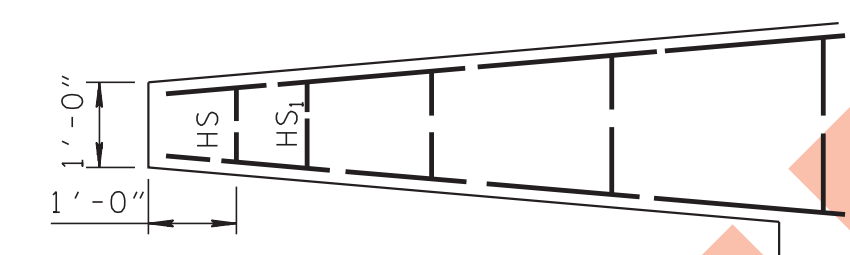


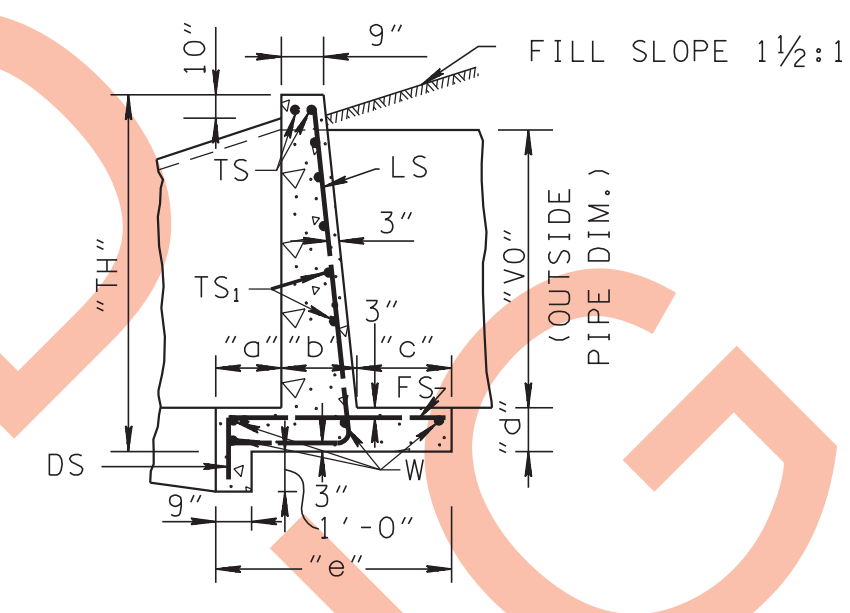
REV. 7-1-72: CHANGED DEPARTMENT NAME.
 REV. 1-1-76: CHANGED DWG. FROM H-5-107 TO D-PE-6.
 REV. 5-27-01: SEPARATED OLD DRAWING D-PE-6 INTO NEW DRAWINGS D-PE-6 AND D-PE-6A.

BILL OF STEEL - (ONE WALL)											
BAR	SIZE	PIPE SIZE									
		60"x38"	68"x43"	76"x48"	83"x53"	91"x58"					
		NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
DS	#4	6	1'-6"	6	1'-6"	6	1'-6"	7	1'-6"	7	1'-6"
ES	#4	2	2'-9"	2	2'-6"	2	3'-9"	2	3'-0"	2	2'-9"
ES ₁	#4	2	4'-6"	2	4'-0"	2	5'-6"	2	4'-9"	2	4'-6"
ES ₂	#4	2	6'-3"	2	5'-6"	2	7'-0"	2	6'-6"	2	6'-0"
ES ₃	#4	2	8'-0"	2	7'-3"	2	8'-9"	2	8'-0"	2	7'-6"
ES ₄	#4	2	9'-9"	2	9'-0"	2	10'-6"	2	9'-9"	2	9'-6"
ES ₅	#4	—	—	2	10'-9"	2	12'-3"	2	11'-6"	2	11'-0"
ES ₆	#4	—	—	—	—	—	—	2	13'-3"	2	12'-9"
ES ₇	#4	—	—	—	—	—	—	—	—	2	14'-6"
FS	#4	14	3'-6"	16	3'-9"	19	4'-0"	21	4'-6"	26	5'-0"
HS	#4	2	0'-9"	2	0'-9"	2	0'-9"	2	0'-9"	2	0'-9"
HS ₁	#4	2	1'-0"	2	1'-0"	2	1'-0"	2	1'-0"	2	1'-0"
HS ₂	#4	2	1'-3"	2	1'-3"	2	1'-3"	2	1'-3"	2	1'-6"
HS ₃	#4	2	1'-6"	2	1'-6"	2	1'-6"	2	1'-6"	2	1'-9"
HS ₄	#4	2	1'-9"	2	1'-9"	2	1'-9"	2	2'-0"	2	2'-0"
HS ₅	#4	2	2'-0"	2	2'-3"	2	2'-0"	2	2'-3"	2	2'-3"
HS ₆	#4	2	2'-3"	2	2'-6"	2	2'-3"	2	2'-6"	2	2'-6"
HS ₇	#4	2	2'-6"	2	2'-9"	2	2'-6"	2	2'-9"	2	2'-9"
HS ₈	#4	2	2'-9"	2	3'-0"	2	2'-9"	2	3'-0"	2	3'-0"
HS ₉	#4	2	3'-0"	2	3'-3"	2	3'-0"	2	3'-3"	2	3'-3"
HS ₁₀	#4	—	—	2	3'-6"	2	3'-3"	2	3'-6"	2	3'-6"
HS ₁₁	#4	—	—	—	—	2	3'-6"	2	3'-9"	2	3'-9"
HS ₁₂	#4	—	—	—	—	2	3'-9"	2	4'-0"	2	4'-0"
HS ₁₃	#4	—	—	—	—	—	—	2	4'-3"	2	4'-3"
HS ₁₄	#4	—	—	—	—	—	—	2	4'-6"	2	4'-6"
HS ₁₅	#4	—	—	—	—	—	—	—	—	4	4'-9"
LS	#4	6	9'-0"	6	10'-0"	8	11'-0"	8	11'-9"	—	—
LS	#5	—	—	—	—	—	—	—	—	6	13'-0"
TS	#4	4	7'-0"	4	7'-6"	4	8'-0"	4	8'-6"	4	9'-0"
TS ₁	#4	12	1'-6"	14	1'-6"	16	1'-6"	16	1'-6"	18	1'-6"
VS	#4	2	2'-0"	2	2'-0"	2	2'-3"	2	2'-3"	2	2'-6"
VS ₁	#4	2	2'-9"	2	2'-9"	2	2'-9"	2	3'-0"	2	3'-0"
VS ₂	#4	2	3'-6"	2	3'-6"	2	3'-6"	2	3'-9"	2	3'-9"
VS ₃	#4	2	4'-0"	2	4'-3"	2	4'-3"	2	4'-3"	2	4'-6"
VS ₄	#4	2	4'-9"	2	5'-0"	2	5'-0"	2	5'-0"	2	5'-3"
VS ₅	#4	2	5'-3"	2	5'-6"	2	5'-9"	2	5'-9"	2	6'-0"
VS ₆	#4	2	6'-0"	2	6'-3"	2	6'-3"	2	6'-6"	2	6'-9"
VS ₇	#4	2	6'-9"	2	7'-0"	2	7'-0"	2	7'-3"	2	7'-3"
VS ₈	#4	2	7'-6"	2	7'-6"	2	7'-9"	2	7'-9"	2	8'-0"
VS ₉	#4	—	—	2	8'-3"	2	8'-3"	2	8'-3"	2	8'-9"
VS ₁₀	#4	—	—	—	—	2	9'-0"	2	9'-0"	2	9'-3"
VS ₁₁	#4	—	—	—	—	2	9'-6"	2	9'-6"	2	9'-9"
VS ₁₂	#4	—	—	—	—	—	—	2	10'-0"	2	10'-3"
VS ₁₃	#4	—	—	—	—	—	—	2	10'-6"	2	10'-9"
VS ₁₄	#4	—	—	—	—	—	—	—	—	2	11'-0"
VS ₁₅	#4	—	—	—	—	—	—	—	—	2	11'-3"
VS ₁₆	#4	—	—	—	—	—	—	—	—	2	11'-9"
W	#4	4	11'-0"	4	11'-9"	4	12'-6"	4	13'-6"	4	14'-6"
W ₁	#4	8	10'-3"	8	11'-3"	8	12'-9"	8	13'-9"	8	15'-0"

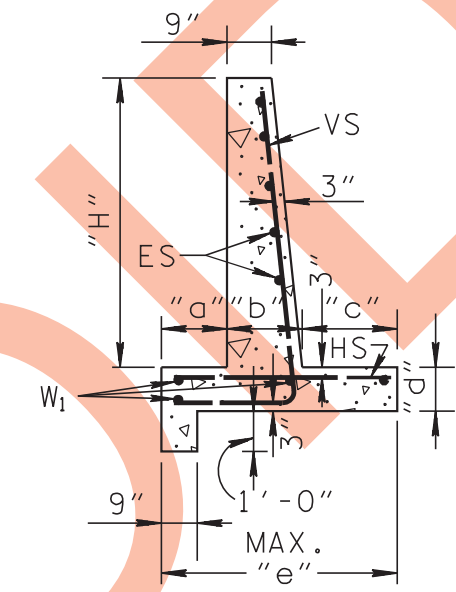
PIPE SIZE		#4 HS BARS SPACED AS SHOWN BELOW	WING LGTH.
"A"	"B"		
60"	38"	9 SPA. @ 12" C.C.	10'-6"
68"	43"	10 SPA. @ 12" C.C.	11'-6"
76"	48"	9 SPA. @ 12" C.C.	13'-0"
83"	53"	9 SPA. @ 12" C.C.	14'-0"
91"	58"	9 SPA. @ 12" C.C.	15'-3"



WING FOOTING PLANS
SHOWING REINFORCEMENT

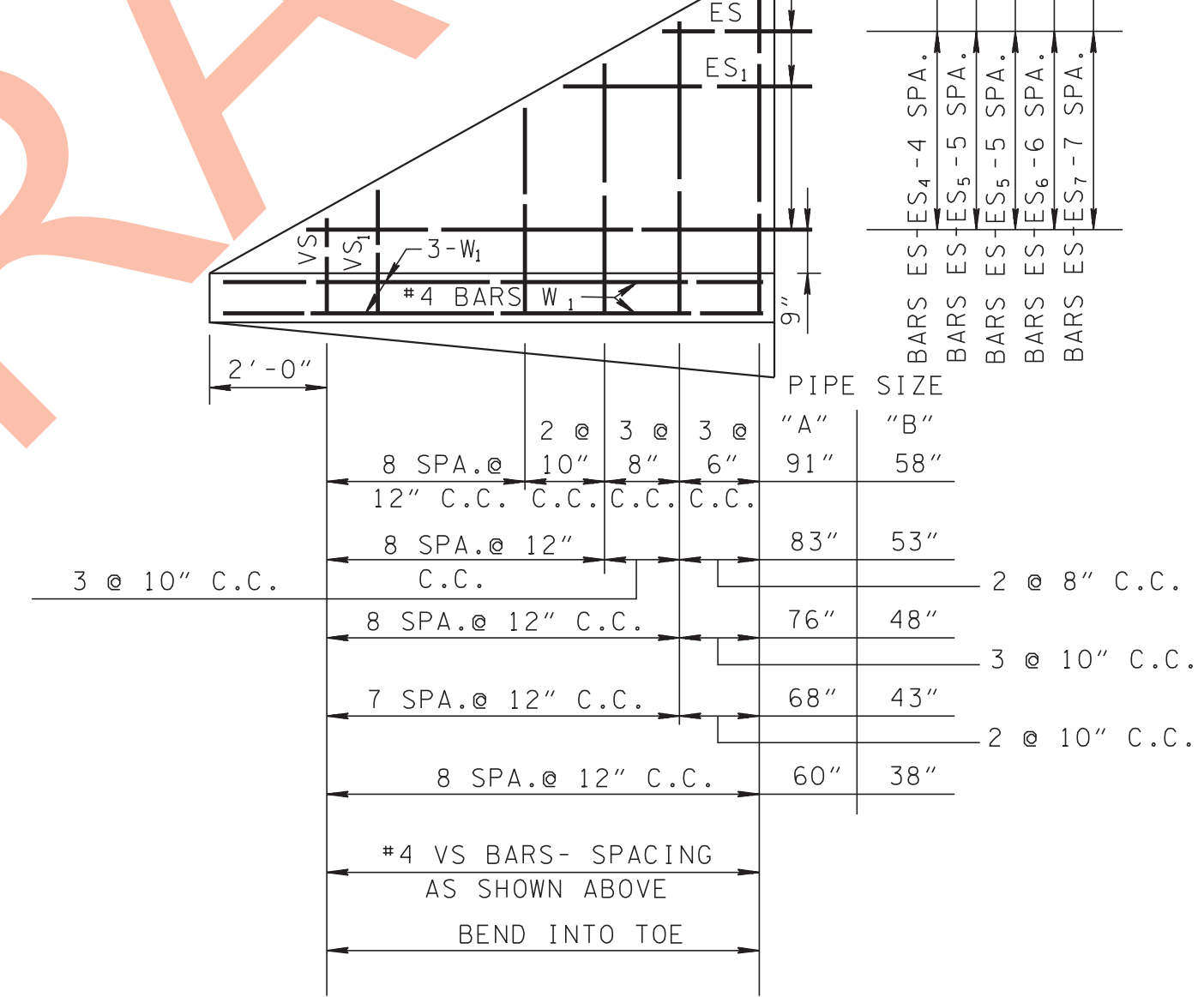


SECTION E-E

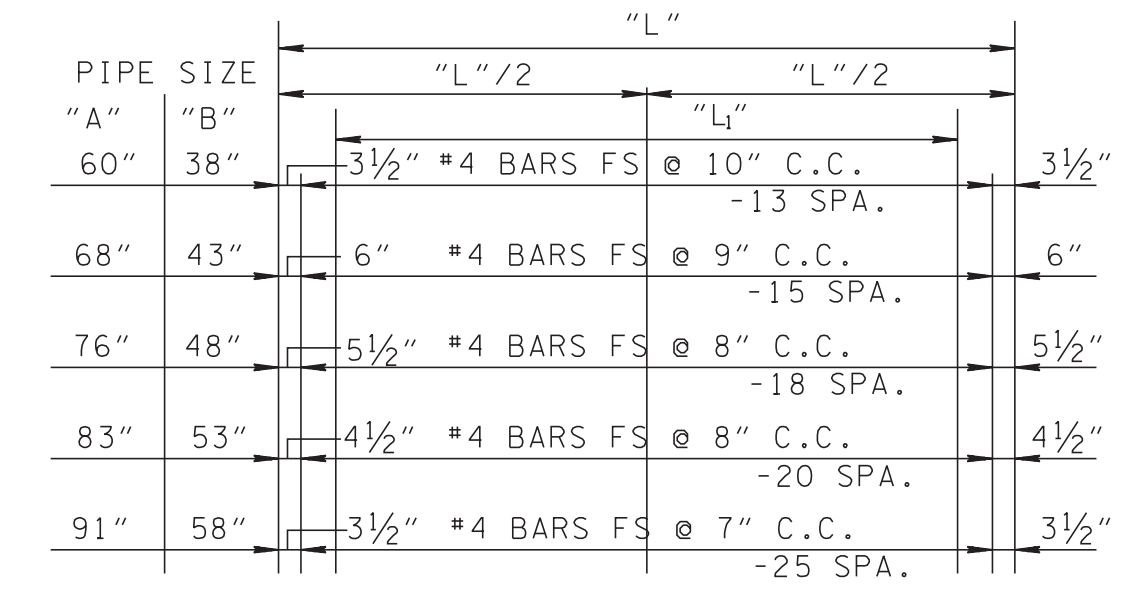


SECTION D-D

#4 ES BARS @ 1'-0" C.C. BEND 1'-0" INTO MAIN WALL

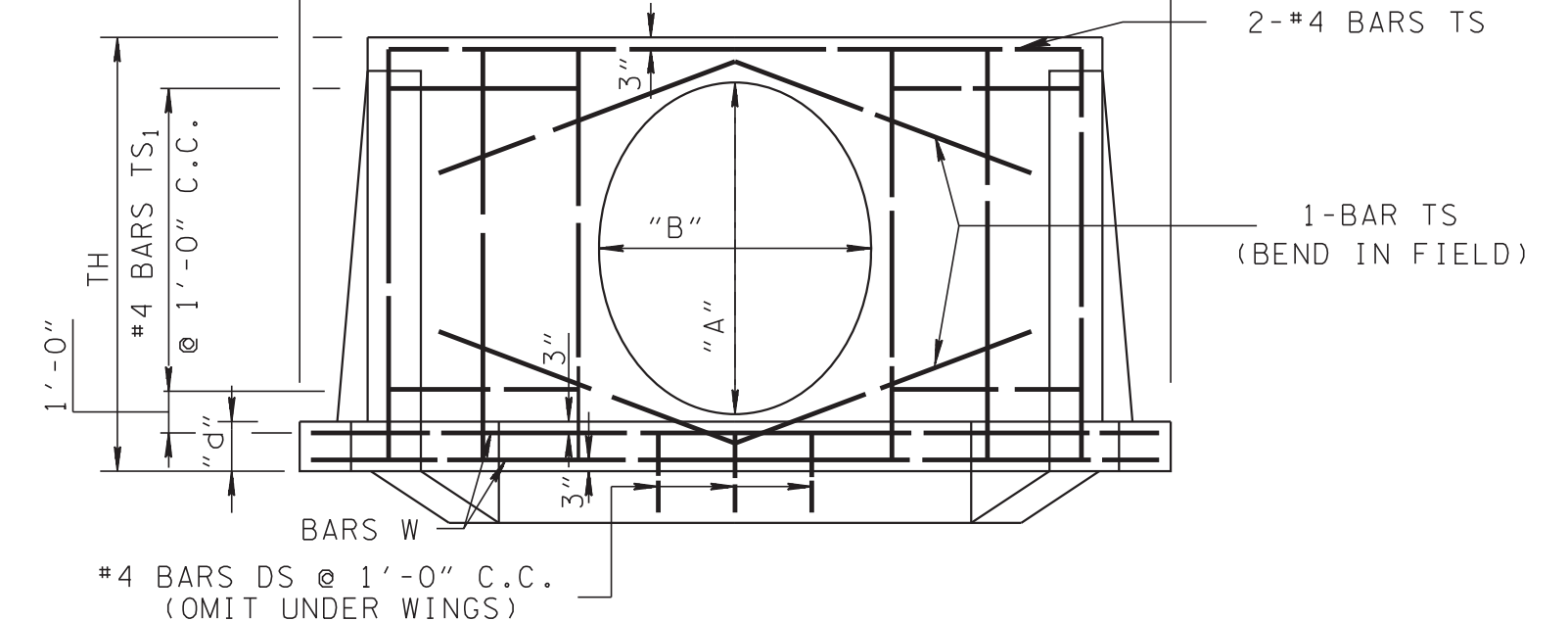


WING ELEVATIONS
SHOWING REINFORCEMENT



PLAN

PIPE SIZE		"L"/2		"L"/2	
"A"	"B"	"L ₁ "		"L ₂ "	
60"	38"	3"	2 SPA. @ 7 1/2" C.C.	#4 BARS LS	2 SPA. @ 7 1/2" C.C.
68"	43"	3"	2 SPA. @ 7 1/2" C.C.	#4 BARS LS	2 SPA. @ 7 1/2" C.C.
76"	48"	3"	3 SPA. @ 5" C.C.	#4 BARS LS	3 SPA. @ 5" C.C.
83"	53"	3"	3 SPA. @ 5" C.C.	#4 BARS LS	3 SPA. @ 5" C.C.
91"	58"	3"	2 SPA. @ 7 1/2" C.C.	#5 BARS LS	2 SPA. @ 7 1/2" C.C.



ELEVATION F-F

TABLE OF DIMENSIONS & ESTIMATED QUANTITIES - (ONE WALL)															
FOR PIPE SIZE 60" x 38" THRU 91" x 58"															
OPENING		EQ. ROUND PIPE DIA.	DIMENSIONS								EST. QTS.				
PIPE SIZE	AREA SQ. FT.		WALL				FOOTING				CONCRETE TOTAL CU. YDS.	REINF. STEEL TOT. LBS.			
"A"	"B"	"L"	"L ₁ "	"H"	"TH"	"VO"	"a"	"b"	"c"	"d"	"e"				
60"	38"	12.9	48"	11'-5"	7'-7"	6'-1"	7'-11"	5'-11"	1'-0"	11"	1'-11"	1'-0"	3'-10"	6.6	314
68"	43"	16.6	54"	12'-3"	8'-1"	6'-10"	8'-8"	6'-8"	1'-2"	1'-0"	2'-1"	1'-0"	4'-3"	8.0	366
76"	48"	20.5	60"	12'-11"	8'-7"	7'-7"	9'-6"	7'-5"	1'-3"	1'-1"	2'-2"	1'-1"	4'-6"	10.1	454
83"	53"	24.8	66"	14'-1"	9'-1"	8'-3"	10'-3"	8'-1"	1'-4"	1'-2"	2'-6"	1'-2"	5'-0"	12.6	536
91"	58"	29.5	72"	15'-1"	9'-7"	9'-0"	11'-1"	8'-10"	1'-6"	1'-3"	2'-9"	1'-3"	5'-6"	15.2	667

WINGWALLS DETAIL
(FOR PIPE SIZES 60" x 38" - 91" x 58" ON 90° SKEW)

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD WINGWALLS
VERTICAL OVAL
CONCRETE PIPES

D-PE-6A