EZY-GUARD HC STEEL RAIL BARRIER

REVISION REGISTER

Revision	Description	Date
1	Issued for use.	14/01/2020
1 A	MASH TL 4 deflection and working width amended. Points of redirection amended. Product Manual reference updated.	12/01/2024

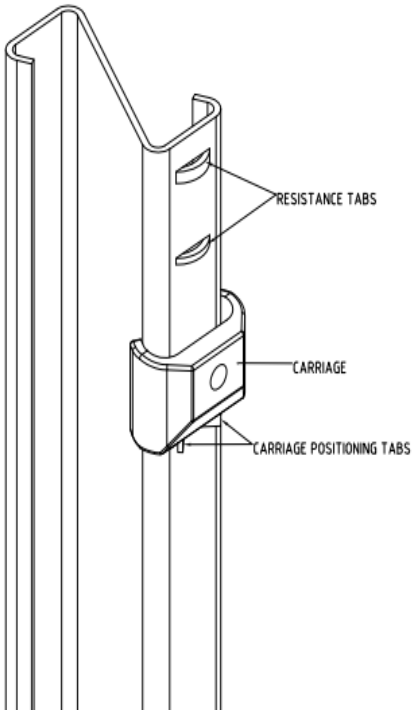
Ezy-Guard HC (High Containment) is a semi-rigid steel rail barrier system which is accepted for use by Main Roads.

Identification Photographs:

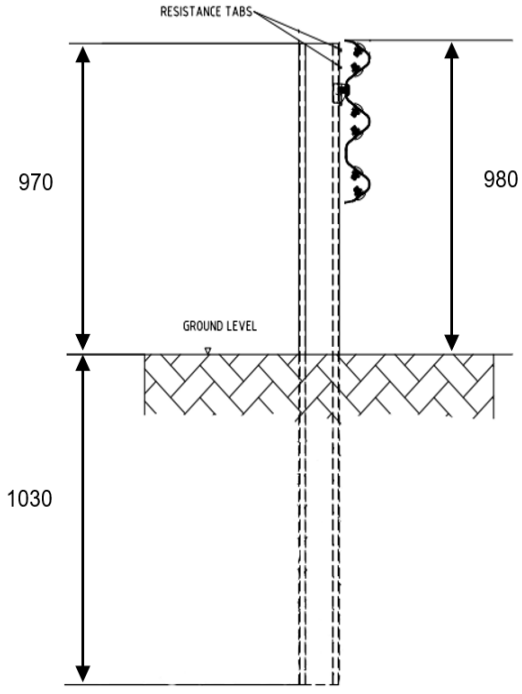
Front View

Rear View

Drawings:



Isometric View –
Z Posts and Ezy-Carriage
(W-beam omitted for clarity)



Typical Cross Section

EZY-GUARD HC STEEL RAIL BARRIER

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Supplier: Ingal Civil Products
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Ph: (08) 9452 9111 Fax: (08) 9358 9111
Website - http://www.ingalcivil.com.au/

Test Level:
MASH TL 3 (2,270 kg)
MASH TL 4 (10,000 kg)

Configuration:
The Ezy-Guard HC steel rail barrier consists of thrie-beam rail, which is attached to Z posts at 2000 mm centres. The system does not have blockouts, but a slider carriage (referred to as the “Ezy-Carriage”) to control the release of the rail from the posts during impacts.

The Z Posts are 2000 mm long and driven into the ground so that the height of the top of post is 970 mm above ground. The top of the thrie-beam rail is at a height 980 mm above ground.

Unless stated in this document the installation shall be in accordance with the Ezy-Guard HC Product Manual (Release 08/22c) available on the Ingal Civil Products website.

Design Considerations:

Test Deflection:
1.16 m under MASH TL 3 conditions (2,270 kg vehicle at 100 km/h and 25°)
1.20 m under MASH TL 4 conditions (10,000 kg vehicle at 90 km/h and 15°)

Note that this deflection was measured in a crash test performed under controlled conditions. The deflection measured is the horizontal offset between the face of the w-beam rail measured prior to and following vehicle impact. Designers should be aware that the deflection figure published as a test result may not be the deflection value achieved in the field for all impacts by errant vehicles.

Working Width:
1.16 m under MASH TL 3 conditions (2,270 kg vehicle at 100 km/h and 25°)
1.80 m under MASH TL 4 conditions (10,000 kg vehicle at 90 km/h and 15°)

Minimum Length:
The minimum length of Ezy-Guard HC barrier is 44 m (full terminal lengths & transitions not included).

Point of Redirection
The MASH TL 3 point of redirection (leading and trailing) is at the interface between the barrier and end treatment.

The MASH TL 4 point of redirection (leading) is 8 m from the first full height Ezy-Guard HC post, excluding any transition, terminal or connecting lower containment level barrier.

The MASH TL 4 point of redirection (trailing) is 24 m from the first full height Ezy-Guard HC post, excluding any transition, terminal or connecting lower containment level barrier.

Refer following detail.

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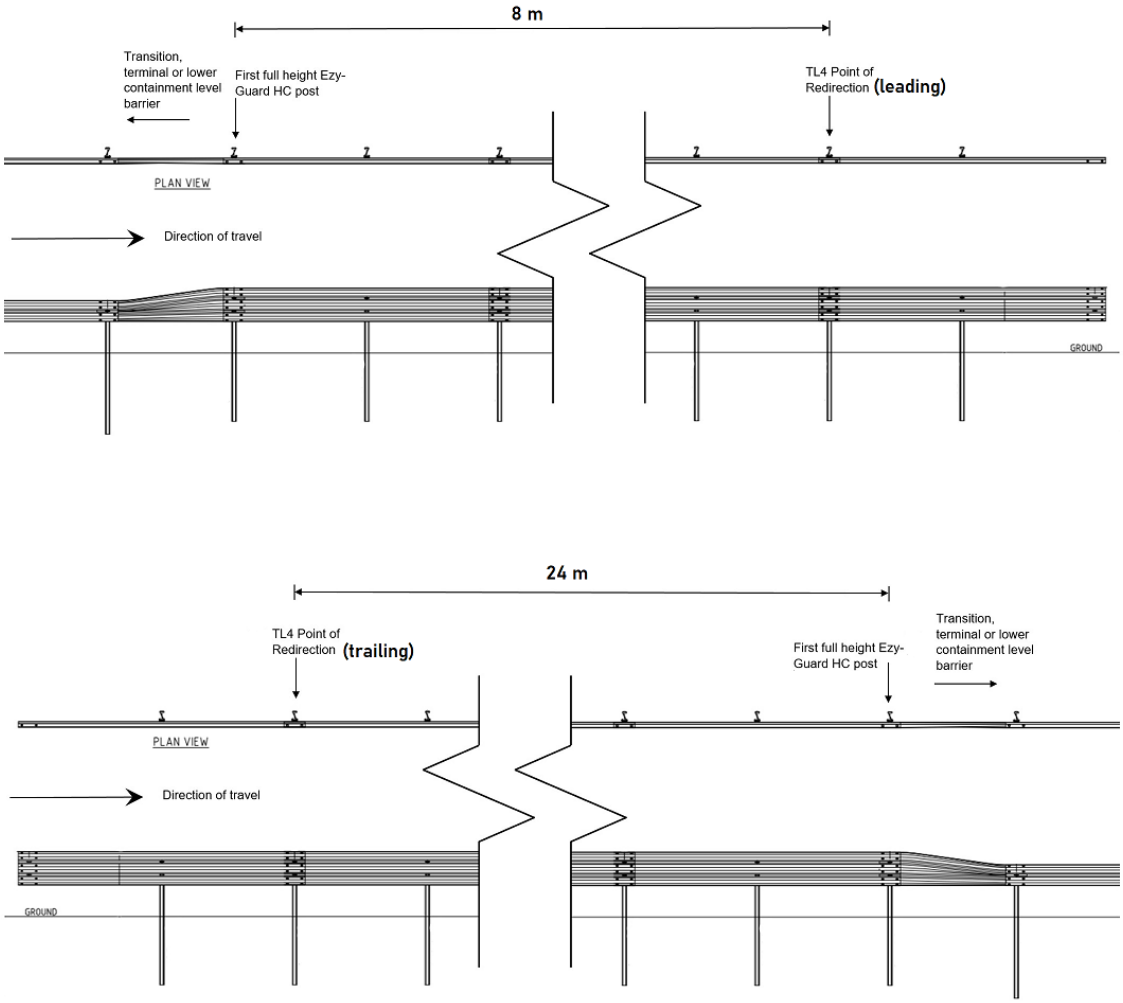

Offset from Kerbing:
As the Ezy-Guard HC barrier does not include a blockout, a greater offset than public domain w-beam is required. The face of Ezy-Guard HC barrier is to be placed 300 mm from the face of the kerb to minimise nuisance impacts and allow driving of posts to be clear of the kerb.

Locations offset further from the kerb are not preferred because of the possibility of vehicle either vaulting the barrier or not being redirected by the barrier.

Approach to barrier:
The approach to the barrier should be a trafficable running surface at a slope of 1 in 10 or flatter clear of objects and grade changes to allow an errant vehicle to hit the barrier at an appropriate height.

Height Correction:
If placed less than 3 m from the face of the kerb the mounting height is measured from the pavement surface. At greater offsets the mounting height is measured from the adjacent finished surface levels.

End Treatments:
ET-SS terminal, Quadguard M10 crash cushion and public domain W-Beam trailing end terminal as per drawing EZY-HC-007 on the Ingal Civil Products website.

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Transitions:
Ezy-Guard HC can transition to Ezy-Guard 4 & public domain W-Beam using the asymmetric transition beam, refer drawings EZY-HC-002, EZY-HC-014 on the Ingal Civil Products website.
Transitions from Ezy-Guard HC to concrete barrier shall be as per the Main Roads WA detail on drawing EZY-HC-008 on the Ingal Civil Products website.

Single Post Omission
A single post can be omitted from the Ezy-Guard HC installation resulting in a 4.0 m clear span if required. The minimum distance between 4.0 m clear spans is 30 m of standard Ezy-Guard HC (2.0 m post spacing).

Delineation:
Refer to Ezy-Guard HC Product Manual.

Limitations:

- The Ezy-Guard HC barrier configuration utilising post spacing other than what is stated above is not approved for use.
- The installation of the Ezy-Guard HC barrier is restricted to soils equivalent to an AASHTO standard soil (i.e. CBR ≥ 60).
- The Ezy-Guard HC barrier configuration using posts on base plates is available. However, approval is required from MRWA Road & Traffic Engineering Branch prior to specifying this configuration.
- The offset from the back of the barrier post to the batter hinge point shall be a minimum of 1.5 m as per the Product Manual based on AASHTO standard soil.
- Should not be installed behind kerbs if possible. If kerbing is required then the preferred kerbing is mountable Type A 100 mm. Semi-mountable is acceptable in some situations (speeds < 70 km/h) but not preferred. Barrier kerbing shall not be used in front of barrier. Refer to Main Roads Standard Drawing 9331-0376 for kerb types.
- Ezy-Guard HC barrier is not to be used for repairs of damaged sections of public domain thrie-beam or modified thrie-beam barrier systems.
- During crash tests the Ezy-Carriage was expelled up to 11 m behind the barrier. This may be hazardous to vulnerable road users such as pedestrians and cyclists. Designers should take this into consideration when determining appropriate locations for this barrier.

References:

Ezy-Guard HC Product Manual (Release 08/22c)

Website - http://www.ingalcivil.com.au/

Refer to Main Roads WA file 16/10233