

PART VI
Appendix L
Information on Steel Reinforcement

Information on sizes, areas, and weights of various steel reinforcement is presented below to facilitate the use of Bangladesh National Building Code.

Table 6.L.1: Sizes, Areas, and Weights of Reinforcing Bars (ASTM Standard)

Bar Size, No.*	Nominal Diameter, mm	Nominal Area, mm ²	Nominal Mass, kg/m
10	9.5	71	0.560
13	12.7	129	0.994
16	15.9	199	1.552
19	19.1	284	2.235
22	22.2	387	3.042
25	25.4	510	3.973
29	28.7	645	5.060
32	32.3	819	6.404
36	35.8	1006	7.907
43	43.0	1452	11.38
57	57.3	2581	20.24

**Bar numbers approximate the number of millimeters of the nominal diameter of the bar. Within the text in Chapters, the referred ϕ (diameter in mm) of bars correspond to the figures in the first column (Bar size, no.)*

Table 6.L.2: Sizes, Areas, and Weights of Prestressing Tendons (ASTM Standard)

Type*	Nominal Diameter, mm	Nominal Area, mm ²	Nominal Mass, kg/m
Seven-wire strand (Grade 1725)	6.4	23.2	0.182
	7.9	37.4	0.294
	9.5	51.6	0.405
	11.1	69.7	0.548
	12.7	92.9	0.730
	15.2	139.4	1.094
Seven-wire strand (Grade 1860)	9.53	54.8	0.432
	11.1	74.2	0.582
	12.70	98.7	0.775
	15.24	140.0	1.102
Prestressing wire	4.88	18.7	0.146
	4.98	19.5	0.149
	6.35	31.7	0.253
	7.01	38.6	0.298
Prestressing bars (plain)	19	284	2.23
	22	387	3.04
	25	503	3.97
	29	639	5.03
	32	794	6.21
	35	955	7.52
Prestressing bars (deformed)	15	181	1.46
	20	271	2.22
	26	548	4.48
	32	806	6.54
	36	1019	8.28

*Depends on availability of some tendon sizes.

Table 6.L.3: Sizes, Areas, and Weights of Wire Reinforcement* (WRI Standard)

MW & MD size		Nominal Diameter, mm	Nominal Mass, kg/m	Area, mm ² /m of Width for Various Spacings							
				Center-to-center spacing, mm							
Plain	Deformed			50	75	100	150	200	250	300	
MW290	MD290	19.22	2.27	5800	3900	2900	1900	1450	1160	970	
MW200	MD200	15.95	1.5700	4000	2700	2000	1300	1000	800	670	
MW130	MD130	12.90	1.0204	2600	1700	1300	870	650	520	430	
MW120	MD120	12.40	0.9419	2400	1600	1200	800	600	480	400	
MW100	MD100	11.30	0.7849	2000	1300	1000	670	500	400	330	
MW90	MD90	10.70	0.7064	1800	1200	900	600	450	360	300	
MW80	MD80	10.10	0.6279	1600	1100	800	530	400	320	270	
MW70	MD70	9.40	0.5494	1400	930	700	470	350	280	230	
MW65	MD65	9.10	0.5102	1300	870	650	430	325	260	220	
MW60	MD60	8.70	0.4709	1200	800	600	400	300	240	200	
MW55	MD55	8.40	0.4317	1100	730	550	370	275	220	180	
MW50	MD50	8.00	0.3925	1000	670	500	330	250	200	170	
MW45	MD45	7.60	0.3532	900	600	450	300	225	180	150	
MW40	MD40	7.10	0.3140	800	530	400	270	200	160	130	
MW35	MD35	6.70	0.2747	700	470	350	230	175	140	120	
MW30	MD30	6.20	0.2355	600	400	300	200	150	120	100	
MW25	MD25	5.60	0.1962	500	330	250	170	125	100	83	
MW20		5.00	0.1570	400	270	200	130	100	80	67	
MW15		4.40	0.1177	300	200	150	100	75	60	50	
MW10		3.60	0.0785	200	130	100	70	50	40	33	
MW5		2.50	0.0392	100	67	50	33	25	20	17	

Table 6.L.4: Dimensions, Mass per Unit Length and Permissible Deviations (BDS ISO_6935-1)

Nominal Bar Diameter, d mm	Nominal Cross-Sectional Area ^a A_n mm ²	Mass per Unit Length	
		Requirement ^b kg/m	Permissible deviation ^c %
6	28,3	0,222	± 8
8	50,3	0,395	± 8
10	78,5	0,617	± 5
12	113	0,888	± 5
14	154	1,21	± 5
16	201	1,58	± 5
20	314	2,47	± 5
22	380	2,98	± 5

^a $A_n=0,785\ 4\times d^2$

^b Mass per unit length $=7,85\times10^{-3}\ A_n$

^c Permissible deviation refers to a single bar.

Table 6.L.5: Dimensions, Mass per Unit Length and Permissible Deviations (BDS ISO_6935-2)

Nominal Bar Diameter ^a , d mm	Nominal Cross-Sectional Area ^b A_n mm ²	Mass per unit length	
		Requirement ^c Kg/m	Permissible deviation ^d %
6	28,3	0,222	± 8
8	50,3	0,395	± 8
10	78,5	0,617	± 6
12	113	0,888	± 6
14	154	1,21	± 5
16	201	1,58	± 5
20	314	2,47	± 5
25	491	3,85	± 4
28	616	4,84	± 4
32	804	6,31	± 4
40	1257	9,86	± 4
50	1964	15,42	± 4

^a Diameters larger than 50mm should be agreed between the manufacturer and purchaser. The permissible deviation on such bars shall be ± 4 %

^b $A_n=0,785\ 4\times d^2$

^c Mass per unit length $=7,85\times10^{-3}\ A_n$

^d Permissible deviation refers to a single bar.

Staircases shall, generally, be designed to support the design uniformly distributed load according to the load combinations specified in Chapter 2, loads. For common free standing stairs, it generally sufficient to design for gravity loading only, using the relevant load combinations.