ROBOS

ROBOS

ROAD BARRIER OPTIMAL SOLUTION

Product Manual **October 2025**

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Introduction

ROBOS is new type of flexible barrier specifically designed for the following features.

- **Mechanised Installation**. ROBOS is quickly and easily installed by ROBOS specialists using ROBOS installation vehicles. This enables up to 1,200m per day of flexible barrier installation, with minimal risk to installers and road traffic.

- **Heavy Vehicle application.** ROBOS has been tested to MASH TL-4 for 10 tonne trucks and demonstrated smooth redirection and arrest with limited vehicle damage during testing.

Ease and Speed of Repair.
ROBOS has proven that after repeated severe impacts, there was no damage to foundation or barrier. The repair works required only replacement of posts and barrier retainers. Using equipment fitted with ROBOS tools, the repair time is generally less than two hours.

- **Protection of Vulnerable Road users**

  ROBOS is designed with posts behind safety barrier to avoid fatal impact with posts by vulnerable road users. This includes vehicles with Aluminium body work. First responders have seen many cases of motorcyclists being delimbed by the exposed posts on wire rope barriers.

- **Enabling Solution.** ROBOS international's intent is to provide Regional Authorities with a cost-effective solution for the supply, installation and maintenance of a flexible barrier solution. ROBOS meets required AASHTO MASH TL 4 requirements.

- The system is significant for the implementation of accident reduction programmes. The product is designed to protect a wide range of road users and in future will comply with EU standards for vulnerable users.
-

- **Design Improvements** ROBOS reserves the right to make improvements in detailed design. All improvements will meet MASH 2016 requirements and be advised to ASBAP.
- **Global Patents Pending** ROBOS has international patents pending for the barrier system, the unique terminal design and for the automated installation system.

Live Barrier (Optional extra)

ROBOS safety barriers can be fitted with live sensors to advise concerned services of impact occurrence and presence of ice.

Instant Ice Notification (Optional Extra)

Emergency procedures

The ROBOS flat strap flexible barrier system behaves without vehicle entanglement in the case of an accident. This is because the flat strap barriers are bound together and do not move individually, as is the case with a wire rope barrier. During the 30 full scale crash tests ROBOS has conducted, there was no occasion in which the crash vehicle became entangled with the barrier. This is due to the post connection retainer travelling with the moving vehicle and avoiding a bandsaw type contact.

In the event post-accident, that it is necessary to reduce tension of the ROBOS flexible barrier, this is easily achieved by using an emergency vehicle to apply pressure to the release post at each terminal as shown in the image on the right.

Lowering Barrier

When tension release has been done, the ROBOS barrier can be lowered to ground level by lifting the barrier attachment loop 50 millimetres at each post. This disengages the flexible barrier from the post and allows barrier straps to be laid on ground.

Road posts can be removed by either lifting from the ground socket or alternatively cutting at ground level using Jaws of Life.

Jaws of Life

In the event that fully tensioned ROBOS strap barrier needs to be cut at point of incident for life saving action, this is achieved by using Jaws of Life which are more than capable of cutting strap. This is easier than cutting a 19mm wire rope. Prior to cutting the strap, a fire blanket or other blanket should be laid over the strap and it should be cut adjacent to a post attachment. Cutting the strap to releases tension should only be done using Jaws of Life whilst maintaining a safe distance from the loose end of the strap.

ROBOS Flexible Barrier Overview

The ROBOS flexible barrier is an alternative to the wire rope barrier. **Wire rope barriers are no longer acceptable in Europe, because of community opposition to the hazards of wire rope.**

The barrier comprises a foundation chosen from the following types.

1. One piece driven road post.
2. Two piece Road Post with Driven Socket
3. Road post inserted into ground screw.

4. The choice of foundation to be agreed by local authority.

The post is light weight galvanized steel, designed to bend upon impact and release barrier to perform vehicle redirection.

The safety barrier is a high tensile galvanized flat steel strap fitted to the post and held in longitudinal tension. Once released from the post the strap provides lateral resistance to the impacting vehicle.

The strap is held in relative position by a galvanized steel retainer.

Firstly, this retainer keeps all straps connected, such that straps become a mobile fence, acting in concert. No straps move independently without restraint.

Secondly, this retainer engages with the impacting vehicle and travels with the vehicle. In doing so, the retainer acts as a sheath, protecting the straps from impact damage and similarly protecting the impacting vehicle and passengers from the sawing action that occurs with wire rope. Cars with aluminium bodies are likely to be penetrated by wire rope collision.

System Description

The ROBOS system has been designed for all road users and provides the option to fit a motorcycle rub rail. The system complies and has been tested to

AASHTO MASH TL 3 and TL 4 requirements

The following tests have been completed and passed.

Length of Need

MASH 4-10

MASH 4-11

MASH 4-12

The barrier heights above the adjacent road level are as follows with a tolerance of + 20 - 20mm.

Top Barrier Height 960mm

Second Barrier 840mm

Third Barrier 720mm

Fourth Barrier 600mm

The barriers are secured by a galvanized steel retainer loop and attached to post with a glass reinforced nylon plug.

Foundations are 800 - 1,000 mm long and installed in the formation.

ROBOS barrier is connected to ROBOS TERMINALS and are non-releasing terminals.
The Terminals have been tested in accordance with MASH (2016) and passed.

MASH 3 - 30

MASH 3 – 31

MASH 3 – 32

MASH 3 – 33

MASH 3 – 34

MASH 3 – 35

MASH 3 – 37b

Limitations and Warnings

ROBOS Steel Strap Barrier System has been thoroughly tested and evaluated by Certified Testing Authority and complies with MASH 2016 evaluation criteria. The tests address typical in-service collisions.

The system must be installed by ROBOS authorised personnel using partially mechanised ROBOS installation equipment, or by licensed operators using ROBOS equipment.

Actual vehicle impacts may be different to MASH 2016 specified impacts and may result is different results, depending on speed, weight, angle of actual incident.

Geotechnical and Post Selection

The performance of barrier and terminal foundations has been tested under a range of geotechnical specifications. The ROBOS foundations provide strength in formations adjacent to roadside. Impact performance is validated using a ROBOS dynamic Impact test. (see Dynamic Test Page 23) Ground conditions are to be approved by Geotech Engineers.

The selection of foundation for posts is as follows

1. Single piece driven post. This is suitable for ground conditions where the ROBOS Impact test provides a pass. It is also suitable where there is not a high level of impacts requiring repeated post replacement.
2. Two piece post with driven socket. This is suitable for ground conditions which pass the ROBOS Impact test. It may also be used where a high frequency of impacts is expected and facilitates repeated replacement.
3. Two piece post with ground screw socket. Where ground conditions are less favourable this post may be used. It remains necessary to pass the ROBOS Impact test for acceptance.

SAFETY

The safety of installation crew and road users is a key part of ROBOS Safety Barrier solution. ROBOS recognizes that current manual method exposes installation workers to a high risk and possibly fatal, environment.

Also, road users face the obstacles of lane closures and disrupted traffic.

ROBOS philosophy is to minimize those risks.

As a result, our partially mechanised installation equipment is able to install up to 1.2 kilometres of barrier per day. The speed of installation also reduces the lane closures time required.

All installation of ROBOS barrier will be done by ROBOS trained and experienced personnel.

Design Considerations – NZ

The Design conditions outlined by local Road Authorities override conditions stated in this manual.

For example, the NZTA guidelines detailed in M23 Appendix A: Permanent Barrier systems by NZTA.

Temperature Range: The ROBOS barrier is effective in an operating temperature range from -20 to +50 degrees centigrade.

The Design Life of the ROBOS barrier is 30 years. All welding of barrier shall be category SP.

Dynamic Deflection

ROBOS has the lowest dynamic deflection for approved flexible barriers.

Roadside Barrier crash tests

Test Level	Vehicle weight kg	Impact speed kph	Impact Angle degrees	Post Spacing metres	Dynamic Deflection metres	Working width metres
MASH TL3	2,270	100	25	3.0	2.16	2.25
MASH TL4	10,000	90	15	3.0	2.88	3.09

Median Barrier crash tests

Test Level	Vehicle weight kg	Impact speed kph	Impact Angle degrees	Post Spacing metres	Dynamic Deflection metres	Working width metres
MASH TL3	2270	100	25	3.0	1.96	1.96

Curves Horizontal

The minimum horizontal curve radius is 250 m.

This is applicable at 3m post spacing and can be reduced by reducing post spacing.

Vertical The minimum vertical curve in a valley is 2,500 m. This can be reduced if required by positioning of Anchors.

Slopes : Slopes up to 1:10 are normal for ROBOS barrier. Local road authority should be consulted for steeper slopes.

Undulating Ground Where undulating ground occurs, levelling by averaging survey information, is used in order that barrier heights remain within tolerance with respect to adjacent road surface.

Future Proofing

With the rapid change to Electric Vehicles, the body work of cars is also rapidly changing to Aluminium to reduce the weight of EVs. This will have a direct impact on acceptable barriers.

Under both NZ and International standard AASHTO MASH, any penetration by barriers into the passenger compartment of the vehicle during testing certification, is a failure and the result of the test is non-compliance and non-acceptance. Aluminium bodied vehicles are much more easily penetrated by cutting wire and exposed posts, than flat straps and non-exposed posts.

When the International Standard Test requirements are upgraded in the next 10 years to include commonly used Aluminium bodied vehicles, exposed post barriers with wire rope will be non-compliant.

The following photos exemplify the difference.

This recent **moderate** crash on SH1

Into a wire rope barrier.

Speed ~ 100km/hr

Angle of impact. < 15 degrees

Penetration of interior at location of Drivers door.

Test of **severe** Impact on

ROBOS Barrier

Speed 100 km/hr

Angle of Impact 25 degrees

Zero Penetration of

Passenger compartment.

Installation

ROBOS flexible barrier installation is a key part of delivering this innovative new flexible barrier system.

The ROBOS flexible barrier is installed by ROBOS crew using partially automated installation unit.

Step 1:

The flexible barrier alignment is confirmed. The positioning of posts may be done by conventional survey and marking.

Step 2: Predrilling Geo Socket

Prior to installing driven post, or driven socket or ground screw, the post position may be predrilled with a heavy-duty rock drill 100mm dia to create a Geo socket surrounded by material undisturbed formation.

1. **Single Piece Driven Post**

   This is installed by truck mounted excavator using hydraulic hammer to drive post into Geo socket.

2. **Two piece post with Driven Socket**

   The Driven socket is installed using an excavator equipped with a hydraulic hammer to drive socket into Geo socket or ground.

   The Driven socket is now ready to receive road post.

3. **Two piece post with Ground screw base.**

   The ground screw is screwed into position by an excavator equipped with a purpose built hydraulic auger until top of ground screw is at ground level. The Ground screw socket is now ready to receive Road Post.

Step 4:

Barrier posts are installed by a semi mechanised installer. Spacing of posts is 3.0 metres. Individual spacing of one post can be up to 3.6m if required.

Installation of posts may also be done using a wheeled excavator using a hydraulic hammer with ROBOS post adaptor fitted to avoid post damage or manual operation.

Debris : In the event there is a likelihood of debris accumulating in sockets , the ROBOS rubber socket seal is placed by the installation crew. This is shown below

Step 4:

The barrier strap is uncoiled and fitted to road posts with metal loop retainer. ROBOS installer has a capacity of up to 1,200 meters of finished barrier per day.

The installation process secures the barrier straps to posts using a ROBOS metal retainer and ROBOS connection plugs, which slot into pre-cut slots in road post. This can be done by a manual crew.

The barrier strap 1,200m coils is manufactured offsite from individual coils of 250 – 300m length. The welding process has been tested and is equal to the onsite welding process described in welded connection on Page 20.

Median Double-Sided Barrier. When used as barrier for narrow median strips, the mechanised installation unit makes two passes, and four straps are fitted to each side of the road post.

Step 5:

ROBOS terminals are installed and secured with ground screws by a ROBOS crew and equipment.

The preassembled terminal is placed in an excavated recess of length 3.7m and width 0.8m using an excavator.

10 ground screws of length 1600mm are then inserted in cross channels to a full depth using a wheeled excavator.

Once assembled ROBOS crew install release post, cables and cam. The anchors posts are then installed ready for straps and tensioning.

Step 6: Tensioning

Roadside barrier

Once terminals and barrier are installed, tensioning takes place at the end terminal using a ROBOS tensioner. This is done by ROBOS crew in accordance with the following temperature correction table.

Tensioning commences by feeding the lower strap into the anchor and then using ROBOS tensioner to tension lower single strap up to 50 Kn (at normal temperature).

The welded strap tested ultimate breaking strain is 90+Kn and for WHS the tensioning during installation of 50 Kn is not to be exceeded.

The tension is measured outside of the end terminal. Due to friction in the system , the actual tension in the barrier will be up to 20% less than tension measured outside of the terminal. This strap is then clamped securely in the anchor using 10 x 12mm high tensile bolts. Each bolt is torqued to a minimum of 70Nm. The straps extend a short distance beyond the terminal.

ROBOS tensioner fitted in terminal location.

Median Double Sided

Tensioning commences by feeding the lower strap into the anchor and then using excavator mounted tensioner to tension lower single strap up to approximately 50 KN (at normal temperature). This is the maximum allowable Tension to ensure WHS requirements.

The tension is measured outside of the end terminal. Due to friction in the system , the actual tension in the barrier will be approximately 20% less than tension measured outside of the terminal. This strap is then clamped securely in the anchor using 10 x 12mm high tensile bolts. Each bolt is torqued to a minimum of 70Nm. For clarity, each clamp holds two straps. Initially one strap is tensioned and secured with the lower most bolts. The second strap is then tensioned and the upper most clamp bolts secure both first and second strap. The process is repeated for each clamp.

Ambient Temp Deg. C	0-4	5-9	10-14	15-19	20-24	25-29	30+
Barrier							
Upper kN	33	32	30	28	26	24	23
Second kN	33	32	30	28	26	24	23
Third kN	33	32	30	28	26	24	23
Lower kN	33	32	30	28	26	24	23

Tensioning release

When barrier strap tension needs to be reduced, in the case of an accident, the trigger posts at each anchor can be forced with a vehicle to release. This trigger post reduces tension in the barrier straps. If required, full tension can be released by undoing anchor clamps with socket spanner.

In most accidents there is no need to release tension. This is because the barriers fall to ground level and can be reinstated from this position.

Maintenance

A significant feature of the ROBOS Flexible Flat Strap Barrier is the reduced requirements for planned and reactive maintenance.

Routine drive by visual inspection of the ground conditions and steel strap mechanism is recommended to ensure the functionality of the ROBOS barrier system is maintained, particularly in high stress impact areas.

If maintenance or replacement work is required, this can easily be undertaken by ROBOS trained crews using a 3.5 tonne mini- excavator and specialist attachments

OR with purpose built manual tools.

The ROBOS roadside and median barrier methodology has been specifically designed so that any vehicle impact is restricted to the impact zone only without compromising the maintenance integrity of the surrounding area.

If fitted, the ROBOS impact sensors will be able to report on any barrier strikes allowing first responders earliest awareness.

DEBRIS: If debris has accumulated in the sockets, then the socket should be cleaned out prior to post replacement. The upper 100mm of the socket can be filled with self-expanding polyurethane foam to seal the socket. Alternately, a ROBOS Rubber socket seal can be installed to seal socket.

Repairs

Repairs are verified by drive past inspections, if live sensors are fitted any impact with the barrier will automatically be communicated to the road controlling authority electronically.

If the impact has caused visible damage, the following procedure will apply.

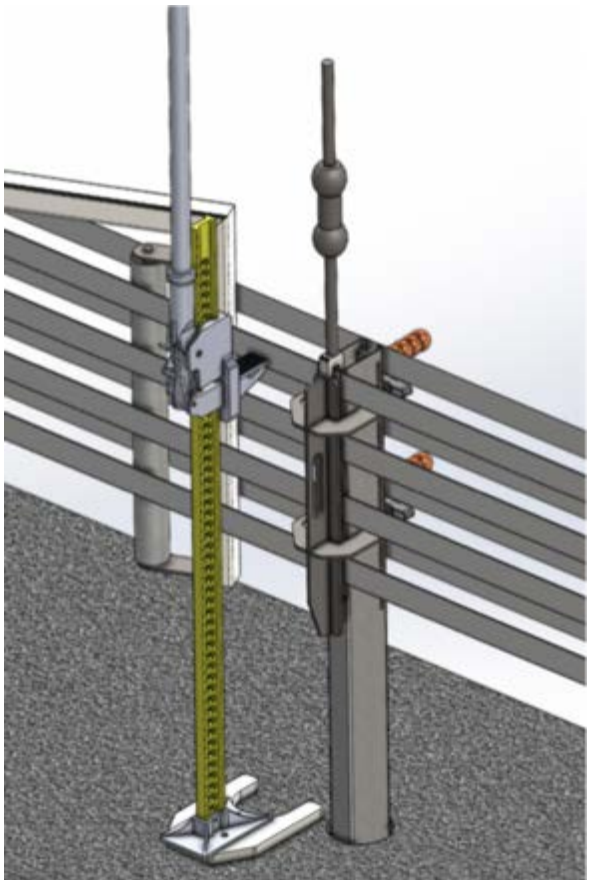
Option One: Using Mini Excavator. (Either truck mounted and limited crew on the ground, or on rubber tracks at ground level.)

1. Prior to repair, an approved traffic management plan will be required.
2. Mobilisation of ROBOS mini excavator (3.5 tonne)and 2-man crew.
3. Removal of all debris including damaged road posts.
4. Visual inspection of ground in the impact zone including photographic record.
5. Visual inspection of strap and photographic record and confirmation of no damage.
6. Installation of new posts if required using mini excavator with hydraulic hammer.
   If there has been ground disturbance for a driven post, the existing ground must be recompacted in 300mm layers prior to new post being installed with hydraulic hammer.
7. Installation of new strap retainers with mini excavator guide and manual crew.
8. Experience demonstrated that a crew of 2 men with excavator and ROBOS tools generally takes no longer than 2 hours to complete repair once the crew has mobilised on site. On busy roads this can be scheduled for off peak or night hours.
9. No re tensioning is required after repair, as all impacts are well within elastic range and no de tensioning has taken place.

Option Two – Manual

1. Prior to repair, an approved traffic management plan will be required.
2. Mobilisation 2-man crew and manual tools.
3. Removal of all debris including damaged road posts.
4. Visual inspection of ground in the impact zone including photographic record.
5. Visual inspection of strap and photographic record and confirmation of no damage.
6. Installation of new posts using manual hammer.
   If there has been ground disturbance for a driven post, the existing ground must be recompacted in 300mm layers prior to new post being installed.
7. Installation of new strap retainers with purpose built clamp and manual crew.

8. Experience demonstrated that a crew of 2 men with manual tools generally takes no longer than 2 hours to complete repair once the crew has mobilised on site. On busy roads this can be scheduled for off peak or night hours.
9. No re tensioning is required after repair, as all impacts are well within elastic range and no de tensioning has taken place.



For Step-by-step details – see Page 29-33.

Removal

If required ROBOS barrier can easily be removed by unclipping strap retainers and recoiling strap onto Installer Truck. Posts are then easily removed with mini excavator.

Welded connection.

Where a welded joint is required for lengths greater than 1,200 metres, the welding process requires a ROBOS engineer to be present and the following procedure to be complied with.

Fire safety precautions: This includes having fire extinguisher readily available and ROBOS engineer confirming that there is no flammable material adjacent to the welding site.

1. A joining strip shown in drawings on page 30 needs to be ready for installation.

2. The joining strip is clamped into position with the ROBOS joining clamp as shown below.

For consistent environmental conditions the joining clamp must be preheated 50°C.

3. Once in position the strap edges are power wire brushed in preparation for welding.

4. Welding takes place in the down hand position using a 3 mm welding rod provided by ROBOS. Upon completion of the upper weld, the weld is power wire brushed to allow detailed visual inspection for approval by ROBOS engineer and photographed for inspection record.

5. The clamp and strap is then rotated 180° to allow the opposite side to be welded in exactly the same manner.

6. Upon completion the welded joint is cold galvanised and then is immediately ready for operation.

Weld
Clamp

Durability

Each component of the ROBOS barrier is galvanised to ensure an extended design life of more than 30 years, and to be maintenance free.

Posts and retainers are galvanised. Cold galvanizing is applied to any damaged surfaces.

Flat Strap barriers are galvanised and during impact they are protected from damage by moving retainers which travel with vehicle. Strap edges are protected by Cold galvanising.

Delineation

ROBOS end posts are to be clearly marked with reflective tape and post tops are fitted with reflectors at spacing of 15m. These will be agreed with respective road authorities. In night-time use the natural reflection of the smooth flat strap barrier makes the visibility of the barrier significantly better than current barrier systems.

Ground Conditions

The ground conditions should be measured and recorded.

Ground conditions to be approved by Geotech Engineers.

The ROBOS Impact test quickly determines ground condition suitability and should be used at each material change in soil type.

ROBOS Impact test

For validation of ground conditions, ROBOS recommends a dynamic impact test. Pseudo pull over tests are not representative of actual crash impact behaviour.

The ROBOS method is a direct comparison.

Test method: Using a 14 tonne excavator the excavator bucket is positioned at 700mm above the ground for contact with post.

Approved Temporary traffic management must be in place before the test.

The excavator bucket is then swung into impact at a speed of not less than 5 meters per second.

When post folds, the ground conditions are confirmed as suitable for use.

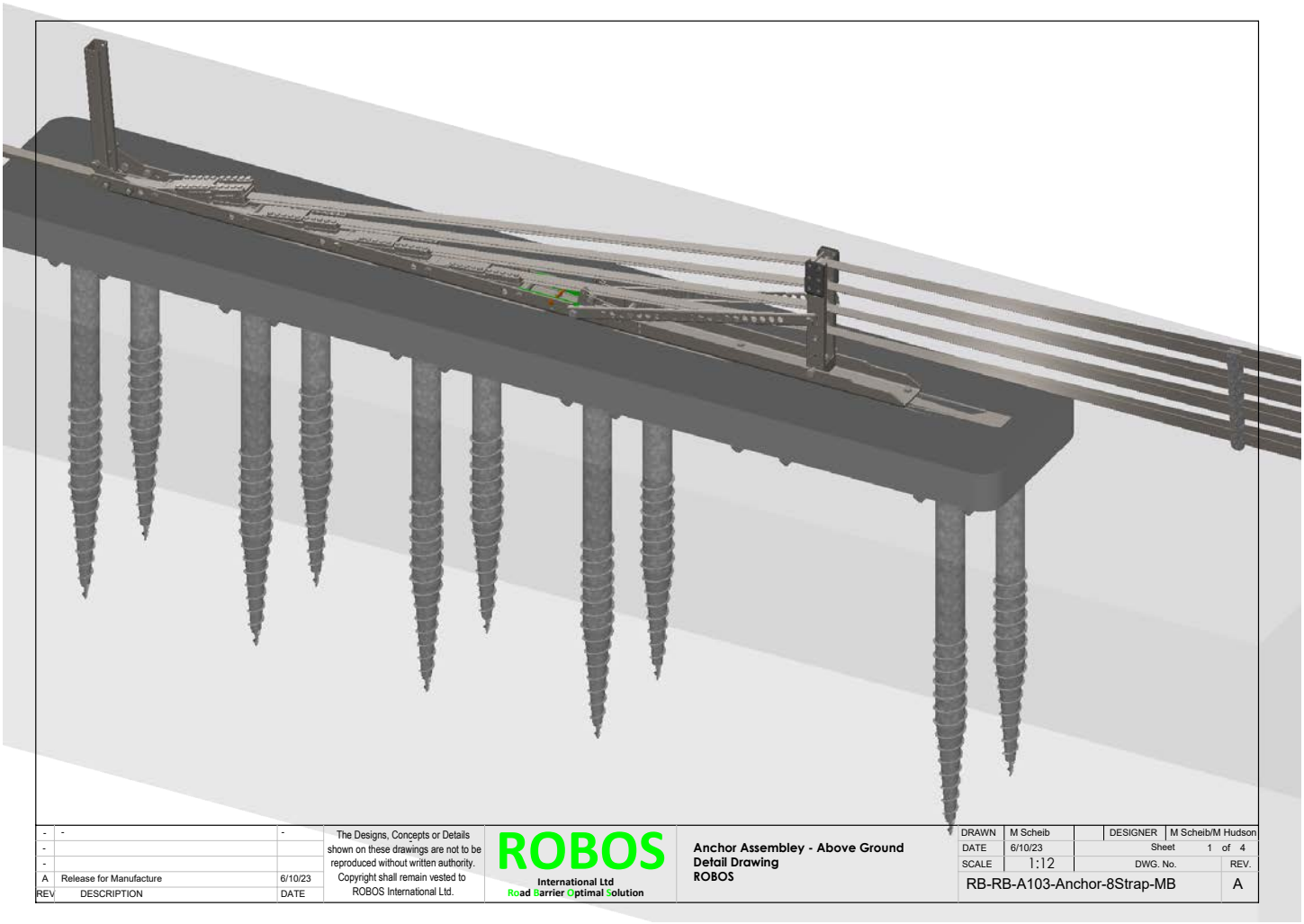
If the post does not fold , ground conditions are not adequate.

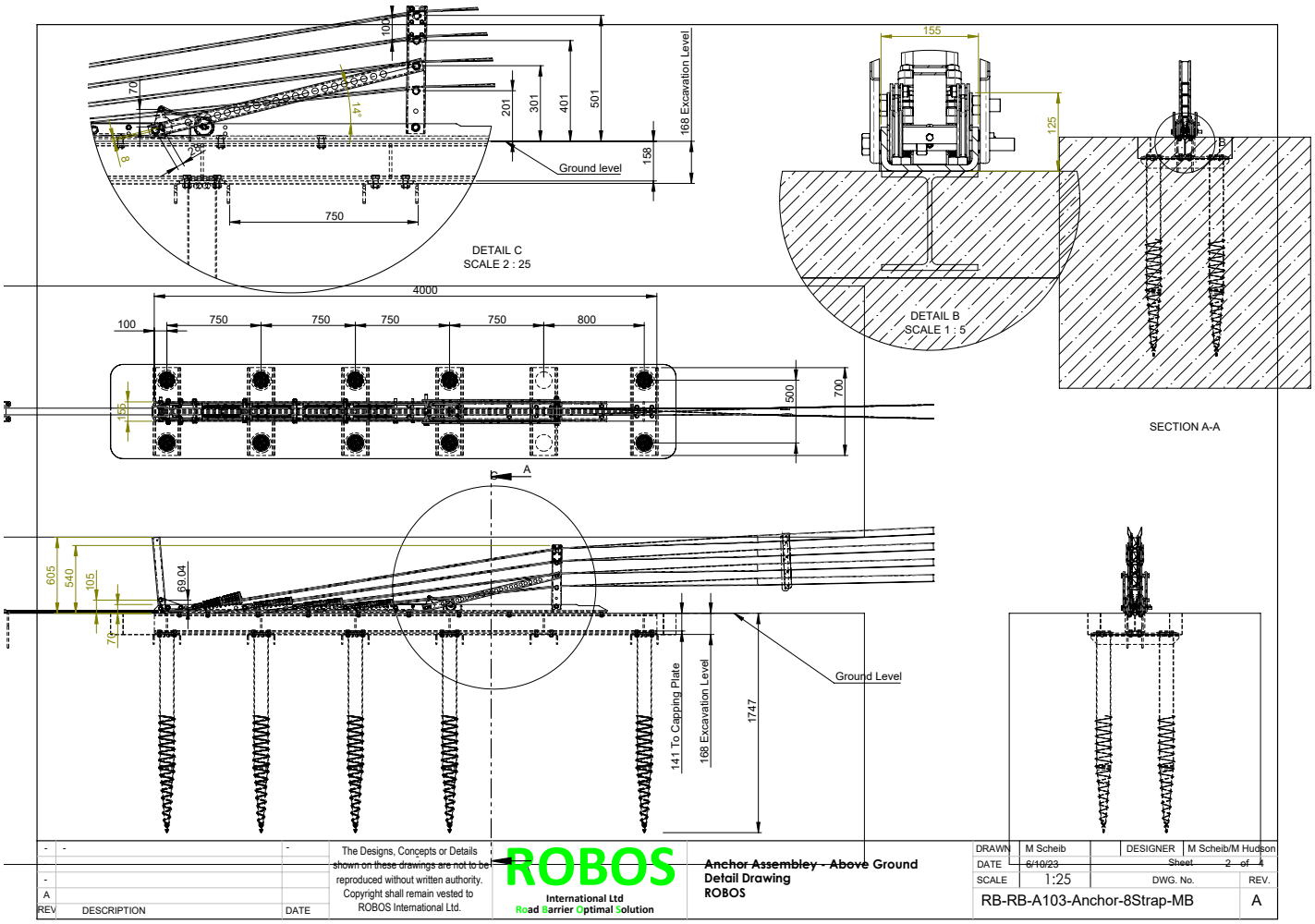
Hard Ground - Above

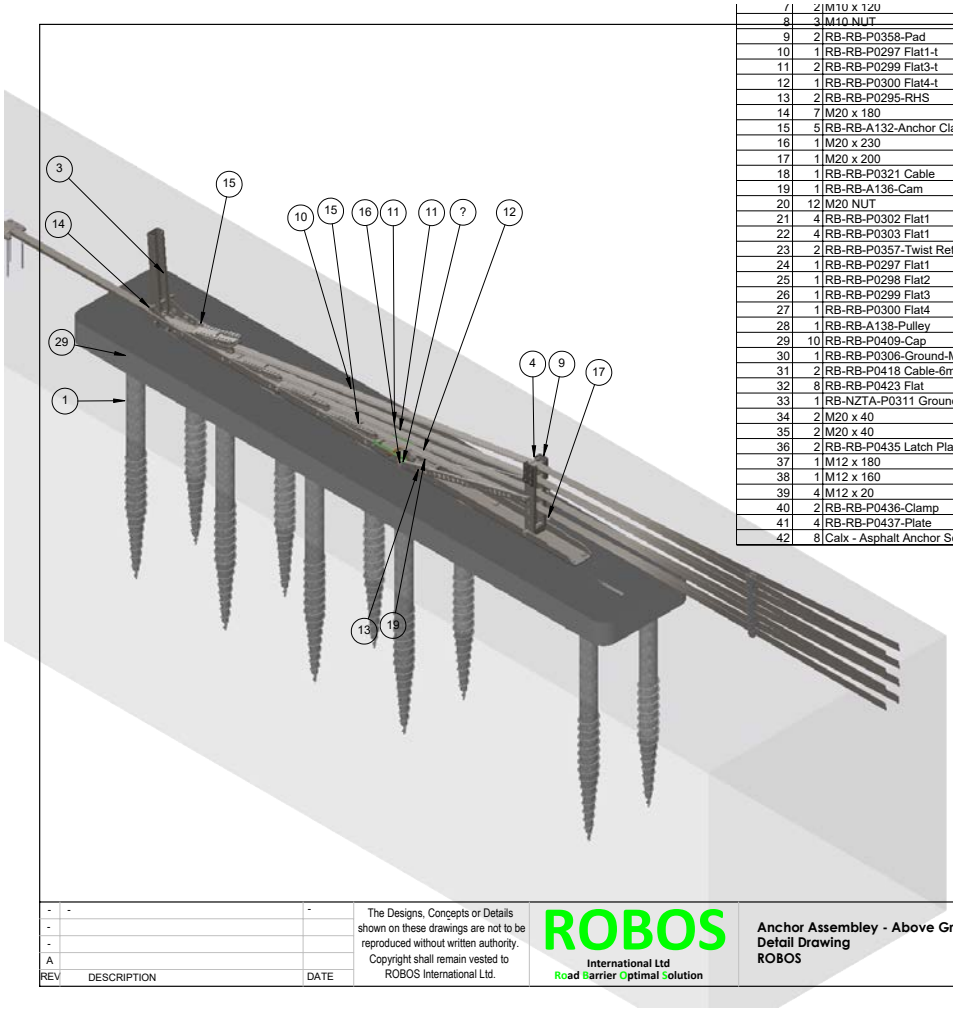
Medium Ground -- Below

DRAWINGS

Terminal




DETAIL C
SCALE 2 : 25
DETAIL B
SCALE 1 : 5
SECTION A-A
Ground level
Ground Level
168 Excavation Level
141 To Capping Plate
4000
750
800
1747
The Designs, Concepts or Details shown on these drawings are not to be reproduced without written authority. Copyright shall remain vested to ROBOS International Ltd.
ROBOS
International Ltd
Road Barrier Optimal Solution
Anchor Assembley - Above Ground
Detail Drawing
ROBOS
DRAWN M Scheib
DESIGNER M Scheib/M Hudson
DATE 6/10/23
Sheet 2 of 4
SCALE 1:25
DWG. No. RB-RB-A103-Anchor-8Strap-MB
REV A



7	2	M10 x 120	Bolt M12 grade 10.9	
8	3	M10 NUT		
9	2	RB-RB-P0358-Pad	Deflector Pad	Nylon 6/10 (30% GF)	A
10	1	RB-RB-P0297 Flat1-t	HT Barrier 53x2.95	Steel G450 Z275	A
11	2	RB-RB-P0299 Flat3-t	HT Barrier 53x2.95	Steel G450 Z275	A
12	1	RB-RB-P0300 Flat4-t	HT Barrier 53x2.95	Steel G450 Z275	A
13	2	RB-RB-P0295-RHS	Post Brace	Mild Steel G450 Z450	A
14	7	M20 x 180	Bolt M20 Grade 10.9		
15	5	RB-RB-A132-Anchor Clamp-MB	Anchor Clamp MB Ass	Mild Steel G350	B
16	1	M20 x 230	Bolt M20 Grade 10.9		
17	1	M20 x 200	Bolt M20 Grade 10.9		
18	1	RB-RB-P0321 Cable	8mm Cable	Stainless	A
19	1	RB-RB-A136-Cam	Cam Ass	Mild Steel G350	A
20	12	M20 NUT			
21	4	RB-RB-P0302 Flat1	HT Barrier 53x2.95	Steel G450 Z275	A
22	4	RB-RB-P0303 Flat1	HT Barrier 53x2.95	Steel G450 Z275	A
23	2	RB-RB-P0357-Twist Retainer	Twist Retainer	Mild Steel G350/450 Z275	A
24	1	RB-RB-P0297 Flat1	HT Barrier 53x2.95	Steel G450 Z275	A
25	1	RB-RB-P0298 Flat2	HT Barrier 53x2.95	Steel G450 Z275	A
26	1	RB-RB-P0299 Flat3	HT Barrier 53x2.95	Steel G450 Z275	A
27	1	RB-RB-P0300 Flat4	HT Barrier 53x2.95	Steel G450 Z275	A
28	1	RB-RB-A138-Pulley	Pulley Ass	Mild Steel G350	A
29	10	RB-RB-P0409-Cap	Cap - Ground Screw	Mild Steel	A
30	1	RB-RB-P0306-Ground-Mod-in	Asphalt	Asphelt	A
31	2	RB-RB-P0418 Cable-6mm	6mm Stainless Cable	Stainless Steel	B
32	8	RB-RB-P0423 Flat	HT Barrier 54.5x2.95	Steel G450 Z275	A
33	1	RB-NZTA-P0311 Ground	Road Ground	Road Chipseal	A
34	2	M20 x 40	Bolt M20 Grade 10.9		
35	2	M20 x 40	M20 Bolt grade 4.6	Galvanised Steel	A
36	2	RB-RB-P0435 Latch Plate	Cam Safety Latch Plate	Mild Steel G350	A
37	1	M12 x 180	Bolt M12		
38	1	M12 x 160	Bolt M12		
39	4	M12 x 20	Bolt M12		
40	2	RB-RB-P0436-Clamp	Barrier Strap Cover	Mild Steel 250 MPa Galv	A
41	4	RB-RB-P0437-Plate	Fixing Plate	Mild Steel G350	A
42	8	Calx - Asphalt Anchor Screw 300	Calx Asphalt Anchor Screw	Steel Galvanised	A

REV	DESCRIPTION	DATE
-	-	-
-		
-		
A		

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Road Barrier Optimal Solution

Anchor Assembley - Above Ground
Detail Drawing
ROBOS

DRAWN	M Scheib	DESIGNER	M Scheib/M Hudson
DATE	6/10/23	Sheet	3 of 4
SCALE	1:20	DWG. No.	REV.
		RB-RB-A103-Anchor-8Strap-MB	A

The Road side Barrier Terminal has 4 straps

The Median Barrier Terminal is fitted with 8 straps (double sided posts.)

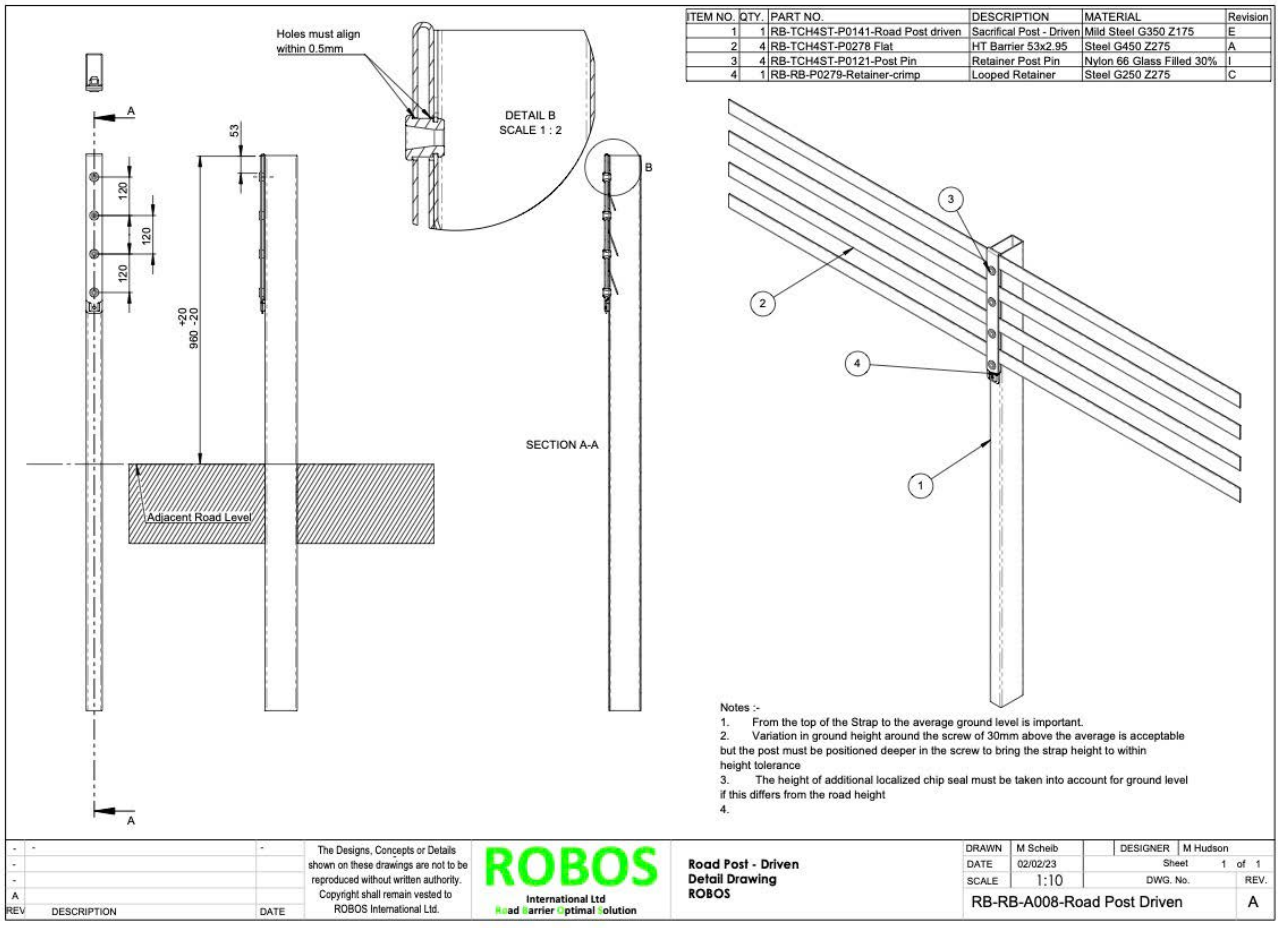
Barrier Post

1.0 Single Piece Driven Post Option

ROBOS single piece driven posts are suitable for installation in standard soil in accordance with ASSHTO standard specifications.(" Materials for Aggregate and Soil Aggregate Subbase Base and Surface Courses").

Upon impact, the post folds at ground level.

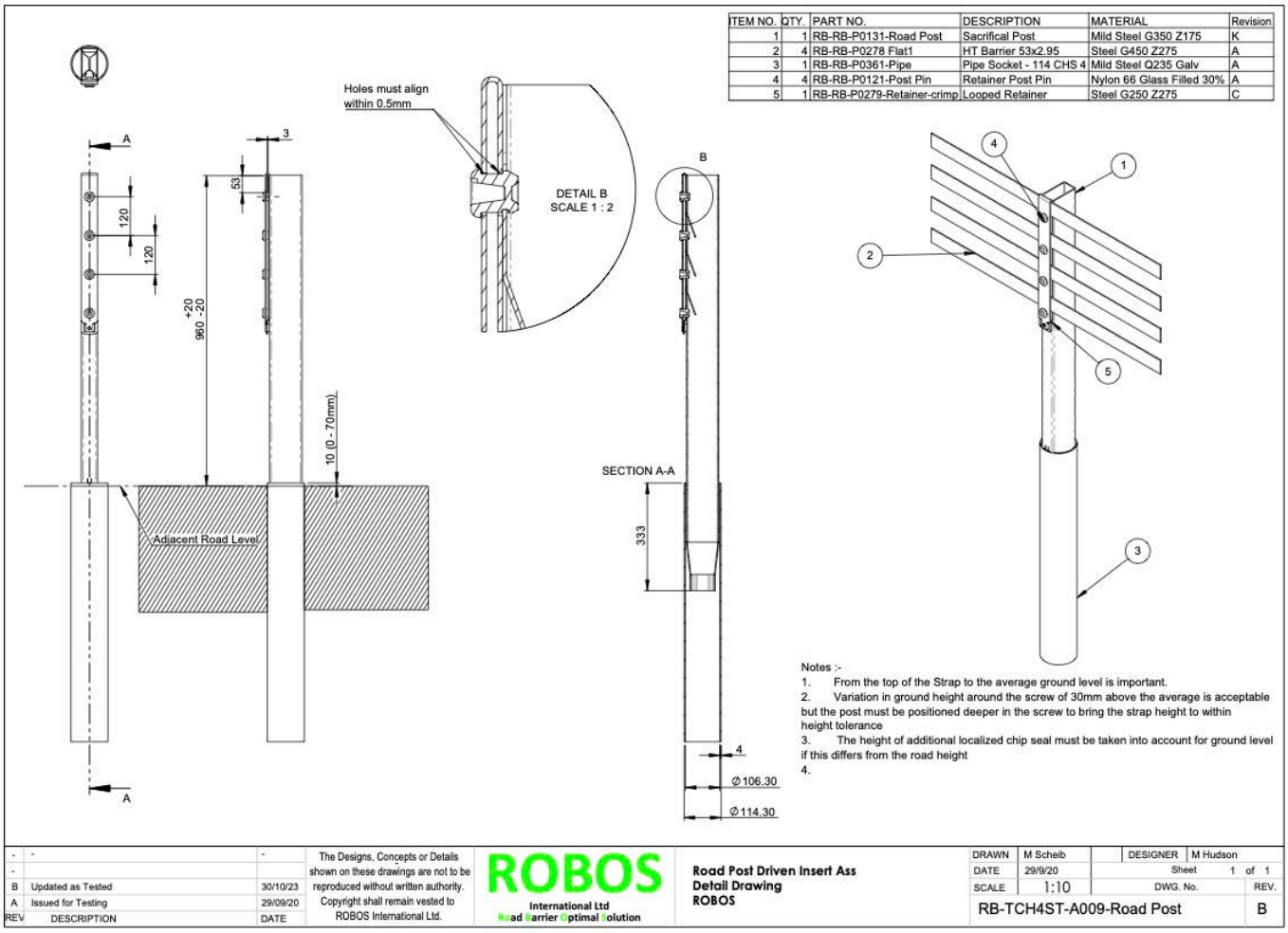
This can easily and quickly be replaced with a mini excavator (3.5 tonne) and specialist attachments. The manual alternate also can be used , however this is slower and does expose crews to errant vehicles.



2.0 Driven Socket option

Where there is a high frequency of impacts, the Driven socket option may be preferred. The Driven Socket provides a fixed socket for posts enabling easy post replacement.

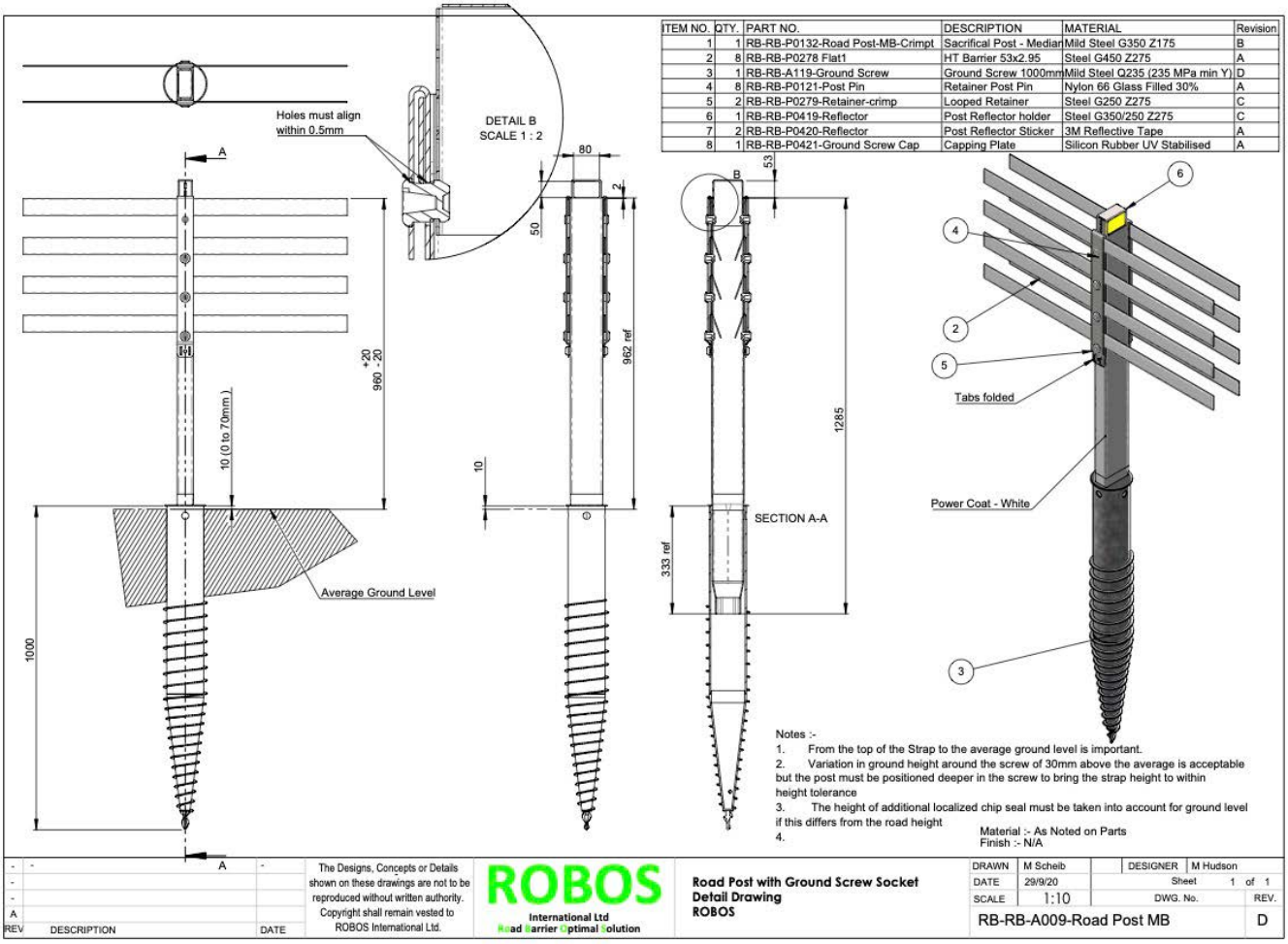
Upon impact the post folds at ground level and posts can easily be replaced, by manual operation, without the need for significant plant.



3.0 Ground screw option

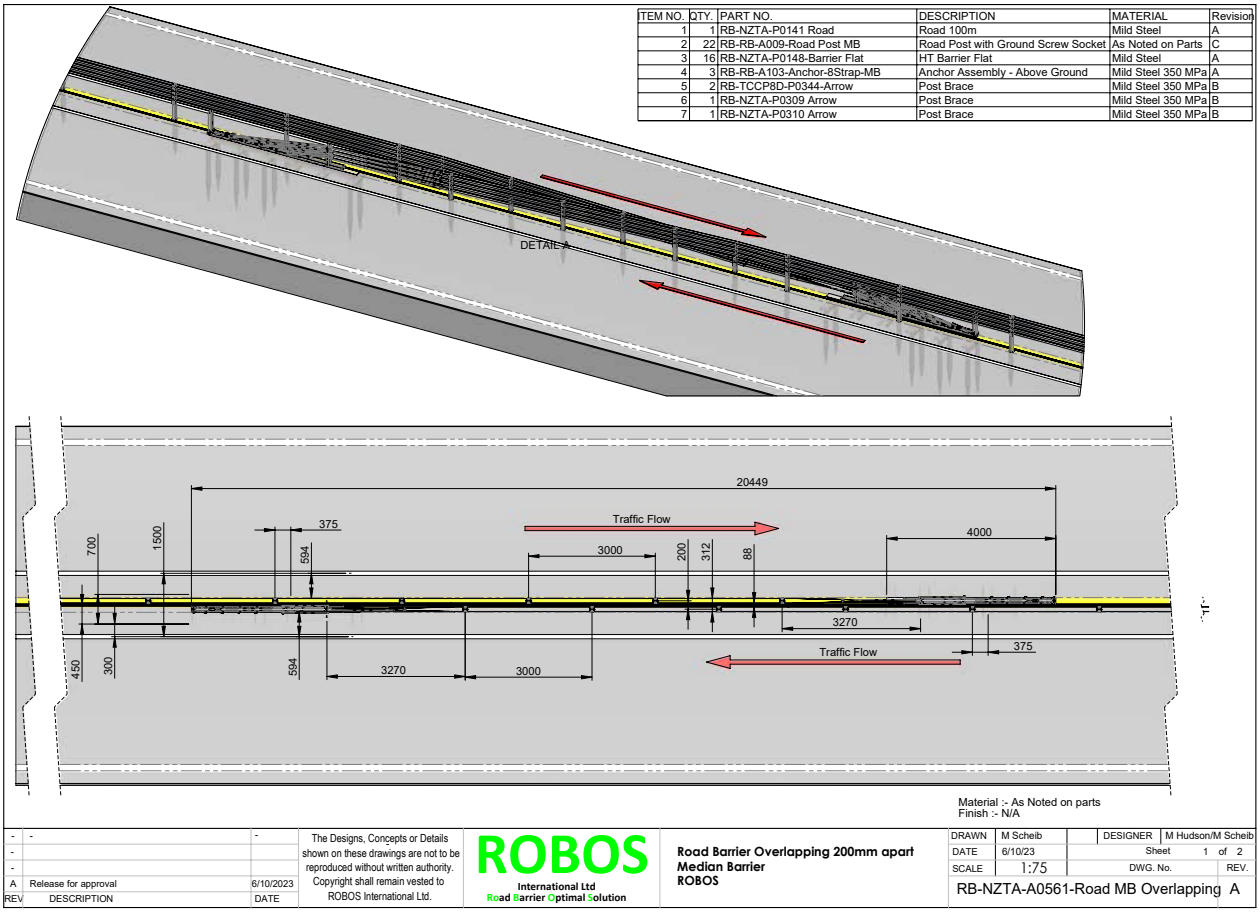
Where there is a high frequency of impacts, the ground screw option may be preferred. The ground screw provides a socket for posts enabling easy post replacement.

Upon impact the post folds at ground level and posts can easily be replaced, by manual operation, without the need for significant plant.

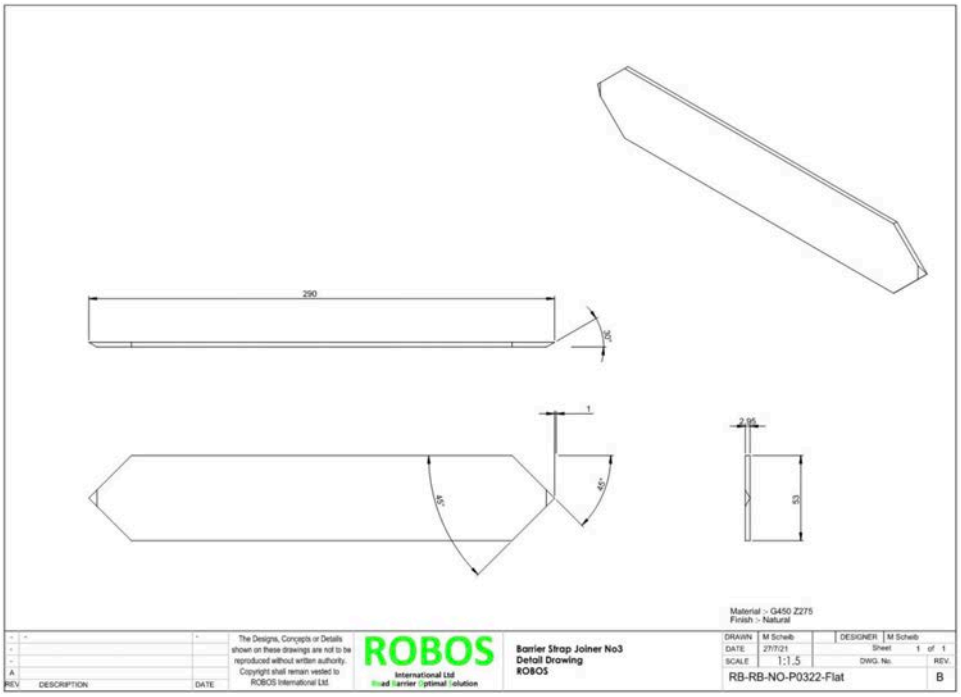


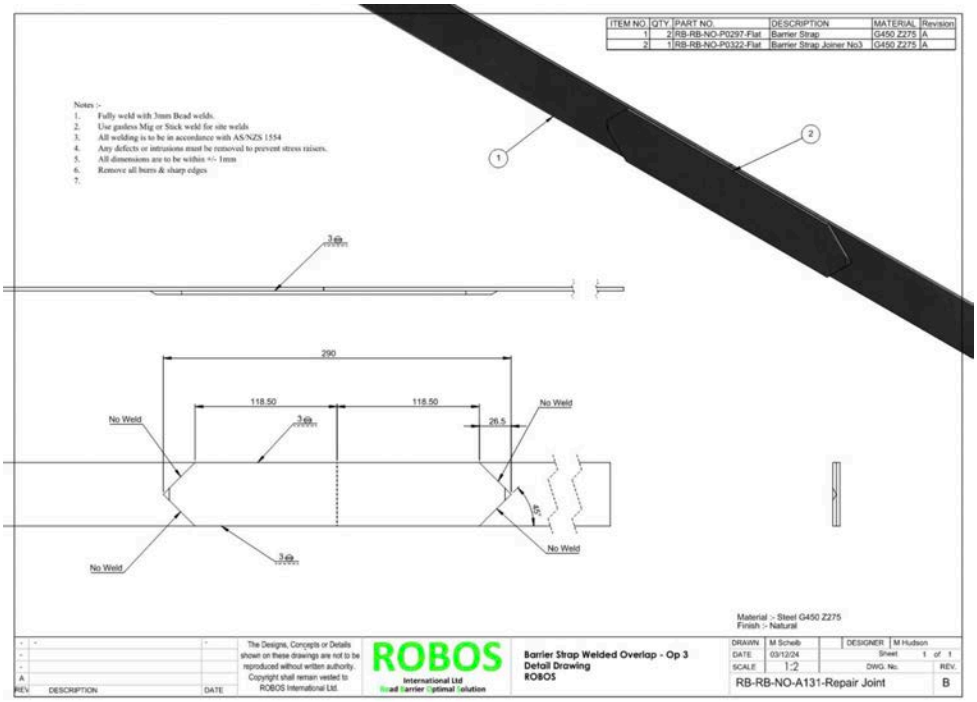
ITEM NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL	Revision
1	1	RB-RB-P0132-Road Post-MB-Crimpt	Sacrifical Post - Median	Mild Steel G350 Z175	B
2	8	RB-RB-P0278 Flat1	HT Barrier 53x2.95	Steel G450 Z275	A
3	1	RB-RB-A119-Ground Screw	Ground Screw 1000mm	Mild Steel Q235 (235 MPa min Y)	D
4	8	RB-RB-P0121-Post Pin	Retainer Post Pin	Nylon 66 Glass Filled 30%	A
5	2	RB-RB-P0279-Retainer-crimp	Looped Retainer	Steel G250 Z275	C
6	1	RB-RB-P0419-Reflector	Post Reflector holder	Steel G350/250 Z275	C
7	2	RB-RB-P0420-Reflector	Post Reflector Sticker	3M Reflective Tape	A
8	1	RB-RB-P0421-Ground Screw Cap	Capping Plate	Silicon Rubber UV Stabilised	A

Barrier Overlap Drawing



Welded Connection Drawings

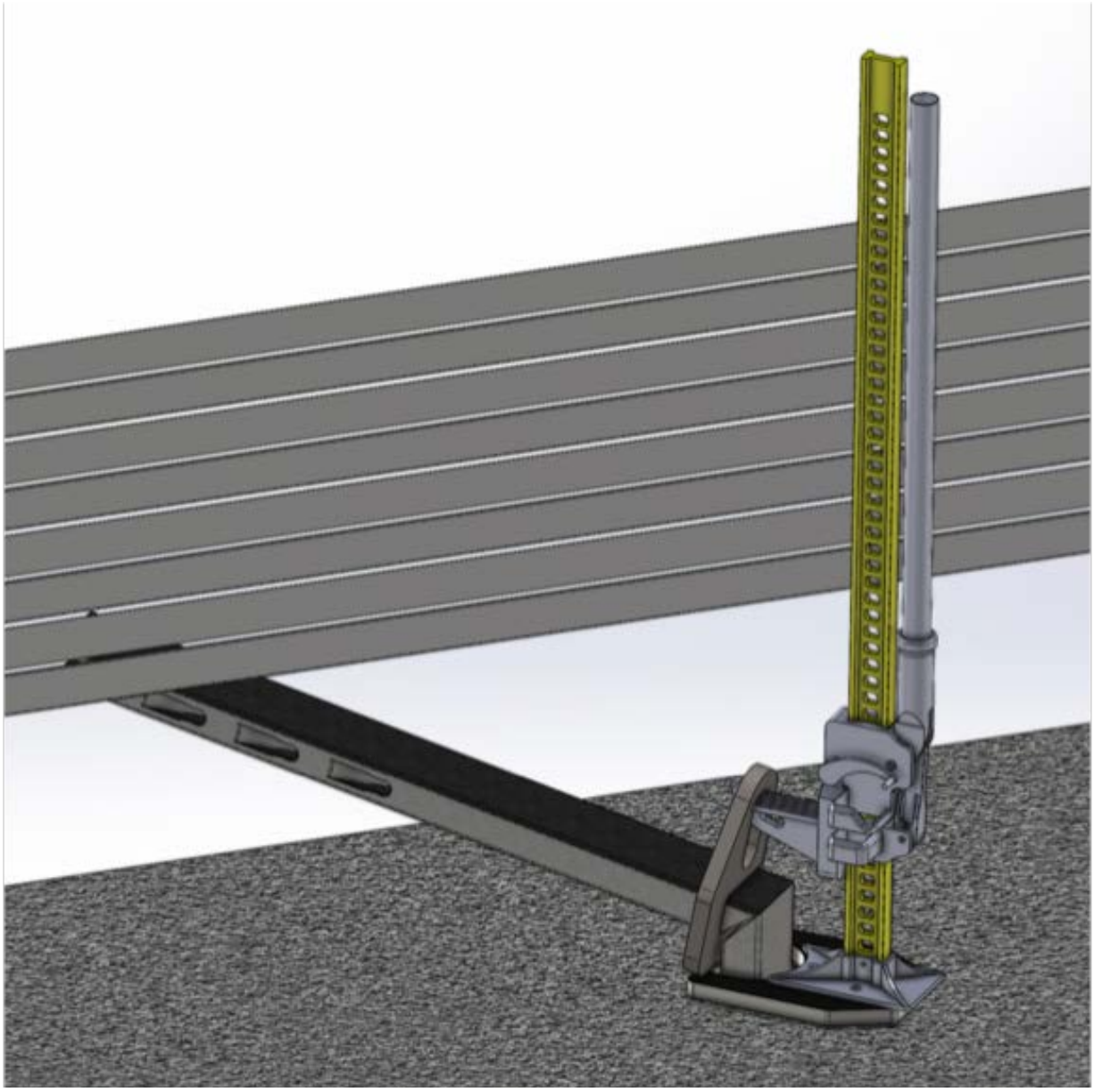




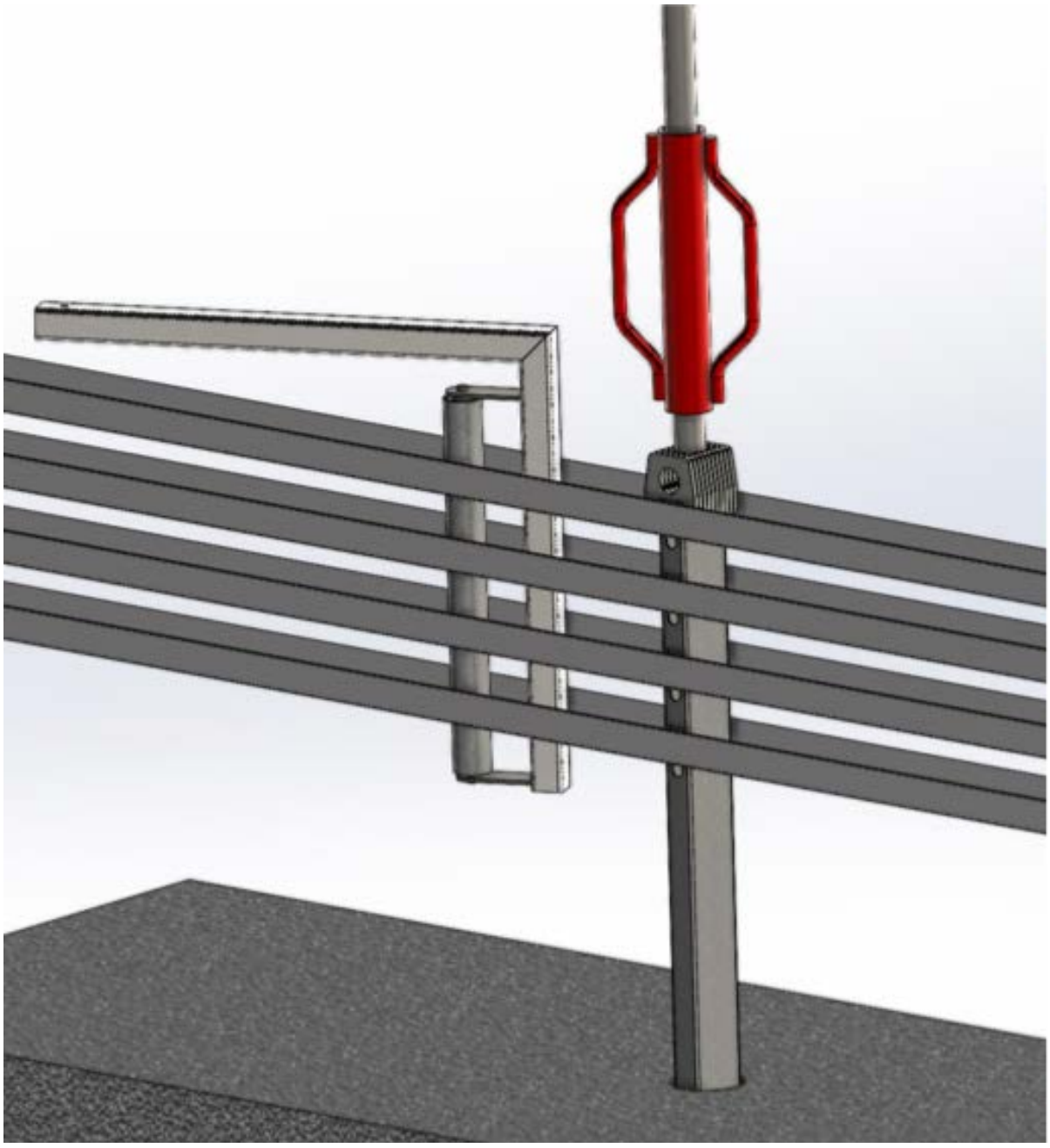
ROBOS flexible barrier manual repair procedure

1. Inspect site to confirm quantities of replacement posts retainers are on site for repair. Ensure traffic management plan has provided a safe working zone for repair crew.

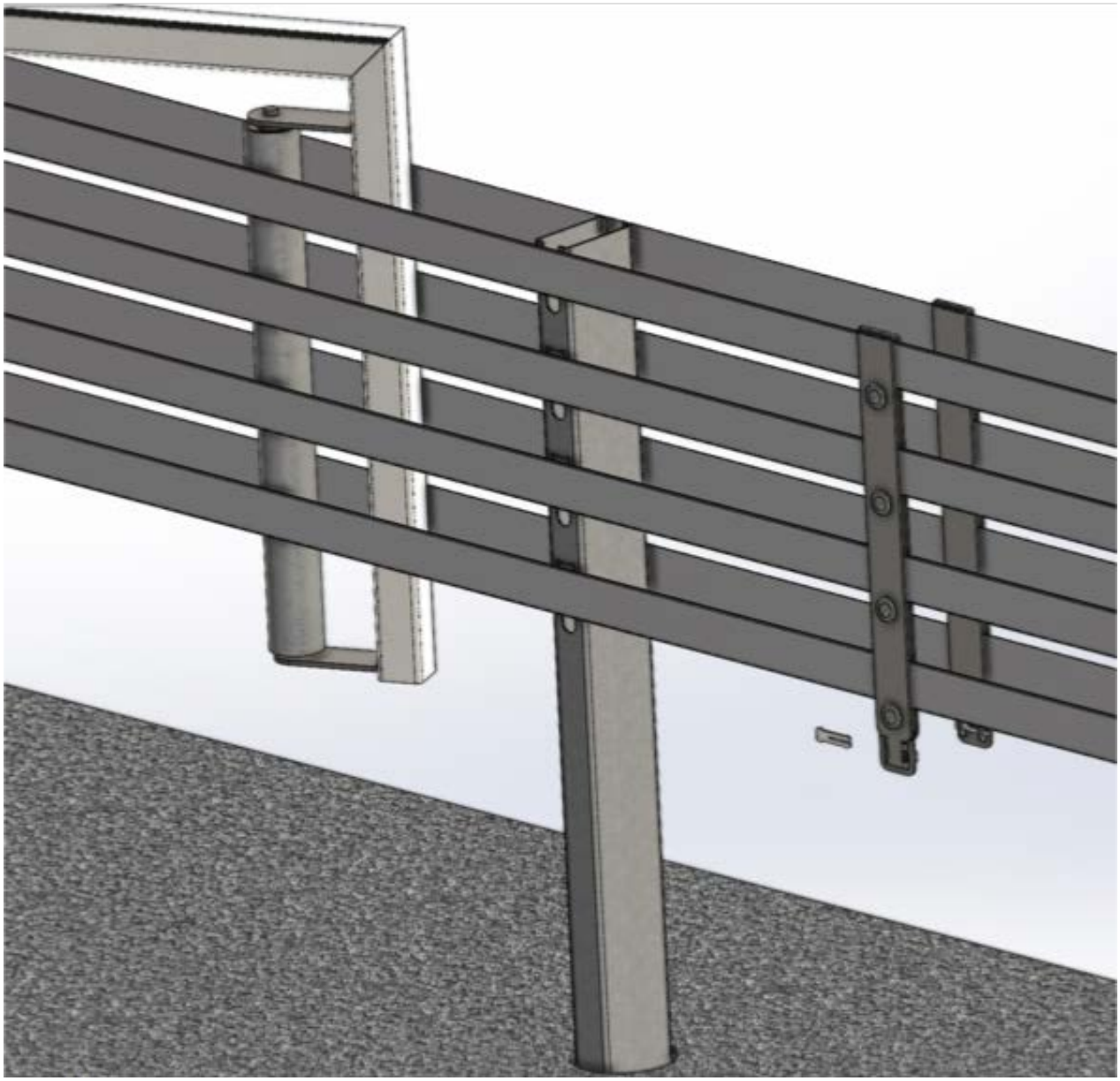
2. Remove posts using manual tool if required



3. Separate barriers using manual expansion tool at each end of the damaged zone.
4. Insert new posts and use manual rammer to set to specified height.



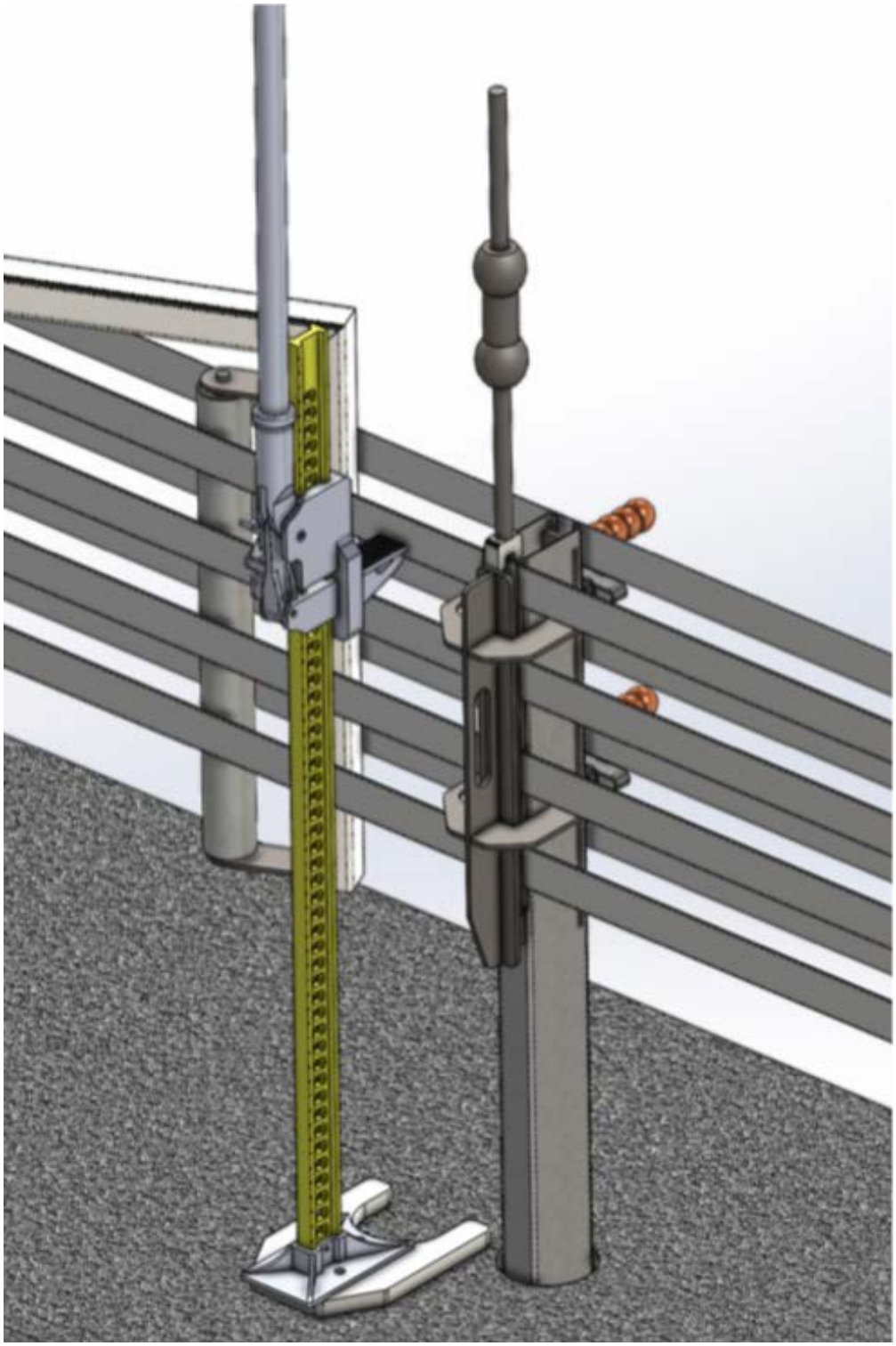
5. Install all new retainers including nylon pins. Pins out to be inserted and then rotated to the lock position using manual tool. Use hand operated tool to fold retainer tabs into the locked position.



6. Lift the barrier strap adjacent to the post with manual lift it by approximately 50 mm

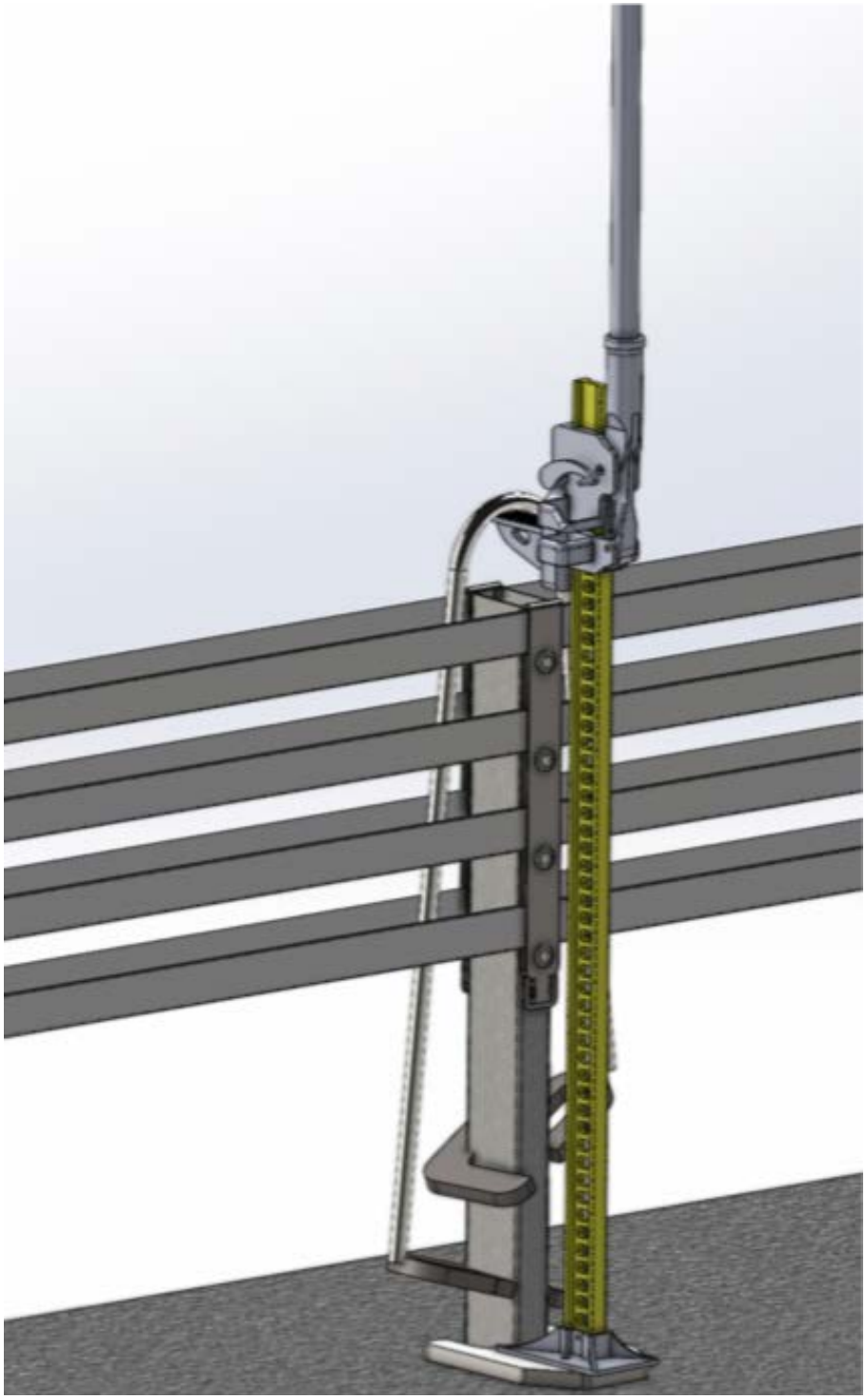
7. Install manual clamp in open position and then manually close such that all pins are

now engaged with the post.
8. Use manual rammer to drive down the retainers by 50mm to their locked position.



ROBOS Manual Repair Procedure

9. Final inspection of installed retainers pins and folded tabs. Check post height and adjust with Jack if necessary.



10. The previously damaged barrier length is now ready for road users