SealSafe® Radial Door
Inspection and Repair Manual

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Explanation of Caution and Warning Headings

The headings shown below are used to alert you to possible or even probable threats to your safety or health if you are not aware and cautious. As these paragraphs appear in the text read them carefully and follow their instructions completely.

DANGER
Danger is indicated when operator injury or death is probable if the message is ignored.

WARNING
A Warning is indicated where operator injury or death is highly likely or damage to equipment is probable if the message is ignored.

CAUTION
A Caution is indicated where operator injury is possible or damage to the equipment is likely if the message is ignored.

NOTICE
A Notice is indicated where information is important to the operation of the equipment or to the operator's understanding.

NOTE
A Note indicates information that may be useful to the operator but does not involve issues of safety or health.

Safety First

Always use Extreme Care when working on any autorack. This manual is intended for use by those who are familiar with autorack repair and sound railroad safety procedures.

WARNING
Each door weighs over 600 pounds. Don't pinch your fingers under the door.

CAUTION
Each door must be locked in the open position before entering the rack.

CAUTION
Visually inspect the door before opening it. If there is any doubt about the structural condition of the door or its operating condition, **Do Not Open the Door** without first securing it to a crane or fork lift.

If there is any question about safety, **STOP!** Contact your supervisor or TrinityRail Products Engineering.

Whenever an autorack is removed from service for any reason, the doors should be inspected for wear and operation. The goal of each repair facility should be to put an autorack back into service, so that it will operate maintenance-free until the next scheduled certification. Proper repairs using quality parts should allow each facility to reach its goal of eliminating down time.

Introduction

The first generation SealSafe® Radial Door was originally applied to Articulated Bi-Level (ABL) cars built beginning in September 1997. These ABL SealSafe® doors are slightly wider than the doors used on conventional autoracks, have a different upper lock arrangement, and have a different lower door track arrangement. The SealSafe® doors were applied to standard bi-level and tri-level autoracks beginning in February of 1998. They have been applied to all Thrall Car autoracks built since that time.

The TrinityRail “NRC Hucked Pivot" is the latest pivot design. The TrinityRail Convertible Auto Rack has an ABL style bottom door track. See Appendix I for identification photos for different designs. NRC Hucked Pivot replaces the NRC Center Screw Pivot.

On all SealSafe® doors, the top of the door pivots from the roof. This allows eliminating the upper door track, upper fingers, and door pivot arms which results in fewer moving parts. All SealSafe® doors have no slots for the corner of the deck to project through making a stronger door. SealSafe® doors also have a rubber gasket applied to the vertical nose members at the center to reduce airflow into the rack.

These improvements make the SealSafe® Radial Door stronger and more secure. Maintenance will be reduced due to fewer moving parts. Airflow and contaminant entry will also be reduced due to fewer openings in the doors and smaller openings around the doors.

The door operation remains the same as it has always been for radial doors. Most of the repair procedures also remain the same. New procedures have been added to cover items unique to these new SealSafe® Radial Doors.

The suggested repair procedures outlined in this manual were developed to meet our goal of continuous service between certifications. The Prep Tracks and Loading Ramps must perform inspections and make the necessary minor running repairs. The Pool Repair Shops and Certification Shops must also perform inspections and thoroughly repair autoracks in their programs.

Whenever an autorack is removed from service for any reason, the doors should be inspected for wear and operation. The goal of each repair facility should be to put an autorack back into service which will operate maintenance-free until the next scheduled certification. Proper repairs using quality parts should allow each facility to reach its goal of eliminating down time.

NRC Hucked Pivot upgrade kits to convert the first generation pivot, are available from Trinity Parts and Components, LLC. The upgrade procedures are found in the appendices of this manual. On-site training will be provided with your first kit.

Please contact Trinity Parts and Components with any questions on these procedures or for information on other autorack repair procedures. Call Trinity Parts and Components, LLC, at (800) 336-7305, or (817) 378-2003, fax (817) 378-2003; www.trinityparts.com

NOTICE
The following procedures must be performed in shop facilities that are approved by the Association of American Railroads [AAR] for work on autoracks and by mechanics trained by Trinity North American Freight Car, Inc. (TrinityRail®). Please contact TrinityRail Customer Service department at (800) 227-8844 to request training and / or the latest version of the procedures.

Section 1 Inspection

Inspection at Prep Tracks or Loading Ramps

Before opening the doors:

1. Inspect the alignment of the two doors. The gap between the doors should be relatively constant from the top to the bottom (1¼" to 2").
2. Inspect the upper and lower lock pin engagement by looking through the slot or space between the ladder and the door or post. The bottom lock pin should be engaged completely. The lock cable extending to the upper lock should be tight with no slack.

Open both doors:

1. Look for interference or binding parts and immediately make the repair. Proper lower door track lubrication will make a substantial difference in the operation of the door.
2. Make sure that both door lock pins fall completely into the lock receivers when the door is fully open. This is very important! If both lock pins do not engage, locate and correct the problem immediately or close the door.

CAUTION
Both lock pins must engage the receiver before people climb up the ladder and use the door to enter the rack.

CAUTION
Never enter or exit an autorack using a door which is not properly locked in the open position!

3. Examine the lower door track for excessive wear where the rollers and 'J' plates rest with the doors locked in the closed position. Also inspect for bypassed coupler damage to the end of the lower door track near the striker bar.
4. Inspect all lock pins and other lock components for excessive wear.
5. Inspect the general structural condition of the doors:
   A. Look for cracks where the door vertical members connect to the door horizontal members.
   B. Look for cracks around the locks.
   C. If the door has been extended from a ¾-height door, look for cracks or missing Huck bolts where the original door meets the door extension kit.
   D. Look for cracks around the upper guide attachment to the door.
   E. Inspect the door lock welds for cracks.
   F. Inspect the safety cable and its connections.
   G. Inspect the Top Door Pivot Assembly. Look for broken reinforcement welds.
   H. Inspect the Top Door Pivot Assembly Pivot Bolt. Excessive play may indicate wear or the need for tightening.
6. Correct the problems found during the above inspections meeting the tolerances listed in Appendix A.

7. Use the "*Radial Door Repair Procedures*" in Section 3 as a guide to performing proper repairs.
8. Never allow an autorack to be loaded with product before proper door repairs are completed.
9. Bad Order the car if the repair work cannot be completed before loading. Allowing a car to make a trip with a "Bad Order" door can cause extensive damage to the door, putting the autorack out of service while the major repair or replacement work is performed.

Inspection at Certification or Pool Repair Facilities

All of the visual inspections that are done at the Prep Track or loading dock are also performed during this inspection. However, this inspection must be more intensive in order to check for wear and provide adjustments to prevent future wear and eventual out of service time.

Inspect the Lower Door Track and 'J' Plates

1. Repair grooves in the lower door track where the rollers are positioned when the doors are in the closed position.
2. Inspect for wear where the 'J' plates contact the lower door track.
3. Look for wear or binding of the 'J' plates.

Inspect the Door Locks

1. The lower door lock must fall easily and completely into both the open and closed position receiver holes.
2. The top lock must also fall easily and completely into both the open and closed positions. The top lock will not fall if the lower lock has not fallen first.
3. Look for wear between the lock pins and the lock brackets. If there is more than $^{1}/_{8}$" total gap between the lock pin and the lock bracket the assembly should be replaced.
4. The drive pin, which goes through the lock pin under the spring, must extend past the spring on each side. If it is worn, replace the cross pin with a solid, 'type A', hardened drive pin.

CAUTION
Roll pins and cotter pins must not be used.

5. Look for wear in the receivers.
6. Look for wear in the lock arms and attachment bolts.
7. Look for cracks in the attachment welds on both locks.

Safety Cable

Check for wear or missing parts. A thimble should be inside the loop at each end of the cable.

Inspect for any Structural Problems

1. Cracks at the ends of the horizontal members.
2. Cracks in the door skin.
3. Missing Huck bolts.
4. Cracks around the bottom roller.
5. Grab irons or fasteners loose or missing.

Top Door Pivot Assembly Inspection

1. Lock the door closed.
2. Remove the cotter pin and discard.
3. Remove the pivot bolt and pivot parts.
4. Inspect all plastic parts for wear.
5. Replace worn parts and all cotter pins.
6. Reinstall the pivot bolt according to "*Top Door Pivot Replacement Procedure*". (Refer to notes on Figure 6.)

CAUTION
Use approved safety procedures when working on top of the roof.

Door Rollers

Bottom door rollers should be inspected whenever an autorack enters a shop. It is recommended that only high-quality, original-equipment, hardened rollers with sealed bearings, or approved plastic rollers be used as replacements. Proper shaft material is most important to assure long component life.

At certification we recommend that all rollers be removed, inspected for wear and, if acceptable, cleaned and repacked with approved grease. Any rollers or shafts which are found to have wear must be replaced.

Roller Inspection

The rollers can be inspected two ways:

A. Without removing the roller from the door

1. Remove the weight from the roller by prying up on the bottom of the door. Place a block under the door to protect hands during the inspection.

WARNING
Each door weighs over 600 pounds. Don't pinch your fingers under the door.

2. With the roller lifted from the track, check for spin and "play". If "play" is found, replace the roller and/or shaft. (See Figure 1.)
3. The shaft should not spin in the roller housing. The shaft must remain still as the wheel spins on it. If the shaft spins, replace the shaft, wheel, 'J' plate or housing to correct the problem.

B. By removing the roller from the door

CAUTION
The door should be in the locked closed position before removing a roller.

1. Check for "play" between the door roller and the shaft (See Figure 1). If "play" is found, replace the roller on the shaft and check it again. If play is still present, also replace the shaft.
2. The roller must spin freely on the shaft.

After correcting all problems found on the above inspections, the doors should be locked open then closed and roller contact with the door track should be checked. Both the front and rear rollers should contact the door track when the door is locked closed. (A maximum of $^{1}/_{32}$" gap is allowable on the rear roller.)

Necessary repairs should be made as shown in Section 3 of this manual. Any problems found in your inspections must be properly corrected in order to properly return an autorack to service.

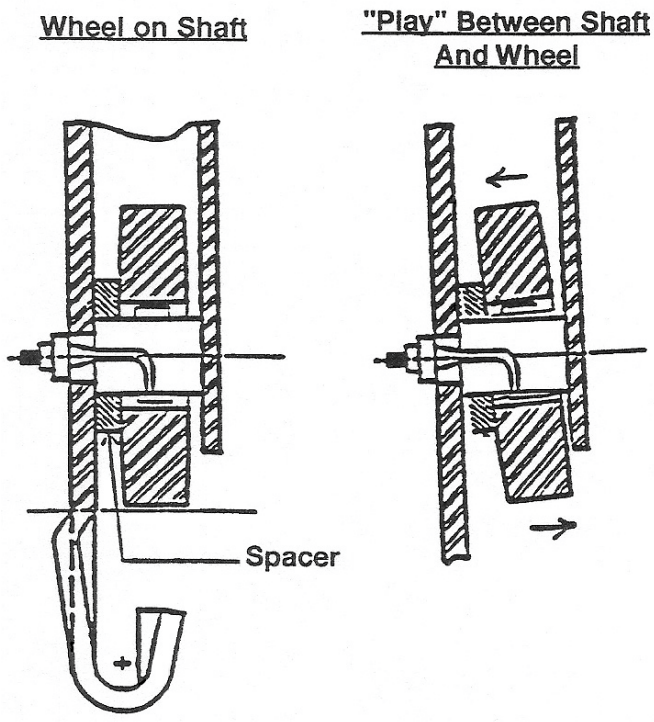


Figure 1.

Thrall Car Radial Door Roller Contact

Thrall Car recommends that both Radial Door Rollers should contact the lower door track when the door is locked in the open or closed positions. These doors should be adjusted and roller contact should be checked with the car / autorack sitting on a measured level track.

Because of variations and distortions in the car or autorack structures it is acceptable to have a maximum gap under the rear door roller of $^{1}/_{32}$", with the door in the closed and locked position.

As a suggestion, a piece of banding wire measuring .035" .thick may be used as a gauge. If the banding wire passes under the wheel, the gap is too large and an adjustment must be made.

In order to obtain roller contact, it is very often necessary to locally move the door track up or down. It is also sometimes necessary to adjust the upper lock receiver assembly position in order to maintain this roller contact.

At the request of the AAR Specially Equipped Freight Car Working Committee, the need for intimate door roller contact in the open position will no longer be a requirement. This requirement has been eliminated because today's autoracks travel only short distances at low speeds with the doors in the locked open position. Door track wear in the open position has been negligible. Even though the roller contact is no longer an issue with the door in the open position, the door operation and the door lock functions are still very critical and require inspection and occasional maintenance.

If you have any questions, please contact Trinity Parts and Components, LLC, at (800) 336-7305, or (817) 378-2003, fax (817) 378-2003; www.trinityparts.com

Section 2 Installation

Objectives for Installing a Replacement Thrall Car SealSafe® Radial Door

1. The door must operate easily by one person standing on the ground.
2. The door should have virtually no contact with the autorack structure (decks, ladders, roof, closure plates, etc.).
3. The bottom rollers must both make contact with the lower track when the door is in the "locked closed" position.
4. The upper lock pin must have full engagement with the open and closed retainer assemblies.
5. The top door pivot assembly must not be more than 19'-0" above the top of rail and must pivot without excessive play. There should also be little to no contact by the top door pivot assembly with the roof.

NOTICE
Adjusting any part of the door can change or affect another part of the door. After each adjustment, the entire inspection of the door must be rechecked to insure that all of these "Objectives" are met.

Installation Procedures to Replace a SealSafe® Radial Door

NOTICE
The following steps must be performed in shop facilities that are approved by the Association of American Railroads [AAR] for work on autoracks and by mechanics trained by Trinity North American Freight Car, Inc. [TrinityRail]. Please contact TrinityRail Customer Service department at (800) 227-8844 to request training and / or the latest version of the procedures.

CAUTION
Shop personnel need to follow all of their shop's PPE and Safety Procedures. The track shall be "Blue Flagged" with a derailer applied or switch locked out to indicate that personnel will be working on the autorack and to prevent any car movement. The rail car must be chocked and hand brake applied prior to starting any work.

WARNING
Radial doors weigh over 600 pounds each and must be handled with care.

1. Carefully remove the old door. With care, damage to the door tracks and/or roof can be avoided.
   A. Attach a crane or hi-lo to the door before attempting to remove it from the rack.
   B. Unbolt the top door pivot assembly from the roof.

C. Unbolt the bottom roller housings.
D. The "L" shaped cable bracket (which connects the safety cable to the door) must be removed by flame cutting from the doorframe or removing the nut and bolt from the cable.
E. Lift the door from the autorack and place aside.

2. The autorack must now be repaired to its original condition.
   A. Repair bent or sagging decks.
   B. Repair or replace bent or damaged lower door tracks. Fill any grooves with weld metal where the rollers rest. (Refer to repair procedure with Figure 6.)
   C. Straighten or replace bent ladders.
   D. Repair any cracked welds on the door tracks.
   E. Repair the roof if damaged.
3. Hang the new door.
   A. Remove the bottom roller 'J' plates by removing the four nuts from the four bolts on each assembly.
   B. Safely and carefully lift the door into place using a lift or hi-lo.
   C. Insert the lower lock pin into the bottom closed lock retainer.
   D. Reassemble the bottom rollers and 'J' plates. Make certain that the inside of the 'J' plate is hooking the lower vertical leg of the bottom door track angle. Ensure that the roller, roller shaft, and spacer, if any, are re-assembled in the proper order (grease fitting outside and spacer on outside of roller).
   E. Tighten all the nuts.
   F. Weld the safety cable attachment to the door horizontal member just below the deck. The cable must be installed so that it is almost taut with the door in the closed position.
   G. Reapply the top door pivot assembly bolt to the roof. Do not forget the plastic cup, which goes between the roof and the top door pivot assembly. (See "*Top Door Pivot Replacement Procedure*" and follow all safety precautions closely.)
   H. Huck bolt the top door pivot assembly to the top of the door. The height of the pivot assembly should be approximately ½" above the end roof sheet. (See "*Top Door Pivot Replacement Procedure*")
   I. Unhook the crane or hi-lo.
4. Set the upper door lock height (for standard bi-level and tri-level).

   (For ABL upper lock, see special repair procedure, "*Replacement of the ABL Top Door Lock*" in Section 3 of this manual.)

   A. Put the upper lock pin in the open receiver hole.
   B. Set the bottom of the lock bracket two inches above the top of the upper lock retainer. While holding the upper lock straight, tighten the $^{5}/_{8}$" bolt. The bottom of the upper lock pin should be flush or below the bottom of the retainer bushing. (There are two different slots on the upper lock through which the bolt can be inserted to obtain the two-inch height dimension. There are also two different nuts located on the back of the lock attachment plate on the door. Use whichever combination of slot and nut is required to obtain the two-inch dimension.)
   C. Weld the upper lock to the door. The lock must have a 3½" weld (vertical up) applied to each side. There must be a 6" overhead weld also applied on the bottom of the upper lock assembly.

5. Set the upper locking cable.
   A. With the doors in the closed position, adjust the upper lock arm pivot bolt up or down so as to provide for full travel of the lock pin.
   B. Open the door slightly so the lower lock pin is just barely out of receiver hole resting on the lower door track angle.
   C. Tighten or loosen the nuts on the locking cable eyebolt until the bottom of the upper lock pin is ¼-inch above the upper lock retainer assembly.
   D. Tighten the lock nut on the eyebolt. This locking cable adjustment is now set. Do not adjust the locking cable for the open position.
6. Adjust the door upper lock retainer assembly (to meet the "*Installation Objectives*").
   A. Lock both doors in the closed position (top and bottom lock).
   B. Stand back and compare the new door to the door adjacent to it. There should be a relatively even space between the two doors at the centerline of the car. Both doors should also be even with each other vertically. (Neither door can extend past the end of the striker bar.)
   C. To reposition either door it will be necessary to flame cut the closed upper lock receiver assembly free from the deck. Position the lock pin in the loose assembly and re-weld it to the deck at the proper location, where the doors are straight (relative to each other).
7. Adjust the lower door track for door roller contact, with the door in the closed position.
   A. With the doors in the locked closed position, both rollers must contact the lower door track. Tolerance on the rear roller is $^{1}/_{32}$" maximum gap.
   B. If the rollers don't make contact with the lower track, the lower door track must be raised or lowered so both wheels touch the track at the same time. This can be done using a hammer or small jack. It may be necessary to burn one or more of the door track supports loose to properly relocate the track.
   C. After the track is adjusted, re-weld any track supports that were removed.
   D. Check all lower door track welds to insure that no welds are cracked. Repair as necessary.
8. Adjust the open upper lock retainer.
   A. Open the door until the lower lock pin falls into the receiver. The upper lock pin should also fall at the same time. The bottom of the upper lock pin should be flush or slightly below the bottom of the retainer assembly.
   B. If the lock pin contacts the retainer assembly as the door is opened it will be necessary to burn the retainer free from the post and reposition it. (Use caution not to gouge the post.) Re-weld the assembly to the post in the proper position so that the bottom of the lock pin is flush with the bottom of the retainer.
   C. If the lock pin does not protrude sufficiently into the retainer assembly, it will be necessary to adjust the height of the retainer assembly as in B (above). Do not re-adjust the lock cable. The cable is set for the door-closed position.
   D. If the bottom of the lock pin only clears the top of the retainer assembly by $^{1}/_{4}$-inch or less, but does not fall into the bushing freely, adjust as follows: Burn the retainer assembly free from the angle. Reposition the assembly on the angle so that the pin falls freely. Re-weld the retainer assembly to the angle on the post.
9. Adjust the lower door track for roller contact with the door in the locked open position.
   A. Open and lock the door (top and bottom locks).
   B. If both rollers do not make contact, adjust the track as necessary.

C. Re-weld the track supports if necessary.

10. Paint the door.
11. Lubricate the door.
    A. Grease the bottom roller shafts.
    B. Grease the door locks.
    C. Grease the door lock retainers.
    D. Using a small brush apply dry lubricant to the lower track where the lock pin rides
    Lubricate the lower vertical legs where the 'J' plate hooks the door track angle.
    Apply lubricant on both the inside and outside surfaces of the bottom track angle where the 'J' plates contact the track.
12. Final inspection of the door.
    Check the door to insure that the "*Objectives*" have been met.
    A. The door must operate easily by one person standing on the ground.
    B. The door should have virtually no contact with the autorack structure (decks, ladders, roof, closure plates, etc.).
    C. The bottom rollers must both make contact with the lower track when the door is in the locked closed position.
    D. The upper lock pin must have full engagement with the open and closed retainer assemblies.
    E. The top door pivot assembly must not be more than 19'-0" above the top of rail and must pivot without excessive play. There should also be little to no contact by the top door pivot assembly with the roof.

NOTICE
Adjusting any part of the door can change or affect another area. After each adjustment, recheck all areas to be sure all of the "Objectives" are met.

Section 3 SealSafe® Radial Door Repair Procedures

NOTICE
The following steps must be performed in shop facilities that are approved by the Association of American Railroads [AAR] for work on autoracks and by mechanics trained by Trinity North American Freight Car, Inc. [TrinityRail]. Please contact TrinityRail Customer Service department at (800) 227-8844 to request training and / or the latest version of the procedures.

CAUTION
Shop personnel need to follow all of their shop's PPE and Safety Procedures. The track shall be "Blue Flagged" with a derailer applied or switch locked out to indicate that personnel will be working on the autorack and to prevent any car movement. The rail car will need to be chocked and hand brake applied prior to starting any work.

Bottom Door Track Repair Procedure

(Refer to Figure 2)

1. All grooves in the bottom door track wear plate should be welded and ground smooth as described in Figure 2.
2. All worn spots in the lower track angle caused by contact with the 'J' plates should be repaired if more than 25% of the angle is worn away.
3. If the majority of the wear is on the outside of the angle, the area should be built up with a low hydrogen weld rod and then ground smooth.
4. If the wear is primarily on the backside of the angle, a section of the angle must be removed and replaced. The replacement piece must be beveled on three sides to prepare the joint for a 100% penetration weld. Grind the welds smooth when complete.

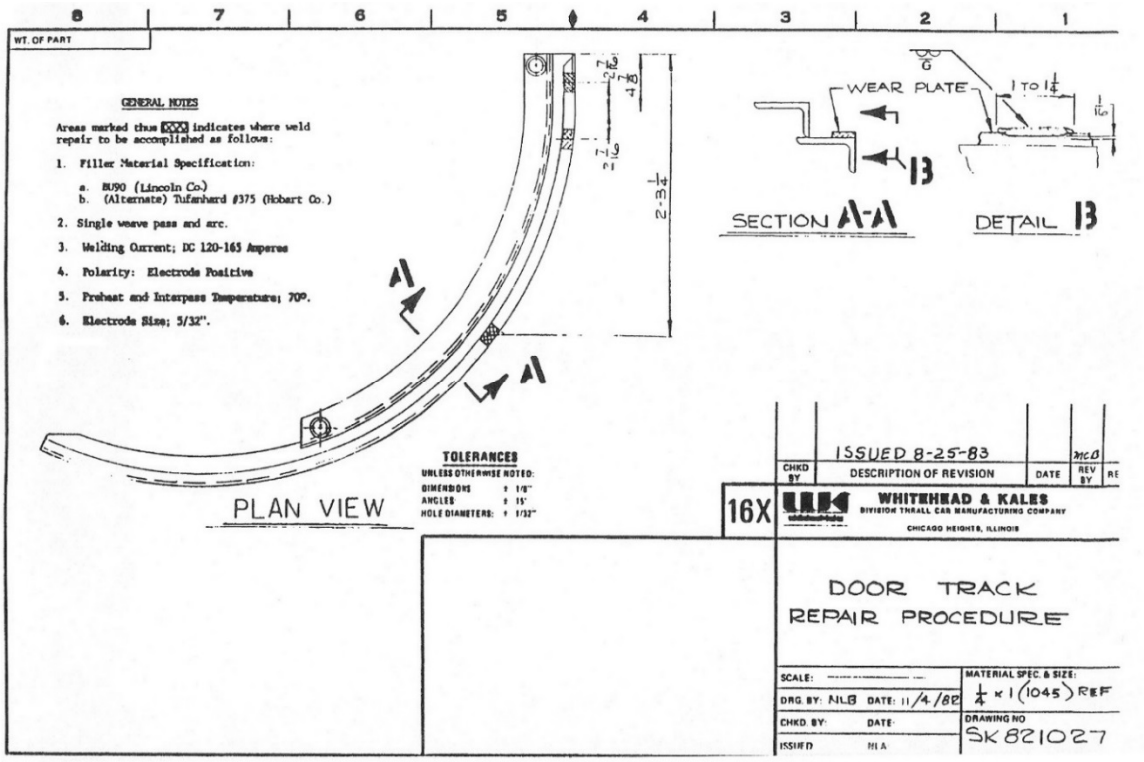


Figure 2.

Upper Door Lock Assembly Repair Procedure

(For all doors, except ABL doors)

1. Before removing the existing upper lock assembly, check to be certain that the upper door guide assembly and safety cable are functioning properly.
2. Repair the lower track, rollers, lower lock, and upper guide assembly, if required, before working on the upper lock. The upper lock is one of the last items to be reworked on the door. All other repairs should be made first.
3. Remove the upper lock assembly.
4. Reapply a new upper lock assembly using the original adjustment bolt with the door in the closed position. The original lock pin pivot can be reused if it is not worn more than $^{1}/_{8}$".
5. The bottom of the lock bracket must be set 2" above the lock receiver plate with the door in the closed position. The lock assembly must also be applied perpendicular to the deck. If the lock cannot be applied properly, then the upper lock receiver must be flame cut so that it is free from the deck. Bolt and clamp the new lock assembly to the door.
6. Weld the upper lock assembly to the door. There must be a 3½" vertical-up (fillet size $^{3}/_{16}$") weld applied to each side of the lock. There also must be a 6" overhead weld (fillet size $^{3}/_{16}$") applied to the bottom of the lock assembly.
7. Reapply the upper closed lock receiver to the deck plate so that the lock pin is free to move up and down with the bottom lock engaged. The gap between the two closed doors should be 1¾" ± ¼".
8. With the lock functioning properly in the closed position, open the door approximately one inch. The lock cable can now be adjusted. A new eye bolt may be required if the threads are

damaged on the existing eye bolt. Adjust the eye bolt so that the top lock pin clears the lock receiver plate by ¼". The lock nut must then be tightened to the first nut on the eye bolt. Finally trim off the excess eye bolt.

9. Move the door to the fully open position. The bottom of the lock pin should clear the open receiver by ¼". The pin should fall into the open receiver as soon as the lower pin falls into the receiver hole. If the lock pin does not fall easily or completely, remove the open receiver and reset it on the number one post in the proper position.
   DO NOT reset the lock cable. The lock cable is set for the closed position only. Any adjustment for the open position is made by moving the open receiver assembly on the post.
10. Lubricate the locks and receivers using an AAR approved grease. Apply adequate lubricant, but do not over apply.
11. Operate the door five times to be sure the locks fall easily and completely each time.
12. If the procedure was properly followed, the lock pin should have full engagement. (The bottom of the top lock pin must be even or below the bottom of the lock receiver pipe). This full lock pin engagement is required in both the open and closed positions.
13. Recheck the bottom roller-to-door track engagement in both the open and closed positions.

Door Vertical Member Repair Procedures

(Refer to Figure 3.)

It is often easier to do major repairs if the doors are removed from the car and worked on a flat table. See Section 2 "*Installation Procedures to Replace a SealSafe® Radial Door*" for the recommended removal and installation procedures.

NOTICE
All welds described in this procedure should be welded with a mild steel electrode such as M6018.

1. Insure that the door is not bent. Brace it or straighten it, if necessary.
2. If a crack exists around the hat section of a vertical member or a splice is being made, remove sufficient door skin to expose the backside of the vertical member at the gouged area. Apply a backup bar against the gouge, crack, or splice from the outer side of the door. (Bar: 2" x $^{3}/_{16}$" x 2¼" – Item 10.) Weld the backup bar as shown in Figure 3, Section A-A. Then reapply or replace the door skin that was removed.
3. On the inside of the door, remove the weld around the two welding tabs located at the end of the horizontal members. Heat and bend these tabs back (inside view of door).
4. "V" out the crack. Weld the crack or gouge 100% to the backup plate (Item 10). Grind off any excess weld – Section A-A.
5.
   A. For gouges or cracks in the deck area, make (or buy from Thrall Car Service Parts) a reinforcement plate as shown on the reference drawing from C 1020 steel, $4^{7}/_{8}$" x $^{3}/_{16}$" x 24". Refer to Item 11.

   OR

   B. For use on other cracks or splices, make (or buy from Thrall Car Service Parts) a reinforcement plate as shown on the reference drawing from a steel plate $4^{7}/_{8}$" x $^{3}/_{16}$" x 12", C 1020 steel. Refer to the Item 12.

6. If the crack extends past the hat shape section on either side, arc or grind it out. Apply a backup bar wherever possible (1" x $^{3}/_{16}$" x length of the crack plus 1"). Weld around the backup bar. Weld the crack 100% to the backup bar.
7. Apply the reinforcement plate to the vertical door member. Center the proper plate (Item 11 or 12) over the gouge, crack or splice and weld complete. (Refer to the welding instructions on the drawing.)
8. Reheat and refit the welding tabs at the ends of the horizontal door members. Fit them tightly to the reinforcement plate and weld complete. If the tabs are cracked, repair them using the "*Horizontal Door Member Repair Procedure*" found in the next section.
9. Check the door operation and adjust as necessary.
10. Make other repairs as required (locks, etc.).
11. Clean and paint the repaired door section. Do not apply paint or allow over spray on door lock pins, grease cups or door lock springs.

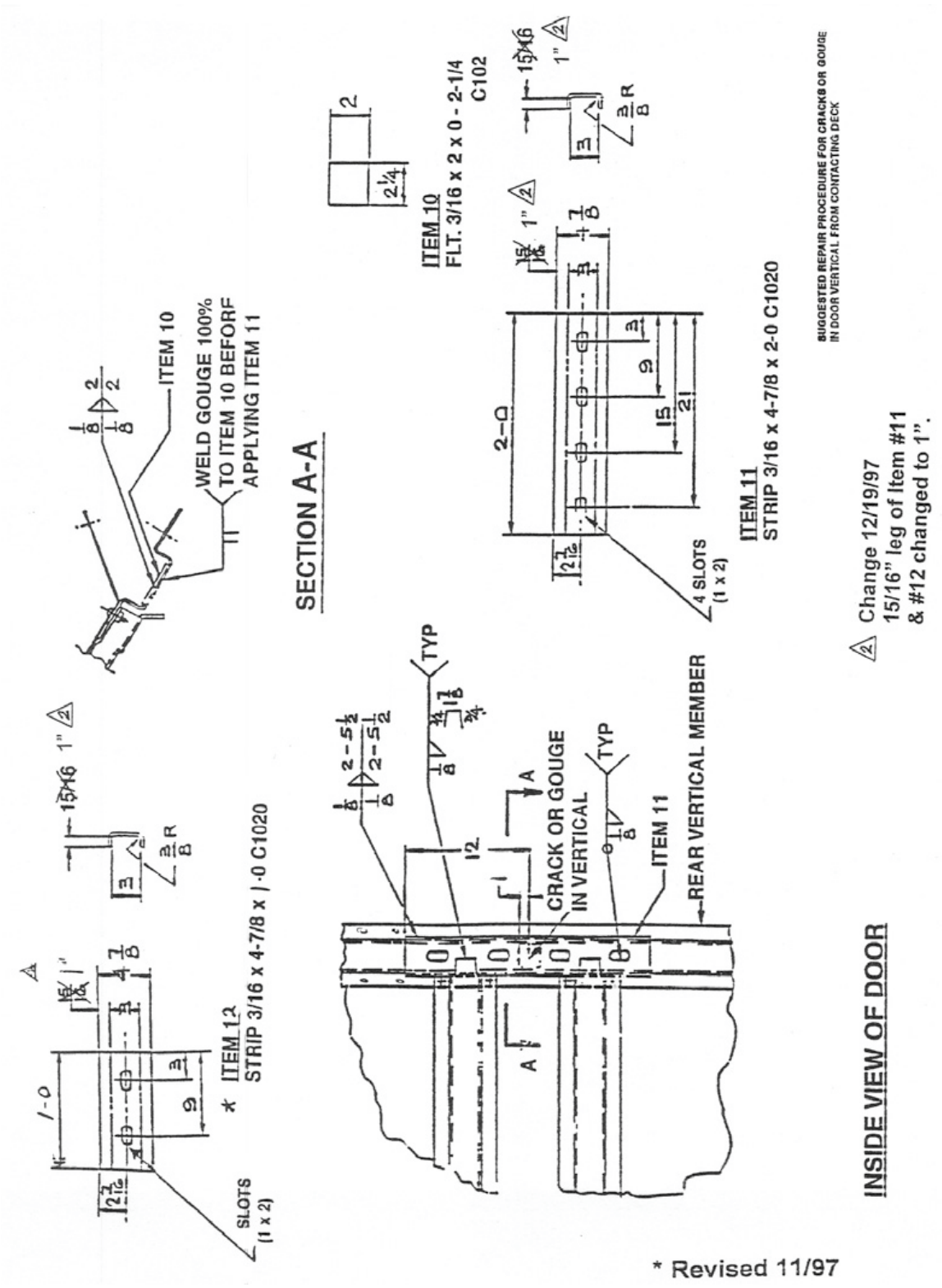

SECTION A-A
ITEM 10
WELD GOUGE 100%
TO ITEM 10 BEFORE
APPLYING ITEM 11
ITEM 10
FLT. 3/16 x 2 x 0 - 2-1/4
C102
ITEM 11
STRIP 3/16 x 4-7/8 x 2-0 C1020
4 SLOTS
(1 x 2)
ITEM 12
STRIP 3/16 x 4-7/8 x 1-0 C1020
SLOTS
(1 x 2)
TYP
CRACK OR GOUGE
IN VERTICAL
REAR VERTICAL MEMBER
ITEM 11
INSIDE VIEW OF DOOR
SUGGESTED REPAIR PROCEDURE FOR CRACKS OR GOUGE
IN DOOR VERTICAL FROM CONTACTING DECK
Change 12/19/97
15/16" leg of Item #11
& #12 changed to 1".
* Revised 11/97

Figure 3.

Horizontal Door Member Repair Procedure

(Refer to Figure 4.)

1. If a crack exists in the tab at the end of the horizontal cross member, carefully remove this tab. Use care so as not to damage or gouge the vertical door member. (Refer to Figure 4 "*Inside View of Door – Existing Condition*".)

CAUTION
If a crack is found in the cross member at any location other than the weld tab, a new cross member should be applied.

2. Make a new reinforcement piece as shown (Item 1). Use mild steel such as M 020.
3. Clamp the reinforcement to the horizontal member and tack weld it into place. Next, clamp the reinforcement to the vertical member. Use heat if necessary to obtain the proper fit up. (See Figure 4, "*Inside View of Door – Repaired*".)
4. Weld the reinforcement using the proper procedure shown on the sketch. Use a mild steel electrode such as 6018.
5. Clean and paint the affected area.
6. Check for any other cracks or defects in the doors. Repair these cracks using the recommended procedures found in this manual.
7. Operate the doors and check for the proper locking, operation and clearances. Adjust as necessary.

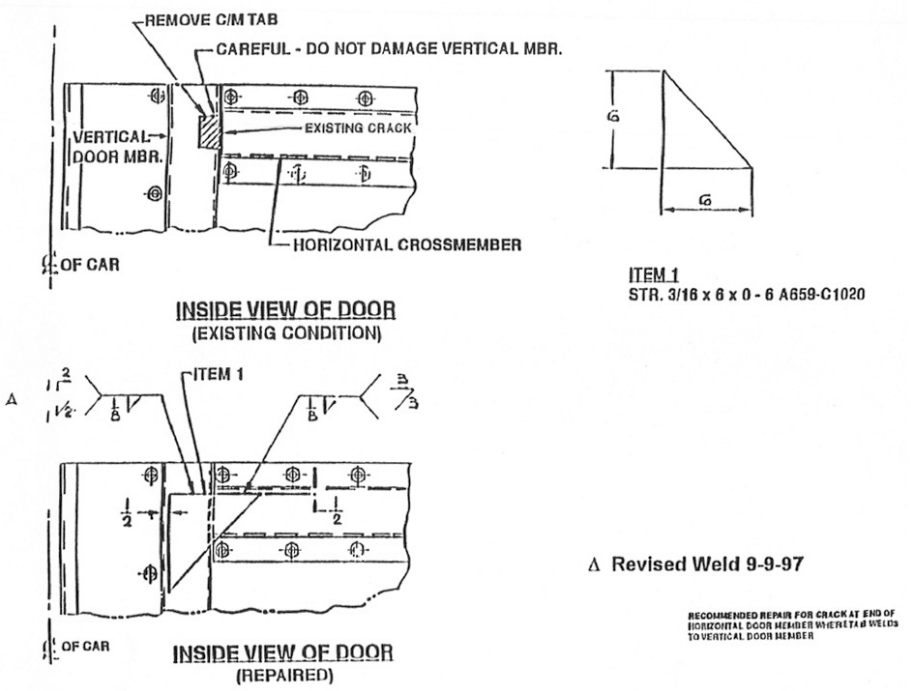


Figure 4.

Cracks Around the Nose of the Door Vertical Member

(Refer to Figure 5.)

1. It is most important to drill a ¼" hole at the end of the crack. (See Figure 5, "*Inside View of Door*".)·
2. Clamp a ¾" x 8" round bar (Item 2) to the inside of the nosepiece as shown in Figure 5. Place the bar vertically so that the rod is centered 9" below the crack.
3. Perform a vertical up weld to the round bar, as shown on the inside view, using the mild steel electrode and proper welding procedures.
4. Grind out the crack.
5. Place backup bars (Item 3) onto the inside of the door. The bars should extend 1" beyond the crack in every direction if possible. Weld the backup bars as shown in Section A-A.
6. Weld the crack with 100% penetration from the outside of the door, welding into the backup bar as shown in Section A-A.
7. Clean and paint the affected area.
8. Check all doors for other defects or wear. Repair and adjust as necessary.

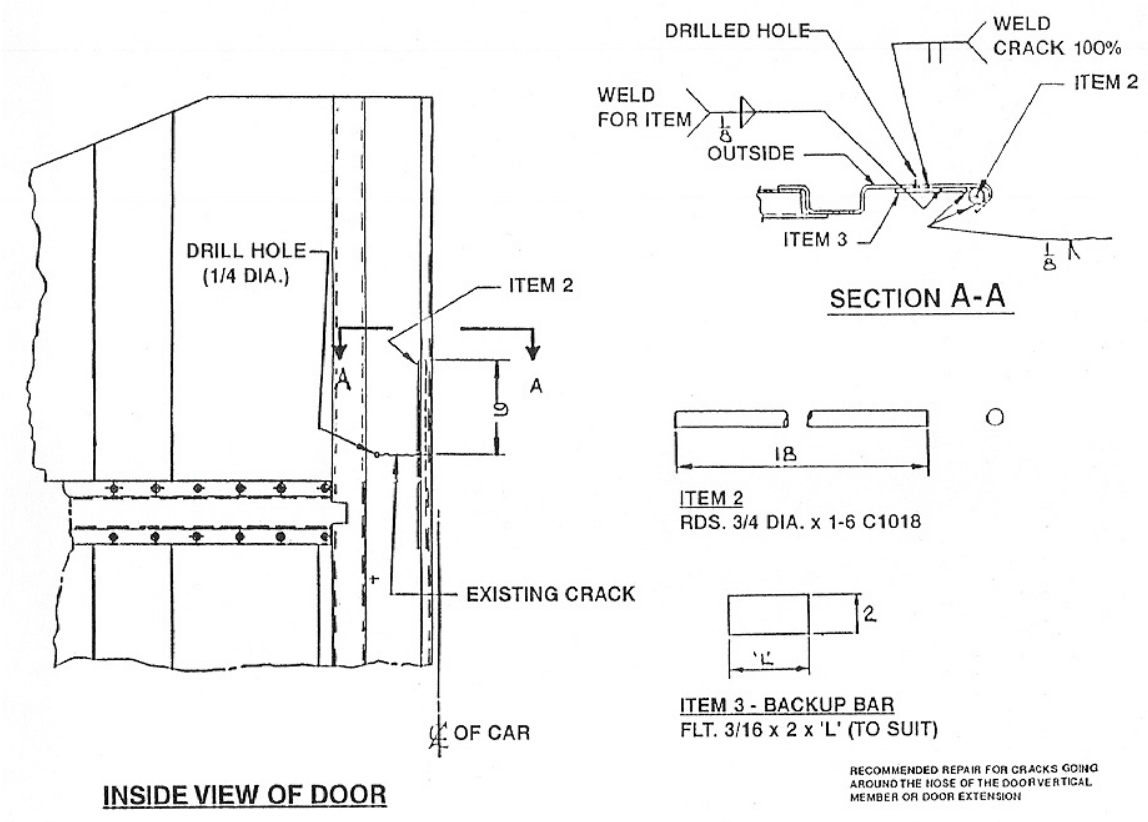


Figure 5.

Suggested Alternate Vertical Member Repairs

It is occasionally difficult to perform the vertical member repairs due to varying factors including:

1. More than one crack located in a short distance.
2. The vertical is badly gouged or damaged and beyond repair.
3. The vertical is bent, dented or twisted beyond reasonable repair.
4. Previous repairs make a proper sound repair impossible.

Alternate #1

It is often more cost effective to replace the entire vertical member. Replacement parts can be ordered through Thrall Car Service Parts (1-800-336-7305).

Alternate #2

A new section of the vertical can be spliced into the original vertical. The damaged portion can be cut out and a new section can be spliced as described in the "*Door Vertical Member Repair Procedures*."

Alternate #3

When two cracks are only a foot or so apart, it is impossible to use a standard part as shown in Figure 3, Item 11. The length of Item 11 can be increased so that it can be applied over both cracks with a minimum of 12" beyond each crack.

NOTICE
After vertical member repairs, some door straightening and readjustment will always be required.

Top Door Pivot Replacement Procedure

Parts Required per Car

Part Name	ABL Part Number	Qty.	Std. Bi or Tri Part Number
BL/AR Top Pivot Assembly	4D-013-035	2	4D-013-038
BR/AL Top Pivot Assembly	4D-013-036	2	4D-013-039
Huck Bolts (short)	9CA101067A	24	Same
Huck Bolts (long)	9CA101053B	8	Same
Huck Collars	9CA200014B	32	Same
Washers	9CF101016	40	Same
Pop Rivets	9CE107016	8	Same
Cotter Pin	9CD101005A	4	Same

Thrall Car Service Parts 1-800-336-7305

Tools Required

1. Disc grinder
2. Allen wrench $^{9}/_{32}$"
3. Adjustable wrench

4. Pliers
5. Huck gun $^{3}/_{8}$" grip
6. Rivet gun for $^{3}/_{16}$" dia. rivet
7. Man lift (top of roof is 19')
8. Safety harness for man on roof

Work to be performed:

1. Remove and replace one top pivot assembly at a time. This will require 2 people.
2. Lock door closed. Be sure top lock pin is engaged.

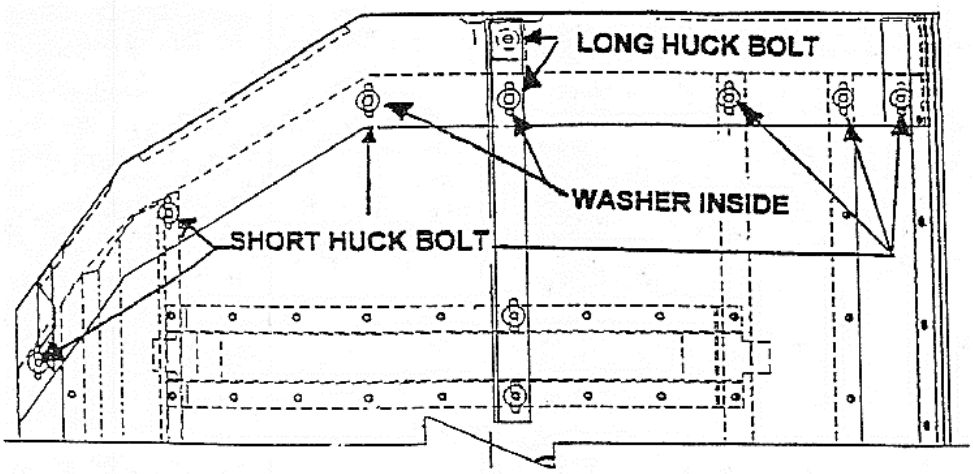
CAUTION
Attach a secondary rope, chain or cable around the door near the top and then secure the other end of it to the chock track or tie-down track. This will act as a safety securement in case the upper lock pin should come disengaged and the standard safety cable would fail.

3. Move the lift or scaffold into place to grind off the 8 Huck bolts across the top of the door. These connect the top pivot to the door. Some bolts may be ground off (cut) more easily from the inside of the autorack. Cut off the top pop rivet, which connects the rubber seal at the edge of the door.
4. Remove the top pivot bolt. This will require one man either on the roof or leaning over the roof and one man inside the rack.

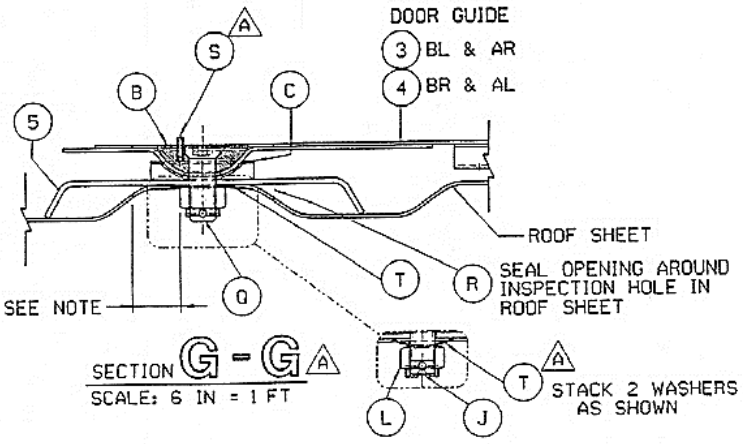
CAUTION
The roof is 19 feet off the ground. The man working outside must use proper safety devices such as a harness secured to the man lift.

5. Save the pivot parts (bolt, nut, plastic nut and plastic cup) for reuse.
6. Carefully remove and lower the pivot assembly to the ground. This piece weighs about 40 pounds.
7. Lift up a new pivot assembly.
8. Loosely secure the top pivot bolt and associated parts. (See Figure 6.)
9. Apply the new Huck bolts which attach the door to the pivot assembly. The holes in the top of the pivot assembly are vertical slots to allow for vertical adjustment. The new pivot assembly should be applied at the same height as the old one. The top pivot assembly must not contact the roof as the door is operated. There are 2 different length bolts, apply them correctly.
10. Washers are also required (inside and outside on 3 Huck bolts). See Figure 6 and use the original door as a guide.
11. Apply the pop rivet at the top of the rubber seal.
12. Finally, adjust the pivot bolt. The nut should be tightened until the 2 spring washers are flat. Do not over tighten! (See notes on Figure 6.) Apply a new cotter pin and spread both legs completely.

13. Remove the safety rope and operate the door. The lock pins must engage in both the open and closed positions.
14. If required, proceed to perform the replacement on the other 3 doors utilizing this procedure.
15. Degrease the new pivot plates on their vertical surfaces along the top of the doors.
16. Paint the vertical surface of the new pivot plates using reflectorized paint.



PIVOT CONNECTION



NOTE:

1. MAKE SURE PLASTIC PIVOT CUP IS INSTALLED UNDER DOOR GUIDE. ITEM #3 OR 4.
2. (A) INSTALL CURVED SPRING WASHERS AS SHOWN IN ENLARGED VIEW. TIGHTEN CASTLE NUT ONLY UNTIL THE CURVED SPRING WASHERS ARE FLAT (DO NOT OVERTIGHTEN).
3. (A) INSTALL COTTER PIN AND BEND BOTH LEGS BACK 180°. DO NOT LET LEGS PROTRUDE BELOW END OF BOLT.
4. (A) WHEN COMPLETE, THE NUT/COTTER PIN MUST HAVE AT LEAST ¼" CLEARANCE TO THE EDGE OF HOLE IN ROOF SHEET. THIS WILL PREVENT CONTACT WHEN THE NUT/COTTER PIN ROTATES.

Figure 6.

Suggested Repair of Crack in ABL Bottom Door Track

(See Figure 7.)

1. "V" out the track on both legs of the bottom door track angle using an arc air.
2. Apply additional shims under the track in the area of the crack. If possible, support the track for 6" on each side of the crack. Weld shims as shown in Figure 7.
3. Weld up the "V".
4. Grind off excess weld.
5. Reapply an AAR approved lubricant.

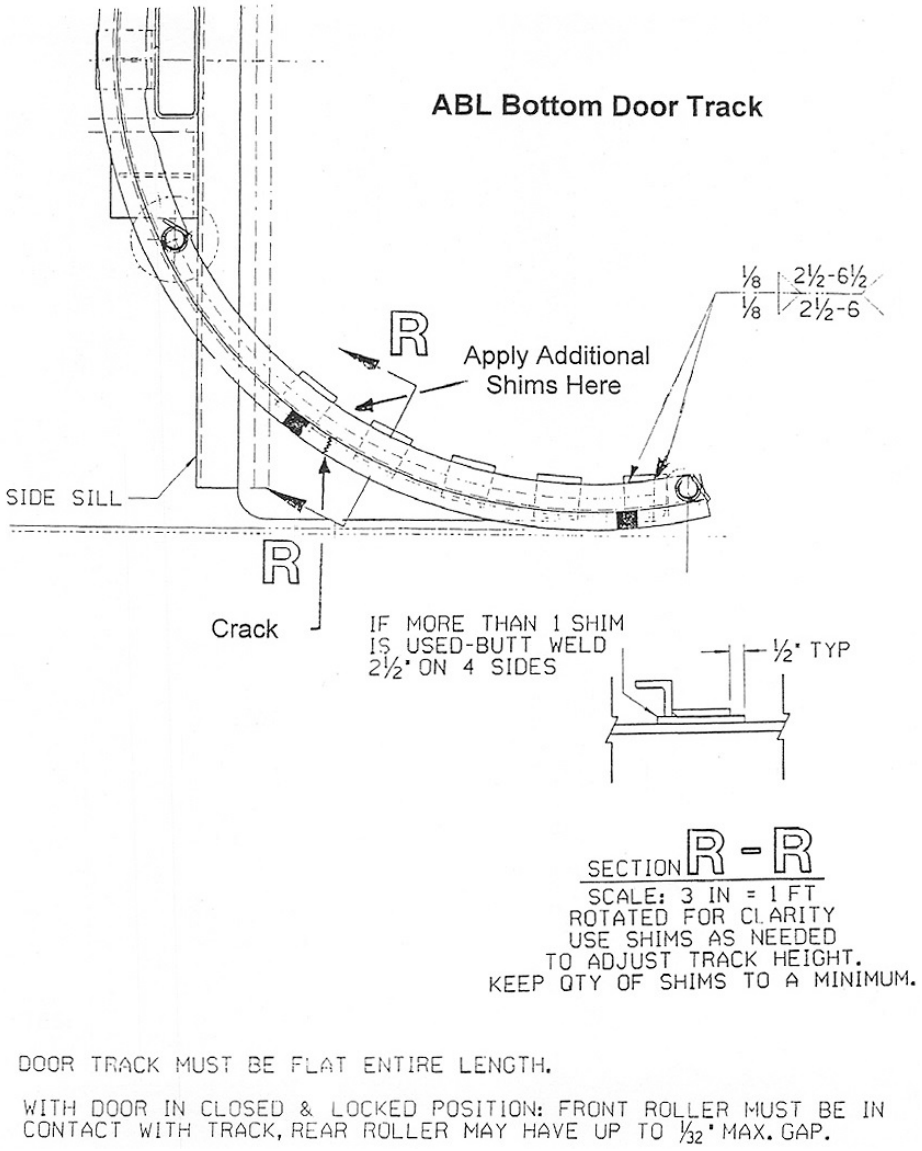


Figure 7.

Replacement of the ABL Top Door Lock

1. Remove the old lock by removing the bolt located on the bottom of the lock pin. Remove the safety cable clevis. All of these attachment parts may be reused. Then remove the three nuts that connect the lock assembly to the door.
2. Loosely bolt the new lock in place. Slide the lock upward until the top of the lock pin is at least flush with the top edge of the closed receiver bushing. (See Figure 8, Section D1-D1.)
3. Be sure the lock is vertically straight and torque all three nuts to 225-ft. lbs. minimum.
4. Reapply the safety cable clevis and the lock cable to the bottom of the lock. Tighten this nut and bolt.
5. Operate the door. The lock pin must clear the deck reinforcement channels. The lock pin must also fall easily and completely into both the open and closed lock receiver assemblies.

CAUTION
The locks must fall easily and completely!

6. If necessary, make adjustments to the lower door track or the upper lock receiver can be burned loose and moved slightly.

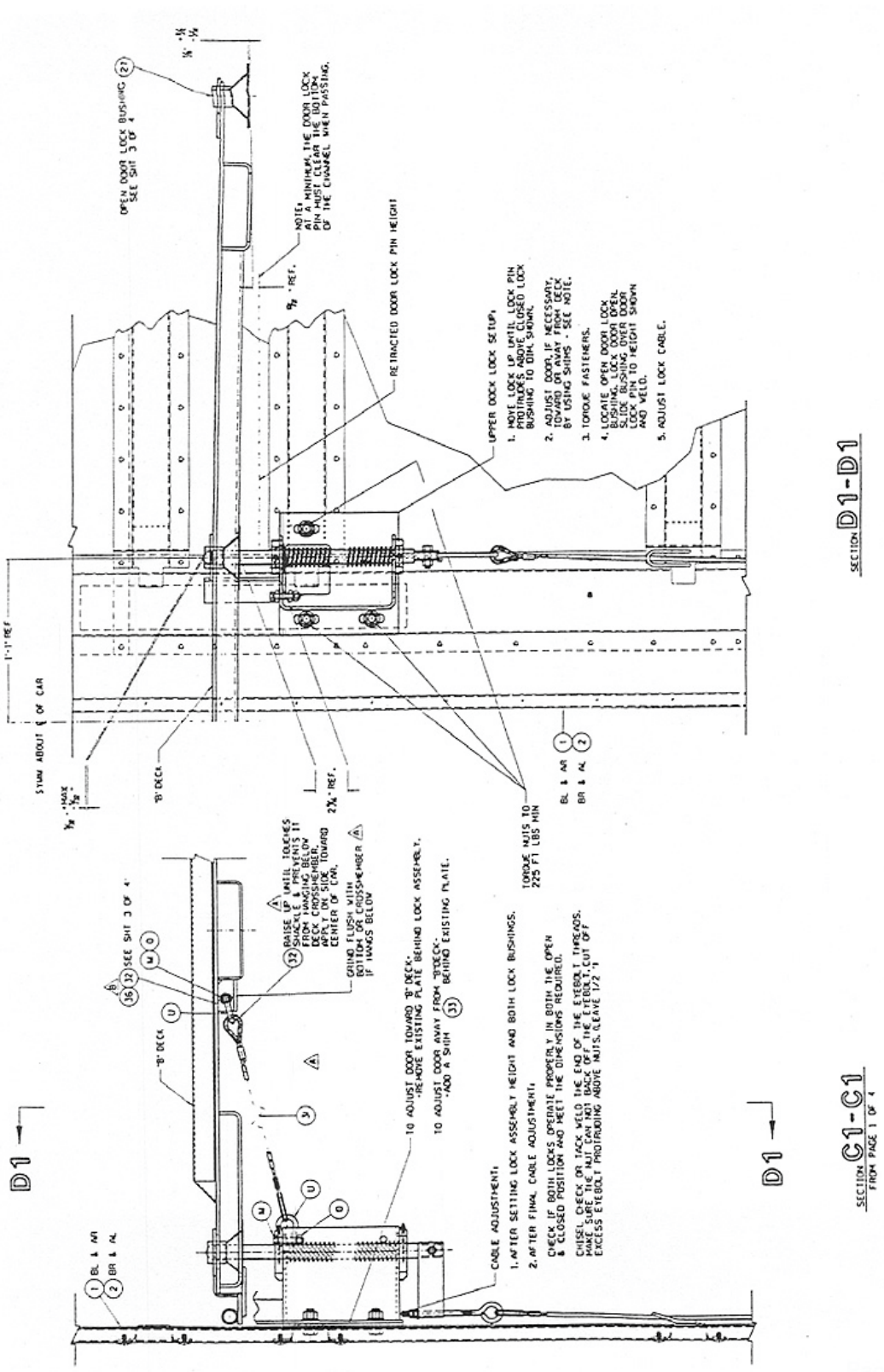

SECTION D1-D1
SECTION C1-C1
FROM PAGE 1 OF 4
D1
D1
RETRACTED DOOR LOCK PIN HEIGHT
UPPER DOOR LOCK SETUP:
1. MOVE LOCK UP UNTIL LOCK PIN PROTRUDES ABOVE CLOSED LOCK BUSHING TO DIM. SHOWN.
2. ADJUST DOOR, IF NECESSARY, TOWARD OR AWAY FROM DECK BY USING SHIMS - SEE NOTE.
3. TORQUE FASTENERS.
4. LOCATE OPEN DOOR LOCK BUSHING. LOCK DOOR OPEN, SLIDE BUSHING OVER DOOR LOCK PIN TO HEIGHT SHOWN AND WELD.
5. ADJUST LOCK CABLE.
NOTE: AT A MINIMUM, THE DOOR LOCK PIN MUST CLEAR THE BOTTOM OF THE CHANNEL WHEN PASSING.
OPEN DOOR LOCK BUSHING (27) SEE SHT 3 OF 4
TORQUE NUTS TO 225 FT LBS MIN
BL & AR
BR & AL
STUM ABOUT ℄ OF CAR
'B' DECK
2¾" REF.
CABLE ADJUSTMENT:
1. AFTER SETTING LOCK ASSEMBLY HEIGHT AND BOTH LOCK BUSHINGS.
2. AFTER FINAL CABLE ADJUSTMENT:
CHECK IF BOTH LOCKS OPERATE PROPERLY IN BOTH THE OPEN & CLOSED POSITION AND MEET THE DIMENSIONS REQUIRED.
CHISEL CHECK OR TACK WELD THE END OF THE EYEBOLT THREADS. MAKE SURE THE NUT CAN NOT BACK OFF THE EYEBOLT. CUT OFF EXCESS EYEBOLT PROTRUDING ABOVE NUTS. LEAVE 1/2"
10 ADJUST DOOR TOWARD 'B' DECK- REMOVE EXISTING PLATE BEHIND LOCK ASSEMBLY.
10 ADJUST DOOR AWAY FROM 'B' DECK- ADD A SHIM (33) BEHIND EXISTING PLATE.
GRIND FLUSH WITH BOTTOM OF CROSSMEMBER IF WAGS BELOW
RAISE UP UNTIL TOUCHES SHACKLE & PREVENTS IT FROM MAKING BELOW LOCK CROSSMEMBER. APPLY ON SIDE TOWARD CENTER OF CAR.
SEE SHT 3 OF 4

Figure 8.

Cracks or Splices on the New Style Nose Vertical

(Curled Edge Type)

The same basic repair technique is used on the new style verticals, whether the autorack is an ABL, a bi-level, or a tri-level. The parts change due to the different dimensions of the verticals.

It is often more cost effective to replace the entire vertical member rather than repairing a damaged member. It is also often easier to make these major repairs if the doors are removed from the car. (See Section 2 “Installation Procedures to Replace a SealSafe® Radial Door”.)

The following procedure is recommended to repair the verticals:

1. Brace and or straighten any bent doors before repairing.
2. If a crack does not exist completely across the vertical member, a $^{3}/_{16}$" termination hole should be drilled at the end of the crack. Elsewhere it calls for a ¼“ hole
3. If a crack exists around the hat section of a vertical member or a splice is being made, remove sufficient door skin to expose the backside of the vertical member at the gouged area.
4. Apply a backup bar against the gouge, crack or splice from the outer side of the door. (Bar: 2" x $^{1}/_{8}$" x 2" – Item 3.)
5. Weld the backup bar as shown in Figure 9. Then reapply or replace the door skin that was removed.
6. On the inside of the door, remove the weld around any welding tabs located at the end of the horizontal members. Heat and bend these tabs back out of the way.
7. "V" out and weld up the crack, including the termination hole.
8. Refer to Figure 10 for bi-level and tri-level parts or Figure 11 for ABL parts.
9. Apply a reinforcement piece over the hat section on the inside of the door. (Figure 10 or 11, Item 1.) Apply and weld per the attached sketch. Reapply the weld tabs if removed.
10. If the crack exists around the curled nose edge of the door and into the flat portion, Figure 10 or 11, Items 2 and 4 will need to be applied.
11. Remove the rubber gasket that is in the area to be worked on.
12. "V' out the crack and re-weld from outside of the door.
13. Apply Item 2 and weld per sketch.
14. Apply Item 4 and weld per sketch.
15. If the crack exists completely across the vertical or a splice is being made, all 4 items will be required.
16. The procedure is the same for either the ABL, the bi-level, or the tri-level, but the size of the four items varies. (See Figure 10 for bi-level and tri-level parts or Figure 11 for ABL parts.)
17. Straighten the door.
18. Reapply the rubber gasket to the nose vertical. Drill new holes for the pop rivets.
19. Operate the door to be sure the locks function properly and the door does not contact the ladder. Make adjustments as required.

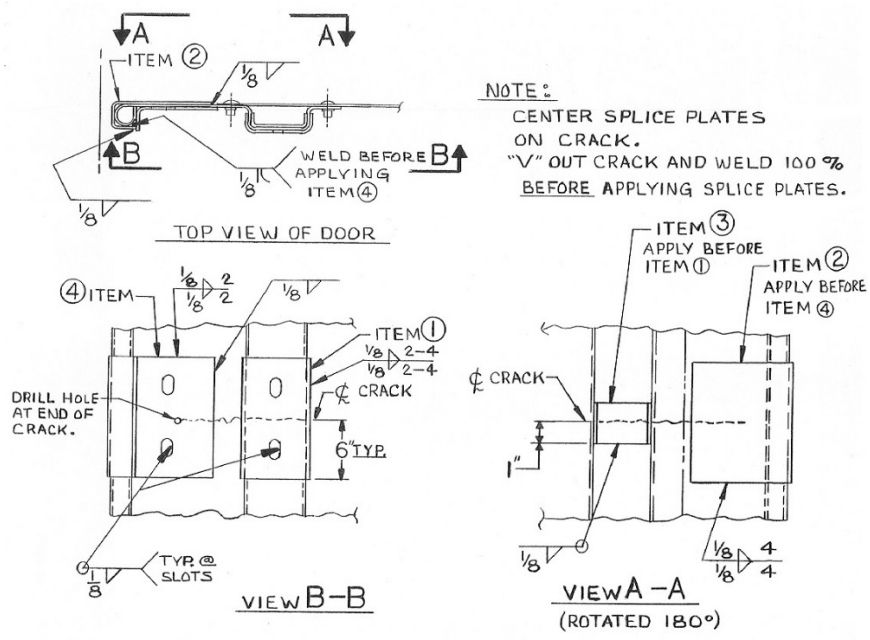


Figure 9.

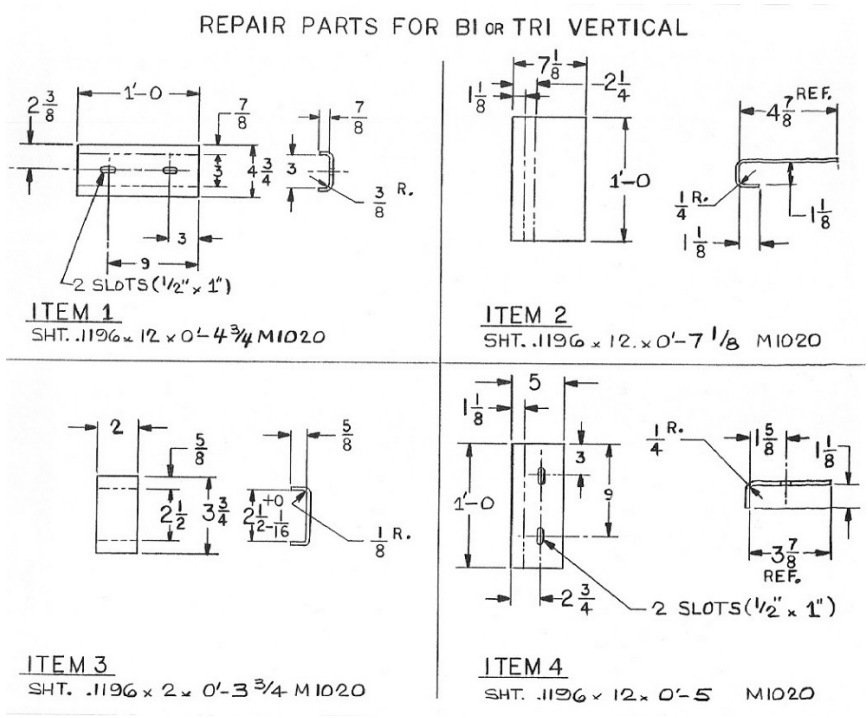


Figure 10.

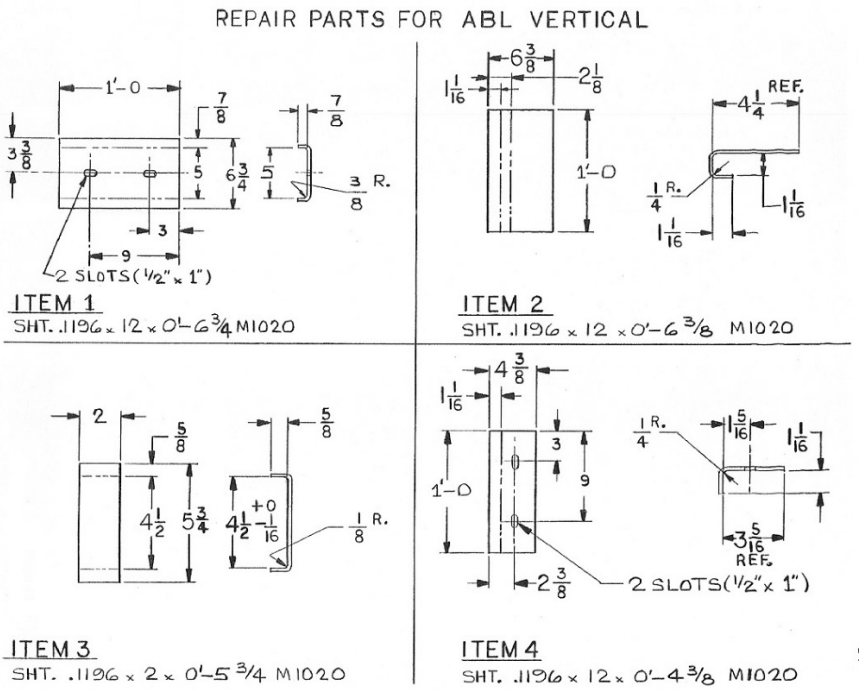


Figure 11.

Replacement Procedure for the Roof Pivot Bar

If the end roof sheet is damaged or replaced, the pivot bar, which rests on top of the end roof sheet, may also need to be replaced or reset.

WARNING
The autorack roofs can become slippery and are located 19 feet above ground. This work should be performed from permanent scaffolding or approved moving platforms. Working on these parts located on top of the roof requires the use of special safety precautions.

WARNING
It is recommended that approved safety harnesses be worn by anyone working this high off the ground. These harnesses must be properly secured to a fixed object to prevent injury.

CAUTION
Check with your local safety department before proceeding.

The channel-shaped pivot bar piece is Huck bolted to the top of the roof through a series of slotted holes that provide adjustment in two different directions. Welded to each end of the channel is a pivot cup which attaches the top of the door to the rack. The pivot bolt goes through

the top of the Top Door Pivot Assembly and through the cup. There are two special plastic bushing pieces also used in this pivot assembly. (See Figure 12.)

If this channel-shaped piece is moved or damaged, it will require resetting. The doors and top door pivot assemblies must be repaired before this piece can be adjusted.

This adjustment is done by temporarily loosely bolting the channel to the roof (with the tops of both doors attached).

Lock both doors closed and snug the temporary attachment bolts to the roof. Operate the doors to the open position and be sure they lock open.

When the doors are caused to operate easily and lock satisfactorily in both the open and closed positions, the pivot bar can be permanently attached to the roof sheet. This is done using Huck bolts as shown in Figure 12.

After making the permanent attachment, retry the door operation and the lock function. It may be necessary to reset lock receivers to obtain a good locking function.

Recheck the top pivot bolt.

Figure 12 is for an ABL door.

On Items 10 through 12, please note the different part numbers used on a standard bi-level or tri-level listed below.

Standard Bi / Tri Doors

Item	Description	Part #
10	Door guide assembly BL/AR	(4) D0130046
11	Door guide assembly BR/AL	(4) D0130047
12	Door guide assembly attachment plate	(3) D0130044

The remainder of the parts are the same for all SealSafe® Radial Doors.

Top Door Pivot Assembly

Item #	Description	Part #	Item #	Description	Part #
10	Door Guide Assembly BL/AR	(4)D0130052	K	3/8" Huck Collar	(9)CA200014B
11	Door Guide Assembly BR/AL	(4)D0130053	L	Bolt Special	(2)CB100116
12	Door Guide Assembly	(3)D0130043	P	Castle Nut	(9)CC109007A
13	Top Door Guide Washer	(2)D1180032	T	Washer	(9)CF101016
C	Plastic Pivot Nut	(2)DM100180	V	Cotter Pin	(9)CD101005A
D	Plastic Pivot Cup	(2)DM100084	W	Moralastic Sealer	(9)PM100046
G	3/8" Huck Bolt	(9)CA101066A	S	Spring Washer	(2)CF123001
H	3/8" Huck Bolt	(9)CA101067A	F	Roll Pin	(9)CM104018

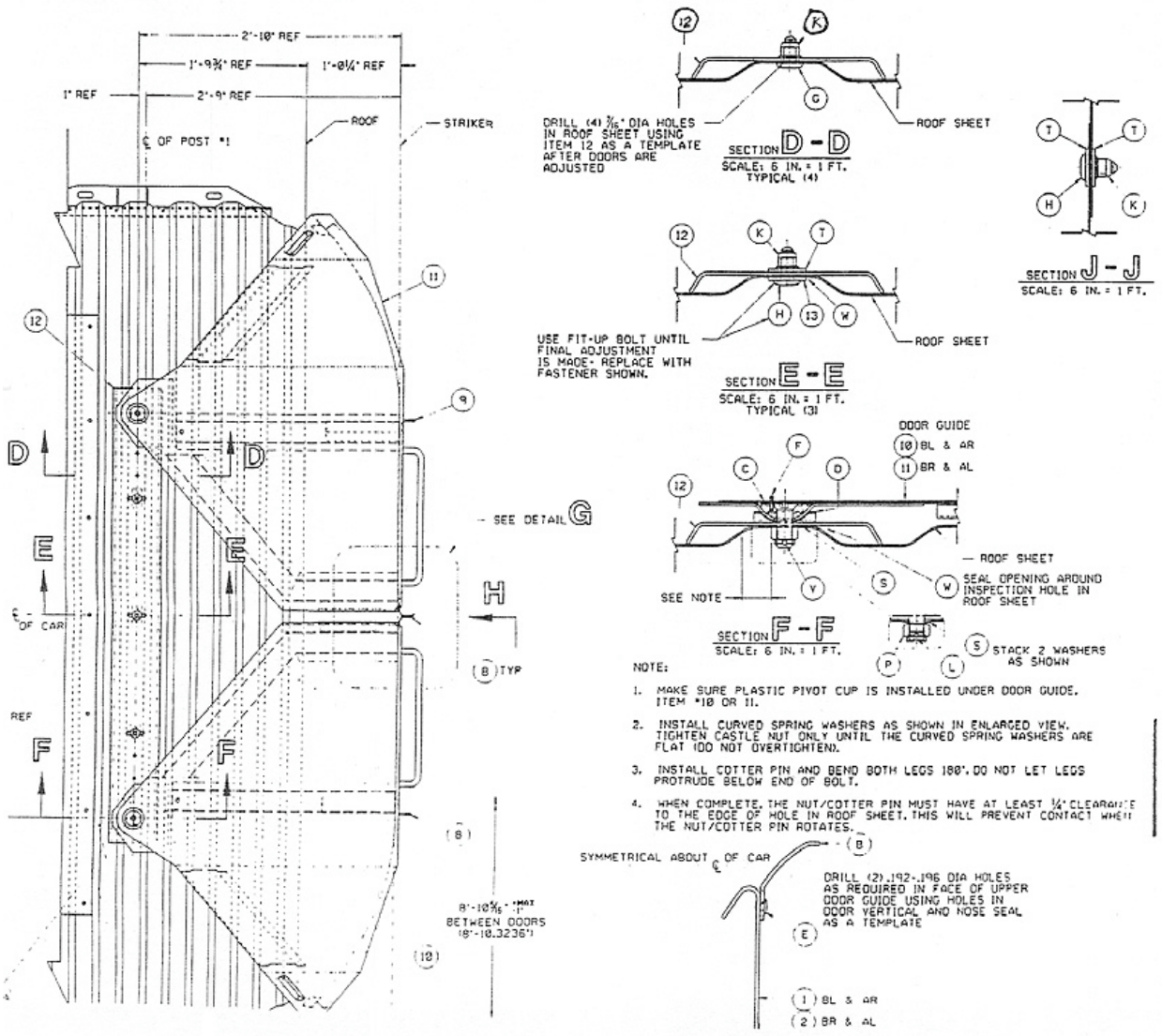


Figure 12.

Appendix A, Wear Limits

Maximum wear before repair or replacement.

Part	At Prep Track	At Cert. Shop
Lock Pin to Bracket	$^3/_{16}$"	$^1/_8$"
Cross Pin in Lock Pin	50%	Any wear
Roller	When it won't roll	If any free play
'J' Plate	50%	25%
Lower Track Groove	$^1/_8$" deep	Any groove
Lower Track Vertical Behind 'J'	50%	25%

Meets Current M970 Revision (10/98).

Appendix B, AAR Early Warnings

EW-174 C-9276

AAR CIRCULARS - Print Page 1 of 1

Patrick T. Ameen
Assistant Vice President -
Technical Services

ASSOCIATION OF AMERICAN RAILROADS

EARLY WARNING

Tuesday, January 16, 2001

c-9276

EW-174

Subject:SealSafe End Doors on Thrall Multi-Level Auto Racks

To:MEMBERS AND PRIVATE CAR OWNERS **File Number:SE-1.33.1**

The Specially Equipped Freight Car Committee has recently been made aware of cracks in the end door canopy of some multi-level autoracks equipped with SealSafe end doors. This style of end door may be found on bi-Level, tri-Level, ABL (Articulated Bi-Level) and Q-2 type autoracks built by Thrall Car Manufacturing Company beginning in 1998. There are approximately 13,600 autoracks currently in service with this type of end door. In some cases the cracks have progressed to the point that the end door canopy has totally broken and separated from the end door pivot pin mounting bolt. When this occurs the entire end door is extremely unstable and is secured in position only by the end door's upper locking pin. Once the locking pin is released, the end door safety cable becomes the last fail-safe device to prevent the end door from detaching from the autorack. (A photogragh of a SealSafe end door having a broken roof canopy is appended. Note that there are 2 canopies per end; 4 per car.) The root cause of the failure is unknown at this time. The SealSafe end door manufacturer (Thrall Car) is actively analyzing this problem and will develop an inspection and repair procedure as well as future design modifications however, it is anticipated that this analysis will not be completed until mid-March. There is no practical means to inspect the doors outside of shop facilities since the location of the cracks and broken areas are on top of the autorack. Until an inspection and repair procedure is developed, please exercise extreme caution when opening and closing SealSafe end doors. Be aware of any unusual movement of the end door when releasing the locking pins and position yourself so you can quickly step clear if required. This situation highlights the importance of the end door safety cable. Once an end door is released, immediately inspect the safety cable to ensure that it is secured and in good condition. Any multi-level car with a broken or totally separated SealSafe End Door must be immediately sent to a designated satellite shop or reported to the rack owner for disposition. Extra precaution should be exercised to ensure that the locking pins are fully engaged prior to movement of the car.

Sincerely,
Patrick T. Ameen
Assistant Vice President - Technical Services

Safety & Operations
202-639-2140 202-639-2179 Email:pameen@aar.org

EW-174-S1 C-9295

Patrick T. Ameen
Assistant Vice President -
Technical Services

ASSOCIATION OF AMERICAN RAILROADS

EARLY WARNING

Friday, March 23, 2001

c-9295

EW-174-S1

Subject:SealSafe End Doors on Thrall Multi-Level Auto Racks

To:MEMBERS AND PRIVATE CAR OWNERS **File Number:SE-1.33.1**

Early Warning EW-174 was issued January 16, 2001 via Circular Letter c-9276 to alert the industry of cracks in the top end door guide (often referred to as the door hood or door canopy) of some multi-level autoracks equipped with SealSafe end doors. This style of end door may be found on bi-Level, tri-Level, ABL (Articulated Bi-Level) and Q-2 type autoracks built by Thrall Car Manufacturing Company. There are approximately 13,600 autoracks currently in service with this type of end door. There have been no reported cases of end doors separating completely from the rack however there was one incident of an end door leaning against an adjacent rack and several broken safety cables. In some cases the cracks have progressed to the point that the end door guide has totally broken and separated from the end door pivot pin mounting bolt. When this occurs the entire end door is extremely unstable and is secured in position only by the end door's upper locking pin. Once the locking pin is released, the end door safety cable becomes the last fail-safe device to prevent the end door from detaching from the autorack. (A photogragh of a SealSafe end door having a broken top end door guide is appended. Note that there are 2 guides per end; 4 per car.) The Specially Equipped Freight Car Committee (SEFCC) has continued to work with the SealSafe end door manufacturer (Thrall Car) in analyzing the problem. Thrall Car and the SEFCC have developed the following action plan which has been approved by the Equipment Engineering Committee: 1) All racks manufactured or equipped with SealSafe end doors will have the end door guides removed and inspected. 2) Those end door guides having cracks will be replaced with a new guide and a doubler plate (or other reinforcement approved by the SEFCC) and a modifed or new safety cable assembly. 3) Those end door guides having no cracks will be reinstalled along with a doubler plate (or other reinforcement approved by the SEFCC) and a modifed or new safety cable assembly. Given the number of racks and doors involved in the retrofit program, special precautions are required for inspection and loading/unloading facilites. In accordance with UMLER/TRAIN II procedures in effect May 1, 1994, EW-174 is assigned Severity Code "MG" - See Early Warning Letter for Instructions. Door Inspection Instructions & Operating Precautions: 1) Position yourself so you can quickly step clear if required. 2) Prior to attempting to open any multi-level end door, make a visual inspection from the ground to determine if any unusual conditions can be noted. 3) Exercise extreme caution when opening and closing SealSafe doors. Be aware of any unusual movement of the end door when releasing the locking pins. 4) Once an end door is unlocked, immediately inspect the safety cable to ensure that it is secured and in good condition. 5) Any empty multi-level car found with a cracked, broken, or totally separated SealSafe top end door guide must be immediately sent to a designated satellite repair shop or reported to the rack owner for disposition. 6) Extra caution should be exercised to ensure that the locking pins are fully engaged prior to movement of the car. 7) Railroads should, where possible, avoid spotting racks with SealSafe doors at the end of a string of cars. When racks with SealSafe doors are spotted at the end of a cut of cars, take whatever steps are necessary to protect personnel from doors falling off rack. Suggested options for opening/closing SealSafe doors at the end of a cut of cars: 1) Open one door at the end of the rack coupled to the adjacent rack. Verify that all door safety cables are in working order. Verify that no one is standing outside the end of the rack, then open the door at the end of the string from the inside. If a safety cable is not in working order then use method 2 below to open doors. Repair defective safety cables before continuing rack in service. 2) Attach a cable, chain, or strap across the outside of the end doors attaching cable to ladder rungs at B-deck level or higher on each side of rack using an approach that does not require climbing the ladder with cable in hand. Note: Remove cable or chain before moving car. 3) Other methods, approved by your supervisor, that protect personnel from doors falling off rack during opening may be utilized. As soon as a supply of material

for the modification is available, racks with SealSafe end doors, built 1998 and earlier will be directed to designated shops in an orderly fashion at a rate equal to available repair material and shop capacity. Supplements to this Early Warning will be issued accordingly to advise all parties of the latest shopping list. All racks on the attached listing will be modified. Any racks equipped with SealSafe end doors arriving at designated satellite shops for any reason must be modified before return to service. Contract repair shops must secure authorization and instructions from rack owner for any modifications to rack. All doors must be modified before a rack may be returned to interchange service. Racks that have been modified will be identified by painted 6 inch diameter green dot on each door centered on the door operating tool key hole. Plans are to complete the end door modification/retrofit program witihin eighteen months. Upon completion of 85% of the racks or 18 months from commencement of the shop program (whichever occurs first) the remaining racks will be removed from interchange service and held for modification. Note: Appendix B M&R pool locations are encouraged to pay special attention to end door safety cable assemblies and repair or replace any found defective.

Sincerely,
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EW-174-S2 C-9318

Patrick T. Ameen
Assistant Vice President -
Technical Services

ASSOCIATION OF AMERICAN RAILROADS

EARLY WARNING

Monday, May 14, 2001

c-9318

EW-174-S2

Subject:SealSafe End Doors on Thrall Multi-Level Auto Racks

To:MEMBERS AND PRIVATE CAR OWNERS **File Number:SE-1.33.1**

Early Warning EW-174 was issued January 16, 2001 via Circular Letter c-9276 to alert the industry of cracks in the top end door guide (often referred to as the door hood or door canopy) of some multi-level autoracks equipped with SealSafe end doors. This style of end door may be found on bi-level, tri-level, ABL (Articulated Bi-Level) and Q-2 type autoracks built by Thrall Car Manufacturing Company. There are approximately 13,600 autoracks currently in service with this type of end door. There have been no reported cases of end doors separating completely from the rack however there was one incident of an end door leaning against an adjacent rack and several broken safety cables. In some cases the cracks have progressed to the point that the end door guide has totally broken and separated from the end door pivot pin mounting bolt. When this occurs the entire end door is extremely unstable and is secured in position only by the end door's upper locking pin. Once the locking pin is released, the end door safety cable becomes the last fail-safe device to prevent the end door from detaching from the autorack. Supplement #1 to Early Warning EW-174 was issued March 26, 2001 via Circular Letter c-9295 and focused on door inspection instructions and operating precautions. The Specially Equipped Freight Car Committee (SEFCC) and the Equipment Engineering Committee (EEC) have continued to work with the SealSafe end door manufacturer (Thrall Car) in analyzing the problem. The Technical Services Working Committee (TSWC) has approved the following course of action: In accordance with UMLER/TRAIN II procedures in effect May 1, 1994, EW-174 is assigned Severity Code "MG" - See Early Warning Letter for Instructions. Safety Cable Assemblies ALL safety cable assemblies will be replaced. Thrall has committed to the TSWC's goal of 90 days for 100% replacement and is sending service technicians to multi-level ramps and selected shops. In addition to the green vinyl coating on the safety cables, racks that have received safety cable assembly replacement will be identified with a 2" diameter green dot, on all 4 end door sections, within 1 foot of the door hasps. This is to afford immediate on-the-ground visual identification to loading/unloading personnel as to whether a rack has the new safety cable assemblies---before opening the end door. The Door Inspection Instructions & Operating Precautions from EW-174 Sup. 1 are repeated at the end of this Supplement for your ready reference. End Door Guides & Doubler Plates Any racks equipped with SealSafe end doors arriving at designated satellite shops for any reason must be modified before return to service. Contract repair shops must secure authorization and instructions from rack owner for any modifications to rack. All doors must be modified before a rack may be returned to interchange service. The end door guides on all racks manufactured or equipped with SealSafe end doors will have the end door guides removed from the car for inspection, in shop. All top door guides, regardless of whether they are cracked, will be reinforced with doubler plates. Those end door guides having no cracks may be reinstalled, along with a doubler plate. End door guides with a single crack or cumulative cracking up to and including 4" may be reinforced with doubler plates provided stop holes are drilled at the end of each crack. End door guides having a single crack >4" or cumulative cracking >4" must be replaced with a new reinforced (i.e., with doubler plate) top door guide. Thrall, working with the SEFCC and EEC, will continually assess the continued efficacy of the corrective measures particularly with respect to those end door guides not exhibiting cracks at the time of removal for inspection (i.e., receiving doubler plates only) and growth of cracks on those guides with single cracks or cumulative cracking not > 4" (doubler plates only). Racks that have been modified will be identified by painted a 6 inch diameter green dot on each door centered on the door operating tool key hole. Record Keeping & Other Actions Thrall, working with the rack owners and repair facilities, will maintain separate detailed (date, repair location/repair company) records of racks (by car initial & #) receiving safety cable assembly replacement, doubler plate application and/or end door guide

replacement. As soon as the new AAR Early Warning System is launched (now scheduled for June 3rd), AAR will generate two separate Early Warning pools and load the car numbers---one to track safety cable assembly replacement and one to track end door guide removal, inspection and retrofit. Given the number of racks and doors involved in the retrofit program, special precautions are required for inspection and loading/unloading facilites. Door Inspection Instructions & Operating Precautions 1) Position yourself so you can quickly step clear if required. 2) Prior to attempting to open any multi-level end door, make a visual inspection from the ground to determine if any unusual conditions can be noted. 3) Exercise extreme caution when opening and closing SealSafe doors. Be aware of any unusual movement of the end door when releasing the locking pins. 4) Once an end door is unlocked, immediately inspect the safety cable to ensure that it is secured and in good condition. 5) Any empty multi-level car found with a cracked, broken, or totally separated SealSafe top end door guide must be immediately sent to a designated satellite repair shop or reported to the rack owner for disposition. 6) Extra caution should be exercised to ensure that the locking pins are fully engaged prior to movement of the car. 7) Railroads should, where possible, avoid spotting racks with SealSafe doors at the end of a string of cars. When racks with SealSafe doors are spotted at the end of a cut of cars, take whatever steps are necessary to protect personnel from doors falling off rack. Suggested options for opening/closing SealSafe doors at the end of a cut of cars: 1) Open one door at the end of the rack coupled to the adjacent rack. Verify that all door safety cables are in working order. Verify that no one is standing outside the end of the rack, then open the door at the end of the string from the inside. If a safety cable is not in working order then use method 2 below to open doors. Replace defective safety cables before continuing rack in service. 2) Attach a cable, chain, or strap across the outside of the end doors attaching cable to ladder rungs at B-deck level or higher on each side of rack using an approach that does not require climbing the ladder with cable in hand. Note: Remove cable or chain before moving car. 3) Other methods, approved by your supervisor, that protect personnel from doors falling off rack during opening may be utilized. Note: Appendix B M&R pool locations are encouraged to pay special attention to end door safety cable assemblies and replace any found defective.

Sincerely,
Patrick T. Ameen
Assistant Vice President - Technical Services

Safety & Operations
202-639-2140 202-639-2179 Email:pameen@aar.org

EW-174-S3 C-9354

Patrick T. Ameen
Assistant Vice President -
Technical Services

ASSOCIATION OF AMERICAN RAILROADS

EARLY WARNING

Friday, September 21, 2001

c-9354

EW-174-S3

Subject:SealSafe End Doors on Thrall Multi-Level Auto Racks

To:MEMBERS AND PRIVATE CAR OWNERS **File Number:SE-1.33.1**

Early Warning EW-174 was issued January 16, 2001 via Circular Letter c-9276 to alert the industry of cracks in the top end door guide (often referred to as the door hood or door canopy) of some multi-level autoracks equipped with SealSafe end doors. This style of end door may be found on bi-level, tri-level, ABL (Articulated Bi-Level) and Q-2 type autoracks built by Thrall Car Manufacturing Company. There are approximately 13,600 autoracks currently in service with this type of end door. There have been no reported cases of end doors separating completely from the rack however there was one incident of an end door leaning against an adjacent rack and several broken safety cables. In some cases the cracks have progressed to the point that the end door guide has totally broken and separated from the end door pivot pin mounting bolt. When this occurs the entire end door is extremely unstable and is secured in position only by the end door's upper locking pin. Once the locking pin is released, the end door safety cable becomes the last fail-safe device to prevent the end door from detaching from the autorack. Supplement #1 to Early Warning EW-174 was issued March 26, 2001 via Circular Letter c-9295 and focused on door inspection instructions and operating precautions. The Specially Equipped Freight Car Committee (SEFCC) and the Equipment Engineering Committee (EEC) continued to work with the SealSafe end door manufacturer (Thrall Car) in analyzing the problem. The Technical Services Working Committee (TSWC) approved modified end door inspection and repair procedures. More important, the TSWC mandated a 100% replacement of safety cable assemblies to be accomplished at various multi-level pre-trip locations and selected shops. These requirements were detailed in Supplement #2 to Early Warning EW-174 was issued May 14, 2001 via Circular Letter c-9318. The first 3132 racks (constructed in late 1997 and in 1998) were loaded in the Early Warning pool in late June. The 1st quarter 1999 racks (1136) have now been loaded in the new Early Warning system which was launched July 22, 2001 (see Circular Letters c-9337 and c-9341). In accordance with the new Early Warning procedures, EW-5174 (the carryover number in the new EW system) is assigned Severity Code "06 - AAR Defined, See Early Warning Letter for Instructions. Note: Appendix B M&R pool locations are encouraged to pay special attention to end door safety cable assemblies and replace any found defective.

Sincerely,
Patrick T. Ameen
Assistant Vice President - Technical Services

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EW-5212 C-10183

Patrick T. Ameen
Assistant Vice President -
Technical Services

ASSOCIATION OF AMERICAN RAILROADS

EARLY WARNING

Thursday, November 03, 2005

C-10183

EW-5212

Subject:SealSafe End Doors on Thrall Multi-Level Auto Racks

To:ALL SUBSCRIBERS **File Number:SE-1.33.1**

Early Warning EW-174 was issued January 16, 2001 via Circular Letter c-9276 to alert the industry of cracks in the top end door guide (often referred to as the door hood or door canopy) of some multi-level autoracks equipped with SealSafe end doors. This style of end door may be found on bi-level, tri-level, ABL (Articulated Bi-Level) and Q-2 type auto racks manufactured by Thrall Car Manufacturing Company. The design is now owned by Trinity Rail Group. There are approximately 13,600 autoracks currently in service with this type of end door.

There have been several incidents of end door guide failures whereby the end door guide has broken and separated from the end door pivot pin mounting bolt. When this occurs the entire end door becomes extremely unstable and is secured in position only by the end door's upper locking pin. Once the locking pin is released, the end door safety cable becomes the last fail-safe device to prevent the door from detaching from the rack structure.

Supplement #1 to Early Warning EW-174 was issued March 26, 2001 via Circular Letter c-9295 and focused on door inspection procedures and operating precautions. Modifed end door inspeciton and repair procedures were issued in Supplement #2 to Early Warning EW-171 on May 14, 2001 via Circular Letter c-9318. Equally important, in response to numerous reports of broken safety cables, the Technical Services Working Committee mandated a 100% replacement of safety cable assemblies by multi-level
pre-trip locations and selected repair shops.

Several additional supplements were issued over the past few years (EW-174 was renumbered to EW-5174 coincident with the July 2001 launch of the new Early Warning system) as additional blocks of racks were assigned (by production quarter) to EW-5174.

Unfortunately, we have continued to experience end door pivot bolt failures and some failures of the new safety cable assemblies, allowing the door to fall to the ground. The Specially Equipped Freight Car Committee is diligently working the issue with Trinity Rail Group to develop and test a viable permanent repair or retrofit. As soon as that critical work is completed we will issue a supplement to this Early Warning. Early Warning EW-5174 remains in effect.

In the interim, we felt it important to re-issue the following **inspection guidelines:**

The pivot bolt is located at the top of the door and secures the door to the roof which makes it very difficult to inspect. Please exercise extreme care when opening autoracks equipped with SealSafe end doors.

Door Inspection Instructions & Operating Precautions:

1) Position yourself so you can quickly step in the clear if required.
2) Prior to attempting to open any multi-level end door, make a visual inspection from the ground to determine if any unusual conditions can be noted.
3) Exercise extreme caution when opening and closing SealSafe doors. Be aware of any unusual movement of the end door when releasing the locking pins.
4) After the locking pins have been retracted, immediately move the door in one motion about one foot towards the open position. This will start the door into the secure position behind the ladder pan which will help support

the door should there be a failure.
5) Once an end door is unlocked and opened, immediately inspect the safety cable to ensure that it is secured and in good condition.
6) Any empty multi-level car found with a broken, missing or severely worn pivot bolt should be sent to a designated satellite repair shop or reported to the rack owner for disposition.
7) Extra caution should be exercised to ensure that the locking pins are fully engaged prior to movement of the car, empty or loaded.
8) Railroads should, where possible, avoid spotting racks with SealSafe doors at the end of a string of cars. When racks with SealSafe doors are spotted at the end of a cut of cars, take whatever steps are necessary to protect personnel from doors falling off rack.

Suggested options for opening/closing SealSafe doors at the end of a cut of cars:

1) Open one door at the end of the rack coupled to the adjacent rack. Verify that all door safety cables are in working order. Verify that no one is standing outside the end of the rack, then open the door at the end of the string from the inside. If a safety cable is not in working order then use method 2 below to open doors. Replace defective safety cables before continuing rack in service.
2) Attach a cable, chain, or strap across the outside of the end doors attaching cable to ladder rungs at B-deck level or higher on each side of rack using an approach that does not require climbing the ladder with cable in hand. Note: Remove cable or chain before moving car.
3) Other methods, approved by your supervisor, that protect personnel from doors falling off rack during opening may be utilized.

Note: Appendix B M&R pool locations are encouraged to pay special attention to end door safety cable assemblies and replace any found defective.

Sincerely,
Patrick T. Ameen
Assistant Vice President - Technical Services

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EW-5212 C-10285

Patrick T. Ameen
Assistant Vice President -
Technical Services

ASSOCIATION OF AMERICAN RAILROADS

EARLY WARNING

Tuesday, March 28, 2006

C-10285

EW-5212

Subject:SealSafe End Doors on Multi-Level Auto Racks Supplement #1

To:ALL SUBSCRIBERS **File Number:SE-1.33.1**

Early Warning Letter EW-5212 was issued November 3, 2005 via Circular Letter c-10183 to advise all personnel to be extremely cautious when operating SealSafe end doors on multi-level autoracks. This style of end door may be found on bi-level, tri-level, ABL (Articulated Bi-Level) and Q-2 type autoracks originally manufactured by Thrall Car Manufacturing Company and now by Trinity Rail Group. EW-5212 followed Early Warning Letter EW-174 and several supplements, all of which addressed various issues with the SealSafe end doors.

The Specially Equipped Freight Car Committee (SEFCC) continues to work with Trinity Rail Group to obtain a viable permanent repair; however, SealSafe end doors continue to experience failures in the pivot bolt area. When there is a total failure of the pivot bolt, the top of the door is not secured and may tilt outward until the green safety cable engages the door to prevent it from falling. In several cases this green safety cable has also failed allowing the door to fall to the ground. In some cases the cable has broken and in some cases there has been a failure with the attachment.

Due to this safety hazard, the SEFCC has directed that the *green colored safety cables* on all autoracks equipped with SealSafe end doors *be replaced with Trinity Rail Group's yellow safety cable and bracket assembly, or the equivalent*. Trinity Rail Group's part numbers, drawings and installation instructions are included in the attachment (Trinity Rail Drawing No. D-078-2005). When all new cables have been installed on a rack, the small green dots on the end doors that originally indicated green safety cables had been applied are to be painted over with blue paint.

The SEFCC has targeted December 31, 2006 for completion of this program. In the interim, please advise all personnel working with and around this equipment to exercise the utmost care when opening and closing doors. Before attempting to move doors make a visual inspection to help insure the door is safe to operate.

In accordance with Interchange Rule 125, this Early Warning is assigned **Severity Code 06-AAR defined**. Handling carriers, M&R pool operators, and designated repair companies should replace the green colored safety cables with the yellow safety cable and bracket assembly per the attached drawing and any green dots on the end doors (signifying the older design safety cables) should be painted over with blue paint. Report Activity Code **MH: Car Repaired; Return to Service** to remove car from the Early Warning system.

Note: Early Warning EW-5174 and its latest supplements remain in force. As of February 28, 2006, there were 385 racks requiring the end door modification (application of doubler plates). The total population (including 2004-2006 production) of autoracks equipped with SealSafe end doors is now

15,327. As of February 28th, 2171 autoracks had been retrofitted with the latest, yellow safety cable and bracket assembly.

Sincerely,
Patrick T. Ameen
Assistant Vice President - Technical Services

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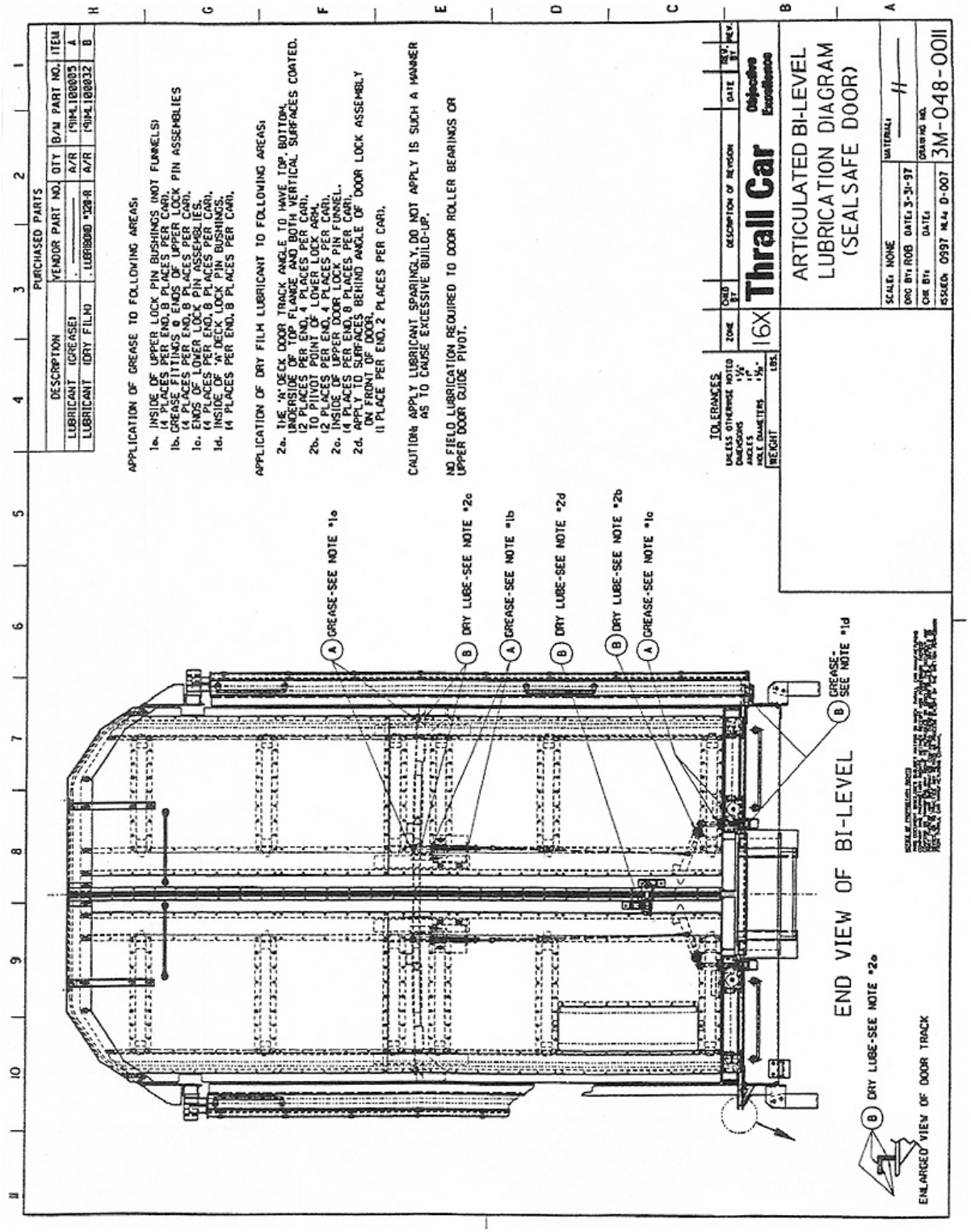
Attachments
trg dwg. d-078-2005.pdf

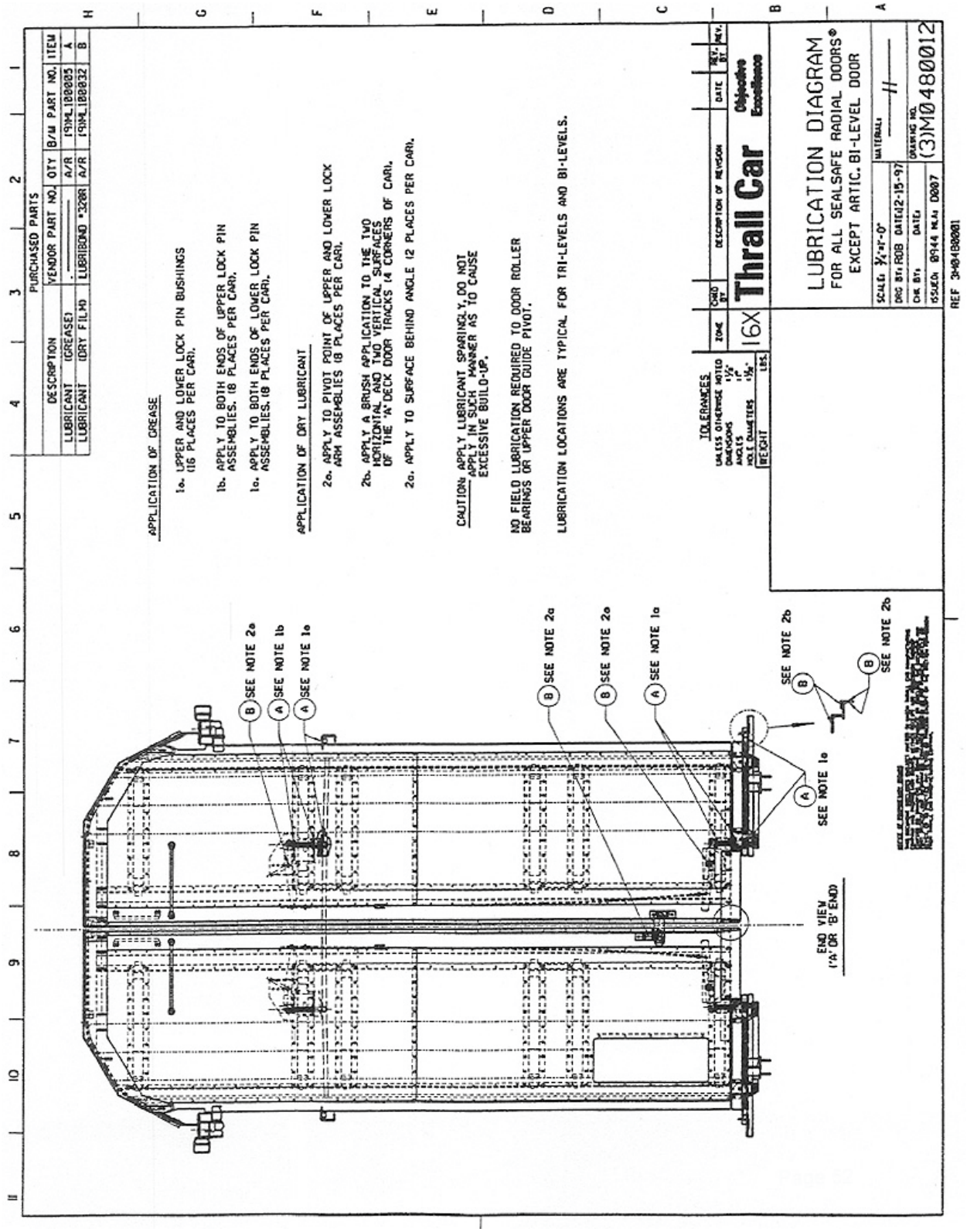
Note: Drawing D-078-2005 – Safety Cable Assembly can be found in Appendix D, Engineering Drawings

Appendix C, Door Lubrication Diagrams

Articulated Bi-level Lubrication – 3M-048-0011



Standard Lubrication – All Other Doors – (3)M-048-0012



Standard Lubrication Diagram

PARTS LIST			
ITEM	PART NO.	QTY	DESCRIPTION
1	043-38282	8.4 OZ	LUBRICANT (GREASE)
2	043-38283	8.0 OZ	LUBRICANT (DRY FILM)

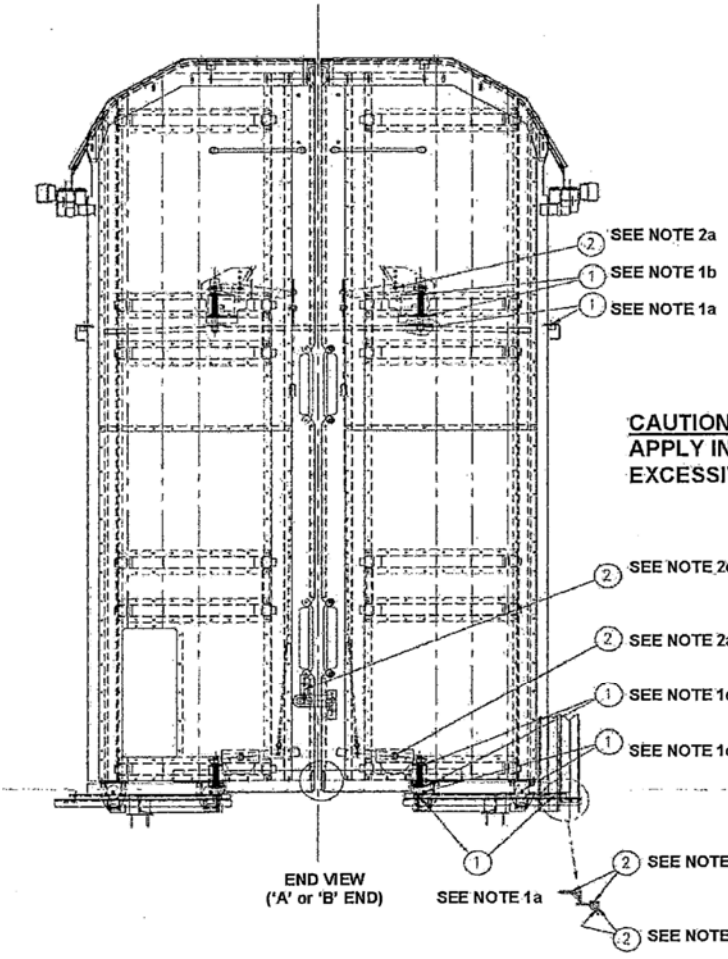
APPLICATION OF GREASE

1a. UPPER AND LOWER LOCK PIN RECEIVER BUSHINGS (16 PLACES PER CAR).

1b. APPLY TO BOTH ENDS OF UPPER LOCK PIN ASSEMBLIES (8 PLACES PER CAR). OMIT IF DOOR IS EQUIPPED WITH ZEFTEK NO LUBE BUSHINGS.

1c. APPLY TO BOTH ENDS OF LOWER LOCK PIN ASSEMBLIES (8 PLACES PER CAR). OMIT IF DOOR IS EQUIPPED WITH ZEFTEK NO LUBE BUSHINGS.

1d. APPLY TO DOOR ROLLER BEARING THROUGH FITTING IN DOOR ROLLER SHAFTS (IF SO EQUIPPED). (8 PLACES PER CAR). OMIT IF EQUIPPED WITH SEALED DOOR ROLLERS.



APPLICATION OF DRY LUBRICANT

2a. APPLY TO PIVOT OF UPPER AND LOWER LOCK ARM ASSEMBLIES (8 PLACES PER CAR).

2b. APPLY A BRUSH APPLICATION TO THE TWO HORIZONTAL AND TWO VERTICAL SURFACES OF THE "A" DECK DOOR TRACKS (4 CORNERS OF CAR).

2c. APPLY TO SURFACE BEHIND ANGLE (2 PLACES PER CAR).

CAUTION: APPLY LUBRICANT SPARINGLY. DO NOT APPLY IN SUCH MANNER AS TO CAUSE EXCESSIVE BUILD-UP

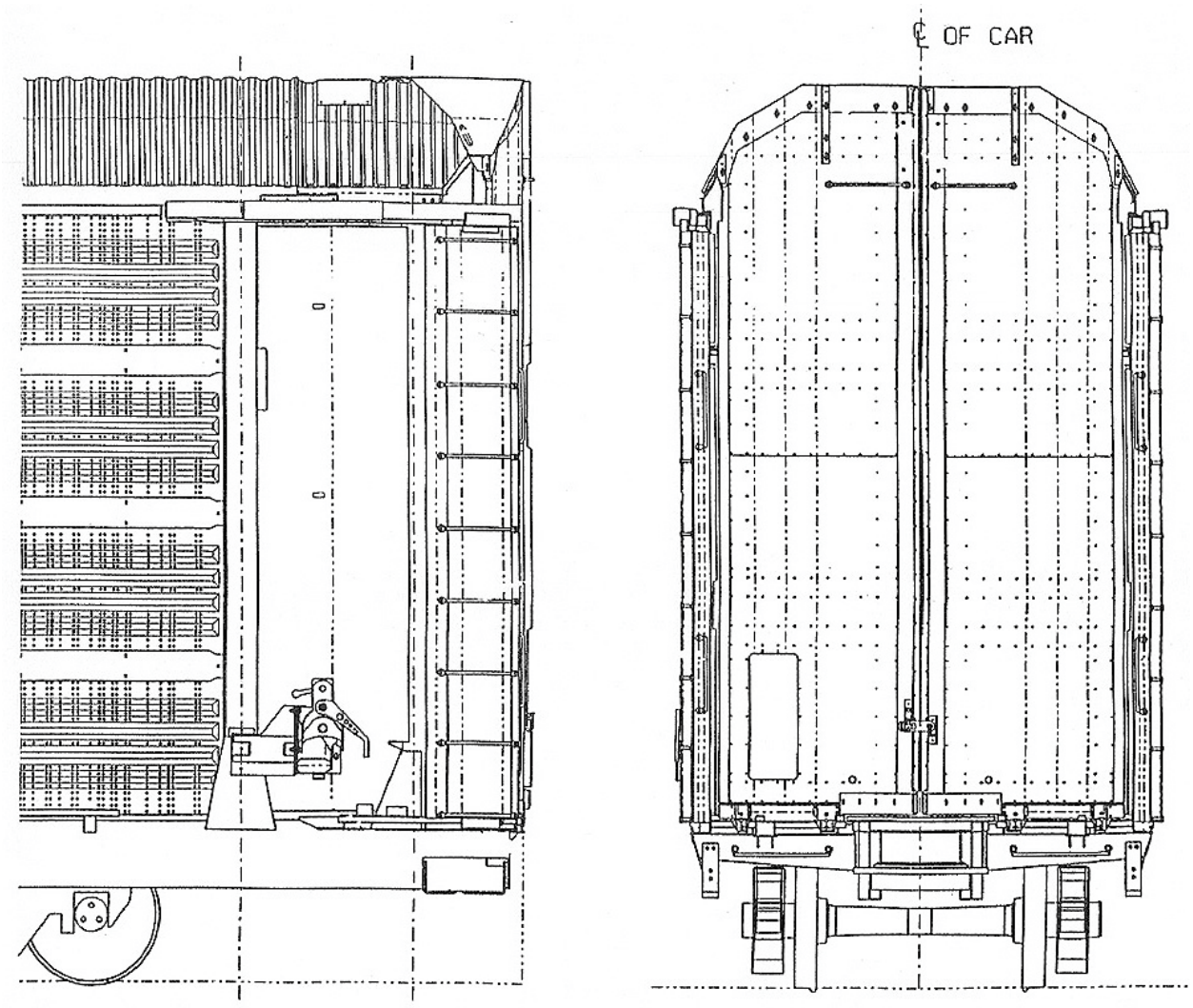
NO FIELD LUBRICATION REQUIRED TO UPPER DOOR GUIDE PIVOT.

LUBRICATION LOCATIONS ARE TYPICAL FOR TRI-LEVELS AND BI-LEVELS.

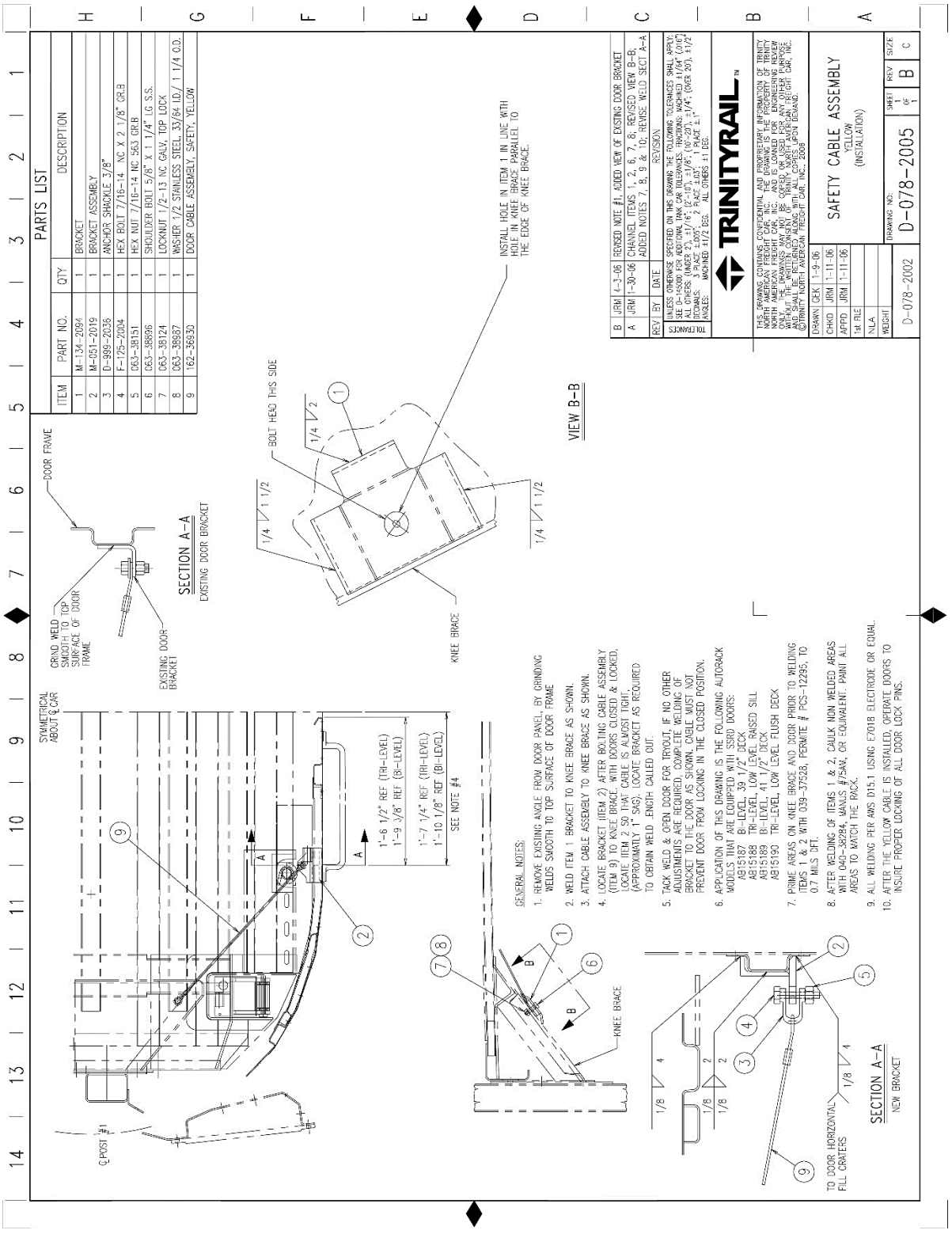
OMIT GREASE ON DOOR LOCKS IF DOOR IS EQUIPPED WITH ZEFTEK NO LUBE BUSHINGS

Appendix D, Engineering Drawings

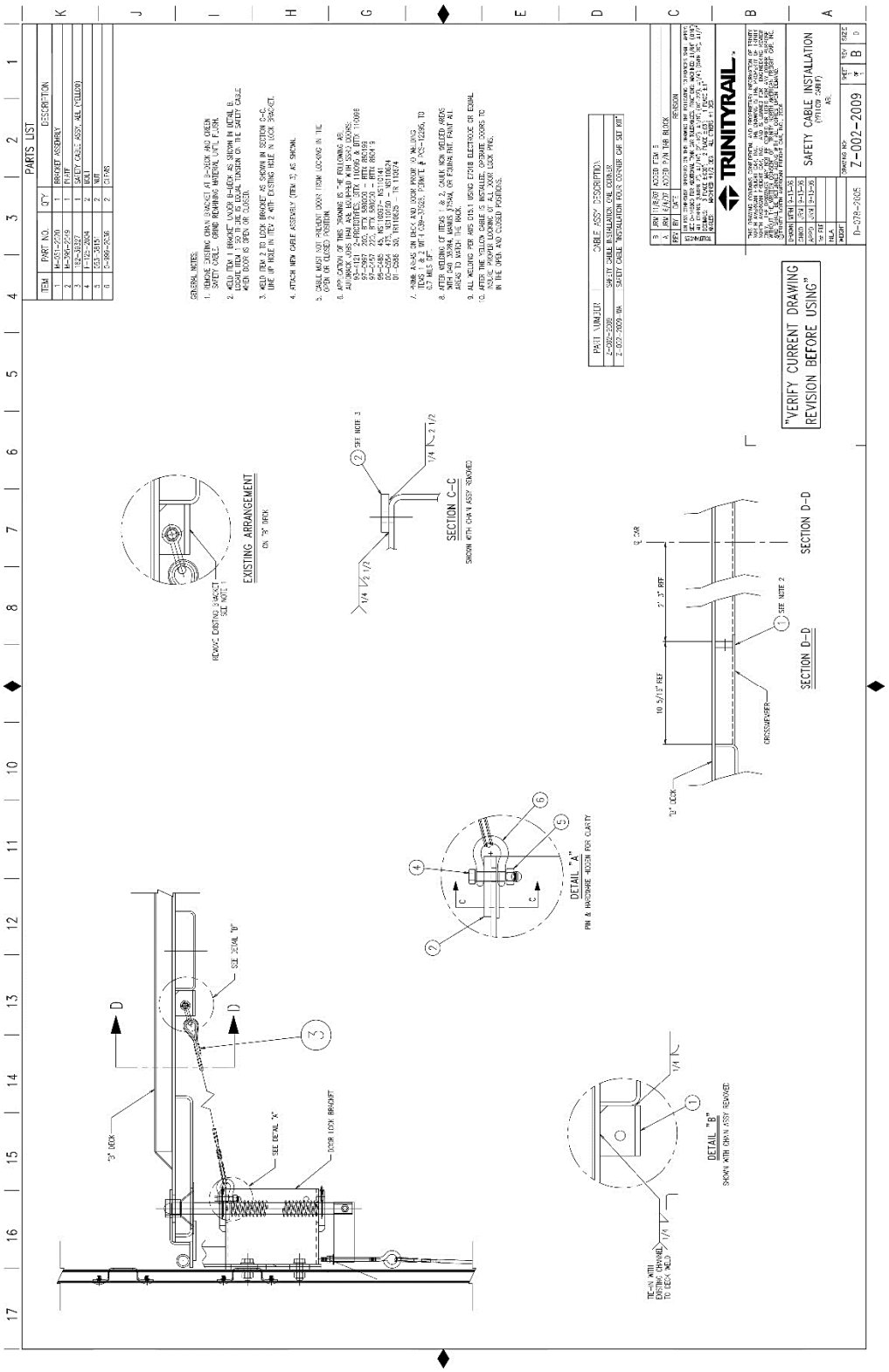
SealSafe© Radial Door



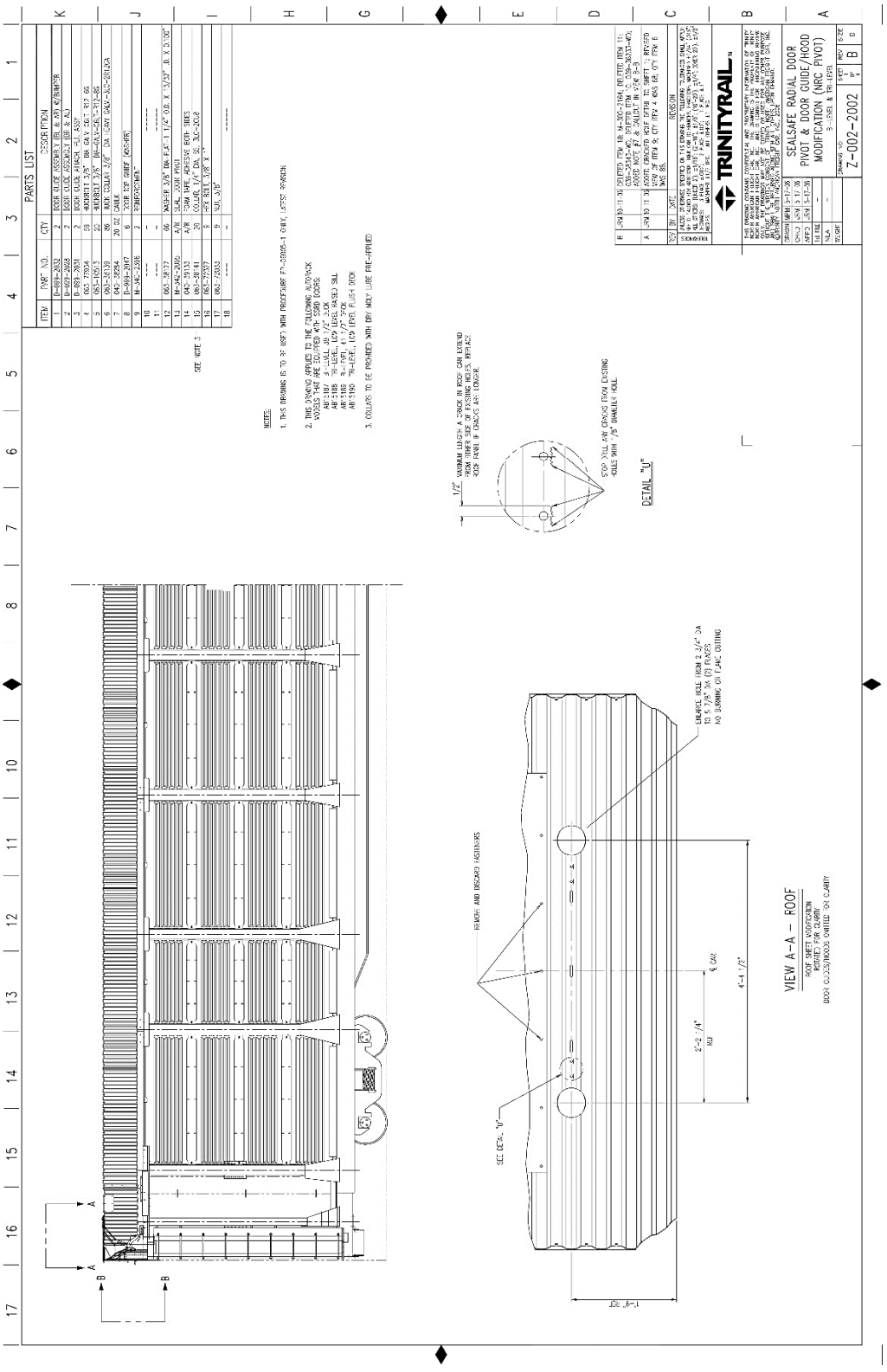
Safety Cable Assembly – D-078-2005



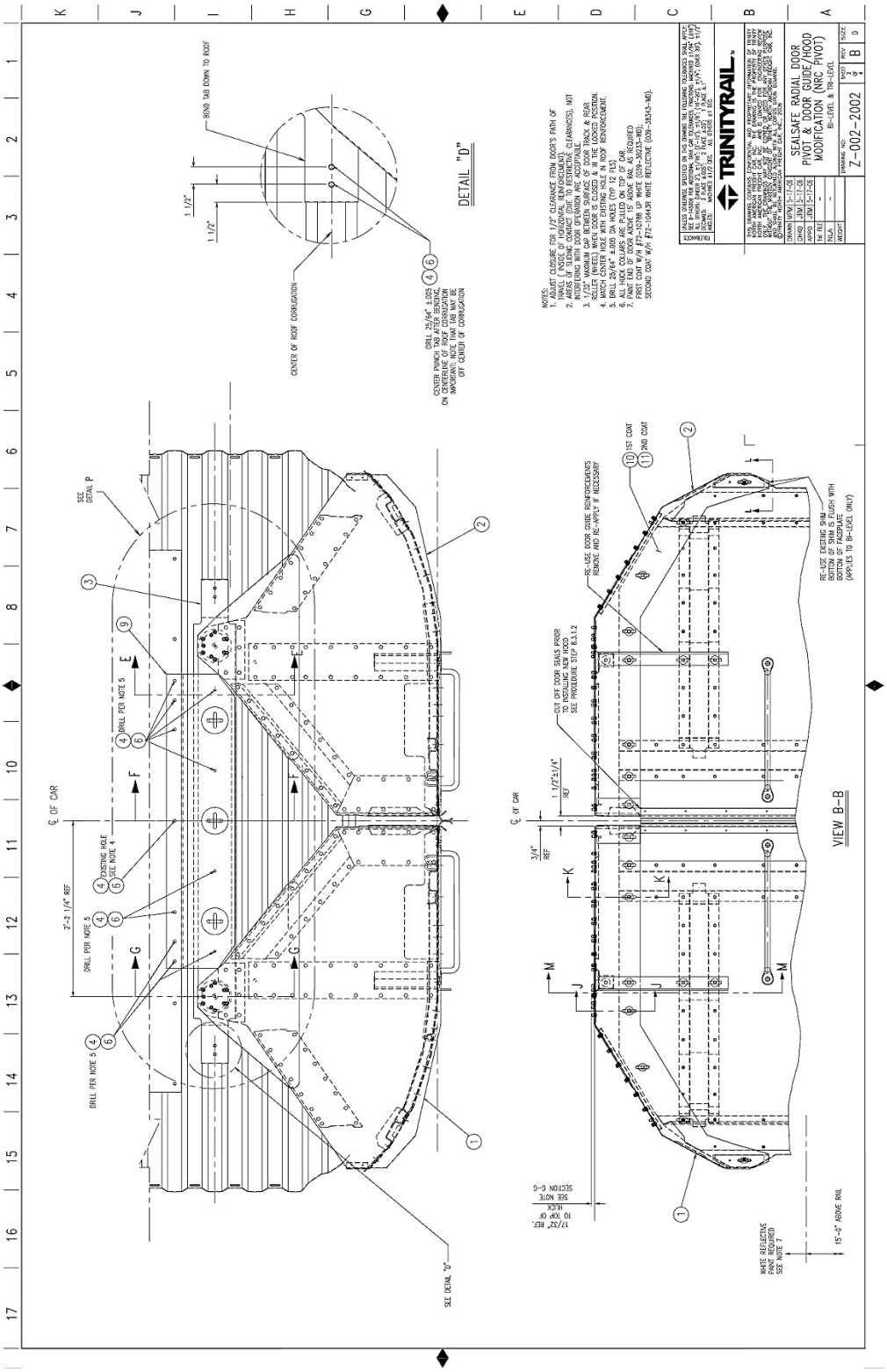
Safety Cable Installation – Z-002-2009



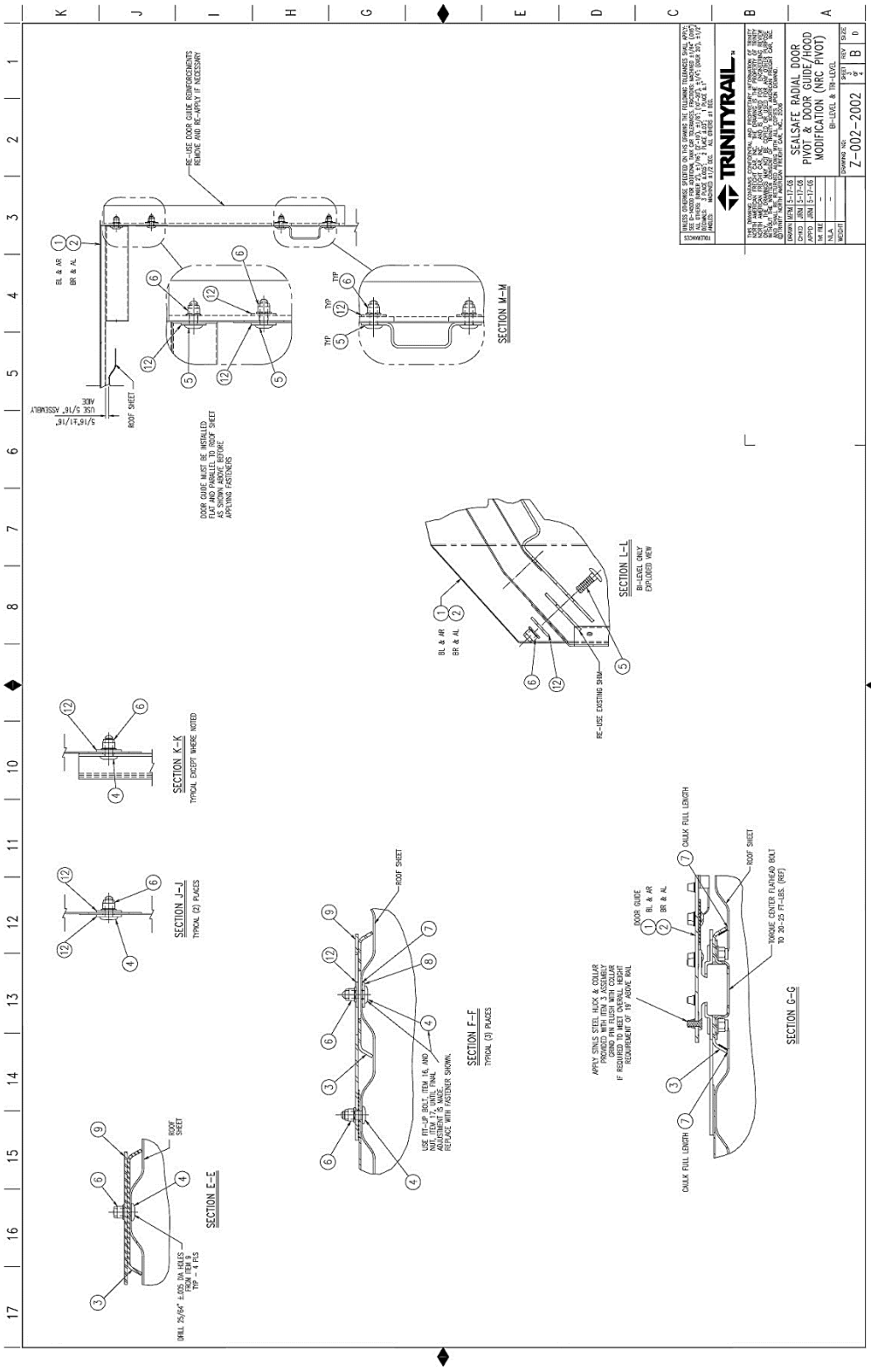
Pivot and Door Guide / Hood Modification – Z-002-2002 Sheet 1



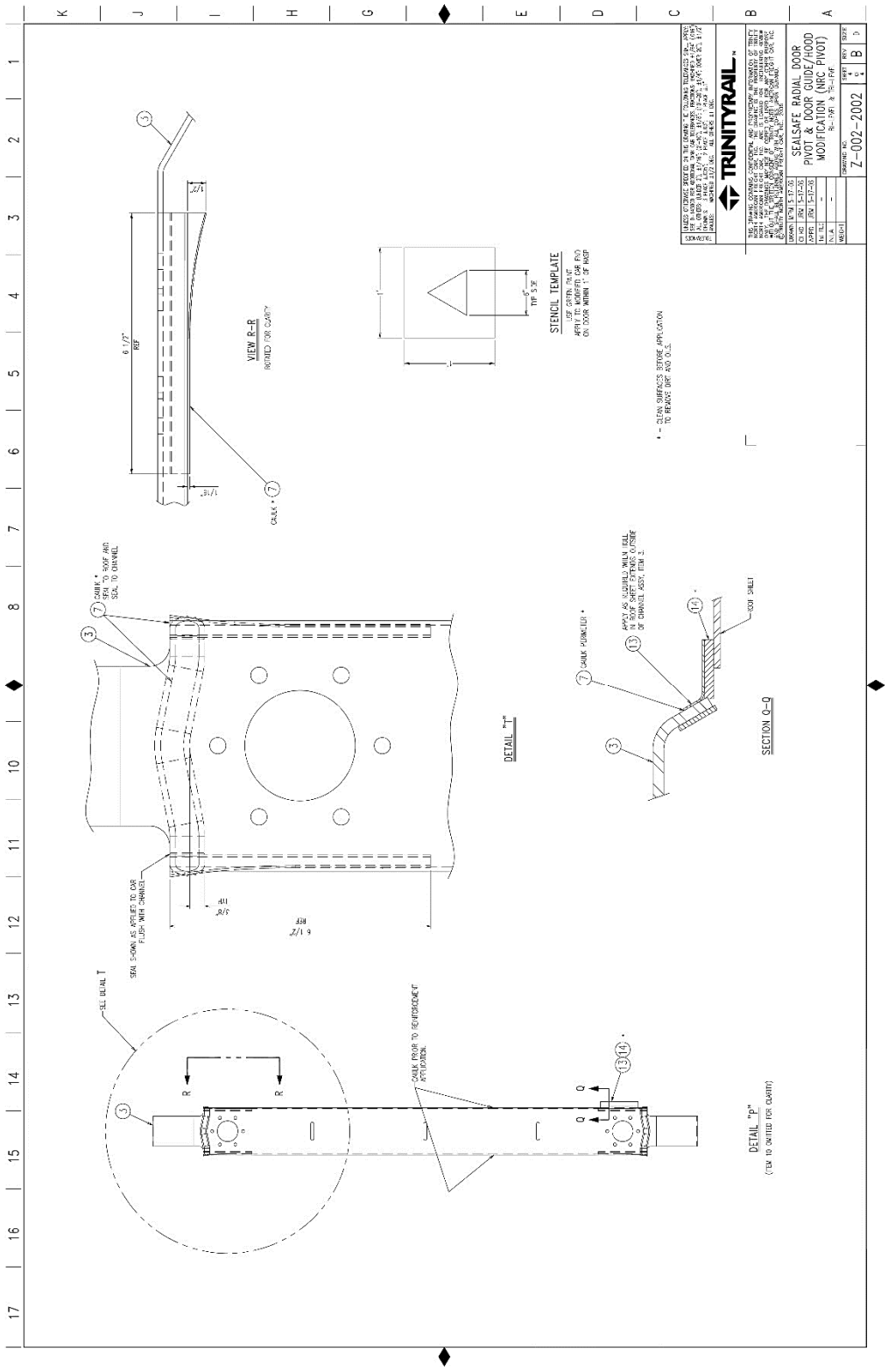
Pivot and Door Guide / Hood Modification – Z-002-2002 Sheet 2



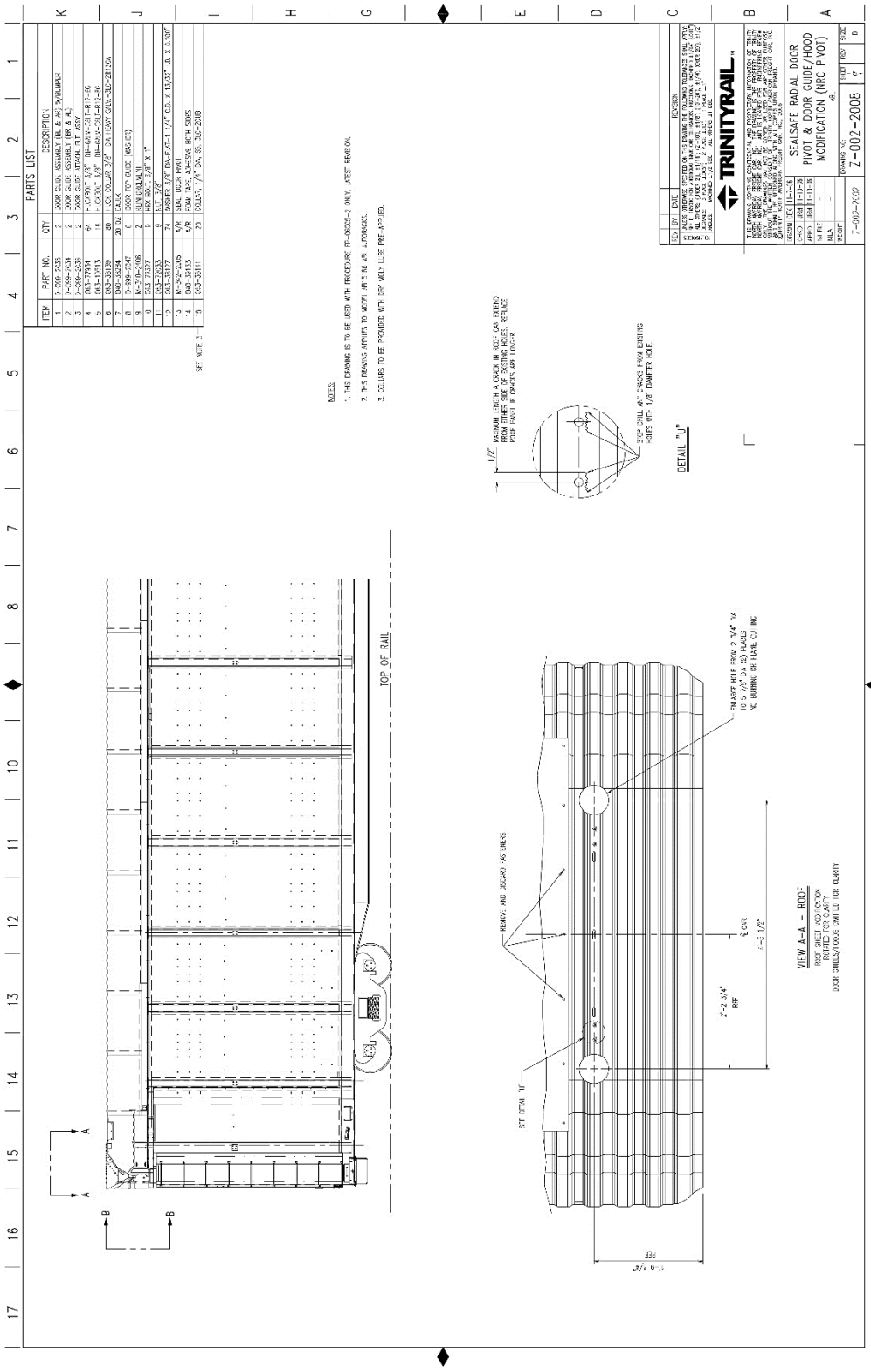
Pivot and Door Guide / Hood Modification – Z-002-2002 Sheet 3



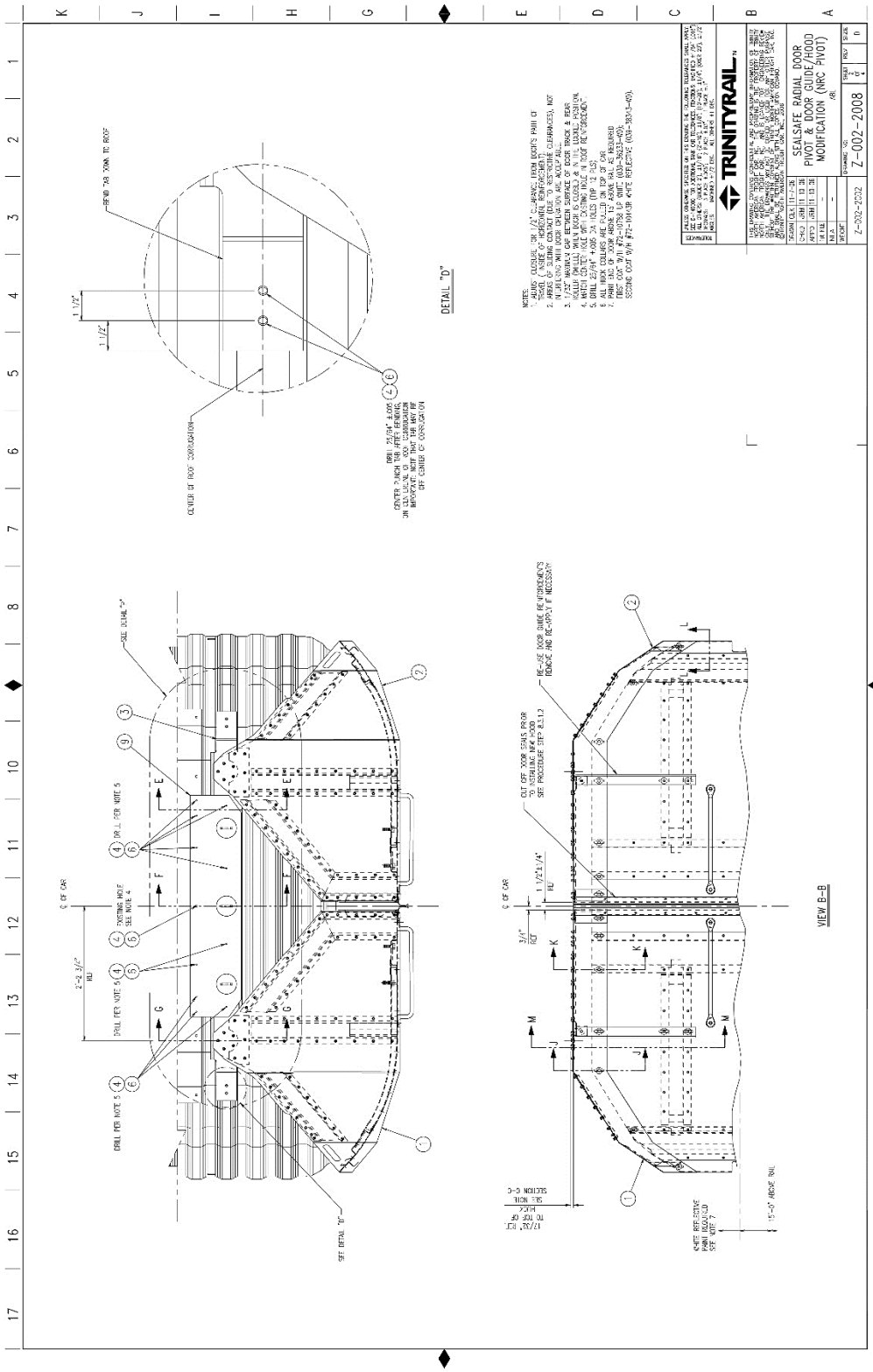
Pivot and Door Guide / Hood Modification – Z-002-2002 Sheet 4



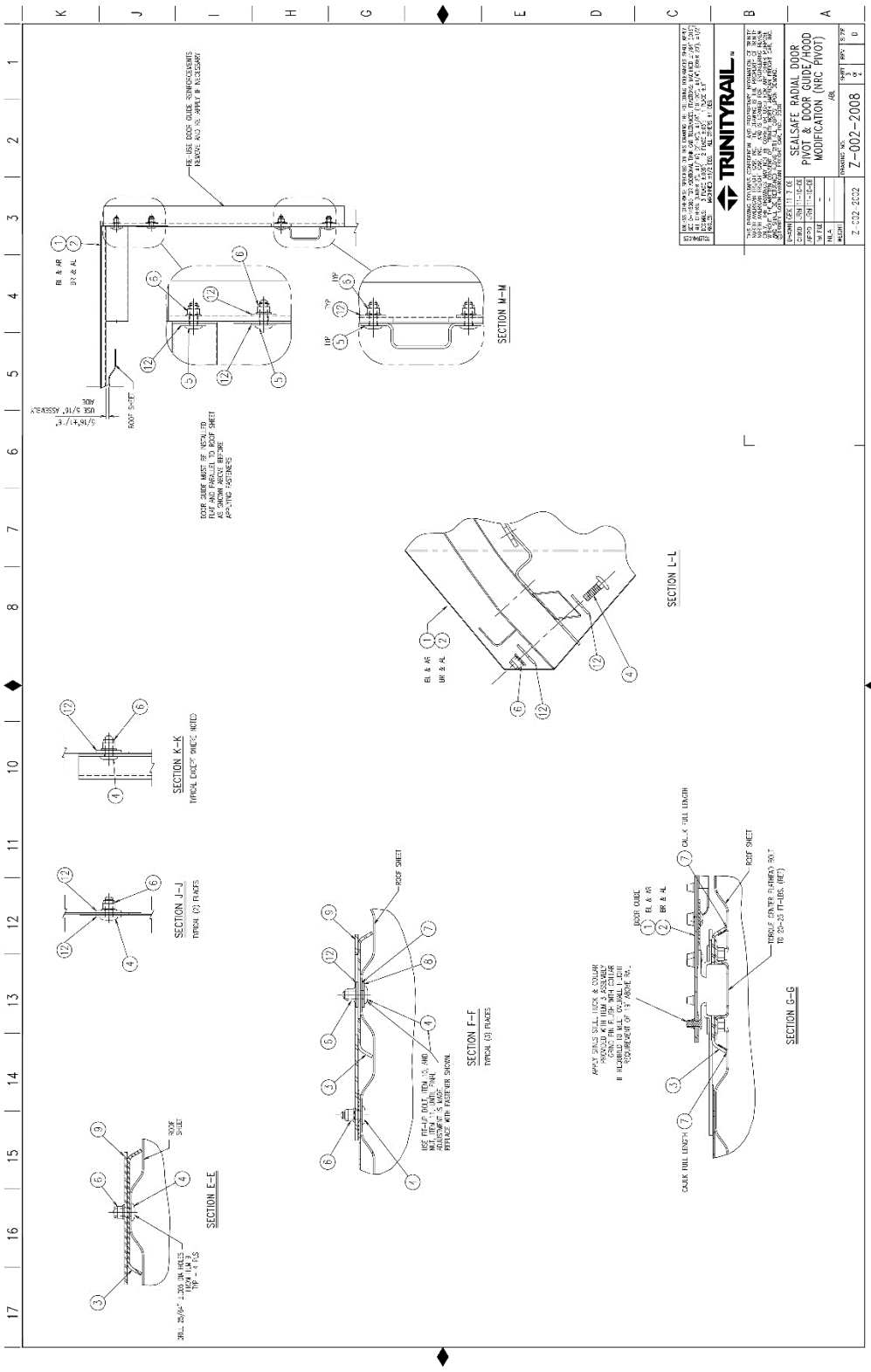
Pivot and Door Guide / Hood Modification – Z-002-2008 Sheet 1



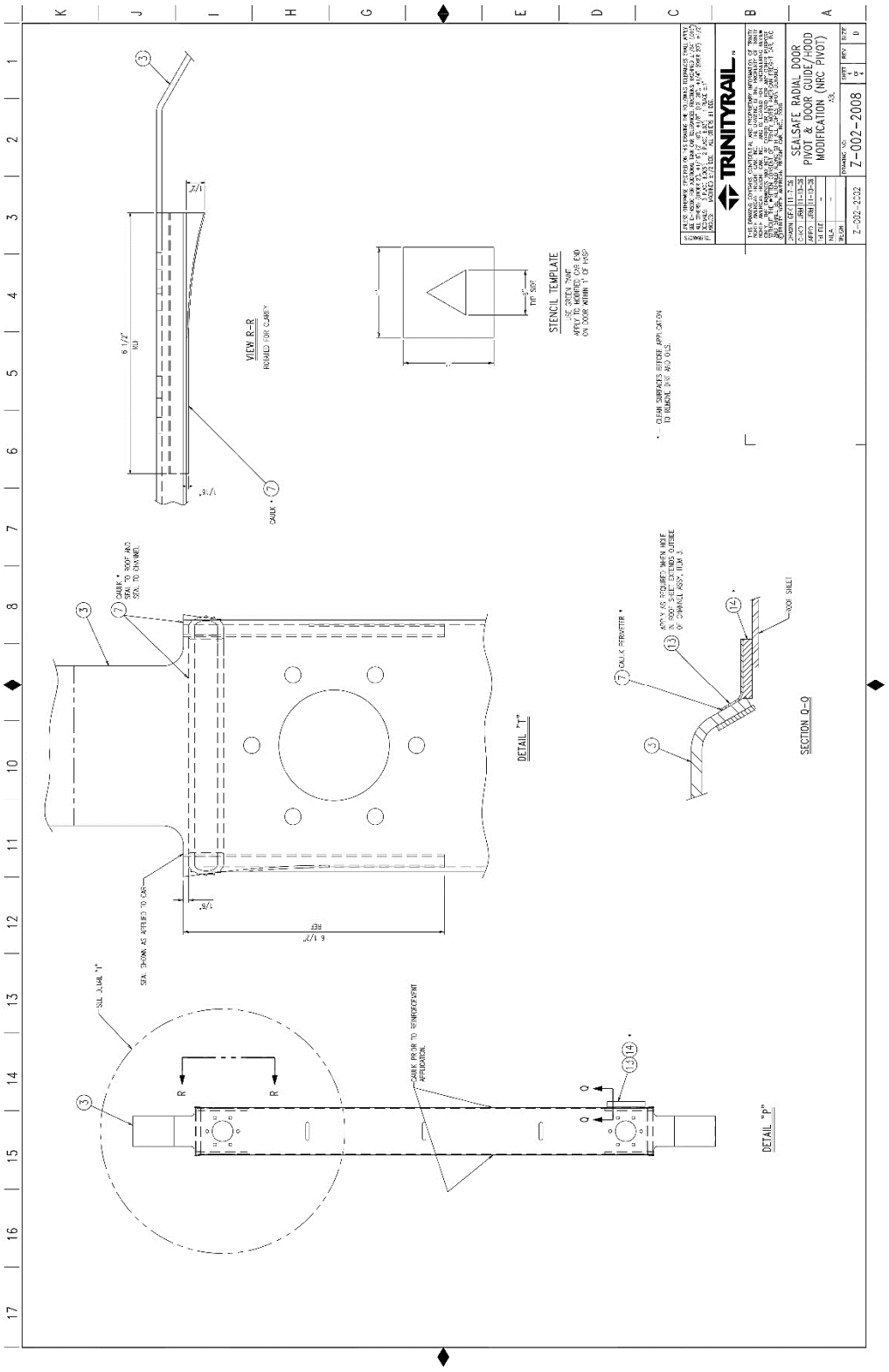
Pivot and Door Guide / Hood Modification – Z-002-2008 Sheet 2



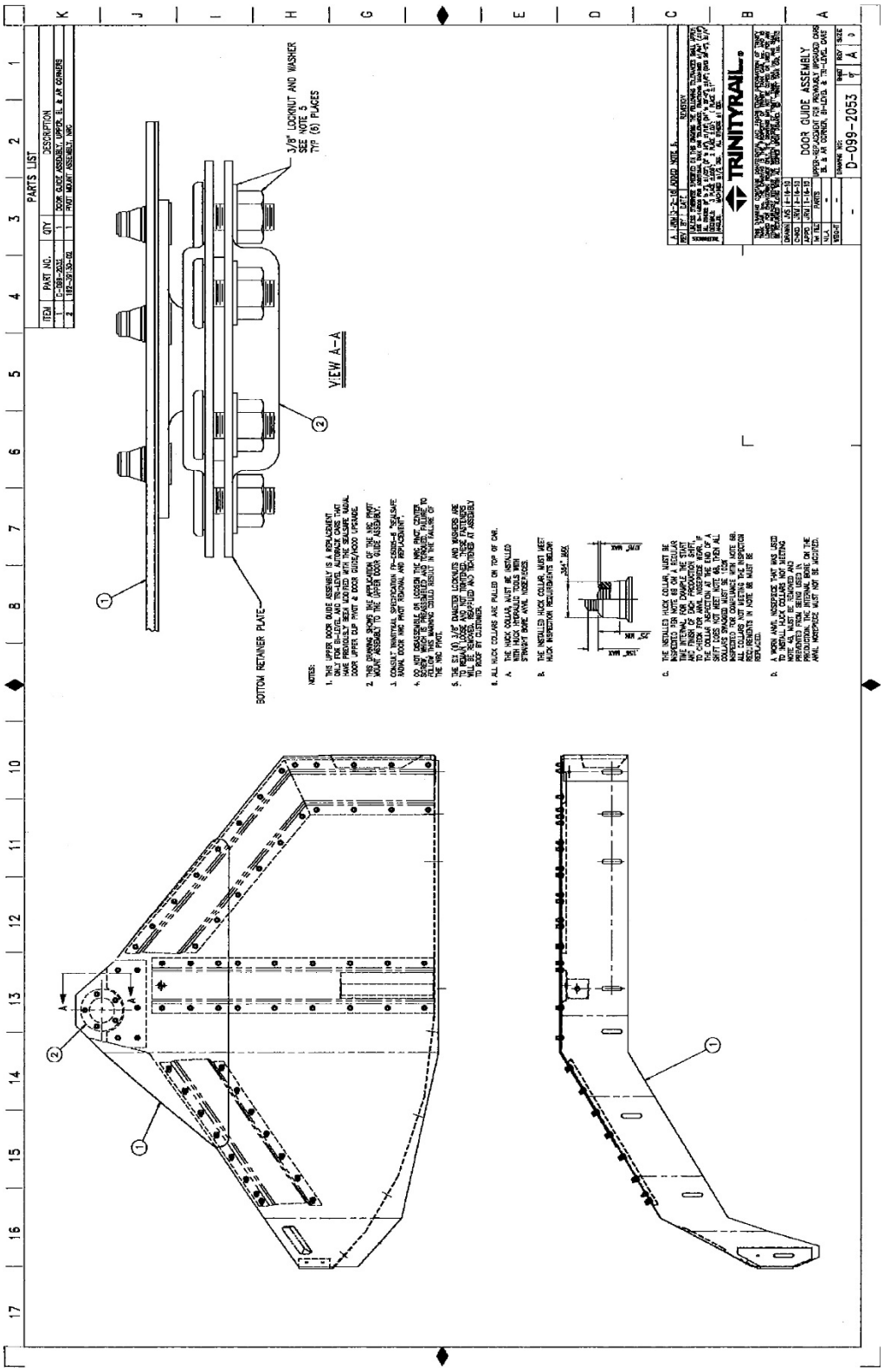
Pivot and Door Guide / Hood Modification – Z-002-2008 Sheet 3



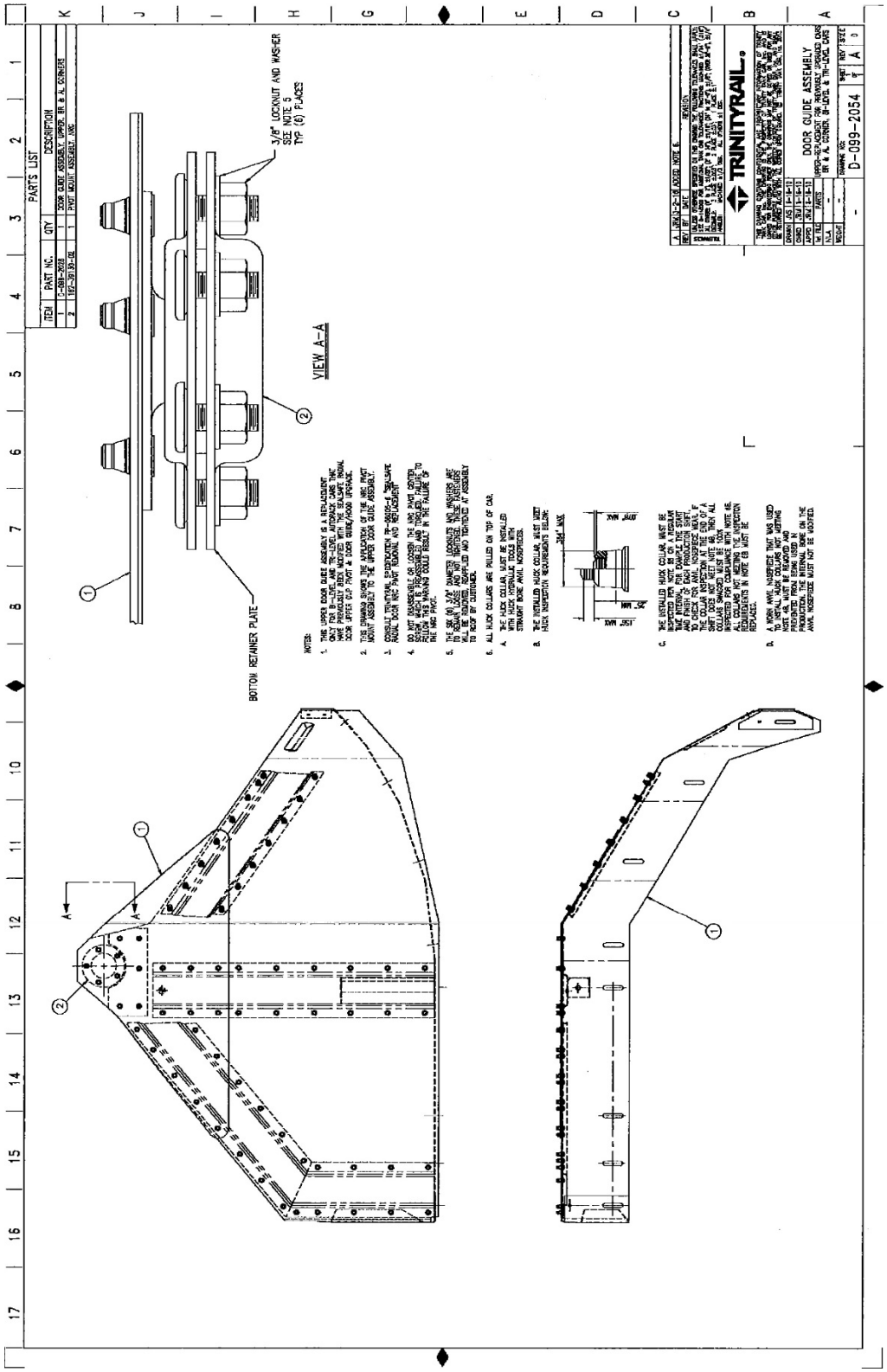
Pivot and Door Guide / Hood Modification – Z-002-2008 Sheet 4



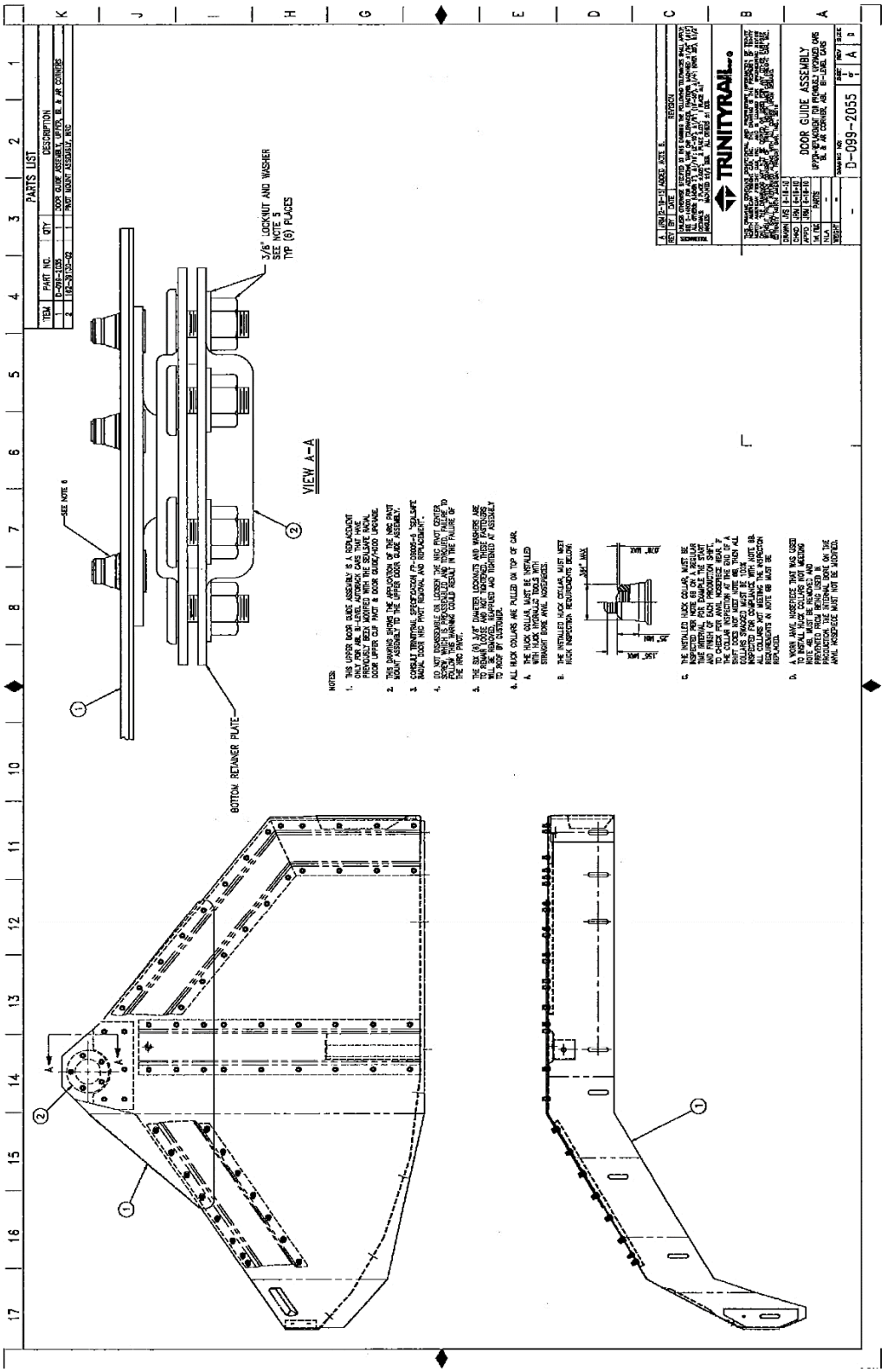
Door Guide Assembly – D-099-2053



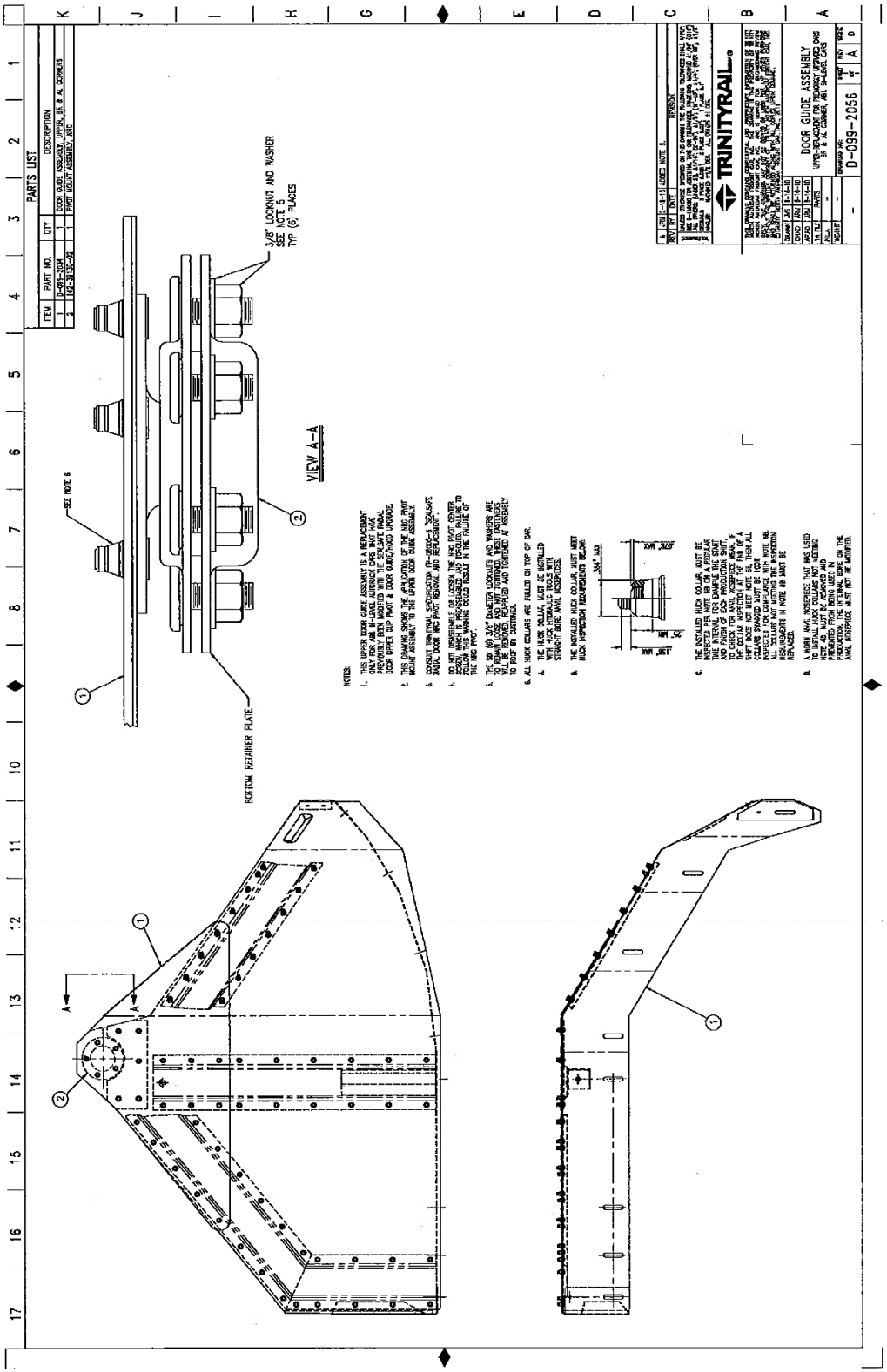
Door Guide Assembly – D-099-2054



Door Guide Assembly – D-099-2055



Door Guide Assembly – D-099-2056



Appendix E, NRC Center Screw Replacement – FP-6005-6

TRINITYRAIL

Trinity North American Freight Car, Inc.

TITLE: SealSafe® Radial Door NRC Center Screw Pivot Removal and Replacement		INDEX NO:	FP-06005-6
		ISSUE DATE:	01/12/09
		REVISION:	2/20/15
APPROVAL:JRM	LOG NO: FP-06005	Page 1 of 4	

1.0 Introduction:

This procedure supersedes all previous versions and instructions. The following describes how to remove and replace the National Research Council Canada ("NRC") Center Screw Pivot on Autorack SealSafe Radial Doors® ("SSRD Door(s)"). The following steps must be performed in a shop by facilities that are approved by the Association of American Railroads ("AAR") and trained by Trinity North American Freight Car, Inc. ("TrinityRail"). Please contact TrinityRail Customer Service department to request training and/or for the latest version of the procedures at 800-227-8844.

2.0 Restrictions and Control of Inspections, Data, and Information:

2.1. All information, including but not limited to data, results, summations, production rates, failure rates, renewal rates, spreadsheets, or similar information, whether in hard copy or electronic format related to this procedure, is exclusively the property of TrinityRail and subject to TrinityRail's sole custody and control.

2.2. This information and all data gathered pursuant to it is not to be shared or provided in any manner or format to any other entities; such as, leasing customer(s), material suppliers or vendors, any railroad or railroad regulator without TrinityRail's prior written permission.

2.3. This procedure was developed using analysis, testing, reasoned judgment, inspections of Autoracks in the field, information provided by the Autorack owners, and information provided by the AAR. There are no representations or warranties of any kind, either expressed or implied. The use of this procedure is at the user's own risk with no liability to TrinityRail.

3.0 Warnings:

3.1. Facilities performing this procedure must be approved by AAR and trained by TrinityRail. Failure to follow this warning could result in poor workmanship.

3.2. Do not disassemble or loosen the NRC Pivot center screw, which is preassembled and torqued. Failure to follow this warning could result in the failure of the NRC Center Screw Pivot.

3.3. Follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy." Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.4. Operations must be conducted on a solid track that is level, the handbrake must be set, and the Flat Car chocked, so it cannot move. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.5. Safety equipment, man-lift, and scaffolding used must be sturdy and provide adequate stability to perform the work described in this procedure. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.6. Each SSRD Door weighs approximately 475 lbs. If the Safety Cable is not attached to the SSRD Door and the Autorack, do NOT perform any work on, inspect, open, remove, lift, or pry the SSRD Door without attaching a crane or a hi-lo to the SSRD Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.7. Prior to the removal and replacement of a NRC Center Screw Pivot, the SSRD Door must be locked in the open position, both Lock Pins must be inserted into the Lock Receiver Holes in the open position. Verify that the two warnings signs are attached to the interior of the SSRD Door at the upper and lower SSRD Door locks. Do not remove the warning signs. Do not unlock the SSRD Doors if the NRC Center Screw Pivot is disengaged. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.8. Each SSRD Door weighs approximately 475 lbs. If the NRC Center Screw Pivot is disengaged, do NOT perform any work on, inspect, open, remove, lift, or pry the SSRD Door without attaching a

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crane or a hi-lo to the SSRD Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.9. Visually inspect each SSRD Door. If there is any doubt about the structural condition or its operating condition, do NOT work on, inspect, open, remove, lift, or pry the SSRD Door; instead, follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy" when dealing with a SSRD Door that may have a structural or operating condition. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.10. Before entering an Autorack, each SSRD Door must be locked in the open position (both Lock Pins must be inserted into the Lock Receiver Holes in the open position). Never enter or exit an Autorack if the SSRD Door is not locked in the open position. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.11. Use only parts purchased from and sold by Trinity Parts and Components, LLC for installation or repair of the SSRD Doors. The installation of any unauthorized part could cause unforeseen results during operation of the Autorack. Failure to follow this warning could result in serious injury or death to workers and/or bystander(s).

4.0 Application Procedure for the Removal and Replacement of the NRC Center Screw Pivot

4.1. This procedure applies to the Autorack models equipped with SSRD Doors and NRC Center Screw Pivot, part number 162-39130.

5.0 Disposition of Removed Parts:

Contact Autorack owner.

6.0 Scope of Work

6.1. This procedure describes how to remove the existing NRC Center Screw Pivot on the Autorack and replace it with the new NRC Center Screw Pivot, one SSRD Door at a time. The procedure requires that the SSRD Door be locked in the open position, both Lock Pins must be inserted into the Lock Receiver Holes in the open position.

7.0 Kit Components

WARNING: Use only parts purchased from and sold by Trinity Parts and Components, LLC for installation or repair of the SSRD Doors. The installation of any unauthorized part could cause unforeseen results during operation of the Autorack. Failure to follow this warning could result in serious injury or death to workers and/or bystander(s).

TrinityRail part number for the kit required to remove and replace the NRC Center Screw Pivot are shown on TrinityRail Drawing Z-002-2055 and are as follows:

Item Number	Part Number	Quantity	Description
Item 1	162-39130-02	1	NRC Center Screw Pivot Assembly Kit

8.0 Before Opening the SSRD Doors:

WARNING: Each SSRD Door weighs approximately 475 lbs. If the Safety Cable is not attached to the SSRD Door and the Autorack, do NOT perform any work on, inspect, open, remove, lift, or pry the SSRD Door without attaching a crane or a hi-lo to the SSRD Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

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	**WARNING**: Each SSRD Door weighs approximately 475 lbs. If the NRC Pivot is disengaged, do NOT perform any work on, inspect, open, remove, lift, or pry the SSRD Door without attaching a crane or a hi-lo to the SSRD Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
	**WARNING**: Visually inspect each SSRD Door. If there is any doubt about the structural condition or its operating condition, do NOT work on, inspect, open, remove, lift, or pry the SSRD Door; instead, follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions and "Blue Flag Policy" when dealing with a SSRD Door that may have a structural or operating condition. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

8.1. Select a SSRD Door on one end of the Flat Car that is adjacent to another Flat Car, if possible. Remember to work on one SSRD Door at a time.

8.2. Ensure that the SSRD Door selected is straight and aligned with the face of the adjacent SSRD Door at the top. If the SSRD Doors are not aligned, do not open the SSRD Door without attaching a crane or hi-lo to the SSRD Door for support.

Note: If the SSRD Door is not straight and aligned, this may be an indication that the NRC Center Screw Pivot could be disengaged.

8.3. Position yourself where you can quickly step clear of the SSRD Door, if needed.

8.4. Inspect for unusual movement of the SSRD Door when unlocking it.

8.5. Verify that the safety cable is properly attached to the SSRD Door and the Autorack.

8.6. Repeat this process on the adjacent SSRD Door, one SSRD Door at a time.

9.0 Removal and Replacement Procedure:

Complete the following steps below and refer to Drawing Z-002-2055 for additional assembly information:

	**WARNING**: Do not disassemble the NRC Center Screw Pivot center screw, which is preassembled and torqued. Failure to follow this warning could result in the failure of the NRC Center Screw Pivot.
	**WARNING**: Safety equipment, man-lift, and scaffolding used must be sturdy and provide adequate stability to perform the work described in this procedure. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
	**WARNING**: Follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy." Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
	**WARNING**: Operations must be conducted on a solid track that is level, the handbrake must be set, and the Flat Car chocked so it cannot move. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
	**WARNING**: Prior to the removal and replacement of a NRC Center Screw Pivot, the SSRD Door must be locked in the open position, both Lock Pins must be inserted into the Lock Receiver Holes in the open position. Verify that the two warnings signs are attached to the interior of the SSRD Door at the upper and lower SSRD Door locks. Do not remove the warning signs. Do not unlock the SSRD Doors if the NRC Center Screw Pivot is disengaged. Failure to follow this warning could result in serious injury or death to workers and/or bystanders

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WARNING: Before entering an Autorack, each SSRD Door must be locked in the open position (both Lock Pins must be inserted into the Lock Receiver Holes in the open position). Never enter or exit an Autorack if the SSRD Door is not locked in the open position. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

9.1. Complete the removal and replacement of the existing NRC Center Screw Pivot, one at a time.

9.2. After securing the Autorack, open the SSRD Door with the existing NRC Center Screw Pivot that needs to be replaced to the open position. Lock the SSRD Door in the open position, both Lock Pins must be inserted into the Lock Receiver holes in the open position.

9.3. Apply two warning signs to the interior of the SSRD Door at the upper and lower SSRD Door locks. (WARNING: NRC Center Screw Pivot is disengaged, do not unlock the SSRD Doors.)

9.4. Remove the six locknuts that attach the lower bottom retainer to the roof from the interior of the Flat Car.

9.5. Carefully remove the 5 Huck Collars that attach the existing NRC Center Screw Pivot to the SSRD Door hood on top of the roof. Do not gouge the hood material.

9.6. Pry the SSRD Door hood upward and remove the existing NRC Center Screw Pivot.

9.7. Remove the 6 loose locknuts, washers, and lower bottom retainer from the new NRC Center Screw Pivot, Item 1.

9.8. Install the new NRC Center Screw Pivot between the roof and the hood. Do not disassemble or loosen the NRC Center Screw Pivot center screw, which is preassembled and torqued.

9.9. Install Huck Collars, Item 2, to attach the new NRC Center Screw Pivot to the SSRD Door hood.

Note: The Huckbolt Pins are installed loose on the new NRC Center Screw Pivot.

9.10. Install the new lower bottom retainer, new washers, and new locknuts to the new NRC Center Screw Pivot from the interior of the Flat Car.

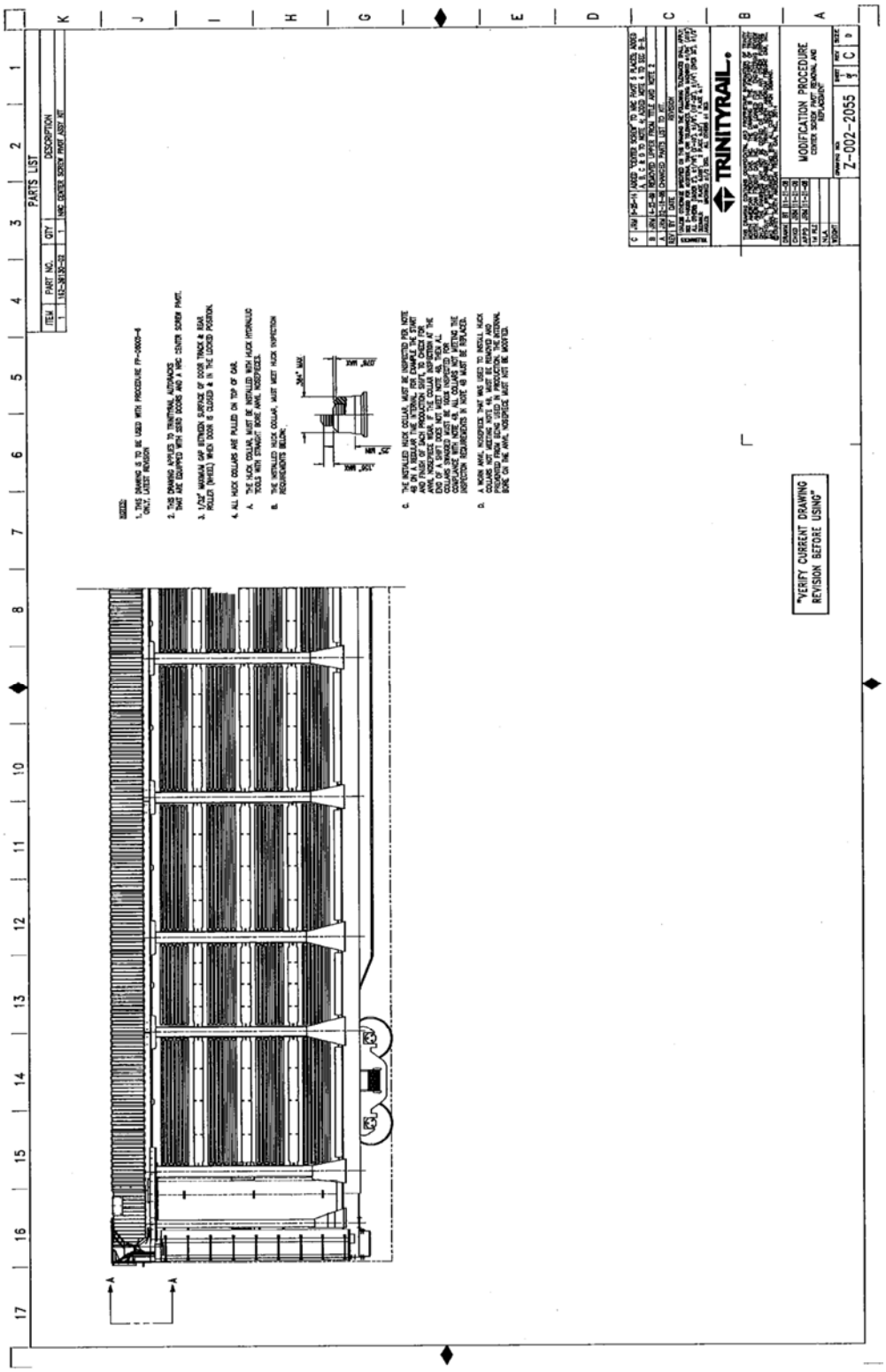
10.0 Operational Check:

10.1 Unlock and open the SSRD Doors. Ensure there is no interference with the Door Guide Assemblies (Hoods) and the roof when the SSRD Doors are fully opened.

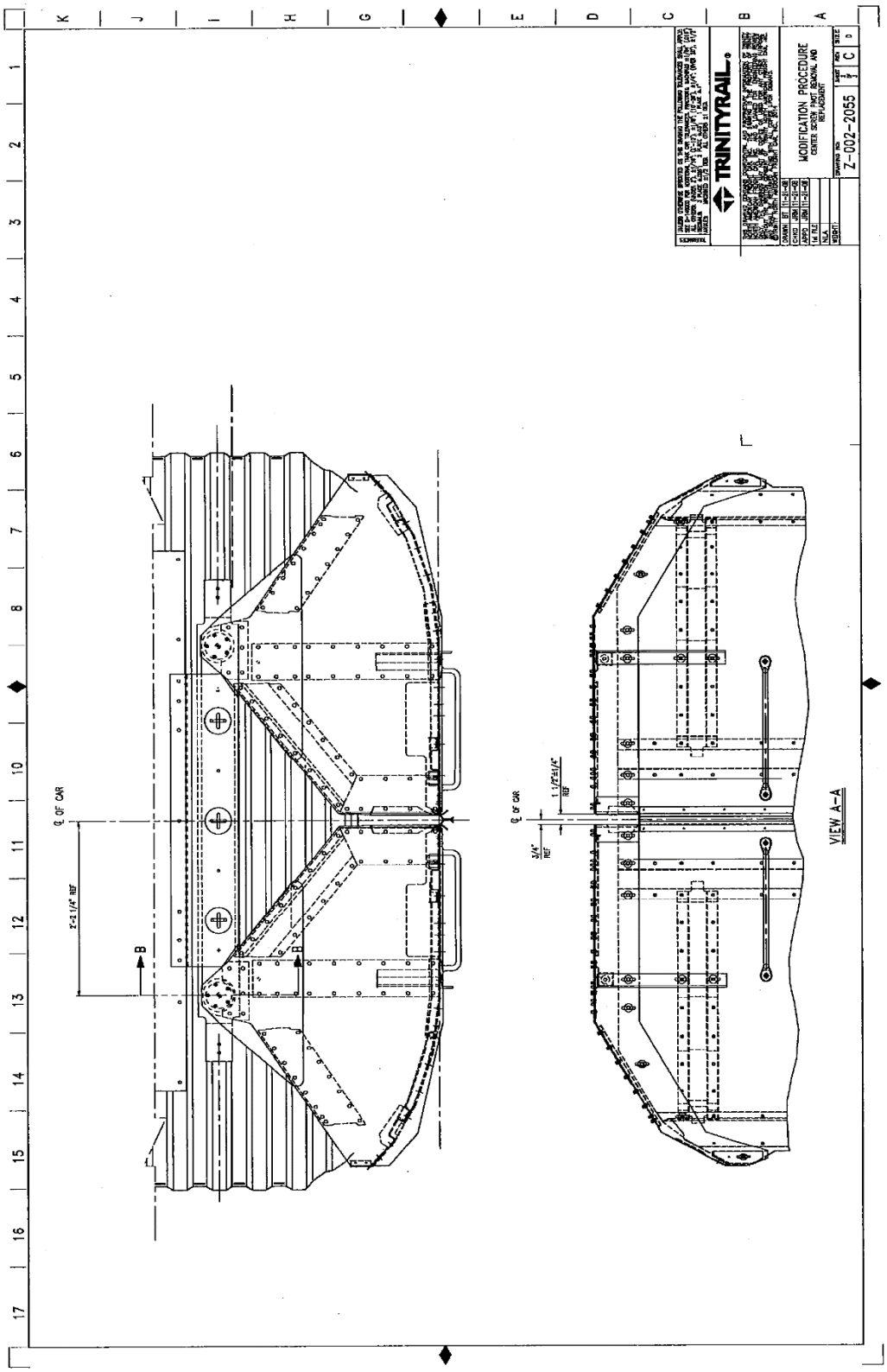
10.2 Ensure the Safety Cable has the proper amount of slack, after the SSRD Door is opened.

10.3 Verify the SSRD Doors' locks work properly (both Lock Pins must be inserted into the Lock Receiver Holes in the open and closed positions) and perform any repairs per instructions from the Autorack owner.

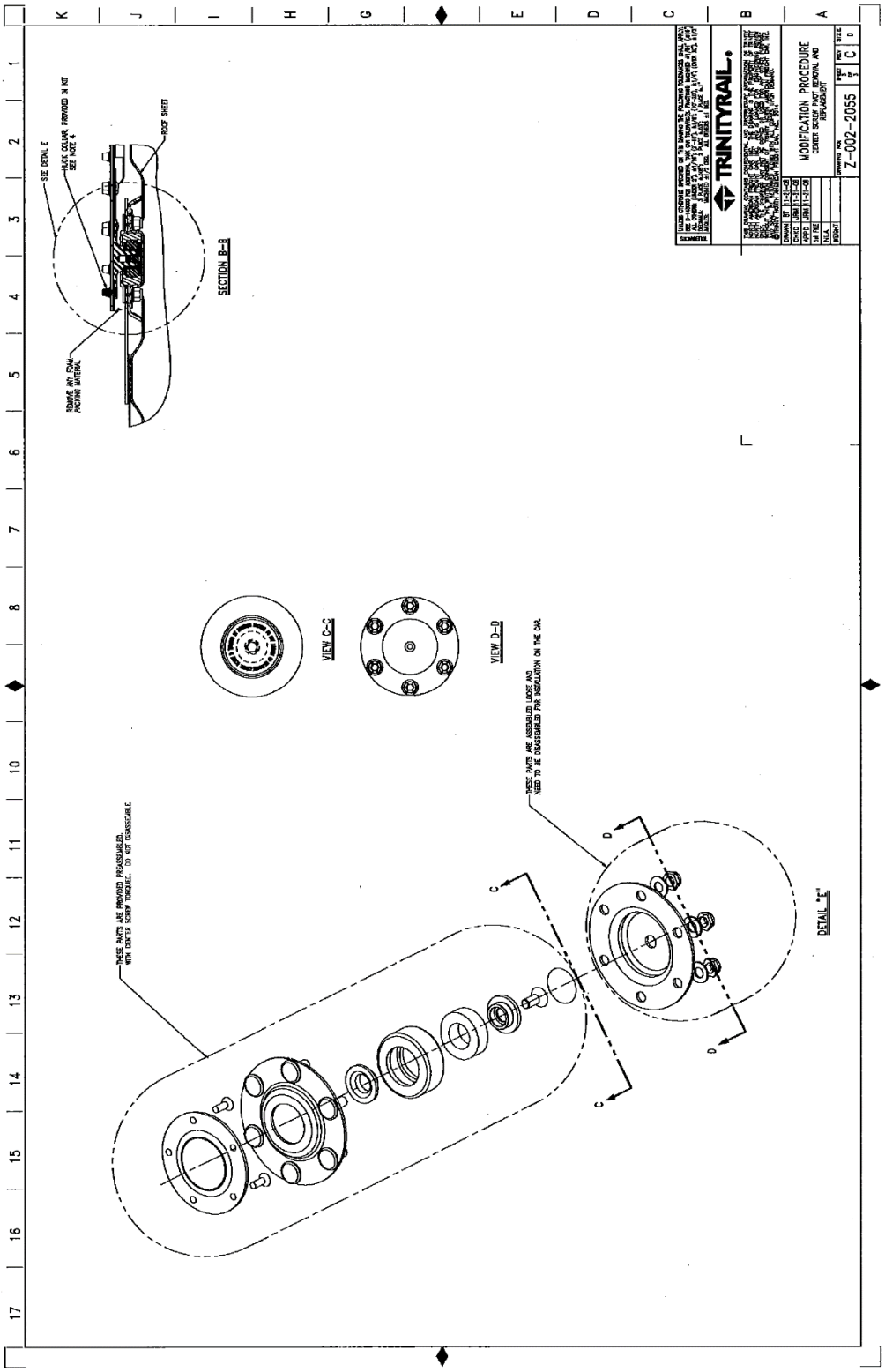
Engineering Drawing Z-002-2055 Sheet 1 of 3



Engineering Drawing Z-002-2055 Sheet 2 of 3



Engineering Drawing Z-002-2055 Sheet 3 of 3



Appendix F, Upgrade Bi-Level and Tri-Level Autoracks – FP-6005-9

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1. **Introduction:**

   This procedure describes how to remove the existing Upper Cup Pivot and apply the National Research Council Canada ("NRC") Huck Bolt Pivot. The following steps must be performed in a shop by facilities that are approved by the Association of American Railroads ("AAR") and trained by Trinity North American Freight Car, Inc. ("TrinityRail"). Please contact TrinityRail Customer Service department to request training and/or for the latest version of the procedures at 800-227-8844.

2. **Restrictions and Control of Inspections, Data, and Information:**

   2.1. All information, including but not limited to data, results, summations, production rates, failure rates, renewal rates, spreadsheets, or similar information, whether in hard copy or electronic format related to this procedure, is exclusively the property of TrinityRail and subject to TrinityRail sole custody and control.

   2.2. This information and all data gathered pursuant to it is not to be shared or provided in any manner or format to any other entities; such as, leasing customer(s), material suppliers or vendors, any railroad or railroad regulator without TrinityRail's prior written permission. This information, however, will be provided by TrinityRail to the AAR Special Equipment Freight Car Committee.

   2.3. This procedure was developed using analysis, testing, reasoned judgment, inspections of Autoracks in the field, information provided by the Autorack owners, and information provided by the AAR. There are no representations or warranties of any kind, either expressed or implied. The use of this procedure is at the Autorack owner's own risk with no liability to TrinityRail.

3. **Warnings:**

   3.1. Facilities performing this procedure must be approved by AAR and trained by TrinityRail. Failure to follow this warning could result in poor workmanship.

   3.2. Follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy." Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.3. Operations must be conducted on a solid track that is level, the handbrake must be set, and the car chocked, so it cannot move. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.4. Safety equipment, man-lift, and scaffolding used must be sturdy and provide adequate stability to perform the work described in this procedure. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.5. Each SealSafe® Radial Door weighs approximately 475 lbs. If the Safety Cable is not attached to the SealSafe® Radial Door and Autorack, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.6. Each SealSafe® Radial Door weighs approximately 475 lbs. If the upper and lower Door Lock Pins are not inserted into the Lock Receiver Holes in the closed position, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.7. Each SealSafe® Radial Door weighs approximately 475 lbs. If the Upper Cup Pivot is disengaged, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

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3.8. Visually inspect each SealSafe® Radial Door. If there is any doubt about the structural condition or its operating condition, do NOT work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door; instead, follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy" when dealing with a SealSafe® Radial Door that may have a structural or operating condition. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.9. Before entering an Autorack, each SealSafe® Radial Door must be locked in the open position (Lock Pins must be inserted into the Lock Receiver Holes in the open position). Never enter or exit an Autorack if the SealSafe® Radial Door is not locked in the open position. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.10. Use only parts purchased from and sold by Trinity Parts and Components, LLC for installation or repair of the SealSafe® Radial Doors. The installation of any unauthorized part could cause unforeseen results during operation of the Autorack. Failure to follow this warning could result in serious injury or death to workers and/or bystander(s).

4. Autoracks that Can Receive this Upgrade:

4.1. This upgrade can be applied to the following Autorack models equipped with SealSafe® Radial Doors ("Door(s)") and Upper Cup Pivot:

AB15187 Bi-level	$39^1/_2$" Deck
AB15188 Tri-Level	Low Level Raised Sill
AB15189 Bi-Level	$41^1/_2$" Deck
AB15190 Tri-Level	Low Level Flush deck
AB15193 Bi-Level	Low Level Raised Deck
AB15194 Bi-Level	Raised Sill Modified Deck

4.2. When an Autorack receives this upgrade, the following information is to be provided by email to Alicia.Morrison@trinityrail.com

4.2.1. Shop that completed the replacement procedure
4.2.2. Autorack owner
4.2.3. Autorack reporting marks and number
4.2.4. Date the work was completed

5. Disposition of Removed Parts:

Contact Autorack owner.

6. Scope of Work

6.1. This upgrade procedure describes the following:

6.1.1. Removal of the existing Door Guide Assemblies (Hoods), Upper Cup Pivots, Door Guide Attachment Assembly Plate (Plate Assembly), and associated sealant material.

6.1.2. Application of new Door Guide Assemblies (Hoods (Items 1 and 2)), Door Guide Attachment Plate Assembly (Item 3), Roof Reinforcement Plates (Item 9), Door Bumper Application (Item 13) associated seals (Door Pivot Seal and Foam Double Sided Tape (Items 11 and 12)), and sealant material.

7. Kit Components

TrinityRail part numbers for the components required for this upgrade for both ends of the Autorack are shown on TrinityRail Drawing Z-002-2014 and are as follows:

Item 1	M-093-2011	2	Door Guide Assembly (Hood), BL or AR
Item 2	M-093-2012	2	Door Guide Assembly (Hood), BR or AL

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Item 3	D-099-2059	2	Door Guide Attachment Plate Assembly
Item 4	063-38139	86	Huck Collar $^{3}/_{8}$" Dia-Heavy-Galv-3LC-2R12GA
Item 5	D-999-2047	6	Top Door Guide Washer
Item 6	063-77934	66	Huck Bolt $^{3}/_{8}$" Dia-Galv-C6LT-R12-6G
Item 7	040-38284	20 oz	Caulk, Manus Products Number 75AM
Item 8	063-10513	20	Huck Bolt $^{3}/_{8}$" Dia-Galv-C6LT-R12-8G
Item 9	M-340-2396	2	Roof Reinforcement Plate
Item 10	063-38127	66	Washer $^{3}/_{8}$" Dia-Flat-1$^{1}/_{4}$" O.D. X $^{13}/_{32}$" I.D. X 0.100"
Item 11	M-342-2005	A/R	Door Pivot Seal
Item 12	040-39133	A/R	Foam Double Sided Tape
Item 13	D-099-2026	1	Door Bumper Application
Item 14	063-72327	9	Hex Bolt $^{3}/_{8}$" X 1" (Fit-up Bolt)
Item 15	063-72033	9	Nut $^{3}/_{8}$" (Fit-up Nut)
Item 16	Assembly Aide		Cardboard Template

8. Pre-requirements:

8.1. Complete the following pre-requirements, before proceeding to the Upgrade Procedure section:

8.1.1. Inspect the Corrugated End Roof Sheet for any cracks. If any cracks exceed ½" from the center line of the adjacent hole, order a new Corrugated End Roof Sheet. Otherwise, repair the crack per Drawing Z-002-2014, Detail "U."

8.1.2. Inspect for AAR repairs and perform them per instructions from the Autorack owner.

8.1.3. Inspect the Doors and perform any repairs per instructions from the Autorack owner.

8.1.4. Verify the Doors' locks work properly (Lock Pins must be inserted into the Lock Receiver Holes in the open and closed positions) and perform any repairs per instructions from the Autorack owner.

8.1.5. Ensure the Safety Cable is properly secured and does not have any broken strands or other defects. Replace the Safety Cables, if any defects are found.

9. Upgrade Procedure:

Complete the following steps below and refer to Drawing Z-002-2014 for additional assembly information:

⚠	**WARNING**: Safety equipment, man-lift, and scaffolding used must be sturdy and provide adequate stability to perform the work described in this procedure. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy." Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Operations must be conducted on a solid track that is level, the handbrake must be set, and the car chocked so it cannot move. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Each SealSafe® Radial Door weighs approximately 475 lbs. If the Safety Cable is not attached to the SealSafe® Radial Door and Autorack, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

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⚠	**WARNING**: Each SealSafe® Radial Door weighs approximately 475 lbs. If the upper and lower Door Lock Pins are not inserted into the Lock Receiver Holes in the closed position, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Each SealSafe® Radial Door weighs approximately 475 lbs. If the Upper Cup Pivot is disengaged, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Visually inspect each SealSafe® Radial Door. If there is any doubt about the structural condition or its operating condition, do NOT work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door; instead, follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions and "Blue Flag Policy" when dealing with a SealSafe® Radial Door that may have a structural or operating condition. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Before entering an Autorack, each SealSafe® Radial Door must be locked in the open position (Lock Pins must be inserted into the Lock Receiver Holes in the open position). Never enter or exit an Autorack if the SealSafe® Radial Door is not locked in the open position. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Use only parts purchased from and sold by Trinity Parts and Components, LLC for installation or repair of the SealSafe® Radial Doors. The installation of any unauthorized part could cause unforeseen results during operation of the Autorack. Failure to follow this warning could result in serious injury or death to workers and/or bystander(s).

9.1. Complete the upgrade on one end of the Autorack, before beginning the upgrade on the opposite end.

Note: Operating on one end of the Autorack at a time is necessary to allow the Autorack to be entered through the opposite end, while completing the work.

9.2. After securing the Autorack as instructed in Section 3, close and lock the Doors on the end of the Autorack currently being modified.

9.2.1. Parts Removal:

9.2.1.1. Remove the components of the existing Upper Cup Pivot from both Doors on one end of the Autorack and discard.

9.2.1.2. Trim off $^{1}/_{2}$" of the Door gasket seal from above the first pop rivet below the Door Guide Assembly (Hood) face plate. (If necessary, move to the second pop rivet below the Door Guide Assembly (Hood) face plate to provide enough room for adjustment).

9.2.1.3. Remove the fasteners that connect the Door Guide Assembly (Hood) to the top front of the Door and the vertical reinforcement angle. Save the angle for re-use. Discard the fasteners.

9.2.1.4. Remove the Door Guide Assemblies (Hoods) from both Doors and retain them.

9.2.1.5. Mark the location of the existing Door Guide Attachment Plate on the roof.

9.2.1.6. Remove the existing Door Guide Attachment Plate from the roof and retain it.

9.2.1.7. Clean any caulking, dirt, or other contamination from the end roof section.

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9.2.1.8. Remove the middle three fasteners that attach the outboard side of the reinforcement plate to the end roof section. (Refer to the upgrade drawing.) Discard these fasteners.

9.2.2. Upgrade and Parts Replacement:

9.2.2.1. Enlarge the clearance holes for the new NRC Pivots in the end roof section to a diameter of $5^{7}/_{8}$" using special hole drill with self centering arbor. Do not burn or flame cut, when enlarging the holes. Ensure the edges of the holes are smooth and free of nicks and burrs.

Note: Contact Trinity Parts and Components, LLC at 800-336-7305 for a special $5^{7}/_{8}$" tool to perform this operation, if necessary.

9.2.2.2. Complete Option A or Option B below. (Select only one option.)

Option A: Door Guide Assembly (Hood) to Plate Assembly on the Roof

A-9.2.2.2.1. Place the new Door Guide Attachment Plate Assembly (Item 3) on top of the end roof and align with the original Door Guide Attachment Assembly Plate marking.

A-9.2.2.2.2. Install the three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 14 and 15)), as shown on Drawing Z-002-2014 (Section F-F). Leave the Hex Bolts loose enough to allow the Door Guide Attachment Plate Assembly (Item 3) location to be adjusted.

A-9.2.2.2.3. Lay a temporary $^{5}/_{16}$" thick shim bar on top of the roof sheet end flange. (This shim will maintain the top Door Guide Assembly (Hood) parallel to the Corrugated End Roof Sheet and will be removed after the new Door Guide Assembly (Hood) is attached to the Door face.)

A-9.2.2.2.4. Hold a new top Door Guide Assembly (Hood (Items 1 and 2)), one at a time, on top of the roof. Rotate the NRC Pivot assembly until the pivot bolts can be engaged through the attachment holes in the Door Guide Attachment Plate Assembly (Item #3). Torque Pivot nuts per Z-002-2014, Section G-G.

A-9.2.2.2.5. Ensure the Door Guide Assemblies (Hoods (Items 1 and 2)) are flat and parallel with the End Sheet. Apply three 3/8" X1" Hex Bolts and 3/8" Nuts (Fit-up Bolts and Fit-up Nuts (Items 14 and 15)) between the Door Guide Assemblies (Hoods) and Doors, per Drawing Z-002-2014, sheet 3 of 4. Reinstall the vertical reinforcement angle that was retained in step 9.2.1.3 with Huck Bolts (Items 4 and 8).

Option B Door Guide Assembly (Hood) to Plate Assembly on the Ground

B-9.2.2.2.1. Place a ½" thick shim between the two Door Guide Assemblies (Hoods) and temporarily clamp together.

B-9.2.2.2.2. Lay a temporary $^{5}/_{16}$" thick shim bar on top of the roof sheet end flange. (This shim will maintain the top Door Guide Assembly (Hood) parallel to the Corrugated End Roof Sheet and will be removed after the new Door Guide Assembly (Hood) is attached to the Door face.)

B-9.2.2.2.3. Lay the two new Door Guide Assemblies (Hoods (Items 1 and 2)) and new Door Guide Attachment Plate Assembly (Item 3) on top of the roof and align with the original Door Guide Attachment Assembly Plate's

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marking and apply the $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Item 14 and 15)).

B-9.2.2.2.4. Apply three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 14 and 15)) between the top Door Guide Faceplate and the top of the Door. Adjust the Door Guide Attachment Plate Assembly (Item 3) forward/backward and/or side-to-side, (as needed) to attach the Door Guide Assembly (Hood (Items 1 and 2)) to the Door. Tighten the Hex Bolts in the Door Guide Attachment Plate Assembly (Item 3) to maintain this setting.

B-9.2.2.2.5. Ensure the Door Guide Assemblies (Hoods (Items 1 and 2)) are flat and parallel with the End Roof Sheet. Apply three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 14 and 15)) between the Door Guide Assemblies (Hoods) and Doors, per Drawing Z-002-2014, sheet 3 of 4. Reinstall the vertical reinforcement angle that was retained in step 9.2.1.3 with Huck Bolts (Items 4 and 8).

9.2.2.3 Unlock, open the Doors, and remove the shim. Operate the Doors between the locked open and closed positions. Verify there are no operational problems or interferences. Verify that the Lock Pins lock in both the open and closed positions. Close and relock the Doors, if no other adjustment is necessary. Remove the $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 14 and 15)) in the Door Guide Attachment Plate Assembly (Item 3), replace with Huck Bolts (Items 4 and 6) and Special Rectangular Top Door Guide Washers (Item 5) one at a time so the Door alignment is not lost. (Refer to Section F-F)

9.2.2.4 Remove the three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 14 and 15)) one at a time so the Door alignment is not lost between the Door Guide Assembly (Hood) Faceplate, and replace with Huck Bolts (Items 4 and 6).

9.2.2.5 Apply repair galvanize paint to the edges of the $5^{7}/_{8}$" diameter holes.

9.2.2.6 Position the new Roof Reinforcement Plate (Item 9) on top of the roof as shown in Section F-F. Do not extend the new Roof Reinforcement Plate past the outbound edge of the Plate Assembly. Clean and apply Caulk, Manus Products Number 75AM (Item 7) to both edges of the new Door Guide Attachment Plate Assembly (Item 3) at the roof sheet.

9.2.2.7 Apply the new Roof Reinforcement Plate (Item 9) to the roof as shown in the left side of Section F-F. Attach the reinforcement plate at the existing center hole of the plate and re-using the center hole in the end roof section with Huck Bolts (Item 4 and 6), while maintaining the plate alignment. Use the line of 6 existing holes in the new Roof Reinforcement Plate as a template to drill 6 holes through the roof sheet and new Roof Reinforcement Plate. Drill one of the six holes, de-burr, attach with Huck Bolt (Items 4 and 6), and ensure the alignment is not lost when drilling the remaining five. De-burr the holes and apply the remaining five Huck Bolts (Items 4 and 6).

9.2.2.8 Use the line of 4 existing holes in the new Roof Reinforcement Plate as a template to drill 4 holes through the Corrugated End Roof Sheet corrugation, the new Roof Reinforcement Plate, and the new Door Guide Attachment Plate Assembly (Item 3). De-burr the holes and apply Huck Bolts (Items 4 and 6).

9.2.2.9 Center punch the hole locations at the center of the roof corrugation along the previously scribed lines, to insure the Huck Bolt head will have full bearing on the flat area of the roof corrugation. (This might not be on the center of the tab itself.) Drill 2 holes in the tab and Corrugated End Roof Sheet (4 per Door Guide Attachment Plate

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Assembly (Item 3). Ensure that the tabs are tightly attached to the Corrugated End Roof Sheet. De-burr the holes and apply Huck Bolts (Items 4 and 6).

9.2.2.10 Remove all drill filings from the roof area prior to continuing. Apply a cover if the enlarged holes in the Corrugated End Roof Sheet extend beyond the front or rear edge of the Door Guide Attachment Plate Assembly (Item 3) are wider than caulking will fill. Apply Double Sided Adhesive Foam Tape (Item 12) to cover the hole. Apply the Door Pivot Seal(s) (Item 11), as shown in Section Q-Q. Apply Caulk, Manus Products Number 75AM (Item 7), to the remaining areas of the Plate Assembly where the seals are exposed.

Note: This will include the Door Guide Attachment Plate Assembly (Item 3) edges on the front and rear sides and across the ends of the Door Guide Attachment Plate Assembly (Item 3). Caulk the rubber seal to the bottom of the Door Guide Attachment Plate Assembly (Item 3) and the roof corrugation, if needed.

9.2.2.11 Apply white finish paint and white reflective paint to the Door Guide Assembly (Hood) faceplate. Touch up the Doors where needed.

9.2.2.12 Apply caulk, item 7, to door guide reinforcement, see Section V-V on drawing Z-002-2014.

9.3.3. Operational Check:

Unlock and open the Doors. Ensure there is no interference with the new Door Guide Assemblies (Hoods) and the ends of the Door Guide Attachment Plate Assembly (Item 3), when the Doors are fully opened.

9.3.3.1 Ensure the Safety Cable has the proper amount of slack, after the Door is opened.

9.3.3.2 Verify the Doors' locks work properly (Lock Pins must be inserted into the Lock Receiver Holes in the open and closed positions) and perform any repairs per instructions from the Autorack owner.

9.3.3.3 Use the Cardboard Template (Item 16) to apply the green triangle marks to the Doors per Drawing Z-002-2014.

9.3.4 Opposite End of the Autorack

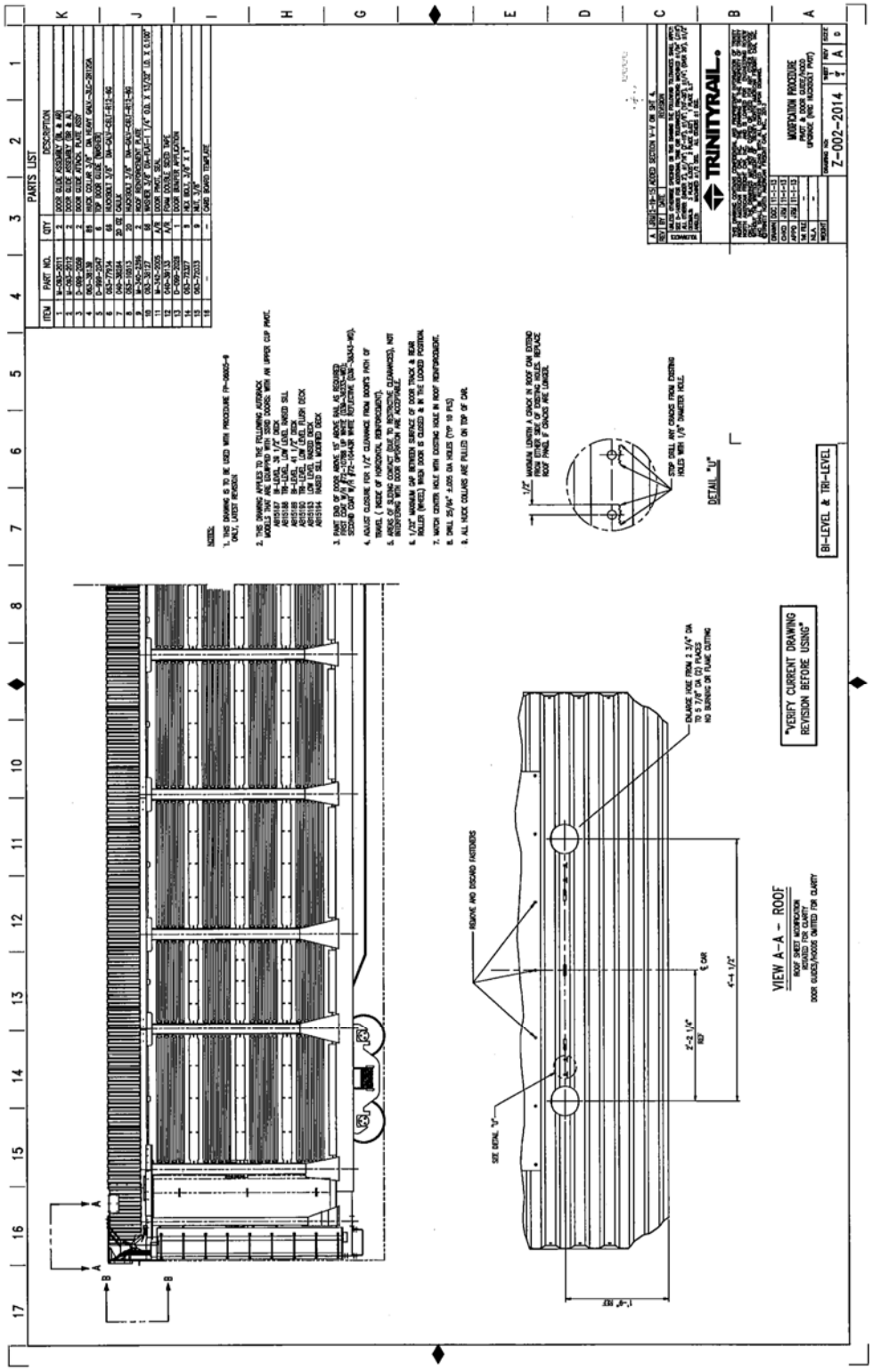
Repeat the upgrade procedure for the other end of the Autorack

9.3.5 Documentation

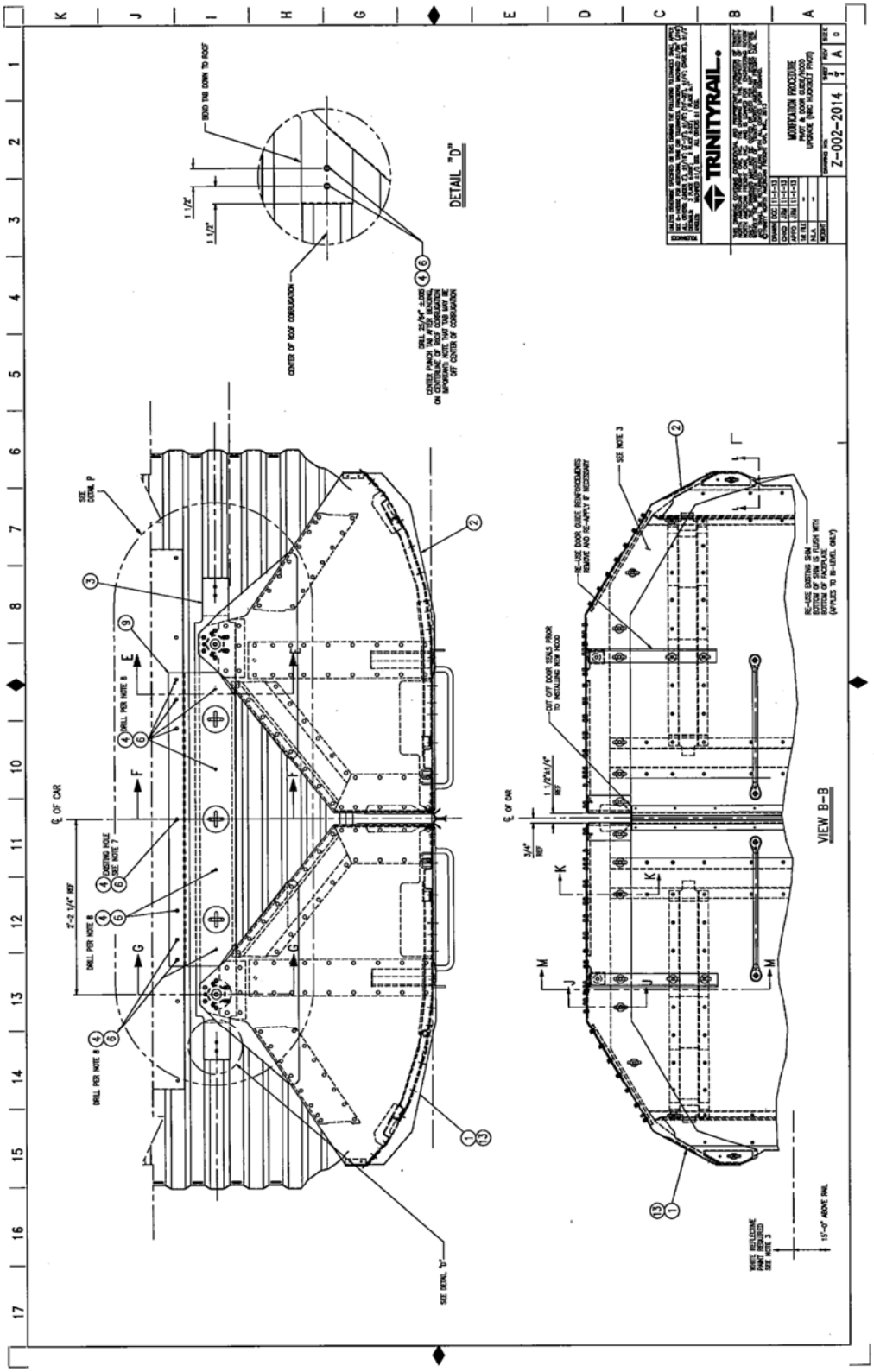
9.3.5.1 Provide the documentation per Section 4.2 of this procedure.

9.3.5.2 Follow Section 5 for disposition of retained parts.

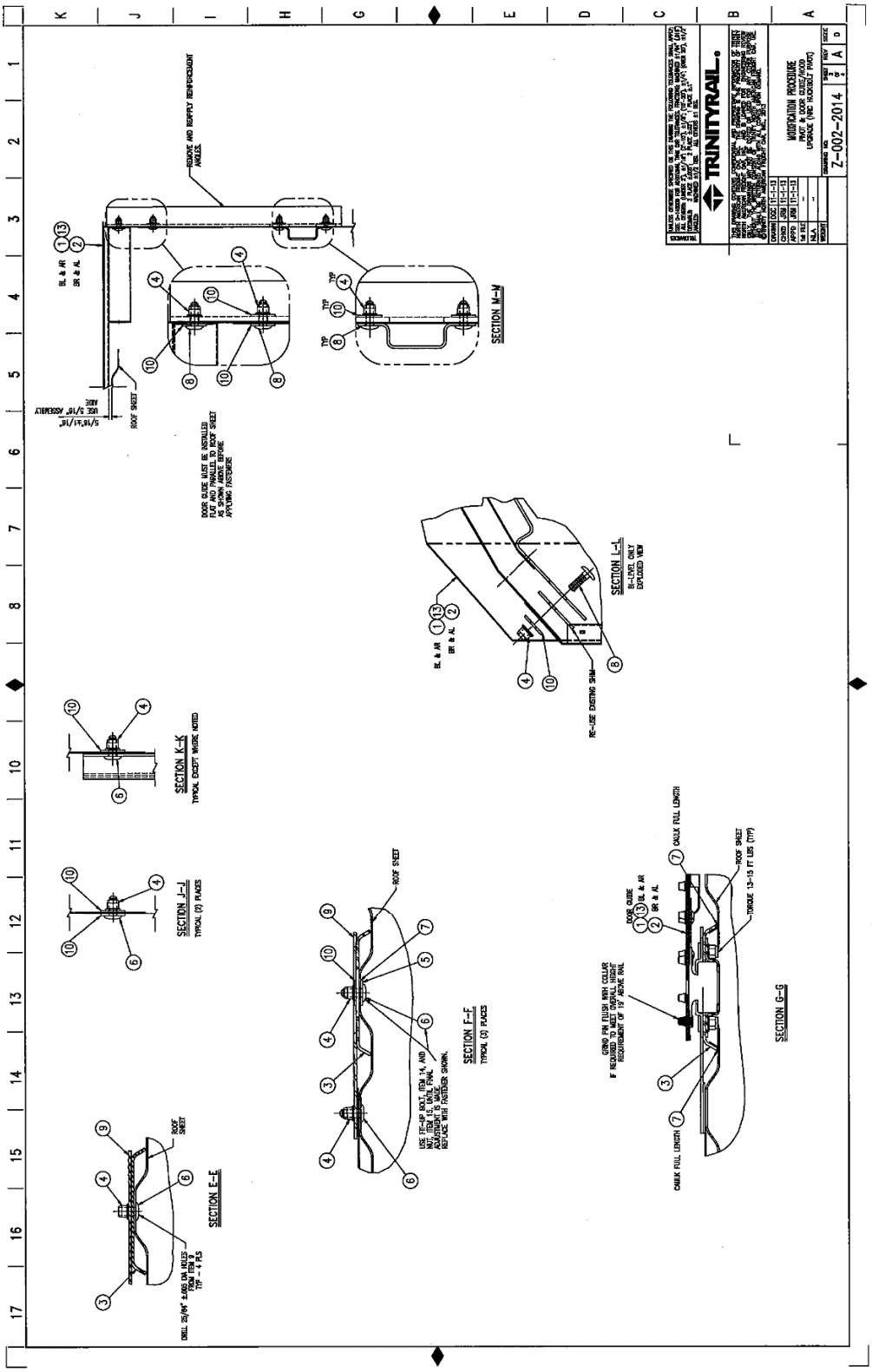
Engineering Drawing Z-002-2014 Sheet 1 of 4



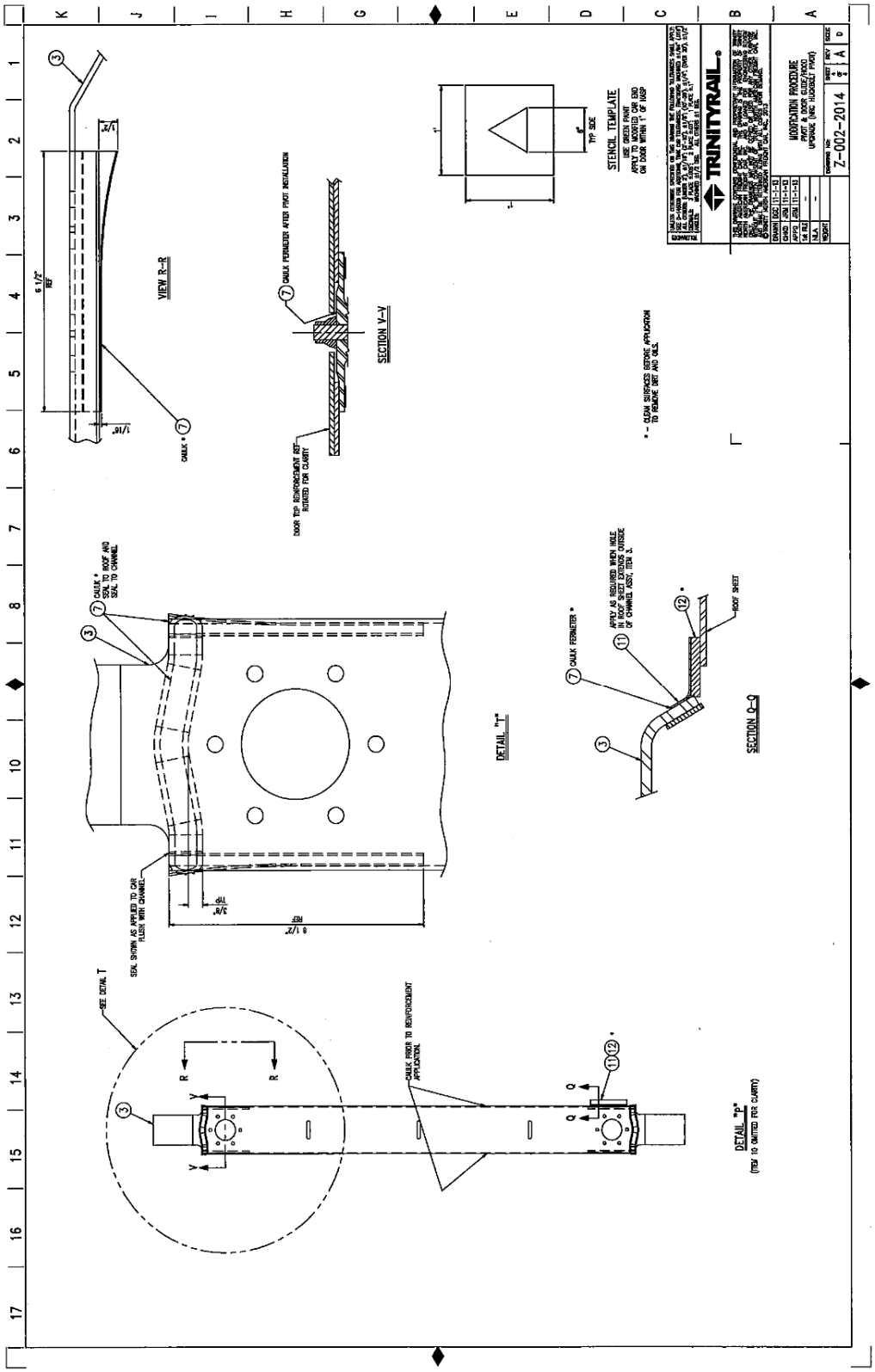
Engineering Drawing Z-002-2014 Sheet 2 of 4



Engineering Drawing Z-002-2014 Sheet 3 of 4



Engineering Drawing Z-002-2014 Sheet 4 of 4



Appendix G, Upgrade Bi-Level ABL Autoracks – FP-6005-10

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1. **Introduction:**

   This procedure describes how to remove the existing Upper Cup Pivot and apply the National Research Council Canada ("NRC") Huck Bolt Pivot. The following steps must be performed in a shop by facilities that are approved by the Association of American Railroads ("AAR") and trained by Trinity North American Freight Car, Inc. ("TrinityRail"). Please contact TrinityRail Customer Service department to request training and/or for the latest version of the procedures at 800-227-8844.

2. **Restrictions and Control of Inspections, Data, and Information:**

   2.1. All information, including but not limited to data, results, summations, production rates, failure rates, renewal rates, spreadsheets, or similar information, whether in hard copy or electronic format related to this procedure, is exclusively the property of TrinityRail and subject to TrinityRail sole custody and control.

   2.2. This information and all data gathered pursuant to it is not to be shared or provided in any manner or format to any other entities; such as, leasing customer(s), material suppliers or vendors, any railroad or railroad regulator without TrinityRail's prior written permission. This information, however, will be provided by TrinityRail to the AAR Special Equipment Freight Car Committee.

   2.3. This procedure was developed using analysis, testing, reasoned judgment, inspections of Autoracks in the field, information provided by the Autorack owners, and information provided by the AAR. There are no representations or warranties of any kind, either expressed or implied. The use of this procedure is at the Autorack owner's own risk with no liability to TrinityRail.

3. **Warnings:**

   3.1. Facilities performing this procedure must be approved by AAR and trained by TrinityRail. Failure to follow this warning could result in poor workmanship.

   3.2. Follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy." Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.3. Operations must be conducted on a solid track that is level, the handbrake must be set, and the car chocked, so it cannot move. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.4. Safety equipment, man-lift, and scaffolding used must be sturdy and provide adequate stability to perform the work described in this procedure. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.5. Each SealSafe® Radial Door weighs approximately 475 lbs. If the Safety Cable is not attached to the SealSafe® Radial Door and Autorack, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.6. Each SealSafe® Radial Door weighs approximately 475 lbs. If the upper and lower Door Lock Pins are not inserted into the Lock Receiver Holes in the closed position, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

   3.7. Each SealSafe® Radial Door weighs approximately 475 lbs. If the Upper Cup Pivot is disengaged, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

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3.8. Visually inspect each SealSafe® Radial Door. If there is any doubt about the structural condition or its operating condition, do NOT work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door; instead, follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy" when dealing with a SealSafe® Radial Door that may have a structural or operating condition. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.9. Before entering an Autorack, each SealSafe® Radial Door must be locked in the open position (Lock Pins must be inserted into the Lock Receiver Holes in the open position). Never enter or exit an Autorack if the SealSafe® Radial Door is not locked in the open position. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

3.10. Use only parts purchased from and sold by Trinity Parts and Components, LLC for installation or repair of the SealSafe® Radial Doors. The installation of any unauthorized part could cause unforeseen results during operation of the Autorack. Failure to follow this warning could result in serious injury or death to workers and/or bystander(s).

4. Autoracks that Can Receive this Upgrade:

4.1. This upgrade can be applied to the following Autorack models equipped with SealSafe® Radial Doors ("Door(s)") and Upper Cup Pivot:

AB15186 Bi-level ABL

4.2. When an Autorack receives this upgrade, the following information is to be provided by email to Alicia.Morrison@trinityrail.com

4.2.1. Shop that completed the replacement procedure
4.2.2. Autorack owner
4.2.3. Autorack reporting marks and number
4.2.4. Date the work was completed

5. Disposition of Removed Parts:

Contact Autorack owner.

6. Scope of Work

6.1. This upgrade procedure describes the following:

6.1.1. Removal of the existing Door Guide Assemblies (Hoods), Upper Cup Pivots, Door Guide Attachment Assembly Plate (Plate Assembly), and associated sealant material.

6.1.2. Application of new Door Guide Assemblies (Hoods (Items 1 and 2)), Door Guide Attachment Plate Assembly (Item 3), Roof Reinforcement Plates (Item 9), Door Bumper Application (Item 15) associated seals (Door Pivot Seal and Foam Double Sided Tape (Items 13 and 14)), and sealant material.

7. Kit Components

TrinityRail part numbers for the components required for this upgrade for both ends of the Autorack are shown on TrinityRail Drawing Z-002-2105 and are as follows:

Item 1	M-093-2013	2	Door Guide Assembly (Hood), BL or AR
Item 2	M-093-2014	2	Door Guide Assembly (Hood), BR or AL
Item 3	D-099-2063	2	Door Guide Attachment Plate Assembly
Item 4	063-38139	80	Huck Collar $^{3}/_{8}$" Dia-Heavy-Galv-3LC-2R12GA
Item 5	D-999-2047	6	Top Door Guide Washer
Item 6	063-77934	64	Huck Bolt $^{3}/_{8}$" Dia-Galv-C6LT-R12-6G
Item 7	040-38284	20 oz	Caulk, Manus Products Number 75AM
Item 8	063-10513	16	Huck Bolt $^{3}/_{8}$" Dia-Galv-C6LT-R12-8G

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Item 9	M-340-2406	2	Roof Reinforcement Plate
Item 10	063-72327	9	Hex Bolt $^{3}/_{8}$" X 1" (Fit-up Bolt)
Item 11	063-72033	9	Nut $^{3}/_{8}$" (Fit-up Nut)
Item 12	063-38127	74	Washer $^{3}/_{8}$" Dia-Flat-1$^{1}/_{4}$" O.D. X $^{13}/_{32}$" I.D. X 0.100"
Item 13	M-342-2005	A/R	Door Pivot Seal
Item 14	040-39133	A/R	Foam Double Sided Tape
Item 15	D-099-2026	1	Door Bumper Application
Item 16	Assembly Aide		Cardboard Template

8. Pre-requirements:

8.1. Complete the following pre-requirements, before proceeding to the Upgrade Procedure section:

8.1.1. Inspect the Corrugated End Roof Sheet for any cracks. If any cracks exceed ½" from the center line of the adjacent hole, order a new Corrugated End Roof Sheet. Otherwise, repair the crack per Drawing Z-002-2105, Detail "U."

8.1.2. Inspect for AAR repairs and perform them per instructions from the Autorack owner.

8.1.3. Inspect the Doors and perform any repairs per instructions from the Autorack owner.

8.1.4. Verify the Doors' locks work properly (Lock Pins must be inserted into the Lock Receiver Holes in the open and closed positions) and perform any repairs per instructions from the Autorack owner.

8.1.5. Ensure the Safety Cable is properly secured and does not have any broken strands or other defects. Replace the Safety Cables, if any defects are found.

9. Upgrade Procedure:

Complete the following steps below and refer to Drawing Z-002-2105 for additional assembly information:

⚠	**WARNING**: Safety equipment, man-lift, and scaffolding used must be sturdy and provide adequate stability to perform the work described in this procedure. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions, and "Blue Flag Policy." Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Operations must be conducted on a solid track that is level, the handbrake must be set, and the car chocked so it cannot move. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Each SealSafe® Radial Door weighs approximately 475 lbs. If the Safety Cable is not attached to the SealSafe® Radial Door and Autorack, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Each SealSafe® Radial Door weighs approximately 475 lbs. If the upper and lower Door Lock Pins are not inserted into the Lock Receiver Holes in the closed position, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
⚠	**WARNING**: Each SealSafe® Radial Door weighs approximately 475 lbs. If the Upper Cup Pivot is disengaged, do NOT perform any work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door without attaching a crane or a hi-lo to the SealSafe® Radial Door. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.

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	**WARNING**: Visually inspect each SealSafe® Radial Door. If there is any doubt about the structural condition or its operating condition, do NOT work on, inspect, open, remove, lift, or pry the SealSafe® Radial Door; instead, follow all standard industry and specific shop or plant safety rules, personal protective equipment provisions and "Blue Flag Policy" when dealing with a SealSafe® Radial Door that may have a structural or operating condition. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
	**WARNING**: Before entering an Autorack, each SealSafe® Radial Door must be locked in the open position (Lock Pins must be inserted into the Lock Receiver Holes in the open position). Never enter or exit an Autorack if the SealSafe® Radial Door is not locked in the open position. Failure to follow this warning could result in serious injury or death to workers and/or bystanders.
	**WARNING**: Use only parts purchased from and sold by Trinity Parts and Components, LLC for installation or repair of the SealSafe® Radial Doors. The installation of any unauthorized part could cause unforeseen results during operation of the Autorack. Failure to follow this warning could result in serious injury or death to workers and/or bystander(s).

9.1. Complete the upgrade on one end of the Autorack, before beginning the upgrade on the opposite end.

Note: Operating on one end of the Autorack at a time is necessary to allow the Autorack to be entered through the opposite end, while completing the work.

9.2. After securing the Autorack as instructed in Section 3, close and lock the Doors on the end of the Autorack currently being modified.

9.2.1. Parts Removal:

9.2.1.1. Remove the components of the existing Upper Cup Pivot from both Doors on one end of the Autorack and discard.

9.2.1.2. Trim off $^{1}/_{2}$" of the Door gasket seal from above the first pop rivet below the Door Guide Assembly (Hood) face plate. (If necessary, move to the second pop rivet below the Door Guide Assembly (Hood) face plate to provide enough room for adjustment).

9.2.1.3. Remove the fasteners that connect the Door Guide Assembly (Hood) to the top front of the Door and the vertical reinforcement angle. Save the angle for re-use. Discard the fasteners.

9.2.1.4. Remove the Door Guide Assemblies (Hoods) from both Doors and retain them.

9.2.1.5. Mark the location of the existing Door Guide Attachment Plate on the roof.

9.2.1.6. Remove the existing Door Guide Attachment Plate from the roof and retain it.

9.2.1.7. Clean any caulking, dirt, or other contamination from the end roof section.

9.2.1.8. Remove the middle three fasteners that attach the outboard side of the reinforcement plate to the end roof section. (Refer to the upgrade drawing.) Discard these fasteners.

9.2.2. Upgrade and Parts Replacement:

9.2.2.1. Enlarge the clearance holes for the new NRC Pivots in the end roof section to a diameter of $5^{7}/_{8}$" using special hole drill with self centering arbor. Do not burn or flame cut, when enlarging the holes. Ensure the edges of the holes are smooth and free of nicks and burrs.

Note: Contact Trinity Parts and Components, LLC at 800-336-7305 for a special $5^{7}/_{8}$" tool to perform this operation, if necessary.

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9.2.2.2. Complete Option A or Option B below. (Select only one option.)

Option A: Door Guide Assembly (Hood) to Plate Assembly on the Roof

A-9.2.2.2.1. Place the new Door Guide Attachment Plate Assembly (Item 3) on top of the end roof and align with the original Door Guide Attachment Assembly Plate marking.

A-9.2.2.2.2. Install the three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 10 and 11)), as shown on Drawing Z-002-2105 (Section F-F). Leave the Hex Bolts loose enough to allow the Door Guide Attachment Plate Assembly (Item 3) location to be adjusted.

A-9.2.2.2.3. Lay a temporary $^{5}/_{16}$" thick shim bar on top of the roof sheet end flange. (This shim will maintain the top Door Guide Assembly (Hood) parallel to the Corrugated End Roof Sheet and will be removed after the new Door Guide Assembly (Hood) is attached to the Door face.)

A-9.2.2.2.4. Hold a new top Door Guide Assembly (Hood (Items 1 and 2)), one at a time, on top of the roof. Rotate the NRC Pivot assembly until the pivot bolts can be engaged through the attachment holes in the Door Guide Attachment Plate Assembly (Item #3). Torque Pivot nuts per Z-002-2105, Section G-G.

A-9.2.2.2.5. Ensure the Door Guide Assemblies (Hoods (Items 1 and 2)) are flat and parallel with the End Sheet. Apply three 3/8" X1" Hex Bolts and 3/8" Nuts (Fit-up Bolts and Fit-up Nuts (Items 10 and 11)) between the Door Guide Assemblies (Hoods) and Doors, per Drawing Z-002-2105, sheet 3 of 4. Reinstall the vertical reinforcement angle that was retained in step 9.2.1.3 with Huck Bolts (Items 4 and 8).

Option B Door Guide Assembly (Hood) to Plate Assembly on the Ground

B-9.2.2.2.1. Place a ½" thick shim between the two Door Guide Assemblies (Hoods) and temporarily clamp together.

B-9.2.2.2.2. Lay a temporary $^{5}/_{16}$" thick shim bar on top of the roof sheet end flange. (This shim will maintain the top Door Guide Assembly (Hood) parallel to the Corrugated End Roof Sheet and will be removed after the new Door Guide Assembly (Hood) is attached to the Door face.)

B-9.2.2.2.3. Lay the two new Door Guide Assemblies (Hoods (Items 1 and 2)) and new Door Guide Attachment Plate Assembly (Item 3) on top of the roof and align with the original Door Guide Attachment Assembly Plate's marking and apply the $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Item 10 and 11)).

B-9.2.2.2.4. Apply three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 10 and 11)) between the top Door Guide Faceplate and the top of the Door. Adjust the Door Guide Attachment Plate Assembly (Item 3) forward/backward and/or side-to-side, (as needed) to attach the Door Guide Assembly (Hood (Items 1 and 2)) to the Door. Tighten the Hex Bolts in the Door Guide Attachment Plate Assembly (Item 3) to maintain this setting.

B-9.2.2.2.5. Ensure the Door Guide Assemblies (Hoods (Items 1 and 2)) are flat and parallel with the End Roof Sheet. Apply three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 10 and 11)) between the Door

TRINITYRAIL
Trinity North American Freight Car, Inc.

TITLE: SealSafe® Radial Door Upper Cup Pivot and Door Guide/Hood Upgrade (NRC Huck Bolt Pivot) Bi-Level ABL Autoracks		INDEX NO:	FP-06005-10
		ISSUE DATE:	Nov 5, 2013
		REVISION: A	Feb 20, 2015
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Guide Assemblies (Hoods) and Doors, per Drawing Z-002-2105, sheet 3 of 4. Reinstall the vertical reinforcement angle that was retained in step 9.2.1.3 with Huck Bolts (Items 4 and 8).

9.2.2.3 Unlock, open the Doors, and remove the shim. Operate the Doors between the locked open and closed positions. Verify there are no operational problems or interferences. Verify that the Lock Pins lock in both the open and closed positions. Close and relock the Doors, if no other adjustment is necessary. Remove the $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 10 and 11)) in the Door Guide Attachment Plate Assembly (Item 3), replace with Huck Bolts (Items 4 and 6) and Special Rectangular Top Door Guide Washers (Item 5) one at a time so the Door alignment is not lost. (Refer to Section F-F)

9.2.2.4 Remove the three $^{3}/_{8}$" X 1" Hex Bolts and $^{3}/_{8}$" Nuts (Fit-up Bolts and Fit-up Nuts (Items 10 and 11)) one at a time so the Door alignment is not lost between the Door Guide Assembly (Hood) Faceplate, and replace with Huck Bolts (Items 4 and 6).

9.2.2.5 Apply repair galvanize paint to the edges of the $5^{7}/_{8}$" diameter holes.

9.2.2.6 Position the new Roof Reinforcement Plate (Item 9) on top of the roof as shown in Section F-F. Do not extend the new Roof Reinforcement Plate past the outbound edge of the Plate Assembly. Clean and apply Caulk, Manus Products Number 75AM (Item 7) to both edges of the new Door Guide Attachment Plate Assembly (Item 3) at the roof sheet.

9.2.2.7 Apply the new Roof Reinforcement Plate (Item 9) to the roof as shown in the left side of Section F-F. Attach the reinforcement plate at the existing center hole of the plate and re-using the center hole in the end roof section with Huck Bolts (Item 4 and 6), while maintaining the plate alignment. Use the line of 6 existing holes in the new Roof Reinforcement Plate as a template to drill 6 holes through the roof sheet and new Roof Reinforcement Plate. Drill one of the six holes, de-burr, attach with Huck Bolt (Items 4 and 6), and ensure the alignment is not lost when drilling the remaining five. De-burr the holes and apply the remaining five Huck Bolts (Items 4 and 6).

9.2.2.8 Use the line of 4 existing holes in the new Roof Reinforcement Plate as a template to drill 4 holes through the Corrugated End Roof Sheet corrugation, the new Roof Reinforcement Plate, and the new Door Guide Attachment Plate Assembly (Item 3). De-burr the holes and apply Huck Bolts (Items 4 and 6).

9.2.2.9 Center punch the hole locations at the center of the roof corrugation along the previously scribed lines, to insure the Huck Bolt head will have full bearing on the flat area of the roof corrugation. (This might not be on the center of the tab itself.) Drill 2 holes in the tab and Corrugated End Roof Sheet (4 per Door Guide Attachment Plate Assembly (Item 3). Ensure that the tabs are tightly attached to the Corrugated End Roof Sheet. De-burr the holes and apply Huck Bolts (Items 4 and 6).

9.2.2.10 Remove all drill filings from the roof area prior to continuing. Apply a cover if the enlarged holes in the Corrugated End Roof Sheet extend beyond the front or rear edge of the Door Guide Attachment Plate Assembly (Item 3) are wider than caulking will fill. Apply Double Sided Adhesive Foam Tape (Item 14) to cover the hole. Apply the Door Pivot Seal(s) (Item 13), as shown in Section Q-Q. Apply Caulk, Manus Products Number 75AM (Item 7), to the remaining areas of the Plate Assembly where the seals are exposed.

Note: This will include the Door Guide Attachment Plate Assembly (Item 3) edges on the front and rear sides and across the ends of the Door Guide Attachment Plate

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Assembly (Item 3). Caulk the rubber seal to the bottom of the Door Guide Attachment Plate Assembly (Item 3) and the roof corrugation, if needed.

9.2.2.11 Apply white finish paint and white reflective paint to the Door Guide Assembly (Hood) faceplate. Touch up the Doors where needed.

9.2.2.12 Apply caulk, item 7, to door guide reinforcement, see Section V-V on drawing Z-002-2105.

9.3.3. Operational Check:

Unlock and open the Doors. Ensure there is no interference with the new Door Guide Assemblies (Hoods) and the ends of the Door Guide Attachment Plate Assembly (Item 3), when the Doors are fully opened.

9.3.3.1 Ensure the Safety Cable has the proper amount of slack, after the Door is opened.

9.3.3.2 Verify the Doors' locks work properly (Lock Pins must be inserted into the Lock Receiver Holes in the open and closed positions) and perform any repairs per instructions from the Autorack owner.

9.3.3.3 Use the Cardboard Template (Item 16) to apply the green triangle marks to the Doors Pper Drawing Z-002-2105.

9.3.4 Opposite End of the Autorack

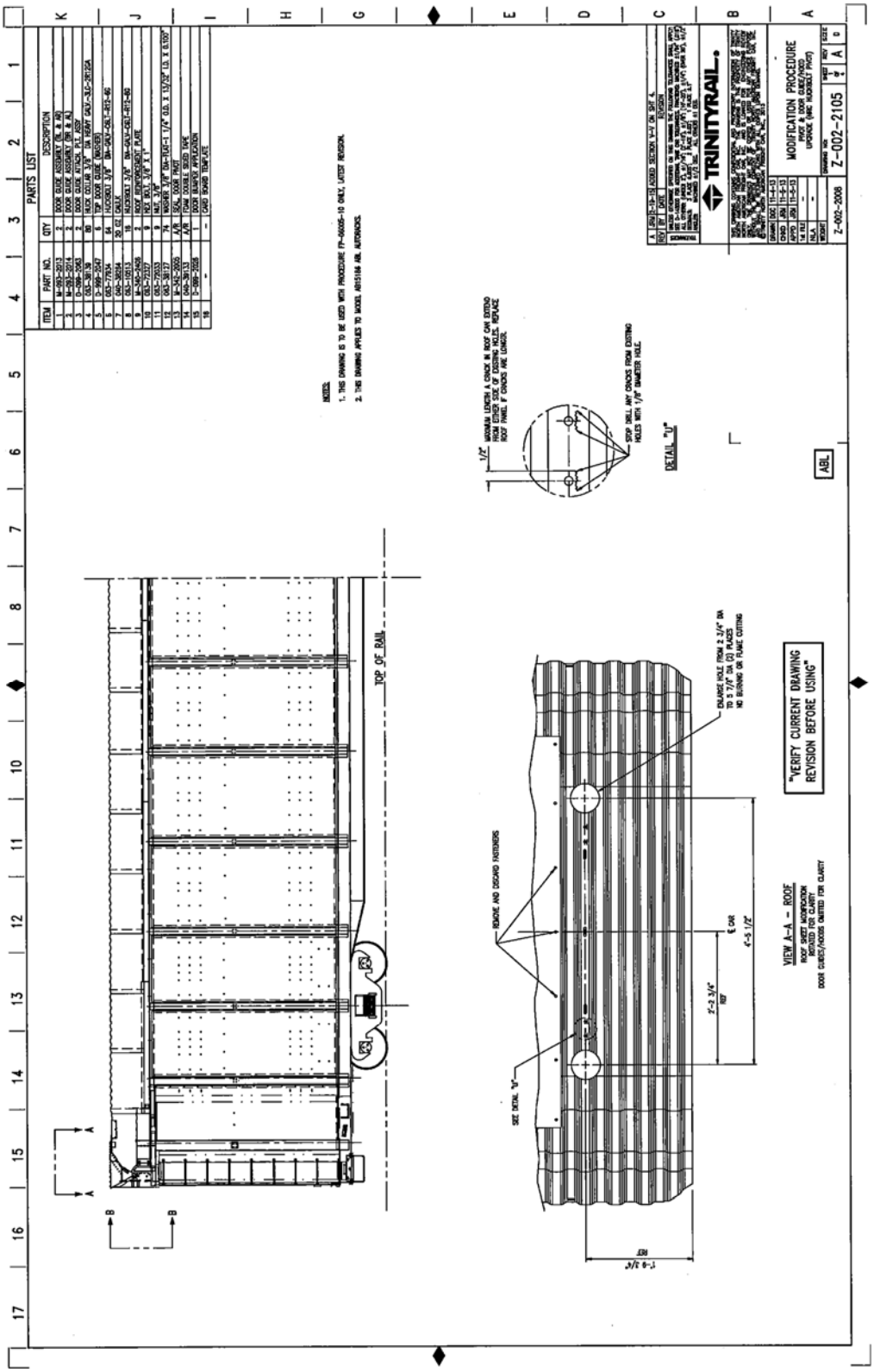
Repeat the upgrade procedure for the other end of the Autorack

9.3.5 Documentation

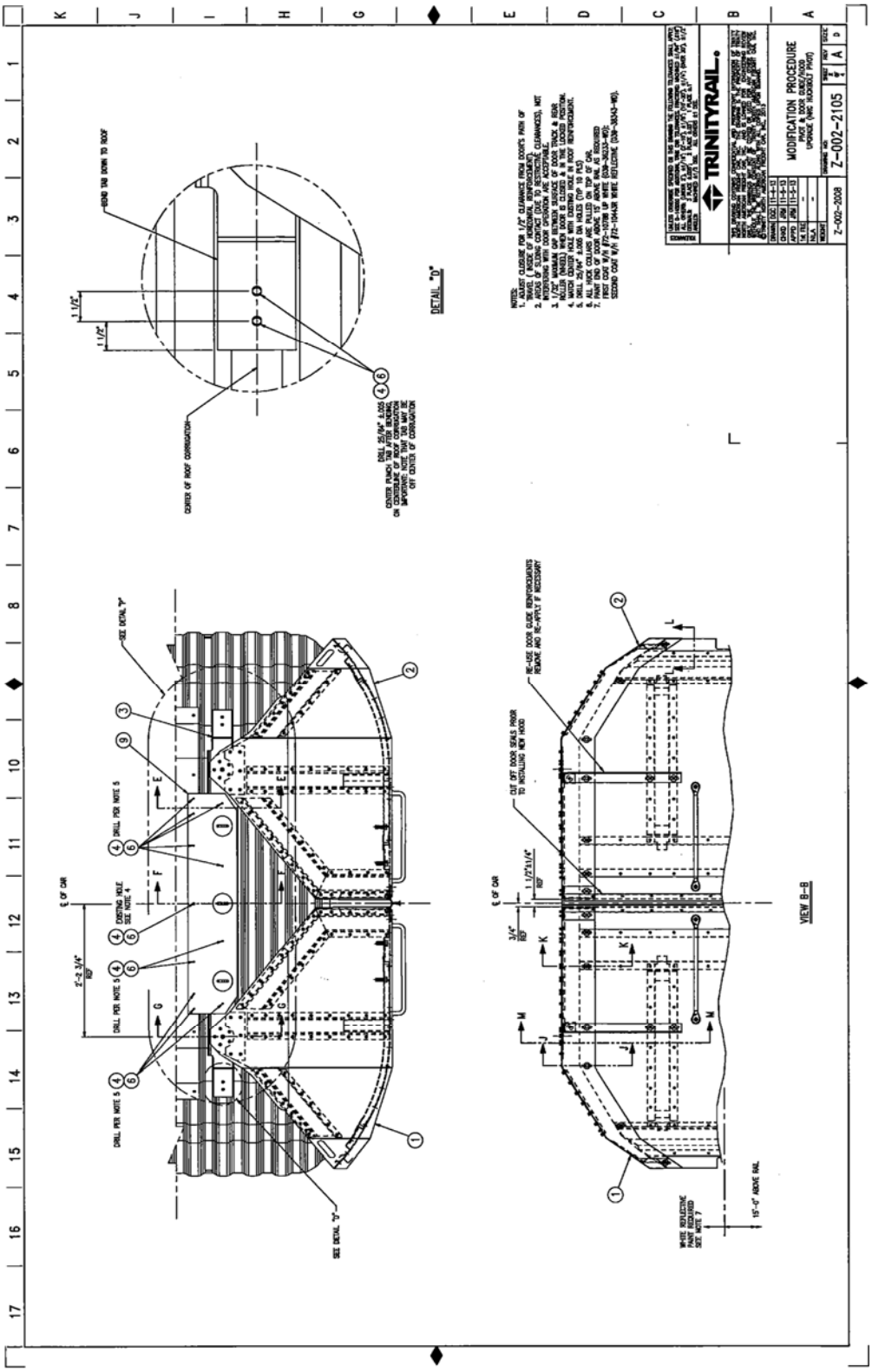
9.3.5.1 Provide the documentation per Section 4.2 of this procedure.

9.3.5.2 Follow Section 5 for disposition of retained parts.

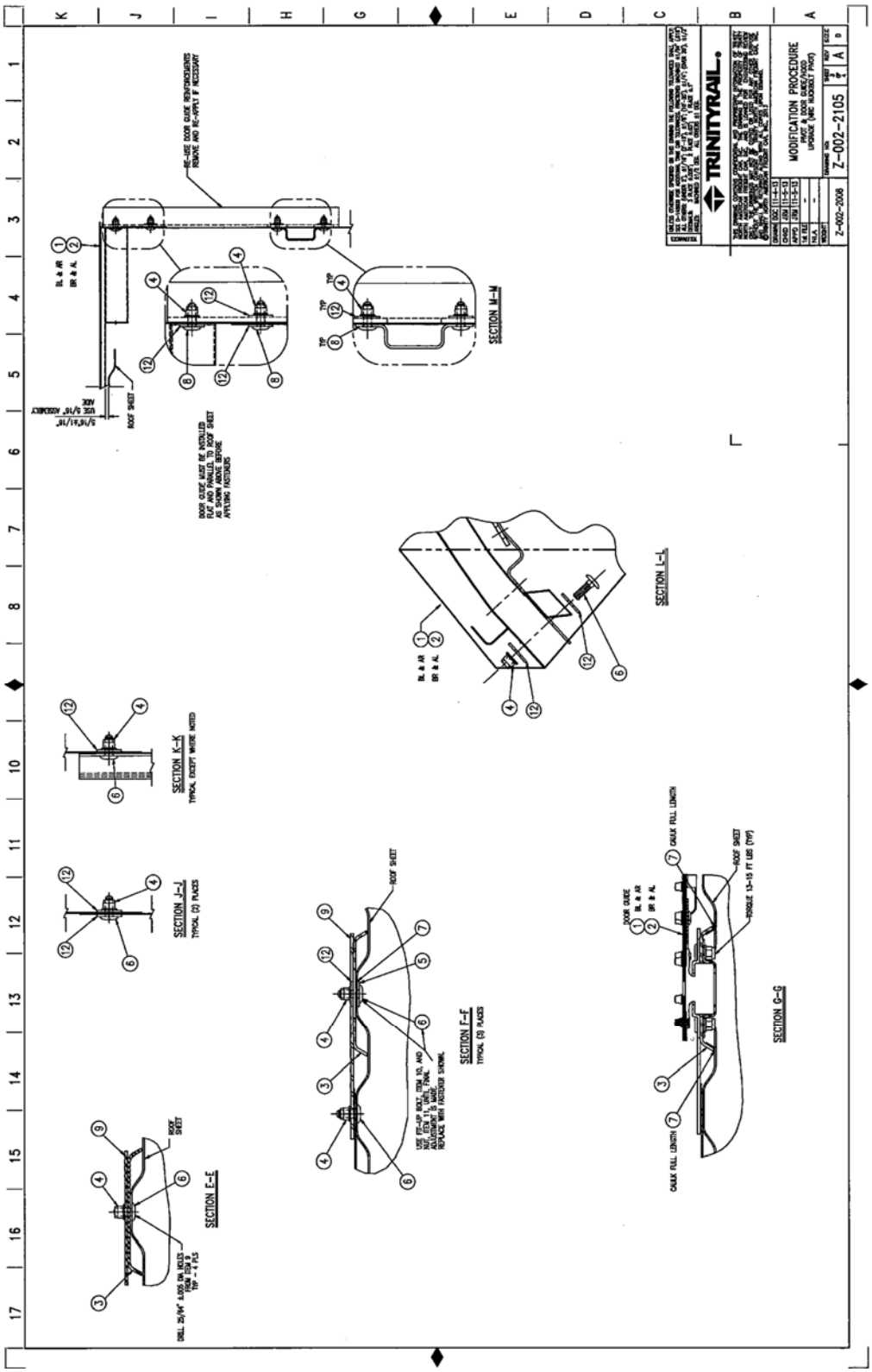
Engineering Drawing Z-002-2105 Sheet 1 of 4



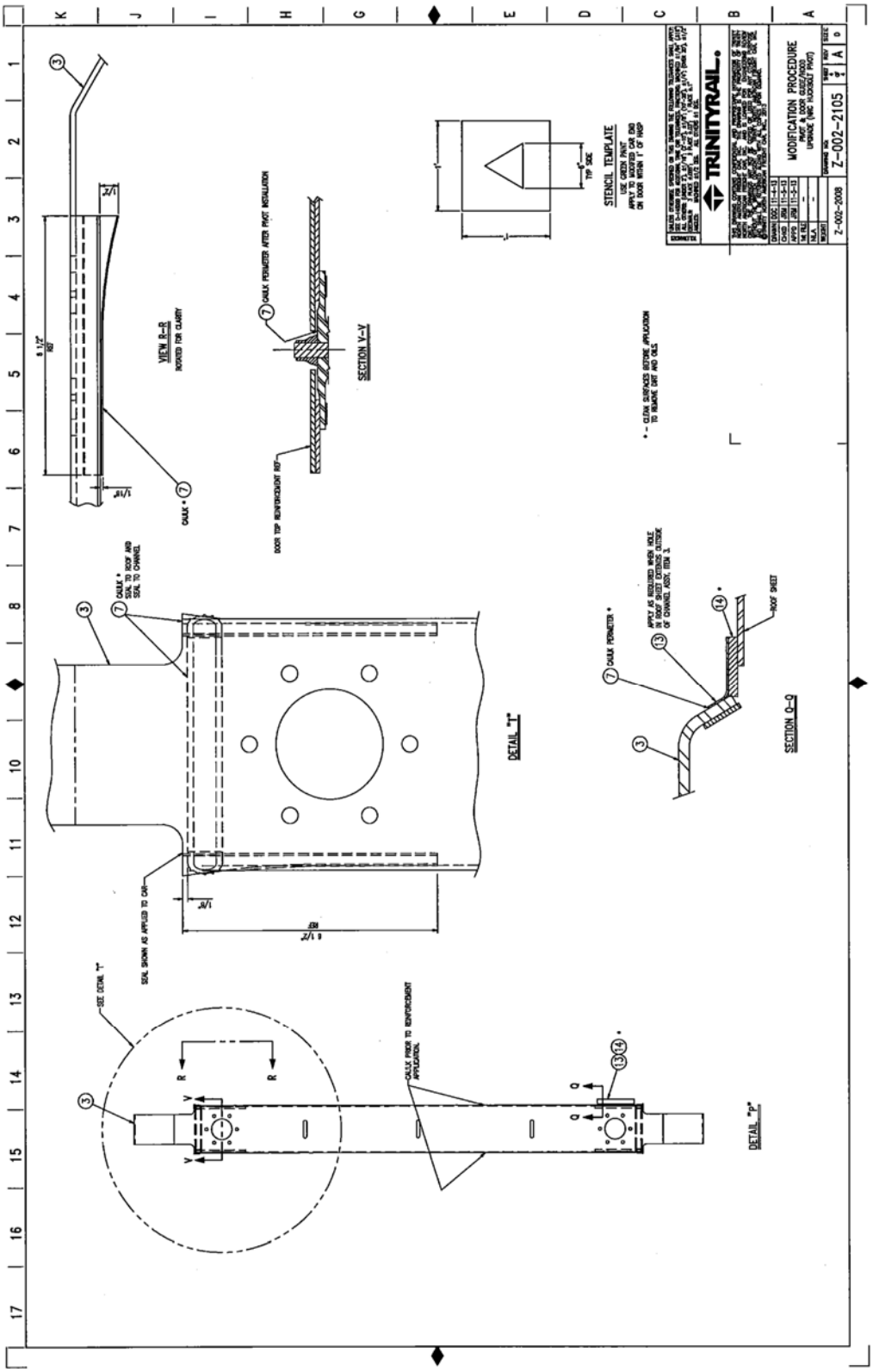
Engineering Drawing Z-002-2105 Sheet 2 of 4



Engineering Drawing Z-002-2105 Sheet 3 of 4



Engineering Drawing Z-002-2105 Sheet 4 of 4



Appendix H, Pivot Hole Wear Limits

THRALL CAR MANUFACTURING COMPANY

ENGINEERING PROCEDURE	ISSUE DATE	INDEX NO.
TITLE: PIVOT HOLE WEAR LIMITS ON SEALSAFE RADIAL DOOR TOP PIVOT ASSEMBLIES	6-28-01	514.06
	Revised	PAGE. NO 1 OF 2
PREPARED BY: J. Robertson		
DISTRIBUTION:		

1.0 PURPOSE:
To provide a documented procedure/specification that defines the maximum allowable worn pivot hole size and criteria on top pivot assemblies of SealSafe radial Doors.

2.0 SCOPE:
All Auto Racks with SealSafe radial doors.

3.0 RESPONSIBILITY:
Assigned repair shops are to be responsible for the performance of this procedure. Thrall Engineering is responsible for any revisions to this procedure.

3.1 SAFETY: **Each shop is responsible for performing all specified work in accordance with all applicable Federal, State and Local safety rules and regulations. Non-compliance with these safety rules and regulations could result in the loss of Thrall-approved-supplier status.**

INSPECTION AND MEASUREMENT

4.0 Removal of the pivot bolt and related parts is necessary to inspect hole in the pivot plate spherical cup. The original hole was 11/16 " diameter. Measure the pivot hole diameter on the two axes shown. The typical wear pattern is to enlarge the hole into a slot with most if not all wear occurring on one side. The wear pattern may occur as a relatively smooth contour (#1) or as a single indention (#2-notch) or finally as multiple notches (#3-serrated). The maximum allowable hole (slot) is 7/8" long by ¾" wide. Notch depth is not to exceed 3/16" for smooth notches and 1/8"for sharp cornered notches. The edges of the wear area must be inspected for potential cracks and burrs. No cracks are allowed. Burrs larger that 1/64" must be removed with a file.
See sketche 4.3 below for visual clarification.

4.2 Pivot Assemblies that do not meet the criteria above are to be removed and replaced with another Pivot Assembly supplied by Thrall Car. Care must be taken NOT to cause other damage to these assemblies when removing, storing and/or shipping. Removed assemblies are to be held pending instructions from Thrall Car.

THRALL CAR MANUFACTURING COMPANY

ENGINEERING PROCEDURE	ISSUE DATE	INDEX NO.
PIVOT HOLE WEAR LIMITS ON SEALSAFE RADIAL	6-28-01	514.06
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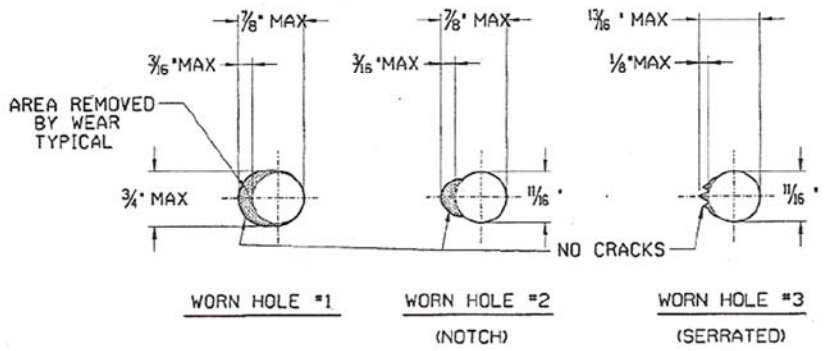
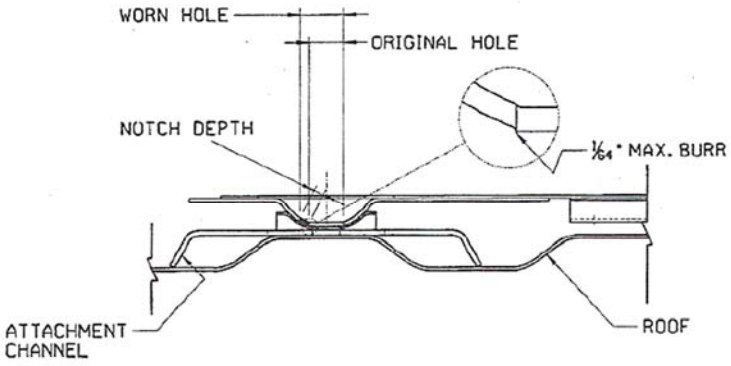
PREPARED BY: J. Robertson		
DISTRIBUTION:		

4.3 Sketch



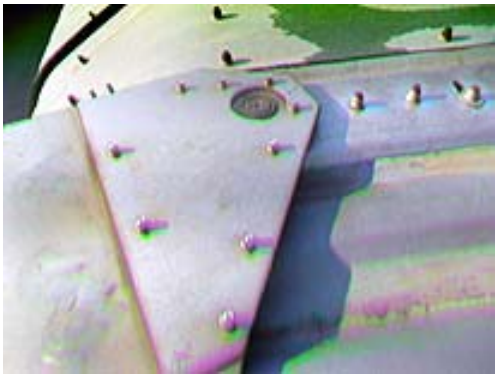
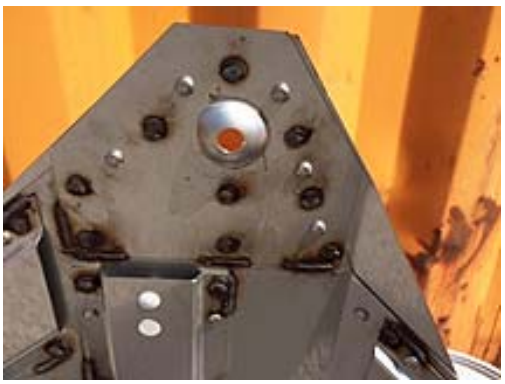


Appendix I, SSRD Pivot and Track Identification Photos

The following photographs are © courtesy of Road & Rail Services

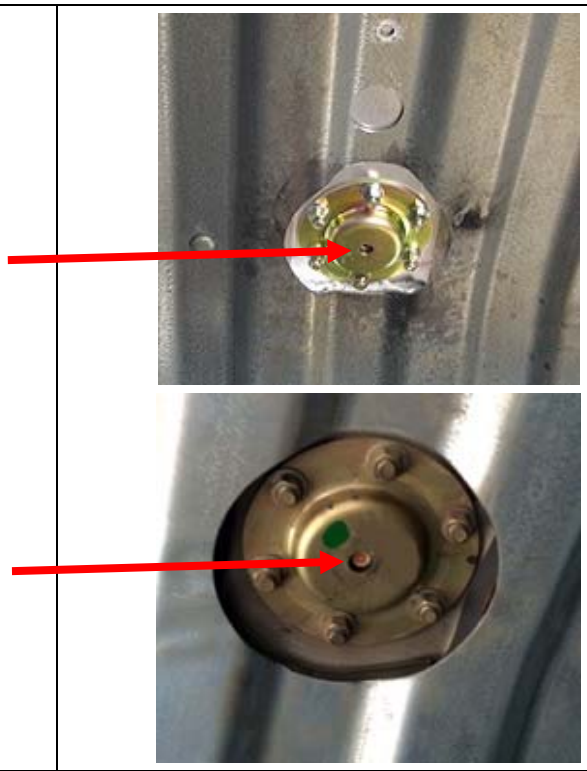
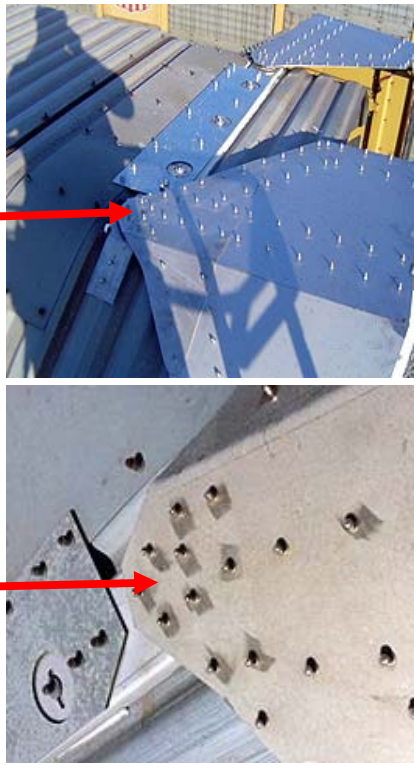
Seal Safe Hood Original Design and Doubler Plate Application

Replace in kind or with an NRC Huck Pivot Upgrade as directed by the rack owner

Original Hood without Doubler Plate Application	Original Hood with Doubler Plate Applied
	
	
	

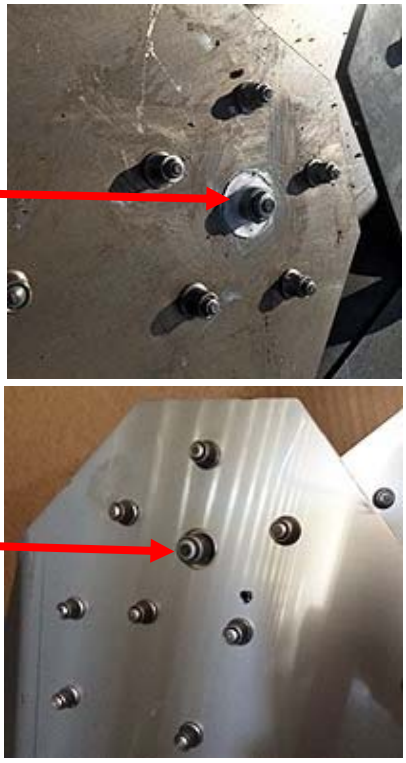
NRC Generation I

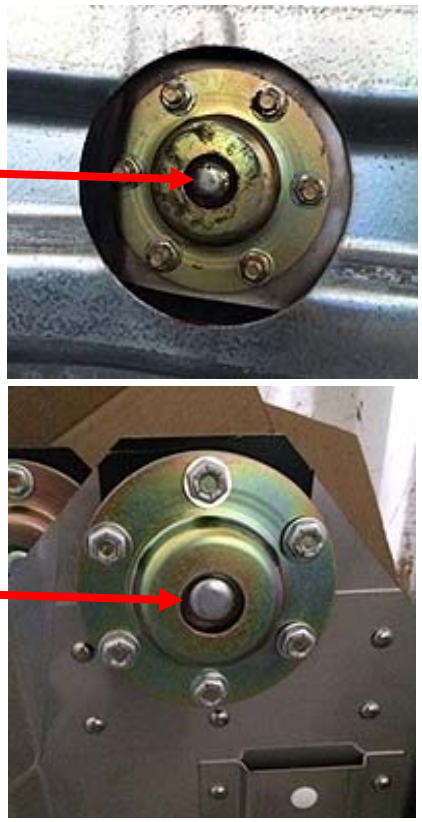
Replace with NRC Huck Pivot when needed.

Small Inspection Access Hole	
Top Flush Hood	

NRC Generation II

The current design; supersedes NRC Generation I pivot. Top Door Guide requires a clearance hole for pivot's center Huck collar.

Top View of Huck Bolt	

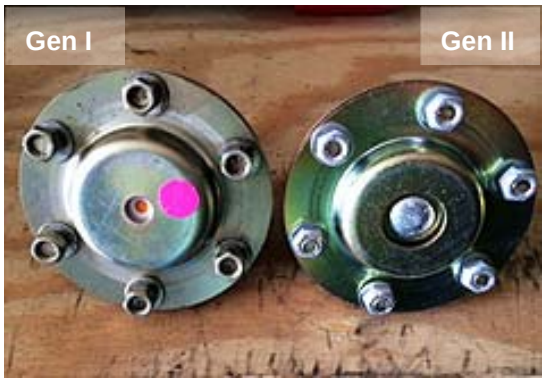
Bottom View of Huck Bolt	

NRC Generation I and Generation II Bearing Comparison

Generation I Allen Head Bolt	
Generation I Torque Indicator Decal	

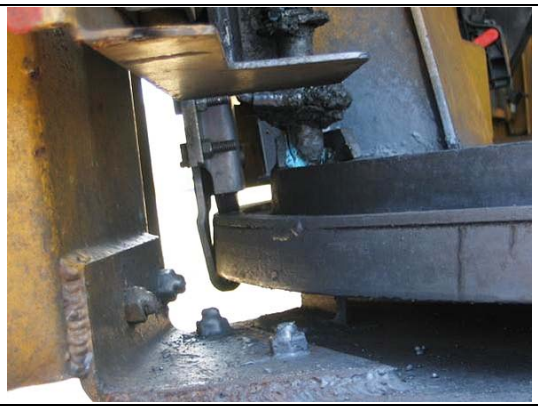
Generation I Top Bearing Pt. Flush	

Generation II Huck Bolt	
Generation II Huck Bolt Top	
Generation II Huck Bolt Bottom	

Comparison of Generation I and Generation II	
Top View	
Bottom View	

Replace complete pivot as an assembly. NRC Huck Pivot assembly on deck before installation.	

Radial End Door Track Arrangement

Radial end door track arrangement for bi-level and tri-level autoracks equipped with SSRD.	
End Door Track Convertible Auto Rack	

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