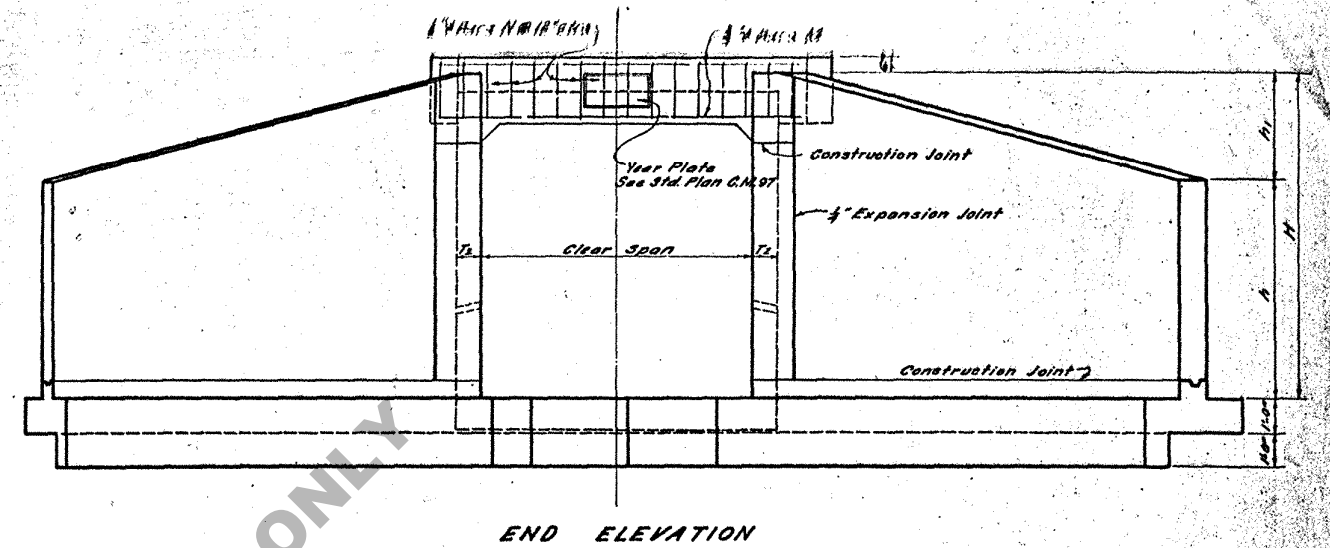
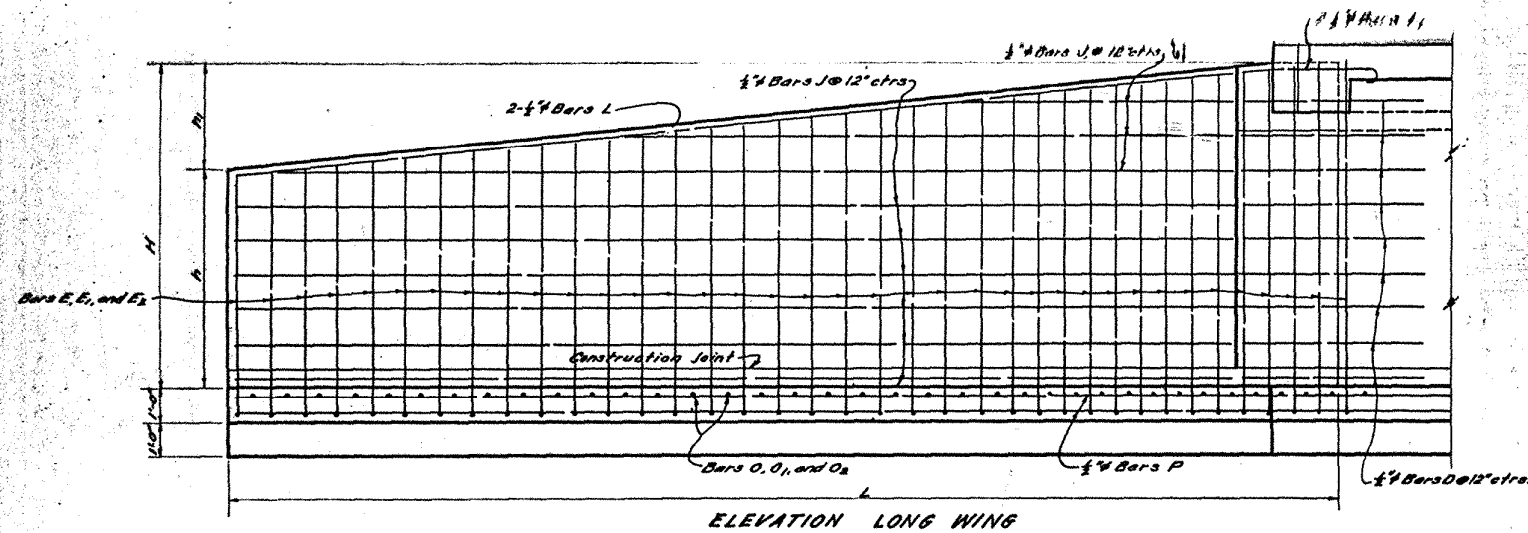
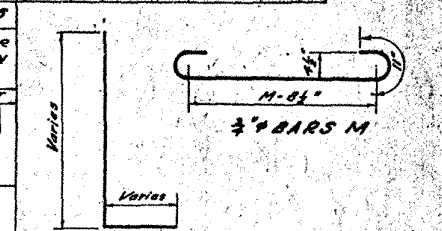


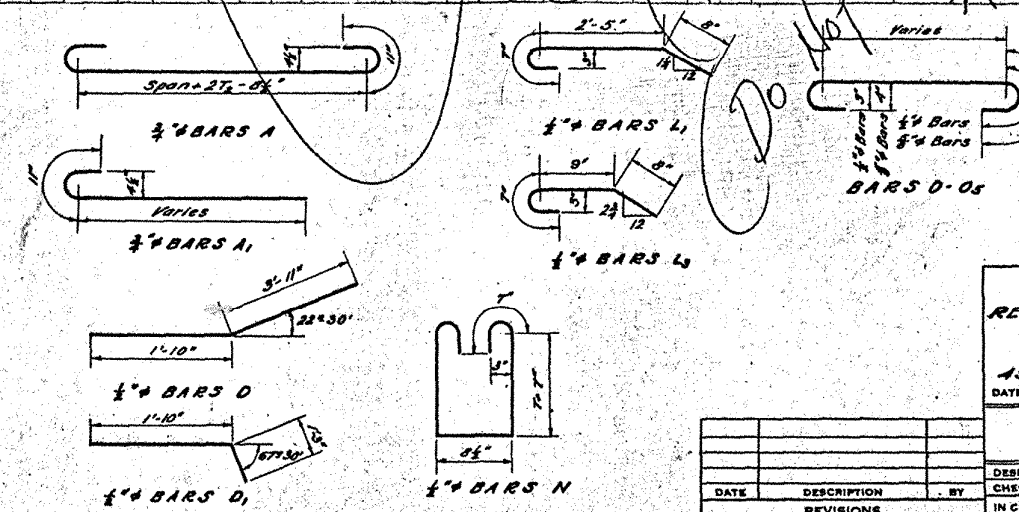


BILL OF STEEL FOR 44'-0" CULVERT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
OPENINGS		BARREL REINFORCEMENT																								WING REINFORCEMENT																								OPENINGS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
CLEAR SPAN	CLEAR HEIGHT	3" BARS A				3" BARS A ₁				3" BARS B				3" BARS C				3" BARS D				3" BARS D ₁				BARS E				BARS E ₁				BARS E ₂				BARS E ₃				BARS E ₄				BARS E ₅				3" BARS J				3" BARS J ₁				3" BARS J ₂				CLEAR SPAN	CLEAR HEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.	NO.	LGTH.	SPE.	VAR.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
FEET	FEET	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.</

OPENINGS		WINGS AND CURBS REINFORCEMENT																								OPENING																																	
CLEAR SPAN	CLEAR HEIGHT	#4 BARS J				#4 BARS L				#4 BARS L ₁				#4 BARS L ₂				#4 BARS M				#4 BARS N				BARS O				BARS O ₁				BARS O ₂				BARS O ₃				BARS O ₄				BARS O ₅				#4 BARS P				#4 BARS Q				CLEAR HEIGHT	CLEAR SPAN
		NO.	SHORT BAR	VAR.	LONG BAR	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.	NO.	LETH.																		
FEET	FEET	NO.	FT. IN.	VAR.	FE. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	FEET	FEET														
8	5		2-11	4	7-2		19-1		3-8		7-9		2-0		16-7 1/2		16-10 1/2		12		14		2-9		13		4-4																																
	6		1-4	4-3	5-7		22-7 1/2		3-8		4-9 1/2		2-0		16-7 1/2		16-10 1/2		12		14		3-0		13		4-9																																
	7		2-11	4-3	7-2		26-1 1/2		3-8		10-8 1/2		2-0		16-7 1/2		16-10 1/2		12		14		3-7		13		5-7 1/2																																
	8		3-0	4-3	11-6		29-7		3-8		12-2 1/2		2-0		16-7 1/2		16-10 1/2		12		14		3-10		13		5-3 1/2																																
9	6		3-3	4-8	7-6		22-11		3-8		9-5		2-0		10-13		17		5-0 1/2		12		3-4		13		4-9																																
	7		3-1	4-3	7-7		26-11 1/2		3-8		10-10 1/2		2-0		10-13		17		5-0 1/2		12		3-4		13		5-7 1/2																																
	8		3-4	4-3	11-10		29-11		3-8		12-4		2-0		10-13		17		5-0 1/2		12		3-4		13		5-3 1/2																																
	9		3-4	4-3	11-10		33-5		3-8		13-10 1/2		2-0		10-13		17		5-0 1/2		12		3-4		13		5-8																																
10	6		3-7	4-3	7-11		23-2 1/2		3-8		10-6		2-0		10-18		19		5-2 1/2		12		3-4		13		4-9																																
	7		3-8	4-3	7-11		26-0 1/2		3-8		11-0 1/2		2-0		10-18		19		5-2 1/2		12		3-4		13		5-7 1/2																																
	8		3-8	4-3	7-11		30-2 1/2		3-8		12-6		2-0		10-18		19		5-2 1/2		12		3-4		13		5-3 1/2																																
	9		3-8	4-3	12-2		33-0		3-8		15-1 1/2		2-0		10-18		19		5-2 1/2		12		3-4		13		5-8																																
	10		3-9	4-3	12-3		37-2 1/2		3-8		15-6		2-0		10-18		19		5-2 1/2		12		3-4		13		5-8																																



DIMENSIONS																												QUANTITIES				OPENING
OPENINGS			BARREL												WINGS AND CURBS													PER LIN. FT. BARREL		FOR 44"Ø CULVERT		
CLEAR SPAN	CLEAR HEIGHT	AREA	X (FT.)	T ₁	T ₂	H	L	L ₁	A	M	F	G	J	K	N	N ₁	R	R ₁	STEEL	CONCRETE	STEEL	CONCRETE	CLEAR HEIGHT	CLEAR SPAN								
FEET	FEET	SQ. FT.	FEET	IN.	IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	FE. IN.	LBS.	CU. YDS.	LBS.	CU. YDS.	FEET	FEET							
9	5	40	14	11	8½	6-5	22-1½	8-3½	4-3½	2-1½	15-5½	0-9	0-9	1-7	1-5	7	0-7½	3-5	6-0	121.29	0.9110			5								
	6	48	14	11	8½	7-5	25-10	10-0½	4-11½	2-5½	15-5½	0-11	0-10	2-0	1-7	7½	0-10	3-9½	7-0	125.55	0.9635			6								
	7	56	14	11	8½	8-5	29-3½	12-1½	5-7½	2-9½	15-5½	1-1	1-0	2-2	1-10	9½	0-10½	4-5½	7-4½	129.47	1.0160			7								
	8	64	14	11	8½	9-5	32-9½	13-7½	6-3½	3-1½	15-5½	1-3	1-1	2-7	2-0	10	1-0½	4-10	8-4½	133.59	1.0685			8								
	9	72	14	11	8½	10-5	36-1½	15-9½	7-0	3-6	17-0½	1-5	1-2	2-10	2-2	10½	1-1½	5-2½	9-4½	140.83	1.1214			9								
	10	80	14	11	8½	11-5	40-1½	18-0½	8-0	4-0	18-0½	1-7	1-4	3-2	2-4	11½	1-3½	5-7½	9-4½	141.12	1.15003			10								
	11	88	14	11	8½	12-5	44-1½	20-0½	9-0	4-6	19-0½	1-9	1-6	3-6	2-6	12½	1-5½	6-0½	10-0½	146.72	1.1808			11								
	12	96	14	11	8½	13-5	48-1½	22-0½	10-0	5-0	20-0½	1-11	1-8	4-0	3-0	14	1-7½	6-6½	11-0½	150.00	1.2120			12								
10	5	40	14	11	8½	6-5	22-1½	8-3½	4-3½	2-1½	15-5½	0-9	0-9	1-7	1-5	7	0-7½	3-5	6-0	121.29	0.9110			5								
	6	48	14	11	8½	7-5	25-10	10-0½	4-11½	2-5½	15-5½	0-11	0-10	2-0	1-7	7½	0-10	3-9½	7-0	125.55	0.9635			6								
	7	56	14	11	8½	8-5	29-3½	12-1½	5-7½	2-9½	15-5½	1-1	1-0	2-2	1-10	9½	0-10½	4-5½	7-4½	129.47	1.0160			7								
	8	64	14	11	8½	9-5	32-9½	13-7½	6-3½	3-1½	15-5½	1-3	1-1	2-7	2-0	10	1-0½	4-10	8-4½	133.59	1.0685			8								
	9	72	14	11	8½	10-5	36-1½	15-9½	7-0	3-6	17-0½	1-5	1-2	2-10	2-2	10½	1-1½	5-2½	9-4½	140.83	1.1214			9								
	10	80	14	11	8½	11-5	40-1½	18-0½	8-0	4-0	18-0½	1-7	1-4	3-2	2-4	11½	1-3½	5-7½	9-4½	141.12	1.15003			10								
	11	88	14	11	8½	12-5	44-1½	20-0½	9-0	4-6	19-0½	1-9	1-6	3-6	2-6	12½	1-5½	6-0½	10-0½	146.72	1.1808			11								
	12	96	14	11	8½	13-5	48-1½	22-0½	10-0	5-0	20-0½	1-11	1-8	4-0	3-0	14	1-7½	6-6½	11-0½	150.00	1.2120			12								



BARS E-E ₃															
OPNS.				VARIATIONS											
SPAN	CLEAR	HEIGHT	NO.	BARE		BARE		BARE		BARE		BARE		BARE	
				HOPE	HOPE	HOPE	HOPE	HOPE	HOPE	HOPE	HOPE	HOPE	HOPE		
FE.	TH.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
8	5	1	28							18	58				
	6	1	28							18	58				
	7	1	28							18	58				
	8	1	28			18				18	58	18	48		
	9	1	28							18	58				
9	5	1	28							18	58				
	6	1	28							18	58				
	7	1	28							18	58				
	8	1	28			18				18	58	18	48		
	9	1	28							18	58	18	48		
10	5	1	28							18	58				
	6	1	28							18	58				
	7	1	28							18	58				
	8	1	28			18				18	58	18	48		
	9	1	28			18				18	58	18	48		
10	1	28			18	1			18	58	18	48	18	48	

STANDARD PLAN
REINFORCED CONCRETE BOX CULVERTS
 8' TO 10' CLEAR SPAN
 5' TO 10' CLEAR HEIGHT
 45° CROSSING
 4:1 SLOPE
 N20-S16 LOADING

DESIGNED: _____
 CHECKED: _____
 IN CHARGE OF: _____

DATE: _____
 DESCRIPTION: _____
 REVISIONS: _____

DESIGNED: _____
 CHECKED: _____
 IN CHARGE OF: _____

DATE: _____
 DESCRIPTION: _____
 REVISIONS: _____