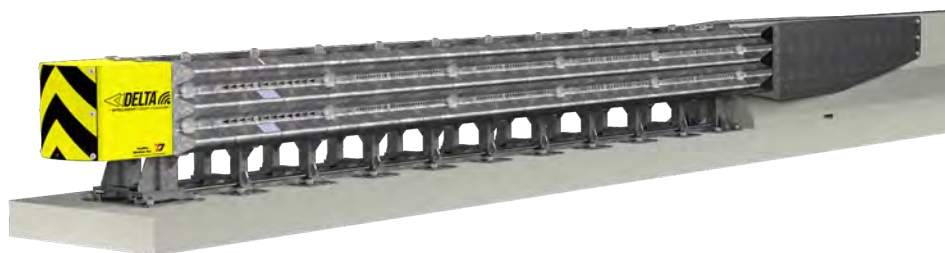


# Delta<sup>®</sup>

## Intelligent Crash Cushion Installation Guide



# Introduction to Guide



**Important:** These instructions pertain only to the assembly and installation of the Delta® Intelligent Crash Cushion (ICC). Any deviation from the Delta ICC shown would require consultation with the appropriate highway authority Engineer and/or certified TraFFix Devices, Inc. representatives. Contact information for TraFFix Devices representatives can be found on the last page of this manual.

















Correct Installation of the Delta ICC is essential for proper performance of the system. For this reason, contacting a TraFFix Devices, Inc. Engineering Department manager for assistance installing the system is recommended. Please read this manual in its entirety before assembling or installing the Delta ICC. The information in this Manual supersedes all previous versions and manuals, with updated illustrations and other information available at time of printing; however; TraFFix Devices, Inc. reserves the right to make changes at any time. For any questions on proper Installation and Operation of the Delta ICC, please contact us at (949) 361-5663 or email [info@traffixdevices.com](mailto:info@traffixdevices.com).



**Important:** This manual applies to the Delta ICC by TraFFix Devices, Inc. It pertains only to the model referenced herein. It requires that all installation, service and repair parts be genuine Original Equipment Manufacturer (OEM) Delta ICC parts that have not been modified or repaired from the original factory design.

# Safety Symbols

	Attention! Read and Understand.
	Proceed with Caution.
	Hard Hat Protection Required.
	Hearing Protection Required.
	Safety Glasses or Safety Goggles Required.
	Dust Mask Required. Dust Hazard, wear appropriate dust mask in this area.
	Safety Gloves Required.
	Safety Shoes Required.
	Tip Over Hazard. Do not move this equipment without mechanical assistance.
	Pinch point. Keep hands clear during operation.
	Crush Hazard. Keep feet clear.
	Forklift Required. Caution Forklift Operating.
	Warning Overhead Crane. Stay out from under suspended loads.
	Danger! Toxic Hazard. Do not get on skin, eyes or clothing.



**NOTE:** The safety symbols list provided is a general recommendation and should not be considered an all-inclusive list. Always follow best practice.

# Table of Contents

<b>Warning and Limitations .....</b>	<b>05</b>
<b>Warranty .....</b>	<b>06</b>
<b>Overview, Product Description .....</b>	<b>08</b>
<b>Delta Orientation .....</b>	<b>09</b>
<b>Lifting Points .....</b>	<b>10</b>
<b>System Dimensions .....</b>	<b>11</b>
<b>Pre-Installation .....</b>	<b>12</b>
<b>Product Placement .....</b>	<b>13</b>
<b>Installation Site, Cross-Slope .....</b>	<b>14</b>
<b>Transition .....</b>	<b>15</b>
<b>Tools Required .....</b>	<b>16</b>
<b>Sentinel Activation .....</b>	<b>18</b>
<b>Installation .....</b>	<b>19</b>
<b>TDI Bridge Shoe Transition Installation .....</b>	<b>25</b>
<b>TDI Transition Panel Installation .....</b>	<b>26</b>
<b>Serial Numbers .....</b>	<b>30</b>
<b>Inspection Checklist .....</b>	<b>31</b>
<b>Maintenance .....</b>	<b>32</b>
<b>Delta Replacement Parts .....</b>	<b>33</b>
<b>Appendix .....</b>	<b>38</b>
<b>Contact Information .....</b>	<b>50</b>

# Warning and Limitations

TraFFix Devices Inc. (TDI), in compliance with the Manual for Assessing Safety Hardware (MASH) recommended procedures for the Safety Performance of Highway Features. TDI contracts with ISO accredited testing facilities to conduct crash tests, evaluation of tests, and submittal of results to the Federal Highway Administration for Eligibility for Federal-Aid Reimbursement. The Delta® Intelligent Crash Cushion (ICC) was tested to meet the safety evaluation guidelines of MASH. The Delta ICC has been tested at TL-3 (62.1 mph/ 100 km/ hr) impact speed conditions. These tests are intended to evaluate product performance by simulating those impacts outlined by MASH involving a range of vehicles on the roadways, from cars with an approx. weight of 2425 lbs [1100 kg] to trucks with an approx. weight of 5004 lbs [2270 kg]. The Delta ICC is a TL-3 tested device capable of decelerating and stopping the light and heavy weight vehicles 2425 lbs [1100 kg] and 5004 lbs [2270 kg] in accordance with the criteria of Tests 3-30, 3-31, 3-32, 3-33, 3-34, 3-35, 3-36, 3-37 and 3-38 for TL-3 (62.1 mph/ 100 km/ hr). These specified tests are not intended to represent the systems performance when impacted by every vehicle type or every impact condition existing on the roadway. This system is tested only to the test matrix criteria of MASH. TraFFix Devices does not represent nor warrant that the results of these controlled tests show that vehicle impacts with the products in other conditions would necessarily avoid injury to person(s) or property. Impacts that exceed the system's specifications may not result in acceptable crash performance as outlined in MASH; relative to structural adequacy, occupant risk, and vehicle trajectory. TDI expressly disclaims any warrant or liability for injury or damage to person(s) or property resulting from any impact, collision, or harmful contact with products, other vehicles, or nearby hazards or objects by any vehicle, object or person, whether or not the products were installed by third parties. The Crash Cushion system is intended to be assembled, installed and maintained in accordance with specific State and Federal guidelines. TDI offers a directional object marker for the Delta ICC. However, the material is only intended to supplement delineation required by the Department of Transportation's "Manual on Uniform Traffic Control Devices" (MUTCD). The appropriate highway authority approved engineer should be careful to properly select, assemble, and maintain the product. Careful evaluation of the speed, traffic direction, and visibility are some of the elements that require evaluation for the proper selection of a safety appurtenance by the appropriate specifying highway authority.

# Warranty

**TrafFix Devices warrants to the purchaser that the Delta® Intelligent Crash Cushion (ICC) is free from any defects in materials and workmanship. If this product proves to be defective in material or workmanship during the period of this warranty, TrafFix Devices will repair or replace, at its discretion, the defective product free of charge. The period of this warranty is one-year beginning from the date the purchaser puts the unit into service or one-year from the date of purchase.**

**To obtain warranty service, the purchaser or distributor must first photograph the unit in question, fill out a warranty authorization form (Pg.7) and email TrafFix Devices to have our Engineering Department evaluate the problem and recommend repair procedures. TrafFix Devices will then issue a signed warranty work approval form to authorize the distributor or customer to repair or replace any items, which TrafFix Devices deems to have been defective. All replacement parts claimed to be defective will be invoiced at the time of shipment, and upon returned and evaluation of defective parts a credit memo will be issued.**

**This warranty does not extend to any failure of the Delta ICC caused by misuse, abuse, material alteration, non-OEM components, or any negligence in connection with the installation, service, or use of this product. For the correct installation, service, or use of this product refer to the installation manual, and the inspection checklist.**

## Warranty Authorization Form

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Email: \_\_\_\_\_

Name of Customer: \_\_\_\_\_

Date: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Replacement and Repair Parts Listed Below? \_\_\_\_\_

List Part Numbers of Replacement or Repair Items:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Describe the Problem and Reason for Failure:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Email this Form along with Pictures to TraFFix Devices  
Email: [info@traffixdevices.com](mailto:info@traffixdevices.com) Phone: (949) 361-5663

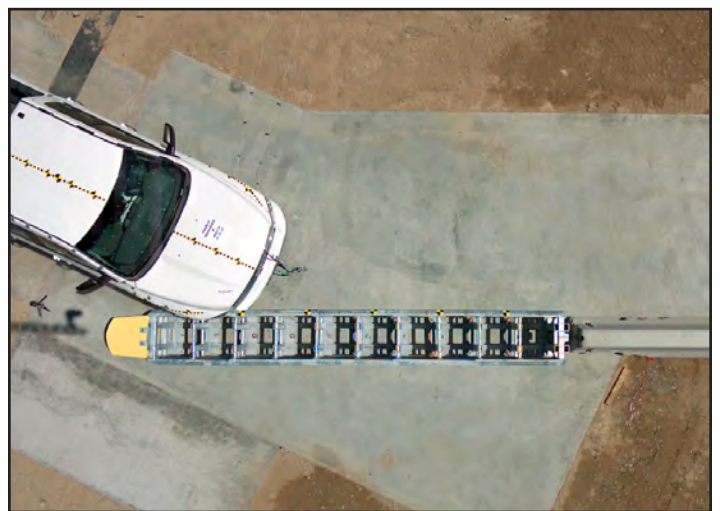


# Overview

The Delta ICC is a Non-Gating Redirective crash cushion manufactured by TraFFix Devices, Inc. The Delta ICC has passed all required AASHTO MASH crash tests and can be used in Uni-Directional or Bi-Directional applications. The Delta ICC was designed to be simple and effective in protecting errant vehicles from striking a wide variety of roadside hazards. The fender panels use the standard AASHTO M-180 Thrie beam profile. Utilizing this profile allows the Delta ICC to be easily attached to standard roadside safety hardware. The Delta ICC was Co-Developed with Midwest Roadside Safety Facility (MwRSF) at the University of Nebraska-Lincoln (UNL).

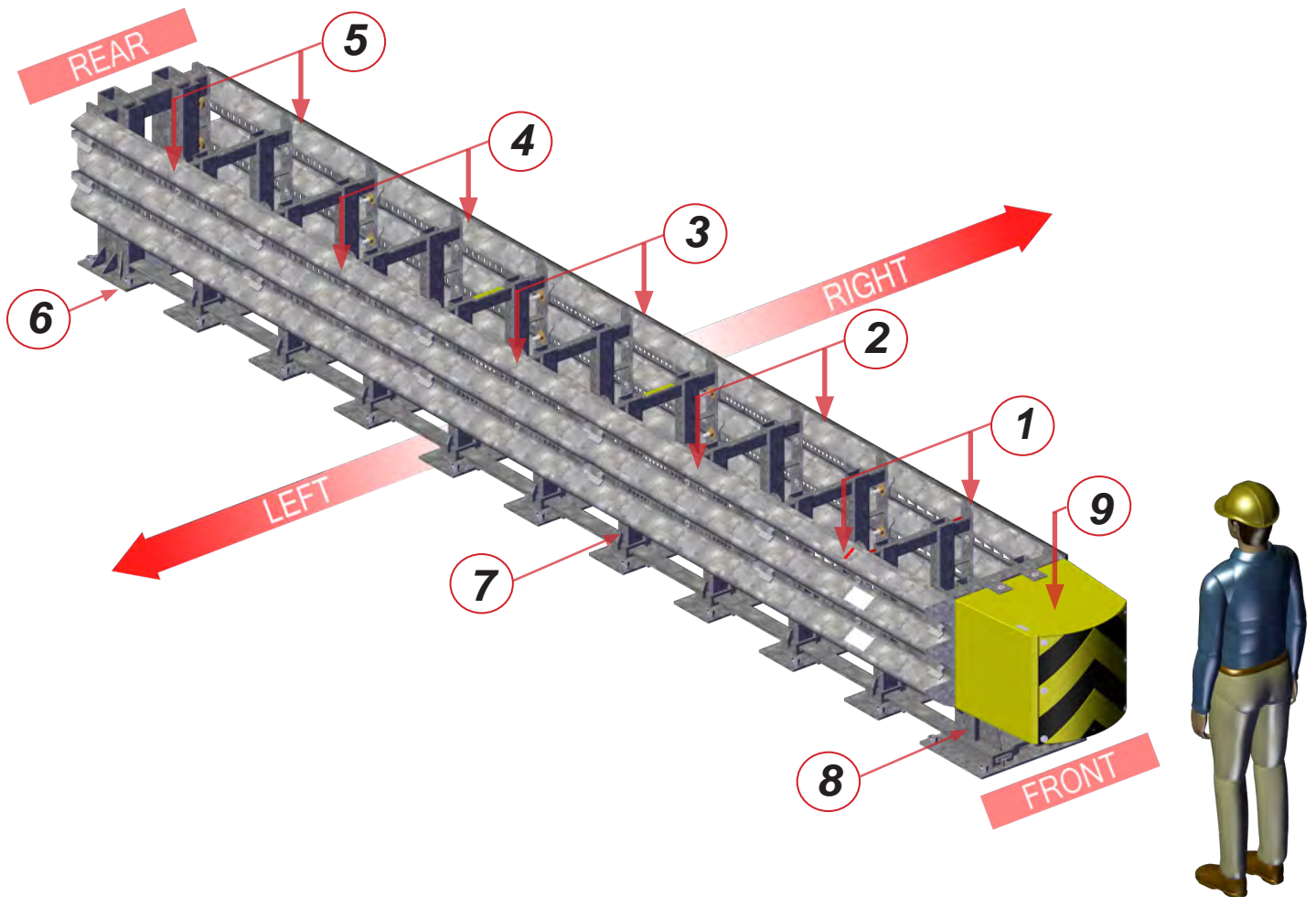
## Product Description

The Delta ICC redirects errant vehicles when struck along the side and when impacted at the nose, it attenuates the impacting vehicles kinetic energy. When struck on the nose of the device, the vehicle's kinetic energy is absorbed by the fender panels telescoping rearward and simultaneously shearing/tearing material in the valley's of the Thrie Beam. The cutout patterns in the valleys of the Thrie beam progressively change from the front to the rear to allow the errant vehicle to be safely brought to a controlled stop.





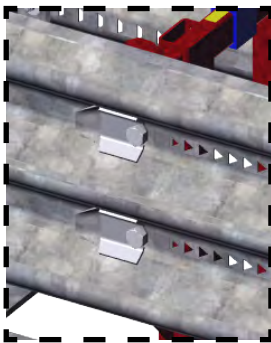
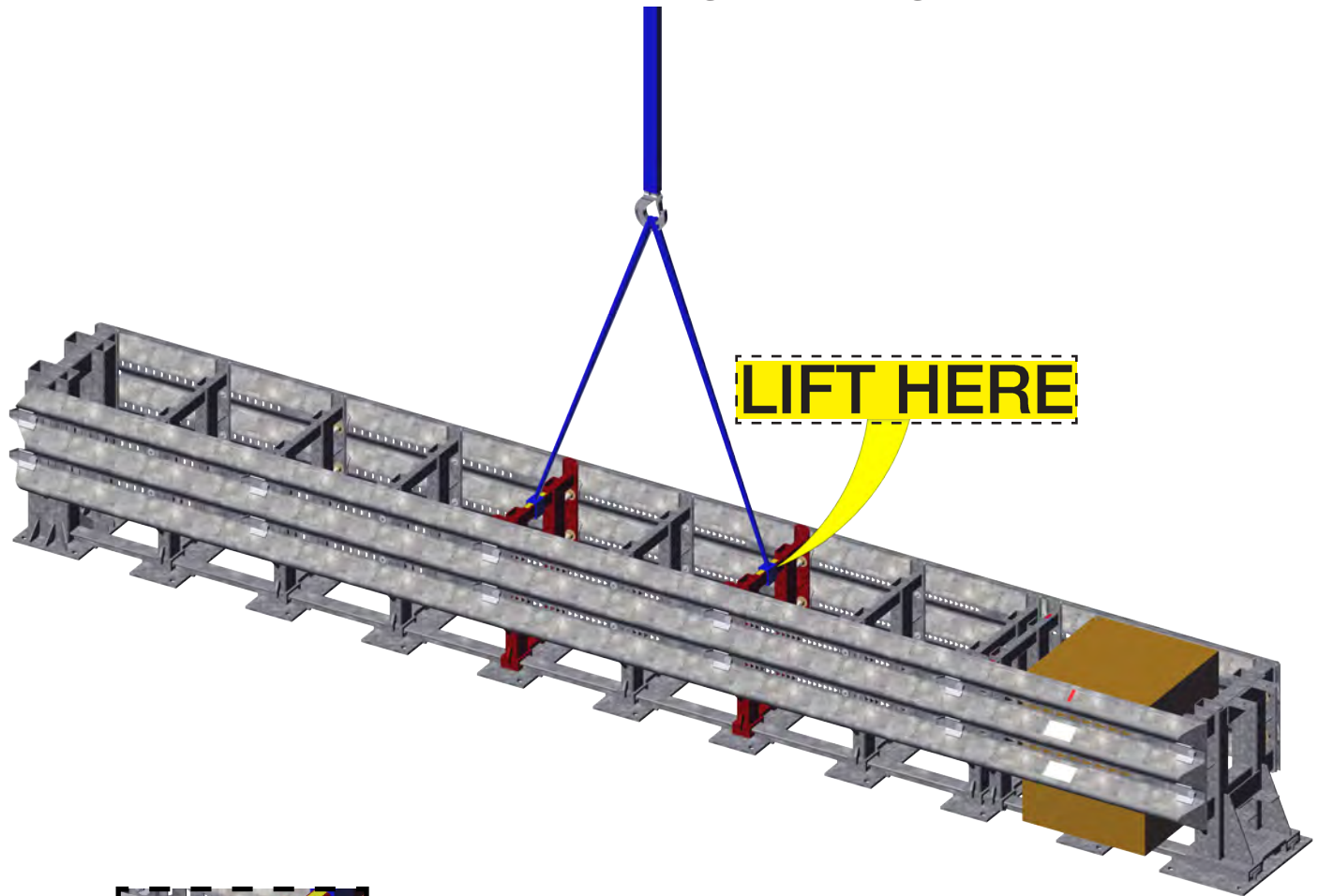
# Delta Orientation



- |   |                                 |
|---|---------------------------------|
| ① - Fender Panel 1N                             | ⑥ - Track                       |
| ② - Fender Panel 2N                             | ⑦ - Diaphragm                   |
| ③ - Fender Panel 3N                             | ⑧ - Front Impact Head Diaphragm |
| ④ - Fender Panel 45N                            | ⑨ - Front Attenuation Module    |
| ⑤ - Fender Panel 45N ( <i>rear most panel</i> ) |                                 |

# Delta Lifting Points

## *Acceptable Lifting Diaphragms*



***Only Lift From Diaphragms That Have A Wing Washer Assembly***



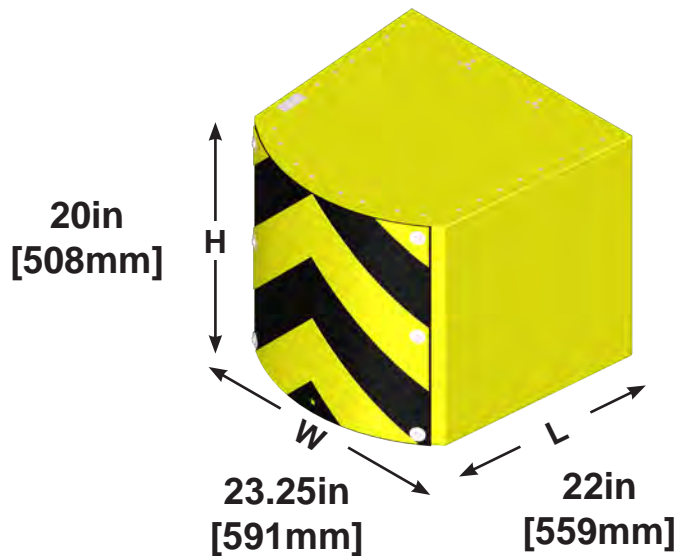
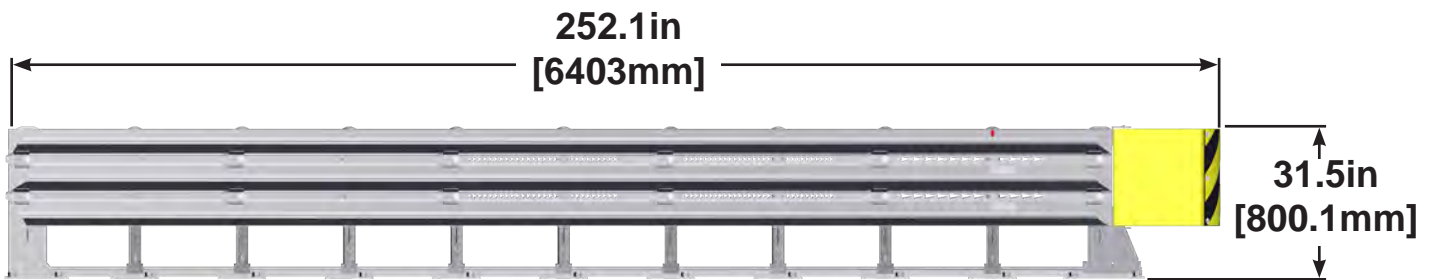
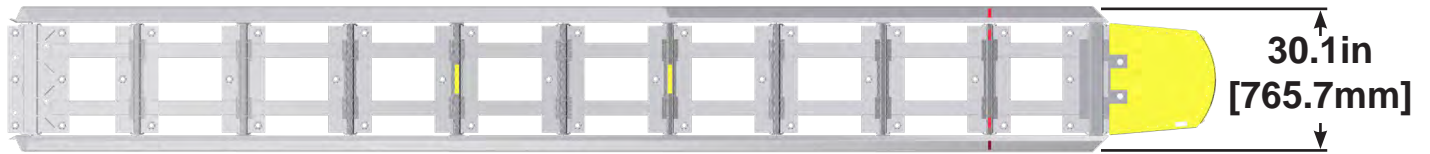
***NOTE: Do Not Lift from the Thrie Beam Fender Panels or Pattern Cutout***

**BE CAREFUL**



**SAFETY FIRST**

# System Dimensions



Narrow TL-3 System	Overall Dimension
Length	252.1 in [6403 mm]
Width	30.1 in [765.7 mm]
Height	31.5 in [800.1 mm]
Approximate Weight	2270 lbs [1030 kg]

# Pre-Installation Questionnaire Form

**Instructions:** Please fill out this document for the Delta ICC installation site. This will help to assist with the purchase of the correct items, installation preparation, and product documentation. Installation shall meet the local and federal installation standard plans. If you have any questions, contact the local road authority or [deltahelp@traffixdevices.com](mailto:deltahelp@traffixdevices.com)

**1. Project Contact:** First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

Company: \_\_\_\_\_ Position: \_\_\_\_\_

**2. Location of Proposed Delta Installation:** City: \_\_\_\_\_

State: \_\_\_\_\_ Highway: \_\_\_\_\_ Direction (Circle One): NB SB EB WB

Closest Exit (Exit Number and Name): \_\_\_\_\_

**3. Object to be protected (Circle One):** Jersey Shape K-Rail Light/Sign Post

Type 60 Guardrail/Thrie Abutment Other (Specify): \_\_\_\_\_

**4. Record the GPS coordinates or nearest mile marker:** \_\_\_\_\_

**5. Anchoring Foundation (Circle One):** Asphalt Concrete Hybrid

**6. Traffic Flow Type** <sup>(See Pg 13)</sup> **(Circle One):** Uni- Directional Bi-Directional Gore Point

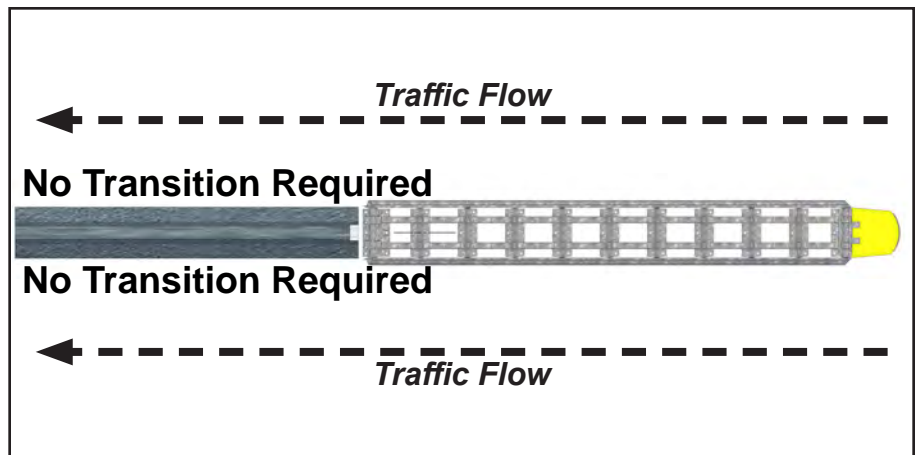
**7. Take several photos of the installation site showing foundation, any obstacles, object(s) being protected (including measurements), exit/highway signs, coordinates and any other images to include with this form. If any site plans or other documentation regarding this site are available, please send along with this form.**

# Product Placement

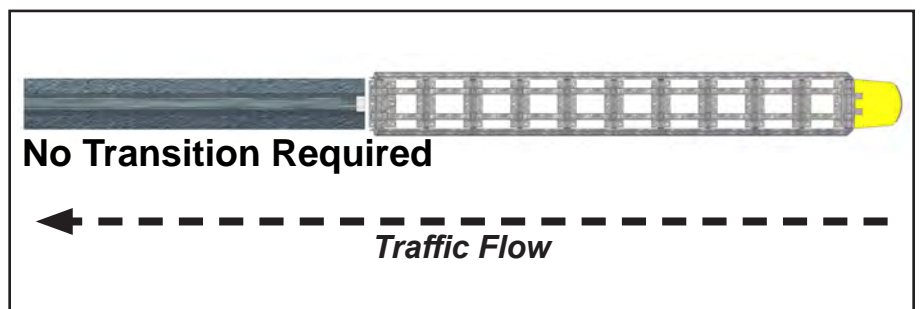
The Delta ICC can be used in both Bi-Directional and Uni-Directional installations. (Note, it is important to know when a transition is necessary). If there is Bi-Directional traffic flow, it is critical to protect the rear of the Delta ICC in the reverse direction with a transition.

**NOTE:** It is the user's responsibility to provide an adequate transition. The transition should conform to local and state government standards.

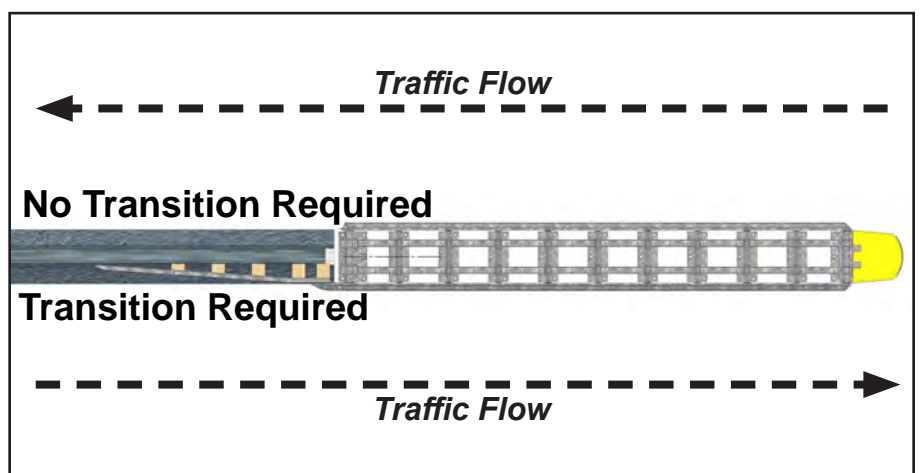
## Gore Point Narrow Hazard



## Uni-Directional Narrow Hazard



## Bi-Directional Narrow Hazard



# Installation Site

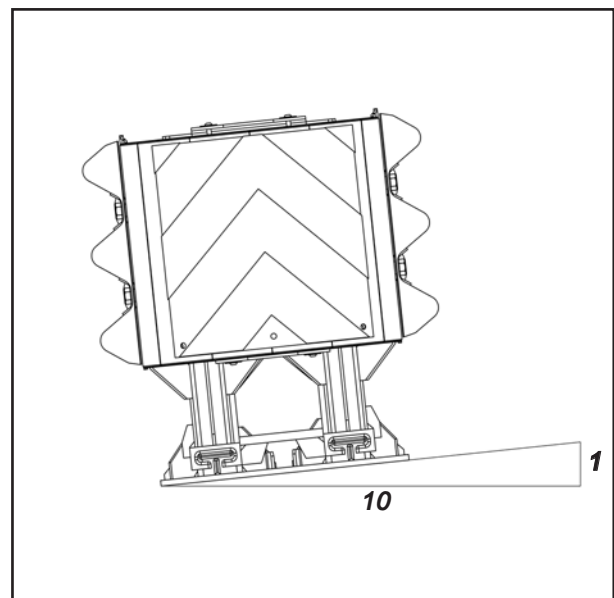
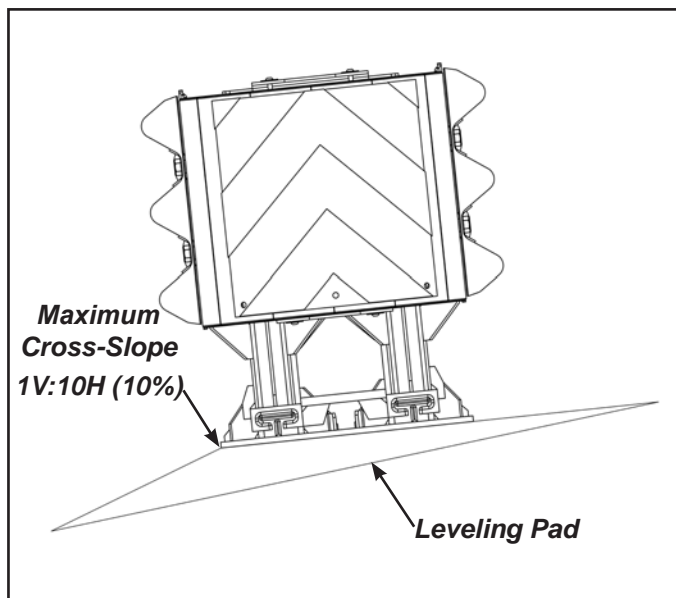
The Delta ICC can be installed on various foundation types including concrete, asphalt, or a hybrid of the two. The foundation and surrounding grading should comply with the recommendations in the latest version of the AASHTO Roadside Design Guide as well as local and state government specifications. Concrete foundations shall be minimum 4000 psi (28 MPa) and asphalt foundation shall have a minimum compaction of 95%. Asphalt pads may expand and contract when experiencing heat cycles. Because of this, it is important to check anchor bolt torque every 6 months to ensure they have not loosened.

## *Acceptable Foundations for the Delta ICC:*

- 6 in. (150 mm) Reinforced Concrete
- 8 in. (203 mm) Non-Reinforced Concrete
- 6 in. (150 mm) Asphalt Over Compacted Subbase
- 3 in. (75 mm) Asphalt Over Concrete
- 8 in. (203 mm) Asphalt
- See *Appendix* (Pg 38 - 47)

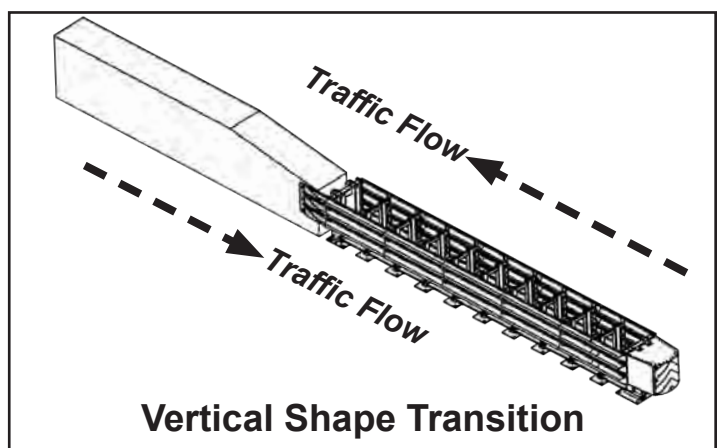
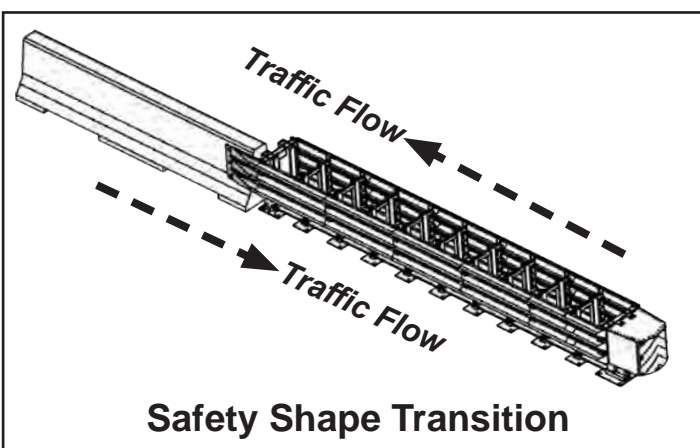
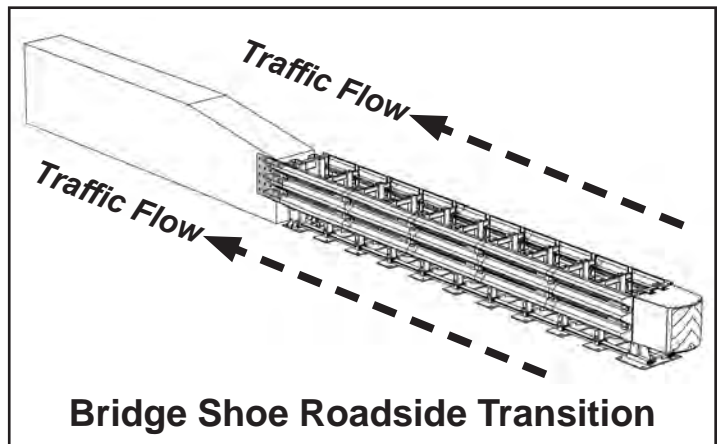
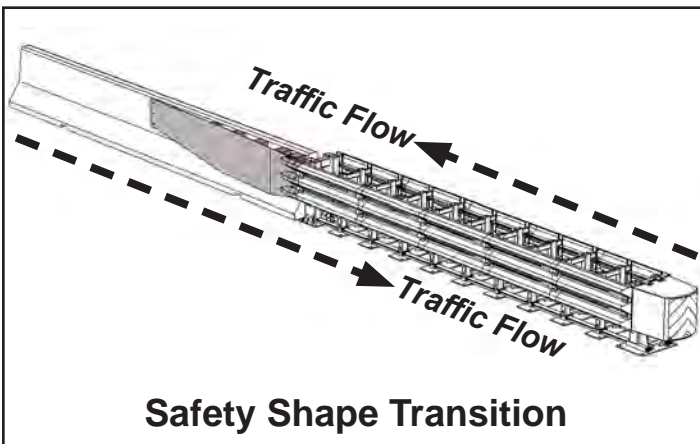
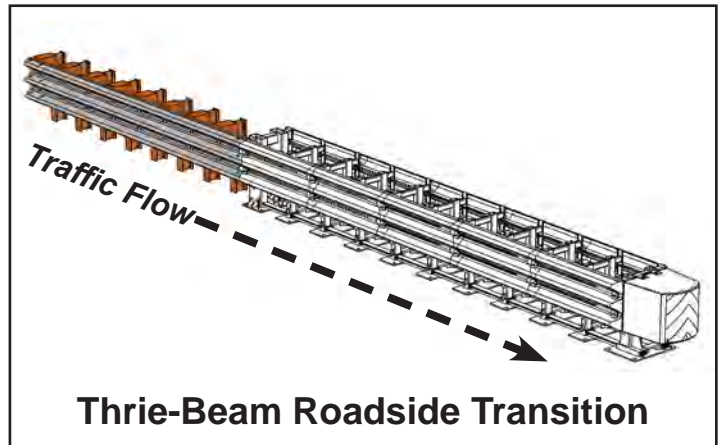
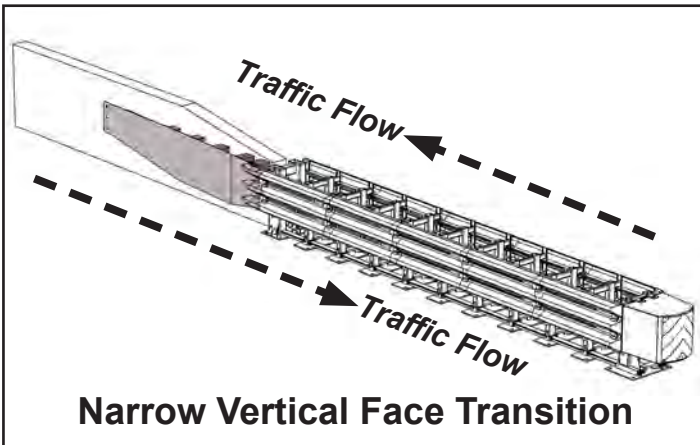
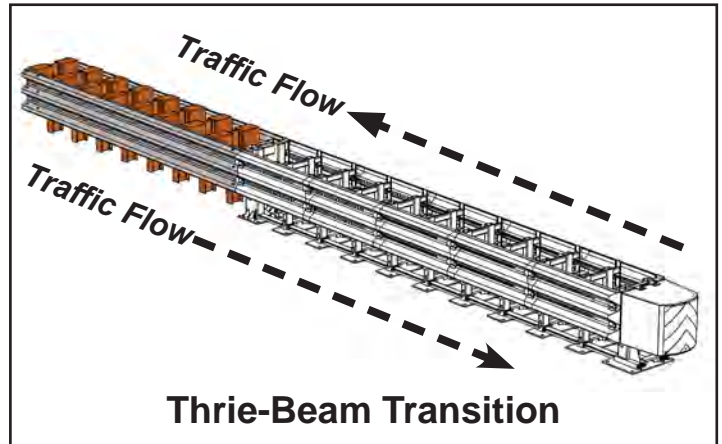
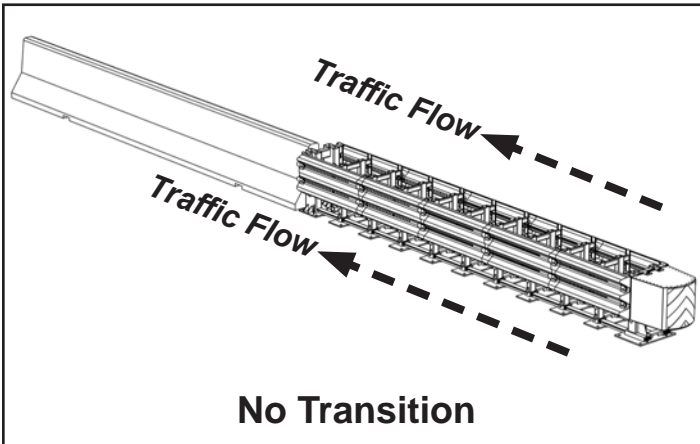
# Cross-Slope

The foundation must be flat with longitudinal and lateral slopes of 1V:10H or less. If the cross-slope exceeds 1V:10H, a leveling pad may be used to achieve an acceptable cross-slope.





# Transition



# Tools Required

	<p>Lifting and moving equipment to safely lift 5000 lbs, either a fork lift, tractor or crane. Industrial Lifting Slings to safely lift 5000 lbs.</p>
	<p>Air Compressor</p>
	<p>Air Nozzle Bottle Brush</p>
	<p>Anti-Static Wet/Dry Vacuum</p> <p>⚠ It is the responsibility of the installer to consult OSHA silica respiratory standard 29CFR 1910.134 for debris removal from borehole(s) and use TrafFix Devices approved adhesive to achieve optimum tensile strength.</p>
	<p>Dust Collection System</p>
	<p>Tape Measure Chalk Reel and Chalk Pry Bar</p>



**NOTE:** The tool list provided is a general recommendation and should not be considered an all-inclusive list.

# Tools Required

	<p><b>Epoxy Dispenser / Approved Epoxy:</b></p> <ul style="list-style-type: none"> <li>- Hilti Hit RE 500</li> <li>- Simpson SET (AT or XP) / ET-3G</li> <li>- Red Head A7</li> </ul>
	<p><b>Rotary Drill: Bosch RH1255VC or Equivalent</b>  <b>1" Diameter Drill Bit,</b>  <b>12" Long for Rotary Drill Bit for Concrete</b>  <b>20" Long for Rotary Drill Bit for Asphalt</b></p>
	<p><b>Socket Wrench</b>  <b>7/16" Socket</b></p>
	<p><b>Impact Driver with 7/16" Socket</b>  <b>1-1/8" Socket</b>  <b>Torque Wrench with 1-7/16" Socket</b></p>
	<p><b>7/16" Wrench</b>  <b>1-1/16" Ratchet Wrench</b>  <b>Drill with Phillips Screw Driver Bit</b></p>
	<p><b>Additional Tools:</b>  <b>Hand tools, Tape,</b>  <b>Grinder, Hacksaw or Torch</b></p>



**NOTE:** The tool list provided is a general recommendation and should not be considered an all-inclusive list.

# Sentinel Activation



Serial Number:

Sentinel Serial Number:



**Scan Me!**  
Or Visit  
[sentinel.traffixdevices.com/log-in](https://sentinel.traffixdevices.com/log-in)



Email

Password

Log in

Forgot password?

Don't have an account yet?

Create an account

**Step 1:** Scan QR Code on the Sentinel, this will take you to the Log In page.

**Step 2:** Enter your Email and Password.

*If you don't have an account, you can create an account by clicking on the Create an Account located at the bottom of the Log In page.*

**Step 3:** Add Sentinel Serial Number.

***Should you require any assistance or have questions, please visit  
[www.traffixdevices.com/sentinel/quick-start](https://www.traffixdevices.com/sentinel/quick-start)  
or email  
[sentinel support@traffixdevices.com](mailto:sentinel support@traffixdevices.com)***

# Installation

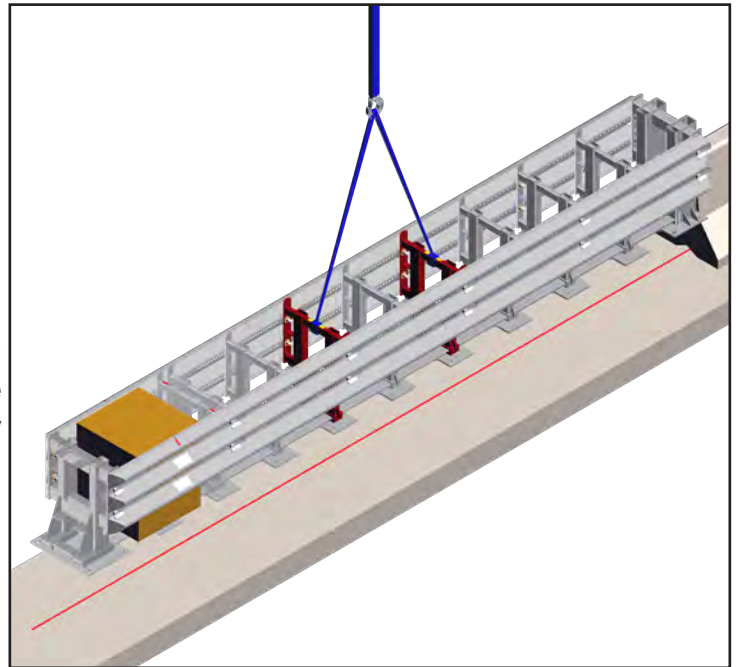


## Step 1

Tie industrial lifting straps to acceptable lifting diaphragms. Lift and Center the Delta in place.

**NOTE:** Product placement must comply with the project plans or as otherwise determined by the resident project engineer or appropriate highway authority. It is the user's responsibility to provide an adequate transition when necessary.

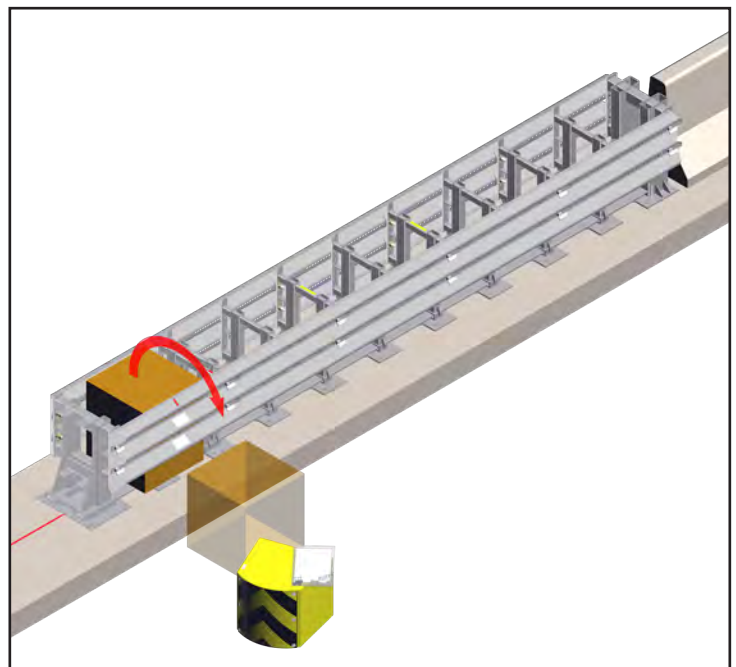
**! NOTE: STAY OUT FROM UNDER SUSPENDED LOADS.**



## Step 2

Remove cardboard box and place in safe area. Box contains Front Attenuation Module, Module Installation Hardware and Sacrificial Hardware for Floating Diaphragm.

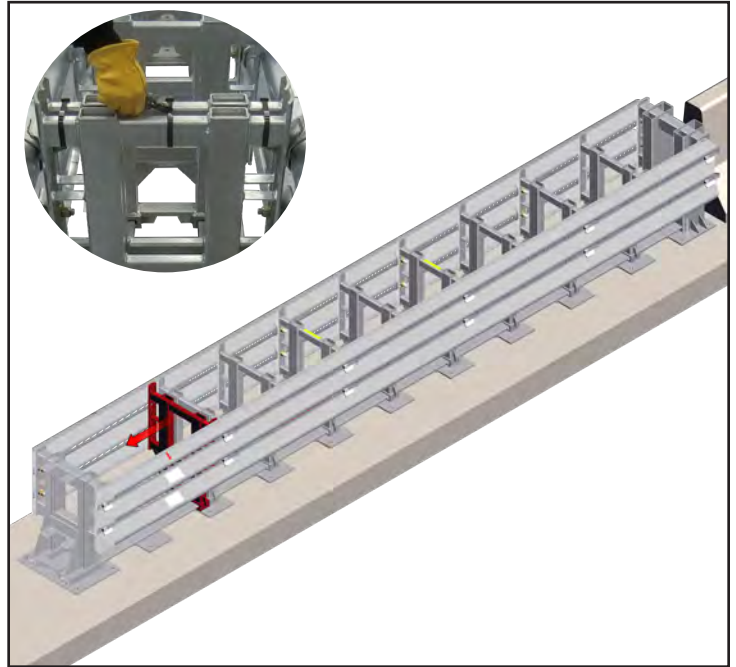
**NOTE: DO NOT INSTALL** Front Attenuation Module, until anchor bolts have been installed. Place and keep in a safe area.





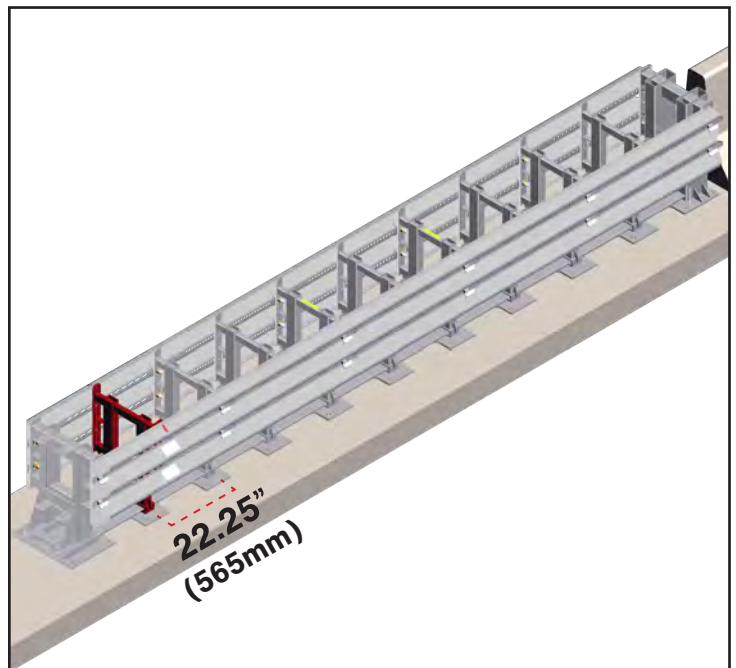
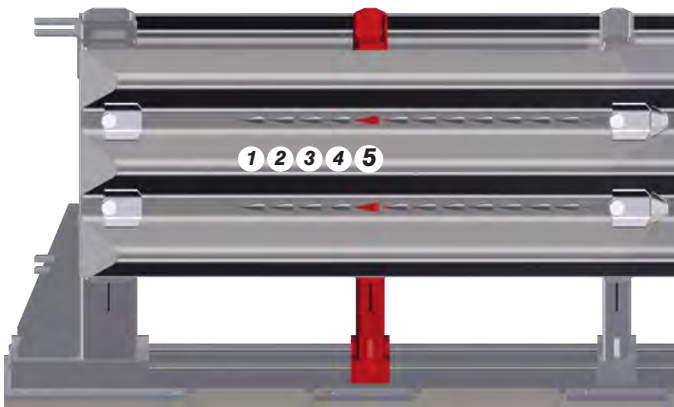
### Step 3

Cut and Remove all steel bands and zip ties. Slide Floating Diaphragm forward.



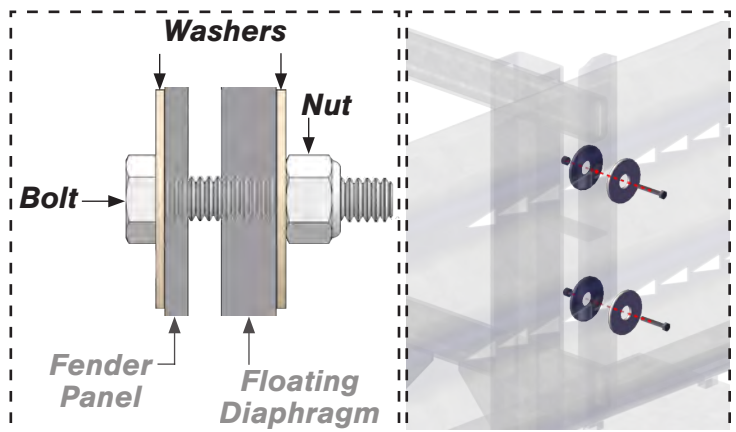
### Step 4

Position Floating Diaphragm to be spaced 22.25"  $\pm$  1" (565mm) from the secured diaphragms. NOTE: You can align the floating diaphragm with the fender panel 5th pattern cutout. As shown below.



### Step 5

Once the floating diaphragm is centered, install sacrificial hardware to secure in place. The sacrificial hardware assembly consists of one (1) bolt, two (2) washers, and one (1) nut. The floating diaphragm requires two assemblies per side. Tighten bolts so that the diaphragm is centered between the fender panels and the washers do not rotate freely.





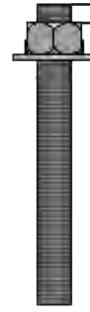
## Step 6

Mark drill bit to the proper depth using a tape marker to the length of the anchor. Prepare anchor bolt assembly, 39 total.

**NOTE:** Must only use Traffix Devices approved anchor bolt.



MAX  
.5 in (13 mm)



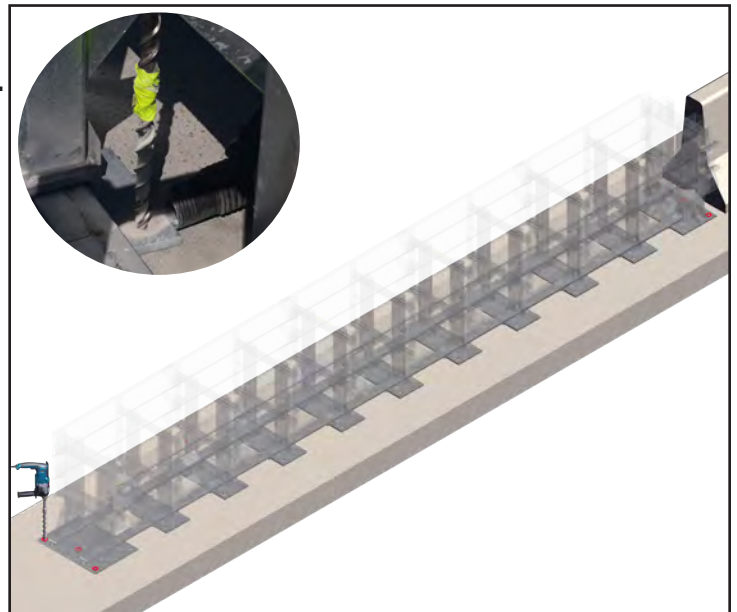
**NOTE:**  
Anchor bolt shall not exceed .5 in (13 mm) past the anchor nut on all 39 anchor bolt assemblies.

<u>Pad Thickness and Material</u>	<u>Anchor Embedment</u>
6 in. (150 mm) Reinforced Concrete	5.5 in. (140 mm)
8 in. (203 mm) Non-Reinforce Concrete	5.5 in. (140 mm)
6 in. (150 mm) Asphalt Over Compacted Subbase	17 in. (430 mm)
3 in. (75 mm) Asphalt Over Concrete	17 in. (430 mm)
8 in. (200 mm) Asphalt	17 in. (430 mm)

## Step 7

Drill one hole at the front and rear of the device.

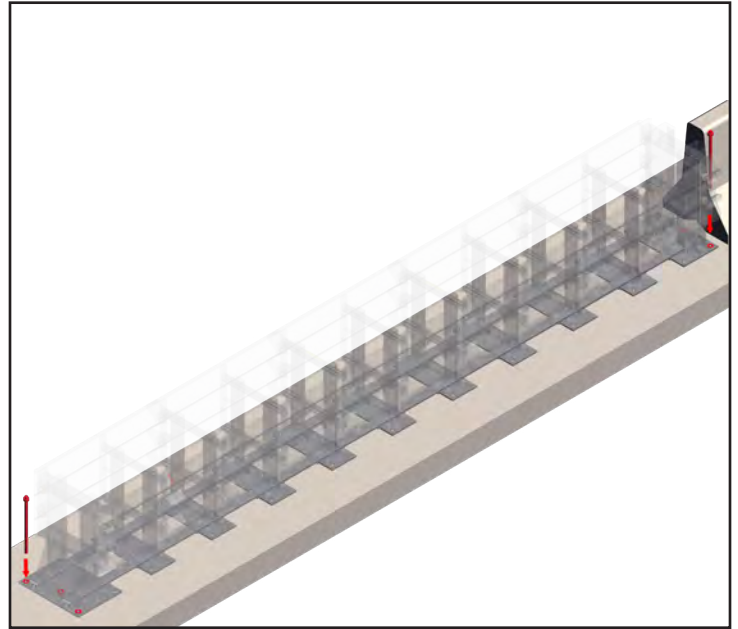
**Tip:** Clean the holes as you go, this reduces cleaning time and exposure to harmful dust particles.



## Step 8

Place an anchor bolt in both of the bore holes.

**Tip:** This will prevent the Delta from shifting during the drilling process. This will also ensure there is sufficient room to access the rear anchor points during installation.

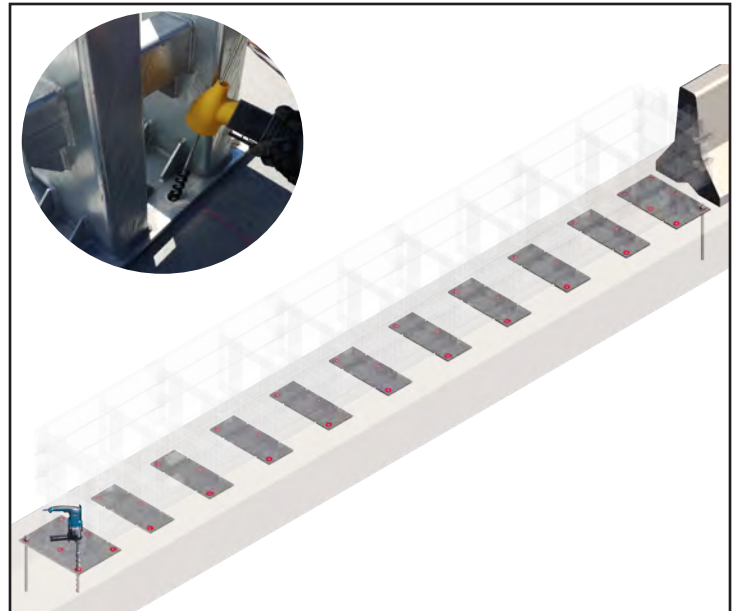


## Step 9

Continue to drill the holes to the proper depth and clean during the drilling process. This can be achieved by a static free vacuum or a built in drill/dust collection system.

**Tip:** To ensure holes are drilled to the proper depth check the depth once the holes have been cleared of dust.

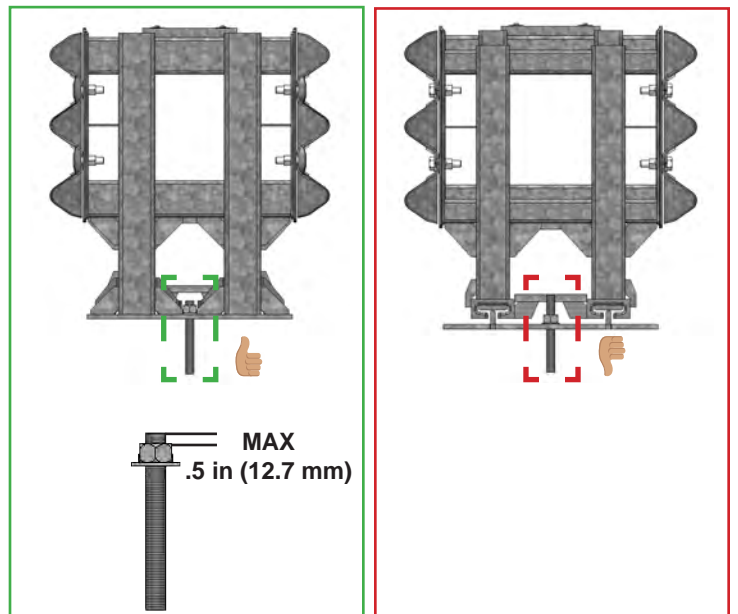
**NOTE:** Always follow manufacturers recommendation for cleaning and preparing bore holes for epoxy.



## Step 10

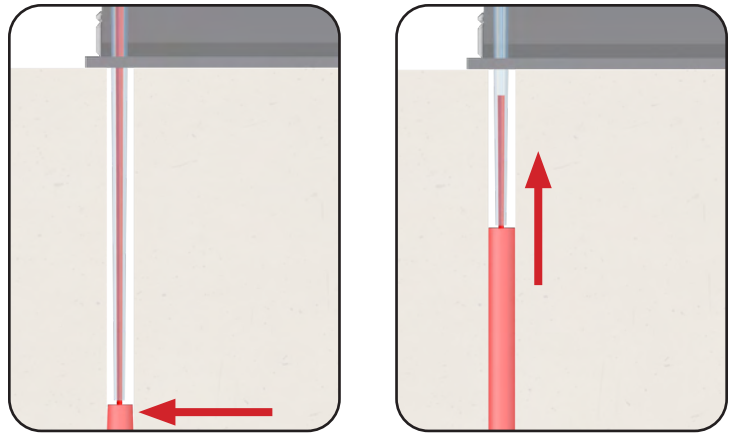
Anchor bolt shall not exceed .5 in (12.7 mm) past the anchor nut on all 39 anchor bolt assemblies.

**NOTE:** Incorrect installation of anchor bolts may result in unsatisfactory performance and can result in serious injury.



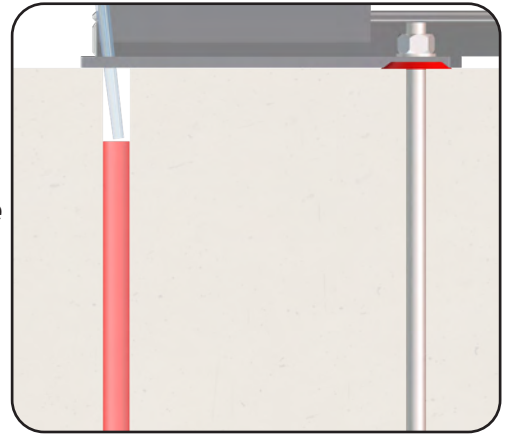
## Step 11

Once holes are cleaned the installation is ready for epoxy. Place the epoxy nozzle close to the bottom of the hole and at an angle. Slowly pull the epoxy dispenser upward as the hole is being filled. This will ensure there is no air trapped in the hole during installation.



Fill holes approximately 1" from the top with approved epoxy.

**NOTE:** Be sure to check epoxy cure time based on ambient temperature before the installation. This will ensure anchor bolts are installed properly and the epoxy doesn't cure before the anchor rods are installed.

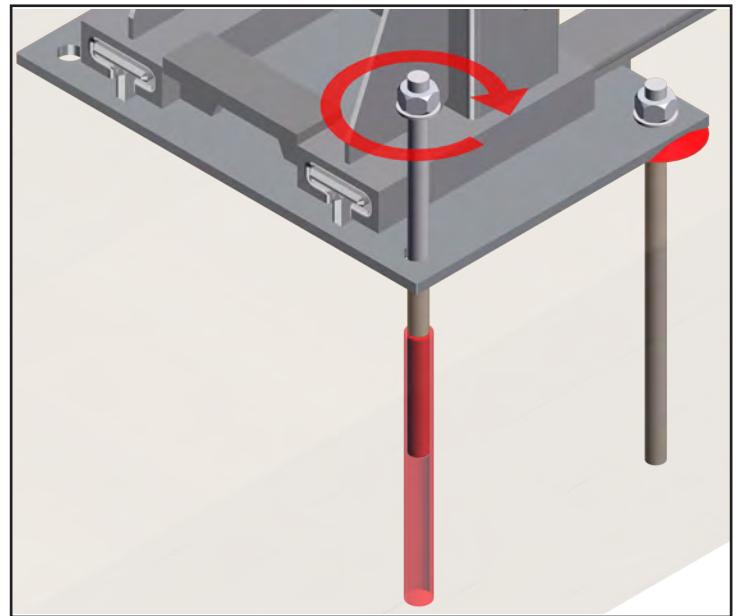


## Step 12

Insert anchor rod in a twisting motion to ensure proper epoxy coverage of anchor bolt. Let cure according to manufactures specs.

Torque to: Concrete anchors 100 ft-lbs (135 Nm), Asphalt anchors 10 ft-lbs (14 Nm).

**NOTE:** Always follow the epoxy manufactures recommendations for cleaning, inserting, and tightening anchor rods.

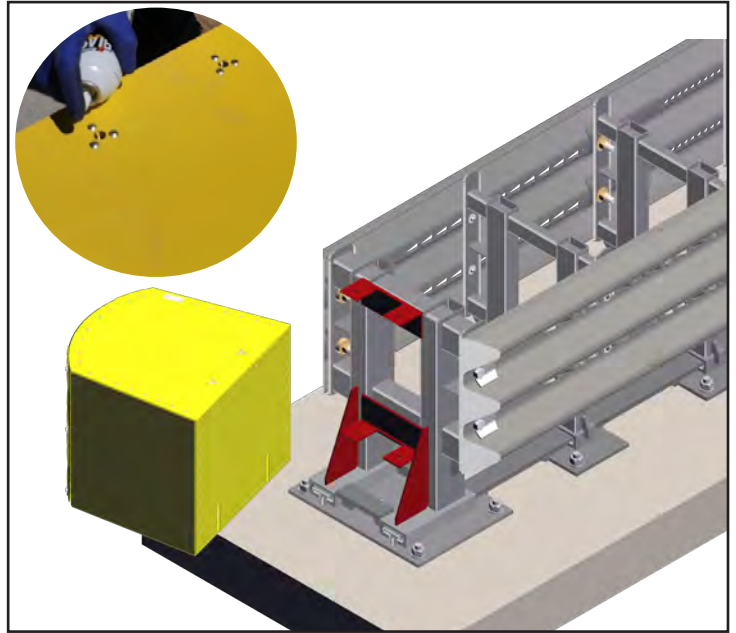


<u>Epoxy Manufacture</u>	<u>Model</u>	<u>Approximate Needed</u>
Hilti	Hit RE 500	220 fl.Oz / 6.5 L
Simpson	SET (AT or XP) / ET-3G	220 fl.Oz / 6.5 L
Red Head	A7	220 fl.Oz / 6.5 L

**⚠ NOTE: Concrete Installation.**

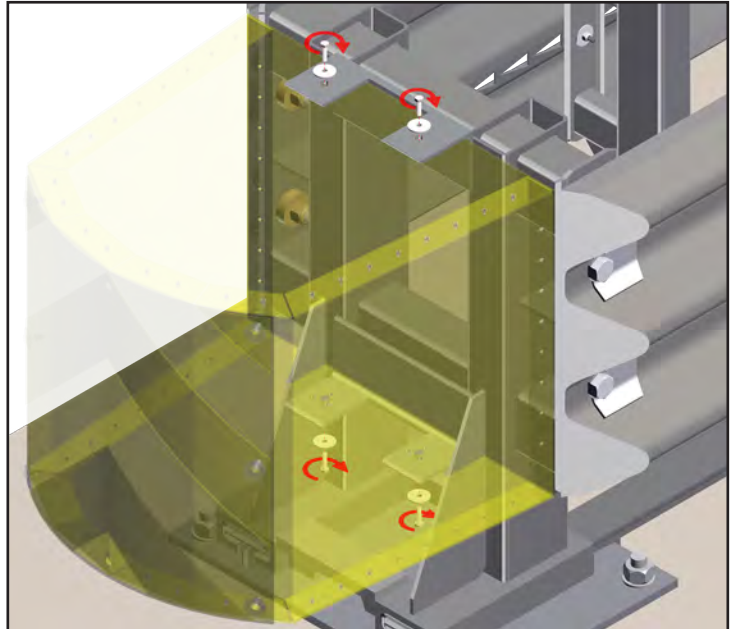
### Step 13

Use a lubricant or grease to prep the top and bottom holes. Lift the Front Attenuation Module into position by aligning the back openings with the Front Impact Head Diaphragm gussets.



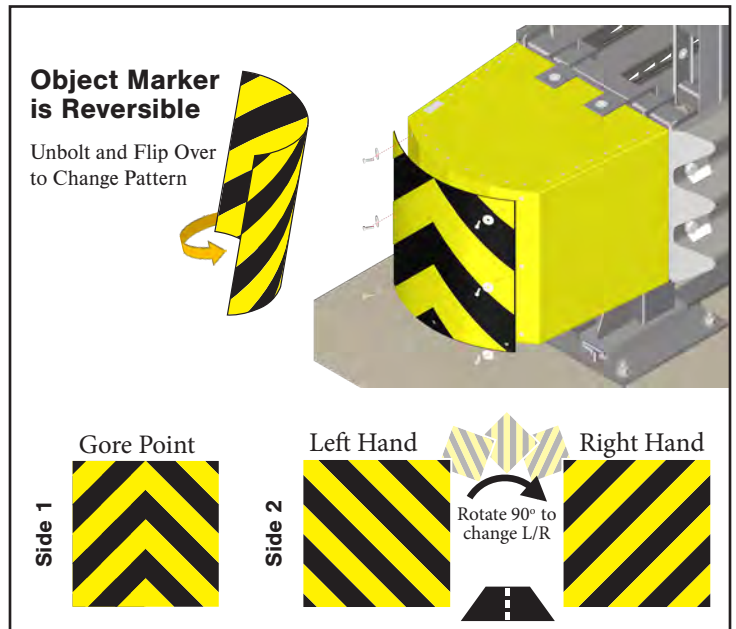
### Step 14

Once Front Module is in position, secure (4) bolts and (1) washer per bolt, on top of the module and under the module. Tighten to a minimum of 6 ft-lbs (8.14 Nm).



### Step 15

The nose sheeting has been provided as a way to easily customize field use. The diagonal stripes used on the Left Hand Traffic Flow can be rotated 90 degrees for Right Hand Traffic Flow. Turn the sheeting over and it is used for Gore Point Traffic Flow. To determine the correct nose sheeting side follow state regulations and installation location. Once the direction is determined, secure the sheeting to the front attenuation module with supplied bolts using a 7/16" socket.

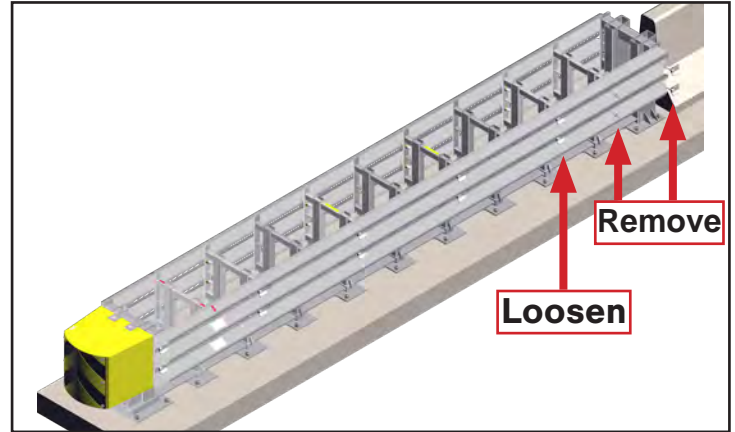




# TDI Bridge Shoe Transition Install

## Step 1

Remove rear wing washers, washers and nuts from rear fender panel (45N). Remove sacrificial hardware. Loosen nuts from wing washers. Once the hardware on fender panel (45N) has been removed, pull the panel outward.



## Step 2

Once transition is lapped under and is in alignment with rear fender panel (45N) insert wing washers to hold transition in place. Proceed to install and tighten wing washers and sacrificial hardware from Step 1.

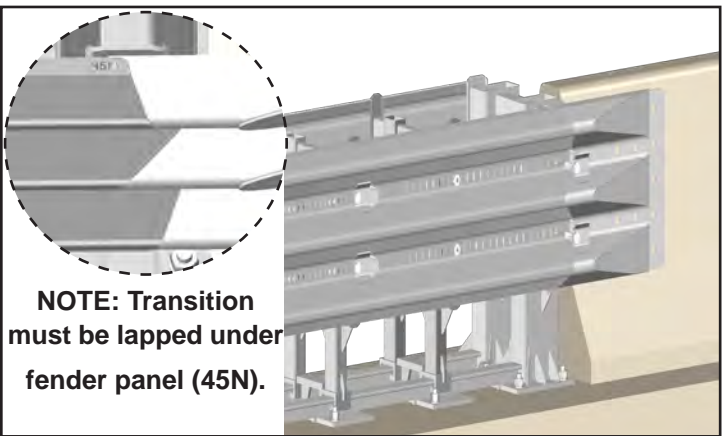
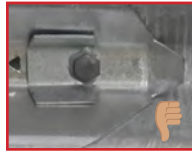
**Correct**



**NOTE:**

*Wing Washers must be installed with the long end facing the rear end of the system.*

**Incorrect**

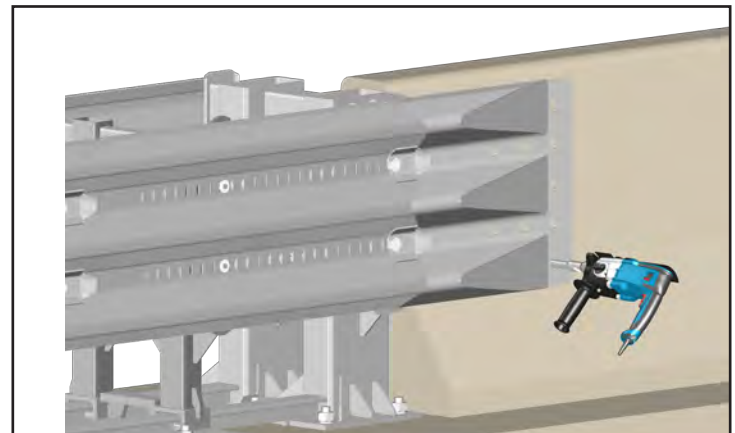


## Step 3

Mark drill bit to the length of the anchor bolt. Use trailing edge holes on the transition as a drilling template. Drill holes to a depth of 5" (127 mm) with a rotary hammer drill and a 3/4" drill bit.



**NOTE:** Clean the holes after drilling.

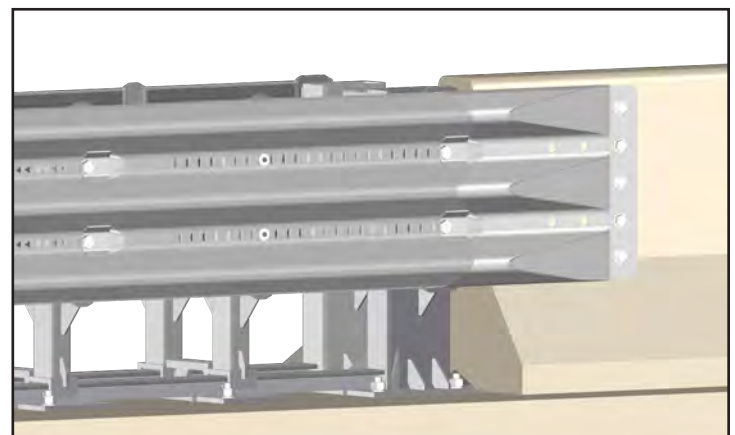


## Step 4

Install the mechanical anchor bolts with an impact wrench and 1-1/8" socket. Tighten anchor bolts until the trailing edge of the transition is flush with the barrier.

**⚠ NOTE:** Steps 1-4 applicable for Standard Bridge Shoe installation.

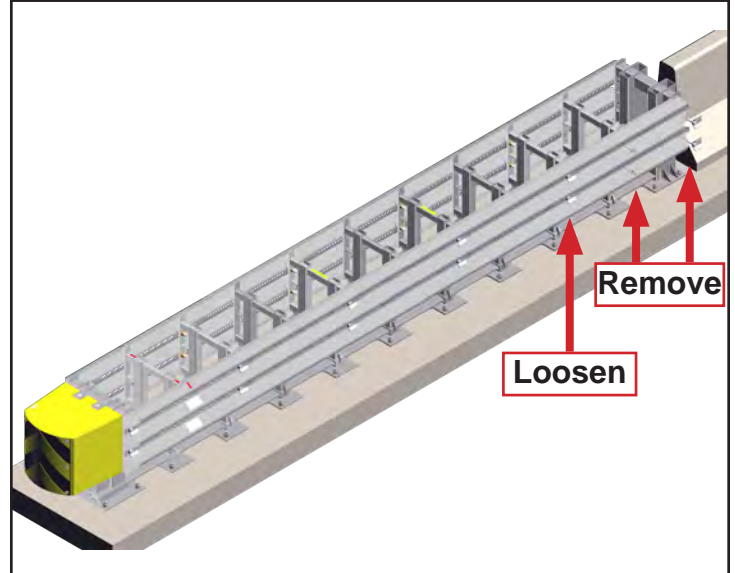
**⚠ User(s)** has the responsibility to determine a suitable transition that must be compliant with local and state government standards.



# TDI Transition Panel Install

## Step 1

Remove rear wing washers, washers and nuts from rear fender panel (45N). Remove sacrificial hardware. Loosen nuts from wing washers. Once the hardware on fender panel (45N) has been removed, pull the panel outward.



## Step 2

Attach lifting strap to the J-Bolts located on the top of the transition. Once transition is lapped under and is in alignment with fender panel (45N), insert wing washers to hold transition in place. Proceed to install and tighten wing washers and sacrificial hardware from Step 1.

**Correct**



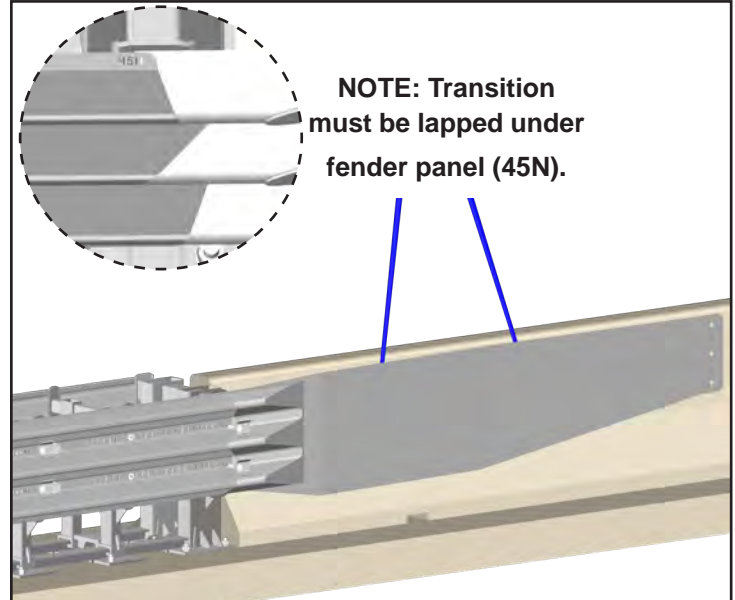
**NOTE:**

*Wing Washers must be installed with the long end facing the rear end of the system.*

**Incorrect**



**NOTE:** Once in place, remove lifting strap and J-Bolts from the transition.

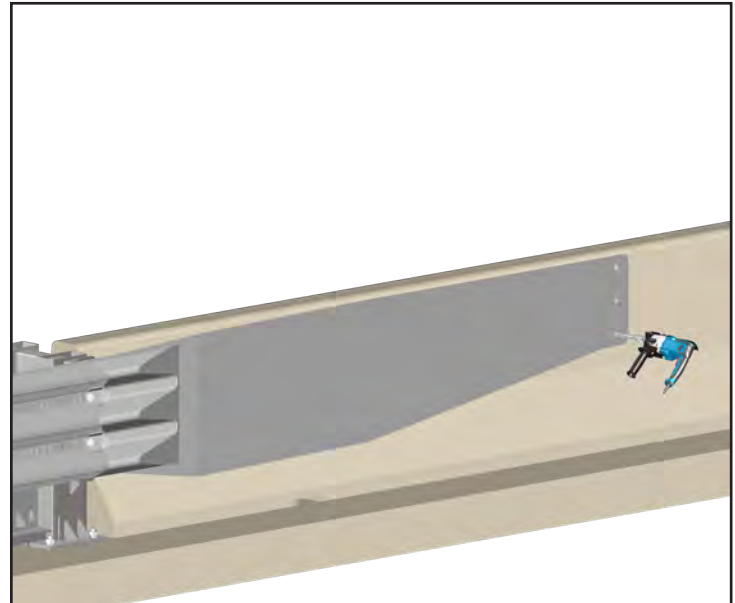


## Step 3

Mark drill bit to the length of the anchor bolt. Use trailing edge holes on the transition as a drilling template. Drill holes to a depth of 5" (127 mm) with a rotary hammer drill and a 3/4" drill bit.



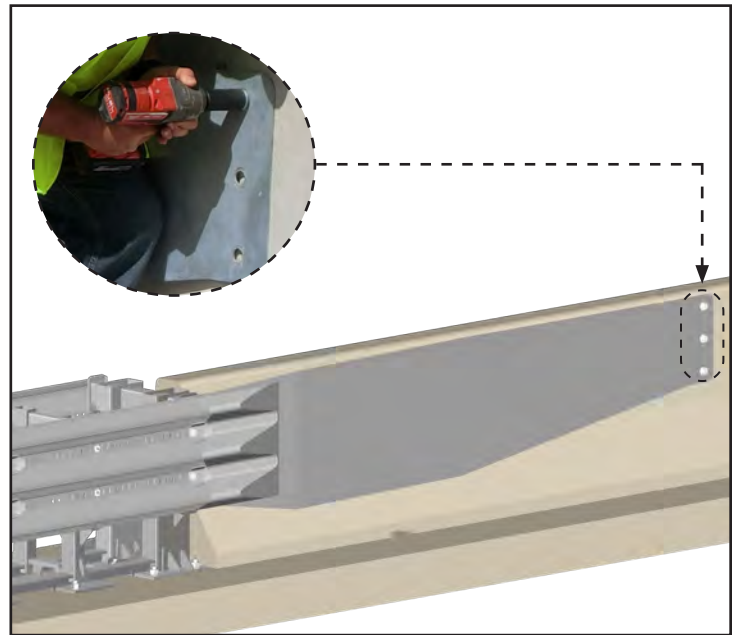
**NOTE:** Clean the holes after drilling.





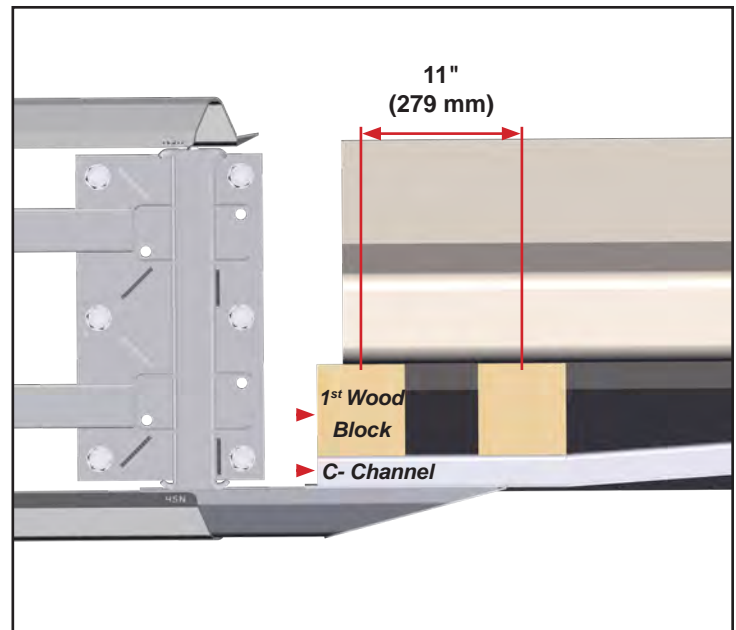
## Step 4

Install the mechanical anchor bolts with an impact wrench and 1-1/8" socket. Tighten anchor bolts until the trailing edge of the transition is flush with the barrier.



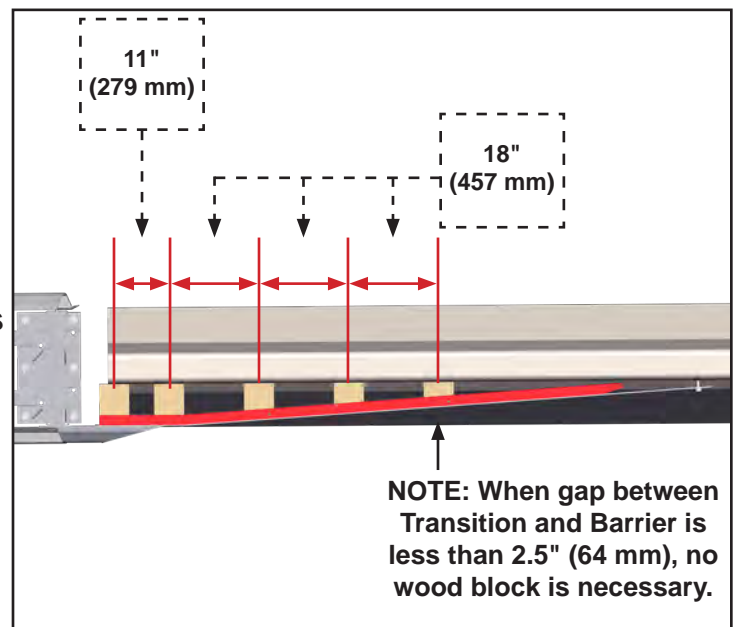
## Step 5

Align first wood block to the transitions leading edge C-channel. A standard blockout is 6" (150 mm) wide, making the center of the first block 3" (75 mm) from the leading edge of the C-channel. Mark C-channel with center location of the first wood block.



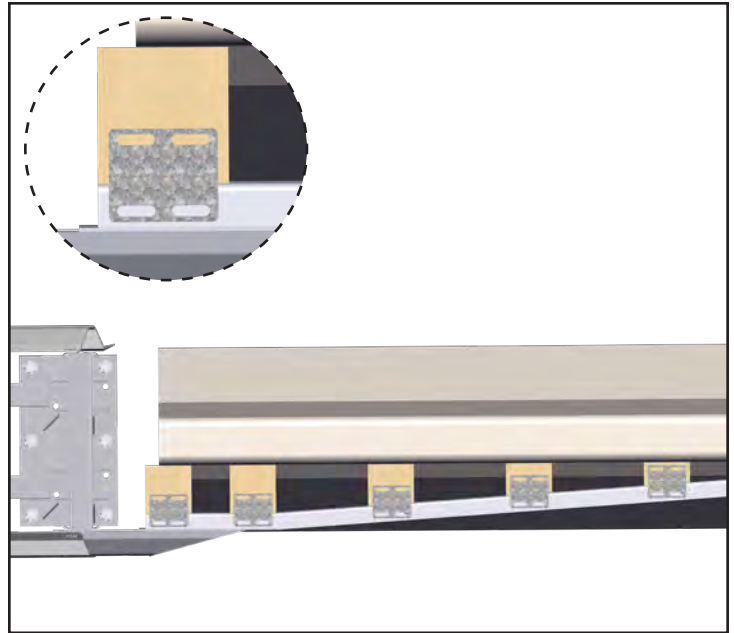
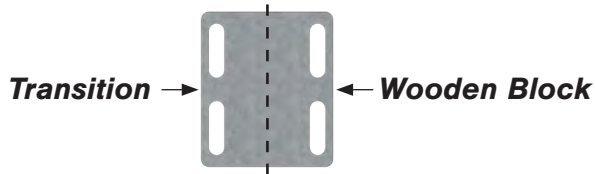
## Step 6

Once the center of the first wood block has been determined, use the dimensions shown to locate the center of the remaining blocks. Mark the center location of each block on the C-channel. Once the center of the blocks have been located measure the top and bottom opening from the C-channel to the barrier. This will help determine the angle to cut when field trimming the wood blocks. Mark each block with the top and bottom opening dimension and field trim blocks. Place wood blocks in position once trimming complete.



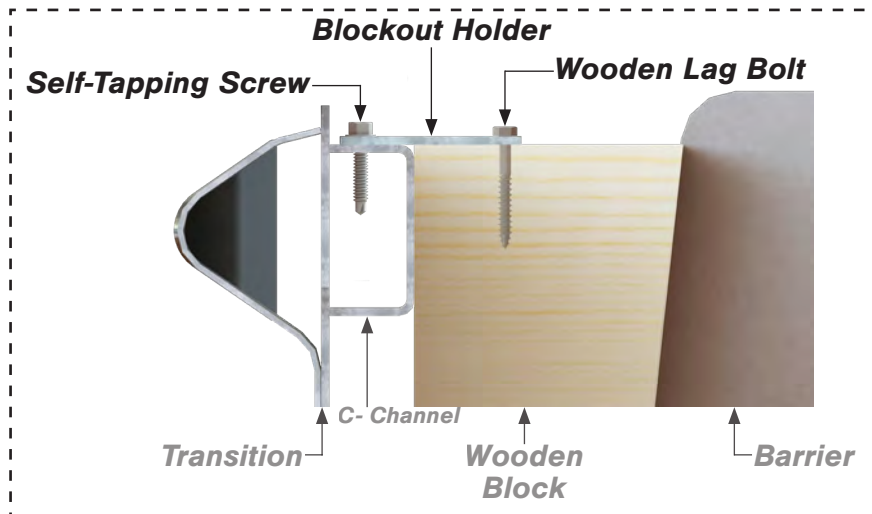
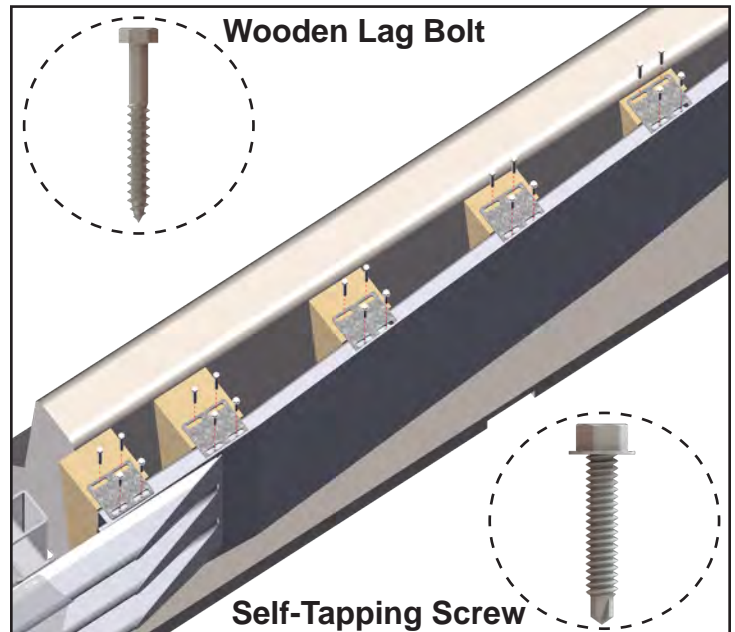
## Step 7

Place a blockout holder on each wood block. Center the blockout holders on the wood blocks with the long edge parallel to the barrier. Use the blockout holder as a drilling template to pre drill pilot holes in the transitions C-Channel and the wooden blocks.



## Step 8

The self-tapping screws go on the C-channel side. Wooden lag bolts go into the wood blocks. Once the self-tapping screws and wooden lag bolts are inserted, tighten with an impact driver to secure the blockout holder plate.



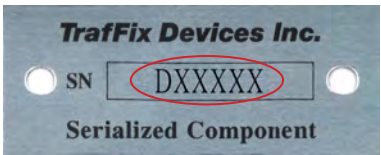
***This Page Intentionally Left Blank***

# Serial Number

Date of Installation: \_\_\_\_\_

Location: \_\_\_\_\_

Condition of Delta: \_\_\_\_\_



**Front Attenuation Module  
Serial Number:**

\_\_\_\_\_



**Track Serial Number:**


\_\_\_\_\_



**Sentinel Serial Number:**

\_\_\_\_\_

# Inspection Checklist

<b><u>Items to Inspect</u></b>	
<b>39 Anchor Bolts are Installed</b>	
<b>39 Anchor Bolts Do Not Exceed .5 in (13 mm) Past Anchor Nut</b>	
<b>39 Anchor Bolts are Properly Torqued. Concrete Installations 100 ft- lbs (135 Nm). Asphalt Installations 10 ft-lbs (14 Nm)</b>	
<b>All Diaphragms are Spaced 22.25" <math>\pm</math> 1"</b> If Spacing Falls out of Spec the Diaphragms with the Sacrificial Hardware shall be Adjusted.	
<b>Rear Fender Panels can Telescope Rearward 35" (889 mm) without Obstruction</b>	
<b>All Wing Washers are the Correct Orientation</b>	
<b>Check all Factory Hardware</b>	
<b>Front Attenuation Module is Installed with 4 Fasteners</b>	
<b>Front Attenuation Module has Proper Sheeting for the Site</b>	
<b>All Tools and Debris are Cleared from Delta</b>	
<b>Serial Numbers have been Documented</b>	

**Inspected By:** \_\_\_\_\_

**Contact Information:** \_\_\_\_\_ **Date:** \_\_\_\_\_

# Maintenance

The Delta ICC is a low-maintenance unit. Regular inspections depend on site conditions, traffic volume and weather conditions. Regular inspections of the Delta ICC is recommended and shall be made by local highway authority, always follow local guidelines for frequency of inspections to ensure adequate repairs are made to the unit.

*Maintenance includes but not limited to the following:*

- Clear and dispose of on site debris (remove excessive dirt, vegetation, snow, etc)
- Check for damage to the front attenuation module
- Check bolts are tight and rust free
- Check for loosened, damaged or rusted anchor bolts
- If installed on asphalt the anchor bolts should be checked on a routine basis
- Check for missing components and vandalism
- Check to see if there is evidence of an impact. Damage to the cutout patterns in the fender panels should be documented and replaced.

To determine if a Delta needs replacement or is potentially reusable, an engineer experienced in highway products/safety directed by local highway authority must be consulted.

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Inspected By: \_\_\_\_\_

Date: \_\_\_\_\_



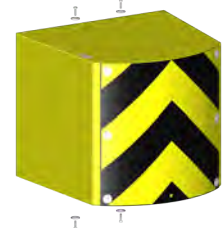
# Delta Replacement Parts

## Part No.

## Description

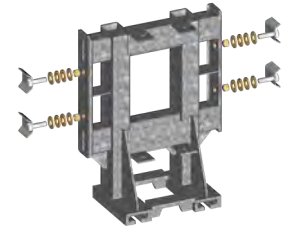
**75220-N-Y4**

**Front Attenuation Module Kit with Hardware,**  
4 Bolts (1/4"-20 x 1"), 4 Washers (1/4") and Object Marker with  
Hardware, 6 Bolts (1/4"-20 x 1") and 6 Washers (1/4")



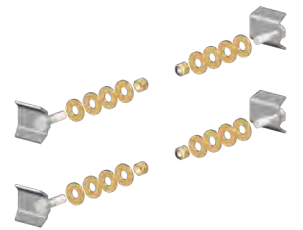
**75230-N-KIT**

**Front Impact Diaphragm Kit,**  
1 Front Impact Head Diaphragm,  
4 Wing Washers, 4 Nuts (3/4"-10) and 16 Washers (3/4")



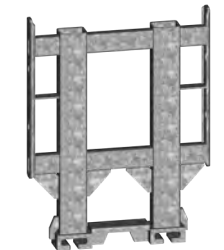
**75230-HW-KIT**

**Front Impact Head Diaphragm Hardware Kit,**  
4 Wing Washers, 4 Nuts (3/4"-10) and 16 Washers (3/4")



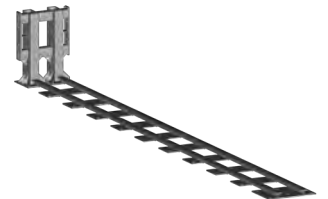
**75240-N**

**Steel Diaphragm**  
(9 per system)



**75250-TL3-N**

**Track Weldment**



**75208-CA**

**Concrete Anchor Rod Assembly,**  
1 Anchor Rod (7/8"-9 x 8"), 1 Nut (7/8"-9) and 1 Washers  
(7/8") (39 per system)



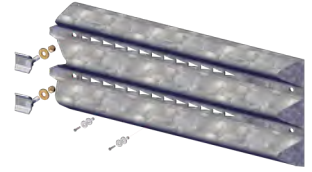
**75218-AA**

**Asphalt Anchor Rod Assembly,**  
1 Anchor Rod (7/8"-9 x 18"), 1 Nut (7/8"-9) and 1 Washers  
(7/8") (39 per system)

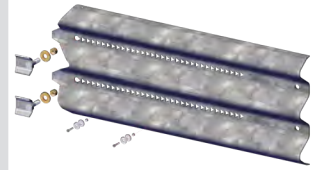


**Part No.****Description****75260-TL3-1N-KIT****Fender Panel 1N, Kit with Hardware,**

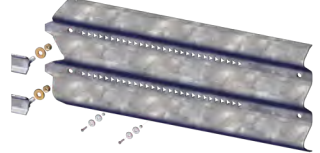
2 Wing Washers, 2 Lock Nuts (3/4"-10), 2 Washers (3/4"),  
2 Sacrificial Bolts (1/4"-20 x 1-1/2"), 2 Lock Nuts (1/4"-20) and  
4 Washers (1/4") (2 per system)

**75260-TL3-2N-KIT****Fender Panel 2N, Kit with Hardware,**

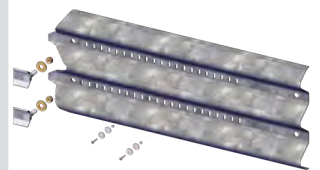
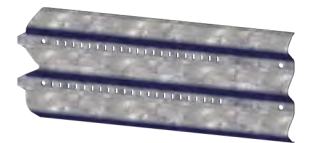
2 Wing Washers, 2 Lock Nuts (3/4"-10), 2 Washers (3/4"),  
2 Sacrificial Bolts (1/4"-20 x 1-1/2"), 2 Lock Nuts (1/4"-20) and  
4 Washers (1/4") (2 per system)

**75260-TL3-3N-KIT****Fender Panel 3N, Kit with Hardware,**

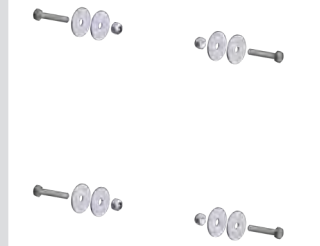
2 Wing Washers, 2 Lock Nuts (3/4"-10), 2 Washers (3/4"),  
2 Sacrificial Bolts (1/4"-20 x 1-1/2"), 2 Lock Nuts (1/4"-20) and  
4 Washers (1/4") (2 per system)

**75260-TL3-45N-KIT****Fender Panel 45N, Kit with Hardware,**

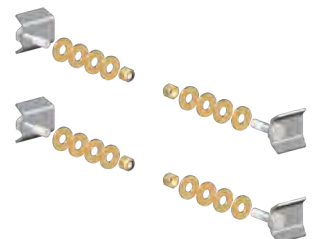
2 Wing Washers, 2 Lock Nuts (3/4"-10), 2 Washers (3/4"),  
2 Sacrificial Bolts (1/4"-20 x 1-1/2"), 2 Lock Nuts (1/4"-20) and  
4 Washers (1/4") (2 per system)

**75260-TL3-45N****Fender Panel 45N****75240-HW-KIT****Floating Diaphragm Hardware Kit,**


4 Bolts (1/4"-20 x 1-1/2"),  
4 Nuts (1/4"-20) and 8 Washers (1/4") (5 kits per system)

**75250-HW-KIT****Rear Track Backup Weldment Hardware Kit,**

4 Wing Washers, 4 Nuts (3/4"-10) and 16 Washers (3/4")

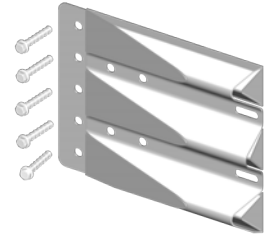
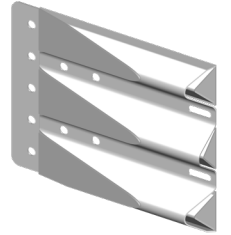


**75270-SBST****Standard Bridge Shoe Transition Panel**

 *User(s) has the responsibility to determine a suitable transition that must be compliant with local and state government standards.*

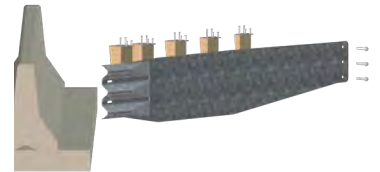
**75270-BST-02-KIT**

**TDI Bridge Shoe Transition Kit with Hardware,**  
1 Bi-Directional Transition Panel and 5 Anchor Bolts (3/4")

**75270-BST-02****TDI Bridge Shoe Transition Panel****75270-RH-KIT**

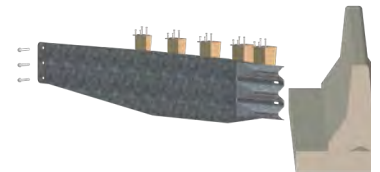
**Right Transition Weldment Kit with Hardware,**  
3 Anchor Bolts (3/4"), 5 Blockout Holders,  
10 Wooden Lag Bolts (3/8"), 10 Self-Tapping Screw (3/8"),  
2 J-Bolt (8") and 2 Nylock Nuts (1/2"-13)

 *Wood Blocks NOT Included. Barrier NOT Included.*

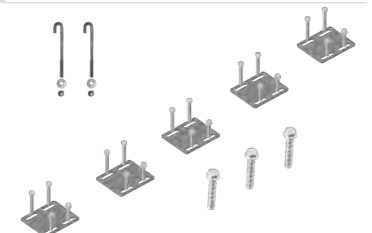
**75270-RH****Right Transition Weldment****75270-LH-KIT**

**Left Transition Weldment Kit with Hardware,**  
3 Anchor Bolts (3/4"), 5 Blockout Holders,  
10 Wooden Lag Bolts (3/8"), 10 Self-Tapping Screw (3/8"),  
2 J-Bolt (8") and 2 Nylock Nuts (1/2"-13)

 *Wood Blocks NOT Included. Barrier NOT Included.*

**75270-LH****Left Transition Weldment****75270-HW-KIT**

**Transition Hardware,**  
3 Anchor Bolts (3/4"), 5 Blockout Holders,  
10 Wooden Lag Bolts (3/8"), 10 Self-Tapping Screw (3/8"),  
2 J-Bolt (8") and 2 Nylock Nuts (1/2"-13)

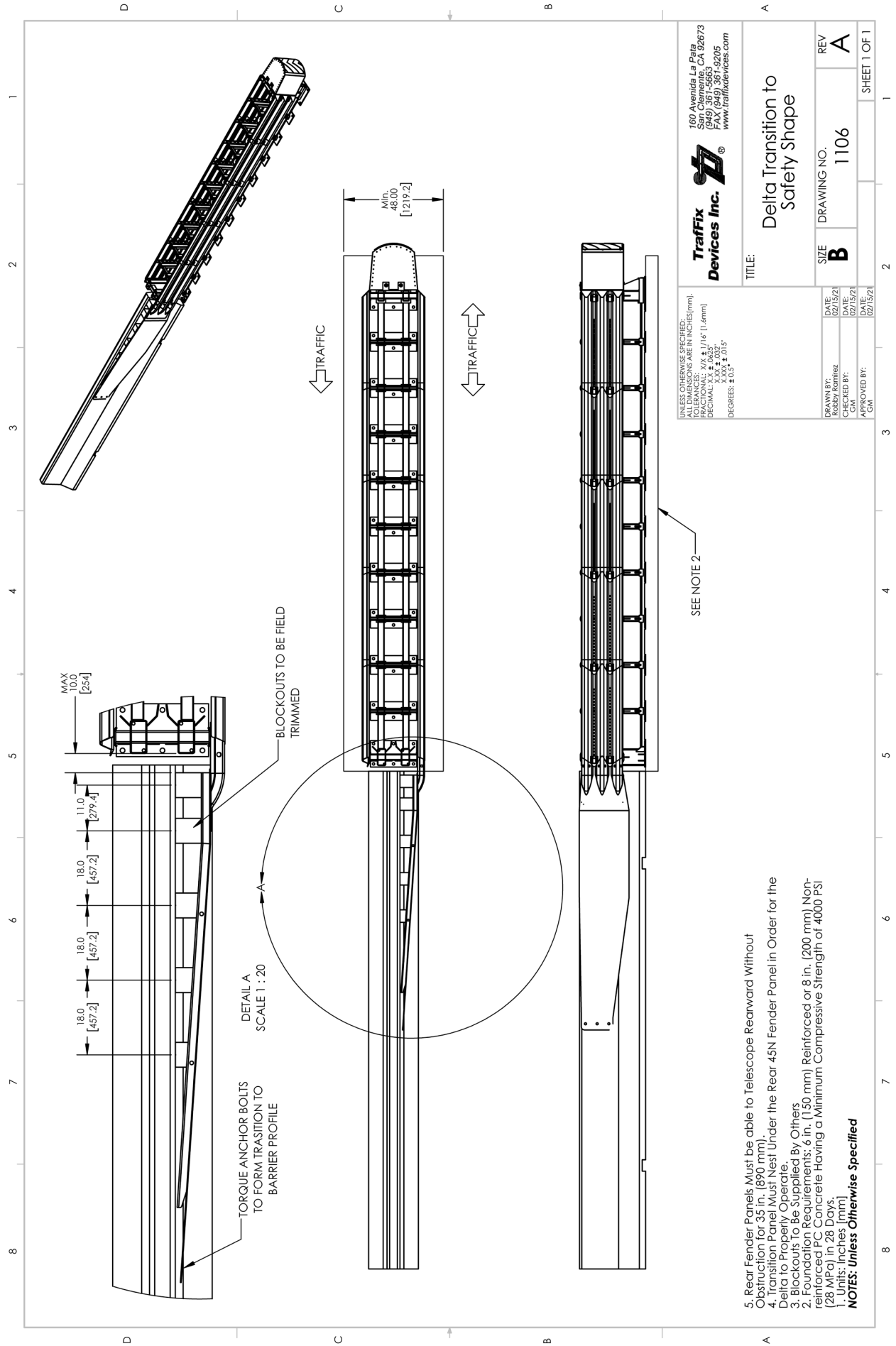


[illegible]

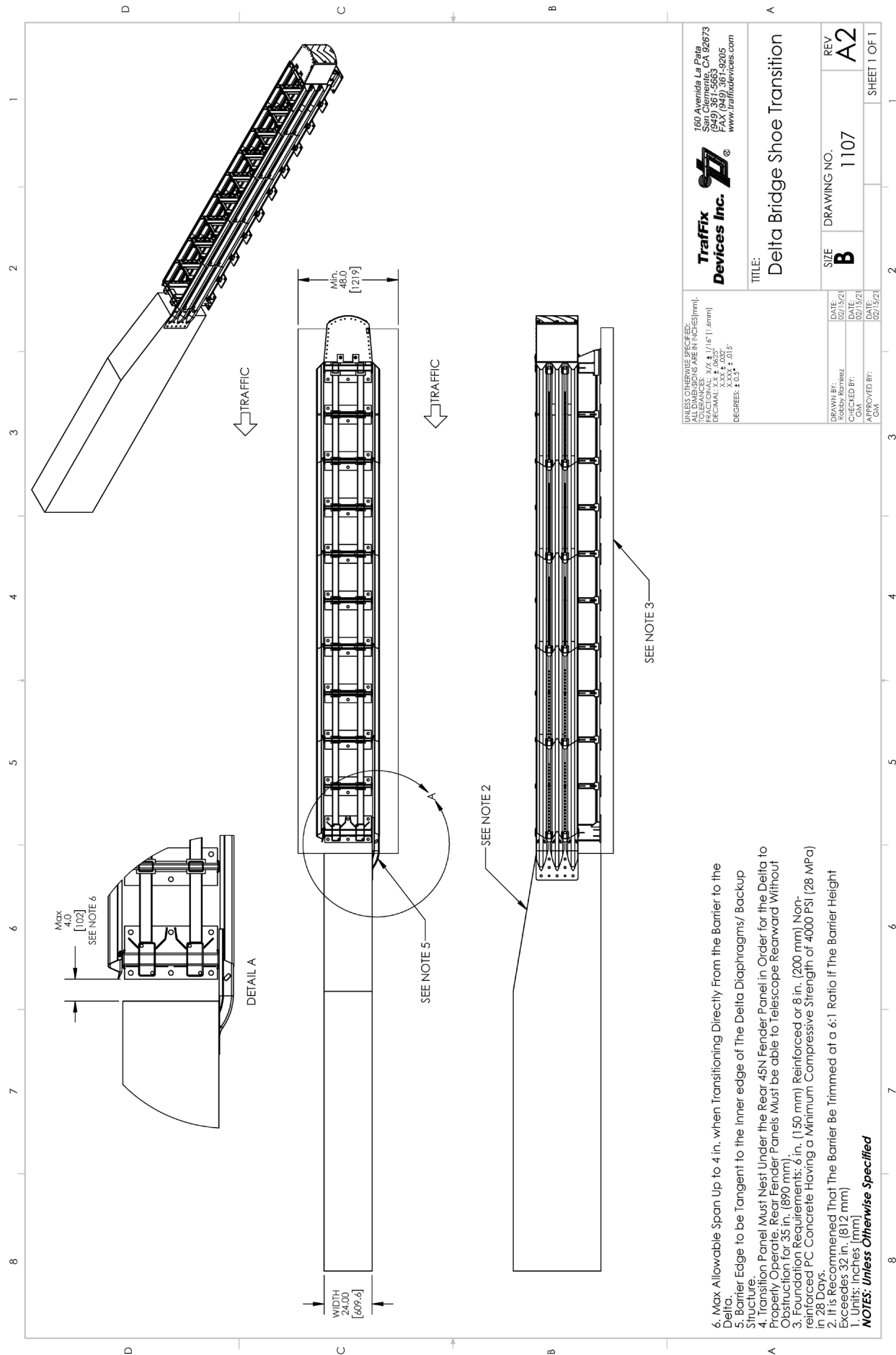
# Notes



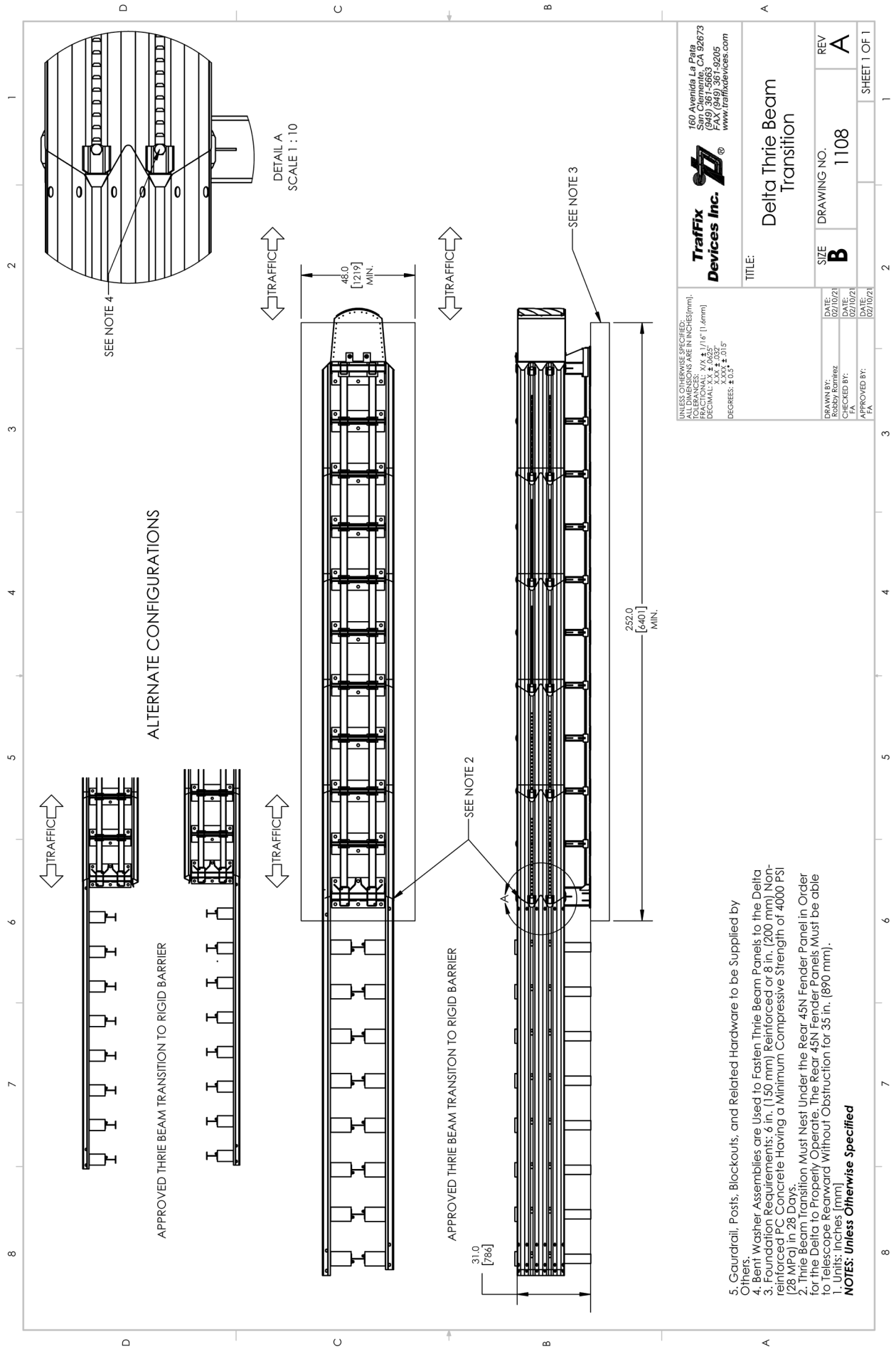




<b>UNLESS OTHERWISE SPECIFIED:</b> DIMENSIONS ARE IN INCHES (mm). TOLERANCES: FRACTIONS: 1/16" (1.6mm) DECIMALS: .005" (0.127mm) ANGLES: 30° ± 0.5° DEGREES: ± 0.5°		<b>TrafFix</b> <b>Devices Inc.</b> 160 Avenida La Pata San Jose, CA 95131 (949) 361-5663 FAX (949) 361-9205 www.traffixdevices.com	
TITLE: Delta Transition to Safety Shape		REV: A	
SIZE: B		DRAWING NO. 1106	
DRAWN BY: BARRY ROSENBERG	DATE: 02/15/21	CHECKED BY: GM	DATE: 02/15/21
APPROVED BY: GIN	DATE: 02/15/21	SHEET 1 OF 1	

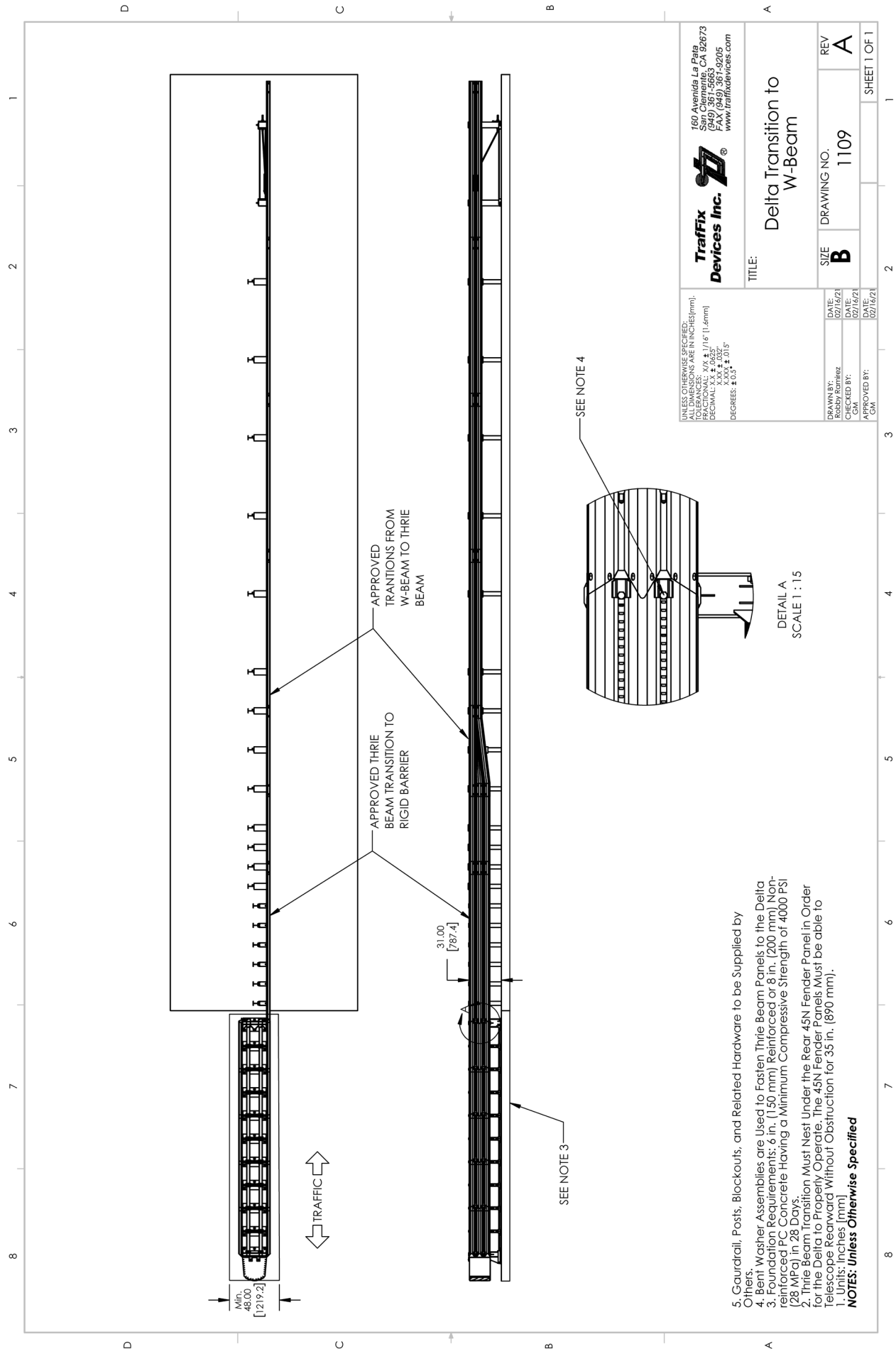


<b>TraFFix</b> <b>Devices Inc.</b>		160 Avenida La Plata San Clemente, CA 92673 (949) 361-5663 FAX (949) 361-9205 www.traffixdevices.com	
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES (mm). TOLERANCES: FRACTIONS: 1/8" ± 1/16" (1 mm) DECIMALS: .XX ± .005 ANGLES: ± 0.5°		TITLE: <b>Delta Bridge Shoe Transition</b>	
DRAWN BY: Robby Barreaz	DATE: 02/15/21	SIZE <b>B</b>	REV <b>A2</b>
CHECKED BY: GCM	DATE: 02/15/21	DRAWING NO. 1107	SHEET 1 OF 1
APPROVED BY: AGM	DATE: 02/15/21		

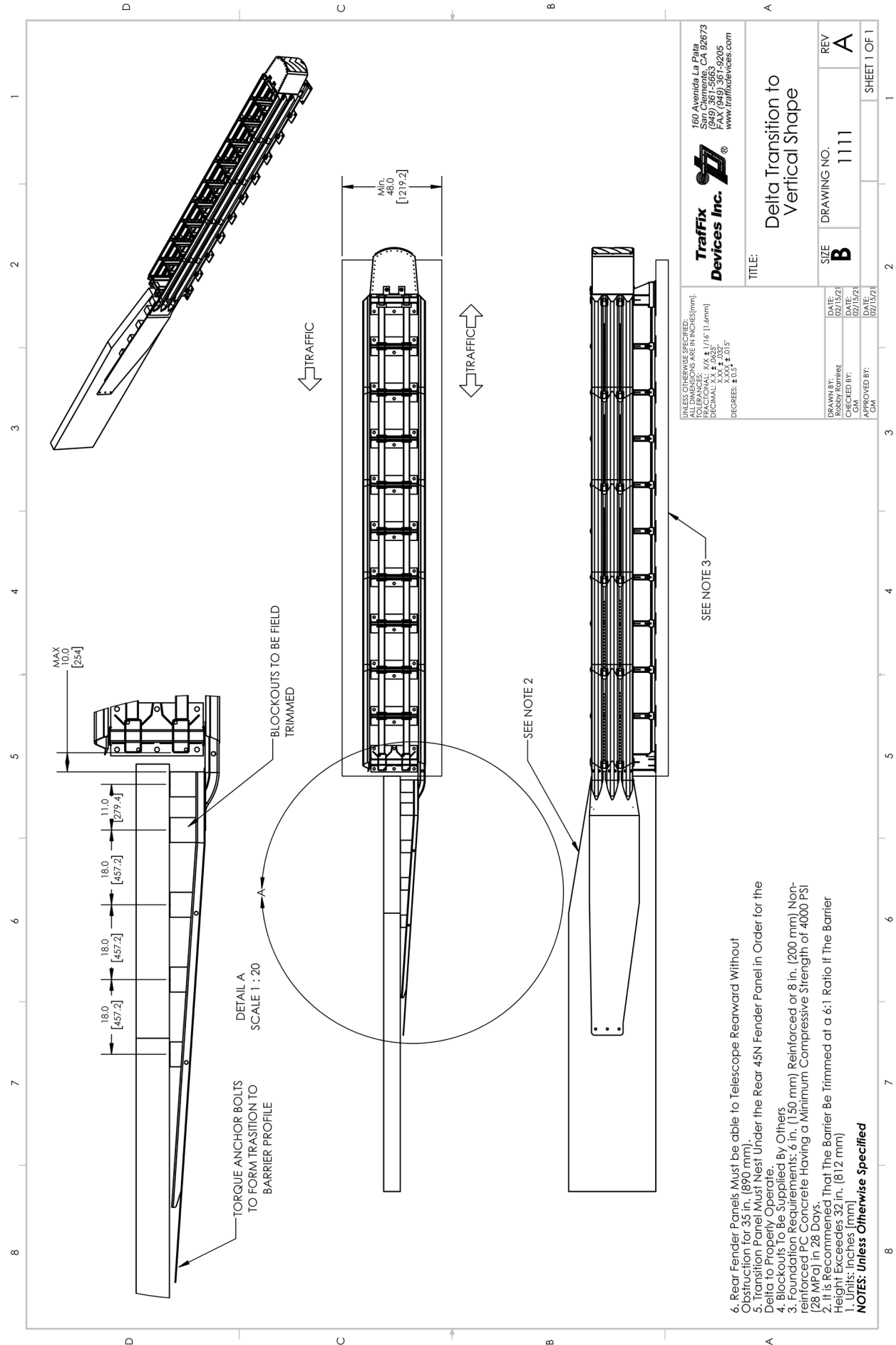


5. Gaurdail, Posts, Blockouts, and Related Hardware to be Supplied by Others.
4. Bent Washer Assemblies are Used to Fasten Thrie Beam Panels to the Delta
3. Foundation Requirements: 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non-reinforced PC Concrete Having a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
2. Thrie Beam Transition Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate. The Rear 45N Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).

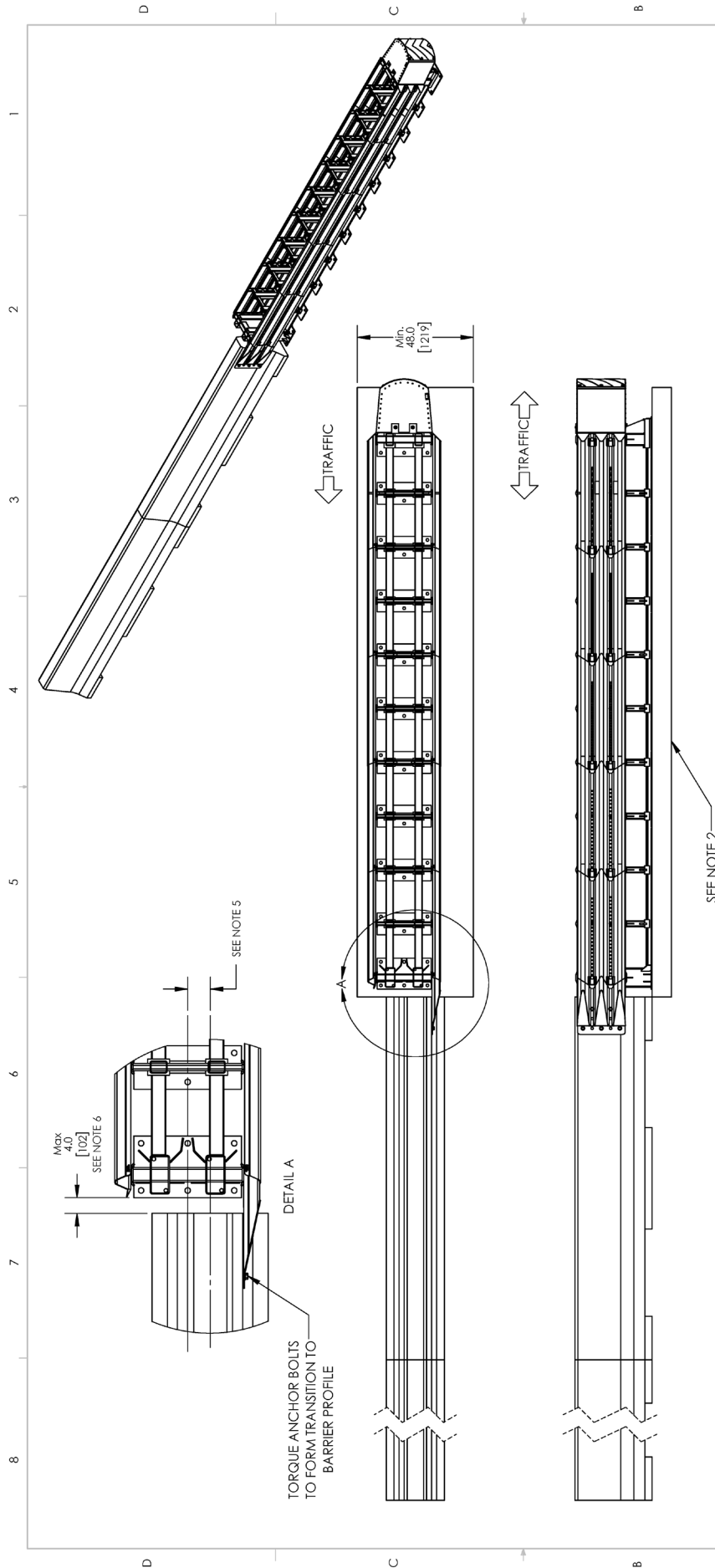
**NOTES: Unless Otherwise Specified**







<b>Traffix Inc.®</b> 160 Avenida La Palta San Clemente, CA 92673 (949) 361-9205 FAX (949) 361-9205 www.traffixdevices.com		TITLE: <b>Delta Transition to Vertical Shape</b>	
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES (mm). FRACTIONAL: X/X ± 1/16" (1.4mm) DECIMAL: X.X ± .005" X.XX ± .002" X.XX ± .015" DEGREES: ± 0.5°	DRAWN BY: Robby Ramirez	DATE: 02/15/21	REV <b>A</b>
CHECKED BY: CM	DATE: 02/15/21	SIZE <b>B</b>	DRAWING NO. <b>1111</b>
APPROVED BY: CM	DATE: 02/15/21	SHEET 1 OF 1	1



6. Max Allowable Span Up to 4 in. when Transitioning Directly From the Barrier to the Delta.
5. Delta Crash Cushion to be Positioned Offset from Centerline of Barrier for TDI Bridge Shoe Transition Installation.
4. Barrier Edge to be Tangent to the Inner edge of The Delta Diaphragms/ Backup Structure.
3. Transition Panel Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate. Rear Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
2. Foundation Requirements: 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non-reinforced PC Concrete Having a Minimum Compaction of 4000 PSI (28 MPa) in 28 Days. Asphalt Shall Have a Minimum Compaction of 95% and a Minimum Depth of 6" (152 mm) over Compacted Subbase or 3" (76 mm) over Concrete.
1. Units: Inches [mm].

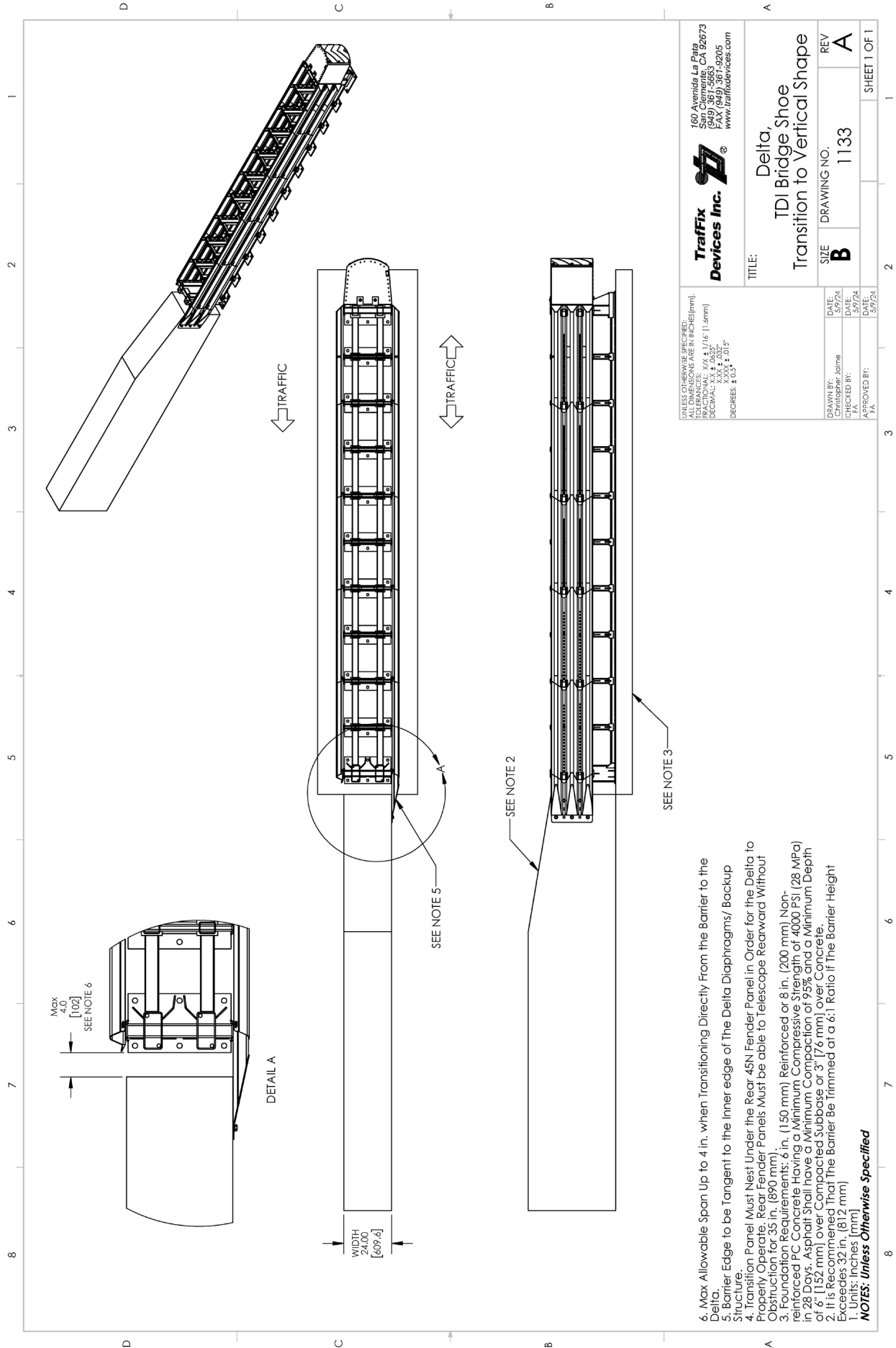
**NOTES: Unless Otherwise Specified**

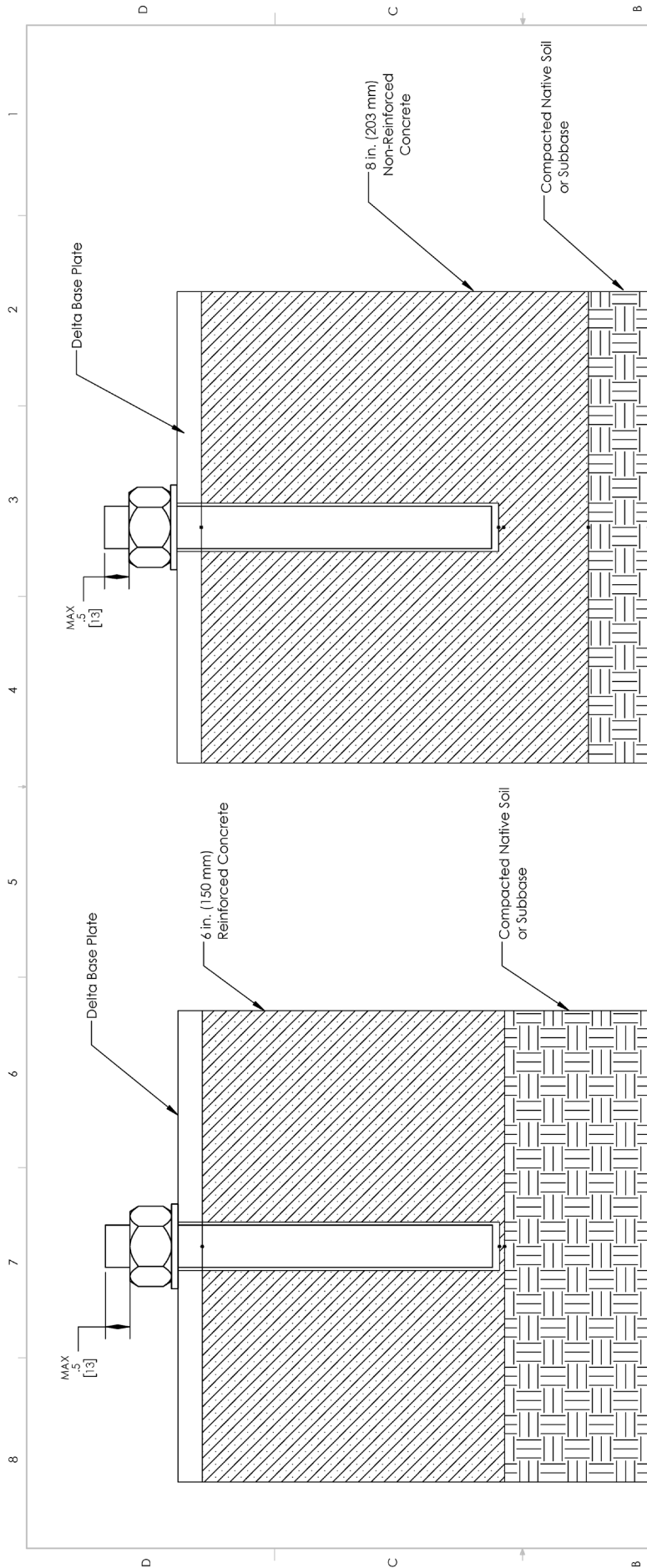
UNLESS OTHERWISE SPECIFIED:  
TOLERANCES: UNLESS NOTED:  
DIMENSIONS: ± 1/16 (1.6 mm)  
DECIMALS: ± 0.031  
FRACTIONS: ± 0.031  
DECIMALS: ± 0.031

**Traffix Inc.**  
160 Avenida La Playa  
San Jose, CA 95063  
(949) 361-5563  
FAX (949) 361-9205  
www.traffixdevices.com

TITLE: Delta,  
TDI Bridge Shoe  
Transition to Safety Shape

DATE:	DATE:	DATE:	DATE:
5/9/24	5/9/24	5/9/24	5/9/24
DRAWN BY:	CHECKED BY:	APPROVED BY:	
Christopher James	PA	PA	
SIZE	DRAWING NO.	REV	
B	1132	A	
SHEET 1 OF 1			

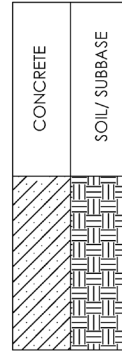




6 IN. (150 mm) MIN REINFORCED  
CONCRETE PAD  
\*SEE SUGGESTED REBAR LAYOUT IN  
INSTALLATION MANUAL

8 in. (203 mm) MIN NON-REINFORCED CONCRETE PAD

### LEGEND



3. Anchor Rod Shall not Extend More Than .5 in. (13 mm) Past Anchor Nut;
2. Concrete Shall Have a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
1. Units: inches (mm)

**NOTES: Unless Otherwise Specified**

<b>Traffix Inc.</b> <b>Devices Inc.</b>		160 Avenida La Pita San Jose, CA 95128 (949) 361-5663 FAX (949) 361-9205 www.traffixdevices.com	
UNLESS OTHERWISE SPECIFIED: (TOLERANCES ARE IN INCHES (mm)) DIMENSIONS: .005" (0.13 mm) DECIMALS: .005" (0.13 mm) FRACTIONS: 1/16" (1.6 mm) ANGLES: ± 0.3° SURFACES: ± 0.01"		TITLE: Delta Foundation Examples	
DRAWN BY: Robby Ramirez	DATE: 03/16/21	SIZE: <b>B</b>	REV: <b>A1</b>
CHECKED BY: GCM	DATE: 03/16/21	DRAWING NO.: 1110	SHEET 1 OF 2
APPROVED BY: GCM	DATE: 03/16/21		





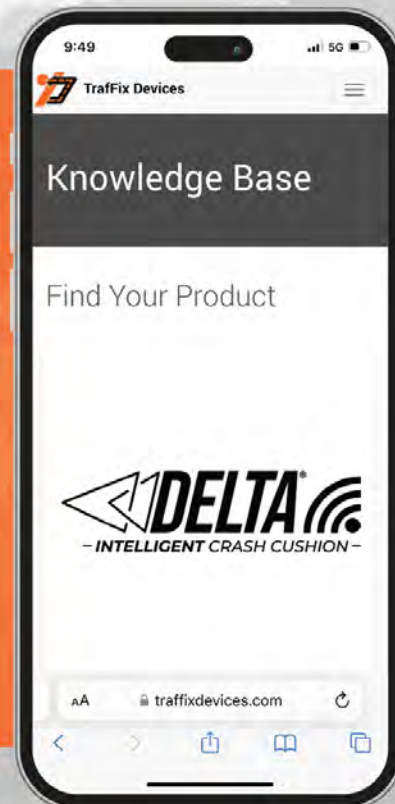
+ INTRODUCING TDI'S NEW PAPERLESS

# Product Knowledge Base

In an effort to cut down on our paper waste and make sure that you can easily access anything you need to know about your TDI product, we're introducing our new digital Product Knowledge Base. You'll be able to find all general and technical information about your TDI products through the simple self-serve portal.

**Scan the QR code or visit the link below to start browsing resources like manuals, replacement part guides, video demonstrations, FAQs + more!**

**Scan the code to access  
our new knowledge base!**



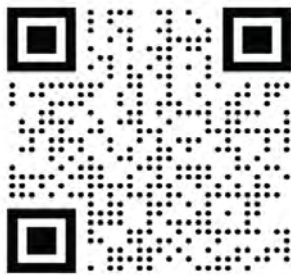
Or visit **[www.traffixdevices.com/KB](http://www.traffixdevices.com/KB)**  
from your computer, tablet, or mobile device!

+ INTRODUCING THE SIGNIFICANTLY SIMPLE

# DELTA Crash Cushion Online Training Course

Want to become an expert on the innovative DELTA Crash Cushion? TDI is now offering a **completely free online training course** that will teach you and your team all of the ins and outs of the DELTA's installation, repair, and maintenance process. The course is just as simple as the DELTA's innovative design and **can be completed in as little as an hour**. Even after completion, the course becomes an invaluable resource that can be accessed for reference in the field.

**Sound like something for your team? Follow these steps to sign up:**



**Scan for access to  
TDI University**

1. Scan the QR code or visit <https://go.bluevolt.com/TraFFix/s/> to access the TraFFix University home page.
2. Sign up and apply for the DELTA training course.
3. Once your application has been approved, simply complete the course modules and assessments through the university portal on your PC, tablet, or smart phone.
4. Earn your completion badge and wear it proudly!





# Regional Sales Manager

<p><b>Northeast Territory Office</b> VA, WV, DE, MD, NJ, NY, PA, CT, MA, RI, NH, VT, ME, D.C. <b>Mike Herlehy</b> <b>(585) 267-9970 Office</b> (949) 573-9239 Fax <a href="mailto:mherlehy@traffixdevices.com">mherlehy@traffixdevices.com</a></p>	<p><b>Southeast Territory Office</b> TN, NC, SC, GA, MS, AL, FL <b>Lary Hudoff</b> <b>(770) 778-8281 Office</b> (949) 325-6059 Fax <a href="mailto:lhudoff@traffixdevices.com">lhudoff@traffixdevices.com</a></p>
<p><b>Northwest Territory Office</b> MT, UT, ID, WA, OR, NV, CO, WY <b>Cary LeMonds</b> <b>(801) 979-7099 Office</b> (949) 573-9290 Fax <a href="mailto:clemonds@traffixdevices.com">clemonds@traffixdevices.com</a></p>	<p><b>Midwest Territory Office</b> OH, MI, IN, KY, IL, WI, MN, ND, SD, IA, MO <b>Dave H. Lindquist</b> <b>(630) 605-1273 Office</b> (949) 573-9240 Fax <a href="mailto:dlindquist@traffixdevices.com">dlindquist@traffixdevices.com</a></p>
<p><b>Western Territory Office</b> CA, HI, AK, AZ <b>Lawrence Berg</b> <b>(949) 350-7048 Office</b> (949) 573-9267 Fax <a href="mailto:lberg@traffixdevices.com">lberg@traffixdevices.com</a></p>	<p><b>Southwest Territory Office</b> TX, OK, KS, NE, NM, AR, LA <b>John Gense</b> <b>(214) 704-1476 Office</b> (949) 573-9291 Fax <a href="mailto:jgense@traffixdevices.com">jgense@traffixdevices.com</a></p>
<p><b>Chief Revenue Officer</b> <b>Chris Giordano</b> <b>(216) 233-3273 Office</b> (949) 573-9264 Fax <a href="mailto:cgiordano@traffixdevices.com">cgiordano@traffixdevices.com</a></p>	<div><p><b><u>To Place Orders</u></b> <b>Email: <a href="mailto:orders@traffixdevices.com">orders@traffixdevices.com</a></b> <b>Office: (949) 361-5663</b> <b>Fax: (949) 573-9250</b></p></div>

# Customer Support Services

## TraFFix Devices, Inc. Headquarters

160 Avenida La Pata, San Clemente, CA 92679

Email : [info@traffixdevices.com](mailto:info@traffixdevices.com)

Phone: (949) 361-5663 Fax: (949) 573-9250

Hours: Monday - Friday

7:30 AM - 4:30 PM

[www.traffixdevices.com](http://www.traffixdevices.com)

