



**mainroads**  
WESTERN AUSTRALIA

## SPECIFICATION 605

---

# GRAB RAILS AND BOLLARDS

Copyright MAIN ROADS Western Australia

<b>REVISION REGISTER</b>			
<b>Clause Number</b>	<b>Description of Revision</b>	<b>Authorised By</b>	<b>Issue Date</b>
605.06, 605.07 & 605.26	Grab rail & metal sleeve size amended, tape reflectivity changed from Class 2 to Class 400	SRE	19/12/2019
Guidance Notes	Suppliers of Energy Absorbing Bollards	RE	29/06/2018
Whole document	Reformatted	SCO	18/04/2017
605.28	Part 605.28 (3) added	PDE	17/10/2012
Whole document	Complete revision of Issue 1.1 to new format	MCP	01/08/2006

# CONTENTS

Clause	Page No
<b>GENERAL</b> .....	<b>4</b>
605.01 Scope .....	4
605.02 References .....	4
605.03 – 605.05 NOT USED .....	4
<b>PRODUCTS AND MATERIALS</b> .....	<b>4</b>
605.06 Grab Rails .....	4
605.07 Steel Bollards .....	4
605.08 Timber Bollards .....	5
605.09 – 605.25 NOT USED .....	5
<b>INSTALLATION</b> .....	<b>5</b>
605.26 Pedestrian Grab Rails .....	5
605.27 Steel Bollards .....	5
605.28 Timber Bollards .....	5
605.29 – 605.80 NOT USED .....	5
<b>AS BUILT HANDOVER REQUIREMENTS</b> .....	<b>5</b>
605.81 – 605.90 NOT USED .....	5
<b>CONTRACT SPECIFIC REQUIREMENTS</b> .....	<b>5</b>
605.91 – 605.99 NOT USED .....	5

# SPECIFICATION 605

## GRAB RAILS AND BOLLARDS

### GENERAL

#### 605.01 SCOPE

1. The work under this specification consists of the supply and installation of grab rails and bollards.

#### 605.02 REFERENCES

1. Australian Standards, MAIN ROADS Western Australia Standards and MAIN ROADS Western Australia Test Methods are referred to in abbreviated form (e.g. AS 1234, MRS 67-08-43 or WA 123). For convenience, the full titles are given below:

##### Australian Standards

AS 1743 Road Signs – Specifications

#### 605.03 – 605.05 NOT USED

### PRODUCTS AND MATERIALS

#### 605.06 GRAB RAILS

1. Grab rails shall be formed from 40 NB painted galvanised pipe.
2. In-situ metal sleeve for grab rail shall be formed from 50 NB galvanised pipe. **Sleeves**
3. Paint shall be as shown on the Drawings. **Paint**
4. Reflective tape shall be to AS 1743 Class 400. **Reflective Tape**
5. Concrete shall be class N20. **Concrete**

#### 605.07 STEEL BOLLARDS

1. Steel bollards shall be formed from 150 mm NB painted galvanised pipe, filled with class N20 concrete.
2. In-situ metal sleeves for steel bollards shall be formed from galvanised pipe. **Sleeves**
3. Paint shall be as shown on the Drawings. **Paint**
4. Reflective tape shall be to AS 1743 Class 400. **Reflective Tape**
5. Concrete shall be class N20. **Concrete**

**605.08 TIMBER BOLLARDS**

1. Timber bollards shall be formed from 150mm dia softwood treated with preservatives against termite and fungal attack.

**605.09 – 605.25 NOT USED**

**INSTALLATION**

**605.26 PEDESTRIAN GRAB RAILS**

1. Pedestrian grab rails shall be installed as shown on the drawings, with the grab rails being wedged using metal wedges, into the 50 NB galvanised pipes which are shall be cast in-situ in the ramp concrete. **Installation**
2. Grab rails shall be painted as shown on the Drawings. **Paint**
3. Reflective tape shall be affixed to grab rails as shown on the Drawings. **Reflective Tape**
4. Installation tolerances shall be within 1:100 of the vertical, and within 20mm of specified height. **Tolerances**

**605.27 STEEL BOLLARDS**

1. Steel bollards shall be installed as shown on the Drawings, and shall be wedged using metal wedges into the galvanised pipes, which shall be cast in-situ in concrete. **Installation**
2. Steel bollards shall be painted as shown on the Drawings. **Paint**
3. Reflective tape shall be affixed to bollards as shown on the Drawings.

**605.28 TIMBER BOLLARDS**

1. Timber bollards shall be installed as shown on the Drawings. **Installation**
2. Timber bollards shall be painted if specified on the Drawings.
3. Timber bollards, unless specified on the Drawings, are to be 1500mm long units, installed to a height 800mm above the ground and 700mm below the ground, at 1.5m spacing. Posts are not to be cemented in at the base as they are required to remain frangible.

**605.29 – 605.80 NOT USED**

**AS BUILT HANDOVER REQUIREMENTS**

**605.81 – 605.90 NOT USED**

**CONTRACT SPECIFIC REQUIREMENTS**

**605.91 – 605.99 NOT USED**

## GUIDANCE NOTES

### FOR REFERENCE ONLY – DELETE GUIDANCE NOTES FROM FINAL DOCUMENT

1. All edits to downloaded Specifications shall be made using *Track Changes*, to clearly show added/deleted text.
  2. If **all** information relating to a clause is deleted, the clause number should be retained and the words “**NOT USED**” should be inserted.
  3. The proposed documents with tracked changes shall be submitted to the Project Manager for review, prior to printing the final batch of documents. When this final printing is carried out, the tracked changes option is to be turned off.
  4. Before printing accept all changes in the document, turn off *Track Changes* and refresh the Table of Contents.
  5. The Custodian of this specification is Road Engineer.
- 

#### 1. CRASHWORTHY BOLLARDS

- 1.1 The crashworthy bollard that is accepted for use on the Main Roads WA network is called the Energy Absorbing Bollard which is marketed under licence by Roadside Services & Solutions or Impact Absorbing Systems Pty Ltd.

## CONTRACT SPECIFIC REQUIREMENTS

The following clauses are to be placed under the CONTRACT SPECIFIC REQUIREMENTS, as required. After inserting the clause, change the clause number and heading to style “H2 SP” so it appears in the Table of Contents.

XXX.XX SUB HEADING (H2 SP)

1. Insert text (Main Table SP)

***Keyword SP***

2. Insert text (Main Table SP)

XXX.XX SUB HEADING (H2 SP)

1. Insert text (Main Table SP)

2. Insert text (Main Table SP)

(NONE AT THIS TIME)

## AMENDMENT CHECKLIST

Specification No. **605** Title: **GRAB RAILS AND BOLLARDS** Revision No: \_\_\_\_\_

Project Manager: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Checked by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Contract No: \_\_\_\_\_ Contract Description: \_\_\_\_\_

ITEM	DESCRIPTION	SIGN OFF
<i>Note: All changes/amendments must be shown in Tracked Changes mode until approved.</i>		
1.	Project Manager has reviewed Specification and identified Additions and Amendments.	
2.	<b>CONTRACT SPECIFIC REQUIREMENTS</b> addressed? Contract specific materials, products, clauses added? (Refer Specification Guidance Notes for guidance).	
3.	Any unlisted materials/products proposed and approved by the Project Manager? If "Yes" provide details at 16.	
4.	Standard clauses amended? <b>MUST SEEK</b> approval from Manager Contracts	
5.	Clause deletes shows as " <b>NOT USED</b> ".	
6.	Appropriate <b>INSPECTION AND TESTING</b> parameters included in Spec 201 (Text Methods, Minimum Testing Frequencies verified).	
7.	<b>ANNEXURES</b> completed (refer Specification Guidance Notes).	
8.	<b>HANDOVER</b> and <b>AS BUILT</b> requirements addressed.	
9.	Main Roads QS has approved changes to <b>SMM</b> .	
10.	Project Manager certifies completed Specification reflects intent of the design.	
11.	Completed Specification – independent verification arranged by Project Manager.	
12.	Project Manager's review completed.	
13.	<b>SPECIFICATION GUIDANCE NOTES</b> deleted.	
14.	<b>TABLE OF CONTENTS</b> updated.	
15.	<b>FOOTER</b> updated with Document No., Contract No. and Contract Name.	
16.	Supporting information prepared and submitted to Project Manager.	
Further action necessary:		

Signed: \_\_\_\_\_ *(Project Manager)* Date: \_\_\_\_\_