VALTIR

REACT 350® II

CRASH CUSHION

PRODUCT DESCRIPTION ASSEMBLY MANUAL

PN 618083
REVISION F NOVEMBER 2022

REACT 350® II

The REACT 350® II has been tested pursuant to National Cooperative Highway Research Program ("NCHRP") Report 350 specifications. The REACT 350® II has been deemed eligible for federal-aid reimbursement on the National Highway System by the Federal Highway Administration ("FHWA").

Product Description Assembly Manual

15601 Dallas Parkway
Suite 525
Addison, Texas 75001

Warning: The local highway authority, distributors, owners, contractors, lessors, and lessees are RESPONSIBLE for the assembly, maintenance, and repair of the REACT 350® II. Failure to fulfill these RESPONSIBILITIES with respect to the assembly, maintenance, and repair of the REACT 350® II could result in serious injury or death.

Important: These instructions are for standard assemblies specified by the appropriate highway authority. In the event the specified system assembly, maintenance, or repair would require a deviation from standard assembly parameters, contact the appropriate highway authority engineer.

This manual must be available to the worker overseeing and/or assembling the product at all times. For additional copies, contact Valtir directly at (888) 323-6374 or visit Valtir.com.

The information contained in this manual supersede all previous versions. The instructions, illustrations, and specifications are based on the latest REACT 350® II information available to Valtir at publication. We reserve the right to make changes at any time. Please visit Valtir.com/Product/REACT-350-II/ to confirm the latest revision.

Part No. 618083

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Customer Service Contacts

Valtir is committed to the highest level of customer service. Feedback regarding the REACT 350® II, its assembly procedures, supporting documentation, and performance is always welcome. Please contact Valtir for additional information:

Valtir

Telephone	(888) 323-6374 (USA) (214) 589-8140 (International)
Contact Link	Valtir.com/Contact

Important Introductory Notes

Proper assembly of REACT 350® II is critical to achieve performance that has been evaluated and accepted by the FHWA per NCHRP Report 350. These instructions should be read in their entirety and understood before assembling the REACT 350® II. These instructions are to be used only in conjunction with the assembly of the REACT 350® II and are for standard assemblies only as specified by the applicable highway authority. If you need additional information, or have questions about the REACT 350® II, please contact the highway authority that has planned and specified this assembly and, if needed, contact Valtir's Customer Service Department. This product must be assembled in the location specified by the appropriate highway authority. If there are deviations, alterations, or departures from the assembly protocol specified in this manual, the device may not perform as tested.

Important: **DO NOT** use any component part that has not been specifically specified herein for the REACT 350® II during assembly or repair.

This product has been specified for use by the appropriate highway authority and has been provided to that user who has unique knowledge of how this system is to be assembled. No person should be permitted to assist in the assembly, maintenance, or repair of this system that does not possess the unique knowledge described herein. These instructions are intended for an individual qualified to both read and accurately interpret them as written. These instructions are intended only for an individual experienced and skilled in the assembly of highway products that are specified and selected by the highway authority.

A manufacturer's drawing package will be supplied by Valtir upon request. Each system will be supplied with a specific drawing package unique to that system. Such drawings take precedence over information in this manual and shall be studied thoroughly by a qualified individual who is skilled in interpreting them before the start of any product assembly.

Safety Symbols

This section describes the safety symbols that appear in this REACT 350® II manual. Read the manual for complete safety and assembly information.

Symbol	Meaning
	**Safety Alert Symbol:** Indicates Danger, Warning, Caution, or Important. Failure to read and follow the Danger, Warning, Caution, or Important indicators could result in serious injury or death to the workers and/or bystanders.
	**Important:** Read safety instructions thoroughly and follow the assembly directions and suggested safe practices before assembling, maintaining, or repairing the REACT 350® II. It is the responsibility of the installer to follow the instructions contained in this manual. Failure to comply with these warnings could result in increased risk of serious injury or death in the event of a vehicle impact with a system.
	**Important:** Please keep up-to-date instructions for later use and reference by anyone involved in the assembly of the product.

Safety Rules for Assembly

*** Important Safety Instructions ***

This manual must be kept in a location where it is readily available to persons who assemble, maintain, or repair the REACT 350® II. Additional copies of this manual are available from Valtir by calling (888) 323-6374 or visiting Valtir.com/Product/REACT-350-II/. Please contact Valtir if you have any questions concerning the information in this manual or about the REACT 350® II. This manual may also be downloaded directly from the website below.

It is the responsibility of the installer to use appropriate safety precautions when operating power equipment, and when moving heavy equipment or REACT 350® II components. Work gloves, apron, eye / ear protection, safety-toe shoes, and back protection shall be used.

Warning: It is the responsibility of the installer to use all safety measures incorporating appropriate traffic control devices specified by the highway authority. These measures must be used to protect all personnel while at the assembly, maintenance, or repair site.

Warning: It is the responsibility of the installer to ensure that your assembly meets all appropriate Manual on Uniform Traffic Control Devices (“MUTCD”) and local standards.

Warning: It is the responsibility of the installer to ensure REACT 350® II delineation meet all federal, state, specifying agency, and local specifications.

Limitations and Warnings

Valtir, in compliance with the NCHRP Report 350 “Recommended Procedures for the Safety Performance of Highway Safety Features”, contracts with FHWA approved testing facilities to perform crash tests, evaluation of tests, and submittal of results to the FHWA for review.

The REACT 350® II has been approved by FHWA as meeting the requirements and guidelines of NCHRP Report 350. These tests typically evaluate product performance defined by NCHRP Report 350 involving a range of vehicles on roadways, from lightweight cars (approx. 820 kg [1800 lb.]) to full size pickup trucks (approx. 2000 kg [4400 lb.]). A product can be certified for multiple Test Levels. The REACT 350® II is certified to the Test Level(s) as shown below:

Test Level 3: 100 km/h [62 mph]

These FHWA directed tests are not intended to represent the performance of systems 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 NCHRP Report 350 as approved by FHWA.

Valtir neither represents nor warrants that the impact results of these federally established test criteria prevent or reduce the severity of any injury to person(s) or damage to property. These tests only demonstrate the occurrence of certain results following an impact within NCHRP Report 350 criteria. Every departure from the roadway is a unique event.

The REACT 350® II is intended to be assembled, delineated, and maintained within specific state and federal guidelines. It is important for the highway authority specifying the use of a highway product to select the most appropriate product configuration for its site specifications. The customer should be careful to properly select, assemble, and maintain the product. Careful evaluation of the site lay out, vehicle population type; speed, traffic direction, and visibility are some of the elements that require evaluation in the selection of a highway product. For example, curbs could cause an untested effect on an impacting vehicle.

After an impact occurs, the debris from the impact should be removed from the area immediately and the specified highway product should be evaluated and restored to its original specified condition or replaced as the highway authority determines as soon as possible.

Warning: Do not assemble, maintain, or repair the REACT 350® II until you have read this manual thoroughly and completely understand it. Ensure that all Danger, Warning, Caution, and Important statements within the manual are completely followed. Please call Valtir at (888) 323-6374 if you do not understand these instructions.

Warning: Only Valtir parts that are specified herein can be used for assembly, maintenance, or repair of the REACT 350® II. **Do not utilize or otherwise comingle parts from other Valtir systems**. Such configurations have not been tested, nor have they been accepted for use. Assembly, maintenance, or repairs using unspecified parts or accessories is strictly prohibited.

System Overview

The REACT 350® II is a potentially reusable, re-directive, non-gating crash cushion for roadside obstacles up to 3' [914 mm] wide.

Important: Valtir makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the project engineer and/or the local highway authority and its engineers to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

The REACT 350® II utilizes various Cylinder wall thicknesses to accommodate both light cars and heavier, high-center-of-gravity vehicles.

The REACT 350® II consists of a series of "smart plastic" Cylinders attached to a steel Base Track. The term "smart plastic" refers to the memory characteristics of the Cylinders. After a head-on impact as described in NCHRP Report 350, the REACT 350® II has the potential to recover a major portion of its shape, position, and energy absorbing capability. What constitutes a potentially reusable highway product should only be determined by a trained engineer, experienced in highway products, directed by the appropriate highway authority.

Two backup options are available to further meet specific requirements of each location. A Self-Contained Backup is available or the REACT 350® II can be mounted to a new or existing Concrete Backup. In some locations, either Backup type may be applicable.

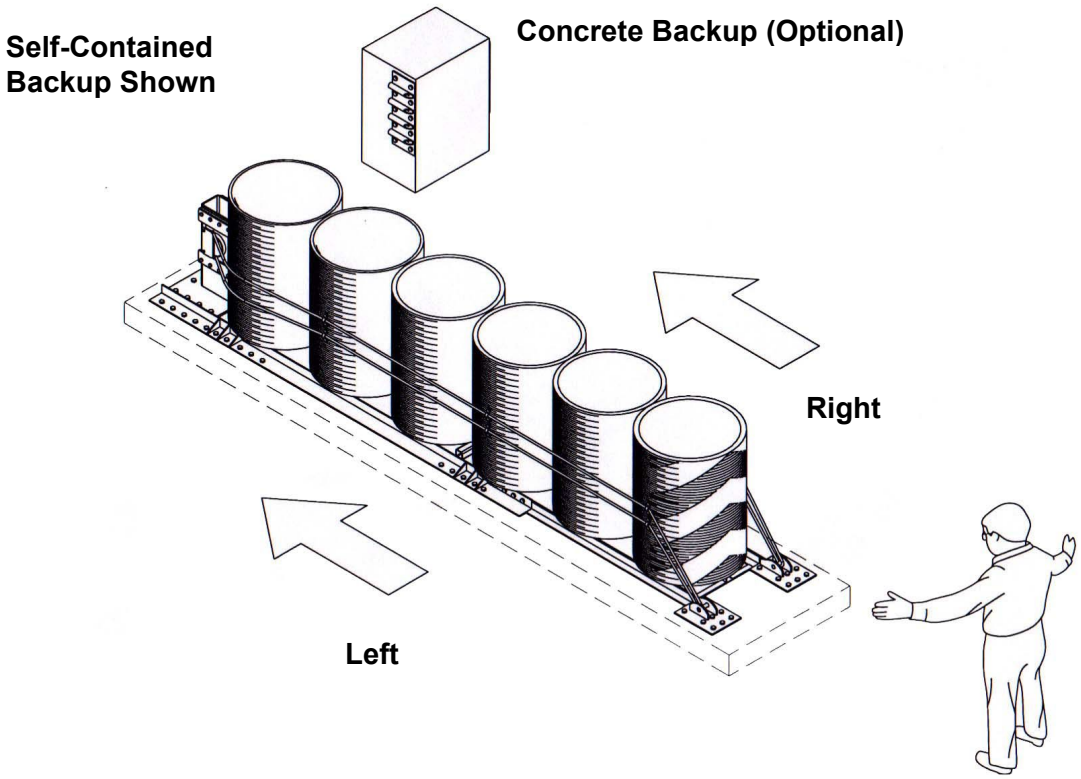


Figure 1 - REACT 350® II with Self-Contained Backup

Foundation/Anchoring

Warning: Ensure that this assembly conforms with the guidance provided by the AASHTO Roadside Design Guide, including, but not limited to, those regarding placement on or adjacent to curbs.

Asphalt Installations

REACT 350® II systems with a Self-Contained Backup may be installed in construction zones on asphalt. Assemblies on **Asphalt Concrete ("A.C.")** must provide a minimum 3" [76 mm] layer of asphalt over a minimum 3" [76 mm] layer of **Portland Cement Concrete ("P.C.C.")**, 6" [152 mm] layer of asphalt over 6" [152 mm] layer of subbase, or 8" [203 mm] layer of asphalt with no subbase.

Important: Only 18" [460 mm] threaded rods, utilizing Valtir approved adhesive, can be used with asphalt foundations. Contact Customer Service for a complete list of approved adhesives (p. 3).

Concrete Installations

For concrete installations, the REACT 350® II should be installed only on an existing or freshly placed and cured concrete base (28 MPa [4000 psi] minimum). Orientation of the concrete base and the attenuator must comply with the project plans or as otherwise determined by the resident project engineer or appropriate highway authority.

Recommended dimension and reinforcement specifications for new concrete pads can be found in your site specific drawing package or standard drawings in the back.

The REACT 350® II may be installed on any of the following foundations using the specified anchorage:

Foundation A: Concrete Pad or Roadway

Foundation: 8" [200 mm] minimum depth P.C.C.

Anchorage: Approved adhesive with 7 1/2" [190 mm] studs 6" [152 mm] embedment

Foundation B: Asphalt over P.C.C.

Foundation: 3" [76 mm] minimum A.C. over 3" [76 mm] minimum P.C.C.

Anchorage: Length of anchor required is 18" [460 mm] 16 1/2" [420 mm] embedment

Foundation C: Asphalt over Compacted Subbase ("C.S.")

Foundation: 6" [150 mm] minimum A.C. over 6" [150 mm] minimum C.S.

Anchorage: Approved adhesive with 18" [460 mm] studs 16 1/2" [420 mm] embedment

Foundation D: Asphalt

Foundation: 8" [200 mm] minimum A.C.

Anchorage: Approved adhesive with 18" [460 mm] studs - 16 1/2" [420 mm] embedment

Valtir Approved Adhesive Anchoring System

A Valtir approved adhesive anchoring system is required to securely anchor crash cushions. Each approved adhesive kit contains adhesive, studs, nuts, washers and instructions. Both vertical and horizontal assemblies are possible using an approved adhesive anchoring system.

Important: Follow adhesive manufacturer's temperature storage requirements.

Anchor Assemblies

Note: Read all Valtir approved adhesive instructions before starting.

1) **Prepare the Concrete Foundation**

Warning: Do not allow anchoring adhesive to contact skin or eyes. See material safety data sheet supplied with adhesive kit for first-aid procedures. Use only in well-ventilated area. Do not use near open flame.

Warning: It is the responsibility of the installer to maintain a safe work area including the use of standard work zone safety equipment & PPE: gloves, safety-toe shoes, and eye / ear protection.

The anchor bolts (studs) that anchor the REACT 350® II system Backup and/or Monorail sections to the concrete foundation must be those shipped in the kit or of high strength steel (Grade B7 or SAE-J429 Grade 5) tensile strength. These studs must be set in minimum 28 MPa [4000 psi] concrete. Allow the concrete to cure a minimum of seven days before applying anchoring adhesive.

2) Drill Boreholes

Caution: It is the responsibility of the installer to consult OSHA silica respiratory standard 29 CFR 1910.134 for debris removal from borehole(s) and use Valtir approved adhesive to achieve optimum tensile strength. Do not use diamond drill bits for drilling boreholes.

Use the part that is to be anchored as a drilling template. Use a rotary hammer drill to drill the boreholes 1/8" [3 mm] larger than the stud diameter to the recommended depth. See the approved adhesive instructions provided with your kit. Check to ensure all boreholes are drilled to the proper depth and aligned with the part to be anchored per table below.

Anchor Drilling Information				
Anchor Size:	**Bit Size**	**Drilling Depth**	**Torque**	**Medium**
3/4"x 7 1/2"	22 mm [7/8"]	160 mm [6 1/4"]	Manufacturer Spec	Concrete
3/4"x 18"	22 mm [7/8"]	420 mm [16 3/4"]	15 N-m [10 ft-lb] ⚠	Asphalt

Important: When mounting on asphalt, initial torque shall be as shown above. Due to the properties of asphalt, anchors may loosen over time. For this reason Valtir recommends anchoring to asphalt only at temporary locations. It is recommended to re-torque anchors in asphalt every six months to the recommended torque specification.

3) Clean the Boreholes

Blow the concrete dust from the borehole using oil-free compressed air. Thoroughly brush it with a 7/8" diameter steel bristle tube brush and then blow it out again. If the borehole is wet, completely flush it with water while brushing and then blow it clean to remove all water using oil-free compressed air.

Note: Use of the Valtir approved vacuum drilling equipment is authorized to replace the blowing and brushing requirement of Step 3.

4) Apply Approved Adhesive

Fill the borehole 100% full.

Caution: Fill borehole 100% full so it is even with the pavement surface per manufacturer's instructions.

5) Add Nuts to Anchors

Thread the nut on until flush with the end of the stud (Figure 2).

6) Insert Anchors in Boreholes and Wait for Adhesive to Cure

Push the stud down through the part to be anchored and into the borehole.

Warning: Do not disturb or load the stud until the approved adhesive material has fully cured (instructions supplied with the approved adhesive kit).

7) Torque the Nuts

Once the adhesive has fully cured, torque the nut to the manufacturer's recommended values.

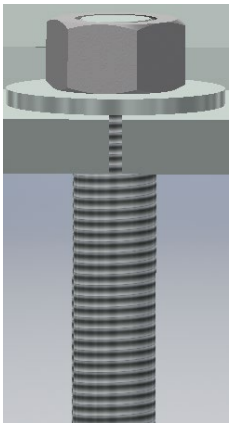


Figure 2
Anchor Application
(Before Applied Torque)

Anchor Assembly Cautions

1) Steel rebar

If steel rebar is encountered while drilling an anchor bolt borehole, apply one of the following solutions:

A) Use a rebar drill bit for the **rebar only** and then switch back to the concrete bit to finish drilling into the underlying concrete until the proper borehole depth is reached.

Caution: Do not drill through rebar without first obtaining permission to do so from the project engineer.

B) Drill a new borehole down at an angle past the rebar to the proper depth. Anchor the stud by completely filling both boreholes with an approved adhesive.

Recommended Tools

Documentation

- Manufacturer's Instructional Manual
- Manufacturer's Drawing Package

Personal protective equipment

- Eye / Ear Protection
- Gloves
- Protective Clothing
- Reflective Vest
- Safety-Toe Shoes

Cutting equipment

- Grinder/Hacksaw or Torch
- Rebar Cutting Bit
- Rotary Hammer Drill
- 22 mm (7/8") x 178 mm (7") Hollow Drill Bit for vacuum feature
- 19 mm (3/4") x 178 mm (7") Concrete Drill Bit (double-fluted)

Important: Valtir recommends using **double-fluted** drill bits to achieve optimum tensile strength when applying an approved adhesive anchoring system (p. 8).

Important: Because every impact is different, Valtir makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the project engineer and/or the local highway authority and its engineers to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

Hammers

- Sledgehammer

Wrenches

- Heavy duty impact wrench
- 1/4", 5/16", 3/8", 3/4", 1 7/8" Sockets
- 3/4", 1 1/16", 1 1/8", 1 1/4" Deep Hex-head Sockets
- Ratchet and extensions for above sockets
- Standard adjustable wrench
- 1 1/16", 1 1/8", 1 1/4", 9/16", 5/8" combination wrenches
- Large Pipe Wrench

Screwdrivers

- Screw gun or standard drill with adapter chuck for small screws/bolts
- Flathead Screwdriver
- Phillips Screwdriver

Miscellaneous

- Traffic control equipment
- Lifting and moving equipment (A lifting device is preferred although a forklift can be used.) Minimum 2722 kg [6,000 lb.] capacity required. Do not lift overhead.
- Compressor (100 psi) and Generator (5 KW)
- Long pry bar
- Drift pin
- Tape measure 7.5 m (25’)
- Chalk line
- Rags, water, and solvent for touch-up

Important: The above list of tools is a general recommendation and should not be considered an extensive list. Depending on specific site conditions and the complexity of the assembly specified by the appropriate highway authority, the required tools may vary. Decisions as to what tools are needed to perform the job are entirely within the discretion of the specifying highway authority and the authority’s selected contractor performing the assembly of the system at the authority’s specified assembly site.

Know Your REACT 350® II System

For specific assembly, maintenance, or repair details refer to the state or specifying agency's standard drawing(s) and/or Valtir standard layout drawings.

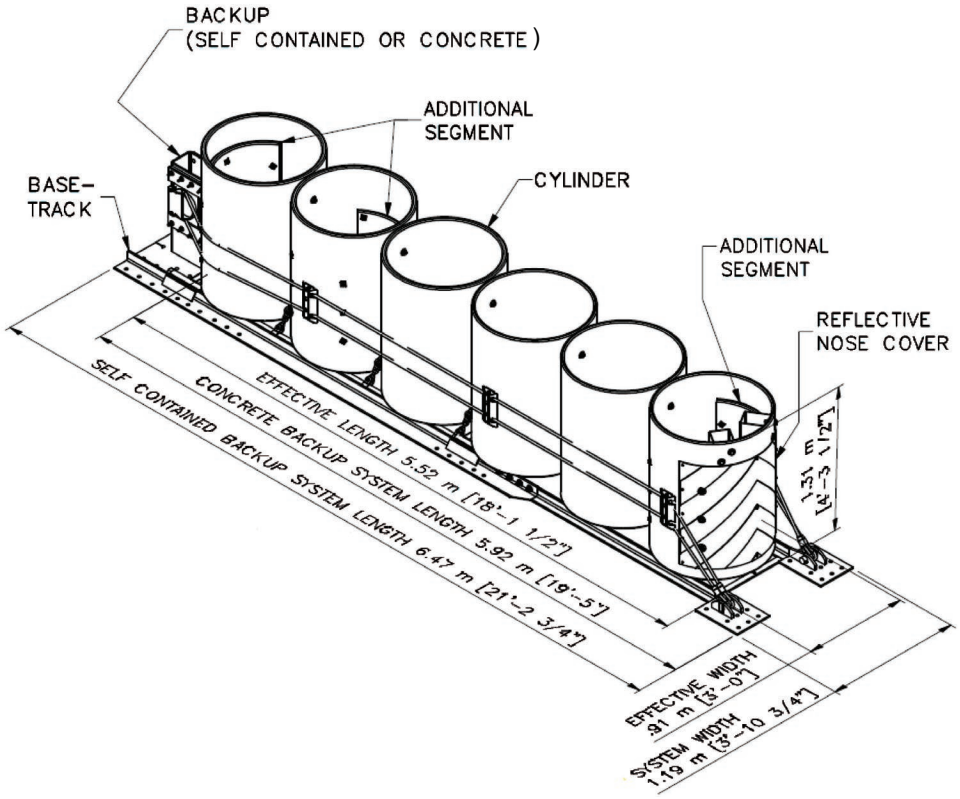


Figure 3

System Size

	Backup	
	Self-Contained	**Concrete**
Effective Length	5.52 m [18'-1 1/2"]	5.52 m [18'-1 1/2"]
System Length	6.47 m [21'-2 3/4"]	6.02 m [19'-9"]
Effective Width	.91 m [3'-0"]	
System Width	1.19 m [3'-10 3/4"]	
Height	1.31 m [4'-3 1/2"]	

Model Number Description

PN	Backup Type		Width
626**B**36	Self-Contained steel backup	**B**	Typical object width*8" [203 mm]
626**C**36	Concrete Backup w/ Side Mount Anchors	**C**	Max. object width 36" [914 mm]

***See "Roadside Obstacle Width" on page 18 for more information.**

62 6 B 36

- 36 — Nominal system width in inches (width of the cylinders)
- B — Backup Type: B or C
- 6 — Number of Bays
- 62 — Maximum nominal speed in mph (62 mph [100 km/h])

Number of Bays

A Bay consists of one Cylinder. The terms Bay and Cylinder may be used interchangeably. The Cylinder at the front of the system (traffic end) is always Bay 1, and each subsequent Bay is sequentially numbered to the rear of the system (roadside obstacle end).

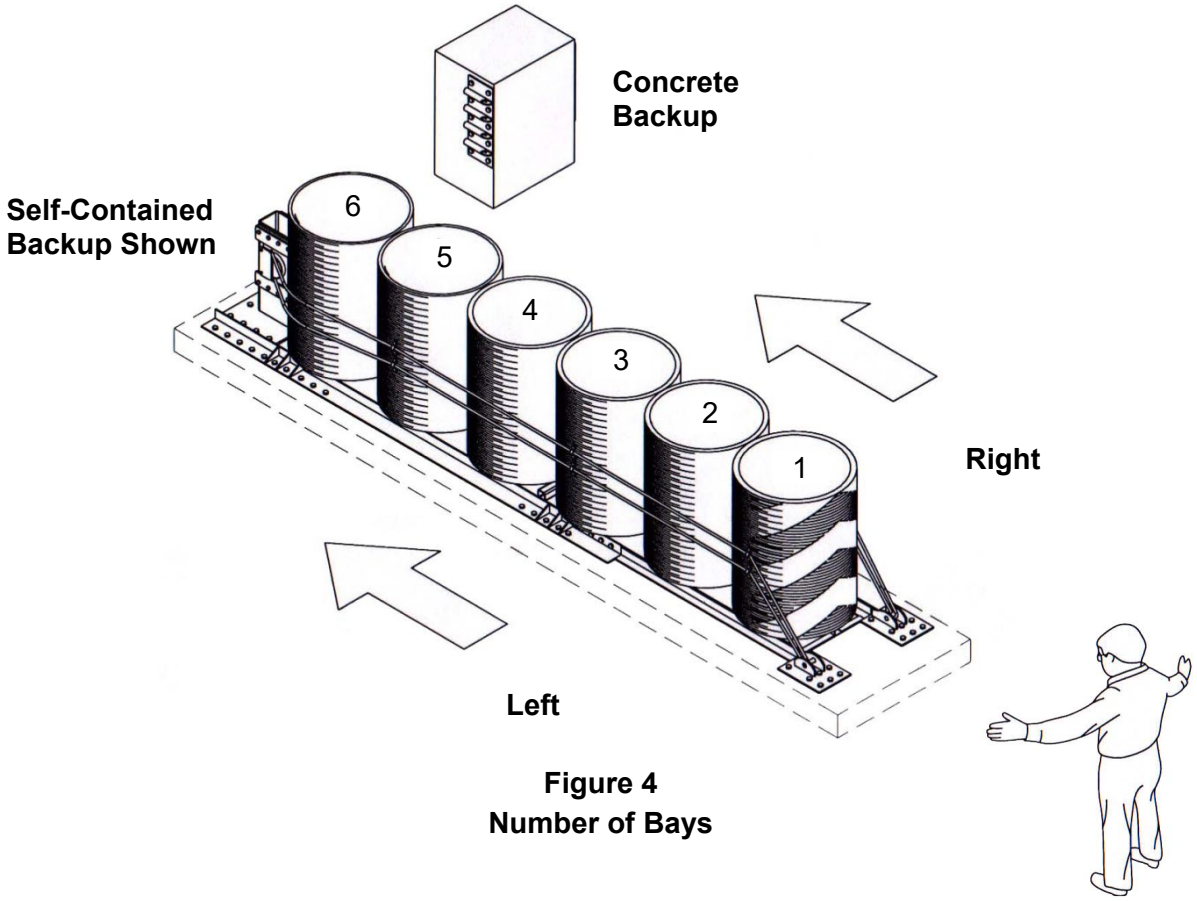


Figure 4
Number of Bays

Backup Type

It is important to fully understand the limitations of each backup type so the correct REACT 350® II is chosen for each location.

The REACT 350® II is available with a Self-Contained Backup or may be attached to a Concrete Backup. Refer to Figures 5a and 5b, along with the backup assembly drawings, to determine which type of backup is appropriate.

Self-Contained Backup

A REACT 350® II with a Self-Contained “steel tube” Backup will require two cables, one cable on each side of the Cylinders. These cables begin at the front of the system, travel through the Cable Guides on the Cylinders, loop around the backup structure, travel back through the Cable Guides, and terminate at the front of the system.

Concrete Backup

REACT 350® II with a Concrete Backup requires four cables. Two cables on each side of the Cylinders begin at the Side Anchor Plates, travel through the Cable Guides on the Cylinders, loop around the pin on the Front Anchor Plates, travel back through the Cable Guides, and terminate at the Side Anchor Plates.

Existing concrete structures may serve as backups for REACT 350® II provided they meet specific size and strength requirements.

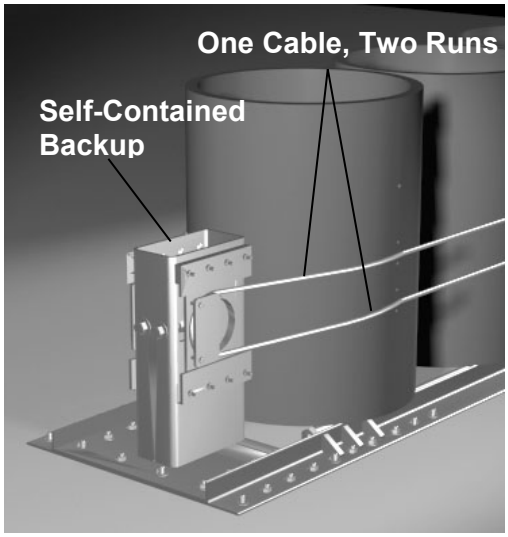


Figure 5a
Self-Contained Backup

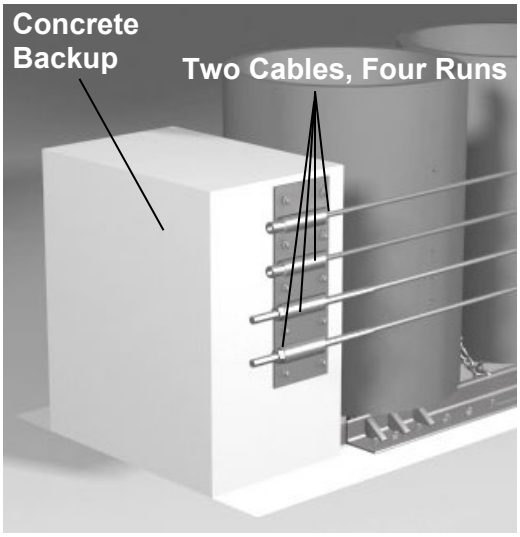


Figure 5b
Concrete Backup

System Design

Self-Contained Backup

The REACT 350® II with a Self-Contained Backup is intended to minimize assembly time. This type of system arrives at the site fully assembled. The assembly crew needs only to lift and place the system in front of the barrier then drill and set the anchors. Refer to the Assembly section on page 21 for a complete list of instructions.

Roadside Feature Width

Generally the REACT 350® II, with a Self-Contained Backup, can shield objects up to 8” [203 mm] wide in a gore application. This type of system can also shield wider roadside features in non-gore and bidirectional traffic locations (p. 17). Please contact Valtir for any additional information (p. 3).

When shielding median barriers (32” [813 mm] high safety shape or single slope), a Self-Contained Backup may be used if the base or “toe” of the barrier is tapered @ 1:4 (15 deg. Maximum) starting at the projected face of the Self-Contained Backup (Figure 6). Transition panels must be added to any side exposed to traffic (p. 22, Figure 16). This helps prevent interaction of wheels on impacting vehicles.

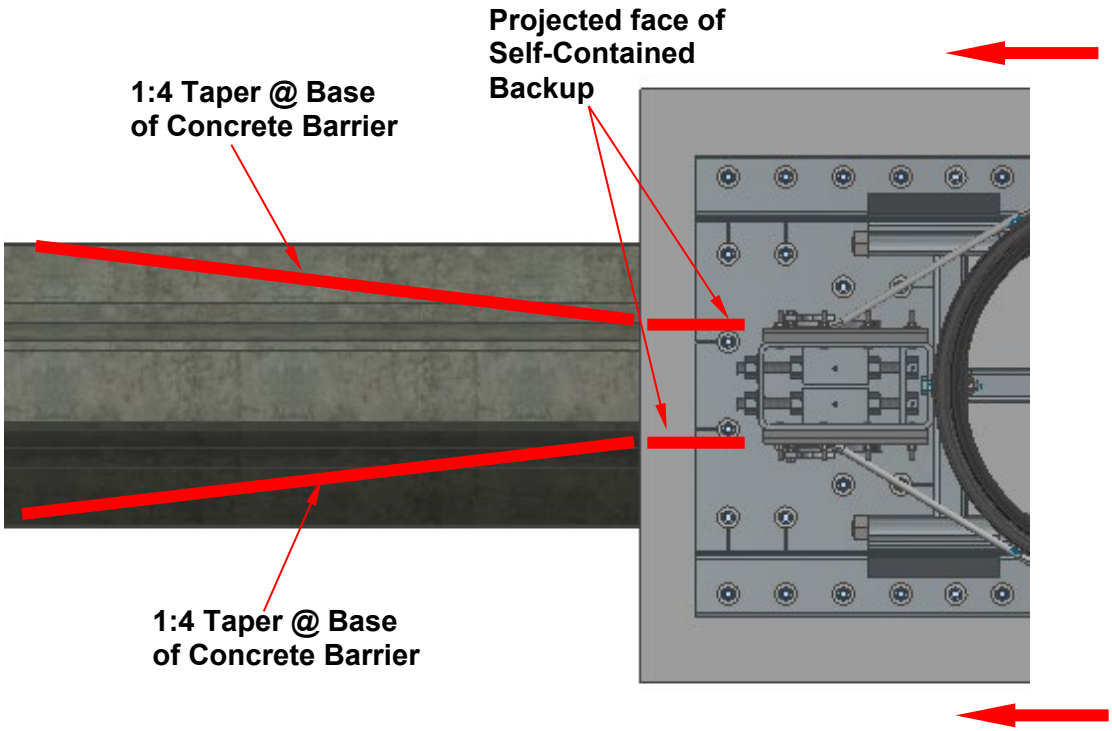


Figure 6
Tapered Barrier

Guardrail Attachment

Hardware is available to mount W-beam guardrail or a safety shaped barrier to the Self-Contained Backup of the REACT 350® II system. A folded Transition Plate and W-beam connector can mount to either or both sides of the backup assembly (Figure 7). If bidirectional traffic is present, special post spacing, rail, and rub-rail will be required for the guardrail. Thrie Beam guardrail adapters are also available. Contact Valtir for assistance (p. 3).

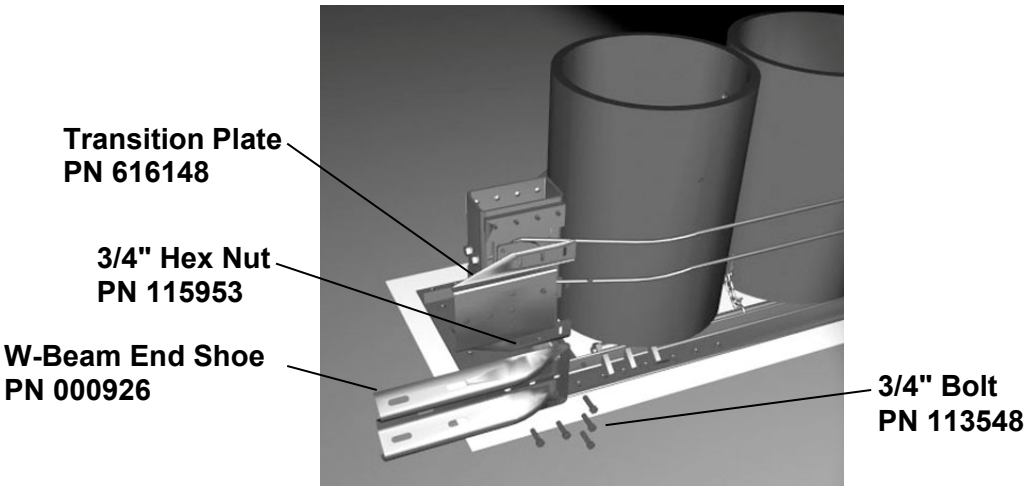


Figure 7
Guardrail Attachment Hardware

Bidirectional Traffic

If bidirectional traffic (vehicles traveling opposite directions on either side of the system) is present, special consideration needs to be taken when placing the system. It is important that the Self-Contained Backup does not become a roadside obstacle to the reverse direction traffic. If a system is placed in a location where traffic will be approaching from the rear of the system, transition hardware may be required.

Optionally, if space permits, the REACT 350® II may be offset so that the backup structure is shielded by the roadside feature (p. 17). Guardrail transition hardware may also be used.

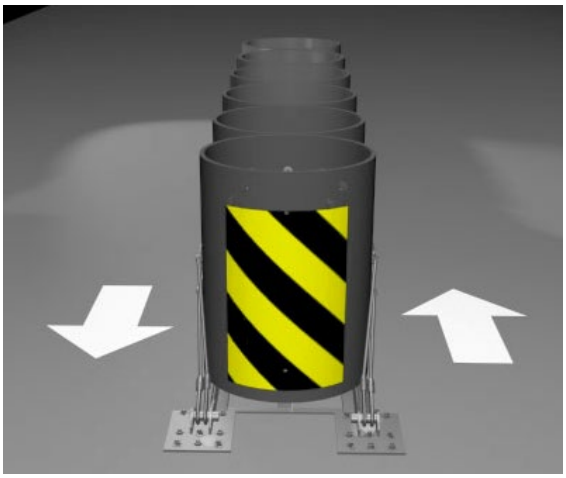


Figure 8
Bidirectional Traffic

Offsetting the System

The REACT 350® II, with a Self-Contained Backup, may be offset from the center of the roadside obstacle if space permits. Offsetting may be necessary for two reasons:

1) To shield a fixed object wider than 200 mm [8”]
2) If bidirectional traffic is present

When offsetting the system, align the vertical face of the Backup structure with the face of the barrier (Figure 9). With this method, REACT 350® II with Self-Contained Backup may shield roadside features up to 610 mm [24”].

Important: A Concrete Backup may be required if a wider roadside feature or bidirectional traffic are present. Please contact Valtir Customer Service for additional information (p. 3).

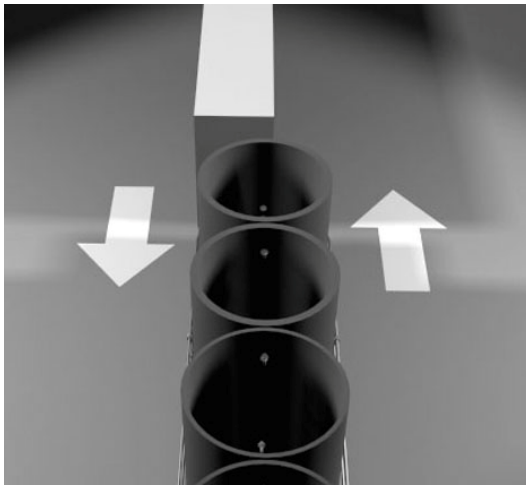


Figure 9

Offsetting the System

Concrete Backup

The REACT 350® II system is also intended to mount directly to a new or existing Concrete Backup. This type of system requires slightly more assembly time, as the cables must be assembled on site (p. 27).

Existing Concrete Backups must be a minimum of 40” [1000 mm] high, 24” [610 mm] long, and 30” [762 mm] to 36” [914 mm] wide, with 28-day strength of 4000 psi [28 MPa] and fully reinforced.

If your existing structure does not meet these minimums, special hardware and designs may be available for them. Contact Valtir Customer Service Department if you have questions concerning Concrete Backup requirements (p. 3).

Roadside Obstacle Width

The REACT 350® II system with a Concrete Backup may be specified to protect obstacles up to 36” [914 mm] wide. The backup must be 30” [762 mm] to 36” [914 mm] wide to use standard side anchor hardware.

Bidirectional Traffic

If bidirectional traffic (vehicles traveling opposite directions on either side of the system) is present, special consideration needs to be taken when placing the system.

It is important for the highway design engineer and the assembler to ensure that the Concrete Backup itself does not become a roadside obstacle to the reverse direction traffic. If the system is placed in a location where traffic will be approaching from the rear of the system, the Backup should not protrude beyond the obstacle being shielded. Concrete tapering may be required.

Also, an additional standard Side Anchor Plate should be rotated 180 degrees and placed behind the first anchor plate (Figure 10). In this case, the backup must be at least 30” [762 mm] long.

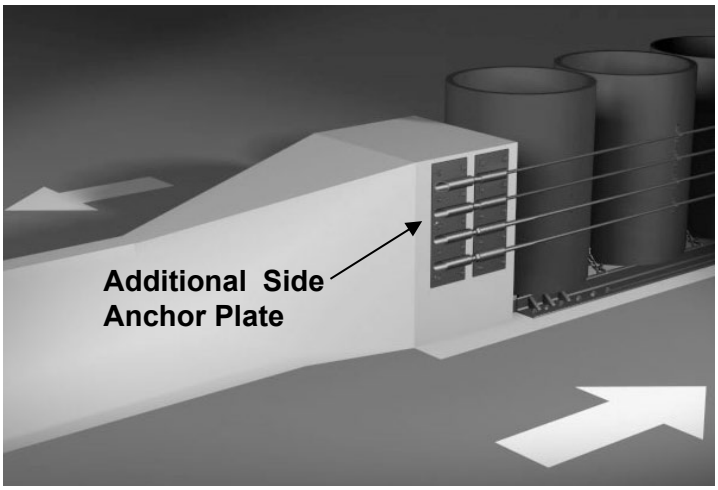


Figure 10
Standard Anchor Plate with Concrete Backup

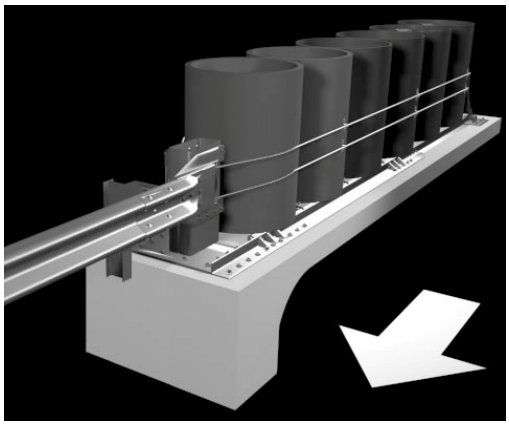


Figure 11a Below-Grade Anchor Block

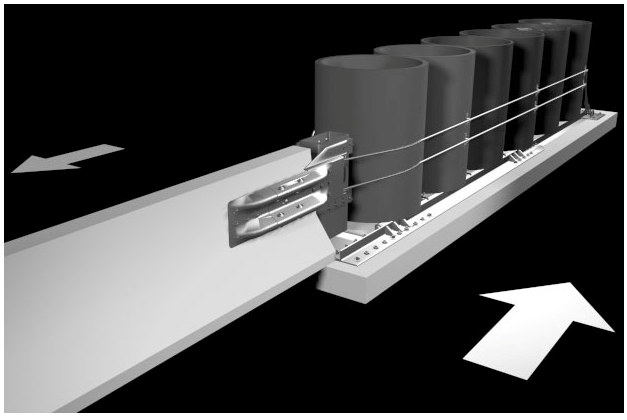


Figure 11b - Anchor Block Not Needed

Application Assistance

Contact Valtir Customer Service if you would like input as to your specific application. Proper model selection is essential to the performance of the REACT 350® II. You will need to answer the following questions:

1. Are curbs, islands, or elevated objects (delineators or signs) present at the site? What height and width are they? All curbs and elevated objects should be removed. Curbs should be removed from behind the backup to approximately 50’ [15 m] in front of the REACT 350® II. Any curbs that must remain should be 4” [102 mm] maximum and be mountable. Signs should not interfere with the system’s ability to collapse. Generally, a vehicle should not interact with two **objects** at the same time. Allow adequate spacing.
2. If the deployment site is a gore area (place where two roads diverge), what is the angle of divergence?
3. What is the general geometry of the site? Include the roadway for 500’ [150 m] in front of the roadside feature, so traffic patterns can be visualized.
4. Is there an existing guardrail or median barrier at the site?
5. What is the width of the roadside obstacle to be protected?
6. Will there be traffic approaching from the rear of the system? Is the system in a two-way traffic situation with traffic going in opposite directions on either side of the system, or is the system on the side of the road where cross over traffic is a concern? If yes, then a transition from the fixed object to the rear of the system may be necessary to prevent a vehicle from interacting with the rear of the system (pp. 16 and 18).
7. Are there any other unique features at the site that may affect the positioning or performance of the REACT 350® II? See the next page for Other Factors That May Affect Your System.

Warning: Do NOT modify the REACT 350® II in any way.

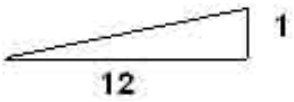
Warning: Safety measures incorporating appropriate traffic control devices specified by the highway authority must be used to protect all personnel while at the assembly, maintenance, or repair site.

Warning: Ensure that there is proper site grading for the REACT 350® II placement as dictated by the state or specifying agency, pursuant to FHWA acceptance.

Other Factors That May Affect Your System

1. The existence of drain inlets or buried culvert pipe.
2. Junction boxes or other appurtenances located near the roadside object.
3. Insufficient space for the length of system preferred.
4. The location and movement of expansion joints.
5. Breaking cross-slopes under or near the proposed assembly or severe cross-slope under the system. Provide leveling to 8% maximum.

Warning: The existence of any cross-slopes in excess of 8% or curbs may create an untested effect on the impacting vehicle.



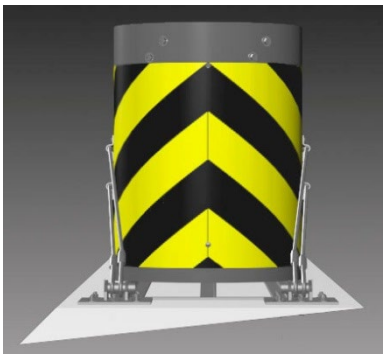


Figure 12
1:12 Cross-Slope

Joints

The REACT 350® II with Concrete Backup and split Base Track may span longitudinal expansion or construction joints. Any system interactive joint movement must be limited to 1 1/2" [38 mm].

Important: The REACT 350® II is not designed to span a transverse joint.

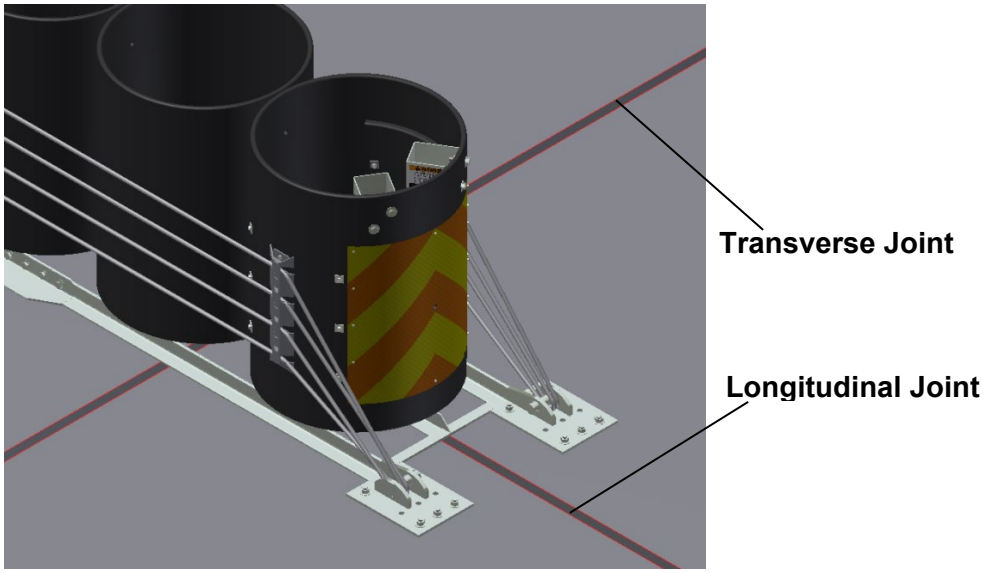


Figure 13
Longitudinal or Transverse Joints

Inspect Shipment

Before assembling the REACT 350® II at a specified location, check the received parts against the shipping list supplied with the system. Make sure all parts have been received. The system is shipped assembled. All assembly hardware can be found in the last Cylinder. The Pullout Assembly should be stored for post impact use.

Assembly

Note: The drawing assembly package provided with the REACT 350® II must be used with these instructions for proper assembly and should take precedence over these general instructions.

1) Deploy Traffic Control

A traffic control plan appropriate to the complexity of the project should be prepared and understood by all parties before the REACT 350® II is assembled. Follow the plan set forth by the highway authority specifying the use of this system.

Deploy the appropriate work zone safety devices prior to beginning the assembly and keep them present through all phases of deployment.

Warning: The correct safety equipment and traffic management system approved by the requisite highway authority must be used as required for any assembly using the REACT 350® II.

2) Determining the Base Point & Centerline

Typically the base point of the REACT 350® II will be the midpoint of the road obstacle at its front face. Offsetting the System may change if bidirectional traffic or expansion joints are present (p. 17).

Extend a chalk line from the base point, perpendicular to the roadside obstacle face, or as determined by project engineer, to a distance greater than the maximum length of the REACT 350® II (refer to the drawings provided). This chalk line will become the centerline for the REACT 350® II (Figure 14).

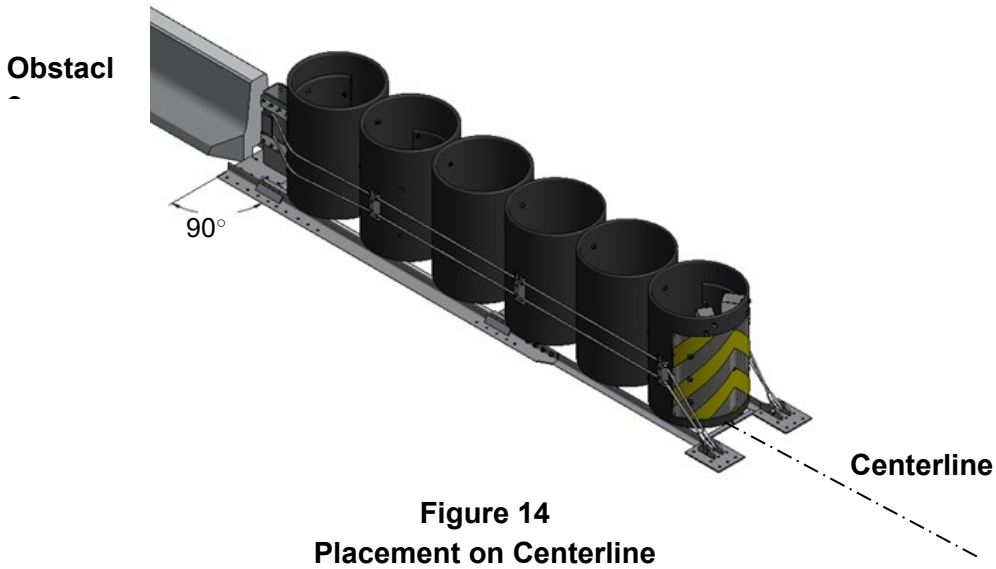


Figure 14
Placement on Centerline

3) Lifting/Placing the System

Mark the centerline on the front and rear of the Base Track. Use the Lifting Eyes located on the Middle Rail of the Rear Base Track (look down into the Cylinders) to lift the REACT 350® II into place (Figure 15).

Use fixed-length slings with a 6,000 lb. [2722 kg] minimum capacity. Fixed slings will prevent the REACT 350® II from tipping. Do not lift overhead. Measure from the centerline to ensure that the REACT 350® II is centered and positioned at the proper angle. The steel Base Track will rest flush against the roadside obstacle face for assemblies that do not require transitions.

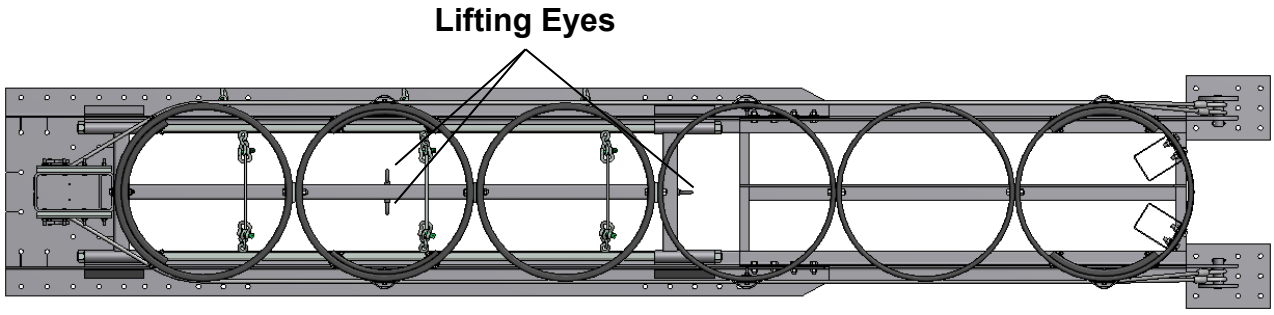


Figure 15 - Lifting Eye Location(s)

Warning: Ensure the hoist device is properly rated to lift the REACT 350® II system.

For Self-Contained Backup assemblies requiring transition hardware to concrete wall or safety shape barrier (PN 616120), the steel Base Track should be 5” [127 mm] forward of the roadside obstacle face (Figure 16).

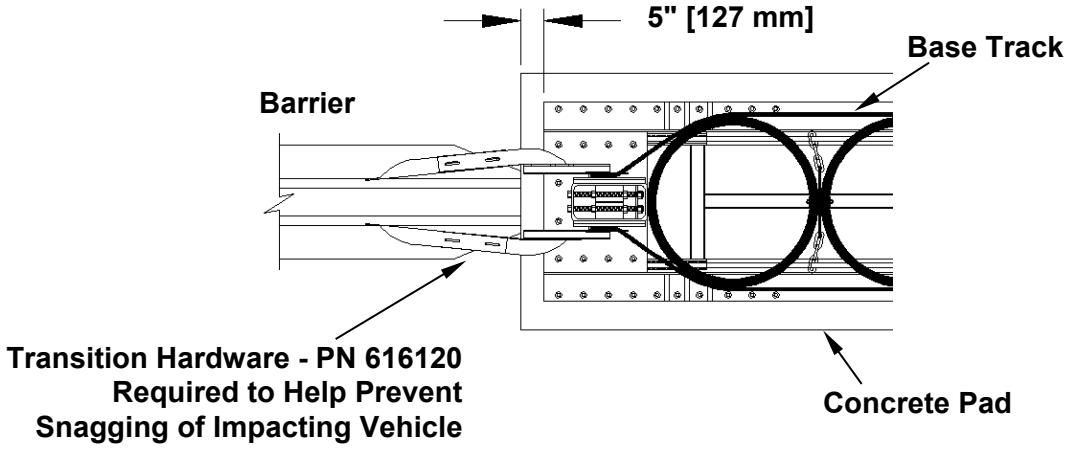


Figure 16 – Transition Hardware

Self-Contained Backups

4) Drill and Set Anchors

Use the holes in the Base Track as a template to locate and drill boreholes, 7/8” [22 mm] diameter x 6” [150 mm] deep into the concrete pad or roadway surface (Figure 17). All boreholes in Base Plate must be used to anchor the REACT 350® II system to the foundation. Use an approved adhesive kit with instructions to secure the 3/4” diameter x 7 1/2” long studs (p. 8).

After adhesive has cured, use 3/4” flat washers and nuts provided with kit to anchor Base Track to foundation.

Warning: Every anchor hole in the Base Plate must be used to secure the REACT 350® II to the foundation.

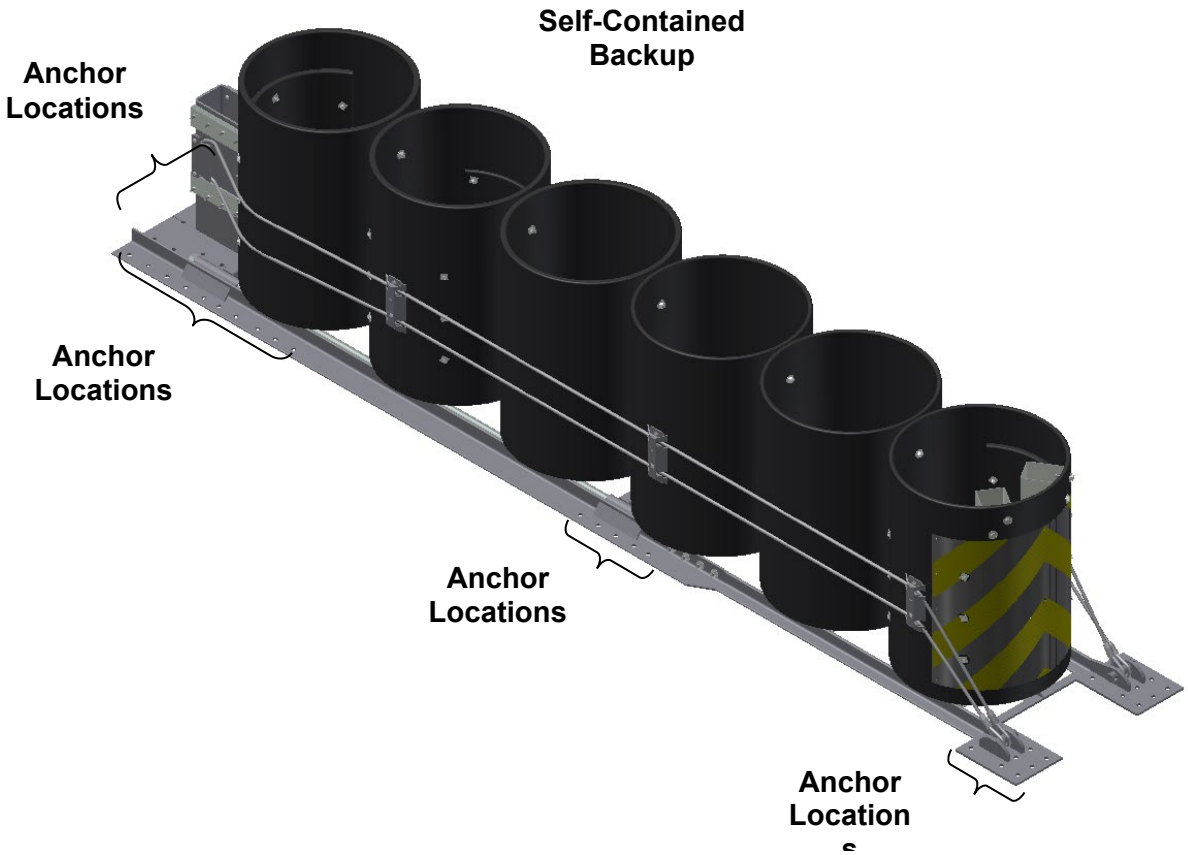


Figure 17 - Anchoring the System - Self-Contained Backup

5) Tension Restraining Cables

Use the two adjusting nuts at the rear of the Backup to tension the cables (Figure 18). When properly tensioned, the cables should not deflect more than 3” [75 mm] with 100 lb. [45 kg] downward pressure.

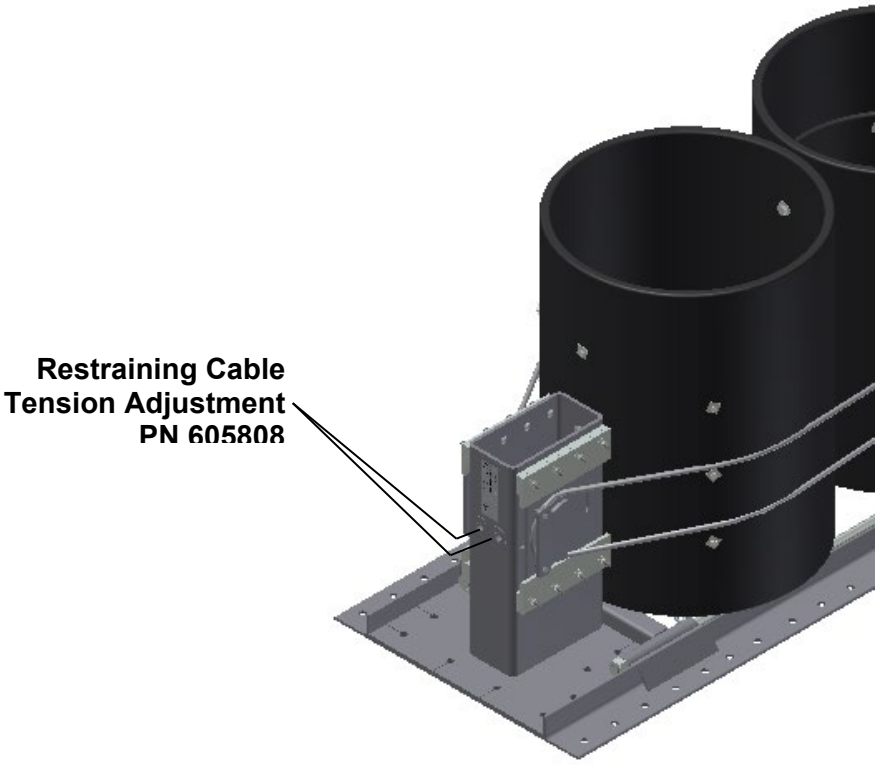


Figure 18 - Tension Adjustment (Self-Contained Backup)

Concrete Backups

1) Rear Cylinder Attachment

Use the top holes of each pair in the Rear Cylinder as a template to locate and drill two (2) holes, 7/8” [22 mm] diameter x 6” [150 mm] deep into the Concrete Backup (Figure 19). Use an approved adhesive kit with instructions to secure the 3/4” diameter x 7 1/2” long studs using instructions included with kit (p. 8). After adhesive has cured, use 3/4” nuts and flat washers included with the approved adhesive kit to attach the Cylinder Assembly to the Concrete Backup (Figure 19).

2) Drill and Set Anchors

Use the holes in the Base Track as a template to locate and drill holes, 7/8” [22 mm] diameter x 6” [150 mm] deep into the concrete pad or roadway surface (Figure 19). Use approved adhesive kits to attach 3/4” diameter x 7 1/2” long studs using instructions included with kit (p. 8). After adhesive has cured, use 3/4” flat washers and nuts provided with kit to anchor Base Track to foundation.

Warning: All holes in Base Plate must be used to anchor the REACT 350® II to the foundation.

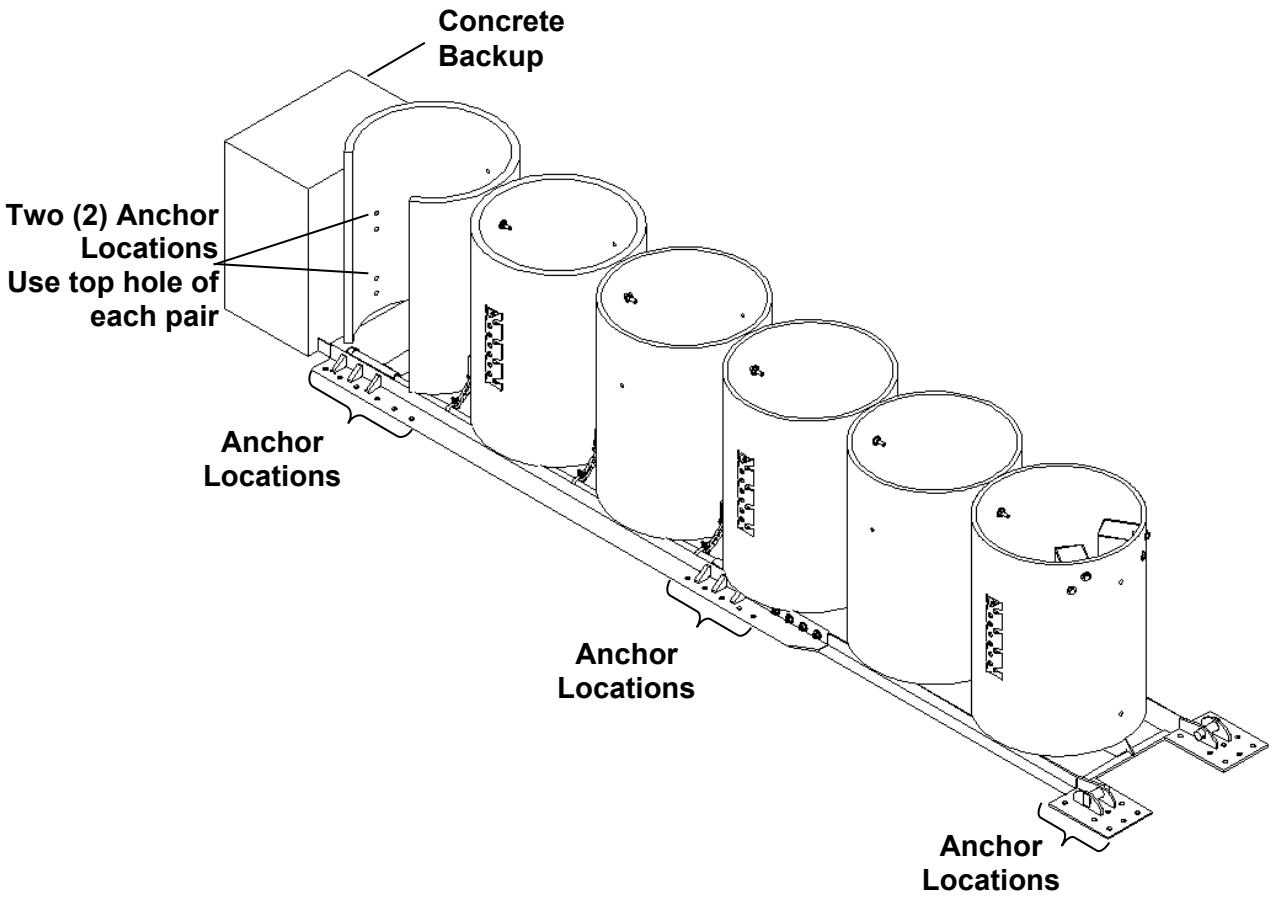


Figure 19 - Anchoring the System - Concrete Backup

3) Drill and Set Side Anchor Plate Anchors

Warning: For REACT 350® II with a Concrete Backup, Side Cable Anchor Plates must be attached.

Warning: The vertical placement of the Side Anchor Plates is critical to the performance of the REACT 350® II. If an existing backup is not tall enough to fulfill these requirements, special brackets are available. Consult Valtir Customer Service for further information (p. 3).

When correctly assembled, the top of the Side Cable Anchor Plates should be 39” [991 mm] from the road surface. The front edge of the Side Cable Anchor Plates should be 2” - 4” [51 mm - 102 mm] from the front face of the backup to avoid reinforcing steel. The tapered tubes of the Side Cable Anchor Plates should face the front of the REACT 350® II (Figure 20). Use the holes in the Side Cable Anchor Plates as templates to match drill ten (10) holes per side of backup, 7/8” [22 mm] diameter x 5 1/2” [140 mm] deep into the Concrete Backup. Use an approved adhesive kit to place **twenty (20) 3/4” diameter x 6 1/2” long studs using instructions included with kit.** After adhesive has cured, use 3/4” flat washers and nuts provided with kit to attach side cable anchor plates (one on each side) to Concrete Backup (Figure 20).

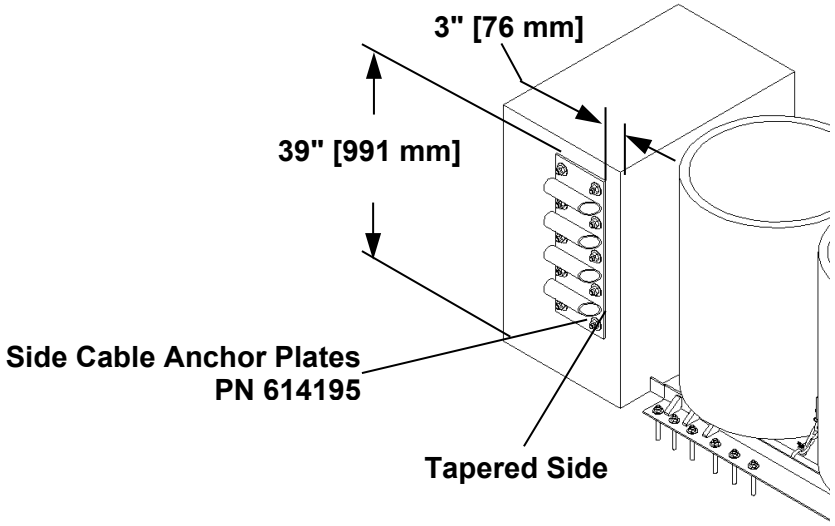


Figure 20 - Side Cable Anchor Plates

4) Attach Restraining Cables

Warning: Four (4) Restraining Cables must be attached; two (2) on each side of the Concrete Backup.

A. Slide the threaded end of a Restraining Cable through the third guide down and attach flat washer and nut as shown in Figure 21. Tighten the nut so it is flush with the end of the threaded end of cable.

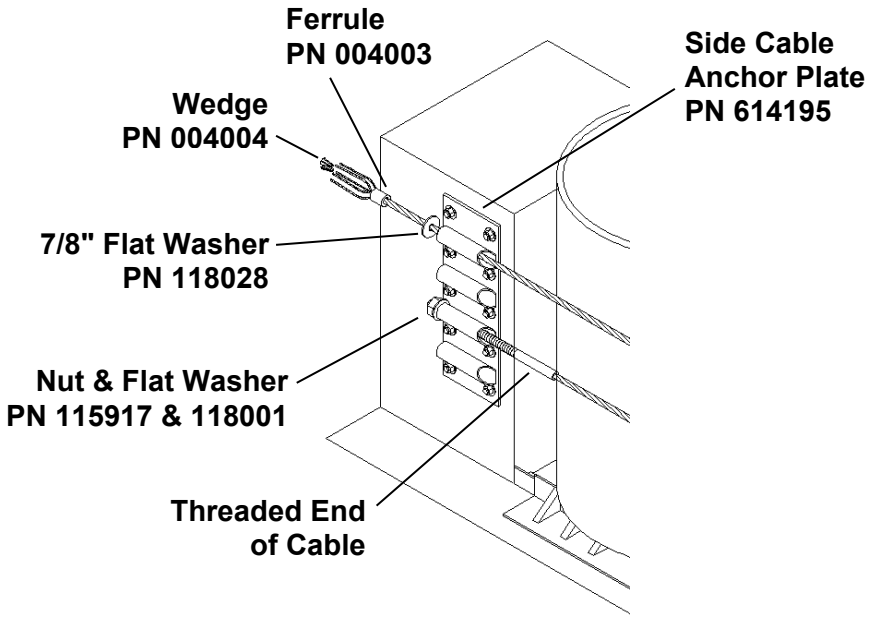


Figure 21 - Routing First Cable

B. Route the Restraining Cable through the Cable Guides on the sides of the Cylinders, around the Restraining Cable Pin as shown in Figure 22, back through the Top Cable Guides on the Cylinders and through the Top Cable Guide of the Side Plate (Figure 23).

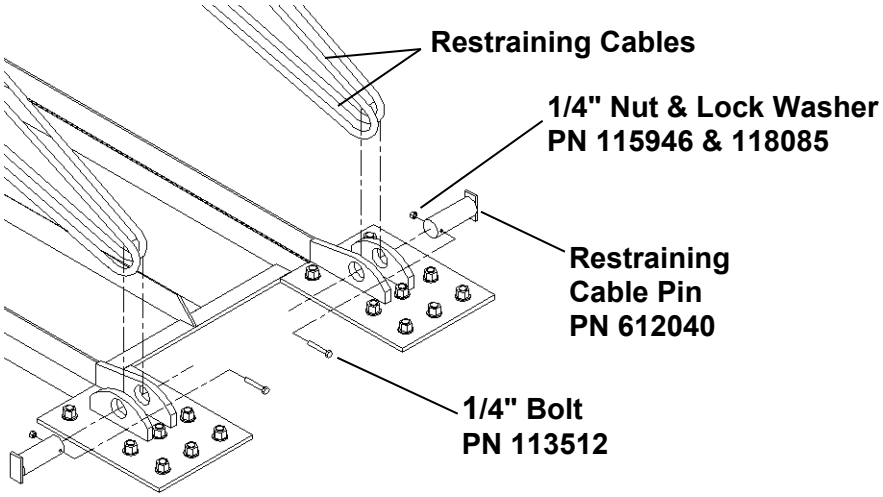


Figure 22 - Front of System Cable Attachment (Concrete Backup)

C. Pull on the cut end of the cable removing all possible slack. Slide the 7/8” x 3” flat washer and the ferrule (in that order) over the end of the non-threaded end of the Restraining Cable. Mark the cable 50 mm [2”] back from the ferrule. Leaving the ferrule and washer in place, cut the cable at the mark with a grinder or hack saw. Do not use a torch to cut the cable. Unbraid end of cable and insert middle strand between the two halves of the wedge. Carefully wrap the remaining six strands into the two halves of the wedge. Carefully wrap the remaining six strands into the slots around the wedge then push into ferrule to tighten (Figure 23 and Detail A). Use a drift pin and sledge hammer to seat the ferrule into the cable receptacles.

Repeat these steps for remaining three Restraining Cables, ensuring that the threaded ends of the Restraining Cables are attached through the lower two guides as shown in Figure 23.

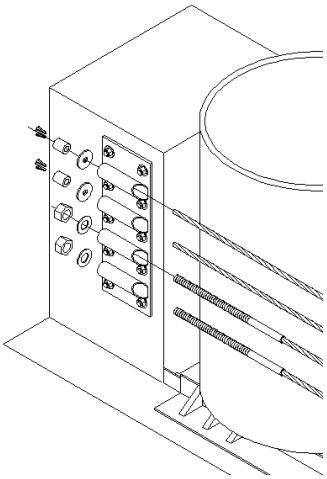
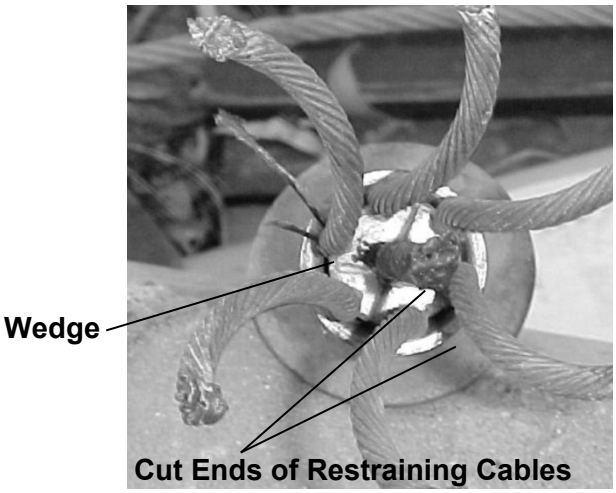


Figure 23 – Rear Cable Attachment Concrete Backup



Detail A – Cable Ferrule

5) Tension Restraining Cables

Use the nuts on the threaded end of the cables to tension the cables (Figure 21).

When properly tensioned, the cables should not deflect more than 75 mm [3”] with 45 kg [100 lb.] downward pressure.

Attach Nose Cover

1. Ensure appropriate Nose Cover is attached (Figure 24). The Nose Cover Selection below will assist in your selection and you should refer to local standards and MUTCD for nose.

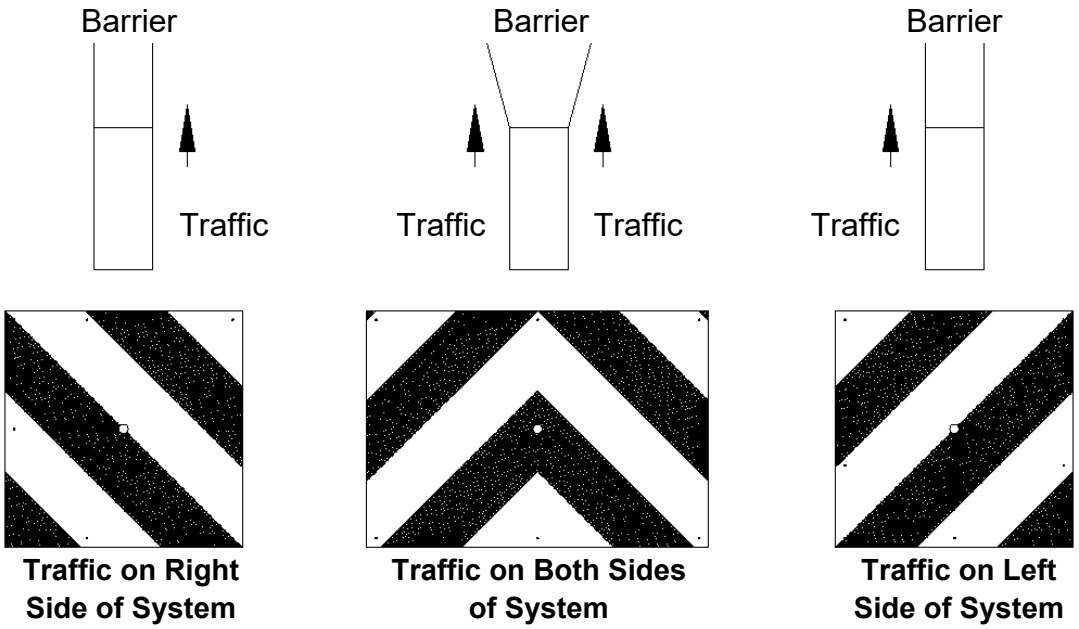


Figure 24 - Nose Cover Selection

2. Align 1” diameter hole in Nose Cover with 1” diameter hole in Cylinder (Figure 25).
3. Screw 1/4" self-drilling screw into Cylinder to punch through reflective tape and into the existing holes in Nose Cover until head of fastener is flush (10 places) (Detail B).

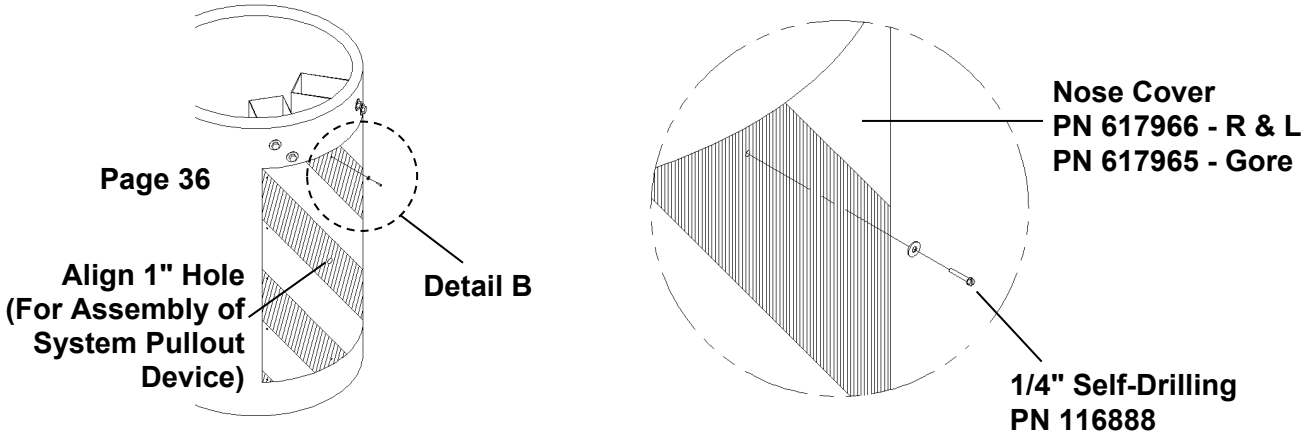


Figure 25 - Nose Cover Attachment **Detail B**

Affix Side Mount Reflectors

Refer to local standards and MUTCD for reflectors.

Attach Side Mount Reflectors to traffic side(s) of the system, with the white side facing traffic, by screwing #8 self-tapping screws through the reflector and into the Cylinder until head is flush (Figure 26).

Note: Reflector drawing available on page 58.

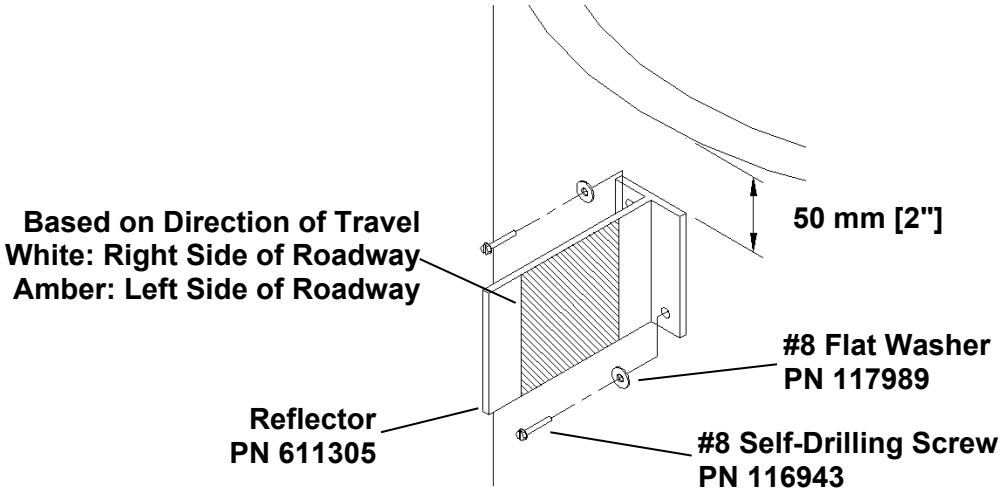


Figure 26 - Side Mounted Reflector

Warning: It is the responsibility of the installer to ensure that the REACT 350® II delineation meet all federal, state, specifying agency, and local specifications.

Attach Optional Debris Covers

To attach Optional Debris Covers, center a cover on Cylinder 1. Note the orientation of the grommets. The two grommets closest together should be located in the front or rear of the Cylinder (Figure 27). Additional style covers are available by contacting Valtir for more options (p. 3).

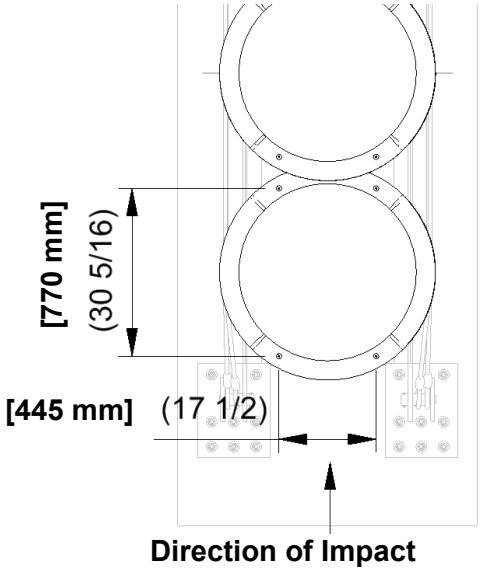


Figure 27

Next, attach Optional Debris Cover to Cylinder with four #10 flat head screws and fender washers ensuring each screw is positioned in the middle of the Cylinder wall (Figure 28).

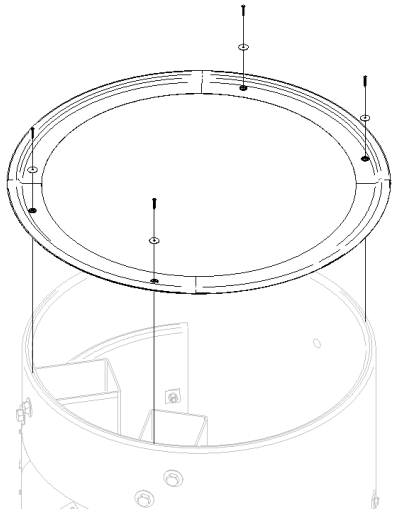


Figure 28

Continue to attach the remaining covers as described above.

Note: The covers may overlap; however, the overlap direction is not critical to system performance.

Maintenance and Repair

The REACT 350® II, through crash testing, has been shown to be a potentially reusable crash cushion. After impacts within NCHRP Report 350 criteria, it has been observed that, potentially, the bulk of the system can be reused. However, whether or not a system is reusable is the sole discretion of the highway authority specifying their use.

Warning: Use only Valtir parts on the REACT 350® II system for assembly, maintenance, or repair. **The assembly or comingling of unauthorized parts is strictly PROHIBITED.** The REACT 350® II and its component parts have been accepted for state use by the FHWA. However, a comingled system has not been accepted within the applicable criteria.

Important: After impact, always follow Post Impact Instructions on page 36.

Estimated Time for Maintenance

An experienced two-person crew with the proper tools and spare parts should be able to complete the work in one to three hours depending on the damage done to the system.

Life Expectancy

Impacts

Potential life expectancy of the system is mostly dependent on system impacts. This includes:

1. The number of impacts
2. The severity of the impacts
3. The temperature at the time of the impacts

The REACT 350® II must be inspected after each impact. Depending on the impact, components may get damaged and need replacement. A cylinder requires replacement when the minor axis of the cylinder stays permanently at 18” [460 mm] or less (Figure 29) or the system does not reach 90% of the original length. It is critical that all cables and anchoring be checked and returned to original assembly conditions. Any parts used in the repair of the system must be original Valtir parts (p. 3).

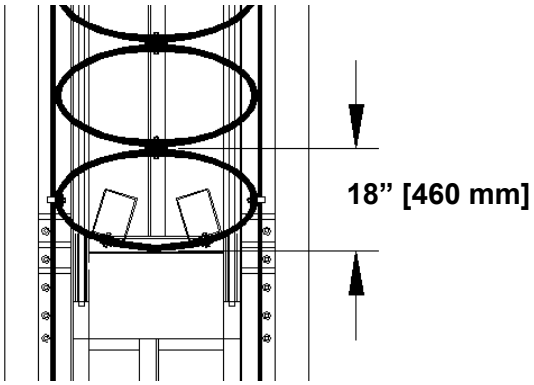


Figure 29 - Measure Minor Axis

Recycling Information

When parts need to be replaced, it is recommended that the old parts be recycled as follows:

Steel should be sold as scrap to a local metal recycler.

HDPE plastic cylinders should be sold to a plastic recycler if possible. If a recycler is unavailable, dispose of the material as plastic refuse.

Parts Ordering Procedure

1. Locate the Product Decal attached to the inside of the Rear Cylinder. Copy the sales order information from the decal.
2. Make a list of any damaged parts, using part numbers and descriptions found on the reference drawings included with the REACT 350® II system.
3. Only parts specified to be used in this system may be used during repair. The use of a part not specified in this system design renders this system as one that HAS NOT BEEN accepted by FHWA for use on the NHS and all observed crash testing to determine system performance is negated. The use of a part not contained herein during the repair renders the systems as something other than that which was tested.

Inspections

Inspections by the appropriate highway authority are recommended as determined by that authority based upon volume of traffic and impact history. Visual drive-by inspections are recommended at least once every three months. Walk-up inspections are recommended at least twice a year.

REACT 350® II Final Inspection Checklist

Site Location: _____

Date: _____

Inspector: _____

- ☐ Each anchor is torqued to adhesive manufacturer specification (p. 8)
- ☐ Every hole on the Base Track is fastened by an anchor (pp. 15, 17)
- ☐ All cables are attached and tensioned (pp.15, 21)
- ☐ Appropriate transitions are in place and properly fitted (p. 23)
- ☐ Ensure pre-assembled hardware fasteners have not loosened during shipment
- ☐ Each Cylinder is properly positioned on Base Track
- ☐ Clear all construction debris in and around system

Important: After impact, always follow Post Impact Instructions on page 36.

Visual Drive-By Inspection

1. Check to see if there is evidence of an impact. Check to verify that the REACT 350® II is fully extended from the backup. If it is not, a walk-up inspection will be necessary to determine the cause.
2. Note the location and condition of the REACT 350® II and the date of visual drive-by inspection on a log sheet.

Warning: Debris, snow, or ice inside the cylinders may prevent the REACT 350® II from absorbing the impact of a crash as observed in NCHRP Report 350 compliant crash testing. Perform a walk-up inspection as needed to check for and dispose of any debris inside the Cylinders. Failing to remove this debris or other material infringes upon the performance of the system as tested.

Walk-Up Inspection Checklist

Date: _____

Inspector: _____

- ☐ Remove any debris under or around the REACT 350® II.
- ☐ Remove any debris found inside the Cylinders.
- ☐ Replace Cylinders when the minor axis of the cylinders measures 460 mm [18”] or less (p. 26).
- ☐ Replace bent or damaged parts as soon as possible (p. 35).
- ☐ Verify that all nuts and bolts are tight and rust free.
- ☐ Ensure each Concrete Anchor Bolt is securely anchored using an approved adhesive.
- ☐ Verify that all Cylinders are in good condition and centered on the Base Track. Any Cylinder that is cracked or otherwise damaged should be replaced. Measure the minor axis of the Cylinders.
- ☐ All cables are attached with parts specified for use in this system.
- ☐ Note the location, condition, and date of inspection for any work done on the REACT 350® II. If further repair is necessary, note the repair requested. Refer to the standard drawing and assembly section of this manual for more information.

Warning: It is the responsibility of the installer to deploy locally approved personal safety equipment and traffic management for all walk-up inspections.

Post-Impact Instructions and Drawings

1. Deploy the appropriate **traffic control** devices to protect your crew.

Warning: Locally approved personal safety equipment and traffic management must be used for walk-up inspections.

2. All anchor bolts have remained firmly anchored in the roadway surface and in the Concrete Backup, if applicable. Replace any anchors that are loose, broken, or pulled out.

   If the system is anchored to asphalt, up to 10% of the total anchors may be replaced if damaged. If more than 10% of the anchors are damaged, the system should be relocated to fresh, undisturbed asphalt and redeployed using the 460 mm [18”] threaded rods.

3. Clear and dispose of any debris inside the cylinders and on site.
4. Check the condition of the Cylinders. Any Cylinder that is cracked or otherwise damaged should be replaced. Measure the minor axis of the Cylinders. Cylinders require replacement when the minor axis of the Cylinders measures 460 mm [18”] or less (p. 34).
5. The REACT 350® II must be pulled out to its original length after each impact. The Pullout Assembly must be attached prior to this procedure and removed and stored when finished (Figure 30).

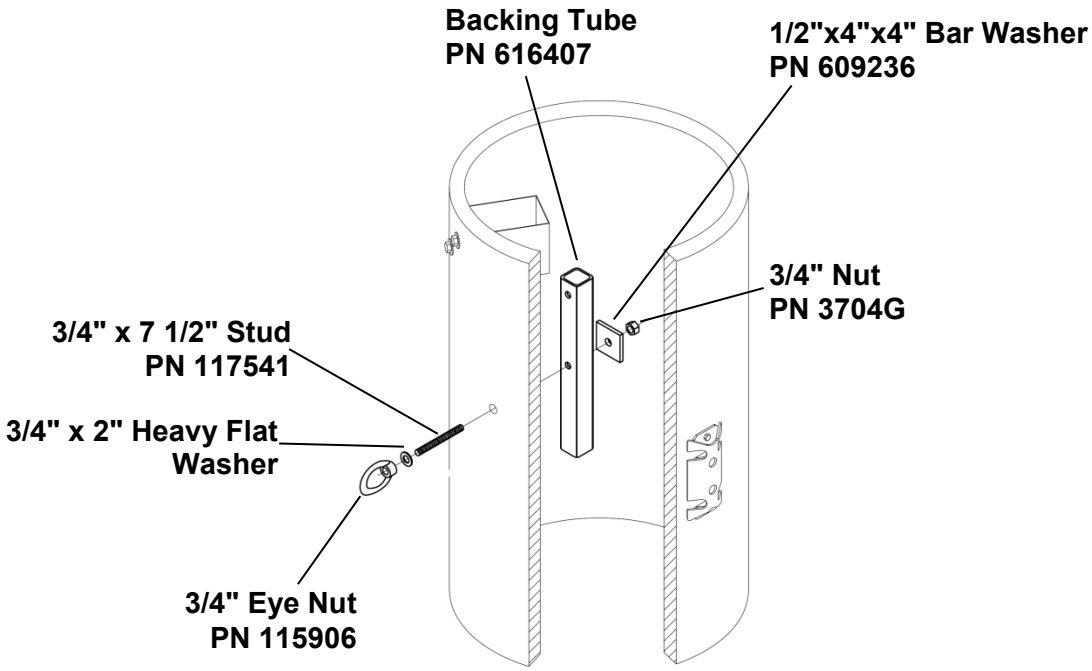
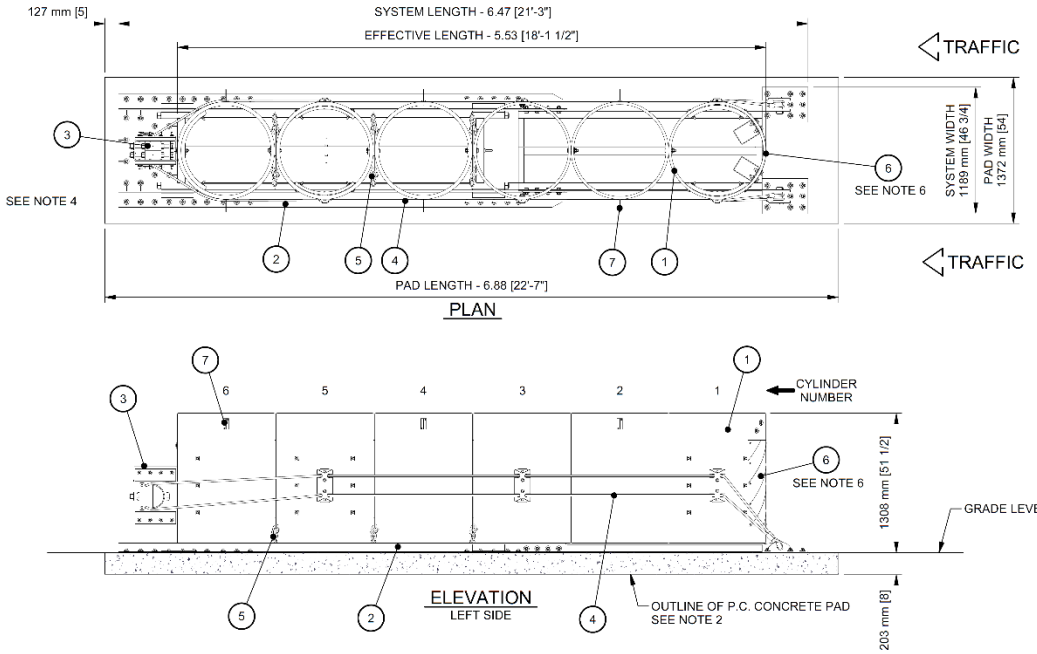


Figure 30 - Pullout Assembly

CYLINDER SCHEDULE		
CYL. NO.	STOCK NO.	CYLINDER ASSY NO.
1	613562 / 617959	617962
2	613562	606571
3	613562	606600
4	613564	606588
5	613564 / 617957	617961
6	613564 / 617958	617960



NOTES:
1. IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. 203 [8.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY MEASURING AT LEAST 3.66m [12'-0"] WIDE BY 15.24m [50'-0"] LONG.
3. SEE THE "REACT 350 II PRODUCT DESCRIPTION INSTRUCTIONAL MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (312) 467-6750.
4. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE SYSTEM TO THE OBJECT BEING SHIELDED. TRANSITION ASSEMBLIES ARE SUPPLIED AS ACCESSORIES AND MUST BE ORDERED SEPARATELY.
5. UNITS OF MESUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
6. NOSE COVER NOT INCLUDED IN MODEL NUMBER. ORDER SEPARATELY.

UNIDIRECTIONAL

KEY

1. CYLINDER
2. BASE TRACK
3. BACKUP
4. RESTRAINING CABLE
5. STABILIZER CHAIN
6. NOSE COVER
7. REFLECTOR

REFERENCES

SERIAL NO. _____
SALES ORDER _____
EH PROJECT _____
DESIGN SPEED 100 km/h [62 MPH]
NOSE TYPE _____
NO. OF UNITS _____

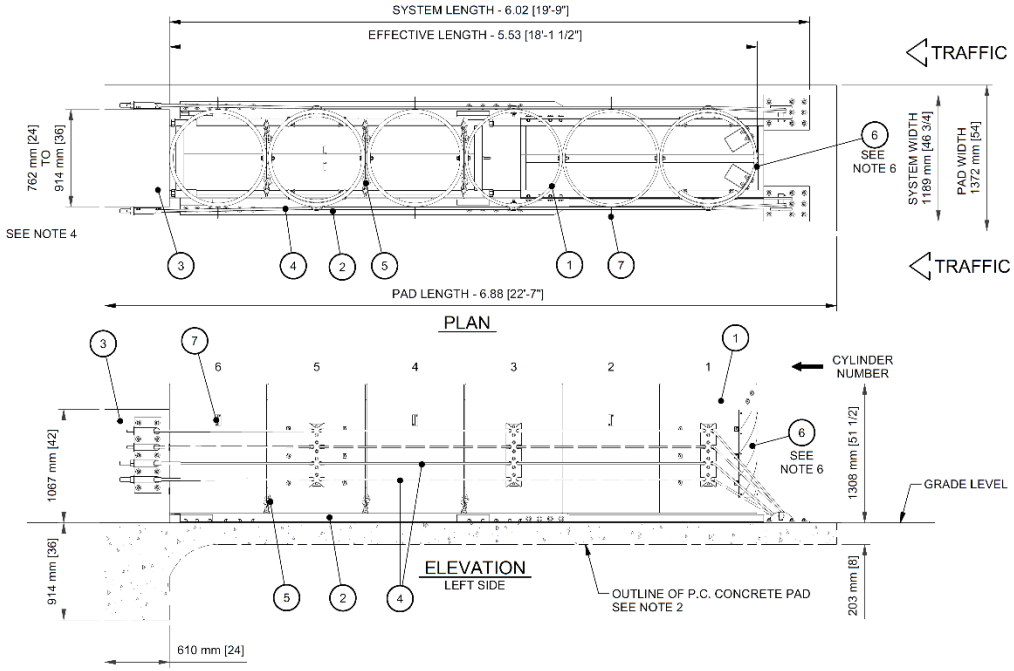
BACKUP / BASETRACK	605028
CONCRETE PAD	114054
STABILIZER CHAIN	606182
REFLECTIVE NOSE	617967
REFLECTOR ASSY	613705
RESTRAINING CABLE	605780
DEBRIS COVERS	618102

DRAWN: D. Hayes Jr	DATE: 1/24/2011	MODEL NO.: 626B036	REACT 350® II SYSTEM
CHECKED: A. Cox	DATE: 2/21/2011	FILE: R626B036U.idw	TL-3 W/ SELF-CONTAINED BACKUP
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN METERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 AND GENC-THP-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	
			DRAWING: R626B036U REV: B SHEET: 1 of 1

CLEAC-THP-TE-042 Rev 2, 1/22/2019

REACT 350® II TL-3 w/Self-Contained Backup R626B036U

CYLINDER SCHEDULE		
CYL. NO.	STOCK NO.	CYLINDER ASSY NO.
1	613562 / 618033	618031
2	613562	606571
3	613562	606599
4	613564	606588
5	613564 / 618034	617994
6	613564	606560



NOTES:
1. IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. 203 [8.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY MEASURING AT LEAST 3.66m [12'-0"] WIDE BY 15.24m [50'-0"] LONG.
3. SEE THE "REACT 350 II PRODUCT DESCRIPTION INSTRUCTIONAL MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (312) 467-6750.
4. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE SYSTEM TO THE OBJECT BEING SHIELDED. TRANSITION ASSEMBLIES ARE SUPPLIED AS ACCESSORIES AND MUST BE ORDERED SEPARATELY.
5. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
6. NOSE COVER NOT INCLUDED IN MODEL NUMBER, ORDER SEPARATELY.

UNIDIRECTIONAL

KEY

1. CYLINDER
2. BASE TRACK
3. BACKUP
4. RESTRAINING CABLE
5. STABILIZER CHAIN
6. NOSE COVER
7. REFLECTOR

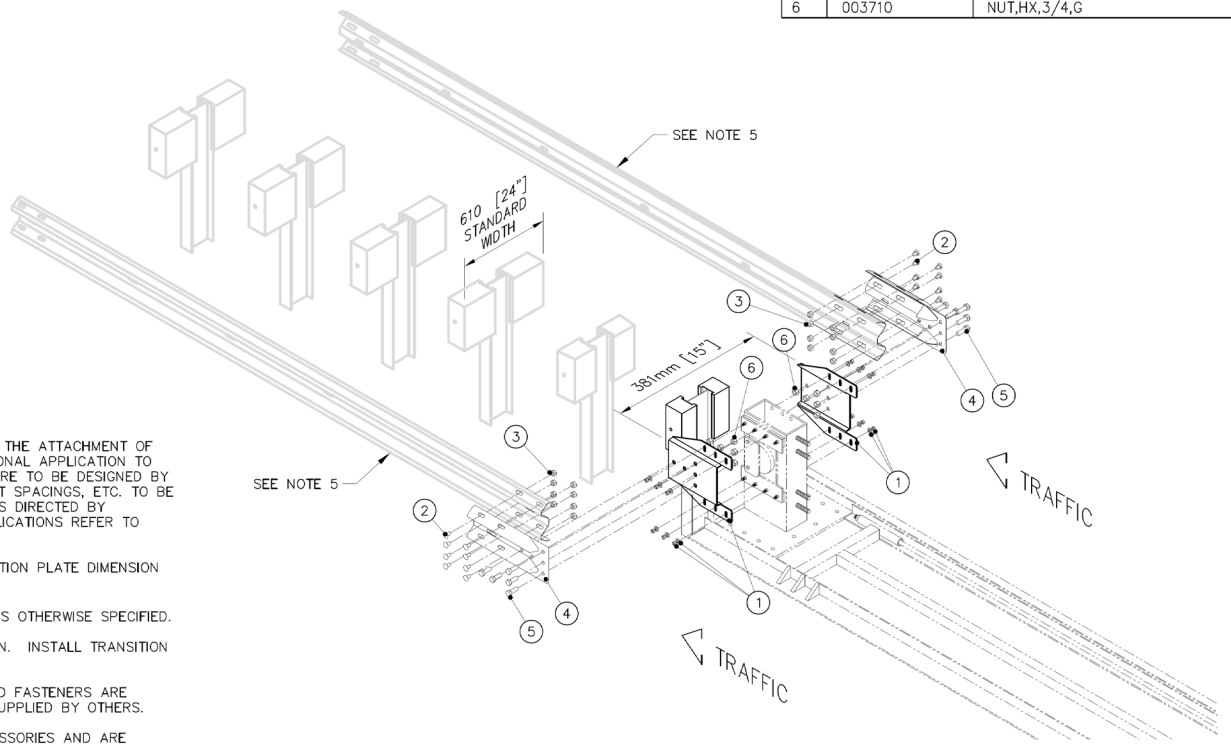
REFERENCES

SERIAL NO.		BACKUP/BASETRACK	605020
SALES ORDER		CONCRETE PAD	114054
EH PROJECT		STABILIZER CHAIN	606182
DESIGN SPEED	100 km/h [62 MPH]	REFLECTIVE NOSE	617967
NOSE TYPE		REFLECTOR ASSY	613705
NO. OF UNITS		RESTRAINING CABLE	605780
		DEBRIS COVERS	618102

DRAWN: D. Hayes Jr.	DATE: 2/17/2011	MODEL NO.: 626C036	REACT 350® II SYSTEM
CHECKED: A. Cox	DATE: 2/20/2011	FILE: R626C036U.idw	TL-3 W/ CONCRETE BACKUP
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN METERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 AND CEMC TRP-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	
			DRAWING: R626C036U REV: B SHEET: 1 of 1

REACT 350® II TL-3 w/Concrete Backup R626C036U

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	616148	TRANSITION PLATE ASSEMBLY	2.00
2	003360	BOLT,RAIL,5/8X1 1/4,G	16.0
3	003340	NUT,HX,5/8,G,RAIL	16.0
4	000926	END SHOE,W-BEAM	2.00
5	113548	BOLT,HX,3/4X1 1/4,G2,G	10.0
6	003710	NUT,HX,3/4,G	10.0



NOTES:

1. THE SCOPE OF THIS DRAWING IS RESTRICTED TO THE ATTACHMENT OF STANDARD W-BEAM GUARDRAIL IN A UNIDIRECTIONAL APPLICATION TO THE REACT SYSTEM. ALL DOWNSTREAM HARDWARE TO BE DESIGNED BY OTHERS. POST AND BLOCKOUT MATERIALS, POST SPACINGS, ETC. TO BE PER CONTRACT PLANS, STATE STANDARDS OR AS DIRECTED BY RESPONSIBLE AGENCY. FOR BIDIRECTIONAL APPLICATIONS REFER TO DRAWING #117827.
2. FACE OF TRANSITION PLATE TO FACE OF TRANSITION PLATE DIMENSION IS APPROXIMATELY 381mm [15"].
3. DIMENSIONS ARE IN MILLIMETERS [INCHES] UNLESS OTHERWISE SPECIFIED.
4. EXISTING STUDS, WASHERS, AND NUTS TO REMAIN. INSTALL TRANSITION PLATE ON TOP OF EXISTING HARDWARE.
5. W-BEAM PANELS, POSTS, BLOCKOUTS & RELATED FASTENERS ARE STANDARD HIGHWAY HARDWARE & ARE TO BE SUPPLIED BY OTHERS.
6. TRANSITION ASSEMBLIES ARE SUPPLIED AS ACCESSORIES AND ARE ORDERED SEPARATELY.

ASSEMBLY NO. 117815

DRAWN: D. Kohfeld	DATE: 1/8/01	
DESIGNED: KRM	DATE: 3/6/01	
CHECKED: B. Burgess	DATE: 3/6/01	
CAD FILE: 117815.dwg		

REACT 350® SYSTEM
TRANSITION ASSY,SC BU,UNI,REACT 350

SCALE	DWG.	SHEET	REV.
1:30	117815	1 of 1	A

Transition Assembly, SC BU, UNI 117815

NOTES:

1. USE TRANSITION PANEL AS TEMPLATE FOR DRILLING.
2. IMPACT FORCES COULD BE TRANSFERRED INTO TERMINAL END OF THE BARRIER. ADEQUATE REINFORCING AND ANCHORAGE ARE REQUIRED FOR PROPER IMPACT PERFORMANCE.
3. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR NUT, SEE DETAIL B.
4. TRANSITION ASSEMBLIES ARE SUPPLIED AS ACCESSORIES AND ARE ORDERED SEPARATELY.
5. END SHOES MUST BE LAPPED FOR TRAFFIC DIRECTION.
6. ITEMS 3 THROUGH 7 ARE STANDARD HIGHWAY HARDWARE & MAY BE SUPPLIED BY CUSTOMER. ORDER PART NUMBER 4720 TO RECEIVE ITEM 1 ONLY.
7. THIS TRANSITION ASSEMBLY MAY BE USED FOR NEW JERSEY BARRIER, F-SHAPED OR VERTICAL CONCRETE WALL.
8. EXISTING STUDS, WASHERS AND NUTS TO REMAIN. INSTALL TRANSITION PLATE ON TOP OF EXISTING HARDWARE.
9. TRIM BARRIER 5 1/2" DEEP X 14" LONG, AS SHOWN.

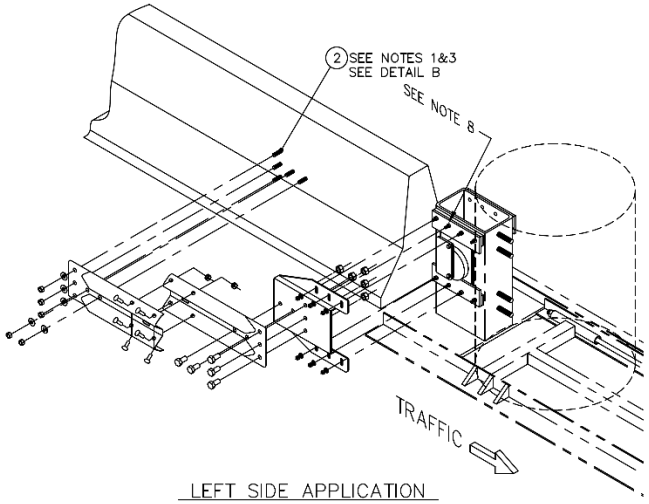
CORRECT

INCORRECT

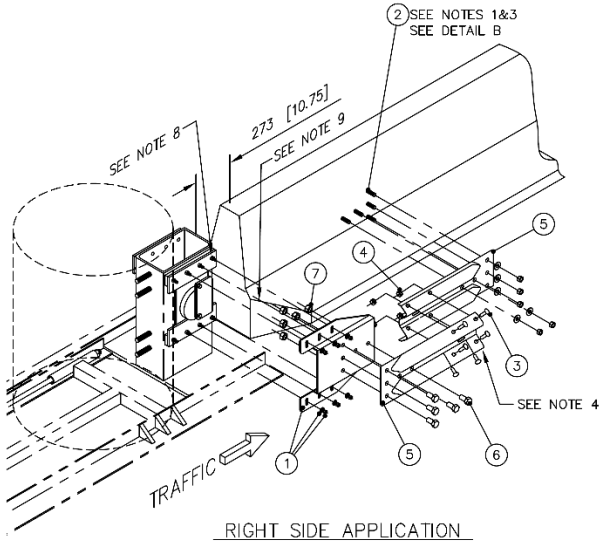
DETAIL B
NOT TO SCALE

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	616148	TRANSITION PLATE ASSEMBLY	1.00
2	619315	ANCH KIT,HIL,3/4X6 1/2(6)	1.00
3	003360	BOLT,RAIL,5/8X1 1/4,G	8.00
4	003340	NUT,HX,5/8,G,RAIL	8.00
5	000926	END SHOE,W-BEAM	2.00
6	113548	BOLT,HX,3/4X1 1/4,G5,G	5.00
7	003710	NUT,HX,3/4,G	5.00



LEFT SIDE APPLICATION



RIGHT SIDE APPLICATION

DRAWN: D. Kohfeld	DATE: 9/25/00	MODEL NO: ASSEMBLY NO. 616120	REACT 350® SYSTEM	
CHECKED: B. BURGESS	DATE: 10/17/00	FILE: 616120	TRANSITION ASSY,SC BU,N,REACT 350	
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN METERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5M AND CEMC-THP-SE-303 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	DRAWING: 616120	REV: D / SHEET: 1 of 1

DEVC-THP-RE-048 Rev E, 12/5/2018

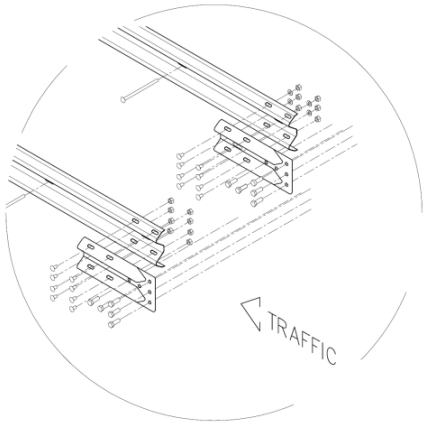
Transition Assembly, SC BU, N 616120

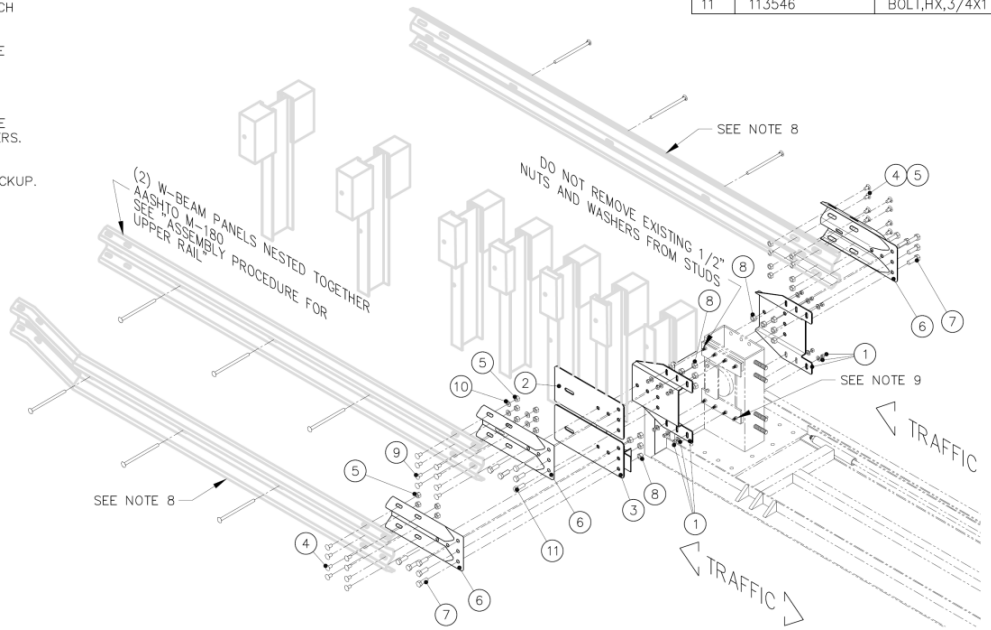
NOTES:

1. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE," 2014, AASHTO TASK FORCE 13 JOINT COMMITTEE.
2. DO NOT BOLT NESTED W-BEAM OR RUBRAIL W-BEAM TO POSTS AND BLOCKS ON POSTS #2 AND #4. BOLT BLOCKS DIRECTLY TO POSTS.
3. USE OF PLATE WASHERS (FWR01) IS OPTIONAL.
4. THE RUBRAIL MAY BE SHOP BENT IN THE LAST 915mm [36"] TO FACILITATE INSTALLATION.
5. POSTS 1, 3, 5, 6 AND 7 REQUIRE AN ADDITIONAL HOLE TO ATTACH RUBRAIL.
6. TRANSITION ASSEMBLIES ARE SUPPLIED AS ACCESSORIES AND ARE ORDERED SEPARATELY.
7. END SHOES MUST BE LAPPED FOR TRAFFIC DIRECTION.
8. W-BEAM PANELS, POSTS, BLOCKOUTS & RELATED FASTENERS ARE STANDARD HIGHWAY HARDWARE & ARE TO BE SUPPLIED BY OTHERS.
9. DO NOT REMOVE EXISTING STUDS, NUTS, AND WASHERS FROM BACKUP.

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	616148	TRANSITION PLATE ASSEMBLY	2.00
2	608107	END SHOE CONNECTOR PLATE	1.00
3	613886	RUBRAIL BRACE	1.00
4	003360	BOLT,RAIL,5/8X1 1/4,G	16.0
5	003340	NUT,HX,5/8,G,RAIL	24.00
6	000926	END SHOE,W-BEAM	3.00
7	113548	BOLT,HX,3/4X1 1/4,G2,G	10.0
8	003710	NUT,HX,3/4,G	15.00
9	003400	BOLT,RAIL,5/8X2,G	8.00
10	003300	WASHER,FLAT,5/8 X 1 3/4,G	8.00
11	113546	BOLT,HX,3/4X1 1/2,G2,G	5.00



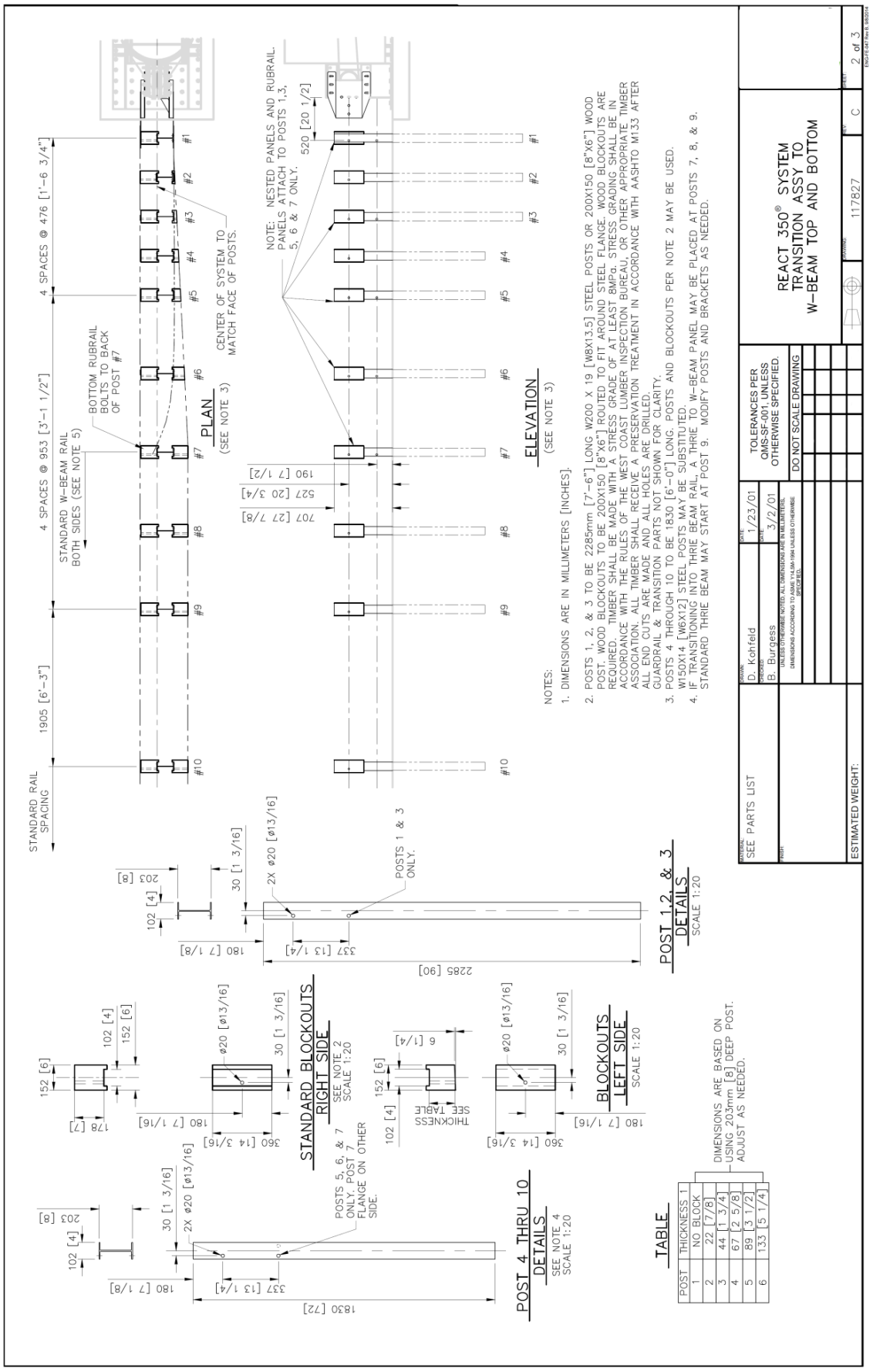


ASSEMBLY NO. 117827

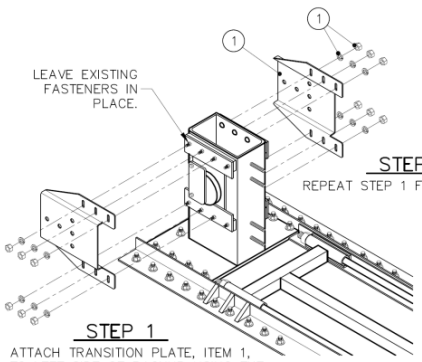
MATERIAL: SEE PARTS LIST	DRAWN: D. Kohfeld 1/23/01	TOLERANCES PER QMS-SF-001, UNLESS OTHERWISE SPECIFIED.	REACT 350® SYSTEM TRANSITION ASSY,SCBU,N, REACT 350 W/RUB RAIL	
FINISH:	CHECKED: B. Burgess 3/2/01	DO NOT SCALE DRAWING		
ESTIMATED WEIGHT: 193.39 lbmass	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS, DIMENSIONS ACCORDING TO ASME Y14.5M-1994 UNLESS OTHERWISE SPECIFIED.		DRAWING: 117827	REV: C / SHEET: 1 of 3

ENG-FE-047 Rev B, 9/8/2014

Transition Assembly, SC BU, N, w/Rub Rail 117827



POST	THICKNESS 1
1	NO BLOCK
2	22 [7/8]
3	44 [1 3/4]
4	67 [2 5/8]
5	89 [3 1/2]
6	133 [5 1/4]



STEP 1

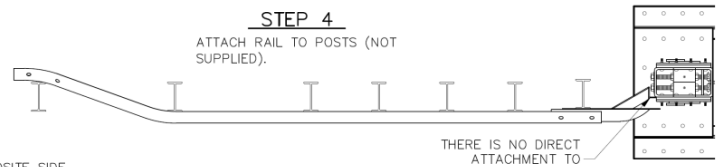
ATTACH TRANSITION PLATE, ITEM 1, TO LEFT SIDE OF BACKUP USING THE FASTENERS PROVIDED WITH THE PLATE.

STEP 2

REPEAT STEP 1 FOR OPPOSITE SIDE.

STEP 4

ATTACH RAIL TO POSTS (NOT SUPPLIED).



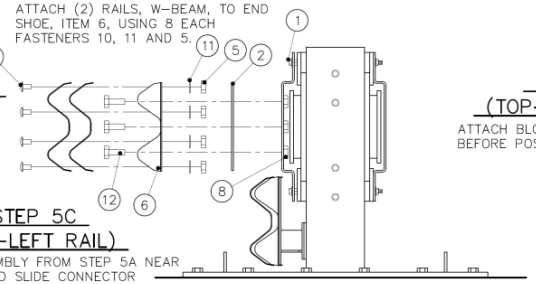
STEP 5A (TOP–LEFT RAIL)

(SEE NOTE 1)

ATTACH (2) RAILS, W–BEAM, TO END SHOE, ITEM 6, USING 8 EACH FASTENERS 10, 11 AND 5.

STEP 5B (TOP–LEFT RAIL)

ATTACH BLOCKOUTS TO POSTS 2 & 4 BEFORE POSITIONING RAIL ASSEMBLY. RAIL WILL NOT ATTACH TO BLOCKOUTS AT THESE LOCATIONS.



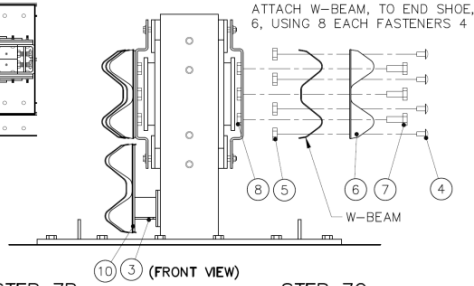
STEP 5C (TOP–LEFT RAIL)

HOLD ASSEMBLY FROM STEP 5A NEAR BACKUP AND SLIDE CONNECTOR PLATE, ITEM 2, INTO PLACE BETWEEN TRANSITION PLATE, ITEM 1, AND ASSEMBLY 5A. SECURE USING 5 EACH FASTENERS 12 AND 8.

(FRONT VIEW)

STEP 7A (TOP–RIGHT RAIL)

ATTACH W–BEAM, TO END SHOE, ITEM 6, USING 8 EACH FASTENERS 4 & 5.

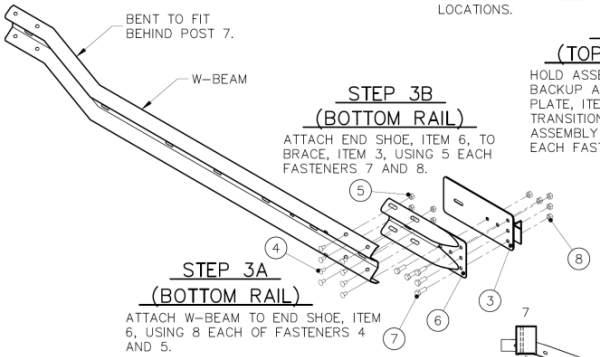


STEP 7B (TOP–RIGHT RAIL)

ATTACH BLOCKOUTS TO POST 2 & 4 BEFORE POSITIONING RAIL ASSEMBLY.

STEP 7C (TOP–RIGHT RAIL)

SECURE USING 5 EACH FASTENERS 7 AND 8.



STEP 3B (BOTTOM RAIL)

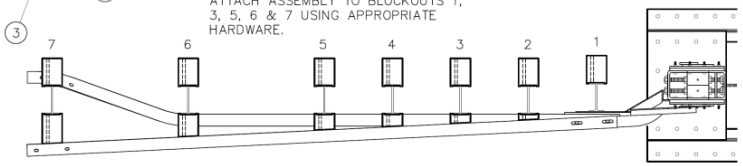
ATTACH END SHOE, ITEM 6, TO BRACE, ITEM 3, USING 5 EACH FASTENERS 7 AND 8.

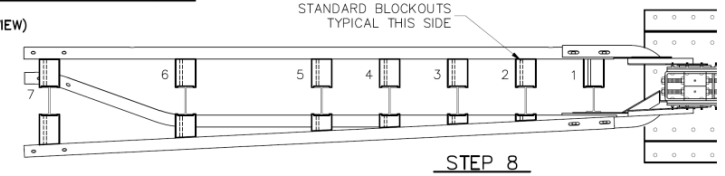
STEP 3A (BOTTOM RAIL)

ATTACH W–BEAM TO END SHOE, ITEM 6, USING 8 EACH OF FASTENERS 4 AND 5.

STEP 6

ATTACH ASSEMBLY TO BLOCKOUTS 1, 3, 5, 6 & 7 USING APPROPRIATE HARDWARE.





STEP 8

ATTACH ASSEMBLY TO POSTS & BLOCKOUTS 1, 3, 5, 6 & 7 USING APPROPRIATE HARDWARE.

NOTES:

1. FOR BEST FIT, IT IS RECOMMENDED THAT ITEMS 6 AND W–BEAM BE OBTAINED BY THE SAME MANUFACTURER.

MATERIAL: SEE PARTS LIST	DRAWN: D. Kohfeld	DATE: 1/23/01	TOLERANCES PER QMS-SF-001, UNLESS OTHERWISE SPECIFIED.
FINISH:	CHECKED: B. Burgess	DATE: 3/2/01	DO NOT SCALE DRAWING
ESTIMATED WEIGHT:	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 UNLESS OTHERWISE SPECIFIED.		

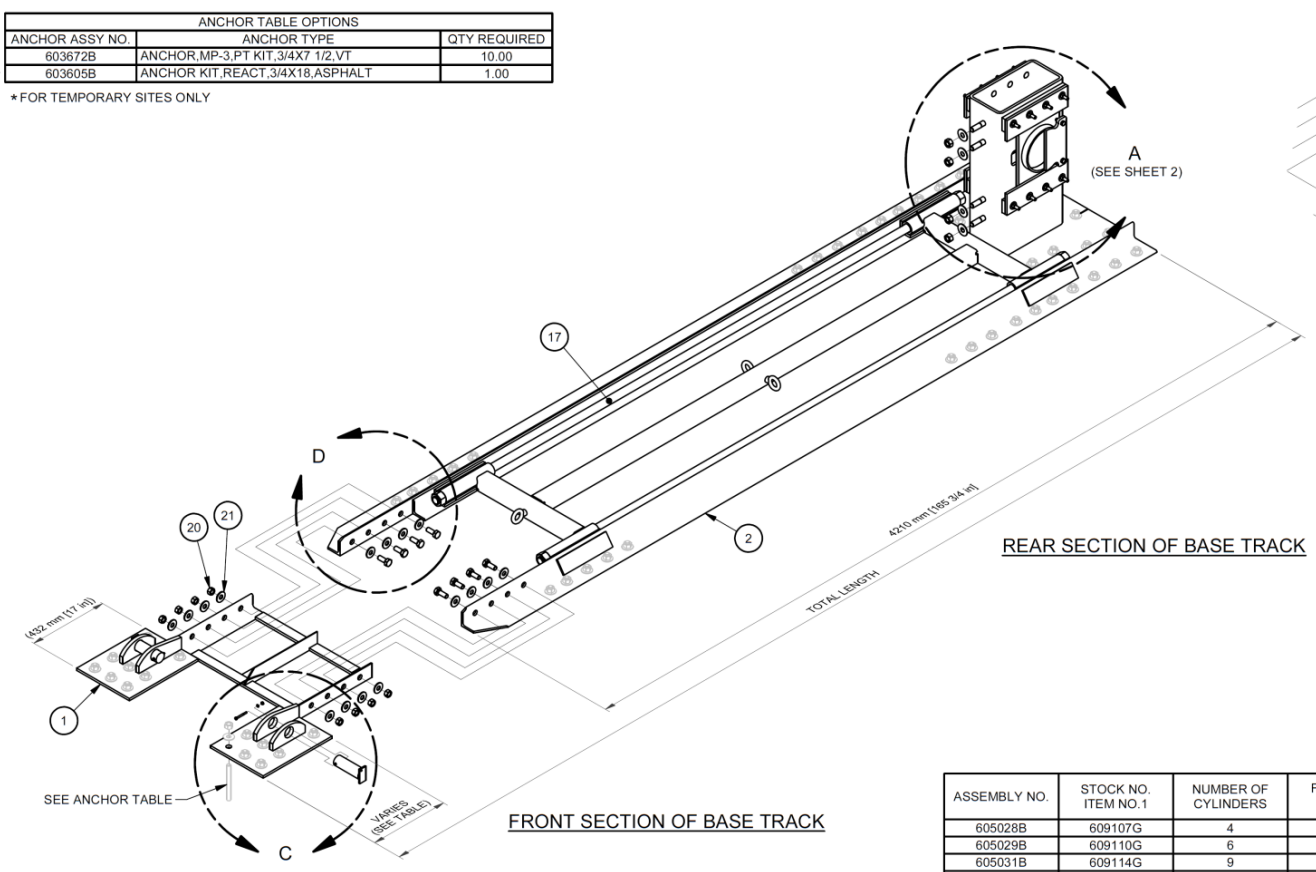
REACT 350® SYSTEM TRANSITION ASSY TO W–BEAM TOP AND BOTTOM

DRAWING: 117827 | REV: C | SHEET: 3 of 3

ENG-FE-047 Rev B, 9/8/2014

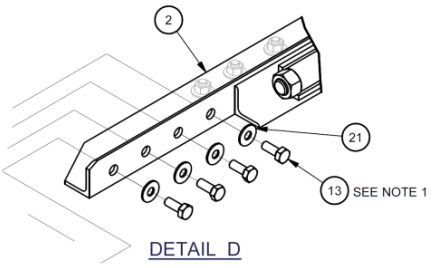
ANCHOR TABLE OPTIONS		
ANCHOR ASSY NO.	ANCHOR TYPE	QTY REQUIRED
603672B	ANCHOR,MP-3,PT KIT,3/4X7 1/2,VT	10.00
* 603605B	ANCHOR KIT,REACT,3/4X18,ASPHALT	1.00

*FOR TEMPORARY SITES ONLY

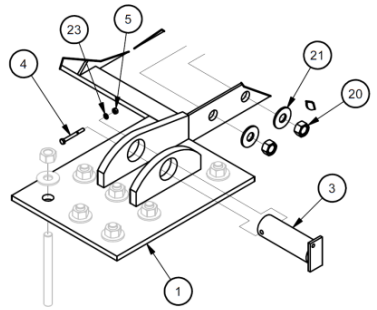


REAR SECTION OF BASE TRACK

FRONT SECTION OF BASE TRACK



DETAIL D



DETAIL C

ASSEMBLY NO.	STOCK NO. ITEM NO.1	NUMBER OF CYLINDERS	FRONT BASETRACK LENGTH (ITEM 1)	TOTAL LENGTH	STOCK NO. ITEM NO. 24
605028B	609107G	4	.43 m [1'-5"]	4.64 m [15'-2 3/4"]	113674G
605029B	609110G	6	2.26 m [7'-5"]	6.47 m [21'-2 3/4"]	113674G
605031B	609114G	9	5.00 m [16'-5"]	9.21 m [30'-2 3/4"]	113674G
605027B	609104G	11	6.83 m [22'-5"]	11.04 m [36'-2 3/4"]	113674G
617350B*	609110G	6	2.26 m [7'-5"]	6.47 m [21'-2 3/4"]	118382G

*FOR REACT II

ASSEMBLY NO. SEE TABLE

NOTES:
1. HEAD OF BOLTS MY BE POSITIONED FROM OUTSIDE OF TRACK OR FROM INSIDE AS SHOWN.

DRAWN:	DATE:
D. Kohfeld	9/25/2000
DESIGNED:	DATE:
CHECKED:	DATE:
APPROVED: DEAN ALBERSON	DATE: 9/28/2000
FILE: 605028.idw	

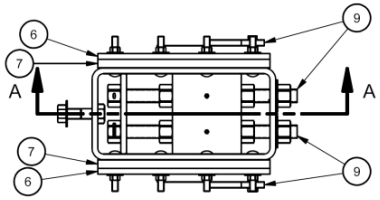
REACT 350® SYSTEM
SELF CONTAINED BACKUP

BASETRACK ASSEMBLY
FOR 36" WIDE UNITS

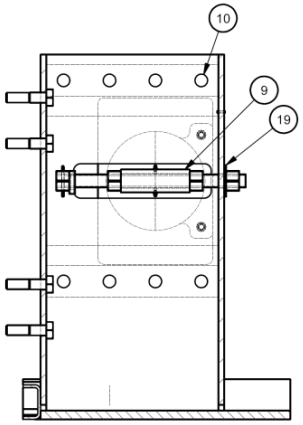
SCALE:	DRAWING:	SHEET:	REV
NTS	605028	1 of 2	J

FM0037 Rev -, 7/22/10

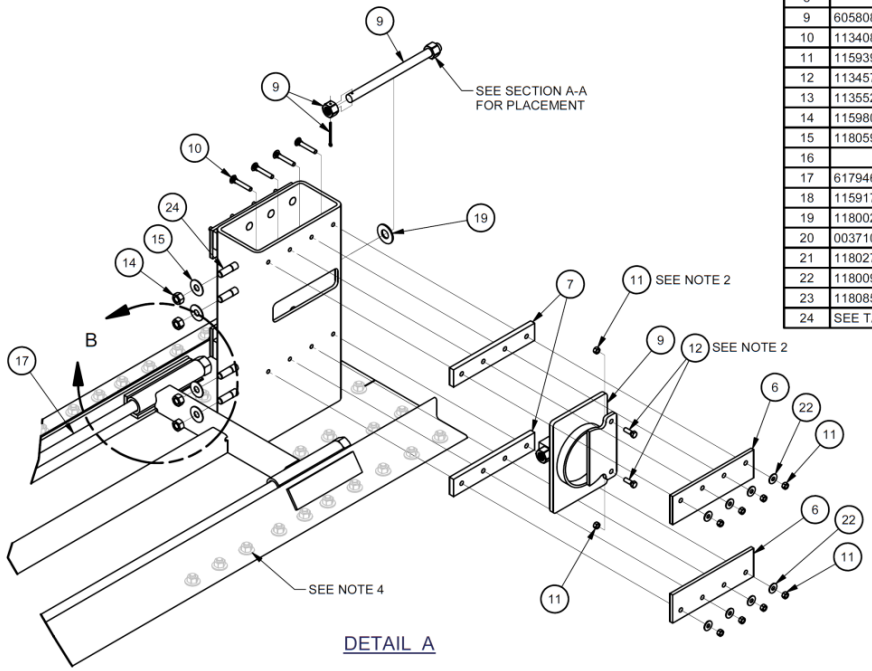
Base Track Assembly 36" Wide Units 605028



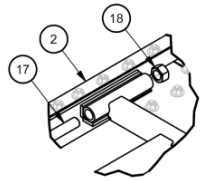
TOP VIEW



SECTION A-A
(SOME HIDDEN LINES NOT SHOWN FOR CLARITY)



DETAIL A



DETAIL B
(SOME ITEMS NOT SHOWN FOR CLARITY)

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	FRONT BASETRACK,*,G	1
2	613621B	REAR BASETRACK,SCBU(REACT),G,W/DECAL	1
3	612040G	PIN,RESTRAINING CABLE,G	2
4	113512G	BOLT,HX,1/4X2 1/2,G2,G	2
5	115946G	NUT,HX,1/4,G	2
6	613734G	RETAINER,TENSIONER,G,(REACT)	4
7	614628G	STANDOFF,RETAINER,TENSIONER,G,(REACT)	4
8			
9	605808B	CABLE TENSIONER ASSY,L&R	2
10	113408G	BOLT,CR 1/2X3 1/4,W/RIBBED NECK,G	16
11	115939G	NUT,HX,1/2,G	20
12	113457G	BOLT,HX,1/2X1 1/2,G2,G	4
13	113552G	BOLT,HX,3/4X2,G2,G	8
14	115980G	NUT,HX,7/8,G	4
15	118059G	WASHER,FLAT,7/8 X 2 1/4,G	4
16			
17	617946G	RRD ST 1 1/2X130,THREADED,G	2
18	115917G	NUT,HX,1 1/2,G	4
19	118002G	WASHER,FLAT,1 1/4 ID X 2 3/4 OD,G	2
20	003710G	3/4" HEX NUT A563	8
21	118027G	WASHER,FLAT,3/4X2,HVY,G	16
22	118009G	WASHER,FLAT,1/2X1 3/8,G	16
23	118085G	WASHER,LOCK,1/4,G	2
24	SEE TABLE	BOLT,HX,7/8X*,G2,G	4

NOTES:
1. BEFORE INSTALLING CABLE TENSION ROD, W/ NUT, INTO CABLE TENSIONER ASSEMBLY. FILL WITH HEAVY GREASE USING GREASE FILTTING, LUBRICATE THREADS ON TENSION ROD.
2. ITEM 9 WILL NEED TO BE REMOVED TO INSTALL CABLE (DWG 605780 [3535005-0000]).
3. ITEMS 11 & 12 NEED TO BE REMOVED TO INSTALL REAR CYLINDER.
4. ANCHORS MUST BE ORDERED SEPARATELY, SEE ANCHOR TABLE OPTIONS SHEET 1.

ASSEMBLY NO. SEE TABLE

DRAWN: D. Kohfeld	DATE: 9/25/2000	REACT 350® SYSTEM SELF CONTAINED BACKUP BASETRACK ASSEMBLY FOR 36" WIDE UNITS	
DESIGNED:	DATE:		
CHECKED:	DATE:		
APPROVED: DEAN ALBERSON	DATE: 9/28/2000		
FILE: 605028.idw		SCALE: NTS	DRAWING: 605028
		SHEET: 2 of 2	REV: J

FM0037 Rev -, 7/22/10

NOTES:

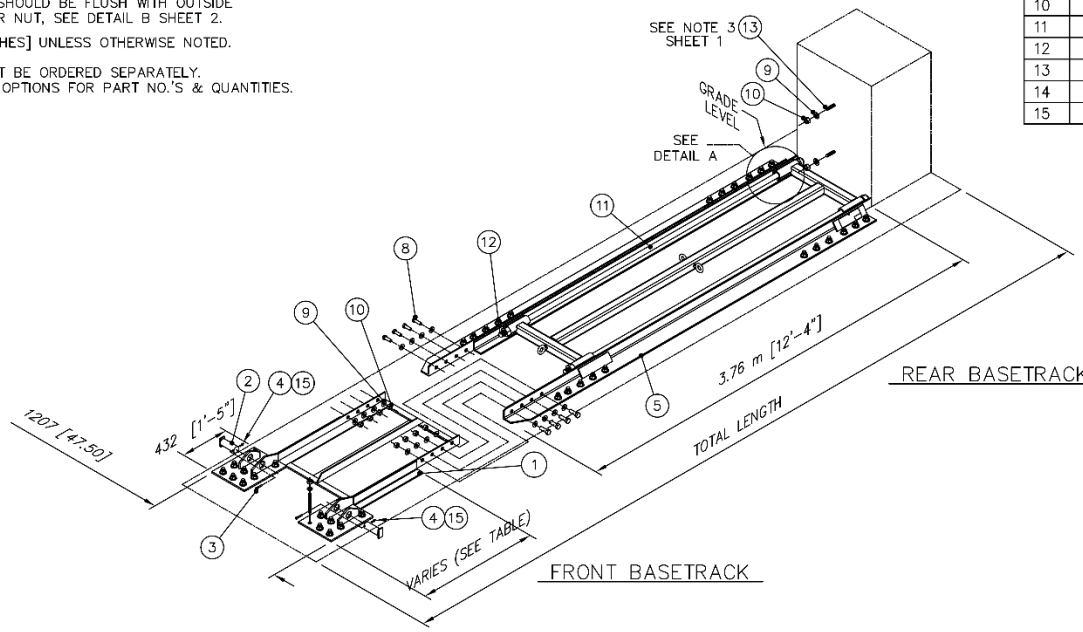
1. BACKUP MUST BE ABLE TO WITHSTAND A MAXIMUM OVERTURNING MOMENT OF 226 kNm [2000 KIP–IN.] AT DECK LINE FOR DURATIONS 40± ms.
2. IMPACT FORCES COULD BE TRANSFERRED INTO STRUCTURE THROUGH SYSTEM. ADEQUATE ANCHORAGE IS REQUIRED FOR PROPER IMPACT PERFORMANCE.
3. USE ITEMS 1, 5 AND 6 AS TEMPLATES FOR DRILLING CONCRETE. INSTALL ITEM 13 USING MP–3 EPOXY ITEM 14 TO SECURE. USE NUTS AND WASHERS ITEMS 9 & 10.
4. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR NUT, SEE DETAIL B SHEET 2.
5. UNITS ARE mm [INCHES] UNLESS OTHERWISE NOTED.
6. ANCHOR BOLTS MUST BE ORDERED SEPARATELY. SEE ANCHOR TABLE OPTIONS FOR PART NO.'S & QUANTITIES.

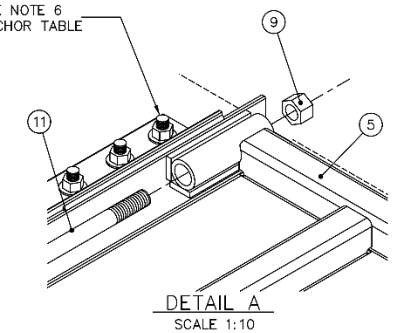
ANCHOR TABLE OPTIONS

	ANCHOR ASSEMBLY NO.	ANCHOR TYPE	QUANTITY REQUIRED
BASETRACK	603672	ANCHOR,MP–3,PT KIT,3/4X7 1/2,VT	7.00
SIDE CABLE ANCHOR	603670	ANCHOR,MP–3,PT KIT,3/4X6 1/2 HOR	4.00

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	BASETRACK,FRONT	1.00
2	612040	PIN,RESTRAINING CABLE	2.00
3	113512	BOLT,HX,1/4X2 1/2,G2,G	2.00
4	115946	NUT,HX,1/4,G	2.00
5	613615	WELDMENT,REAR BASETRACK,CONC(REACT)	1.00
6	614195	WELDMENT,CABLE ANCHOR,CONC,(REACT)	2.00
8	113552	BOLT,HX,3/4X2,G2,G	8.00
9	118027	WASHER,FLAT,3/4X2,HVY,G	18.00
10	115953	NUT,HX,3/4,G	10.00
11	116823	RRD ST 1 1/2X120,THREADED BOTH ENDS	2.00
12	115917	NUT,HX,1 1/2,G	4.00
13	117543	STUD,3/4X8 1/2,G5,G	2.00
14	611475	MP–3,PINT PACKAGE	1.00
15	118085	WASHER,LOCK,1/4,G	2.00





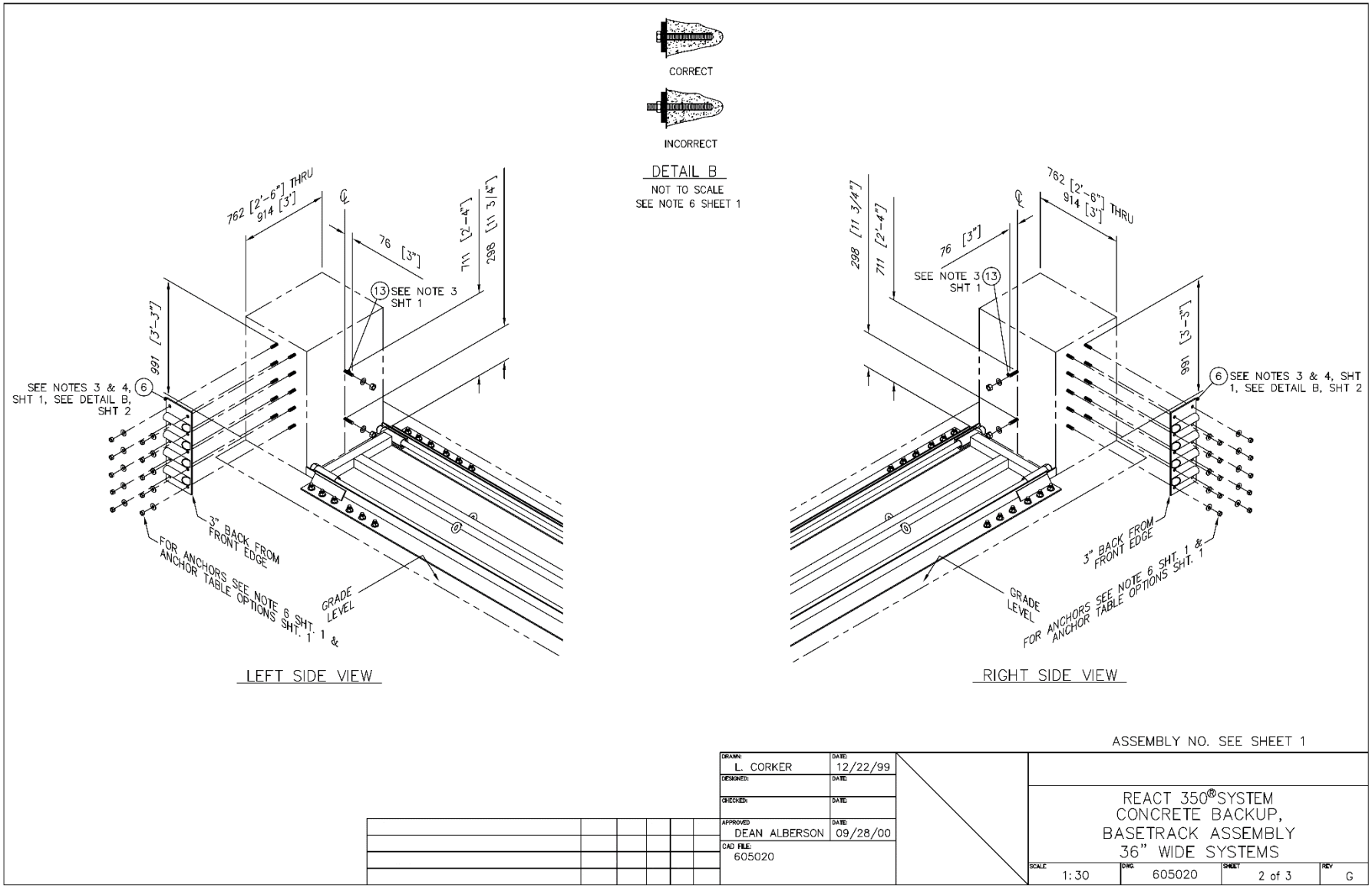
TABLE

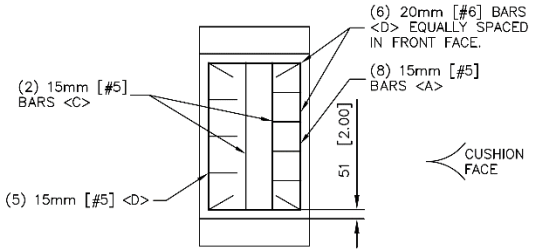
BASETRACK ASSEMBLY NO.	STOCK NO. ITEM NO.1	NUMBER OF CYLINDERS	FRONT BASETRACK LENGTH (ITEM 1)	TOTAL LENGTH
605020	609107	4	0.43 m [1'–5"]	5.06 m [16'–7"]
605022	609110	6	2.26 m [7'–5"]	6.88 m [22'–7"]
605025	609114	9	5.00 m [16'–5"]	9.63 m [31'–7"]
605019	609104	11	6.83 m [22'–5"]	10.59 m [34'–9"]

ASSEMBLY NO. SEE TABLE

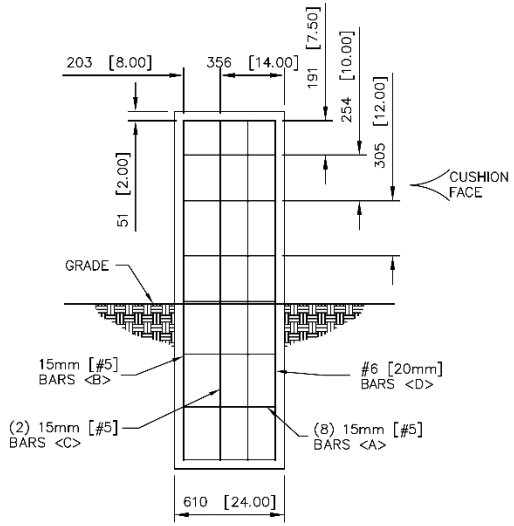
DRAWN: L. CORKER	DATE: 12/22/99	REACT 350® SYSTEM CONCRETE BACKUP BASETRACK ASSEMBLY 36" WIDE SYSTEMS	
DESIGNED:	DATE:		
CHECKED:	DATE:		
APPROVED: DEAN ALBERSON	DATE: 09/28/00		
CAD FILE: 605020		SCALE: 1:40	DWG.: 605020
		SHEET: 1 of 3	REV: G

Concrete B-up Base Track Assembly 36" Wide Units 605020

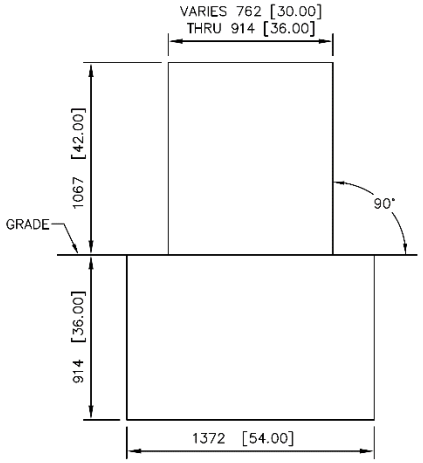

CORRECT
INCORRECT
DETAIL B
NOT TO SCALE
SEE NOTE 6 SHEET 1
762 [2'-6"] THRU
914 [3']
76 [3"]
711 [2'-4"]
298 [11 3/4"]
991 [3'-3"]
SEE NOTE 3 (13) SHT 1
SEE NOTES 3 & 4, (6) SHT 1, SEE DETAIL B, SHT 2
3" BACK FROM FRONT EDGE
FOR ANCHORS SEE NOTE 6 SHT. 1 & ANCHOR TABLE OPTIONS SHT. 1
GRADE LEVEL
LEFT SIDE VIEW
RIGHT SIDE VIEW
ASSEMBLY NO. SEE SHEET 1
DRAWN: L. CORKER
DATE: 12/22/99
DESIGNED:
CHECKED:
APPROVED: DEAN ALBERSON
DATE: 09/28/00
CAD FILE: 605020
REACT 350® SYSTEM
CONCRETE BACKUP,
BASETRACK ASSEMBLY
36" WIDE SYSTEMS
SCALE: 1:30
DWG.: 605020
SHEET: 2 of 3
REV: G



TOP VIEW
REINFORCEMENT DETAIL

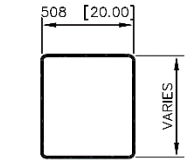


SIDE VIEW
REINFORCEMENT DETAIL

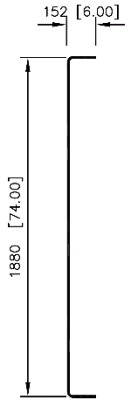


FRONT VIEW

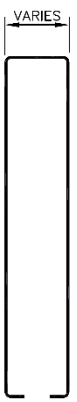
NOTES:
1. CROSS SLOPE OF PAD SHALL NOT EXCEED 8%
   2% FROM FRONT TO BACK.
2. ALL CONCRETE TO BE 28 MPa [4000 PSI] P.C. CONCRETE.
3. FOR EXISTING APPROVED CONCRETE SURFACES:
   A) MIN 180 [7] DECK STRUCTURE,
   B) MIN 200 [8] NON-REINFORCED ROADWAY OR
   C) MIN 150 [6] REINFORCED ROADWAY.
   VERTICAL STEEL SHALL BE DOWELLED 140 [5.5] MIN. USING MP-3® ANCHORING SYSTEM GROUT OR EQUAL. ADJUST REBAR AND CONCRETE QUANTITIES AS NEEDED.
4. PAD AND BELOW GRADE ANCHOR BLOCK TO BE POURED MONOLITHICALLY.
5. DIMENSIONS ARE IN mm[inches] UNLESS OTHERWISE NOTED.



<A> 15mm [#5] BAR
SCALE 1:25



<B> 15mm [#5] BAR
SCALE 1:25



<C> 15mm [#5] BAR
SCALE 1:25

<D> 20mm [#6] BAR
SCALE 1:25

DRAWN: L. CORKER	DATE: 09/21/00
DESIGNED:	DATE:
CHECKED:	DATE:
APPROVED: DEAN ALBERSON	DATE: 09/28/00
CAD FILE: 605020	

REACT 350® SYSTEM

CONCRETE BACKUP DETAILS
30-36,CONC,(REACT)

SCALE	DWG.	SHEET	REV
1:25	605020	3 of 3	G

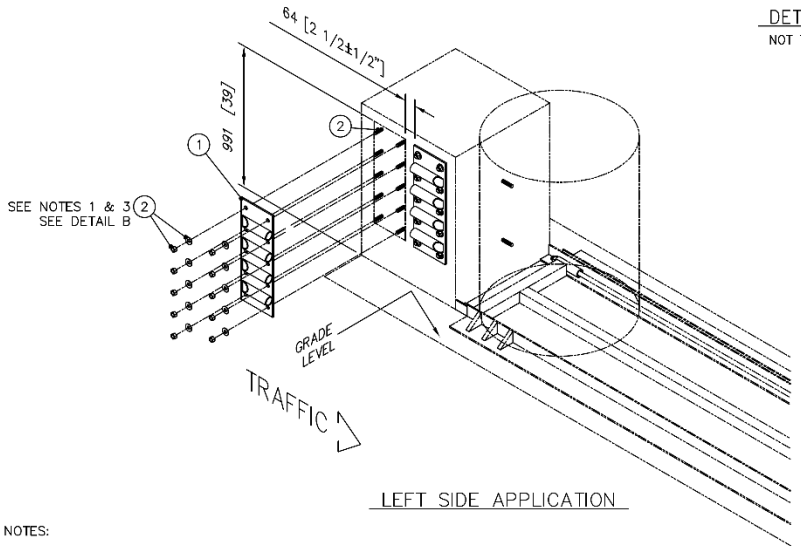
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	614195	WELDMENT,CABLE ANCHOR,CONC,(REACT)	1.00
2	619315	ANCH KIT,HIL,3/4X6 1/2(6)	*2.00

* EXPANSION ANCHORS OPTIONAL (SUPPLIED BY OTHERS).

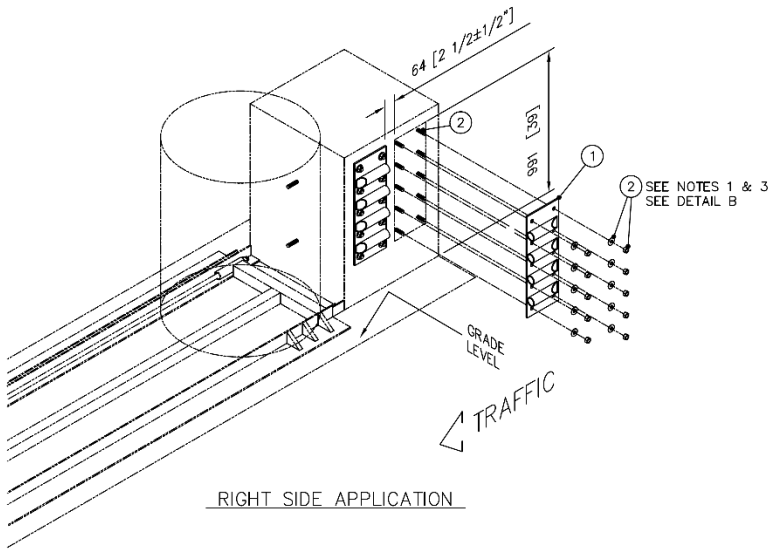
CORRECT

INCORRECT

DETAIL B
NOT TO SCALE



LEFT SIDE APPLICATION



RIGHT SIDE APPLICATION

NOTES:

1. USE CABLE ANCHOR (ITEM 1) AS TEMPLATE FOR DRILLING. RECOMMENDED HOLE DEPTH 140 [5 1/2"]. FINAL TORQUE TO BE 165Nm [120 FT-LBS] (TYP).
2. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR NUT, SEE DETAIL B.

DRAWN: L. CORKER	DATE: 01/25/00	MODEL NO: ASSEMBLY NO. 616084	REACT 350® SYSTEM
CHECKED: DEAN ANDERSON	DATE: 09/28/00	FILE: 616084	TRANSITION ASSEMBLY FOR USE W/CONCRETE B.U.
UNLESS OTHERW SE NOTED: ALL DIMENSIONS ARE IN METERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5M AND CEMC TRP SE 003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	DRAWING: 616084 REV: B SHEET: 1 of 1

CEMC-TRNPE-048 Rev F, 12/5/2016

Transition Assembly w/Concrete Backup 616084

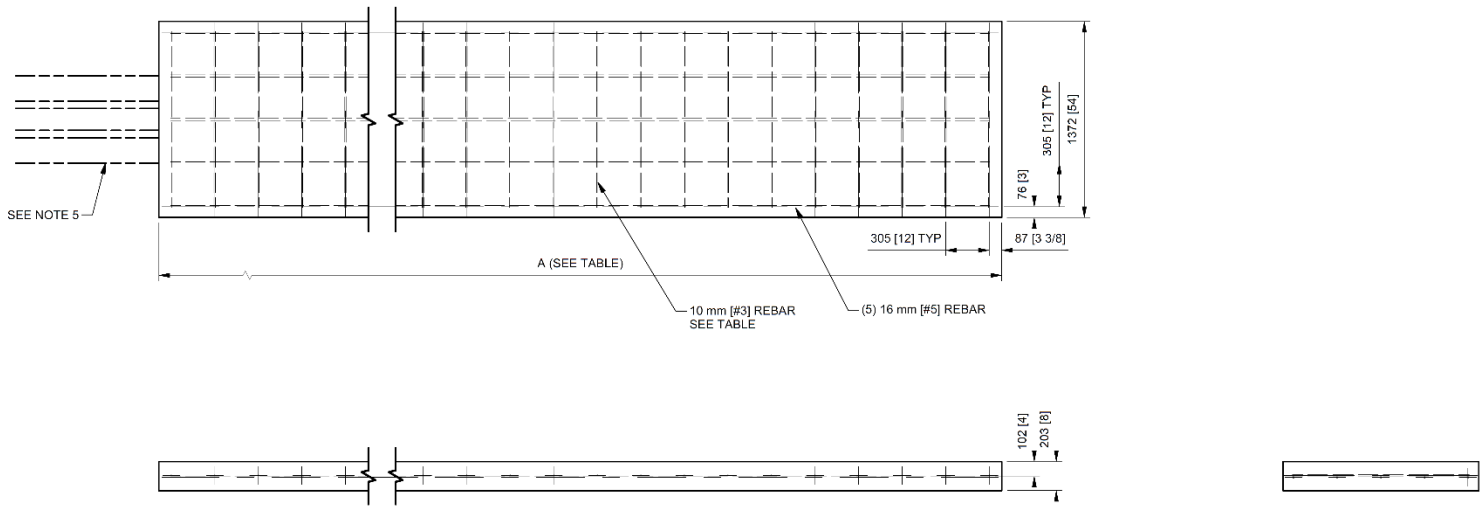


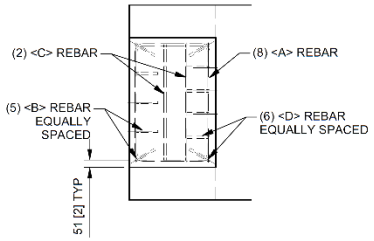
TABLE				
NO. OF CYLINDERS	SYSTEM W/STEEL BACKUP	SYSTEM W/CONCRETE BACKUP	A	10 mm [#3] REBAR QTY
4	R43B036	R43C036	5.06 m [16'-7"]	17
6	R55B036	R55C036	6.88 m [22'-7"]	23
6	R626B036	R626C036	6.88 m [22'-7"]	23
9	R62B036	R62C036	9.63 m [31'-7"]	32
9	R70B036	R70C036	9.63 m [31'-7"]	32
11	R75B036	R75C036	11.46 m [37'-7"]	38

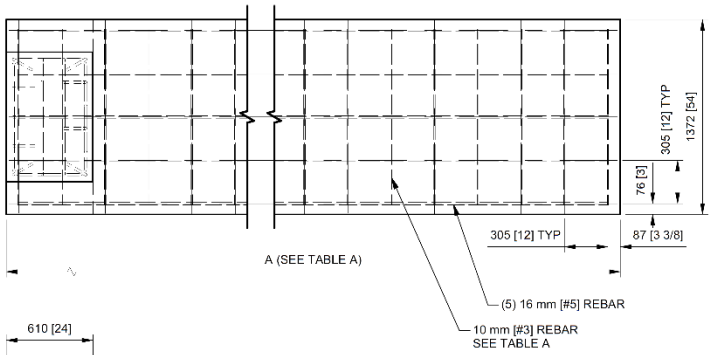
NOTES:
1. ALL CONCRETE WORK AND RE-BAR DETAILS SHALL CONFORM TO THE LATEST ACI CODE AND MANUAL.
2. ALL CONCRETE TO BE 203 [8] MINIMUM THICK 28 MPa [4000 PSI] COMPRESSIVE STRENGTH AT 28 DAY TEST.
3. ALL REINFORCING BARS SHALL BE A615 GRADE 60 NEW BILLET STEEL.
4. PROVIDE MIN. 51 [2] CLEAR CONCRETE COVER OVER REINFORCING STEEL.
5. THE SLAB DETAILED ON THIS SHEET REQUIRES IT TO BE PLACED AGAINST AND SUPPORTED BY A RIGID BARRIER OR OTHER STRUCTURE. THE SUPPORT STRUCTURE OR BARRIER WILL RESIST PAD AND SYSTEM SLIDE DURING IMPACTS. THE SYSTEM COULD TRANSFER IMPACT LOADING TO ADJACENT STRUCTURES. PROVIDE ADEQUATE ANCHORAGE.
6. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.

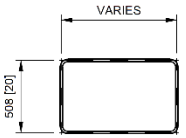
DRAWN: D. Kohfeld	DATE: 9/25/2000	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS [INCH] AND ACCORDING TO ASME Y14.5M-1994 AND THP-SE-003.	REACT® SYSTEM
CHECKED: DEAN ALBERSON	DATE: 9/28/2000	DO NOT SCALE DRAWING	CAST-IN-PLACE CONCRETE SLAB FOR 36" SYSTEMS W/STEEL BACKUP AGAINST A RIGID BARRIER
			DRAWING 114054 REV F SHEET 1 of 3

THPHTE-350 Rev -, 9/13/2029

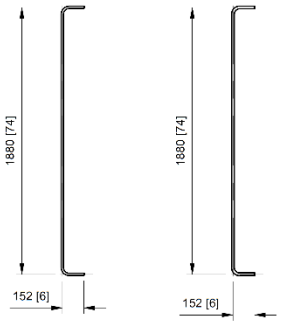
Cast-in-Place Concrete Slab w/Steel Backup 36” 114054



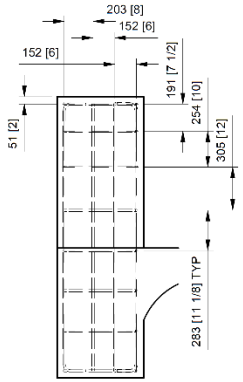


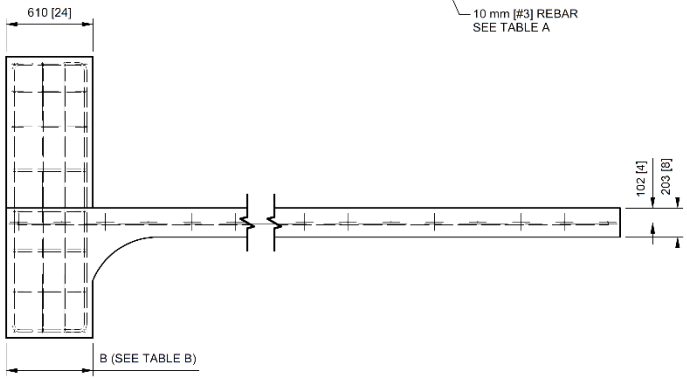


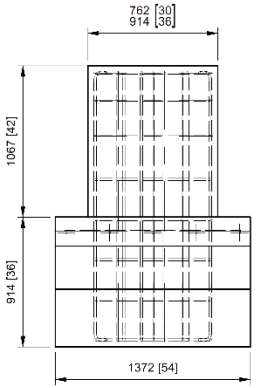
<A> 15 mm [#5]

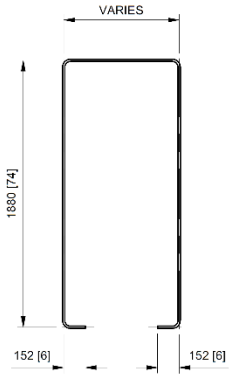


<B> 15 mm [#5] <D> 20 mm [#6]









<C> 15 mm [#5]

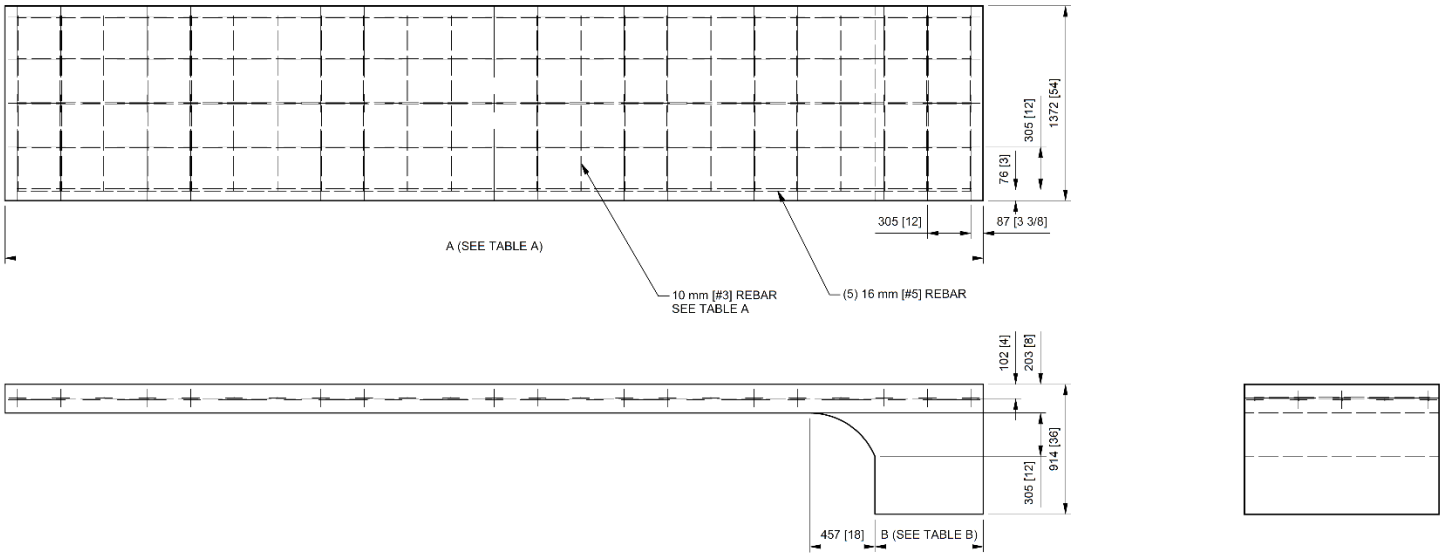
TABLE A				
NO. OF CYLINDERS	SYSTEM W/STEEL BACKUP	SYSTEM W/CONCRETE BACKUP	A	10 mm [#3] REBAR QTY
4	R43B036	R43C036	5.06 m [16'-7"]	17
6	R55B036	R55C036	6.88 m [22'-7"]	23
6	R626B036	R626C036	6.88 m [22'-7"]	23
9	R62B036	R62C036	9.63 m [31'-7"]	32
9	R70B036	R70C036	9.63 m [31'-7"]	32
11	R75B036	R75C036	11.46 m [37'-7"]	38

TABLE B	
TRAFFIC	B
UNIDIRECTIONAL	610 [24]
BIDIRECTIONAL	762 [30]

NOTES:
1. ALL CONCRETE WORK AND RE-BAR DETAILS SHALL CONFORM TO THE LATEST ACI CODE AND MANUAL.
2. ALL CONCRETE TO BE 203 [8] MINIMUM THICK 28 MPa [4000 PSI] COMPRESSIVE STRENGTH AT 28 DAY TEST.
3. ALL REINFORCING BARS SHALL BE A615 GRADE 60 NEW BILLET STEEL.
4. PROVIDE MIN. 51 [2] CLEAR CONCRETE COVER OVER REINFORCING STEEL.
5. EXISTING APPROVED CONCRETE SURFACES IN LIEU OF PAD:
   A) MIN 180 [7] DECK STRUCTURE
   B) MIN 300 [8] NON-REINFORCED ROADWAY
   C) MIN 150 [6] REINFORCED ROADWAY
6. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.
7. PAD, BACKUP AND BELOW-GRADE ANCHOR BLOCK TO BE POURED MONOLITHICALLY.
8. ALL REBAR BEND DIAMETER TO BE 6D.

DRAWN: D. Kohfeld	DATE: 9/25/2000	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS [INCH] AND ACCORDING TO ASME Y14.5M-1994 AND THP-SE-003	REACT SYSTEM
CHECKED: DEAN ALBERSON	DATE: 9/28/2000	DO NOT SCALE DRAWING	CAST-IN-PLACE CONCRETE PAD FOR 36" SYSTEMS W/BELOW-GRADE ANCHOR BLOCK AND CONCRETE BACKUP
			DRAWING: 114054 REV: F SHEET: 2 of 3

THP FE 003 Rev. : 9/13/2023



NOTES:
1. ALL CONCRETE WORK AND RE-BAR DETAILS SHALL CONFORM TO THE LATEST ACI CODE AND MANUAL.
2. ALL CONCRETE TO BE 203 [8] MINIMUM THICK 28 MPa [4000 PSI] COMPRESSIVE STRENGTH AT 28 DAY TEST.
3. ALL REINFORCING BARS SHALL BE A615 GRADE 60 NEW BILLET STEEL.
4. PROVIDE MIN. 51 [2] CLEAR CONCRETE COVER OVER REINFORCING STEEL.
5. EXISTING APPROVED CONCRETE SURFACES IN LIEU OF PAD:
   A) MIN 180 [7] DECK STRUCTURE
   B) MIN 300 [8] NON-REINFORCED ROADWAY
   C) MIN 150 [6] REINFORCED ROADWAY
6. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.
7. PAD, BACKUP AND BELOW-GRADE ANCHOR BLOCK TO BE POURED MONOLITHICALLY.
8. ALL REBAR BEND DIAMETER TO BE 6D.

TABLE A

NO. OF CYLINDERS	SYSTEM W/STEEL BACKUP	SYSTEM W/CONCRETE BACKUP	A	10 mm [#3] REBAR QTY
4	R43B036	R43C036	5.06 m [16'-7"]	17
6	R55B036	R55C036	6.88 m [22'-7"]	23
6	R626B036	R626C036	6.88 m [22'-7"]	23
9	R62B036	R62C036	9.63 m [31'-7"]	32
9	R70B036	R70C036	9.63 m [31'-7"]	32
11	R75B036	R75C036	11.46 m [37'-7"]	38

TABLE B

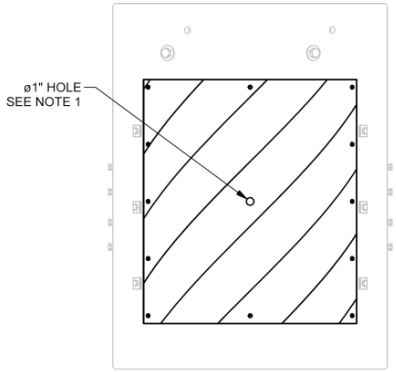
TRAFFIC	B
UNIDIRECTIONAL	610 [24]
BIDIRECTIONAL	762 [30]

DRAWN: D. Kohfeld	DATE: 9/25/2000	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS [INCH] AND ACCORDING TO ASME Y14.5M-1994 AND TRI-SE-002
CHECKED: DEAN ALBERSON	DATE: 9/28/2000	DO NOT SCALE DRAWING

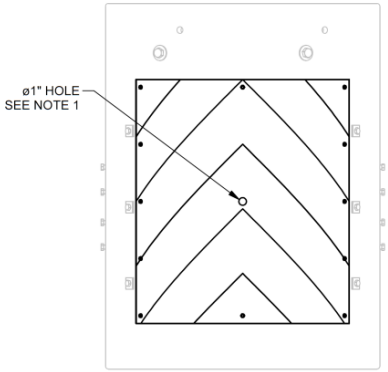
REACT® SYSTEM

CAST-IN-PLACE CONCRETE PAD FOR 36" SYSTEMS W/STEEL BACKUP AND BELOW-GRADE ANCHOR BLOCK

DRAWING: 114054 | REV: F | SHEET: 3 of 3



UNIVERSAL
ASSEMBLY NO. 617968B
(SEE NOTE 4)



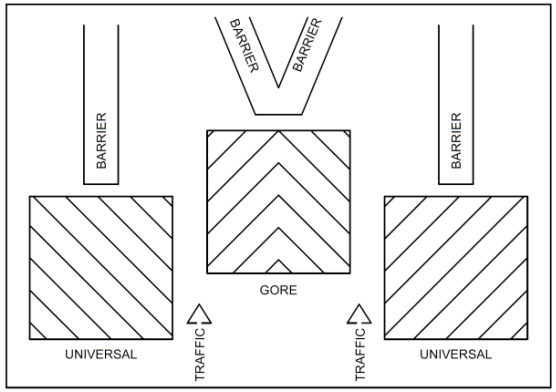
GORE
ASSEMBLY NO. 617967B

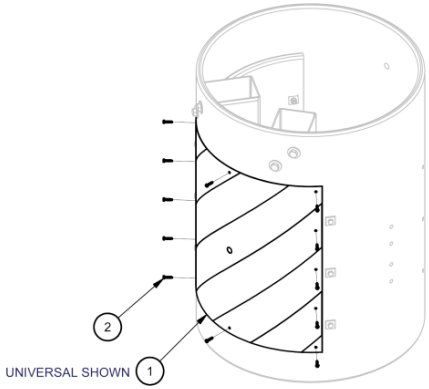
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	NOSE COVER,*,32X32,TL-3,REACT,**	1
2	116888G	SCREW,HWH,1/4X1 1/4,SELF DRILL/TAP,P	12

* GORE / UNIV (APPLICATION TYPE)
** TAPE COLOR

Table		
ASSEMBLY NO.	DESCRIPTION	ITEM 1
617967B	NOSE COVER ASSY,GORE,TL-3,REACT,Y	617965B
617968B	NOSE COVER ASSY,UNIV,TL-3,REACT,Y	617966B
618068B	NOSE COVER ASSY,GORE,TL-3,REACT,O	618066B
618069B	NOSE COVER ASSY,UNIV,TL-3,REACT,O	618067B

APPLICATION DETAIL





NOTES:
1. LOCATE ø1" HOLE IN NOSE COVER OVER ø1" HOLE IN CYLINDER, THEN SECURE WITH SCREWS (ITEM 2).
2. SCREW ITEM 2 INTO CYLINDER, PUNCHING THRU REFLECTIVE TAPE AND INTO EXSISTING HOLES IN NOSE COVER, UNTIL HEAD OF FASTENER (ITEM 2) IS FLUSH. DO NOT CONTINUE TO SPIN FASTENER.
3. NOSE COVER NOT INCLUDED IN MODEL AND MUST BE ORDERED SEPARATELY. DESIRED NOSE MUST BE SPECIFIED WHEN ORDERING. REVIEW APPLICATION DETAIL TO VERIFY TYPE.
4. AS SHOWN, APPROACH TRAFFIC PASSES TO LEFT OF SYSTEM NOSE. HAZARD/OBJECT IS ON RIGHT SIDE OF TRAVELWAY. FOR APPROACH TRAFFIC ON RIGHT OF SYSTEM NOSE & HAZARD/OBJECT ON THE LEFT OF TRAVELWAY, ROTATE 90°.

DRAWN: D. Hayes Jr	DATE: 12/21/2010	
DESIGNED: A. Cox	DATE: 11/12/2010	
CHECKED: J. Espinoza	DATE: 2/22/2011	
APPROVED: A. Cox	DATE:	
FILE: 617967.idw		

ASSEMBLY NO. SEE TABLE

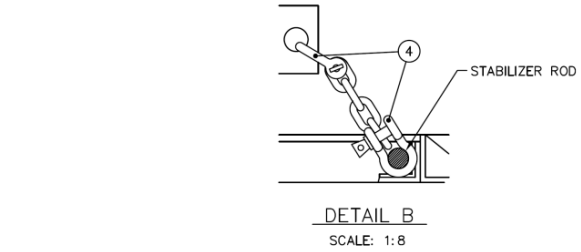
REACT 350® SYSTEM

NOSE COVER ASSEMBLY,TL-3,REACT

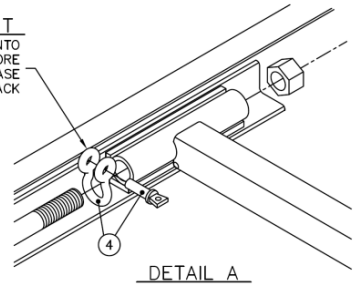
SCALE:	DRAWING:	SHEET:	REV
NTS	617967	1 of 1	A

FM0037 Rev.: 7/22/10

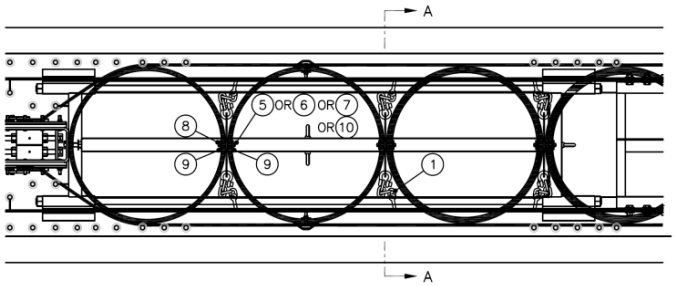
Nose Cover Assembly TL-3 617967



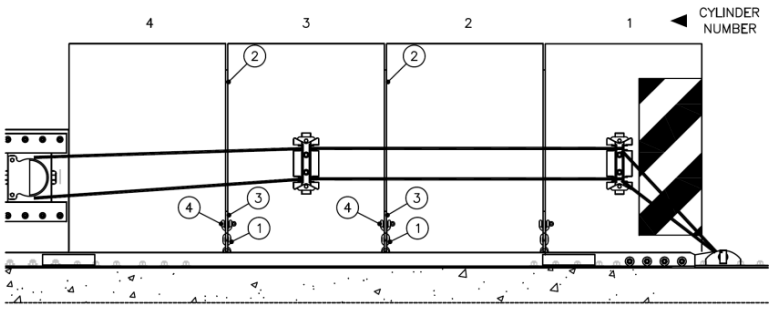
DETAIL B
SCALE: 1:8



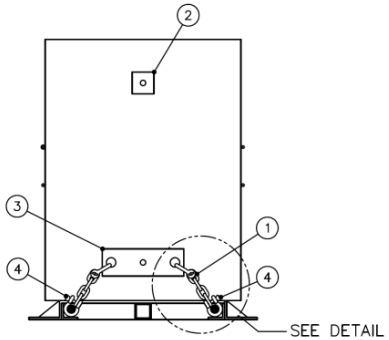
DETAIL A
SCALE: 1:8



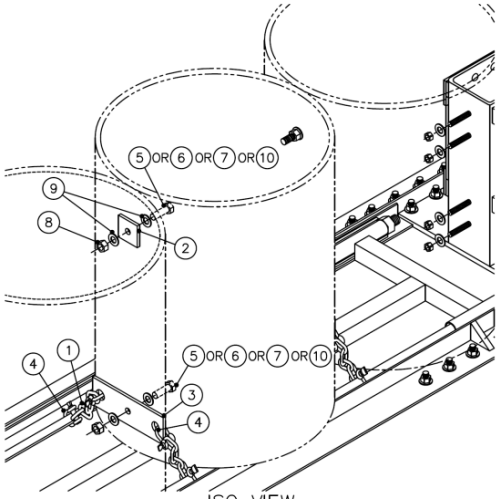
PLAN



ELEVATION
SCALE: 1:25



SECTION A–A
SCALE: 1:20



ISO VIEW
N.T.S.

620753B
606182B
606183B
606185B
ASSEMBLY NO. 617999B

MATERIAL: SEE SHEET 2 FOR PARTS LIST	DRAWN: L. CORKER	DATE: 01/10/00	TOLERANCES PER QMS-SF-001, UNLESS OTHERWISE SPECIFIED.	REACT 350® SYSTEM
	CHECKED: Dean Anderson	DATE: 09/28/00		
FINISH: N/A	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	CHAIN/CYL CONNECTOR ASSEMBLY
ESTIMATED WEIGHT:				DRAWING: 606182 REV: I SHEET: 1 of 2

ENG-FE-046 Rev B, 9/8/2014

Chain/CYL Connector Assembly 606182

ASSEMBLY NO. 617999B

PARTS LIST (6 CYLINDER REACT 350 II) TL-3 (62 MPH)

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	606177B	CHAIN, PROOF COIL,1/2,4 LINKS,REACT	6
2	609236G	FTB ST 1/2X4X4,W/HOLE,G,(REACT)	3
3	609256G	FTB ST 1/2X5X15,G,(REACT)	3
4	117071G	SHACKLE,ANCHOR,5/8,W/SCREW PIN	12
* 5	113564G	BOLT,HX,3/4X4 1/2,G5,G	4
* 6	113567G	BOLT,HX,3/4X4,G5,G	2
* 7	113558G	BOLT,HX,3/4X3 1/2,G5,G	4
8	003710G	3/4" HEX NUT A563	10
9	118027G	WASHER,FLAT,3/4,HVY,G	20

* ITEM 5 USED TO CONNECT CYLINDERS 4 & 5 AND 5 & 6.
* ITEM 6 USED TO CONNECT CYLINDERS 3 & 4.
* ITEM 7 USED TO CONNECT CYLINDERS 1 & 2 AND 2 & 3.

ASSEMBLY 606182B

PARTS LIST (4 CYLINDER REACT 350)

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	606177B	CHAIN, PROOF COIL,1/2,4 LINKS,REACT	6
2	609236G	FTB ST 1/2X4X4,W/HOLE,G,(REACT)	3
3	609256G	FTB ST 1/2X5X15,G,(REACT)	3
4	117071G	SHACKLE,ANCHOR,5/8,W/SCREW PIN	12
* 5	113564G	BOLT,HX,3/4X4 1/2,G5,G	2
* 6	113573G	BOLT,HX,3/4X5,G5,G	2
* 7	113567G	BOLT, HX, 3/4 X 4, G5, G	2
8	003710G	3/4" HEX NUT A563	6
9	118027G	WASHER,FLAT,3/4,HVY,G	12

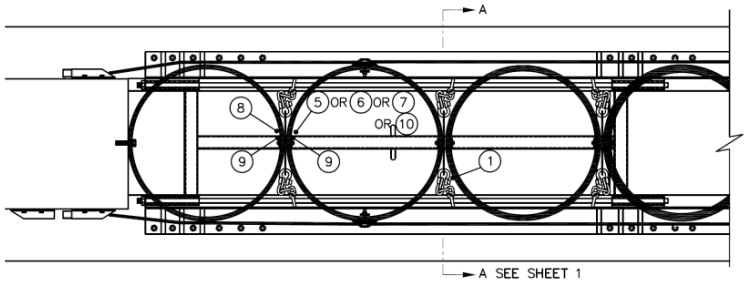
* ITEM 5 USED TO CONNECT CYLINDERS 2 & 3.
* ITEM 6 USED TO CONNECT CYLINDERS 1 & 2.
* ITEM 7 USED TO CONNECT CYLINDERS 3 & 4.

ASSEMBLY 606183B

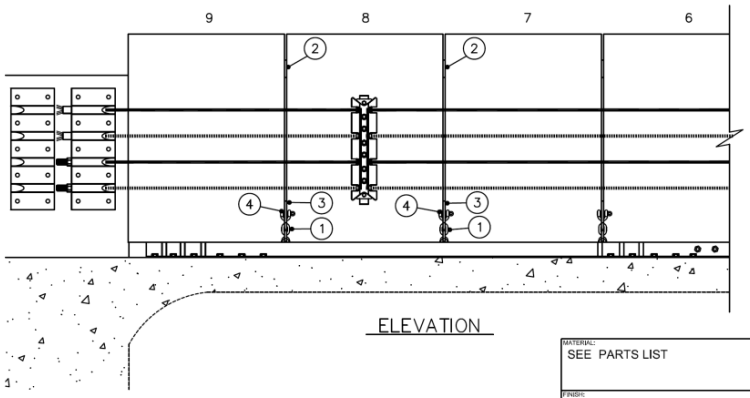
PARTS LIST (6 CYLINDER REACT 350)

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	606177B	CHAIN, PROOF COIL,1/2,4 LINKS,REACT	6
2	609236G	FTB ST 1/2X4X4,W/HOLE,G,(REACT)	3
3	609256G	FTB ST 1/2X5X15,G,(REACT)	3
4	117071G	SHACKLE,ANCHOR,5/8,W/SCREW PIN	12
* 5	113564G	BOLT,HX,3/4X4 1/2,G5,G	2
* 6	113571G	BOLT,HX,3/4X5 1/2,G5,G	2
* 7	113558G	BOLT,HX,3/4X3 1/2,G5,G	4
8	003710G	3/4" HEX NUT A563	10
9	118027G	WASHER,FLAT,3/4,HVY,G	20
* 10	113567G	BOLT, HX, 3/4 X 4, G5, G	2

* ITEM 5 USED TO CONNECT CYLINDERS 4 & 5.
* ITEM 6 USED TO CONNECT CYLINDERS 5 & 6.
* ITEM 7 USED TO CONNECT CYLINDERS 1 & 2 AND 2 & 3.
* ITEM 10 USED TO CONNECT CYLINDERS 3 & 4.



PLAN



ELEVATION

ASSEMBLY 606185B

PARTS LIST (9 CYLINDER REACT 350, 62 MPH)

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	606177B	CHAIN, PROOF COIL,1/2,4 LINKS,REACT	6
2	609236G	FTB ST 1/2X4X4,W/HOLE,G,(REACT)	3
3	609256G	FTB ST 1/2X5X15,G,(REACT)	3
4	117071G	SHACKLE,ANCHOR,5/8,W/SCREW PIN	12
* 5	113564G	BOLT,HX,3/4X4 1/2,G5,G	6
* 6	113567G	BOLT,HX,3/4X4,G5,G	2
* 7	113558G	BOLT,HX,3/4X3 1/2,G5,G	2
8	003710G	3/4" HEX NUT A563	16
9	118027G	WASHER,FLAT,3/4,HVY,G	24
* 10	113562G	BOLT,HX,3/4X3,G5,G	6

* ITEM 5 USED TO CONNECT CYLINDERS 6 & 7, 7 & 8, 8 & 9.
* ITEM 6 USED TO CONNECT CYLINDERS 5 & 6.
* ITEM 7 USED TO CONNECT CYLINDERS 4 & 5
* ITEM 10 USED TO CONNECT CYLINDERS 1 & 2, 2 & 3, 3 & 4.

ASSEMBLY 620753B

PARTS LIST (9 CYLINDER REACT 350, 70 MPH)

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	606177B	CHAIN, PROOF COIL,1/2,4 LINKS,REACT	6
2	609236G	FTB ST 1/2X4X4,W/HOLE,G,(REACT)	3
3	609256G	FTB ST 1/2X5X15,G,(REACT)	3
4	117071G	SHACKLE,ANCHOR,5/8,W/SCREW PIN	12
* 5	113571G	BOLT,HX,3/4X5 1/2,G5,G	6
* 6	113567G	BOLT,HX,3/4X4,G5,G	2
* 7	113558G	BOLT,HX,3/4X3 1/2,G5,G	2
8	003710G	3/4" HEX NUT A563	16
9	118027G	WASHER,FLAT,3/4,HVY,G	24
* 10	113562G	BOLT,HX,3/4X3,G5,G	6

* ITEM 5 USED TO CONNECT CYLINDERS 6 & 7, 7 & 8, 8 & 9.
* ITEM 6 USED TO CONNECT CYLINDERS 5 & 6.
* ITEM 7 USED TO CONNECT CYLINDERS 4 & 5
* ITEM 10 USED TO CONNECT CYLINDERS 1 & 2, 2 & 3, 3 & 4.

MATERIAL: SEE PARTS LIST	DRAWN: L. CORKER	DATE: 01/10/00	TOLERANCES PER QMS-SF-001, UNLESS OTHERWISE SPECIFIED.
FINISH: N/A	CHECKED: Dean Anderson	DATE: 09/28/00	DO NOT SCALE DRAWING
ESTIMATED WEIGHT:	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 UNLESS OTHERWISE SPECIFIED.		

REACT 350® SYSTEM

CHAIN/CYL CONNECTOR ASSEMBLY

DRAWING: 606182 | REV: I | SHEET: 2 of 2

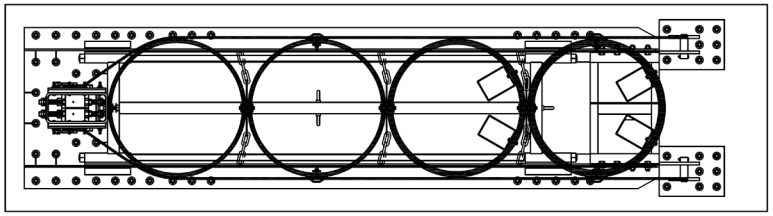
ENG-FE-046 Rev B, 8/8/2014

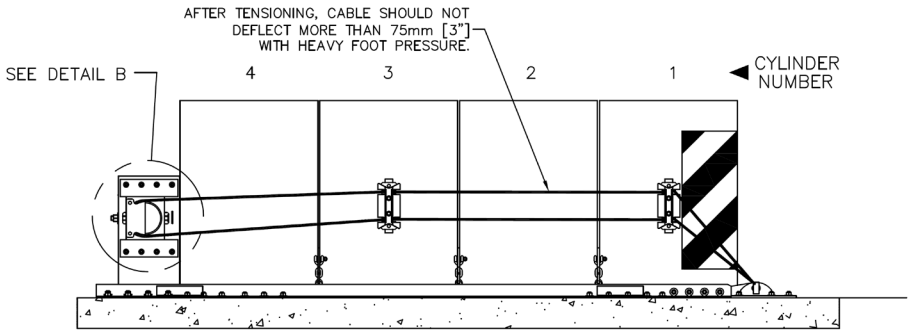
NEXT ASSEMBLY:	MATERIAL:	TOL ANGULAR: TOL LINEAR: UNLESS OTHERWISE NOTED.

PARTS LIST

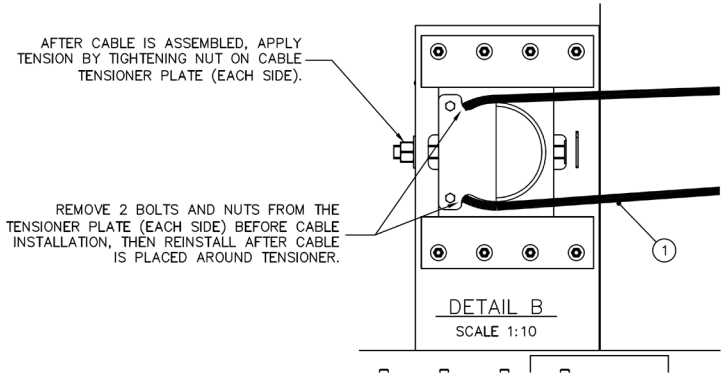
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	RESTRAINING CABLES	2.00

CABLE LENGTHS (SELF CONTAINED BACKUPS)		
NO. CYLINDERS	CABLE LENGTH	ITEM 1
4	9.12 m [29'–11"]	113924G
6	12.8 m [41'–11"]	113926G
9	18.3 m [59'–11"]	113929G
11	21.9 m [71'–11"]	113931G

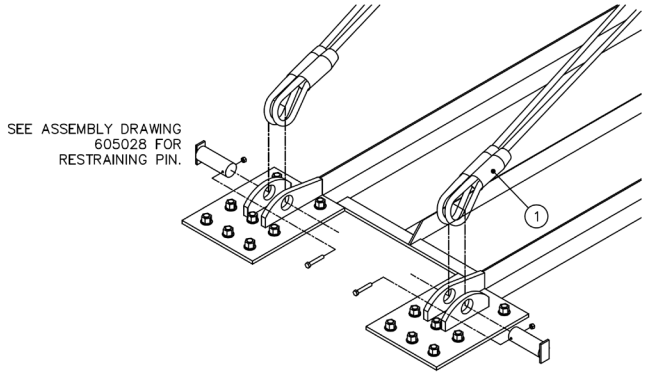




ELEVATION
SCALE 1:30



DETAIL B
SCALE 1:10



FRONT CABLE ATTACHMENT DETAIL
FOR SELF CONTAINED BACKUP
SCALE 1:15

DRAWN: D. KOHFELD	DATE: 9/25/00	REACT 350® SYSTEM CABLE ASSEMBLIES	
DESIGNED:	DATE:		
CHECKED:	DATE:		
APPROVED: DEAN ALBERSON	DATE: 09/28/00		
CAD FILE: 605780		SCALE: AS NOTED / DWG.: 605780 / SHEET: 1 of 2	REV: E

Cable Assemblies 605780

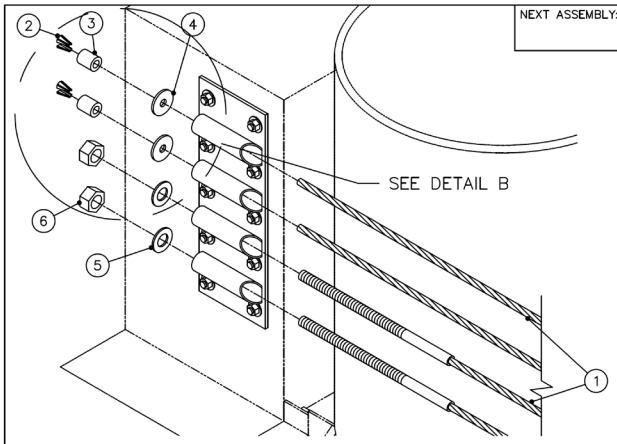
NEXT ASSEMBLY:	MATERIAL:	TOL ANGULAR: TOL LINEAR: UNLESS OTHERWISE NOTED.

PARTS LIST

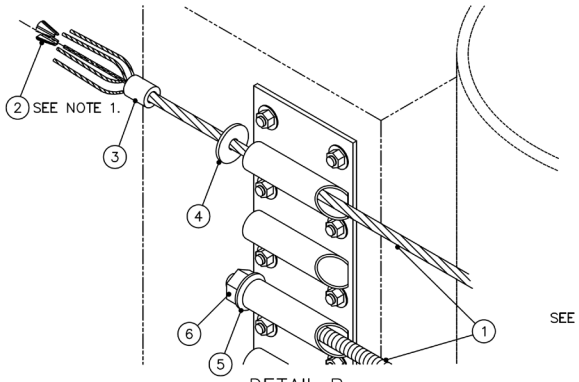
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	RESTRAINING CABLES	4.00
2	004004B	CBL,3/4,WEDGE,#6	4.00
3	004003G	CBL,3/4,FERRULE,L6,LIGHT	4.00
4	118028G	WASHER,FLAT,7/8X3 OD,G	4.00
5	118001G	WASHER,FLAT,1 1/2X3 OD,G	4.00
6	115917G	NUT,HX,1 1/2,G	4.00

CABLE LENGTHS (CONCRETE BACKUPS)

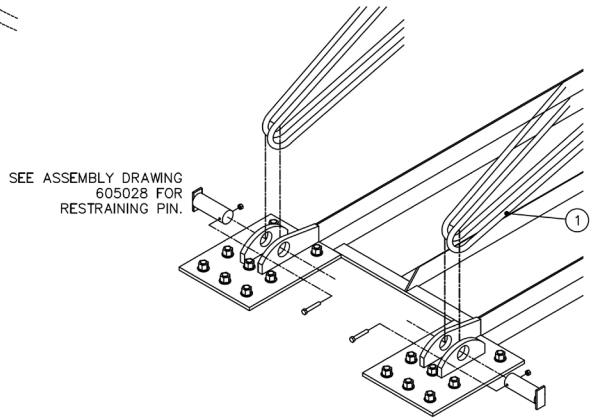
NO. CYLINDERS	ASSEMBLY NO.	CABLE LENGTH	ITEM 1
4	605780B	12.20 m [40']	113925G
6	605781B	15.24 m [50']	113928G
9	605782B	21.34 m [70']	113930G
11	605779B	27.43 m [90']	113923G



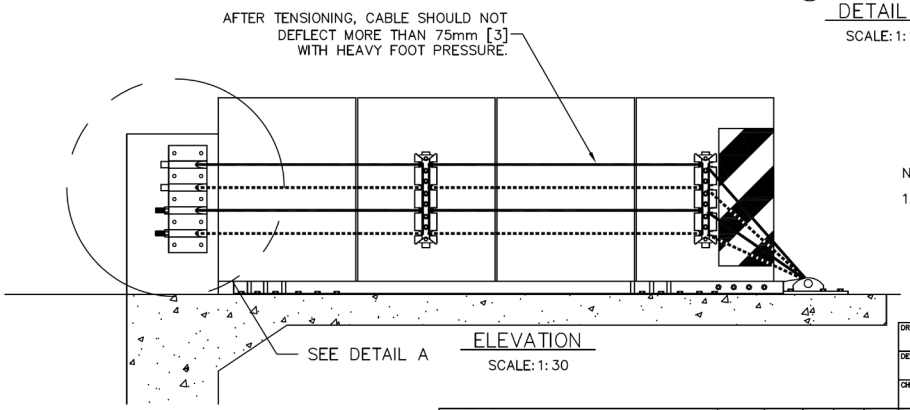
DETAIL A
SCALE: 1:15



DETAIL B
SCALE: 1:10



FRONT CABLE ATTACHMENT DETAIL
FOR CONCRETE BACKUP
SCALE: 1:15



ELEVATION
SCALE: 1:30

NOTES:

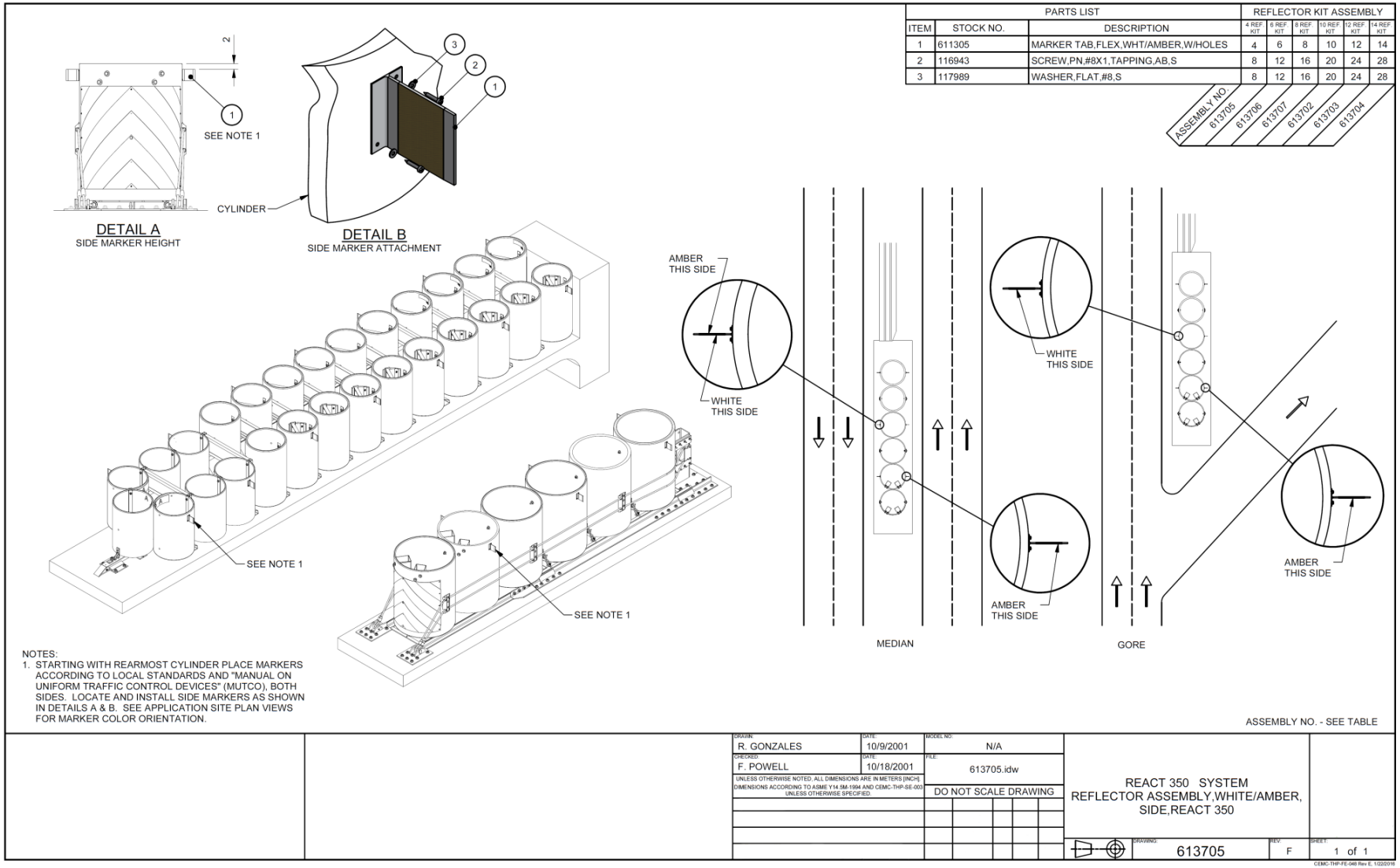
1. SLIDE ITEM 4 ONTO END OF CABLE FIRST, THEN ITEM 3. UN-BRAID CABLE (ITEM1). INSERT MIDDLE STRAND BETWEEN ITEM 2, PLACE REMAINING 6 STRANDS INTO SLOTS AROUND ITEM 2 THEN PUSH INTO ITEM 3 TO TIGHTEN.

ASSEMBLY NO. SEE TABLE

DRAWN:	DATE:
L. Corker	02/25/00
DESIGNED:	DATE:
---	---
CHECKED:	DATE:
---	---
APPROVED	DATE:
Dean Alberson	09/28/00
CAD FILE:	
605780 SH02	

REACT 350® SYSTEM
CABLE ASSEMBLIES

SCALE	DWG.	SHEET	REV
AS NOTED	605780	2 of 2	E



PARTS LIST			REFLECTOR KIT ASSEMBLY					
ITEM	STOCK NO.	DESCRIPTION	4 REF KIT	6 REF KIT	8 REF KIT	10 REF KIT	12 REF KIT	14 REF KIT
1	611305	MARKER TAB,FLEX,WHT/AMBER,W/HOLES	4	6	8	10	12	14
2	116943	SCREW,PN,#8X1,TAPPING,AB,S	8	12	16	20	24	28
3	117989	WASHER,FLAT,#8,S	8	12	16	20	24	28
ASSEMBLY NO.			613705	613706	613707	613702	613703	613704

NOTES:
1. STARTING WITH REARMOST CYLINDER PLACE MARKERS ACCORDING TO LOCAL STANDARDS AND "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCO), BOTH SIDES. LOCATE AND INSTALL SIDE MARKERS AS SHOWN IN DETAILS A & B. SEE APPLICATION SITE PLAN VIEWS FOR MARKER COLOR ORIENTATION.

ASSEMBLY NO. - SEE TABLE

DRAWN: R. GONZALES	DATE: 10/9/2001	MODEL NO: N/A	
CHECKED: F. POWELL	DATE: 10/18/2001	FILE: 613705.idw	
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN METERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 AND CEMC-THP-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	

REACT 350 SYSTEM
REFLECTOR ASSEMBLY,WHITE/AMBER, SIDE,REACT 350

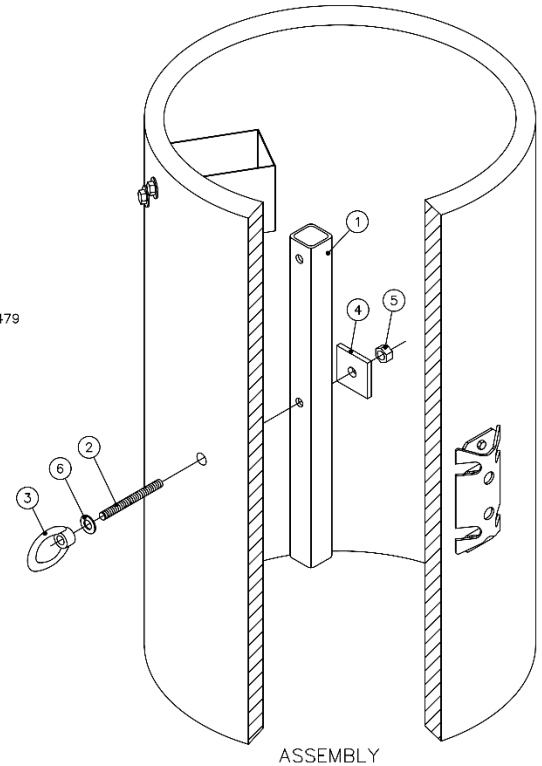
DRAWING: 613705 | REV: F | SHEET: 1 of 1

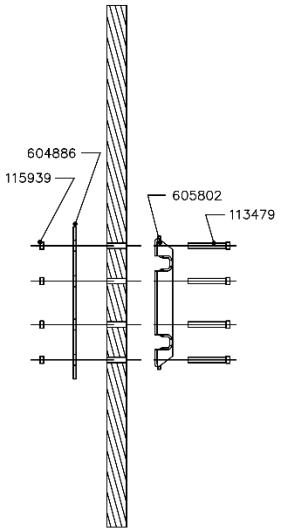
CEMC-THP-FE-048 Rev E 1/22/2018

Reflector Assembly, White/Amber, Side 613705

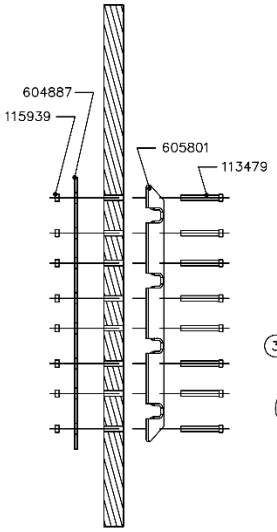
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	616407	STT ST 3X3X1/4X36,W/HOLES	1.00
2	117541	STUD,3/4X7 1/2,G5,G	1.00
3	115906	NUT,EYE,3/4,G	1.00
4	609236	FTB ST 1/2X4X4,W/HOLE,G	1.00
5	003704	NUT,HX,3/4,G,GR DH	1.00
6	118027	WASHER,FLAT,3/4X2,HVY,G	1.00
7	115350	INSTALLATION INSTRUCTIONS,REACT 350	1.00
8	115674	MATERIAL SAFETY INFORMATION NOTICE	1.00

ASSEMBLY 612816





ASSEMBLY
605806
SCALE 1:10



ASSEMBLY
605805
SCALE 1:10

ASSEMBLY
612816
SCALE 1:10

NOTE:
1. INSTALLER TO DELIVER PULLOUT BRACKET & ASSOCIATED HARDWARE, DRAWINGS & MANUAL TO AGENCY RESPONSIBLE FOR MAINTENANCE.

MATERIAL: SEE PARTS LIST	DRAWN: L. Corker	DATE: 02/21/01	TOLERANCES PER CEMC-THP-SF-001, UNLESS OTHERWISE SPECIFIED.	REACT 350® SYSTEM MISCELLANEOUS HARDWARE
FINISH: N/A	CHECKED: D. June	DATE: 2/27/01	DO NOT SCALE DRAWING	
EST UNFINISHED WT: 2.640	UNLESS OTHERWISE NOTED: ALL DIMENSIONS ARE IN INCHES. DIMENSION ACCORDING TO ASME Y14.5M AND CP-MC-THP-SF-001 UNLESS OTHERWISE SPECIFIED.			DRAWING: 611324 REV: E SHEET: 1 of 1

CEMC-THP-E-046 Rev E, 12/20/2018

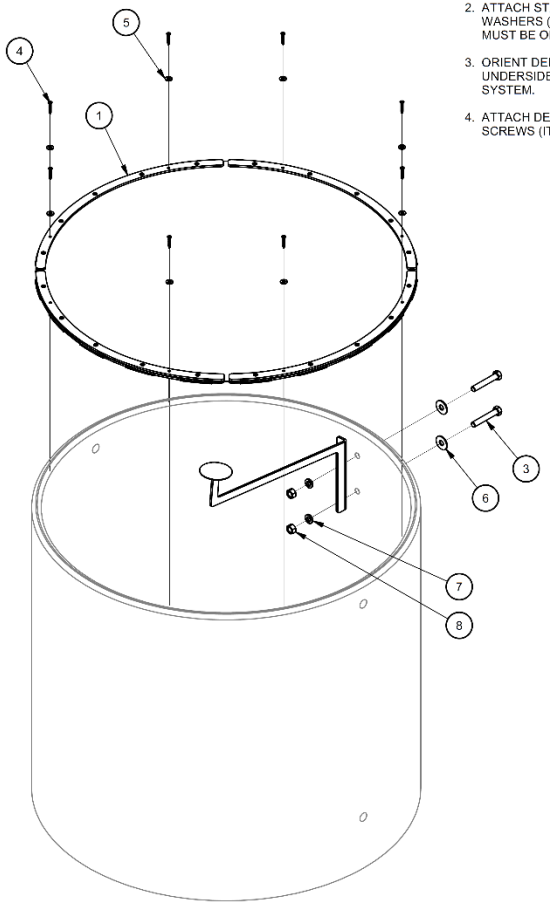
Misc. Hardware 611324

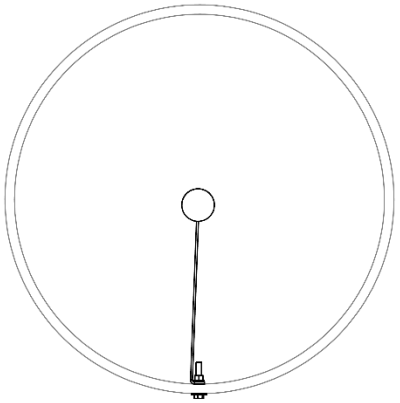
ASSEMBLY INSTRUCTIONS:

1. DRILL 2X9/16" HOLES AT THE LOCATION SHOWN. HOLES MUST BE ON A SIDE PERPENDICULAR TO LINE OF HEAD ON IMPACT.
2. ATTACH STANDOFF ASSEMBLY (ITEM 2) WITH SCREWS (ITEM 3), WASHERS (ITEM 6 & 7) AND NUTS (ITEM 8) AS SHOWN. THE STANDOFF MUST BE ORIENTED SO THAT IT IS PERPENDICULAR TO THE SYSTEM.
3. ORIENT DEBRIS COBER SO THAT THE ARROW STENCILED ON THE UNDERSIDE OF THE COVER POINTS TOWARD THE FRONT OF THE SYSTEM.
4. ATTACH DEBRIS COVER TO CYLINDER WITH FLAP SIDE UP USING 8 SCREWS (ITEM 4) AND 8 WASHERS (ITEM 5) AS SHOWN.

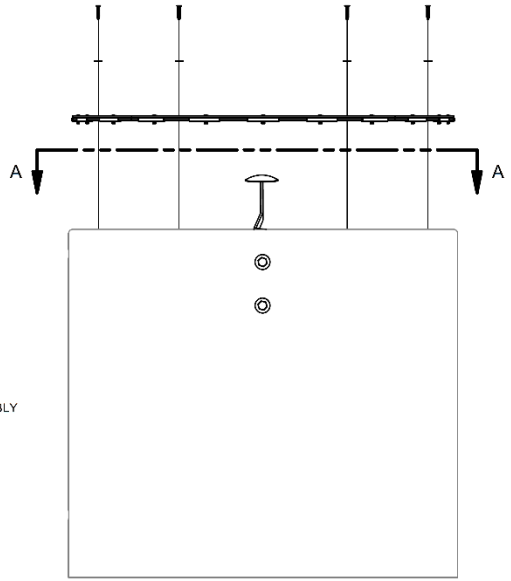
PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY.
1	615993	TOP PRE-ASSEMBLY,DEBRIS COVER,36	1
2	614624	STANDOFF ASSEMBLY,36,REACT	1
3	113479	BOLT,HX,1/2X3,G5,G,ALL THREAD	2
4	116861	SCREW,FL,#10X1 1/4,S	8
5	118019	WASHER,FLAT,1/4X5/8,S	8
6	118009	WASHER,FLAT,1/2X1 3/8,G	2
7	118082	WASHER,LOCK,1/2,G	2
8	115939	NUT,HX,1/2,G	2
9	115397	INSTRUCTIONS,DEBRIS COVER II ASSY,REACT,36	1





TRAFFIC
SEE ASSEMBLY
NOTE 1



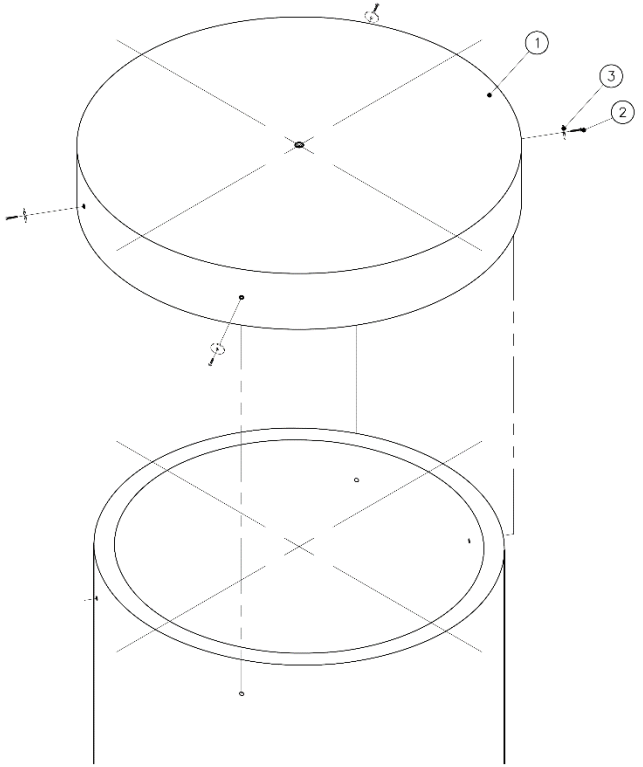
SECTION A-A

MATERIAL: SEE PARTS LIST	DRAWN: D. Standridge	DATE: 7/19/2007	TOL ANGULAR: ± 1°	DEBRIS COVER ASSY II,REACT 350,36
FINISH: N/A	CHECKED: S. Thompson	DATE: 8/3/2007	TOL FRACTIONAL: ± 1/16 TOL DECIMAL: .XX ± .01 TOL DECIMAL: .XXX ± .005	INSTRUCTION NO. 115397
	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M AND THP-SE-005 UNLESS OTHERWISE SPECIFIED.		UNLESS OTHERWISE SPECIFIED	
			DO NOT SCALE DRAWING	
EST UNFINISHED WT: 6.4 lbs			Chk.	DRAWING: 606715 REV: E SHEET: 1 of 1

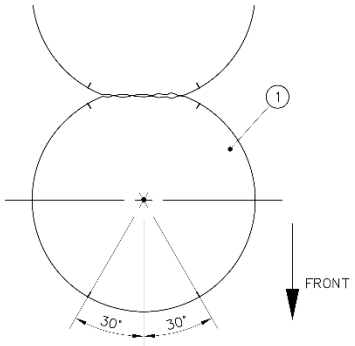
THP-PE-SHS Rev F 9/24/2018

Debris Cover Assembly, 36” 606715

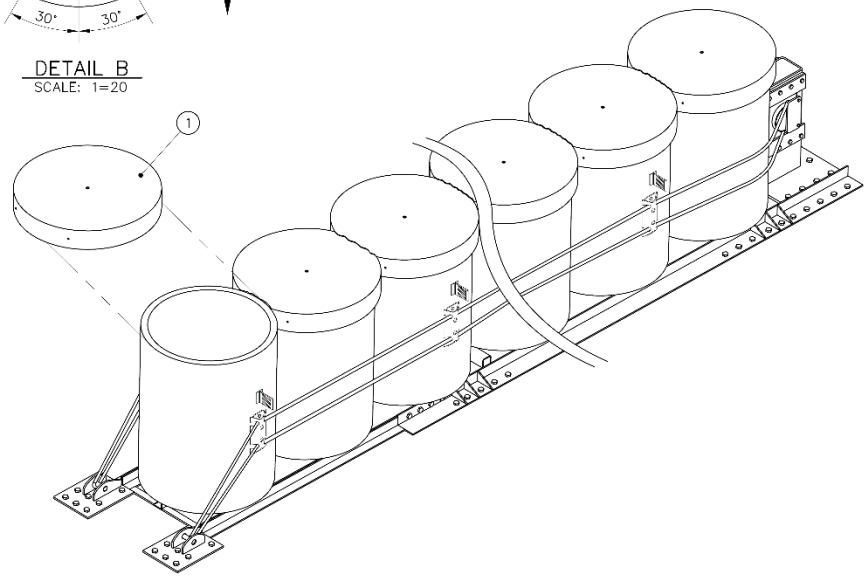
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	114426B	DEBRIS COVER,36",REACT 350	1.00
2	116943G	SCREW,PN,#8X1,TAPPING,AB,S	4.00
3	117994G	WASHER,FLAT,.219 ID X 1.25 OD,G	4.00



DETAIL A
SCALE: 1=10



DETAIL B
SCALE: 1=20



NOTES:

1. STARTING AT THE FRONT, PLACE COVERS ON EVERY CYLINDER IN SYSTEM. ORIENT FASTENERS IN LINE WITH LENGTH OF SYSTEM AS SHOWN IN DETAIL B.
2. USE COVER AS A TEMPLATE FOR SCREW LOCATION. KEEP COVERS TIGHT ON SIDE OF SYSTEM.
3. COVERS WILL BUNCH UP BETWEEN CYLINDERS. FIT COVERS BETWEEN CYLINDERS AS BEST AS POSSIBLE.

ASSEMBLY NO. 606716B

DRAWN: R. GONZALES	DATE: 10/24/01	
CHECKED:	DATE:	
CHECKED: JME	DATE: 11/1/01	
APPROVED: F. POWELL	DATE: 11/1/01	
CAD FILE: 606716		

REACT 350® SYSTEM

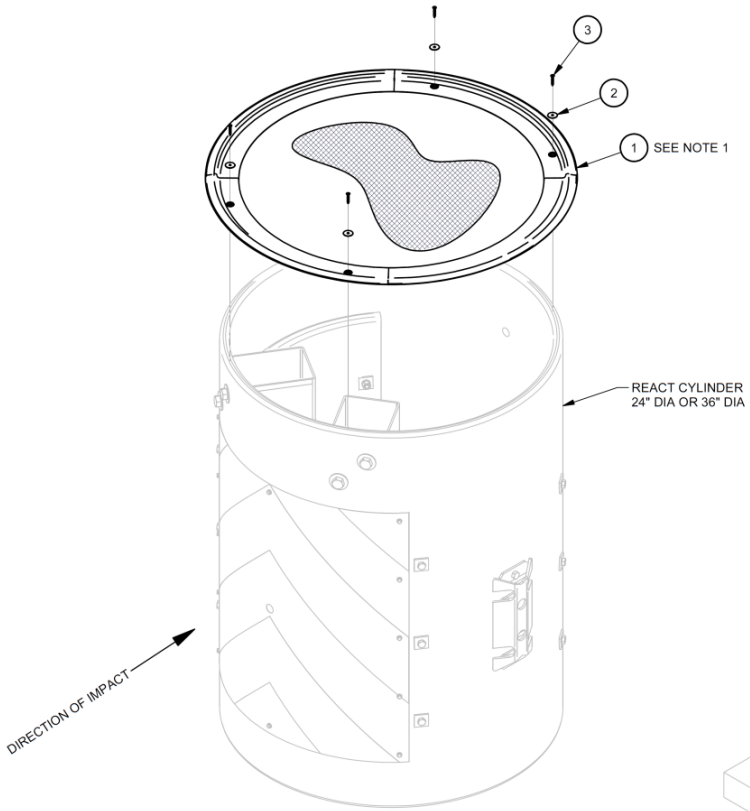
DEBRIS COVER ASSEMBLY,36",REACT 350

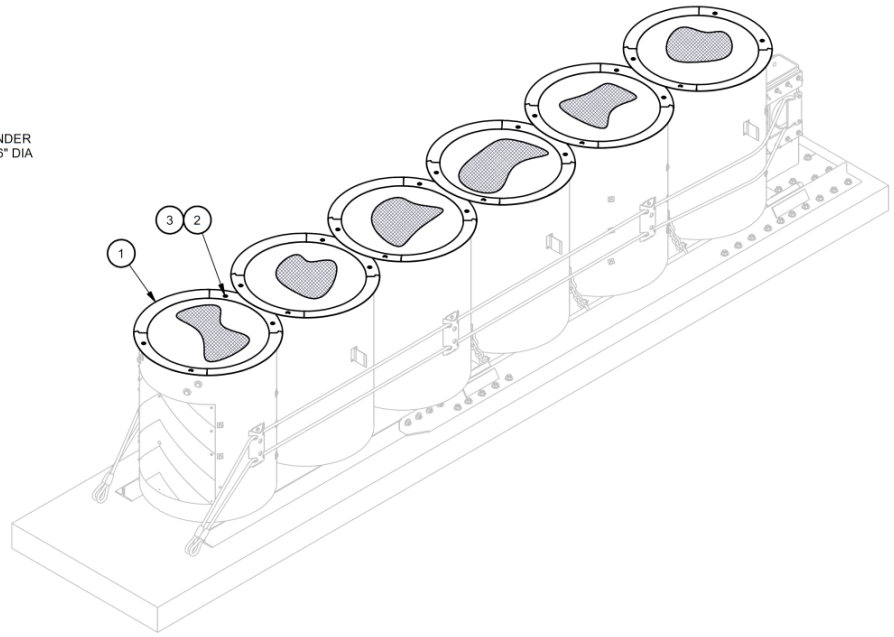
SCALE	DWG.	SHEET	REV.
1=30	606716	1 of 1	A

Debris Cover Assembly, 36” 606716

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	DEBRIS COVER,*,REACT	1
2	118435G	WASHER,FENDER,#10,S	4
3	116861G	SCREW,FL,#10X1 1/4,S	4

Table			
ASSEMBLY NO.	DESCRIPTION	ITEM 1	CYL DIA *
618102B	DEBRIS CVR ASSY,36,REACT	118434B	36"
618103B	DEBRIS CVR ASSY,24,REACT	118433B	24"





ASSEMBLY NO. SEE TABLE

NOTES:
1. VERIFY ORIENTATION OF ITEM 1 DURING INSTALLATION.

DRAWN: D. Hayes Jr	DATE: 4/19/2011					
DESIGNED: A. Van Brocklin	DATE: 1/31/2011					
CHECKED: J. Espinoza	DATE: 5/3/2011					
APPROVED: A. Van Brocklin	DATE: 5/2/2011					
FILE: 618102.idw						

DEBRIS CVR ASSY,*,REACT

SCALE:	DRAWING:	SHEET:	REV
	618102	1 of 1	-

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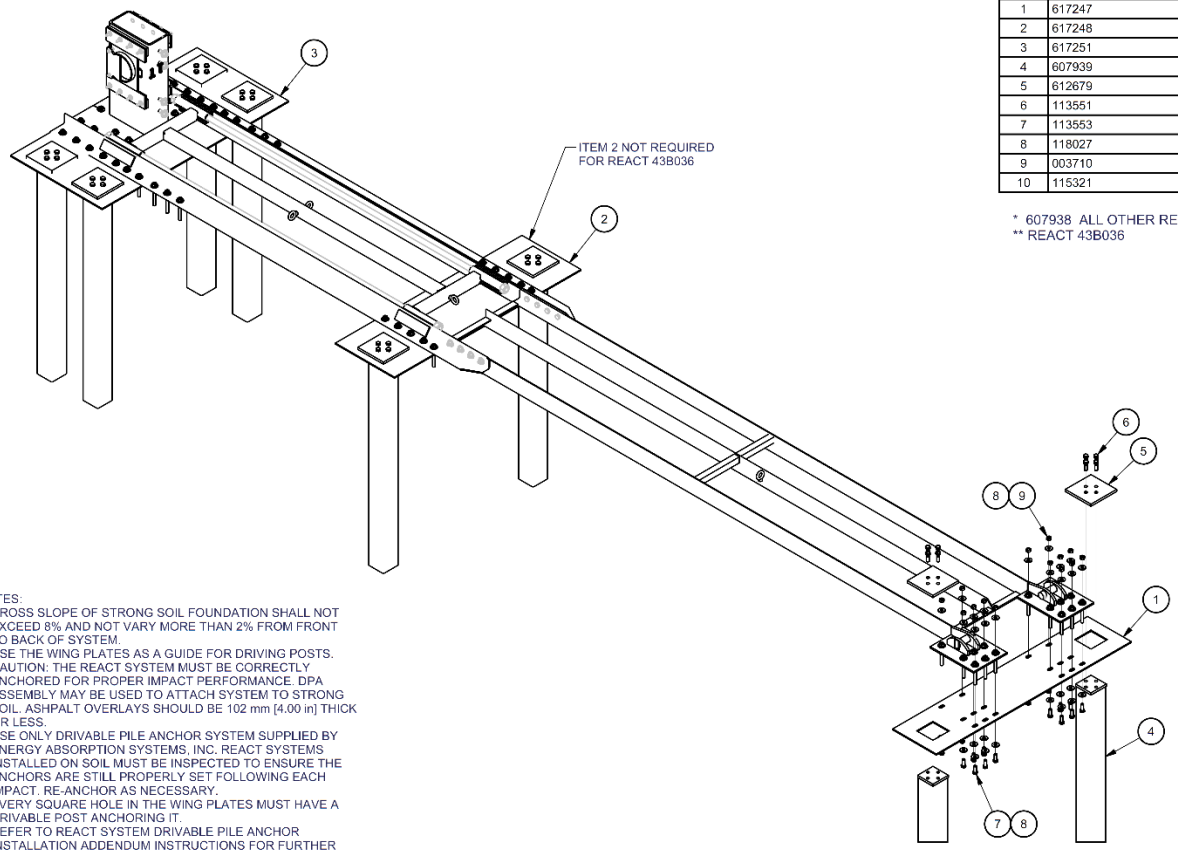
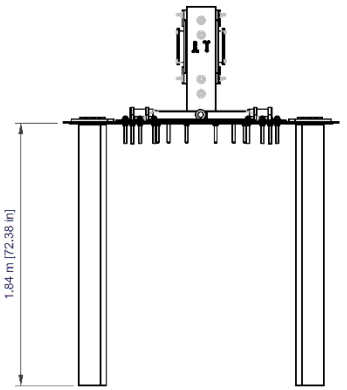
Debris Cover Assembly 618102

PARTS LIST			*	**
ITEM	STOCK NO.	DESCRIPTION	QTY.	QTY
1	617247	WING PLATE,FRONT,REACT,DPA	1	1
2	617248	WING PLATE,MID,REACT,DPA	1	0
3	617251	WING PLATE,REAR,REACT,DPA	1	1
4	607939	DRIVABLE POST,QG,CZ,DPA	8	6
5	612679	POST CAP,QG,CZ,DPA	8	6
6	113551	BOLT,HX,3/4X2 1/2,G8,G	32	24
7	113553	BOLT,HX,3/4X2,G5,G	50	40
8	118027	WASHER,FLAT,3/4X2,HVY,G	100	80
9	003710	3/4" HEX NUT A563	50	40
10	115321	INSTALLATION INSTRUCTIONS,DPA,REACT	1	1

* 607938 ALL OTHER REACT 350
** REACT 43B036



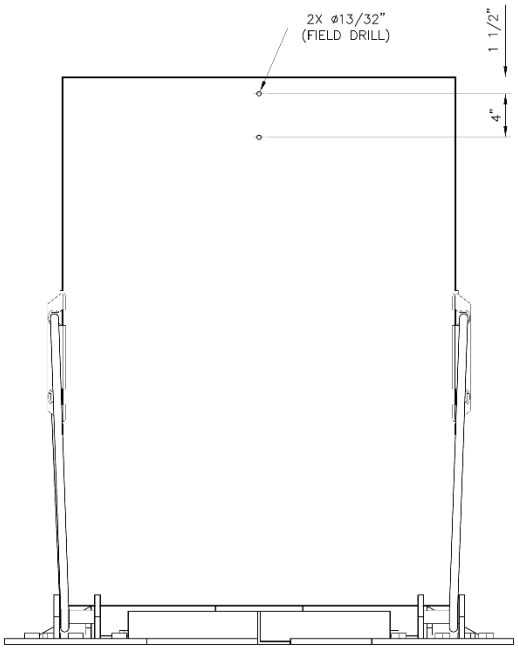


NOTES:
1. CROSS SLOPE OF STRONG SOIL FOUNDATION SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK OF SYSTEM.
2. USE THE WING PLATES AS A GUIDE FOR DRIVING POSTS.
3. CAUTION: THE REACT SYSTEM MUST BE CORRECTLY ANCHORED FOR PROPER IMPACT PERFORMANCE. DPA ASSEMBLY MAY BE USED TO ATTACH SYSTEM TO STRONG SOIL. ASHPALT OVERLAYS SHOULD BE 102 mm [4.00 in] THICK OR LESS.
4. USE ONLY DRIVABLE PILE ANCHOR SYSTEM SUPPLIED BY ENERGY ABSORPTION SYSTEMS, INC. REACT SYSTEMS INSTALLED ON SOIL MUST BE INSPECTED TO ENSURE THE ANCHORS ARE STILL PROPERLY SET FOLLOWING EACH IMPACT. RE-ANCHOR AS NECESSARY.
5. EVERY SQUARE HOLE IN THE WING PLATES MUST HAVE A DRIVABLE POST ANCHORING IT.
6. REFER TO REACT SYSTEM DRIVABLE PILE ANCHOR INSTALLATION ADDENDUM INSTRUCTIONS FOR FURTHER INFORMATION.

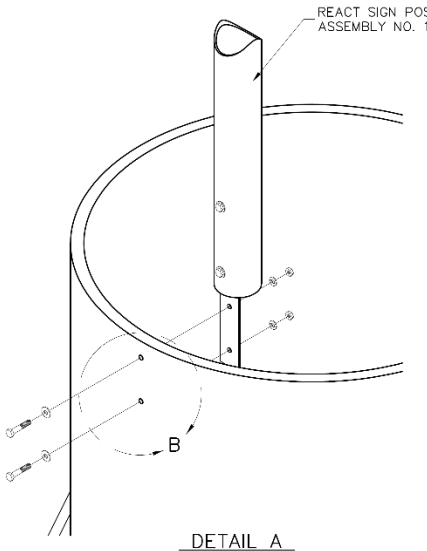
DRAWN: D. Hayes Jr.	DATE: 1/12/2006	MODEL NO: ASSEMBLY NO 607938	
CHECKED: R. Brougher	DATE: 3/16/2006	FILE: 607938.idw	
UNLESS OTHERWISE NOTED: ALL DIMENSIONS ARE IN METERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5M-1994 AND GEMC-THP-SE-300 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	DRIVABLE PILE ANCHOR ASSY,REACT
			DRAWING: 607938 REV: B SHEET: 1 of 1

GEMC-THP-TC-009 Rev E, 02/2015

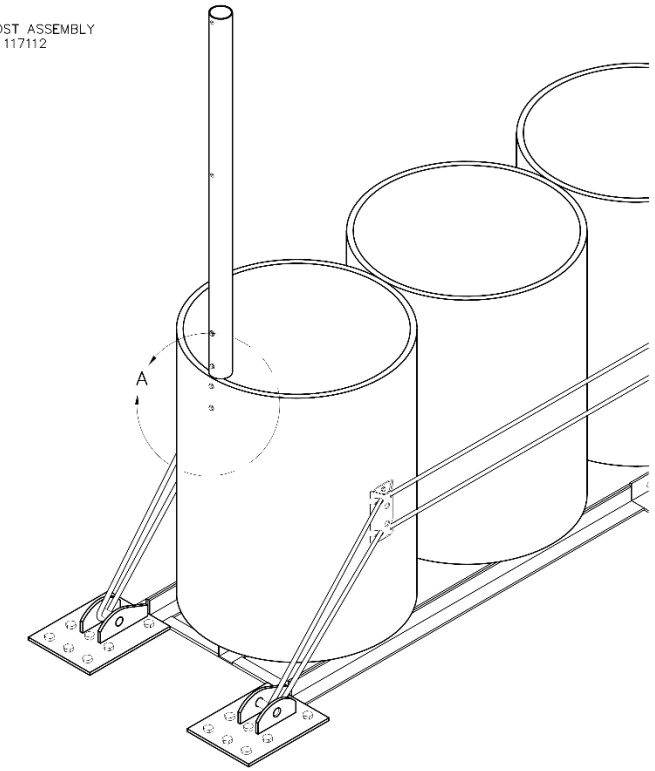
Drivable Pile Anchor (DPA) 607938



DETAIL B
SCALE: 1=10



DETAIL A
SCALE: 1=10



MATERIAL: N/A	DRAWN: D. Kohfeld	DATE: 2/21/01	TOLERANCES PER CEMC-THP-SF-001, UNLESS OTHERWISE SPECIFIED.	INSTALLATION INSTRUCTIONS, SIGN POST,REACT
	CHECKED: Bret Eckert	DATE: 4/9/01		
FINISH: N/A	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M AND CEMC-THP-SF-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING	
EST UNFINISHED WT: N/A				DRAWING: 115254 REV: B SHEET: 1 of 1

CEMC-THP-FF-046 Rev B 10/5/2016

Sign Post Assembly 115254

NOTES:

NOTES:

VALTIR
A TIER ABOVE

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