GREENHECK
Building Value in Air.

Document 487915
Structural Supports
Models ESD-435, ESD-635, EHH-401, EHH-501, and EHH-601

Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.

Ratings

1. Design load: 25PSF
2. Max live load movement: 1.5 in.
3. All structural steel substrate shall be min. 0.25 in. thick FY= 36 KSI
4. All concrete substrates shall be min. 3000 PSI
5. Concrete masonry shall be ASTM C90, Type II, 2000 PSI, grout-filled
6. Max size: 240 (in.) vertical support
7. Max single section widths (see chart)

Max Section Widths at Various Heights (in.)				
Max Section Width	60	78	96	120
Opening Height	240	226	214	198

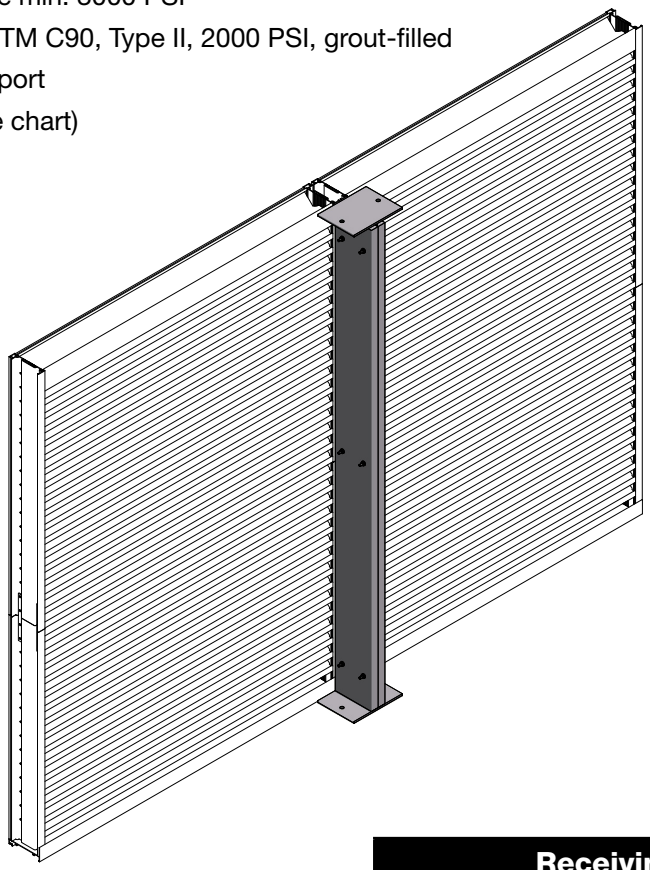


Table of Contents

General Louver Installation Instructions 2
Optional Support Instructions 2
Structural Support Base Plate Location 3
Structural Support Assembly Steps 4
Structural Support Overlap Table 5
Structural Support Mounting Conditions:
CMU or Concrete 6-8
Concrete 9-10
CMU 11
Steel 12-15
Structural Support Mounting Parts 16

Receiving and Handling

Upon receiving louvers, check for both obvious and hidden damage. If damage is found, record all necessary information on the bill of lading and file a claim with the final carrier. Check to be sure that all parts of the shipment, including accessories are accounted for.

Safety Warning

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.

General Louver Installation Instructions

1. Locate all crates, boxes, cartons, etc.
2. Use care when handling louver sections or accessories to prevent damage. Louvers are to be carefully lifted by the louver frame or supports. Use multiple lifting points when possible to avoid deformation or distortion of louver components. **DO NOT LIFT LOUVERS BY THE LOUVER BLADES.** Use appropriate caution to prevent damage to the louver finish.
3. Remove louvers and any provided accessories from the packaging and inspect for damages. Verify louver dimensions and that all required pieces are present.
4. Single section louvers will ship fully assembled. Multiple section assemblies will ship as individual louver sections to be combined into the larger assembly at installation. Large multiple section louver assemblies may ship in multiple crates.
5. All louver sections will have a factory applied louver label affixed. This label will identify the louver size and a Tag identification if one was provided during the order process.
6. Verify that all required installation hardware is available, to include mounting angles and fasteners (customer provided or optional manufacturer provided). Inspect the opening for any damage or issues that may affect installation of the louvers. Remove any obstructions or debris as required. Adequate substrate depth must be verified.
7. Check the dimensions of the opening to verify the louver will fit correctly. Check the opening is square and plumb.
8. Louvers are custom built per order to fit the application and do not need to be field cut or modified. Check the dimensions of the louver to ensure fit prior to installation.

Optional Support Installation Instructions

1. Locate mounting angles and fasteners required to attach the louver to the structure. Clip angles and fasteners are by others unless the optional mounting angles have been ordered from manufacturer with the louvers. Anchors to the structure are by others and are not manufacturer provided.
2. Locate and layout the louver sections face down in front of the building opening in their respective locations and mark the centerline of the mullion locations on the optional sill pan and substrate.
3. Locate the optional extended sill, if provided, and install in the opening. (see extended sill details)
4. Install deadload shims for the louver and below the structural support mounting pads
5. Refer to Table 1. For structural mount locations in the substrate opening, some conditions may need to use secondary support angle. See Figure 1 & 2 for details.
6. While the louver is face down, start with the bottom left most louver and slide the matching mullion flange into the accessory races. Repeat with top section louvers as required. (mullion flange will end at section seam)
7. Install alignment plates IOM # 482877 and splice angle IOM # 468788 as required.
8. Lay out the two halves of the structural support and loosely fasten the interior row of fasteners between the two halves of the support beam (See Figure 3). The two halves are male & female matched pair, allow enough slack to open the halves around the mounting plates.
9. Lift the supports vertically (the 2.5” slot at the top/head of the opening) and arrange around the structural mounts with the opening slot towards the exterior of the building and tighten the 1/4-20 fasteners to secure the support around the mount (keep a 3/8 (in.) gap in the slot to allow easy install of the mullion flange). See Figure 3.
10. Install the 1/4-20 X 3.25” SS HHCS through the slot and upper structural mount finger tight only.
11. Place the two left most louver sections in the opening and insert the mullion flange into the 3/8 (in.) gap of the vertical beam (See Figure 3). Shim around the perimeter and between the structural support and the back of the louver to maintain spacing for backer rod and caulk joint.
12. Use clip angles or perimeter attachment and secure the first louver/s.
13. Install the next louver in line, (shim as required) and insert the mullion flange into the structural support next to the previous louver.
14. Tighten the exterior row of fasteners on the support tube to temporarily secure the louver in location.
15. Use the exterior holes in the structural support beam as a guide to drill through the mullion flanges and bolt together. See Figure 4 for complete assembly.
16. Fully tighten all fasteners on the structural support tube, note the 3.25” bolt will tighten against the shoulder; this is intentional to allow for vertical movement within the slot.
17. Repeat previous steps by installing the next louver in the line and structural supports along the opening.

STRUCTURAL SUPPORT BASE PLATE LOCATION

Figure 1

Structural Mount Location on Building Substrate

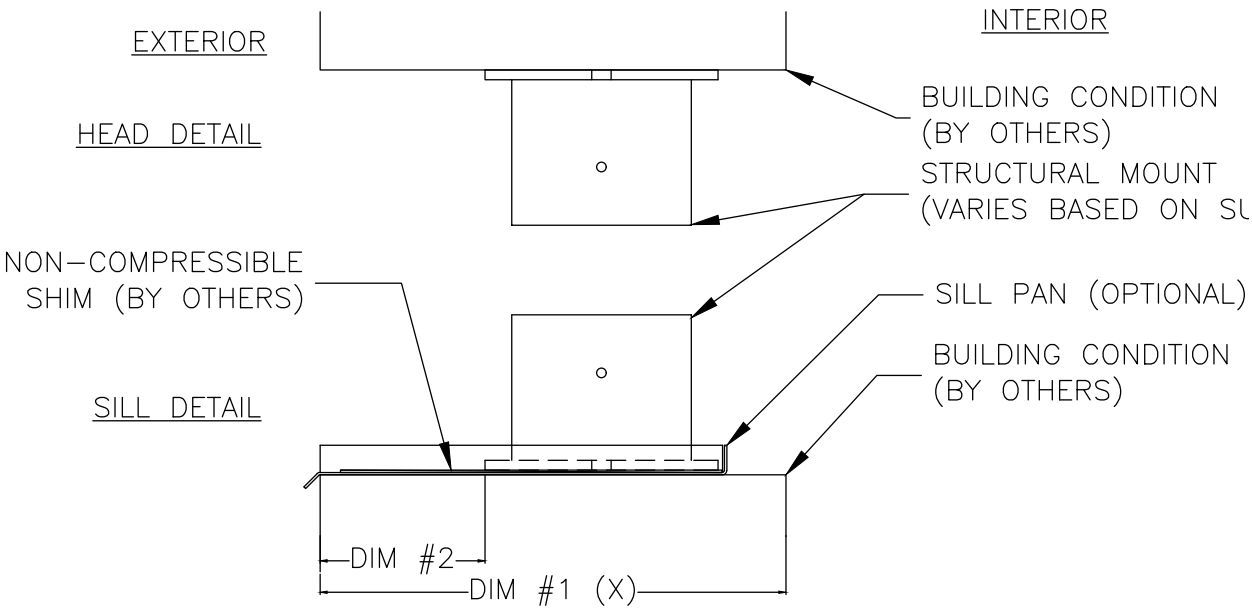
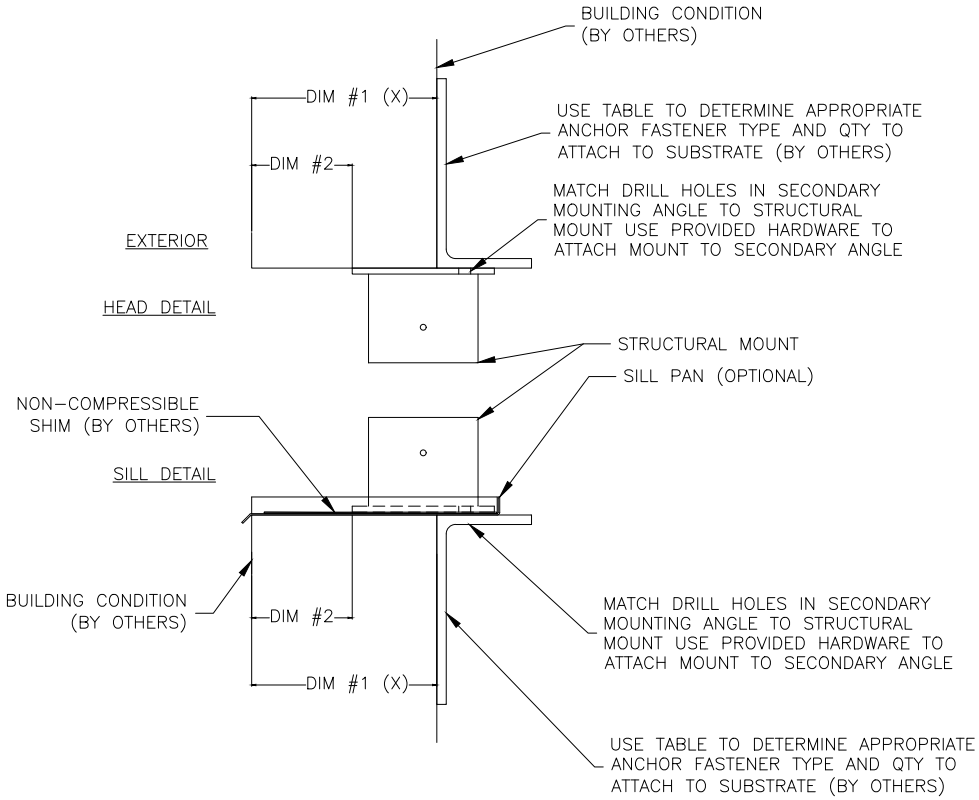


Figure 2

When Secondary Mounting Angle is Required



STRUCTURAL SUPPORT ASSEMBLY STEPS

Figure 3

Support Column Before Louver Install

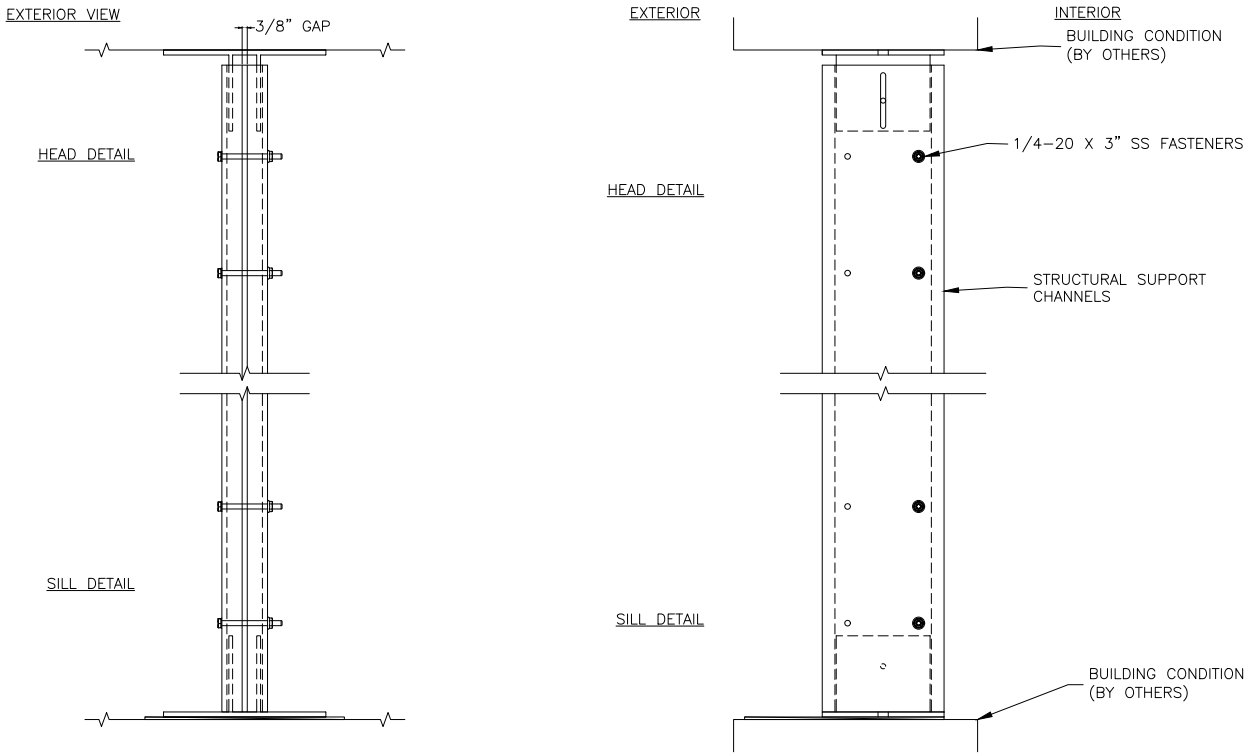
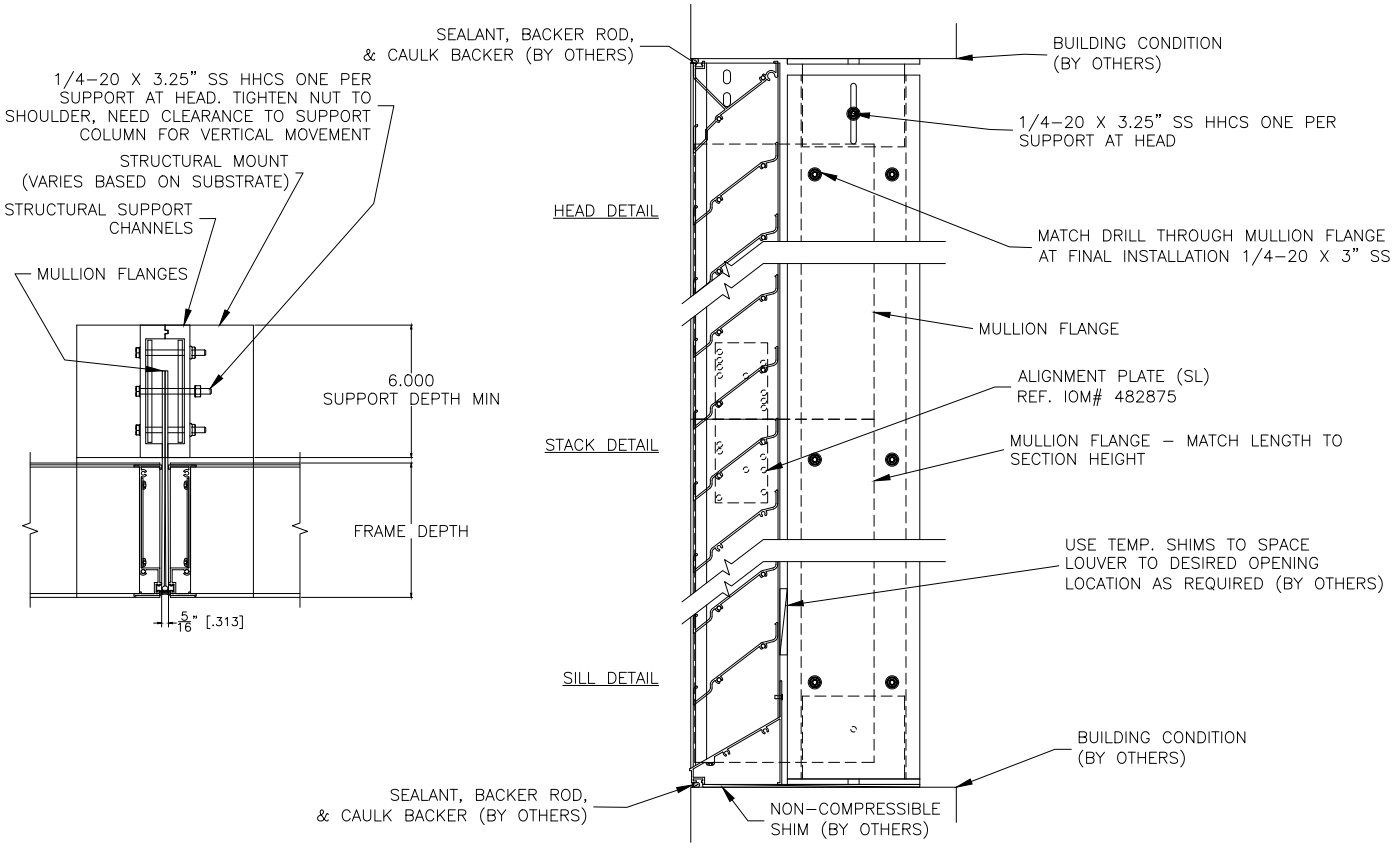


Figure 4

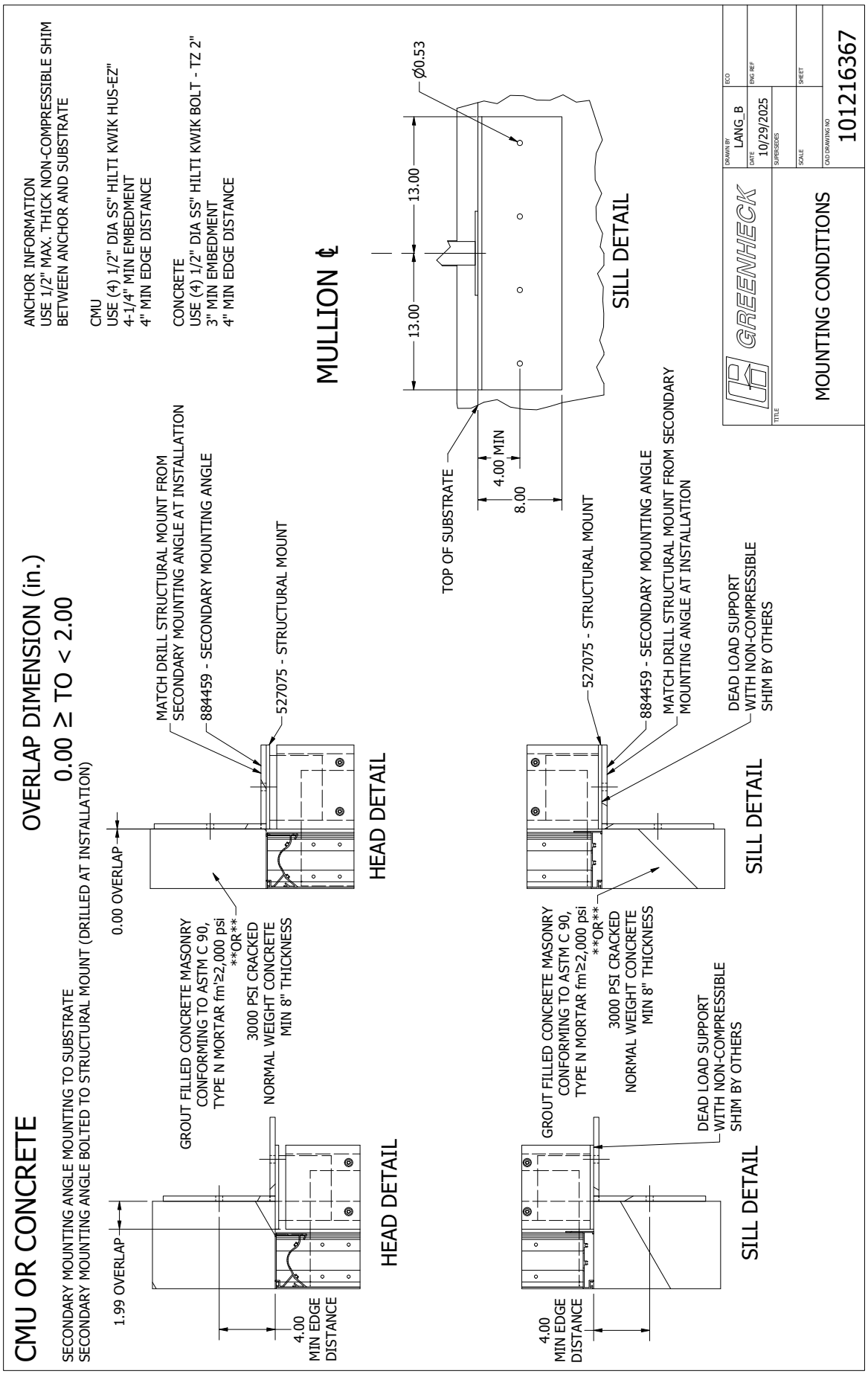
Install Louver to Support



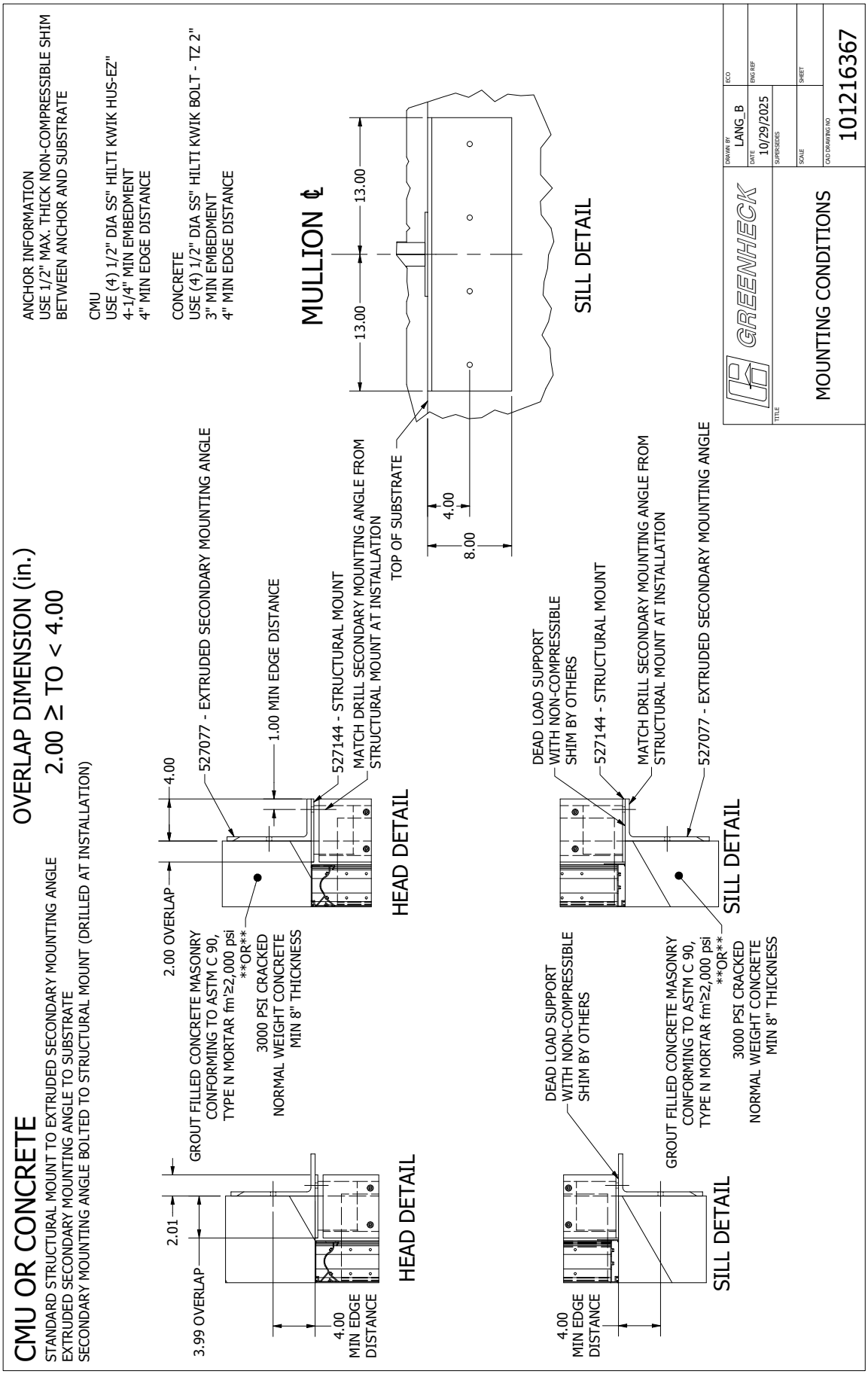
STRUCTURAL SUPPORT OVERLAP TABLE 1

Mat Min Req.	Louver Frame Depth (in.)	Accessories	SUBSTRATE DEPTH (X) DIM #1 (in.)	STRUCTRUAL MOUNT (LOCATION ON SUBSTRATE) DIM #2 (in.)	Overlap Range = DIM #1 - DIM #2 / Parts QTY = 2X PER SUPPORTED MULLION				
STEEL					0.0≥ To <2	2≥ To <3	3≥ To <6	≥6	-
ASTM A36 1/4 (in.) MIN	4	None	8 ≤ X ≥ 16	4.25	884459 - FABRICATED SECONDARY MOUNTING ANGLE 527075 - STRUCT. MOUNT **BY OTHERS-** USE (5) 0.38 S.S. Screws 300 series (by others) 1 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527144 - STRUCT. MOUNT **BY OTHERS-** USE (5) 0.38 S.S. Screws 300 series (by others) 1 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527142 - STRUCT. MOUNT EXT 2 (in.) **BY OTHERS-** USE (6) 1/4-20 S.S. SCREWS 300 SERIES (BY OTHERS) 1 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527143 - STRUCT. MOUNT EXT 4 (in.) **BY OTHERS-** USE (6) 1/4-20 S.S. SCREWS 300 SERIES (BY OTHERS) 1 (in.) MIN EDGE DISTANCE	-
		Screen		5.00					
		1 (in.) Blankoff		5.25					
		Screen & 1 (in.) Blankoff		6.00					
	5	None		5.25					
		Screen		6.00					
		1 (in.) Blankoff		6.25					
		Screen & 1 (in.) Blankoff		7.00					
	6	None	8 ≤ X ≥ 17	6.25					
		Screen		7.00					
		1 (in.) Blankoff		7.25					
		Screen & 1 (in.) Blankoff		8.00					
CONCRETE					0.0≥ To <2	2≥ To <4	4≥ To <6	6≥ To <8	≥8
3 KSI	4	None	8 ≤ X ≥ 16	4.25	884459 - FABRICATED SECONDARY MOUNTING ANGLE 527075 - STRUCT. MOUNT **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK BOLT - TX2 3 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527144 - STRUCT. MOUNT **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK BOLT - TX2 3 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527142 - STRUCT. MOUNT EXT 2 (in.) **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK BOLT - TX2 3 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527143 - STRUCT. MOUNT EXT 4 (in.) **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK BOLT - TX2 3 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527075 - STRUCT. MOUNT **BY OTHERS-** USE (2) 1/2 (in.) DIA SS HILTI KWIK BOLT - TX2 3 (in.) MIN EMBEDMENT 5 (in.) MIN EDGE DISTANCE
		Screen		5.00					
		1 (in.) Blankoff		5.25					
		Screen & 1 (in.) Blankoff		6.00					
	5	None		5.25					
		Screen		6.00					
		1 (in.) Blankoff		6.25					
		Screen & 1 (in.) Blankoff		7.00					
	6	None	8 ≤ X ≥ 17	6.25					
		Screen		7.00					
		1 (in.) Blankoff		7.25					
		Screen & 1 (in.) Blankoff		8.00					
CMU					0.0≥ To <2	2≥ To <4	4≥ To <6	6≥ To ≤7.25	-
GROUT FILLED CMU WITH 2 KSI	4	None	8 ≤ X ≥ 12.25	4.25	884459 - FABRICATED SECONDARY MOUNTING ANGLE 527075 - STRUCT. MOUNT **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK HUS-EZ (in.) 4 1/4 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527144 - STRUCT. MOUNT **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK HUS-EZ (in.) 4 1/4 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527142 - STRUCT. MOUNT EXT 2 (in.) **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK HUS-EZ (in.) 4 1/4 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	527077 - EXTRUDED SECONDARY MOUNTING ANGLE 527143 - STRUCT. MOUNT EXT 4 (in.) **BY OTHERS-** USE (4) 1/2 (in.) DIA SS HILTI KWIK HUS-EZ (in.) 4 1/4 (in.) MIN EMBEDMENT 4 (in.) MIN EDGE DISTANCE	NA
		Screen		5.00					
		1 (in.) Blankoff		5.25					
		Screen & 1 (in.) Blankoff		6.00					
	5	None	8 ≤ X ≥ 13.25	5.25					
		Screen		6.00					
		1 (in.) Blankoff		6.25					
		Screen & 1 (in.) Blankoff		7.00					
	6	None	8 ≤ X ≥ 14.25	6.25					
		Screen		7.00					
		1 (in.) Blankoff		7.25					
		Screen & 1 (in.) Blankoff		8.00					

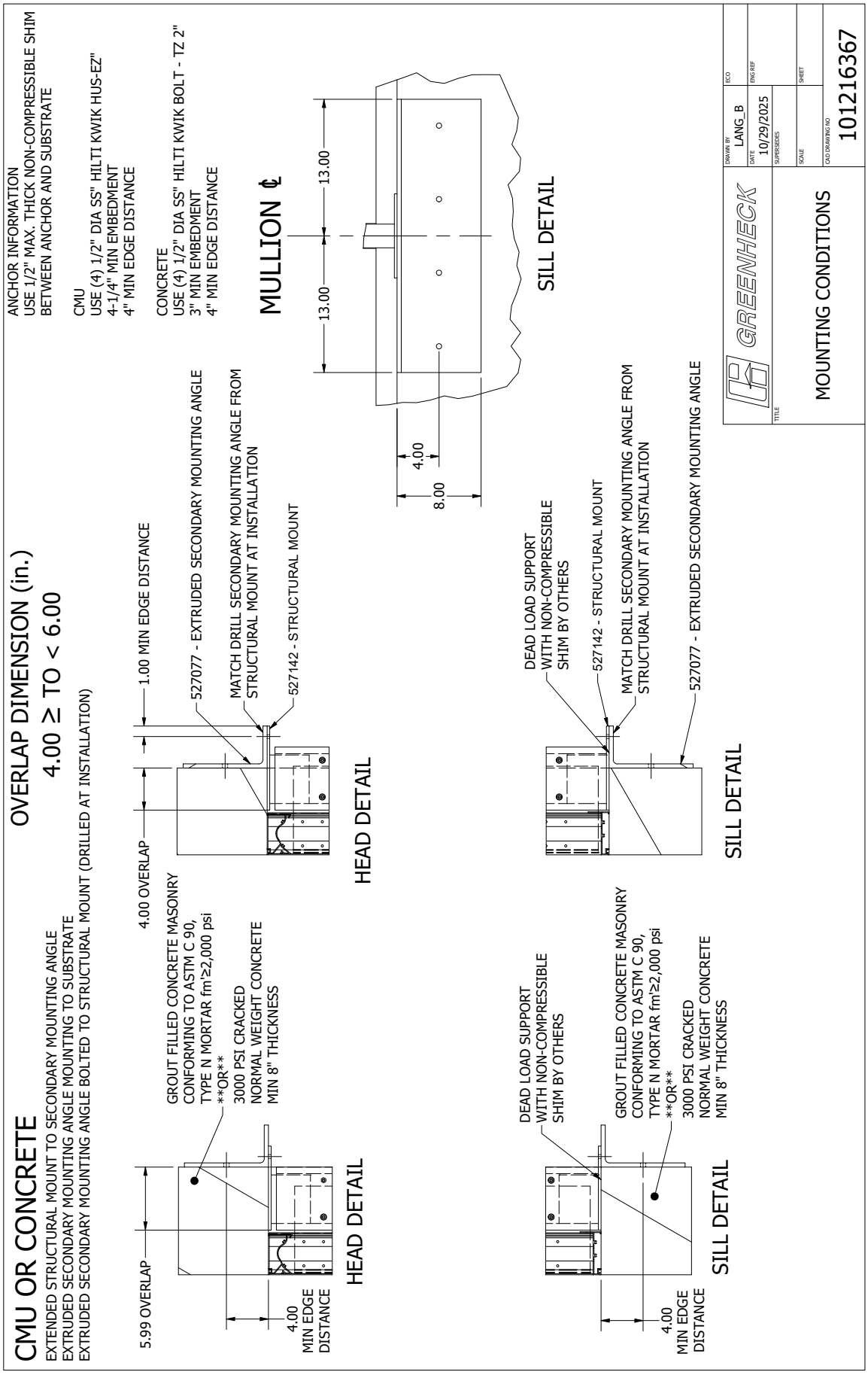
STRUCTURAL SUPPORT MOUNTING CONDITIONS - CMU OR CONCRETE



STRUCTURAL SUPPORT MOUNTING CONDITIONS - CMU OR CONCRETE



STRUCTURAL SUPPORT MOUNTING CONDITIONS - CMU OR CONCRETE



CONCRETE

EXTENDED STRUCTURAL MOUNT TO SECONDARY MOUNTING ANGLE
EXTRUDED SECONDARY MOUNTING ANGLE MOUNTING TO SUBSTRATE
SECONDARY MOUNTING ANGLE BOLTED TO STRUCTURAL MOUNT (DRILLED AT INSTALLATION)

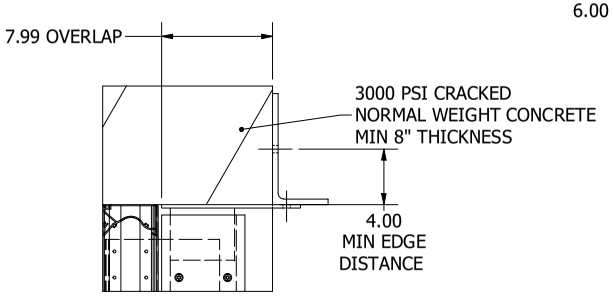
OVERLAP DIMENSION (in.)

6.00 ≥ TO < 8.00

ANCHOR INFORMATION
USE 1/2" MAX. THICK NON-COMPRESSIBLE SHIM BETWEEN ANCHOR AND SUBSTRATE

CONCRETE
USE (4) 1/2" DIA SS" HILTI KWIK BOLT - TZ 2"
3" MIN EMBEDMENT
4" MIN EDGE DISTANCE

CMU
USE (4) 1/2" DIA SS" HILTI KWIK HUS-EZ"
4-1/4" MIN EMBEDMENT
4" MIN EDGE DISTANCE



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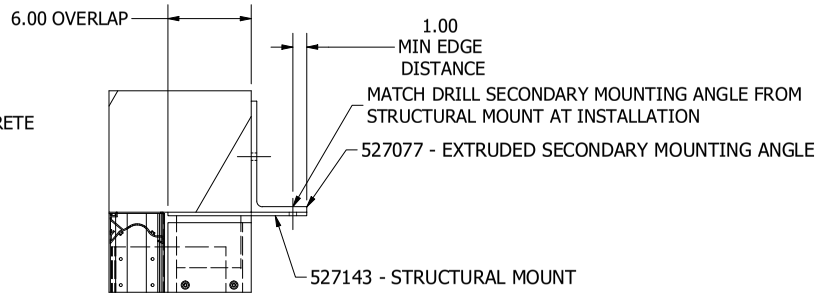
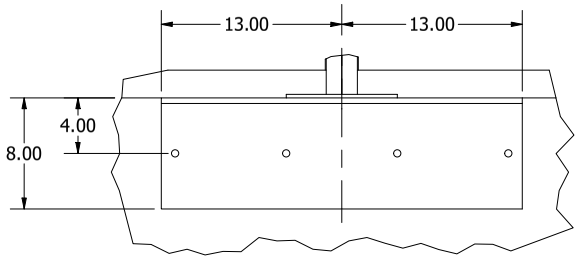


HEAD DETAIL

MULLION ℄



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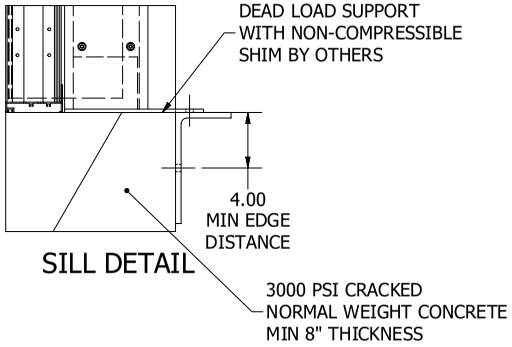

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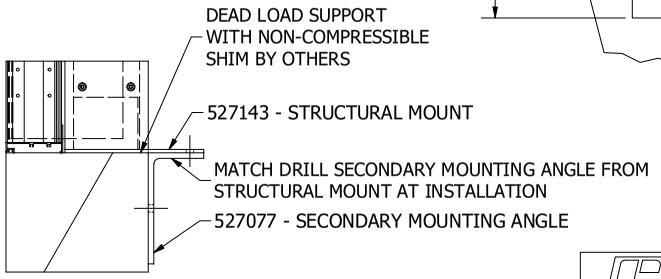

SILL DETAIL

GREENHECK

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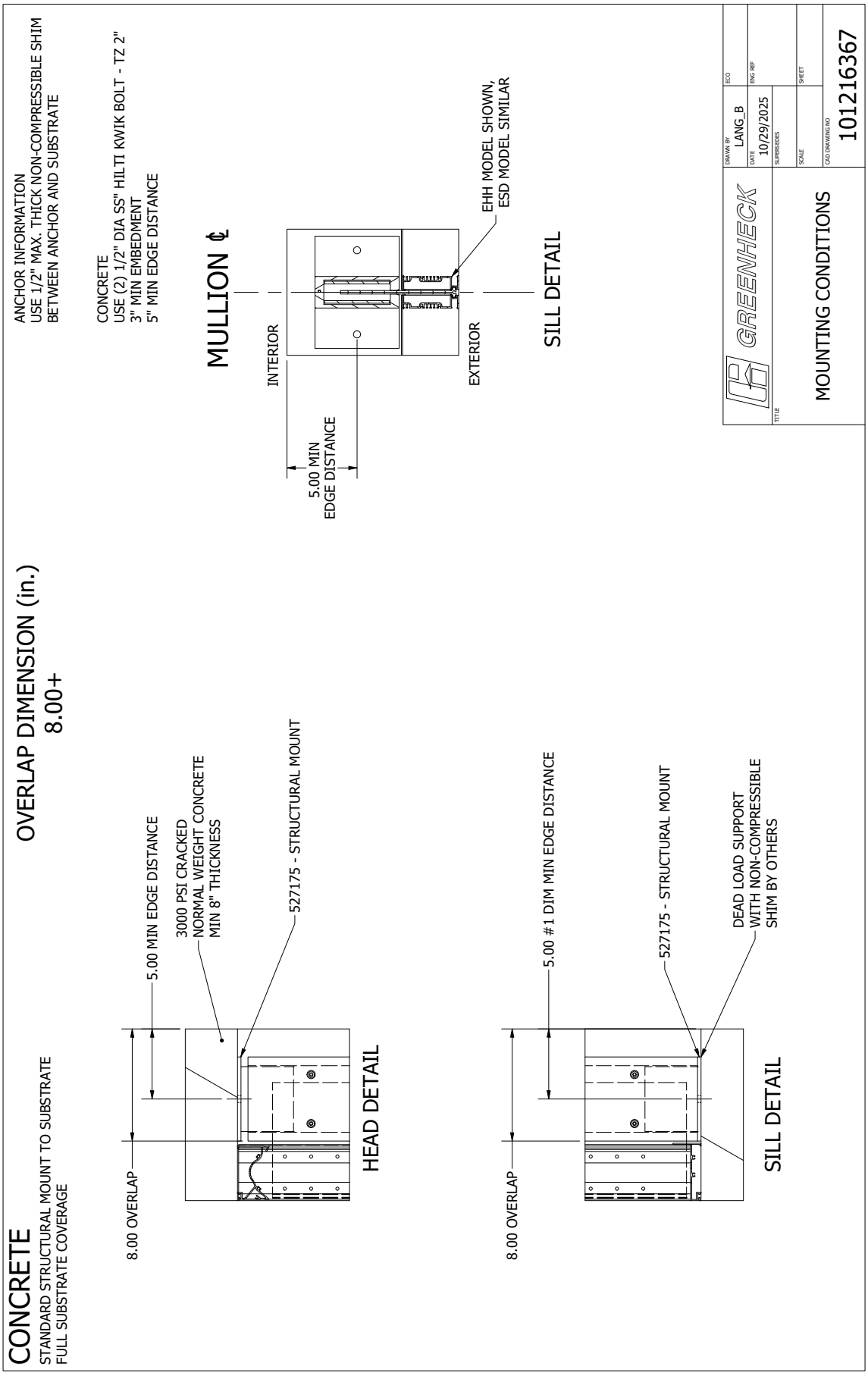
DATE: 10/29/2025	ENG REF:
SUPERSEDES:	
SCALE:	SHEET:
TITLE: MOUNTING CONDITIONS	CAD DRAWING NO: 101216367

STRUCTURAL SUPPORT MOUNTING CONDITIONS - CONCRETE



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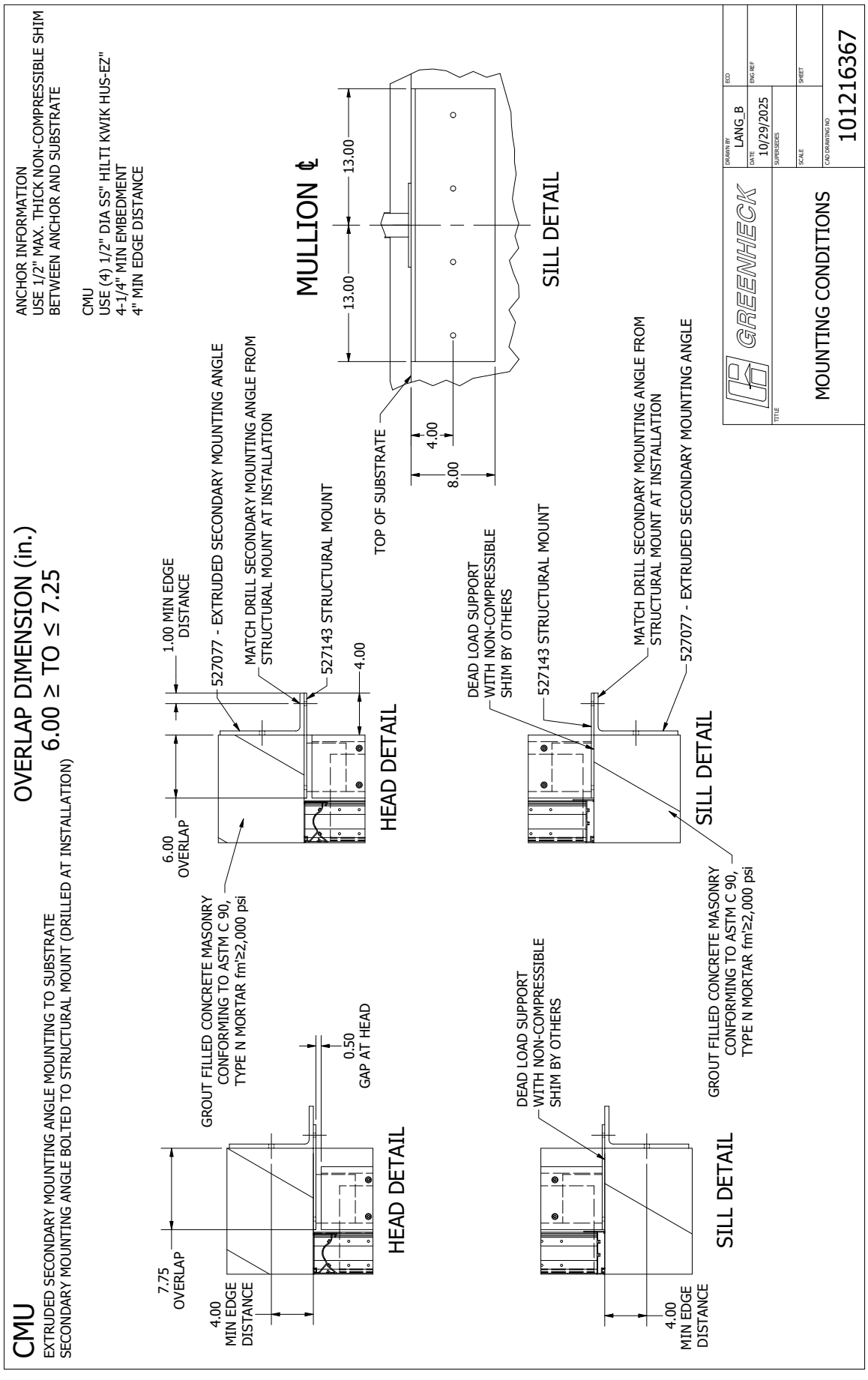

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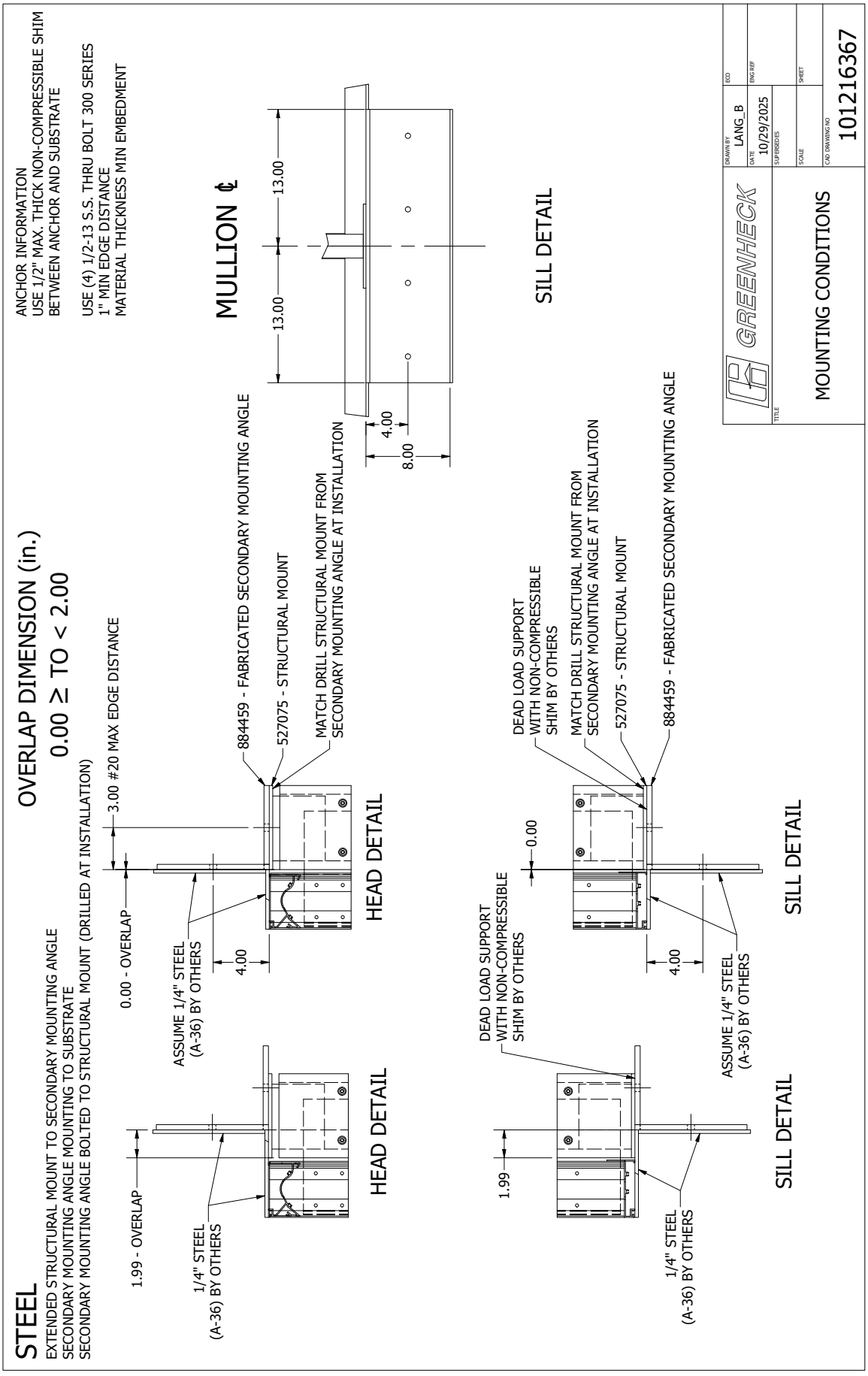
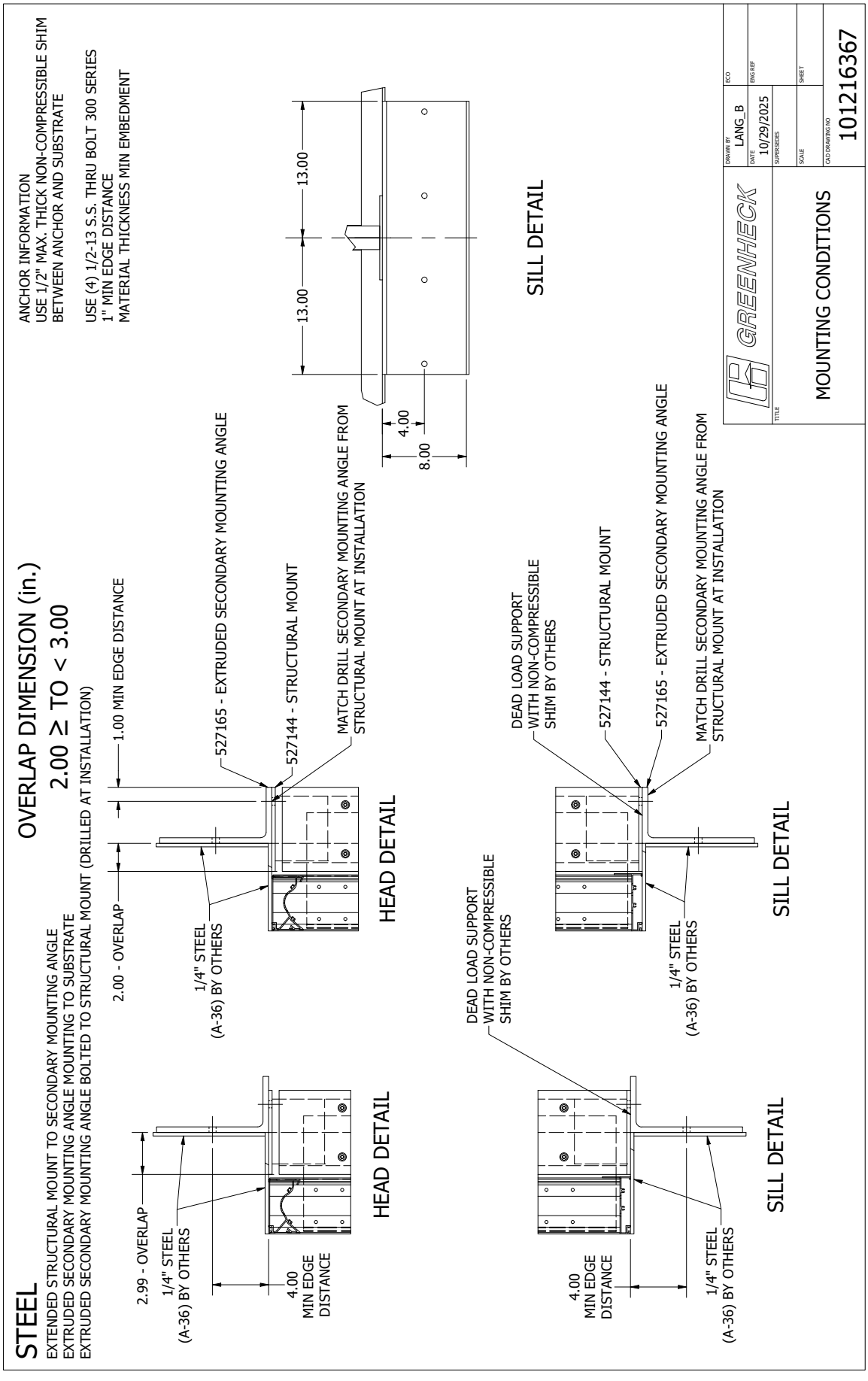
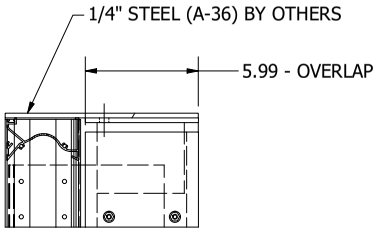


STRUCTURAL SUPPORT MOUNTING CONDITIONS - STEEL



STEEL

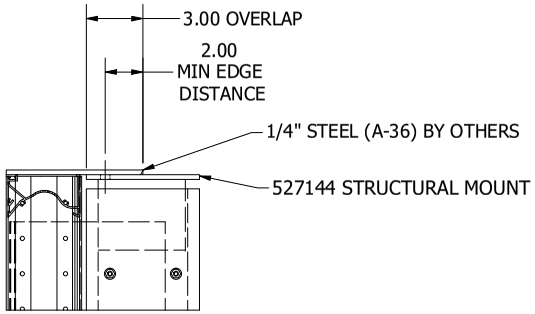
STANDARD MOUNTING PLATE
PARTIAL SUBSTRATE COVERAGE



HEAD DETAIL

OVERLAP DIMENSION (in.)

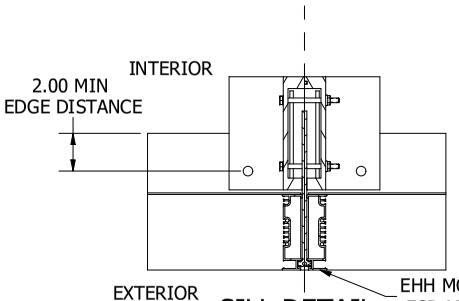
3.00 ≥ TO < 6.00



HEAD DETAIL

ANCHOR INFORMATION
USE 1/2" MAX. THICK NON-COMPRESSIBLE SHIM
BETWEEN ANCHOR AND SUBSTRATE

USE (2) 1/2-13 S.S. THRU BOLT 300 SERIES
2" MIN EDGE DISTANCE
MATERIAL THICKNESS MIN EMBEDMENT



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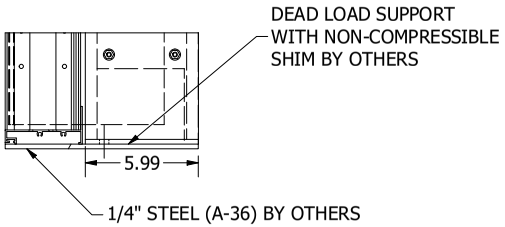

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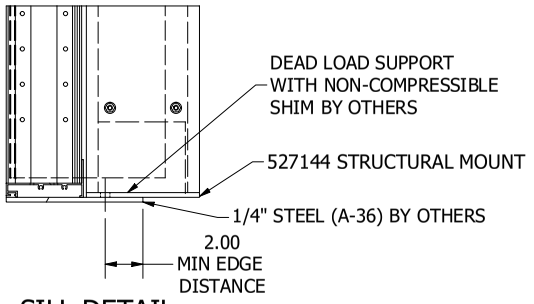

SILL DETAIL

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	DATE: 10/29/2025	ENG REF:
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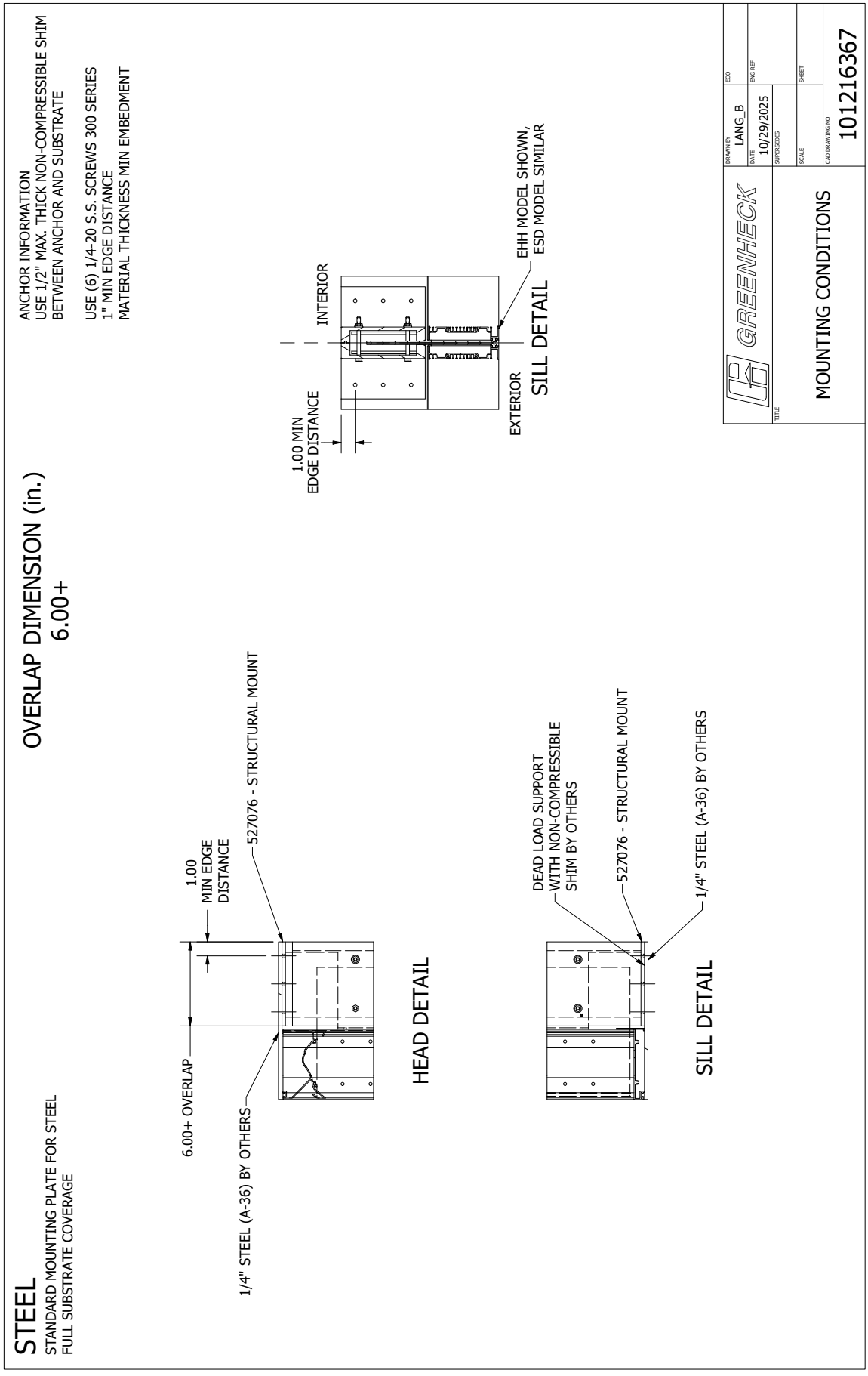
	CAD DRAWING NO: 101216367	

STRUCTURAL SUPPORT MOUNTING CONDITIONS - STEEL



STRUCTURAL SUPPORT MOUNTING PARTS

MOUNTING PARTS

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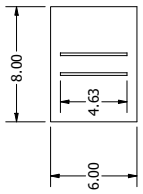
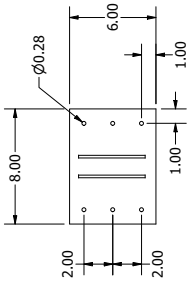
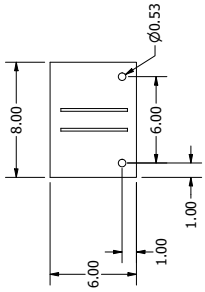


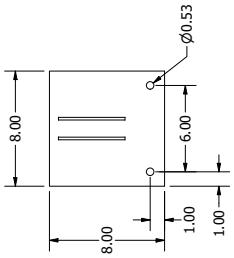
527076 - STRUCTURAL MOUNT, STEEL



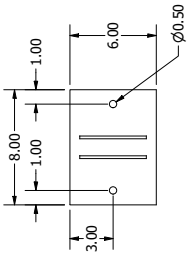
527144 STRUCTURAL MOUNT, 2 HOLE



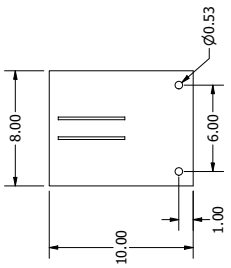
527142 STRUCTURAL MOUNT, EXTENDED 2"



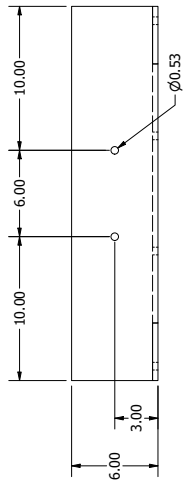
527175 STRUCTURAL MOUNT, CENTERED 2 HOLE



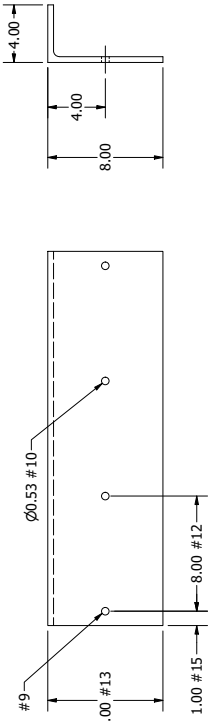
527143 STRUCTURAL MOUNT, EXTENDED 4"



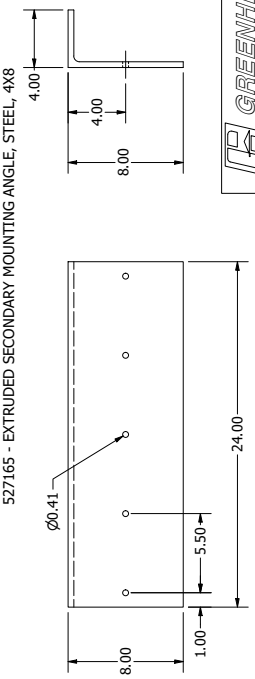
884459 - FABRICATED SECONDARY MOUNTING ANGLE

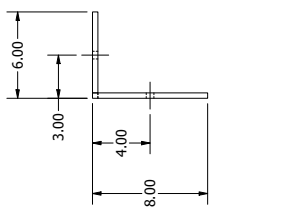


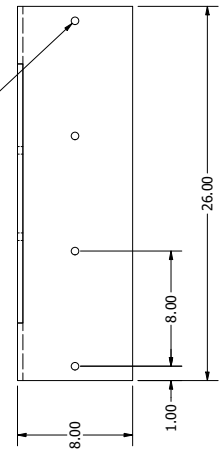
527077 - EXTRUDED SECONDARY MOUNTING ANGLE, CONCRETE-CMU, 4X8



527165 - EXTRUDED SECONDARY MOUNTING ANGLE, STEEL, 4X8







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