INSTRUCTION TO SERVICE

ITS: 5358	
SECTION:	400 Structures
WRITTEN BY:	Jeff Kosheluk
SUBJECT:	Weld all cracks in header tube or other areas affected at the exit door area. This will also include welding in corner gussets at the top of the exit door.

ITS5358

PROCEDURE:

1. Turn the main battery disconnect switch to the “OFF” position.

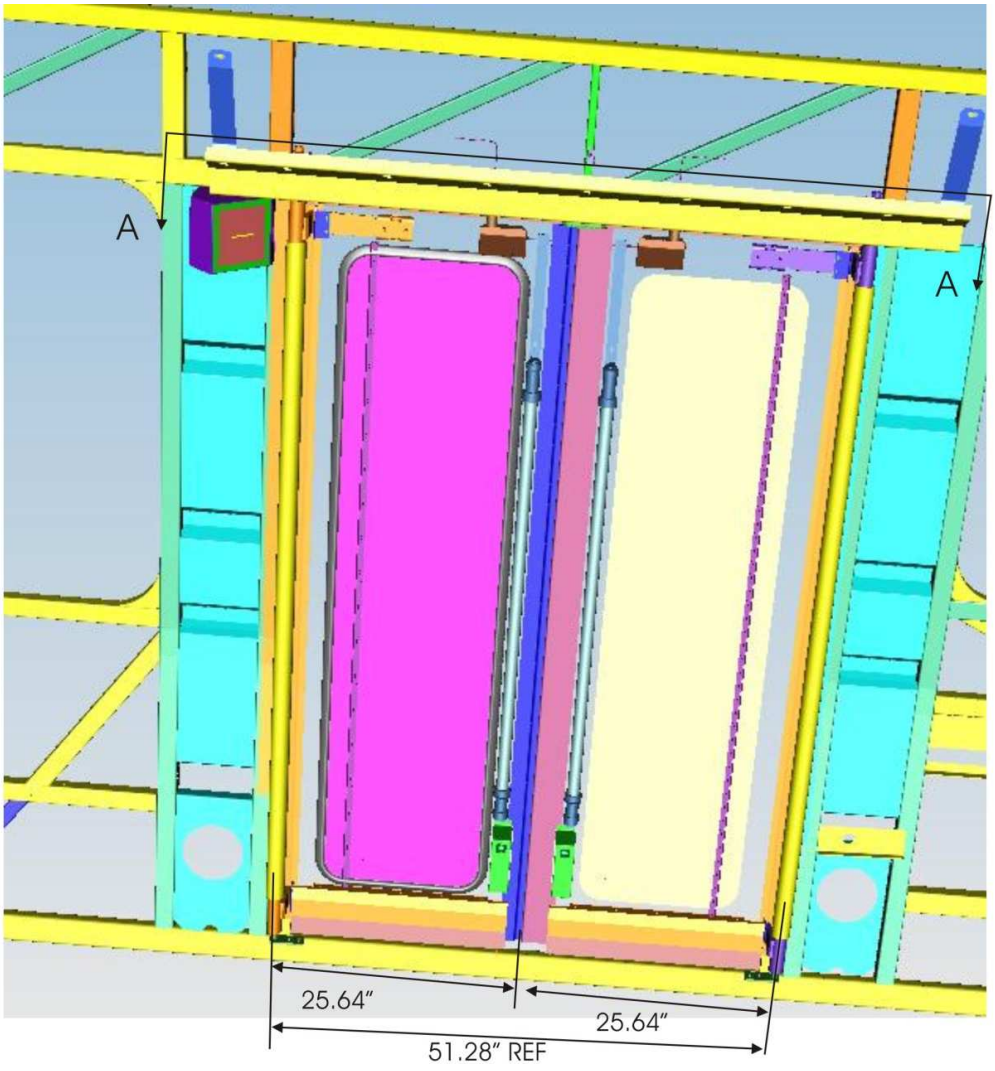
Note: For coaches that require additional welding due to more structural cracks, additional labor time will be required & reviewed by NF service. This will be on a per bus basis. Standard ITS will cover 2 cracks at exit header area.

PART 1A: DISCONNECT ALL ELECTRICAL MODULES AS REQUIRED.

2. **Disconnect battery cables when welding. Also disconnect ECU’s for engine, transmission, electronic destination signs, ABS and VCM as applicable. This will include disconnecting hybrid electrical modules as well.**
3. On the exterior/interior of the coach, remove the following parts before the welding procedure can be done.

PART 1B: THIS SECTION WILL REMOVE ALL THE COMPONENTS FROM THE AFFECTED WORK AREA AS REQUIRED.

4. Locate the exit door area where the rework will be completed on the inside of the coach.
5. Remove curbside light panel assemblies, forward and rear of exit door. **Note:** Remove hardware and set aside to avoid damage. Disconnect the electrical from the back of the light panel as required. Also loosen off exit door mirror & position off to the side to allow removal of the light panel.
6. Remove the speaker panels and set aside to re-install later. Be careful when removing from the wall to avoid damage.
7. Proceed to remove the exit doors from the coach as per the service manual. Set aside all hardware to re-install later. **Note:** This includes the removal of the doorposts, trims and exit header seal. If new hardware is required at the top of the door posts, use the following **(NF PN: 103423, 103424 & 103425)**. **Refer to Figure 1.**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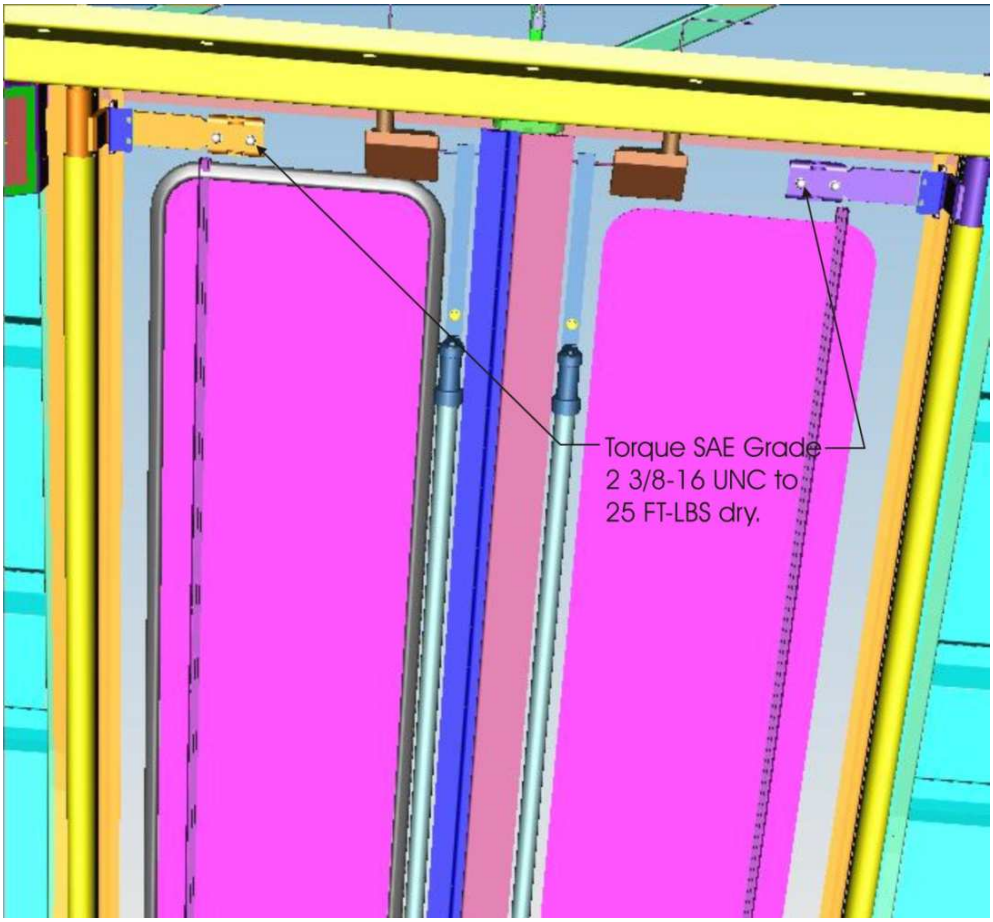


FIGURE 1: *SHOWN INSIDE VIEW OF THE EXIT DOORS. SEE NOTE FOR TORQUE VALUE FOR THE DOOR HARDWARE. SECTION A-A VIEW WILL SHOW THE COMPONENTS ATTACHED INSIDE OF THE EXIT BASE PLATE. TORQUE VALUE FOR THE LOWER MOUNT HARDWARE FOR THE DOOR POSTS IS 7 FT/LBS WET.*

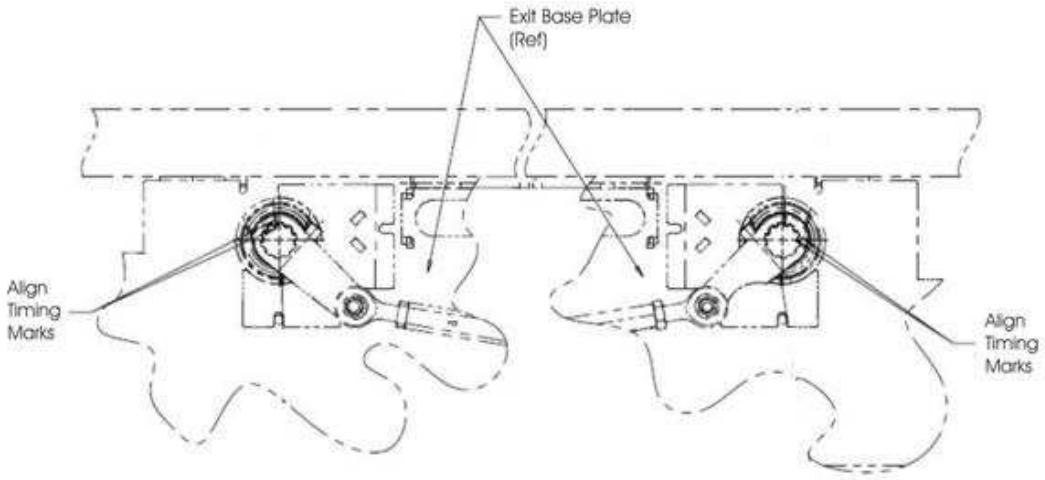


FIGURE 1 A: ***SHOWN CONNECTION OF SWING ARMS FOR THE EXIT DOOR POSTS INSIDE THE DOOR MECH.***

8. Locate and remove the exit door base plate from the coach. Remove the hardware that secures the exit header to the structure. Disconnect electrical/airlines as required inside of the exit header to allow removal of the exit door base plate. Set aside exit door base plate and hardware to re-install later. Remove upper exit door brush as well. Set aside hardware to re-install later. ***Refer to Figure 2***.

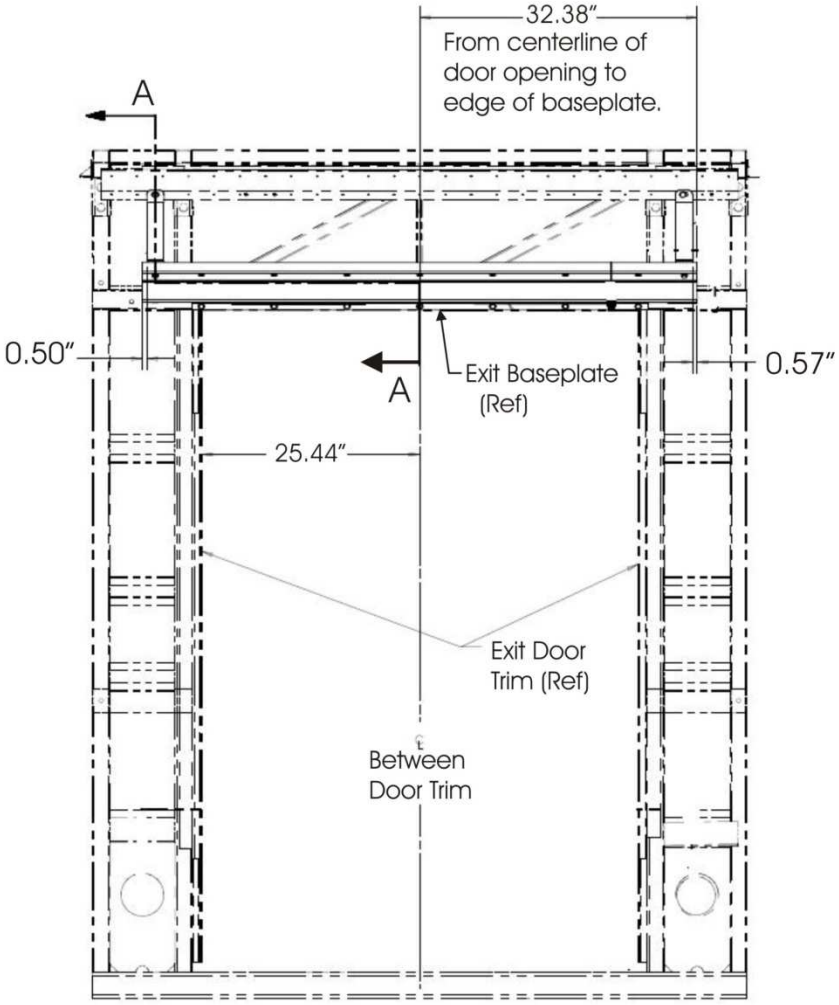


FIGURE 2: ***SHOWN INSTALLATION VIEW OF EXIT DOOR BASE PLATE. SECTION A VIEW WILL SHOW A SIDE VIEW WITH MOUNTING HARDWARE.***

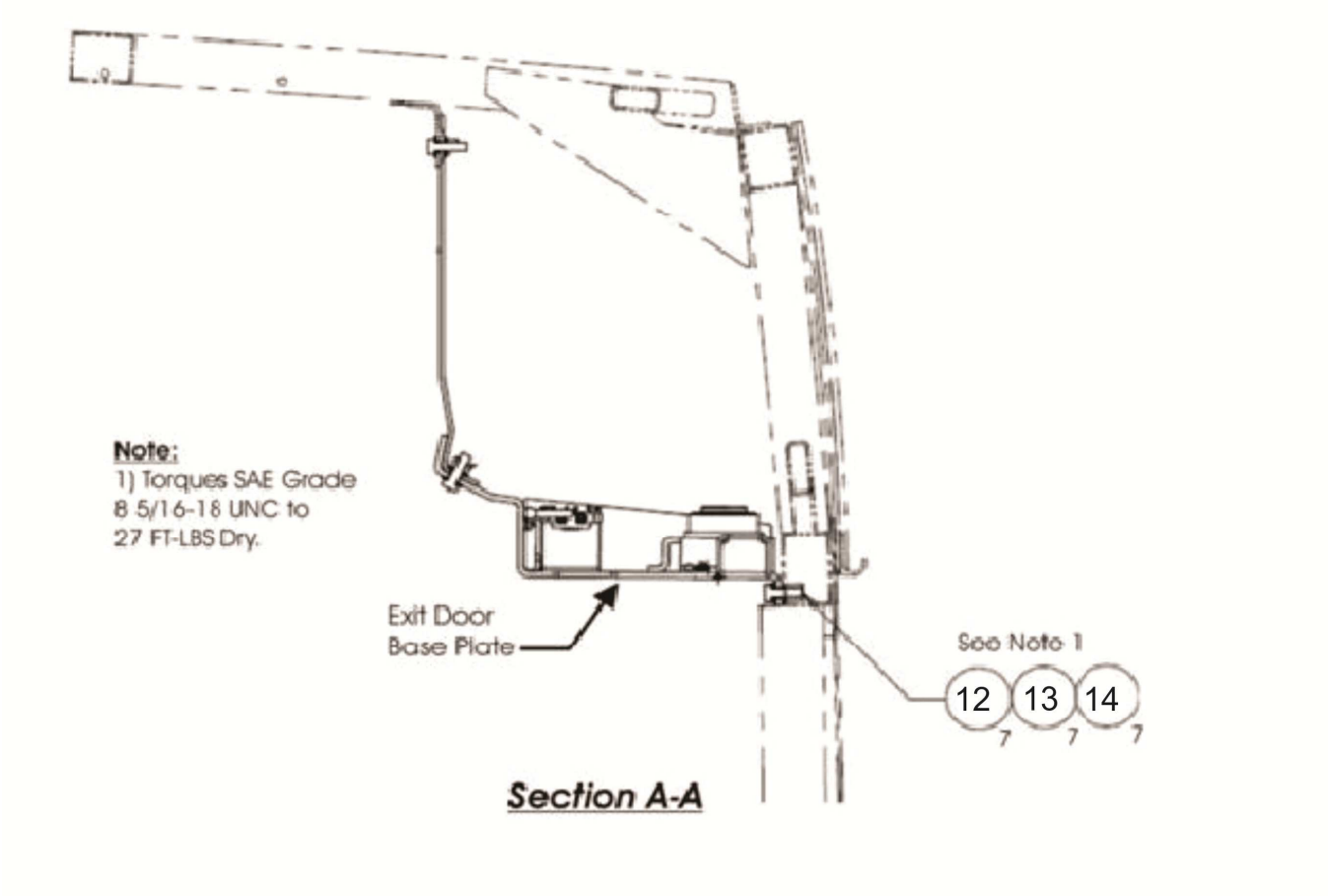


FIGURE 2 A: ***SHOWN SIDE VIEW WITH THE APPLICABLE MOUNTING HARDWARE TO MOUNT THE EXIT DOOR BASE PLATE.***

9. Remove the exit door dump valve box from the coach to gain access for working around the exit header. Disconnect the airlines as required. Set aside mounting hardware to re-install the exit dump valve box later. ***Refer to Figure 3*****.**

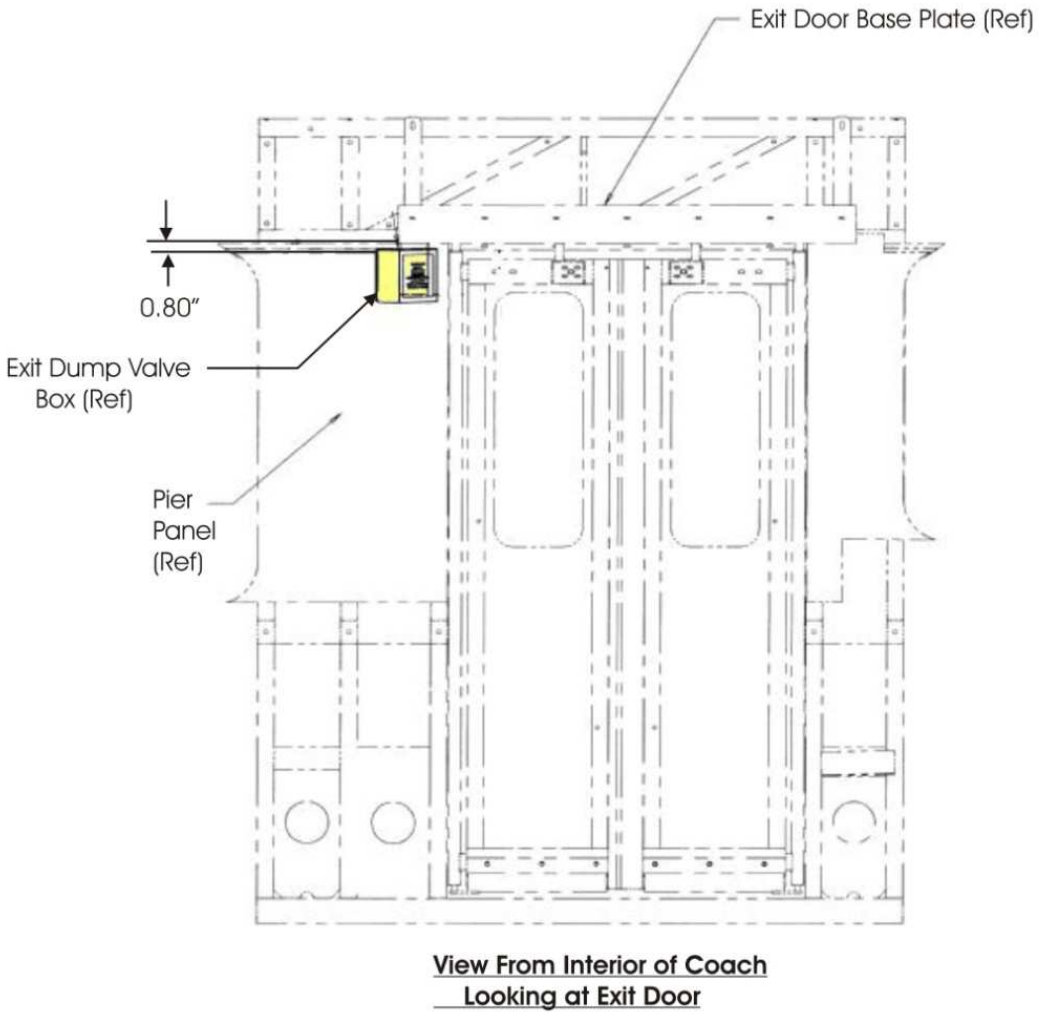


FIGURE 3: SHOWN VIEW OF THE DUMP VALVE BOX INSTALLED FORWARD OF THE EXIT DOORS.

10. Remove Velcro cover from the light panel areas. **Note:** Set aside to re-install later.
11. Next disconnect the electrical plugs (x4) on the VMM exit door panel. Set harness aside out of the way. **For steps 11 – 12, see Figure 4.**

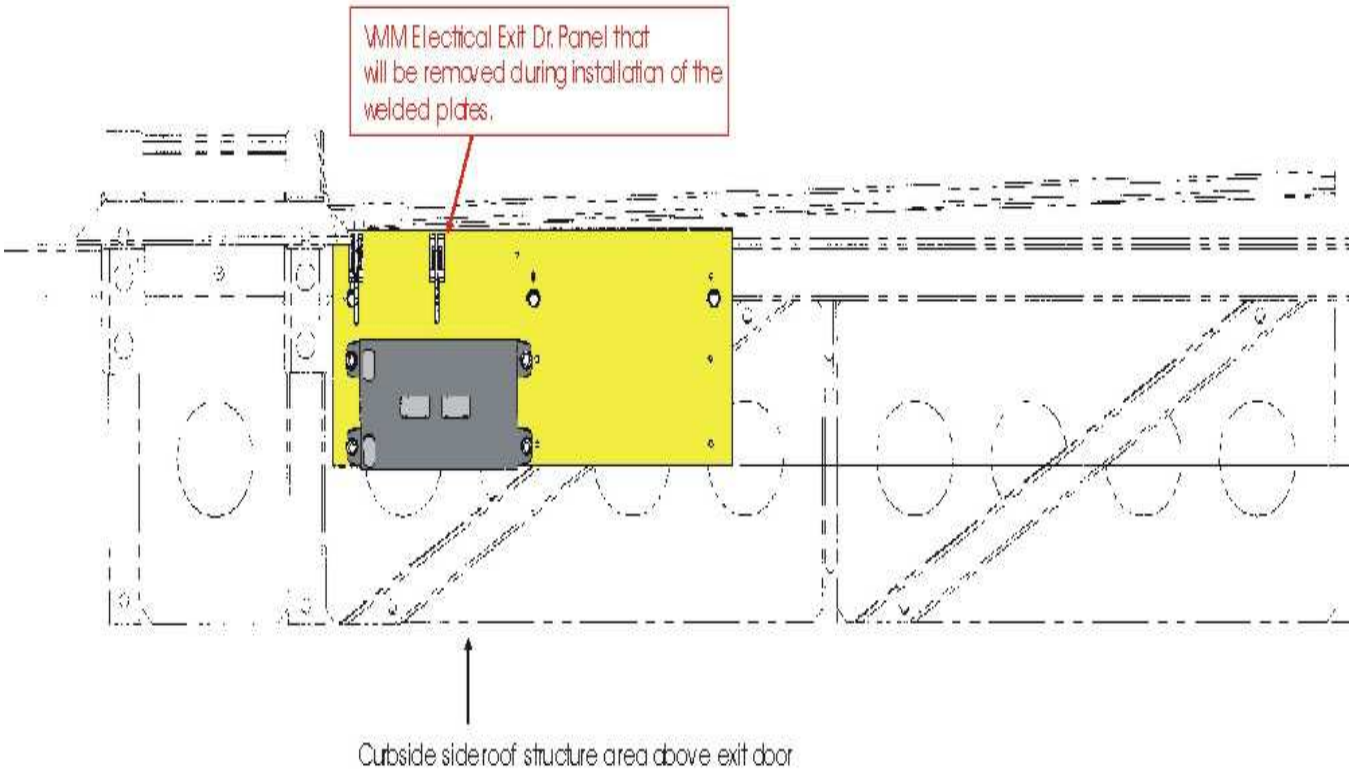
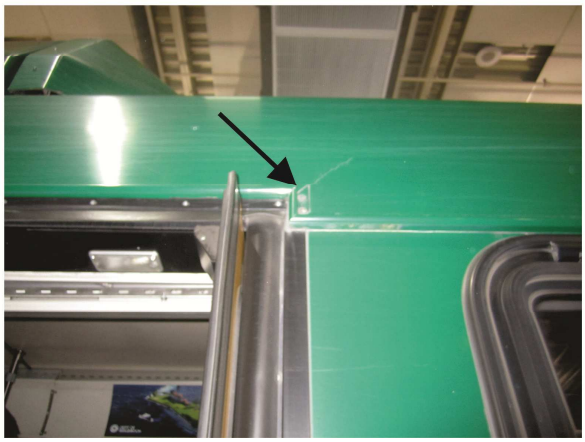


FIGURE 4: ***VMM EXIT DOOR PANEL THAT WILL BE REMOVED AND SET OFF TO THE SIDE.***

12. Next remove the (x3) bolts, lock washer and washers that secure the VMM exit door panel. **Note:** Set aside mounting hardware and VMM exit door panel to re-install later.
13. Next remove the p-clips that secure the 3/8" red airline that is secured along the bottom of the structure tube above the exit header. **Note:** Set p-clips and hardware aside to re-install later.
14. For electrical harnesses that are p-clipped in the area where the work will be performed, remove p-clips and move harnesses off to the side. **Note:** Set aside hardware and p-clips to re-install later. Secure all other loose electrical out of the way where the work is being done. Remove curbside rear harness cover rear of modesty panel. Set aside to re-install later.

15. Remove the rear modesty panels. Set aside along with mounting hardware. *Leave post fastened in place and **“only”** remove modesty panels*.

Note: *The roof panel will only be touched, only if required. This will be determined if the weld repair cannot be done from the inside of the coach. This cannot be done unless approved by NF team member. If this step is not required, proceed to step 18.*



Shown fiberglass crack at top forward corner at exit door opening. If fiberglass crack exists as shown, section of the panel will be cut out and fiberglass back in place and painted. This will only be done if required. Otherwise all other repairs will be done from the inside.

16. On the exterior of the coach, remove the drip rail cover at the joint. Set aside to re-install later. ***Refer to Figure 5 & 6***.

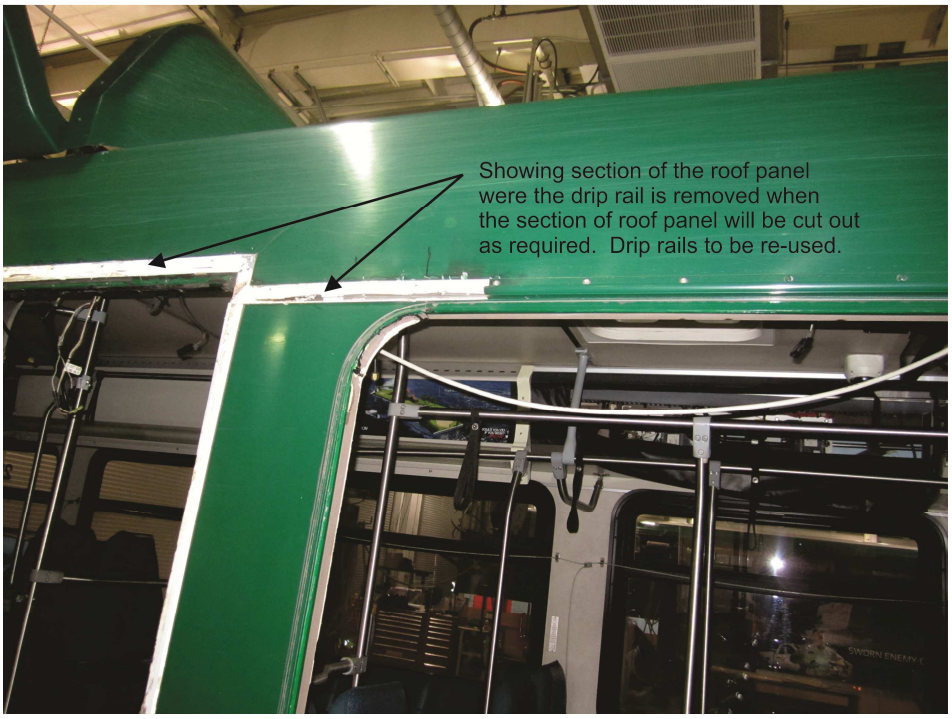
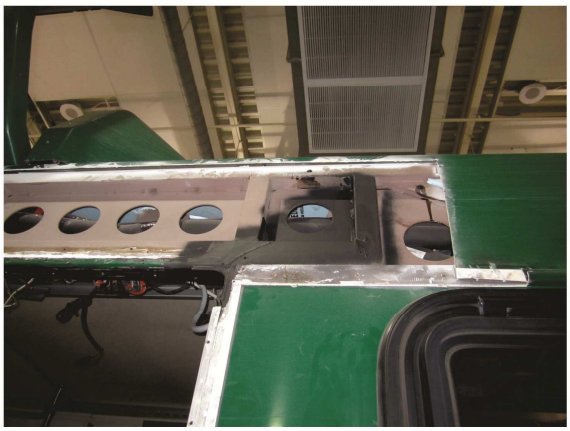


FIGURE 5: ***SHOWN SECTION OF DRIP RAIL REMOVED.***

17. If the roof panel needs to be cut open, tape off section including the cracked section. Carefully trim open section and set aside to fiberglass back in place after welding is completed. Refer to Figure 6.

Shown area taped off to be cut out. Section will be fiber-glassed back in place and painted. This will be determined on a per bus basis. This will likely be done when fiberglass is cracked at on the section above the exit door.

Pictures below show a section opened up.



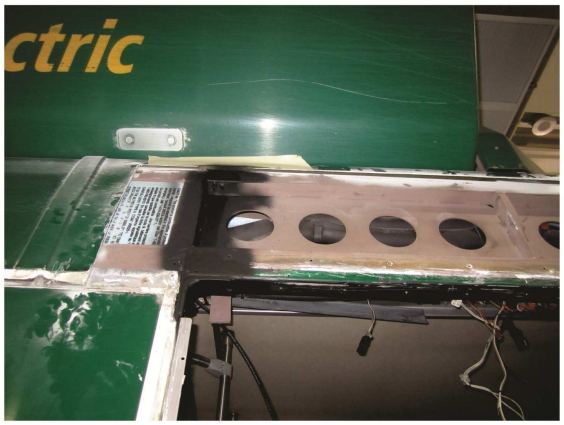


FIGURE 6: ***SHOWN ROOF PANEL SECTION CUT OUT. THIS IS ON A PER BUS BASIS. (SET ASIDE TO FIBERGLASS BACK IN PLACE).***

18. On the exterior of the coach, locate the exterior trims at the exit door. Drill out the (x2) rivets on the inside edge of the exterior trims. Use a 1/8” drill bit to drill a (0.125”) diameter hole to remove the (x2) rivets on both the forward and rear exterior exit trims. Carefully remove the exit exterior trims (forward and rear). **Note:** Be careful when removing trim to avoid damaging paint on the exterior panels around the trims. Remove all old sealant from behind the trims. Use sika cleaner 205 **(NF PN: 055702)** to remove all residue from the exterior body panels where the trim was installed. ***Refer to Figure 7***.

19. Some trimming will be required at the top of the interior exit door trims to allow for the corner gussets to be welded in the top corners of the exit door opening. These trims may have to be removed to allow for welding. Modify trim at the top as shown below Figure 7B. Typical both sides.

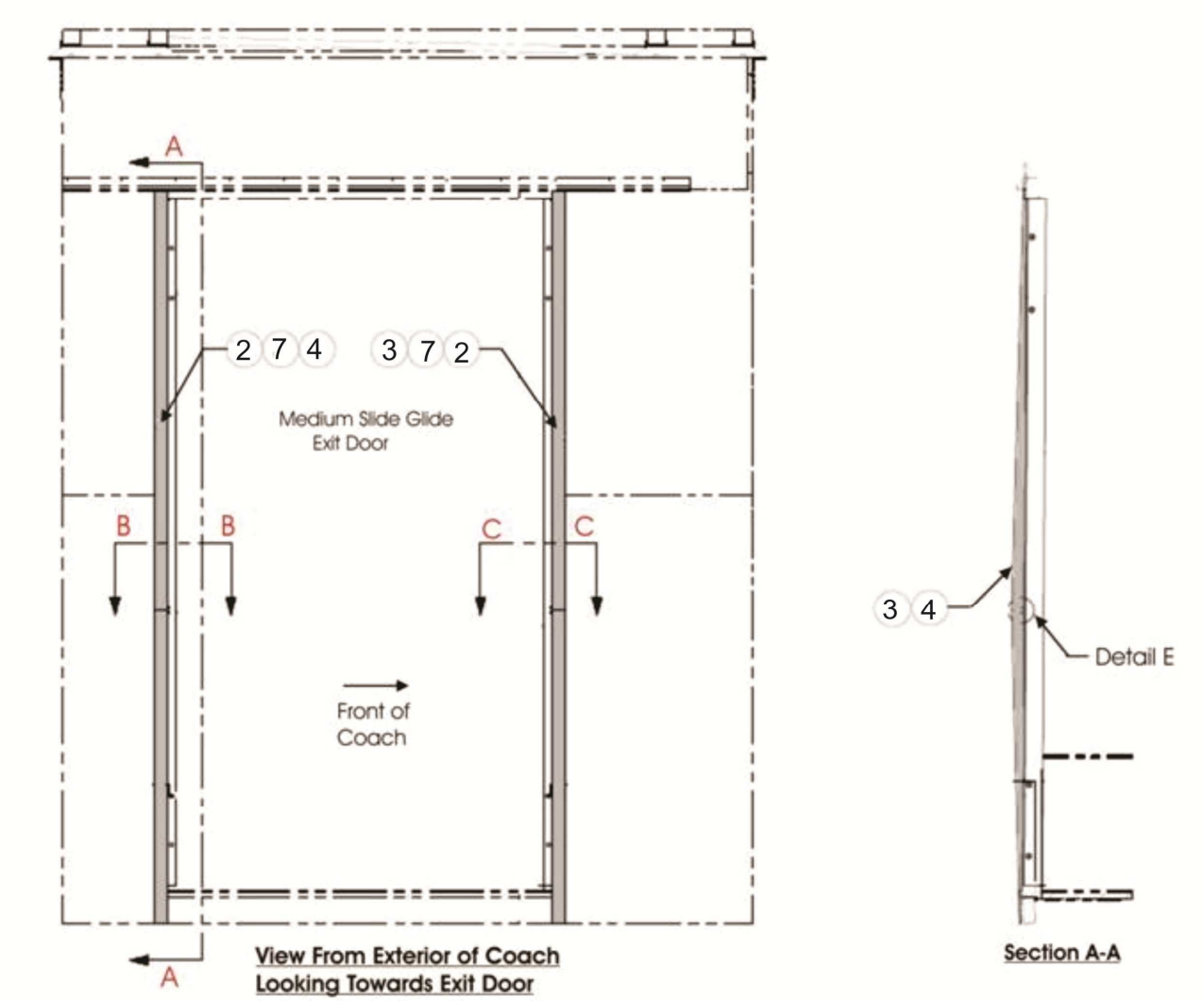


FIGURE 7: ***SHOWN INSTALLATION OF THE FORWARD AND REAR EXTERIOR EXIT TRIMS. REFER TO SECTION A/B & E FOR MORE DETAILS. SECTION A-A VIEW WOULD BE TYPICAL FOR BOTH SIDES.***

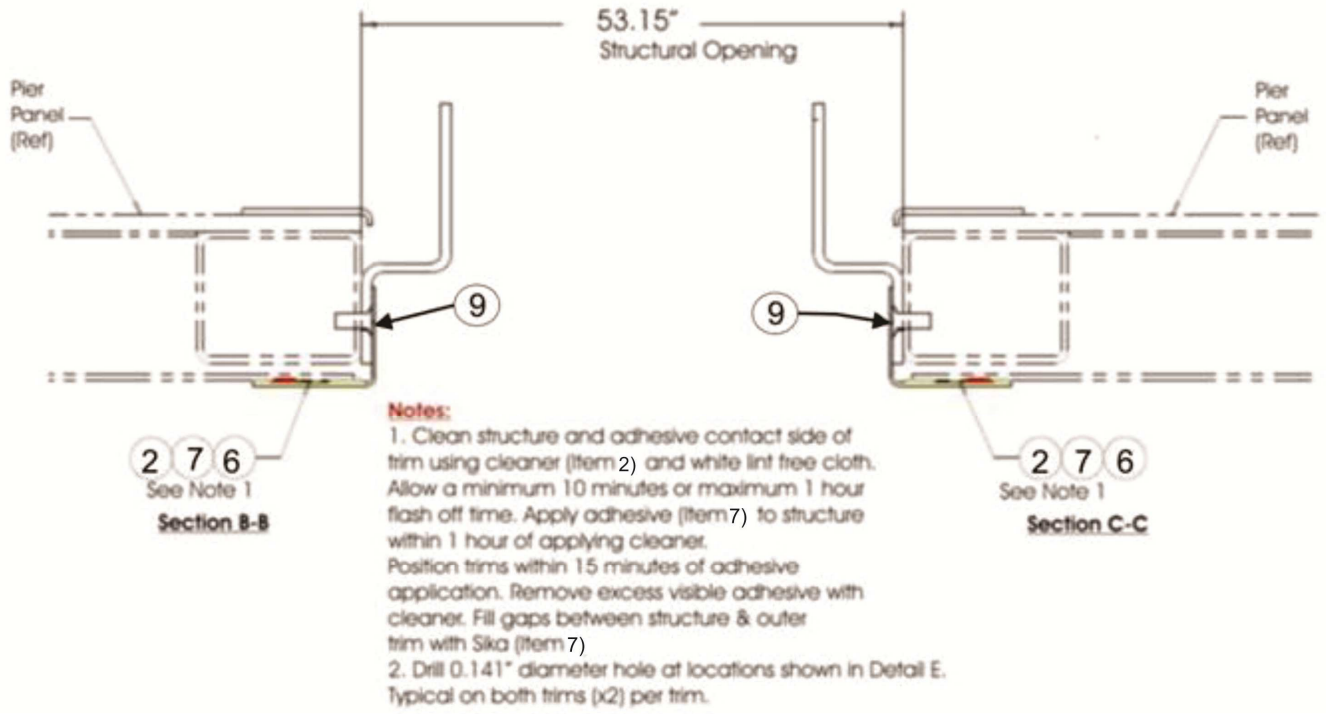


FIGURE 7A: ***SHOWN VIEW OF SECTION B & C TO INSTALL THE TRIMS,***

FOLLOW ADDITIONAL NOTES AS STATED.

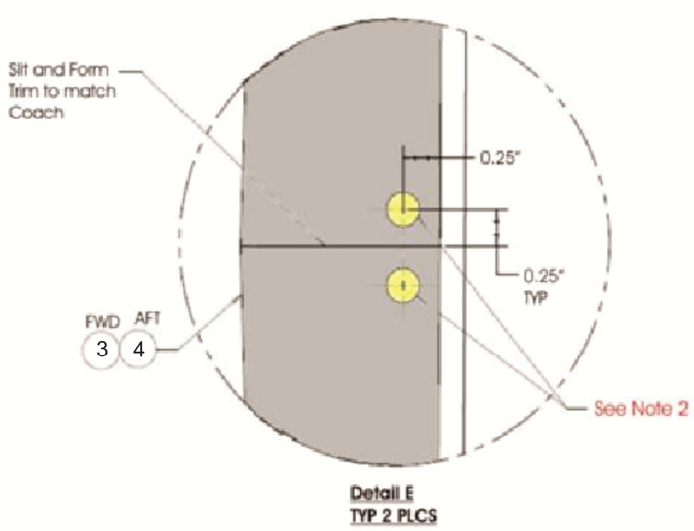
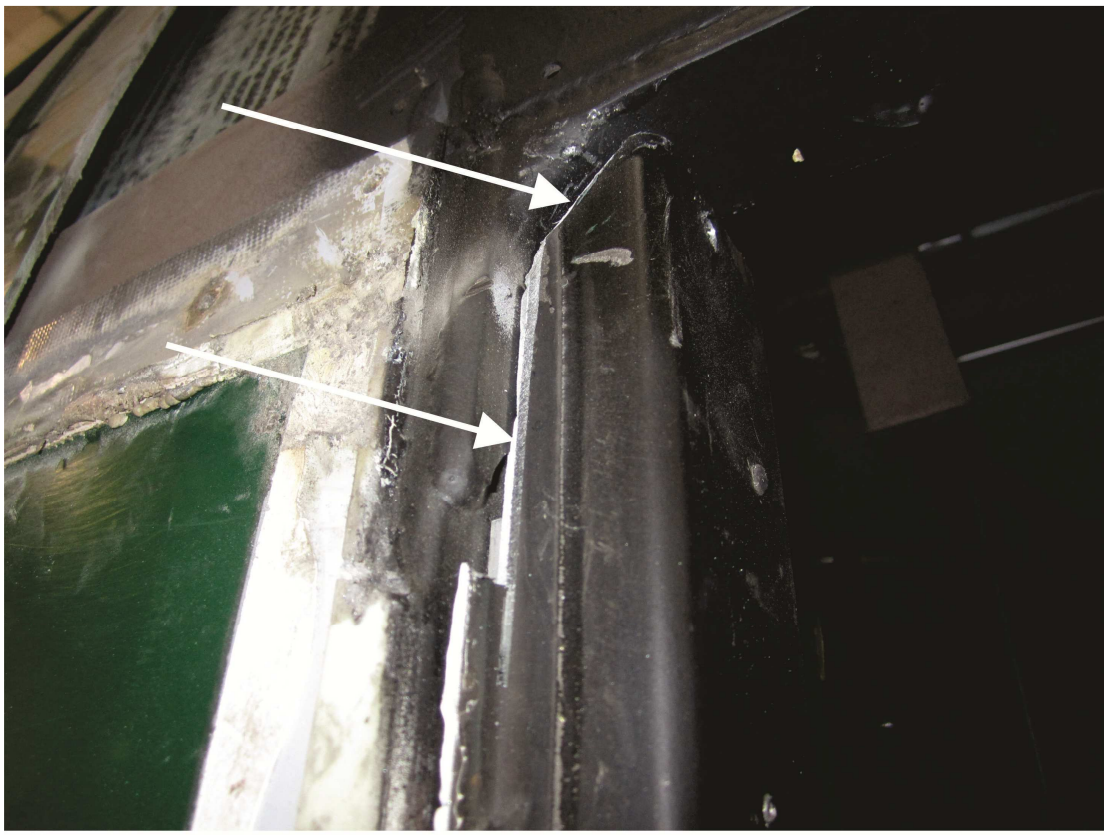


FIGURE 7B: ***SHOWN THE AREA WHERE THE SLIT IS NEEDED TO FORM TO THE CONTOUR OF THE BODY PANEL. (X2) HOLES TO DRILLED AND RIVETS INSTALLED AT THE LOCATION SHOWN ABOVE.***



Trim at area shown to fit around corner gusset plate that is welded in the top corner.

20. Remove window carefully forward of the exit door ***(if required)***. Set aside window & trim ring to re-install later.
21. Remove harness cover and channel ***(if required)***, rear of the exit door.
22. Carefully remove pier panels (forward and rear of exit door) if required. **Note:** Do not damage, this will allow for panels to be re-installed later. Remove old sealant & residue from backside of panels and structure surface. Set aside to re-install later. If new panels are required, new interior pier panels **(NF PN: 080594-82 & 080614-82)**.
23. Remove inside exit door trims (both forward and rear). Clean off backside of trims to re-install later. If not, new trims will be installed **(NF PN: 087116 & 087121)**.
24. Disconnect chime cord as required. Leave hardware off to the side to re-install later ***(if required)***.
25. Once all electrical/components are moved out of the way and then prepare area for the welding of the plates.
26. Wrap all electrical and airlines with welding blankets (fire blankets) to protect all electrical and airlines. **Note:** Ensure that the electrical and airlines are as far out of the way as possible.

PART 1(C) THIS SECTION WILL BE FOR REPAIRING CRACKS ON THE STRUCTURE TUBE (IF REQUIRED).

IN ADDITION, GUSSETS WILL BE WELDED IN AT THE TOP INSIDE CORNERS OF THE EXIT DOOR OPENING.

⚠ **WARNING:**

Before welding anywhere on vehicle, disconnect the following items:

- **Disconnect battery cable before welding.**
- **Engine ECM – disconnect the vehicle interface harness connector.**
- **Transmission ECU – disconnect the vehicle interface harness connector.**
- **Vansco Multiplexing Modules (VMM) – disconnect all VMM1210, VMM2820 and Pocket Gateway (PGM) modules.**
- **Destination Sign – disconnect the vehicle interface harness connector.**

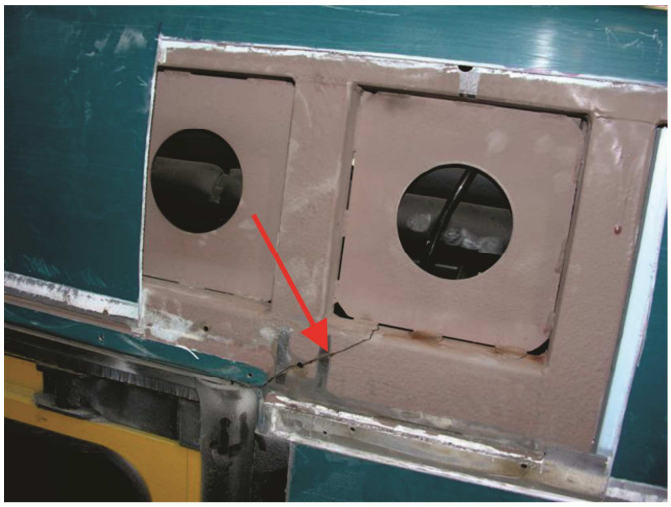
- **HVAC Controller (if equipped) – disconnect vehicle interface harness connector.**
- **Auxiliary Heater (if equipped) – disconnect main connector.**
- **Any electrical modules for the Hybrid components.**

⚠ **WARNING: The following safety equipment should be at the work station and used as required:**

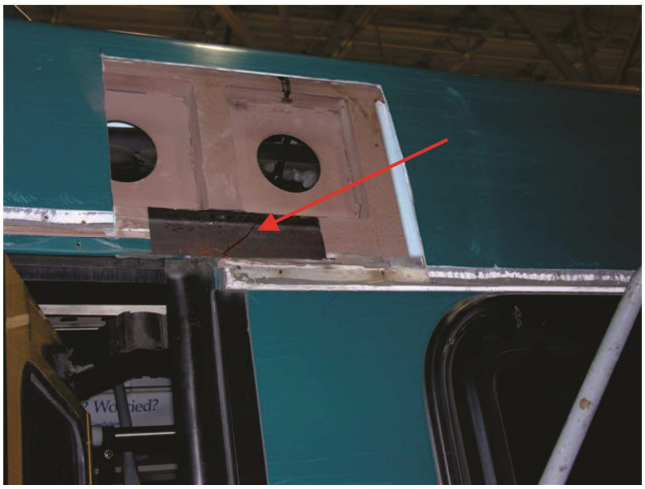
- **Safety shields should be utilized and used as required when working at each workstation. Safety shields must be provided at each workstation.**
- **Fire Extinguishers should be placed at each workstation. Each member trained to operate the fire extinguisher and know the location of each fire extinguisher at each workstation.**

Fill out the inspection sheet in Appendix D showing the number of cracks found in the structure area.

27. Using a wire wheel or similar tool, remove all primer and Sika sealant from the required weld areas. Extend past the weld location 2.0 inches to ensure adequate welds are obtained. For steps 27 – 35, refer to Figure 8 & 9.
28. Locally clean repair area's with vacuum to remove dust and debris. Wipe the weld areas clean with a clean cloth.
29. Remove insulation as required around area were the crack is located on the structure tube.
30. Grind off zinc primer on either side of crack on the tube as specified in step 27. Repeat step 28 to remove dust and debris. **Note:** Cracks in structure tube will only be welded and repaired if found anywhere else beyond the header tube (in the open area).
31. Weld over cracks on structure tube as per **Appendix A/B**. From top/outside/bottom if cracked through, then re-weld in the removed window. ***(only if required)***
    If the welds between the tube and the shear plates are cracked, then the repair would be to grind off the existing (cracked) weld. Then remove the zinc primer and re-weld again.
32. After welding of the cracks has been completed, grind off sharp edges. Check for any weld defects such as undercut and porosity.



Shown crack from the outside on the header tube above the exit door. Fiberglass panel will not be cut out to repair. The tube will have a cutout window from the inside to make the weld repair.



Shown crack in the structure tube. Outside face of the tube is removed.

FIGURE 8: SHOWN CRACK IN THE HEADER TUBE ABOVE EXIT DOOR.

V-groove the crack as shown along the original crack line.

Weld the area along the v-grooved crack as shown on the affected area.

Top picture shows the window cutout in the tube to gain access to the cracked weld on the other side of the tube. Crack will be welded from the inside.

Bottom picture shows the window welded back in place on the tube once the crack has been v-grooved and crack welded.

FIGURE 8 A: ***SHOWN PICTURES OF CRACKED STRUCTURE. THERE WILL BE 2 OPTIONS: DRILL STOP, V-GROOVE AND WELD FROM THE OUTSIDE OR SAME PROCEDURE TO BE COMPLETED FROM THE INSIDE OF THE TUBE (WITH A WINDOW OPEN UP AND WELD CLOSED AFTER WELD COMPLETED). THIS WILL DEPEND ON HOW FAR THE CRACK SPREADS ON THE TUBE SURFACE.***

33. Weld in corner gussets **(NF PN: 221549)** at each top corner of the exit door opening.
34. Removes weld slags and clean welds in preparation of priming. Check for any weld defects such as undercut and porosity.

☞ **NOTE: Visual Inspection of all tubes in the area must be done to confirm no further cracking has occurred after welding procedure is complete.**

35. Once area is cooled, re-apply zinc primer to the affected welded area. **See Appendix C**.

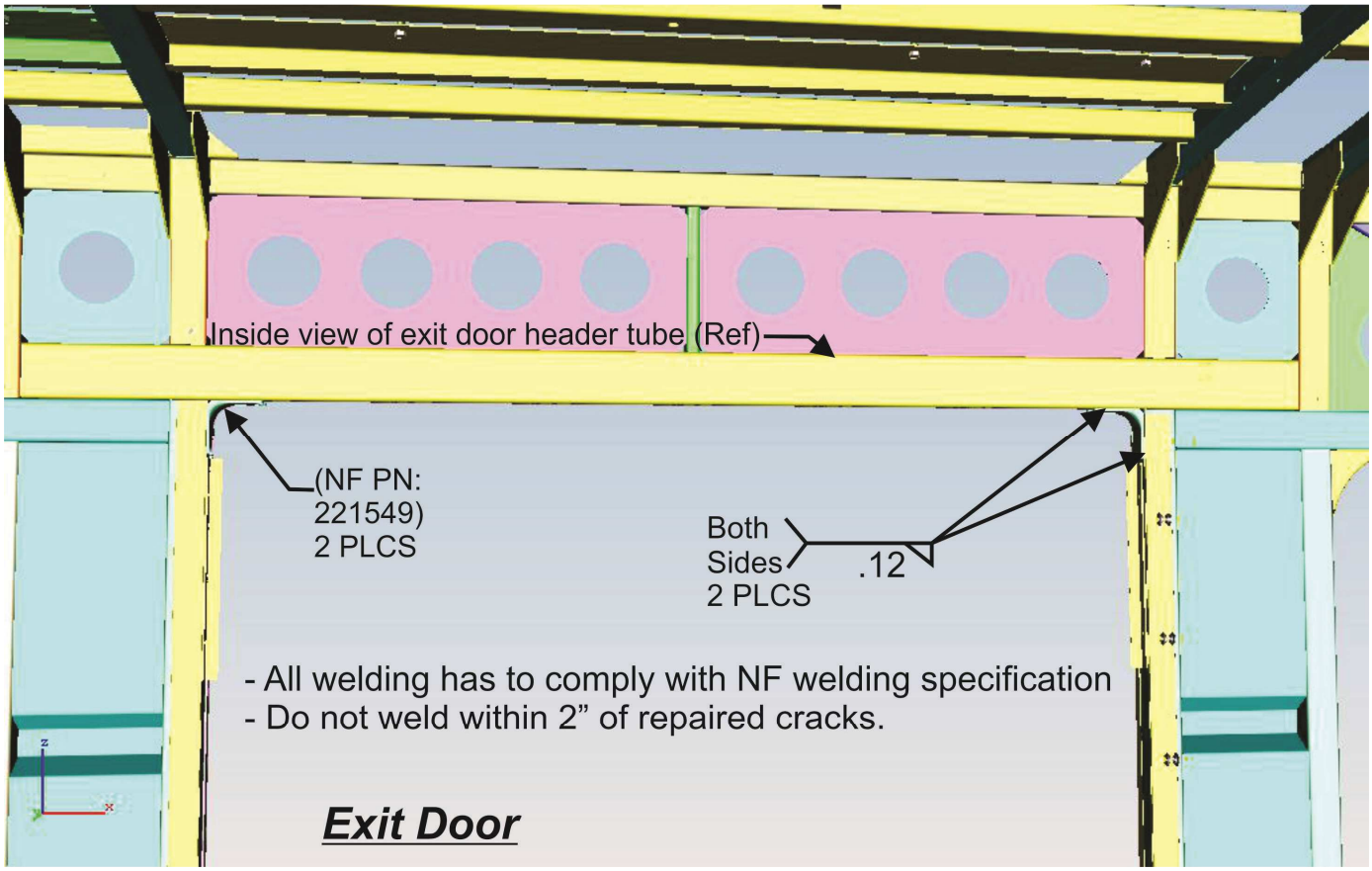


FIGURE 9: ***WELDING INFORMATION TO WELD IN CORNER GUSSETS AT TOP OF EXIT DOOR.***

WILL BE WELDED IN PLACE AS PER ABOVE.

Shown corner gusset plates welded in place. This view is from the inside of the coach.

View shown of corner gusset welded in place from the exterior.

FIGURE 9 A: ***SHOWN COMPLETED VIEW OF CORNER GUSSET PLATES WELDED IN PLACE.***

PART 1(D): THIS SECTION WILL RE-INSTALL ALL THE PARTS THAT WERE REMOVED BEFORE WELDING.

36. Remove welding blanket (fire blanket) from work area. Inspect all electrical/airlines and components to ensure that there is no damage.
37. On the interior of the coach, locate the forward/rear upper pier panel structure area. First, dry fit the interior forward pier panel **(existing panel, if it can be used)** to ensure that the panel fits properly. **For steps 37 - 39, refer to Figure 10.** Proceed to install the pier panel. ***Note:*** These steps will only need to be done if the interior upper pier panels were removed.

38. Following steps must be followed for the application of the interior pier panels and above the exit door. **(Only required if interior pier panels removed)**. Skip steps 37 - 39 if the pier panels didn't require to be removed and proceed to step 40.

a) Clean structure with sika cleaner **(NF PN: 055702)** using white lint-free cloth. Allow a minimum 10 minutes of flash-off time.

b) Place spacer tape **(NF PN: 089832)** at approximate locations and in lengths as shown.

c) Clean adhesive contact side (non-painted side) of aluminum painted panel entirely with sika cleaner. Allow a minimum 10 minutes of flash-off time.

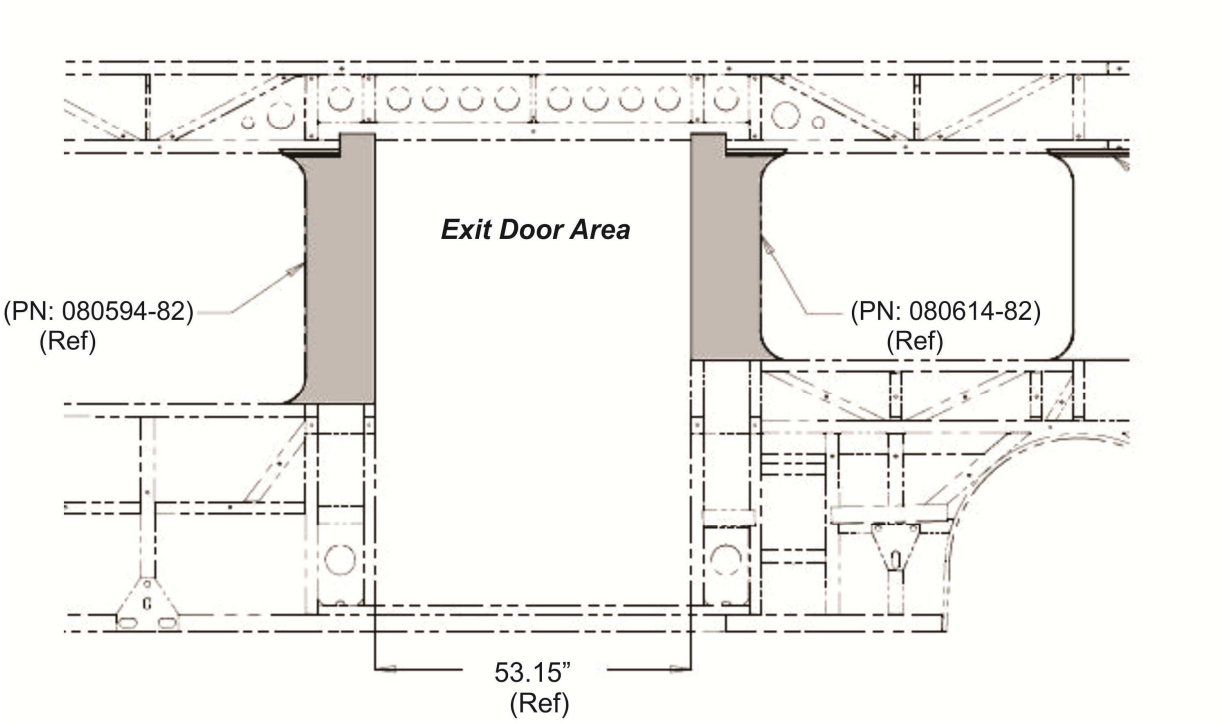
d) Apply adhesive-sika 221 **(NF PN: 055701)** to surface. Apply as shown.

e) Place & secure pier panel **(existing panel)** to side structure. Press firmly in place across the entire surface for proper contact and adhesion to the side structure. Remove excess sealant.

39. Proceed to the rear pier panel **(existing panel)** and repeat step 38 to apply to structure.

40. Back to the forward interior pier panel, re-install the molding-interior panel trim that was set aside. Install on the top edge of the interior pier panel.

41. Next, re-install the molding-interior panel trim on top edge of the interior pier panel that was removed.



Shown view from the interior looking toward the exterior

FIGURE 10: SHOWN PIER PANELS INSTALLED ON THE INTERIOR.

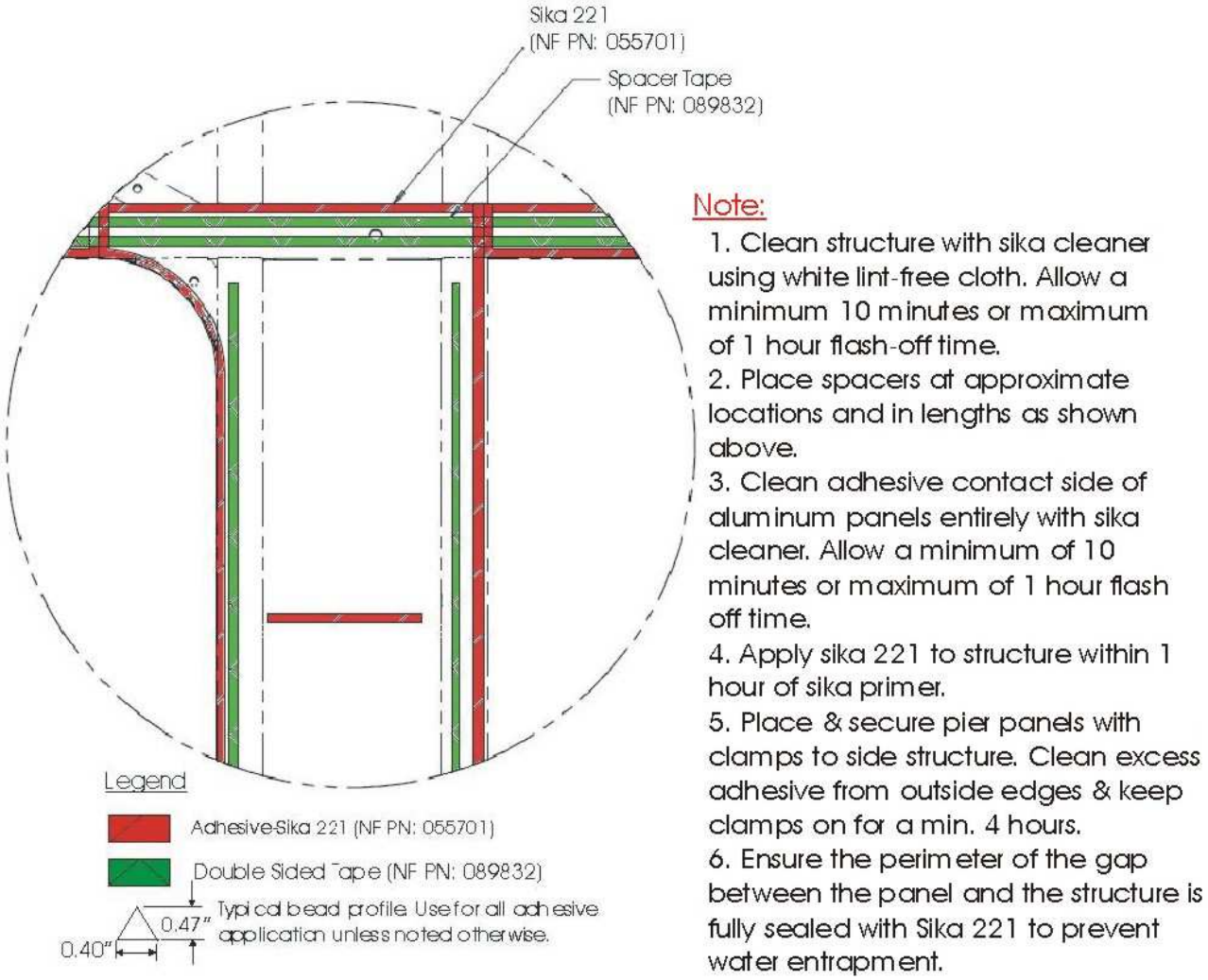


FIGURE 10A (CONT'D): SHOWN VIEW OF THE APPLICATION OF THE DOUBLE SIDED TAPE AND THE ADHESIVE APPLIED ON THE STRUCTURE. SEE NOTES ATTACHED FOR THE APPLICATION OF THE PIER PANELS. NOTE: THE PIER PANELS CAN ONLY BE APPLIED AFTER ALL THE STRUCTURE THAT HAS BARE METAL MUST HAVE THE ZINC PRIMER APPLIED FIRST.

42. Trim top of the trim to fit around the upper corner gussets at the exit door opening. Install interior exit door trims back at the original position. Drill 0.203" diameter holes and install with rivets **(NF PN: 008756)**. Repeat for the other trim.
43. Install both exterior trims that were removed. Prepare to install the forward exit trim **(existing trim)** on the forward side of exit door opening. Dry-fit trim **(existing trim)** on the

coach (shorter flange at the bottom) to ensure that the trim is flush with the bottom of the drip rail and even with the bottom of the lower body panel. Use masking tape to position the trim in place and mark off (x2) hole location at the slit area on the trim. Drill (x2) holes at the dimensions showing above and below the slit on the trim. Drill out the holes to 0.141" diameter. Countersink the holes so that the rivet head will sit flush in the hole. Remove trim from the coach and remove all debris from the area. On the backside of the trim (non-painted side) wipe surface with Sika Cleaner 205 **(NF PN: 055702).** Use a clean lint free cloth to wipe surface down where trim will be applied. Add structural tape 0.5W **(NF PN: 102378)** to outer and inner flange of door opening (if required). Typical on both sides. Apply (x2) beads of sealant **(NF PN: 055701)** to the backside of the trim on the wider inside flange and (x1) bead of sealant along the inner flange that will be installed against the exterior pier and body panels. Carefully position trim on the coach. Press firmly against trim (by hand) across the entire surface of the trim. Install (x2) rivets **(NF PN: 8410582)** and crimp in place. Remove excess as required. Using white sealant **(NF PN: 055701)**, seal the bottom flange to the structure. Seal to a 90-degree finish.

44. Repeat step 43 to re-install the rear exit door trim at rear side of the exit door opening.
45. Apply sealant and re-install roof panel/drip rail to roof structure above exit door. Clamp and secure in place until sealant has bonded. Remove excess sealant and seal all gaps. ***(Only if this was required to be done – otherwise skip this step and proceed to step 46)***.
46. Re-install 3/8" red airline to the structure with the p-clips that were removed in step 13.
47. Re-install the VMM exit door panel that was removed in step 12. Re-install hardware and tighten.
48. Proceed to re-secure and p-clip all loose electrical that was p-clipped to the structure area above the exit door. Secure all other loose electrical harnesses. Ty-rap STD 15" **(NF PN: 5963577)** or ty-rap MED 7" **(NF PN: 5958112)** for securing. Re-install the curbside rear harness cover that was removed in step 14.
49. Install the exit door base plate that was removed in step 7. Use new hardware to install the exit door base plate, use the following hardware:

BOLT – HEX 5/16" UNC X 1.00" (NF PN: 10B05016) QTY.5

WASHER – LOCK 5/16" UNC X 1.00" (NF PN: 30W05000) QTY.5

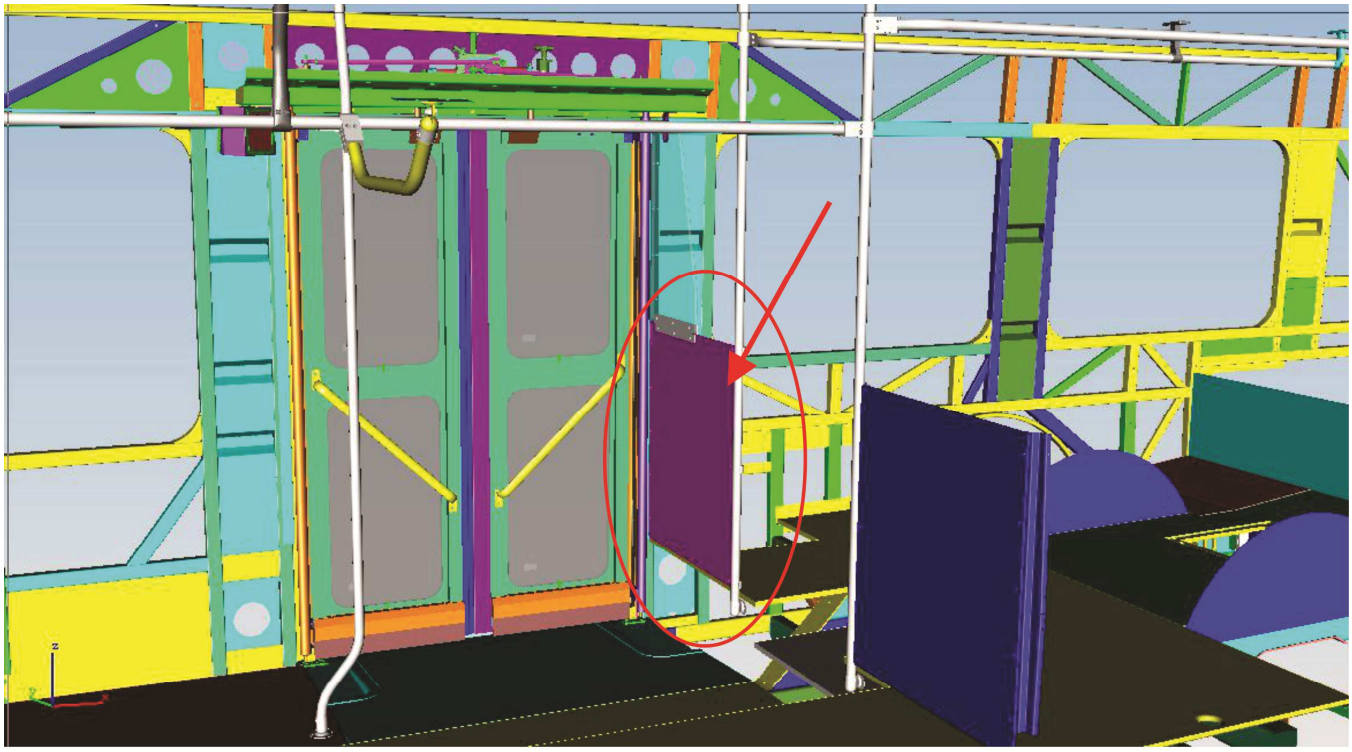
WASHER – FLAT 5/16" (NF PN: 10W05000) QTY.5

Tighten hardware. Torque SAE grade 8 5/16 – 18 UNC to ***27 FT/LBS dry***. **Refer to Figure 2.**

50. Next, proceed to re-install the speaker panel to the structure, forward and rear of the exit door that was removed. Before re-installing the speaker panel, remove old double-sided foam tape and residue from the bottom flange on speaker panel. Install new tape-DBL coated foam **(NF PN: 098140)** along the bottom flange along the center (press firmly for proper contact). Starting on the forward speaker panel, remove the adhesive tape paper and install into the channel on the molding trim that is installed above the interior pier panel. **Note:** Press firmly for proper contact to the structure. Re-attach the speaker panel to the light panel hangers. Tighten hardware.
51. Repeat step 50 to re-install rear speaker panel.
52. Re-install the angle support bracket along the exit door base plate and the forward/rear speaker panels that were set-aside. Tighten all mounting hardware.
53. On the forward edge of the exit door opening (interior), prepare forward molding trim **(NF PN: 089172)**. Add 0.5" W structural tape **(NF PN: 102378)** along the backside of the trim. Remove paper backing of structural tape and apply trim along the forward edge of the interior pier/sidewall panel. Press firmly for proper contact with panels. **Note:** Face of trim must be painted flat black **(NF PN: 121389)** before installation. Let trim dry and install with painted surface being visible.
54. On the rear edge of the door opening (interior), repeat step 53 to install the rear molding trim **(NF PN: 089173)**.
55. Re-install the exit door dump valve box **(NF PN: 249686)** at the forward pier panel below the exit door base plate at the specified location. **Note:** Use hardware that was set aside. Refer to Figure 4.
56. Re-connect the emergency cable in the exit dump valve box that was disconnected. Tighten hardware on cable.
57. Proceed to re-install the curbside rear harness cover assembly. First, re-install the air/electrical housing at the same location that was removed. Use the hardware that was set aside to re-install the housing, tighten hardware. Next, re-install the saddle at the top of

the opening to secure the harnesses in place. Ty-rap the harnesses as required to secure. Next, re-install the harness cover that was removed and tighten all hardware.

58. On the rear side of the exit door, prepare to re-install the rear curbside modesty panel that was set aside. Use the hardware that was set aside to re-install the modesty panel. Apply 1 to 2 drops of loctite **(NF PN: 8110440)** to inner threads of nut-sleeve. Once all hardware is tighten, deburr all fasteners after installation is complete. For step 58, ***refer to figure 12***.



Curbside rear modesty panel can be re-installed.

FIGURE 11: SHOWN INSTALLATION OF MODESTY PANELS TO BE RE-INSTALLED.

59. Re-install the chime cords on both the forward and rear side of the exit door. Tighten hardware and ensure the proper amount of tension is applied to chime cord. ***(IF chime cord was removed – if not, skip this step and proceed to step 60)***.
60. Next, re-install the upper brush to the exit door base plate above the doors. Use the brush and hardware that was set aside.

61. Starting on the forward side of the exit door opening, prepare to re-install the metal strip retainer and rubber seal. Use the rubber seal and metal retainer strip that was removed. Install the metal retainer strip into the channel on the rubber strip so that it sits flush on the rubber seal. Use some clamps to position the seal/metal retainer on the forward side of the interior trim. Position the seal/strip at 1.00” from the inner edge of the door trim to the center of the seal/trim. The top placement will be at 0.58” from top of rubber to the bottom of the exit door base plate. Clamp in place at the specified dimensions and drill the top hole at 0.191” diameter. Install rivet-3/16” black **(NF PN: 8410642)** and crimp in place. Next, go to the bottom of the door seal/retainer and place at 0.85” from the inside edge of trim to center of the seal (bottom of rubber should be stretched down so that the seal is flush to the exit door nosing). Clamp in place and drill out 0.191” diameter hole at the bottom. Install rivet-3/16” black **(NF PN: 8410642)** and crimp in place. The seal/retainer should be straight when installed. Continue to drill out the holes and install rivets. Start from the top and work down. For steps 61 – 71, ***refer to Figure 1***.
62. Repeat step 61 to install the remaining door seal and metal retainer strip that was set aside.
63. Next, install the forward lower bottom pivot assembly. Install lower bottom pivot using new mounting hardware. Install never seize **(NF PN: 5928660)** on threads on bolt **(NF PN: 296483)**. Apply lock washer **(NF PN: 51W04000)**, flat washer **(NF PN: 50W04000)** and locknut **(NF PN: 50N04000)** [x2] to secure lower pivot mount. ***Torque hardware to 7 FT-LBS Wet***.
64. Repeat step 63 to install the rear lower bottom pivot on the rear side of the exit door at the nosing area. Use the pivot that was set aside.
65. Starting on the forward exit door (from inside) that was set aside, install door panel into the bearing in the exit base plate and attach the LH arm assembly. Install screw **(NF PN: 5961264)**, wedge **(NF PN: 103424)** and the other wedge **(NF PN: 103425)**. Tighten hardware and torque to ***38 FT-LBS Dry***. Once door is re-installed, check door seal on the outside to ensure that the rubber seal is tight to the door when in the closed position.
66. Repeat step 65 to install the rear exit door that was set aside.
67. Disconnect the welding ground if not already done.

68. **<u>Connect battery cables. Also connect ECU's for engine, transmission, electronic destination signs, ABS and VCM as applicable.</u>**
69. Turn the main battery disconnect switch to the "ON" position.
70. Inspect and ensure that all hardware is tight in the exit header, on the exit door and lower pivot mounting hardware. Check and operate the exit doors to ensure that the door opens and closes smoothly.

☞ **NOTE: Full functional test of the exit door mechanism and rear door brake interlock must be performed and passed before coach can be put back into service.**

- **Ensure that all electrical that was disconnected is re-connected in the exit door header and doors function correctly.**
- **Check to ensure that all hardware is installed correctly and tighten in the exit door header.**
- **Ensure that all electrical/airlines are out of the way of moving parts in the exit door header.**
- **Check to ensure exit door courtesy lights function when exit door controller is activated.**
- **Check to ensure that the exit door opens and closes smoothly (no binding).**
- **Check to ensure that the emergency door open grab handle functions so that the doors will release when grab handle is functioned.**
- **Check to ensure that the w/c ramp functions properly and doesn't interfere with exit doors when opening/closing.**

With rear door activated, check to ensure that rear brake interlocks are applied. Utilizing a pressure gauge, confirm that the air pressure is set at 45 PSI.

71. Re-install the velcro cover that was removed.
72. Re-install the curbside light panels that were removed. Connect the electrical to the light panel. Install and tighten hardware. Position exit door mirror in correct location and tighten in place.

73. Next, to install the windows on the coach a helper will be required. Prepare the window-opening forward of the exit door. Apply a small bead of butyl sealant **(NF PN: 061837)** at each of the exterior joints around the window, TYP. 4 PLCS, prior to installing. **Note:** Ensure that there is a good seal in these areas, in order to prevent water from entering the unit at each of these locations. For steps 73 – 81, ***refer to Figure 12***.
74. Install the forward window that was set aside. Install the interior window trim ring and install (x28) black # 8 torque screws **(NF PN: 292903)**. Tighten screws to ***35 Inch LB torque value***.

NOTE: Do not tighten screws until all screws have been inserted and snug up, and then follow torque procedure.

I. **Install screws 1, 2, 3 and 4 with the screw tip bottomed out in the sub frame screw port.**
II. **Install screw # 5 at the clamping joint to ensure a tight fit at the joint.**
III. **Install screw #6 and complete installation of the screws up to 10.**
IV. **Install the remainder of the screws.**

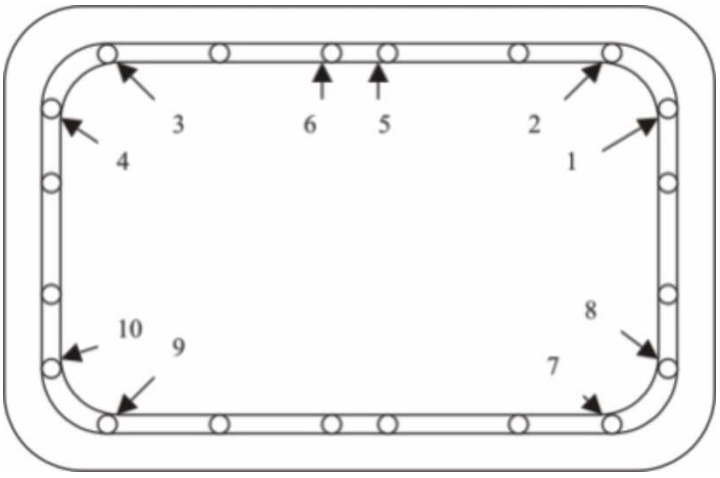


FIGURE 12: ***WINDOW TORQUE PROCEDURE.***

75. Torque all screws to ***35 in-lbs*** using a random torque pattern same as you would when tightening the lugs on your car wheel.

76. Check window exterior to ensure perimeter rubber gasket is properly seated.
77. Check clamp ring to ensure rubber gasket is properly seated against panel.
78. Check slider window operation by opening and closing slider window to ease of operation (if applicable).
79. Check emergency exit windows by opening exit window and letting it close to test latch operation (if applicable).
80. Ensure window is properly closed. If window does not open properly close, loosen lower clamp ring screws, hold window at 60 degrees and drop. If window does not latch, attempt second time. Re-tighten lower clamp ring screws.
81. New Flyer Certified Welding Inspector is to complete the sign off sheet for the welding certification sheet for the structural repairs with Vancouver representative present. Once completed the sheet will be given to a Vancouver representative.

PART 1(E & F): PATCH FIBERGLASS ABOVE EXIT DOOR AND PAINT AFFECTED AREA (THIS WILL BE ON A PER BUS BASIS)

82. If the fiberglass had to be cut out, patch fiberglass back in place and repair the original fiberglass crack. It will need to be determined on a per bus basis how big of an area to remove. Paint affected area to match the property paint specifications.
83. Re-install the roof panel above the exit door. Apply double sided tape **(PN: 102378)** & white adhesive **(PN: 055701)**. Press firmly in place. Re-install drip rails that were removed. Drill 3/16" holes. Apply a dab of sealant on each rivet head before installation. Install rivet **(PN: 066884)** & crimp in place. Repeat steps for all other rivets. Neatly seal gaps along bottom of drip rails. Seal joints inside of drip rail.
84. Remove all debris and tools from work area to return coach to service condition.

IMPLEMENTATION OF NEW FLYER ITS 5358

Bus Number: _____

Hub Reading: _____

Date Work Completed: _____

Assigned Welder: _____

Assigned CWI: _____

Maximo Mileage: _____

New Flyer Industries hereby certified that the structural repairs completed on this bus were completed in accordance with approved ITS 5358 and the bus is structurally fit for service.

New Flyer Representative: Date:

_____ _____

Seattle Representative Turnover: Date:

_____ _____

Appendix A

Welding Procedure

I. Remove old weld by grinding as required. Oxy-acetylene torches must not be used.

II. Area enclosed by welded zone plus 2" either side to be cleaned to base metal by wire brush, removing all grease, oil, rust and scale from surfaces to be joined.

III. **Disconnect battery cables when welding. Also disconnect ECUs for engine, transmission, electronic destination signs, ABS, articulated joint (black box and pressure sensors) and VCM**.

IV. All welds to be made with E7018, low hydrogen welding rods. Gas metal arc welding (semi-automatic) may be used where practicable, provided AWS A5.18 standard E70S-3 or E70S-6 wire is used, with argon-carbon dioxide shielding gases.

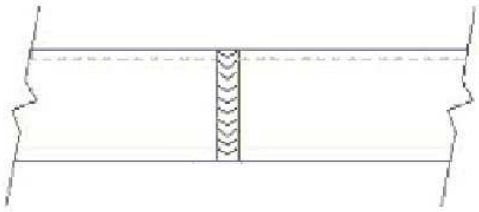
Welder shall meet qualifications for "all position" welding as per AWS D1.1 or CSA W59 standard qualification for metal arc welding.

APPENDIX B

CRACK REPAIR PROCEDURE

(USE ONLY IF REQUIRED)

LOCATE THE CRACK SITE.



WELD UP ALL ACCESSIBLE CRACKS,
NO NEED TO GRIND CRACKS
AS MATERIAL IS 0.125" THICK.

NOTE: ***DRILL 0.25" DIAMETER HOLE AT THE END OF THE CRACK.***

APPENDIX C

PRIMER APPLICATION INSTRUCTIONS

Primer Mixing Instructions

I. Clean area to be primed per painting and priming procedures in the New Flyer Service Manual under section: Chassis and Structure.

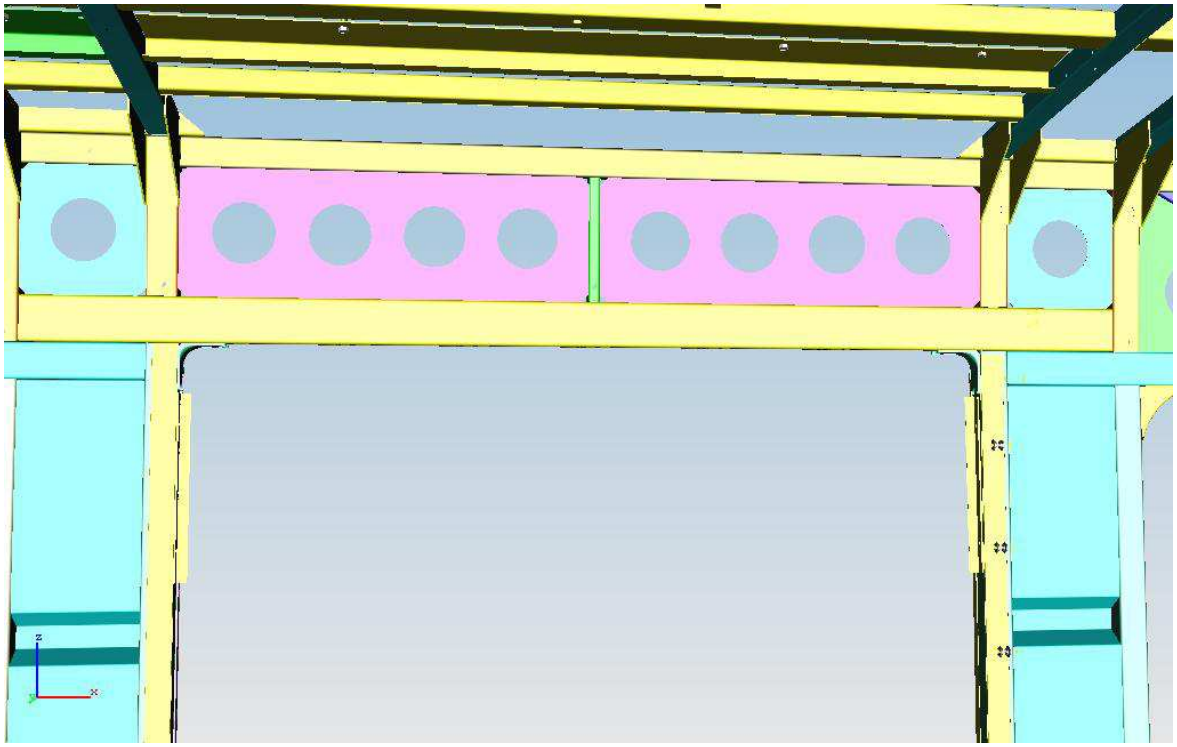
II. Mix 1 part of PPG Catalyst S28079 (NFIL P/N 108936) with 2 parts of PPG Green Zinc Powder coat S28080 (NFIL P/N 115956). Mixture to be applied by brush. No Varsol (thinner) is required. Mix thoroughly.

Cure time is 4 hours at 77°F (25°C).

Pot life of mixture is approx. 3 to 4 hours, BUT is significantly reduced with exposure to air (moisture).

APPENDIX D

MARK AREA AT THE EXIT DOOR FOR STRUCTURE CRACKS



(VIEWED FROM INSIDE OF COACH)

CURBSIDE INSPECTION AREA

1. _____
2. _____
3. _____
4. _____
5. _____

COACH # _____

DATE REPAIRED: _____

INSPECTED BY: _____

WELDING TECHNICIAN: _____

MILEAGE: _____

Note: Mark area on the structure showing the area of the crack.

LABOUR ESTIMATE				
	Operation	Men	Hours	Labour Time M X HR
1A	Dis-connect/connect all electrical components before welding (including hybrid system and exit door hook-up – 2 hours). This will also include time for interior clean and wash. (2 hours)	1	2+2	4
B	Removal of components as required preparing for welding.	1	6	6
C	Cut/Trim/Prep and weld (including primer application).	1	3	*3
D	Re-installation of components.	1	14	14
E	Cut out fiberglass section above exit door. Patch fiberglass. (This will be done on a case by case basis – usually when fiberglass is cracked above exit door opening).	1	7	*7
F	Paint reworked area only.	1	3	3

Total hours: 37 hours

- * Note the labor hours may increase depending on the amount of structure cracks found.

PARTS REQUIRED					
Item	Part Number	Description	Qty. per Coach	Units	Notes
1	6412158	Kit – Seattle Exit Door Repair	1	EA	
2	108936	PPG CATALYST S28079	0.05	GA	
3	115956	PPG GREEN ZINC S28080	0.1	GA	

Note: Do not order parts below, just listed for the BOM for the kit **(PN: 6412158)**

PARTS REQUIRED (These parts are included in Kit PN : 6412158)					
Item	Part Number	Description	Qty. per Coach	Units	Notes
1	221549	Gusset Windows – Stamped	2	EA	
2	055702	Sika Cleaner 205	0.5	EA	
3	6412382	Painted Trim – Fwd. Exit Door	1	EA	
4	6412383	Painted Trim – RR Exit Door	1	EA	
5	8410582	Rivet-Blind CSK 1/8	8	EA	
6	102378	Tape – Structural 0.5 W	40	FT	

7	055701	Sika 221 White Adhesive	2	EA	• 3
8	055700	Sika 221 Black Adhesive	0.5	EA	• 3
9	008756	Rivet – 3/16 SS F/Head	20	EA	
10	121389	Paint Flat Black	1	EA	*2
11	8410642	Rivet – 3/16 Black	32	EA	
12	10B05016	Bolt Hex 5/16 18 UNC x 1 LG	7	EA	
13	10W05000	Washer – Flat 5/16	7	EA	
14	30W05000	Washer Lock Spring 5/16	7	EA	
15	5928660	Neverseize	0.01	EA	
16	51W04000	SS ¼" Lock Washer	4	EA	
17	50W04000	SS ¼" Flat Washer	4	EA	
18	50N04000	¼" Locknut	4	EA	
19	296483	Bolt – Carriage 316SST ¼-20 x 2	4	EA	
20	292903	Screw-8x1 PH TRX Blk.	54	EA	*1
21	061837	Butyl Sealant-BLK	1	EA	
22	089172	Molding-Trim Int.	1	FT	*1
24	089173	Molding-Trim Int.	1	EA	*1
25	089832	Tape Double Sided Adh. 0.06 THK	50	FT	
27	8410642	Rivet Blind Black Painted 3/16"	30	EA	
28	080594-82	Pier Panel - interior	1	EA	Do not order
29	080614-82	Pier Panel - interior	1	EA	Do not order
30	103423	SCR 12PT FLG 3/8-24x1.25	2	EA	Do not order
31	103424	Wedge	2	EA	Do not order
32	103425	Wedge	2	EA	Do not order
33	243818	Moulding-Drip Rail	0	EA	Do not order
34	066884	Rivet-3/16 S.STL .59 GRP	18	EA	
35	051283	Insert	2	EA	

Notes:

1) Trims will need to be painted flat black on-site with spray can.
2) Purchase locally.
3) Customer will order sika sealant and charge back NF per bus.