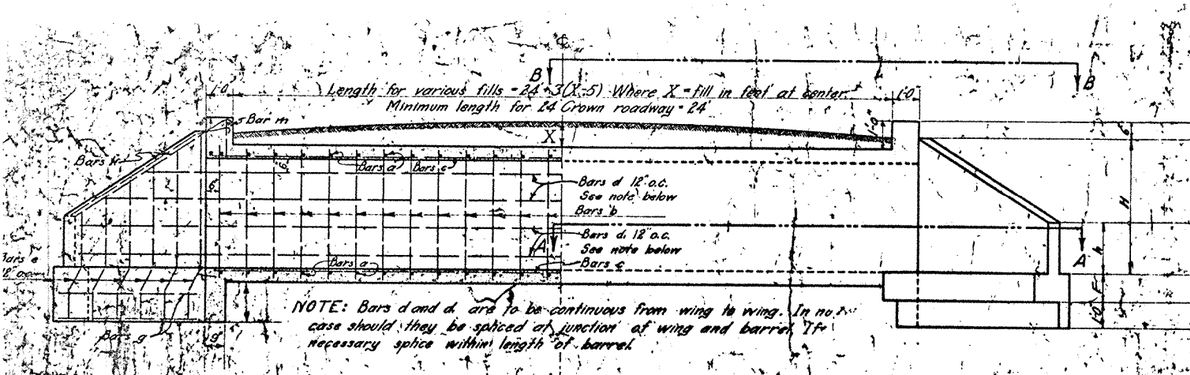
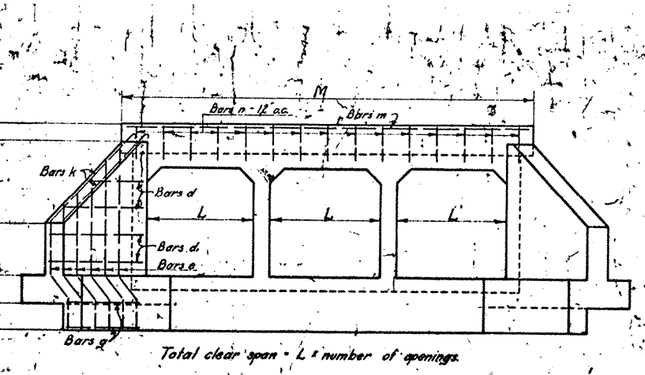
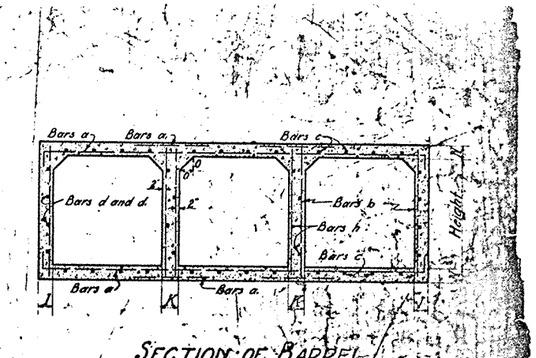


HALF SECTION ON ℄

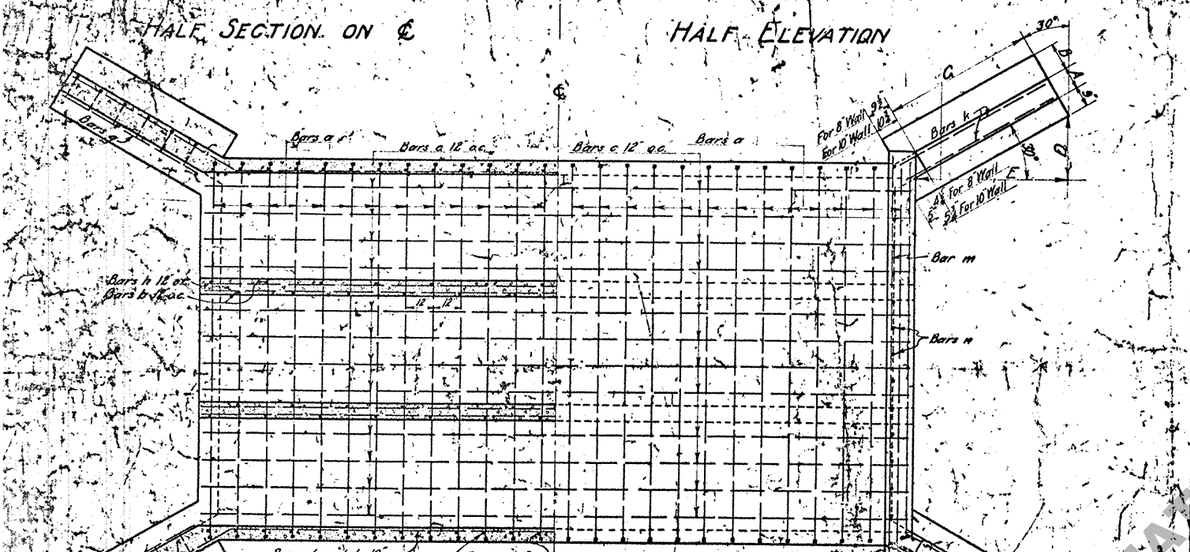


HALF ELEVATION

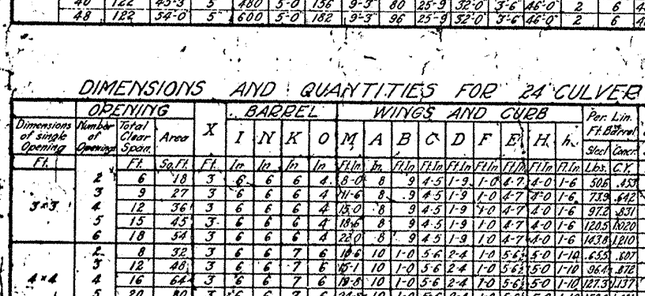
END ELEVATION



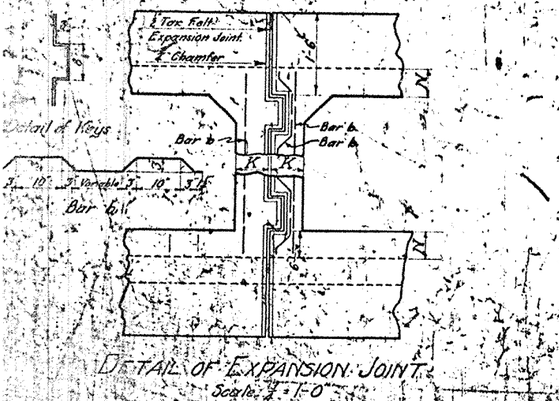
SECTION OF BARREL



SECTION AA
SHOWING REINFORCING



SECTION BB
SHOWING REINFORCING



DETAIL OF EXPANSION JOINT
Scale: ¼" = 1'-0"
To be used in large culverts when so directed by Engineer

REINFORCEMENT FOR 24' CULVERT

OPENING		BARREL REINFORCEMENT ALL ½" ⌀ BARS																WING AND CURB REINFORCEMENT ALL ½" ⌀ BARS													
Clear Height	Total Clear Span	Bars a			Bars a.		Bars b		Bars c		Bars d				Bars d.		Bars h		Bars m		Bars n		Bars e				Bars g		Bars k	
		No.	Length	Spacing Ins.	No.	Length	No.	Length	No.	Length	Short Bar	Variation	Long Bar	No. of each length	No.	Length	No.	Length	No.	Length	No.	Length	Short Bar	Variation	Long Bar	No. of each length	No.	Length	No.	Length
3	6	70	8'-3"	9"	70	2'-0"	78	3'-9"	12	25'-9"	31'-3"	3'-6"	34'-9"	2	2	34'-10"	5	25'-9"	2	7'-9"	16	1'-3"	3'-6"	7"	5'-0"	4	4	4'-9"	8	6'-0"
	9	70	11'-9"	9"	140	2'-0"	104	3'-9"	18	25'-9"	31'-3"	3'-6"	34'-9"	2	2	34'-10"	6	25'-9"	2	11'-3"	24	1'-3"	4'-5"	7"	6'-0"	4	4	4'-9"	8	6'-0"
	12	70	15'-3"	9"	210	2'-0"	130	3'-9"	24	25'-9"	31'-3"	3'-6"	34'-9"	2	2	34'-10"	8	25'-9"	2	14'-9"	30	1'-3"	4'-5"	7"	6'-0"	4	4	4'-9"	8	6'-0"
	15	70	18'-9"	9"	280	2'-0"	156	3'-9"	30	25'-9"	31'-3"	3'-6"	34'-9"	2	2	34'-10"	12	25'-9"	2	18'-3"	38	1'-3"	4'-5"	7"	6'-0"	4	4	4'-9"	8	6'-0"
	18	70	22'-3"	9"	350	2'-0"	182	3'-9"	36	25'-9"	31'-3"	3'-6"	34'-9"	2	2	34'-10"	15	25'-9"	2	21'-9"	44	1'-3"	4'-5"	7"	6'-0"	4	4	4'-9"	8	6'-0"
4	8	70	10'-4"	9"	70	2'-9"	78	4'-9"	16	25'-9"	31'-3"	3'-6"	34'-9"	2	4	37'-0"	4	25'-9"	2	10'-3"	22	1'-3"	4'-3"	7"	7'-2"	4	4	5'-10"	8	7'-5"
	12	70	14'-11"	9"	140	2'-9"	104	4'-9"	24	25'-9"	31'-3"	3'-6"	34'-9"	2	4	37'-0"	8	25'-9"	2	14'-9"	30	1'-3"	4'-3"	7"	7'-2"	4	4	5'-10"	8	7'-5"
	16	70	19'-6"	9"	210	2'-9"	130	4'-9"	32	25'-9"	31'-3"	3'-6"	34'-9"	2	4	37'-0"	12	25'-9"	2	19'-5"	40	1'-3"	4'-3"	7"	7'-2"	4	4	5'-10"	8	7'-5"
	20	70	24'-4"	9"	280	2'-9"	156	4'-9"	40	25'-9"	31'-3"	3'-6"	34'-9"	2	4	37'-0"	16	25'-9"	2	24'-0"	50	1'-3"	4'-3"	7"	7'-2"	4	4	5'-10"	8	7"
	24	70	28'-8"	9"	350	2'-9"	182	4'-9"	48	25'-9"	31'-3"	3'-6"	34'-9"	2	4	37'-0"	20	25'-9"	2	28'-7"	58	1'-3"	4'-3"	7"	7'-2"	4	4	5'-10"	8	7"
5	10	78	12'-7"	8"	76	3'-3"	78	5'-9"	20	25'-9"	31'-3"	3'-6"	38'-3"	2	4	39'-8"	5	25'-9"	2	12'-4"	26	1'-3"	4'-9"	7"	8'-3"	4	4	7'-0"	8	8"
	15	78	18'-3"	8"	152	3'-3"	104	5'-9"	30	25'-9"	31'-3"	3'-6"	38'-3"	2	4	39'-8"	10	25'-9"	2	18'-0"	38	1'-3"	4'-9"	7"	8'-3"	4	4	7'-0"	8	8"
	20	78	23'-11"	8"	228	3'-3"	130	5'-9"	40	25'-9"	31'-3"	3'-6"	38'-3"	2	4	39'-8"	15	25'-9"	2	23'-8"	48	1'-3"	4'-9"	7"	8'-3"	4	4	7'-0"	8	8"
	25	78	29'-7"	8"	304	3'-3"	156	5'-9"	50	25'-9"	31'-3"	3'-6"	38'-3"	2	4	39'-8"	20	25'-9"	2	29'-4"	60	1'-3"	4'-9"	7"	8'-3"	4	4	7'-0"	8	8"
	30	78	35'-3"	8"	380	3'-3"	182	5'-9"	60	25'-9"	31'-3"	3'-6"	38'-3"	2	4	39'-8"	25	25'-9"	2	35'-0"	70	1'-3"	4'-9"	7"	8'-3"	4	4	7'-0"	8	8"
6	12	88	14'-7"	7"	86	3'-9"	78	6'-11"	24	25'-9"	31'-6"	3'-6"	38'-6"	2	6	41'-6"	6	25'-9"	2	14'-4"	30	1'-4"	5'-3"	7"	9'-4"	4	4	4'-0"	8	8"
	18	88	21'-3"	7"	172	3'-9"	104	6'-11"	36	25'-9"	31'-6"	3'-6"	38'-6"	2	6	41'-6"	12	25'-9"	2	21'-0"	44	1'-4"	5'-3"	7"	9'-4"	4	4	4'-0"	8	8"
	24	88	27'-11"	7"	258	3'-9"	130	6'-11"	48	25'-9"	31'-6"	3'-6"	38'-6"	2	6	41'-6"	18	25'-9"	2	27'-8"	56	1'-4"	5'-3"	7"	9'-4"	4	4	4'-0"	8	8"
	30	88	34'-7"	7"	344	3'-9"	156	6'-11"	60	25'-9"	31'-6"	3'-6"	38'-6"	2	6	41'-6"	24	25'-9"	2	34'-4"	70	1'-4"	5'-3"	7"	9'-4"	4	4	4'-0"	8	8"
	36	88	41'-3"	7"	430	3'-9"	182	6'-11"	72	25'-9"	31'-6"	3'-6"	38'-6"	2	6	41'-6"	36	25'-9"	2	41'-0"	84	1'-4"	5'-3"	7"	9'-4"	4	4	4'-0"	8	8"
8	16	122	19'-0"	5"	120	5'-0"	78	9'-3"	32	25'-9"	32'-0"	3'-6"	46'-0"	2	6	46'-8"	8	25'-9"	2	18'-5"	38	1'-6"	6'-3"	7"	11'-6"	4	4	10'-6"	8	8"
	24	122	27'-8"	5"	240	5'-0"	104	9'-3"	48	25'-9"	32'-0"	3'-6"	46'-0"	2	6	46'-8"	16	25'-9"	2	27'-2"	56	1'-6"	6'-3"	7"	11'-6"	4	4	10'-6"	8	8"
	32	122	36'-6"	5"	360	5'-0"	130	9'-3"	64	25'-9"	32'-0"	3'-6"	46'-0"	2	6	46'-8"	24	25'-9"	2	35'-11"	74	1'-6"	6'-3"	7"	11'-6"	4	4	10'-6"	8	8"
	40	122	45'-3"	5"	480	5'-0"	156	9'-3"	80	25'-9"	32'-0"	3'-6"	46'-0"	2	6	46'-8"	32	25'-9"	2	44'-8"	90	1'-6"	6'-3"	7"	11'-6"	4	4	10'-6"	8	8"
	48	122	54'-0"	5"	600	5'-0"	182	9'-3"	96	25'-9"	32'-0"	3'-6"	46'-0"	2	6	46'-8"	40	25'-9"	2	53'-5"	108	1'-6"	6'-3"	7"	11'-6"	4	4	10'-6"	8	8"

DIMENSIONS AND QUANTITIES FOR 24' CULVERT

Dimensions of single Opening	Number of Openings	Total Clear Span	Area	X	BARREL I	BARREL N	BARREL K	BARREL O	WINGS AND CURB M	A	B	C	D	F	E	H	h	Per Lin. Ft. Barrel Steel	Per Lin. Ft. Barrel Concr.	TOTAL QUANTITIES Steel	TOTAL QUANTITIES Concr.
Ft.		Ft.	Sq. Ft.	Ft.	In.	In.	In.	In.	Ft. In.	In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Lbs.	C.Y.	Lbs.	C.Y.
3×3	2	6	18	3	6	6	6	4	8'-0"	8	9	4'-5"	1'-9"	1'-0"	4'-7"	4'-0"	1'-6"	508	.853	1526	16.26
	3	9	27	3	6	6	6	4	11'-6"	8	9	4'-5"	1'-9"	1'-0"	4'-7"	4'-0"	1'-6"	739	.942	2167	21.73
	4	12	36	3	6	6	6	4	15'-0"	8	9	4'-5"	1'-9"	1'-0"	4'-7"	4'-0"	1'-6"	972	.931	2805	27.22
	5	15	45	3	6	6	6	4	18'-6"	8	9	4'-5"	1'-9"	1'-0"	4'-7"	4'-0"	1'-6"	1205	1.020	3445	32.69
	6	18	54	3	6	6	6	4	22'-0"	8	9	4'-5"	1'-9"	1'-0"	4'-7"	4'-0"	1'-6"	1438	1.210	4084	38.16
4×4	2	8	32	3	6	6	7	6	10'-6"	10	1'-0"	5'-6"	2'-4"	1'-0"	5'-6"	5'-0"	1'-10"	655	.807	1997	23.91
	3	12	48	3	6	6	7	6	15'-1"	10	1'-0"	5'-6"	2'-4"	1'-0"	5'-6"	5'-0"	1'-10"	964	.872	2817	30.52
	4	16	64	3	6	6	7	6	19'-8"	10	1'-0"	5'-6"	2'-4"	1'-0"	5'-6"	5'-0"	1'-10"	1273	1.037	3639	38.13
	5	20	80	3	6	6	7	6	24'-3"	10	1'-0"	5'-6"	2'-4"	1'-0"	5'-6"	5'-0"	1'-10"	1582	1.201	4461	45.74
	6	24	96	3	6	6	7	6	28'-10"	10	1'-0"	5'-6"	2'-4"	1'-0"	5'-6"	5'-0"	1'-10"	1889	1.366	5284	53.35
5×5	2	10	50	3	7	6	8	6	11'-7"	10	1'-3"	6'-8"	2'-11"	1'-3"	6'-7"	6'-0"	2'-3"	1411	.796	2577	31.00
	3	15	75	3	7	6	8	6	18'-3"	10	1'-3"	6'-8"	2'-11"	1'-3"	6'-7"	6'-0"	2'-3"	1752	1.139	3706	40.90
	4	20	100	3	7	6	8	6	25'-11"	10	1'-3"	6'-8"	2'-11"	1'-3"	6'-7"	6'-0"	2'-3"	2154	1.481	4831	50.87
	5	25	125	3	7	6	8	6	29'-7"	10	1'-3"	6'-8"	2'-11"	1'-3"	6'-7"	6'-0"	2'-3"	2556	1.824	5951	60.70
	6	30	150	3	7	6	8	6	35'-3"	10	1'-3"	6'-8"	2'-11"	1'-3"	6'-7"	6'-0"	2'-3"	2956	2.169	7410	70.80
6×6	2	12	72	3	7	7	8	6	14'-7"	10	1'-6"	7'-9"	3'-3"	1'-3"	7'-6"	7'-1"	2'-7"	1063	1.016	3190	50.57
	3	18	108	3	7	7	8	6	21'-3"	10	1'-6"	7'-9"	3'-3"	1'-3"	7'-6"	7'-1"	2'-7"	1553	1.436	4521	63.27
	4	24	144	3	7	7	8	6	27'-11"	10	1'-6"	7'-9"	3'-3"	1'-3"	7'-6"	7'-1"	2'-7"	2103	1.886	5850	76.[illegible]
	5	30	180	3	7	7	8	6	34'-7"	10	1'-6"	7'-9"	3'-3"	1'-3"	7'-6"	7'-1"	2'-7"	2642	2.336	7195	77.7[illegible]
	6	36	216	3	7	7	8	6	41'-3"	10	1'-6"	7'-9"	3'-3"	1'-3"	7'-6"	7'-1"	2'-7"	3182	2.791	8830	98.6[illegible]
8×8	2	16	128	3	9	9	9	6	18'-5"	10	1'-9"	10'-2"	4'-8"	1'-6"	9'-2"	9'-3"	3'-5"	1931	[illegible]	[illegible]	6[illegible]
	3	24	192	3	9	9	9	6	27'-2"	10	1'-9"	10'-2"	4'-8"	1'-6"	9'-2"	9'-3"	3'-5"	[illegible]	[illegible]	[illegible]	[illegible]
	4	32	256	3	9	9	9	6	34'-2"	10	1'-9"	10'-2"	4'-8"	1'-6"	9'-2"	9'-3"	3'-5"	[illegible]	[illegible]	[illegible]	[illegible]
	5	40	320	3	9	9	9	6	44'-11"	10	1'-9"	10'-2"	4'-8"	1'-6"	9'-2"	9'-3"	3'-5"	[illegible]	[illegible]	[illegible]	[illegible]
	6	48	384	3	9	9	9	6	53'-8"	10	1'-9"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

GENERAL NOTES & DESIGN DATA

General Specifications:- La. State Highway Commission
Concrete: All class "A", 1:6 mix.
Steel: All ½" ⌀ deformed bars.
All exposed corners to be chamfered 3 in.
All exposed surfaces to be given a smooth finish.
Design Loads:-
Concentrated load = 15 kips, typical truck with 30% impact allowance distributed as specified in general specifications.
Entire weight of all fill above culvert is considered as active.
All dimensions relating to bars are to centers of bars.
Bars at splices are to be lapped 2'-0".
Reinforcing bars should be wired at intersections and properly secured against displacement during placing of concrete.
Expansion joints to be used only when number of openings are in excess of number provided in table of quantities. Special instructions will be given by Bridge Engineer.

MULTIPLE
CONCRETE BOX CULVERTS
FLARING WING WALLS
6FT TO 30FT SPANS
6FT TO 30FT HEIGHTS

B-2-46

FOR INFORMATION ONLY