FDOT Contacts:

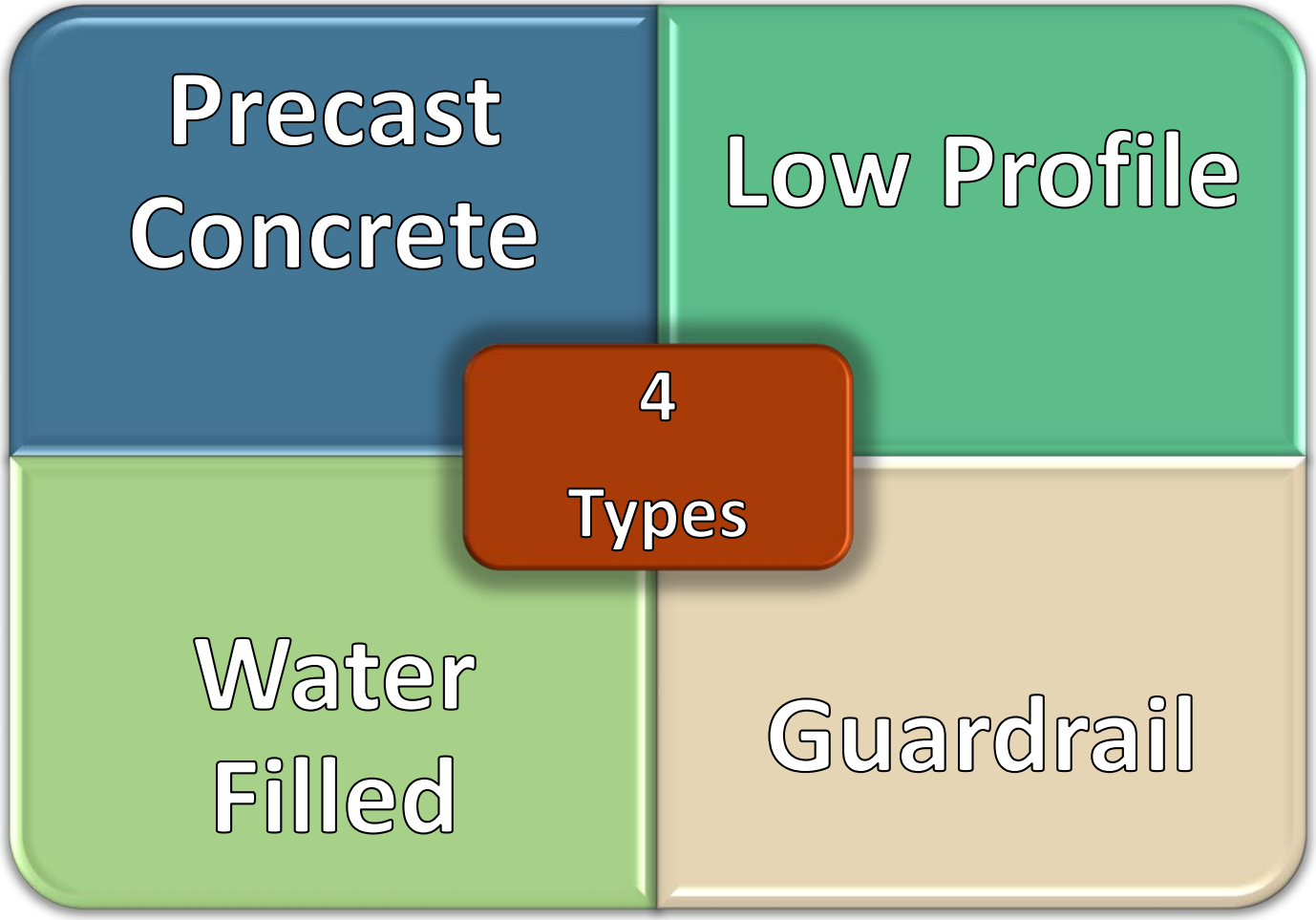
Construction
Stefanie Maxwell
850-414-4313
Stefanie.maxwell
@dot.state.fl.us

Design
Cheryl Adams
850-414-4327
Cheryl.Adams
@dot.state.fl.us

Barriers and Crash Cushions

Florida Department of Transportation

Temporary Barriers



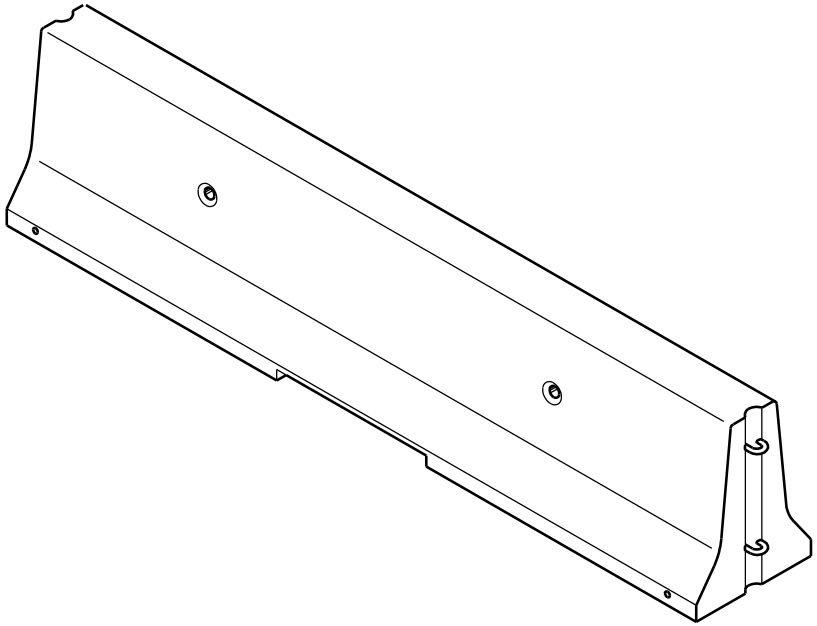
Precast Concrete

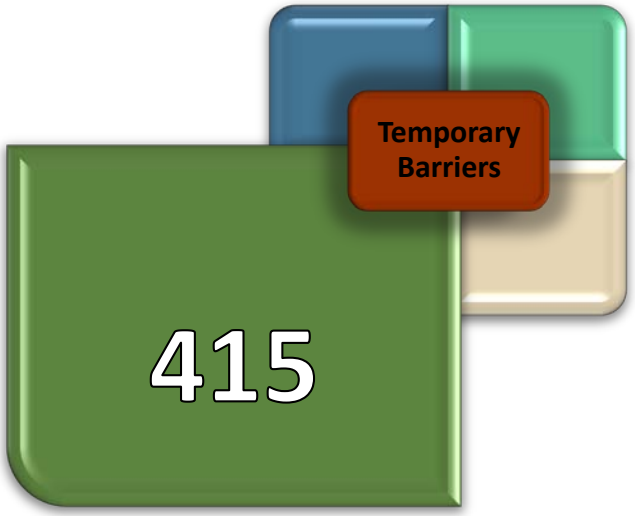
3 Types Precast Concrete

- JJ Hook
- Type K
- 415

Temporary Barriers

INDEX 415 BARRIER WALL





Index 415 units constructed prior to October 1, 2002 may be used ~~until September 30, 2012~~ THROUGH JUNE 30, 2012 LETTING with usage of 'FDOT Snake Pin' Interconnection

INDEX 415 - JJ HOOK

See QPL for vendor drawings

JJ Hook

Temporary Barriers

Index 415 and JJ Hook

Installation	• Free Standing
Surface	• Rigid Pavement (Concrete) • Flexible Pavement (Asphalt) • Cross Slope of 1 to 10 or flatter
Transitions	• Required Between Other Types of Barriers
Deflection Distance	• Varies on Use, Location and Speed

Index 415 and JJ Hook

Deflection Distance

See Index 415 Sheet 1

When Shielding Above Ground Hazards:

Design Speed	Deflection Space
45 mph or Less	2'
50 mph and Greater	4'

When Shielding Dropoffs:

Design Speed	Deflection Space
45 mph or Less	2'
50 mph and Greater a. Dropoffs 4' or Less and No Traffic Below b. All dropoff conditions other than 'a'.	 2' 4'

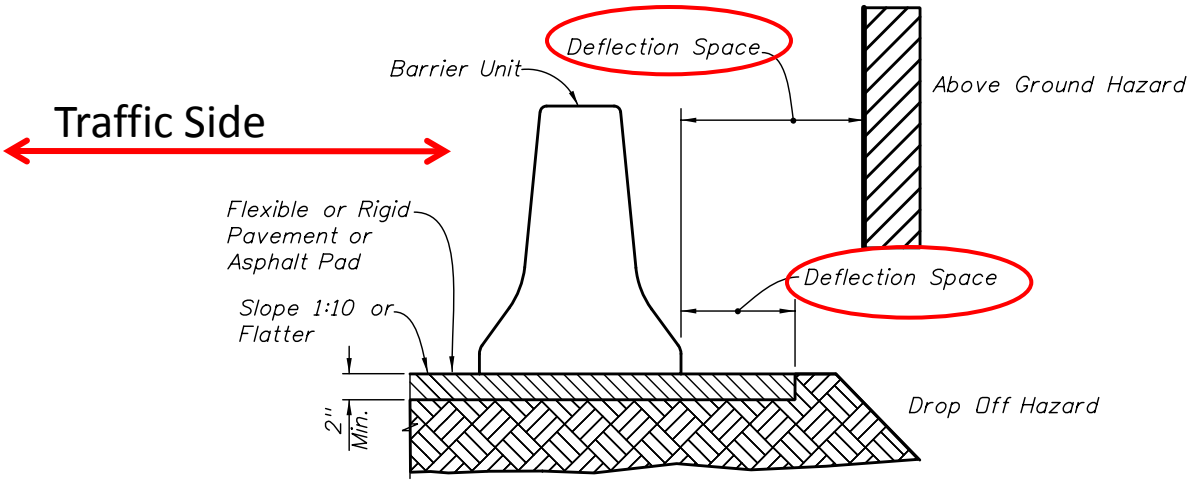
When used as a Temporary Median Barrier separating opposing traffic lanes:

Design Speed	Offset To Travelway
45 mph or Less	0' min., 2' preferred
50 mph and Greater	2'

Note: These deflection space requirements also apply to approved options identified in General Note 1.

DEFLECTION SPACE REQUIREMENTS

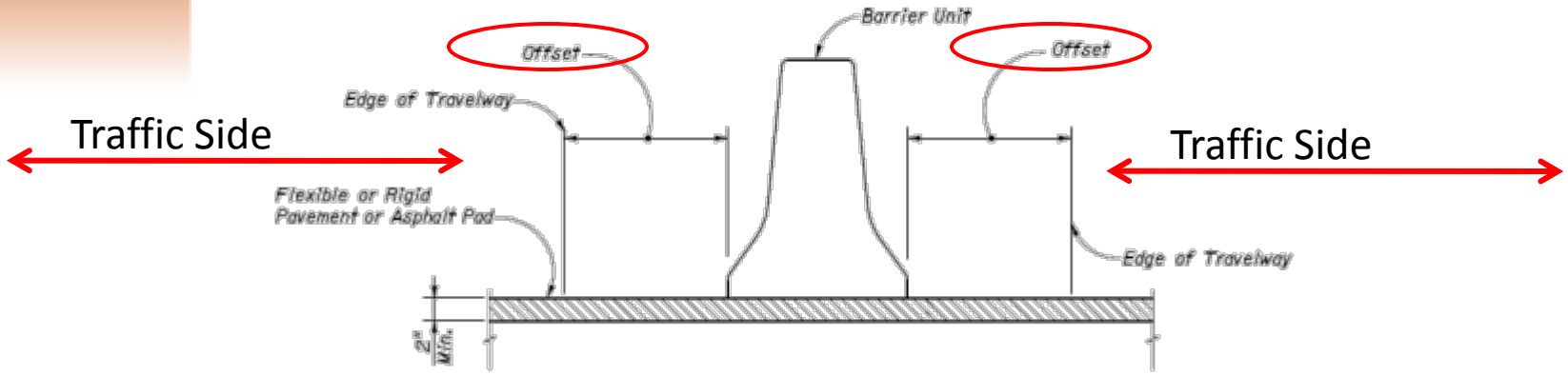
Free Standing Precast Concrete Temporary Barrier Wall Deflection Space Requirements



When Shielding	Design Speed	Deflection Space
Above Ground Hazards	45 mph or Less	2’
	50 mph and Greater	4’
Dropoff Hazards	45 mph or Less	2’
	50 mph and Greater: a. Dropoff 4’ or less, no traffic below b. All droppoff conditions other than ‘a.’	2’ 4’

Deflection Space Based On Installation On An Asphalt Or Concrete Surface.

Free Standing Precast Concrete Temporary Barrier Wall Deflection Space Requirements



Used As	Design Speed	Offset to Travelway
Median Barrier Separating Opposing Traffic Lanes	45 mph or Less	0 min., 2' preferred
	50 mph and Greater	2'

Offsets Based On Installation On An Asphalt Or Concrete Surface.

Index 414 – Type K

Temporary Barriers

Type K

Only Type K barrier is approved for use on bridges

Type K

Installation	• Bolted • Staked • Free Standing • Backfilled
Surface	• Rigid Pavement (Concrete) • Flexible Pavement (Asphalt) • Cross Slope of 1 to 10 or flatter
Transitions	• Required Between Type K Freestanding, Bolted, Staked and Back Filled • Required Between Other Types of Barriers
Deflection Distance	• Varies on Type of Installation (above), Use, Location and Speed

Type K

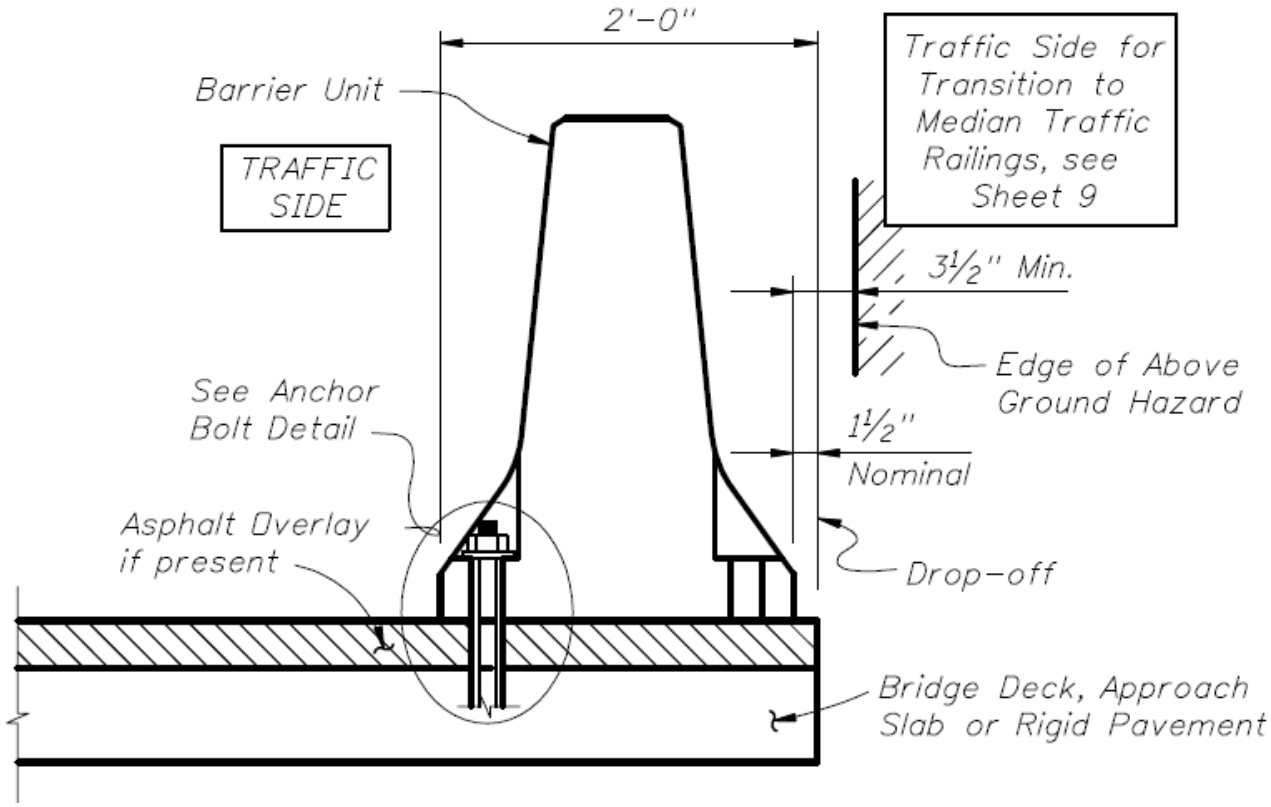
Deflection Distance

Bolted	• See Index 414 - Sheet 5
Staked	• See Index 414 - Sheet 6
Free Standing	• See Index 414 -Sheet 6 & 7
Back Filled	• See Index 414 - Sheet 7

Type K

Bolted

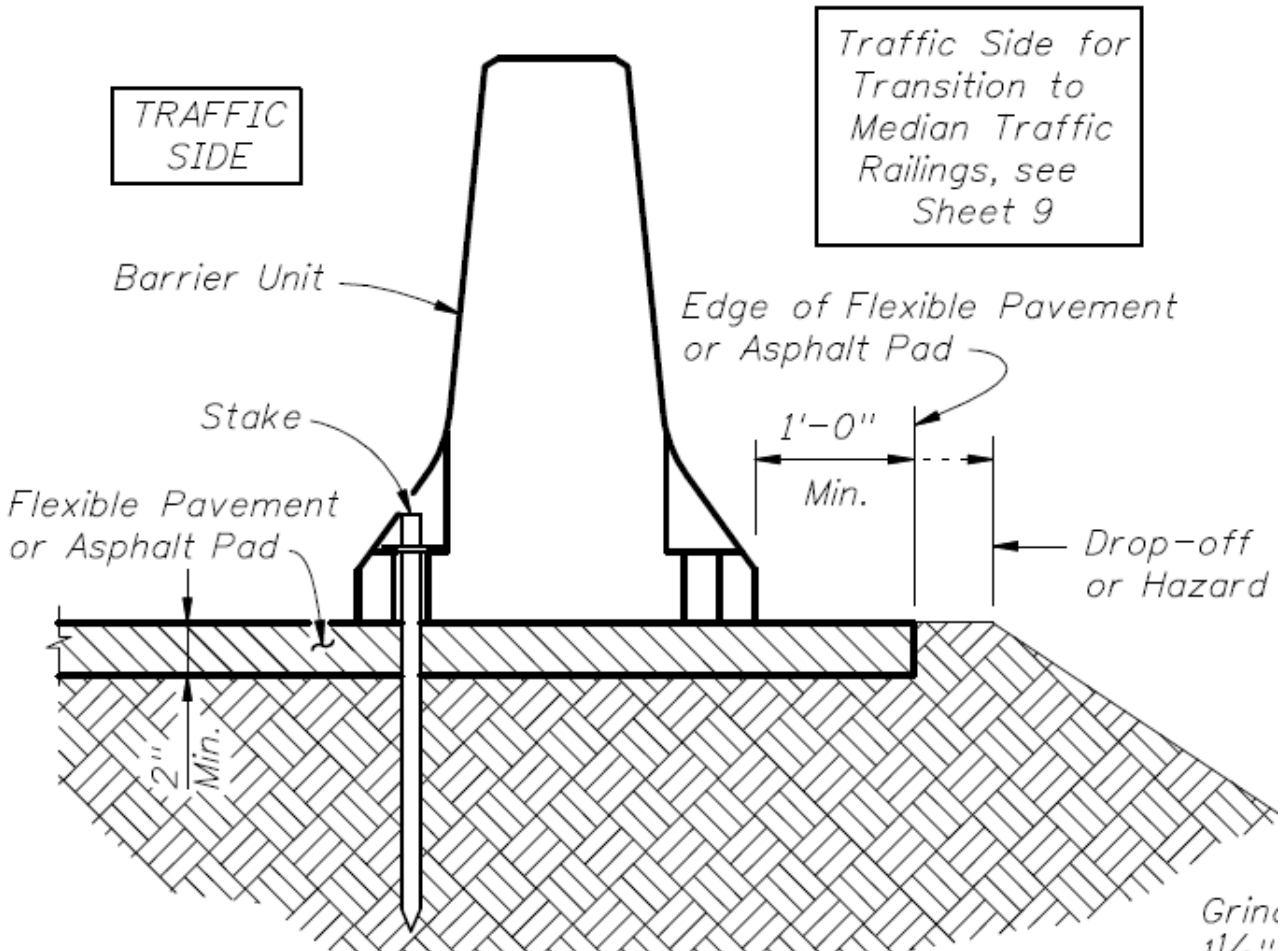
- See Index 414 - Sheet 5



Type K

Staked

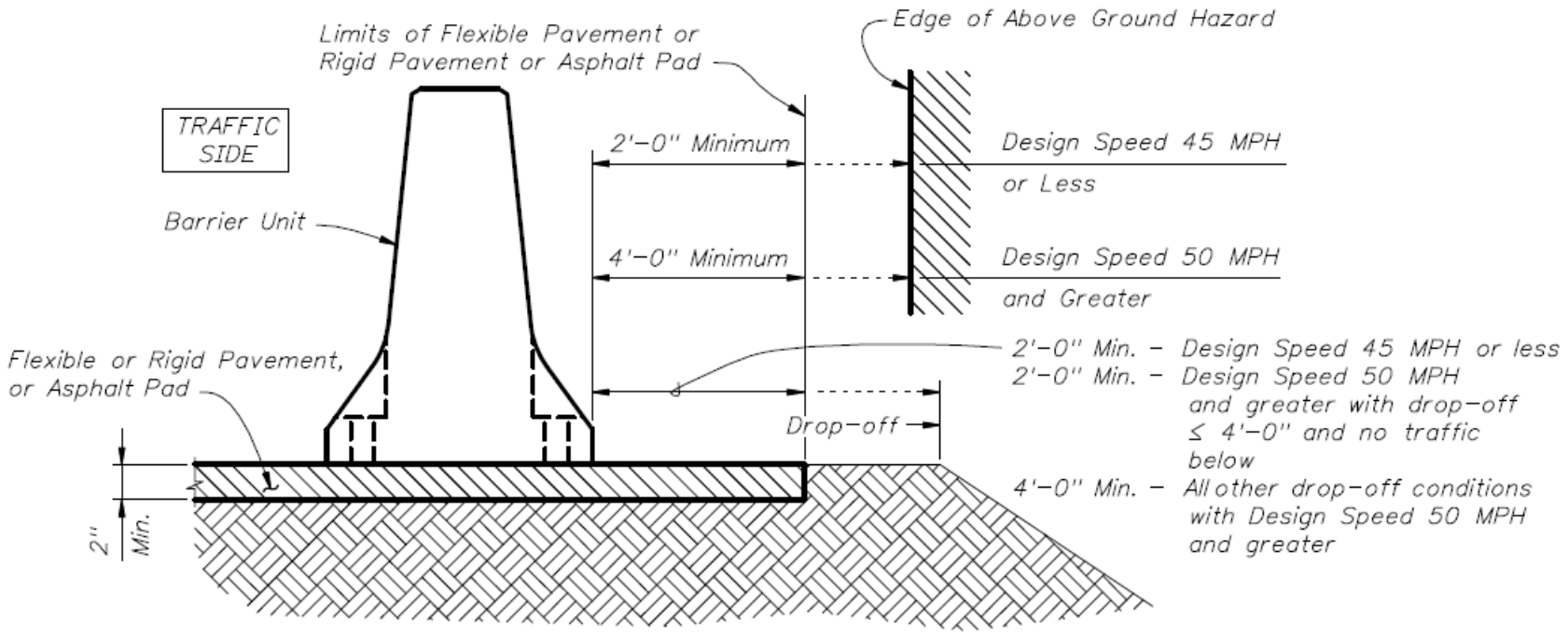
- **See Index 414 - Sheet 6**



Type K

Free Standing Roadway

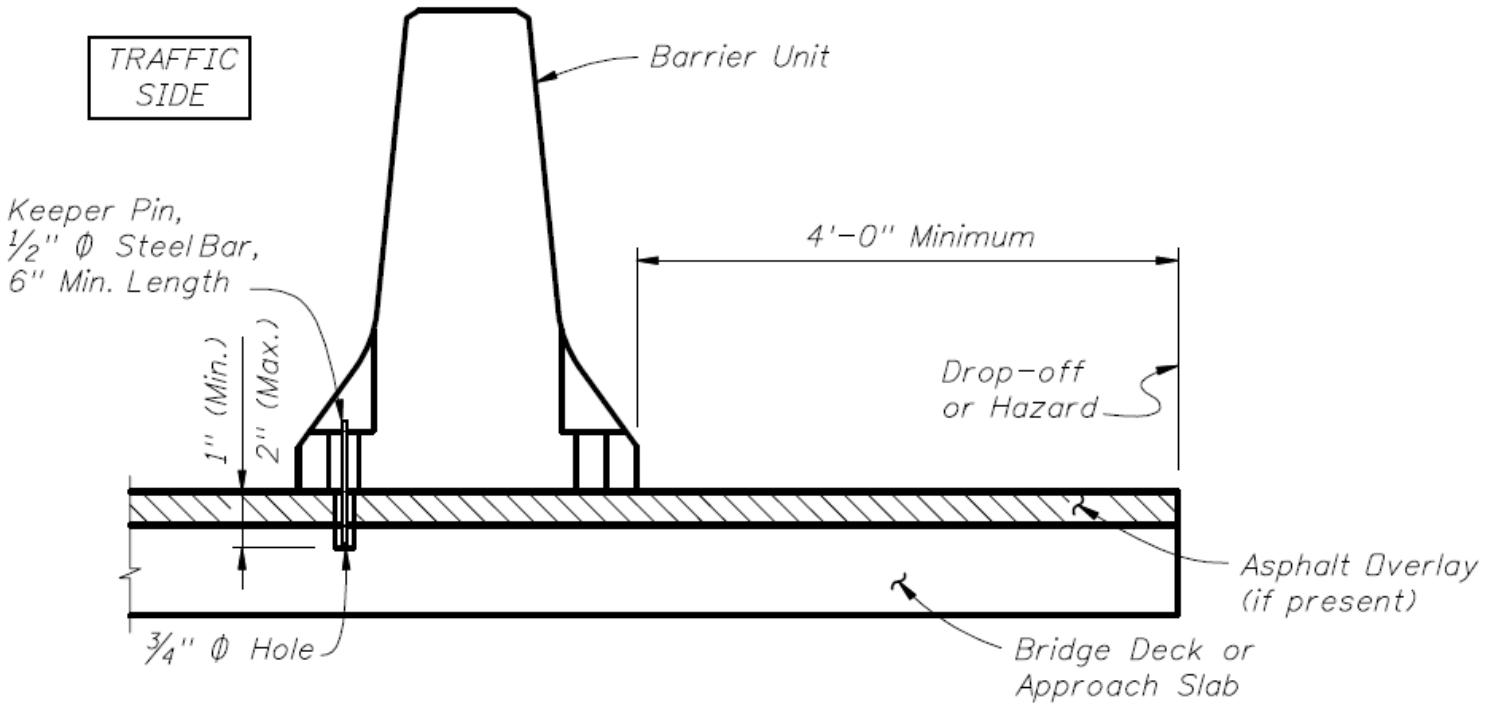
- **See Index 414 -Sheet 6**



Type K

Free Standing Bridge

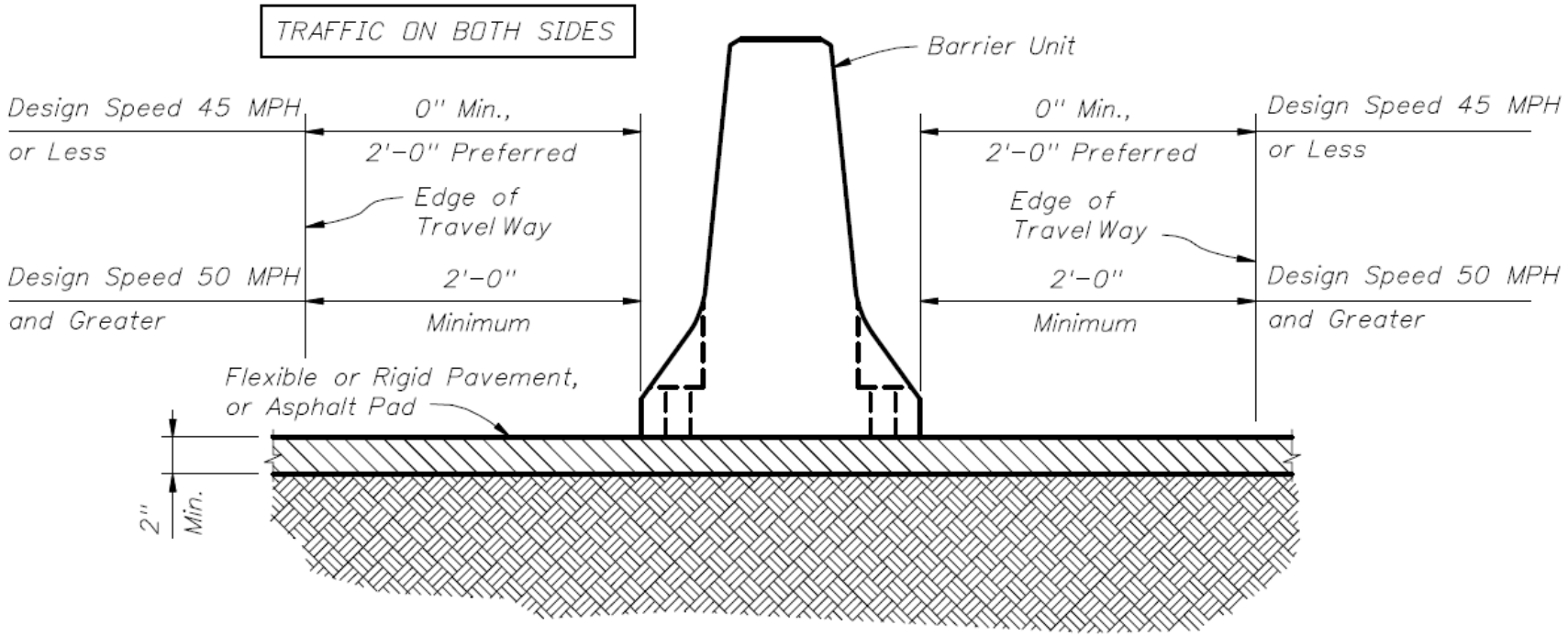
- **See Index 414 -Sheet 6**



Type K

Free Standing Roadway Median

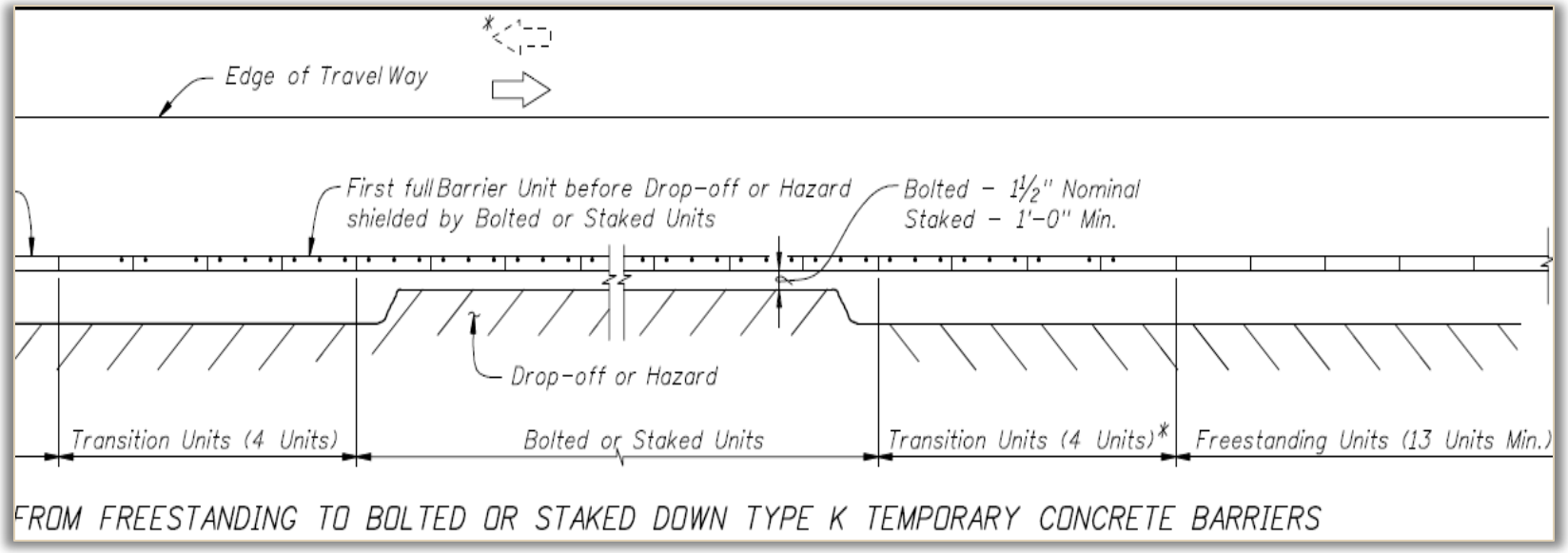
See Index 414 -Sheet 7



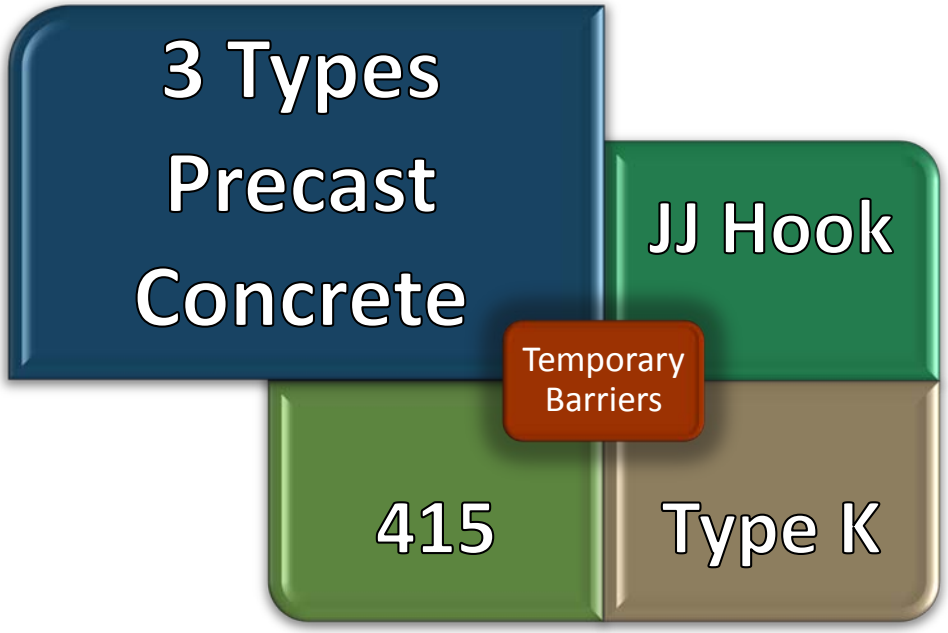
Type K

Transitions

- **Required Between Type K Freestanding, Bolted, Staked and Back Filled**
- **Required Between Other Types of Barriers**

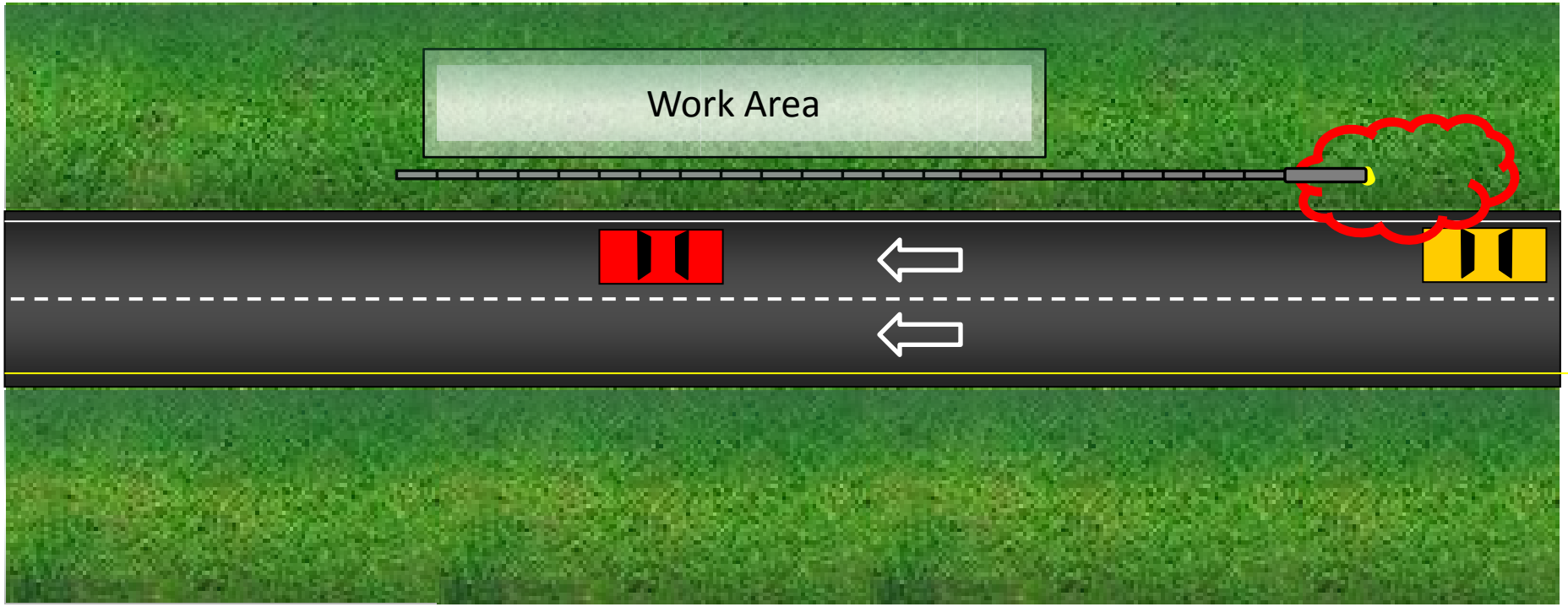


Barrier Wall Placement



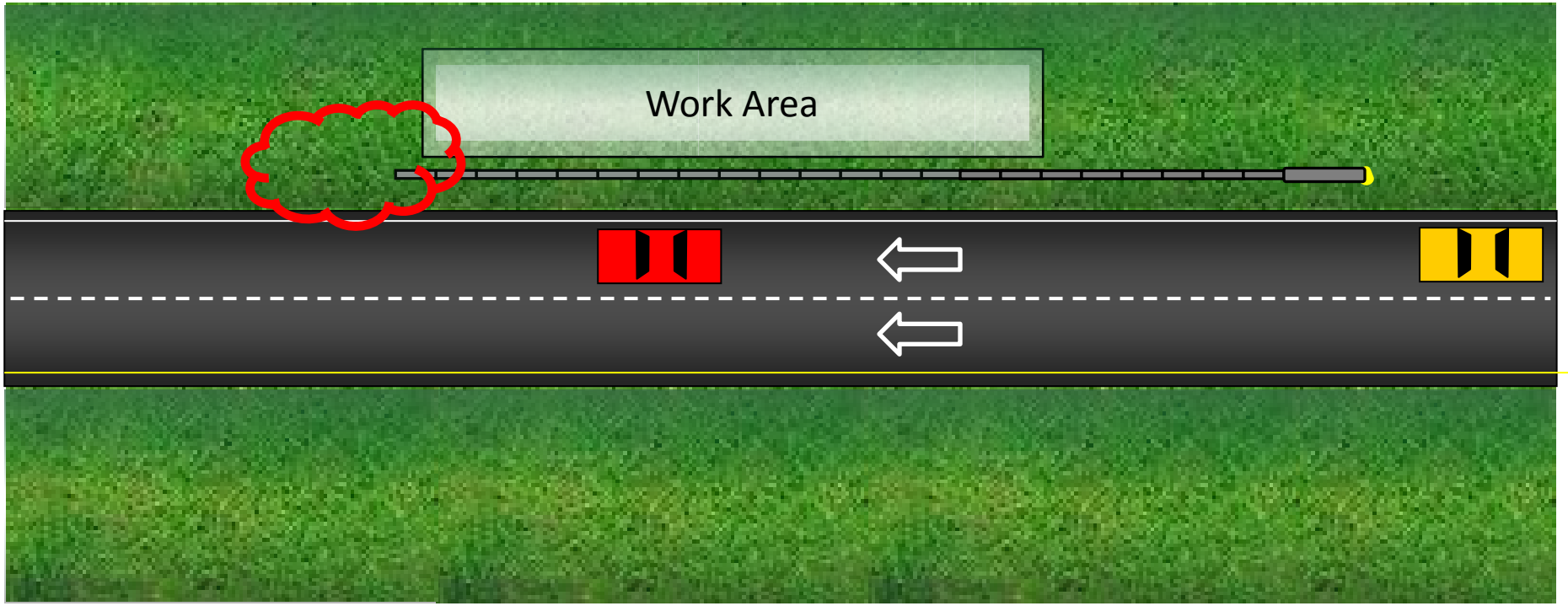
Barrier Terms

Approach End – The portion of a barrier system exposed to approaching traffic.



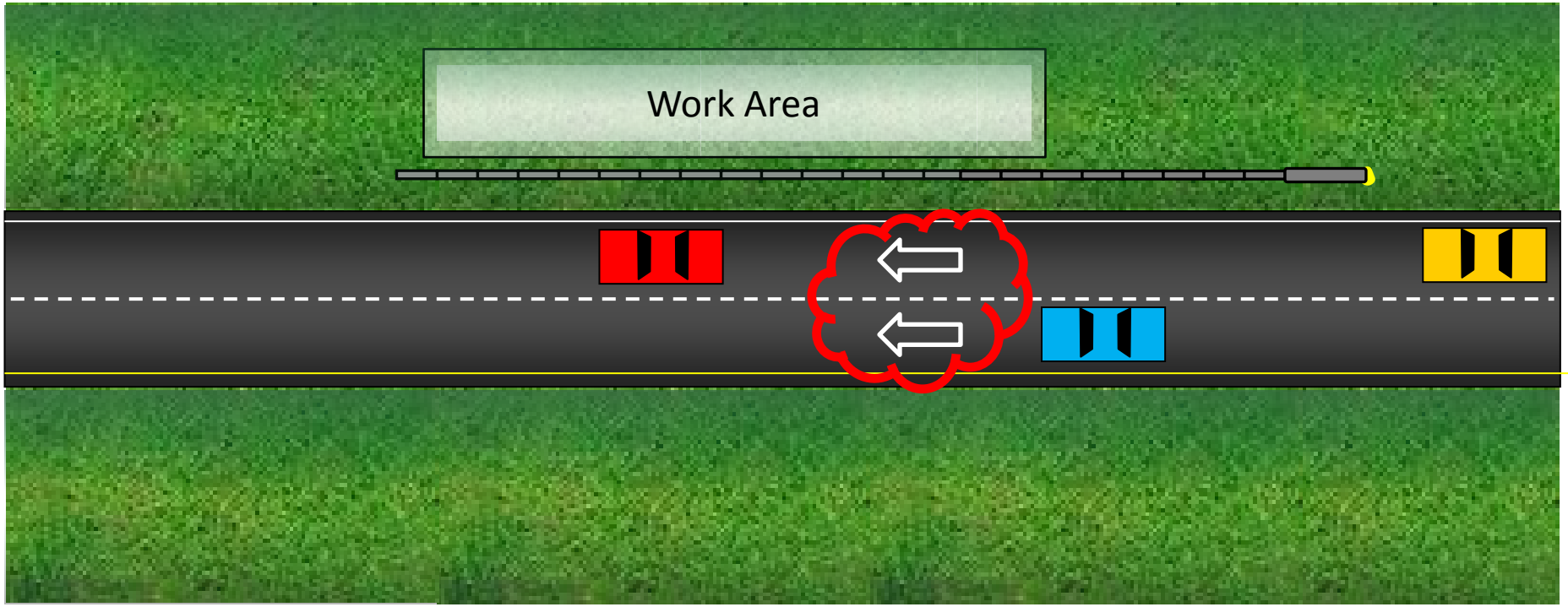
Barrier Terms

Trailing End – Downstream end of a barrier system, not exposed to approaching Traffic.



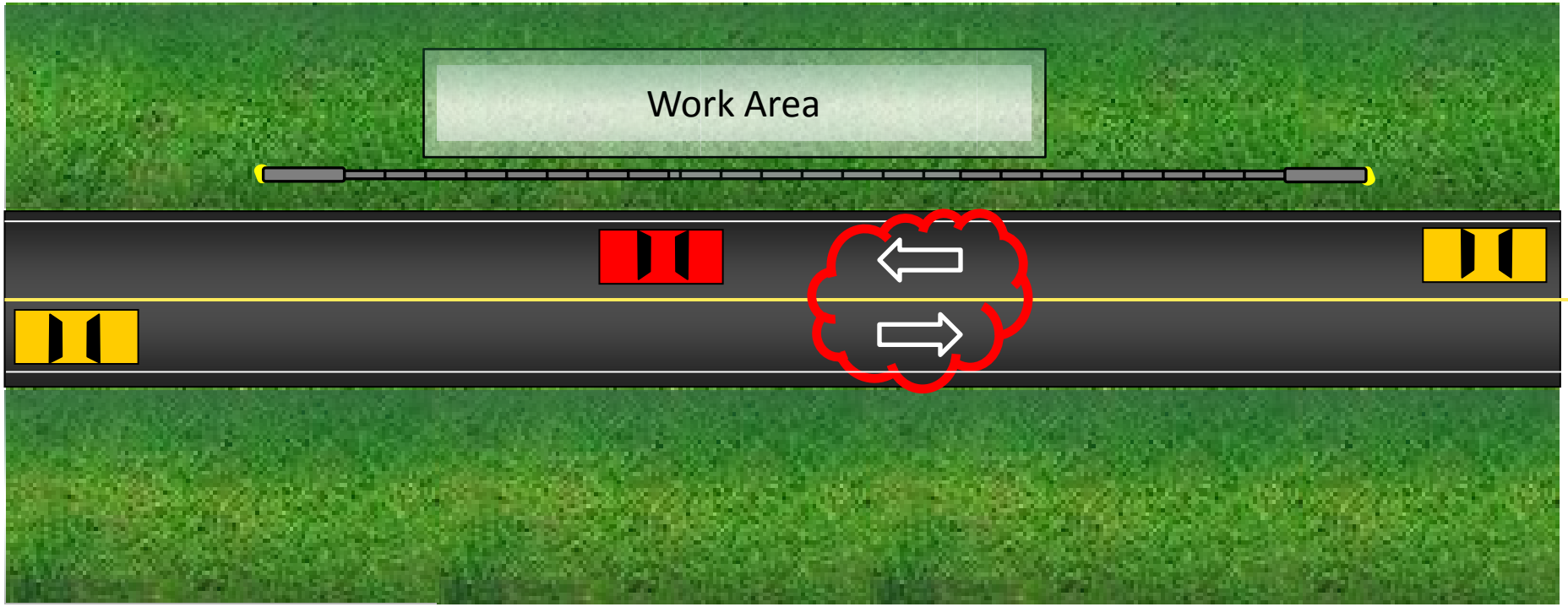
Barrier Terms

Unidirectional – Exposed to traffic approaching from one direction only.



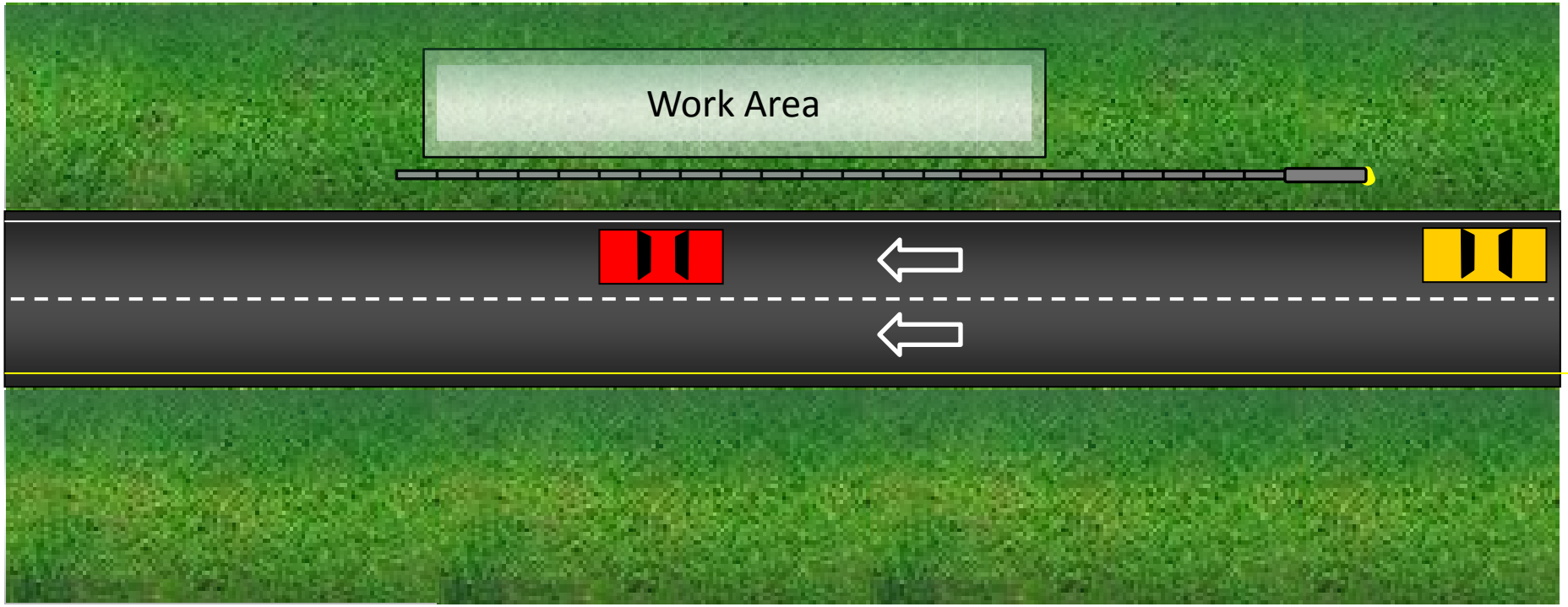
Barrier Terms

Bidirectional – Exposed to traffic approaching from opposing directions



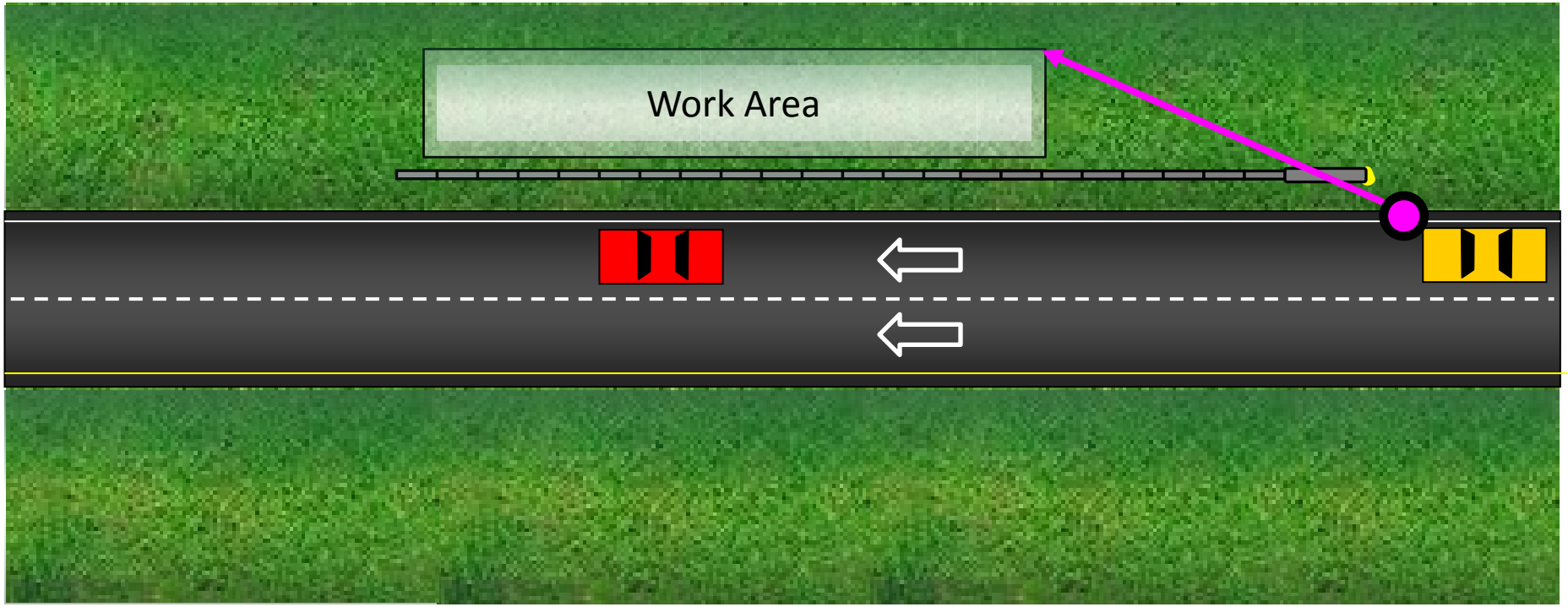
Barrier Terms

- Point of Departure - A point on the edge of a lane at which an errant vehicle leaving the lane will likely impact the leading face of a hazard or area of concern.



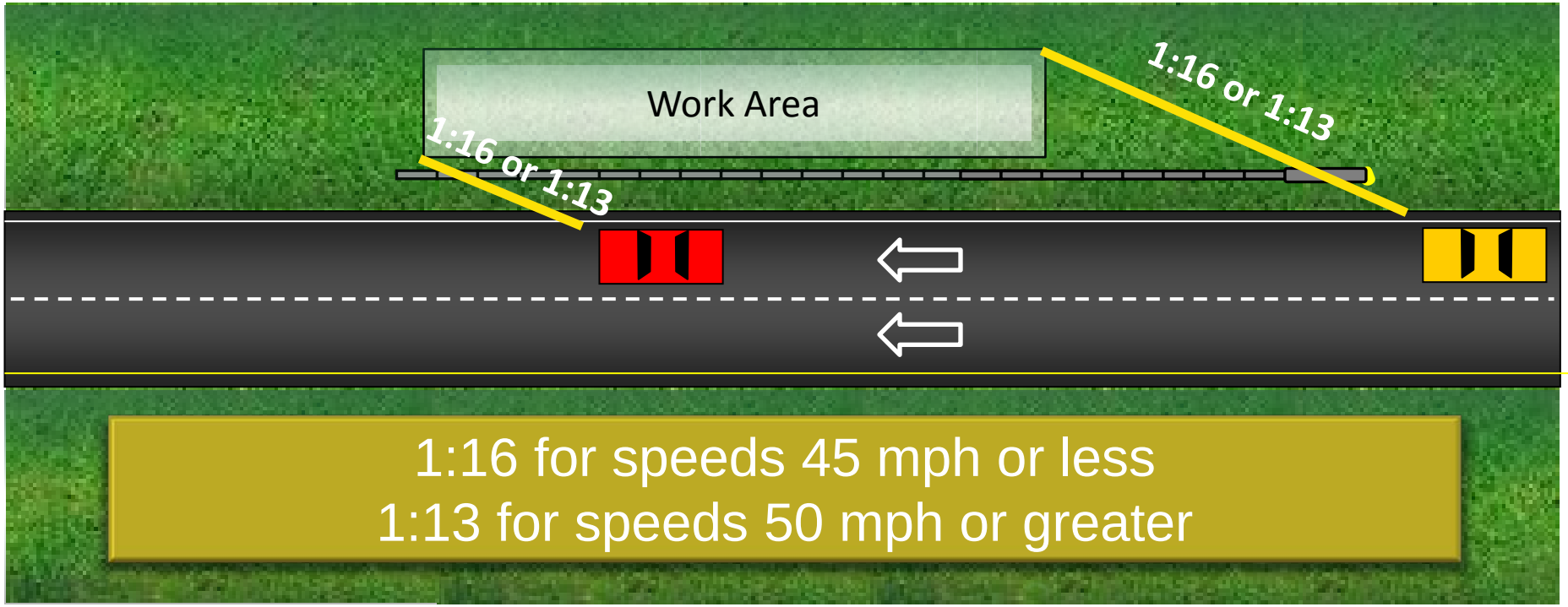
Barrier Terms

Departure Line - A line extending from the Point of Departure to the back of a hazard or Clear Zone



Barrier Terms

Departure Rate - The rate at which the Departure Line leaves the roadway and extends to the back of a hazard or CZ.



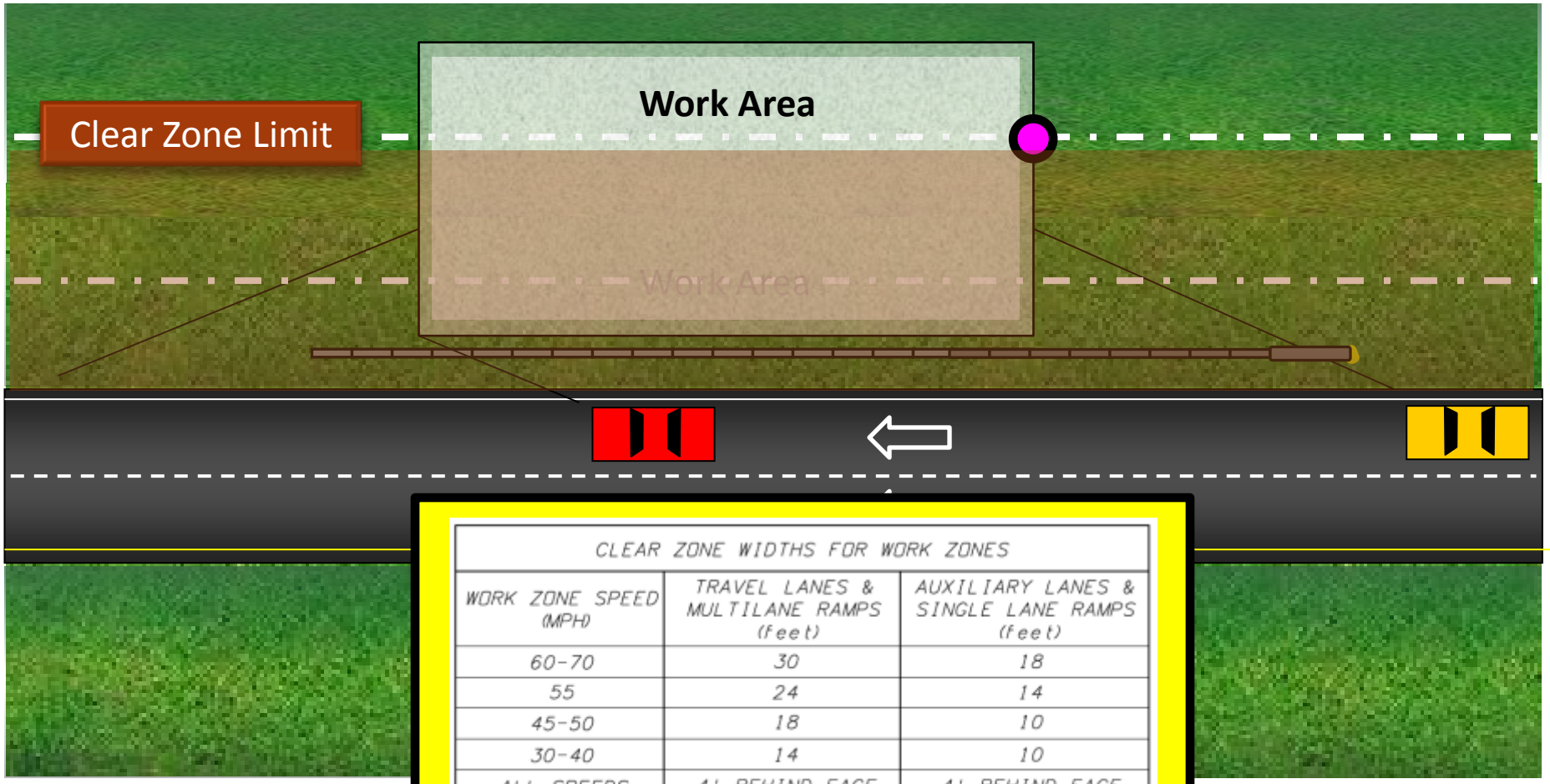
Barrier Terms

Work Area **INSIDE** Clear Zone Limit use the
Back of Hazard or Back of Work Area Inside Clear Zone

CLEAR ZONE WIDTHS FOR WORK ZONES		
WORK ZONE SPEED (MPH)	TRAVEL LANES & MULTILANE RAMPS (feet)	AUXILIARY LANES & SINGLE LANE RAMPS (feet)
60-70	30	18
55	24	14
45-50	18	10
30-40	14	10
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB	4' BEHIND FACE OF CURB

Barrier Terms

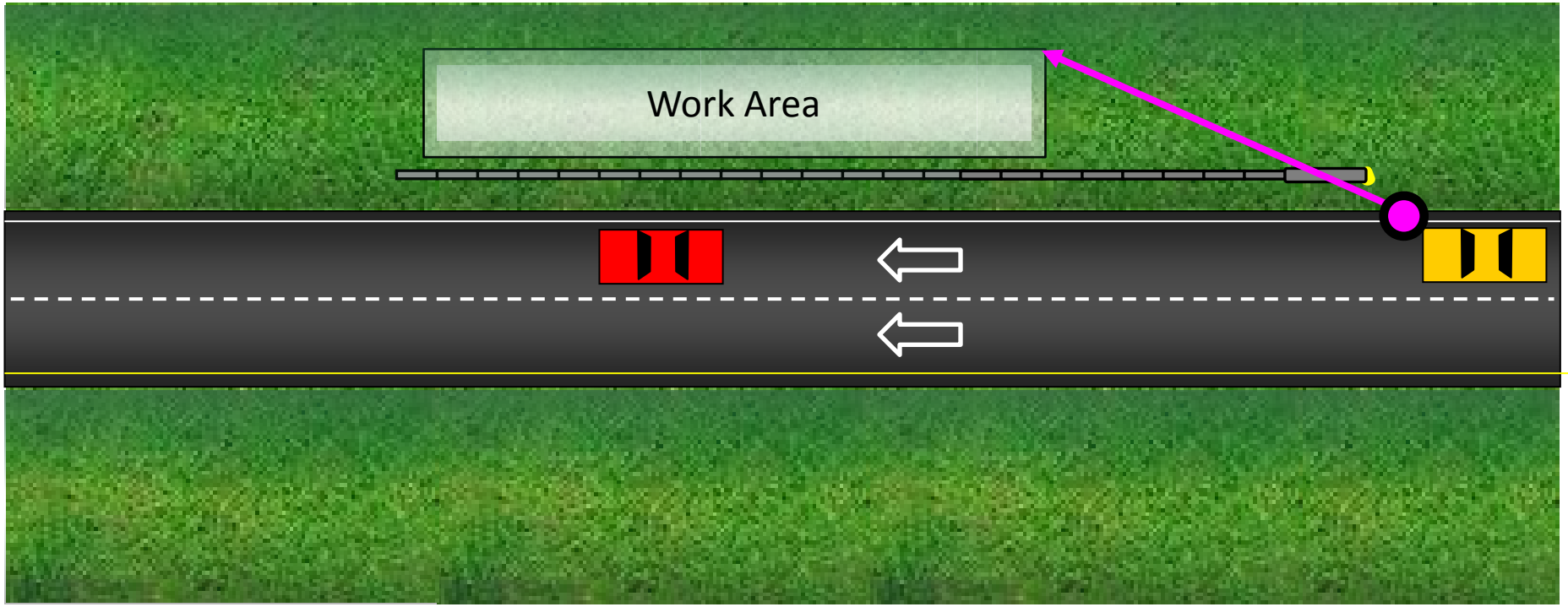
Work Area extends **OUTSIDE** Clear Zone Limit
use the Clear Zone Limit Distance



CLEAR ZONE WIDTHS FOR WORK ZONES		
WORK ZONE SPEED (MPH)	TRAVEL LANES & MULTILANE RAMPS (feet)	AUXILIARY LANES & SINGLE LANE RAMPS (feet)
60-70	30	18
55	24	14
45-50	18	10
30-40	14	10
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB	4' BEHIND FACE OF CURB

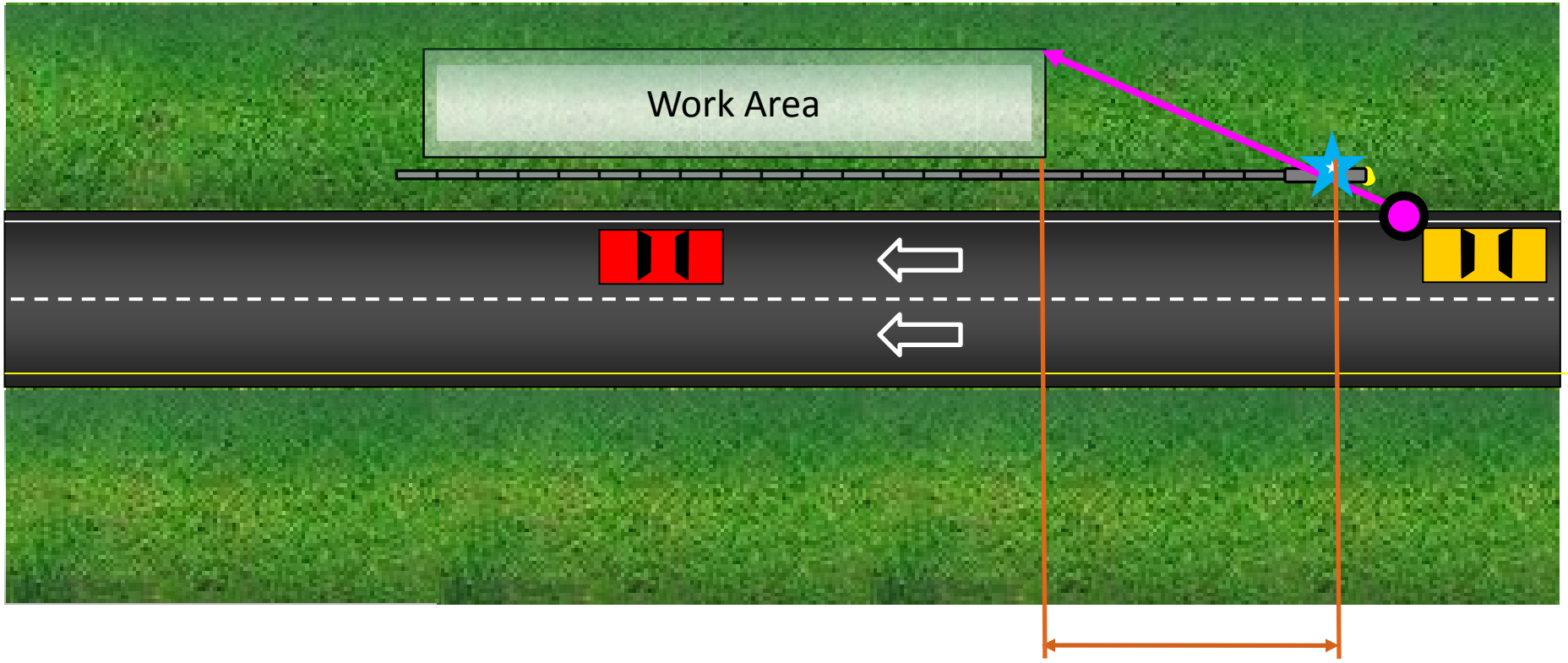
Barrier Terms

★**Beginning Length of Need-** The point at which a barrier intersects the Departure Line establishes the Beginning of the Length of Need

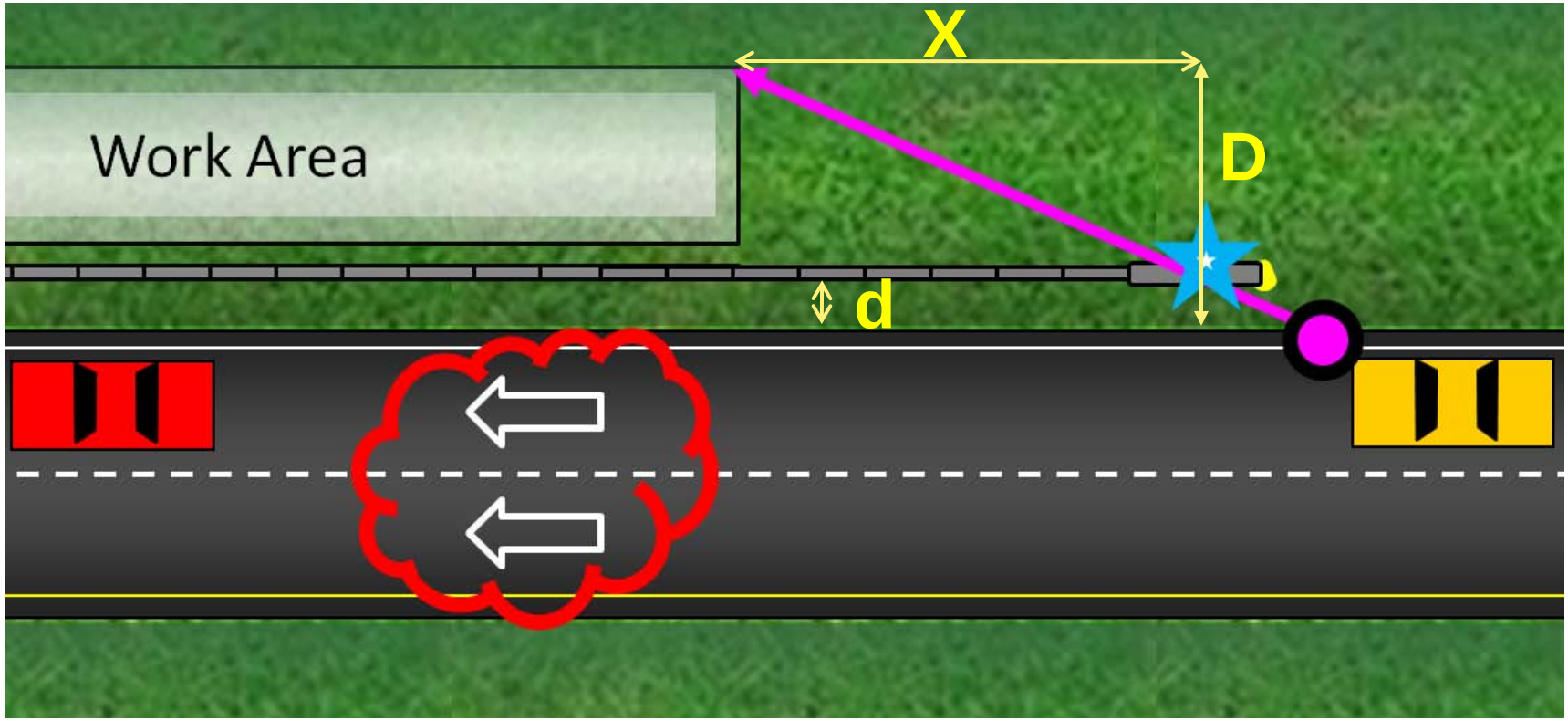


Barrier Terms

Length of Advancement (X) – The distance a longitudinal barrier must be extended in advance of an area of concern in order to adequately shield the hazard.



Barrier Terms
(Length of Advancement)



Example for 45 mph with CZ of 18’ with Barrier set at 2’ from Edge of Pavement

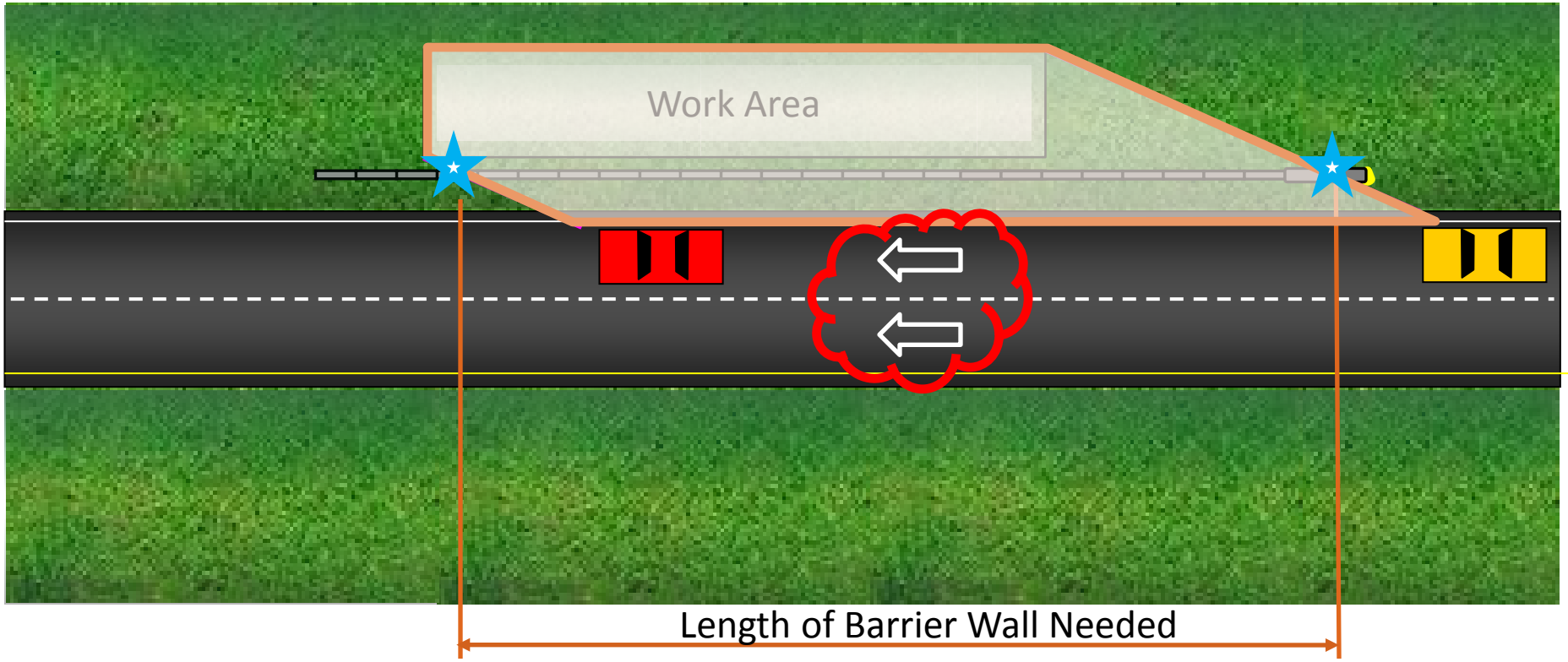
X = 16 (18-2)

X = 256’

Design Speed mph	X (Length Of Advancement) Ft.
≤45	= 16 (D−d)
≥50	= 13 (D−d)

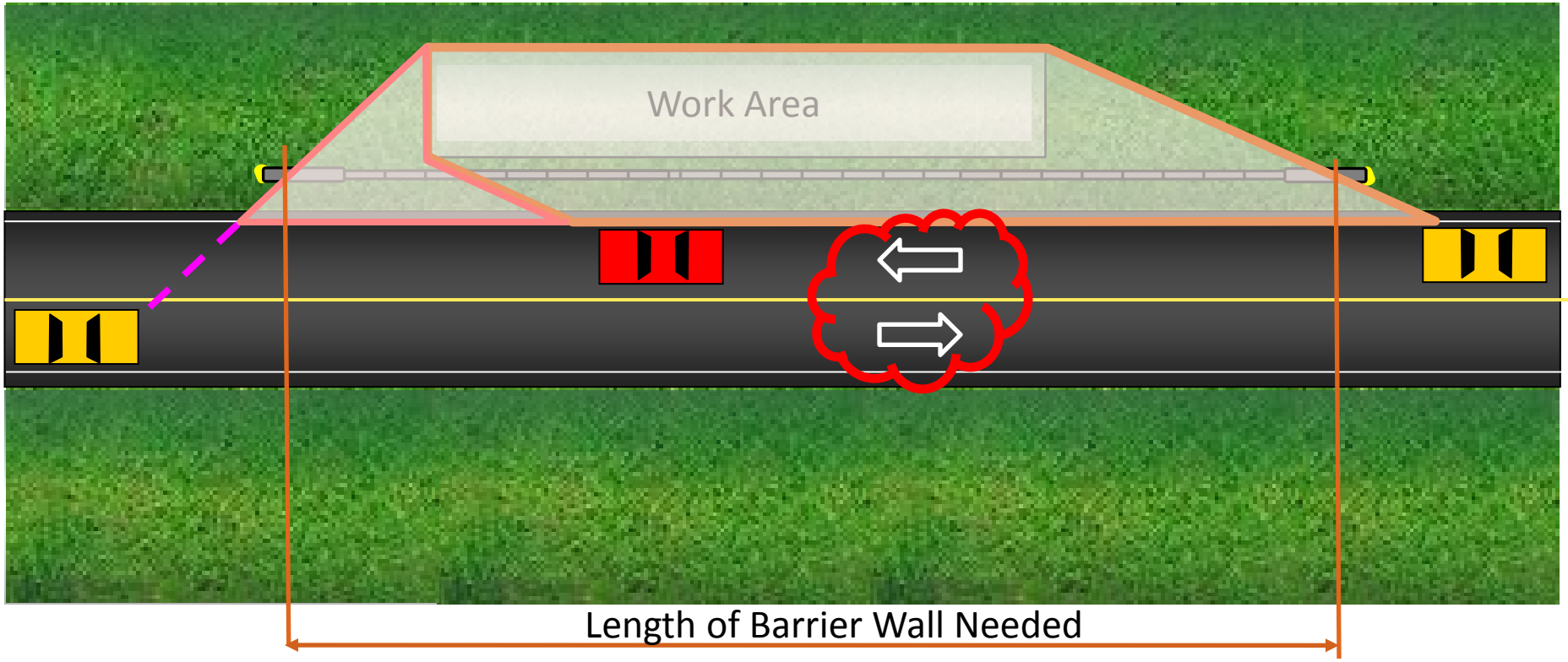
Barrier Terms

Length Of Need Unidirectional – Barrier needed is from the approach departure line to the trailing departure line.



Barrier Terms

Length Of Need Bidirectional – Barrier needed is from the approach departure line to the trailing departure line



Low Profile Barrier

Intended for use in Urban Areas where sight distance for side streets and driveways may be a problem.

Low Profile Barrier

Application	• Design Speeds of 45 mph or less
Surface	• Cross Slope of 1 to 10 or flatter

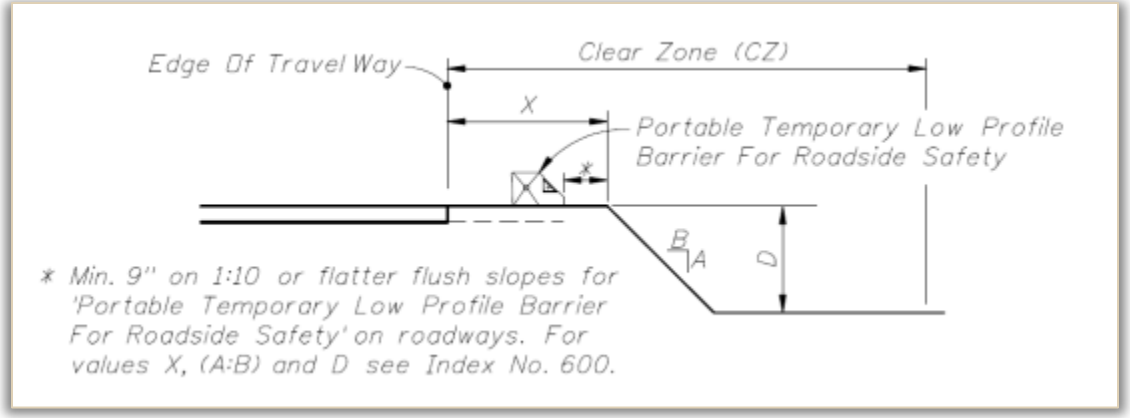
Supplemental Devices	• Along the run of barrier:
	  • Tubular Markers
	  • 50’ cc Tangent; 25’ cc radii
	• Approach end:
	  • Type 1 Object Marker

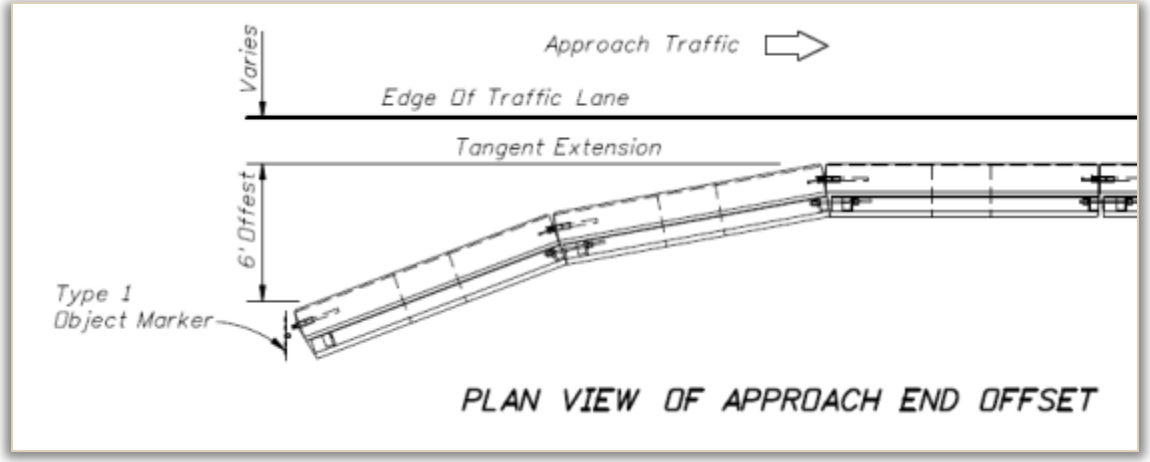
Deflection Distance & Offset	• Deflection Distance - 9 inch min • Approach End Offset – 6 foot min

Low Profile Barrier

Deflection Distance & Offset

- **Deflection Distance - 9 inch min**
- **Approach End Offset – 6 foot min**





Water Filled Barriers

3 Systems:

- Triton
- Guardian
- Yodock

See QPL

Truck / Trailer Mounted Attenuators (TMA's)

Truck or Trailer Mounted

Listed on QPL

Indexes

607 & 619

Mounted by Manufacturers Recommendations

Crash Cushions

Redirective

Inertial

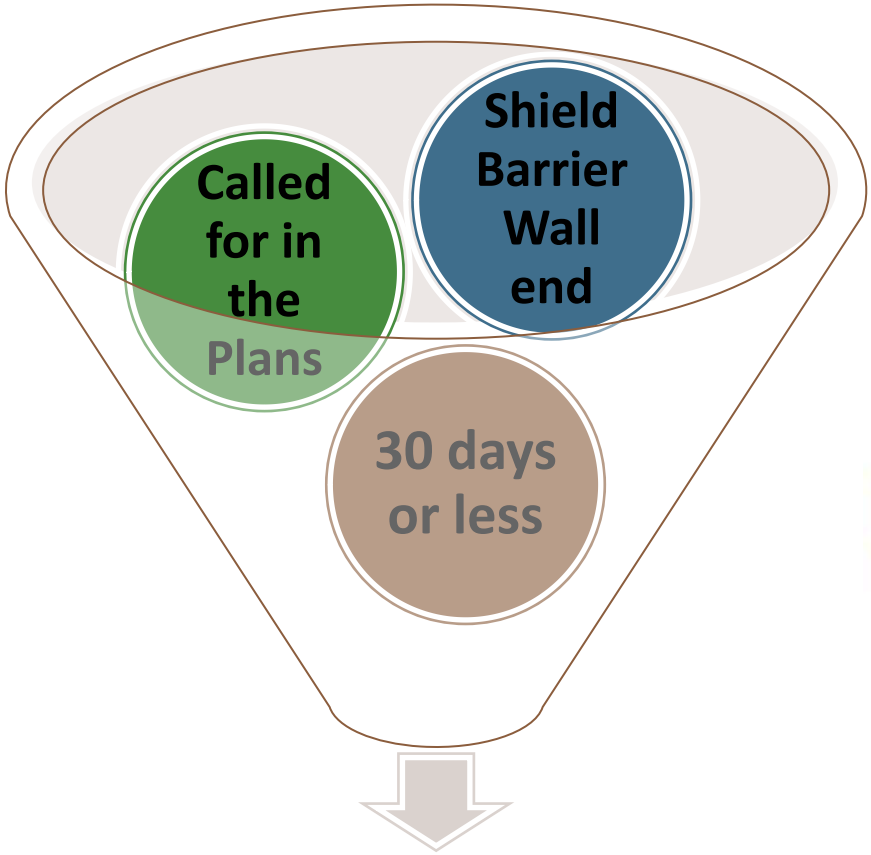
ALTERNATIVE:

The contractor has the option to install reflective sheeting on the nose of the crash cushion in lieu of placing the yellow Type I Object Marker 3 feet in front of the nose of the crash cushion. The sheeting to be used must be solid yellow, Type III or better, and must be a product listed on the Department's Qualified Products List (QPL). The sheeting to be applied to the nose of the crash cushion shall be a minimum of 360 square inches with a minimum height of 15 inches.

April 30, 2009

Inertial Crash Cushions

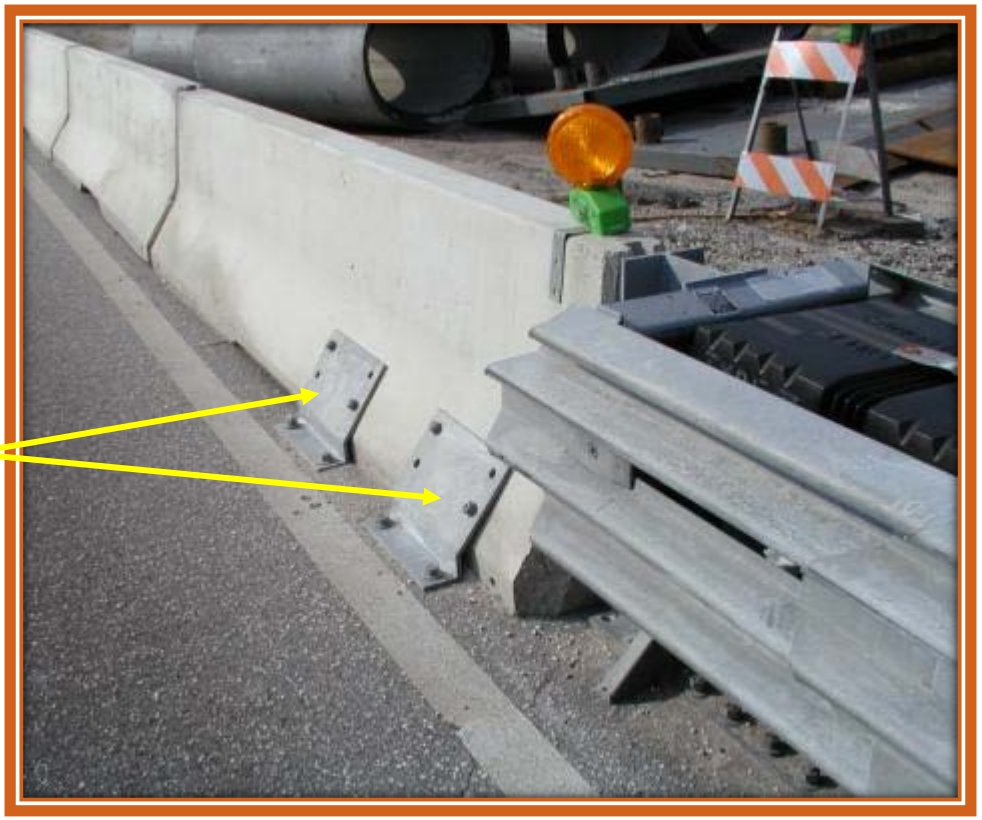
Allowed when ALL the following conditions are met:



Approved for Use

Redirective Crash Cushions

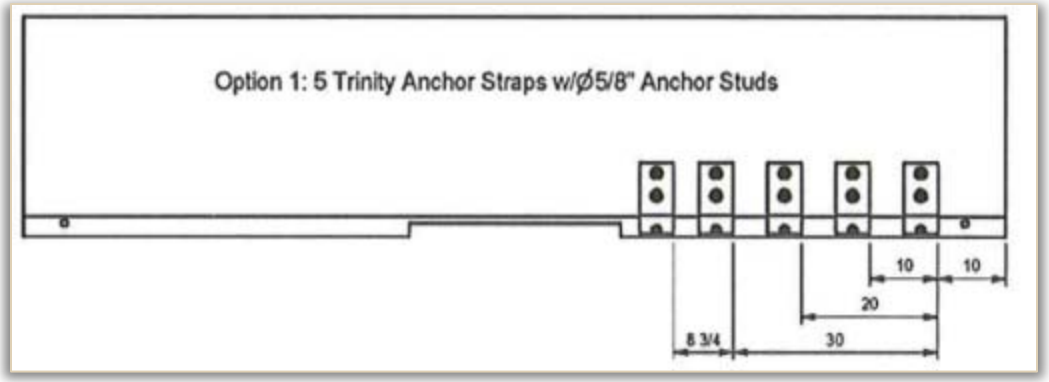
Barrier Wall End Anchor Plates



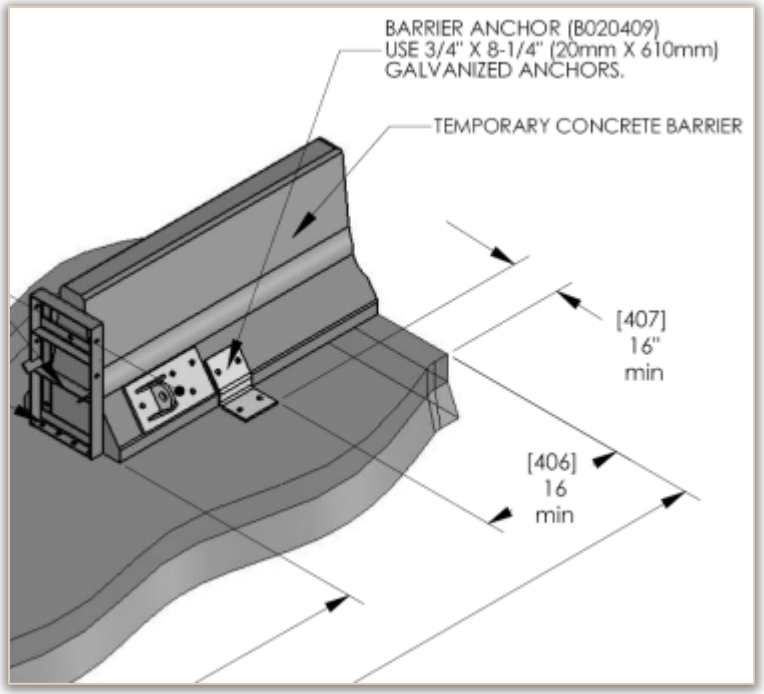
Redirective crash cushions are the principle device to shield approach ends of barrier wall

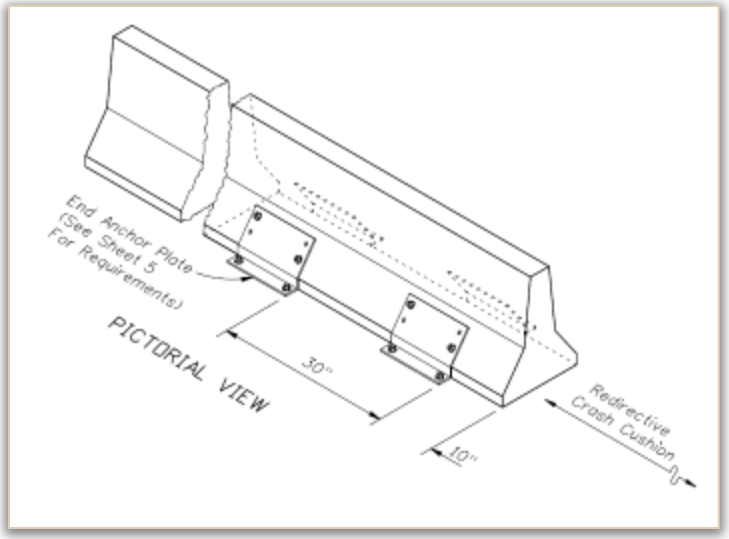
Redirective Crash Cushions

Barrier Wall End Anchor Plates

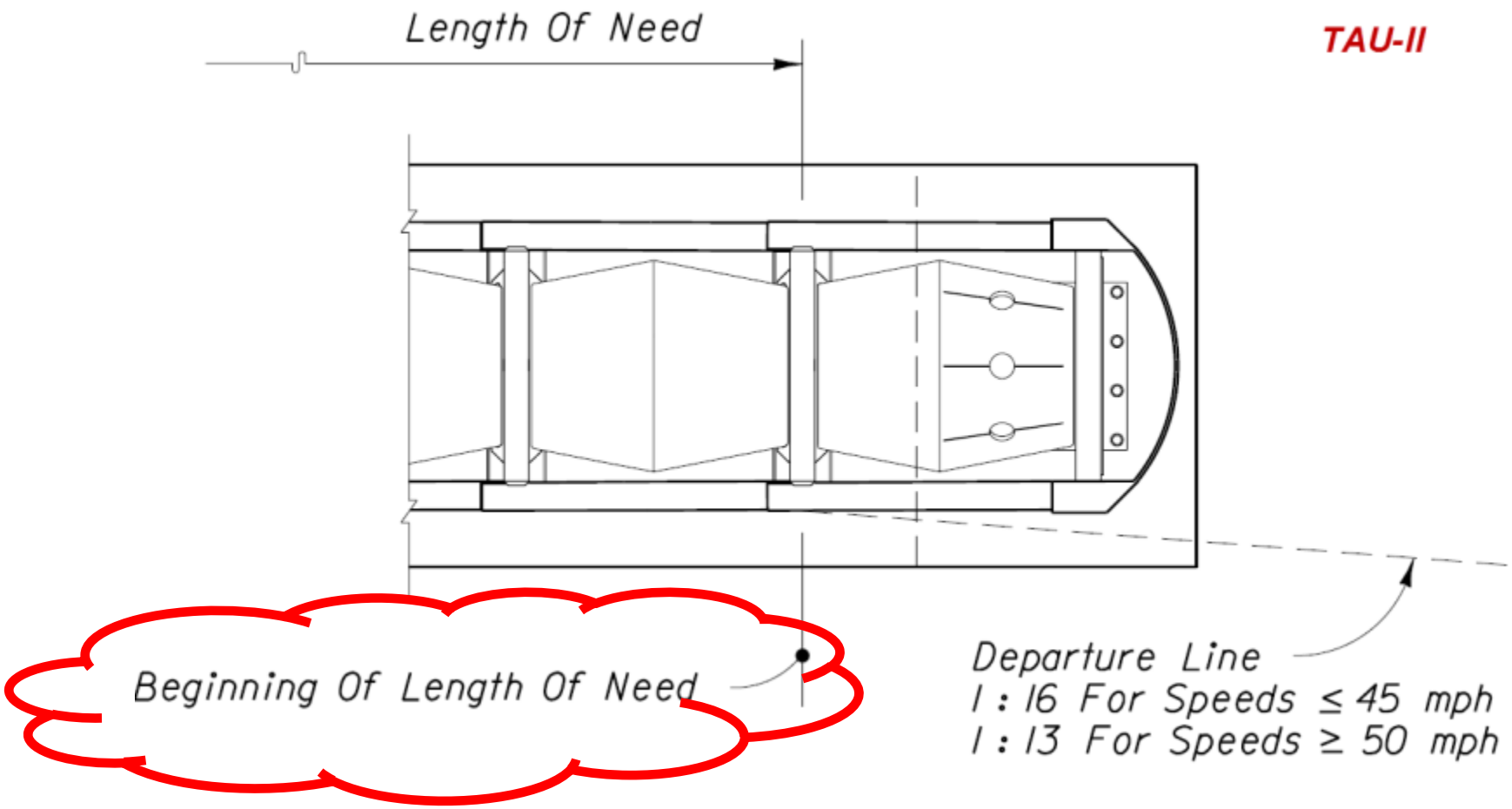


Where barrier wall end units are not anchored, 2 and ½ wall units (min.) are required beyond the length of barrier need for wall end anchorage

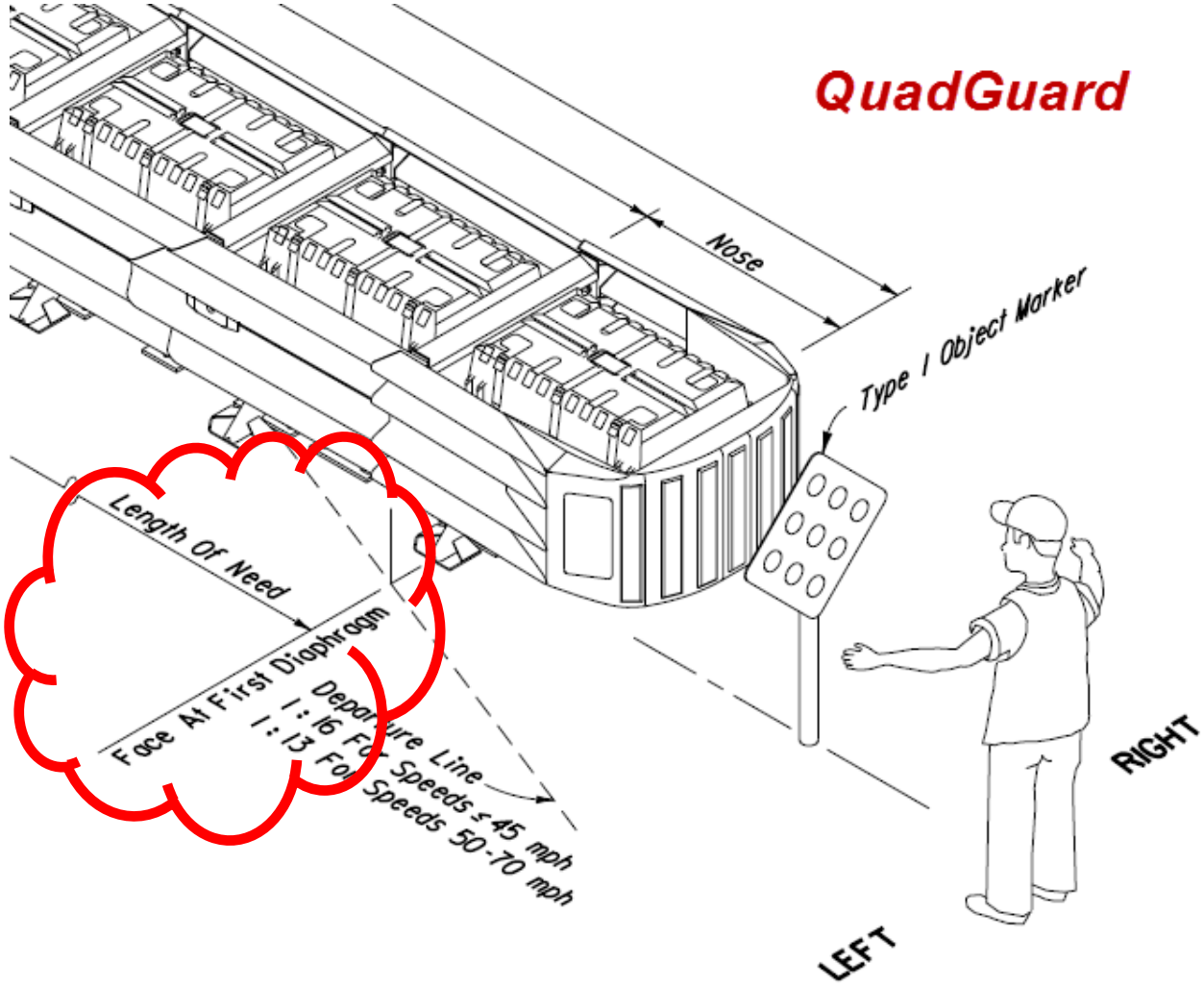




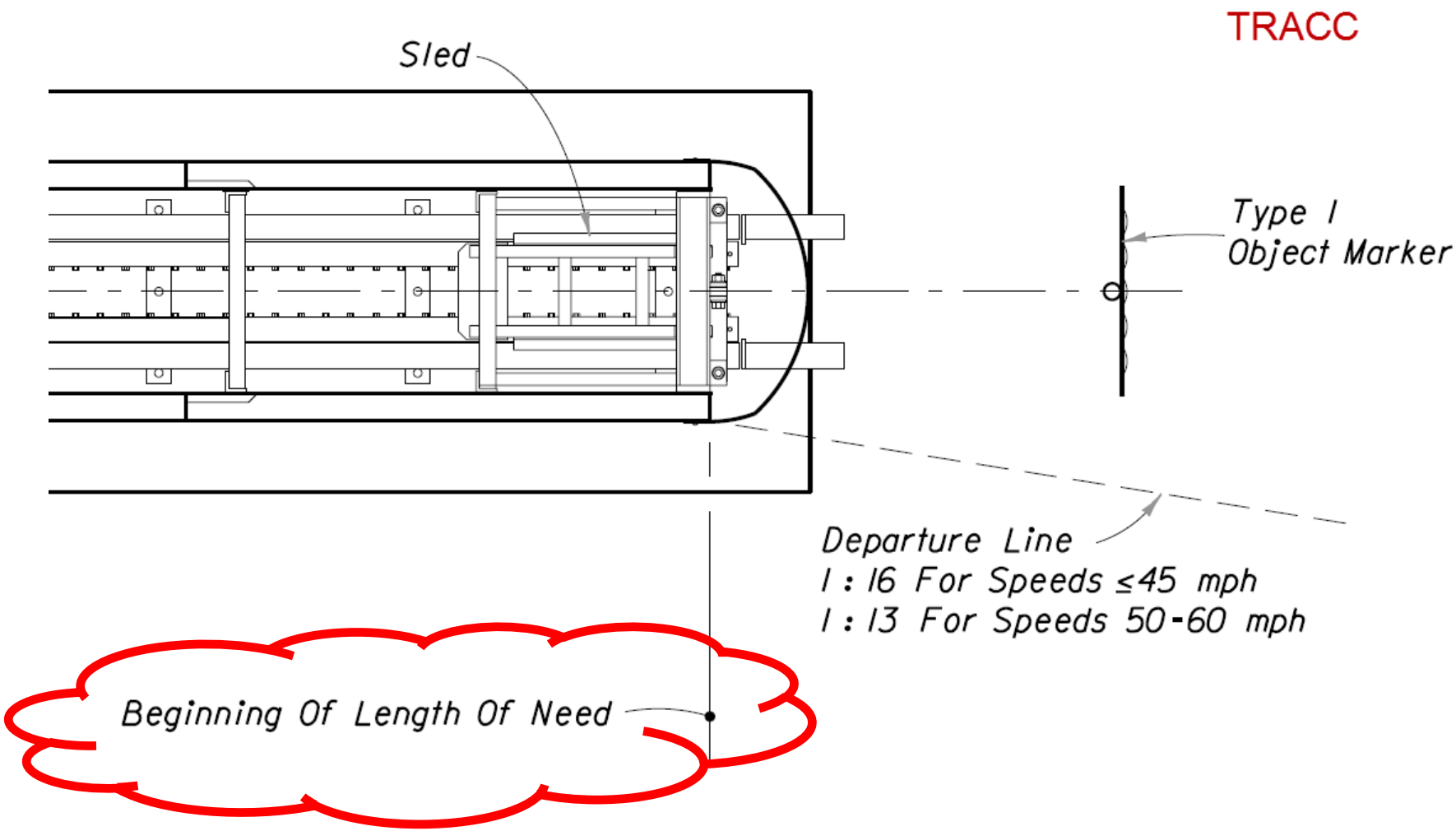
Length of Need Point – TAU-II



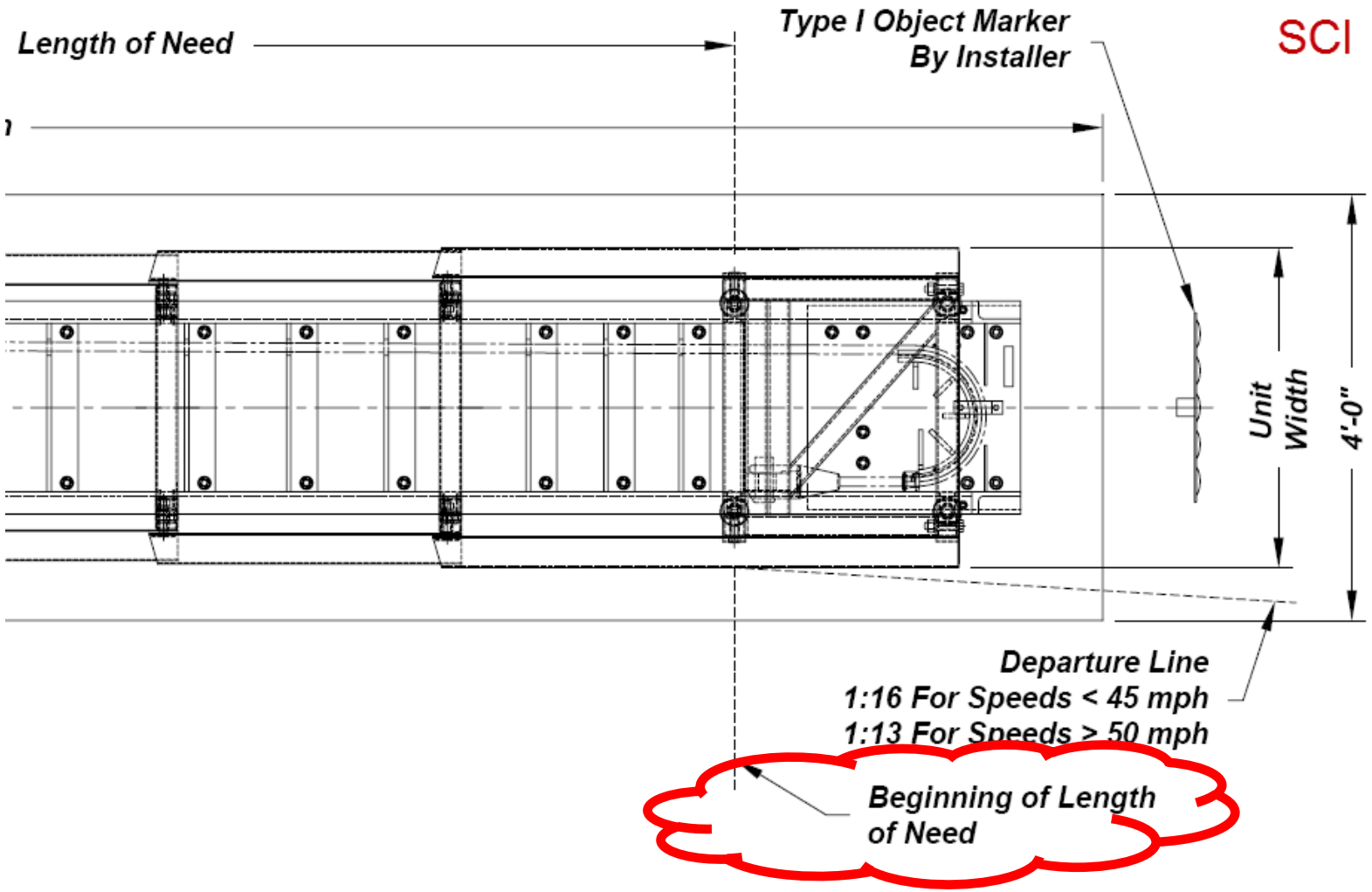
Length of Need Point – QuadGuard



Length of Need Point – TRACC



Length of Need Point – SCI



Pay Items

Struct.	102- 71- AB	TEMPORARY BARRIER WALL	LF

A = Operation
1 (Furnish & Install)
2 (Relocate)

B = Material
1 (Concrete)
2 (Water filled)
3 (Low Profile Concrete)
4 (Type K) bridge applications

Struct.	102- 89- A	TEMPORARY CRASH CUSHION	LO

A = Type
7 (Redirective Option)

SPECIFICATIONS

102-13.12 Temporary Vehicular Impact Attenuator:

102-13.12.1 Redirective: Price and payment will be full compensation for furnishing, installing, maintaining and subsequently removing such attenuators. Payment for restoring damaged attenuators will be the manufacturer's/distributor's invoice price for the new materials/parts plus 20% markup. The 20% markup is compensation for all necessary work, including but not limited to labor, equipment, supplies and profit, as authorized by the Engineer. Additional MOT required for the repair of the attenuator will be paid for under the appropriate MOT pay item.

Questions ??????????????

UNIVERSAL TAU-II
FDOT QPL S544-0029

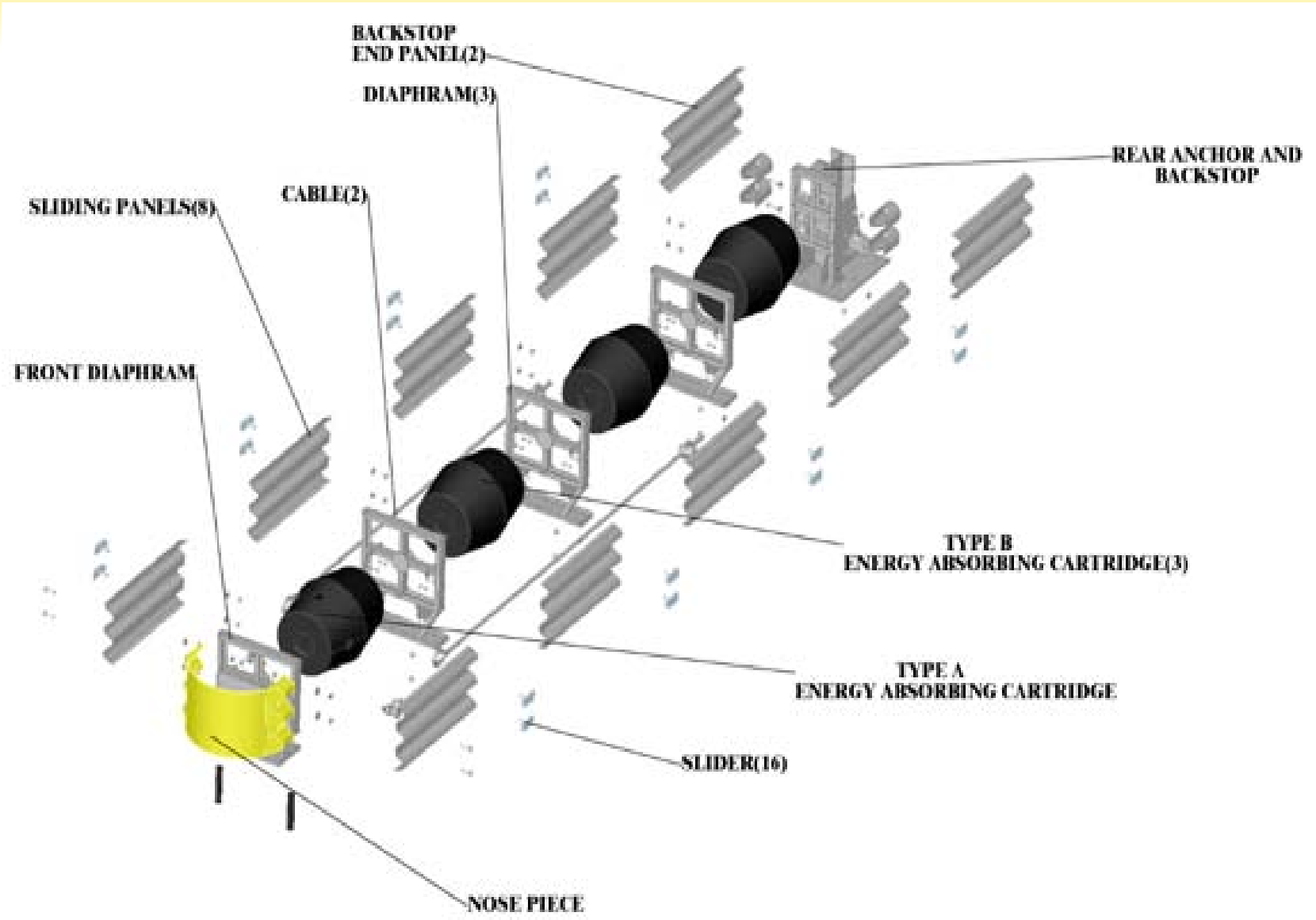
Cloverleaf Corp.

Matthew Schindler

(813) 649-1336

TAU-II

TAU-II


BACKSTOP
END PANEL(2)
DIAPHRAM(3)
REAR ANCHOR AND
BACKSTOP
SLIDING PANELS(8)
CABLE(2)
FRONT DIAPHRAM
TYPE B
ENERGY ABSORBING CARTRIDGE(3)
TYPE A
ENERGY ABSORBING CARTRIDGE
SLIDER(16)
NOSE PIECE

FOUNDATION OPTIONS

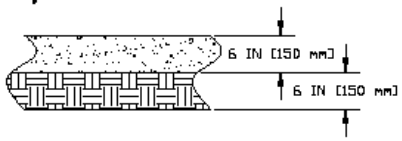
FOUNDATION SPECIFICATIONS:

THE UNIVERSAL TAU-II CRASH CUSHION SYSTEM HAS BEEN DESIGNED TO ATTACH TO CONCRETE OR ASPHALT FOUN
ANCHORAGE SPECIFIED BELOW DEPENDING ON THE FOUNDATION AT THE JOB SITE. REFERENCE TAU-II FOUNDATIC
FURTHER DETAIL.

1.) CONCRETE PAD

FOUNDATION: MINIMUM 6 IN. [150 mm] REINFORCED PCC PAD OR 8 IN. [200 mm] NONREINFORCED PCC PAD
ANCHORAGE: 3/4 IN. [20 mm] X 8 1/2 IN. [210 mm] GALVANIZED ANCHOR WITH 6 IN. [150 mm] EMBEDMENT OR 3/4" MECHANICAL ANCHORS WITH AN EMBEDMENT THAT IS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

2.) ASPHALT OVER SUBBASE



FOUNDATION: MINIMUM 6 IN [150 mm] AC OVER 6 IN. [150 mm] COMPACTED DGA SUBBASE

ANCHORAGE: 3/4 IN. [20 mm] X 18 IN. [460 mm] GALVANIZED ANCHORS WITH 16 IN. [410 mm] EMBEDMENT.

ASPHALT ANCHORING KIT REQUIRED

3.) ASPHALT ONLY

FOUNDATION: MINIMUM 8 IN. [200 mm] AC

ANCHORAGE: 3/4 IN. [20 mm] X 18 IN. [460 mm] GALVANIZED ANCHORS WITH 16 IN. [410 mm] EMBEDMENT.

ASPHALT ANCHORING KIT REQUIRED

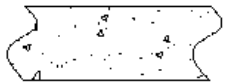
4.) ASPHALT OVER P.C. CONCRETE

FOUNDATION: AC OVER PCC.

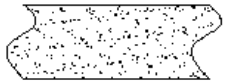
ANCHORAGE: 3/4 IN. [20 mm] GALVANIZED ANCHORS WITH MINIMUM 6 IN. [150 mm] EMBEDMENT IN PCC - NO ASPHALT ANCHORING KIT REQUIRED
OR
3/4 IN. [20 mm] X 16 IN. [460 mm] GALVANIZED ANCHORS WITH 16 IN. [410 mm] EMBEDMENT - ASPHALT ANCHORING KIT REQUIRED

MATERIAL SPECIFICATIONS

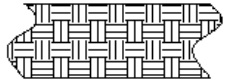
PORTLAND CEMENT CO



ASPHALTIC CONCRETE



COMPACTED SUBBASE (



REV.	CHANGES	DATE	BY	REQ'D	NEXT ASSY.	ITEM
A	ADDED NOTE TO CONCRETE PAD ANCHORAGE	10/21/08	JR			

SCALE: FULL

	DATE	INIT.
DRAWN BY	01/09/04	GAD
APPR'D BY		JSM

Standard Tolerance
Angular ± 1/2°
Fractional ± 1/16
Dec .XXX=± .010
Dec .XX=± .030

TITLE: FOUNDATION SPECIFICATIONS

MODEL

Chart is in QPL 544-0029 Vendor Drawings

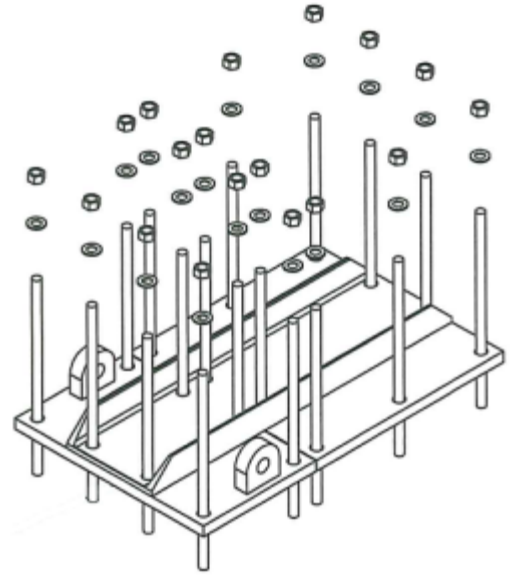
Foundation Options

This is not an acceptable pad – asphalt placed over compacted dirt.

Concrete Foundations

8” threaded rod w/ 6” embedment

Asphalt Foundations



18” threaded rod w/ 16” embedment

Anchor Embedment

-Chemical or mechanical anchors are acceptable.
-Most common method is using all-thread rod & epoxy.
- For a concrete pad, ¾" x 8" threaded rod is used with an embedment depth of 6" in the pad
- For asphalt foundations, a ¾" x 18" threaded rod is used with an embedment depth of 16" in the asphalt.
-For any anchors in the concrete barrier wall, ¾" mechanical anchors (wedge bolts) are acceptable.
-Proper anchor installation procedures are key – dust is blown out of holes; generous amount of epoxy put into holes; epoxy given ample time to cure before tightening, etc.
-Not all adhesives listed under QPL 937 HV Type are acceptable. Manufacturer publishes periodic list of those evaluated and found acceptable per manufacturer's requirements.

Anchor Embedment Depth

Threads should not extend more than ¼” above the top of the nut when the nut is tight against the backstop ground plate.

Anchor Embedment Depth

Nuts are not torqued down. No evidence of epoxy flooding out around bolt holes which could indicate not enough epoxy in holes.

Anchor Embedment Depth

Properly installed front cable anchor plate. Note some epoxy flowing out of holes. No more than ¼” of threads extending above nuts.

Cartridge Placement

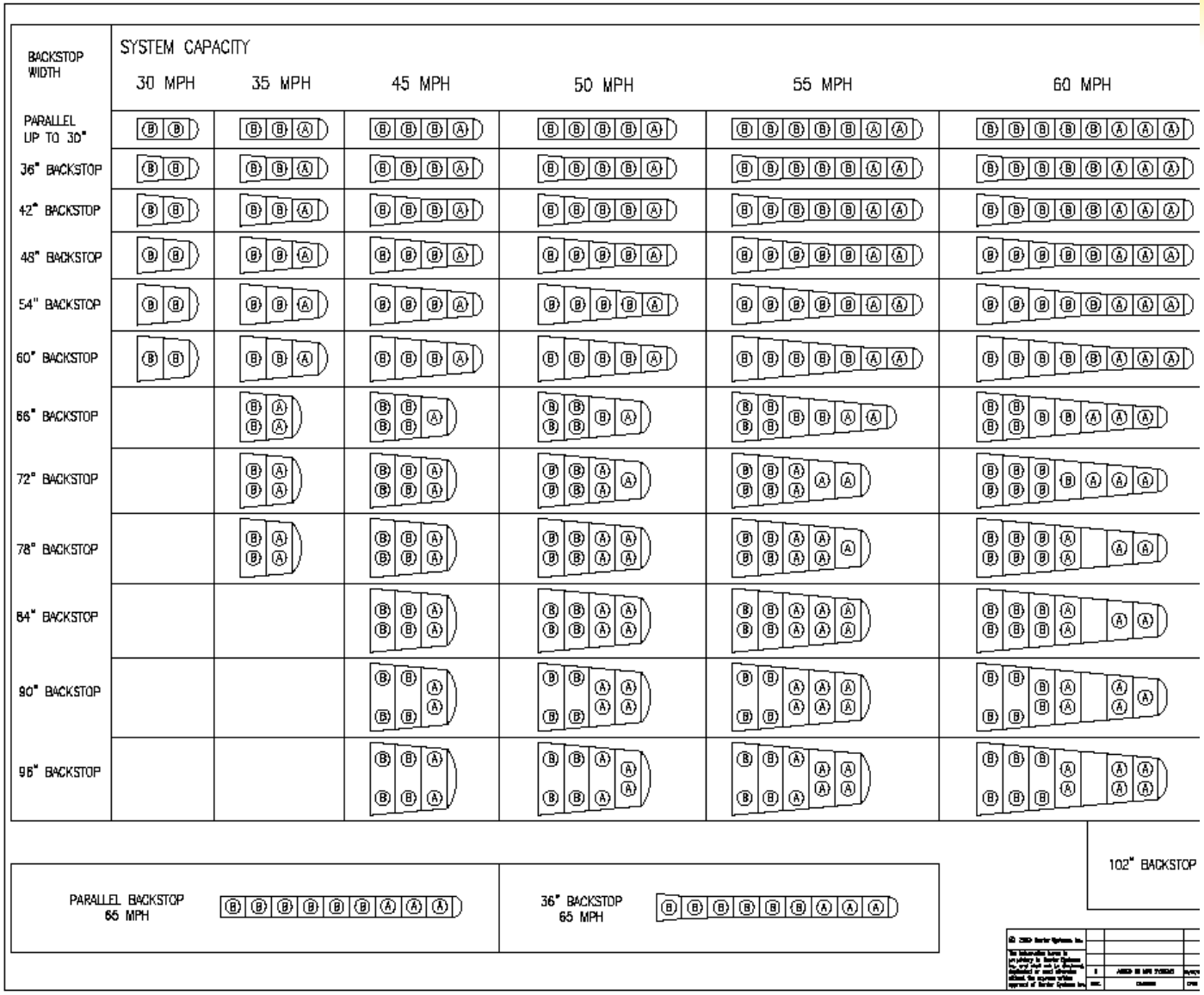


Chart is in QPL 544-0029 Vendor Drawings

Cartridge Placement

Type B Cartridge

Type A Cartridge – holes towards the front

Cartridge Placement

The writing on the cartridge should face up and is to be legible when standing behind the crash cushion looking towards the nose.

Cartridge Placement

The TAU Configuration chart is printed on the bottom side of each cartridge

Slider Panels & End Panels

The forward panel overlaps the rearward panel so the forward panel slides over and back .

Slider Panels & End Panels

The rearward panel is “on top” of the forward panel. When impacted, the attenuator will telescope rearward.

Slider Panels & End Panels

The gap between the slider panels should not exceed 3/4”

Slider Panels & End Panels

If you can get your finger in the gap, it's more than 3/4"!

Slider Panels & End Panels

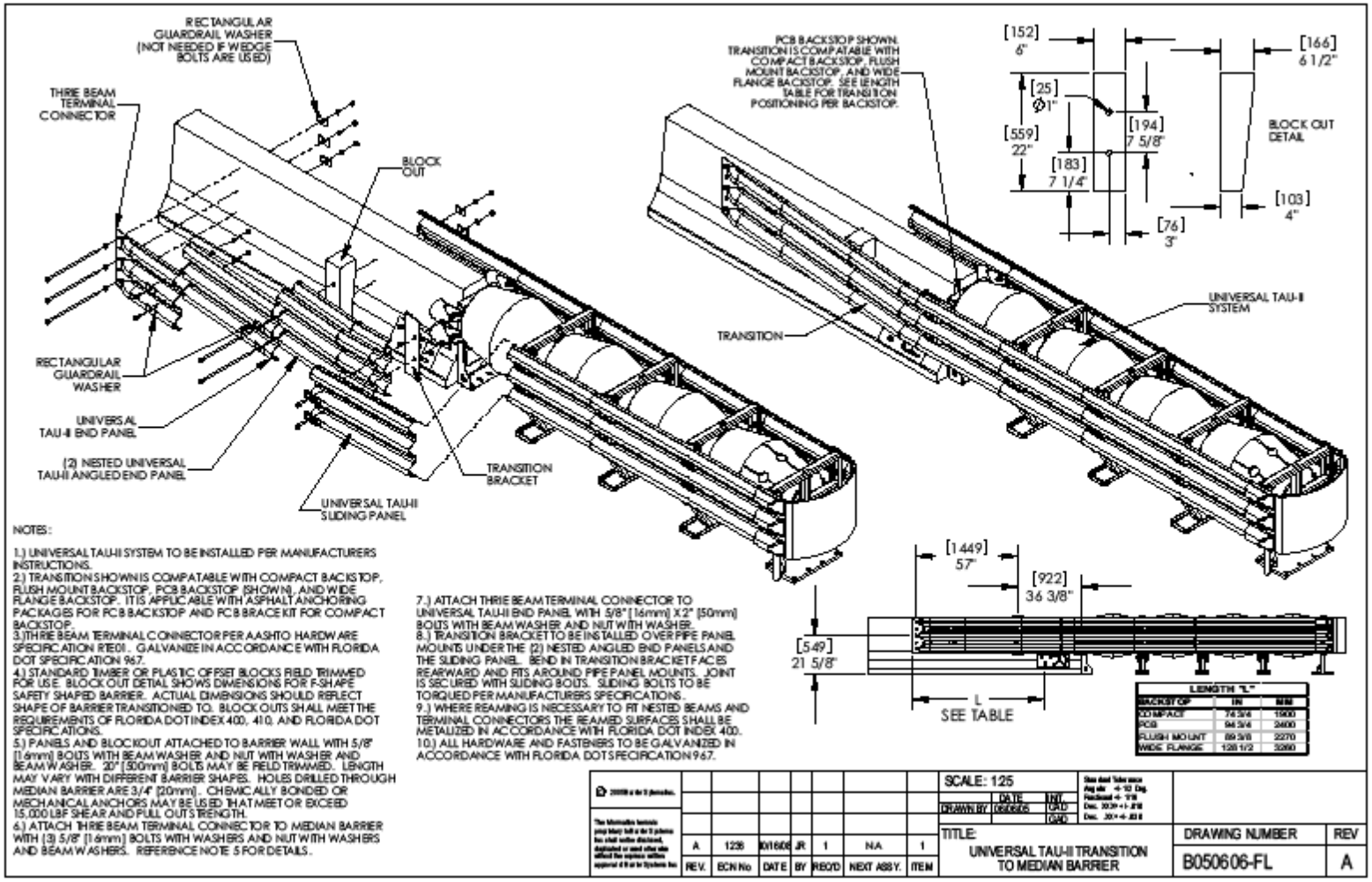
The end panel is needed even in uni-directional situations to adequately protect the backstop.

Bi-Directional Conditions

If traffic is approaching the TAU from the backside, a bi-directional transition wing is used to mitigate a reverse impact into the backstop.

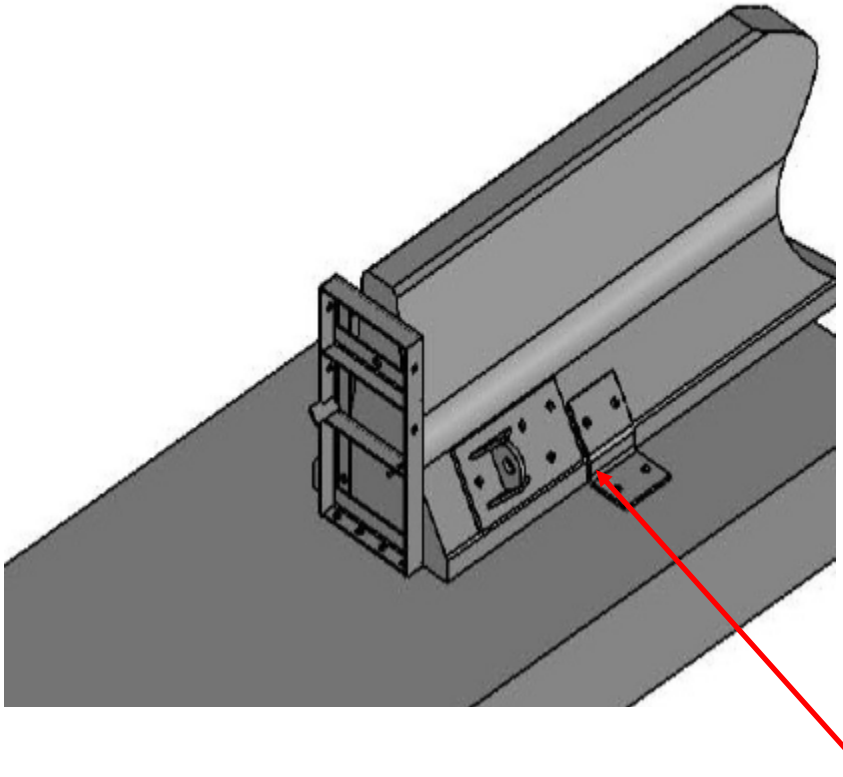
A “kit” is available for this wing (pictured) or a piece of thrie-beam guardrail and end shoe can be used.

Bi-Directional Conditions



Drawing is in QPL 544-0029 Vendor Drawings

Barrier Wall Anchoring



The TAU-II uses two barrier wall anchor tabs – one on each side of the barrier. Whenever the PCB backstop is used on an asphalt foundation, even if not in a bi-directional configuration, the anchor tabs should be used.

TORQUE

Slider bolts: 20 ft-lbs

If the slider bolts are too tight, the system will not telescope rearward when impacted!

TORQUE

Anchors in pad & barrier:
On concrete pads – 120 ft-lbs
On asphalt pads – 5 ft-lbs

Cables:
On concrete pads – 500 ft-lbs
On asphalt pads – 120 ft-lbs

CHECKLISTS

APPENDIX B - System Torque Chart

CONCRETE INSTALLATION

Compact Backstop Anchors	120 ft-lbs (160 N-m)
PCB Backstop Anchors	120 ft-lbs (160 N-m)
Cable Anchor (Rear)	120 ft-lbs (160 N-m)
Cable Anchor (Front)	120 ft-lbs (160 N-m)
Cable Adj. Eye Bolt	500 ft-lbs (675 N-m)

ASPHALT INSTALLATION

Compact Backstop Anchors	5 ft-lbs (8 N-m)
PCB Backstop Anchors	5 ft-lbs (8 N-m)
PCB Asphalt Adapter	5 ft-lbs (8 N-m)
Cable Anchor (Front)	5 ft-lbs (8 N-m)
Cable Adj. Eye Bolt	120 ft-lbs (160 N-m)

SYSTEM COMPONENT INSTALLATION

Sliding Bolt Assembly	20 ft-lbs (27 N-m)
Front Panel Holding Nose Cover	200 ft-lbs (270 N-m)
Pipe Panel Mount to Backstop	70 ft-lbs (95 N-m)
Cable Guide Bolts	30 ft-lbs (48 N-m)

The Universal TAU-II Crash Cushion has been successfully tested in various configurations having the cable torque ranging from 120 ft-lbs for asphalt installation, to 500 ft-lbs of torque for concrete applications. The system will function properly under this full range of torque. If a torque wrench is not available, refer to the table below for an alternate method of reaching the desired torque range.

Ways of creating approximately 500 ft-lbs of torque:

- 6 ft. [1. 8 m] wrench extension with entire weight of 100 lbs [45 kg] applied 12" from the end
- 42 in. [1.1 m] wrench extension with entire weight of 200 lbs [90 kg] applied 12" from the end
- Use free weights or human weight

These methods should ensure torque within tested range and manufacturer tolerances.

STEP 12

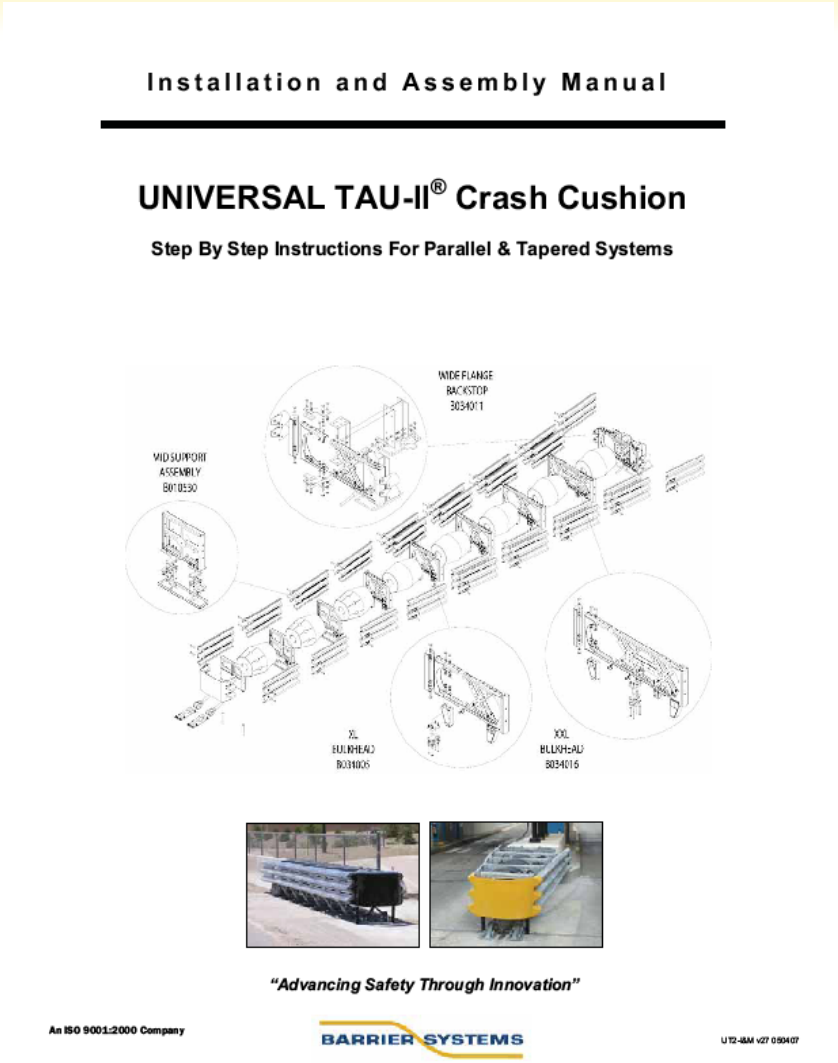
Final Inspection

Use the check list below to confirm that all of the installation steps have been completed.

Inspection Date	Inspection By:	Item
		All front cable anchor plate and backstop anchor bolts in place and epoxy cured.
		Clevis and pin, mounted to the front cable anchor, is installed with the handle portion of the pin on the inside of the anchor assembly, firmly tightened. *(This may be different depending on the type of foundation, ie, asphalt or PCC.)*
		All cable guide assemblies securely fastened.
		System cables tightened to meet torque specifications.
		Pipe panel mounts positioned properly, flat end facing back, cut out facing forward.
		Sliding panels installed properly to allow for stacking.
		Sliding panels should have no more than a ¾" (19mm) gap between stacked panels.
		Nose cover properly installed with thick spacer and tightened to specifications.
		Torque Sliding Bolt assemblies to specifications. Do NOT over tighten.
		Energy Absorbing Cartridges (EAC) installed in proper A-B position and sequence. See Configuration Chart.
		EAC air discharge holes positioned properly. Rotate cast ID to the top of the cartridge.
		Asphalt adapter installed on both sides of portable concrete barrier when applicable.
		Torque all fasteners to meet specifications.

Available for download: www.cloverleafcorp.com Click on “Download Library”

CHECKLISTS



Installation and Assembly Manual

UNIVERSAL TAU-II® Crash Cushion

Step By Step Instructions For Parallel & Tapered Systems

"Advancing Safety Through Innovation"

An ISO 9001:2000 Company

BARRIER SYSTEMS

Available for download: www.cloverleafcorp.com Click on "Download Library"

Contact Information

CLOVERLEAF CORPORATION

PO Box 7628
Sun City, FL 33586
Phone (813) 649-1336
FAX (813) 645-5577
www.cloverleafcorp.com

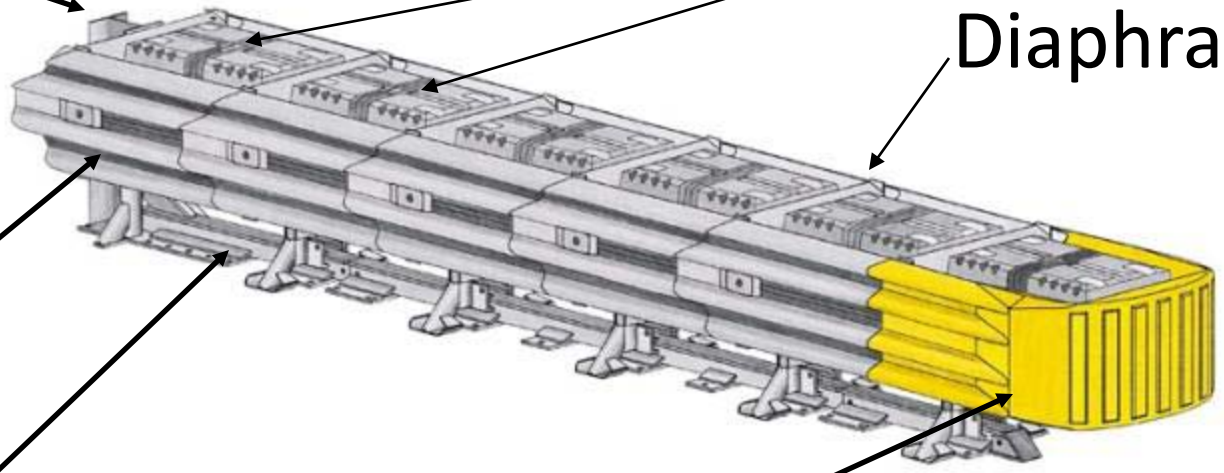
QuadGuard

Vendor Contact

Tony Scheidt – Energy Absorption Systems, Inc.

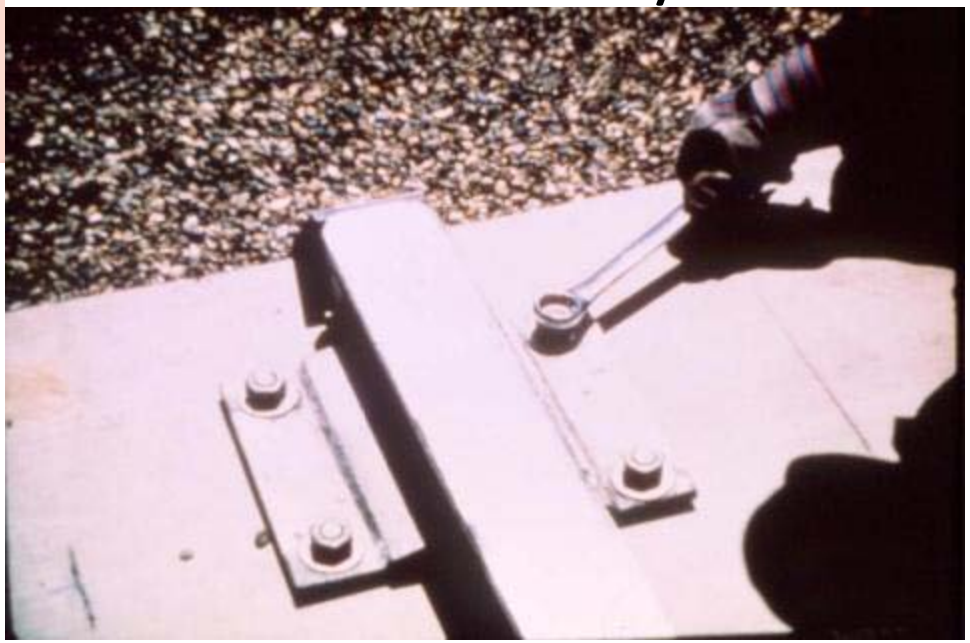
Information

Installation and Maintenance tips



Installation and Maintenance tips

- Mix and pour the 2-part epoxy
- Torque anchors to 120 ft/lbs



Installation and Maintenance tips

- Fender Panel Gap should be ¾” or less.
- These are good

Installation and Maintenance tips

- Well Nested Panels

Installation and Maintenance tips

- Type I Cartridges are placed in the Front of the System
- Type II are in the Rear of the System

Installation and Maintenance tips

- Cartridges should be level

Installation and Maintenance tips

GOOD

- Mushroom Washer should nest flat

BAD

Installation and Maintenance tips

GOOD

- Debris around monorail should be limited

BAD

Installation and Maintenance tips

- ClearZones are still important with Redirective, Non-Gating Systems

SCI SMART CUSHION®

Vendor Contact

Information

Manufactured by:
Work Area Protection Corporation
St. Charles, Illinois

SCI SMART CUSHION®

SCI SMART CUSHION®

NCHRP 350 Approved

Test Level 2	13’6” L X 24” W X 34” H
Test Level 3	21”6” L X 24” W X 34” H

Fully Redirective

Non-gating

Bi-directional

Available for wide application

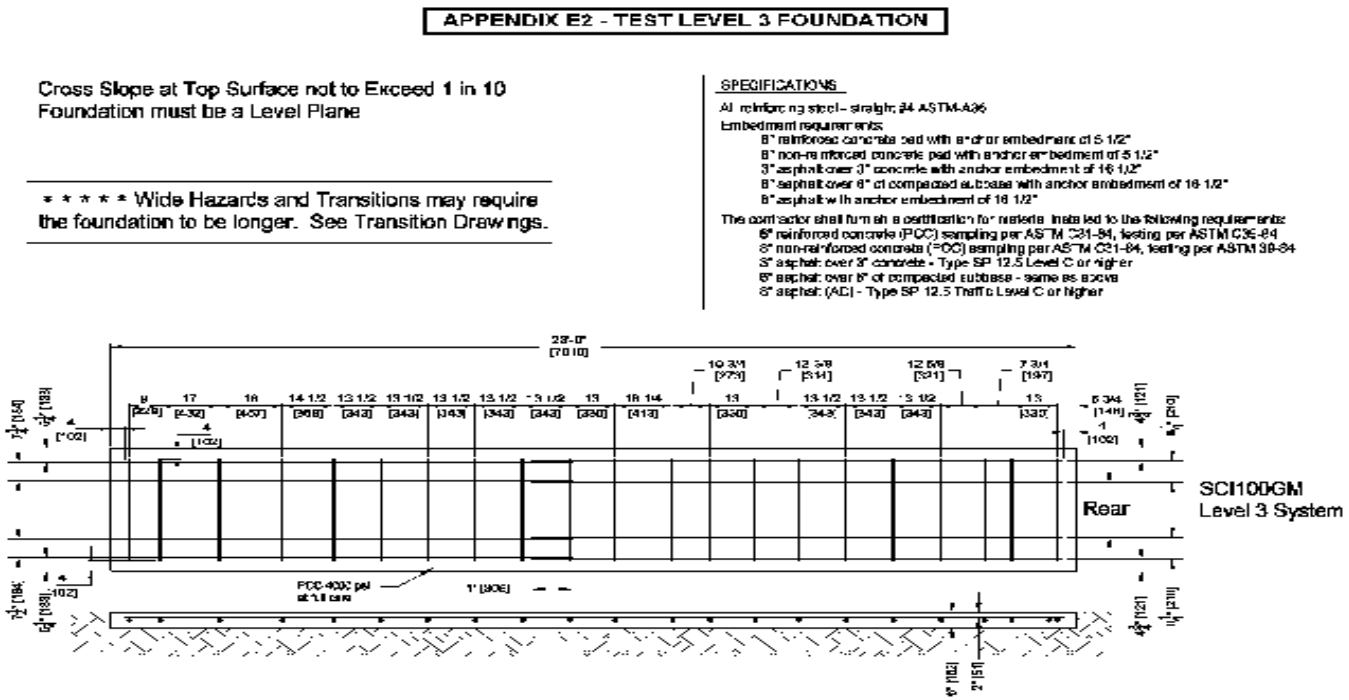
Low Cost Repair

30 Minute Reset (typical)

SCI SMART CUSHION®

Inspection for Proper Installation

Pad must be per specifications as found in the manufacturer's Design and Installation Manual.



Form # ATT0609

APPENDIX E2 - TEST LEVEL 3 FOUNDATION

Cross Slope at Top Surface not to Exceed 1 in 10
Foundation must be a Level Plane

* * * * * Wide Hazards and Transitions may require the foundation to be longer. See Transition Drawings.

SPECIFICATIONS

All reinforcing steel – straight, #4 ASTM-A36

Embedment requirements:
- 6" reinforced concrete pad with anchor embedment of 5 1/2"
- 6" non-reinforced concrete pad with anchor embedment of 5 1/2"
- 3" asphalt over 3" concrete with anchor embedment of 16 1/2"
- 6" asphalt over 6" of compacted subbase with anchor embedment of 16 1/2"
- 6" asphalt with anchor embedment of 16 1/2"

The contractor shall furnish certification for materials installed to the following requirements:
- 6" reinforced concrete (PCC) sampling per ASTM C31-84, testing per ASTM C39-84
- 6" non-reinforced concrete (PCC) sampling per ASTM C31-84, testing per ASTM 39-84
- 3" asphalt over 3" concrete - Type SP 12.5 Level C or higher
- 6" asphalt over 6" of compacted subbase - same as above
- 6" asphalt (AC) - Type SP 12.5 Traffic Level C or higher

SCI100GM
Level 3 System

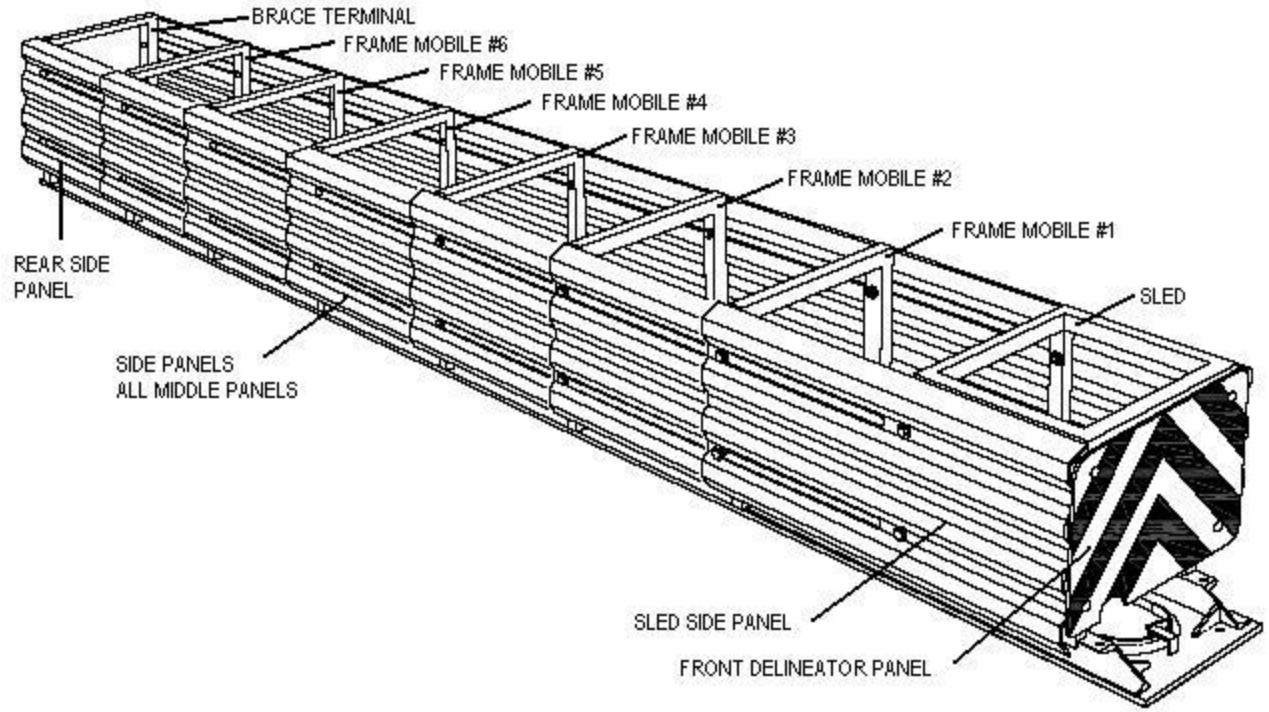
Rear

SMART CUSHION® by SCI Products Inc.

SCI SMART CUSHION®

Inspection for Proper Installation (continued)

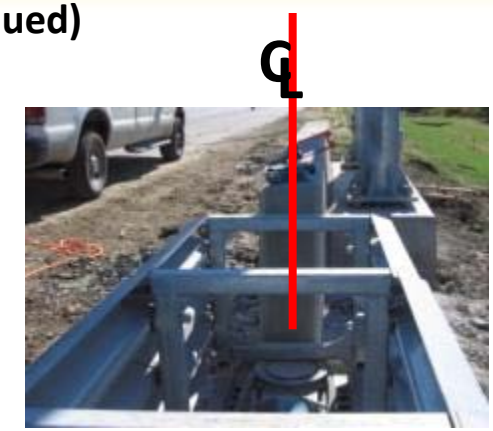
The SCI SMART CUSHION® is shipped in one piece, fully assembled. During installation the unit only needs to be properly positioned on the pad. Once the SCI SMART CUSHION® is positioned, the holes in the base are used as a template to drill holes to accept the epoxy anchors.



SCI SMART CUSHION®

Inspection for Proper Installation (continued)

Unit should be centered on the barrier



Attenuator should be level and properly oriented on pad

SCI SMART CUSHION®

Inspection for Proper Installation (continued)

Check to make sure all anchors are in place and nuts are tight

Proper torque is 125 ft-lbs.

The manufacturer recommends RedHead A7 *Fast Dispensing, Fast Curing Acrylic Adhesive e*poxy or equivalent. Proper care should be taken to make sure epoxy is within date code.

On a full collapse, the last set of side panels will telescope 30” beyond the last terminal brace at the rear of the crash cushion. All objects that may interfere with this motion can affect the performance of and cause undue damage to the crash cushion.

Inspection for Proper Installation (continued)

Check that the front section is pulled out to within 1” of the front stop bolt.

Verify that shear bolts are installed on the mobile sheaves

Inspection for Proper Installation (continued)

The cables should be visually inspected for damage or any sign of deterioration, broken wires or localized wear.

Inspect Side Keeper Bolts and Side Panels

SCI SMART CUSHION®

Inspection for Proper Installation (continued)

The SCI SMART CUSHION® is a 24” wide unit. To protect a barrier wider than 24” a transition needs to be installed. If needed, insure that the transition is properly assembled and anchored per the specifications as found in the manufacturer’s Design and Installation Manual.

SCI SMART CUSHION®

Inspection for Proper Installation

Final Inspection

Walk the area to make sure all tools or other equipment have not been left within the SCI SMART CUSHION® structure.

FDOT Contacts:

Construction
Stefanie Maxwell
850-414-4313
Stefanie.maxwell
@dot.state.fl.us

Design
Cheryl Adams
850-414-4327
Cheryl.Adams
@dot.state.fl.us

Barriers and Crash Cushions

Florida Department of Transportation

Introduction to Site-Safe

Site-Safe Products of Florida is a Certified Trinity TRACC Repair Center that houses a full inventory of TRACC, HEART , MPS-350 TMA & repair parts to assist contractors in meeting or exceeding FDOT(s) 24 hour response time for damaged roadway safety items.

Site-Safe Products of Florida specializes in quick response delivery…

SITE SAFE
Products of Florida, LLC

286 North State Road 415
Osteen, FL 32764
Phone: 407.321.3024
Fax: 407.321.3026
Cell:270.792.0249

TRACC

(TRinity Attenuating Crash Cushion)

TRACC INSPECTION

TRINITY TRACC (RESETTABLE)

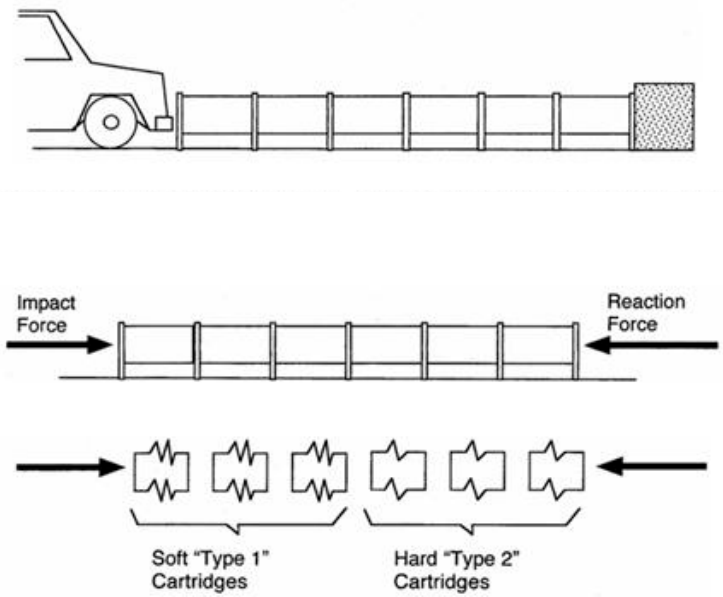
- ARRIVES ASSEMBLED
- 26 ANCHOR RODS
- RESETTABLE DESIGN
- NO CUSHIONS

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

TRACC = NO BLACK BOX

Design Impact Explanation



Easily identify TRACC system; no cushions used with TRACC

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

TRACC NOT DISPOSABLE

TRACC FAMILY REPAIR AFTER IMPACT

Low-Risk Repair Options

TRACC systems are designed for field repair or rapid replacement of the entire unit.

The energy absorbing base assembly of the TRACC system can be replaced in stages depending on the extent of the impact or it may be replaced completely while reusing the upper system components. Because TRACC systems are delivered fully assembled, it is extremely practical to replace the entire damaged system on the roadside and then perform the necessary repairs safely and accurately in the maintenance shop away from traffic dangers.

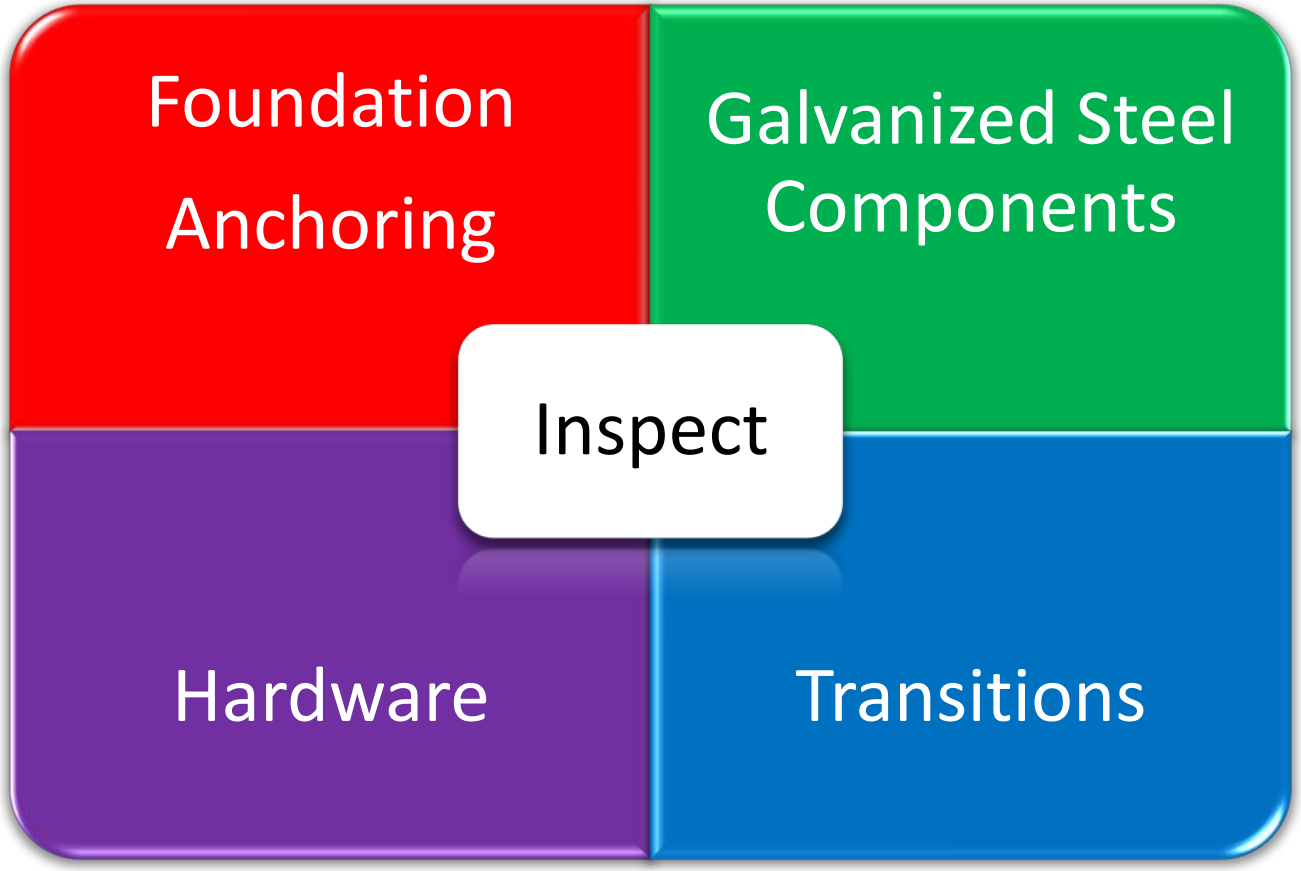
Many of a TRACC system's components remain undamaged after most impacts making refurbishment simple and economical. Entire units can be repaired and then reused on the roadside or the damaged portion of a partial base assembly can be refurbished and reused as needed.

NOTE: TRACC PRODUCTS ARE **NOT** DISPOSABLE. COMPLETE REPLACEMENT ON THE ROADSIDE AFTER AN IMPACT IS A CONVENIENT - BUT NOT REQUIRED - WAY TO PROTECT WORKERS BY LIMITING EXPOSURE TO TRAFFIC. UP TO 98% OF A TRACC SYSTEM IS REUSABLE AFTER DESIGN IMPACTS REGARDLESS OF WHERE THE REPAIR IS PERFORMED.

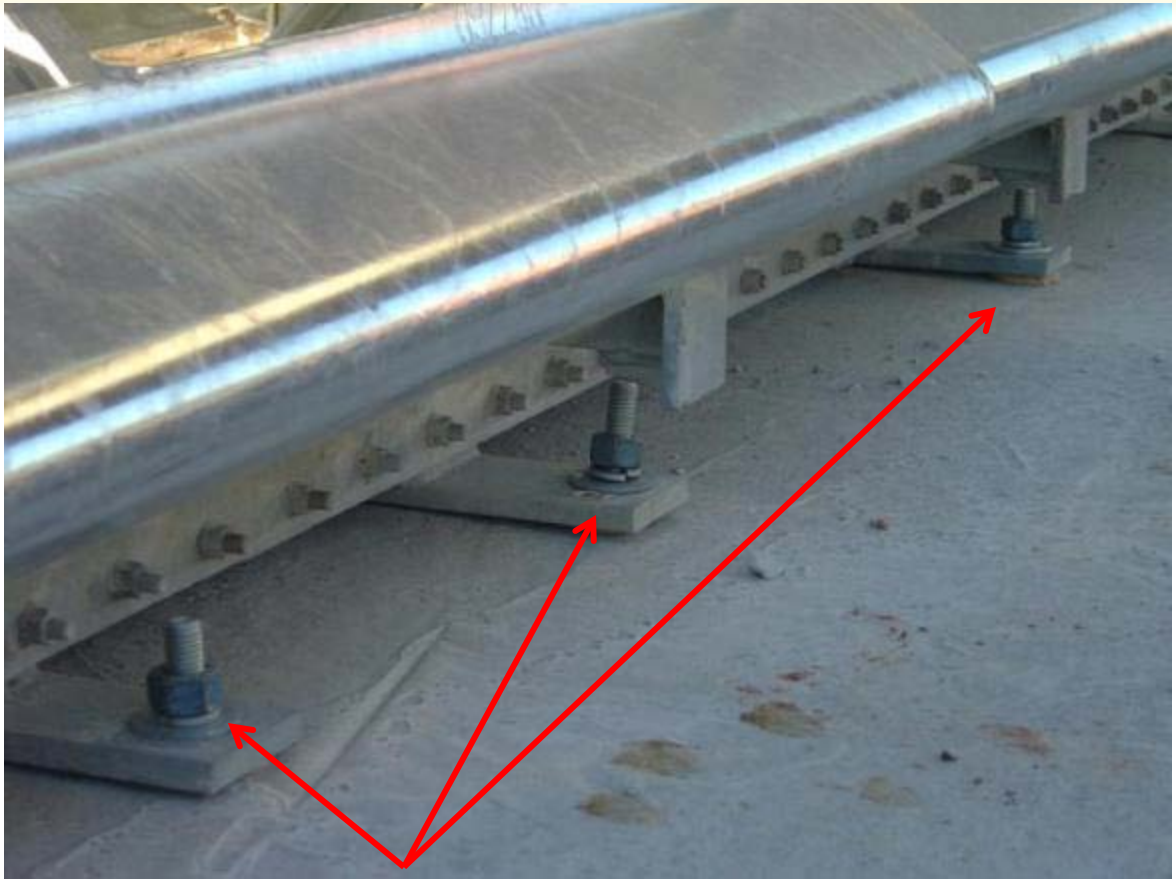
TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

ATTENUATOR INSPECTION



Foundation Anchoring



- No more than ½” thread exposed
- TRACCs require flat and lock washer…

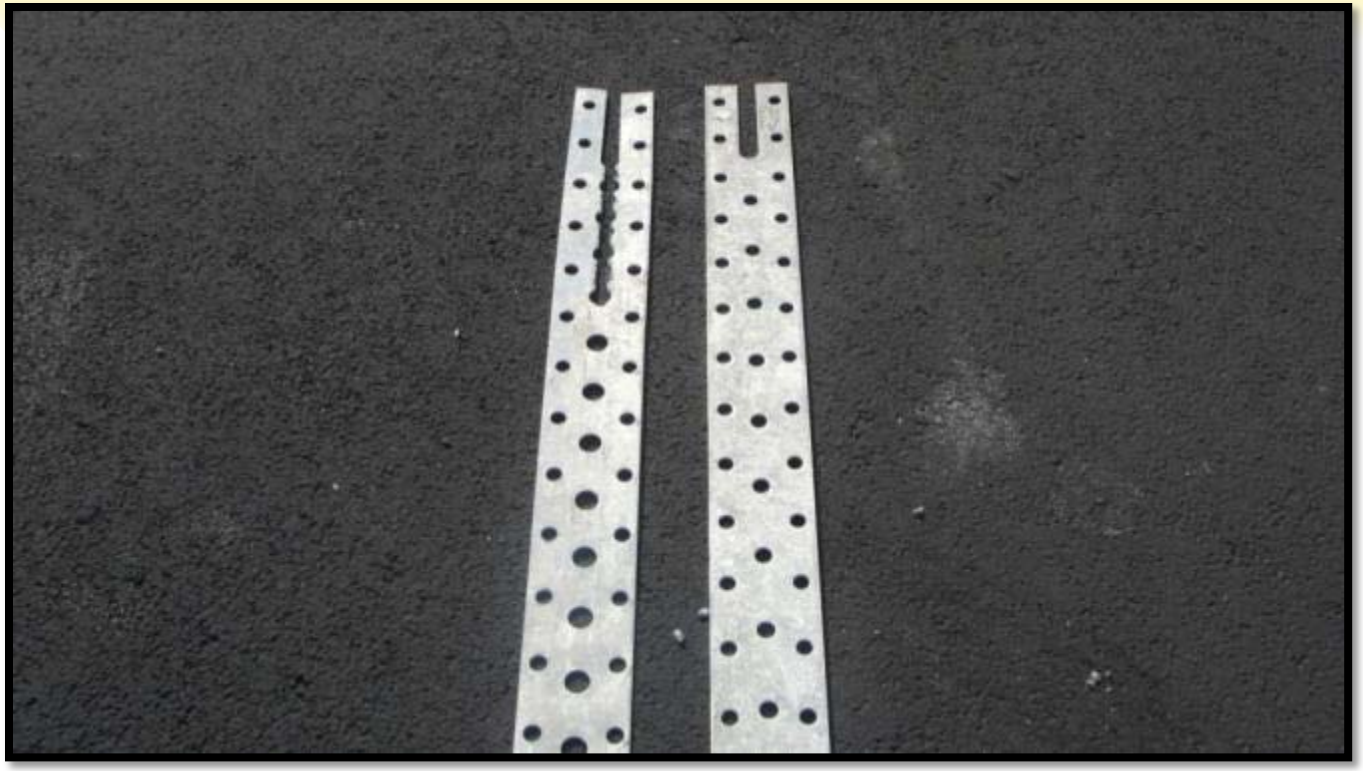
Foundation Anchoring

•Check tightness of anchor hardware…

FOUNDATION ANCHORING

Foundation Anchoring

Galvanized Steel Components

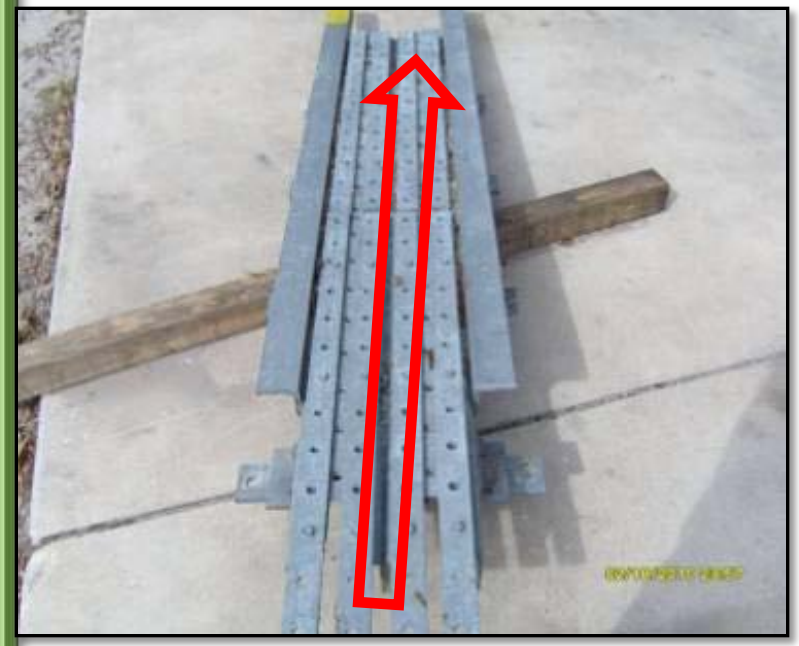


- Units will have 1-4 rip plate stages
- Inspect for rip plate damage

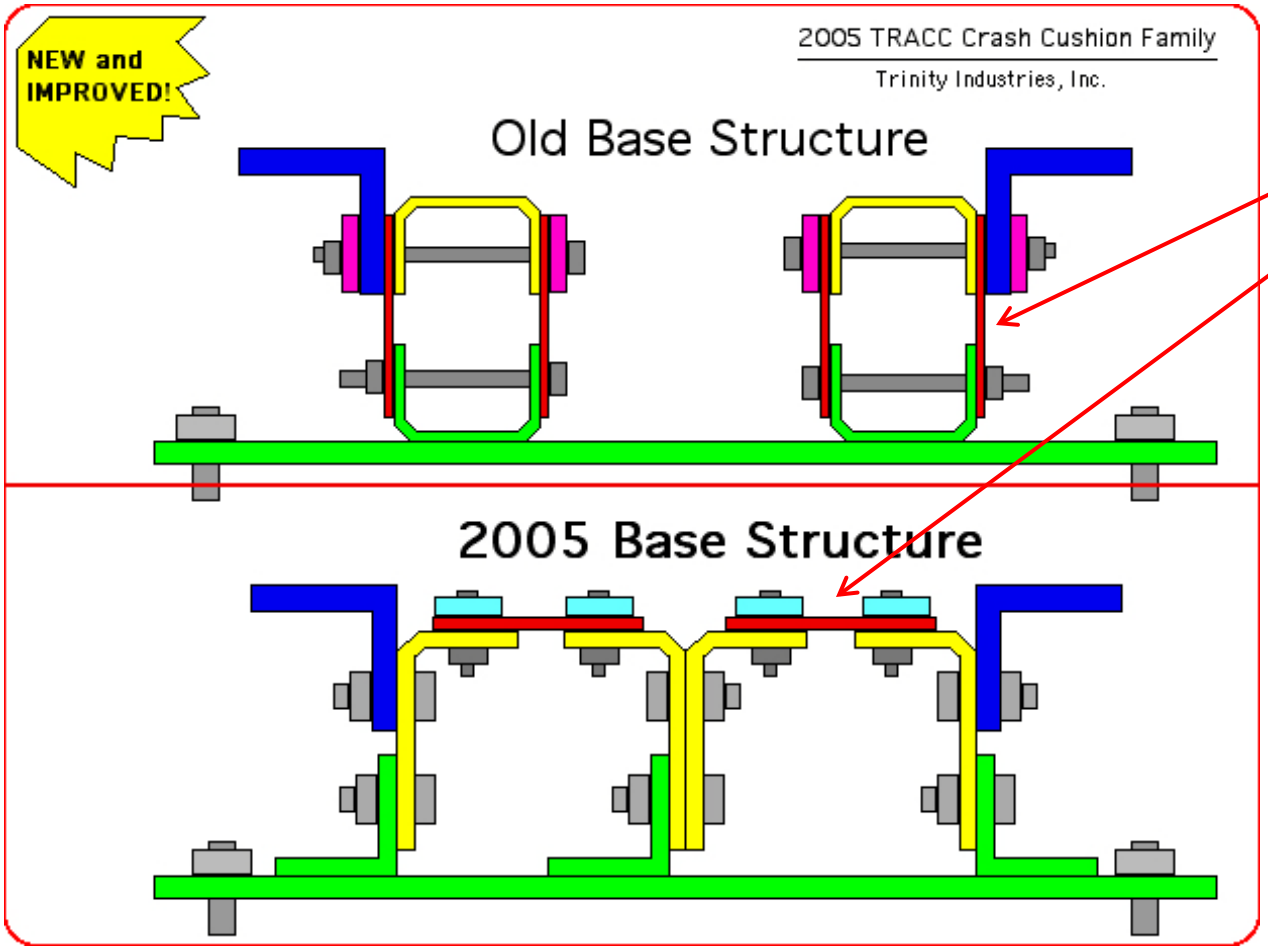
GALVANIZED STEEL COMPONENTS

- OVERHEAD OF BASE W/ RIP PLATES INSTALLED

- TL-2 UNIT
  2ea Base Assembly
- TL-3 UNIT
  3ea Base Assembly
- TL-3+ UNIT
  4ea Base Assembly



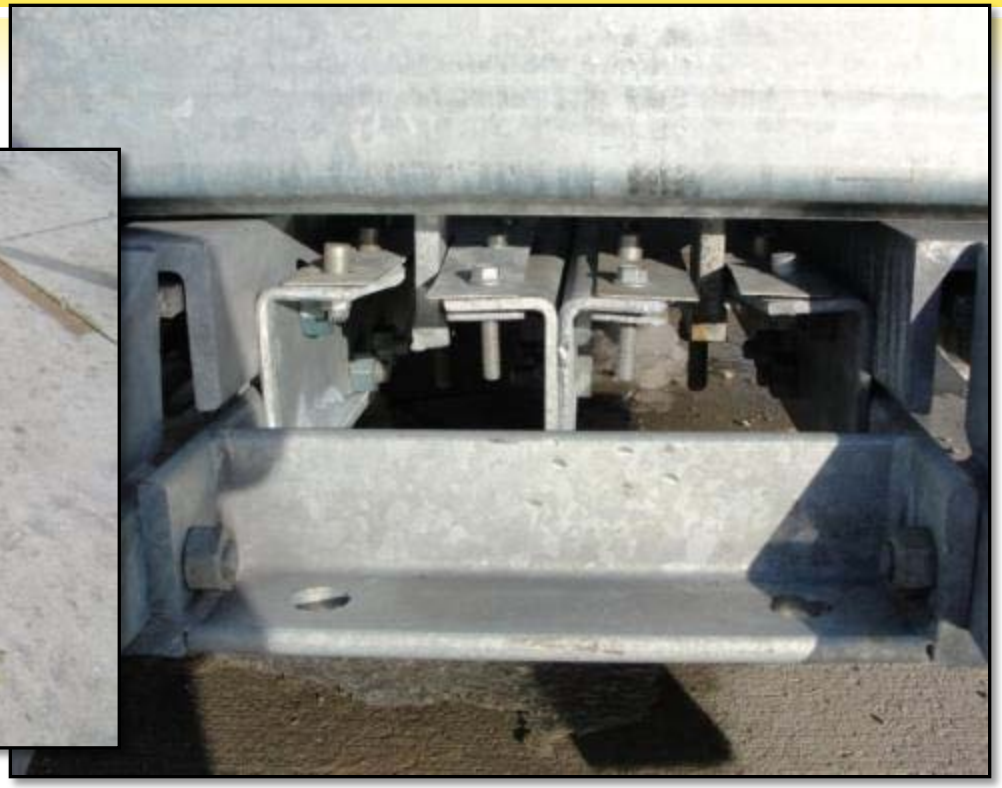
GALVANIZED STEEL COMPONENTS



TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

GALVANIZED STEEL COMPONENTS



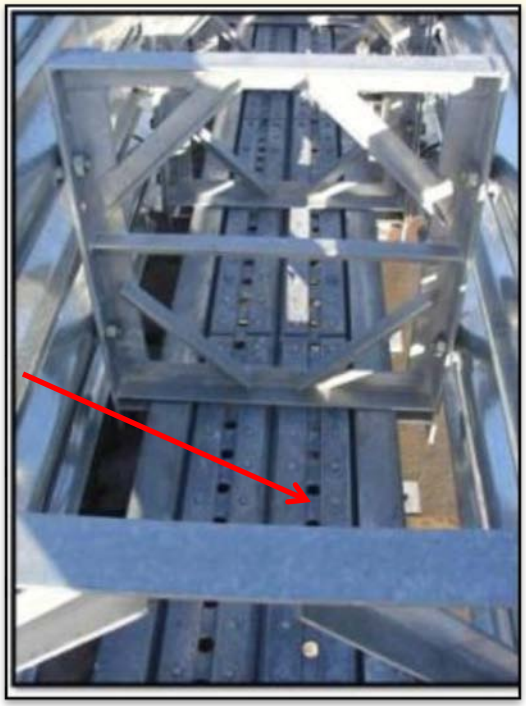
- Sled slides on impact…
- Cutter bar slices thru rip plate…
- Friction slows vehicle…

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

GALVANIZED STEEL COMPONENTS

OK
USA



DAMAGED

- Overhead of TRACC Rip Plates
- No Cushions…
- Look for damaged rip plates…
- Look for damaged rip plates…

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

Galvanized Steel Components

Cutter Bar

- Old Style TRACC
- Rip Plates Mounted on Base Side
- Photo of damaged rip plates

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

GALVANIZED STEEL COMPONENTS

- NOSEPIECE
- SLED
- FRAMES
- FENDER PANELS

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

Galvanized Steel Components

- Look for bent components…
- Check for missing components

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

HARDWARE (L-BRACKETS)

INSTALL 4ea L-BRACKET
PER TRACC UNIT INSTALLATION

HARDWARE (BARRIER STRAPS)

FDOT DESIGN STANDARD INDEX 415

TRINITY HIGHWAY PRODUCTS

SITESAFE Products of Florida, LLC

TRANSITIONS

TRANSITIONS

What's missing????

WHAT'S WRONG????

What's missing????

What's missing????

QUESTIONS

?

SITESAFE
Products of Florida, LLC

286 North State Road 415
Osteen, FL 32764
Phone: 407.321.3024
Fax: 407.321.3026
Cell:270.792.0249