



澳門特別行政區政府
Governo da Região Administrativa Especial de Macau
體育局
Instituto do Desporto
體育基金
Fundo do Desporto

Concurso Público N.º 6/ID/2018

“Aquisição de barreiras metálicas de protecção e os respectivos acessórios sobressalentes para a 65.ª Edição do Grande Prémio de Macau”

1. The standard specifications of the Guard Rails for Reference

1.1 Scope:

These specifications cover Guard Rails based on “The standard and explanation of setting up Guard Rail”.

1.2 Reference:

- a) Corporate juridical person Japan Road Association
“The standard and explanation of setting up Guard Rail”
(November 1998)
- b) Corporate juridical person Japan Road Association
“The standard and explanation of setting up Guard Rail for cars”
(November 1999)

1.3 Material:

The material for Guard Rails is as indicated in the attached sheet.

1.4 Surface treatment:

1.4.1 Paint type:

- a) As a general rule, Beam, Post, Bracket and Spacer shall be coated by hot dip zinc and then the finishing paint shall be done on the surface at the plant. In this case, in order to get good the adhesion of the painting, the surface treatment, such as phosphoric acid zinc treatment, shall be done. The coating mass shall be Z27 (275g/m² over), which is specified in JIS G 3302 “Hot-dip zinc coated steel sheets and coils. Regarding the underground portion of post, after hot-dip zinc coating, black varnish or the equal paint material (or more than it) shall be painted on the inside out surface;
- b) Bolt and nut shall be coated as per JIS H 8641 “Hot dip zinc coating” Class 2-35 (HDZ 35). And also, regarding screw portion, screw cleaning and centrifuging shall be done after hot- dip zinc coating.



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**Anexo V –
Normas Técnicas**

1.4.2 Hot-dip zinc coating:

- a) The Operation of hot-dip zinc coating shall be as per JIS H 9124 “The operation standard of hot-dip zinc coating”;
- b) Beam, Post, Bracket and Spacer shall be confirm to JIS H 8641 “Hot-dip zinc coating” Class 2-55(HDZ 55). And the other parts shall be confirmed to Class 2-35(HDZ 35). And, in case that the thickness of beam is less than 3.0mm, it shall be confirm to the clause 4-1;
- c) Bolt and nut shall conform to the clause 4-1(2);
- d) Regarding the zinc finish, there shall be no distortion on all products as much as possible, and it shall be equally good the finish and there shall be no remarkable difference about the luster.

1.5 The shape, dimension and tolerance:

1.5.1 The shape and dimension shall be in a separate drawing.

1.5.2 The dimensional tolerance shall conform to the attached sheet.

1.6 Inspection and test:

1.6.1 Inspection:

- a) The inspection of Guard Rails shall be the inspection about appearance, dimension and the zinc coating mass;
- b) Mill certificate of the steel shall be issued for the beam, post and bracket, in case that purchaser requests to issue it.

1.6.2 Chemical composition test and Mechanical property test for the material:

The Chemical composition and Mechanical property of the steel material shall be shown in the mill certificate. In case that purchaser does not request it, such kind of test shall not be done.

1.6.3 Zinc coating test:

As a general rule, the test of zinc coating mass shall be done by the antimony chloride method, which is specified in JIS H0401 “The method of zinc coating test”.



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1.7 Other:

As a general rule, inspection and test shall be an independent inspection, and the test report shall be submitted in case the purchaser requests it.

Dimension tolerance

Parts	Item	Tolerance
BEAM	Width	+/- 5mm
	Length	+/- 10mm
	Cross Section	With -5%
	Flatness	3mm (per 1meter)
	Straightness	3mm (per 1meter)
UPPER BEAM	Length	+/- 5mm
	Thickness	+/- 10%
	Straightness (all direction)	3mm (per 1meter)
POST	Length	+/- 10mm
	Thickness	+/- 10%
	Straightness (all direction)	2mm (per 1meter)

Chemical composition

Symbol	Chemical composition %			
	C	Mn	P	S
SS 330	-	-	0.050 max.	0.05 max.
SS 400				
SS 490				
SS540	0.3 max	1.60 max.	0.04 max.	0.04 max.



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Mechanical Properties

Symbol	Yield point or yield strength (N/mm ²)			Tensile strength (N/mm ²)	Dimension of rolled steel (mm)	Elongation (%)	Bend property	
	Thickness of rolled steel (mm)						Angle of bending	Inside radius
	16 or under	Over 16 up to 40	Over 40					
SS 400	245 min.	235 min.	215 min.	400 to 510	Steel plates and sheets, strips, flats and shapes of 5 or under in thickness	21 min.	180°	1.5 times the thickness
					Steel plates and sheets, strips, flats and shapes of over 5 up to 16 in thickness	17 min.		
					Steel plates and sheets, strips, flats and shapes of over 16 up to 50 in thickness	23 min.		
					Steel plates and sheets, strips, flats and shapes of over 40 in thickness	23 min.		
					Steel bars of 25 or under in diameter, side or distance between flats	20 min.	180°	1.5 times the diameter, side or distance between flats
					Steel bars of over 25 in diameter, side or distance between flats	24 min.		



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2. The standard specifications of the for Bolts to install the Guard Rails

2.1 Scope:

These specifications cover the Bolts to install the Guard Rails based on “The standard and explanation of setting up Guard Rail”.

2.2 Reference:

- a) Corporate juridical person Japan Road Association
“The standard and explanation of setting up Guard Rail”
(November 1998)
- b) Corporate juridical person Japan Road Association
“The standard and explanation of setting up Guard Rail for cars”
(November 1999)

2.3 Material:

The material for Bolts is steel grade 6.8.

2.4 Surface treatment:

Bolt and nut shall be coated as per JIS H 8641 “Hot dip zinc coating” Class 2-35 (HDZ 35). And also, regarding screw portion, screw cleaning and centrifuging shall be done after hot- dip zinc coating.

2.5 The shape, dimension and tolerance:

The shape for bolt, nut and washer must follow the drawing attached.

The bolt head must fit in the Guard Rails fabricated according to the JIS Standard.

The dimensions must follow the dimensions indicated on the drawings for M16x35 and M16x50 bolts and respect the tolerances in the standard.

2.6 Reception and inspection:

The supplier must present Mill certificate for the bolts.

The Chemical composition and Mechanical property of the steel material shall be shown in the mill certificate.

3. Reference drawing

Part 1 - Typical Details and Assembly for Type – A& B Guard Rail

Part 2 - Typical Details and Assembly for Type – A Guard Railand Post