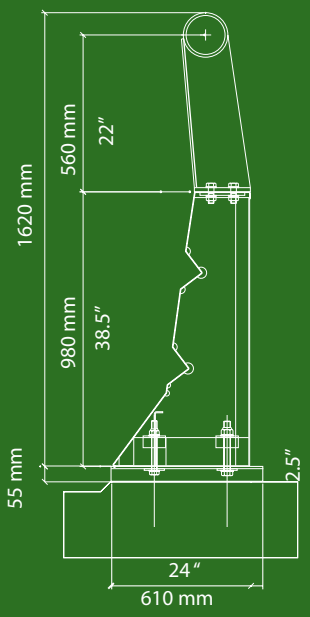
MDS BARRIERS



SERGARD MDS® TL5

SERGARD
MDS® TL5

Road & Bridge Steel Safety Barrier System
Product Description & Installation Manual

Temporary and Permanent Road Work

PRODUCT MANUAL

MVN-TL5 5.3.15

SERGARD MDS® TL5 BARRIERS

SAFETY INTRUCTIONS

This Manual follows the Guidelines set forth in ANSI Z535.4-1998 for alerting you to possible hazards and their potential severity

This is the safety alert symbol. This manual uses this symbol to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

SERGARD MDS® TL5 BARRIERS

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SERGARD MDS® TL5 BARRIERS

SECTION 1
INTRODUCTION

SERGARD MDS® TL5 BARRIERS

1. Safety Performance Review

Read and follow safety instructions thoroughly. Follow the assembly directions and suggested safe practices before assembling, maintaining, or repairing the MDS® Barrier system. Failure to follow this warning can result in serious injury or death to the worker and/or bystanders. Therefore, the contractor who performs the MDS® Barrier installation must have approval by the owner and must be trained and certified by MDS® Barrier as a certified MDS® Barrier installer. A certification card will be issued to the installer(s) after the completion of the training course.

MDS® Barriers require proper assembly according to the design specifications to meet the intended system performance. These instructions should be read in their entirety and understood before assembling the MDS® Barrier system. In the event the system assembly requires or involves deviation from standard design during the assembly process it is recommended to contact the appropriate transportation authority and MDS® Barriers for guidance. It is critical for any users of the MDS® Barrier systems to be fully familiar with the Manufacturer's instructions for use.

⚠WARNING **Improper installation can result in serious injury or death.**

Always review the Limitations and Warnings thoroughly before performing the necessary work. Do not attempt to install any longitudinal barrier without the proper plans and installation manual from the manufacturer or approval from the relevant Road Authority. If you need additional information, or have questions about the MDS® Barrier system please contact MDS® Barrier or an Authorized MDS® service center for assistance.

Contact Tel:
MDS® Barriers USA Tel: 860.289.8033
APAC Road Barriers Pty Ltd PH: 1300 00 APAC
Australia Tel: +61.(0) 409.331.871 or 1300 00 APAC

The instructions contained within this Manual supersede all previous information and Manuals. All information, illustrations, and specifications in this Manual are based on the latest MDS® Barrier system information available from MDS® BARRIERS. MDS® Barriers reserves the right to make updates and changes at any time. For more information regarding technical questions and products please contact MDS® Barriers.

To ensure the manual is the current issue, verify that the Manual Version Number (MVN) is the latest release located at the bottom right of each page in the manual.

Contact MDS® Barriers directly at **+ 61 (0)409 331 871** or verify the document release numbers on the MDS® Barriers web site www.MDSbarriers.com Support page.

SERGARD MDS® TL5 BARRIERS

2. System Overview

SERGARD MDS® TL5 Barriers is a lightweight easy transportable road and bridge barrier system that has been developed to provide full TL5 Minimal Deflection impact protection. Lightweight SERGARD MDS® TL5 weighs only 104 kg per meter and requires no through deck anchoring. Designed for use on bridges as median barrier and bridge parapets as well as phase construction for temporary lane changes due to its high level of crashworthiness. MDS® Barriers keep traffic from entering work zones or from hitting exposed objects and excavations while providing positive protection for roadside workers.

SERGARD MDS® TL5 Barriers have been tested extensively and approved in accordance with NCHRP 350, and MASH-08, as well as the European standards EN 1317-5:2007+A1:2008. The testing has shown that SERGARD MDS® TL5 Barrier is acceptable for use on roadways throughout the world including the USA, European national highways and various other national highways.

3. Construction

MDS® Barrier is constructed from a series of individual barrier sections. Manufactured using an all steel safety shape profile that is designed around a NJ shape and F shape concrete barrier. **See Figure 1**

Barrier Identification

Each SERGARD MDS® TL5 barrier marked with a CE Identification stamp No. Example: 15X01 where 15 = year 2015, 01 = batch number **See Figure 2**

Figure 2

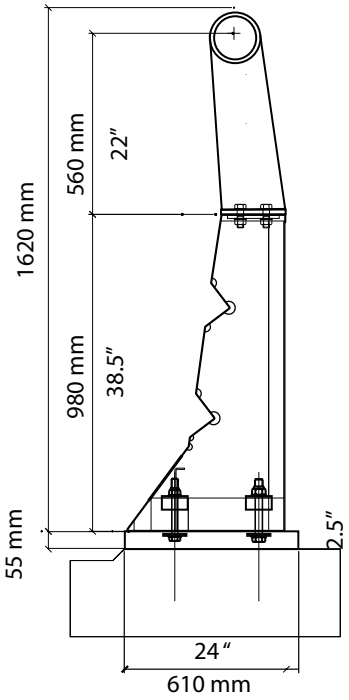


Figure 1

An upper steel tubular top rail is also an integral component of the MDS® Barrier System. The steel safety shape and tubular rail interact with an impacting vehicle in a way that resists penetration and overriding. **See Figure 3**

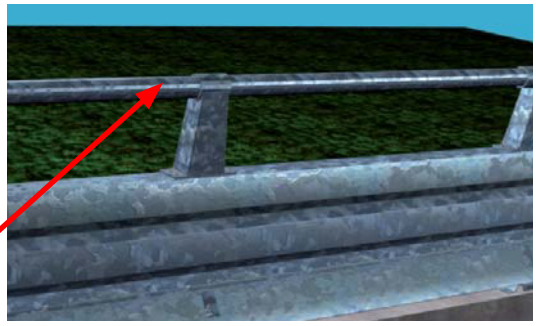


Figure 3

SERGARD MDS® TL5 BARRIERS

MDS® Barrier standard sections are available in both 2.95 m and 5.90 m long sections. Custom lengths can be provided if required. **See Figure 4**

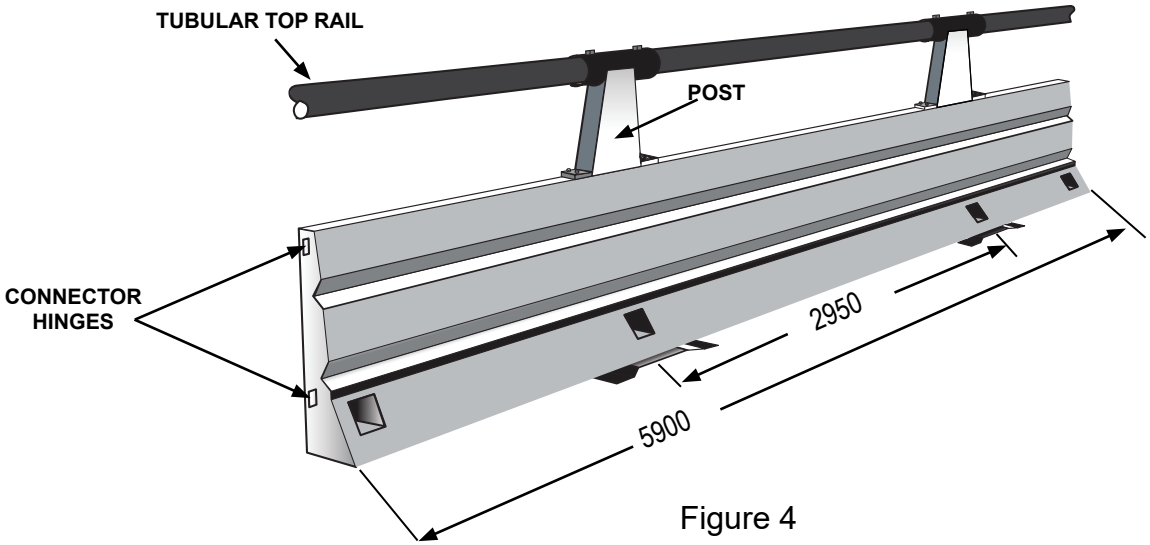


Figure 4

The ends of each MDS® section are constructed with vertically aligned loop connector hinges that interlock with each individual barrier using a steel connecting pin. **See Figure 5**

Vertical hinges

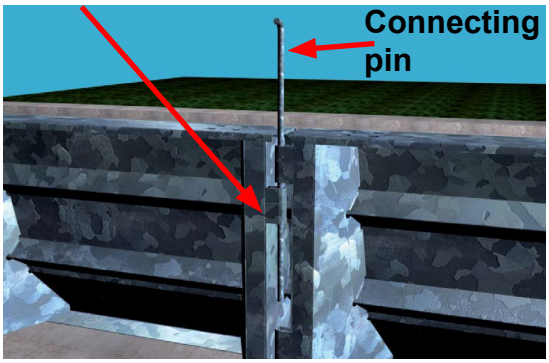


Figure 5

The pin securely joins the sections together while each MDS® section is held together by the splice plate. **See Figure 6**

Splice plate

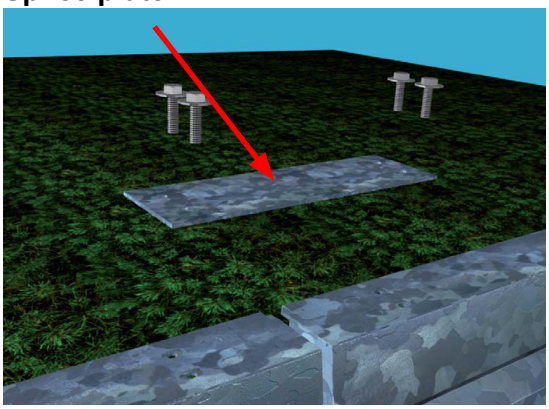


Figure 6

SERGARD MDS® TL5 BARRIERS

SECTION 2
SYSTEM PERFORMANCE & DESIGN

4. Minimal Deflection System (MDS)

SERGARD MDS® TL5 minimum deflection system is anchored every 2950 mm. Each 5900 mm barrier section is anchored at two locations as shown in **Figure 7**

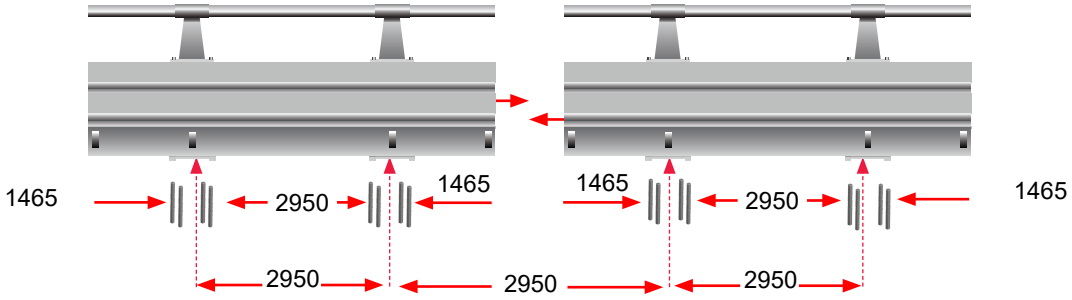
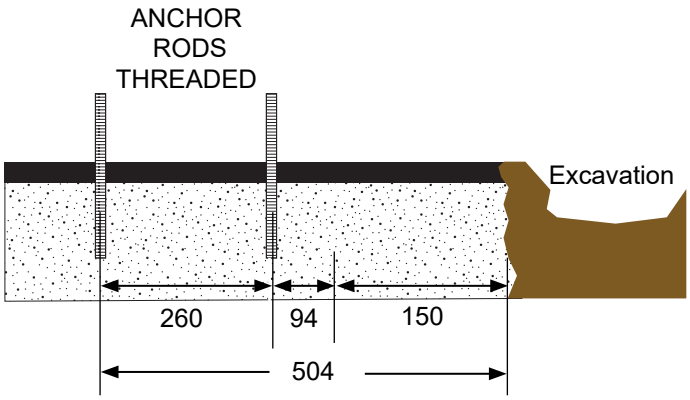


Figure 7

Details on the configuration, anchoring and deflections of the system are shown in Drawing No. 15-AUST-1R1 located in Annex A. This configuration has been tested to EN-1317-5:2007+A1:2008 in accordance with NCHRP 350, and MASH-08. The minimum run length of the minimum deflection system is 66m, (contact manufacturer for anchoring details on shorter run lengths). The normalised deflections for the minimum deflection system are shown in Drawing No. 15-AUST- 2R1. For installation of the MDS next to excavations, soil profiles and properties will need to be detailed and taken into account for location of barrier and anchors. This installation must be detailed by an installation designer to determine the suitability of barrier location to ensure ground would not fail under impact and cause deflection to increase above that expected from this system. For details on the installation within the proximity of changes in terrain (eg kerbing, excavations, bridge decks etc) refer to Drawing No. 15-AUST-3R2 within Annex A. In general, the installation of SERGARD MDS® TL5 should not have the back side of the barrier within 150mm of an excavation or drop-off unless previously authorised by the manufacturer.

Note: The reference of 150 mm proximity to an excavation is in reference to the back side of the barrier. The anchorage will be approx. 504 mm from this excavation on the traffic side of the installation. **See Figure 8**

Figure 8



5. End Treatments

A terminal is defined by NCHRP 350 as *"a device designed to treat the end of a longitudinal barrier. A terminal may function by (a) decelerating a vehicle to a safe stop within a relatively short distance, (b) permitting controlled penetration of a vehicle behind the device, (c) containing and redirecting the vehicle, or (d) a combination of (a), (b) and (c)"*.

6. Transition Types

Sergard MDS® TL5 has several types of transition elements that connect the following traffic devices:

1. W-Beam guard rail. **See Figure 9**
2. Portable and formed concrete barriers (PCB). **See Figure 10**
3. Sergard MDS® TL5 back to back into PCB. **See Figure 11**
4. Crash Attenuators. **See Figure 12**

Guard Rail Transition

Sergard MDS® TL5 transitions into standard and W-Beam and or Thrie-Beam guard rail. **See Figure 9**

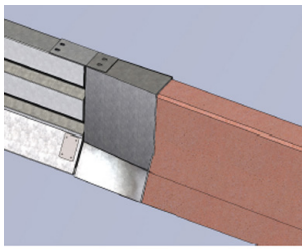
Sergard MDS® TL5 guard rail transition element provides a positive connection between the two longitudinal barrier systems eliminating the possibilities of snagging and clipping through internal anchoring.

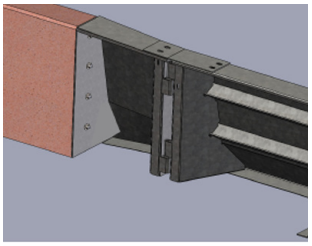
Figure 9

SERGARD MDS® TL5 BARRIERS

Portable Concrete Barrier Transition
Sergard MDS® TL5 transitions into 800 mm, 1000 mm PCB (32” and 42”) and formed concrete. **See Figure 10**

Portable Concrete Barrier
Sergard MDS® TL5 direct transition into standard and F shape PCB provides a positive connection between two longitudinal barrier systems eliminating the possibilities of snagging and clipping through internal anchoring.





Formed Concrete Transition
Sergard MDS® TL5 transition element onto formed concrete parapet and guardrail.

Figure 10

Back to Back Transition
Sergard MDS® TL5 for median barrier installations with PCB and Guard Rail. **See Figure 11**

Back to Back onto PCB
Sergard MDS® TL5 back to back installation sleeve onto PCB provides a positive connection between the two longitudinal barrier systems eliminating the possibilities of snagging and clipping through internal anchoring.

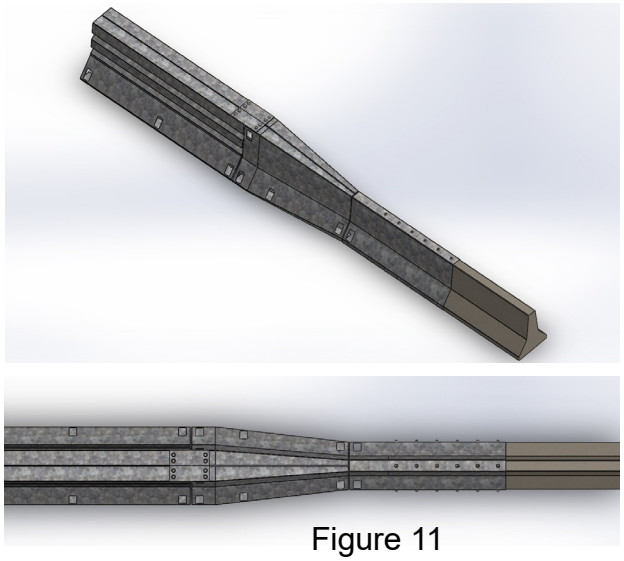


Figure 11

7. Crash Cushions

When the Sergard MDS® TL5 barrier is used as a stand alone barrier such as a work zone it must have a crash cushion attached to the end to ensure that adequate protection is provided for both approach and departure ends for all installations. The QuadGuard CZ cushions (**See Figure 12** below) can be used with the Sergard MDS® TL5 depending on the intended use and also the design speed for the location. The QuadGuard CZ accomodates speeds from 40 to 100 km/h (25 to 62 mph). **See Annex 3 for drawings**

Figure 12

7.1 End Conditions in Unidirectional Traffic Flow

In unidirectional traffic flows, the approach end of the Sergard MDS® TL5 barrier should be shielded as required by the governing requirements. The two most common methods will be the use of a crash cushion, and flaring the run out of the clear zone.

Crash cushion transitions are shown in Annex B, Drawing No. 15-QS2406- 15-QS6906

7.2 End Conditions in Bidirectional Traffic Flow

In bidirectional traffic flows, both ends of the Sergard MDS® TL5 barrier must be shielded as required by the governing requirements. The most common methods will be the use of a crash cushion.

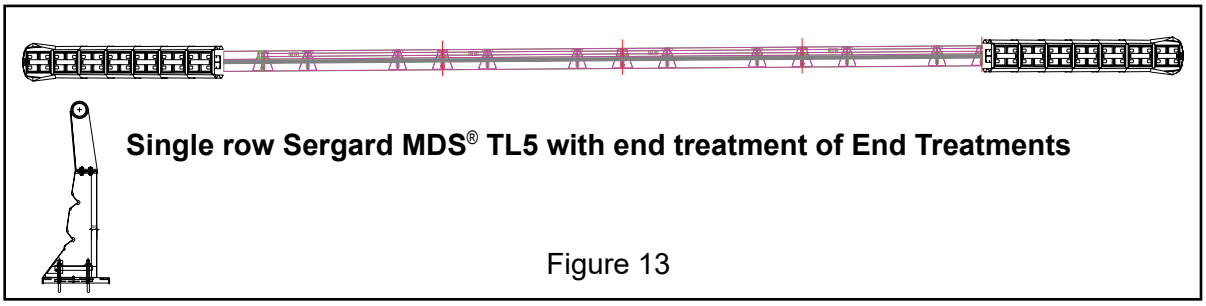
Crash cushion transitions are shown in Annex B, Drawing No. 15-QS2406- 15-QS6906. It is recomended to consult with the crash cushion manufacturer if there are any concerns regarding the surface anchoring of the attenuator.

NOTICE

It is recomended to always check the current approvals for any element of a crash attenuator system. For the installation and arrangement of the crash cushions, please consult the manufacturers of the crash cushion to ensure all installations and set-ups are correct.

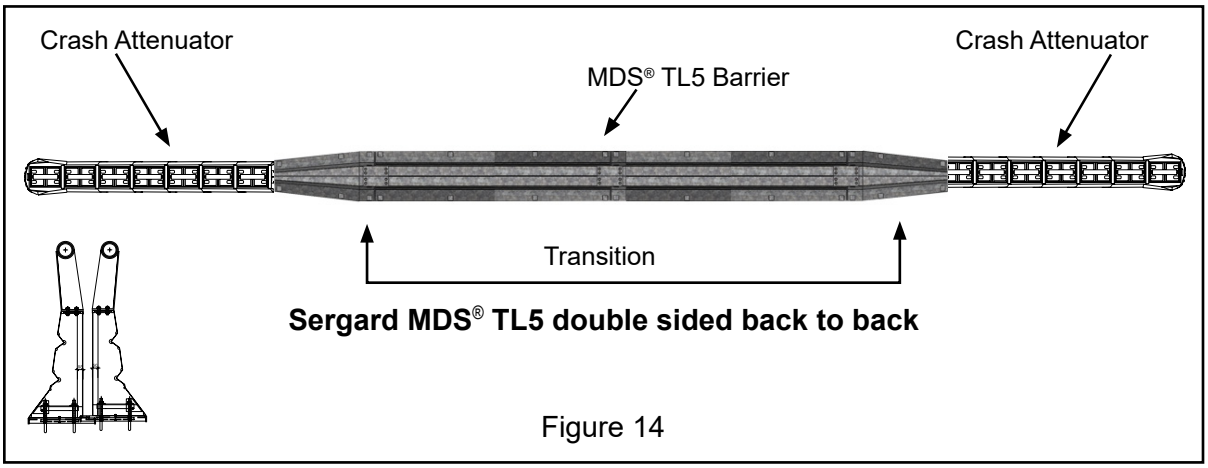
7.3 Example of End Treatments in Work Zones

Sergard MDS® TL5 barriers when used in a work zone may require a crash attenuator as indicated by the governing transportation authority. **Figure 13** below illustrates a single row of MDS ® TL5 barrier, **Figure 14** illustrates MDS® TL5 barrier installed back to back and **Figure 15** illustrates MDS® TL5 barrier spaced apart with a maximum separation distance of 685mm to accommodate QuadGuard model No. QS6906**.**



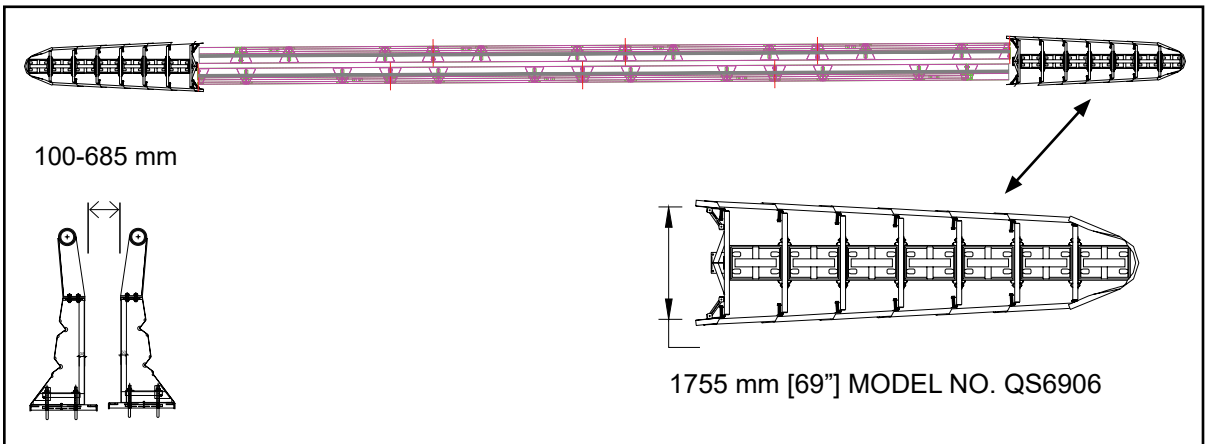
Single row Sergard MDS® TL5 with end treatment of End Treatments

Figure 13



Sergard MDS® TL5 double sided back to back

Figure 14



Sergard MDS® TL5 double row with center space row back to back

Figure 15

8. Delineation

PASSIVE REFLECTORS
Delineation requirements vary between government authorities and special applications. In most circomstances "L-type" stick on reflectors can be used (**See Figure 16 below**). These reflectors can be attached to the top and side of the Sergard MDS® TL5.

SOLAR LED LIGHTS
Advanced delineation solutions with LED's are available for increased visibility such as the solar LED object marker for rail mount. (**See Figure 17 below**)

All delineation is to be applied in accordance with local authorities' guidelines. If stick on delineation is not allowable, consult the manufacturer. DO NOT drill holes for any reason. Where clear direction cannot be found for the local state authority, please contact MDS Barriers for directions on delineation.

Figure 16

L-Type Reflectors

Material: ABS
Colors: White, Yellow, Red, Green, Blue

Figure 17

Solar LED with passive reflective film

Solar LED rail markers. Available in single or double sided.
Material: ABS
Flash rate: 75 FPM
Colors: White, yellow, red
LED intensity: 30 MCL per side
Visibility: 1 km

REFERENCE	PART No.	TYPE	DESCRIPTION	DIM. METRIC
80	2I-RM1-color	LED	Single sided LED with reflective film	98 x 47 x 117
	2I-RM2-color - color	LED	Double sided LED with reflective film	

SERGARD MDS® TL5 BARRIERS

9. Sound and Site Walls

Noise barriers reduce the sound which enters a community from a busy highway by either absorbing the sound, reflecting it back across the highway, or forcing it to take a longer path over and around the barrier. A noise barrier must be tall enough and long enough to block the noise of a highway from the area that is to be protected.

Sergard MDS® TL5 barriers are pre-designed to integrate sound & noise protection barriers, site walls, wind breakers and fencing within a single barrier system providing considerable savings in terms of occupied space, supporting substructures and overall cost. The special backward positioning of the noise-protection barrier requires less lateral space on the bridge deck or road side.

Sound Walls

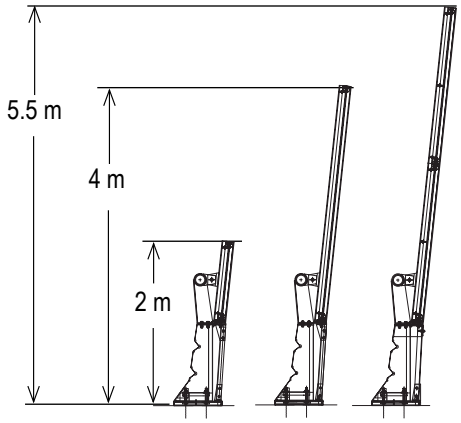
Site Walls

Dissuasive Wind Walls

Fencing Grid Walls

Modular Construction

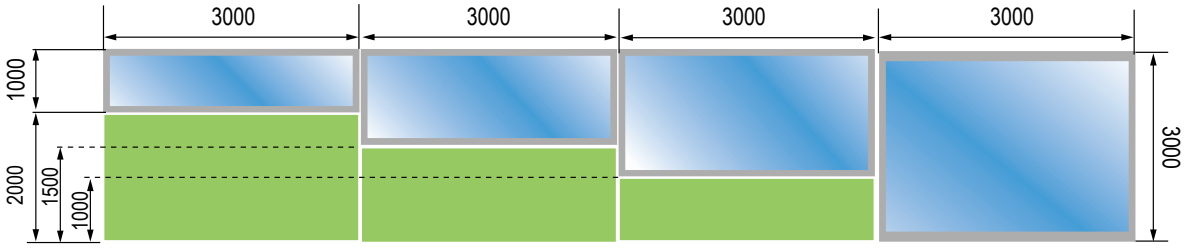
Sergard MDS® TL5 system can accommodate panels up to 5.5 meters high. **See Figure 18**
Panels are designed to easily slide and stack between support beams. **See Figure 19**



AVAILABLE SIZES
Sound and transparent walls are available in 50 cm height increments.

2 to 2.5 meters
3 to 3.5 meters
4 to 4.5 meters
5 to 5.5 meters

Figure 18



Dimensions in Millimeters

Figure 19

See Annex 4

SERGARD MDS® TL5 BARRIERS

Impact Performance
The backward positioning of the sound walls do not effect the performance of the barrier under impact as the walls displace with the dynamic movement of the barrier. **See Figure 20**

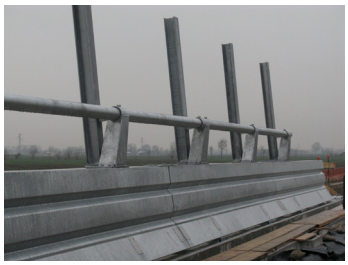


Figure 20

9.1 Sound Panel Types

According to FHWA *"To effectively reduce the noise coming around its ends, a sound barrier should be at least eight times as long as the distance from the home or receiver to the barrier"*. Sergard MDS® TL5 barriers have two types of sound panels, aluminum and glass. **See Figure 21**

Dissuasive wind breakers walls protect motorcyclists and vehicle operators from being blown off course from strong wind gusts as they pass through bridges, valleys, mountain roads or gaps in open areas especially in slippery road conditions. **See Figure 22**

Chain link fence provides containment from falling roadside rock as well as added safety for work zones. **See Figure 23**

Aluminum Sound Panels
Reduce high noise levels from highway traffic while reducing potentially harmful sound pressure.

Transparent Sound Panels
Laminated glass panels maintain excellent transparency in all weather conditions and guarantee maximum noise protection in any location where noise pollution is an issue.

Figure 21

Dissuasive Wind Breakers
Wind breakers louvers for wind reduction

Figure 22

Fence & Grids
Protect overpasses and work sites from projectiles and vandalism encouraging safe passageway for pedestrians and motorists.

Figure 23

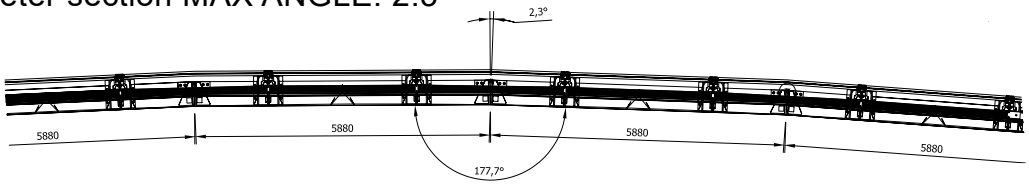
Sound panels have been tested in compliance with UNI EN 1793-1,2:2008 and UNI EN 1794-1,2:2003, metal sound panels are CE certified and belong to A4 sound absorption category and to B3 sound insulation category. The transparent sound panel are CE Certified and belong to B3 sound insulation category. **See Annex 4**

10. Installation on Curves

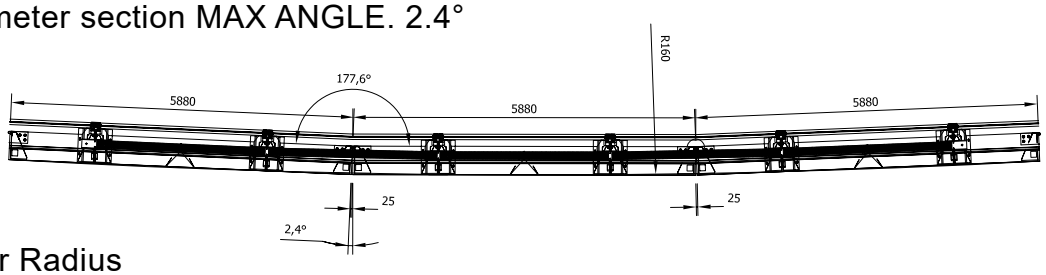
10.1 Horizontal Curves

Sergard MDS® TL5 Barriers using standard 5.90 m sections can be curved down to a inner radius of 150 meters at 2.3°. For tighter curves, Sergard MDS® units can be supplied in shorter 2.95 m sections which will allow installation on curved down to 73 meter inner radius at 2.3°. The outer radius can be curved down to 160 meters at 2.4°. **See Figure 24**. It is recomended to consult manufacturer for other special lengths to accommodate tighter radii. For turning small arc length curves, custom fabricated radius units are available from 2.5 to 90 degree angle units. **See Drawing No. H4-6000-IR23, H4-6000-OR24 and H4-3000-IR23** in Annex 2 for details of both uni-directional and bi-directional applications.

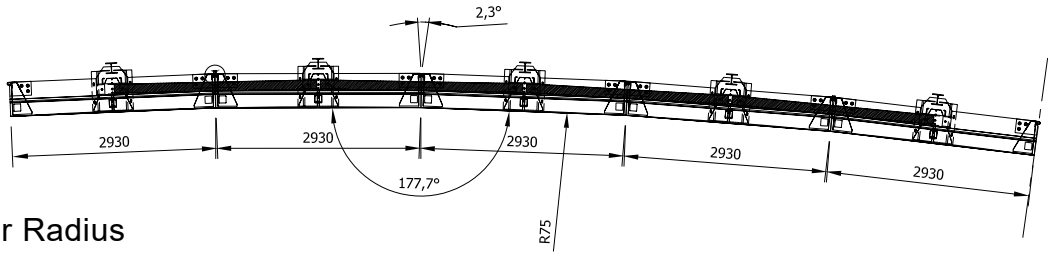
Inner Radius
5.9 meter section MAX ANGLE. 2.3°



Outer Radius
5.9 meter section MAX ANGLE. 2.4°



Inner Radius
2.95 meter section MAX ANGLE. 2.3°



Outer Radius
2.95 meter section MAX ANGLE. 2.4°

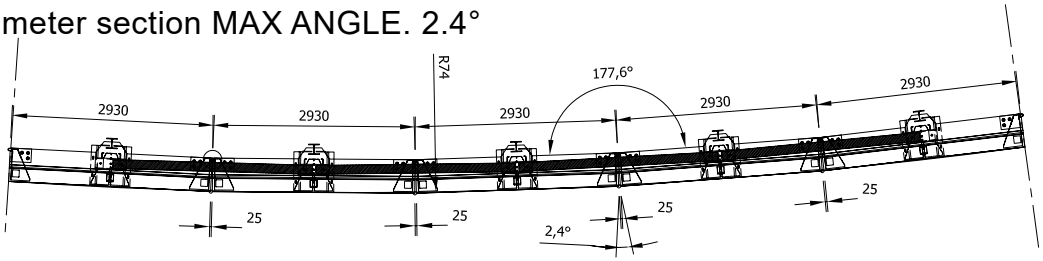


Figure 24

10.2 Cross-Slopes

Cross-Slopes

The MDS® Barrier may be placed on cross-slopes up to 5% or 3 degrees. **See Figure 25**

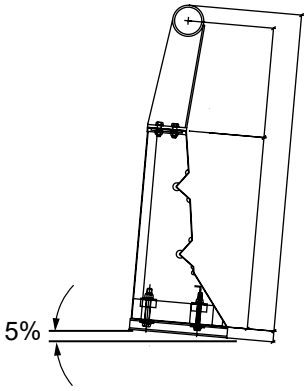


Figure 25

10.3 Longitudinal Slopes

The MDS® Barrier may be placed on various longitudinal slopes up to 2 degrees. **See Figure 26**

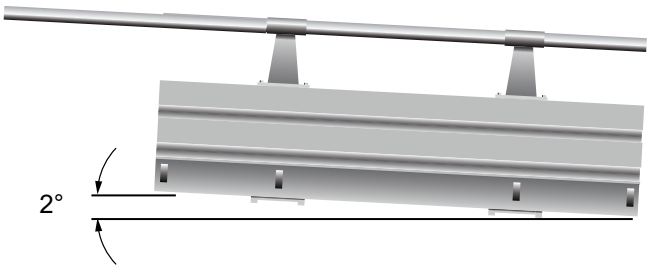


Figure 26

10.4 Curbs

MDS® Barrier shall NOT be placed directly against curbs that can prevent its lateral movement. **See Figure 27**

MDS® Barrier system can be placed on bridge curbing no higher than 165 mm (6 1/2”), with a minimum curb width of 620 mm (24.4”) for TL5.

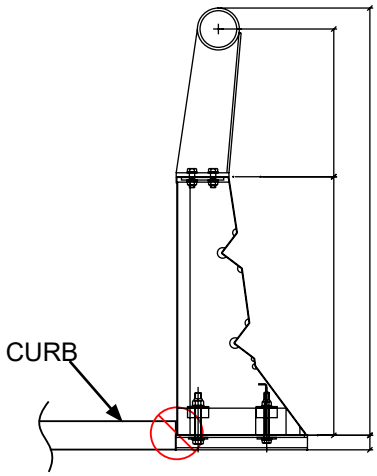


Figure 27

10.5 Vertical Alignment

Crest

MDS® Barrier has the ability to conform to a hill up to 2 degrees. **See Figure 28**

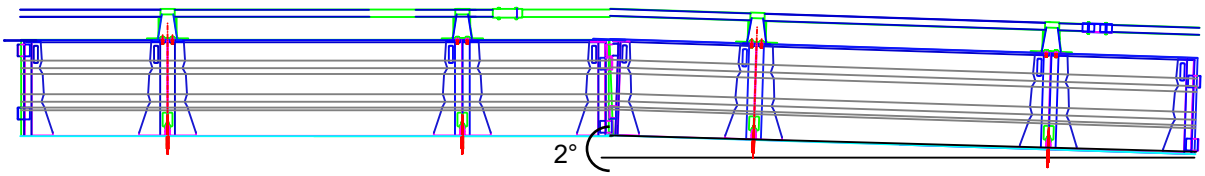


Figure 28

Ditch

MDS® Barrier has the ability to conform to a ditch up to 2 degrees. **See Figure 29**

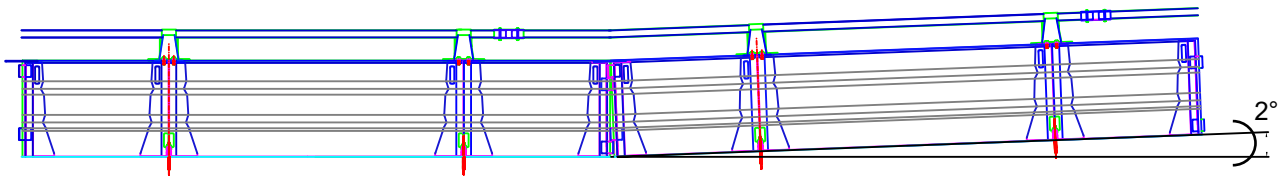


Figure 29

SERGARD MDS® TL5 BARRIERS

11. Design Deflections

Sufficient space between the work zone side of the barrier and the Work Zone or Workers needs to be available to allow for the deflection of the barrier during an impact. The Deflection Table below (**Table 1**) shows the minimum deflections derived from interpolating crash test results, this area required behind the barrier is also known as the Clear Zone. **See Figure 30**

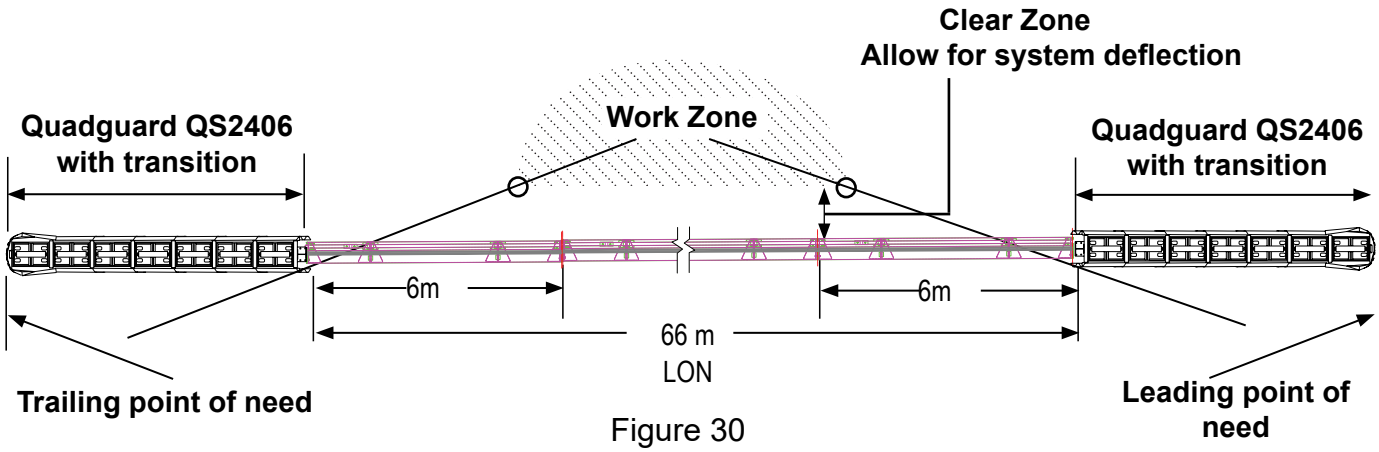


Figure 30

11.1 Length of Need (LON)

LON is defined as the total length of a longitudinal barrier needed to shield an area of concern. It is also described as that part of a longitudinal barrier or terminal designed to contain and redirect an errant vehicle as detailed in **Figure 30**.

11.2 Deflection Table

Test No.	Speed km/h	Vehicle weight kg	Impact angle	Max Dynamic Deflection m	Max Permanent Deflection m
TB11	102.4	920	20	0.12	0.09
TB81	67.6	37140	20	0.42	0.31

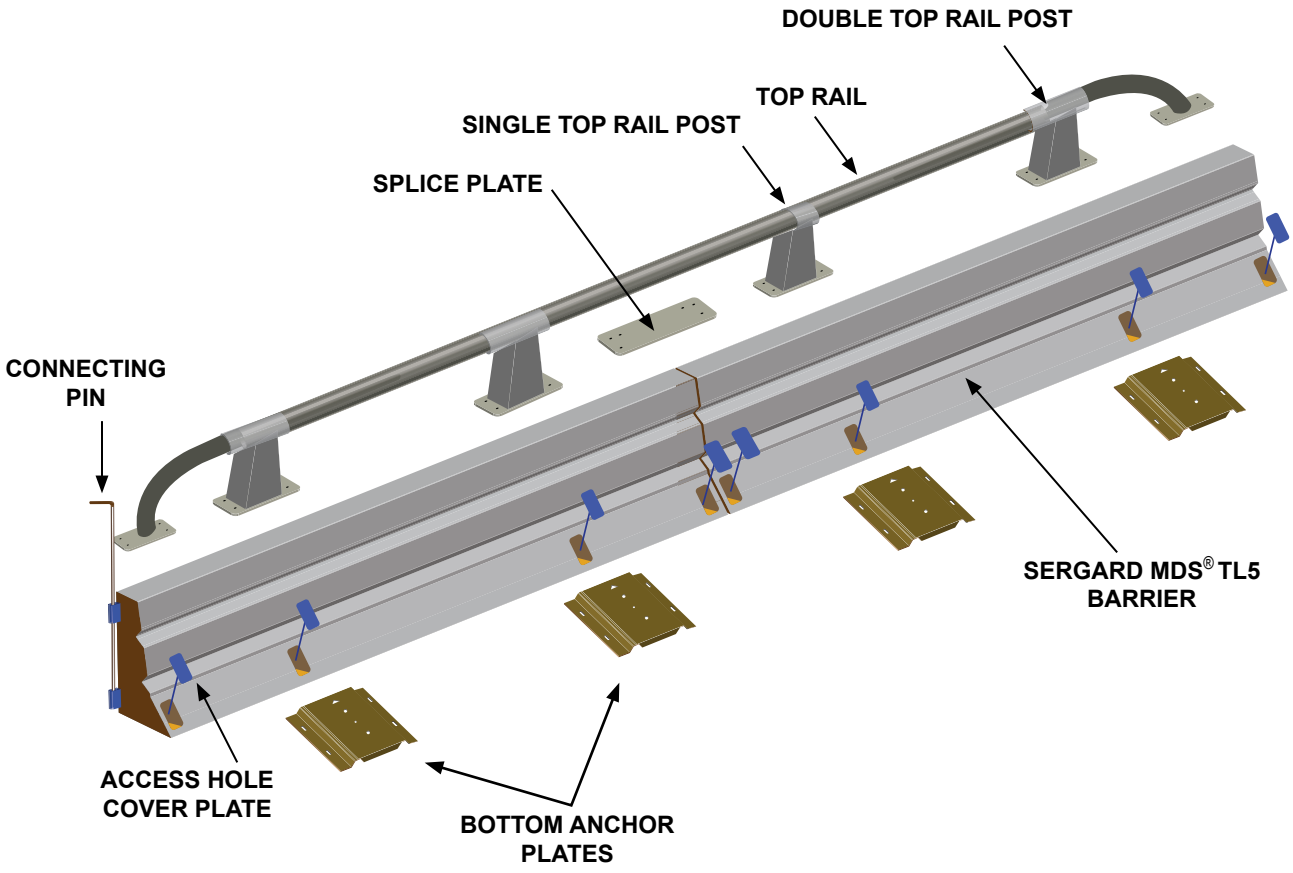
SERGARD MDS® TL5, TEST REFERENCE TB11 EN1317							
Speed (km/ h)	100	90	80	70	60	50	40
Permanent deflection (m)	0.09	0.073	0.058	0.044	0.032	0.023	0.014

SERGARD MDS® TL5, TEST REFERENCE TB81 EN1317				
Speed (km/ h)	70	60	50	40
Permanent deflection (m)	0.31	0.228	0.158	0.101

SERGARD MDS® TL5 BARRIERS

SECTION 3
SYSTEM INSTALLATION

SERGARD MDS® TL5 BARRIERS



12. Pre-Installation Planning

Prior to travelling to the job site, ensure that:

- You have enough units to complete the installation.
- Trucks can carry up to 24 x 5.90 m sections for a total of 141.6 m of Sergard MDS® Barriers per truck.
- Project site to be contacted to ensure acceptable truck load height before loading truck.
- You have enough of the required anchors for the system being installed.
- Your lifting equipment can lift this weight properly in the extended position for unloading and placing each unit. Each 5.90 m unit weighs approximately 614 kg (See Table 1 below for unit weights). Careful consideration must be given to the width available on site and the width needed for lifting equipment.
- Your lifting equipment can accommodate the required heights for loading/unloading.
- All chains and slings are certified to lift the required weight.
- All MDS® Barrier sections are aligned the same way on every truck.
- The crew leader is properly trained and certified for installation of Sergards MDS® Barriers.
- All DBYD must be organised prior to installation.
- All weight and identification markings is clear and visible on all required parts of the barrier.

12.1 Sergard MDS® TL5 Weight Chart

Sergard MDS® TL5 weight chart	
Base Section per meter	56 kg
Hand Rail per meter	25 kg
Single Rail Post each	36 kg
Double Rail Post each	44 kg

Table 1

13. Site Approach & Setup

Prior to work zone entry, ensure that

- Traffic management is in place
- The work area is safe and all crews are wearing appropriate PPE
- The truck is properly identified with equipment required by governing specifications, such as beacons, signage, etc.

Establish the location for the beginning of the run, and ensure that there is enough lateral width for the truck and lifting equipment

14. Unloading Preparation

Before unloading Sergard MDS® Barriers review Drawing No. 15-AUST-2R1 in Annex 1 for lifting points. Prior to each relocation of the truck, check for overhead cables. Prior to unloading, ensure that all slings and chains are certified and in good order, and that the vehicle and load are stable and level.

Do Not

- **Initiate lifts near overhead cables**
- **Swing lift over personnel**
- **Allow personnel to walk under lift**
- **Allow lift to swing over live traffic lane**
- **Exceed safe working load of equipment**

15. Assembly

Begin preparing for assembly by thoroughly reviewing the specified barrier location, layout, and orientation according to the approved traffic management plan. Consideration must be given to determine if an end treatment is required and allow for the length of the treatment in determining required segments. A visual inspection should be carried out to confirm the suitability of all segments. Should visible damage from delivery be evident in any segments, they should be sent for inspection and refurbishment prior to use.

Warning: The correct safety equipment and approved traffic management must be used as required for any MDS® Barrier system assembly.

16. Installation Tools

Recommended Tools	Dimensions
	Millimeters
Ratchet Drive	12, 16, 20
Torque Wrench	12, 16, 20
Drive Sockets	6, 12, 16, 20
Wrenches	6, 12, 16, 20
Carbide Drill Bits	16 & 18
Rotary Hammer Drill	Standard
Drill Socket Extention	1000
Hammer	Standard
Tape Measure	Standard
Crane / Forklift	According to project weight specifications
Lifting Straps	According to project weight specifications
Pry Bar	1 meter

Note: The above list of tools is a general recommendation. Depending on specific site conditions and the complexity of the assembly specified by the appropriate highway authority, additional or fewer tools may be required. 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 site.

SERGARD MDS® TL5 BARRIERS

Please refer to all layout drawings that show assembly details in this Manual.
Verify placement and measurements on-site prior to placement of anchor bolts or base plates.
SERGARD MDS® TL5 Barrier system can be assembled on bridge curbing that is no higher than 165 mm (6.5”) with a minimum curb width of 620 mm (24.4”).
You will need to assemble the anchor bolts before setting the barriers in position unless the Quick release plate is used. (Part No: T45-QRP-G)

17. Barrier Stacking, Storage & Transport

Sergard MDS® TL5 Barrier system is designed to be nested and stacked on top for storage and freighting purposes. When transporting it is recommended that MDS® TL5 Barrier be stacked no more then two high.

Caution should be used when freighting that the lower level is strapped down and secured properly before loading the second level. **See Figure 31**

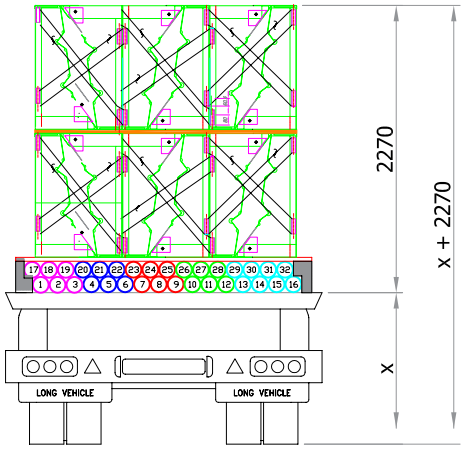


Figure 31

WARNING

Use caution when rigging units, use tag lines.

17.1 Barrier Lifting

Each section of MDS® TL5 Barrier can be lifted with a crane or front end loader utilizing a cable or chain. Attach the proper weight rated chain at each end of a segment section providing a central balance lifting point. *Please refer to state requirements for training and certification of crane or forklift operators.* **See Figure 32**

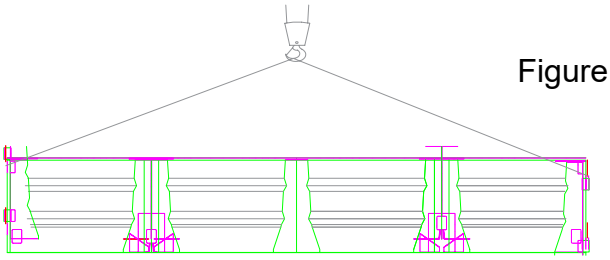


Figure 32

17.2 Unloading Sequence

Each section of MDS® TL5 Barrier can be unloaded separately or in sections of 2 if the units are prestapped together during loading. **See Figure 33**

WARNING

Use caution when rigging units.
Lifting from 2 points is recommended. Tag lines should also be used to control the unit.

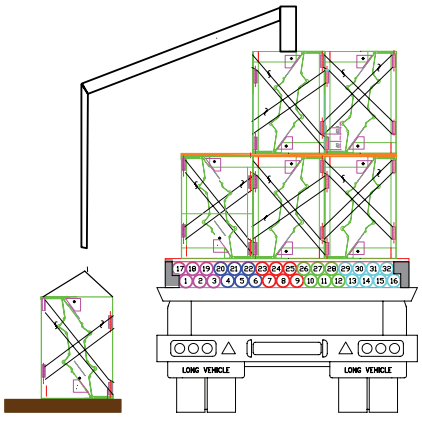


Figure 33

17.3 Righting Inverted Units

Rig the lift using chains of hoists, and attach tag link to the end. Ensure that the lift is properly balanced, and that the drop area is clear. When turning MDS® units, there is a danger of the top rail kicking away from the direction of rotation. The amount of movement should be controlled by offloading onto timber blocking immediately adjacent to the tire of the truck. **See Figure 34 & 35**

Continue lowering the unit and at the same time, slide the unit away from the tyres so that free access can be gained to the top rail. Attach the slings/chains for lifting upright. **See Figure 35**

Figure 34

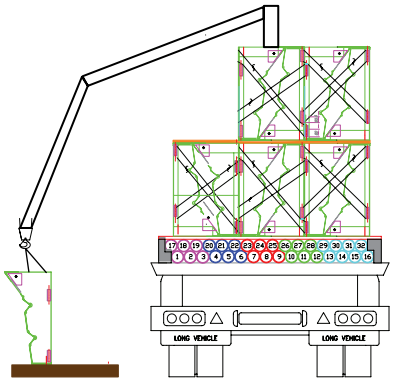
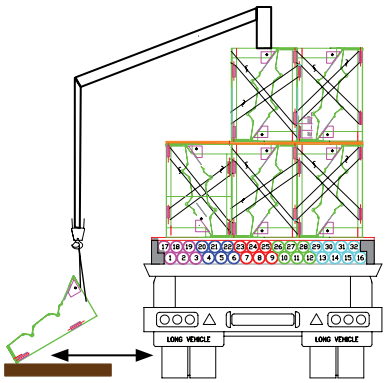


Figure 35



With barrier placed horizontal on timber, relocate chains to top of the barrier and hoist upright.
See Figure 36 & 37

Figure 36

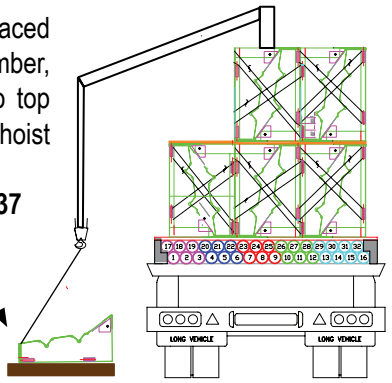
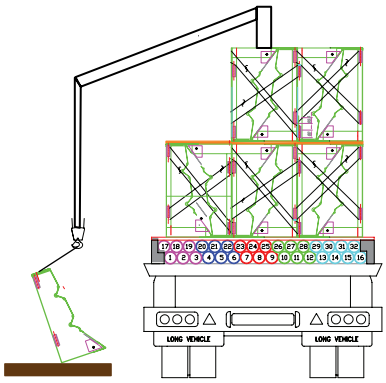
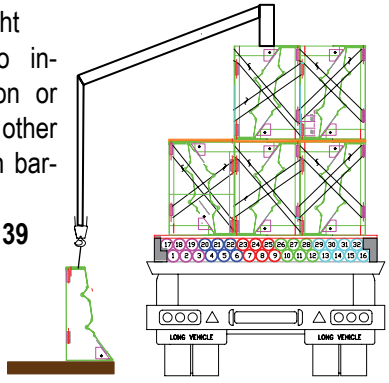


Figure 37



With barrier upright place directly to installation possition or use fork lift to or other equipment to join barriers.
See Figure 38 & 39

Figure 38



18. Barrier Relocation

Forklifts can be used for placing barriers for joining an attachment when available.

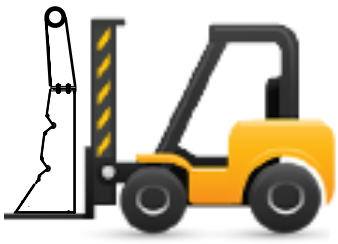


Figure 39

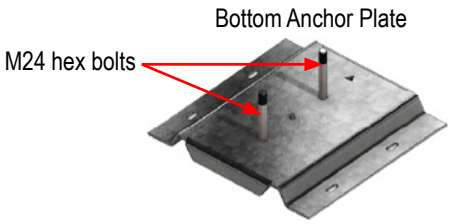
19. Deployment

- Begin deployment at the upstream traffic end of the site and work downstream. Work from the non-traffic side of the installation whenever possible. Unloading proceeds much faster if one person remains on the truck and two people work on the ground. If site conditions permit, a fourth person can drive the truck so that segments can be unloaded continuously as the installation is progressing.
- Align the segments according to the specified configuration and lay out in the traffic control plan.
- Caution: refer to the deflection graph in Section 11.2 contained in this manual when determining minimum clearance between barrier and hazard.

- Caution:
  Do not place barrier up against curbing as it may affect the deflection characteristics of the barrier under impact.

20. Anchoring Types

MDS® TL5 Barriers are considered a Minimal Deflection System, therefore they must be anchored. You will need to install the M24 bolts in the bottom anchor plate as well as anchoring the plate to the road surface before setting the barrier in position unless you are utilizing the Quick Release Anchor Plate. There are 2 types of anchoring: Internal **See Section 21 Figure 40** and External **See Section 22 Figure 41**.



INTERNAL ANCHORING
FOR PERMANENT INSTALLATIONS

Figure 40

EXTERNAL ANCHORING
FOR TEMPORARY INSTALLATIONS

Figure 41

21. Internal Anchoring Main Components

Internal anchoring requires the following components. **See Figure 42**

1. Bottom Anchor Plate
2. M24 x 180 mm hex bolts
3. Bottom anchor rib
4. M16 x 165 mm threaded rods

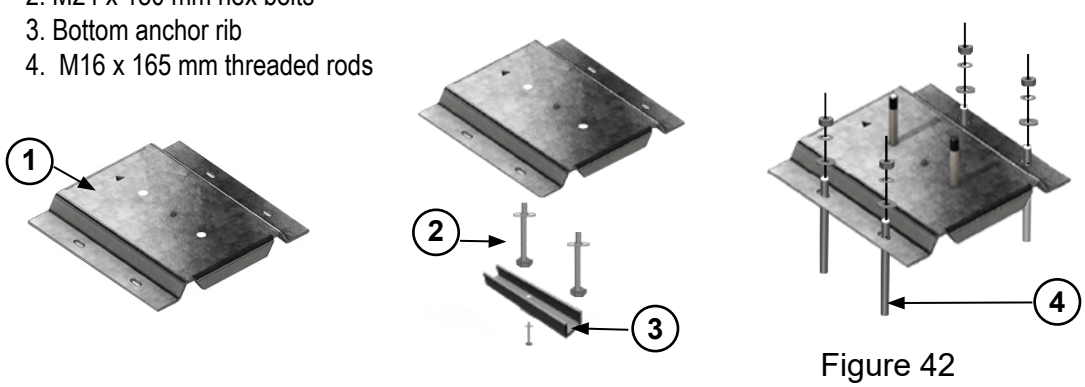
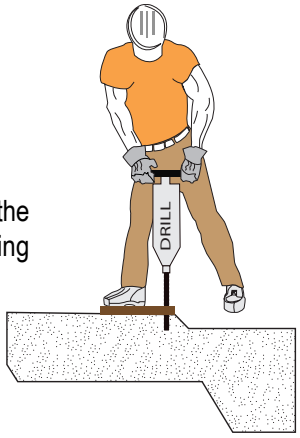


Figure 42

21.1 Internal Anchoring Procedure

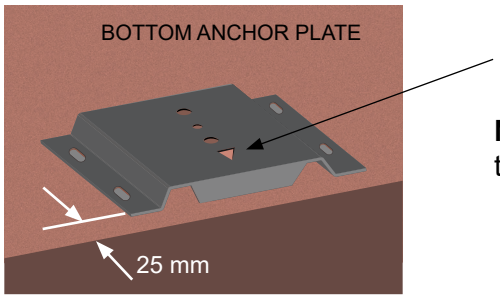
SERGARD MDS® TL5 INTERNAL ANCHORING



The first phase consists of deck drilling utilizing a "template" that accurately reflects the dimensions of the barrier and the center-to-center spacing of the anchorage holes using the bottom anchor plate.
See Figure 41, 42, 43, 44, 45

Referring to the layout place the template in a starting position.

STEP 1 Place the Bottom Anchor Plate on the surface. An arrow on the base plate points toward the outside edge of the road /bridge, away from the traffic. **See Figure 43**



NOTE: Allow a minimum of 25 mm gap from the bridge fascia

Figure 43

STEP 2 Using the template insert positioning pins onto anchor plate. Pre-mark its initial pilot hole position. **See Figure 44**

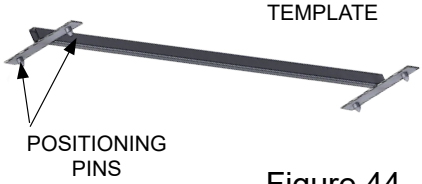
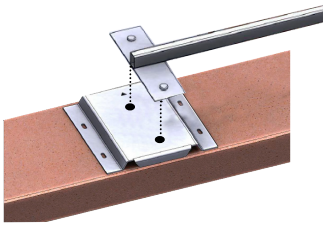
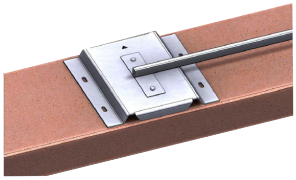


Figure 44



INSERT POSITIONING PINS



TEMPLATE PLACEMENT

STEP 3 After placement, drill a 1 cm deep Ø16 mm pilot holes in each of the 4 holes through the bottom anchor template. Move the template to the next position until the installation track has been completed. **See Figure 45**

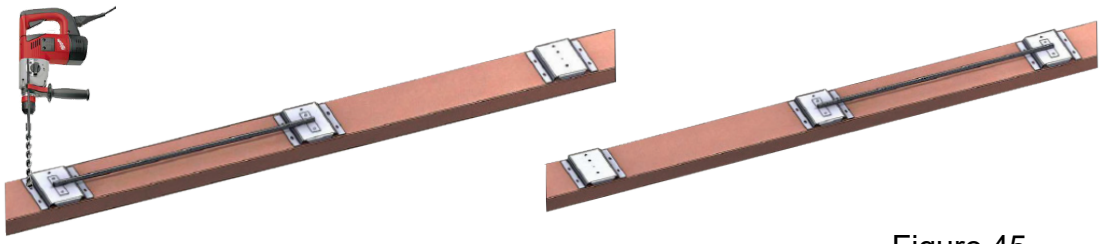
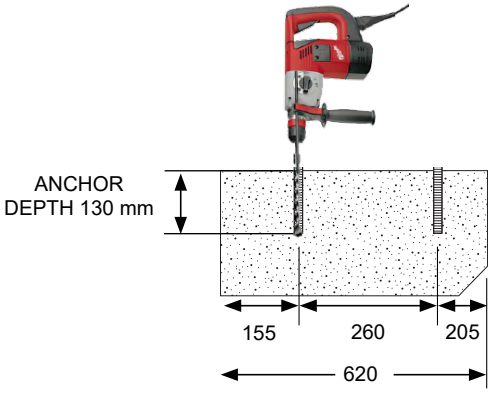


Figure 45

STEP 4 Finish drilling Ø18 mm hole 130 mm deep with carbide drill bit. **See Figure 46**

Figure 46



STEP 5 Blow out all holes with compressed air gun. **See Figure 47**

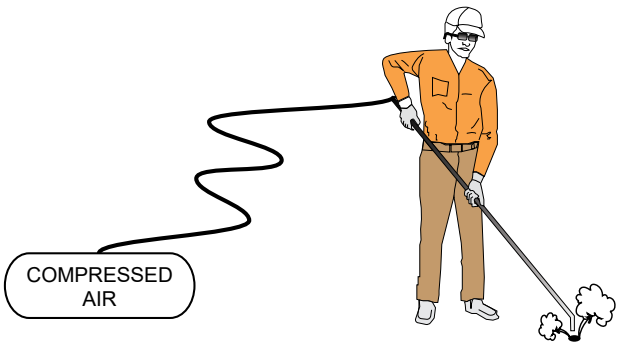


Figure 47

SERGARD MDS® TL5 BARRIERS

STEP 6 Prepare the base plate utilizing M8 hex bolt with M8 washer and M8 nut. Install the bottom anchor rib with two M24 x 180 mm hex bolts with M24 washers. **See Figure 48**

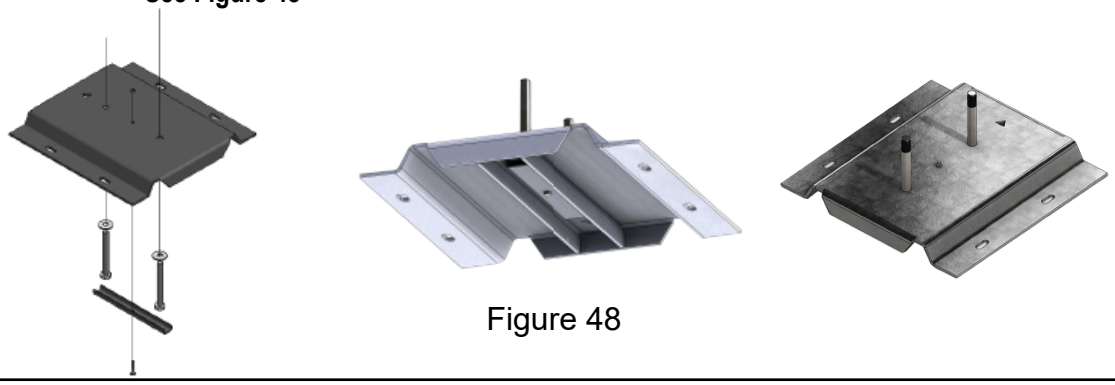


Figure 48

STEP 7 With bottom anchor plate set in place, inject HILTI HIT RE-500 resin into the four anchor bolt holes following the resin manufacturer's recommendation for application. Install four M16 x 165 mm hex bolts, four M16 washers and four M16 nuts. **See Figure 49**

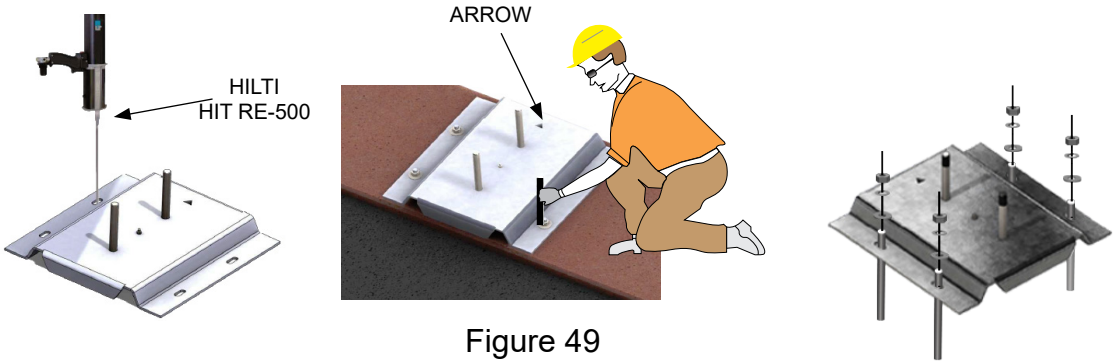


Figure 49

Insert the four threaded rods. Rotating movement will stir the resin in order to mix it with the residue dust in the hole ensuring a sufficient thread contact. **See Figure 49**
Allow the resin to harden (see the resin data sheet for curing times and temperatures).

STEP 8 With bottom anchor plates in place, place barrier onto M24 hex bolts. **See Figure 50**

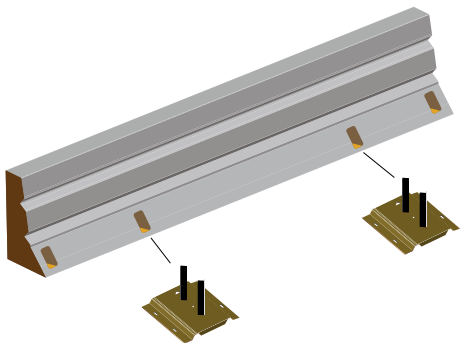
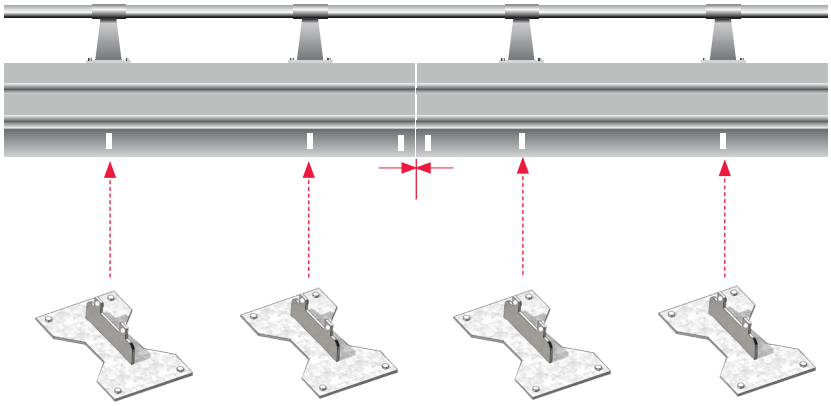


Figure 50

22. MDS® TL5 External Anchor Plate Installation

Note: External anchoring most often used for temporary installations / workzones

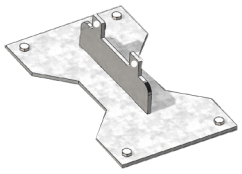


22.1 External Anchor Plate Main Components

The Quick Release Anchor Plate is designed to allow the MDS® Barriers to quickly detach from the plate for relocation. The plate has 3 parts:

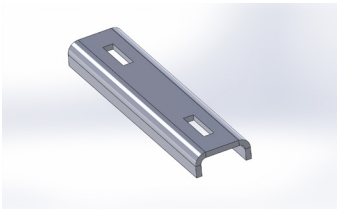
1. Quick Release Plate
2. Upper anchor rib
3. U-pins

1. Quick Release Plate



Part # T45-QRP-G

2. Upper anchor rib



Part # T45-D34073-G

3. U-pins

Part # T45-EPIN1-G

The External anchoring Quick Release Anchor Plate may be pre-attached to the barrier before placement to the surface or be placed into position while the barrier is being set in place. Each plate requires four M16 x 165 mm threaded rods that can be installed after the barrier has been placed in position.
See Figure 51

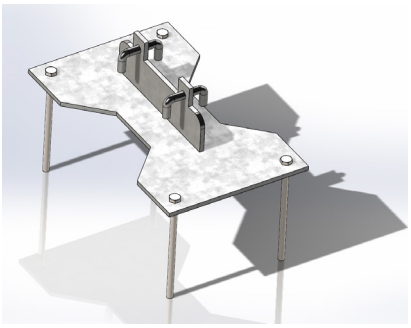
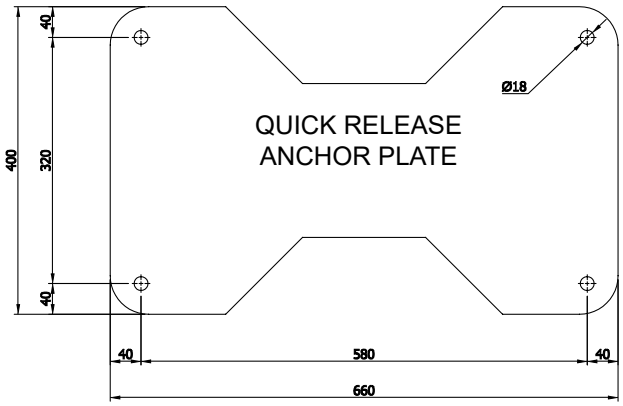
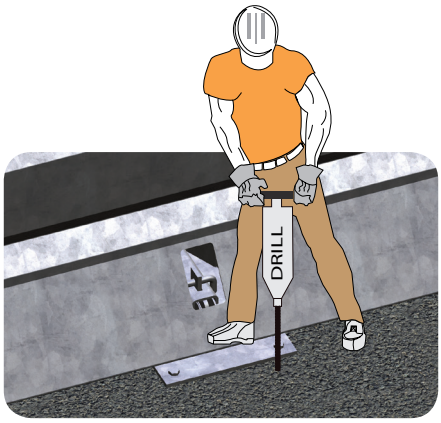


Figure 51



22.2 External Anchoring Procedure

STEP 1 Once the barrier is in place, drill four Ø18 mm holes 130 mm deep through the Quick Release Anchor Plate. **See Figure 52**



Front

Rear

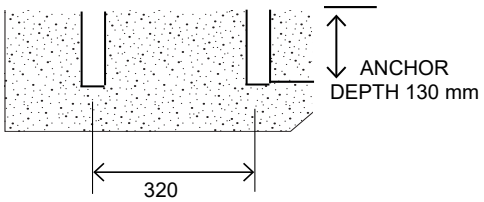


Figure 52

STEP 2
After drilling is completed: blow out holes removing all debris with compressed air gun. **See Figure 53**

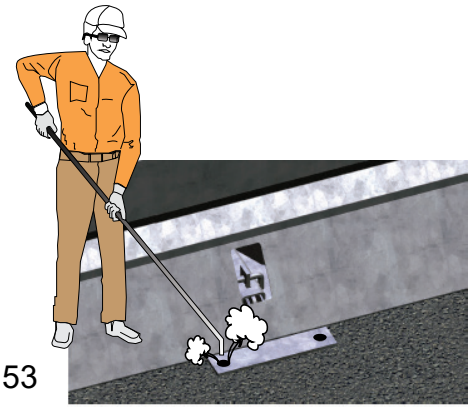


Figure 53

STEP 3
Inject resin with a pump gun. **See Figure 54**

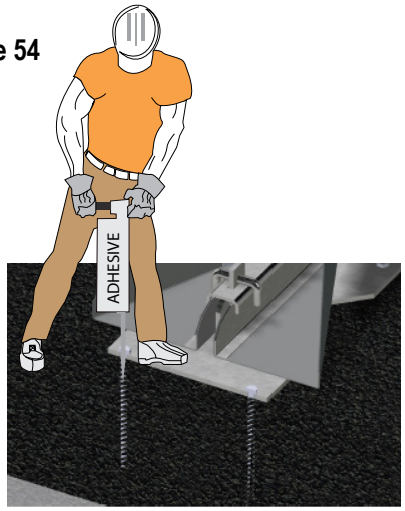


Figure 54

STEP 4
Insert the M16 x 165 mm threaded anchor rods. With a rotating movement stir the resin in order to mix it with the residue dust in the hole ensuring a sufficient thread contact. **See Figure 55**

NOTE:
Allow the resin to harden (see the resin data sheet for curing times and temperatures).

These steps may vary from the anchor manufacturer. If the installation steps differ, please follow manufacturers instructions.

Figure 55

STEP 5

Once all holes are fitted with threaded rods, use four M16 washers and four M16 nuts to fasten the Quick Release Anchor Plate to the ground. **See Page 56**

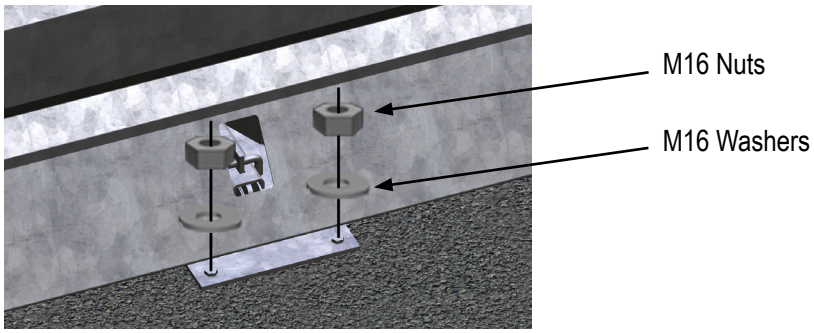
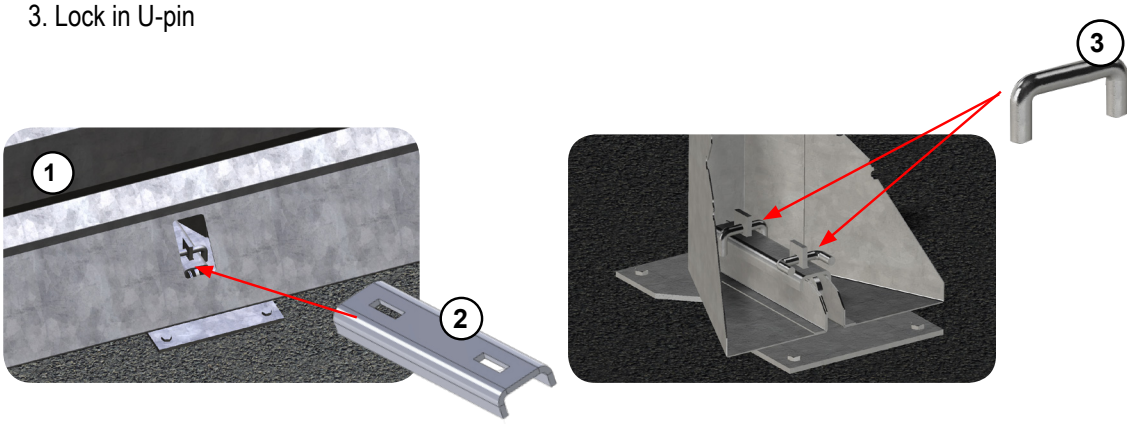


Figure 56

STEP 6

Connect the Quick Release Anchor Plate to the SERGARD MDS® TL5 Barrier.
See Figure 57

1. Place barrier onto quick release anchor plate
2. Insert upper anchor rib through front access hole
3. Lock in U-pin



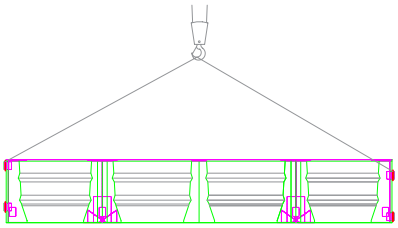
Front View

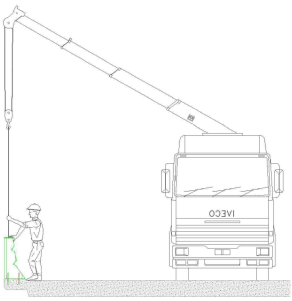
Rear View

Figure 57

23. Barrier Sections Placement

Once the threaded anchor rods are in place, all the barrier sections are lifted up by a truck-crane or fork truck with the assistance of an installation staff guiding the barrier up over the protruding anchorage rods while the barrier is dropped into place.
See Figure 58 and 59





NOTE: Different types of equipment can be used to unload and place barriers in place. Always ensure that the equipment being used is capable to support the weight of the barrier for safety.

Figure 58

Figure 59

Sergard MDS® Barrier sections can be installed Back to Back **See Figure 60**

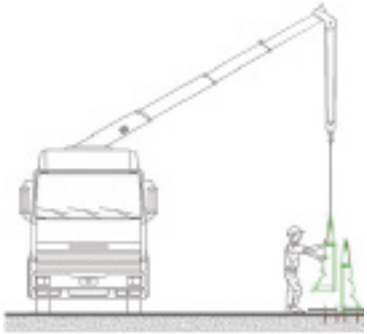


Figure 60

WARNING

ATTENTION

- Ensure hand, fingers and feet are clear of joint when making connection.
- Wear suitable PPE.

24. Barrier Sections Attachment

After placing the MDS® Barriers side-by-side pin the two sections together from the back, with the long Connecting Pin (Part # T5-CP1-G). **See Figure 61**

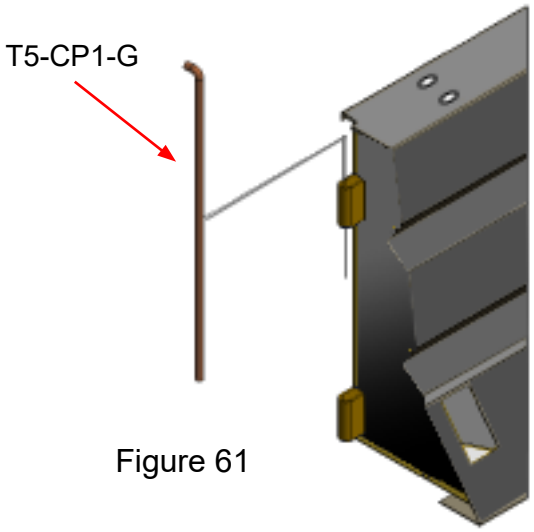


Figure 61

On the front side, join the two sections utilizing the access holes in the lower front panel using one M16 x 120 mm bolt, one M16 nut and two M16 washers. **See Figure 62**

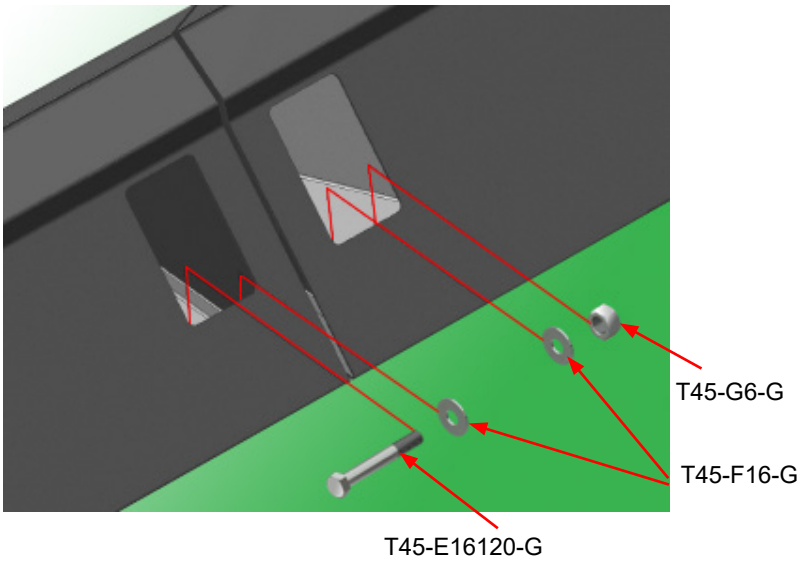


Figure 62

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
4E	T45-E16120-G	Hex bolt	M16 x 120	5/8 x 4 3/4	1
4F	T45-F16-G	Washer	M16	5/8	2
4G	T45-G6-G	Hex nut	M16	5/8	1

25. Splice Plate Sections Attachment

Join the two adjacent sections together with the Splice Plate (T5-SP1-G) using six M20 x 60 mm bolts, six M20 x 60 oversided washers on the top plate and six standard washers at the bottom with six M20 hex nuts.
See Figure 63

DO NOT TIGHTEN THE FASTENERS AT THIS TIME

Only after all barriers have been attached and aligned all bolts can be tightened

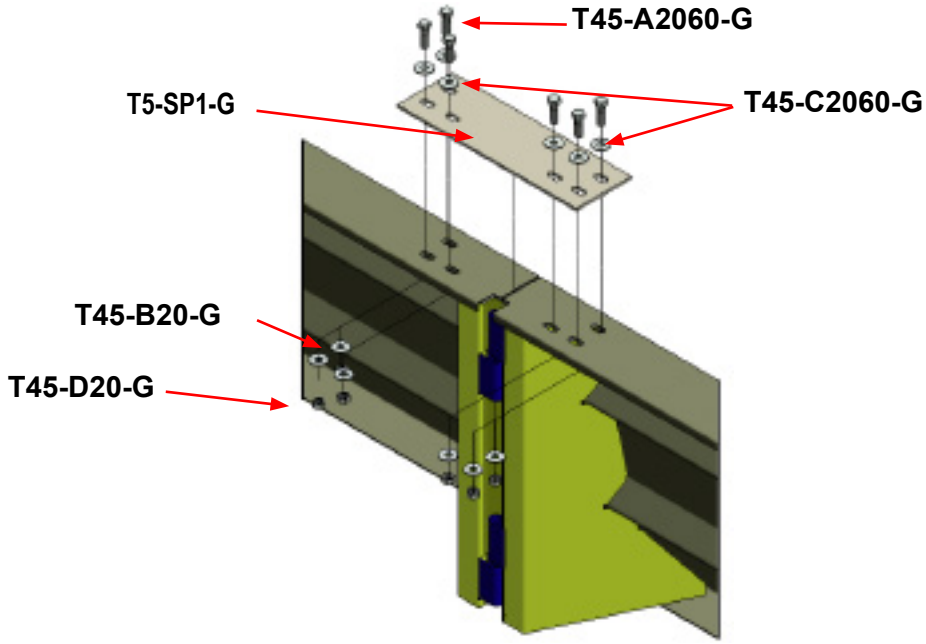


Figure 63

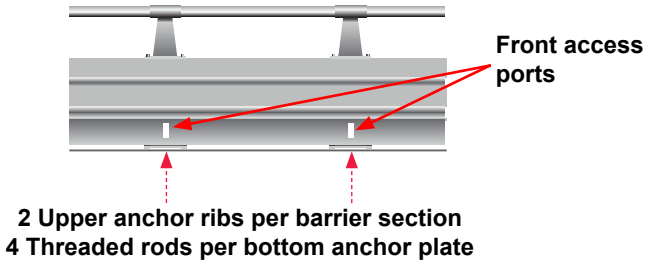
REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
4A	T45-A2060-G	Hex bolt	M20 x 60	0.75 x 2.5	6
4B	T45-B20-G	Washer	M20	0.75	6
4C	T45-C2060-G	Oversize washer	M20 x 60	0.75 x 2.5	6
4D	T45-D20-G	Hex nut	M20	0.75	6

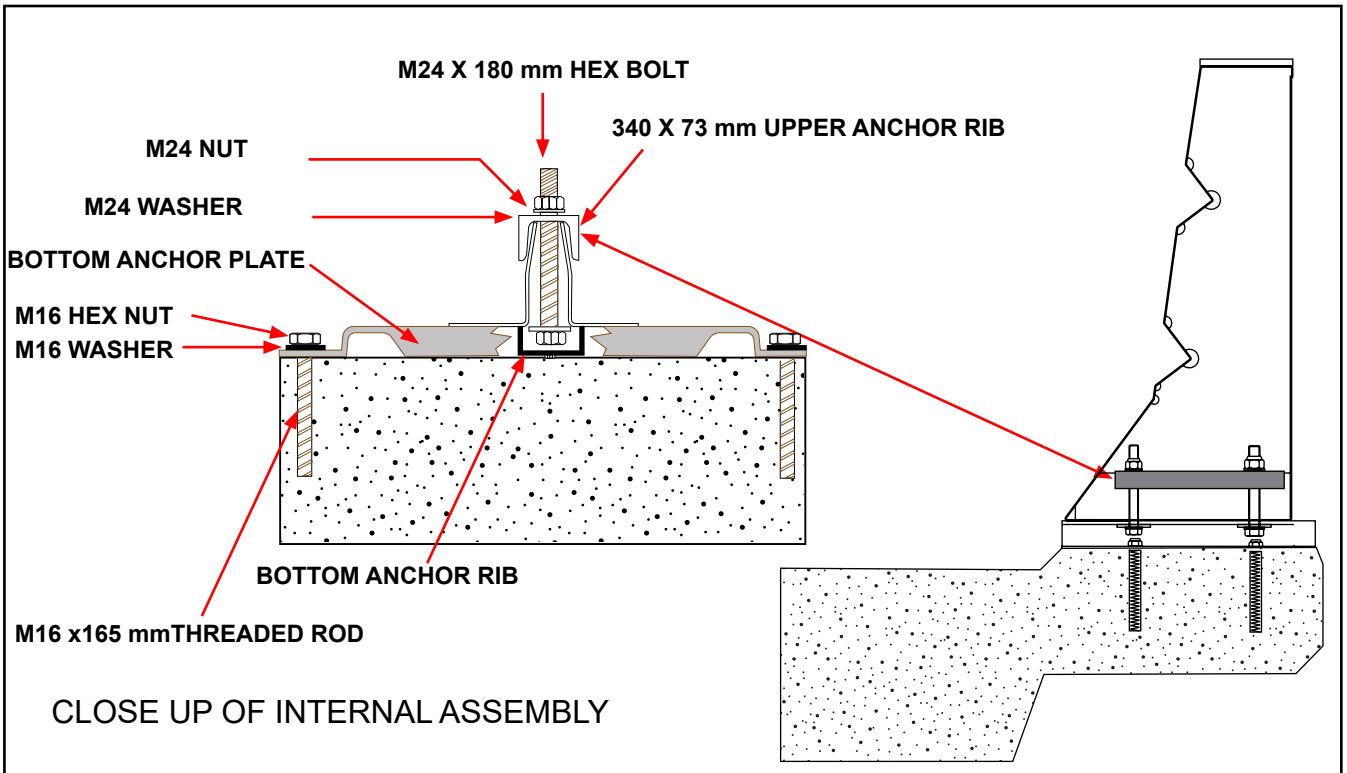
26. Barrier Anchoring to Roadway / Deck

Fasten each barrier section with upper anchor rib (Part # T5-E34073-G) Utilizing the front access ports on the barrier, place the upper anchor rib over the two protruding M24 x 180 mm hex bolts utilizing the following fasteners through the front access ports: **See Figure 64**

- Two M24 nuts
- Two M24 washers

Figure 64





CLOSE UP OF INTERNAL ASSEMBLY

REF	Part No.	TYPE	DIM. METRIC	DIM US	QUANTITY
10K	T5-K34073-G	Upper anchor rib	340 x 73	13.5 x 2.8	1
10L	T5-L24-G	Washer	M24	1	2
10M	T5-M24-G	Hex nut	M24	1	2
10E	T5-E34073-G	Bottom anchor rib	340 x 69	13.5 x 1.5	1
10F	T5-F24-G	Washer	M24	1	2
10G	T5-G24-G	Hex bolt	M24	1	2
10H	T5-H850-G	Hex bolt	M8 x 50	0.30	1
10I	T5-I8-G	Washer	M8	0.30	1
10J	T5-J8-G	Hex nut	M8	0.30	1

26. Barrier Anchoring to Roadway / Deck Continued

To fasten the barrier section to the roadway / deck, tighten the nuts on the upper anchor rib.

1. Tighten the rear nut through the top access hole utilizing a 1 meter socket extension arm. **See Figure 65**
2. Tighten the front nut through the front access holes in the lower front panel onto the threaded anchor rods. **See Figure 66**

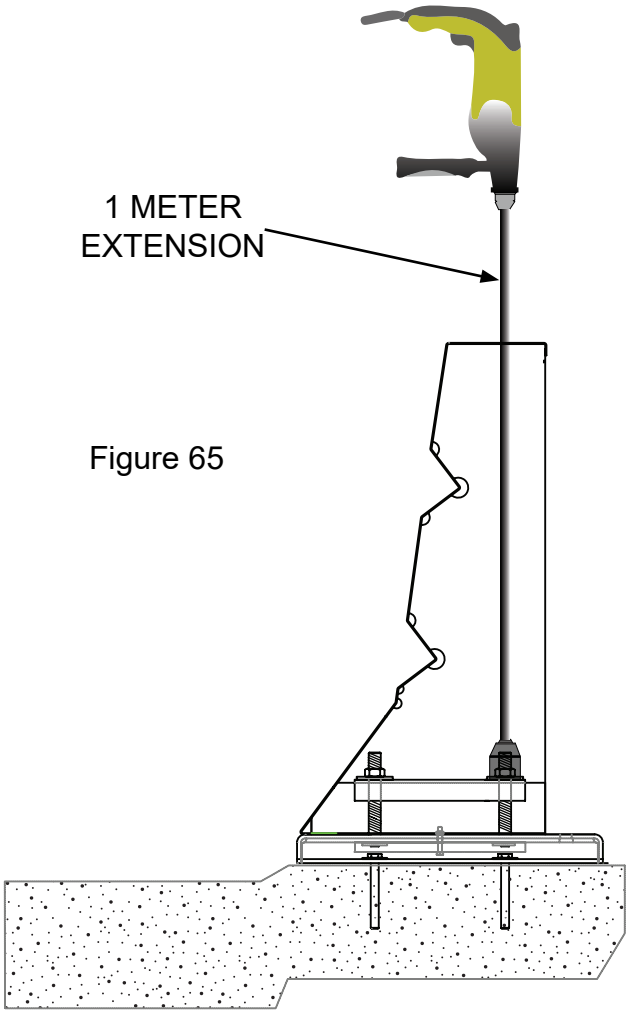


Figure 65

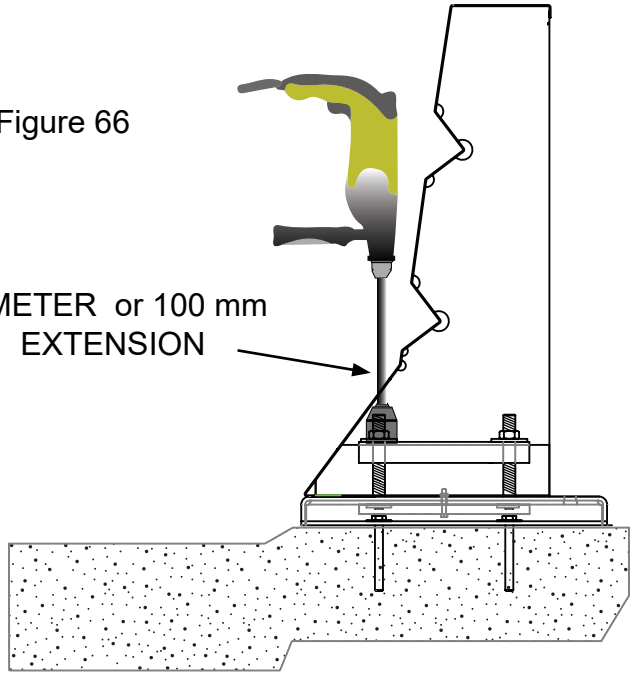


Figure 66

27. Top Rail Assembly

Once barriers are anchored in position, install the top rail posts on each barrier section then slide the top rail through the top rail post.

See Figure 67

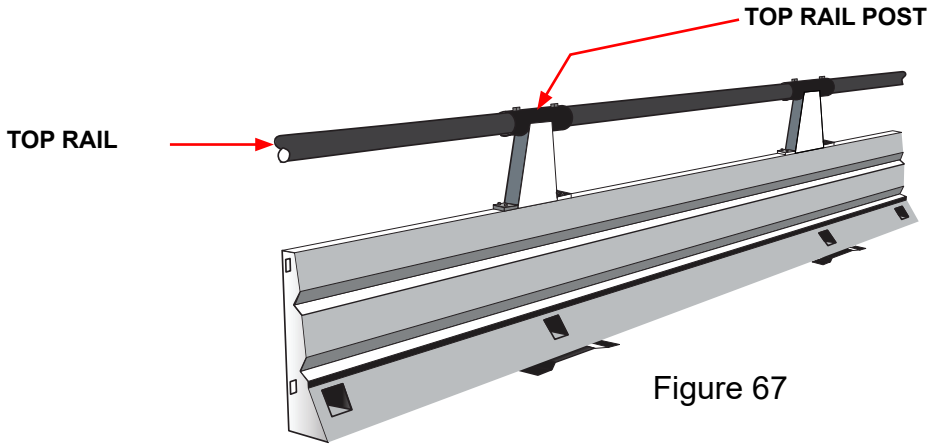


Figure 67

Place top rail single or double post onto top of barrier using four M20 x 60 mm hex bolts, eight M20 washer and four M20 nuts and tighten.

See Figure 68

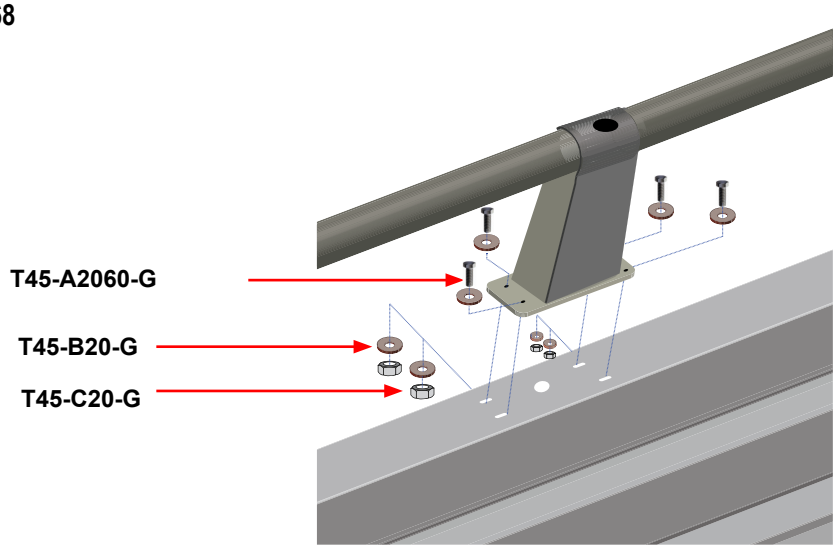


Figure 68

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
6A	T45-A2060-G	Hex bolt	M20 x 60	0.75 x 2.5	4
6B	T45-B20-G	Washer	M20	0.75	8
6C	T45-C20-G	Hex nut	M20	0.75	4

27. Top Rail Assembly Continued

Top Rails are installed by sliding through the pedistal base which are mounted on each barrier. **See Figure 69 and 70**

Single Top Rail Post	Part No. T5-SRP-G
Double Top Rail Post	Part No. T5-DRP-G
Top Rail	Part No. T5-TS-G

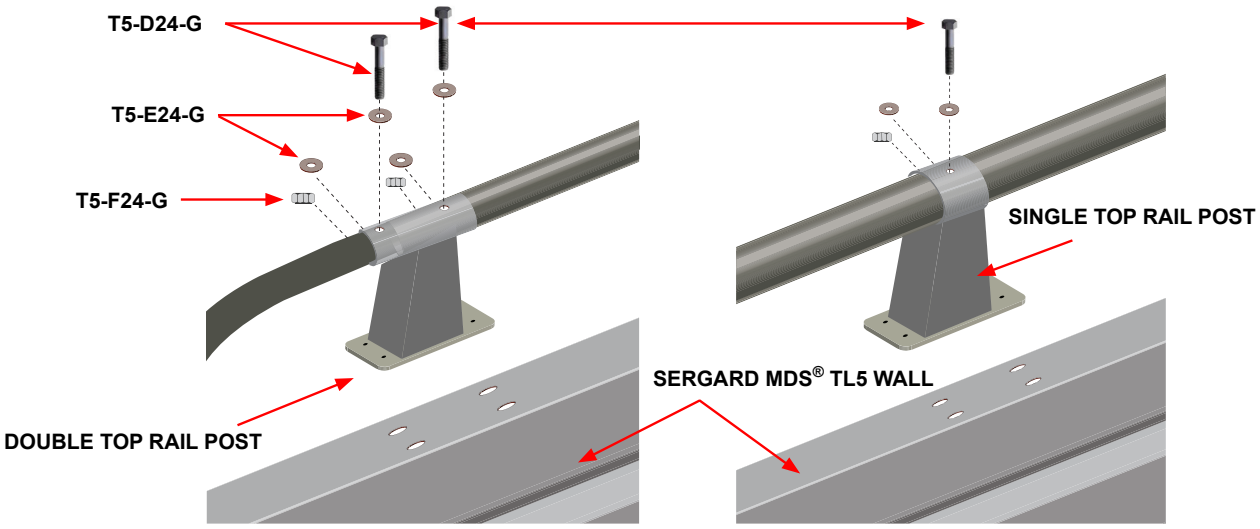


Figure 69

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
6D	T5-D24-G	Hex bolt	M24 x 200	1 x 8	1
6E	T5-E24-G	Washer	M24	1	1
6F	T5-F24-G	Hex nut	M24	1	1

27.1 End of Run Rail Ends

At the end of a barrier run curved rail posts are used to tie in the rails on the end barrier.
See Figure 70 for left and right hand.

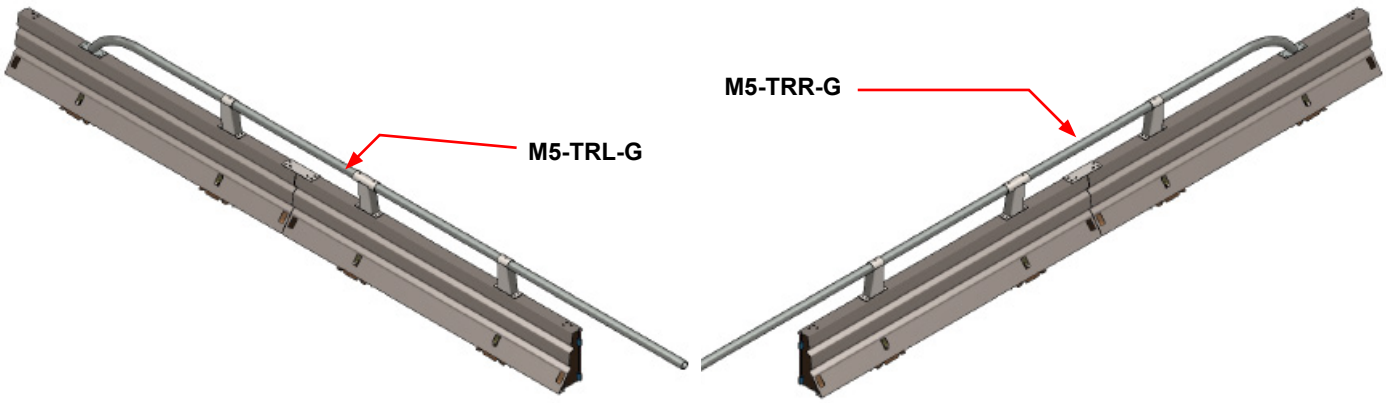


Figure 70

28. Full Profile Assembly

After all the MDS® Barrier system components have been assembled and positioned correctly, verify and tighten each bolt assembly throughout the system. **Figure 71**

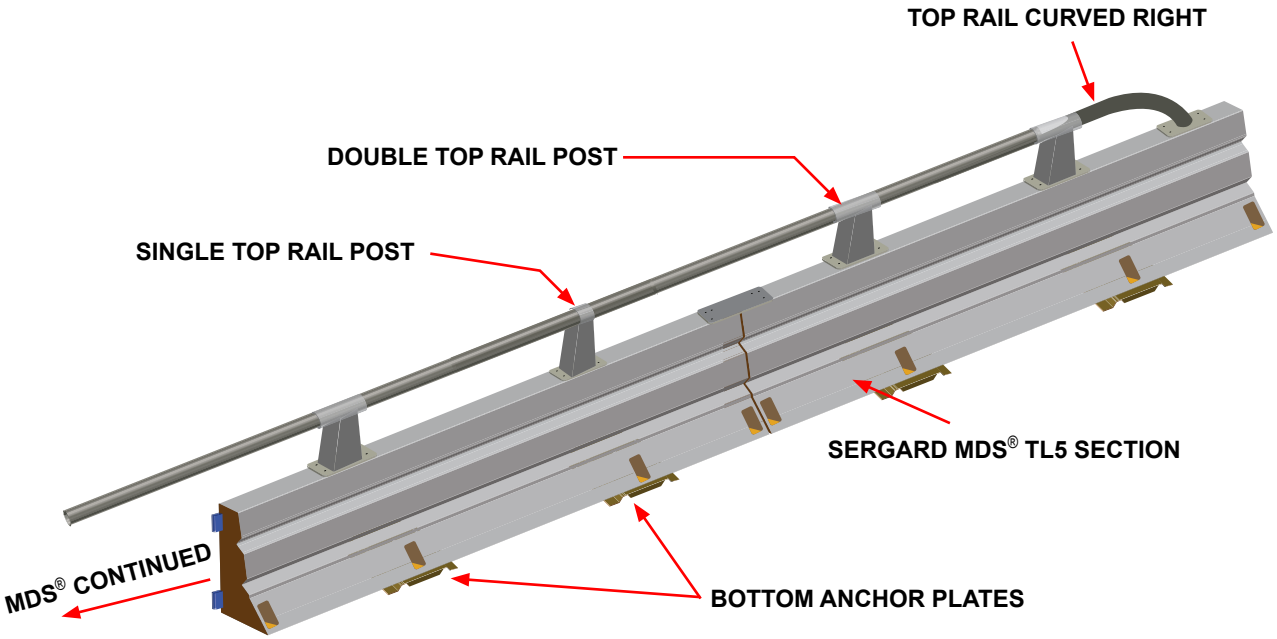


Figure 71

29. Access Hole Cover

Attach the MDS® Barrier access hole cover plates to cover the access holes at the lower section of the barrier wall.
See Figure 72

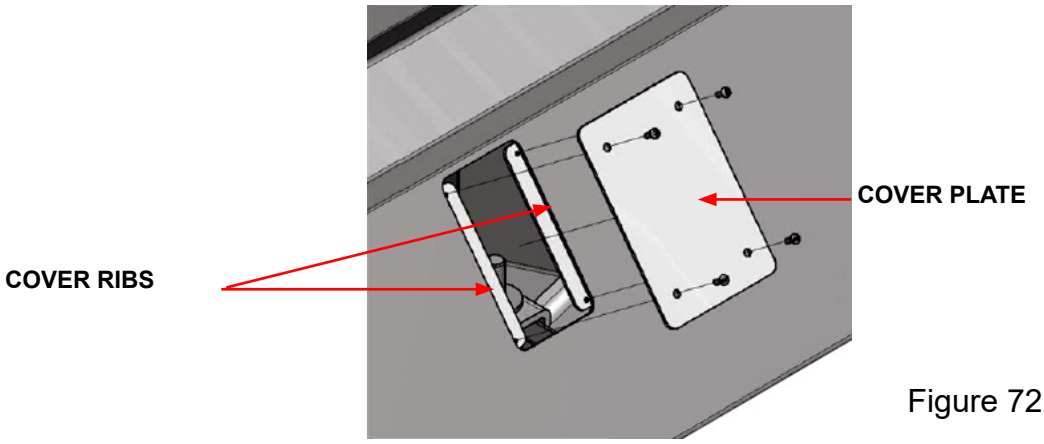


Figure 72

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
9A	T45-ACP-ST	Cover plate			1
9B	T45-BCP-ST	Cover attachment rib			2
9C	T45-C630-ST	Machine screw	M6	1/4	4

30. Anchorage Types and Ground Conditions

MDS® Barriers can be installed in a number of differing ground conditions. Each condition has a minimum embedment depth of the required anchor type and each anchor type may have multiple applications.
Figure 73 below illustrates a list of the possible foundations typically found on project sites with the appropriate anchorages for each situation. If alternate foundations/anchorages are required, please contact MDS® Barriers for recommendations.

Concrete Foundation
Requires minimum anchor depth of 130 mm depth with a total minimum concrete thickness of 200 mm.

Bridge Deck
Requires minimum anchor depth of 130 mm depth with a total minimum concrete thickness of 200 mm.

Asphalt Only
Requires a minimum of 300 mm.

Asphalt over Compact Subbase
Requires a minimum of 500 mm.

Unbound Granular Surface with Concrete Base
Requires concrete footing at each anchor location sized at 700 mm x 700 mm x 2000 mm deep.
Anchors require a minimum depth of 130 mm.

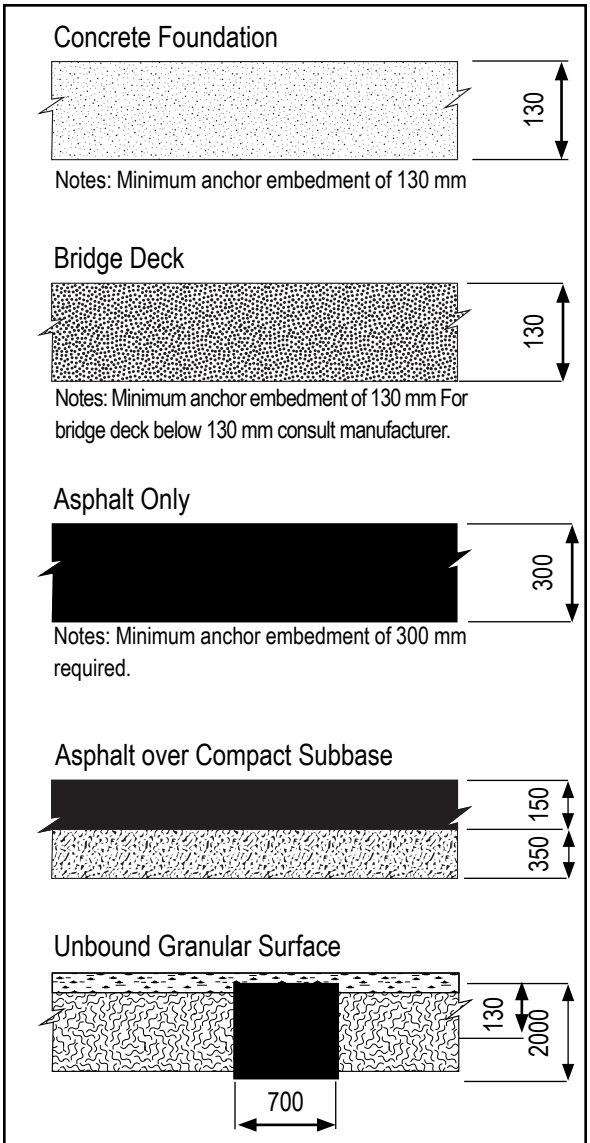


Figure 73

Foundation Specifications for
SERGARD MDS® Barriers TL5 Sergard

30.1 Internal Anchoring Using Threaded Rods

For Concrete Foundations and Bridge Decks

Determine anchor locations as per drawings H4-6000-AP1 and H4-6000-AT2 in Appendix A for the Minimum Deflection Systems respectively. Guidelines for earth anchor installation can be found in drawing H4-6000-AE4 Annex A.

WARNING

DANGER

Ensure proper PPE is worn at all times when drilling holes and when handling, mixing and placing resin.
Ensure locations of utilities are determined prior to drilling holes.

THREADED ROD
M16-HDW-R16165-G

SPECIFICATIONS
Steel grade: 8.8
Specification: ASTM A325 or equivalent

Rod diameter: 16 mm
Rod length: 165 mm
Can be used with the following foundations
- Concrete Pad
- Concrete Deck

Drill hole diameter: 18 mm
Drill hole depth: 130 mm
Can be used with the following foundations
- Concrete Pad
- Concrete Deck

NOTE:
The use of other chemically set anchors is allowable. These equivalent anchorages must be able to withstand the following forces:
- Min. Tensile Strength: 800 MPa
- Min. Yield Strength: 640 MPa

Internal installation process for the threaded rod is as follows

- Determine the anchor rod locations using the above listed drawings in Appendix A.
- Using the drilling template (Part # M5-T5-3MPLATE) drill four holes per anchor location 18 mm x 130 mm deep.
- Remove the debris from the hole and area.
- Check the depth of the hole to ensure proper embedment.
- Place base anchor plate onto surface.
- Inject resin as per manufacturer's instructions.
- Insert threaded rod.
- Allow resin to cure as per manufacturer's instructions.
- Place barrier on top of base anchor plate.
- Install upper anchor rib (Part # T5-E34073-G) onto two M24 bolts using two M24 washers and two M24 nuts.
- Using a socket drill tighten down barrier.

Should minimum foundations not be present for required depth for installation of threaded rod, please contact the manufacturer for assistance

30.2 External Anchoring Using Threaded Rods

For Concrete Foundations and Bridge Decks

Determine anchor locations as per drawings H4-6000-AP1 and H4-6000-AT2 in Appendix A for the Minimum Deflection Systems respectively. Guidelines for earth anchor installation can be found in drawing H4-6000-AE4 Annex A.

WARNING

Ensure proper PPE is worn at all times when drilling holes and when handling, mixing and placing resin.

DANGER

Ensure locations of utilities are determined prior to drilling holes.

THREADED ROD
M16-HDW-R16180-G

SPECIFICATIONS
Steel grade: 8.8
Specification: ASTM A325 or equivalent

Rod diameter: 16 mm
Rod length: 165 mm
Can be used with the following foundations
- Concrete Pad
- Concrete Deck

Drill hole diameter: 18 mm
Drill hole depth: 130 mm
Can be used with the following foundations
- Concrete Pad
- Concrete Deck

NOTE:
The use of other chemically set anchors is allowable. These equivalent anchorages must be able to withstand the following forces:
- Min. Tensile Strength: 800 MPa
- Min. Yield Strength: 640 MPa

External installation process for the threaded rod is as follows

- Determine the anchor rod locations using the above listed drawings in Appendix A.
- Using the drilling template (Part # M5-T5-3MPLATE) drill four holes per anchor location 18 mm x 130 mm deep.
- Remove the debris from the hole and area.
- Check the depth of the hole to ensure proper embedment.
- Place base anchor plate onto surface.
- Inject resin as per manufacturer's instructions.
- Insert threaded rod.
- Allow resin to cure as per manufacturer's instructions.
- Place barrier on top of base anchor plate.
- Install upper anchor rib (Part # T5-E34073-G) onto Quick Anchor Release Plate using two U-pins.

Should minimum foundations not be present for required depth for installation of threaded rod, please contact the manufacturer for assistance

30.3 External Anchoring Asphalt Using Threaded Bars

For <u>Asphalt and Asphalt over Compact Subbase</u>

Determine anchor locations as per drawings H4-6000-AP1 and H4-6000-AT2 in Appendix A for the Minimum Deflection Systems respectively. Guidelines for anchor installation can be found in drawing H4-6000-AA4 Appendix A.

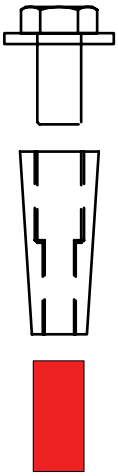
WARNING Ensure proper PPE is worn at all times when drilling holes and when handling, mixing and placing resin.

DANGER Ensure locations of utilities are determined prior to drilling holes.

<u>THREADED BAR</u>
<u>M24-HDW-DYW15-500</u>

SPECIFICATIONS
Steel grade: DYWIDAG St 900/1100

Bar diameter: 15 mm
Bar length: 500 mm
Can be used with the following foundations
- Asphalt
- Asphalt over Compact Subbase



Drill hole diameter: 30 mm
Drill hole depth: 500 mm
Can be used with the following foundations
- Concrete Pad
- Concrete Deck
- Max Load: 195 kN
- Working Load: 90 kN

Adhesive: BASF MasterFlow 960

External installation process for the threaded bar is as follows

- Install quick release anchor plate (Part # T45-QRP-G).
- Place barrier in final roadway position.
- Drill four holes per anchor location (2 front and 2 rear)18 mm x 500 mm deep.
- Remove the debris from the hole and area.
- Check the depth of the hole to ensure proper embedment.
- Inject resin as per manufacturer's instructions.
- Insert threaded bar.
- Allow resin to cure as per manufacturer's instructions.
- Place positioning cone onto threaded bar using hex bolt with washer.
- Tighten down.

Should minimum foundations not be present for required depth for installation of threaded bar, please contact the manufacturer for assistance

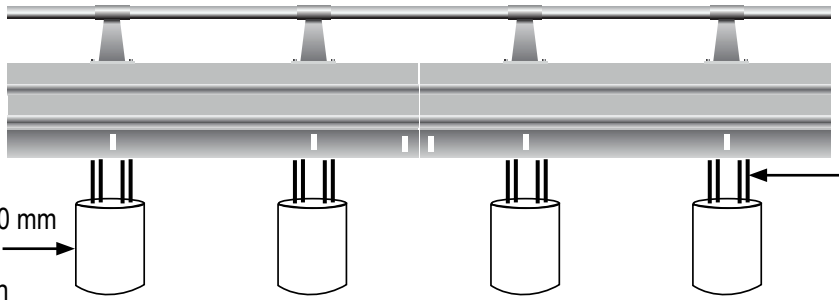
30.4 Anchoring in Unbound Granular or Cohesionless Conditions

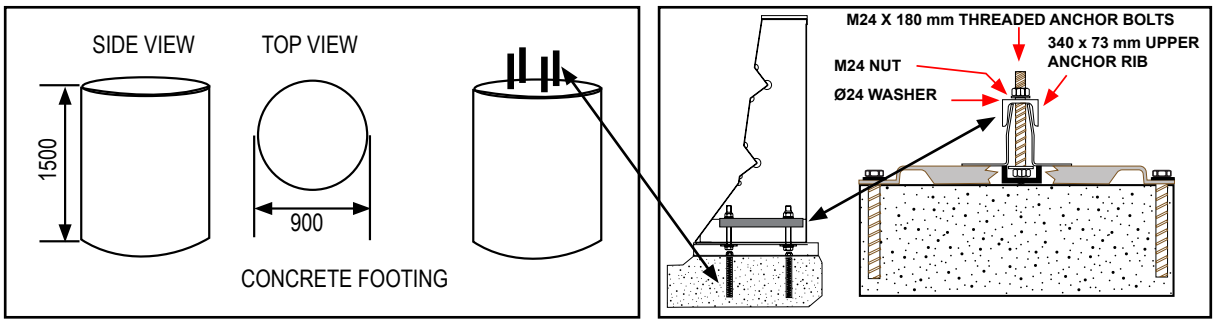
MDS® Barriers are a minimal deflection system therefore requiring a concrete footing that the barrier can be anchored to (See drawing H4-6000-AC3) or by using an earth beam which resembles an eyebeam on a guard rail. (See drawing H4-6000-AE4).

WARNING

DANGER

Ensure proper PPE is worn at all times when drilling holes and when handling, mixing and placing resin.
Ensure locations of utilities are determined prior to drilling holes.



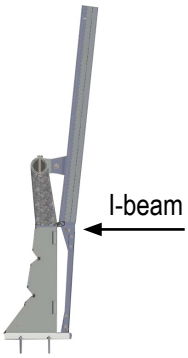


Achoring in unbound granular soil with concrete base

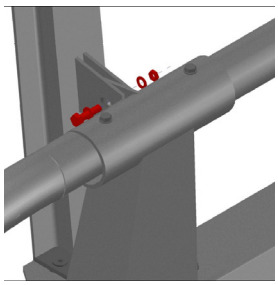
- Determine the anchor rod locations using the above listed drawing H4-6000-AP1 in Appendix A.
- Remove earth and fill a diameter 900 mm x 1500 mm deep cavity with rebar and concrete.
- Once concrete is cured use the drilling template (Part # M5-T5-3MPLATE) and drill four holes per anchor location 18 mm x 130 mm deep.
- Remove the debris from the hole and area.
- Check the depth of the hole to ensure proper embedment.
- Place bottom anchoring plate onto surface.
- Inject resin as per manufacturer's instructions.
- Allow resin to cure as per manufacturer's instructions.
- Place barrier on top of threaded rods.
- Install upper anchor rib (Part # T5-E34073-G) onto two M24 bolts using two M24 washers and two M24 nuts.
- Using a socket drill tighten down barrier.

31. Attaching Site and Sound Walls

MDS® Barriers are are pre-designed to integrate noise-protection sound, wind and site walls within a single barrier system providing considerable savings in terms of occupied space, supporting substructures and overall cost in addition to requiring less lateral space on the bridge deck. The special backward positioning of the noise-protection barrier does not anchor to the road structure and does not alter or effect the preformance of the barrier during impact. The system is designed to move with the deformation of the barrier during impact.
See drawing H4-6000-7DA for assembly details.

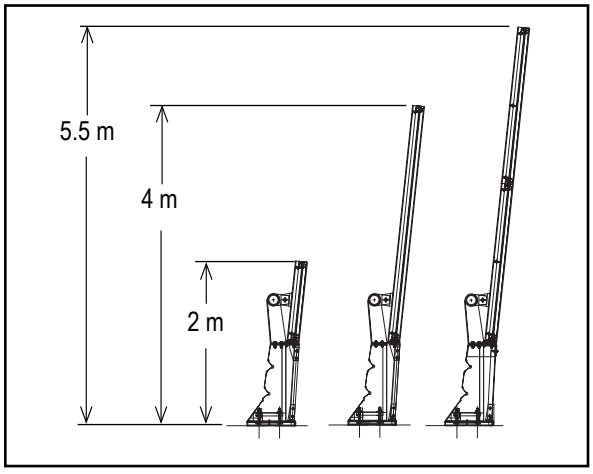


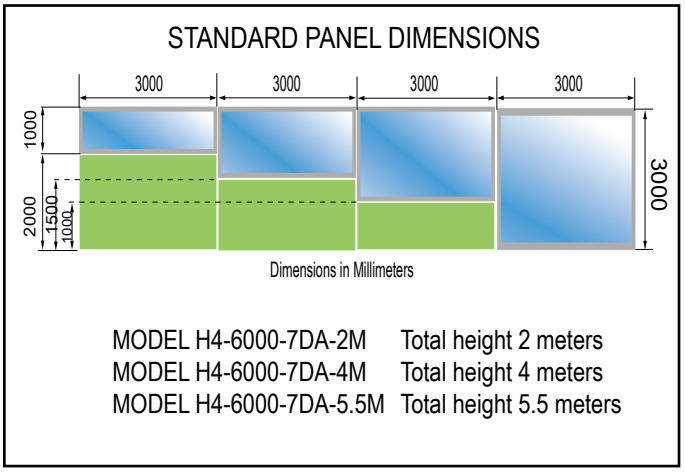
Attach I-beam



Secure and Tighten

Slide in Panels





Installation of sound and site panels

- Install MDS® Barriers according to specifications and drawings in Appendix A.
- Place I-beam behind the barrier and bolt onto top rail post.
- Attach I-beam base to barrier base using attachment plate.
- Install all I-beams according project design.
- Using a fork lift or other lifting equipment, slide in sound, site or wind panels between I-beams.
- Lock panels into place with mounting clips.

⚠WARNING

Use caution when rigging units. Lifting from 2 points is recommended.
Tag lines should also be used to control the unit.

32. Inspection

Once the installation is complete, inspect the run and ensure that each of the following points are inspected

- Alignment of barrier is correct
- Approach/departure end of the run is protected as per the governing specifications
- Anchors are properly tightened according to the system being installed
- All joints are properly aligned
- Attachments and assemblies are properly engaged and bolts tightened at all connections

NOTE: Periodic inspections should be performed to check for damage to the units as well as to ensure that units are properly aligned.

33. Barrier Maintenance

After an impact with the barrier, there is potential maintenance to be conducted. The barrier should be checked to determine the extent of the damage to the barrier. In most instances, the barrier will not require to be replaced. If any of the following has occurred the barrier and or top rail will require replacement:

- Barrier skin bent/pierced/broken revealing the inside of the barrier.
- Attachment joints dislodged and or broken resulting in incomplete locking of adjacent barrier.
- Top rail is bent, disconnected or damaged.

If any of the above damage has occurred, then possible replacement of the barrier section/unit and or top rail will be required. If the barrier needs to be replaced then the following steps should be conducted:

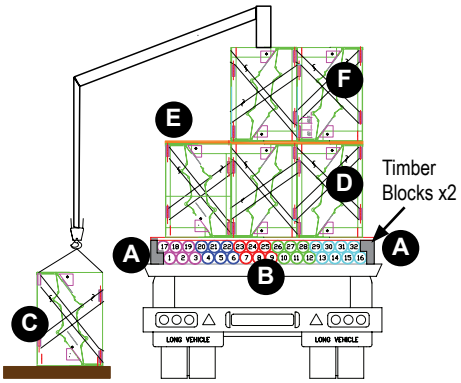
- Detach all appropriate connecting plates and screws from adjacent barriers.
- Lift out and remove the damaged barrier.
- Remove and clear any damaged parts from the area.
- Replace gap in the system with a new MDS® Barrier unit.
- Attach all appropriate connecting plates and screws to ensure system compliance.

34. Removal and Loading

Before removing installed MDS® Barriers make sure to disconnect all attachment assemblies. As the barrier units are removed, the following loading sequence is recomended:

A. Place timber blocks to secure top rails.
B. Layer top rails up to 2 levels high.
C. Seat and strap barrier together.
D. Load first barrier layers 1, 2, 3.
E. Place timber blocks.
F. Load second barrier layer 4, 5, 6.

Refer to drawing H4-6000-LD12 Appendix A.



WARNING Failure to properly detach assemblies prior to removal of units may cause damage to units.

NOTICE Ensure all panels are correctly aligned during loading and tied down for safe transport.

35. Anchor Removal and Repair of Holes

For installations using all thread rod, remove nuts from the all thread rods, and uplift the barrier. Follow governing specifications for treatment of remaining all thread rod. All thread rod may be cut off. See drawing H4-6000-ACH1 for suggested repair methods once anchors are removed.

WARNING Ensure proper PPE is worn at all times when cutting and removing anchors.

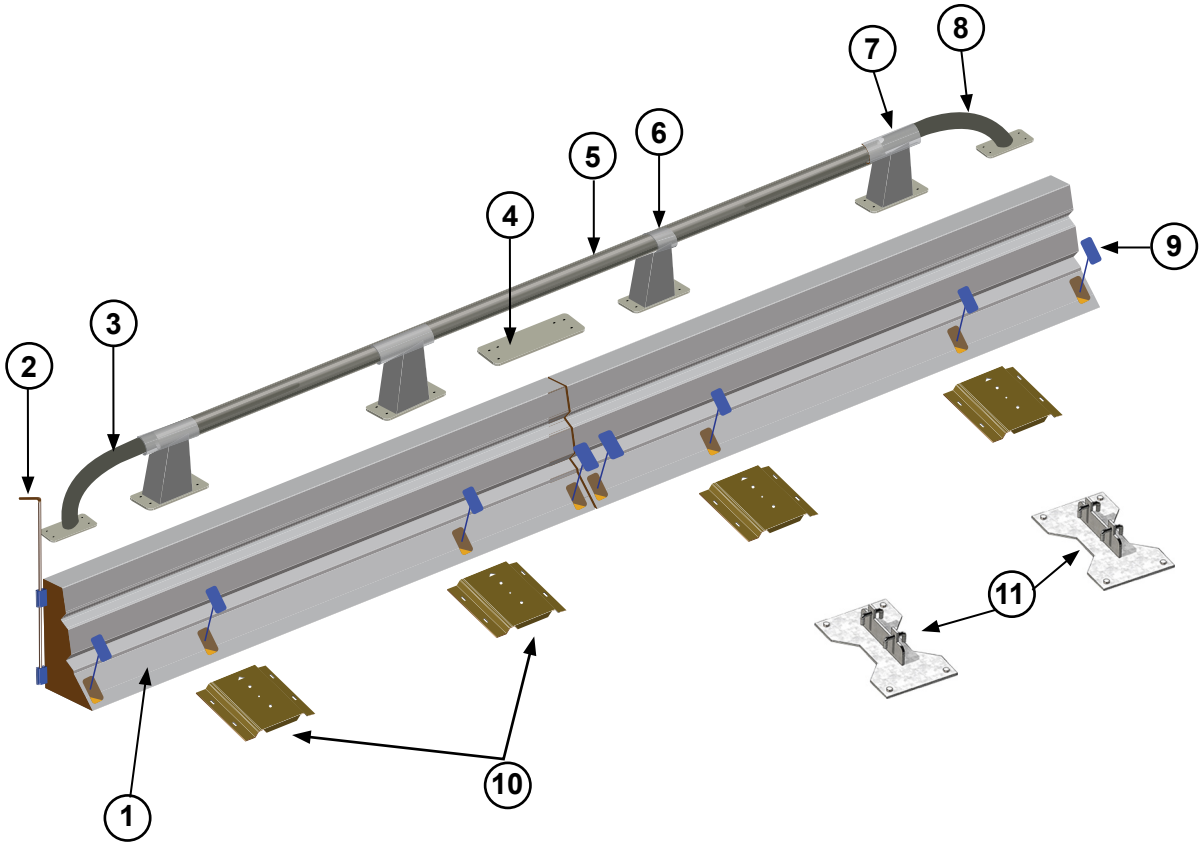
SERGARD MDS® TL5 BARRIERS

SECTION 4
SERGARD MDS® TL5 PARTS LIST

SERGARD MDS® TL5 BARRIERS

SECTION 6

System Components



REF	Description
1	SERGARD MDS® TL5 WALL
2	Connecting pin
3	6 Meter top rail left curved
4	Splice plate
5	6 Meter top rail
6	Single top rail post
7	Double top rail post
8	6 Meter top rail right curved
9	Access hole cover plate
10	Bottom anchor plate
11	Quick release anchor plate

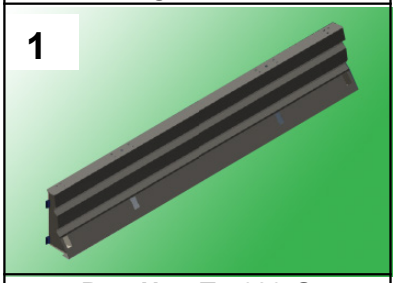
SERGARD MDS® TL5 BARRIERS

PARTS LIST

MAIN COMPONENTS

6 Meter Sergard MDS TL5 Wall

1



Part No: T5-620-G

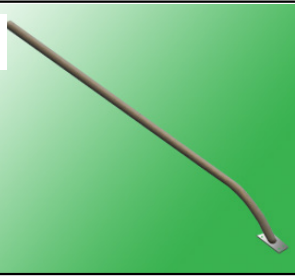
Connecting Pin

2

Part No: T5-CP1-G

6 Meter Top Rail Curved Left

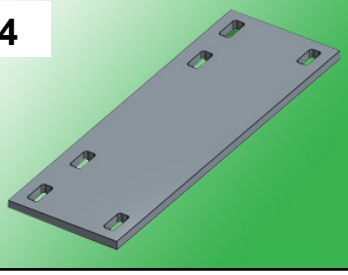
3



Part No: T5-TRL-G

Splice Plate

4



Part No: T5-SP1-G

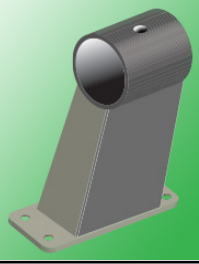
6 Meter Top Rail

5

Part No: T5-TRS-G

Single Top Rail Post

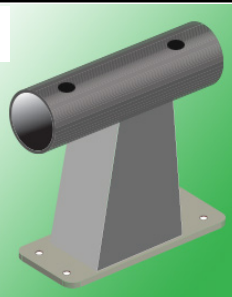
6



Part No: T5-SRP-G

Double Top Rail Post

7



Part No: T5-DRP-G

6 Meter Top Rail Curved Right

8

Part No: T5-T5R-G

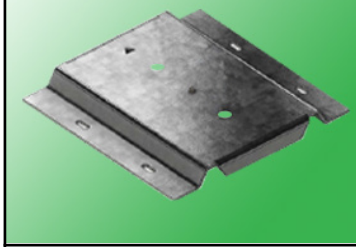
Access Hole Cover Plate

9

Part No: T45-ACP-ST

Bottom Anchor Plate

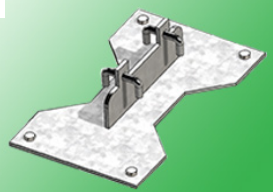
10



Part No: T5-BAP-G

Quick Release Anchor Plate

11

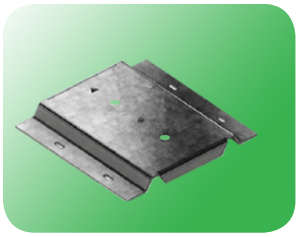


Part No: T45-QRP-G

SERGARD MDS® TL5 BARRIERS

HARDWARE

MAIN COMPONENT



Part No: T5-BAP-G

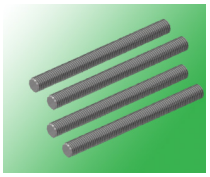
REFERENCE 10

Bottom Anchor Plate

Anchor plate requires 4 anchors when installing to surface

ASSEMBLY HARDWARE

Concrete-Adhesive **Concrete-DRY**



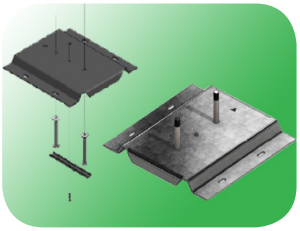
Ref 10A

Ref 10B

Ref 9C

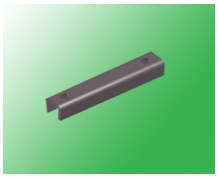
Ref 10D

REF	Part No.	TYPE	Installation	DIM. METRIC	DIM US	QUANTITY	ADHESIVE
10A	T5-A16165-G	Threaded Rod	Concrete	M16 x 165	5/8 x 6.5	4	Yes
10B	T5-B16-G	Washer		M16	5/8	4	
10C	T5-C16-G	Hex nut		M16	5/8	4	
10D	T5-D16165-G	Expansion anchor	Concrete	M16 x 165	5/8 x 6.5	4	No



BOTTOM ANCHOR RIB

Keeps M24 hex bolts into vertical position



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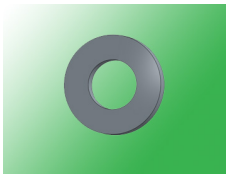

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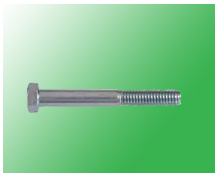
Ref 10G



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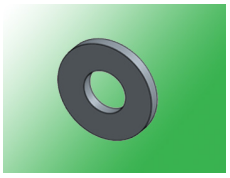
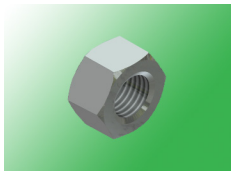


Ref 10I



Ref 10J

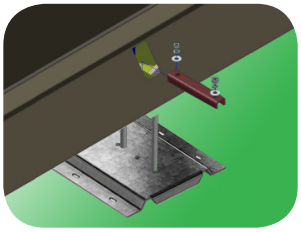
REF	Part No.	TYPE	DIM. METRIC	DIM US	QUANTITY
10E	T5-E34069-G	Bottom anchor rib	340 x 69	13.5 x 1.5	1
10F	T5-F24-G	Washer	M24	1	2
10G	T5-G24-G	Hex bolt	M24	1	2
10H	T5-H850-G	Hex bolt	M8 x 50	0.30	1
10I	T5-I8-G	Washer	M8	0.30	1
10J	T5-J8-G	Hex nut	M8	0.30	1

SERGARD MDS® TL5 BARRIERS

HARDWARE

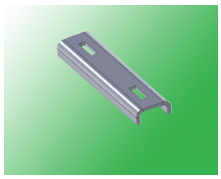
MAIN COMPONENT

ASSEMBLY HARDWARE



UPPER ANCHOR RIB

Attaches MDS® TL5 barrier to bottom anchor plate



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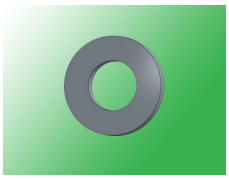
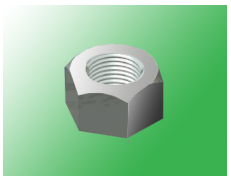
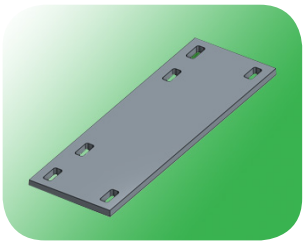


Ref 10L



Ref 10M

REF	Part No.	TYPE	DIM. METRIC	DIM US	QUANTITY
10K	T5-K34073-G	Upper anchor rib	340 x 73	13.5 x 2.8	1
10L	T5-L24-G	Washer	M24	1	2
10M	T5-M24-G	Hex nut	M24	1	2



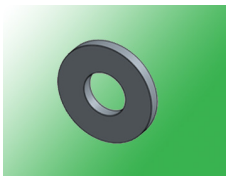
Part No: T5-SP1-G

REFERENCE 4

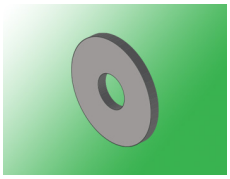
Splice Plate

Attaches two MDS® TL5 barrier sections together

Ref 4A



Ref 4B



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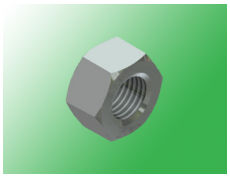


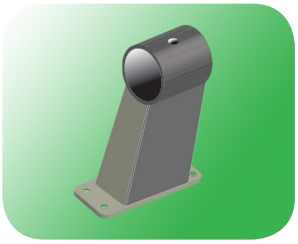
Ref 4D

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
4A	T45-A2060-G	Hex bolt	M20 x 60	0.75 x 2.5	6
4B	T45-B20-G	Washer	M20	0.75	6
4C	T45-C2060-G	Oversize washer	M20 x 60	0.75 x 2.5	6
4D	T45-D20-G	Hex nut	M20	0.75	6

SERGARD MDS® TL5 BARRIERS

MAIN COMPONENT

ASSEMBLY HARDWARE



Part No: T5-SRP-G

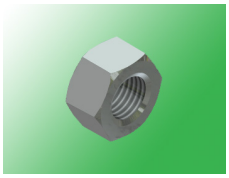
REFERENCE 6

Single Top Rail Post

Top rail support assembly hardware

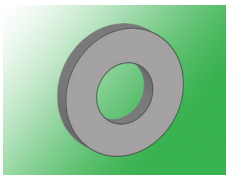
Ref 6A

Ref 6B



Ref 6C

Ref 6D



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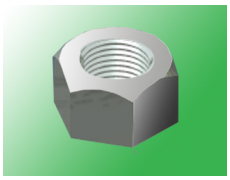
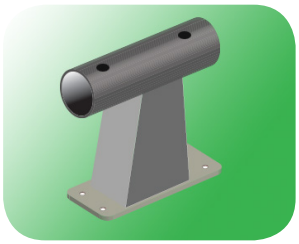


Ref 6F

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
6A	T45-A2060-G	Hex bolt	M20 x 60	0.75 x 2.5	4
6B	T45-B20-G	Washer	M20	0.75	8
6C	T45-C20-G	Hex nut	M20	0.75	4
6D	T5-D24-G	Hex bolt	M24 x 200	1 x 8	1
6E	T5-E24-G	Washer	M24	1	1
6F	T5-F24-G	Hex nut	M24	1	1



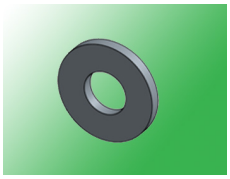
Part No: T5-DRP-G

REFERENCE 7

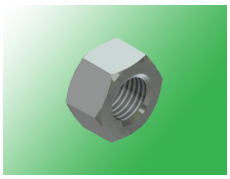
Double Top Rail Post

Double top rail support

Ref 6A

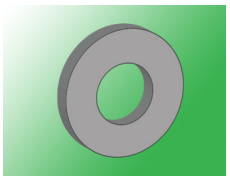


Ref 6B

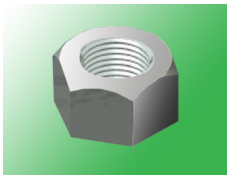


Ref 6C

Ref 6D



Ref 6E



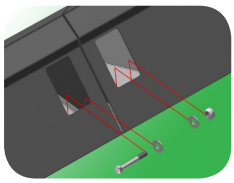
Ref 6F

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
6A	T45-A2060-G	Hex bolt	M20 x 60	0.75 x 2.5	4
6B	T45-B20-G	Washer	M20	0.75	8
6C	T45-C20-G	Hex nut	M20	0.75	4
6D	T5-D24-G	Hex bolt	M24 x 200	1 x 8	2
6E	T5-E24-G	Washer	M24	1	2
6F	T5-F24-G	Hex nut	M24	1	2

SERGARD MDS® TL5 BARRIERS

MAIN COMPONENT

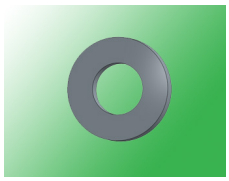
ASSEMBLY HARDWARE



FRONT BOLT CONNECTOR

Attaches two MDS® TL5 barrier sections together front side

Ref 4E



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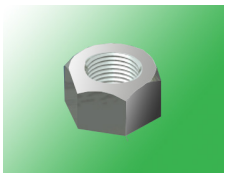
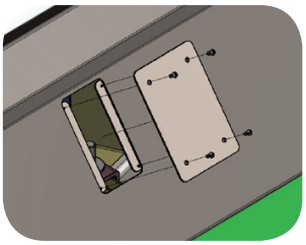


Ref 4G

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
4E	T45-E16120-G	Hex bolt	M16 x 120	5/8 x 4 3/4	1
4F	T45-F16-G	Washer	M16	5/8	2
4G	T45-G6-G	Hex nut	M16	5/8	1

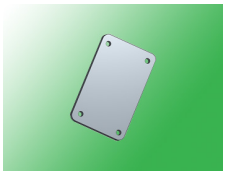


Part No: T45-ACP-ST

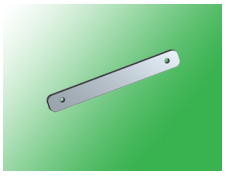
REFERENCE 9

Access Hole Cover Plate

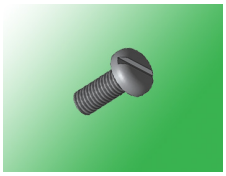
Front anti-debris access cover



Ref 9A



Ref 9B

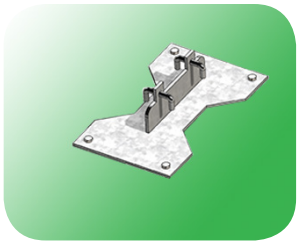


Ref 9C

REF	PART No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
9A	T45-ACP-ST	Cover plate			1
9B	T45-BCP-ST	Cover attachment rib			2
9C	T45-C630-ST	Machine screw	M6	1/4	4

SERGARD MDS® TL5 BARRIERS

MAIN COMPONENT



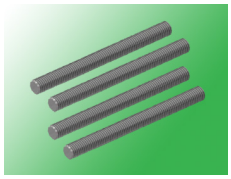
Part No: T45-QRP-G

REFERENCE 11
Quick Release Anchor Plate

Anchor plate requires 4 anchors when installing to surface

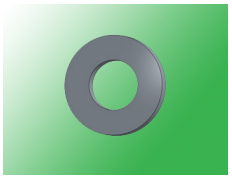
ASSEMBLY HARDWARE

Concrete-Adhesive



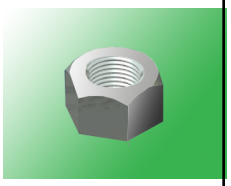
Ref 11A

Concrete-DRY



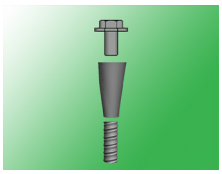
Ref 11B

Asphalt



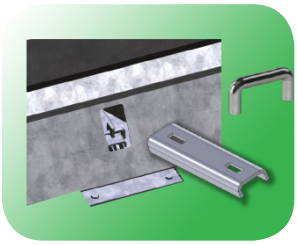
Ref 11C

Ref 11D



Ref 11E

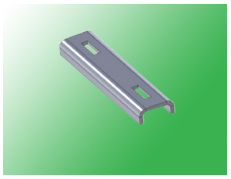
REF	Part No.	TYPE	Installation	DIM. METRIC	DIM US	QUANTITY	ADHESIVE
11A	T45-A16165-G	Threaded Rod	Concrete	M16 x 165	5/8 x 6.5	4	Yes
11B	T45-B16-G	Washer		M16	5/8	4	
11C	T45-C16-G	Hex nut		M16	5/8	4	
11D	T45-D16165-G	Expansion anchor	Concrete	M16 x 165	5/8 x 6.5	4	No
11E	T45-E15500-G	DYWIDAG	Asphalt	M15 x 500	5/8 x 20	4	Yes



REFERENCE 11
Quick Release Anchor Plate Hardware

Anchor plate requires Rib and U-pins

Upper Anchor Rib



Ref 11D

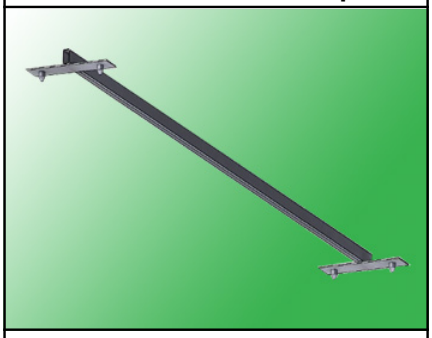
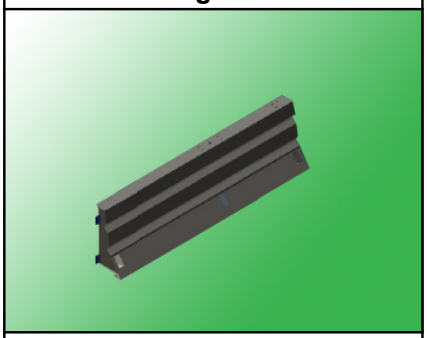
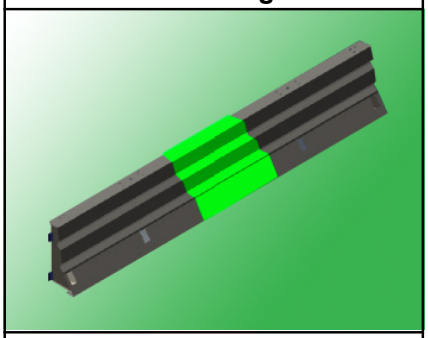
U-pins

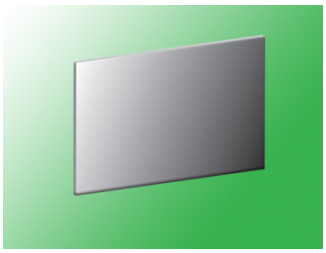
Ref 11E

REF	Part No.	DESCRIPTION	DIM. METRIC	DIM US	QUANTI-TY
11F	T45-F34073-G	Upper anchor rib	340 x 73	13.5 x 2.8	1
11G	T45-GPIN1-G	U-pins			2

SERGARD MDS® TL5 BARRIERS

Accessories

3 Meter Installation Template	3 Meter Sergard MDS TL5	MDS Variable Length Barrier
		
Part No: T5-TP-1	Part No: T5-310-G	Part No: T5-VLB620-068M-G



Back Panel

The design of the MDS® BARRIER has an open back. Some applications may want to close the space by utilizing back panels for aesthetics. Different materials are available based on project integration and land scape such as solid panels, and perforated steel.
Contact MDS® Barriers for more information and material choices.

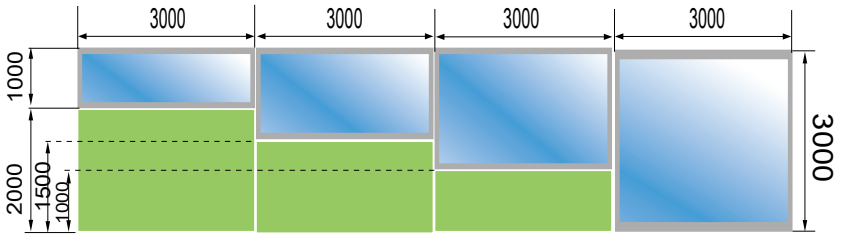
REF	PART No.	TYPE	DESCRIPTION	DIM. METRIC	DIM US	QUANTITY
55	M45-1M2-G	Plate	Galvanized panel	J		1
57	M45-1M2-ST	Plate	Stainless steel	J		1

SERGARD MDS® TL5 BARRIERS

Sound & Site Wall Part Reference

MDS® BARRIERS are pre-designed to integrate modular noise-protection and site walls within a single barrier system providing considerable savings in terms of occupied space, supporting substructures and overall cost. The special backward positioning of the noise-protection barrier requires less lateral space on the bridge deck. Modular site and sound panels have been crash tested with Sergard MDS® TL5 Barriers. The panel design does not effect the performance of the barrier while being impacted. 6 Panel sizes to accommodate visual and sound solutions.

STANDARD PANEL DIMENSIONS



Dimensions in Millimeters

REF	PART No.	TYPE	DESCRIPTION	SIZES Length	Size Height	COLOR
80	M45-G52	Site	Laminated glass panel	3000 mm 3000 mm 3000 mm	1000 mm 1500 mm 2000 mm 3000 mm	Transparent / Frosted
82	M45-GS52-	Sound	Galvanized sound panel			Yes
84	M45-SS52	Sound	Stainless steel sound panel			Yes
86	M45-AL52	Sound	Aluminum sound panel			Yes
88	M45-DWL52	Wind	Dissuasive wind louvers			Yes
89	M45-CLF-2	Fence	2 inch chain link fence			Standard

SERGARD MDS® TL5 BARRIERS
ANNEX DRAWINGS

ANNEX 1

REF	Drawing Number	Drawing Description	SURFACE ANCHORING		
			Concrete	Asphalt	Earth
1	H4-6000-AP1	Minimal Deflection System Permanent Installation	X		
2	H4-6000-AT2	Minimal Deflection System Temporary Installation	X		
3	H4-6000-AA4	Minimal Deflection System Temporary Asphalt Installation		X	
4	H4-6000-AC3	Minimal Deflection System Unbound Gravel Installation	X		
5	H4-6000-AE4	Minimal Deflection System Earth Beam Installation			X
6	H4-6000-AP1-2	TL5 MINIMUM Deflection Values			
7	H4-6000-AP1-3	Permanent Anchor Details			

ANNEX 2

REF	Drawing Number	Drawing Description
11	H4-6000-IR23	Maximum Inner Radius 6 meter section
12	H4-6000-OR24	Maximum Outer Radius 6 meter section
13	H4-3000-IR23	Maximum Inner Radius 3 meter section
14	H4-3000-OR24	Maximum Outer Radius 3 meter section

ANNEX 3

REF	Drawing Number	Drawing Description
15	H4-6000-VLB-T1	Variable Length Barrier for Bridge Expansion Joints
16	H4-2000-TQG-610	Attenuators
17	H4-6000-TWB-350	MDS to W-beam transition

ANNEX 4

REF	Drawing Number	Drawing Description
20	H4-6000-7DA-2M	Aluminum Acoustic Sound Absorbing Wall 2 Meters
21	H4-6000-7DG-2M	Glass Acoustic Sound Wall 2 Meters
22	H4-6000-7DA-3M	Aluminum Acoustic Sound Absorbing Wall 3 Meters
23	H4-6000-7DG-3M	Glass Acoustic Sound Wall 3 Meters
24	H4-6000-7DA-4M	Aluminum Acoustic Sound Absorbing Wall 4 Meters
25	H4-6000-7DG-4M	Glass Acoustic Sound Wall 4 Meters
26	H4-6000-7DA-5M	Aluminum Acoustic Sound Absorbing Wall 5 Meters
27	H4-6000-7DG-5M	Glass Acoustic Sound Wall 5 Meters
28	H4-6000-7DA-55M	Aluminum Acoustic Sound Absorbing Wall 5.5 Meters
29	H4-6000-7DG-55M	Aluminum Acoustic Sound Absorbing Wall 5.5 Meters

ANNEX 5

REF	Drawing Number	Drawing Description
30	H4-6000-SHIPPING	Truck Loading and Stacking

ANNEX 6

REF	Description
SWMS	Safe Working Methods Statement

SERGARD MDS® TL5 BARRIERS

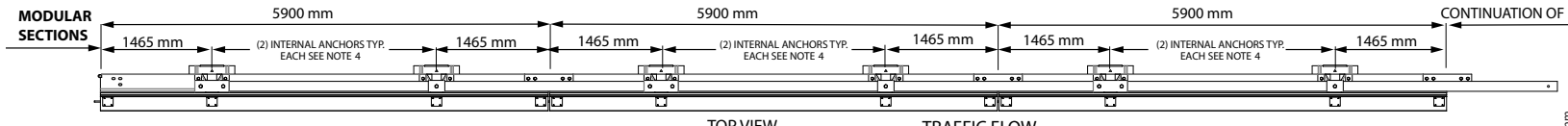
ANNEX 1

REF	Drawing Number	Drawing Description	SURFACE ANCHORING		
			Concrete	Asphalt	Earth
1	H4-6000-AP1	Minimal Deflection System Permanent Installation	X		
2	H4-6000-AT2	Minimal Deflection System Temporary Installation	X		
3	H4-6000-AA4	Minimal Deflection System Temporary Asphalt Installation		X	
4	H4-6000-AC3	Minimal Deflection System Unbound Gravel Installation	X		
5	H4-6000-AE4	Minimal Deflection System Earth Beam Installation			X
6	H4-6000-AP1-2	TL5 MINIMUM Deflection Values			
7	H4-6000-AP1-3	Permanent Anchor Details			

TEST TB 11 - SERGARD MDS® TL5							
SPEED (KM/H)	100	90	80	70	60	50	40
Permanent deflection (m)	0.09	0.073	0.058	0.044	0.032	0.023	0.014

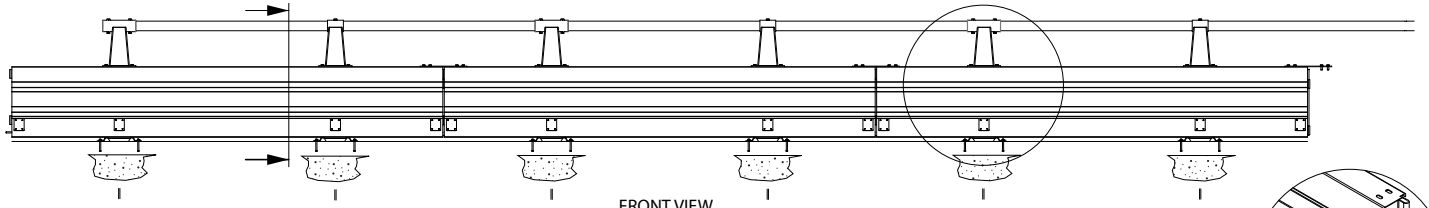
TEST TB 81 - SERGARD MDS® TL5				
SPEED (KM/H)	70	60	50	40
Permanent deflection (m)	0.31	0.228	0.158	0.101

SERGARD MDS® TL5 BARRIERS

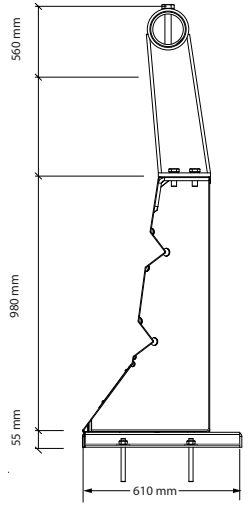


TOP VIEW

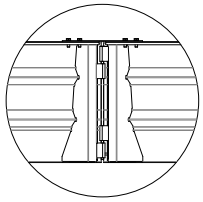
TRAFFIC FLOW



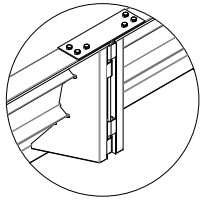
FRONT VIEW



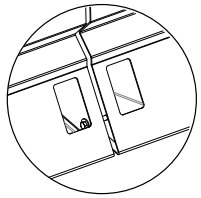
INTERNAL ANCHORING



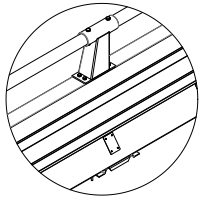
CONNECTION DETAIL STEP 1
PIN JUNCTION



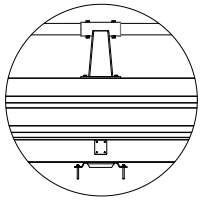
CONNECTION DETAIL STEP 2
TOP SPLICE PLATE



CONNECTION DETAIL STEP 3
FRONT PANEL UNION BOLT

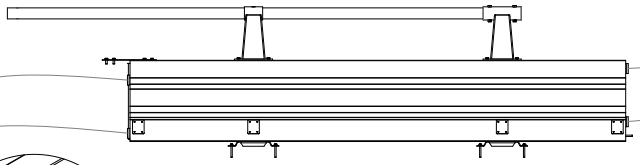


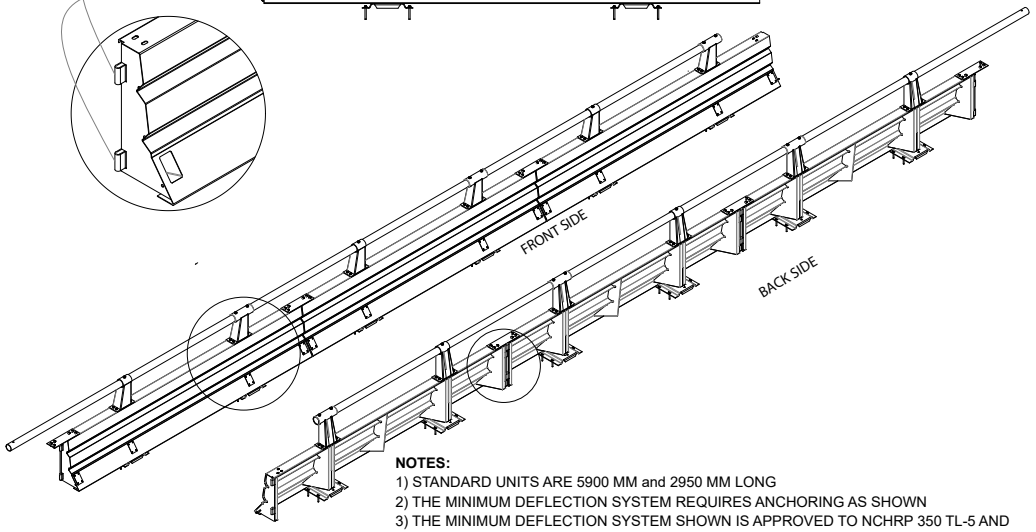
CONNECTION DETAIL STEP 4
TOP TUBE RAIL POST

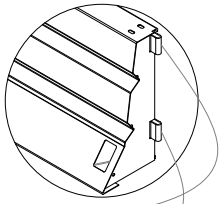


CONNECTION DETAIL STEP 5
TOP RAIL JUNCTION

MALE - FEMALE SECTION







NOTES:
1) STANDARD UNITS ARE 5900 MM and 2950 MM LONG
2) THE MINIMUM DEFLECTION SYSTEM REQUIRES ANCHORING AS SHOWN
3) THE MINIMUM DEFLECTION SYSTEM SHOWN IS APPROVED TO NCHRP 350 TL-5 AND MASH-08 (FOR DEFLECTION VALUES SEE DRAWING H4-6000-AP1-2)
4) FOR ANCHORING DETAILS SEE DRAWING H4-6000-AP1-3
5) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
6) SYSTEM SHOULD NOT BE PLACED ON A CROSS SLOPE OF MORE THEN 5%
7) 5900 mm UNITS CAN BE PLACED ON HORIZONTAL CURVES DOWN TO 160 METER RADIUS
8) 2950 mm UNITS CAN BE PLACED ON HORIZONTAL CURVES DOWN TO 73 METER RADIUS
9) 5900 mm UNITS CAN ACCOMMODATE A CHANGE IN GRADE OF 2% OVER ITS LENGTH

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Drawn By	Date	Material
GC	07 / 23 / 2015	
Scale	Finish	Weight
	GALV.	

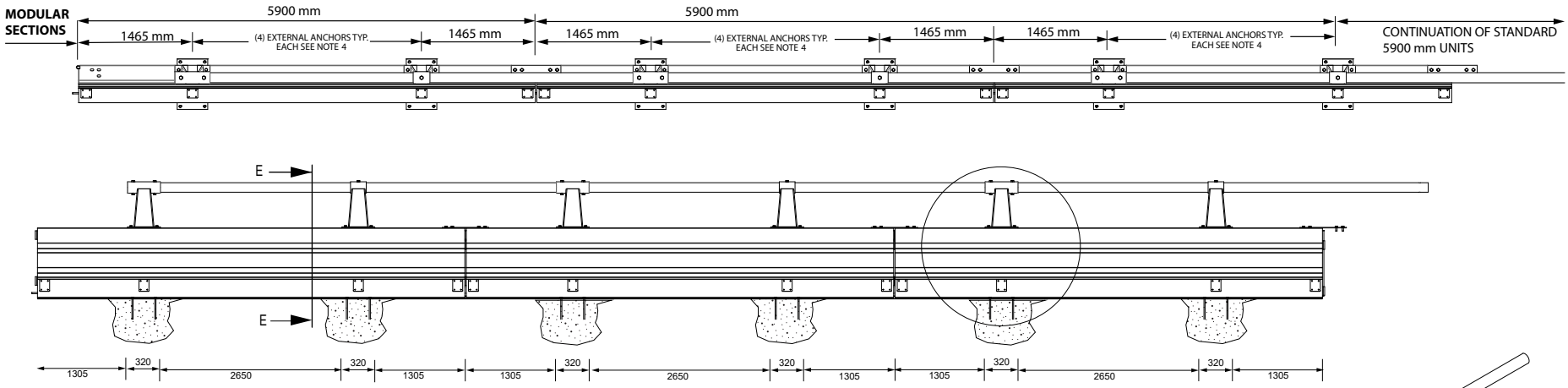
Description
SERGARD MDS® TL5
BARRIER
PERMANENT INSTALLATION
MINIMUM DEFLECTION SYSTEM
INSTALLATION DETAILS

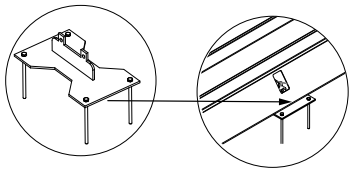
UNCONTROLLED WHEN PRINTED

MDS® BARRIERS
43 Franklin St
East Hartford CT 06108
Tel: 860.289.8033
Fax: 860.289.8035
www.MDSBARRIERS.com

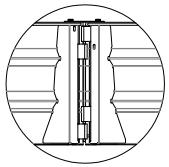
Drawing No.
H4-6000-AP1

SERGARD MDS® TL5 BARRIERS

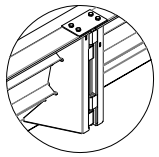




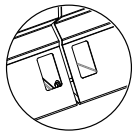
CONNECTION DETAIL STEP 1
ATTACH PLATE TO BARRIER BASE (2 BASES PER BARRIER)



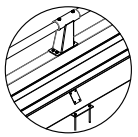
CONNECTION DETAIL STEP 2
PIN JUNCTION



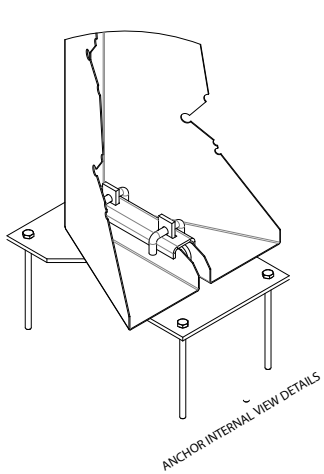
CONNECTION DETAIL STEP 3
TOP SPLICE PLATE

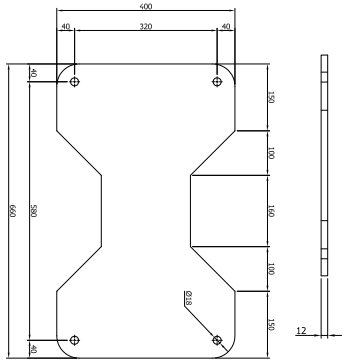


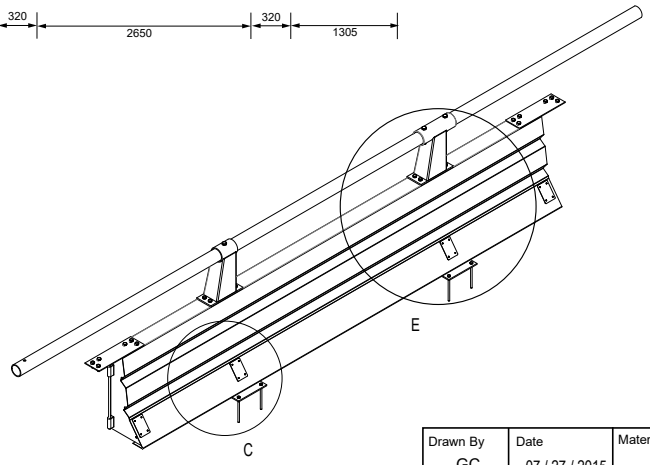
CONNECTION DETAIL STEP 4
FRONT PANEL UNION BOLT

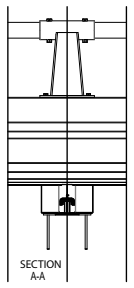


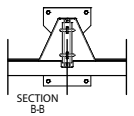
CONNECTION DETAIL STEP 5
TOP TUBE RAIL POST

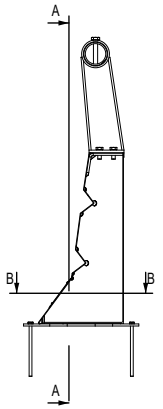












NOTES:
1) STANDARD UNITS ARE 5900 MM and 2950 MM LONG
2) THE MINIMUM DEFLECTION SYSTEM REQUIRES ANCHORING AS SHOWN
3) THE MINIMUM DEFLECTION SYSTEM IS APPROVED TO NCHRP 350 TL-5 AND MASH-08 (FOR DEFLECTION VALUES SEE DRAWING H4-6000-AP1-2)
4) FOR ASPHALT ANCHORING DETAILS SEE DRAWING H4-6000-AA4
5) FOR CONCRETE ANCHORING DETAILS SEE DRAWING H4-6000-API-3
5) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
6) SYSTEM SHOULD NOT BE PLACED ON A CROSS SLOPE OF MORE THEN 5%
7) 5900 mm UNITS CAN BE PLACED ON HORIZONTAL CURVES DOWN TO 160 METER RADIUS
8) 5900 mm UNITS CAN ACCOMMODATE A CHANGE IN GRADE OF 2% OVER ITS LENGTH

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Drawn By	Date	Material
GC	07 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5
BARRIER
Minimum Deflection System Temporary Installation

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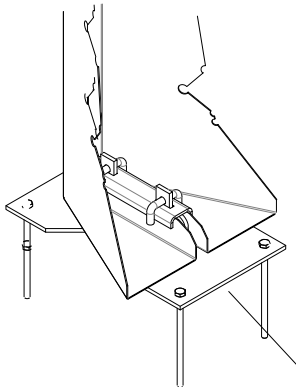
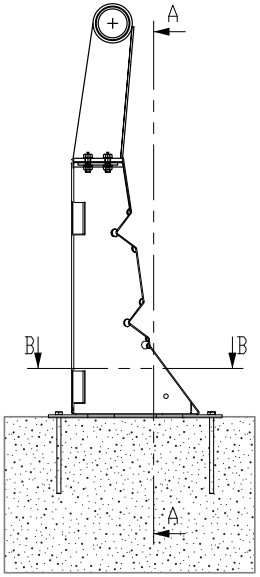
Drawing No.
H4-6000-AT2

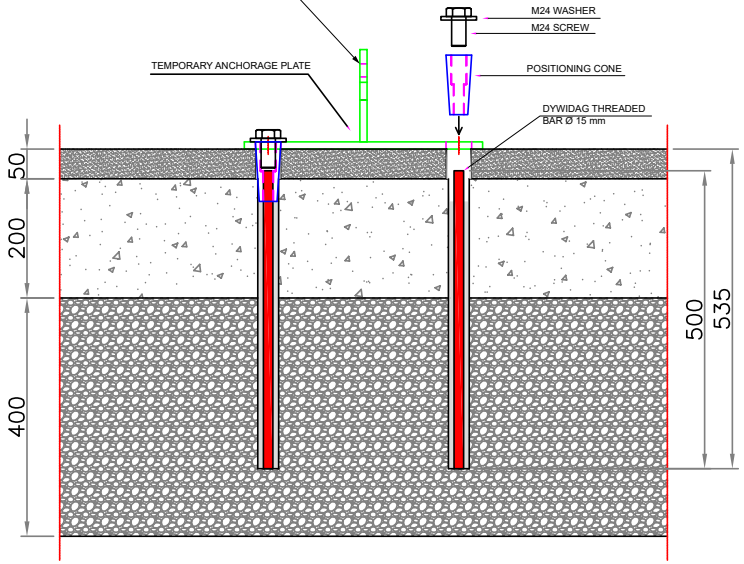
SERGARD MDS® TL5 BARRIERS

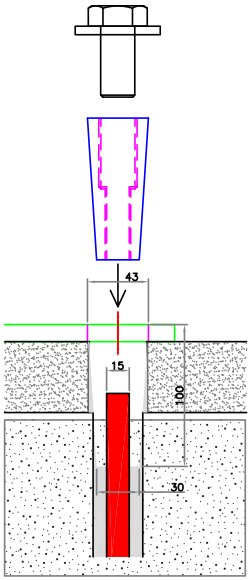


DANGER

ALLWAYS ENSURE UTILITY LOCATIONS ARE DETERMINED BEFORE DRILLING HOLES







PLACE BARRIER ON TEMPORARY ANCHORAGE PLATE AND LOCK IN PLACE WITH U-LOCKS. ONCE BARRIERS ARE PLACED ON ROADWAY DRILL 4 HOLES DIA. 30 x 535 mm DEEP. REMOVE DEBRIS, INSTALL DYWIDAG THREADED BAR.

NOTES:

1) ANCHOR LOCATIONS REFER TO DRAWING H4-6000-AT2.
2) ANCHORING ON ASPHALT REQUIRES DYWIDAG OR EQUAL DIA. 15 X 500 mm THREADED BAR AS SHOWN .
3) FOR ANCHORING ON ASPHALT WITH LESS THAN 200 mm OF ASPHALT CONSULT MANUFACTURER.
4) ALTERNATIVE ANCHOR DESIGNS CERTIFIED BY THE MANUFACTURER MAY BE USED TO PROVIDE EQUAL OR GREATER ANCHORAGE STRENGTH TO ACCOMMODATE INSTALLATIONS ON SURFACES NOT SPECIFIED IN THE MANUAL.
5) FOR ADDITIONAL ANCHORING ALTERNATIVES AND INFORMATION CONSULT INSTALLATION MANUAL.
6) ALL NUMBERS SHOWN IN mm UNLESS OTHERWISE SPECIFIED.

Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5
BARRIER
TEMPORARY ASPHALT
ANCHOR DETAILS

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Drawing No.

H4-6000-AA4

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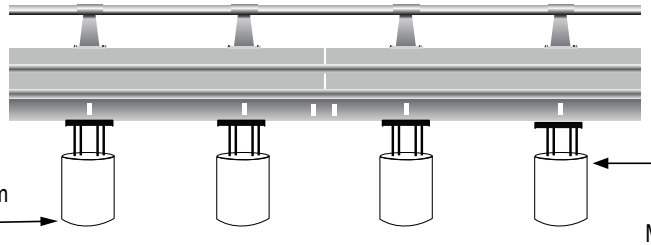
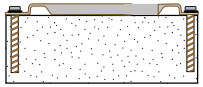
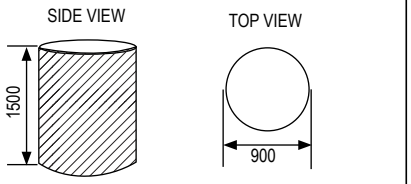
SERGARD MDS® TL5 BARRIERS



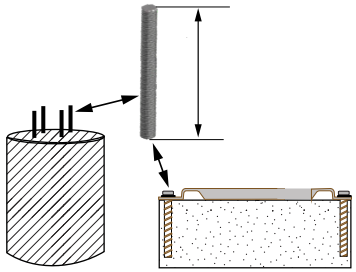


DANGER

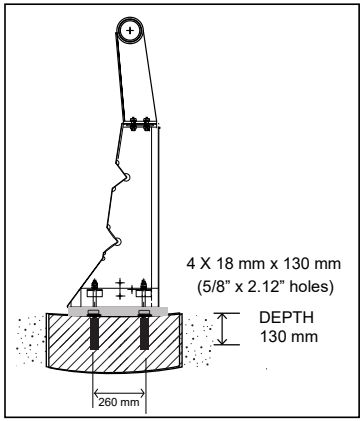
ALLWAYS ENSURE UTILITY LOCATIONS ARE DETERMINED BEFORE DRILLING HOLES



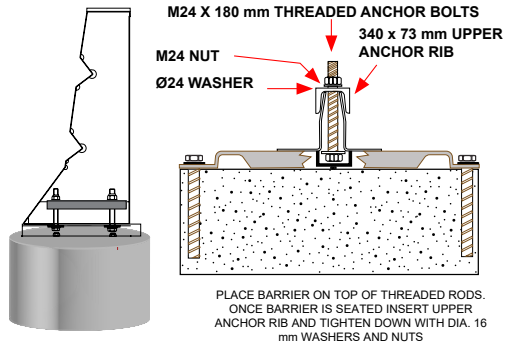
STEP 1 CONCRETE FOOTING
Dimensions Dia. 500 mm x 1500 mm



STEP 2 ANCHOR INSTALLATION
Install threaded Rod through anchor plate



STEP 3 BARRIER PLACEMENT
Anchor barrier to concrete footing



STEP 4 BARRIER TIGHTENING
Align all barriers and secure all the bolts

NOTES:

1) ANCHOR LOCATIONS REFER TO DRAWING H4-6000-AP1.
2) REMOVE EARTH AND FILL A DIAMETER 900 mm X 1500 mm DEEP CAVITY WITH REBAR AND CONCRETE.
3) ONCE CONCRETE IS CURED USE THE DRILLING TEMPLATE (PART # T5-TP-1) AND DRILL FOUR HOLES PER ANCHOR LOCATION 18 mm X 130 mm DEEP.
4) REMOVE THE DEBRIS FROM THE HOLE AND AREA.
5) CHECK THE DEPTH OF THE HOLE TO ENSURE PROPER EMBEDMENT.
6) PLACE BOTTOM ANCHOR PLATE (PART # T5-BAP-G) ON CONCRETE FOOTING.
7) INJECT RESIN AS PER MANUFACTURER'S INSTRUCTIONS AND INSERT 16 X 290 MM THREADED ANCHOR RODS.
8) ALLOW RESIN TO CURE AS PER MANUFACTURER'S INSTRUCTIONS.
9) PLACE BARRIER ON TOP OF THREADED RODS.
10) INSTALL UPPER ANCHOR RIB (PART # T5-E34073-G) ONTO THREADED RODS AND PLACE TWO M16 WASHERS AND TWO M16 NUTS ON THE RODS.
11) USING A SOCKET DRILL TIGHTEN DOWN BARRIER.
12) ALL NUMBERS SHOWN IN mm UNLESS OTHERWISE SPECIFIED.

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Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5
BARRIER
ANCHORING IN UNBOUND GRANULAR OR COHESIONLESS CONDITIONS

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www.MDSBARRIERS.com

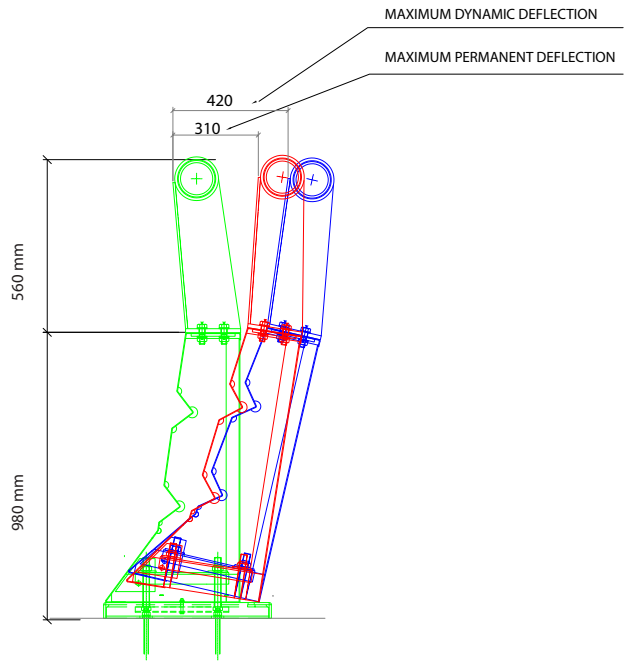
Drawing No.
H4-6000-AC3

SERGARD MDS® TL5 BARRIERS

SERGARD MDS® TL5 Barriers have been tested extensively and approved in accordance with NCHRP 350, and MASH-08, as well as the European standards EN 1317-5:2007+A1:2008. The testing has shown that SERGARD MDS® TL5 Barrier is acceptable for use on roadways throughout the world including the USA.

LEVEL	Parameter	Report 350	MASH-08	EN1317
TL-5	Test Vehicle Type Vehicle Mass (kg) Vehicle c.g. height (mm) Impact Velocity (km/hr) Impact Angle (deg) Impact Severity (kj)	4-10/5-10 Passenger Car 820 550 100 20 37	4-10/5-10 Passenger Car 1100 100 25 76	TB-11 Passenger Car 900 490 100 20 41
TL-5	Test Vehicle Type Vehicle Mass (kg) Vehicle c.g. height (mm) Impact Velocity (km/hr) Impact Angle (deg) Impact Severity (kj)	5-12 Tracktor Trailer 36,000 Not Specified 80 15 595,438	5-12 Tracktor Trailer 36,000 1,850 80 15 595,438	5-12 Tracktor Trailer 38,000 1,900 65 20 724,562

TEST TB 81



TEST TB 11 - SERGARD MDS® TL5							
SPEED (KM/H)	100	90	80	70	60	50	40
Permanent deflection (m)	0.09	0.073	0.058	0.044	0.032	0.023	0.014

TEST TB 81 - SERGARD MDS® TL5				
SPEED (KM/H)	70	60	50	40
Permanent deflection (m)	0.31	0.228	0.158	0.101

TEST TB 11

Maximum dynamic deflection 0.12 m
Maximum permanent deflection 0.09 m
Normalised dynamic deflection 0.12 m

TEST TB 81

Maximum dynamic deflection 0.42 m
Maximum permanent deflection 0.31 m
Normalised dynamic deflection 0.41 m

NOTES:
1) ALL DEFLECTION VALUES SHOWN IN TABLES ARE DYNAMIC DEFLECTIONS OF THE BARRIER.
2) ALL NUMBERS SHOWN ARE IN mm UNLESS NOTED

Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5
BARRIER
DEFLECTION DETAILS

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H4-6000-AP1-2

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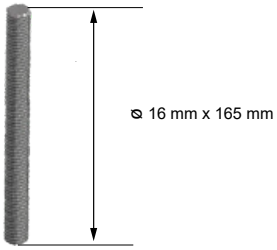
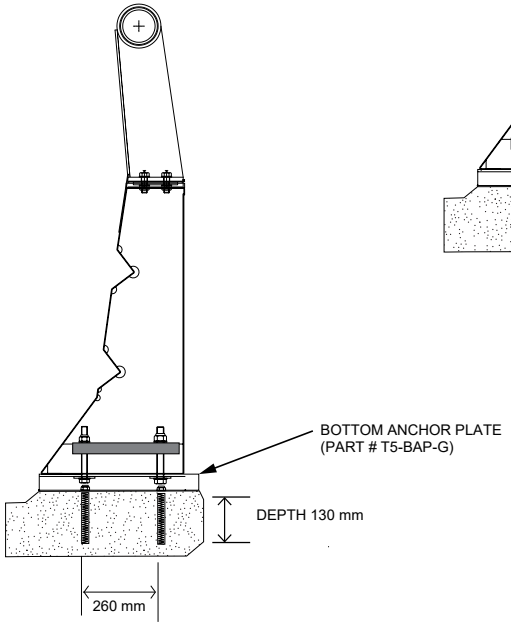
SERGARD MDS® TL5 BARRIERS



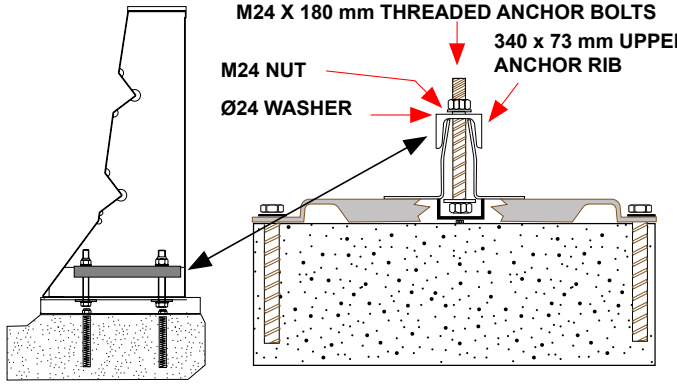
M16 THREADED ROD
Steel grade: 8.8
Specification: ASTM A325 or equivalent

DANGER

ALLWAYS ENSURE UTILITY LOCATIONS ARE DETERMINED BEFORE DRILLING HOLES



DRILL 4 HOLES DIA. 18 mm X 130 mm
CLEAN DEBRIS FROM HOLE, INJECT RESIN
(5/8" x 2.12" holes)



PLACE BARRIER ON TOP OF THREADED RODS. ONCE BARRIER IS SEATED INSERT UPPER ANCHOR RIB AND TIGHTEN DOWN WITH M16 WASHERS AND NUTS

NOTES:

1) ANCHOR LOCATIONS REFER TO DRAWING H4-6000-AP1.
2) ANCHORING IN CONCRETE REQUIRES FOUR M16 X 165 mm THREADED RODS AS SHOWN WITH A MINIMUM EMBEDMENT DEPTH OF 130 mm.
3) PLACE BOTTOM ANCHOR PLATE (PART # T5-BAP-G) ON SURFACE AND ANCHOR TO SURFACE.
4) FOR ANCHORING ON A BRIDGE DECK WITH LESS THAN 130 mm EMBEDMENT DEPTH AND 94 mm MINIMUM EDGE DISTANCE CONSULT MANUFACTURER.
5) ALTERNATIVE ANCHOR DESIGNS CERTIFIED BY THE MANUFACTURER MAY BE USED TO PROVIDE EQUAL OR GREATER ANCHORAGE STRENGTH TO ACCOMMODATE INSTALLATIONS ON SURFACES NOT SPECIFIED IN THE MANUAL.
6) FOR ADDITIONAL ANCHORING ALTERNATIVES AND INFORMATION CONSULT INSTALLATION MANUAL.
7) ALL NUMBERS SHOWN IN mm UNLESS OTHERWISE SPECIFIED.

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Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5
BARRIER
CONCRETE ANCHOR
DETAILS

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Drawing No.
H4-6000-AP1-3

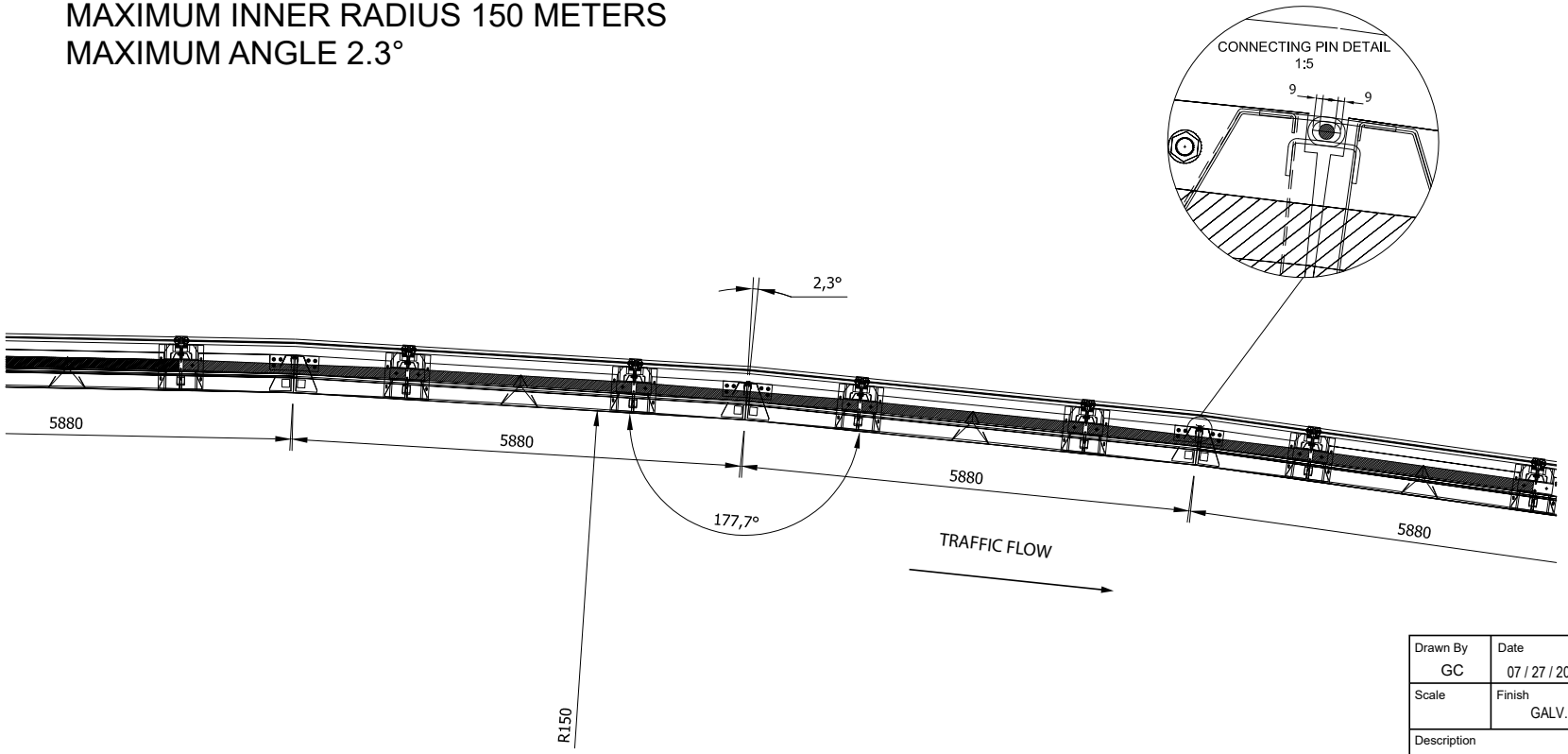
SERGARD MDS® TL5 BARRIERS

ANNEX 2

REF	Drawing Number	Drawing Description
11	H4-6000-IR23	Maximum Inner Radius 6 meter section
12	H4-6000-OR24	Maximum Outer Radius 6 meter section
13	H4-3000-IR23	Maximum Inner Radius 3 meter section
14	H4-3000-OR24	Maximum Outer Radius 3 meter section

SERGARD MDS® TL5 BARRIERS

5900 mm SERGARD MDS® TL5 BARRIER
MAXIMUM INNER RADIUS 150 METERS
MAXIMUM ANGLE 2.3°



NOTES:
1) MAXIMUM INNER RADIUS IS 150 METERS UTILIZING 5900 mm LONG SECTIONS
2) THE MINIMUM DEFLECTION SHOWN REQUIRES ANCHORING AS SHOWN
3) THE MINIMUM DEFLECTION SYSTEM SHOWN IS APPROVED TO NCHRP 350 TL-5 AND MASH-08 (FOR DEFLECTION VALUES SEE DRAWING H4-6000-AP1-2
4) FOR ANCHORING DETAILS SEE DRAWING H4-6000-AP1-3
5) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
6) SYSTEM SHOULD NOT BE PLACED ON A CROSS SLOPE OF MORE THEN 5%
7) 5900 mm UNITS CAN ACCOMMODATE A CHANGE IN GRADE OF 2% OVER ITS LENGTH
8) RADIUSES WITH CURVATURES GREATER THAN 2.3 DEGREES CAN BE FITTED WITH PRE-FABRICATED ANGLE SECTIONS AVAIABLE IN 2.5, 5, 7.5 AND 10 DEGREE RADIUSES

Drawn By	Date	Material
GC	07 / 27 / 2015	
Scale	Finish: GALV.	Weight

Description
SERGARD MDS® TL5 BARRIERS
PORTABLE TRAFFIC BARRIER
MAXIMUM INNER RADIUS 6 METER SECTION

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Drawing No.
H4-6000-IR23

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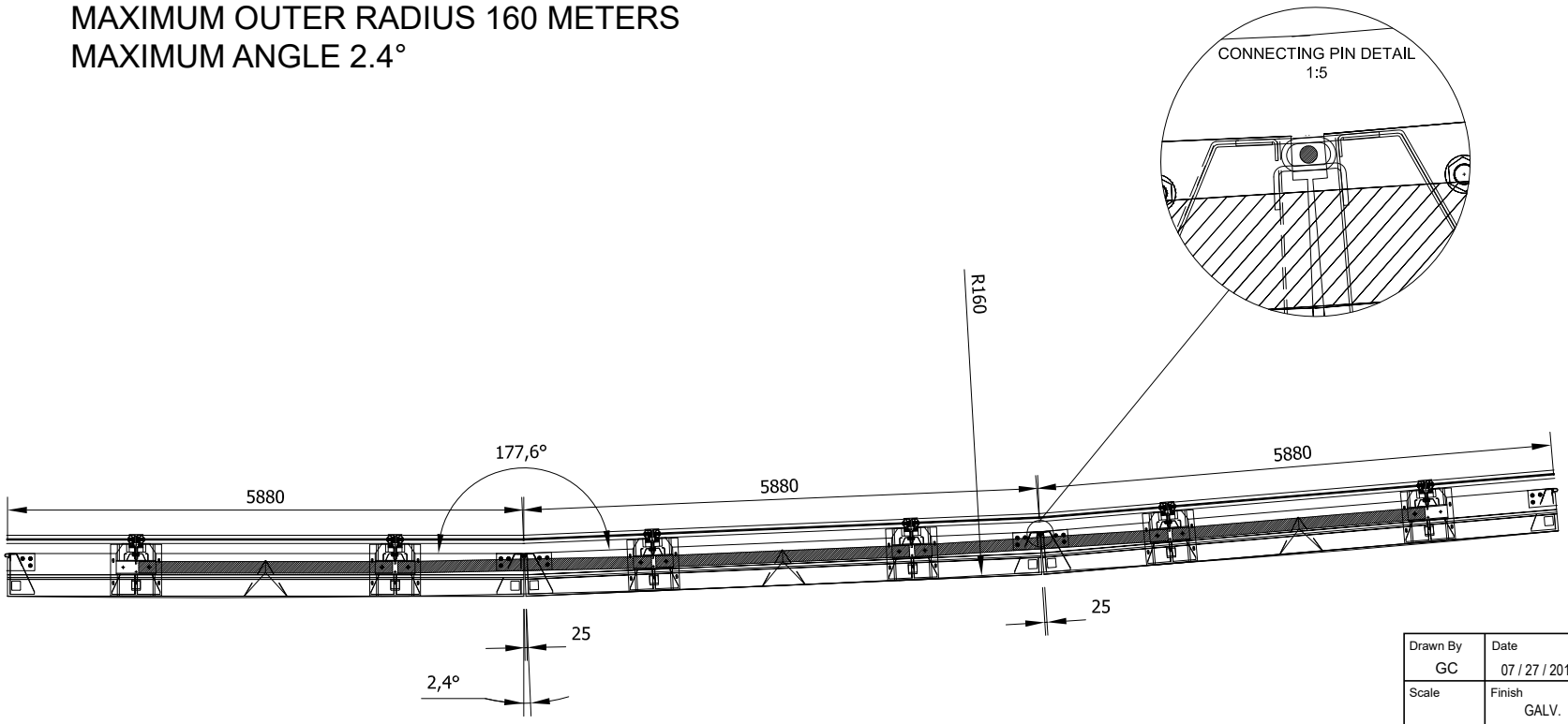
5900 mm SERGARD MDS® TL5 BARRIER
MAXIMUM OUTER RADIUS 160 METERS
MAXIMUM ANGLE 2.4°



NOTES:
1) MAXIMUM OUTER RADIUS IS 160 METERS UTILIZING 5900 mm LONG SECTIONS
2) THE MINIMUM DEFLECTION SHOWN REQUIRES ANCHORING AS SHOWN
3) THE MINIMUM DEFLECTION SYSTEM SHOWN IS APPROVED TO NCHRP 350 TL-5 AND MASH-08 (FOR DEFLECTION VALUES SEE DRAWING H2-6000-AP1-2
4) FOR ANCHORING DETAILS SEE DRAWING H5-6000-AP1-3
5) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
6) SYSTEM SHOULD NOT BE PLACED ON A CROSS SLOPE OF MORE THEN 5%
7) 5900 mm UNITS CAN ACCOMMODATE A CHANGE IN GRADE OF 2% OVER ITS LENGTH
8) RADIUSES WITH CURVATURES GREATER THAN 2.4 DEGREES CAN BE FITTED WITH PRE-FABRICATED ANGLE SECTIONS AVAIABLE IN 2.5, 5, 7.5 AND 10 DEGREE RADIUSES

Drawn By	Date	Material
GC	07 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5 BARRIERS
PORTABLE TRAFFIC BARRIER
MAXIMUM OUTER RADIUS 6
METER SECTION

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Drawing No.
H4-6000-IR23

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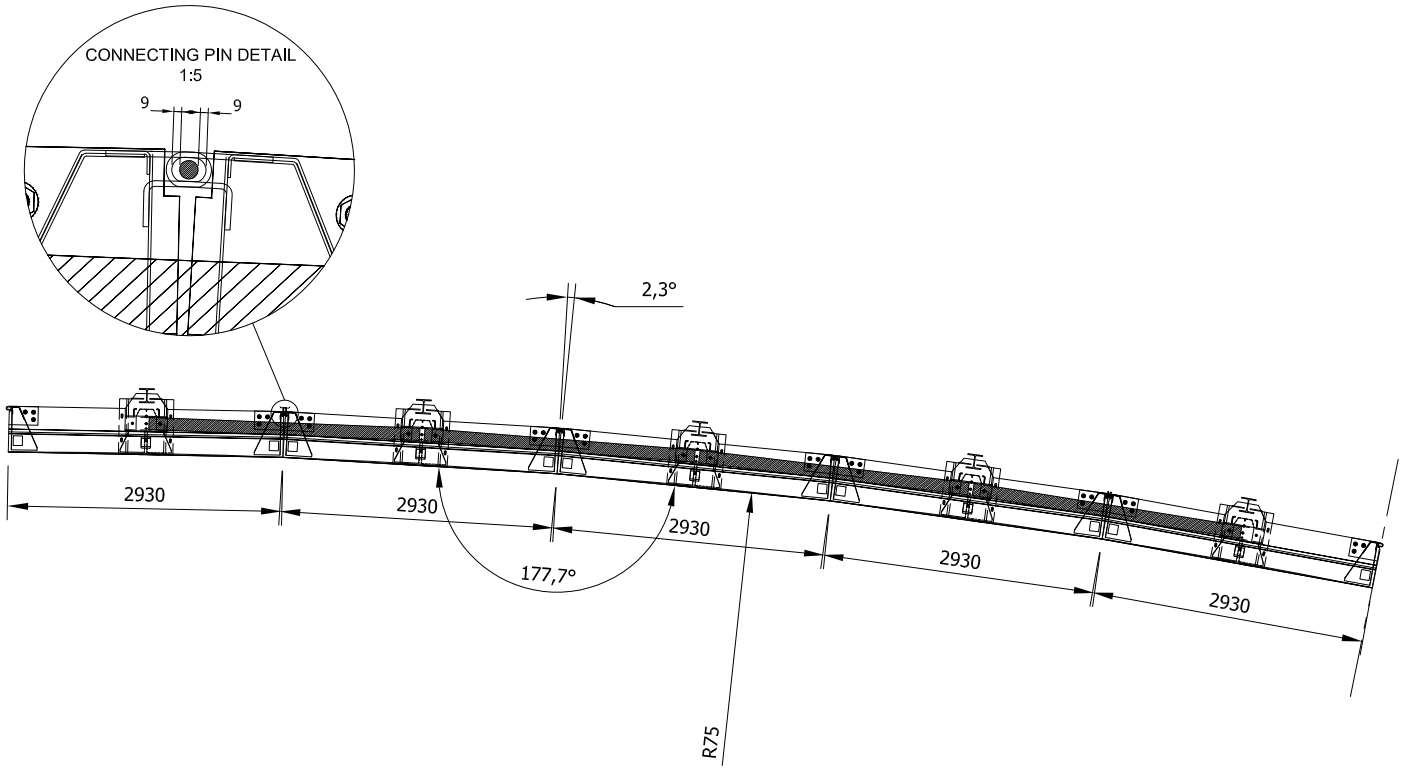
2950 mm MDS® SERGARD TL5 BARRIER
MAXIMUM INNER RADIUS 75 METERS
MAXIMUM ANGLE 2.3°



NOTES:
1) MAXIMUM INNER RADIUS IS 75 METERS UTILIZING 2950 mm LONG SECTIONS
2) THE MINIMUM DEFLECTION SHOWN REQUIRES ANCHORING AS SHOWN
3) THE MINIMUM DEFLECTION SYSTEM SHOWN IS APPROVED TO NCHRP 350 TL-5 AND MASH-08 (FOR DEFLECTION VALUES SEE DRAWING H5-6000-AP1-2
4) FOR ANCHORING DETAILS SEE DRAWING H5-6000-AP1-3
5) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
6) SYSTEM SHOULD NOT BE PLACED ON A CROSS SLOPE OF MORE THEN 5%
7) 2950 mm UNITS CAN ACCOMMODATE A CHANGE IN GRADE OF 2% OVER ITS LENGTH
8) RADIUSES WITH CURVATURES GREATER THAN 2.3 DEGREES CAN BE FITTED WITH PRE-FABRICATED ANGLE SECTIONS AVAIABLE IN 2.5, 5, 7.5 AND 10 DEGREE RADIUSES

Drawn By	Date	Material
GC	07 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5 BARRIERS
PORTABLE TRAFFIC BARRIER
MAXIMUM INNER RADIUS 3
METER SECTION

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Drawing No.

H4-3000-IR23

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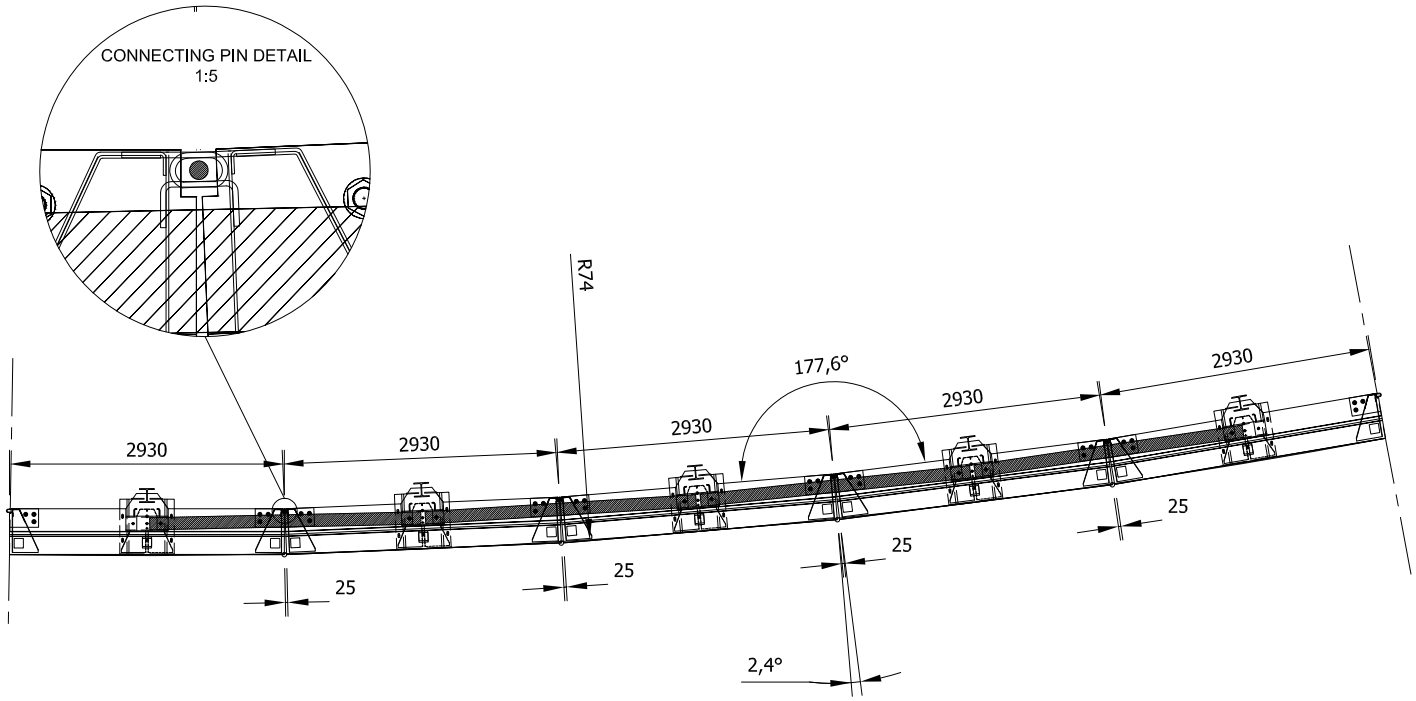
2950 mm MDS® SERGARD TL5 BARRIER
MAXIMUM OUTER RADIUS 74 METERS
MAXIMUM ANGLE 2.4°



NOTES:
1) MAXIMUM OUTER RADIUS IS 74 METERS UTILIZING 2950 mm LONG SECTIONS
2) THE MINIMUM DEFLECTION SHOWN REQUIRES ANCHORING AS SHOWN
3) THE MINIMUM DEFLECTION SYSTEM SHOWN IS APPROVED TO NCHRP 350 TL-5 AND MASH-08 (FOR DEFLECTION VALUES SEE DRAWING H4-6000-AP1-2
4) FOR ANCHORING DETAILS SEE DRAWING H4-6000-AP1-3
5) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
6) SYSTEM SHOULD NOT BE PLACED ON A CROSS SLOPE OF MORE THEN 5%
7) 2950 mm UNITS CAN ACCOMMODATE A CHANGE IN GRADE OF 2% OVER ITS LENGTH
8) RADIUSES WITH CURVATURES GREATER THAN 2.4 DEGREES CAN BE FITTED WITH PRE-FABRICATED ANGLE SECTIONS AVAIABLE IN 2.5, 5, 7.5 AND 10 DEGREE RADIUSES

Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5 BARRIERS
PORTABLE TRAFFIC BARRIER
MAXIMUM OUTER RADIUS 3
METER SECTION

UNCONTROLLED WHEN PRINTED

MDS® BARRIERS
43 Franklin St
East Hartford CT 06108
Tel: 860.289.8033
Fax: 860.289.8035
www.MDSBARRIERS.com

Drawing No.
H4-3000-OR24

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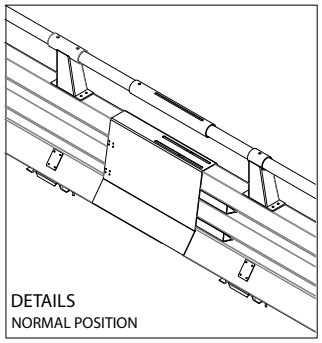
SERGARD MDS® TL5 BARRIERS

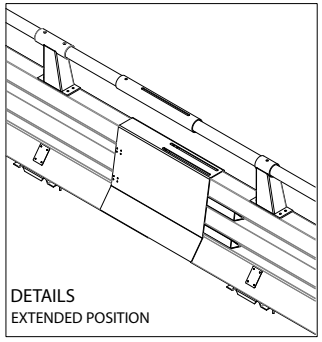
ANNEX 3

REF	Drawing Number	Drawing Description
15	H4-6000-VLB-T1	Variable Length Barrier for Bridge Expansion Joints
16	H4-2000-TQG-610	Attenuators
17	H4-6000-TWB-350	MDS to W-beam transition

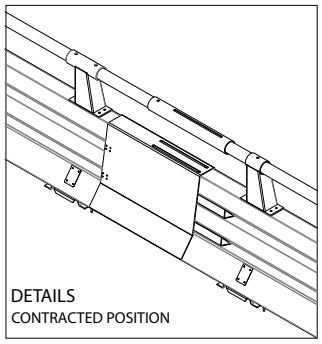
SERGARD MDS® TL5 BARRIERS



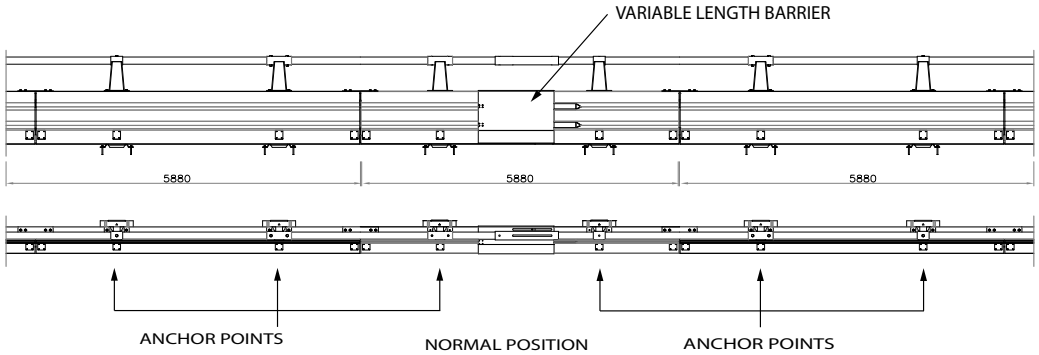
DETAILS
NORMAL POSITION

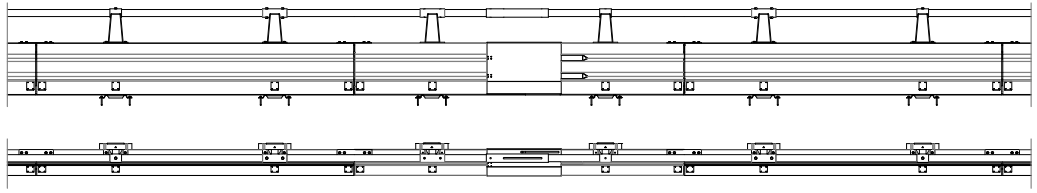


DETAILS
EXTENDED POSITION

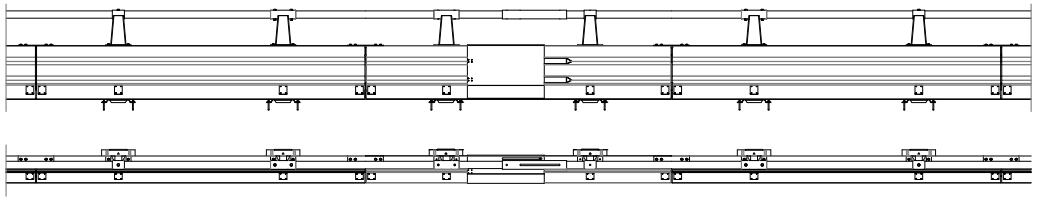


DETAILS
CONTRACTED POSITION





EXTENDED POSITION



CONTRACTED POSITION

NOTES:
1) VARIABLE LENGTH BARRIERS HAVE A STANDARD LENGTH OF 5880 mm.
2) STANDARD VARIABLE LENGTH BARRIERS HAVE A MAXIMUM EXTENDED LENGTH 6230 mm.
3) VARIABLE LENGTH BARRIERS HAVE 700 MM OF MOVABLE EXPANSION.
4) FOR EXPANSION MOVEMENT GREATER THEN 700 MM CONSULT MANUFACTURER.

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Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5
VARIABLE LENGTH BARRIER
SECTION

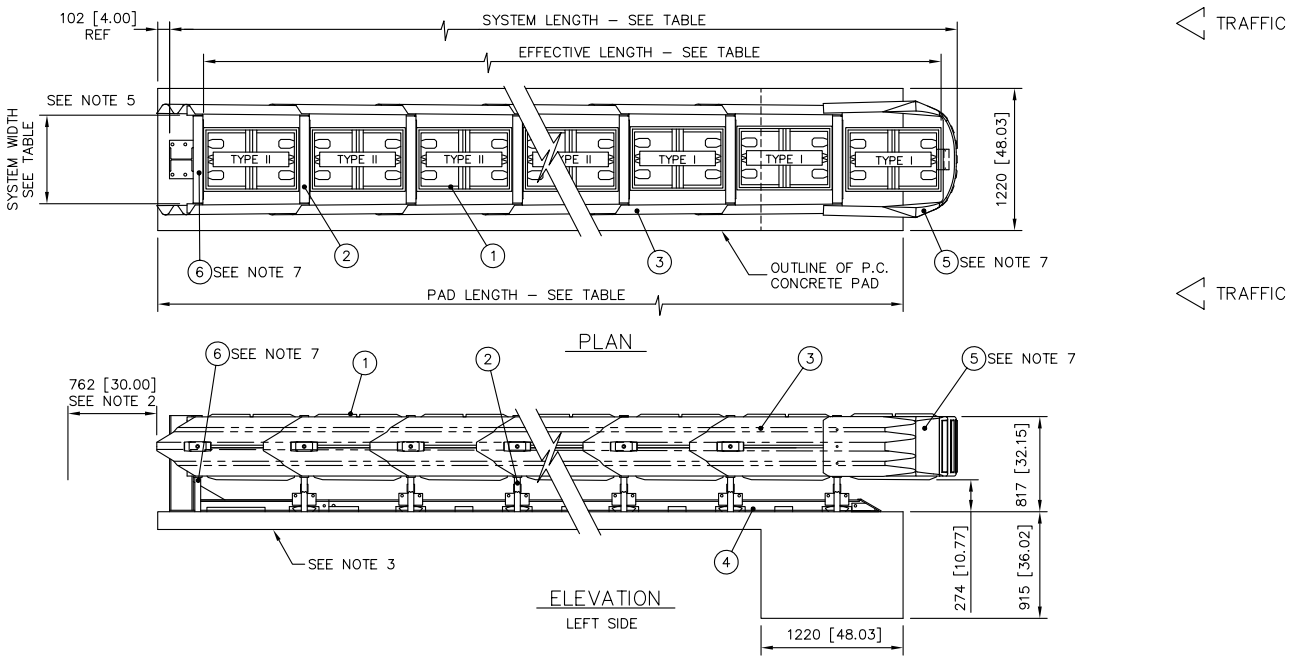
UNCONTROLLED WHEN PRINTED

MDS® BARRIERS
43 Franklin St
East Hartford CT 06108
Tel: 860.289.8033
Fax: 860.289.8035
www.MDSBARRIERS.com

Drawing No.

H4-6000-VLB-T1

SERGARD MDS® TL5 BARRIERS



* G = GREY or Y = YELLOW

BAYS	610 [24"] WIDTH MODEL#	762 [30"] WIDTH MODEL#	914 [36"] WIDTH MODEL#	SYSTEM LENGTH m	SYSTEM LENGTH ft–in	EFFECTIVE LENGTH m	EFFECTIVE LENGTH ft–in	PAD LENGTH m	PAD LENGTH ft–in	MAX DESIGN SPEED km/h [MPH]	# OF CARTRIDGES TYPE I	# OF CARTRIDGES TYPE II
1	QS2401*	QS3001*	QS3601*	2.16	[7'–1"]	1.73	[5'–8"]	2.74	[9'–0"]	40 [25]	2	0
2	QS2402*	QS3002*	QS3602*	3.08	[10'–1"]	2.64	[8'–8"]	2.74	[9'–0"]	60 [37]	2	1
3	QS2403*	QS3003*	QS3603*	4.00	[13'–1"]	3.56	[11'–8"]	3.66	[12'–0"]	70 [44]	3	1
4	QS2404*	QS3004*	QS3604*	4.91	[16'–1"]	4.47	[14'–8"]	4.57	[15'–0"]	80 [50]	3	2
5	QS2405*	QS3005*	QS3605*	5.83	[19'–1"]	5.38	[17'–8"]	5.49	[18'–0"]	90 [56]	4	2
6	QS2406*	QS3006*	QS3606*	6.74	[22'–1"]	6.30	[20'–8"]	6.40	[21'–0"]	△100 [62]	4	3
7	QS2407*	QS3007*	QS3607*	7.65	[25'–1"]	7.21	[23'–8"]	7.32	[24'–0"]	△105 [65]	4	4
8	QS2408*	QS3008*	QS3608*	8.57	[28'–1"]	8.13	[26'–8"]	8.23	[27'–0"]	△110 [68]	4	5
9	QS2409*	QS3009*	QS3609*	9.49	[31'–1"]	9.04	[29'–8"]	9.14	[30'–0"]	△115 [71]	4	6
10	QS2410*	QS3010*	QS3610*	10.40	[34'–1"]	9.96	[32'–8"]	10.06	[33'–0"]	△120 [75]	5	6
11	QS2411*	QS3011*	QS3611*	11.32	[37'–1"]	10.87	[35'–8"]	10.97	[36'–0"]	△120 [75]	5	7
12	QS2412*	QS3012*	QS3612*	12.23	[40'–1"]	11.79	[38'–8"]	11.89	[39'–0"]	△120 [75]	5	8

NOTES:
1. IN COMPLIANCE WITH THE AASHTO 2002 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 [30.00] MIN.
3. 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON–REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m [12'–0"] WIDE BY 15.24 m [50'–0"] LONG.
4. SEE THE "QUADGUARD SYSTEM PRODUCT 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 (888) 323–6374.
5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY AN ADEQUATE TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
6. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES], UNLESS OTHERWISE NOTED.
7. BACKUP AND NOSE ASSEMBLIES NOT INCLUDED IN MODEL NUMBER. ORDER SEPARATELY.
8. THE NUMBER OF BAYS INDICATED IN THE TABLE IS BASED ON CALCULATED VALUES TO ENSURE ADEQUATE SYSTEM CAPACITY TO DISSIPATE THE LONGITUDINAL IMPACT ENERGY OF A 2000 kg VEHICLE TRAVELING AT THE SPEED INDICATED.
△9. THE SIX BAY SYSTEM HAS BEEN FULLY TESTED AT 100 km/h UNDER THE FULL 8 TEST MATRIX OF NCHRP 350 TL–3. SYSTEMS LONGER THAN SIX BAYS SHALL ALSO BE CAPABLE OF MEETING THE OCCUPANT RISK CRITERIA AS RECOMMENDED IN NCHRP 350 FOR VEHICLES WEIGHING 2000 kg IMPACTING HEAD ON AT THE SPEED INDICATED IN THE TABLE.

UNIDIRECTIONAL

KEY
1 QUADGUARD CARTRIDGE
2 DIAPHRAGM
3 FENDER PANEL
4 MONORAIL
5 NOSE ASSEMBLY
6 BACKUP

Revisions	Date	Rev.	By	Ckd.	App.
AASHTO WAS 1996	12/01/03	I	SDC	STT	ACF
CHANGED NOTES 4,5 & 7	12/15/04	J	RGC	STT	ACF
REVISED NOTE 3	9/25/01	H	DDW	STT	SPT

REFERENCES

SERIAL#		DIAPHRAGM ASSY.	35–40–07
SALES ORDER#		NOSE ASSY.	35–40–05
		FENDER PANEL ASSY.	35–40–04
EH PROJECT#		BACKUP ASSY.	35–40–03
DESIGN SPEED	SEE CHART ABOVE	MONORAIL ASSY.	35–40–06
		CONCRETE PAD	35–40–11
NOSE COLOR		TRANSITION ASSY.	N/A
NUMBER OF UNITS		WHEEL DEFLECTOR ASSY.	N/A

DRAWN:	S. LEWIS	DATE:	03/21/96
DESIGNED:	JMV/MHO	DATE:	03/21/96
CHECKED:	S. TRAGESER	DATE:	6/07/96
APPROVED	J. MACHADO	DATE:	6/07/96
CAD FILE:	QSTSCVR–U.dwg		

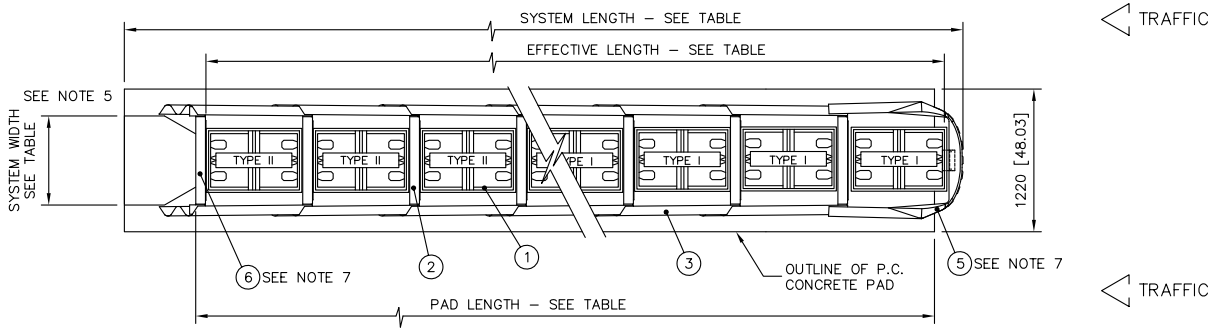
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

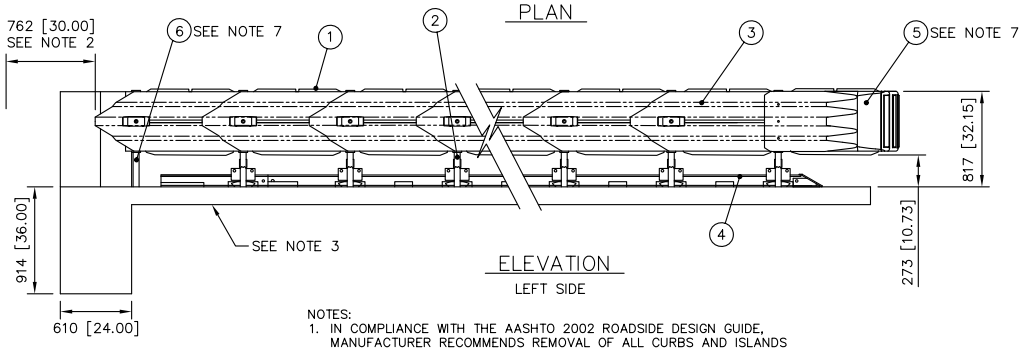
QUADGUARD® SYSTEM
W/ TENSION STRUT BACKUP

SCALE	DWG.	SHEET	REV
1=40	QSTSCVR–U	1 OF 1	J

QuadGuard® System

SERGARD MDS® TL5 BARRIERS





* G = GREY or Y = YELLOW

BAYS	610[24] WIDTH MODEL#	762[30] WIDTH MODEL#	915[36] WIDTH MODEL#	SYSTEM LENGTH m	SYSTEM LENGTH ft-in	EFFECTIVE LENGTH m	EFFECTIVE LENGTH ft-in	PAD LENGTH m	PAD LENGTH ft-in	MAX DESIGN SPEED km/h [MPH]	# OF CARTRIDGES TYPE I	# OF CARTRIDGES TYPE II
1	QS2401*	QS3001*	QS3601*	2.59	[8'-6"]	1.73	[5'-8"]	1.68	[5'-6"]	40 [25]	2	0
2	QS2402*	QS3002*	QS3602*	3.51	[11'-6"]	2.64	[8'-8"]	2.59	[8'-6"]	60 [37]	2	1
3	QS2403*	QS3003*	QS3603*	4.42	[14'-6"]	3.56	[11'-8"]	3.51	[11'-6"]	70 [44]	3	1
4	QS2404*	QS3004*	QS3604*	5.33	[17'-6"]	4.47	[14'-8"]	4.42	[14'-6"]	80 [50]	3	2
5	QS2405*	QS3005*	QS3605*	6.25	[20'-6"]	5.38	[17'-8"]	5.33	[17'-6"]	90 [56]	4	2
6	QS2406*	QS3006*	QS3606*	7.16	[23'-6"]	6.30	[20'-8"]	6.25	[20'-6"]	△100 [62]	4	3
7	QS2407*	QS3007*	QS3607*	8.08	[26'-6"]	7.21	[23'-8"]	7.16	[23'-6"]	△105 [65]	4	4
8	QS2408*	QS3008*	QS3608*	8.99	[29'-6"]	8.13	[26'-8"]	8.08	[26'-6"]	△110 [68]	4	5
9	QS2409*	QS3009*	QS3609*	9.91	[32'-6"]	9.04	[29'-8"]	8.99	[29'-6"]	△115 [71]	4	6
10	QS2410*	QS3010*	QS3610*	10.82	[35'-6"]	9.96	[32'-8"]	9.91	[32'-6"]	△120 [75]	5	6
11	QS2411*	QS3011*	QS3611*	11.73	[38'-6"]	10.87	[35'-8"]	10.82	[35'-6"]	△120 [75]	5	7
12	QS2412*	QS3012*	QS3612*	12.65	[41'-6"]	11.79	[38'-8"]	11.74	[38'-6"]	△120 [75]	5	8

NOTES:
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9. △ THE SIX BAY SYSTEM HAS BEEN FULLY TESTED AT 100 km/h UNDER THE FULL 8 TEST MATRIX OF NCHRP 350 TL-3. SYSTEMS LONGER THAN SIX BAYS SHALL ALSO BE CAPABLE OF MEETING THE OCCUPANT RISK CRITERIA AS RECOMMENDED IN NCHRP 350 FOR VEHICLES WEIGHING 2000 kg IMPACTING HEAD ON AT THE SPEED INDICATED IN THE TABLE.

UNIDIRECTIONAL

KEY
1. QUADGUARD CARTRIDGE
2. DIAPHRAGM
3. FENDER PANEL
4. MONORAIL
5. NOSE ASSEMBLY
6. BACKUP

Revisions	Date	Rev.	By	Ckd.	App.
AASHTO WAS 1996	11/25/03	J	SDC	STT	ACF
CHANGES WITH NOTES 4,5 & 7	12/15/04	K	RGC	STT	ACF
REVISED NOTE 3	2/14/02	I	DDW	STT	SPT

REFERENCES

SERIAL#		DIAPHRAGM ASSY.	35-40-07
SALES ORDER#		NOSE ASSY.	35-40-05
EH PROJECT#		FENDER PANEL ASSY.	35-40-04
DESIGN SPEED	SEE CHART ABOVE	BACKUP ASSY.	35-40-08, 14
NOSE COLOR		MONORAIL ASSY.	35-40-06
NUMBER OF UNITS		CONCRETE PAD	35-40-09
		TRANSITION ASSY.	N/A
		WHEEL DEFLECTOR ASSY.	N/A

DRAWN:	T. BUSSE	DATE:	8/08/96
DESIGNED:	JVM/MHO	DATE:	3/01/96
CHECKED:	BB	DATE:	8/13/96
APPROVED	J. MACHADO	DATE:	8/13/96
CAD FILE:	QSCBCVR-U.dwg		

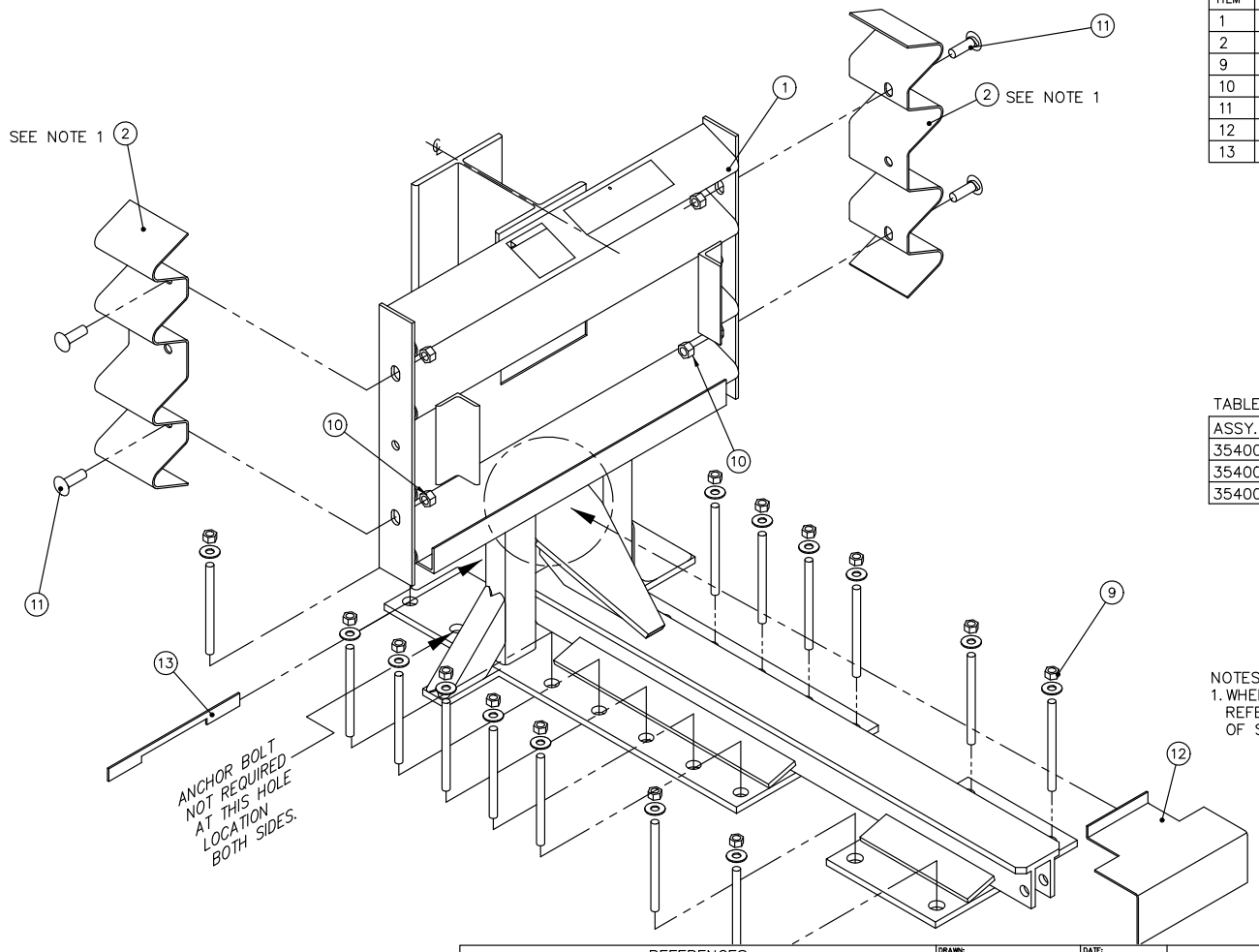
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
W/ CONCRETE BACKUP

SCALE	DWG.	SHEET	REV
1=40	QSCBCVR-U	1 OF 1	K

QuadGuard® System

SERGARD MDS® TL5 BARRIERS



PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE A	BACKUP,TS,QG,G	1.00
2	2760141-0000	PANEL,SIDE,QG,G	2.00
9	3525300-0000	ANCHOR,MP-3,PT-KIT,3/4X7,VT	3.00
10	2704191-0000	NUT,HX,5/8,G,RAIL	4.00
11	2699341-0000	BOLT,RAIL,5/8X2,G	4.00
12	2760293-0000	BRACKET,CARTRIDGE SUPPORT,TS B/U	1.00
13	2760294-0000	LOCKING BAR,CARTRIDGE SUPPORT	1.00

TABLE A

ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
3540031-0000	2760011-0000	BACKUP,TS,24,QG,G	610 [24.00]
3540032-0000	2760021-0000	BACKUP,TS,30,QG,G	760 [30.00]
3540033-0000	2760031-0000	BACKUP,TS,36,QG,G	915 [36.00]

NOTES:
1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER REFER TO THE TRANSITION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL PART NO. 2760141-0000.

ASSEMBLY NO. SEE TABLE A

REFERENCES

Revisions	Date	Rev.	By	Ckd.	App.
DEL ITEMS 3,5,6,7,&8,ADDED ITEMS 12 & 13, UPDATED RAIL END HOLES	10/21/97	E	RGC	KRM	DLJ
REMOVED 1 ANCHOR BOLT & ADDED NOTE	03/19/99	F	LWC	KM	SPT
QTY #8 WAS 4	07/08/97	D	JF	BB	SPT

DRAWN: S. LEWIS	DATE: 4-22-96		
DESIGNED: JVM/MHO	DATE: 3-1-96		
CHECKED: S. Trageser	DATE: 5/16/96		
APPROVED: J. Machado	DATE: 5/16/96		
CAD FILE: 354003.dwg			
NEXT ASSEMBLY:			

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

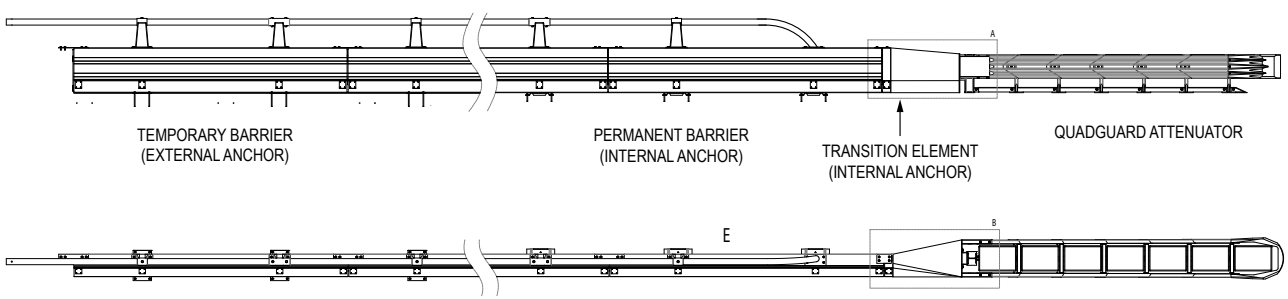
QUADGUARD® SYSTEM

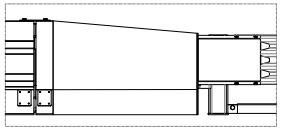
BACKUP ASSY, TS, QG

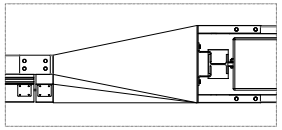
SCALE	DWG.	SHEET	REV
N.T.S.	35-40-03	1 of 1	F

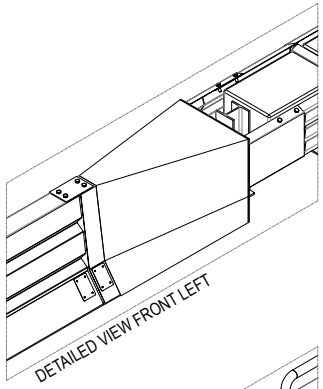
QuadGuard® System

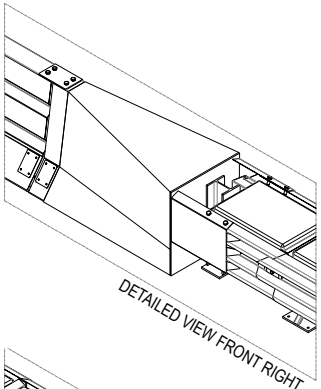
SERGARD MDS® TL5 BARRIERS

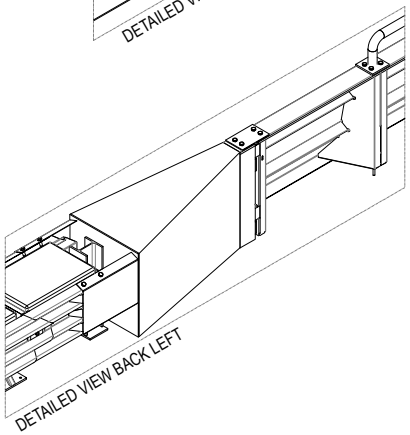


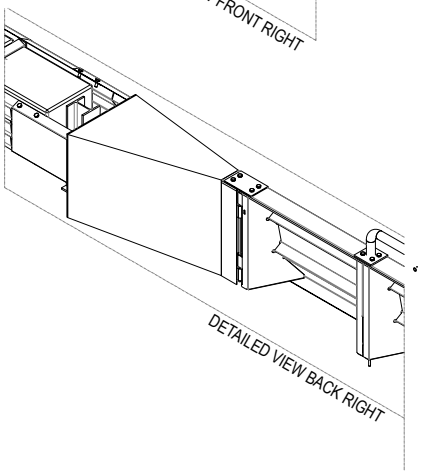

SIDE VIEW


TOP VIEW

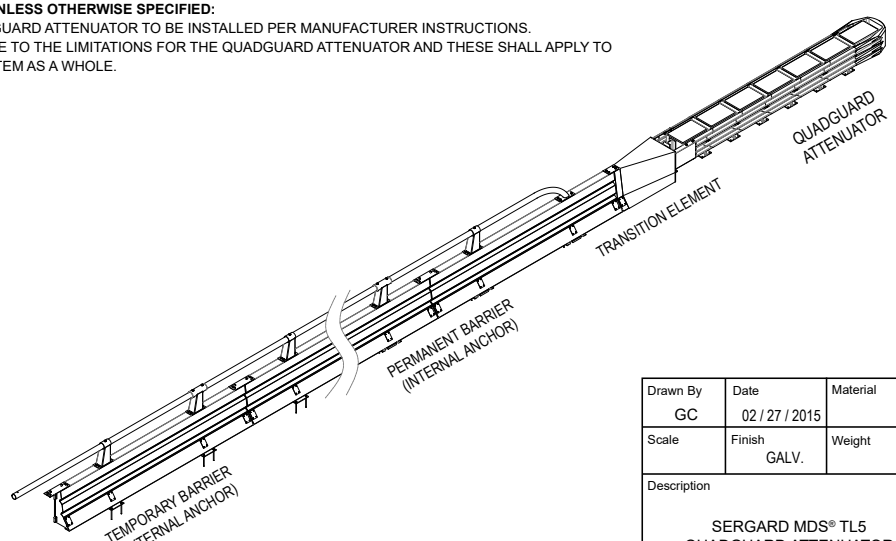

DETAILED VIEW FRONT LEFT

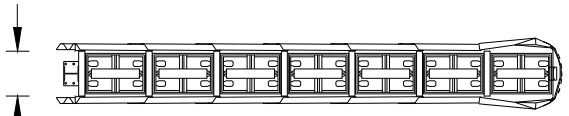

DETAILED VIEW FRONT RIGHT


DETAILED VIEW BACK LEFT


DETAILED VIEW BACK RIGHT

NOTES UNLESS OTHERWISE SPECIFIED:
1) QUADGUARD ATTENUATOR TO BE INSTALLED PER MANUFACTURER INSTRUCTIONS.
2) REFERE TO THE LIMITATIONS FOR THE QUADGUARD ATTENUATOR AND THESE SHALL APPLY TO THE SYSTEM AS A WHOLE.




QUADGUARD ATTENUATOR
610 mm [24"] MODEL NO. QS2406

Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5
QUADGUARD ATTENUATOR
model no. QS2406

UNCONTROLLED WHEN PRINTED

MDS® BARRIERS
43 Franklin St
East Hartford CT 06108
Tel: 860.289.8033
Fax: 860.289.8035
www.MDSBARRIERS.com

Drawing No.

H4-2000-TQG-610

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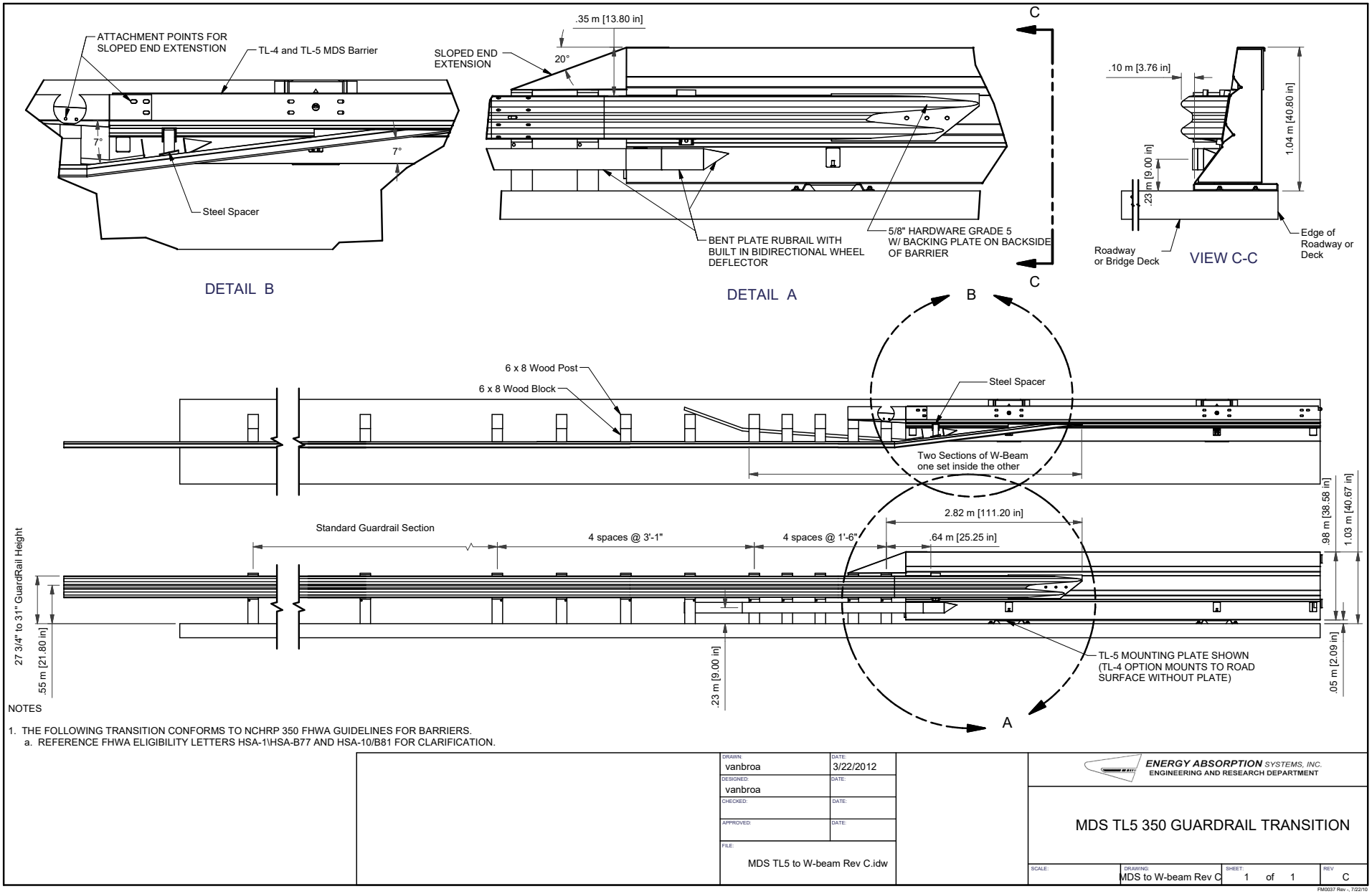
SERGARD MDS® TL5 BARRIERS



NOTES

1. THE FOLLOWING TRANSITION CONFORMS TO NCHRP 350 FHWA GUIDELINES FOR BARRIERS.
   a. REFERENCE FHWA ELIGIBILITY LETTERS HSA-1\HSA-B77 AND HSA-10/B81 FOR CLARIFICATION.

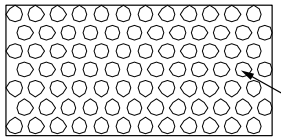
DRAWN: vanbroa	DATE: 3/22/2012	ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT	
DESIGNED: vanbroa	DATE:	MDS TL5 350 GUARDRAIL TRANSITION	
CHECKED:	DATE:		
APPROVED:	DATE:		
FILE: MDS TL5 to W-beam Rev C.idw		SCALE:	DRAWING: MDS to W-beam Rev C / SHEET: 1 of 1 / REV: C

FM0037 Rev -, 7/22/10

ANNEX 4

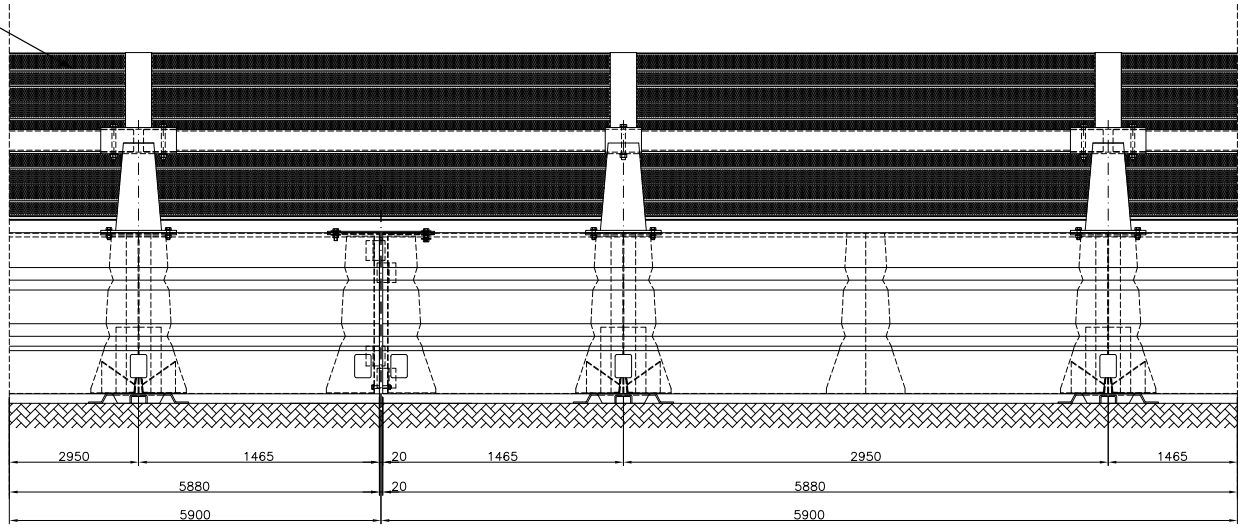
REF	Drawing Number	Drawing Description
20	H4-6000-7DA-2M	Aluminum Acoustic Sound Absorbing Wall 2 Meters
21	H4-6000-7DG-2M	Glass Acoustic Sound Wall 2 Meters
22	H4-6000-7DA-3M	Aluminum Acoustic Sound Absorbing Wall 3 Meters
23	H4-6000-7DG-3M	Glass Acoustic Sound Wall 3 Meters
24	H4-6000-7DA-4M	Aluminum Acoustic Sound Absorbing Wall 4 Meters
25	H4-6000-7DG-4M	Glass Acoustic Sound Wall 4 Meters
26	H4-6000-7DA-5M	Aluminum Acoustic Sound Absorbing Wall 5 Meters
27	H4-6000-7DG-5M	Glass Acoustic Sound Wall 5 Meters
28	H4-6000-7DA-55M	Aluminum Acoustic Sound Absorbing Wall 5.5 Meters
29	H4-6000-7DG-55M	Aluminum Acoustic Sound Absorbing Wall 5.5 Meters

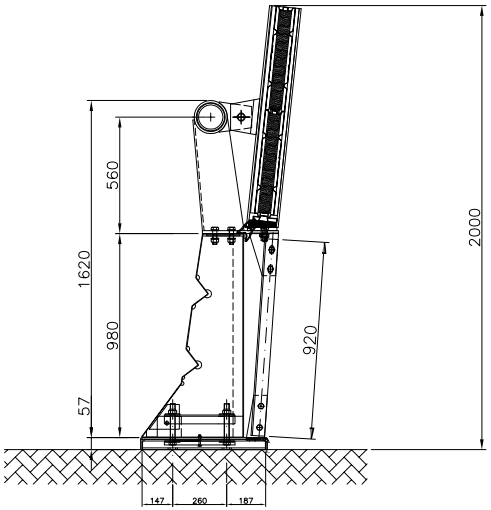
SERGARD MDS® TL5 BARRIERS



PERFORATED ALUMINUM PANELS

1 METER ALUMINUM ACOUSTIC SOUND ABSORBING PANEL
TOTAL HEIGHT OF SYSTEM 2 METERS





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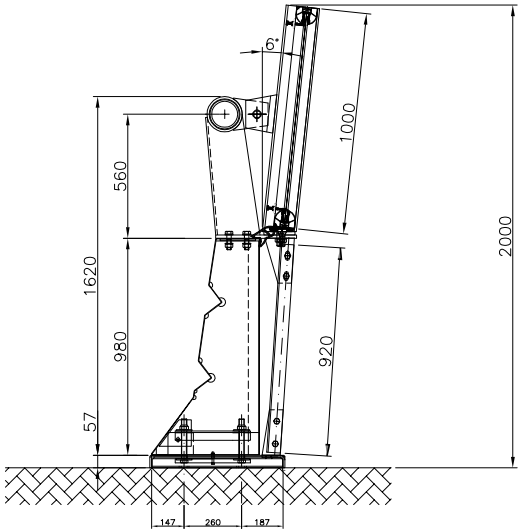
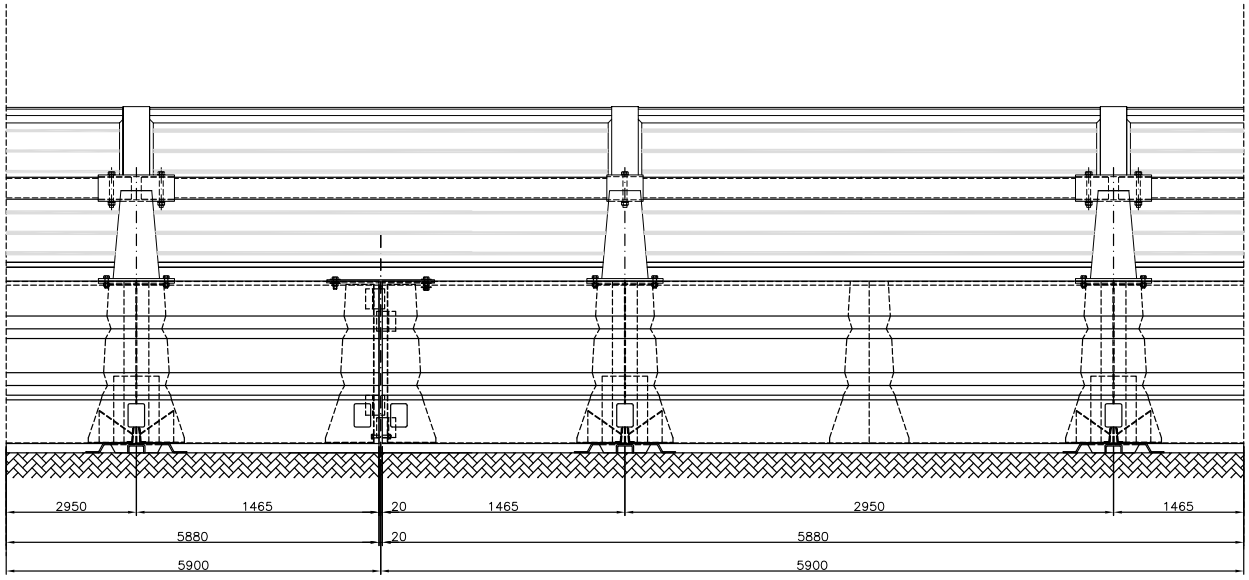
GC	07 / 27 / 2015		SERGARD MDS® TL5 BARRIER INTERGRATED WITH SOUND WALL TYPE 7DA	Drawing No. H4-6000-7DA-2M	
Scale	Finish	Weight			
	GALV.				

1 METER GLASS ACOUSTIC SOUND PANEL
TOTAL HEIGHT OF SYSTEM 2 METERS





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Drawn By	Date	Material
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Scale	Finish	Weight
	GALV.	

Description
SERGARD MDS® TL5 BARRIER
INTERGRATED WITH
SOUND WALL
TYPE 7DG

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Drawing No.
H4-6000-7DG-2M

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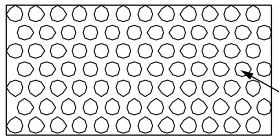
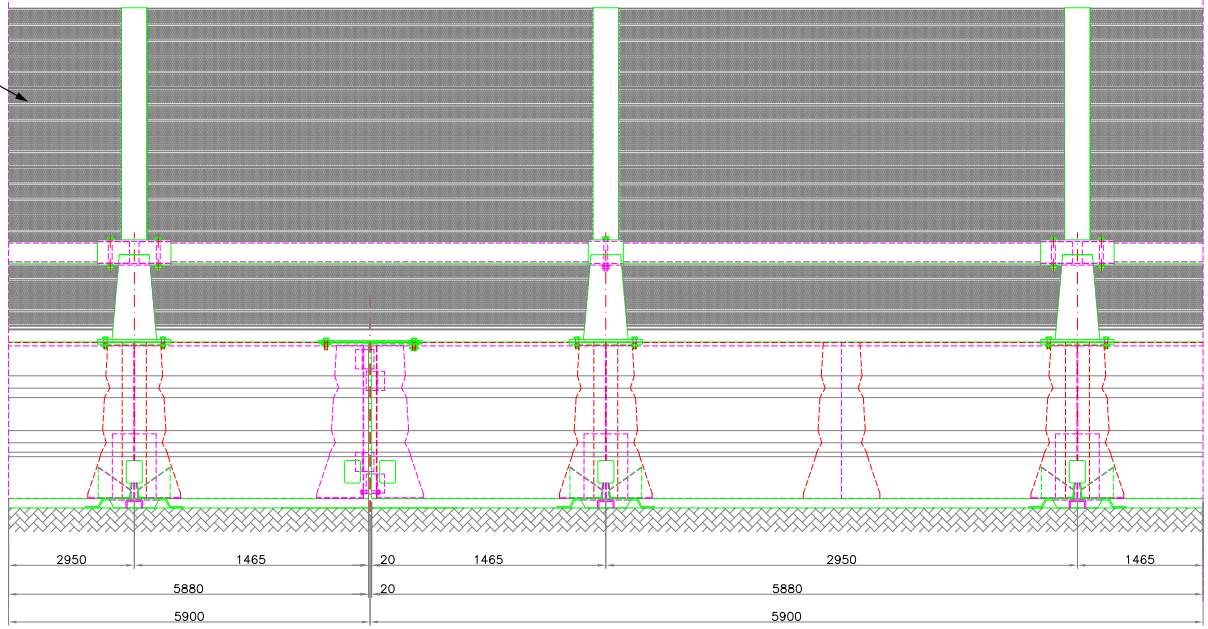
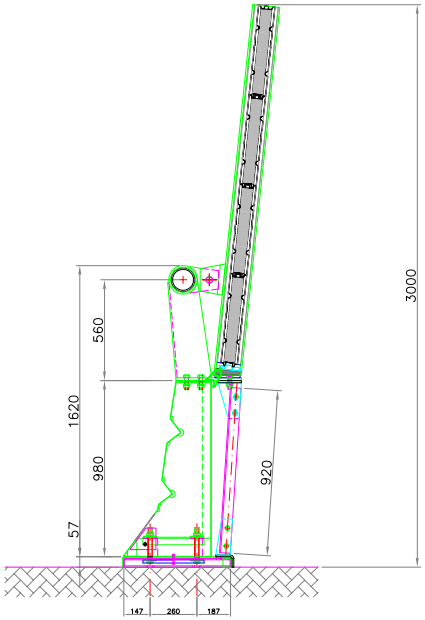


PERFORATED ALUMINUM PANELS

2 METER ALUMINUM ACOUSTIC SOUND ABSORBING PANEL
TOTAL HEIGHT OF SYSTEM 3 METERS





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Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5 BARRIER
INTERGRATED WITH
SOUND WALL
TYPE 7DA

UNCONTROLLED WHEN PRINTED

Drawing No.

H4-6000-7DA-3M

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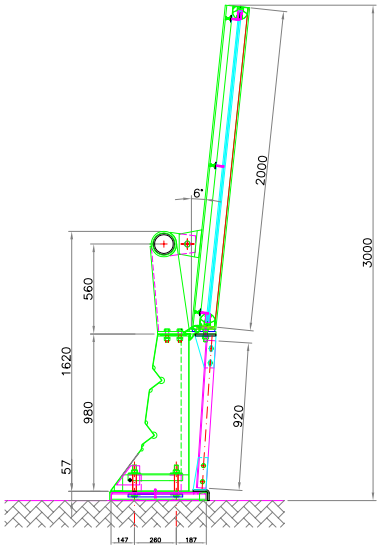
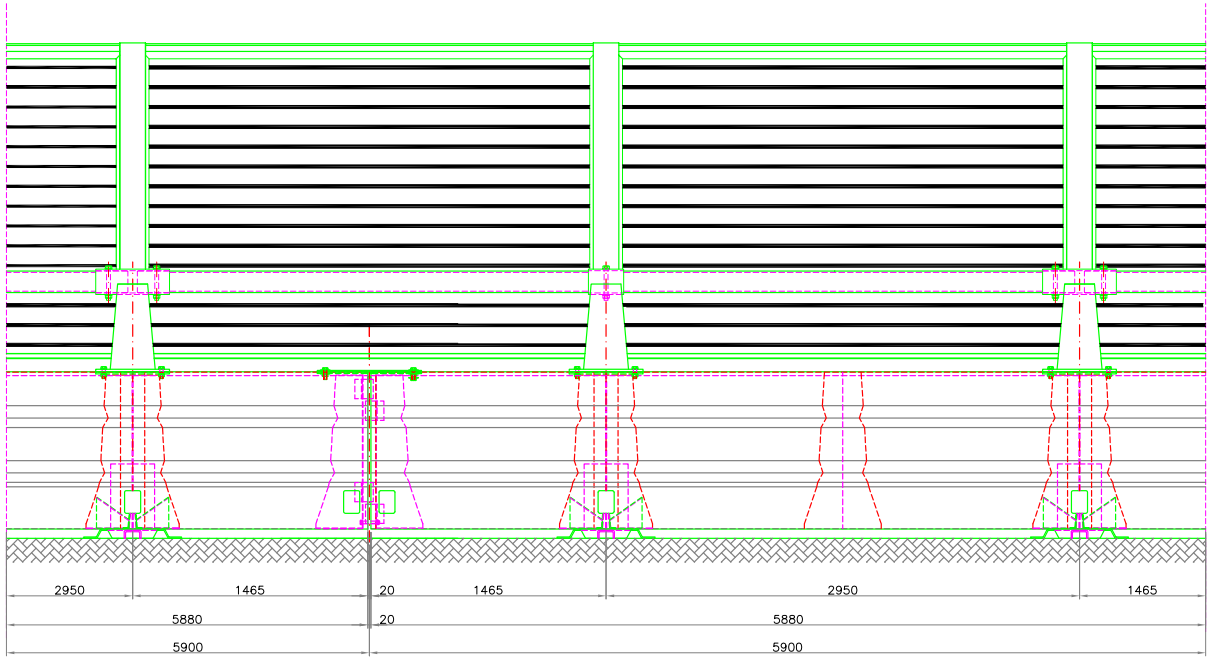
SERGARD MDS® TL5 BARRIERS

2 METER GLASS ACOUSTIC SOUND PANEL
TOTAL HEIGHT OF SYSTEM 3 METERS





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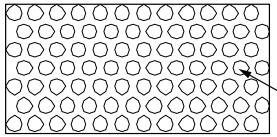
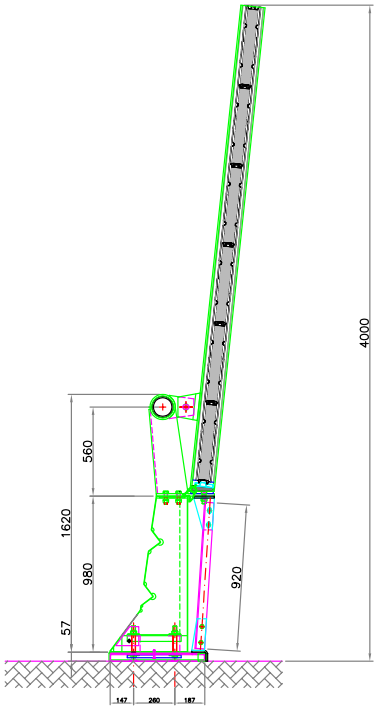
Scale	Finish	Weight			
	GALV.				

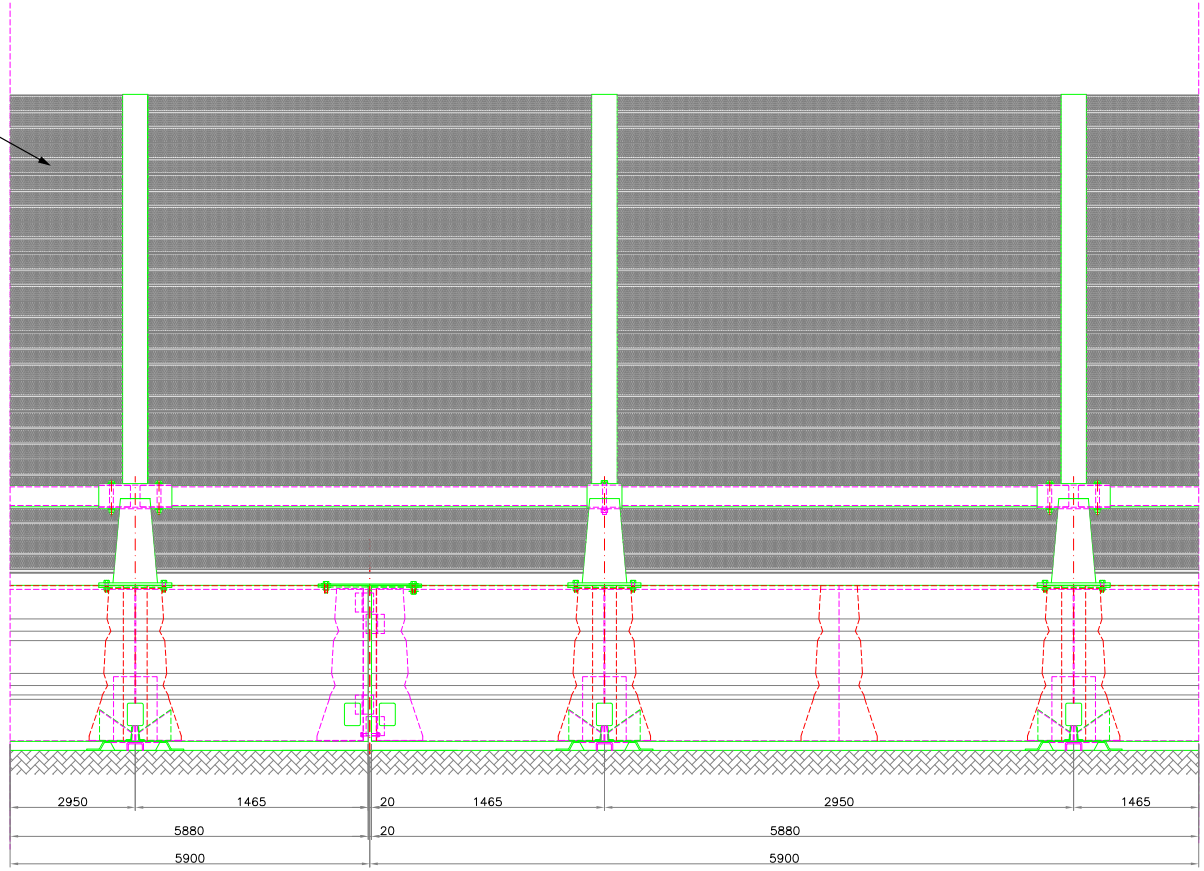
SERGARD MDS® TL5 BARRIERS



PERFORATED ALUMINUM PANELS

3 METER ALUMINUM ACOUSTIC SOUND ABSORBING PANEL
TOTAL HEIGHT OF SYSTEM 4 METERS





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Drawn By	Date	Material
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Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5 BARRIER
INTERGRATED WITH
SOUND WALL
TYPE 7DA

UNCONTROLLED WHEN PRINTED

Drawing No.

H4-6000-7DA-4M

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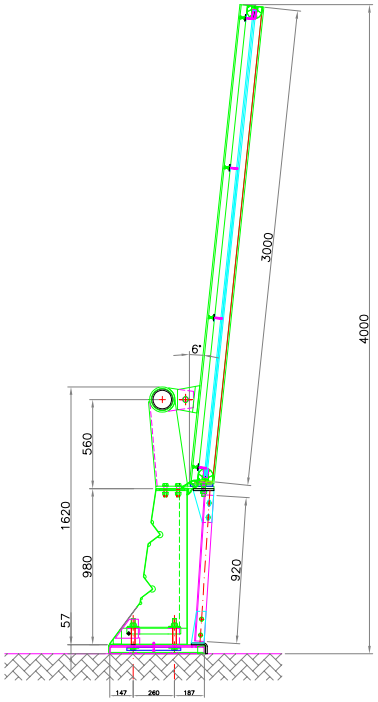
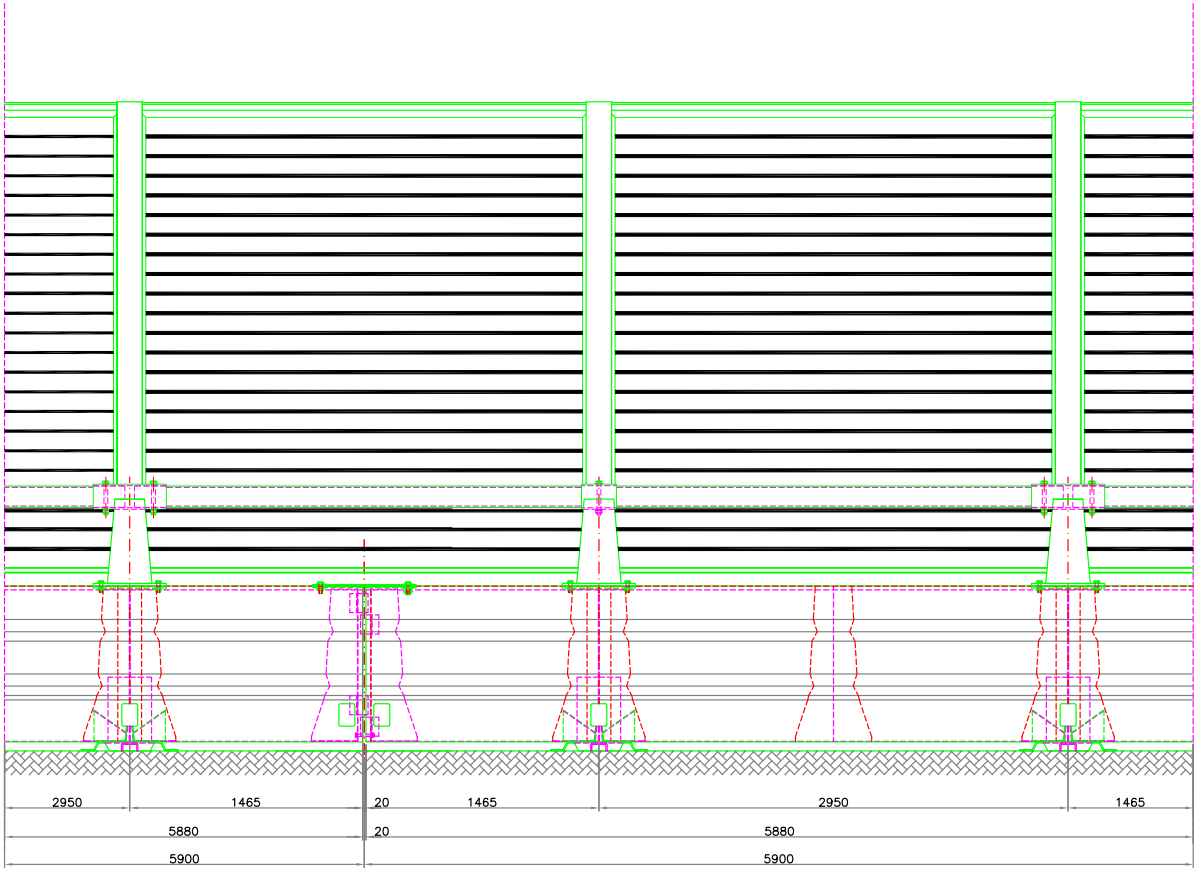
3 METER GLASS ACOUSTIC SOUND PANEL
TOTAL HEIGHT OF SYSTEM 4 METERS





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Drawn By	Date	Material	Description		
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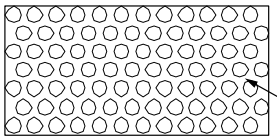
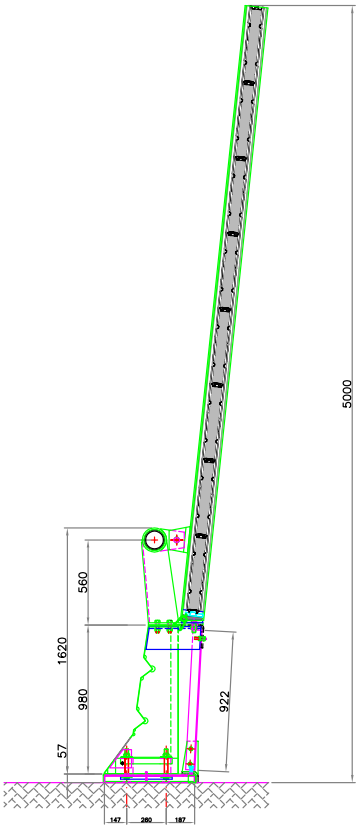
Scale	Finish	Weight		Drawing No. H4-6000-7DG-4M	
	GALV.				

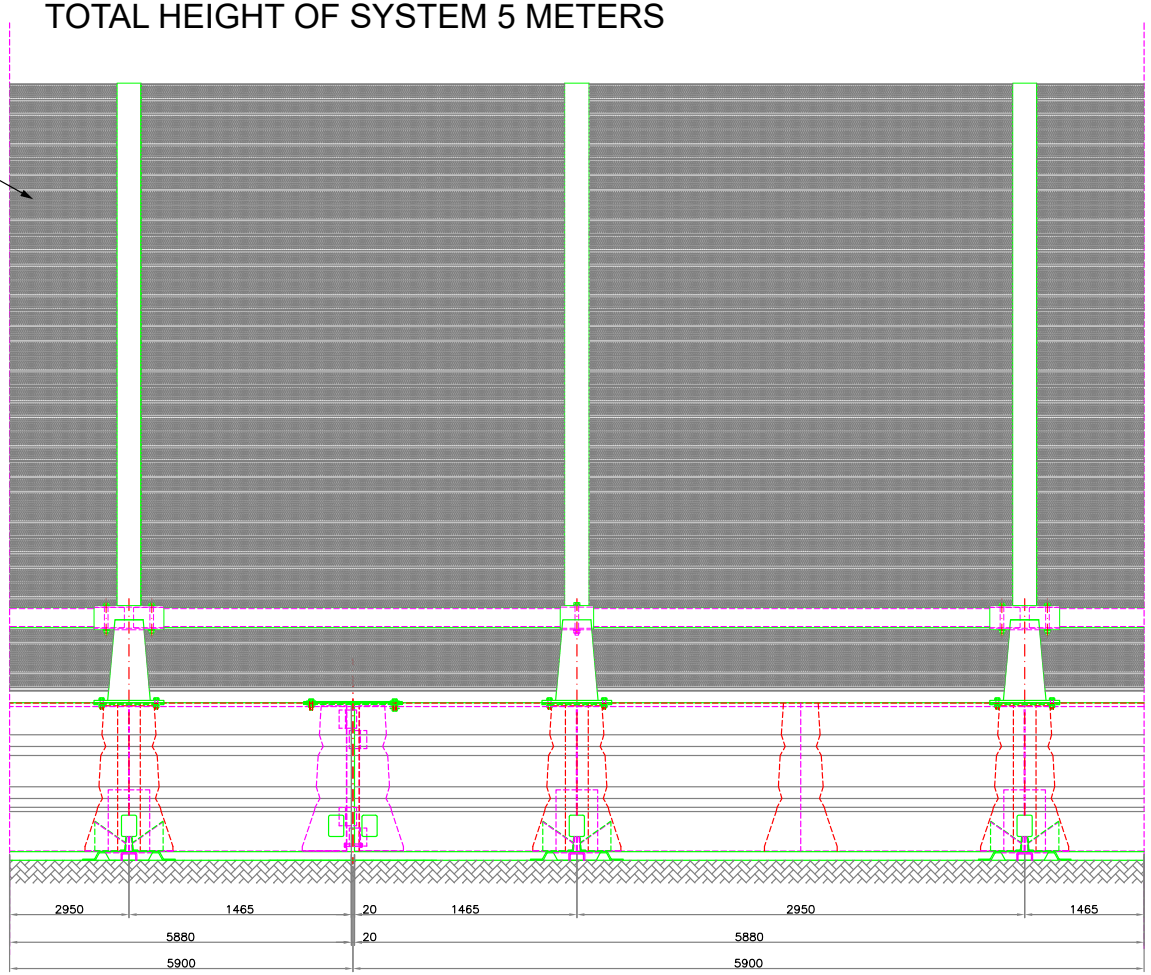
SERGARD MDS® TL5 BARRIERS



PERFORATED ALUMINUM PANELS



4 METER ALUMINUM ACOUSTIC SOUND ABSORBING PANEL
TOTAL HEIGHT OF SYSTEM 5 METERS



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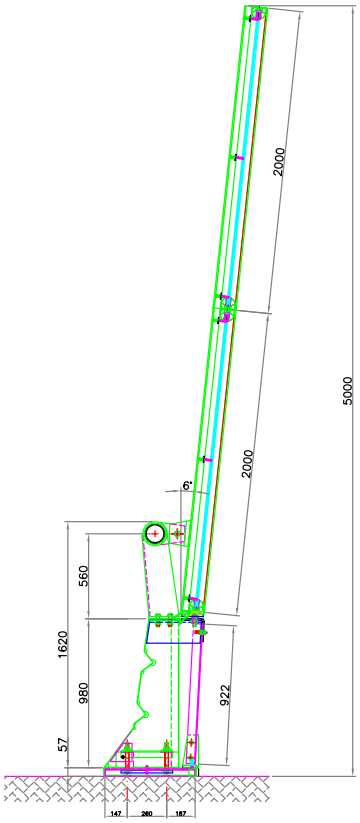
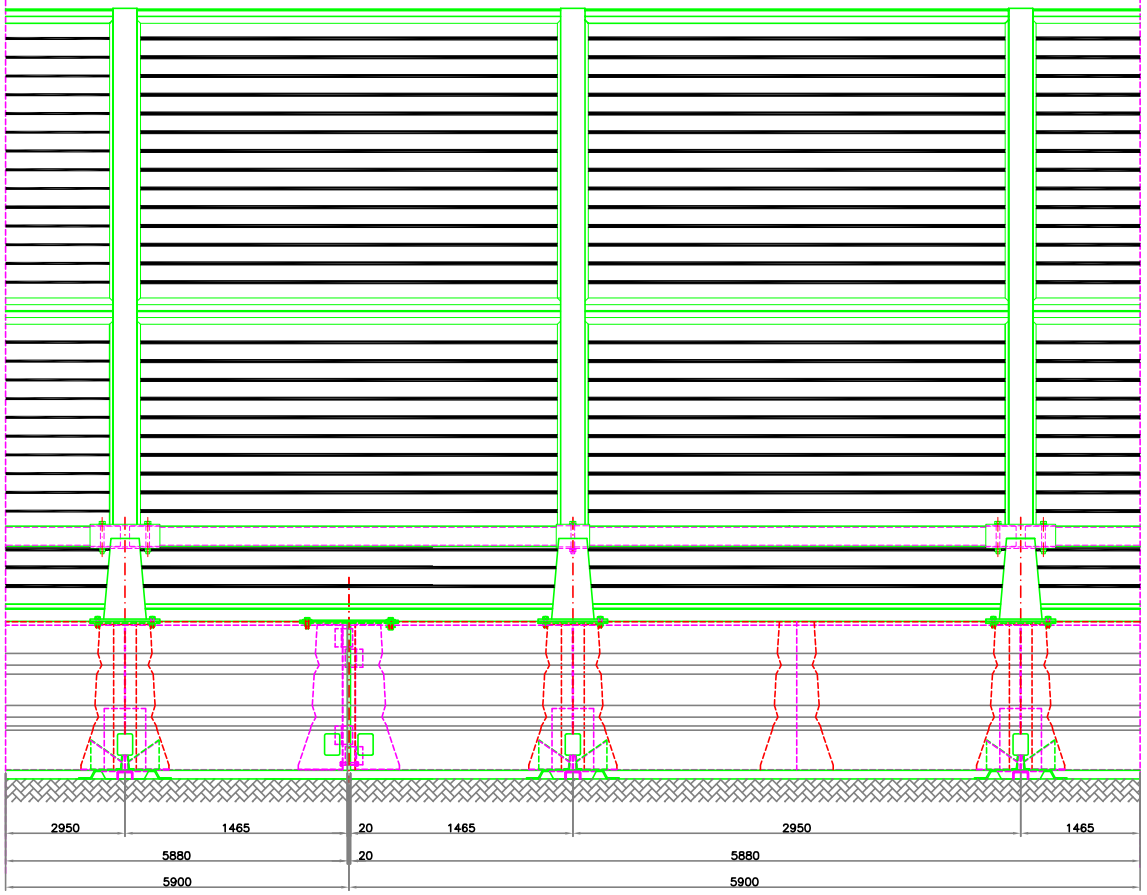
GC	07 / 27 / 2015		SERGARD MDS® TL5 BARRIER INTERGRATED WITH SOUND WALL TYPE 7DA	Drawing No. H4-6000-7DA-5M	
Scale	Finish	Weight			
	GALV.				

SERGARD MDS® TL5 BARRIERS

4 METER GLASS ACOUSTIC SOUND PANEL
TOTAL HEIGHT OF SYSTEM 5 METERS





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Drawn By	Date	Material	Description		
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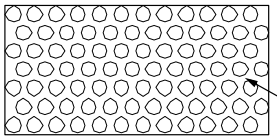
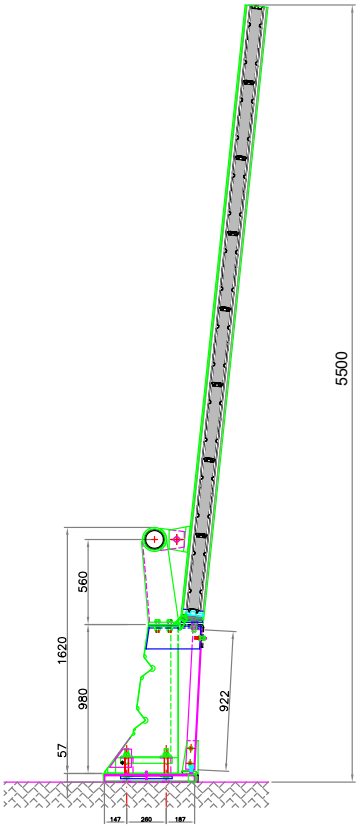
Scale	Finish	Weight		Drawing No. H4-6000-7DG-5M	
	GALV.				

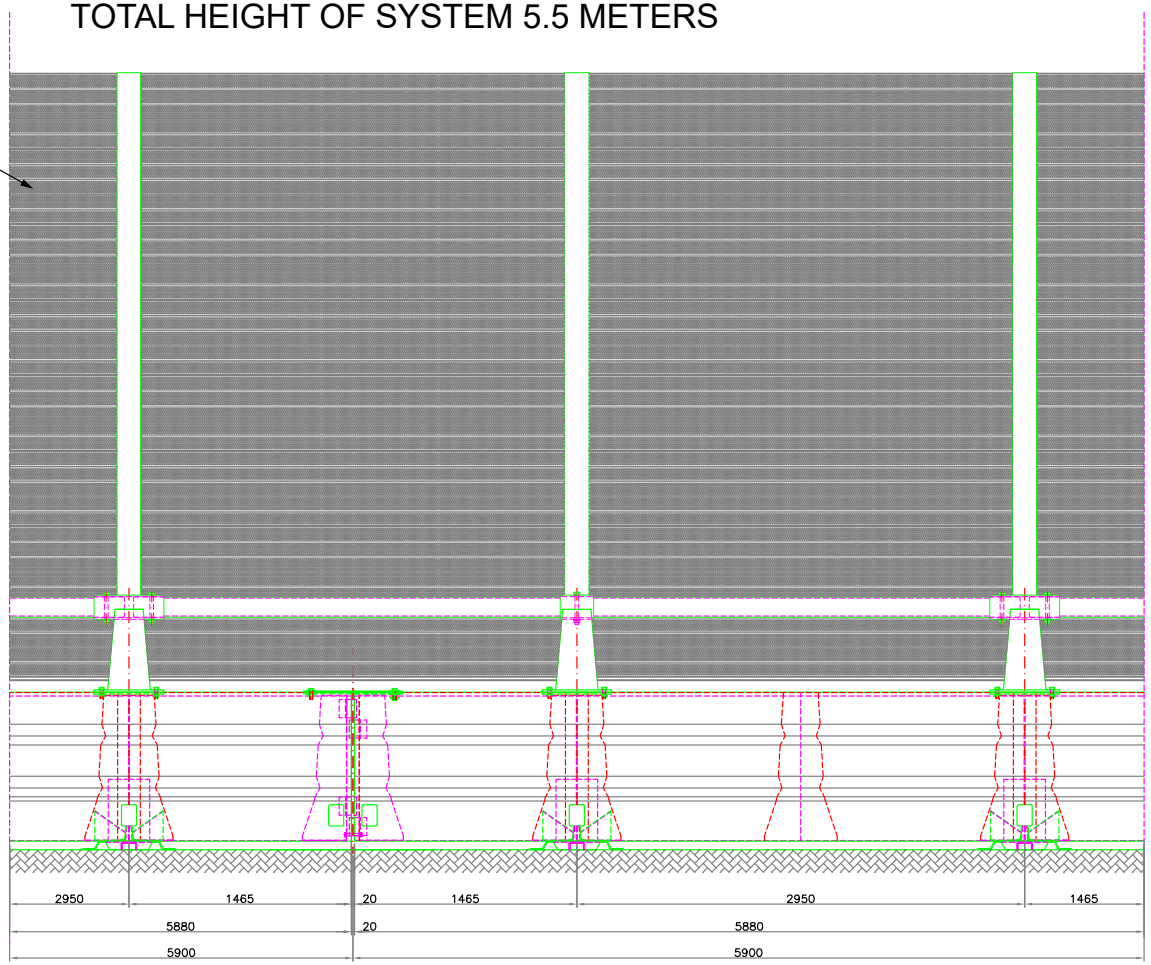
SERGARD MDS® TL5 BARRIERS



PERFORATED ALUMINUM PANELS

4.5 METER ALUMINUM ACOUSTIC SOUND ABSORBING PANEL
TOTAL HEIGHT OF SYSTEM 5.5 METERS





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Drawn By	Date	Material
GC	07 / 27 / 2015	
Scale	Finish	Weight
	GALV.	

Description

SERGARD MDS® TL5 BARRIER
INTERGRATED WITH
SOUND WALL
TYPE 7DA

UNCONTROLLED WHEN PRINTED

Drawing No.

H4-6000-7DA-55M

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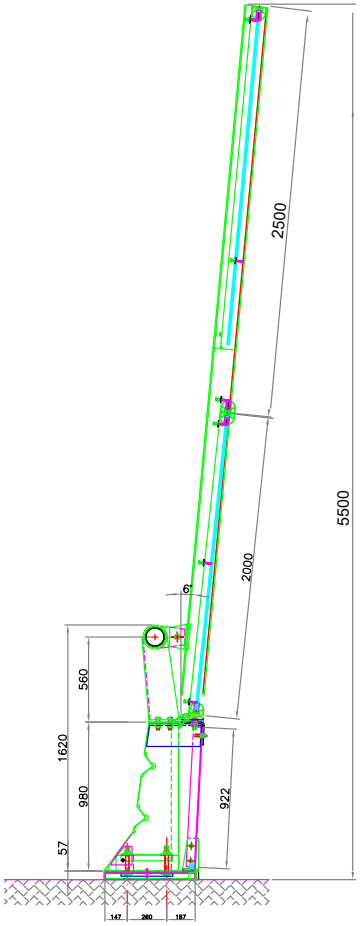
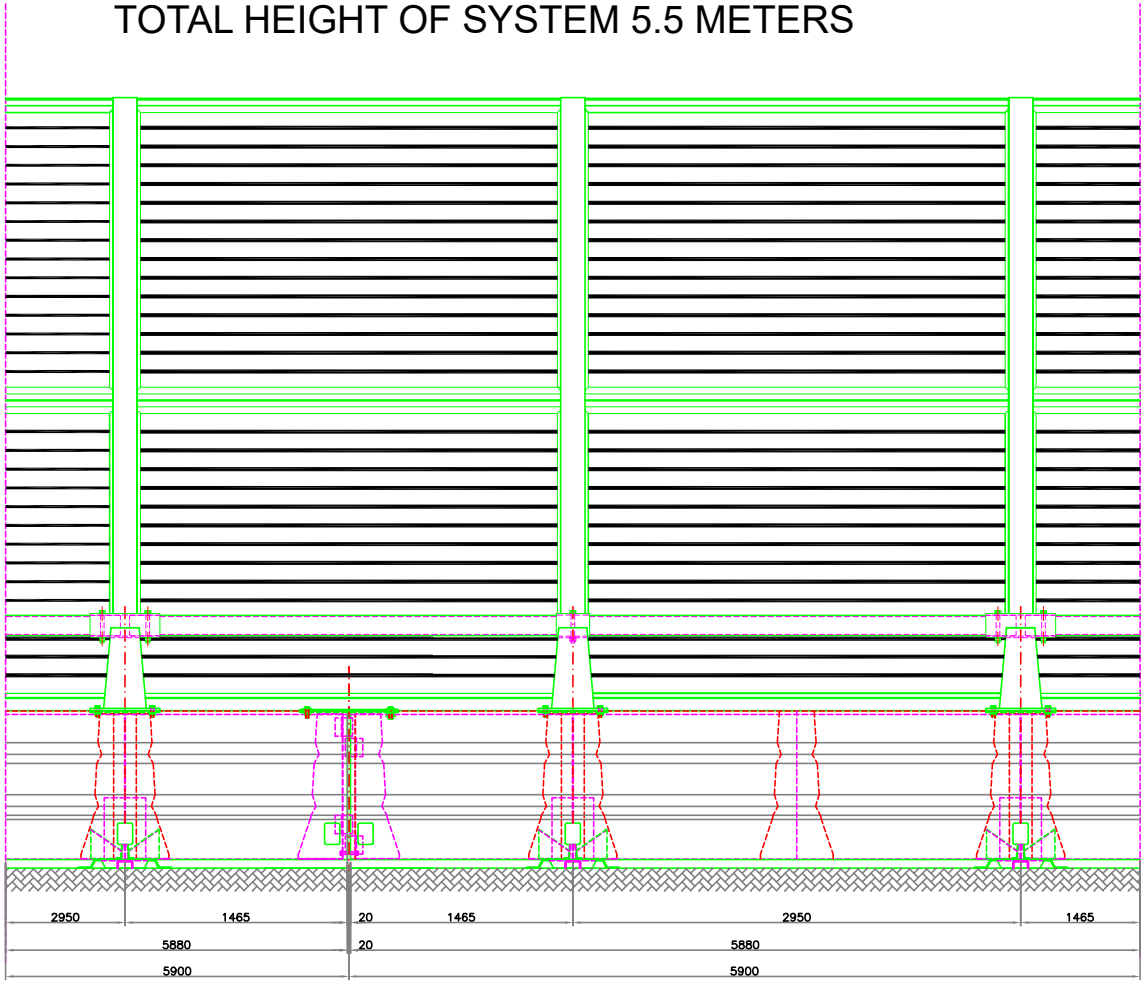
SERGARD MDS® TL5 BARRIERS

4.5 METER GLASS ACOUSTIC SOUND PANEL
TOTAL HEIGHT OF SYSTEM 5.5 METERS





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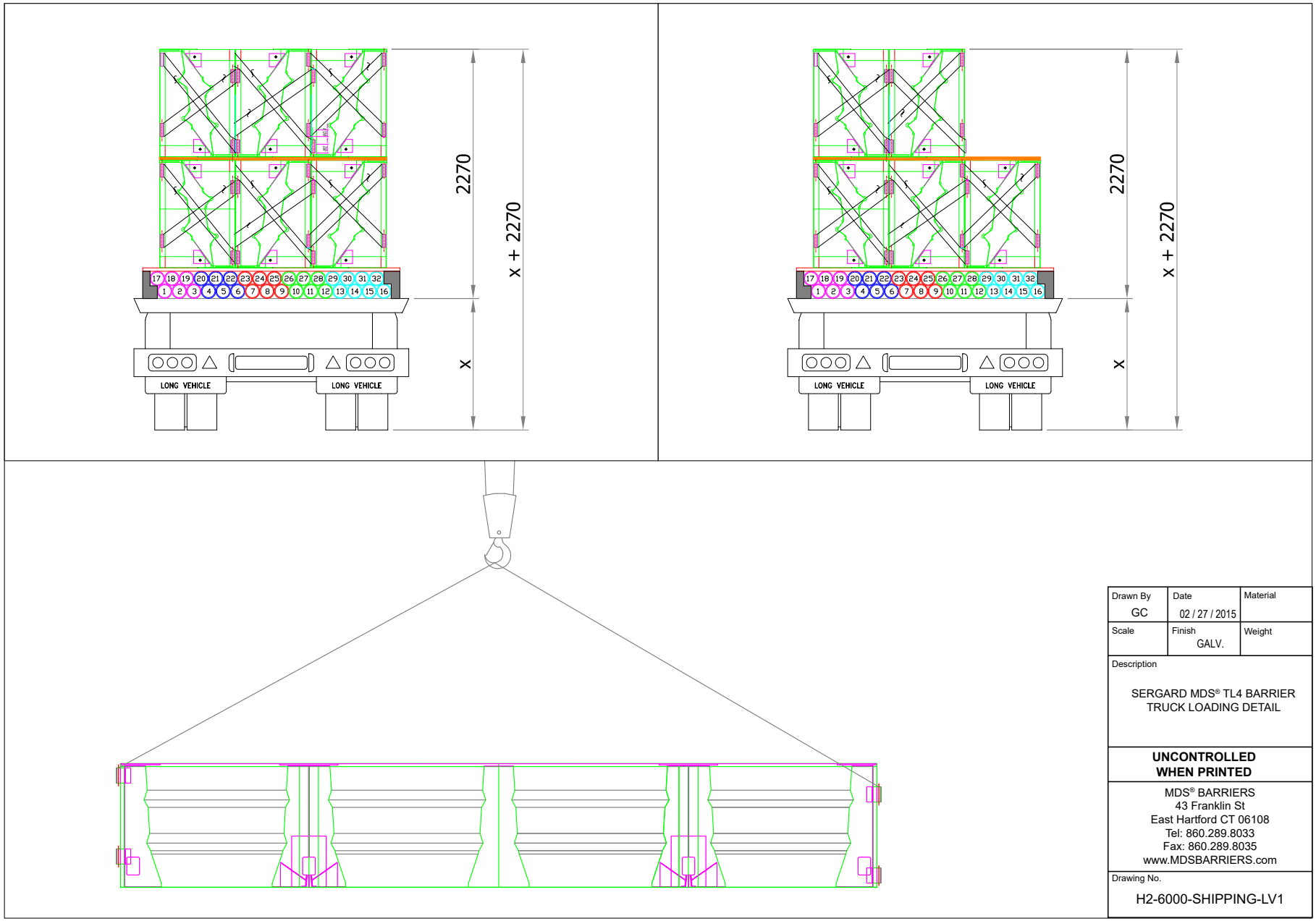
GC	07 / 27 / 2015		SERGARD MDS® TL5 BARRIER INTERGRATED WITH SOUND WALL TYPE 7DG	Drawing No. H4-6000-7DG-5M	
Scale	Finish	Weight			
	GALV.				

ANNEX 5

REF	Drawing Number	Drawing Description
30	H4-6000-SHIPPING	Truck Loading and Stacking

SERGARD MDS® TL5 BARRIERS



Drawn By	Date	Material
GC	02 / 27 / 2015	
Scale	Finish: GALV.	Weight

Description

SERGARD MDS® TL4 BARRIER
TRUCK LOADING DETAIL

UNCONTROLLED WHEN PRINTED

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East Hartford CT 06108
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Drawing No.

H2-6000-SHIPPING-LV1

SERGARD MDS® TL5 BARRIERS

ANNEX 6

REF	Description
SWMS	Safe Working Methods Statement

SERGARD MDS® TL5 BARRIERS

Safe Working Method Statement

Hazard Identified	Control Required	Assessed Risk Before Controls	Person Responsible	Residual Risk Score	Installer / Operator Sign Off\
Refused entry to project site for lack of PPE	Ensure all delivery drivers are aware of the project site PPE requirements and are physically wearing them (eg. reflective vests, hard hats, eye and ear protection, long sleeve shirt and safety shoes)	M	X	L	X
All cranes to be properley maintained and certificates to be available	Cranes must have valid certificates as well as operator to have appropriate qualifications to operate crane	M		L	
	Lift chains to be in good service and tagged condition	M		L	
Contact with overhead obstructions	Always “LOOK UP AND LIVE”	H		L	
	Stick to the designated routes	H		L	
	Never operate a crane without assessing potential overhead obstructions	H		L	
	If uncertain or if view is obstructed arrange for a spotter	H		L	
Injuries to pedestrians or collisions with vehicles	Maintain speed according to posted speed limits and reduce speed in work zones	M		L	
	Give priority way to other traffic	M		L	
	Always ensure traffic management / controller is aware of offloading to ensure a safe working environment	M		L	
	Ensure delivery trucks have flashing safety lights, reverse alarm and are in road worthy condition. Truck and vehicle inspection must be conducted before any start of work				

MDS® Barrier	FORM SAFE WORKING METHOD STATMENT	AUTHORISED BY:	ISSUE 1	February 2. 2015

Hazard Rating Assessment H - High Risk M - Medium Risk L - Low Risk

SERGARD MDS® TL5 BARRIERS

Safe Working Method Statement

Activity	Hazard Identified	Control Required	Assessed Risk Before Controls	Person Responsible	Residual Risk Score	Installer / Operator Sign Off\
Unloading and placement of MDS® Barrier		Site to provide instructions as per location for barriers to be installed in accordance with the approved traffic management plan and/ or the approved method of compliance and safe working proceedures	L	X	L	X
		MDS® Barriers to be installed in accordance with the MDS® Barriers installation manual	L		L	
		Traffic management to be supplied by site safety operations to ensure general public and vehicles stay clear of any lifting zone	M		L	
	Truck tips over	Set up on a firm level surface	M		L	
		Out riggers are to be used and spacers must be used to provide level surface	M		L	
	Driver falls	Driver to only work over 2 m if wearing suitable fall arrest equipment, and to use steps or ladder to access equipment or barriers above this height	M		L	
	Hazard due to weather conditions	Weather conditions must be taken into account and assessed prior to commencing placement of MDS® Barriers. Do not commence work where wind, rain, heat, cold or other inclement conditions exist	L		L	
	Personnel crushed by load	Driver /operator must not get in between load and another solid object	M		L	
		If required, barricade off the work area	M		L	
	Crushing body while raising or lowering MDS® Barrier	Operator to ensure all site personnel to stay clear of the MDS® Barrier	M		L	
	Crushing of pinch points between MDS® Barrier connections	Alert crew and all workers to ensure hands, fingers and other body parts are to be clear when connecting two barriers together	L		L	
		Hands, fingers and other body parts to be kept clear when installing or lowering connecting pins	L		L	

Hazard Rating Assessment H - High Risk M - Medium Risk L - Low Risk