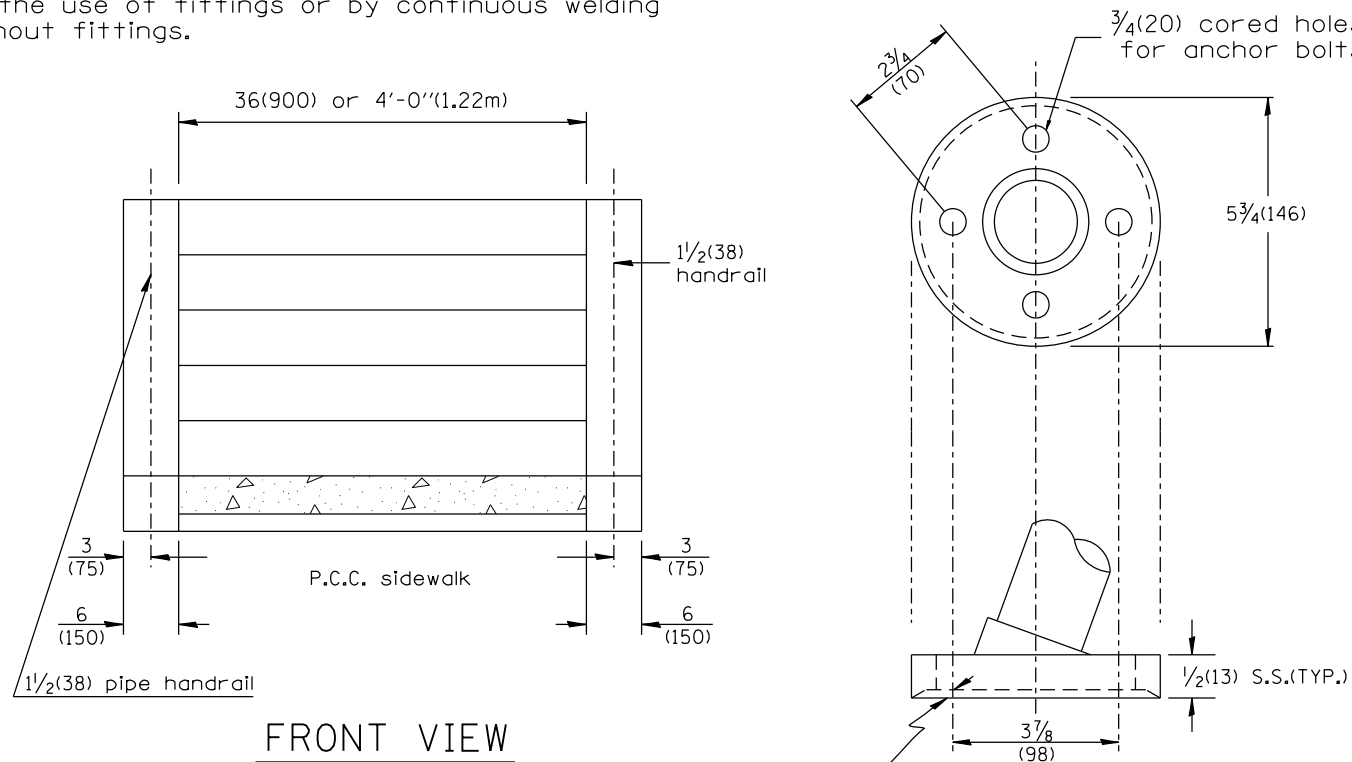


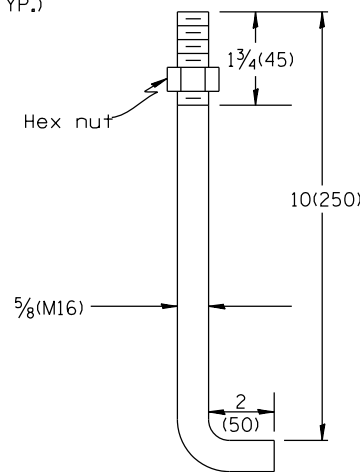
Connexion of railings to posts may be made either by the use of fittings or by continuous welding without fittings.

Article 509.04 of the Standard Specifications apply.

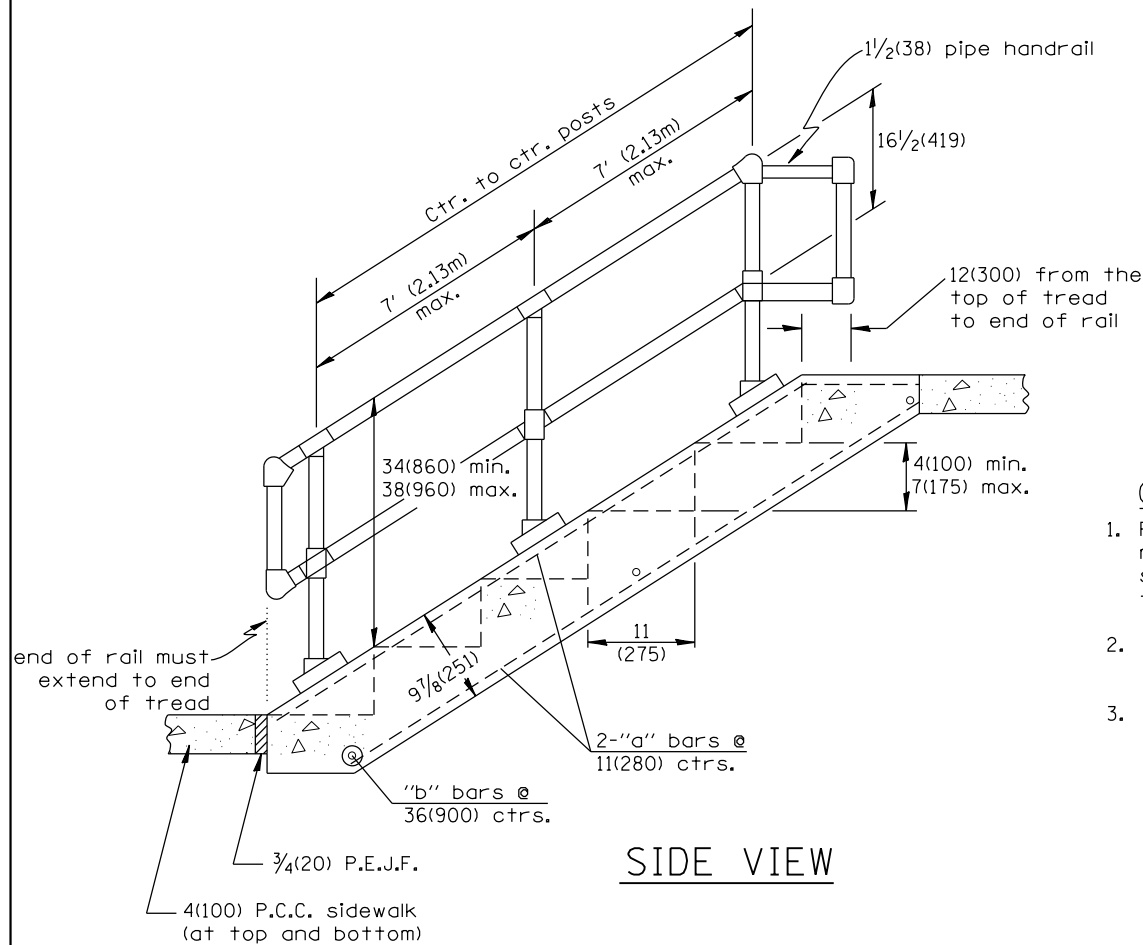


FRONT VIEW

SPECIAL CAST IRON OR STRUCTURAL STEEL FITTING



BUILT-IN ANCHOR BOLT
5/8 DIA. (M16), 12(300) LONG
(SEE GENERAL NOTE 3)



SIDE VIEW

GENERAL NOTES:

1. Pipe handrail shall be used only when there are 4 or more steps to be constructed. P.C. CONCRETE CLASS SI shall be used throughout. 1/4(6) drop at end of tread for drainage.
2. When 8 or more steps are to be constructed, an intermediate post shall be used.
3. An equivalent epoxy anchor stud can be used in place of anchor shown. Anchor bolt holes shall be 3/4(20) in diameter and 5(125) deep. They shall be pre-drilled with an electric hammer drill to a depth of 1(25) prior to use of pneumatic drill for the remaining 4(100). A two component encapsulated epoxy such as "parabond" or an equivalent shall be used. Installation shall be according to manufacturer's recommendations. The pipe handrail shall be galvanized by the hot dip process.

NO. OF STEPS	WIDTH IN.(mm)	CLASS "SI" CONCRETE CU. YDS. m ³	#4(#15) REINFORCEMENT BARS				PIPE HANDRAIL LENGTH
			BAR	NO.	LGTH.	lbs(kg)	
1	36 (900)	0.17(0.13)	a	7	24(610)	14(10)	—
			b	2	3'-9"(1.14m)		
1	4'-0" (1.22m)	0.21(0.16)	a	8	24(610)	16(12)	—
			b	2	4'-9"(1.45m)		
2	36 (900)	0.26(0.20)	a	7	36(914)	20(14)	—
			b	2	3'-9"(1.14m)		
2	4'-0" (1.22m)	0.33(0.25)	a	8	36(914)	22(16)	—
			b	2	4'-9"(1.45m)		
3	36 (900)	0.35(0.27)	a	7	4'-0"(1.22m)	26(19)	—
			b	3	3'-9"(1.14m)		
3	4'-0" (1.22m)	0.45(0.34)	a	8	4'-0"(1.22m)	31(22)	—
			b	3	4'-9"(1.45m)		
4	36 (900)	0.44(0.34)	a	7	5'-0(1.52m)	31(24)	3'-4"(1.01m)
			b	3	3'-9"(1.14m)		
4	4'-0" (1.22m)	0.57(0.44)	a	8	5'-0(1.52m)	36(26)	3'-4"(1.01m)
			b	3	4'-9"(1.45m)		
5	36 (900)	0.53(0.41)	a	7	6'-0(1.83m)	38(27)	4'-5"(1.35m)
			b	4	3'-9"(1.14m)		
5	4'-0" (1.22m)	0.69(0.53)	a	8	6'-0(1.83m)	45(32)	4'-5"(1.35m)
			b	4	4'-9"(1.45m)		
6	36 (900)	0.62(0.47)	a	7	7'-0(2.13m)	43(31)	5'-6"(1.68m)
			b	4	3'-9"(1.14m)		
6	4'-0" (1.22m)	0.81(0.62)	a	8	7'-0(2.13m)	50(36)	5'-6"(1.68m)
			b	4	4'-9"(1.45m)		
7	36 (900)	0.71(0.54)	a	7	8'-0(2.44m)	49(56)	6'-7"(2.01m)
			b	5	3'-9"(1.14m)		
7	4'-0" (1.22m)	0.93(0.71)	a	8	8'-0(2.44m)	59(42)	6'-7"(2.01m)
			b	5	4'-9"(1.45m)		
8	36 (900)	0.80(0.61)	a	7	9'-0(2.74m)	55(39)	7'-8"(2.34m)
			b	5	3'-9"(1.14m)		
8	4'-0" (1.22m)	1.05(0.80)	a	8	9'-0(2.74m)	64(46)	7'-8"(2.34m)
			b	5	4'-9"(1.45m)		
9	36 (900)	0.89(0.68)	a	7	10'-0(3.05m)	62(44)	8'-9"(2.67m)
			b	6	3'-9"(1.14m)		
9	4'-0" (1.22m)	1.17(0.89)	a	8	10'-0(3.05m)	72(52)	8'-9"(2.67m)
			b	6	4'-9"(1.45m)		
10	36 (900)	0.98(0.75)	a	7	11'-0(3.35m)	66(48)	9'-10"(2.67m)
			b	6	3'-9"(1.14m)		
10	4'-0" (1.22m)	1.29(0.99)	a	8	11'-0(3.35m)	78(56)	9'-10"(2.67m)
			b	6	4'-9"(1.45m)		

QUANTITIES	
CALC. BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
QUANTITY CALCULATIONS ARE ON FILE AT THE DISTRICT 4 OFFICE; BUREAU OF PROJECT IMPLEMENTATION; DOCUMENTATION SECTION	

All dimensions are in inches (millimeters) unless otherwise noted.

DESIGNER NOTES: DETAIL FOR PRIVATE RESIDENCE, NOT COMMERCIAL USE. COMMERCIAL MUST FIT ADA REQUIREMENTS.

01-01-97	RENUM. A-19.01, METRICS, REVISED TITLE BOX,	T.P.	10-16-06	REVISED TO 2007 SPEC.	M.A.
	ADDED QUANTITY CALCULATION BOX, REVISED GENERAL		7-15-15	UPDATED ENDS OF RAIL TO BE CLOSER TO ADA	R.D.
	NOTES, NEW REVISION BOX				
06-27-00	REVISE DESIGNER NOTES	T.L.			

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

DETAIL OF CONCRETE STEPS AND PIPE HANDRAIL
7(175) RISER 11(275) TREAD

CADD STD. 503201-D4

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				