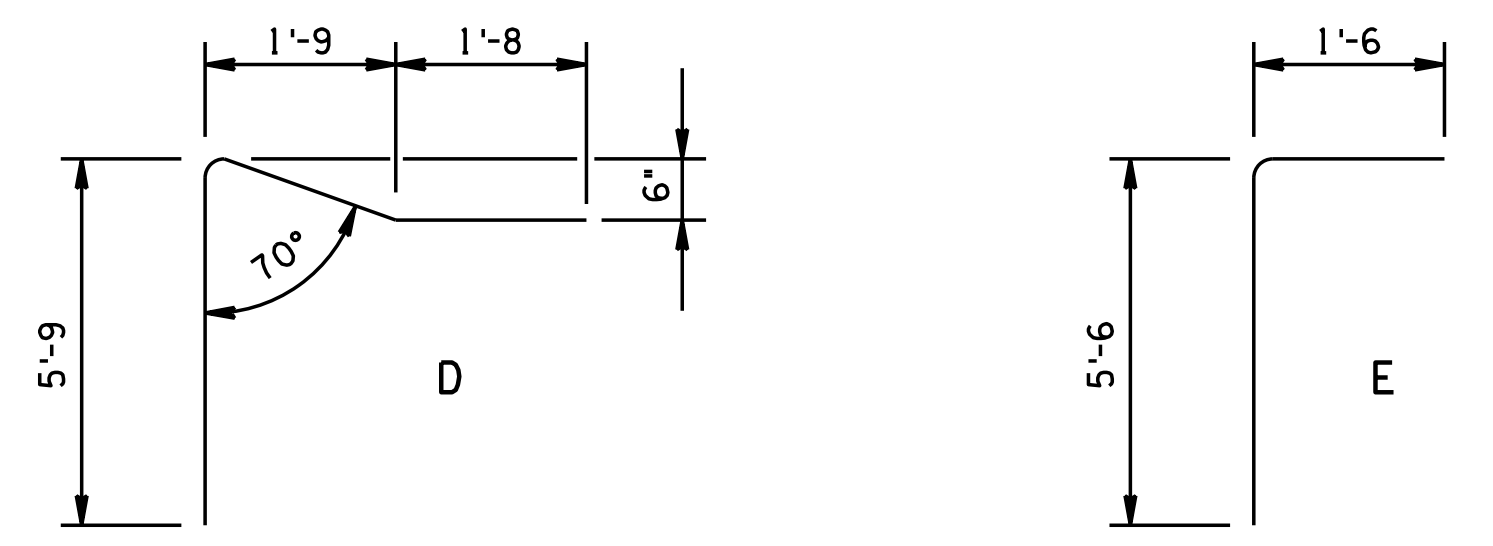


NO.	DESCRIPTION OF REVISIONS	DATE
1	Original Issue	7-12
2		
3		
4		

Note to Designer:
The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

Mark	Bend	RIGHT ANGLE									
		90°	96°	102°	108°	114°	120°	126°	132°	138°	144°
		NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth
h	D	15 9'-3	16 9'-3	16 9'-3	17 9'-3	18 9'-3	19 9'-3	19 9'-3	20 9'-3	20 9'-3	21 9'-3
j	str	8 17'-0	8 18'-0	8 19'-0	8 20'-0	8 21'-0	8 22'-0	8 23'-0	8 24'-0	8 25'-0	8 26'-0
k	E	15 7'-0	16 7'-0	16 7'-0	17 7'-0	18 7'-0	19 7'-0	19 7'-0	20 7'-0	20 7'-0	21 7'-0
r1	str	9 10'-6	9 11'-3	9 12'-3	9 13'-3	9 14'-0	11 15'-6	11 16'-0	11 17'-0	11 17'-9	13 18'-6
r2	str	4 5'-6	4 7'-0	4 8'-6	4 10'-0	4 11'-0	4 11'-0	4 12'-0	4 14'-0	4 15'-0	4 14'-0
r3	str			2 6'-0	2 7'-6	4 6'-0	2 8'-0	4 7'-0	4 8'-0	4 9'-6	4 8'-6
r4	str								2 7'-0		2 4'-6
r5	str										
s	str	31 2'-0	33 2'-0	36 2'-0	38 2'-0	41 2'-0	43 2'-0	46 2'-0	48 2'-0	51 2'-0	53 2'-0
t1	str	3 8'-0	3 8'-6	3 8'-9	3 9'-3	3 9'-9	3 10'-3	3 10'-9	3 11'-0	4 11'-6	4 12'-0
t2	str	3 10'-3	3 11'-0	3 11'-0	3 11'-6	3 12'-0	3 12'-3	3 12'-9	3 13'-3	3 14'-0	4 15'-0
t3	str	3 12'-3	3 13'-3	3 13'-0	3 13'-6	3 14'-6	3 14'-3	3 14'-9	3 15'-6	3 16'-6	3 18'-0
t4	str	3 14'-6	3 15'-9	2 15'-0	3 15'-9	3 16'-9	3 16'-0	3 17'-0	3 17'-6	3 18'-9	3 20'-3
t5	str		2 16'-9		2 18'-0	3 19'-3	3 18'-0	3 19'-0	3 19'-9	3 21'-3	3 22'-6
t6	str						2 20'-0	2 21'-0	3 22'-0	3 23'-9	3 25'-0
t7	str										

Mark	Bend	15° SKEW									
		90°	96°	102°	108°	114°	120°	126°	132°	138°	144°
		NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth
h	D	13 9'-3	14 9'-3	14 9'-3	15 9'-3	15 9'-3	16 9'-3	16 9'-3	17 9'-3	17 9'-3	18 9'-3
j	str	8 19'-0	8 19'-9	8 20'-6	8 21'-3	8 22'-0	8 22'-9	8 23'-6	8 24'-6	8 25'-3	8 26'-0
k	E	13 7'-0	14 7'-0	14 7'-0	15 7'-0	15 7'-0	16 7'-0	16 7'-0	17 7'-0	17 7'-0	18 7'-0
r1	str	9 11'-0	9 11'-6	10 12'-0	10 12'-3	10 12'-9	11 13'-3	12 13'-9	12 14'-3	12 14'-9	13 15'-0
r2	str	2 9'-3	2 9'-9	2 9'-3	2 10'-3	3 9'-3	2 11'-6	2 11'-0	2 12'-0	2 12'-6	2 13'-0
r3	str	2 6'-9	2 7'-0	2 6'-3	2 7'-6	2 6'-6	2 9'-3	2 8'-3	2 9'-0	2 9'-0	2 10'-3
r4	str	2 4'-0	2 4'-3	2 3'-6	2 4'-9	2 4'-0	2 7'-3	2 5'-6	2 6'-0	2 5'-6	2 7'-6
r5	str										
r6	str										
r7	str										
r8	str										
r10	str										
s	str	34 2'-0	36 2'-0	37 2'-0	38 2'-0	40 2'-0	41 2'-0	42 2'-0	44 2'-0	45 2'-0	46 2'-0
t1	str	2 8'-0	2 8'-6	3 9'-0	3 9'-6	2 10'-0	2 10'-6	3 11'-0	3 11'-6	2 12'-0	2 12'-6
t2	str	2 9'-6	2 10'-3	2 10'-9	2 11'-3	2 11'-6	2 12'-0	2 12'-9	2 13'-3	2 13'-6	2 14'-3
t3	str	2 11'-3	2 11'-9	2 12'-6	2 13'-0	2 13'-3	2 13'-9	2 14'-6	2 15'-0	2 15'-3	2 16'-0
t4	str	2 13'-0	2 13'-6	2 14'-6	2 15'-0	2 15'-0	2 15'-6	2 16'-6	2 17'-0	2 17'-0	2 17'-6
t5	str	2 14'-9	2 15'-3	2 16'-3	2 16'-9	2 16'-6	2 17'-0	2 18'-3	2 18'-6	2 18'-6	2 19'-3
t6	str	2 16'-9	2 17'-0	2 18'-0	2 18'-6	2 18'-3	2 18'-9	2 20'-3	2 20'-3	2 20'-3	2 21'-0
t7	str					2 20'-0	2 20'-6	2 22'-0	2 22'-0	2 21'-9	2 22'-9
t8	str									2 23'-6	2 24'-6
t9	str										
t10	str										
t11	str	1 18'-0	1 18'-6	1 19'-3	1 20'-0	1 20'-6	1 21'-3	1 22'-0	1 22'-6	1 23'-3	1 24'-0



BENDS

Mark	Bend	30° SKEW									
		90°	96°	102°	108°	114°	120°	126°	132°	138°	144°
		NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth
h	D	15 9'-3	16 9'-3	17 9'-3	17 9'-3	18 9'-3	19 9'-3	20 9'-3	20 9'-3	21 9'-3	22 9'-3
j	str	8 22'-0	8 23'-3	8 24'-6	8 25'-6	8 26'-9	8 28'-0	8 29'-3	8 30'-6	8 31'-9	8 33'-0
k	E	15 7'-0	16 7'-0	17 7'-0	17 7'-0	18 7'-0	19 7'-0	20 7'-0	20 7'-0	21 7'-0	22 7'-0
r1	str	9 10'-6	10 11'-0	10 11'-6	11 12'-0	11 12'-6	12 13'-0	13 13'-6	13 14'-0	14 14'-6	14 15'-0
r2	str	2 9'-0	2 9'-6	2 10'-0	2 10'-6	2 11'-6	2 11'-6	2 12'-0	2 13'-0	2 13'-0	2 14'-0
r3	str	2 7'-3	2 7'-9	2 8'-3	2 8'-9	2 9'-9	2 9'-9	2 10'-3	2 11'-3	2 11'-6	2 12'-6
r4	str	2 5'-9	2 6'-3	2 6'-9	2 7'-3	2 8'-3	2 8'-3	2 8'-9	2 9'-6	2 10'-0	2 10'-9
r5	str	2 4'-0	2 4'-6	2 5'-0	2 5'-6	2 6'-6	2 6'-6	2 7'-0	2 7'-9	2 8'-6	2 9'-3
r6	str					1 6'-0	1 6'-0	1 6'-0	2 6'-0	2 7'-0	2 7'-6
r7	str										2 6'-0
r8	str										
r9	str										
s	str	33 2'-0	35 2'-0	37 2'-0	39 2'-0	41 2'-0	43 2'-0	45 2'-0	47 2'-0	49 2'-0	51 2'-0
t1	str	2 9'-3	2 9'-9	2 10'-3	2 11'-0	2 11'-6	2 12'-0	2 12'-6	2 13'-0	2 13'-9	2 14'-3
t2	str	2 11'-9	2 12'-0	2 12'-6	2 13'-6	2 13'-9	2 14'-6	2 14'-9	2 15'-3	2 16'-0	2 16'-6
t3	str	2 14'-0	2 14'-6	2 15'-0	2 15'-9	2 16'-0	2 16'-9	2 17'-3	2 17'-9	2 18'-6	2 18'-9
t4	str	2 16'-6	2 16'-9	2 17'-3	2 18'-3	2 18'-6	2 19'-3	2 19'-6	2 20'-0	2 20'-9	2 21'-0
t5	str	2 19'-0	2 19'-3	2 19'-6	2 20'-6	2 20'-9	2 21'-6	2 21'-9	2 22'-6	2 23'-3	2 23'-6
t6	str			1 22'-0	2 33'-0	2 23'-0	2 24'-0	2 24'-3	2 24'-9	2 25'-6	2 25'-9
t7	str							1 26'-6	1 27'-3	2 28'-0	2 28'-0
t8	str										
t9	str						1 15'-0		1 16'-0		1 23'-0
t10	str	1 21'-6	1 22'-9	1 24'-0	1 25'-3	1 26'-6	1 27'-9	1 29'-0	1 30'-3	1 31'-6	1 32'-9

Mark	Bend	45° SKEW									
		90°	96°	102°	108°	114°	120°	126°	132°	138°	144°
		NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth	NoLgth
h	D	21 9'-3	22 9'-3	23 9'-3	24 9'-3	25 9'-3	26 9'-3	27 9'-3	28 9'-3	29 9'-3	30 9'-3
j	str	8 31'-0	8 32'-6	8 34'-0	8 35'-6	8 37'-3	8 38'-9	8 40'-3	8 41'-9	8 43'-6	8 45'-0
k	E	21 7'-0	22 7'-0	23 7'-0	24 7'-0	25 7'-0	26 7'-0	27 7'-0	28 7'-0	29 7'-0	30 7'-0
r1	str	11 9'-0	12 9'-6	13 10'-0	14 10'-6	14 11'-0	15 11'-6	16 12'-0	16 12'-6	17 13'-0	17 13'-6
r2	str	3 7'-9	3 8'-6	3 8'-9	3 9'-3	3 9'-9	3 10'-0	3 10'-6	3 11'-0	3 11'-6	3 12'-6
r3	str	3 6'-3	3 7'-0	3 7'-3	3 7'-9	3 8'-6	3 8'-9	3 9'-3	3 9'-9	3 10'-3	3 11'-0
r4	str	3 5'-0	3 5'-9	3 5'-9	3 6'-6	3 7'-6	3 7'-3	3 7'-9	3 8'-3	3 8'-9	3 9'-6
r5	str	3 3'-6	3 4'-3	3 4'-6	3 5'-0	2 6'-3	3 6'-0	3 6'-6	3 7'-0	3 7'-3	3 8'-0
r6	str					2 5'-3	3 4'-6	2 5'-6	2 6'-0	2 6'-6	3 6'-6
r7	str							2 4'-6	2 5'-0	2 5'-6	3 5'-0
r8	str										2 4'-0
r9	str										
r10	str										
s	str	39 2'-0	41 2'-0	43 2'-0	45 2'-0	47 2'-0	49 2'-0	51 2'-0	53 2'-0	55 2'-0	57 2'-0
t1	str	2 12'-0	2 12'-9	2 13'-3	2 14'-0	2 14'-9	2 15'-3	2 16'-0	2 16'-9	2 17'-3	2 18'-0
t2	str	2 16'-0	2 16'-9	2 17'-3	2 18'-0	2 18'-6	2 19'-3	2 20'-3	2 20'-9	2 21'-6	2 22'-3
t3	str	2 20'-0	2 20'-9	2 21'-6	2 22'-3	2 22'-6	2 23'-6	2 24'-6	2 25'-0	2 25'-6	2 26'-6
t4	str	2 24'-0	2 24'-9	2 25'-9	2 26'-6	2 26'-3	2 27'-9	2 28'-9	2 29'-3	2 29'-9	2 30'-6
t5	str	1 28'-0	1 28'-9	1 30'-0	2 30'-6	2 30'-3	2 31'-9	2 33'-0	2 33'-3	2 34'-0	2 34'-9
t6	str					1 34'-0	1 36'-0	1 37'-3	2 37'-6	2 38'-0	2 39'-0
t7	str										
t8	str										
t9	str										1 28'-0
t10	str	1 30'-6	1 32'-0	1 33'-6	1 35'-3	1 36'-9	1 38'-3	1 39'-9	1 41'-3	1 43'-0	1 44'-6

NOTE:
All reinforcing bars are #4.
The apron quantities take into consideration the cutoff walls being omitted along outlet headwalls.

	QUANTITIES		
	PIPE Dia.	RE INF. Lbs.	CONCRETE C. Y.
	RIGHT ANGLE	90° 115	2.2
	96° 125	2.5	
	102° 140	2.7	
	108° 160	3.0	
	114° 195	3.3	
	120° 235	3.8	
	126° 245	4.1	
	132° 275	4.6	
	138° 305	5.0	
	144° 345	5.5	
15° SKEW	90° 95	2.8	
	96° 105	3.0	
	102° 120	3.2	
	108° 130	3.4	
	114° 150	3.7	
	120° 170	4.0	
	126° 185	4.3	
	132° 200	4.6	
	138° 220	4.9	
	144° 250	5.1	
30° SKEW	90° 150	3.4	
	96° 170	3.8	
	102° 185	4.1	
	108° 225	4.5	
	114° 235	4.8	
	120° 255	5.2	
	126° 285	5.7	
	132° 305	6.2	
	138° 330	6.6	
	144° 370	7.1	
45° SKEW	90° 230	5.6	
	96° 255	6.0	
	102° 270	6.4	
	108° 315	6.8	
	114° 345	7.4	
	120° 385	7.9	
	126° 405	8.5	
	132° 450	9.0	
	138° 475	9.5	
	144° 525	10.2	

NOTE:
For General Notes and additional Details, see SD 6.30 (1 of 5) and SD 6.36 (1 of 4).