

**MRTS78**

**Fabrication of Structural  
Steelwork**

**Appendix**



# APPENDIX

## AUSTRALIAN STANDARD REQUIREMENTS FOR BOLTS

### A1 CLASS 4.6 BOLTS

Class 4.6 bolts and nuts (coarse thread) shall conform to the following table.

**Table A1-A - Proof and Ultimate Loads for Class 4.6 Bolts and Nuts**

Size	Proof Load of Bolt (kN)	*Minimum Ultimate Tensile Load of Bolts	+Proof Load for Nuts, Hot Dip Galv. (kN)
M10	13.0	23.2	34.2
M12	19.0	33.7	51.4
M16	35.3	62.8	95.8
M20	55.1	98.0	154.4
M22	68.2	121.0	190.9
M24	79.4	141.0	222.4
M27	103	184.0	289.2
M30	126	224.0	353.4
M36	184.0	327.0	514.7
M39	220.0	390.0	614.9
M42	252.0	448.0	705.6
M48	330.8	588.0	926.1
M56	456.8	812.0	1278.9

\* Ref: AS 4291.1 – Minimum Ultimate Tensile Loads and Proof Loads, Tables 6-7.

+ Ref: AS 4291.2 – Minimum Proof Loads, Tables 6-7.

Hardness shall be determined in accordance with Clause 8.2 of AS/NZS 4291.2 and mechanical properties shall conform to the following table.

**Table A1-B - Mechanical Properties of Class 4.6 Nuts**

Thread		Stress under Proof Load $S_p$ N/mm <sup>2</sup>	Vickers Hardness HV		Style
≥	≤		Min	Max	
-	M4	520	130	302	1
M4	M7	580			
M7	M10	590			
M10	M16	610			
M16	M56	630	146		

## A2 HIGH STRENGTH BOLTS

High strength bolts and nuts (coarse thread) shall conform to the following table.

**Table A2-A - Proof and Ultimate Loads for High Strength Bolts and Nuts**

Size	Proof Load of Bolt (kN)	* Minimum Ultimate Tensile Load of Bolts (kN)	+ Proof Load for Nuts, Hot Dip Galv. (kN)
M16	91.0	125.0	182.9
M20	147.0	203.0	285.4
M22	182.0	252.0	353.0
M24	212.0	293.0	411.2
M27	275.0	381.0	534.7
M30	337.0	466.0	653.6
M36	490.0	678.0	951.8
M39	586.0	810.0	1137.0
M42	672.0	929.6	1304.8
M48	882.0	1220.0	1712.6
M56	1218.0	1685.0	2365.0

\* Ref: AS 4291.1 – Minimum Ultimate Tensile Loads and Proof Loads, Tables 6-7.

+ AS 1252 – Proof Loads for Nuts, Table 3.2.

Hardness shall be determined in accordance with Clause 8.2 of AS/NZS 4291.2 and shall conform to the following table.

**Table A2-B - Mechanical Properties of High Strength Nuts**

Thread		Stress under Proof Load $S_p$ N/mm <sup>2</sup>	Vickers Hardness HV		Style
>	<		Min	Max	
-	M4	800	180	302	1
M4	M7	855	200		
M7	M10	870			
M10	M16	880			
M16	M39	920	233	353	2
M16	M56	890	180	302	