

WINGWALLS, TOEWALLS AND PARAPETS

CLEAR HEIGHT	N BARS AT 1'-0" C. TO C.						P BARS AT 1'-0" C. TO C.						R BARS AT 1'-0" C. TO C.				M BARS			CLEAR HEIGHT
	SIZE	NO. (CONSTANT LENGTH)	* LENGTH	NO. (VARIABLE LENGTH)	LENGTH *		SIZE	NO. (CONSTANT LENGTH)	LENGTH	NO. (VARIABLE LENGTH)	LENGTH		SIZE	NO. (VARIABLE LENGTH)	LENGTH **		SIZE	NO. (CONSTANT LENGTH)	LENGTH	
					SHORTEST	LONGEST					SHORTEST	LONGEST			SHORTEST	LONGEST				
2'	#4	4	5'-4"	12	4'-4"	5'-2"	#4	20	3'-5"	4	1'-2"	1'-2"	#6	32	3'-6"	3'-6"	#6	14	X+2"	2'
3'	#4	4	6'-7"	24	4'-4"	6'-5"	#4	20	6'-4"	8	1'-9"	4'-2"	#6	56	3'-6"	3'-6"	#6	14	X+2"	3'
4'	#5	4	8'-2"	40	4'-5"	8'-2"	#4	20	9'-10"	12	2'-11"	7'-9"	#6	88	3'-6"	3'-6"	#6	14	X+2"	4'
5'	#5	4	9'-11"	44	4'-11"	9'-0"	#4	20	11'-3"	16	2'-11"	10'-4"	#6	96	3'-6"	3'-6"	#6	14	X+2"	5'
6'	#5	4	10'-2"	48	5'-5"	9'-11"	#4	24	12'-7"	16	2'-11"	10'-5"	#6	104	3'-6"	3'-6"	#6	14	X+2"	6'
7'	#5	4	11'-2"	56	5'-11"	11'-2"	#4	24	13'-11"	20	3'-0"	13'-0"	#6	120	3'-6"	3'-6"	#6	14	X+2"	7'
8'	#6	4	12'-4"	60	6'-6"	12'-3"	#4	28	15'-2"	24	3'-2"	13'-0"	#6	128	3'-8"	4'-0"	#6	14	X+2"	8'
9'	#6	4	13'-5"	64	7'-0"	13'-2"	#4	28	16'-6"	24	3'-4"	15'-7"	#6	136	3'-8"	4'-6"	#6	14	X+2"	9'
10'	#7	4	14'-7"	72	7'-8"	14'-7"	#4	32	17'-9"	24	3'-4"	15'-7"	#6	152	3'-8"	5'-0"	#6	14	X+2"	10'
11'	#7	4	15'-7"	76	8'-2"	15'-6"	#4	32	19'-1"	28	3'-4"	18'-2"	#6	160	3'-8"	5'-6"	#6	14	X+2"	11'
12'	#8	4	16'-8"	80	8'-9"	16'-6"	#4	36	20'-5"	28	3'-5"	18'-3"	#6	168	3'-8"	6'-0"	#6	14	X+2"	12'

* LENGTH INCLUDES VERTICAL LEG, HORIZONTAL LEG AND 180° STANDARD HOOK.

** LENGTH INCLUDES 2 STANDARD 180° HOOKS.

X = TOTAL BARREL WIDTH OUT TO OUT (DIMENSION "X" FROM CULVERT SHEET)

Y = TOTAL BARREL HEIGHT OUT TO OUT (DIMENSION "Y" FROM CULVERT SHEET)

GENERAL NOTES

- 1) SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION & SUPPLEMENTS THERETO.
- 2) MAINTAIN 3" CLEARANCE ON REINFORCEMENT AT FACE OF CONCRETE CAST AGAINST EARTH. MAINTAIN 2" CLEARANCE ON ALL OTHER REINFORCEMENT.
- 3) CHAMFER ALL EXPOSED EDGES $\frac{3}{4}$ ".
- 4) CONCRETE APRONS (SEPARATE STANDARD SHEETS) ARE REQUIRED AT ALL OUTLETS. THE ENGINEER MAY ALLOW AN EXCEPTION FOR BED ROCK CONDITIONS. TOEWALLS UNDER PARAPETS MAY BE MODIFIED AT OUTLETS AS SHOWN ON STANDARDS FOR CONCRETE APRONS.
- 5) PARAPETS AT INLETS SHALL BE CONSTRUCTED WITH A 4°/45° BEVEL.
- 6) CULVERT TO HAVE MINIMUM OF 1'-0" BELOW BOTTOM OF BASE OR CONCRETE PAVEMENT.

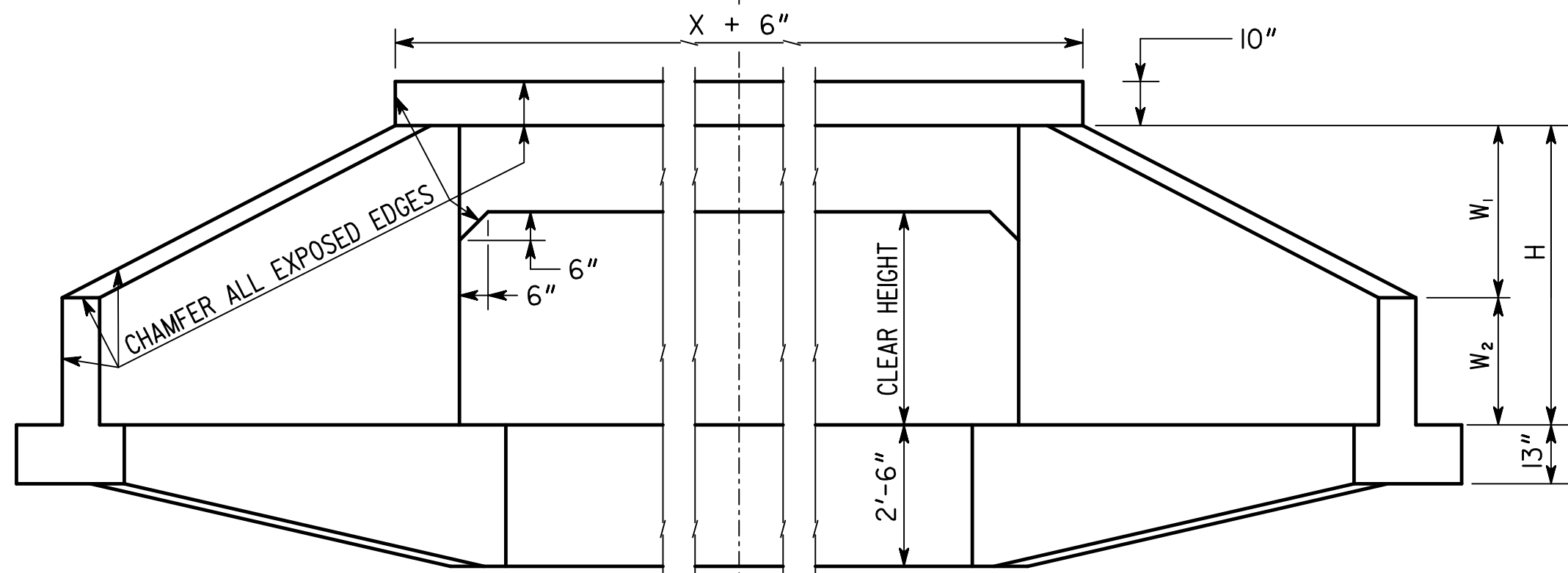
DESIGN DATA

SPECIFICATIONS - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, 2014
LOADING - HL-93

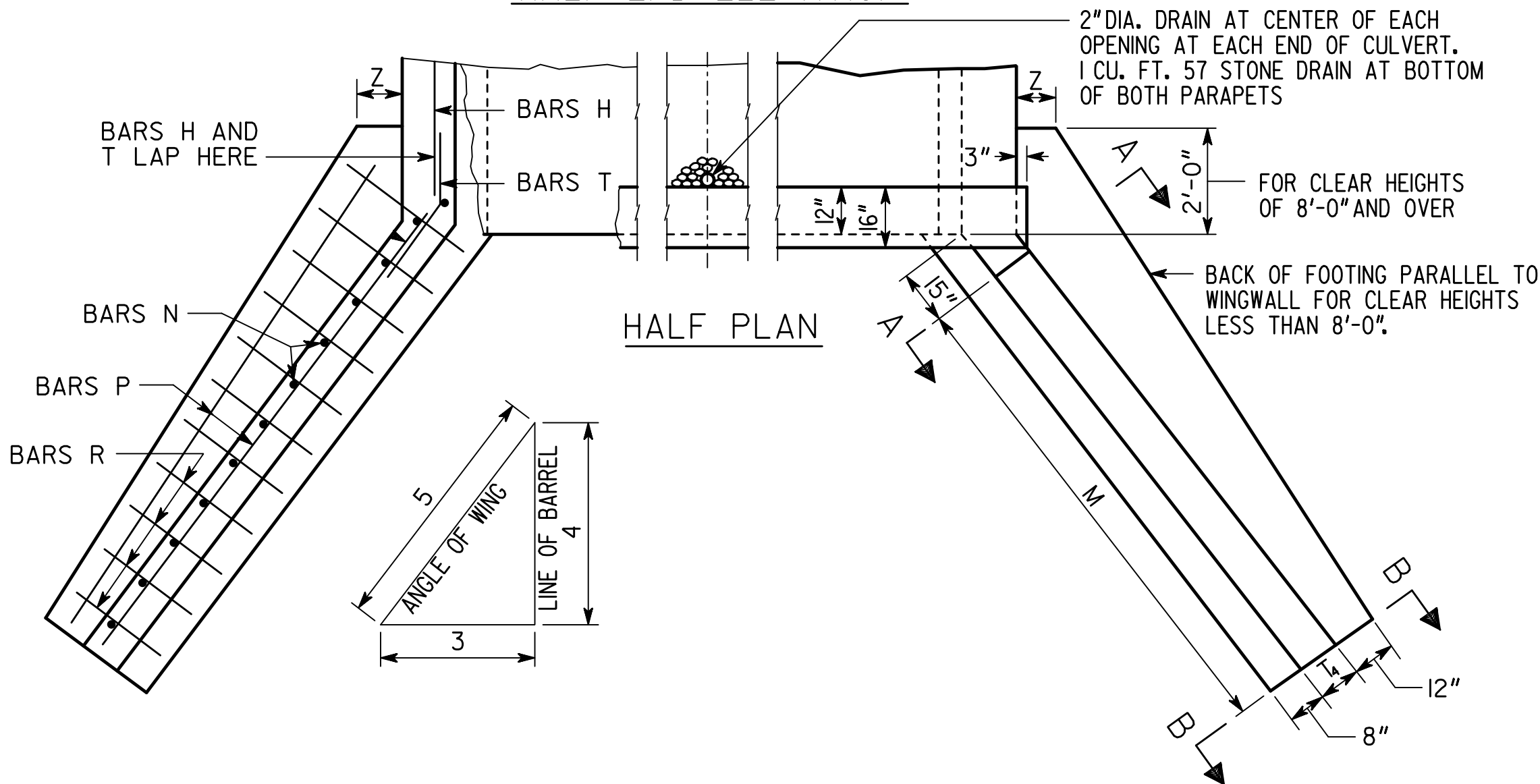
DIMENSIONS AND QUANTITIES										
CLEAR HEIGHT	H	W ₁	W ₂	S	M	T ₄	Z	CY CLASS AA CONCRETE	LBS. BAR REINF STEEL	CLEAR HEIGHT
2'	3'-1"	1'-1"	2'-0"	1'-1"	2'-8"	10"	-	3.3	270	2'
3'	4'-3 1/2"	2'-3 1/2"	2'-0"	2'-1 1/2"	5'-7"	10"	-	6.0	499	3'
4'	5'-9"	3'-9"	2'-0"	2'-7"	9'-2"	10"	-	9.2	795	4'
5'	6'-9"	4'-3"	2'-6"	2'-7"	10'-6"	10"	-	12.4	1083	5'
6'	7'-9"	4'-9"	3'-0"	2'-7"	11'-10"	10"	-	15.0	1246	6'
7'	8'-9 1/2"	5'-3 1/2"	3'-6"	2'-7 1/2"	13'-2"	10"	-	17.9	1507	7'
8'	9'-10 1/2"	5'-10 1/2"	4'-0"	2'-8 1/2"	14'-5"	12"	1'-0"	25.3	2070	8'
9'	10'-11"	6'-5"	4'-6"	2'-9"	15'-9"	12"	1'-6"	29.9	2345	9'
10'	11'-11"	6'-11"	5'-0"	2'-9"	17'-0"	12"	2'-0"	34.7	3277	10'
11'	12'-11"	7'-5"	5'-6"	2'-9"	18'-4"	12"	2'-6"	40.0	3676	11'
12'	13'-11 1/2"	7'-11 1/2"	6'-0"	2'-9 1/2"	19'-8"	12"	3'-0"	45.8	4788	12'

QUANTITIES GIVEN INCLUDE WINGWALL, WINGWALL FOOTING, AND WINGWALL TOEWALL FOR BOTH ENDS.

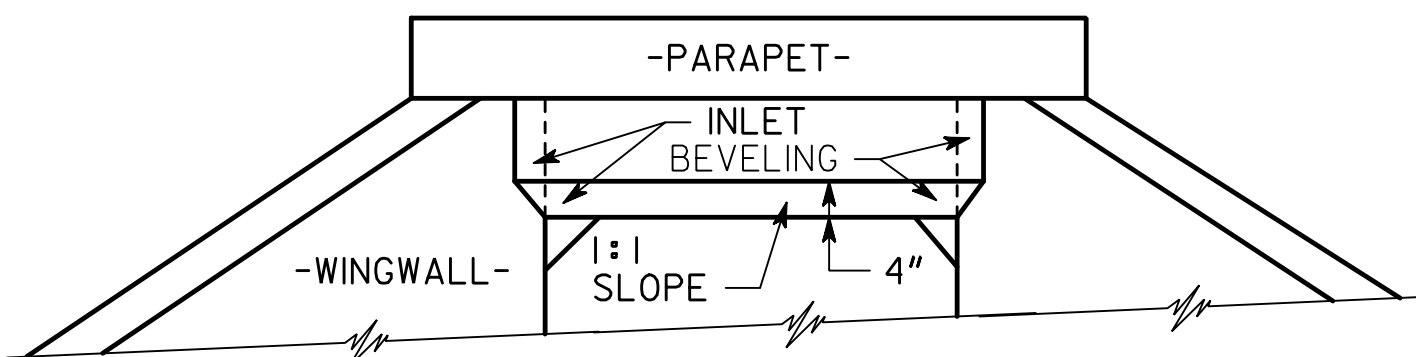
SYMMETRICAL ABOUT C CULVERT



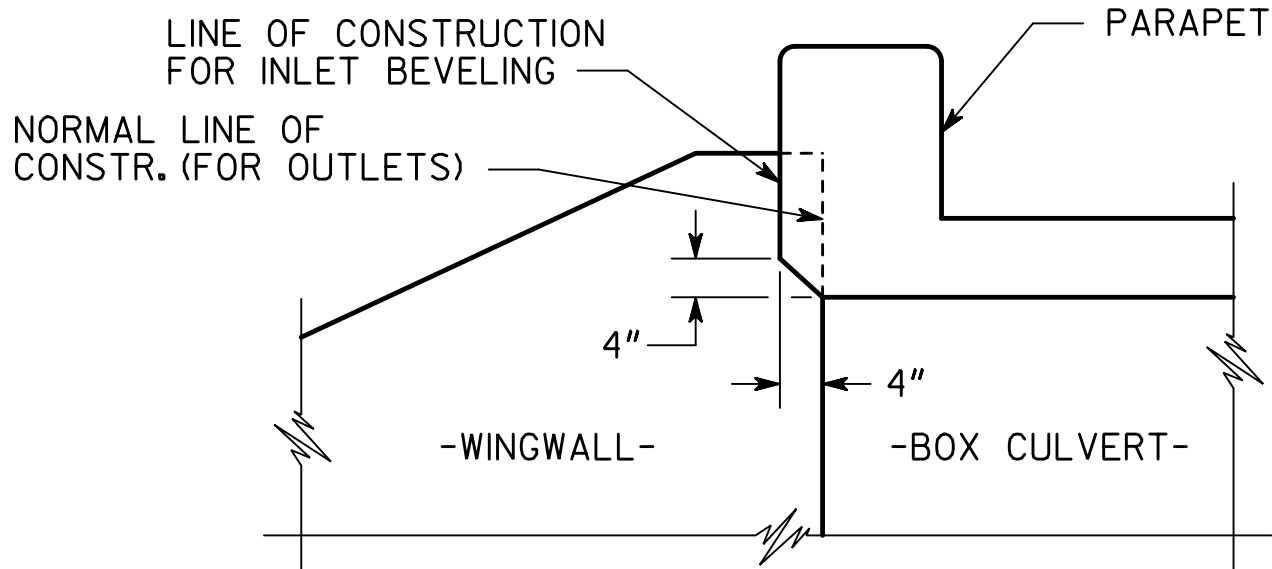
HALF END ELEVATION



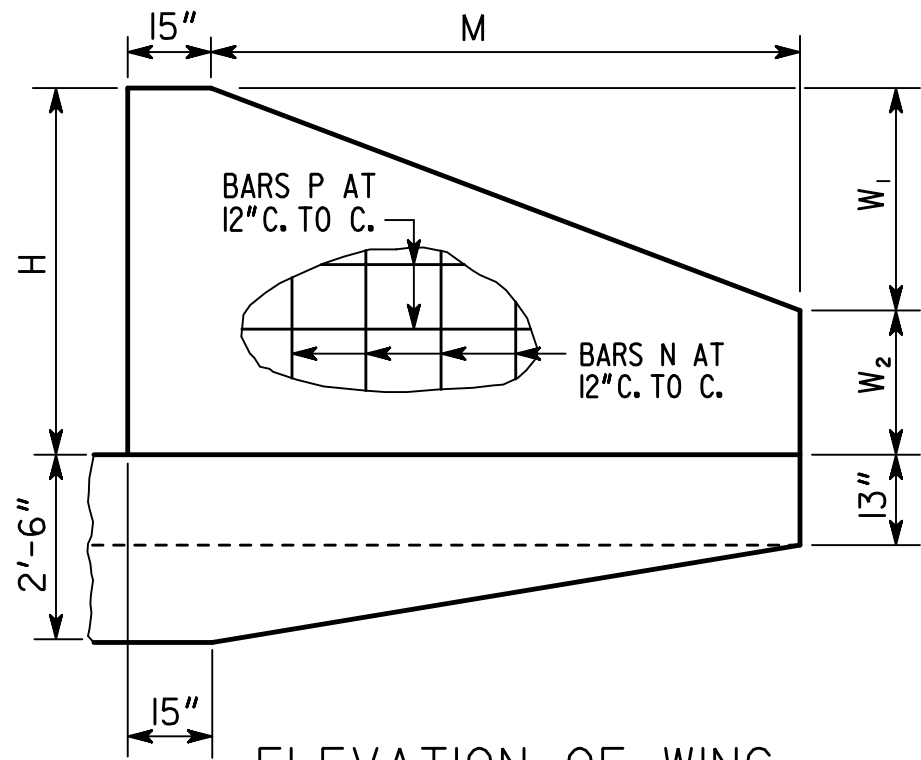
HALF PLAN



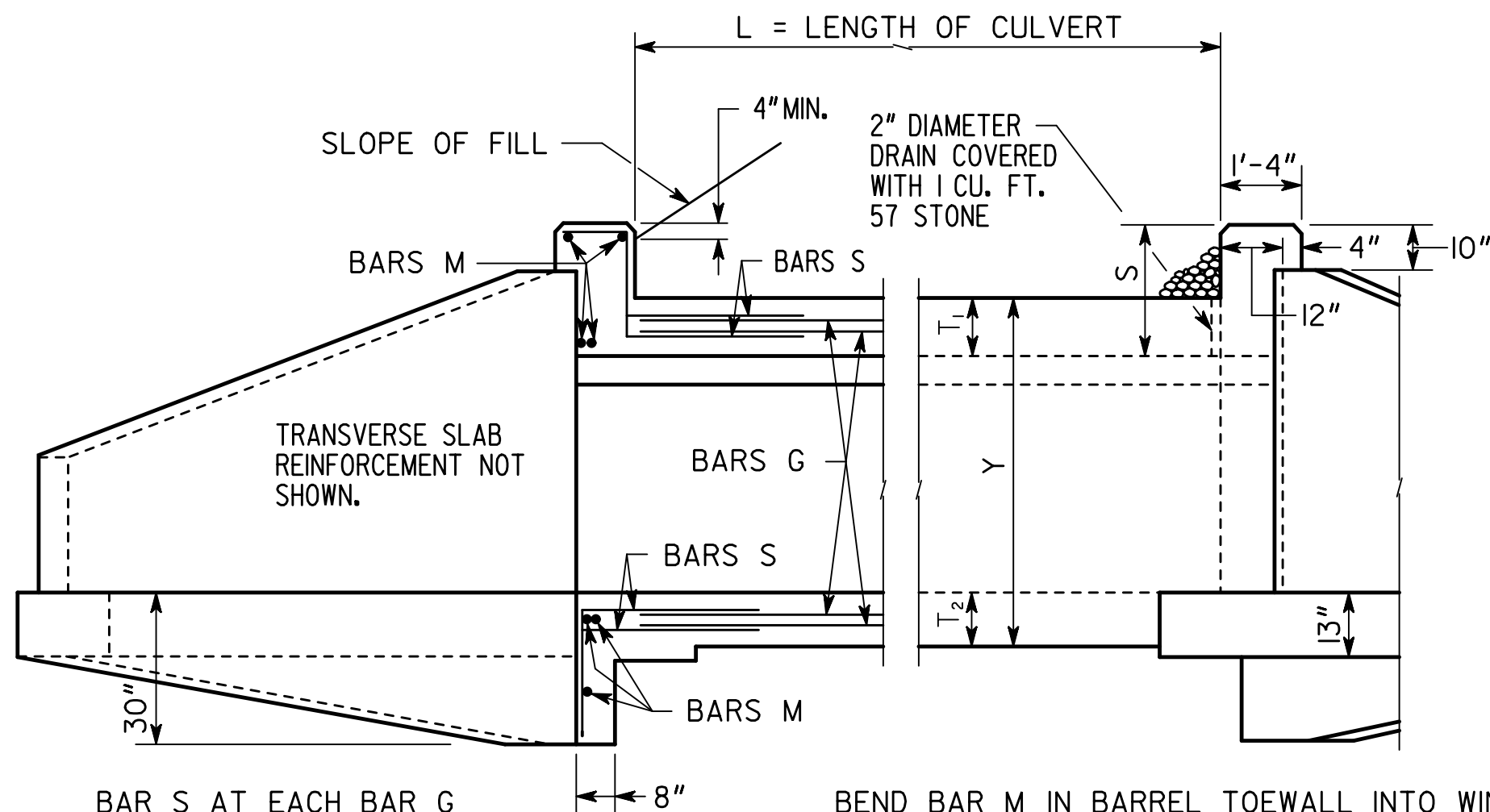
INLET BEVELING IS REQUIRED AT THE INLET OF ALL BOX CULVERTS EXTENDING FROM WINGWALL TO WINGWALL, AT TOP OF CULVERT AS SHOWN.



INLET BEVELING DETAIL



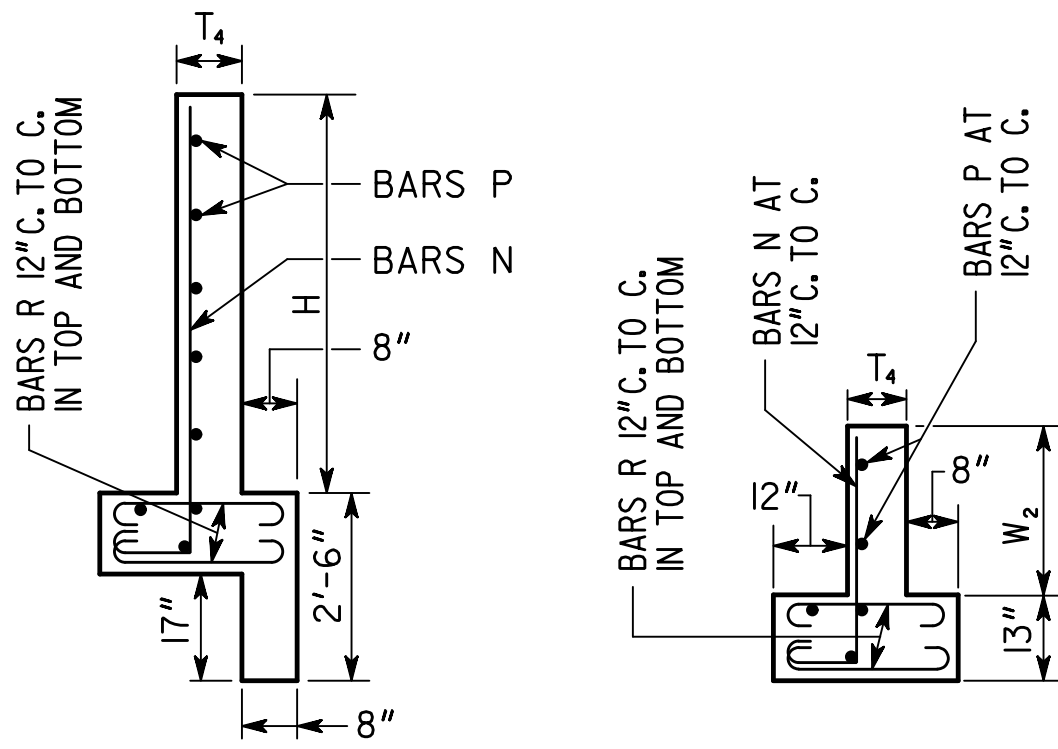
ELEVATION OF WING



PART SECTION

SIDE VIEW

PART ELEVATION

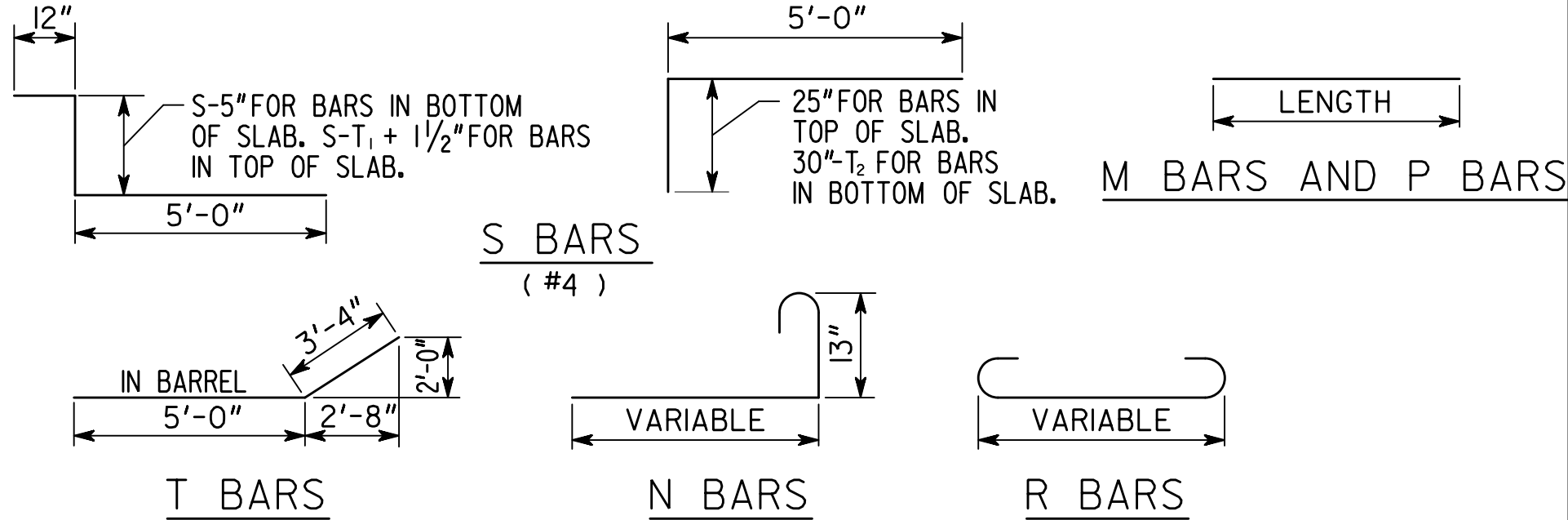


SECTION A-A

SECTION B-B

BARS S AND T ARE LAPPED WITH BARS G AND H, RESPECTIVELY.

T₁ = TOP SLAB THICKNESS
T₂ = BOTTOM SLAB THICKNESS
NOTE: SEE BOX CULVERT STANDARDS FOR DIMENSIONS.



S BARS
(#4)

T BARS
(#4)

N BARS

R BARS

		DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
		REVISION	STANDARD REINFORCED CONCRETE WINGWALLS, TOEWALLS AND PARAPETS FOR CONCRETE BOX CULVERTS	
			NO SCALE	SEPTEMBER 2017
BY	DES. WEI TRA. WEI CHK. YSK	(SUBMITTED) (APPROVED)	STATE DESIGN POLICY ENGINEER CHIEF ENGINEER	
				NUMBER 2404 SHEET 1 OF 1