



Ingal MPR

Motorcyclist Protection

Product Manual



Release 05/17

www.ingalcivil.com.au

1.0 Introduction

The Ingal Motorcyclist Protection Rail (Ingal MPR) is a protective enhancement installed on existing four-wheel vehicle restraint systems to reduce the chances of serious injury to motorcyclists and pillion passengers in run-off-road accidents.

Traditional highway safety barriers installed on the road carriageways to restrain vehicles from impacting roadside hazards, these typically take the form of the W-Beam rail supported by a series of posts. These posts introduce a significant hazard to an errant motorcyclist in a run-off-road accident. The Ingal MPR consists of an under-riding rail which is mounted on a spring bracket. Upon impacting this rail, the spring bracket deflects back absorbing some of the impact energy from the motorcyclist, whilst the rail contains and re-directs the motorcyclist away from the rigid posts and hazards.

The installer should ensure any variants of this product are approved by the final asset owner.

2.0 Specification

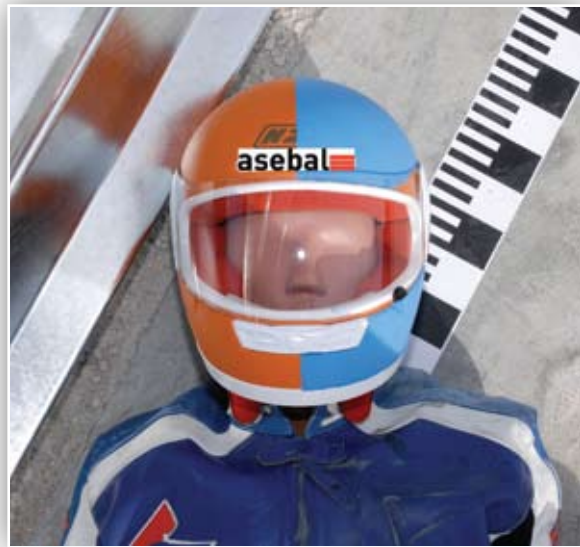
Ingal MPR Rail Length:	4m NLL
4m MPR Rail Mass:	12.3kg
Ingal MPR System Mass:	4.65kg per metre
Rail Height Above Ground:	60mm
Post Spacing:	2m or 5m
Ingal MPR Crash Test Performance:	Level 1

The Ingal MPR rails and brackets are manufactured from hot-rolled steel flat products in accordance with AS/NZS1594. These items are hot dip galvanised in accordance with AS/NZS 4680 after fabrication leaving no surface untreated.

3.0 Crash Test Analysis

Crash test guidelines provide a minimum set of requirements that a roadside barrier has to meet in order to demonstrate its satisfactory impact performance. Whilst crash test guidelines cannot include all possible impact conditions that may be experienced in the real world, the crash test matrix is selected to represent a "worst practical condition" for a roadside barrier impact. The Ingal MPR system has been fully crash tested and evaluated according to Standards UNE 135900-1 and 2 and UNE EN-1317-1 and 2, and has produced satisfactory results in the following full scale crash tests. **The dummy tests recorded an impact severity of Level 1 which is the lowest severity for this testing standard.**

- TM1.6.0: Dummy to post, 60 km/h 30° angle of impact.
- TM.3.60: Dummy to point on barrier midway between posts, 60 km/h 30° angle of impact
- TB11: 900 kg car at 100 km/h and 20° angle of impact.
- TB32: 1,500 kg car at 110 km/h and 20° angle of impact



4.0 Features and Benefits

- The specially designed anchoring system fully facilitates the positioning of the guard rail at the correct height, ensuring a uniform distance from the ground throughout the run and compensating for uneven terrain and height differences in the existing barriers. The mounting bracket also allows the motorcyclists rail to be raised to match alterations in the level of the road surface.
- The motorcyclist rail can be assembled and raised without the need to modify the traditional vehicle barrier system
- More space between the system and the ground (60mm), allowing water drainage, snow clearance, cleaning of hard shoulders, etc.
- The mounting bracket is symmetric, and is therefore the same for both the right and left side of the carriageway.
- Small number of components and ease of installation make the system very cost-effective.

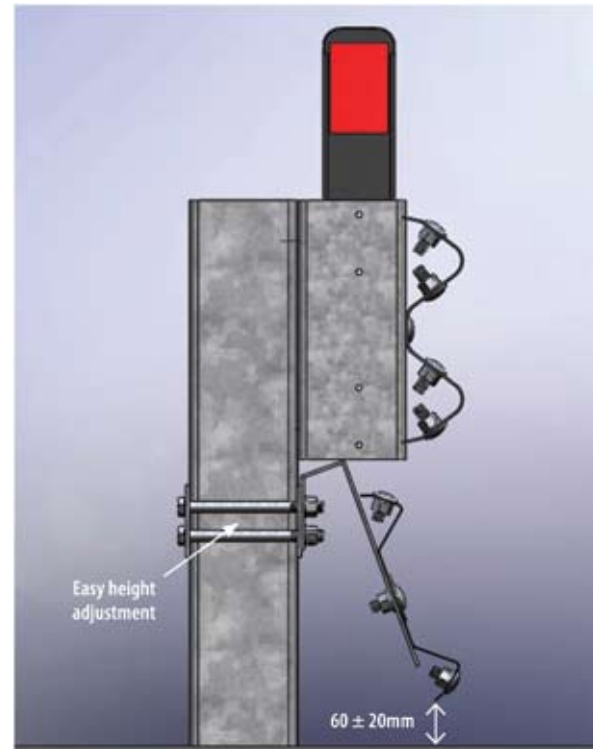
5.0 Installation

The specially designed anchoring system facilitates the positioning of the guard rail at the correct height, allowing deflection of the system when impacted.

Only items provided by Ingal are to be used for the installation of the Ingal MPR. The following written instructions are to be read in conjunction with Ingal's drawings. A generic Safe Work Method Statement is available upon request for installation operations.

5.1 Site Preparation

This site should be prepared free of obstructing vegetation and other hazards that may interfere with the installation or operational performance of the system. Some sites may require minor grading if installed beyond the edge of the pavement shoulder.



5.2 Assembly

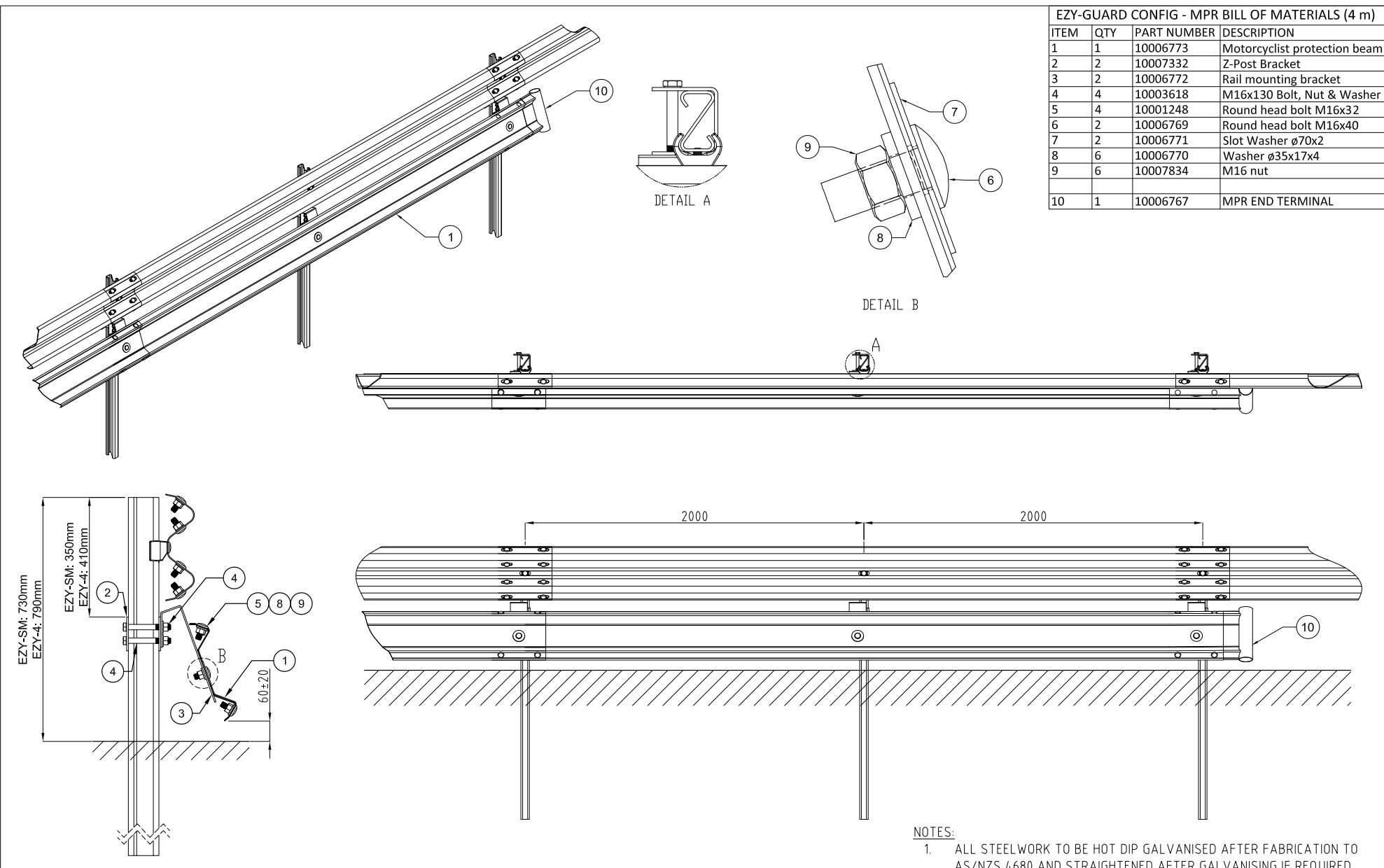
- Step 1 Assembly should be initiated with placing the post bracket around the guardrail posts, particular care should be taken to ensure the bracket is oriented in the correct direction with the open side facing the oncoming traffic for verge installations.
- Step 2 Attach the rail bracket to the post bracket with the M16 x 190 Hex Bolts. Typically the rail bracket will need to be abutting the underside of the block in the G4 guardrail system for convenient assembly. Tighten all fasteners to snug tight.
- Step 3 Mount the rail on the rail brackets with the appropriate fastener configuration. Before tightening, ensure a 60mm clearance between finished ground level and MPR rail.
- Step 4 Terminate beginning and end of run with MPR terminal piece.



5.3 Curved Installations

The MPR rails can be field curved down to a radius of 26m. Rails can be machine curved down to a radius of 5m. Contact your local Ingal office for details.



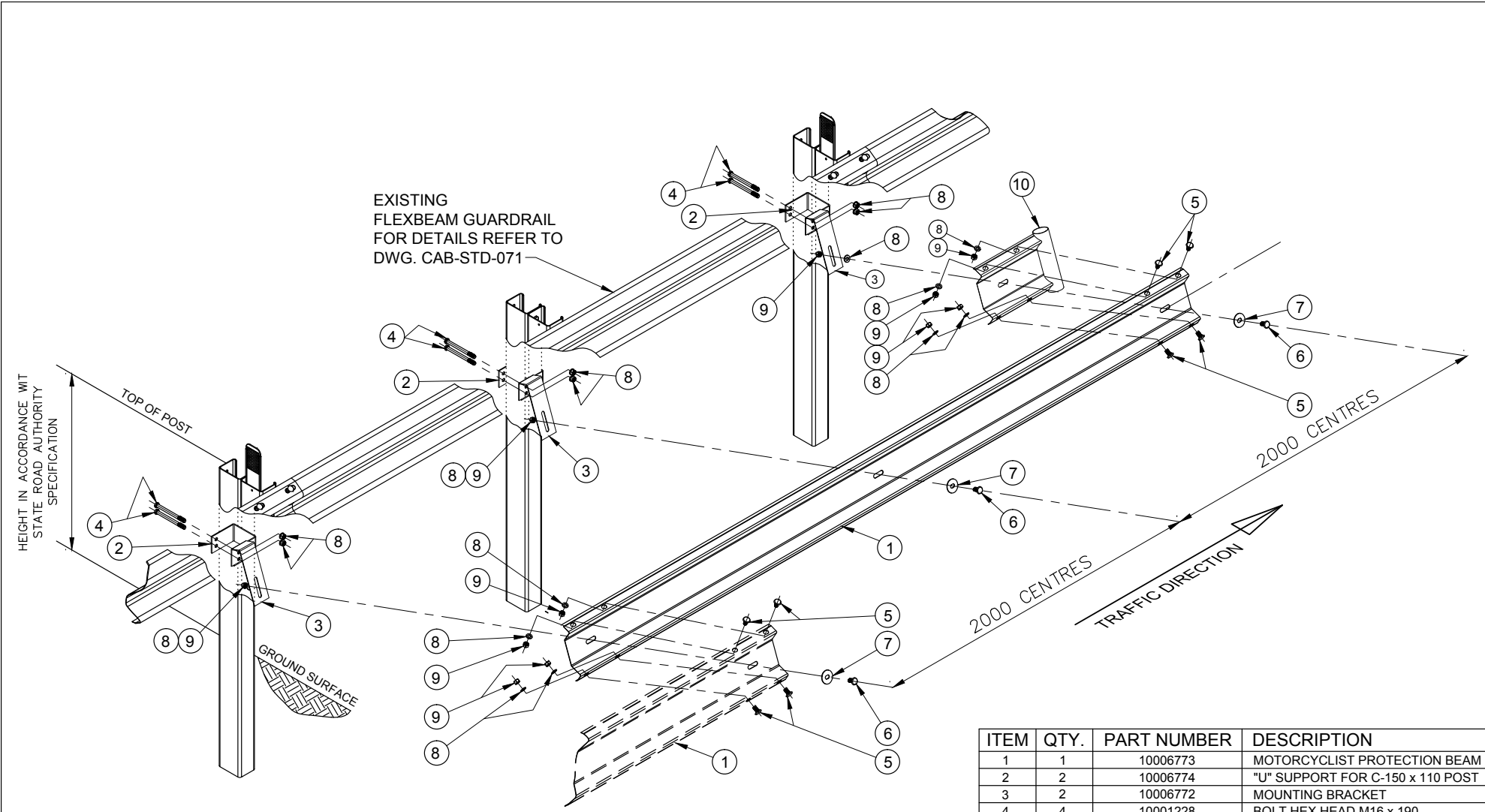


EZY-GUARD CONFIG - MPR BILL OF MATERIALS (4 m)			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	10006773	Motorcyclist protection beam
2	2	10007332	Z-Post Bracket
3	2	10006772	Rail mounting bracket
4	4	10003618	M16x130 Bolt, Nut & Washer
5	4	10001248	Round head bolt M16x32
6	2	10006769	Round head bolt M16x40
7	2	10006771	Slot Washer ø70x2
8	6	10006770	Washer ø35x17x4
9	6	10007834	M16 nut
10	1	10006767	MPR END TERMINAL


NOTES:
 1. ALL STEELWORK TO BE HOT DIP GALVANISED AFTER FABRICATION TO AS/NZS 4680 AND STRAIGHTENED AFTER GALVANISING IF REQUIRED.

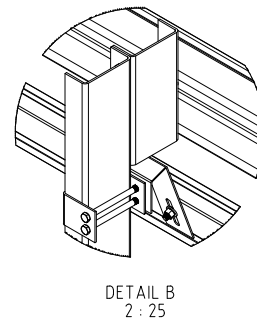
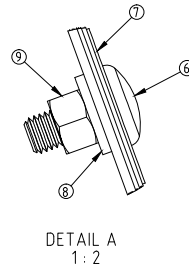
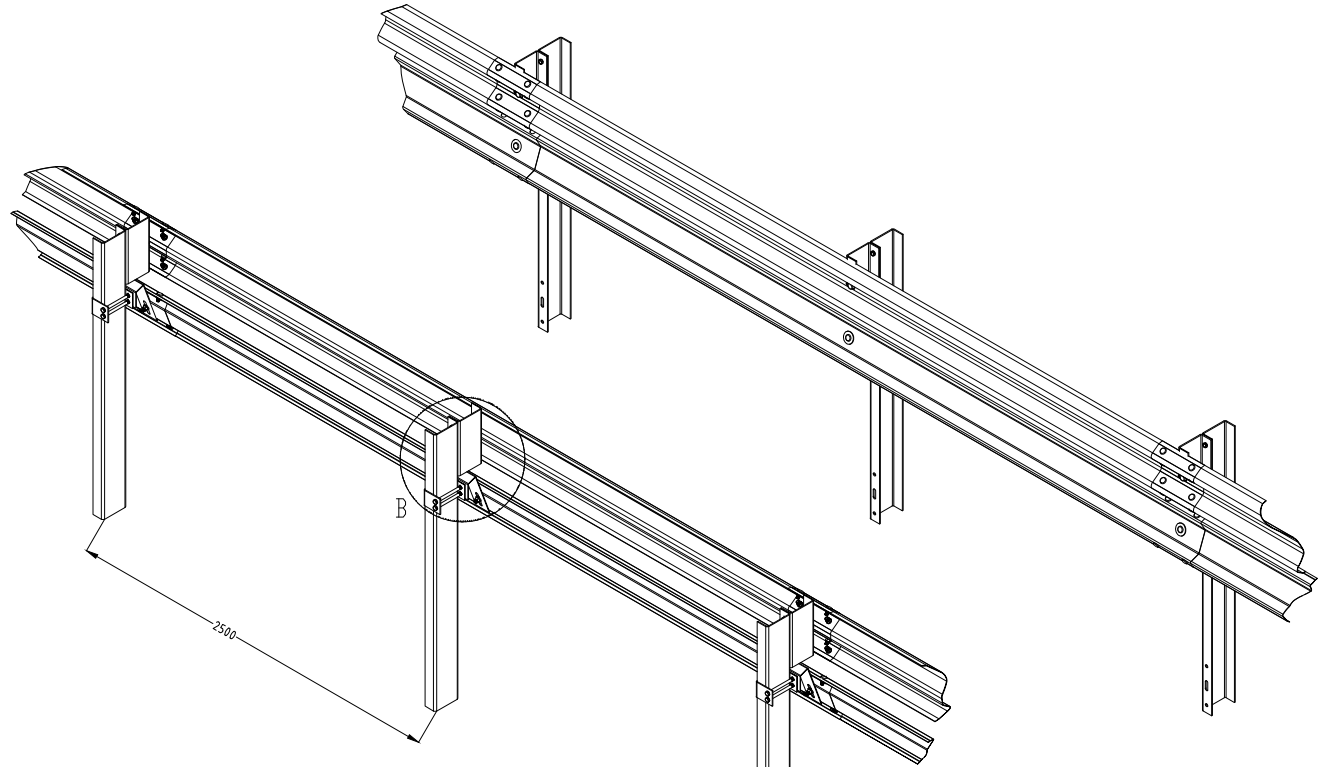
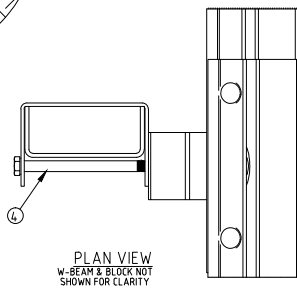
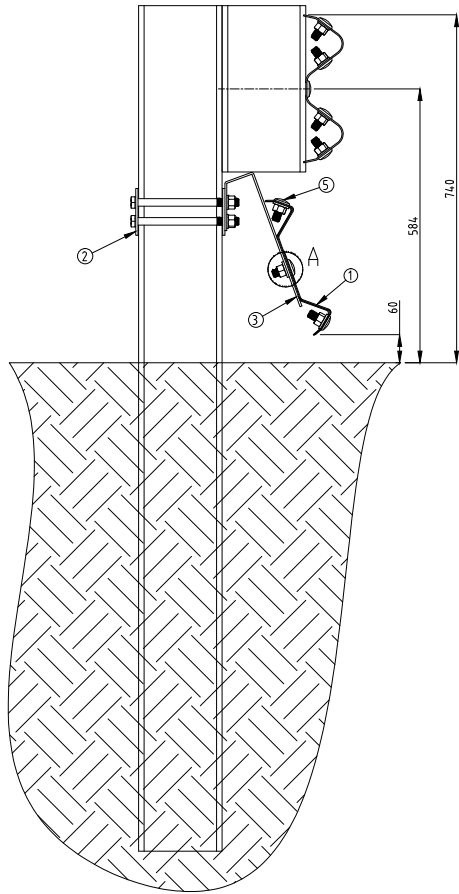
REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED	DRAWING NUMBER	REFERENCE DRAWINGS	NAME	DATE	PROJECT	TITLE	DRAWING No.
5	25-05-2017	CDMS ADDED	MC	LG	MC			A.R.	28/07/2014	INGAL CIVIL PRODUCTS 57-65 AIRDS ROAD MINTO, N.S.W AUSTRALIA 2566 PH. +61 2 9827 3333 FAX. +61 2 9827 3300 www.ingalcivil.com.au	INGAL MPR MOTORCYCLIST PROTECTION EZY-GUARD CONFIGURATION ASSEMBLY DETAILS	INGAL CIVIL PRODUCTS PART No. ICP-MPR-003
4	22-11-2016	WASHER QTY REDUCED	LG	MC	LG							
3	17-11-2016	BOM CORRECTION	LG	MC	LG							
2	28-07-2016	Z POST BRACKET PART NUMBER ADDED	MC	LG	MC							
1	20-07-2015	BOM CORRECTION - ITEM 10	LG									

J.SALES & MARKETING/DRAWINGS/INGAL_MPR/ICP-MPR-003-EZY-GUARD WITH MPR/LOG



ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	10006773	MOTORCYCLIST PROTECTION BEAM
2	2	10006774	"U" SUPPORT FOR C-150 x 110 POST
3	2	10006772	MOUNTING BRACKET
4	4	10001228	BOLT HEX HEAD M16 x 190
5	4	10001248	BOLT ROUND HEAD M16 x 32
6	2	10006769	BOLT ROUND HEAD M16 x 40
7	2	10006771	WASHER FLAT Ø 70 x 2
8	10	10006770	WASHER FLAT Ø 35 x 17 x 4
9	6	10007834	NUT HEX M16
10	1	10006767	END TERMINAL

REVISIONS 4 31-08-2016 BOM CORRECTION - ITEM 9 MC 3 20-07-2015 BOM CORRECTION - ITEM 10 LG 2 17-06-2015 BOM CORRECTION - ITEM 8 LG 1 02/07/2014 FIRST ISSUE A.R. L.G.			REFERENCES DRAWING NUMBER REFERENCE DRAWINGS			NAME DATE DRAWN A.R. 02/07/2014 CHECKED LG 04/07/2014 APPROVED LG 04/07/2014		 INGAL CIVIL PRODUCTS 57-65 AIRDS ROAD MINTO, N.S.W AUSTRALIA 2566 PH. +61 2 9827 3333 FAX +61 2 9827 3300 www.ingalcivil.com.au		PROJECT TITLE INGAL MPR MOTORCYCLIST PROTECTION G4 CONFIGURATION EXPLODED ISOMETRIC ASSEMBLY		INGAL CIVIL PRODUCTS PART No. 10006851 DRAWING No. ICP-MPR-001			
REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED	DRAWING NUMBER	REFERENCE DRAWINGS	SCALE	N.T.S. @ A3	ISSUE FOR	INFORMATION ONLY	PROJECT	TITLE	INGAL CIVIL PRODUCTS PART No.	DRAWING No.



TYPE B - U-POST - BILL OF MATERIALS			
ITEM	QTY	PART No	DESCRIPTION
1	1	10007376	Motorcyclist protection beam 5m NLL
2	2	10006768	MPS U-Post bracket
3	2	10006772	Rail mounting bracket
4	4	10004064	M16x220 HEX HEAD BOLT GALV
5	4	10001248	Round head bolt M16x32
6	2	10006769	Round head bolt M16x40
7	2	10006771	Slot washer ϕ 70x2
8	10	10006770	Washer ϕ 35x17x4
9	10	10007834	M16 nut

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	30-10-2015	BOM UPDATED	MC	LG	LG
0	11-12-2014	ORIGINAL ISSUE	AR	LG	LG

REFERENCES	DRAWING NUMBER	REFERENCE DRAWINGS

NAME	DATE
DRAWN A.R.	11-12-2014
CHECKED LG	11-12-2014
APPROVED LG	11-12-2014
SCALE N.T.S. @ A3	
ISSUE FOR INFORMATION ONLY	

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PROJECT	TITLE
	INGAL MPR MOTORCYCLIST PROTECTION TYPE-B GUARDRAIL CONFIGURATION ASSEMBLY DETAILS

INGAL CIVIL PRODUCTS PART No.	DRAWING No.
	ICP-MPR-004



INGAL
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A valmont  COMPANY

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