

SECTION 26

BARRIER RAILINGS

26 BARRIER RAILINGS

26.1 GENERAL

The standard barrier types in current use by the RTA include:

- Steel Traffic Barrier Railings
- Steel Pedestrian Railings
- Aluminium Pedestrian Railings

26.2 DIMENSIONS

26.2.1 Traffic Barrier Railings

Refer to RTA Standard Bridge Drawings RTAB051 and RTAB052 for general details of Traffic Barrier Railings for Regular and Medium Performance Levels.

26.2.2 Pedestrian Barrier Railings

Refer to RTA Standard Bridge Drawings RTAB018 and RTAB019 for details of Steel and Aluminium Pedestrian Barrier Railings.

Blank spaces are provided on these detail sheets for the addition of relevant information, ie numbers of items required.

26.3 GEOMETRY

26.3.1 Grades and Vertical Curves

Posts for all types of traffic barrier railings shall be perpendicular to the top of the concrete parapet or footway surface on which they are located in all cases where the grade of the structure does not exceed 4%.

Posts for all types of traffic barrier railings that are located on a structure where the grade of the structure exceeds 4% at any point, shall be detailed to be truly vertical for the full length of the structure. Detailing of traffic barrier railings in this instance will entail the calculation of vertical offsets from a given datum for each panel type as shown in Figure 26.3.1.

End posts and balusters for pedestrian barrier railings shall be detailed to be truly vertical in all instances.

26.3.2 Horizontal Curves

All types of barriers on structures which are set out on a curved horizontal alignment need careful examination to ensure that the angular variation between panels can be accommodated at rail splices.

Straight panels shall be used for structures set out on horizontal curves where the radius of curvature is greater than or equal to 150 x the panel length for the longest panel used.

Where the radius of curvature of the structure is less than 150 x the panel length for the longest panel used, the panels shall be detailed to suit the radius as appropriate however, where the mid-ordinate offset for any panel is calculated to be less than 5mm, the panel shall be detailed as being straight.

Figure 26.3.2 shows the correct method for the detailing of curved traffic barrier railing panels and also illustrates the method used to calculate the mid-ordinate offset for all types of curved railing panels.

26.4 JOINTS

Bolted rather than welded joints between panels in traffic barrier railings should be used for maintenance and tolerance reasons. RTA Standard Bridge Drawing No RTAB053 provides details of joints for Regular Performance Traffic Barrier Railings and RTA Standard Bridge Drawing No RTAB054 provides details of joints for Medium Performance Traffic Barrier Railings.

On continuous bridges, joints between panels in traffic barrier railings may be placed at the most convenient locations, however as a general rule, joints between adjacent panels shall occur at approximately the quarter point of the span between adjacent posts in the direction of travel as shown in Figure 26.4.

On simply supported bridges and continuous bridges where expansion and or contraction joints are detailed, a joint in the railing (all types) shall be provided between the posts located either side of the joint in the deck. Joints provided at these locations shall be detailed with a rail splice that is sufficient in length to accommodate the expected range of movement of the joint in the deck.

26.5 POST SPACING

26.5.1 Traffic Barrier Railings

In all cases, the form and geometry of all traffic barrier railings shall conform to the requirements of AS 5100.1 – Bridge Design.

For aesthetic considerations, post spacing in barrier railings shall be as even as is practical to suit the particular application and to reduce the number of different panel types to be used.

Where post spacing at the ends of structures is different to that adopted for the majority of the structure, the post spacing shall be reduced rather than increased and if necessary an intermediate post spacing shall be used to reduce the visual impact of the change in spacing. Where a reduction in post spacing is required, the post spacing adopted should, in most cases, not be less than two-thirds of the post spacing used for the remainder of the structure.

26.5.2 Pedestrian Railings

The maximum centre to centre spacing for supports in pedestrian railings shall be 1500mm.

The maximum clear spacing between balusters in pedestrian railings shall be 130mm as defined in Clause 12.1(b) of AS 5100.1 – Bridge Design.

26.6 PANEL LENGTHS

26.6.1 Traffic Barrier Railings

For ease of manufacture, protective treatment, handling and erection, panel lengths should not exceed 5500mm and should not contain more than two railing posts.

26.6.2 Pedestrian Railings

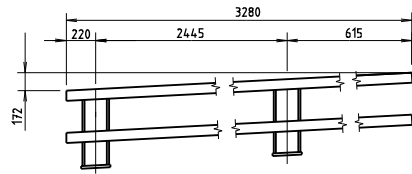
Panel lengths for pedestrian railings shall not exceed 2990mm.

26.7 TERMINATION OF RAILINGS AT ENDS OF STRUCTURES

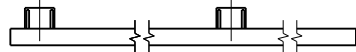
Where traffic barrier railings terminate at a concrete end post/wing wall arrangement they shall be connected to that concrete end post or wing wall with a socket and spigot type joint. For skewed bridges, the ends of the rails shall be cut to match the skew.

Where traffic barrier railings are provided on top of an 820mm high Type F profile concrete safety barrier terminate, the rails shall be curved or sloped down.

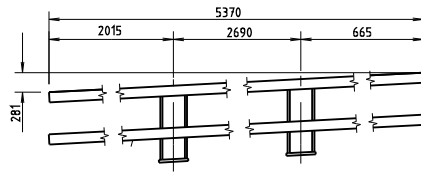
Other types of traffic barrier railing terminations are under investigation by the Authority.



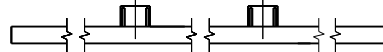
PANEL A



PANEL A - 1 REQUIRED

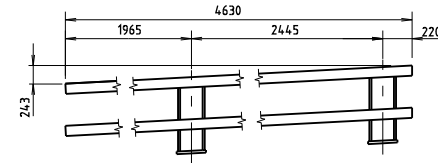


PANEL B
INSIDE ELEVATION

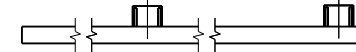


PANEL B - 8 REQUIRED

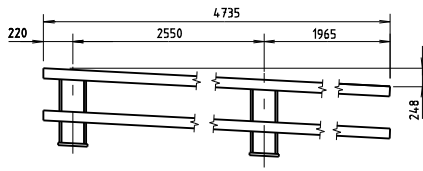
PLAN



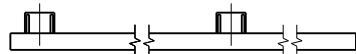
PANEL C



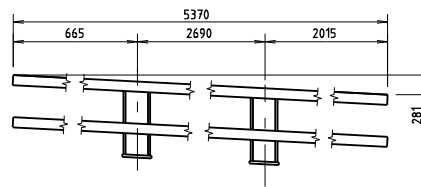
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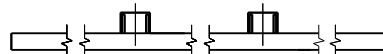
PANEL D



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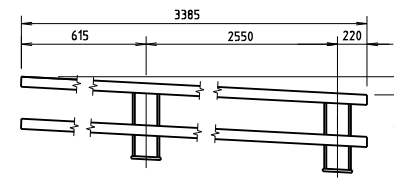


PANEL E
INSIDE ELEVATION



PANEL E - 8 REQUIRED

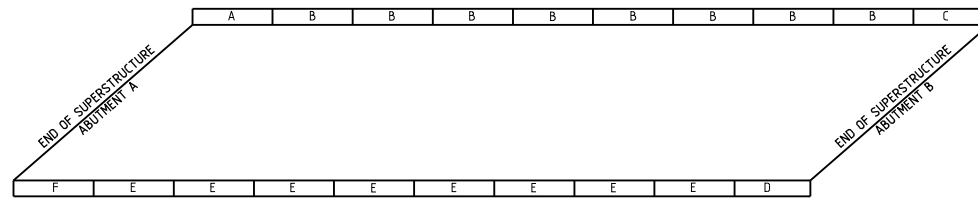
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PANEL F

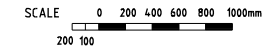


PANEL F - 1 REQUIRED



PANEL LAYOUT
NOT TO SCALE

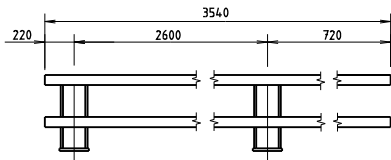
GENERAL NOTES



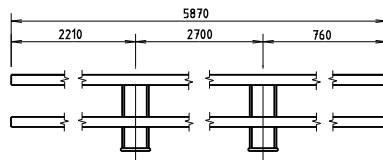
FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, SEE SHEET No...

ISSUE	DATE	REVISION	PREP	CHECK	AUTH
ROADS AND TRAFFIC AUTHORITY OF NSW					
TRAFFIC BARRIER RAILING PANELS					
		PREPARED BY BRIDGE ENGINEERING 110 GEORGE STREET PARRAMATTA NSW 2150 PHONE (02) 8837-0002 FACSIMILE (02) 8837-0065			
		REGISTRATION No of PLANS			
DESIGN	---	CHECKED	---	RTA BRIDGE NUMBER	
DRAWING	---	---		ISSUE STATUS:	
MANAGER, BRIDGE DESIGN PROJECTS			SHEET No	ISSUE	

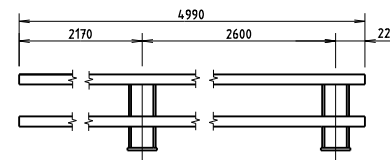
FIGURE 26.3.1



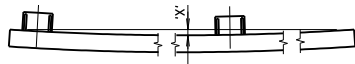
PANEL A



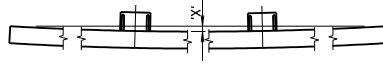
PANEL B
ELEVATION



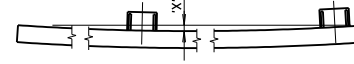
PANEL C



PANEL A - 1 REQUIRED



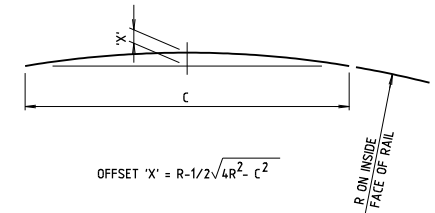
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PANEL C - 1 REQUIRED

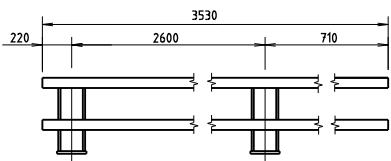
PLAN

CALCULATION OF MID-ORDINATE OFFSET

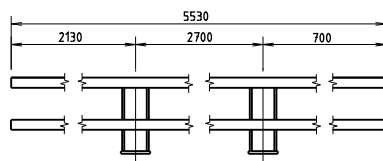


$$\text{OFFSET 'X'} = R - 1/2 \sqrt{4R^2 - C^2}$$

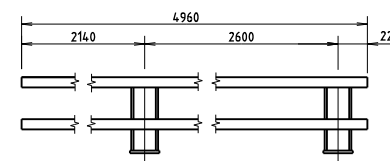
EXAMPLE:
FOR PANEL TYPE B: 'X' = 234 300 - 1/2 * sqrt(4 * 234 300^2 - 5760^2)
= 18



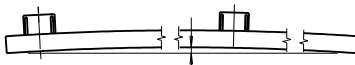
PANEL D



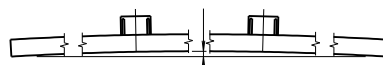
PANEL E
ELEVATION



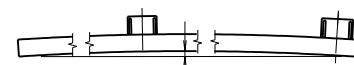
PANEL F



PANEL D - 1 REQUIRED



PANEL E - 14 REQUIRED



PANEL F - 1 REQUIRED

PLAN

GENERAL NOTES

SCALE 0 200 400 600 800 1000mm OR AS SHOWN
200 100

PANELS SHALL BE BENT ON A CIRCULAR CURVE.

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, SEE SHEET No

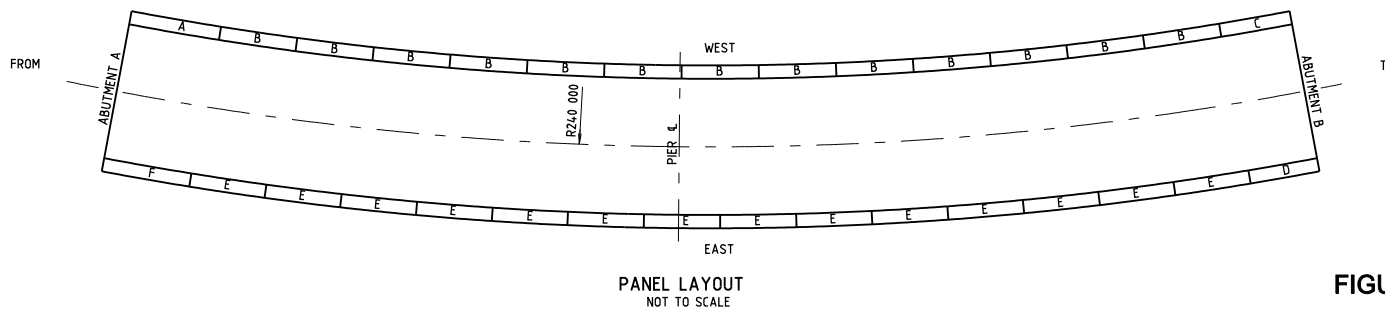


FIGURE 26.3.2

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TRAFFIC BARRIER RAILING PANELS					
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		REGISTRATION No of PLANS _____			
DESIGN	_____	CHECKED	_____	RTA BRIDGE NUMBER	
DRAWING	_____			ISSUE STATUS:	
MANAGER, BRIDGE DESIGN PROJECTS				SHEET No	ISSUE

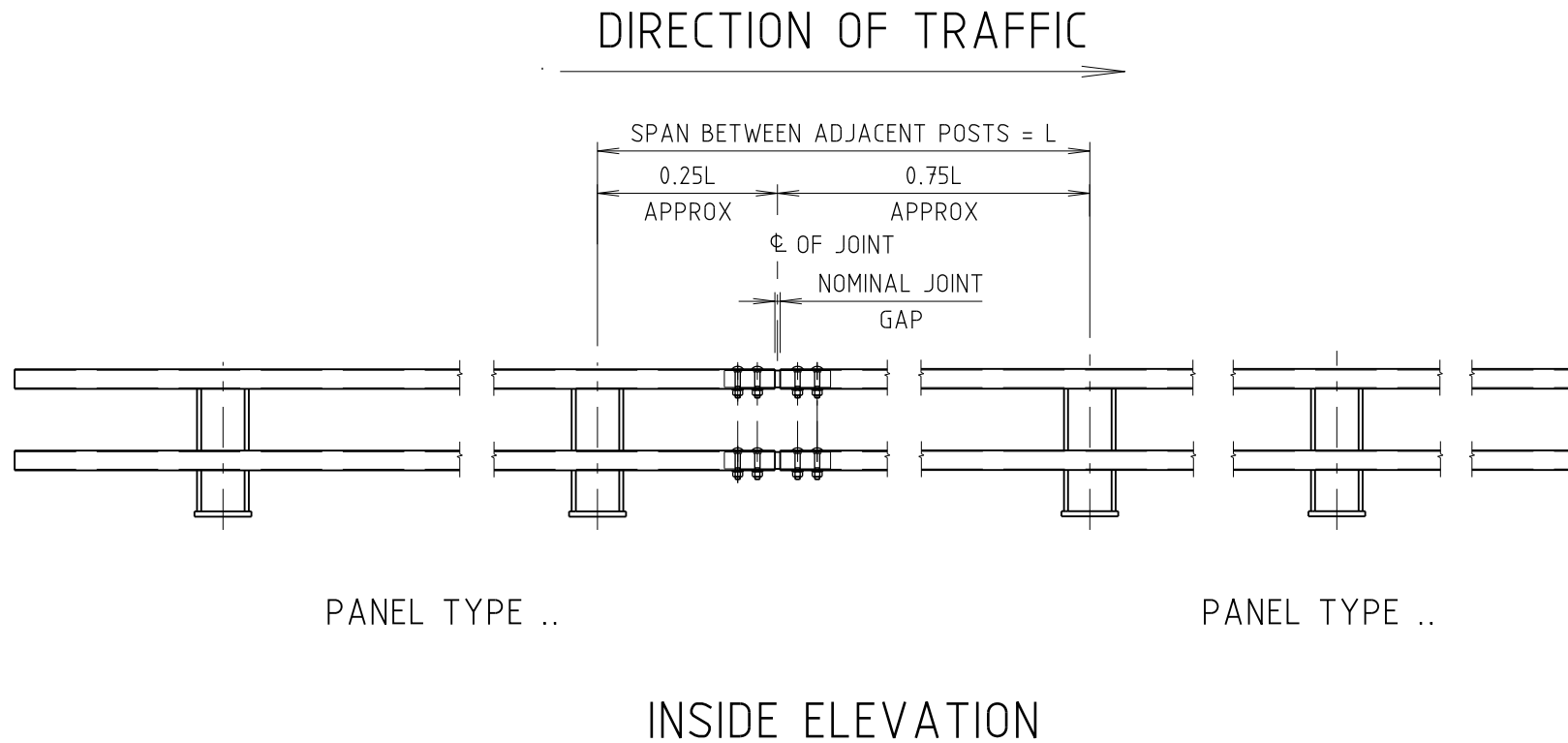


FIGURE 26.4