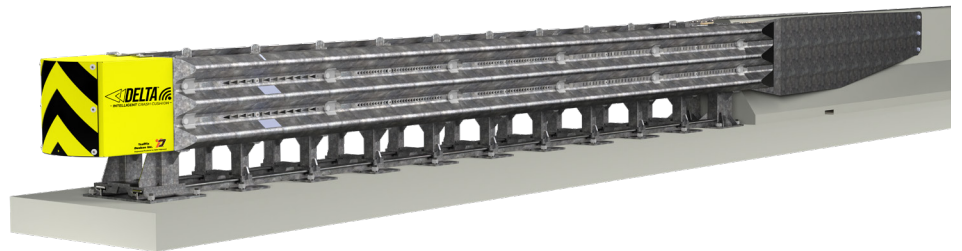
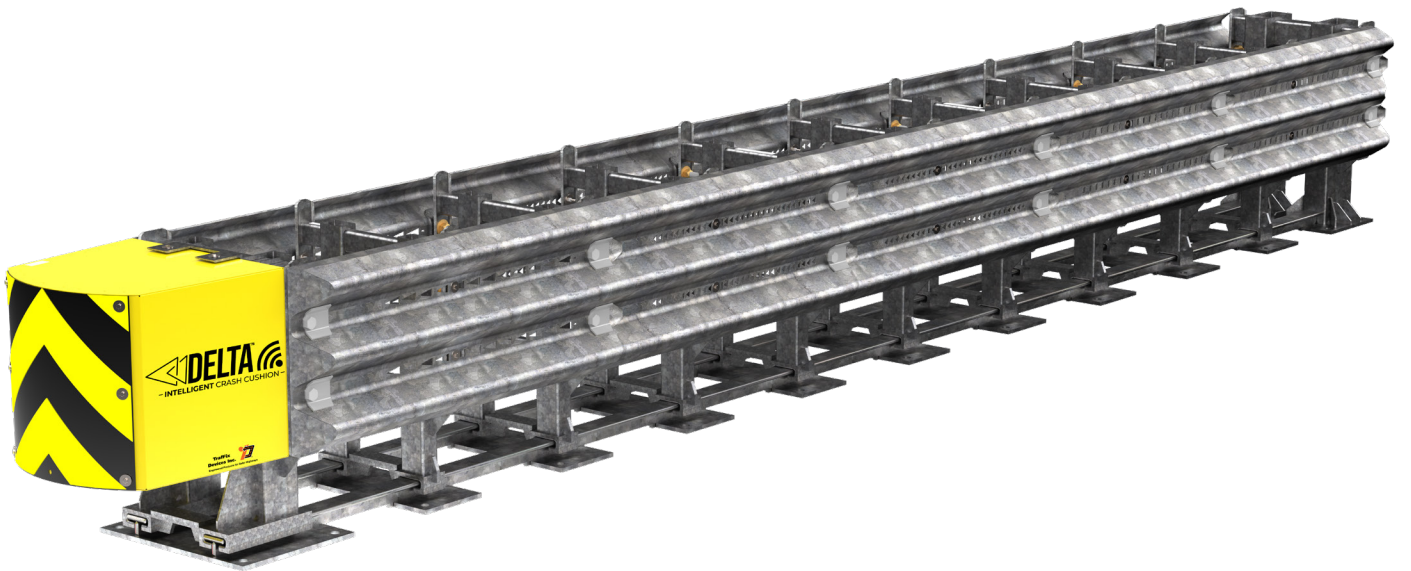


Delta[®] Intelligent Crash Cushion Installation Guide



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.



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.

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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:

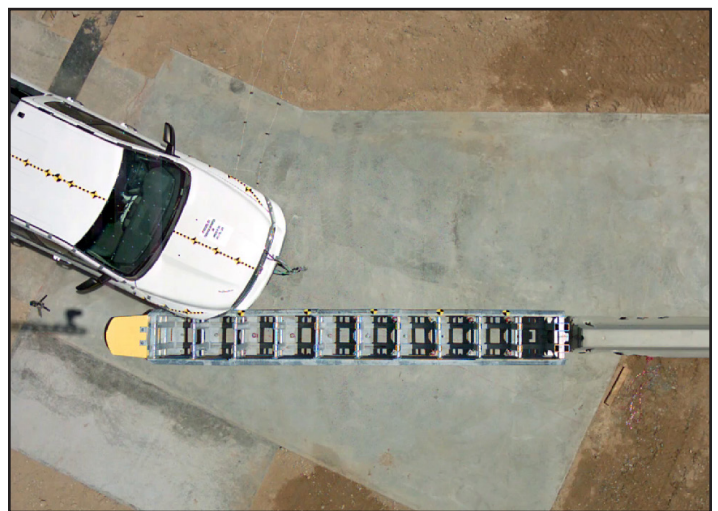
**Email this Form along with Pictures to Traffix Devices
Email: info@traffixdevices.com Phone: (949) 361-5663**

Overview

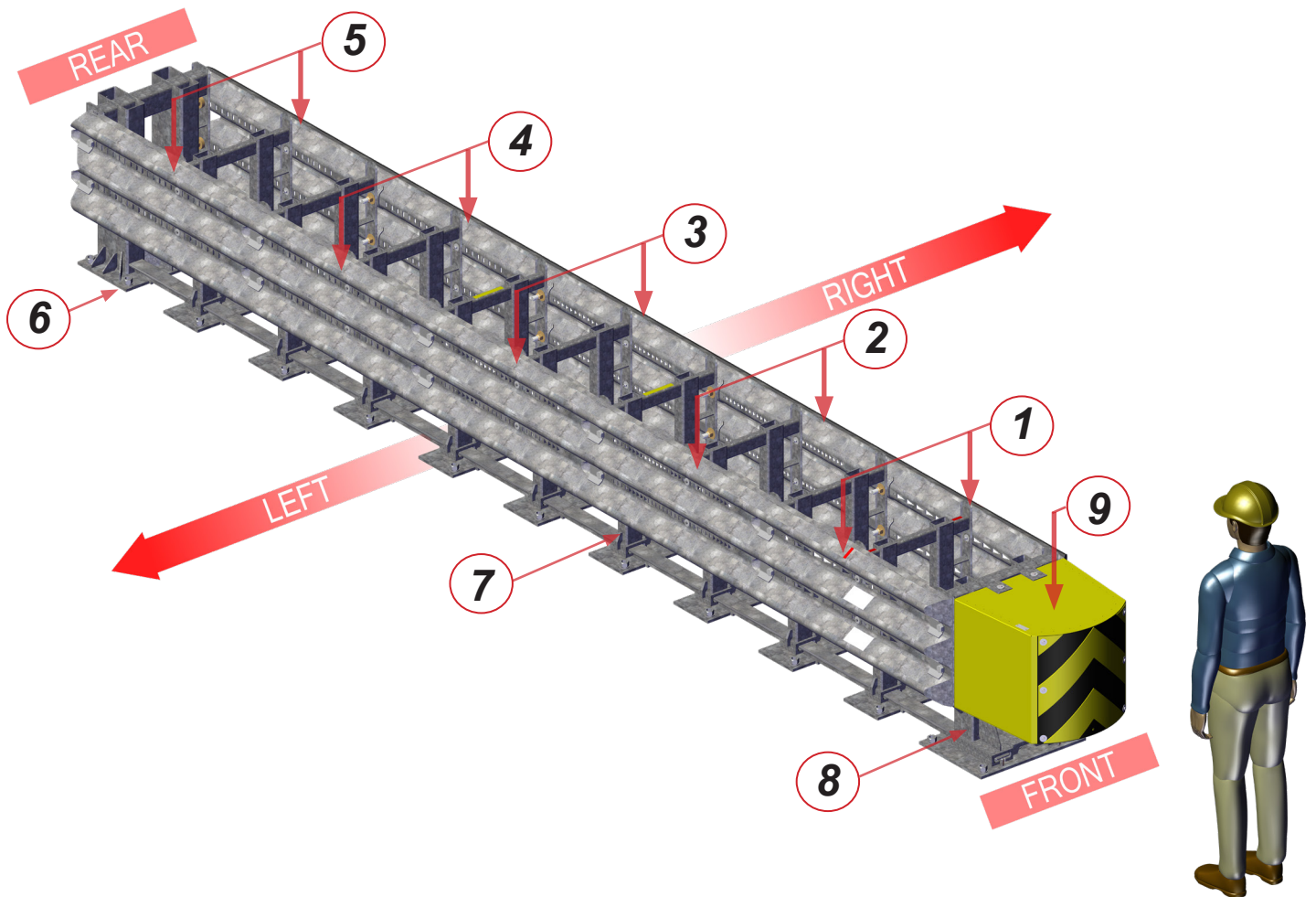
The Delta ICC is a Non-Gating Redirective crash cushion manufactured by Traffix Devices, Inc. The Delta ICC has passed all required AASHTO MASH crash tests and can be used in Uni-Directional or Bi-Directional applications. The Delta ICC was designed to be simple and effective in protecting errant vehicles 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

② - Fender Panel 2N

③ - Fender Panel 3N

④ - Fender Panel 45N

⑤ - Fender Panel 45N (rear most panel)

⑥ - Track

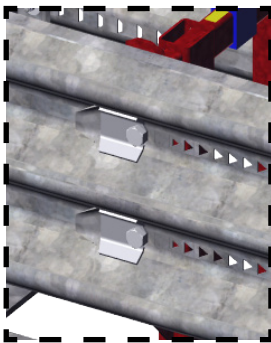
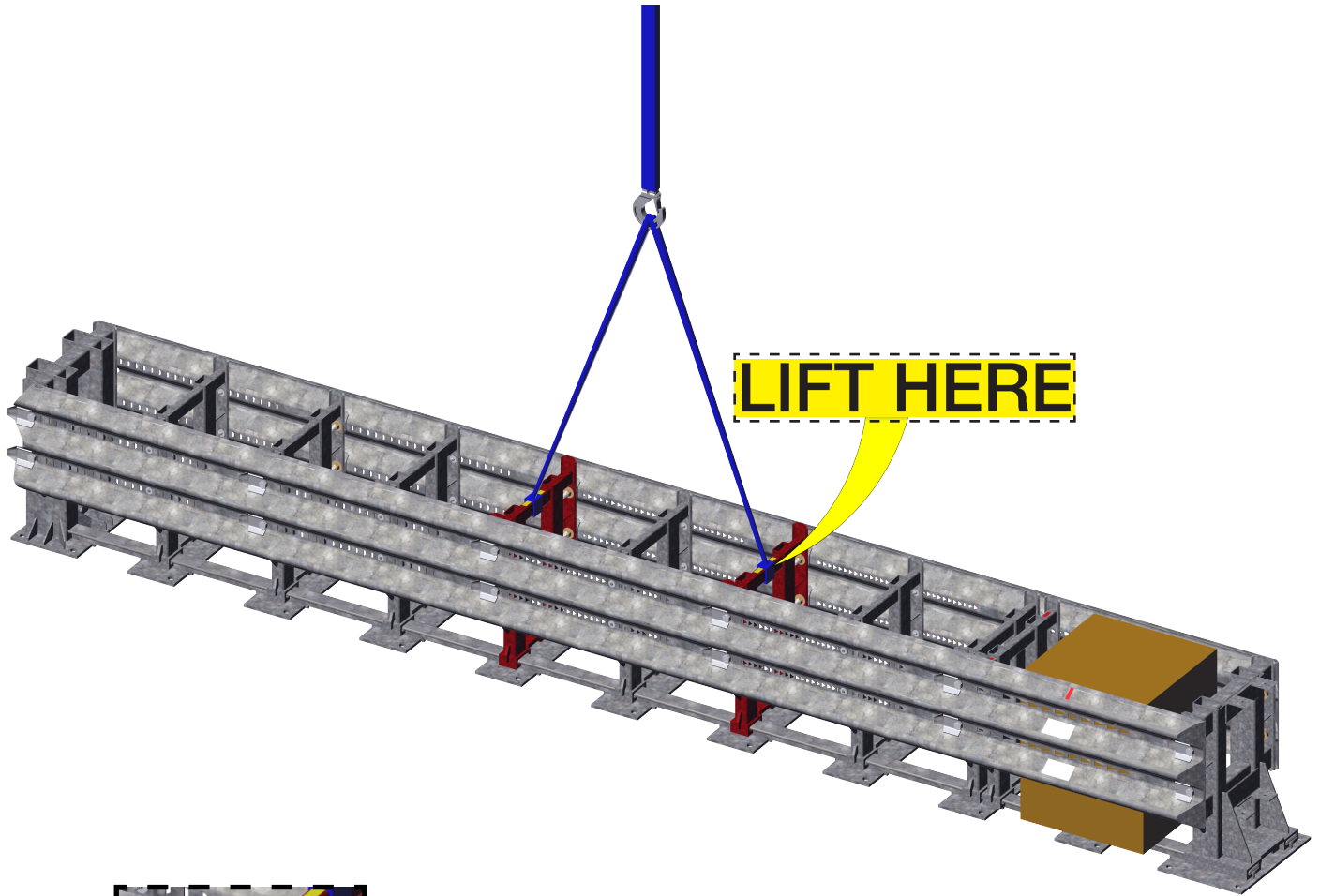
⑦ - Diaphragm

⑧ - Front Impact Head Diaphragm

⑨ - Front Attenuation Module

Delta Lifting Points

Acceptable Lifting Diaphragms



Only Lift From Diaphragms That Have A Wing Washer Assembly



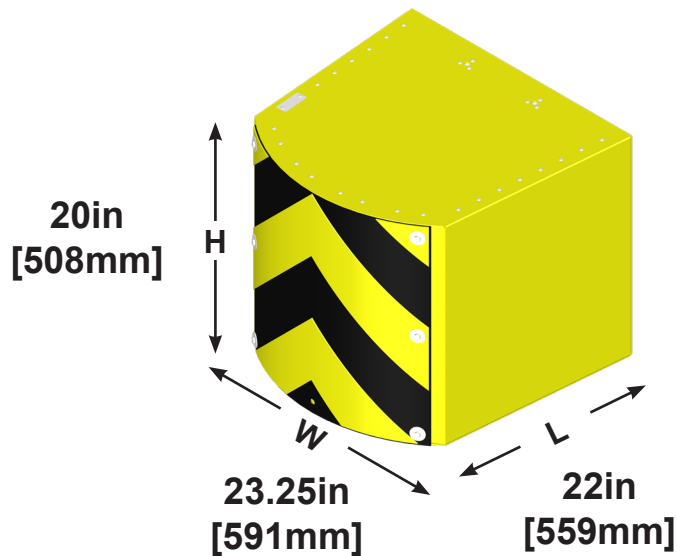
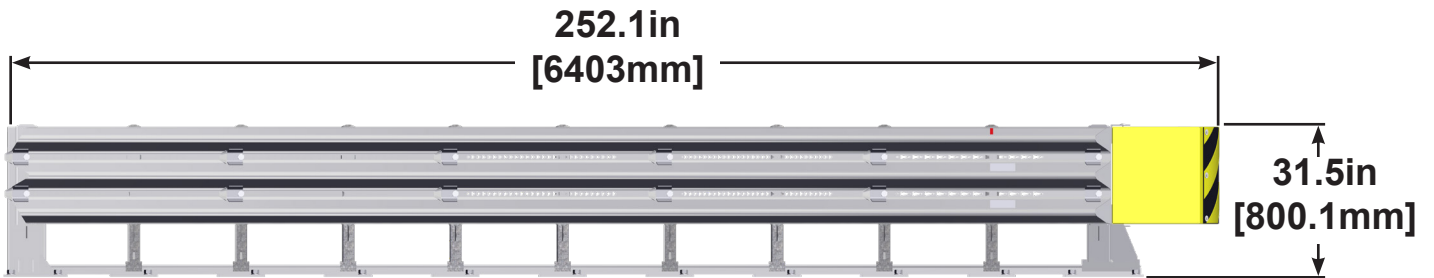
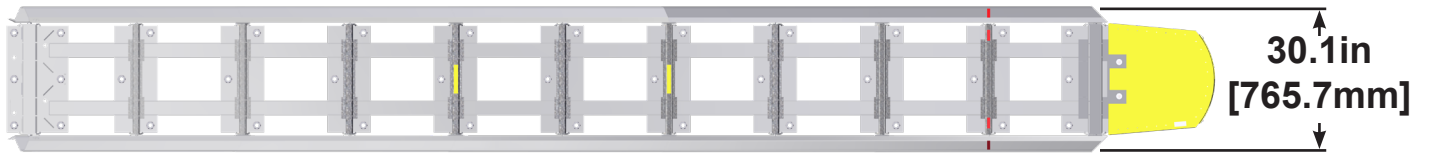
NOTE: Do Not Lift from the Thrie Beam Fender Panels or Pattern Cutout

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

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 ^(See Pg 13) **(Circle One):** Uni- Directional Bi-Directional Gore Point

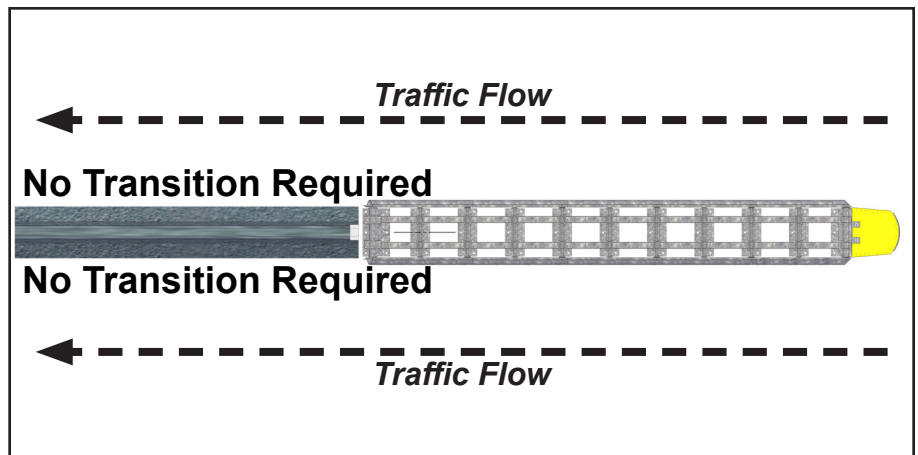
7. Take several photos of the installation site showing foundation, any obstacles, object(s) being protected (including measurements), exit/highway signs, coordinates and any other images to include with this form. If any site plans or other documentation regarding this site are available, please send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

Product Placement

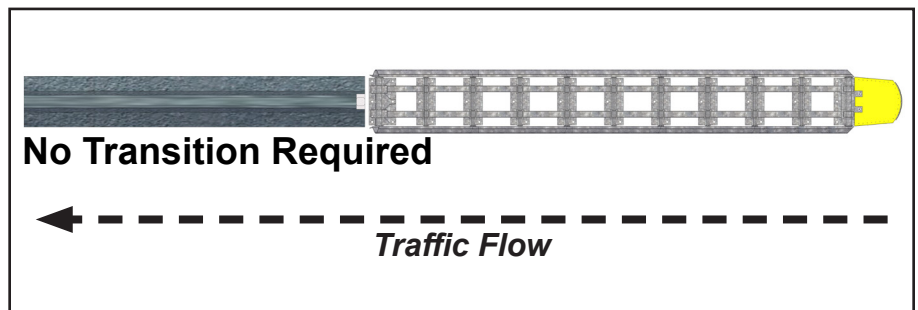
The Delta ICC can be used in both Bi-Directional and Uni-Directional installations. (Note, it is important to know when a transition is necessary). If there is Bi-Directional traffic flow, it is critical to protect the rear of the Delta ICC in the reverse direction with a transition.

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

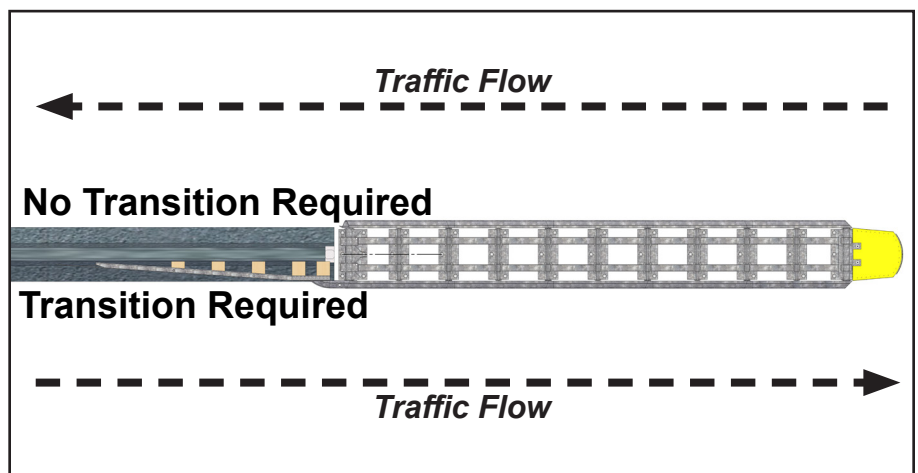
Gore Point Narrow Hazard



Uni-Directional Narrow Hazard



Bi-Directional Narrow Hazard



Installation Site

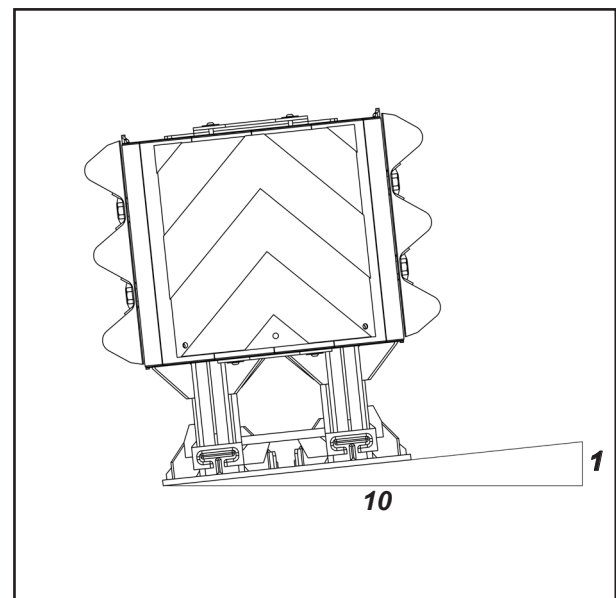
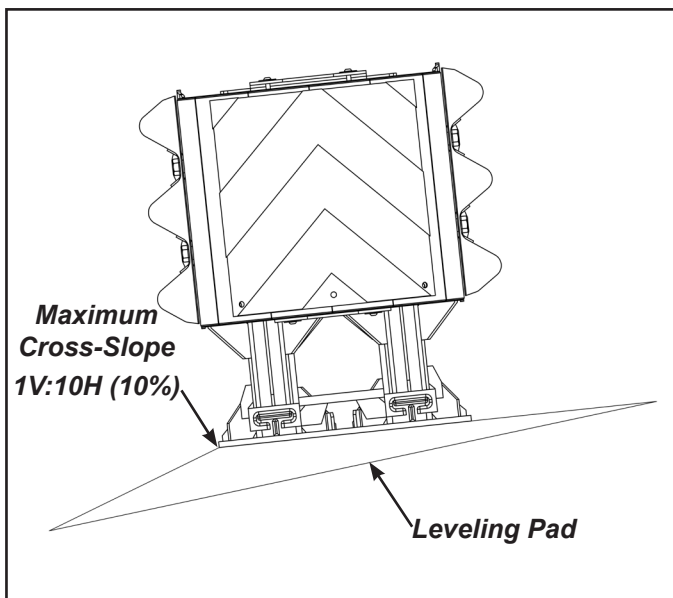
The Delta ICC can be installed on various foundation types including concrete, asphalt, or a hybrid of the two. The foundation and surrounding grading should comply with the recommendations in the latest version of the AASHTO Roadside Design Guide as well as local and state government specifications. 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:

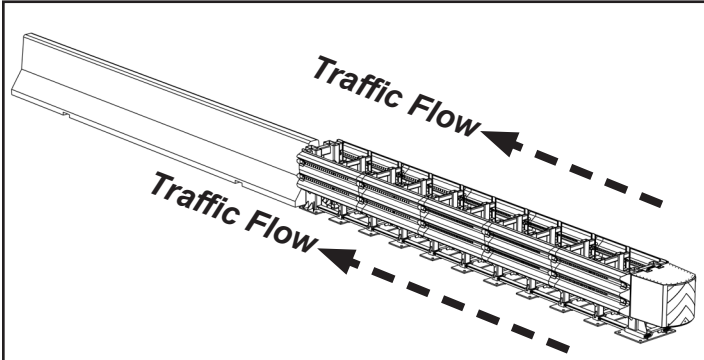
- 6 in. (150 mm) Reinforced Concrete
- 8 in. (203 mm) Non-Reinforced Concrete
- 6 in. (150 mm) Asphalt Over Compacted Subbase
- 3 in. (75 mm) Asphalt Over Concrete
- 8 in. (203 mm) Asphalt
- See *Appendix* (Pg 38 - 47)

Cross-Slope

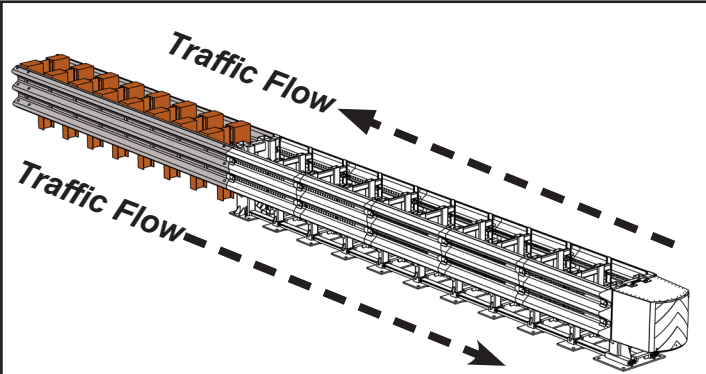
The foundation must be flat with longitudinal and lateral slopes of 1V:10H or less. If the cross-slope exceeds 1V:10H, a leveling pad may be used to achieve an acceptable cross-slope.



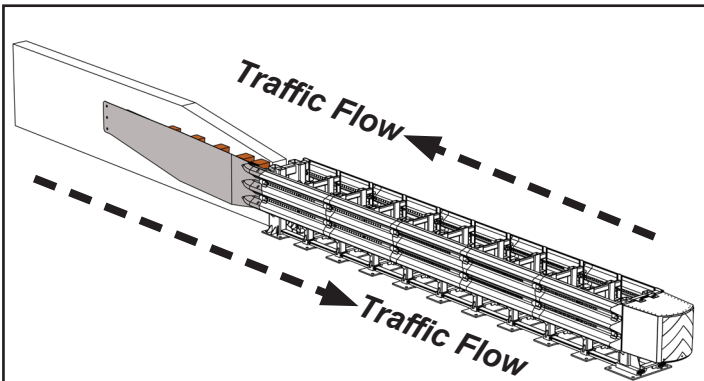
Transition



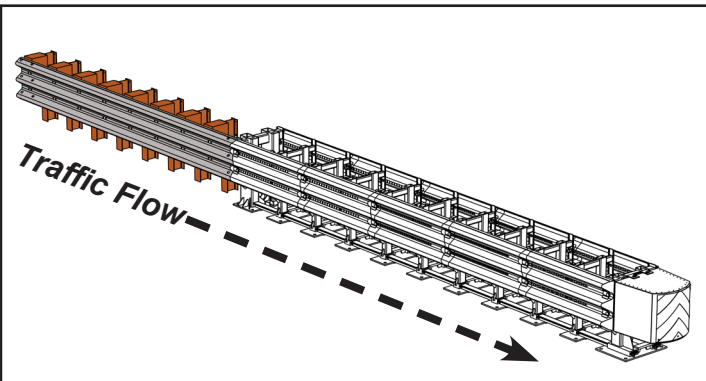
No Transition



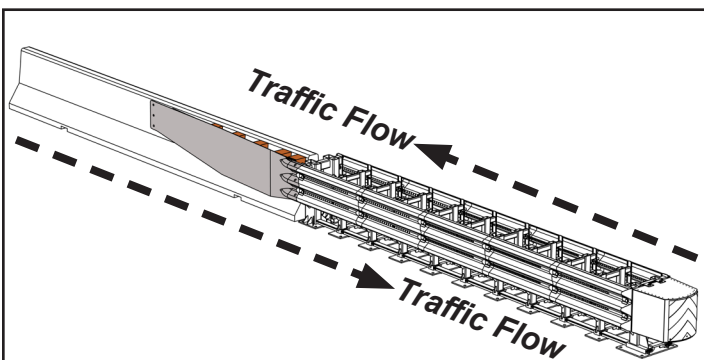
Thrie-Beam Transition



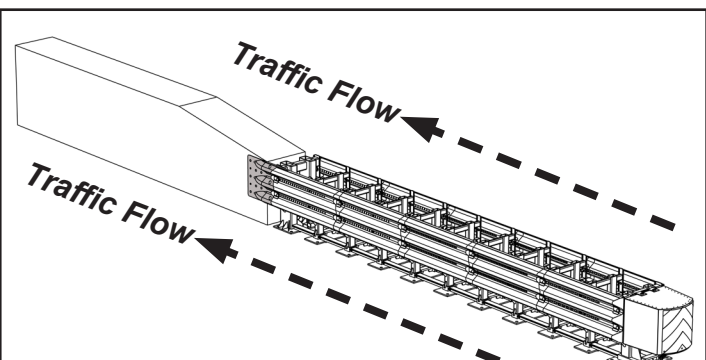
Narrow Vertical Face Transition



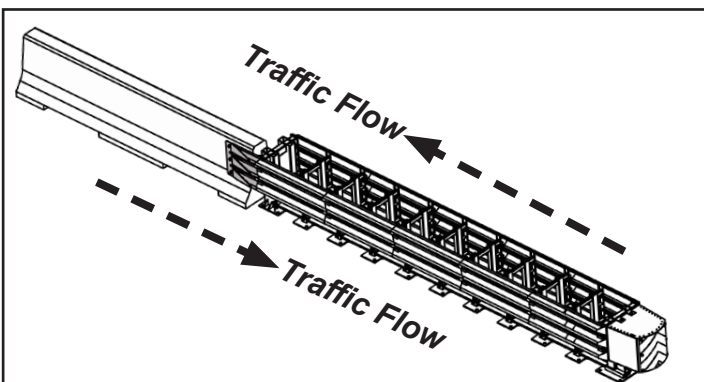
Thrie-Beam Roadside Transition



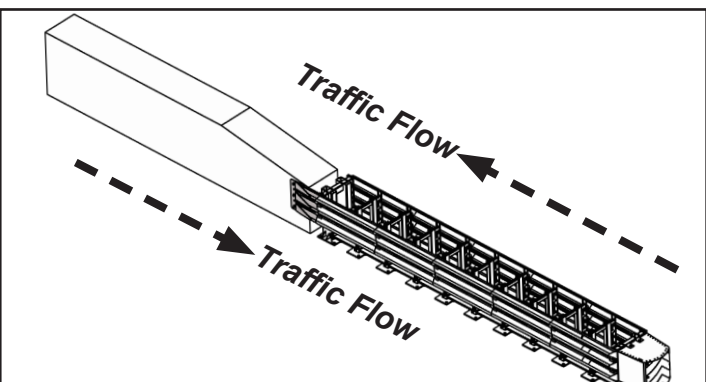
Safety Shape Transition



Bridge Shoe Roadside Transition



Safety Shape Transition



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



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

Sentinel Activation

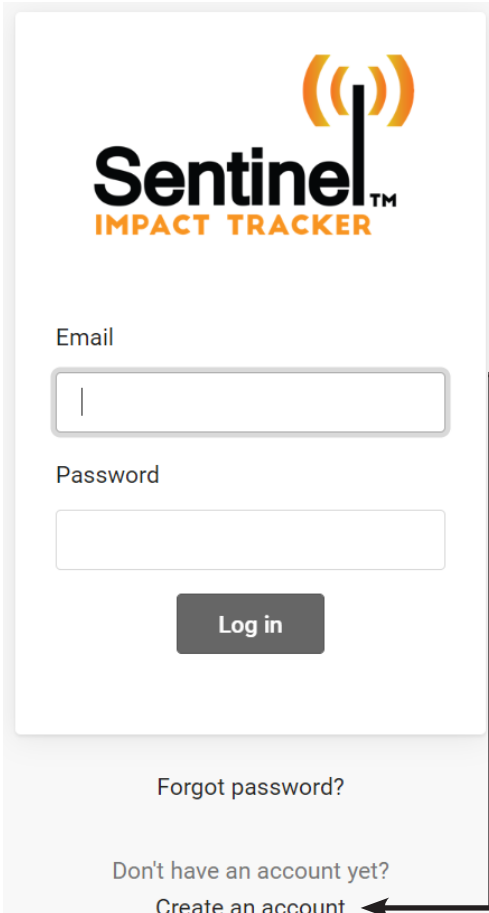


Serial Number:


Sentinel Serial Number:



← **Scan Me!**
Or Visit
sentinel.traffixdevices.com/log-in



The screenshot shows the Sentinel Impact Tracker login interface. At the top is the logo. Below it are two input fields: 'Email' and 'Password'. A 'Log in' button is positioned below the password field. At the bottom, there are two links: 'Forgot password?' and 'Don't have an account yet? Create an account'. An arrow points from the 'Create an account' link to the corresponding instruction in the text to the right.

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 or email sentinel support@traffixdevices.com

Installation

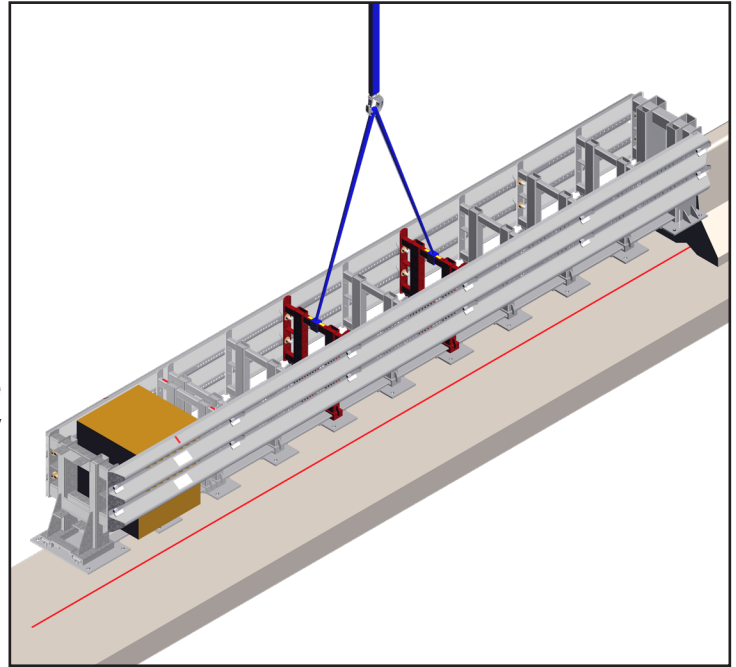


Step 1

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.

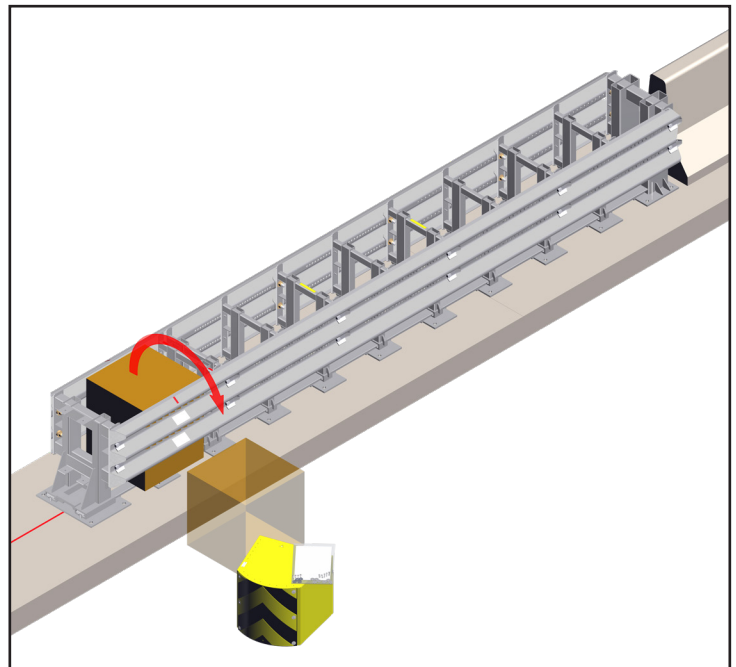
⚠ NOTE: STAY OUT FROM UNDER SUSPENDED LOADS.



Step 2

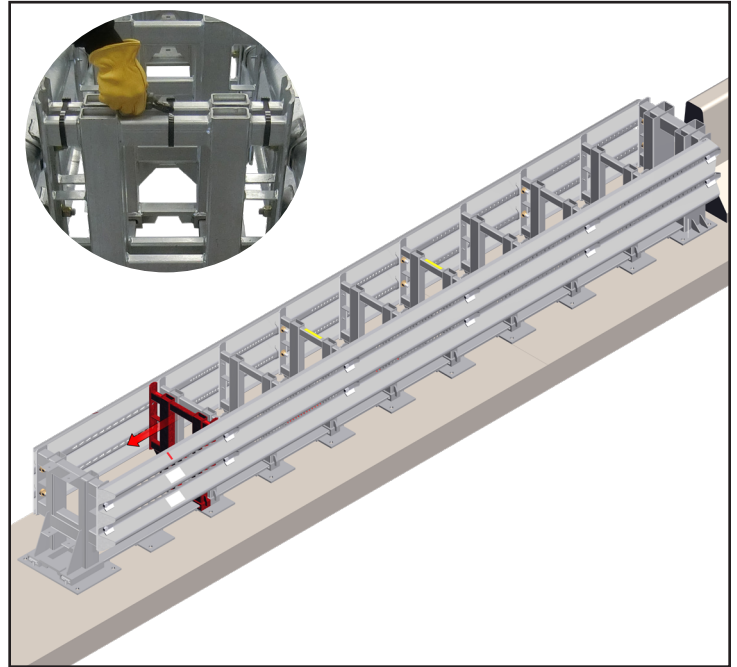
Remove cardboard box and place in safe area. Box contains Front Attenuation Module, Module Installation Hardware and Sacrificial Hardware for Floating Diaphragm.

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



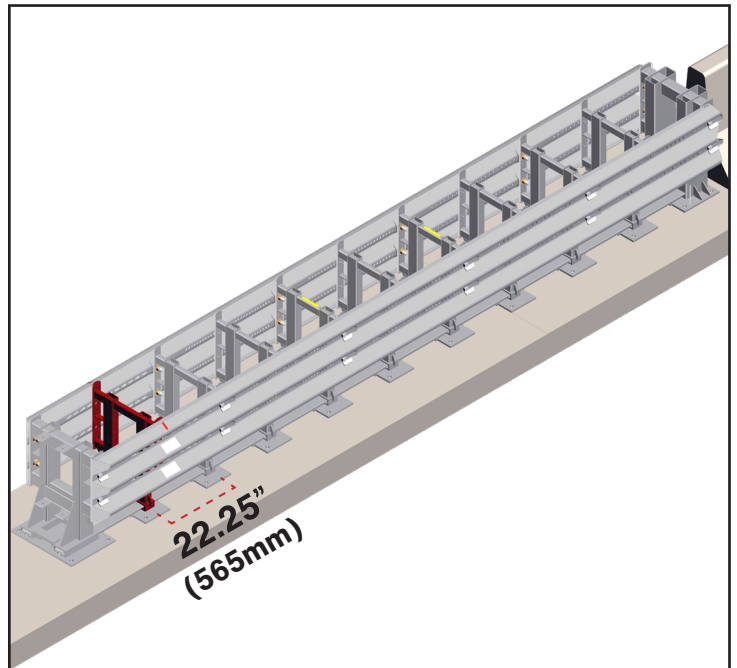
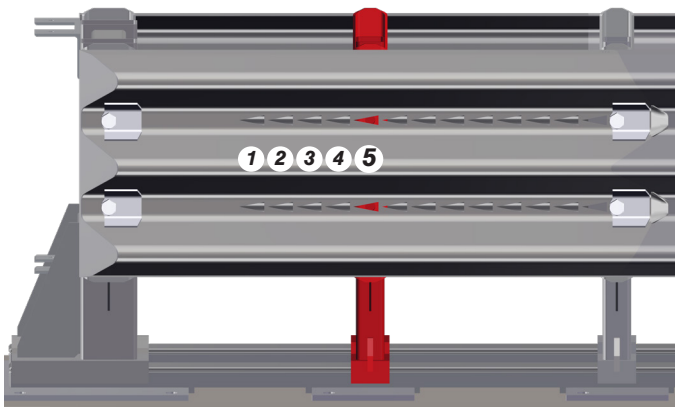
Step 3

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



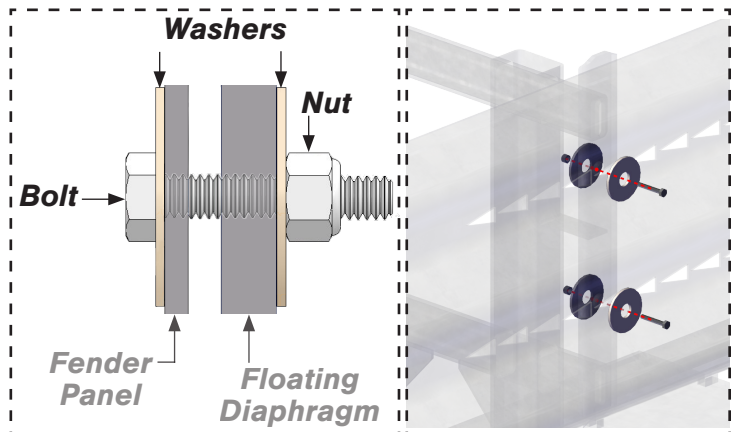
Step 4

Position Floating Diaphragm to be spaced 22.25" ± 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.



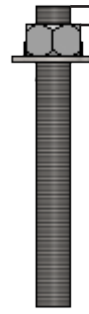
Step 6

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)



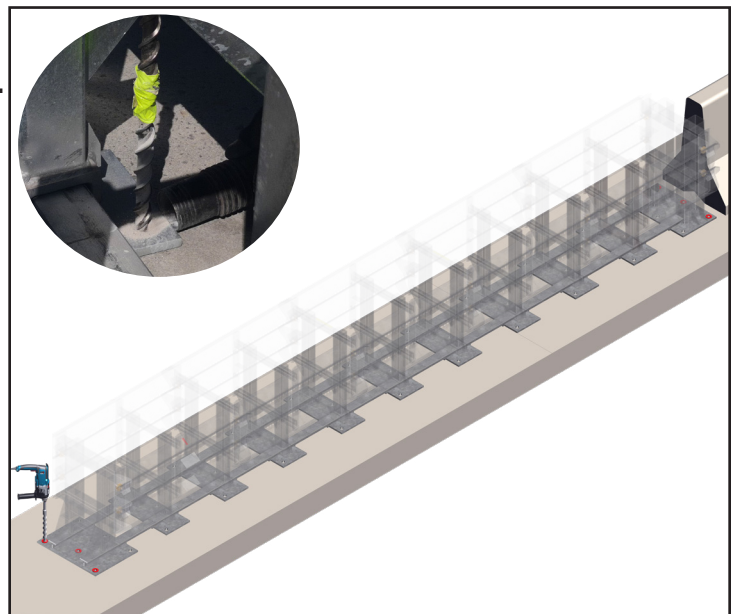
NOTE:
Anchor bolt shall not exceed .5 in (13 mm) past the anchor nut on all 39 anchor bolt assemblies.

<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.

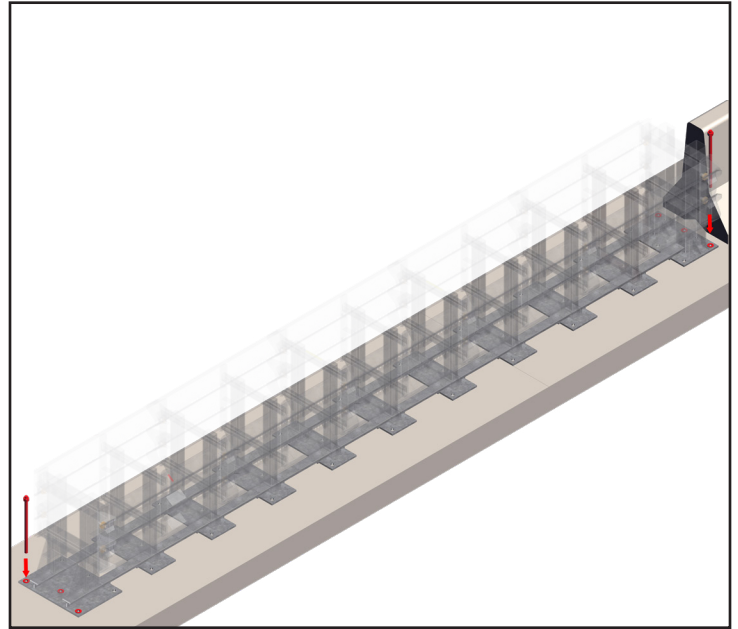
Tip: Clean the holes as you go, this reduces cleaning time and exposure to harmful dust particles.



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.

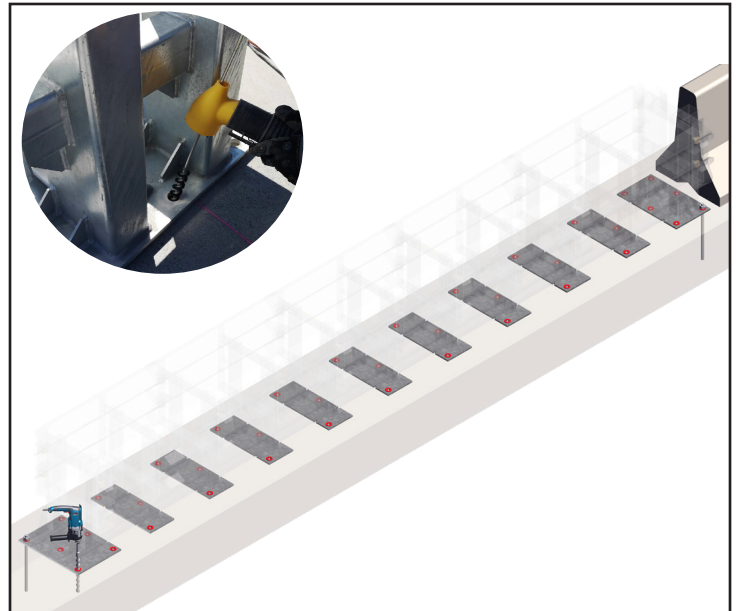


Step 9

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.

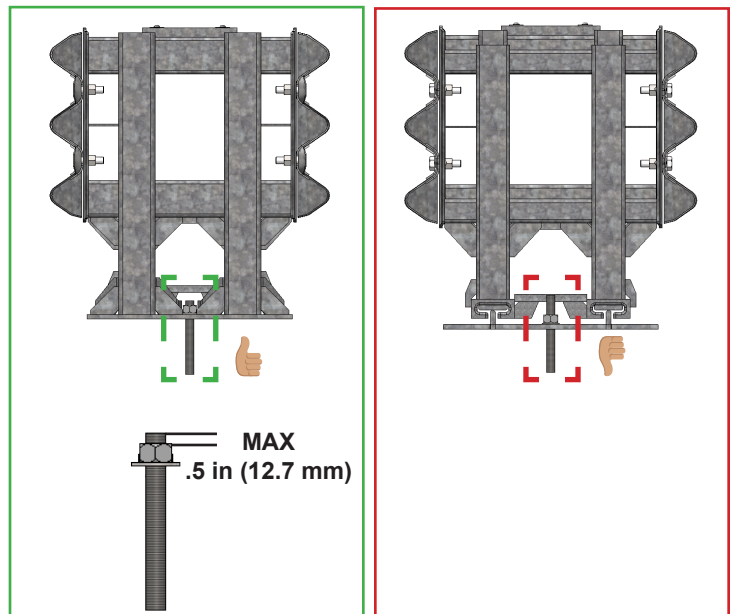
NOTE: Always follow manufacturers recommendation for cleaning and preparing bore holes for epoxy.



Step 10

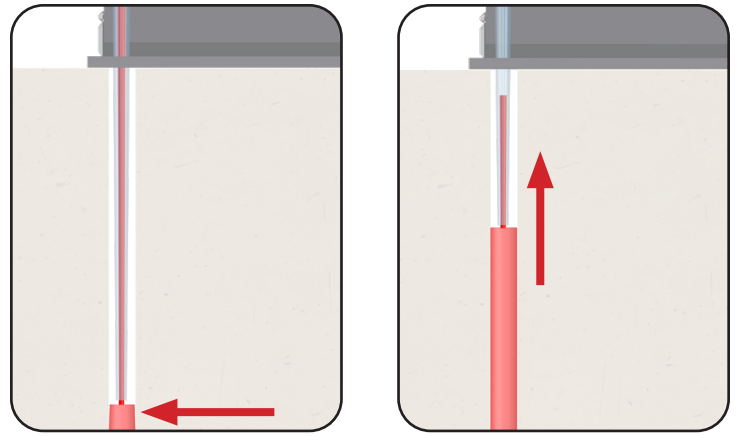
Anchor bolt shall not exceed .5 in (12.7 mm) past the anchor nut on all 39 anchor bolt assemblies.

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



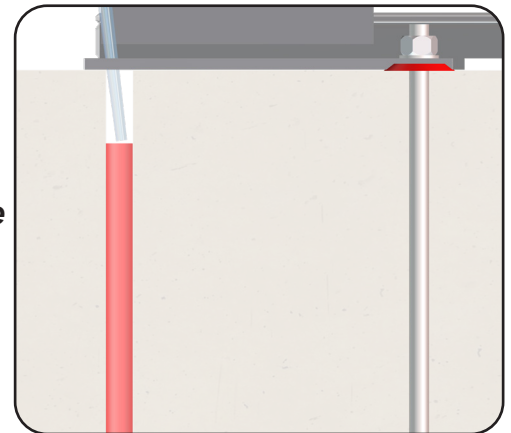
Step 11

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.

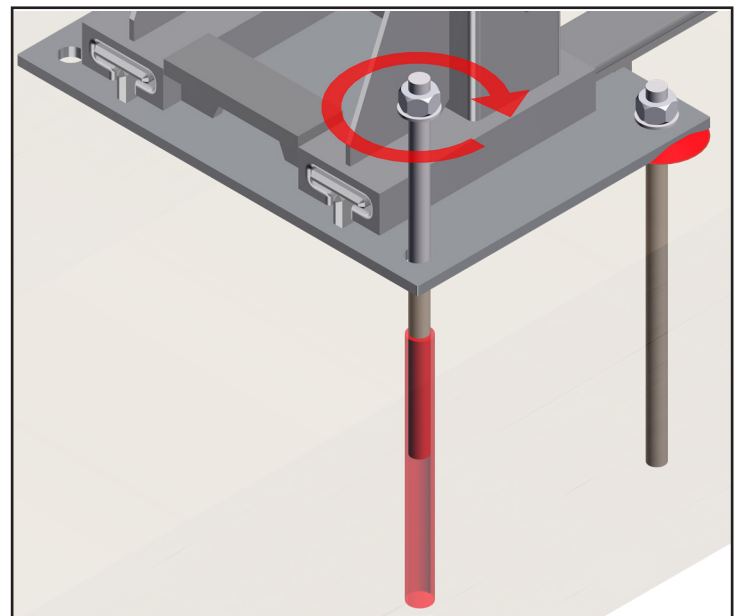


Step 12

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.

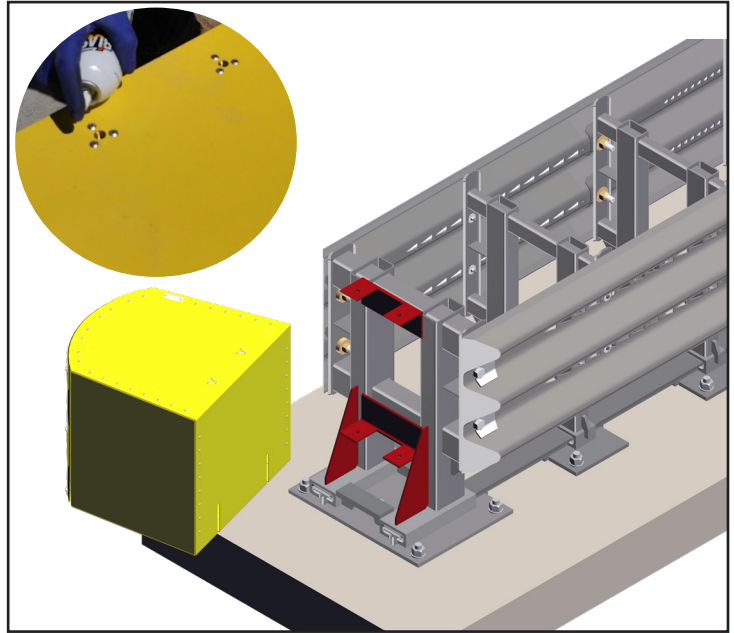


<u>Epoxy Manufacture</u>	<u>Model</u>	<u>Approximate Needed</u>
Hilti	Hit RE 500	220 fl.Oz / 6.5 L
Simpson	SET (AT or XP) / ET-3G	220 fl.Oz / 6.5 L
Red Head	A7	220 fl.Oz / 6.5 L

⚠ NOTE: Concrete Installation.

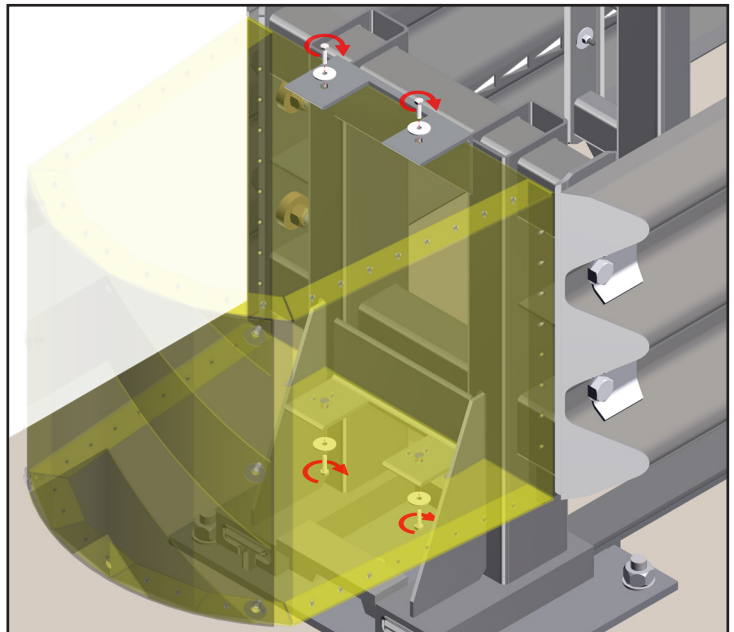
Step 13

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.



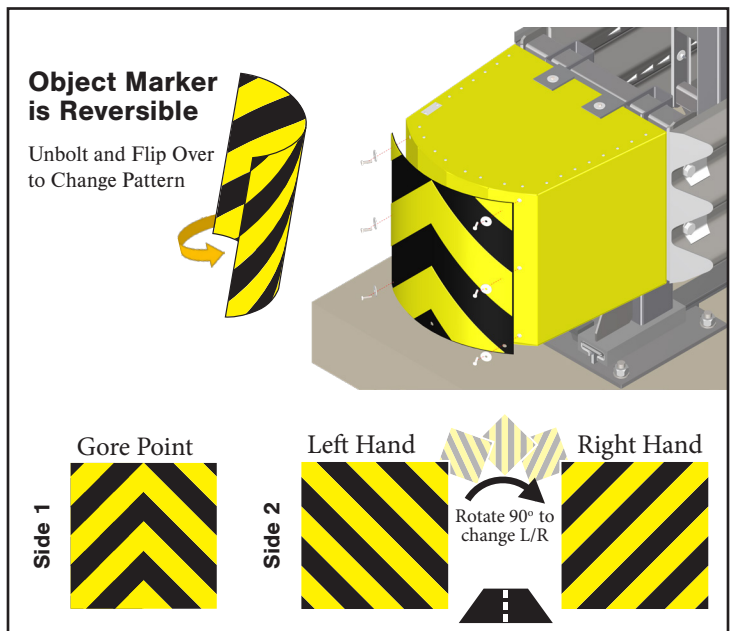
Step 14

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

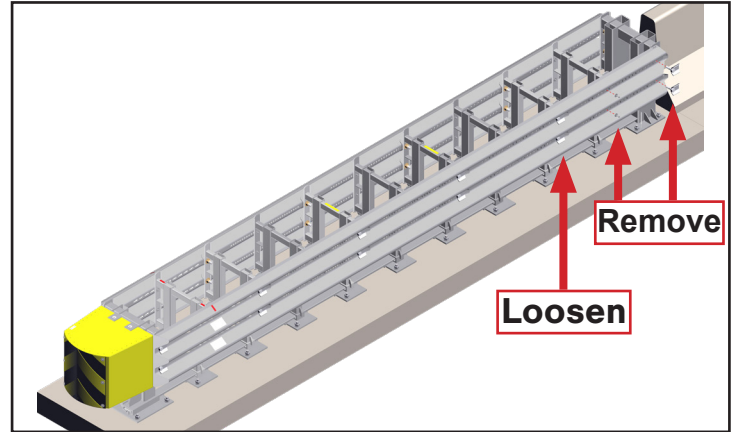
The nose sheeting has been provided as a way to easily customize field use. The diagonal stripes used on the Left Hand Traffic Flow can be rotated 90 degrees for Right Hand Traffic Flow. Turn the sheeting over and it is used for Gore Point Traffic Flow. To determine the correct nose sheeting side follow 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

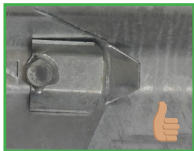
Remove rear wing washers, washers and nuts from rear fender panel (45N). Remove sacrificial hardware. Loosen nuts from wing washers. Once the hardware on fender panel (45N) has been removed, pull the panel outward.



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.

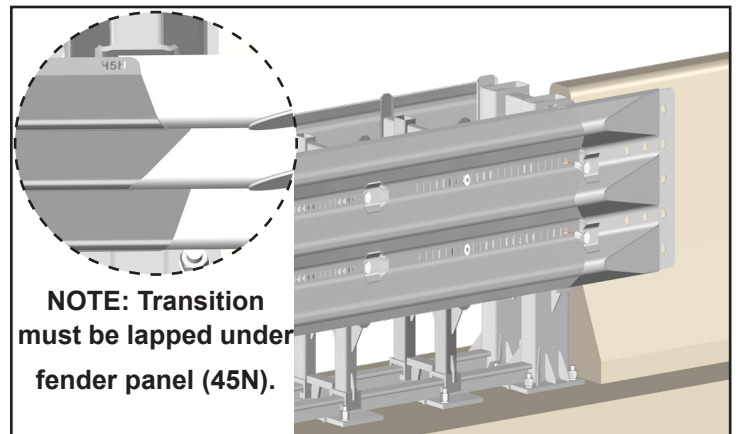
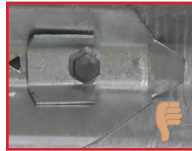
Correct



NOTE:

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

Incorrect

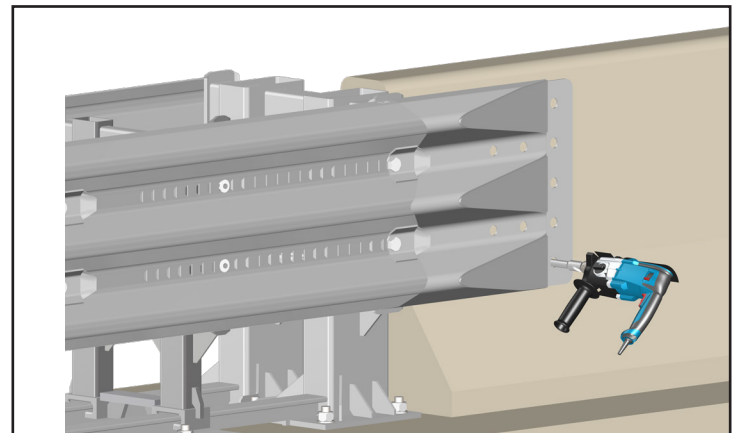


Step 3

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.

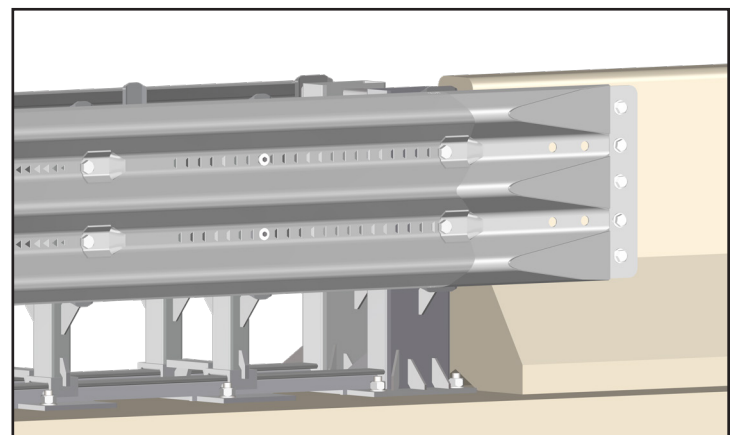


Step 4

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.

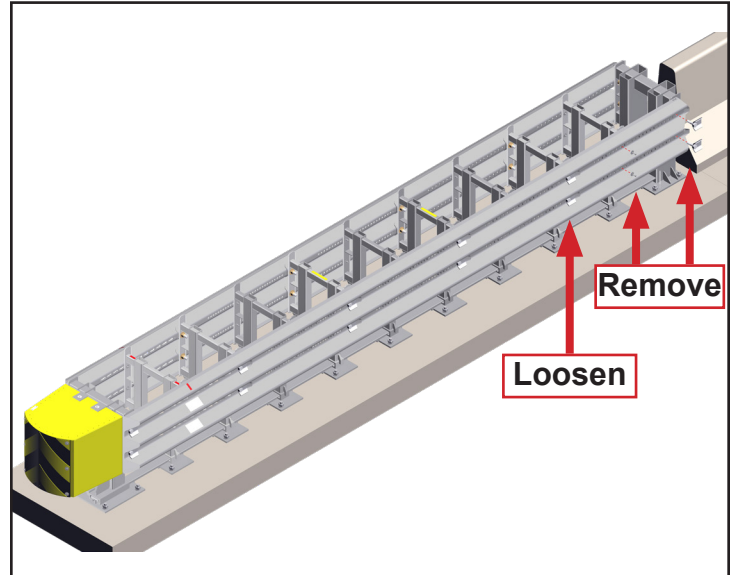
⚠ User(s) has the responsibility to determine a suitable transition that must be compliant with local and state government standards.



TDI Transition Panel Install

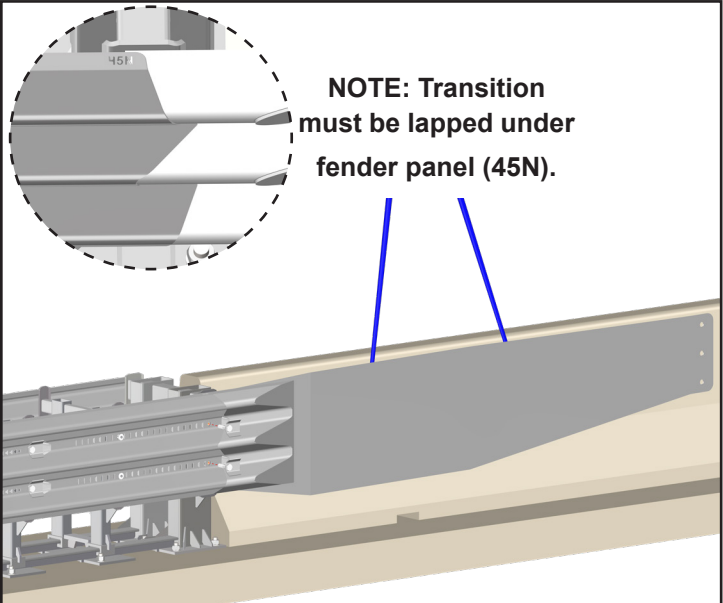
Step 1

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.

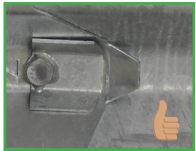


Step 2

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.

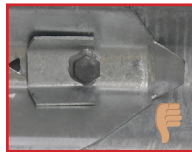


Correct



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

Incorrect



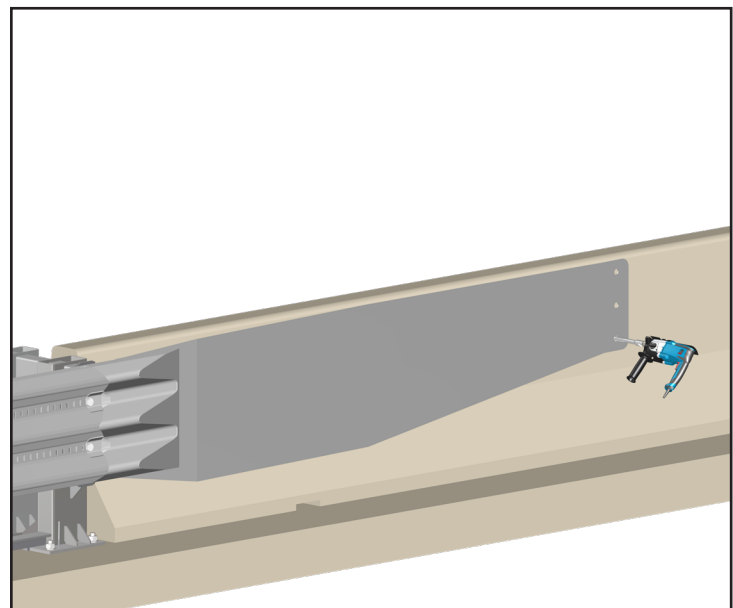
NOTE: Once in place, remove lifting strap and J-Bolts from the transition.

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.

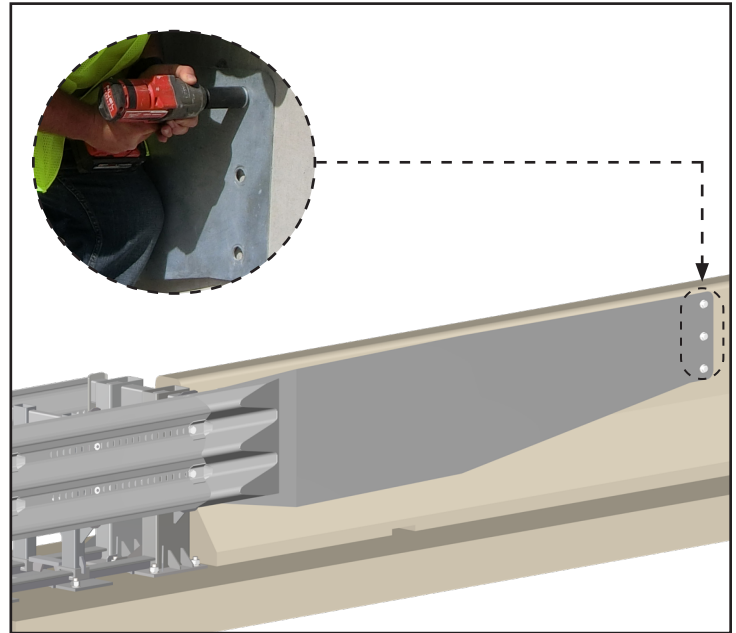


NOTE: Clean the holes after drilling.



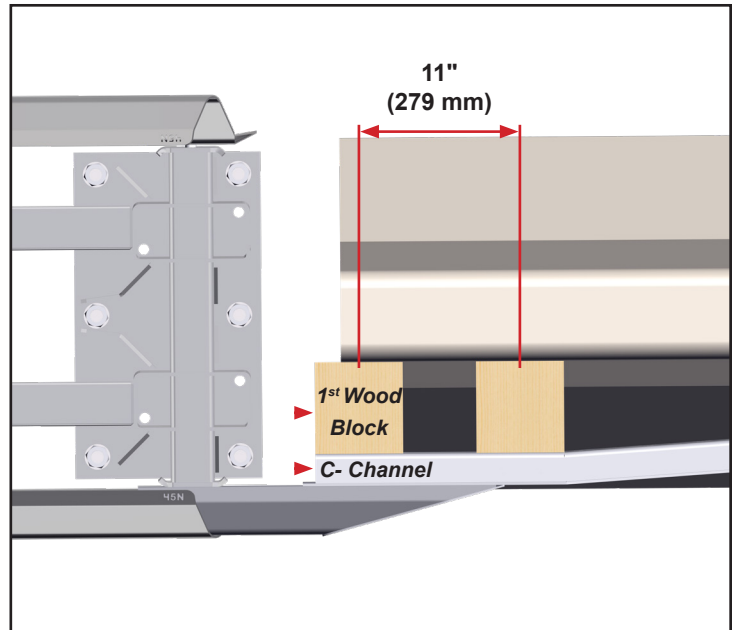
Step 4

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.



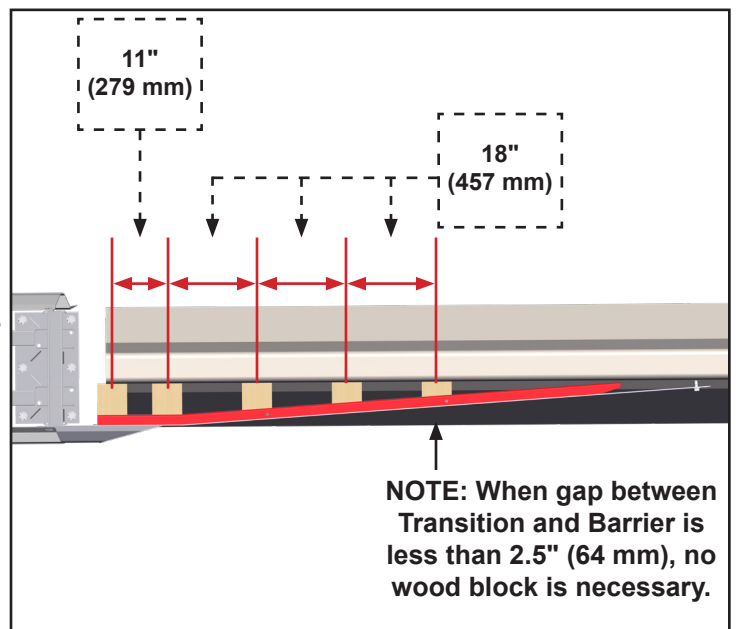
Step 5

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.



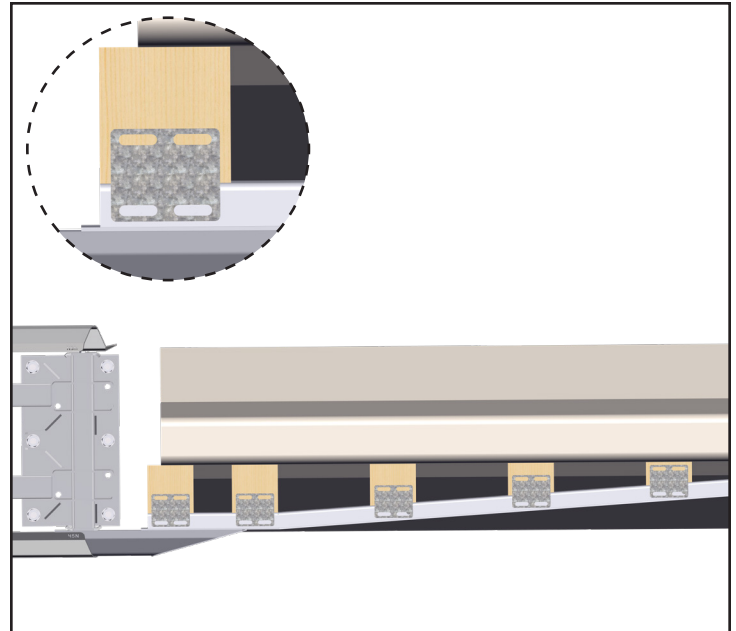
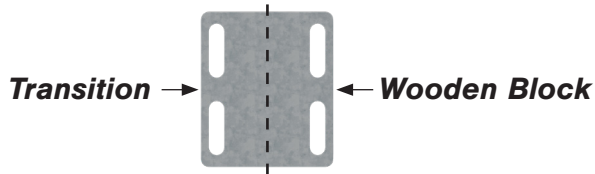
Step 6

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.



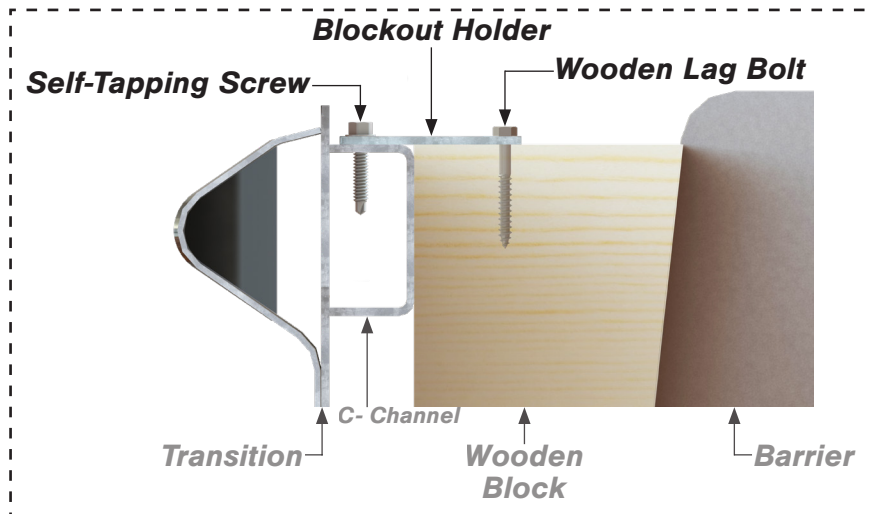
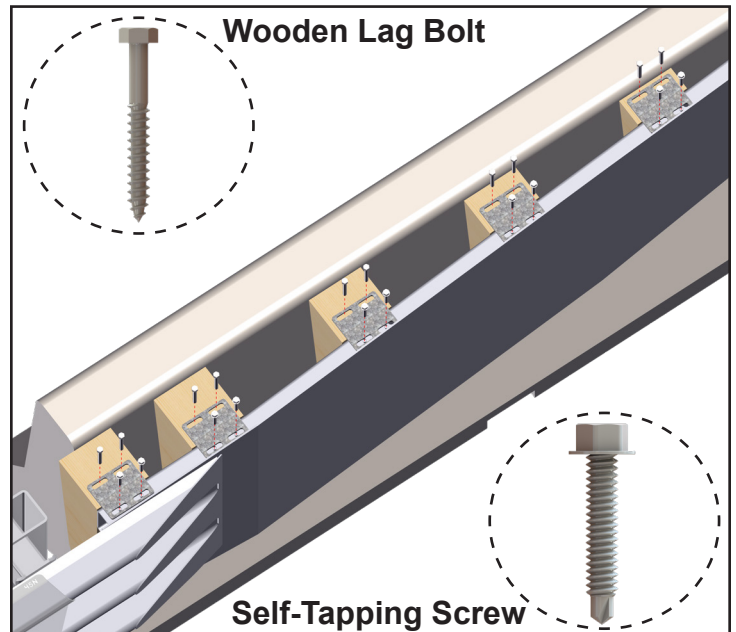
Step 7

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.



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Serial Number

Date of Installation: _____

Location: _____

Condition of Delta: _____

TrafFix Devices Inc.
SN **DXXXXX**
Serialized Component

**Front Attenuation Module
Serial Number:**

TrafFix Devices Inc.
160 Avenida La Pata
San Clemente, CA 92673
www.traffixdevices.com
PHONE: 949-361-5663
PAT. PENDING

JAN	FEB	MAR	APR	2021
MAY	JUN	JUL	AUG	2022
SEP	OCT	NOV	DEC	2023
				2024
				2025

**DELTA REDIRECTIVE CRASH CUSHION
MODEL 75000
THIS ATTENUATOR CONFORMS TO MASH TEST STANDARD**
REFER TO OWNERS MANUAL FOR LIFTING INSTRUCTIONS

Made in USA ID No. **XXXXX**

Track Serial Number:


**Sentinel™
IMPACT TRACKER**

This device complies with part 15 of the FCC Rules and Industry Canada's license-exempt RSS standards. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Contains FCC ID: _____ Contains IC: _____ **Serial Number:** _____

Sentinel Serial Number:

Inspection Checklist

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

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.

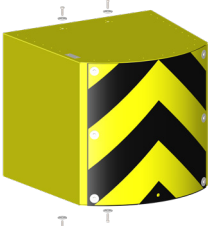
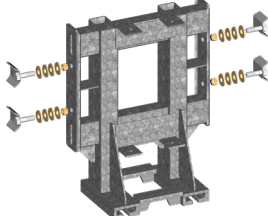
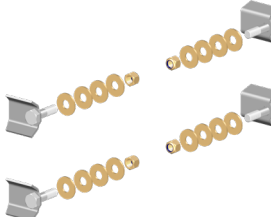
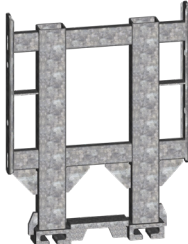
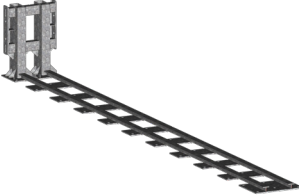


To determine if a Delta needs replacement or is potentially reusable, an engineer experienced in highway products/safety directed by local highway authority must be consulted.

Notes: _____

Inspected By: _____

Date: _____

Delta Replacement Parts

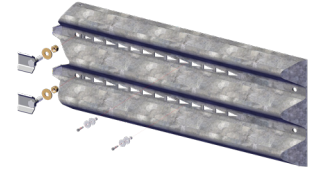
<u>Part No.</u>	<u>Description</u>	
75220-N-Y4	Front Attenuation Module Kit with Hardware, 4 Bolts (1/4"-20 x 1"), 4 Washers (1/4") and Object Marker with Hardware, 6 Bolts (1/4"-20 x 1") and 6 Washers (1/4")	
75230-N-KIT	Front Impact Diaphragm Kit, 1 Front Impact Head Diaphragm, 4 Wing Washers, 4 Nuts (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

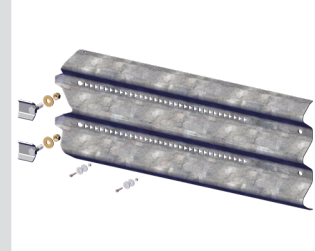
75260-TL3-1N-KIT

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)



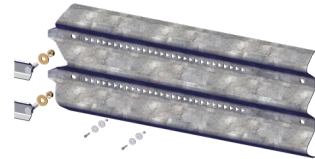
75260-TL3-2N-KIT

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)



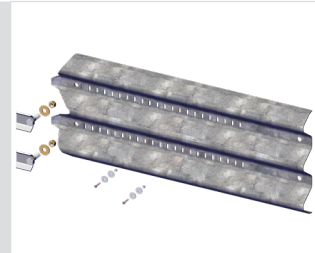
75260-TL3-3N-KIT

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)



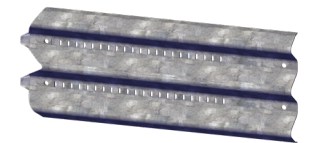
75260-TL3-45N-KIT

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)



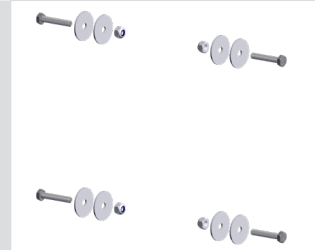
75260-TL3-45N

Fender Panel 45N



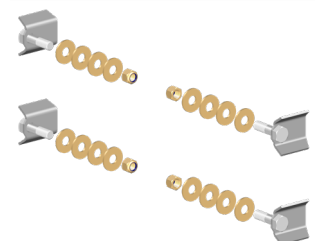
75240-HW-KIT

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

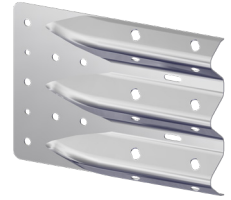
Rear Track Backup Weldment Hardware Kit,
4 Wing Washers, 4 Nuts (3/4"-10) and 16 Washers (3/4")



75270-SBST

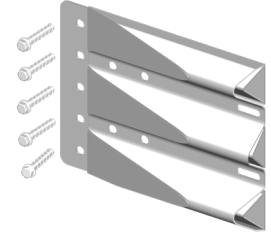
Standard Bridge Shoe Transition Panel

! *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

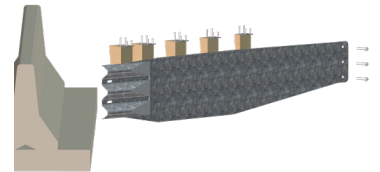
TDI Bridge Shoe Transition Panel



75270-RH-KIT

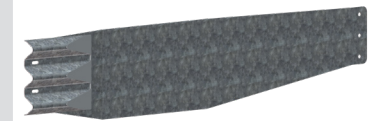
Right Transition Weldment Kit with Hardware,
3 Anchor Bolts (3/4"), 5 Blockout Holders,
10 Wooden Lag Bolts (3/8"), 10 Self-Tapping Screw (3/8"),
2 J-Bolt (8") and 2 Nylock Nuts (1/2"-13)

! *Wood Blocks NOT Included. Barrier NOT Included.*



75270-RH

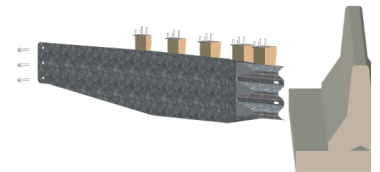
Right Transition Weldment



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.*



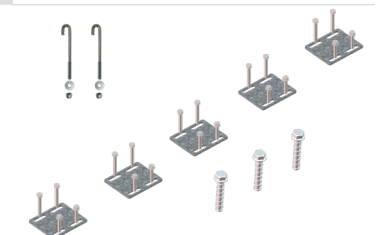
75270-LH

Left Transition Weldment



75270-HW-KIT

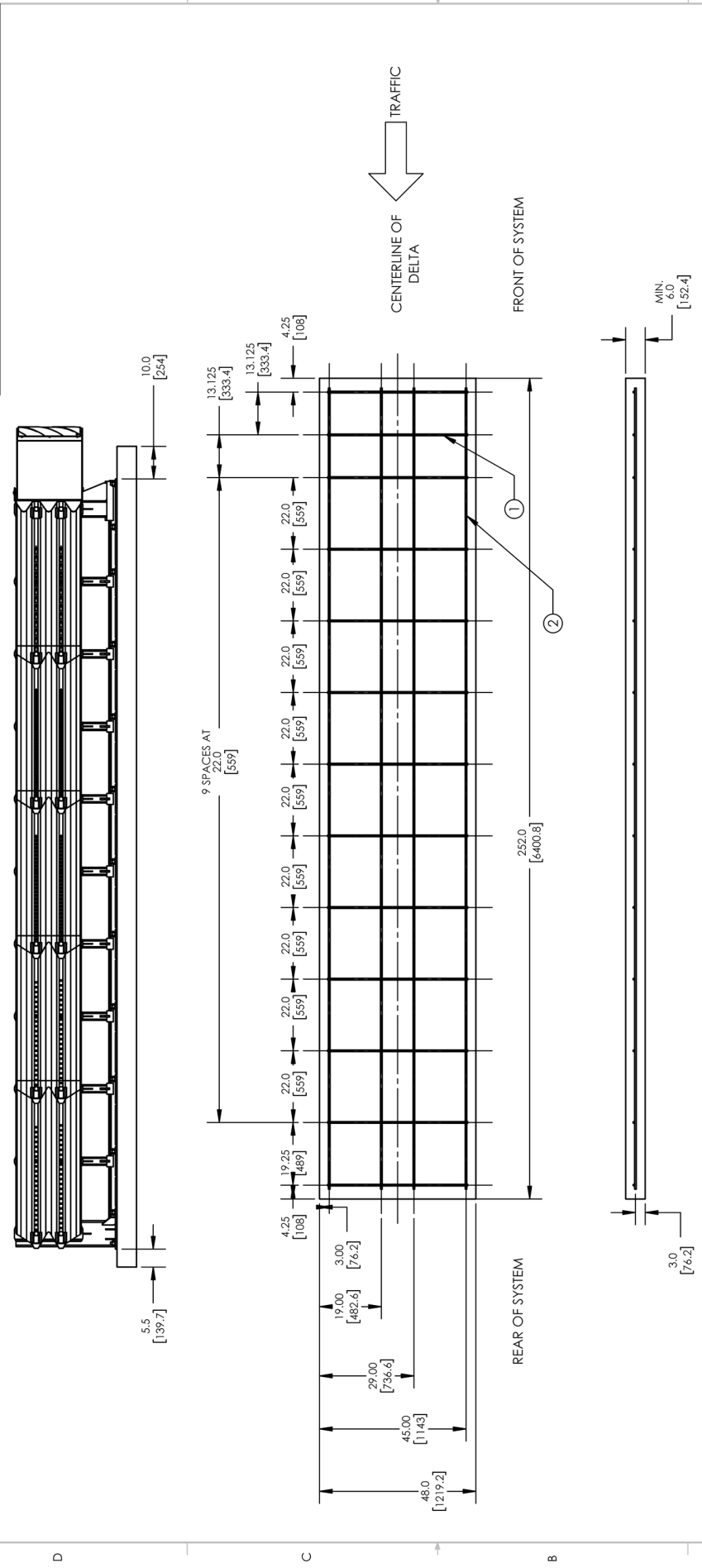
Transition Hardware,
3 Anchor Bolts (3/4"), 5 Blockout Holders,
10 Wooden Lag Bolts (3/8"), 10 Self-Tapping Screw (3/8"),
2 J-Bolt (8") and 2 Nylock Nuts (1/2"-13)



Notes

Notes

Item No.	Length	QTY.
1	43 in. (1092 mm)	13
2	246 in. (6248 mm)	4



Traffix Devices Inc.

160 Avenida La Palms
Sunnyvale, CA 94087
Tel: (949) 361-9205
Fax: (949) 361-9205
www.traffixdevices.com

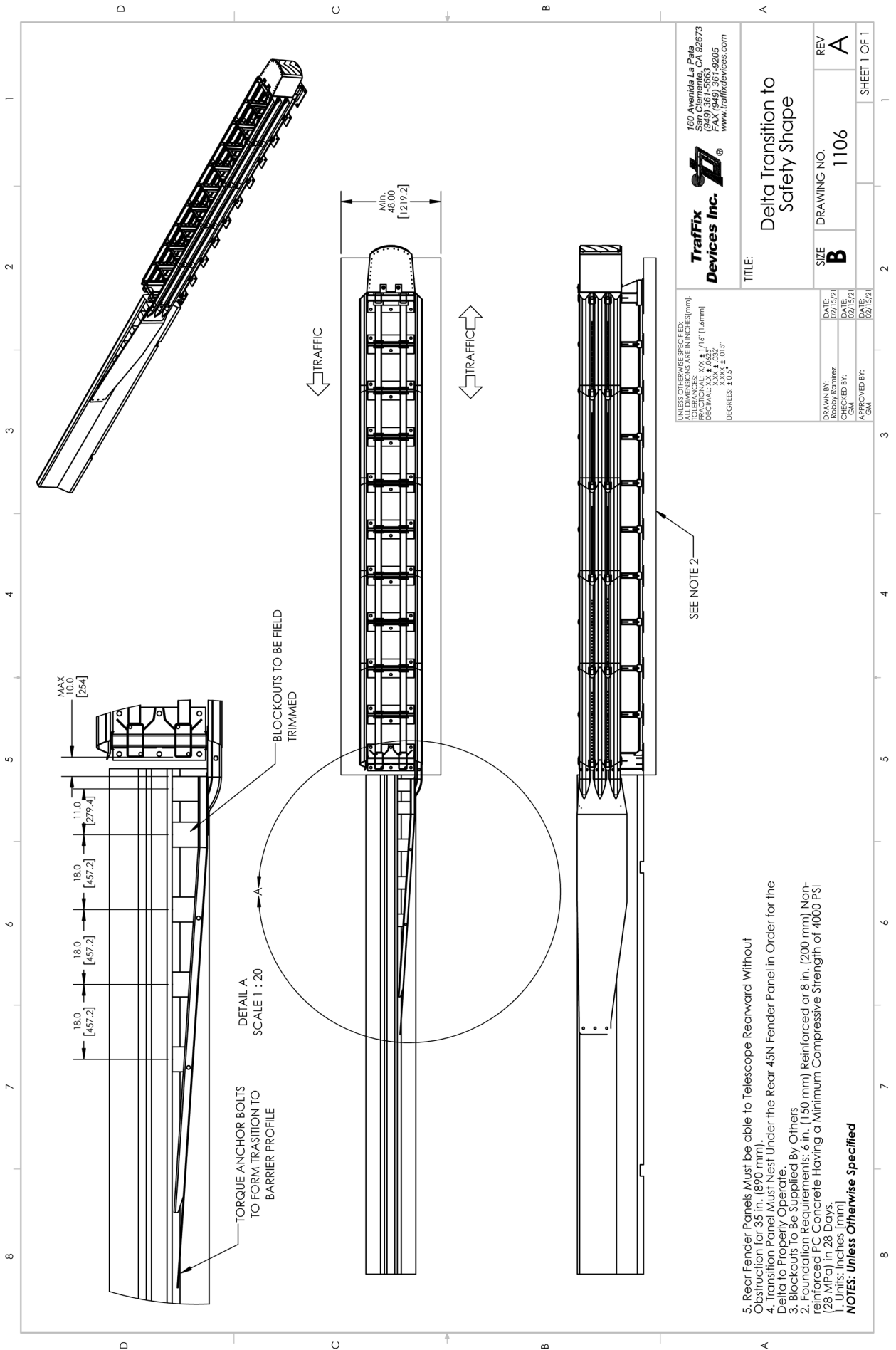
Delta Rebar Foundation Detail

SIZE **B** DRAWING NO. **11005** REV **A**

DATE: 02/11/21
DRAWN BY: Robby Romerez
CHECKED BY: GM
DATE: 02/11/21
APPROVED BY: GM

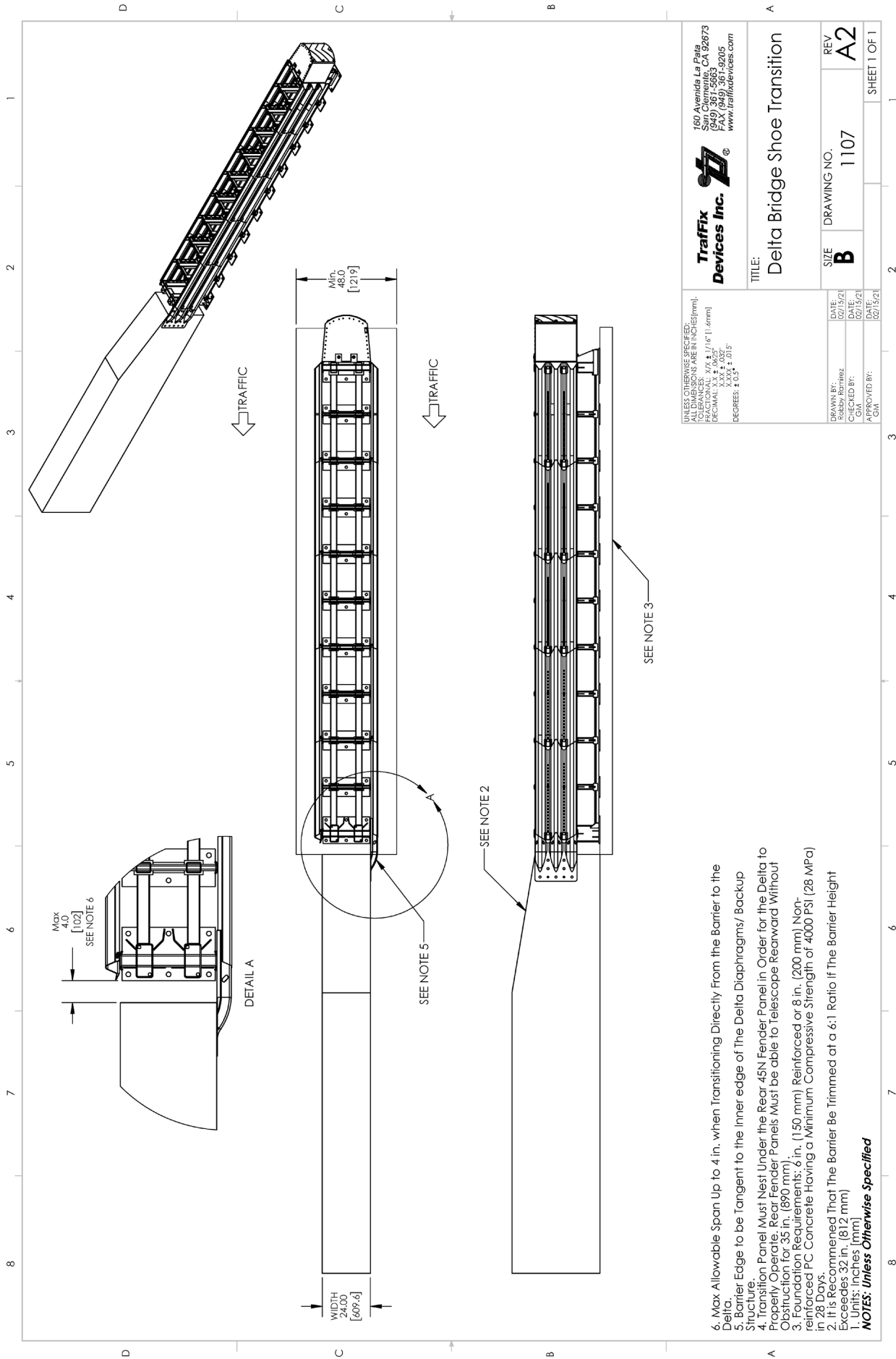
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES (mm).
FRACTIONAL: X/Y ± 1/16 (1.6mm)
DECIMAL: XXX ± .032
DEGREES: XXX ± .015

5. Rebar to be Tied Using Standard Construction Methods
 4. 4000 PSI (28 MPa) Minimum Compressive Strength at 28 Days
 3. Concrete Spacers can be Used to Keep Rebar 3 in. (75 mm) From Base of Foundation
 2. Rebar Shall be Minimum #4 (13 mm) or Equivalent
 1. Units: Inches (mm)
NOTES: Unless Otherwise Specified



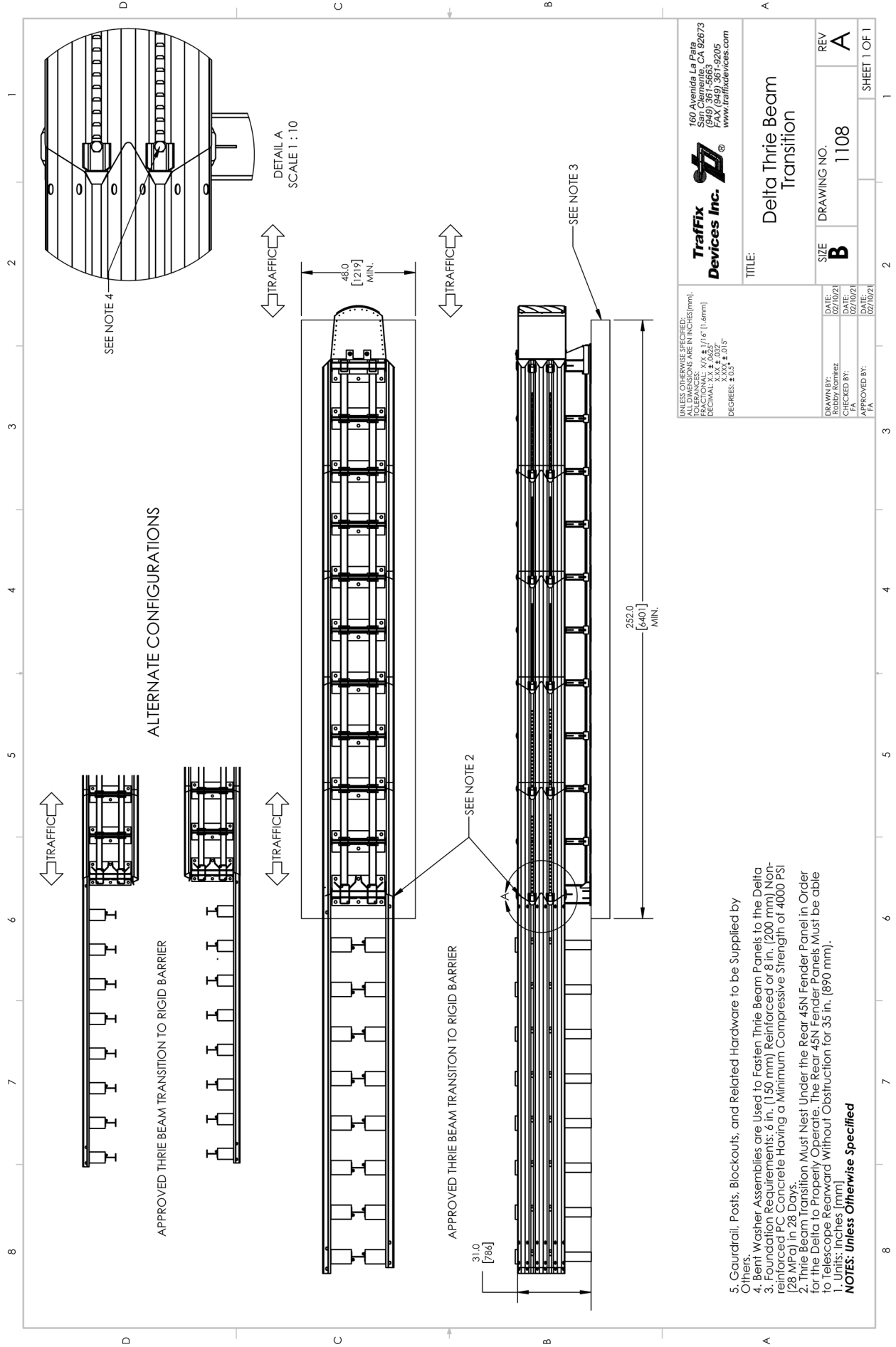
TrafFix Devices Inc. 160 Avenida La Plata San Jose, CA 95131 (949) 361-5563 FAX (949) 361-9205 www.traffixdevices.com	
TITLE: Delta Transition to Safety Shape	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES (mm) TOLERANCES: FINISH: ± 0.005 / ± 0.13 DIMENSIONS: ± 0.005 / ± 0.13 DECIMALS: ± 0.005 / ± 0.13 ANGLES: ± 0.01° DEGREES: ± 0.5°	REV A DRAWING NO. 1106
DESIGNED BY: Babby Rodriguez CHECKED BY: GM APPROVED BY: SN	DATE: 02/15/21 DATE: 02/15/21 DATE: 02/15/21
SIZE B	SHEET 1 OF 1

5. Rear Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
 4. Transition Panel Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate.
 3. Blockouts To Be Supplied By Others
 2. 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.
 1. Units: Inches [mm]
- NOTES: Unless Otherwise Specified**



- 6. Max Allowable Span Up to 4 in. when Transitioning Directly From the Barrier to the Delta.
- 5. Barrier Edge to be Tangent to the Inner edge of The Delta Diaphragms/ Backup Structure.
- 4. 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).
- 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. It is Recommended That The Barrier Be Trimmed at a 6:1 Ratio If The Barrier Height Exceeds 32 in. (812 mm)

NOTES: Unless Otherwise Specified
 1. Units: Inches (mm)



UNLESS OTHERWISE SPECIFIED:
 ALL DIMENSIONS ARE IN INCHES (mm).
 FRACTIONAL X/X ± 1/16" (1.6mm)
 DECIMAL X.XX ± .005"
 ANGLES X° X' X" ± .015°
 DEGREES ± 0.5°

Traffix Devices Inc.
 160 Avenida La Plata
 San Clemente, CA 92673
 (949) 381-5865 ext. 2105
 Fax: (949) 381-5865 ext. 2106
 www.traffixdevices.com

TITLE: **Delta Thrie Beam Transition**

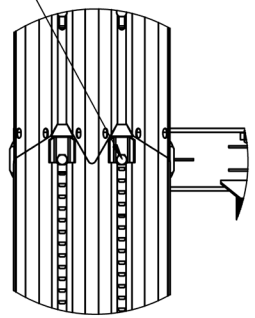
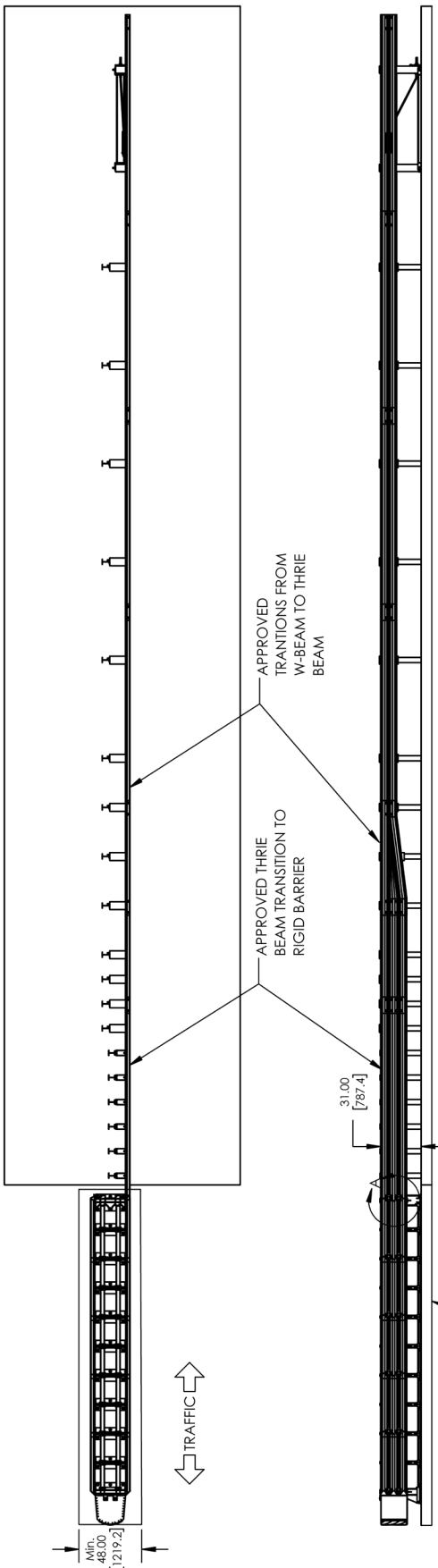
DATE: 02/7/02	REVISION: REV
DRAWN BY: Robby Romero	SIZE: B
CHECKED BY: FA	DRAWING NO. 1108
APPROVED BY: FA	SHEET 1 OF 1

- 5. Guardrail, Posts, Blockouts, and Related Hardware to be Supplied by Others.
- 4. Bent Washer Assemblies are Used to Fasten Thrie Beam Panels to the Delta 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

1 2 3 4 5 6 7 8

D C B A



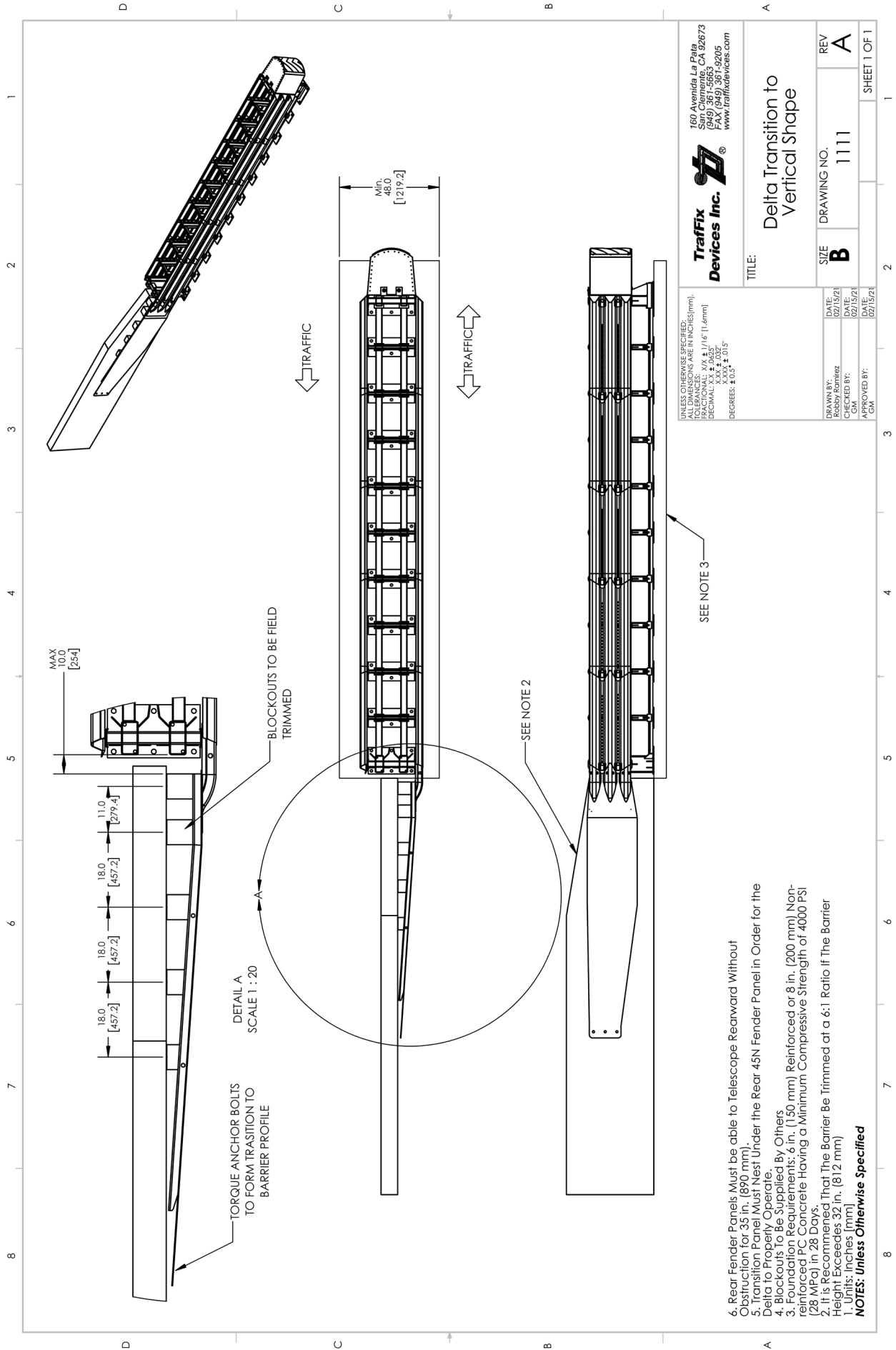
5. Gaurdtrail, Posts, Blockouts, and Related Hardware to be Supplied by Others.
 4. Bent Washer Assemblies are Used to Fasten Thrie Beam Panels to the Delta
 3. Foundation Requirements: 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non-reinforced PC Concrete Having a Minimum Compressive Strength of 4000 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 45N Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
 1. Units: Inches [mm]
- NOTES: Unless Otherwise Specified**

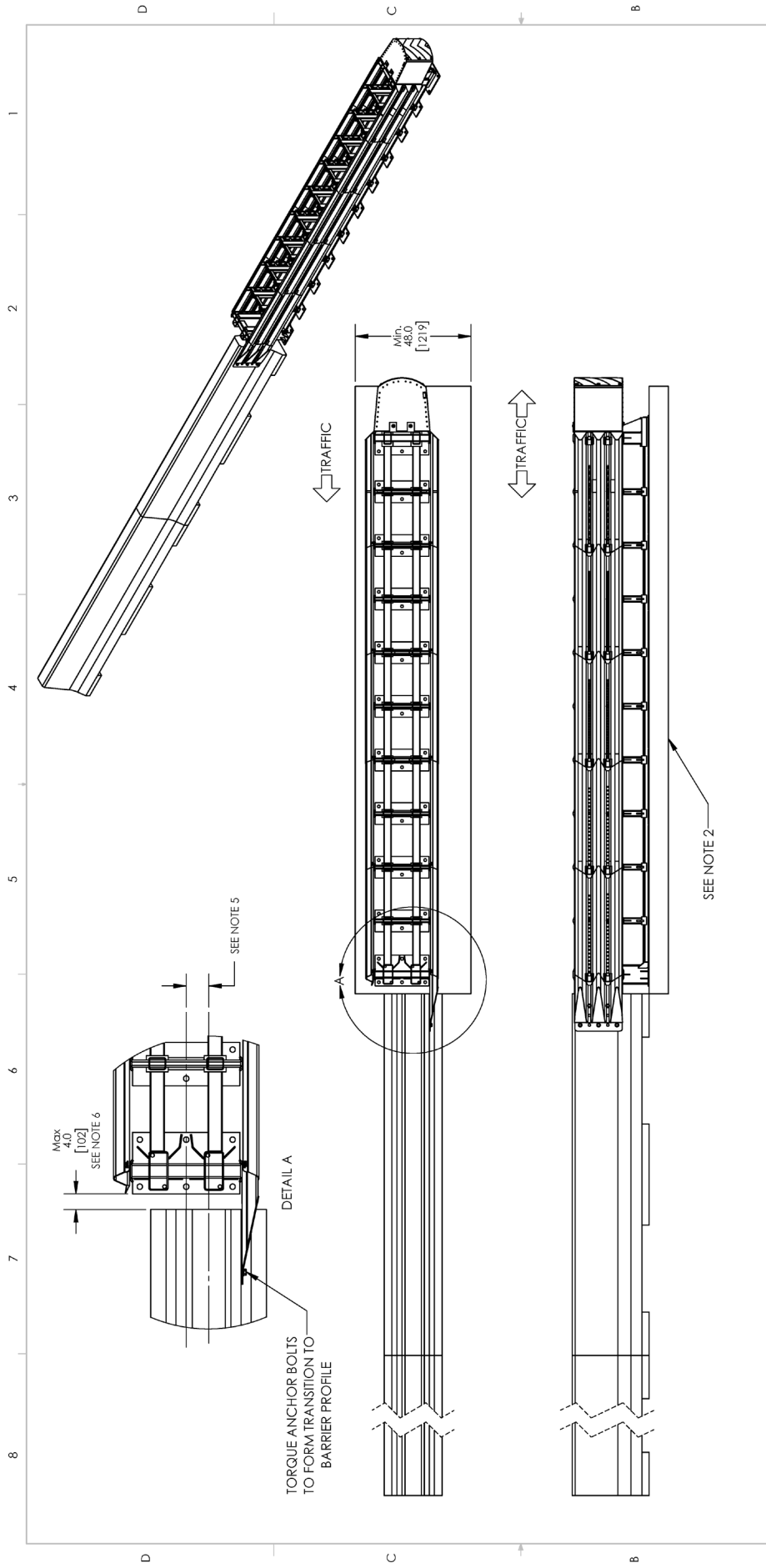
UNLESS OTHERWISE SPECIFIED:
TOLERANCES ARE IN INCHES (mm).
FRACTIONAL: X/8, 1/16, 1/32, 1/64
DECIMAL: X.X, X.XX, X.XXX
DEGREE: ± 0.1°

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160 Avenida La Plata
San Clemente, CA 92673
Tel: (949) 367-9205
Fax: (949) 367-9205
www.traffixdevices.com

TITLE: **Delta Transition to W-Beam**

DRAWN BY: GBJ/Robbiez	DATE: 02/16/21	SIZE: B	DRAWING NO. 1109	REV: A
CHECKED BY: GJM	DATE: 02/16/21	SHEET 1 OF 1		
APPROVED BY: GJM	DATE: 02/16/21			





- 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 Compressive Strength 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

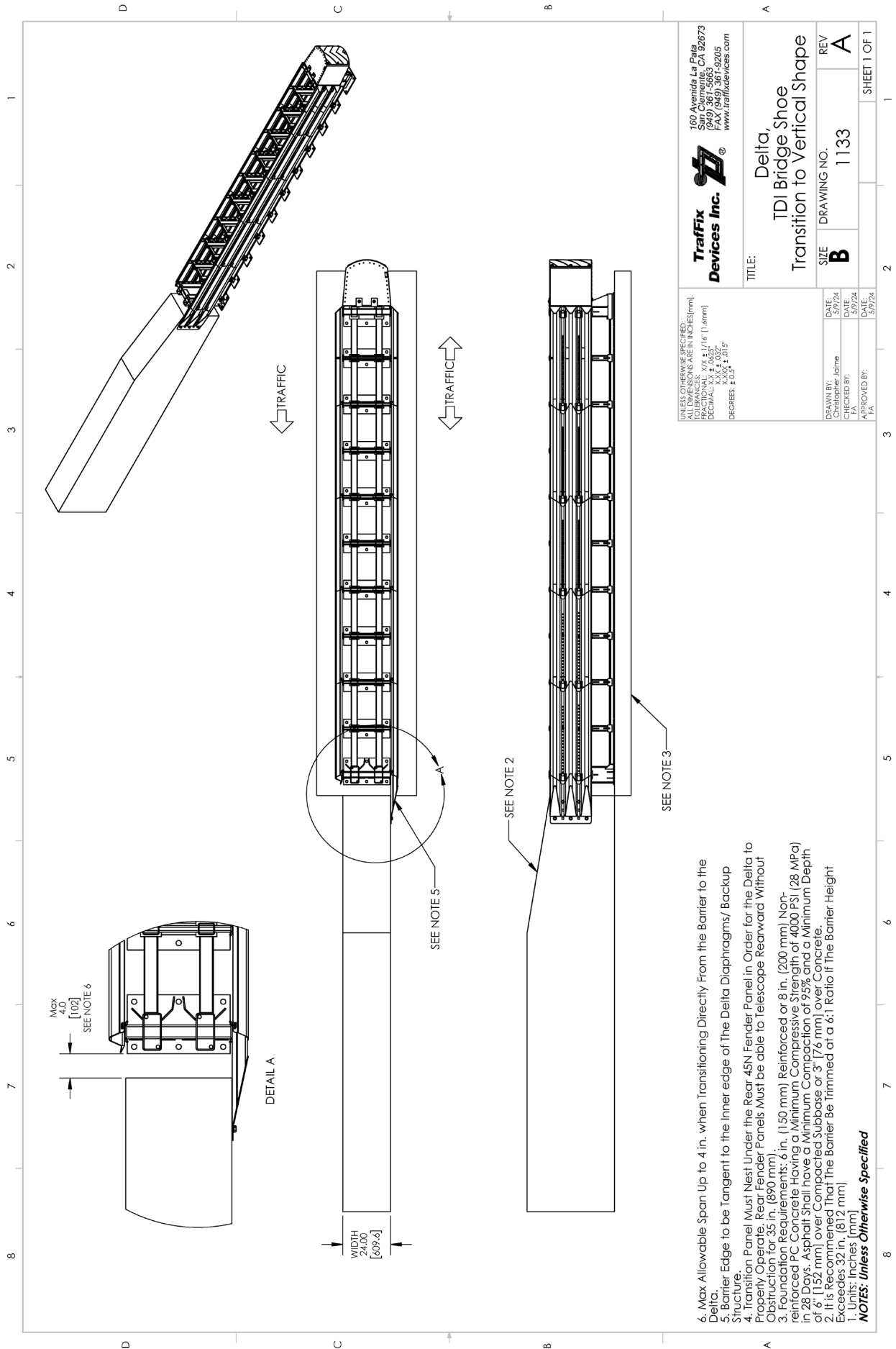
UNLESS OTHERWISE SPECIFIED:
 TOLERANCES: DIMENSIONS IN INCHES (mm)
 DECIMALS: .1 (2.5)
 FRACTIONS: 1/16 (1.6mm)
 ANGLES: 1/4 (6.35)
 DECIMALS: .1 (2.5)
 DECIMALS: .1 (2.5)

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Devices Inc.

160 Avenida La Paja
 San Jose, CA 95128
 (949) 361-5663
 FAX (949) 361-9205
 www.traffixdevices.com

TITLE: Delta,
 TDI Bridge Shoe
 Transition to Safety Shape

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

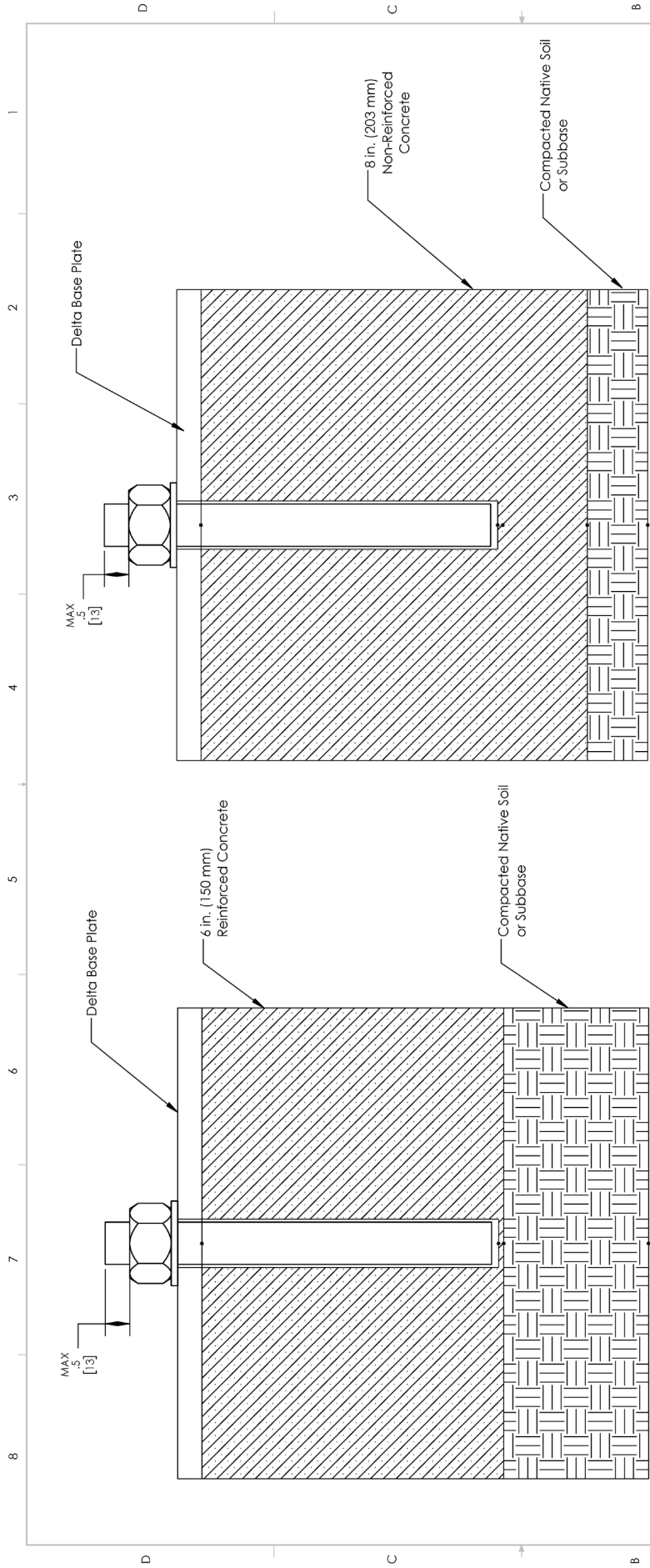


6. Max Allowable Span Up to 4 in. when Transitioning Directly From the Barrier to the Delta.
 5. Barrier Edge to be Tangent to the Inner edge of The Delta Diaphragms/ Backup Structure.
 4. Transition Panel Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate. Rear Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
 3. Foundation Requirement: 8 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. Asphalt Shall have a Minimum Compressive Strength of 75% and a Minimum Depth of 4" (152 mm) over Compacted Subgrade or 3" (76 mm) over Concrete.
 2. It is Recommended that The Barrier be Truncated at a 6:1 Ratio if The Barrier Height Exceeds 32 in. (812 mm)
 1. Units: Inches (mm)

NOTES: Unless Otherwise Specified

160 Avenida La Plata San Francisco, CA 942673 (949) 361-5563 FAX (949) 361-9205 www.traffixdevices.com	
TITLE: Delta, TDI Bridge Shoe Transition to Vertical Shape	
DRAWN BY: Christopher Jaime	DATE: 5/9/24
CHECKED BY: J.A.	DATE: 5/9/24
APPROVED BY: J.A.	DATE: 5/9/24
SIZE B	DRAWING NO. 1133
REV A	SHEET 1 OF 1

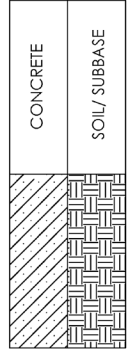
UNLESS OTHERWISE SPECIFIED:
 TOLERANCES: UNLESS NOTED (mm)
 FINISHES: AS SHOWN
 DIMS: 1/16" ± 0.007"
 DIMS: 1/8" ± 0.015"
 DIMS: 3/16" ± 0.010"
 DIMS: 1/4" ± 0.015"
 DIMS: 3/8" ± 0.015"
 DIMS: 1/2" ± 0.015"
 DIMS: 3/4" ± 0.015"
 DIMS: 1" ± 0.015"



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

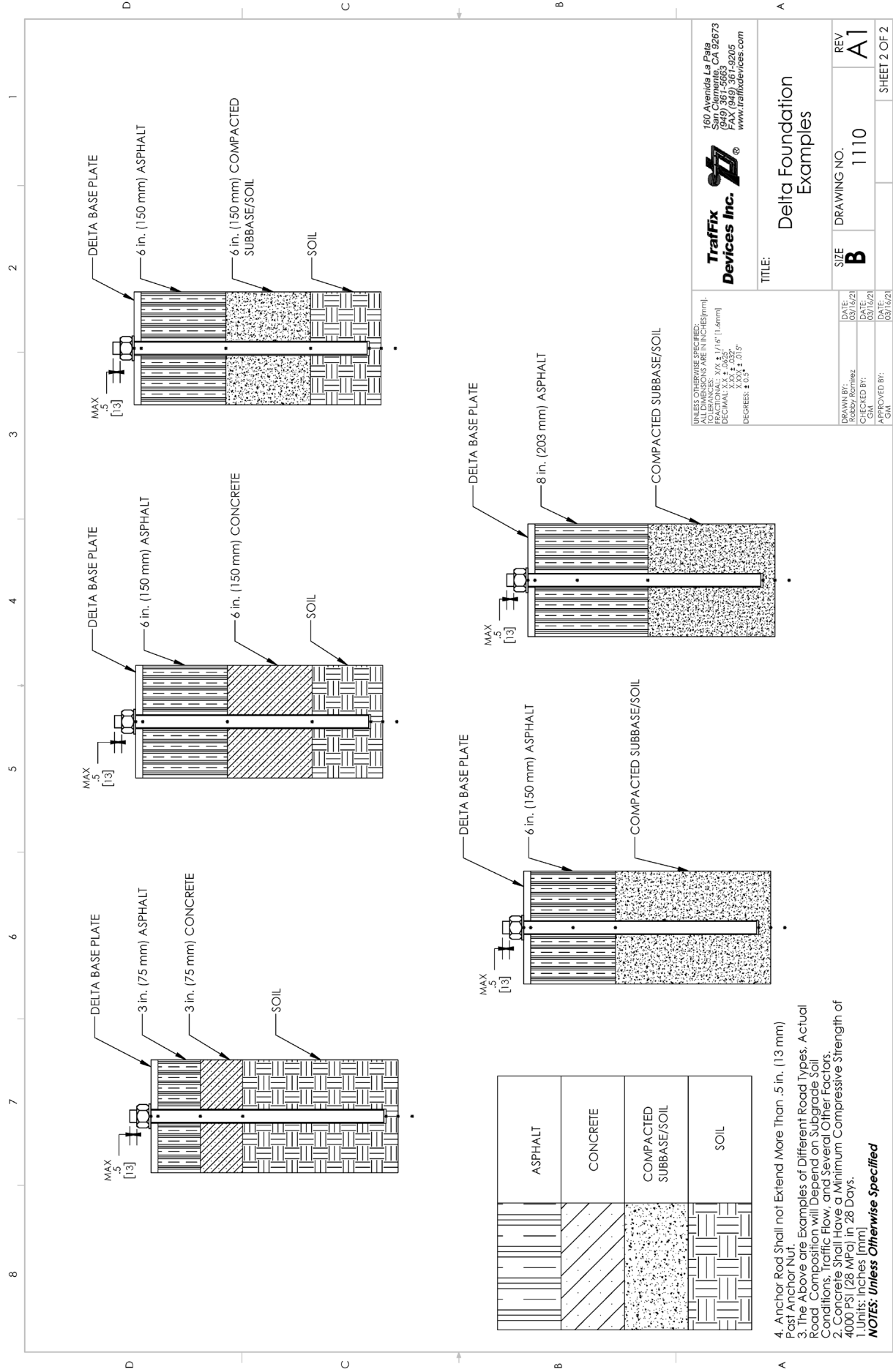
8 in. (203 mm) MIN NON-REINFORCED CONCRETE PAD

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**

UNLESS OTHERWISE SPECIFIED: TOLERANCES: DIMENSIONS ARE IN INCHES (mm). DECIMALS: .125, .25, .375, .5, .75, 1.0 FRACTIONS: 1/16, 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1.0 ANGLES: ± 0.1° DECIMALS: ± 0.015°		TraFFix Devices Inc. 160 Avenida La Plata San Jose, CA 95128 (949) 351-5663 FAX (949) 361-9205 www.traffixdevices.com	
TITLE: Delta Foundation Examples		SIZE: B	REV: A1
DRAWN BY: Robby Ramirez	DATE: 03/16/21	DRAWING NO.: 1110	SHEET 1 OF 2
CHECKED BY: GJM	DATE: 03/16/21		
APPROVED BY: GJM	DATE: 03/16/21		



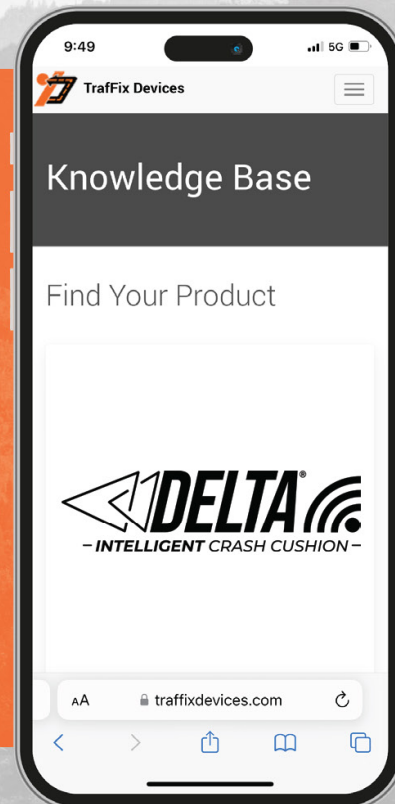
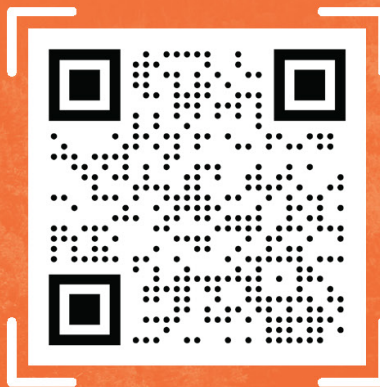
+ INTRODUCING TDI'S NEW PAPERLESS

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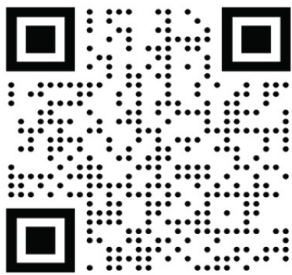
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3. Once your application has been approved, simply complete the course modules and assessments through the university portal on your PC, tablet, or smart phone.
4. Earn your completion badge and wear it proudly!



Regional Sales Manager

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