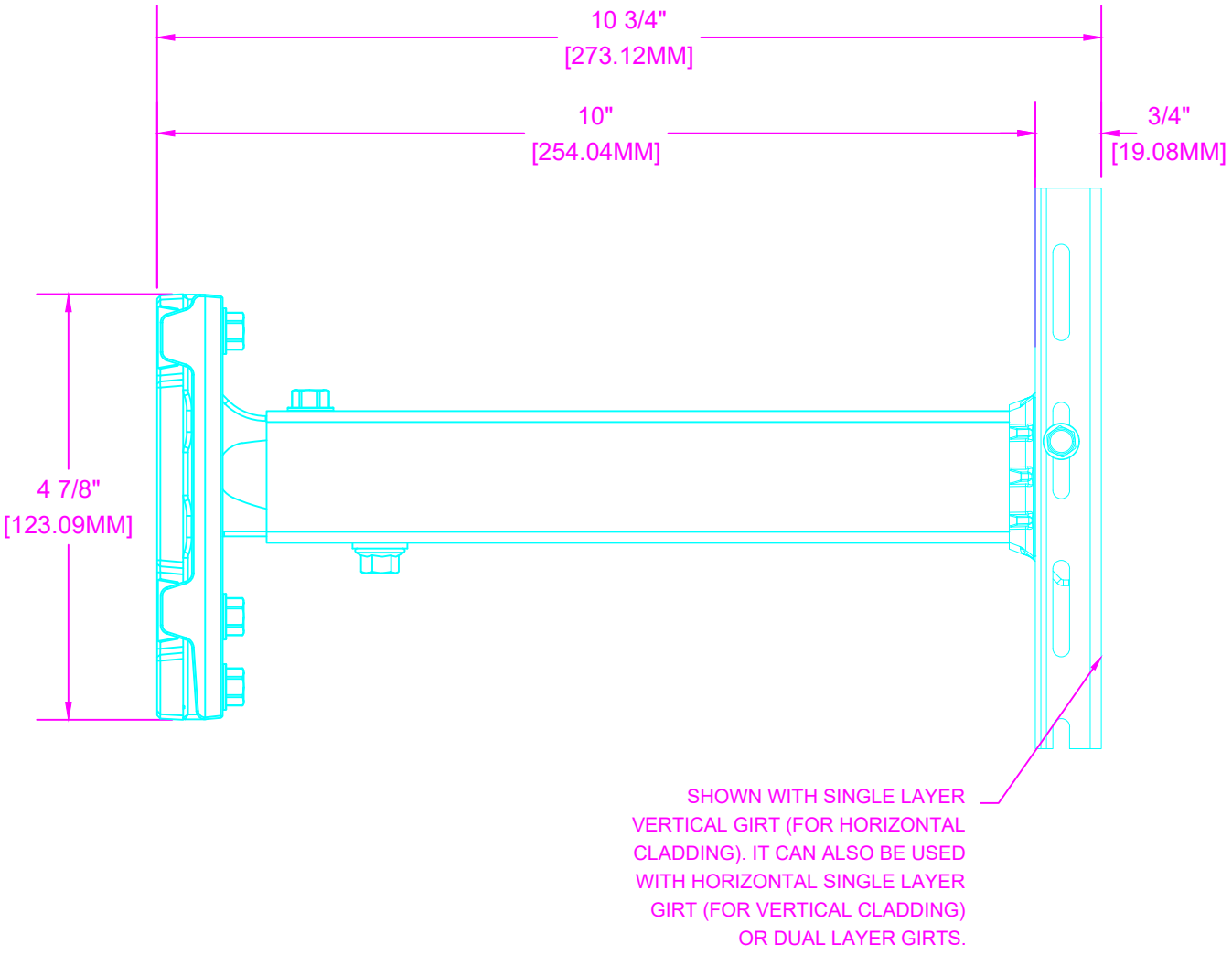

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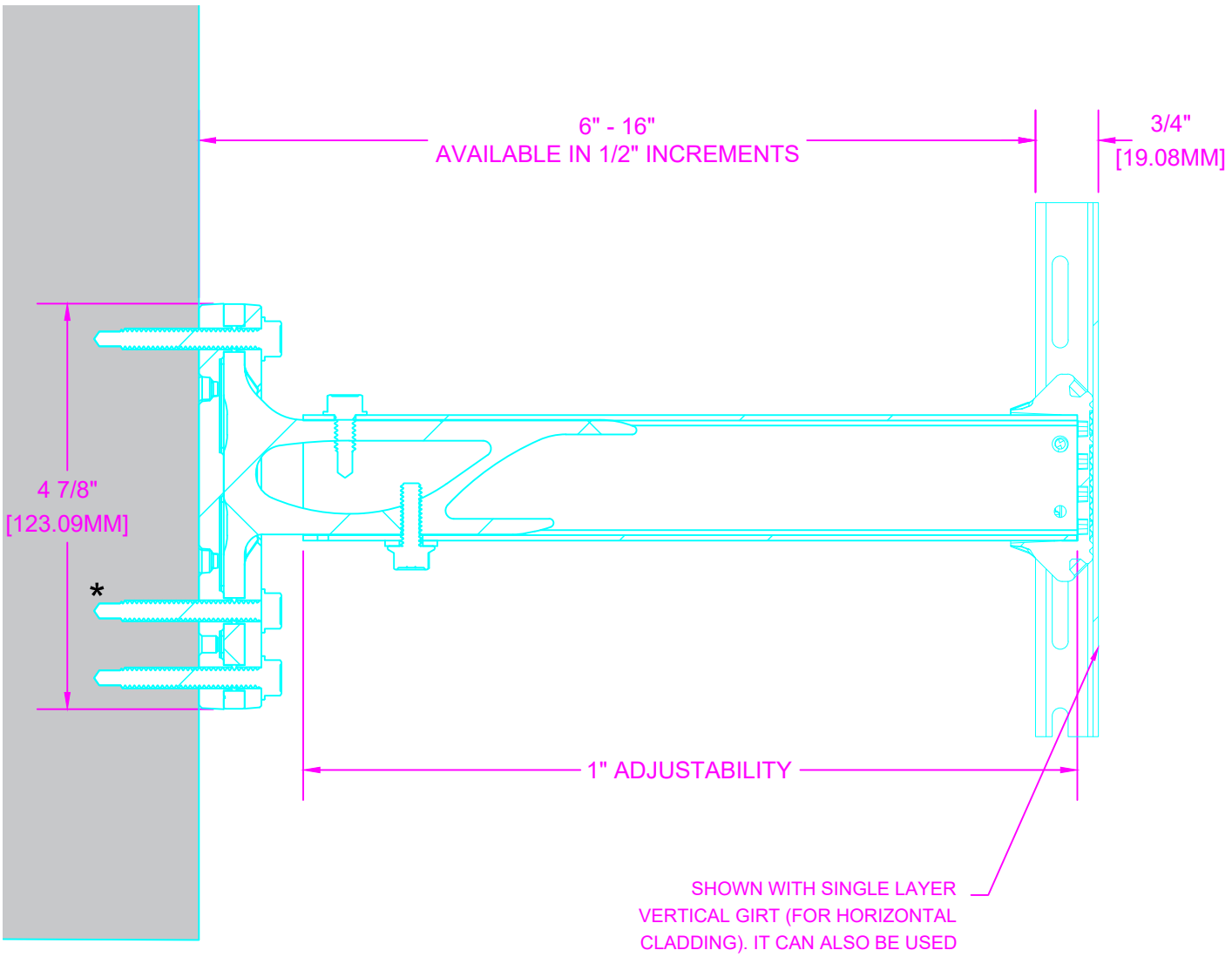
HD+ CLIP W GIRT - SIDE VIEW

SCALE: 1:2

..\TEMPLATES\Longboard_logo_stacked_2022.png

ISSUE DATE: 2023-01-13



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HD+ CLIP W GIRT - SECTION VIEW

SCALE: 1:2

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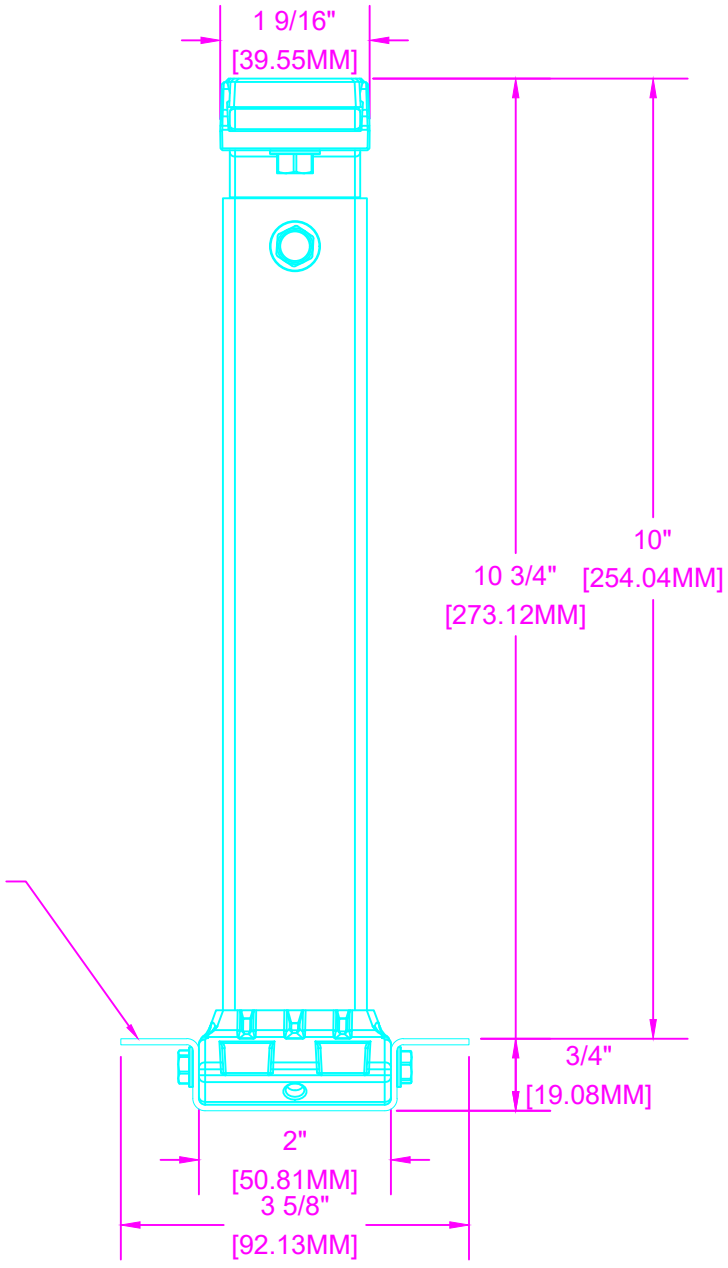

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HD+ CLIP W GIRT - TOP VIEW

SCALE: 1:2

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Appendix B: Simulation Assumptions and Material Properties

General Assumptions

Steady-state simulations were utilized for the thermal evaluation outlined in this report with the following assumptions:

1. Material properties were taken from the 2017 ASHRAE Handbook – Fundamentals for common materials, information provided by Longboard for the system components, and datasheets for proprietary products.
2. Interior and exterior heat transfer coefficients were taken from table 10 on page 26.21 of the 2017 ASHRAE Handbook – Fundamentals. Lightweight claddings have an insignificant impact on the overall thermal resistance of insulated wall assemblies, other than shielding the insulation or sheathing from direct wind exposure. The cladding and secondary structure outboard of the sheathing were not explicitly modeled. The impact of lightweight cladding was incorporated into the exterior heat transfer coefficient per ASHRAE 1365-RP and CSA Z5010:21 so that the results can directly apply to any climate.
3. Contact resistances between the sheathing and insulation and steel components were simulated per ASHRAE 1365-RP and CSA Z5010:21 and varied between R-0.01 (0.002 m^2 K/W) and R-0.17 (0.030 m^2 K/W) depending on the materials and interfaces.
4. Insulation is assumed to be installed tight to the framing and sheathing.

Temperature Index

The temperature index is the ratio of the surface temperature relative to the interior and exterior temperatures. The temperature index has a value between 0 and 1, where 0 is the exterior temperature and 1 is the interior temperature per the following equation:

$$T_i = \frac{T_{suface} - T_{outside}}{T_{inside} - T_{outside}}$$

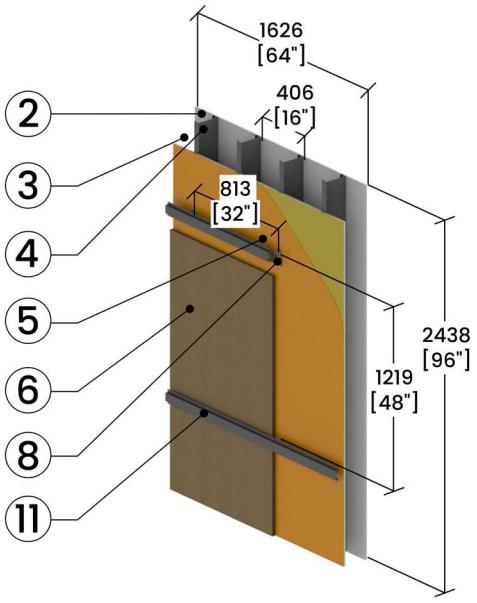
This formula can be rearranged for $T_{surface}$ to determine the surface temperatures for any climate once the temperature index is known for a critical location to evaluate the condensation risk. The temperature indices shown in the temperature profiles in Appendix C are for general information and not intended to predict in-service temperatures subject to transient conditions, variable heating systems, and/or obstructions that restrict heat getting to the wall system. Refer to ASHRAE 1365-RP for a full discussion on the limitations of using steady-state temperature indices for evaluating condensation risk.

Boundary Conditions

Boundary Condition	Combined Convective and Radiative Heat Transfer Coefficient Btu/ft^2· hr·°F (W/m^2 K)
Exterior wall surface with generic cladding	1.5 (8.3)
Interior surface	1.5 (8.3)

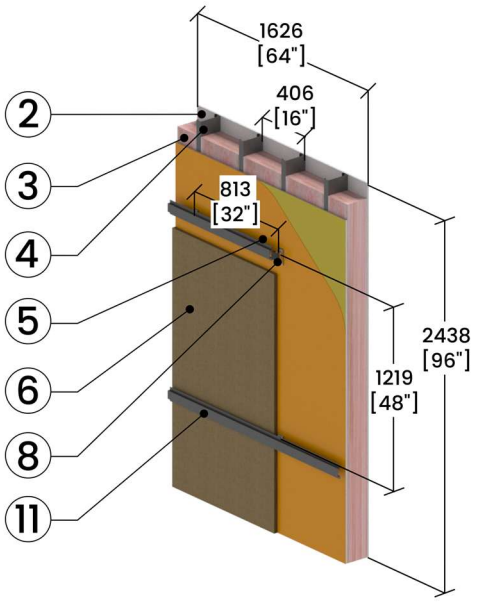
Material Properties

Exterior Insulated Steel-Framed Wall Assembly with HITCH™ SD and Mineral Wool Exterior Insulation



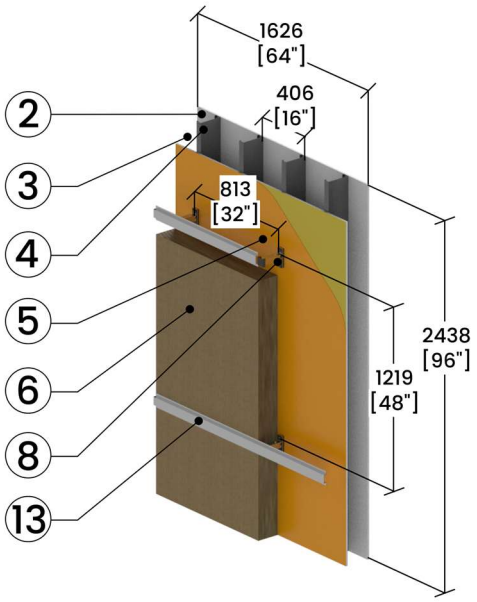
Item	Component	Material	Thermal Conductivity Btu · in/ft^2 · hr·°F (W/m K)	Nominal Resistance ft^2 · hr·°F / Btu (m^2 K/ W)
		Backup Wall		
2	Gypsum wall board	Gypsum	1.1 (0.16)	R-0.5 (0.09 RSI)
3	Stud cavity	Air	-	R-0.9 (0.16 RSI)
4	6" x 1 5/8" steel studs	Galvanized Steel	430 (62)	-
5	Exterior Sheathing	Gypsum	1.1 (0.16)	R-0.6 (0.10 RSI)
		Exterior Wall		
6	Exterior Insulation	Mineral wool	0.24 (0.034)	R-4.2 to R-10.5 (0.74 RSI to 1.85 RSI)
7	Thermal shim	Polyamide	1.7 (0.25)	-
8	HITCH™ SD	Stainless Steel	118 (17)	-
9	Thermal cap	Polyamide	1.7 (0.25)	-
10	3 - #14 fasteners	Galvanized Steel	430 (62)	-
11	Hat track girt	Galvanized Steel	430 (62)	-

Split Insulated Steel-Framed Wall Assembly with HITCH™ SD, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation



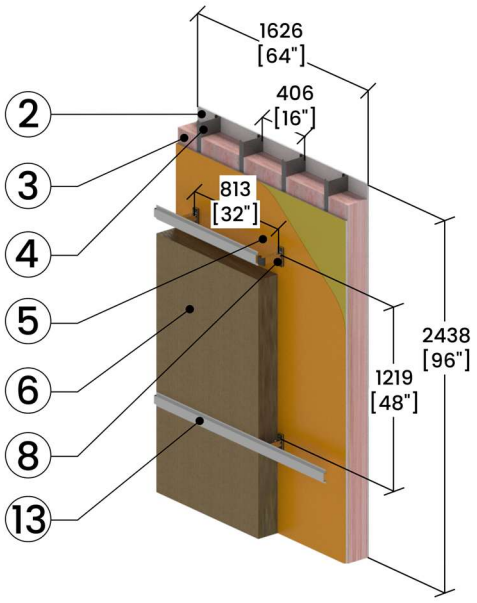
Item	Component	Material	Thermal Conductivity Btu · in/ft² · hr·°F (W/m K)	Nominal Resistance ft² · hr·°F / Btu (m² K/ W)
		Backup Wall		
2	Gypsum wall board	Gypsum	1.1 (0.16)	R-0.5 (0.09 RSI)
3	Stud cavity	R-20 Batt Insulation	0.30 (0.043)	R-20 (3.52 RSI)
4	6" x 1 5/8" steel studs	Galvanized Steel	430 (62)	-
5	Exterior Sheathing	Gypsum	1.1 (0.16)	R-0.6 (0.10 RSI)
		Exterior Wall		
6	Exterior Insulation	Mineral wool	0.24 (0.034)	R-4.2 to R-10.5 (0.74 RSI to 1.85 RSI)
7	Thermal shim	Polyamide	1.7 (0.25)	-
8	HITCH™ SD	Stainless Steel	118 (17)	-
9	Thermal cap	Polyamide	1.7 (0.25)	-
10	3 - #14 fasteners	Galvanized Steel	430 (62)	-
11	Hat track girt	Galvanized Steel	430 (62)	-

Exterior Insulated Steel-Framed Wall Assembly with HITCH™ HD and HD+, and Mineral Wool Exterior Insulation



Item	Component	Material	Thermal Conductivity Btu · in/ft² · hr·°F (W/m K)	Nominal Resistance ft² · hr·°F / Btu (m² K/ W)
		Backup Wall		
2	Gypsum wall board	Gypsum	1.1 (0.16)	R-0.5 (0.09 RSI)
3	Stud cavity	Air	-	R-0.9 (0.16 RSI)
4	6" x 1 5/8" steel studs	Galvanized Steel	430 (62)	-
5	Exterior Sheathing	Gypsum	1.1 (0.16)	R-0.6 (0.10 RSI)
		Exterior Wall		
6	Exterior Insulation	Mineral wool	0.24 (0.034)	R-12.6 to R-67.2 (2.22 RSI to 11.84 RSI)
7	Thermal shim	Polyamide	1.7 (0.25)	-
8	HITCH™ HD or HD+	6063 aluminum alloy	1395 (201)	-
9	HD thermal base cap	Polyamide	1.7 (0.25)	-
10	Post arm	Stainless Steel	118 (17)	-
11	Thermal cap	Polyamide	1.7 (0.25)	-
12	3 - #14 fasteners	Galvanized Steel	430 (62)	-
13	Hat track girt	Galvanized Steel	430 (62)	-

Split Insulated Steel-Framed Wall Assembly with HITCH™ HD and HD+, Mineral Wool Exterior Insulation, and R-20 Batt Cavity Insulation



Item	Component	Material	Thermal Conductivity Btu · in/ft² · hr·°F (W/m K)	Nominal Resistance ft² · hr·°F / Btu (m² K/ W)
		Backup Wall		
2	Gypsum wall board	Gypsum	1.1 (0.16)	R-0.5 (0.09 RSI)
3	Stud cavity	R-20 Batt Insulation	0.30 (0.043)	R-20 (3.52 RSI)
4	6" x 1 5/8" steel studs	Galvanized Steel	430 (62)	-
5	Exterior Sheathing	Gypsum	1.1 (0.16)	R-0.6 (0.10 RSI)
		Exterior Wall		
6	Exterior Insulation	Mineral wool	0.24 (0.034)	R-12.6 to R-67.2 (2.22 RSI to 11.84 RSI)
7	Thermal shim	Polyamide	1.7 (0.25)	-
8	HITCH™ HD or HD+	6063 aluminum alloy	1395 (201)	-
9	HD thermal base cap	Polyamide	1.7 (0.25)	-
10	Post arm	Stainless Steel	118 (17)	-
11	Thermal cap	Polyamide	1.7 (0.25)	-
12	3 - #14 fasteners	Galvanized Steel	430 (62)	-
13	Hat track girt	Galvanized Steel	430 (62)	-

Appendix C: Simulated Temperature Profiles

Appendix C illustrates example temperature distribution of the HITCH™ cladding attachment Systems. The following figures are provided for one insulation level as indicated in the title. The profiles are presented as a temperature index (between 0 and 1). See Appendix B for more discussion on temperature index.

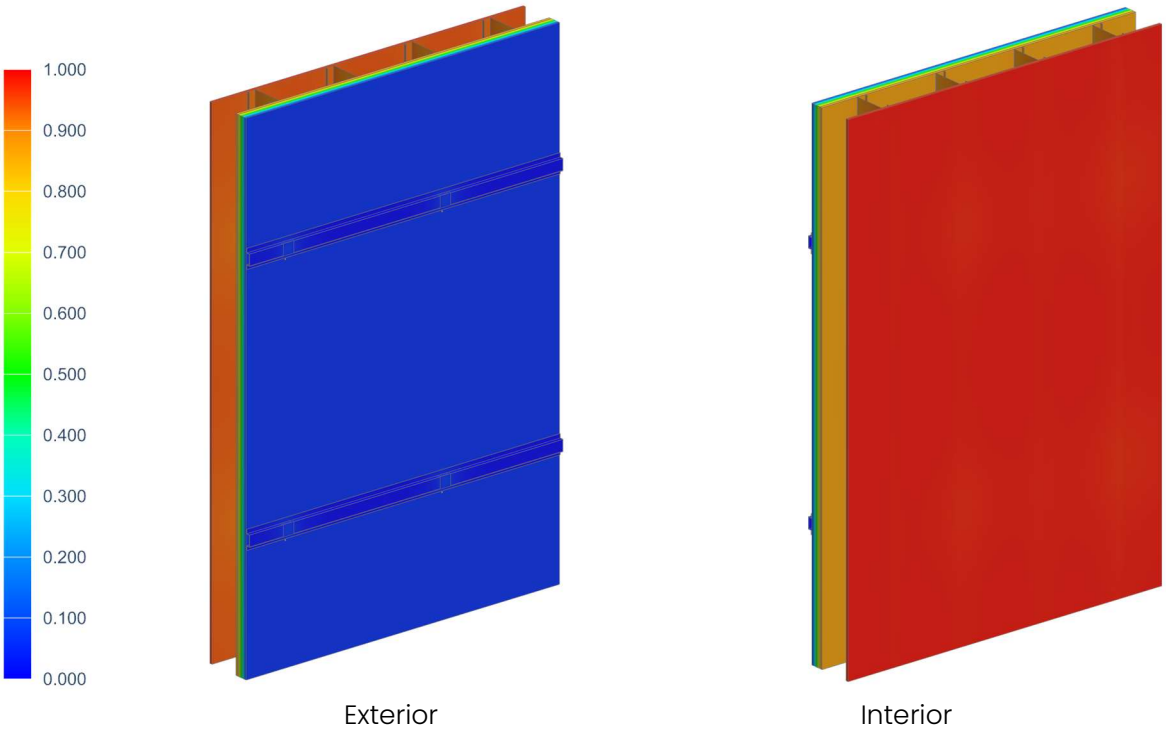


Figure C1. Temperature Profile of the HITCH™ SD Clip with Horizontal Girt and 2 inches of Mineral Wool Exterior Insulation

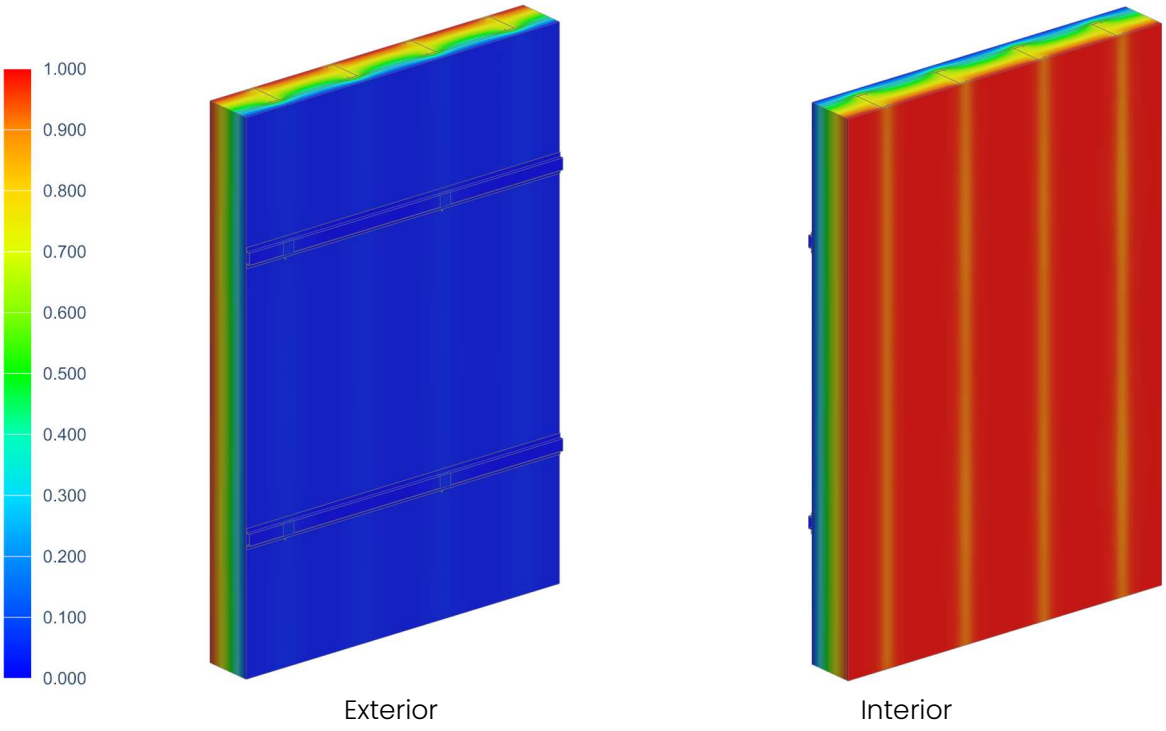


Figure C2. Temperature Profile of the HITCH™ SD Clip with Horizontal Girt, 2 inches of Mineral Wool Exterior Insulation and R-20 Cavity Insulation

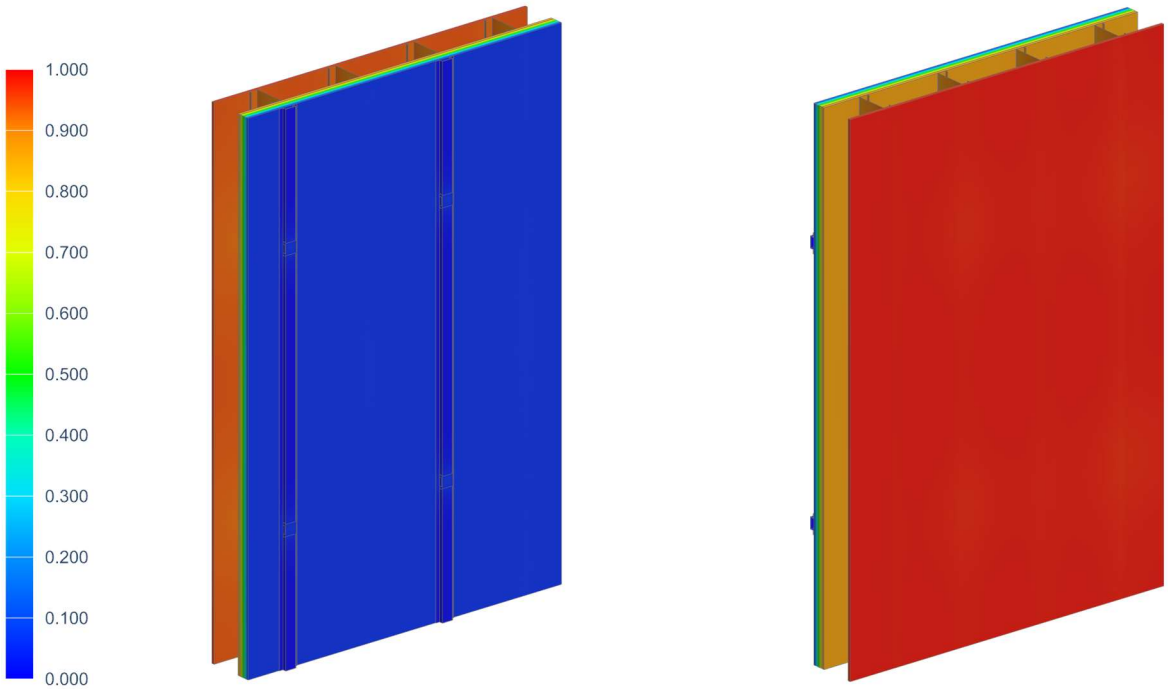


Figure C3. Temperature Profile of the HITCH™ SD Clip with Vertical Girt and 2 inches of Mineral Wool Exterior Insulation

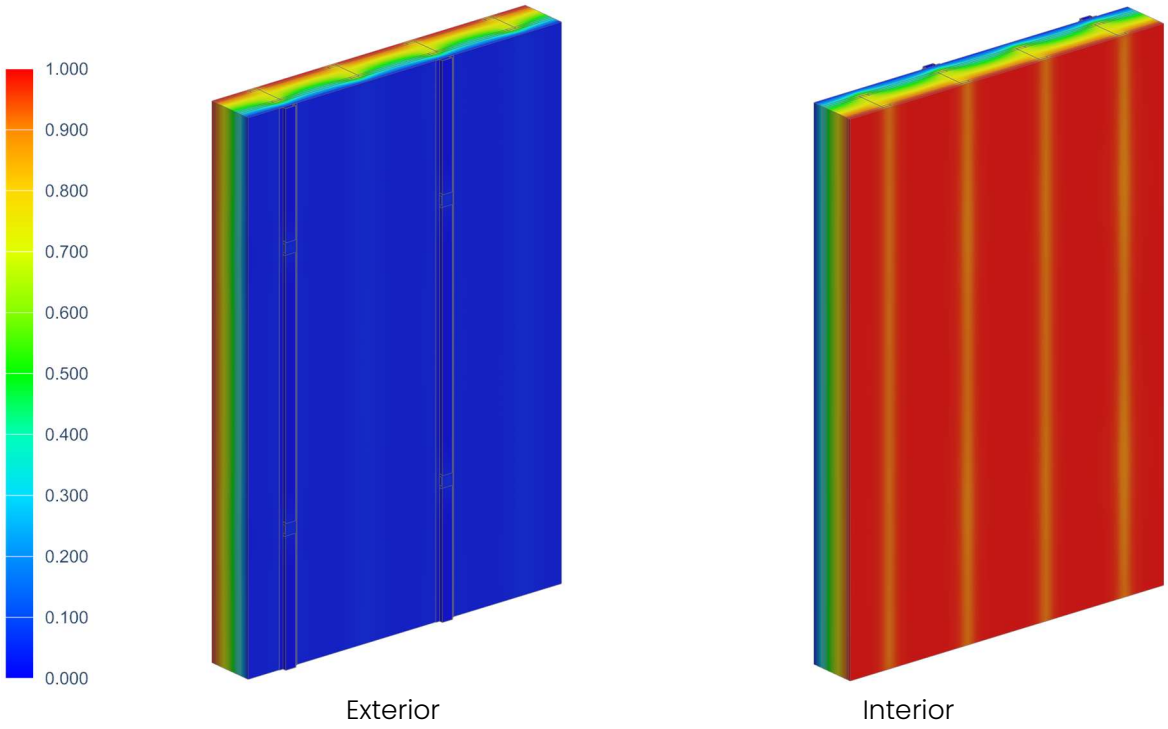


Figure C4. Temperature Profile of the HITCH™ SD Clip with Vertical Girt, 2 inches of Mineral Wool Exterior Insulation and R-20 Cavity Insulation

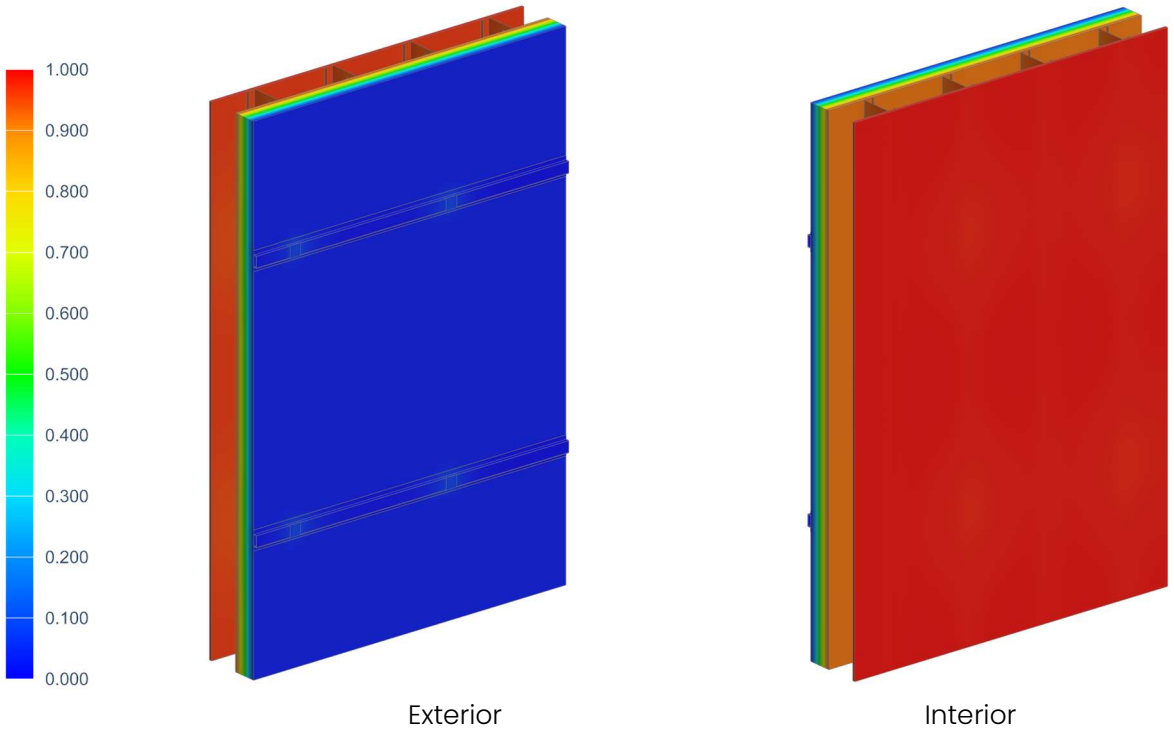


Figure C5. Temperature Profile of the HITCH™ HD Clip with Horizontal Girt and 4 inches of Mineral Wool Exterior Insulation

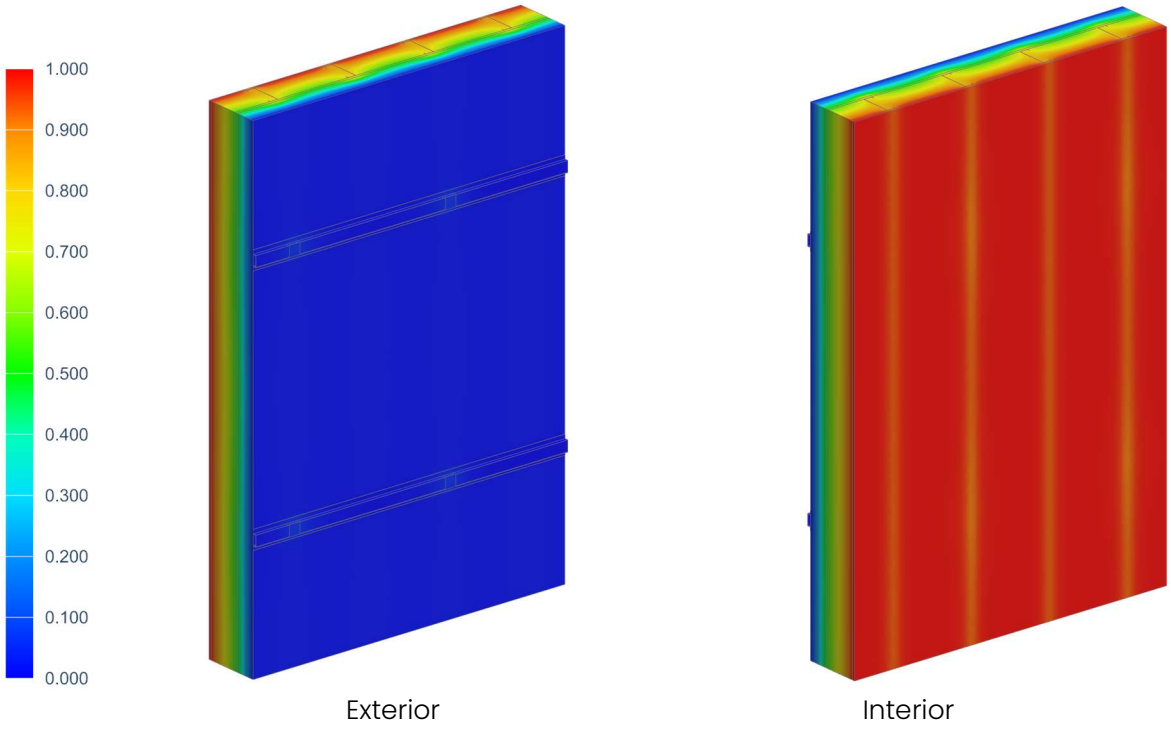


Figure C6. Temperature Profile of the HITCH™ HD Clip with Horizontal Girt, 4 inches of Mineral Wool Exterior Insulation and R-20 Cavity Insulation

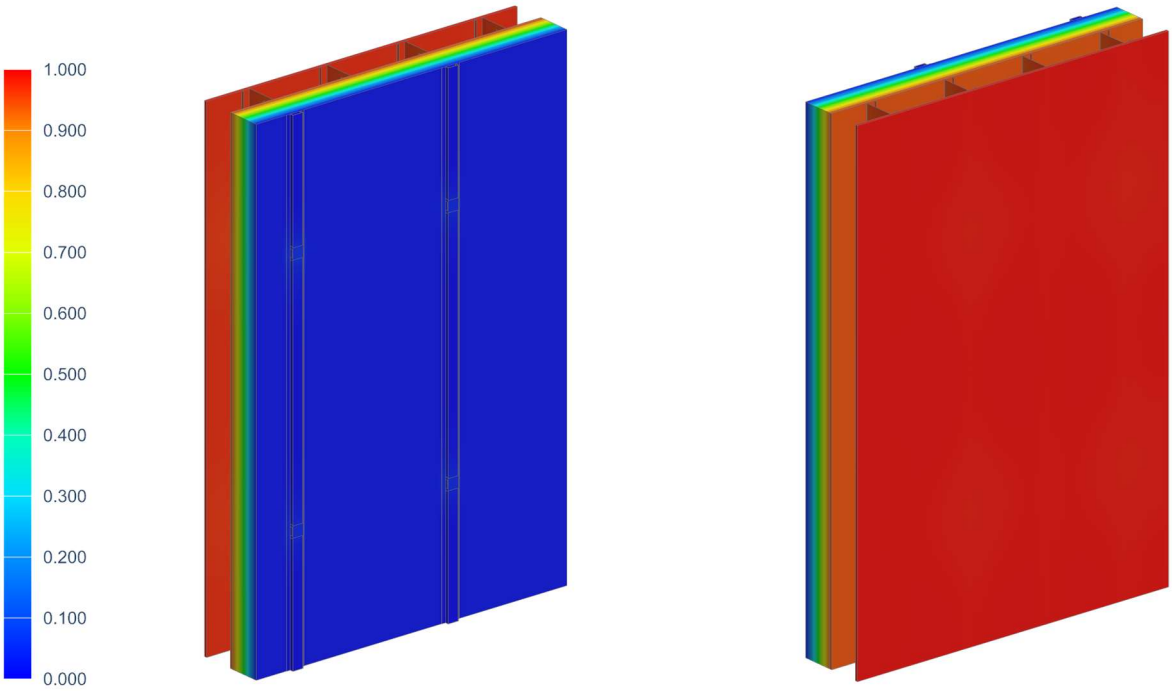


Figure C7. Temperature Profile of the HITCH™ HD Clip with Vertical Girt and 6 inches of Mineral Wool Exterior Insulation

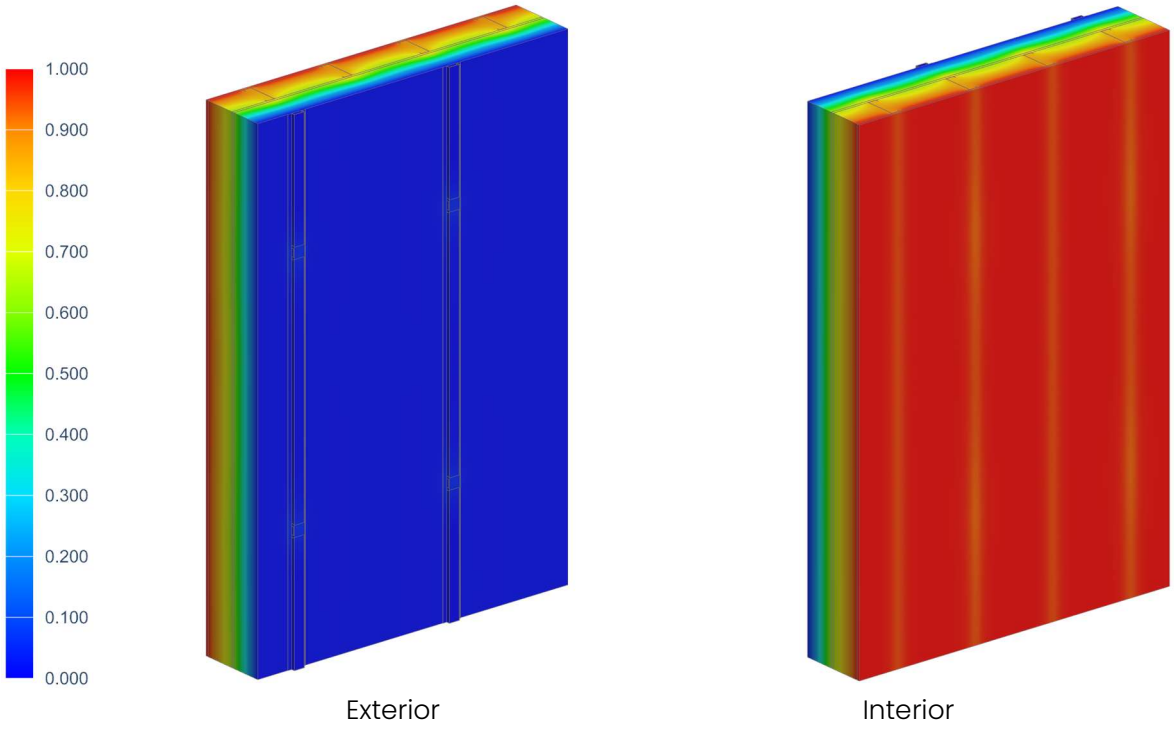


Figure C8. Temperature Profile of the HITCH™ HD Clip with Vertical Girt, 6 inches of Mineral Wool Exterior Insulation and R-20 Cavity Insulation

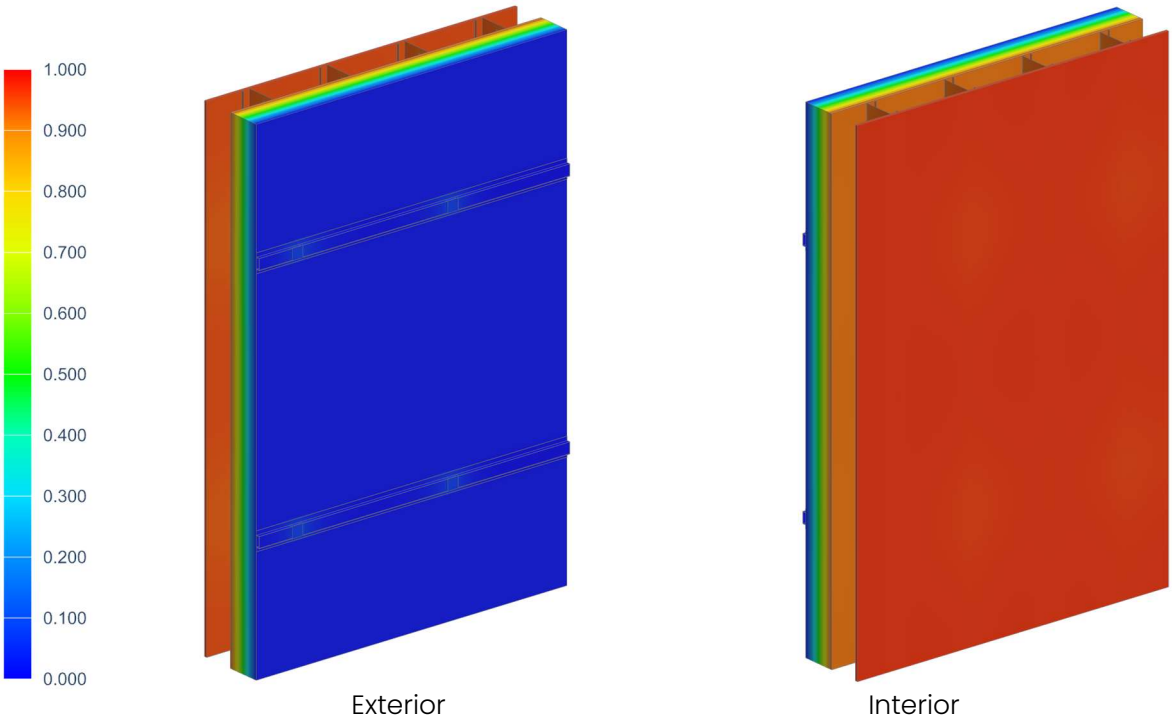


Figure C9. Temperature Profile of the HITCH™ HD+ Clip with Horizontal Girt and 6 inches of Mineral Wool Exterior Insulation

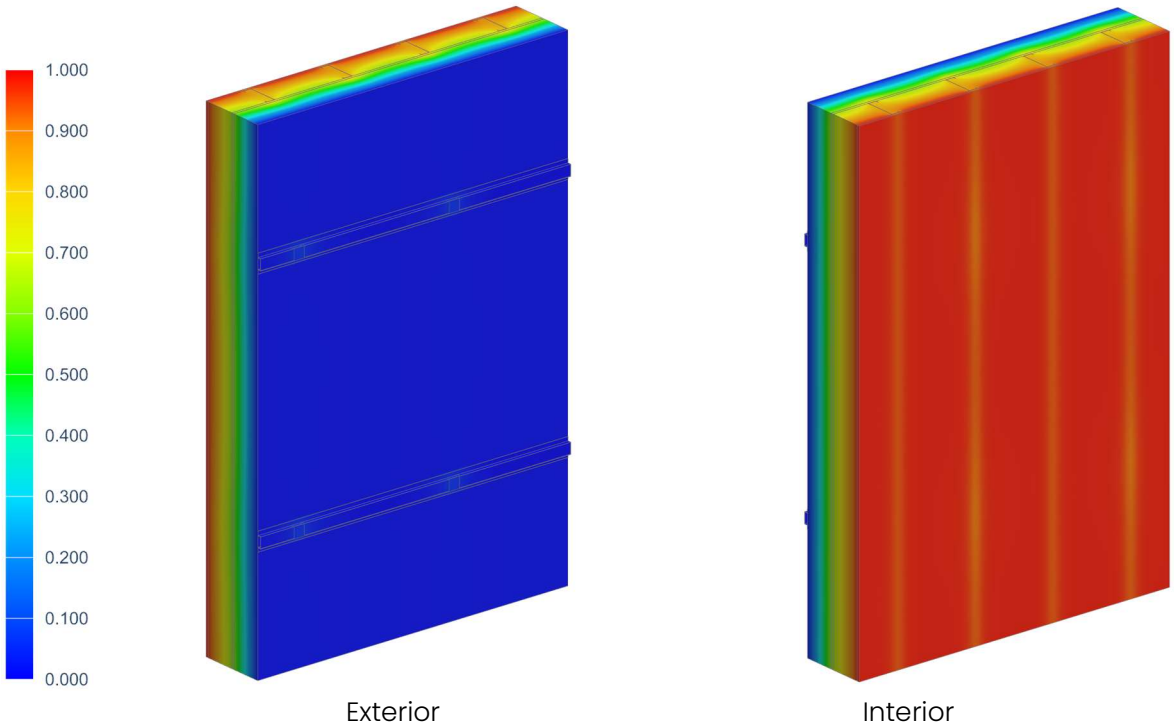


Figure C10. Temperature Profile of the HITCH™ HD+ Clip with Horizontal Girt, 6 inches of Mineral Wool Exterior Insulation and R-20 Cavity Insulation