

J-540

STATE	FEDERAL AID PROJECT NO.	STATE	FEDERAL AID PROJECT NO.
TEXAS	C-276-5-10 & C-236-3-11	TEXAS	C-276-5-10 & C-236-3-11
22	Zavala	22	Zavala

305210

STATE OF TEXAS STATE HIGHWAY DEPARTMENT PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

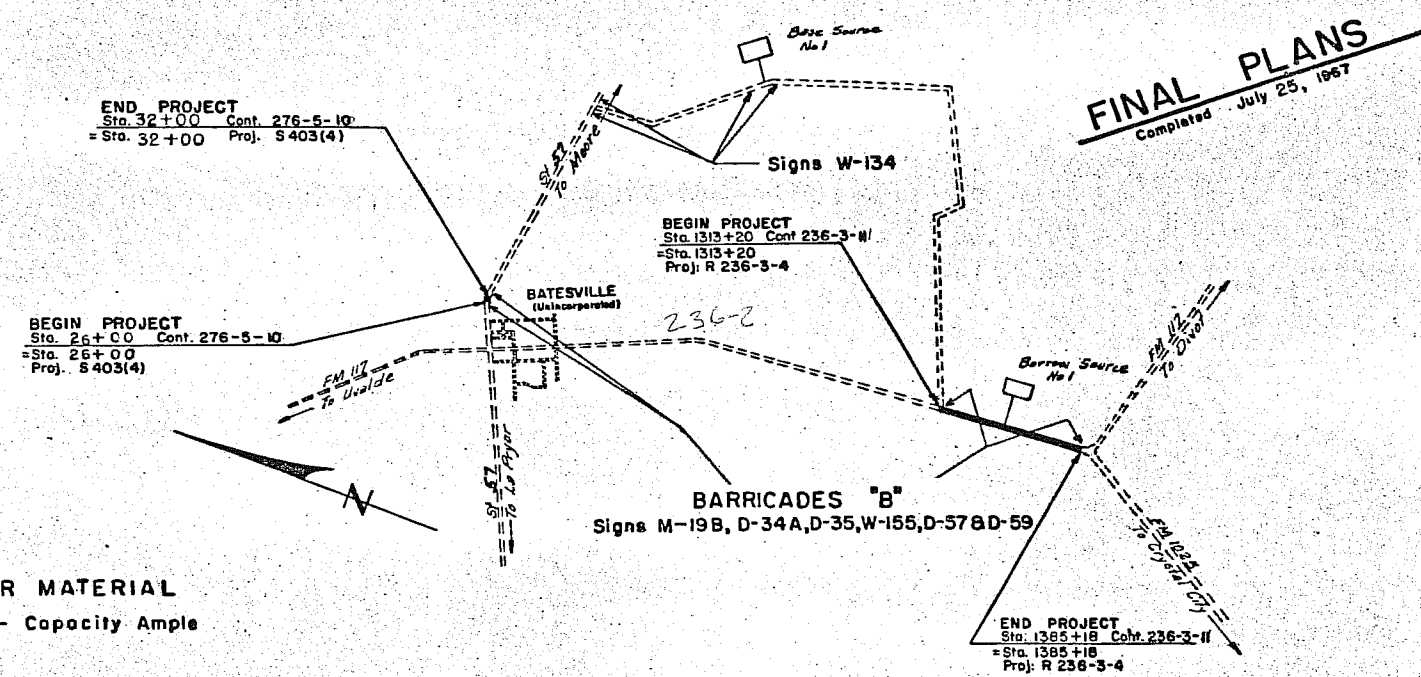
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL CROSS SECTION
3A-3F	GENERAL NOTES
4	ESTIMATE AND QUANTITY
5	STRUCTURE SUMMARY
6-10	PLAN PROFILE
11	HAUL DIAGRAM
12	DRAINAGE LAYOUT
13	CULVERT LAYOUTS
14-16	BRIDGE LAYOUTS
	STRUCTURAL DETAILS AND STANDARDS
17	SLAB EXTENSION DETAIL
18	BENT EXTENSION DETAIL
19	BRIDGE LENGTHENING DETAIL
20	CULVERT EXTENSION DETAIL
21	SC-15°-A
22	FW-15°
23	MC 6-1
24	MC 9-2
25	MCW-F1
26	MCW-F2
27	CG 0-26-30
28	BCG 0-26-30
29	BAS-65A Mod.
30	TRAFFIC RAIL (TYTI)
31	GF (TD)-65
32	CP (MOD)
33	RR-B & RR-9
34	GF & DA-62 (Sp1)
35-36	BW-61- (1) & (2)

STATE PROJECT
C 276-5-10 & C 236-3-11
PLAN: 1 IN. = 100 FT.
PROFILE: 1 IN. HOR. = 100 FT., 1 IN. VERT. = 10 FT.
CROSS-SECTIONS: 1 IN. HOR. AND VERT. = 5 FT.
OTHERS AS NOTED.
NET LENGTH OF PROJECT = 7,798 FT. = 1.474 MI.
ST. 57 Bridges Rural = 125.00 FT. = 0.023 MI.
Roadway Rural = 475.00 FT. = 0.089 MI.
F.M. 117 Bridges Rural = 239.83 FT. = 0.045 MI.
Roadway Rural = 6,958.17 FT. = 1.317 MI.

ZAVALA COUNTY
ST. HIGHWAY 57 From 0.5 Mi. East of F.M. 117 at Batesville To 0.1 Mi. East
Leona River Bridge & Approaches
F.M. HIGHWAY 117 From 4.8 Mi. South of Batesville To 1.4 Mi. South
Grading, Structures, Base, & Surface

DETOUR NOTE:
See Plan Sheet No. 2 & 3B

BARRICADES:
Barricades as shown on plans to be furnished by the contractor. Other barricades and signs as required or as directed by the Engineer to be furnished by the Contractor.



DELIVERY POINT FOR MATERIAL
La Pryor - S. A. U. & G. R.R. - Capacity Ample

Information shown is approximate. The Contractor shall make his own arrangements for trackage facilities

NO EQUATION
NO EXCEPTION
NO R. R. CROSSING

SPECIFICATIONS ADOPTED BY THE STATE HIGHWAY DEPARTMENT OF TEXAS, JANUARY 2, 1962, SHALL GOVERN THIS PROJECT.

LAYOUT SCALE: 1 IN. = 5,208 FT.

CONVENTIONAL SIGNS
STATE OR NATIONAL LINE
CITY OR VILLAGE LINE
COUNTY LINE
BASE OR SURVEY LINE
RIGHT OF WAY LINE
RIGHT OF WAY MARKERS
FENCE LINE
RAILROAD
TRAVELED WAY
CULVERT OR BRIDGE
POWER LINE
TELEGRAPH OR TELEPHONE

STATE HIGHWAY DEPARTMENT

CORRECT: Oct 10 1966

RECOMMENDED FOR APPROVAL: 10/21 1966

APPROVED: 11-15-66

RESIDENT ENGINEER: J. H. Corno

DISTRICT ENGINEER: E. L. Sandoz

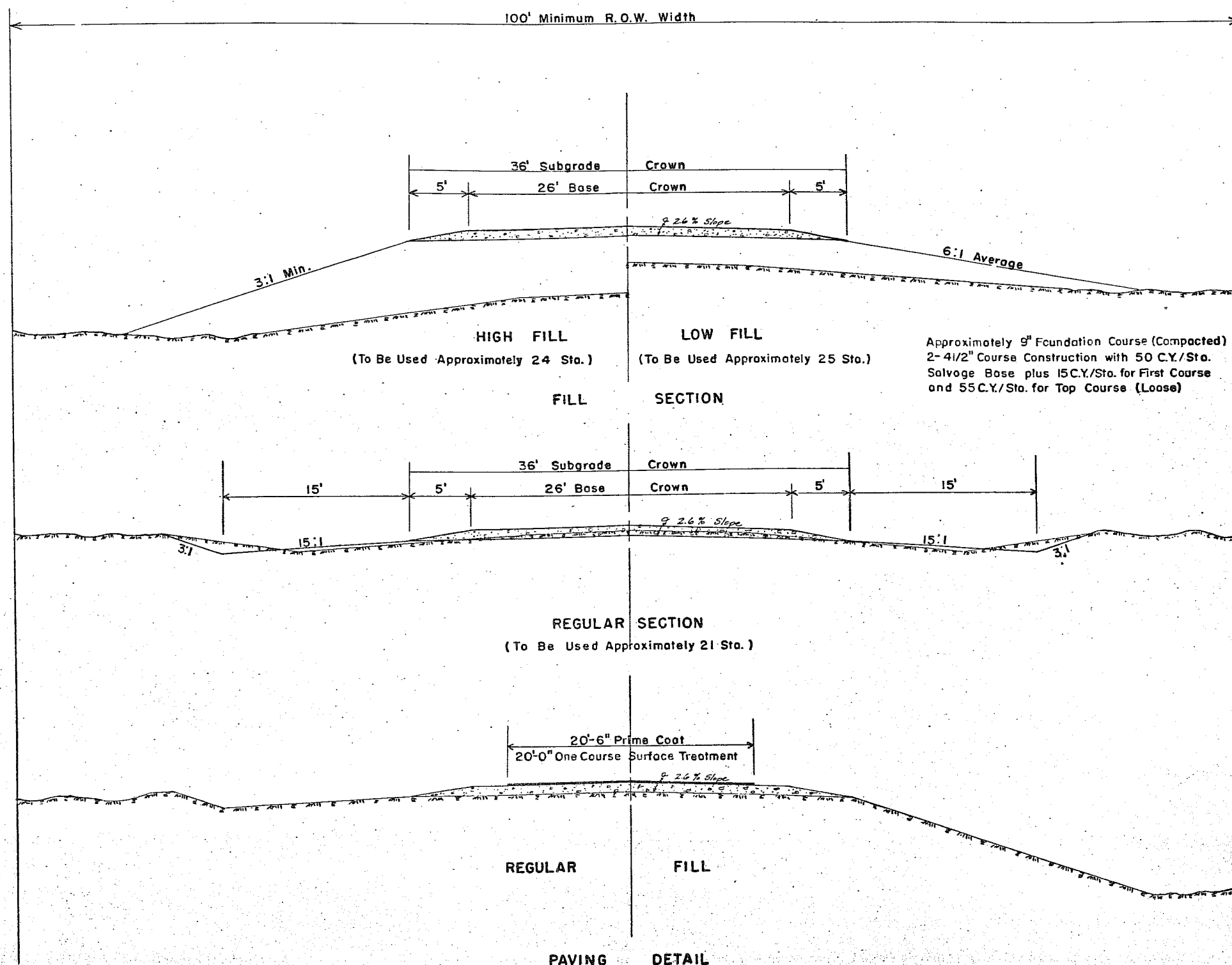
ENGINEER SECONDARY ROADS: H. Corno

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED: [Signature]

DISTRICT ENGINEER: [Signature]

DATE: [Signature]



NOTE: During Construction of Embankment and Structures A Detour will be Constructed adjacent the right fence using Salvage Base. Upon Completion of the Structures and Embankment the Salvage Base Shall then be placed as part of First Course Base.

To accommodate the Detour the Contractor will be required to construct the right ditch and right fill slope after Detour is eliminated.

TYPICAL SECTIONS ARE FOR FM 117
NONE SHOWN FOR ST 57

TYPICAL SECTIONS

FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
0	TEXAS		2
STATE	COUNTY	CONTRACT	SECTION

SPECIFICATION DATA													
Test to be in accordance with Texas Highway Department Standard Test Methods													
ITEM	DESCRIPTION	GRADING REQUIREMENTS							SOIL CONSTANTS			WET BALL MILL	SEE NOTE
		PERCENT RETAINED, SIEVE							L.L.		P.I.		
		2 1/2"	2"	1 3/4"	1"	1/2"	" 4	" 10	" 40	Max.	Max.	Min.	
246	Foundation course	0-2							20-75	45	15		

Item 330
"Cold Mix Limestone Rock Asph Pav"
Type C Mod
Retained on 1/2" Sieve 0 %
Retained on 3/8" Sieve 0-2 %
Retained on 1/4" Sieve 25-35%
Retained on No. 4 Sieve 40-55%
Passing on No. 10 Sieve 35-50%

Item 302
"Aggregate For Surf. Trmt"
Type B, Gr. 3 Mod
Retained on 3/4" Sieve 0 %
Retained on 1/2" Sieve 5-15 %
Retained on 3/8" Sieve 50-80 %
Retained on No 4 Sieve 95-100%
Retained on No 10 Sieve 98-100%

COMPACTION REQUIREMENTS FOR BASE COURSES					
PERCENT OF DENSITY AS DETERMINED BY COMPACTION RATIO (TEX-114-E)					
ITEM	MATERIAL	ROADWAY		F.R. ROAD	
		COURSE	DENSITY	COURSE	DENSITY

SURFACE TREATMENT DATA			
ITEM	APPLICATION		
	First	Second	Third
One COURSE SURFACE TREATMENT			
Asphalt, Type *	AC-5		
Asphalt, Rate (gal/sy)	0.35		
Aggregate, Type	B		
Aggregate, Grade	3 Mod		
Aggregate, Rate (cy/sy)	1:80		
Rolling 210 (Hrs/Mi)	4		
Rolling 213 (Hrs/Mi)	8		

SURFACE TREATMENT AREA:

* AC-5 or RC-3

GENERAL NOTES AND SPECIFICATION DATA:

- ITEM
- Field Office and Laboratory will not be required.
- Grade shown on "P&P" sheets is subgrade elevation.
- 7
- The Contractors attention is called specifically to the existence of gas lines and telephone line located underground within the right-of-way. Before work is begun on the project the Contractor shall contact the utility owners and determine the exact location of said lines and shall use necessary safe-guard procedures to protect the lines and the public.
- 7,150,154, 204,213,246, 252,314
- In addition to the requirements of Item 7 of the Specifications the Contractor shall provide a suitable road within the project right-of-way to accommodate and provide for the safe passage of all traffic at all times, to include "temporary detours." Salvage base from the existing road will be used to stabilize "temporary detour" on FM Highway 117 and Foundation Course Material shall be used on State Highway 57. When detours are no longer required the salvage base material shall be returned to the salvage base stockpiles for use on the completed subgrade as required and the detour scarified. The construction, maintenance and obliterating of "temporary detours" and all other work necessary to meet these requirements will be paid for directly in accordance with the pertinent bid items as ordered by the Engineer, except the work involved in handling "Salvage Base" which is subsidiary to the Item 252.
- 104,430,496
- All structural concrete and concrete riprap removed shall be neatly stockpiled. At the Leona River Bridge State Highway 57 the Contractor shall place all such concrete removed on the river bank slopes at locations designated on the plans or directed by the Engineer. This work will be done after all shaping and backfilling of slopes has been completed and shall be considered as subsidiary to the Items 104, 430, and 496.
- 110, 120
- In those instances where fixed features require, the governing slopes indicated herein may be varied to the extent determined by the Engineer.
- 130
- The Contractor will construct a gate 16 foot minimum width, either of wood or metal, in the right-of-way fence at the entrance to the "Borrow Source" and will leave the gate in place upon the completion of the work. This gate will not be paid for directly but will be considered subsidiary to the Item 130 "Borrow". No material will be removed or

F. R. DIV. 8	TEXAS	C276-5-10 C236-3-11	SHEET 3C
Zavala	COUNTY	St. HWY. 57	CONT. 276-5-10 FM HWY. 117 236-3-11

GENERAL NOTES AND SPECIFICATION DATA:

- entry made into, or machinery left at the Ottenhouse Borrow Source between November 1st and December 31st.
- 150The entire right-of-way shall be bladed to remove all vegetation. This work will be paid for under the Item of "Blading," as ordered by the Engineer.
- 150, 154Necessary channel excavation and the construction of "header-banks" will be paid for by the item of "Blading" or "Scraperwork" actually used as ordered by the Engineer.
- 252Existing bituminous mat shall be broken into particles so that at least 95% (by weight) of a sample, selected at random, will pass the 2" sieve. Payment for this work shall be included in the price bid for Item 252, "Salv and Repl Base". Upon the completion of "Salv and Repl Base" any excess salvage material shall be placed in neat stockpiles along the right-of-way fence at locations as directed by the Engineer at no additional payment.
- 252Approx. 6 inches of existing base plus the existing bituminous mat shall be included in Salvaging and Replacing Base for the entire length of the project.
- 314Emulsified Asphalt (EA-HVMS) shall be mixed with water at a minimum rate of one part of emulsified asphalt to twenty parts of water. The amount of emulsified asphalt to be mixed with water may be increased as determined by the Engineer.
- 314,320,330, 340,350No asphaltic materials or mixtures except cut-back asphalt or emulsified asphalts for use as prime coat, dust palliative, base preservative or surface treatments shall be placed between November 1 and April 1 unless specifically authorized or directed by the Engineer in writing.
- 320, 248Asphalt AC-5 shall not be applied between November 1st. and April 1st. During the closed season the Contractor may elect to substitute "Cut-back" asphalt (RC-3). "Cut-back" Asphalt (RC-3) shall be paid for at

F. R. DIV. 8	TEXAS	C276-5-10 C236-3-11	SHEET 3D
Zavala	COUNTY	St. HWY. 57	CONT. 276-5-10 FM. HWY. 117 236-3-11

GENERAL NOTES AND SPECIFICATION DATA:

- the same unit price bid for Asphalt (AC-5 or RC-3). The rate of application for "Cut-back" Asphalt (RC-3) shall be increased as directed by the Engineer. In any case, the base material shall be immediately finished and the specified prime coat applied. If "Cut-back" Asphalt (RC-3) is not applied the Contractor shall be responsible for the maintenance of the primed base material until Asphalt (AC-5) is applied after April 1st. Use of "Asphalt (RC-3)" shall be approved by the Engineer in writing.
- 430Where dimensions of "Existing Structures" are not true dimensions as shown on plans or standards, the Contractor shall extend or cut reinforcing steel to required lengths at his entire expense.
- 430Concrete structures shall receive Type 3 finish.
- 432Necessary work in shaping of "header-banks" and other areas in preparation for riprap shall be considered a subsidiary to the Item of "Riprap".
- 496Any stabilized material and riprap around the existing structures shall be removed by the Contractor. This work will not be paid for directly but shall be considered subsidiary work pertaining to bid Item 496 "Remov Old Structures", except at Leona River Bridge the Riprap will be removed and paid for by the square yard actually removed.
- 560The rail for Metal Beam Guard Fence at bridge ends shall be the same as that used on the bridges.
- 473For culvert pipe used in the detour it shall be the responsibility of the Contractor to anchor the culvert pipe sufficiently to prevent them from being washed away in case of high water on the river or creek involved. Upon obliteration of the detour the contractor shall remove the CGM pipe culverts used in the detour and place them next to the right-of-way fence. This work will not be paid for directly but shall be considered subsidiary to the Item 473 "Laying Culvert Pipe."

GENERAL NOTES AND SPECIFICATION DATA:

430

All existing asphaltic pavement shall be removed from the existing Leona River Bridge and the concrete surface thoroughly cleaned by sand blasting or other approved means. This work will not be paid for directly but shall be considered subsidiary to Item 430 "Extending Concrete Structures". After all slab and approach slab concrete has been placed and cured the entire bridge roadway surface shall receive a "Two Course Surface Treatment" of asphalt and aggregate. After a minimum of 15 calendar days ACP shall be applied.

GENERAL NOTES AND SPECIFICATION DATA:

	SUBGRADE	BASE		PRIME
		Salvage	Fnd. Course	
204 Sprinkling 210 Rolling 211 Rolling 213 Rolling 314 Emul Asph	40 Gal/CY Emb 0.2 Hr/Sta 1 Hr/250 CY Emb 1 Hr/250 CY Emb	70 Gal/CY 1 Hr/300 CY 1 Hr/125 CY 1 Hr/150 CY	70 Gal/CY 1 Hr/300 CY 1 Hr/125 CY 1 Hr/150 CY	0.04 Gal/SY

	SURFACING		DETOUR	
	Cont 276-5-10	Cont 236-3-11	Cont 276-5-10	Cont 236-3-11
204 Sprinkling 210 Rolling 211 Rolling 213 Rolling 314 Emul Asph or 320 Aggr (Ty B, Gr 3 Mod) or 320 Asph (AC-5 or RC-3) 330 Tack Coat 330 Cold Mix	(322) 1 st Crse-1:90, 2 nd Crse-1:80 (322) 1 st Crse-0.30, 2 nd Crse-0.20 0.05 Gal/SY 100#/SY	4 Hr/M. 8 Hr/M. (322) 1:80 (322) 0.35 Gal/SY	7.5 MG/Sta 0.5 Hr/Sta 1.0 Hr/Sta 1.0 Hr/Sta 30 Gal/Sta	3 MG/Sta 0.25 Hr/Sta 15 Gal/Sta

322
322

SURFACE TREATMENT AREA		
	Cont 276-5-10	Cont 236-3-11
Prime Surface	933 SY	15,980 SY 15,594 SY

ESTIMATE SUMMARY

URBAN				RURAL								ALT.	ITEM-CODE			DESCRIPTION	UNIT	TOTAL			
CONTROL ()				CONTROL (276-5-10) S.H. 57				CONTROL (236-3-11) F.M. 117					ITEM NO	DESC CODE	SP NO			EST.	FINAL		
GRADING, SMALL STR., BASE & SURF.		BRIDGES		GRADING, SMALL STR., BASE & SURF.		BRIDGES		GRADING, SMALL STR., BASE & SURF.		BRIDGES										EST.	FINAL
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL										
								4.59	4.59			102	001		Clear and Grub	AL	4.59	4.59			
				589	566.81							104	006		Remov Old Conc (Riprap)	CY	589	566.81			
								832	890			110	001		Uncl Rd Excau (Ord Comp)	CY	832	890			
								35,211	32,553			130	001		Uncl Borr (Ord Comp)	CY	35,211	32,553			
								41,293	37,645			140	001		Cvrhi	Yq	41,293	37,645			
				50	36.25			60	75.25			150	001		Blad	Hr	110	111.50			
				600	478.88			150	322.15			154	003		Scrap Work (Ord Comp)	YH	750	801.03			
				50	20.64			2,300	2,097.80			204	001		Sprink	Ms	2,350	2,118.44			
				5	4.50			50	64.75			210	001		Roll (Flat Wheel)	Hr	55	69.25			
				10	5.00			215	233.75			211	001		Roll (Tamp)	Hr	225	238.75			
				10	9.00			230	219.25			213	002	001	Roll (Medm Pneum Tire) (Ty A)	Hr	240	228.25			
				840	284			4,890	5,103			246	001		Finl Cree (Ord Comp)	CY	5,103	5,387			
				5,127	6,063			121,448	126,703			246	005		Asal Gtr Mi Husl	CY	126,575	132,766			
								3,550	3,492			252	003		Calv and Repl Gase (Ord Comp)	CY	3,550	3,492			
				200	0			1,800	2,000			314	002		Emul Asph (EA-HUMIS)	Gal	2,000	2,000			
								200	200			320	147		Aggr (Ty B Gr 3 Mod)	CY	200	200			
								5,500	5,160			320	224		Asph (AC-5 or AC-3)	Gal	5,500	5,160			
				50	0							(1)	350	024	Tack Coat (AC-3)	Gal	50	0			
				50	33.18							(1)	350	003	Cold Mix LRA Pav (Ty C Mod)	Ton	50	33.18			
								287	287	20	20		400	001	Uncl Str Excau (Culv)	CY	307	307			
						16	16			18	18		400	002	Uncl Str Excau (Br)	CY	34	34			
						455	449.40			1,216	1,199.44	(2)	403	001	Conc Pil (14 In Sq)	LF	1,671	1,648.84			
								121.40	121.40	38.85	38.85		421	001	019	CI A Conc (Culv)	CY	160.25	160.25		
						8.90	8.65			35.20	34.12	(2)	421	002	019	CI A Conc (Bent)	CY	44.18	42.77		
						17.35	17.35						421	004	019	CI A Conc (Slab)	CY	47.35	47.35		
										228.20	228.20		421	006	019	CI A Conc (Pan Gird)	CY	228.20	228.20		
				43.48	43.48			28.82	28.82				421	010	019	CI A Conc (Appr Slab)	CY	72.50	72.50		
										15.51	15.51		430	001		CI A Conc For Ext Str (Culv)	CY	15.51	15.51		
						16.83	16.83					(2)	450	002		CI A Conc For Ext Str (Bent)	CY	16.83	16.83		
						94.40	94.40						450	003		CI A Conc For Ext Str (Slab)	CY	94.40	94.40		
						130	185.64			110	102.14		432	003		Riprap (Conc) (CI B)	CY	300	287.78		
				3,932	3,932	26,705	26,705	17,928	17,928	58,169	58,169	(2)	440	001	002	Reinf SH	LF	700.00	700.00		
						266.67	266.67			433.33	433.33		450	093	007	Rail (Ty T1)	LF	72	102		
				46	42			26	60				473	001		Laying Culv Pipe	LF	72	102		
								1	1				496	001		Remov Old Str (Large)	Ea	1	1		
								2	2				496	002		Remov Old Str (Small)	Ea	2	2		
				75.00	75.00			75.00	75.00				520	002	015	Metal Beam Set Fence (CI B)	LF	150.00	150		
								34	34				1518	001		Delin Assem (Ty I)	Ea	34	34		
				2	2			8	8				1518	003		Delin Assem (Ty III)	Ea	10	10		
				500	1,050								322	267		Asph (AC-5 or AC-3)	Gal	500	1,050		
				24	35								322	178		Aggr (Ty B Gr 3 Mod)	CY	24	35		
						0	5.60			0	16.56		409	001		Conc Pil (14 In Sq) Cut-Off	LF	0	22.16		

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ESTIMATE & QUANTITY SHEET

ESTIMATE SUMMARY

URBAN				RURAL								ALT.	ITEM-CODE			DESCRIPTION	UNIT	TOTAL			
CONTROL ()				CONTROL (276-5-10) S.H. 57				CONTROL (236-3-11) F.M. 117					ITEM NO	DESC CODE	SP NO			EST.	FINAL		
GRADING, SMALL STR., BASE & SURF.		BRIDGES		GRADING, SMALL STR., BASE & SURF.		BRIDGES		GRADING, SMALL STR., BASE & SURF.		BRIDGES										EST.	FINAL
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL										
								4.59	4.59				102	001		Clear and Grub	Ac	4.59	4.59		
				589	566.81								104	006		Remov Old Conc (Riprap)	CY	589	566.81		
								832	890				110	001		Incl Rd Excav (Ord Comp)	CY	832	890		
								35,211	32,553				130	001		Incl Borr (Ord Comp)	CY	35,211	32,553		
								41,293	37,645				140	001		Cvrht	Yq	41,293	37,645		
				50	36.25			60	75.25				150	001		Blad	Hr	110	111.50		
				600	478.88			150	322.15				154	003		Scrap Work (Ord Comp)	YH	750	801.03		
				50	20.64			230	2,097.80				204	001		Sprink	MG	2,350	2,118.44		
				5	4.50			50	64.75				210	001		Roll (Flat Wheel)	Hr	55	69.25		
				10	5.00			215	233.75				211	001		Roll (Tamp)	Hr	225	238.75		
				10	9.00			230	219.25				213	002	001	Roll (Medm Pneu Tire) (Ty A)	Hr	240	228.25		
				240	284			4,890	5,103				246	001		Finl Crce (Ord Comp)	CY	5,100	5,387		
				5,127	6,063			121,448	126,703				246	005		Axial Gtr Mi Haul	CY	166,575	132,766		
								3,550	3,492				252	003		Ediv and Repl Conc (Ord Comp)	CY	3,550	3,492		
				200	0			1,800	2,000				314	002		Emul Asph (EA-HVMS)	Gal	2,000	2,000		
								200	200				320	147		Aggr (Ty B Gr 3 Mod)	CY	200	200		
								5,500	5,160				320	224		Asph (AC-5 or AC-3)	Gal	5,500	5,160		
				50	0							(1)	350	024		Tack Coat (AC-3)	Gal	50	0		
				50	33.18							(1)	350	009		Cold Mix LFA Pav (Ty C Mod)	Ton	50	33.18		
								287	287	20	20		400	001		Incl Str Excav (Culv)	CY	307	307		
						16	16			18	18		400	002		Incl Str Excav (Br)	CY	34	34		
						455	449.40			1,216	1,199.44	(2)	409	001		Conc Pil (14 in Sq)	LF	1,671	1,448.84		
								121.40	121.40	38.85	38.85		421	001	019	CI A Conc (Culv)	CY	160.25	160.25		
						8.90	8.65			33.20	34.12	(2)	421	002	019	CI A Conc (Bent)	CY	44.10	42.77		
						17.35	17.35						421	004	019	CI A Conc (Slab)	CY	47.35	47.35		
										228.20	228.20		421	006	019	CI A Conc (Pan Gird)	CY	228.20	228.20		
				43.48	43.48			28.82	28.82				421	010	019	CI A Conc (Appr Slab)	CY	72.30	72.30		
										15.51	15.51		430	001		CI A Conc For Ext Str (Culv)	CY	15.51	15.51		
						16.83	16.83					(2)	430	002		CI A Conc For Ext Str (Bent)	CY	16.83	16.83		
						94.40	94.40						430	003		CI A Conc For Ext Str (Slab)	CY	94.40	94.40		
						190	185.64			110	102.14		432	003		Riprap (Conc) (CI B)	CY	300	287.78		
				3,932	3,932	26,705	26,705	17,928	17,928	58,169	58,169	(2)	440	001	002	Reinf SH	Lb	106,734	106,734		
						266.67	266.67			433.33	433.33		450	003	007	Roll (Ty T1)	LF	700.00	700.00		
				46	42			26	60				475	001		Laying Culv Pipe	LF	72	102		
								1	1				496	001		Remov Old Str (Large)	Ea	1	1		
								2	2				496	002		Remov Old Str (Small)	Ea	2	2		
				75.00	75.00			75.00	75.00				560	002	015	Metal Beam Gal Fence (CI B)	LF	150.00	150		
								34	34				1518	001		Delin Assem (Ty I)	Ea	34	34		
				2	2			8	8				1518	003		Delin Assem (Ty III)	Ea	10	10		
				500	1,050								322	267		Asph (AC-5 or AC-3)	Gal	500	1,050		
				24	35								322	178		Aggr (TYB Gr 3 Mod)	CY	24	35		
						0	5.60			0	16.56		409	001		Conc Pil (14 in Sq) Cut-Off	LF	0	22.16		

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

SMALL DRAINAGE STRUCTURE											
STATION	EXISTING STRUCTURE	PROPOSED STRUCTURE	PROPOSED DESIGN	Uncl. Str. Excavation C.Y.		Cl A Conc. (Culv.) C.Y.		Reinforcing Steel Lb.		Lay Culv. Pipe (24 in) L.F.	
				Est	Final	Est	Final	Est	Final	Est	Final
Rt 1343+60 Lt Rt 1370+07	-	1-24" x 26"	CGM Pipe							26	30
1350+00	1-6" x 6" x 26"	2-9" x 9" x 44"	(MC9-2)(MCW-F2)	221	221	95.14	95.14	11,412	11,412		
1366+13.6	1-Des 4" x 46" CGM Pipe Arch	1-Des 4" x 36" 15" RT Fwd Skew	(SC-15A)(F1-15")	66	66	26.26	26.26	3,728	3,728		
TOTAL				287	287	121.40	121.40	15,140	15,140	26	60

(12) Added because of Defect Condition during Construction.

STRUCTURES TO BE REMOVED			
STATION	DESCRIPTION	LARGE	SMALL
1343+10-1344+10	4-25' Slab Spans	1	
1349+98	1-6" x 6" x 26" Box Culv		1
1366+19.6	1-Des 4" x 46" CGM Pipe Arch		1
TOTAL		1	2

SUMMARY OF DELINEATORS		
LOCATION	SPACE	NO.
TYPE I		
Lt & Rt Sta 1338+00 - Sta 1342+00	100' C to C	10
Lt & Rt Sta 1346+00 - Sta 1349+00	100' C to C	8
Lt & Rt Sta 1351+00 - Sta 1355+00	100' C to C	16
TOTAL		34
TYPE III		
Rt Sta 1342+60 & Lt Sta 1344+72.33		2
Rt & Lt Sta 1350+00		2
Rt & Lt Sta 1366+19.6		2
Rt Sta 1370+14.5 & Lt Sta 1370+42		2
TOTAL		8

NOTE:
Delineators at Structure Sites shall be placed in line with and line feet from curb or guard fence.

STRUCTURES OVER 20 FT. IN LENGTH																														
STR NO	Sta. - Sta.	Length	Existing Structure	Existing Design	Proposed Structure	Proposed Design	Uncl. Str. Excav. (Culv) C.Y.		Uncl. Str. Excav. (Sr) C.Y.		Conc. Pili (14 in Sq) L.F.		Cl A Conc (Culv) C.Y.		Cl A Conc (Bent) C.Y.		Cl A Conc (Pon Girder) C.Y.		Cl A Conc (Appr Slab) C.Y.		Cl A Conc For Ext Str (Culv) C.Y.		Riprap Conc (Cl B) C.Y.		Reinforcing Steel Lb.		Rolling (Ty T1) (L.F.)		Metal Beam Guard Fence (L.F.)	
							Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final	Est	Final
8	1342+60-1344+72.33	212.33'	4-25' Slab Spans	FS-8-20-25	7-30"x4" Conc Slab & 6" Slab Spans with Appr Slabs	CG-0-24-30, BCG-0-26-30 BAS-65A # CP			18	18	1216	1199.44			35.20	34.12	228.20	228.20	28.82	28.82			112.00	94.28	50,870*	50,870	433.33	433.33	75.00	75.00
9	1370+4.5-1370+42	275'	2-6'x6'x26'	(MC6-1) (MCW-F1)	4-6'x6'x36' (Extend Existing Structure 3' Lt & Rt and Add 2-6'x36')	(MC6-1) (MCW-F1)	20	20					38.85	38.85							15.51	15.51			7.86	7,299	7,299			
TOTAL							20	20	18	18	1216	1199.44	38.85	38.85	35.20	34.12	228.20	228.20	28.82	28.82	15.51	15.51	112.00	102.14	58,169	58,169	433.33	433.33	75.00	75.00

(1) Conc Pili (14 in Sq) Cut-Off = 16.56 LF

* Reinf Stl. (Appr. Slab) = 2,788 Lbs
Not included in above quantity.

F.M. 117 CONTROL 236-3-11

STRUCTURE OVER 20 FT. IN LENGTH																												
STR. NO.	Sta. - Sta.	Length	Existing Structure	Existing Design	Proposed Structure	Proposed Design	Uncl. Str. Excav. (Br.) C.Y.		Conc. Pil (14 in Sq) L.F.		Cl. A Conc (Bent) C.Y.		Cl. A Conc (Slab) C.Y.		Cl. A Conc (Appr Slab) C.Y.		Cl. A Conc For Ext Str (Bent) C.Y.		Cl. A Conc For Ext Str (Slab) C.Y.		Riprap Conc (Cl B) C.Y.		Reinforcing Steel Lb.		Rolling (Ty T1) L.F.		Metal Beam Guard Fence L.F.	
							Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final	Est.	Final
39	28+12.1-29+37.1	125'	4-25' Slab Spans	FS-8-24-25	Extend Existing Bents & Slabs and Add 1-25' Slab Span with Approach Slab.	Spl. # BAS-65A	16.0	16.0	4.55	449.40	8.90	8.65	47.35	47.35	43.48	43.48	16.83	16.83	94.40	94.40	190	185.64	30,637	30,637	266.67	266.67	75.00	75.00
TOTAL							16.0	16.0	4.55	449.40	8.90	8.65	47.35	47.35	43.48	43.48	16.83	16.83	94.40	94.40	190	185.64	30,637	30,637	266.67	266.67	75.00	75.00

(1) Conc Pili (14 in Sq) Cut-Off = 5.60 LF

SMALL DRAINAGE STRUCTURE

STATION	PROPOSED STRUCTURE	PROPOSED DESIGN	LAY. CULV. PIPE (42") L.F.	
			Est	Final
Rt 28+60	1-42" x 46"	CGM Pipe	46	42

SUMMARY OF DELINEATORS	
LOCATION	NO.
TYPE III	
* Rt Sta 28+12.1 - Sta 29+37.1	2
TOTAL	2

* See Note Above

STRUCTURE SUMMARY

FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS		5
STATE DIST. NO.	COUNTY	CONTRACT NO.	SECTION & JOB
28	Zavala	878	PM 12

ST. 57 CONTROL 276-5-10

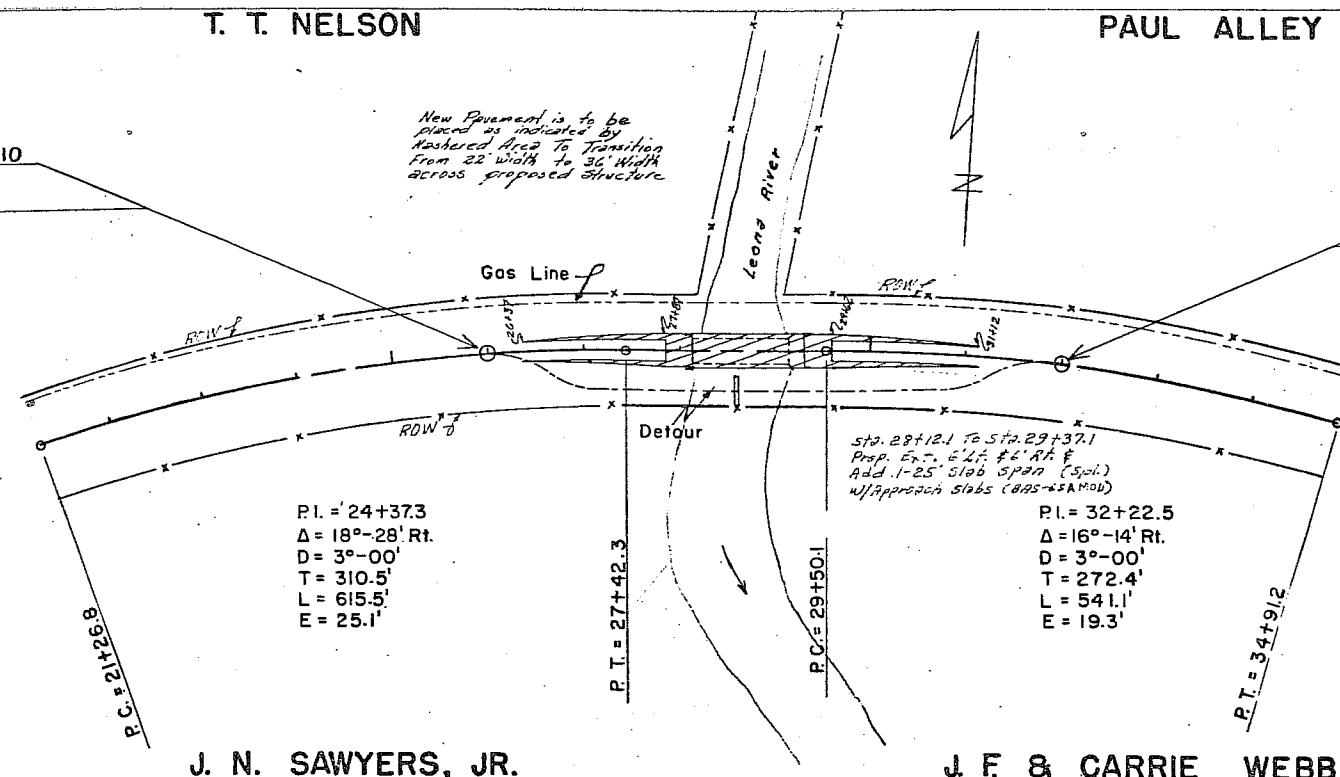
T. T. NELSON

PAUL ALLEY

BEGIN PROJECT C 276-5-10
Sta. 26+00 Control 276-5-10
Sta. 26+00 Control 276-5-10
= Sta. 26+00 Proj. S 403(4)

New Pavement is to be placed as indicated by hatched Area To Transition From 22' width to 36' width across proposed structure

END PROJECT C 276-5-10
Sta. 32+00 Control 276-5-10
Sta. 32+00 Control 276-5-10
= Sta. 32+00 Proj. S 403(4)



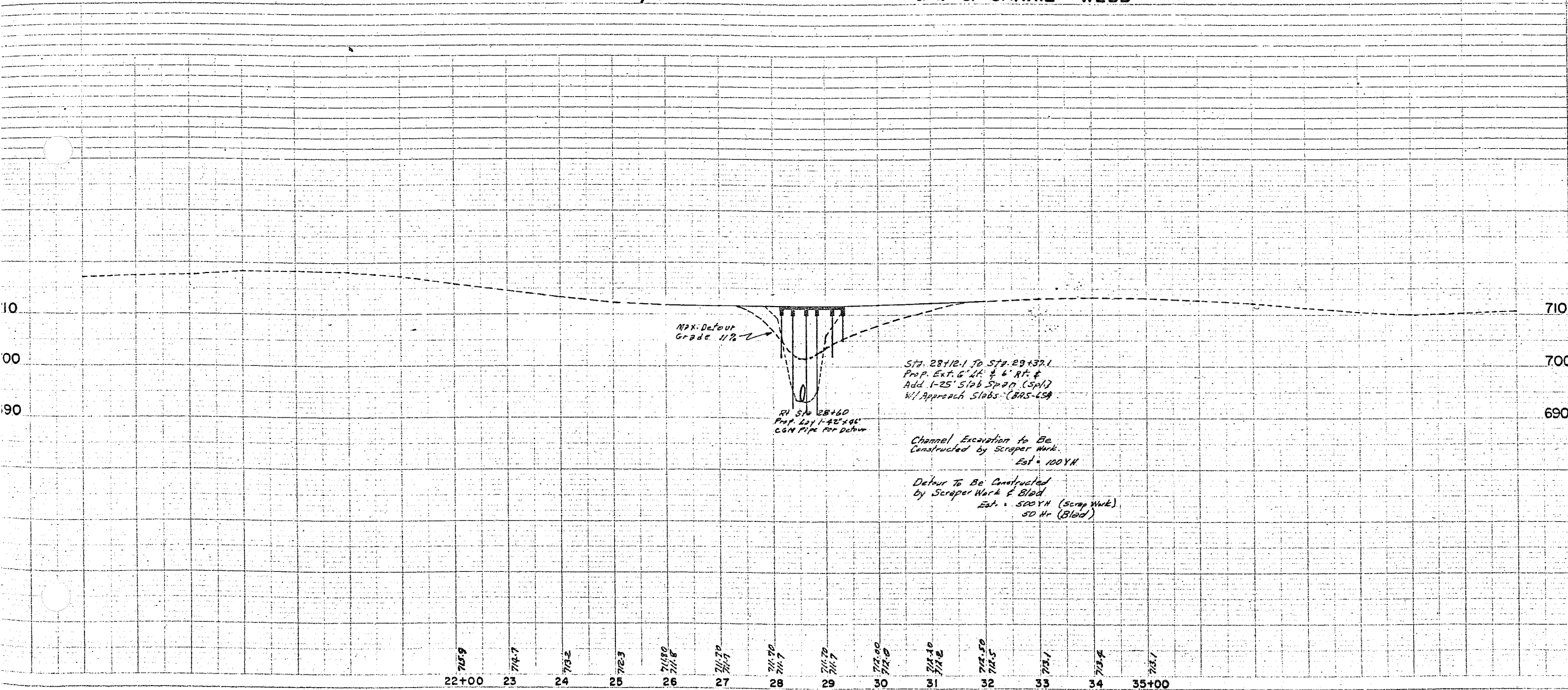
P.I. = 24+37.3
Δ = 18°-28' Rt.
D = 3°-00'
T = 310.5'
L = 615.5'
E = 25.1'

P.I. = 32+22.5
Δ = 16°-14' Rt.
D = 3°-00'
T = 272.4'
L = 541.1'
E = 19.3'

The contractor will be required to construct a detour along the South right-of-way line. After the detour is of no further use it shall be obliterated and the River banks restored to their original shape. See General Notes for Payment

J. N. SAWYERS, JR.

J. F. & CARRIE WEBB



B.M. No. 2
Nail in 8" Mesq. 100' Rt. Sta. 29+75, Elev. = 712.04.

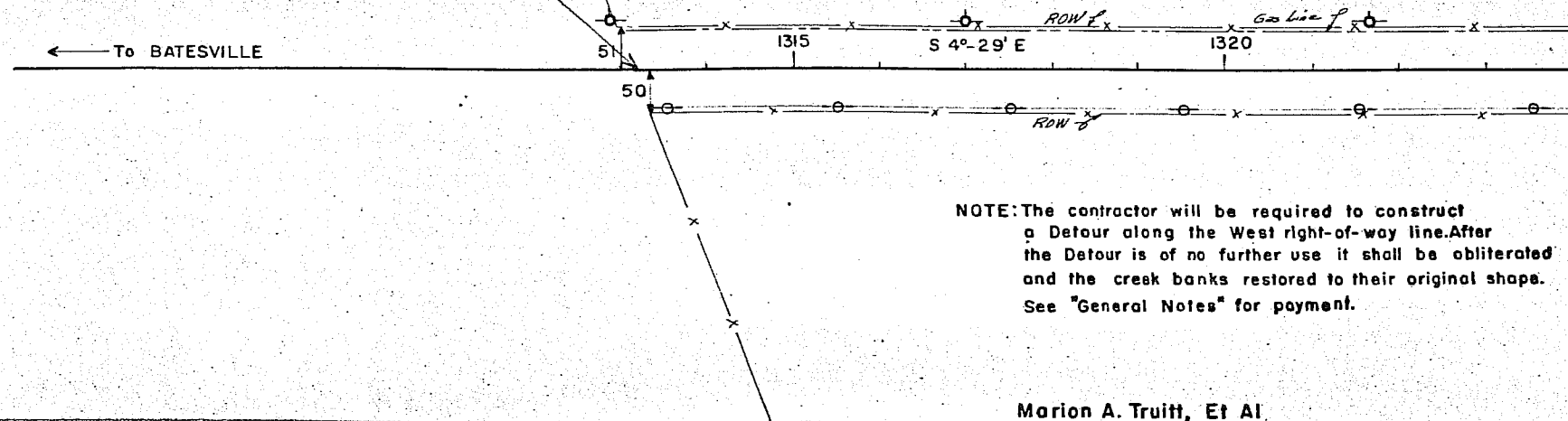
B.M. No. 2A
Nail in Power Pole 60' Lt. Sta. 29+94, Elev. = 713.39.

PROJECT NO.	DATE	BY	CHECKED	APPROVED
C 276-5-10	11/20	JNS	JFW	JNS
22	Zavala	276 5 10	St. 57	

Marion A. Truitt, Et Al

CROSS SECTION DATA

BEGIN PROJECT
Sta. 1313+20 Control 236-3-11
Sta. 1313+20 Control 236-3-11
Sta. 1313+20 Project R 236-3-4



Marion A. Truitt, Et Al

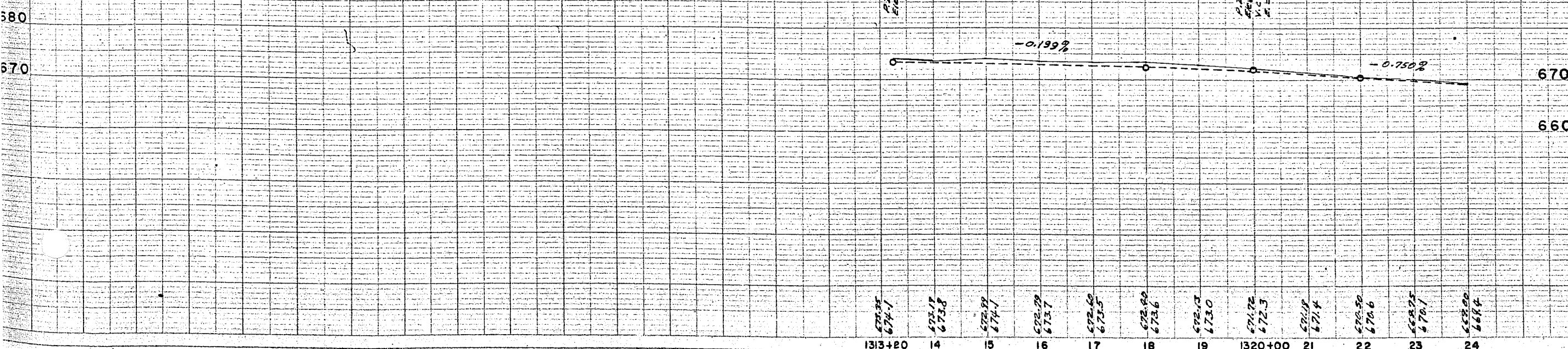
SHEET TOTALS

Uncl. Rd. Excav.
Uncl. Borrow
Embank. + Shr.
Overhaul

37	56	94	78	76	81	41	30	20	17	20	550	Cy.	Uncl. Rd. Excav.
0	0	0	0	0	0	0	0	0	0	0	0	Cy.	Uncl. Borrow
6	26	6	12	23	14	26	33	42	26	23	237	Cy.	Embank. + Shr.
242	144	144	122	130	148	142	134	133	132	122	224	Y.R.	Overhaul
131	61	149	215	268	335	350	347	325	316	313			

Uncl. Rd. Excav. 817 Cy.
Uncl. Borrow 0 Cy.
Embank. + Shr. 817 Cy.
Overhaul 224 Y.R.

BENCH MARKS
BM#1 Elev 670.41
5' Iron Rod 50' Lx 1322+00

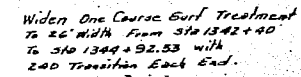


PLAN, PROFILE NEW STYLE

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	236-3-11	7
COUNTY	CONTRACT SECTION	ROAD NO.
22	236-3-11	7

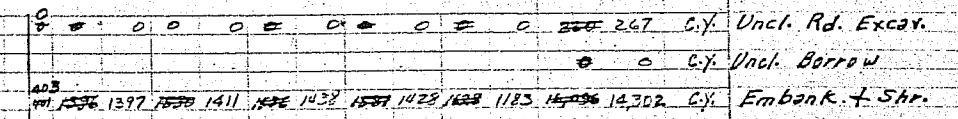
N

1. 1965-1966
2. 1967-1968
3. 1969-1970
4. 1971-1972
5. 1973-1974
6. 1975-1976
7. 1977-1978
8. 1979-1980
9. 1981-1982
10. 1983-1984
11. 1985-1986
12. 1987-1988
13. 1989-1990
14. 1991-1992
15. 1993-1994
16. 1995-1996
17. 1997-1998
18. 1999-2000
19. 2001-2002
20. 2003-2004
21. 2005-2006
22. 2007-2008
23. 2009-2010
24. 2011-2012
25. 2013-2014
26. 2015-2016
27. 2017-2018
28. 2019-2020
29. 2021-2022
30. 2023-2024
31. 2025-2026
32. 2027-2028
33. 2029-2030
34. 2031-2032
35. 2033-2034
36. 2035-2036
37. 2037-2038
38. 2039-2040
39. 2041-2042
40. 2043-2044
41. 2045-2046
42. 2047-2048
43. 2049-2050
44. 2051-2052
45. 2053-2054
46. 2055-2056
47. 2057-2058
48. 2059-2060
49. 2061-2062
50. 2063-2064
51. 2065-2066
52. 2067-2068
53. 2069-2070
54. 2071-2072
55. 2073-2074
56. 2075-2076
57. 2077-2078
58. 2079-2080
59. 2081-2082
60. 2083-2084
61. 2085-2086
62. 2087-2088
63. 2089-2090
64. 2091-2092
65. 2093-2094
66. 2095-2096
67. 2097-2098
68. 2099-2100
69. 2101-2102
70. 2103-2104
71. 2105-2106
72. 2107-2108
73. 2109-2110
74. 2111-2112
75. 2113-2114
76. 2115-2116
77. 2117-2118
78. 2119-2120
79. 2121-2122
80. 2123-2124
81. 2125-2126
82. 2127-2128
83. 2129-2130
84. 2131-2132
85. 2133-2134
86. 2135-2136
87. 2137-2138
88. 2139-2140
89. 2141-2142
90. 2143-2144
91. 2145-2146
92. 2147-2148
93. 2149-2150
94. 2151-2152
95. 2153-2154
96. 2155-2156
97. 2157-2158
98. 2159-2160
99. 2161-2162
100. 2163-2164
101. 2165-2166
102. 2167-2168
103. 2169-2170
104. 2171-2172
105. 2173-2174
106. 2175-2176
107. 2177-2178
108. 2179-2180
109. 2181-2182
110. 2183-2184
111. 2185-2186
112. 2187-2188
113. 2189-2190
114. 2191-2192
115. 2193-2194
116. 2195-2196
117. 2197-2198
118. 2199-2200
119. 2201-2202
120. 2203-2204
121. 2205-2206
122. 2207-2208
123. 2209-2210
124. 2211-2212
125. 2213-2214
126. 2215-2216
127. 2217-2218
128. 2219-2220
129. 2221-2222
130. 2223-2224
131. 2225-2226
132. 2227-2228
133. 2229-2230
134. 2231-2232
135. 2233-2234
136. 2235-2236
137. 2237-2238
138. 2239-2240
139. 2241-2242
140. 2243-2244
141. 2245-2246
142. 2247-2248
143. 2249-2250
144. 2251-2252
145. 2253-2254
146. 2255-2256
147. 2257-2258
148. 2259-2260
149. 2261-2262
150. 2263-2264
151. 2265-2266
152. 2267-2268
153. 2269-2270
154. 2271-2272
155. 2273-2274
156. 2275-2276
157. 2277-2278
158. 2279-2280
159. 2281-2282
160. 2283-2284
161. 2285-2286
162. 2287-2288
163. 2289-2290
164. 2291-2292
165. 2293-2294
166. 2295-2296
167. 2297-2298
168. 2299-2300
169. 2301-2302
170. 2303-2304
171. 2305-2306
172. 2307-2308
173. 2309-2310
174. 2311-2312
175. 2313-2314
176. 2315-2316
177. 2317-2318
178. 2319-2320
179. 2321-2322
180. 2323-2324
181. 2325-2326
182. 2327-2328
183. 2329-2330
184. 2331-2332
185. 2333-2334
186. 2335-2336
187. 2337-2338
188. 2339-2340
189. 2341-2342
190. 2343-2344
191. 2345-2346
192. 2347-2348
193. 2349-2350
194. 2351-2352
195. 2353-2354
196. 2355-2356
197. 2357-2358
198. 2359-2360
199. 2361-2362
200. 2363-2364
201. 2365-2366
202. 2367-2368
203. 2369-2370
204. 2371-2372
205. 2373-2374
206. 2375-2376
207. 2377-2378
208. 2379-2380
209. 2381-2382
210. 2383-2384
211. 2385-2386
212. 2387-2388
213. 2389-2390
214. 2391-2392
215. 2393-2394
216. 2395-2396
217. 2397-2398
218. 2399-2400
219. 2401-2402
220. 2403-2404
221. 2405-2406
222. 2407-2408
223. 2409-2410
224. 2411-2412
225. 2413-2414
226. 2415-2416
227. 2417-2418
228. 2419-2420
229. 2421-2422
230. 2423-2424
231. 2425-2426
232. 2427-2428
233. 2429-2430
234. 2431-2432
235. 2433-2434
236. 2435-2436
237. 2437-2438
238. 2439-2440
239. 2441-2442
240. 2443-2444
241. 2445-2446
242. 2447-2448
243. 2449-2450
244. 2451-2452
245. 2453-2454
246. 2455-2456
247. 2457-2458
248. 2459-2460
249. 2461-2462
250. 2463-2464
251. 2465-2466
252. 2467-2468
253. 2469-2470
254. 2471-2472
255. 2473-2474
256. 2475-2476
257. 2477-2478
258. 2479-2480
259. 2481-2482
260. 2483-2484
261. 2485-2486
262. 2487-2488
263. 2489-

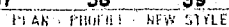


Sta. 1349 + 98
Exist. 1-6'x6'x26' SBC
To Be Removed

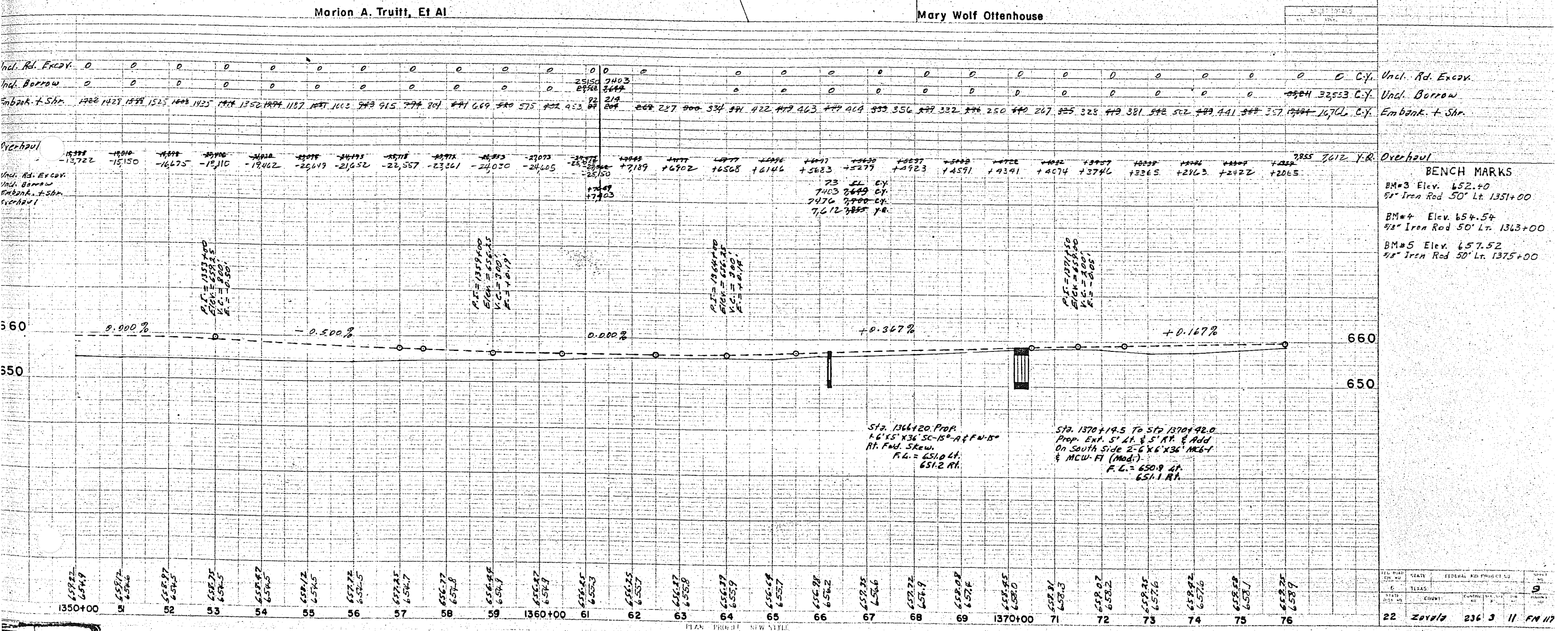
SHEET TOTALS		
USE	FRAG	1967

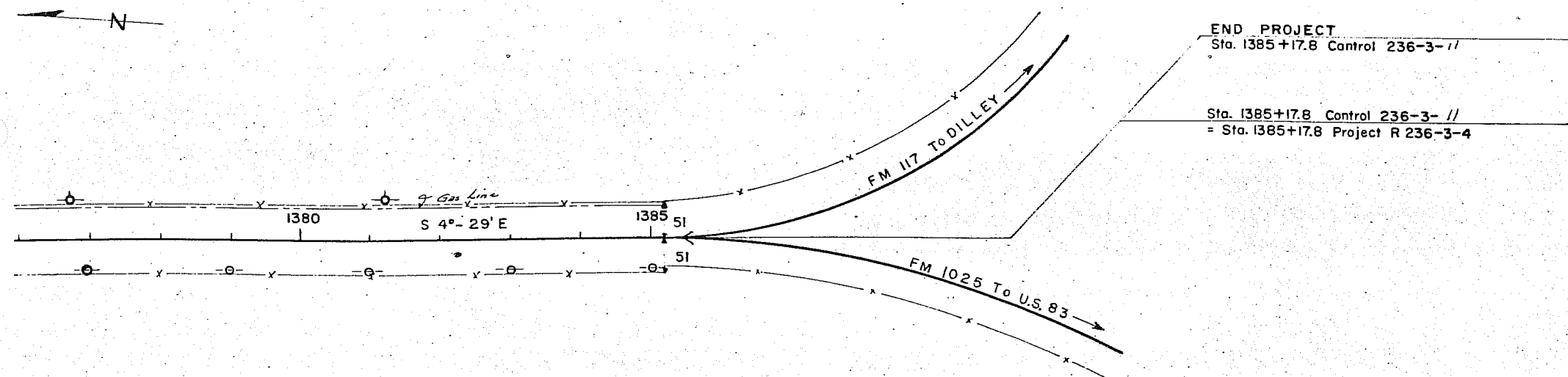


-746	-849	-963	-1073	-1188	-1300	-1524		35211 29209 Y.G.	Overall!
-662Z	-826Z	-826Z	-9673	-11,111	-12537	-13722		BENCH MARKS BM#2 Elev. 660.79 5/8" Iron Rod 50' L+ 1334 +00	



STATE DIST NO	STATE COUNTY	FEDERAL AID PROJECT NO	STATE DIST NO
0	TEXAS		0
STATE DIST NO	COUNTY	FEDERAL AID PROJECT NO	STATE DIST NO
22	Texas	236 3 11	FMA





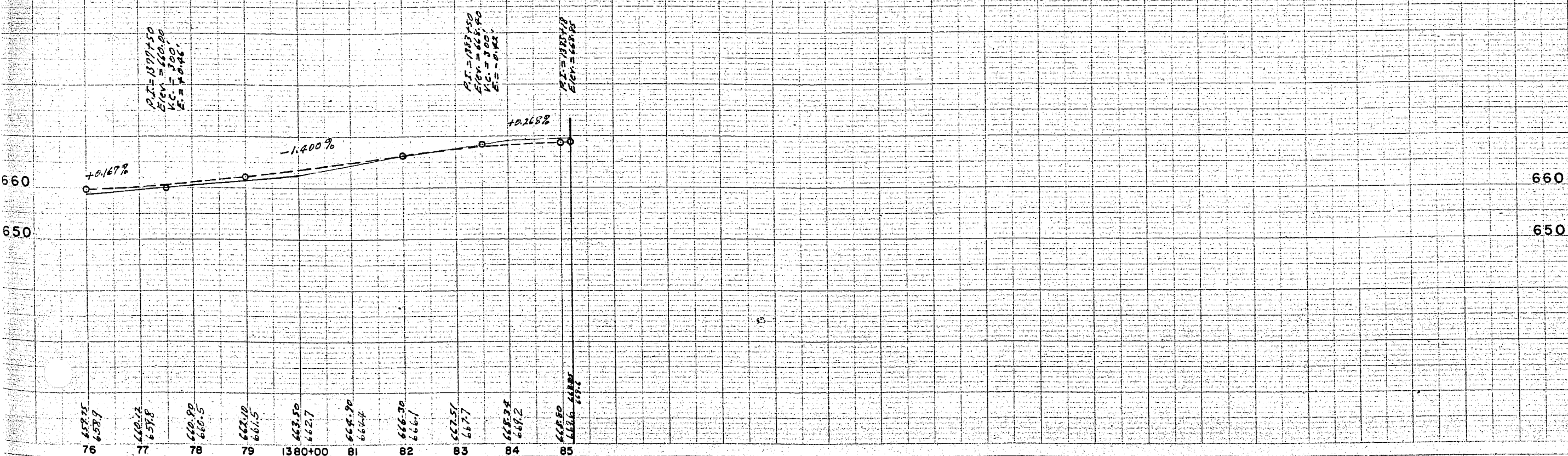
Mary Wolf Ottenhouse

Incl. Rd. Excp.	0	0	0	0	0	0	0	0	0	0	14	18	33	48	4	7
Incl. Borrow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Embank. & Str.	255	294	320	355	383	411	436	464	492	527	569	613	660	708	758	809

ST 73	C.Y.	Uncl. Rd. Excav.
8	0	C.Y. Uncl. Borrow
1995 2138	C.Y.	Embank. + Shr.

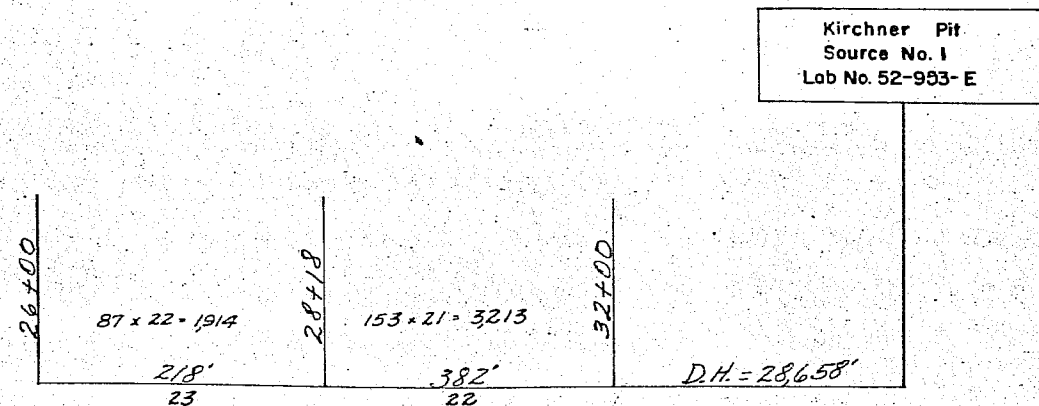
Overhaul	1938	1944	1944	1949	1948	1951	1952	1950	1950	1950
	+2065	+1771	+1506	+1223	+967	+582	+315	+117	+22	+2
Und. A.L. Excav.	0	0	C.Y.							
Und. Borrow	0	0	C.Y.							
Embank. & Str.	0	0	C.Y.							
Overhaul	0	0	S.R.							

	C	Y.R.	Overhaul
			BENCH MARKS
			BM#6 Elev. 167.97
			3/8" Iron Rod 50' L: 1354+00



CONTROL 276-5-10

CONTROL 236-3-11

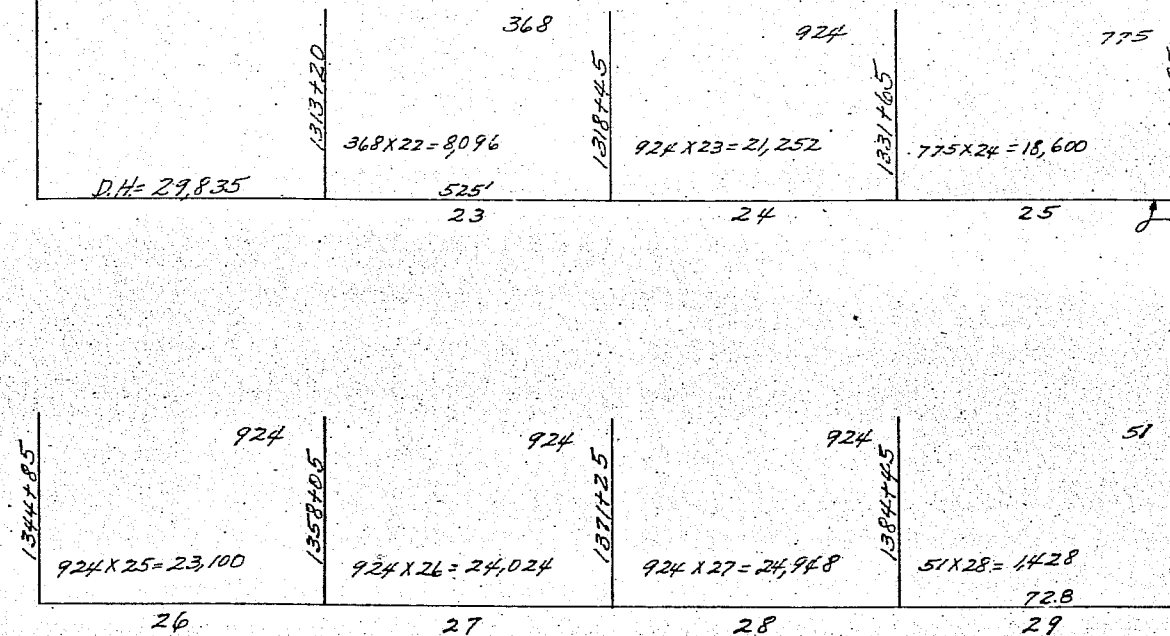


RATE OF DISTRIBUTION
(FOR DETOUR ONLY)

40 C.Y./Sta. Fnd. Course (Loose)

TOTAL
Fnd. Crse. ~~240 CY~~ 284 CY
Addl. Qtr. Mi. Haul ~~5,127 CY~~ 6,063 CY

Kirchner Pit
Source No. 1
Lab No. 52-953-E



Exception
Sta. 1342+60 to 1344+72.33
(Bridge) (-212.33')

RATE OF DISTRIBUTION

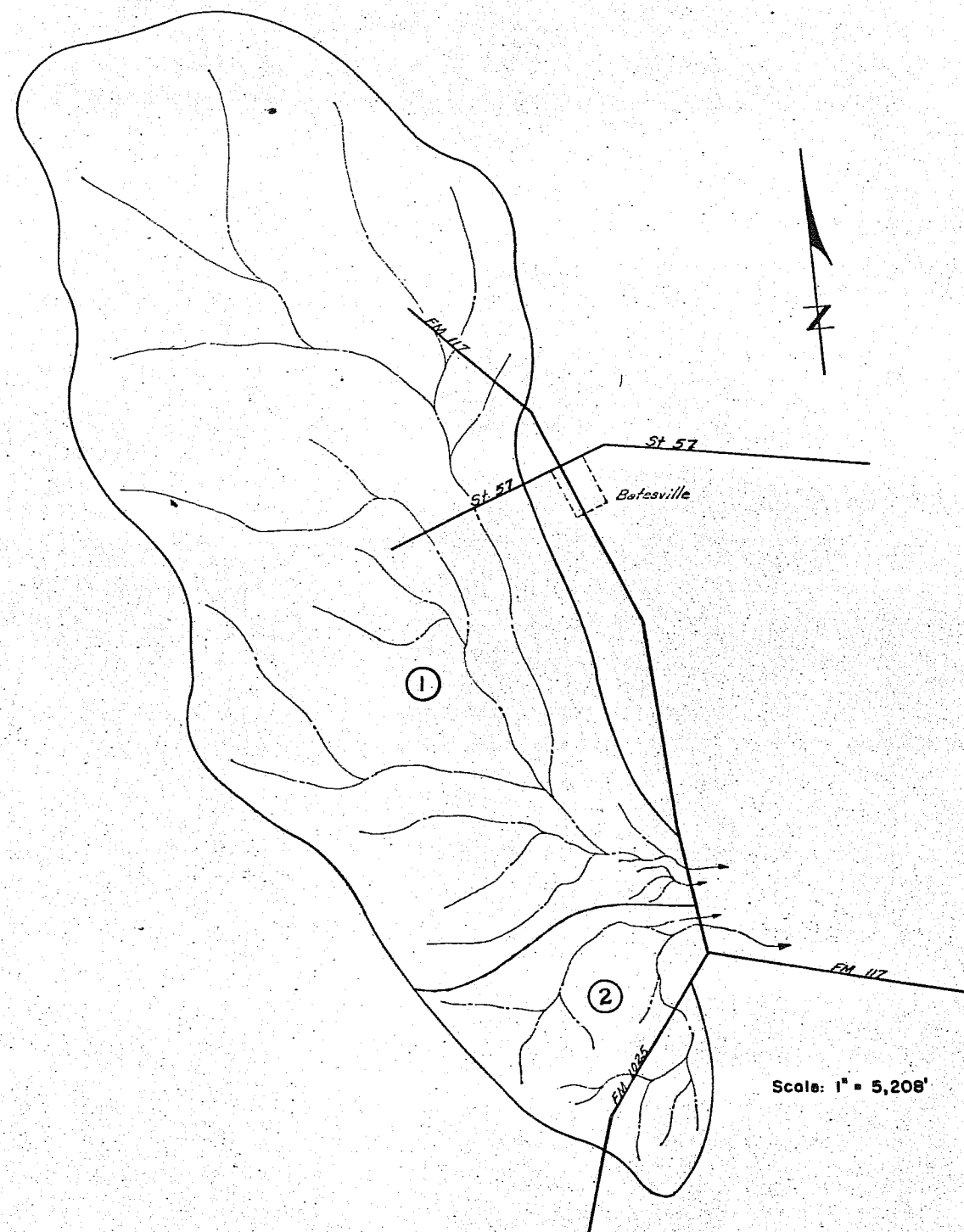
1st. Crse. 50 C.Y./Sta. Salvage (Loose)
15 C.Y./Sta. Fnd. Crse. (Loose)
Top Crse 55 C.Y./Sta. Fnd. Crse. (Loose)

TOTAL

Salvage Base ~~3,550 CY~~ 3,492 CY
Fnd. Crse. ~~4,890 CY~~ 5,103 CY
Addl. Qtr. Mi. Haul ~~121,448 CY~~ 126,703 CY

HAUL DIAGRAM

P.D. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
22	TEXAS		11
STATE DIST. NO.	COUNTY	CONT.	SECT.
22	2802/B	BYC	5
		216	11
			2442



DRAINAGE SUMMARY					Natural Channel	
Area No	Station	DA Acres	Existing Structure	Proposed Structure	Length Ft	Slope ft/ft
1	1342+40 - 1344+72.33	35,000	4-25' Slab Spans	7-30'-8" Conc. Slab & Girder Span Bridge	65,100	0.004
	1349+95		1-6x6x26' MBC	2-9x9x44' MC 9-2' MCW-F2		
2	1366+19.6	4,900	1-20x4x46' Cam Pipe Arch	1-6x5x36' 15' Rd Skew (SC-15' x 15'-15')	28,640	0.004
	1370+14.5 - 1370+42		2-6x6x26' MBC	4-6x6x36' (Extend Existing Structure 3' at Rt and Add 2-6x6x36')		

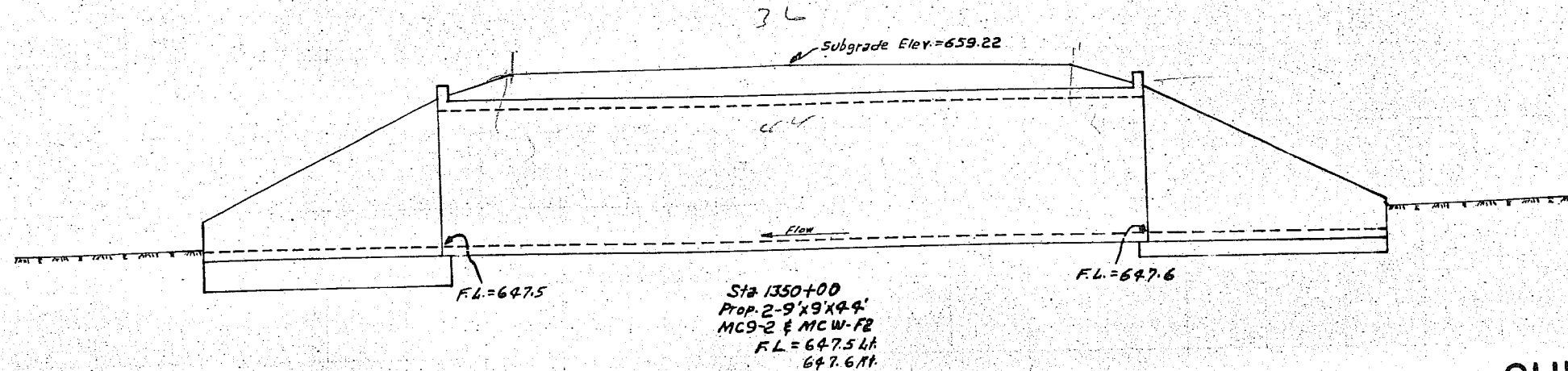
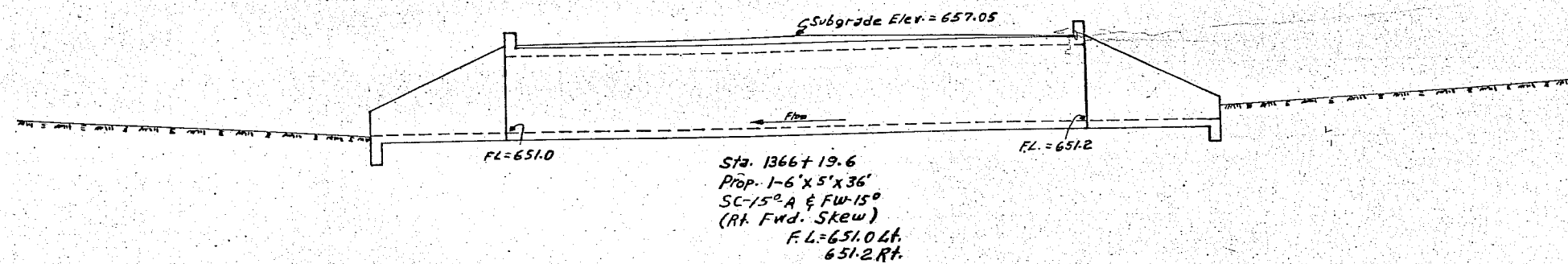
STATION	Drainage Area No	DA Ac	T (Min)	C	I ₁₀ (in/hr)	Q ₁₀ (cfs)
1342+40 - 1344+72.33	* 1					
1349+98						
1366+19.6	2	4,900	318	0.25	0.833	1020
1370+14.5 - 1370+42						

* Drainage Area = 54.9 Sq. Mi.
 Slope = 0.004 ft/ft
 Length = 12.5 Mi.
 Q₂₅ = 7420 cfs
 T_W = 654.6
 V₂₅ = 5.4 ft/sec
 Max Obs HW = 657.0

Note: Q for Drainage Area No. 1 obtained by use of Texas Water Commission Bulletin 6311 Dated December 1963.

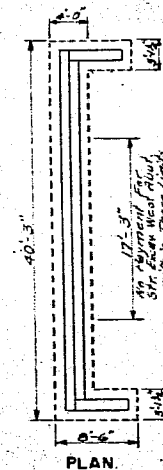
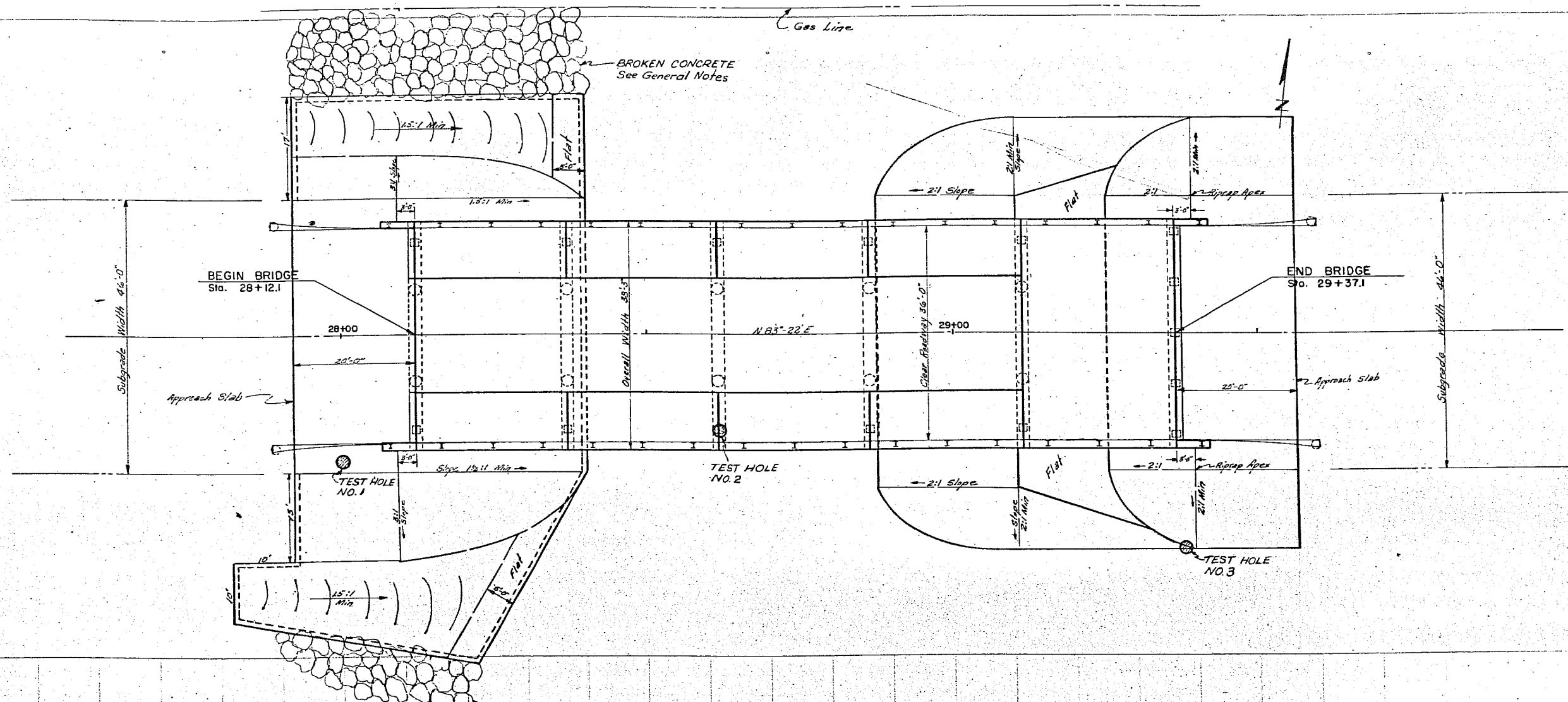
DRAINAGE AREA MAP

FED. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
22	TEXAS	256 3 11	12
STATE DIST. NO.	COUNTY	CONT.	BLK.
22	Zavala	256	3



CULVERT LAYOUT

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS		15
STATE DIST. NO.	COUNTY	SECTION NO.	SECTION NO.
22	ZAVILA	236	3



EXCAVATION DIAGRAM

ESTIMATED QUANTITIES

Uncl. Str. Excav. (Br.)	16.00	16.00 CY
Conc. Pil. (14 In Sq)	449.30	449.30 LF
Cl. A Conc. (Bent)	8.65	8.65 CY
Cl. A Conc. (Slob)	47.35	47.35 CY
Cl. A Conc. (Appr. Slob)	43.48	43.48 CY
Cl. A Conc. For Ext. Str. (Bent)	16.83	16.83 CY
Cl. A Conc. For Ext. Str. (Slob)	34.40	34.40 CY
Riprap (Conc) (Cl B)	185.64	185.64 CY
Reinf. Steel	26.705	26.705 LB
Rail (Ty 11)	266.67	266.67 LF
Metal Beam Guard Fence	75.00	75.00 LF
Reinf. Steel (Appr. Slob)	3.932	3.932 LB
Conc Pil (14 In Sq) Cut-Off		5.60 LF

* Alternate Drilled Shaft (24")

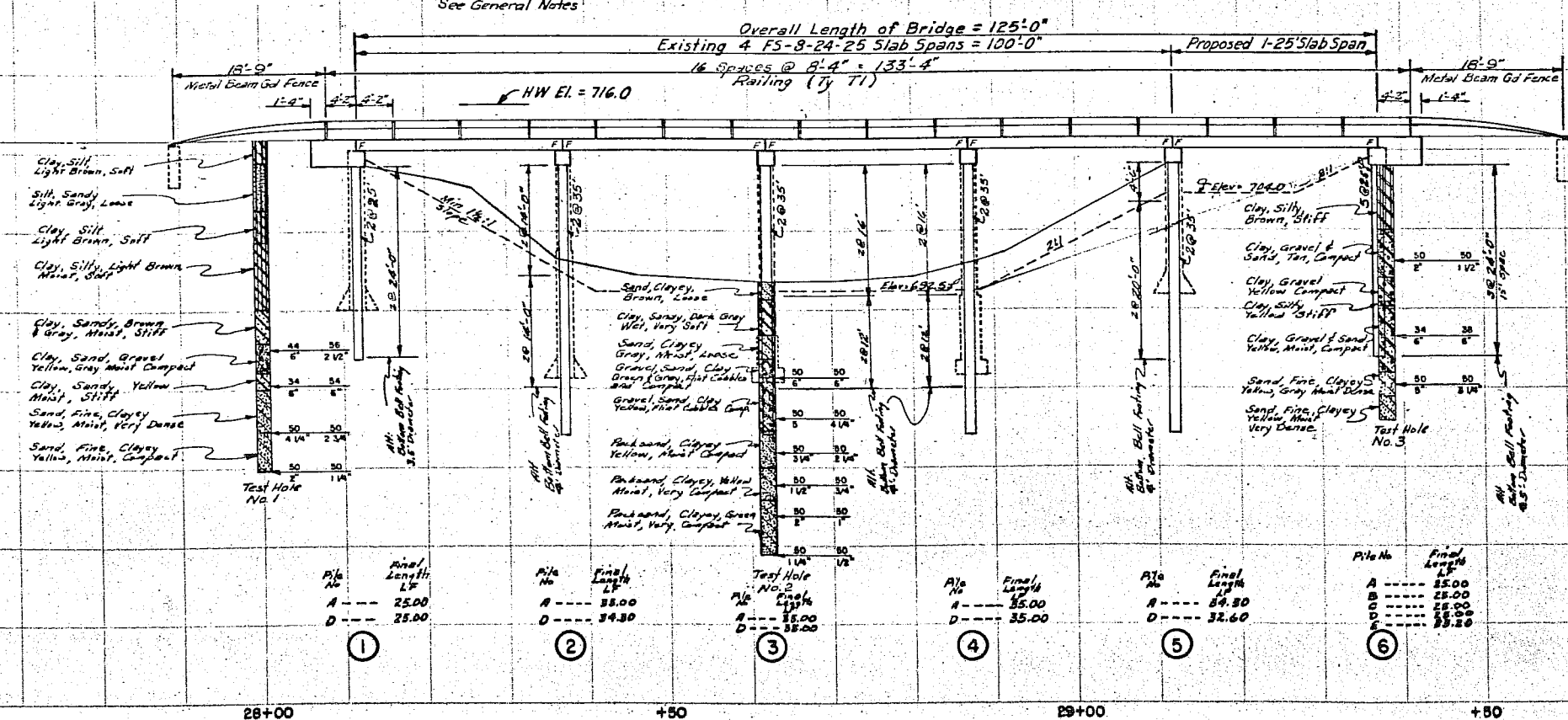
ITEM	UNIT	QUANT
Drilled Shaft (24")	LF	233
Reinf. Steel	CY	6.4
Cl. A Conc. (Bent)	CY	8.65
Cl. A Conc. For Ext. Str. (Bent)	CY	35.45
Reinf. Steel	LB	128.795

Note: Approach Rail (Metal Beam Guard Fence) shall be of the same material as that furnished for the Bridge Railing.

* See Standard BCG 0-24-30 for Details of Drilled Shaft not shown here. Cap Dimensions for Drilled Shaft Bents shall be the same as shown for piling Plan Sheet Nos. 18 & 19.

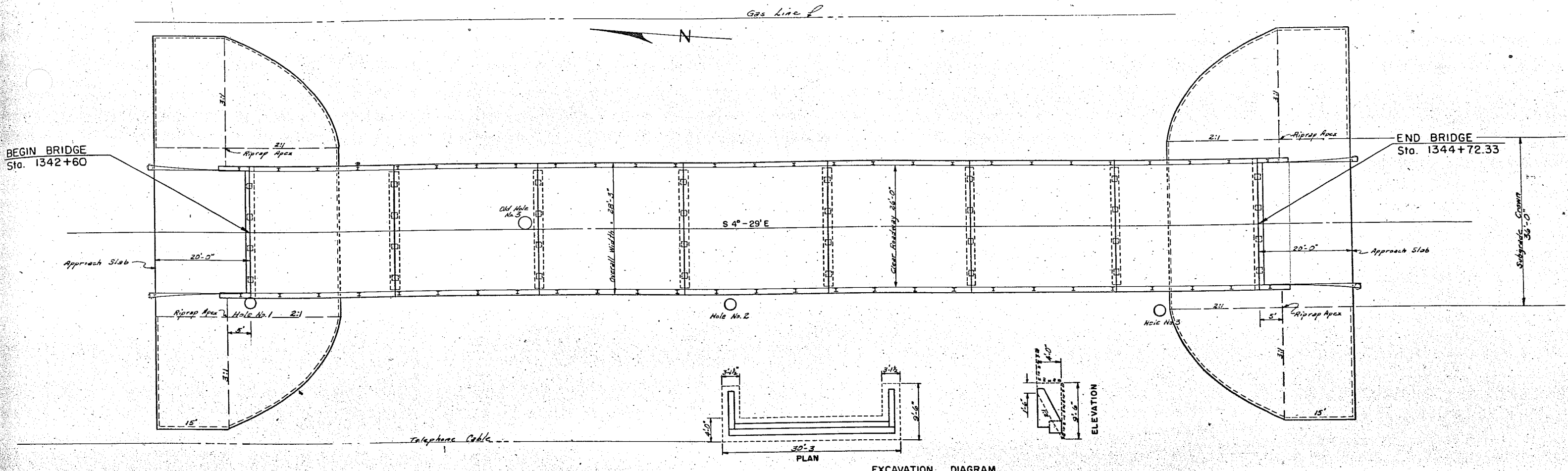
BRIDGE LAYOUT LEONA RIVER

Sta. 28+12.1 to Sta. 29+37.1
Extend Existing Bent & Slob Span
Bridge 6 Ft. Left & Right and
Add 1-25' Slob Span Unit
(See Spt. Details)



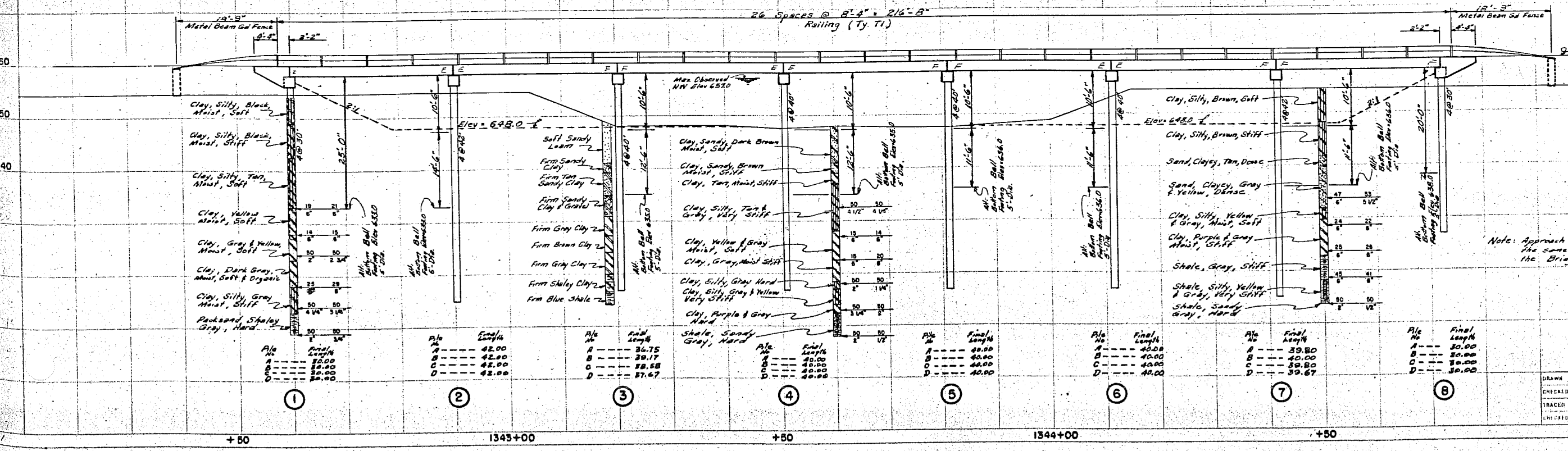
ITEM	UNIT	QUANT
Drilled Shaft (24")	LF	233
Reinf. Steel	CY	6.4
Cl. A Conc. (Bent)	CY	8.65
Cl. A Conc. For Ext. Str. (Bent)	CY	35.45
Reinf. Steel	LB	128.795

DRAWN	REV	DATE	PROJECT NO.	SHEET NO.
22	2	2010	C 276-5-10	ST. 57
22	2	2010	276	5
22	2	2010	276	5



ESTIMATED QUANTITIES

Uncl. Str. Excav. (Br.)	18.0	18.0 CY
Conc. Pil (14 In Sq)	1133.44	1133.44 LF
Cl. A Conc (Bent)	34.12	34.12 CY
Cl. A Conc (Pon Gird)	228.20	228.20 CY
Cl. A Conc (Appr Slab)	28.82	28.82 CY
Riprap (Conc) (Cl B)	94.28	94.28 CY
Reinf. Steel	50.870	50.870 LB
Rail (Ty T1)	433.33	433.33 LF
Metal Beam Guard Fence	75.00	75.00 LF
Reinf. Slab (Appr. Slab)	2788	2788 LF
Conc Pil (14 In Sq) Cut-Off	16.56	16.56 LF



ESTIMATED QUANTITIES

ITEM	UNIT	QUANT
Drilled Shaft (24 In)	LF	0.230
Ball Footing	CY	0.140
Cl. A Conc (Bent)	CY	0.531
Reinf. Steel	LB	0.54732

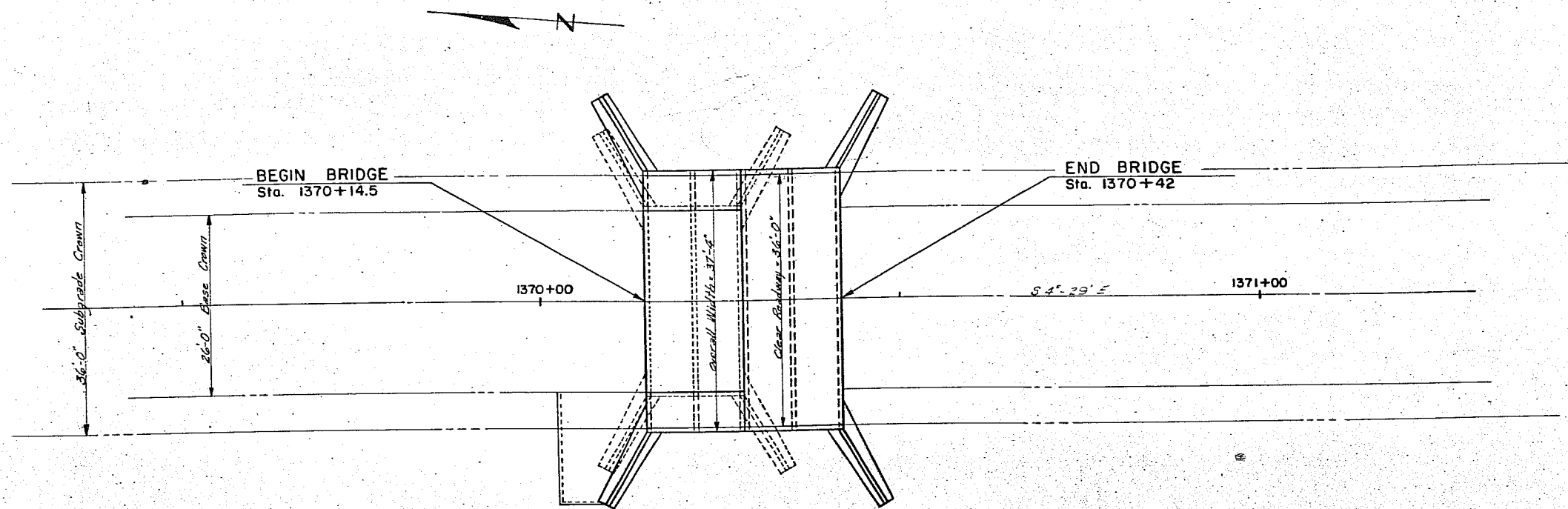
(1) Ball Footing 5'-0" x 5'-0"

For Hydraulic Data
See Plan Sheet No. 12.

Note: Approach Rail (Metal Beam Gd Fence) shall be of the same material as that furnished for the Bridge Railing.

BRIDGE LAYOUT
CHILDRES CREEK
Sta. 1342+60 to Sta. 1344+72.33
Prop: 7'-30"-4" Conc Slab & Girder Span
with Bridge Approach Slab
CG-0-26-30, BCG-0-26-30

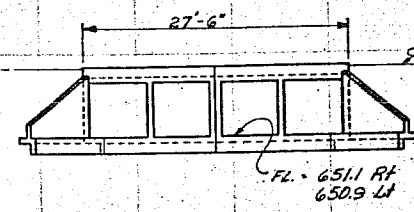
DRAWN	120 NO	STATE	FEDERAL AID PROJECT NO.	SHEET	OF	SHEETS	DATE
CHECKED	120 NO	STATE	FEDERAL AID PROJECT NO.	SHEET	OF	SHEETS	DATE
TRACED	120 NO	STATE	FEDERAL AID PROJECT NO.	SHEET	OF	SHEETS	DATE
120 NO	22	Zavala	236	3	11	15	



ESTIMATED QUANTITIES	
Uncl. Str. Excav. (Culv.)	20.00 25.12 CY
Cl. A Conc. (Culv.)	38.85 32.05 CY
Cl. A Conc. For Ext. Str. (Culv.)	15.51 16.81 CY
Reinf. Steel	7.29 7.99 Lbs
*Riprap (Conc.) (Cl. B)	7.86 6 CY

* Added during Construction.

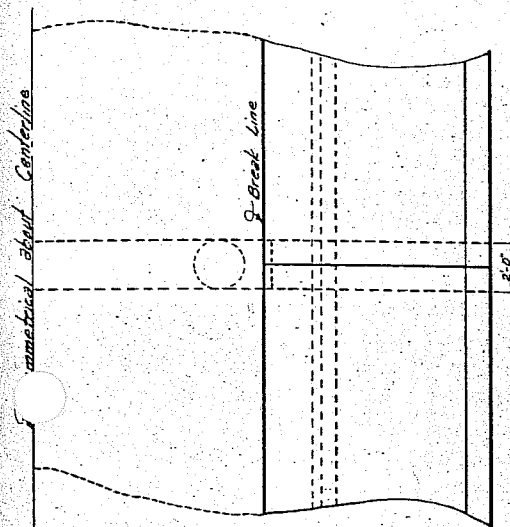
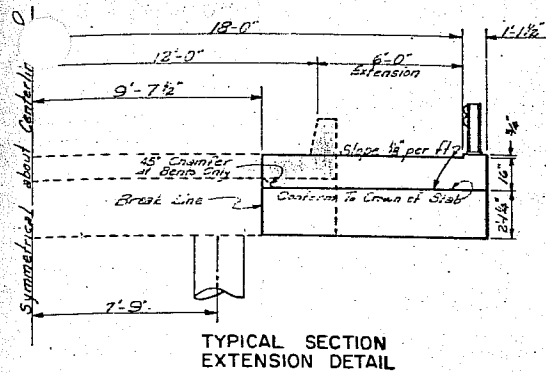
For Hydraulic Data See Plan Sheet No 12.



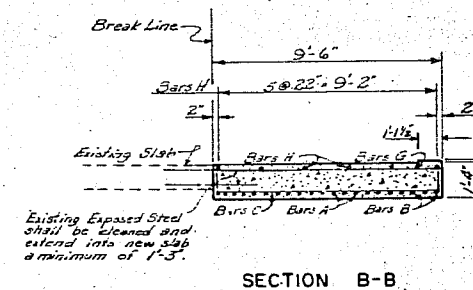
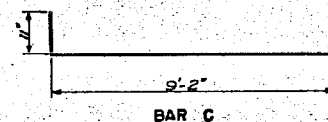
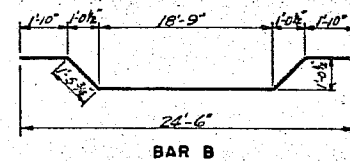
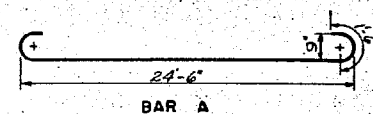
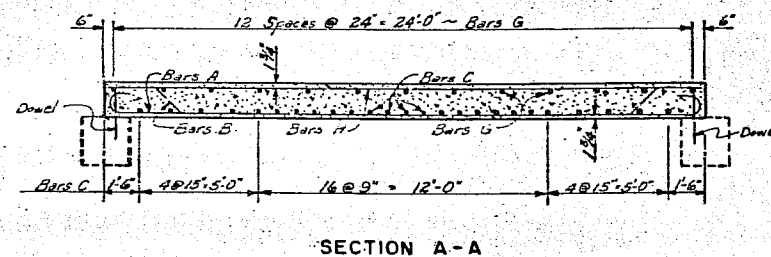
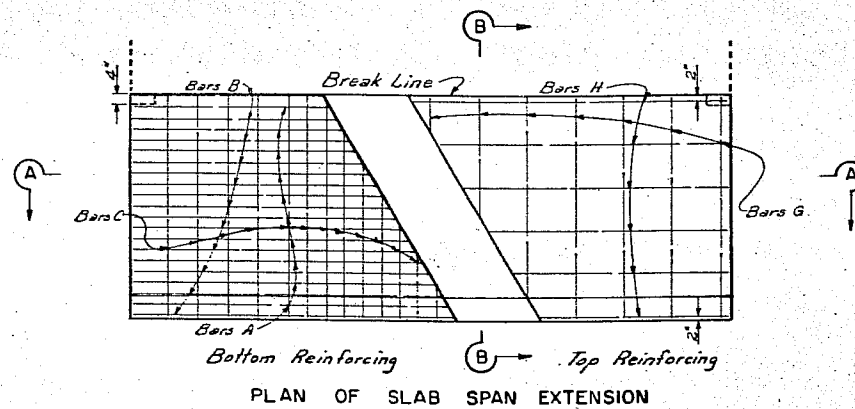
BRIDGE LAYOUT
LIVE OAK CREEK
 Sta. 1370+14.5 to Sta. 1370+42
 Existing: 2-6'6"x28' (MC6-1)
 Proposed: Extend existing structure 5' L & 5' Rt. and add 2-6'6"x36' (MC6-1 B MCW-F)

DRAWN	BY	STATE	FEDERAL AID PROJECT NO.	SHEET	OF	SHEETS
CHECKED	BY	TEXAS				
DESIGNED	STATE	COUNTY	SECTION	NO.		
APPROVED	22	Zavala	230	3	11	16

+50 1370+00 +50 1371+00



PLAN
Showing Break Line



GENERAL NOTES:

All concrete shall be class A.
All exposed corners shall be chamfered 3/4".

All dimensions relating to reinforcing steel are to centers of bars.

The existing exposed steel shall be cleaned and extend into new slab a minimum of 1'-3".

H-20 Loading

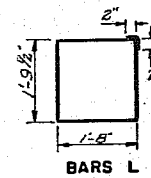
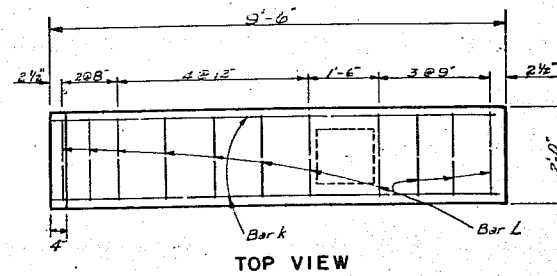
BILL OF REINFORCING STEEL FOR EXTENDING ONE SLAB SPAN (L.F. & RI.)					
Bar	No.	Size	Spec	Length	Weight
A	20	#8	11"	24'-3"	1,428
B	22	#8	11"	25'-4"	1,488
C	50	#5	9' @ 15"	11'-0"	574
G	24	#4	24"	9'-4"	142
H	12	#4	22"	24'-6"	196
Dowel	8	#6	5'-0"	2'-0"	24
TOTAL					3,872

ESTIMATED QUANTITIES FOR EXTENDING ONE SLAB SPAN (L.F. & RI.)		
Description	Unit	Quantity
C/A Conc For Ext Str (Slab)	CY	23.60
Reinf Steel	Lb	3,872

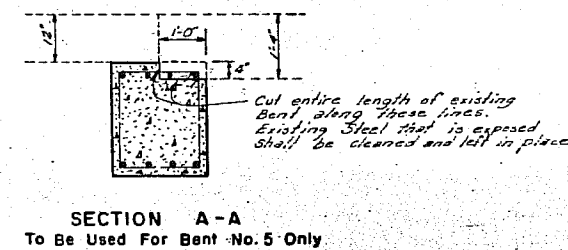
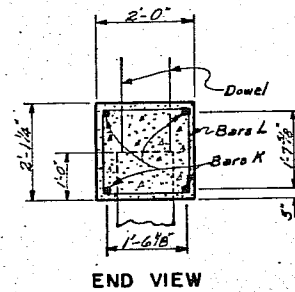
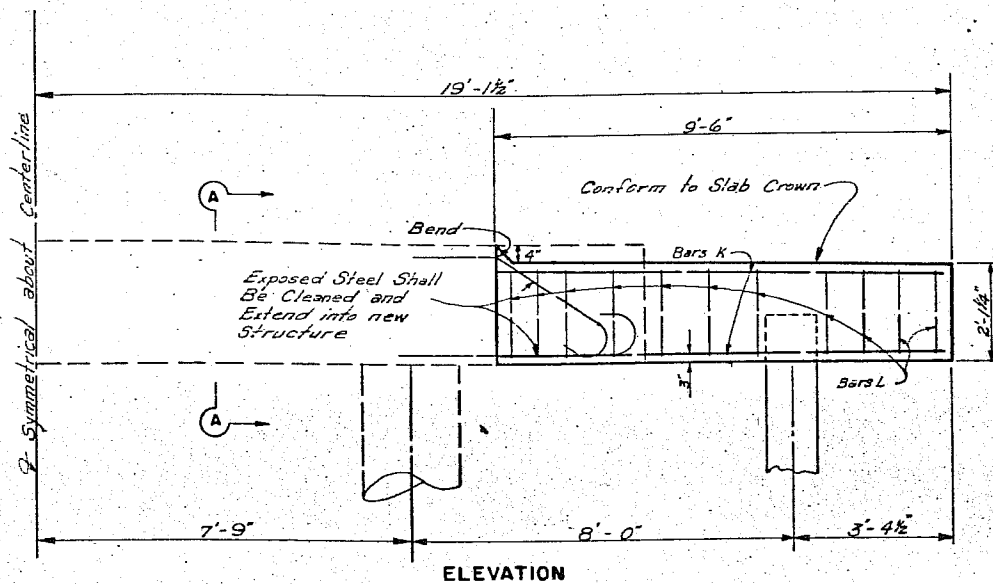
TEXAS HIGHWAY DEPARTMENT

Widen 25'-0" Slab Span
From 24'-0" Roadway To 38'-0" Roadway
LEONA RIVER BRIDGE
ON STATE HIGHWAY 57

FED. RD. DIST. NO.	STATE	PROJECT NO.	SHEET NO.
22	TEXAS	C 276-5-10	17
STATE DIST. NO.	COUNTY	POST. SECT.	JOB
22	ZAVALA	276 5 10	BT 5

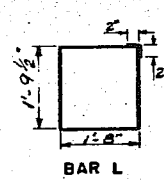
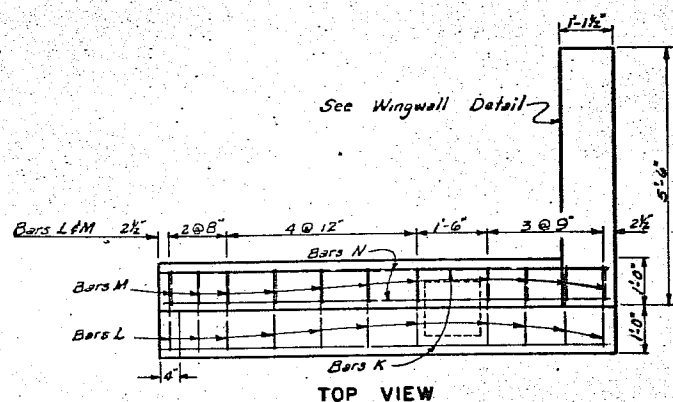


BILL OF REINFORCING STEEL For Extending One Int. Bent (Lt & Rt)					
Bar	No.	Size	Spac	Length	Weight
K	8	#11	Shown	9'-3"	393
L	22	#4	Shown	7'-3"	107
TOTAL					500



ESTIMATED QUANTITIES For Extending One Int. Bent (Lt & Rt)		
Description	Unit	Quantity
Ci A Conc For Ext Str. (Bent)	CY	3.94
Reinforcing Steel	Lb	500

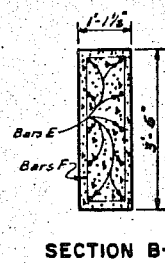
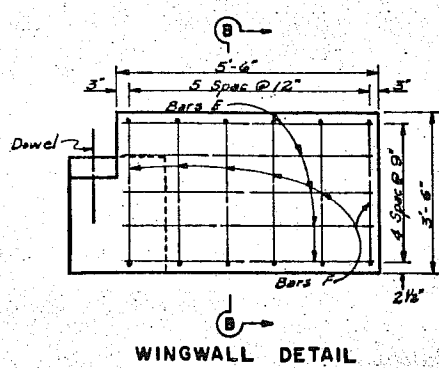
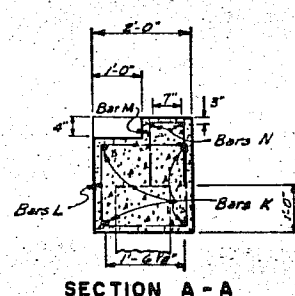
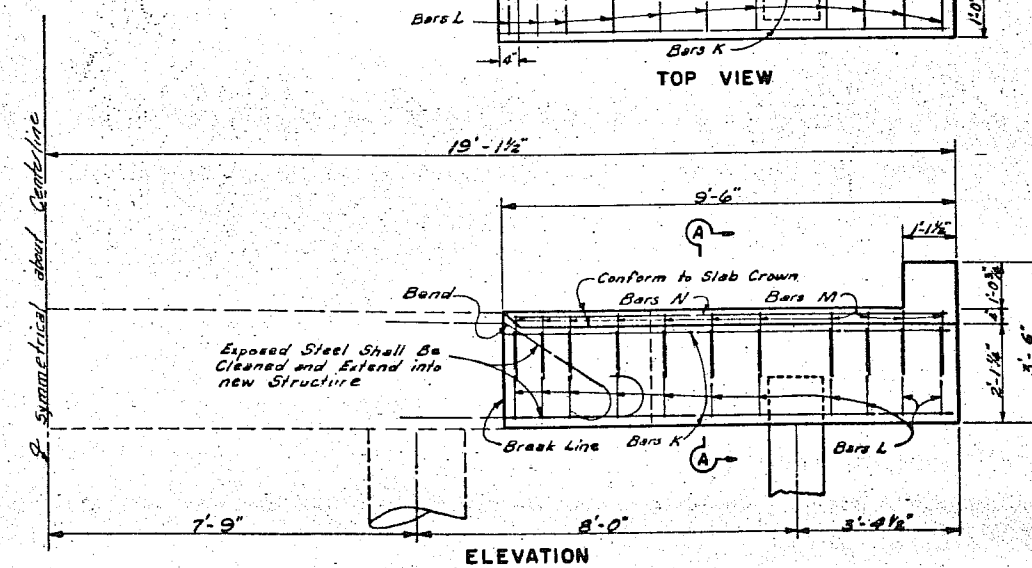
INTERIOR BENT



BILL OF REINFORCING STEEL For Extending One Abutment Bent (Lt & Rt)					
Bar	No.	Size	Spac	Length	Weight
K	8	#11	Shown	9'-3"	393
L	22	#4	Shown	7'-3"	107
N	4	#4	7"	9'-3"	25
M	22	#4	Shown	3'-4"	49
E	20	#4	~	5'-2"	49
F	12	#4	12"	8'-0"	64
TOTAL					707

ESTIMATED QUANTITIES For Extending One Abutment Bent (Lt & Rt)		
Description	Unit	Quantity
Ci A Conc For Ext Str. (Bent)	CY	4.67
Reinforcing Steel	Lb	707

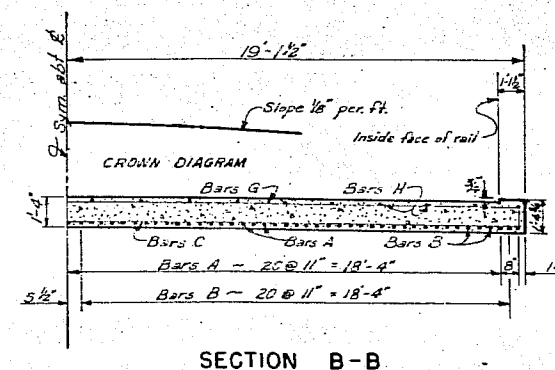
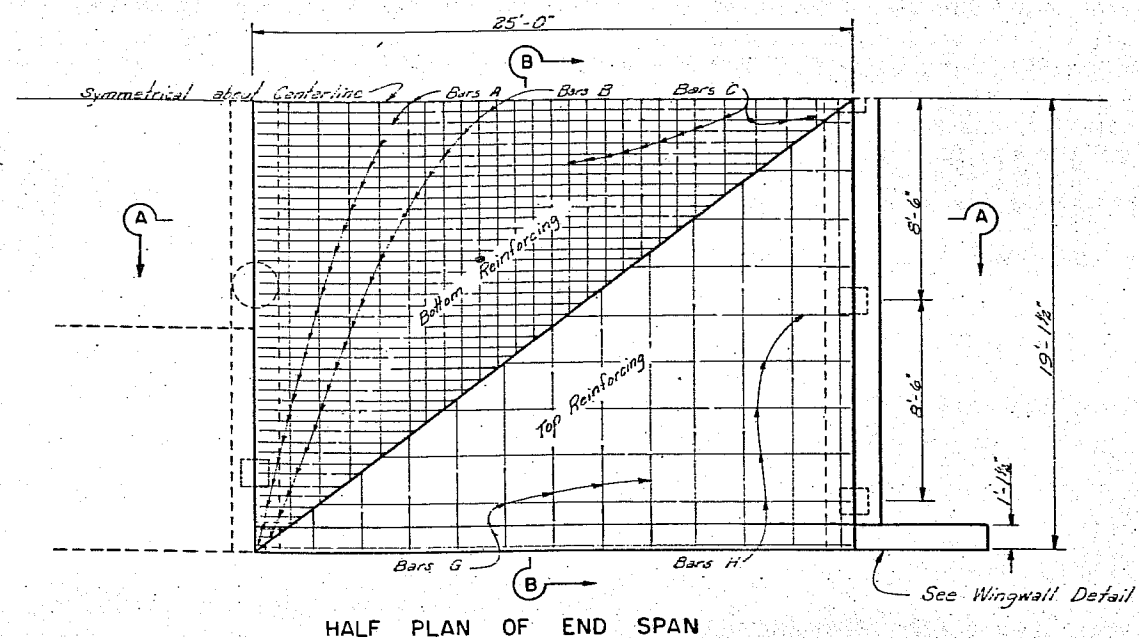
GENERAL NOTES:
 All concrete shall be Class A.
 Chamfer all exposed corners 3/4" unless otherwise noted.
 Dimensions relating to reinforcing steel are to centers of bars.
 Average Calc. Pile Loading:
 Abutment Bent = 22 T/shaft
 Interior Bent = 30 T/pile
 Avg. Calc. D.S. Loading:
 Abutment Bent = 22 T/shaft
 Interior Bent = 30 T/shaft
 No keyway required for widened abut. bent cap.
 H-20 Loading



ABUTMENT BENT

TEXAS HIGHWAY DEPARTMENT
 EXTENSION DETAIL FOR INT. &
 ABUT. BENT LEONA RIVER BRIDGE

FIG. NO.	STATE	PROJECT NO.	SHEET NO.
22	TEXAS	C 276-5-10	18
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
22	Zavala	BT6 5	10



BILL OF REINFORCING STEEL FOR ONE SLAB SPAN					
Bar	No	Size	Spec	Length	Weight
A	43	8	11"	26'-9"	3,071
B	42	8	11"	25'-4"	2,841
C	25	5	5' x 15"	39'-10"	1,039
G	13	4	24"	38'-0"	330
H	20	4	24"	24'-6"	327
Dowel	10	6	4'-0"	2'-0"	30
TOTAL					7,638

BILL OF REINFORCING STEEL FOR ONE ABUT. BENT					
Bar	No	Size	Spec	Length	Weight
J ₁	36	4	Shown	2'-9"	66
J ₂	36	4	Shown	6'-3"	160
K	4	9	~	37'-9"	513
M	20	4	~	5'-2"	69
N	12	4	12"	8'-0"	64
TOTAL					872

ESTIMATED QUANTITIES		
Unit	Cl. A Conc. C.Y.	Reinf. Steel Lb.
One Slab Span	47.35	7,638
One Abutment Bent	8.90	872
E. 65		

GENERAL NOTES:

All concrete shall be Class A. Chomfer all exposed corners 3/4" unless otherwise noted.

Dimensions relating to reinforcing steel are to centers of bars.

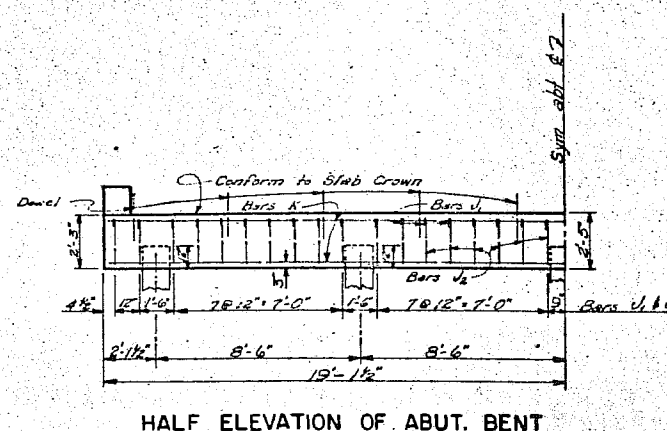
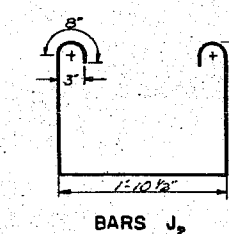
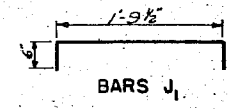
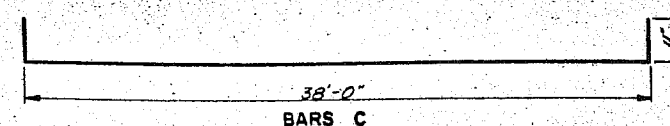
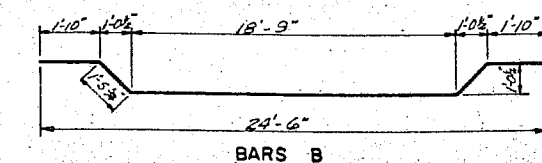
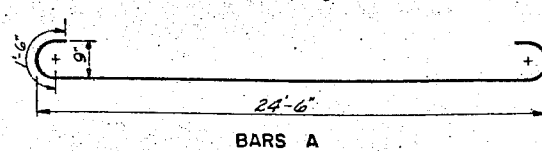
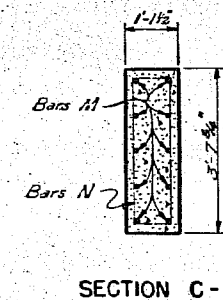
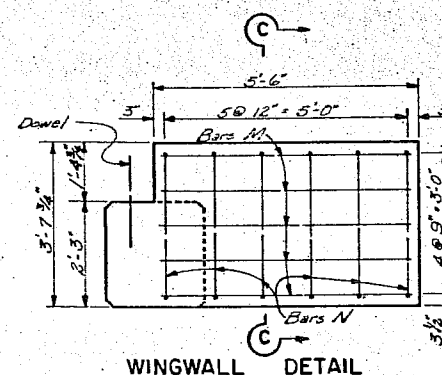
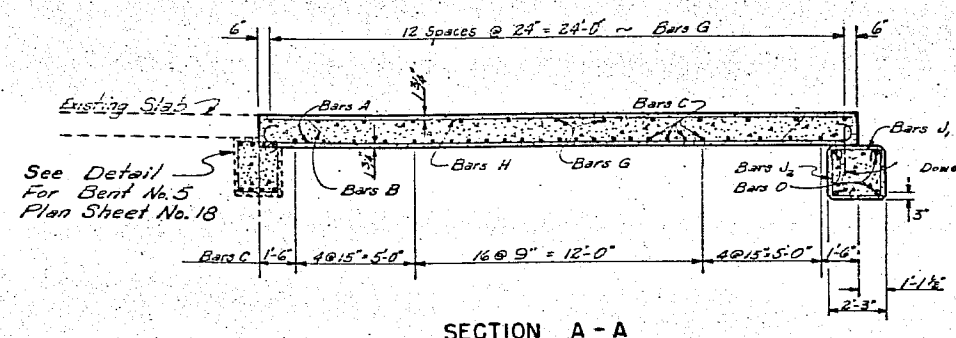
Average Calculated Pile Loading

Abut. Bent = 23 T/pile

Average Calculated D.S. Loading = 38 T/shaft

See RR 8 & RR 9 for keyway in abutment cap.

H-20 Loading



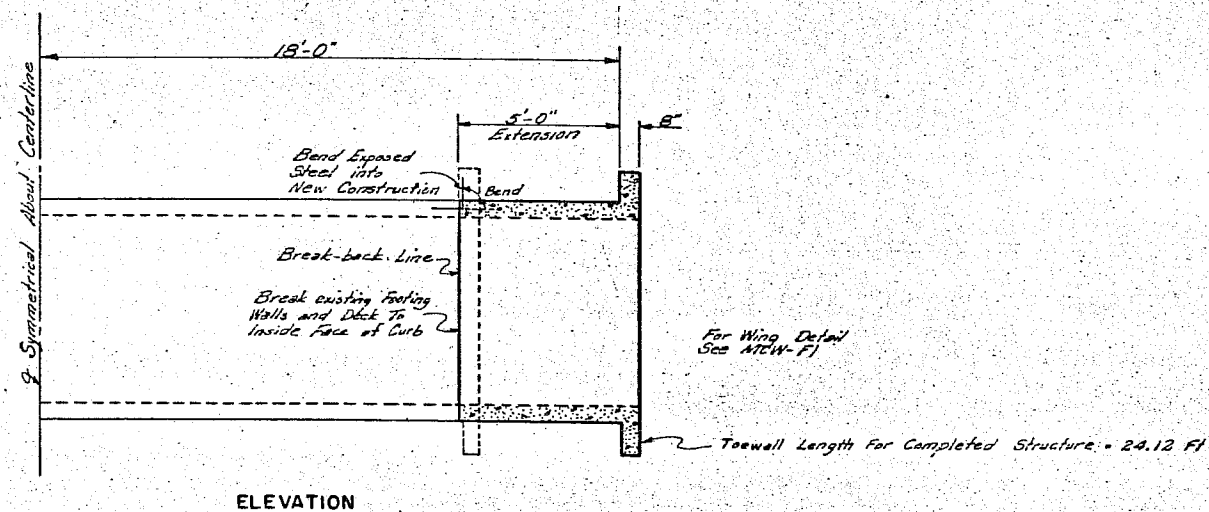
TEXAS HIGHWAY DEPARTMENT
LENGTHENING DETAILS (SPL.)
LEONA RIVER BRIDGE
1-25'-0" SLAB SPAN
36'-0" Roadway No Curbs

FED. RD. DIST. NO.	STATE	PROJECT NO.	SHEET NO.
22	TEXAS	C 276-5-10	19
COUNTY	CONTRACT	SECTION	JOB
Zavala	276	5	10
87.57			

BILL OF REINFORCING STEEL FOR 5' EXTENSION LEFT & RIGHT															
BAR	A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	Total
Number	16	30	32	32	14	28	42	48	30	4	28	20	14	14	
Size	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	
Spacing	10"	10"	8"	8"	10"	5"	~	18"	~	~	18"	18"	12"	12"	
Length	13'-7"	13'-5"	6'-10"	4'-1"	4'-8"	4'-8"	5'-6"	5'-6"	5'-6"	13'-5"	3'-11"	5'-11"	3'-4"	12'-10"	
Weight	145	269	189	87	44	87	154	176	110	36	73	79	31	120	1600

BILL OF REINF. STEEL FOR TWO TOEWALLS					
BAR	NUMBER	SIZE	SPAC	LENGTH	WEIGHT
Y	2	#4	~	24'-1"	32
Z ₁	17	#4	18"	2'-6"	28
Z ₂	17	#4	18"	3'-6"	40
TOTAL					100

ESTIMATED QUANTITIES FOR EXTENSIONS & ADDITION OF 2'-6"x6"x36" MBC			
Portion of Structure	Cl. A Conc For Ext. Str. (Culv)	Cl. A Conc. (Culv)	Reinforcing Steel
	C.Y.	C.Y.	Lb.
Barrel (Extension)	10.86		1600
Barrel (Addition)		34.21	4808
Wingwalls	3.98	3.97	791
Toewalls	0.67	0.67	100
TOTAL	15.51	38.85	7299



GENERAL NOTES:

For dimensions and details not shown hereon see design standards MC 6-1 & MCW-F1 and see Bridge Layout Sheet.

The existing exposed steel shall be cleaned and extend into the construction.

CULVERT EXTENSION DETAIL

Sta. 1370+14.5 to Sta. 1370+42

Existing: 2'-6"x6"x26" (MC 6-1)
Proposed: Extend existing structure 5' Lt & Rt and add 2'-6"x6"x36" (MC 6-1 & MCW-F1)

FED. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS				20
STATE DIST. NO.	COUNTY	CON.	SECT.	JOB	HIGHWAY NO.
22	Zavala	236	3	11	FM 117

CULVERT SIZE		TYPE	SECTION	DIMENSIONS		TOTAL QUANTITIES 44'-0" CLEAR WIDTH	QUANTITIES OF RDWY BARREL		BARS A IN TOP SLAB		BARS B IN BOTTOM SLAB	BARS C WALLS AND TOP CORNER	BARS D IN BOTTOM CORNERS	62#4 BARS E @ 18" C to C	#4 BARS F LENGTH = 46'-8"	BARS H 4'-4"	#4 BARS M IN TOP SLAB	#4 BARS N IN BOTTOM SLAB															
				T	U		Conc.	Reinf.	No.	Size	Spac.	Length	Weight	No.	Size	Spac.	Length	Weight	No.	Size	Spac.	Length	Weight	No.	Size	Spac.	Length	Weight	No.	Size	Spac.	Length	Weight
3'x3'	2	1	1	6"	6"	10.63	1285	0.230	27.49	78	#4	7"	3'-9"	195																			
3'x3'	2	1	1	6"	6"	12.37	1367	0.268	29.27	78	#4	7"	3'-9"	195																			
4'x4'	2	1	1	6"	6"	12.42	1771	0.268	38.06	91	#4	6"	4'-10"	294																			
4'x4'	2	1	1	6"	6"	14.16	1875	0.307	40.35	91	#4	6"	4'-10"	294																			
4'x4'	2	1	1	6"	6"	15.90	2041	0.345	44.03	91	#4	6"	4'-10"	294																			
5'x5'	2	2	2	6"	6"	14.21	2126	0.307	45.74	68	#5	8"	5'-10"	414	58	#4	9 1/2"	5'-10"	226	136	#4	8"	4'-10"	371	1'-7"								
5'x5'	2	2	2	6"	6"	15.95	2217	0.345	47.75	68	#5	8"	5'-10"	414	58	#4	9 1/2"	5'-10"	226	136	#4	8"	4'-10"	371	1'-7"								
5'x5'	2	2	2	6"	6"	17.69	2370	0.383	51.14	68	#5	8"	5'-10"	414	58	#4	9 1/2"	5'-10"	226	136	#4	8"	4'-10"	371	1'-7"								
5'x5'	2	2	2	6"	6"	21.17	2995	0.460	64.84	68	#5	8"	6'-0"	426	58	#4	9 1/2"	6'-0"	232	136	#4	8"	4'-10"	371	1'-7"								
6'x6'	2	2	2	6"	6"	17.74	2782	0.383	59.96	78	#5	7"	6'-11"	563	78	#4	7"	6'-11"	360	168	#4	6 1/2"	5'-10"	458	1'-7"								
6'x6'	2	2	2	6"	6"	19.48	2956	0.422	63.81	78	#5	7"	6'-11"	563	78	#4	7"	6'-11"	360	168	#4	6 1/2"	5'-10"	458	1'-7"								
6'x6'	2	2	2	6"	6"	22.96	3607	0.498	78.06	78	#5	7"	7'-1"	576	78	#4	7"	7'-1"	369	168	#4	6 1/2"	5'-10"	458	1'-7"								
6'x6'	2	2	2	6"	6"	24.99	3760	0.543	81.42	78	#5	7"	7'-1"	576	78	#4	7"	7'-1"	369	168	#4	6 1/2"	5'-10"	458	1'-7"								
7'x7'	2	2	2	6 1/2"	6 1/2"	20.69	2974	0.447	64.04	78	#5	7"	7'-1"	644	91	#4	6"	7'-1"	481	156	#4	7"	5'-10"	425	1'-7"								
7'x7'	2	2	2	6 1/2"	6 1/2"	22.43	3140	0.486	67.71	78	#5	7"	7'-1"	644	91	#4	6"	7'-1"	481	156	#4	7"	5'-10"	425	1'-7"								
7'x7'	2	2	2	6 1/2"	6 1/2"	25.94	3625	0.563	78.41	78	#5	7"	8'-1"	658	91	#4	6"	8'-1"	491	136	#4	8"	7'-10"	371	1'-7"								
7'x7'	2	2	2	6 1/2"	6 1/2"	27.96	3757	0.607	81.30	78	#5	7"	8'-1"	658	91	#4	6"	8'-1"	491	136	#4	8"	7'-10"	371	1'-7"								
7'x7'	2	2	2	6 1/2"	6 1/2"	29.99	4015	0.652	86.96	78	#5	7"	8'-1"	658	91	#4	6"	8'-1"	491	136	#4	8"	7'-10"	371	1'-7"								
8'x8'	2	2	2	6 1/2"	6 1/2"	24.36	3632	0.527	78.42	78	#5	7"	8'-11"	725	68	#5	8"	8'-11"	632	182	#4	6"	6'-10"	496	1'-7"								
8'x8'	2	2	2	6 1/2"	6 1/2"	27.87	4296	0.604	92.95	78	#5	7"	9'-1"	739	68	#5	8"	9'-1"	644	182	#4	6"	6'-10"	496	1'-7"								
8'x8'	2	2	2	6 1/2"	6 1/2"	29.90	4459	0.649	96.51	78	#5	7"	9'-1"	739	68	#5	8"	9'-1"	644	182	#4	6"	6'-10"	496	1'-7"								
8'x8'	2	2	2	6 1/2"	6 1/2"	31.93	4746	0.694	102.84	78	#5	7"	9'-1"	739	68	#5	8"	9'-1"	644	182	#4	6"	6'-10"	496	1'-7"								
8'x8'	2	2	2	6 1/2"	6 1/2"	36.59	5107	0.797	110.86	78	#5	7"	9'-4"	759	68	#5	8"	9'-4"	662	198	#4	5 1/2"	10'-10"	540	1'-7"								
9'x9'	2	2	2	7"	7"	31.28	5131	0.678	111.26	64	#6	8 1/2"	10'-2"	977	84	#5	6 1/2"	10'-2"	891	128	#5	8 1/2"	8'-3"	1101	2'-1"								
9'x9'	2	2	2	7"	7"	33.31	5306	0.723	115.10	64	#6	8 1/2"	10'-2"	977	84	#5	6 1/2"	10'-2"	891	128	#5	8 1/2"	8'-3"	1235	2'-1"								
9'x9'	2	2	2	7"	7"	35.33	5605	0.768	121.70	64	#6	8 1/2"	10'-2"	977	84	#5	6 1/2"	10'-2"	891	128	#5	8 1/2"	10'-3"	1368	2'-1"								
9'x9'	2	2	2	7"	7"	40.03	6057	0.871	130.83	61	#6	9"	10'-4"	947	61	#6	9"	10'-4"	947	122	#5	9"	11'-3"	1432	2'-4"								
9'x9'	2	2	2	7"	7"	42.34	6350	0.922	137.28	61	#6	9"	10'-4"	947	61	#6	9"	10'-4"	947	122	#5	9"	12'-3"	1559	2'-4"								
10'x10'	2	2	2	7"	7"	33.36	6000	0.723	130.13	68	#6	8"	11'-2"	1141	68	#6	8"	11'-2"	1141	156	#5	7"	8'-3"	1342	2'-1"								
10'x10'	2	2	2	7"	7"	35.39	6204	0.768	134.60	68	#6	8"	11'-2"	1141	68	#6	8"	11'-2"	1141	156	#5	7"	8'-3"	1505	2'-1"								
10'x10'	2	2	2	7"	7"	37.41	6534	0.813	141.83	68	#6	8"	11'-2"	1141	68	#6	8"	11'-2"	1141	156	#5	7"	10'-3"	1668	2'-1"								
10'x10'	2	2	2	7"	7"	42.10	7193	0.916	155.83	73	#6	7 1/2"	11'-4"	1243	73	#6	7 1/2"	11'-4"	1243	146	#5	7 1/2"	11'-3"	1713	2'-4"								
10'x10'	2	2	2	7"	7"	44.42	7510	0.967	162.82	73	#6	7 1/2"	11'-4"	1243	73	#6	7 1/2"	11'-4"	1243	146	#5	7 1/2"	12'-3"	1865	2'-4"								
10'x10'	2	2	2	7"	7"	46.74	7863	1.018	169.81	73	#6	7 1/2"	11'-4"	1243	73	#6	7 1/2"	11'-4"	1243	146	#5	7 1/2"	13'-2"	2018	2'-4"								
6'x5'	2	2	2	6"	6"	17.74	2870	0.383	61.97	68	#5	8"	6'-11"	491	68	#5	8"	6'-11"	491	182	#4	6"	6'-10"	496	1'-7"								
6'x5'	2	2	2	6"	6"	19.48	3054	0.422	66.03	68	#5	8"	6'-11"	491	68	#5	8"	6'-11"	491	182	#4	6"	6'-10"	496	1'-7"								
6'x5'	2	2	2	6"	6"	22.96	3715	0.498	80.51	68	#5	8"	7'-1"	502	68	#5	8"	7'-1"	502	182	#4	6"	7'-10"	524	1'-7"								
6'x5'	2	2	2	6"	6"	24.99	4016	0.543	87.21	68	#5	8"	7'-1"	502	68	#5	8"	7'-1"	502	182	#4	6"	7'-10"	524	1'-7"								
7'x5'	2	2	2	6 1/2"	6 1/2"	20.69	3187	0.447	68.86	68	#5	8"	7'-1"	561	68	#5	8"	7'-1"	561	168	#4	6 1/2"	6'-10"	458	1'-7"								
7'x5'	2	2	2	6 1/2"	6 1/2"	22.43	3162	0.486	68.29	68	#5	8"	7'-1"	561	68	#5	8"	7'-1"	561	168	#4	6 1/2"	6'-10"	458	1'-7"								
7'x5'	2	2	2	6 1/2"	6 1/2"	25.93	3815	0.563	82.58	68	#5	8"	8'-1"	573	68	#5	8"	8'-1"	573	168	#4	6 1/2"	7'-10"	479	1'-7"								
7'x5'	2	2	2	6 1/2"	6 1/2"	27.96	4173	0.607	90.28	73	#5	7 1/2"	8'-1"	615	73	#5	7 1/2"	8'-1"	615	182	#4	6 1/2"	8'-10"	524	1'-7"								
7'x5'	2	2	2	6 1/2"	6 1/2"	29.99	4611	0.652	99.98	73	#5	7 1/2"	8'-1"	615	73	#5	7 1/2"	8'-1"	615	182	#4	6 1/2"	9'-10"	540	1'-7"								
8'x6'	2	2	2	7"	7"	25.66	3915	0.556	84.63	84	#5	6 1/2"	8'-11"	781	84	#5	6 1/2"	8'-11"	781	198	#4	5 1/2"	6'-11"	915	2'-1"								
8'x6'	2	2	2	7"	7"	29.20	4464	0.634	96.54	84	#5	6 1/2"	9'-1"	796	84	#5	6 1/2"	9'-1"	796	182	#4	5 1/2"	7'-11"	963	2'-1"								
8'x6'	2	2	2	7"	7"	31.23	4626	0.678	100.11	84	#5	6 1/2"	9'-1"	796	84	#5	6 1/2"	9'-1"	796	182	#4	5 1/2"	8'-11"	1084	2'-1"								
8'x6'	2	2	2	7"	7"	33.25	5066	0.723	109.86	84	#5	6 1/2"	9'-1"	796	84	#5	6 1/2"	9'-1"	796	198	#4	5 1/2"	9'-11"	1312	2'-1"								
8'x6'	2	2	2	7"	7"	37.95	5483	0.827	119.02	84	#5	6 1/2"	9'-4"	817	84	#5	6 1/2"	9'-4"	817	218	#4	5 1/2"	10'-11"	1590	2'-1"								
9'x6'	2	2	2	7"	7"	31.28	5630	0.678	122.17	68	#6	8"	10'-2"	1038	68	#6	8"	10'-2"	1038	156	#5	7"	8'-3"	1342	2'-1"								
9'x6'	2	2	2	7"	7"	33.31	5834	0.723	126.64	68	#6	8"	10'-2"	1038	68	#6	8"	10'-2"	1038	156	#5	7"	8'-3"	1505	2'-1"								
9'x6'	2	2	2	7"																													

TABLE OF REINFORCING STEEL FOR TWO WINGS

TABLE OF REINFORCING STEEL - Continued

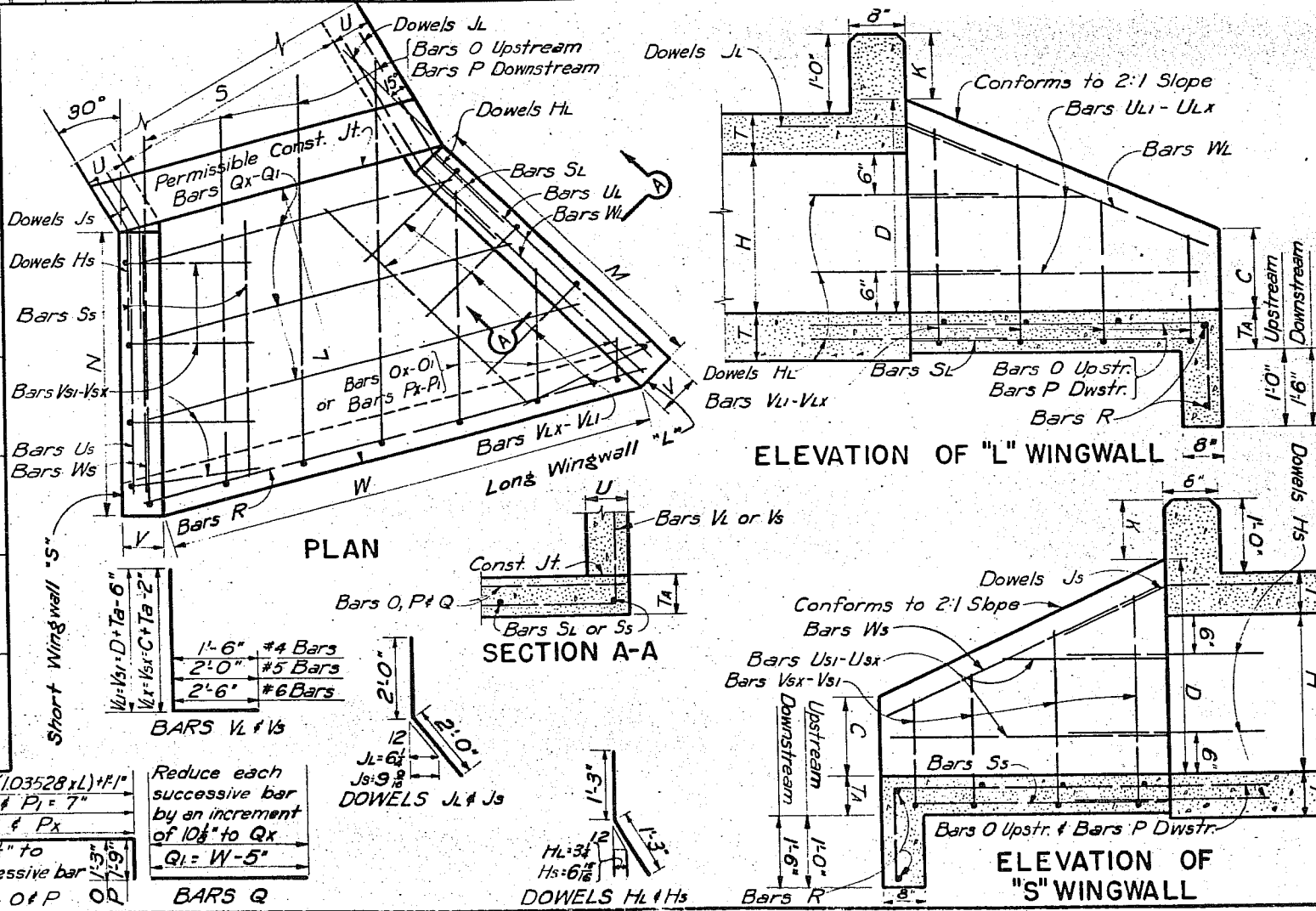
$U_1 = 2'-6" \# U_5 = 2'-2"$
 $U_2 \text{ thru } U_{(x-n)} \text{ or } U_5 \text{ thru } U_{(x-n)}$
 $U_x = M-2" \# U_{5x} = N-2"$
 Increase each successive Bar by: $2'-3\frac{1}{2}"$ for Bars U_2-U_4 & $2'-0\frac{1}{2}"$ for Bars U_5-U_{5x}
 BARS U_1 & U_5

$O \neq P = (1.03528 \times L) + P_1$
 $O_1 \neq P_1 = 7"$
 $\rightarrow O_x \neq P_x$
 Add $1' 3\frac{1}{2}"$ to
 each successive bar $1' 3"$ $1' 9"$
 BARS: $O \neq P$ $O \neq P$

Reduce each successive bar by an increment of $10\frac{1}{8}"$ to Qx

Q1 = W-5"

BARS Q



GENERAL NOTES:-
All concrete shall be Class A.
Dimensions relating to reinforcing steel are to centers of bars.
Steel cover to be 2" from center of outside layer of steel to face of concrete.
Chamfer exposed corners $\frac{3}{4}$ " except as otherwise noted.

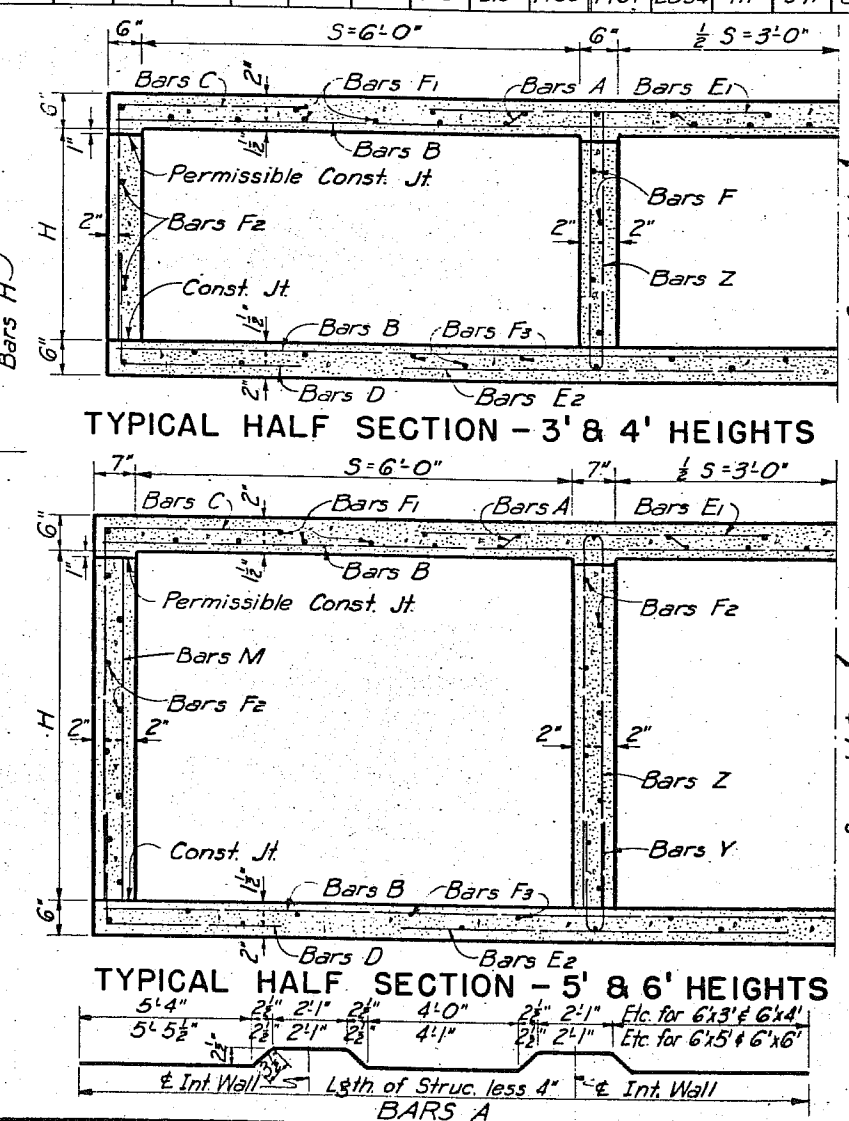
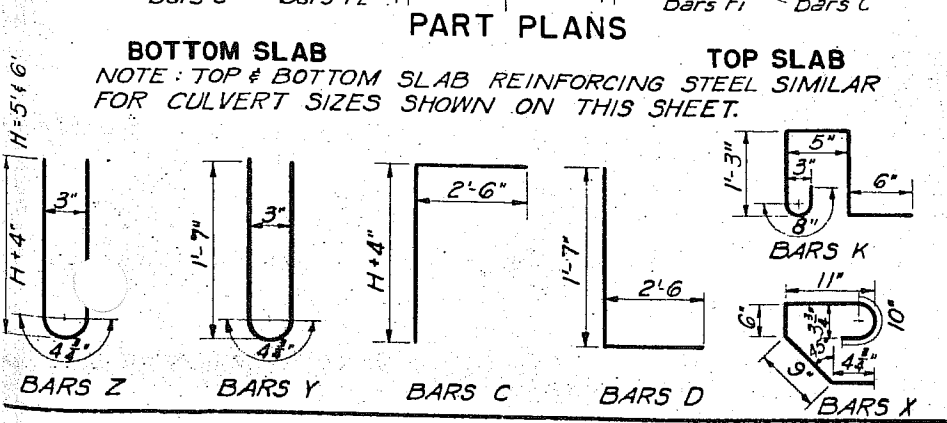
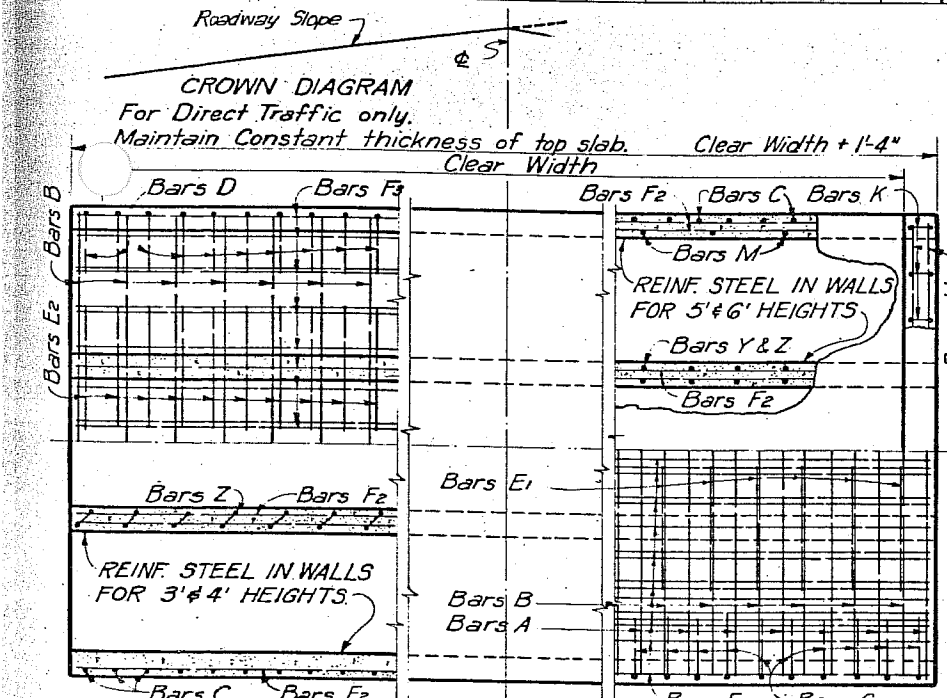
TEXAS HIGHWAY DEPARTMENT
FLARED WINGS-15° SKEW
FOR
SINGLE BOX CULVERTS
SIZES 3 x 2 TO 10 x 10
FW-15°

DIN:	RATM.	DRAWING	DATE	FED. PROJ. NO.	STATE	FEDERAL AID PROJECT NO.	FED. DIST. NO.
CK DW	WJ	Original	April 1949	6	TENAS	C276-5-10-C236-1-1	22
DW		Rev Oct. 1959					
CK DW	H M	Rev Jan 1959					
TE	CWW						
CTR	MMA						

BILLS OF REINFORCING STEEL - FOR 44' CLEAR WIDTH - BARRELS ONLY

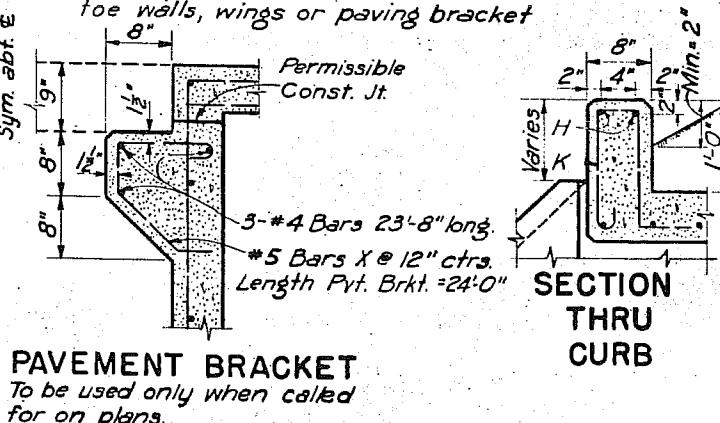
2 SPANS 6'x3'													2 SPANS 6'x4'													2 SPANS 6'x5'													2 SPANS 6'x6'																												
A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	Z		A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	Z		A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z														
55	109	136	136	54	109	21	8	15	4	28	46		55	109	136	136	54	109	21	12	15	4	28	46		55	109	136	136	54	109	21	24	15	4	28	62	46	46		55	109	136	136	54	109	21	24	15	4	28	62	46	46													
#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4													
10"	10"	8"	8"	10"	5"	18"	18"	18"	12"	12"	10"		10"	10"	8"	8"	10"	5"	16"	16"	16"	12"	12"	10"		10"	10"	8"	8"	10"	5"	15"	15"	15"	12"	12"	10"	10"	10"	10"	10"	10"	8"	8"	10"	5"	18"	18"	18"	12"	12"	10"	10"	10"	10"	10"	10"	10"									
13'4"	13'2"	5'10"	4'1"	4'8"	4'8"	45'0"	45'0"	45'0"	13'2"	3'11"	7'6"		13'4"	13'2"	6'10"	4'1"	4'8"	4'8"	45'0"	45'0"	45'0"	13'2"	3'11"	9'6"		13'7"	13'5"	7'10"	4'1"	4'8"	4'8"	45'0"	45'0"	45'0"	13'5"	3'11"	4'11"	3'4"	10'10"	13'7"	13'5"	8'10"	4'1"	4'8"	4'8"	45'0"	45'0"	45'0"	13'5"	3'11"	5'11"	3'4"	12'10"	13'7"	13'5"	8'10"	4'1"	4'8"	4'8"	45'0"	45'0"	45'0"					
190	959	530	371	168	340	632	241	452	35	73	230		490	959	620	371	168	340	632	361	452	35	73	292		499	977	711	371	168	340	632	722	452	36	73	204	102	333	499	977	802	371	168	340	632	722	452	36	73	245	102	394	499	977	802	371	168	340	632	722	452	36	73	245	102	394

3 SPANS 6'x3'													3 SPANS 6'x4'													3 SPANS 6'x5'													3 SPANS 6'x6'																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	Z		A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	Z		A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	A	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																			
55	109	136	136	108	218	32	12	22	4	42	92		55	109	136	136	108	218	32	18	22	4	42	92		55	109	136	136	108	218	32	32	22	4	42	62	92	92		55	109	136	136	108	218	32	32	22	4	42	62	92	92																																																																																																																																																																																																																																																																																																																																																																																																																																																		
#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4																																																																																																																																																																																																																																																																																																																																																																																																																																															
10"	10"	8"	8"	10"	5"	18"	18"	18"	12"	12"	10"		10"	10"	8"	8"	10"	5"	16"	16"	16"	12"	12"	10"		10"	10"	8"	8"	10"	5"	15"	15"	15"	12"	12"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"



BARREL QUANTITIES FOR 44' CLEAR WIDTH

CULVERT SIZE	NO. OF SPANS	LENGTH OF STRUCT.	BARREL QUANT.		QUANT. P.L.F. BBL	
			CONC.	STEEL	CONC.	STEEL
			Cu. Yd.	Lb.	Cu. Yd.	Lb.
6'x3'	2	13'-6"	30.90	4521	0.667	97.30
	3	20'-0"	44.64	6695	0.963	143.99
	4	26'-6"	58.38	8862	1.259	190.69
	5	33'-0"	72.17	11037	1.556	237.38
	6	39'-6"	85.91	13,205	1.852	284.07
6'x4'	2	13'-6"	33.40	4793	0.722	103.31
	3	20'-0"	48.00	7089	1.037	152.68
	4	26'-6"	62.60	9377	1.352	202.04
	5	33'-0"	77.20	11,674	1.667	251.40
	6	39'-6"	91.76	13,965	1.981	300.78
6'x5'	2	13'-9"	38.44	5620	0.833	121.43
	3	20'-4"	54.72	8128	1.185	175.44
	4	26'-11"	71.01	10,629	1.537	229.47
	5	33'-6"	87.29	13,139	1.889	283.49
	6	40'-1"	103.57	15,647	2.241	337.48
6'x6'	2	13'-9"	41.39	5813	0.898	125.66
	3	20'-4"	58.67	8382	1.272	181.01
	4	26'-11"	75.90	10,946	1.645	236.37
	5	33'-6"	93.18	13,097	2.019	291.73
	6	40'-1"	110.42	16,086	2.392	347.06



GENERAL NOTES:-
Design Loading: H20- or H20 S16- in accordance with A.A.S.H.O 1957 Standard Specifications.
All concrete shall be Class "A". Chamfer exposed corners 1/4".
Dimensions relating to reinforcing steel are to centers of bars.
Quantities of reinforcing steel shown hereon are for 44'-0" clear width between headwalls.

CONSTRUCTION JOINTS: SHOW AT THE FLOW LINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S OPTION. BARS M MAY BE CUT OFF OR RAISED. BARS C & L MAY BE REVERSED (D ON TOP) AND BARS Y & Z MAY BE REVERSED (Y ON TOP).

PVT. BRKT. QUANT.

2 PVT. BRKTS.	
24'-0" Long	
CONC.	STEEL
CU. YDS.	LBS.
1.19	264

TEXAS HIGHWAY DEPARTMENT

MULTIPLE BOX CULVERTS

SIZES 6'x3', 6'x4', 6'x5' & 6'x6'

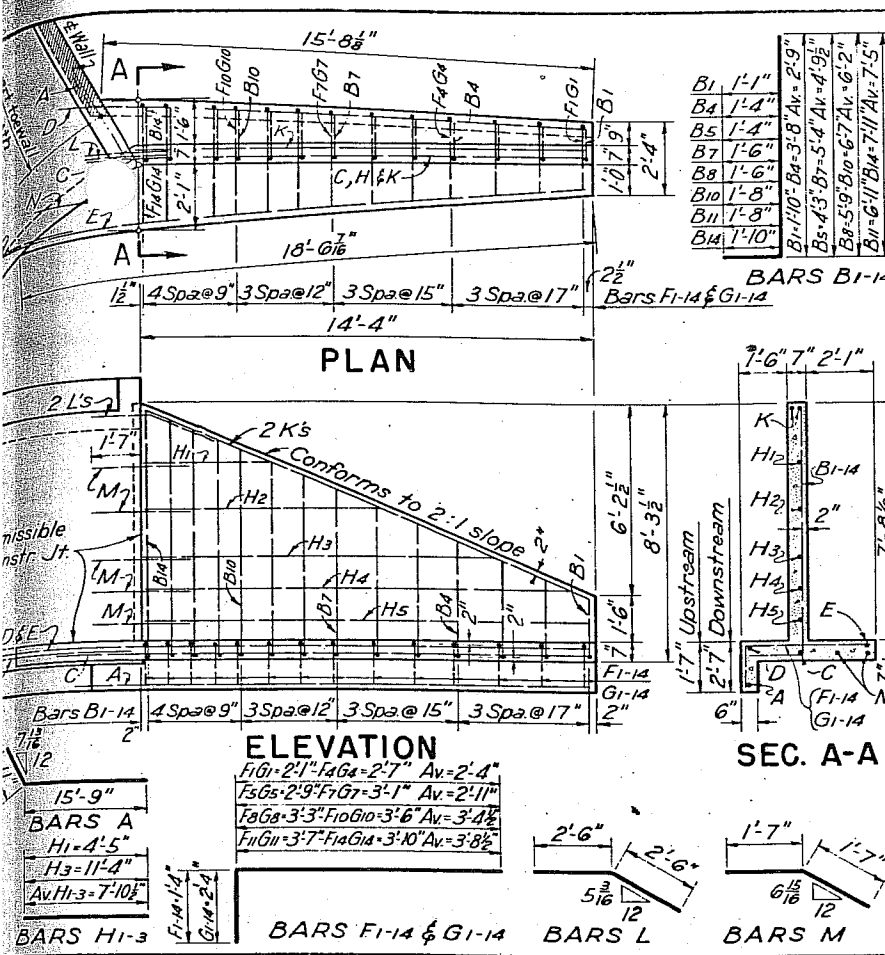
DIRECT TRAFFIC TO 4'-0" FILL

MC6-1

DR. W.H.	DRAWING	DATE	PER. ROAD	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
C.K. D.N. R.M.	Original	JAN 1958	6	TEXAS	276-5-10 6'x6' 3-11	23
D.W. K.M.	Rev. Jan. 1958					
C.K. D.W. M.D.A.	Rev. Nov. 1964					
TR. C.W.W.						
C.H. Y.R. K.M.						

BILLS OF REINFORCING STEEL - FOR 44' CLEAR WIDTH - BARRELS ONLY

MARK	2 SPANS 9'x5'													2 SPANS 9'x6'													2 SPANS 9'x7'													2 SPANS 9'x8'														
	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z		
NUMBER	168	156	156	99	99	21	24	19	4	40	62	46	46	182	168	168	99	99	21	24	19	4	40	62	46	46	182	168	168	99	99	21	30	19	4	40	62	46	46	182	182	182	109	109	21	30	19	4	42	62	46	46		
SIZE	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4			
SPACING	7"	7"	7"	5 1/2"	5 1/2"	15"	15"	15"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	18"	18"	18"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	17"	17"	17"	12"	18"	12"	12"	12"	6"	6"	6"	5"	5"	19"	19"	19"	12"	18"	12"	12"	12"		
LENGTH	5'-0"	8'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	19'-5"	4'-3"	4'-11"	3'-8"	11'-2"	19'-5"	9'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	19'-5"	4'-3"	5'-11"	3'-8"	13'-2"	19'-5"	10'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	19'-5"	4'-3"	6'-11"	3'-8"	15'-2"	19'-8"	11'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	29'-4"	4'-3"	7'-11"	3'-8"	17'-2"	17'-2"		
WEIGHT	2179	834	443	550	550	632	722	572	52	114	204	113	343	2361	1010	477	550	550	632	722	572	52	114	245	113	405	2361	1122	477	550	550	632	903	572	52	114	287	113	466	2391	1337	517	606	606	632	903	572	53	119	328	113	528	528	
MARK	3 SPANS 9'x5'													3 SPANS 9'x6'													3 SPANS 9'x7'													3 SPANS 9'x8'														
	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z		
NUMBER	168	156	156	198	198	32	32	28	4	60	62	92	92	182	168	168	198	198	32	32	28	4	60	62	92	92	182	168	168	198	198	32	40	28	4	60	62	92	92	182	182	182	218	218	32	40	28	4	60	62	92	92		
SIZE	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		
SPACING	6 1/2"	7"	7"	5 1/2"	5 1/2"	15"	15"	15"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	18"	18"	18"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	17"	17"	17"	12"	18"	12"	12"	12"	6"	6"	6"	5"	5"	19"	19"	19"	12"	18"	12"	12"	12"		
LENGTH	29'-0"	8'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	29'-0"	4'-3"	4'-11"	3'-8"	11'-2"	29'-0"	9'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	29'-0"	4'-3"	5'-11"	3'-8"	13'-2"	29'-0"	10'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	29'-0"	4'-3"	6'-11"	3'-8"	15'-2"	29'-4"	11'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	29'-4"	4'-3"	7'-11"	3'-8"	17'-2"	17'-2"	
WEIGHT	3254	834	443	1101	1101	963	963	843	77	170	204	226	637	3526	1010	477	1101	1101	963	963	843	77	170	245	226	809	3526	1122	477	1101	1101	963	1204	843	77	170	287	226	932	3566	1337	517	1212	1212	963	1204	843	78	170	328	226	1055	1055	
MARK	4 SPANS 9'x5'													4 SPANS 9'x6'													4 SPANS 9'x7'													4 SPANS 9'x8'														
	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z		
NUMBER	168	156	156	297	297	43	40	37	4	78	62	138	138	182	168	168	297	297	43	40	37	4	78	62	138	138	182	168	168	297	297	43	50	37	4	78	62	138	138	182	182	182	327	327	43	50	37	4	80	62	138	138		
SIZE	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		
SPACING	6 1/2"	7"	7"	5 1/2"	5 1/2"	15"	15"	15"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	18"	18"	18"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	17"	17"	17"	12"	18"	12"	12"	12"	6"	6"	6"	5"	5"	19"	19"	19"	12"	18"	12"	12"	12"		
LENGTH	38'-7"	8'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	38'-7"	4'-3"	4'-11"	3'-8"	11'-2"	38'-7"	9'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	38'-7"	4'-3"	5'-11"	3'-8"	13'-2"	38'-7"	10'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	38'-7"	4'-3"	6'-11"	3'-8"	15'-2"	39'-0"	11'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	39'-0"	4'-3"	7'-11"	3'-8"	17'-2"	17'-2"		
WEIGHT	4330	834	443	1651	1651	1294	1204	1114	103	221	204	338	1030	4690	1010	477	1651	1651	1294	1204	1114	103	221	245	338	1214	4690	1122	477	1651	1651	1294	1505	1114	103	221	287	338	1398	1398	4741	1337	517	1818	1818	1294	1505	1114	104	227	328	338	1583	1583
MARK	5 SPANS 9'x5'													5 SPANS 9'x6'													5 SPANS 9'x7'													5 SPANS 9'x8'														
	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z		
NUMBER	168	156	156	396	396	54	48	46	4	98	62	184	184	182	168	168	396	396	54	48	46	4	98	62	184	184	182	168	168	396	396	54	60	46	4	98	62	184	184	182	182	182	436	436	54	60	46	4	100	62	184	184		
SIZE	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	
SPACING	6 1/2"	7"	7"	5 1/2"	5 1/2"	15"	15"	15"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	18"	18"	18"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	17"	17"	17"	12"	18"	12"	12"	12"	6"	6"	6"	5"	5"	19"	19"	19"	12"	18"	12"	12"	12"		
LENGTH	48'-2"	8'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	48'-2"	4'-3"	4'-11"	3'-8"	11'-2"	48'-2"	9'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	48'-2"	4'-3"	5'-11"	3'-8"	13'-2"	48'-2"	10'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	48'-2"	4'-3"	6'-11"	3'-8"	15'-2"	48'-8"	11'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	48'-8"	4'-3"	7'-11"	3'-8"	17'-2"	17'-2"		
WEIGHT	5405	834	443	2201	2201	1625	1445	1385	129	278	204	451	1373	5856	1010	477	2201	2201	1625	1445	1385	129	278	245	451	1619	5856	1122	477	2201	2201	1625	1806	1385	129	278	287	451	1865	5917	1337	517	2424	2424	1625	1806	1385	130	284	328	451	2110	2110	
MARK	6 SPANS 9'x5'													6 SPANS 9'x6'													6 SPANS 9'x7'													6 SPANS 9'x8'														
	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z	B	C	D	E ₁	E ₂	F ₁	F ₂	F ₃	H	K	M	Y	Z		
NUMBER	168	156	156	495	495	65	56	55	4	118	62	230	230	182	168	168	495	495	65	56	55	4	118	62	230	230	182	168	168	495	495	65	70	55	4	118	62	230	230	182	182	182	545	545	65	70	55	4	118	62	230	230		
SIZE	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4		
SPACING	6 1/2"	7"	7"	5 1/2"	5 1/2"	15"	15"	15"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	18"	18"	18"	12"	18"	12"	12"	12"	6"	6 1/2"	6 1/2"	5 1/2"	5 1/2"	17"	17"	17"	12"	18"	12"	12"	12"	6"	6"	6"	5"	5"	19"	19"	19"	12"	18"	12"	12"	12"		
LENGTH	57'-9"	8'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	57'-9"	4'-3"	4'-11"	3'-8"	11'-2"	57'-9"	9'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	57'-9"	4'-3"	5'-11"	3'-8"	13'-2"	57'-9"	10'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	45'-0"	57'-9"	4'-3"	6'-11"	3'-8"	15'-2"	58'-4"	11'-0"	4'-3"	5'-4"	5'-4"	45'-0"	45'-0"	58'-4"	4'-3"	7'-11"	3'-8"	17'-2"	17'-2"		
WEIGHT	6481	834	443	2752	2752	1957	1686	1656	154	335	204	564	1716	7021	1010	477	2752	2752	1957	16868																																		



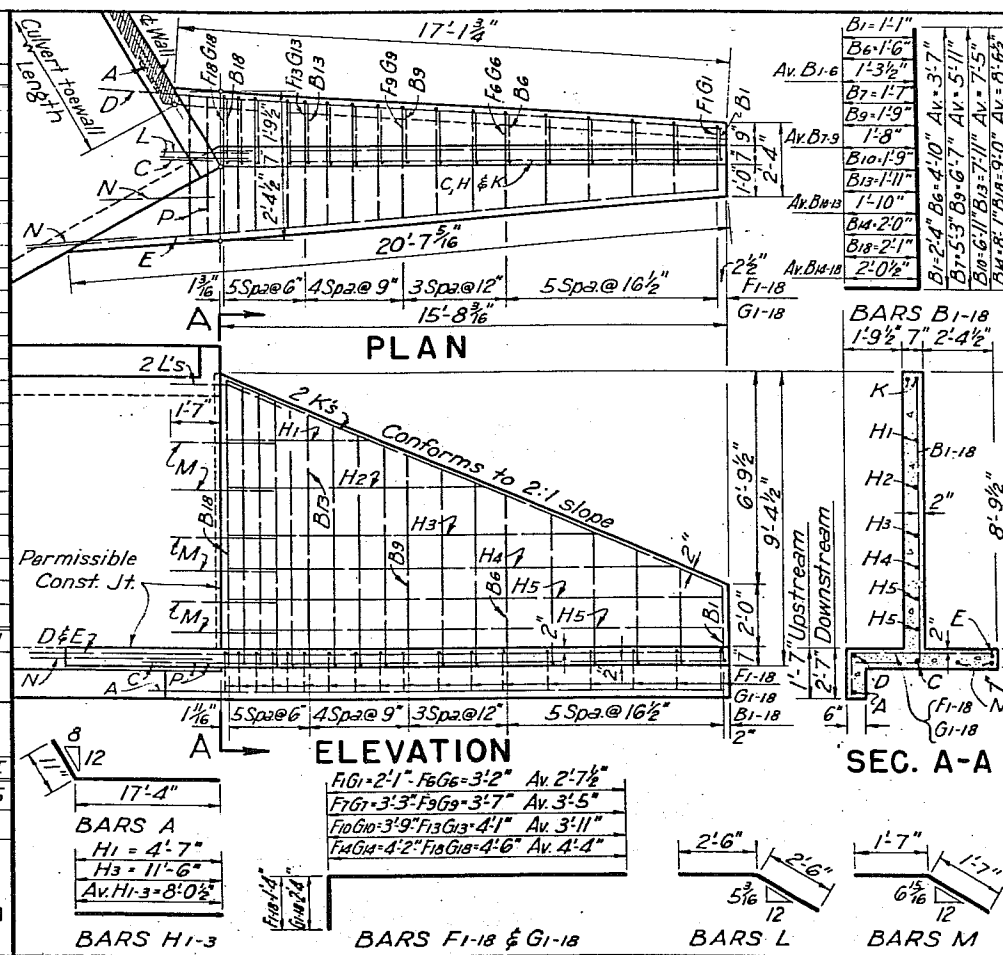
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	16'-8"	45
B1-4	16	#4	17'-11"	42
B5-7	12	#4	15'-6"	49
B8-10	12	#4	12'-9"	62
B11-14	16	#4	9'-9"	98
C	4	#5	16'-0"	67
D	4	#5	17'-0"	71
E	4	#5	19'-7"	82
F1-4	8	#4	17'-3"	20
F5-7	6	#4	15'-4"	17
F8-10	6	#4	12'-4"	19
F11-14	8	#4	9'-5"	27
G1-4	8	#4	17'-3"	25
G5-7	6	#4	15'-4"	21
G8-10	6	#4	12'-4"	23
G11-14	8	#4	9'-5"	32
H1-3	12	#4	18'-10"	63
H4	4	#4	12'-13"	37
H5	4	#4	12'-14"	38
K	8	#5	15'-5"	129
L	8	#7	5'-0"	82
M	20	#5	12'-8"	66
N	8	#5	3'-2"	26

ESTIMATED QUANTITIES FOR 4 WINGWALLS

ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	12.05
REINF. STEEL	LB.	1,141

WINGWALLS FOR M.C.s. H=7'-0"



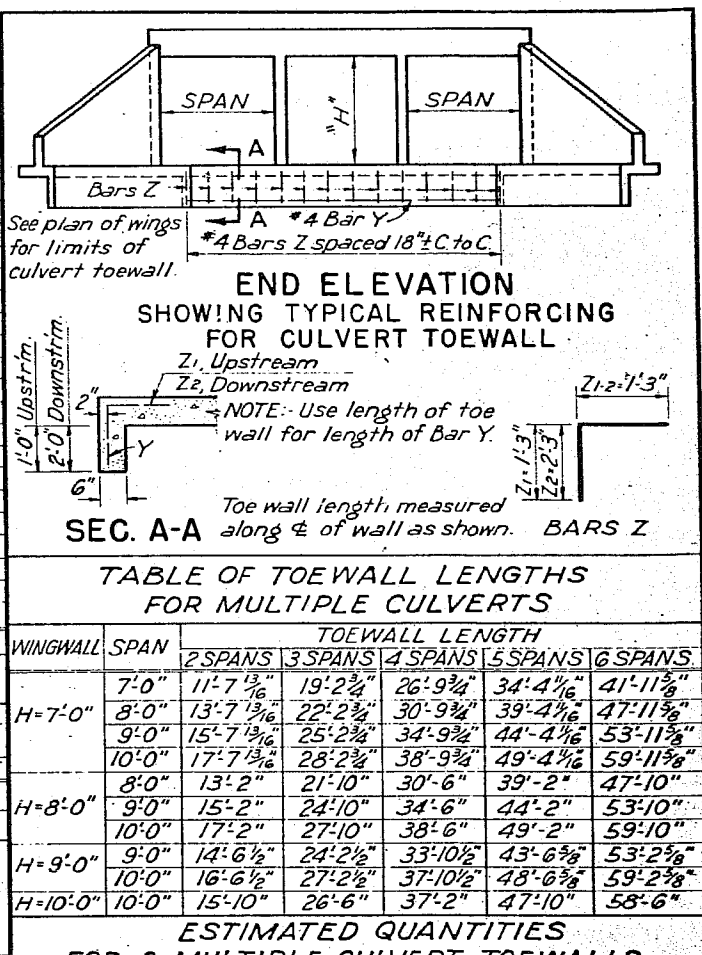
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	18'-2"	49
B1-6	24	#4	16'-4"	77
B7-9	12	#4	12'-9"	61
B10-12	16	#4	9'-9"	99
B13-16	20	#4	6'-7"	141
C	4	#5	17'-3"	72
D	4	#5	18'-6"	77
E	4	#5	21'-8"	90
F1-6	12	#4	16'-3"	31
F7-9	6	#4	12'-4"	19
F10-12	8	#4	9'-5"	28
F13-16	10	#4	6'-5"	38
G1-6	12	#4	16'-3"	39
G7-9	6	#4	12'-4"	23
G10-12	8	#4	9'-5"	33
G13-16	10	#4	6'-5"	45
H1-3	12	#4	18'-0"	64
H4	4	#4	12'-13"	37
H5	4	#4	12'-15"	82
K	8	#5	16'-9"	140
L	8	#7	5'-0"	82
M	24	#5	12'-8"	79
N	8	#5	3'-2"	26
P	8	#5	4'-7"	38

ESTIMATED QUANTITIES FOR 4 WINGWALLS

ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	14.78
REINF. STEEL	LB.	1,470

WINGWALLS FOR M.C.s. H=8'-0"



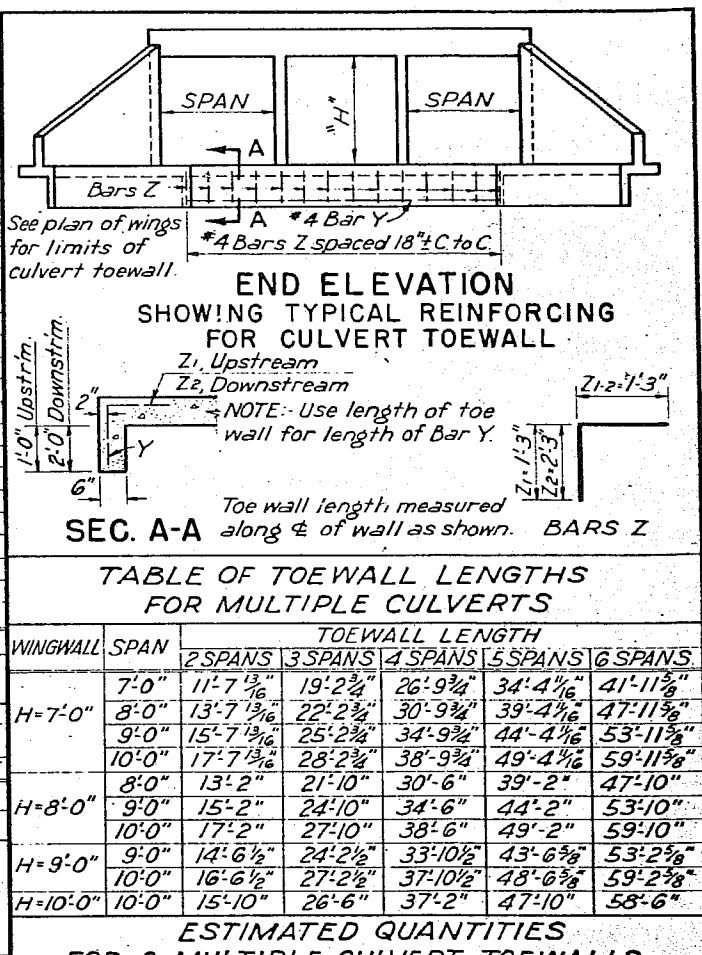
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	23'-6"	63
B1-4	16	#4	17'-4"	50
B5-8	16	#4	12'-9"	74
B9-12	16	#4	10'-8"	94
B13-16	16	#5	10'-10"	174
B17-20	16	#5	8'-11"	199
B21-24	16	#5	8'-13"	318
C	4	#5	22'-2"	92
D	4	#5	23'-9"	99
E	4	#6	27'-2"	163
F1-4	8	#4	17'-3"	21
F5-8	8	#4	12'-4"	25
F9-12	8	#4	10'-5"	28
F13-16	8	#5	10'-5"	49
F17-20	8	#5	8'-6"	53
F21-24	8	#6	8'-6"	81
G1-4	8	#4	17'-3"	26
G5-8	8	#4	12'-5"	30
G9-12	8	#4	10'-6"	33
G13-16	8	#5	10'-6"	57
G17-20	8	#5	8'-7"	61
G21-24	8	#6	8'-7"	93
H1-4	16	#4	18'-11"	122
H5	4	#4	12'-18"	51
H6	8	#4	12'-20"	109
K	8	#6	22'-2"	266
L	8	#8	5'-6"	117
M	28	#5	12'-8"	93
N	8	#6	3'-9"	45
P	8	#6	5'-7"	67

ESTIMATED QUANTITIES FOR 4 WINGWALLS

ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	25.21
REINF. STEEL	LB.	2,753

WINGWALLS FOR M.C.s. H=10'-0"



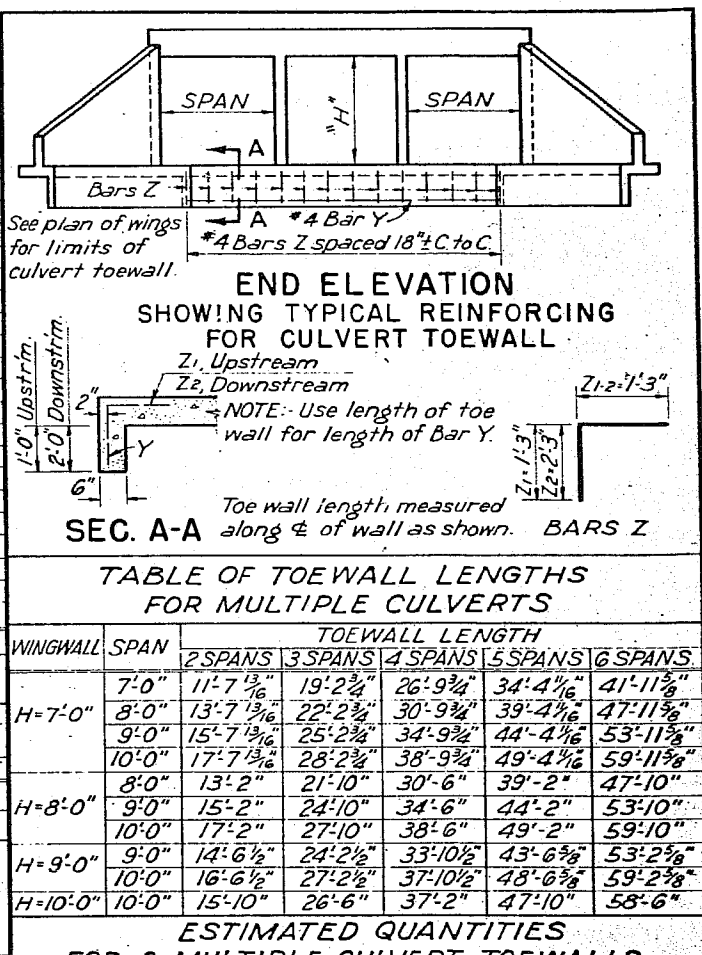
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	23'-6"	63
B1-4	16	#4	17'-4"	50
B5-8	16	#4	12'-9"	74
B9-12	16	#4	10'-8"	94
B13-16	16	#5	10'-10"	174
B17-20	16	#5	8'-11"	199
B21-24	16	#5	8'-13"	318
C	4	#5	22'-2"	92
D	4	#5	23'-9"	99
E	4	#6	27'-2"	163
F1-4	8	#4	17'-3"	21
F5-8	8	#4	12'-4"	25
F9-12	8	#4	10'-5"	28
F13-16	8	#5	10'-5"	49
F17-20	8	#5	8'-6"	53
F21-24	8	#6	8'-6"	81
G1-4	8	#4	17'-3"	26
G5-8	8	#4	12'-5"	30
G9-12	8	#4	10'-6"	33
G13-16	8	#5	10'-6"	57
G17-20	8	#5	8'-7"	61
G21-24	8	#6	8'-7"	93
H1-4	16	#4	18'-11"	122
H5	4	#4	12'-18"	51
H6	8	#4	12'-20"	109
K	8	#6	22'-2"	266
L	8	#8	5'-6"	117
M	28	#5	12'-8"	93
N	8	#6	3'-9"	45
P	8	#6	5'-7"	67

ESTIMATED QUANTITIES FOR 4 WINGWALLS

ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	25.21
REINF. STEEL	LB.	2,753

WINGWALLS FOR M.C.s. H=10'-0"



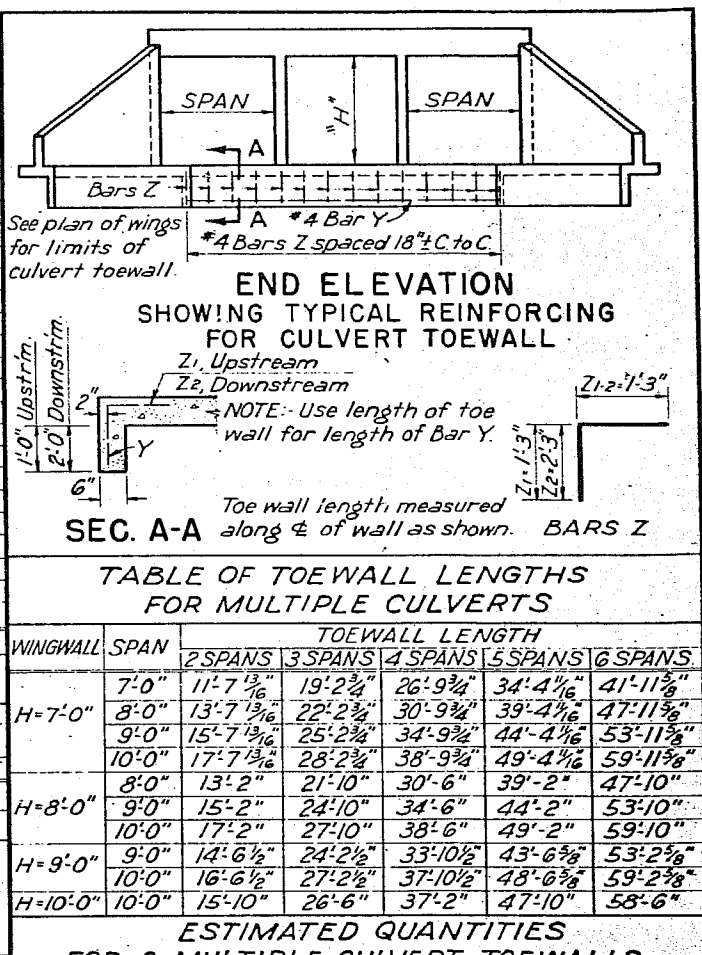
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	23'-6"	63
B1-4	16	#4	17'-4"	50
B5-8	16	#4	12'-9"	74
B9-12	16	#4	10'-8"	94
B13-16	16	#5	10'-10"	174
B17-20	16	#5	8'-11"	199
B21-24	16	#5	8'-13"	318
C	4	#5	22'-2"	92
D	4	#5	23'-9"	99
E	4	#6	27'-2"	163
F1-4	8	#4	17'-3"	21
F5-8	8	#4	12'-4"	25
F9-12	8	#4	10'-5"	28
F13-16	8	#5	10'-5"	49
F17-20	8	#5	8'-6"	53
F21-24	8	#6	8'-6"	81
G1-4	8	#4	17'-3"	26
G5-8	8	#4	12'-5"	30
G9-12	8	#4	10'-6"	33
G13-16	8	#5	10'-6"	57
G17-20	8	#5	8'-7"	61
G21-24	8	#6	8'-7"	93
H1-4	16	#4	18'-11"	122
H5	4	#4	12'-18"	51
H6	8	#4	12'-20"	109
K	8	#6	22'-2"	266
L	8	#8	5'-6"	117
M	28	#5	12'-8"	93
N	8	#6	3'-9"	45
P	8	#6	5'-7"	67

ESTIMATED QUANTITIES FOR 4 WINGWALLS

ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	25.21
REINF. STEEL	LB.	2,753

WINGWALLS FOR M.C.s. H=10'-0"



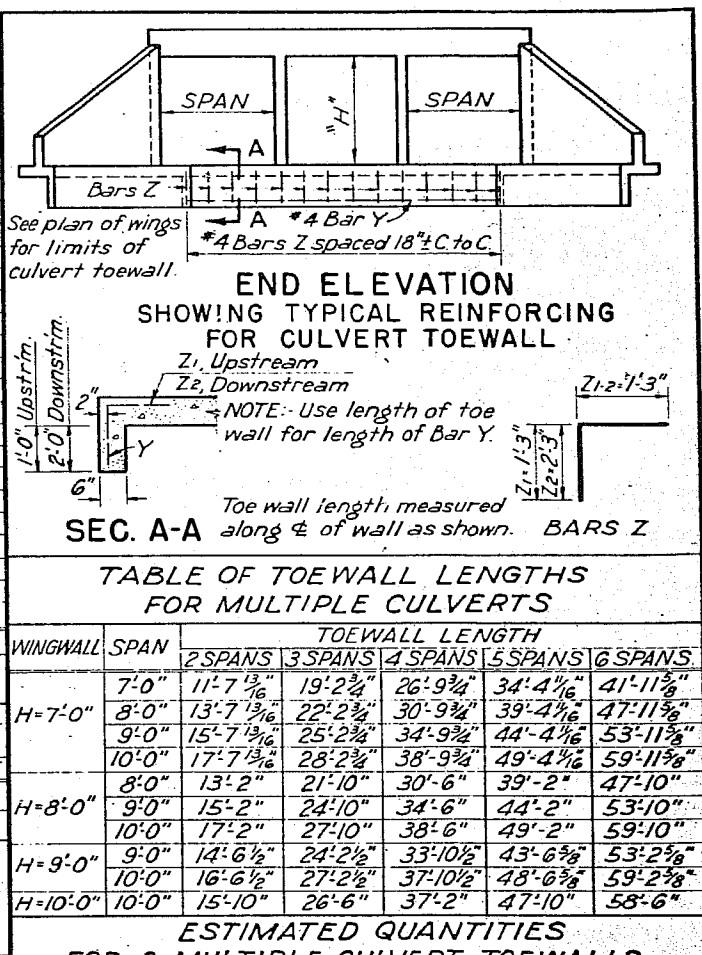
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	23'-6"	63
B1-4	16	#4	17'-4"	50
B5-8	16	#4	12'-9"	74
B9-12	16	#4	10'-8"	94
B13-16	16	#5	10'-10"	174
B17-20	16	#5	8'-11"	199
B21-24	16	#5	8'-13"	318
C	4	#5	22'-2"	92
D	4	#5	23'-9"	99
E	4	#6	27'-2"	163
F1-4	8	#4	17'-3"	21
F5-8	8	#4	12'-4"	25
F9-12	8	#4	10'-5"	28
F13-16	8	#5	10'-5"	49
F17-20	8	#5	8'-6"	53
F21-24	8	#6	8'-6"	81
G1-4	8	#4	17'-3"	26
G5-8	8	#4	12'-5"	30
G9-12	8	#4	10'-6"	33
G13-16	8	#5	10'-6"	57
G17-20	8	#5	8'-7"	61
G21-24	8	#6	8'-7"	93
H1-4	16	#4	18'-11"	122
H5	4	#4	12'-18"	51
H6	8	#4	12'-20"	109
K	8	#6	22'-2"	266
L	8	#8	5'-6"	117
M	28	#5	12'-8"	93
N	8	#6	3'-9"	45
P	8	#6	5'-7"	67

ESTIMATED QUANTITIES FOR 4 WINGWALLS

ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	25.21
REINF. STEEL	LB.	2,753

WINGWALLS FOR M.C.s. H=10'-0"



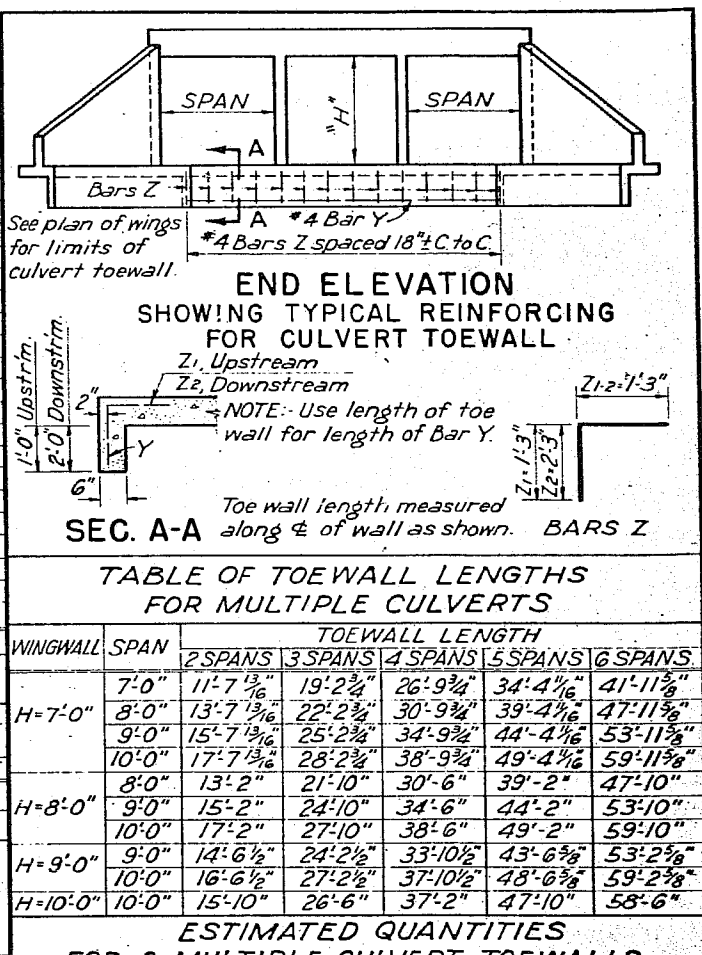
BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE	SPAC.	LGTH.	WT.
A	4	#4	23'-6"	63
B1-4	16	#4	17'-4"	50
B5-8	16	#4	12'-9"	74
B9-12	16	#4	10'-8"	94
B13-16	16	#5	10'-10"	174
B17-20	16	#5	8'-11"	199
B21-24	16	#5	8'-13"	318
C	4	#5	22'-2"	92
D	4	#5	23'-9"	99
E	4	#6	27'-2"	163
F1-4	8	#4	17'-3"	21
F5-8	8	#4	12'-4"	25
F9-12	8	#4	10'-5"	28
F13-16	8	#5	10'-5"	49
F17-20	8	#5	8'-6"	53
F21-24	8	#6	8'-6"	81
G1-4	8	#4	17'-3"	26
G5-8	8	#4	12'-5"	30
G9-12	8	#4	10'-6"	33
G13-16	8	#5	10'-6"	57
G17-20	8	#5	8'-7"	61
G21-24	8	#6	8'-7"	93
H1-4	16	#4	18'-11"	122
H5	4	#4	12'-18"	51
H6	8	#4	12'-20"	109
K	8	#6	22'-2"	266
L	8	#8	5'-6"	117
M	28	#5	12'-8"	93
N	8	#6	3'-9"	45
P	8	#6	5'-7"	67

ESTIMATED QUANTITIES FOR 4 WINGWALLS

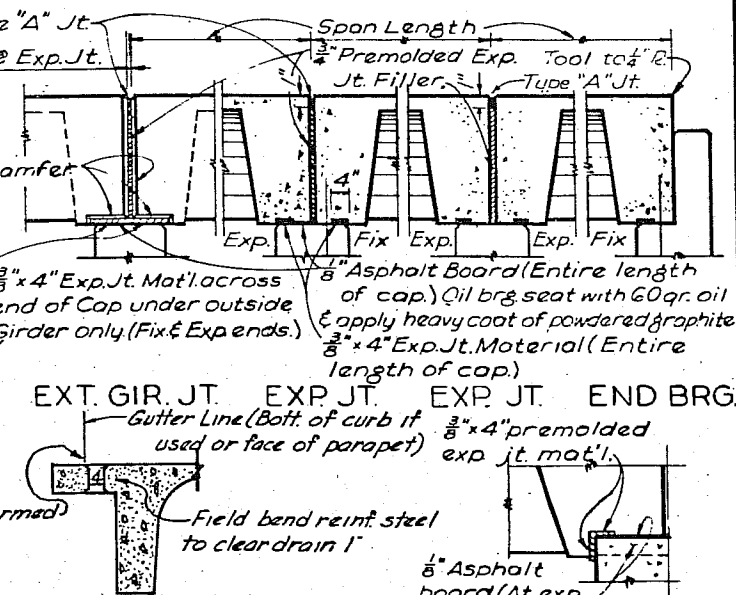
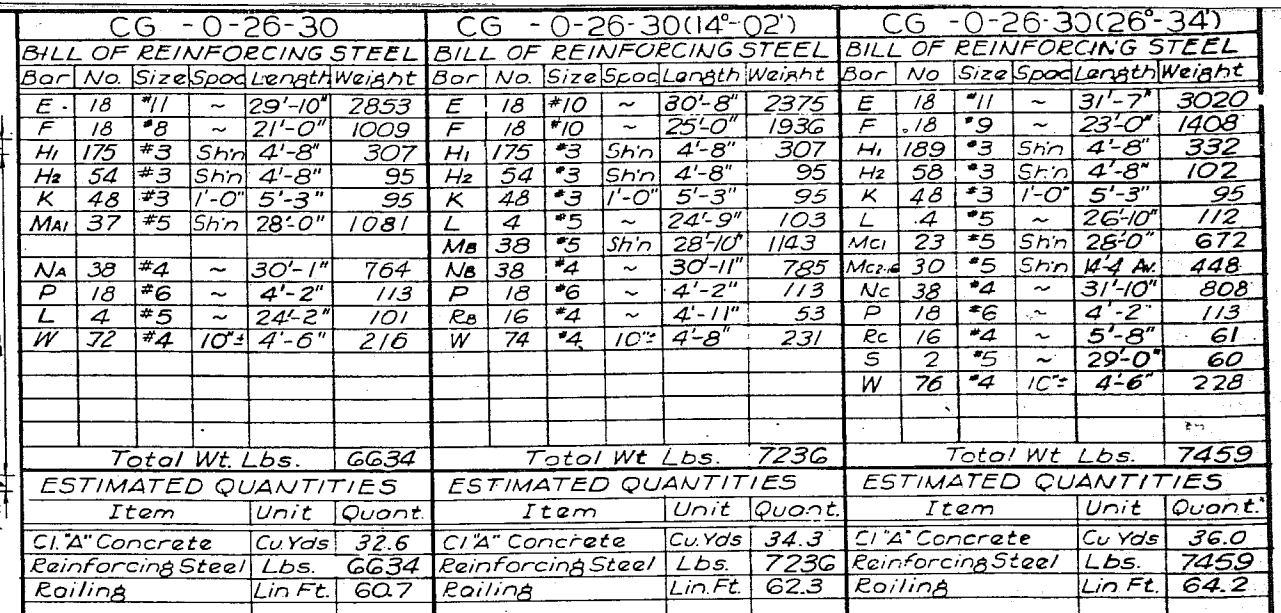
ITEM	UNIT	QUANT.
CL. A CONCRETE	C.Y.	25.21
REINF. STEEL	LB.	2,753

WINGWALLS FOR M.C.s. H=10'-0"

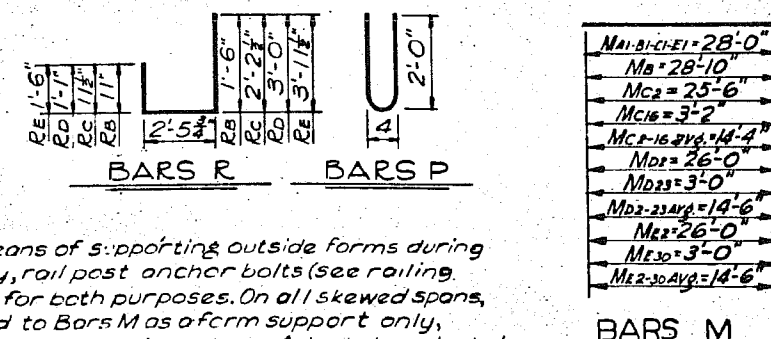
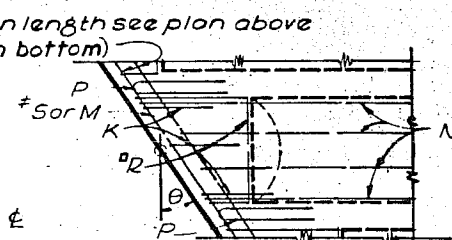
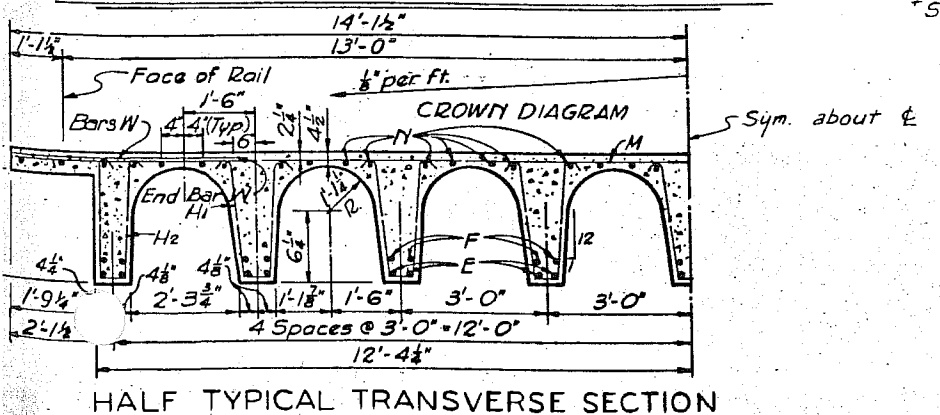
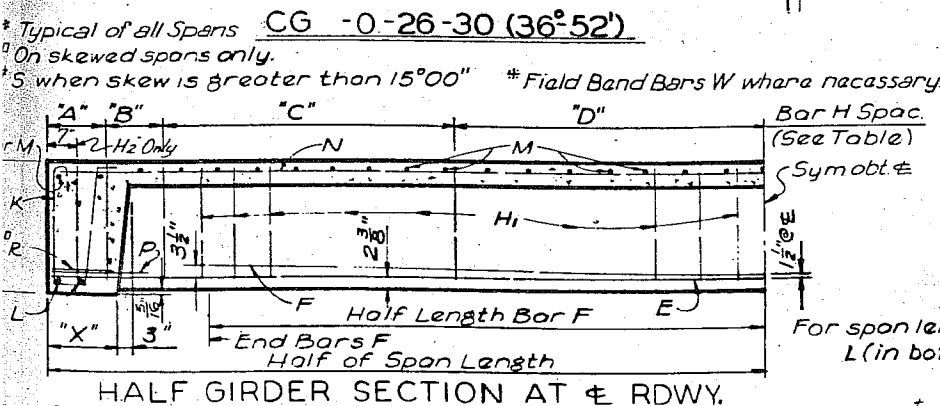


BILL OF REINF. STEEL FOR 4 WINGWALLS

BAR NO.	SIZE
---------	------



Spon	30'-4"	31'-2"	32'-1"	33'-1"	34'-2"
A	1'-2"	1'-1"	1'-3 1/2"	1'-3 1/2"	1'-1"
B	2 @ 9"	2 @ 9"	3 @ 9"	3 @ 9"	4 @ 9"
C	5 @ 1'-0"	4 @ 1'-0"	5 @ 1'-0"	4 @ 1'-0"	4 @ 1'-0"
D	5 @ 1'-6"	6 @ 1'-6"	5 @ 1'-6"	6 @ 1'-6"	6 @ 1'-6"
X	1'-0 1/2"	1'-5 1/2"	1'-11"	2'-5"	2'-11 1/2"



DETAIL "A"
(Typ. all skewed spans)

CONSTRUCTION NOTES:

Contractor must provide adequate means of supporting outside forms during placement of concrete. On square spans only, rail post anchor bolts (see railing details) may be welded to Bars M and used for both purposes. On all skewed spans, a sleeve nut or coil tie anchor may be welded to Bars M as a form support only, provided at least 1" concrete cover is provided over such anchors. Adequate external bracing or supports will be acceptable on all spans.

Forms may be supported from bent caps only when specified on bent details.

CG - 0-26-30(36°-52')						CG - 0-26-30(45°-00')					
BILL OF REINFORCING STEEL						BILL OF REINFORCING STEEL					
Bar	No.	Size	Spac	Length	Weight	Bar	No.	Size	Spac	Length	Weight
E	18	#11	~	32'-7"	3116	E	18	#11	~	33'-8"	3220
F	18	#10	~	25'-0"	1936	F	18	#10	~	26'-0"	2014
H ₁	189	#3	Sh'n	4'-8"	332	H ₁	203	#3	Sh'n	4'-8"	356
H ₂	58	#3	Sh'n	4'-8"	102	H ₂	62	#3	Sh'n	4'-8"	109
K	48	#3	1'-0"	5'-3"	95	K	48	#3	1'-0"	5'-3"	95
L	4	#5	~	30'-0"	125	L	4	#5	~	33'-11"	142
M _{D1}	17	#5	Sh'n	28'-0"	496	M _{E1}	10	#5	Sh'n	28'-0"	292
M _{D2}	44	#5	Sh'n	14'-6 1/4"	665	M _{E2}	58	#5	Sh'n	14'-6 1/4"	877
N _D	38	#4	~	32'-10"	833	N _E	38	#4	~	33'-11"	861
P	18	#6	~	4'-2"	113	P	18	#6	~	4'-2"	113
R _D	16	#4	~	6'-7"	70	R _E	16	#4	~	7'-11"	85
S	2	#5	~	32'-5"	68	S	2	#5	~	36'-8"	76
W	78	#4	10'-1/2	4'-6"	234	W	80	#4	10'-1/2	4'-6"	240
Total Wt. Lbs. 8185						Total Wt. Lbs. 8480					
ESTIMATED QUANTITIES						ESTIMATED QUANTITIES					
Item		Unit		Quant.		Item		Unit		Quant.	
CI.'A Concrete		Cu.Yds.		37.9		CI.'A Concrete		Cu.Yds.		40.2	
Reinforcing Steel		Lbs.		8185		Reinforcing Steel		Lbs.		8480	
Railing		Lin.Ft.		66.2		Railing		Lin.Ft.		683	

GENERAL NOTES:

Design: H20-44 Loading in accordance with A.A.S.H.O. 1961
Standard Specifications, and interim revisions thereto.

All concrete shall be Class A. Chamfer all exposed corners
1/4" except as noted.

Dimensions to reinforcing steel are to centers of bars.
Design stress for reinforcing steel = 20,000 psi.

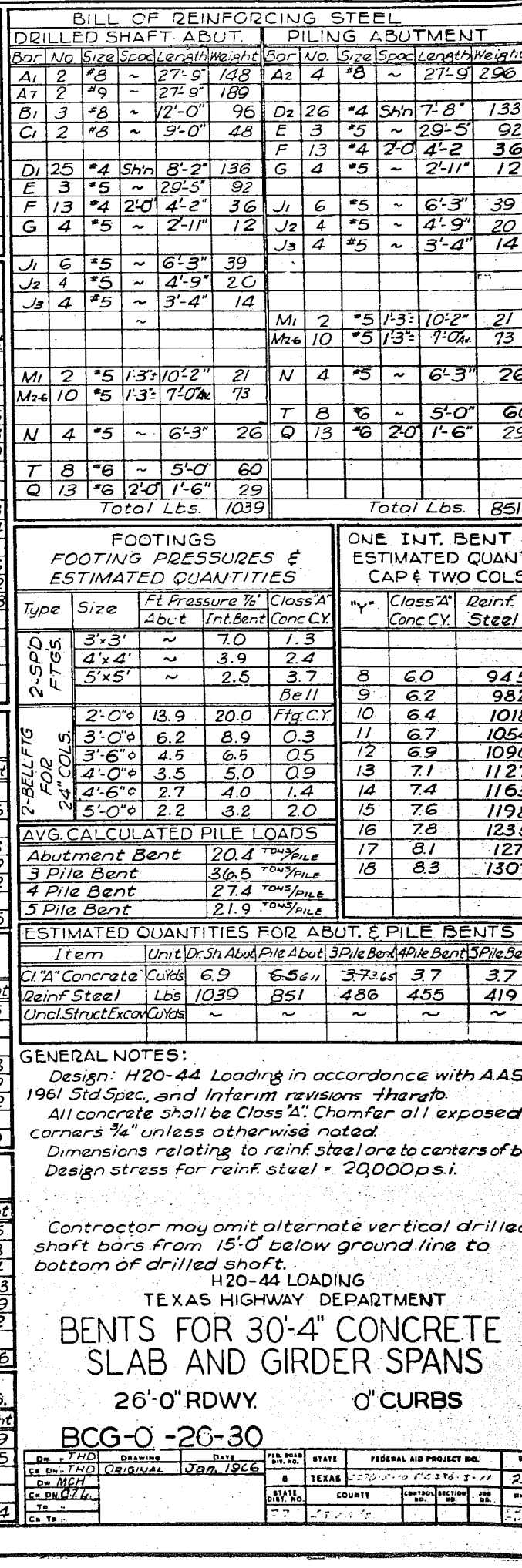
Details shown are for Right Forward Skew. Reverse for Left Forward Skew.

Details of metal forms are available on request.

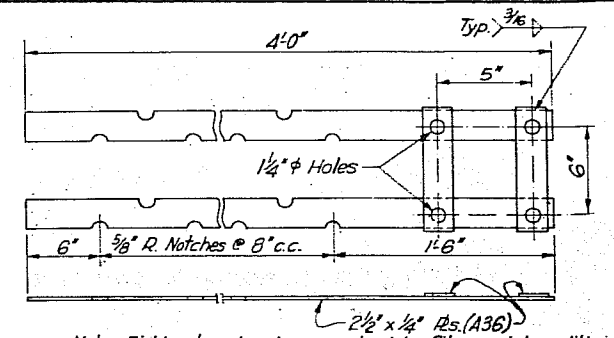
Pay Quantity of Class "A" Concrete will be Plan Quantity which includes concrete required for Sroad Cambar.

H 20-44 LOADING
TEXAS HIGHWAY DEPARTMENT
30'-4" CONCRETE SLAB
AND GIRDER SPANS
26'-0" RDWY. 0" CURBS
CG - 0-26-30

DR <u>THD</u>	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CR <u>DRM</u>	<u>ORIGINAL</u>	<u>JAN. 1956</u>	6	TEXAS	2-3-5-55-536-9-11	27
DR <u>THD</u>			STATE DIST. NO.	COUNTY	CONTROL SECTION NO.	RIGHTWAY NO.
CR <u>DRM</u>			22	2-3-5-53		2-3-5-53
TE						



and holes, or between splice plates and rail members, has been allowed in determining these controls.

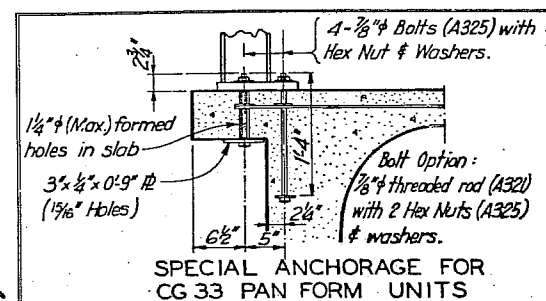


(Do not galvanize nor oil this assembly)

BOLT ANCHORAGE PLATES

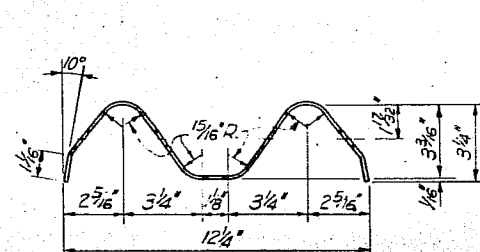
AT ARMOR JTS. AT FINGER JTS.

Note: In addition to expansion provisions at all armor and finger joints, expansion splices in channel member only shall be provided at other locations so that the maximum length of channel without expansion provisions does not exceed 200'.



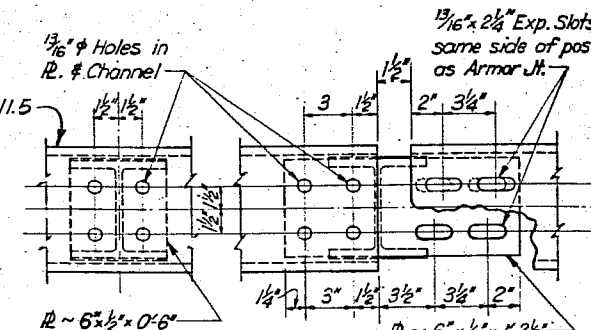
ROADWAY ELEVATION OF RAIL

this slot or provide B.H. Bolt.
 At Reg. Splices $2" \ 4\frac{1}{2}" \ 4\frac{1}{2}" \ 2"$
 At Exp. Splices $2\frac{3}{4}" \ 3\frac{1}{2}" \ 3\frac{1}{2}" \ 2\frac{3}{4}"$
 Reg. Slot = $\frac{3}{4}" \times 2\frac{1}{2}"$
 Exp. Slot = $\frac{3}{4}" \times 3\frac{1}{2}"$
 $2\frac{9}{32}" \times 1\frac{1}{8}"$ Slots
 at Reg. Splices
 $2\frac{9}{32}" \times 2\frac{1}{2}"$ Slots
 at Exp. Splices
 Direction of Traffic



RAIL SPLICE DETAIL

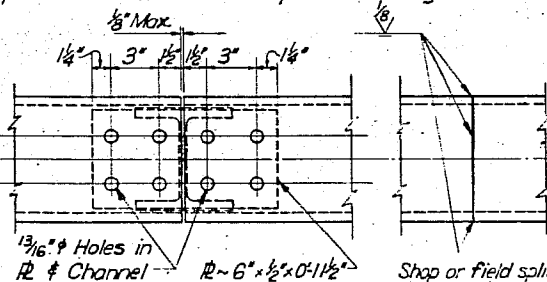
5/8" ϕ Button Hd. Guard Rail Bolts with Hex Nuts at all slots.



DEEP BEAM RAIL MEMBER

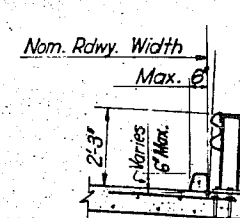
May be either aluminum or steel.

(Aluminum: Nom. thickness = .105"). (Steel: Nom. thickness = .1046" exclusive of protective coating.



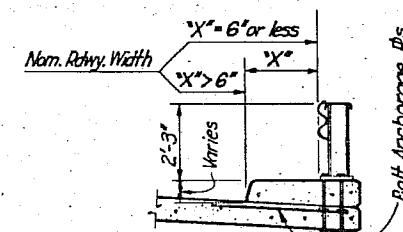
TYPICAL SPLICE

CHANNEL MEMBER DETAILS



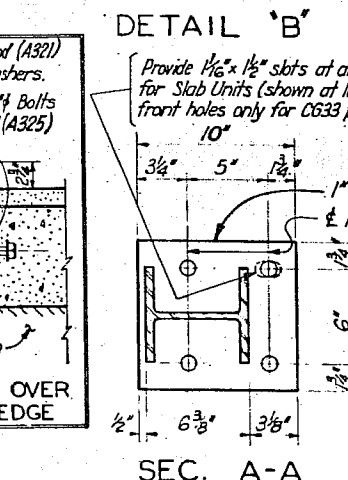
SPECIAL CONDITIONS

Note: If curb is placed monolithically with slab, post anchorage may be as shown for Slab Units (See detail) at the Contractor's option.

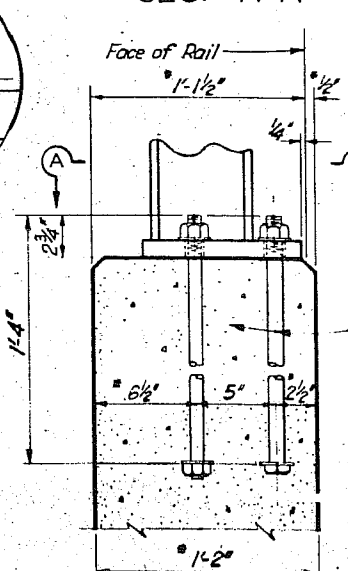


USUAL CONDITION

NOTE : THIS RAIL IS INTENDED PRIMARILY FOR USE ON CURBLESS STRUCTURES. Curbs, if required for special conditions, shall be constructed as shown elsewhere in the project plans in which case the rail posts shall be mounted as indicated by the details shown above.

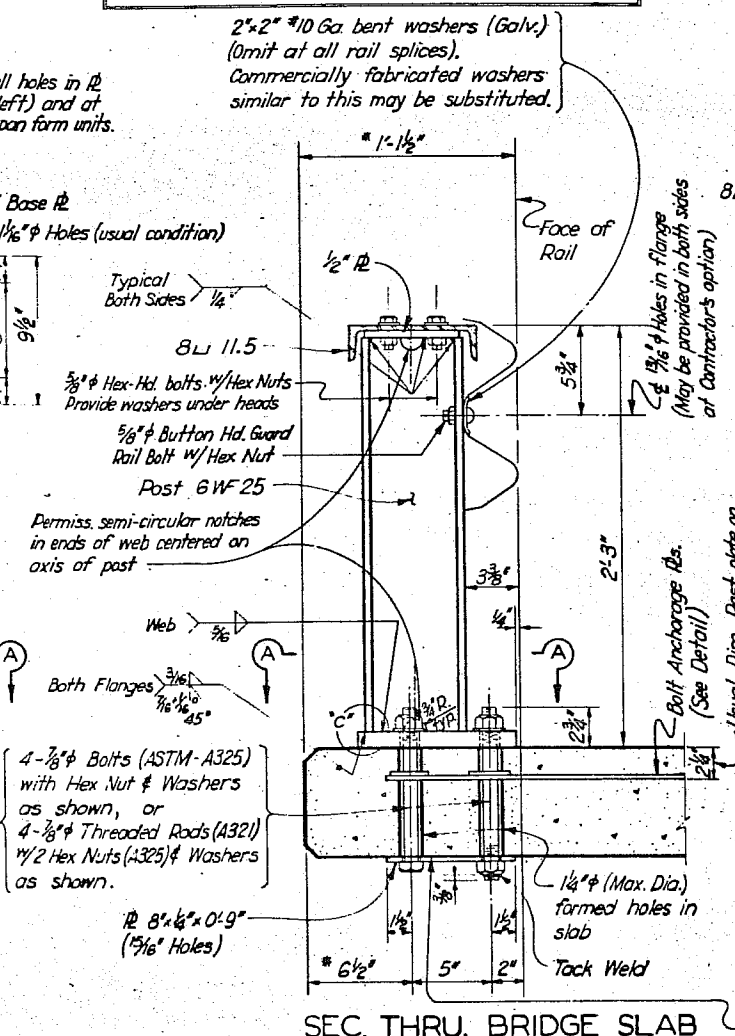


SEC. A-A



SEC. THRU.
ABUT. WING

*Note: These dimensions are usual and will apply unless shown otherwise on Span or Abutment Details.



SEC. THRU. BRIDGE SLAB

— Note : Bottom plates may be embedded flush with bottom of slab at Contractor's option.

GENERAL NOTES :

Design : AASHTO 1964 Interim Specifications

Panel lengths of channel member shall be attached continuously to a minimum of four posts and a maximum of six (except at abutments).

All bolts, nuts, washers, plates, and elastomeric materials are considered as parts of the rail for payment.

All steel connecting bolts and fasteners for aluminum or steel railing and all anchor bolts, nuts, washers and bottom plates shall be galvanized after fabrication. For protective coating of steel railing see special provision to Item 450.

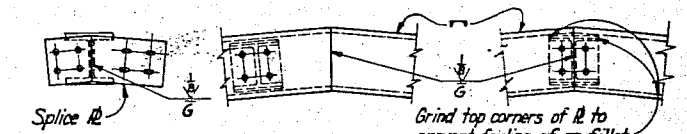
Rail posts shall be set perpendicular to roadway profile grade and cross slope and to top of curb when so mounted.

Rail posts shall be seated on elastomeric pads having the same dimensions as post base & 1/8" thick. Additional pads or half pads may be used in shimming for alignment. Post heights shown will increase by the thickness of the pad.

At expansion slots in deep beam rails and channels, tighten bolts, back off one half turn and burr threads

** RAILS ON HORIZONTAL CURVES

RATES ON APPROXIMATE SIZES			
	Road to Face of Rail	Max. Chord Lgth.	Fabrication
Channel Member	Over 4000'	41'-8"	Furnish & erect in straight rail panels.
	Over 2230' - 4000'	33'-4"	
	Over 1250' - 2230'	25'-0"	
	Over 480' - 1250'	16'-8"	Bevel weld chord sections of channels or fabricate to the required radius
	Over 250' - 480'	8'-4"	
Thru. 250'	0	Fabricate to the required radius	
Channel Member	Over 150'		Furnish in straight sections
	Thru. 150'		Fabricate to the required radius

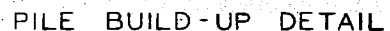


BEVEL WELDED SECTIONS

TEXAS HIGHWAY DEPARTMENT
BRIDGE DIVISION

TRAFFIC RAIL
TYPE T1

ORIGINAL DRAWING DATE: JAN. '65		REV. NO.	STATE	FEDERAL PROJECT NO.	DRAWN BY
DN.: JJP	REVISIONS	1	TEXAS	CR70-5-46378-T-11	JJP
CK.: RLR	Rev. 5-85 - Splices; Galv.; 60.	2			
	Slab Joint Anchorage		STATE	COUNTY	CONT. SECT.
DN.: JJP	Rev. 6-65 - Watch in Rys; Welds	3			
CK.: DMS	Rev. 6-65 - General Rys; Welds	4			

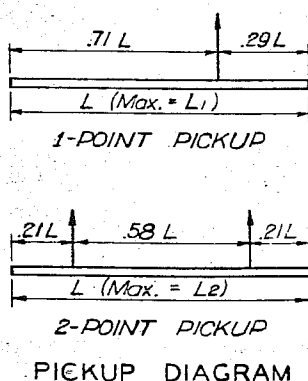



Optional Method : Pile shall be cut back to expose reinforcement a min. of 3". Butt weld Bars B to Bars A.

PRECAST CONCRETE PILING
(TYPE "A" DISPLACEMENT PILING)

* Pickup lengths based on allowable $f_s = 20,000 \text{ psi}$, allowable $f_c = 1200 \text{ psi}$ and 50% impact.

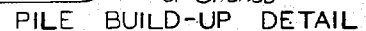
*** When 14" piling are specified on the plans, Contractor has the option of furnishing either 14" or 15" piling.*



Note : Piling shall be held firmly in this position  (horiz.) throughout all lifting and handling operations.

Note: Payment for piling shall be made in accordance with detail shown above. Reinforcing steel shall protrude into substructure only where shown in substructure details, in which case piles may be cast 10" short of payment length with reinforcing steel protruding from the top of piles; or they may be cast to full payment length (or slightly more for Precast Concrete Piling if desired by Contractor), and cut back after driving to expose reinforcing steel 10".

For Trellis-Pile Bents, piles shall be stripped back 10" when the side cover from the edge of pile to the edge of bent cap is less than 4" after driving.



Class A Concrete may be used for pile build-up when no additional driving is required.

PRESTRESSED CONCRETE PILING (TYPE "A" DISPLACEMENT PILING)

Note: Material used in forming holes in piling may be left in place provided it does not add appreciably to the weight of the pile.

* Note: Consideration will be given to variations in the number, size, or arrangement of strands, or to the use of strands of higher strength than required by the Specifications, provided the initial prestress force is at least equivalent to that shown above. Drawings of alternate proposal clearly indicating the proposed strand pattern and the physical properties of the strand as outlined in ASTM A416 shall be submitted to D5 for approval. Six copies required.

- "Pickup Lengths based on final prestress, no impact & zero stress on tension side of pile.
- "Allowable static moment without impact. Moment can be increased 50% for dynamic effects of handling without exceeding allowable concrete stress of zero on tension side of pile, based on 80% of initial prestress.

GENERAL NOTES FOR CONCRETE PILING:

GENERAL NOTES FOR CONCRETE PILING:

- All concrete for Precast Piling shall be Class A.
- Concrete for Prestressed Piling shall be Class F except as noted.
- All corners shall be chamfered as shown or noted.
- All dimensions relating to reinf. or prestressing steel are to centers of bars or strands.
- Size, number, and length of piling shall be as shown on Layout Sheets.

Spiral Hooping shall have a minimum diameter of .207."

Precast Piling shall be cast without hole.

Prestressed Piling may be cast as follows at the option of the Contractor:

Without hole ;

With hole except solid for the bottom 1'-6" of the pile.

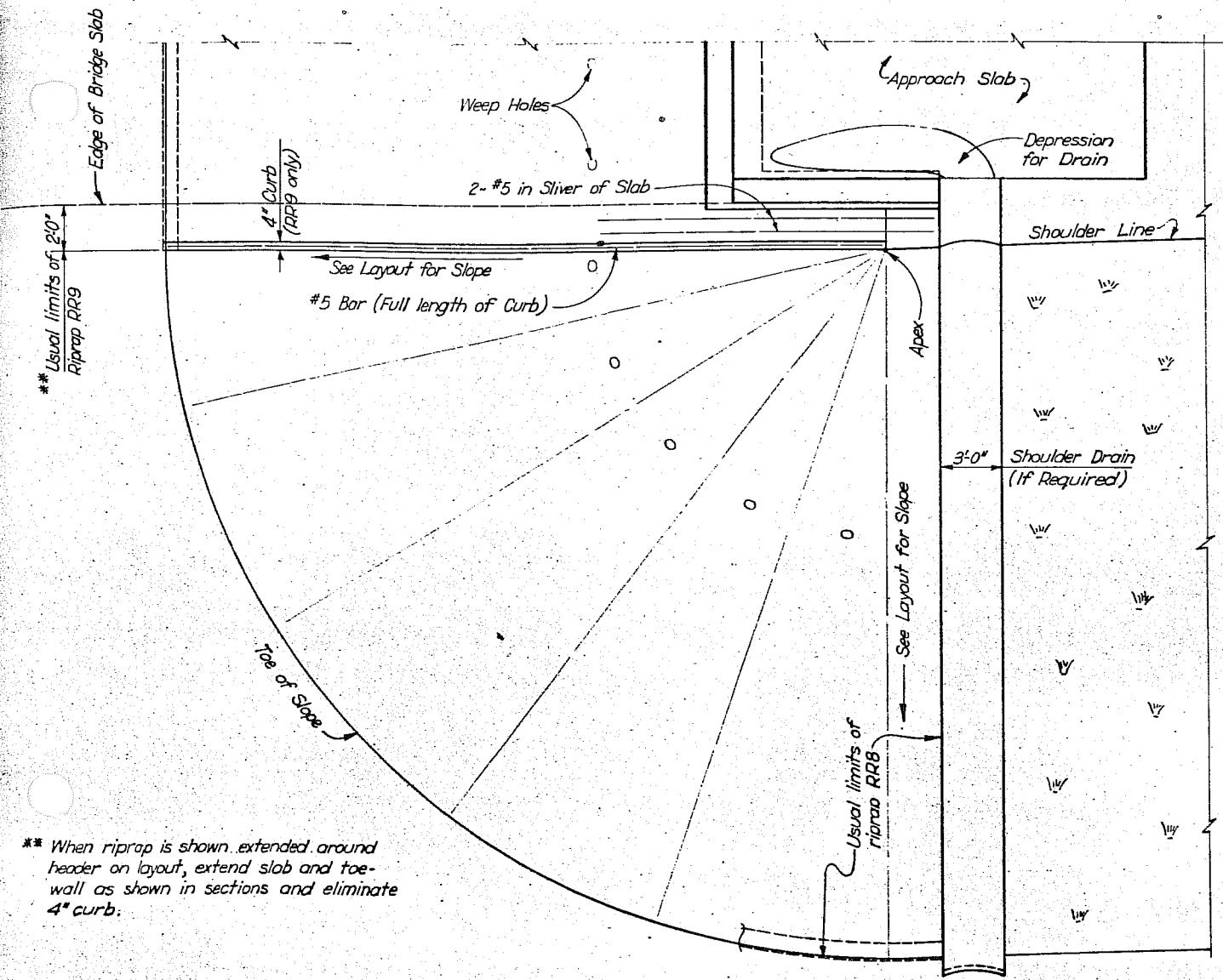
Solid portion to be placed monolithically with the remainder of the pile.

TEXAS HIGHWAY DEPARTMENT
BRIDGE DIVISION

CONCRETE PILING
PRECAST CONCRETE &
PRESTRESSED CONCRETE

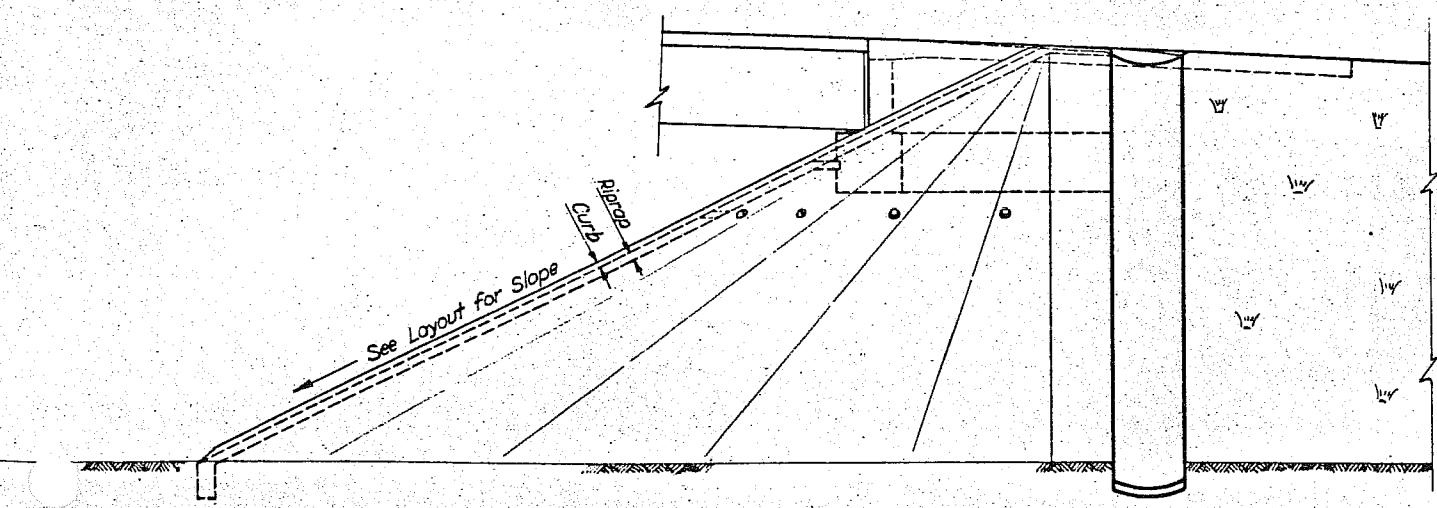
CP (MOD.)

DN. T. RLR	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CR. DN. T. CE	ORIGINAL	JAN. '65	8	TEXAS	5770-S-1-5 C 275-3-1	32
CR. DN. - RNS	Rev. 4-65 Prec. Pile Tip					
CR. DN. - RLR	Rev. 11-66-65 Pile option note					
TR.			STATE DIST. NO.	COUNTY	CONTR. SECTION NO.	JOB NO.
			22	235518		

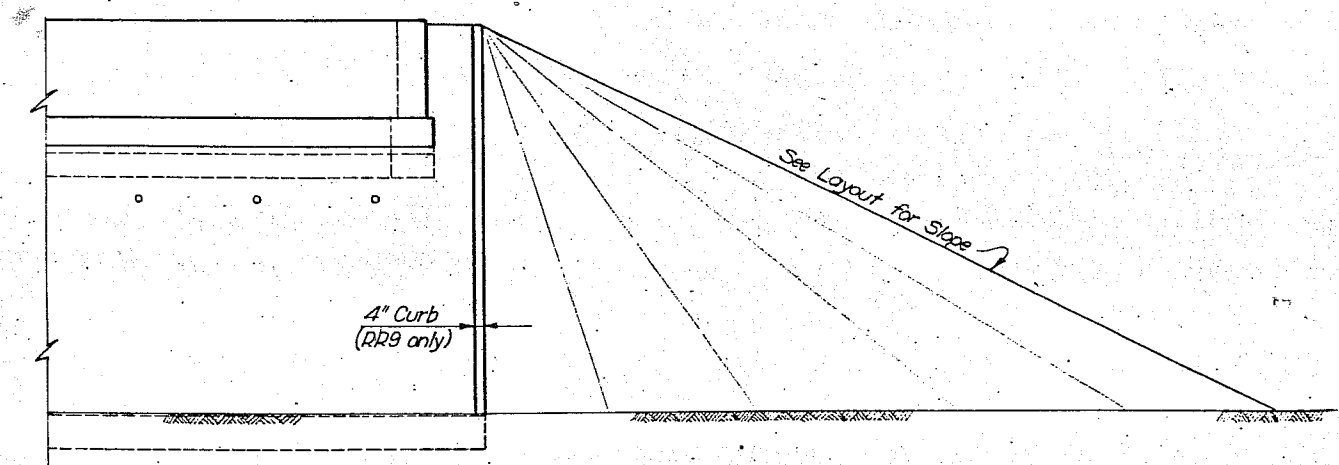


PART PLAN

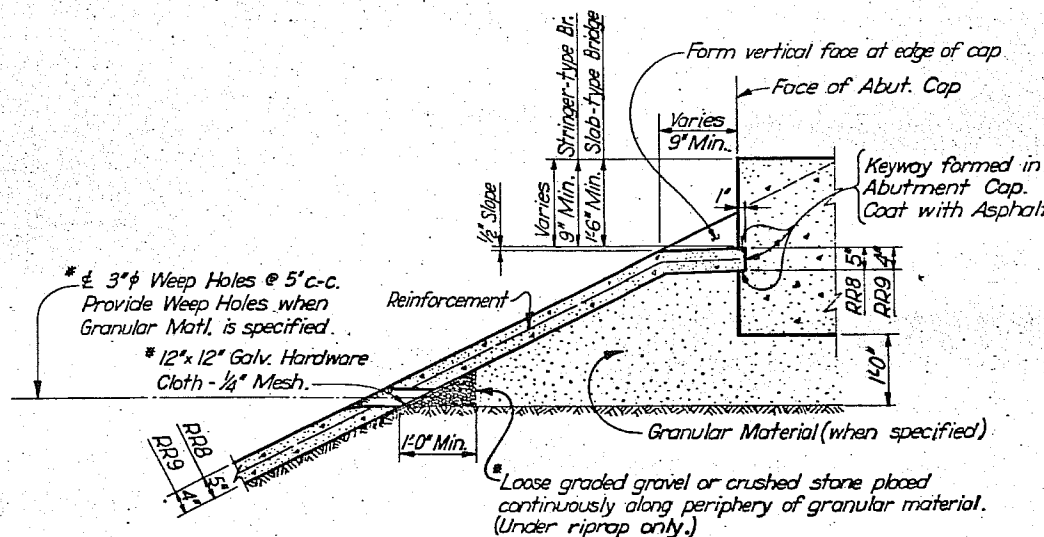
** When riprap is shown extended around header on layout, extend slab and toe-wall as shown in sections and eliminate 4" curb.



SIDE ELEVATION

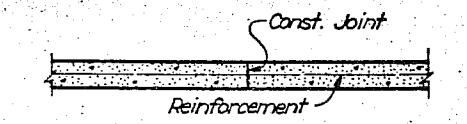


PART END ELEVATION

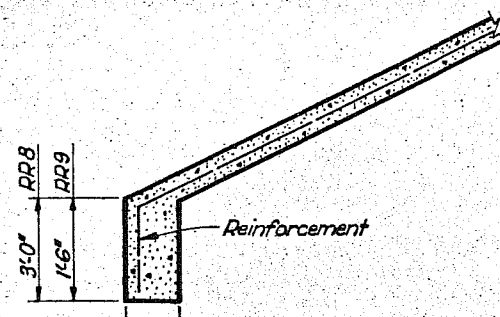


SEC. THRU. RIPRAP AT CAP

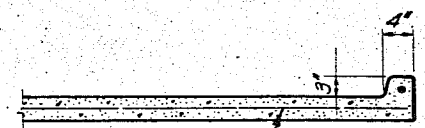
* Subsidiary to cost of riprap.



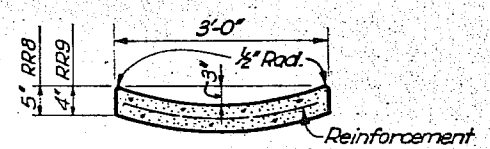
SEC. THRU. CONST. JOINT



SEC. THRU. TOEWALL



SECTION THRU. CURB



SECTION THRU. SHOULDER DRAIN

Quantities for shoulder drains to be included in riprap quantities.

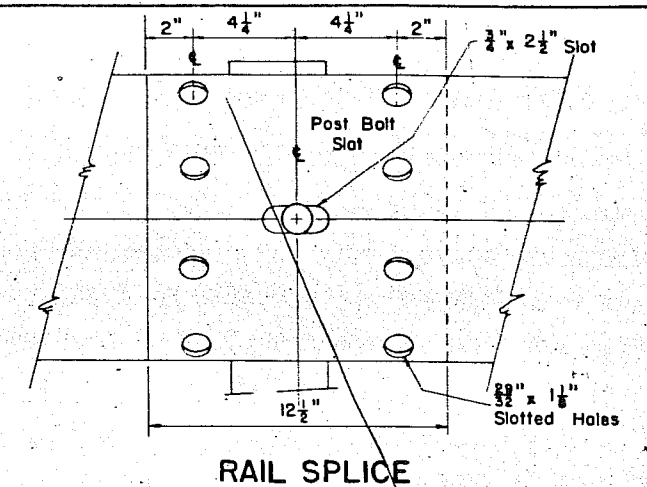
GENERAL NOTES :
 Concrete shall be Class B unless otherwise noted on the layout.
 See Specifications for reinforcement.
 Construction Joints shall be as shown or as directed by the Engineer.
 RRB to be used on stream crossings.
 RRB9 to be used on other header banks.

TEXAS HIGHWAY DEPARTMENT
BRIDGE DIVISION

CONCRETE RIPRAP
FOR EMBANKMENT SLOPES
UNDER BRIDGE ENDS

RR8 & RR9

ORIGINAL DRAWING DATE: JAN. '65	STATE PERSONAL REVISIONS	FEDERAL AND PROJECT	SHEET
CM.-THD	REVISIONS	22 6	33
CM.-THD	Rev. 5-18-65 Drain Thickness	228-5-11-65 3-11	
CM.-RNS	Rev. 12-65 RRB Gen. Rev.	COUNTY	SECTION AND
CM.-RLR		24 25 26	



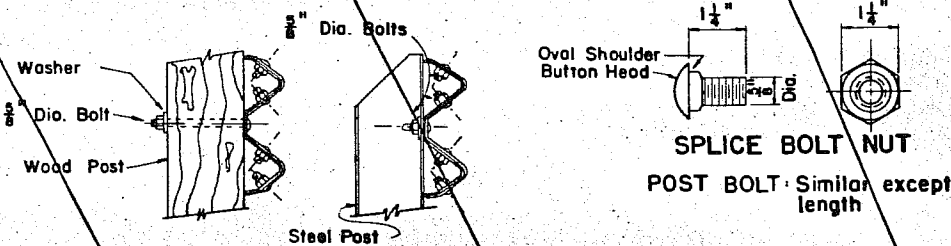
STEEL POST

NOTE: See specification for material requirements and construction methods.

Detail drawings and samples of plates and fittings must be submitted to and approved by the Texas Highway Department.

Special fabrication will be required in installations having a curvature of less than 150' radius.

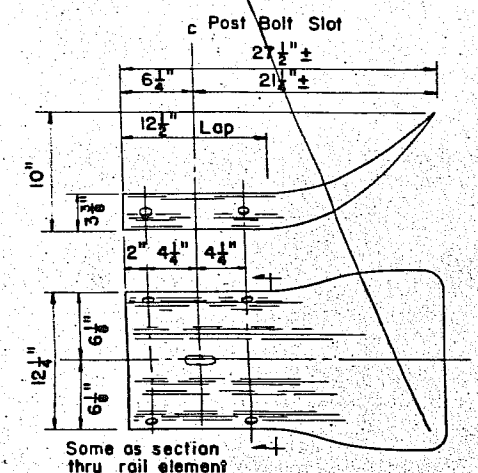
Sections of comparable strength may be substituted if approved by the Engineer.



SPLICE BOLT NUT
POST BOLT: Similar except
length

Bolts used in attaching rail to post shall be of sufficient length to extend through the full thickness of the nut and no more than $\frac{1}{2}$ " beyond it. Square washers, of not less than $1\frac{1}{4}$ " on a side, will be permitted in lieu of the round washer shown.

NOTE: All dimensions subject to manufacturing tolerances



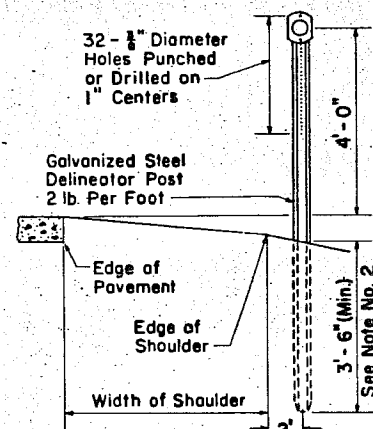
TERMINAL SECTION

VOID
METAL BEAM GUARD FENCE

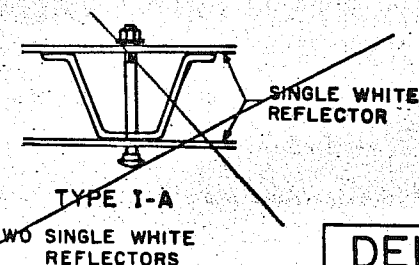
Other spacing as indicated elsewhere in these plans

The spacing S on the curve is found from the formula $S = 2\sqrt{R-50}$ where R is the radius of the curve in feet. The spacing to the first delineator down to and beyond the curve is 1.8 S, to the next delineator 3 S, and to the next 6 S, but not to exceed 200 feet.

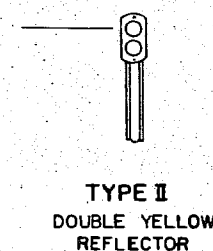
Minimum Spacing=10 feet



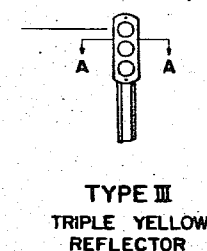
TYPE I
SINGLE WHITE
REFLECTOR



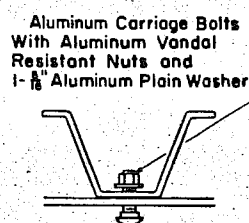
~~TYPE I-A~~
~~TWO SINGLE WHITE REFLECTORS~~



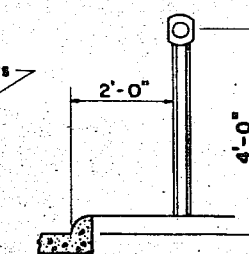
TYPE II
DOUBLE YELLOW
REFLECTOR



TYPE III
TRIPLE YELLOW
REFLECTOR



SECTION A-A



CURB MOUNTING DETAILS

1. DELINEATORS SHALL BE PLACED ALONG THE RIGHT SIDE OF THE THROUGH INTERSTATE ROADWAYS, TWO FEET BEYOND THE OUTER EDGE OF THE ROADWAY SHOULDER OR THE FACE OF AN UNMOUNTABLE CURB, OR IN THE LINE OF THE GUARD RAIL. DELINEATOR POSTS SHALL BE DRIVEN USING AN APPROVED DRIVING CAP. POSTS SHALL BE DRIVEN PRIOR TO INSTALLATION OF THE REFLECTIVE UNITS.
2. IF ROCK IS ENCOUNTERED AT A DEPTH LESS THAN 3' 6" BELOW THE GROUND SURFACE, A SIX INCH OR LARGER DIAMETER HOLE SHALL BE DRILLED FOR THE CHANNEL AND THE POST SHALL BE SET IN CLASS "A" CONCRETE. IF ROCK IS ENCOUNTERED AT A DEPTH OF 1' 6" OR MORE BELOW THE GROUND SURFACE, THE HOLE SHALL BE DRILLED TO A DEPTH OF 3' 6". IF ROCK IS ENCOUNTERED AT A DEPTH LESS THAN 1' 6" BELOW THE GROUND SURFACE, THE HOLES SHALL BE DRILLED A MINIMUM OF 2' 0" INTO THE ROCK.
3. SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS AND CONSTRUCTION METHODS.

3082
10

TEXAS HIGHWAY DEPARTMENT
METAL BEAM GUARD FENCE
AND
DELINEATOR ASSEMBLIES
GF & DA-62(SPL)

FED. AD DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	C276-5-10 & C276-3-11				34
STATE DIST. NO.	COUNTY	COR.	SECT.	JOB	HIGHWAY NO.	
22	Zavala	276 524	3 5	10 11	STA	