

Footing Specifications

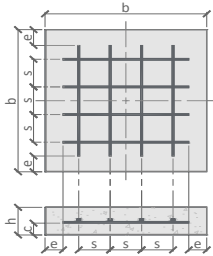
Use in conjunction with MiTek Adjustable Support Columns, BLACKJACK & REDJACK series

Table 1. Concrete Footing Recommendations, 20 MPa Concrete Strength							
Soil Bearing Capacity kPa (psf)	Max. Footing Capacity		Min. Footing Dimensions b x b x h	Rebar Specifications Qty & Size Spacing, s			
	Unfactored Load, P _s (Working Stress Design) kN (lb)	Factored Load, P _f (Limit States Design) kN (lb)					
75 (1,570)	27.8	[6,270]	40.4	[9,090]	24" x 24" x 9"	2 - 10M	@ 18" E/W
	43.5	[9,790]	63.1	[14,200]	30" x 30" x 9"	3 - 10M 2 - 15M	@ 12" E/W @ 19.5" E/W
	62.7	[14,100]	90.9	[20,440]	36" x 36" x 9"	4 - 10M 2 - 15M	@ 10" E/W @ 19.5" E/W
	85.3	[19,190]	123.7	[27,820]	42" x 42" x 9"	5 - 10M 3 - 15M	@ 9" E/W @ 18" E/W
	111.4	[25,060]	161.6	[36,340]	48" x 48" x 9"	6 - 10M 3 - 15M	@ 8" E/W @ 19.5" E/W
	141.0	[31,720]	204.5	[45,990]	54" x 54" x 10"	7 - 10M 4 - 15M	@ 8" E/W @ 16" E/W
	174.1	[39,160]	252.5	[56,780]	60" x 60" x 11"	9 - 10M 5 - 15M	@ 6.5" E/W @ 13.5" E/W
	210.7	[47,380]	305.6	[68,710]	66" x 66" x 12"	11 - 10M 6 - 15M	@ 6" E/W @ 12" E/W
	37.1	[8,350]	53.8	[12,110]	24" x 24" x 9"	2 - 10M	@ 18" E/W
	58.0	[13,050]	84.1	[18,930]	30" x 30" x 9"	3 - 10M 2 - 15M	@ 12" E/W @ 19.5" E/W
100 (2,090)	83.6	[18,800]	121.2	[27,260]	36" x 36" x 9"	4 - 10M 3 - 15M	@ 10" E/W @ 15" E/W
	113.8	[25,580]	165.0	[37,100]	42" x 42" x 9"	5 - 10M 3 - 15M	@ 9" E/W @ 18" E/W
	148.6	[33,420]	215.5	[48,450]	48" x 48" x 10"	7 - 10M	@ 7" E/W
	188.1	[42,290]	272.7	[61,320]	54" x 54" x 12"	4 - 15M	@ 14" E/W
	46.4	[10,440]	67.3	[15,140]	24" x 24" x 9"	3 - 10M 2 - 15M	@ 9" E/W @ 18" E/W
	72.5	[16,320]	105.2	[23,660]	30" x 30" x 9"	4 - 10M 2 - 15M	@ 8" E/W @ 19.5" E/W
	104.5	[23,500]	151.5	[34,070]	36" x 36" x 9"	5 - 10M 3 - 15M	@ 7.5" E/W @ 15" E/W
	142.2	[31,980]	206.2	[46,370]	42" x 42" x 10"	6 - 10M 3 - 15M	@ 7" E/W @ 18" E/W
	185.8	[41,770]	269.4	[60,570]	48" x 48" x 11"	7 - 10M	@ 7" E/W
					48" x 48" x 12"	4 - 15M	@ 14" E/W
125 (2,610)	55.7	[12,530]	80.8	[18,170]	24" x 24" x 9"	3 - 10M 2 - 15M	@ 9" E/W @ 18" E/W
	87.0	[19,580]	126.2	[28,390]	30" x 30" x 9"	4 - 10M 3 - 15M	@ 8" E/W @ 12" E/W
	125.4	[28,200]	181.8	[40,880]	36" x 36" x 10"	5 - 10M 3 - 15M	@ 7.5" E/W @ 15" E/W
	170.7	[38,380]	247.5	[55,650]	42" x 42" x 11"	6 - 10M 3 - 15M	@ 7" E/W @ 18" E/W
	222.9	[50,130]	323.3	[72,680]	48" x 48" x 12"	8 - 10M 4 - 15M	@ 6" E/W @ 14" E/W
	111.4	[25,060]	161.6	[36,340]	24" x 24" x 10"	4 - 10M 3 - 15M	@ 6" E/W @ 9" E/W
	174.1	[39,160]	252.5	[56,780]	30" x 30" x 11"	5 - 10M 4 - 15M	@ 6" E/W @ 8" E/W
	250.8	[56,390]	363.7	[81,770]	36" x 36" x 13"	6 - 10M 4 - 15M	@ 6" E/W @ 10" E/W

Exp. Dec. 31, 2018

- 1) Footing design is in accordance with CAN/CSA A23.3, and meets or exceeds the prescriptive requirements of NBCC Part 9 and its provincial counterparts.
- 2) Soil bearing capacity and load(s) to be supported by the footing shall be verified by an engineer.
- 3) Concrete shall be normal Portland cement, Type 10 or Type 50 as required, slump +/- 75 mm (3"), entrained air 4-7%, maximum aggregate 20 mm (3/4") diameter, minimum strength of 20 MPa (2,900 psi) at 28 days.
- 4) Rebar shall be Grade 400, tied at all intersections, and placed in conformance with Figure 1.
- 5) Column shall be installed at the center of the footing; eccentric loading reduces the footing capacity. Design is based on MiTek Adjustable Support Column steel base plate size 4-1/2" x 6".
- 6) Refer to Table 1 for footing size [b x b x h] and rebar spacing (s). Footing height (h) indicates the depth of footing below the column base plate. Rebar edge distance (e) and depth of concrete below rebar (c) shall be no less than 3".

Figure 1 :
Rebar layout



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BLACKJACK ■ REDJACK
Structural Columns



- HEAVY DUTY ADJUSTMENT ASSEMBLY FOR MAXIMUM LOADS
- MODULAR DESIGN FOR GREATEST JOB SITE FLEXIBILITY
- SQUARE POST FOR EASY AND ACCURATE CUT DOWN
- USE REBAR/ROD THROUGH 1/4" HOLE FOR HEIGHT ADJUSTMENT

BLACKJACK / REDJACK TABLES

BLACKJACK / REDJACK Adjustable Structural columns are designed and tested to meet or exceed the CAN/CGSB-7.2-94 Adjustable Steel Columns standard.

Materials: Bottom Plates: 4-1/2" x 6" - 3 gauge
BLACKJACK 2.5: Tube 2-1/2" x 2-1/2" - 11 gauge; Top Plate 3-1/2" x 6" - 3/8" thick
REDJACK 2.5: Tube 2-1/2" x 2-1/2" - 11 gauge; Top Plate 4-1/2" x 6" - 3 gauge
BLACKJACK 3.0: Tube 3" x 3" - 10 gauge, Top Plate 4-1/2" x 6" - 3 gauge
REDJACK 3.0: Tube 3" x 3" - 8 gauge, Top Plate 4-1/2" x 6" - 3 gauge

Finish: REDJACK 2.5 & REDJACK 3.0 Tube: Powder-Coated Red Paint
BLACKJACK 2.5 & BLACKJACK 3.0 Tube: Powder-Coated Black Paint
Plates: Grey Primer Paint

BLACKJACK 2.5										
MiTek Stock No.	Adjustable Height		Extended Length		Allowable Load			Factored Resistance		
	in	mm	in	mm	lb	kN	kg	lb	kN	kg
T2JP110	106 - 110	2692 - 2794	110	2794	10000	44	4536	14400	64	6532
REDJACK 2.5										
MiTek Stock No.	Adjustable Height		Extended Length		Allowable Load			Factored Resistance		
	in	mm	in	mm	lb	kN	kg	lb	kN	kg
T2JPLD84	80 - 84	2032 - 2134	84	2134	16900	75	7665	26000	116	11815
T2JPLD88	84 - 88	2134 - 2235	88	2235	15500	69	7030	24300	108	11020
T2JPLD90	86 - 90	2184 - 2286	90	2286	15000	67	6805	23700	105	10750
T2JPLD96	92 - 96	2337 - 2438	96	2438	13600	60	6170	21800	97	9935
T2JPLD102	98 - 102	2489 - 2591	102	2591	12800	57	5805	20050	89	9095
T2JPLD108	104 - 108	2642 - 2743	108	2743	12200	54	5535	18400	82	8385
T2JPLD114	110 - 114	2794 - 2896	114	2896	11500	51	5215	17000	76	7710
T2JPLD120	116 - 120	2946 - 3048	120	3048	10900	48	4945	15600	70	7120
BLACKJACK 3.0										
MiTek Stock No.	Adjustable Height		Extended Length		Allowable Load			Factored Resistance		
	in	mm	in	mm	lb	kN	kg	lb	kN	kg
T2JPMD84	80 - 84	2032 - 2134	84	2134	30400	135	13790	41500	185	18825
T2JPMD88	84 - 88	2134 - 2235	88	2235	27600	123	12520	39600	176	17960
T2JPMD90	86 - 90	2184 - 2286	90	2286	26400	117	11975	38600	172	17510
T2JPMD96	92 - 96	2337 - 2438	96	2438	24000	107	10885	36100	161	16375
T2JPMD102	98 - 102	2489 - 2591	102	2591	22900	102	10385	33650	150	15265
T2JPMD108	104 - 108	2642 - 2743	108	2743	22300	99	10115	31400	140	14245
T2JPMD114	110 - 114	2794 - 2896	114	2896	22000	98	9980	29900	133	13560
T2JPMD120	116 - 120	2946 - 3048	120	3048	21900	97	9935	27200	121	12340
REDJACK 3.0										
MiTek Stock No.	Adjustable Height		Extended Length		Allowable Load			Factored Resistance		
	in	mm	in	mm	lb	kN	kg	lb	kN	kg
T2JPHD84	80 - 84	2032 - 2134	84	2134	39600	176	17960	49900	222	22685
T2JPHD88	84 - 88	2134 - 2235	88	2235	36600	163	16600	47300	210	21455
T2JPHD90	86 - 90	2184 - 2286	90	2286	35500	158	16100	46400	206	21045
T2JPHD96	92 - 96	2337 - 2438	96	2438	32100	143	14560	43400	193	19730
T2JPHD102	98 - 102	2489 - 2591	102	2591	30000	133	13610	40300	179	18280
T2JPHD108	104 - 108	2642 - 2743	108	2743	28300	126	12835	37600	168	17105
T2JPHD114	110 - 114	2794 - 2896	114	2896	27500	122	12475	35100	156	15920
T2JPHD120	116 - 120	2946 - 3048	120	3048	26800	119	12155	32700	145	14840
T2JPHD144	140 - 144	3556 - 3658	144	3658	21300	95	9660	24800	111	11250

- 1) The Allowable Load values have been determined thru testing standards prescribed in the National Research Council Evaluation Directive for Adjustable Steel Columns using a safety factor of 2.25.
- 2) The Factored Resistances of REDJACK 2.5, BLACKJACK 3.0 and REDJACK 3.0 columns are limited by the resistance of the tubes. The depicted values are established in accordance with CSA S16, Design of Steel Structures, using Resistance Factor $\Phi = 0.90$.
- 3) The Factored Resistance of the BLACKJACK 2.5 column assembly is limited by the strength of the adjustable screw assembly. The depicted value is soft converted by multiplying the allowable load by 1.44.
- 4) The bearing resistance of the supported beam should be checked by the building designer using the appropriate CSA standard.



- Installation:**
- Ensure column is installed in a vertical and plumb position.
 - Column base shall be aligned and secured to a proper supporting slab.
 - Top plate shall cover the full width of the supported beam. Beam shall be centered on the top plate and continuous across the entire length of the plate.
 - Square tube may be cut down, ensure cut is smooth, square and level.
- BLACKJACK 2.5:** Rotate jack screw to desired height. Secure the top plate to wood beam with two (2) 1/4" x 2" lag screws.
- REDJACK 2.5, BLACKJACK 3.0, REDJACK 3.0:** Turn threaded collar or threaded pipe to extend the column to the desired height. Maximum 4" adjustment. Secure the top plate to wood beam with four (4) 1/4" x 2" lag screws.

T2TP BLACKJACK / REDJACK Supplementary Top Plates

T2TP Supplementary Top Plates can be installed on top of the standard top plate supplied with BLACKJACK 3.0 / REDJACK 2.5/3.0 columns, and provide additional bearing for Structural Composite Lumber (SCL) beams and dimensional lumber.

T2TP527 – 5-1/4" bearing width (Typical: 3 ply 1-3/4" LVL or 6x beam)
T2TP79 – 7" bearing width (Typical: 4 ply 1-3/4" LVL or 8x beam)
Materials: 3 gauge ASTM A 36 steel
Finish: MiTek primer

- Installation:**
- Place T2TP supplementary plate on top of standard BLACKJACK / REDJACK Top Plate.
 - Align holes of the two plates and install appropriate lag screws through the stacked plates into bottom of the supported beam.
 - T2TP shall cover the full width of the supported beam. Beam shall be centered on the T2TP and continuous across the entire length of the plate.

MiTek Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule		DF		S-P-F	
			W	L	Qty	Type	Factored Resistance		Factored Resistance	
							Bearing (100%)		Bearing (100%)	
							Lbs	kN	Lbs	kN
T2TP527	--	3	5-1/4	7	4	1/4" x 2" Lag Screw	29300	131.3	22600	101.3
T2TP79	--	3	7	9	4	1/4" x 2" Lag Screw	38500	172.6	34000	152.4

- 1) Factored resistances are for standard term loading; reduce or increase for other load durations in accordance with the code.
- 2) Bearing loads are based on compression perpendicular to grain values published in CSA O86-14 and having the bucket base in full contact with the supported member.
- 3) Factored resistances are based on lumber with a specific gravity of DF-L = 0.49 and S-P-F = 0.42 and a moisture content of 19% or less.
- 5) Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device.
- 6) The factored resistance of the T2TP may exceed the column capacity. Refer to the BLACKJACK / REDJACK Column load tables for the maximum factored resistance based on column length.

T2CC BLACKJACK / REDJACK Column Caps

Cap only version for BLACKJACK 3.0 / REDJACK 2.5/3.0 Adjustable Structural Columns. Adds bearing capacity and resists beam rotation.

Materials: T2CC35: 7 gauge ASTM A1011; T2CC525, T2CC71: 3 gauge ASTM A 36 steel
Finish: MiTek primer

- Installation:**
- Replaces standard BLACKJACK / REDJACK Top Plate.
 - Slide column cap tube into top of existing threaded pipe component.
 - WS3 Wood Screws, 1/4" dia. x 3" long, are supplied with T2CC Column Caps.
 - Beam shall be continuous across the entire length of the column cap.

MiTek Stock No.	Ref. No.	Steel Gauge	Dimensions (in)			Fastener Schedule ⁴		DF Factored Resistance		S-P-F Factored Resistance	
			W	H	L	Beam		Bearing (100%)		Bearing (100%)	
						Qty	Type	Lbs	kN	Lbs	kN
T2CC35	--	7	3-5/8	6-1/2	11	16	WS3	31270	139.1	23675	105.3
T2CC525	--	3	5-1/4	8	13	16	WS3	54115	240.7	40970	182.2
T2CC71	--	3	7-1/8	6-1/2	11	16	WS3	62540	278.2	47350	210.6

- 1) Factored resistances are for standard term loading; reduce or increase for other load durations in accordance with the code.
- 2) Bearing loads are based on compression perpendicular to grain values published in CSA O86-14 and having the bucket base in full contact with the supported member.
- 3) Factored resistances are based on lumber with a specific gravity of DF-L = 0.49 and S-P-F = 0.42 and a moisture content of 19% or less.
- 4) WS3 Wood Screws (1/4" dia. x 3" long) are included with T2CC Column Caps.
- 5) Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device.
- 6) The factored resistance of the T2CC may exceed the column capacity. Refer to the BLACKJACK / REDJACK Column load tables for the maximum factored resistance based on column length.

