Subject	E2 40FT Ecab Top Bracket Retrofit
Issue Date	10/30/23
Service Bulletin Number	SC-20-076
Models Affected	Service Specified Vehicles
Complete By	Next Service Opportunity
Labor Operation Code	ID41Z
Description	This bulletin details the process to replace brackets supporting the vertical ecab stanchions for increased rigidity.

Labor Table				
	Operation	**Technicians**	**Hours**	**Labor Time (T x H)**
1	Steps 1-32	1	4	4 Hours
		Total Labor Time:		4 Hours

Contact the Proterra Customer Service Team with any questions related to the following procedure.

864-438-0000
Service@Proterra.com

Parts Required:

053858	ECAB, 40’ RR, BRACKET RETROFIT KIT		Qty.	UOM
	005443-003	BOLT,HEX,FLANGE,STL,YZPL,CLASS 10.9, M8-1.25X20X20	6	EA
	005443-011	BOLT,HEX,FLANGE,STL,YZPL,CLASS 10.9, M8-1.25X45X22	4	EA
	018221	STEEL OVERSIZE WASHER M12	4	EA
	018308-003	SCREW, PAN, TAP, SS, ST6.3X19	4	EA
	018569	LOCKNUT, HEX, M8-1.25	10	EA
	018570	NUT, NYLOK, NON-SERRATED, M10 FLANGE, ZINC	8	EA
	046644	PLATE, STUD	2	EA
	046744	BRACKET, ECAB, TOP	1	EA
	046759	BRACKET, ECAB, TOP	1	EA
	053796	BUSHING, PLASTIC ISOLATOR	8	EA
	194-7411	MOUNT, STUD PLATE, ECAB FLOOR	2	EA
	194-9798	BRACKET,ECAB FLOOR	2	EA
065287	Service Retrofit Kit, Add-On, Consumables, BODY MATERIAL		Qty.	UOM
	018362	PLEXUS, MA-530	1	EA
	023387	ISOPROPYL ALCOHOL - RUBBING IN GALLON	1	GL
	050318	PROMOTED VINYL ESTER RESIN, COMPOSITE, BODY	1	EA
	050675	MEKP, COMPOSITE, BODY	1	EA
	063493	Composite, Biaxial, 1708	1	M

Tools Required:

- T-30 Torx Driver
- Ratchet
- Torque Wrench (foot-pounds and inch-pounds)
- 13mm socket
- 10mm socket
- 13mm combination wrench
- 10mm combination wrench
- Permanent Marker
- Power Drill
- 10mm Drill Bit
- 21/32-Inch Drill Bit
- 36-Grit Sanding Disc
- 36-Grit Sand Paper
- Isopropyl Alcohol
- Shop Towels

Overview:

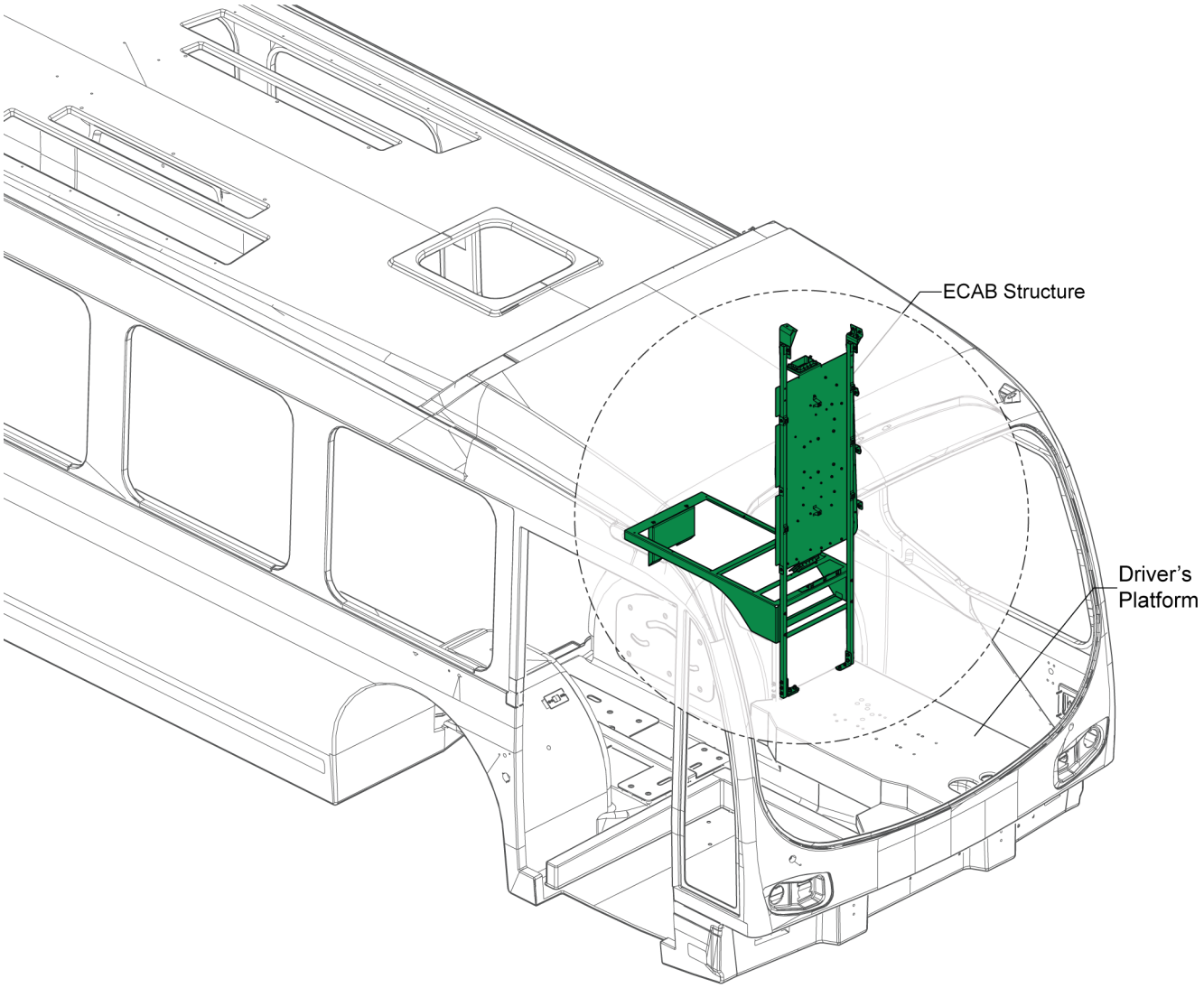
- Remove original ecab bottom brackets
- Bond new stud plates to bus floor
- Install new ecab bottom brackets

Step 1:

Power down the bus and perform the Proterra-approved lockout/tagout procedure before beginning work.

Remove the driver seat, ecab cover, wheel well box, and any other components necessary to gain access to the ecab structure and driver's platform, shown below.

Do not remove ecab stanchions.



Step 2:

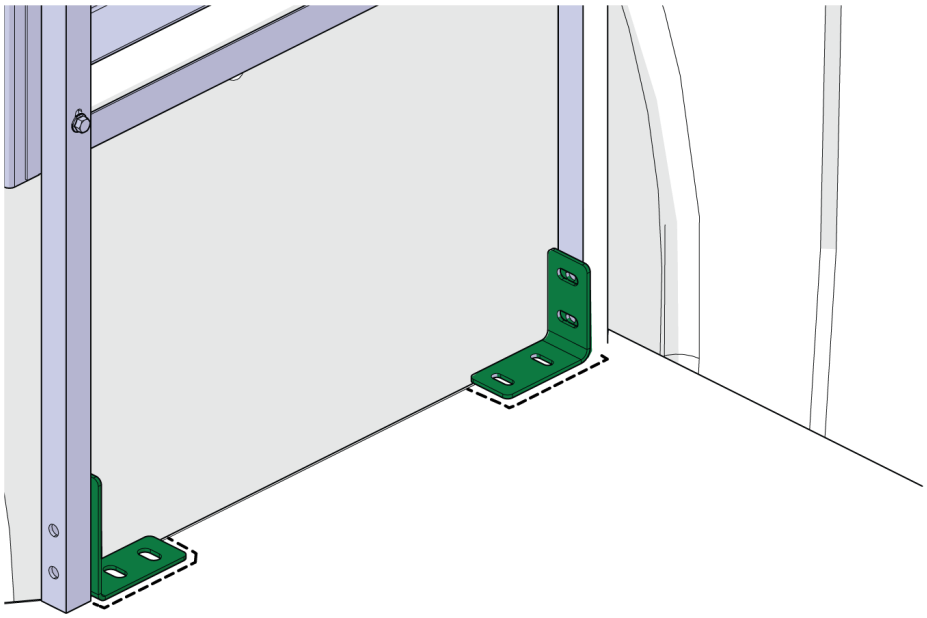
Using the templates attached to this bulletin (pages 13 and 14) cut out fiberglass sheets needed to bond the stud plate to the bus floor.

Make sure to cut out bolt-holes located in the center of the templates.

Fiberglass Sheets			
Layer	**Material**	**Dimensions**	**Qty.**
1	1708	84 mm x 122 mm	2
2	1708	134 mm x 172 mm	2
3	1708	184 mm x 222 mm	2

Step 3:

Position the floor brackets as shown and draw an outline around each bracket to mark the location of where the stud plates will be installed.

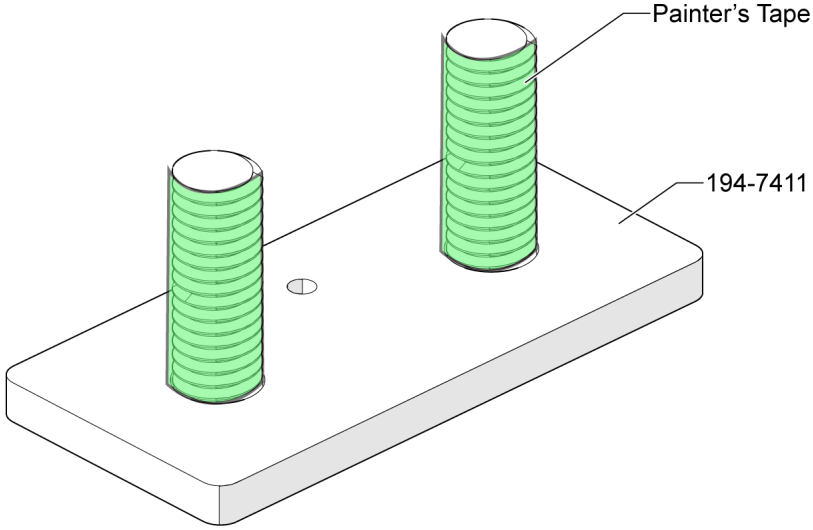


Step 4:

Mark the center of the bracket slots onto the bus floor and drill four holes with a diameter of 24 mm and a depth of 3 mm. Recessed holes are needed for the stud plates to sit level on the bus floor.

Step 5:

Wrap the threads of the stud plate studs with painter's tape to protect them from fiberglass resin.

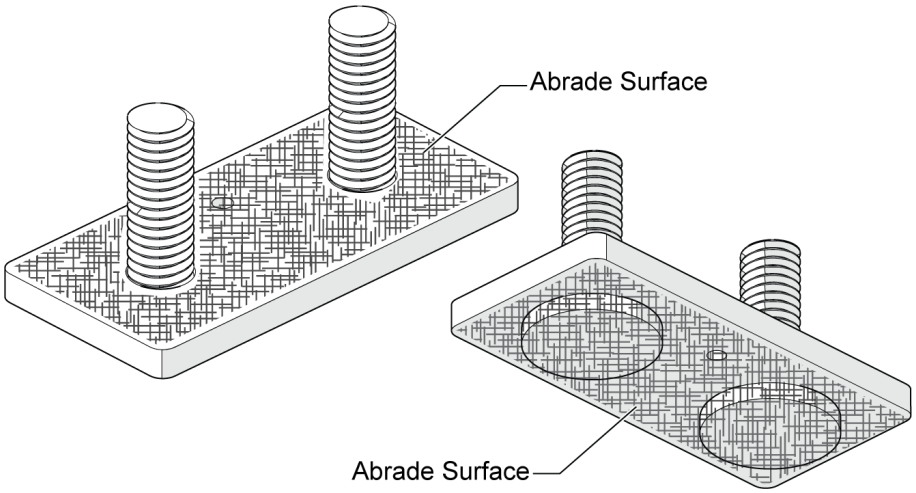


Step 6:

Abrade the bonding surfaces (top and bottom) of the two stud plates (194-7411) with a 36-grit sanding disc.

Clean the abraded surfaces with Isopropyl alcohol then apply metal primer (020990).

The properly coated surface will have a light pink finish.



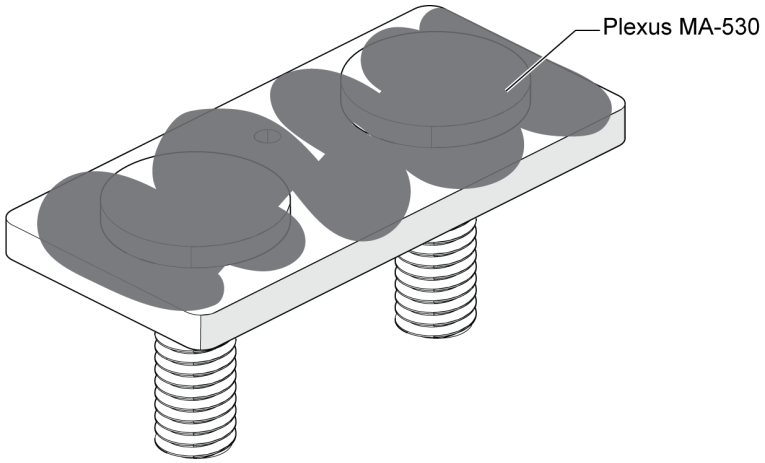
Step 7:

Lightly scuff the bus floor within the area outlined in Step 3 with 36-grit sanding disc.

Clean abraded surface with isopropyl alcohol to remove dust and debris.

Step 8:

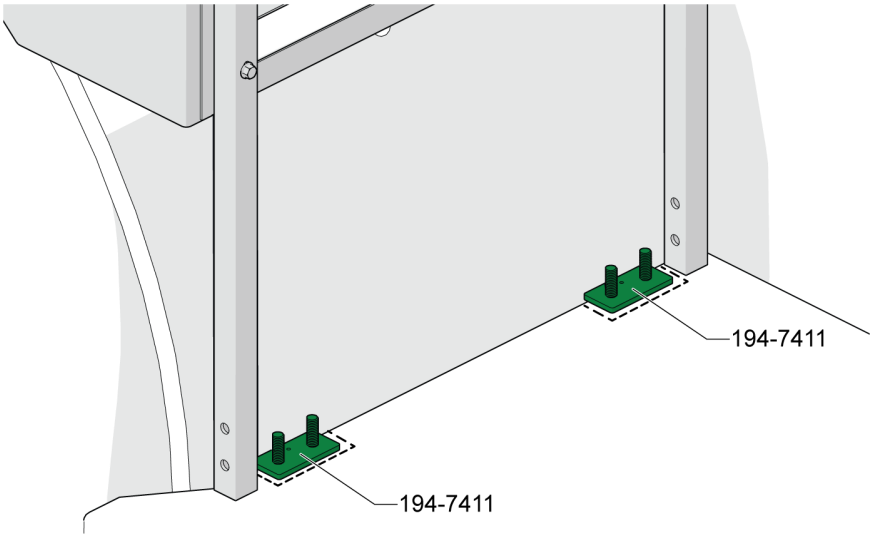
Apply a generous portion of Plexus MA-530 to the underside of both stud plates (194-7411) and spread out to achieve full coverage.



Step 9:

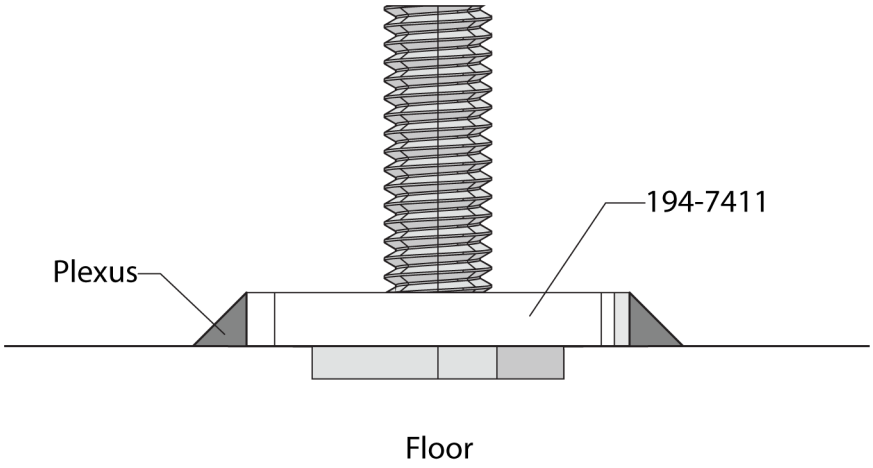
Position both stud plates (194-7411) onto the floor of the bus aligning them with the recessed holes drilled in Step 4.

Apply downward pressure to the plates until level contact is made with the floor.



Step 10:

Spread the excess Plexus material around the stud plate to create a smooth transition from the stud plate to the floor.



Step 11:

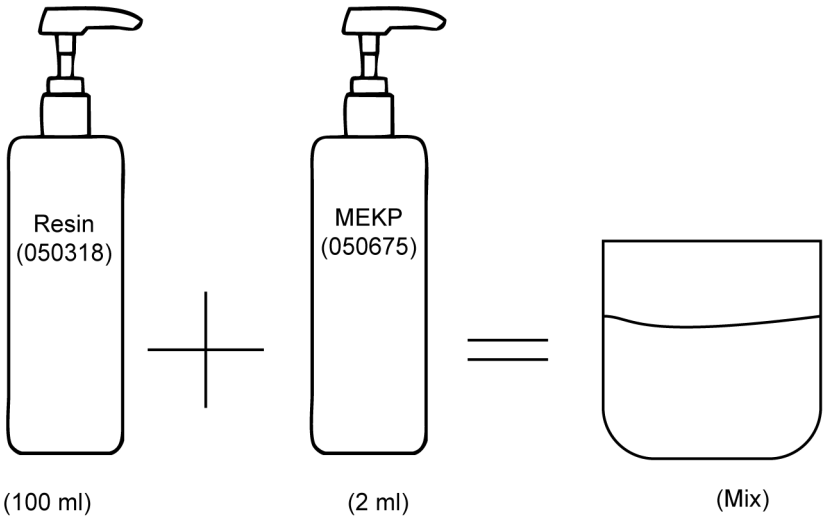
Allow 90 minutes for Plexus to fully cure and bond stud plates to bus floor.

Step 12:

Prepare the resin mix used for coating the fiber glass.

Mix Resin and MEKP in the ratio as shown until fully blended.

Follow all safety guidance provided by chemical manufacturers.



Step 13:

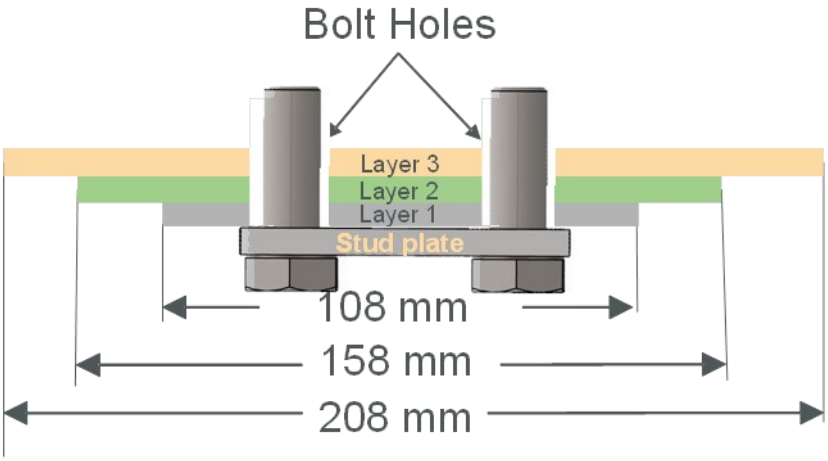
Apply the resin mixture and install fiberglass sheets.

- Wear gloves and appropriate PPE
- Place a piece of clean cardboard on a flat surface to be used as a working area
- Place the Layer 1 fiberglass sheets (84 mm x 122 mm) onto the cardboard and use a paintbrush to coat the first side with the resin mixture, brushing from center to outside.
- Flip-over the Layer 1 sheets and continue coating the other side until fiberglass is fully saturated.
- Position one of the Layer 1 fiberglass sheets over each of the bonded stud plates (194-7411)
- Smooth and flatten the fiberglass sheet, ensuring consistent contact with the bus floor.
- Apply an additional layer of resin on top of fiberglass after positioning in place.

Step 14:

Apply additional fiberglass layers two and three using the same process from **Step 13**.

After all layers have been applied, roll the layers of fiber-glass flush to the stud plate and floor, removing any air bubbles.



Step 15:

Allow **four hours** for saturated fiberglass to fully cure.

When fiberglass has fully hardened and is no longer tacky, clean up any rough edges by lightly sanding with 36-grit sandpaper.

Caution: Do not remove any thickness from the outer layer of fiberglass.

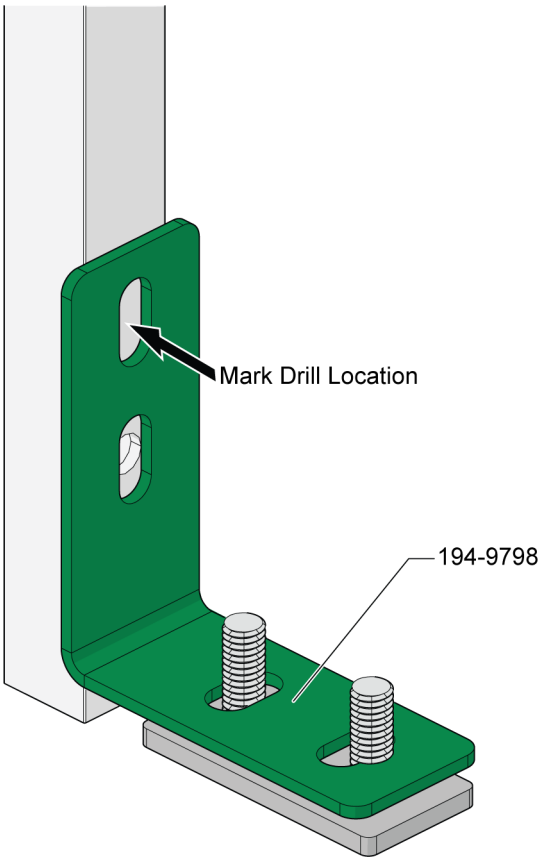
Clean work area and dispose of any un-used resin mixture.

Step 16:

Fit the ecab floor bracket (194-9798) on the stud plate (194-7411) and ensure the bottom slot is aligned with the top bolt hole in the ecab vertical stanchion.

Mark the center of the top attachment point of the ecab bracket.

Remove the bracket and drill a hole completely through the ecab stanchion with an M10 drill bit.



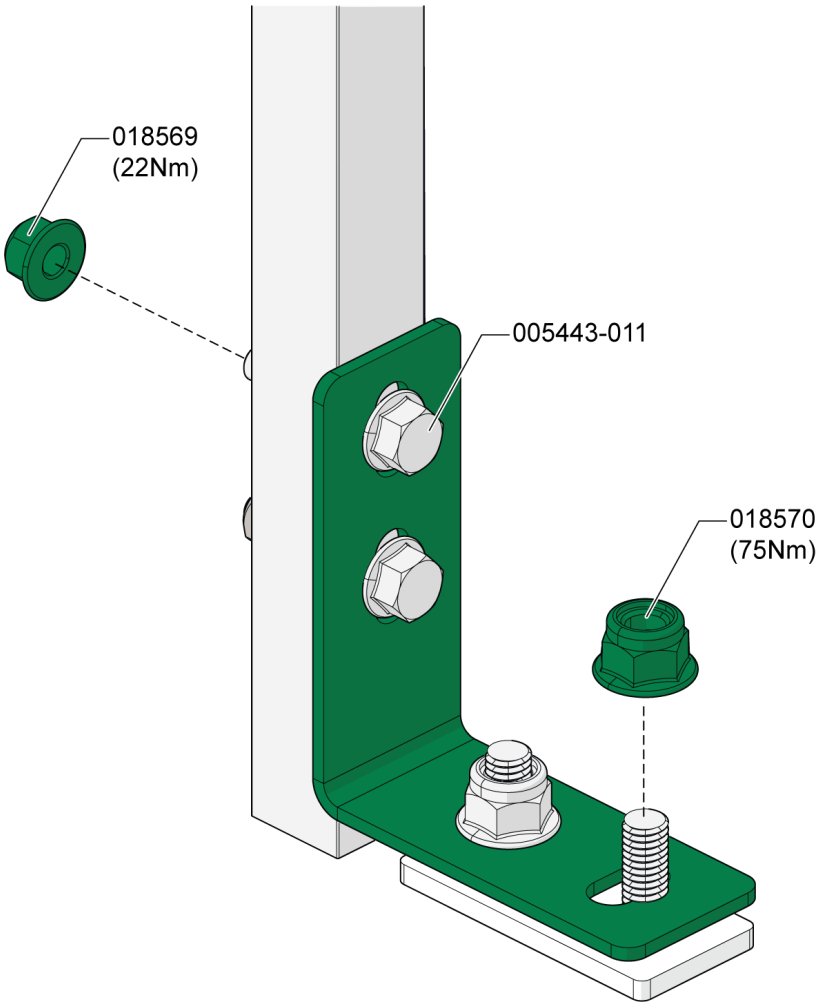
Step 17:

Install the ecab bracket to the stud plate and vertical stanchion.

Attach fasteners and torque as shown.

Torque stripe M10 and M8 lock-nuts.

Repeat for other side.



Step 18:

The procedure to install the bottom brackets is now complete.

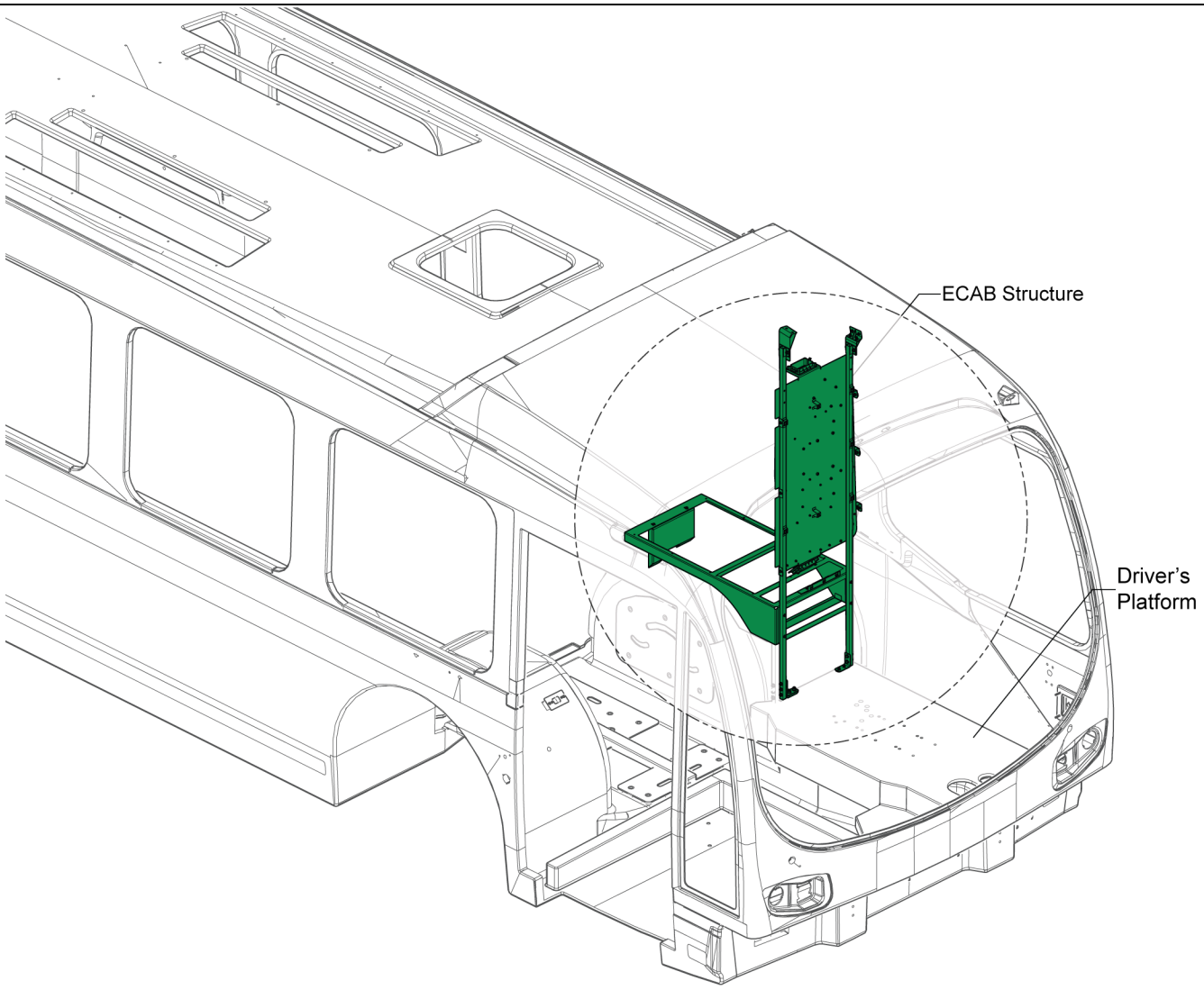
Overview:

- Remove the original ecab top brackets
- Install new ecab top brackets
- Install new stud plates to bus body interior.

Step 19:

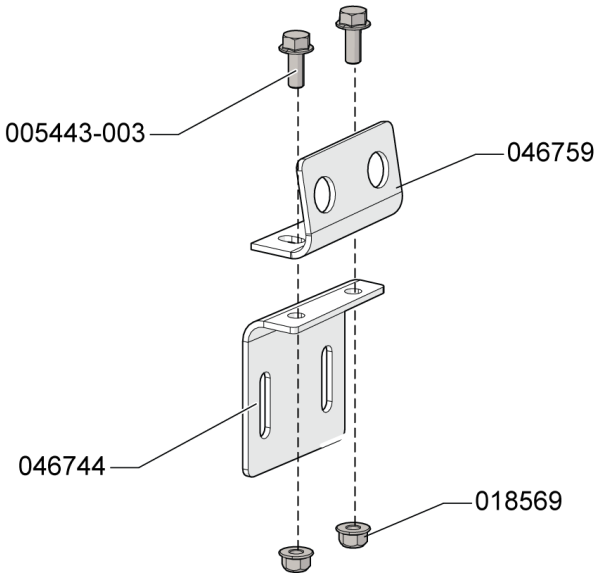
Power down the bus and perform the Proterra-approved lockout/tagout procedure before beginning work.

Before beginning this procedure remove the original brackets and rotolocs located at the top of the ecab vertical stanchions.



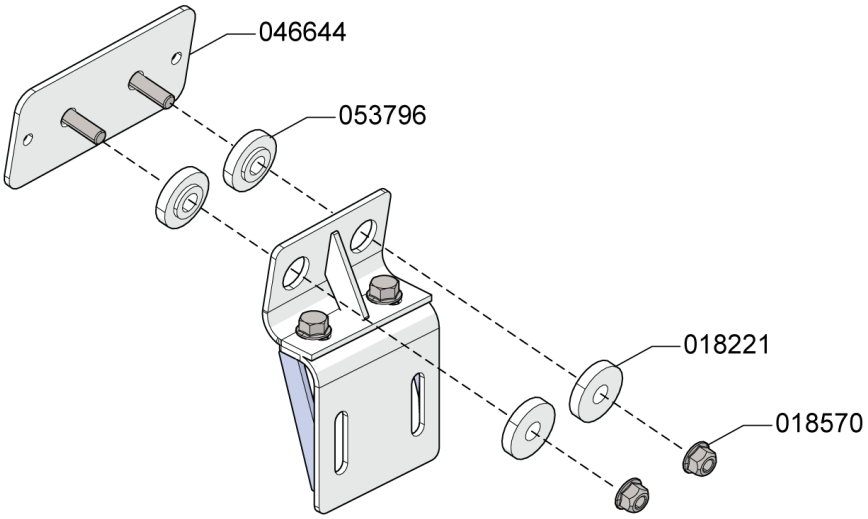
Step 20:

Assemble bracket (046759) and bracket (046744).



Step 21:

Attach stud plate (046644) to the assembled brackets.

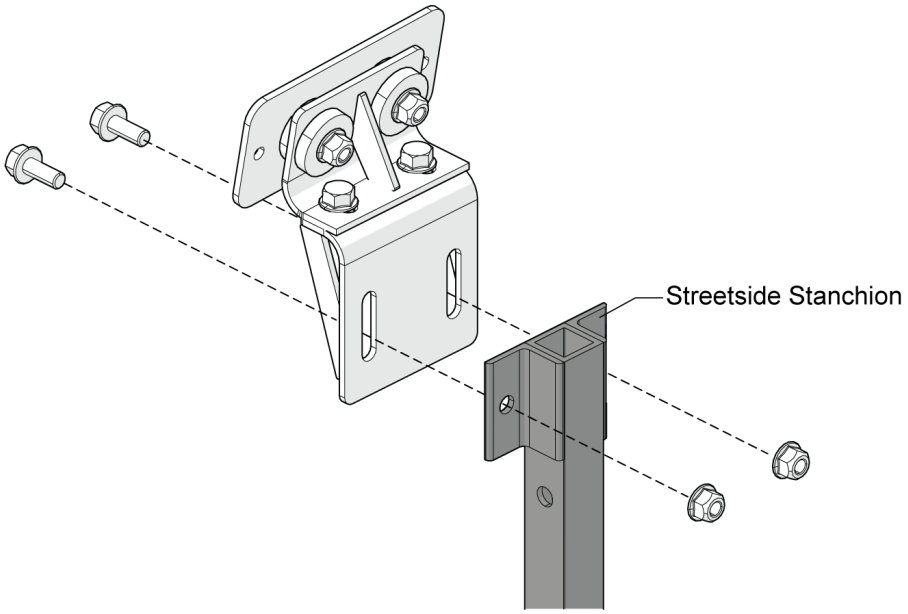


Step 22:

Attach the assembled bracket to the square tubing on the street side of the bus with original fasteners.

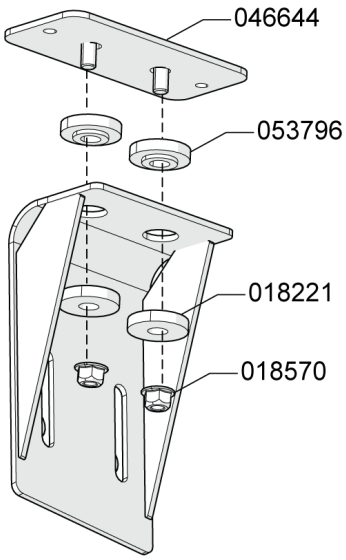
Adjust the bracket for the best fit of the stud plate (046644) for mounting to the bus body.

Draw an outline of the stud plate (046644) onto the bus body interior.



Step 23:

Attach stud plate (046644) to the original curbside bracket (046741) with fasteners.

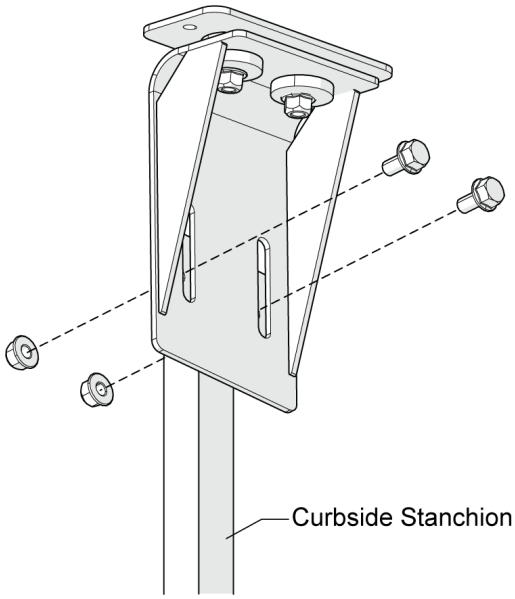


Step 24:

Loosely attach assembled bracket to the curbside ecab stanchion using the original fasteners.

Adjust the bracket for the best fit to mount the stud plate to the bus body interior wall.

Using a permanent marker, outline the stud plate onto the bus body interior wall.



Step 25:

Temporarily remove the assembled brackets from both sides of the vertical ecab stanchions.

Step 26:

Using a power drill with a 36-grit sanding disc, lightly scuff the back side of both stud plates (046644) and the areas of the interior bus body that were outlined in previous steps.

Clean the scuffed areas with a shop towel and isopropyl alcohol.

Step 27:

Apply Plexus Primer (018362) to the scuffed areas on the back of the stud plates (046644).

Step 28:

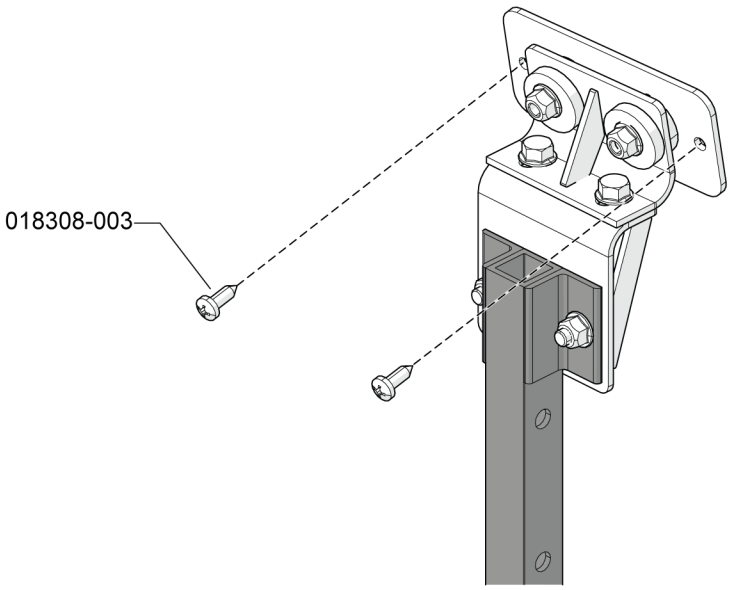
Apply Plexus (018362) to the back of the stud plates (046644) and re-attach to the ecab vertical stanchions.

Step 29:

Adjust the re-attached brackets so the stud plates contact the bus body in the outlined locations.

Using a #2 phillips screwdriver secure the stud plates to the bus body with self tapping screws (018308-003).

Streetside bracket shown in illustration.



Step 30:

Allow 60 minutes for Plexus to fully cure.

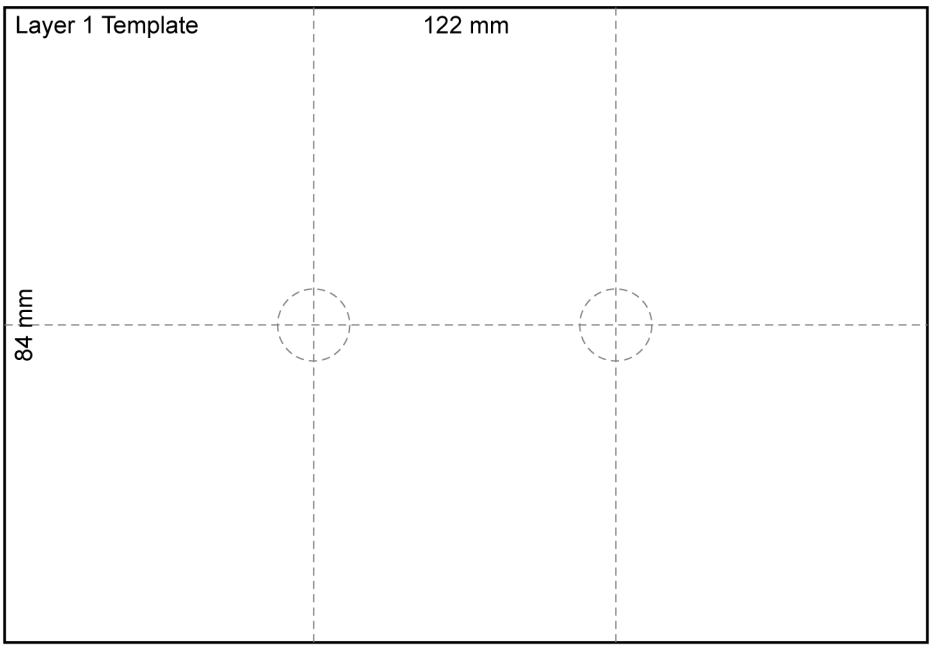
Step 31:

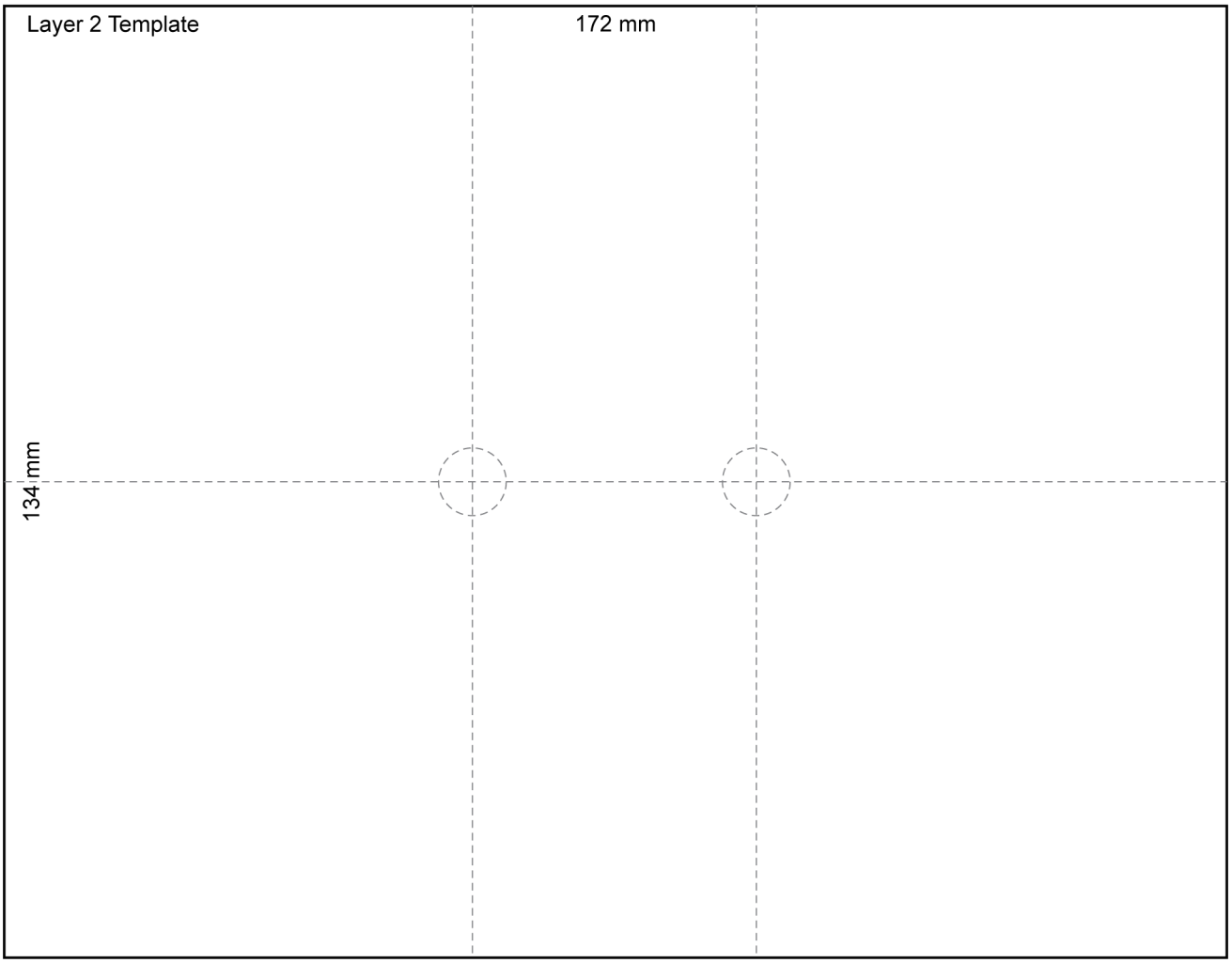
Torque fasteners to specifications provided:

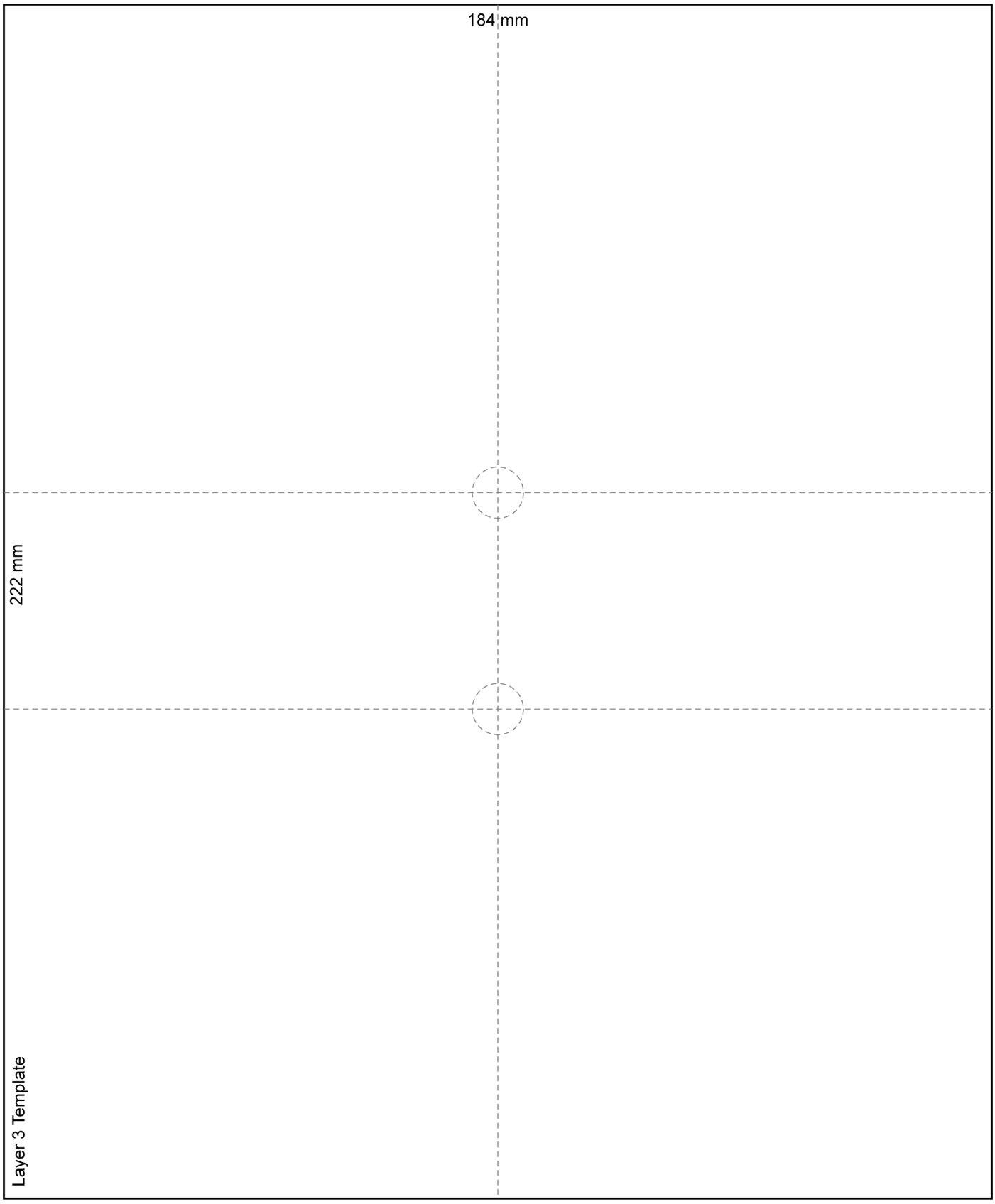
Fastener Size:	Socket Size:	Torque Value:
M6	10 mm	51 inch-pounds
M8	13 mm	20 foot-pounds
M10	16 mm	46 foot-pounds

Step 32:

Re-install all components previously removed to access the ecab brackets and return bus to service.


Layer 1 Template
122 mm
84 mm


Layer 2 Template
172 mm
134 mm


184 mm
222 mm
Layer 3 Template