

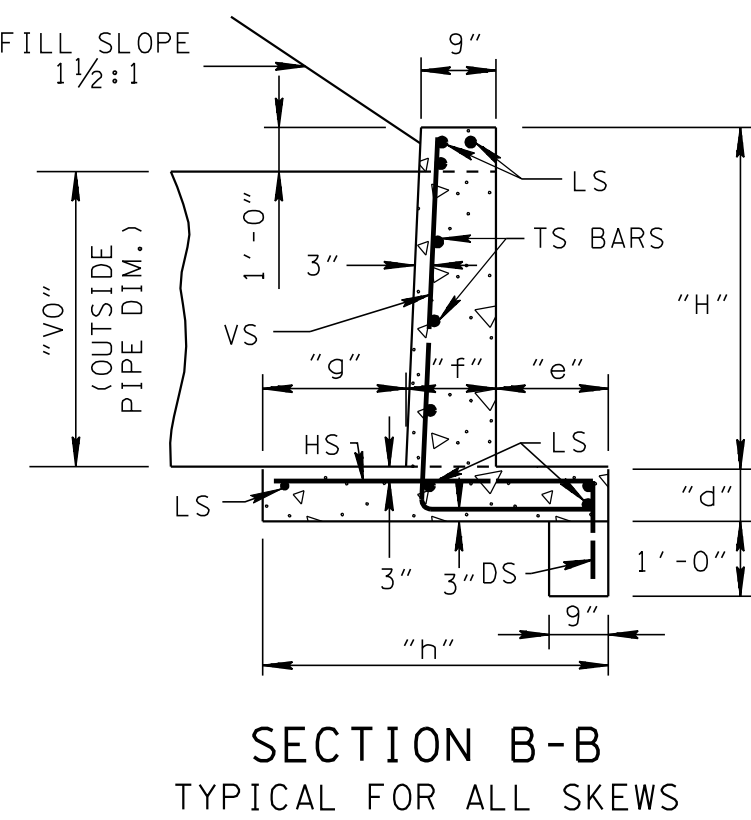
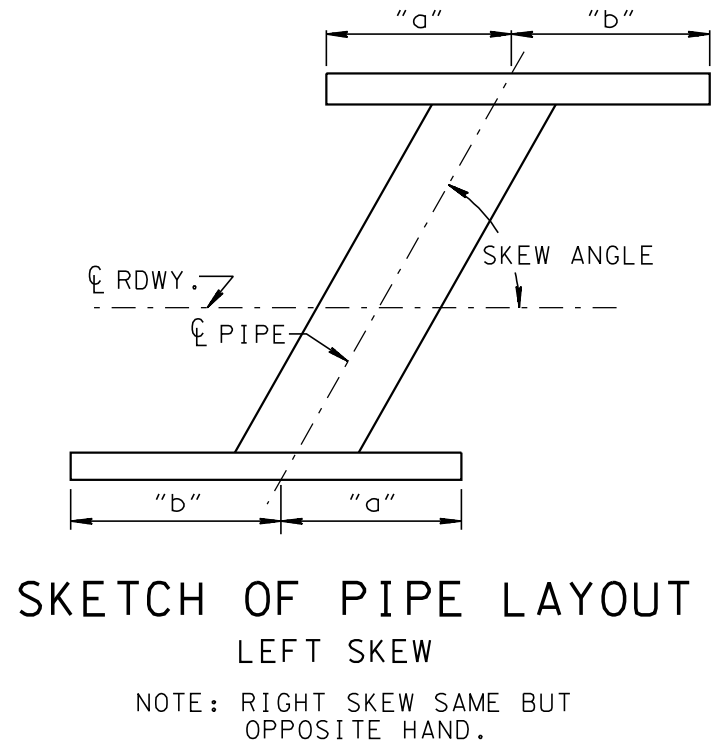
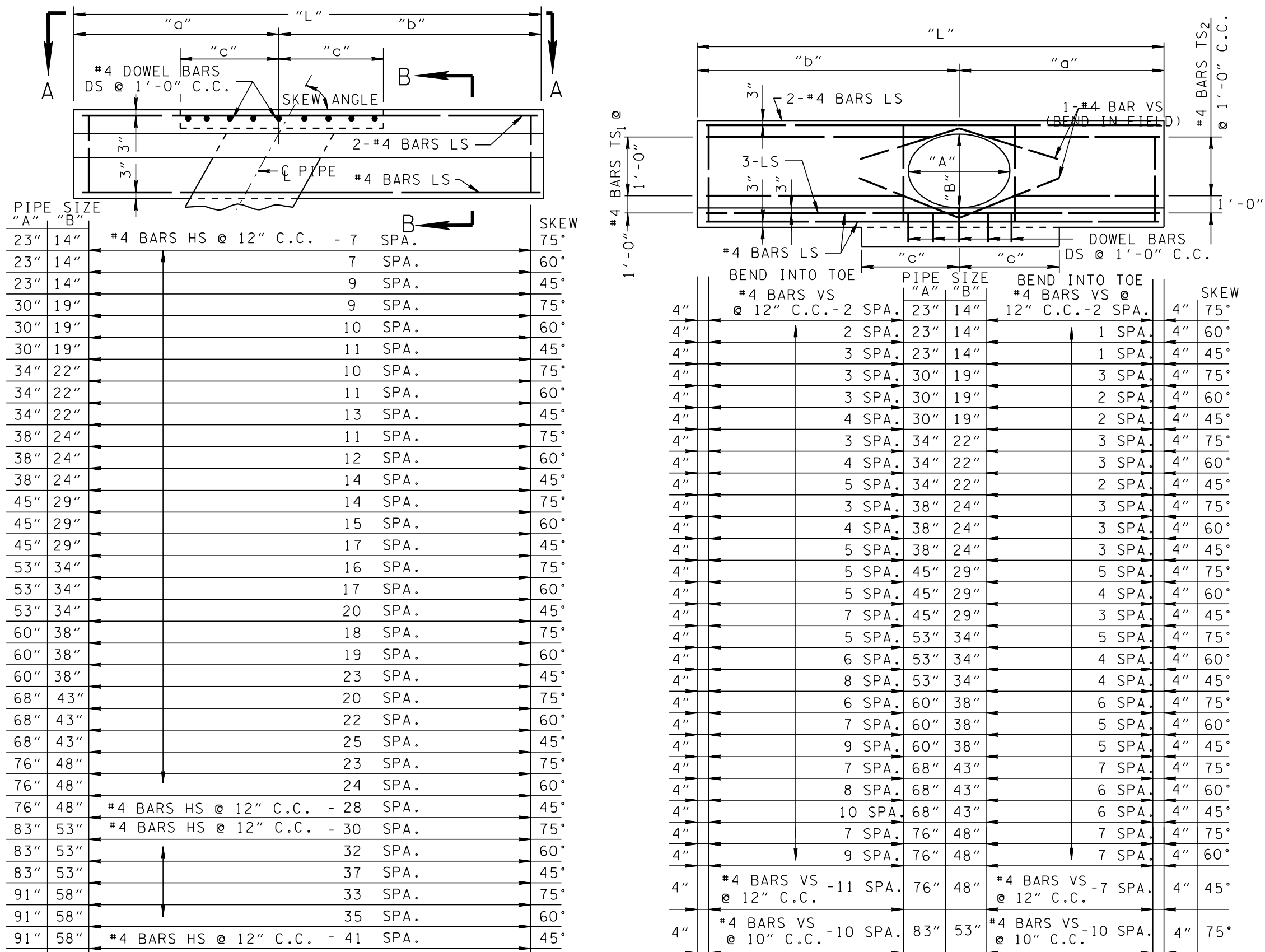
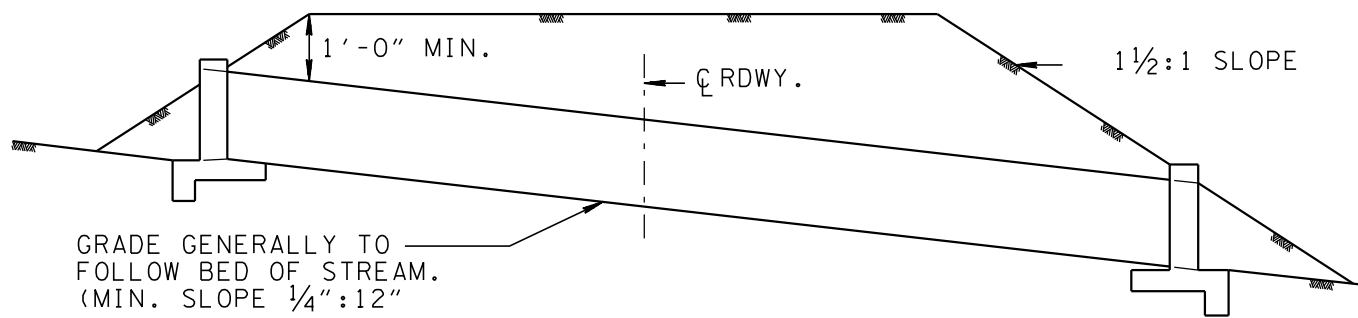
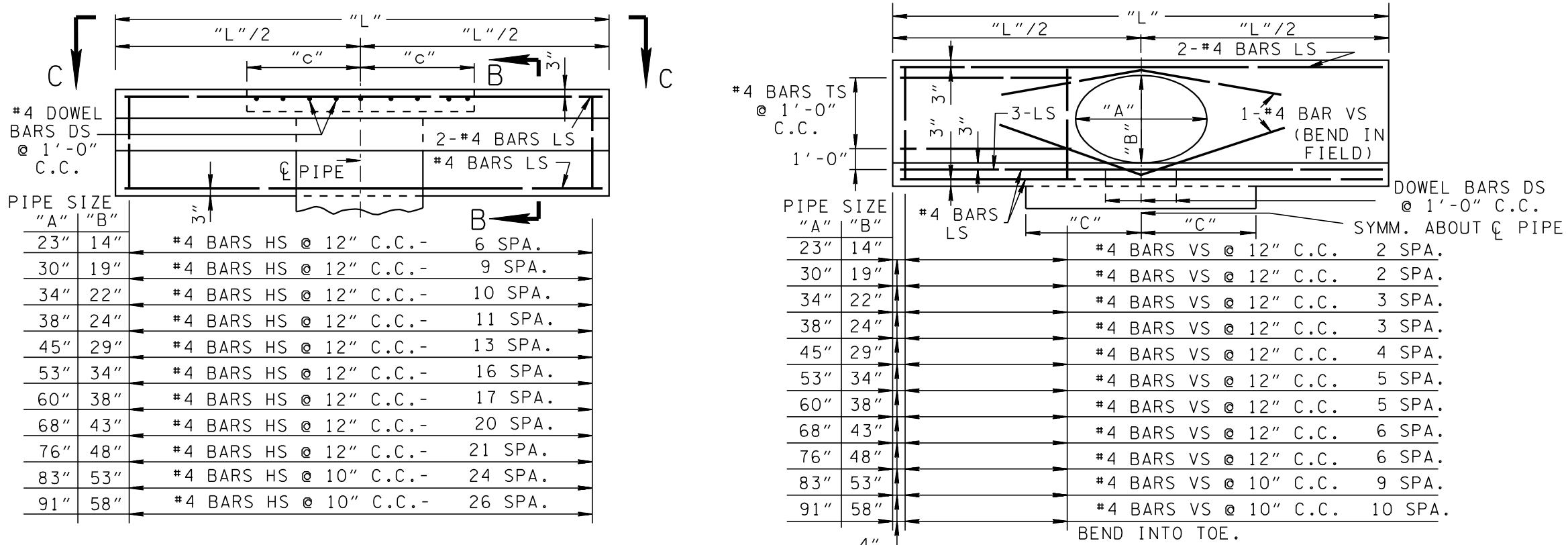


TABLE OF DIMENSIONS & REINFORCEMENT - 90° SKEW - (ONE WALL)																						
OPENING		E.O. ROUND PIPE DIA.	DIMENSIONS								REINFORCEMENT											
PIPE SIZE	AREA SQ.FT		WALL			FOOTING & CUT-OFF WALL					BARS VS #4		BARS LS #4		BARS DS #4		BARS TS #4		BARS HS #4			
"A"	"B"		"L"	"H"	"VO"	"c"	"d"	"e"	"f"	"g"	"h"	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	
23"	14"	1.8	18"	7'-3"	2'-7½"	1'-7½"	—	9"	4"	9"	8"	1'-9"	8	3'-6"	6	6'-9"	—	—	4	2'-0"	7	1'-3"
30"	19"	3.3	24"	9'-6"	3'-1½"	2'-1½"	—	9"	4"	9"	8"	1'-9"	8	4'-0"	6	9'-0"	—	—	4	2'-9"	10	1'-3"
34"	22"	4.1	27"	10'-9"	3'-5"	2'-5"	4'-3"	9"	4"	9"	8"	1'-9"	10	4'-3"	6	10'-3"	9	1'-3"	6	3'-0"	11	1'-3"
38"	24"	5.1	30"	11'-9"	3'-7½"	2'-7½"	4'-6"	9"	4"	9"	8"	1'-9"	10	4'-6"	6	11'-3"	9	1'-3"	6	3'-6"	12	1'-3"
45"	29"	7.4	36"	14'-0"	4'-2"	3'-2"	5'-0"	9"	4"	9"	8"	1'-9"	12	5'-0"	6	13'-6"	9	1'-3"	8	4'-3"	14	1'-3"
53"	34"	10.2	42"	16'-6"	4'-8"	3'-8"	5'-3"	9"	5"	9"	10"	2'-0"	14	5'-6"	6	16'-0"	11	1'-3"	8	5'-0"	17	1'-6"
60"	38"	12.9	48"	18'-3"	5'-1"	4'-1"	5'-6"	9"	6"	9"	1'-0"	2'-3"	14	6'-0"	6	17'-9"	11	1'-3"	8	5'-9"	18	1'-9"
68"	43"	16.6	54"	20'-6"	5'-7"	4'-7"	6'-6"	9"	7"	9"	1'-2"	2'-6"	16	6'-9"	6	20'-0"	13	1'-3"	10	6'-6"	21	2'-0"
76"	48"	20.5	60"	22'-0"	6'-1"	5'-1"	6'-9"	9"	8"	9"	1'-4"	2'-9"	16	7'-3"	6	21'-6"	13	1'-3"	10	6'-9"	22	2'-3"
83"	53"	24.8	66"	25'-0"	6'-7"	5'-7"	7'-3"	9"	9"	9"	1'-7"	3'-1"	22	8'-0"	6	24'-6"	15	1'-3"	12	8'-0"	25	2'-7"
91"	58"	29.5	72"	27'-3"	7'-1"	6'-1"	7'-9"	9"	10"	9"	1'-9"	3'-4"	24	8'-6"	6	26'-9"	15	1'-3"	12	8'-9"	27	2'-10"



ESTIMATED QUANTITIES - ONE WALL - ALL SKEWS																				
PIPE SIZE		CONC.-TOTAL CU.YDS% SKEWS				CONC- RETE PER. CU.YDS.	REINF.-TOTAL LBS% SKEWS				REINF. PER FT. LBS.									
"A"	"B"	90°	75°	60°	45°		90°	75°	60°	45°										
23"	14"	0.8	0.8	0.9	1.0	0.121	57	59	59	70	7.706									
30"	19"	1.1	1.1	1.3	1.5	0.135	73	81	82	93	8.041									
34"	22"	1.6	1.6	1.8	2.0	0.144	98	100	106	119	9.716									
38"	24"	1.8	1.8	2.0	2.2	0.149	107	108	118	133	9.883									
45"	29"	2.3	2.4	2.6	2.8	0.164	137	149	154	171	10.888									
53"	34"	2.9	3.0	3.2	3.6	0.185	169	172	180	205	11.391									
60"	38"	3.2	3.3	3.5	4.0	0.204	189	206	208	242	11.893									
68"	43"	4.0	4.1	4.3	4.9	0.225	235	246	258	295	13.233									
76"	48"	4.5	5.0	5.2	5.9	0.245	253	277	300	338	13.736									
83"	53"	5.8	6.0	6.3	7.2	0.268	337	364	377	428	16.547									
91"	58"	6.6	6.8	7.2	8.2	0.289	378	403	424	484	17.150									

INCLUDES CUT-OFF WALL
NOTE: CUT-OFF WALL PER FT. SAME FOR ALL SKEWS & PIPE SIZES
EQUALS 0.03 CU. YDS. & 0.838 LB. REINFORCING STEEL.

TABLE OF DIMENSION "X"					
PIPE SIZE	59'-46"	44'-36"	35'-26"	25'-15"	
"A" "B"	"X"	"X"	"X"	"X"	
23"	14"	6"	9"	1'-6"	3'-3"
30"	19"	6"	1'-0"	2'-0"	4'-3"
34"	22"	9"	1'-3"	2'-3"	5'-0"
38"	24"	9"	1'-3"	2'-6"	5'-6"
45"	29"	1'-0"	1'-6"	3'-0"	6'-6"
53"	34"	1'-0"	1'-9"	3'-3"	7'-6"
60"	38"	1'-3"	2'-0"	3'-9"	8'-6"
68"	43"	1'-3"	2'-3"	4'-3"	9'-6"
76"	48"	1'-6"	2'-6"	4'-9"	10'-6"
83"	53"	1'-9"	2'-9"	5'-3"	11'-6"
91"	58"	1'-9"	3'-0"	5'-9"	12'-6"

MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD
WINGWALLS
HORIZONTAL OVAL
CONCRETE PIPES
D-PE-5