

# RAPTOR Plastic Single Point Protector

## Product summary

<b>Status</b>	Accepted Trial Product
<b>Category</b>	Pole Protector / Single Hazard Protection
<b>Test Level</b>	Test Level 1 (NCHRP 350): 50km/h Trial locations accepted up to 80km/h (refer to design requirements)
<b>Supplier</b>	Ingal Civil Products
<b>Description</b>	Plastic Crash Cushion used on round or closed section poles.



Figure 1: Typical Installation of RAPTOR Crash Cushion

## Introduction and purpose

This detail sheet supplements *VicRoads' Road Design Note 06-04 - Accepted Safety Barrier Products*. Please refer to RDN 06-04 for the current VicRoads acceptance status, information on the product assessment process and general acceptance conditions.

The technical details within this document have been extracted from information submitted to VicRoads by the Supplier and the recommended 'Conditions for Use' from the Austroads Safety Barrier Assessment Panel (ASBAP).

***VicRoads requirements take precedence over the product manual and Austroads conditions.*** Where a departure from these requirements is required, users should understand the risks and document their engineering decisions.

For more detailed product information, refer to the individual product manual or contact the System Supplier.

## Technical information

The RAPTOR Plastic Single Point Protector should be designed, installed and maintained in accordance with the following VicRoads conditions for use. These conditions for use have been based on an Austroads assessment of technical performance against AS/NZS 3845 and contain VicRoads specific requirements when necessary.



Figure 2: VicRoads asset number attached to RAPTOR

## Summary Conditions for Use

<b>Accepted configuration</b>	RAPTOR Plastic Single Point Protector
<b>Variants</b>	R300 R600
<b>Deflection</b>	N/A
<b>Product manual reviewed</b>	November 2018
<b>ASBAP issue</b>	30 June 2014

Refer *VicRoads conditions for use (below)*.

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## VicRoads Conditions for Use

### Tested design requirements

Containment level	Speed (km/h)	Vehicle mass (kg)	Point of Redirection (m)*		Minimum length of barrier (m)	Anchor/Pin Spacing (m)*	Dynamic deflection (m)	Working width (m)	Notes
			Leading	Trailing					
NCHRP350	50	2000	N/A		N/A	N/A	N/A	N/A	Applies to all variants

### Approved Terminals and Connections

<i>Crash Cushions or Terminals must be fitted to both ends of a barrier</i>	
<b>Public Domain Products</b>	
All Types	Not applicable
<b>Proprietary Products</b>	
All Types	Not applicable

### Design Guidance

System width (m)	1.15
Installation	This product must be installed and maintained in accordance with the Product Manual and Road Agency specifications. Road Agency specifications and standards shall have precedence.
Minimum distance to excavation	Not applicable
Slope limit	Side slope limit: 10 Horizontal to 1 Vertical (10%).
Systems conditions	<ol style="list-style-type: none"> <li>Only to be used with site specific approval from VicRoads or the local Road Authority</li> <li>Only to be used on round poles or closed section poles.</li> <li>Ensure adequate sightlines at driver's eye height before installation</li> <li>The device may rotate during impacts. The area within a radius of 1.5 metres must be level without any hindrance to this free rotation</li> <li>Installation on top of a kerb is not recommended, however if installed on top a kerb, all system components must be free to operate.</li> </ol>
Gore area use	Not Permitted
Pedestrian area use	Permitted
Cycleway use	Permitted
Frequent impact likely	Permitted
Remote location	Permitted
Median use	Permitted

## Foundation pavement conditions

Submitted Foundation Pavement Conditions					
Pavement	Use	Accepted Speed (max)	Post/pin spacing (m)	Pavement construction	Post/pin type
Concrete	Permitted	50 km/h	N/A	Foundation pavement conditions must be smooth and free of snag points, kerbs or obstructions that may interfere with the operation of the product	N/A
Deep lift asphaltic concrete	Permitted				
Asphaltic concrete over granular pavement	Permitted				
Flush seal over granular pavement	Permitted				
Unsealed compacted formation	Permitted				
Natural surface	Permitted				

## Other considerations and comments

### Acceptance Conditions

This product is accepted on a trial basis only. Proposed trials require acceptance by the Manager Safe System Engineering and asset owner prior to installation. A submission (email) to the M-SSE must demonstrate the following:

1. Consideration of alternate safety barrier options,
2. Sightlines are achieved in accordance with the relevant Austroads Guide and relevant standards,
3. The RAPTOR has been designed in accordance with this detail and the manufacturers requirements

It is imperative that the RAPTOR is not used as an alternative to good design practises, but rather is considered as an absolute last resort to more conventional hazard treatment methods, such as hazard removal/relocation or using appropriate roadside safety barrier system.

Installations in Victoria are required to be coloured **black**. No advertising will be permitted on any RAPTOR.

### Joint Asset Owner and VicRoads Requirements

#### *Prior to Installation*

Where a RAPTOR is proposed to be installed around a utility pole, approval from the asset owner is required prior to installation. No alteration to ground level near the pole is permitted without asset owner approval.

#### *Agreement with Powercor Australia Ltd*

VicRoads has recently signed a Facilities Access Agreement (FAA) with Powercor Australia Ltd (the Distributor) for the installation of RAPTORs on its assets. Under this FAA, the Distributor permits VicRoads to position the RAPTOR around its poles or to remove the RAPTOR from its poles.

#### *Nominated Installer*

As the FAA requires installation by skilled persons with suitable electrical safety awareness competencies, it has been accepted that Next Generation Electrical (NGE) will be the nominated supplier and installer of the RAPTOR on Powercor

assets when required by Projects. The appropriate person at NGE that should be contacted for requests in relation to RAPTORs is Ayce Cordy -> refer details below:

NGE has separate rates for supply of RAPTORs and prices for installation of 1-5 units within a zone. The pricing has been accepted. There are 5 zones within Victoria based on the distance measured from the Powercor depot at Ardeer which are 200 km, 360 km, 600 km, 900 km and 1200 km. Therefore, if a RAPTOR is required at a location say 300 km away from the depot, then the zone 2 price for installation by NGE will apply. Projects will need to make their arrangements with NGE for payment. When requesting a RAPTOR installation, NGE requires a lead time of 2 weeks for delivery of the unit(s).

### Requirements for RRV Projects

Requests for RAPTOR installation by RRV Projects shall be made by following the steps below:

1. A submission to Manager – SSE as per the Acceptance Conditions above.
2. Once accepted by Manager – SSE, seek acceptance from Powercor by completing attached form. Attach Powercor form.
3. Once acceptances from both Manager- SSE and Powercor have been obtained, arrange for supply and installation with NGE, the nominated installer.
4. Contact the ITS Operations [ITS\\_Operations\\_Management@roads.vic.gov.au](mailto:ITS_Operations_Management@roads.vic.gov.au) and ITS Team Leader Traffic Management Systems via email to obtain a VicRoads Site Number for the RAPTOR unit. The email shall request that a new site be created for the particular RAPTOR Site in RAI. The following fields must be specified in the email for the request:
  - Site Name
  - Site Type = **Hazard protection**
  - Owner
  - Road Classification
  - Comments
  - GPS Latitude/Longitude
  - Requestor Name
  - Requestor Phone Number
  - Requestor Email Address

5. Order from a sign manufacturer the supply of a self-adhesive sticker (as shown on Figure 2) with the VicRoads TMC Contact Number and Site Number details in accordance with VicRoads Standard Drawing TC-2100.
6. Attach sticker to RAPTOR unit making sure it can be seen by the travelling public.
7. Carry out regular maintenance on unit and remove any rubbish/litter that may be deposited in the cavity around the pole. Check that the RAPTOR has not been moved from its original orientation.

**Requirements for MTIA Projects (WGTP, MRPV, NELP and LXR)**

All requests for RAPTOR installation shall be co-ordinated through the VicRoads Network Integration & Assurance Group.

**Post Installation**

Periodic Asset Inspections

Each RAPTOR is identified by an asset number which is marked along with the VicRoads TMC contact number (Figure 2).

When the asset owner needs to inspect its pole, VicRoads TMC must be notified a minimum 10 days in advance for the RAPTOR to be removed. VicRoads can be contacted on 13 11 70 quoting the asset number(s) of the RAPTOR(s) affected by the inspection.

TMC will then be able to advise the relevant Region for the removal of the subject RAPTORs to allow access for asset owner operations. Removal shall be carried out in accordance with the INGAL Product Manual (October 2018). Once inspection works have been completed, TMC shall be notified that RAPTORs can be reassembled at the subject poles. TMC shall advise the Region accordingly.

Asset Damage

Where it has been discovered that a RAPTOR has been impacted by an errant vehicle, VicRoads shall notify the asset owner that the RAPTOR (identified by an Asset Number on sticker) at the location has been impacted so that asset owner can inspect the pole's condition, etc.

In addition, if the asset owner is aware that a RAPTOR has been impacted/moved, VicRoads shall be notified so that the device is inspected to ensure its crashworthiness and correct orientation around the pole.

Where the VicRoads sticker on a RAPTOR has been defaced or removed, TMC shall be contacted on 13 11 70 identifying the pole location so that a new sticker can be reapplied.

**Damaged Components**

Damaged components must be replaced. Repaired components must not be used.

**References**

- Product Installation Manual and Product Operational Manual refer licensed product supplier website.
- VicRoads Road Design Note 06-04 Accepted Safety Barrier Products.
- [Powercor Contact](#)

The Initial contact for consultation of proposed Installation/Removal sites for RAPTOR devices (see application form) and RAPTOR Installation Pole Site Address notification is;

Peter Yates

Senior Statutory Compliance Advisor

Network Safety

CitiPower & Powercor Electricity Networks

Ph (03) 9297 6670

Email [pyates@citipower.com.au](mailto:pyates@citipower.com.au)

Postal Address:

Locked Bag 14090

Melbourne Vic 8001

Secondary Contact

Luke Farrugia

Network Safety Manager

CitiPower & Powercor Electricity Networks

Ph (03) 9683 4294

Email [lfarrugia@powercor.com.au](mailto:lfarrugia@powercor.com.au)

- [NGE Contact](#)

Ayce Cordy, Project Manager

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**Detail Sheet – Update Summary**

Issue	Approved	Amendment
July 2017	M-SSD	First edition
July 2019	M-SSE	Supplier change Commentary Update Powercor and VicRoads requirements

### RAPTOR INSTALLATION POLE SITE ADDRESS

Equipment number	Description	Address	Pole LIS	Pole #	Classification	Owner	Status	Species	Material	Length (M) & Strength (Kn)	Melway VicRoads reference	Raptor Installation or Removal Date
33042323 (office use)	Lowe St 10 (office use)	210 Lowe St	40105	10	Lv/hv	PAL	In service	CC-Concrete (office use)	Concrete	12.5/12 (office use)	Mel 432/F10	12/12/1999

Note: First entry as example

**Application Form**  
**Facilities Access Agreement (FAA) – Signs and Other Minor Attachments**

*This Application Form is to be submitted in accordance with the requirements stipulated in the 'Facilities Access Agreement (FAA) for Attachments*

***Please forward Applications to:***

Powercor

**1. Applicant Details**

**Company Name** .....

**Contact Person** .....

**Contact Phone No.** .....

**Contact Email.** .....

***Name*** of Appropriate Person  
who has assessed this application. ....

**2. Site Details**

Site Address	Pole LIS	Pole #	Classification	Owner	Material Wood Concrete Steel	Length (M) & Strength (Kn)	Melway VicRoads reference	Photo of pole	RAPTOR Installation or Removal Date	Reason for use of RAPTOR
210 Lowe St, Geelong	40105	10	HV/LV	PAL	Concrete	12.5/12	Mel 432/F10		12/12/1999	Steel safety barrier too close to pole

**Note: First entry as example**

**3. Clearance and Pole Suitability Details**

- 3.1 Does the proposed Attachment for each Distributor's Pole, comply with the clearances specified in section 1.1(v) of the FAA? Yes [ ] No [ ]
- 3.2 Are detailed dimensioned drawings of each proposed attachment to each Distributor's Pole attached to the application? Yes [ ] NA [ X ]
- 3.3 Is each attachment request to a suitable pole type as noted in section 1.1 of the FAA? Yes [ ] No [ ]
- 3.4 Has each attachment been checked to ensure no interference with Distribution Assets? Yes [ ] No [ ]

**(Note: Attachments are not allowed on *Frangible poles* – please refer to 'FAA Pole Attachments Guideline')**

**4. Attachment Details**

4.1 Is the proposed attachment item listed in Schedule 1 of the FAA? **Yes [ ] No [ ]**  
 If not, are details provided as specified in Section 1.2(r) of the FAA. **Yes [ ] No [ ]**

4.2 Does the affixing method of the attachment comply with section 1.2(i) of the FAA? **Yes [ ] No [ ]**

4.3 Is an example of the wording and/or artwork to be displayed on the Attachment attached to this application? **Yes [ ] No [ ]**

***(Only answer 4.4 if attachment request area of attachment is greater than 0.3m<sup>2</sup>)***

4.4 If the proposal involves the installation of an Attachment which is greater than 0.3m<sup>2</sup>, then the application **must** be supported by comprehensive evaluation data, taking into account all existing attachments and loads on the pole, prepared by a **suitably qualified Engineer** approved by CitiPower/Powercor.

Are any proposed Attachments greater than 0.3m<sup>2</sup>? **Yes [ ] No [ ]**

**5. Details of the Installer**

5.1 Are all proposed installers Authorised by the Applicant to affix or remove an attachment?  
*(note that before authorising a person the Applicant **must** ensure that the person has received training by means of a program as specified in Section 1.1(n) of the FAA)* **Yes [ ] No [ ]**

5.2 Does the applicant have an inspection and maintenance program regarding the proposed attachment/s? **Yes [ ] No [ ]**



**Declaration**

*This Application form is completed by a suitably qualified person who is able to certify the suitability of the proposed attachment/s to CitiPower's Pole/s in accordance with the requirements*

*set out in the FAA.*

**Signed by:**      **Full Name:**.....

**Signature:**.....

**Date:** .....