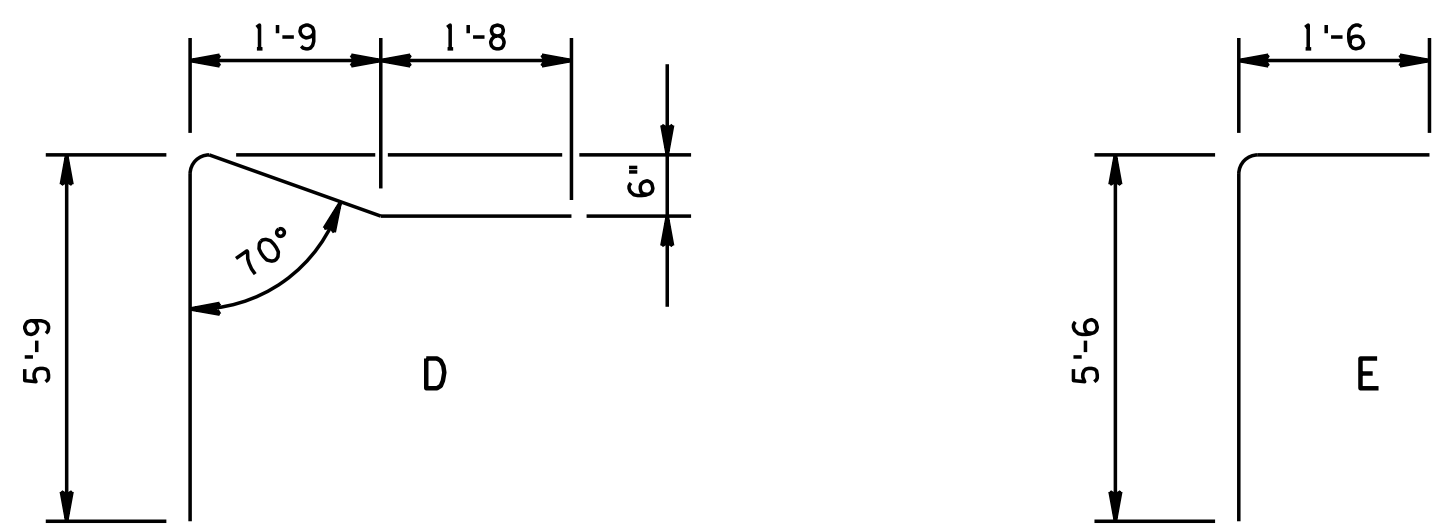


Note to Designer:  
The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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

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

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	16 9'-3"	17 9'-3"	18 9'-3"	18 9'-3"	19 9'-3"	20 9'-3"	21 9'-3"	21 9'-3"	22 9'-3"	23 9'-3"
j	str	8 24'-0"	8 25'-0"	8 26'-0"	8 27'-0"	8 28'-0"	8 29'-0"	8 30'-0"	8 31'-0"	8 32'-0"	8 33'-0"
k	E	16 7'-0"	17 7'-0"	18 7'-0"	18 7'-0"	19 7'-0"	20 7'-0"	21 7'-0"	21 7'-0"	22 7'-0"	23 7'-0"
r1	str	9 20'-0"	9 21'-0"	9 21'-9"	9 22'-9"	9 23'-9"	11 24'-9"	11 25'-6"	11 26'-6"	11 27'-6"	13 28'-6"
r2	str	4 15'-0"	4 15'-6"	4 17'-0"	4 18'-6"	4 18'-6"	4 20'-0"	4 20'-6"	4 23'-0"	4 24'-0"	4 23'-6"
r3	str	4 9'-9"	4 10'-0"	4 11'-6"	4 13'-0"	4 13'-6"	4 15'-6"	4 15'-0"	4 17'-6"	4 18'-6"	4 17'-9"
r4	str	2 7'-0"	2 7'-6"	2 9'-0"	2 10'-6"	4 9'-6"	2 11'-0"	4 10'-0"	4 12'-0"	4 13'-0"	4 12'-0"
r5	str									2 10'-6"	2 9'-0"
s	str	51 2'-0"	53 2'-0"	56 2'-0"	58 2'-0"	61 2'-0"	63 2'-0"	66 2'-0"	68 2'-0"	71 2'-0"	73 2'-0"
t1	str	3 8'-0"	4 8'-6"	4 9'-0"	4 9'-6"	4 10'-0"	4 10'-6"	4 11'-0"	4 11'-6"	4 12'-0"	5 12'-6"
t2	str	3 10'-3"	3 11'-0"	4 11'-6"	4 12'-0"	4 12'-9"	4 13'-3"	4 13'-9"	4 14'-6"	4 15'-0"	4 15'-6"
t3	str	3 12'-6"	3 13'-3"	3 14'-0"	4 14'-6"	4 15'-3"	4 16'-0"	4 16'-9"	4 17'-3"	4 18'-0"	4 18'-6"
t4	str	3 15'-0"	3 15'-9"	3 16'-6"	3 17'-3"	3 18'-0"	4 18'-9"	4 19'-6"	4 20'-3"	4 21'-0"	4 21'-9"
t5	str	3 17'-3"	3 18'-3"	3 19'-0"	3 19'-9"	3 20'-9"	3 21'-6"	4 22'-3"	4 23'-3"	4 24'-0"	4 24'-9"
t6	str	3 19'-6"	3 20'-6"	3 21'-6"	3 22'-6"	3 23'-3"	3 24'-3"	3 25'-3"	4 26'-0"	4 27'-0"	4 28'-0"
t7	str	3 22'-0"	3 23'-0"	3 24'-0"	3 25'-0"	3 26'-0"	3 27'-0"	3 28'-0"	3 29'-0"	4 30'-0"	4 31'-0"

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	16 9'-3"	17 9'-3"	17 9'-3"	18 9'-3"	19 9'-3"	20 9'-3"	21 9'-3"	21 9'-3"	22 9'-3"	22 9'-3"
j	str	8 23'-0"	8 24'-0"	8 25'-0"	8 26'-0"	8 27'-0"	8 28'-0"	8 29'-0"	8 30'-0"	8 31'-0"	8 32'-0"
k	E	16 7'-0"	17 7'-0"	17 7'-0"	18 7'-0"	19 7'-0"	20 7'-0"	21 7'-0"	21 7'-0"	22 7'-0"	22 7'-0"
r1	str	8 18'-6"	9 19'-3"	9 20'-3"	9 21'-0"	10 22'-0"	10 23'-0"	11 23'-9"	12 24'-9"	12 25'-6"	13 26'-6"
r2	str	2 16'-6"	2 17'-0"	2 18'-6"	2 20'-0"	2 20'-0"	2 20'-6"	2 22'-0"	2 22'-0"	2 23'-0"	3 23'-0"
r3	str	2 13'-6"	2 14'-0"	2 15'-6"	2 17'-0"	2 17'-6"	2 18'-0"	2 18'-9"	2 19'-0"	2 20'-0"	3 18'-6"
r4	str	2 10'-6"	2 11'-0"	2 12'-6"	2 14'-0"	2 14'-3"	2 14'-9"	2 15'-9"	2 16'-0"	2 17'-0"	2 15'-6"
r5	str	2 7'-6"	2 8'-0"	2 9'-6"	2 11'-0"	2 10'-9"	2 11'-3"	2 12'-6"	2 13'-0"	2 14'-0"	2 12'-6"
r6	str	2 4'-6"	2 5'-0"	2 6'-6"	2 8'-0"	2 7'-6"	2 8'-0"	2 9'-6"	2 10'-0"	2 11'-0"	2 9'-6"
r7	str						2 7'-0"	2 8'-0"	2 6'-6"		
r8	str	1 9'-0"	1 9'-9"	1 10'-6"	1 11'-3"	1 11'-9"	1 12'-6"	1 13'-3"	1 14'-0"	1 14'-9"	1 15'-6"
s	str	47 2'-0"	50 2'-0"	53 2'-0"	56 2'-0"	59 2'-0"	62 2'-0"	65 2'-0"	68 2'-0"	71 2'-0"	74 2'-0"
t1	str	2 8'-6"	3 9'-0"	2 9'-6"	3 10'-0"	3 10'-3"	3 10'-9"	3 11'-3"	3 11'-9"	3 12'-3"	3 12'-9"
t2	str	2 10'-0"	2 11'-0"	2 11'-0"	2 12'-0"	3 12'-6"	3 13'-0"	3 13'-6"	3 14'-3"	3 14'-6"	3 15'-0"
t3	str	2 11'-6"	2 12'-6"	2 12'-6"	2 13'-6"	2 15'-0"	3 15'-3"	3 16'-0"	3 16'-9"	3 17'-0"	3 17'-3"
t4	str	2 13'-0"	2 14'-0"	2 14'-3"	2 15'-0"	2 16'-9"	2 17'-6"	3 18'-3"	3 19'-0"	3 19'-3"	3 19'-6"
t5	str	2 14'-6"	2 15'-6"	2 15'-9"	2 16'-6"	2 18'-3"	2 19'-0"	2 20'-9"	3 21'-6"	3 21'-9"	3 22'-0"
t6	str	2 16'-0"	2 17'-0"	2 17'-3"	2 18'-0"	2 20'-0"	2 20'-9"	2 22'-3"	2 23'-6"	3 24'-0"	3 24'-3"
t7	str	2 17'-6"	2 18'-6"	2 18'-9"	2 19'-6"	2 21'-9"	2 22'-3"	2 23'-9"	2 25'-0"	2 26'-0"	3 26'-6"
t8	str	2 19'-0"	2 20'-0"	2 20'-6"	2 21'-0"	2 23'-3"	2 24'-0"	2 25'-6"	2 26'-6"	2 27'-6"	2 28'-6"
t9	str	2 21'-6"	2 21'-6"	2 22'-0"	2 22'-6"	2 25'-0"	2 25'-6"	2 27'-0"	2 28'-0"	2 29'-0"	2 30'-0"
t10	str		2 21'-0"	2 22'-0"	2 22'-0"	2 19'-0"	2 21'-0"	2 24'-0"	2 17'-0"	2 21'-0"	1 23'-0"
t11	str	1 21'-6"	1 22'-6"	1 23'-6"	1 24'-6"	1 25'-6"	1 26'-6"	1 27'-6"	1 28'-6"	1 29'-6"	1 30'-6"



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	19 9'-3"	20 9'-3"	21 9'-3"	22 9'-3"	23 9'-3"	24 9'-3"	25 9'-3"	26 9'-3"	27 9'-3"	28 9'-3"
j	str	8 30'-0"	8 31'-3"	8 32'-6"	8 33'-9"	8 35'-0"	8 36'-0"	8 37'-3"	8 38'-6"	8 39'-9"	8 41'-0"
k	E	19 7'-0"	20 7'-0"	21 7'-0"	22 7'-0"	23 7'-0"	24 7'-0"	25 7'-0"	26 7'-0"	27 7'-0"	28 7'-0"
r1	str	9 15'-6"	10 16'-3"	11 17'-3"	11 18'-0"	11 19'-0"	12 19'-9"	13 20'-9"	13 21'-6"	14 22'-3"	14 23'-3"
r2	str	2 14'-6"	2 15'-6"	2 15'-9"	2 17'-0"	2 18'-0"	2 18'-6"	2 19'-3"	3 19'-6"	3 20'-0"	3 21'-0"
r3	str	2 13'-0"	2 13'-9"	2 14'-3"	2 15'-3"	2 16'-3"	2 16'-9"	2 17'-6"	2 17'-9"	3 18'-3"	3 19'-6"
r4	str	2 11'-6"	2 12'-3"	2 12'-6"	2 13'-9"	2 14'-9"	2 15'-3"	2 15'-9"	2 16'-3"	2 16'-6"	3 18'-0"
r5	str	2 10'-0"	2 10'-6"	2 10'-9"	2 12'-0"	2 12'-0"	2 13'-6"	2 14'-3"	2 14'-6"	2 14'-9"	2 15'-9"
r6	str	2 9'-6"	2 9'-0"	2 9'-3"	2 10'-3"	2 11'-6"	2 12'-0"	2 12'-6"	2 13'-0"	2 12'-9"	2 13'-9"
r7	str	2 7'-0"	2 7'-3"	2 7'-6"	2 8'-9"	2 9'-9"	2 10'-3"	2 10'-9"	2 11'-3"	2 11'-0"	2 11'-6"
r8	str	2 5'-6"	2 5'-9"	2 6'-0"	2 7'-0"	2 8'-3"	2 8'-9"	2 9'-3"	2 9'-9"	2 9'-3"	2 9'-6"
r9	str				1 6'-3"	2 6'-6"	2 7'-0"	2 7'-6"	2 8'-0"	2 7'-6"	2 7'-3"
s	str	48 2'-0"	51 2'-0"	53 2'-0"	56 2'-0"	59 2'-0"	61 2'-0"	64 2'-0"	67 2'-0"	69 2'-0"	72 2'-0"
t1	str	2 9'-3"	2 9'-9"	3 10'-3"	3 11'-0"	3 11'-6"	3 12'-0"	3 12'-6"	3 13'-0"	3 13'-9"	3 14'-3"
t2	str	2 11'-9"	2 12'-3"	2 12'-9"	3 13'-9"	3 14'-3"	3 15'-0"	3 15'-6"	3 16'-3"	3 17'-0"	3 17'-6"
t3	str	2 14'-0"	2 14'-6"	2 15'-3"	2 16'-6"	3 17'-3"	3 18'-0"	3 18'-9"	3 19'-6"	3 20'-3"	3 20'-9"
t4	str	2 16'-6"	2 17'-0"	2 17'-9"	2 19'-3"	2 20'-0"	3 21'-0"	3 21'-9"	3 22'-6"	3 23'-9"	3 24'-0"
t5	str	2 18'-9"	2 19'-3"	2 20'-3"	2 21'-9"	2 22'-9"	2 24'-0"	2 24'-9"	3 25'-9"	3 27'-0"	3 27'-3"
t6	str	2 21'-3"	2 21'-9"	2 23'-0"	2 24'-6"	2 25'-6"	2 27'-0"	2 27'-9"	2 29'-0"	3 30'-3"	3 30'-6"
t7	str	2 23'-6"	2 24'-0"	2 25'-6"	2 27'-3"	2 28'-6"	2 30'-0"	2 31'-0"	2 32'-3"	2 33'-9"	2 33'-9"
t8	str	1 26'-0"	1 26'-6"	2 28'-0"	2 30'-0"	2 31'-3"	2 33'-0"	2 34'-0"	2 35'-6"	2 37'-0"	2 37'-0"
t9	str		1 20'-0"							1 24'-0"	1 25'-0"
t10	str	1 29'-3"	1 30'-6"	1 31'-9"	1 33'-0"	1 34'-3"	1 35'-6"	1 36'-9"	1 38'-0"	1 39'-3"	1 40'-6"

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	25 9'-3"	26 9'-3"	27 9'-3"	29 9'-3"	30 9'-3"	31 9'-3"	32 9'-3"	34 9'-3"	35 9'-3"	36 9'-3"
j	str	8 37'-0"	8 39'-0"	8 41'-0"	8 43'-0"	8 45'-0"	8 47'-0"	8 49'-0"	8 51'-0"	8 53'-0"	8 55'-0"
k	E	25 7'-0"	26 7'-0"	27 7'-0"	29 7'-0"	30 7'-0"	31 7'-0"	32 7'-0"	34 7'-0"	35 7'-0"	36 7'-0"
r1	str	11 12'-6"	12 13'-6"	13 14'-6"	14 15'-3"	14 16'-3"	15 17'-3"	16 18'-3"	16 19'-0"	17 20'-0"	17 21'-0"
r2	str	3 11'-6"	3 12'-3"	3 13'-0"	3 13'-9"	3 14'-6"	3 15'-6"	3 16'-3"	3 17'-0"	3 17'-9"	4 18'-6"
r3	str	3 10'-0"	3 10'-9"	3 11'-3"	3 12'-3"	3 13'-0"	3 14'-0"	3 14'-6"	3 15'-6"	3 16'-3"	3 16'-9"
r4	str	3 8'-9"	3 9'-3"	3 9'-9"	3 10'-9"	3 11'-3"	3 12'-6"	3 13'-0"	3 14'-0"	3 14'-6"	3 15'-3"
r5	str	3 7'-3"	3 7'-9"	3 8'-0"	3 9'-3"	3 9'-9"	3 11'-0"	3 11'-3"	3 12'-3"	3 13'-0"	3 13'-6"
r6	str	3 5'-9"	3 6'-0"	3 6'-3"	3 7'-6"	3 8'-3"	3 9'-3"	3 9'-9"	3 10'-9"	3 11'-3"	3 12'-0"
r7	str	2 4'-6"	2 5'-3"	3 4'-9"	3 6'-0"	3 6'-9"	3 7'-9"	3 8'-3"	3 9'-3"	3 9'-9"	3 10'-3"
r8	str				3 4'-6"	3 5'-3"	2 6'-6"	3 6'-6"	3 7'-9"	3 8'-3"	3 8'-9"
r9	str					2 4'-0"	2 5'-6"	3 4'-9"	2 6'-6"	3 6'-6"	3 7'-0"
r10	str							2 5'-6"	3 5'-0"	3 5'-6"	
s	str	47 2'-0"	50 2'-0"	53 2'-0"	56 2'-0"	59 2'-0"	62 2'-0"	65 2'-0"	68 2'-0"	71 2'-0"	74 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"	3 16'-9"	3 17'-3"	3 18'-0"
t2	str	2 16'-3"	2 16'-9"	2 17'-3"	2 17'-9"	2 18'-9"	2 19'-3"	2 19'-9"	2 22'-0"	3 23'-0"	3 23'-0"
t3	str	2 20'-6"	2 20'-9"	2 21'-6"	2 21'-9"	2 22'-6"	2 23'-3"	2 23'-6"	2 26'-3"	2 29'-0"	3 28'-0"
t4	str	2 24'-9"	2 25'-0"	2 25'-9"	2 25'-6"	2 26'-3"	2 27'-0"	2 27'-3"	2 30'-6"	2 33'-0"	2 33'-0"
t5	str	2 29'-0"	2 29'-0"	2 29'-9"	2 29'-3"	2 30'-3"	2 31'-0"	2 30'-9"	2 34'-6"	2 37'-0"	2 38'-0"
t6	str	1 33'-0"	2 33'-0"	2 34'-0"	2 33'-3"	2 34'-3"	2 35'-0"	2 34'-6"	2 38'-9"	2 41'-0"	2 43'-0"
t7	str		1 34'-0"	1 36'-0"	2 37'-0"	2 38'-0"	2 39'-0"	2 38'-3"	2 43'-0"	2 45'-0"	2 48'-0"
t8	str						1 41'-0"	2 42'-0"	2 40'-0"	2 39'-0"	2 30'-0"
t9	str	1 28'-0"	1 13'-0"	1 24'-0"	1 24'-0"	2 21'-0"	2 19'-0"	2 21'-0"	2 19'-0"	2 19'-0"	2 16'-0"
t10	str	1 36'-0"	1 38'-0"	1 40'-0"	1 42'-0"	1 44'-0"	1 46'-0"	1 48'-0"	1 50'-0"	1 52'-0"	1 54'-0"

NOTE:

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

NOTE:

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

DESIGN APPROVED <i>Shafiq U. Hasan</i>		
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