

- FIELD CHANGES
- No. 1 - Increase max plan length drilled shafts for Judson Rd. Underpass & provide 6" Bell Footing
- No. 2 - Revise Metal Contraction Joint from details
- No. 3 - Substitute Flex. Base 4 1/2" Hot Mix Asph. Conc. Pavt. for Conc. Pavt. (10") on SBL Business Rt. from Sta 374+74.74 to 378+00
- No. 4 - Place Rigid Metal Lighting Conduit(2")
- No. 5 - Extend spacing of Metal Contraction joint forms to 60' & allow sawed joints for the intermediate 15' joints for duration of steel strike

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-7	PROJECT LAYOUT & DETOUR LAYOUT
8-10	TYPICAL CROSS SECTIONS
11-15	ESTIMATE AND QUANTITY
16-42	PLAN SHEET (ROADWAY)
43-79	PROFILE SHEET (ROADWAY, CONNECTIONS, RAMPS, & CHANNELS)
80-87	HAUL DIAGRAM (EMBANKMENT)
91	INTERCHANGE LAYOUTS
92-122	HAUL DIAGRAM (FLEXIBLE BASE)
123-125 A	CONCRETE PAVEMENT DETAILS
126-128	MAP OF DRAINAGE AREAS
129	CULVERT LAYOUTS & STORM SEWER
130-144	BRIDGE LAYOUTS & DETAILS (CULVERT)
145-148	GRADE SEPARATION LAYOUTS
149-160	STRUCTURAL DETAILS

149 JUDSON ROAD SEPARATION
150 O'CONNOR ROAD SEPARATION
151-52 WEIDNER ROAD SEPARATION
153-54 STATION 334+25 SEPARATION
155 CONNECTION "B" SEPARATION
156-57 81 BUSINESS ROUTE SEPARATION
158-59 S. BOUND U.S. 81 (Business Route) SEPARATION
160 CONNECTION "F" SEPARATION

(Continued from below)

ROADWAY
BRIDGES
TOTAL

250 SC-30° C
251 FW-15°
252 SC-30° A
253 PW-30°
254 FW-30°
255 SC-45° B
256 PMCW-52
257 FW-45°
258 CH-11-B
259 CH-11-B-30°
260 CH-11-B-45°
261 SWC-39
262 GF-52
263-4 BW-54 (1 & 2)
265 M-47
266 SC-NA

STATE OF TEXAS STATE HIGHWAY DEPARTMENT PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT BEXAR COUNTY U.S. HIGHWAY NO. 81 INTERSTATE & U.S. HIGHWAY NO. 81 (BUSINESS ROUTE) FROM TOEPPERWEIN ROAD TO 0.75 MI. WEST OF FRATT GRADING, DRAINAGE STRUCTURES, BASE, CONC. PAVT., ASPH. CONC. PAVT. & HWY. SEPARATIONS

FEDERAL AID PROJECT.
FI-31(17); FI-1088(2); F 31(18)
PLAN: 1 IN. = 50 FT.
PROFILE: 1 IN. HOR. = 50 FT., 1 IN. VERT. = 5 FT.
CROSS-SECTIONS: 1 IN. HOR. AND VERT. = 5 FT.
OTHERS AS NOTED.

NET LENGTH OF PROJECT = 27,589.11 FT. = 5.222 MI.
PROJECT NO. FI 31(17) 18635.80 FT. = 3.529 MI.
363.23 FT. = 0.068 MI.
18999.03 FT. = 3.597 MI.
PROJECT NO. FI 1088(2) 2073.23 FT. = 0.392 MI.
243.27 FT. = 0.046 MI.
2316.50 FT. = 0.438 MI.
PROJECT NO. F 31(18) 5991.82 FT. = 1.134 MI.
281.76 FT. = 0.053 MI.
6273.58 FT. = 1.187 MI.

FINAL PLANS

This is to certify that these plans have been revised to show the project as actually constructed.

Date March 28, 1957

Sr. Resident Engineer John A. Shackleton

DETOUR NOTE:
See Special Provision to Item 7
"Legal Relations and Responsibilities
to the Public" for requirements for
handling highway traffic.

CLASS "AA" HIGHWAY
DESIGN SPEED 60 M.P.H.

PROJECT FI-31(17) CONTROL 16-7-25

NO RAILROAD CROSSINGS
NO EXCEPTIONS
EQUATIONS
Sta. 190+87.93 (Back) = Sta. 190+88.9 (Ahead) - 0.97

PROJECT FI-1088(2) CONTROL 17-10-13

NO RAILROAD CROSSINGS
NO EXCEPTIONS
NO EQUATIONS

PROJECT F 31(18) CONTROL 16-7-26

ONE EXISTING RAILROAD UNDERPASS
NO EXCEPTIONS
EQUATIONS
Sta. 385+26.93 (Back) = Sta. 374+74.74 (Ahead) + 1052.19

DELIVERY POINTS FOR MATERIALS

Delivery Point	Railroad	Approx. Distance from Project
Fratt	M-K-T	Adjacent to Project
Remount	M-K-T	1.8 Miles
W.W. White	S.P.	4.0 Miles
Perrin-Baitel	M.P.	1.6 Miles

FOR CITY OF SAN ANTONIO

RECOMMENDED FOR APPROVAL 3/24 19 55

Sam Chaney, Jr.
DIRECTOR OF PUBLIC WORKS

APPROVED: 3/24 19 55

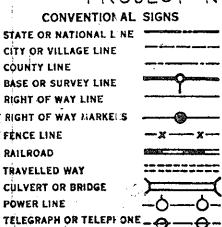
Geo. W. Rice
CITY MANAGER

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED: [Signature]
DISTRICT ENGINEER DATE

Sheet Nos. 90 to 92 omitted

PROJ. NO. FI-31(17); FI-1088(2); F 31(18)
COUNTY BEXAR
HWY. NO. U.S. 81
LETTING DATE
DATE ACCEPTED



SPECIFICATIONS ADOPTED BY THE STATE HIGHWAY DEPARTMENT OF TEXAS, JANUARY 2, 1951 AND APPROVED BY THE U. S. BUREAU OF PUBLIC ROADS JULY 25, 1951 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT:
REQUIRED CONTRACT PROVISIONS FOR FEDERAL AID PROJECTS APPROVED JANUARY 13, 1955.

NOTE: FEDERAL PROJECT MARKERS OF APPROVED DESIGN WILL BE ERECTED AT EACH END OF PROJECT PRIOR TO COMPLETION.

LAYOUT SCALE: 1 IN. = 2640 FT.

CORRECT: March 18, 55
SENIOR DESIGNING ENGINEER
March 18, 55
RESIDENT ENGINEER
March 19, 55
DISTRICT ENGINEER

APPROVED: [Signature]
ENGINEER ROAD DESIGN

STATION 180+00 BEGINNING OF
PROJECT IN 31(17) CONTROL 12-7-25
STATION 180+00 END OF PROJECT F1-31(5)
CONTROL 12-7-22 (Under Construction)
4" L. STATION 3385+60 ON OLD
PROJECT NRH 31 Part 2

- LEGEND
- Proposed Construction
 - Under Construction
 - Future Construction
 - Proposed Right of Way Line
 - Future Right of Way Line
 - Existing Right of Way Line

PROJECT LAYOUT

SHEET 1 OF 2

SCALE 1"=200'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	DATE
6	TEXAS	F1-31(17) F1-31(5)	12-7-25
STATE DIST. NO.	COUNTY	CONTROL SECTION JOB	
15	BEXAR	12-7-25	12-7-25

M.K.T. RAILROAD

To San Antonio

EXISTING US HIGHWAY 31

To San Antonio via Frisco

BLUDAU-SISHOP ROAD

JUDSON RD

O'CONNOR DRIVE

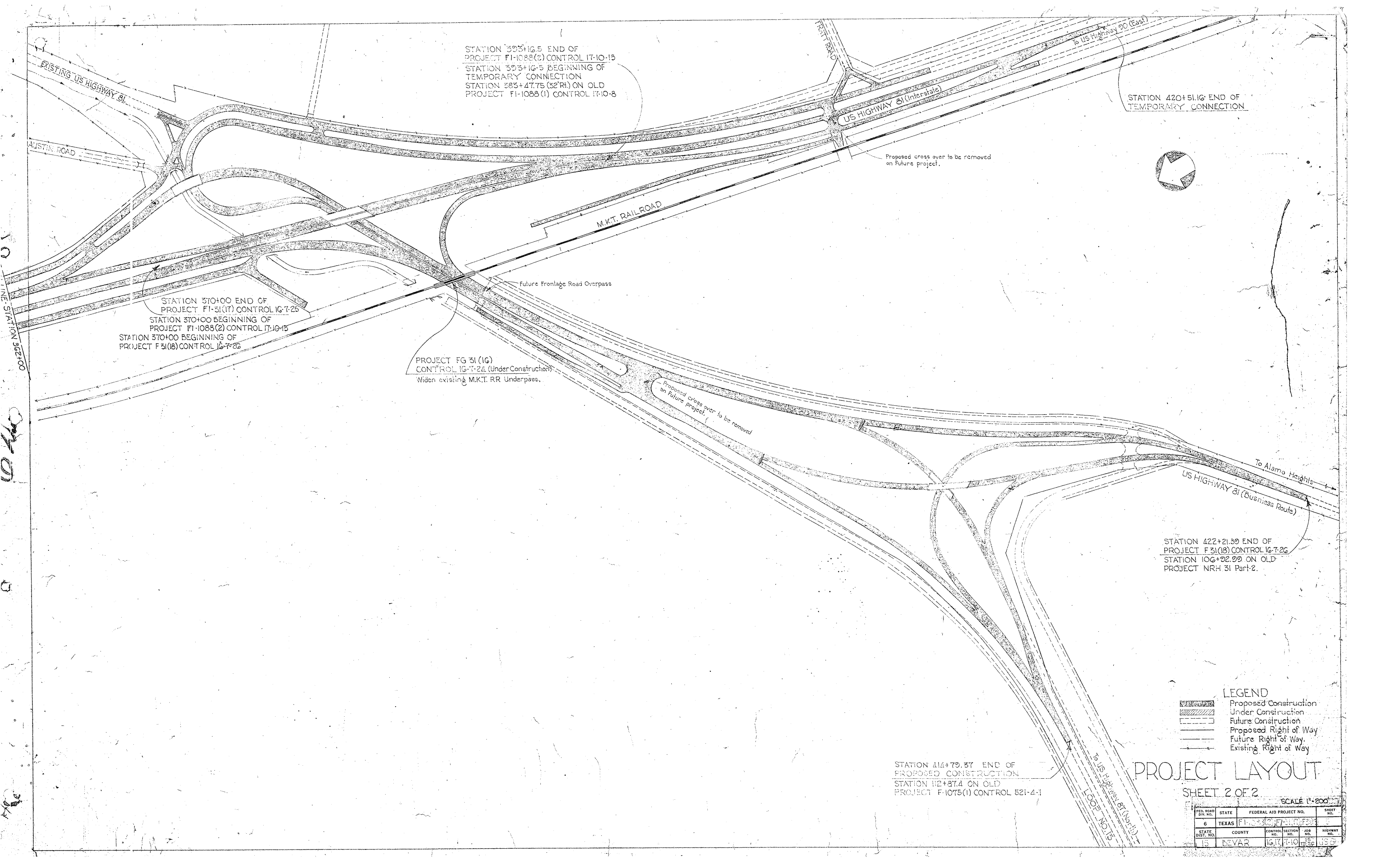
WEDNER ROAD

MATCH LINE STATION 210+00

MATCH LINE STATION 300+00

MATCH LINE STATION 300+00

MATCH LINE



STATION 335+16.5 END OF
PROJECT FI-1088(2) CONTROL 17-10-13
STATION 323+16.5 BEGINNING OF
TEMPORARY CONNECTION
STATION 383+47.75 (32'RI) ON OLD
PROJECT FI-1088(1) CONTROL 17-10-8

STATION 420+51.16 END OF
TEMPORARY CONNECTION

STATION 370+00 END OF
PROJECT FI-31(17) CONTROL 16-7-25
STATION 370+00 BEGINNING OF
PROJECT FI-1088(2) CONTROL 17-10-13
STATION 370+00 BEGINNING OF
PROJECT F-31(18) CONTROL 16-7-26

PROJECT FG 31 (16)
CONTROL 16-7-24 (Under Construction)
Widen existing M.K.T. RR Underpass.

Proposed cross over to be removed
on future project.

Proposed cross over to be removed
on future project.

STATION 422+21.39 END OF
PROJECT F-31(18) CONTROL 16-7-26
STATION 106+22.29 ON OLD
PROJECT NRH 31 Part 2.

STATION 114+79.37 END OF
PROPOSED CONSTRUCTION
STATION 112+87.4 ON OLD
PROJECT F-1075(1) CONTROL 521-4-1

- LEGEND
- Proposed Construction
 - Under Construction
 - Future Construction
 - Proposed Right of Way
 - Future Right of Way
 - Existing Right of Way

PROJECT LAYOUT

SHEET 2 OF 2

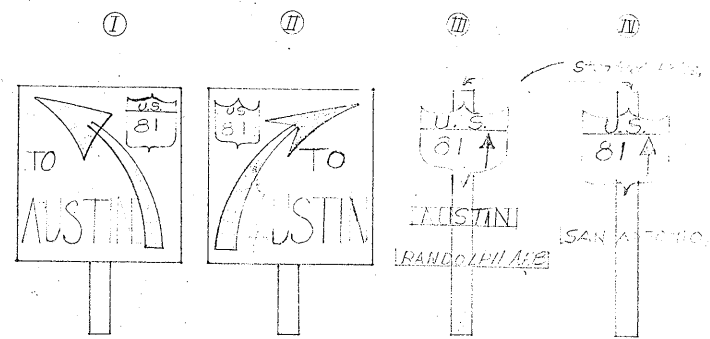
SCALE 1"=200'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F-1088(2)	2
STATE DIST. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
15	BEAR	16-7-26	1088

[illegible]

REVISED DETOUR LAYOUT

SHOWING ALIGNMENT, SIGNS & BARRICADES



EXISTING PAVEMENT
NEW PAVEMENT

NOTES: ~~SPEED LIMIT 40MS TO BE~~
~~MAINTAINED THROUGHOUT DETOUR LIMITS~~
PAVEMENT WIDTH= 24'

Location	Barrenside		Off-Forest	Grass							
	D"	E"		W-37A	D-37A	E-37	D-37	D-37	W-37	W-37	W-37
1. 100' x 100' x 100' x 100'	1	1	41	1		1	1	2	1		
2. 100' x 100' x 100' x 100'	1	3	10		1	1	1	2	1		
3. 100' x 100' x 100' x 100'		2						1			
4. 100' x 100' x 100' x 100'		2						1			
5. 100' x 100' x 100' x 100'		4							2	1	
6. 100' x 100' x 100' x 100'	1		25	1	1	1	1		1		
7. 100' x 100' x 100' x 100'			21			1			2	2	
8. 100' x 100' x 100' x 100'	1			1	1	1	1	1			
9. 100' x 100' x 100' x 100'	1		10	1	1	1	1	1	1		
10. 100' x 100' x 100' x 100'	1		15	1	1	2	1	1	1		
11. 100' x 100' x 100' x 100'			10					5			
Totals:	7	11	23	5	6	9	6	11	10	3	

SEIBOUR ROAD N. BOUND LANE.
 APPROX. CURVE DATA
 D = 1200'
 A = 4°50' Lt.
 T = 521.73'
 L = 482.53'

Foundation Course 344 CY
H.M. Gold (aid) Aspen Core, Post 98 Ten

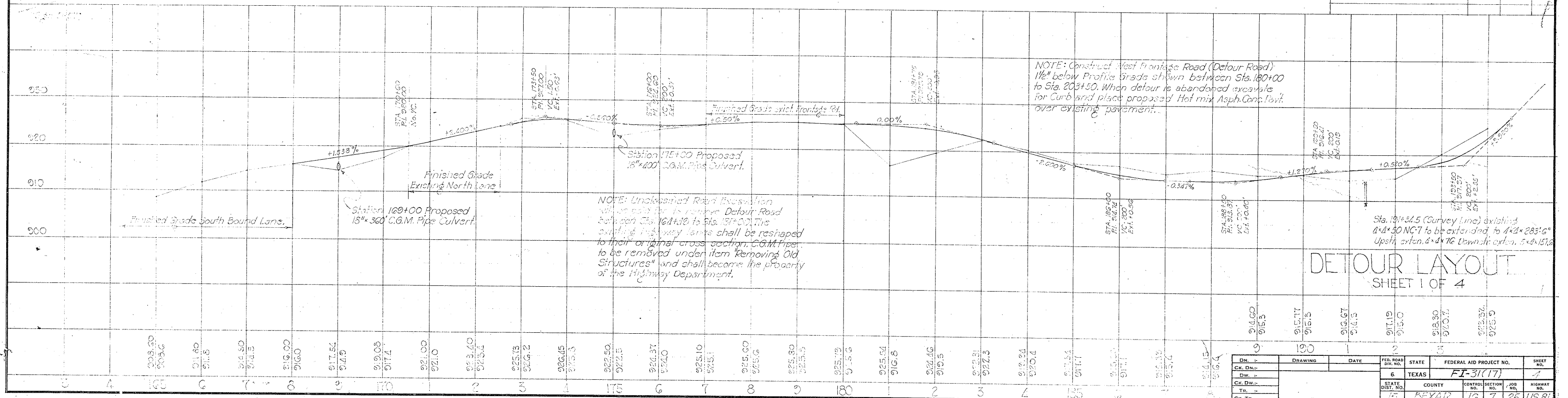
Foundation Course 107 CM,
H.M.Cold laid Asph. Conc. Pavt. 11 Ton.

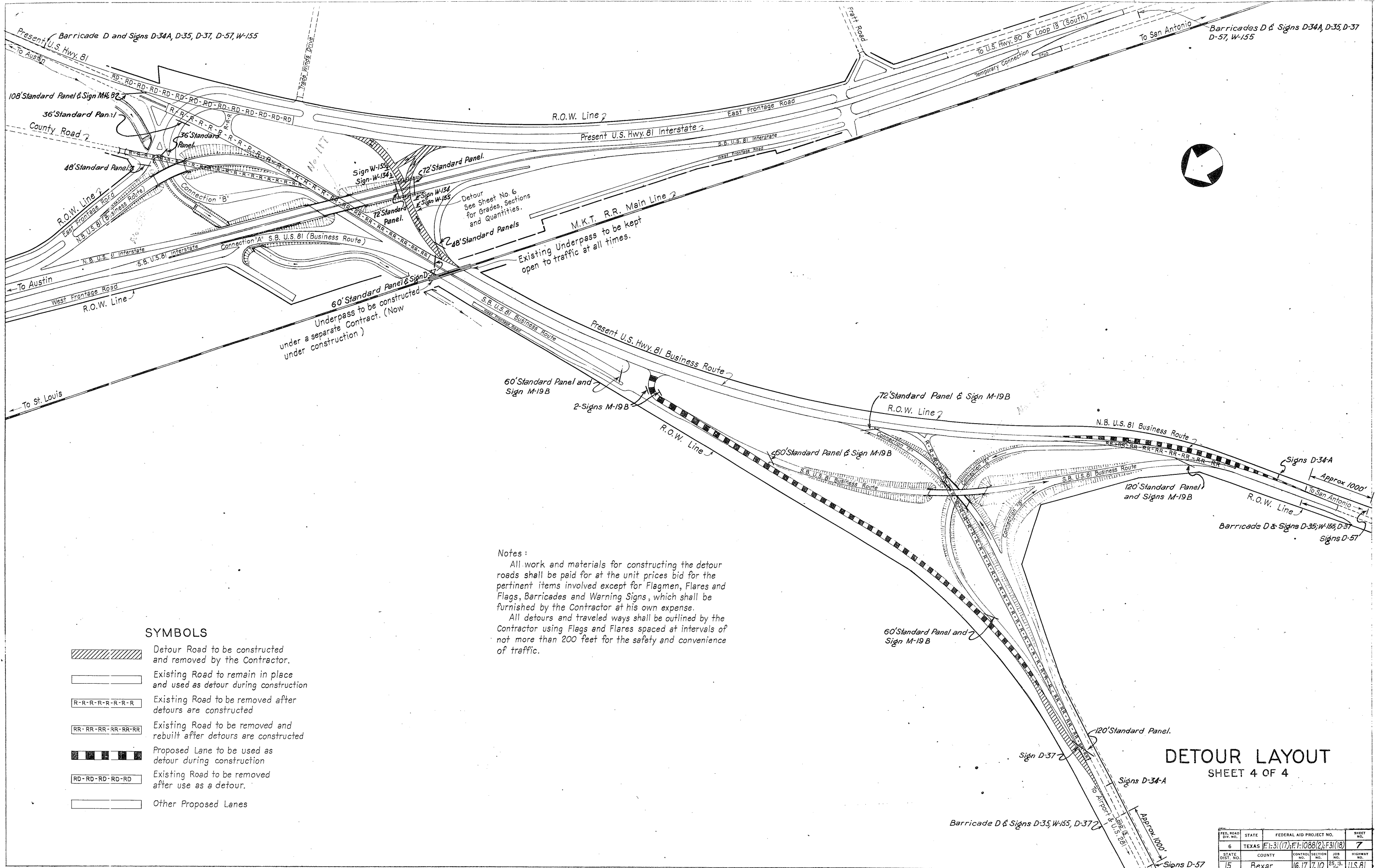
Hand-drawn cross-section diagram of a foundation for a 12' x 12' column. The diagram shows a rectangular foundation with a width of 12' 0" and a depth of 24' 0". The top surface is labeled "Finish Grade above" and the bottom surface is labeled "Prop. Grade below". The foundation is shown with a 12' 0" width and a 24' 0" depth. The diagram is labeled "Foundation Cross Section" and "12' x 12' Column".

4. Four Road, East Wendage Road.
At 1000 y. QUARRY 1948
D 2500'
A 13250' 74
T 206.58'
L 925.00

STATION 180+00 BEGINNING OF
PROJECT NO. FI-3(S) CONTROL 16-7-25
STATION 180+00 END OF PROJECT FI-3(S)
CONTROL 16-7-22 (Under Construction)
STATION 1835+00 ON OLD PROJECT NRHSR-12

ESTIMATED QUANTITIES			
Delour Road from Sta. 1241+00 to Sta. 205+00			
Item	Plan	Final	Unit
Undeulation Course	1806		CY.
1/2 mix Cold laid, 4-ph. Conc. Pavt.	630		Ton
"Corr. Galv. Metal Pipe	760		L.F.
Removing Old Structures.	2		Each
Unclassified Road Lycopast	2706		CY
Grass	2706		CY





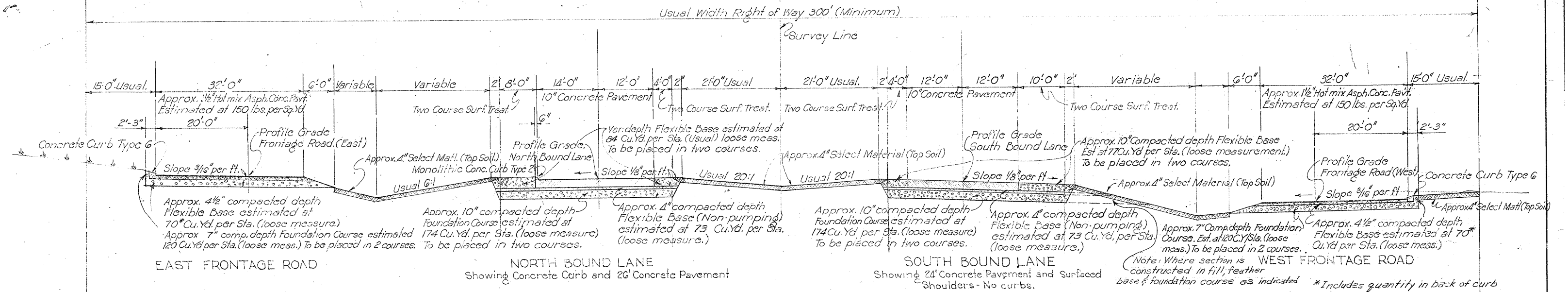
SYMBOLS

- Detour Road to be constructed and removed by the Contractor.
- Existing Road to remain in place and used as detour during construction
- Existing Road to be removed after detours are constructed
- Existing Road to be removed and rebuilt after detours are constructed
- Proposed Lane to be used as detour during construction
- Existing Road to be removed after use as a detour.
- Other Proposed Lanes

Notes:
All work and materials for constructing the detour roads shall be paid for at the unit prices bid for the pertinent items involved except for Flagmen, Flares and Flags, Barricades and Warning Signs, which shall be furnished by the Contractor at his own expense.
All detours and traveled ways shall be outlined by the Contractor using Flags and Flares spaced at intervals of not more than 200 feet for the safety and convenience of traffic.

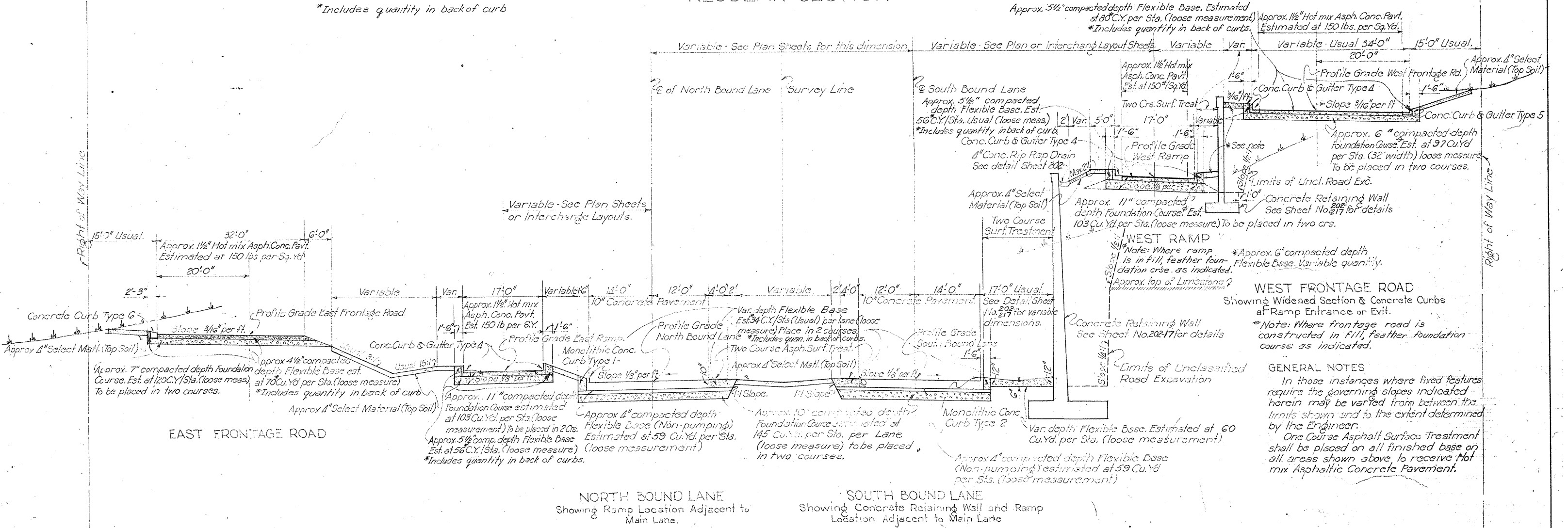
DETOUR LAYOUT
SHEET 4 OF 4

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F-1-31(17); F-1-1088(2); F-3(18)	7
STATE DIST. NO.	COUNTY	CONTROL NO.	JOB NO.
15	Bexar	16, 17, 7, 10	25, 3, 26
			U.S. 81



REGULAR SECTION

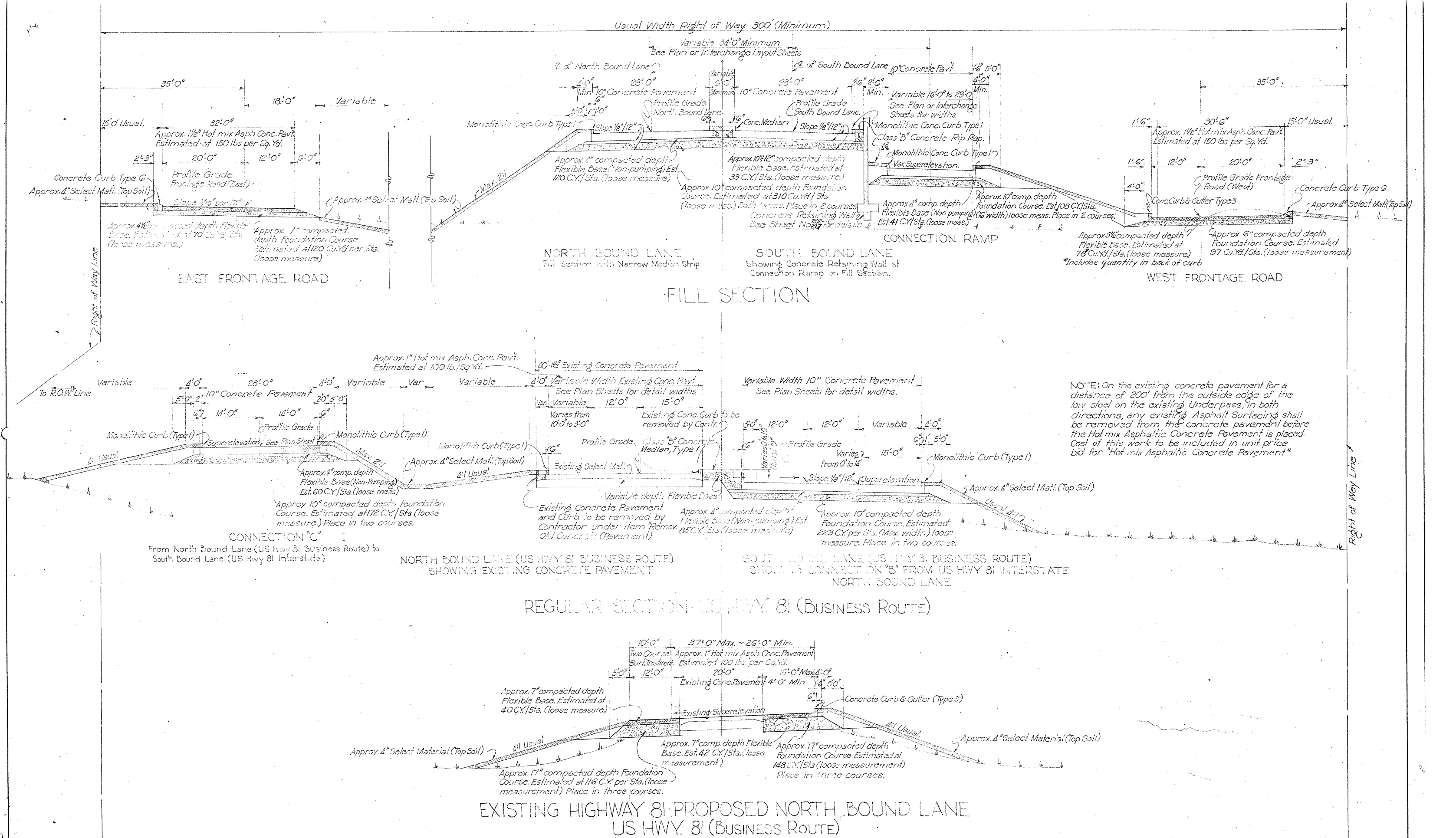
*Includes quantity in back of curb



CUT SECTION SHOWING RAMP CONNECTIONS

TYPICAL CROSS SECTIONS SHEET 1 OF 3

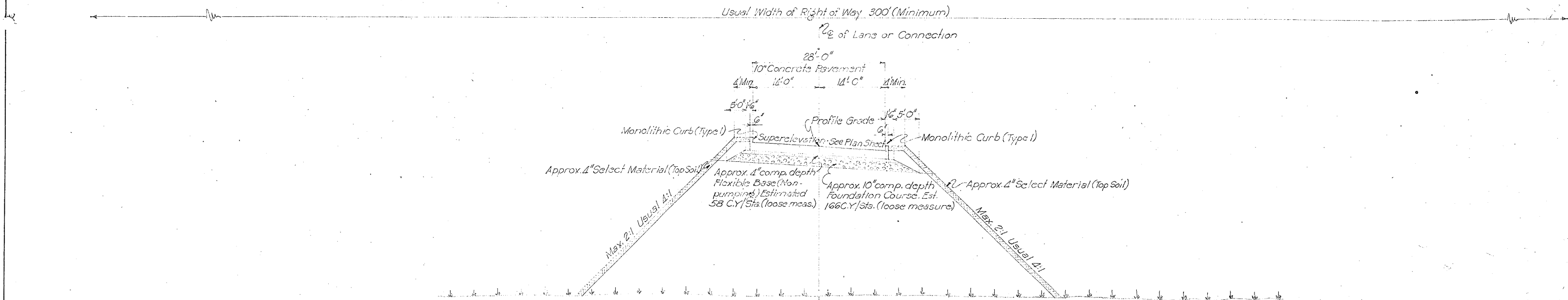
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
G	TEXAS	F1-51(7) FH038(2)	F51(8) 8
STATE DIST. NO.	COUNTY	CONTRACT NO.	JOB NO.
15	DEXAR	1617 T-10	2515
			US 81



TYPICAL CROSS SECTIONS

SHEET 2 OF 3

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
G	TEXAS	F1-31(17); F1-1088(2); F3(14)	9
STATE DIST. NO.	COUNTY	CONTROL SECTION	JOB HIGHWAY NO.
15	BEXAR	16; 17; 10	25; 19 US 81

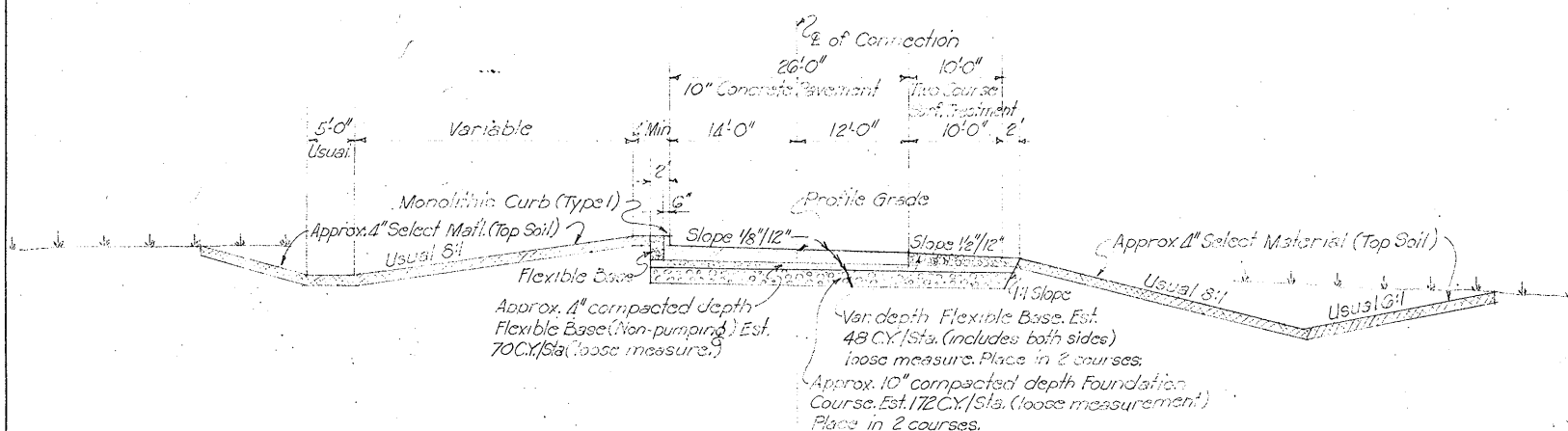


FILL SECTION CONNECTIONS

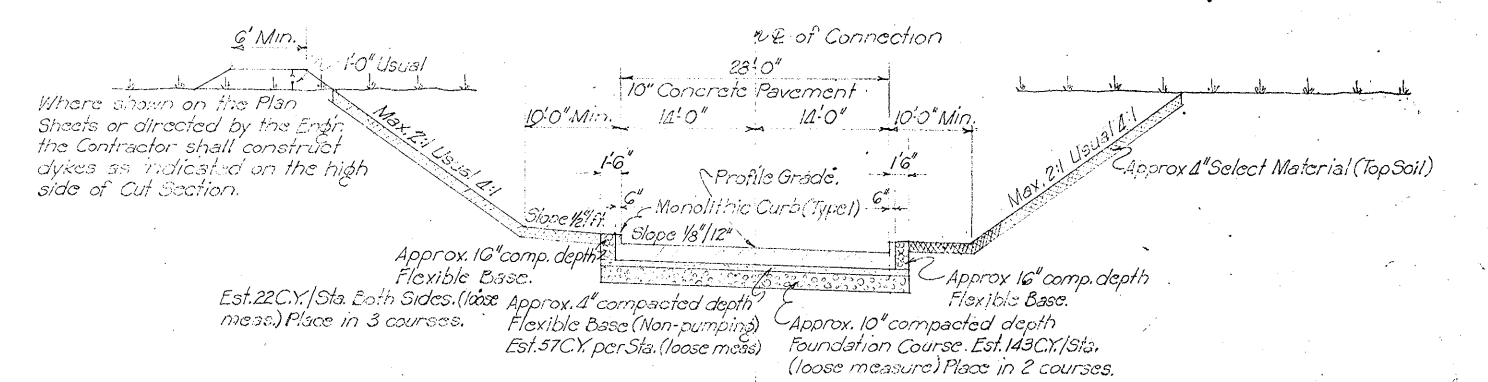
CONNECTION "G"

SOUTH BOUND LANE (US HWY. 81 Business Route)

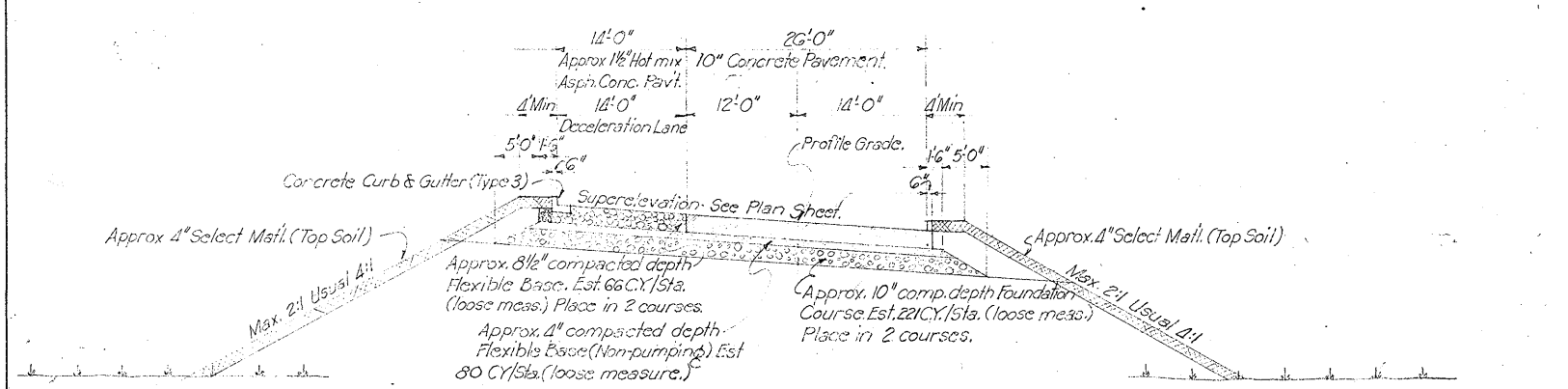
CONNECTION "F"



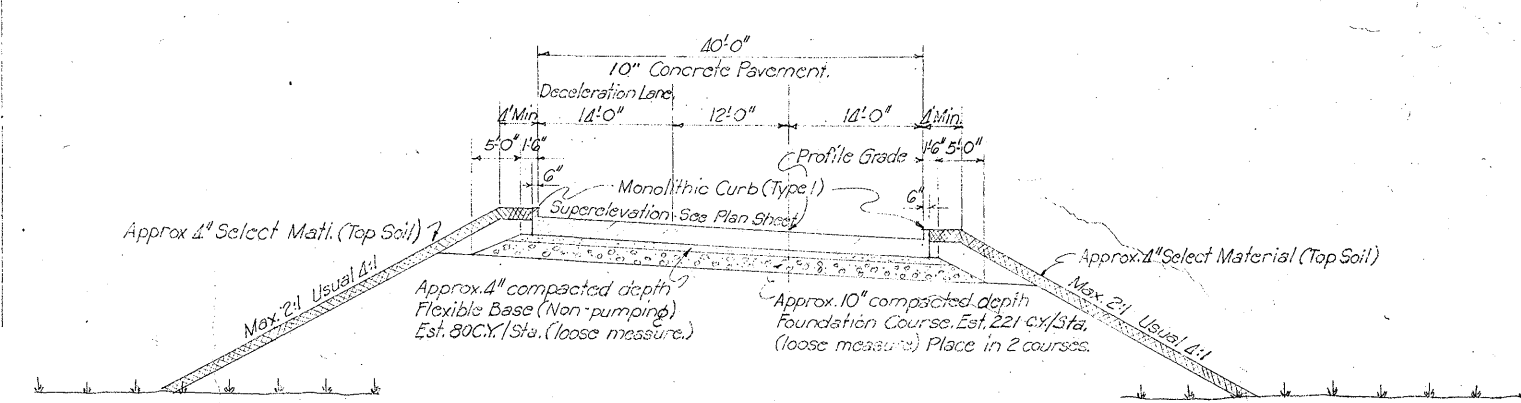
CONNECTION "D"



CUT SECTION CONNECTIONS



NORTH BOUND LANE (US HWY. 81 BUSINESS ROUTE)
ASPHALTIC CONCRETE PAV'T. DECELERATION LANE



NORTH BOUND LANE (US HWY. 81 BUSINESS ROUTE)
CONCRETE PAVEMENT DECELERATION LANE

TYPICAL CROSS SECTIONS

SHEET 3 OF 3

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
15	TEXAS	16-0382	10
STATE DIST. NO.	COUNTY	CONTRACT SECTION	JOB HIGHWAY NO.
15	BEXAR	16-0382	25 15 24 US 81

* 360 L.F. to be used at Sta. 169+00 & 400 L.F. at Sts. 175+00 on Detour at Beginning of Project

ESTIMATE & QUANTITY SHEET
SHEET 2 OF 5

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F 31(17), F 1088(2), F 31(18)	12
STATE DIST. NO.		CONTRACT	SECTION JOB. HIGHWAY NO.
15	BEXAR	10,17,7;10	25 15,26 US-81

SUMMARY OF DRAINAGE STRUCTURES

Sheet No.			Structure No.	Design	Location	Description	Unclassified Structural Excavation			Class "A" Concrete			Standard Reinforced Concrete Pipe								18" Corr. Galv. Metal Pipe	Relaying Culv. Pipe 18" Dia. Under	Class "B" Concrete Rip Rep.	Grate and Frame Each	Manhole Cover & Ring Each	Class "A" Concrete (Ext. Struct) Cu. Yd.					
Plan	Layout	Details					(Culverts) Cu. Yd.	(Inlets, Hdws. & Manholes) Cu. Yd.	Pipe Line Cu. Yd.	(Culverts) Cu. Yd.	(Inlets, Hdws. & Manholes) Cu. Yd.	Lb.	18" Dia. Lin. Ft.	24" Dia. Lin. Ft.	30" Dia. Lin. Ft.	36" Dia. Lin. Ft.	42" Dia. Lin. Ft.	48" Dia. Lin. Ft.	54" Dia. Lin. Ft.												
PROJECT NO. F-31(18) CONTROL 10-T-2G																															
30	238	239-9	BC-5	FW-N, Spl.	See "Drainage Layout", Sheet N-230	1-3'x2' Box Culv. Ext'n	31-27	13		551	2-27	226.8												23	22.87	14.08					
40	240	241	BC-6	Spl.		3-4'x4' " " "	173-18						226.8													161.06	142.77				
36	134	247-18	BC-7	SCL, FW-N, Spl.		1-4'x3' " " "	8-5						842													5.64					
30	239	230	CI-453, CI-465, CI-473	Spl.		Quantities Included in BC-5 Above																									
38	144	221	CI-48 & W36	Spl.		Curb Inlets		21-22	21	26	640	5-79	543-933												1						
36	134	231	DI-50 & W32	Spl.		Curb Inlet, Type 3		8-6	52	116	172	1-31	275-282																		
38	144	"	DI-51 & W33	Spl.		Drop Inlet, Type C		4	210	314		1.00	115-120																		
38	144	"	DI-52 & W34	Spl.		" " " A		8	104	64	171	1-42	230																		
38	144	"	DI-53 & W35	Spl.		" " " A		5	31	23		0.97	121-122																		
38	144	"	DI-54 & W37	Spl.		" " " C		11	538	522		2.37	236																		
38	144	"	DI-55 & W38	Spl.		" " " A		6-7	258	145	151	1-88	160-226																		
38	144	"	DI-56 & W39	Spl.		" " " A		5	72	89	118	1-10	158																		
38	144	"	DI-57 & W40	Spl.		" " " B		20-19	1,442	1583	486	4-95	158-395																		
42	144	"	DI-58 & W41	Spl.		" " " C		19	1,002	985	468	4-03	156-451																		
30	134	"	MH-10 & W30	Spl.		Manhole, Type A		5-9	54	40	202	1-82	230-191																		
36	134	"	MH-11 & W31	Spl.	" " " A (Mod.)		6-4	36	55	151	2-04	150-358																			
42	144	"	MH-12 & W42	Spl.	" " " A		22	1,242	384	521	4-50	151-427																			
30	134	260	PH-7	CH-11-B 45°		Pipe Headwall	3-2				0.80	11-88																			
36	134	259	PH-8	CH-11-B 30°		" " "	7-1				2.28	251-256																			
3738		232		Special	Various	Summary of Curb Inlets (See Sheet N-230 for part in unit)					1.60	84																			
282 @ 115% of UNIT PRICE																															
42	144					1/4" at between 1' & 5' lower than plan elevation																									
TOTALS PROJECT F-31(18)							208	166	5,116	4806	4933	31,173	726.58	488	271.33	1615.59															
GRAND TOTALS							5125	1066	19,772	15559	1059.59	325.22	257.26	5389	2033	2400	3487	1127	1,207	78	848	88	2.00	10	67	58	188.77	162.49			
							5120	1087			1657.15	271.69	255.91	5351.35	157.49	2357.65	3427.91														

⊠ This sheet includes quantities of elevation below that indicated on plans

SUMMARY OF HIGHWAY SEPARATION STRUCTURES

Sheet No.			Location	Design	Length	Stations		Description	Unclassified	Class "A" Concrete		Reinforcing Steel	Structural Steel	18" Dia. Drilled Shafts	30" Dia. Drilled Shafts	Class "B" Concrete	Railings	Permanent	30" Dia. Drilled	30" Dia. Drilled	Bell Footings	
Plan	Layout	Details				Beginning	End		Struct. Excav (Pierages)	(Benits)	(Slabs)											Cu. Yd.
PROJECT NO. FI-31 (17) CONTROL 10-T-25																						
18	149	161-64	100' Cont. I Beam Unit	*121'-6"	69.75	100' Cont. I Beam Unit	20'-60' Cont. I Beam Unit	2'-26' Rdwy. 4' Median	53.4	77.0	151.8	46.155	146.009	40'-110	104'-115	112'-235	240	49	16.75	16.15	1.55	
21	150	161-64	100' Cont. I Beam Unit	*121'-6"	69.75	100' Cont. I Beam Unit	60'-60' Cont. I Beam Unit	2'-26' Rdwy. 4' Median	53.4	77.09	151.8	46.155	146.077	34'-156	68'-92	111'-230	240	50	27.30			
24	151	165-69	100' Cont. I Beam Unit	196'-8 3/4"	171.5	100' Cont. I Beam Unit	60'-75' 60' Cont. I Beam Unit	28' Rdwy. 3' Median	78.0	119.14	278.7	77.000	285.000	82'-150	310'-347	59'-0	370	51				
24	152	165-69	100' Cont. I Beam Unit	196'-8 3/4"	171.5	100' Cont. I Beam Unit	60'-75' 60' Cont. I Beam Unit	28' Rdwy. 3' Median	78.0	119.14	278.7	77.000	285.000	82'-150	310'-347	59'-0	370	51				
27	153	170-13	100' Cont. I Beam Unit	166'-6"	171.5	100' Cont. I Beam Unit	50'-65' 50' Cont. I Beam Unit	28' Rdwy. 3' Median	60.0	110.68	231.6	69.005	205.745	95'-150	310'-347	60'-0	330	52				
27	154	170-13	100' Cont. I Beam Unit	166'-6"	171.5	100' Cont. I Beam Unit	50'-65' 50' Cont. I Beam Unit	28' Rdwy. 3' Median	60.0	110.68	231.6	69.005	205.745	95'-150	310'-347	60'-0	330	52				
TOTALS PROJECT FI-31 (17)									240.8	384.51	813.9	230.54	783.407	251	792	205.3	1200			11.05	16.15	1.55
PROJECT NO. FI-1088 (2) CONTROL 10-T-13																						
30	156	178-83	210' Cont. I Beam Unit	212'-1 7/8"	171.5	210' Cont. I Beam Unit	45'-60' 45' Cont. I Beam Unit	28' Rdwy. 3' Median	86.0	183.97	300.1	94.276	269.063	72'-142	435'-147	78'-0	420	117				
30	157	178-83	210' Cont. I Beam Unit	212'-1 7/8"	171.5	210' Cont. I Beam Unit	45'-60' 45' Cont. I Beam Unit	28' Rdwy. 3' Median	86.0	183.97	300.1	94.276	269.063	72'-142	435'-147	78'-0	420	117				
TOTALS PROJECT FI-1088 (2)									86.0	183.97	300.1	94.276	269.063	72	435	78.0	420					
PROJECT NO. F-31 (18) CONTROL 10-T-2G																						
158	153	184-91	50' Cont. I Beam Unit	281'-5 1/2"	126.41	50' Cont. I Beam Unit	50'-73' 78' 54' 50' 73' Cont. I Beam Unit	50' I Beam Span 28' Rdwy.	59.0	120.0	193.2	64.366	182.100	133'-147	336'-337	1247.4	560.0	53				
160	192-98	Connection "F"	47' 25' 10.5' I Beam Span	*166'-8 1/4"	126.41	47' 25' 10.5' I Beam Span	47' 25' 10.5' I Beam Span	28' Rdwy.	56.0	113.0	149.7	35.009	105.166	78'-77	92'-143	143'-143	330.0	54				
31	155	174-77	30' 50' I Beam Spans	*161'-6"	126.41	30' 50' I Beam Spans	30' 50' 50' 30' I-Beam Spans	40' Rdwy.	44.0	89.7	149.7	24.393	131.000	78'-77	92'-143	143'-143	330.0	55				
TOTALS PROJECT F-31 (18)									159.0	267.9	455.9	144.368	418.866	228	863	147.4	1213.6					
GRAND TOTALS									189.8	335.7	1569.9	172.316	471.925	611	2150	430.8	2833.6			11.05	16.15	1.55

* These lengths not included in total bridge length.

ESTIMATE & QUANTITY SHEET
SHEET 3 OF 5

Quantities Revised 4-28-55 H.M.K.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17) FI-1088(2) FI-31(18)	13
STATE DIST. NO.	COUNTY	CONTROL SECTION	HIGHWAY NO.
15	BEXAR	10-T-7, 10-T-13, 10-T-2G	US-81

ESTIMATE SUMMARY

ITEM NO.	DESCRIPTION	SUMMARY OF QUANTITIES																				UNIT
		PROJECT NO. FI-31(17) CONTROL IG-7-25						PROJECT NO. FI-1088(2) CONTROL IG-10-13						PROJECT NO. F-31(18) CONTROL IG-7-26						GRAND TOTALS		
		Roadway		Structures		Totals		Roadway		Structures		Totals		Roadway		Structures		Totals				
Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	
100	Clearing and Grubbing	5.70	5.70			5.70	5.70	1.20	1.20			1.20	1.20	1.00	1.00			1.00	1.00	7.90	7.90	Acre
101 & Special	Unclassified Road Excavation	663,163	657,422			663,163	657,422	50,829	51,912			50,829	51,912	91,686	92,872			91,686	92,872	805,678	804,758	Cu. Yd.
103	Unclassified Channel Excavation	4259	4115			4,259	4,115	21,912	20,122			21,912	20,122	132	162			132	162	26,303	24,429	Cu. Yd.
104	Unclassified Structural Excavation (Bridges)			244.8	244.8	244.8	244.8			86	86	86	86	0	0	159	159	159	159	489.8	489.8	Cu. Yd.
104	Unclassified Structural Excavation (Retaining Wall)	4375	4766			4,375	4,766	110	110			110	110	0	0			0	0	4,485	4,876	Cu. Yd.
104	Unclassified Structural Excavation (Culverts)	4816	4927			4,816	4,927	91	91	319	319	410	429	218	208			218	208	5,444	5,464	Cu. Yd.
104	Unclassified Structural Excavation (Inlets, Headwalls, Manholes)	603	650			603	650	306	271			306	271	157	166			157	166	1,066	1,087	Cu. Yd.
104	Unclassified Structural Excavation (Pipe Line)	11,985	11,660			11,985	11,660	2671	2533			2,671	2,533	5,116	4,806			5,116	4,806	19,772	18,998	Cu. Yd.
109	Stripping	30,000	35,000			30,000	35,000	7,000	8,573			7,000	8,573	7,000	8,573			7,000	8,573	44,000	52,631	Cu. Yd.
110	Overhaul	672,789	545,137			672,789	545,137	396,322	196,827			396,322	196,827	1,338,249	1,338,249			1,338,249	1,338,249	2,407,360	2,143,955	Yd. Qtr.
202	Spinning	32,619	32,619			32,619	32,619	6,336	6,336			6,336	6,336	13,452	13,452			13,452	13,452	52,407	52,407	M. Gal.
203	Rolling	244	185			244	185	47	47			47	47	36	36			36	36	327	110.5	Hour
203-A	Rolling	989	31			989	31	205	205			205	205	8	8			607	52.5	1,801	74.5	Hour
203-B	Rolling	244	156			244	156	321	321			321	321	846	846			846	846	1,411	261	Hour
203-C	Rolling	1977	1661			1,977	1,661	410	410			410	410	1,214	1,214			1,214	1,214	3,601	2,781.5	Hour
Special	Rolling (Heavy Pneumatic Tire)	989	812			989	812	205	205			205	205	607	607			607	607	1,801	1,250	Hour
Special	Preparation of Subgrade	396,166	397,116			396,166	397,116	86,203	86,203			86,203	86,203	81,912	81,912			81,912	81,912	564,281	564,281	Sq. Yd.
215 & Special	Flexible Base (Non-pumping)	27,265	27,265			27,265	27,265	4,104	4,104			4,104	4,104	7,402	7,402			7,402	7,402	38,771	38,771	Cu. Yd.
215 & Special	Flexible Base	64,681	64,681			64,681	64,681	11,873	11,873			11,873	11,873	8,947	8,947			8,947	8,947	85,501	85,501	Cu. Yd.
218 & Special	Foundation Course	148,064	148,064			148,064	148,064	27,643	27,643			27,643	27,643	37,033	37,033			37,033	37,033	212,760	212,760	Cu. Yd.
302 & 305	Asphalt (MC-3)	74,235	74,235			74,235	74,235	15,934	15,934			15,934	15,934	10,055	10,055			10,055	10,055	100,224	100,224	Gal.
304	Aggregate (Type 3-Grade 4)	1804	1804			1804	1804	437	437			437	437	219	219			219	219	2,460	2,460	Cu. Yd.
305	Asphalt (OA-115 or RC-2)	9496	9120			9496	9120	562	562			562	562	2,051	2,051			2,051	2,051	12,110	12,110	Gal.
305	Aggregate (Type 3-Grade 4)	605	605			605	605	37	37			37	37	132	132			132	132	774	774	Cu. Yd.
317	Asphalt	677	611.96			677	611.96	188	188			188	188	128	128			128	128	393	393	Ton
317	Aggregate (Type C)	12,856	12,856			12,856	12,856	3,575	3,575			3,575	3,575	2,425	2,425			2,425	2,425	18,856	18,856	Ton
317 & Special	Hot-mix Cold-laid Asphaltic Concrete Pavement (Type FF)	630	630			630	630	128	128			128	128	339	339			339	339	1,097	1,097	Ton
317 & Special	Task Cost	10,912	10,912			10,912	10,912	2,893	2,893			2,893	2,893	2,720	2,720			2,720	2,720	16,525	16,525	Gal.
320 & Special	Concrete Pavement (10')	117,949	117,949			117,949	117,949	21,483	21,483			21,483	21,483	42,239	42,239			42,239	42,239	181,677	181,677	Sq. Yd.
320 & Special	Monolithic Curb (Type 1)	18,530	18,530			18,530	18,530	7,663	7,663			7,663	7,663	16,586	16,586			16,586	16,586	42,779	42,779	Lin. Ft.
320 & Special	Monolithic Curb (Type 2)	1,688	1,688			1,688	1,688	0	0			0	0	0	0			0	0	1,688	1,688	Lin. Ft.
403	Class "A" Concrete (Retaining Wall)	6006.07	6006.07			6,006.07	6,006.07	241.15	241.15			241.15	241.15	0	0			0	0	6,247.22	6,247.22	Cu. Yd.
403	Class "A" Concrete (Inlets, Headwalls, and Manholes)	221.36	221.36			221.36	221.36	64.63	64.63			64.63	64.63	39.23	39.23			39.23	39.23	325.22	325.22	Cu. Yd.
403	Class "A" Concrete (Benches)			384.5	384.5	384.5	384.5			183.3	183.3	183.3	183.3			267.9	267.9	267.9	267.9	835.7	835.7	Cu. Yd.
403	Class "A" Concrete (Slabs)			813.9	813.9	813.9	813.9			300.1	300.1	300.1	300.1			455.9	455.9	455.9	455.9	1,569.9	1,569.9	Cu. Yd.
403	Class "A" Concrete (Culverts)	1059.59	1059.59			1,059.59	1,059.59	0	0	598.78	598.78	598.78	598.78	0	0			0	0	1,658.37	1,658.37	Cu. Yd.
405 & Special	Reinforcing Steel	1,320,509	1,320,509	236,511	236,511	1,557,020	1,557,020	48,579	48,579	175,943	175,943	224,522	224,522	29,769	29,769	144,368	144,368	174,137	174,137	1,955,679	1,955,679	Lb.
407 & Special	Structural Steel			783,407	783,407	783,407	783,407			269,652	269,652	269,652	269,652			418,866	418,866	418,866	418,866	1,471,325	1,471,325	Lb.
412 & Special	18" Standard Reinforced Concrete Pipe	4036	4036			4,036	4,036	616	616			616	616	728	728			728	728	5,380	5,380	Lin. Ft.
412 & Special	21" Standard Reinforced Concrete Pipe	1328	1328			1,328	1,328	655	655			655	655	50	50			50	50	2,033	2,033	Lin. Ft.
412 & Special	30" Standard Reinforced Concrete Pipe	2070	2070			2,070	2,070	48	48			48	48	282	282			282	282	2,400	2,400	Lin. Ft.
412 & Special	36" Standard Reinforced Concrete Pipe	1257	1257			1,257	1,257	563	563			563	563	1,617	1,617			1,617	1,617	3,437	3,437	Lin. Ft.
412 & Special	42" Standard Reinforced Concrete Pipe	872	872			872	872	255	255			255	255	0	0			0	0	1,127	1,127	Lin. Ft.
412 & Special	48" Standard Reinforced Concrete Pipe	1040	1040			1,040	1,040	0	0			0	0	167	167			167	167	1,207	1,207	Lin. Ft.
412 & Special	54" Standard Reinforced Concrete Pipe	0	0			0	0	78	78			78	78	0	0			0	0	78	78	Lin. Ft.
413	18" Corrugated Galvanized Metal Pipe	760	760			760	760	88	88			88	88	0	0			0	0	848	848	Lin. Ft.
414	Relaying Culvert Pipe (18" Diam. and Under)	0	0			0	0	88	88			88	88	0	0			0	0	88	88	Lin. Ft.

* See Sheet #15

CONTINUED ON NEXT SHEET

ESTIMATE & QUANTITY SHEET
SHEET 4 OF 5

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
G	TEXAS	FI-31(17); FI-1088(2); F-31(18)	14
COUNTY	CONTRACT	JOB	HIGHWAY NO.
15	BEXAR	IG-7-10	US 31

Quantities Revised 4/20/55 HWK

ESTIMATE SUMMARY

ITEM NO.	DESCRIPTION	SUMMARY OF QUANTITIES																				UNIT
		PROJECT NO. F1-31(17) CONTROL 16-7-25						PROJECT NO. F1-1088(2) CONTROL 17-10-13						PROJECT NO. F-31(18) CONTROL 16-7-26						GRAND TOTALS		
		Roadway		Structures		Totals		Roadway		Structures		Totals		Roadway		Structures		Totals				
Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	Plan	Final	
415	Class "A" Concrete for Extending Structures	101.44	101.97			101.44	101.97	94.71	95.19			94.71	95.19	188.77	162.49			188.77	162.49	384.92	360.25	Cu. Yd.
1.255 Special	18" Dia. Drilled Shafts			251	254.16	251	254.16			72	73.62	72	73.62			288	296.88	288	296.88	611	644.31	Lin. Ft.
1.255 Special	30" Dia. Drilled Shafts			792	822.95	792	822.95			425	431.29	425	431.29			863	906.40	863	906.40	2150	2234.98	Lin. Ft.
422	Railing (Type 3, Modified)			1200.0	1355.0	1200.0	1355.0			420.0	420.0	420.0	420.00			1,213.6	1213.6	1,213.6	1213.6	2833.6	2833.6	Lin. Ft.
423	Class "B" Concrete Riprap	293.0	304.97	205.3	191.7	498.3	500.84	497.0	412.16	123.4	120.04	620.4	592.20	54	59.27	147.5	125.14	201.5	184.41	1,320.2	1274.45	Cu. Yd.
500	Removing Old Structures	3	5			3	5	4	5			4	5	2	2			2	2	9	12	Each
511	Concrete Curb (Type 6)	27,490	27,301.55			27,490	27,301.55	3,671	3,519.33			3,671	3,519.33	750	804.70			750	804.70	31,911	31,625.98	Lin. Ft.
513	Concrete Curb & Gutter (Type 3)	11,652	11,652.85			11,652	11,652.85	1,302	1,514.38			1,302	1,514.38	6,050	7309.98			6,050	7309.98	19,004	19,055.21	Lin. Ft.
513	Concrete Curb & Gutter (Type 4)	29,170	27,951.93			29,170	27,951.93	184	206.25			184	206.25	0	0			0	0	29,354	28,158.18	Lin. Ft.
513	Concrete Curb & Gutter (Type 5)	9,947	11,567.24			9,947	11,567.24	1,970	189,024			1,970	189,024	0	0			0	0	11,917	13,754.2	Lin. Ft.
Special	Concrete Median (Type 1)	4,138	7859			4,138	7859	8,263	1652			8,263	1652	1,481	840			1,481	840	13,898	6430	Sq. Yd.
Special	Concrete Median (Type 2)	7859	7859			7,859	7,859	4,012	1,028			4,012	1,028	193	755			193	755	12,064	5249	Sq. Yd.
514	Right of Way Markers (Type 2)	49	49			49	49	8	8			8	8	5	5			5	5	62	62	Each
516 Sp	Steel Plate Guard Fence (Type 5 or 6)	1550	1550			1550	1550	500	500			500	500	650	650			650	650	2,700	2,687.5	Lin. Ft.
518	Removing Old Concrete (Pavement)	6543	712			6543	712	2,742	2,742			2,742	2,742	1,604	1,604			1,604	1,604	10,834	11,756	Sq. Yd.
518	Removing Old Concrete (Curb)	0	0			0	0	0	0			0	0	1,316	1,316			1,316	1,316	1,316	1,316	Lin. Ft.
Special	Special Backfill	4425	4425			4425	4425	88	0			88	0	0	0			0	0	4,513	4,453	Cu. Yd.
Special	Graze and Frame	38	38			38	38	19	19			19	19	10	10			10	10	67	67	Each
Special	Manhole Cover and Ring	38	38			38	38	13	13			13	13	7	6			7	6	58	57	Each
	ALTERNATE																					
314 Sp	Cold Mix Limestone Rock Asph. Pav't. (Type "B")	630				630		123				123		333				333		1,097		Ton
101	Unclassified Structural Excavation (Pipe/Inch) @ 115%														282				282		282	Cu. Yd.
416 Sp	30" Diameter Drilled Shafts @ 115%																				44.05	Lin. Ft.
416 Sp	30" Diameter Drilled Shafts @ Supp. Area																				16.15	Lin. Ft.
416 Sp	Ball Footing @ (Supp. Area)																				1.55	Cu. Yd.
Special	Rigid Metal Conduit (Supp. Area)																				4055.27	Lin. Ft.

* Structural Steel shall conform to the requirements of structural steel for welding ASTM Designation A36. See Special Provision No. 21 to Item 407 "Metal for Structures" included in proposal.

In reference to Specification Item 424, only final photographs will be required of the Overpass & Underpass Structures.

Note: All arc welding of reinforcing steel shall be done with electrodes of the E-6016 or E-7016 Types.

In the event Limestone Rock Asphalt is used the tack coat shall be either RC-2 or EA-11M.

SPECIFICATION DATA	
FOUNDATION COURSE (CALICHE GRAVEL)	
Grading Requirements	The material passing the 40 mesh sieve shall be known as "Soil Binder," and shall meet the following requirements:
Retained on 2" screen	%
Retained on 3" screen	%
Retained on 2 1/2" screen	%
Retained on 2" screen	%
Retained on 1 1/2" screen	%
Retained on 1" screen	%
Retained on 3/4" screen	%
Retained on 1/2" screen	%
Retained on 1/4" screen	%
Retained on 10 mesh sieve	30.85%

SPECIFICATION DATA	
ASPHALT SURFACE TREATMENT & HOT MIX CONCRETE PAVEMENT	
Item	Two Course Asph. Surf. Treat. One Course Hot Mix Glad Hot Mix Asph.
Surface Area (Sq. Yd.)	40,364 40,364 245,985
Asphalt Type	MC-3 MC-3 MC-3
Asphalt Rate (Gal./Sq. Yd.)	0.35 gal./Sq. Yd. 0.30 gal./Sq. Yd. 0.25 gal./Sq. Yd.
Asphalt Quantity	14,129 12,110 86,095
Aggregate Type	3-4 3-4 3-4
Aggregate Rate (Cu. Yd.)	1.00 Cu. Yd. 1.00 Cu. Yd. 1.00 Cu. Yd.
Aggregate Quantity	405 369 2,460
Asph. Conc. Pav't. (Type)	Type "FF" Type "C"
Asph. Conc. Pav't. Rate (Cu. Yd.)	100 lbs./Sq. Yd. 50 lbs./Sq. Yd.
Asph. Conc. Pav't. Quantity	21,241 244,657
Asph. Conc. Pav't. Rate (Cu. Yd.)	1,097 19,849
Tack Coat Rate (Gal./Sq. Yd.)	0.5 gal./Sq. Yd. 0.05 gal./Sq. Yd.
Tack Coat Quantity	3,292 13,233

* Total Asphalt Conc. Pav't. Type "C" for use in Item 407 "Metal for Structures" shall be 5% of the quantity of Asphalt Conc. Pav't. Type "C" estimated for use in Item 407 "Metal for Structures".

BASIS OF ESTIMATE		QUANTITIES			
Item No.	Description	Rate	F1-31(17)	F1-1088(2)	F-31(18)
202	Sprinkling Embankment	40 Gal. per Cu. Yd.	15,976	3,283	9,716
"	" Foundation Cr.	10 Gal. per Cu. Yd.	10,366	1,935	2,592
"	" Flexible Base	70 Gal. per Cu. Yd.	4,528	831	626
"	" Flex. Base (Non pump)	70 Gal. per Cu. Yd.	1,909	287	518
203	Rolling Asph. Surf. Treat.	1.0 Hr. per 1000 Sq. Yd.	244	47	36
203-A	Rolling Embankment	1.0 Hr. per 400 Cu. Yd.	989	205	607
203-B	Rolling Asph. Surf. Treat.	1.0 Hr. per 1000 Sq. Yd.	244	47	36
203-C	Rolling Embankment	1.0 Hr. per 300 Cu. Yd.	1318	274	810
Special	Rolling (Heavy Pneumatic)	1.0 Hr. per 400 Cu. Yd.	989	205	607

GENERAL NOTES:

All curves shall be super-elevated in accordance with SWC-30 Table unless otherwise noted on the "Plan" or "Interchange Layout" sheets.

All concrete structures shall receive a "Type 1" surface finish.

As specified under Item 540, "Structure for Field Office" the Contractor will furnish one Type A Structure and one Type C Structure. See Special Provision to Item 540 "Structure for Field Office" for Number and Type of Structures to be furnished.

Approx. 89,054 C.Y. of Road Excav. is shown as "Waste" See Spl. Prov. to Item 101 & 103 for method of disposal.

The quantity of "Select Material (Top Soil)" shown below is for estimating purposes only. See Spl. Prov. to Item 101 Road Excav.

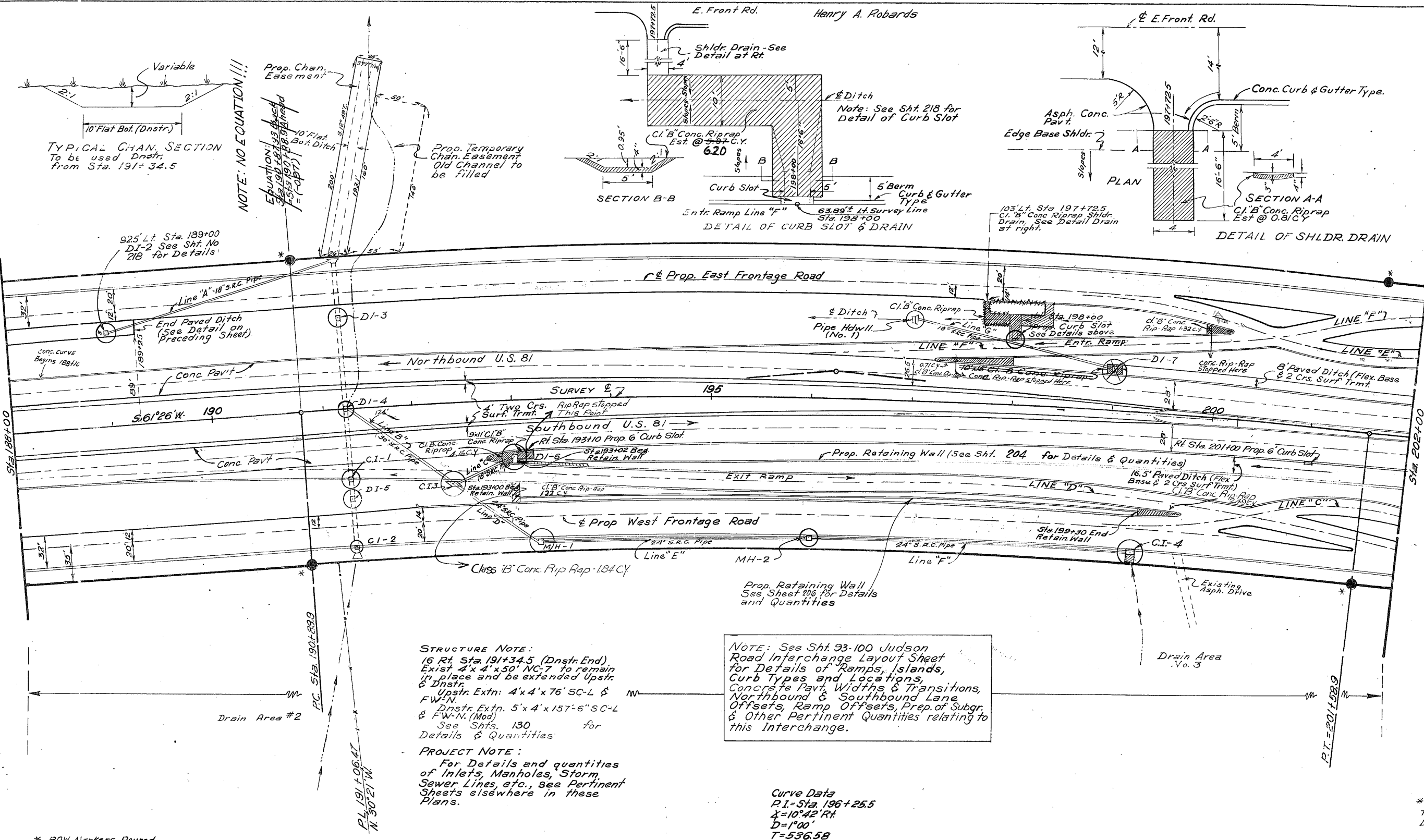
Proj. F1-31(17) 34,259 CY
" F1-1088(2) 25,000 CY
" F-31(18) 12,000 CY
TOTAL = 71,259 CY

ESTIMATE & QUANTITY SHEET
SHEET 5 OF 5

FED. ROAD DIST. NO.	STATE	FED. AID PROJECT NO.	SHEET NO.
15	TEXAS	F1-31(17); F1-1088(2); F-31(18)	15
STATE DIST. NO.	COUNTY	CONTROL SECTION JOB NO.	THIS SHEET NO.
15	BEXAR	16,17,10,19,25	15

N.B. Lane

FED. RD. DIV. NO.		STATE	FEDERAL PROJECT NO.				SHEET NO.
6		TEXAS	F-1-31 (17)				16
STATE DIST. NO.	COUNTY		CONT.	SECT.	JOB	HIGHWAY NO.	
15	Brewer		16	7	25	4581	



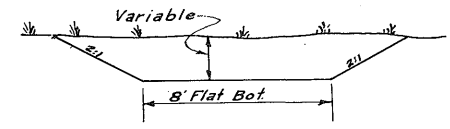
DESCRIPTION														
Clear & Grubbing														
Dnstr. Chan. Easements = 0.07 Ac.														
Und. Rd. Excav	520	315	100	2	733	2585	5694	8848	12,499	11,912	11,264	10,097	10,351	10,217
Und. Chan. Excav				265								50		
Embank. & Shr.	3378	3821	4772	6246	2961	667	375	898	671	924	1908	2,696	2235	1969
Waste									1677	10388	9356	7451	8116	8248
Class B Conc. Riprap														
ROW Mark Type 2														
188	89	190	91	92	93	94	195	96	97	98	99	200	01	202
4														Each ROW Mark Type 2

STA. 188+00 TO STA. 202+00

PLAN SHEET

15 Bexar 16 7 25 U.S. 81

Sta. 3+19 (Exist. U.S. Hwy. 81) Exist.
3'x3'x46 Conc. Culv. to be extended
14' Upstr. with SC-L & FW-N and
extended 21' Dnstr with SC-L
& FW-N. See Sht 130
for Details



Sta 212+94.33 Prop 4'x4'x289
Conc. Box Culv. - 37°30' Rt Ewd.
Skew. (Spl. Design) See Sht. 130
for Details.

② U.S. Hwy 81 Connection
Uncl. Rd. Excav. = 1341 C.Y.
Emb. + Shr. = 1341 C.Y.
R.A. Reavis

TYPICAL CHAN. SECTION
To be used Upstr. from Sta.
209+90(±) & Dnstr. from Sta. 214+00(±)

⊗ Includes Quantities for Exist U.S. Hwy.
81 Connections from Sta. 0+00 to 5+00
See Connection above

[illegible]

STA.202+00 TO STA.216+00 PLAN SHEET

216		FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.		
6		TEXAS	F-1-31 (17)		18		
STATE DIST. NO.	COUNTY		CONT.	SECT.	JUG	HIGHWAY NO.	
15	Boxar		16	7	25	4581	

Curve Data
 $P.I. = 218 + 74.7$
 $\Delta = 14^\circ 55' \text{ Lt.}$
 $D = 1^\circ 00'$
 $T = 750.07'$
 $L = 1491.67'$

NOTE: See Sht. 208
for Details of
Retaining Wall.

Proposed Channel
Easement

TYPICAL CHAN. SECT.
To be use Upstrm. & Dnstrm.
from Sta. 224 + 60

Cl. "B" Conc. Rip Rap
0.23 c.y.

Conc. curb Type #6

see Sht. 208 for
Details of Ret. Wall

Sta. 224+60 Prop. 4x4x 282'-0")
SC-15-A (15' Rt Fwd Skew) with
FW-N upstr & FW-N (Mod) Dnstr.
See Sheet No. 131 for details

Note: See Sht. 93-100 Judson Road Interchange Layout Sheet for Details of Ramps, Islands, Curb Types & Locations, Concrete Pavt. Widths, & Transitions Northbound & Southbound Lane, Offsets, Ramp Offsets, Prep of Subgr. & Other Pertinent Quantities relating to this Interchange.

*For Details and Quantities
of Inlets, Manholes, Storm
Sewer Lines etc. See Pertinent
Sheets elsewhere in these Plans*

Surface Area Sta. 228+00-Sta. 230+00
Two Crs. Surf. Trm't. - 1,128 S.Y.
One Crs. Surf. Trm't. &
Asph. Conc. Pavt. - 1,422 S.Y.

SHEET TOTALS

CONC. CURB & GUTTER

EST.	FINAL	UNIT	TYPE
400		L.F.	Conc. Curb & Gutter-Type G

SHEET TOTALS		
--------------	--	--

EST.	FINAL	UNIT	DESCRIPTION
0.28		AC.	Clear. & Grub.
4,100		S.Y.	Prep Subgr.
1066		S.Y.	Conc Pav't

41,517	C.Y.	Uncl. Rd. Exc.	
252	C.Y.	Uncl. Chan. Exc.	
29,433	C.Y.	Emb. + Shr.	

2		Each	ROW Markers Type 2

[illegible][illegible]

FED. NO. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
----------------------	-------	---------------------	--------------

6	TEXAS	FI-31(17)	19
---	-------	-----------	----

STATE DIST. NO.	COUNTY	CONT.	SECT.	JCA	HIGHWAY NO.
--------------------	--------	-------	-------	-----	----------------

15	Bexar	16	7	25	U.S. 81
----	-------	----	---	----	---------

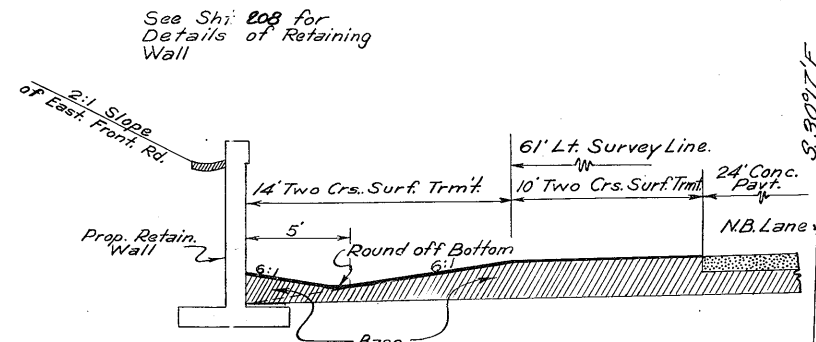
STA. 216+00 TO STA. 230+00 PLAN SHEET

FED. RD. DIV. NO. 6	STATE TEXAS	FEDERAL PROJECT NO. <i>FI-31(17)</i>	SHEET NO. 19
STATE DIST. NO. 15	COUNTY <i>Bexar</i>	CONT. SECT. 16 7	JCR 25
			HIGHWAY NO. <i>45.81</i>

Edward Pfeil

E.J. Bishop et ux

Harold W. Behrendt et ux

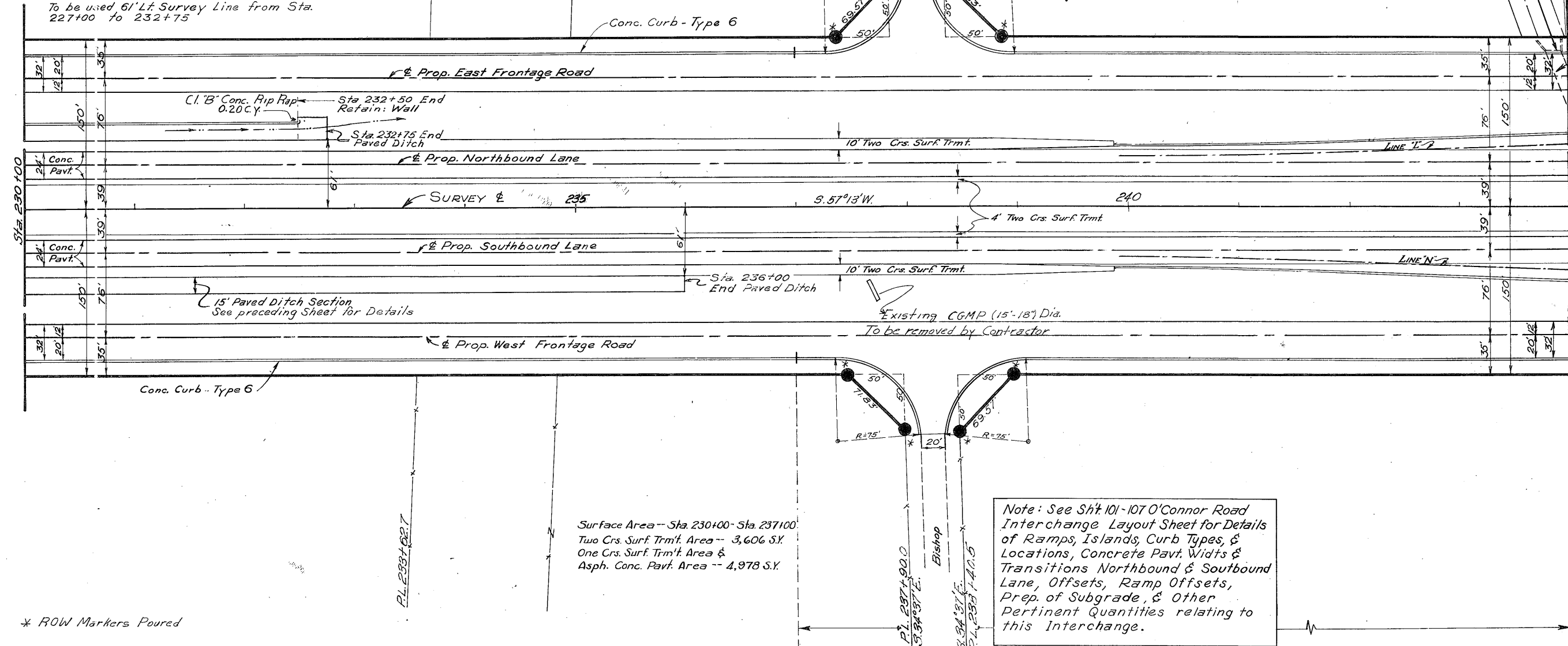
See Sh't 100 for
Details of Retaining
Wall

Typical PAVED DITCH SECTION
To be used 6' Lt. Survey Line from Sta.
227+00 to 232+75

Typical CHAN. SECTION
To be used Upstr. From
Sta. 244+00 (2)

Prop. Channel
Easement
D.A. No. 6

See Next Sheet for
Culv. Description, etc.



* ROW Markers Poured

Surface Area -- Sta. 230+00 - Sta. 237+00
Two Crs. Surf. Trmt. Area -- 3,606 S.Y.
One Crs. Surf. Trmt. Area &
Asph. Conc. Pavt. Area -- 4,978 S.Y.

Note: See Sh't 101-107 O'Connor Road
Interchange Layout Sheet for Details
of Ramps, Islands, Curb Types, &
Locations, Concrete Pavt. Widths &
Transitions Northbound & Southbound
Lane, Offsets, Ramp Offsets,
Prep. of Subgrade, & Other
Pertinent Quantities relating to
this Interchange.

SHEET TOTALS

EST.	FINAL	UNIT	TYPE
1400		L.F.	Conc. Curb & Gutter - Type 6

SHEET TOTALS

EST.	FINAL	UNIT	DESCRIPTION
3734		S.Y.	Conc. Pavt.
14,311		S.Y.	Prep. of Subgr.
0.16		AC.	Clear & Grub.

Edward Pfeil

E.J. Bishop et ux

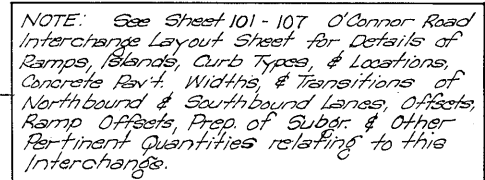
Harold W. Behrendt et ux

DESCRIPTION																		EST.	FINAL	UNIT	DESCRIPTION
Conc. Pavt.	Northbound Lane 1,867 Sq. Yds. ~ Southbound Lane 1,867 Sq. Yds.																	3734		S.Y.	Conc. Pavt.
Prep. of Subgr.																		14,311		S.Y.	Prep. of Subgr.
																		0.16		AC.	Clear & Grub.
Uncl. Rd. Excav	10012	10334	10293	9614	8336	6145	4094	3517	2138	1563	1072	815	857	570				69,360		C.Y.	Uncl. Rd. Exc.
Embank. + Shr	228	150	19	0	0	0	0	15	43	90	587	1608	2075	1451				62,66		C.Y.	Emb. + Shr.
ROW Mark. Type 2																		8		Each	ROW Mark Type 2

STA. 230+00 TO STA. 244+00 PLAN SHEET

STATE	FEDERAL PROJECT NO.	SHEET NO.
TEXAS	FI-31(17)	20
COUNTY	SECT.	HIGHWAY NO.
Brewer	16	7 25 U.S. 81

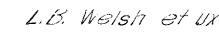
V. Mussett



Herbert Sauer

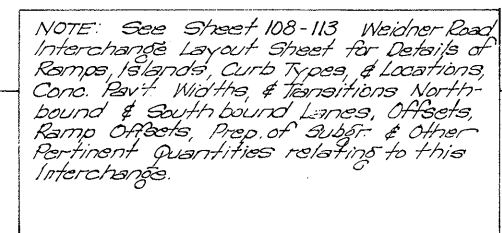
Violet S. Mussett

4012-9A



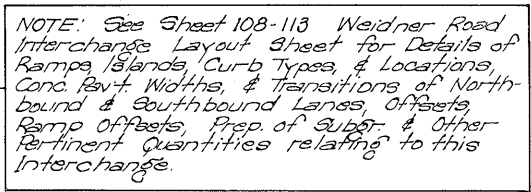
284 + 44.7

328.7



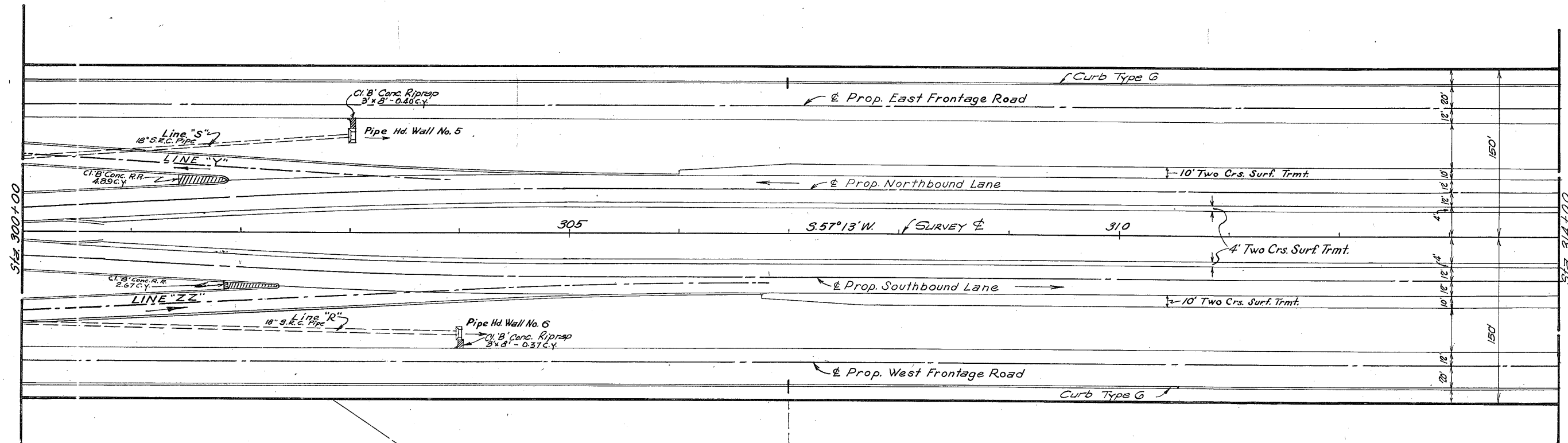
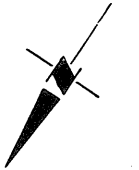
* Approx. 240 C.Y. of Uncl. Chan. Excav.
to be used to fill Old Channel

[illegible]



* Approx. 300 C.Y. Uncl. Chan.
Excav. to be used to fill Old
Channel.

DESCRIPTION		L.D. WEISSE ET AL.																				EST.	FINAL	UNIT	DESCRIPTION
Clear & Grubb		Upstr Chan Excs. 0.08 Ac 0.18 Ac 0.09 Ac Dnstr Chan Excs. Dnstr Temp Excs.																				0.35			Clear & Grubb
</																									



NOTE: See Sheet 108-113 Weidner Road Interchange Layout Sheet for Details of Ramps, Islands, Curb Types, & Locations, Conc. Pavt. Widths, & Transitions of Northbound & Southbound Lanes, Offsets, Ramp Offsets, Prop. of Subgr. & Other Pertinent Quantities relating to this Interchange.

Mrs. Hedwig Twiefel

Linda Mohlenhoff & Erna Kutzer Koenig

Surface Areas (Sta. 307 to 314)
Two Crs. Surf. Trmt. = 2163 S.Y.
One Crs. Surf. Trmt. &
Asph. Conc. Pavt. = 4978 S.Y.

Northbound Lane 1853 S.Y. ~ Southbound Lane 1,948 S.Y.

SHEET TOTALS

Concrete Curb & Gutter			
EST.	FINAL	UNIT	TYPE
1400			Conc. Curb & Gutter-Type G
SHEET TOTALS			
EST.	FINAL	UNIT	DESCRIPTION
14,310		S.Y.	Prop. of Subgr.
2,801		S.Y.	Conc. Pavt.

DESCRIPTION
Prop. of Subgr.
Conc. Pavt.

DESCRIPTION	300	01	02	03	04	305	06	07	08	09	310	11	12	13	314	UNIT	DESCRIPTION
Uncl. Rd. Exch.	450	396	480	674	917	1072	1417	2098	2637	2765	2509	2156	2000	1739	21,310	C.Y.	Uncl. Rd. Ex.
Embank + Shr.	7756	8003	6953	5033	3005	1485	402	0	0	0	0	0	0	150	32,787	C.Y.	Emb + Shr.

STA. 300+00 TO STA. 314+00 PLAN SHEET

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F-1-31 (17)	25
STATE DIST. NO.	COUNTY	CONT. SECT.	HIGHWAY NO.
15	Bexar	16 7	25 U.S. 81

Linda Mohlenhoff & Erna Kutzer Koenig

T.G. Marsh
PROPOSED ADDITION
MORNINGSIDE PARK

Drain Area No. 14

Future St.

Prop. Channel
Easement
D.A. No. 13

Approx. 1'-6" Height Dike

Width of this Int.
to be adjusted during
construction to fit
Prop. St. Width

Future St.

Curb Type G 7

East Frontage Rd.

315 S 57°13'W

North Bound Lane

South Bound Lane

West Frontage Rd.

Prop. 6' Curb Slot
Lt. Sta. 324+00

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
4.67 C.Y.

CLB Conc. RR
1.05 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

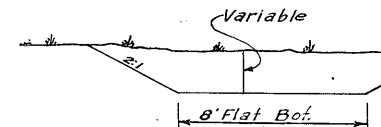
CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

CLB Conc. RR
1.75 C.Y.

Note: See following sheet
for Survey & Curve Data.



TYPICAL CHAN SECTION
To be used Upstr. from Sta. 318+80(±)
Dnstr. from Sta. 322+25(±)

Sta. 320+55 Prop.
7'4" x 230' 50" x 50" B (Mod)
(50° Rt. Flnd. & C.W.) with
FW 50° (Mod). See Sheet
Nos. 133 for Details, etc.

Prop. Chan.
Easement

NOTE: See Sheet 114-121 Sta. 324+25 -
Interchange Layout Sheet for Details of
Ramps, Islands, Curb Types, & Locations
Conc. Pavt. Widths, & Transitions of North-
bound & South bound Lanes, Offsets,
Ramp Offsets, Prop. of Subst. & Other
Pertinent Quantities relating to this
Interchange.

Linda Mohlenhoff & Erna Kutzer Koenig

Upstr. Chan Easement 0.15 Ac.

Dnstr. Chan Easement 0.53 Ac.

Surface Areas (Sta. 314 to 315)
Two Crs. Surf. Trmt. = 311 S.Y.
One Crs. Surf. Trmt. &
Asph. Conc. Pavt. = 711 S.Y.

T.G. Marsh

SHEET TOTALS

Concrete Curb & Gutter

EST.	FINAL	UNIT	TYPE
200			Conc. Curb & Gutter-type 6

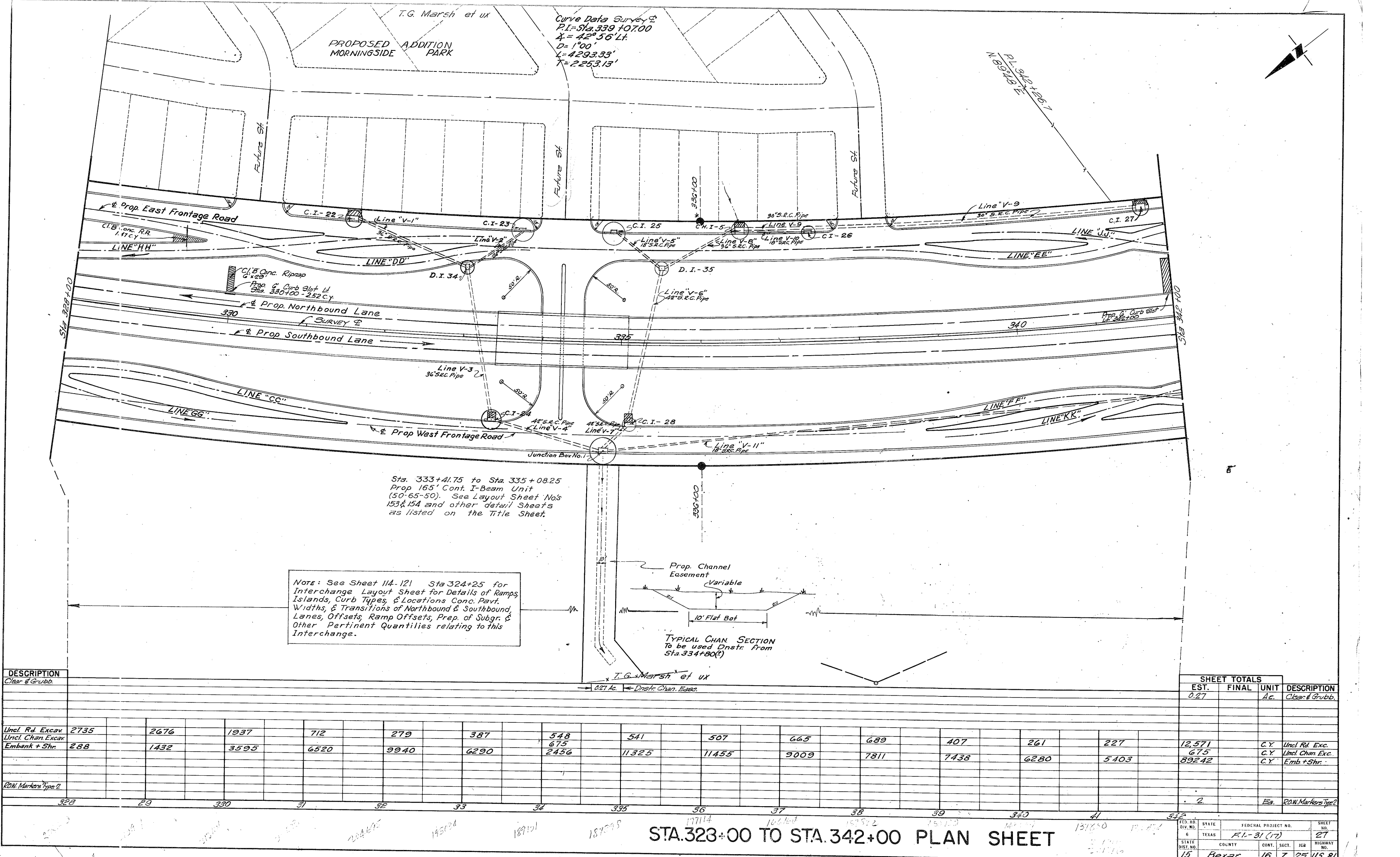
SHEET TOTALS

EST.	FINAL	UNIT	DESCRIPTION
0.68		Ac.	Clear & Grubb.
534		S.Y.	Conc. Pavt.
2,079		S.Y.	Prop. of Subst.

DESCRIPTION	1487	1272	921	730	744	859	733	520	1137	1867	1237	524	2257	2932	17,220	854	10,650	2	Est.	Final	Unit	Description
Uncl. Rd. Excav	1487	1272	921	730	744	859	733	520	1137	1867	1237	524	2257	2932	17,220	854	10,650	2				Uncl. Rd. Exc.
Uncl. Chan. Excav																						Uncl. Chan. Exc.
Embank + Shr.	420	585	520	660	545	490	868	1415	1355	1092	1042	1453	132	73								Emb. + Shr.
ROW Markers Type 2																						ROW Markers Type 2

STA. 314+00 TO STA. 328+00 PLAN SHEET

FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F-1-31 (17)	20
STATE DIST. NO.	COUNTY	CONTRACT	SECTION
15	Bexar	16	7

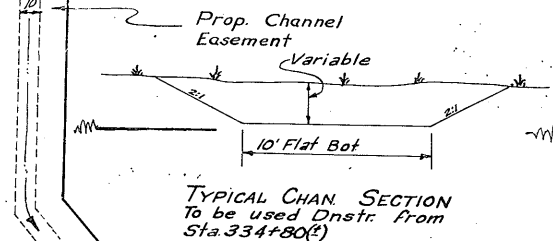


T.G. Marsh et ux
PROPOSED ADDITION
MORNINGSIDE PARK

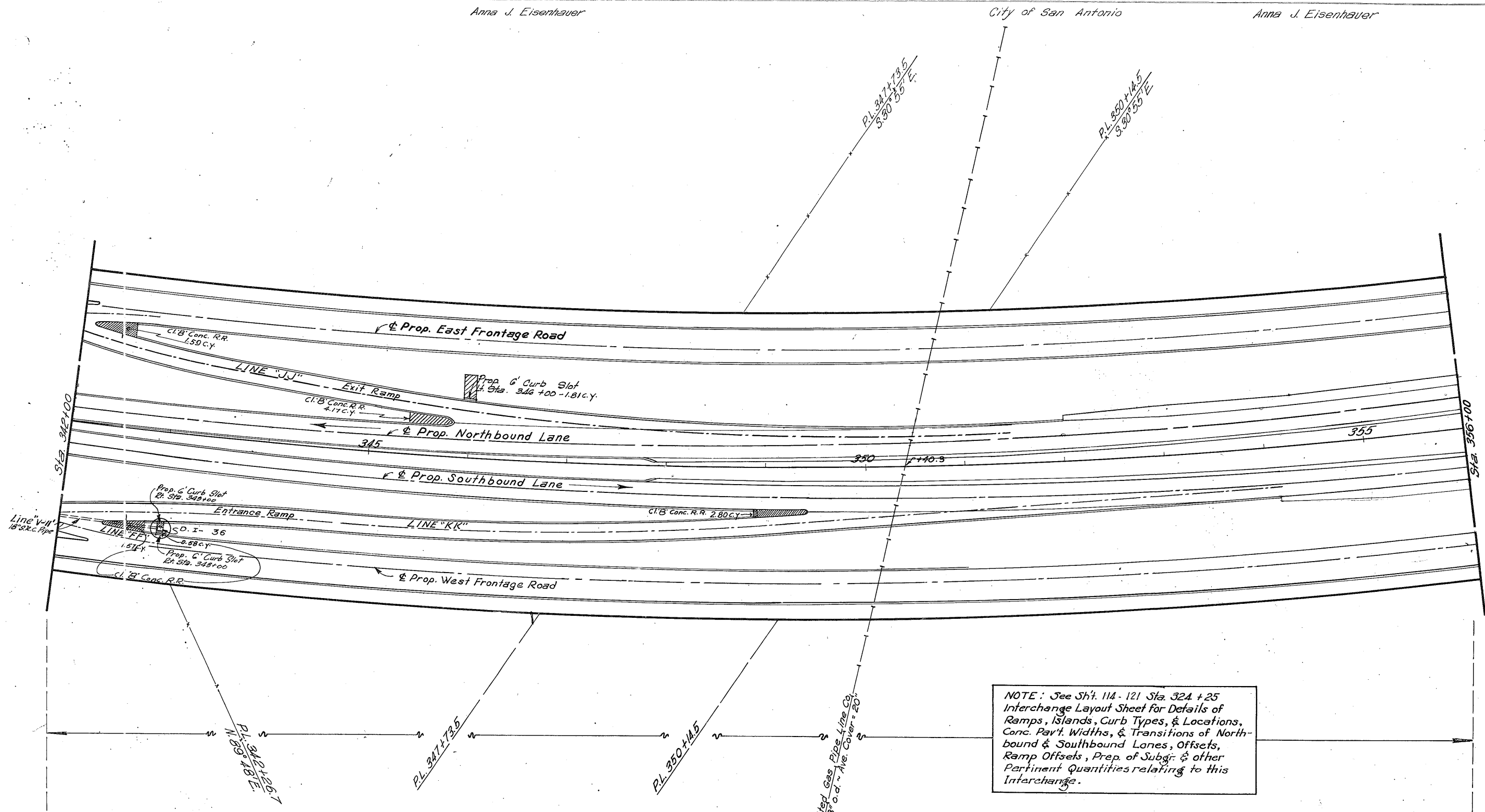
Curve Data Survey
P.I. Sta. 339+07.00
A = 42°56'14"
D = 1'00"
L = 4293.33'
T = 2253.13'

Sta. 333+41.75 to Sta. 335+08.25
Prop 165' Cont. I-Beam Unit
(50'-65'-50'). See Layout Sheet No's
153 & 154 and other detail Sheets
as listed on the Title Sheet.

NOTE: See Sheet 114-121 Sta 324+25 for
Interchange Layout Sheet for Details of Ramps,
Islands, Curb Types, & Locations Conc. Pavt.
Widths, & Transitions of Northbound & Southbound
Lanes, Offsets, Ramp Offsets, Prep. of Subgr. &
Other Pertinent Quantities relating to this
Interchange.



DESCRIPTION																						SHEET TOTALS			
Clear & Grubb.																						EST.	FINAL	UNIT	DESCRIPTION
																						0.27		Ac.	Clear & Grubb.



DESCRIPTION	Anna J. Eisenhower														City of San Antonio														Anna J. Eisenhower														SHEET TOTALS				DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
																													EST.				FINAL				UNIT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															</

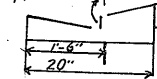
Frontage Road Curve Data
A=24°00'
D=6°03'
T=201.37'
L=396.69'
R=947.37'

Spiral Curve Data
A=24°00'
D=4°00'
R=1432.69'
Os=6°00'
Ls=300'
Xc=299.68'
Yc=10.46'
Ts=455.01'
T=304.533'
K=149.92
p=2.62
q=7.47
L=300.00'
P.I.=51' Lt. Sta 365+16.83 (Survey Line)

SHEET TOTALS

CONCRETE CURB (Lin. Ft.)		
Type	Est.	Final
1	1247.2	
2		
3	300.3	
4		
5	1369.6	
6	1682.0	

Special Type # 5



BEDELL PROPERTY

Main Lane Curve Data

A=2°30'
D=1°00'
T=125.02'
L=250.00'
P.I.=39' Lt. & Rt. Sta. 367+48.02

STA. 370+00.0 END PROPOSED
PROJ. NO. FI-31(17) Control 16-7-25
= STA. 370+00.0 BEGIN. PROPOSED
PROJ. NO. FI-1088(2) Control 17-10-13

400' RT. STA. 370+00.0 BEG. PROPOSED
PROJ. NO. F-31(18) Control 16-7-26
U.S. HWY NO. 81 BUSINESS ROUTE
SOUTH BOUND LANE

DESCRIPTION														
Prep. of Subgr. Conc. Pavt.														
Uncl. Rd. Excav. Embank. + Shr.														
Uncl. Rd. Exc. Embank. + Shr.														
Uncl. Rd. Exc. Embank. + Shr.														
Cl. B Conc. Riprap ROW Markers (Type 2)														
Northbound Lane, 2557 S.Y. Southbound Lane 2,790 S.Y. U.S. 81 Business Route 2422 S.Y.														
Surface Areas (Sta. 361 to 370) Two Crs. Surf. Trmt. = 878 S.Y. One Crs. Surf. Trmt. & Asph. Conc. Pavt. = 8060 S.Y.														
SHEET TOTALS														
EST. FINAL UNIT DESCRIPTION														
18,947 7,769 S.Y. Conc. Pavt.														
2553 16 Cu.Yd. East Fr. Rd.														
2901 3520 Cu.Yd. U.S. 81 Bus. Rte.														
26642 564 Cu.Yd. Main Lanes														
31 3 Cu.Yd. Front Rds.														
4 4 Cu.Yd. Cl. B Conc. Riprap														
Each ROW Mark. Type 2														
FED. RD. DIST. NO. 15 STATE TEXAS COUNTY Bexar CONT. 16 SECT. 7 JCR 25 HIGHWAY NO. 1581														
FEDERAL PROJECT NO. FI-31(17) SHEET NO. 29														

STA. 356+00 TO STA. 370+00 PLAN SHEET

STATION 370+00 BEGINNING
OF PROJECT FI-1088(2) CONTROL 17-10-13
=STATION 370+00 END OF PROJECT
FI-31 (17) CONTROL 16-7-25

STATION 370+00 BEGINNING
OF PROJECT F31(18) CONTROL 16-7-26
= STATION 370+00 END OF PROJECT
FI-31 (17) CONTROL 16-7-25

CONCRETE CURB (LIN. FT.)					
PROJECT FI-1088 (2)			PROJECT F-31 (18)		
TYPE	EST.	FINAL	TYPE	EST.	FINAL
1	1950.8		1	2284.1	
2			2		
3	178.8		3		
4			4		
5	409.7		5		
6	374.6		6		

CONCRETE MEDIAN (SQ. YD.)					
PROJECT FI-1088 (2)			PROJECT F-31 (18)		
TYPE	EST.	FINAL	TYPE	EST.	FINAL
1	1045		1	130	
2			2		

CONCRETE PAVEMENT (SQ. YD.)					
PROJECT FI-1088(2)			PROJECT F-31(18)		
LANE	EST.	FINAL	EST.	FINAL	
S.B. INTERSTATE	3632				
N.B. INTERSTATE	3911				
LINE "A"				4088	

DESCRIPTION	See Sheet No. 32 for Curb and Pavement Quantities on Line "C".
-------------	--

Uncl. Road Excav.	1648	1507	1135	537	318	361	317	376	0	0	293	1583	1996	1480	11551	C.Y.	FI-1088(2)
Embank.+Shr.	148	324	999	1438	2354	4302	7005	10154	11126	1746	731	5706	4551	3109	53693	C.Y.	FI-1088(2)
Uncl. Channel Excav.	552	371	372	373	374	375	376	377	378	379	380	381	382	383	384	C.Y.	FI-1088(2)
Uncl. Road Excav.	87	96	70	3	0	0	0	0	0	0	65	102	* See	S.B. Lane *	423	C.Y.	F31(18) Line A*
Embank.+Shr.	44	54	74	222	611	1688	1939	1949	2264	2148	404	48	* See	S.B. Lane *	11445	C.Y.	F31(18) Line A*
	370	71	72	73	74	375	76	77	78	79	380	81	82	83	384		

† Includes West Frontage Road

⊕ Includes Connection "C"

PLAN SHEET

SHEET TOTALS					
EST.	FINAL	UNIT	PROJECT		
2		Each	FI-1088 (2)		
13516		Sa.Yd.	FI-1088 (2)		
4985		Sa.Yd.	F 31 (18)		
11551		C.Y.	FI-1086 (2)		
53693		C.Y.	FI-1088 (2)		
4300		C.Y.	FI-1088 (2)		
423		C.Y.	F31 (18) Line A		
11445		C.Y.	F31 (18) Line A		

\swarrow P.T. Sta. 377+83.21 Back
= Sta. 364+99.9 Ahead

Existing 5'x3'x57' SC-NA Box Culvert
See Sheets No. 241

SHEET TOTALS					
CONCRETE CURB (LIN. FT.)					
PROJECT NO. F 1.1088 (2)			PROJECT NO. F 31 (18)		
TYPE	EST.	FINAL	TYPE	EST.	FINAL
1	3205.9		1	1680.9	
2			2		
3	1099.0		3	188.0	
4	184.0		4		
5	422.5		5		
6	654.9		6		
CONCRETE MEDIANS (SQ. YD.)					
TYPE	EST.	FINAL	TYPE	EST.	FINAL
1	85				
2	720				
CONCRETE PAVEMENT (SQ. YD.)					
PROJECT NO. F 1.1088 (2)			PROJECT NO. F 31 (18)		
LANE	EST.	FINAL	LANE	EST.	FINAL
N.B. 81 Bus Rt.				3805	
Line "B"	5090				

CLASS "B" CONC. RIPRAP(CU.YD.)

PROJ. NO. IN 1088 (2)	
EST.	FINAL
487	459.15

SHEET TOTALS			
	EST.	FINAL	UNIT DESCRIPTION
	2742		S.Y. F.I. 1088 (2)
	2		Each F.I. 1088 (2)
	6		Each F.I. 1088 (2)
	* 17612		C.Y. F.I. 1088 (2)
82			
35	3254		C.Y. F.I. 1088 (2)
32	5673		C.Y. F.I. 1088 (2)
374			
	5303		S.Y. F 31 (18)
	2862		C.Y. F 31 (18)
	36392		C.Y. F 31 (18)
	21 046		S.Y. F.I. 1088 (2)
	8493		C.Y. F.I. 1088 (2)
34	5546		C.Y. F.I. 1088 (2)
0			

DESCRIPTION	SECTION																			
Rem. Old Conc. Pav't.																				
Rem. Old Struct.																				
R.O.W. Markers																				
Uncl. Chan. Excav.	181	512	1165	1251	1123	1263	880	1144	1348	1992	2177	1876	1628	1072						
	368	369	370	71	72	73	74	375	76	77	78	79	380	81	82	83	84	85	86	87
Uncl. Rd. Exc. E.F.R.	64	0	203	* 1469	242	175	245	268	235	137	61	33	15	0	0	22	8			
Emb.+ Shr. E.F.R.	548	1792	138	* 54	156	86	96	28	78	64	82	136	382	761	821	369	8			
	370	71	72	73	74	375	76	77	377+83.2=364+99.9	365	66	67	68	69	370	71	72	73		
Prep. of Subgrade																				
Uncl. Rd. Exc. (Line A)	328	322	0	0	0	0	0	0	0	519	1285	332								
Emb.+ Shr. (Line A)	374.6	7024	1166	3275	5941	5767	4658	3130	1515	130	30	10								
	370	71	72	73	74	375	76	77	78	79	380	81	381+19.79=368+16.06							
Prep. of Subgrade																				
Uncl. Rd. Exc. (Line B)	48	269	306	344	485	608	953	1434	1161	598	319	206	28	13	334	930	380			
Emb.+ Shr. (Line B)	38	156	88	44	68	118	50	26	20	30	884	1308	1863	429	28	366	367	368	369	
	365	364+99.9=355+14.85	356		357		358		359		360	61	62	63	64	365	366	367	368	369

* Note: Proposed Channel Exposed

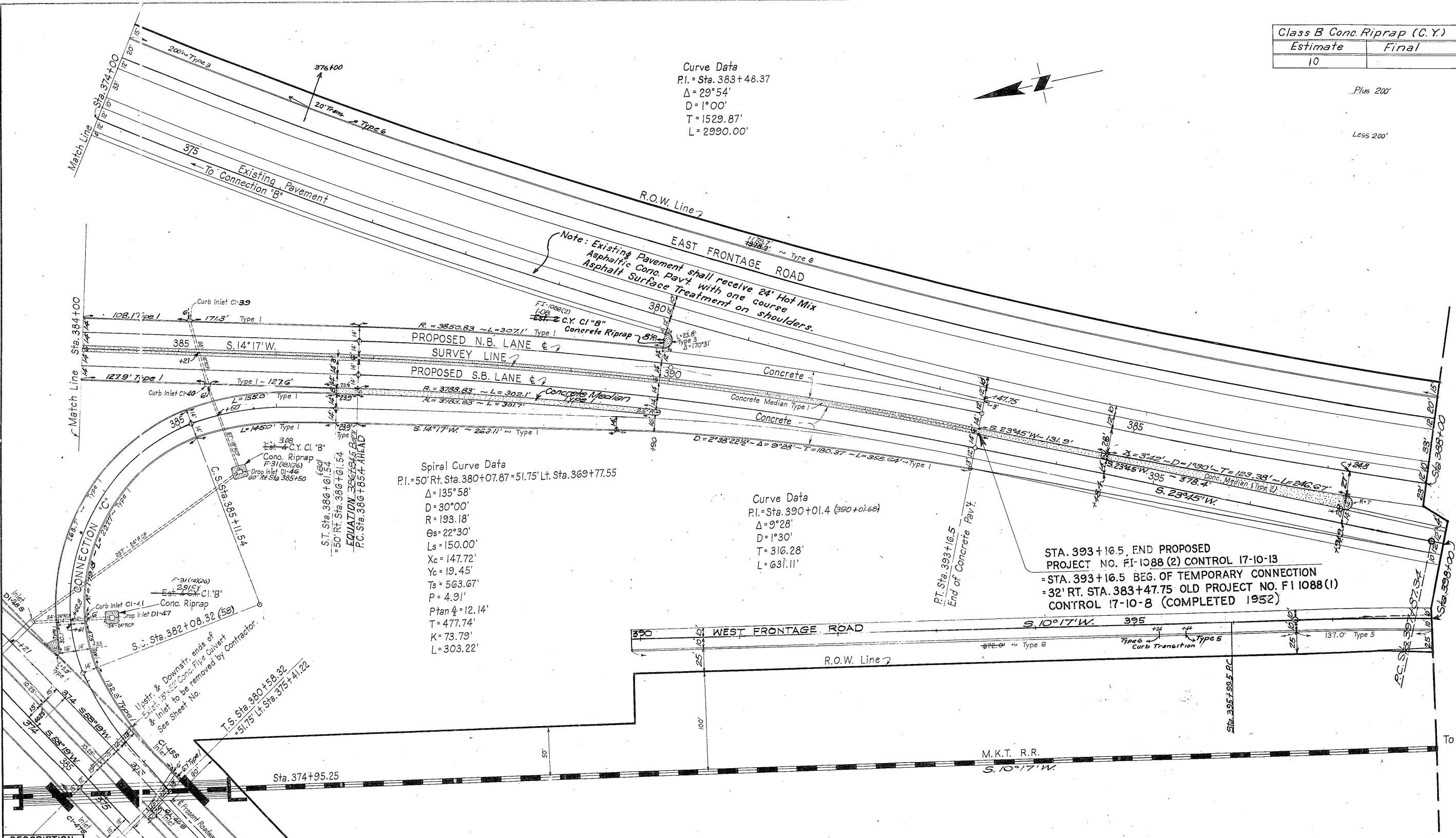
* Includes ramp quantities.

306 307 308 309

*Note: Proposed Channel Excav. shall be used to backfill existing channel within free haul distance unless otherwise shown or directed by the Engineer.

58+16.06 V. uring ance rected	FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
	6	TEXAS	F.1.1088 (2) & F.31 (18)				31
	STATE DIST. NO.	COUNTY	CONT.	SECT.	JGR	HIGHWAY NO.	
	15	REXAR	17	10	15	U.S. 8	
			2		20		

PLAN SHEET



Curve Data
P.I. = Sta. 383+48.37
 $\Delta = 29^\circ 54'$
 $D = 1^\circ 00'$
 $T = 1529.87'$
 $L = 2990.00'$

Spiral Curve Data
P.I. = 50' Rt. Sta. 380+07.87 = 51.75' Lt. Sta. 369+77.55
 $\Delta = 135^\circ 58'$
 $D = 30^\circ 00'$
 $R = 193.18'$
 $\Theta = 22^\circ 30'$
 $L_s = 150.00'$
 $X_c = 147.72'$
 $Y_c = 19.45'$
 $T_s = 563.67'$
 $P = 4.91'$
 $P_{tan} = 12.14'$
 $T = 477.74'$
 $K = 73.79'$
 $L = 303.22'$

Curve Data
P.I. = Sta. 390+01.4 (390+01.68)
 $\Delta = 9^\circ 28'$
 $D = 1^\circ 30'$
 $T = 316.28'$
 $L = 631.11'$

STA. 393+16.5, END PROPOSED
PROJECT NO. FI-1088 (2) CONTROL 17-10-13
= STA. 393+16.5 BEG. OF TEMPORARY CONNECTION
= 32' RT. STA. 383+47.75 OLD PROJECT NO. FI 1088 (1)
CONTROL 17-10-8 (COMPLETED 1952)

SHEET TOTALS				
Class B Conc. Riprap (C.Y.)		Concrete Curb (Lin. Ft.)		
Estimate	Final	Type	Est.	Final
10		1	2506.3	707
		2		
		3	23.8	
		4		
		5	137.0	
		6	2050.7	
Concrete Median (Sq. Yds.)				
		Type	Est.	Final
		1	7139	
		2	3292	
Concrete Pavement (S.Y.)				
		Lane	Est.	Final
		SB Int.	3494	
		NB Int.	2862	
		Line "C"	2500	

includes all of Line "C".

DESCRIPTION		STATIONING															SHEET TOTALS		PROJECT	
		384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	EST.	FINAL	UNIT	PROJECT
R.O.W. Markers (Type 2)																	22	159	Each	FI 1088 (2)
Preparation of Subgrade																			Sq. Yd.	FI 1088 (2)
Unclass. Rd. Exc.		189	224	213	257	276	315	363	376	400	413	424	439	443	424	4756			Cu. Yd.	FI 1088 (2) E. Fr. Rd.
Embank. + Shr.		48	44	52	52	44	34	34	34	30	26	22	26	26	34	506			Cu. Yd.	FI 1088 (2) E. Fr. Rd.
		374	375	376	377	378	379	380	381	382	383	384	385	386	387	388				
Unclass. Rd. Exc.		* 1001	* 950	* 1226	1946	2096	1709	1393	1180	1187	932	732	576	378	252	1555.8			Cu. Yd.	FI 1088 (2)
Embank. + Shr.		* 1322	* 92	* 22	130	278	344	482	680	690	499	536	586	386	312	6359			Cu. Yd.	FI 1088 (2)

* Includes Connection "C" Quantities at same Stationing.

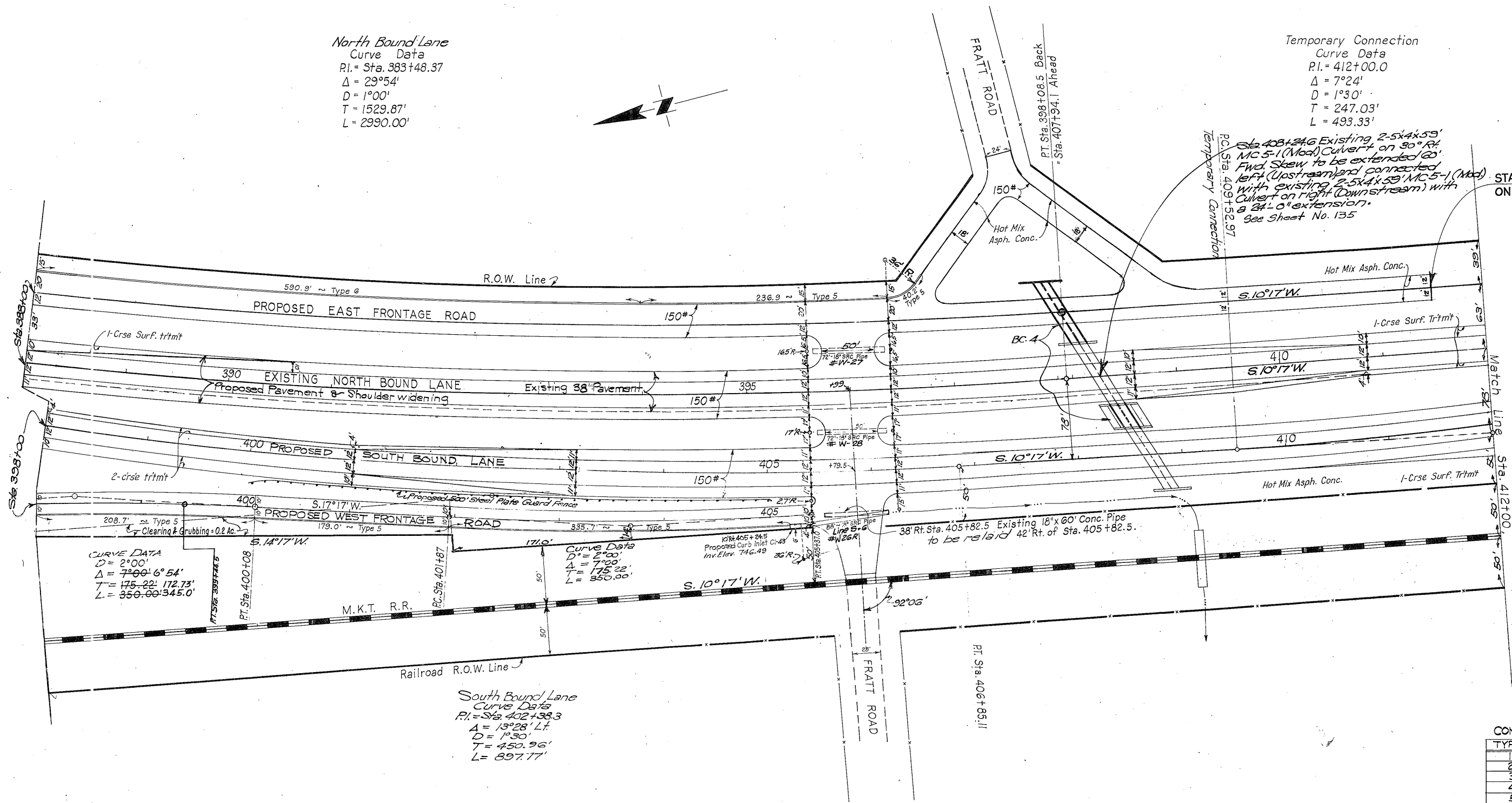
PLAN SHEET

SHEET TOTALS		PROJECT	
EST.	FINAL	UNIT	PROJECT
22	159	Each	FI 1088 (2)
		Sq. Yd.	FI 1088 (2)
4756		Cu. Yd.	FI 1088 (2) E. Fr. Rd.
506		Cu. Yd.	FI 1088 (2) E. Fr. Rd.
1555.8		Cu. Yd.	FI 1088 (2)
6359		Cu. Yd.	FI 1088 (2)

SHEET TOTALS		PROJECT	
EST.	FINAL	UNIT	PROJECT
22	159	Each	FI 1088 (2)
		Sq. Yd.	FI 1088 (2)
4756		Cu. Yd.	FI 1088 (2) E. Fr. Rd.
506		Cu. Yd.	FI 1088 (2) E. Fr. Rd.
1555.8		Cu. Yd.	FI 1088 (2)
6359		Cu. Yd.	FI 1088 (2)

North Bound Lane
Curve Data
P.I. = Sta. 383+48.37
 $\Delta = 29^\circ 54'$
 $D = 1^\circ 00'$
 $T = 1529.87'$
 $L = 2990.00'$

Temporary Connection
Curve Data
P.I. = 412+00.0
 $\Delta = 7^\circ 24'$
 $D = 1^\circ 30'$
 $T = 247.03'$
 $L = 493.33'$



STA. 411+50 END CONSTRUCTION
ON EAST FRONTAGE ROAD

SHEET TOTALS
CONCRETE CURB (LIN. FT.)

TYPE	EST.	FINAL
1		
2		
3		
4		
5	1000.5	
6	590.9	

* Includes Quantities from Sta. 397+00 to Sta. 398+08.5
and from Sta. 407+94.1 to Sta. 408+00
(a total distance of 114.4 feet)

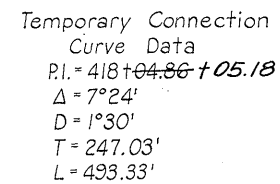
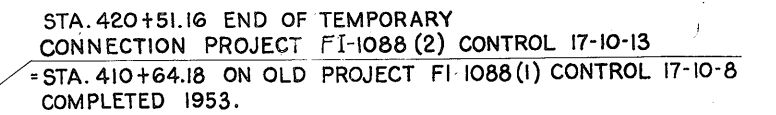
DESCRIPTION																						EST.	FINAL	UNIT	DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Clearing & Grubbing																						0.2	✓	Acres	Clearing & Grubbing																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Preparation of Subgrade																						19959		Sq. Yd.	Preparation of Subgrade																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Steel Plate Guard Fence																						500	✓	Lin. Ft.	Steel Plate Guard Fence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Uncl. Road Excav.	420		437		452		446		389		320		246		98		14		⊕ 150		⊕ 150		0		0				3122	✓	C.Y.	E. Fr. Rd. & N.B. Lane																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Embank. + Shr.	34		30		38		40		48		38		26		82		360		⊕ 1229		⊕ 1343		396		26				3690		C.Y.	E. Fr. Rd. & N.B. Lane																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Uncl. Road Excav.	232	89		390		91		92		93		94		95		96		97	*	408		09		410		411				2145	✓	C.Y.	S.B. Lane & W. Fr. Rd.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Embank. + Shr.	360		318		256		226		364		392		456		198		896		37	29		0		418		188			6147		C.Y.	S.B. Lane & W. Fr. Rd.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						</

Includes Fratt Road Intersection.

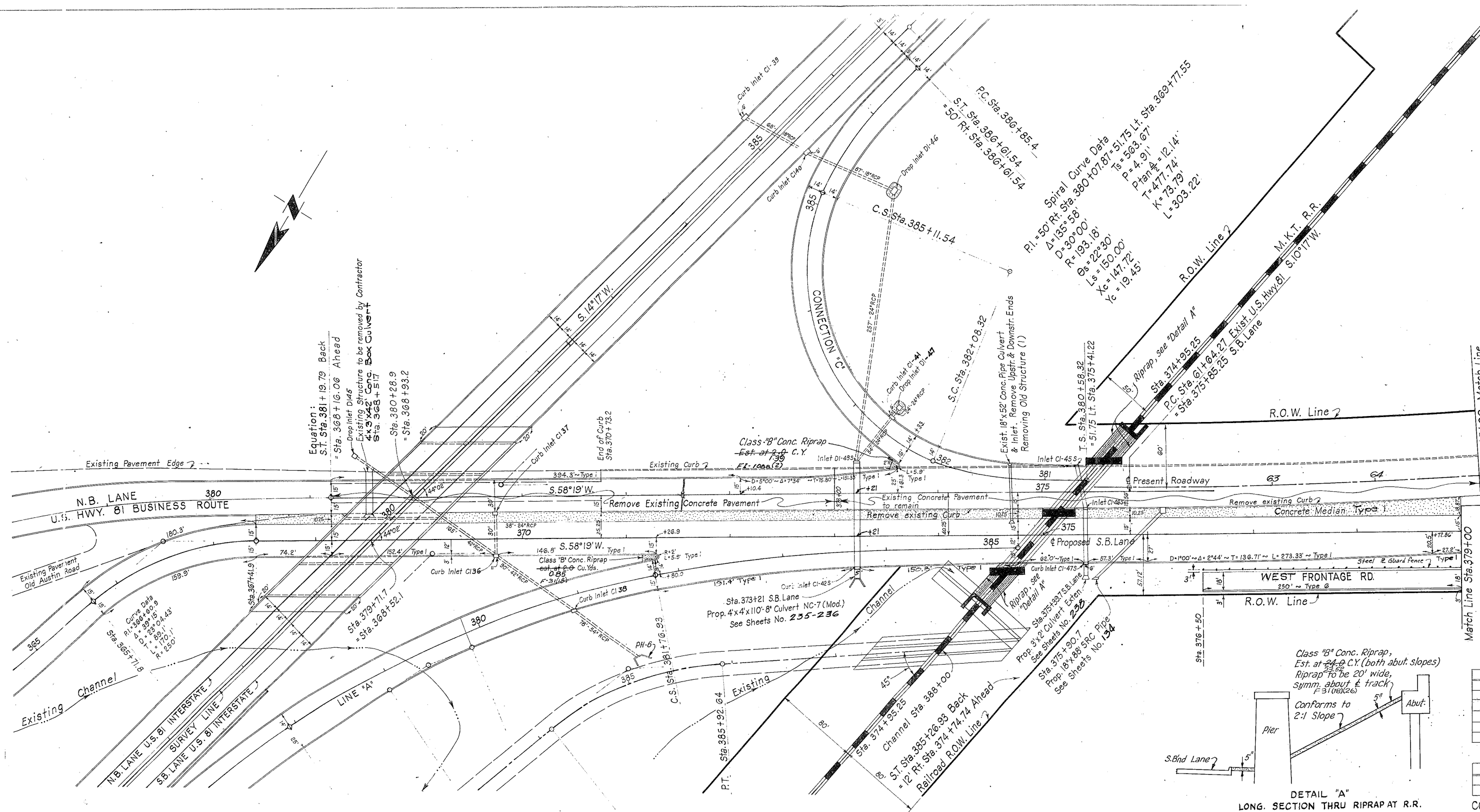
PLAN SHEET

STATE	COUNTY	CONTRACT	SECTION	JOB	HIGHWAY
TEXAS	Bexar	17	10	13	U.S. 81 (I)

At Acceleration or deceleration lanes these lane widths are 11'-0" and shall receive One course Asph. Surf. Trtmt and Hot-Mix Asph. Conc. Pvt (Type "C").

[illegible]

PLAN SHEET



SHEET TOTALS

CONCRETE CURB (LIN. FT.)		
TYPE	EST.	FINAL
1	1276.4	
2		
3		
4		
5		
6	250.0	

CONCRETE MEDIAN (SQ. YDS.)		
TYPE	EST.	FINAL
1	1351	

CONCRETE PAVEMENT (SQ. YDS.)		
	EST.	FINAL
* N.B. Lane	164	
* S.B. Lane	1062	
Total	1226	

DETAIL "A"
 LONG. SECTION THRU RIPRAP AT R.R.
 SHEET TOTALS, CLASS "B" CONC. RIPRAP (CU. YD.)

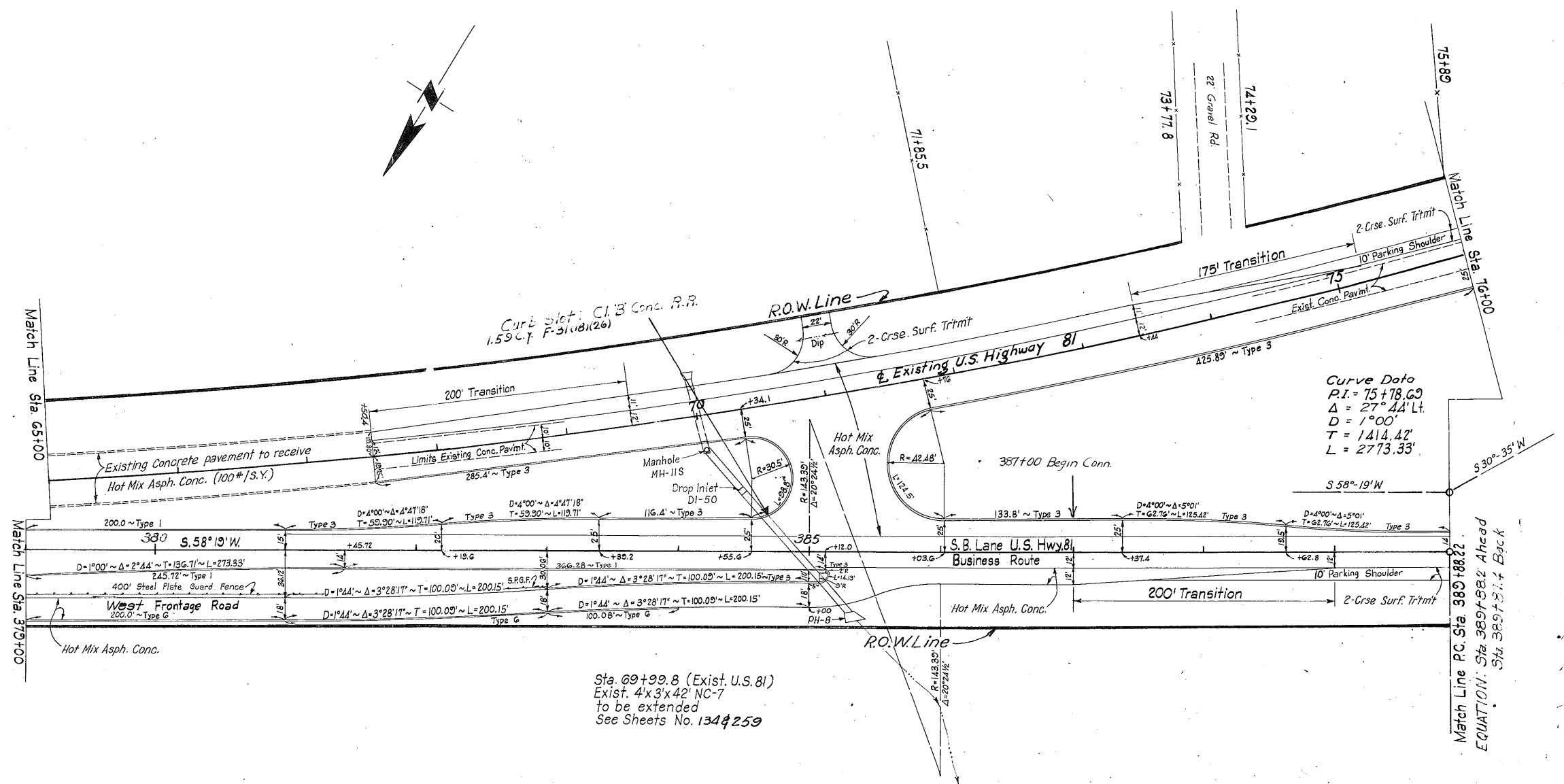
PROJ. F-31 (18)	EST.	FINAL
28.0	25.76	

DESCRIPTION	1541	1983	1478	894	399	64	383	390	873	1376	1391
Prep. Subgrade											
Rem. Old Conc. (Pavt)											
Rem. Old Conc. (Curb)											
Rem. Old Structures											
Uncl. Rd. Excav.											
Embank. + Shr.	104	40	30	232	514	1516	178	316	57	4	0
Steel Plate Guard Fence											

PLAN SHEET

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	35

STATE DIST. NO.	COUNTY	CONT.	SECT.	SEC.	HIGHWAY NO.
15	Bexar	16	7	26	U.S. 81



Sta. 69+99.8 (Exist. U.S. 81)
Exist. 4'x3'x42" NC-7
to be extended
See Sheets No. 134 & 259

SHEET TOTALS
CONCRETE CURBS (LIN. FT.)

F 31 (18)		
TYPE	EST.	FINAL
1	812.0	
2		
3	1894.3	
4		
5		
6	500.2	

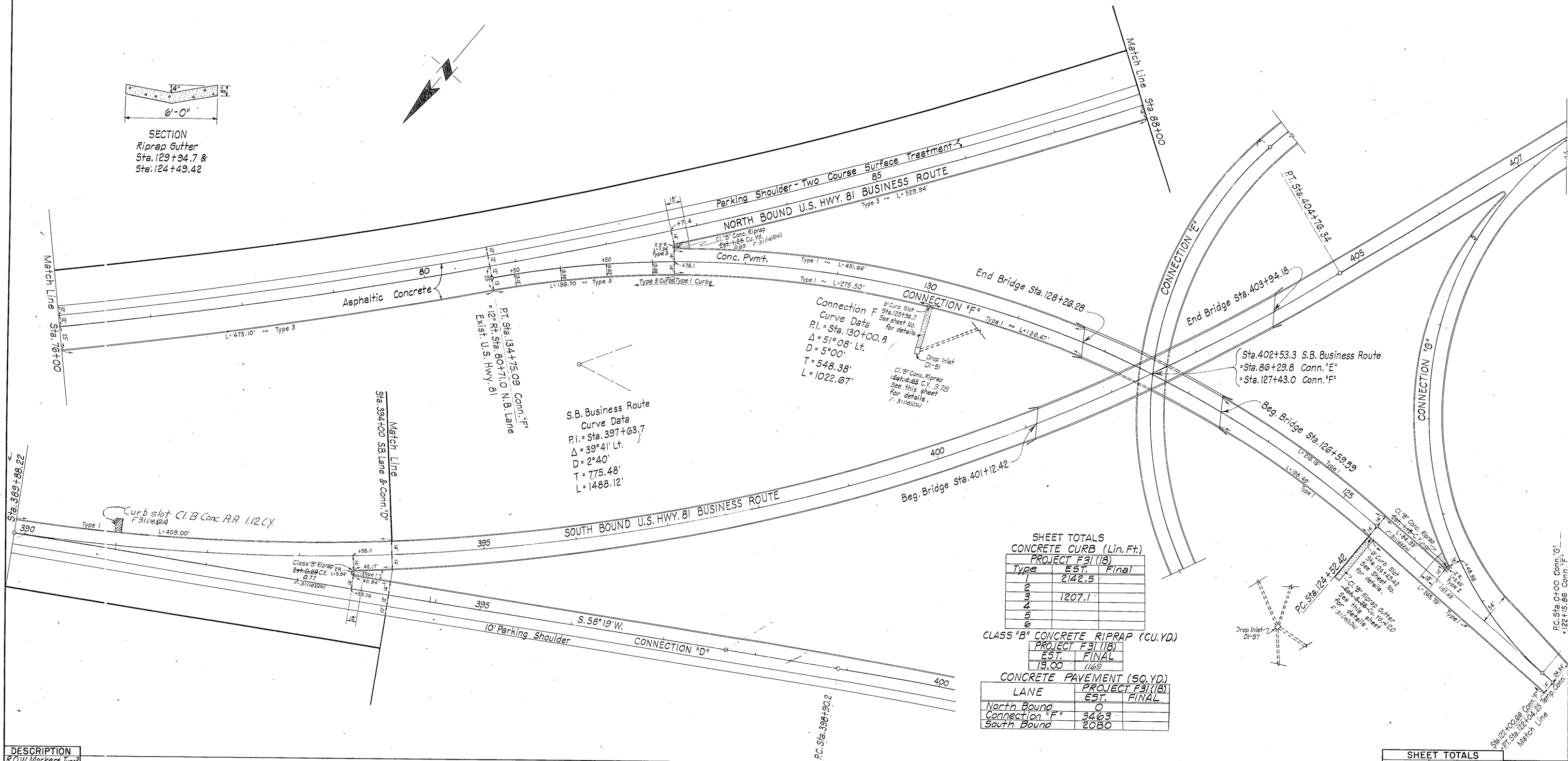
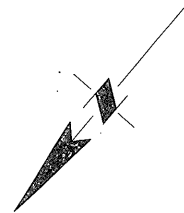
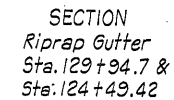
CONCRETE PAVEMENT (SQ. YD.)

F 31 (18)		
LANE	EST.	FINAL
S.B. Lane Bus. Rte.	3186	

DESCRIPTION																	SHEET TOTALS			
																	EST.	FINAL	UNIT	DESCRIPTION
Prep. of Subgrade																	10,119		Sq. Yd.	Sheet Total
Uncl. Road Excav.																	1517		CU. YD.	N.B. Lane
Embank. + Shr.																	1596		CU. YD.	N.B. Lane
Uncl. Road Excav.																	6850		CU. YD.	S.B. & W. Fwy Rd.
Embank. + Shr.																	3833		CU. YD.	S.B. & W. Fwy Rd.
Steel Plate Guard Fence																	400		Lin. Ft.	West Fwy Rd.
379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395				

PLAN SHEET

FED. NO.	STATE	FED. PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	36
STATE DIST. NO.	COUNTY	CONTR. SECT.	HIGHWAY NO.
15	Bexar	16	7 26 US 81



SHEET TOTALS		
CONCRETE CURB (Lin.Ft.)		
PROJECT F31(18)		
Type	EST.	Final
1	2142.5	
2		
3	1207.1	
4		
5		
6		

CLASS "B" CONCRETE RIPRAP (CU.YD.)

PROJECT F31(18)	
EST.	FINAL
13.00	1169

CONCRETE PAVEMENT (SQ.YD.)

LANE	PROJECT F31(18)	
	EST.	FINAL
North Bound	0	
Connection "F"	3463	
South Bound	2080	

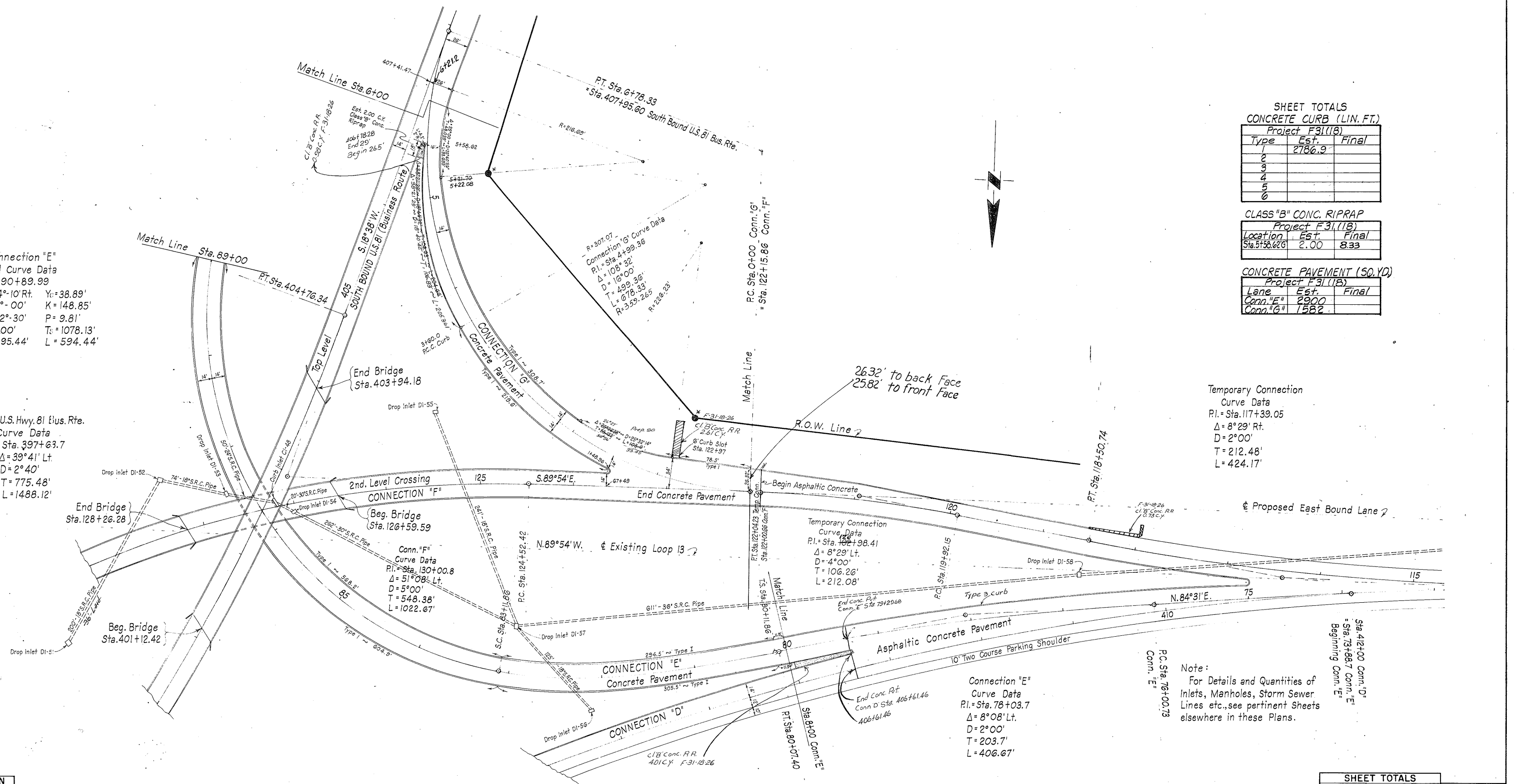
[illegible]

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	F-31 (18)				37
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.	
15	Bexar	16	7	26	US 81 B.R.	

PLAN SHEET

Connection "E"
Spiral Curve Data
P.I. = Sta. 90+89.99
 $\Delta = 134^\circ 10' R$ $Y_0 = 38.89'$
 $D = 15^\circ 00'$ $K = 148.85'$
 $U_s = 22^\circ 30'$ $P = 9.81'$
 $L_s = 300'$ $T_s = 1078.13'$
 $X_c = 295.44'$ $L = 594.44'$

S.B. U.S. Hwy. 81 Bus. Rte.
Curve Data
P.I. = Sta. 397+63.7
 $\Delta = 39^\circ 41' Lt$
 $D = 2^\circ 40'$
 $T = 775.48'$
 $L = 1488.12'$



Temporary Connection
Curve Data
P.I. = Sta. 117+39.05
 $\Delta = 8^\circ 29' R$
 $D = 2^\circ 00'$
 $T = 212.48'$
 $L = 424.17'$

Note:
For Details and Quantities of
Inlets, Manholes, Storm Sewer
Lines etc., see pertinent Sheets
elsewhere in these Plans.

SHEET TOTALS		
CONCRETE CURB (LIN. FT.)		
Project F31(18)		
Type	Est.	Final
1	2786.9	
2		
3		
4		
5		
6		

CLASS "B" CONC. RIPRAP		
Project F31(18)		
Location	Est.	Final
Sta. 5+58.626	2.00	8.33

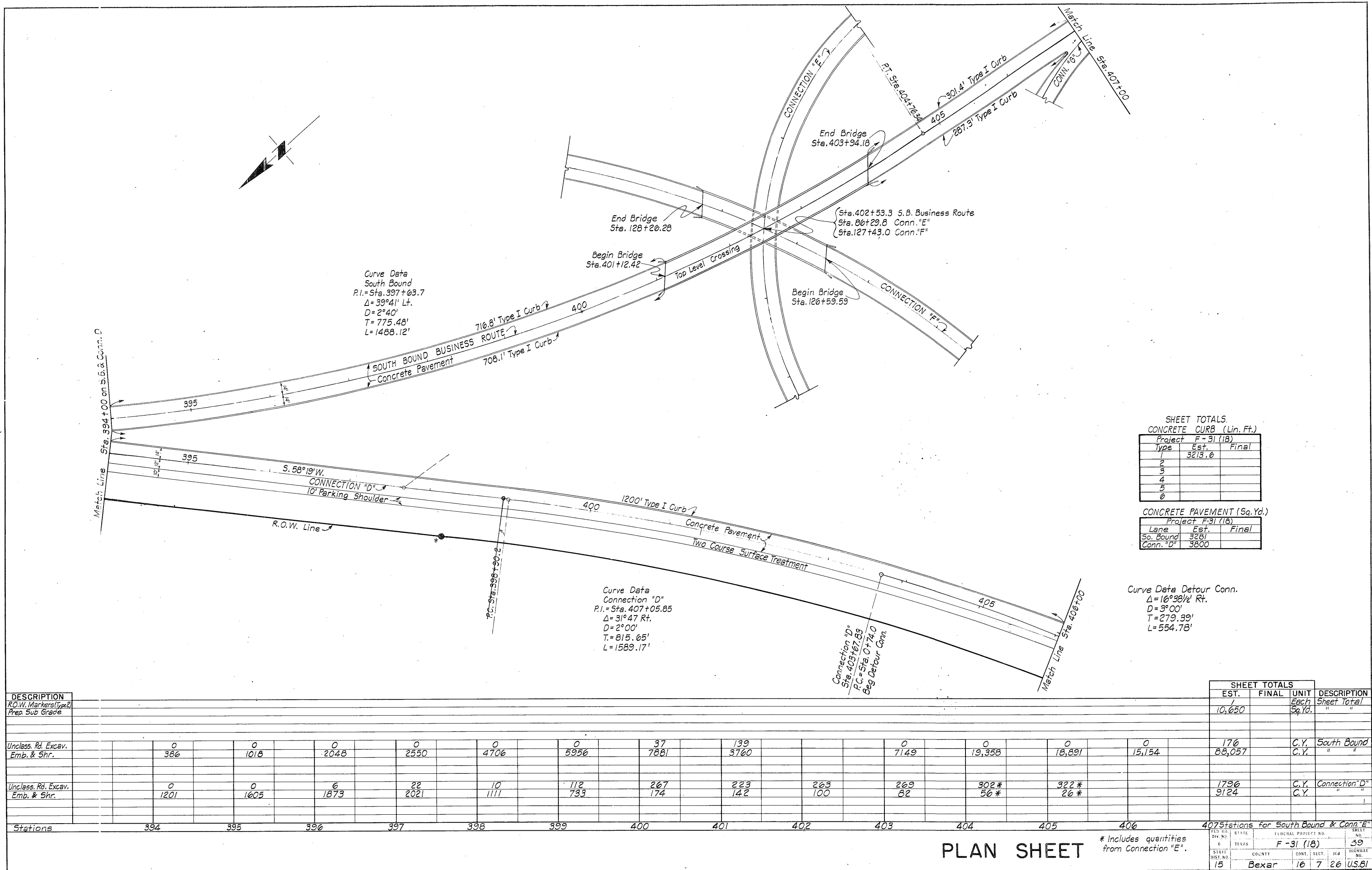
CONCRETE PAVEMENT (SQ. YD.)		
Project F31(18)		
Lane	Est.	Final
Conn. "E"	2900	
Conn. "G"	1582	

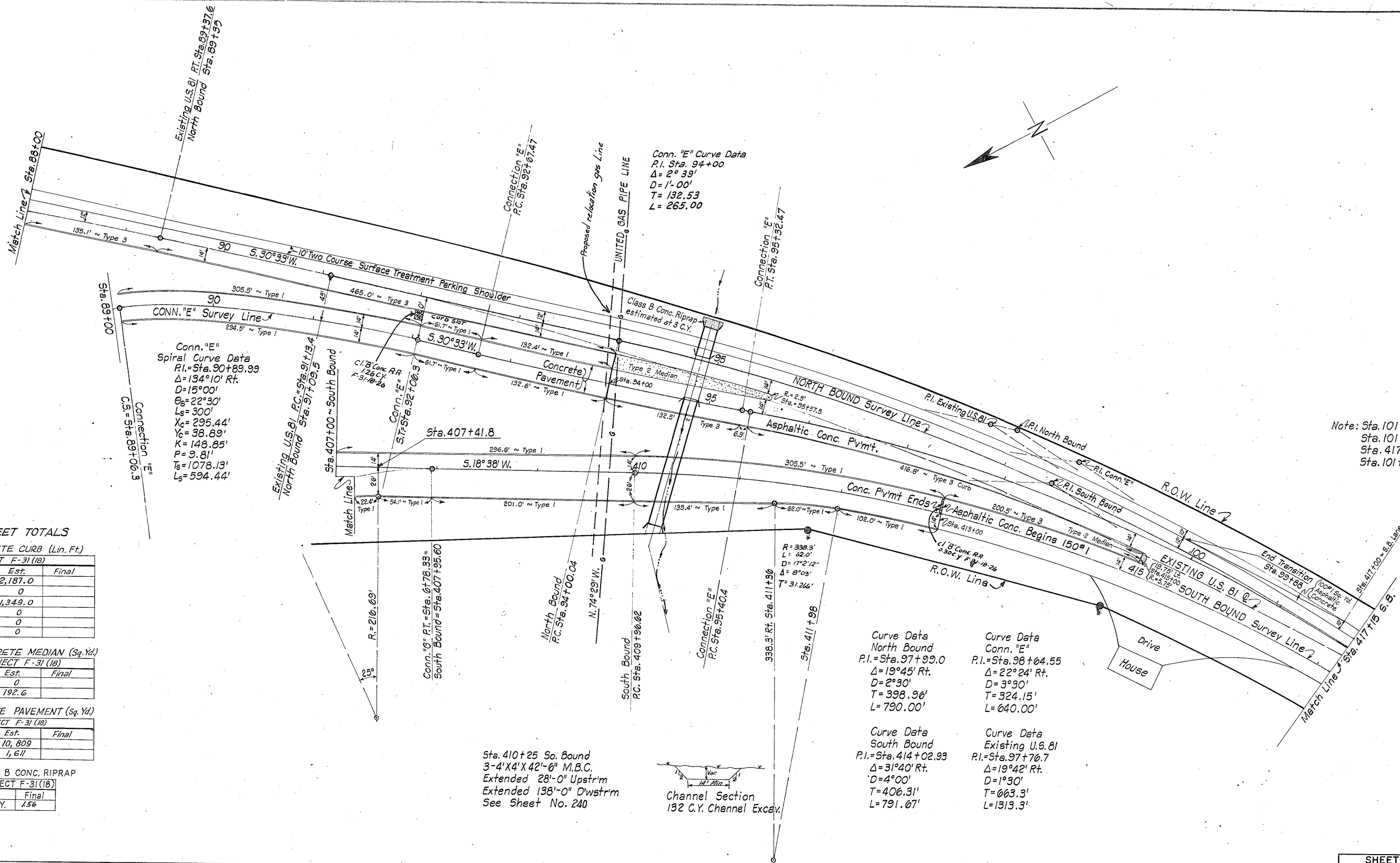
DESCRIPTION	STATIONS										SHEET TOTALS			
	80	81	82	83	84	85	86	87	88	89	EST.	FINAL	UNIT	DESCRIPTION
R.O.W. Markers type 2											2		Each	Sheet Total
Prep. Subgrade											5478		Sq. Yd.	Sheet Total
Unless Rd. Excav.														
Embank & Shr.														
Stations														
Unless Rd. Excav.														
Embank & Shr.														
Stations														

* Quantities included in
Connection "F"

PLAN SHEET

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F31(18)	38
STATE DIST. NO.	COUNTY	CONT. SECT.	HIGHWAY NO.
15	Bexar	16 7 26	U.S. 81 Bus. Rte.





Note: Sta. 101+85.14 North Bound =
Sta. 101+80.40 Conn. "E" =
Sta. 417+21.60 South Bound =
Sta. 101+83.30 Existing U.S. 81

SHEET TOTALS

CONCRETE CURB (Lin. Ft.)

PROJECT F-31 (18)		
Type	Est.	Final
1	2,187.0	
2	0	
3	1,349.0	
4	0	
5	0	

CONCRETE MEDIAN (Sq. Yd.)

PROJECT F-31 (18)		
Type	Est.	Final
1	0	
2	192.6	

CONCRETE PAVEMENT (Sq. Yd.)

PROJECT F-31 (18)		
Line	Est.	Final
So. Bound	10,809	
Conn. "E"	1,611	

CLASS B CONC. RIPRAP

PROJECT F-31 (18)		
Est.	Final	
3 C.Y.	156	

Sta. 410+25 So. Bound
3'-4" X 4" X 42"-6" M.B.C.
Extended 28'-0" Upstr'm
Extended 138'-0" Dwnstr'm
See Sheet No. 240

Channel Section
132 C.Y. Channel Excav.

Curve Data
North Bound
P.I. = Sta. 97+99.0
Δ = 19°45' Rt.
D = 2°30'
T = 398.96'
L = 790.00'

Curve Data
Conn. "E"
P.I. = Sta. 98+64.55
Δ = 22°24' Rt.
D = 3°30'
T = 324.15'
L = 640.00'

Curve Data
South Bound
P.I. = Sta. 414+02.93
Δ = 31°40' Rt.
D = 4°00'
T = 406.31'
L = 791.67'

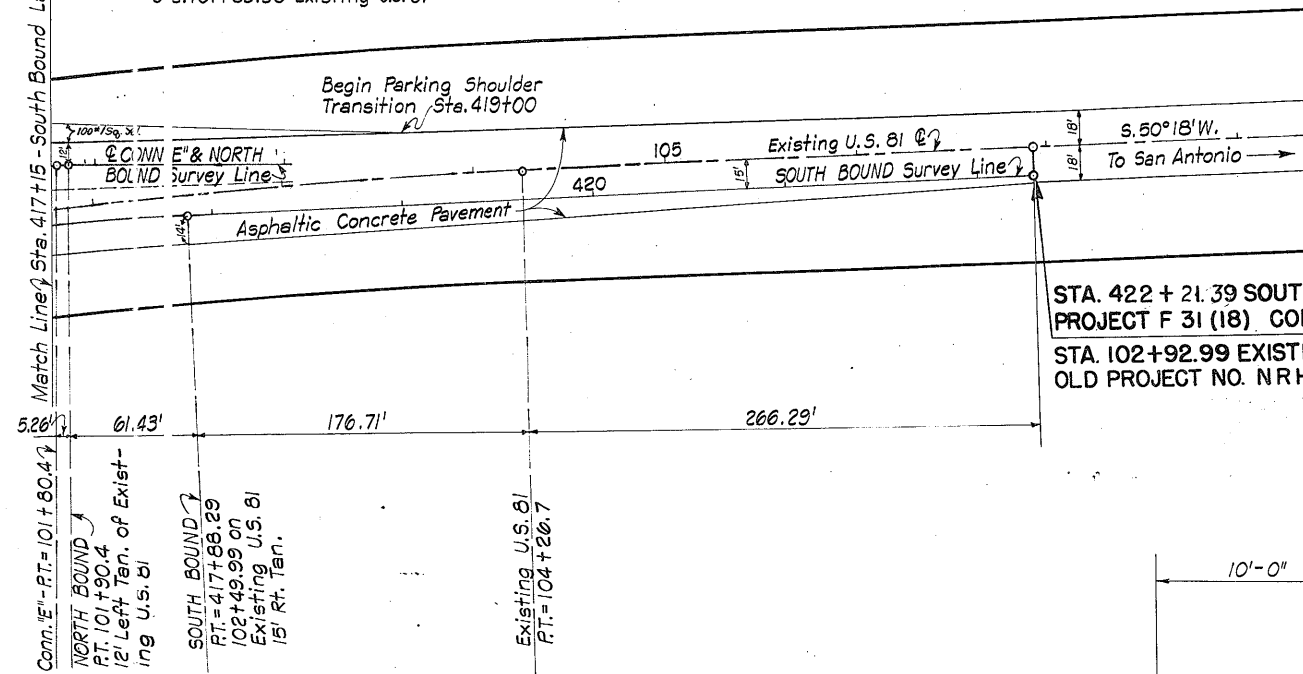
Curve Data
Existing U.S. 81
P.I. = Sta. 97+76.7
Δ = 19°42' Rt.
D = 1°30'
T = 663.3'
L = 1313.3'

DESCRIPTION																						SHEET TOTALS		UNIT	DESCRIPTION										
		EST.	FINAL																																
R.O.W. Marker																						2		Est.											
Prep. Subgrade																						12,611		Sq. Yd.	Sheet Total										
Channel Excav.																						132		Cu. Yd.	Sheet Total										
Uncl. Road Excav.	133	183		172		191		143		113		85		141		115		126		165		230		252		85		2,134		C.Y.	North Bound				
Embankment + Shr.	22	20		56		64		78		112		338		467	*	278		104	*	22	*	0	*	0	*	0	*	22	*	1,583		C.Y.	North Bound		
Add'l Asphalt				31		28		28		16		45		31	*	31	*	13	*	7	*	7	*	7	*	7	*	244		Tons	North Bound				
Uncl. Road Excav.		1,350		820		467		207		82		58		237		* Quantities for Conn. "E" included in North Bound from Sta. 94+91.5 Conn. "E" 95+00 N.B.																2,984		C.Y.	Conn. "E"
Embankment + Shr.		64		0		4		121		243		237		7														669		C.Y.	Conn. "E"				
Add'l Asphalt	88		89		90		91		92		93		94		95		96		97		98		99		100		101		7		Tons	Conn. "E"			
Uncl. Road Excav.						0		0		0		0		0		0		2		32		106		133		120		0		393		C.Y.	South Bound		
Embankment + Shr.						11,725		8,486		6,804		3,408		1,973		1,020		392		82		0		0		0		0		33,890		C.Y.	South Bound		
Add'l Asphalt																					13		67		70				150		Tons	South Bound			

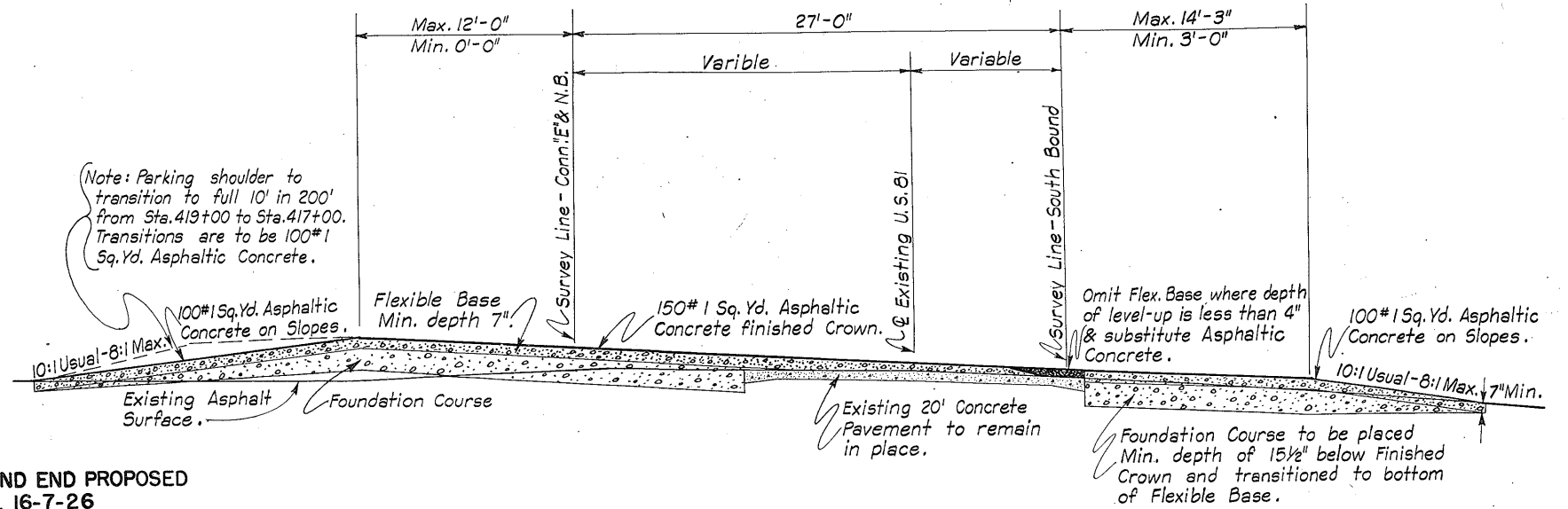
PLAN SHEET

FED. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
5	TEXAS	F31-(18)	40
STATE DIST. NO.	COUNTY	CONT.	SECT.
15	Bexar	16	7
ROUTE	NO.	JOB	NO.
15	Bexar	16	7

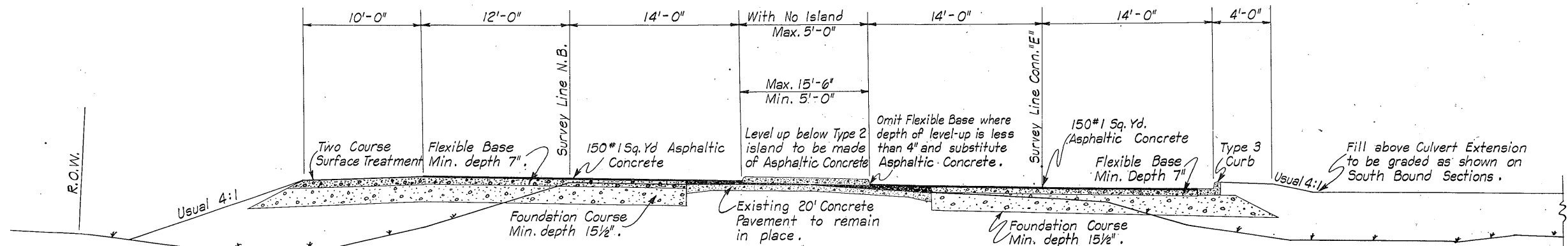
Note: S a. 101+85.14 North Bound
S a. 101+80.40 Conn. "E"
S a. 417+21.60 South Bound
S a. 101+83.30 Existing U.S. 81



STA. 422 + 21.39 SOUTH BOUND END PROPOSED
PROJECT F 31 (18) CONTROL 16-7-26
STA. 102+92.99 EXISTING US HWY. 81
OLD PROJECT NO. N R H "31" 1933



CROSS SECTION IN VICINITY OF STA. 417+00 SOUTH BOUND



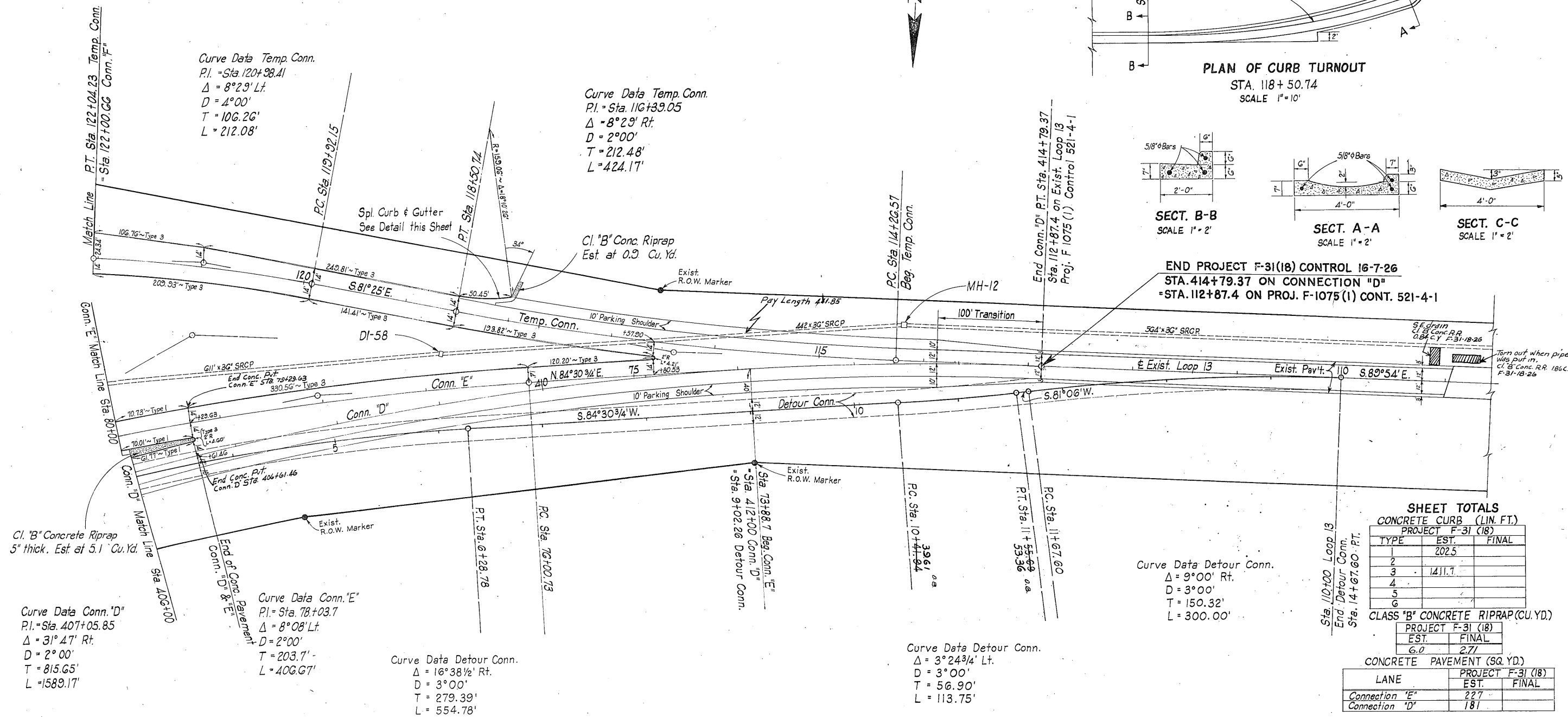
CROSS SECTION IN VICINITY OF STA. 95+00 NORTH BOUND

DESCRIPTION	EST.	FINAL	UNIT	DESCRIPTION
R.O.W. Marker Type 2	0		Each	South Bound
Prep. Subgrade	3800		Sq. Yd.	South Bound
Unclass. Rd. Excav.	14		C.Y.	South Bound
Emb. & Shr.	30		C.Y.	"
Add'l. Asphalt	109		Tons	"

South Bound 417 418 419 420 421 422 + 21.39

PLAN SHEET

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	41
STATE DIST. NO.	COUNTY	CONT. SECT.	HIGHWAY NO.
15	Bexar	16 7 26	U.S. 81

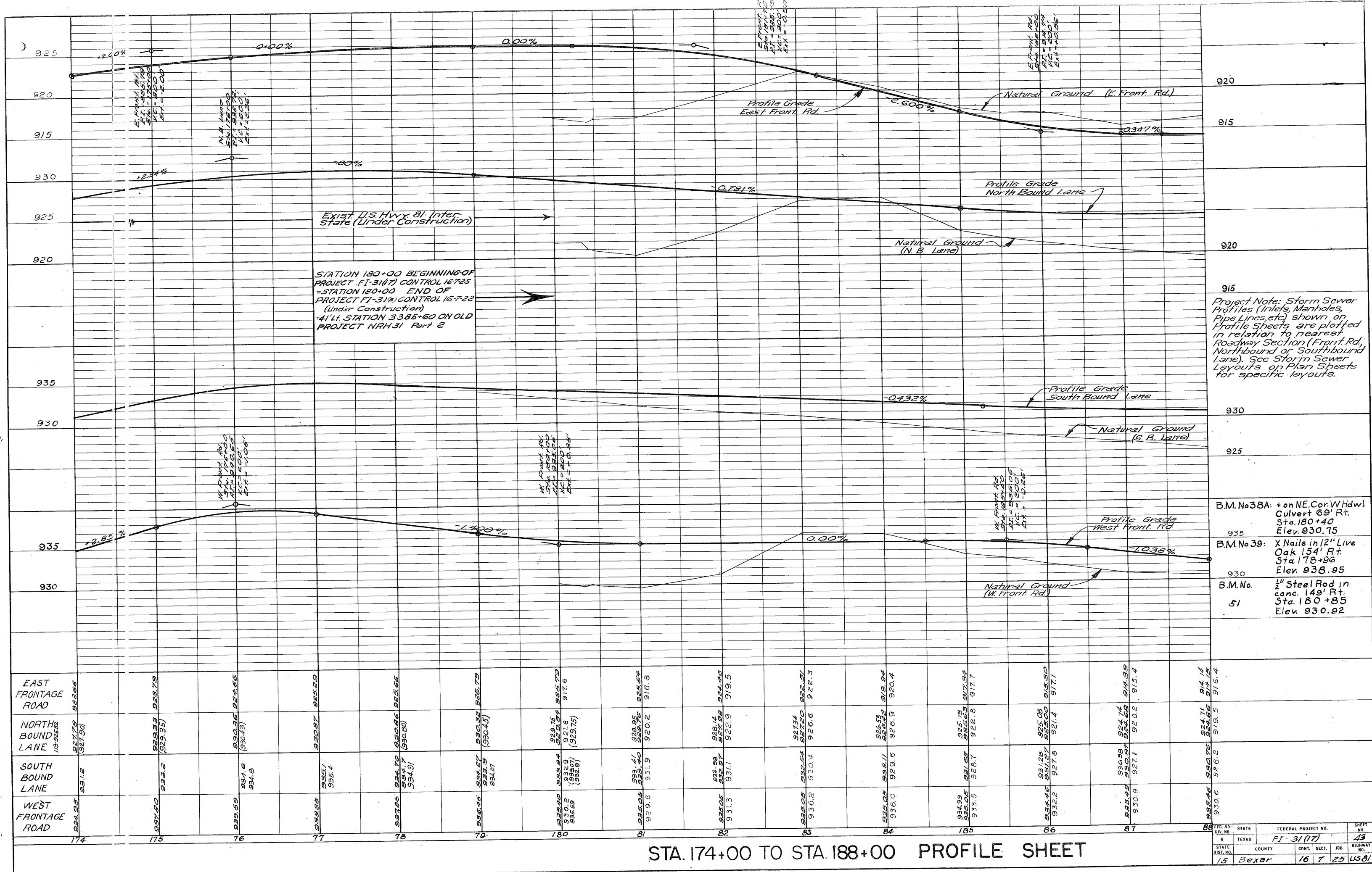


DESCRIPTION		SHEET TOTALS																EST. FINAL UNIT DESCRIPTION			
ROW Markers																		0		Each	
Prep. of Subgrade																		9812		Sq. Yd.	
Uncl. Road Excav.		1700	1152	1339	828	430	780	607	222									7058		Cu. Yd.	F-31(18) Conn. "D"
Embank. + Shr.		38	4	0	0	0	18	162	96									318		Cu. Yd.	F-31(18) Conn. "D"
Uncl. Road Excav.		948	300	250	200	150	100	100	50	50								1548		Cu. Yd.	Detour Conn.
Embank. + Shr.		0	0	0	0	0	0	0	0	0								0		Cu. Yd.	Detour Conn.
		406	407	408	409	410	411	412	413	414	79.37										
Uncl. Road Excav.		1154	896	1219	2050	2024	1913	65										10291		Cu. Yd.	F-31(18) Temp. Conn.
Embank. + Shr.		0	0	164	1154	1375	2422	122										5237		Cu. Yd.	F-31(18) Temp. Conn.
		116	117	118	119	120	121	122	123	124	125										

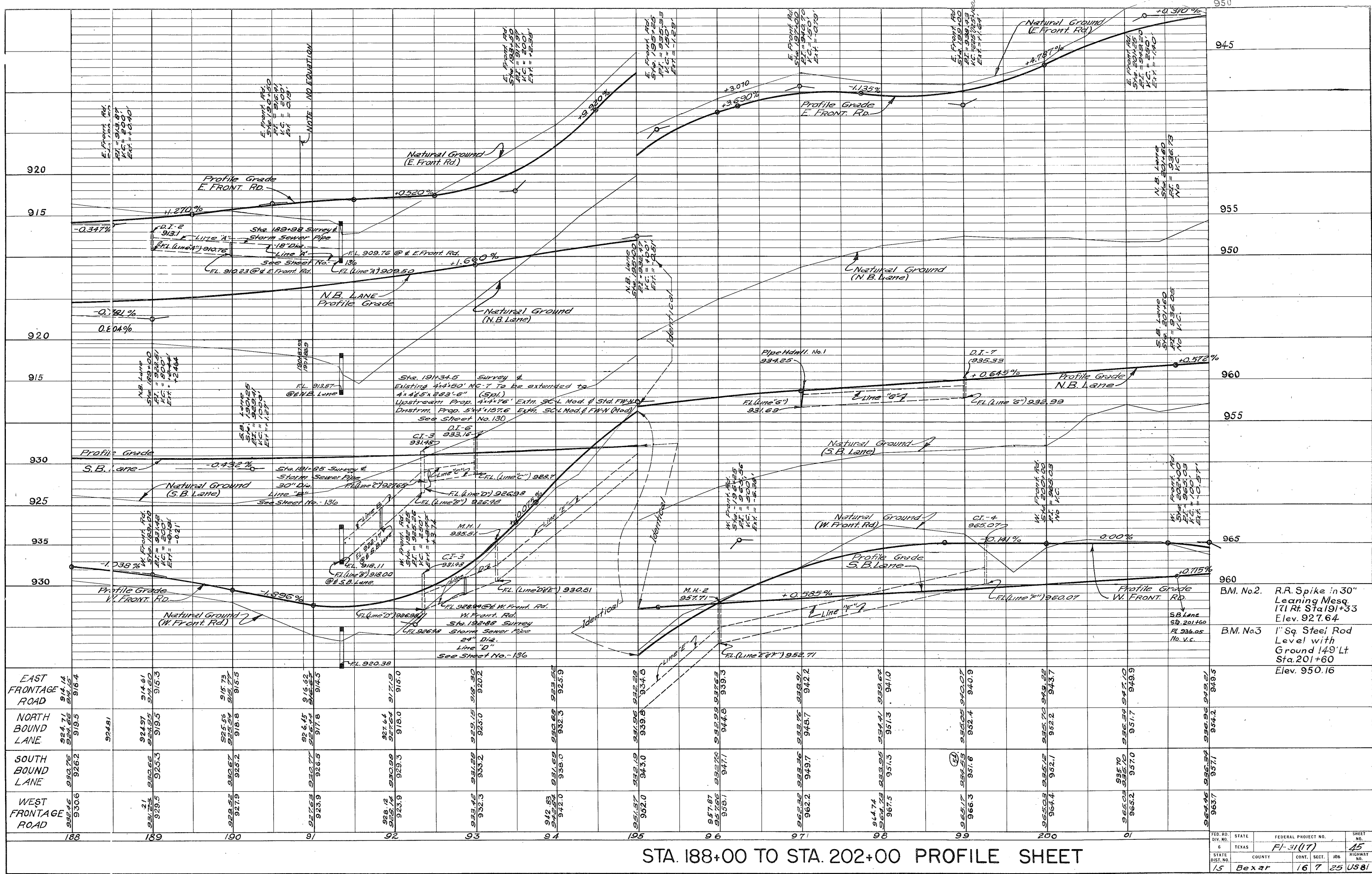
* Includes quantities from Connection "E" † Includes quantities from Temporary Connection

PLAN SHEET

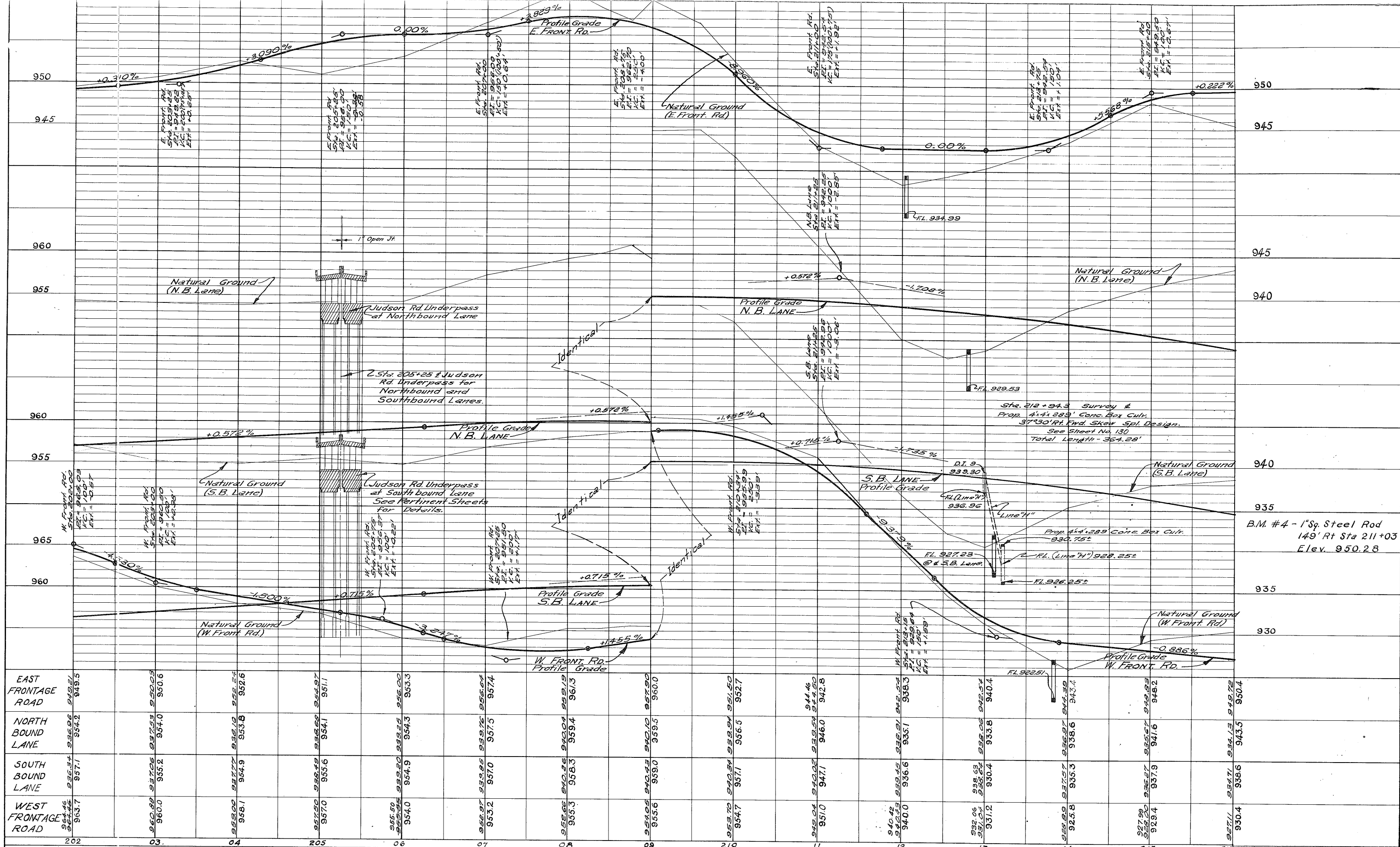
FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
15	TEXAS	F-31(18)	42
COUNTY	CONT.	SECT.	JOB
Bexar	16	7	26
U.S. 81			



STA. 174+00 TO STA. 188+00 PROFILE SHEET

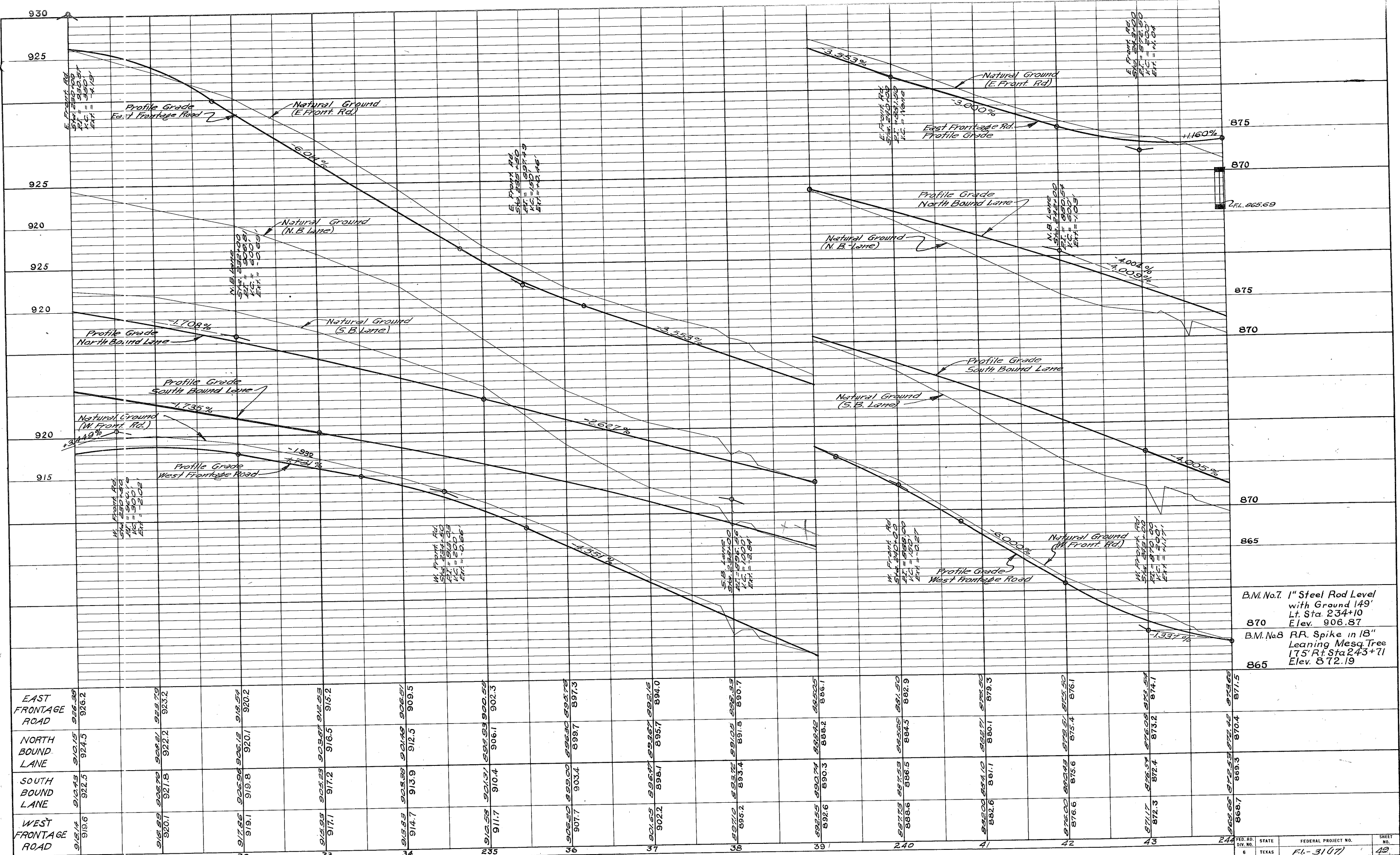


STA. 188+00 TO STA. 202+00 PROFILE SHEET



Station	East Frontage Road	North Bound Lane	South Bound Lane	West Frontage Road
202	949.50	954.2	957.1	953.7
203	950.0	954.0	955.2	954.0
204	950.0	953.8	954.9	953.1
205	950.0	953.8	954.9	953.1
206	950.0	953.8	954.9	953.1
207	950.0	953.8	954.9	953.1
208	950.0	953.8	954.9	953.1
209	950.0	953.8	954.9	953.1
210	950.0	953.8	954.9	953.1
211	950.0	953.8	954.9	953.1
212	950.0	953.8	954.9	953.1
213	950.0	953.8	954.9	953.1
214	950.0	953.8	954.9	953.1
215	950.0	953.8	954.9	953.1
216	950.0	953.8	954.9	953.1

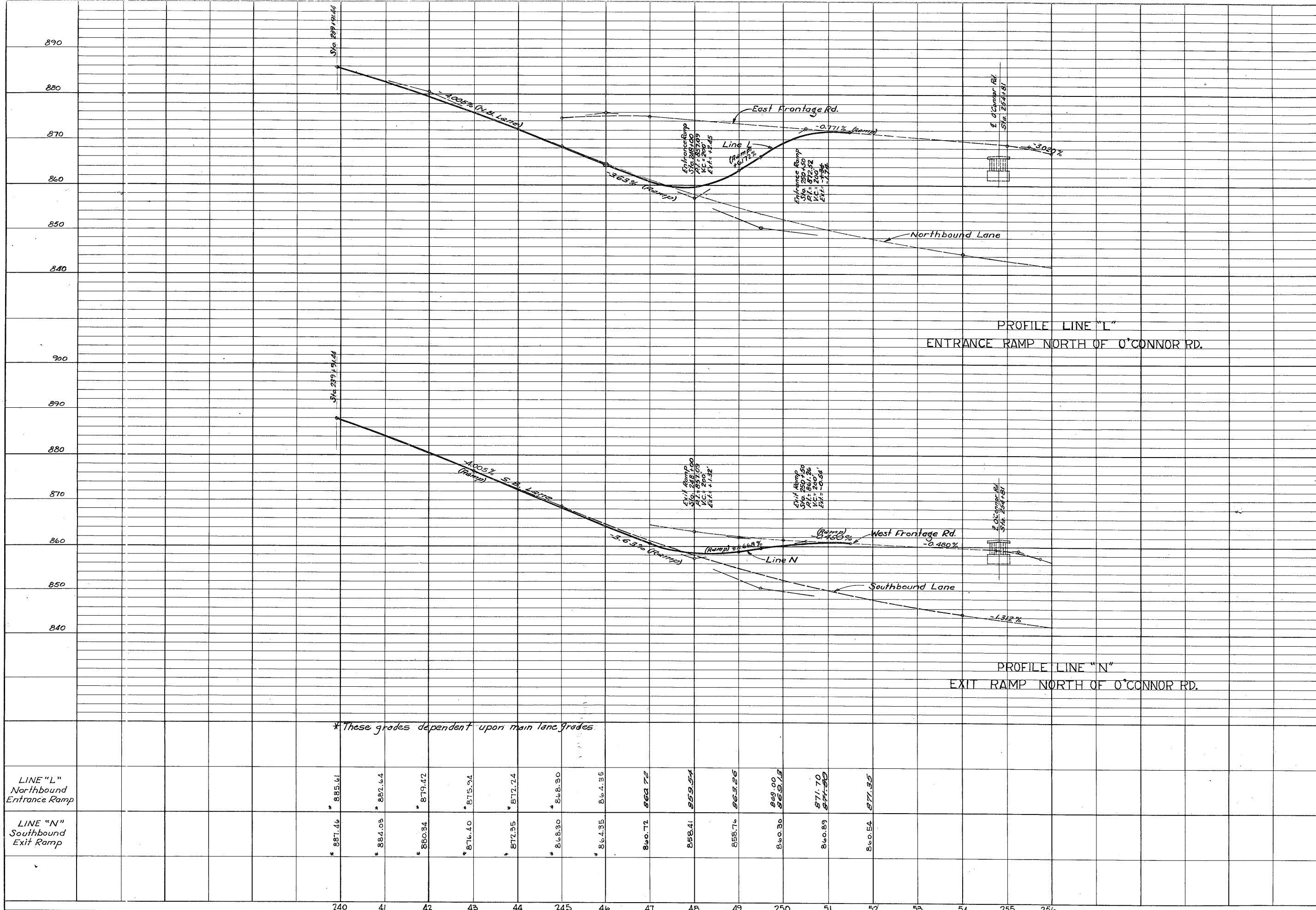
STA. 202+00 TO STA. 216+00 PROFILE SHEET



STA. 230+00 TO STA. 244+00 PROFILE SHEET

B.M. No. 7 1" Steel Rod Level
with Ground 149'
Lt. Sta. 234+10
Elev. 906.87

B.M. No. 8 R.R. Spike in 18"
Leaning Mesq Tree
175' Rt. Sta. 243+71
Elev. 872.19



* These grades dependent upon main lane grades.

LINE "L"
Northbound
Entrance Ramp

LINE "N"
Southbound
Exit Ramp

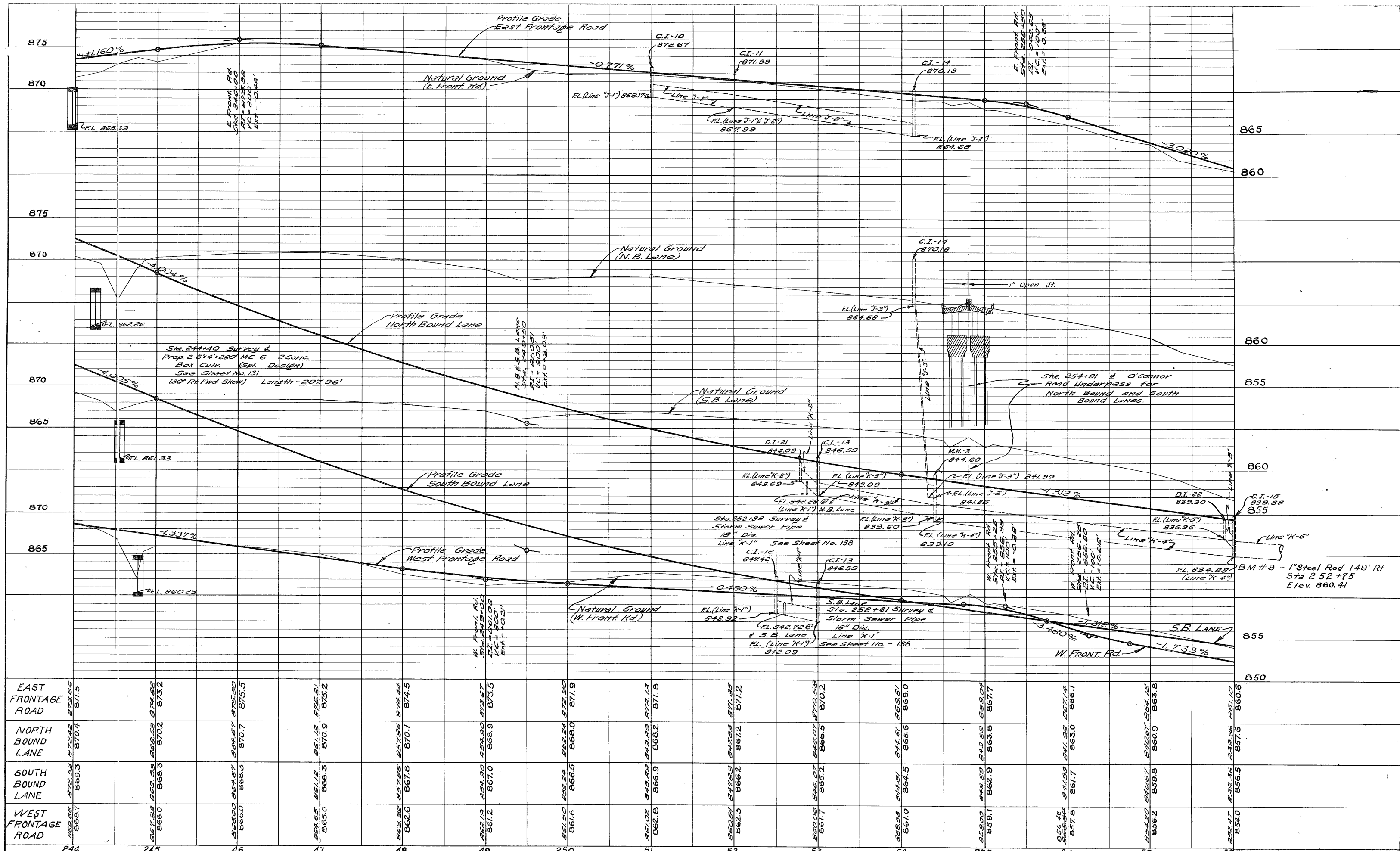
240	41	42	43	44	245	46	47	48	49	250	51	52	53	54	255	256
* 885.61	* 887.64	* 879.42	* 875.94	* 872.24	* 868.30	* 864.35	860.72	858.41	858.76	863.26	869.00	869.13	871.70	871.90	871.35	

SHEET NOTE: See Pertinent Profile Sheets for Grades on East & West Frontage Rds. and Northbound & Southbound Lanes.

RAMP PROFILE SHEET

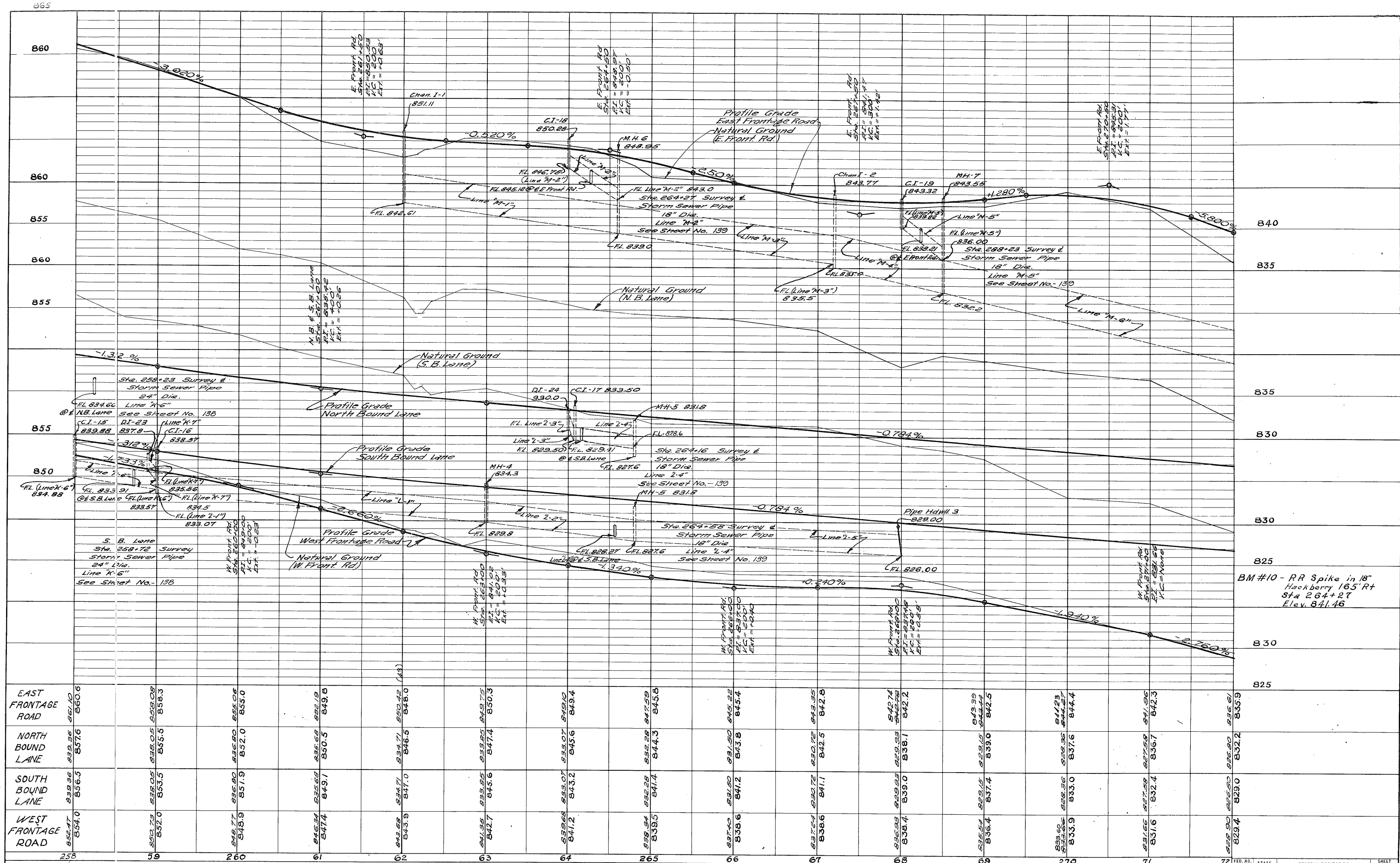
RAMP LINE "L"
RAMP LINE "N"
(O'Connor Drive Interchange)

FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F-1 - 31(17)	50
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	Bexar	16 7	25
			U.S. 81

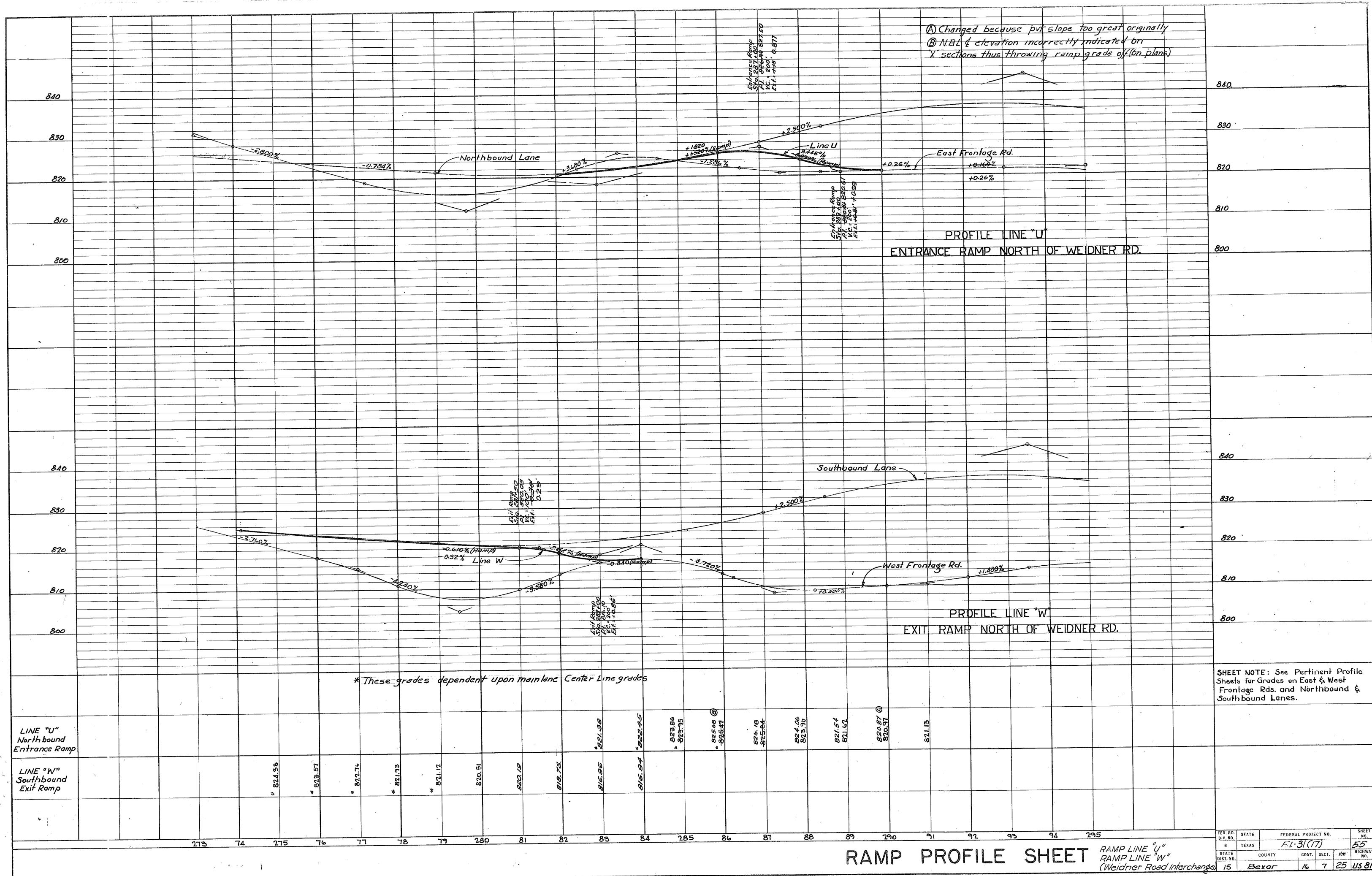


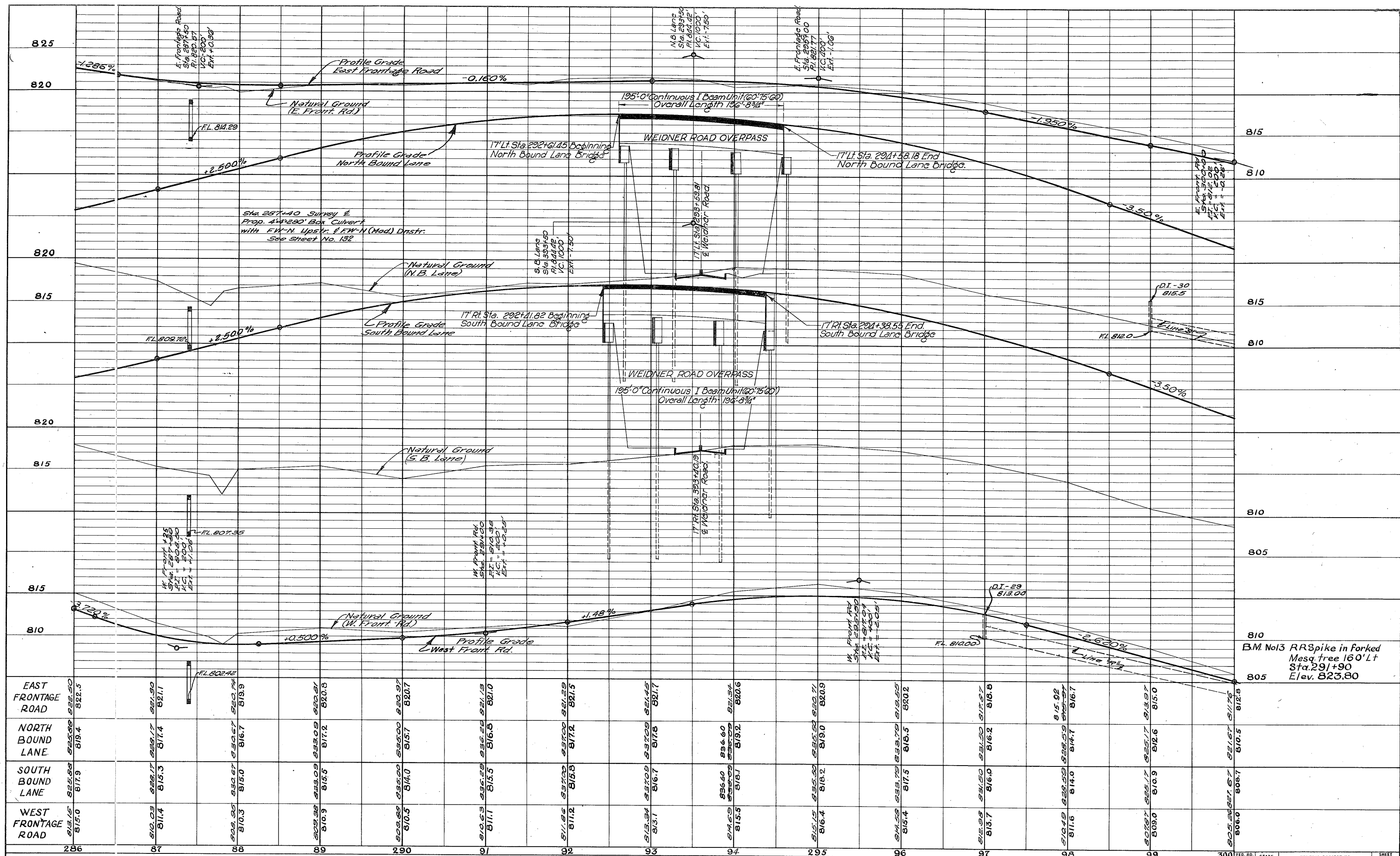
STA. 244+00 TO STA. 258+00 PROFILE SHEET

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FL-31(17)	51
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	16 7 25	03 81

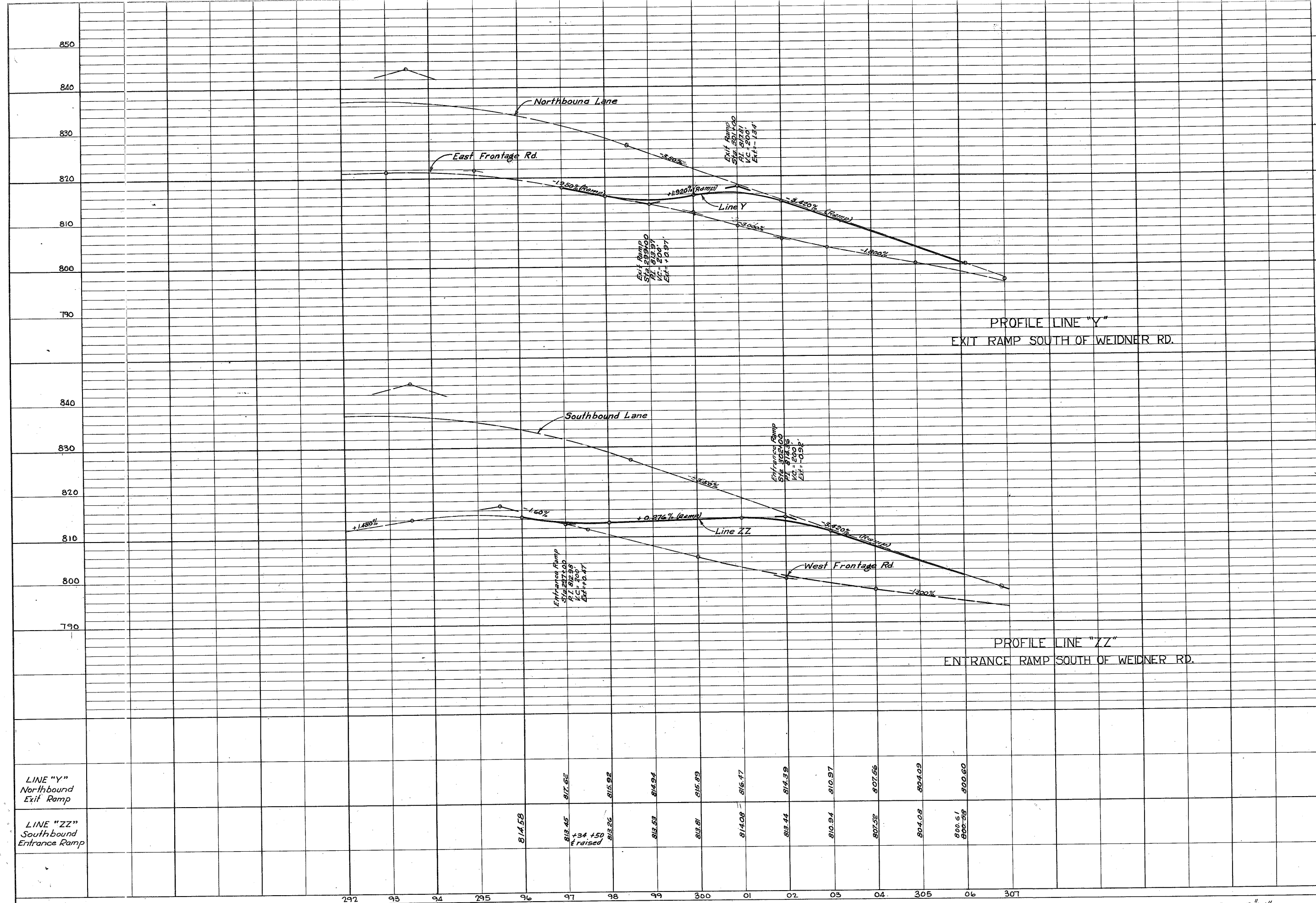


STA. 258+00 TO STA. 272+00 PROFILE SHEET





STA. 286+00 TO STA. 300+00 PROFILE SHEET



850
840
830
820
810
800
790
840
830
820
810
800
790

PROFILE LINE "Y"
EXIT RAMP SOUTH OF WEIDNER RD.

PROFILE LINE "ZZ"
ENTRANCE RAMP SOUTH OF WEIDNER RD.

SHEET NOTE: See Pertinent Profile Sheets for Grades on East & West Frontage Rds. and Northbound & Southbound Lanes.

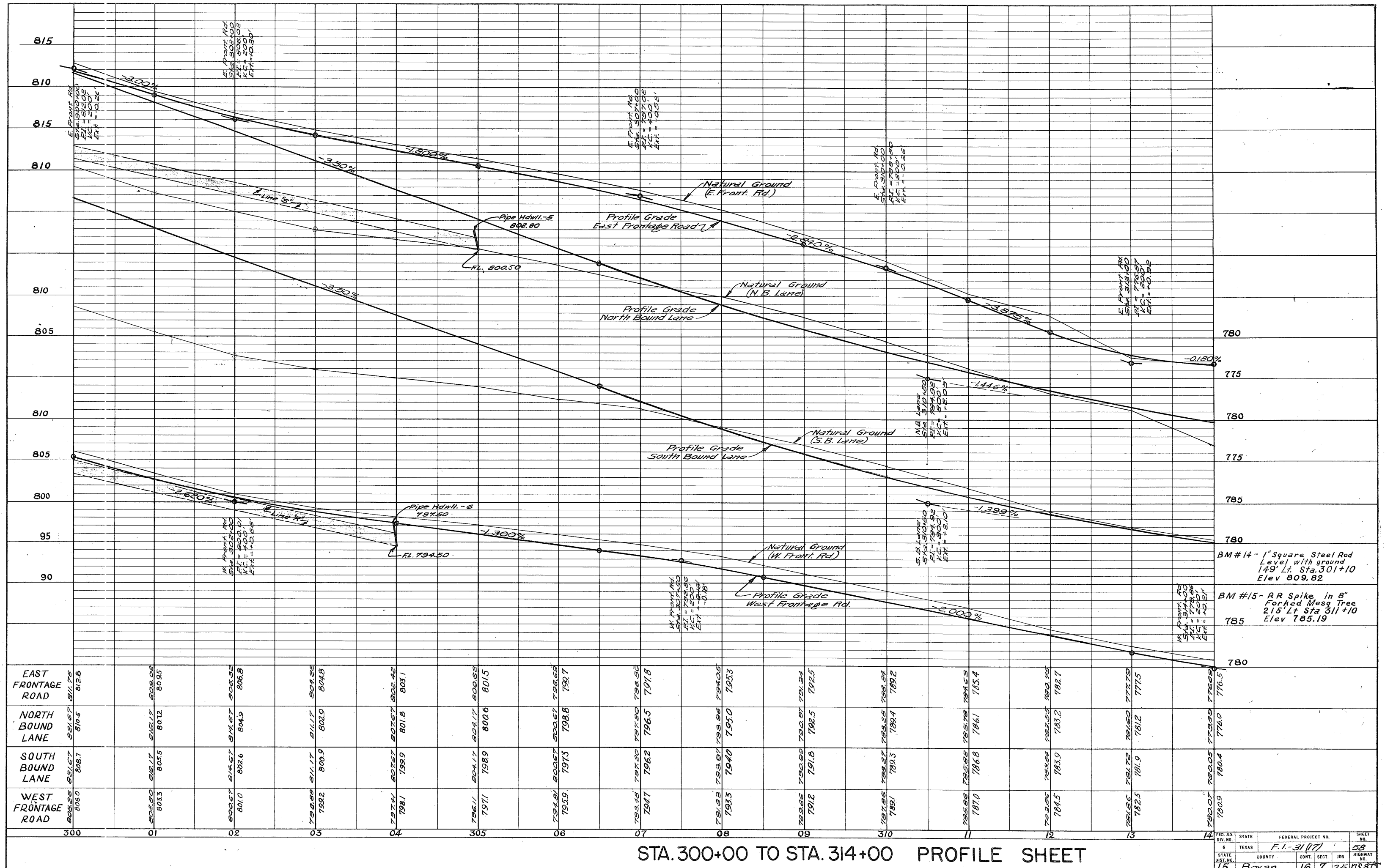
LINE "Y"
Northbound
Exit Ramp

LINE "ZZ"
Southbound
Entrance Ramp

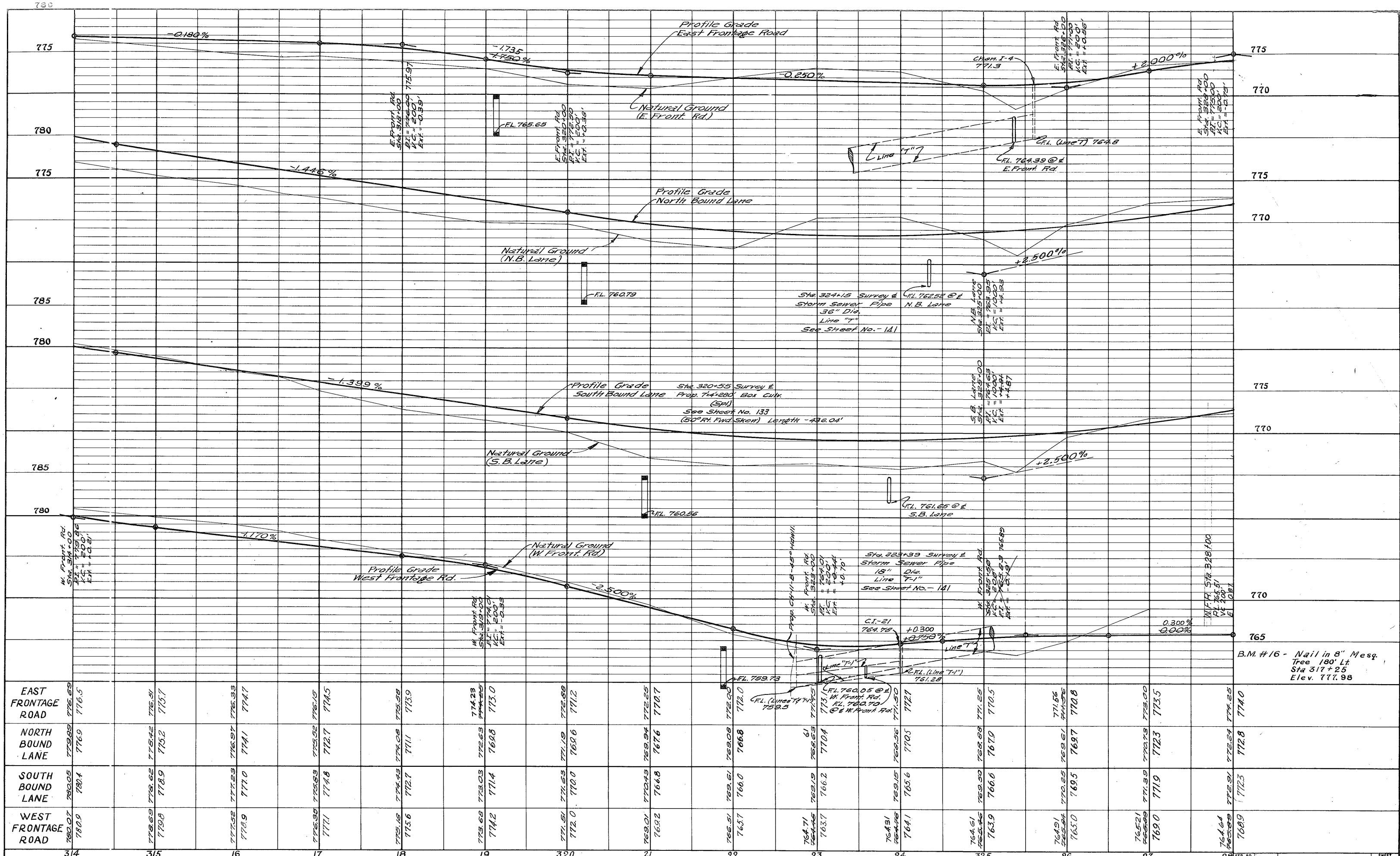
292 93 94 95 96 97 98 99 300 01 02 03 04 305 06 307

RAMP PROFILE SHEET RAMP LINE "Y" RAMP LINE "ZZ" (Weidner Road Interchange)

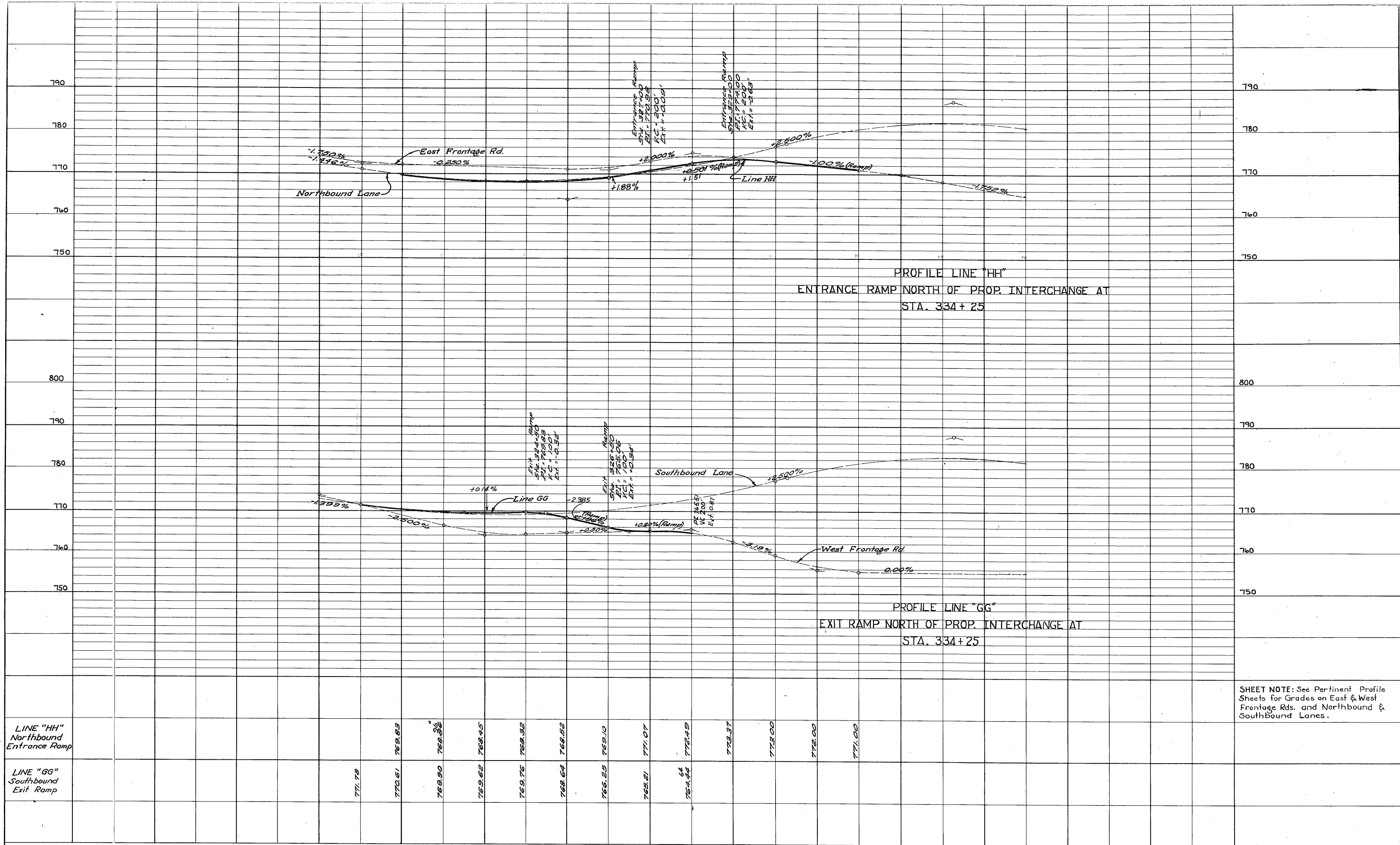
FED. RD. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-3(17)	57
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	Bexar	16 7	25
			U.S. 81



STA. 300+00 TO STA. 314+00 PROFILE SHEET



STA. 314+00 TO STA. 328+00 PROFILE SHEET



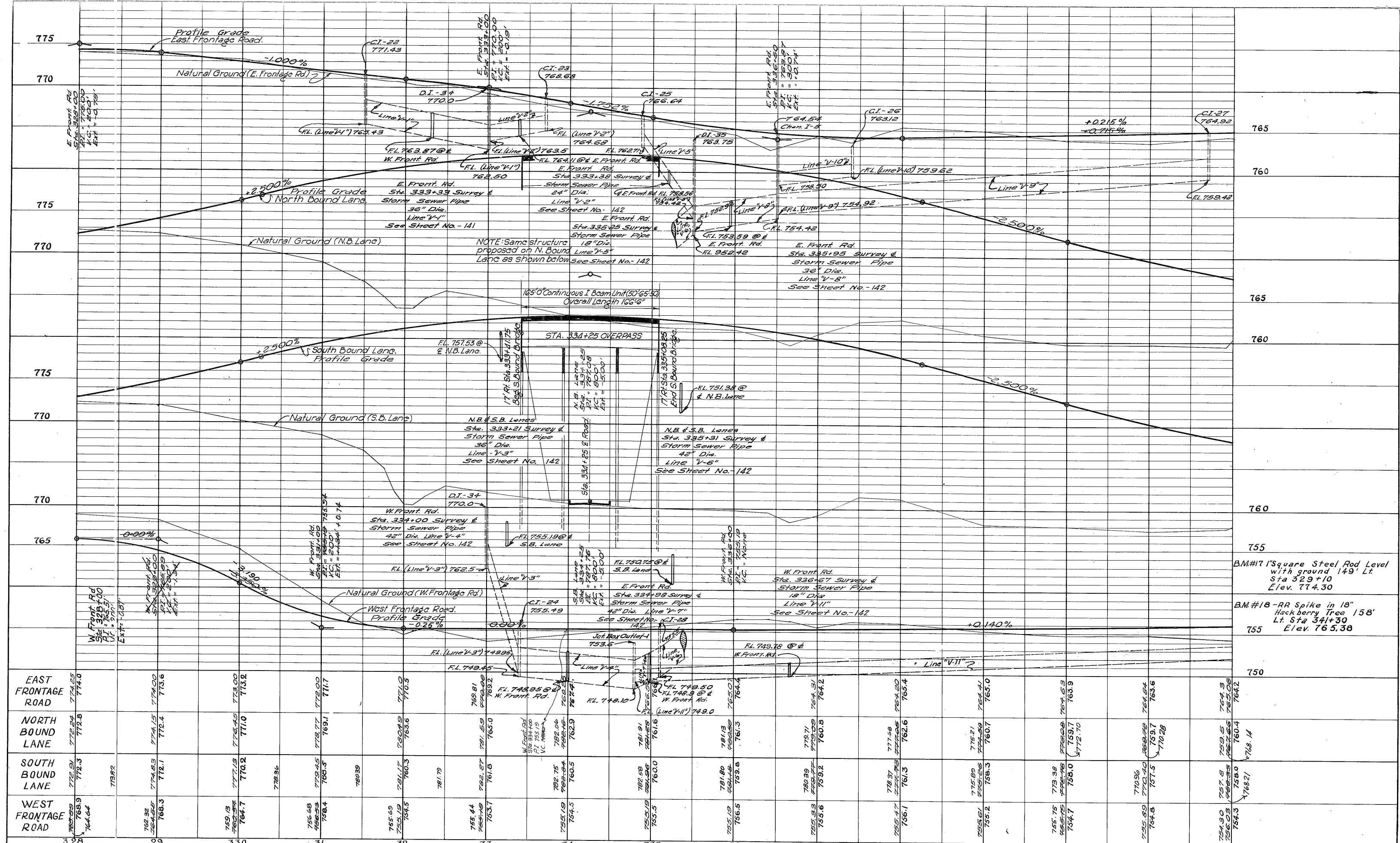
LINE "HH"
Northbound
Entrance Ramp

LINE "GG"
Southbound
Exit Ramp

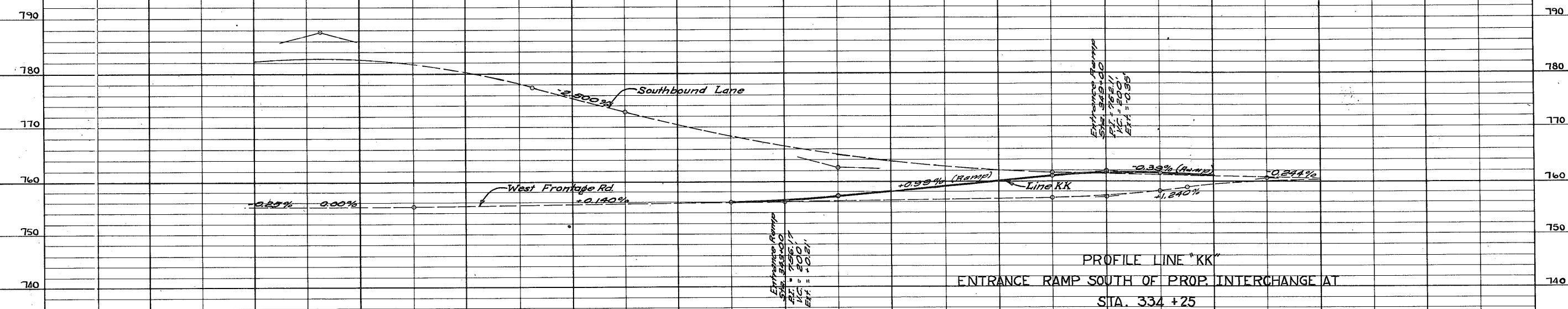
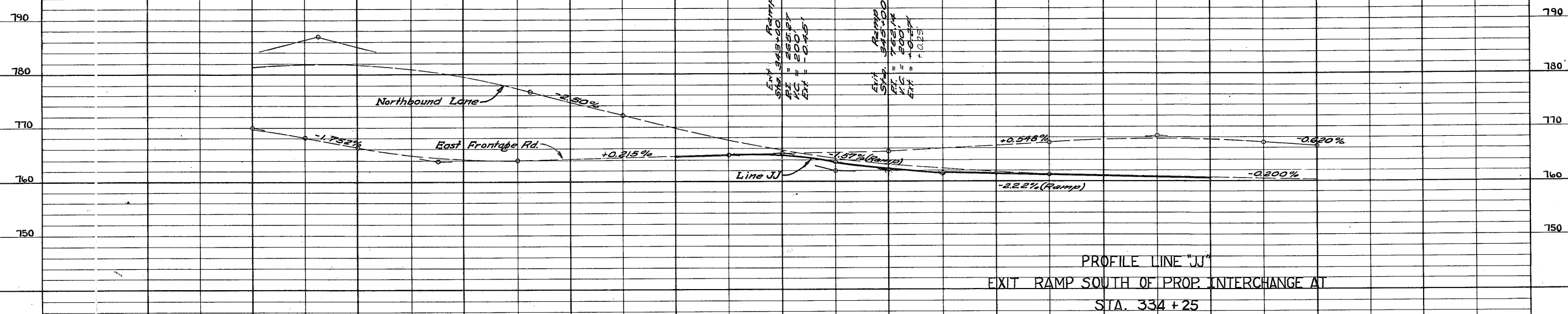
SHEET NOTE: See Pertinent Profile
Sheets for Grades on East & West
Frontage Rds. and Northbound &
Southbound Lanes.

RAMP PROFILE SHEET RAMP LINE "HH"
RAMP LINE "GG"
(Sta. 334+25 Interchange)

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F-1-31(17)	60
STATE DIST. NO.	COUNTY	CONT. SECT. JOB	HIGHWAY NO.
15	Bexar	16 7 25	U.S. 81



STA. 328+00 TO STA. 342+00 PROFILE SHEET

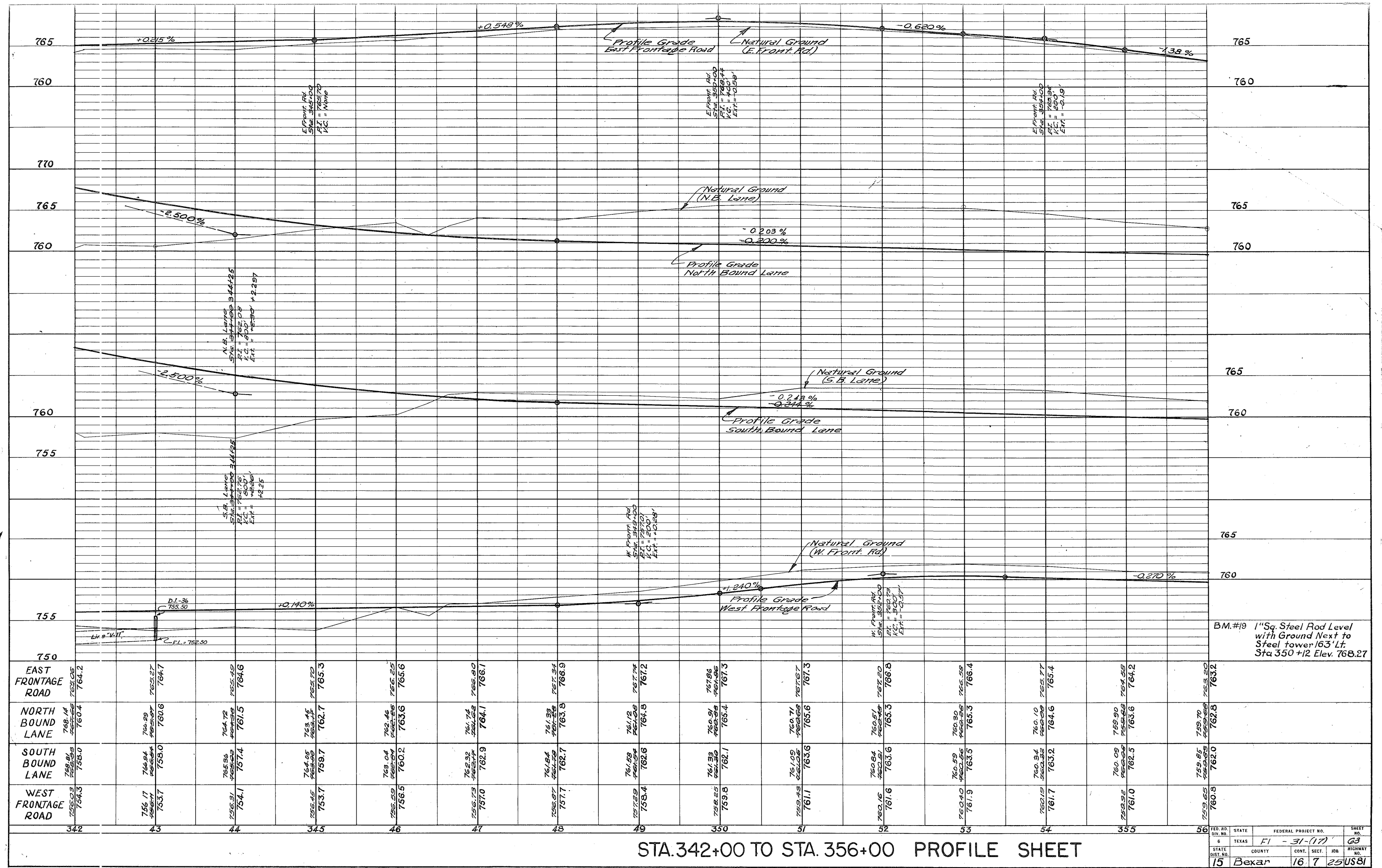


Note, * These grades dependent upon NBL & Grades
Note 2 * ✓ ✓ ✓ ✓ SBL ✓ ✓

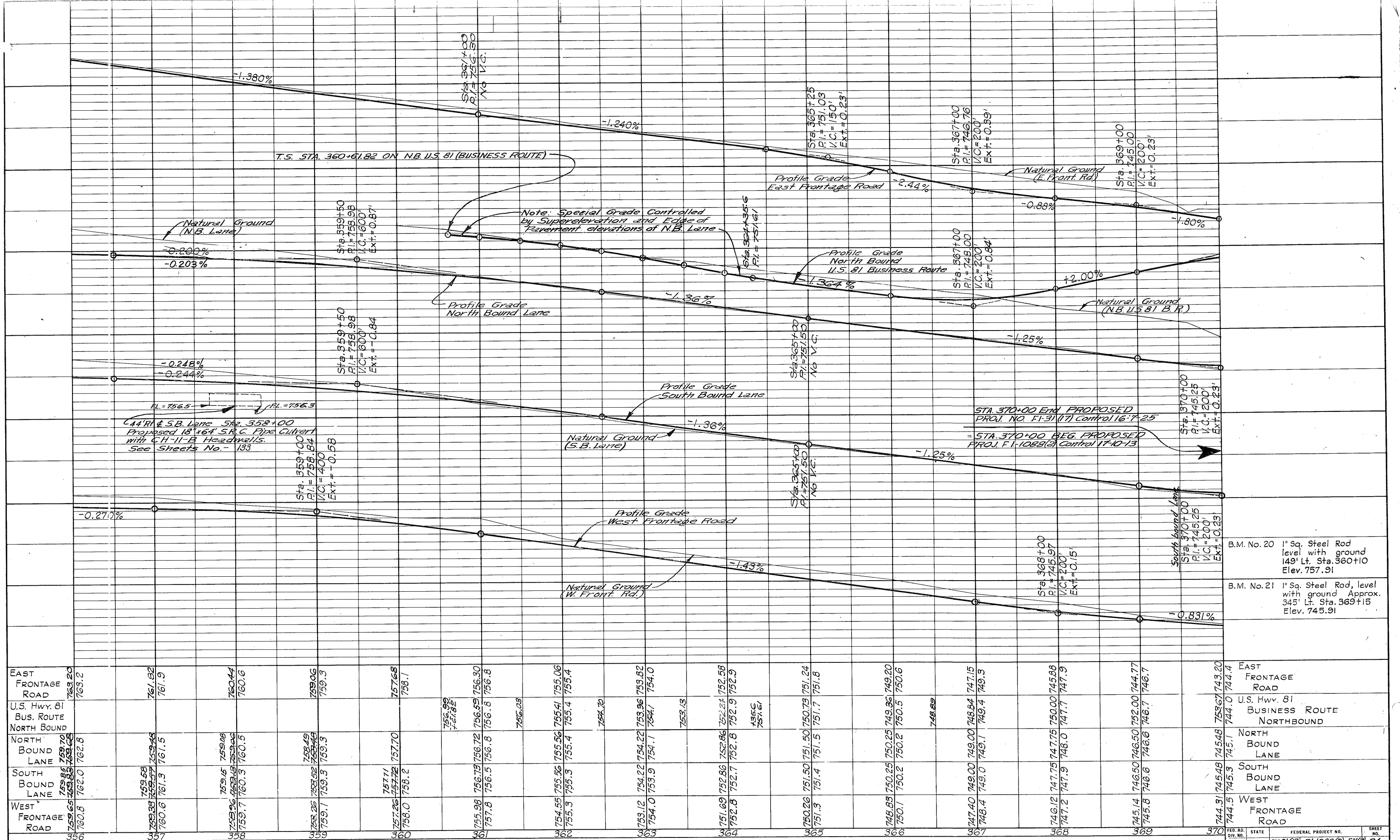
SHEET NOTE: See Pertinent Profile Sheets for Grades on East & West Frontage Rds. and Northbound & Southbound Lanes.

[illegible]

123



STA. 342+00 TO STA. 356+00 PROFILE SHEET



STA. 356+00 TO STA. 370+00 PROFILE SHEET

B.M. No. 20 1" Sq. Steel Rod level with ground 149' Lt. Sta. 360+10 Elev. 757.91

B.M. No. 21 1" Sq. Steel Rod, level with ground Approx. 345' Lt. Sta. 369+15 Elev. 745.91

EAST FRONTAGE ROAD	759.67	743.20
U.S. Hwy. 81 BUSINESS ROUTE NORTHBOUND	744.0	744.4
NORTH BOUND LANE	745.1	745.1
SOUTH BOUND LANE	745.3	745.3
WEST FRONTAGE ROAD	744.5	744.5

FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
15	TEXAS	F-13(17), F-1088(2), F-1100	64
COUNTY	CONT. SECT.	JOB	HIGHWAY NO.
BEXAR	16:17:10	25:13	US 81

FL=859.4
FL=842.61
Inlet

Lt. Sta 262+35

FL=872.90
FL=868.30
2'-4'x6' Box Culv.
FL=860.0
FL=858.90
Lt. Sta 244+40 Rt.

FL=914.4
FL=908.7
4'x4' Box Culv.
FL=899.9
FL=898.03
Lt. Sta 224+60 Rt.

FL=944.5
FL=938.5
4'x4' Box Culv.
FL=921.5
FL=916.5
Lt. Sta 212+94 Rt.

FL=974.01
FL=963.32
Special Inlet
Lt. Sta 199+25 Rt.

FL=926.3
FL=921.6
4'x4' Box Culv.
FL=909.5
FL=905.0
Lt. Sta 191+35 Rt.

Junction Box
FL=748.1
FL=744.6
2'-5.5'x36" Conc. Pipes Under RR

Lt. Sta 334+80 Rt.

FL=777.2
FL=768.5
7'x4' Box Culv.
FL=760.0
FL=759.5
FL=758.4
Lt. Sta 320+55 Rt.

FL=924.6
FL=915.5
4'x4' Box Culv.
FL=908.702
FL=902.02
FL=801.00
Lt. Sta 287+68 Rt.

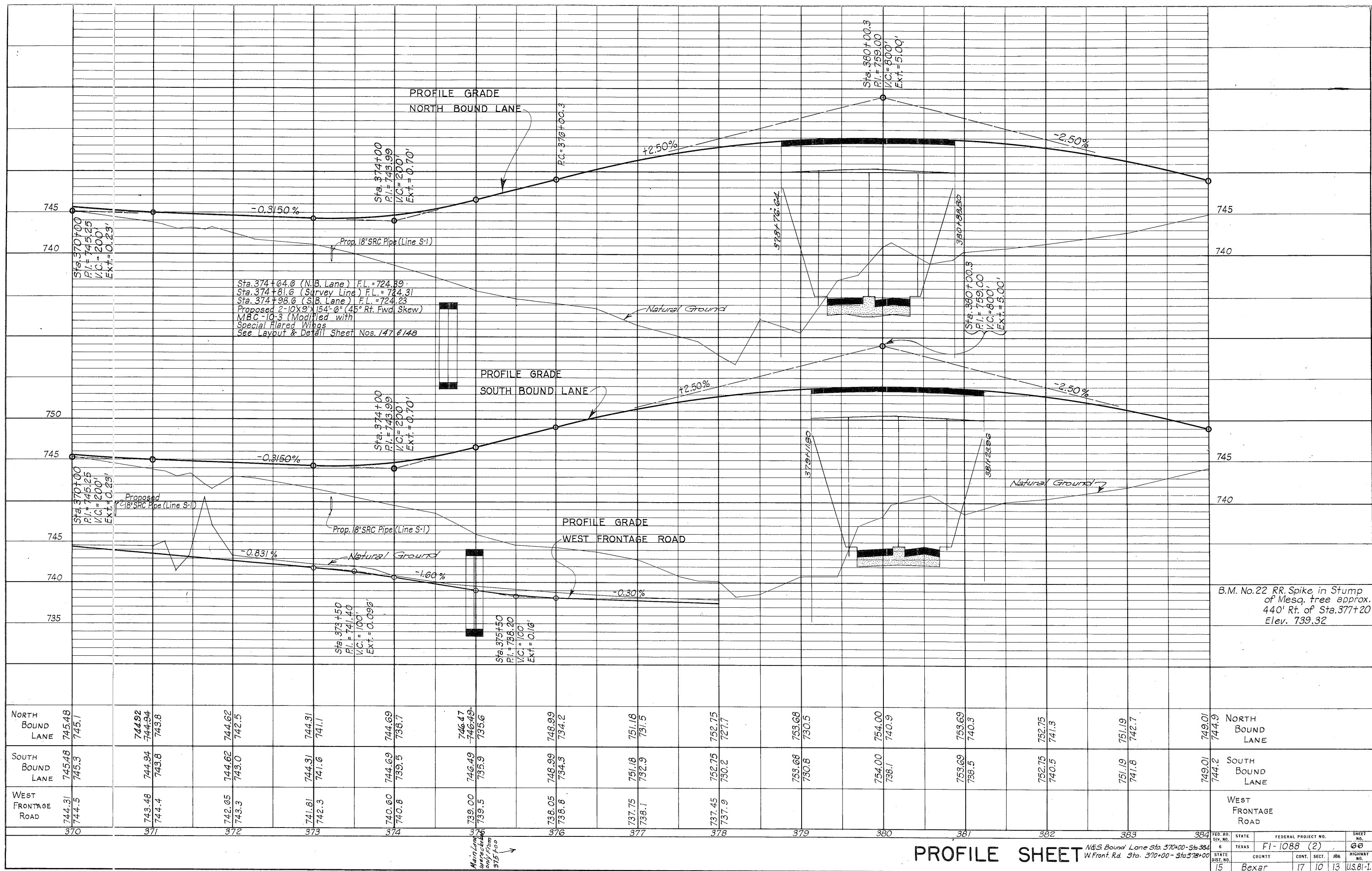
FL=919.3
FL=914.4
FL=910.9
Inlet
Lt. Sta 279+60

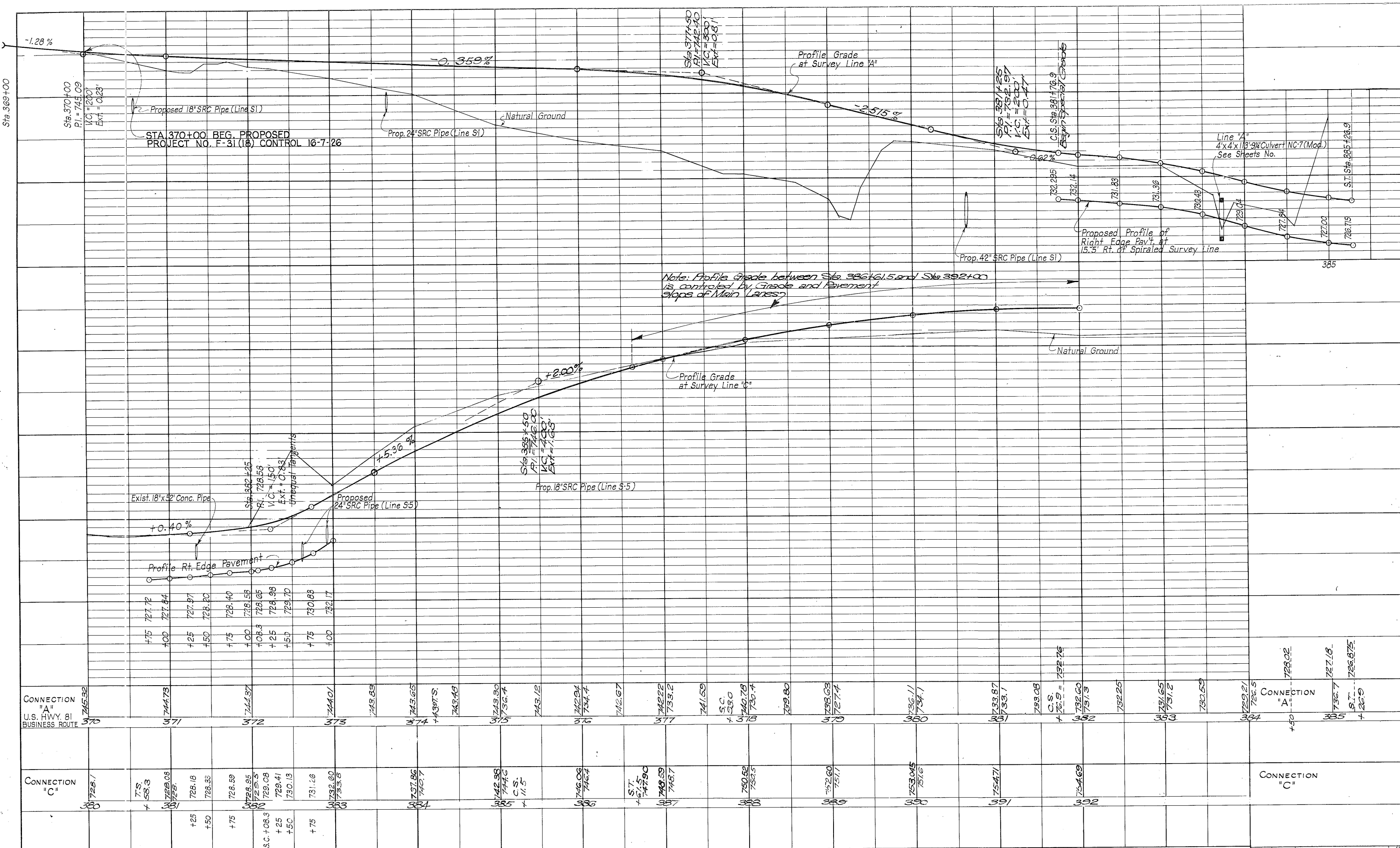
FL=820.0
FL=815.0
FL=810.03
10'x6' Box Culv.
FL=799.570
FL=799.07
FL=798.03
Lt. Sta 278+60 Rt.

FL=846.0
FL=835.0
Inlet
Lt. Sta 268+68

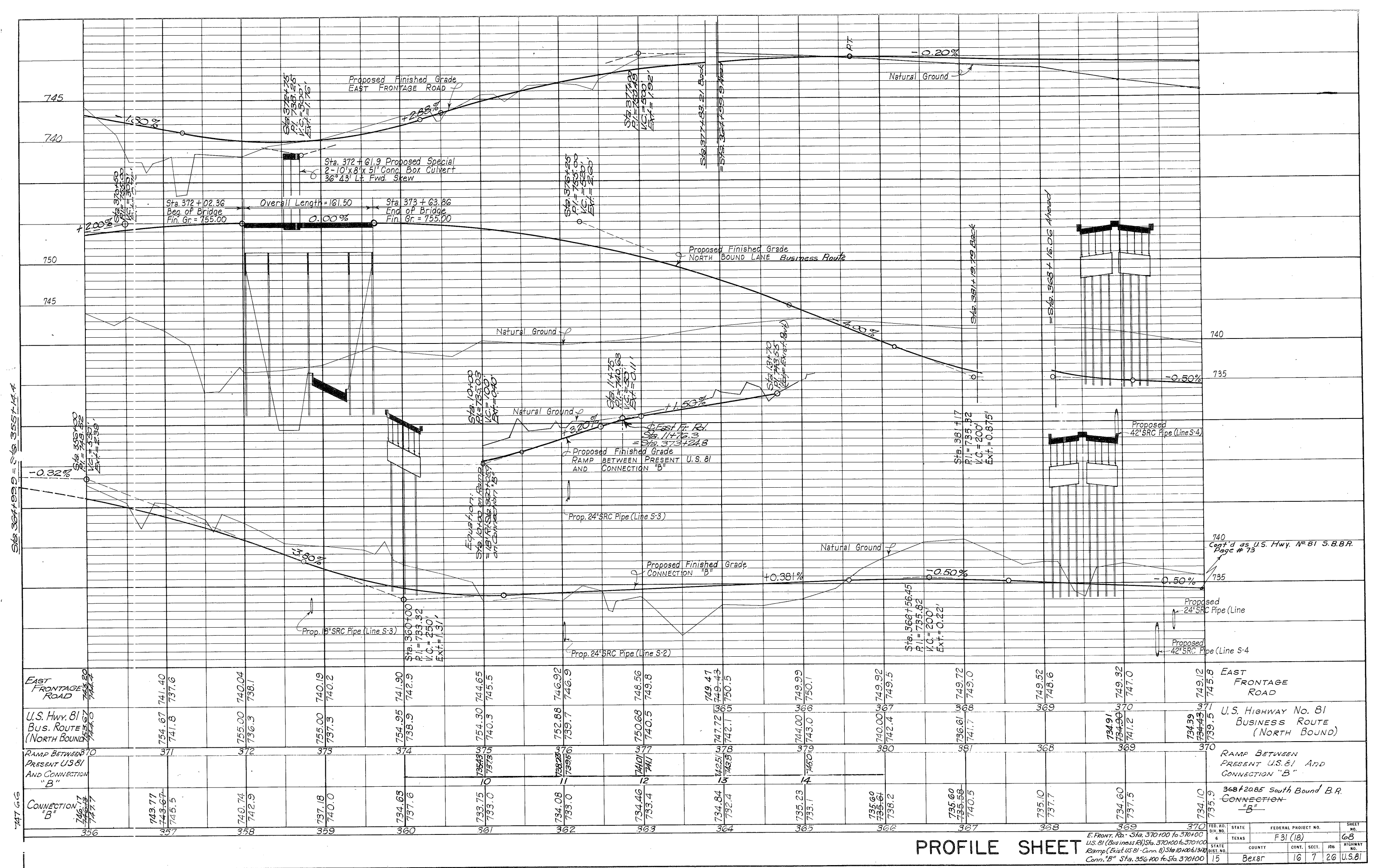
CHANNEL PROFILES

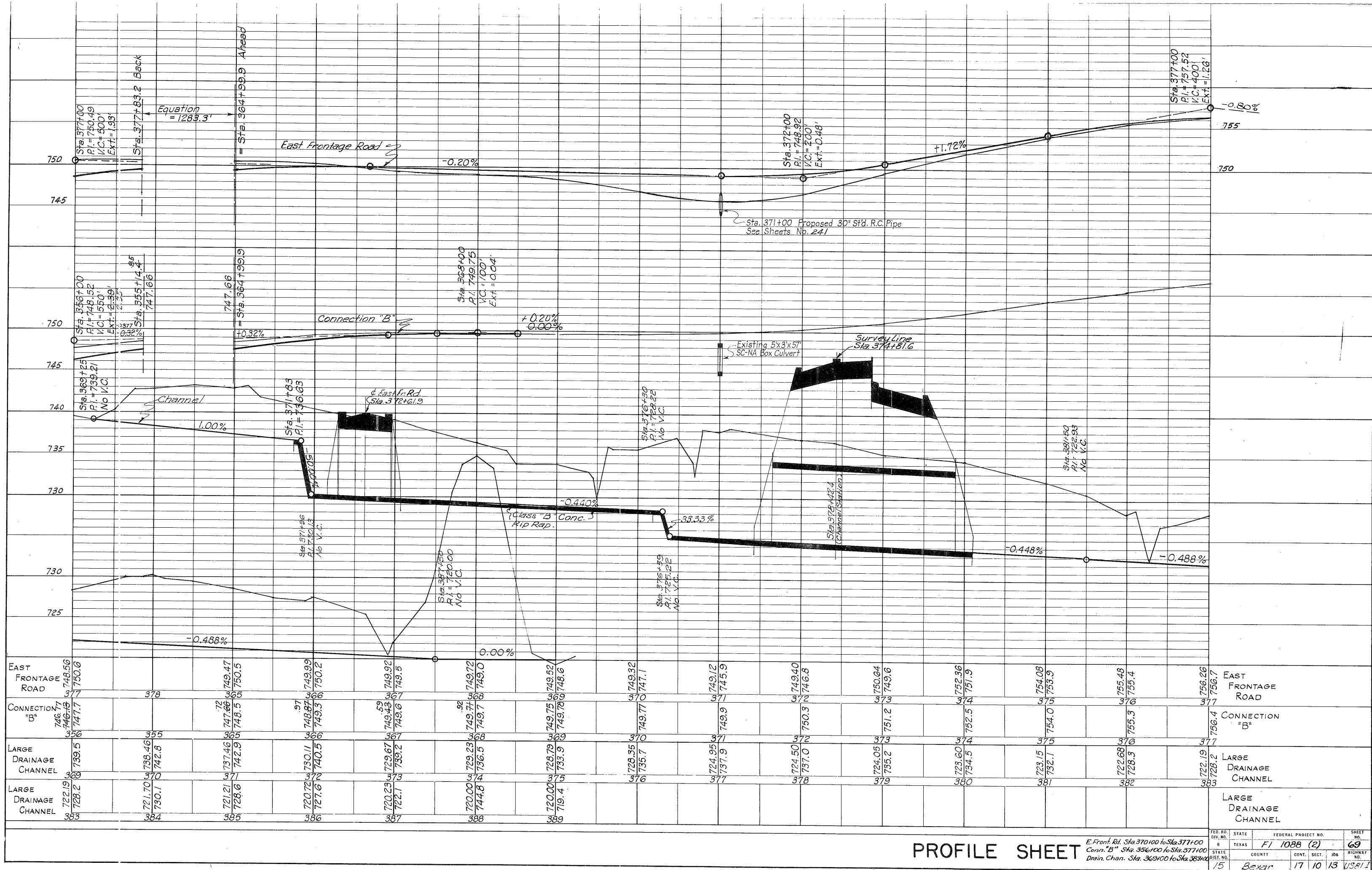
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	65
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	BEXAR	16 7 25	115.81

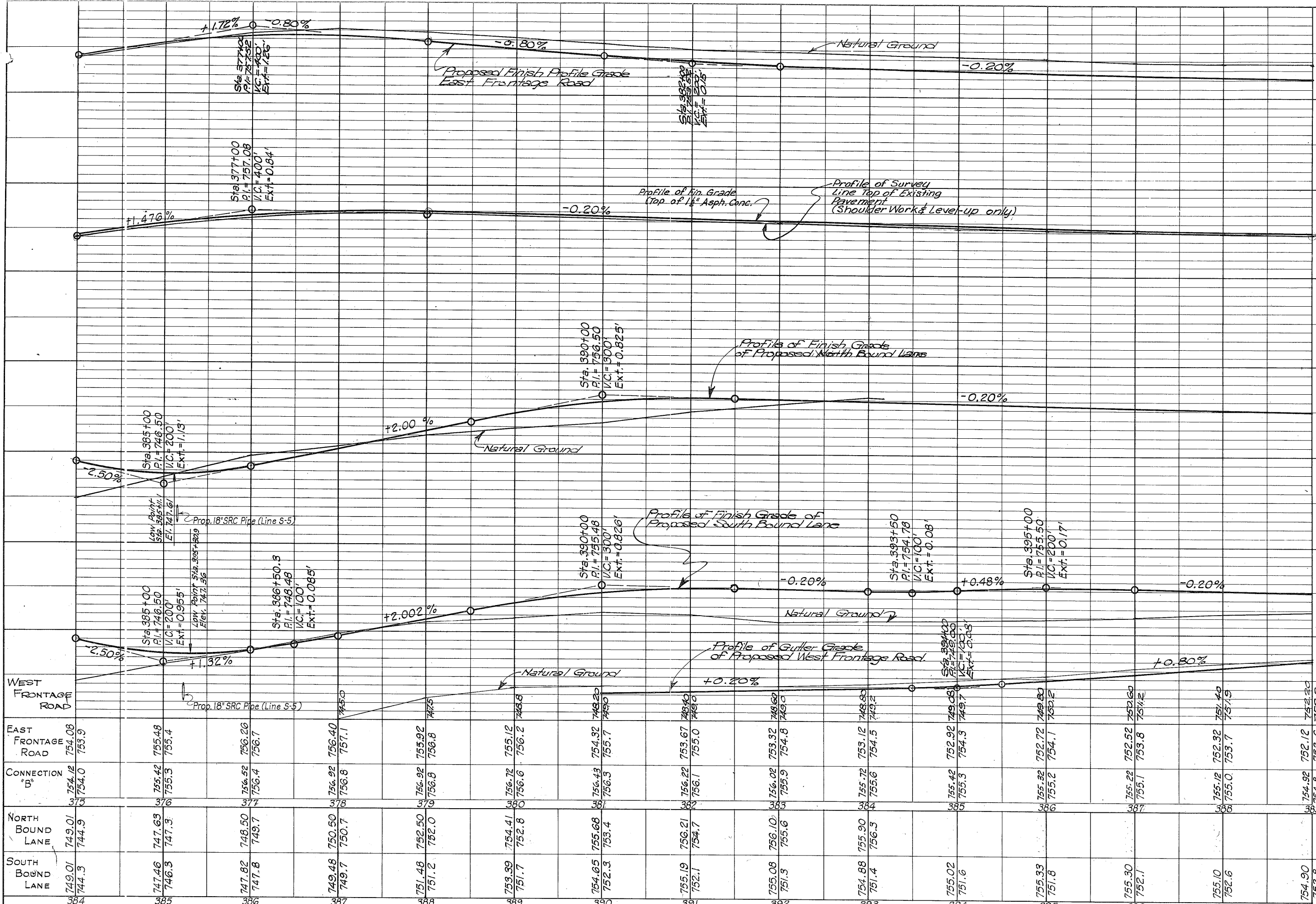




PROFILE SHEET







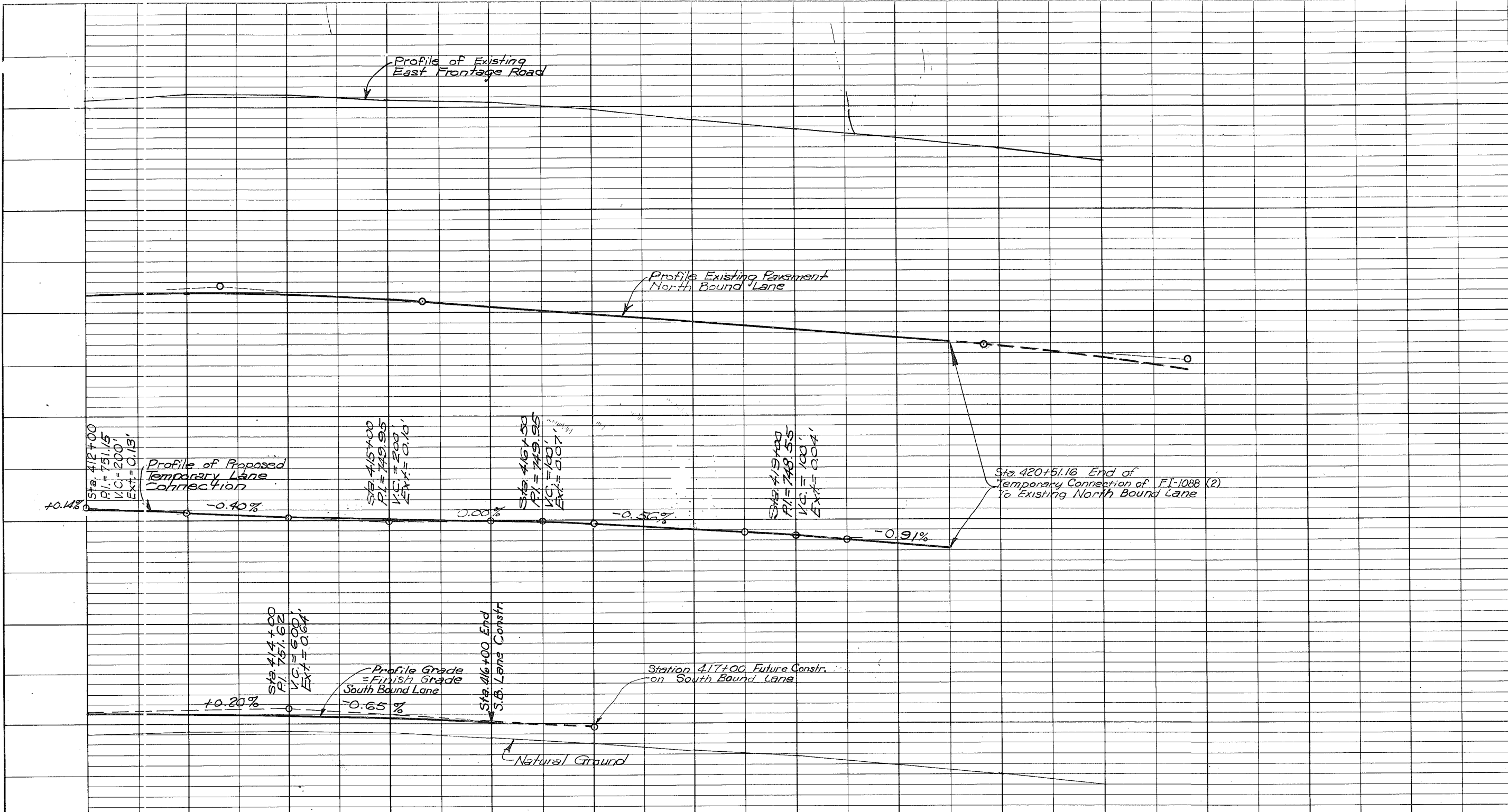
B.M. No. 23: 1" Sq. Steel Rod Level with Ground. Rt. on R.R. R.O.W. next to Telephone Pole. Elev. = 741.89

B.M. No. 24: 1" Sq. Steel Rod Level with Ground. Set in Concrete Marked B.M. No. 4. Elev. = 748.72

WEST FRONTAGE ROAD	EAST FRONTAGE ROAD	CONNECTION "B"	NORTH BOUND LANE	SOUTH BOUND LANE
754.08	754.12	754.12	749.01	749.01
753.9	754.0	754.0	744.9	744.9
755.4	755.3	755.3	747.63	747.63
755.4	755.3	755.3	747.3	747.3
756.26	756.52	756.52	748.50	748.50
756.7	756.4	756.4	749.7	749.7
756.40	756.92	756.92	750.50	750.50
757.1	756.8	756.8	750.7	750.7
755.92	756.92	756.92	752.50	752.50
756.8	756.8	756.8	752.0	752.0
755.12	756.6	756.6	754.41	754.41
756.2	756.6	756.6	752.8	752.8
748.20	754.32	754.32	755.68	755.68
749.0	755.7	755.7	753.4	753.4
753.67	756.22	756.22	756.21	756.21
749.0	756.1	756.1	754.7	754.7
753.32	756.02	756.02	756.10	756.10
754.8	755.9	755.9	755.6	755.6
749.2	755.72	755.72	755.90	755.90
748.80	755.6	755.6	756.3	756.3
752.92	755.42	755.42	755.02	755.02
749.08	755.3	755.3	751.6	751.6
754.3	755.2	755.2	755.33	755.33
750.2	754.1	754.1	751.8	751.8
752.60	755.22	755.22	755.30	755.30
751.2	755.1	755.1	752.1	752.1
752.52	755.8	755.8	755.10	755.10
751.9	753.7	753.7	752.6	752.6
752.3	754.9	754.9	754.90	754.90
752.3	753.6	753.6	752.8	752.8

PROFILE SHEET

W. Front. Rd. Sta. 384+00 to Sta. 389+00		FED. PROJECT NO.		SHEET NO.	
E. Front. Rd. Sta. 375+00 to Sta. 389+00		FL 1088 (2)		70	
Conn. B Sta. 375+00 to Sta. 389+00		COUNTY		HIGHWAY NO.	
N.S. Bound Lane Sta. 375+00 to Sta. 389+00		Bexar		15	
STATE		CON.		SECT.	
TEXAS		17		10	
DIST. NO.		JOB		US811	
15		13			

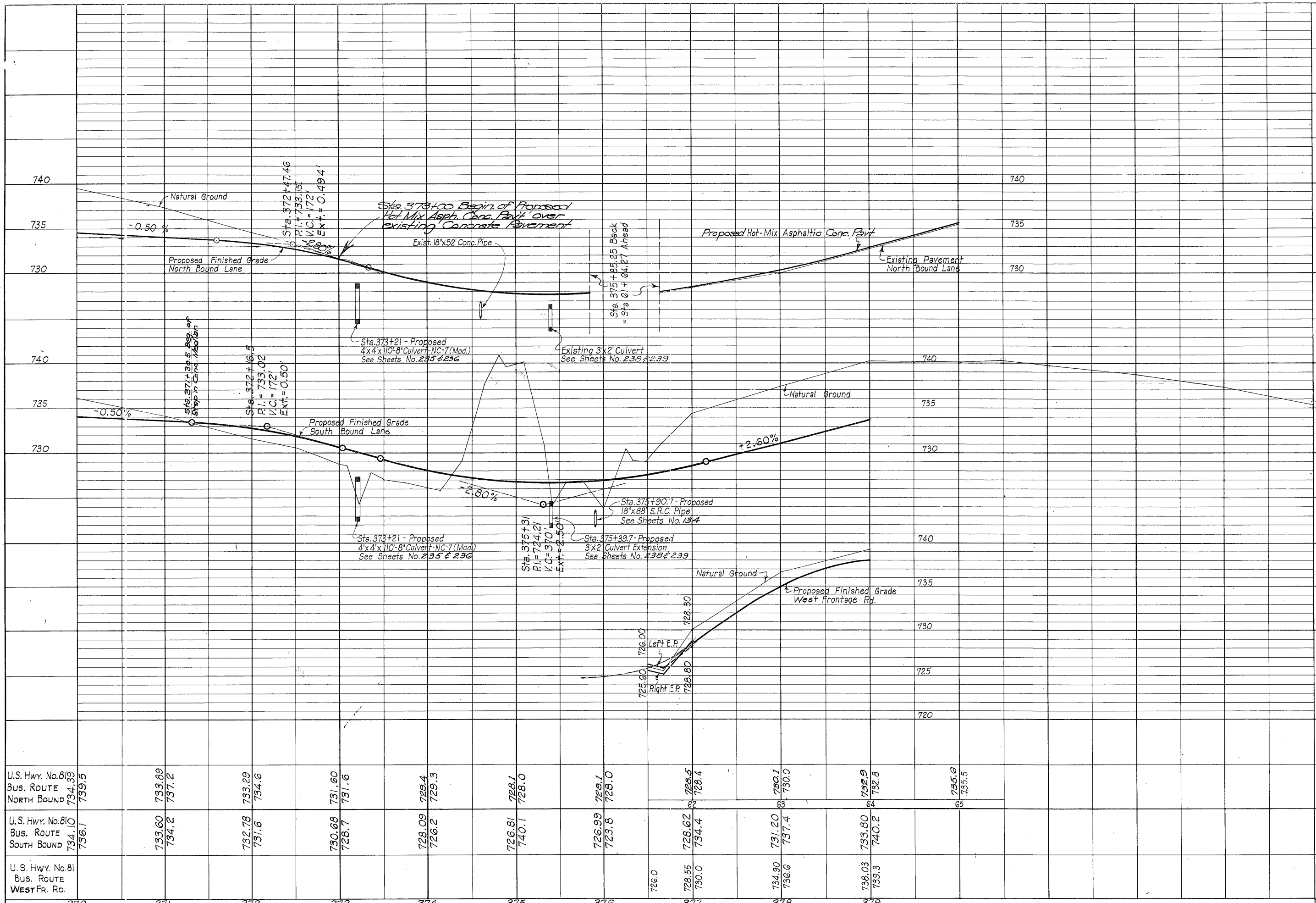


EAST FRONTAGE ROAD	750.7		751.3		751.2		750.8		750.4		749.7		748.8		747.7		746.9		745.9		744.7
EXISTING NORTH BOUND LANE	751.092	751.80	751.93	751.87	751.80	751.63	751.40	751.28	750.84	750.72	750.09	749.97	749.28	749.16	748.63	748.51	747.74	747.62	746.89	746.77	745.77
TEMPORARY CONNECTION	751.04	751.02	750.75		750.35	751.80	750.05		749.95		749.68	749.67	749.12	749.11	748.52	748.51	747.64				
FUTURE SOUTH BOUND LANE	751.15	749.0	751.13	749.3	750.98	749.3	750.68	749.1	750.25	748.6	749.67	748.0	747.3		746.8		745.9		745.0		744.0
	412	413	414	415	416	417	418	419	420	421	422										

PROFILE SHEET

Exist. E. Front. Rd.
 Exist. N.B. Lane Sta. 412+00 to Sta. 420+51.16
 Temp. Conn. Sta. 412+00 to Sta. 420+51.16
 S.B. Lane Sta. 412+00 to Sta. 416+00

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088 (2)	72
STATE DIST. NO.	COUNTY	CONT.	SECT.
15	Bexar	17	10
		13	US 811



Bench Mark No. 23, 1" Sq. Rod in Ground at base R.R. Tel. Pole S. 10° 15' W. 352' from S.B. Lane Sta. 374+50 Elevation = 741.89'

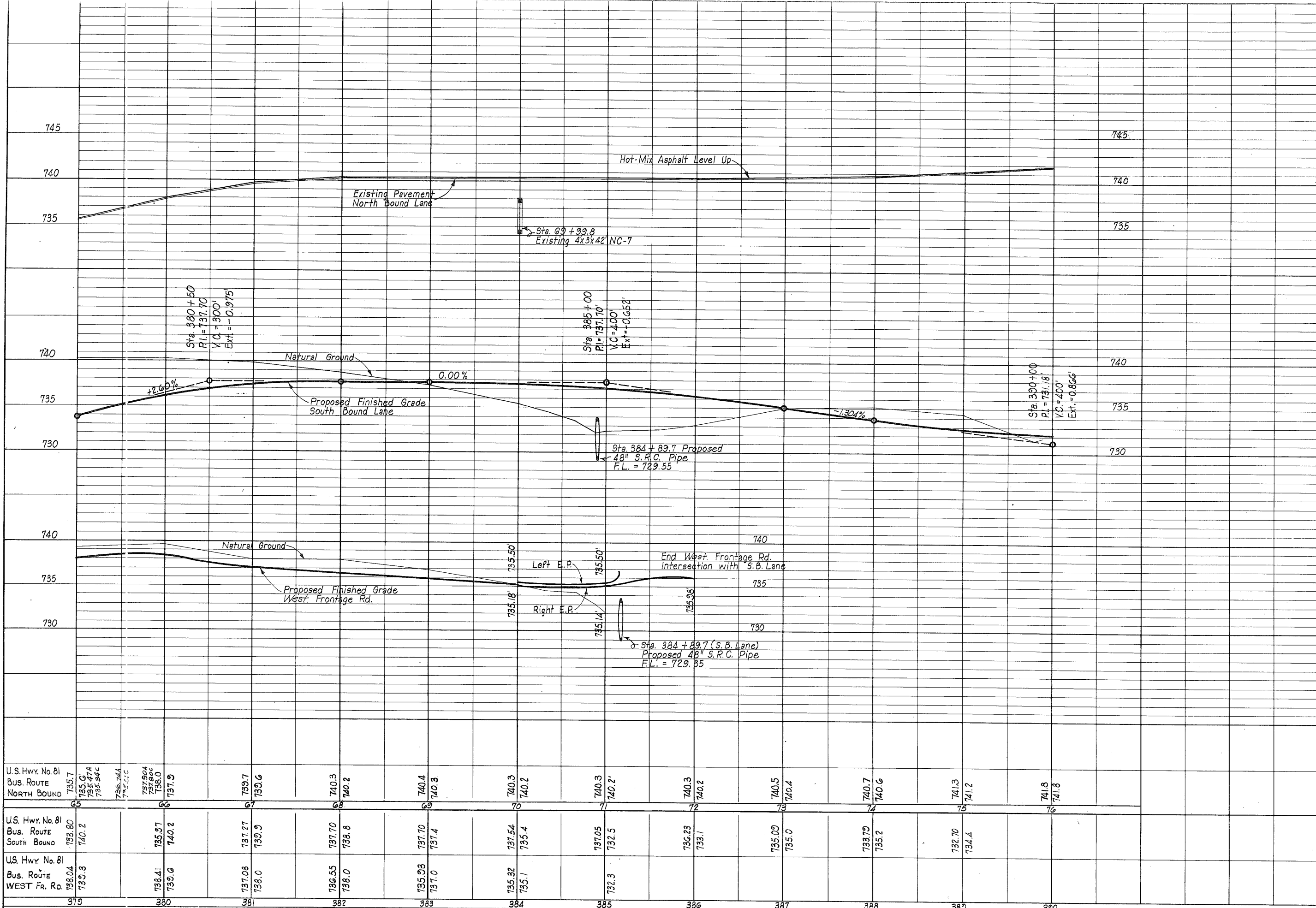
U.S. Hwy. No. 81 Bus. Route North Bound	734.39 739.15	733.89 737.2	733.29 734.6	731.60 731.6	729.4 729.3	728.1 728.0	728.1 728.0	728.5 728.4	730.1 730.0	732.9 732.8	735.6 735.5
U.S. Hwy. No. 81 Bus. Route South Bound	734.10 736.1	733.60 734.2	732.78 731.6	730.68 728.7	728.09 726.2	726.81 740.1	726.99 723.8	728.62 734.4	731.20 737.4	733.80 740.2	
U.S. Hwy. No. 81 Bus. Route West Fr. Rd.								728.0 728.55 730.0	734.90 736.6	738.03 739.3	
	370	371	372	373	374	375	376	377	378	379	

U.S. Highway No. 81 Business Route (North Bound)	
U.S. Highway No. 81 Business Route (South Bound)	
U.S. Highway No. 81 Business Route West Frontage Rd.	

PROFILE SHEET

U.S. 81 N.B. (Bus. Rte) 370+00 to 365+00
U.S. 81 S.B. (Bus. Rte) 370+00 to 379+00
West Fr. Rd. U.S. 81 (Bus. Rte) 370+50 to 379+00

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F-31(18)	13
STATE DIST. NO.	COUNTY	CONT.	SECT.
15	Bexar	16	7
			JOB
			26
			HIGHWAY NO.
			US 81



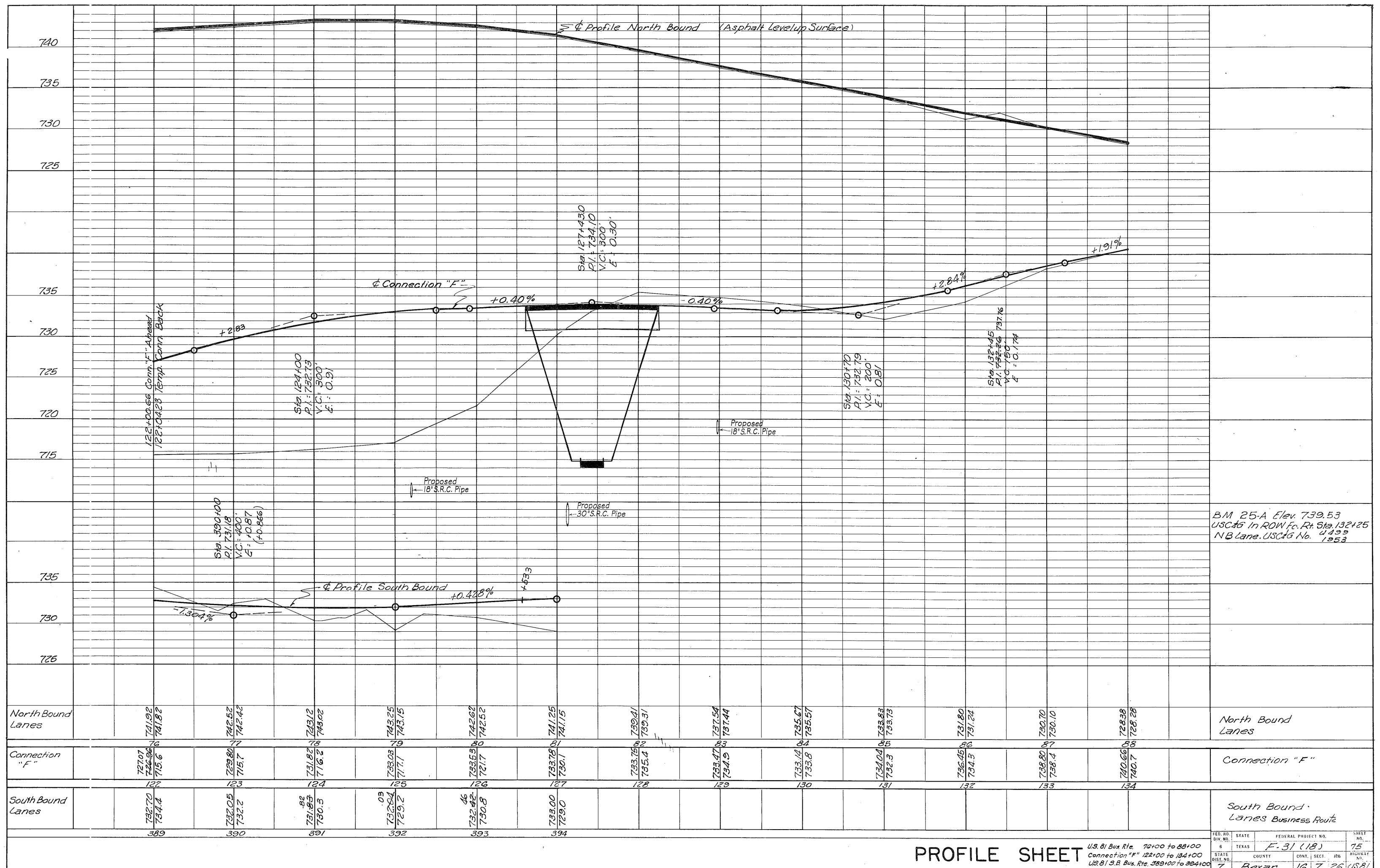
U.S. Hwy. No. 81 Bus. Route NORTH BOUND	735.7 735.6 735.47A 735.44C 736.744 737.904 737.80C 738.0 737.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

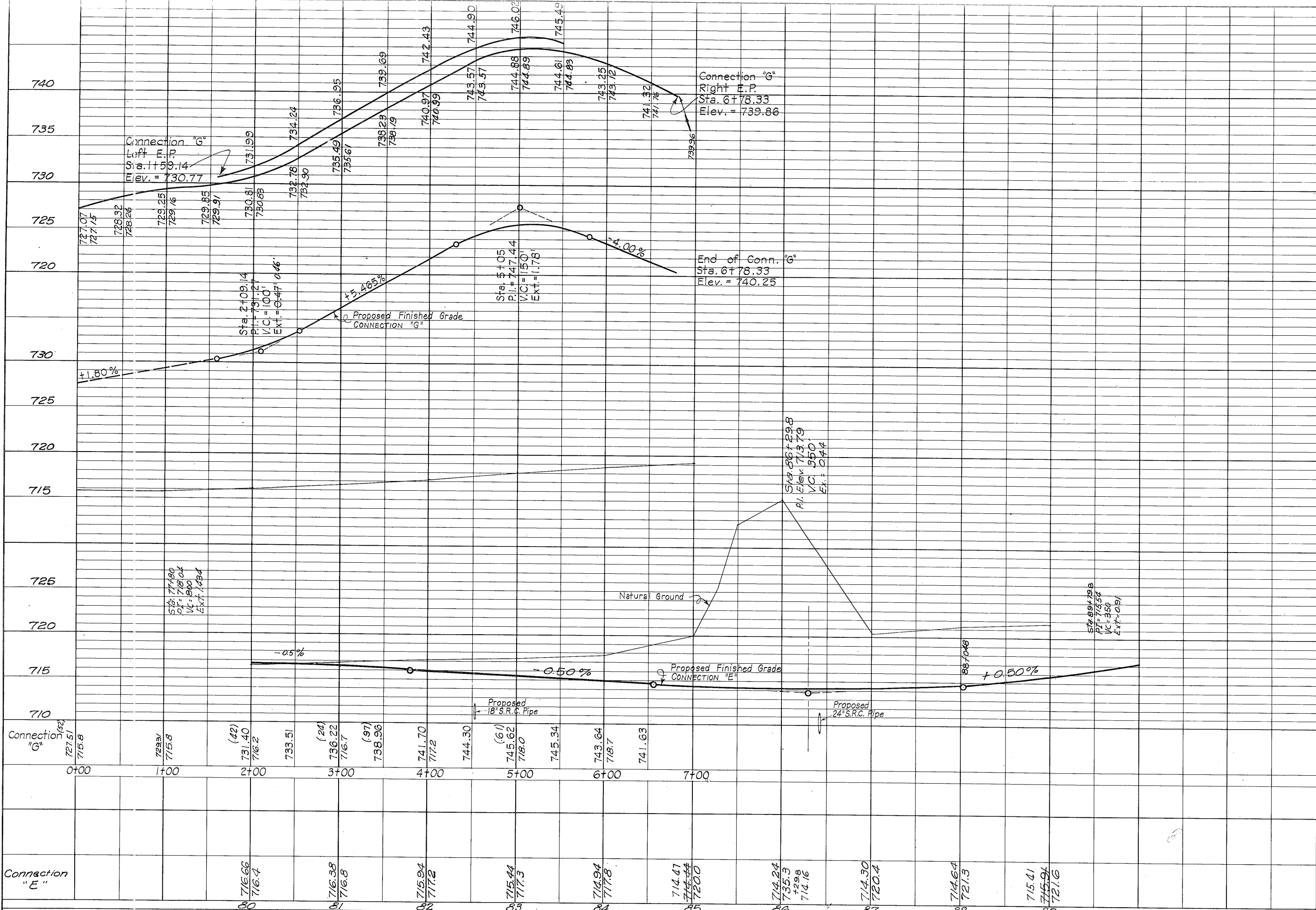
B.M. 24-A: R.R. Spike in Power Pole Lt. Sta. 388+00 (S.B. Lane) Elev. = 741.87

U.S. Hwy. No. 81 BUSINESS ROUTE NORTH BOUND LANE	U.S. Hwy. No. 81 BUSINESS ROUTE SOUTH BOUND LANE	U.S. Hwy. No. 81 BUSINESS ROUTE WEST FRONTAGE RD.
--	--	---

PROFILE SHEET

FED. RD. DIST. NO. 6		STATE TEXAS	FEDERAL PROJECT NO. F 31 (18)		SHEET NO. 74
STATE DIST. NO. 15		COUNTY Bexar	CONT. 16	SECT. 7	JOB 26
U.S. 81 N.B. Bus. Rte. Sta. L5+00 to 76+00		U.S. 81 S.B. Bus. Rte. Sta. 379+00 to 389+00		West Front. Rd. Sta. 379+00 to 386+00	





B.M. 27-A: "X" on Hdwl. N.E. Corner
of Culvert Lt. Sta. 410+25
S.B. LANE (U.S. 81 Bus. Route)
Elev. = 725.31

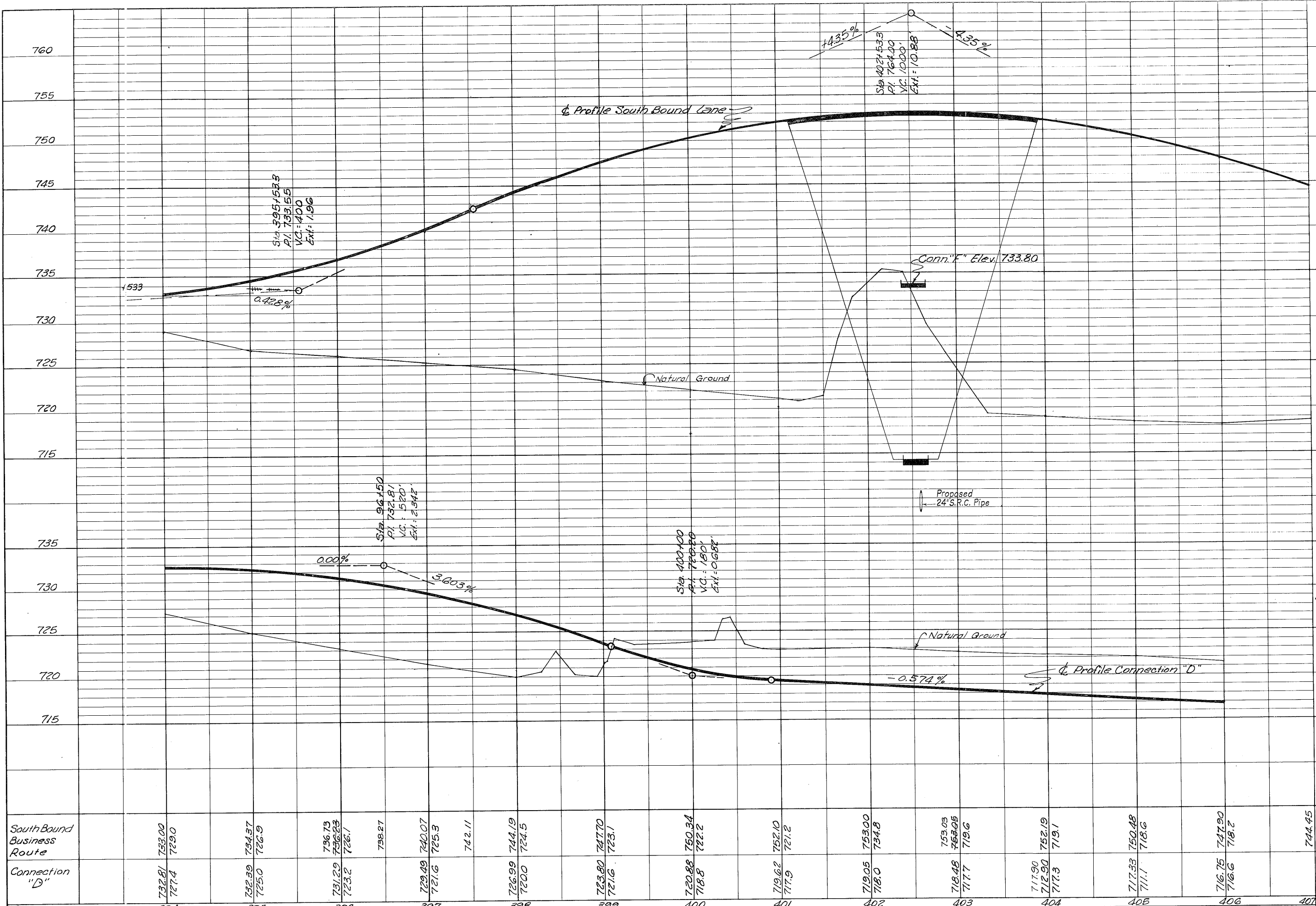
CONNECTION "G"

CONNECTION "E"

PROFILE SHEET

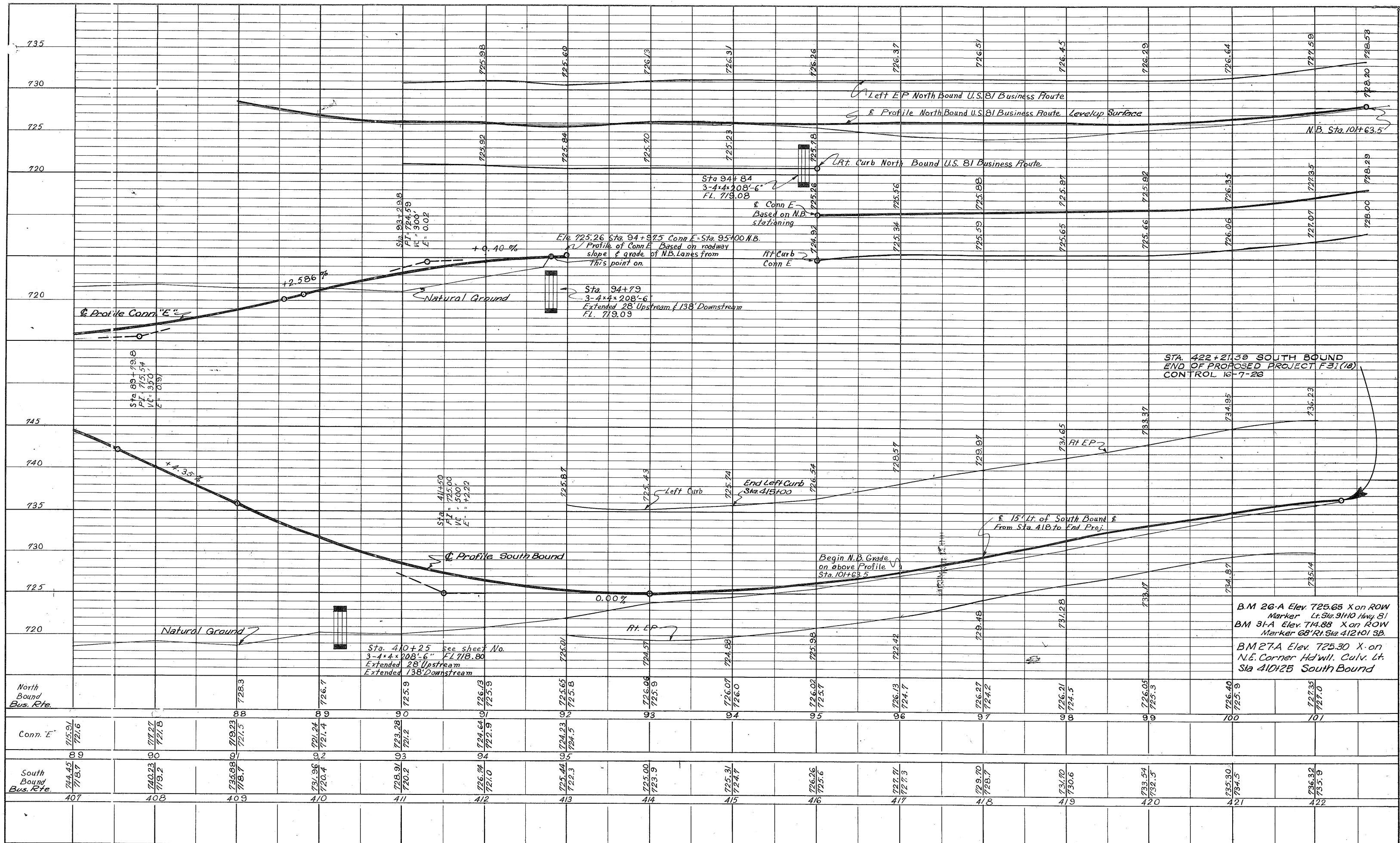
Connection "G" Sta. 0+00 to 6+78.33
Connection "E" Sta. 80+00 to 89+00

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F-31(18)	76
STATE DIST. NO.	COUNTY	CONT. SECT. JBB	HIGHWAY NO.
15	Bexar	16 7	US 81



B.M. 29-A 1" Steel Bar 64' Rt.
 Sta. 402+00 Conn. "D"
 Elev. 717.53

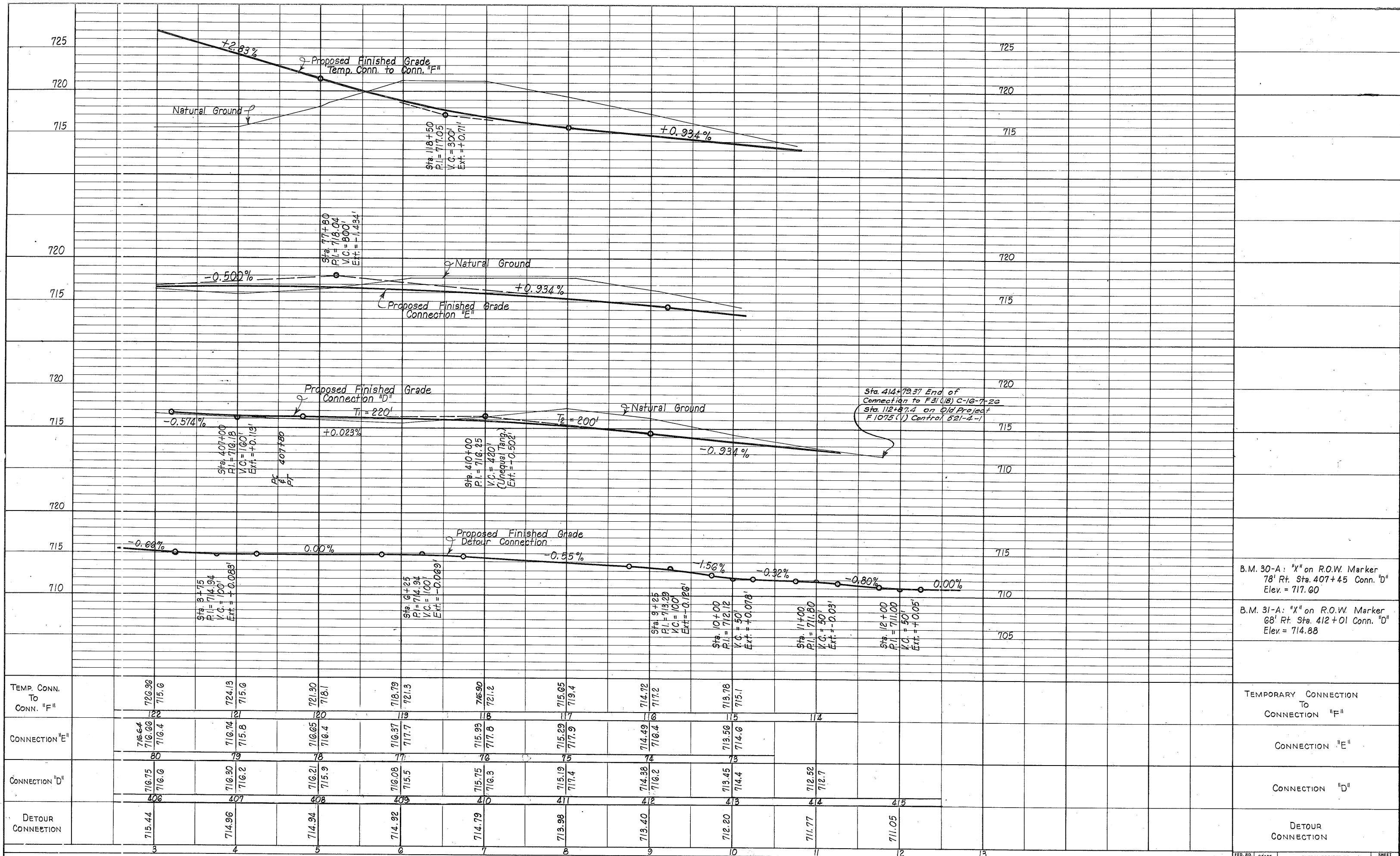
Stations	394	395	396	397	398	399	400	401	402	403	404	405	406	407
South Bound Business Route	732.81 729.0	734.37 726.9	736.73 736.23	738.27 726.1	740.07 725.3	742.11	744.19 724.5	746.17 723.1	748.34 722.2	750.10 721.2	752.00 719.8	753.03 718.6	754.48 717.3	756.48 716.2
Connection "D"	732.81 727.4	732.39 725.0	731.29 723.2	729.49 721.6	726.99 720.0	723.80 717.6	720.88 715.8	719.62 717.9	719.05 718.0	718.48 717.7	717.90 717.3	717.33 716.6	716.75 716.6	716.15 715.7



PROFILE SHEET

U.S. 81 N.B. (Bus. Rte.) Sta. 89+00 to Sta. 101+00
 Conn. "E" Sta. 89+00 to Sta. 95+00
 U.S. 81 S.B. (Bus. Rte.) Sta. 407+00 to Sta. 422+00

FED. RD. DIST. NO. 15
 STATE TEXAS
 COUNTY Bexar
 FEDERAL PROJECT NO. F-31(18)
 SHEET NO. 78
 CONT. 16
 SECT. 7
 JOB 26
 HIGHWAY NO. US81



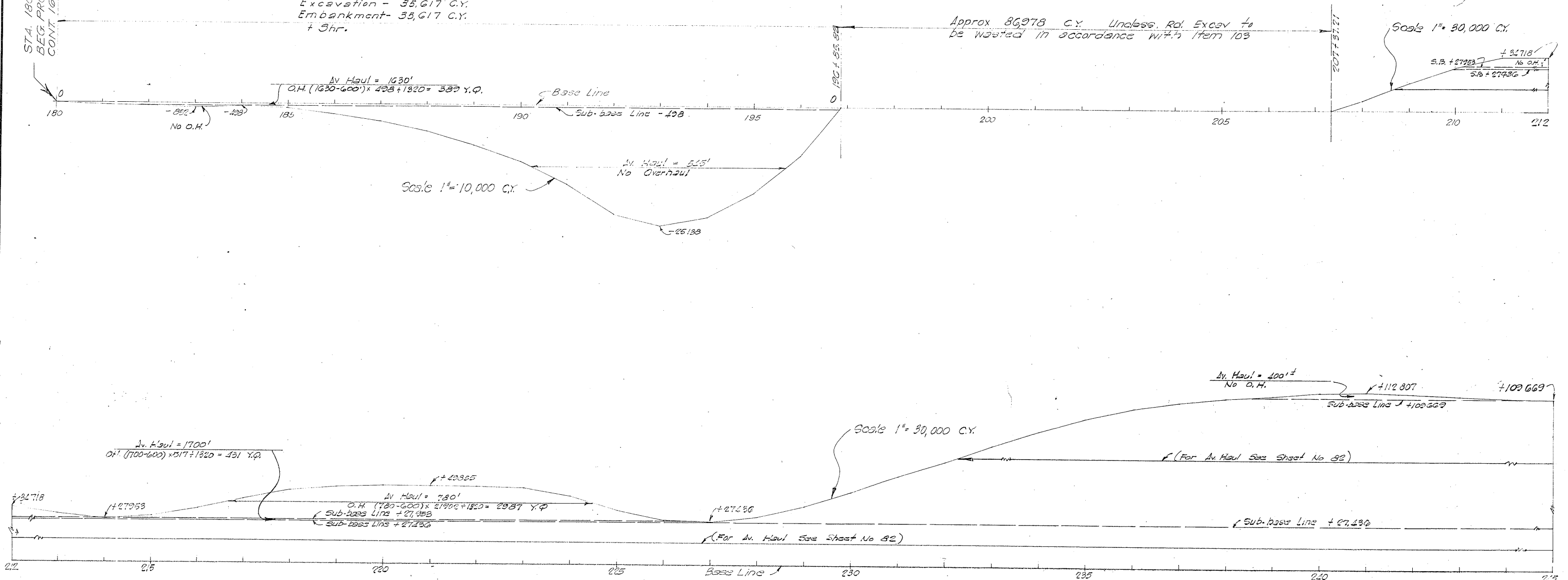
TEMP. CONN. TO CONN. "F"	722.96	722.96	724.13	724.13	721.30	721.30	718.79	718.79	714.72	714.72	713.78	713.78	711.05	711.05
CONNECTION "E"	716.64	716.64	716.74	716.74	716.05	716.05	716.37	716.37	714.49	714.49	713.56	713.56	711.77	711.77
CONNECTION "D"	716.75	716.75	716.30	716.30	716.21	716.21	716.08	716.08	714.38	714.38	713.45	713.45	711.52	711.52
DETOUR CONNECTION	715.44	715.44	714.96	714.96	714.94	714.94	714.92	714.92	713.40	713.40	712.20	712.20	711.05	711.05

STA. 180+00
BEG. PROJ. FI-31(17)
CONT. 16-7-25

Balance Quantities
Excavation - 35,617 C.Y.
Embankment - 35,617 C.Y.
+ 3hr.

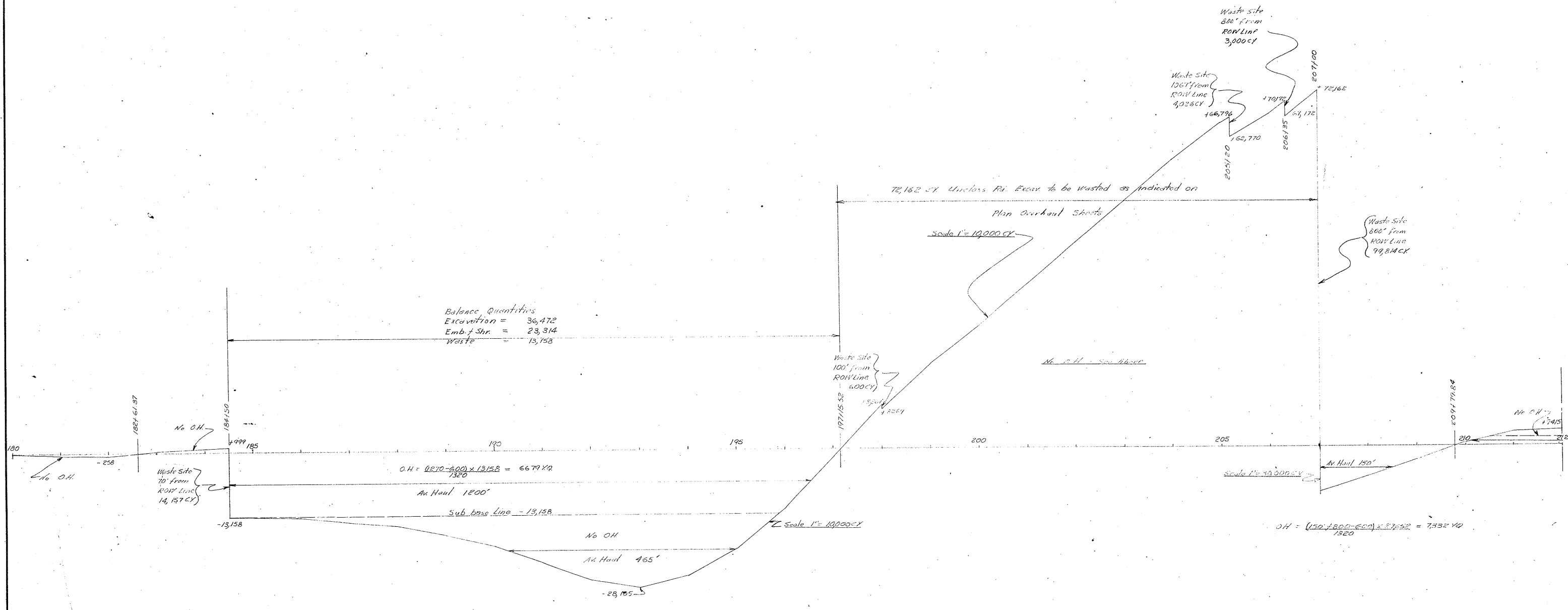
Approx 86,978 C.Y. Unless Rd. Excess to
be wasted in accordance with Item 103

Scale 1" = 30,000 C.Y.

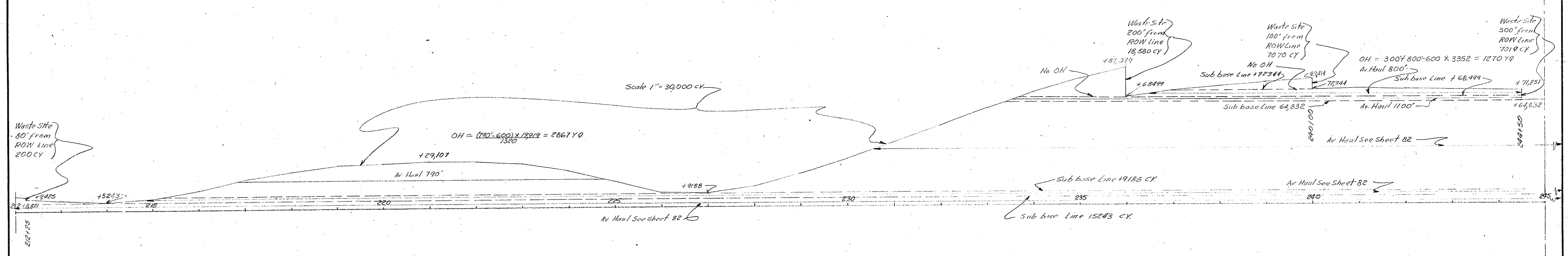


HAUL DIAGRAM (EMBANKMENT)

DN.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.			6	TEXAS	FI-31(17)	30
DW.						
CK. DW.						
TR.						
CK. TR.						
STATE DIST. NO.	15	COUNTY	BEXAR	CONTROL NO.	16	SECTION NO. 7
						JOB NO. 25
						HIGHWAY NO. 25

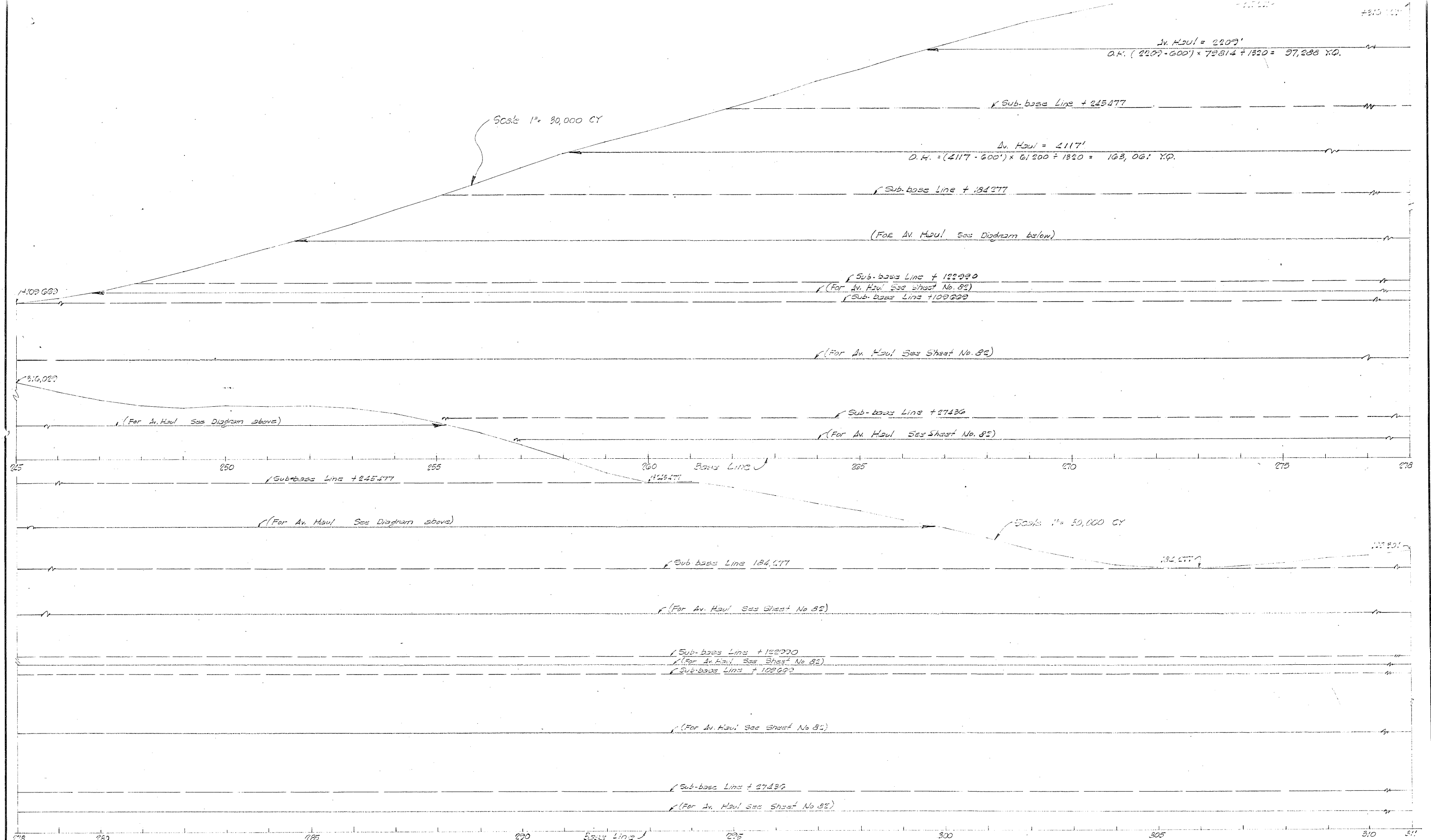


Note:
 SEE FOLLOWING SHEETS
 FOR
 BALANCE QUANTITIES



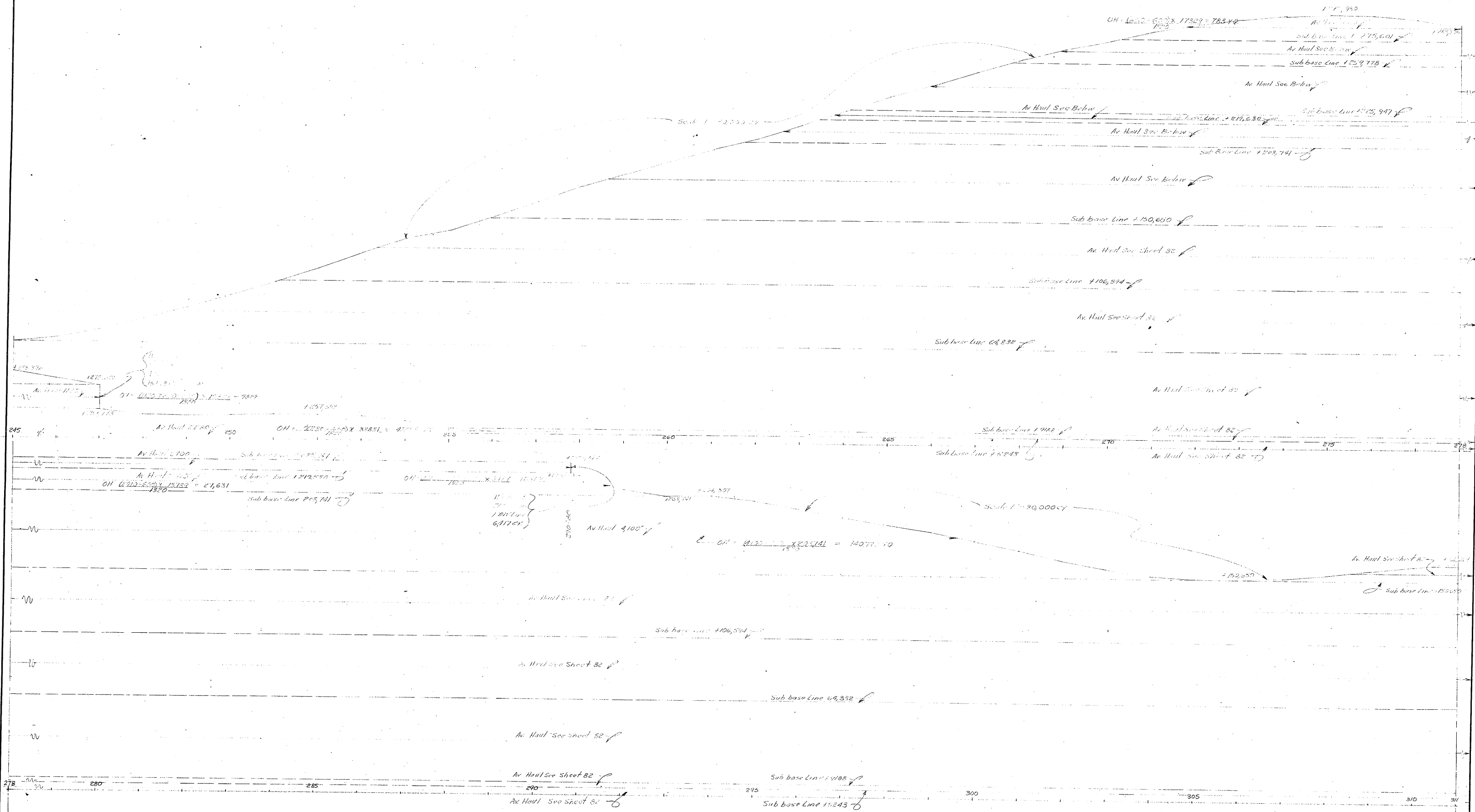
FINAL

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI 31-(17)	80-A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	16 7 25	US 81



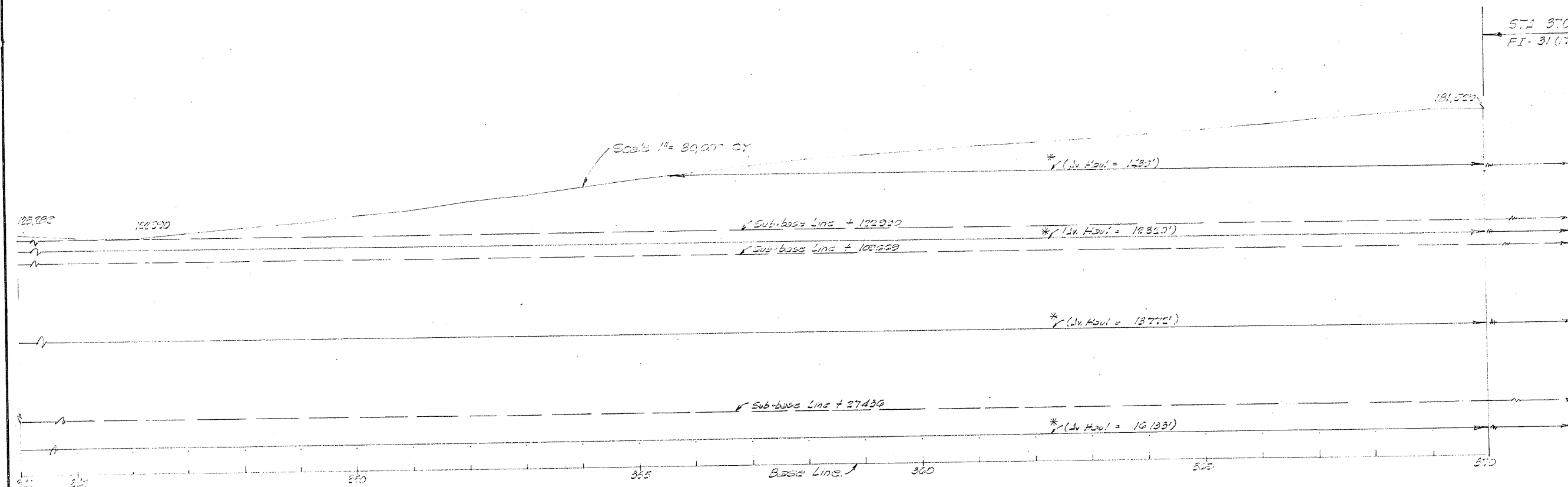
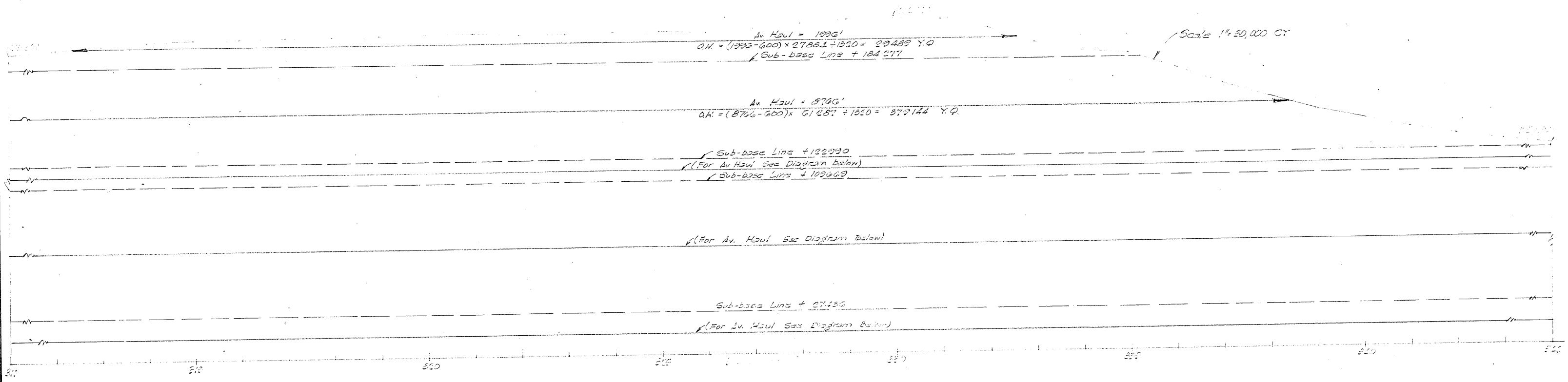
HAUL DIAGRAM (EMBANKMENT)

DN. -	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. -			6	TEXAS	FI-31	31
DW. -						
CK. DW. -						
Tr. -						
CK. Tr. -						



FINAL

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI 31-17	81-A
STATE DIST. NO.	COUNTY	CONT. SECT. JOB	HIGHWAY NO.
15	ROXAR	16 7 25	US 81



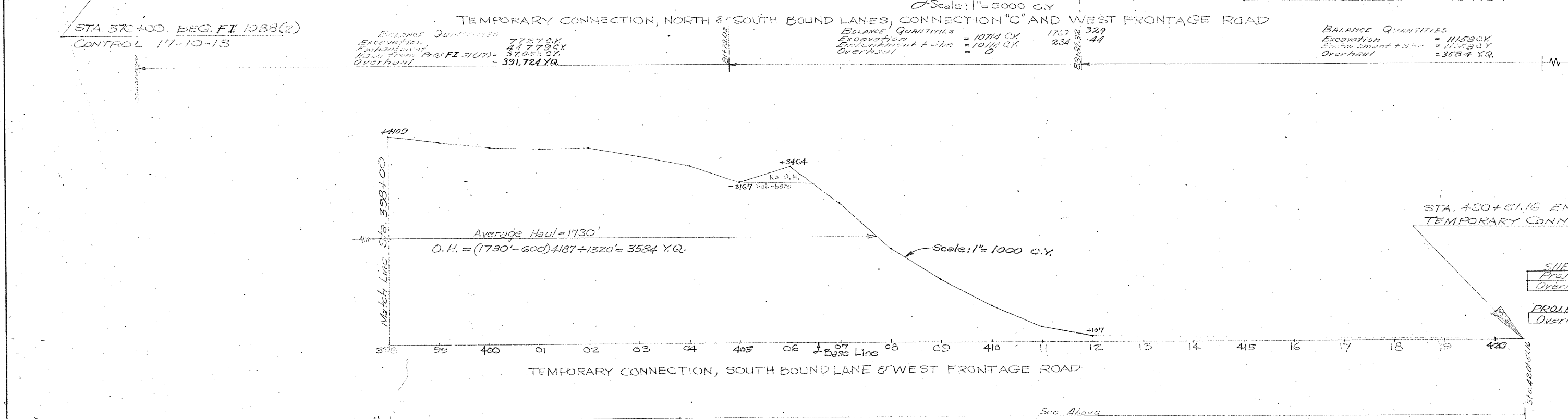
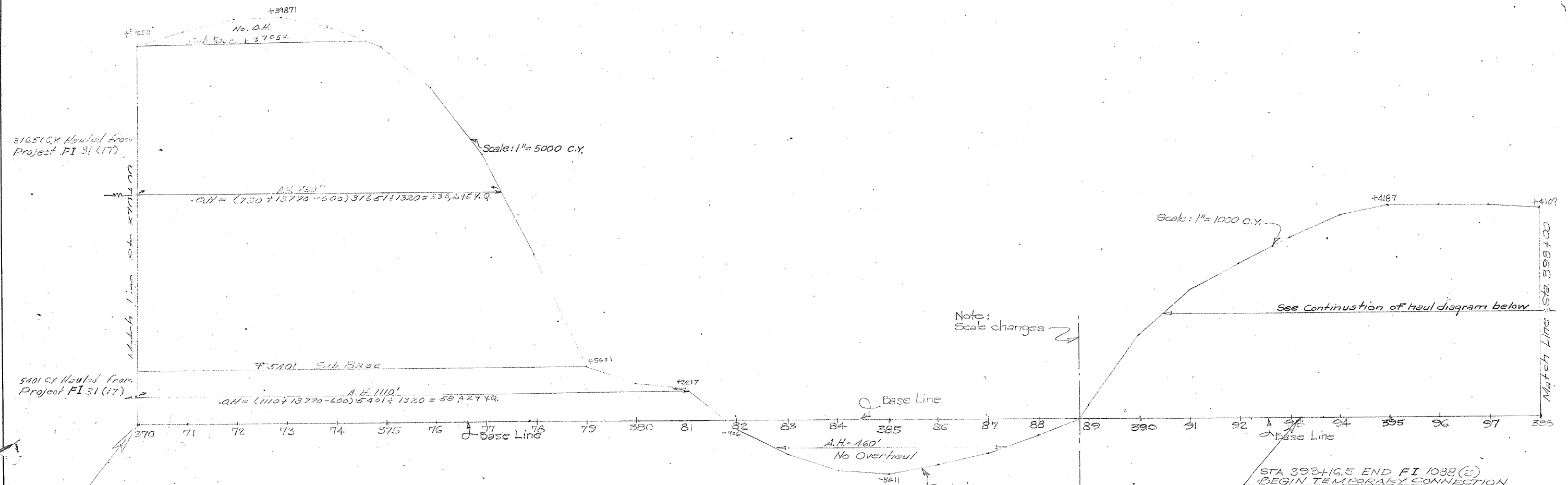
CONT 16-7-25

Sta No	Overhaul
80	3807 Y.O.
81	100340 Y.O.
82	408533 Y.O.
TOTAL	672,780 Y.O.

See following sheets for Balance Quantities.

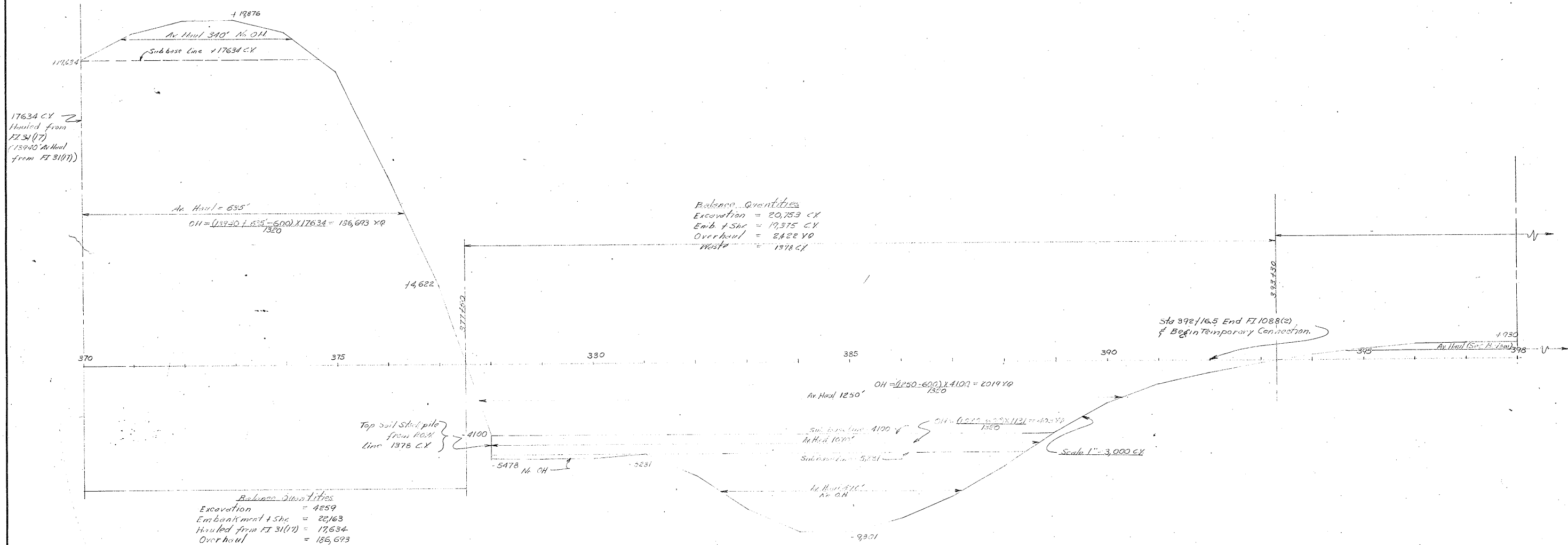
HAUL DIAGRAM (EMBANKMENT)

DN.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.			6	TEXAS	FI-31(17)	82
DW.						
CK. DW.						
TR.						
CK. TR.						

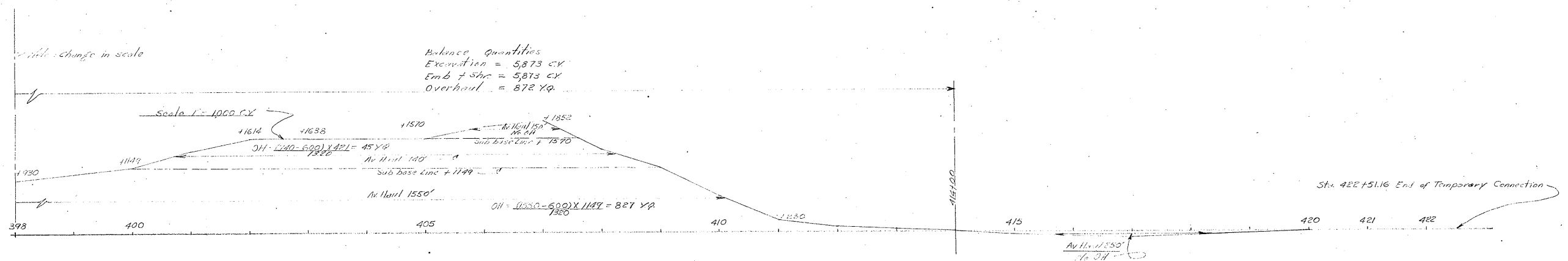


HAUL DIAGRAM - EMBANKMENT

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
8	TEXAS	FI-1088 (2)	83
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEXAR	17-10-13	13-61



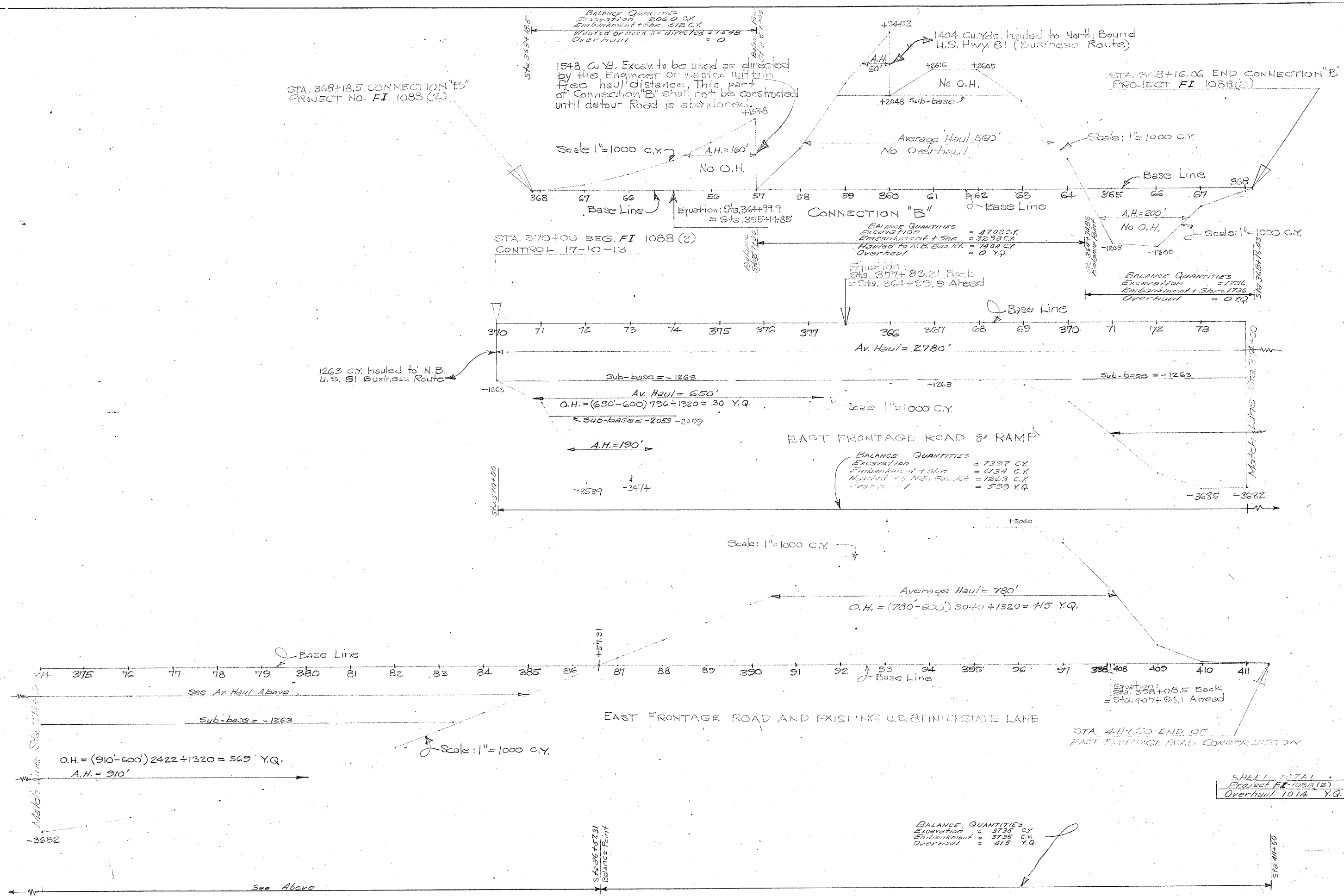
TEMPORARY CONNECTION, NORTH SIDE, LEBANON, CONN. "C" AND WEST PORTLAND ROAD, FI 1088(2)



FINAL

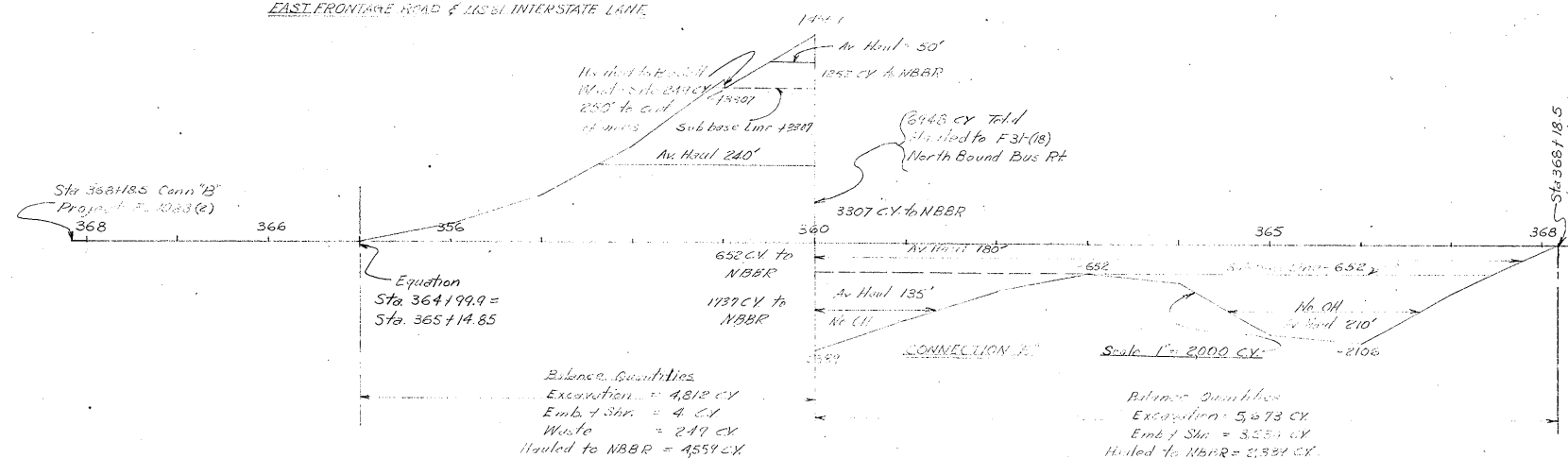
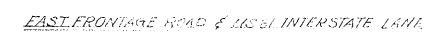
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI 1088(2)	83-A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	17 10 13	US81

1



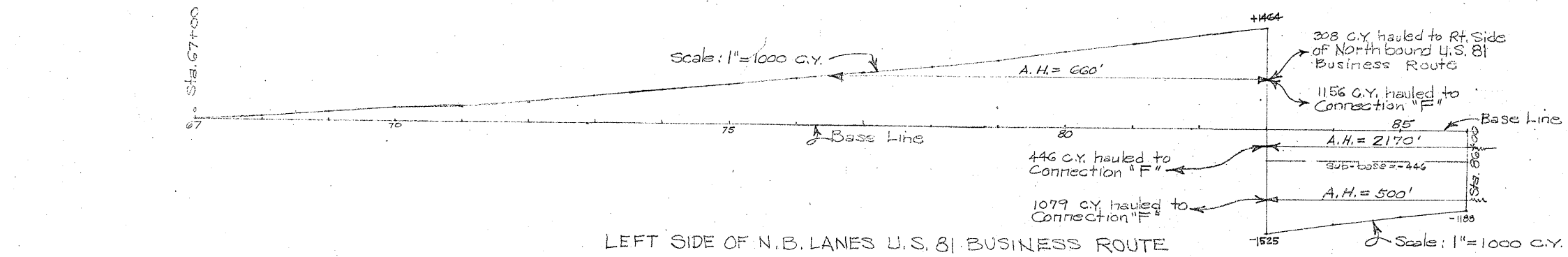
HAUL DIAGRAM - EMBANKMENT

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6 TEXAS	FI 1088 (2)	84
STATE DIST. NO.	COUNTY	SECTION
15	BEXAR	17 10 13

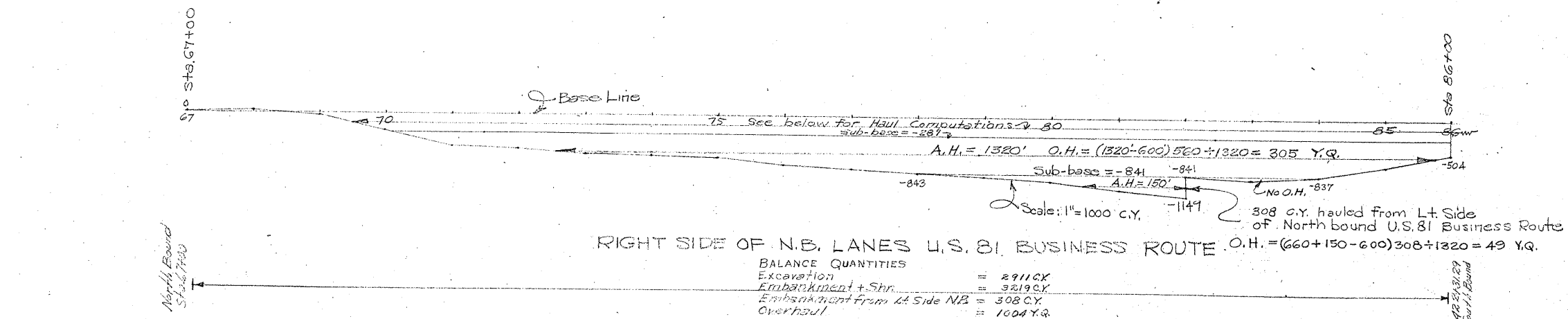
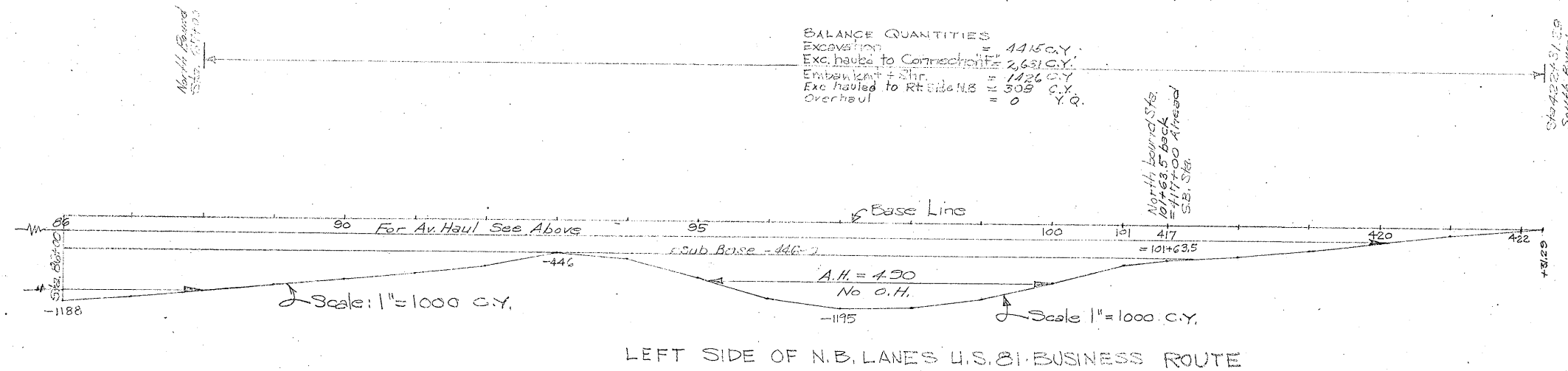


FINAL

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	FI 1088(2)				84-
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.	
15	Bexar	17	10	13	4381	

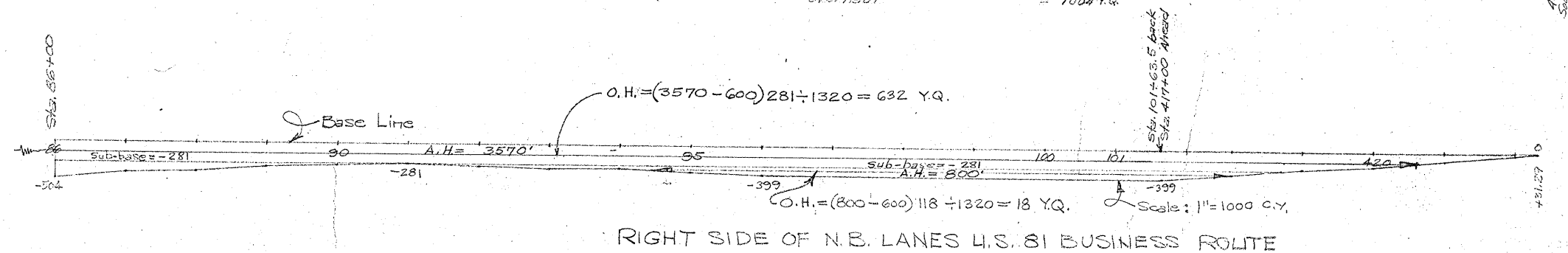


BALANCE QUANTITIES
 Excavation = 1415 C.Y.
 Exc. hauled to Connection "F" = 2,631 C.Y.
 Embankment + Shr. = 1426 C.Y.
 Exc. hauled to Rt. Side NB = 308 C.Y.
 Overhaul = 0 Y.Q.



BALANCE QUANTITIES
 Excavation = 2911 C.Y.
 Embankment + Shr. = 3219 C.Y.
 Embankment from Lt. Side NB = 308 C.Y.
 Overhaul = 1004 Y.Q.

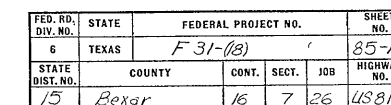
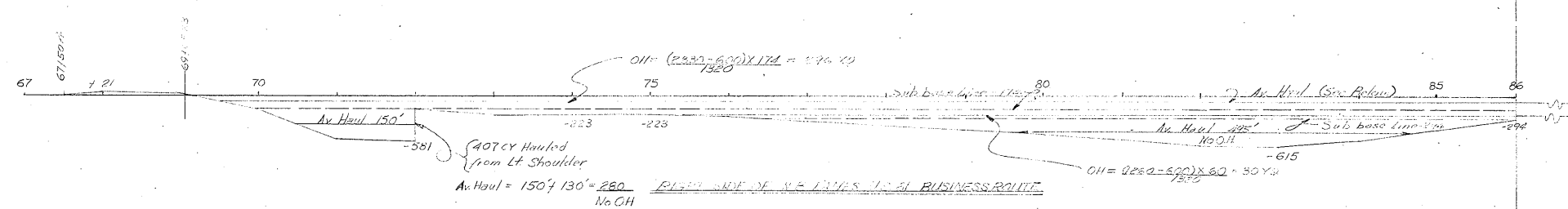
SHEET TOTAL
 Project F-31 (18)
 Overhaul 1004 Y.Q.



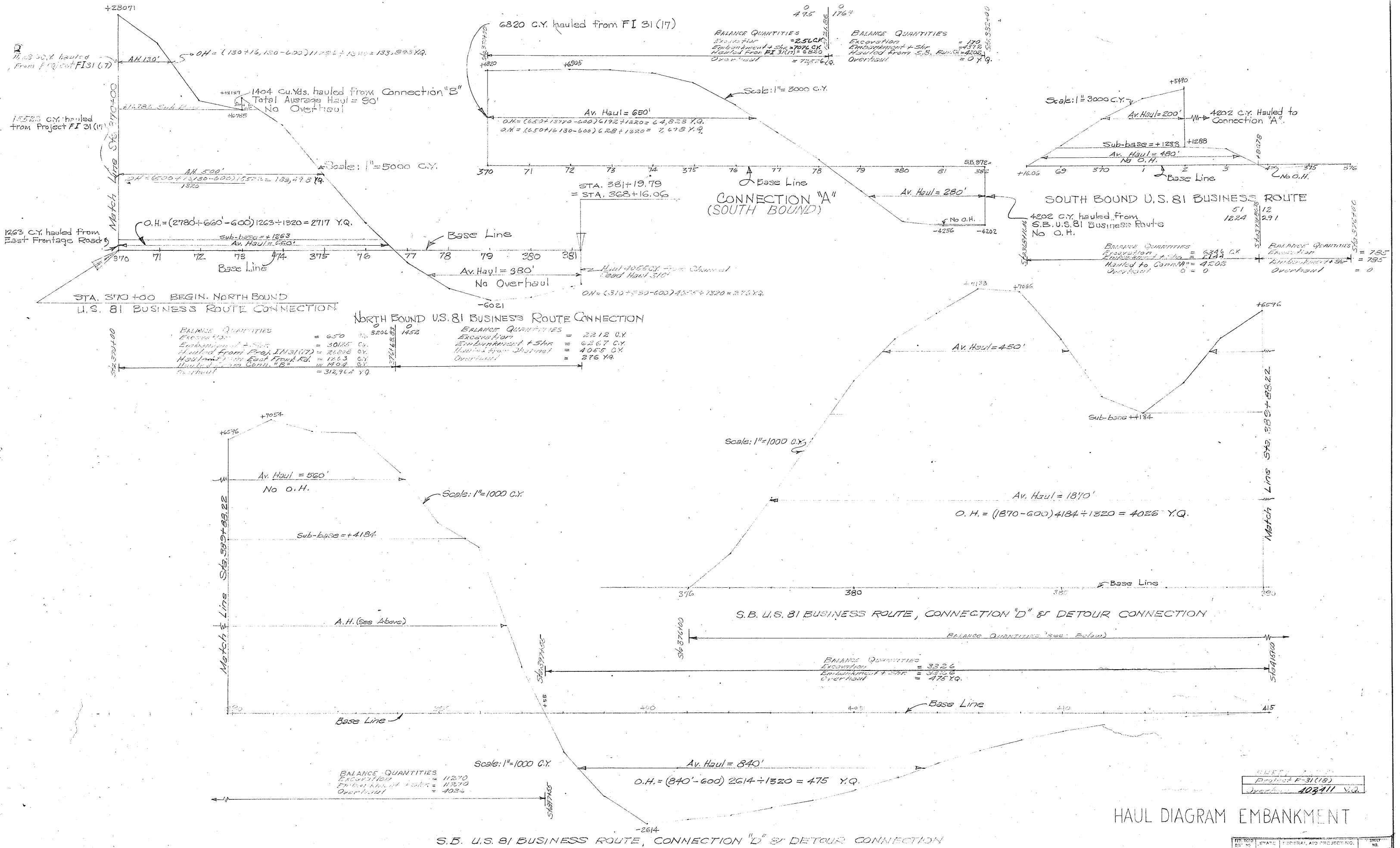
PROJECT F-31 (18) TOTAL
 Overhaul 1,338,249 Y.Q.

HAUL DIAGRAM - EMBANKMENT

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F-31 (18)	85
STATE DIV. NO.	COUNTY	CONTRACT SECTION NO.	JOB NO.
15	BEXAR	10 7 20	US 81

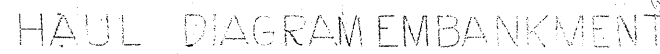
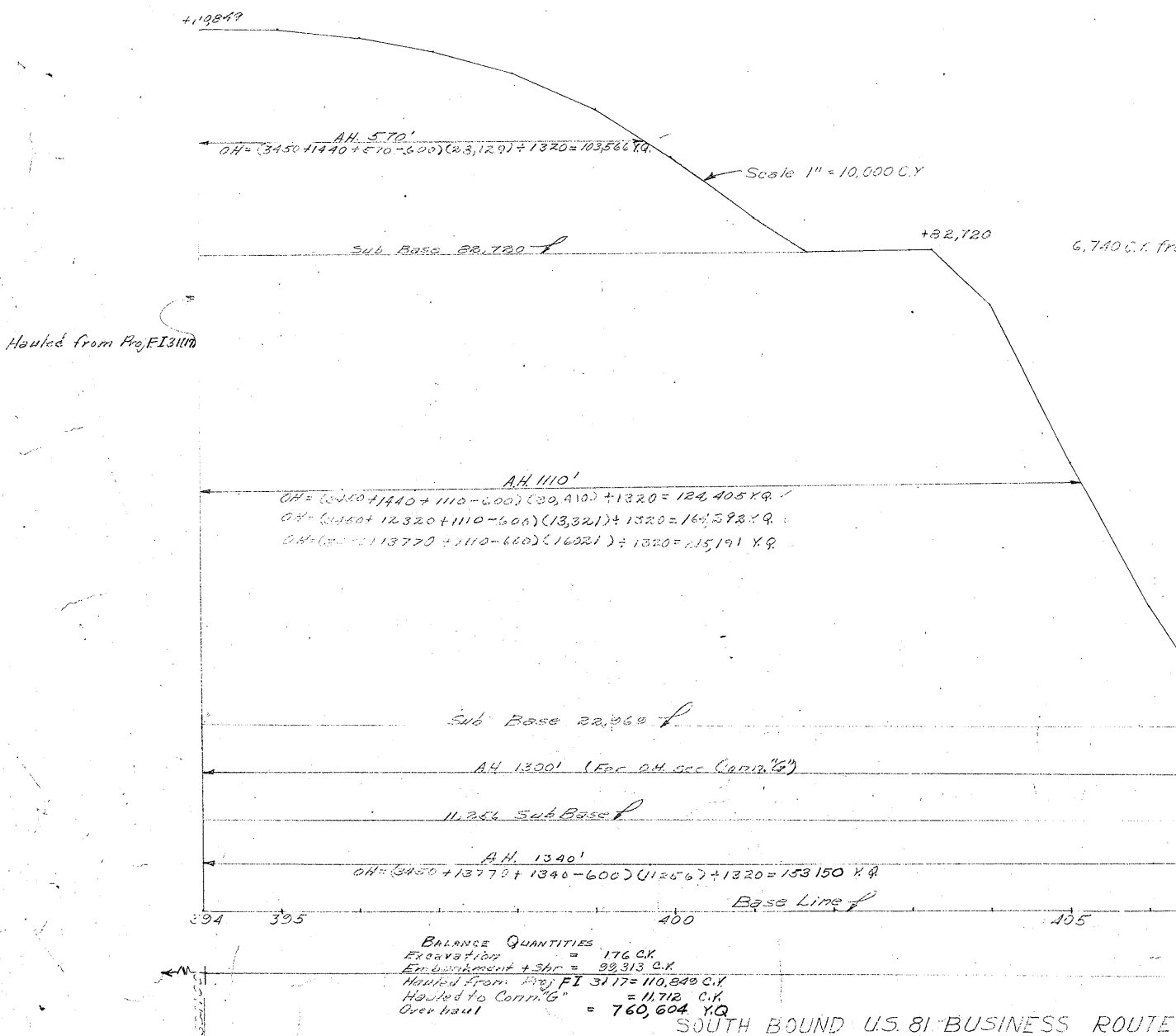


NO.	85-
-----	-----



HAUL DIAGRAM EMBANKMENT

STATE	COUNTY	PROJECT NO.	SHEET NO.
TEXAS	BEXAR	F-31(18)	86
STATE	COUNTY	CONTRACT NO.	DATE
15	BEXAR	16	7 20



TRC ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.		SHEET NO.
6	TEXAS	F-31 (18)		87
STATE Dist. No.	COUNTY	CONTRACT NO.	SECTION NO.	HIGHWAY NO.
15	BEXAR	16	7	26 U.S. 81

STATION 180+00 BEGINNING OF
PROJECT IN SUT CONTROL 10-7-25
STATION 180+00 END OF PROJECT FI-31(3)
CONTROL 10-7-22 (Under Construction)
41' STATION 3385+20 ON OLD
PROJECT MK-3, Part 2

EXISTING US HIGHWAY 30

BLUDAU-BISHOP ROAD

RD. NOS. 17

WETTER ROAD

M.K.T. RAILROAD

LEGEND

- Proposed Construction
- Under Construction
- Future Construction
- Proposed Right of Way Line
- Future Right of Way Line
- Existing Right of Way Line

TO ACCOMPANY FIELD
CHANGE REQUEST NO. 4

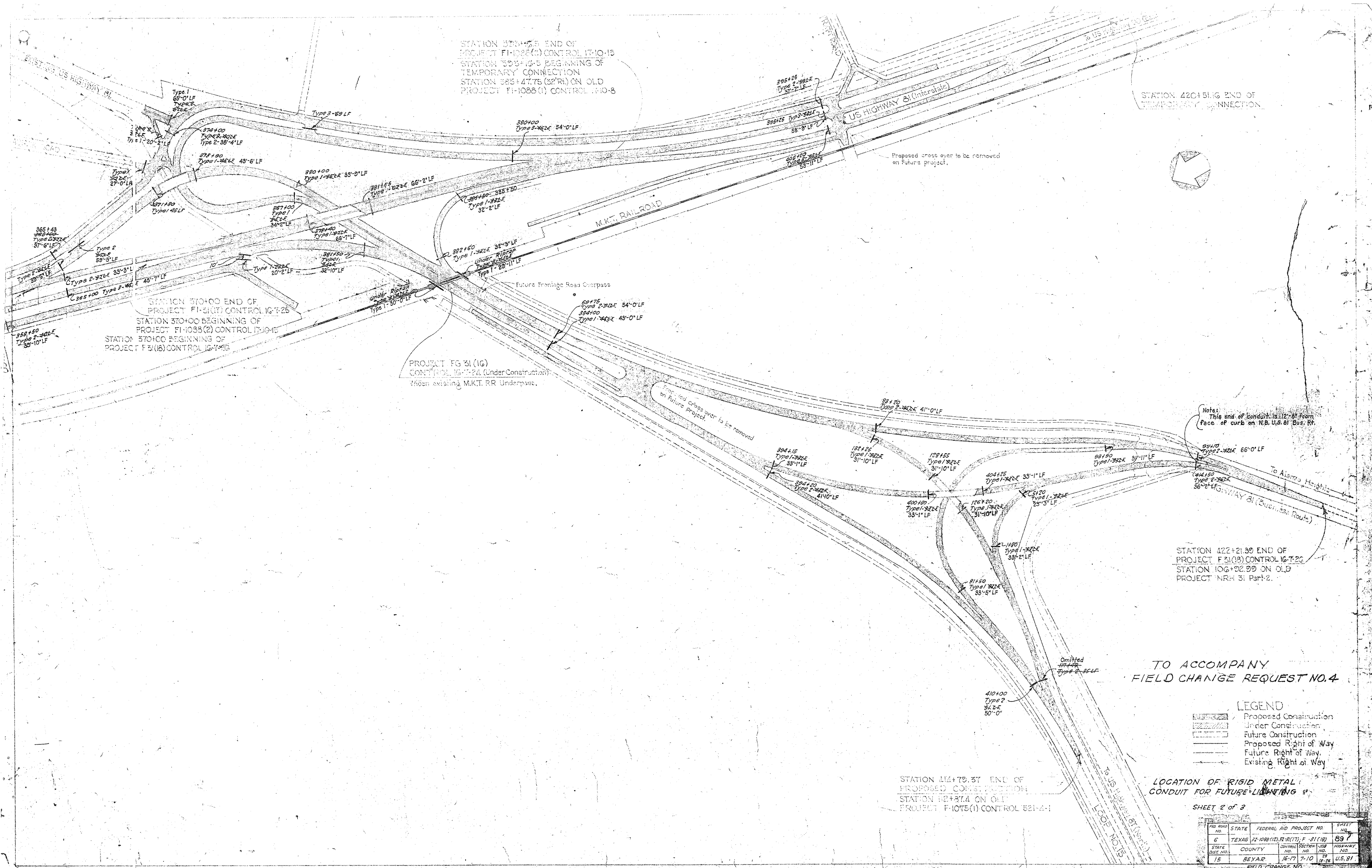
LOCATION OF RIGID METAL
CONDUIT FOR FUTURE LIGHTING

SHEET 1 OF 3

SCALE 1"=200'

FED. ROAD NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088(2); FI-31(17)F 31(18)	88
STATE DIST. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEXAR	16-17	7-10
			1-26
			US 81

FIELD CHANGE NO.



STATION 383+45.5 END OF
PROJECT FI-1088(2) CONTROL 17-10-13
STATION 383+10-5 BEGINNING OF
TEMPORARY CONNECTION
STATION 383+47.75 (32' R) ON OLD
PROJECT FI-1088(1) CONTROL 17-10-8

STATION 422+51.6 END OF
TEMPORARY CONNECTION

Proposed cross over to be removed
on future project.

PROJECT FG 31(1G)
CONTROL 16-7-26 (Under Construction)
When existing M.K.T. RR Underpass

Note:
This end of conduit is 12'-6" from
face of curb on N.B. U.S. 81 Bus. Rt.

STATION 422+21.39 END OF
PROJECT F-31(3) CONTROL 16-7-26
STATION 106+02.99 ON OLD
PROJECT NRH 31 Part 2

STATION 124+79.37 END OF
PROPOSED CONSTRUCTION
STATION 124+37.4 ON OLD
PROJECT F-1075(1) CONTROL 521-4-1

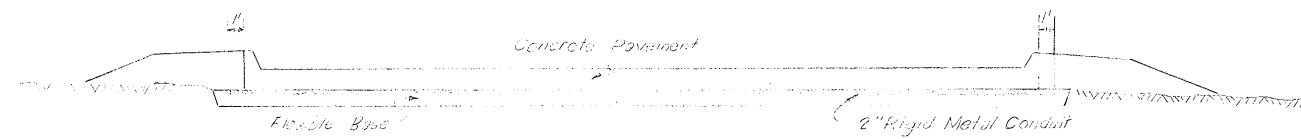
TO ACCOMPANY
FIELD CHANGE REQUEST NO. 4

- LEGEND
- Proposed Construction
 - Under Construction
 - Future Construction
 - Proposed Right of Way
 - Future Right of Way
 - Existing Right of Way

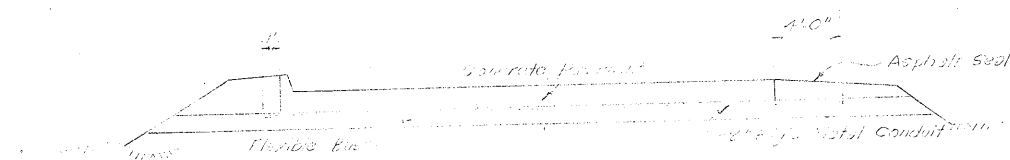
LOCATION OF RIGID METAL
CONDUIT FOR FUTURE LIGHTING

SHEET 2 OF 3

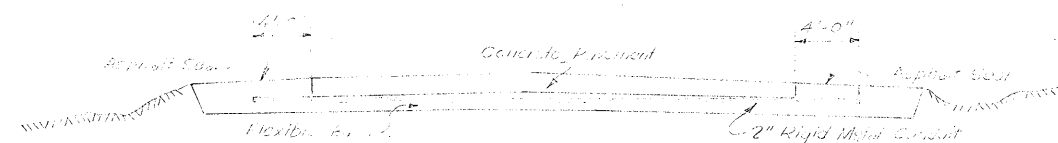
FED. ROAD NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
15	TEXAS	21-1088(1), 21-31(1), F-31(1)	89
STATE DIST. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
15	BEXAR	16-17	7-10
FIELD CHANGE NO.			U.S. 81



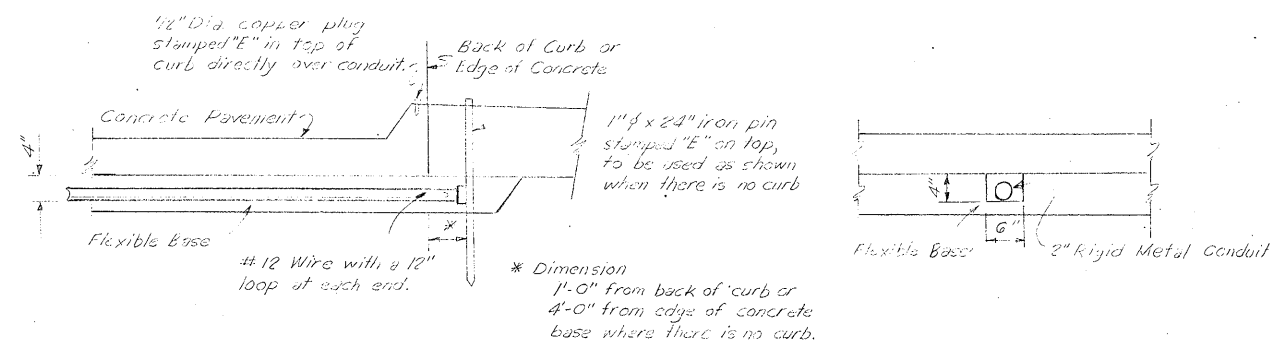
TYPE 1 INSTALLATION
(CURB BOTH SIDES)



TYPE 2 INSTALLATION
(CURB ONE SIDE)



TYPE 3 INSTALLATION
(NO CURBS)



RIGID METAL CONDUIT

DETAIL

SECTION

NOTE:
Across Frontage Roads, the conduit trench shall be at least ten inches below the finished roadway surface.

INSTALLATION DETAILS
RIGID METAL CONDUIT

SHEET 3 OF 3

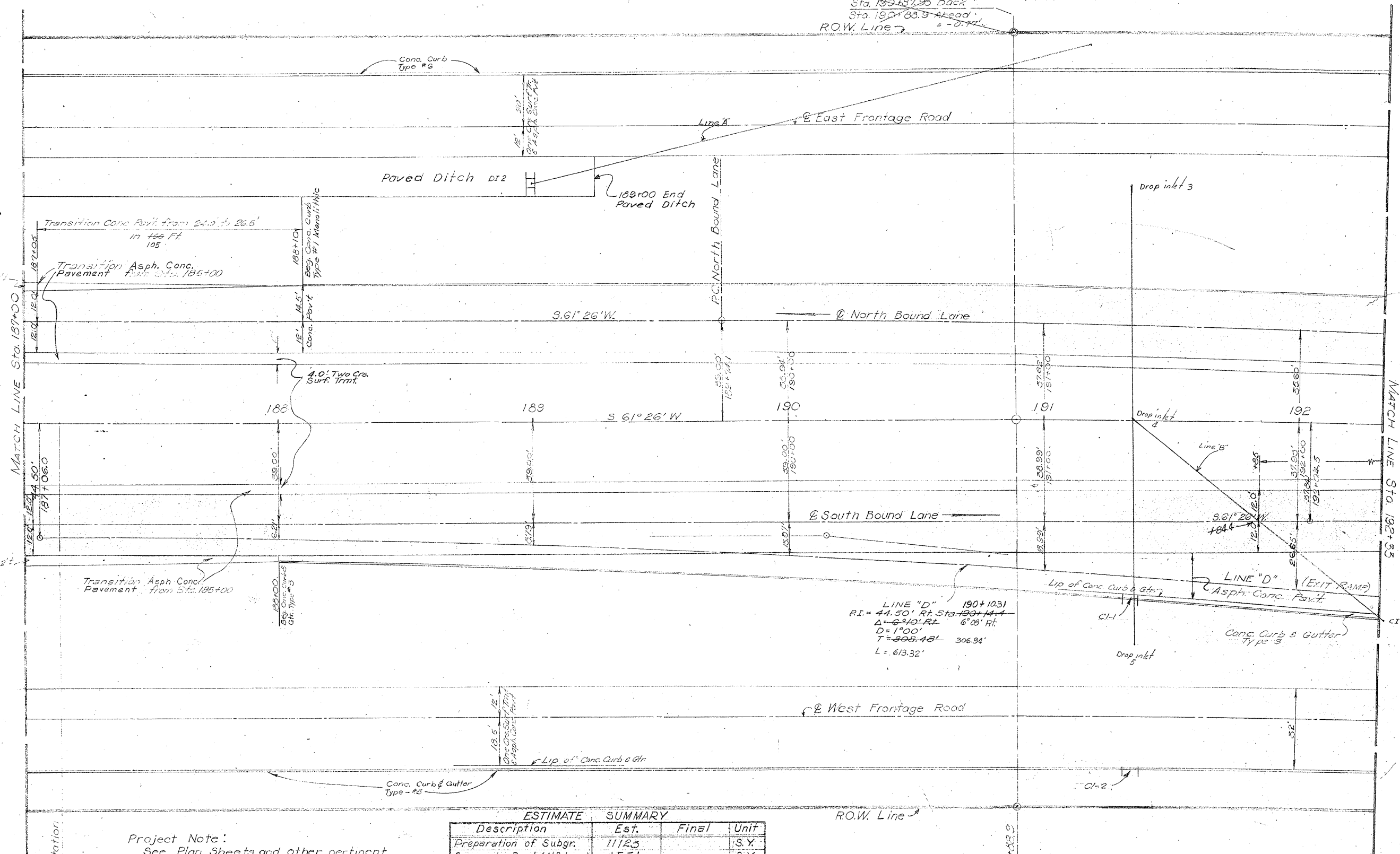
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FT 1056(22)FT-3(KD)F-3(CND)	90
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
16	BEXAR	6-17	7-10

FIELD CHANGE NO.

EQUATION:
Sta. 190+37.95 Back
Sta. 190+66.9 Ahead
ROW Line

NOTE: NO EQUATION

191554 END PLAN



Old P.T. Same Station
P.T. = 1871+14.11

Project Note:
See Plan Sheets and other pertinent sheets elsewhere in these plans for all drainage structures storm sewer, etc. Drainage structures have been omitted from Interchange Layouts. Curb slots and Curb Inlets have been shown so that the proper curb deductions can be made.

ESTIMATE SUMMARY			
Description	Est.	Final	Unit
Preparation of Subgr.	11123		S.Y.
Concrete Pavt. (N.B. Lane)	1551		S.Y.
Concrete Pavt. (S.B. Lane)	1291		S.Y.
Monolithic Curb (Type 1)	423		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	0		C.Y.
Concrete Curb - Type 6	532		L.F.
Conc. Curb & Gutter - Type 3	426		L.F.
Conc. Curb & Gutter - Type 4	0		L.F.
Conc. Curb & Gutter - Type 5	526		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	4466		S.Y.
Surf. Area (Asph. Conc. Pavt.)	4466		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	759		S.Y.

JUDSON ROAD INTERCHANGE LAYOUT

SHEET 1 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	93
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEXAR	76	7
			25
			413.81

R.O.W.

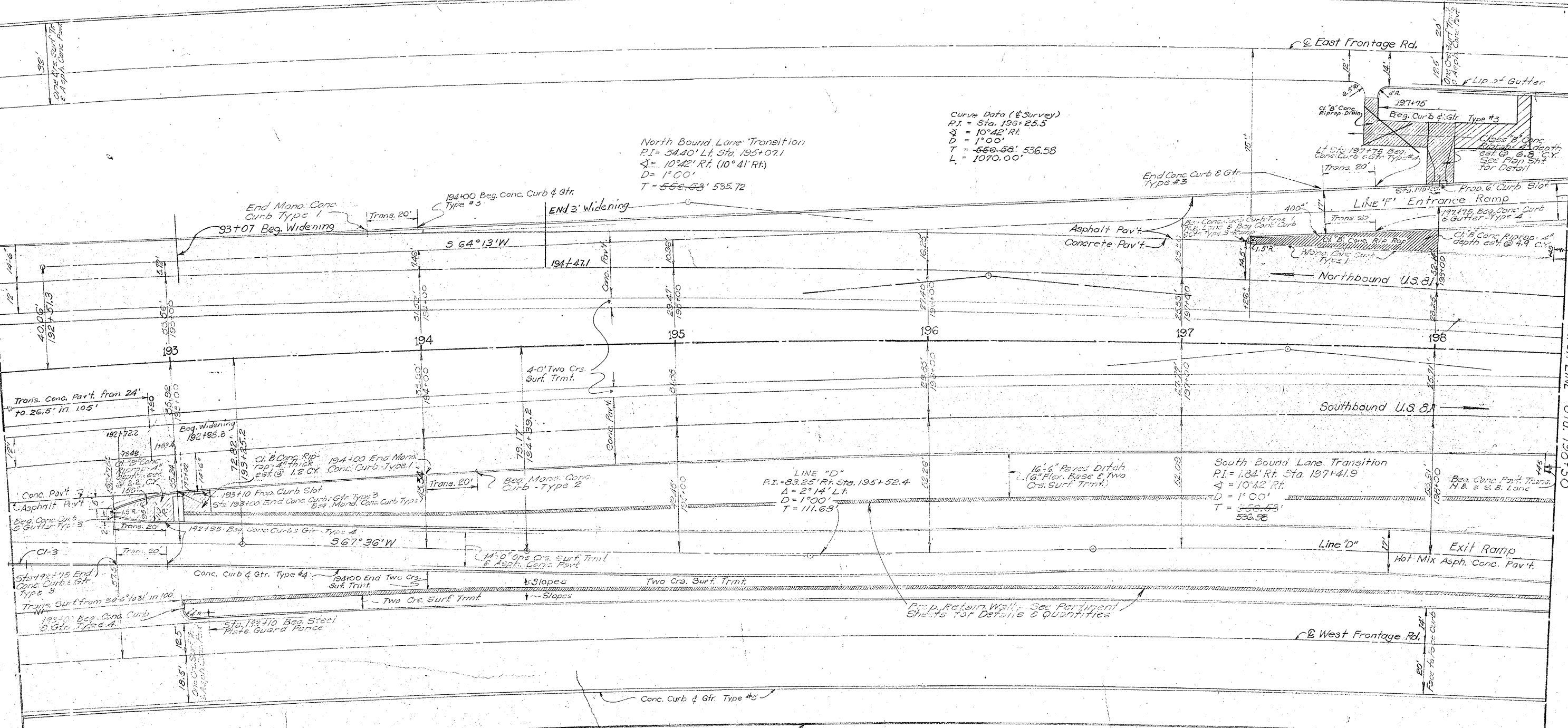
Conc. Curb Type #6

North Bound Lane Transition
 $PI = 5440' \text{ Lt. Sta. } 195+07.1$
 $\Delta = 10^\circ 42' \text{ Rt. } (10^\circ 41' \text{ Rt.})$
 $D = 1' 00'$
 $T = 556.53 \text{ } 536.72$

Curve Data (Survey)
 $PI = \text{Sta. } 198+25.5$
 $\Delta = 10^\circ 42' \text{ Rt.}$
 $D = 1' 00'$
 $T = 556.53 \text{ } 536.58$
 $L = 1070.00'$

MATCH LINE Sta. 192+33

MATCH LINE Sta. 198+50



ESTIMATE SUMMARY

Description	Est.	Final	Unit
Preparation of Subst.	13,138		S.Y.
Concrete Pavt. (Main Lane)	1802		S.Y.
Concrete Pavt. (S.B. Lane)	1929		S.Y.
Monolithic Curb (Type 1)	337		L.F.
Monolithic Curb (Type 2)	430		L.F.
Class 'B' Concrete Riprap	151		CY
Conc. Curb - Type 6	631		L.F.
Conc. Curb & Gutter - Type 3	549		L.F.
Conc. Curb & Gutter - Type 4	1888		L.F.
Conc. Curb & Gutter - Type 5	603		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Pipe Guard Fence	540		L.F.
Removing Old Conc. (Pavt.)	1371		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5806		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5806		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	2064		S.Y.

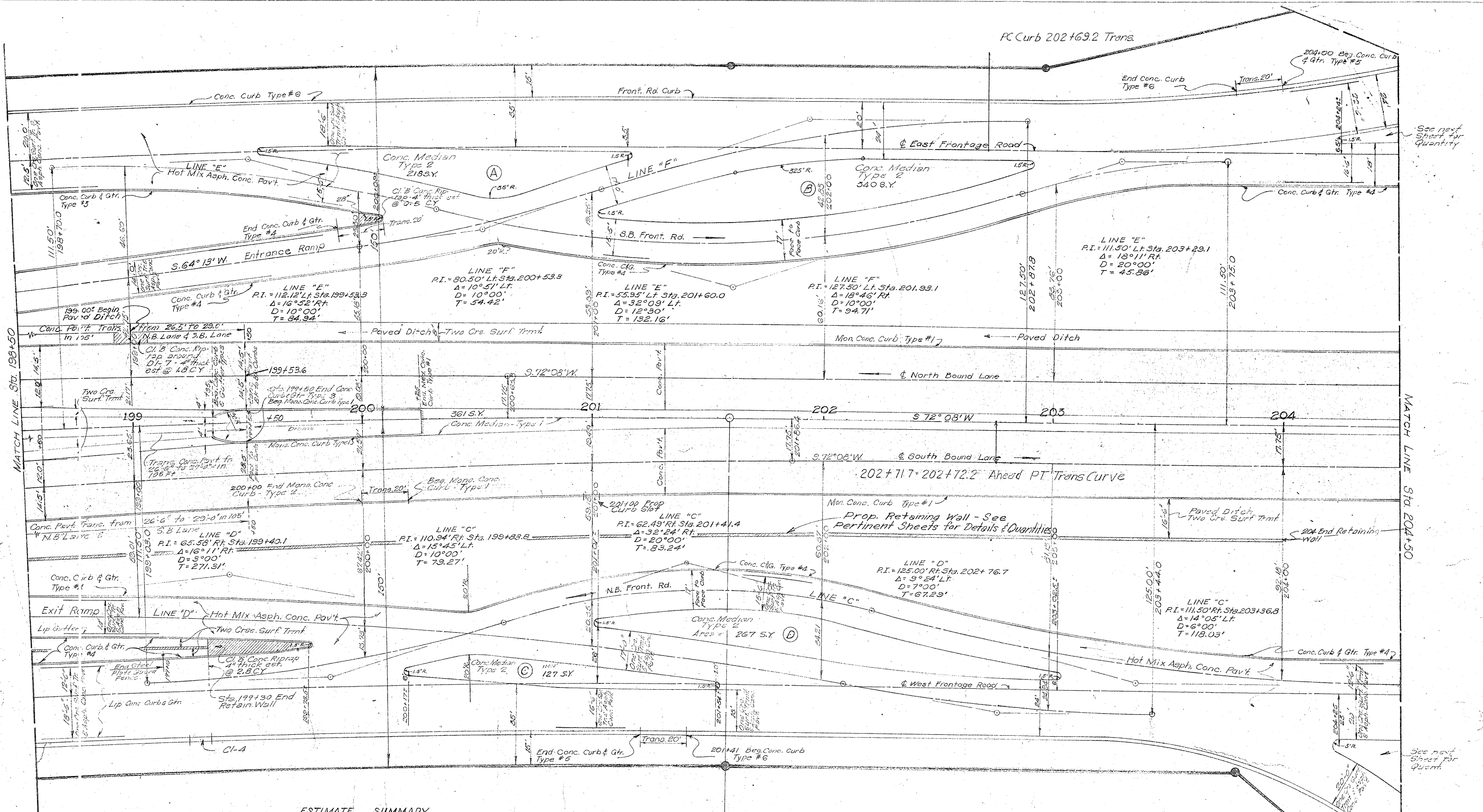
SHEET NOTES:

See Sheet 231 Details of Monolithic Curb, Curb & Gutter, Concrete Curb & Concrete Median for details of the various types of curbs and transitions. Where curb slots are indicated, the lengths of these slots shall be deducted from the curb lengths. For details of Curb Slots and Quantities see Sheet.

See Pertinent Sheets elsewhere in these Plans for Quantities & Information not listed on this Sheet.

JUDSON ROAD INTERCHANGE LAYOUT

SHEET 2 OF 29
 SCALE 1" = 20'



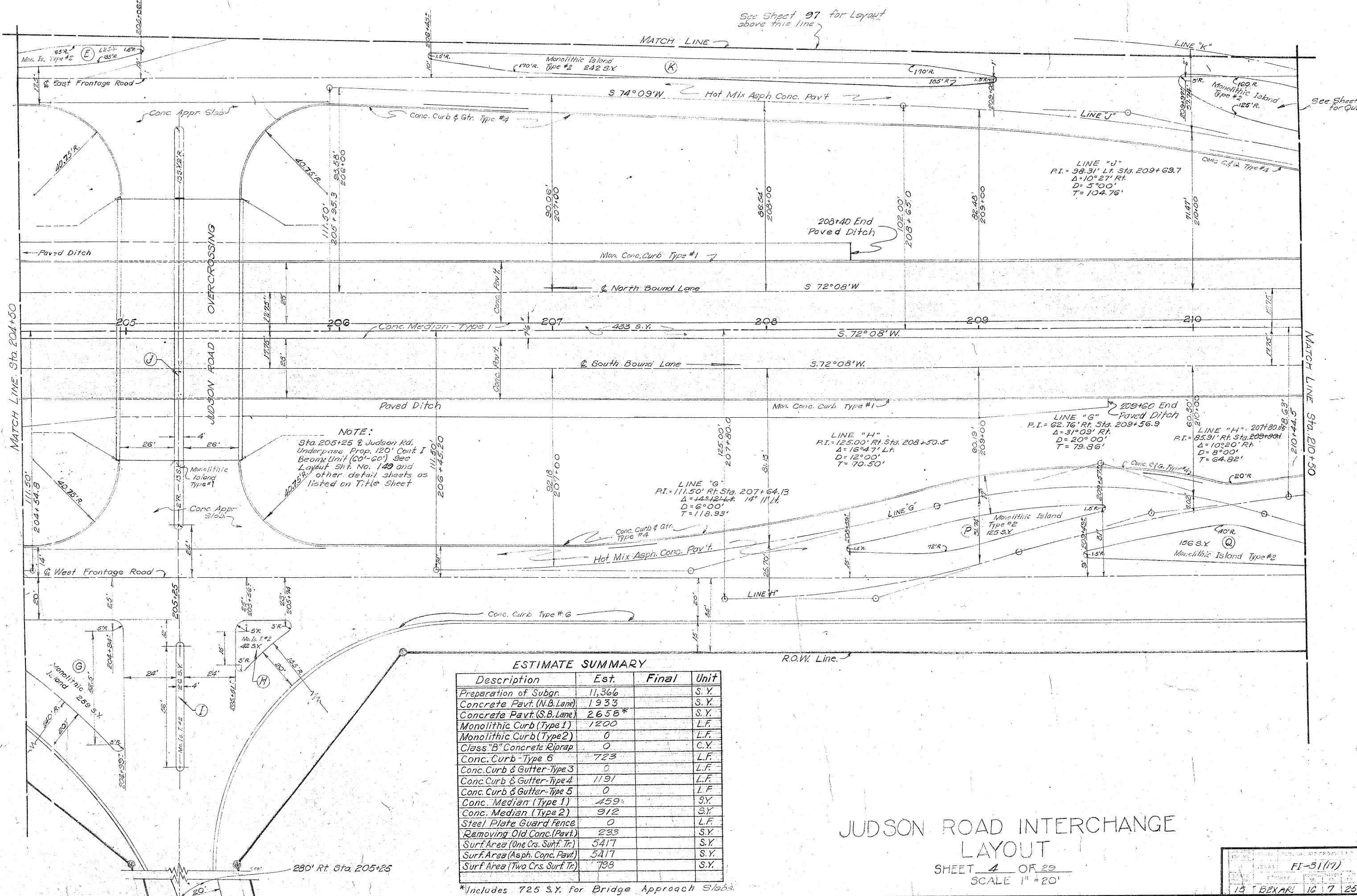
ESTIMATE SUMMARY

Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	12,611		S.Y.	Conc. Curb & Gutter-Type 5	354		L.F.
Concrete Pavt. (N.B. Lane)	1935		S.Y.	Conc. Median (Type 1)	361		S.Y.
Concrete Pavt. (S.B. Lane)	1935		S.Y.	Conc. Median (Type 2)	952		S.Y.
Monolithic Curb (Type 1)	1194		L.F.	Steel Plate Guard Fence	60		L.F.
Monolithic Curb (Type 2)	150		L.F.	Removing Old Con. (Pavt.)	1333		S.Y.
Class B Concrete Riprap	5.1		C.Y.	Surf. Area (One Crs. Surf. Tr.)	6168		S.Y.
Concrete Curb-Type 6	855		L.F.	Surf. Area (Asph. Conc. Pavt.)	6168		S.Y.
Conc. Curb & Gutter-Type 3	191		L.F.	Surf. Area (Two Crs. Surf. Tr.)	1725		S.Y.
Conc. Curb & Gutter-Type 4	1625		L.F.				

JUDSON ROAD INTERCHANGE LAYOUT

SHEET 3 OF 29
SCALE 1" = 20'

15	25	10	7	25	U.S.
----	----	----	---	----	------



ESTIMATE SUMMARY

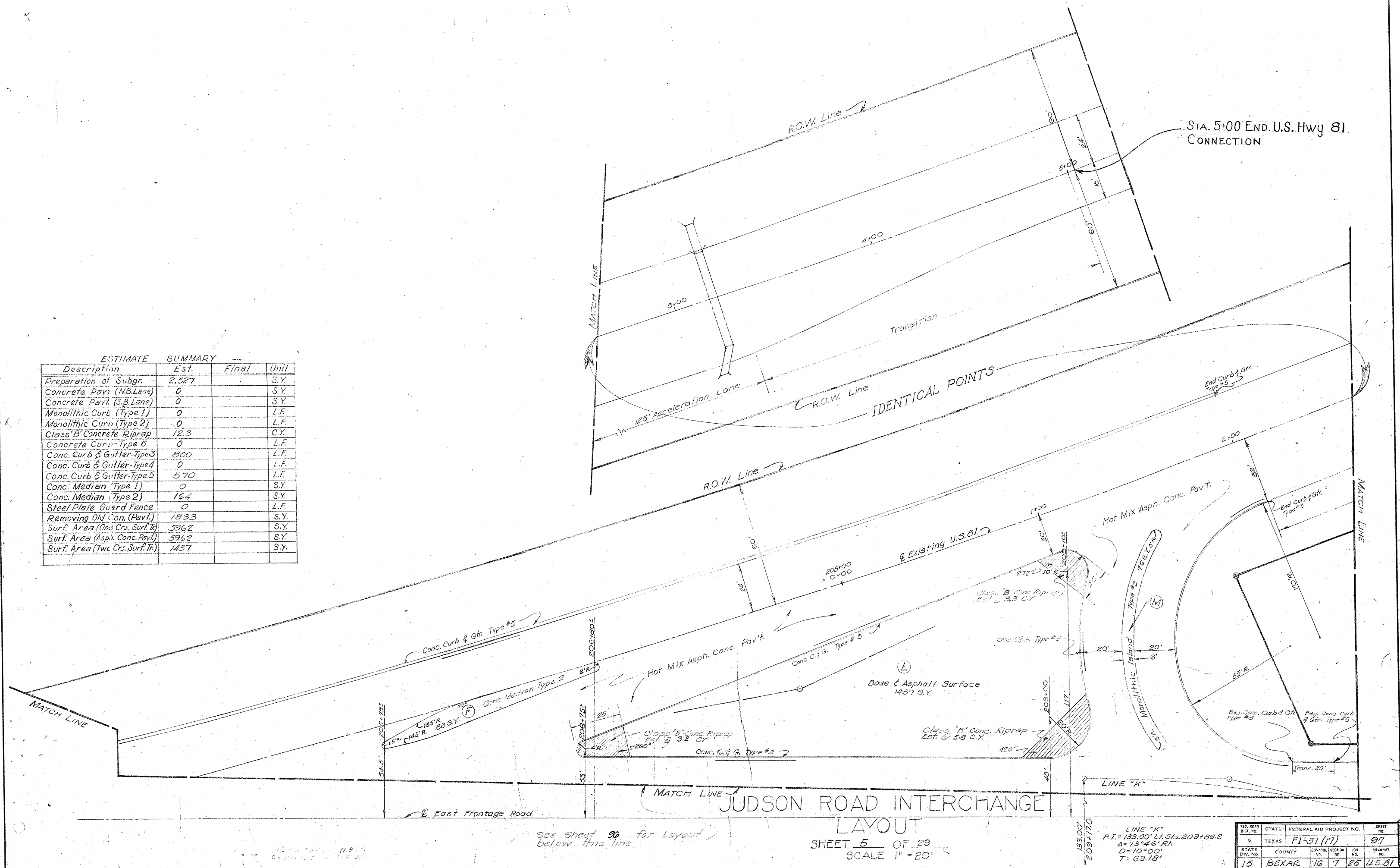
Description	Est.	Final	Unit
Preparation of Subgr.	11,366		S.Y.
Concrete Pavt. (N.B. Lane)	1,933		S.Y.
Concrete Pavt. (S.B. Lane)	2,658*		S.Y.
Monolithic Curb (Type 1)	1,200		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	0		C.Y.
Conc. Curb - Type 6	723		L.F.
Conc. Curb & Gutter - Type 3	0		L.F.
Conc. Curb & Gutter - Type 4	1,191		L.F.
Conc. Curb & Gutter - Type 5	0		L.F.
Conc. Median (Type 1)	459		S.Y.
Conc. Median (Type 2)	912		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Conc. (Pavt.)	233		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5,417		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5,417		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	798		S.Y.

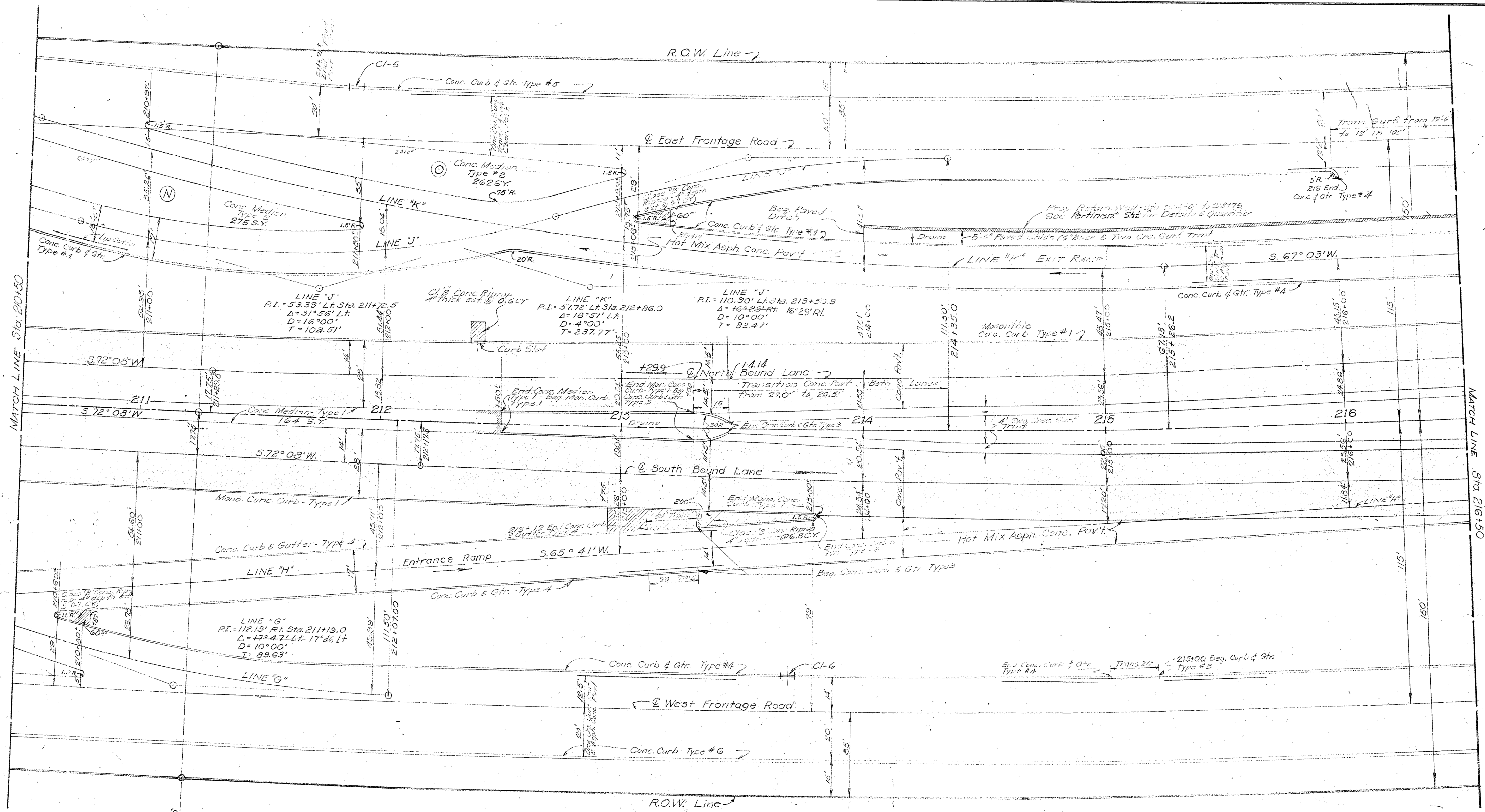
*Includes 725 S.Y. for Bridge Approach Slabs

JUDSON ROAD INTERCHANGE LAYOUT

SHEET 4 OF 29
SCALE 1" = 20'

ESTIMATE SUMMARY			
Description	Est.	Final	Unit
Preparation of Subgr.	2,527		S.Y.
Concrete Pavi. (N.B. Lane)	0		S.Y.
Concrete Pavi. (S.B. Lane)	0		S.Y.
Monolithic Curb (Type 1)	0		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	12.3		C.Y.
Concrete Curb - Type 6	0		L.F.
Conc. Curb & Gutter - Type 3	800		L.F.
Conc. Curb & Gutter - Type 4	0		L.F.
Conc. Curb & Gutter - Type 5	570		L.F.
Conc. Median Type 1	0		S.Y.
Conc. Median Type 2	16.4		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pav't.)	1833		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5962		S.Y.
Surf. Area (Asph. Conc. Pav't.)	5962		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	1437		S.Y.





ESTIMATE			SUMMARY		
Description	Est.	Final	Description	Est.	Final
Preparation of Subgr.	13,359		Conc. Curb & Gutter-Type 5	580	
Concrete Pavt (N.B. Lane)	1860		Conc. Median (Type 1)	164	
Concrete Pavt (S.B. Lane)	1860		Conc. Median (Type 2)	537	
Monolithic Curb (Type 1)	1087		Steel Plate Guard Fence	0	
Monolithic Curb (Type 2)	0		Removing Old Con. (Pavt)	0	
Class B Concrete Riprap	8.8		Surf. Area (One Crs. Surf. Th)	6239	
Concrete Curb-Type 6	614		Surf. Area (Asph. Conc. Pavt)	6230	
Conc. Curb & Gutter-Type 3	550		Surf. Area (Two Crs. Surf. Th)	442	
Conc. Curb & Gutter-Type 4	2225				

JUDSON ROAD INTERCHANGE LAYOUT

SHEET 6 OF 19
SCALE 1" = 20'

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	FI-31(17)	98
COUNTY	SECTION	ROUTE
15 BEXAR	10 7	25 U.S. 81

Curve Data (E Survey)
 P.I. = 218+12.7
 $\Delta = 14^\circ 55' \text{ L.t.}$
 $D = 1^\circ 00'$
 $T = 750.07'$
 $L = 1491.67'$

R.O.W. Line

Conc. Curb & Gtr. Type #5

East Frontage Road

Prop. Retain. Wall - See Pertinent
 Sheets for Details & Quantities

218+75 End
 Retaining Wall

Exit Ramp

Hot Mix Asph. Conc. Pavt.

219+90 End Conc. Curb & Gtr.
 Type #4

Beg. Conc. Curb & Gtr.
 Type #3

Cl. B Conc. Riprap 4"
 Thick set @ 1.5 CY.
 Curb Slot

LINE "K"

220+32 End
 Mon. Conc. Curb Type #1
 Beg. Curb & Gtr. Type #2

North Bound Lane

South Bound Lane

North Bound Lane Transition Curve
 $P.I. = 212.24'$ Rt Sta. 217+86.0
 $\Delta = 14^\circ 55' \text{ L.t.}$
 $D = 1^\circ 00'$
 $T = 750.07'$

South Bound Lane Transition Curve
 $P.I. = 77.71'$ Rt Sta. 219+54.0
 $\Delta = 14^\circ 55' \text{ L.t.}$
 $D = 1^\circ 00'$
 $T = 750.07'$

Trans. Pavt. from 32.5' to 34' in 100'

West Frontage Road

Conc. Curb Type #6

R.O.W. Line

MATCH LINE Sta 216+50

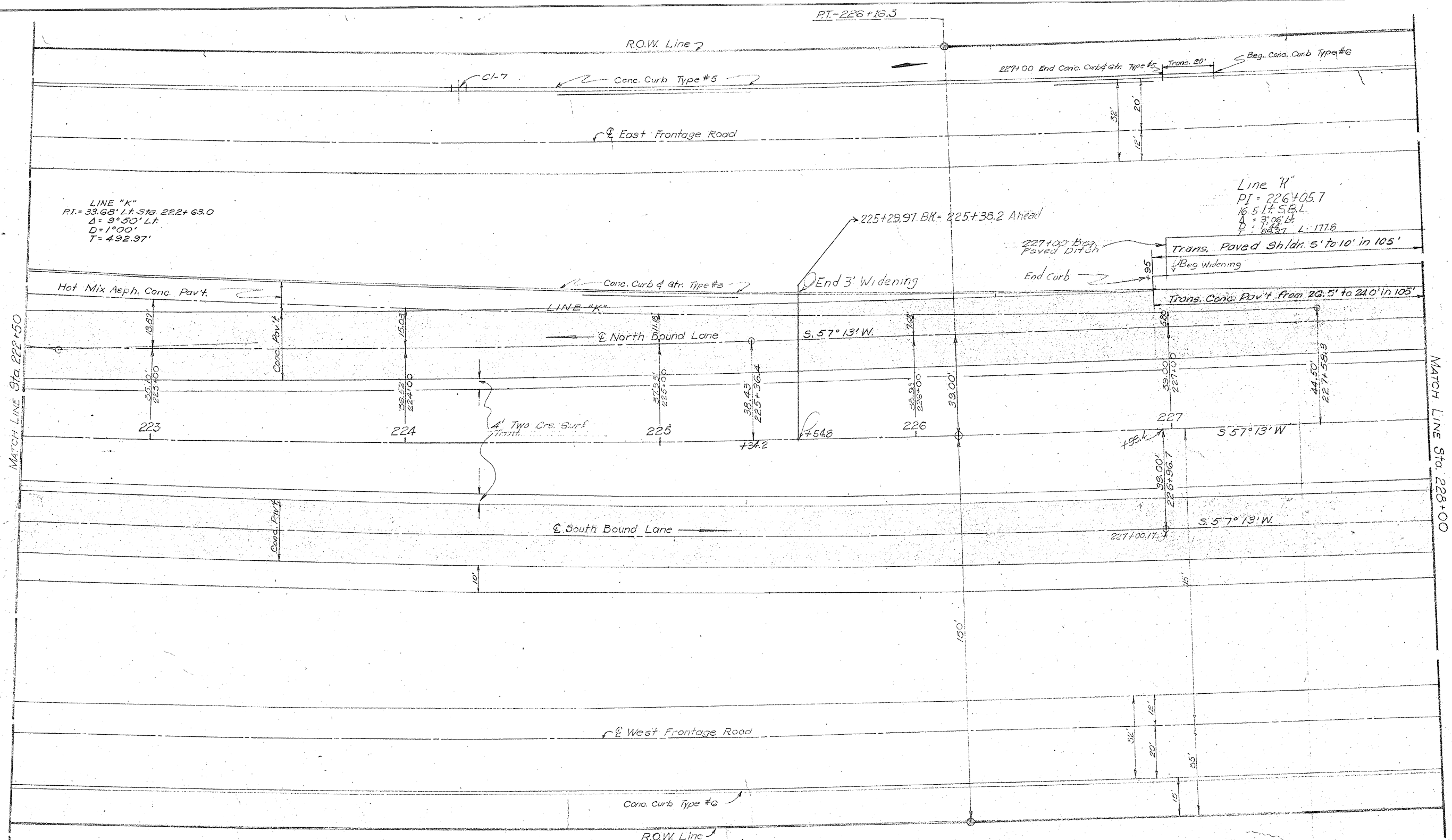
MATCH LINE Sta 222+50

Description	Est.	Final	Unit
Preparation of Subgr.	12,108		S.Y.
Concrete Pavt. (N.B. Lane)	1,767		S.Y.
Concrete Pavt. (S.B. Lane)	1,688		S.Y.
Monolithic Curb (Type 1)	421		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class B Concrete Riprap	8.2		C.Y.
Concrete Curb - Type 6	614		L.F.
Conc. Curb & Gutter Type 3	769		L.F.
Conc. Curb & Gutter Type 4	720		L.F.
Conc. Curb & Gutter Type 5	586		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5203		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5203		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	1014		S.Y.

JUDSON ROAD INTERCHANGE LAYOUT

SHEET 7 OF 29
 SCALE 1" = 20'

STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.
TXAS	BEXAR	FI-3117	99
STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.
16	BEXAR	16 7 25	4561



ESTIMATE SUMMARY			
Description	Est	Final	Unit
Preparation of Subgr.	11,718		S.Y.
Concrete Pav't (N.B. Lane)	1605		S.Y.
Concrete Pav't (S.B. Lane)	1467		S.Y.
Monolithic Curb (Type 1)	0		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class B Concrete Riprap	0		C.Y.
Concrete Curb - Type 6	641		L.F.
Conc. Curb & Gutter Type 3	445		L.F.
Conc. Curb & Gutter Type 4	0		L.F.
Conc. Curb & Gutter Type 5	458		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pav't)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	4122		S.Y.
Surf. Area (Asph. Conc. Pav't)	4122		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	1342		S.Y.

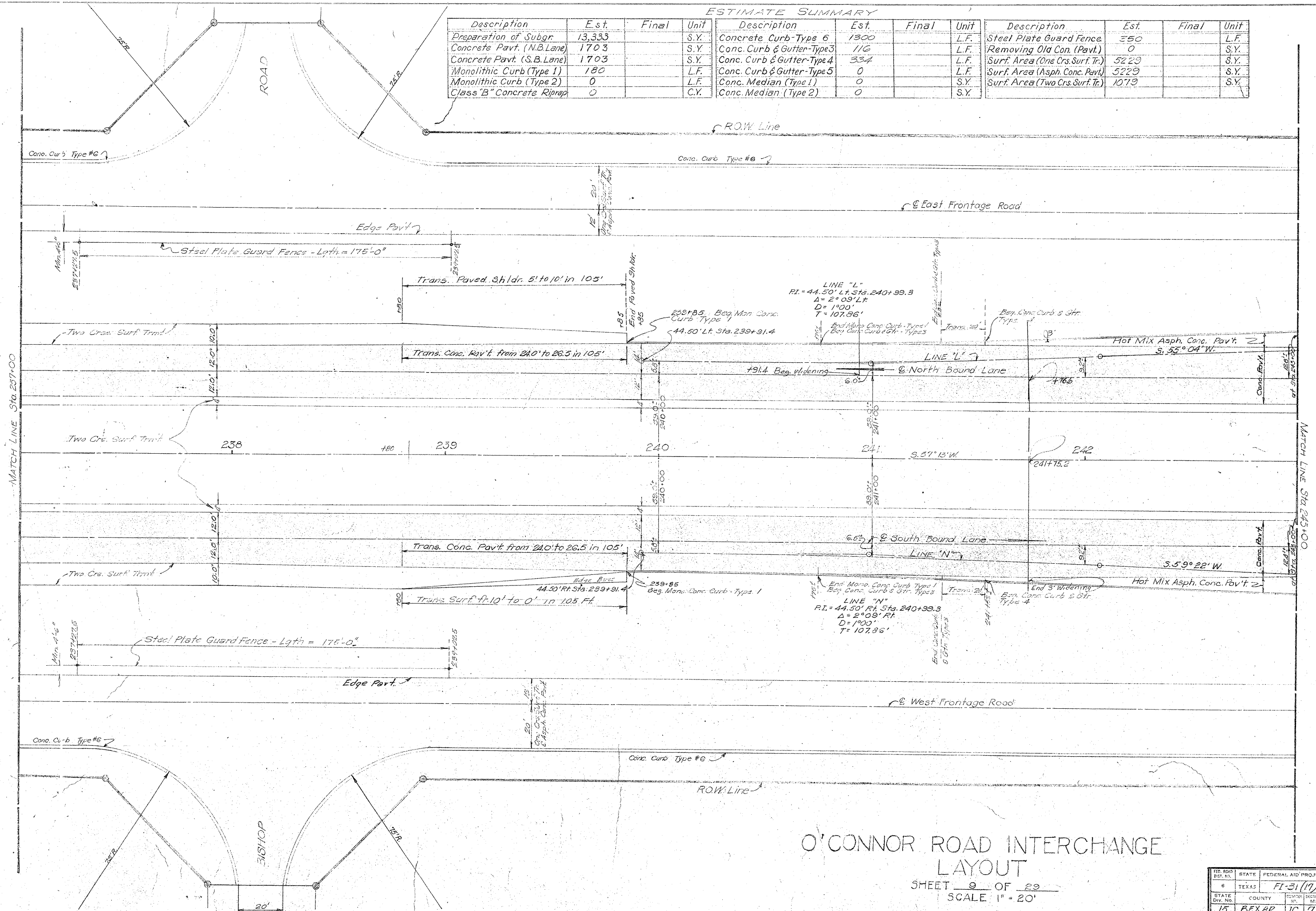
JUDSON ROAD INTERCHANGE LAYOUT

SHEET 8 OF 29
SCALE 1" = 20'

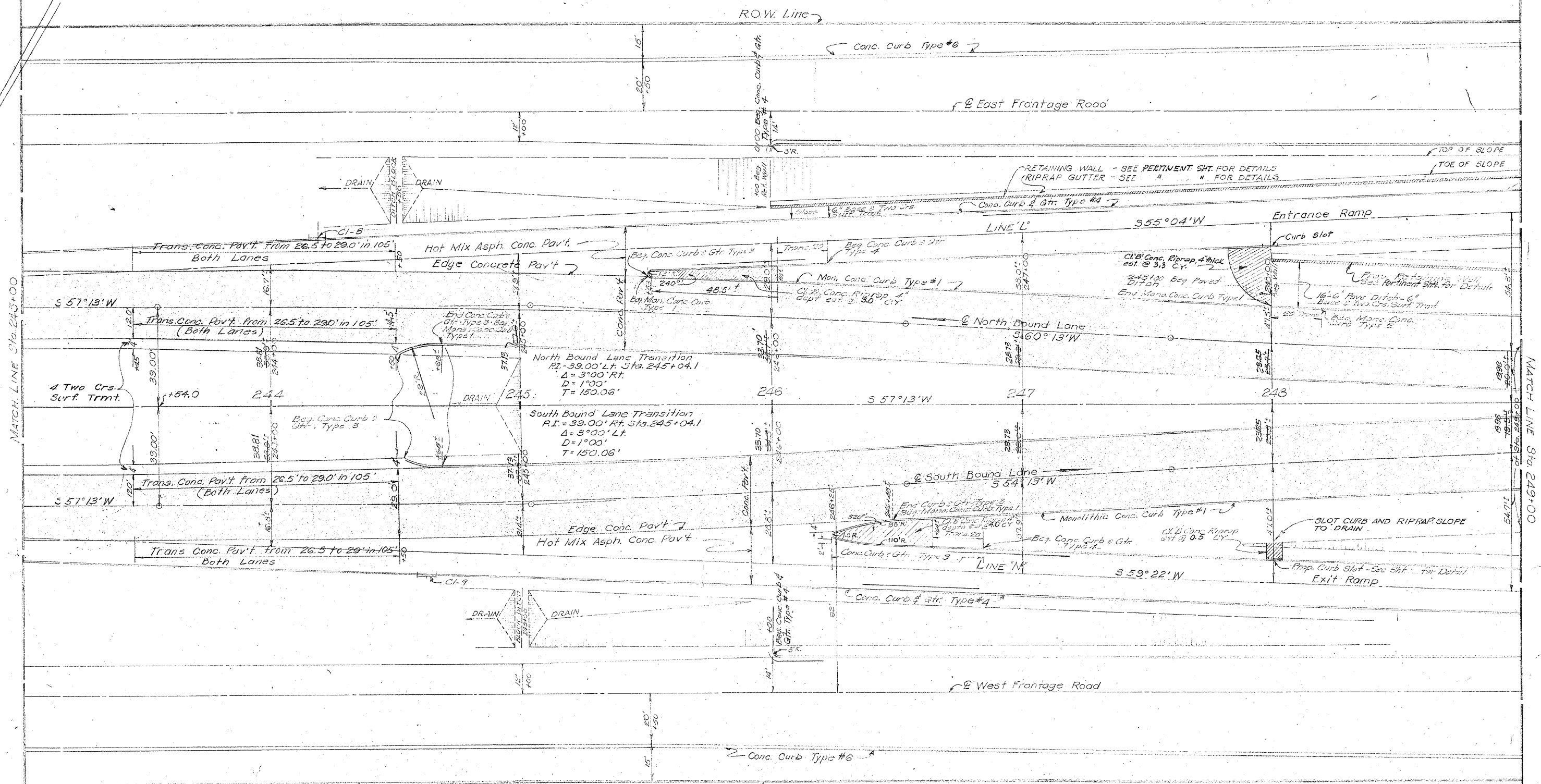
TEN. & GAO DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31 (17)	100
STATE DIV. NO.	COUNTY	CONTRACT SECTION NO.	SECTION NO.
15	BEXAR	16	7
			25
			45.81

ESTIMATE SUMMARY

Description	Est.	Final	Unit	Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	13,333		S.Y.	Concrete Curb-Type 6	1300		L.F.	Steel Plate Guard Fence	350		L.F.
Concrete Pavt. (N.B. Lane)	1703		S.Y.	Conc. Curb & Gutter-Type 3	116		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Concrete Pavt. (S.B. Lane)	1703		S.Y.	Conc. Curb & Gutter-Type 4	334		L.F.	Surf. Area (One Crs. Surf. Tr.)	5229		S.Y.
Monolithic Curb (Type 1)	180		L.F.	Conc. Curb & Gutter-Type 5	0		L.F.	Surf. Area (Asph. Conc. Pavt.)	5229		S.Y.
Monolithic Curb (Type 2)	0		L.F.	Conc. Median (Type 1)	0		S.Y.	Surf. Area (Two Crs. Surf. Tr.)	1079		S.Y.
Class "B" Concrete Riprap	0		C.Y.	Conc. Median (Type 2)	0		S.Y.				

O'CONNOR ROAD INTERCHANGE
LAYOUTSHEET 9 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31 (17)	101
STATE DIV. NO.	COUNTY	SECTION NO.	DATE
15	BEXAR	10	7 25 45 81



ESTIMATE SUMMARY

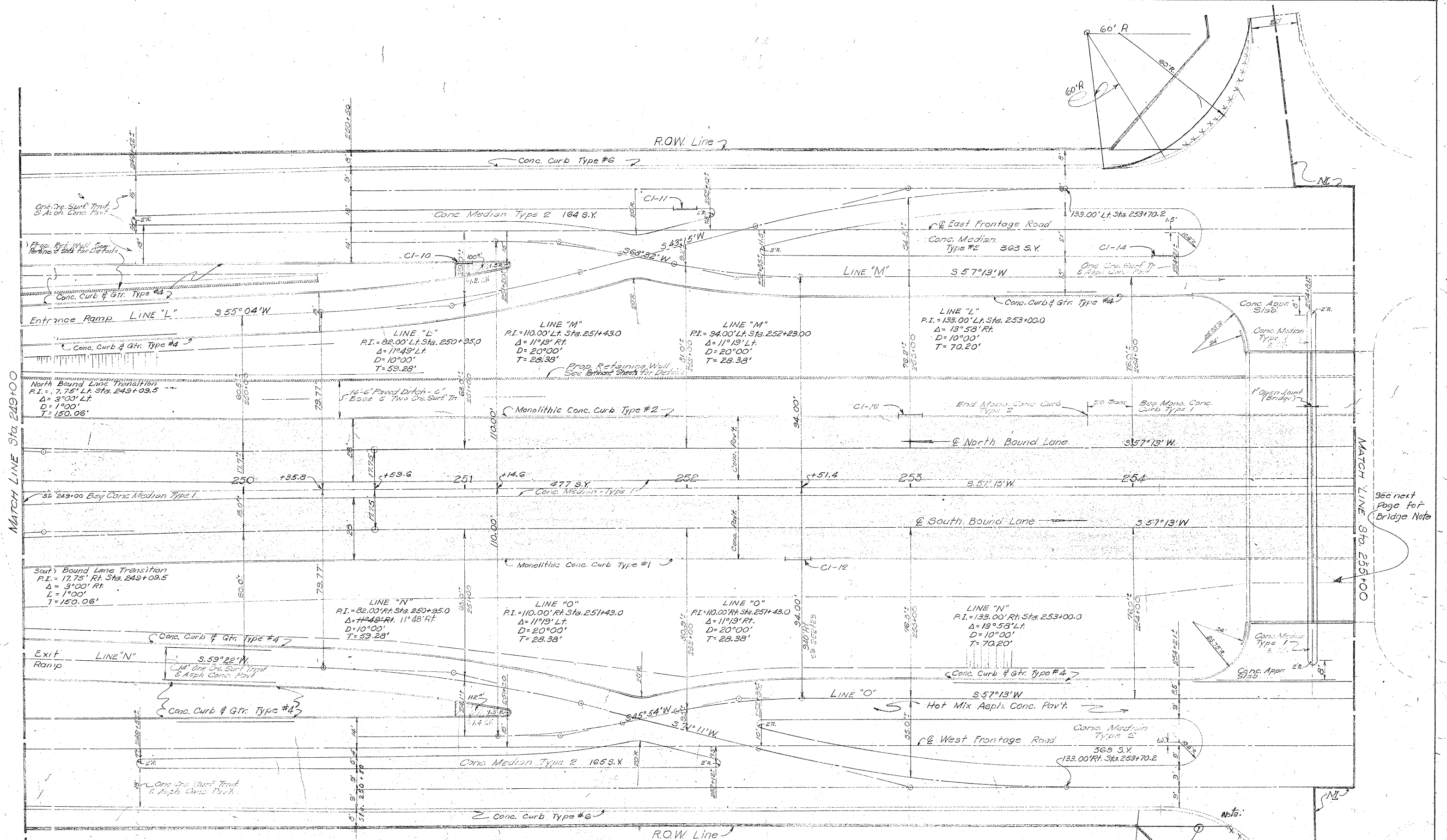
Description	Est.	Final	Unit
Preparation of Subgr.	11,533		S.Y.
Concrete Pavt. (N.B. Lane)	1906		S.Y.
Concrete Pavt. (S.B. Lane)	1906		S.Y.
Monolithic Curb (Type 1)	1386		L.F.
Monolithic Curb (Type 2)	80		L.F.
Class "B" Concrete Riprap	10.8		C.Y.
Conc. Curb - Type 6	1200		L.F.
Conc. Curb & Gutter - Type 3	156		L.F.
Conc. Curb & Gutter - Type 4	2317		L.F.
Conc. Curb & Gutter - Type 5	0		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Conc. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	6335		S.Y.
Surf. Area (Asph. Conc. Pavt.)	6335		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	488		S.Y.

Note: Offset distances & M.L. to & Calculated See Same

O'CONNOR ROAD INTERCHANGE LAYOUT

SHEET 10 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
5	TEXAS	FI-31(17)	102
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	RIGHTWAY NO.
15	BEXAR	16 7 25	45.81



See next
Page for
Bridge Note

ESTIMATE SUMMARY				ESTIMATE SUMMARY				ESTIMATE SUMMARY			
Description	Est.	Final	Unit	Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	13,821			Concrete Curb - Type 6	1196		L.F.	Steel Plate Guard Fence	0		L.F.
Concrete Pavt. (N.B. Lane)	1933		S.Y.	Conc. Curb & Gutter-Type 3	0		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Concrete Pavt. (S.B. Lane)	2361*		S.Y.	Conc. Curb & Gutter-Type 4	2018		L.F.	Surf. Area (One Crs. Surf. Tr.)	6514		S.Y.
Monolithic Curb (Type 1)	709		L.F.	Conc. Curb & Gutter-Type 5	16		L.F.	Surf. Area (Asph. Conc. Pavt.)	6514		S.Y.
Monolithic Curb (Type 2)	469		L.F.	Conc. Median (Type 1)	477		S.Y.	Surf. Area (Two Crs. Surf. Tr.)	1223		S.Y.
Class B Concrete Riprap	2.6		C.Y.	Conc. Median (Type 2)	1060		S.Y.				

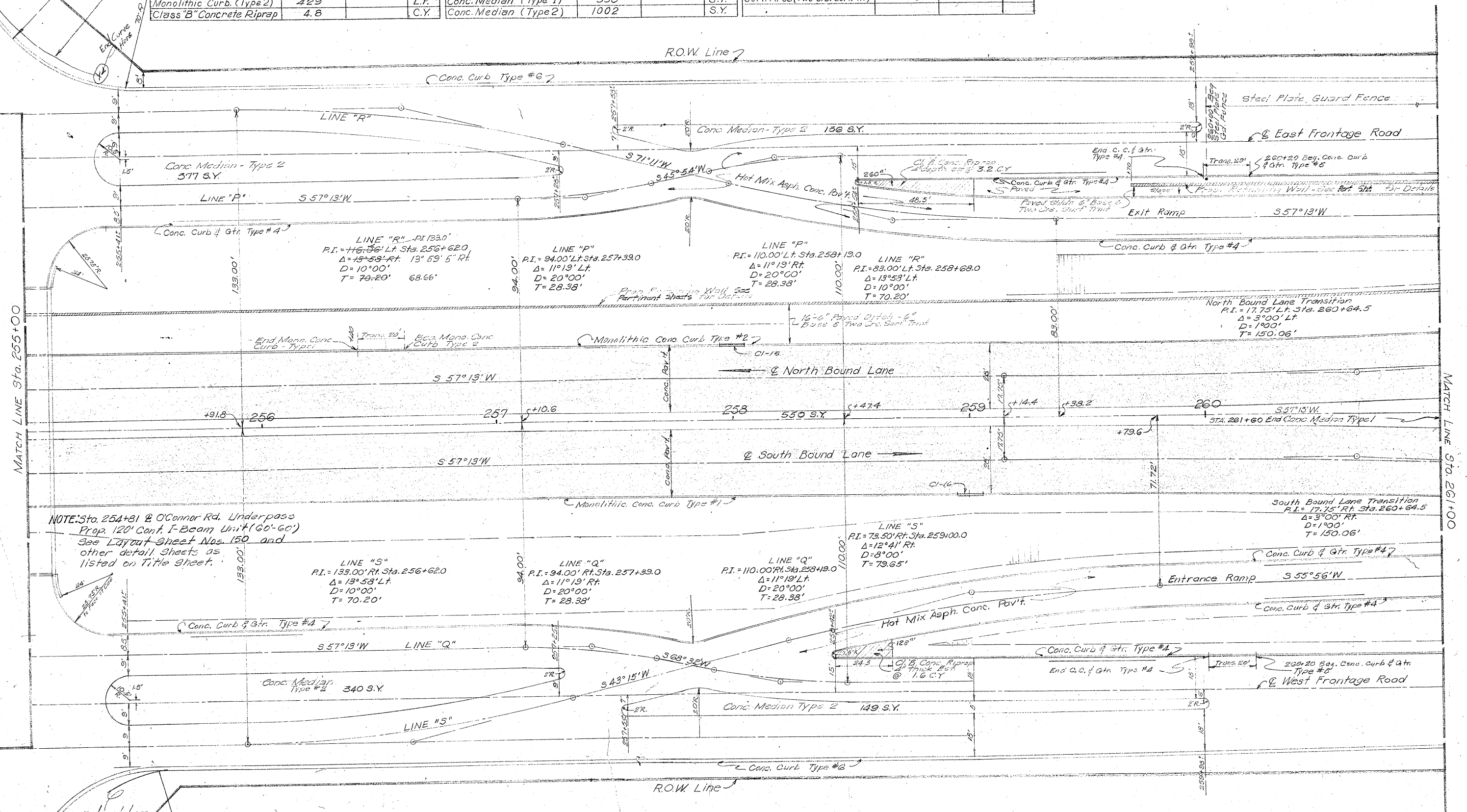
*Includes 428 S.Y. Conc. for Bridge Approach Slabs

O'CONNOR ROAD INTERCHANGE
LAYOUT
SHEET 11 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-3(17)	103
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEXAR	16	7
			15 USE1

ESTIMATE SUMMARY

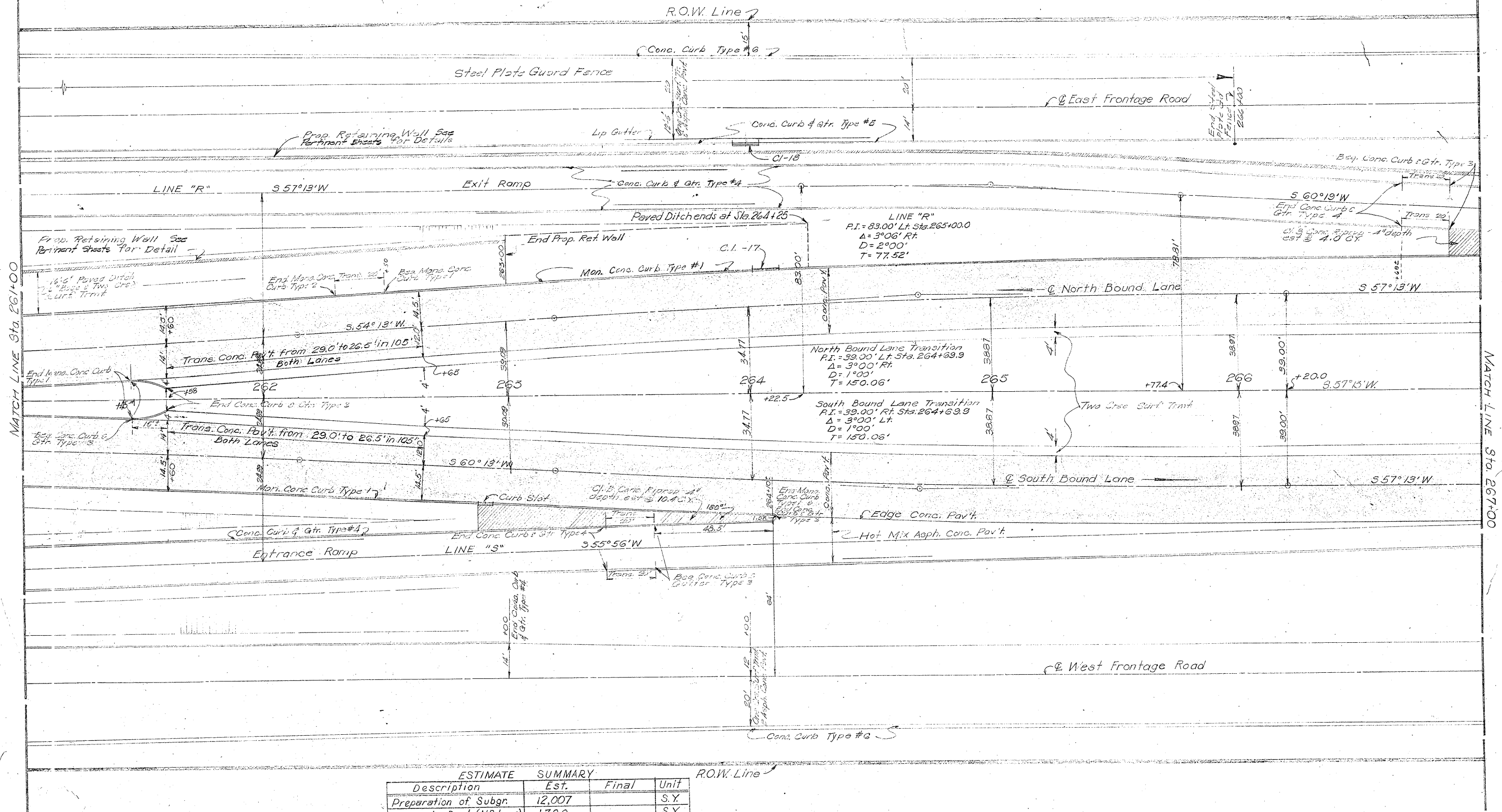
Description	Est.	Final	Unit	Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	12,332		S.Y.	Concrete Curb-Type 6	1307		L.F.	Steel Plate Guard Fence	100		L.F.
Concrete Pavt. (N.B. Lane)	1933		S.Y.	Conc. Curb & Gutter-Type 3	0		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Concrete Pavt. (S.B. Lane)	1933		S.Y.	Conc. Curb & Gutter-Type 4	2080		L.F.	Surf. Area (One Crs. Surf. Tr.)	6506		S.Y.
Monolithic Curb. (Type 1)	749		L.F.	Conc. Curb & Gutter-Type 5	160		L.F.	Surf. Area (Asph. Conc. Pavt.)	6506		S.Y.
Monolithic Curb. (Type 2)	429		L.F.	Conc. Median (Type 1)	550		S.Y.	Surf. Area (Two Crs. Surf. Tr.)	1300		S.Y.
Class "B" Concrete Riprap	4.8		C.Y.	Conc. Median (Type 2)	1002		S.Y.				



O'CONNOR ROAD INTERCHANGE LAYOUT

SHEET 12 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31 (17)	104
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
15	BEXAR	16	7 25

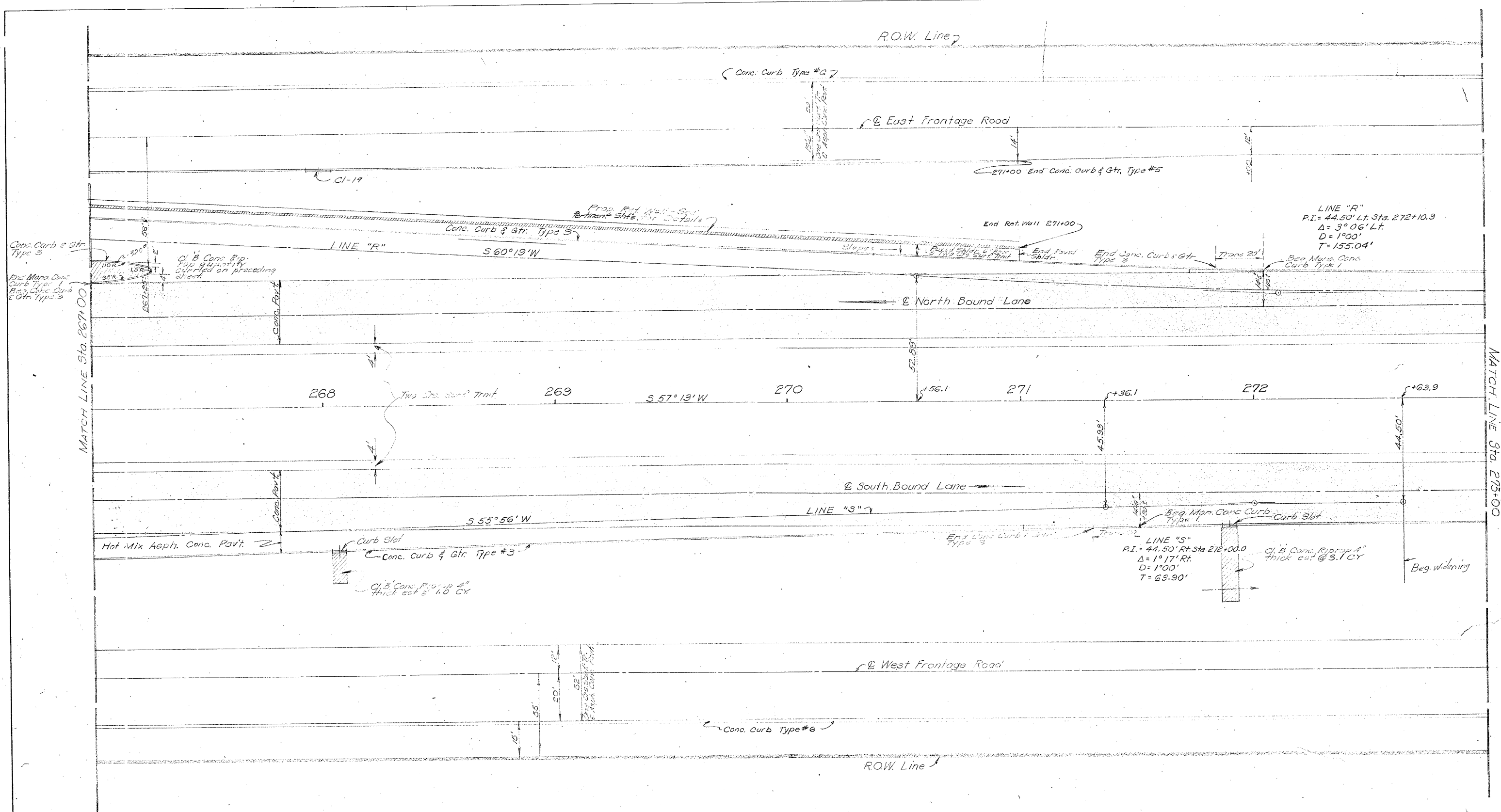


ESTIMATE		SUMMARY	
Description	Est.	Final	Unit
Preparation of Subgr.	12,007		S.Y.
Concrete Pavt. (N.B. Lane)	1799		S.Y.
Concrete Pavt. (S.B. Lane)	1799		S.Y.
Monolithic Curb (Type 1)	855		L.F.
Monolithic Curb (Type 2)	130		L.F.
Class "B" Concrete Riprap	14.4		C.Y.
Concrete Curb-Type 6	1200		L.F.
Conc. Curb & Gutter-Type 3	448		L.F.
Conc. Curb & Gutter-Type 4	1896		L.F.
Conc. Curb & Gutter-Type 5	539		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	500		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	6309		S.Y.
Surf. Area (Asph. Conc. Pavt.)	6309		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	1642		S.Y.

O'CONNOR ROAD INTERCHANGE LAYOUT

SHEET 13 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(11)	105
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
15	BEXAR	16-7	25
			U.S. 51



ESTIMATE SUMMARY

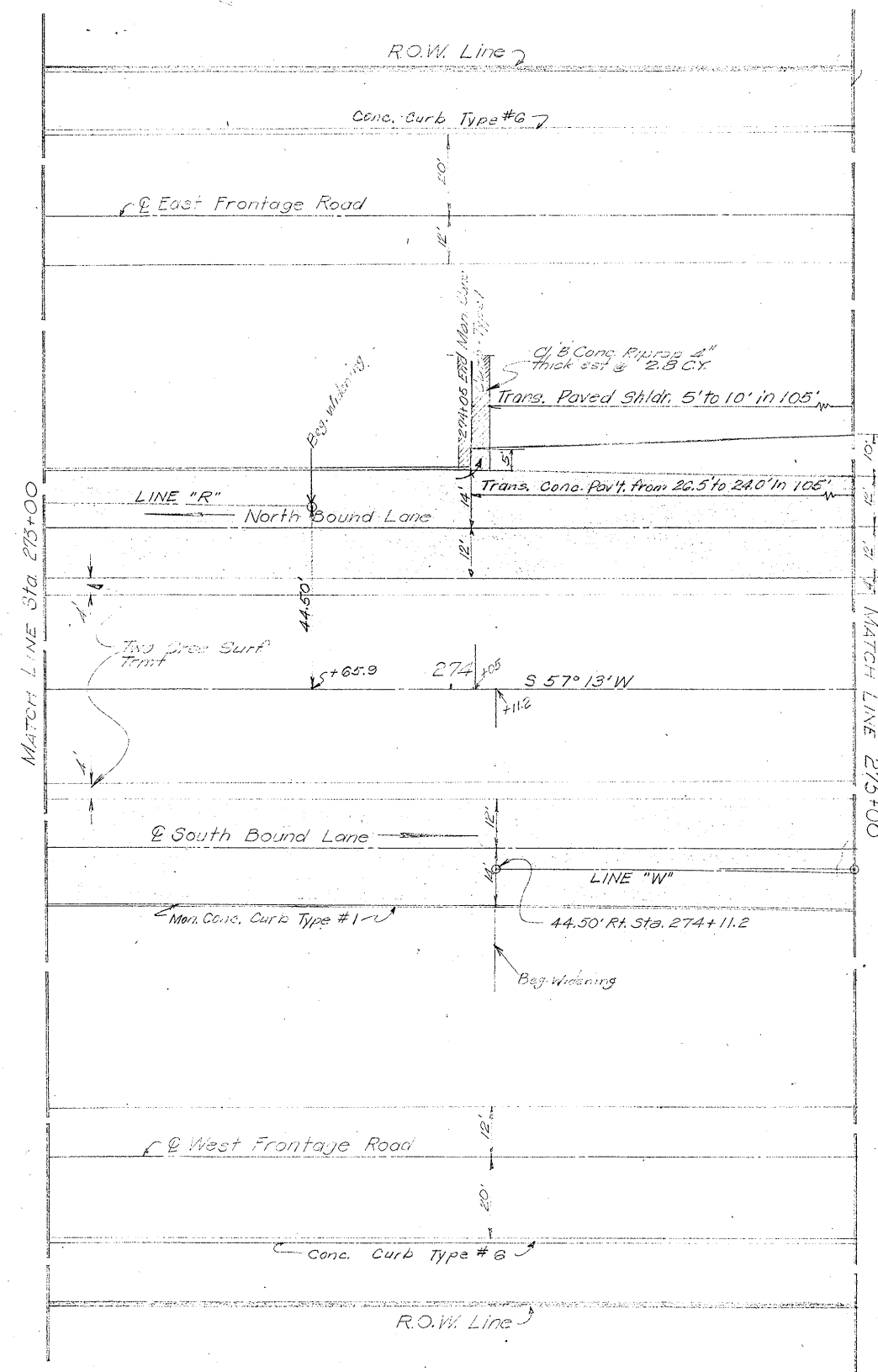
Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	10,386		S.Y.	Conc. Curb & Gutter-Type 5	339		L.F.
Concrete Pavt. (N.B. Lane)	1767		S.Y.	Conc. Median (Type 1)	0		S.Y.
Concrete Pavt. (S.B. Lane)	1766		S.Y.	Conc. Median (Type 2)	0		S.Y.
Monolithic Curb (Type 1)	239		L.F.	Steel Plate Guard Fence	0		L.F.
Monolithic Curb (Type 2)	0		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Class "B" Concrete Riprap	41		C.Y.	Surf. Area (One Crs. Surf. Tr.)	4960		S.Y.
Concrete Curb-Type 6	1200		L.F.	Surf. Area (Asph. Conc. Pavt.)	4960		S.Y.
Conc. Curb & Gutter-Type 3	953		L.F.	Surf. Area (Two Crs. Surf. Tr.)	711		S.Y.
Conc. Curb & Gutter-Type 4	0		L.F.				

O'CONNOR ROAD INTERCHANGE LAYOUT

SHEET 14 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F131(17)	106
STATE DIV. NO.	COUNTY	SECTION NO.	JOB NO.
15	BEXAR	10	7

Description	Est.	Final	Unit
Preparation of Subgr.	3644		S.Y.
Concrete Pavt.(N.B.Lane)	604		S.Y.
Concrete Pavt.(S.B.Lane)	589		S.Y.
Monolithic Curb (Type 1)	305		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	2.8		C.Y.
Concrete Curb - Type 6	400		L.F.
Conc. Curb & Gutter-Type 3	0		L.F.
Conc. Curb & Gutter-Type 4	0		L.F.
Conc. Curb & Gutter-Type 5	0		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Conc. (Pavt.)	0		S.Y.
Surf. Area (One Crs Surf Tr)	1422		S.Y.
Surf Area (Asph. Conc. Pavt.)	1422		S.Y.
Surf Area (Two Crs Surf Tr)	257		S.Y.



Conc. Curb Type #6 ✓

↖ East Frontage Road

LINE "R"

North Bound Lane

Two Deep Surf
Tent

 $c + 65.9$

27410

S 57° 13' W

E South Bound Lane

LINE "W"

44.50' Rt. Sta. 274+11.2

Beğ. widening

Q West Frontage Road

Conc. Curb Type # 6 ✓

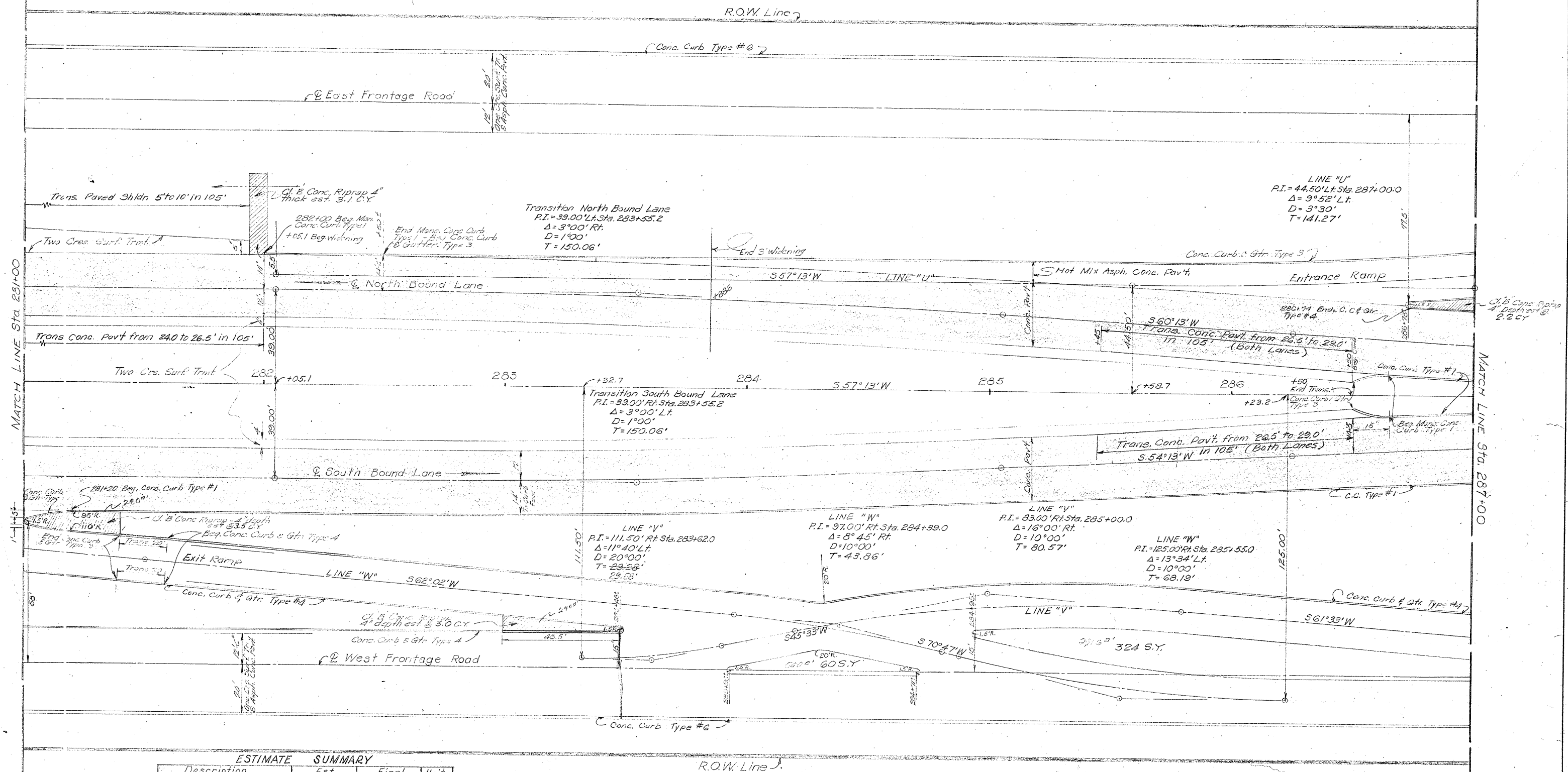
R.O.V. Line -

O'CONNOR ROAD INTERCHANGE LAYOUT

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	F1-31(17)			107
STATE Div. No.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	BEXAR	16	7	25	4581



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	FI-31 (17)			108
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	BEXAR	16	7	25	U.S. 81

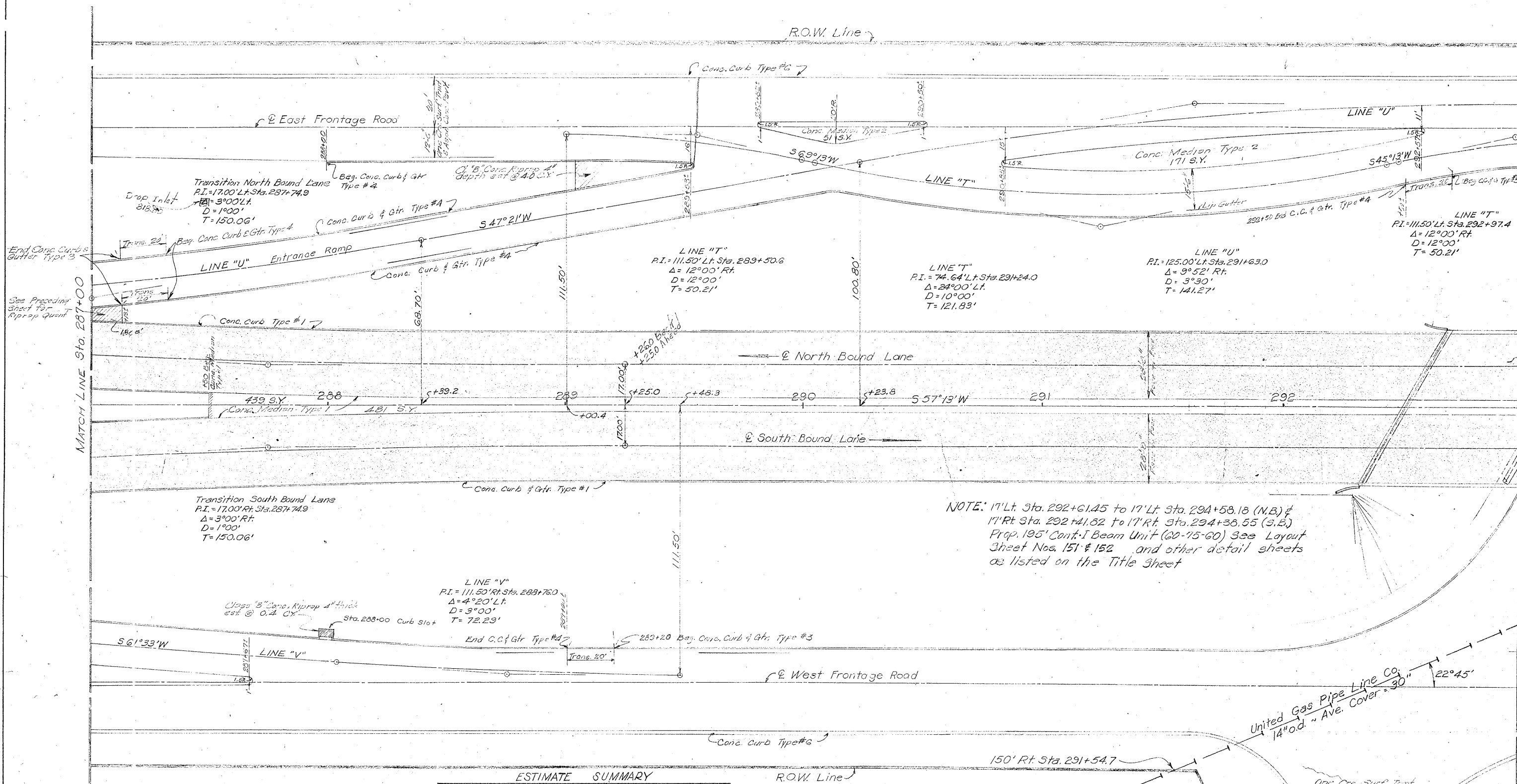


ESTIMATE SUMMARY			
Description	Est.	Final	Unit
Preparation of Subgr.	12.784		S.Y.
Concrete Pavt. (N.B. Lane)	179.6		S.Y.
Concrete Pavt. (S.B. Lane)	179.5		S.Y.
Monolithic Curb (Type 1)	702		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class 'B' Concrete Riprap	11.3		C.Y.
Concrete Curb-Type 6	1200		L.F.
Conc. Curb & Gutter-Type 3	585		L.F.
Conc. Curb & Gutter-Type 4	1080		L.F.
Conc. Curb & Gutter-Type 5	0		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	384		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5571		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5571		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	581		S.Y.

WEIDNER ROAD INTERCHANGE LAYOUT

SHEET 17 OF 29
SCALE 1" = 20'

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	FI-31 (17)	109
COUNTY	SECTION	HIGHWAY NO.
BEXAR	10 17	25 U.S. 81

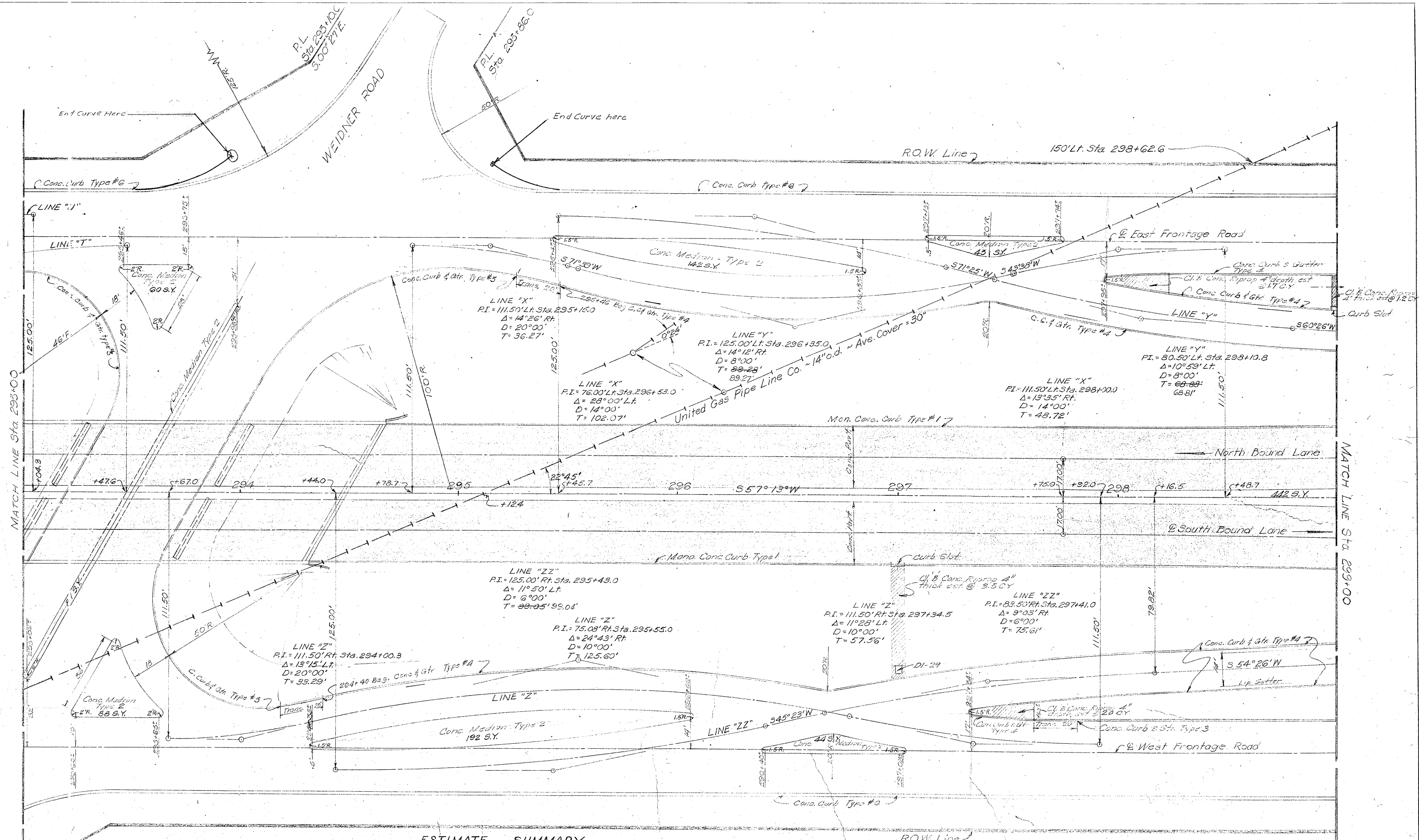


ESTIMATE SUMMARY			
Description	Est.	Final	Unit
Preparation of Subgr.	11,875		S.Y.
Concrete Pavt. (N.B. Lane)	1933		S.Y.
Concrete Pavt. (S.B. Lane)	1933		S.Y.
Monolithic Curb (Type 1)	1203		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	4.4		C.Y.
Concrete Curb-Type 6	1281		L.F.
Conc. Curb & Gutter-Type 3	461		L.F.
Conc. Curb & Gutter-Type 4	1174		L.F.
Conc. Curb & Gutter-Type 5	0		L.F.
Conc. Median (Type 1)	481		S.Y.
Conc. Median (Type 2)	222		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5812		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5812		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	67		S.Y.

WEIDNER ROAD INTERCHANGE LAYOUT

SHEET 18 OF 29
 SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	110
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	HIGHWAY NO.
15	BEXAR	18-7	25 US81



ESTIMATE SUMMARY

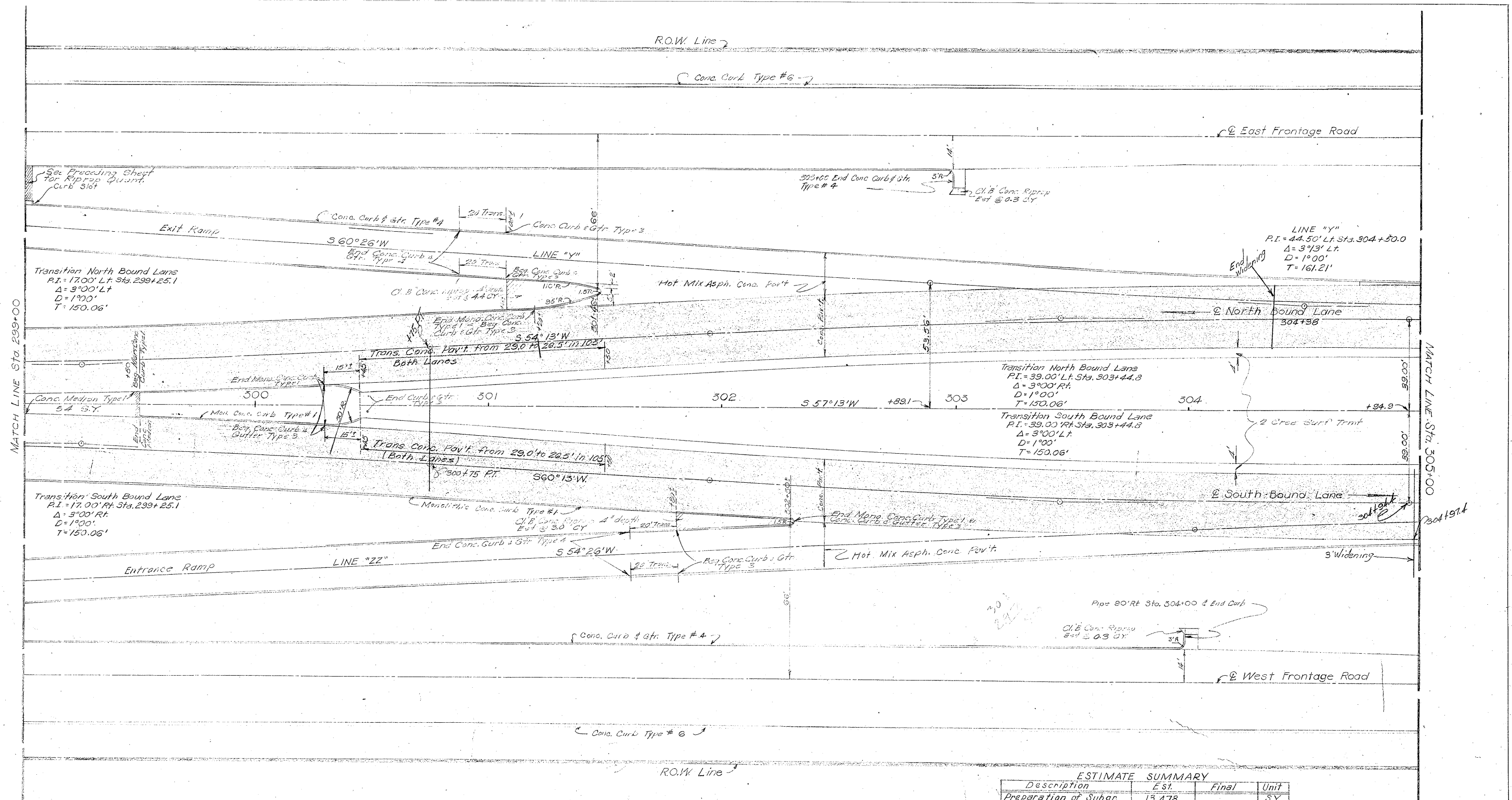
Description	Est.	Final	Unit	Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	13,373		S.Y.	Concrete Curb-Type 6	1280		L.F.	Steel Plate Guard Fence	0		L.F.
Concrete Pavt. (NB Lane)	1933		S.Y.	Conc. Curb & Gutter-Type 3	626		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Concrete Pavt. (S.B. Lane)	2191*		S.Y.	Conc. Curb & Gutter-Type 4	1293		L.F.	Surf. Area (One Crs. Surf. Tr.)	7237		S.Y.
Monolithic Curb (Type 1)	899		L.F.	Conc. Curb & Gutter-Type 5	0		L.F.	Surf. Area (Asph. Conc. Pavt.)	7237		S.Y.
Monolithic Curb (Type 2)	0		L.F.	Conc. Median (Type 1)	442		S.Y.	Surf. Area (Two Crs. Surf. Tr.)	0		S.Y.
Class "B" Concrete Riprap	72		C.Y.	Conc. Median (Type 2)	656		S.Y.				

* Includes 258 S.Y. Conc. for Bridge Approaches

WEIDNER ROAD INTERCHANGE LAYOUT

SHEET 19 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	E1-31(17)	111
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEXAR	12	7
			25
			45.81



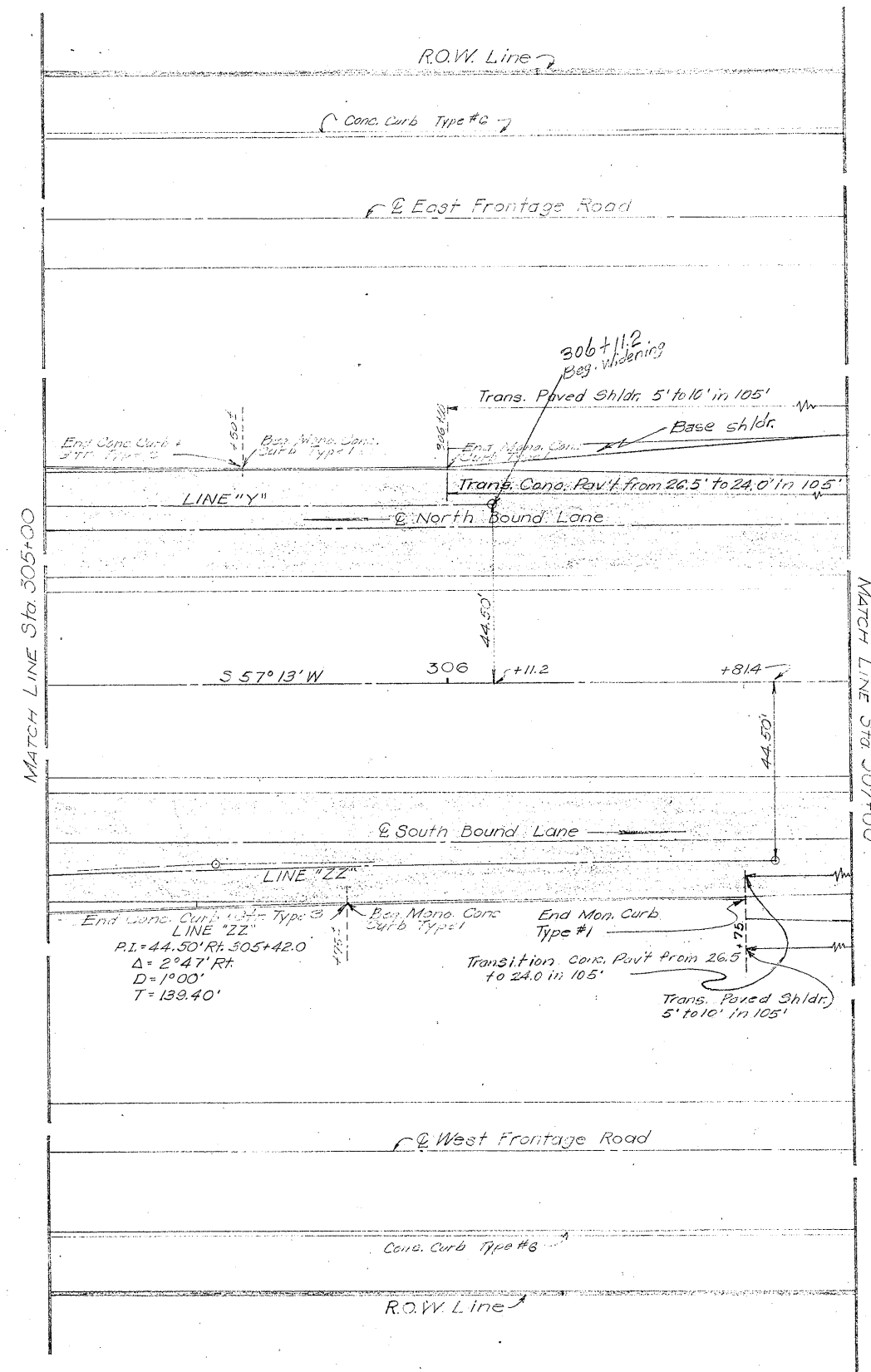
WEIDNER ROAD INTERCHANGE LAYOUT

SHEET 20 OF 29
SCALE 1" = 20'

ESTIMATE SUMMARY			
Description	Est.	Final	Unit
Preparation of Subgr.	13,478		S.Y.
Concrete Pavt. (N.B. Lane)	1823		S.Y.
Concrete Pavt. (S.B. Lane)	1823		S.Y.
Monolithic Curb (Type 1)	711		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class B Concrete Riprap	80		C.Y.
Concrete Curb - Type 6	1200		L.F.
Conc. Curb & Gutter Type 3	866		L.F.
Conc. Curb & Gutter Type 4	1392		L.F.
Conc. Curb & Gutter Type 5	0		L.F.
Conc. Median (Type 1)	54		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5955		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5955		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	411		S.Y.

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	112
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.
15	BEXAR	16	7
			25
			45.51

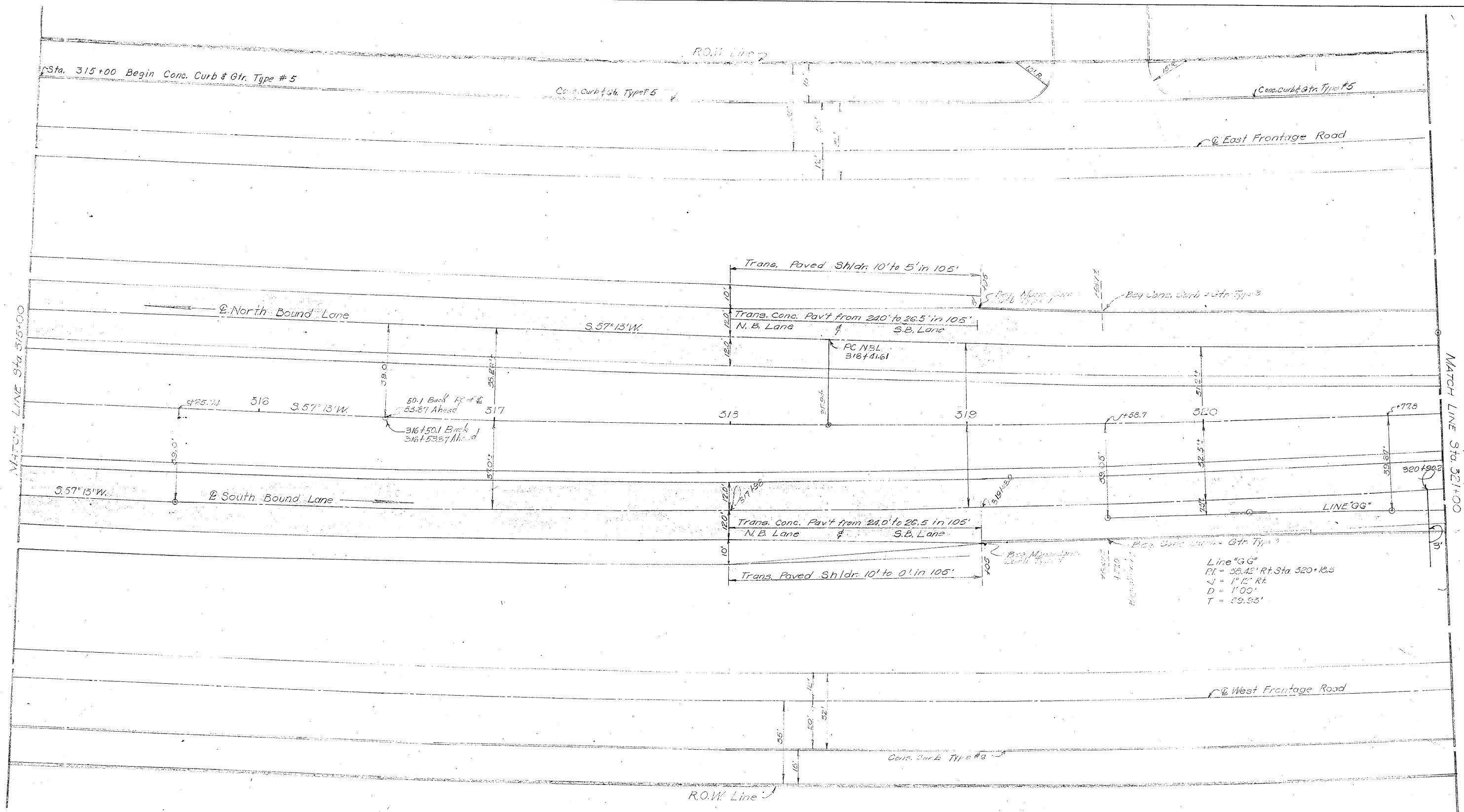
ESTIMATE SUMMARY			
Description	Est.	Final	Unit
Preparation of Subgr.	3,956		S.Y.
Concrete Pavt. (N.B. Lane)	589		S.Y.
Concrete Pavt. (S.B. Lane)	515		S.Y.
Monolithic Curb (Type 1)	125		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class 'B' Concrete Riprap	0		C.Y.
Concrete Curb - Type 6	400		L.F.
Conc. Curb & Gutter - Type 3	125		L.F.
Conc. Curb & Gutter - Type 4	0		L.F.
Conc. Curb & Gutter - Type 5	0		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	1430		S.Y.
Surf. Area (Asph. Conc. Pavt.)	1430		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	278		S.Y.



WEIDNER ROAD INTERCHANGE LAYOUT

SHEET 21 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	113
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEXAR	16	7
			25
			US 51



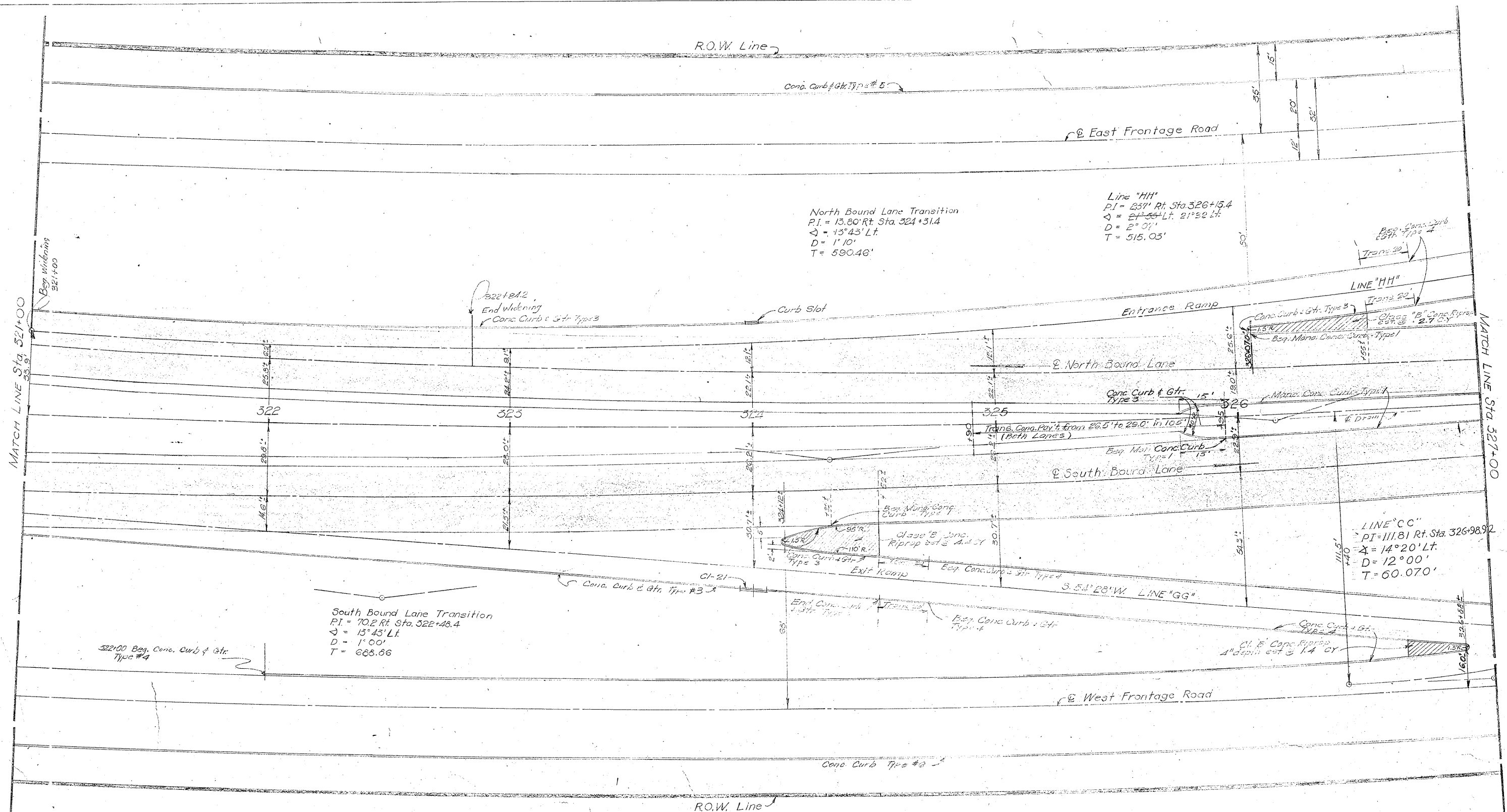
ESTIMATE SUMMARY

Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	12,774		S.Y.	Conc. Curb & Gutter Type 5	502		L.F.
Concrete Pavt. (N.B. Lane)	1669		S.Y.	Conc. Median (Type 1)	0		S.Y.
Concrete Pavt. (S.B. Lane)	1669		S.Y.	Conc. Median (Type 2)	0		S.Y.
Monolithic Curb (Type 1)	103		L.F.	Steel Plate Guard Fence	0		L.F.
Monolithic Curb (Type 2)	0		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Class "B" Concrete Riprap	0		C.Y.	Surf. Area (One Crs. Surf. Tr.)	4250		S.Y.
Concrete Curb - Type 6	614		L.F.	Surf. Area (Asph. Conc. Pavt.)	4250		S.Y.
Conc. Curb & Gutter Type 3	232		L.F.	Surf. Area (Two Crs. Surf. Tr.)	1375		S.Y.
Conc. Curb & Gutter Type 4	0		L.F.				

INTERCHANGE LAYOUT STA. 334+25

SHEET 22 OF 29
SCALE 1" = 20'

TEN. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	114
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	HIGHWAY NO.
15	BEXAR	16	7 25 US81



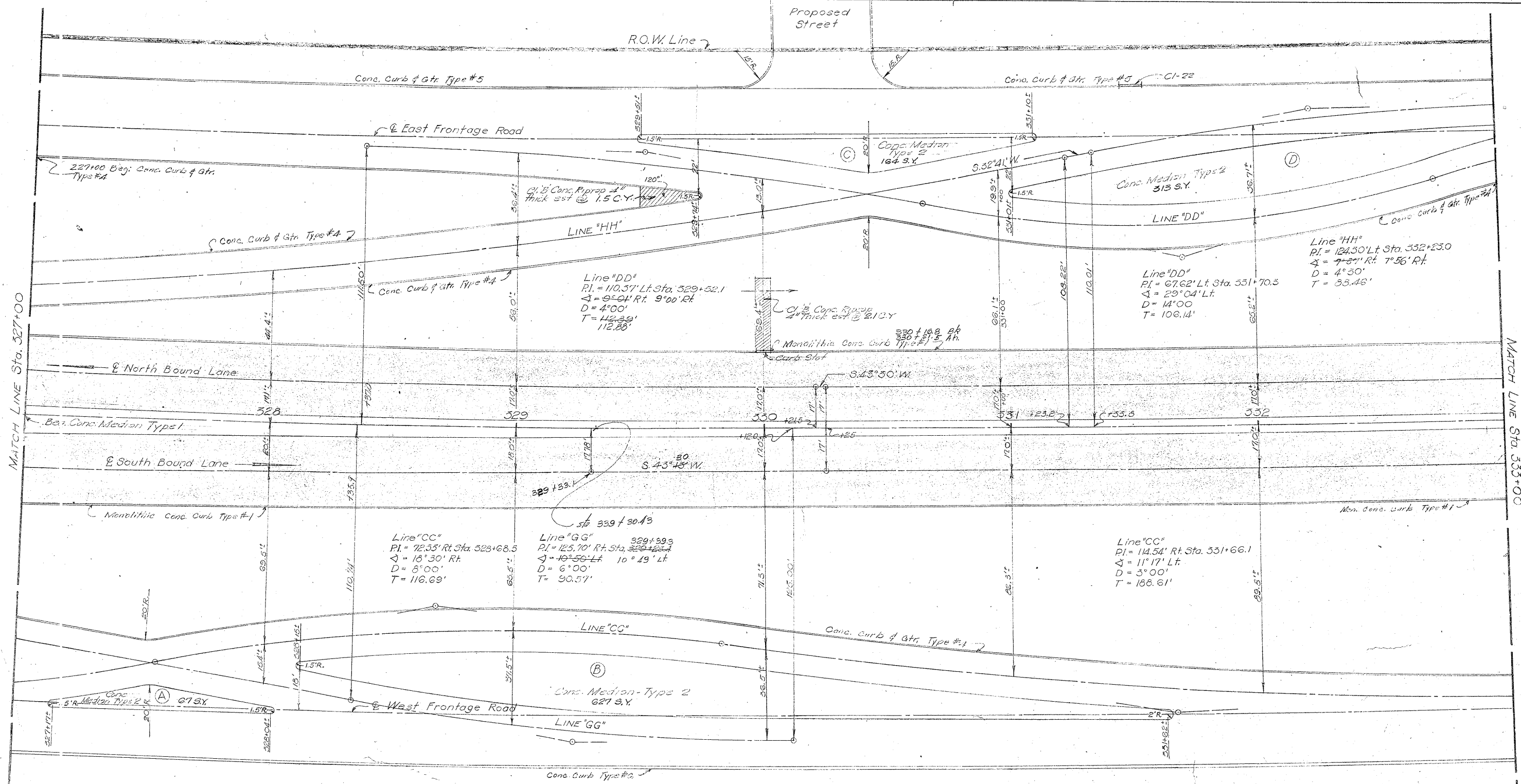
ESTIMATE SUMMARY

Description	Est.	Final	Unit	Description	Est.	Final	Unit
Preparation of Subgr.	12,406		S.Y.	Conc. Curb & Gutter-Type 5	586		L.F.
Concrete Pavt. (N.B. Lane)	1812		S.Y.	Conc. Median (Type 1)	0		S.Y.
Concrete Pavt. (S.B. Lane)	1812		S.Y.	Conc. Median (Type 2)	0		S.Y.
Monolithic Curb (Type 1)	531		L.F.	Steel Plate Guard Fence	0		L.F.
Monolithic Curb (Type 2)	0		L.F.	Removing Old Con. (Pavt.)	0		S.Y.
Class "B" Concrete Riprap	8.5		C.Y.	Surf. Area (One Crs. Surf. Tr.)	5485		S.Y.
Concrete Curb-Type 6	614		L.F.	Surf. Area (Asph. Conc. Pavt.)	5485		S.Y.
Conc. Curb & Gutter-Type 3	1043		L.F.	Surf. Area (Two Crs. Surf. Tr.)	431		S.Y.
Conc. Curb & Gutter-Type 4	1084		L.F.				

INTERCHANGE LAYOUT STA. 334+25

SHEET 23 OF 29
 SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	EI-31(17)	115
STATE HWY. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	DEKAR	16	7
			25
			11551



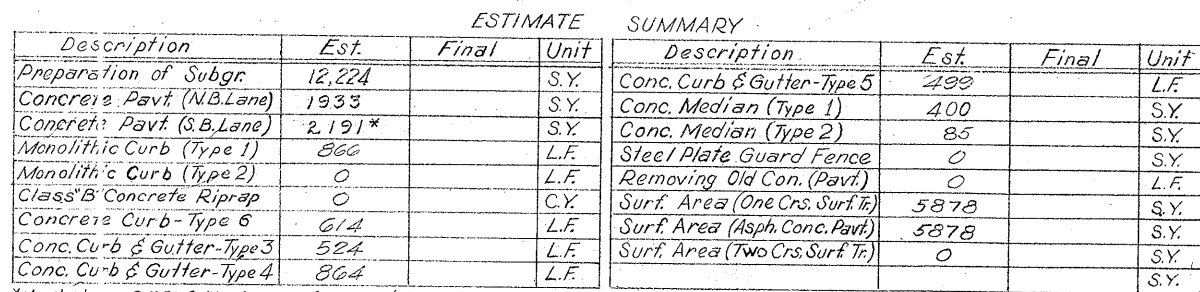
ESTIMATE SUMMARY

Description	Est.	Final	Unit
Preparation of Subgr.	12,586		S.Y.
Concrete Pavt. (N.B. Lane)	1933		S.Y.
Concrete Pavt. (S.B. Lane)	1933		S.Y.
Monolithic Curb (Type 1)	1200		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	3.6		C.Y.
Concrete Curb-Type 6	614		L.F.
Conc. Curb & Gutter-Type 3	0		L.F.
Conc. Curb & Gutter-Type 4	1759		L.F.
Conc. Curb & Gutter-Type 5	553		L.F.
Conc. Median (Type 1)	500		S.Y.
Conc. Median (Type 2)	1171		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5582		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5582		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	0		S.Y.

INTERCHANGE LAYOUT STA. 334+25

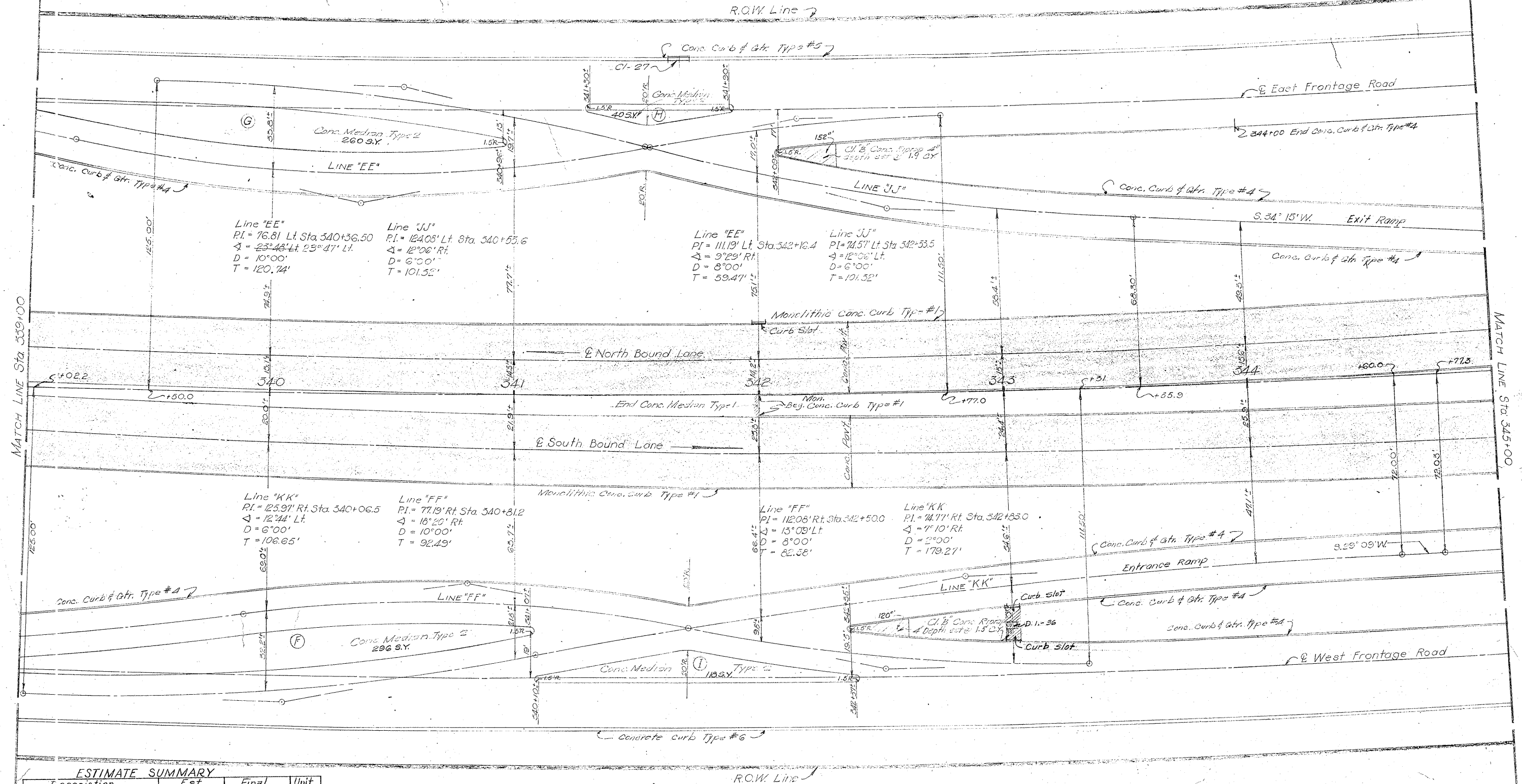
SHEET 24 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6.	TEXAS	FI-31(17)	116
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	100' HIGHWAY NO.
15	BEXAR	16 7 25	115.51



INTERCHANGE LAYOUT
STA. 334+25

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	FI-31(17)			117
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	BEXAR	16	7	25	U.S. 81

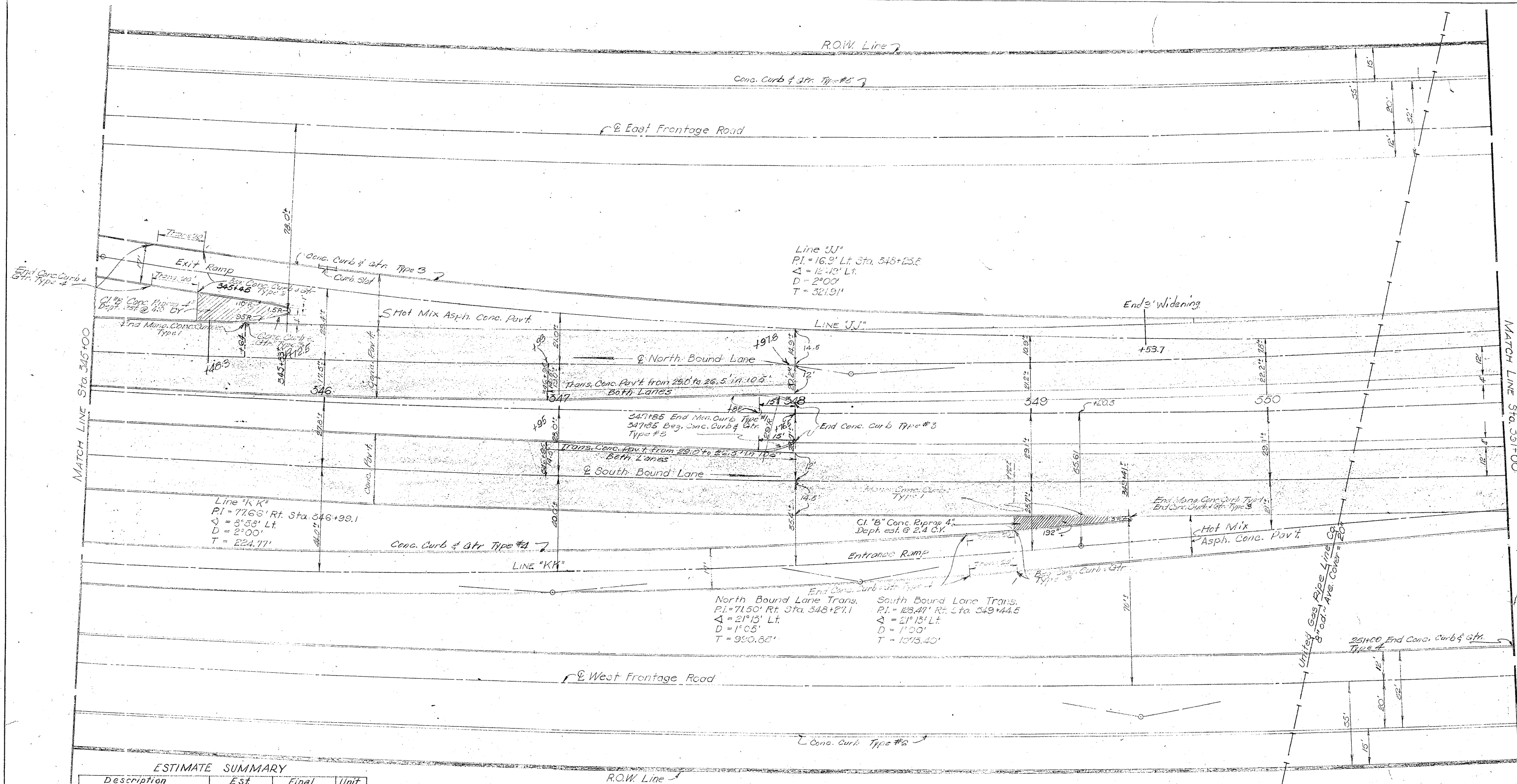


ESTIMATE SUMMARY			
Description	Est	Final	Unit
Preparation of Subgr.	13,600		S.Y.
Concrete Pavt. (N.B. Lane)	1933		S.Y.
Concrete Pavt. (S.B. Lane)	1933		S.Y.
Monolithic Curb (Type 1)	1794		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	3.4		C.Y.
Concrete Curb Type 6	614		L.F.
Conc. Curb & Gutter Type 3	0		L.F.
Conc. Curb & Gutter Type 4	2240		L.F.
Conc. Curb & Gutter Type 5	577		L.F.
Conc. Median (Type 1)	250		S.Y.
Conc. Median (Type 2)	714		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	5615		S.Y.
Surf. Area (Asph. Conc. Pavt.)	5615		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	0		S.Y.

INTERCHANGE LAYOUT STA. 334+25

SHEET 29 OF 29
 SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	118
STATE DIV. NO.	COUNTY	CONTROL SECTION	JOB NO.
15	BEXAR	16	7
			25
			U.S. 81



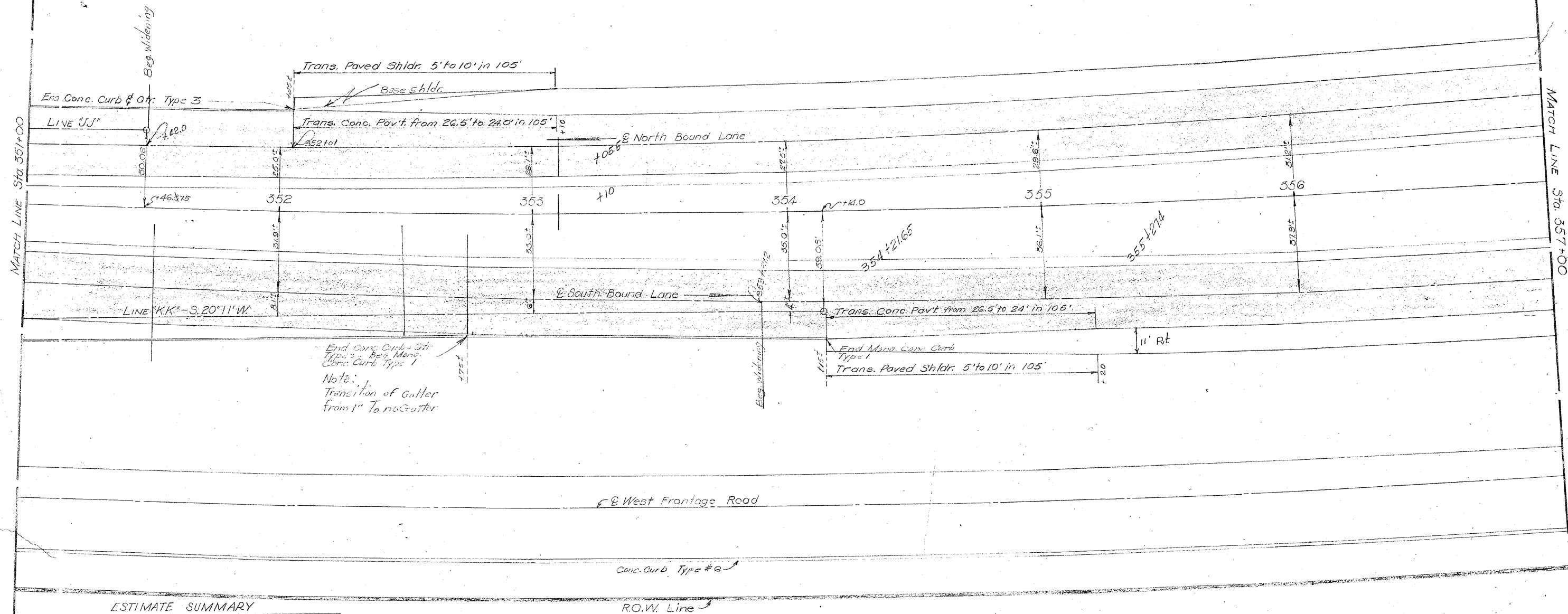
ESTIMATE SUMMARY

Description	Est	Final	Unit
Preparation of Subgr.	12,075		
Concrete Pavt. (N.B. Lane)	1836		
Concrete Pavt. (S.B. Lane)	1836		
Monolithic Curb (Type 1)	1076		
Monolithic Curb (Type 2)	0		
Class "B" Concrete Riprap	6.4		
Concrete Curb - Type 6	614		
Conc. Curb & Gutter - Type 3	901		
Conc. Curb & Gutter - Type 4	1485		
Conc. Curb & Gutter - Type 5	586		
Conc. Median (Type 1)	0		
Conc. Median (Type 2)	0		
Steel Plate Guard Fence	0		
Removing Old Con. (Pavt.)	0		
Surf. Area (One Crs. Surf. Tr.)	5771		
Surf. Area (Asph. Conc. Pavt.)	5771		
Surf. Area (Two Crs. Surf. Tr.)	267		

INTERCHANGE LAYOUT STA. 334+25

SHEET 27 OF 28
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	E-31(17)	119
STATE DIST. NO.	COUNTY	CONTRACT SECTION NO.	JOB NO.
15	BEXAR	10-7	25
			U.S.D.



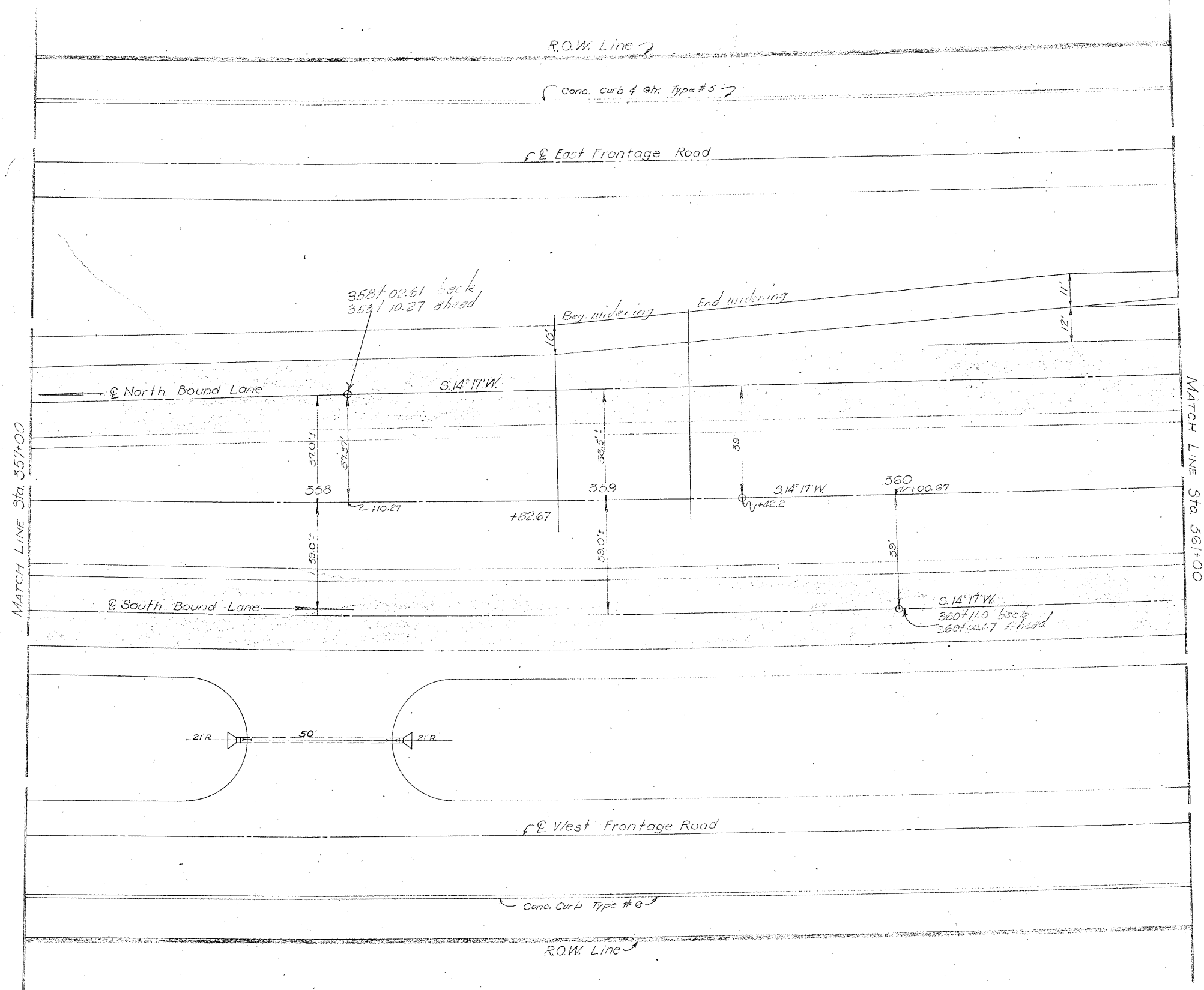
ESTIMATE SUMMARY

Description	Est.	Final	Unit
Preparation of Subgr.	9,814		S.Y.
Concrete Pavt. (N.B. Lane)	1644		S.Y.
Concrete Pavt. (S.B. Lane)	1703		S.Y.
Monolithic Curb (Type 1)	140		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class B Concrete Riprap	0		C.Y.
Concrete Curb - Type 6	614		L.F.
Conc. Curb & Gutter - Type 3	280		L.F.
Conc. Curb & Gutter - Type 4	0		L.F.
Conc. Curb & Gutter - Type 5	586		L.F.
Conc. Median (Type 1)	0		S.Y.
Conc. Median (Type 2)	0		S.Y.
Steel Plate Guard Fence	0		L.F.
Removing Old Conc. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	4774		S.Y.
Surf. Area (Asph. Conc. Pavt.)	4774		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	1342		S.Y.

INTERCHANGE LAYOUT STA. 334+25

SHEET 25 OF 29
SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	120
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
15	DEKAR	16	7 25 115.21



ESTIMATE SUMMARY

Description	Est.	Final	Unit
Preparation of Subgr.	7,471		S.Y.
Concrete Pavt. (N.B. Lane)	1,067		S.Y.
Concrete Pavt. (S.B. Lane)	1,767*		S.Y.
Monolithic Curb (Type 1)	0		L.F.
Monolithic Curb (Type 2)	0		L.F.
Class "B" Concrete Riprap	0		C.Y.
Concrete Curb - Type 6	409		L.F.
Conc. Curb & Gutter - Type 3	0		L.F.
Conc. Curb & Gutter - Type 4	0		L.F.
Conc. Curb & Gutter - Type 5	391		L.F.
Conc. Median (Type 1)	0		L.F.
Conc. Median (Type 2)	0		L.F.
Steel Plate Guard Fence	0		L.F.
Removing Old Con. (Pavt.)	0		S.Y.
Surf. Area (One Crs. Surf. Tr.)	3549		S.Y.
Surf. Area (Asph. Conc. Pavt.)	3549		S.Y.
Surf. Area (Two Crs. Surf. Tr.)	902		S.Y.

* Includes 700 S.Y. Conc. for U.S. 81 Business Route.

INTERCHANGE LAYOUT
STA. 334+25
 SHEET 22 OF 29
 SCALE 1" = 20'

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	121
STATE DIV. NO.	COUNTY	SECTION NO.	ROADWAY NO.
15	BEXAR	16 7 25	US 81

SUMMARY OF INTERCHANGE QUANTITIES

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	FI-31 (17)			122
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	Bexar	16	7	25	U.S. 81

Includes	*1	725 S.Y.	for Bridge Approach Slabs
"	*2	428 "	" " " "
"	*3	258 "	" " " "
"	*4	258 "	" " " "

*Includes 700 S.Y. Concrete for U.S. 81 Business Route

SUMMARY OF FLEXIBLE BASE AND FOUNDATION COURSE

FLEXIBLE BASE													FOUNDATION COURSE													FLEXIBLE BASE													FOUNDATION COURSE													FLEXIBLE BASE													FOUNDATION COURSE												
STATION TO STATION	EAST FRONTAGE ROAD	EAST RAMP	NORTH BOUND LANE	SOUTH BOUND LANE	WEST RAMP	WEST FRONTAGE ROAD	CONNECTIONS ETC.	DITCHES AND DRAINS	NORTH BOUND LANE	SOUTH BOUND LANE	CONNECTIONS ETC.	TOTALS FOR QUARTER	STATION TO STATION	EAST FRONTAGE ROAD	EAST RAMP	NORTH BOUND LANE	SOUTH BOUND LANE	WEST RAMP	WEST FRONTAGE ROAD	CONNECTIONS ETC.	DITCHES AND DRAINS	NORTH BOUND LANE	SOUTH BOUND LANE	CONNECTIONS ETC.	TOTALS FOR QUARTER	STATION TO STATION	EAST FRONTAGE ROAD	EAST RAMP	NORTH BOUND LANE	SOUTH BOUND LANE	WEST RAMP	WEST FRONTAGE ROAD	CONNECTIONS ETC.	DITCHES AND DRAINS	NORTH BOUND LANE	SOUTH BOUND LANE	CONNECTIONS ETC.	TOTALS FOR QUARTER																																							
180	181	54	125	125	54				100	100		106	272	270												252	253	148	23	13	13				58	19	59	224	52	143	143	1231	324	1242	15	13	11	3	21				17	15	25	42	27	25	41																		
181	182	61	125	125	61				100	100		117	270	270													253	254	155	13	13				63	59	59	302	143	143	224	324	1242	55	69	41	24	77			63	53	75	153	21	96	156																				
182	183	65	116	116	66				98	98		124	267	267													254	255	518	18	18				63	183	183	1920	143	143	1920	122	122	70	127	44	47	93			76	59	120	289	176	113	197																				
183	184	66	116	116	70				93	93		125	267	267													255	256	155	18	18				63	59	59	245	143	143	245	324	1242	84	23	86	34	56	34			82	55	154	52	205	164	124	197																		
184	185	66	116	116	70				45	98	98	125	267	267													256	257	155	18	18				63	59	59	302	143	143	245	324	1242	98	56	31	31	23	184			53	53	147	113	157	157	52	344																		
185	186	68	116	116	70				83	93	93	123	251	251													257	258	153	12	12				63	59	59	291	143	143	233	324	1242	98	56	22	22			55	55	187	103	153	153		306																				
186	187	70	116	116	70				75	85	85	120	242	242													258	259	153	6	4	4	6	28	15	13	13	56	11	31	31	11	54			46	46	187	52	153	153		306																								
187	188	70	116	116	70				72	80	78	120	222	217													259	260	103	22	16	16	22	104	53	47	47	204	41	113	113	41	235			126	11	11			43	43	257	157	157		262																				
188	189	70	116	116	70				72	78	72	120	199	197													260	261	108	56	26	26	56	109	79	62	62	189	103	154	154	56	30			161	11	11			45	45	336	157	157		282																				
189	190	68	116	116	70				13	72	78	123	199	211													261	262	106	56	29	29	56	95	79	64	64	183	103	153	153	103	117																																		

SUMMARY OF FLEXIBLE BASE AND FOUNDATION COURSE

[illegible]

HAUL DIAGRAM

FLEXIBLE BASE AND FOUNDATION COURSE

SHEET 2 OF 4

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
2	TEXAS	F 31 (18)	124
STATE DIST. NO.	COUNTY	CONT.	SECT.
15	Bexar	16	7
		26	U.S. 81

SUMMARY OF FLEXIBLE BASE AND FOUNDATION COURSE

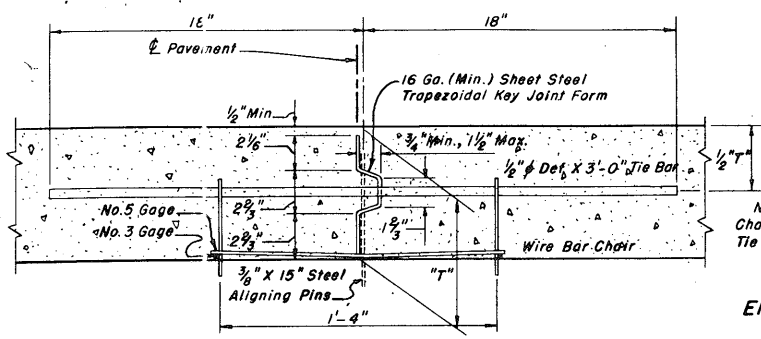
[illegible]

* Includes Cross-over & Intersection Quantities

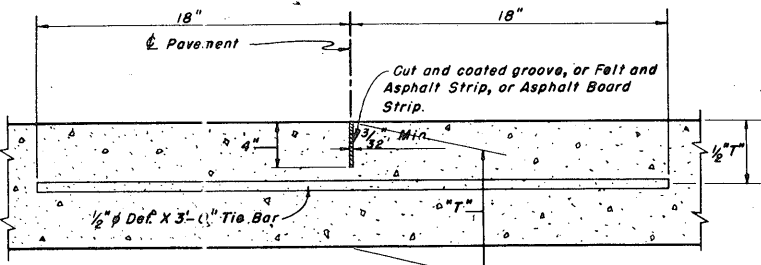
① For North Bound Lane (U.S. 81 Interstate), Use Stationing of South Bound Lane (U.S. 81 Int) from Sta. 393+16.51 to 411+00

HAUL DIAGRAM
FLEXIBLE BASE AND FOUNDATION COURSE
SHEET 3 OF 4

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	F.I. 1088 (2)				125
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.	
15	Bexar	17	10	13	U.S. 81	



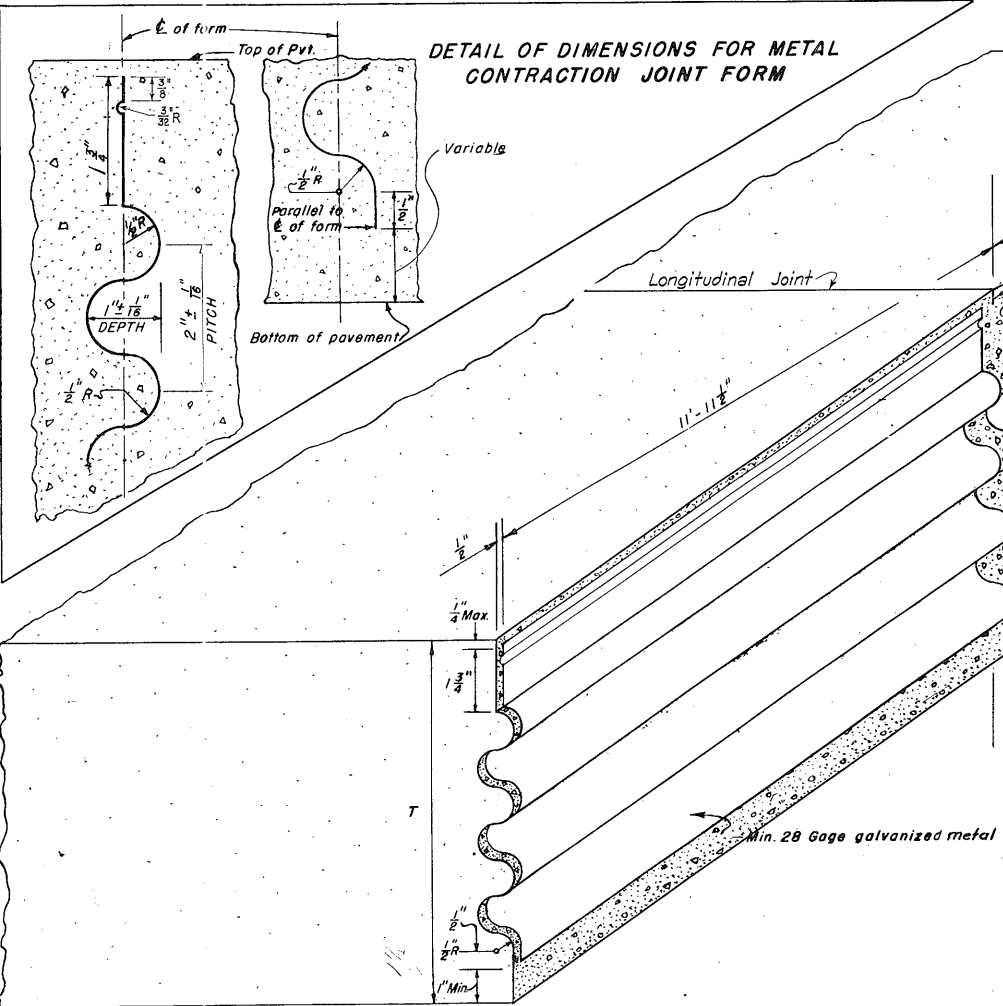
TYPE 1: STEEL TONGUE-AND-GROOVE FORM



TYPE 2: MACHINE CUT GROOVE

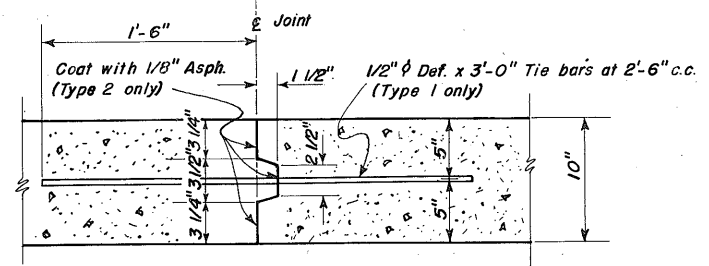
The groove shall be cut by an approved machine and the vertical faces of the concrete coated with an approved concrete curing compound before closing and final finishing, or a 1/8 inch asphalt impregnated felt strip shall be inserted, or an asphalt board strip held in an approved continuous metal shield, shall be placed continuously in a groove cut in the concrete by an approved mechanical device operated in advance of the longitudinal float. The strips or groove shall be true to line, vertical, and of the depth shown. Tie-bars shall be installed as in TYPE 1, or accurately placed in position on the screeded concrete by means of an approved template and forced to the proper position with a suitable tool.

ALTERNATE TYPES OF LONGITUDINAL JOINTS

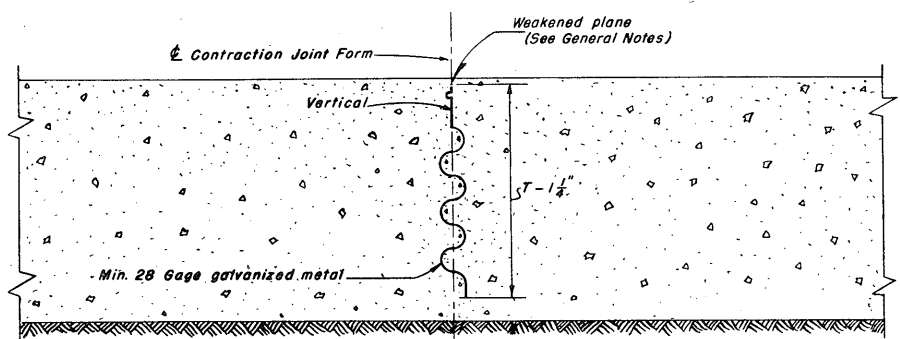


OBLIQUE SECTION: CONTRACTION JOINT
SHOWING
METAL CONTRACTION JOINT FORM IN PLACE

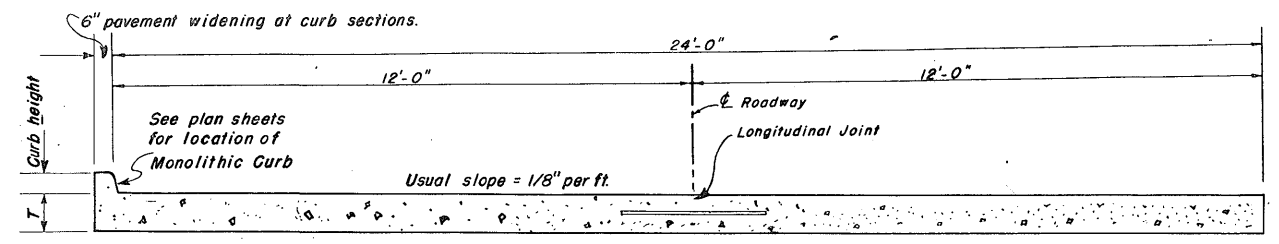
Length tolerance for Corrugated sheets up to 12 ft. long: plus zero minus 1/2 inch
At butt joint use metal clip to hold top edges of adjacent sheets in line.
Minimum length of sheets to be 6'-0"



TYPE 1: CONSTRUCTION JOINT (WITH TIE BARS)
TYPE 2: CONSTRUCTION JOINT (TIE BARS OMITTED)

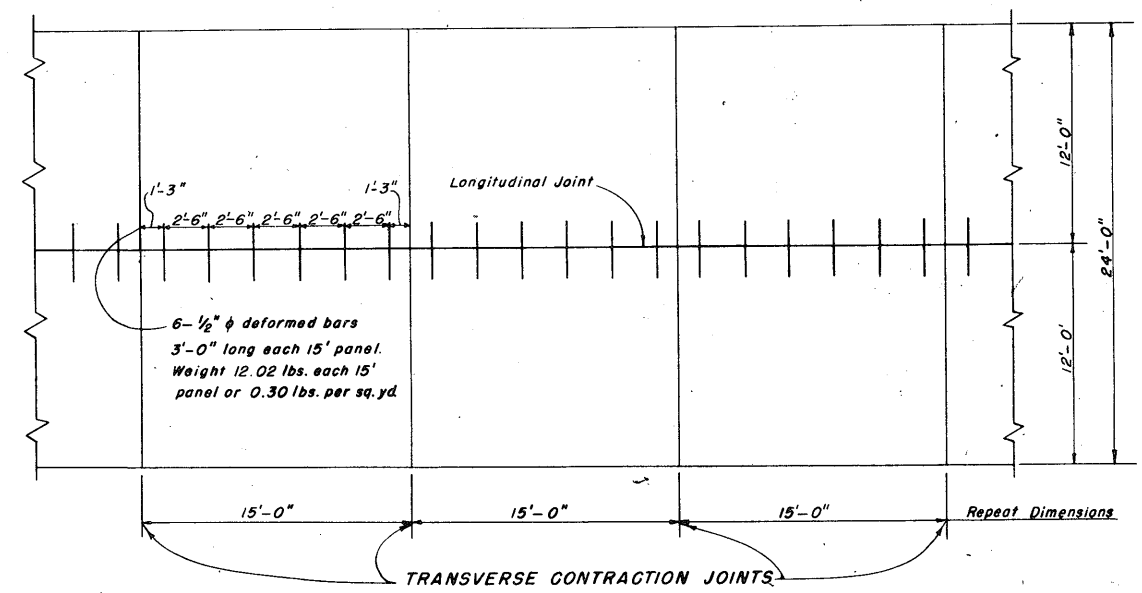


ELEVATION: CONTRACTION JOINT



SECTION

NOTE: For this contract - Dimension "T" = 10"



PLAN VIEW

Steel quantities are for information of bidders. No direct payment will be made for reinforcing steel. (Refer to "General Notes")

GENERAL NOTES:

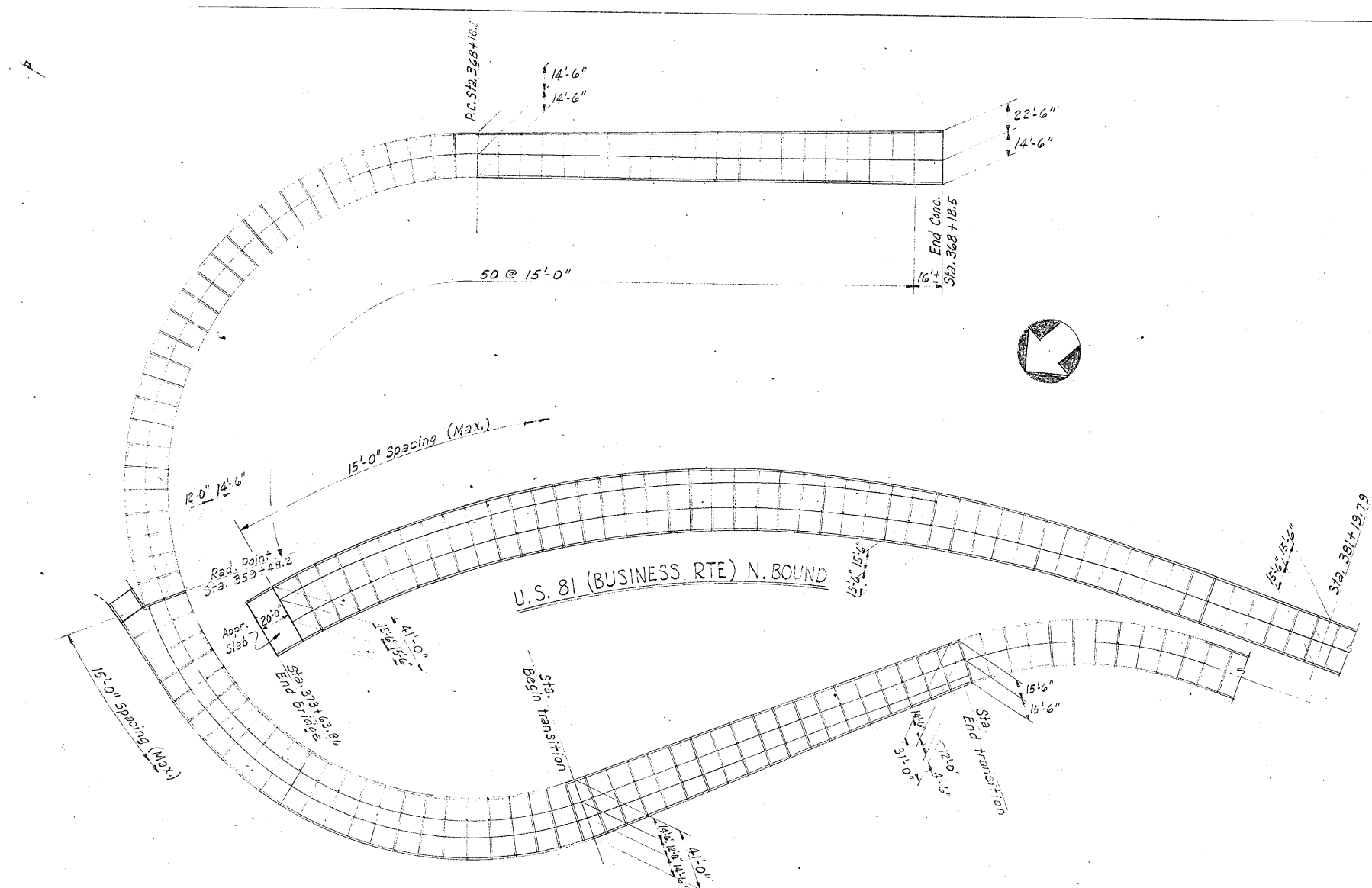
- All joints, including all materials, devices, and work required for installation, shall be considered subsidiary work and shall be included in the unit price bid for "Concrete Pavement." No direct payment will be made for any material, bar chair, steel, metal contraction joint form, or any other device shown, nor for its installation. Steel quantities are for information of bidders only.
- At each bridge end construct a thickened and reinforced approach slab, if required elsewhere in these plans. Additional work, concrete and steel, shall be included in unit price bid for "Concrete Pavement."
- Integral Traffic Stripe shall be applied as required by plans and governing specifications. Provisions for use of this patented device have been made by the State free of royalty charges to the Contractor.
- When work is stopped, due to breakdown or other cause, remove concrete beyond last contraction joint in place and install header.
- When TYPE 2 Longitudinal Joint is used, notch Metal Contraction Joint Form to permit installation of joint.
- Coat one side of Contraction Joint Form with lacquer, membrane curing compound - (Item 531), or other material whose ability to break bond between concrete and galvanized metal has been demonstrated to the satisfaction of the Engineer.
- The Contractor will be required to vibrate the Metal Contraction Joint Form or concrete adjacent to form to the extent necessary that all corrugations are filled with concrete and no voids or honey comb exist adjacent to the Contraction Joint Form.
- After the finishing machines have passed, separate aggregate above joint form with a trowel or similar tool. Guide tool by pressing it against top vertical section of joint form and close the cut, avoiding placing aggregate directly over joint form.
- Provisions have been made by the State for the use, free of royalty charges to the contractor, of the Metal Contraction Joint Form.
- The crown diagram shown on Typical Sections elsewhere in the plans shall govern.

The contractor shall hold and save the State, its officers, its agents, and its employees harmless to liability of any nature or kind, including costs and expenses, for or on account of any patent or unpatented invention, article or appliance manufactured or used in accordance with the details of these plans.

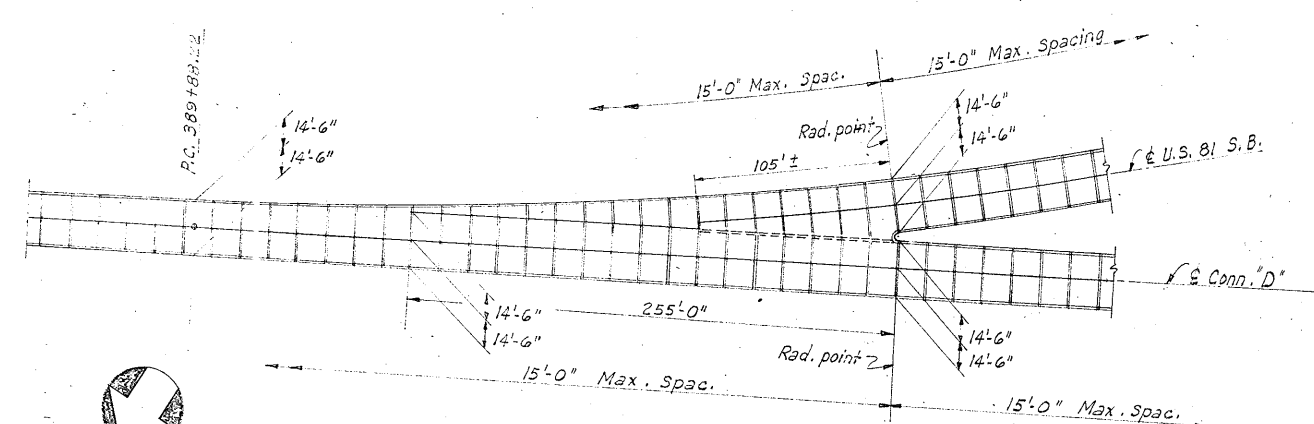
CONCRETE PAVEMENT DETAILS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17), FH088(2), F31(18)	126
COUNTY	SECTION NO.	JOB NO.	HIGHWAY NO.
15	Bexar	16, 17, 10	25, 13
			26
			U.S. 81

Revised Jan. 15, 1956



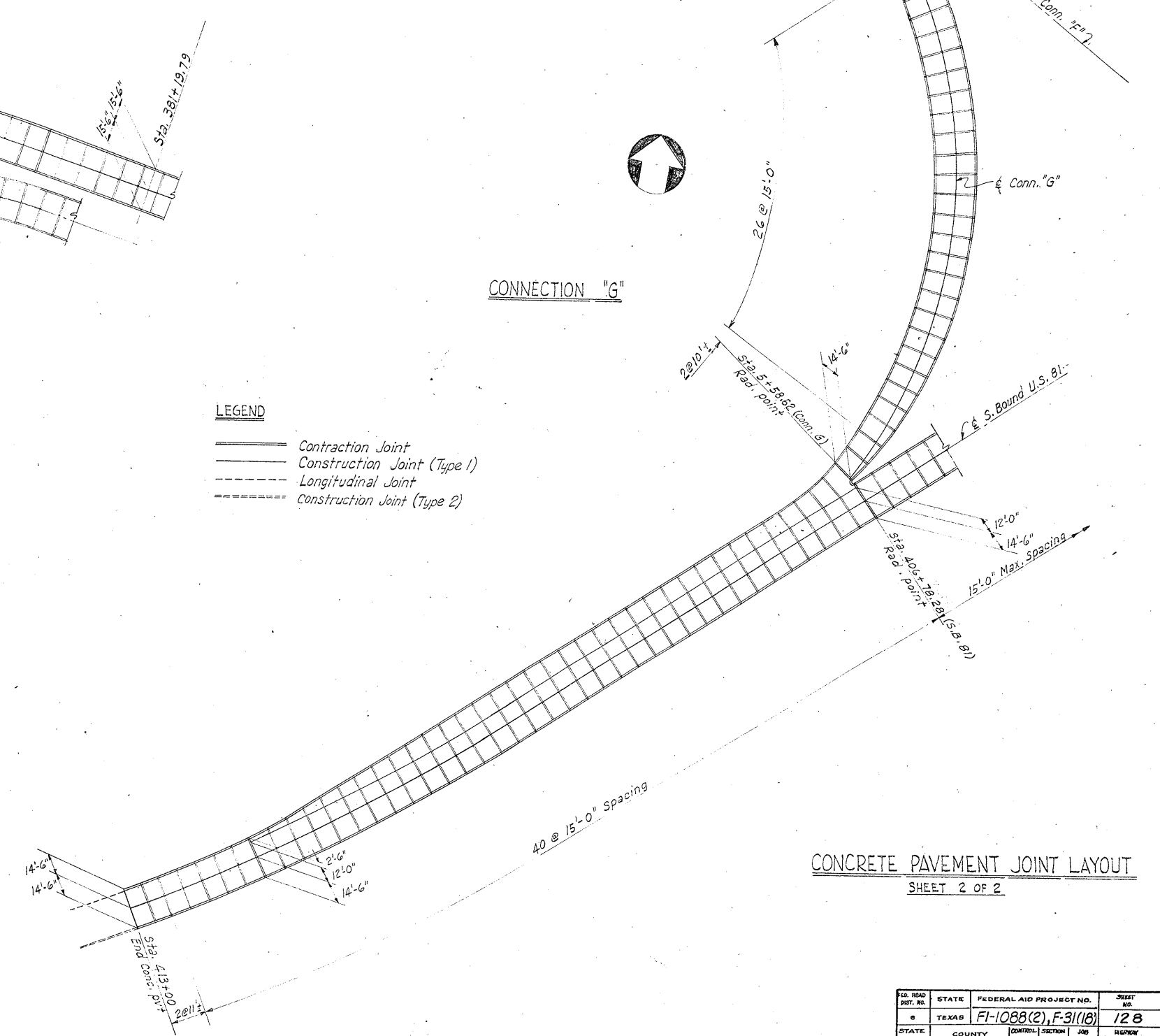
CONNECTION "B"



SOUTH BOUND U.S. 81 AT CONN. "D"

LEGEND

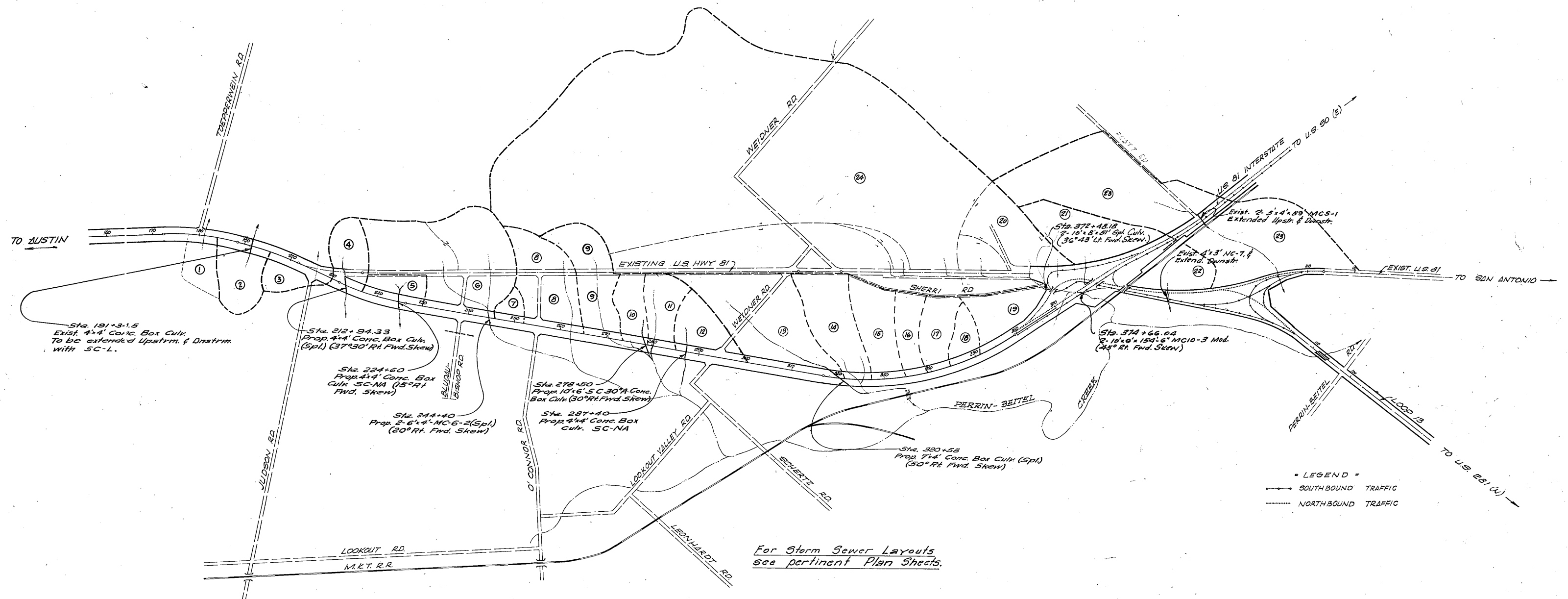
- Contraction Joint
- Construction Joint (Type 1)
- - - Longitudinal Joint
- ==== Construction Joint (Type 2)



CONCRETE PAVEMENT JOINT LAYOUT

SHEET 2 OF 2

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	FI-1088(2), F-31(18)	128
STATE DIV. NO.	COUNTY	SECTION NO.
15	Bexar	7,10,7,13,26
		U.S. 81



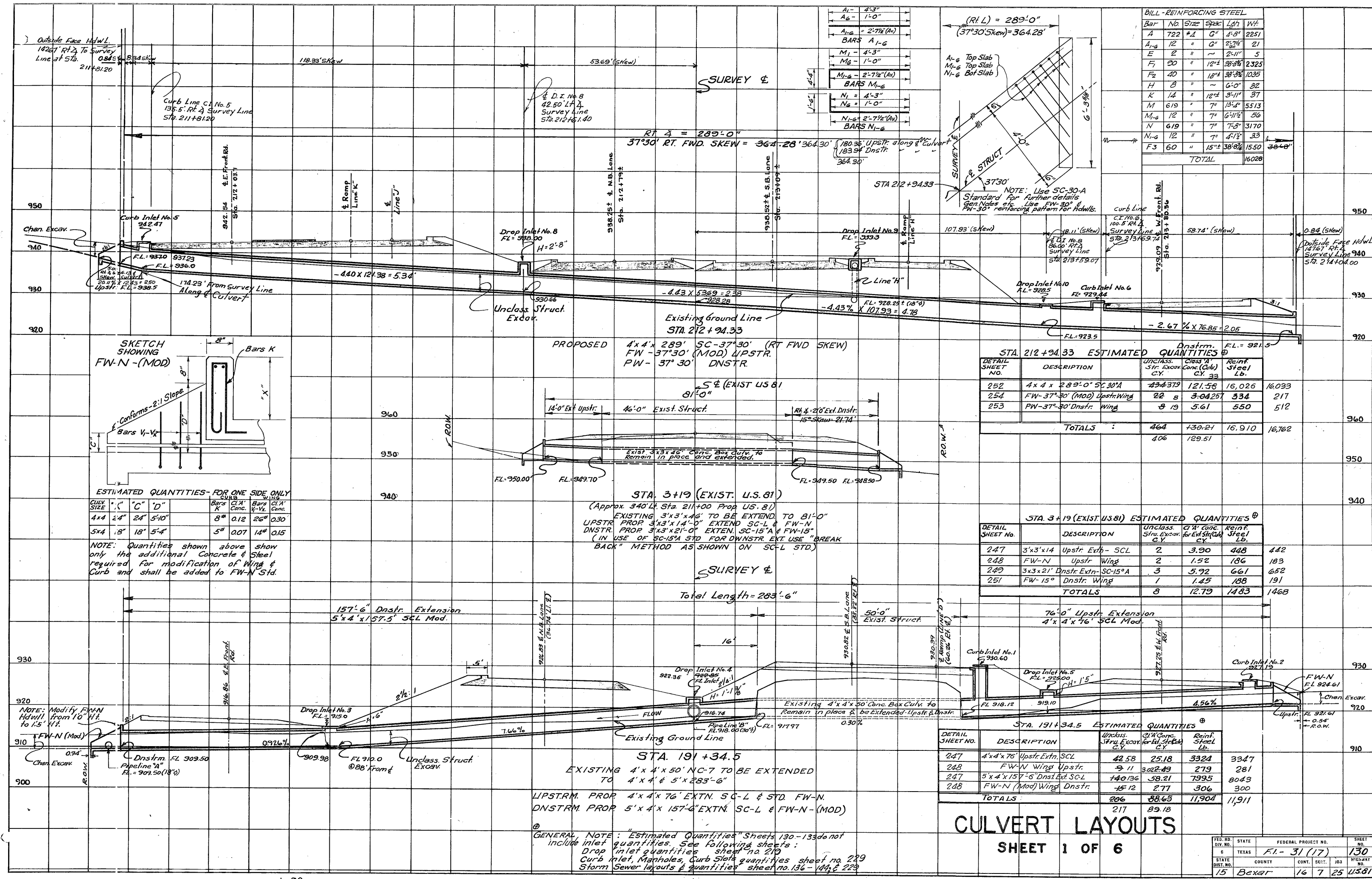
DRAINAGE AREAS								
D.A. Area	Area	Length	Slope	Velocity	Time	"C"	"Q" #	
No.	Ac.	Ft.	%	ft/sec.	Min.		cfs.	
1	18	Constructed on Project FI 31 (15) Control 16.7.22						
2	31	1480'	1.0	1.5	30	0.35	47	
3	17	200'	1.0	1.5	30	0.35	26	
4	23	400'	6.4	3.0	30	0.70	69	
5	16	880'	5.6	3.0	30	0.60	41	
6	117	1550'	3.1	3.0	19.7	0.40	234	
7	8	600	5.0	3.0	15	0.40	18	
8	51	2700	3.0	3.0	15	0.40	112	
9	44	2600	3.5	3.0	15	0.40	97	
10	18	300	3.0	3.0	15	0.40	40	
11	23	300	3.0	3.0	15	0.40	51	
12	30	1200	3.0	1.5	30	0.40	52	
13	93	3500	2.5	1.5	38.8	0.40	141	
14	46	2000	2.0	1.5	22.2	0.40	88	
15	35	2200	2.0	1.5	24.4	0.40	66	
16	18	1600	2.0	1.5	17.7	0.40	38	
17	20	1500	2.0	1.5	16.6	0.40	44	
18	12	1100	2.0	1.5	15	0.40	26	

* 10 year design frequency

DRAINAGE AREA MAP

SCALE 1" = 1000'

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS	FF-31(17), FF-1088(2), F31(18)			129
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
15	BEXAR	16	7		US 81



BILL - REINFORCING STEEL

Bar	No.	SIZE	SPAC.	LAH	Wt.
A	722	#4	6"	4'-8"	2251
A-6	12	"	6"	2'-11"	21
E	2	"	"	"	5
F	20	"	12"	38'-8"	2325
F2	40	"	10"	38'-8"	1035
H	8	"	"	6'-0"	32
K	14	"	12"	3'-11"	37
M	619	"	7"	13'-4"	5513
M-6	12	"	7"	6'-11"	56
N	619	"	7"	7'-8"	3170
N-6	12	"	7"	4'-11"	33
F3	60	"	15"	38'-8"	1550
TOTAL					16028

STA. 212+94.33 ESTIMATED QUANTITIES[Ⓢ]

DETAIL SHEET NO.	DESCRIPTION	UNCLAS. STR. EXCAV. C.Y.	CLASS A CONC. (CULV.) C.Y.	REIN. STEEL LB.
252	4' x 4' x 289'-0" SC-30'A	434.379	121.56	16,026
254	FW-37'-30" (MOD) UPSTR. WING	22	3-04257	334
253	PW-37'-30" DNSTR. WING	8	19	5.61
TOTALS		464	130.21	16,910
		406	129.51	16,762

STA. 3+19 (EXIST. U.S. 81) ESTIMATED QUANTITIES[Ⓢ]

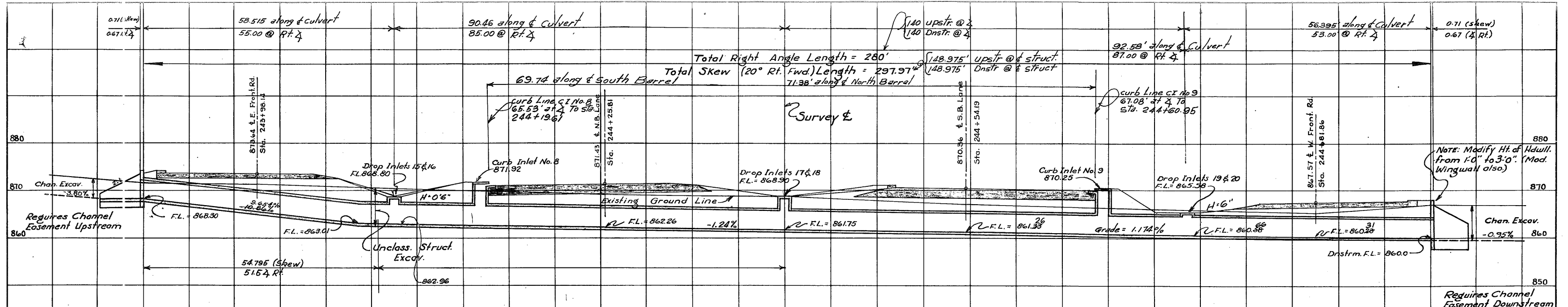
DETAIL SHEET NO.	DESCRIPTION	UNCLAS. STR. EXCAV. C.Y.	CLASS A CONC. (CULV.) C.Y.	REIN. STEEL LB.
247	3' x 3' x 14' Upstr. Extn - SCL	2	3.90	448
248	FW-N Upstr. Wing	2	1.52	186
249	3' x 3' x 21' DNSTR. Extn - SC-15'A	3	5.92	661
251	FW-15' DNSTR. WING	1	1.45	188
TOTALS		8	12.79	1483

STA. 191+34.5 ESTIMATED QUANTITIES[Ⓢ]

DETAIL SHEET NO.	DESCRIPTION	UNCLAS. STR. EXCAV. C.Y.	CLASS A CONC. (CULV.) C.Y.	REIN. STEEL LB.
247	4' x 4' x 76' Upstr. Extn. SCL	42.58	25.18	3324
248	FW-N Wing Upstr.	9	11	3022.49
247	5' x 4' x 157'-6" DNSTR. Extn. SCL	140.136	58.21	7995
248	FW-N (MOD) Wing DNSTR.	45	12	277
TOTALS		206	88.65	11,904
		217	89.18	11,911

CULVERT LAYOUTS
SHEET 1 OF 6

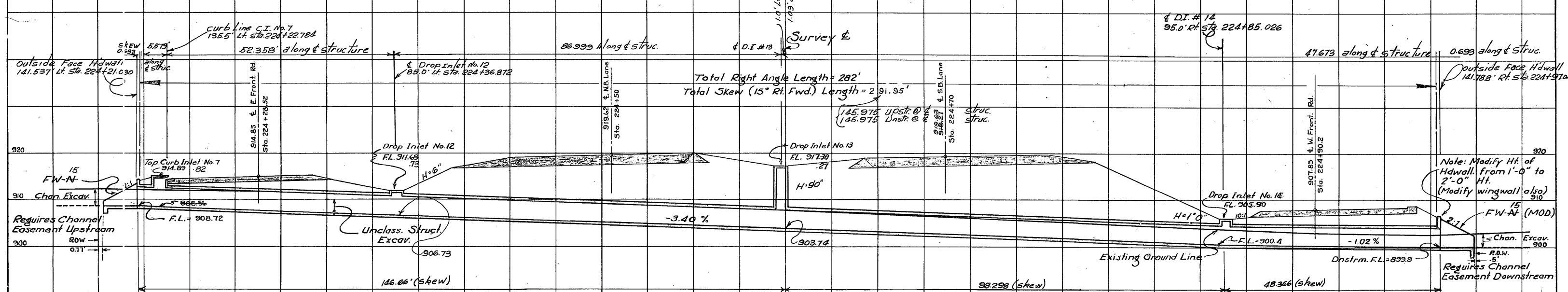
GENERAL NOTE: "Estimated Quantities" Sheets 130-133 do not include inlet quantities. See following sheets:
Drop inlet quantities sheet no. 219
Curb inlet, Manholes, Curb Slets quantities sheet no. 229
Storm Sewer layouts & quantities sheet no. 136-144 & 229



STA. 244+40
 PROPOSED 2-6'x4'x280'-0" MC-6-2-20°
 MCW-FI 20° UPSTR. & MCW-FI-20° (MOD) DNSTR.

STA. 244+40 ESTIMATED QUANTITIES^①

DETAIL SHEET NO.	DESCRIPTION	Unclass. Struc. Excav. CY	Cl. W. Conc. (Culv.) CY	Reinf. Steel Lb.	
245	2-6'x4'x280 MC-6-2-20°	1182	216.02	292.57	33,278
245	Wing 1 & Wing 2	21	3.48	319	317
245	Wing 3 & Wing 4	12	2.29	258	257
TOTALS:		1188	221.79	29,834	29,832
		1163	221.45		

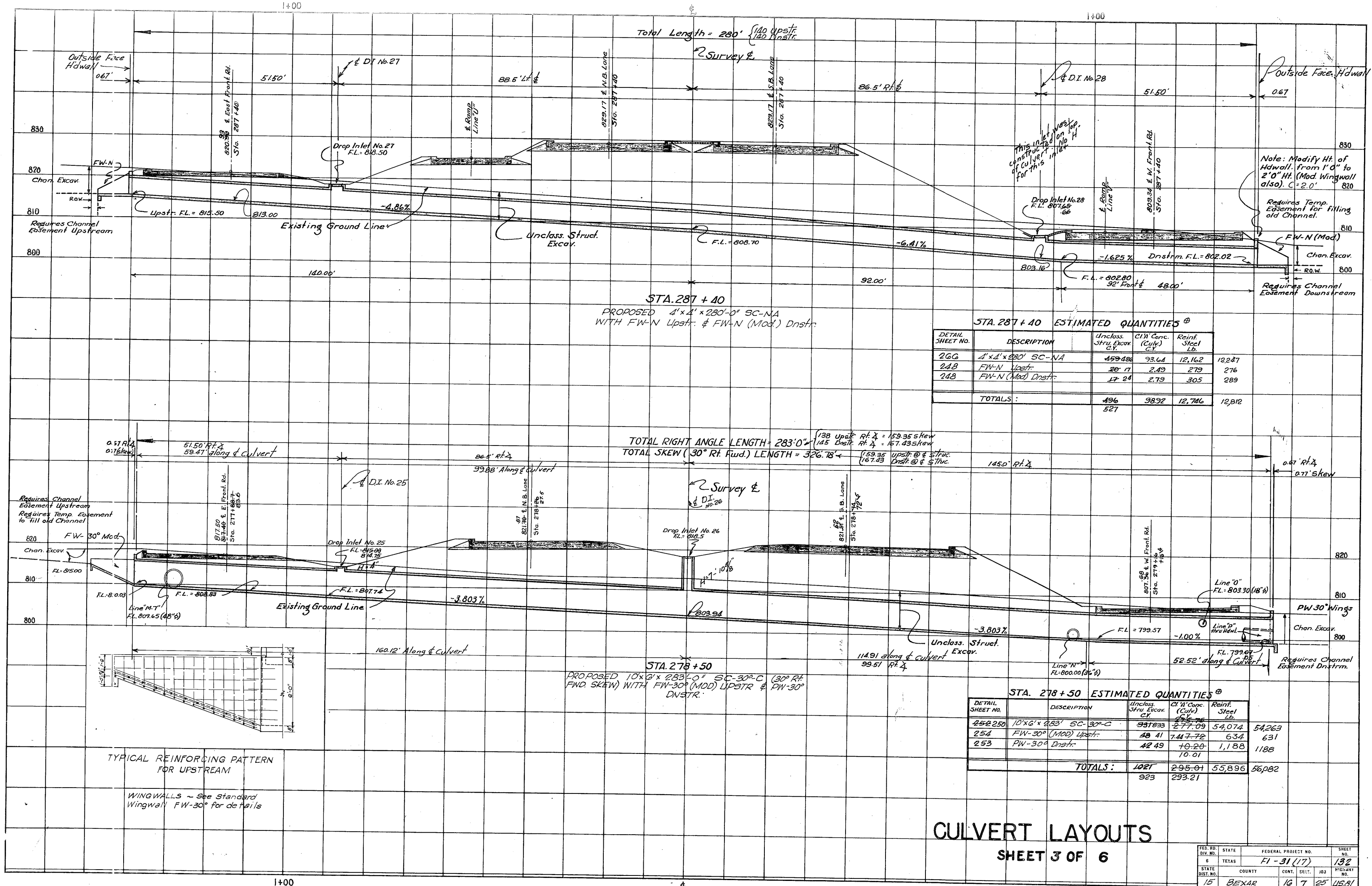


STA. 224+60
 PROPOSED 4'x4'x282' SC 15°A WITH
 FW-15° Upstr. & FW-15° (MOD) DNSTR.

STA. 224+60 ESTIMATED QUANTITIES^①

DETAIL SHEET NO.	DESCRIPTION	Unclass. Struc. Excav. CY	Cl. W. Conc. (Culv.) CY	Reinf. Steel Lb.	
249	4'x4'x282' SC 15°A	226323	57498.4	12,544	12630
249 251	Std FW-15 Wing Upstr.	3 13 231	2.38	271	270
249 251	FW-15 (Mod) Wing Dnstr.	3 12 245	2.68	297	319
TOTALS:		234	103.17	13,112	13,219
		348	102.17		

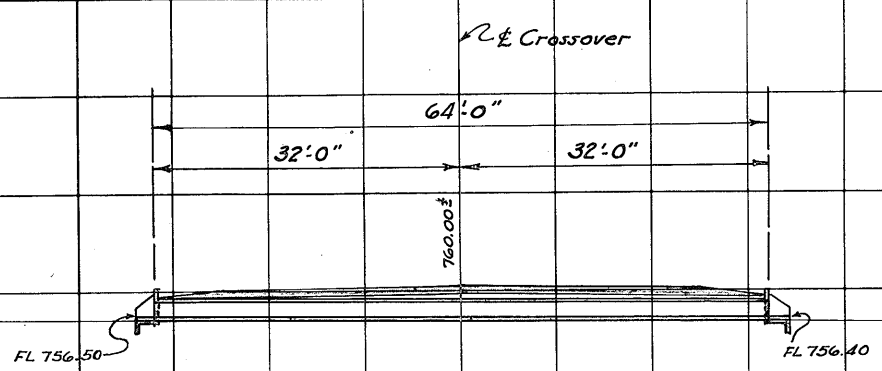
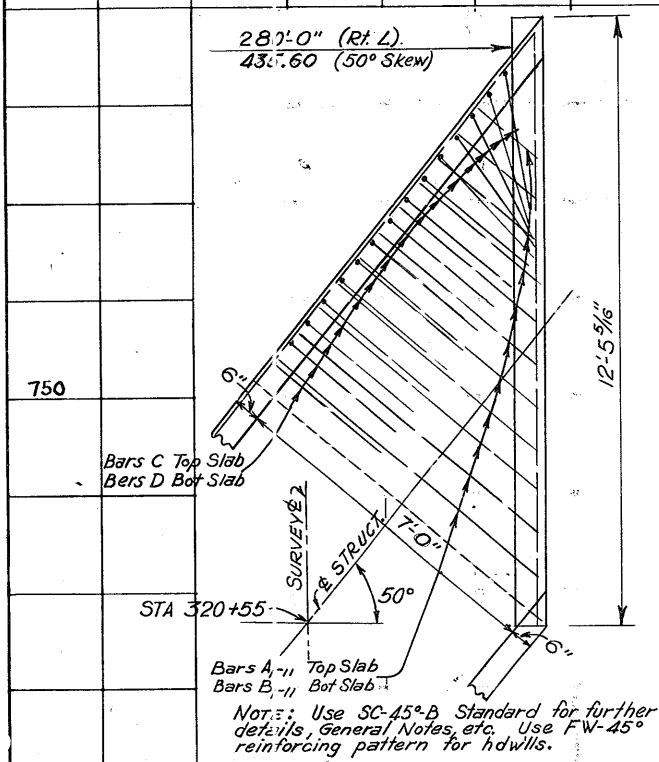
CULVERT LAYOUTS SHEET 2 OF 6



CULVERT LAYOUTS

SHEET 3 OF 6

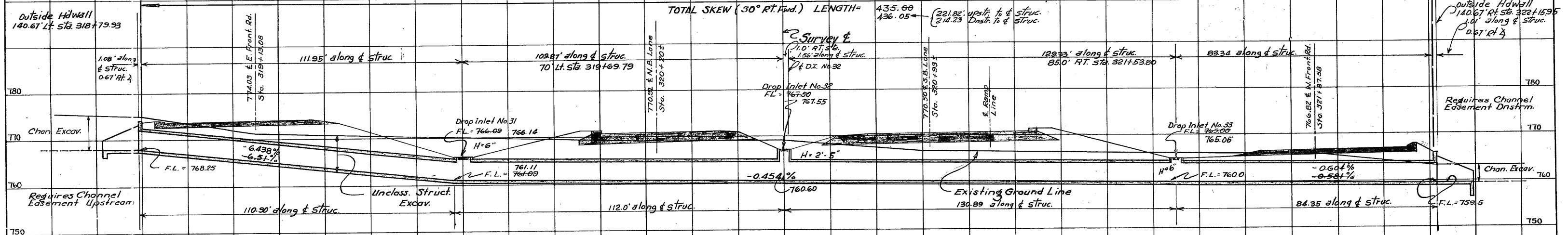
FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
5	TEXAS	FI-31(17)	132
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	BEXAR	16 7 25	1581



44' RT. STA. 358+00
PROPOSED 18"x64'-0" STD. REINF. CONC.
PIPE & CH-11-B HDWLLS.

44' RT. STA. 358+00 - ESTIMATED QUANTITIES

DETAIL SHEET NO.	DESCRIPTION	Unclass. Str. Excav. C.Y.	Cl. 14" Conc. Inlets M.H. & Hd. Walls C.Y.	Reinf. Steel Lb.	S.R.C. Pipe 18" dia. L.F.
258	Std. Reinf. Conc. Pipe	1.2			6390
	CH-11-B Hdwlls.	1	1.0	129	
	TOTALS:	2.3	1.0	129	6390



BILL REINFORCING STEEL
STA. 320+55

Bar	No	Size	Spac	Lgh	Wt.
A	643	#5	8"	7'-8"	5142
A ₁₋₁₁	11	#5	"	4'-3 1/2"	49
B	643	#5	8"	7'-8"	5142
B ₁₋₁₁	11	#5	"	4'-3 1/2"	49
C	1612	#4	6 1/2"	6'-10"	7358
C ₁	2	#4	"	4'-10"	6
D	1612	#4	6 1/2"	4'-1"	4397
E	4	#4	18"	3'-11"	10
F	108	#4	18"	38'-5 1/2"	2773
F ₂	108	#4	18"	38'-5 1/2"	2773
F ₃	72	#4	14"	38'-5 1/2"	1849
H	8	#4	"	12'-1"	65
K	26	#4	12"	3'-11"	69
	TOTAL				29682

BARS A₁₋₁₁ & B₁₋₁₁

A ₁	= 7'-0"
B ₁	= 7'-0"
A ₁₁	= 1'-7"
B ₁₁	= 1'-7"
A ₁₋₁₁	= 4'-3 1/2" (Av)
B ₁₋₁₁	= 4'-3 1/2" (Av)

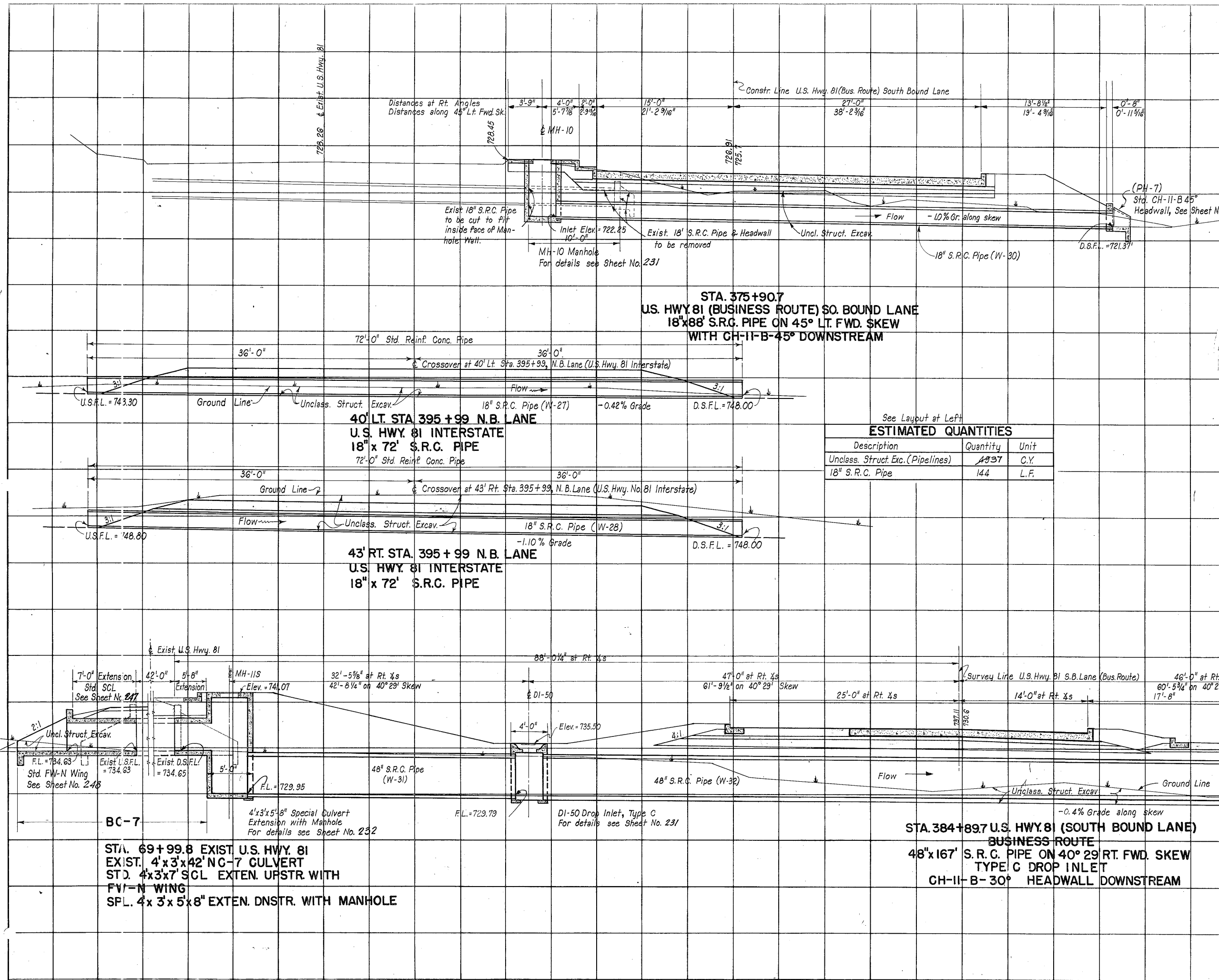
STA. 320+55
PROPOSED 7'x4'x280'-0" SC-50°-B (MOD.)
WITH FW-50° UPSTR & DNSTR.

STA. 320+55 ESTIMATED QUANTITIES

DETAIL SHEET NO.	DESCRIPTION	Unclass. Str. Excav. C.Y.	Cl. 14" Conc. (Cul.) C.Y.	Reinf. Steel Lb.
255	7'x4'x280' SC-50°-B	1136	200.67	29,682
257	FW-50° Upstr	35	4.91	474
257	FW-50° DNSTR	35	4.91	474
	Mod. Dnsfr. Hdwall & Wings	0		101
	TOTALS:	1199	210.49	30,732

CULVERT LAYOUTS SHEET 4 OF 6

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	133
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	16	7 25 US 81



See Layout at Left

ESTIMATED QUANTITIES		
Description	Quantity	Unit
Unclass. Struct. Exc. (Pipelines)	54.40	C.Y.
* Uncl. Str. Exc. (Inlets, Hdws., & Manholes)	2	C.Y.
* Class "A" Conc. (Inlets, Hdws., & Manholes)	0.80	C.Y.
* Reinforcing Steel	84	Lb.
18" S.R.C. Pipe	88	L.F.

*Note: For Manhole Quantities see Sheet No. 231

See Layout at Left

ESTIMATED QUANTITIES		
Description	Quantity	Unit
Unclass. Struct. Exc. (Pipelines)	43.37	C.Y.
18" S.R.C. Pipe	144	L.F.

See Layout Below

ESTIMATED QUANTITIES						
Description	BC-7	MH-11S	PH-8	W32	Unit	Total
Unclass. Struct. Excav. (Culverts)	85	-	-	-	C.Y.	85
Unclass. Struct. Exc. (Pipelines)	-	-	-	88	C.Y.	88
* Uncl. Str. Exc. (Inlets, Hdws., & Manholes)	-	47	16	-	C.Y.	63
* Cl. "A" Conc. (Inlets, Hdws., & Manholes)	-	2.04	5.95	-	C.Y.	7.99
* Cl. "A" Conc. for Extend. Structures	5.04	2.87	-	-	C.Y.	7.91
* Reinforcing Steel	842	568	420	54	Lb.	1494
48" S.R.C. Pipe	-	-	-	107	L.F.	107
Manhole Ring & Cover	-	1	-	-	Ea.	1

*Note: For Drop Inlet Quantities see Sheet No. 231

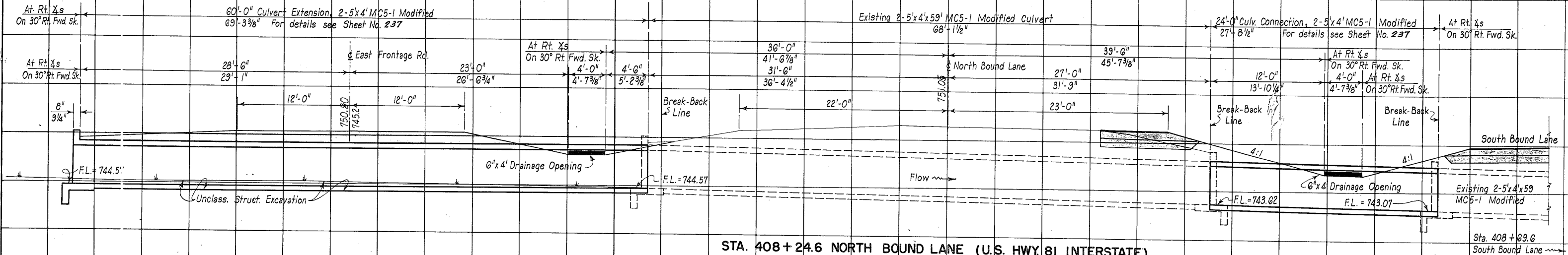
CULVERT LAYOUTS

SCALE: 1"=5'-0"

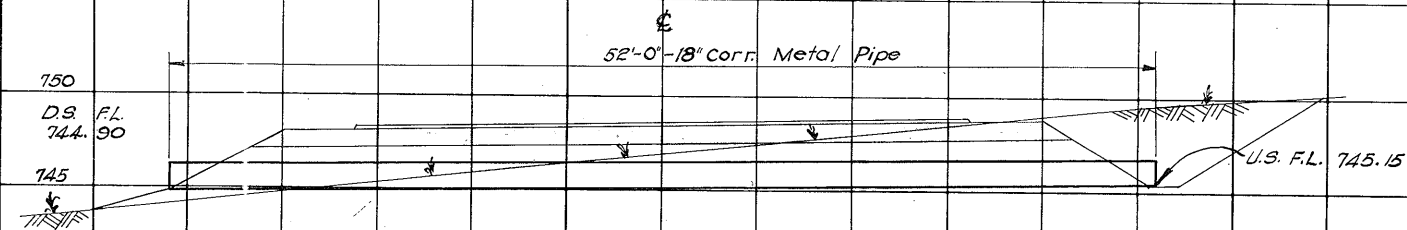
SHEET 5 OF 6

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088(2), F31(18)	134
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	Bexar	17, 16, 10, 7, 13, 26	U.S. 81

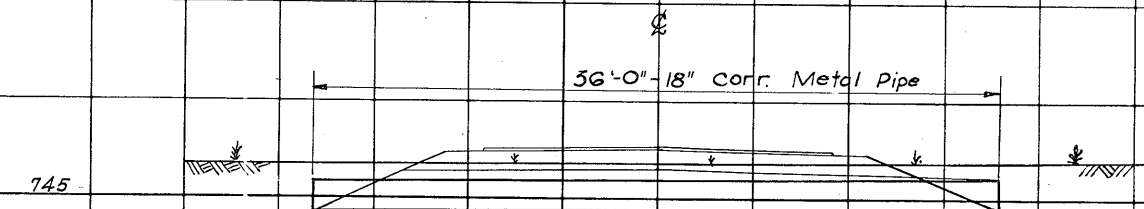
ESTIMATED QUANTITIES F31 (18)				
Description	Unit	Quantities for 60' Extension	Quantities for 24' Extension	Totals
Unclass. Struct. Excav. (Culverts)	C.Y.	36.33	8.6	44.93
Cl. 1/2" Conc. for Extending Structures	C.Y.	51.76	17.87	69.63
Reinforcing Steel	Lb.	6716	2387	9103
			2390	9106



STA. 408+24.6 NORTH BOUND LANE (U.S. HWY. 81 INTERSTATE)
 EXISTING 2-5'x4'x59' MC5-1 MOD.
 2-5'x4'x60' MC5-1 MOD. EXTENSION UPSTREAM
 2-5'x4'x24' MC5-1 MOD. CONNECTION DOWNSTREAM.



STA. 386+80 DETOUR CONN. (EAST INTERCHANGE)



STA. 386+00 DETOUR CONN. (EAST INTERCHANGE)

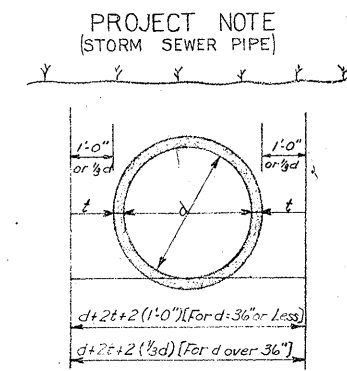
See Layouts at Left

ESTIMATED QUANTITIES (IN 1088(2))		
Description	Quantity	Unit
Unclass. Struct. Excav. (Pipe Lines)	20	Cu. Yd.
18" Corr. Metal Pipe	88	Lin. Ft.

CULVERT LAYOUTS

SCALE 1"=5'-0"
 SHEET 60F 6

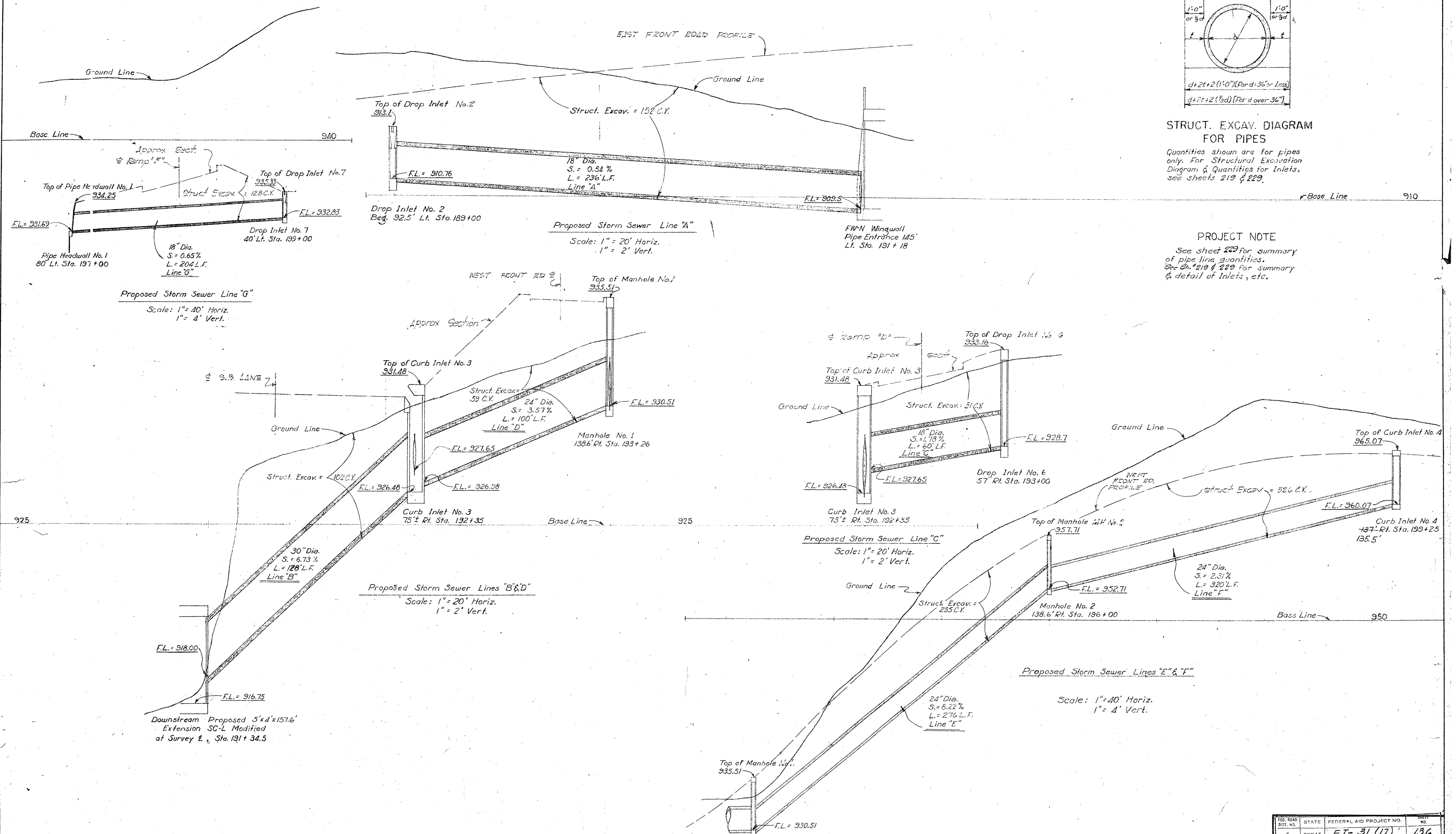
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	135
STATE DIST. NO.	COUNTY	CONT. SECT.	JO3
15	Bexar	16 7 26	U.S. 81



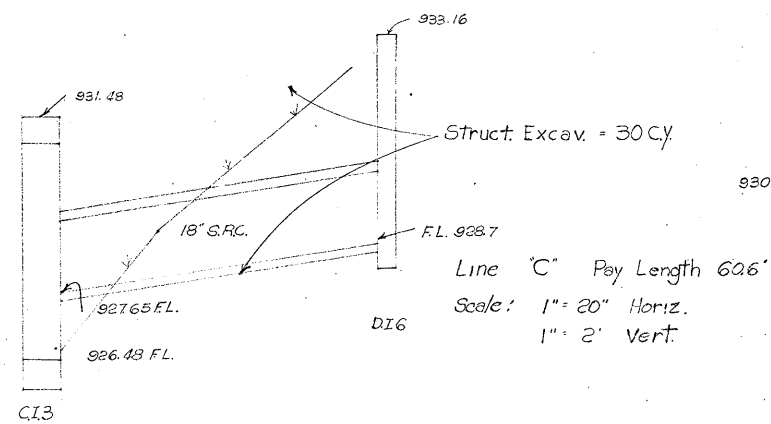
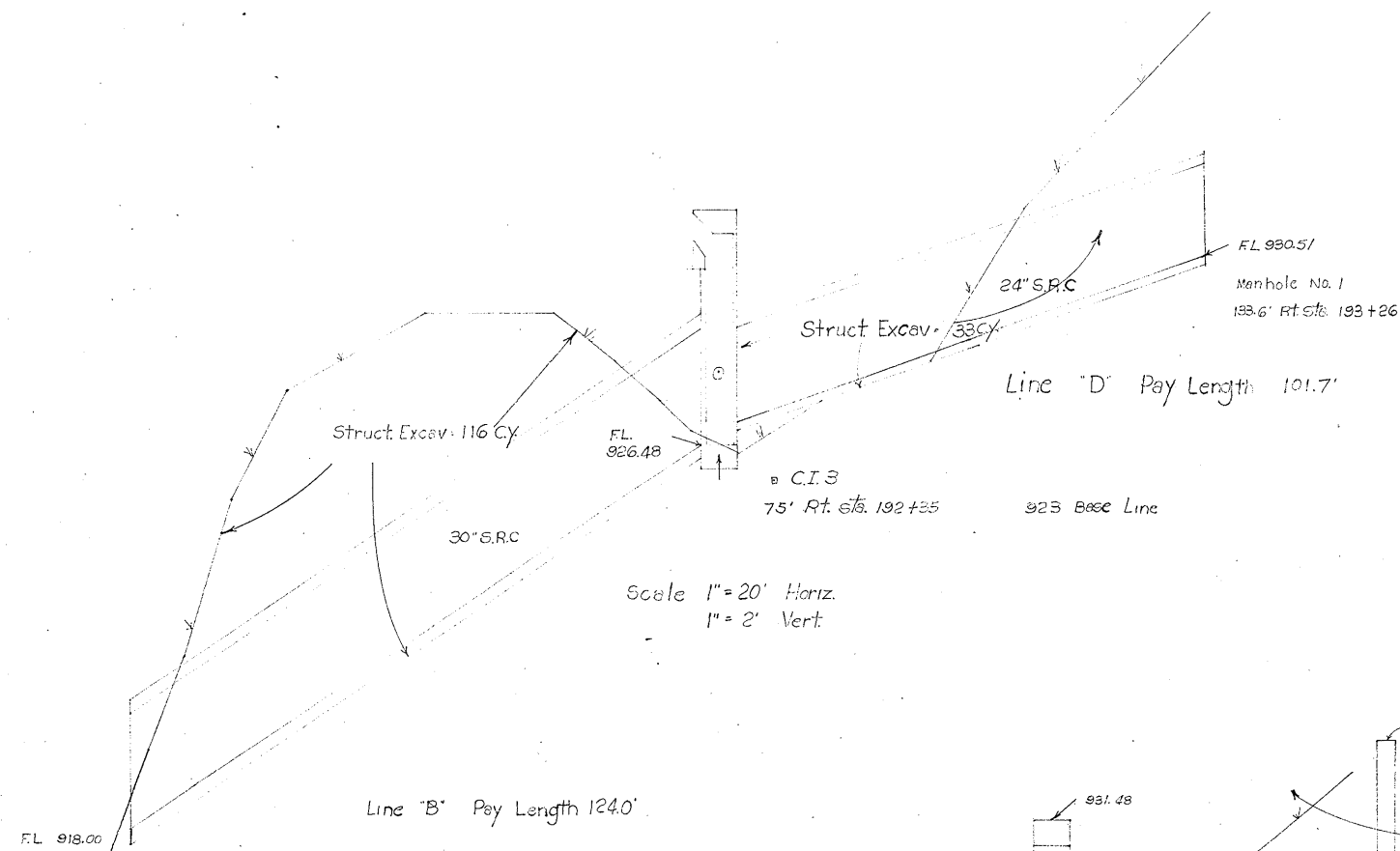
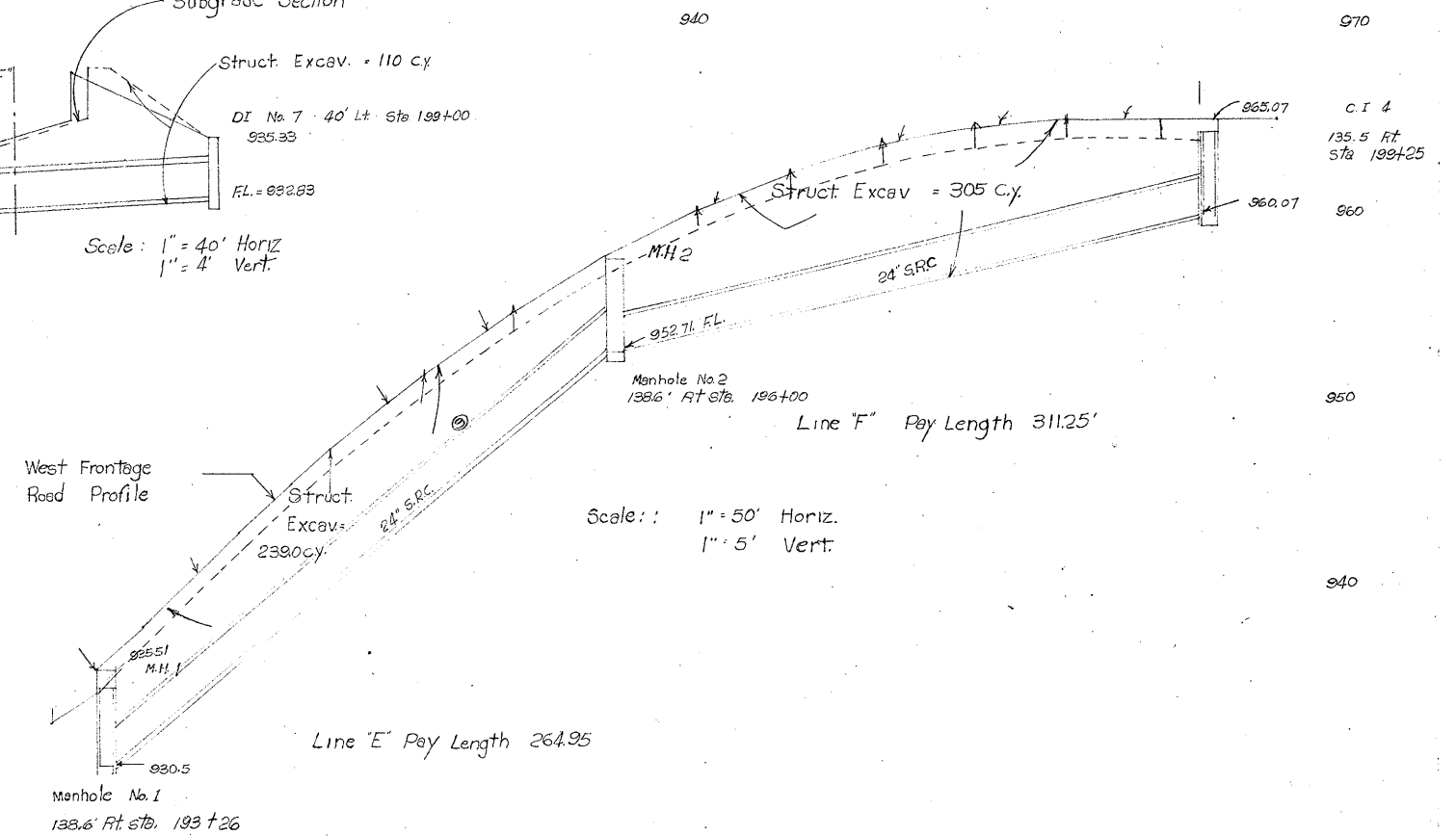
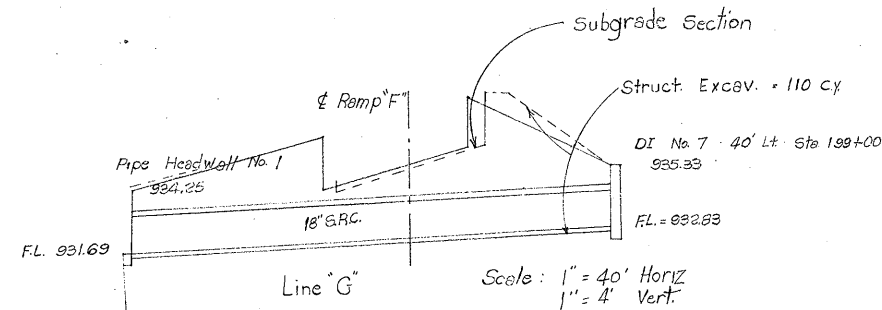
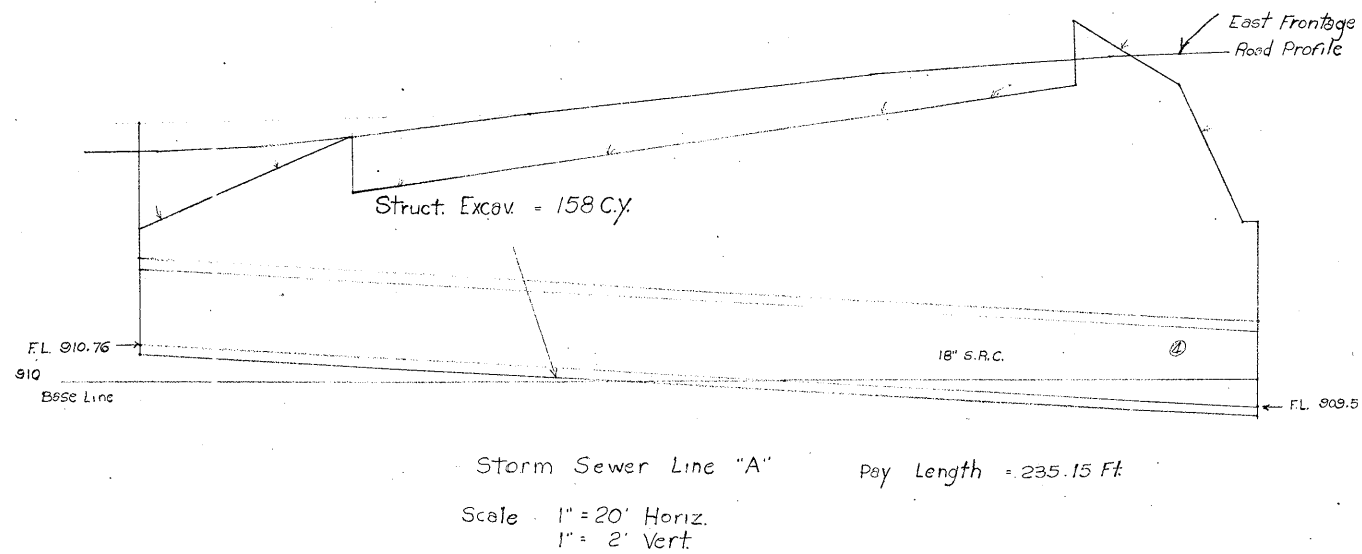
STRUCT. EXCAV. DIAGRAM FOR PIPES

Quantities shown are for pipes only. For Structural Excavation Diagram & Quantities for Inlets, see sheets 219 & 229.

PROJECT NOTE
See sheet 229 for summary of pipe line quantities. See Sh. 219 & 229 for summary & detail of Inlets, etc.



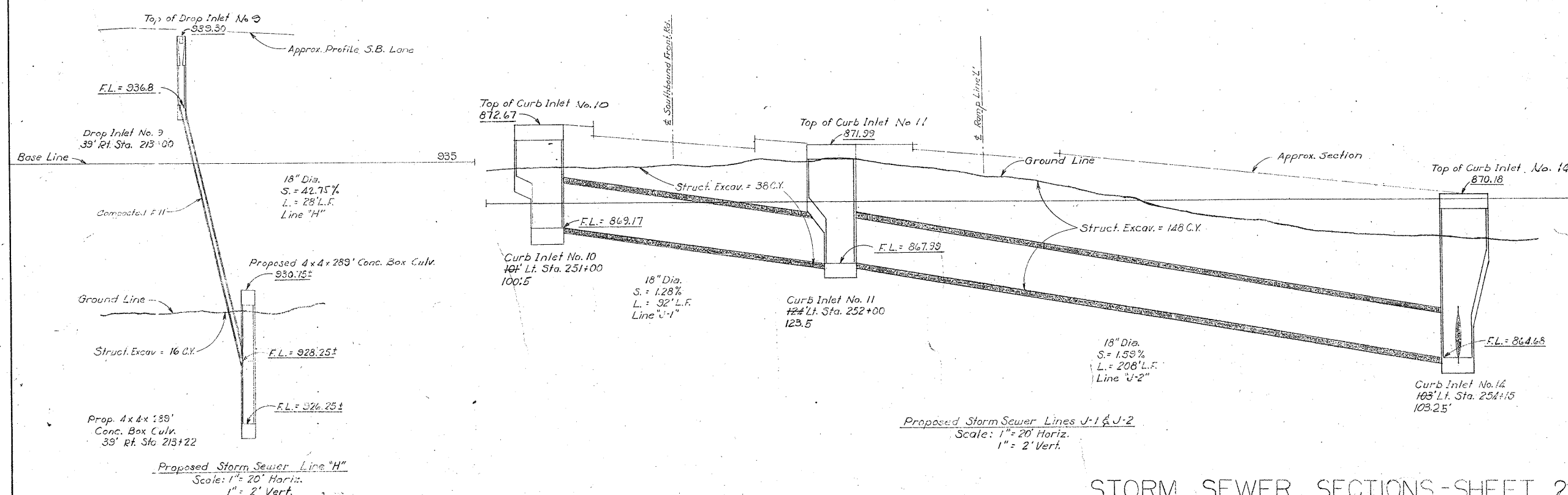
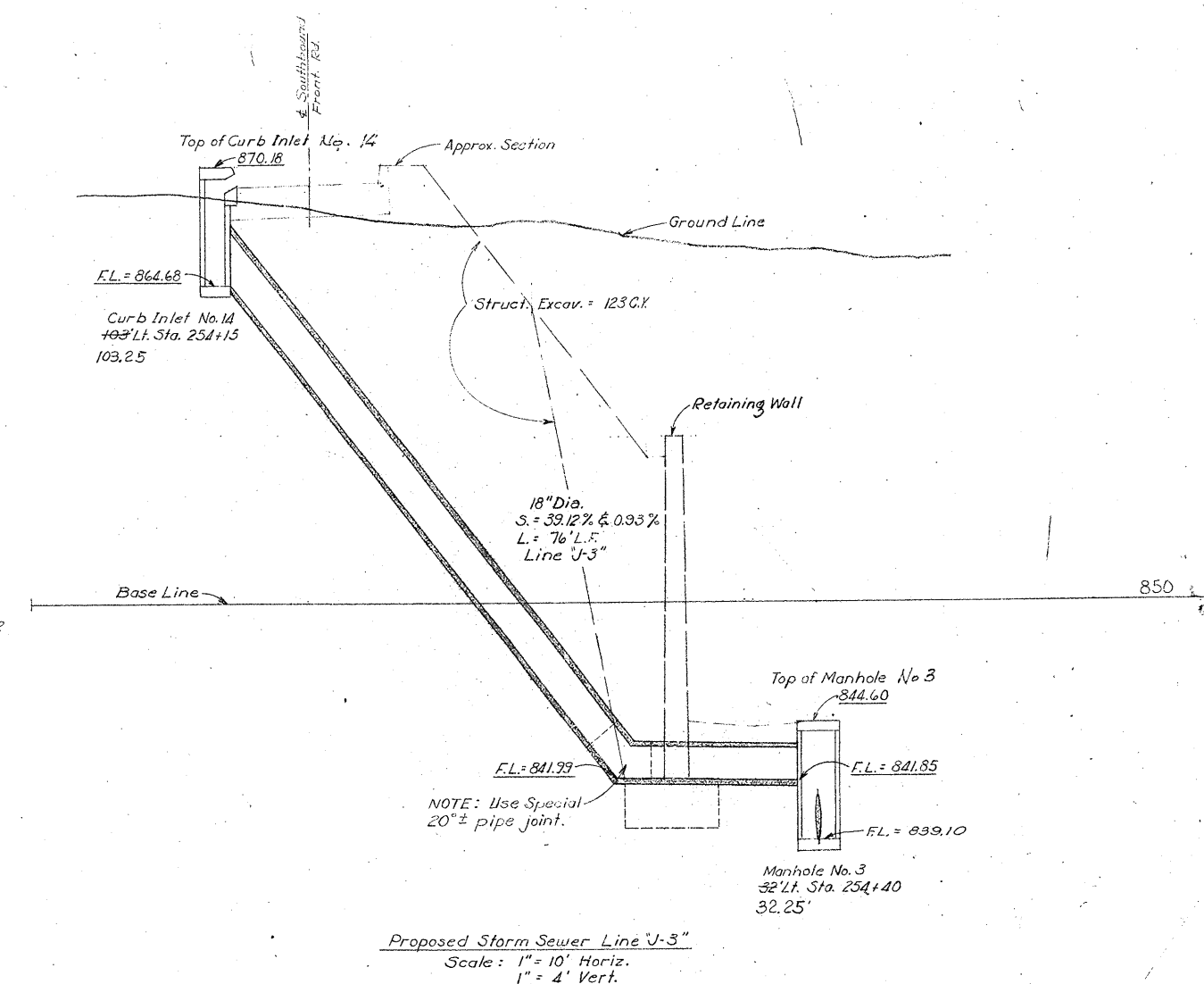
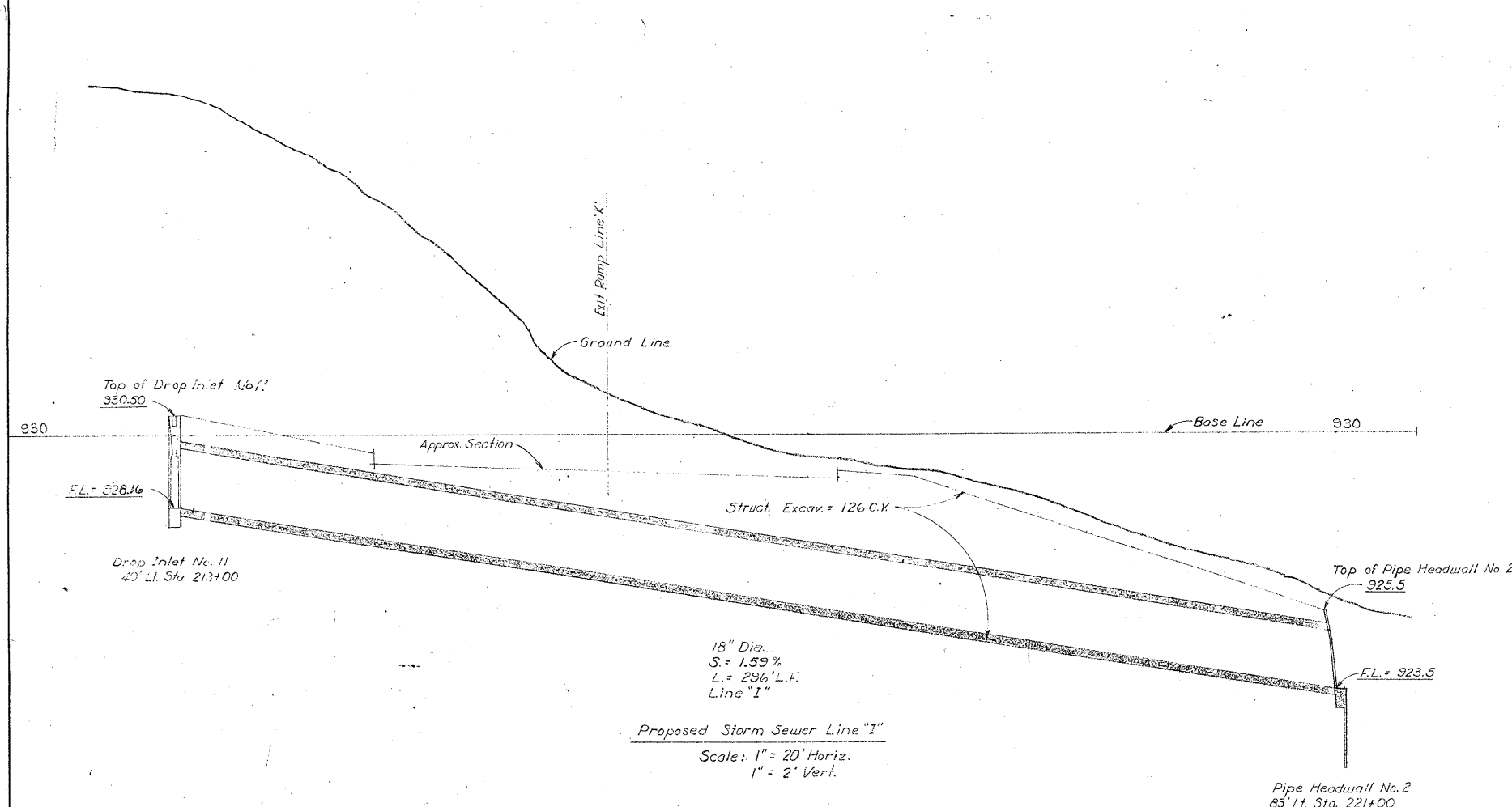
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	136
STATE DIV. NO.	COUNTY	CONTRACT NO.	HIGHWAY NO.
15	Brewer	16	7
			25 U.S. 81



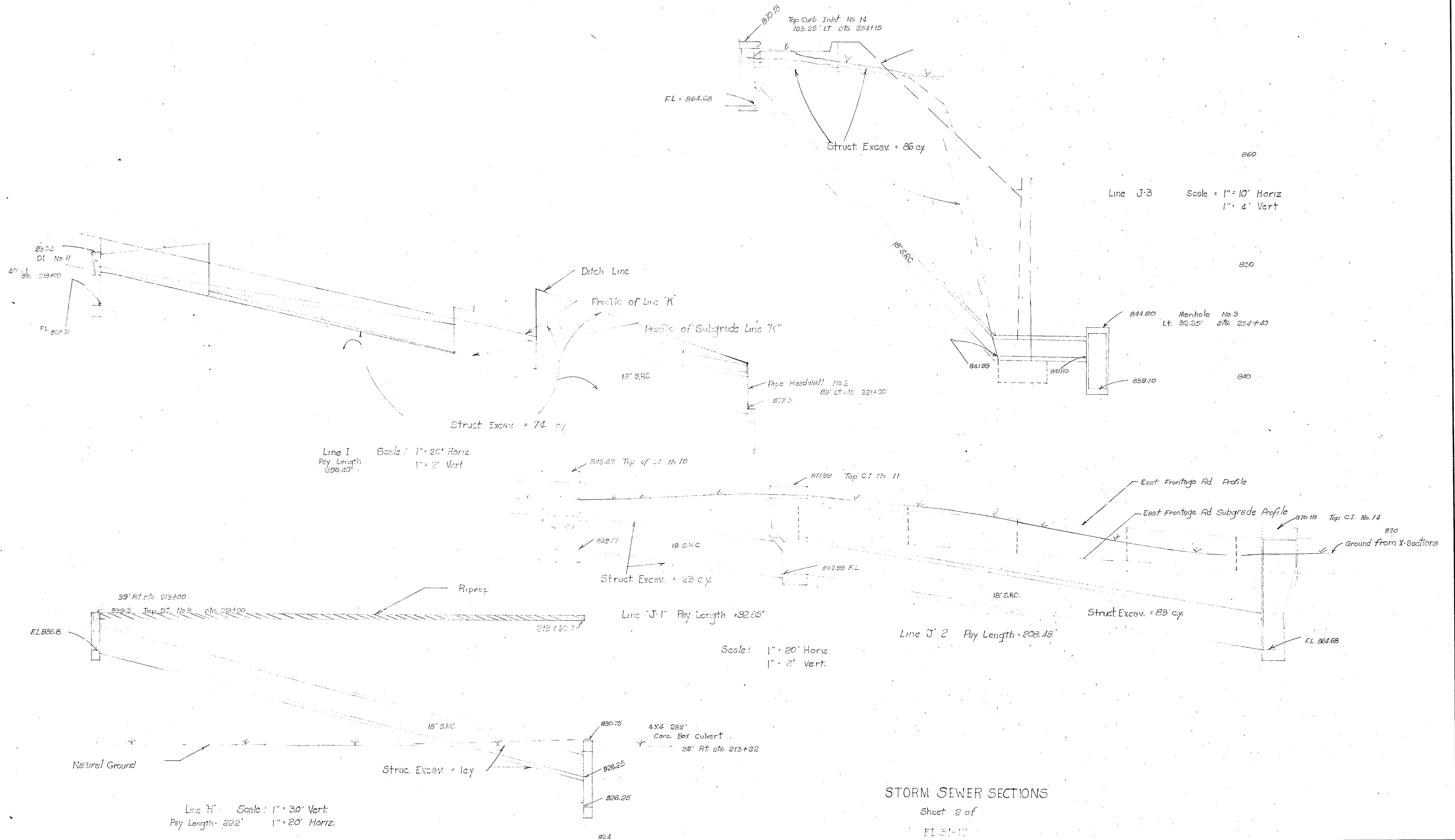
STORM SEWER SECTIONS

Sheet 1 of
FI-31-17

STATE	FEDERAL AID PROJECT NO.	EMIT NO.
TEXAS	FI 31-17	136-A
COUNTY	SECTION NO.	JOB NO.
Bexar	16	7 25
		USA



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI - 31(17)	137
STATE DIV. NO.	COUNTY	CIVIL NO.	SECTION NO.
15	BEXAR	16	7
			25
			45.81

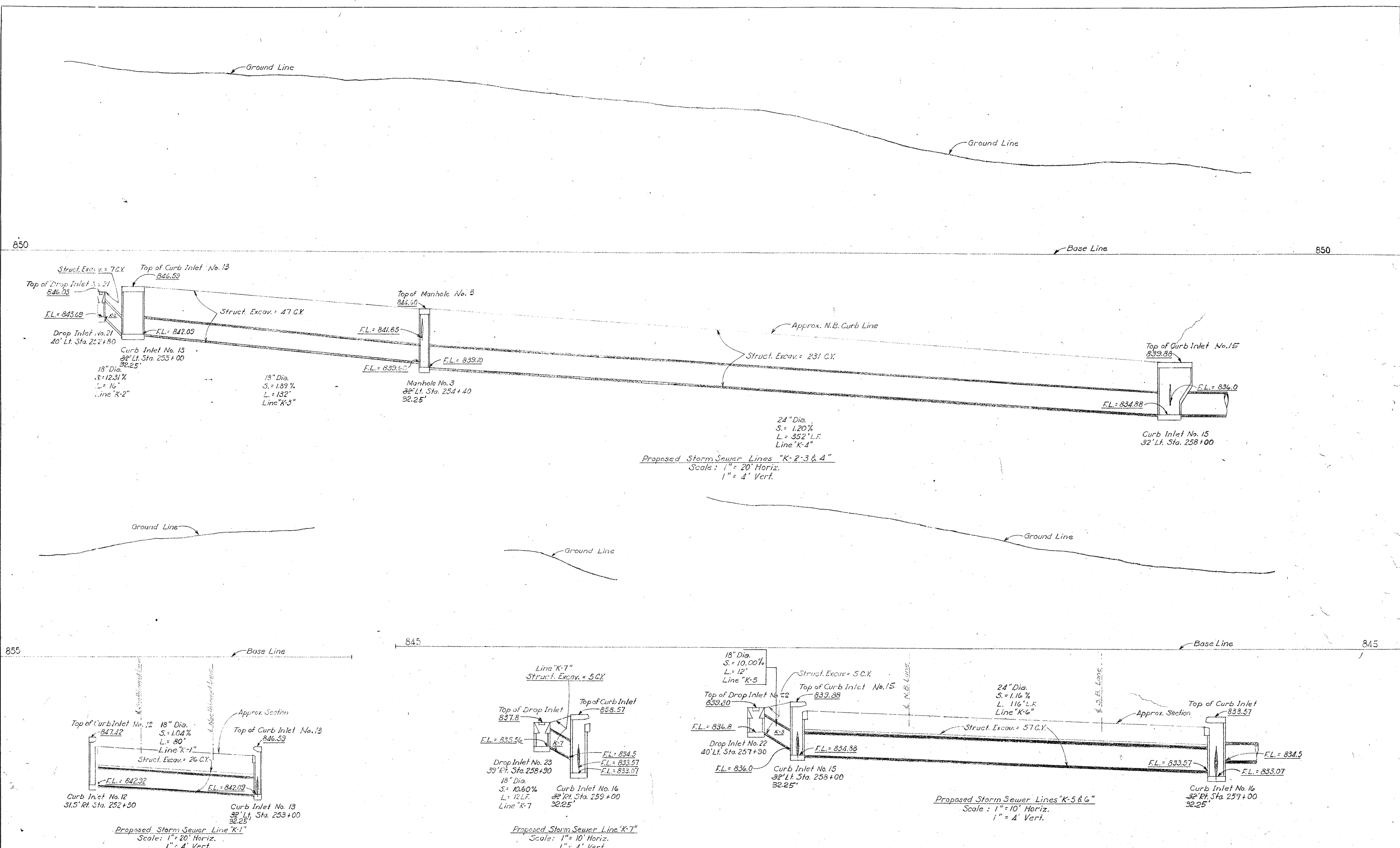


STORM SEWER SECTIONS

Sheet 2 of

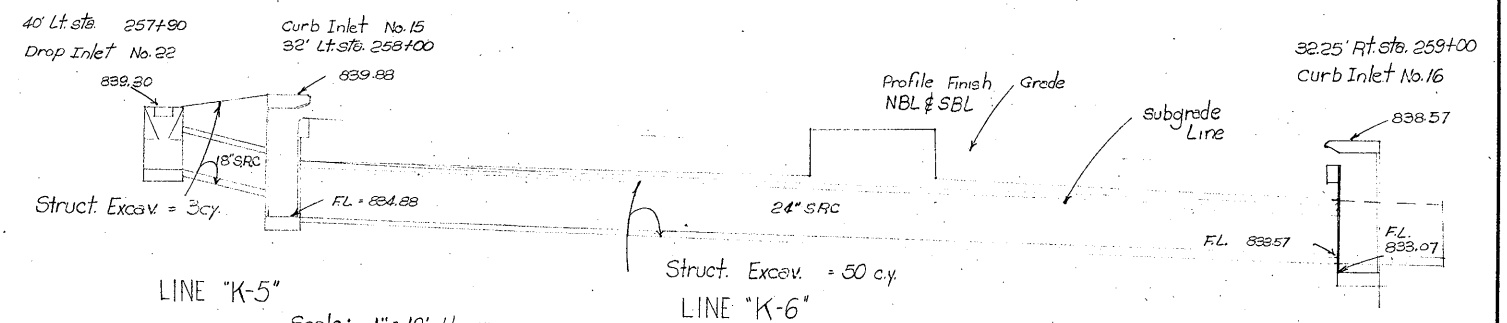
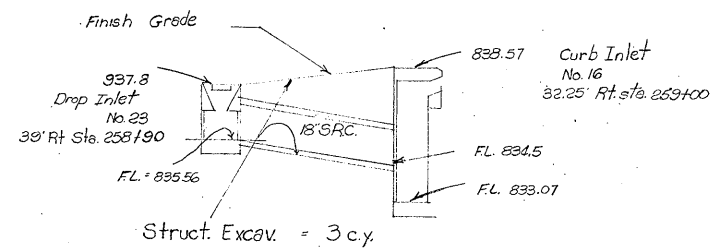
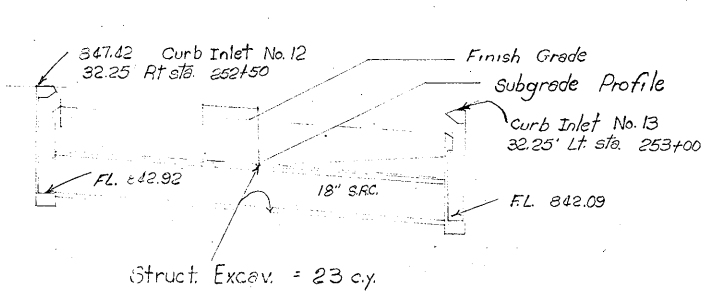
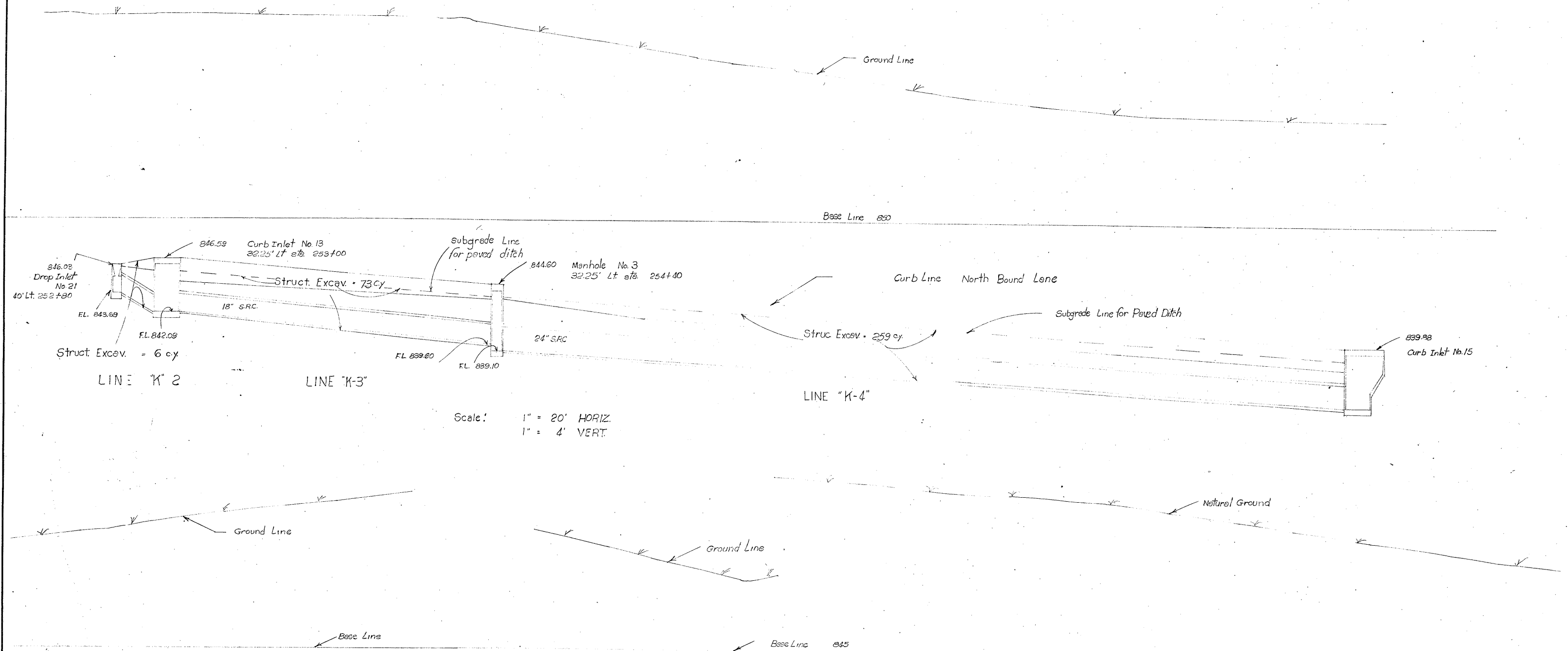
FI 31-17

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F31-17	137A
STATE DIST. NO.	COUNTY	CONT.	SECT.
15	Bexar	16	7
JOB	HIGHWAY NO.		
25	US 31		



STORM SEWER SECTIONS-SHEET 3. OF 9.

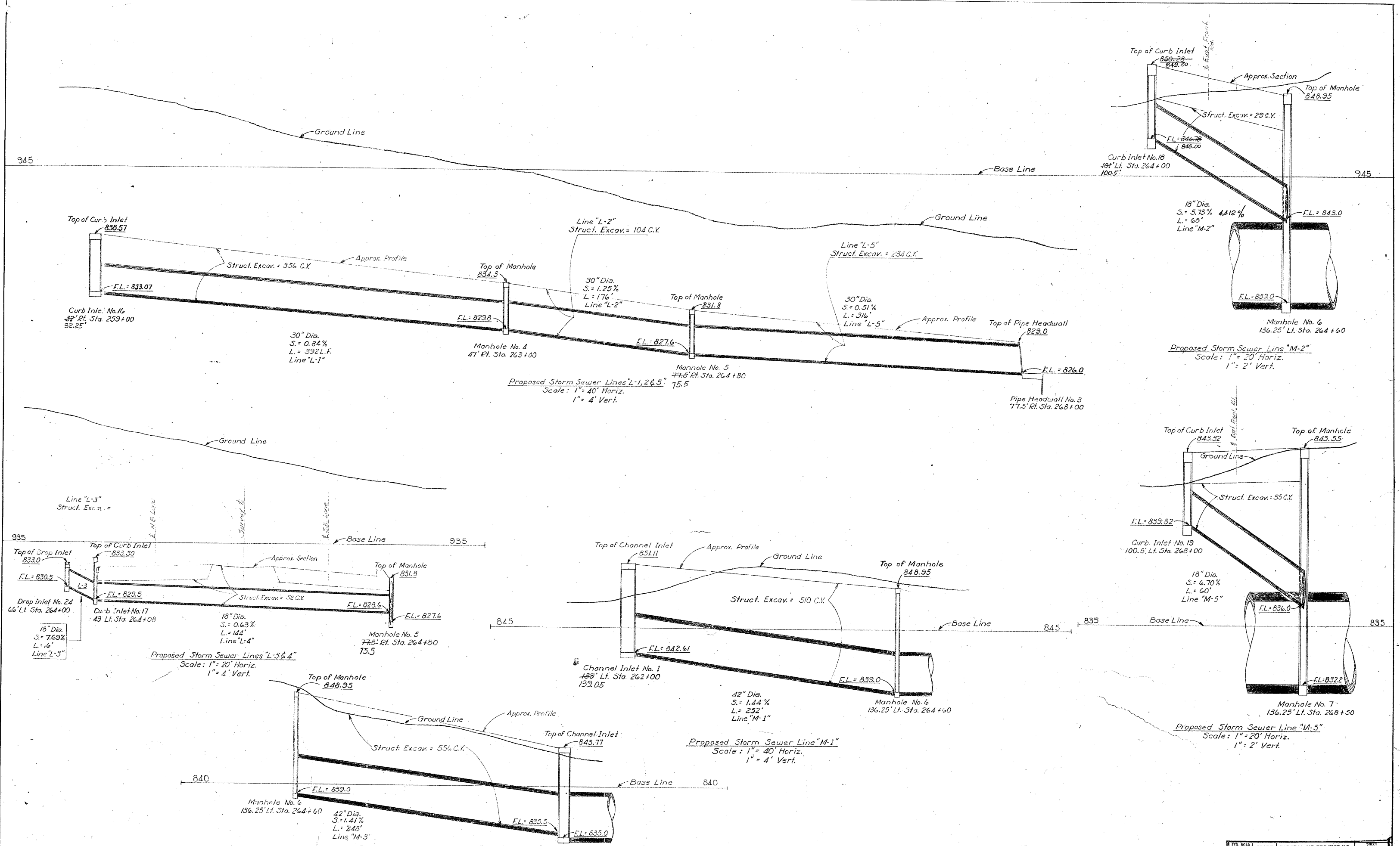
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FI-31(17)	138
STATE DIV. NO.	COUNTY	CERTIFIC. NO.	HIGHWAY NO.
15	DALLAS	16 7 25	113.81



STORM SEWER SECTIONS

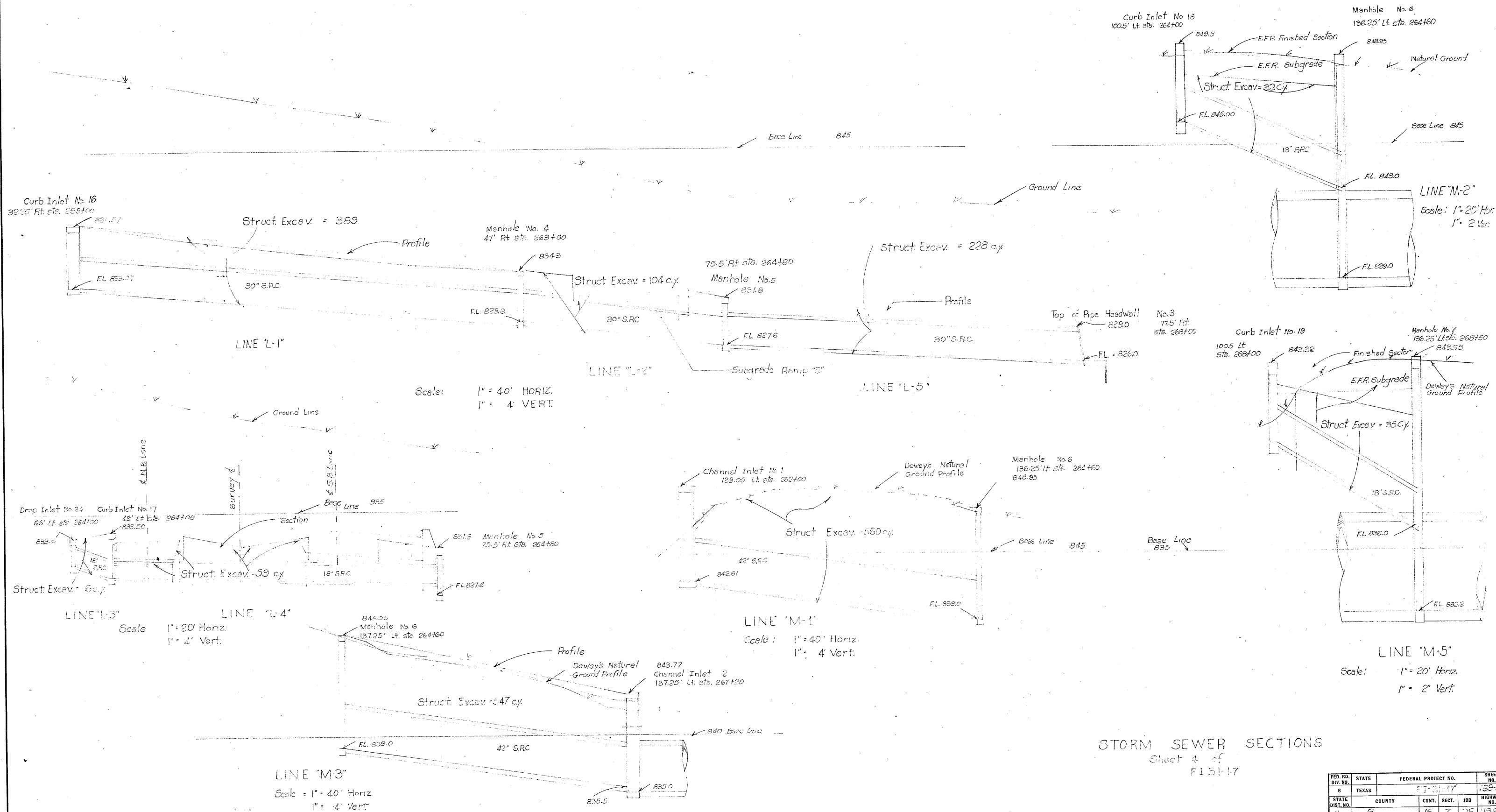
Sheet 3 of
FI 31-17

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI 31-17	138-A
STATE DIST. NO.	COUNTY	CONT.	SECT.
15	Bexar	16	7
			25
			US. 81

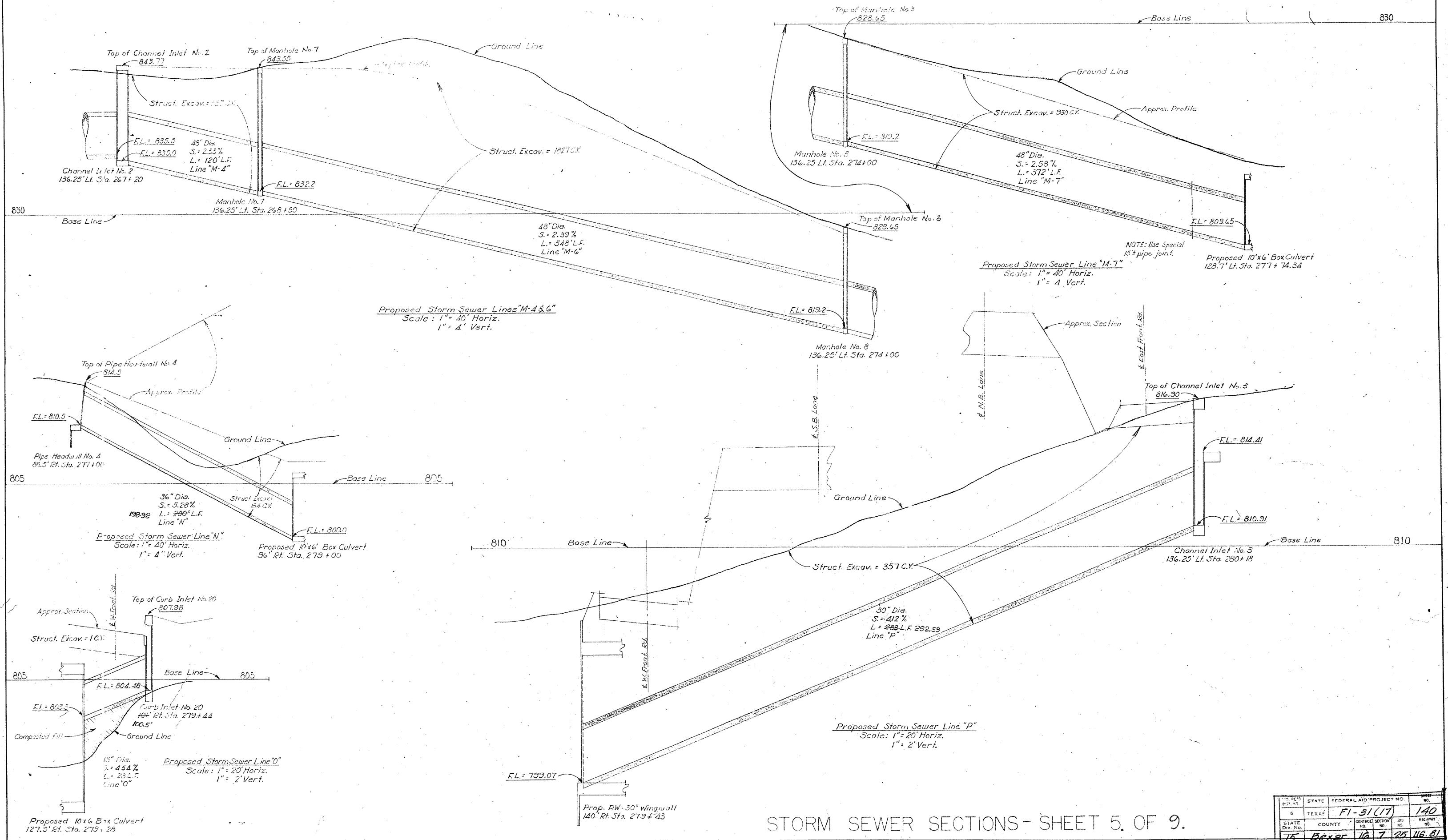


STORM SEWER SECTIONS - SHEET 4. OF 9.

100' ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	139
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	100' ROAD DIST. NO.
15	Bexar	16	7

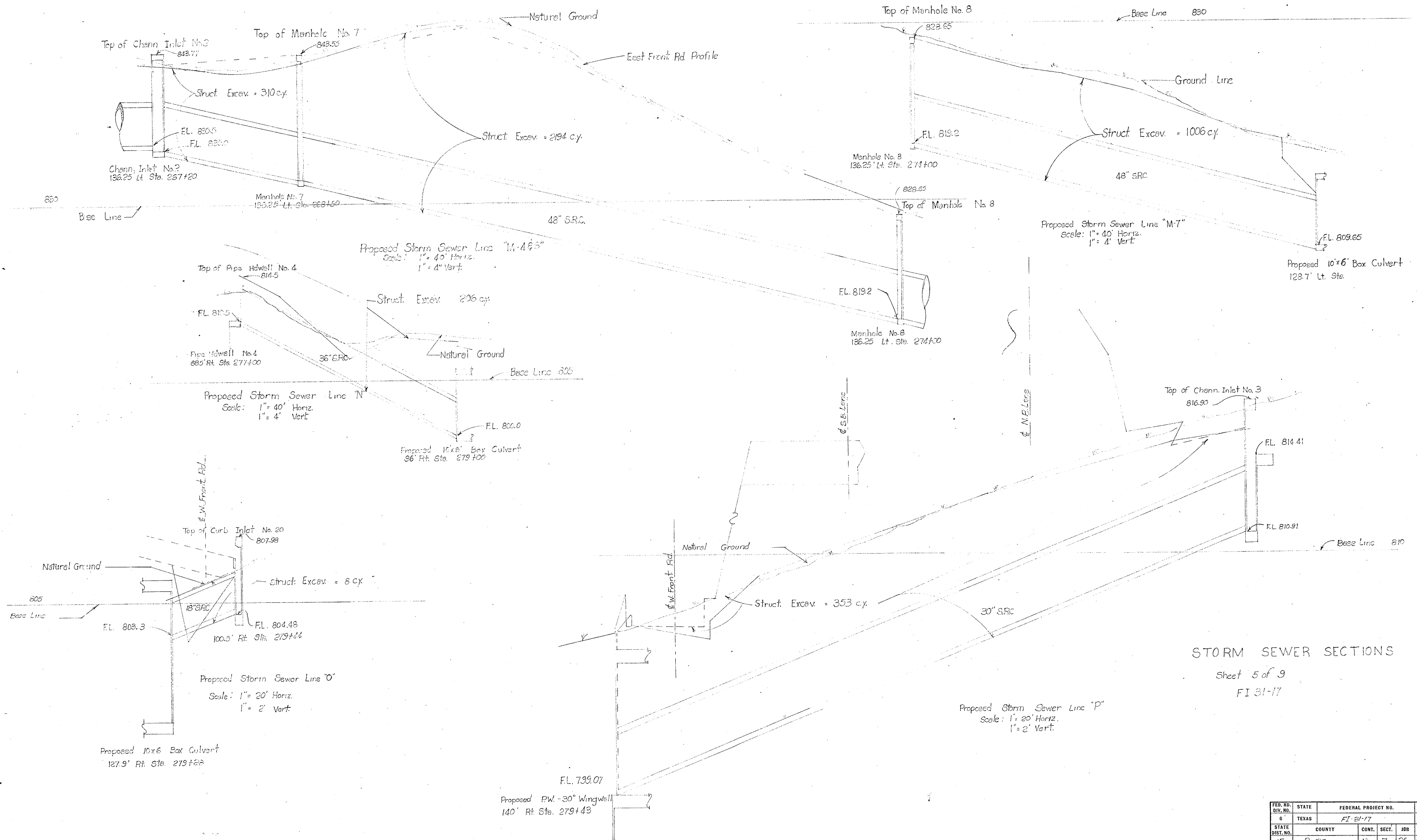


FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	1-3-17	159-A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	16	7 25 US 81



STORM SEWER SECTIONS - SHEET 5 OF 9.

STATE FED. AID PROJECT NO.	FEDERAL AID PROJECT NO.			SHEET NO.	
6	TEXAS	FI-31(17)			140
STATE DIST. No.	COUNTY	CONTROL NO.	SECTION NO.	100 NO.	HIGHWAY NO.
15	Bexar	16	7	25	46.81

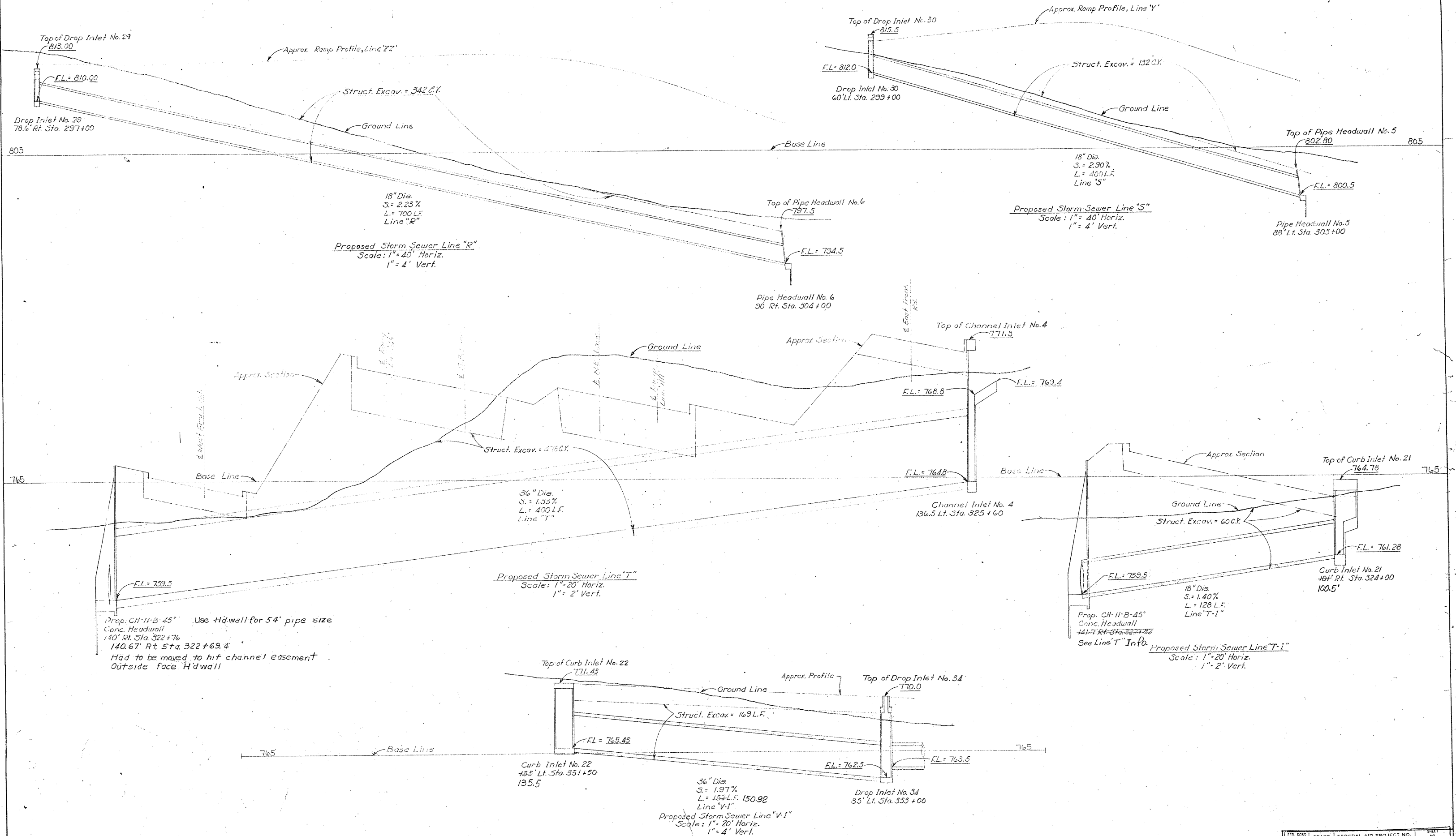


STORM SEWER SECTIONS

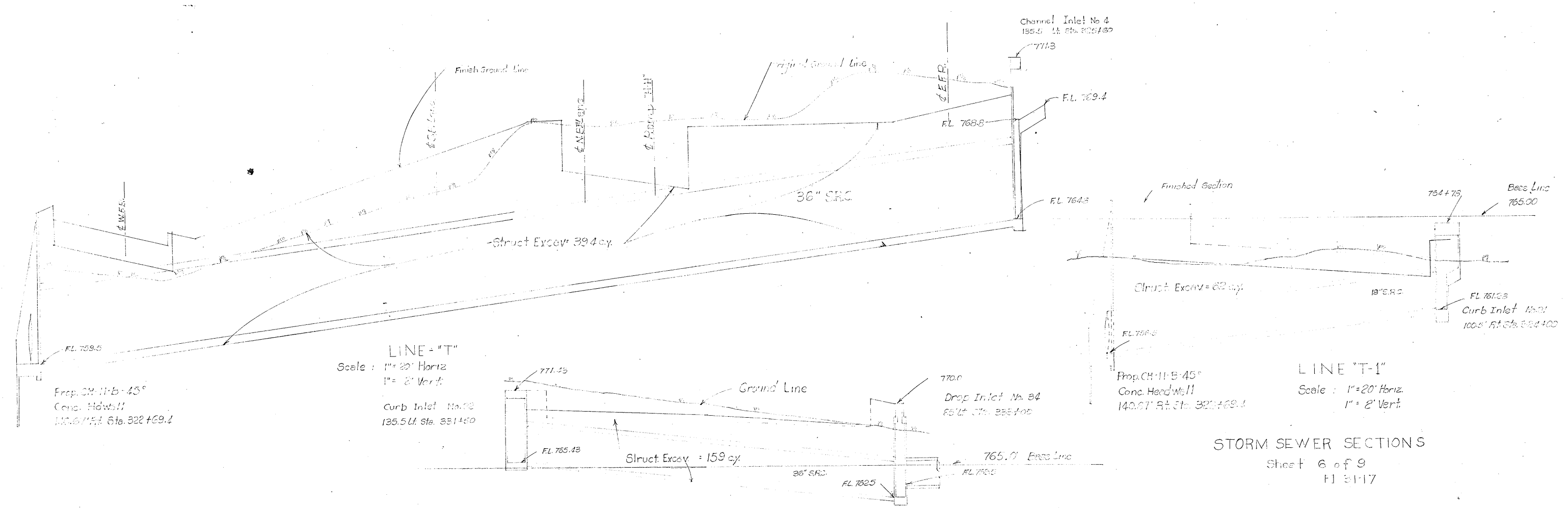
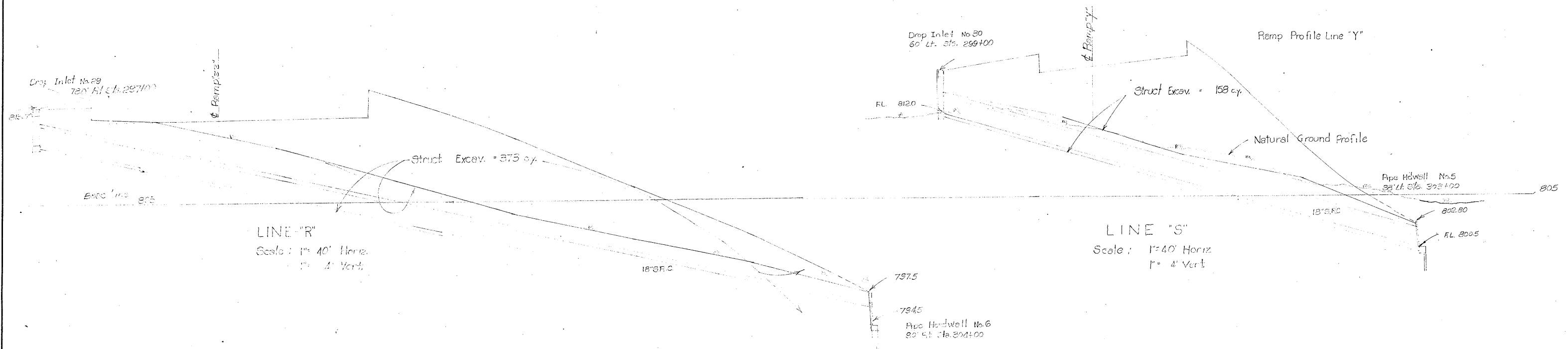
Sheet 5 of 9

FI 31-17

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI 31-17	MD-A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Brewer	16	7 25 15.31

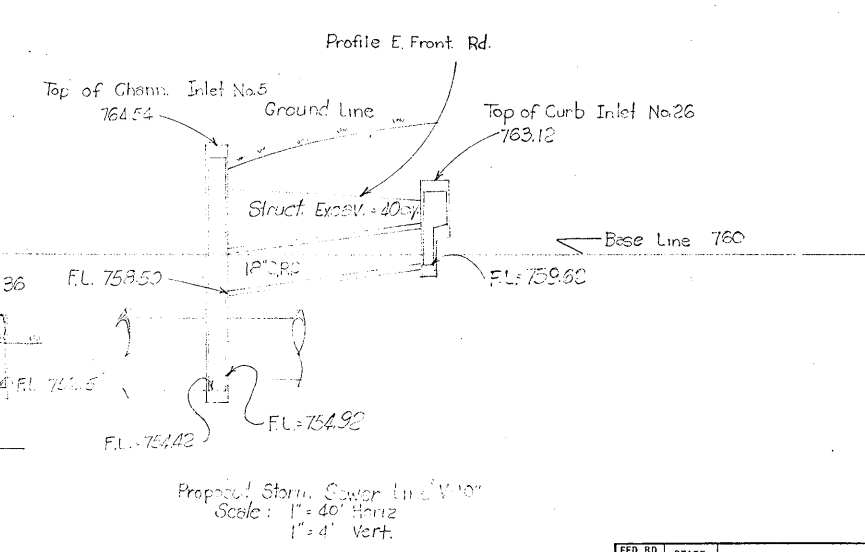
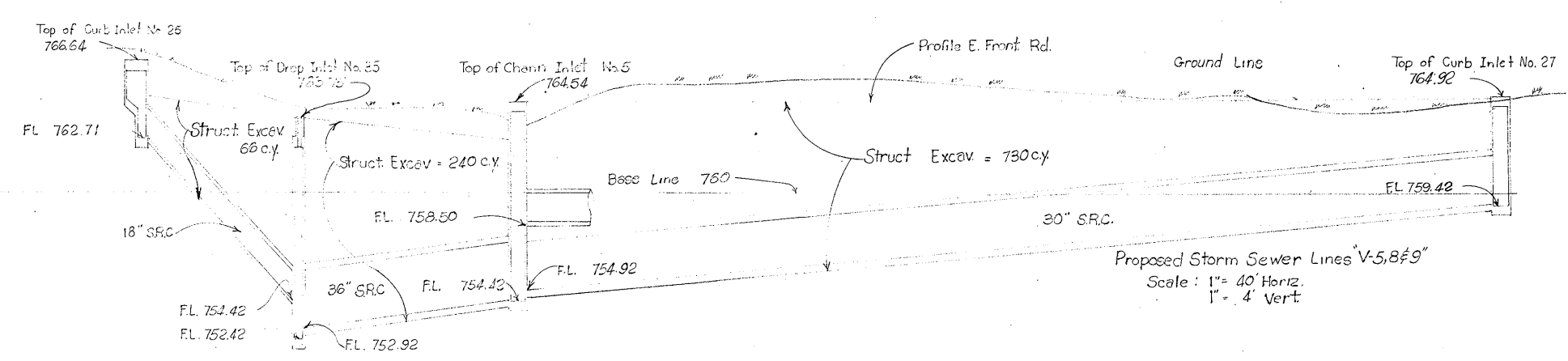
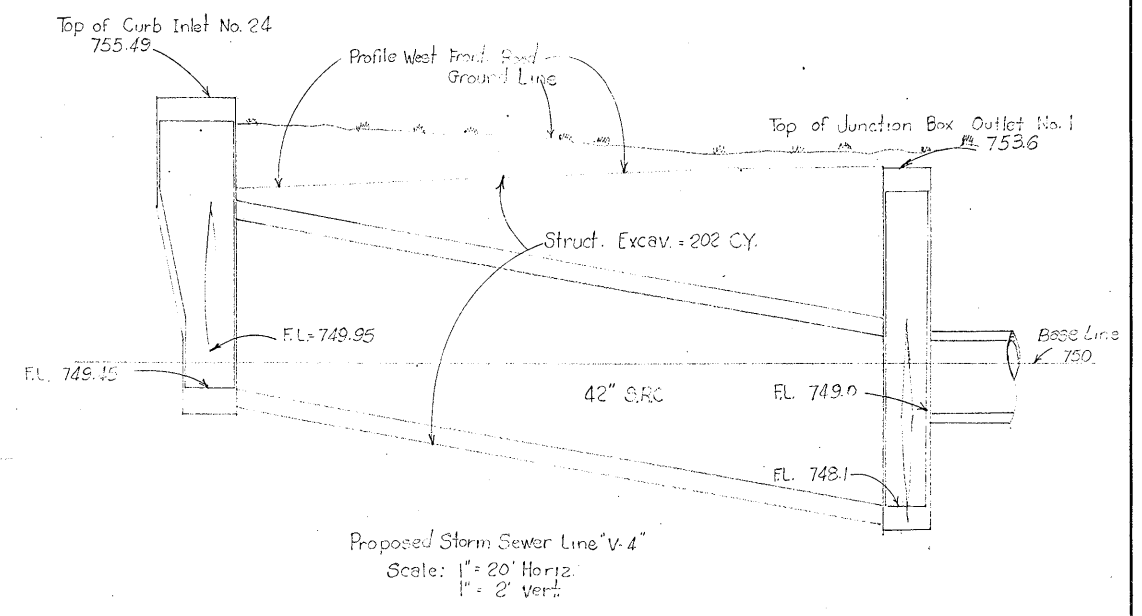
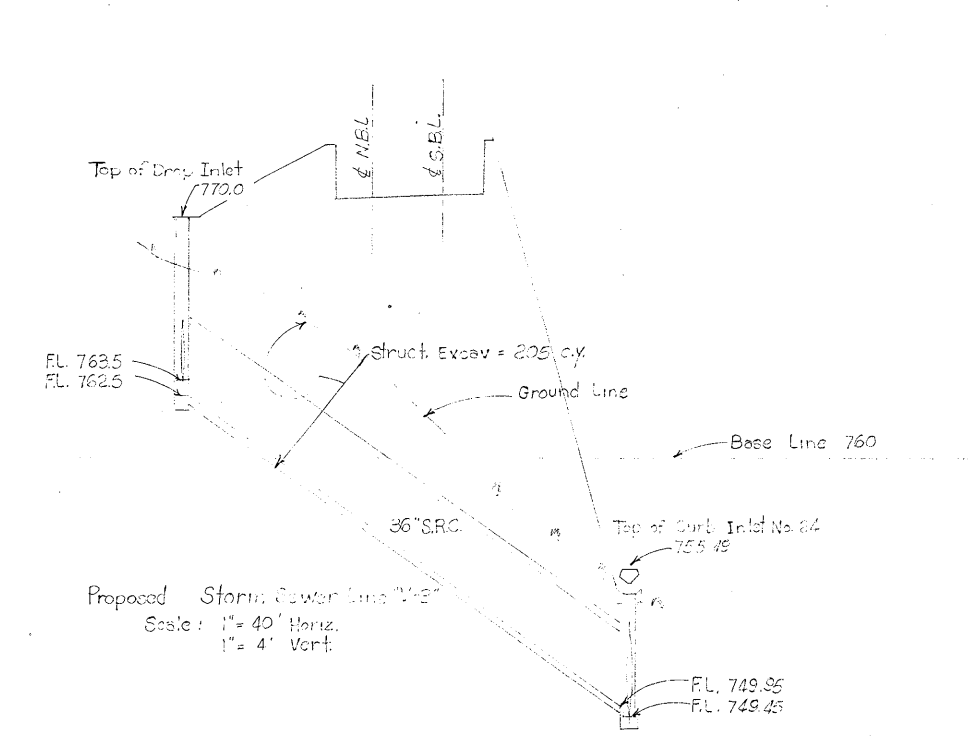
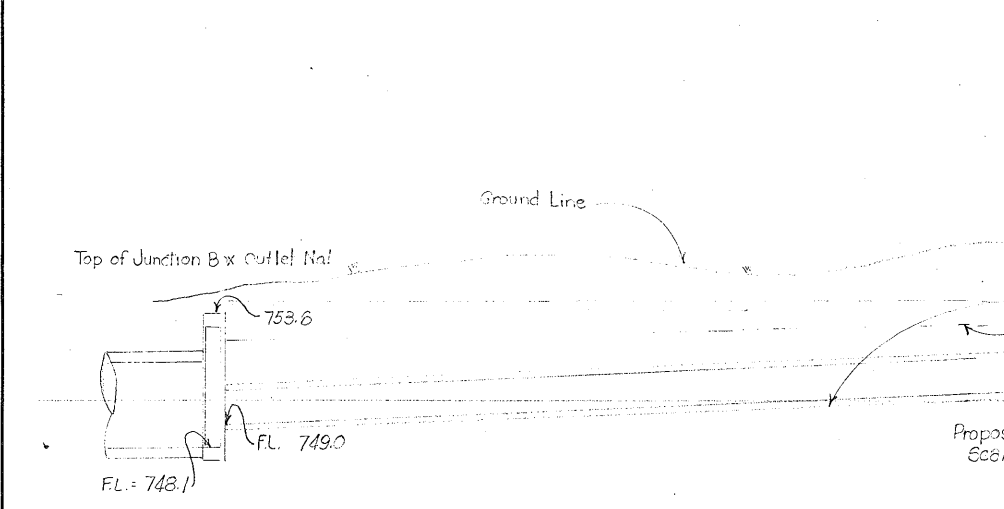
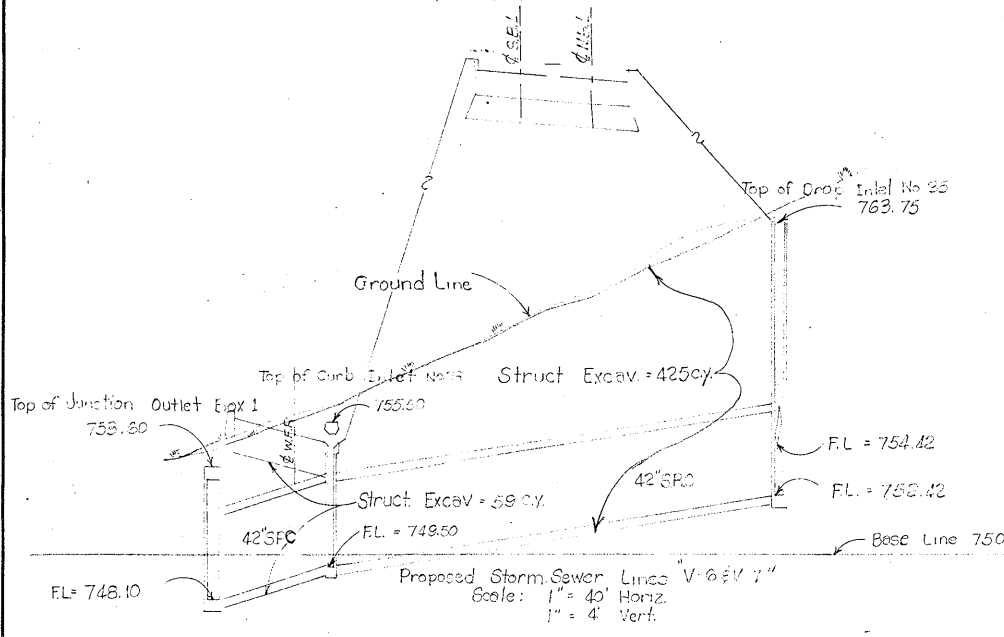
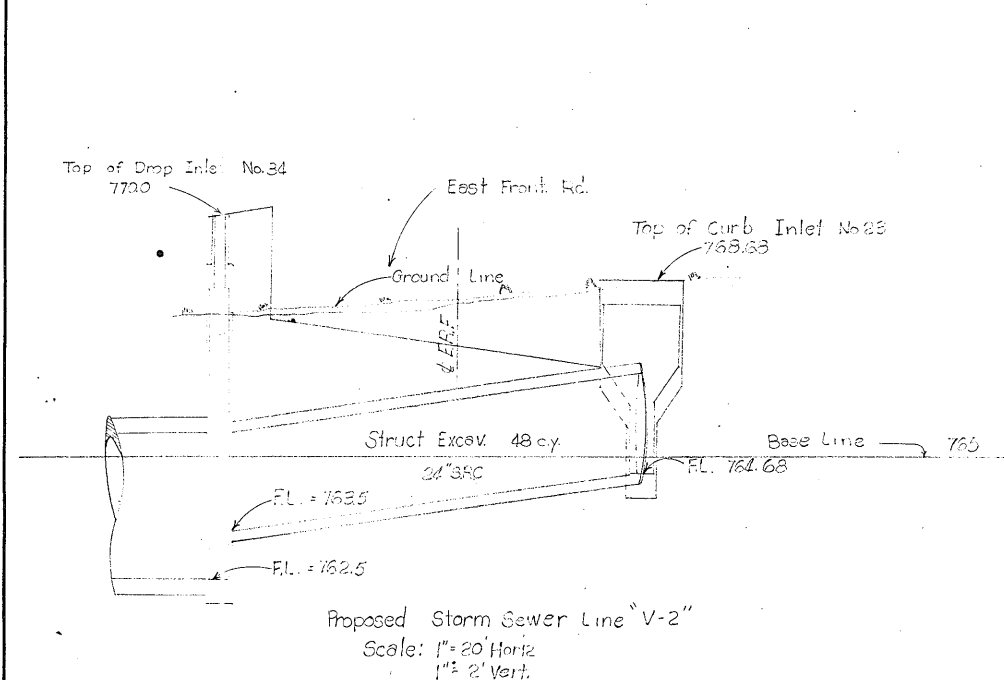


FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	141
STATE DIV. NO.	COUNTY	COUNTY SECTION NO.	SHEET NO.
15	BEXAR	16	7

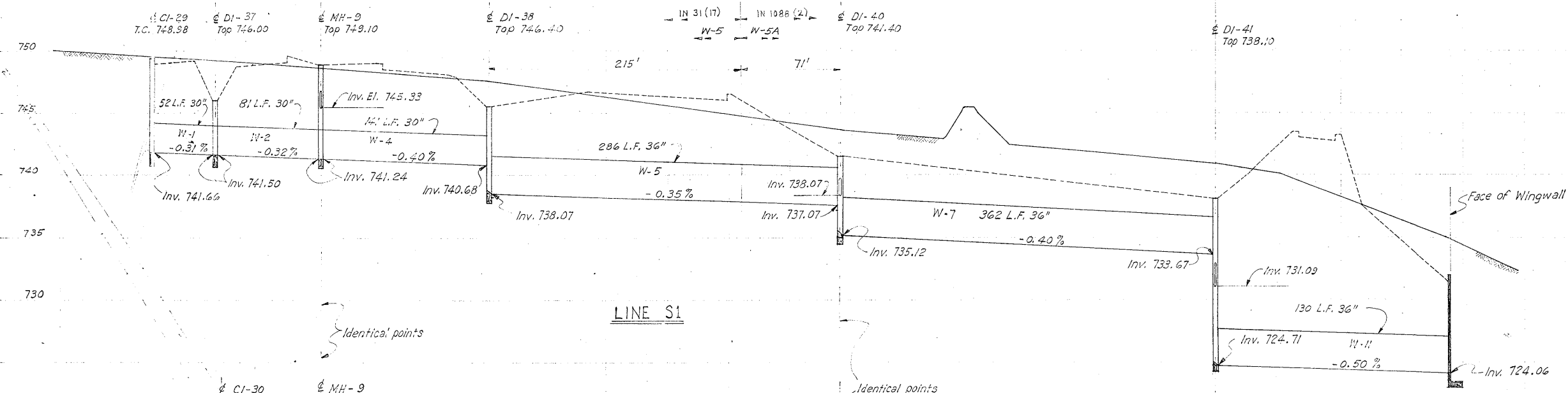


STORM SEWER SECTIONS
Sheet 6 of 9
FI 31-17

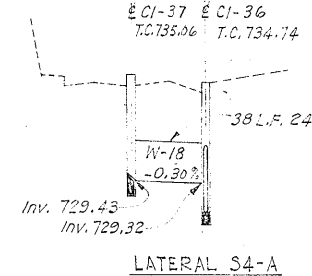
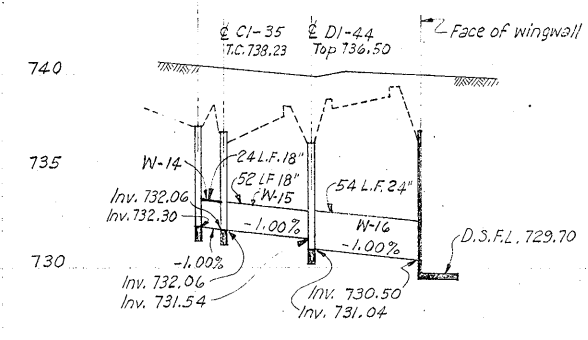
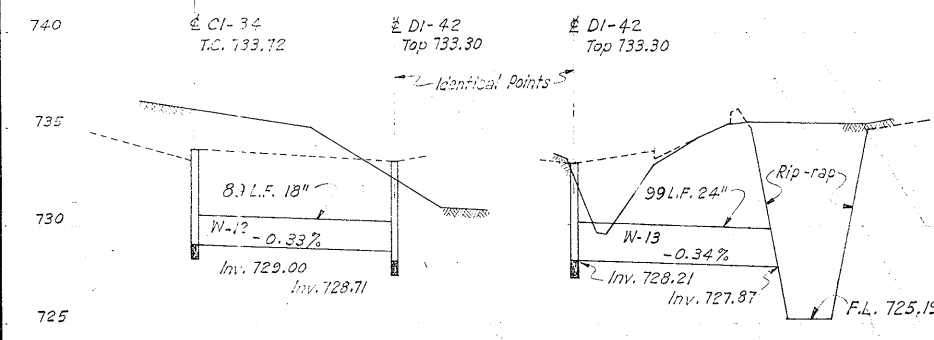
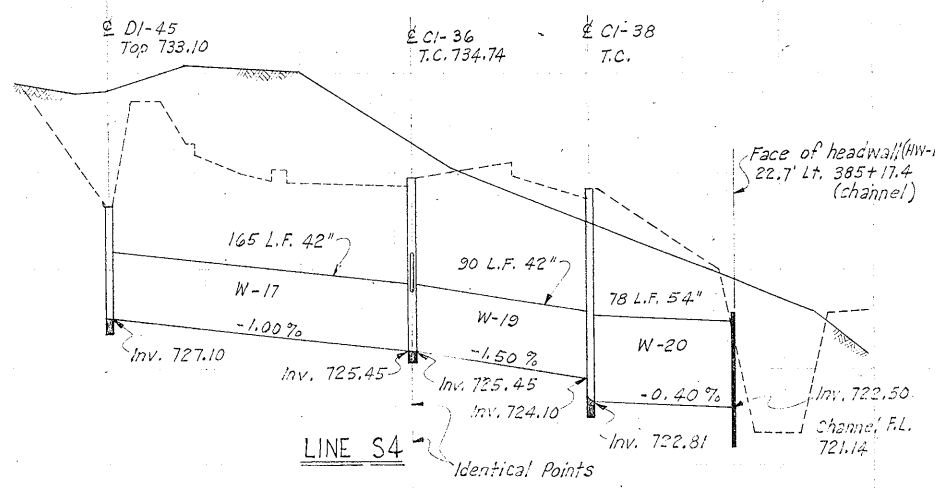
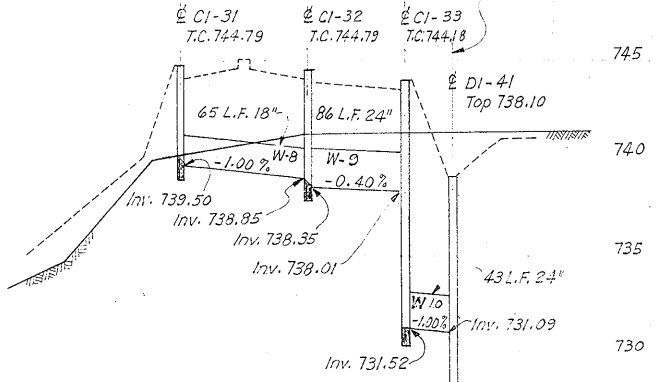
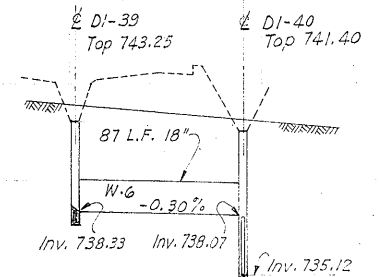
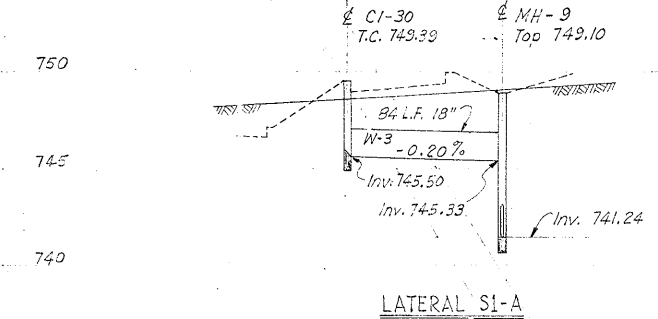
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-31-17	141A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	16 7 25	US 81



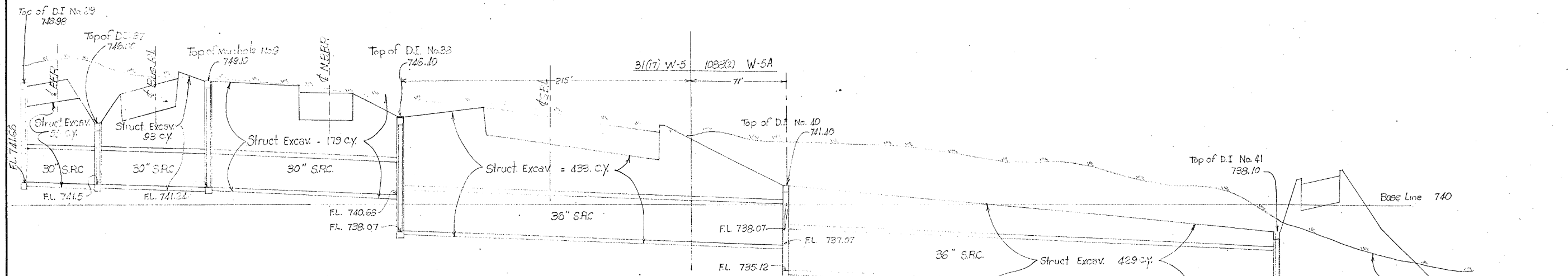
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-81-17	142-A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Brewer	16	7 25



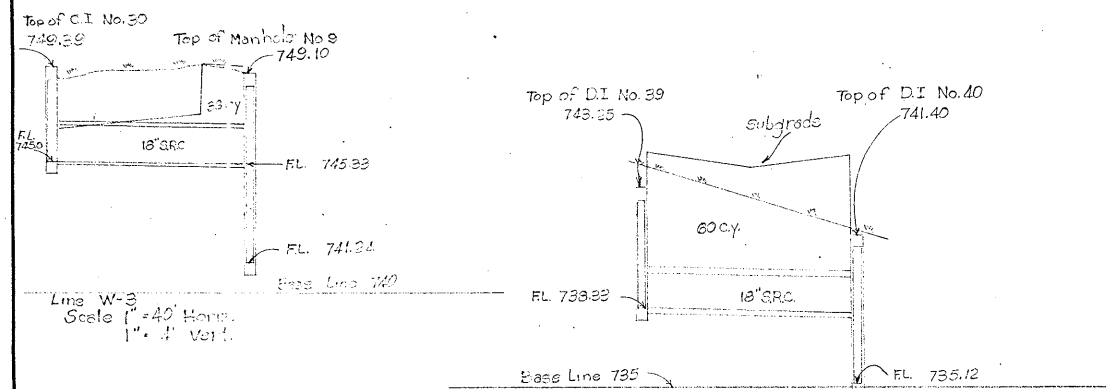
PIPE	UNCLAS. STRUCT EXCAV. (PIPE LINE) CU. YD.	ESTIMATED QUANTITIES					
		STD. REINF. CONCRETE PIPE					
		18"	24"	30"	36"	42"	54"
		L.F.	L.F.	L.F.	L.F.	L.F.	L.F.
W-1	64			52			
W-2	106			81			
W-3	37	94					
W-4	177			141			
W-5	332				215		
W-5A	82				71		
W-6	62	37					
W-7	399				362		
W-8	45	55					
W-9	71		86				
W-10	66		43				
W-11	318				130		
W-12	56	89					
W-13	76		99				
W-14	17	24					
W-15	37	52					
W-16	61		54				
W-17	351					165	
W-18	28		38				
W-19	193					90	
W-20	183						78
TOTAL	2,761	401	320	274	778	255	78



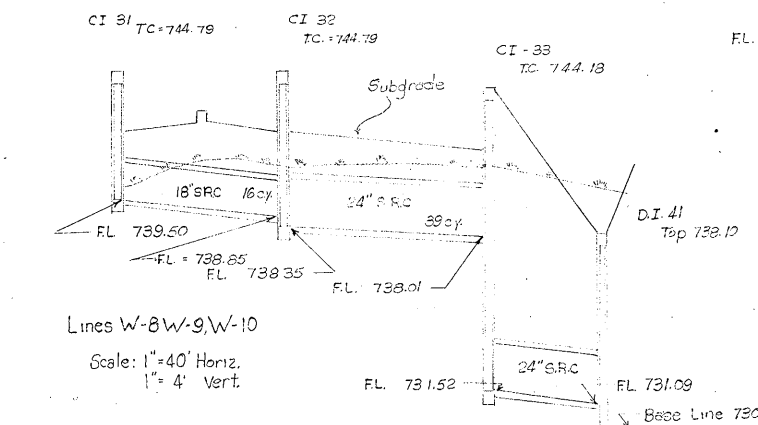
STORM SEWER PROFILES
SHEET 8 OF 9.



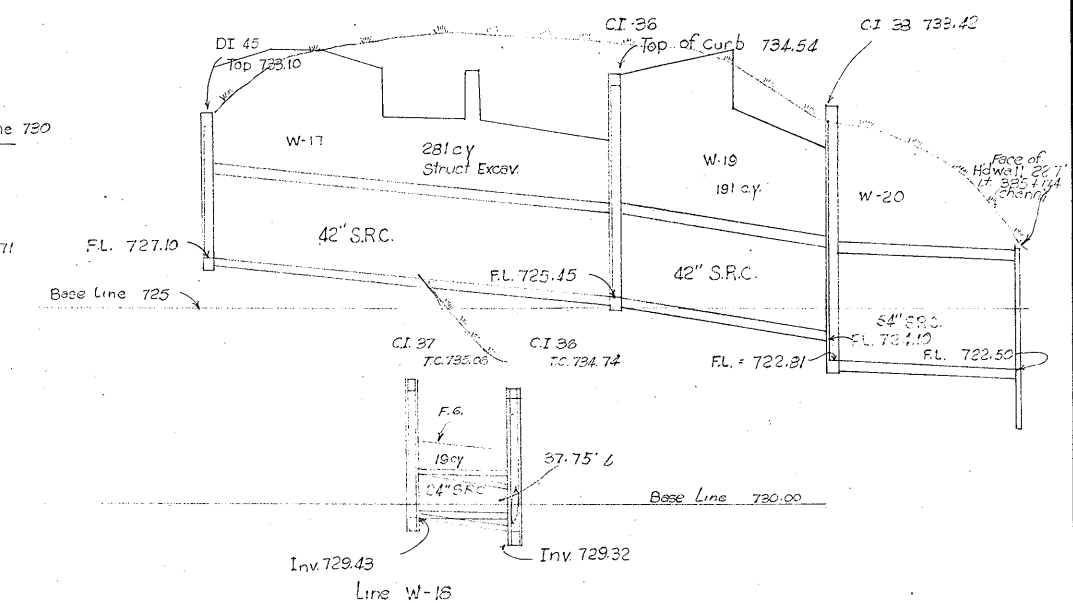
Lines W-1, W-2, W-4, W-5, W-7, & W-11
 Scale: 1" = 40' Horiz.
 1" = 4' Vert.



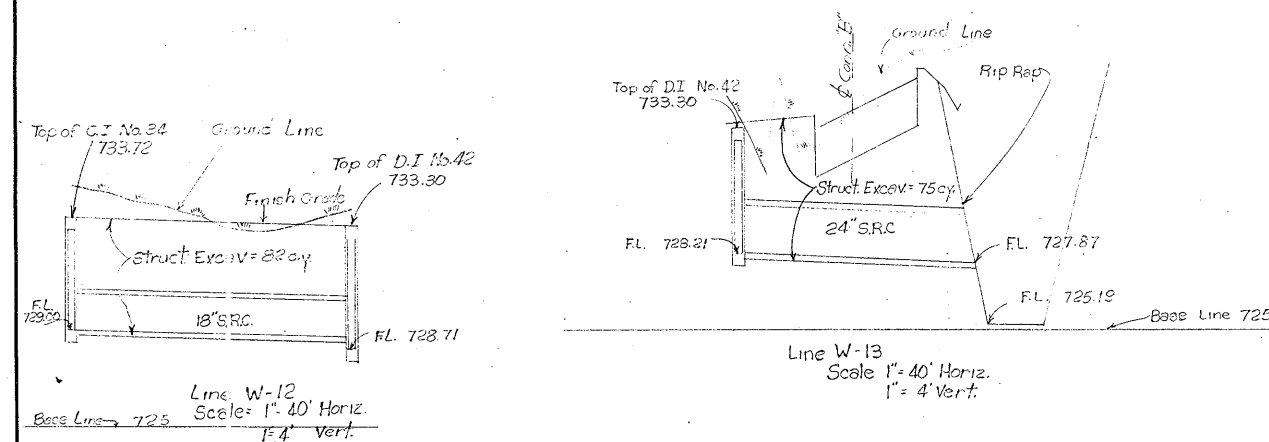
Line W-6
 Scale: 1" = 40' Horiz.
 1" = 4' Vert.



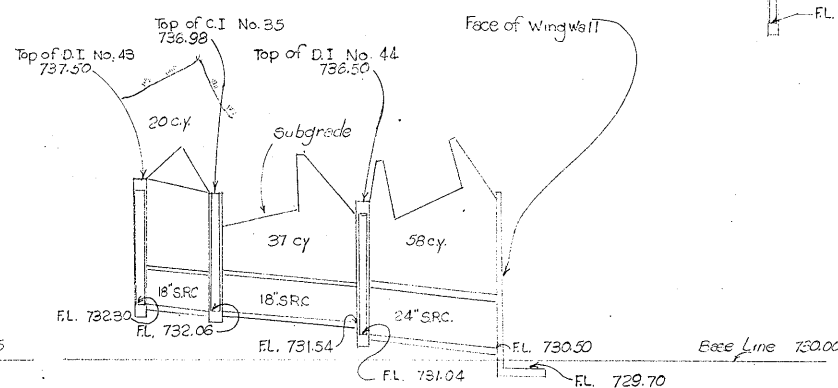
Lines W-8, W-9, W-10
 Scale: 1" = 40' Horiz.
 1" = 4' Vert.



Storm Sewer Profiles
 Sheet 8 of 8

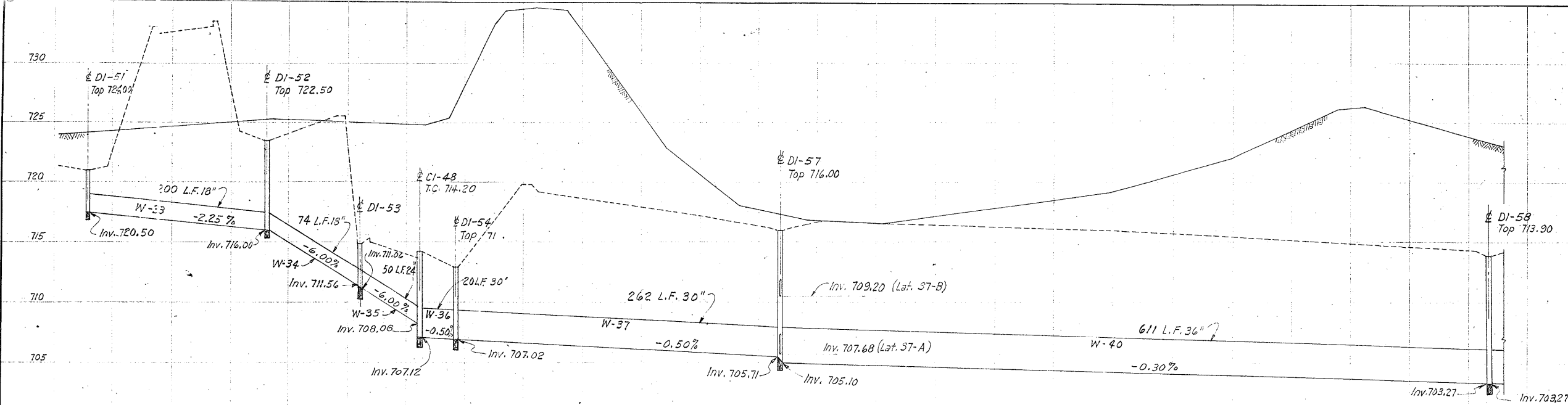


Line W-13
 Scale: 1" = 40' Horiz.
 1" = 4' Vert.

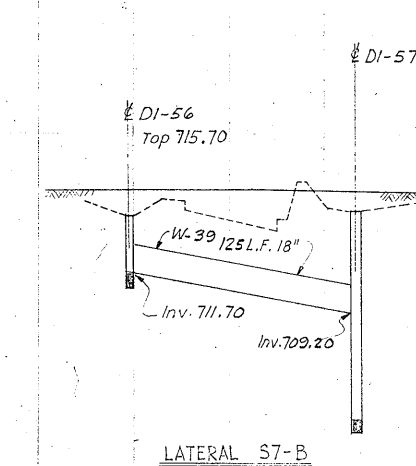
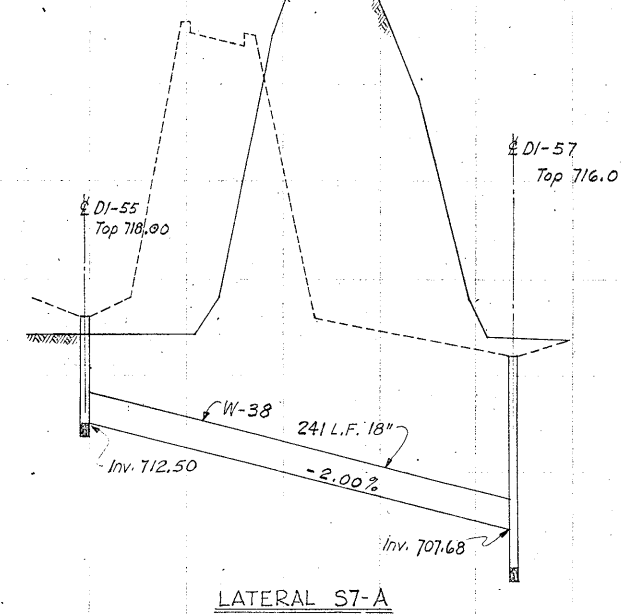
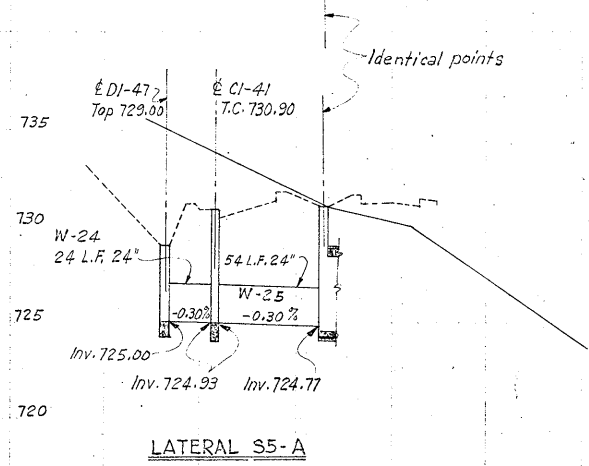
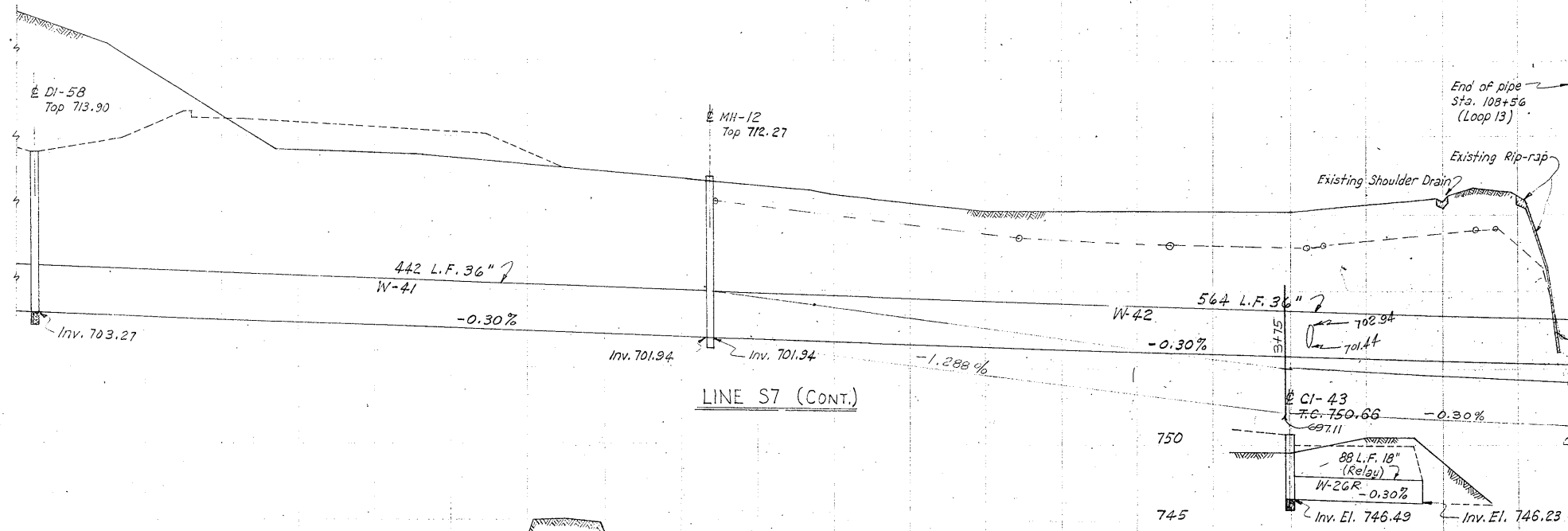
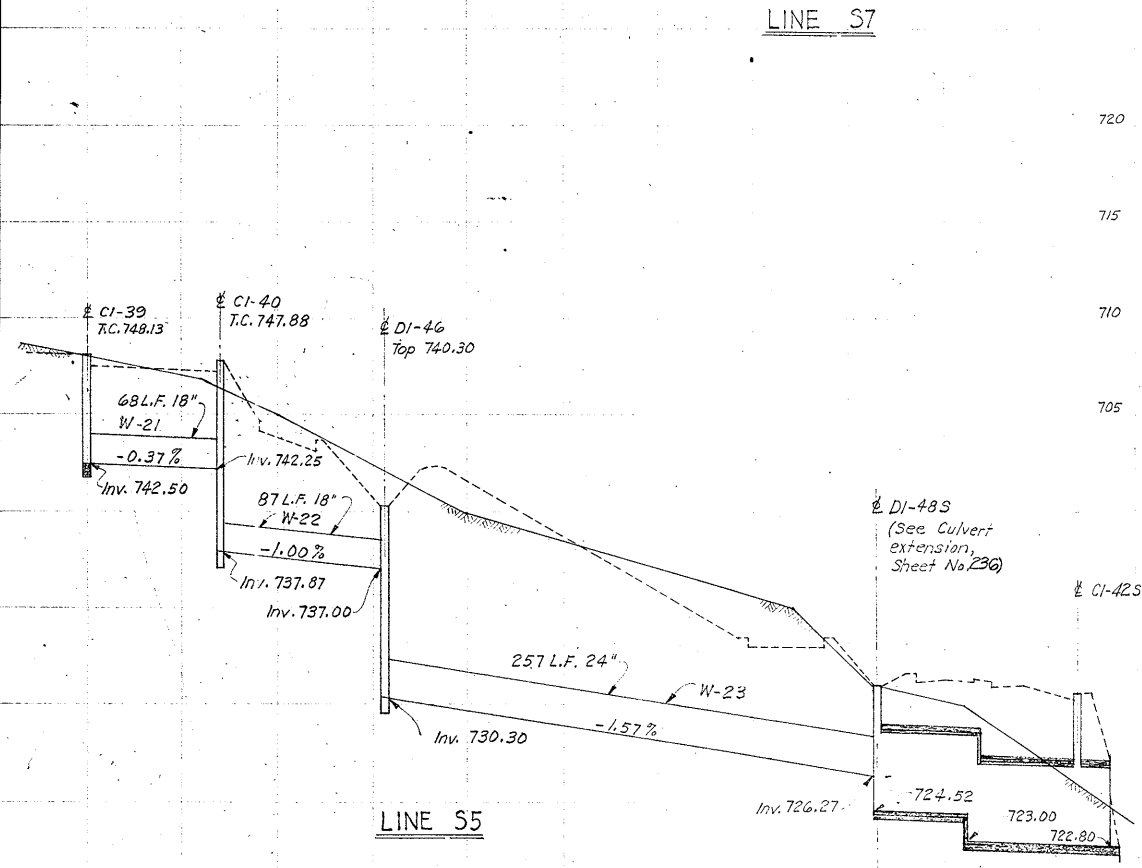


Lines W-14, W-15, W-16
 Scale: 1" = 40' Horiz.
 1" = 4' Vert.

FED. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-31-17 - FI-1088-2	142-A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	Bexar	6-17	7-10 25-15

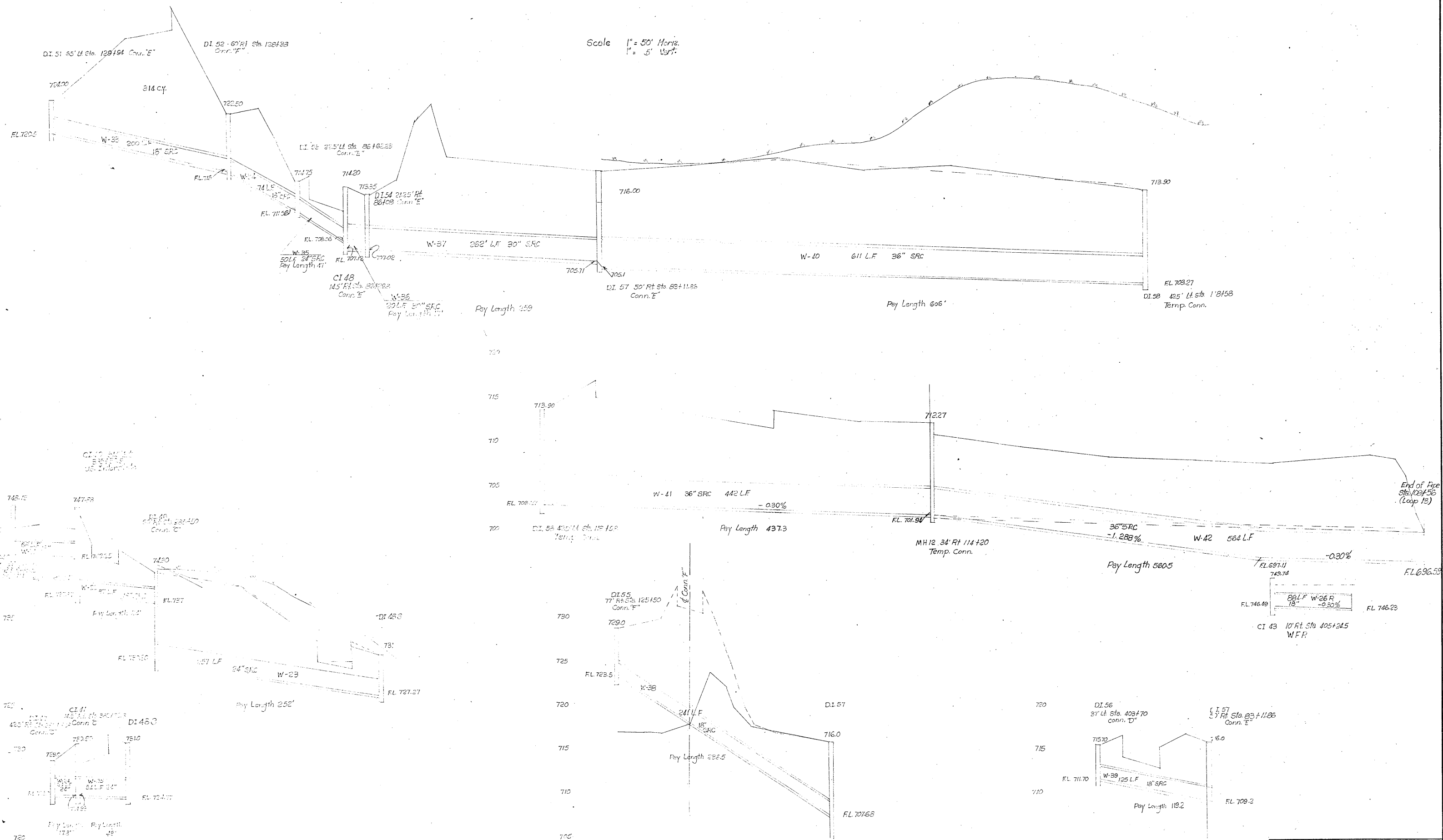


PIPE	UNCLASS. STRUCT. EXCAVATION (PIPE LINES) CU. YDS.	STD. REINF. CONC. PIPE				RELAYING CULV. PIPE 18" UNDER LIN. FT.
		18" L.F.	24" L.F.	30" L.F.	36" L.F.	
W-21	43	68				
W-22	73	87				
W-23	376		257			
W-24	19		24			
W-25	52		54			
W-26	40					88
W-27	210	200				
W-28	104	74				
W-29	31		50			
W-30	21			20		
W-31	538		262			
W-32	258	241				
W-33	72	125				
W-34	1,469				611	
W-35	1,002				442	
W-36	1,269				564	
Total	5,577	795	385	282	1,617	88



1" = 50' Hor
1" = 5' Vert
STORM SEWER PROFILES
SHEET 9 OF 9

Scale 1" = 50' Horiz.
1" = 5' Vert.



FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FT-200-1 F-3113	144A
STATE DIST. NO.	COUNTY	CONT. / JOB	HIGHWAY NO.
15	Bexar	17-12-15-18-19-20-21	4531

Bar Number	A	A(1-13)	A(1)	Ba	Ba(1-12)	Bb	Bb(1-17)	Bc	Bd	Ca	Co	D	E1	E2	Fa(1)	Fa(2)	Fa(3)	Fa(4)	Fa(5)	Fa(6-14)	Fa(6-14)	Fa(5)	Fa(6)	FbL	FbM	FbS	FbD	Fc(1)	Fc(2)	Fc(3)	Fc(4)	Fc(5-11)	Fc(5-11)	Fc(5-11)	H1	H5	K	L1	L2	M1	M2	Y	Z1	Z2
43	13	6	43	12	65	17	2	5	147	16	164	56	92	2	2	2	2	1	9	9	9	2	29	10	10	10	3	2	2	2	1	7	7	7	4	2	23	28	19	79	10	60	59	7
Size	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	5/8" ϕ	3/4" ϕ	3/4" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	1/2" ϕ	
Spacing	14"	14"	4"	14"	14"	10 1/2"	10 1/2"	~	14"	9 1/2"	10"	9 1/2"	14"	8 1/2"	~	~	~	~	13"	13"	~	~	~	20"	20"	20"	~	~	~	~	~	~	18"	18"	~	~	12"	12"	18"	18"	18"	12"	12"	12"
Length-I	~	21 7/8"	~	~	20 1/4"	~	21 5/8"	~	~	~	~	~	~	~	73 7/8"	64 1/2"	59 1/2"	58 5/8"	~	66 1/8"	50 5/8"	58 1/2"	~	~	~	~	~	~	~	73 7/8"	71 7/8"	67 7/8"	~	~	~	~	~	~	~	~	~	~	~	~
Length-X	~	2 1/4"	~	~	3 1/2"	~	2 1/8"	~	~	~	~	~	~	~	56 7/8"	7 5/8"	55 3/8"	57 1/2"	~	58 1/2"	56 1/2"	57 1/2"	~	~	~	~	~	~	~	56 7/8"	58 1/2"	63 1/2"	~	~	~	~	~	~	~	~	~	~	~	~
Av. Length	21 1/4"	11 1/2"	2 3/8"	21 1/8"	11 1/2"	21 1/8"	12 1/2"	27 1/2"	27 1/2"	11 1/2"	13 1/2"	4 1/4"	5 1/8"	5 1/8"	65 1/2"	58 1/2"	57 1/2"	57 1/2"	65 1/2"	62 1/2"	53 1/2"	57 1/2"	7 3/8"	73 1/4"	65 1/2"	56 7/8"	7 3/8"	65 1/2"	65 1/2"	65 1/2"	65 1/2"	69 1/2"	61 1/2"	27 1/2"	21 1/8"	4 1/2"	5 1/2"	2 1/4"	7 1/4"	9 1/2"	3 1/2"	17 1/2"	20 1/4"	
Weight	983	160	171	972	147	1469	213	56	141	1725	225	841	477	783	87	78	77	77	44	377	323	77	140	490	436	378	15	87	87	88	44	325	286	74	29	64	107	26	418	63	158	673	94	

35/bs. $21'-8''$
 $9'-7''$ $4''$ $1'-10''$ $4''$ $9'-7''$
 $4''$ $5/8$

BARS FA (6-14)s

$F_{C(5)}S = 57' - 2''$. Increase each succeeding bar by $13\frac{1}{2}''$. $F_{C(11)}S = 63' - 11''$.

BARS $F_c(5-11)_s$

$X = 2' - 4\frac{1}{4}"$. Decrease each succeeding bar by $18\frac{3}{4}"$. $X_{13} = 2' - 4\frac{1}{4}"$.

Diagram showing a trapezoidal structure with dimensions:

- Top width: $9' - 7"$
- Bottom width: $9' - 3\frac{1}{4}"$
- Height: $4"$
- Top width segments: $4"$, $1' - 10"$, $4"$
- Bottom width segments: $4"$, $1' - 10"$, $4"$
- Overall top width: $X = 2' - 4\frac{1}{4}"$

$Ba(1) = 20' - 4"$. Decrease each succeeding bar by $18 \frac{3}{4}"$. $Ba(12) = 3' - 2"$.

$B_{11(1)} = 2' - 5"$. Decrease each succeeding bar by $14\frac{1}{8}"$. $B_{b(17)} = 2' - 7"$.

BARS A 1-13

BARS Z

BARS Y

BARS L_2

BARS L₁

Hand-drawn structural drawing of a slab reinforcement layout. The drawing shows a rectangular slab with various reinforcement bars labeled: Bars H_L, Bars F_{ao}, Bars B_o, Bars A_o, Bars L_i, Bars B_c, Bars L₂, Bars E_i, and Top Slab Reinf. Dimensions are given in feet and inches: 8", 2", 4", 5'-0", 3'-0", 10", 2", 2", 6", 3'-1 1/2", 3'-0", 7 1/2". A 3" gutter depression is indicated. The elevation is noted as Elev. = 739.32.

2 Sym. abt. 9'

2'-6" 5'-6 1/2" 1'-11" 10"

Bar Fa(1) Bar Fa(2) Bar Fa(3) Bar Fa(4) Bar Fa(5)

8 Spaces @ 1'-1" = 8'-8"

Bars Fa(6) to Fa(14)

Bars Ca Bars M1 Bars FbL Bars Z1 Bars FbM

Permissible Const. Jt.

Construction Joint

6 Spaces @ 1'-6" = 9'-0"

Bars Fc(1) to Fc(11) Bars D1 Bars Bb Bars E2 Bars Y

Bar Fc(1) Bar Fc(2) Bar Fc(3) Bar Fc(4)

2'-6" 5'-6 1/2" 2'-9" 8"

10'-0"

8'-0" 1'-0" 9'-0" 1'-0"

TEXAS HIGHWAY DEPARTMENT
2-10'x8'x51' SPECIAL CULVERT
36'43' LT. FWD. SKEW
SPECIAL WINGS UPSTREAM
STD. FMCW-S2 WINGS DOWNSTREAM

STA. 372 + 48.18 TO STA. 372 + 75.62
EAST FRONTAGE ROAD

SCALE: 1/4" = 1'-0"
SHEET 1 OF 2

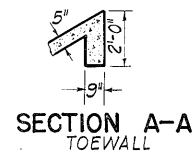
BC-1 .

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	FI-1088 (2)				145
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.	
15	Bexar	17	10	13	U.S. 81 INTER.	

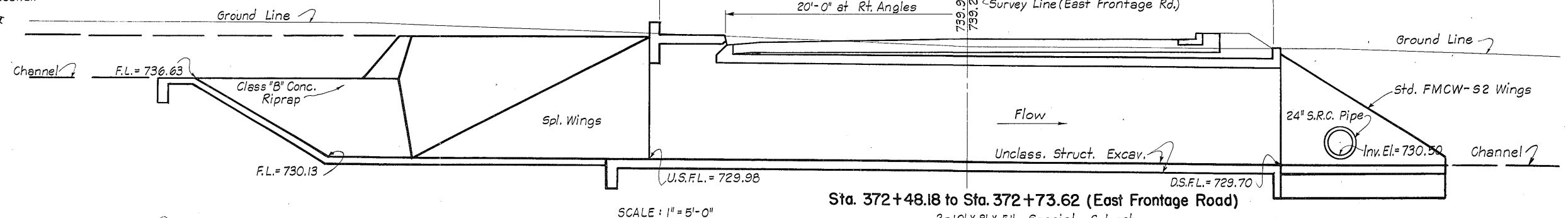
PLAN OF TOP SLAB

PLAN OF BOTTOM SLAB

SECTION C-C)



SECTION A-A
TOEWALL



SCALE : 1" = 5'-0"

Sta. 372+48.18 to Sta. 372+73.62 (East Frontage Road)

2-10' X 8' X 51' Special Culvert
36°43' Left Fwd. Skew

Bill of Reinforcing Steel for Special Wings																	
Bar	G ₁	G ₂	R	S ₁	S ₂	T ₁	T ₂	U ₁	U ₂	W ₁	W ₂	W ₃	W ₄	W ₅	X ₁	X ₂	
Number	4	4	94	56	24	7	7	14	14	1	5	2	4	4	5	4	
Size	½" φ	½" φ	¾" φ	¾" φ	½" φ	½" φ	½" φ	¾" φ	¾" φ	½" φ	½" φ	½" φ	½" φ	½" φ	¾" φ	½" φ	
Spacing	12"	12"	5½"	5½"	12"	18"	18"	9"	9"	∞	12"	∞	12"	12"	5½"	12"	
Length	27'-8"	14'-10"	13'-7"	7'-11"	7'-9"	27'-8"	15'-2"	4'-6"	4'-7"	35'-6"	28'-0"	25'-4"	39'-11"	44'-7"	6'-0"	3'-11"	
Weight	74	40	1917	660	124	129	71	95	96	24	94	34	107	119	45	10	
													TOTAL		4037 lbs		

ESTIMATED QUANTITIES

ESTIMATED QUANTITIES					
Description	Unit	2-10X8X51" Spl. Culv.	Special Wings	Std. FMCWS ² Wings	Totals
Cl."A" Concrete (Culv.)	C.Y.	108.19	24.70	7.68	140.57
Reinf. Steel	Lb.	43,568- 13,385	4,053- 1,287	665- 1,038	18,286
Cl."B" Conc. Riprap	C.Y.	45.36	45.36		45.36
Unclass. Struct. Excav.	C.Y.	36	89.40	20.19	145.59

GENERAL NOTES:

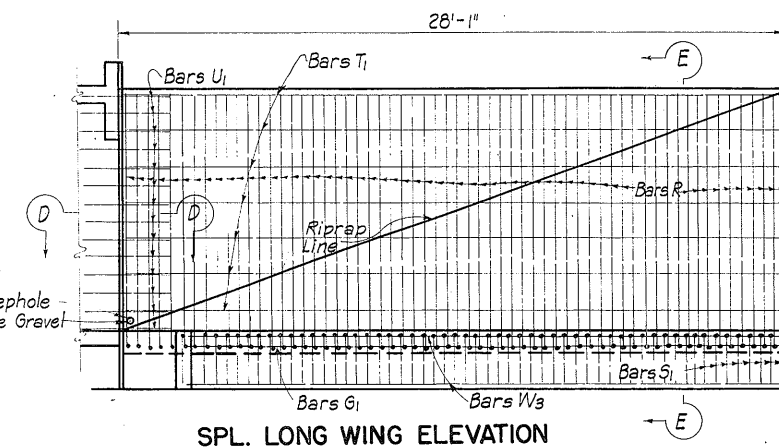
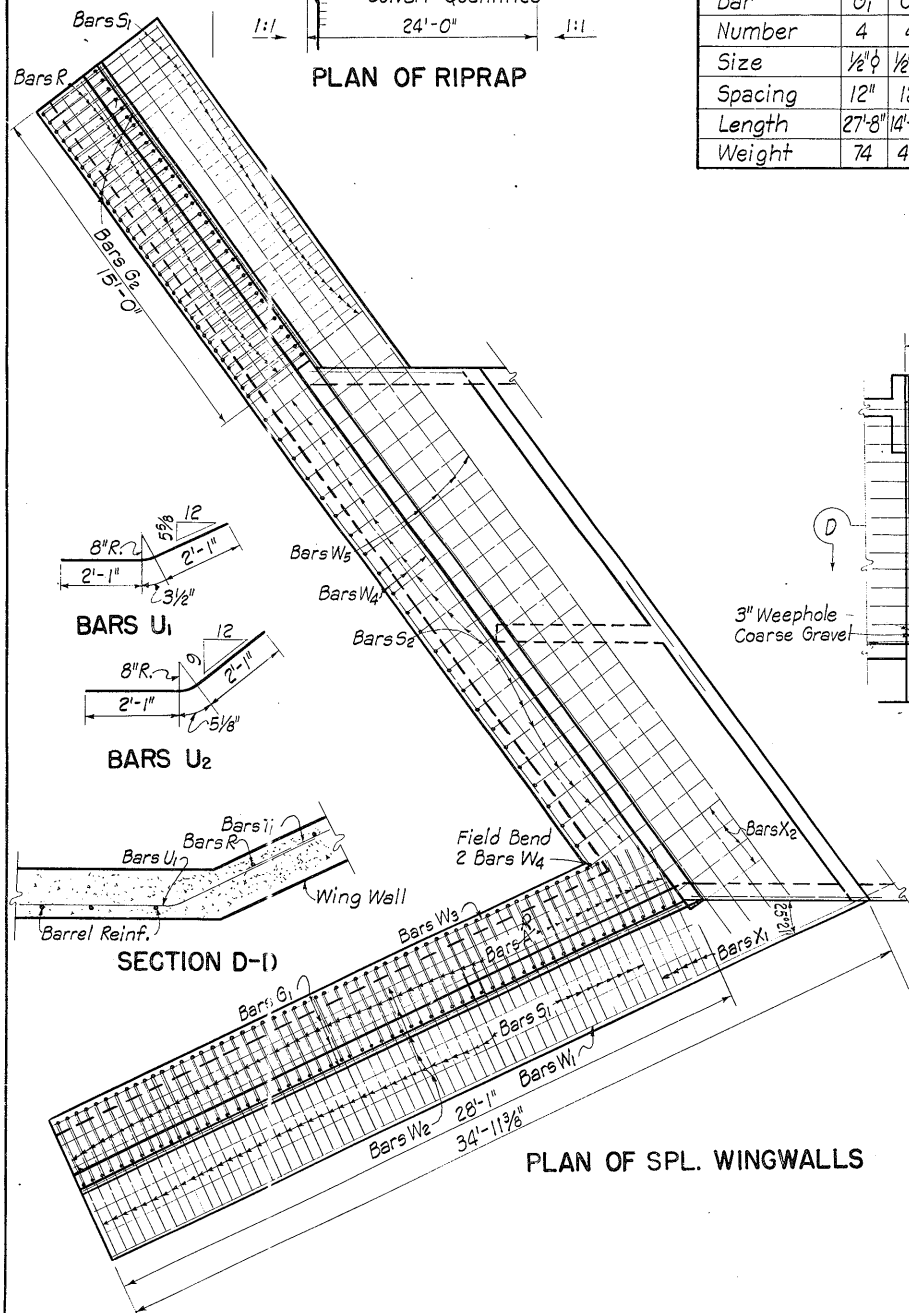
Design Loading: H20-44 or H20S16-44 in accordance with A.A.S.H.O. 1949 Specifications and T.H.D. Supplement No. 1.

All concrete shall be Class "A". Chamfer exposed corners $\frac{3}{4}$ ".
Dimensions relating to reinforcing steel shown hereon include one
20 diameter lap for all bars exceeding 60 feet in length.

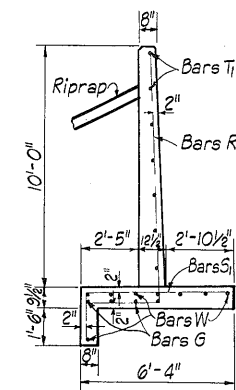
6 inches at the option of the Contractor. Adjust length of vertical steel as required.

The bottom slab of barrel, wing footings, and toe walls shall be placed in one continuous operation.

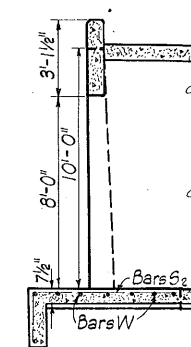
Special Wings shall be constructed monolithically with the barrel: If construction joints are used near the barrel walls, these joints shall continue through the wings.



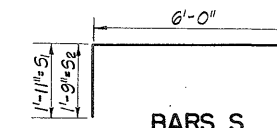
SPL. LONG WING ELEVATION



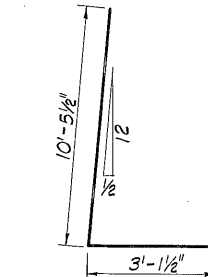
SECTION E-E



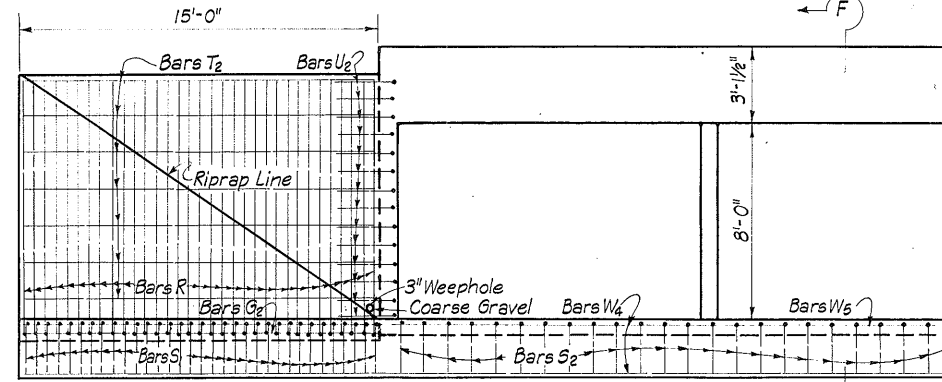
SECTION F-F



BARS S



BARS R

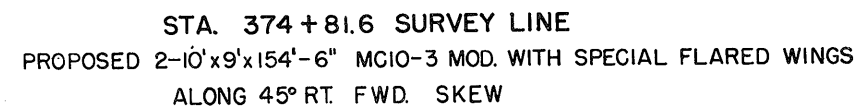


SPL. SHORT WING ELEVATION

TEXAS HIGHWAY DEPARTMENT
2-10'x8'x51' SPECIAL CULVERT
36° 43' LT. FWD. SKEW
SPECIAL WINGS UPSTREAM
STD. FMCW-S2 WINGS DOWNSTREAM
STA. 372+48.18 TO STA. 372+75.62
EAST FRONTAGE ROAD
SCALE: 1/4" = 1'-0"
SHEET 2 of 2

BC-1

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.					SHEET NO.
6	TEXAS	FI-1088 (2)					146
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.		
15	Bexar	17	10	13	U.S. 81		



Design Loading: H20-44 or H20S16-44 in accordance with A.A.S.H.O. 1949 Standard Specifications and T.H.D. Supplement #1.

All concrete shall be "Class A". Chamfer exposed corners $\frac{3}{4}$ ".

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

Quantities of reinforcing steel shown hereon include: One 20 dia. lap for bars over 60' in length, two 20 dia. laps for bars over 120' in length, and three 20 dia. laps for bars over 180' in length.

Const. Joint shown at flow line may be raised a max. of 6" at the option of the contractor. Adjust length of vertical steel as required.

The reinforcing steel in the 'Short' Dwnstr'm. Wing shall be cut and bent to conform to the outside surf. of the 36" S.R.C. Pipe. This shall not be paid for directly but shall be considered subsidiary to the various bid items of the contract.

2-10'x9'x154'-6" MC10-3 MODIFIED
(FOR 12' FILLS)
45° RT. FWD. SKEW WITH SPECIAL FLARED WINGS
STA. 374+66.04 to STA. 374+97.15
SCALE: 1/4" = 1'-0"
SHEET 1 of 2

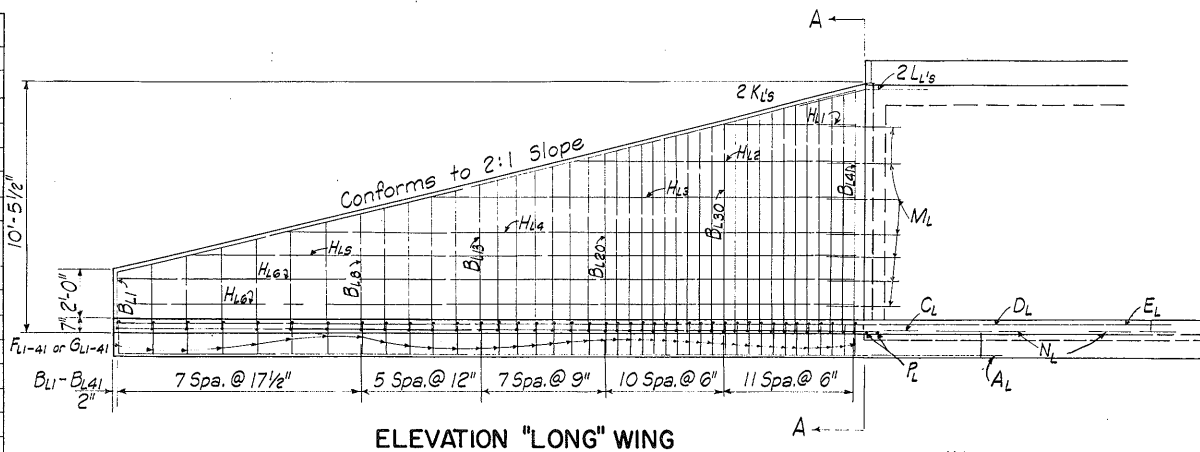
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS	FI-1088 (2)			147
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
15	Bexar	17	10	13	U.S. 81 INTERST.

BILL OF REINFORCING STEEL

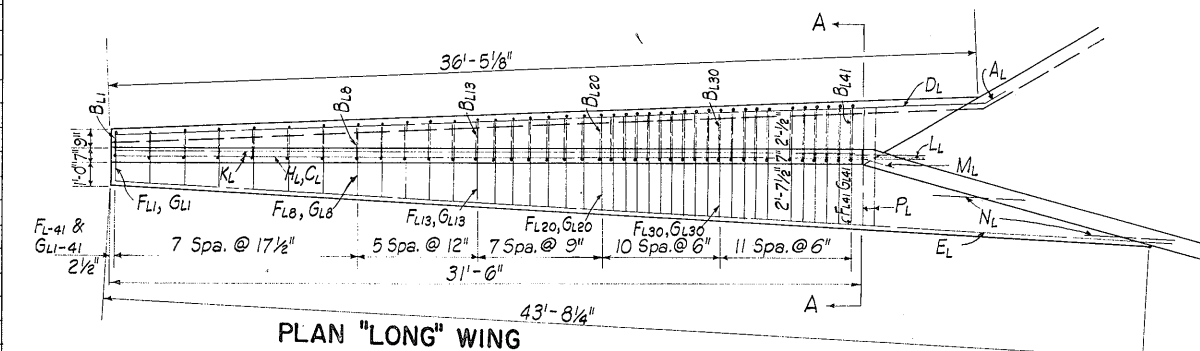
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
2 LONG WINGS					
BL1 - BL8	10	1/2" ϕ	17 1/2"	Av. = 4'-11"	53
BL9 - BL13	10	1/2" ϕ	12"	Av. = 7'-3"	48
BL14 - BL20	14	1/2" ϕ	9"	Av. = 8'-8"	81
BL21 - BL30	20	1/2" ϕ	6"	Av. = 10'-5 1/2"	135
BL31 - BL41	22	5/8" ϕ	6"	Av. = 11'-8"	268
FL1 - FL8	8	1/2" ϕ	17 1/2"	Av. = 3'-10"	20
FL9 - FL13	5	1/2" ϕ	12"	Av. = 4'-7"	15
FL14 - FL20	7	1/2" ϕ	9"	Av. = 5'-0"	23
FL21 - FL30	10	1/2" ϕ	6"	Av. = 5'-6"	37
FL31 - FL41	11	5/8" ϕ	6"	Av. = 6'-0"	69
GL1 - GL8	8	1/2" ϕ	17 1/2"	Av. = 4'-10"	26
GL9 - GL13	5	1/2" ϕ	12"	Av. = 5'-7"	19
GL14 - GL20	7	1/2" ϕ	9"	Av. = 6'-0"	28
GL21 - GL30	10	1/2" ϕ	6"	Av. = 6'-0"	43
GL31 - GL41	11	5/8" ϕ	6"	Av. = 7'-0"	80
HL1 - HL4	8	1/2" ϕ	18"	Av. = 14'-11"	80
HL5	2	1/2" ϕ	12"	27'-11"	37
HL6	4	1/2" ϕ	12"	31'-0"	83
KL	4	3/4" ϕ	~	32'-0"	192
ML	14	5/8" ϕ	12" & 18"	3'-2"	46
LL	4	1" ϕ	~	5'-6"	59
DL	2	5/8" ϕ	~	37'-6"	78
AL	2	1/2" ϕ	~	37'-6"	50
CL	2	5/8" ϕ	~	33'-4"	70
EL	2	3/4" ϕ	~	44'-4"	133
PL	4	5/8" ϕ	~	5'-0"	21
NL	4	3/4" ϕ	~	3'-9"	23
2 SHORT WINGS					
BS1 - BS4	8	1/2" ϕ	17 1/2"	Av. = 4'-8"	25
BS5 - BS7	6	1/2" ϕ	12"	Av. = 7'-0"	28
BS8 - BS11	8	1/2" ϕ	9"	Av. = 8'-5 1/2"	45
BS12 - BS16	10	1/2" ϕ	6"	Av. = 10'-1"	67
BS17 - BS22	12	5/8" ϕ	6"	Av. = 11'-7"	145
CS	2	5/8" ϕ	~	17'-9"	37
DS	2	5/8" ϕ	~	17'-2"	36
ES	2	3/4" ϕ	~	23'-3"	70
FS1 - FS4	4	1/2" ϕ	17 1/2"	Av. = 3'-9"	10
FS5 - FS7	3	1/2" ϕ	12"	Av. = 4'-6"	9
FS8 - FS11	4	1/2" ϕ	9"	Av. = 5'-0"	13
FS12 - FS16	5	1/2" ϕ	6"	Av. = 5'-6"	18
FS17 - FS22	6	5/8" ϕ	6"	Av. = 6'-0"	38
GS1 - GS4	4	1/2" ϕ	17 1/2"	Av. = 4'-9"	13
GS5 - GS7	3	1/2" ϕ	12"	Av. = 5'-6"	11
GS8 - GS11	4	1/2" ϕ	9"	Av. = 6'-0"	16
GS12 - GS16	5	1/2" ϕ	6"	Av. = 6'-0"	22
GS17 - GS22	6	5/8" ϕ	6"	Av. = 7'-0"	44
HS1 - HS4	8	1/2" ϕ	18"	Av. = 7'-7"	41
HS5	2	1/2" ϕ	12"	14'-4"	19
HS6	4	1/2" ϕ	12"	15'-11"	42
KS	4	3/4" ϕ	~	17'-9"	107
LS	4	1" ϕ	~	5'-6"	59
MS	14	5/8" ϕ	12" & 18"	3'-2"	46
NS	4	3/4" ϕ	~	3'-9"	23
PS	4	5/8" ϕ	6"	5'-0"	21
BARREL					
B	792	5/8" ϕ	6"	21'-8"	17,898
B1 - B40	160	5/8" ϕ	6"	Av. = 11'-9"	1961
C	756	5/8" ϕ	7"	12'-5"	9791
D	756	5/8" ϕ	7"	5'-1"	4008
E1	440	7/8" ϕ	6"	5'-8"	5098
E2	440	7/8" ϕ	6"	5'-8"	5098
F1	23	1/2" ϕ	~	222'-5"	3417 3/4
F2	36	1/2" ϕ	18"	222'-5"	5349 5/4
F3	21	1/2" ϕ	~	222'-5"	3120 3/78
H	8	1/2" ϕ	~	30'-9"	164
K	64	1/2" ϕ	12"	4'-4"	185
M	294	1/2" ϕ	18"	8'-11"	1751
Y	221	1/2" ϕ	12"	3'-11"	578
Z	221	1/2" ϕ	12"	19'-5"	2806
TOE WALLS					
S1	17	1/2" ϕ	18" \pm C.to C.	2'-8"	30
S2	17	1/2" ϕ	18" \pm C.to C.	3'-8"	42
U	2	1/2" ϕ	~	23'-7"	32
TOTAL = 64,233					64,455

ESTIMATED QUANTITIES

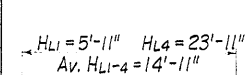
DESCRIPTION	CLASS "A" CONCRETE C.Y.	REINFORCING STEEL LBS.	UNCL. STRUCT. EXCAVATION C.Y.
2-10'X9'X154'-6" MC10-3 Modified	432.88	61388	
2 Special "Long" Wings	15.95	1817	
2 Special "Short" Wings	7.72	1028	
TOTALS	456.22	64233	208 1/4



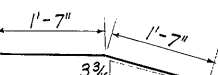
ELEVATION "LONG" WING



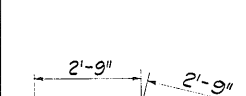
PLAN "LONG" WING



BARS HLI-4



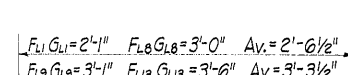
BARS ML



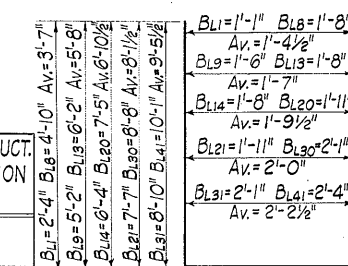
BARS LL



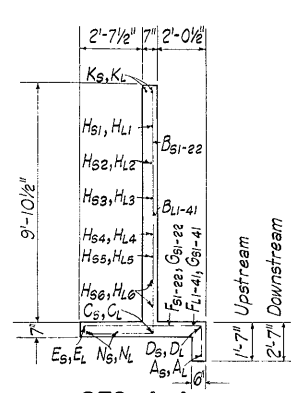
BARS AS



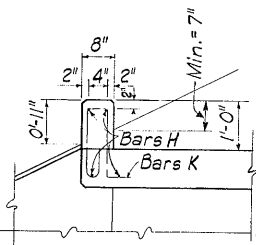
BARS FLI-41 & GLI-41



BARS BLI-41

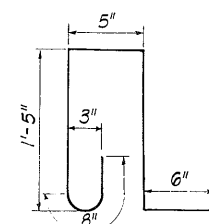


SEC. A-A

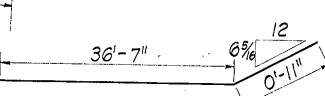


SEC. THRU CURB

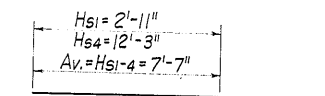
SCALE: 1/2" = 1'-0"



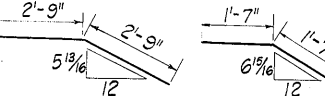
BARS K



BARS A L



BARS HSI-4

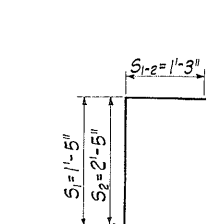


BARS LS

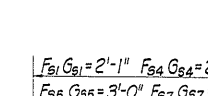
BARS MS

SEC. THRU CULVERT TOEWALL

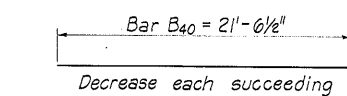
SCALE: 1/2" = 1'-0"



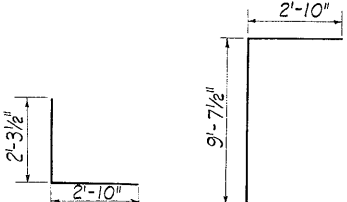
BARS S



BARS FSI-22 & GSI-22

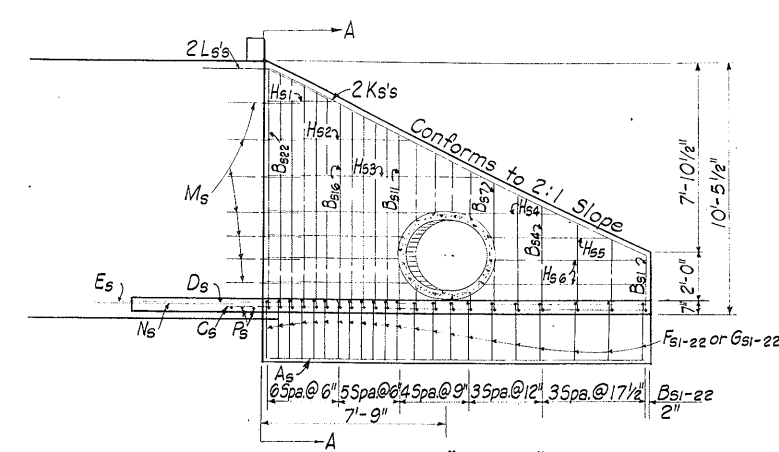


BARS B-40

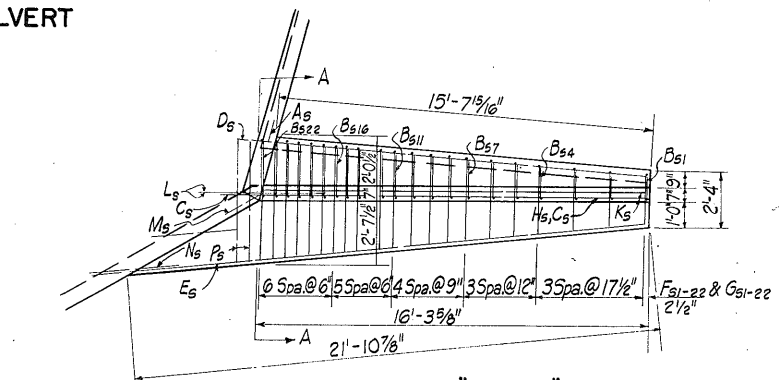


BARS D

BARS C



ELEVATION "SHORT" WING



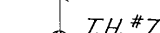
PLAN "SHORT" WING

TEXAS HIGHWAY DEPARTMENT MULTIPLE BOX CULVERT 2-10'X9'X154'-6" MC10-3 MODIFIED (FOR 12' FILLS)

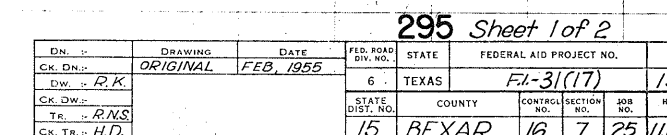
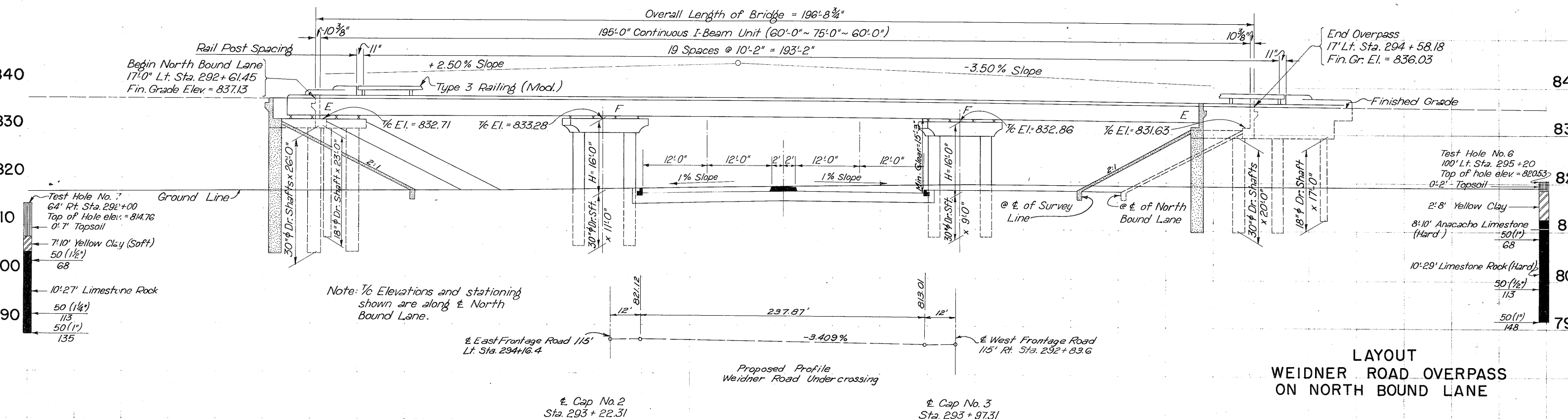
45° RT. FWD. SKEW WITH SPECIAL FLARED WINGS
STA. 374 + 66.04 to STA. 374 + 97.15
SCALE: 1/4" = 1'-0"
SHEET 2 of 2

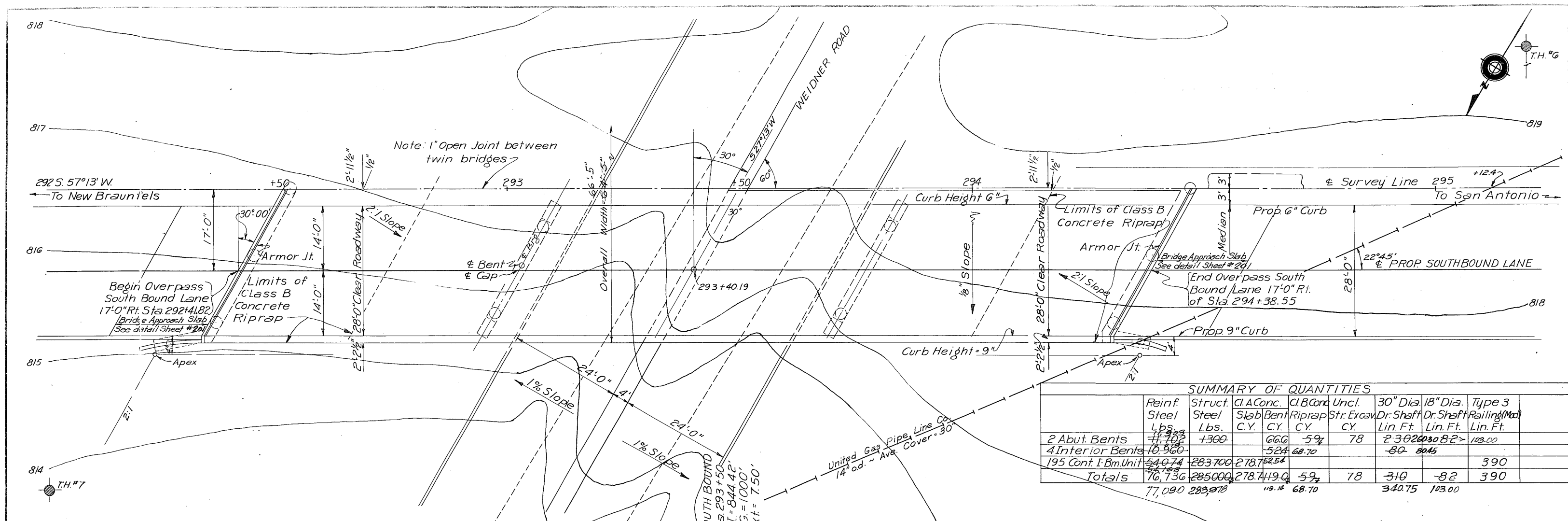
BC-2

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F.I. 1088 (2)	148
STATE DIST. NO.	COUNTY	CONT. SECT. JOB	HIGHWAY NO.
15	Bexar	17 10 13	U.S. 81 INTERST.



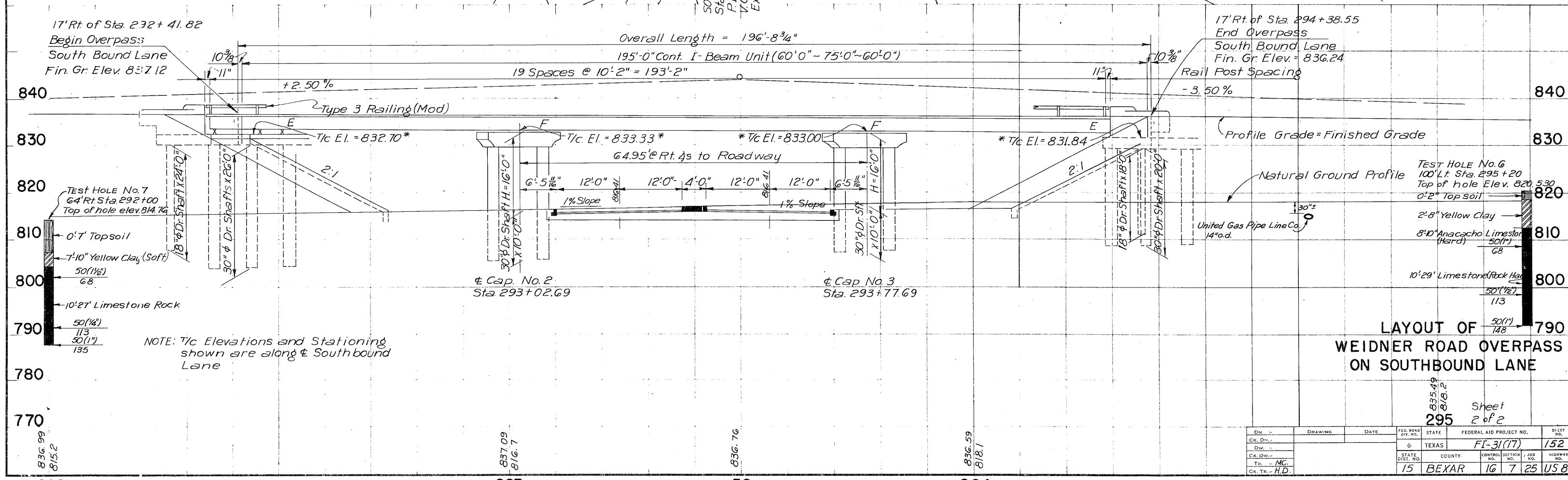
	Bent #1	Bent #2	Bent #3	Bent #4
Beam #1	832.59	833.13	832.68	831.42
Beam #2	832.67	833.23	832.81	831.55
Beam #3	832.76	833.34	832.93	831.70
Beam #4	832.84	833.44	833.05	831.82
Beam #5	832.84	833.45	833.09	831.90
Beam #6	832.75	833.38	833.03	831.84
Beam #7	832.65	833.30	832.98	831.84
Beam #8	832.56	833.22	832.92	831.70





SUMMARY OF QUANTITIES

	Reinf. Steel Lbs.	Struct. Steel Lbs.	C.I. Conc. C.Y.	C.B. Conc. C.Y.	Uncl. C.Y.	30" Dia. Dr. Shaft Lin. Ft.	18" Dia. Dr. Shaft Lin. Ft.	Type 3 Railing (Mod) Lin. Ft.
2 Abut. Bents	11,702	1,300	66.6	59	78	230	82	103.00
4 Interior Bents	10,960		52.4	68.70				
195 Cont. I-Beam Unit	54,074	283,700	278.7	52.54				390
Totals	76,736	285,000	278.7	119.16	136.70	340.75	82	103.00

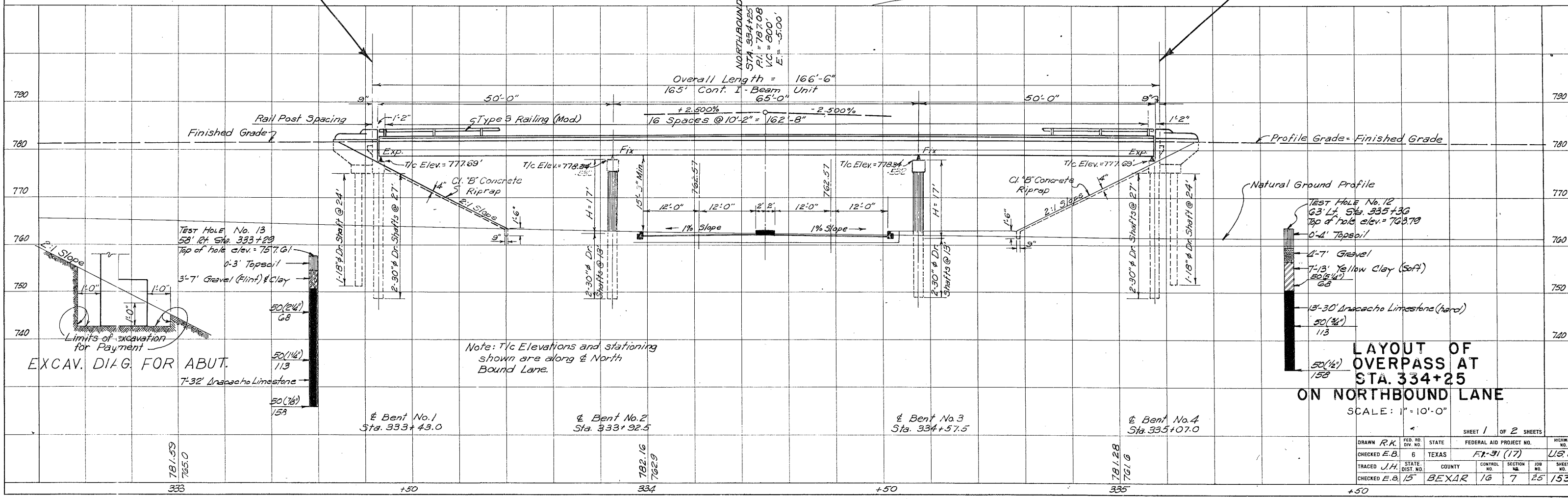
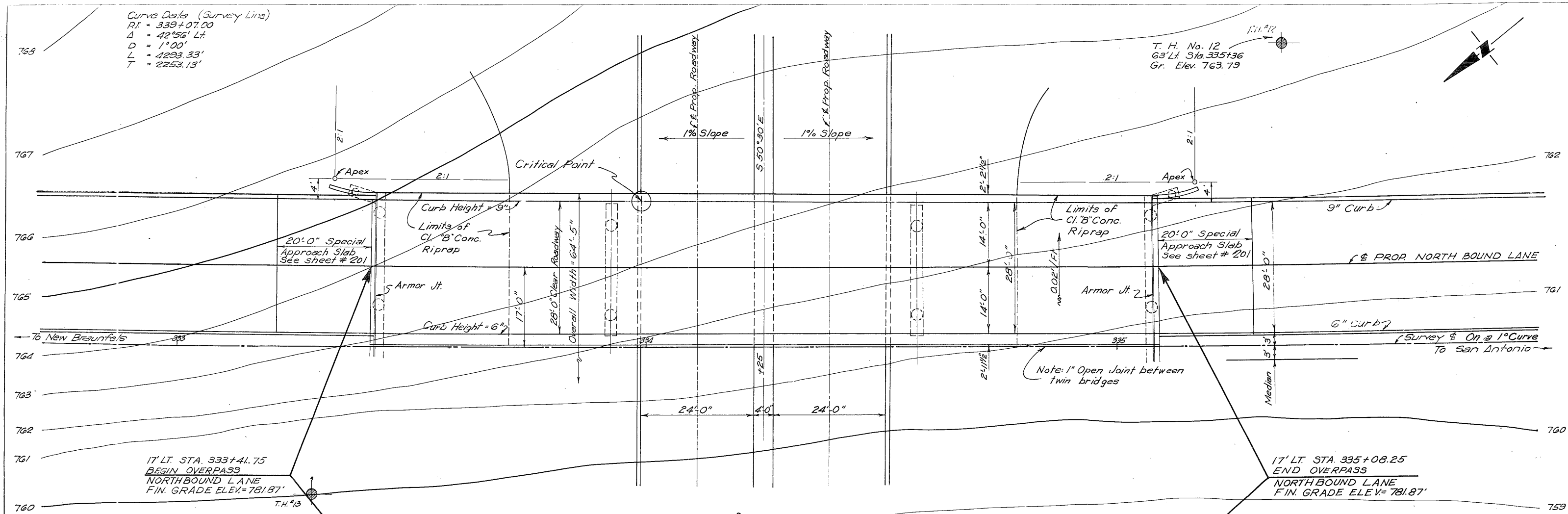


LAYOUT OF WEIDNER ROAD OVERPASS ON SOUTHBOUND LANE

Sheet 2 of 2

DN. NO.	DW. NO.	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
836.99	816.7		15	TEXAS	FI-3(17)	152

Curve Data (Survey Line)
 P.I. = 339+07.00
 Δ = 42°56' L_T
 D = 1°00'
 L = 4293.33'
 T = 2253.13'



DRAWN R.K.		FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHECKED E.B.		6	TEXAS	FT-91 (17)	US 81
TRACED J.H.		STATE	COUNTY	CONTROL NO.	SECTION NO.
CHECKED E.B.		15	BEXAR	16	7 25

CURVE DATA (Survey Line)

P.I.	= 339+07.00
Δ	= 42°56' Lt.
D	= 1°00'
L	= 4293.33'
T	= 2253.13'

SUMMARY OF QUANTITIES

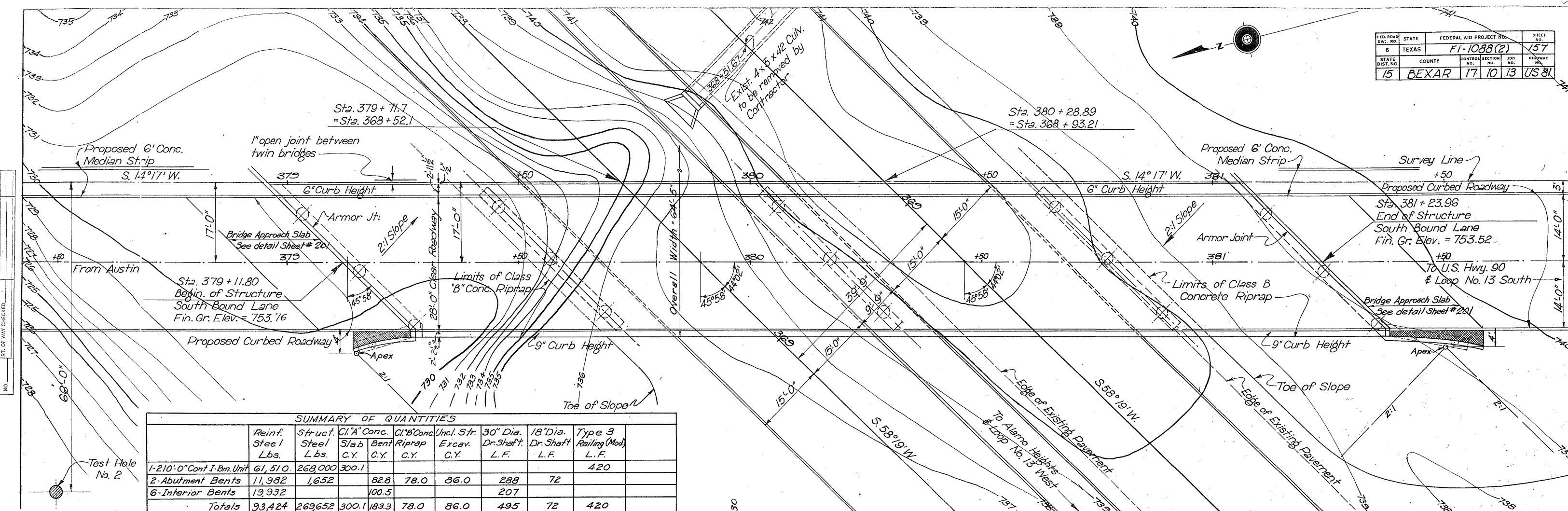
	Reinf. Steel Lbs.	Struct. Steel Lbs.	Cl. "A" Conc. Slab C.Y.	Cl. "B" Conc. Bent C.Y.	Cl. "B" Conc. Riprap C.Y.	Uncl. Str. Excav. C.Y.	30" Dia. Dr. Shaft L.F.	18" Dia. Dr. Shaft L.F.	Type 3 Railings (Mod.) L.F.
2 Abut. Bents	11,806	1130		59.6	60	60	214	223	9.5
4 Interior Bents	10,125			51.3	67.84		-96	109	00
165 Cont. I.Bm. Units	45,300	205,200	231.6	51.08					330
Totals	67,231	206,330	231.6	110.9	60	60	-310	95	330

[illegible]

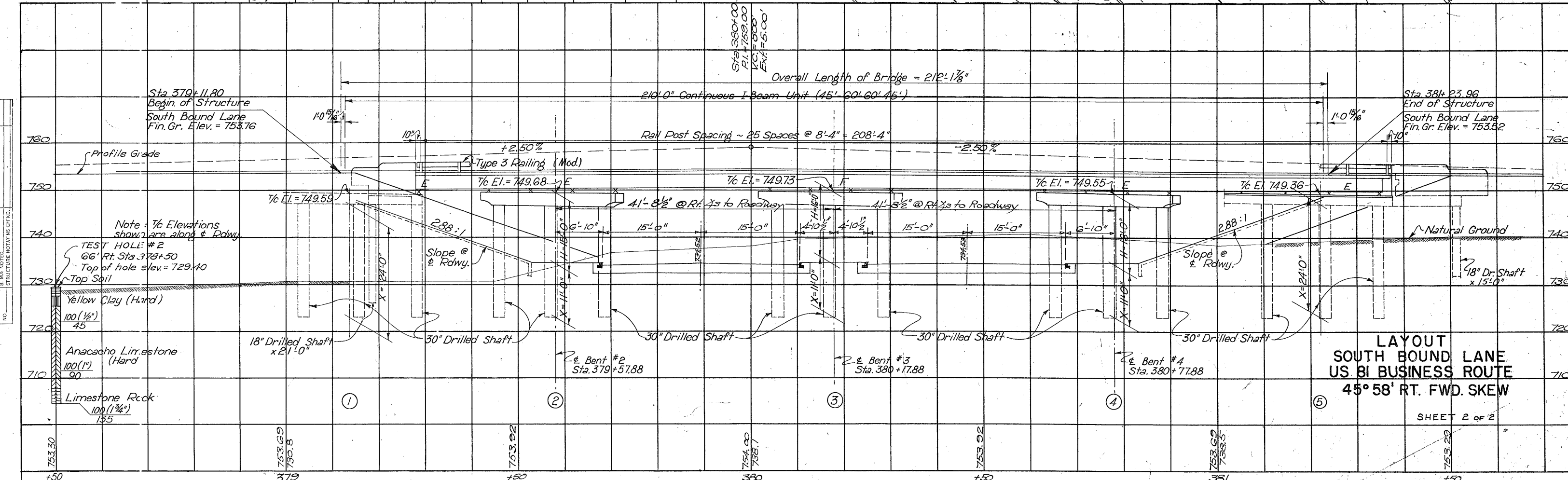
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
SURVEYED										PLOTTED										NOTE BOOK ALIGNMENT CHECKED										RT. OF WAY CHECKED										NO.																																																											



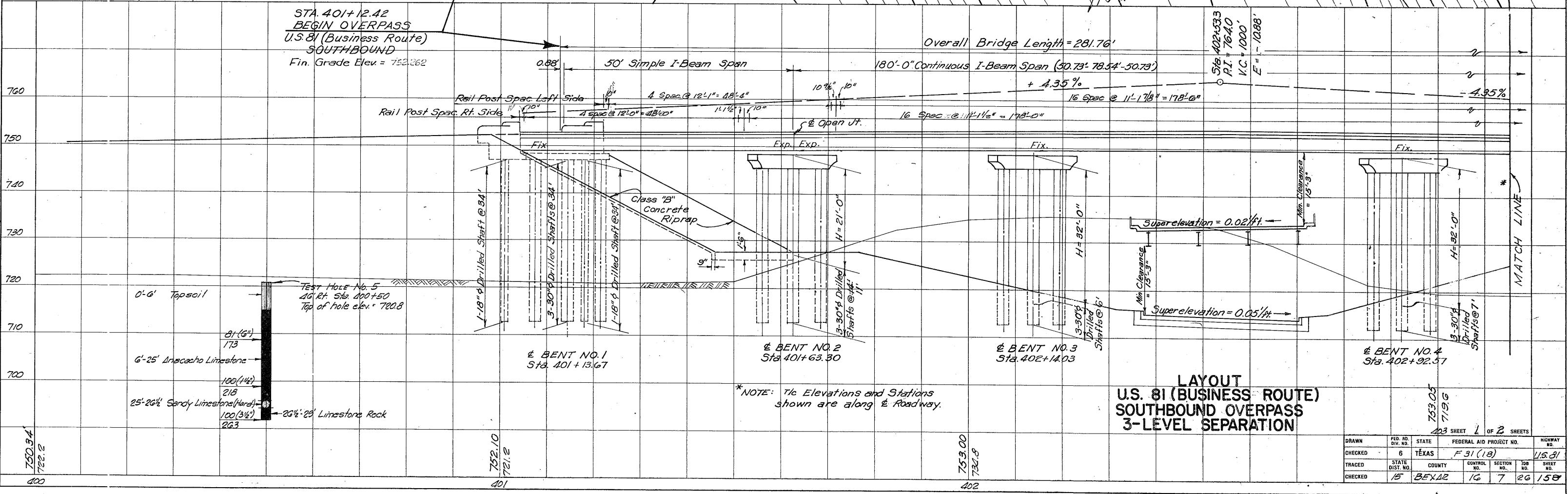
NO.	NOTE BOOK	PLOTTED	SURVEIL.
		GRADES CHECKED	
		B. M. NOTED	
		STRUCTURE NOTATIONS CHECKED	

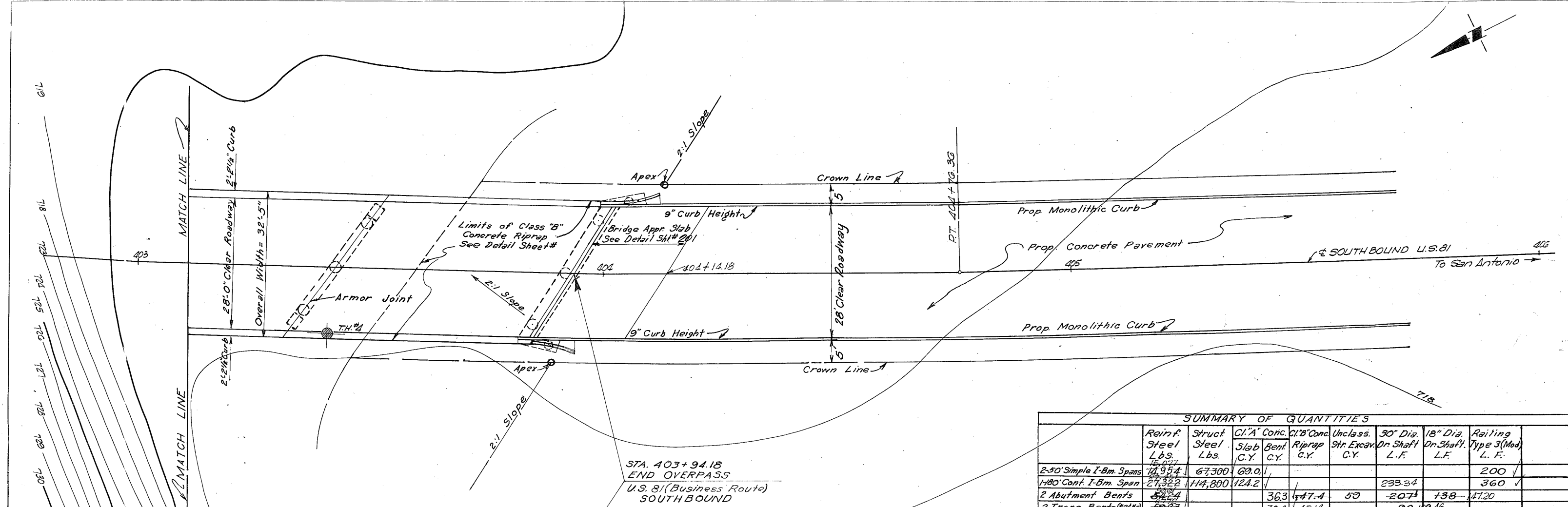


SUMMARY OF QUANTITIES								
	Reinf. Steel Lbs.	Struct. Steel Lbs.	Cl. A' Conc. Slab C.Y.	Cl. B' Conc. Bent C.Y.	Uncl. Str. Riprap C.Y.	Excav. C.Y.	30" Dia. Dr. Shaft L.F.	Type 3 Railing (Mod.) L.F.
1-210'0" Cont I-Beam Unit	61,510	268,000	300.1					420
2-Abutment Bents	11,982	1,652		82.8	78.0	86.0	288	72
6-Interior Bents	19,932			100.5			207	
Totals	93,424	269,652	300.1	183.3	78.0	86.0	495	420



LAYOUT
SOUTH BOUND LANE
US 81 BUSINESS ROUTE
45° 58' RT. FWD. SKEW

[illegible]



SUMMARY OF QUANTITIES

	Reinf. Steel Lbs.	Struct Steel Lbs.	Cl. "A" Conc. Slab Bent C.Y.	Cl. "B" Conc. Riprap C.Y.	Uncl. Str. Excav. C.Y.	30" Dia. Dr. Shaft L.F.	18" Dia. Dr. Shaft L.F.	Railing Type 3 (Mod) L.F.
2-50' Simple I-Beam Spans	14,954	67,300	69.0					200
1-80' Cont. I-Beam Span	27,322	114,800	124.2			293.34		360
2 Abutment Bents	5,224			363	47.4	207	138	47.20
2 Trans. Bents (#2 #4)	5,224		39.3	36.4	48.14	90	109.46	
2 Int. Bents (#3 #4)	11,283		50.8	47.3		39	48.25	
Totals	64,966	182,100	193.2	120.0	47.4	391.05	138	560
	67,014	181,432	126.41					

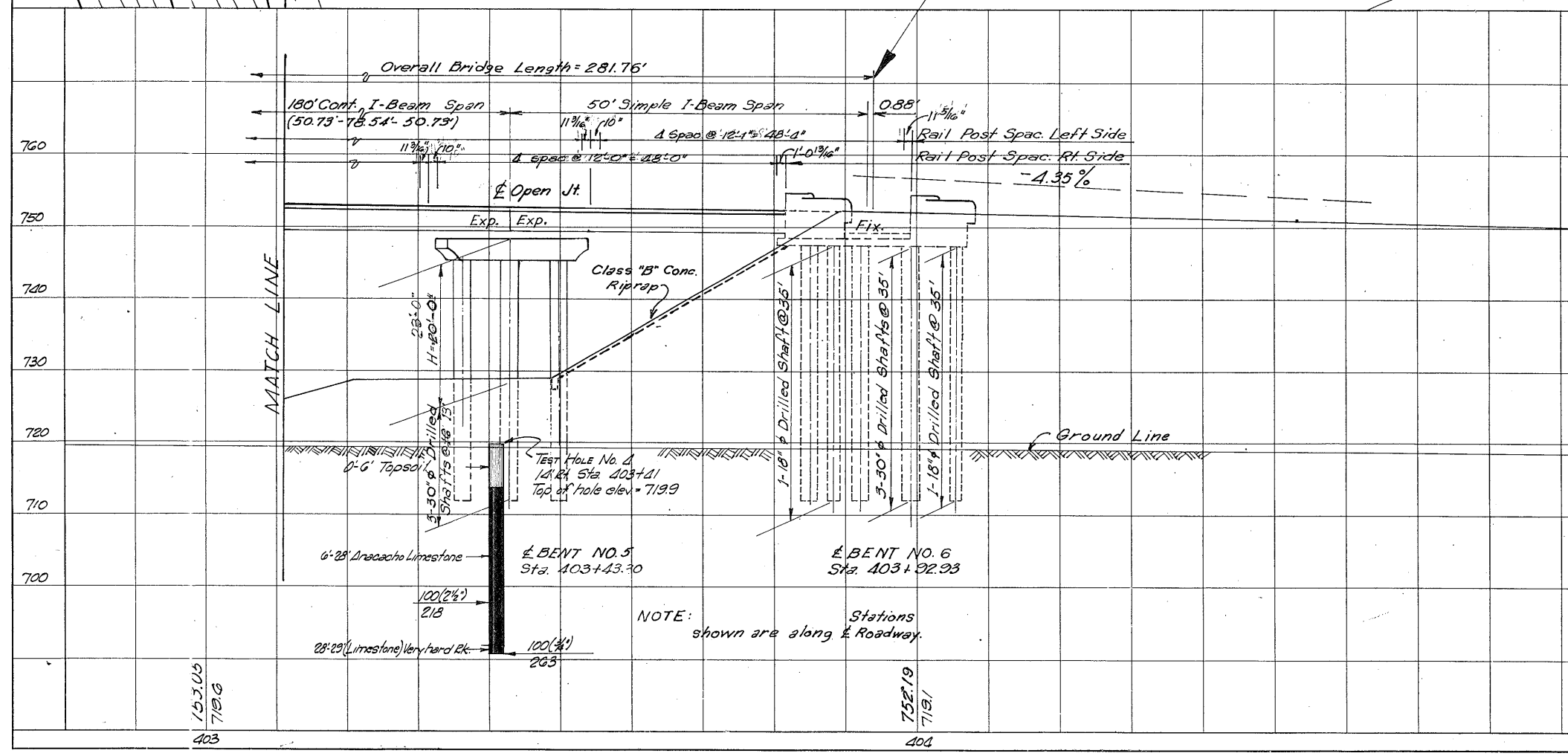


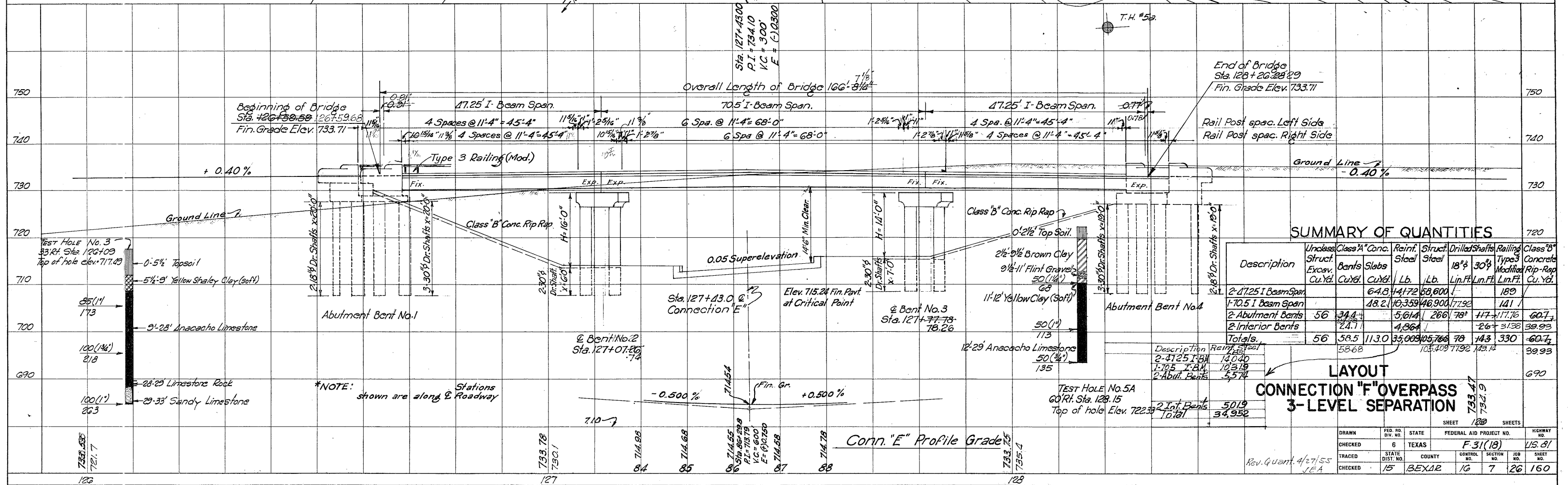
TABLE OF BEARING SEAT ELEVATIONS									
BEAM NO.	BENT NO.								
	1	2N	2S	3	4	5N	5S	6	
1	748.63	748.40	748.42	749.28	749.23	748.33	748.30	748.47	
2	748.75	748.53	748.55	749.42	749.41	748.52	748.50	748.69	
3	748.86	748.66	748.68	749.57	749.58	748.72	748.70	748.91	
4	748.97	748.78	748.80	749.71	749.76	748.92	748.90	749.13	

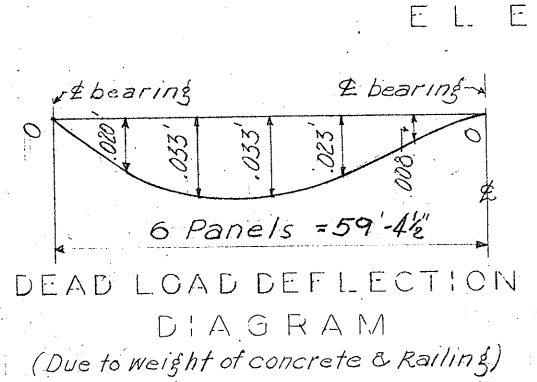
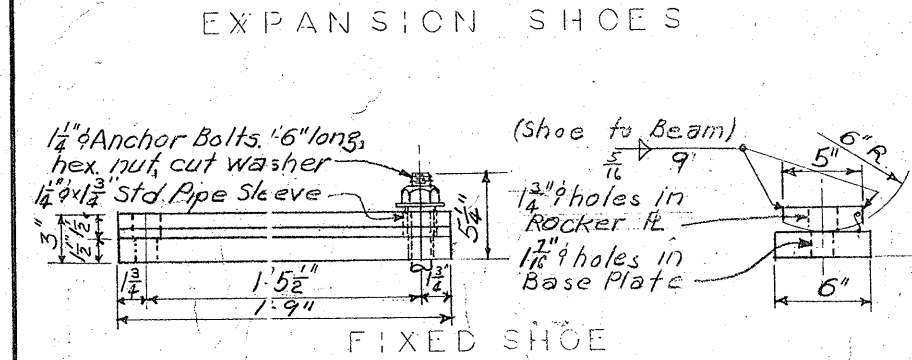
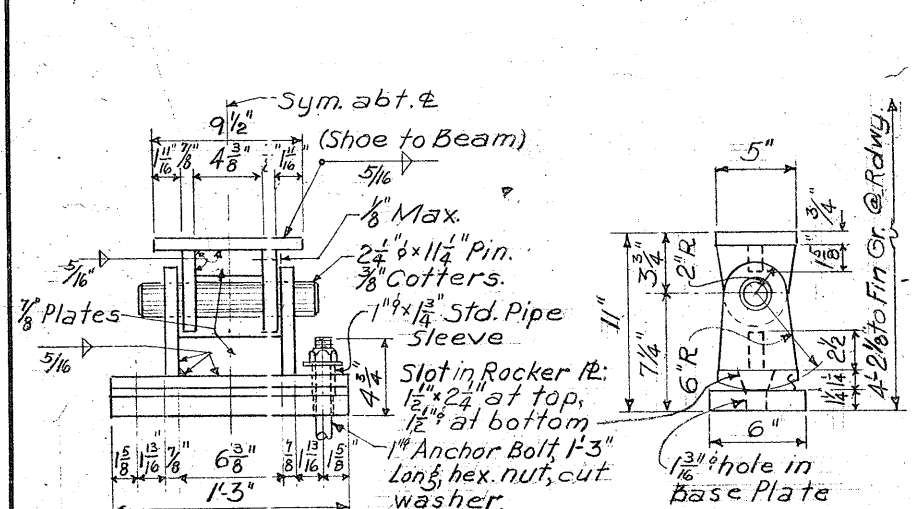
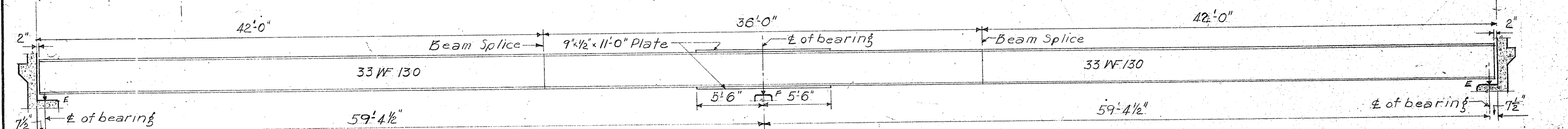
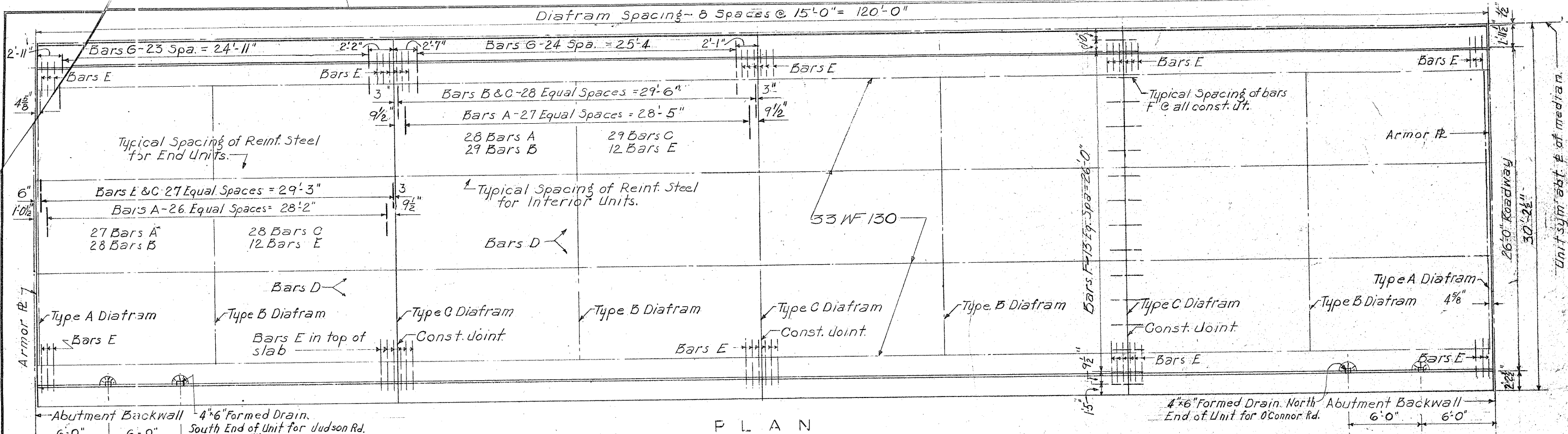
**LAYOUT
U.S. 81 (BUSINESS ROUTE)
SOUTHBOUND OVERPASS
3-LEVEL SEPARATION**

SHEET 2 OF 2 SHEETS

DRAWN	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHECKED	6	TEXAS	F 31 (18)	U.S. 81
TRACED	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.
CHECKED	15	BEXAR	16	7 26 159

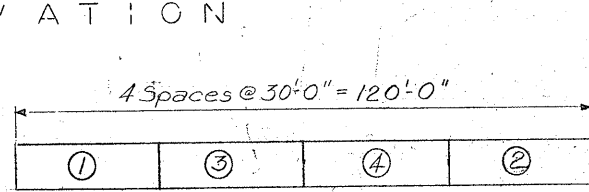
Quantities Revised 4-28-55 (H.I.D.)



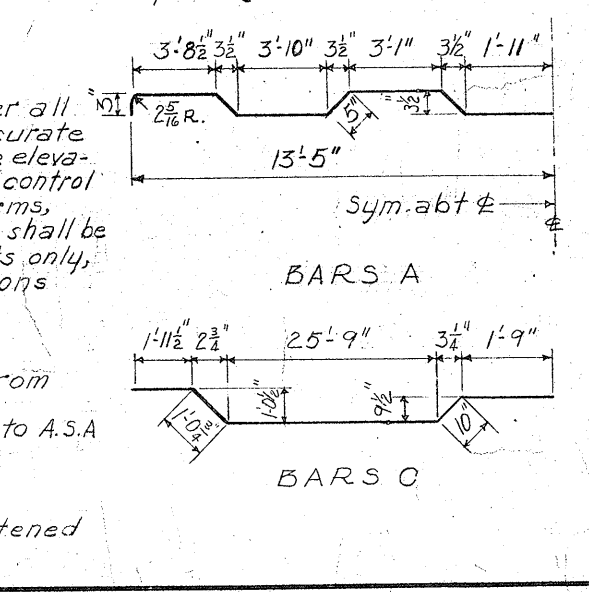


CONSTRUCTION PROCEDURE: After all structural steel is erected, an accurate measurement shall be made of the elevations of the beam flanges at all control points. Subsequent setting of forms, pouring and finishing of concrete shall be governed by these measurements only, taking into account the deflections shown above.

NOTE:
All shoes shall be fabricated from structural steel.
Surface finishes shall conform to A.S.A. standard finishes as follows:
Pins and Pin Holes #125
Rockers #250
Anchor Bolts Nuts shall be tightened and threads burred.



All structural steel shall be erected before placing concrete.



Note: these totals represent Qty., Wt., etc. for both Lane of Bridge.

BILL OF REINFORCING STEEL

Bar No.	Size	Spac.	Length	Weight
A	220	#5	13'-0"	442.5
B	228	#5	13'-0"	440.1
C	228	#5	13'-0"	445.1
D	328	#5	shown	101.78
E	96	#6	0'-7"	7.21
F	96	#5	2'-0"	2.50
G	196	#4	13'-0"	52.4
Total wt.				Lbs. 31950

* See above sheet for Dowel Bars

ESTIMATED QUANTITIES

Item	Unit	Quant	Item	Judson	O'Connor
Class A Concrete	C.Y.	151.8	Reinforcing	32,134	32,245
Reinforcing Steel	Lbs.	31950			
Structural Steel	Lbs.	145000			
Railing	L.F.	240			

* Includes weight of two complete armor joint + shoes.

NOTE:
Quantities shown are for 2-26'-0" Roadways 120'-0" Cont. I-Beam Units. Add an additional 77 lbs. of struct. steel for O'Connor R.D.

GENERAL NOTES:
Design H-20-44 Loading in accordance with A.A.S.H.O. 1953 Standard Specifications and T.H.D. Supplement No. 1.
All concrete shall be Class A. Chamber all exposed corners 3/4" unless otherwise noted.
Each series of bearings shall be accurately aligned and set to the correct elevation on beds of portland cement (dry or paste) of the thickness required to remove irregularities from the bearing seat.
Dimensions relating to reinforcing steel are to centers of bars.
Design stress for reinforcing steel = 20,000 psi.
No concrete shall be placed until all welding is completed.

Judson Road		O'CONNOR Road	
Length	Weight	Length	Weight
4'-3 1/2"	480	4'-6"	451
BAR NO. 48	2'-9 1/2"	BAR NO. 49	1'-9 1/2"
	95		30

TEXAS HIGHWAY DEPARTMENT

120'-0" CONT I-BEAM UNIT
(60-60)
2-26'-0" RDWY. 4'-0" MEDIAN 1'-6" CURBS
O'CONNOR RD. UNDERPASS
JUDSON RD. UNDERPASS

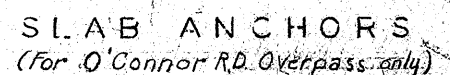
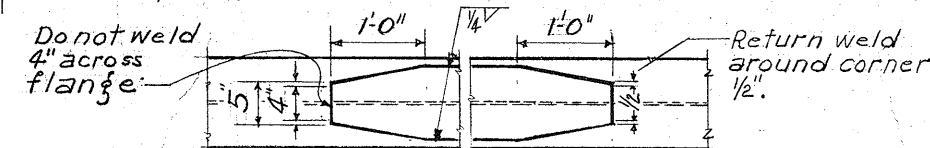
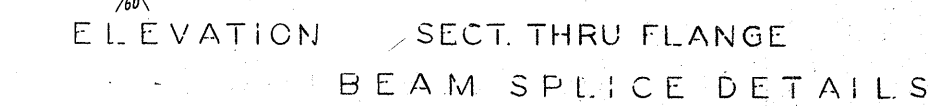
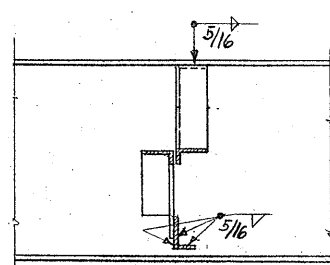
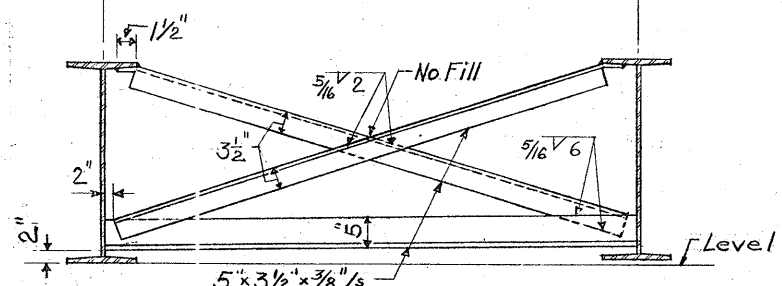
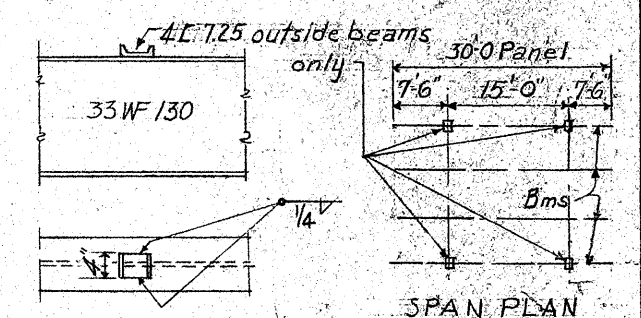
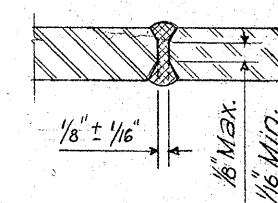
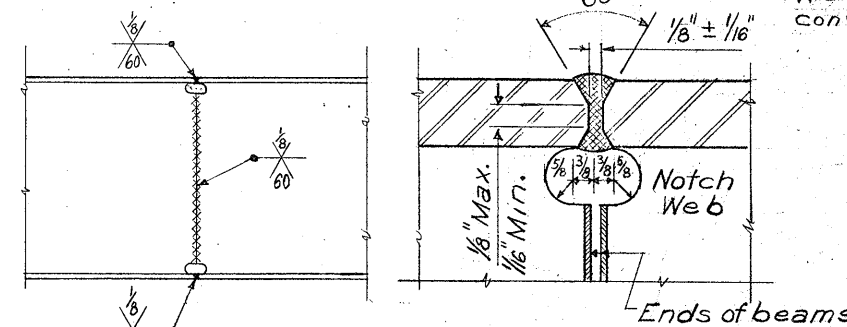
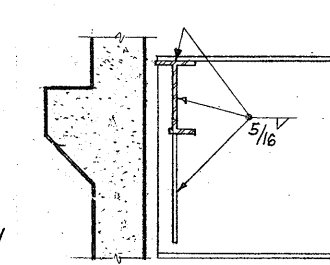
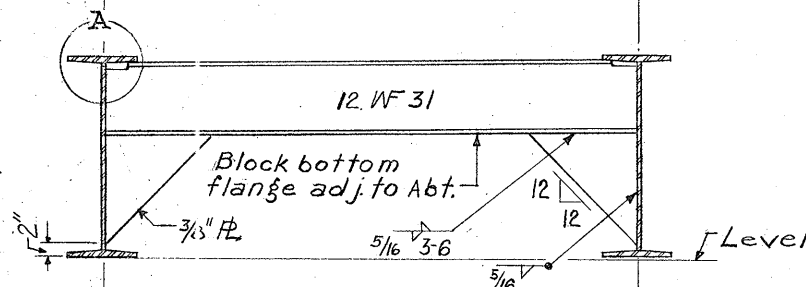
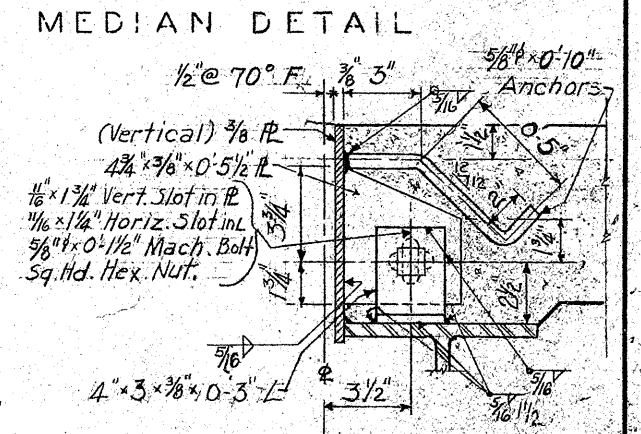
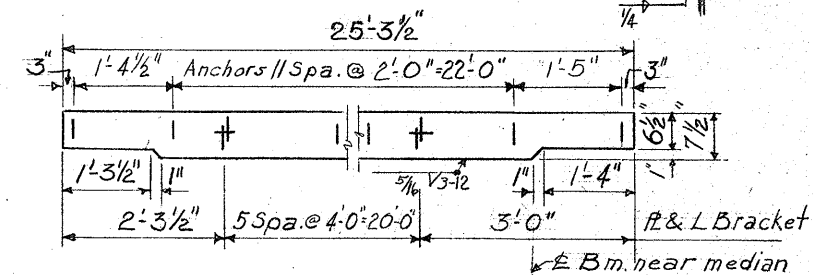
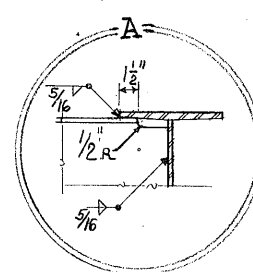
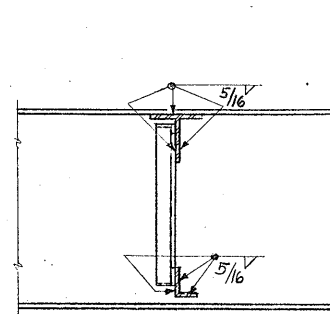
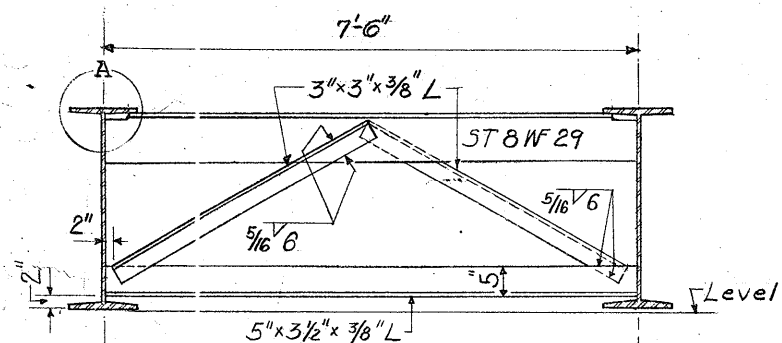
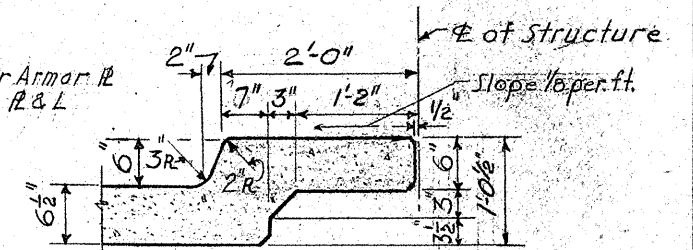
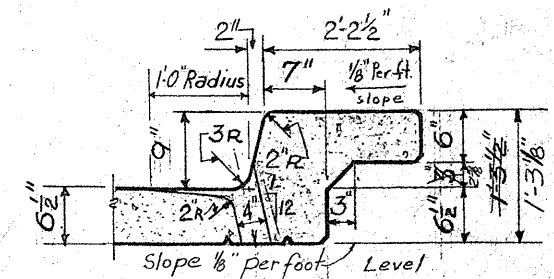
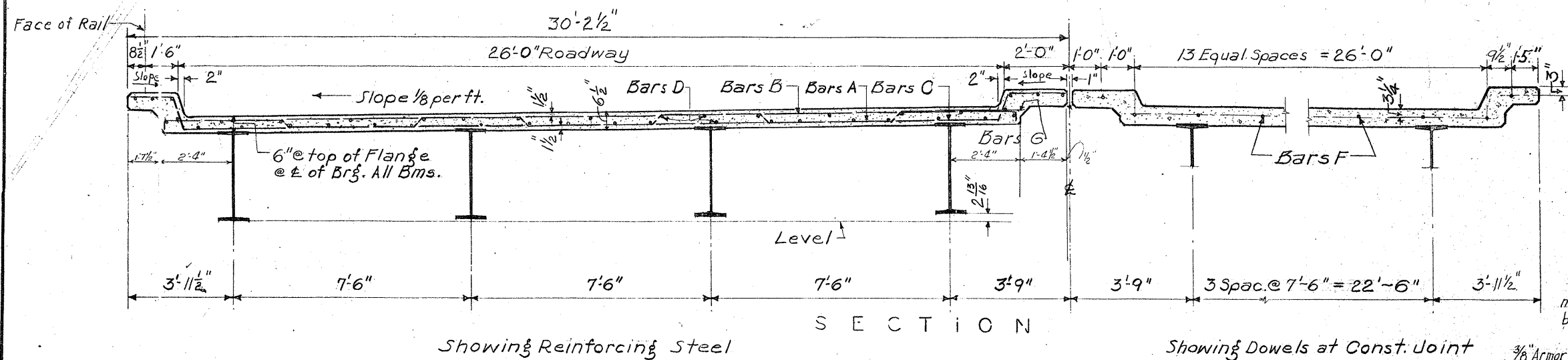
Sheet 1 of 2

DN	R.L.R.	DRAWING	DATE	PER. ROAD	STATE	FEDERAL AID PROJECT NO.	SHEET
CK. DN	HM	Original	Nov-1954	6	TEXAS	FI-31(17)	101
CK. DN	R.L.R.						
TR							
CK. TR							

STATE	COUNTY	SECTION	CONTRACT	NO.
15	BEXAR	16	125	US 81

BRIDGE SLAB	NO. BARS REQD.	STEEL FOR CONSTRUCTION JOINTS ON BRIDGE SLABS ("F" BARS)				ACTUAL LENGTH	REQD. LENGTH
		NO.	LOCATION	TYPE BAR			
Judson Road	96	20	Wall G-P 55	"G"	4'10"	2'6"	
		26	Wall G-P 53	"G"	4'6"	2'6"	
		26	Wall G-P 52	"G"	4'6"	2'6"	
		24	Wall G-P 51	"G"	4' 6"	2'6"	
O'Connor Road	96	2	Wall G-P 51	"G"	4'6"	2'6"	
		26	Wall G-P 50	"G"	4'6"	2'6"	
		26	Wall G-P 48	"G"	4'6"	2'6"	
		16	Wall G-P 47	"G"	4'6"	2'6"	
		26	Wall G-P 49	"G"	4'6"	2'6"	
Sta. 334+25	152	16	Wall G-P 44	"G"	4'6"	2'6"	
		26	Wall G-P 43	"G"	4'6"	2'6"	
		17x2=34	Wall G-P 40	"G"	$\frac{5'10"}{2} = 2'5\frac{1}{2}"$	2'6"	
		2x24 = 48	Wall F-P 6	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		2x14 = 28	Wall F-P 7	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		* "G" Bars to be cut into 2 dowels					
Connection "B"	46	22x2=44	Wall G-P 37	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		2	Wall G-P 37	"G"	5'7"	2'6"	
U. S. 81 Business Route	252	26	Wall G-P 6	"G"	4'6"	2'6"	
		20	Wall G-P 2	"G"	4'0"	2'6"	
		18	Wall G-P 1	"G"	4'0"	2'6"	
		13x2=26	Wall F-P 66	"G"	$\frac{5'10"}{2} = 2'5\frac{1}{2}"$	2'6"	
		18x2=36	Wall F-P 64	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		Also	24x2=48	Wall F-P 14	$\frac{5'9"}{2} = 2'10\frac{1}{2}"$	2'6"	
		17x2=34	Wall F-P 6	"G"	$\frac{5'10"}{2} = 2'5\frac{1}{2}"$	2'6"	
		10x2=20	Wall F-P 7	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		12x2=24	Wall G-P 12	"G"	$\frac{5'10"}{2} = 2'11\frac{1}{2}"$	2'6"	
U. S. 81 Business Route 3-level	85	6x2=12	Wall F-P 64	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		24x2=48	Wall F-P 63	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
(50' Section)	17	12x2=24	Wall F-P 8	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		1	Wall F-P 8	"G"	5'7"	2'6"	
Connection "F"	17	8x2=16	Wall F-P 8	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"	
		1	Wall F-P 8	"G"	5'7"	2'6"	
		2	Wall G-P 46	"G"	4'6"	2'6"	
		11	Wall G-P 45	"G"	4'6"	2'6"	
		17	Wall G-P 45	"G"	4'6"	2'6"	
		2	Wall G-P 44	"G"	4'6"	2'6"	
		17	2x2= 4	Wall F-P 8	"G"	$\frac{5'7"}{2} = 2'5\frac{1}{2}"$	2'6"
PRINTED IN U.S.A. AND PAPER MADE IN U.S.A.							
PERFECTED BY EUGENE DIETRICH CO.							
FED. ROAD DIST. NO. STATE FEDERAL AID PROJECT NO. SHEET NO.							
6 TEXAS F131171 161-A							
STATE DIST. NO. COUNTY DISTRICT SECTION JOB HIGHWAY NO.							
15 Bexar 16 7 25 US 81							

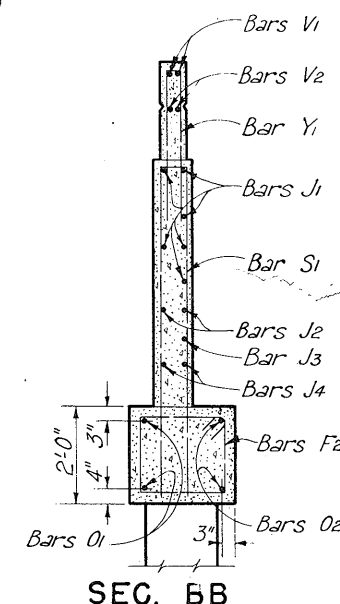
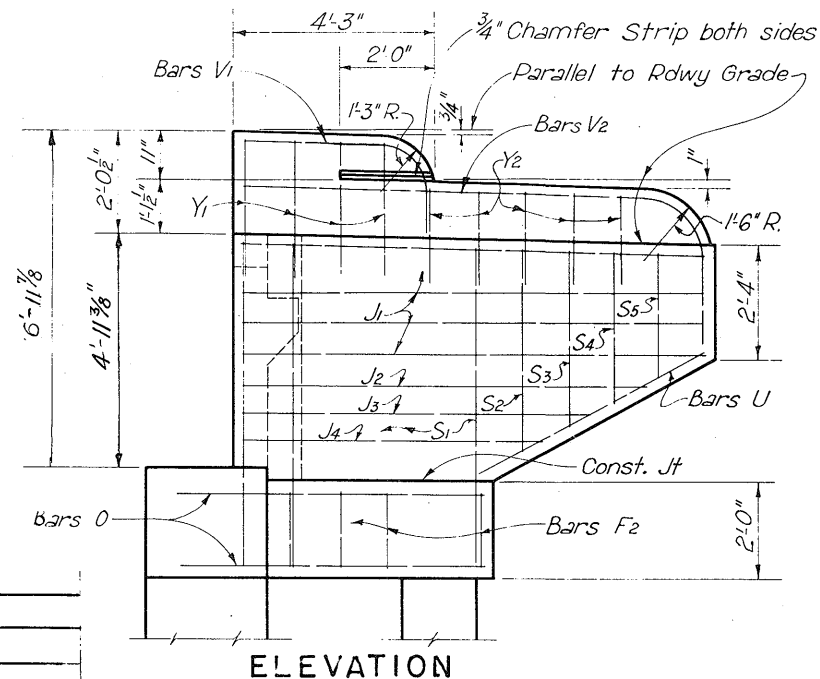
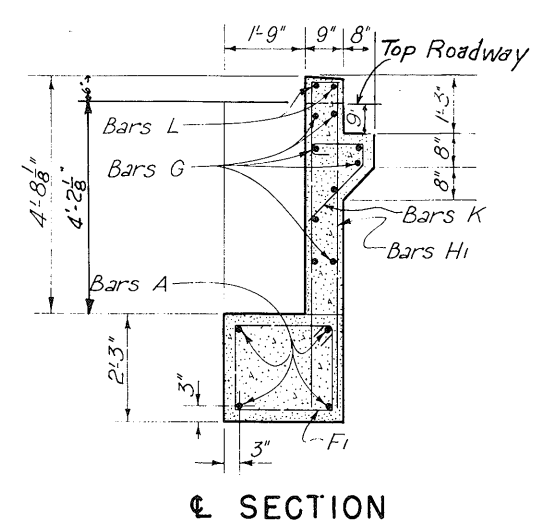
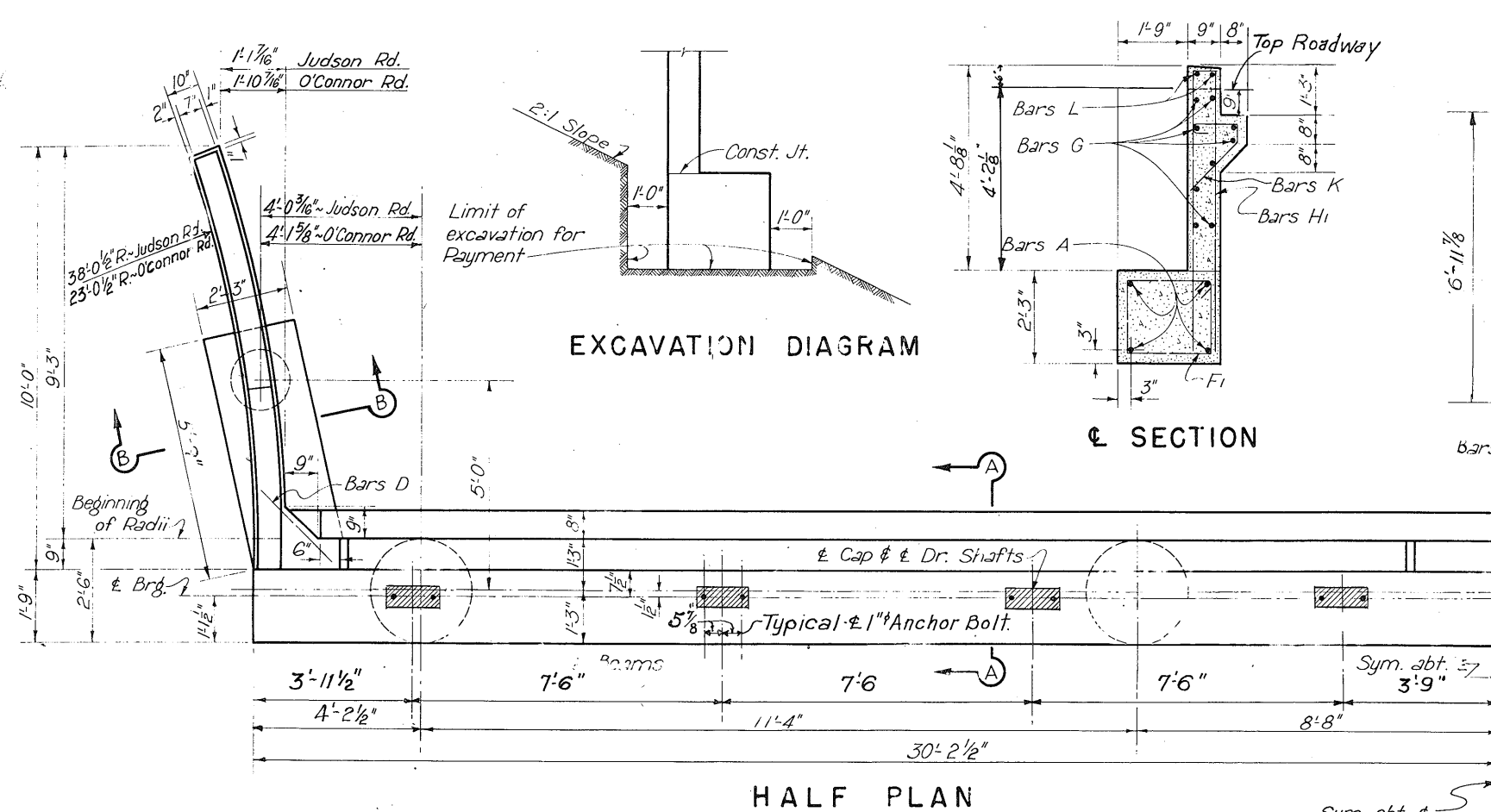
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS	F131171			161-A
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
15	Bexar	16	7	25	US 81



TEXAS HIGHWAY DEPARTMENT
120-0 CONT I-BEAM UNIT
(60-60)
2-28'-0" RDWY. 4'-0" MEDIAN 16" CURBS
O'CONNOR R.D. UNDERPASS
JUDSON RD UNDERPASS

(sheet 1 of 2)

DN. #	R.L.R.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. #		original	Dec. 1954	6	TEXAS	F-51(97)	162
DW. #	14						
CK. DW. #	R.L.R.			STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.
TR. #				15	BEXAR	16	7
CK. TR. #						25	USDA



BILL OF REINFORCING STEEL					
Bar	No.	Size	Spac.	Length	Weight
A	4	#11	~	59'-11"	1275 1273
B	4	#10	~	12'-0"	207
C	2	#10	~	9'-0"	77
D	10	#5	1'-0"	2'-7"	27
F1	39	#5	15' @ 13"	9'-2"	373
F2	8	#5	12"	8'-2 3/4"	68 67
G	9	#5	~	62'-7"	587
H1	52	#5	12"	12'-0"	651
H2	8	#5	12"	14'-0"	117
J1	12	#5	7 1/2' @ 15"	10'-6"	131
J2	4	#5	"	9'-7"	40
J3	2	#5	"	8'-1"	17
J4	4	#5	"	6'-9"	28
K	57	#4	12"	4'-2"	159
L	2	#5	6"	6'-3"	13
M	4	#5	6"	3'-8"	15
O1	4	#8	~	6'-6"	69
O2	4	#8	~	7'-0"	75
S1	12	#5	12"	14'-0"	175
S2	2	#5	12"	8'-6"	18
S3	2	#5	12"	7'-6"	16
S4	2	#5	12"	6'-6"	14
S5	2	#5	12"	5'-8"	12
V1	4	#5	~	5'-4"	22
V2	4	#5	~	12'-1"	50
Y1	18	#5	12"	5'-10"	24 49
Y2	10	#5	12"	4'-0"	42
U	4	#5	6"	5'-0"	21
Total					Lbs. 4345

* Includes 20 dia. lap

ESTIMATED QUANTITIES (One Bent)		
Item	Unit	Quantity
Class A Concrete	C.Y.	25.1
Reinforcing Steel	Lb.	4323 4345
Uncl. Struct. Excav.	C.Y.	25.0
Struct. Steel (Armor Jt. ~2 Pcs.)	Lb.	500

GENERAL NOTES ~
Design: H20-44 Loading in accordance with
A.A.S.H.O. 1953 Standard Specifications and T.H.D.
Supplement No. 1.

All concrete shall be Class A. Chamfer exposed corners $\frac{3}{4}$ " unless otherwise noted.

Dimensions relating to reinforcing steel are to centers of bars. Design stress for reinforcing steel = 20,000 p.s.i.

Average calculated footing pressure:

30" ϕ Drilled Shafts	~ 8.9 T/a'
18" ϕ Drilled Shafts	~ 4.8 T/a'

30" ϕ Drilled Shafts ~ 89 T/ft

18" ϕ Drilled Shafts ~ 4.8 T/ft

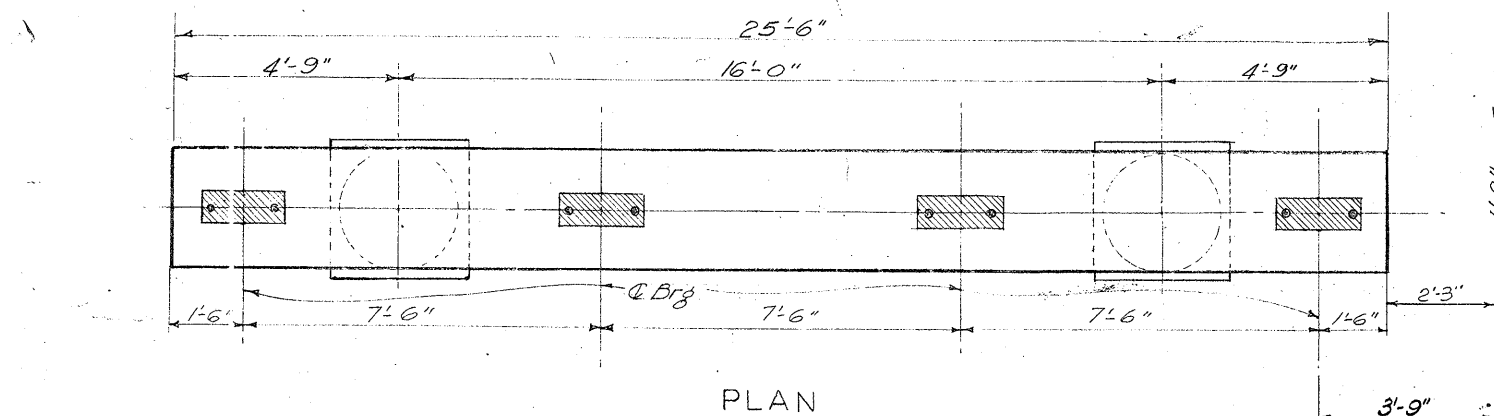
TEXAS HIGHWAY DEPARTMENT

ABUTMENT BENTS
O'CONNOR RD. UNDERPASS
JUDSON RD. UNDERPASS

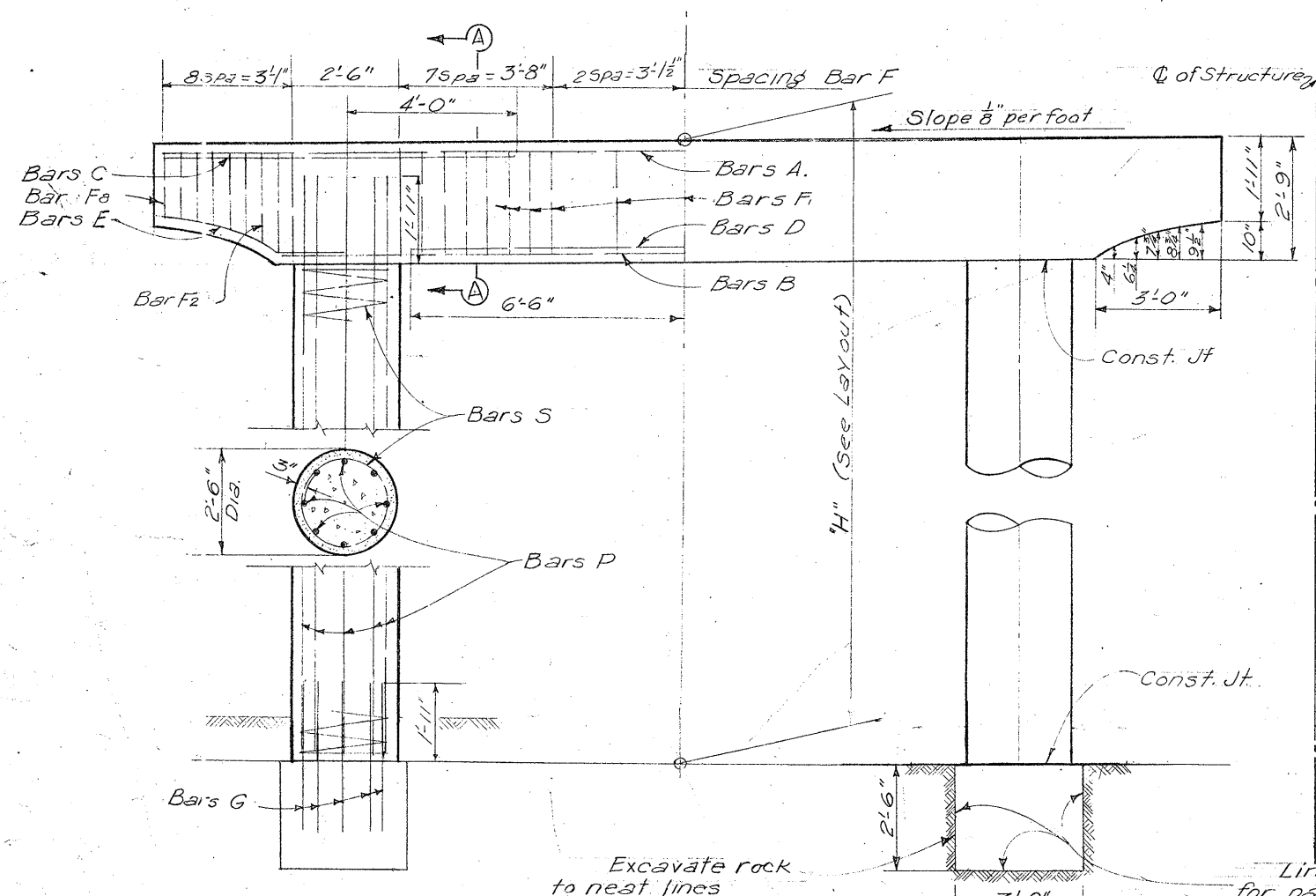
O'CONNOR RD. UNDERPASS
JUDSON RD. UNDERPASS

JUDSON RD. UNDERPASS

DN	JEA	DRUG NO.	DATE	STATE	FEDERAL PROJECT NO.	SMITH
C. C.	R	ORIGINAL	NOV. 1954	TX		
DN	HM			6	TEXAS	F1-31 (17)
C. C.				STATE	COUNTY	TOWNSHIP
To	R.N.S.			15	REXAR	16 7 25
C. C.	JEA					

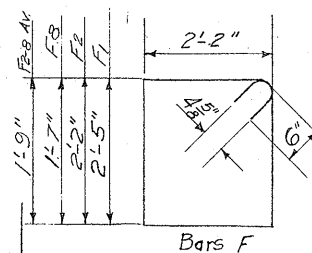


PLAN

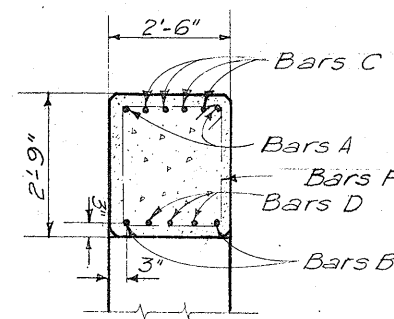


ELEVATION

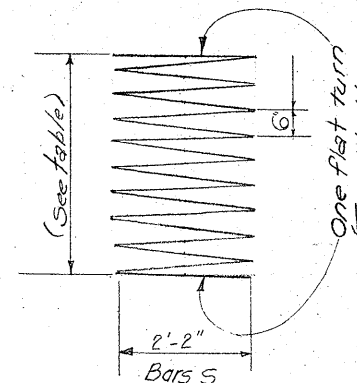
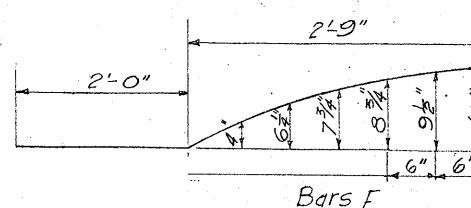
Note: Portions of circular columns above ground may be formed either with metal forms or with laminated fiber tubes lined with plastic and coated with wax. These tubes to be Sonotubes as manufactured by Sonoco Products Co. or approved equal.



Sym abt. C. of Struct. (Except Slope)



SEC. A-A



BILL OF REINFORCING STEEL					
Bar	No.	Size	Spec	Length	Weight
A	2	#10	~	25'-2"	217
B	2	#10	~	19'-0"	163
C	8	#11	~	8'-7"	365
D	8	#10	~	13'-0"	336
E	4	#6	~	4'-11"	30
F	23	#5	6'-11"	16'-8"	252
F2	14	#5	4'-11"	11'-2"	134
G	16	#9	~	3'-10"	208
Total					1705

BILL OF VARIABLE REINF. STEEL

"H"	2" #3 Bars S	16" #9 Bars P	Total
Length	Weight	Length	Weight
19'	235	177	188
20'	249	187	197
21'	262	197	207
18'	221	167	177

Drilled Shaft	Steel for lap splice (Judson Rd)	71
Drilled Shaft	Steel for lap splice (O'Connor Rd)	142

ESTIMATED QUANTITIES *

"H"	CLACore	Reinf. Steel	Struct. Excav.
19'	13.7	28.70	1.7
20'	14.1	29.34	1.7
21'	14.4	29.99	1.7
18'	13.4	28.06	1.7

*2-Column Bent for one 26'-0" Roadway.

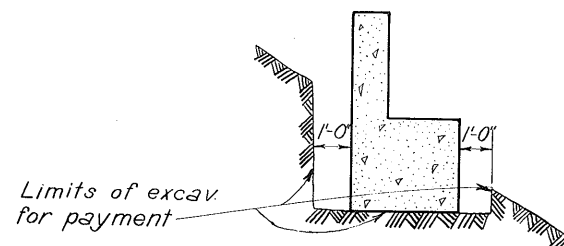
GENERAL NOTES ~

Design: H20-44 loading in accordance with A.A.S.H.O. 1953 Standard Specifications and T.H.D. Supplement No. 1.
All concrete shall be Class A. Chamfer exposed corners 3/4" unless otherwise noted. Dimensions relating to reinforcing steel are to centers of bars.
Design stress for reinforcing steel - 20,000 P.S.I.
Average calculated footing pressure - 12.7 K.
Bent designed for use with 60'-60" Cont. I-Bm.
Unit: 2'-26'-0" Rdwys 4'-0" Median 1'-6" Curbs
TEXAS HIGHWAY DEPARTMENT

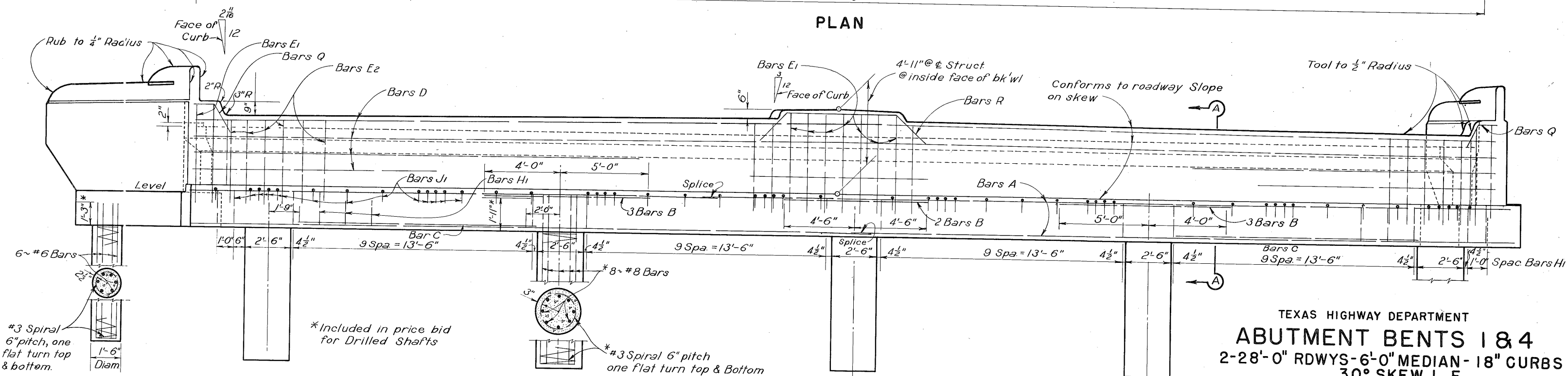
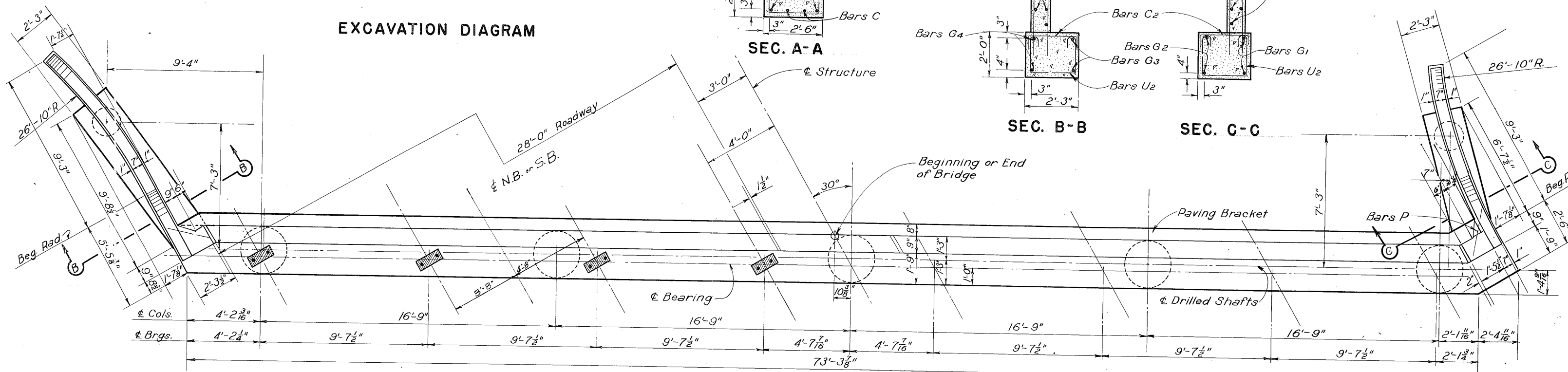
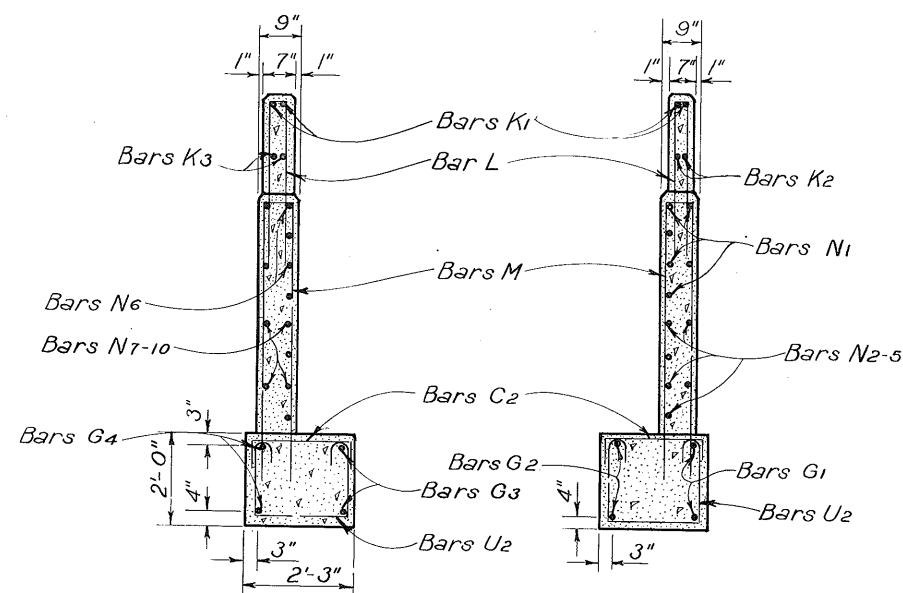
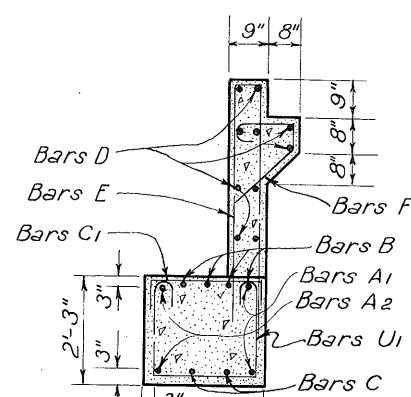
INTERIOR BENT

JUDSON RD. & O'CONNOR RD.
UNDERPASSES

DR.	DRAWING	DATE	FED. ROAD	STATE	FEDERAL AID PROJECT NO.	EXT.
DR. - RLR	Original	Dec. 1954	6	TEXAS	F1-3/172	104
CK. DR. - WES						
CK. DR. - RLR						
TR. -						
CK. TR. -						

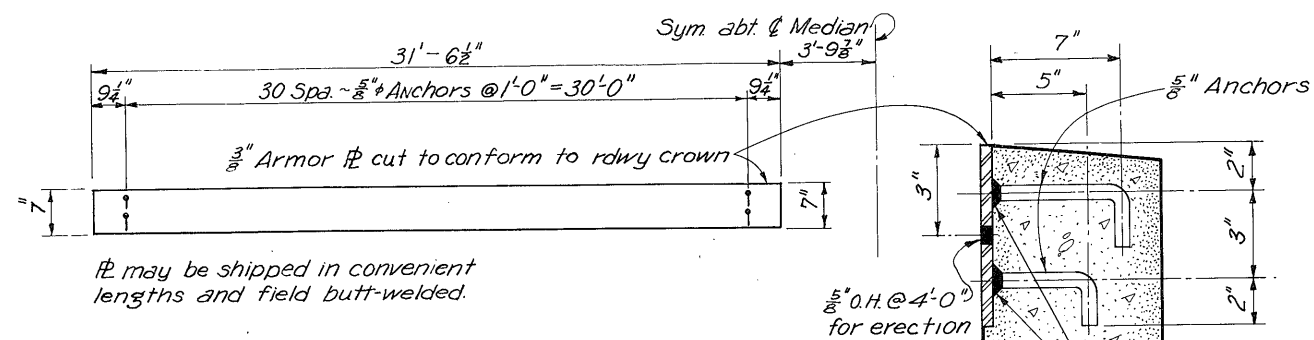


EXCAVATION DIAGRAM

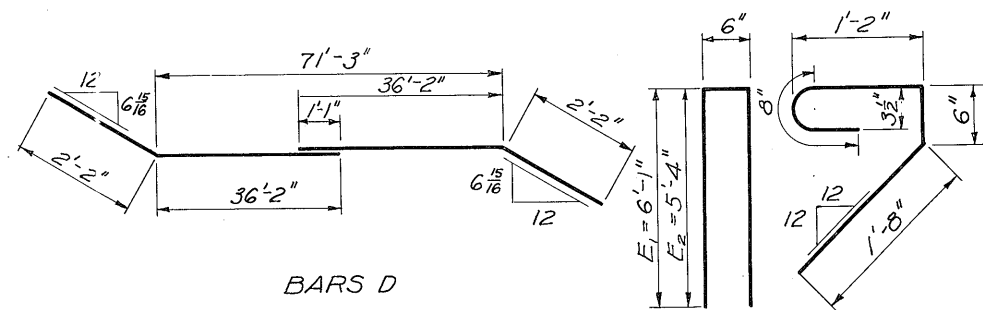


TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS 1 & 4
 2-28'-0" RDWYS-6'-0" MEDIAN-18" CURBS
 30° SKEW L.F.
WEIDNER ROAD OVERPASS

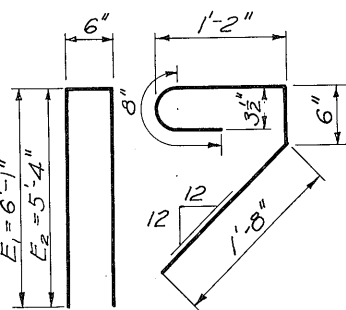
DN. - RLR	DRAWING	DATE	FED. ROAD	STATE	FEDERAL AID PROJECT NO.	SHEET
CK. DN. -	Original	Dec 1954	6	TEXAS	F-31 (17)	167
DW. - WES						
CK. DW. - H.D.						
TR. - J.K.						
CK. TR. - H.J.O.						
STATE	COUNTY	CONTROL SECTION	JOB	NO.	HIGHWAY	
15	BEXAR	16	7	25	U.S. 81	



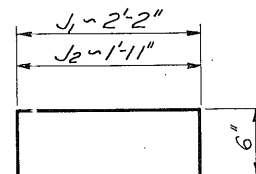
ARMOR JOINT DETAILS



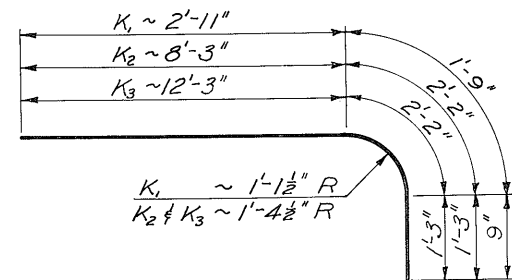
BARS D



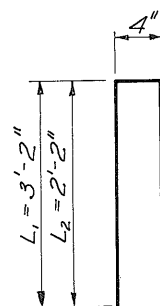
BARS E BARS F



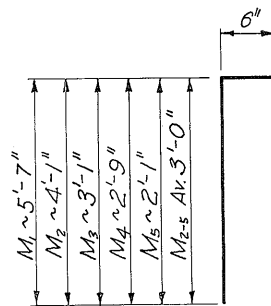
BARS J



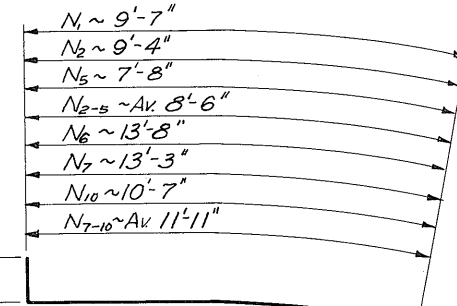
BARS K



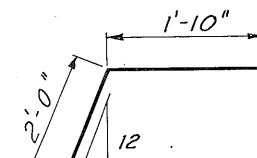
BARS L



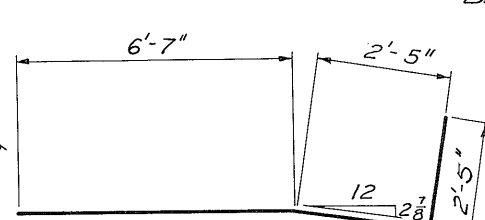
BARS M



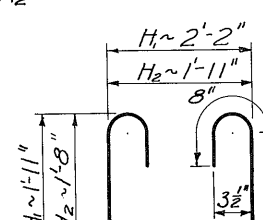
BARS N



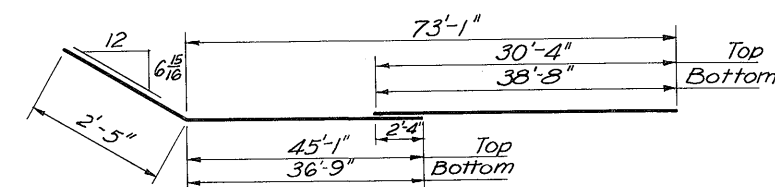
BARS Q



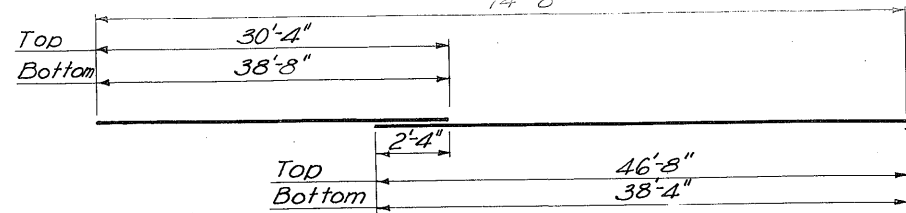
BARS G1



BARS H



BARS A2



BARS A

BILL OF REINFORCING STEEL					
Bar	No.	Size	Spa.	Length	Weight
* A1	2	#11	~	77'-0"	818
* A2	2	#11	~	77'-10"	827
B	8	#10	~	9'-0"	310
C	4	#11	~	13'-0"	276
* D	10	#5	1'-0"	76'-8"	800
E1	11	#5	1'-0"	12'-8"	145
E2	64	#5	1'-0"	11'-2"	745
F	72	#4	1'-0"	3'-10"	184
G1	2	#9	~	11'-5"	78
G2	2	#9	~	9'-4"	63
G3	2	#9	~	12'-6"	85
G4	2	#9	~	13'-8"	93
H1	43	#5	Shown	7'-1"	318
H2	12	#5	1'-6"±	6'-4"	79
J1	53	#5	2'-0"±	3'-2"	175
J2	7	#5	3'-0"±	2'-11"	21
K1	4	#5	~	5'-5"	23
K2	2	#5	~	11'-8"	24
K3	2	#5	~	15'-8"	33
L1	8	#5	1'-0"	6'-8"	56
L2	14	#5	1'-0"	4'-8"	68
M1	19	#5	11 1/2"	Av. 6'-6"	47
M2-5	7	#5	7 1/2" ± 1'-3"	Av. 9'-3"	58
N1	6	#5	Do.	Av. 9'-3"	58
N2-5	6	#5	Do.	Av. 9'-3"	58
N6	6	#5	Do.	Av. 9'-3"	58
N7-10	6	#5	Do.	Av. 9'-3"	58
P	10	#5	1'-0"	2'-6"	26
Q	4	#5	~	3'-10"	16
R	2	#5	~	8'-8"	18
Total					5851

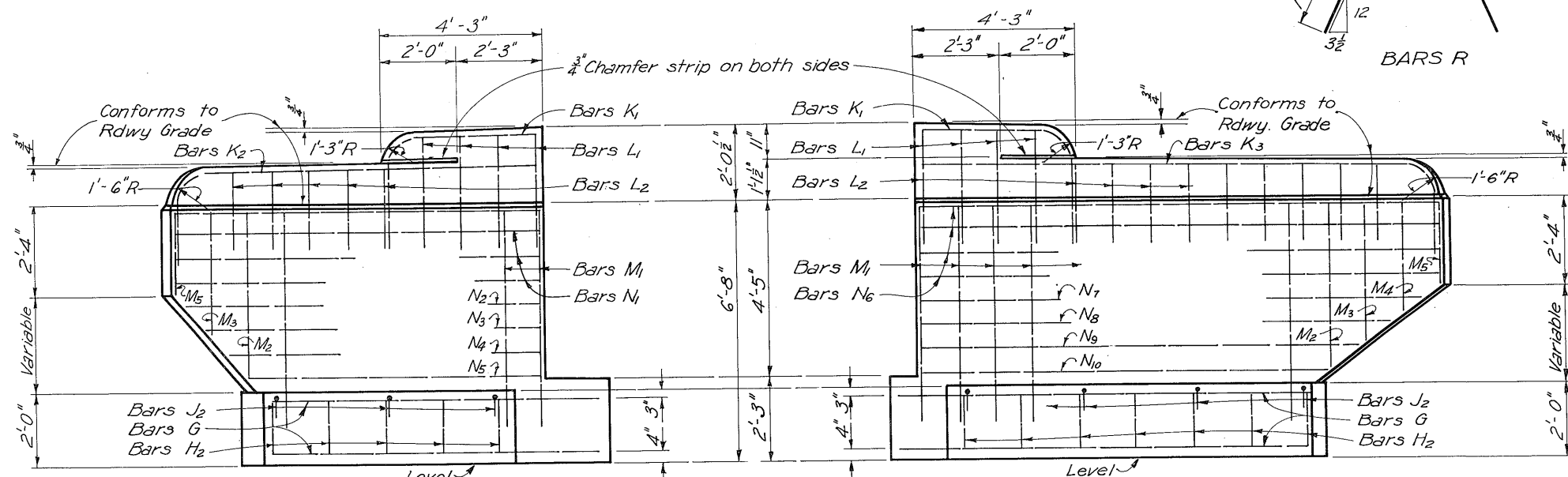
* Includes 20 Dia. Lap

ESTIMATED QUANTITIES

Item	Unit	Quan.
Class A Concrete	C.Y.	33.3
Reinf. Steel	Lbs.	5851
Unclass. Struct. Excav.	C.Y.	39.0
Struct. Steel (Armor Jt) 2/R	Lbs.	650

GENERAL NOTES:
 Design: H20-S16-44 loading in accordance with A.A.S.H.O. 1953 Standard Specifications and T.H.D. Supplement No. 1.
 All concrete shall be Class A. Chamfer exposed corners 3/4" unless otherwise specified.
 Dimensions relating to reinforcing steel are to centers of bars.
 Design stress for reinforcing steel = 20,000 psi.
 Average calculated footing pressure = 6.0 1/4'

TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS 1 & 4
 2- 28'-0" RDWYS. 6'-0" MEDIAN
 30° L. F. SKEW 18" CURBS
WEIDNER ROAD OVERPASS

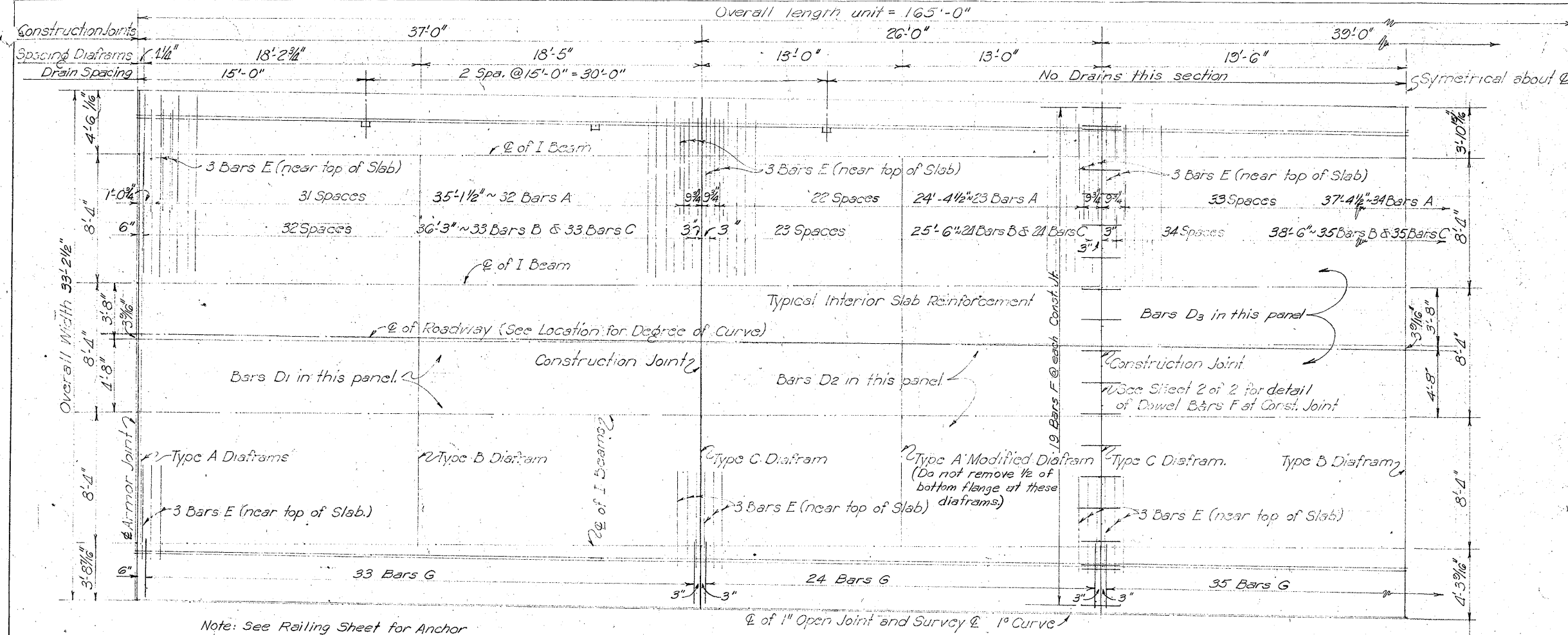


LEFT WINGWALL

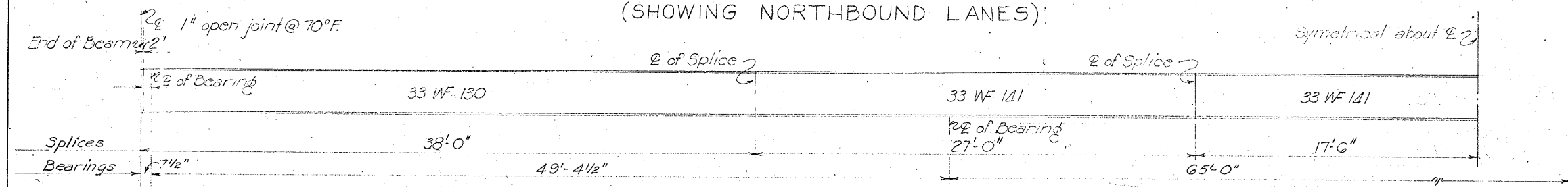
RIGHT WINGWALL

ELEVATIONS

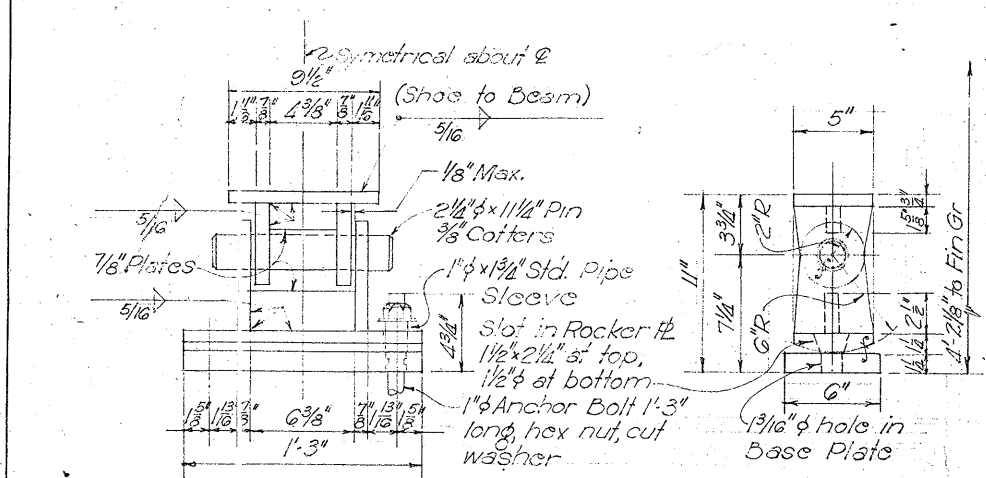
DN.	RLR	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.	WES	Original	March '55	6	TEXAS	FI-31(17)	168
CK. DW.	H.D.						
TR.	DMH						
CK. TR.	H.D.						



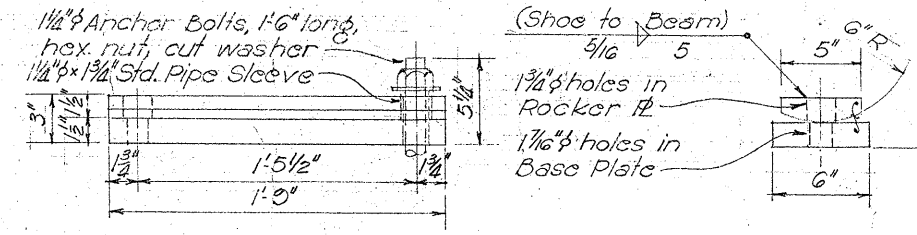
HALF PLAN (SHOWING NORTHBOUND LANES)



HALF ELEVATION OF BEAMS



NOTE:
All shoes shall be fabricated from structural steel. Surface finishes shall conform to A.S.A. Standard. Finishes as follows: Pins and Pin Holes #125; Rockers #250. Anchor bolt nuts shall be tightened and threads burred.



See Attached sheets on page 199

Bar	No.	Size	Spac	Length	Weight
A	144	#5	13 1/2"	29'-11"	4494
B	149	#5	13 1/2"	28'-10"	4480
C	149	#5	13 1/2"	33'-9"	5245
D ₁	86	#5	~	36'-0"	3226
D ₂	86	#5	~	25'-0"	2310
D ₃	43	#5	~	33'-0"	1738
E	60	#6	7"	6'-0"	541
*F	76	#5	2'-0"	2'-6"	198
G	149	#4	13 1/2"	3'-6"	348
Total Reinforcing Steel (Lb)					22,650

* See yellow sheet Attached To page 161

SKETCH SHOWING LOCATION OF 165' CONTINUOUS I BEAM UNITS.

Item	Unit	Quantity
Class A Concrete	Cu. Yd.	115.8
Reinforcing Steel	Lbs.	22,650
Structural Steel (incl. 2 Armor Pls & Shoes)	Lbs.	102,600
Railing Type 3	Lin. Ft.	165

TEXAS HIGHWAY DEPARTMENT

CONTINUOUS I-BEAM DETAILS

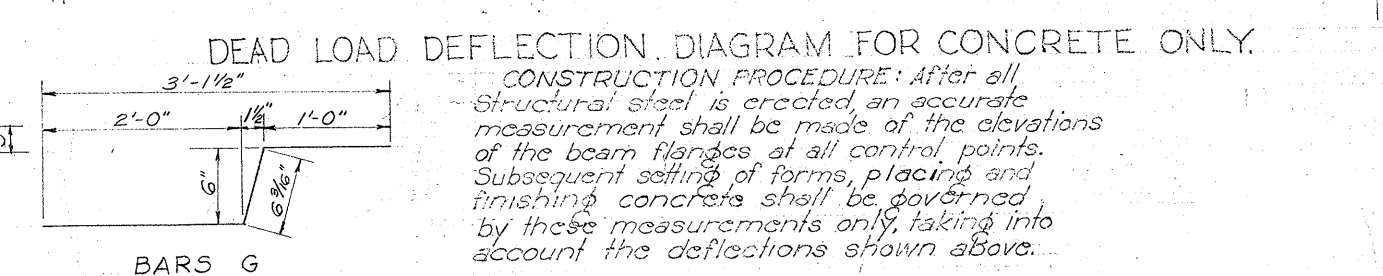
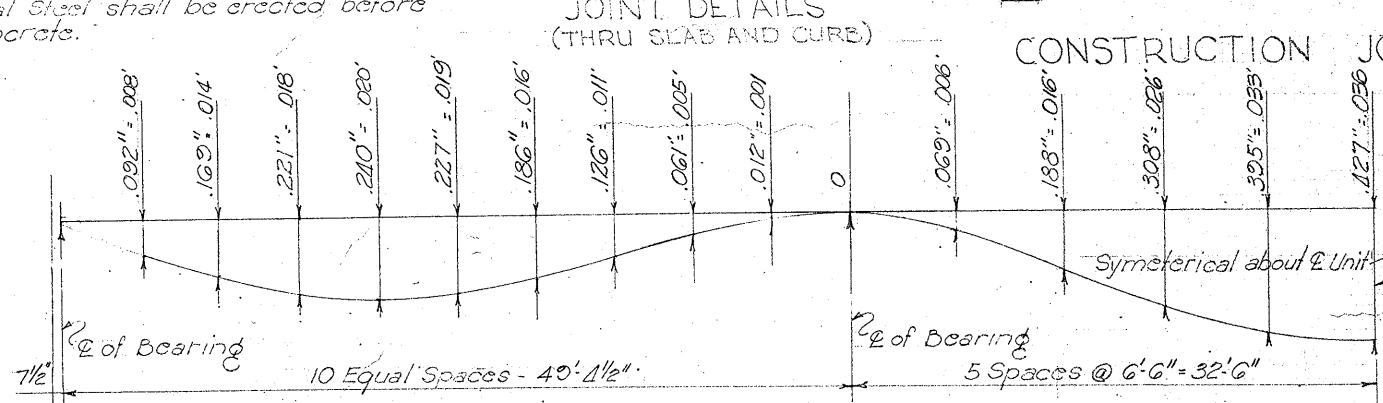
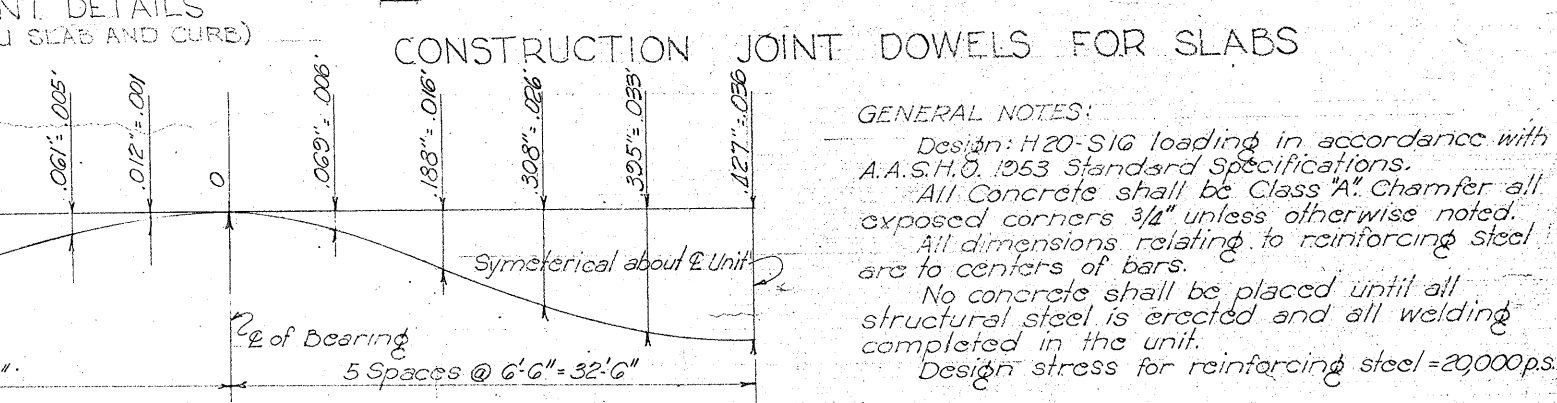
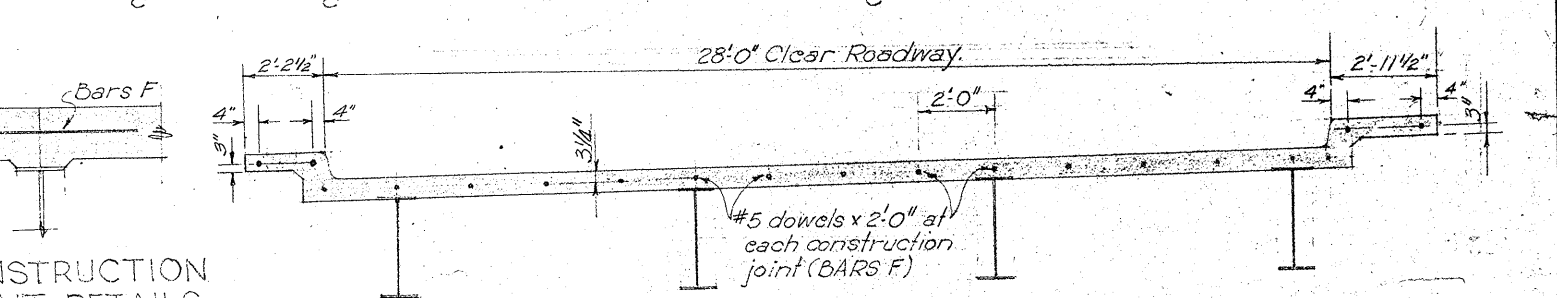
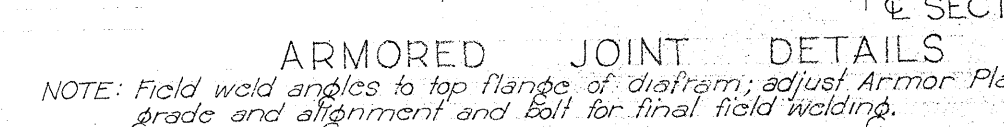
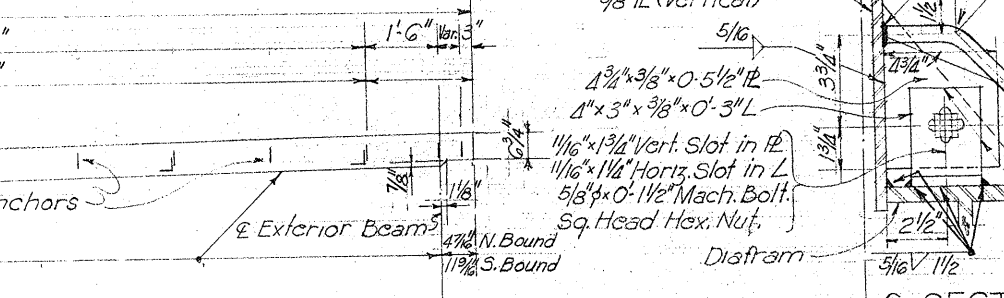
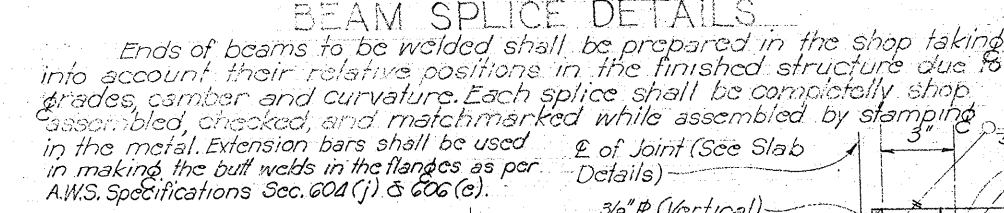
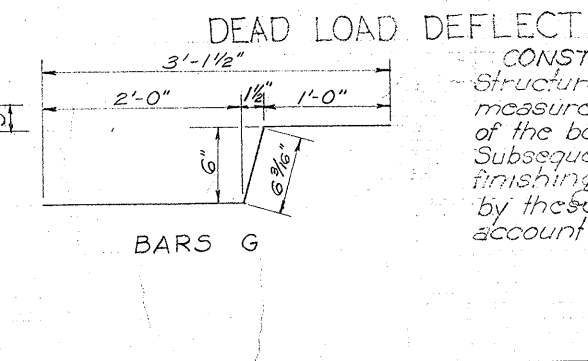
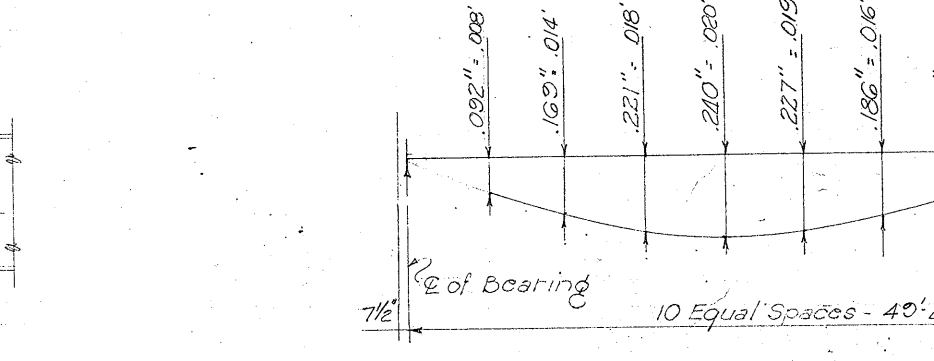
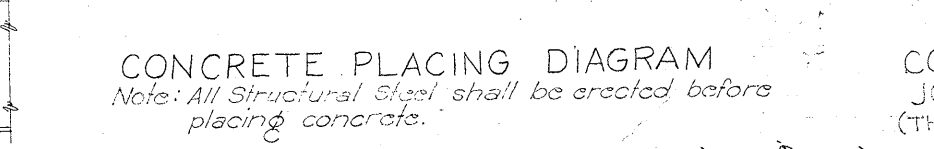
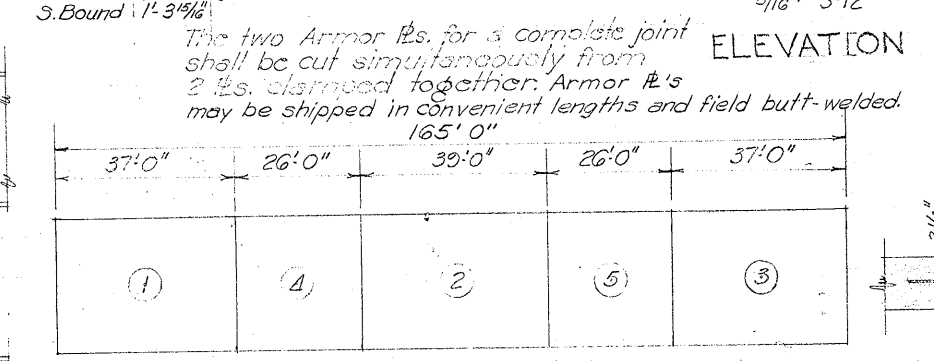
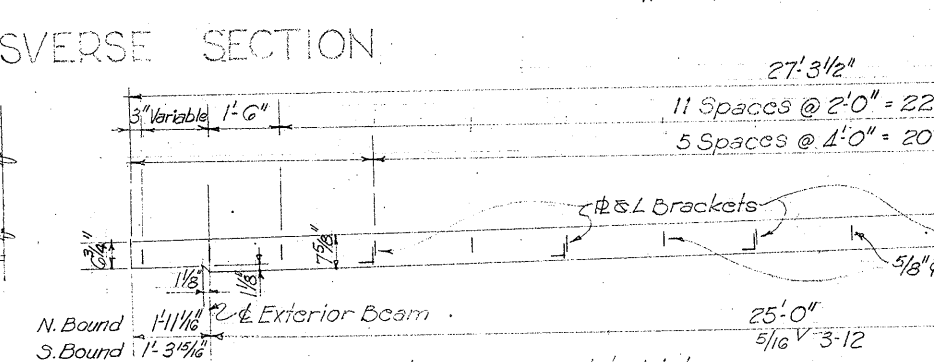
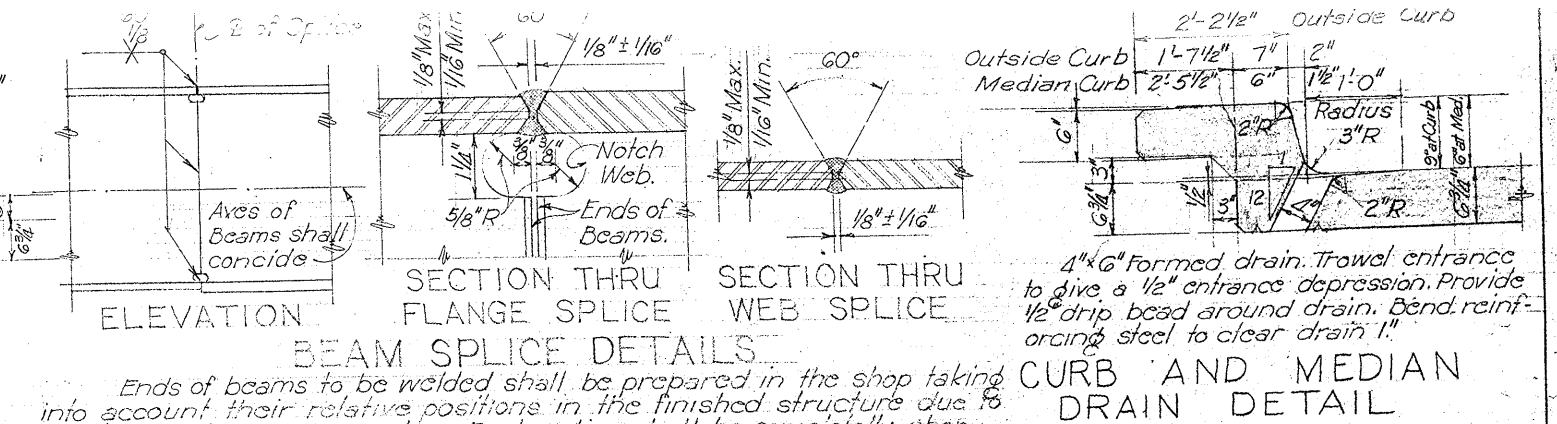
2-28'-0" ROADWAY 5'-6'-0" MEDIAN 18" CURBS

50'-65'-50' UNIT

OVERPASS AT STA. 334+25

SHEET OF 2

DN.	W.H.	DRAWING	DATE	REV.	STA.	FEDERAL AID PROJECT NO.	DATE
CK.DW.	R.L.R.	ORIGINAL	Nov. 1954				
DW.	H.F.H.						
CK.DW.	H.U.D.						
TR.							
CK.TR.							



GENERAL NOTES:

Design: H20-S16 loading in accordance with A.A.S.H.O. 1953 Standard Specifications.

All Concrete shall be Class "A". Chamfer all exposed corners $\frac{3}{4}$ " unless otherwise noted.

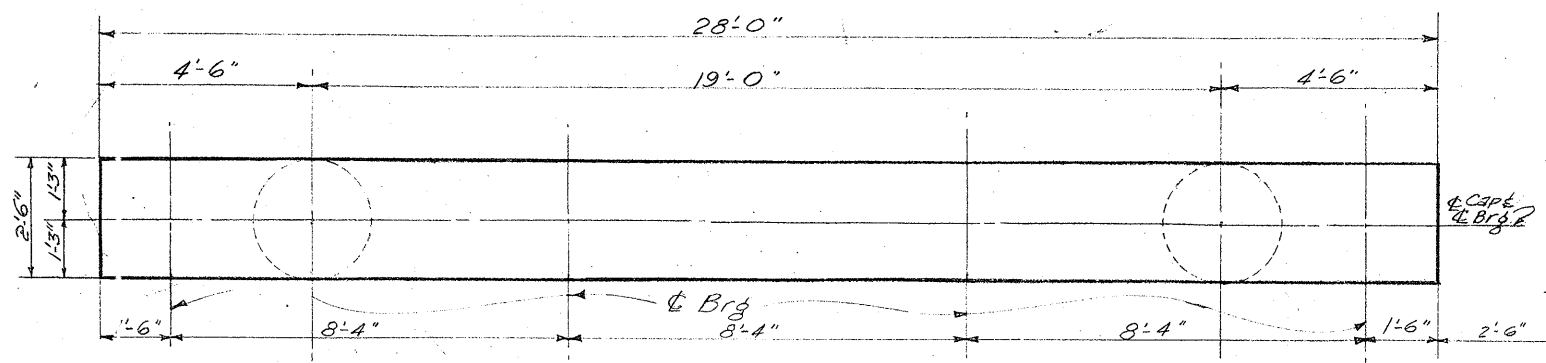
All dimensions relating to reinforcing steel are to centers of bars.

No concrete shall be placed until all structural steel is erected and all welding completed in the unit.

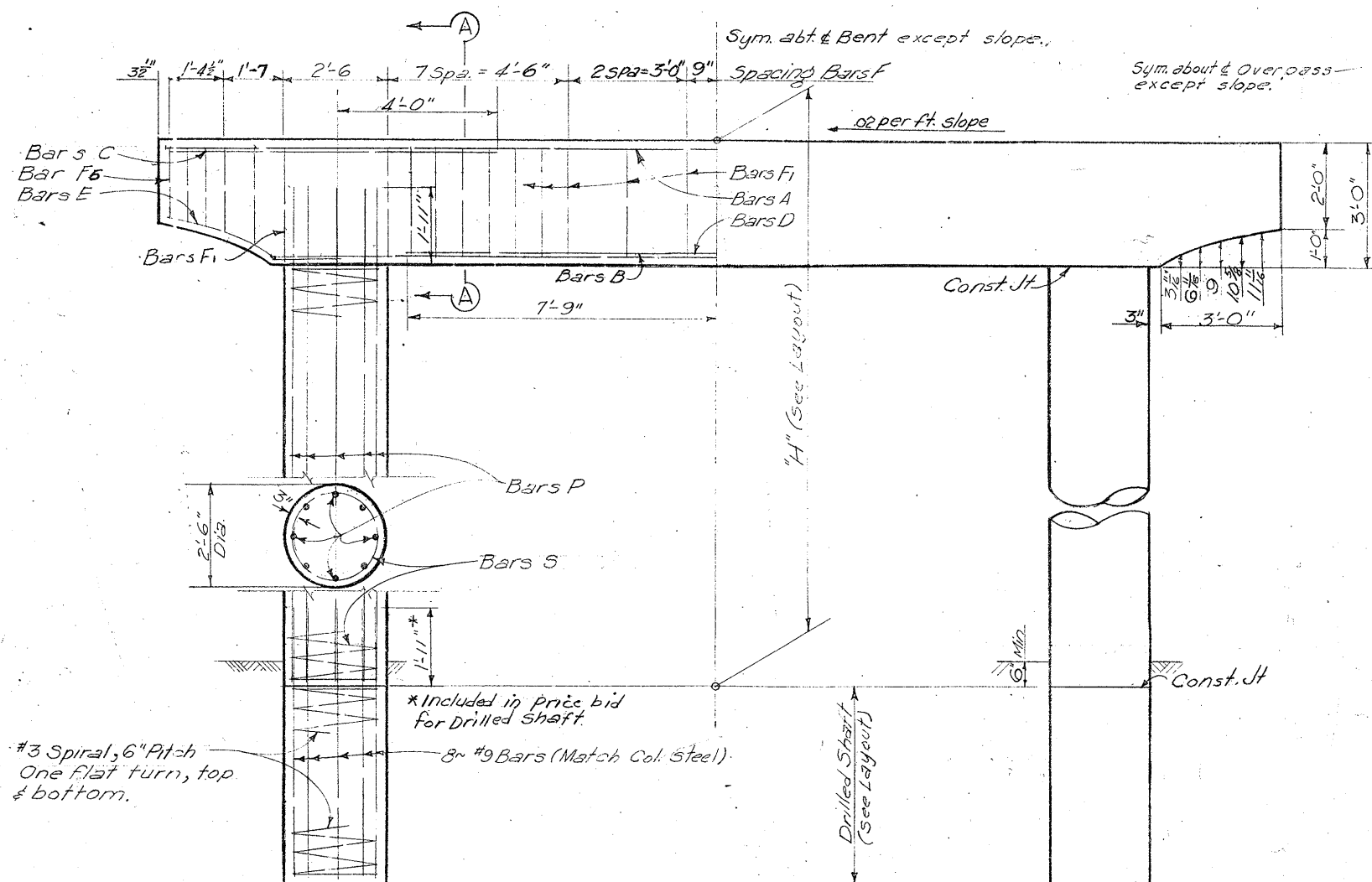
Design stress for reinforcing steel = 20,000 p.s.i.

TEXAS HIGHWAY DEPARTMENT
CONTINUOUS I-BEAM DETAILS
2 - 28'-0" ROADWAYS ~ 6'-0" MEDIAN 18" CURBS
50'-65'-50' UNIT
OVERPASS AT STA. 334+25

DR	W.H.	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CX DR	R.L.R.	ORIGINAL	NOV 1954	6	TEXAS	FI-31(17)	171
DW	H.F.H.						
CX DW	H.J.D.						
TR				STATE Div. No.	COUNTY	SECTION	SECTION
				15	BEYAR	16	25

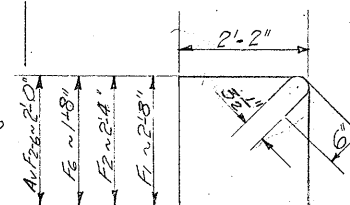


PLAN

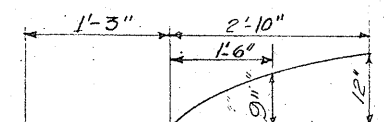


ELEVATION

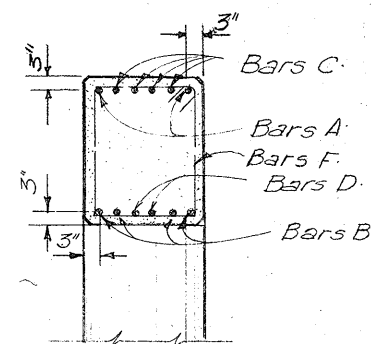
NOTE: Portions of circular columns above ground may be formed either with metal forms or with laminated fiber tubes lined with plastic and coated with wax. These tubes to be Sonotubes as manufactured by Sonoco Products Co. or approved equal.



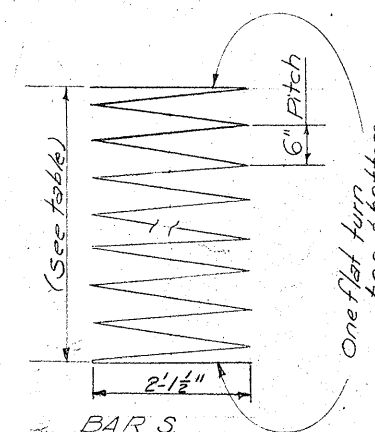
BARS F



BARS E



SEC. A-A



BAR S

BILL OF CONSTANT REINF. STEEL

Bar	No.	Size	Spec.	Length	Weight
A	2	#10	~	27'-8"	238
B	4	#11	~	22'-0"	468
C	8	#9	~	8'-4"	227
D	2	#11	~	15'-6"	165
E	4	#6	~	4'-4"	36
F	22	#5	Shown	10'-8"	245
F-6	10	#5	Shown	9'-4"	197
Total					1466

BILL OF VARIABLE REINF. STEEL

"H"	Length	Weight	Length	Weight	Weight
17'	201	151	15'-11"	866	1017
18'	215	161	16'-11"	920	1081
19'	228	171	17'-11"	975	1146
20'	242	181	18'-11"	1029	1210
21'	256	192	19'-11"	1083	1275

*ESTIMATED QUANTITIES

"H"	C/A	Reinf.
	Conc.	Steel
	C.Y.	Lb.
17'	12.6	2483
18'	12.9	2547
19'	13.2	2612
20'	13.6	2676
21'	14.0	2741

*2-Column Bent for one 28'-0" Roadway.

GENERAL NOTES~

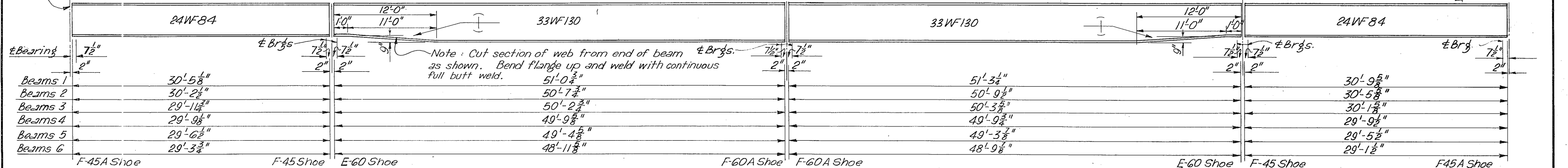
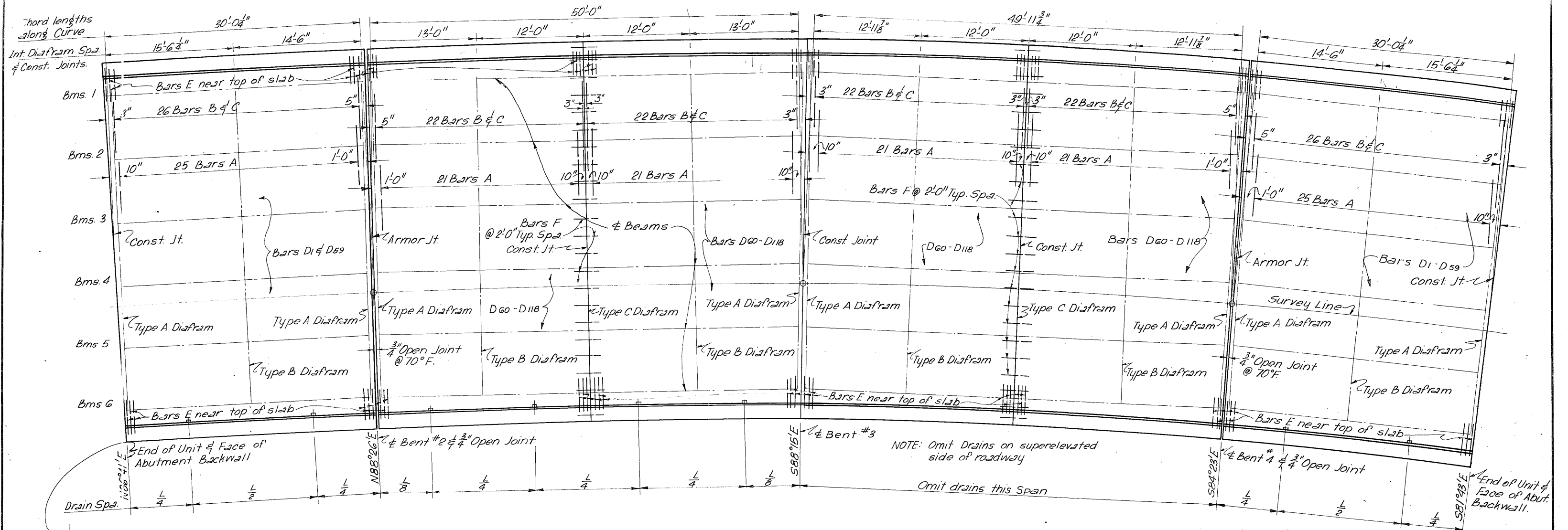
Design H20-S16-44 loading in accordance with A.A.S.H.O 1953 Standard Specifications and T.H.D Supplement No.1
All concrete shall be Class 4. Chamfer exposed corners 3/4" unless otherwise noted.
Dimensions relating to reinforcing steel are to centers of bars.
Design stress for reinforcing steel = 20,000 P.S.I.
Average calculated footing pressure = 2 1/2 tons / ft.
Bent design for use with 50'-65'-50" Cont. I-Beam Unit.

TEXAS HIGHWAY DEPARTMENT

INTERIOR BENTS

OVERPASS AT STA. 334+25

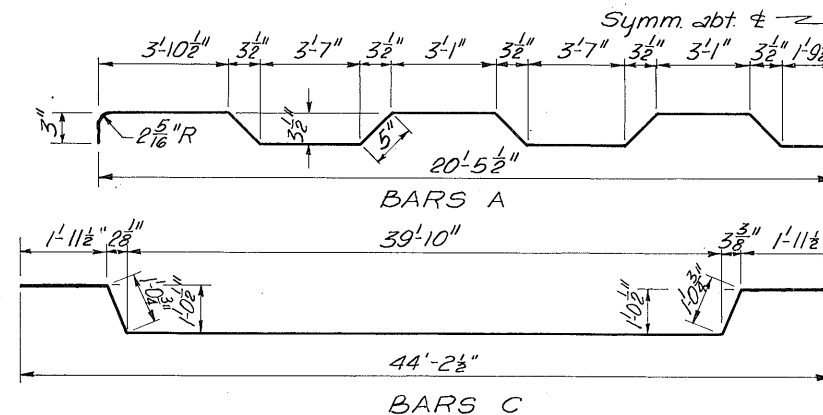
DR. C.H.J.A.	DRAWING	DATE	FED. ROAD	STATE	FEDERAL AID PROJECT NO.	SHEET
CK. DW. WES	Original	Dec. 1954	6	TEXAS	F-31(17)	1713
CK. DW. H.J.D.						
TR.						
CK. TR.						
			15	BEXAR	16 7.25	US81



BILL OF REINFORCING STEEL					
One 30' Unit					
Bar	No.	Size	Spac.	Length	Weight
A	25	#5	1'-2"	42'-8"	1113
B	26	#5	1'-2"	40'-11"	1110
C	26	#5	1'-2"	45'-10"	1243
D1-D59	59	#5	~	Av 29'-11"	#84#1850
E	12	#6	7"	5'-0"	90
Total					Lbs. 5397
One 50' Unit					
A	42	#5	1'-2" ±	42'-8"	1869
B	44	#5	1'-2" ±	40'-11"	1878
C	44	#5	1'-2" ±	45'-10"	2103
D60-D118	118	#5	~	Av 25'-0"	3077 3064
E	24	#6	7"	5'-0"	180
F	23	#5	2'-0"	Av 2'-6"	60
Y	34	#5	~	2'-10" ± 1/4"	70
Total					Lbs. 9167
					9244

ESTIMATED QUANTITIES			
2-30' Units			
Item	Unit	Quantity	
Class A Concrete	C.Y.	56.0	
Reinforcing Steel	Lbs.	10,794	10812
Structural Steel	Lbs.	39,000*	
Type 3 Railing (Mod.)	Lin. Ft.	121.6	
*This includes 877# for 2 Armor Pls.			
2-50' Units			
Class A Concrete	C.Y.	93.7	
Reinforcing Steel	Lbs.	18,334	18488
Structural Steel	Lbs.	92,000*	
Type 3 Railing (Mod.)	Lin. Ft.	202	
*This includes 877# for 2 Armor Pls.			

ELEVATION



TEXAS HIGHWAY DEPARTMENT

30' & 50' I-BEAM SPANS

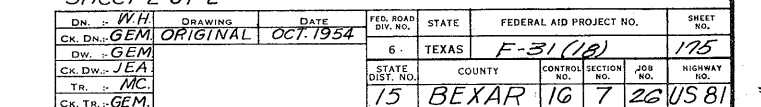
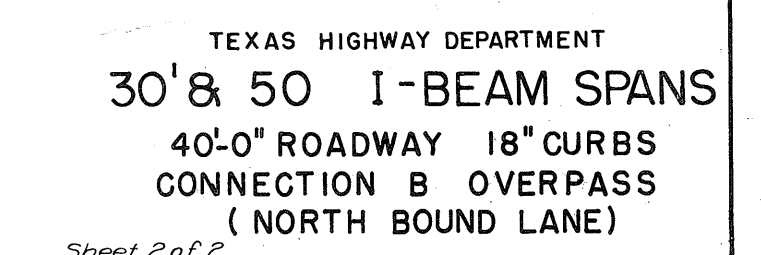
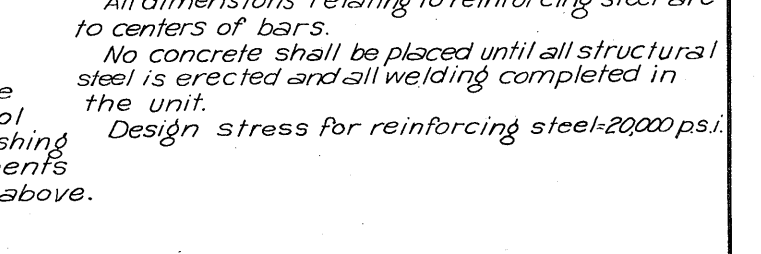
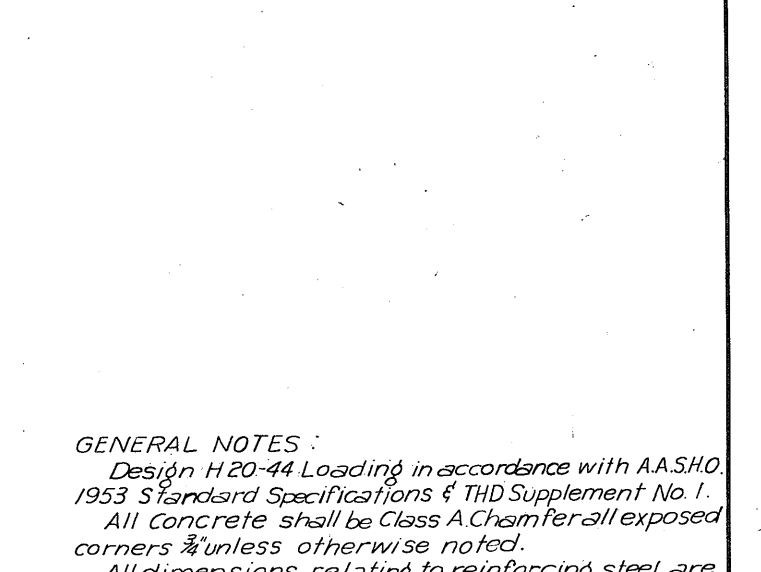
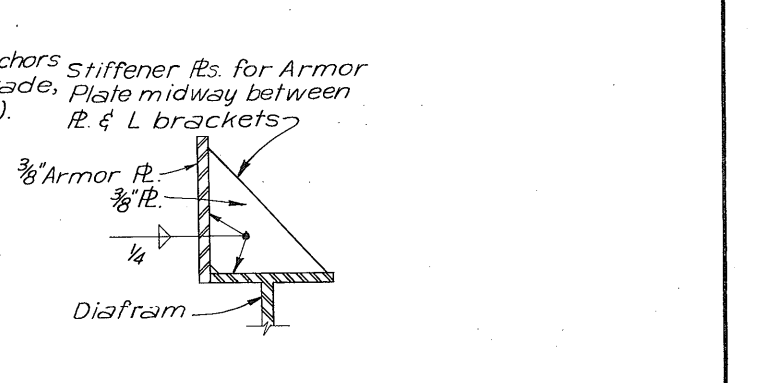
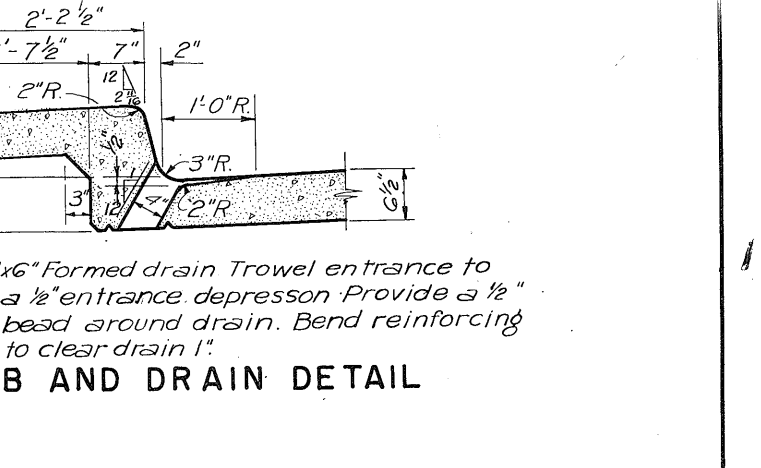
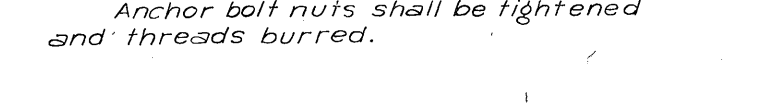
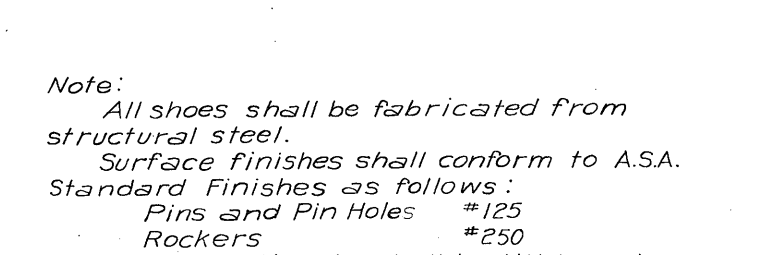
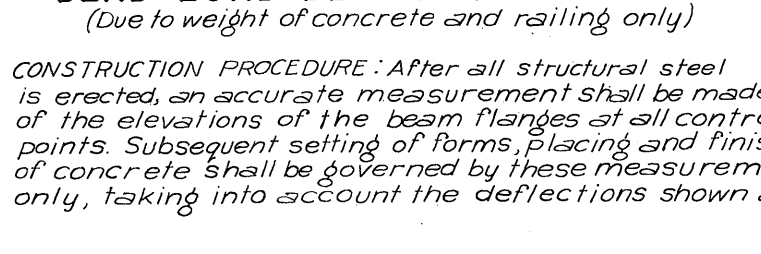
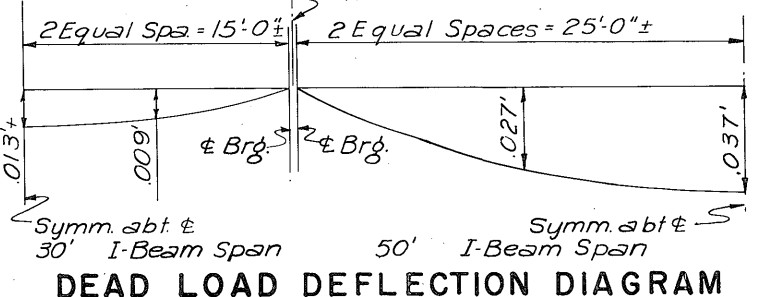
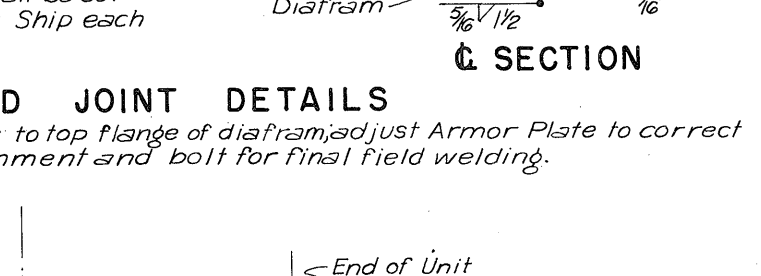
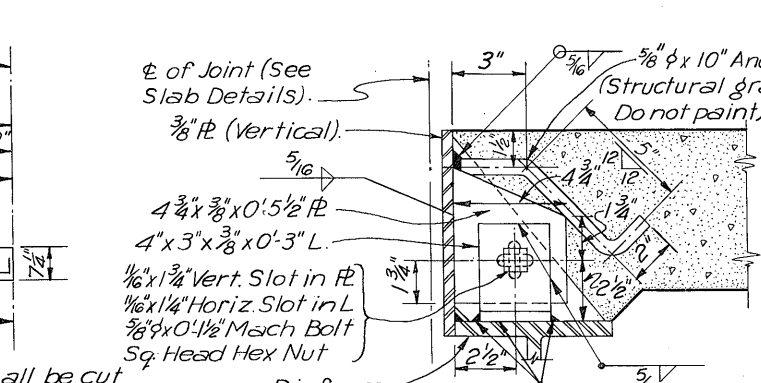
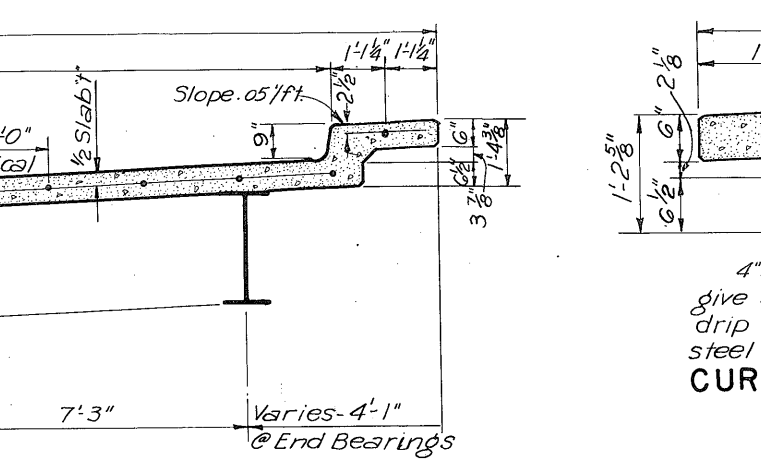
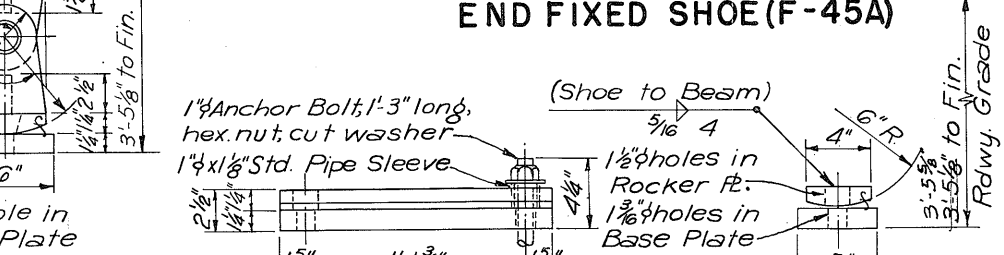
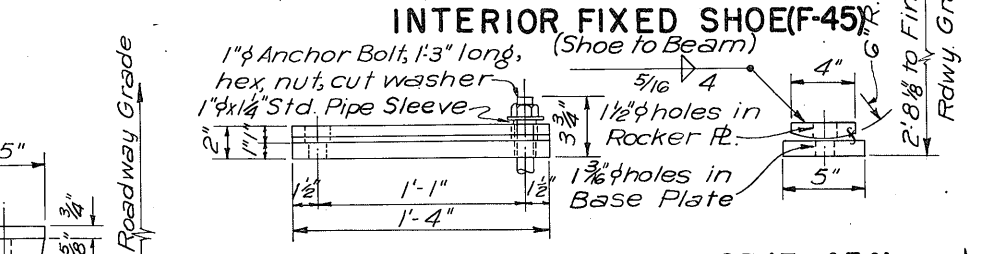
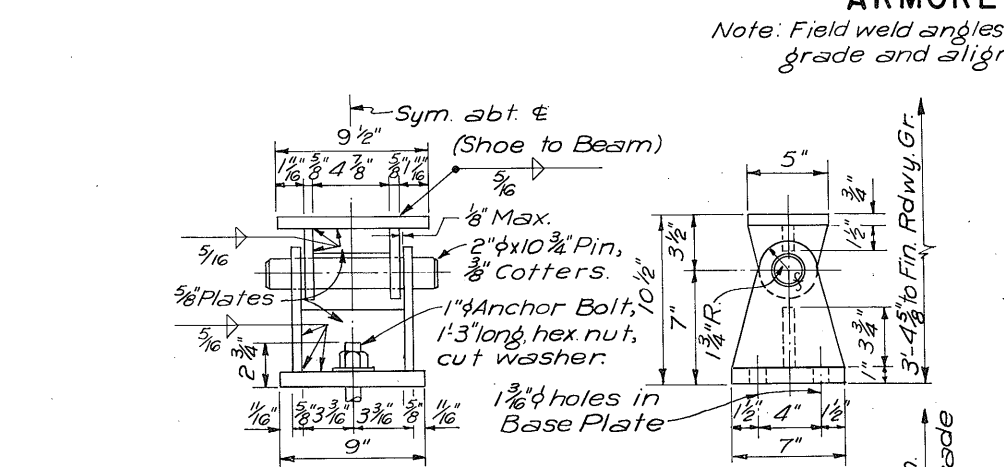
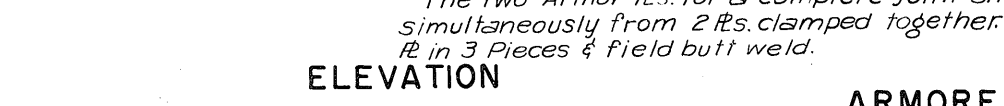
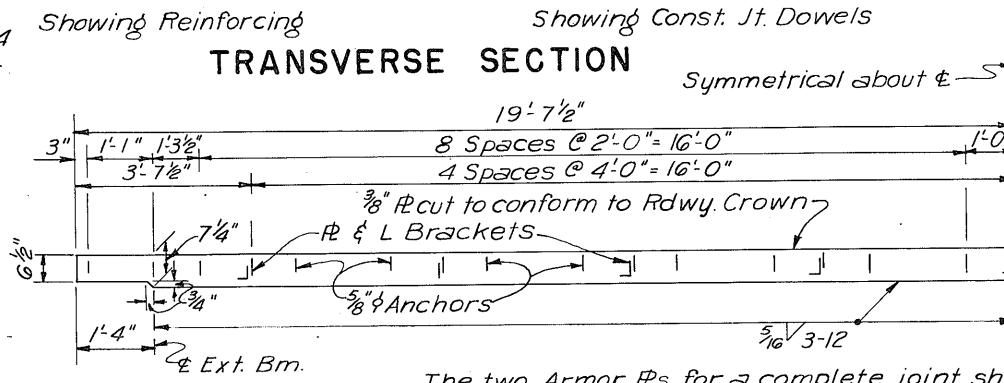
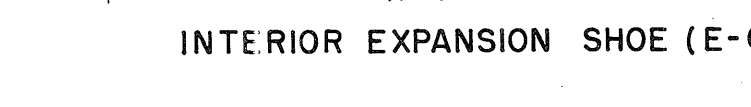
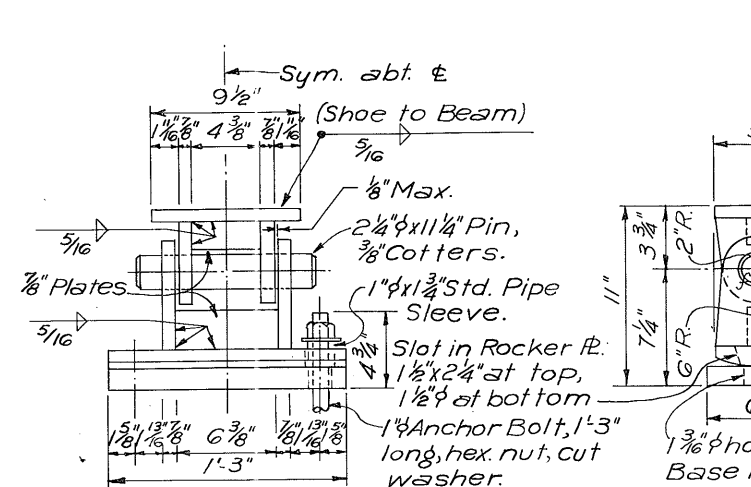
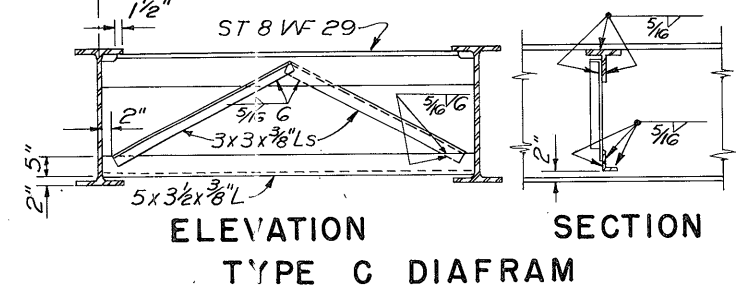
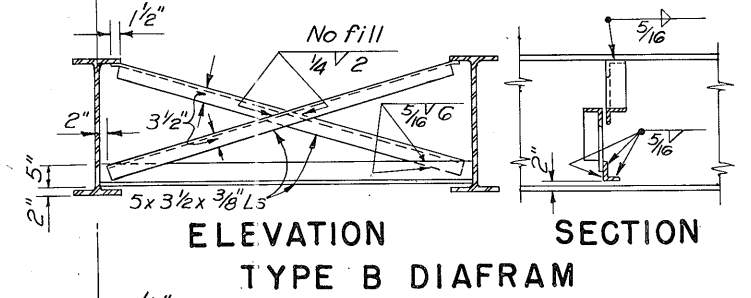
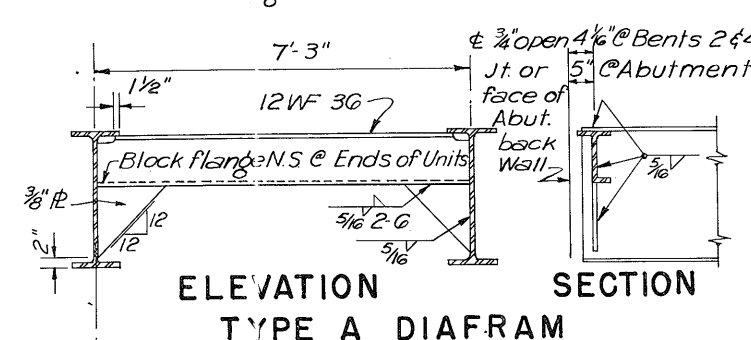
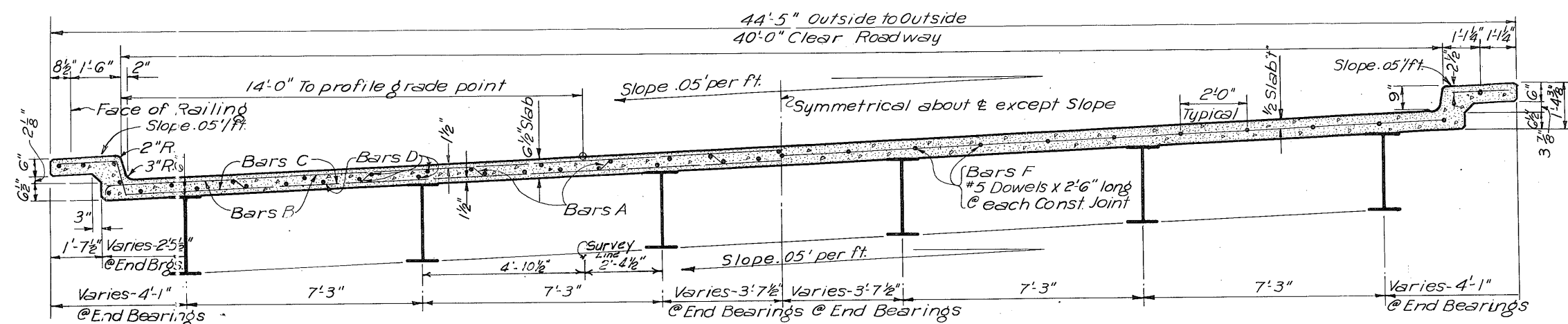
40'-0" ROADWAY 18" CURBS

CONNECTION B OVERPASS

(NORTH BOUND LANE)

Sheet 1 of 2

DN.	WH.	DRAWING	DATE	FED. ROAD	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.	GEM	ORIGINAL	OCT. 1954	6	TEXAS	F-31 (18)	174
DW.	GEM	Revised 5-3-53	R.N.S.				
CK. DW.	J.E.A.						
TR.	W.W.W.						
CK. TR.	GEM						
STATE	COUNTY	CONTROL SECTION	JOB NO.	HIGHWAY NO.			
15	BEXAR	17	10	13	US 81		

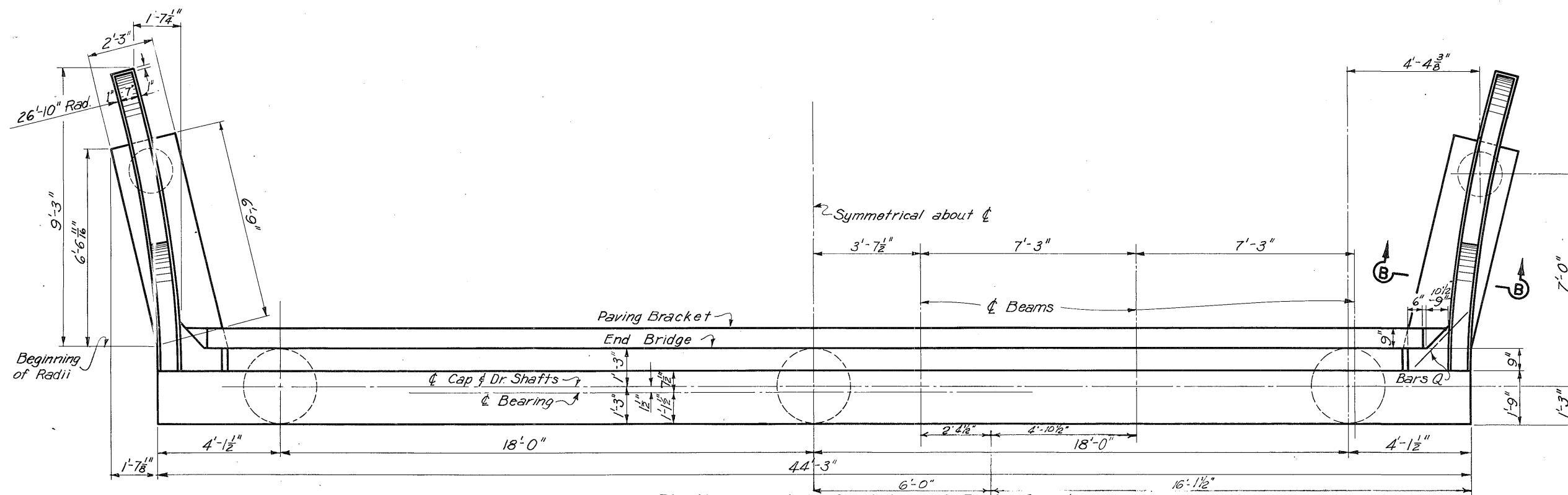


ESTIMATED QUANTITIES FOR ONE ABUTMENT

Item	Unit	QUANTITY
Class A Concrete	C.Y.	18.6
Reinforcing Steel	Lbs.	3358

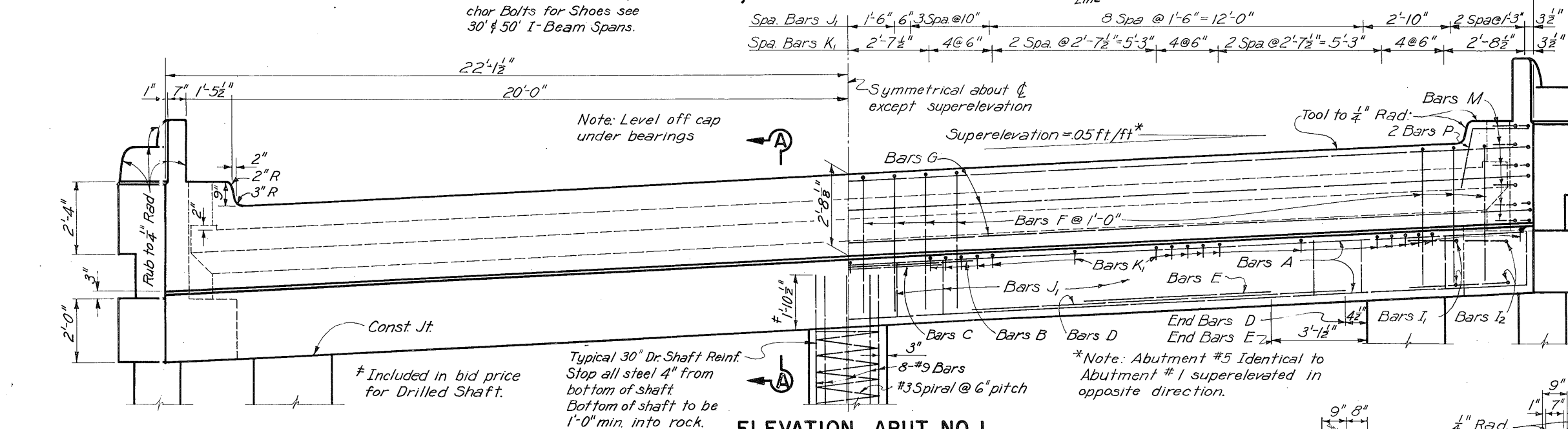
BILL OF REINFORCING STEEL

Bar	No.	Size	Spacing	Length	Weight
A	4	#10	~	46'-9"	805
B	2	#10	~	11'-0"	95
C	1	#10	~	8'-0"	34
D	4	#10	~	12'-4"	212
E	2	#10	~	8'-0"	52
F	42	#5	1'-0"	9'-4"	409
G	7	#5	~	45'-6"	332
H	42	#4	1'-0"	3'-10"	107
I ₁	4	#9	~	10'-10"	147
I ₂	4	#9	~	10'-4"	140
J ₁	32	#5	Shown	7'-3"	242
J ₂	12	#5	1'-0"	6'-6"	81
K ₁	37	#4	Shown	3'-2"	78
K ₂	10	#4	2'-0"	2'-11"	20
L ₁	16	#5	11 1/2" ±	11'-0"	184
L ₂	6	#5	11 1/2" ±	4'-6"	28
M ₁	12	#5	7 1/2" ± 1'-3"	10'-6"	131
M ₂	6	#5	7 1/2" ± 1'-3"	8'-0"	50
N ₁	8	#5	1'-0"	7'-10"	65
N ₂	10	#4	1'-0"	4'-10"	32
O ₁	4	#5	~	11'-8"	49
O ₂	4	#5	~	5'-5"	23
P	4	#5	6"	3'-10"	16
Q	10	#5	1'-0"	2'-6"	26
Total				Lbs.	3358



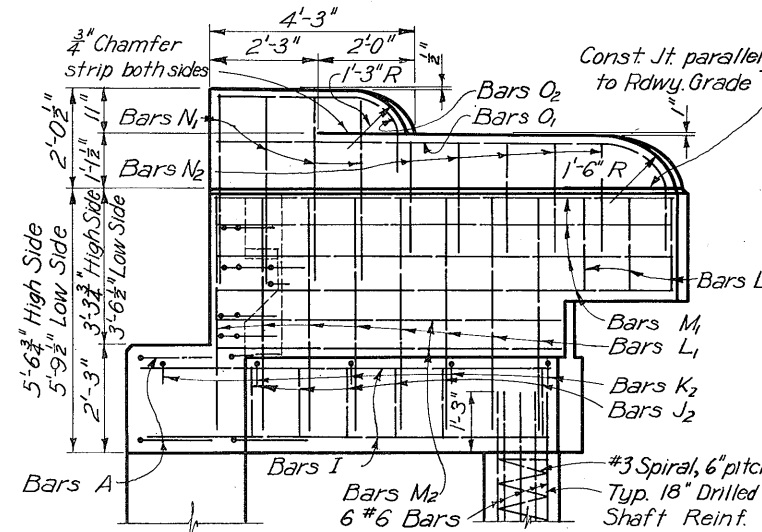
Note: For location of Anchor Bolts for Shoes see 30' & 50' I-Beam Spans.

PLAN, ABUTMENTS NO. 1 & 5



Note: Level off cap under bearings

*Note: Abutment #5 identical to Abutment #1 super-elevated in opposite direction.



SIDE ELEVATION

GENERAL NOTES:

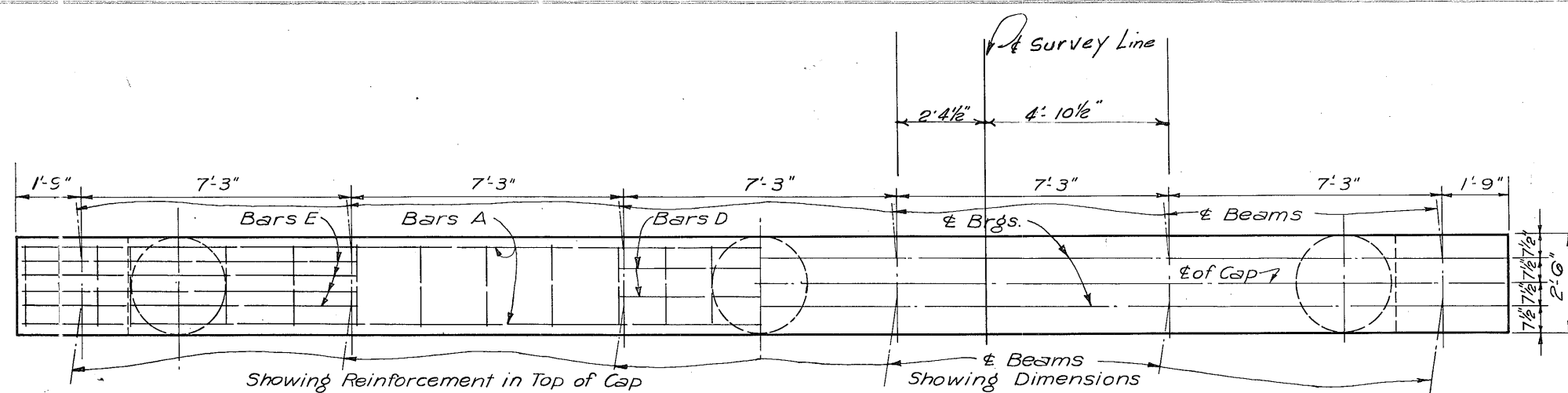
Design: H20-44 Loading in accordance with A.A.S.H.O. 1953 Standard Specifications.
All concrete shall be Class A. Chamfer all exposed corners 3/4" unless otherwise noted.
All dimensions relating to reinforcing steel are to centers of bars.
Design stress for reinf. steel = 20,000 p.s.i.
Average footing pressure = 9.3 tons/sq. ft.

TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS NOS. 1 & 5
40'-0" RDWY. 18" CURBS
CONNECTION B OVERPASS
(NORTH BOUND LANE)

SECTION A-A

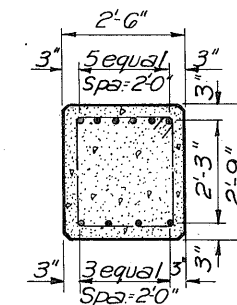
SECTION B-B

DR. - GEM	DATE	FED. ROAD	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DR. - JEA	Original	Nov. 54	6 TEXAS	F-31 (18)	176
DR. - GEM					
CK. DR. - JEA					
TR. - DHH					
CK. TR. - JEA					



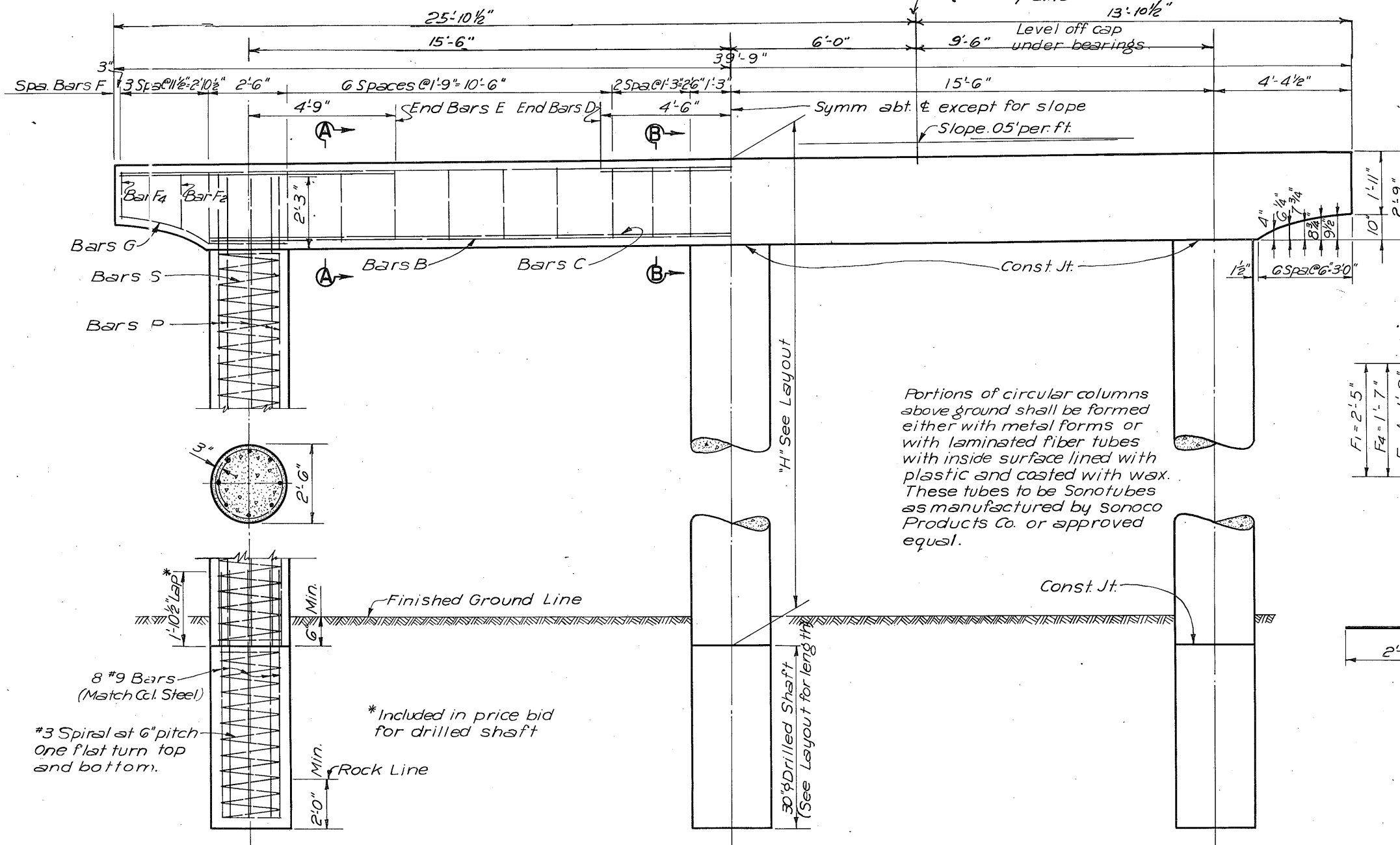
PLAN

Note: For location of Anchor Bolts for shoes see "30' & 50' I-Beam Spans"



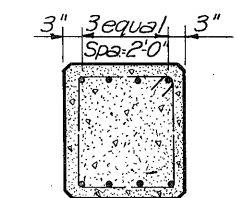
SECTION A-A

BILL OF CONSTANT REINFORCING STEEL					
Bar	No.	Size	Spacing	Length	Weight
A	2	#11	~	39'-4"	418
B	2	#9	~	33'-6"	228
C	2	#8	~	33'-6"	179
D	2	#10	~	9'-0"	77
E	8	#6	~	8'-11"	107
F ₁₋₄	20	#5	Shown	10'-1"	210
F ₂₋₄	6	#5	"	Av 8'-9"	55
G	4	#6	~	5'-10"	35
Total				Lbs.	1309



ELEVATION

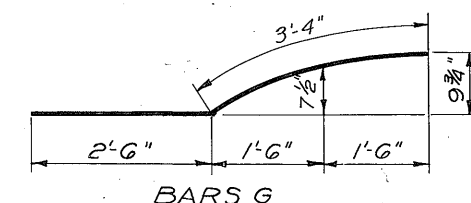
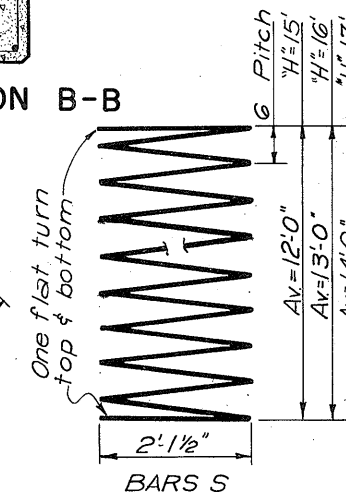
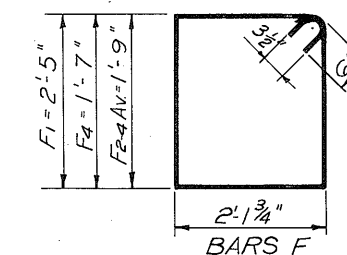
Showing Dimensions



SECTION B-B

BILL OF VARIABLE REINFORCING STEEL					
"H"	3" #3 Bars S	24" #9 Bars P	Total		
	Length	Weight	Length	Weight	Weight
15'	174	196	14'-6" Av	118.3	1379
16'	187	211	15'-6" Av	126.5	1476
17'	201	227	16'-6" Av	134.6	1573
				H=15' 1767	
				H=16' 1767	
				H=17' 1564	

"H"	Class A Concrete C.Y.	Reinf. Steel Lb.	
15'	16.5	2688	
16'	17.0	2785	
17'	17.6	2882	



GENERAL NOTES:
Design H20-44 Loading in accordance with AASHTO 1953 Standard Specifications & T.H.D. Supplement No. 1.
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.
Design stress for reinforcing steel = 20,000 psi.
Average calculated footing pressure = 20.7 ksf.

TEXAS HIGHWAY DEPARTMENT
INTERIOR BENTS NOS. 2, 3 & 4
CONNECTION B OVERPASS
(NORTH BOUND LANE)

DN. GEM	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. D.M. JEA	ORIGINAL	NOV. 54	6	TEXAS	F-31 (18)	177
CK. D.M. JEA	TR. & MC	NO.	STATE	COUNTY	CONTROL SECTION NO.	JOB NO.
CK. TR. JEA			15	BEXAR	16	7

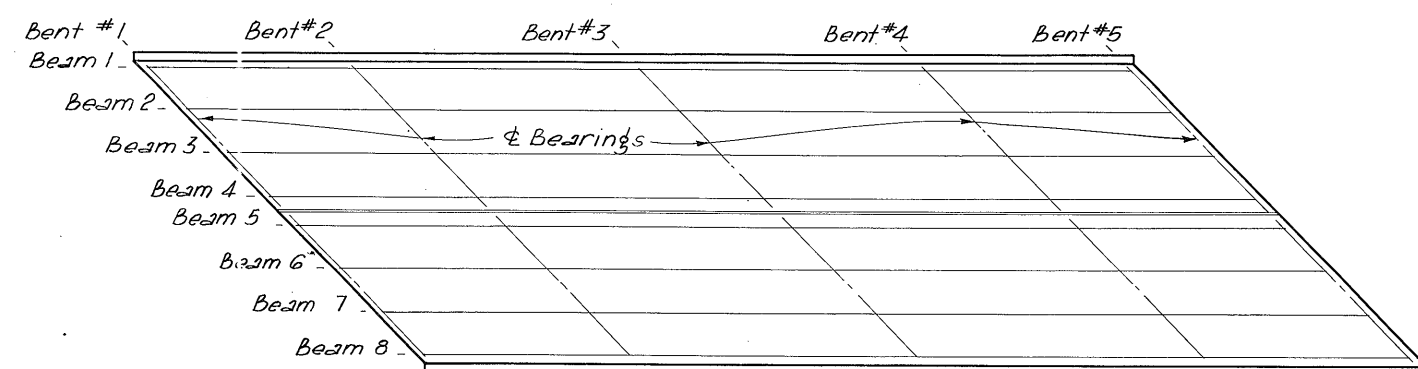
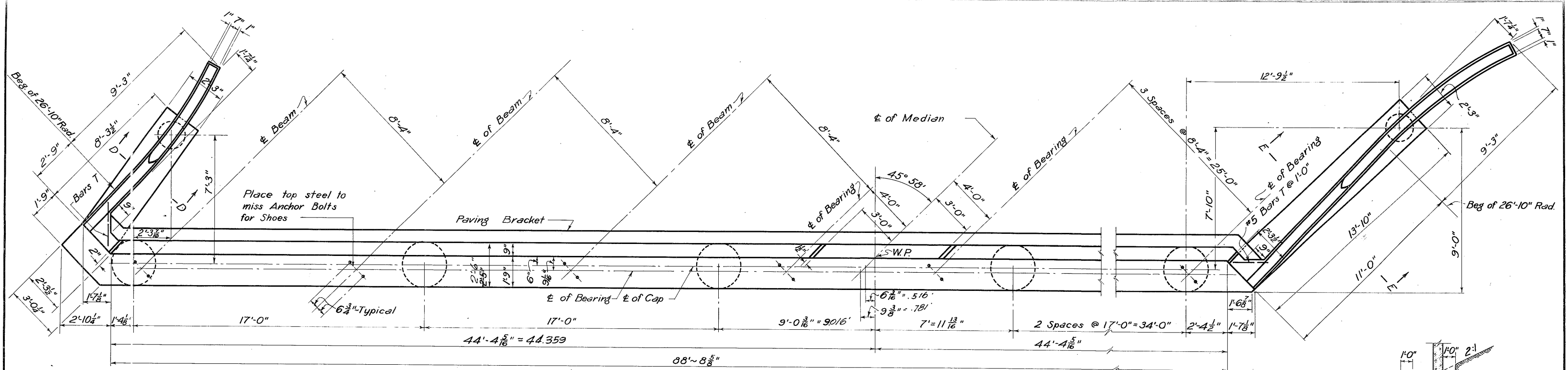


TABLE OF BEARING SEAT ELEVATIONS					
Bearing No.	Bent No.				
	1	2	3	4	5
1	749.14	749.36	749.58	749.59	749.53
2	749.30	749.50	749.68	749.66	749.57
3	749.45	749.62	749.78	749.72	749.61
4	749.60	749.75	749.87	749.78	749.65
5	749.65	749.78	749.87	749.75	749.60
6	749.61	749.72	749.78	749.62	749.45
7	749.57	749.66	749.68	749.50	749.30
8	749.53	749.59	749.58	749.36	749.14

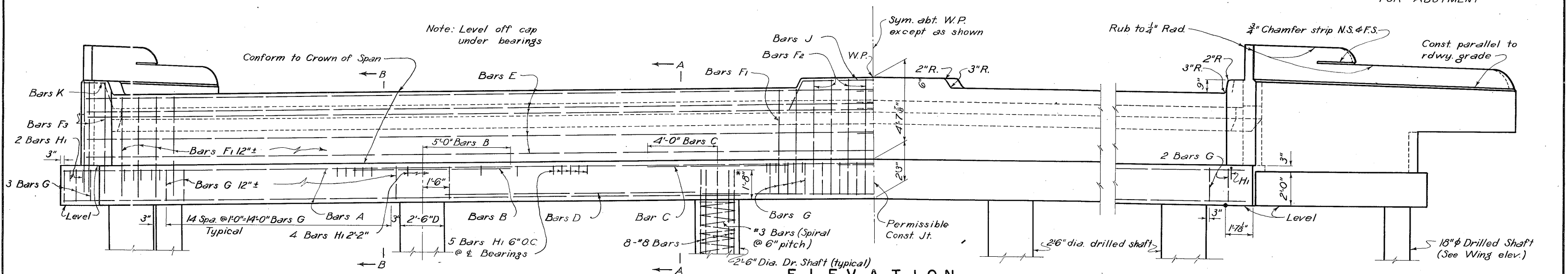
SUMMARY OF QUANTITIES									
Structure Unit	Uncl. Struct. Excavation C.Y.	Class A Conc.		Reinf. Steel Lbs.	Struct. Steel Lbs.	Drilled Shaft		Railing Type 3 (Mod) Lin. Ft.	Class B Conc. Riprap C.Y.
		Slab C.Y.	Bents C.Y.			18" Dia. Lin. Ft.	30" Dia. Lin. Ft.		
1-210'-0" Cont. I-Beam Unit		300.1		61,510	268,000			420	
2-Abutment Bents	86.0		82.8	11,982	1,652	72	288		78.0
6-Interior Bents			100.5	19,932			207		
Totals	86.0	300.1	183.3	93,424	269,652	72	495	420	78.0

TEXAS HIGHWAY DEPARTMENT
ESTIMATE SUMMARY
AND
BEARING SEAT ELEVATIONS
U.S. 81 BUSINESS ROUTE OVERPASS

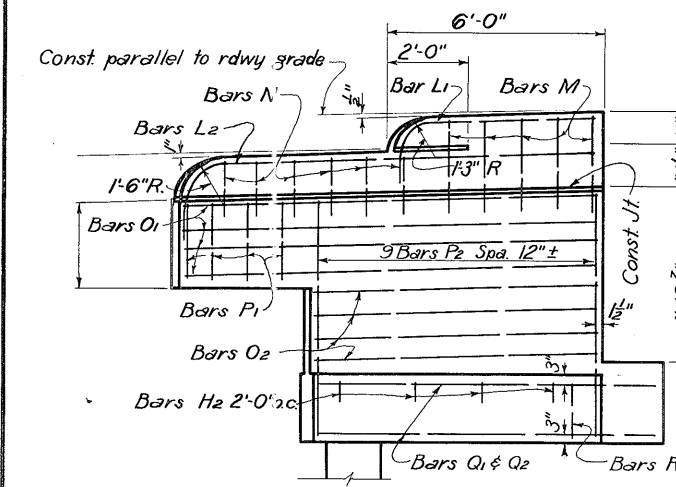
DR. 1	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DWG.	ORIGINAL	SEPT. 54	6	TEXAS	F1-1088(2)	180
DW. GEM.						
CK. DWG. J.E.A.						
TR. WWW						
CK. TR. GEM.						
			15	BEXAR	17 10 13	US 81



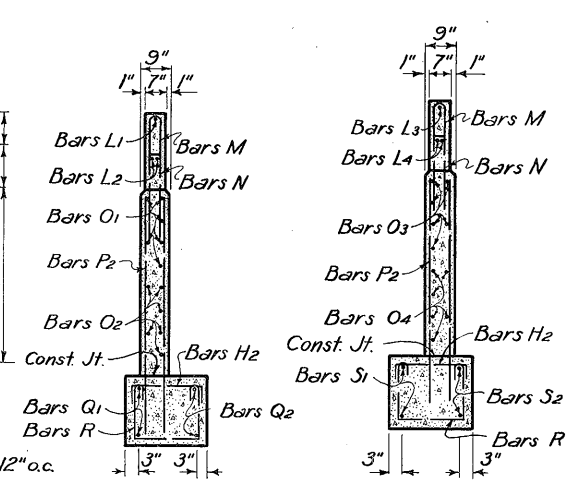
P L A N



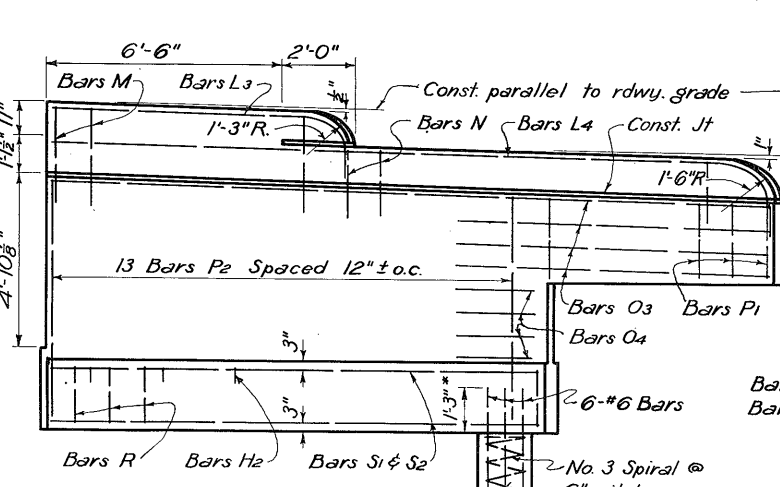
E L E V A T I O N



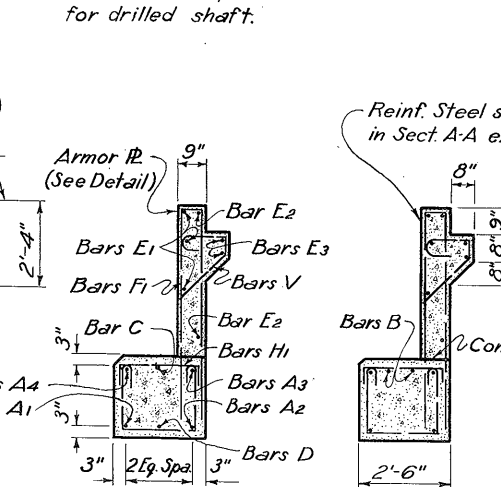
E L E V A T I O N



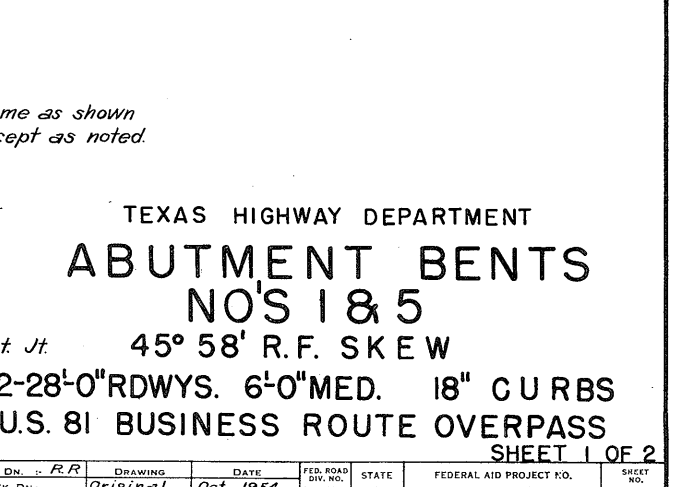
SEC. D-D



SEC. E-E



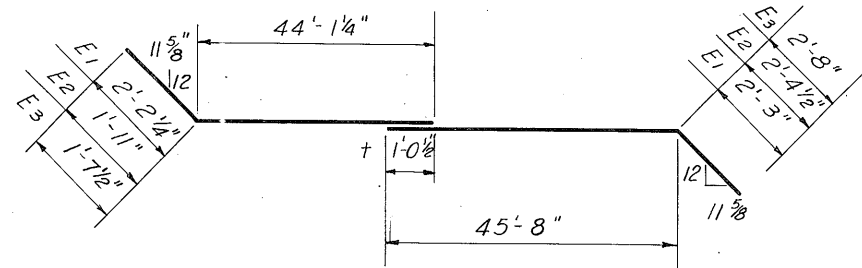
SEC. A-A



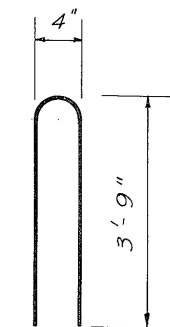
SEC. B-B

TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS
NO'S 18 & 5
 45° 58' R.F. SKEW
 2-28'-0" RDWYS. 6'-0" MED. 18" CURBS
 U.S. 81 BUSINESS ROUTE OVERPASS

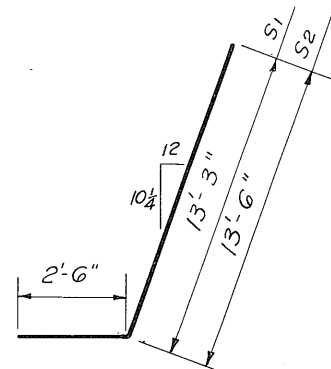
DR. - R.R.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DW. - J.E.A.	Original	Oct, 1954	6	TEXAS	F1-1088(2)	181
CK. DW. - J.E.A.						
TR. - G.A.G.						
CK. TR. - H.M.						



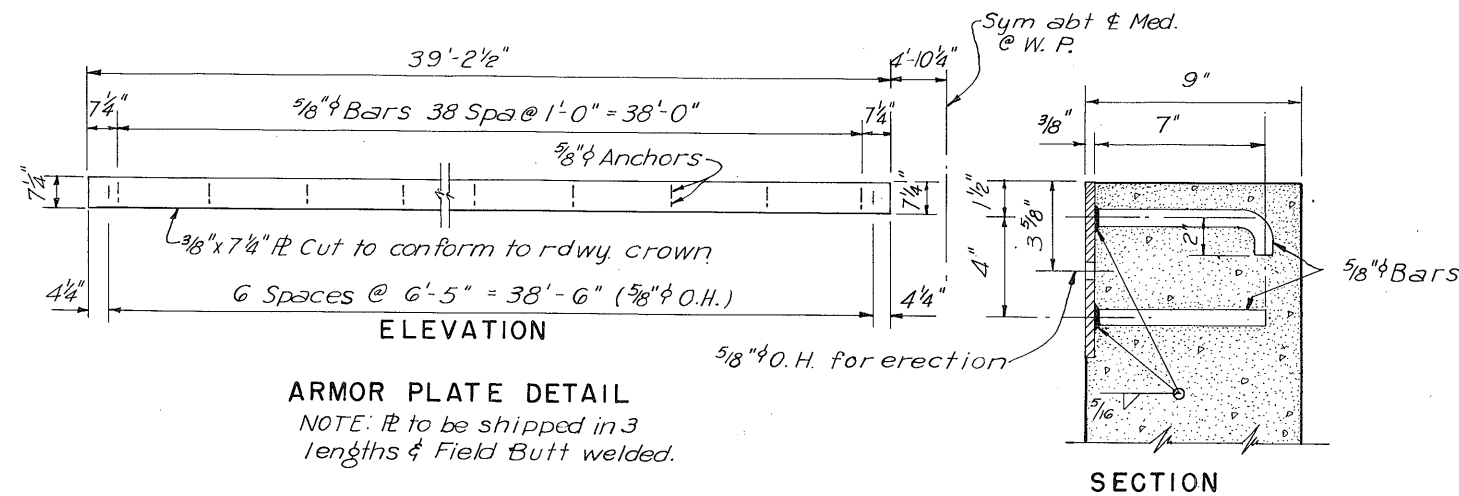
BARS E



BARS M



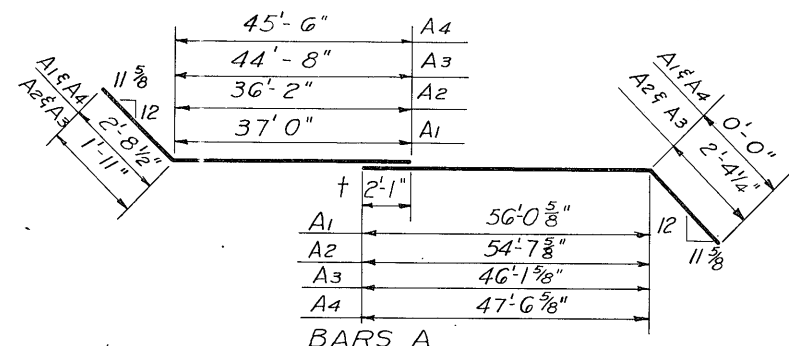
BARS S



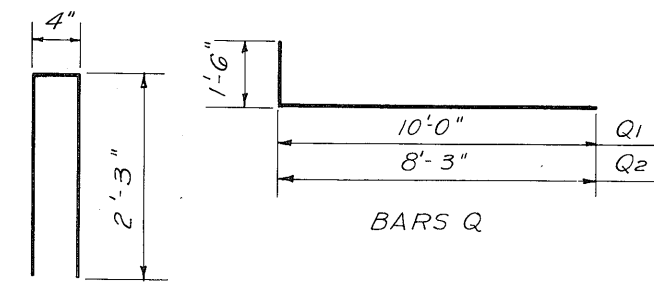
ARMOR PLATE DETAIL

NOTE: Pl to be shipped in 3 lengths & Field Butt welded.

SECTION

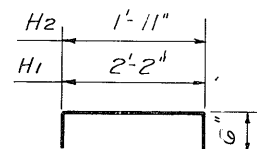


BARS A

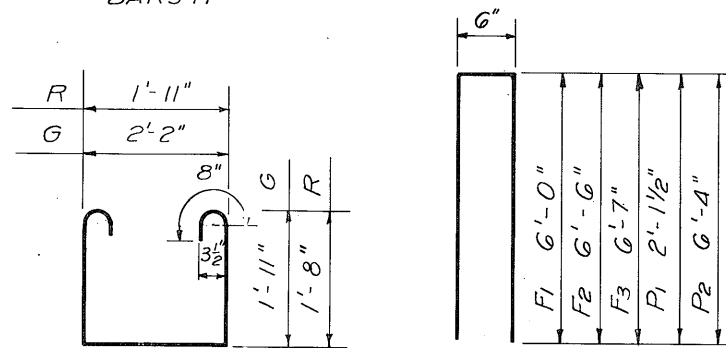


BARS N

† Includes 20 dia. tap

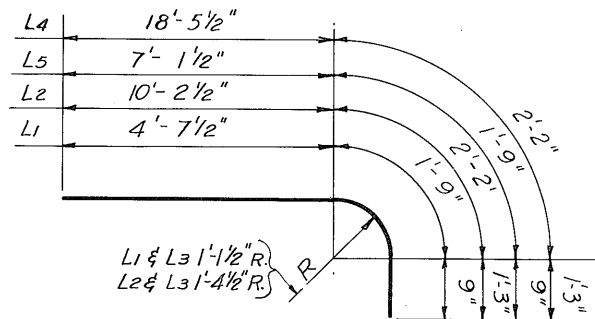


BARS H

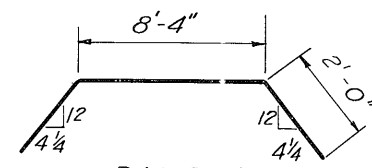


BARS G & R

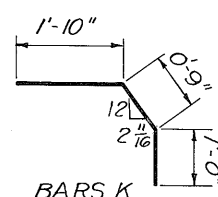
BARS F & P



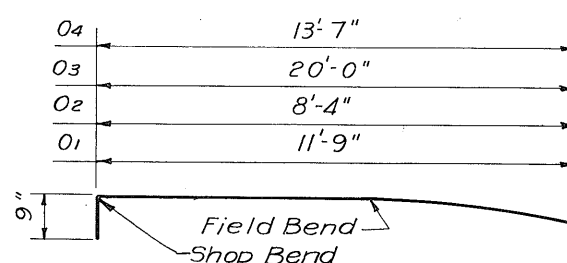
BARS L



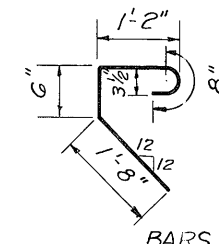
BARS J



BARS K



BARS O



BARS V

BILL OF REINFORCING STEEL FOR ONE ABUTMENT BENT

Bar	No.	Size	Spac.	Length	Weight
†A1	1	#10	Shown	95'-9"	412
†A2	1	#10	Shown	95'-0"	409
†A3	1	#10	Shown	95'-0"	409
†A4	1	#10	Shown	95'-9"	412
B	4	#11	Shown	9'-0"	191
C	2	#10	Shown	8'-0"	69
D	2	#11	Shown	14'-0"	149
†E1	3	#5	Shown	94'-2"	294
†E2	2	#5	Shown	94'-1"	196
†E3	2	#5	Shown	94'-1"	196
F1	80	#5	12"±	12'-6"	1043
F2	8	#5	12"±	13'-6"	113
F3	6	#5	12"±	13'-8"	86
G	80	#4	12"±	7'-1"	378
H1	71	#4	Shown	3'-2"	150
H2	13	#4	2'-0"	2'-11"	25
J	2	#5	6"	12'-4"	26
K	4	#5	6"	3'-7"	15
L1	1	#5	Shown	7'-2"	7
L2	2	#5	Shown	13'-7"	28
L3	1	#5	Shown	9'-8"	10
L4	2	#5	Shown	21'-10"	46
M	12	#4	12"±	7'-8"	61
N	16	#4	12"±	4'-10"	52
O1	6	#5	7 1/2"±1'3"	12'-6"	78
O2	6	#5	7 1/2"±1'3"	9'-1"	57
O3	6	#5	7 1/2"±1'3"	20'-9"	130
O4	6	#5	7 1/2"±1'3"	14'-4"	90
P1	11	#4	12"±	4'-9"	35
P2	22	#4	12"±	13'-2"	194
Q1	2	#8	Shown	11'-6"	61
Q2	2	#8	Shown	9'-9"	52
R	21	#4	2'-0"	6'-4"	89
S1	2	#8	Shown	15'-9"	84
S2	2	#8	Shown	16'-0"	85
T	10	#5	12"±	2'-3"	23
V	92	#4	12"±	3'-10"	236
Total Wt.				Lbs.	5993

TOTAL QUANTITIES FOR ONE ABUT. BENT

ITEM	UNIT	QUANTITY
Concrete Class "A"	Cu Yds	414
Reinforcing STEEL	Lbs.	5993
Structural STEEL (2Ar Rls)	Lbs.	826
Structural Excavation	Cu Yds	430

GENERAL NOTES:

Designed H20-S16-44 Loading in accordance with A.A.S.H.O. 1953 Standard Specifications and T.H.D. Supplement No. 1.

All concrete shall be Class A. Chamfer all exposed corners 3/4" unless other wise shown.

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

Average calculated Footing Pressure = 6.7 1/2'.

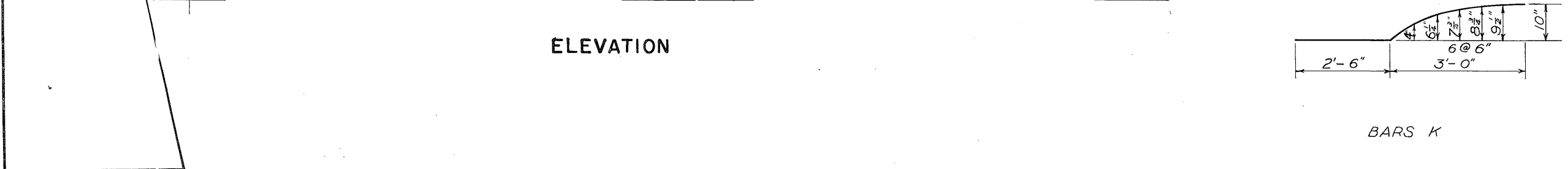
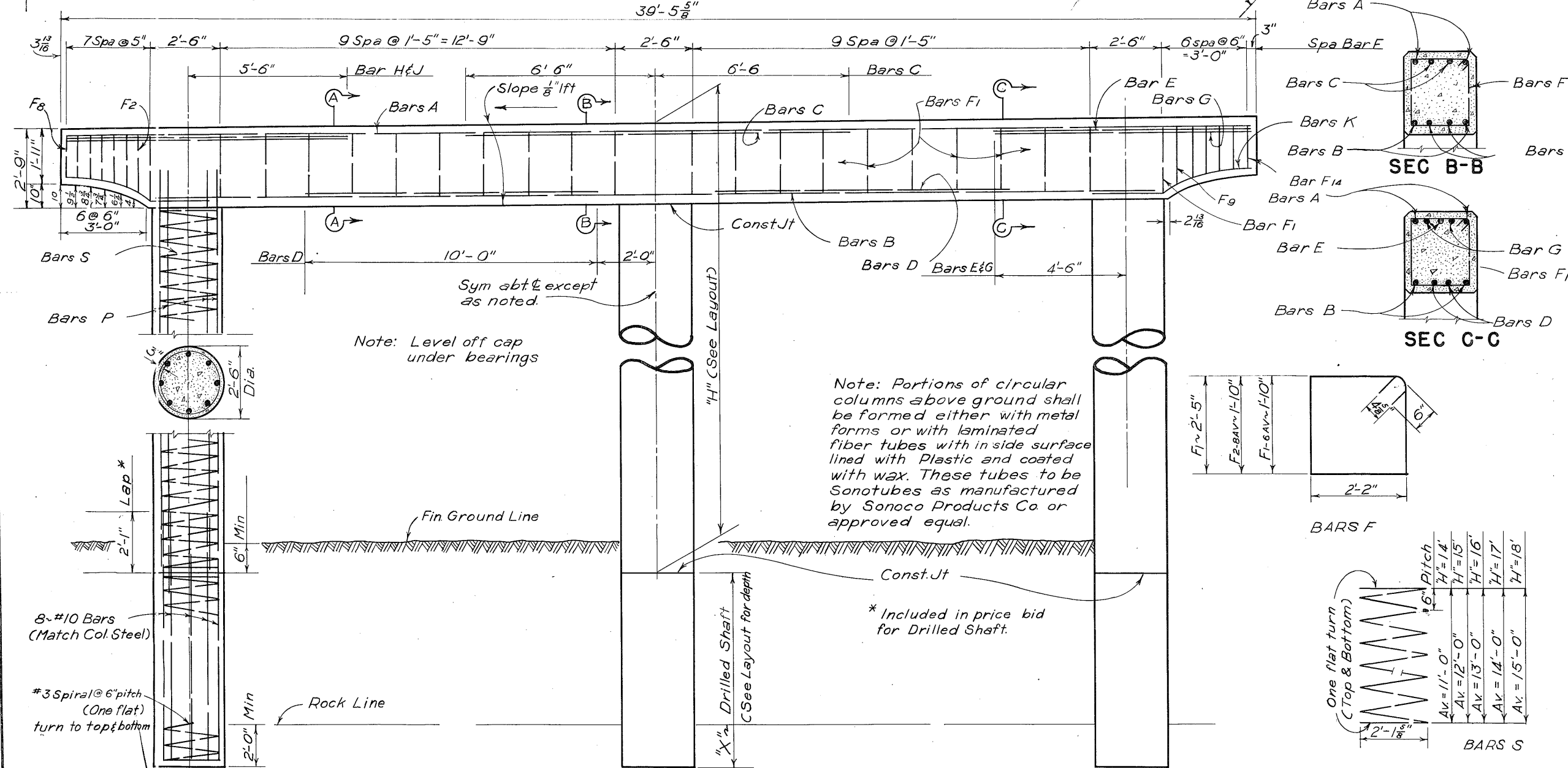
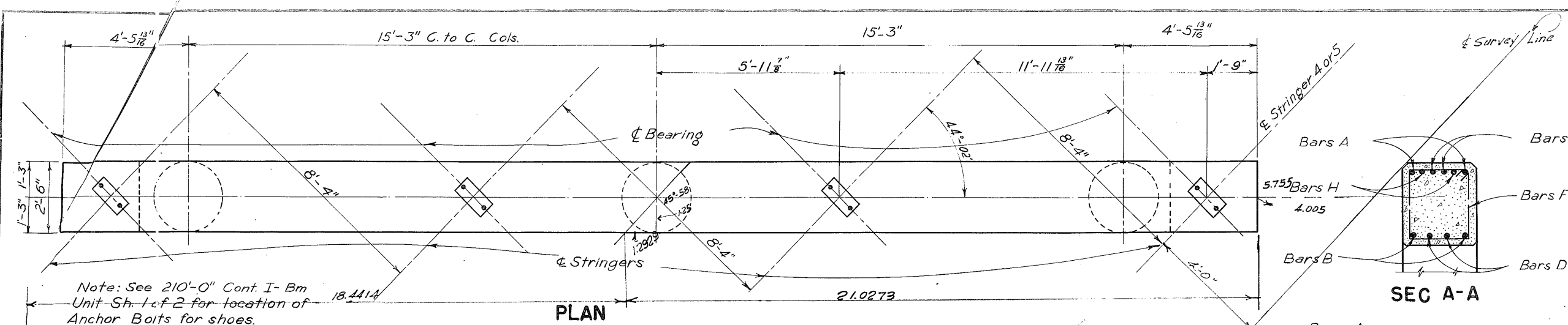
TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS

NO'S 1 & 5

45° 58' R.F. SKEW
2-28'-0" RDWYS. 6'-0" MED. 18" CURBS
U.S. 81 BUSINESS ROUTE OVERPASS

Sheet 2 of 2

DN. - RR	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. -	Original	Oct. 1954	6	TEXAS	F1-1028 (2)	182
DW. - HM						
CK. DW. - JEA						
TR. - MC						
CK. TR. - HM						
STATE DIST. NO.	COUNTY	SECTION NO.	JOB NO.	HIGHWAY NO.		
15	BEXAR	17	10	13	US 81	



BILL OF CONSTANT REINF STEEL

Bar	No.	Size	Spa.	Length	Weight
A	2	#10	~	39'-2"	337
B	2	#10	~	33'-0"	284
C	2	#10	~	13'-0"	112
D	4	#11	~	10'-0"	212
E	1	#10	~	8'-9"	38
F	22	#5	shown	10'-3"	235
F2-8	7	#5	"	Av 9'-4"	66
F9-14	6	#5	"	Av 9'-1"	57
G	2	#9	~	8'-9"	60
H	2	#10	~	9'-9"	84
J	2	#9	~	9'-9"	66
K	4	#9	~	5'-10"	35
					1629
					4586

1022

BILL OF VARIABLE REINF STEEL

"H"	3~#3 Bars S	24~#10 Bars P	Total
Length	Weight	Length	Weight
14'	161	13'-4"	1538
15'	175	14'-4"	1677
16'	188	15'-4"	1795
17'	202	16'-4"	1914
18'	215	17'-4"	2005

ESTIMATED QUANT.

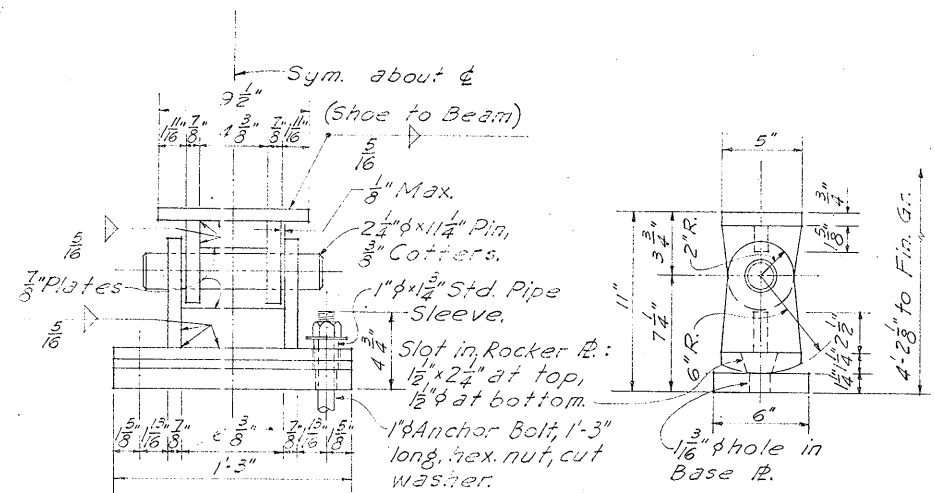
"H"	C.I.A Conc. C.Y.	Reinf Steel Lb.
14'	15.9	3124
15'	16.5	3263
16'	17.0	3381
17'	17.6	3500
18'	18.1	3591

3306
3424

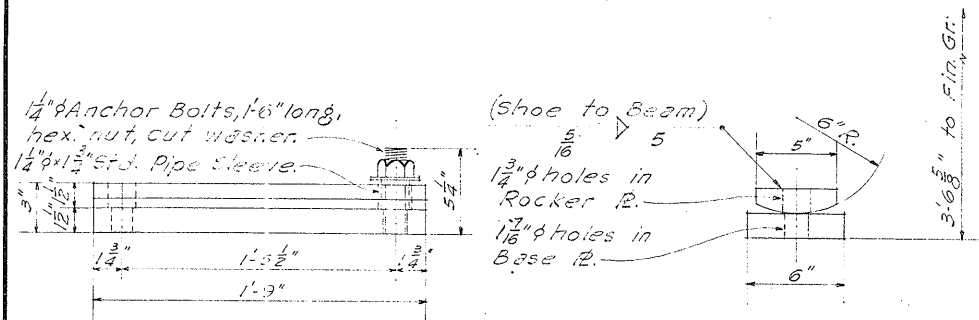
GENERAL NOTES:
 Design: H20-S16-44 Loading in accordance with A.A.S.H.O 1953 Standard Specifications & T.H.D. Supplement No. 1.
 All concrete shall be Class A. Chamfer exposed corners 3/4" unless otherwise noted.
 Dimensions relating to reinforcing steel are to centers of bars.
 Design stress for reinforcing steel = 20,000 PSI.
 Average calculated footing pressure = 14.3 ^t/sq.
 Designed for use with 210' Cont I-Bm Unit 2-28' Rdwys. 6'-0" Median 18" Curbs

TEXAS HIGHWAY DEPARTMENT
INTERIOR BENTS
 U.S. 81 BUSINESS ROUTE OVERPASS

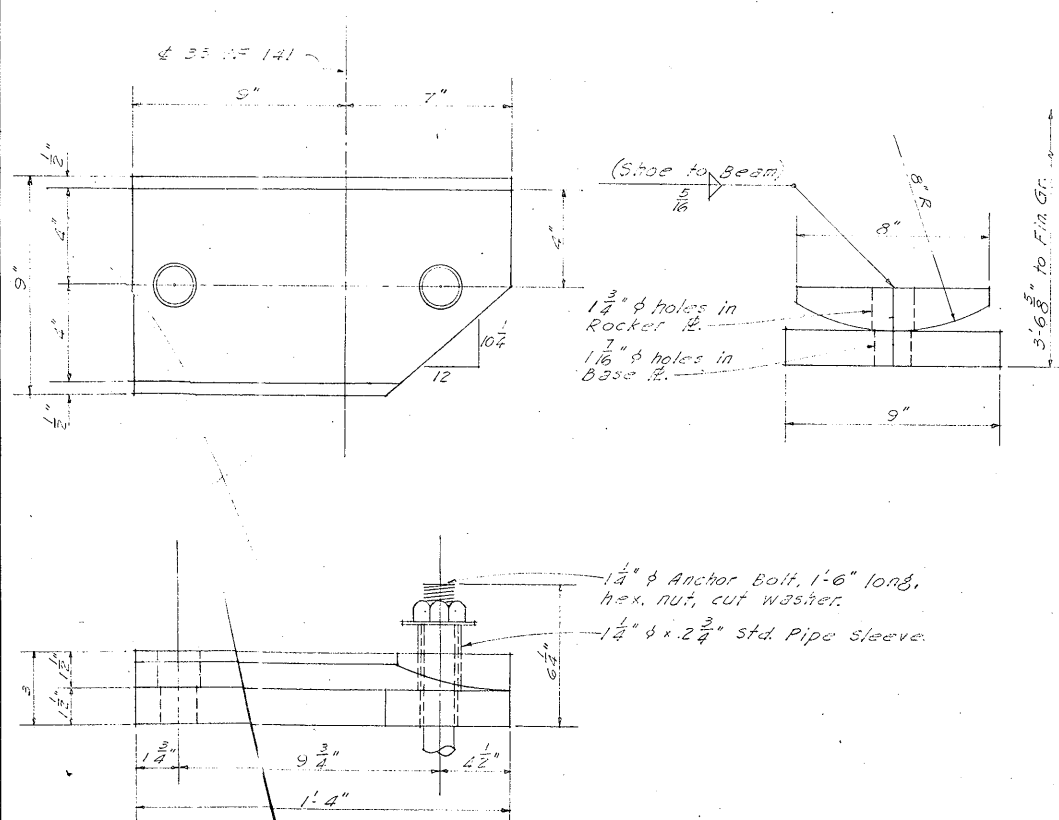
DN. - RLR	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. - JEA	Original	Sept. 1954	6	TEXAS	F1-1088(2)	183
CK. DW. - JEA						
TR. - J.K.						
CK. TR. - WES						



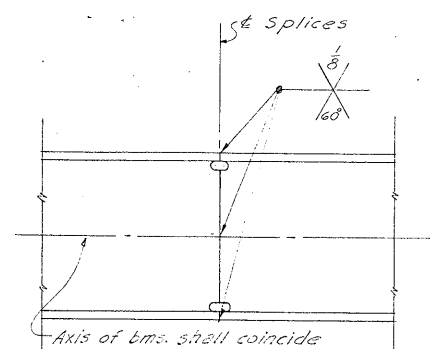
END EXPANSION SHOE



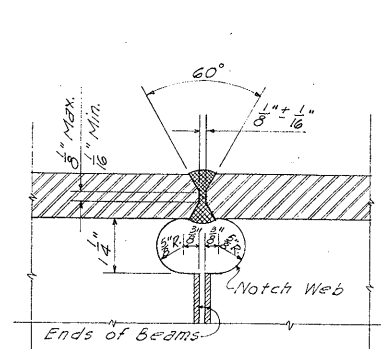
INTERIOR FIXED SHOE



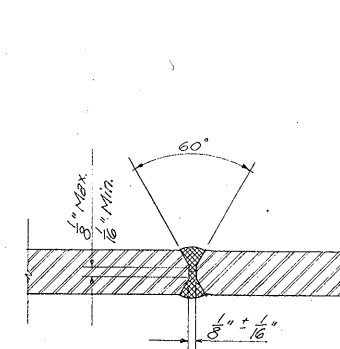
INTERIOR FIXED SHOE
 (Beam No. 1, Bent No. 3)



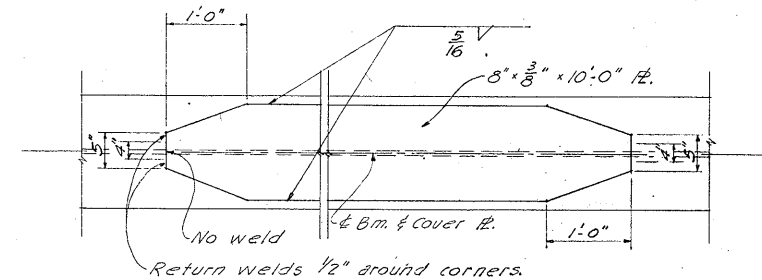
ELEVATION



SECTION THRU FLANGE SPLICE



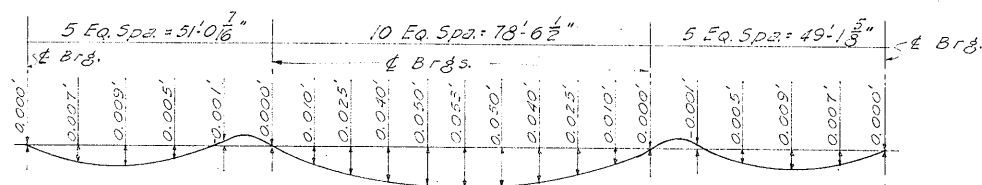
SECTION THRU WEB SPLICE



COVER PLATE DETAIL

BEAM SPLICE DETAILS

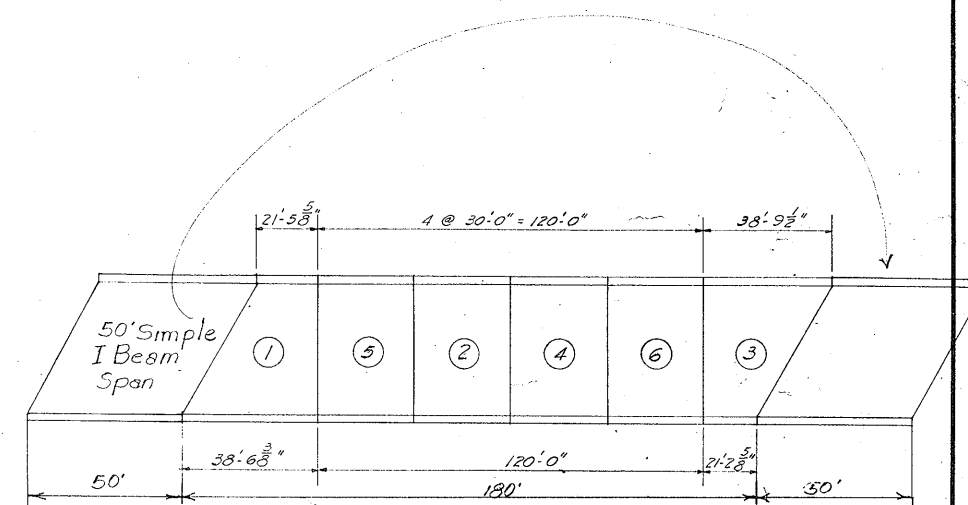
Ends of beam to be welded shall be prepared in the shop taking into account their relative positions in the finished structure due to grade, camber and curvature. Each splice shall be completely shop-assembled, checked and matched marked while assembled by stamping in the metal. Extension bars shall be used in making the butt welds in the flanges as per A.W.S. Specification Sect. 604 (f) & 606 (e).



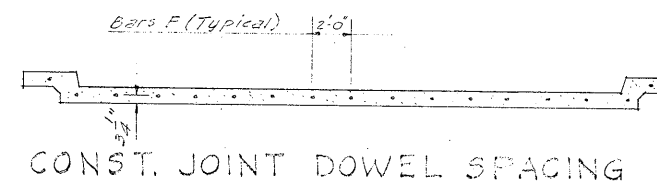
DEAD LOAD DEFLECTION DIAGRAM

(For concrete & Rail only)

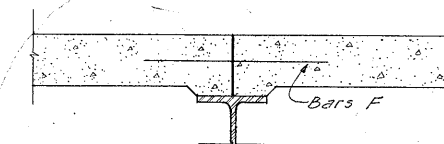
Note: For Construction Procedure see 50' I-Bm Span No. 1



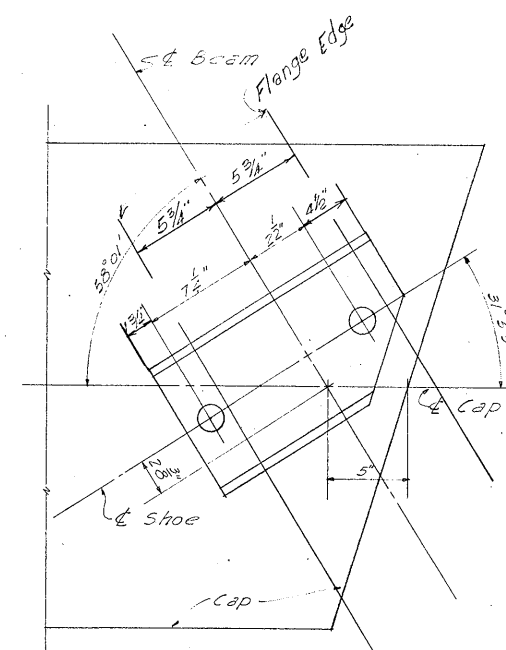
CONCRETE PLACING SEQUENCE



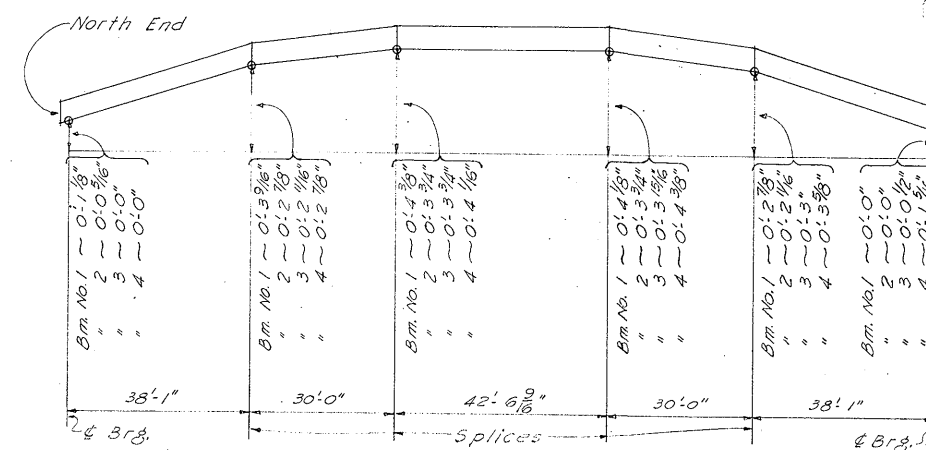
CONST. JOINT DOWEL SPACING



CONSTRUCTION JOINT DETAIL
 (Through Slab and Curb)



SHOE LOCATION

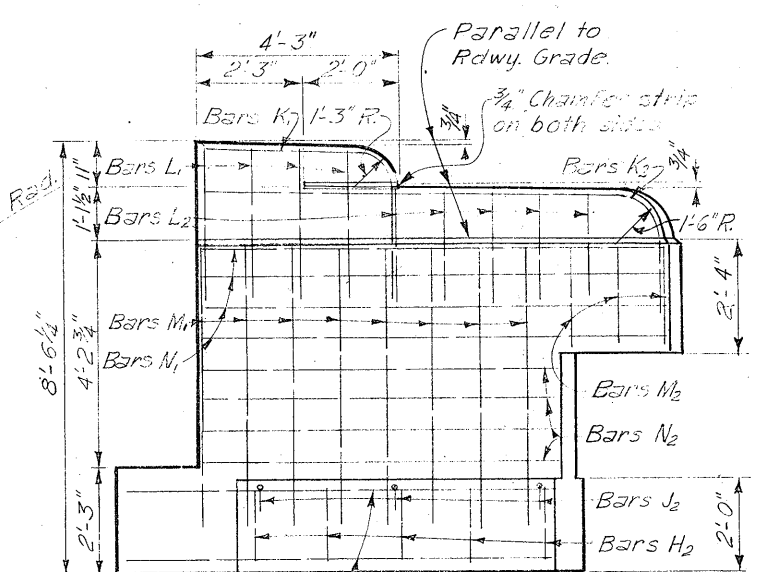
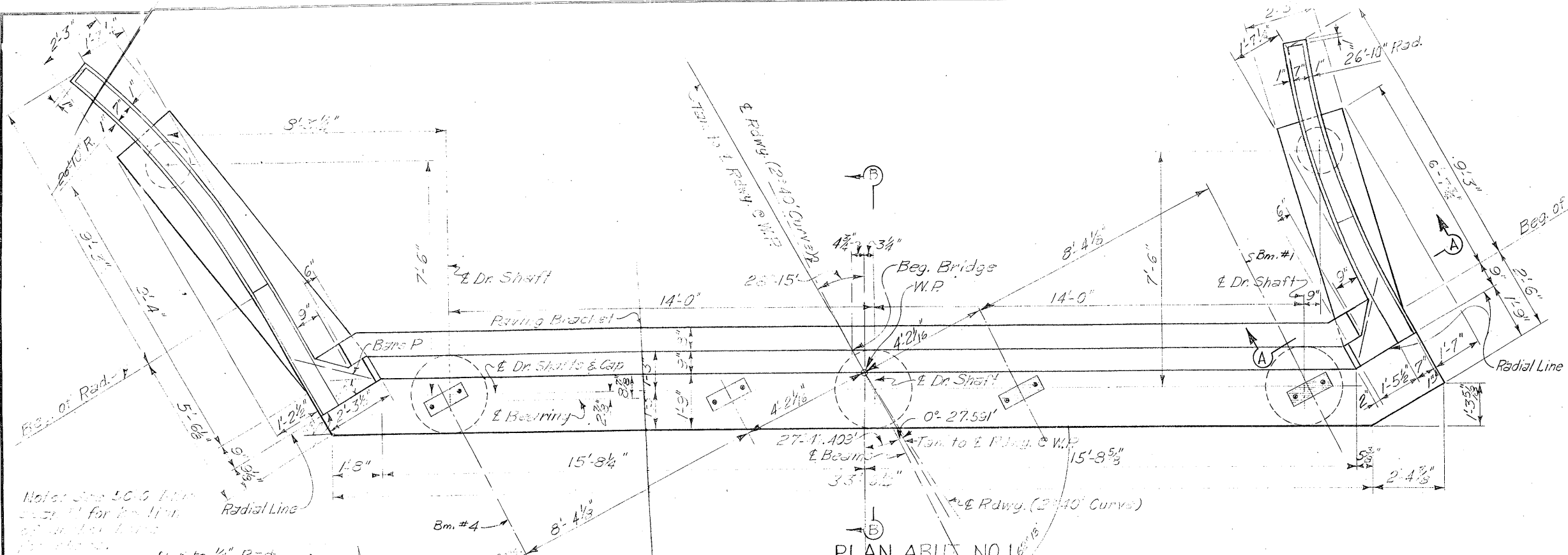


CAMBER BLOCKING DIAGRAM

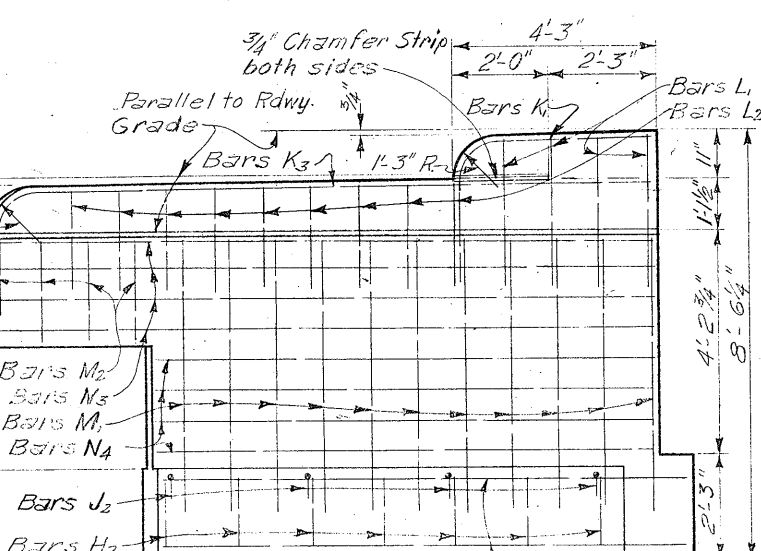
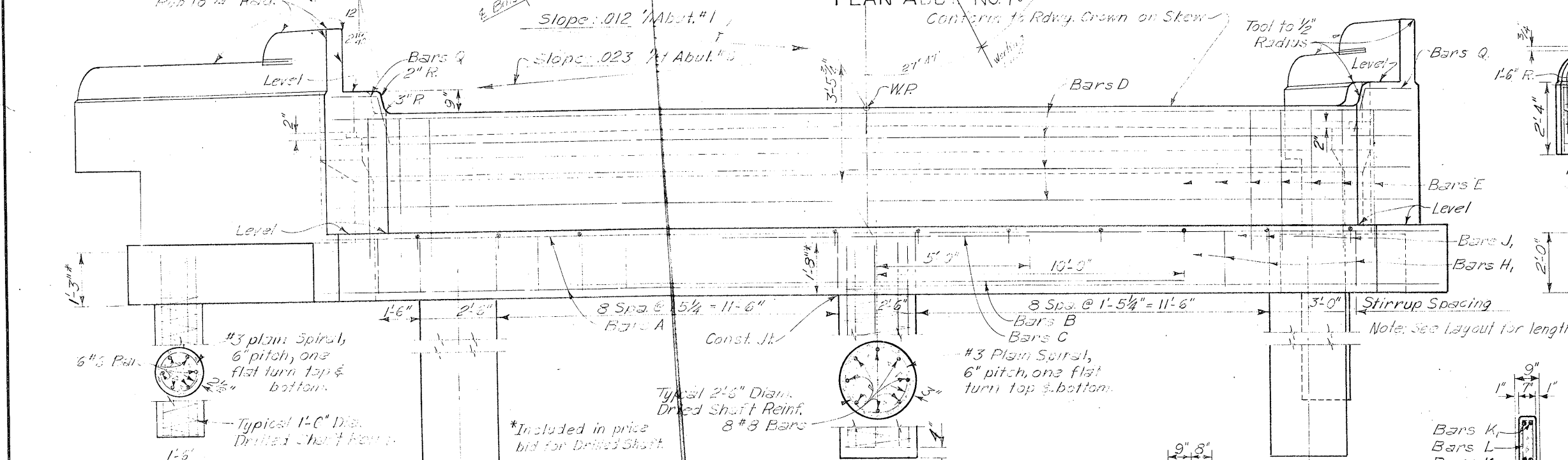
TEXAS HIGHWAY DEPARTMENT
 180'-0" CONT. I-BM UNIT
 (50.73'-78.54'-50.73')
 28'-0" RDWY. ~ 18" CURBS
 3 LEVEL INTERCHANGE
 SOUTH BOUND U.S. 81 ~ 3RD. LEVEL

Sheet 2 of 2

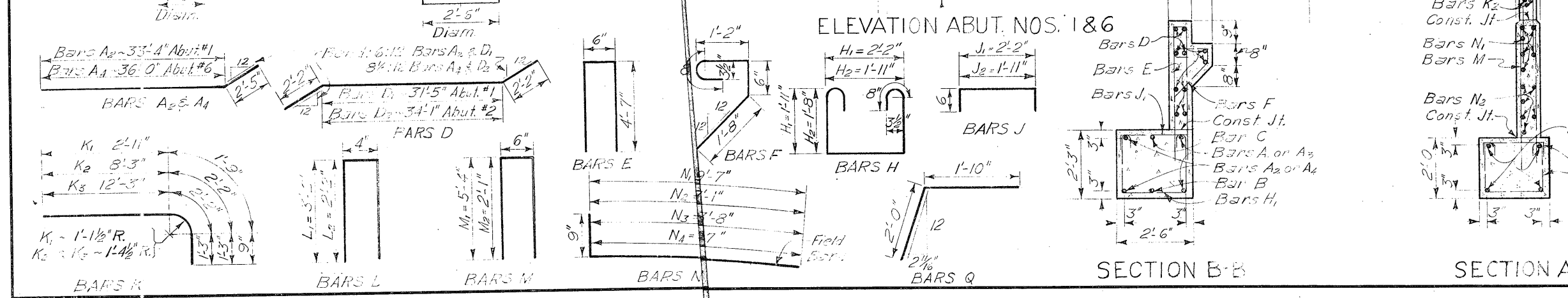
DN.	WH.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.		ORIGINAL	FEB. 1955	6	TEXAS	F-31(18)	185
DR.	H.J.D.	Rev. April, 1955	H.J.D.				
CK. DW.							
TR.							
CK. TR.							
				15	BEXAR	16 7 26	US 81



SIDE ELEVATION



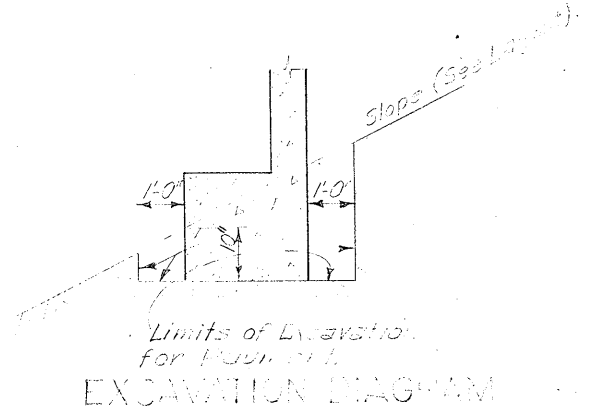
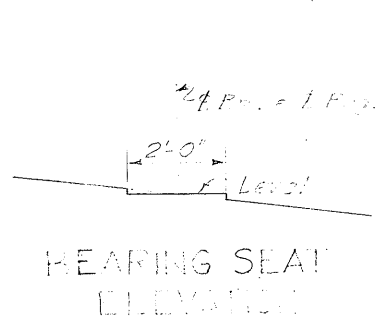
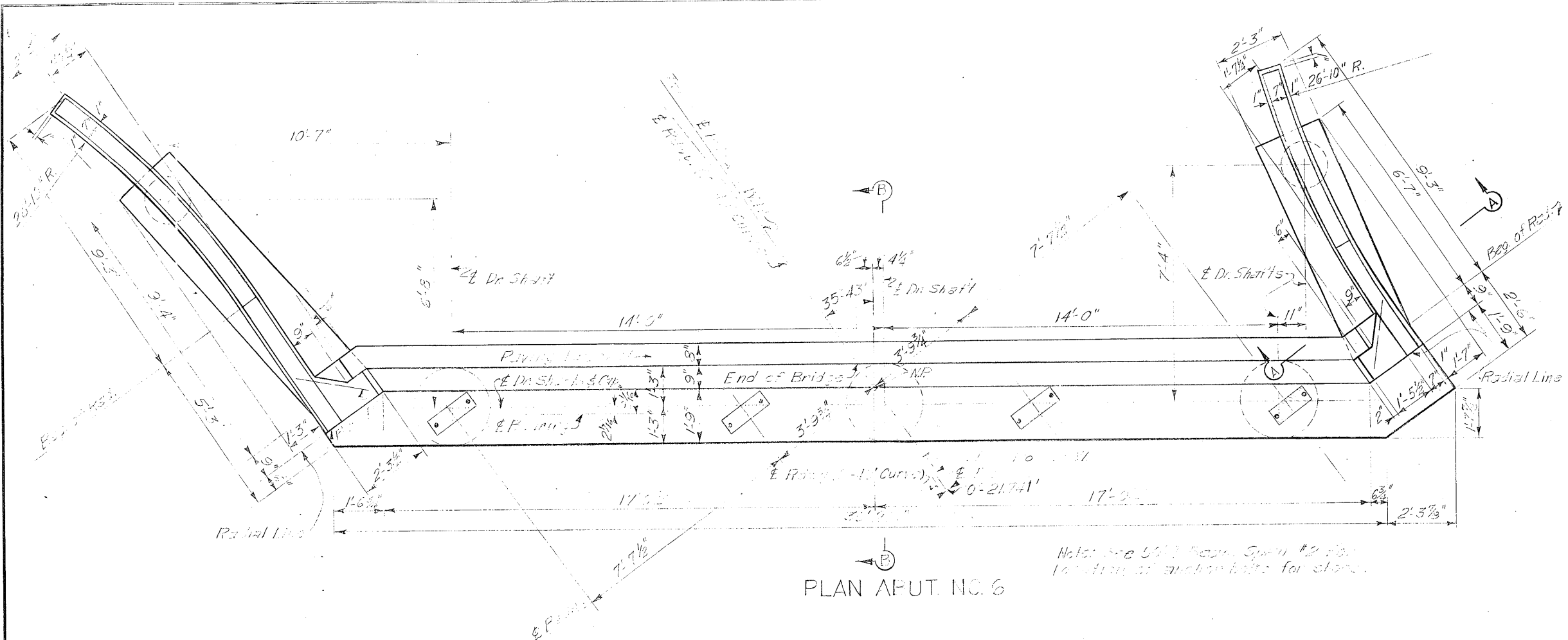
SIDE ELEVATION



TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS NO. 1 & 6
 28'-0" RDWY. ~2°40' CURVE ~18" CURBS
 3 LEVEL INTERCHANGE
 SOUTHBOUND U.S. 81 ~3RD LEVEL

Sheet 1 of 2

DN. - THD	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. - GEM	ORIGINAL	MAR. 55	6	TEXAS	F-31 (13)	158
CK. DW. - JEA	Rev. 3-55	G.E.M.				
TR.			STATE DIST. NO.	COUNTY	CONTRACT NO.	JOB NO.
CK. TR. -			15	BEXAR	16	7 20 4331



BILL OF REINFORCING STEEL						
Bar	No.	Size	Spacing	Length	Weight	
					Abut #1	Abut #6
A ₁	2	#9	~	36'-4"	247	
A ₂	2	#9	~	35'-5"	243	
A ₃	2	#9	~	39'-3"		267
A ₄	2	#9	~	38'-5"		261
B	1	#11	~	20'-0"	106	103
C	1	#10	~	10'-0"	43	43
D ₁	10	#5	~	35'-9"	373	
D ₂	10	#5	~	38'-5"		401
E	35	#5	1'-0" ±	9'-8"	353	353
F	35	#5	1'-0" ±	3'-10"	90	90
G ₁	4	#3	~	9'-0"	122	122
G ₂	4	#3	~	10'-6"	143	143
H	21	#4	Shown	7'-1"	99	99
H ₂	12	#4	1'-6"	6'-4"	51	51
J	12	#4	3'-0"	3'-2"	25	25
J ₂	7	#4	3'-0"	2'-11"	14	14
K	4	#5	~	5'-5"	23	23
K ₂	2	#5	~	11'-8"	24	24
K ₃	3	#5	~	15'-8"	34	33
L	8	#5	1'-0"	6'-8"	53	53
L ₂	14	#5	1'-0"	4'-8"	68	63
M	19	#5	11" ±	11'-2"	221	221
M ₂	7	#5	11" ±	4'-8"	34	34
N	6	#5	7'-5 1/2"	10'-4"	65	65
N ₂	6	#5	7'-5 1/2"	7'-10"	49	49
N ₃	6	#5	7'-5 1/2"	14'-5"	90	90
N ₄	6	#5	7'-5 1/2"	12'-4"	65	65
P	10	#5	1'-0"	2'-5"	26	26
Q	4	#5	~	3'-10"	16	16
Totals					2679	2745

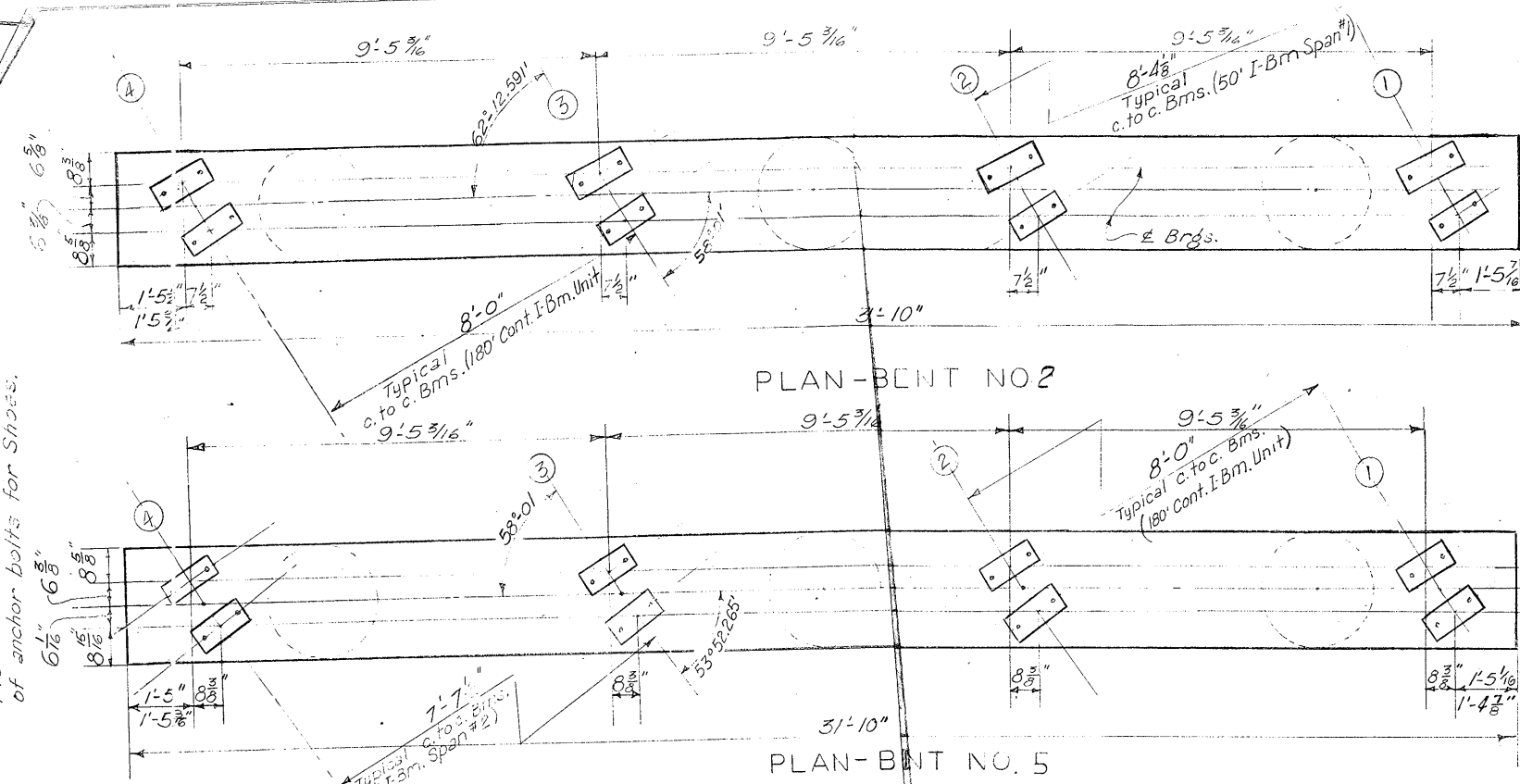
ESTIMATED QUANTITIES			
Item	Unit	Quantity	
		Abut #1	Abut #6
Class A Concrete	C.Y.	17.7	18.6
Reinf. Steel	Lbs.	2679	2745
Uncl. Struct. Excan.	C.Y.	29	30

GENERAL NOTES:
 Design H20-44 Loading in accordance with AASHTO 1953 Specifications & T.H.D. Supplement No.1.
 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. Design stress for reinforcing steel = 20,000 psi.
 Average calculated footing pressure = 9.07^{1/2}

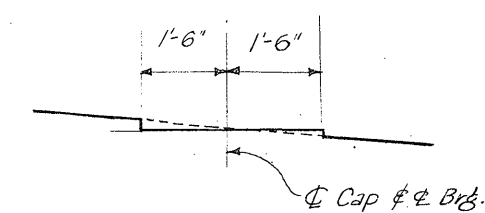
TEXAS HIGHWAY DEPARTMENT
 ABUTMENT BENT NOS. 1 & 6
 28'-0" RDWY. ~ 2'-40' CURVE 18" CURBS
 3 LEVEL INTERCHANGE
 SOUTHBOUND US. 81 3RD. LEVEL
 Sheet 2 of 2

DN. T.H.D.	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DWG. J.E.A.	ORIGINAL	MAR. 1955	6	TEXAS	F-31 (18)	139
TR. & C.K. TR.	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
	15	BEXAR	16	7	26	US. 81

See 50' I-Bm. Spans No. 1 & 2
& 180' Cont. I-Bm. Unit for location
of anchor bolts for Shoes.

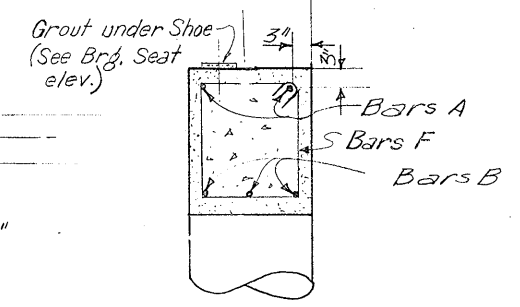


A-E Cap

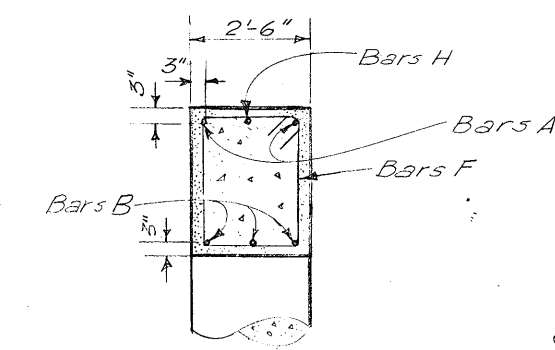


BEARING SEAT DETAIL

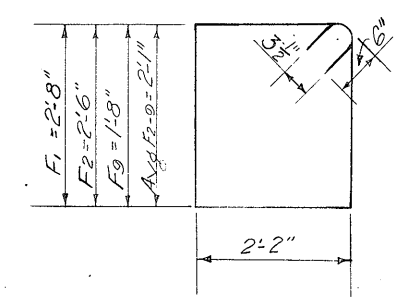
50'-I-Bm. Span
180' Unit



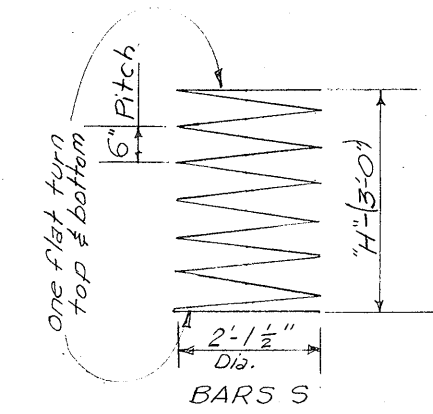
SEC. B-B



SEC. A-A



BARS F



BARS G

BILL OF VARIABLE REINF. STEEL

"H"	3-#3 Spiral Bars S	24-#9 Bars P	Total Weight
Length	Weight	Length	Weight
18'	214'-0"	17'-0"	1628
19'	228'-0"	18'-0"	1726
20'	241'-0"	19'-0"	1822
21'	254'-0"	20'-0"	1919
22'	268'-0"	21'-0"	2016
23'	281'-0"	22'-0"	2112
24'	295'-0"	23'-0"	2210
25'	308'-0"	24'-0"	2305

BILL OF CONSTANT REINF. STEEL

Bar	No.	Size	Spa.	Length	Weight
A	2	#11	~	31'-6"	335
B	3	#9	~	25'-10"	263
F1	22	#5	Shown	10'-0"	247.245
F2-9	16	#5	~	8'-5"	169.159
G	4	#6	~	4'-6"	27
H	2	#11	~	8'-5"	89
Total					Lbs. 1118

ESTIMATED QUANTITIES

"H"	Class A Reinf. Conc. C.Y.	Reinf. Steel Lbs.
18'	16.8	2749
19'	17.4	2847
20'	17.9	2943
21'	18.5	3040
22'	19.0	3137
23'	19.6	3233
24'	20.1	3331
25'	20.7	3426

GENERAL NOTES ~
Design H20-44 loading in accordance with A.A.S.H.O 1953 Standard Specifications and T.H.D. Supplement No. 1.
All concrete shall be Class A.
Chamfer exposed corners 3/4" unless otherwise noted.
Dimensions relating to reinforcing steel are to centers of bars.
Design Stress for reinf. Steel = 20,000 p.s.i.
Avg. Calc. footing pressures = 10.7 T/sq'.

TEXAS HIGHWAY DEPARTMENT
TRANSITION BENTS 2&5
THREE-LEVEL INTERCHANGE,
SOUTHBOUND U.S. 81-3RD LEVEL

DN. - T.H.D.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DW. - WES	Original Feb. 1955		6	TEXAS	F31 (13)	130
CK. DW. - J.E.A.	Rev. 4-27-55					
TR. -	R.N.S.					
CK. TR. -						

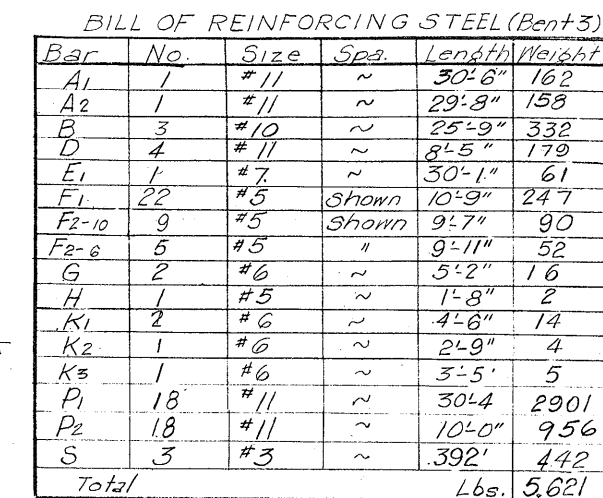
*Included in bid price for Drilled Shaft

8 #9 Bars (Match Col. Steel Rock Line)

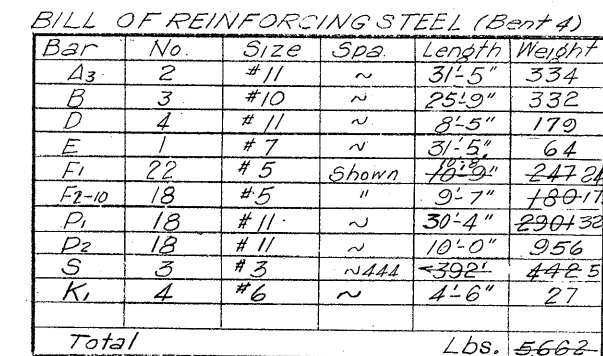
#3 Spiral @ 6" Pitch (One flat turn top & bott.)

Note: Portions of circular columns above ground shall be formed either with metal forms or with laminated fiber tubes with inside surfaces lined with plastic and coated with wax. These tubes to be Sonotubes as manufactured by Sonoco Products Co. or approved equal.

ELEVATION



Item	Unit	Quant.
Class A Concrete	Cu.Yd.	23.5
Reinforcing Steel	Lbs	5,621

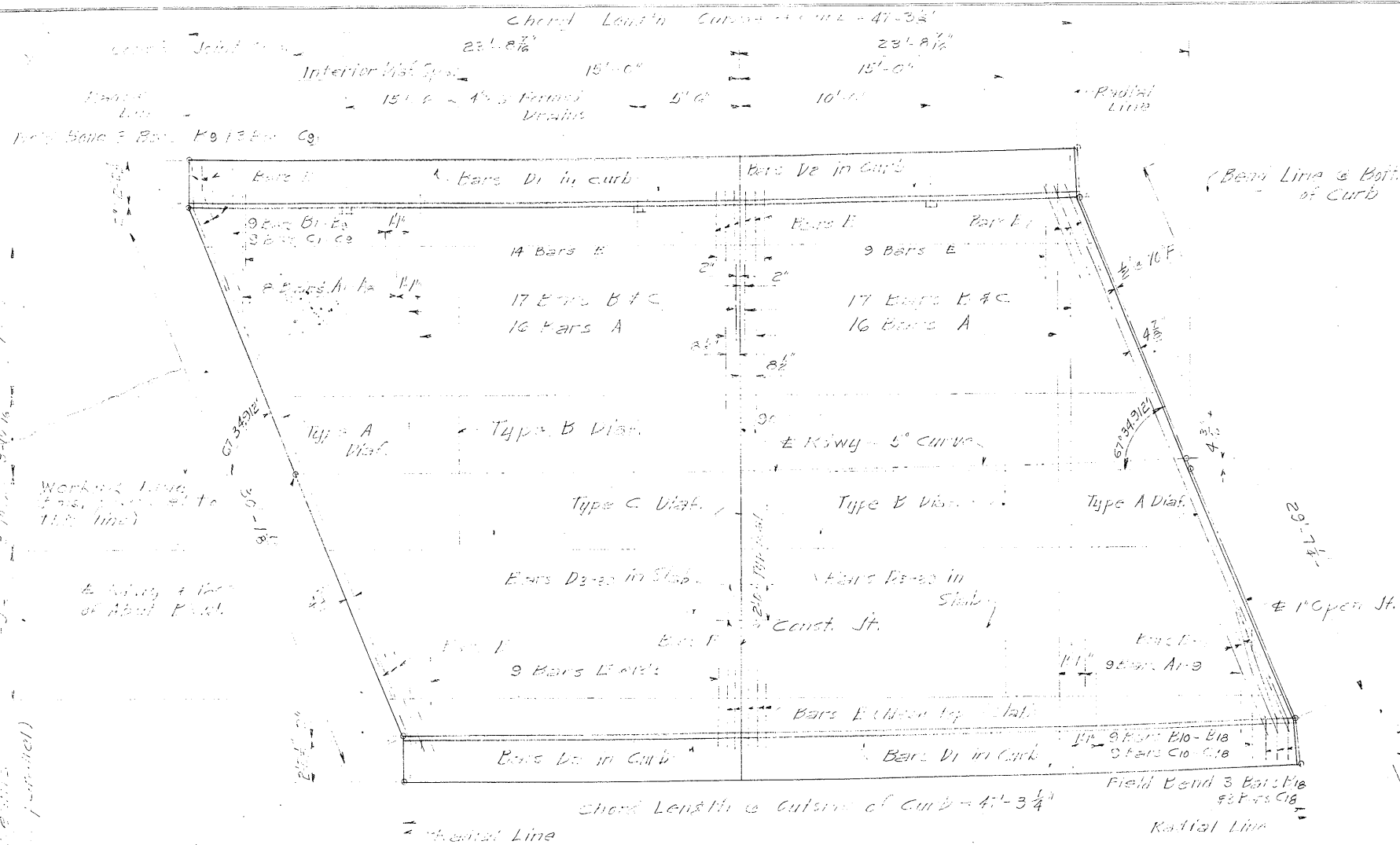


ESTIMATED QUANT. (Bent 4)			6100
Item	Unit	Quant	
Class A concrete	Cu. Yd.	25.82	
Reinforcing steel	Lbs.	5662.6	
"H" Changed from 32' to 36'			

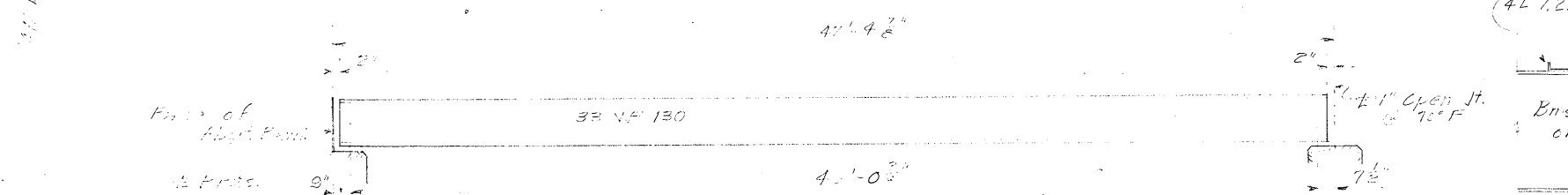
GENERAL NOTES~
Design H₂O loading in accordance with
A.A.S.H.O. 1953 Standard Specifications and
T.H.D. Supplement No. 1.
All concrete shall be class A. Chamfer
exposed corners $\frac{3}{4}$ " unless otherwise noted.
Dimensions relating to reinforcing steel
are to centers of bars.
Design stress for reinforcing steel = 20,000
Average calculated footing pressure = 16.0 $\frac{1}{2}$ "

INTERIOR BENTS 3-4
THREE-LEVEL INTERCHANGE
SOUTHBOUND U.S. 81 3RD LEVEL

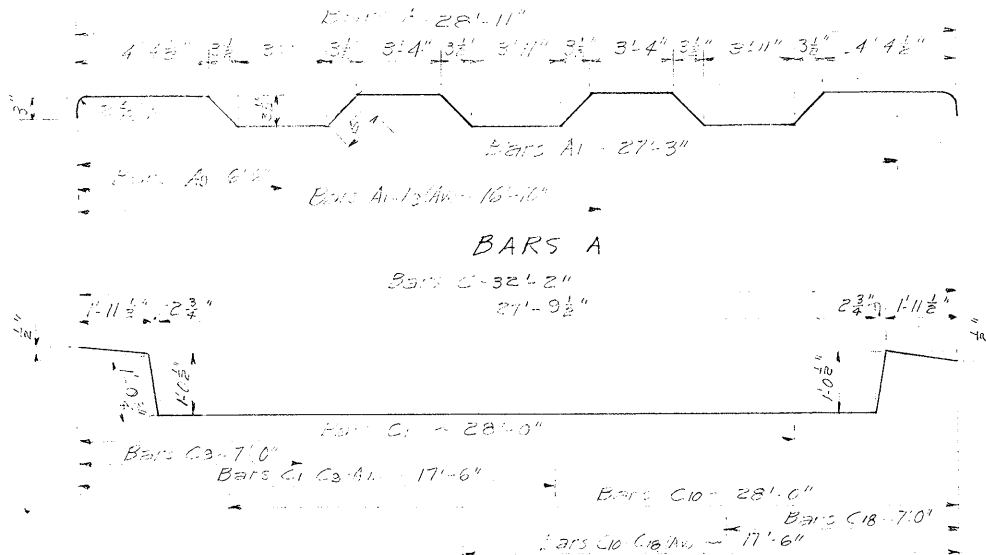
DN. <i>74D</i>	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.				SHEET NO.
CK. DN. <i>WES</i>	<i>ORIGINAL FEB. 1955</i>		6	TEXAS	<i>F-31 (13)</i>				<i>191</i>
CK. DW. <i>LEA</i>	<i>REV. 4-27-55, R.M.C.</i>		STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.	
TR. <i>LEA</i>			<i>15</i>	<i>BEXAR</i>	<i>16</i>	<i>7</i>	<i>20</i>	<i>US81</i>	
CK. TR. <i>LEA</i>									



PLAN



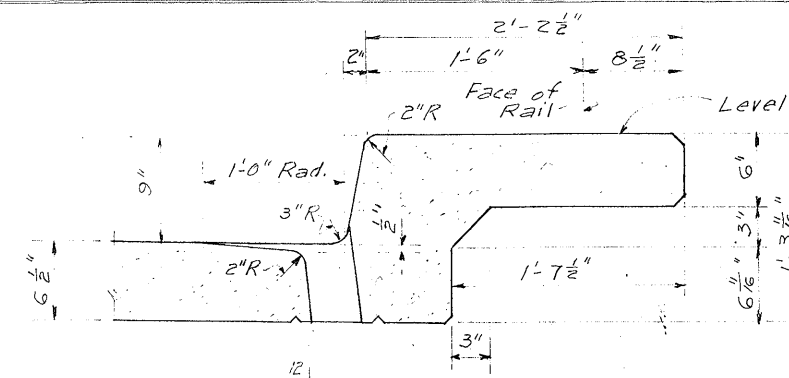
ELEVATION - ALL BEAMS



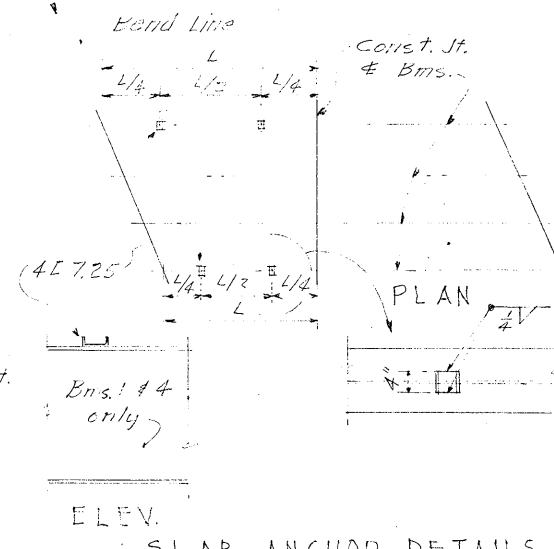
BAR S C

DEAD LOAD DEFLECTION DIAGRAM
(For Concrete and Rail only)

CONSTRUCTION PROCEDURE: After all structural steel is erected, an accurate measurement shall be made of the elevations of the beam flanges at all control points. Subsequent setting of forms, pouring and finishing of concrete shall be governed by these measurements only, taking into account the deflections shown above.



CURB AND DRAIN DETAIL



SLAB ANCHOR DETAILS

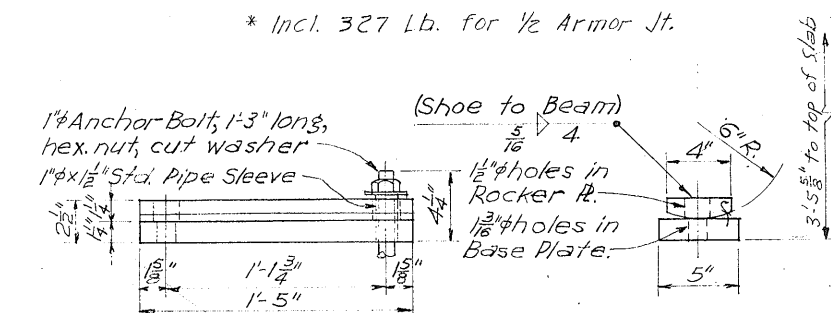
BILL OF REINFORCING STEEL					
Bar No.	Size	Spa.	Length	Weight	
A	3/4"	#5	30'-0"	1001	
A1-A9	1/2"	#5	13'-4"	330	
B	3/4"	#5	28'-11"	1026	
B1-B9	1/2"	#5	13'-4"	330	
B10-B18	1/2"	#5	13'-4"	330	
C	3/4"	#5	33'-10"	1200	
C1-C9	1/2"	#5	13'-4"	330	
C10-C18	1/2"	#5	13'-4"	330	
D	10	#5	29'-1"	303	
D1	10	#5	17'-8"	184	
D1-D33	7/4	#5	47'-3 3/4"	1814	
E	53	#6	7'-13 1/2"	398	
* F	17	#5	5'-0"	44	
* Y	16	#5	1'-11"	32	
Total				Lbs.	7158

* See yellow sheets attached to page 161
* See sheets attached to page 199

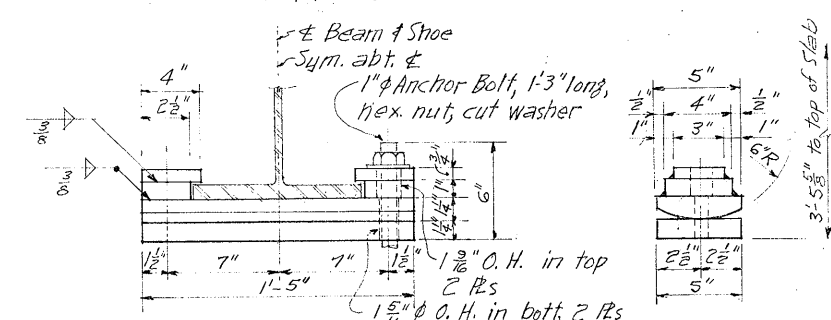
ESTIMATED QUANTITIES

Item	Units	Quantity
Class "A" Concrete	Cu. Yds.	32.5
Reinforcing Steel	Lbs.	7158
* Structural Steel	Lbs.	29,300
Type 3 Railing (Mod.)	Lin. Ft.	94.5

* Incl. 327 Lb. for 1/2 Armor Jt.



FIXED SHOE

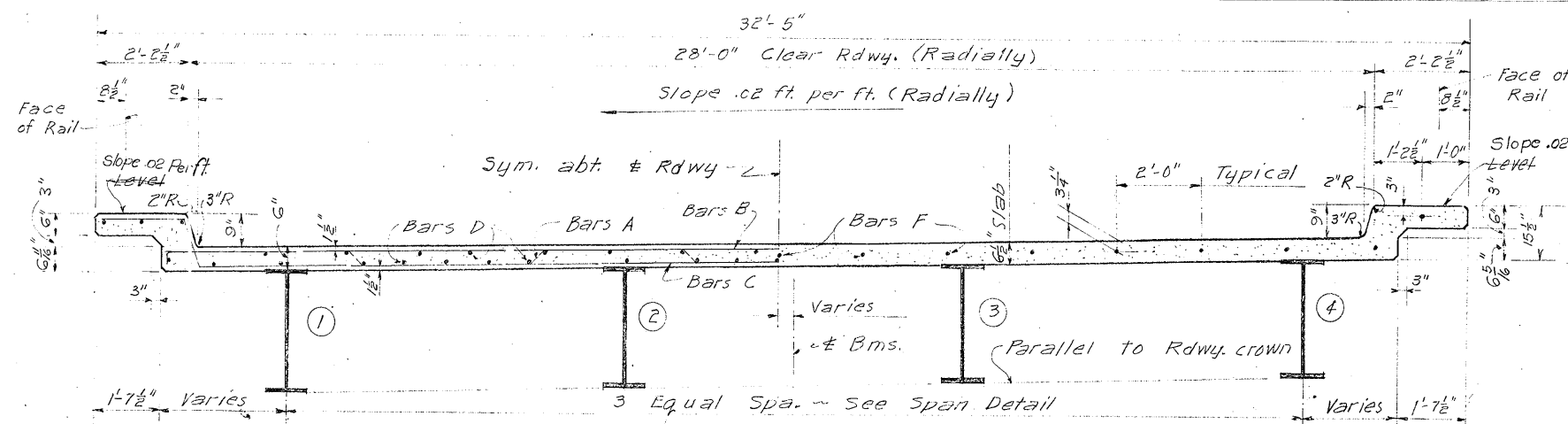


EXPANSION SHOE

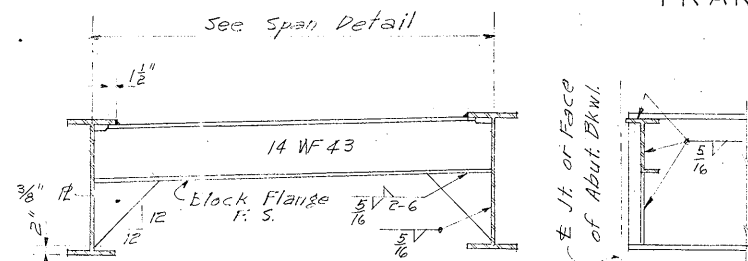
Note: Shoes shall be fabricated from structural steel. Surface finishes shall conform to A.S.A. Standard. Pins & Pin Holes #125. Rockers #250. Anchor bolt nuts shall be tightened and threads burred.

TEXAS HIGHWAY DEPARTMENT
47.75' SIMPLE I-BEAM SPAN 1
28'-0" RDWY. 18" CURBS
3 - LEVEL INTERCHANGE
CONN. "F" MIDDLE LEVEL

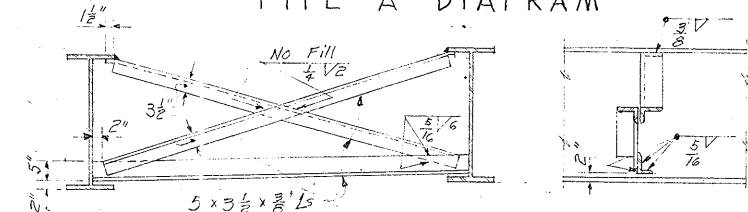
DN.	JE	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	ORIGINAL	FEB. 1955	6	TEXAS	F-31 (18)	192
15	BEXAR	16	7	22	U.S. 81		



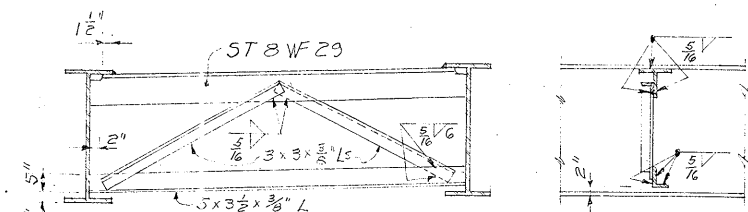
TRANSVERSE SECTION



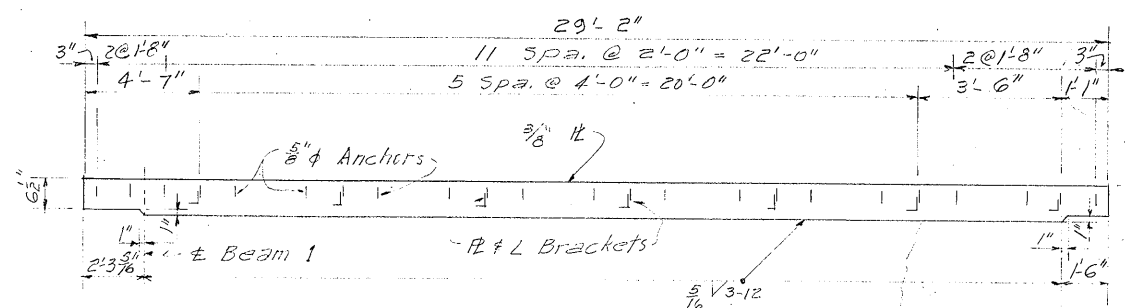
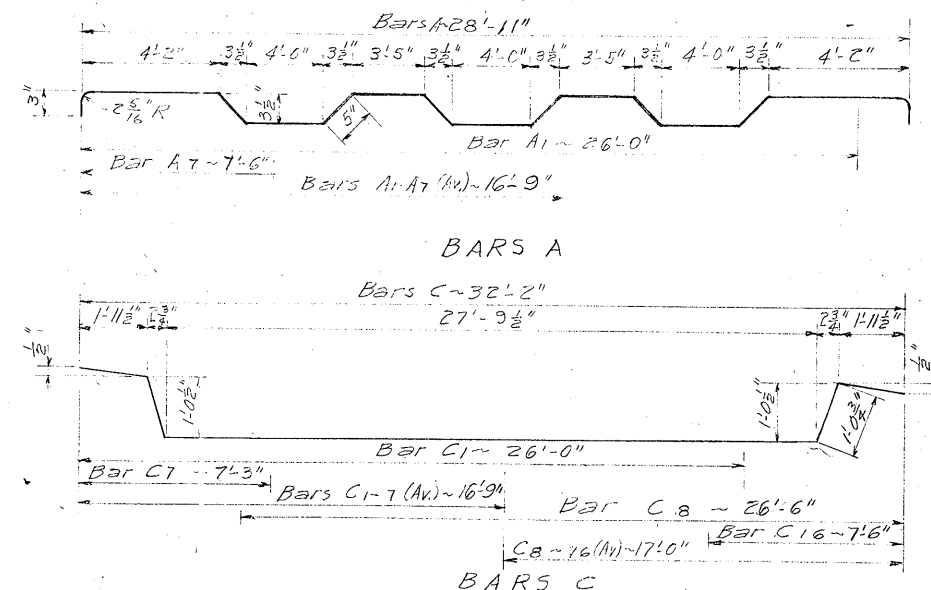
ELEVATION TYPE A DIAGRAM



ELEVATION TYPE B DIAGRAM



ELEVATION TYPE C DIAGRAM

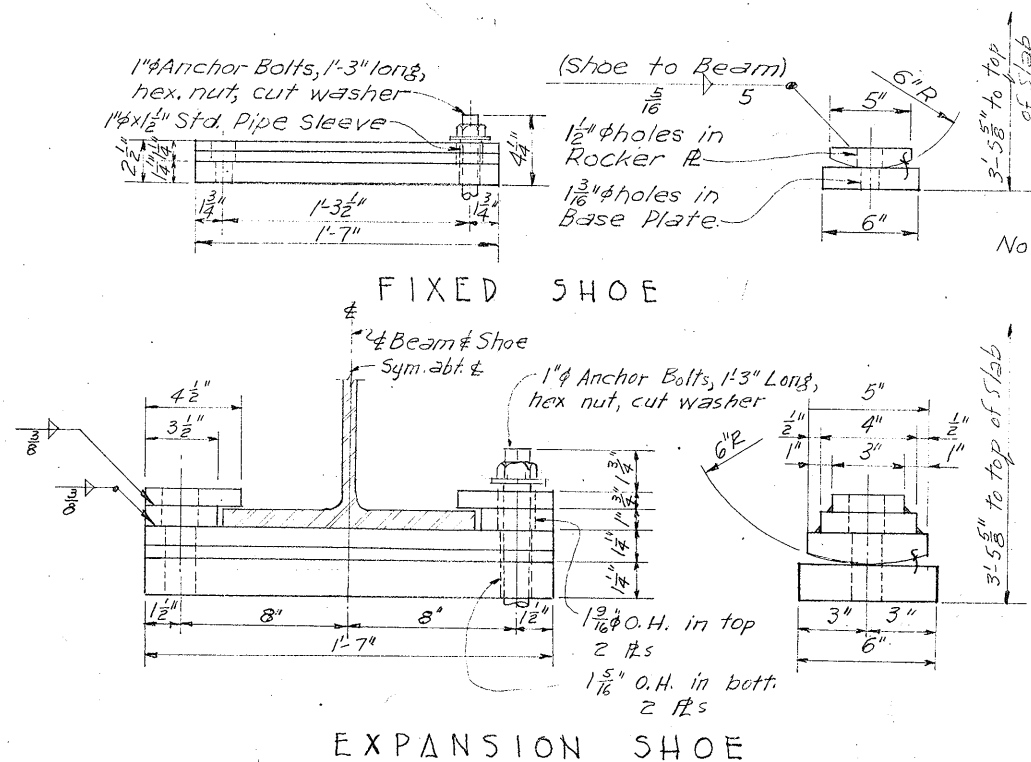


Note: Ship R's in 3 pieces and field butt weld. The two Armor R's for a complete joint shall be cut simultaneously from 2 R's clamped together.

ELEVATION

ARMORED JOINT DETAILS

Note: Field weld angles to top flange of diaphragm; adjust Armor R to correct grade and alignment and bolt for final field welding.

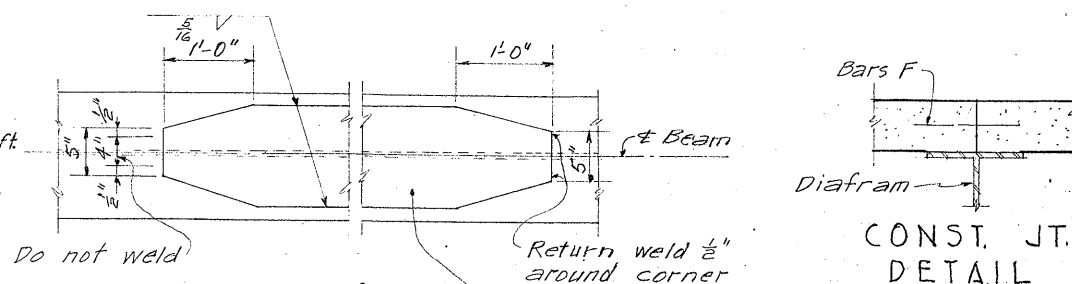


Note: Shoes shall be fabricated from structural steel. Surface finishes shall conform to A. S. A. Standard Finishes as follows:

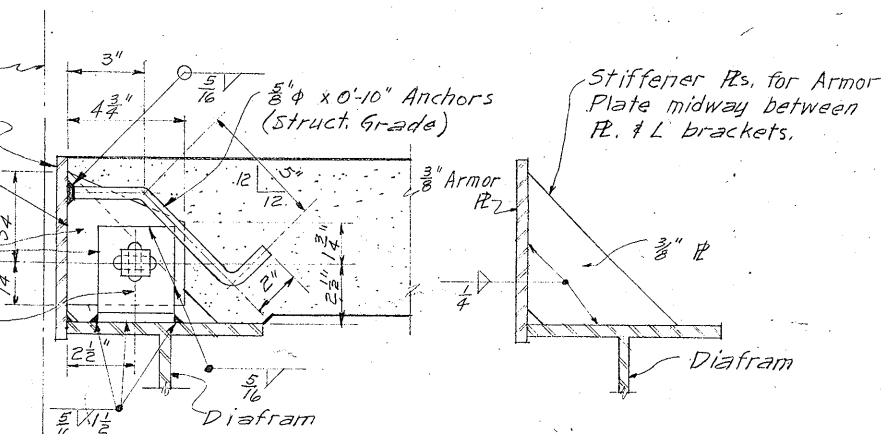
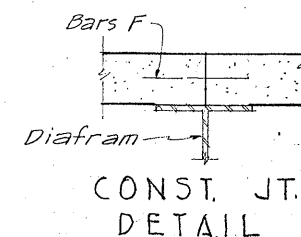
Pins & Pin Holes #125

Rockers #250

Anchor bolt nuts shall be tightened and threads burred.



COVER R DETAIL



SECTION

GENERAL NOTES:

Design: H20-44 Loading in accordance with A.A.S.H.O. 1953 Standard Specifications and T.H.D. Supplement No. 1.

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

Dimensions relating to reinforcing steel are to centers of bars.

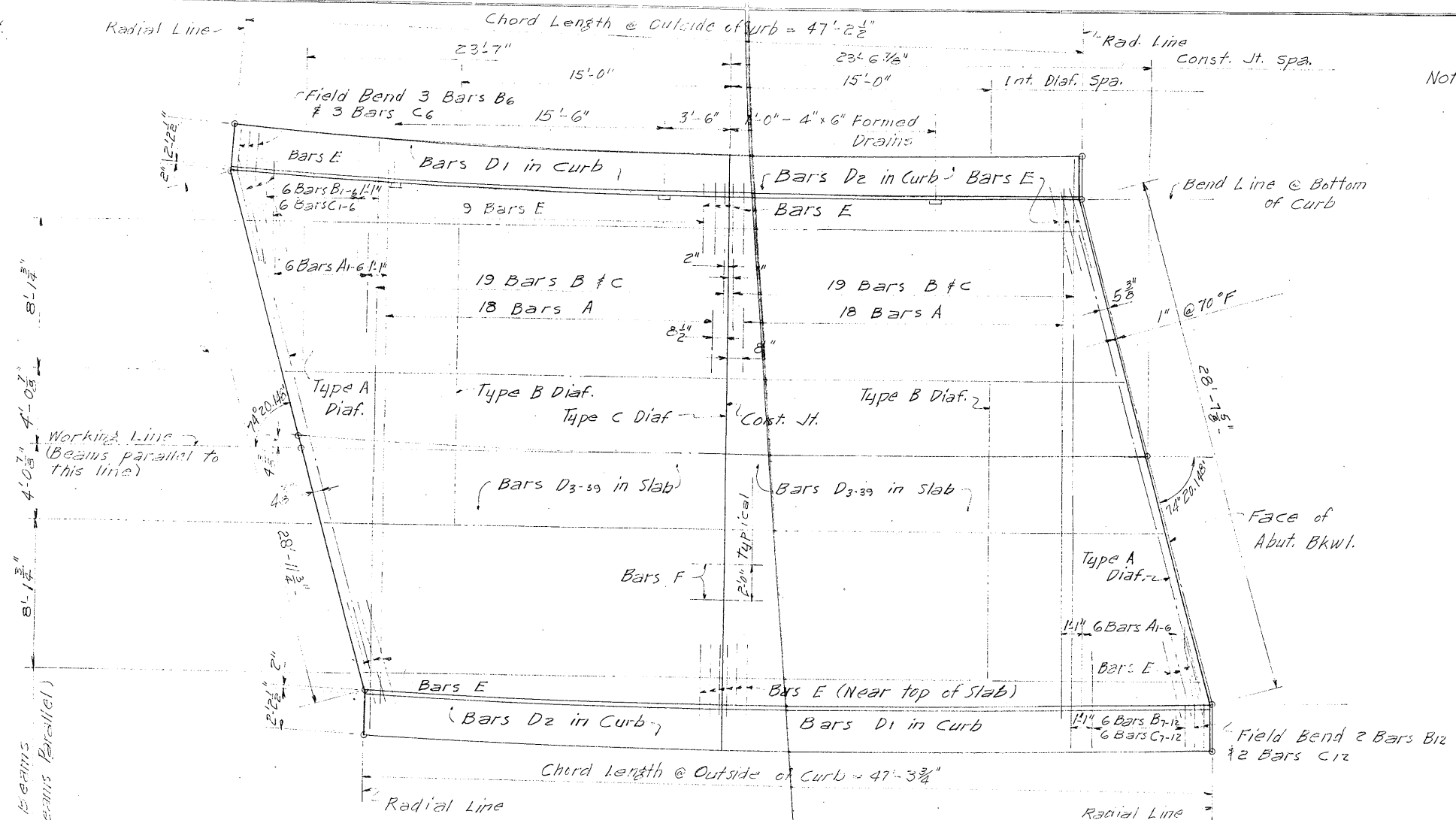
Design stress for reinforcing steel = 20,000 p.s.i.

No concrete shall be placed until all structural steel is erected and all welding completed in the unit.

TEXAS HIGHWAY DEPARTMENT
70.5' COMPOSITE I-BEAM SPAN
28'-0" RDWY. 18" CURBS
3-LEVEL INTERCHANGE
CONN. "F" MIDDLE LEVEL

Sheet 2 of 2

DN. - JEA	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. - JEA	ORIGINAL	FEB. 1955	6	TEXAS	F-31(18)	194
DW. - JEA	Rev. 4/27/55	J.E.A.				
CK. DW. - H.J.D.						
TR. -						
CK. TR. -						
			15	BEXAR	16	7 23 45.81



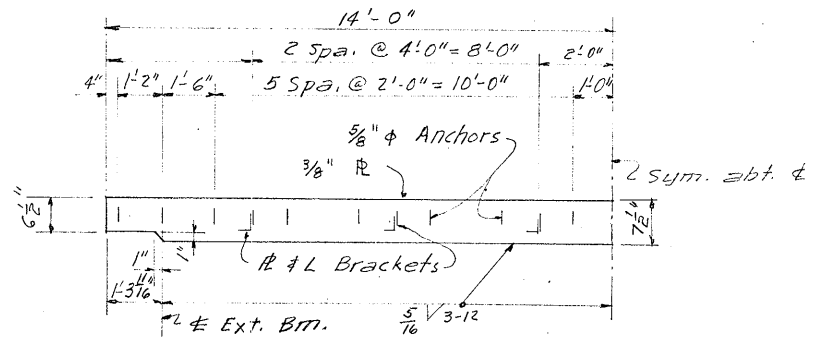
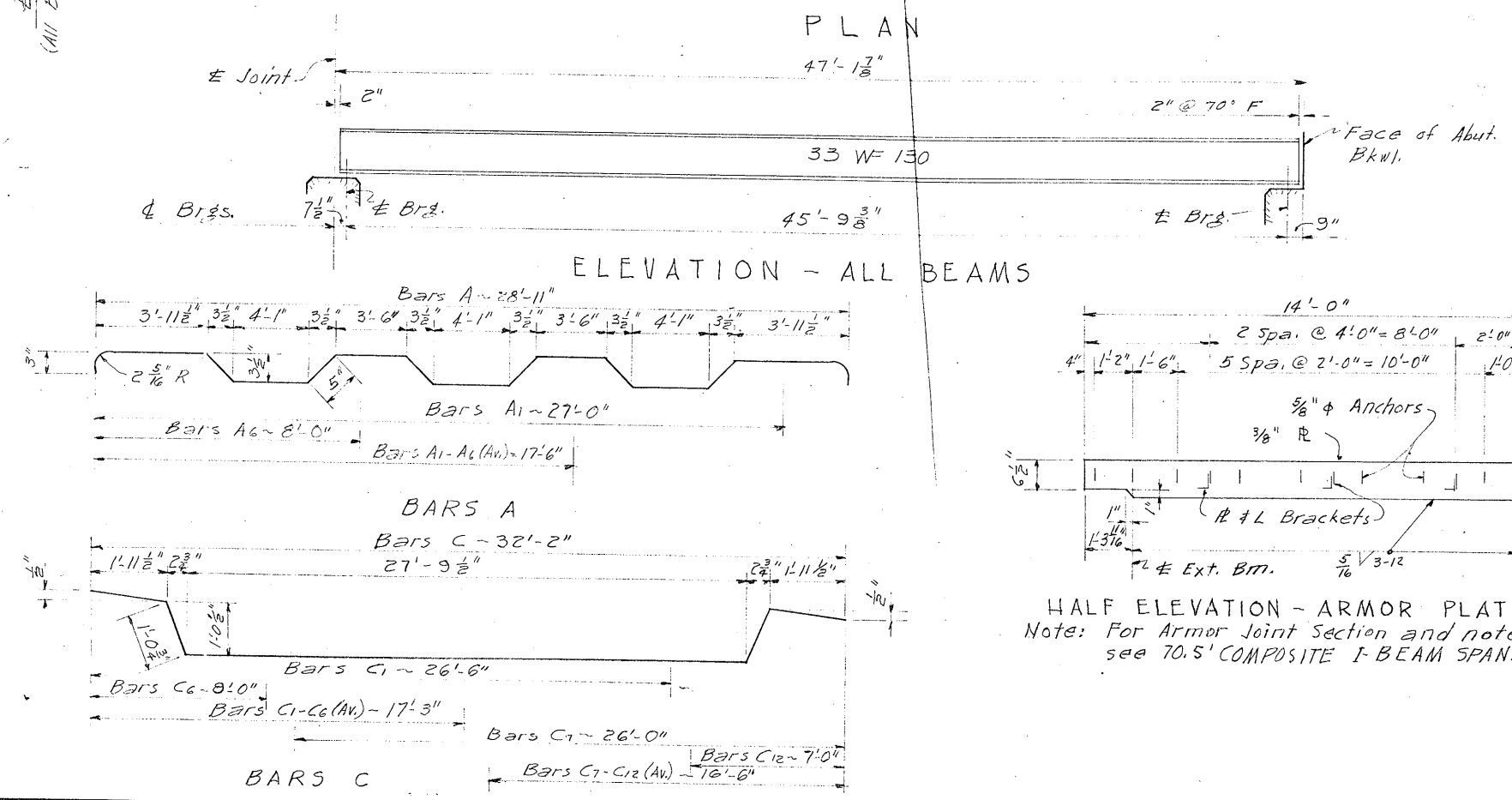
Note: See 47.25 SIMPLE I-BEAM SPAN NO. 1 for Slab Anchor Details.

BILL OF REINFORCING STEEL						
Bar	No.	Size	Spa.	Length	Weight	
A	36	#5	13"±	30'-0"	1126	
A1-A6	12	#5	13"±	Av. 18'-5"	228	237
B	38	#5	13"±	28'-11"	1146	
B1-B6	9	#5	13"±	Av. 15'-7"	117	145
B7-B12	8	#5	13"±	Av. 15'-7"	104	130
C	38	#5	13"±	33'-10"	1341	
C1-C6	9	#5	13"±	Av. 18'-5"	141	170
C7-C12	8	#5	13"±	Av. 17'-4"	125	145
D1	10	#5	~	27'-3"	284	
D2	10	#5	~	19'-7"	204	
D3-D33	74	#5	~	Av. 23'-5"	1807	
E	32	#6	7"±	5'-0"	240	
* F	17	#5	Shown	4'-6"	80	
⊕ Y	16	#5	~	1'-11"	32	
Total				Lbs.	7014	6975

ESTIMATED QUANTITIES		
Item	Units	Quantity
Class A Concrete	Cu. Yds.	32.3
Reinforcing Steel	Lbs.	6975.014
* Structural Steel	Lbs.	29,300
Type 3 Railing (Mod.)	Lin. Ft.	94.5

* Includes 340 Lbs. for 1/2 Armor Pl.

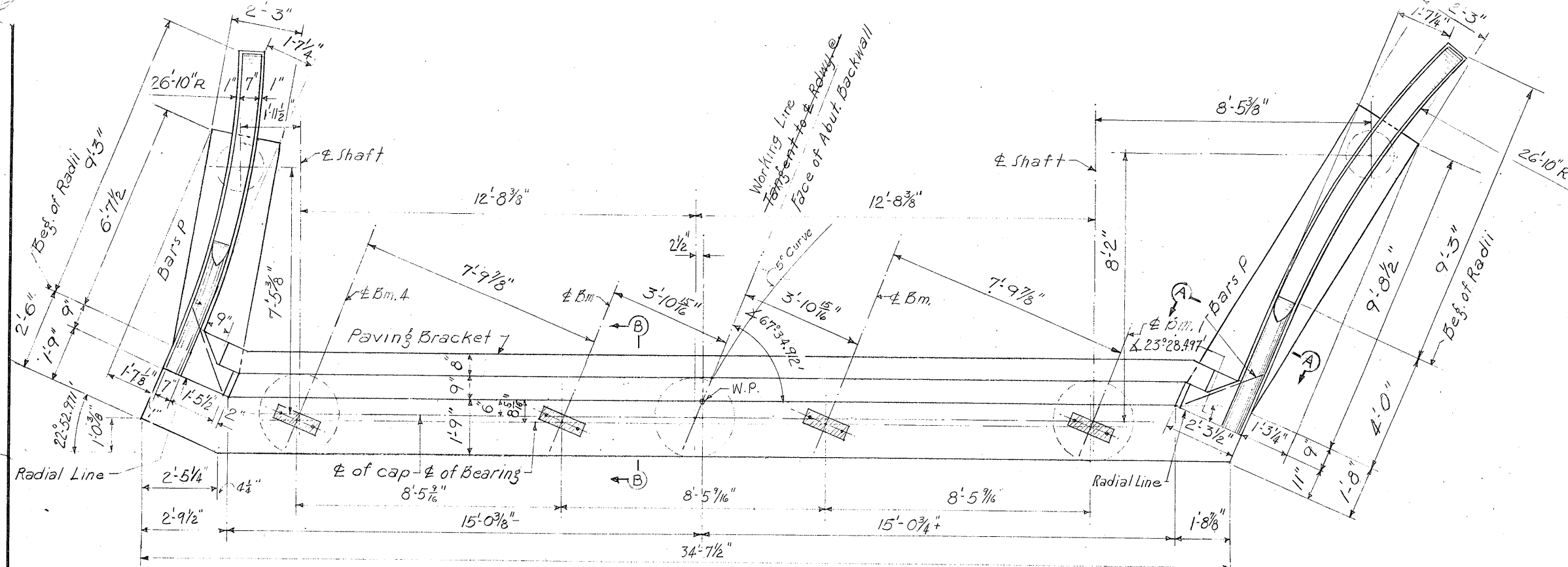
NOTE: For Curb And Drain Detail, Shoes, and Dead Load Deflection Diagram see 47.25' SIMPLE I-BEAM SPAN 1.
For all other details not shown see 70.5' COMPOSITE I-BEAM SPAN.



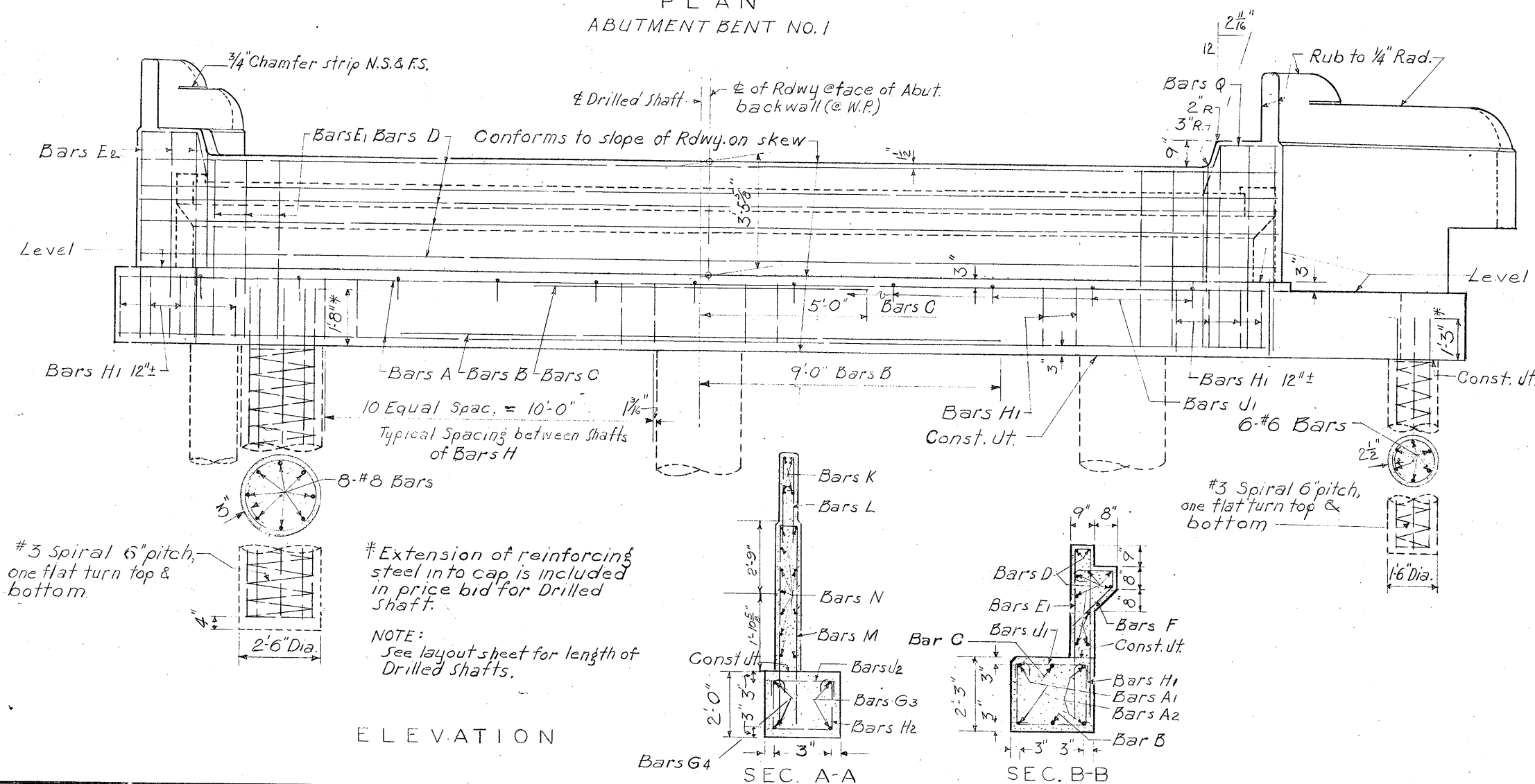
HALF ELEVATION - ARMOR PLATE
Note: For Armor Joint Section and notes see 70.5' COMPOSITE I-BEAM SPAN.

TEXAS HIGHWAY DEPARTMENT
47.25' SIMPLE I-BEAM SPAN 2
28'-0" RDWY. 18" CURBS
3-LEVEL INTERCHANGE
CONN. "F" MIDDLE LEVEL

DR. J.E.A.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CR. DR. J.E.A.	ORIGINAL	MAR. 1955	6	TEXAS	F-31(15)	195
CR. DR. J.E.A.	Rev. 4/27/55	J.E.A.				
CR. DR. J.E.A.	STATE DIST. NO.	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.	
TR. J.	15	BEXAR	16	7	26	U.S. 81
CR. TR. J.						



PLAN
ABUTMENT BENT NO. 1



ELEVATION

SEC. A-A SEC. B-B

BILL OF REINFORCING STEEL (Abut. No. 1)

Bar No	Size	Spac	Length	Weight
A ₁	2	#9	34'-7"	235
A ₂	2	#9	34'-8"	236
B	1	#11	18'-0"	96
C	1	#10	10'-0"	43
D	10	#5	shown 34'-2"	356
E ₁	31	#5	12"± 9'-6"	307
E ₂	6	#5	12"± 11'-0"	69
F	34	#4	12"± 3'-10"	87
G ₁	2	#9	9'-0"	61
G ₂	2	#9	9'-6"	65
G ₃	2	#9	12'-6"	85
G ₄	2	#9	11'-3"	77
H ₁	30	#5	shown 7'-7"	222
H ₂	12	#5	12"± 6'-4"	79
J ₁	11	#5	3'-0" 3'-2"	36
J ₂	7	#5	3'-0" 2'-11"	21
K ₁	4	#5	5'-5"	23
K ₂	2	#5	11'-8"	24
K ₃	2	#5	15'-8"	33
L ₁	8	#5	12"± 6'-8"	56
L ₂	14	#5	12"± 4'-8"	68
M ₁	19	#5	12"± 11'-2"	221
M ₂	7	#5	12"± 4'-8"	34
N ₁	6	#5	7 1/2" & 13" 10'-4"	65
N ₂	8	#5	7 1/2" & 13" 8'-1"	42
N ₃	8	#5	7 1/2" & 13" 14'-5"	75
N ₄	5	#5	7 1/2" & 13" 11'-0"	57
P	10	#5	12"± 2'-6"	26
Q	4	#5	6" 3'-10"	16
Total				2815
				2831

* ESTIMATED QUANTITIES

Item	Unit	Quantity
Concrete Class "A"	Cu Yds	17.6
Reinforcing Steel	Lbs.	2815
Uncl. Struct. Excav.	Cu Yds	28.0

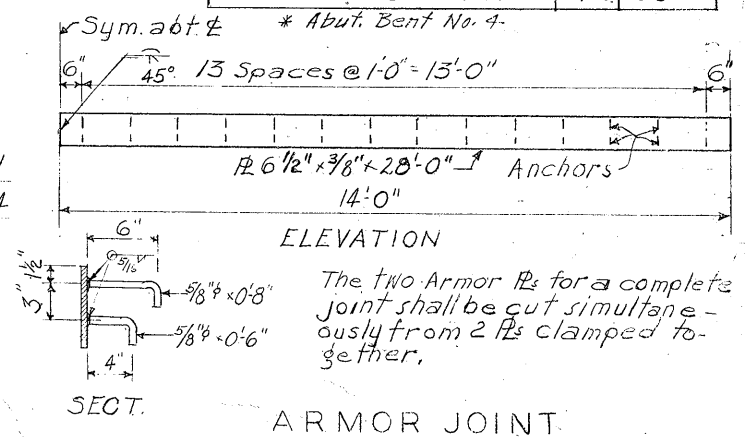
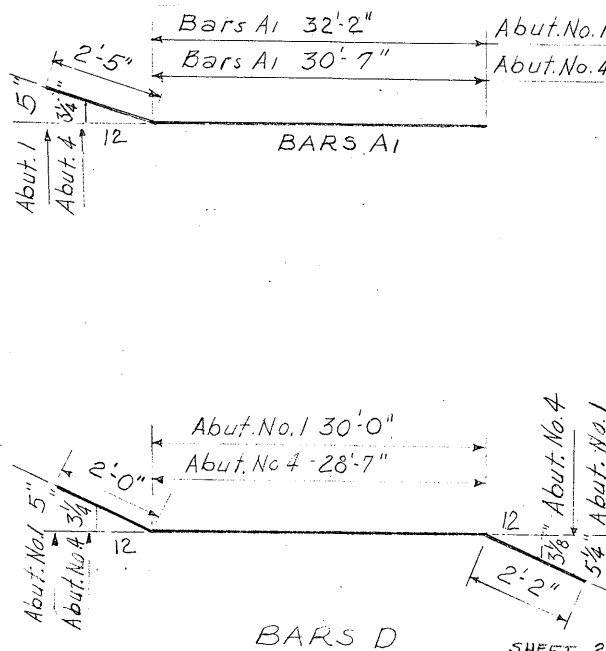
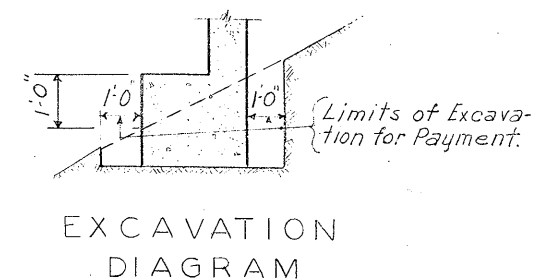
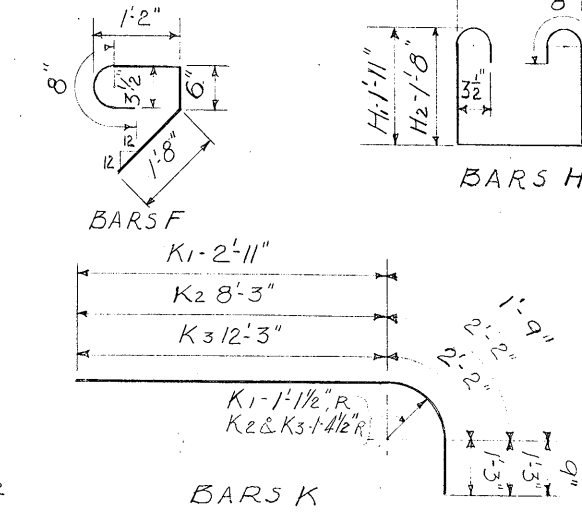
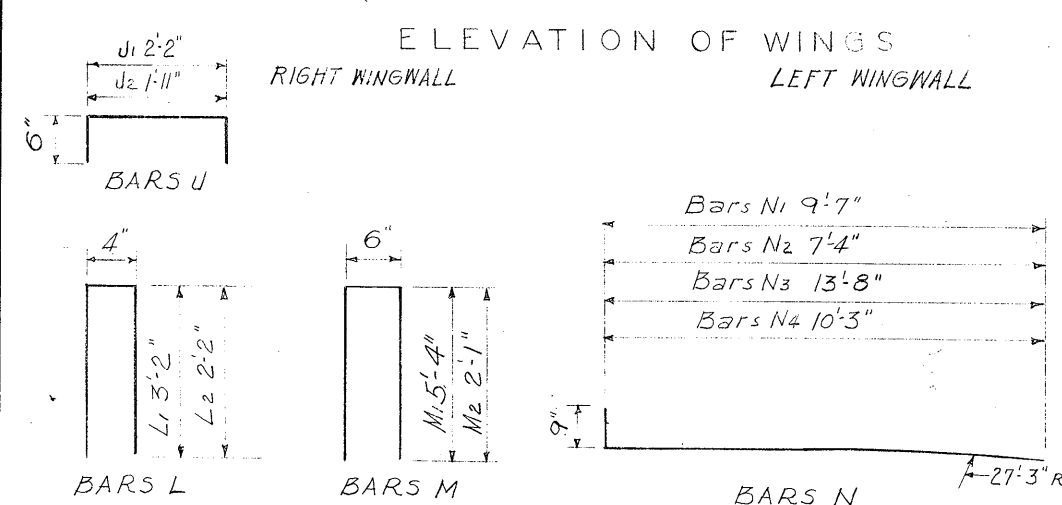
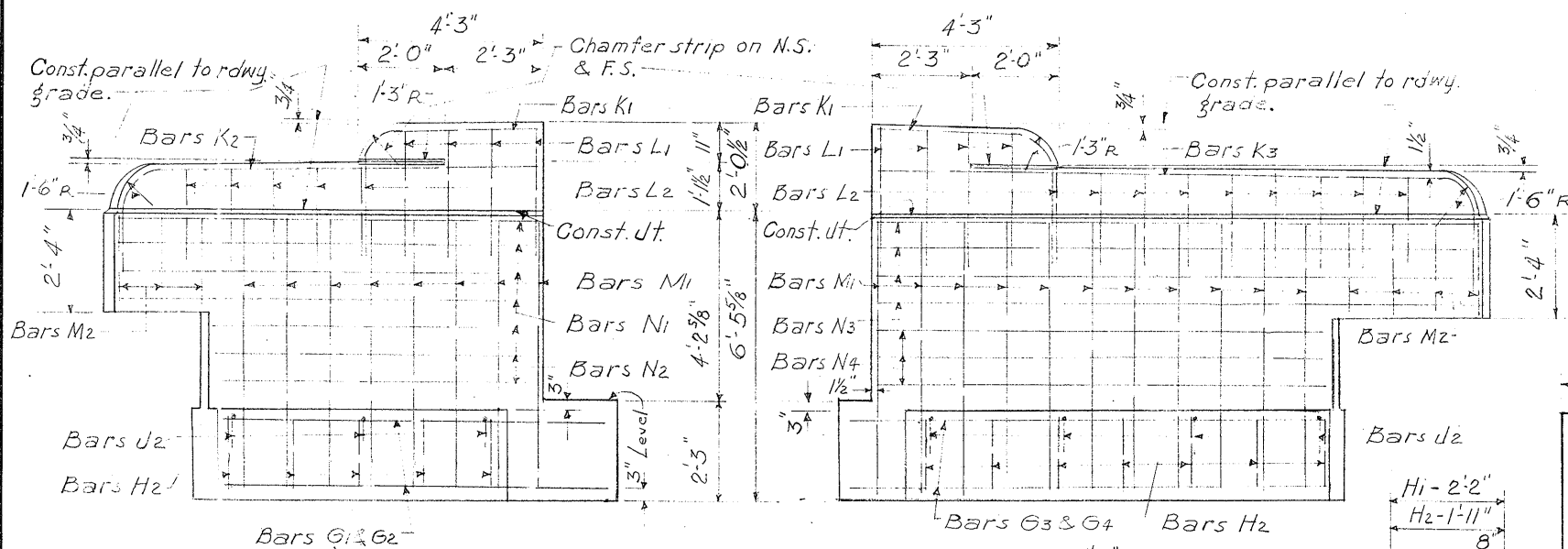
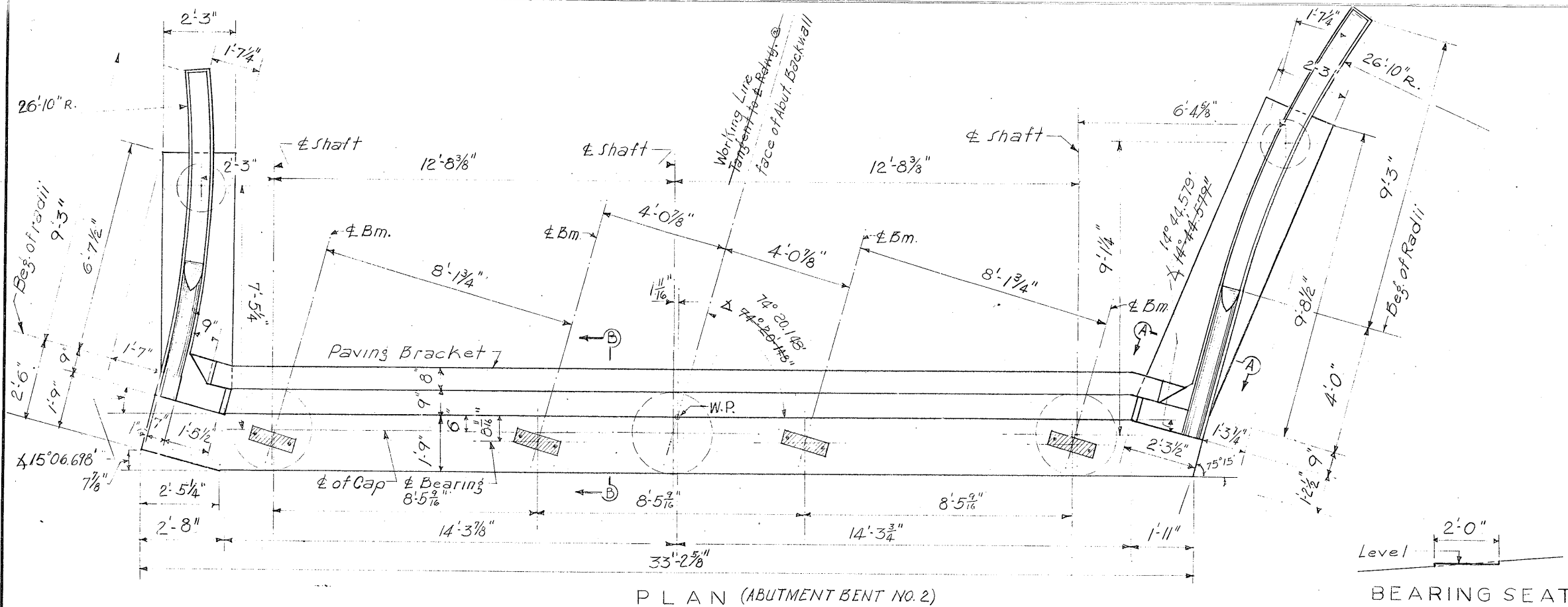
* Abut. Bent No. 1

GENERAL NOTES:

Design: H-20-44 Loading in accordance with A.A.S.H.O. 1953 Standard Specifications, as amended by T.H.D. Supplement No. 1.
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.
Design stress for reinforcing steel = 20,000 p.s.i.
Average calculated footing pressure equals 30" Drilled Shaft 74.7
18" Drilled Shaft 107.4

TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS NO. 1 & 4
28'-0" ROADWAY 18" CURBS
3-LEVEL INTERCHANGE
CONN. F MIDDLE LEVEL

DN.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.	Original	March 55	6	TEXAS	F-31 (1-1)	122
DW.	H.M.	Revised 4-26-55				
CK. DW.	H.M.					
TR.						
CK. TR.						

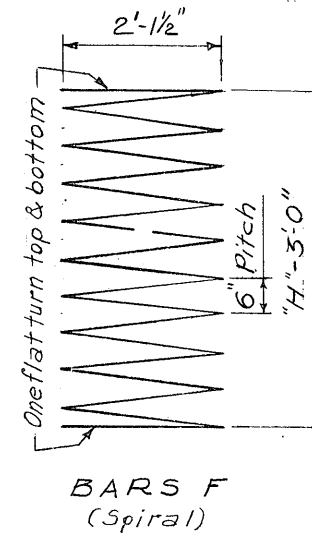
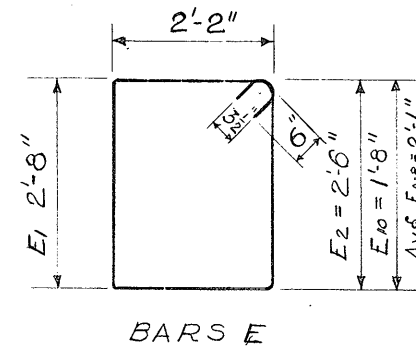
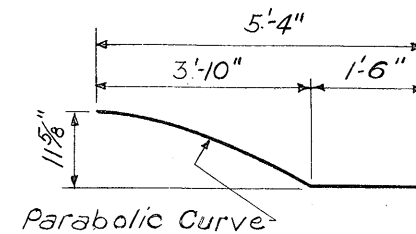
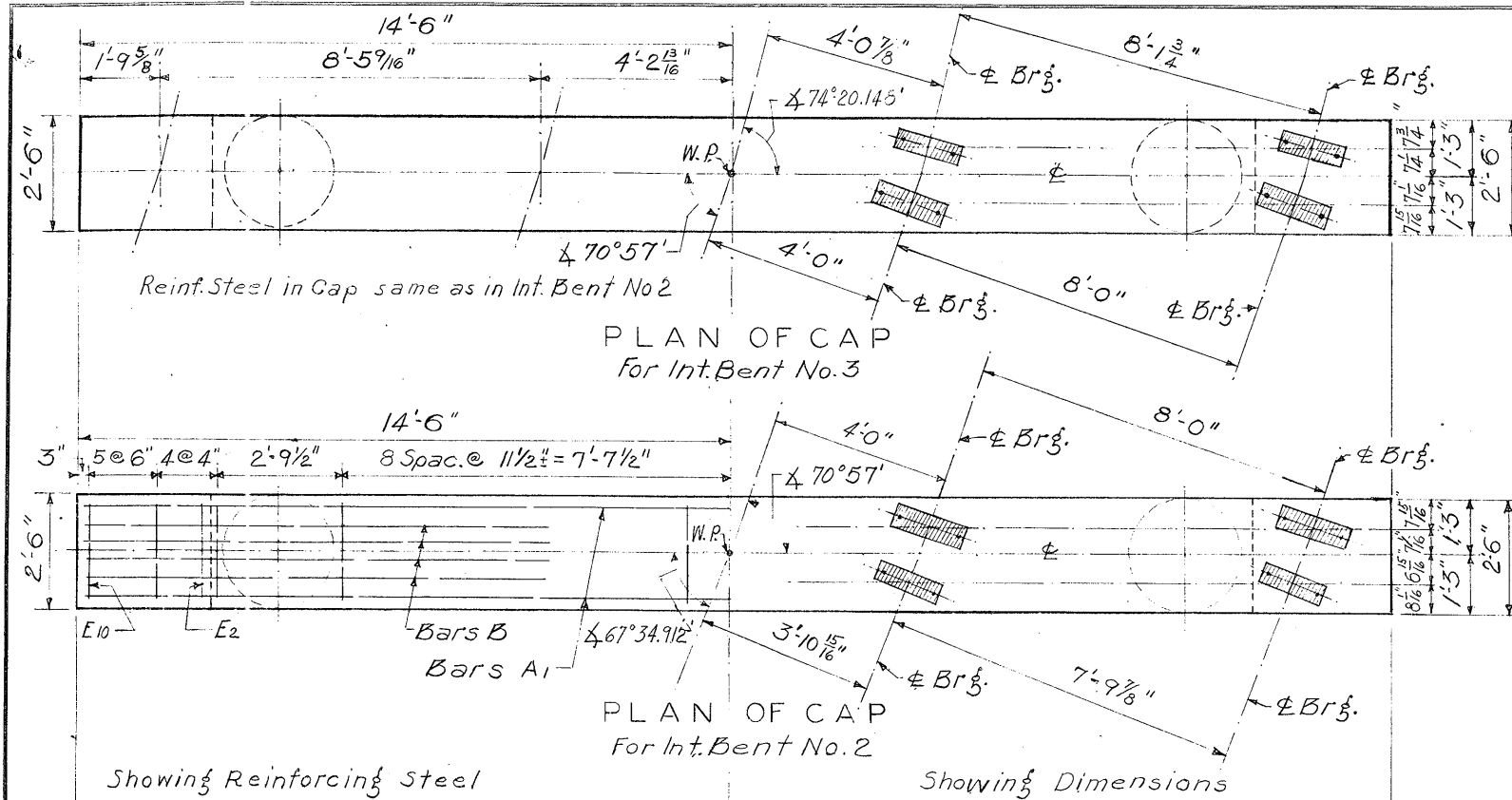


Bar	No	Size	Spac	Length	Weight
A1	2	#9	—	33'-0"	224
A2	2	#9	—	32'-9"	223
B	7	#11	—	18'-0"	96
C	1	#10	—	10'-0"	43
D	10	#5	shown	32'-9"	342
E1	28	#5	12"±	9'-6"	277
E2	6	#5	12"±	11'-0"	69
F	32	#4	12"±	3'-10"	82
G1	2	#9	—	9'-0"	61
G2	2	#9	—	9'-6"	65
G3	2	#9	—	12'-6"	85
G4	2	#9	—	11'-3"	77
H1	28	#5	shown	7'-1"	207
H2	12	#5	12"±	6'-4"	79
J1	11	#5	3'-0"±	3'-2"	36
J2	7	#5	3'-0"	2'-11"	21
K1	4	#5	—	5'-5"	23
K2	2	#5	—	11'-8"	24
K3	2	#5	—	15'-8"	33
L1	8	#5	12"±	6'-8"	56
L2	14	#5	12"±	4'-8"	68
M1	19	#5	12"±	11'-2"	221
M2	7	#5	12"±	4'-8"	34
N1	6	#5	7½" & 13"	10'-4"	65
N2	5	#5	7½" & 13"	8'-1"	42
N3	5	#5	7½" & 13"	14'-5"	75.91
N4	5	#5	7½" & 13"	11'-0"	57
P	10	#5	12"±	2'-6"	26
Q	4	#5	6"	3'-10"	16
Total wt.				Lbs.	2727

Item	Unit	Quantity
Concrete Class A	Cu.yds.	16.8
Reinforcing Steel	Lbs.	2798
Structural Steel	Lbs.	266
Unclass Struct. Excav.	Cu.yds.	28.0

TEXAS HIGHWAY DEPARTMENT
ABUTMENT BENTS NO. 1 & 4
28'-0" ROADWAY 18" CURBS
3-LEVEL INTERCHANGE
CONN."F" MIDDLE LEVEL

DN. 12	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN. 12	ORIGINAL	MAR. 1955				
DN. 12	Revised 4-27-55	17	6	TEXAS	F 31 (18)	123
CK. DN. 12	H.D.		STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.
TR. 12			15	BEXAR	16	7
CK. TR. 12						2045.81



*BILL OF REINFORCING STEEL (Constant)

Bar	No.	Size	Spac.	Length	Weight
A1	2	#11	-	28'-8"	305
A2	2	#11	-	21'-0"	223
B	8	#10	shown	10'-3"	353
C	4	#6	-	5'-4"	32
D	3	#10	shown	16'-0"	207
E1	19	#5	shown	10'-9"	213.22
E2-10	18	#5	shown	9'-7" Av.	180
Total					1513.1512

*BILL OF REINFORCING STEEL (VARIABLE)

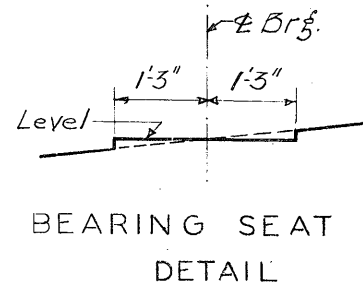
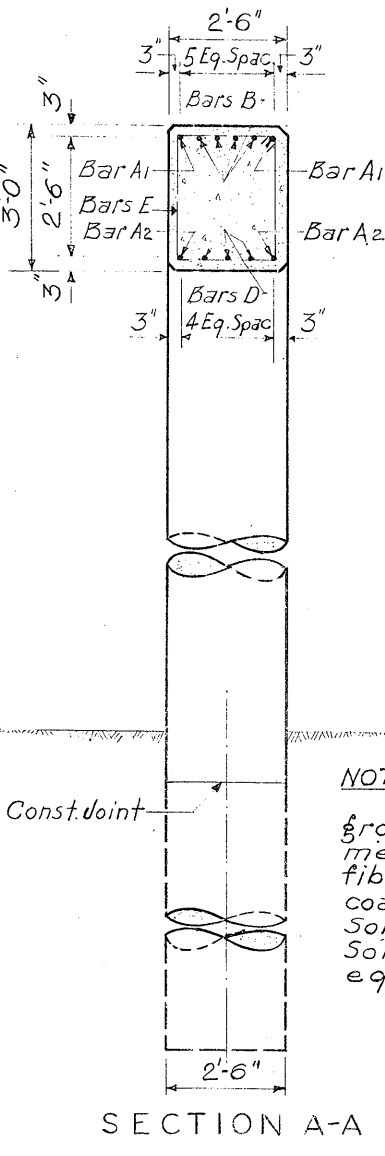
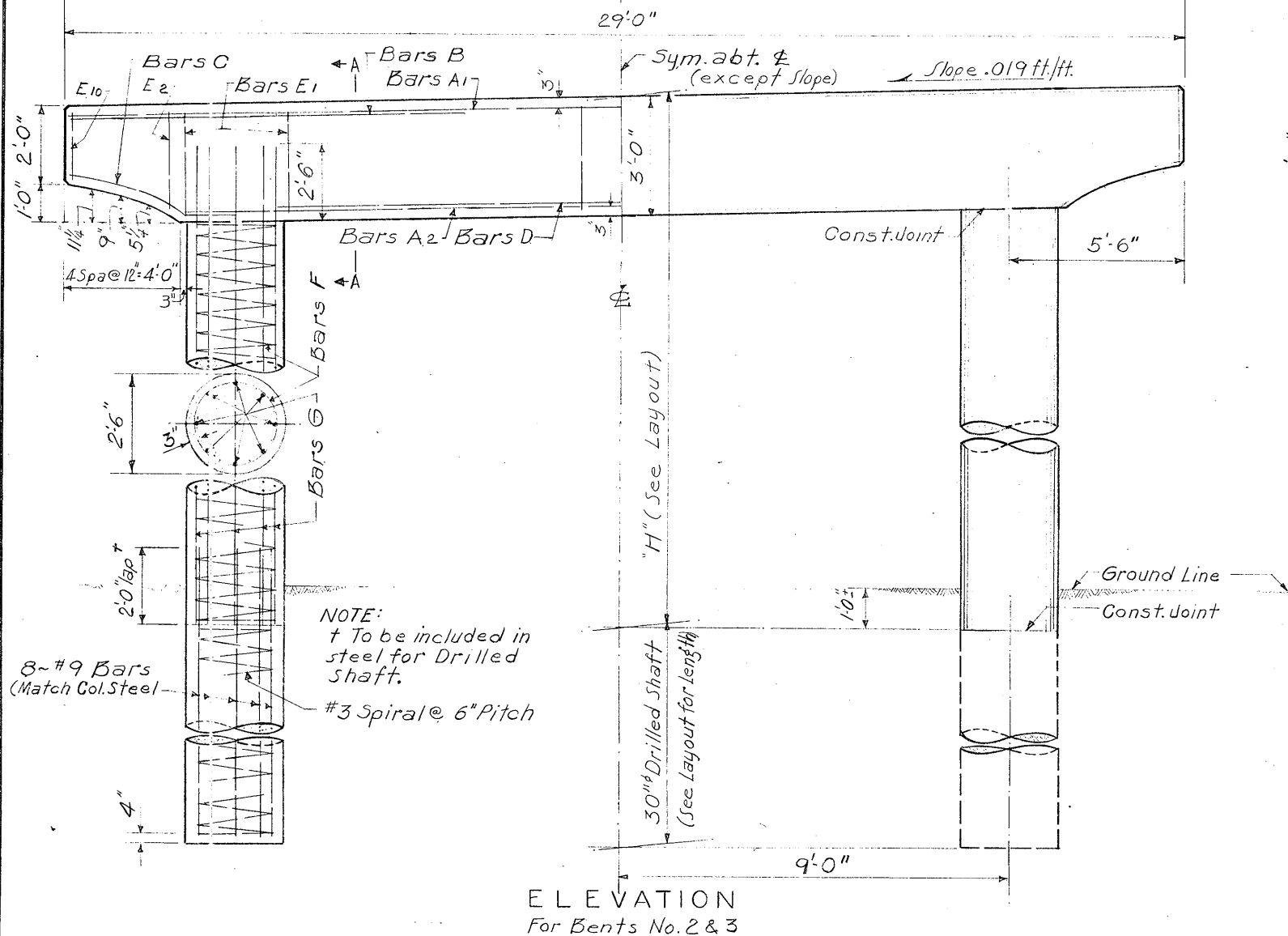
"H"	16-#9 Bars G		2-#3 Bars F		Total
	Length	Weight	Length	Weight	Weight
12'	11'-6"	626	134'-0"	101	727
13'	12'-6"	680	147'-0"	111	791
14'	13'-6"	734	160'-0"	120	854
15'	14'-6"	789	174'-0"	131	920
16'	15'-6"	843	187'-0"	141	984
17'	16'-6"	898	200'-0"	150	1048

*ESTIMATED QUANTITIES

*ESTIMATED QUANTITIES

"H"	Class A Concrete Cu. Yds.	Reinforcing Steel Lbs.
12'	10.9	2240
13'	11.3	2304
14'	11.6	2367
15'	12.0	2433
16'	12.5	2497

* Quantities shown are for one bent.



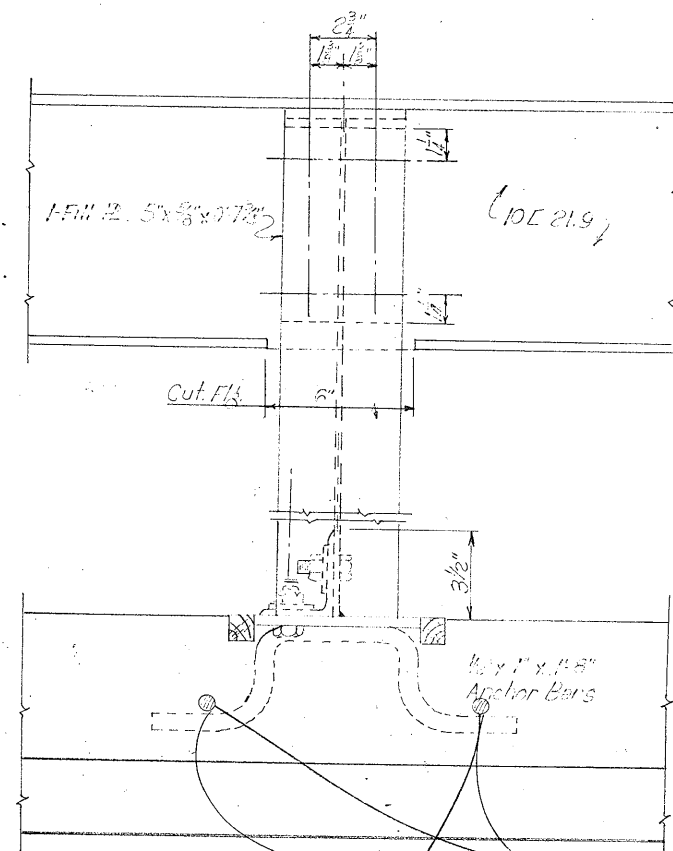
GENERAL NOTES:
Designed for use with H20-44 loading in accordance with A.A.S.H.O. 1953 Standard Specifications as amended by T.H.D. Supplement No. 1.
All concrete shall be Class A. Chamfer all exposed corners 3/4".
Dimensions relating to reinforcing steel are to centers of bars.
Design stress for reinforcing steel = 20,000 p.s.i.
Average calculated footing pressure = 20T/p'.

NOTE:
Portions of Circular Columns above ground shall be formed either with metal forms or with laminated fiber tubes lined with plastic and coated with wax. These tubes to be Sonotubes as manufactured by Sonoco Products Co. or approved equal.

TEXAS HIGHWAY DEPARTMENT
TRANSITION BENTS
NO. 2 & 3
3 LEVEL INTERCHANGE
CONN. F MIDDLE LEVEL

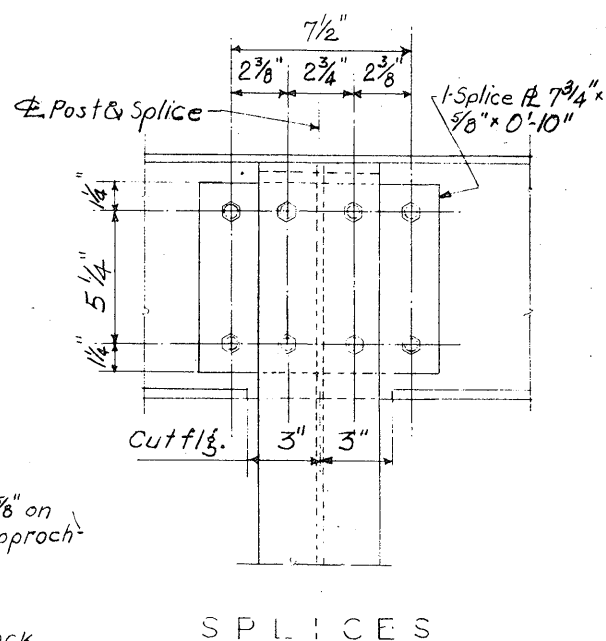
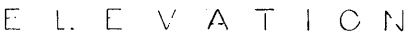
DN.	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
Original	Feb. 1955	6	TEXAS	E-31(10)	19
Revised	4-27-55				
STATE	COUNTY	CONTROL SECTION	JOB NO.	HIGHWAY NO.	
15	BEXAR	16	7	26	US 81

Rail Post Revision



Y bars
Provide 2#5 bar x 2'-0" ±
@ each rail post

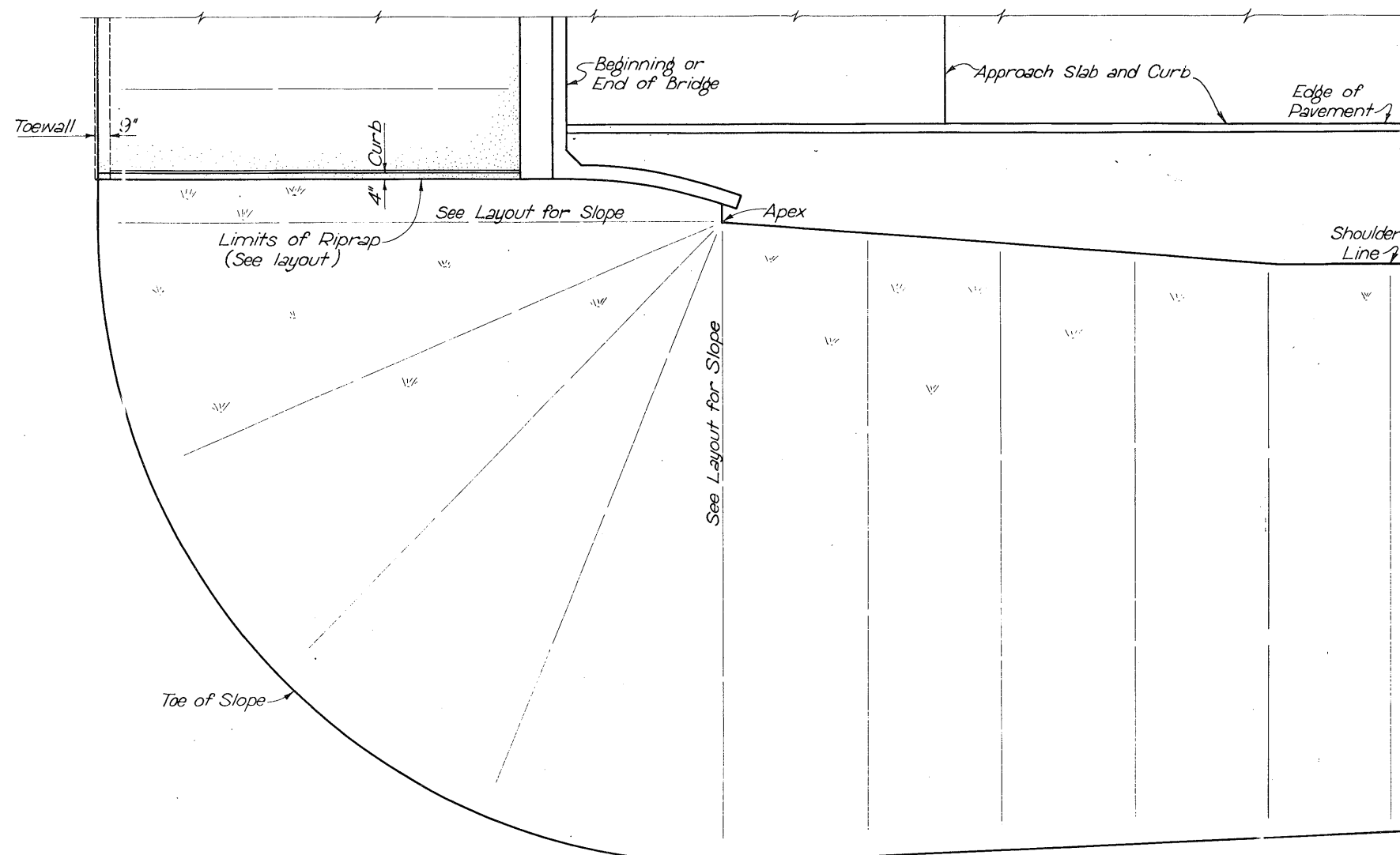
STEEL FOR BRIDGE RAILING REINFORCEMENT (Y BARS)						
BRIDGE	No. Bars Req'd	Bars on Hand	Location	Type of bars	Actual Length	Req'd Length
Weidner Road	80	18x4 = 72	Wall D-P 10	"#4"	87.0 = 21.7'	22'
		2x4 = 8	Wall D-P 70	"#4"	85.0 = 21.5'	22'
Judson Road	48	12x4 = 48	Wall F-P 4	"#4"	8.60 = 21.5'	22'
O'Connor Road	48	12x4 = 48	Wall F-P 4	"#4"	8.60 = 21.5'	22'
Overpass & 334+25	68	2x4 = 8	Wall F-P 4	"#4"	8.60 = 21.5'	22'
		15x4 = 60	Wall G-P 5	"#4"	8.50 = 21.2'	22'
Connection "B"	68	11x4 = 44	Wall G-P 5	"#4"	85.0 = 21.2'	22'
		3x4 = 12	Wall G-P 70	"#4"	85.0 = 21.5'	22'
		3x3 = 9	Wall C-P 3	"#4"	84.0 = 21'	22'
		1x4 = 4	Wall G-P 43	"#4"	96.0 = 24'	22'
U. S. 81 Business Route	104	26x4 = 104	Wall C-P 3	"#4"	84.0 = 21'	22'
U. S. 81 Business Route 3-Level	84	1x4 = 4	Wall C-P 3	"#4"	84.0 = 21'	22'
		6x3 = 18	Wall C-P 2	"#4"	69.0 = 23'	22'
		20x3 = 60	Wall D-P 12	"#4"	67.0 = 22.3'	22'
		6x3 = 18	Wall G-P 43	"#4"	71.0 = 23.6'	22'
Connection "F" 3-Level	60	10x3 = 30	Wall D-P 12	"#4"	67.0 = 22.3'	22'
		9x3 = 27	Wall G-P 2	"#4"	68.0 = 22.6'	22'
		1x4 = 4	Wall G-P 43	"#4"	96.0 = 24'	22'



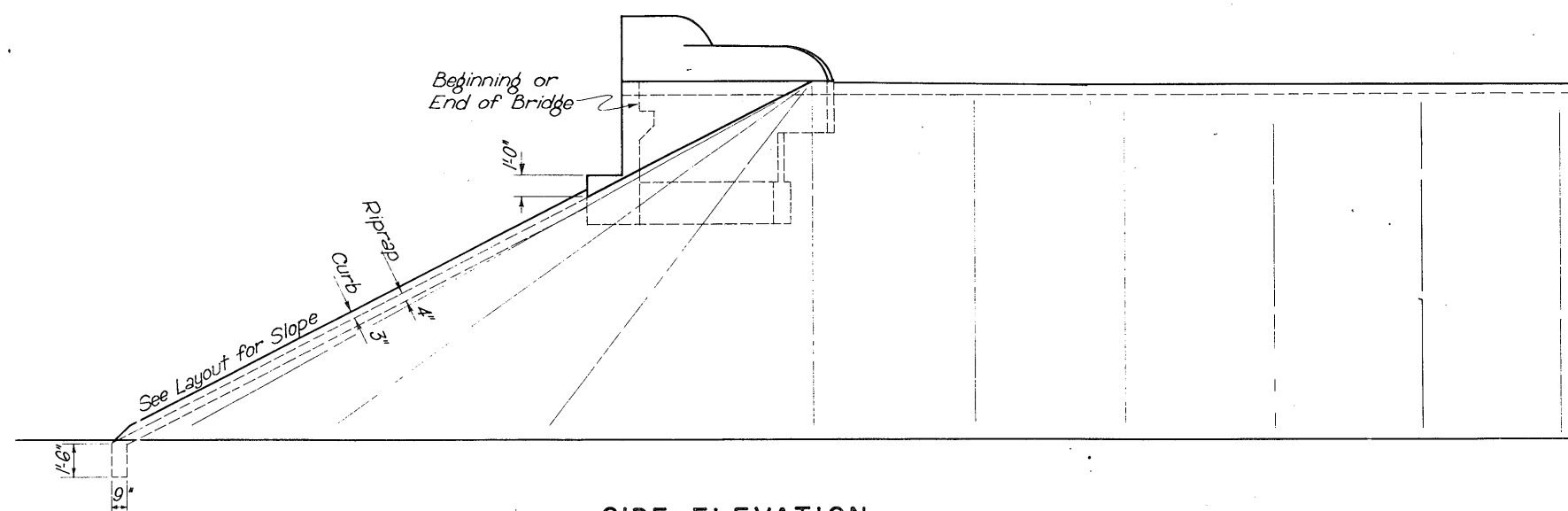
All posts shall be set vertically.
If the metal railing is properly cleaned by sandblasting or pickling, the shop coat of paint may be applied by spraying.

TYPE 3 RAILING MODIFIED

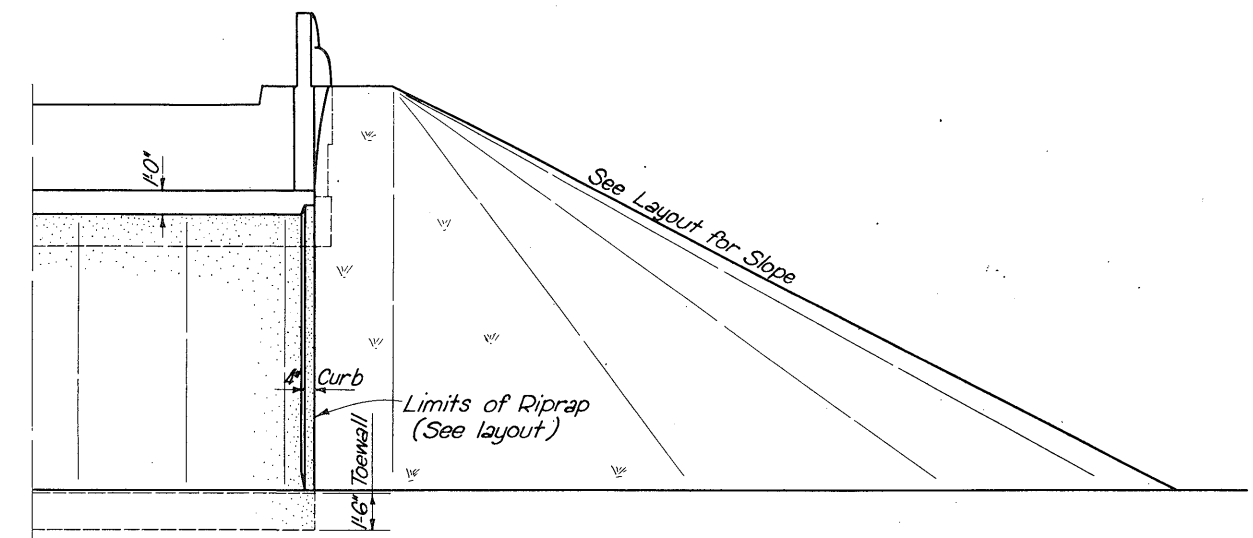
C.D. No.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
C.D. No.	FM	4/22/14	6	TEXAS	F-31(07); IN-1088(2); F31(18) 199	
C.D. No.	WH			COUNTY	CONTROL NO.	SECTION NO.
Tr.						JOB NO.
C.D. Tr.			15	BEXAR	1617	710
					1526	US 81



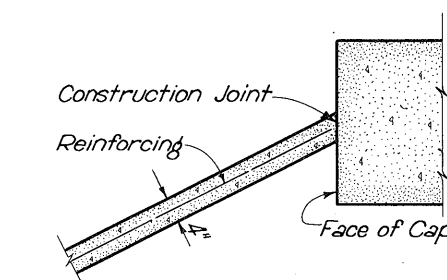
PART PLAN



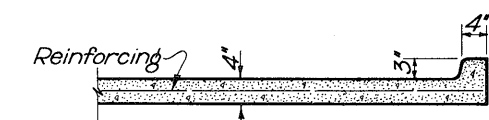
SIDE ELEVATION



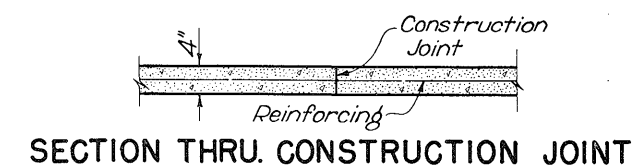
PART END ELEVATION



SECTION THRU. RIPRAP AT CAP

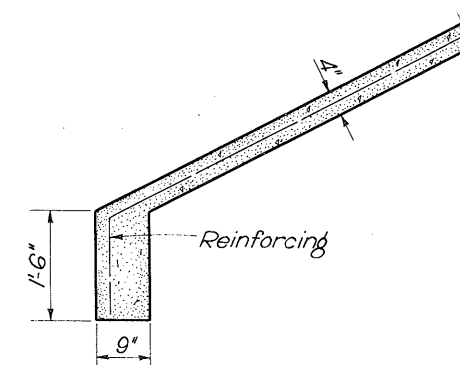


SECTION THRU. CURB



SECTION THRU. CONSTRUCTION JOINT

GENERAL NOTES:
 Concrete shall be Class B unless otherwise noted on the layout.
 See Specifications for reinforcing.
 Construction Joints shall be as shown or as ordered by the Engineer.



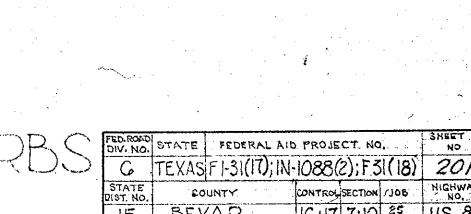
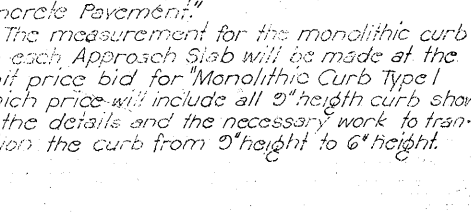
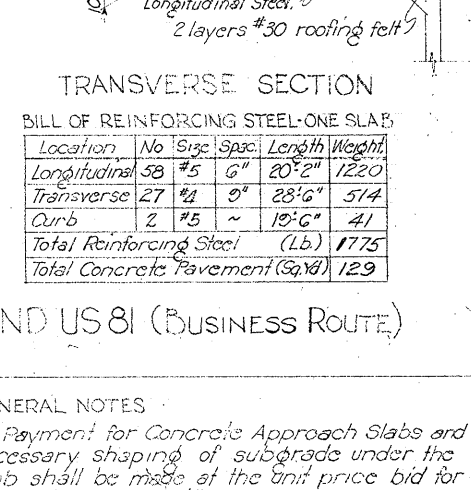
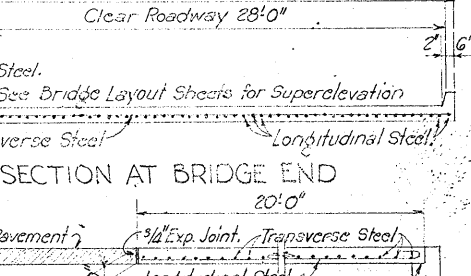
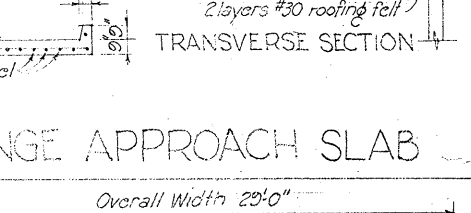
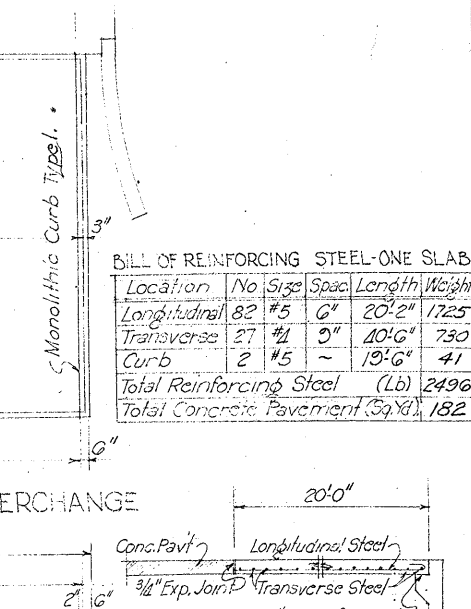
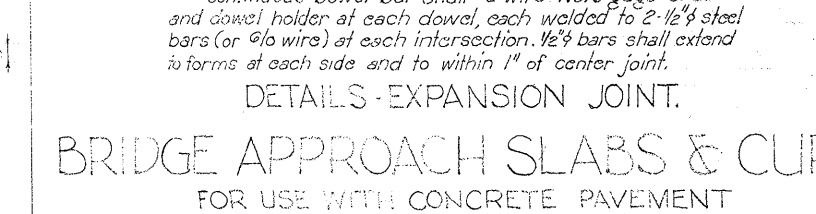
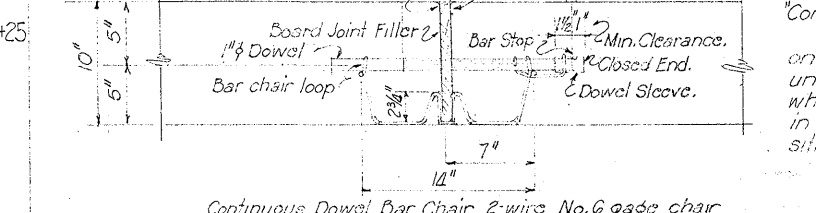
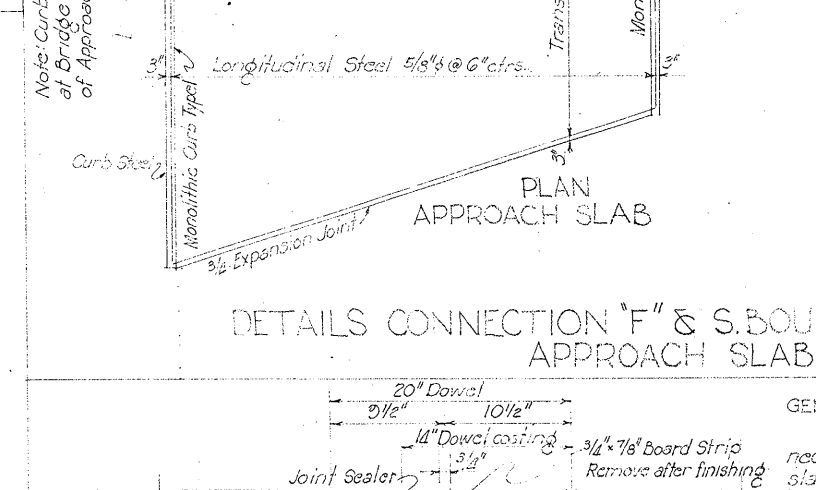
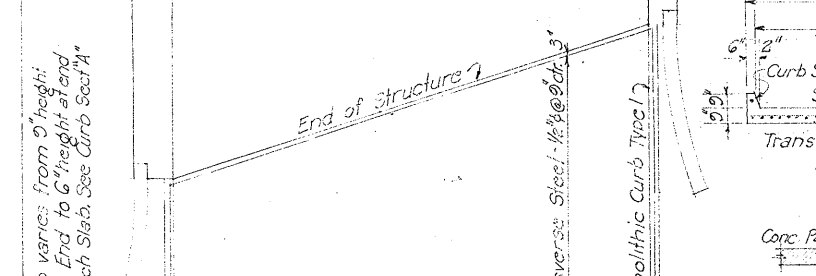
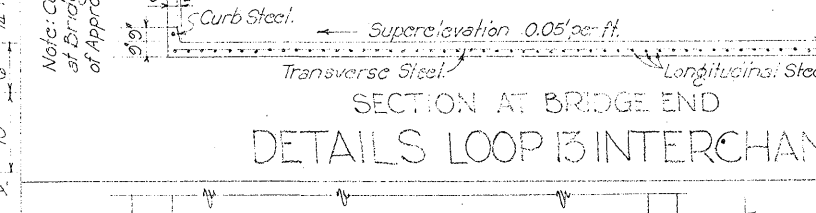
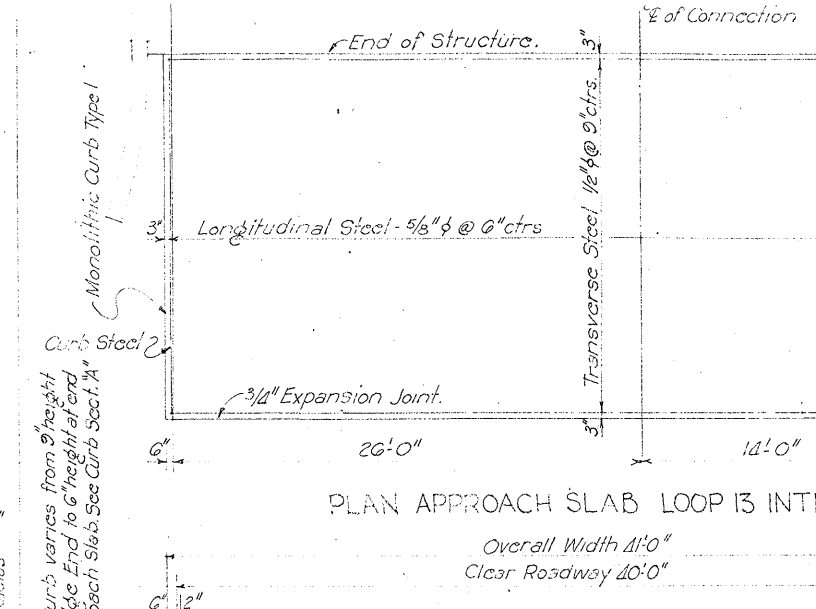
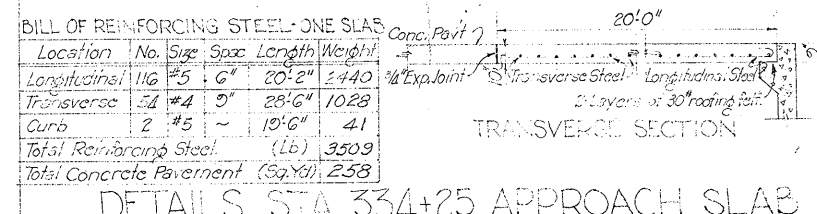
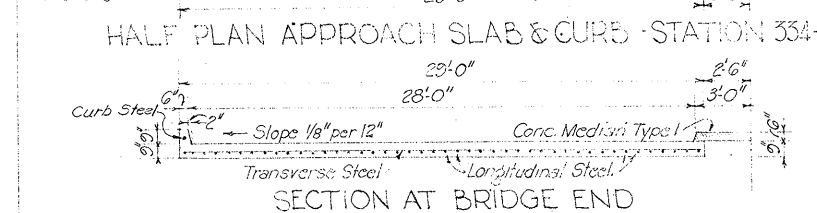
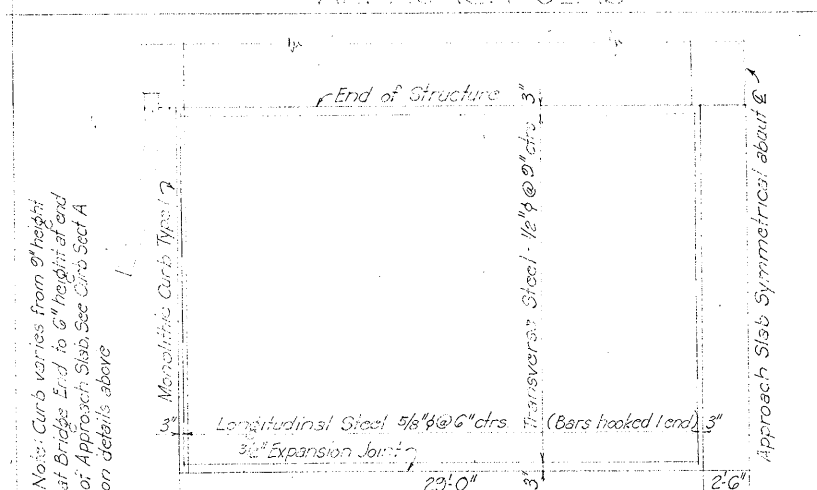
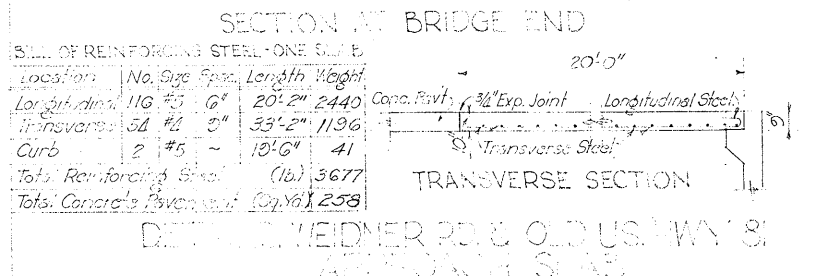
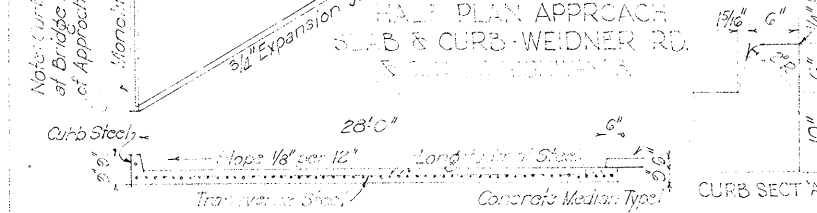
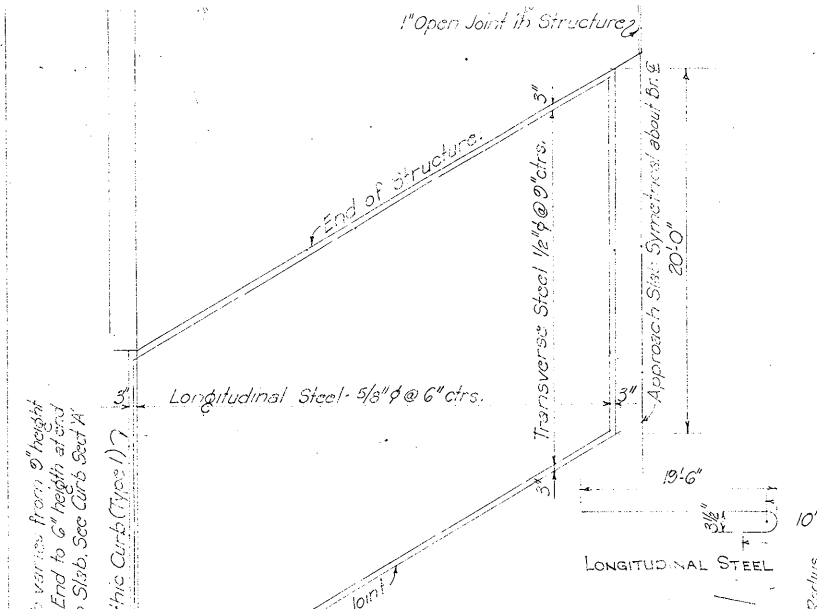
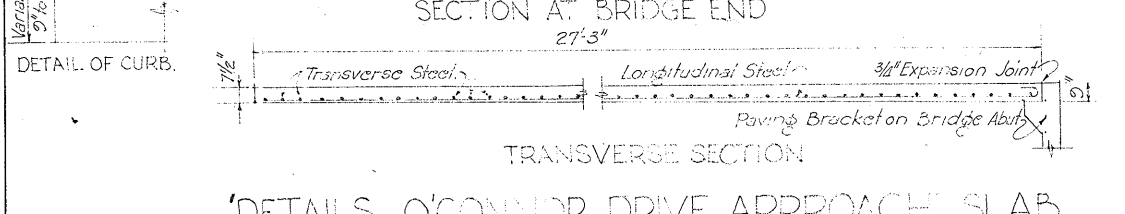
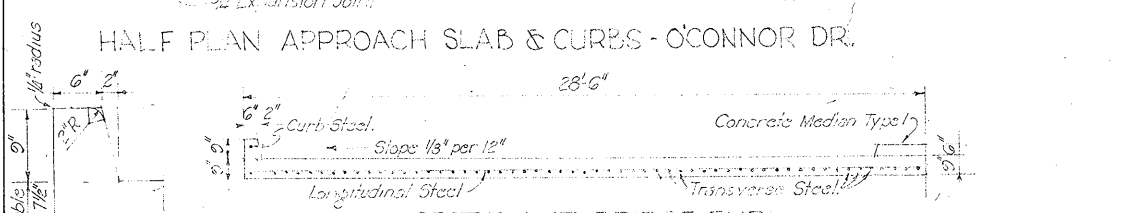
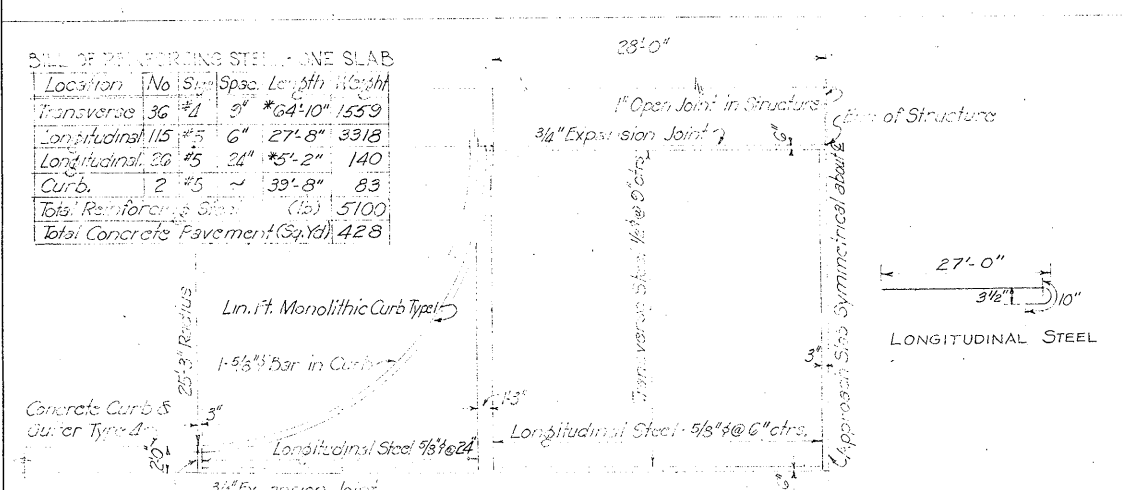
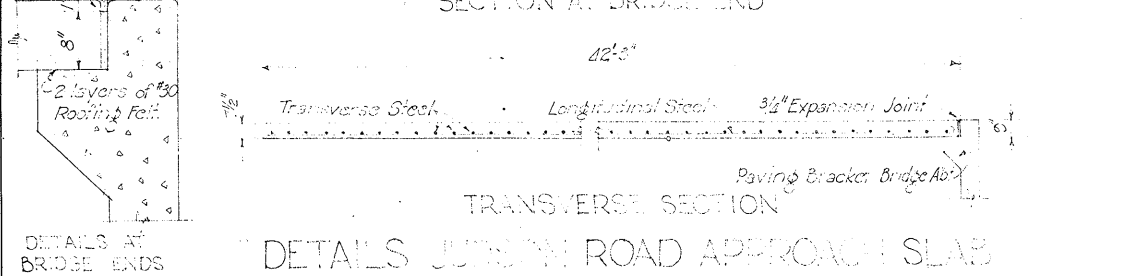
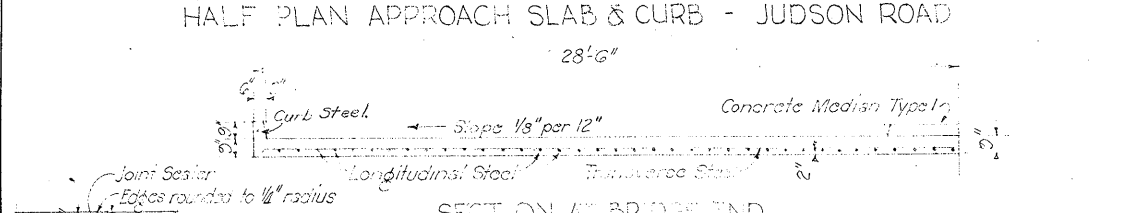
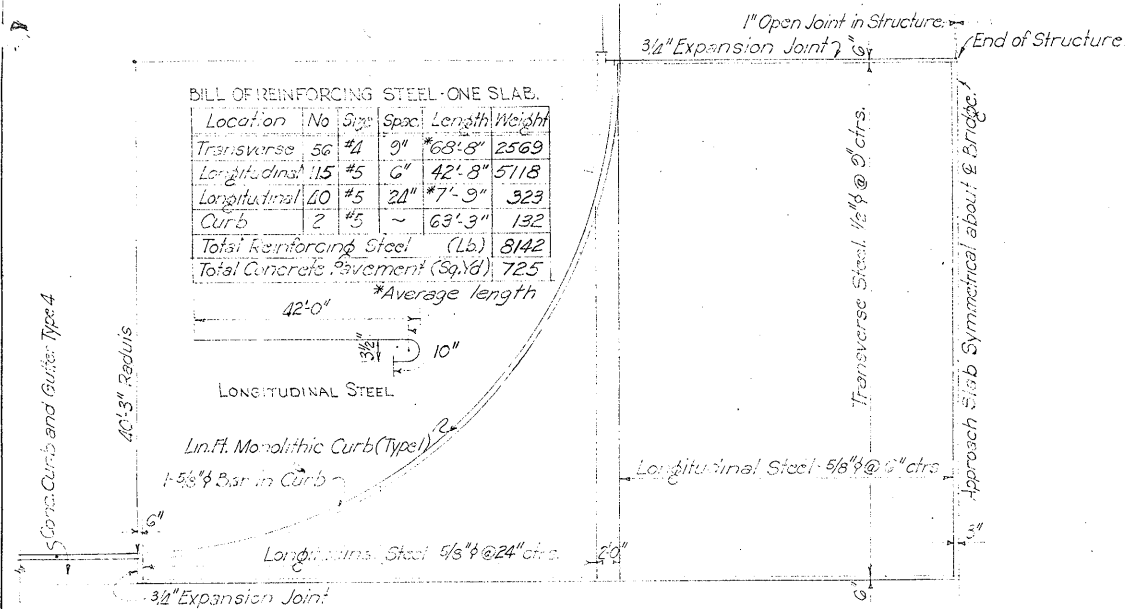
SECTION THRU. TOEWALL

TEXAS HIGHWAY DEPARTMENT
CONCRETE RIPRAP
 FOR EMBANKMENT SLOPES UNDER
 BRIDGE ENDS

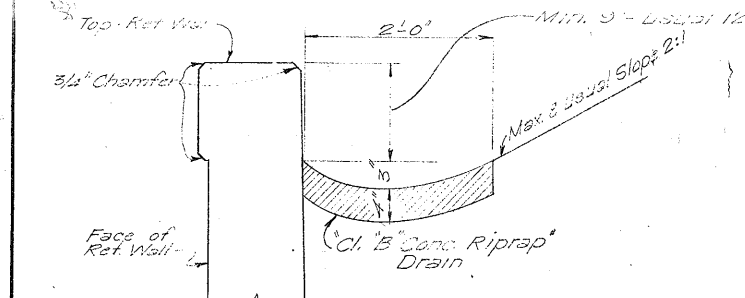
Revised: Feb. 1955 E.B.

RR 9(MOD.)

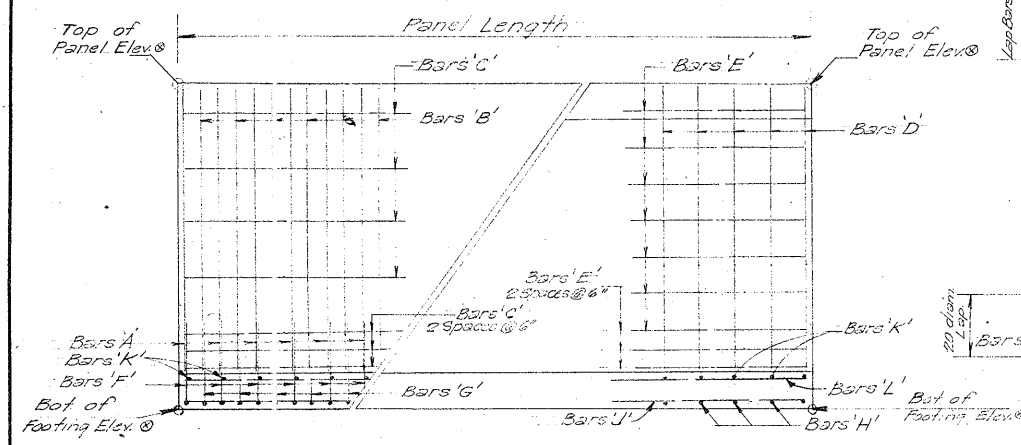
DN	DRAWING	DATE	F.I.D. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN.	ORIGINAL	AUGUST 1954	6	TEXAS	F-31(17); IN-10880; F3(18)	200
CK. DW.	TR.	STATE	COUNTY	CONTROL SECTION NO.	JOB NO.	HIGHWAY NO.
CK. DW.	R.N.S.	15	BEXAR	16,17,10	25	US 81



FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
G	TEXAS	F-3(17)IN-1088(2):F3(18)	201
STATE DIST. NO.	COUNTY	CONTRACT NO./JOB	HIGHWAY NO.
15	BEAR	16177:101526	US-81



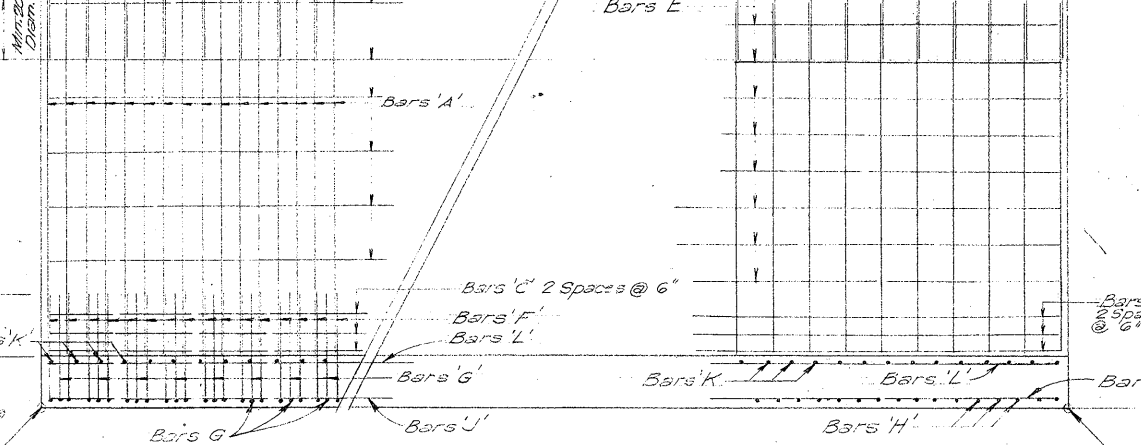
NOTE:
See Retaining Wall
Layouts, Sheet No.
203 to 217 for
Panel Lengths,
Panel Elevations, etc.



TYPICAL ELEV. RET. WALL SHOWING REINFORCING
FOR HEIGHT UNDER 10 FT.

BACK OF WALL

FRONT OF WALL

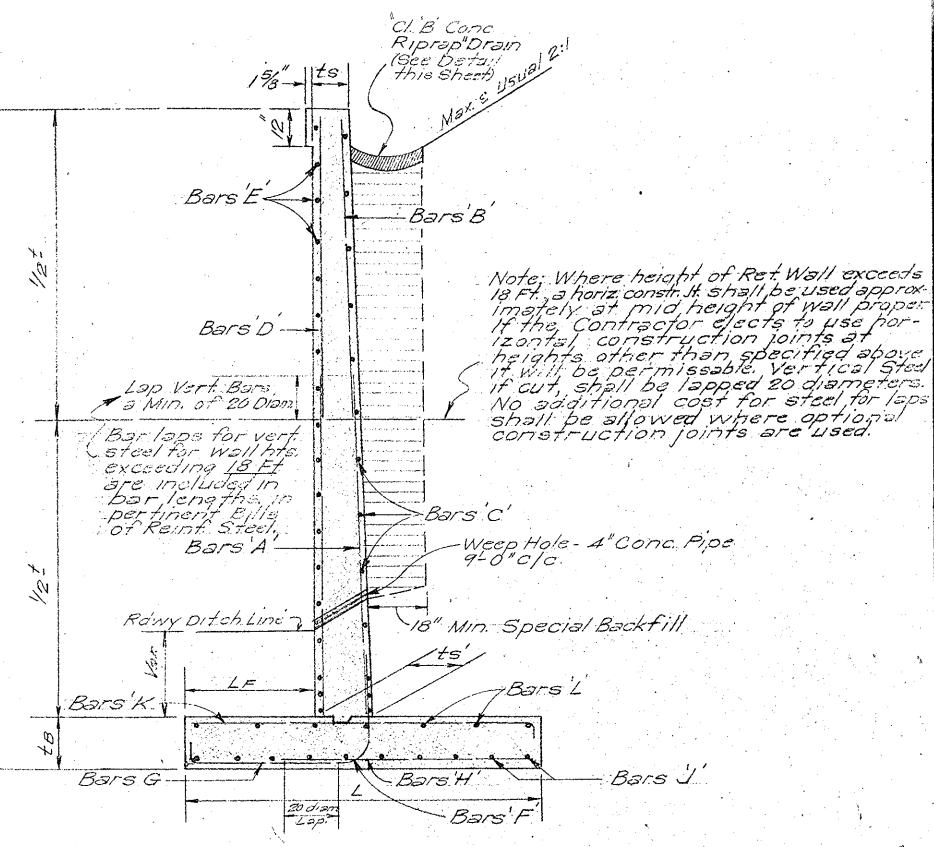


TYPICAL ELEV. OF RET. WALL SHOWING REINFORCING
FOR HEIGHT OF 10 FT. AND OVER

BACK OF WALL

FRONT OF WALL

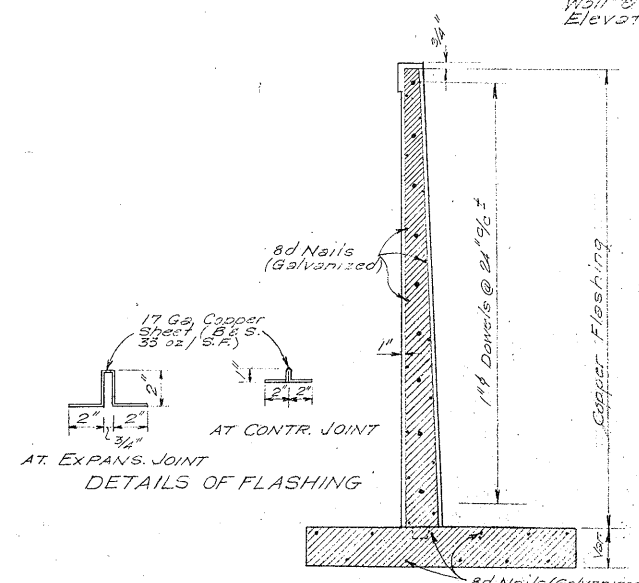
NOTE: See Layouts of
Retaining Walls elsewhere
in these Plans for Top of
Wall & Bottom of Footing
Elevations.



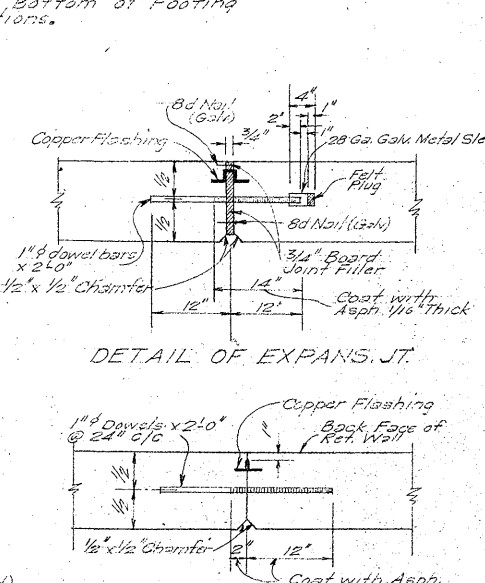
TYP. SECTION - RETAINING WALL

Note: Where height of Ret. Wall exceeds
18 ft., a horiz. constr. joint shall be used approx.
mid height of wall proper
If the Contractor elects to use hori-
zontal construction joints at
heights other than specified above
it will be permissible. Vertical steel
if cut, shall be lapped 20 diameters.
No additional cost for steel for laps
shall be allowed where optional
construction joints are used.

RETAINING WALL - VARIABLE DIMENSIONS & REINSTEEL SIZE & SPACING											
Dimensions			Reinforcing Steel								
H'	ts	ts'	ts	L	LF	A	B	C	D	E	F
4'-6"	12"	12"	12"	3'-6"	9'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
6'-0"	12"	12"	12"	4'-0"	12'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
8'-0"	12"	12"	12"	5'-0"	15'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
10'-0"	12"	12"	12"	6'-0"	18'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
12'-0"	12"	12"	12"	7'-0"	21'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
14'-0"	12"	12"	12"	8'-0"	24'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
16'-0"	12"	12"	12"	9'-0"	27'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
18'-0"	12"	12"	12"	10'-0"	30'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
20'-0"	12"	12"	12"	11'-0"	33'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
22'-0"	12"	12"	12"	12'-0"	36'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
24'-0"	12"	12"	12"	13'-0"	39'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
26'-0"	12"	12"	12"	14'-0"	42'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
28'-0"	12"	12"	12"	15'-0"	45'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
30'-0"	12"	12"	12"	16'-0"	48'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
32'-0"	12"	12"	12"	17'-0"	51'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
34'-0"	12"	12"	12"	18'-0"	54'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
36'-0"	12"	12"	12"	19'-0"	57'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
38'-0"	12"	12"	12"	20'-0"	60'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
40'-0"	12"	12"	12"	21'-0"	63'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
42'-0"	12"	12"	12"	22'-0"	66'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
44'-0"	12"	12"	12"	23'-0"	69'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
46'-0"	12"	12"	12"	24'-0"	72'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
48'-0"	12"	12"	12"	25'-0"	75'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
50'-0"	12"	12"	12"	26'-0"	78'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
52'-0"	12"	12"	12"	27'-0"	81'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
54'-0"	12"	12"	12"	28'-0"	84'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
56'-0"	12"	12"	12"	29'-0"	87'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
58'-0"	12"	12"	12"	30'-0"	90'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
60'-0"	12"	12"	12"	31'-0"	93'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
62'-0"	12"	12"	12"	32'-0"	96'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
64'-0"	12"	12"	12"	33'-0"	99'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
66'-0"	12"	12"	12"	34'-0"	102'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
68'-0"	12"	12"	12"	35'-0"	105'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
70'-0"	12"	12"	12"	36'-0"	108'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
72'-0"	12"	12"	12"	37'-0"	111'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
74'-0"	12"	12"	12"	38'-0"	114'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
76'-0"	12"	12"	12"	39'-0"	117'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
78'-0"	12"	12"	12"	40'-0"	120'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
80'-0"	12"	12"	12"	41'-0"	123'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
82'-0"	12"	12"	12"	42'-0"	126'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
84'-0"	12"	12"	12"	43'-0"	129'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
86'-0"	12"	12"	12"	44'-0"	132'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
88'-0"	12"	12"	12"	45'-0"	135'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
90'-0"	12"	12"	12"	46'-0"	138'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
92'-0"	12"	12"	12"	47'-0"	141'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
94'-0"	12"	12"	12"	48'-0"	144'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
96'-0"	12"	12"	12"	49'-0"	147'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
98'-0"	12"	12"	12"	50'-0"	150'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"
100'-0"	12"	12"	12"	51'-0"	153'	#5 @ 12"	#5 @ 12"	#4 @ 18"	#4 @ 12"	#4 @ 12"	#5 @ 12"

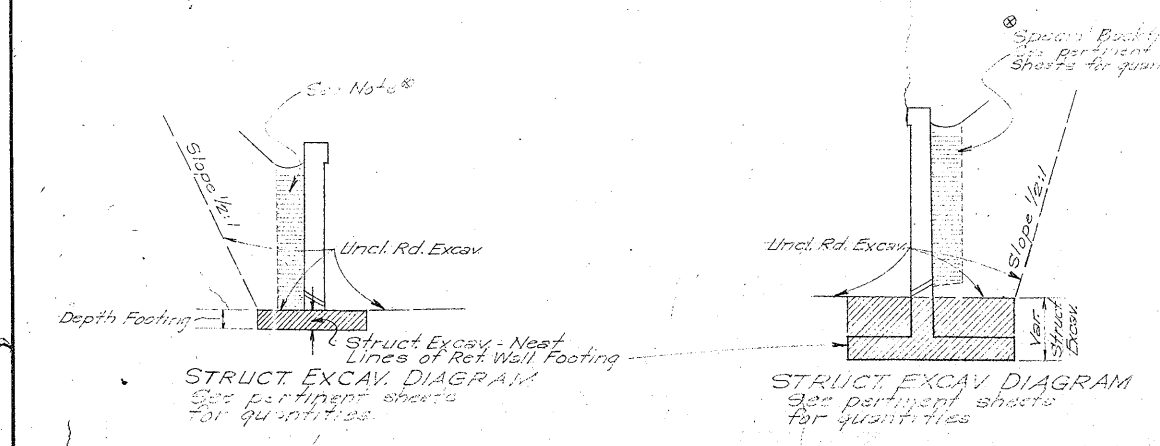


SECTION THRU EXPANS. JT.



DETAIL OF CONTR. JT.

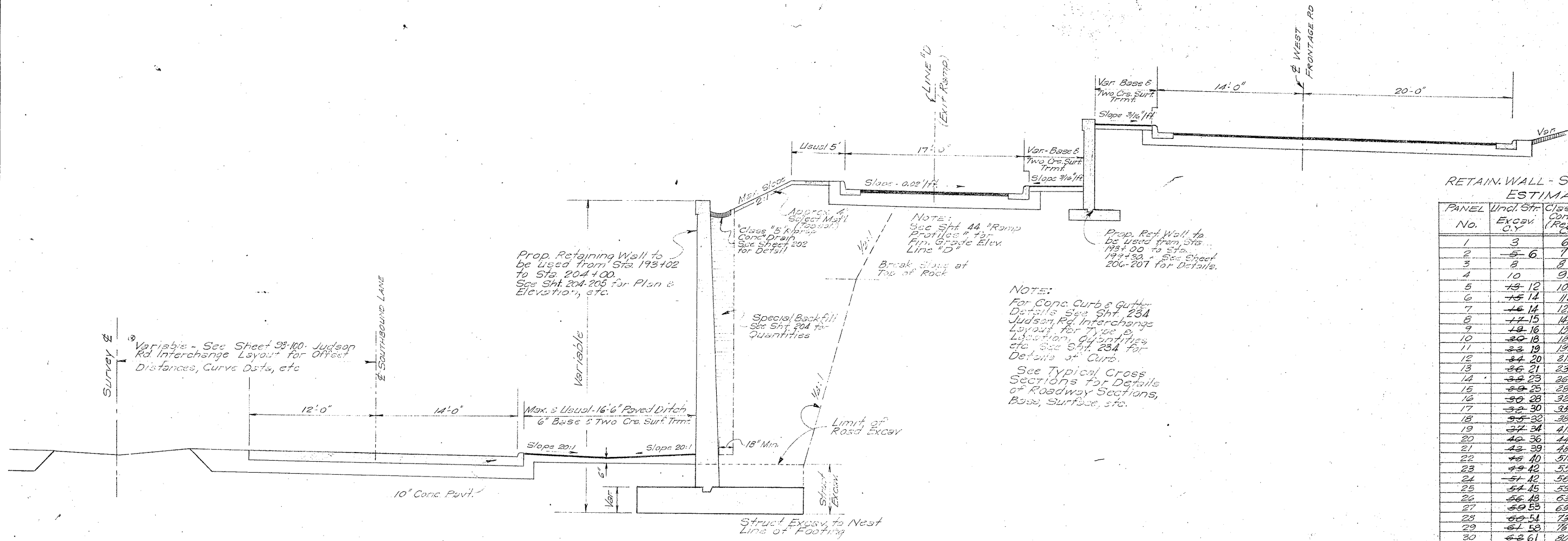
GENERAL NOTES:
Design Loading - 2 ft. Horizontal Surcharge
and Toe Pressure as noted elsewhere on
this sheet.
Concrete for Walls shall be "Class A"
Concrete (Retaining Walls).
Chamfer exposed corners as noted
on this sheet.
Dimensions relating to reinforcing
steel are to centers of bars.
All excavation below bottom of walls
shall be to meet lines.
All material for Expansion and
Contraction Joints other than Dowel
Bars shall not be paid for directly but
shall be included in the unit price bid
for Class A Concrete (Retaining Walls).
4" Conc. Pipe for Weep holes as in-
dicated on this sheet shall not be paid
for directly but shall be included in the
unit price bid for Class A Conc. (Ret. Walls).



GENERAL INFORMATION SHEET RETAINING WALL DETAILS

SHEET 1 OF 16

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	SHEET NO.
6	TEXAS	FI 31(17)	202
STATE DIV. NO.	COUNTY	CONTRACT SECTION NO.	JOB NO.
15	BEXAR	16	7 25



TYPICAL SECTION RETAINING WALLS

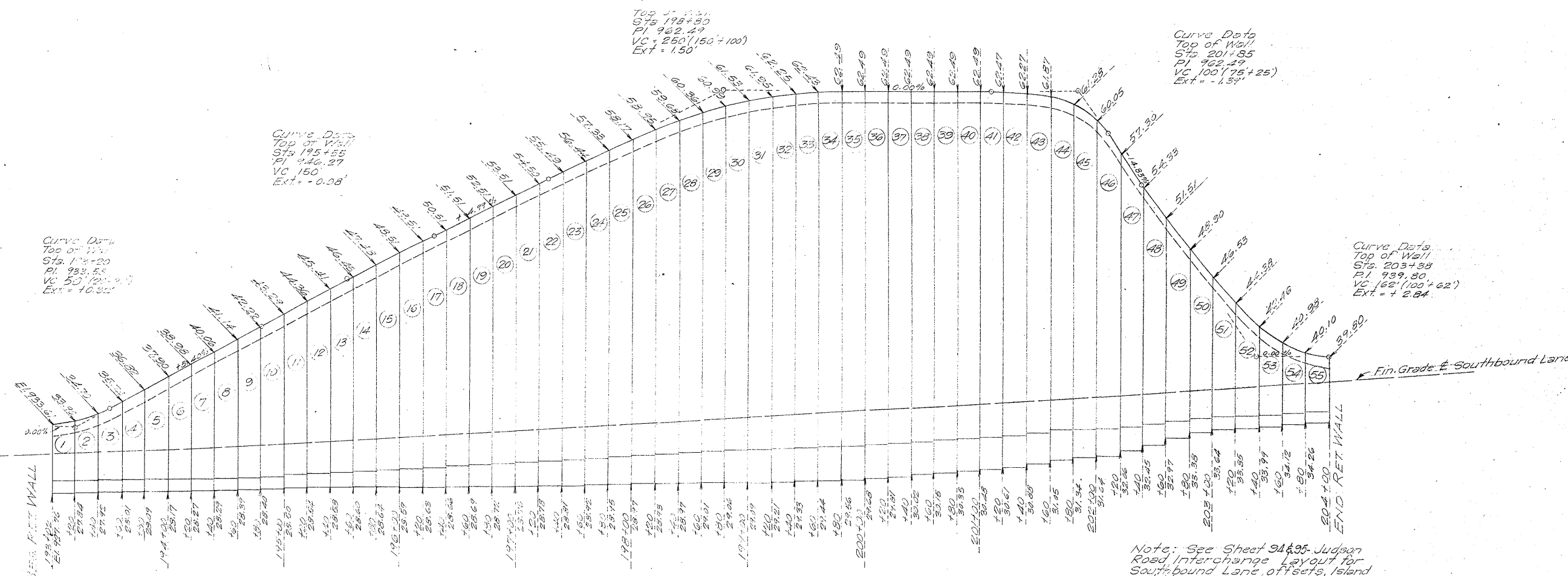
RETAIN. WALL - STA. 193+02 TO 204+00.
ESTIMATED QUANTITIES

PANEL No.	Undr. Str. Excav. C.Y.	Class A Conc. (Ret. Walls) C.Y.	Reinf. Steel Lb.	Cl. B Conc. Riprap (Drain) C.Y.	Special Backfill C.Y.
1	3	6.10	776	0.49	1
2	5-6	7.48	926	0.49	2
3	8	8.47	1061	0.49	4
4	10	9.56	1189	0.49	5
5	13-12	10.67	1310	0.49	7
6	15-14	11.78	1423	0.49	8
7	16-14	12.88	1535	0.49	11
8	17-15	14.15	1649	0.49	12
9	19-16	15.91	1824	0.49	13
10	20-18	18.02	2201	0.49	15
11	22-19	19.23	2387	0.49	16
12	24-20	21.48	2614	0.49	18
13	26-21	23.84	2825	0.49	20
14	28-23	26.32	3209	0.49	22
15	29-25	28.85	3583	0.49	24
16	30-28	32.80	4092	0.49	26
17	32-30	35.65	4373	0.49	28
18	35-32	38.63	4753	0.49	30
19	37-34	41.73	5141	0.49	32
20	40-36	44.87	5569	0.49	35
21	43-39	48.10	6037	0.49	37
22	46-40	51.53	6563	0.49	39
23	49-42	55.08	7150	0.49	41
24	51-42	58.05	7689	0.49	43
25	54-45	59.60	8198	0.49	45
26	56-48	63.20	8785	0.49	47
27	59-53	69.46	9539	0.49	50
28	60-54	73.18	10247	0.49	53
29	61-58	76.93	10921	0.49	55
30	62-61	80.85	11591	0.49	57
31	64-63	84.26	12324	0.49	59
32	65-51	84.71	12379	0.49	59
33	65-51	84.88	12396	0.49	59
34	66-64	84.90	12396	0.49	59
35	66-64	84.77	12384	0.49	59
36	67-65	84.59	12373	0.49	59
37	68-65	84.40	12333	0.49	59
38	67-62	81.04	12058	0.49	58
39	59-62	80.65	12047	0.49	58
40	52-53	79.59	11756	0.49	56
41	56-60	78.39	11732	0.49	56
42	62-60	78.06	11633	0.49	55
43	64-56	72.37	11282	0.49	53
44	59-54	68.64	10857	0.49	50
45	55-47	62.85	10741	0.49	47
46	56-44	54.93	13552	0.49	41
47	44-36	46.27	8530	0.49	33
48	34-27	34.79	6765	0.49	26
49	25-25	25.32	4503	0.49	19
50	23-19	18.43	3693	0.49	13
51	18-16	14.37	1905	0.49	10
52	16-13	11.26	1356	0.49	8
53	12-10	8.79	1104	0.49	5
54	11-9	7.45	954	0.49	3
55	10-8	6.54	830	0.49	1
Totals	8144	6441.38	699243	26.05	1384

PANEL QUANTITY SUMMARY &
TYPICAL SECTION PROP. RETAINING WALL - RIGHT
STA. 193+02 TO STA. 204+00

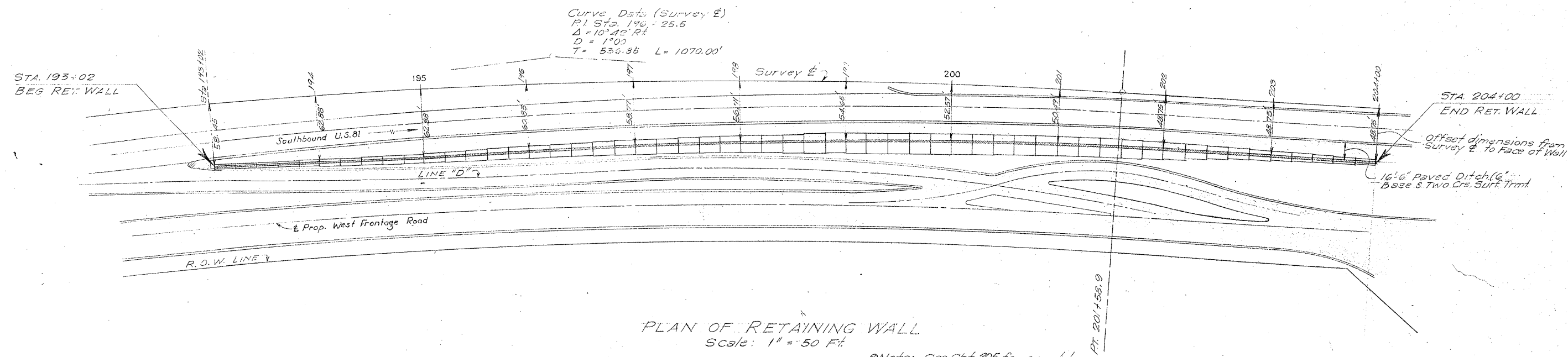
RETAINING WALL DETAILS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	203
STATE DIV. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
15	BEXAR	16 7 25	US-81



BACK ELEVATION OF RETAINING WALL
 Scale: 1" = 50 Ft. Horiz.
 1" = 5 Ft. Vert.
 Length of Wall = 1098'-0"

Note: Footing elevations shown are at the beginning of each panel.



PLAN OF RETAINING WALL
 Scale: 1" = 50 Ft.

ESTIMATED QUANTITIES

Retaining Wall Rt. Sta. 193+02 to Rt. Sta. 204+00 (Wall-Rt. of S.B. Lane)	Unpl. Struct. Excav. CY	Class "A" Conc. (Ret. Walls) CY	Reinf. Steel Lb.	Class "B" Conc. (Cns. & Apron) CY	Special Basketball CY
	2144	2491.28	520,243	26.95	1991
		2491.28	520,243	26.95	1991

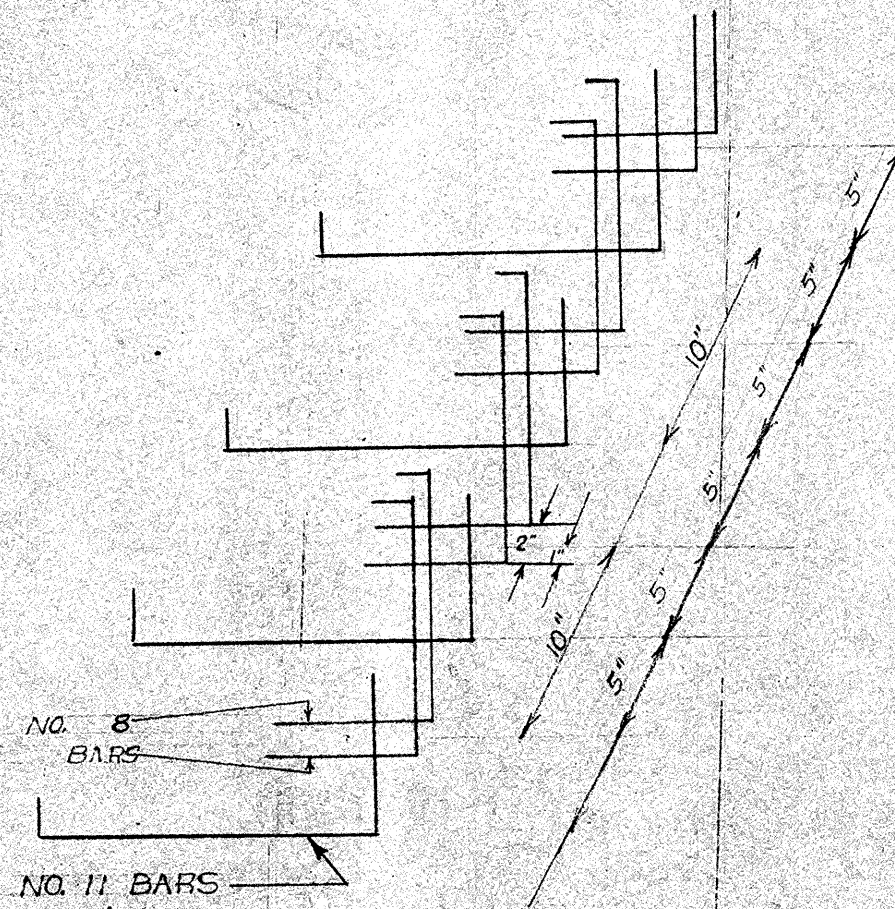
Note: See Sheet 203 for Typical Retaining Wall Section, Bill of Reinforcing Steel, Panel Data, etc.

Note: See Sht. 205 for quantity breakdown for each Panel.

PROPOSED RETAINING WALL - RIGHT
 STA. 193+02 TO STA. 204+00

RETAINING WALL DETAILS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F-1-3(17)	204
STATE Div. No.	COUNTY	CONTRACT NO.	SECTION NO.
15	BEVAP	16	7
			25



ISOMETRIC VIEW

Typical Arrangement of "F" bars for panels 30 thru 46

In retaining wall Rt. Sta. 193+02 To Rt. Sta. 204+00

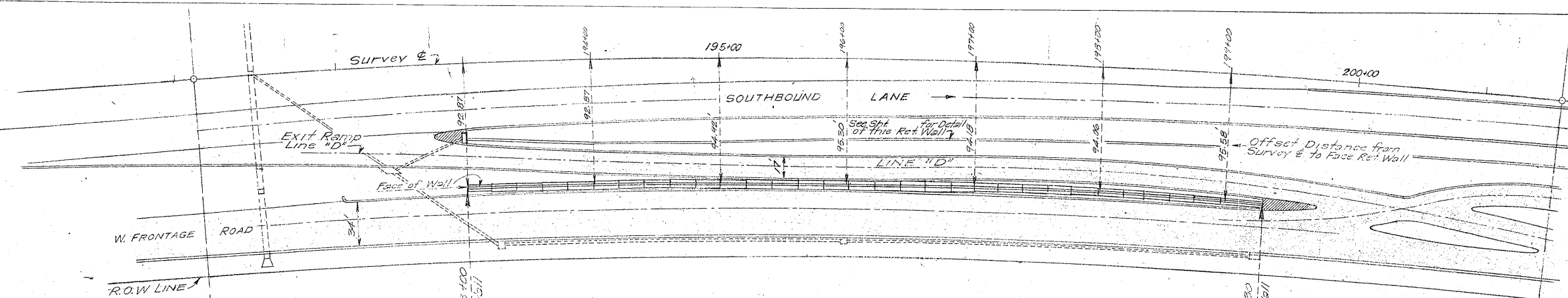
Note: 2" space between bars in each pair of no. 8 bars.

283B

BILL OF REINFORCING STEEL (RET. WALL- RT. STA. 193+02 TO RT. STA. 204+00)

RT. STA. 193+02 TO STA. 204+00
RETAINING WALL DETAILS
SHEET 4 OF 16

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	F1-31(17)			205
STATE Div. No.	COUNTY	CONTRACT NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	BEYAR	16	7	25	US-81

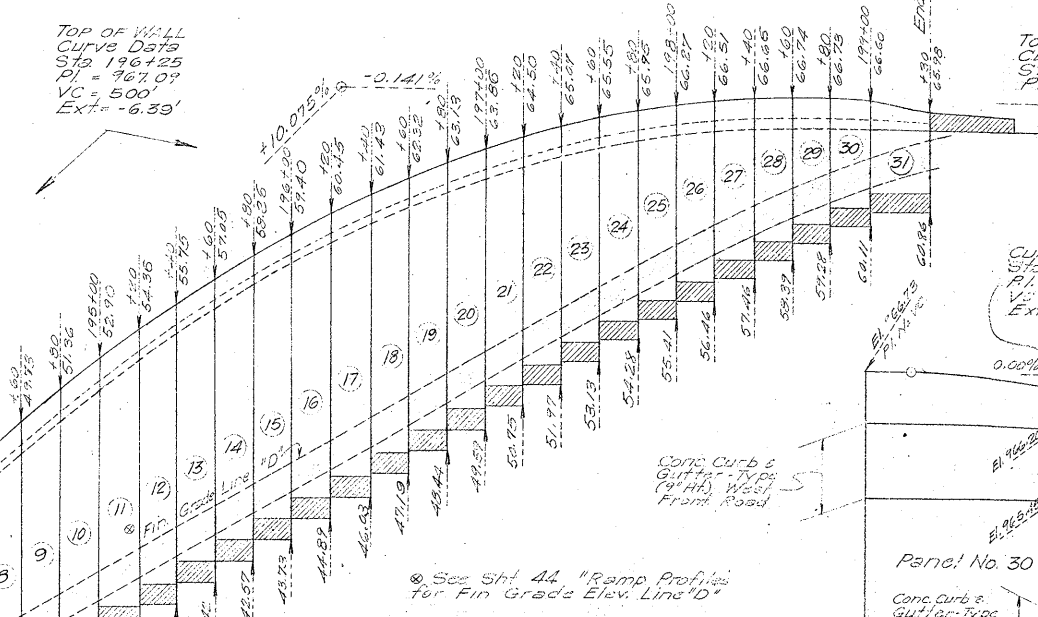
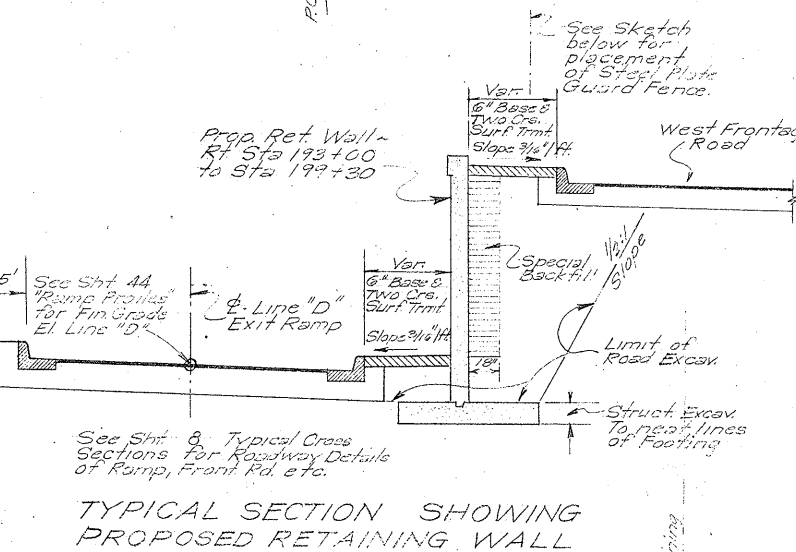


Curve Data (Survey 2)
 Sta. 196+25.5
 R = 1000.00'
 T = 536.58'
 L = 1070.00'

See Table Below for Panel Heights & Lengths for this Wall.

Note: See Sht. 23-35 Judson Rd. Interchange for Ramp Offsets, Island Details, etc.

ESTIMATED QUANTITIES					
PANEL NO.	Unl. Str. Excav. C.Y.	C/A Conc. (Ret. Wall) C.Y.	Reinf. Steel Lb.	Special Backfill C.Y.	
1	4	7.61	894	4	627
2	4	8.49	1093	5	782
3	4	9.30	1185	7	591
4	4	10.91	1564	8	1073
5	4	11.70	1666	9	1145
6	5	13.13	1870	11	1482
7	5	13.73	1921	12	1533
8	5	14.21	1973	14	1460
9	6	16.22	2662	14	2015
10	6	16.57	2683	15	2031
11	6	16.83	2757	15	2108
12	8	18.83	3749	15	3079
13	8	18.98	3763	15	3429
14	8	19.07	3768	15	3423
15	8	19.03	3768	15	3423
16	8	19.35	3765	15	3430
17	8	19.94	3753	15	3418
18	8	18.75	3744	15	3409
19	7	16.74	2749	15	2080
20	7	16.44	2675	15	2026
21	7	16.04	2623	14	1974
22	6	14.05	1935	14	1409
23	5	13.57	1867	13	1179
24	5	13.05	1809	12	1121
25	4	11.74	1654	11	1200
26	4	11.16	1584	9	1083
27	4	10.57	1515	9	698
28	4	9.22	1147	7	816
29	4	8.59	1076	6	628
30	3	7.18	927	5	654
31	4	9.52	1242	5	670
Totals	174	421.66	69,361	354	54,817



Curve Data
 Sta. 199+00
 R = 966.73
 V = 30
 Ext. = -0.13'

Curve Data
 Sta. 199+20
 R = 966.05
 V = 10
 Ext. = +0.05'

END OF RETAINING WALL DETAIL
 Scale: 1" = 10' Horiz., 1" = 1.0' Vert.

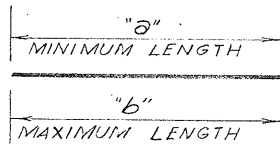
PANEL NO.	Panel Length	Panel Width	Panel Area
1	5'-6 1/8"	7'-1 1/2"	20'-0"
2	6'-4 1/8"	3'-5 3/4"	"
3	7'-5 1/8"	9'-5"	"
4	8'-7"	10'-7 1/8"	"
5	9'-8"	11'-7 1/2"	"
6	10'-7 3/8"	12'-6 3/8"	"
7	11'-6"	13'-9 3/8"	"
8	12'-2 1/4"	13'-10 3/4"	"
9	12'-10 1/8"	14'-5 1/4"	"
10	13'-5 3/8"	14'-10 3/8"	"
11	13'-8 1/4"	15'-1 1/8"	"
12	14'-1 1/4"	15'-6"	"
13	14'-4"	15'-7 1/8"	"
14	14'-5 3/4"	15'-8 1/2"	"
15	14'-6 3/8"	15'-8"	"
16	14'-6 1/8"	15'-6 3/4"	"
17	14'-5"	15'-4 3/4"	"
18	14'-2 1/8"	15'-1 1/2"	"
19	13'-10 1/2"	14'-8 1/4"	"
20	13'-6 1/4"	14'-3 1/4"	"
21	13'-1 3/8"	12'-9"	"
22	12'-6 3/8"	13'-1 1/4"	"
23	11'-11 1/4"	12'-5"	"
24	11'-3 1/4"	11'-8"	"
25	10'-6 1/8"	10'-10 3/4"	"
26	9'-9 3/4"	10'-0 3/4"	"
27	9'-0 3/4"	9'-2 1/2"	"
28	8'-3 1/4"	8'-4 1/2"	"
29	7'-5 1/4"	7'-5 3/8"	"
30	6'-7 1/2"	6'-5 3/8"	"
31	6'-8 7/8"	5'-1 1/2"	30'-0"

ESTIMATED QUANTITIES				
Retaining Wall Rt. of Sta. 193+00 to Rt. of Sta. 199+30 (Wall - Rt. of Line "D" (Exit Ramp))	Unl. Str. Excav. C.Y.	C/A Conc. (Ret. Wall) C.Y.	Reinf. Steel Lb.	Special Backfill C.Y.
	174	421.66	69,361	354

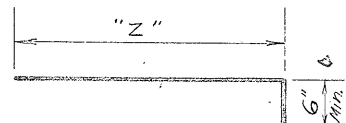
Note: See Sheet 207 for Bill of Reinforcing Steel and Retaining Wall Panel Data.

PROPOSED RETAINING WALL - RT OF LINE "D" (EXIT RAMP) & RT OF STA. 193+00 TO STA. 199+30 RETAINING WALL DETAILS

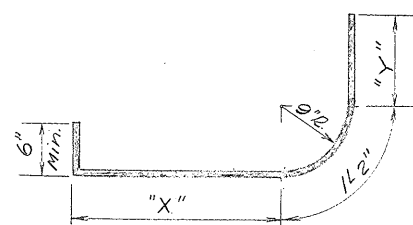
BILL OF REINFORCING STEEL (RET WALL-RT STA 193+00 TO 199+30)

[illegible]

BARS A, B & D



BARS K



BARS F & G

* Actual Wt. required
for this Wall.

BILL OF REINFORCING STEEL
PROP. RETAINING WALL - BT. OF LINE "D" (EXIT
RAMP) & RT. OF STA. 193+00 TO STA. 193+30
RETAINING WALL DETAILS

SHEET 6 OF 16

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	ENTRY NO.
6	TEXAS	F1-31(17)	207
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.
15	DEXAR	16	7
		25	45-81

RET. WALL NOTE:
For height of Wall at
Panel lines and depth
and size of Footing see
Table of Variable
Dimensions.

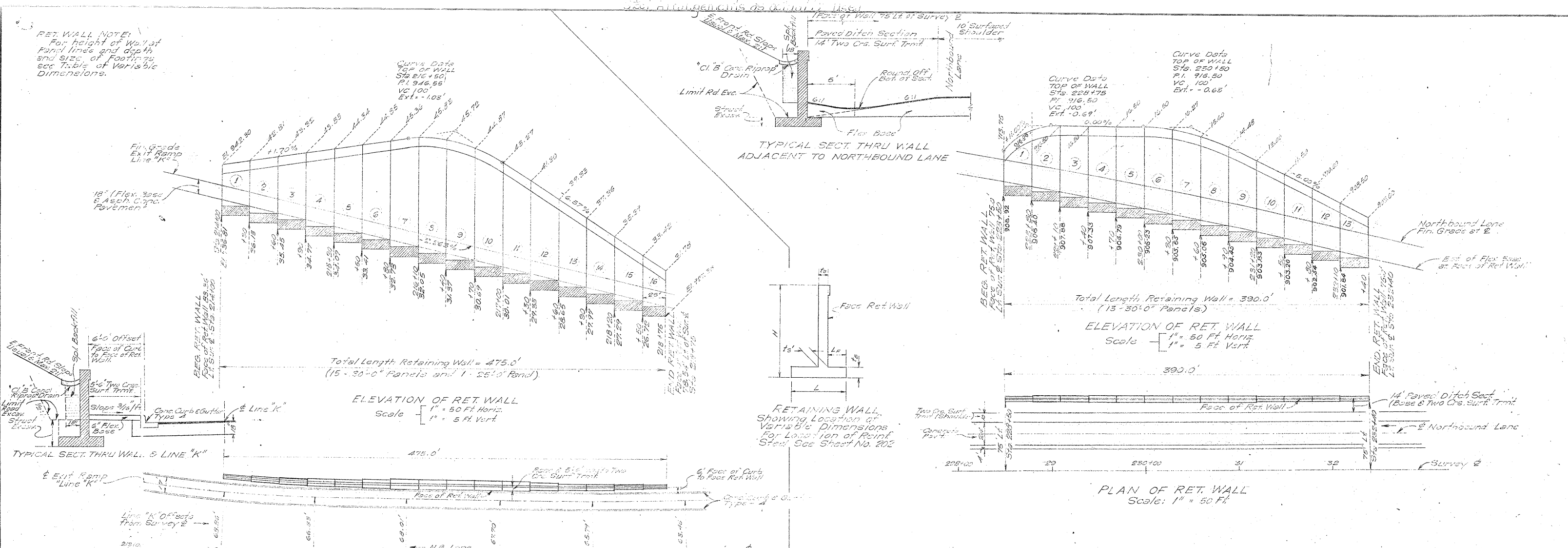


TABLE OF VARIABLE DIMENSIONS & PANEL QUANTITIES

PANEL NO.	Begin Sect.	End Sect.	ts	ts'	ts''	LF	L	Uncl. Str. Excav. (Ret. Wall) C.Y.	Class A Conc. (Ret. Wall) C.Y.	Reinf. Steel (Ret. Wall) Lb.	Cl. B Conc. Riprap Backfill C.Y.	Special Backfill C.Y.
1	5'-5.5"	6'-0"	12'	12'	12'	4'-0"	4'-0"	13	9.54	1225	100.0	0.74
2	6'-5.5"	7'-0"	12'	12'	12'	4'-0"	4'-0"	17	12.32	1444	150.0	0.74
3	7'-5.5"	8'-0"	12'	12'	12'	4'-0"	4'-0"	17	12.32	1444	150.0	0.74
4	8'-5.5"	9'-0"	12'	12'	12'	4'-0"	4'-0"	20	16.06	2155	180.0	0.74
5	9'-5.5"	10'-0"	12'	12'	12'	4'-0"	4'-0"	20	16.06	2155	180.0	0.74
6	10'-5.5"	11'-0"	12'	12'	12'	4'-0"	4'-0"	23	19.22	2701	210.0	0.74
7	11'-5.5"	12'-0"	12'	12'	12'	4'-0"	4'-0"	23	19.22	2701	210.0	0.74
8	12'-5.5"	13'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
9	13'-5.5"	14'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
10	14'-5.5"	15'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
11	15'-5.5"	16'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
12	16'-5.5"	17'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
13	17'-5.5"	18'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
14	18'-5.5"	19'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
15	19'-5.5"	20'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
16	20'-5.5"	21'-0"	12'	12'	12'	4'-0"	4'-0"	27	23.37	3345	240.0	0.74
TOTALS								338	278.66	36173	11.72	260

PLAN OF RET. WALL
Scale: 1" = 50 Ft

ESTIMATED QUANTITIES

Uncl. Str. Excav. (Ret. Wall) C.Y.	Class A Conc. (Ret. Wall) C.Y.	Reinf. Steel (Ret. Wall) Lb.	Cl. B Conc. Riprap Backfill C.Y.	Special Backfill C.Y.
338	278.66	36173	11.72	260

PROP. RETAINING WALL
LT. STA. 214+00 TO 213+75

* Includes 77 #8 Dowel Bars 2'-0" long. See Sht. 200 for No. of Dowels for each Panel.

TABLE OF VARIABLE DIMENSIONS & PANEL QUANTITIES

PANEL NO.	Begin Sect.	End Sect.	ts	ts'	ts''	LF	L	Uncl. Str. Excav. (Ret. Wall) C.Y.	Class A Conc. (Ret. Wall) C.Y.	Reinf. Steel (Ret. Wall) Lb.	Cl. B Conc. Riprap Backfill C.Y.	Special Backfill C.Y.
1	4'-10"	5'-0"	12'	12'	12'	1'-0"	4'-0"	4	10.13	1312	100.0	0.74
2	5'-10"	6'-0"	12'	12'	12'	1'-0"	4'-0"	6	13.35	1655	140.0	0.74
3	6'-10"	7'-0"	12'	12'	12'	1'-0"	4'-0"	6	13.35	1655	140.0	0.74
4	7'-10"	8'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
5	8'-10"	9'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
6	9'-10"	10'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
7	10'-10"	11'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
8	11'-10"	12'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
9	12'-10"	13'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
10	13'-10"	14'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
11	14'-10"	15'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
12	15'-10"	16'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
13	16'-10"	17'-0"	12'	12'	12'	1'-0"	4'-0"	7	15.89	2000	160.0	0.74
TOTALS								80	186.09	24765	7.62	144

ESTIMATED QUANTITIES

Uncl. Str. Excav. (Ret. Wall) C.Y.	Class A Conc. (Ret. Wall) C.Y.	Reinf. Steel (Ret. Wall) Lb.	Cl. B Conc. Riprap Backfill C.Y.	Special Backfill C.Y.
80	186.09	24765	7.62	144

PROP. RETAINING WALL
LT. STA. 223+50 TO 232+40

* Includes 46 #8 Dowel Bars 2'-0" long. See Sht. 210 for No. of Dowels for each Panel.

BILL OF REINFORCING STEEL

BAR NO.	BAR A	BAR E	BAR C	BAR D	BAR E	BAR F	BAR G	BAR H	BAR J	BAR K	BAR L
1	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
2	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
3	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
4	41 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
5	52 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
6	52 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
7	72 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
8	72 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
9	72 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
10	72 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
11	72 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
12	72 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
13	41 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
14	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
15	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
16	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4

BILL OF REINFORCING STEEL

BAR NO.	BAR A	BAR B	BAR C	BAR D	BAR E	BAR F	BAR G	BAR H	BAR J	BAR K	BAR L
1	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
2	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
3	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
4	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
5	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
6	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
7	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
8	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
9	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
10	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
11	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
12	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4
13	31 #5	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4	12 #4

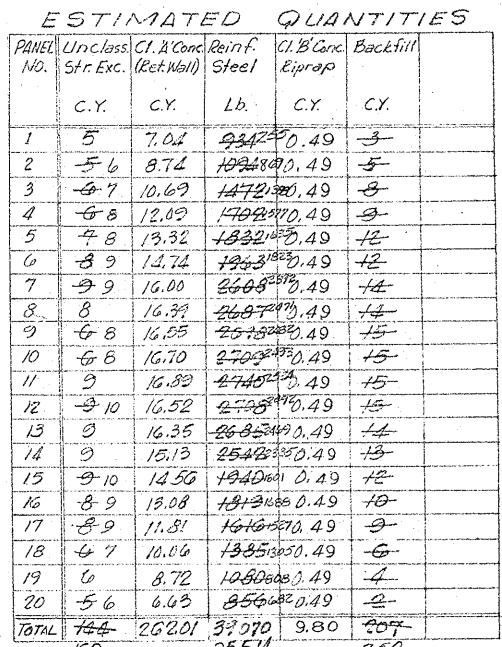
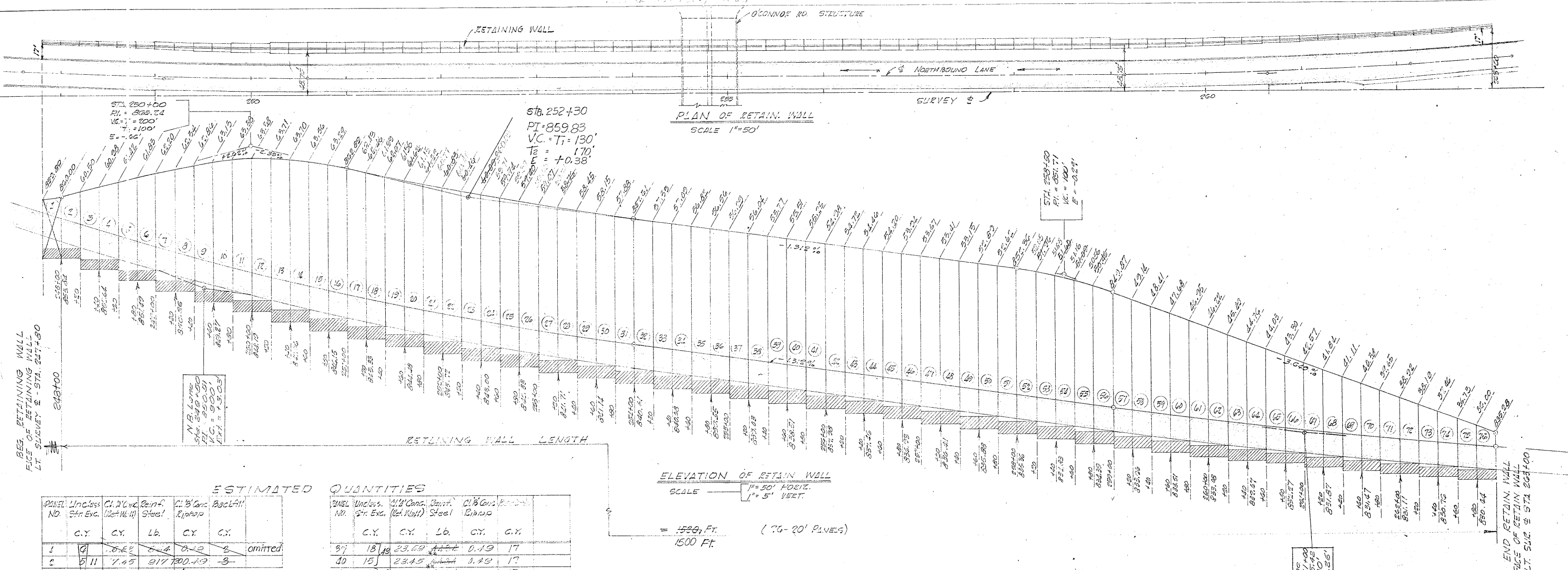


Diagram illustrating the dimensions and types of reinforcement bars used in the concrete slab:

- Bars A, B & D:** Straight bars with dimensions:
 - MINIMUM LENGTH: 2"
 - MAXIMUM LENGTH (Av.): 16"
 - AVERAGE LENGTH
- Bars K:** L-shaped bars with dimensions:
 - Horizontal length: x"
 - Vertical length: 6"
 - Hook length: 1/2"
- Bars F & G:** Hooked bars with dimensions:
 - Horizontal length: x"
 - Vertical length: 6"
 - Hook length: 1/2"
 - Hook angle: 1/4"

PROP. RETAINING WALL LT. STA. 246+00 TO LT. STA. 250+00
RETAINING WALL DETAILS
SHEET 10 OF 16

TRD. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.				ENTRY NO.
6	TEXAS	FI 31(17)				211
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	MILEAGE + S.D.	
15	BEXAR	16	7	25	US31	



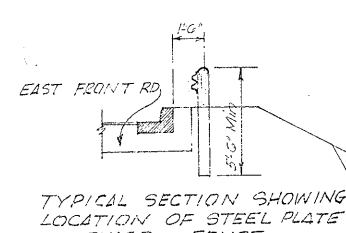
BEG. RETAINING WALL
FACE OF RETAINING WALL
LT. SURVEY & STA. 247+80

END RETAINING WALL
FACE OF RETAINING WALL
LT. SURVEY & STA. 263+00

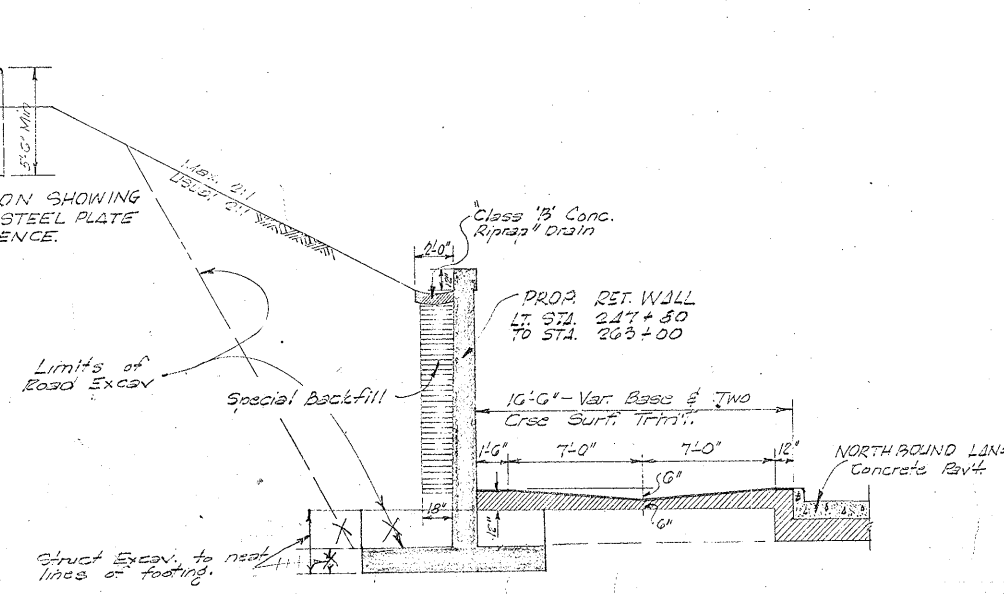
ESTIMATED QUANTITIES

PANEL NO.	Unclass. Str. Exc.	C.Y.	Class 'B' Conc. (24" Min.)	Reinf. Steel	Class 'B' Conc. Riprap	Backfill	Notes
		C.Y.		Lb.	C.Y.		
1	9	8.62	8.62	0.12	2	omitted	
2	5	11	7.45	917	100.49	3	
3	8	13	5.17	1123	1080.19	4	
4	6	14	9.78	1338	1080.19	4	
5	8	15	11.32	1525	1080.19	4	
6	7	16	11.38	1424	1080.19	4	
7	10	18	14.17	1046	1080.19	4	
8	7	19	14.08	1046	1080.19	4	
9	12	39	16.17	855	1080.19	4	
10	3		16.47	845	0.19	14	
11	15	32	18.13	379	0.19	75	
12	10	24	19.32	379	0.19	16	
13	20		23.23	4434	0.19	17	
14	15	51	23.19	4434	0.19	17	
15	20	50	23.37	4434	0.19	17	
16	15		23.21	4434	0.19	17	
17	20		23.27	4434	0.19	17	
18	15	49	23.10	4434	0.19	17	
19	20		23.28	4434	0.19	17	
20	15	50	23.27	4434	0.19	17	
21	20		23.23	4434	0.19	17	
22	15	50	23.20	4434	0.19	17	
23	20		23.10	4434	0.19	17	
24	15	51	23.10	4434	0.19	17	
25	20		23.17	4434	0.19	17	
26	15	52	23.19	4434	0.19	17	
27	20		23.15	4434	0.19	17	
28	15	52	23.17	4434	0.19	17	
29	15		23.10	4434	0.19	17	
30	15		23.15	4434	0.19	17	
31	18		23.13	4434	0.19	17	
32	15	51	23.15	4434	0.19	17	
33	15	50	23.15	4434	0.19	17	
34	15	50	23.15	4434	0.19	17	
35	18		23.13	4434	0.19	17	
36	15	50	23.15	4434	0.19	17	
37	15	50	23.15	4434	0.19	17	
38	15		23.15	4434	0.19	17	
SUB-TOTAL	548	462	78,155,306	15,662	553		
TOTAL				15.13			

PANEL NO.	Unclass. Str. Exc.	C.Y.	Class 'B' Conc. (24" Min.)	Reinf. Steel	Class 'B' Conc. Riprap	Backfill	Notes
		C.Y.		Lb.	C.Y.		
37	18	19	23.69	4434	0.19	17	
38	15		23.45	4434	0.19	17	
39	18	50	23.69	4434	0.19	17	
40	15		23.45	4434	0.19	17	
41	18	49	23.69	4434	0.19	17	
42	15		23.45	4434	0.19	17	
43	18	49	23.69	4434	0.19	17	
44	15		23.45	4434	0.19	17	
45	18	48	23.69	4434	0.19	17	
46	15		23.45	4434	0.19	17	
47	18	48	23.69	4434	0.19	17	
48	15		23.45	4434	0.19	17	
49	18	49	23.69	4434	0.19	17	
50	15		23.45	4434	0.19	17	
51	18	51	23.69	4434	0.19	17	
52	15		23.45	4434	0.19	17	
53	18	49	23.69	4434	0.19	17	
54	15		23.45	4434	0.19	17	
55	12	44	21.56	3638	0.19	16	
56	12		21.30	3638	0.19	16	
57	14	40	19.38	3419	0.19	14	
58	12		19.30	3419	0.19	14	
59	14	37	17.13	3221	0.19	13	
60	12		17.14	3491	0.19	13	
61	12	48	16.10	3491	0.19	12	
62	9		15.54	3255	0.19	12	
63	11	32	14.50	3114	0.19	11	
64	9		13.97	3114	0.19	10	
65	10	15	13.16	1752	0.19	9	
66	8	14	12.08	1772	0.19	9	
67	8	13	12.04	1408	0.19	8	
68	6	12	10.92	1408	0.19	7	
69	7	13	10.89	1472	0.19	6	
70	5	12	9.77	1340	0.19	6	
71	6	11	9.50	1319	0.19	5	
72	5	10	8.68	1084	0.19	4	
73	5	10	8.39	1084	0.19	4	
74	5	9	7.40	915	0.19	3	
75	5	10	7.08	915	0.19	3	
76	4	8	6.17	812	0.19	2	
SUB-TOTAL	455	568	71,115,953	12,662	468		
TOTAL	1578	1578		15,13			
TOTAL	1003	1003	15,13		1165		



TYPICAL SECTION SHOWING LOCATION OF STEEL PLATE GUARD FENCE.



TYPICAL SECTION SHOWING PROPOSED RETAINING WALL FOR QUANTITIES, LOCATION & LIMITS OTHER THAN RETAINING WALL SEE PLAN-PROFILE SHEETS, ETC.

248+00
PROP. RETAINING WALL LT. STA. 247+80 TO STA. 263+00
RETAINING WALL DETAILS
SHEET II OF 16

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
15	TEXAS	F1-31(17)	212
STATE DIV. NO.	COUNTY	SECTION NO.	NO. OF SHEETS
15	BEXAR	16	7 25 115.81

BILL OF REINFORCING STEEL (RETAINING WALL LT. STA. 247+00 TO LT. STA. 263+00)

PANEL		DATA						BARS A				BARS B				BARS C				BARS D				BARS E				BARS F				BARS G				BARS H				BARS J				BARS K				BARS L				QUANTITIES		PAGE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
PANEL NO.	RES PANEL	EVO PANEL	CS	LS	LS	L	LS	H	No	SIZE	SPAC	"A"	"B"	LEN	WT	No	SIZE	SPAC	"C"	"D"	LEN	WT	No	SIZE	SPAC	"E"	"F"	LEN	WT	No	SIZE	SPAC	"X"	"Y"	LEN	WT	No	SIZE	SPAC	"X"	"Y"	LEN	WT	No	SIZE	SPAC	"Z"	LEN	WT	No	SIZE	SPAC	LEN	WT	No	SIZE	SPAC	LEN	WT	STEEL	CONC	GY	No																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1	5'-11 1/2"	6'-1 7/8"	12"	15"	15"	4'-0"	14'	6	21	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20	#5	12"	4'-0"	12"	20

NOTE: ALL PANELS THIS WALL ARE 20'-0" IN LENGTH.

(PROP. RETAINING WALL LT.
STA. 247+00 TO LT. STA. 263+00)

RETAINING WALL DETAILS

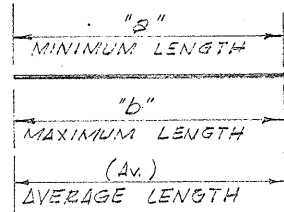
SHEET 12 OF 16

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.		
G	TEXAS	F1-31(17)	213		
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	BEXAR	16	7	25	US-81

BILL OF REINFORCING STEEL (RETAINING WALL LT. STA. 247+00 TO LT. STA. 263+00)

[illegible]

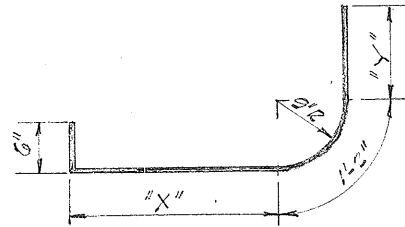
NOTE: ALL PANELS THIS WALL ARE 20'-0" IN LENGTH



BARS A, B & D



BARS K



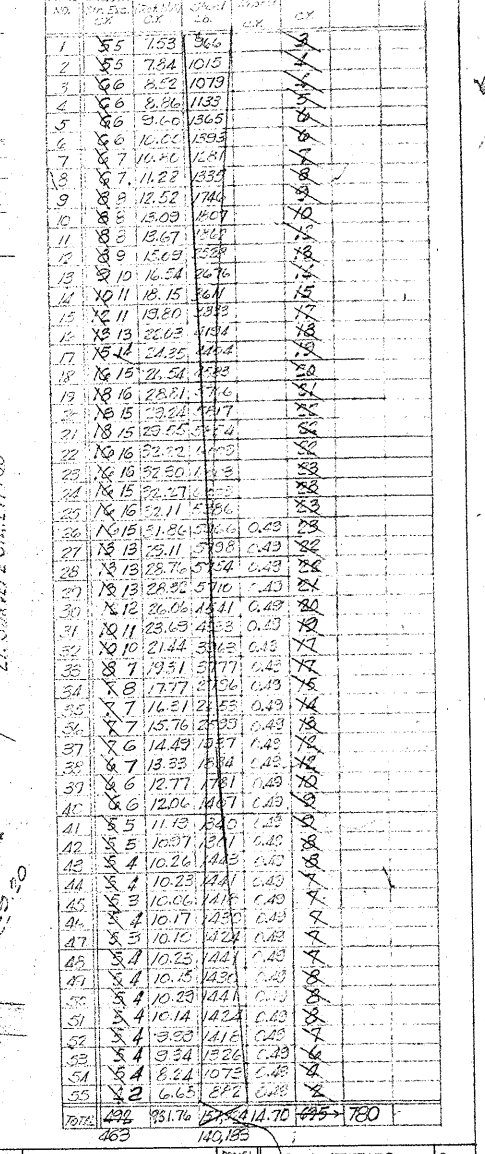
BARS F E G

PROP. RETAINING WALL LT. STA. 247+00 TO LT. STA. 263+00

RETAINING WALL DETAILS

SHEET 13 OF 16

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	F1-31(17)	214
STATE DIV. NO.	COUNTY	CONTR. NO.	ELECTION NO.
15	BEXAR	16	7
		25	US 81

[illegible]

PROP. RETAINING WALL LT. STA. 260+00 TO LT. STA. 271+00
RETAINING WALL DETAILS
SHEET 14 OF 16

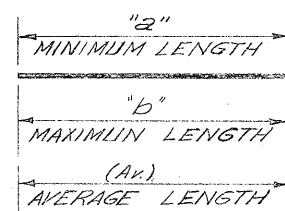
TEO. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	FI-31(17)			215
STATE Div. No.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
15	BEAR	16	7	25	US. 81

BILL OF REINFORCING STEEL (RETAINING WALL LT. STA. 260+00 TO LT. STA. 271+00)

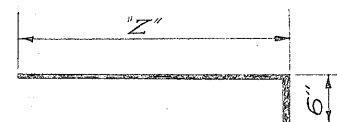
[illegible]

NOTE: ALL PANELS THIS WALL ARE 20'-0" IN LENGTH.

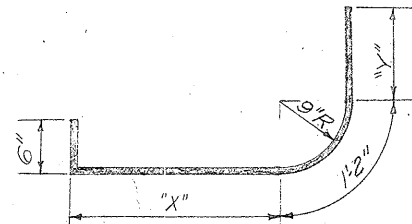
NOTE: * Includes 1-20 Bar Dia. Lap
 @ Includes Additional Length of 10 Bar Dia.



BARS $A, B \notin D$



BARS K



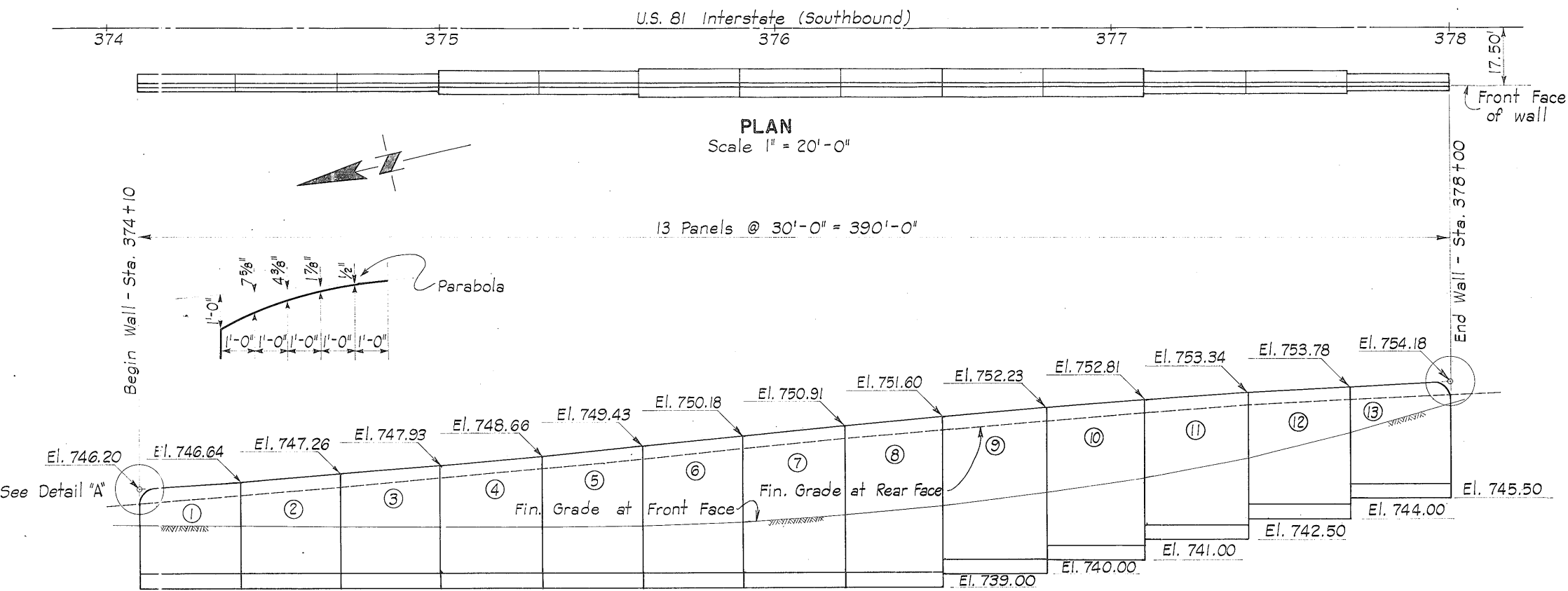
BARS $F \notin G$

PROP. RETAINING WALL LT. STA. 260+00 TO LT. STA. 271+00

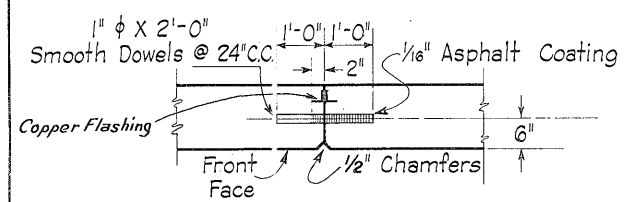
RETAINING WALL DETAILS

SHEET 15 of 16

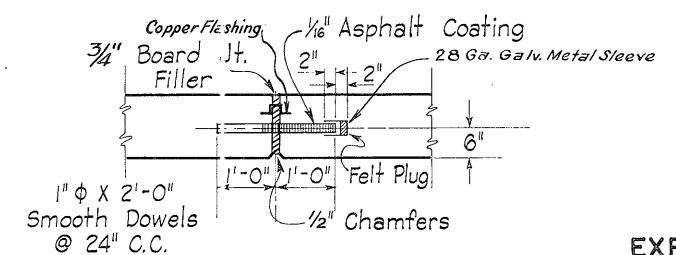
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	F-1-31(17)			216
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	MILEAGE NO.
15	BEXAR	16	7	25	115.91



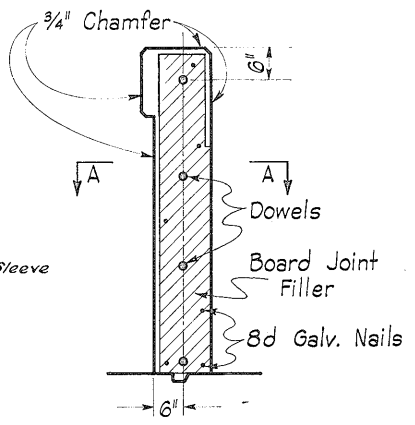
FRONT ELEVATION
Vertical = 1" = 5'-0"
Horizontal = 1" = 20'-0"



CONTRACTION JOINT DETAIL



SECTION A-A



EXPANSION JOINT

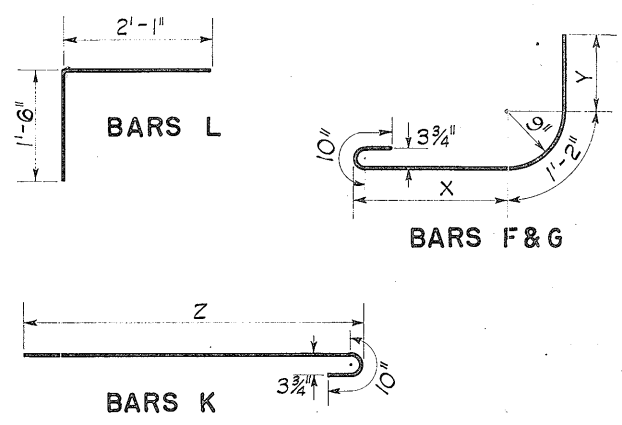
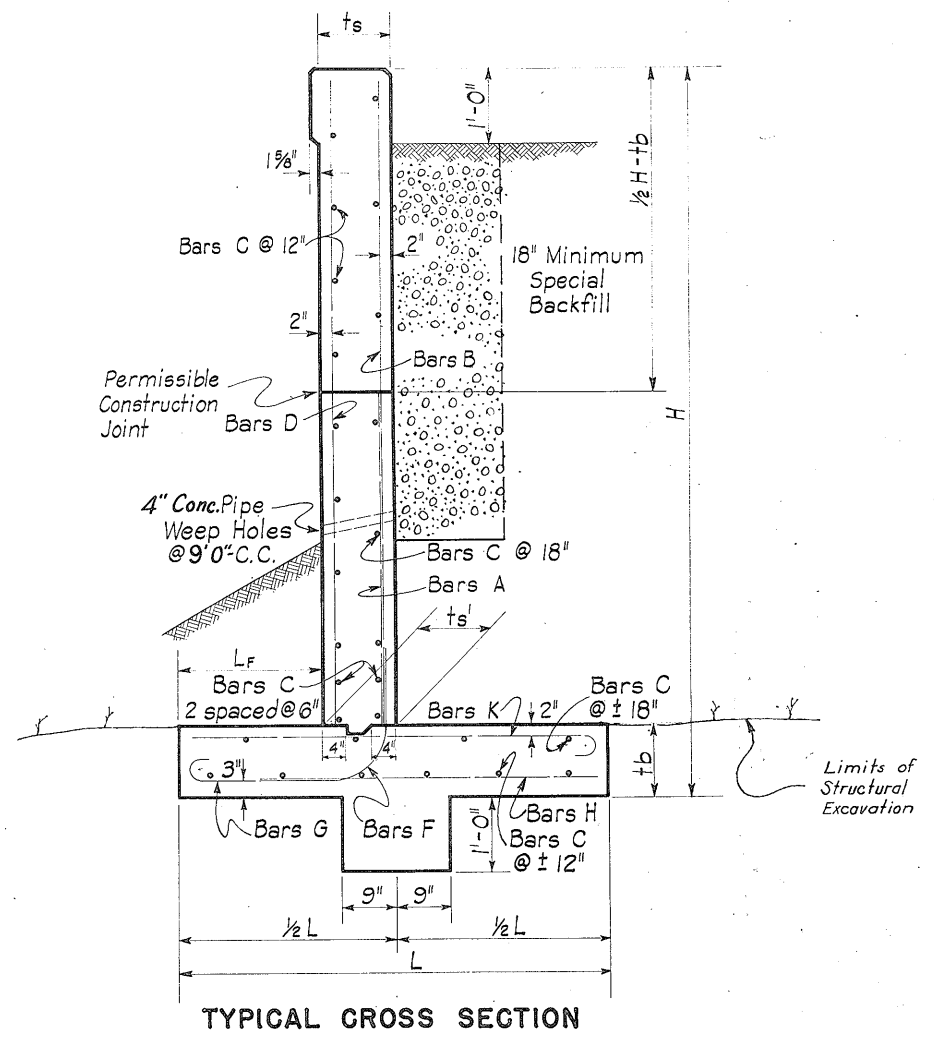


TABLE OF VARIABLE DIMENSIONS													
PANEL DIMEN.	1	2	3	4	5	6	7	8	9	10	11	12	13
H(max)	8'	8'	8'	10'	10'	12'	12'	12'	12'	12'	10'	10'	8'
ts	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
ts'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
tb	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
L	5'-0"	5'-0"	5'-0"	6'-0"	6'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	6'-0"	6'-0"	6'-0"
Lf	1'-6"	1'-6"	1'-6"	2'-0"	2'-0"	2'-6"	2'-6"	2'-6"	2'-6"	2'-6"	2'-0"	2'-0"	1'-6"



TYPICAL CROSS SECTION

GENERAL NOTES :

Design Data : AASHTO Spec. 1949 - Max. toe pressure = 4,000 * 1/2".

All concrete to be Class "A".
All exposed corners to be chamfered as indicated.

Payment for all necessary materials for expansion and contraction joints, including dowels, shall be included in the contract unit price bid for "Class 'A' Concrete, Retaining Walls."

BAR PANEL	BARS A					BARS B					BARS C					BARS D					BARS F					BARS G					BARS H					BARS K									
	No.	Size	Spac.	Lgth	Wt.	No.	Size	Spac.	Lgth	Wt.	No.	Size	Spac.	Lgth	Wt.	No.	Size	Spac.	Lgth	Wt.	No.	Size	Spac.	X	Y	Lgth	Wt.	No.	Size	Spac.	X	Y	Lgth	Wt.	No.	Size	Spac.	Lgth	Wt.	No.	Size	Spac.	Z	Lgth	Wt.
1	31	#4	12"	3'-10"	79	31	#5	12"	6'-3"	202	24	#4	Shown	29'-8"	476	31	#4	12"	6'-3"	130	31	#5	12"	1'-2"	12 1/2"	4'-0"	129	31	#5	12"	1'-2"	12 1/2"	4'-0"	129	31	#5	12"	4'-7"	148	31	#5	12"	4'-8"	5'-4"	172
2	31	#4	12"	4'-2"	86	31	"	12"	6'-10"	221	26	"	"	"	515	"	"	"	6'-10"	141	31	"	12"	1'-2"	"	4'-0"	129	31	"	12"	1'-2"	"	4'-0"	129	31	"	12"	4'-7"	148	31	"	12"	4'-8"	5'-4"	172
3	31	#4	12"	4'-6"	93	31	"	12"	7'-5"	240	26	"	"	"	515	"	"	"	7'-5"	153	31	"	12"	1'-2"	"	4'-0"	129	31	"	12"	1'-2"	"	4'-0"	129	31	"	12"	4'-7"	148	31	"	12"	4'-8"	5'-4"	172
4	31	#5	12"	4'-10"	156	31	"	12"	8'-2"	264	29	"	"	"	575	"	"	"	8'-2"	169	31	"	"	1'-8"	"	4'-6"	146	31	"	12"	1'-8"	"	4'-6"	146	31	"	12"	5'-1"	164	37	"	10"	5'-8"	6'-4"	245
5	31	#5	12"	5'-3"	170	31	"	12"	8'-4"	288	31	"	"	"	614	"	"	"	8'-4"	185	31	"	"	1'-8"	"	4'-6"	146	31	"	12"	1'-8"	"	4'-6"	146	31	"	12"	5'-1"	164	37	"	10"	5'-8"	6'-4"	245
6	37	#5	10"	5'-8"	219	37	"	10"	9'-8"	373	34	"	"	"	674	"	"	"	9'-8"	200	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	5'-7"	215	46	"	8"	6'-8"	7'-4"	352
7	37	#5	10"	6'-0"	232	37	"	10"	10'-5"	402	35	"	"	"	694	"	"	"	10'-5"	216	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	5'-7"	215	46	"	8"	6'-8"	7'-4"	352
8	37	#5	10"	6'-4"	244	37	"	10"	11'-1"	428	36	"	"	"	713	"	"	"	11'-1"	229	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	5'-7"	215	46	"	8"	6'-8"	7'-4"	352
9	37	#5	10"	6'-2"	238	37	"	10"	10'-9"	415	36	"	"	"	713	"	"	"	10'-9"	223	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	5'-7"	215	46	"	8"	6'-8"	7'-4"	352
10	37	#5	10"	6'-11"	228	37	"	10"	10'-5"	402	35	"	"	"	694	"	"	"	10'-5"	216	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	2'-2"	"	5'-0"	193	37	"	10"	5'-7"	215	46	"	8"	6'-8"	7'-4"	352
11	31	#5	12"	5'-5"	175	31	"	12"	9'-5"	304	31	"	"	"	614	"	"	"	9'-5"	195	31	"	12"	1'-8"	"	4'-6"	146	31	"	12"	1'-8"	"	4'-6"	146	31	"	12"	5'-1"	164	37	"	10"	5'-8"	6'-4"	245
12	31	#5	12"	5'-11"	159	31	"	12"	8'-5"	272	29	"	"	"	575	"	"	"	8'-5"	174	31	"	12"	1'-8"	"	4'-6"	146	31	"	12"	1'-8"	"	4'-6"	146	31	"	12"	5'-1"	164	37	"	10"	5'-8"	6'-4"	245
13	31	#4	12"	4'-5"	91	31	"	12"	7'-4"	237	26	"	"	"	515	"	"	"	7'-4"	152	31	"	12"	1'-2"	"	4'-0"	129	31	"	12"	1'-2"	"	4'-0"	129	31	"	12"	4'-7"	148	31	"	12"	4'-8"	5'-4"	172

TABLE OF DIMENSIONS AND QUANTITIES

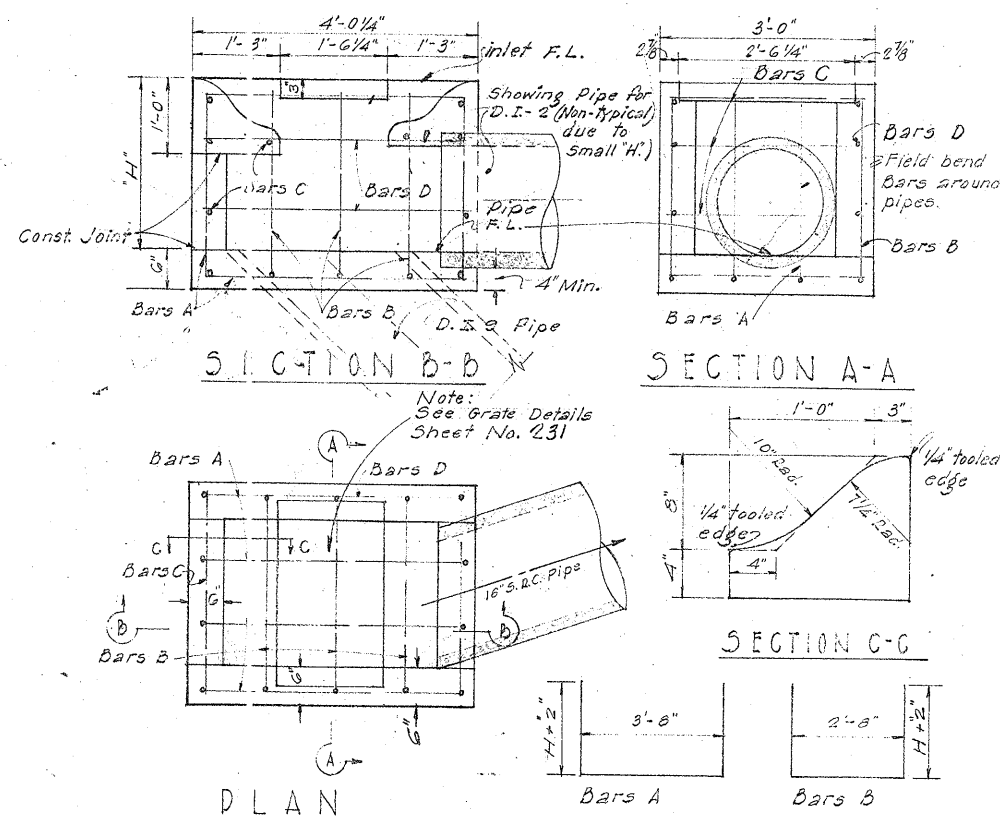
ESTIMATED QUANTITIES			
SPECIAL BACKFILL	REINF. STEEL	CLASS "A" CONC. (RET. WALL)	PANEL No.
3.2	1465	14.50	1 7
4.3	1541	15.09	2 7
5.4	1579	15.80	3 7
6.6	1865	17.54	4 8
7.7	1958	18.52	5 8
8.7	2419	20.48	6 10
9.4	2497	21.30	7 10
9.4	2567	22.11	8 10
8.9	2542	21.71	9 10
8.5	2493	21.28	10 10
7.5	1989	19.11	11 8
5.5	1881	18.03	12 8
2.9	1573	15.68	13 7
88.0 C.Y.		26,369 Lbs.	241.15 C.Y. TOTALS 110

Total Uncl. Str. Excav. Ret. Walls 110 C.Y.

TEXAS HIGHWAY DEPARTMENT
RETAINING WALL
STA. 374+10 to STA. 378+00
U.S. HWY. 81 INTERSTATE
SHEET 16 OF 16

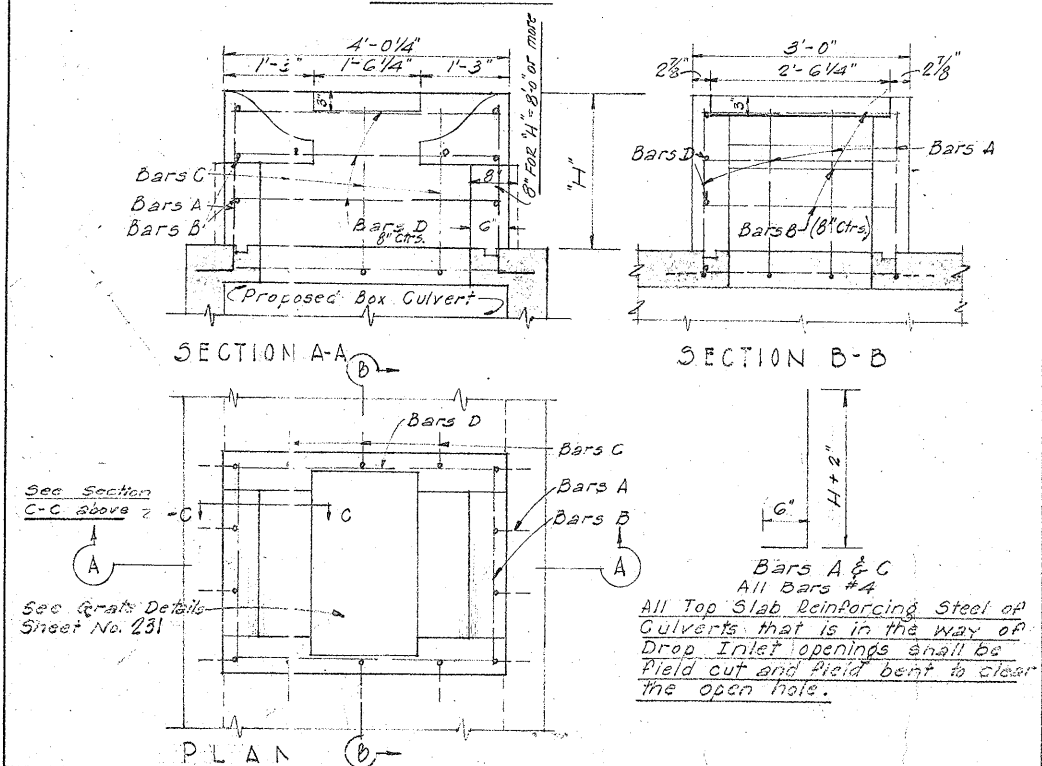
FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI. 1088 (2)	217
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	17 10 13	81

DETAILS OF DROP INLET - TYPE 3

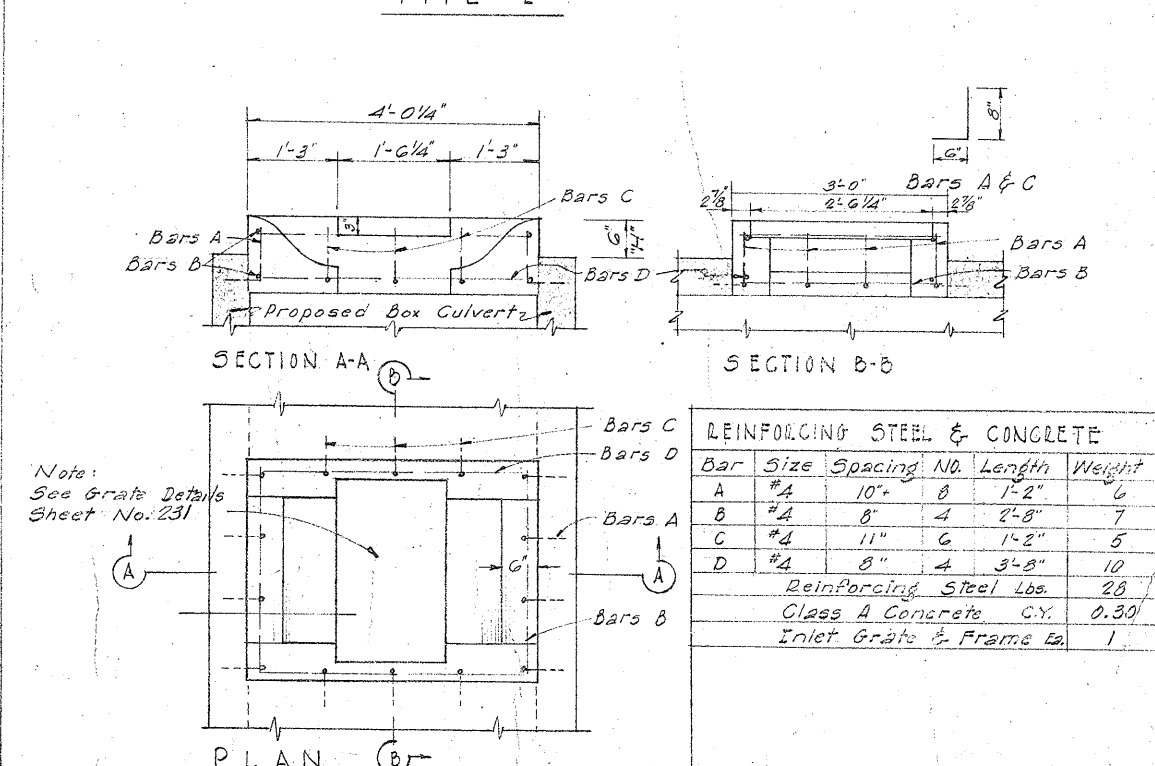


Bar	Size	Spacing	No.	Length	Weight
A	#4	8"	4	8'-8"	83
B	#4	11"	3	7'-8"	15
C	#4	10"	10	2'-9"	18
D	#4	10"	6	3'-8"	15
Reinforcing Steel				Lbs.	71
Class 'A' Concrete				C.Y.	0.69
Inlet Grate & Frame				Ea.	1

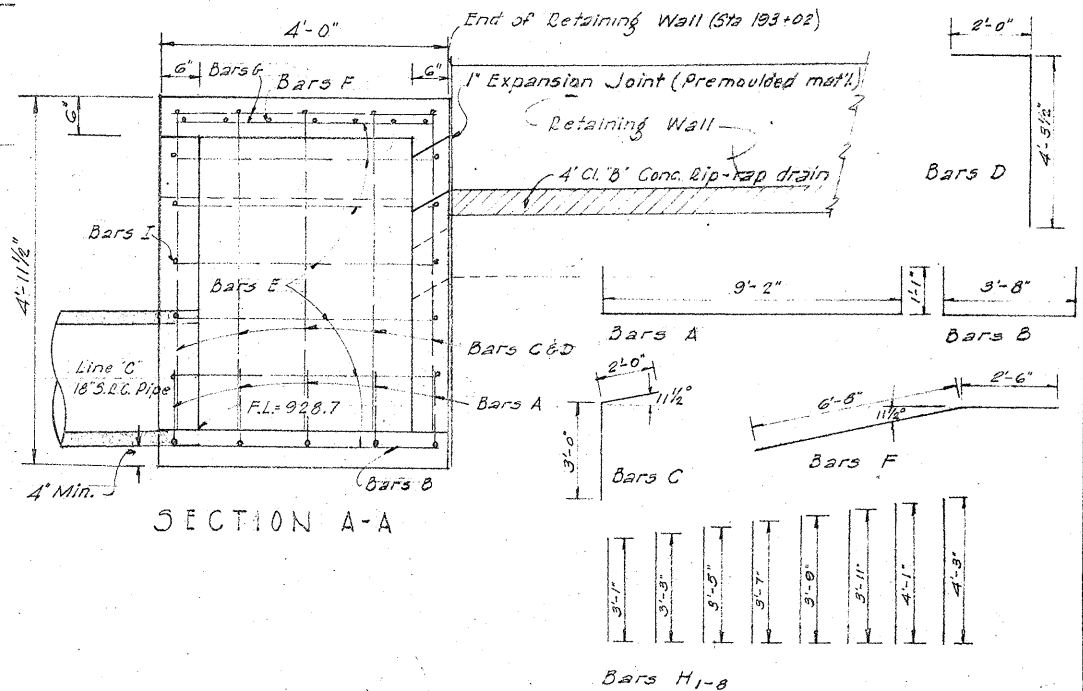
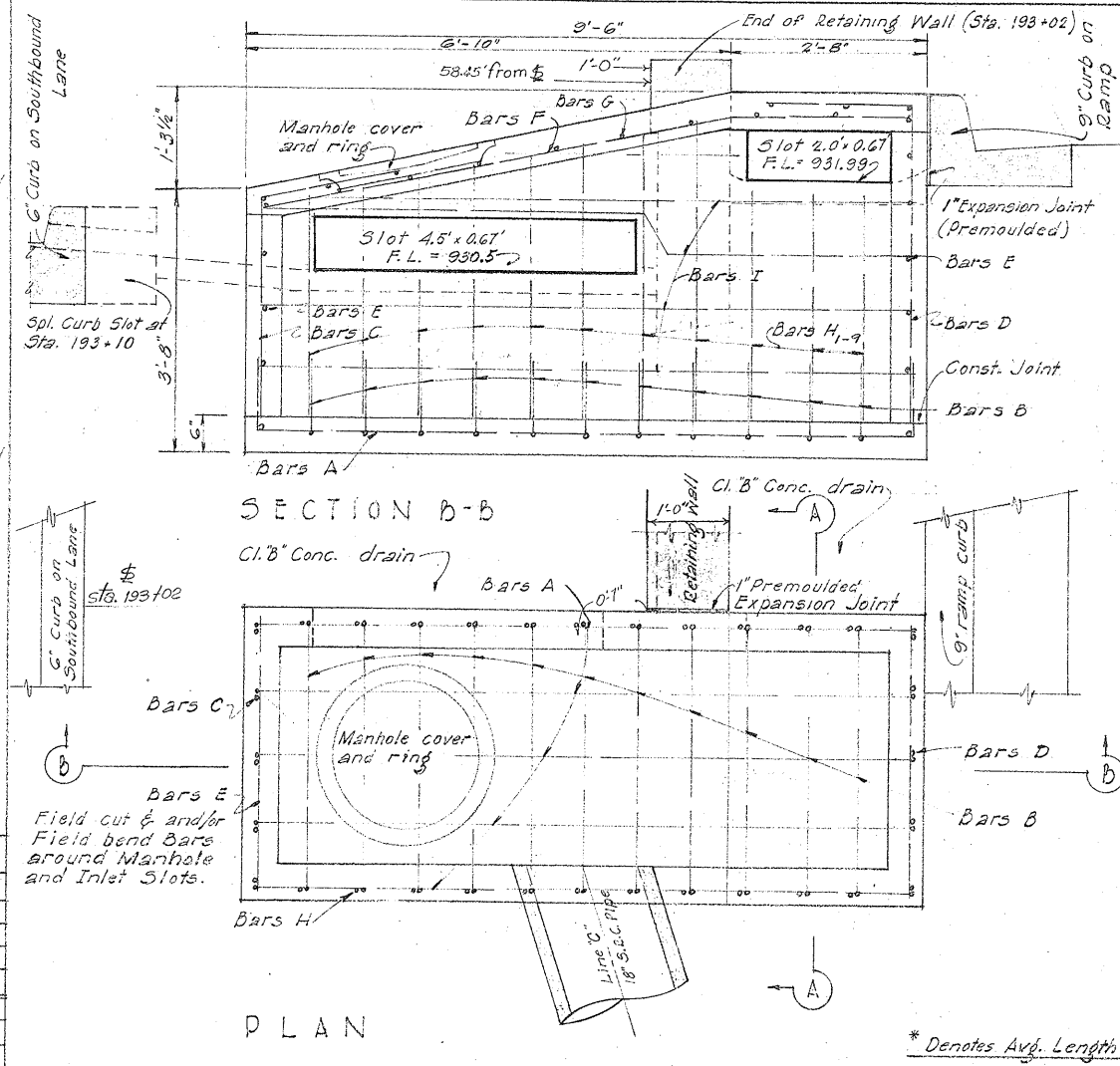
DROP INLET DETAILS TYPE 1



DROP INLET DETAILS TYPE 2

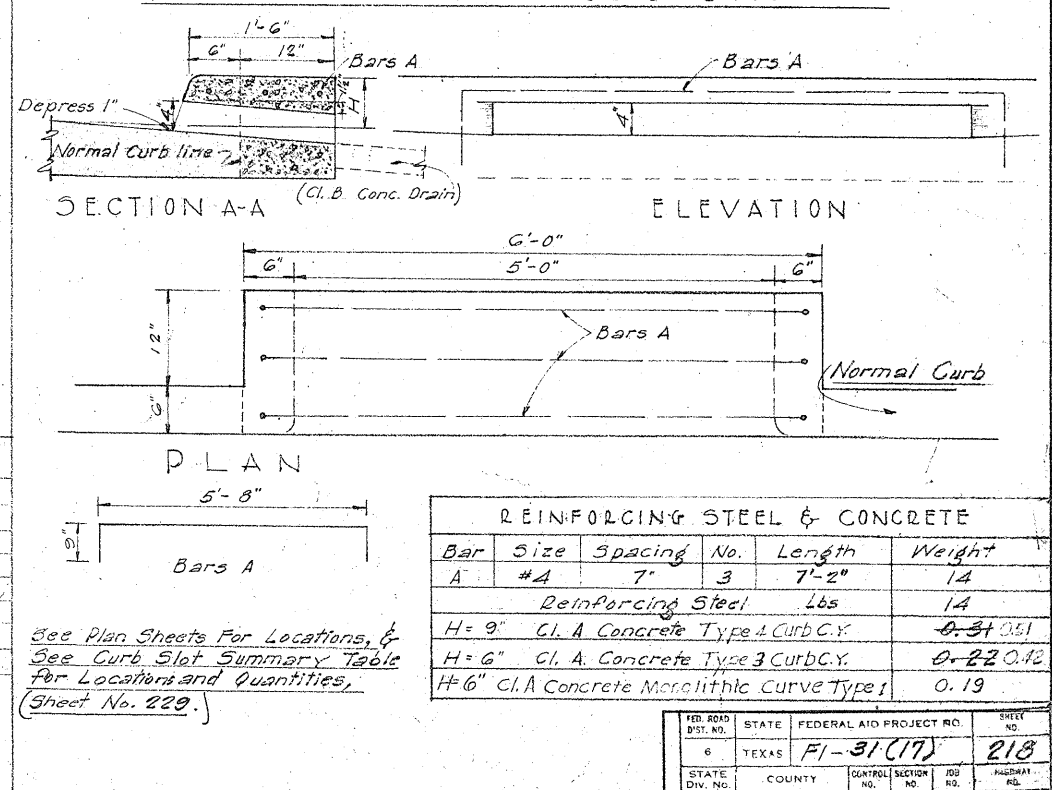


DETAILS OF DROP INLET D.I.-6



Bar	Size	Spacing	No.	Length	Weight
A	#4	11"	5	11'-4"	38
B	#4	9"	11	5'-10"	43
C	#4	11"	5	5'-0"	17
D	#4	11"	5	6'-3 1/2"	21
E	#4	9"	12	3'-8"	29
F	#4	7"	7	9'-2"	43
G	#4	12"	14	3'-8"	34
H-1-8	#4	9"	16	3'-8"	39
H-9	#4	9"	6	3'-2"	13
I	#4	9"	10	9'-2"	61
Reinforcing Steel				Lbs.	338
Class 'A' Concrete				C.Y.	2.83
Manhole Cover and Ring				Ea.	1

DETAILS OF SPECIAL CURB SLOT



DETAILS OF DROP INLET D.I. - 1

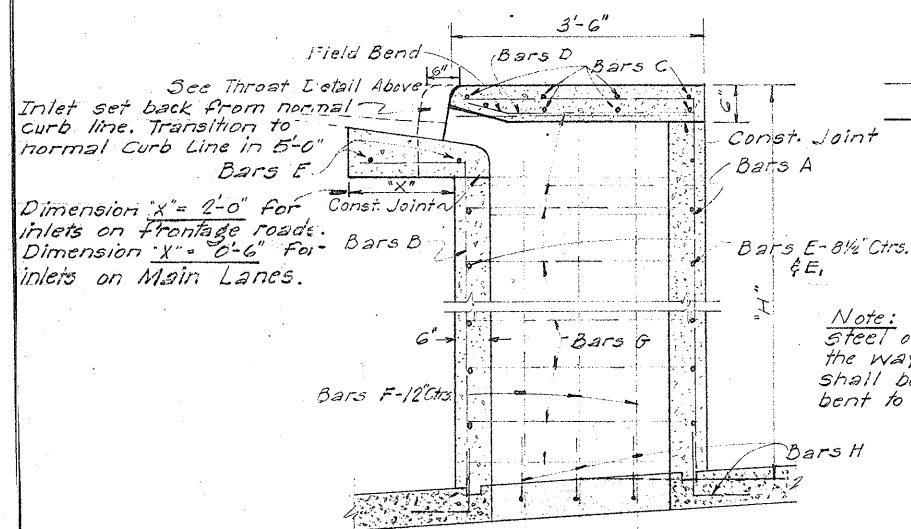
Build-up existing Drop Inlet to new F.L. of 331.0 (using same Inlet Grate and Frame) follow D.I.-Type 2 Detail

F.L. 331.0

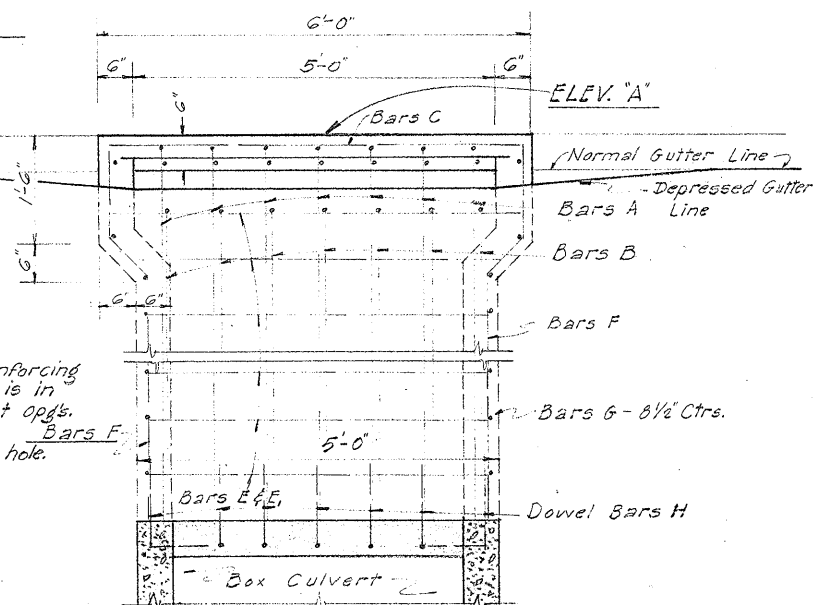
Existing Drop Inlet (F.L. 330.24) Complete with Inlet Grate and Frame

Existing 3'x3'x25' NC-7 Box Culvert

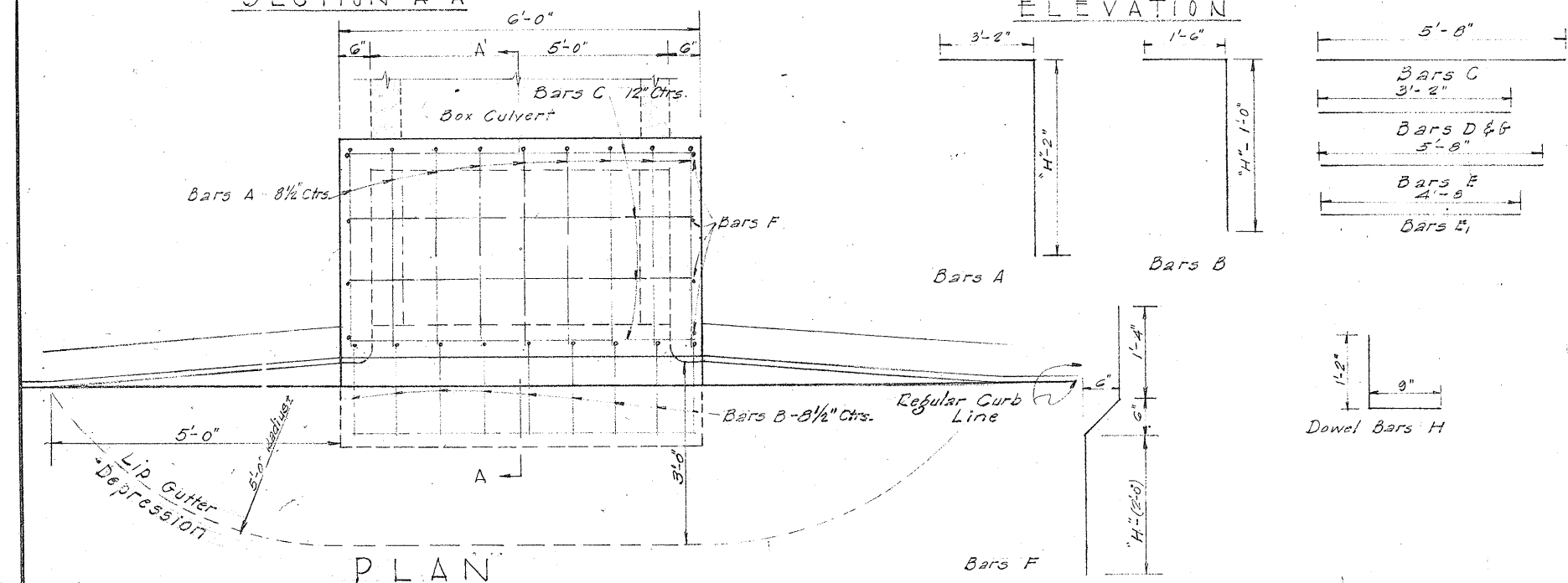
DETAILS OF CURB INLET - TYPE 1.



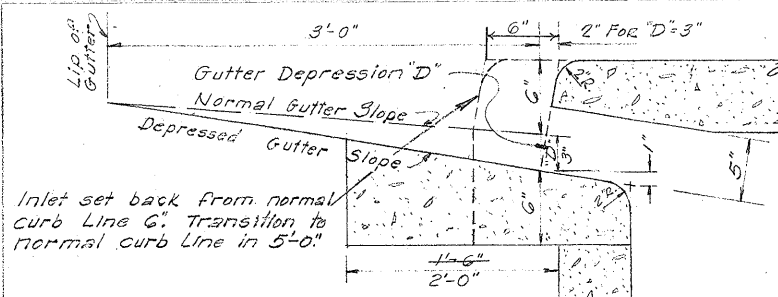
SECTION A-A



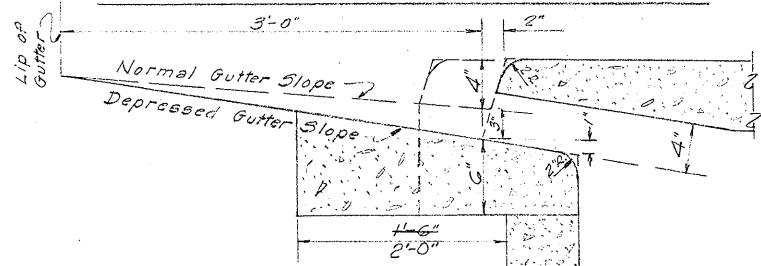
ELEVATION



PLAN



THROAT DETAIL FOR 6" HEIGHT CURB



THROAT DETAIL FOR 4' HEIGHT CURB

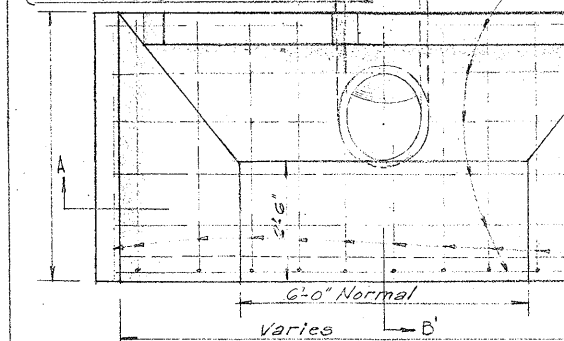
SUMMARY OF DROP INLETS (CONT. 16-7-25)

Drop Inlet Designation	Location	Detail Type	Flow Line	Variable Dimension "H"	Uncl. Str. Excavation (In. H.W. M.H.) Cu. Yd.	Class 'A' Concrete (In. H.W. M.H.) Cu. Yd.	Inlet Grate & Frame Inlet Ft.	Manhole Ring & Cover Ft.	Reinforcing Steel					Weight Lbs.	
									Bar - No. & Length Repl.				S S		
									A	B	C	D			
D.I.-1	74 Rt. Sta. 180+41.1	2	931.0	9 1/8"	0	0.25	0		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-2	92 Rt. Sta. 189+00	3	913.1	2'-4 1/8"	3	0.76	1		4 8'-8"	3 7'-8"	10 2'-8"	6 3'-8"	2 1'-2"	71	
D.I.-3	90 Lt. Sta. 191+34.5	2	915.0	6 1/8"	0	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-4	4 Sta. 191+34.5	1	922.85	1'-7 1/8"	0	2.42 029	1		8 2'-3"	6 2'-8"	6 2'-3"	6 3'-8"	2 1'-2"	47	
D.I.-5	67 Rt. Sta. 191+34.5	1	925.0	1'-5"	0	0.38	1		8 2'-1"	6 2'-8"	6 2'-1"	6 3'-8"	2 1'-2"	45	
D.I.-6	57 Rt. Sta. 193+00	3pl. See Detail	—	—	10	2.83268	0	1	See 3pl. Detail					338	
D.I.-7	40 Lt. Sta. 199+00	3	935.33	2'-6"	3	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	75	
D.I.-8	42 Rt. Sta. 212+00	1	938.0	2'-10"	0	0.67	1		8 3'-6"	8 2'-8"	6 3'-6"	8 3'-8"	2 1'-2"	67	
D.I.-9	39 Rt. Sta. 213+00	3	938.3	2'-6"	3	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	73	
D.I.-10	86 Rt. Sta. 213+34.5	2	928.5	6"	8	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-11	49 Lt. Sta. 218+00	3	930.5	2'-6"	2	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	73	
D.I.-12	85 Lt. Sta. 224+36.1	12	916.3	6"	0	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-13	1 Lt. Sta. 224+60	1	917.8	9'-0"	0	2.75 279	1		8 9'-8"	26 2'-8"	6 9'-8"	26 3'-8"	2 1'-2"	201	
D.I.-14	95 Rt. Sta. 224+33.1	1	905.9	1'-0"	0	0.30	1		8 1'-8"	6 2'-8"	6 1'-8"	4 3'-8"	2 1'-2"	37	
D.I.-15	85 Lt. Sta. 244+03.8	12	925.3	0'-6" 1'-4"	0	2.36 030	1		8 2'-0"	6 2'-8"	6 2'-0"	4 3'-8"	2 1'-2"	40	
D.I.-16	85 Lt. Sta. 244+103	12	925.3	0'-6" 1'-4"	0	2.36 030	1		8 2'-0"	6 2'-8"	6 2'-0"	4 3'-8"	2 1'-2"	40	
D.I.-17	4 Sta. 244+36.8	1	868.9	2'-8"	0	0.66	1		8 3'-4"	10 2'-8"	6 3'-4"	8 3'-8"	2 1'-2"	69	
D.I.-18	4 Sta. 244+43.3	1	868.9	2'-8"	0	0.66	1		8 3'-4"	10 2'-8"	6 3'-4"	8 3'-8"	2 1'-2"	69	
D.I.-19	87 Rt. Sta. 244+68.4	2	865.58	6"	0	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-20	87 Rt. Sta. 244+74.9	2	865.58	6"	0	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-21	40 Lt. Sta. 252+90	3	846.03	2'-6"	3	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	73	
D.I.-22	40 Lt. Sta. 257+90	3	839.3	2'-6"	3	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	73	
D.I.-23	39 Lt. Sta. 258+30	3	837.8	2'-6"	3	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	73	
D.I.-24	66 Lt. Sta. 264+00	3	833.0	2'-6"	3	0.79	1		4 9'-0"	3 8'-0"	10 2'-8"	6 3'-8"	2 1'-2"	73	
D.I.-25	81 Lt. Sta. 278+02.1	1	845.9	8'-9"	0	0.25	1		8 1'-5"	6 2'-8"	6 1'-5"	4 3'-8"	2 1'-2"	34	
D.I.-26	6 Sta. 278+50	1	818.5	1'-0" 8'-0"	0	2.43 199	1		8 8'-8"	24 2'-8"	6 8'-8"	22 3'-8"	2 1'-2"	178	
D.I.-27	88 Lt. Sta. 281+40	1	818.5	1'-0"	0	0.30	1		8 1'-8"	6 2'-8"	6 1'-8"	4 3'-8"	2 1'-2"	37	
D.I.-28	86 Rt. Sta. 281+40	2	807.65	0'-6" 0'-6"	0	2.30 000	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-29	78 Rt. Sta. 297+00	3	813.0	3'-0"	8	0.91	1		4 10'-0"	3 9'-0"	12 2'-8"	8 3'-8"	2 1'-2"	86	
D.I.-30	60 Lt. Sta. 293+00	3	815.5	3'-6"	1	1.02	1		4 11'-0"	3 10'-0"	14 2'-8"	10 3'-8"	2 1'-2"	99	
D.I.-31	70 Lt. Sta. 319+34.5	2	766.88	0'-6"	0	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-32	6 Sta. 320+55	1	767.55	5'-5"	0	0.60	1		8 3'-1"	10 2'-8"	6 3'-1"	8 3'-8"	2 1'-2"	66	
D.I.-33	85 Rt. Sta. 331+45	2	765.05	0'-6"	0	0.30	1		8 1'-2"	4 2'-8"	6 1'-2"	4 3'-8"	2 1'-2"	28	
D.I.-34	85 Lt. Sta. 333+00	C	770.0	7'-6"	10	2.98 326	1		See Inlet Detail Sheet					358	
D.I.-35	85 Lt. Sta. 335+50	C	763.75	11'-4"	18	6.54 181	1		See Inlet Detail Sheet					552	
D.I.-36	95 Lt. Sta. 343+00	3	755.5	5'-0"	8	0.91	1		4 10'-0"	3 9'-0"	12 2'-8"	8 3'-8"	2 1'-2"	86	
D.I.-37	98 Lt. Sta. 366+61.8	B	746.0	4'-6"	8	2.85 183	2		See Detail Type B					242	
D.I.-38	4 Sta. 365+00	B	746.4	8'-4"	15	2.48 236	2		See Detail Type B					389	
(CONT 16-7-25) TOTALS						2199	38.78	38	1					3315	3873

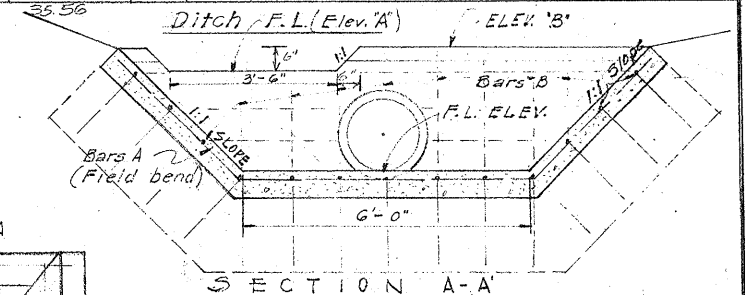
DETAILS OF CL.B CONCRETE RIPRAP PIPE HEADWALLS

TYPE A

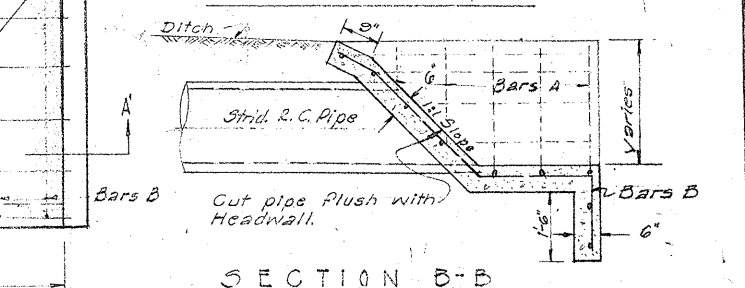
Note: All bars #4
All bars at 12" Ctrs.
Field cut & bend
All bars.
(Use #4 bars or 6x6 Mesh)



PLAN



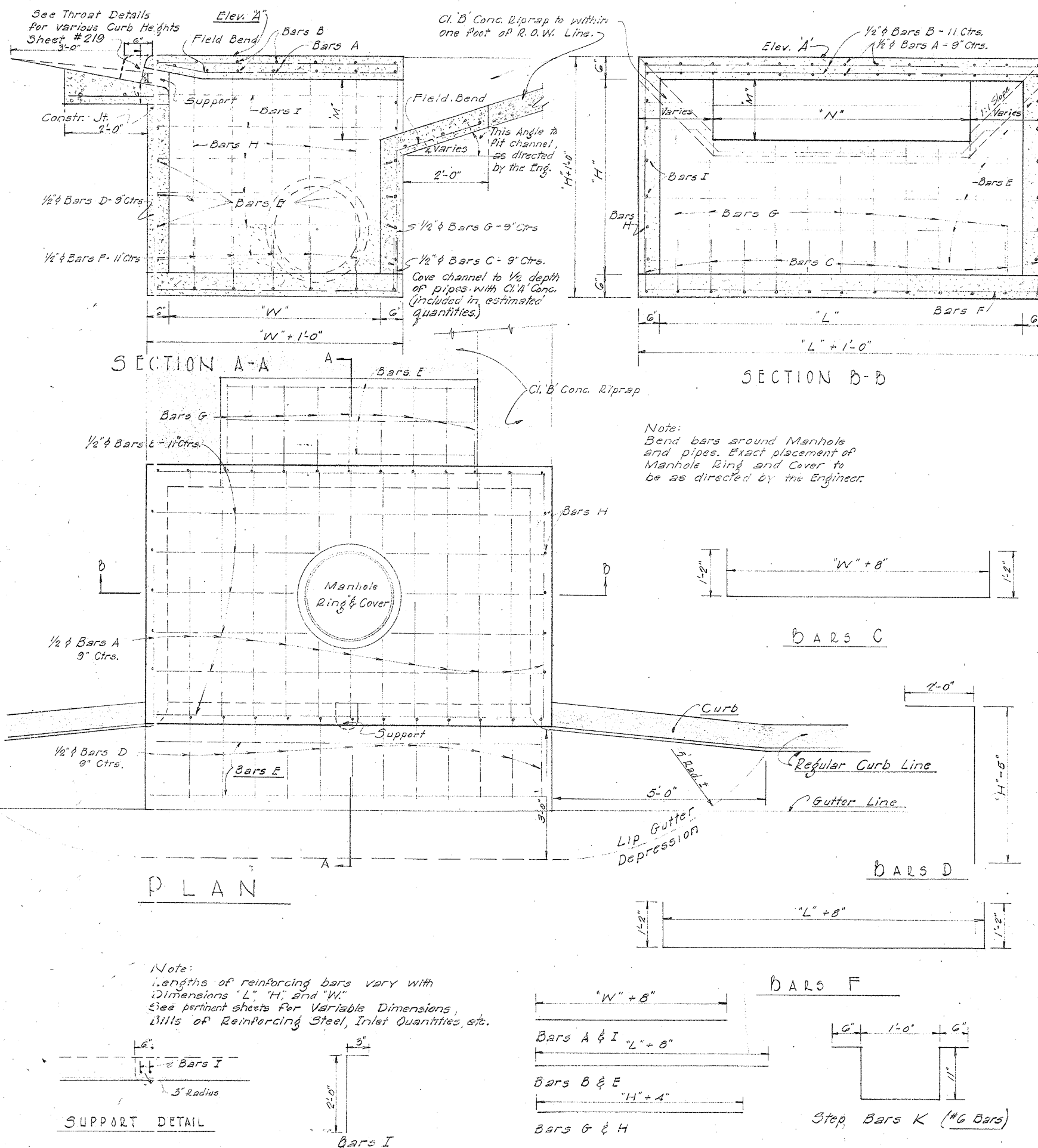
SECTION A-A



SECTION B-B

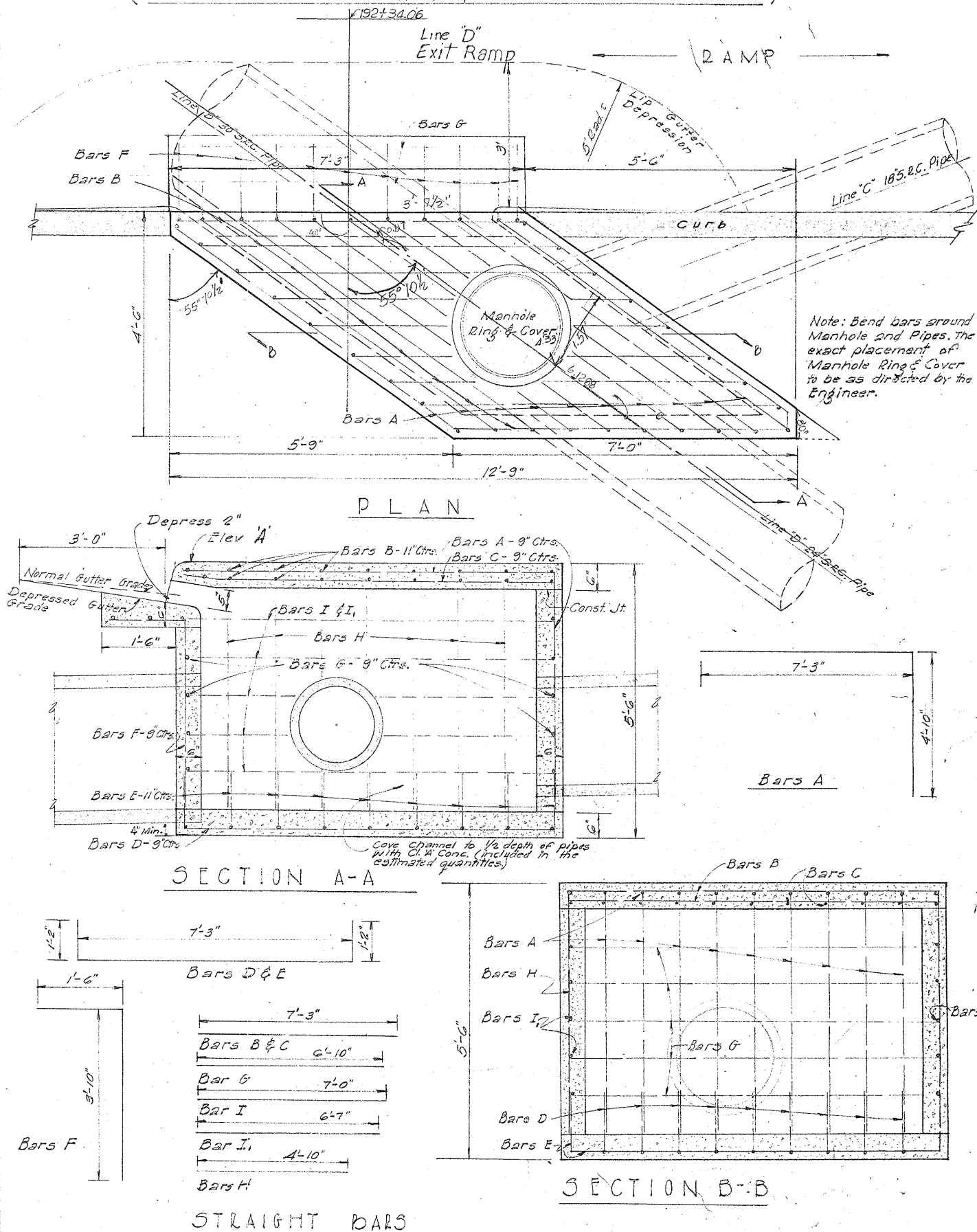
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	FT-31 (17)	219
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	Bexar	16	7
			254.81

DETAILS OF CURB INLET - TYPE 2

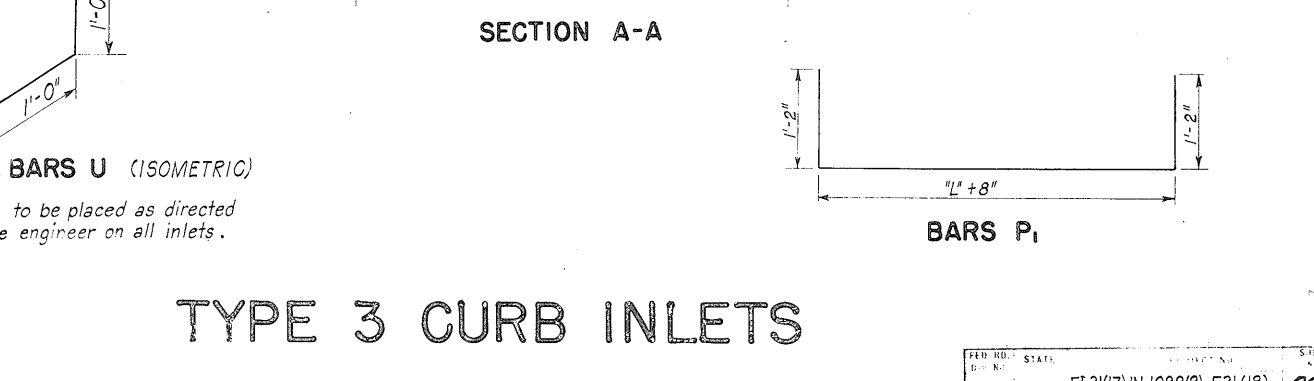
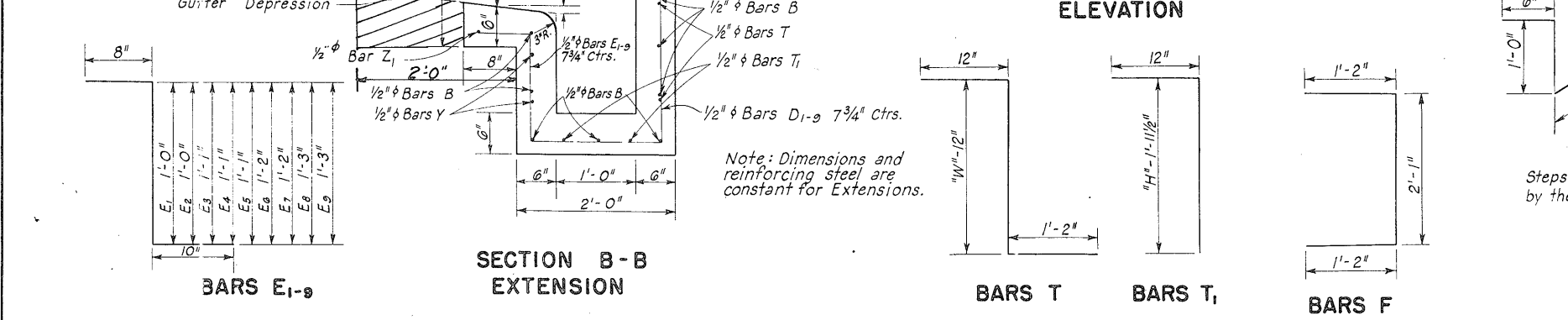
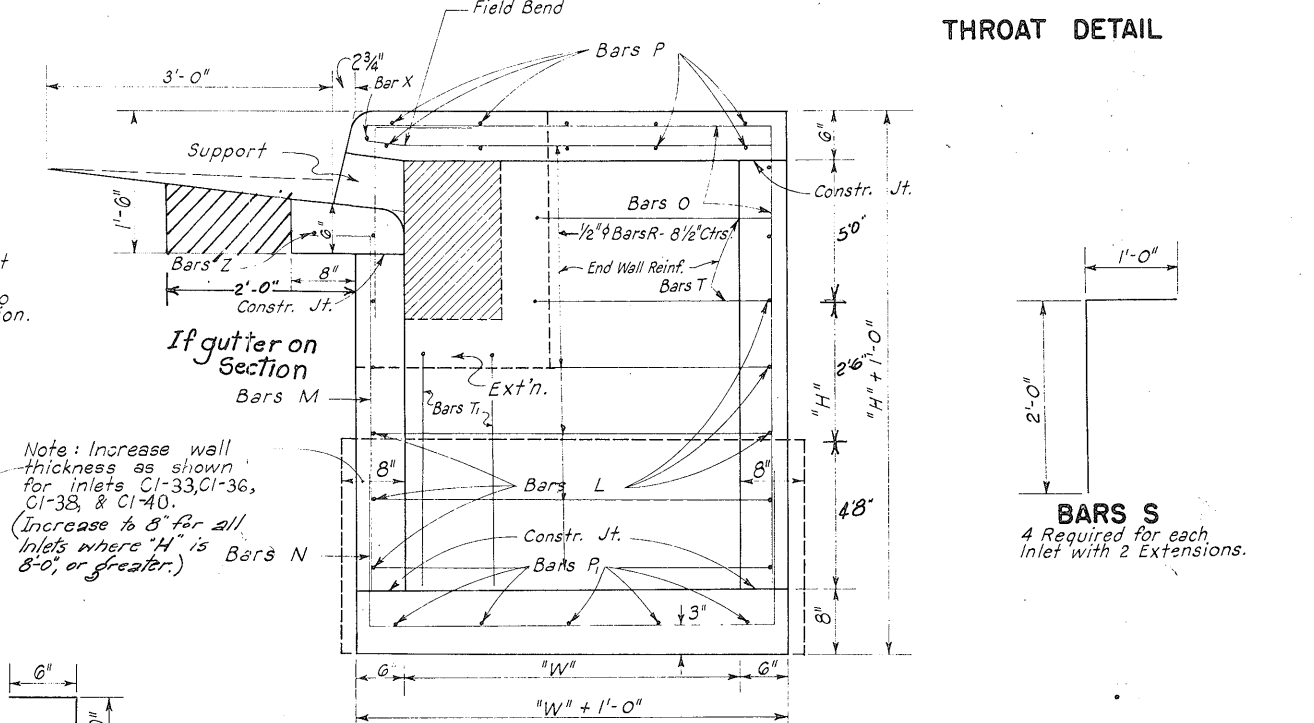
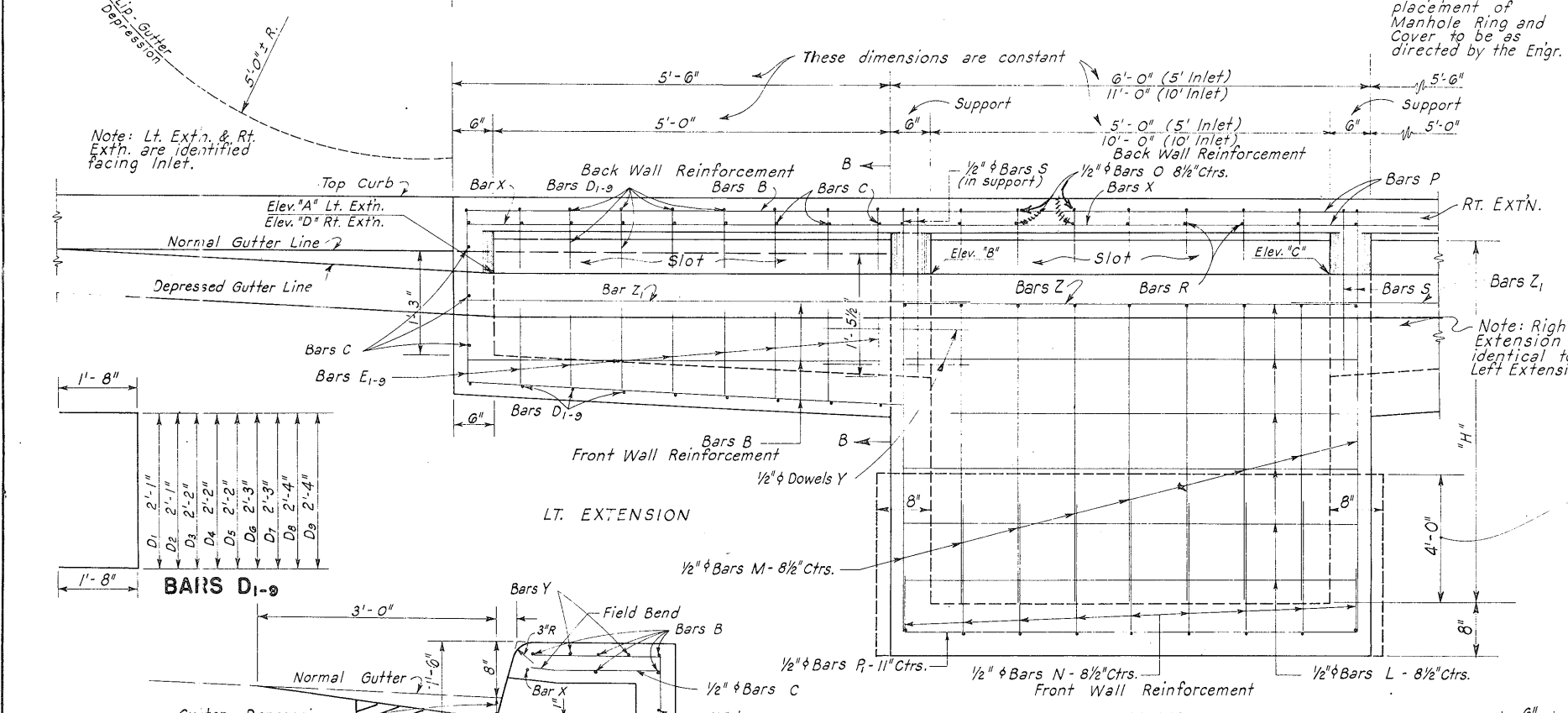
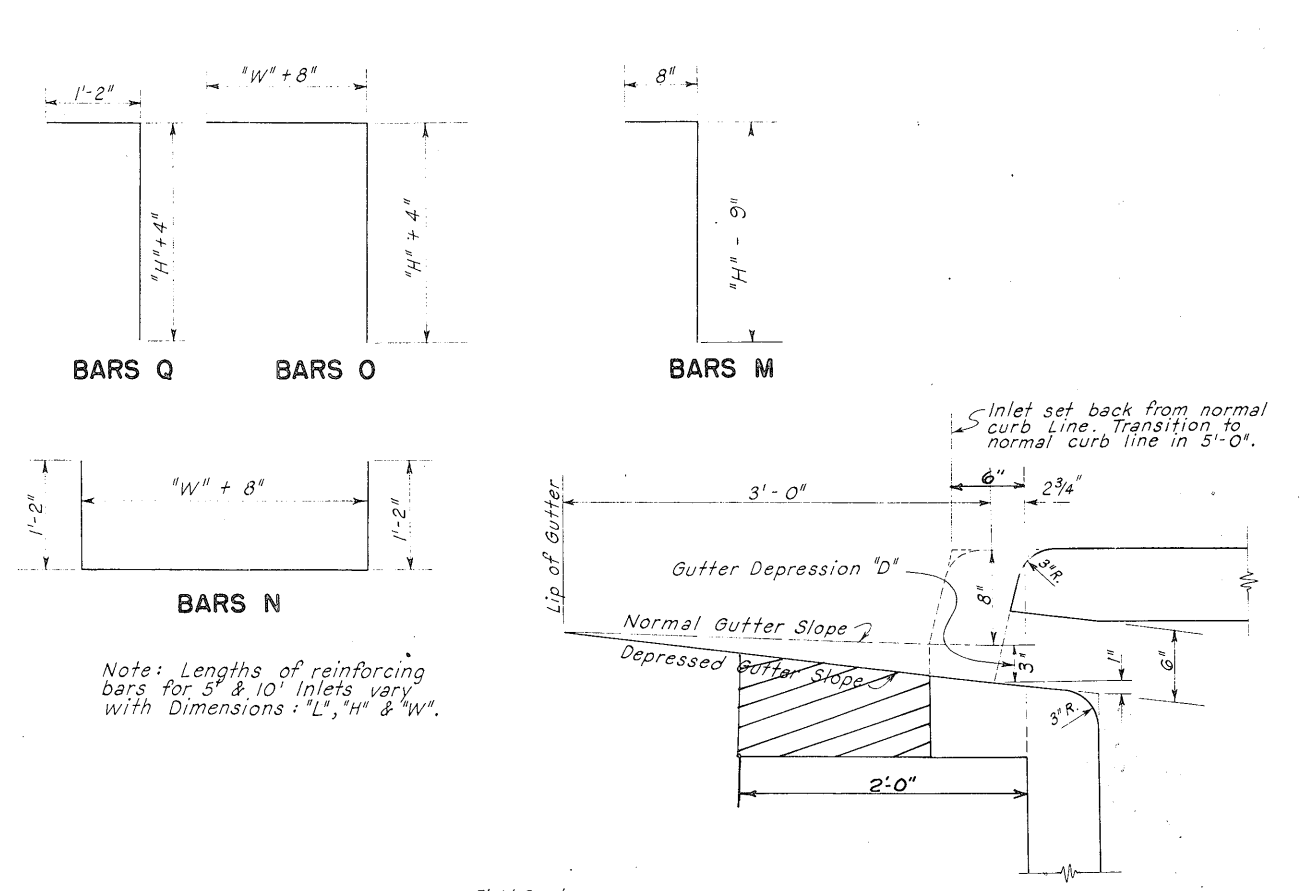
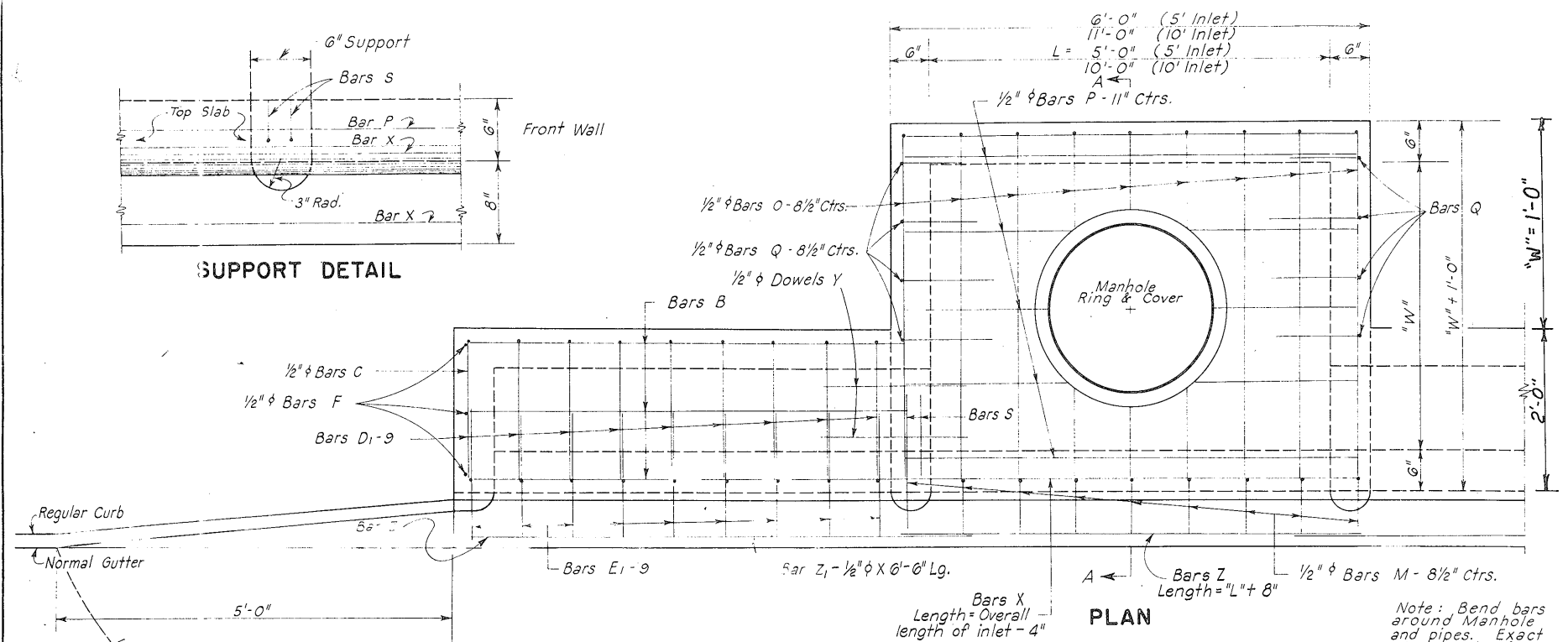


DETAILS OF CURB INLET C.I. - 3

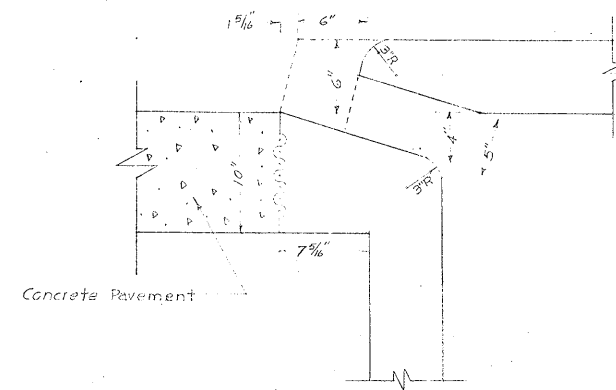
(COMBINATION CURB INLET & MANHOLE - 75' RT. STA. 192+35)



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO	SHEET NO.
6	TEXAS	FR-31 (17)	220
STATE DIV. NO.	COUNTY	CONTROL NO.	SECTION NO.
15	Bexar	16	7
		25	U.S.B.

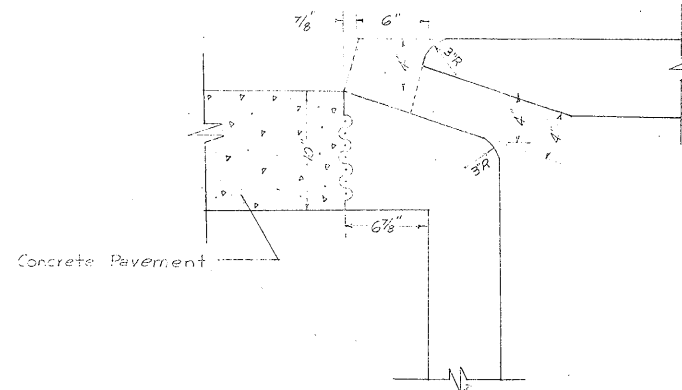


TYPE 3 CURB INLETS



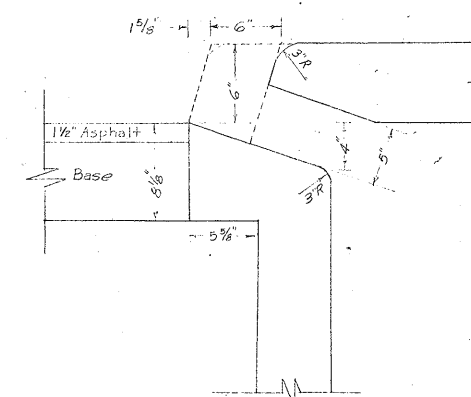
THROAT DETAIL
FOR
MONOLITHIC CURB
TYPE 1
AND
CONCRETE MEDIAN
TYPE 1

Scale 1 1/2" = 1'0"



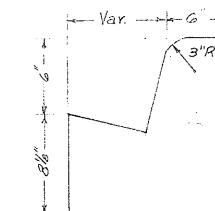
THROAT DETAIL
FOR
MONOLITHIC CURB
TYPE 2

Scale 1 1/2" = 1'0"



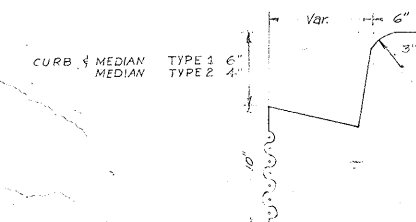
THROAT DETAIL
FOR
CONCRETE MEDIAN
TYPE 2

Scale 1 1/2" = 1'0"



SECTION A-A

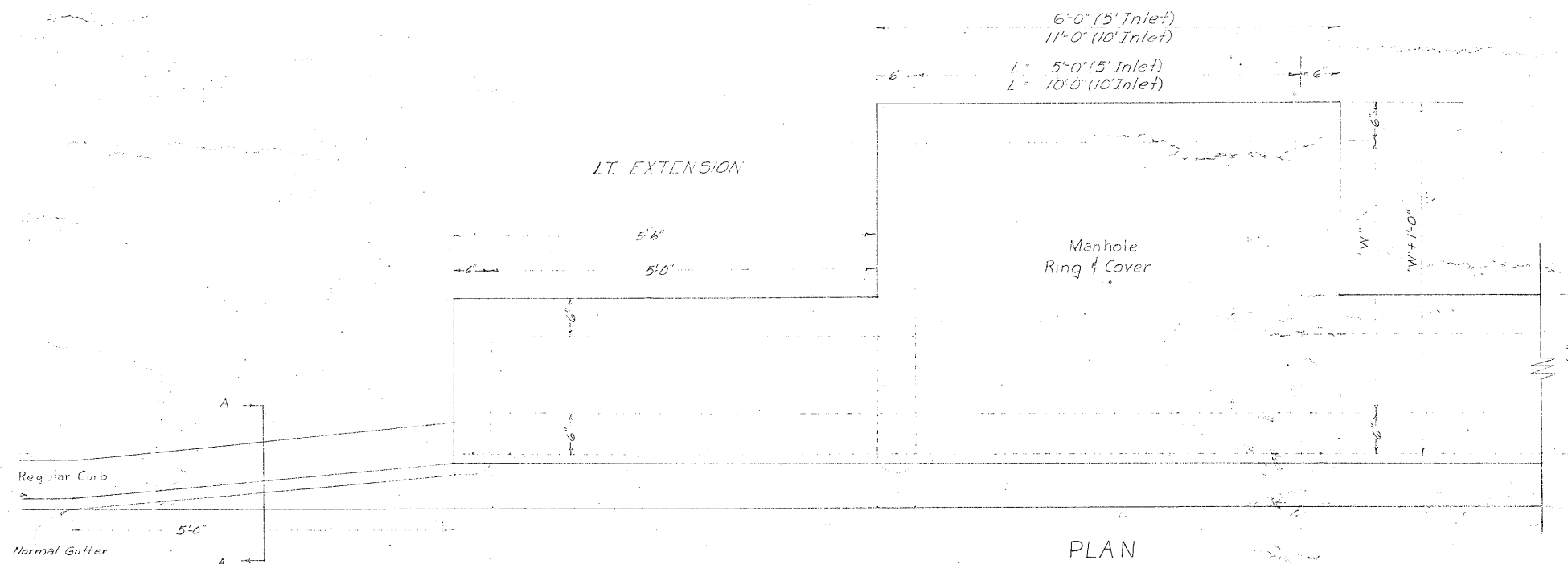
Variable dimension for
Concrete Median Type 2
Minimum = 0' 1 5/8"
Maximum = 7' 3/8"



SECTION A-A

Variable dimension for
Monolithic Curb Type 2
Minimum = 0' 1 5/16"
Maximum = 7' 5/16"

Variable dimension for
Monolithic Curb Type 2
Minimum = 0' 7/8"
Maximum = 0' 6 1/8"



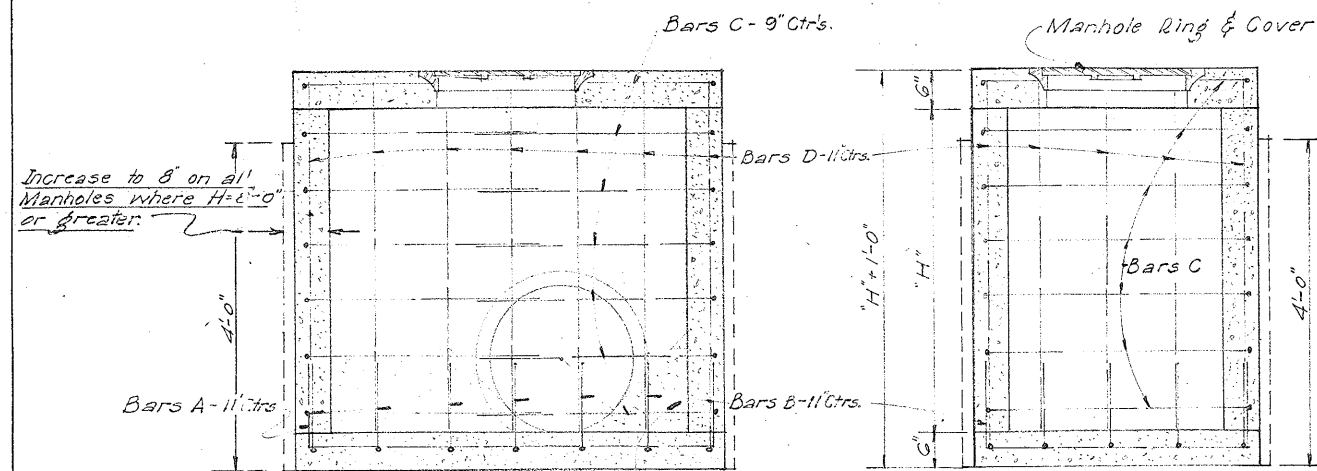
PLAN
CURB INLET TYPE 3

Scale 1" = 1'0"

Note: Right
Extension
identical to
Left Extension

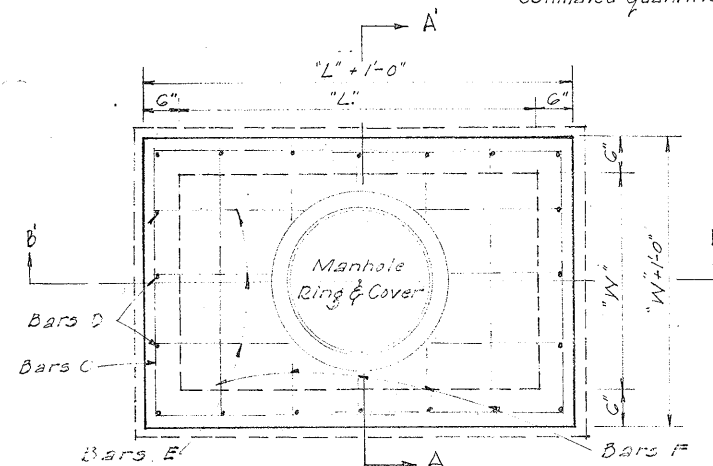
FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
6	TEXAS	FF3(17), FF1088(2), F3(15)	221 A
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB NO.
15	Baylor	16, 17, 7, 10	25 13, 26 0, 2, 31

MANHOLE DETAILS — TYPE "B"



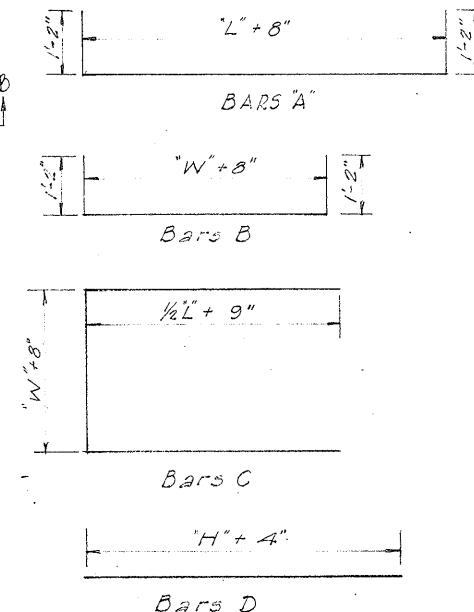
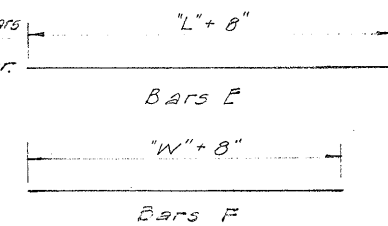
SECTION B-B

SECTION A-A

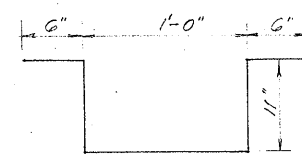


PLAN

Field cut and bend bars to clear pipes and Manhole Ring & Cover.

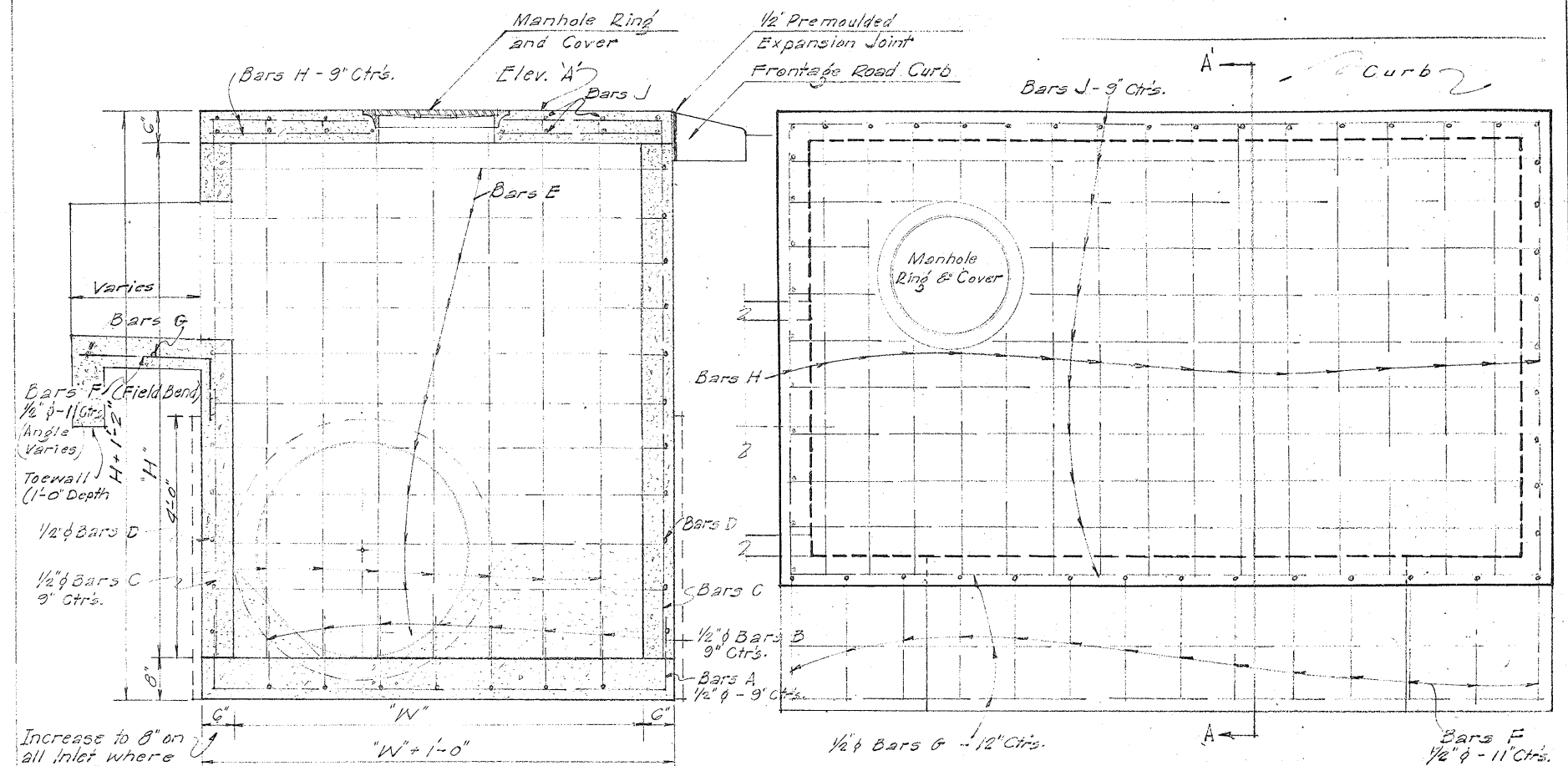


Steps to be placed at 14" O.C., as directed by the engineer, on all Manholes where "H" is greater than 4 feet.



Step Bars K
(All Step Bars #6 Bars)

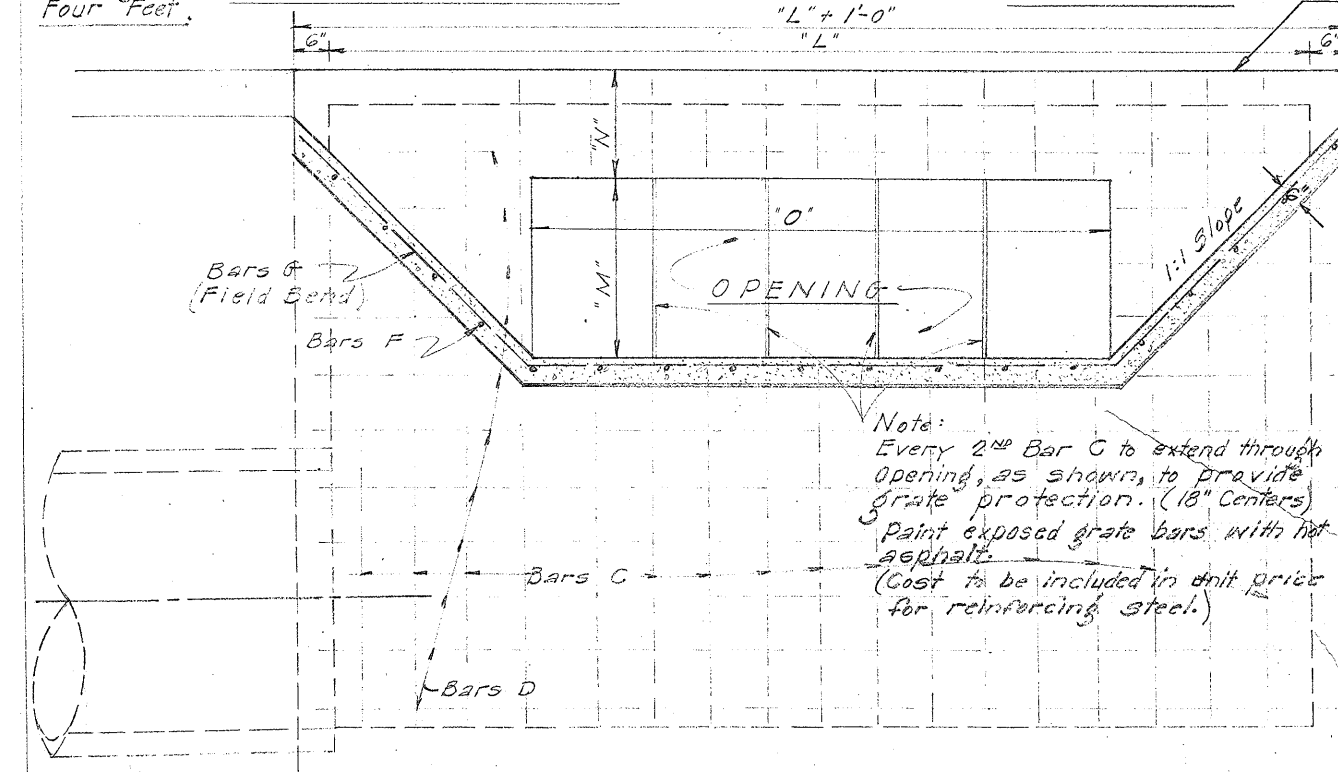
CHANNEL INLET DETAILS



Increase to 8" on all Inlet where H=8'-0" or greater; for height of Four Feet.

SECTION A-A

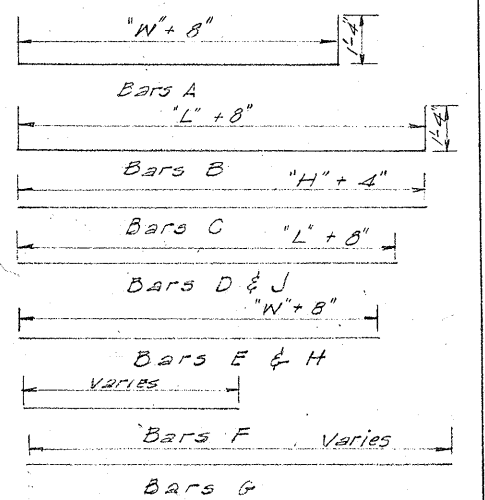
PLAN



ELEVATION

Note: Every 2nd Bar C to extend through opening, as shown, to provide grate protection. (18" Centers) Paint exposed grate bars with hot asphalt. (Cost to be included in unit price for reinforcing steel.)

Notes: Field cut and bend bars to clear pipes, Manhole, and opening as shown. Cove channel with Cl. A concrete (included in estimated quantities) to 1/2 depth of pipes. Exact placement of Manhole Ring and cover to be as directed by the Engineer.

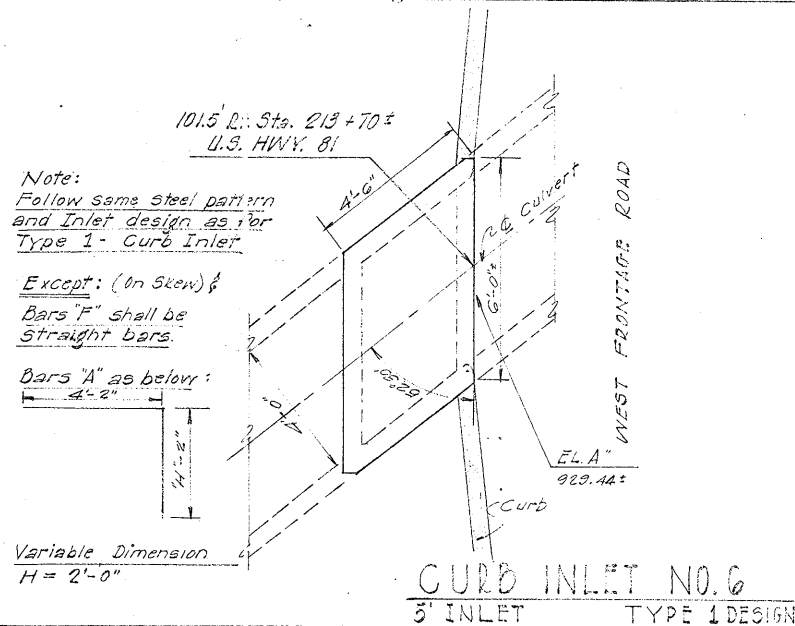


Step Bars K
(See detail at left of sheet)

STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	PERM	FF-31(17)	222
STATE	COUNTY	CONTRACT NO.	SECTION NO.
15	PERM	16	7

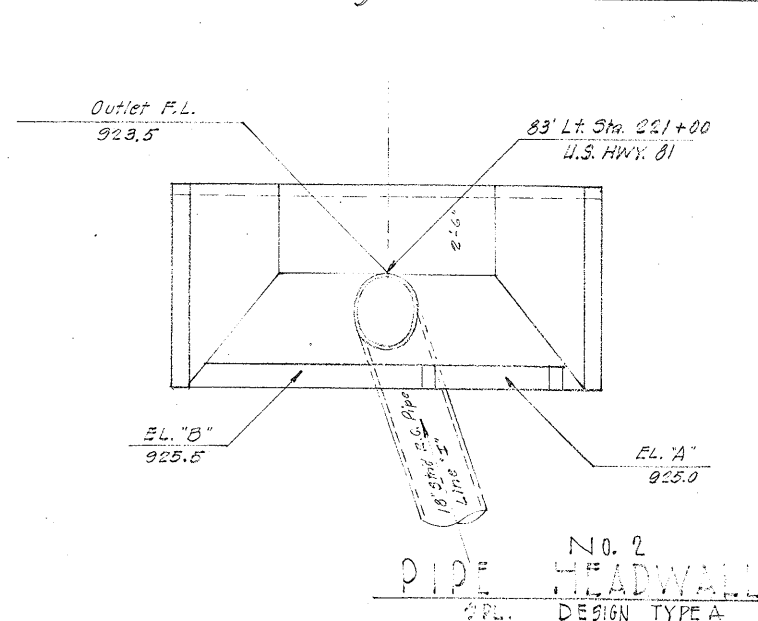
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	9	#4	8 1/2"	6'-0"	36
B	9	#4	8 1/2"	2'-6"	15
C	8	#4	12"	5'-8"	30
D	9	#4	8 1/2"	4'-5"	25
E	6	#4	8 1/2"	5'-8"	23
F	8	#4	12"	1'-10"	10
G	6	#4	8 1/2"	4'-2"	17
H	18	#4	~	1'-11"	23
Uncl. Str. Excav. (In. H.W. M.H.)					0 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					1.14 424 C.Y.
Reinforcing Steel					179 Lbs.



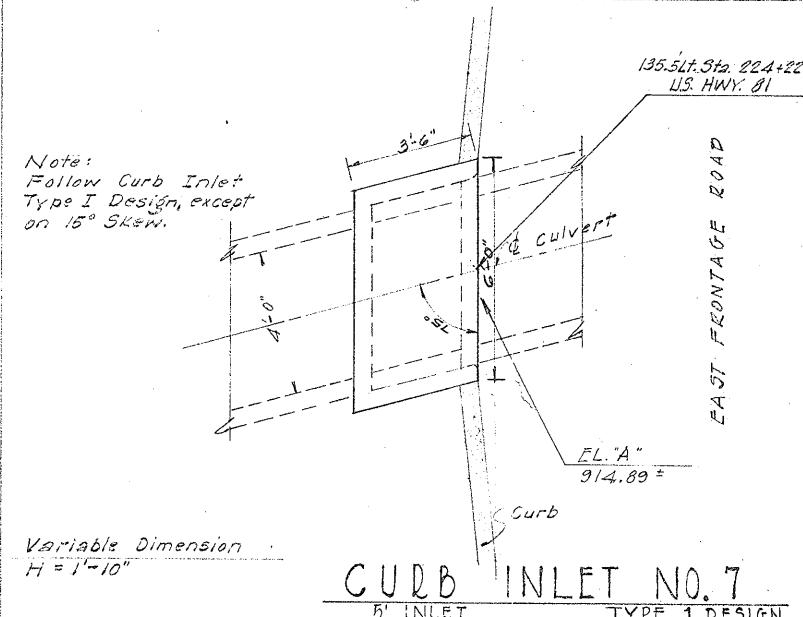
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
Steel included in unit price bid for Cl. B' Conc. Riprap					
Uncl. Str. Excav. (In. H.W. M.H.)					(includ)
Cl. B' Concrete Riprap					1.78 435 C.Y.
Reinforcing Steel					(includ)



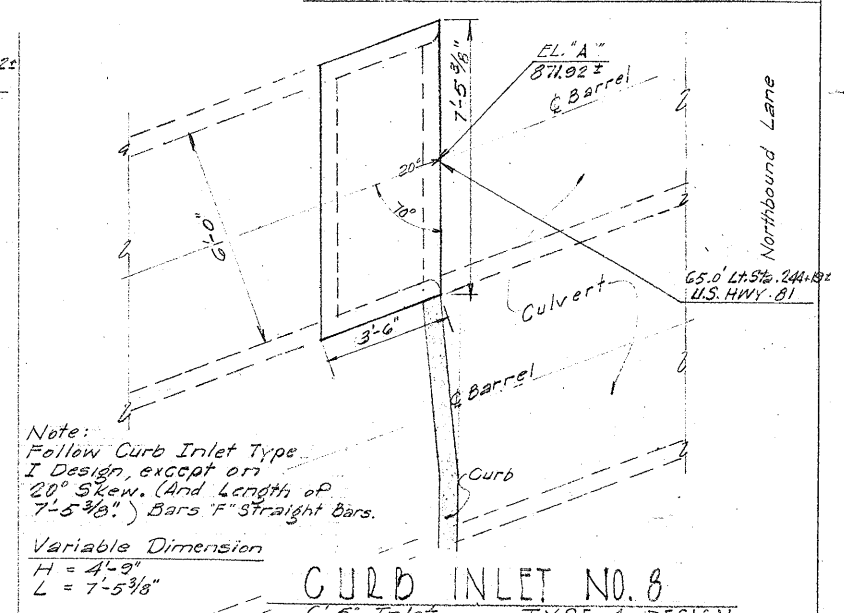
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	9	#4	8 1/2"	4'-10"	29
B	9	#4	8 1/2"	2'-4"	14
C	8	#4	12"	5'-8"	30
D	9	#4	8 1/2"	3'-2"	19
E	6	#4	8 1/2"	5'-8"	23
F	8	#4	12"	1'-8"	9
G	6	#4	8 1/2"	3'-2"	13
H	18	#4	~	1'-11"	23
Uncl. Str. Excav. (In. H.W. M.H.)					0 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					0.92 102 C.Y.
Reinforcing Steel					160 Lbs.



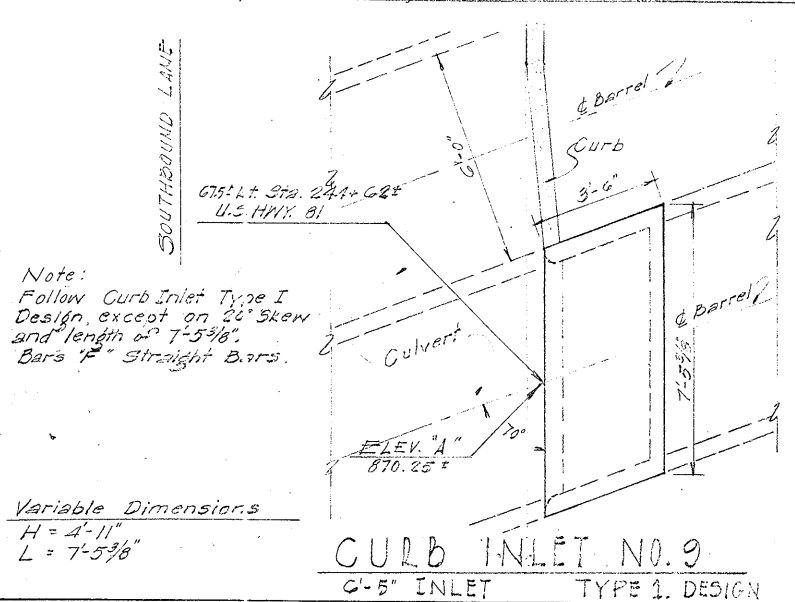
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	12	#4	8 1/2"	7'-9"	62
B	12	#4	8 1/2"	5'-3"	42
C	8	#4	12"	7'-1"	38
D	12	#4	8 1/2"	3'-2"	25
E	12	#4	8 1/2"	7'-1"	57
F	8	#4	12"	4'-7"	24
G	12	#4	8 1/2"	3'-2"	25
H	18	#4	~	1'-11"	23
Uncl. Str. Excav. (In. H.W. M.H.)					0 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					2.24 C.Y.
Reinforcing Steel					296 Lbs.



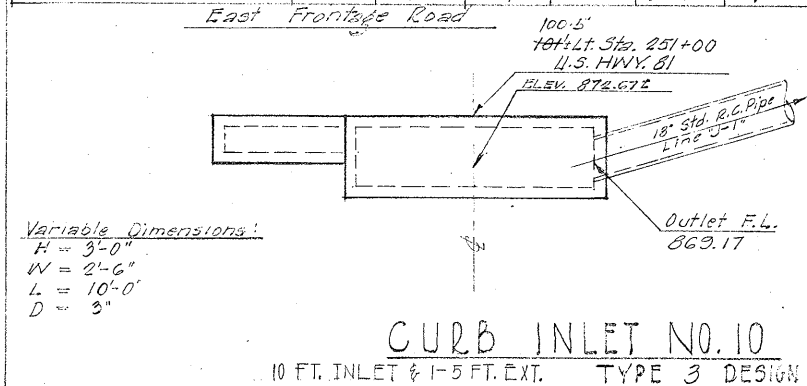
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	12	#4	8 1/2"	7'-11"	63
B	12	#4	8 1/2"	5'-5"	43
C	8	#4	12"	7'-1"	38
D	12	#4	8 1/2"	3'-2"	25
E	12	#4	8 1/2"	7'-1"	57
F	8	#4	12"	4'-9"	23
G	12	#4	8 1/2"	3'-2"	25
H	18	#4	~	1'-11"	23
Uncl. Str. Excav. (In. H.W. M.H.)					0 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					2.31 C.Y.
Reinforcing Steel					299 Lbs.



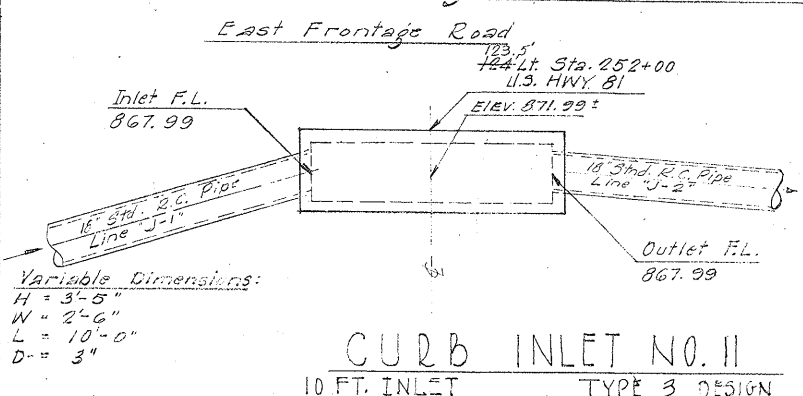
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7'-2"	5'-4"	46
C	12	#4	7'-3/4"	1'-8"	13
D	9	#4	7'-3/4"	4'-5 1/2"	33
E	9	#4	7'-3/4"	4'-5 1/2"	16
F	8	#4	6'-3/4"	4'-5"	9
G	8	#4	8 1/2"	10'-8"	57
H	16	#4	8 1/2"	2'-11"	31
I	16	#4	8 1/2"	5'-6"	59
J	16	#4	8 1/2"	6'-6"	69
K	8	#4	11"	10'-8"	57
L	4	#4	11"	13'-0"	35
M	7	#4	8 1/2"	4'-6"	21
N	21	#4	8 1/2"	3'-2"	44
O	2	#4	~	3'-0"	4
P	2	#4	~	3'-8"	5
Q	2	#4	~	2'-0"	3
R	1	#4	~	10'-8"	7
S	4	#4	~	2'-0"	5
T	1	#4	~	6'-6"	4
U	1	#4	~	10'-8"	7
Uncl. Str. Excav. (In. H.W. M.H.)					9 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					3.91 C.Y.
Reinforcing Steel					525 Lbs.
Manhole Ring & Cover					1 Ea.



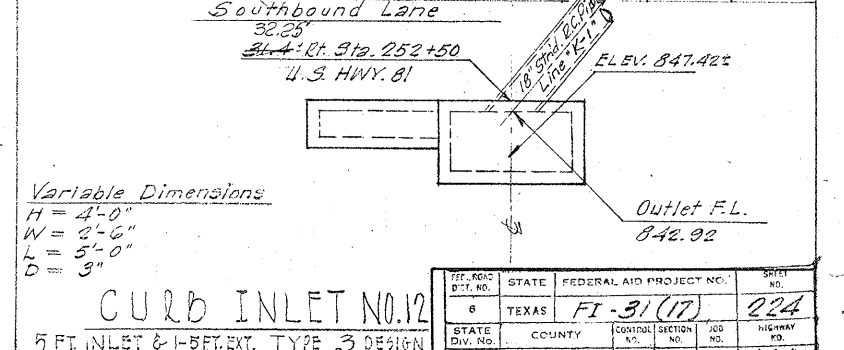
BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
L	9	#4	8 1/2"	10'-8"	64
M	16	#4	8 1/2"	3'-4"	36
N	16	#4	8 1/2"	5'-6"	59
O	16	#4	8 1/2"	6'-11"	74
P	8	#4	11"	10'-8"	57
Q	4	#4	11"	13'-0"	35
R	10	#4	8 1/2"	4'-11"	33
S	24	#4	8 1/2"	3'-2"	51
T	1	#4	~	10'-8"	7
U	1	#4	~	10'-8"	7
Uncl. Str. Excav. (In. H.W. M.H.)					87 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					3.28 C.Y.
Reinforcing Steel					423 Lbs.
Manhole Ring & Cover					1 Ea.



BILL OF REINFORCING STEEL

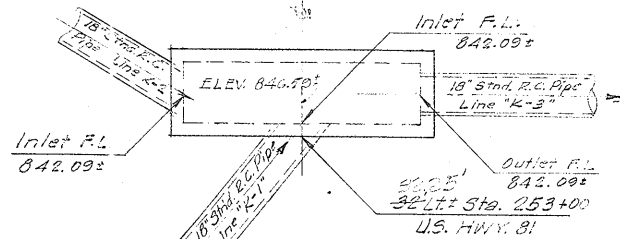
MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7'-2"	5'-4"	46
C	12	#4	7'-3/4"	1'-8"	13
D	9	#4	7'-3/4"	4'-5 1/2"	33
E	9	#4	7'-3/4"	4'-5 1/2"	16
F	8	#4	6'-3/4"	4'-5"	9
G	10	#4	8 1/2"	5'-8"	38
H	9	#4	8 1/2"	3'-11"	24
I	9	#4	8 1/2"	5'-6"	33
J	9	#4	8 1/2"	7'-6"	45
K	8	#4	11"	5'-8"	30
L	4	#4	11"	5'-0"	21
M	7	#4	8 1/2"	5'-6"	26
N	16	#4	8 1/2"	3'-2"	34
O	2	#4	~	3'-0"	4
P	2	#4	~	3'-8"	5
Q	2	#4	~	2'-0"	3
R	1	#4	~	10'-8"	7
S	4	#4	~	2'-0"	5
T	1	#4	~	6'-6"	4
U	1	#4	~	10'-8"	7
Uncl. Str. Excav. (In. H.W. M.H.)					16 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					5.52 C.Y.
Reinforcing Steel					416 Lbs.
Manhole Ring & Cover					1 Ea.



BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
L	9	#4	8 1/2"	10'-8"	64
M	16	#4	8 1/2"	3'-11"	42
N	16	#4	8 1/2"	5'-6"	59
O	16	#4	8 1/2"	5'-6"	80
P	8	#4	11"	10'-8"	57
Q	4	#4	11"	13'-0"	35
R	10	#4	8 1/2"	5'-6"	37
S	20	#4	8 1/2"	3'-2"	59
X	1	#4	~	10'-8"	7
Z	1	#4	~	10'-8"	7
U	3	#6	~	4'-0"	18

Incl. Str. Excav. (In. H.W., M.H.) 108 C.Y.
 Cl. A Conc. (In. H.W., M.H.) 228 C.Y.
 Reinforcing Steel 465 Lbs.
 Manhole Ring & Cover 1 Ea.



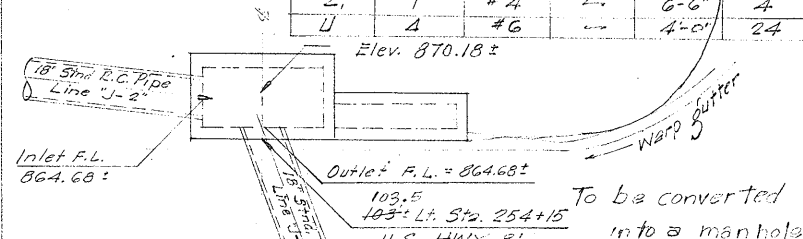
Variable Dimensions:
 H = 4'-0"
 W = 2'-6"
 L = 10'-0"
 D = 3"

CURB INLET NO. 13
 10 FT. INLET TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 1/4"	1'-8"	13
D-9	9	#4	7 3/4"	4' 5 5/8"	33
E-9	9	#4	7 3/4"	4' 2 7/8"	16
F	3	#4	6 3/4"	4'-5"	9
L	13	#4	8 1/2"	5'-8"	49
M	9	#4	8 1/2"	4'-11"	30
N	9	#4	8 1/2"	5'-6"	33
O	9	#4	8 1/2"	8'-6"	51
P	8	#4	11"	5'-8"	30
Q	4	#4	11"	8'-0"	21
R	7	#4	8 1/2"	6'-6"	30
S	2	#4	~	3'-0"	4
T	2	#4	~	3'-8"	5
U	2	#4	~	4'-0"	5
X	1	#4	~	5'-8"	4
Y	4	#4	~	2'-0"	5
Z	1	#4	~	5'-8"	4
Z	1	#4	~	6'-6"	4
U	4	#6	~	4'-0"	24

Incl. Str. Excav. (In. H.W., M.H.) 10 CK
 Cl. A Conc. (In. H.W., M.H.) 2.99 C.Y.
 Reinforcing Steel 458 Lbs.
 Manhole Ring & Cover 1 Ea.



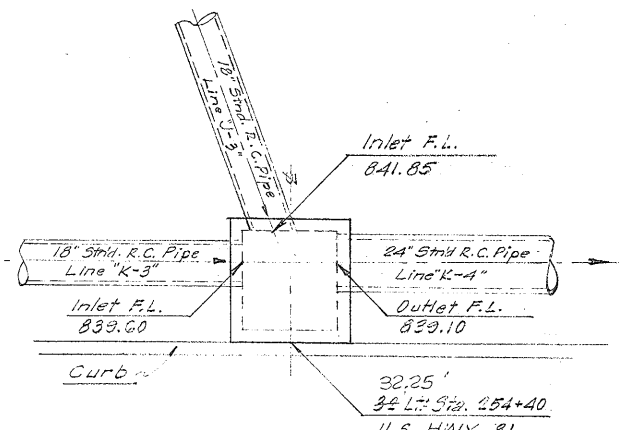
Variable Dimensions:
 H = 5'-0"
 W = 2'-6"
 L = 5'-0"
 D = 3"

CURB INLET NO. 14
 5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	7	#4	11"	7'-0"	33
B	6	#4	11"	7'-0"	28
C	16	#4	9"	10'-2"	109
D	20	#4	11"	5'-4"	71
E	4	#4	11"	4'-8"	12
F	4	#4	11"	4'-8"	12
K	3	#6	14"	3'-10"	17

Incl. Str. Excav. (In. H.W., M.H.) 7 C.Y.
 Cl. A Conc. (In. H.W., M.H.) 235 C.Y.
 Reinforcing Steel 282 Lbs.
 Manhole Ring & Cover 1 Ea.



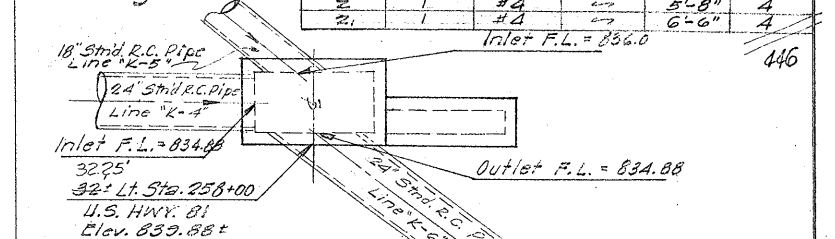
Variable Dimensions:
 H = 5'-0"
 W = 4'-0"
 L = 4'-0"

MANHOLE NO. 3
 TYPE "D" DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 1/4"	1'-8"	13
D-9	9	#4	7 3/4"	4' 5 5/8"	33
E-9	9	#4	7 3/4"	4' 2 7/8"	16
F	3	#4	6 3/4"	4'-5"	9
L	12	#4	8 1/2"	5'-8"	45
M	9	#4	8 1/2"	4'-5"	27
N	9	#4	8 1/2"	5'-6"	33
O	9	#4	8 1/2"	8'-0"	48
P	8	#4	11"	5'-8"	30
Q	4	#4	11"	8'-0"	21
R	7	#4	8 1/2"	6'-0"	28
S	2	#4	~	3'-2"	38
T	2	#4	~	3'-0"	4
U	2	#4	~	3'-8"	5
U	9	#6	~	4'-0"	24
X	1	#4	~	5'-8"	4
Y	4	#4	~	2'-0"	5
Z	1	#4	~	5'-8"	4
Z	1	#4	~	6'-6"	4

Incl. Str. Excav. (In. H.W., M.H.) 7 C.Y.
 Cl. A Conc. (In. H.W., M.H.) 235 C.Y.
 Reinforcing Steel 442 Lbs.
 Manhole Ring & Cover 1 Ea.



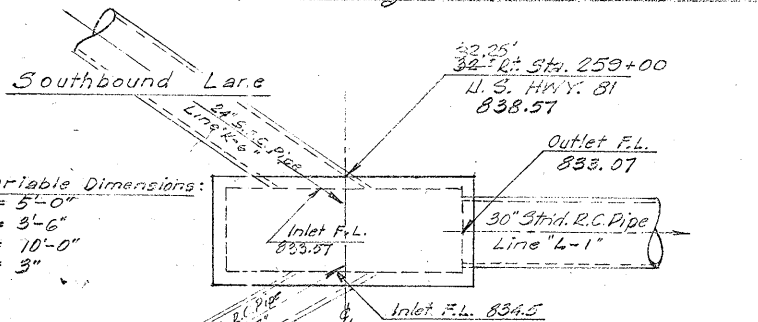
Variable Dimensions:
 H = 4'-0"
 W = 2'-6"
 L = 5'-0"
 D = 3"

CURB INLET NO. 15
 5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
L	13	#4	8 1/2"	10'-8"	93
M	16	#4	8 1/2"	4'-11"	53
N	16	#4	8 1/2"	6'-6"	69
O	16	#4	8 1/2"	9'-6"	102
P	10	#4	11"	10'-8"	71
Q	5	#4	11"	13'-0"	43
R	12	#4	8 1/2"	6'-6"	52
S	22	#4	8 1/2"	4'-2"	61
U	4	#6	~	4'-0"	24
X	1	#4	~	10'-8"	7
Z	1	#4	~	10'-8"	7

Incl. Str. Excav. (In. H.W., M.H.) 41 ACY
 Cl. A Conc. (In. H.W., M.H.) 4.49 C.Y.
 Reinforcing Steel 582 Lbs.
 Manhole Ring & Cover 1 Ea.



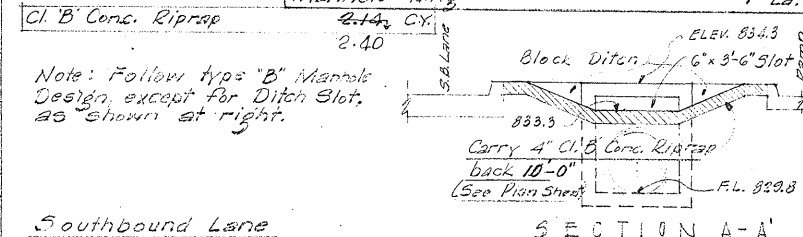
Variable Dimensions:
 H = 5'-0"
 W = 3'-6"
 L = 10'-0"
 D = 3"

CURB INLET NO. 16
 10 FT. INLET TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	6	#4	11"	7'-0"	28
B	6	#4	11"	6'-6"	26
C	12	#4	9"	9'-8"	78
D	22	#4	11"	4'-4"	64
E	4	#4	11"	4'-8"	12
F	4	#4	11"	4'-2"	11
K	2	#6	14"	3'-10"	12

Incl. Str. Excav. (In. H.W., M.H.) 6 C.Y.
 Cl. A Conc. (In. H.W., M.H.) 1.73 C.Y.
 Reinforcing Steel 231 Lbs.
 Manhole Ring 1 Ea.

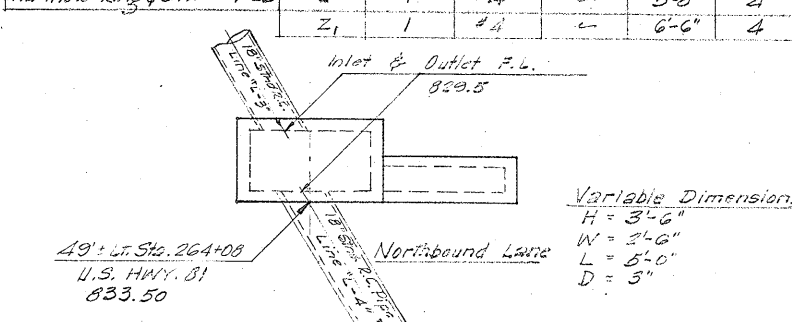


MANHOLE NO. 4
 TYPE "B" DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 1/4"	1'-8"	13
D-9	9	#4	7 3/4"	4' 5 5/8"	33
E-9	9	#4	7 3/4"	4' 2 7/8"	16
F	3	#4	6 3/4"	4'-5"	9
L	9	#4	8 1/2"	5'-8"	34
M	9	#4	8 1/2"	3'-5"	31
N	9	#4	8 1/2"	5'-6"	33
O	9	#4	8 1/2"	7'-0"	42
P	8	#4	11"	5'-8"	30
Q	4	#4	11"	8'-0"	21
R	7	#4	8 1/2"	6'-0"	23
S	16	#4	8 1/2"	3'-2"	34
T	2	#4	~	3'-0"	4
U	2	#4	~	3'-6"	5
U	3	#4	~	2'-6"	3
Y	4	#4	~	5'-8"	4
Z	1	#4	~	2'-0"	5
Z	1	#4	~	5'-8"	4
Z	1	#4	~	6'-6"	4

Incl. Str. Excav. (In. H.W., M.H.) 6 C.Y.
 Cl. A Conc. (In. H.W., M.H.) 2.39 C.Y.
 Reinforcing Steel 394 Lbs.
 Manhole Ring & Cover 1 Ea.



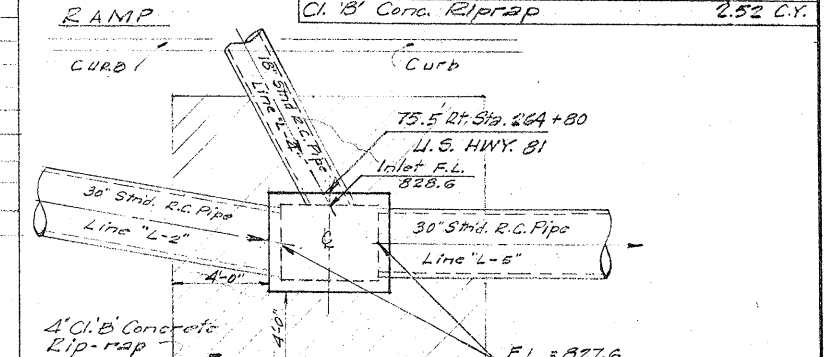
Variable Dimensions:
 H = 3'-6"
 W = 3'-6"
 L = 5'-0"
 D = 3"

CURB INLET NO. 17
 5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	5	#4	11"	7'-0"	28
B	6	#4	11"	6'-0"	24
C	12	#4	9"	9'-2"	74
D	18	#4	11"	4'-0"	48
E	3	#4	11"	4'-8"	9
F	5	#4	11"	3'-8"	12

Incl. Str. Excav. (In. H.W., M.H.) 7 C.Y.
 Cl. A Conc. (In. H.W., M.H.) 1.46 C.Y.
 Reinforcing Steel 190 Lbs.
 Manhole Ring & Cover 1 Ea.



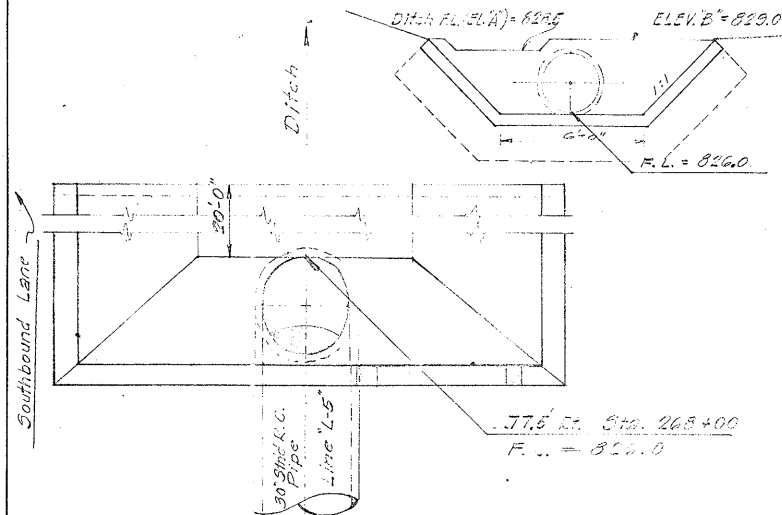
Variable Dimensions:
 H = 3'-8 1/2"
 W = 3'-0"
 L = 4'-0"

MANHOLE NO. 5
 TYPE "B" DESIGN

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
0	TEXAS	FJ-31(17)	225
STATE DIV. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	Bexar	16	7

BILL OF REINFORCING STEEL

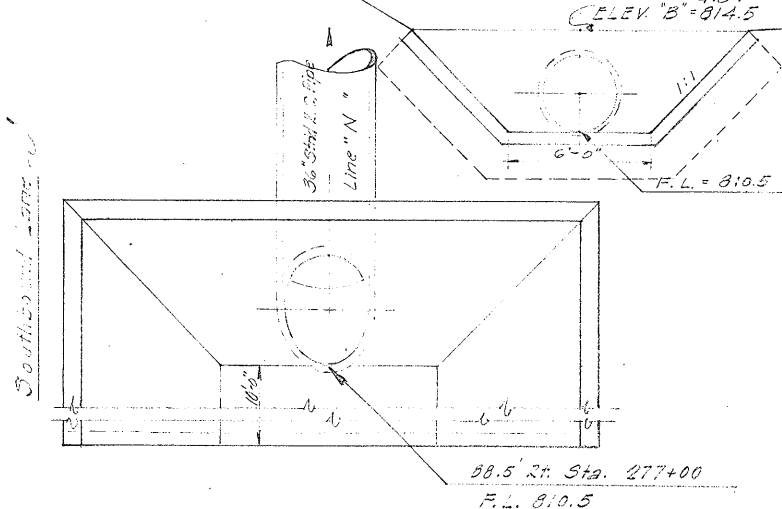
MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
Steel included in unit price bid for					
Cl. B' Conc. Riprap					
Cl. B' Concrete Riprap					7.41 C.Y.
					6.79



PIPE HEADWALL NO. 3
SPL. DES. TYPE A DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
Steel included in unit price bid for					
Cl. B' Conc. Riprap					
Cl. B' Concrete Riprap					4.79 C.Y.
					4.34

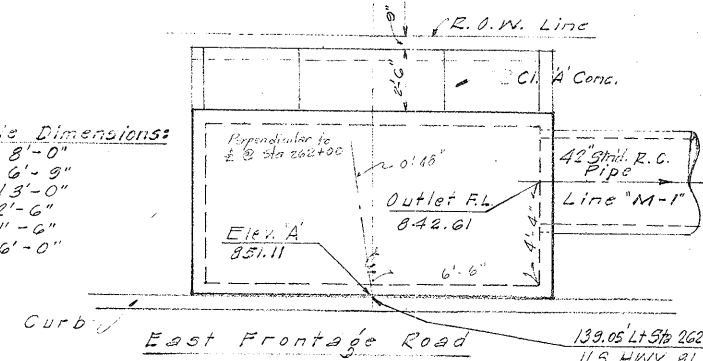


PIPE HEADWALL NO. 4
SPL. DES. TYPE A DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	19	#4	9"	10'-1"	128
B	7	#4	9"	16'-4"	76
C	52	#4	9"	8'-4"	289
D	22	#4	9"	13'-8"	201
E	22	#4	9"	7'-5"	109
F	16	#4	11"	3'-9"	40
G	3	#4	12"	16'-0"	32
H	38	#4	9"	7'-5"	188
J	22	#4	9"	13'-8"	201
K	3	#6	14"	3'-10"	17

Uncl. Str. Excav. (In. H.W. M.H.) 30 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 1237 C.Y.
Reinforcing Steel 1281 Lbs.
Manhole Ring & Cover 1 Ea.



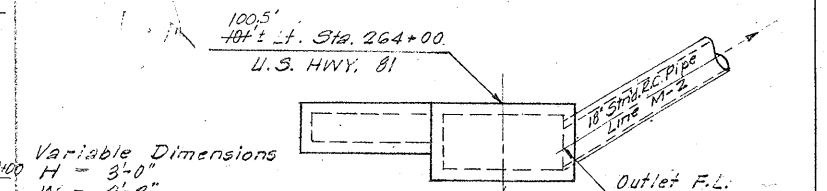
CHANNEL INLET NO. 1
SPL. DES. TYPE A DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 3/4"	1'-8"	13
D-9	9	#4	7 3/4"	4'-6 1/2"	33
E-9	9	#4	7 3/4"	4'-7 1/2"	16
F	3	#4	6 3/4"	4'-5"	9
L	8	#4	8 1/2"	5'-8"	30
M	9	#4	8 1/2"	2'-11"	16
N	9	#4	8 1/2"	5'-2"	31
O	9	#4	8 1/2"	6'-2"	37
P	8	#4	11"	5'-8"	30
R	4	#4	11"	8'-0"	21
Q	6	#4	8 1/2"	4'-6"	18
R	14	#4	8 1/2"	4'-10"	45
S	2	#4	8 1/2"	3'-0"	4
T	2	#4	8 1/2"	3'-4"	4
U	2	#4	8 1/2"	2'-0"	3
X	1	#4	8 1/2"	5'-8"	4
Y	4	#4	8 1/2"	2'-0"	5
Z	1	#4	8 1/2"	5'-8"	4
Z	1	#4	8 1/2"	6'-6"	4

Uncl. Str. Excav. (In. H.W. M.H.) 5 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 235 C.Y.
Reinforcing Steel 375 Lbs.
Manhole Ring & Cover 1 Ea.

East Frontage Road

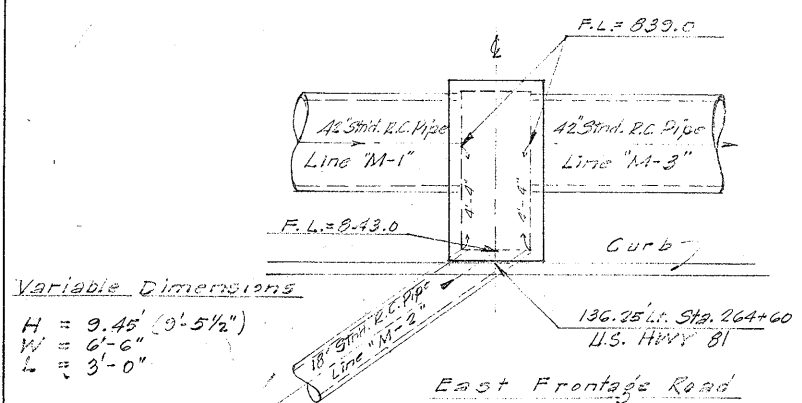


CURB INLET NO. 18
5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	10	#4	11"	6'-0"	40
B	5	#4	11"	3'-6"	32
C	26	#4	9"	11'-8"	203
D	22	#4	11"	9'-9"	143
E	8	#4	11"	3'-8"	20
F	3	#4	11"	7'-2"	14
K	6	#6	14"	3'-10"	35

Uncl. Str. Excav. (In. H.W. M.H.) 20 24 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 4.16 5.00 C.Y.
Reinforcing Steel 487 Lbs.
Manhole Ring & Cover 1 Ea.

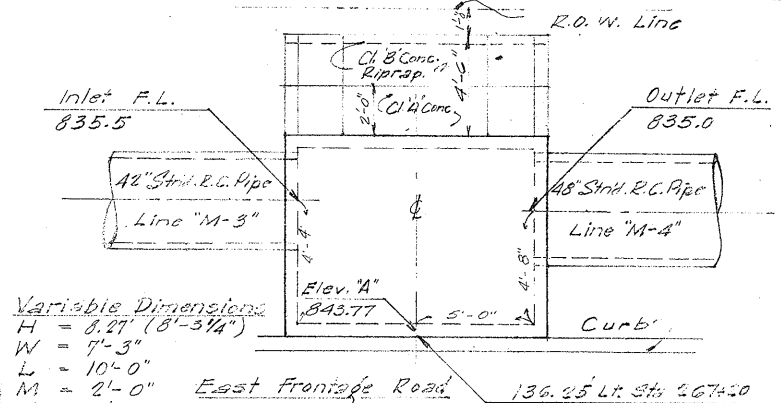


MANHOLE NO. 6
TYPE B DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	15	#4	9"	10'-7"	106
B	8	#4	9"	13'-4"	71
C	46	#4	9"	8'-7"	264
D	22	#4	9"	10'-8"	157
E	22	#4	9"	7'-11"	116
F	14	#4	11"	5'-6"	51
G	3	#4	12"	13'-0"	24
H	30	#4	9"	7'-11"	159
J	22	#4	9"	10'-8"	235
K	3	#6	14"	3'-10"	17

Uncl. Str. Excav. (In. H.W. M.H.) 27 43 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 10.18 48.85 C.Y.
Reinforcing Steel 1200 Lbs.
Manhole Ring & Cover 1 Ea.
Cl. B' Conc. Riprap 0.82 0.94 C.Y.

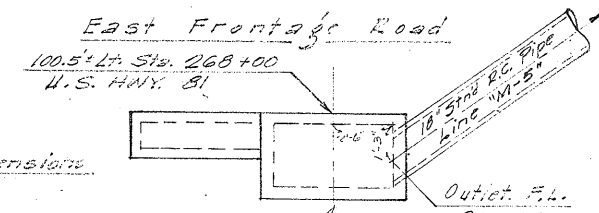


CHANNEL INLET NO. 2
SPL. DES. TYPE A DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 3/4"	1'-8"	13
D-9	9	#4	7 3/4"	4'-6 1/2"	33
E-9	9	#4	7 3/4"	4'-7 1/2"	16
F	3	#4	6 3/4"	4'-5"	9
L	8	#4	8 1/2"	5'-8"	30
M	9	#4	8 1/2"	2'-11"	16
N	9	#4	8 1/2"	5'-2"	31
O	9	#4	8 1/2"	6'-2"	37
P	8	#4	11"	5'-8"	30
R	4	#4	11"	8'-0"	21
Q	7	#4	8 1/2"	4'-6"	21
R	14	#4	8 1/2"	3'-2"	30
S	2	#4	8 1/2"	3'-0"	4
T	2	#4	8 1/2"	3'-4"	4
U	2	#4	8 1/2"	2'-0"	3
X	1	#4	8 1/2"	5'-8"	4
Y	4	#4	8 1/2"	2'-0"	5
Z	1	#4	8 1/2"	5'-8"	4
Z	1	#4	8 1/2"	6'-6"	4

Uncl. Str. Excav. (In. H.W. M.H.) 4 6 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 4.26 C.Y.
Reinforcing Steel 363 Lbs.
Manhole Ring & Cover 1 Ea.

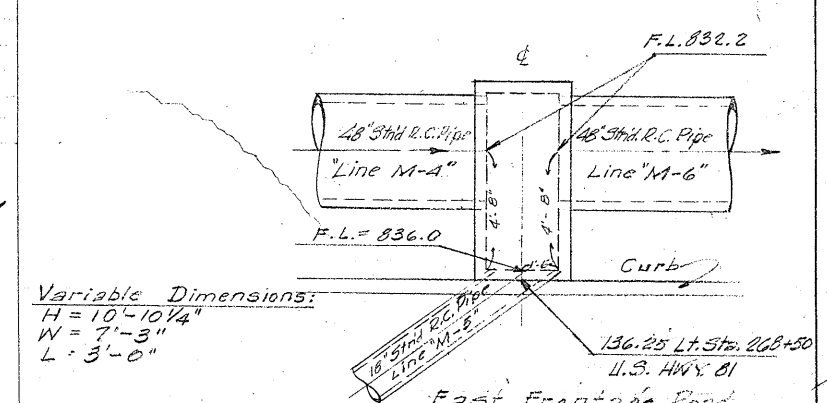


CURB INLET NO. 19
5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	10	#4	11"	6'-0"	40
B	5	#4	11"	3'-6"	32
C	26	#4	9"	11'-8"	203
D	22	#4	11"	9'-9"	143
E	8	#4	11"	3'-8"	20
F	3	#4	11"	7'-2"	14
K	6	#6	14"	3'-10"	35

Uncl. Str. Excav. (In. H.W. M.H.) 22 24 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 4.95 5.00 C.Y.
Reinforcing Steel 556 Lbs.
Manhole Ring & Cover 1 Ea.



MANHOLE NO. 7
TYPE B DESIGN

STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	BEXAR	F1-31(17)	226
SECTION	FOOTING	FOOTING	FOOTING
15	7	25	U.S. 81

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	10	#4	11"	6'-0"	40
B	5	#4	11"	10'-3"	34
C	20	#4	9"	12'-5"	166
D	24	#4	11"	9'-3"	148
E	8	#4	11"	3'-8"	20
F	3	#4	11"	7'-11"	16
K	5	#6	14"	3'-10"	18

MANHOLE NO. 8
TYPE "B" DESIGN

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	12	#4	9"	7'-4"	59
B	5	#4	9"	11'-4"	38
C	34	#4	9"	5'-10"	132
D	16	#4	9"	8'-8"	93
E	16	#4	9"	4'-8"	50
F	12	#4	11"	8'-9"	70
G	3	#4	12"	10'-0"	20
H	24	#4	9"	4'-8"	75
J	16	#4	9"	8'-8"	93
K	2	#6	14"	3'-10"	12

Hand-drawn plan view of a culvert structure. The culvert is rectangular with a width of 1'-0" and a length of 7'-9". It is labeled "Cl. B' Conc. Riprap" and "Ch. 14' Conc.". The structure is shown with a dashed line indicating the "E.O.W. Line". The culvert is situated on a slope, with the "Outlet F.L." (Finished Level) at 810.80 and the "Elev. A" at 816.90. The culvert is labeled "Culvert".

CHANNEL INLET NO. 3
SPL. DESIGN

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	26	#4	7" ±	5'-4"	93
C	24	#4	7 3/4"	1'-8"	27
D _{1-a}	18	#4	7 3/4"	^{AB} 5'-6 1/2"	C7
E _{1-a}	18	#4	7 3/4"	^{AB} 2'-7 1/2"	32
F	6	#4	6 3/4"	4'-5"	18
L	8	#4	8 1/2"	5'-8"	30
M	9	#4	8 1/2"	2'-11"	18
N	9	#4	8 1/2"	5'-0"	30
O	9	#4	8 1/2"	6'-0"	36
P	8	#4	11"	5'-8"	30
P ₁	4	#4	11"	8'-0"	31
Q	2	#4	8 1/2"	4'-6"	6
R	11	#4	8 1/2"	2'-8"	20
S	4	#4	↖	3'-0"	8
T	4	#4	↖	3'-2"	8
T ₁	4	#4	↖	2'-0"	5
X	1	#4	↖	16'-8"	4
Y	8	#4	↖	2'-0"	11
Z	1	#4	↖	5'-8"	4
Z ₁	2	#4	↖	6'-6"	9

CURB INLET NO. 20
5 FT. INLET & 2-5 FT. EXT. TYPE 3 DESIGN

[illegible]

PIPE HEADWALL NO. 5
TYPE A DESIGN

[illegible]

PIPE HEADWALL NO. 6
TYPE "A" DESIGN

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"±	5'-4"	46 ✓
C	12	#4	7¾"	1'-8"	13 ✓
D-9	9	#4	7¾"	4½' 5'-6 ¾"	33 ✓
E-9	9	#4	7¾"	4½' 2'-7 ¾"	16 ✓
F	3	#4	6¾"	4'-5"	9 ✓
L	8	#4	8½"	5'-8"	30 ✓
M	9	#4	8½"	2'-11"	18 ✓
N	9	#4	8½"	6'-0"	36 ✓
O	9	#4	8½"	7'-0"	42 ✓
P	8	#4	11"	5'-8"	30 ✓
P	4	#4	11"	8'-0"	21 ✓

CURB INLET NO. 21
5 FT. INLET & 1-5 FT. EXT. TYPE 3

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	15	#4	9"	6'-4"	63
B	4	#4	9"	13'-4"	36
C	38	#4	9"	6'-4"	161
D	16	#4	9"	10'-8"	114
E	16	#4	9"	3'-8"	39
F	14	#4	11"	9'-9"	91
G	3	#4	12"	12'-0"	24
H	30	#4	9"	3'-8"	74
J	12	#4	9"	10'-8"	86
K	2	#6	14"	3'-10"	12

CHANNEL INLET NO. 4
SPL. DESIGN

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	24	#4	9"	4'-11"	79
B	12	#4	11"	8'-8"	69
C	12	#4	9"	7'-3"	68
D	12	#4	9"	7'-1"	57
E	15	#4	9"	8'-8"	87
F	6	#4	11"	11'-0"	44
G	12	#4	9"	5'-10"	47
H	12	#4	11"	5'-10"	47
I	16	#4	—	4'-11"	53
K	2	#6	14"	3'-10"	12

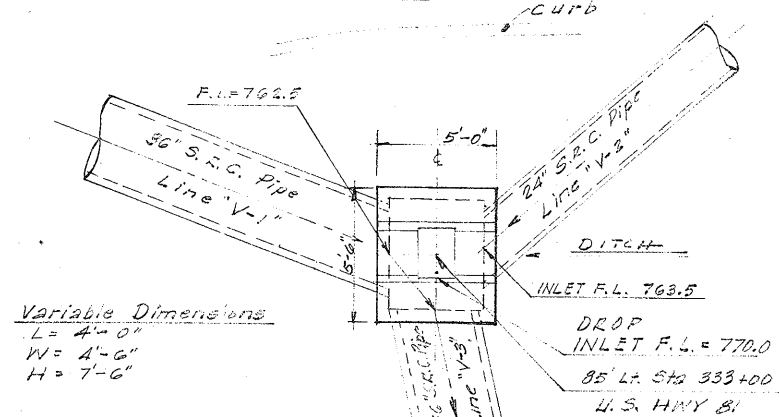
Incl. Str Excav. (Un)F.W. NH) 17 C.Y.

CURB INLET NO.22
TYPE 2 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	6	#4	8"	2'-8"	11
B	8	#4	8"	4'-8"	25
C	20	#4	8"	10'-4"	138
E	5	#4	11"	6'-7"	22
E ₂	6	#4	11"	7'-2"	29
F	10	#4	11"	2'-5"	16
J	26	#4	11"	6'-4"	110
K	6	#4	11"	1'-8"	7
Uncl. Str. Excav. (In. H.W. M.H.)					11 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					2.98 C.Y.
Reinforcing Steel					358 Lbs.
Inlet Grate & Frame					1 Ea.

East Frontage Road
LINE "DD"



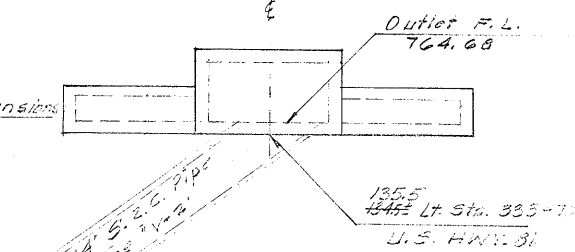
DROP INLET NO. 34
TYPE C DESIGN MOD.

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	26	#4	7"	5'-4"	93
C	24	#4	7 3/4"	1'-8"	27
D ₁₋₉	18	#4	7 3/4"	5'-6 3/4"	67
E ₁₋₉	18	#4	7 3/4"	2'-7 1/2"	32
F	6	#4	6 3/4"	4'-5"	18
L	9	#4	8 1/2"	5'-8"	34
M	9	#4	8 1/2"	3'-5"	21
N	9	#4	8 1/2"	5'-6"	33
O	9	#4	8 1/2"	7'-0"	42
P	8	#4	11"	5'-8"	30
P ₁	4	#4	11"	8'-0"	21
Q	4	#4	8 1/2"	5'-0"	13
R	15	#4	8 1/2"	3'-2"	32
S	4	#4	11"	3'-0"	8
T	4	#4	11"	3'-8"	10
T ₁	4	#4	11"	2'-6"	7
X	1	#4	11"	5'-8"	4
Y	8	#4	11"	2'-0"	11
Z	1	#4	11"	5'-8"	4
Z ₁	2	#4	11"	6'-6"	9
Uncl. Str. Excav. (In. H.W. M.H.)					6 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					3.86 C.Y.
Reinforcing Steel					516 Lbs.
Manhole Ring & Cover					1 Ea.

Uncl. Str. Excav. (In. H.W. M.H.) 6 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 3.86 C.Y.
Reinforcing Steel 516 Lbs.
Manhole Ring & Cover 1 Ea.

Variable Dimensions
H = 3'-6"
W = 2'-6"
L = 5'-0"
D = 3"



CURB INLET NO. 23
5 FT. INLET & 5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 3/4"	1'-8"	13
D ₁₋₉	9	#4	7 3/4"	5'-6 3/4"	23
E ₁₋₉	9	#4	7 3/4"	2'-7 1/2"	16
F	3	#4	6 3/4"	4'-5"	9
L	15	#4	8 1/2"	10'-5"	107
M	16	#4	8 1/2"	5'-5"	53
N	16	#4	8 1/2"	8'-0"	86
O	16	#4	8 1/2"	11'-7"	122
P	14	#4	11"	10'-8"	100
P ₁	7	#4	11"	13'-0"	61
Q	14	#4	8 1/2"	7'-1"	66
R	28	#4	8 1/2"	5'-8"	106
S	2	#4	11"	3'-0"	4
T	2	#4	11"	6'-9"	8
T ₁	2	#4	11"	4'-7"	6
X	1	#4	11"	4'-0"	24
Y	4	#4	11"	10'-8"	7
Z	1	#4	11"	6'-0"	5
Z ₁	1	#4	11"	10'-8"	7
Uncl. Str. Excav. (In. H.W. M.H.)					16 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					6.22 C.Y.
Reinforcing Steel					888 Lbs.
Manhole Ring & Cover					1 Ea.
Cl. B' Conc. Riprap					0.99 C.Y.

Uncl. Str. Excav. (In. H.W. M.H.) 16 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 6.22 C.Y.
Reinforcing Steel 888 Lbs.
Manhole Ring & Cover 1 Ea.
Cl. B' Conc. Riprap 0.99 C.Y.



Variable Dimensions
H = 5'-6 1/2"
W = 5'-0"
L = 10'-0"
D = 3"

West Frontage Road
CURB INLET NO. 24
10 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 3/4"	1'-8"	13
D ₁₋₉	9	#4	7 3/4"	5'-6 3/4"	23
E ₁₋₉	9	#4	7 3/4"	2'-7 1/2"	16
F	3	#4	6 3/4"	4'-5"	9
L	9	#4	8 1/2"	5'-8"	34
M	9	#4	8 1/2"	3'-4"	20
N	9	#4	8 1/2"	5'-6"	33
O	9	#4	8 1/2"	6'-11"	42
P	8	#4	11"	5'-8"	30
P ₁	4	#4	11"	8'-0"	21
Q	10	#4	8 1/2"	4'-11"	33
R	12	#4	8 1/2"	3'-2"	25
S	2	#4	11"	3'-0"	4
T	2	#4	11"	3'-8"	5
T ₁	2	#4	11"	2'-5"	3
X	1	#4	11"	5'-8"	4
Y	4	#4	11"	2'-0"	5
Z	1	#4	11"	5'-8"	4
Z ₁	1	#4	11"	6'-6"	4
Uncl. Str. Excav. (In. H.W. M.H.)					6.7 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					3.67 C.Y.
Reinforcing Steel					584 Lbs.
Manhole Ring & Cover					1 Ea.

Uncl. Str. Excav. (In. H.W. M.H.) 6.7 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 3.67 C.Y.
Reinforcing Steel 584 Lbs.
Manhole Ring & Cover 1 Ea.



Variable Dimensions
H = 3'-5 1/2"
W = 2'-6"
L = 5'-0"
D = 3"

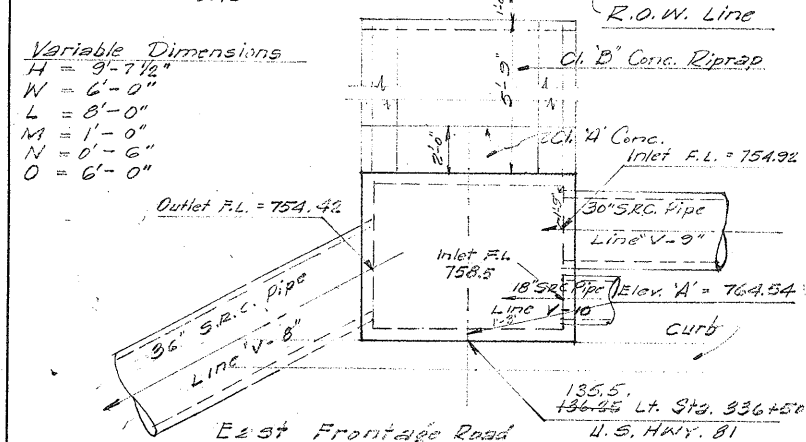
East Frontage Road
CURB INLET NO. 25
5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	12	#4	9"	9'-4"	75
B	7	#4	9"	11'-4"	53
C	38	#4	9"	9'-11"	252
D	26	#4	9"	8'-8"	151
E	26	#4	9"	6'-8"	116
F	10	#4	11"	6'-9"	45
G	3	#4	12"	10'-0"	20
H	24	#4	9"	6'-8"	107
J	20	#4	9"	8'-8"	116
K	4	#6	14"	3'-10"	23
Uncl. Str. Excav. (In. H.W. M.H.)					35-38 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					8.84-8.75 C.Y.
Reinforcing Steel					958 Lbs.
Manhole Ring & Cover					1 Ea.

Cl. B' Conc. Riprap 0.75 C.Y.
0.45

Variable Dimensions
H = 9'-7 1/2"
W = 6'-0"
L = 8'-0"
M = 1'-0"
N = 0'-6"
O = 6'-0"

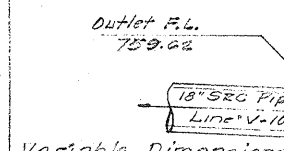


CHANNEL INLET NO. 5
SPL. DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 3/4"	1'-8"	13
D ₁₋₉	9	#4	7 3/4"	5'-6 3/4"	23
E ₁₋₉	9	#4	7 3/4"	2'-7 1/2"	16
F	3	#4	6 3/4"	4'-5"	9
L	8	#4	8 1/2"	5'-8"	30
M	9	#4	8 1/2"	2'-11"	18
N	9	#4	8 1/2"	5'-6"	33
O	9	#4	8 1/2"	6'-6"	39
P	8	#4	11"	5'-8"	30
P ₁	4	#4	11"	8'-0"	21
Q	7	#4	8 1/2"	4'-6"	21
R	14	#4	8 1/2"	3'-2"	30
S	2	#4	11"	3'-0"	4
T	2	#4	11"	3'-5"	5
T ₁	2	#4	11"	2'-0"	3
X	1	#4	11"	5'-8"	4
Y	4	#4	11"	2'-0"	5
Z	1	#4	11"	5'-8"	4
Z ₁	1	#4	11"	6'-6"	4
Uncl. Str. Excav. (In. H.W. M.H.)					6 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					2.26 C.Y.
Reinforcing Steel					348 Lbs.
Manhole Ring & Cover					1 Ea.

Uncl. Str. Excav. (In. H.W. M.H.) 6 C.Y.
Cl. A' Conc. (In. H.W. M.H.) 2.26 C.Y.
Reinforcing Steel 348 Lbs.
Manhole Ring & Cover 1 Ea.

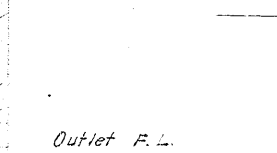


East Frontage Road
CURB INLET NO. 26
5 FT. INLET & 1-5 FT. EXT. TYPE 3 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	24	#4	9"	6'-8"	107
B	16	#4	11"	8'-8"	93
C	12	#4	9"	9'-0"	72
D	12	#4	9"	6'-7"	53
E	14	#4	9"	8'-8"	81
F	8	#4	11"	11'-0"	66
G	12	#4	9"	5'-4"	43
H	14	#4	11"	5'-4"	50
I	14	#4	11"	6'-8"	62
K	2	#6	14"	3'-10"	12
Uncl. Str. Excav. (In. H.W. M.H.)					18 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					5.73 C.Y.
Reinforcing Steel					639 Lbs.
Manhole Ring & Cover					1 Ea.

Cl. B' Conc. Riprap 0.23 C.Y.

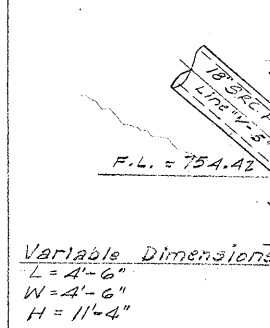


East Frontage Road
CURB INLET NO. 27
TYPE 2 DESIGN

BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	6	#4	8"	2'-8"	11
B	8	#4	8"	5'-2"	28
C	30	#4	8"	11'-2"	224
E	8	#4	11"	7'-2"	38
E ₂	8	#4	11"	7'-2"	38
F	10	#4	11"	2'-5"	16
J	28	#4	11"	10'-2"	190
K	6	#4	11"	1'-8"	7
Uncl. Str. Excav. (In. H.W. M.H.)					25.24 C.Y.
Cl. A' Conc. (In. H.W. M.H.)					6.54 C.Y.
Reinforcing Steel					552 Lbs.
Inlet Grate & Frame					1 Ea.

East Frontage Road

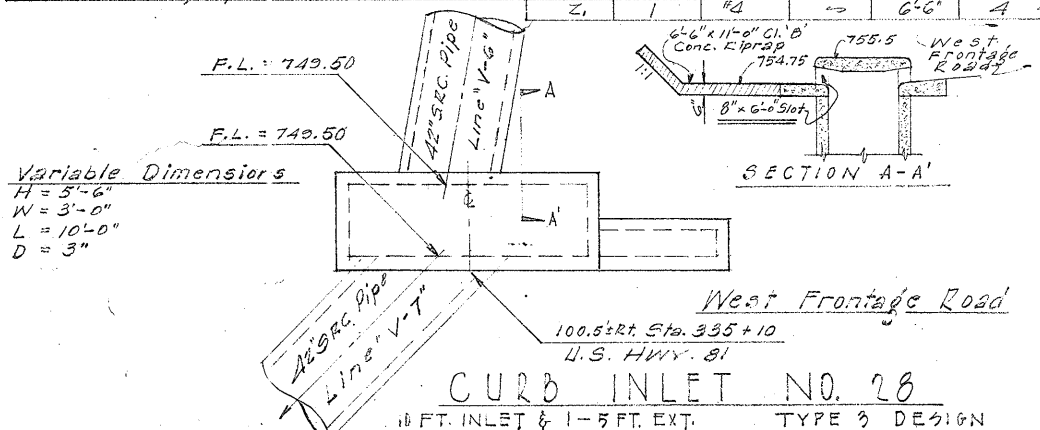


DROP INLET NO. 35
TYPE "C" DESIGN MOD.

BILL OF REINFORCING STEEL

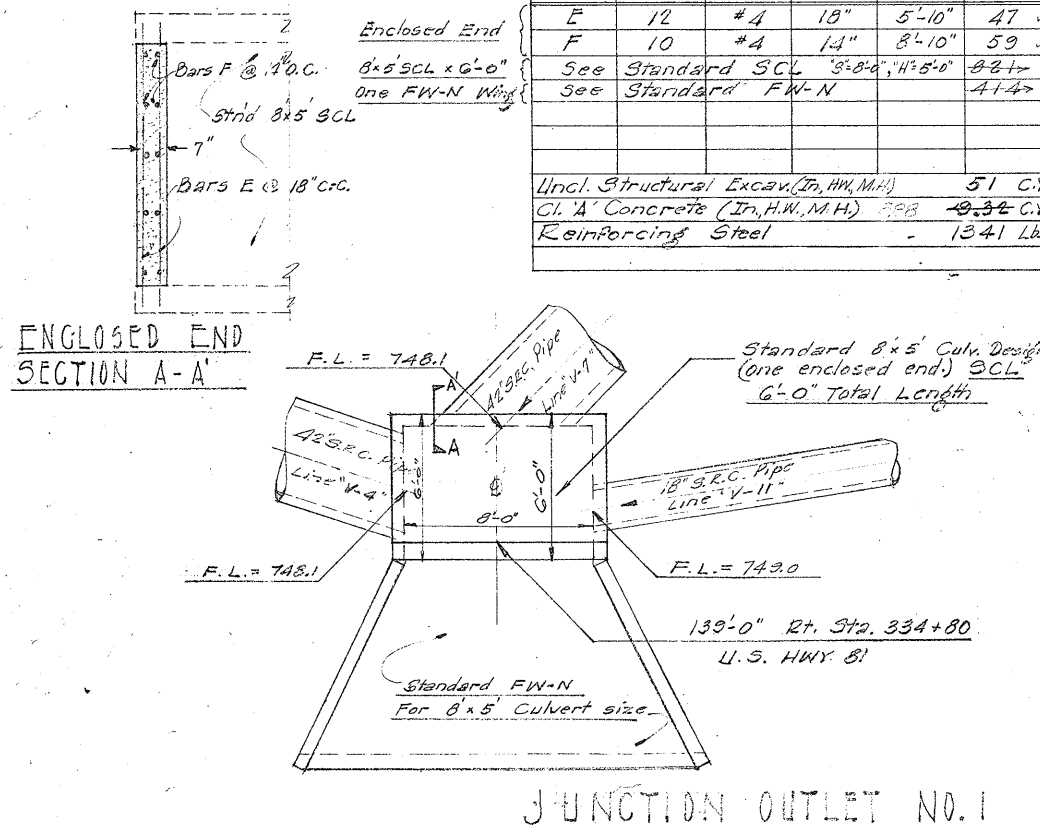
MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
B	13	#4	7"	5'-4"	46
C	12	#4	7 3/4"	1'-8"	13
D	9	#4	7 3/4"	1'-8" 5/8"	33
E	9	#4	7 3/4"	1'-8" 7/8"	16
F	5	#4	6 3/4"	4'-5"	9
L	15	#4	0 1/2"	10'-8"	107
M	16	#4	8 1/2"	5'-5"	58
N	16	#4	8 1/2"	13'-0"	139
O	16	#4	8 1/2"	9'-6"	102
P	8	#4	11"	10'-8"	57
Q	4	#4	11"	13'-0"	35
R	14	#4	0 1/2"	7'-0"	65
S	28	#4	8 1/2"	3'-8"	69
T	2	#4	3'-0"	4'-0"	4
U	2	#4	4'-6"	6'-0"	6
V	4	#4	10'-0"	24'-0"	24
W	1	#4	10'-0"	5'-0"	5
X	1	#4	6'-0"	7'-0"	7
Y	1	#4	10'-0"	5'-0"	5
Z	1	#4	6'-0"	7'-0"	7

Incl. Str. Excav. (In. H.W. M.H.) 16.14 C.Y.
 Cl. A' Conc. (In. H.W. M.H.) 536.435 C.Y.
 Reinforcing Steel 812 Lbs
 Manhole Ring & Cover 152 Ea.
 Cl. B' Conc. Riprap 152 L32 C.Y.



BILL OF REINFORCING STEEL

MARK	NO.	SIZE	SPACING	LENGTH	WEIGHT
E	12	#4	18"	5'-10"	47
F	10	#4	14"	8'-10"	59
See Standard SCL				3'-0" 1/2" 4'-0"	88
See Standard FW-N					414
Incl. Structural Excav. (In. H.W. M.H.)				51 C.Y.	
Cl. A' Concrete (In. H.W. M.H.)				228	0.34 C.Y.
Reinforcing Steel					1341 Lbs



CURB INLET SUMMARY

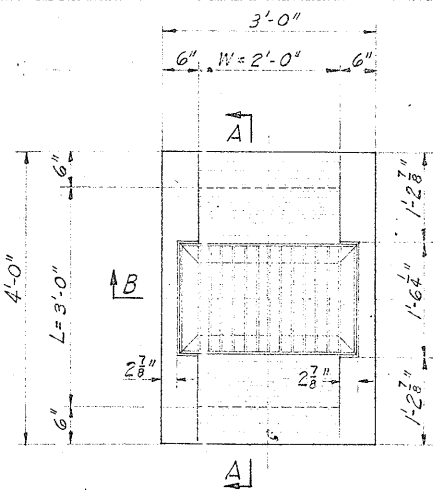
Sheet No.			Location	Curb Inlet		Uncl. Str. Ex. (Inlets, Manholes & Manholes) C.Y.	Cl. A' Conc. (Inlets, Manholes & Manholes) C.Y.	Reinf. Steel Lb.	Manhole Cover & Ring Ea.	Cl. B' Conc. Riprap C.Y.		
Plan	Loc. Out	Total		No.	Type							
17	223	219	683' 1/4 S. 19' 1/4 E.	CI-1	1	—	✓	2.88	213	350	✓	
17	"	219	15' 5 1/2" S. 13' 1/2" E.	CI-2	1	—	✓	0.85	122		✓	
17	"	220	15' 1/4 S. 19' 1/4 E.	CI-3	301	8	3	2.65	275	539	✓	1
17	"	220	15' 5 1/2" S. 19' 1/4 E.	CI-4	2	8	11	2.75	381	571	✓	1
18	"	219	15' 5 1/4 S. 13' 1/2" E.	CI-5	1	—	✓	1.25	106	220	✓	
18	224	219	14' 1/4 S. 21' 1/4 E.	CI-6	1	—	✓	1.24	118	179	✓	
19	"	219	15' 5 1/2 S. 13' 1/2 E.	CI-7	1	100.5'	✓	1.02	102	160	✓	
21	"	219	16' 0 1/4 S. 12' 1/4 E.	CI-8	1		✓	2.2	236		✓	
21	"	219	17' 5 1/4 S. 12' 1/4 E.	CI-9	1		✓	2.31	299		✓	
21	"	221	10' 1/4 S. 25' 1/4 E.	CI-10	3		8	3.21	412	565	✓	1
21	"	221	10' 1/4 S. 25' 1/2 E.	CI-11	3		8	3.28	423		✓	1
21	"	221	10' 1/2 S. 25' 1/2 E.	CI-12	3		0	2.76	352	416	✓	1
21	225	221	10' 1/4 S. 25' 1/2 E.	CI-13	3		9	3.29	428	465	✓	1
21	"	221	10' 1/4 S. 25' 1/2 E.	CI-14	3		10	2.89	383	458	✓	1
21	"	221	10' 1/4 S. 25' 1/2 E.	CI-15	3		0	2.73	348	442	✓	1
22	"	221	10' 1/4 S. 25' 1/2 E.	CI-16	3		11	1.59	182	582	✓	1
22	"	221	10' 1/4 S. 25' 1/2 E.	CI-17	3		8	2.89	381	394	✓	1
22	226	221	10' 1/4 S. 25' 1/2 E.	CI-18	3		5	2.49	235	375	✓	1
22	"	221	10' 1/4 S. 25' 1/2 E.	CI-19	3		0	2.76	247	368	✓	1
23	227	221	10' 1/4 S. 25' 1/2 E.	CI-20	3		—	2.89	383	427	181	✓
26	"	221	10' 1/4 S. 25' 1/2 E.	CI-21	3		5	2.65	264	368	280	✓
27	"	220	15' 5 1/4 S. 13' 1/2 E.	CI-22	2		17	4.89	617	861	✓	1
27	228	221	11' 5 1/4 S. 13' 1/2 E.	CI-23	3		0	3.26	387	516	✓	1
27	"	221	10' 1/4 S. 25' 1/2 E.	CI-24	3		10	2.82	316	388	✓	1
27	"	221	10' 1/4 S. 25' 1/2 E.	CI-25	3		0	2.67	270	384	✓	1
27	"	221	10' 1/4 S. 25' 1/2 E.	CI-26	3		5	2.26	318	368	✓	1
27	"	220	15' 5 1/4 S. 13' 1/2 E.	CI-27	2		18	5.73	535	639	✓	1
27	229	221	10' 1/4 S. 25' 1/2 E.	CI-28	3		11	4.25	426	512	✓	1
29	233	221	10' 1/4 S. 25' 1/2 E.	CI-29	3		23	5.25	706	940	931	✓
29	"	221	10' 1/4 S. 25' 1/2 E.	CI-30	3		7	4.42	206	288	305	✓
CONTROL 10-7-25				TOTALS			208	35.80	13,397	23	6.45	



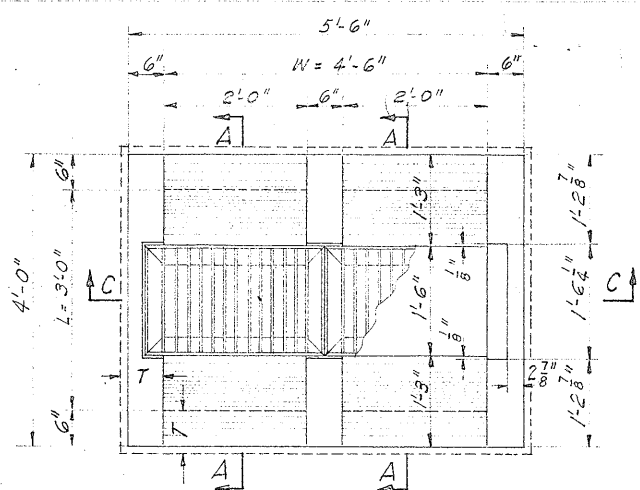
EAST AND WEST INTERCHANGES

PROJECT IN. 1088 (2) CONT. 17-10-13										PROJECT F 31 (18) CONT. 16 7-25									
INDEX TO DRAINAGE STRUCTURES					INDEX TO PIPE LINES					INDEX TO DRAINAGE STRUCTURES					INDEX TO PIPE LINES				
STRUCT NO	DESCRIPTION	PLAN SHEET NO	DRAINAGE LAYOUT SH. NO	DETAIL SHEETS NO	PIPE NO	PIPE LINE NO	SIZE & LENGTH	PLAN SHEET NO	PIPE PROFILE SH. NO.	STRUCT NO	DESCRIPTION	PLAN SHEET NO	DRAINAGE LAYOUT SH. NO	DETAIL SHEETS NO.	PIPE NO	PIPE LINE NO	SIZE & LENGTH	PLAN SHEET NO	PIPE PROFILE SH. NO.
BC-1	2-10'x8' Box Culvert (3pl)	30	146	145, 146	W5A	S1	71'-36"	30	143	BC-5	1- 3'x2' B.Culv. Extension	30	238	238, 239	W30	-	88'-18"	30	134
BC-2	2-10'x9' Box Culvert (3pl)	30	147	147, 148	W6	S1	87'-18"	30	143	BC-6	3-4'x4' B.Culv. Extension	40	240	240	W31	-	38'-48"	36	134
BC-3	1-4'x4' B.Culv. Extension	30	235	235, 236	W7	S1	368'-36"	30	143	C1-453	Curb Inlet, Special	30	239	239	W32	-	124'-48"	36	134
BC-4	1-5'x4' B.Culv. Extension	33	135	237	N8	S1	65'-18"	30	143	C1-463	" " " "	30	239	239	W33	S7	200'-18"	38	144
BC-8	1-5'x3' B.Culv. Extension	31	241	241, 242	N9	S1	86'-24"	30	143	C1-473	" " " "	30	239	239	W34	S7	74'-18"	38	144
C1-31	Curb Inlet, Type 3	30	143	221, 233	N10	S1	43'-24"	30	143	C1-48	" " " " Type 3	38	144	221, 233	W35	S7	50'-24"	38	144
C1-32	" " " " 3	30	143	221, 233	N11	S1	130'-36"	30	143	DI-50	Drop Inlet, Type C	36	134	231	W36	S7	20'-30"	38	144
C1-33	" " " " 3	30	143	221, 233	N12	S2	89'-18"	30	143	DI-51	" " " " A	38	144	231	W37	S7	262'-30"	38	144
C1-34	" " " " 3	30	143	221, 233	N13	S2	99'-24"	30	143	DI-52	" " " " A	38	144	231	W38	S7	241'-18"	38	144
C1-35	" " " " 3	31	143	221, 233	N14	S3	24'-18"	31	143	DI-53	" " " " A	38	144	231	W39	S7	125'-18"	38	144
C1-36	" " " " 3	30	143	221, 233	N15	S3	52'-18"	31	143	DI-54	" " " " B	38	144	231	W40	S7	611'-36"	42	144
C1-37	" " " " 3	30	143	221, 233	N16	S3	54'-24"	31	143	DI-55	" " " " A	38	144	231	W41	S7	442'-36"	42	144
C1-38	" " " " 3	30	143	221, 233	N17	S4	165'-42"	30	143	DI-56	" " " " A	38	144	231	W42	S7	564'-36"	42	144
C1-39	" " " " 3	35	144	221, 233	N18	S4	38'-24"	30	143	DI-57	" " " " B	38	144	231					
C1-40	" " " " 3	35	144	221, 233	N19	S4	90'-42"	30	143	DI-58	" " " " C	42	144	231					
C1-41	" " " " 3	30	144	221, 233	N20	S4	78'-54"	30	143	MH-10	Manhole, Type A	30	134	231					
C1-42S	" " " " Spl.	30	235	236	N21	S5	68'-18"	35	144	MH-11S	" " " " Special	36	134	232					
C1-43	" " " " 3	33	143	221, 233	N22	S5	87'-18"	35	144	MH-12	Manhole, Type A	42	144	231					
C1-44	" " " " 3	31	241	221, 241	N23	S5	257'-24"	35	144	PH-7	Headwall, CH-II-B 45°	30	134	260					
DI-39	Drop Inlet, Type A	30	143	231	N24	S5	24'-24"	30	144	PH-8	" " " " CH-II-B 30°	36	134	259					
DI-40	" " " " B	30	143	231	N25	S5	54'-24"	30	144	BC-7	1-4'x3' B.Culv. Extn.	36	134	231, 232					
DI-41	" " " " B	30	143	231	W26S	S6	88'-18" 86'-18"	33	144										
DI-42	" " " " A	30	143	231	W27	-	72'-18"	33	134										
DI-43	" " " " A	31	143	231	W28	-	72'-18"	33	134										
DI-44	" " " " B	31	143	231	W29	-	48'-30"	31	241										
DI-45	" " " " B (Mod)	30	143	231, 232															
DI-46	" " " " B	35	144	231															
DI-47	" " " " C	30	144	231															
DI-48S	" " " " Spl.	30	144, 235	235G															
DI-49S	" " " " Spl.	31	241	242															
PH-6	Headwall, CH-II-B 30°	30	143																

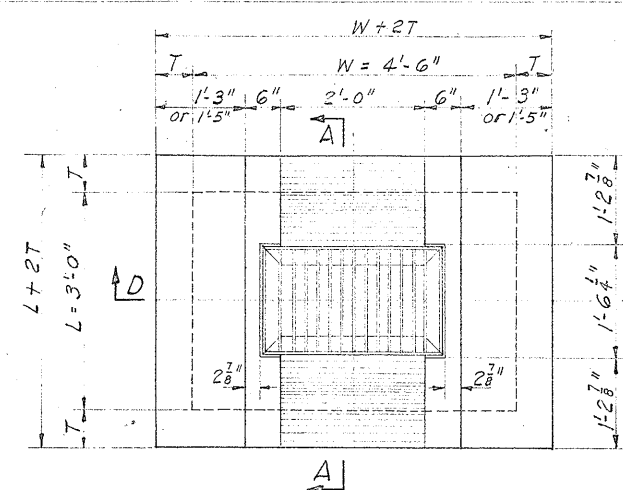
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.				SHEET NO.
6	TEXAS	F13(17); IN.1088(2); F31(18)				230
STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.	
15	Bexar	16,17	7,10	25,3, 26	US81	



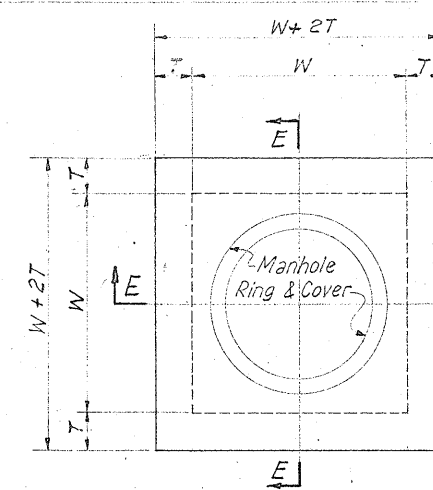
PLAN
TYPE A INLET



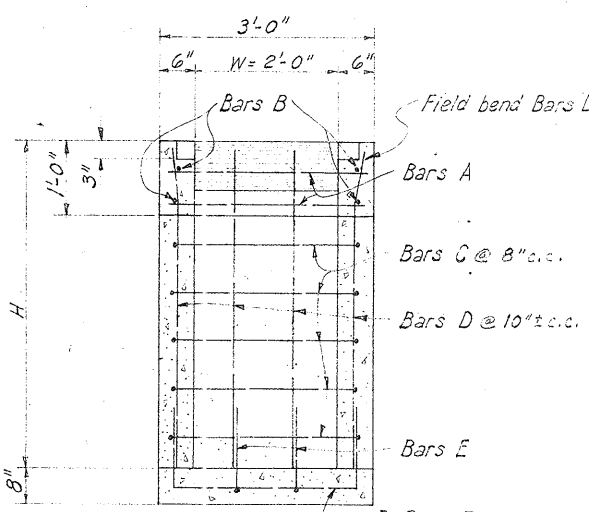
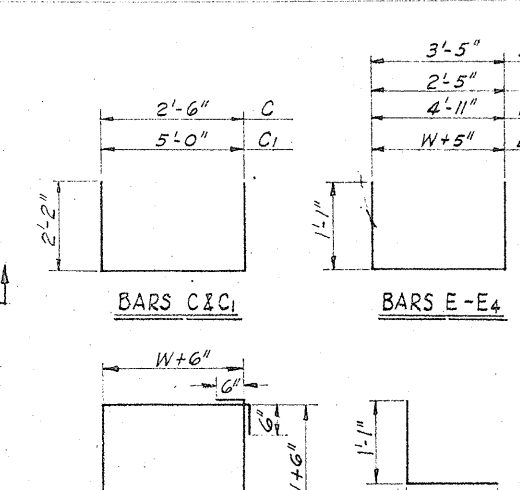
PLAN
TYPE B INLET



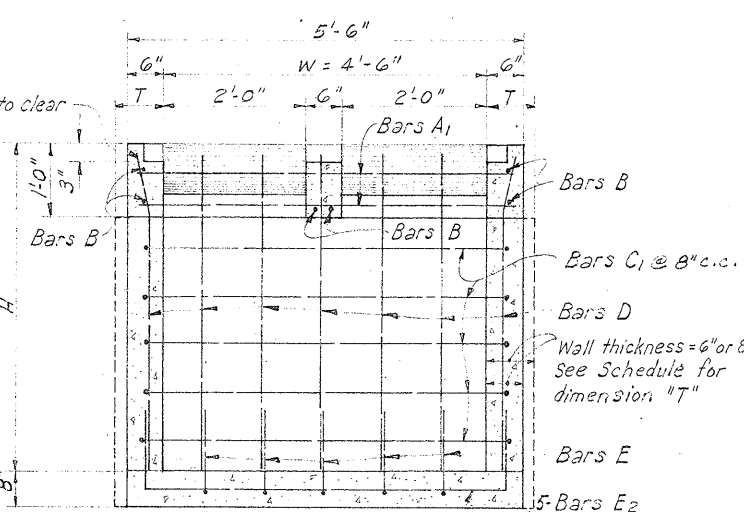
PLAN
TYPE C INLET



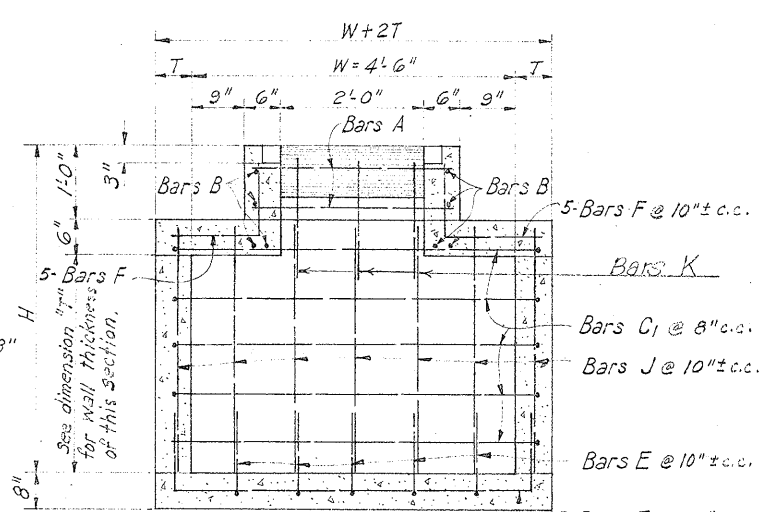
PLAN
TYPE A MANHOLE



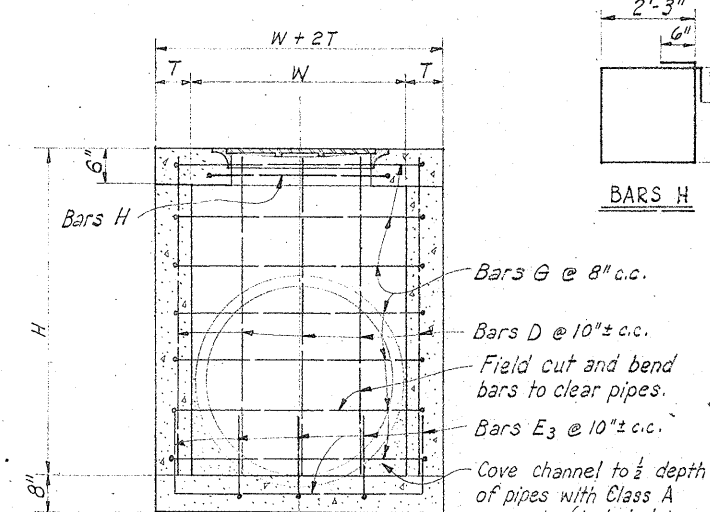
SECTION B-B



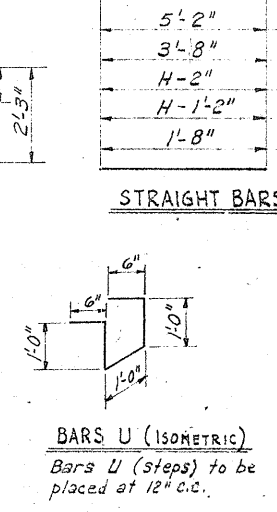
SECTION C-C



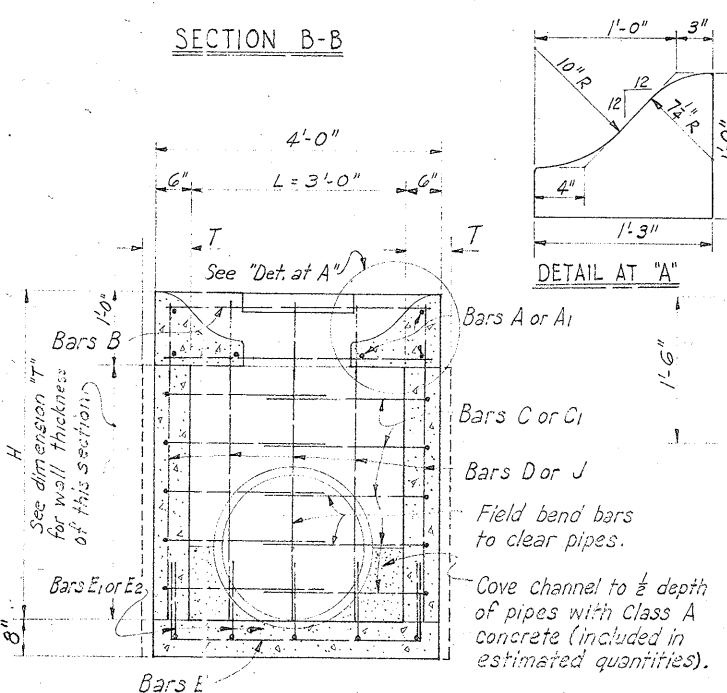
SECTION D-D



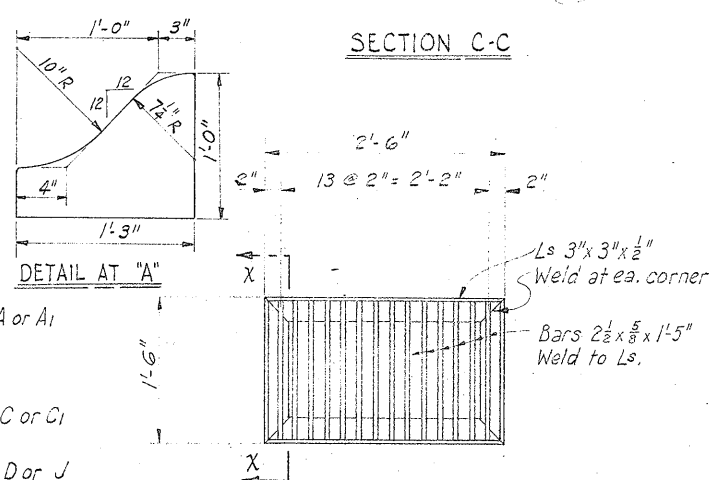
SECTION E-E



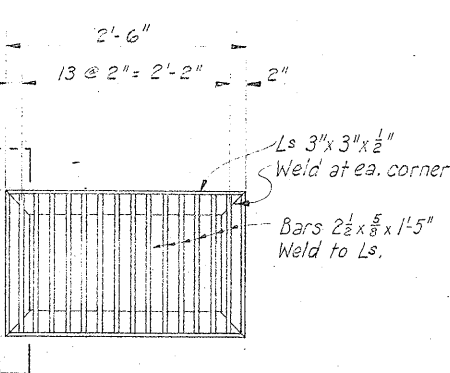
GENERAL NOTES: General Notes on sheet No. 232 shall apply to this sheet.



SECTION A-A



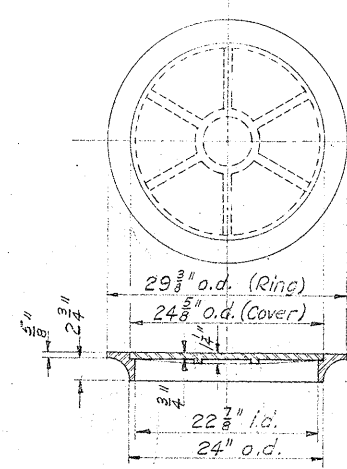
DETAIL AT "A"



PLAN OF GRATE



SECTION X-X



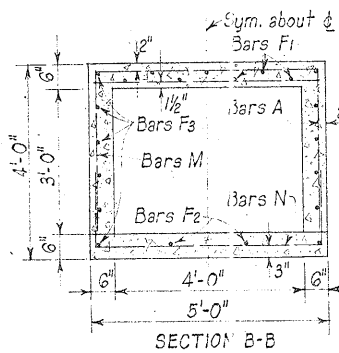
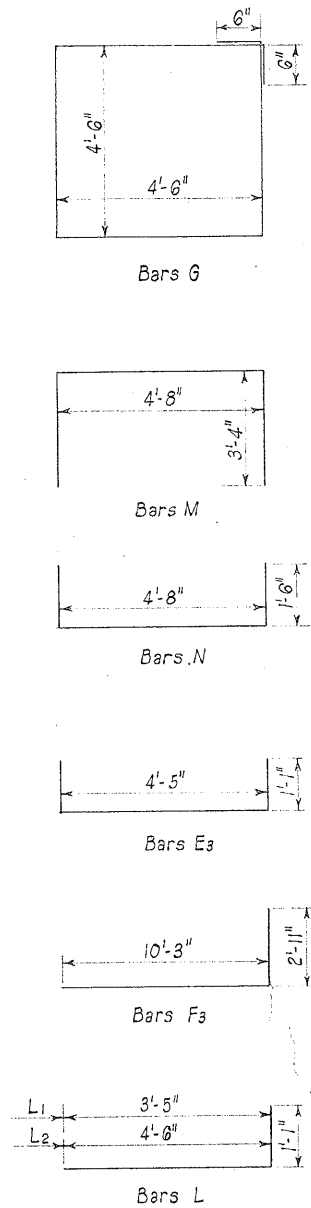
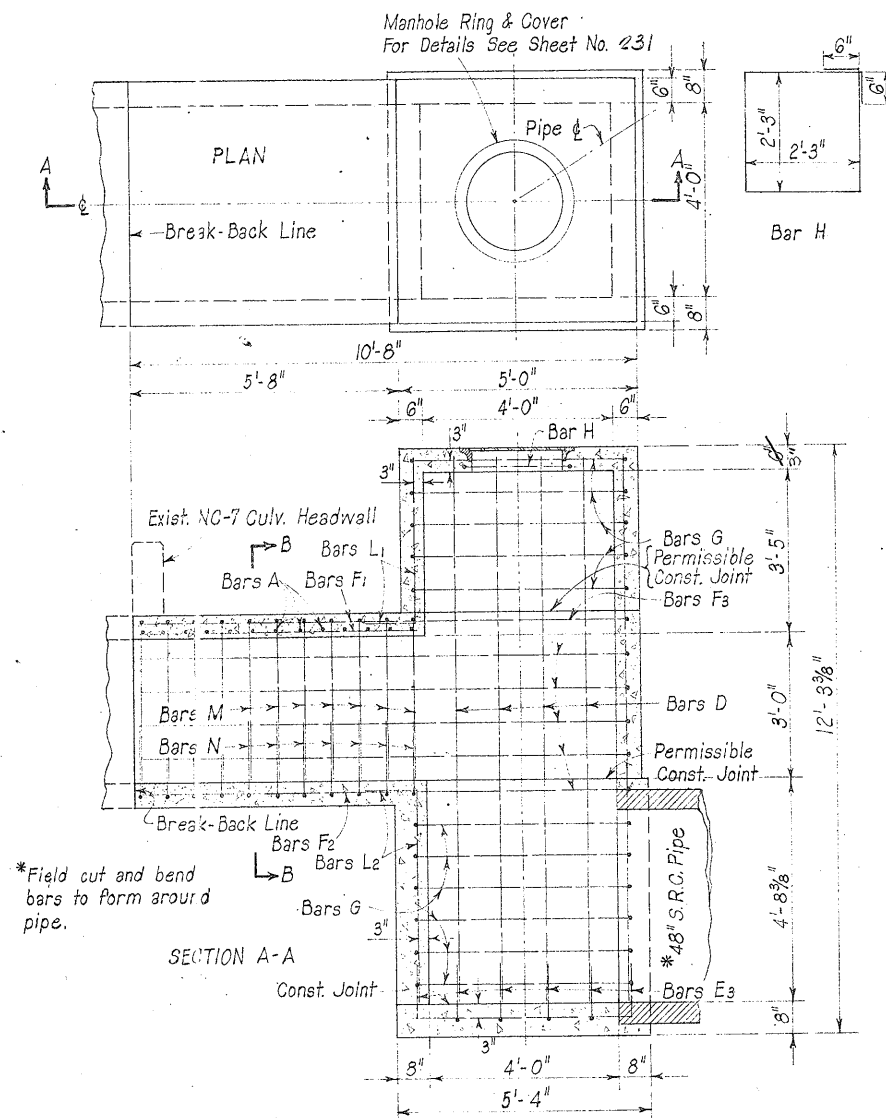
MANHOLE RING
& COVER

SCHEDULE OF DROP INLETS AND MANHOLES																													
*Note: Drop Inlet 37E38 entered on Ft 370 Tubulation for Reinforcing Steel.		DESCRIPTION	TOP ELEV.	OUTLET F.L.	VARIABLE DIMENSIONS				UNCLASS. STRUCT. EXCAV. (INLETS) - CU. YDS.	CLASS "A" CONCRETE (INLETS) - CU. YDS.	MANHOLE COVER & RING EACH	GRATES EACH	REINFORCING STEEL (ALL BARS #4 EXCEPT BARS U-#6)																WEIGHT
LOCATION					NO	TYPE	BAR AND NUMBER REQUIRED																						
*							A	B					C	D	E	E1	E2	E3	F	G	H	J	K	U					
38.60' Lt. Sta. 366+61.82	U.S. 81 N.B. Bus. Rte	DI-37	B	746.00	741.50	4'-6"	4'-6"	3'-0"	6"	8 ✓	-2.05	183	2	6	6	12	20	5	5			4	242						
Sta. 368+00	U.S. 81 Interstate	DI-38	B	746.40	738.07	8'-4"	4'-6"	3'-0"	6"	15 ✓	-2.48	238	2	6	6	24	20	5	5			8	389						
Sta. 370+43	U.S. 81 Interstate	DI-39	A	743.25	738.33	4'-11"	2'-0"	3'-0"	6"	6 ✓	-1.19	138	1	6	4	12	14	2	5			4	169						
83.0' Rt. Sta. 370+75	U.S. 81 Interstate	DI-40	B	741.40	735.12	6'-3"	4'-6"	3'-0"	6"	11 ✓	2.21		2	6	6	16	20	5	5			6	304						
83.0' Rt. Sta. 374+40	U.S. 81 Interstate	DI-41	B	738.10	724.71	13'-4"	4'-6"	3'-0"	8"	28.24	-3.13	550	2	6	6	38	20	5	5			13	582						
48.0' Lt. Sta. 362+00	Connection "B"	DI-42	A	733.30	728.21	5'-1"	2'-0"	3'-0"	6"	6 ✓	-1.14	138	1	6	4	12	14	2	5			5	180						
42.5' Lt. Sta. 358+70	Connection "B"	DI-43	A	731.50	732.30	5'-2"	2'-0"	3'-0"	6"	6 ✓	-1.09	145	1	6	4	12	14	2	5			5	178						
24.82' Rt. Sta. 353+03.20	Connection "B"	DI-44	B	736.50	731.04	5'-4"	4'-6"	3'-0"	6"	10 ✓	-1.43	231	2	6	6	14	20	5	5			5	271						
40.0' Lt. Sta. 368+40	U.S. 81 N.B. Bus. Rte.	DI-45	*B	733.10	727.10	6'-0"	4'-6"	3'-0"	6"	11 ✓	-2.35	227	2	6	6	16	20	5	5			6	296						
60.0' Rt. Sta. 385+50	Connection "C"	DI-46	B	740.30	730.30	10'-0"	4'-6"	3'-0"	8"	18.20	-3.09	490	2	6	6	28	20	5	5			10	449						
42.5' Rt. Sta. 382+62.8	Connection "C"	DI-47	C	729.00	725.00	4'-0"	4'-6"	3'-0"	6"	8 ✓	-1.15	174	1	6	4	10	14	2	5	10		20	64						
See Culvert Extension Details, Sheet No 235		DI-48	Spl.																										
"	"	"	"	Sheet No 237	DI-49	Spl.					-6																		
"	"	"	"	Sheet No 234	DI-50	C	735.50	729.73	5'-8"	4'-6"	3'-0"	6"	6.8	-1.31	172	1	6	8	14	5	5	10	20	65					
65.0' Lt. Sta. 129+17	Connection "F"	DI-51	A	724.00	720.50	3'-6"	2'-0"	3'-0"	6"	4 ✓	1.00		1	6	4	10	14	2	5				120						
60.0' Rt. Sta. 128+38	Connection "F"	DI-52	A	722.50	716.00	6'-6"	2'-0"	3'-0"	6"	8 ✓	-1.42	171	1	6	4	20	14	2	5			6	230						
22.5' Lt. Sta. 86+62.23	Connection "E"	DI-53	A	714.75	711.06	3'-8"	2'-0"	3'-0"	6"	5 ✓	0.97		1	6	4	10	14	2	5				122						
21.25' Rt. Sta. 86+08	Connection "E"	DI-54	B	713.35	707.02	6'-4"	4'-6"	3'-0"	6"	11 ✓	2.37		2	6	6	16	20	5	5			6	296						
77.0' Rt. Sta. 125+50	Connection "F"	DI-55	A	718.00	712.50	5'-6"	2'-0"	3'-0"	6"	16 ✓	-1.88	152	1	6	4	8	14	2	5			5	226						
37.0' Lt. Sta. 403+70	Connection "D"	DI-56	A	715.70	711.70	4'-0"	2'-0"	3'-0"	6"	5 ✓	-1.19	113	1	6	4	12	14	2	5			4	158						
50.0' Rt. Sta. 83+11.86	Connection "E"	DI-57	B	716.00	705.10	10'-11"	4'-6"	3'-0"	8"	18.20	-4.95	496	2	6	6	28	20	5	5			10	395						
42.5' Lt. Sta. 118+58	Temporary Conn.	DI-58	C	713.30	703.27	10'-7"	4'-6"	3'-0"	8"	19 ✓	-4.03	163	1	6	8	28	16			6	11	1	7						
102.1' Lt. Sta. 367+00	U.S. 81 Interstate	MH-9	A	749.10	741.24	7'-10"	3'-0"	3'-0"	6"	11 ✓	-2.55	223																	
See Culvert Layout Sheet No 134		MH-10	A	723.45	722.25	6'-2"	3'-0"	3'-0"	6"	8.3	-1.02	203								6	11	1	7						
See Culvert Layout Sheet No 134		MH-11	Spl.								-6																		
34.0' Rt. Sta. 114+20	Temporary Conn.	MH-12	A	712.27	701.34	10'-4"	4'-0"	4'-0"	8"	22	-4.50	1								A	11	1	10						

* See sheet No. 232 for modifying details.

TYPES A, B & C DROP INLETS
TYPE A MANHOLES

STATE	PROJECT NO.	SHEET
TEXAS	F-31(17), N.1008(2) F31(18)	231
COUNTY	CONTRACT	JOB
Bexar	1617	7, 10
DIST. NO.	CONTRACT	JOB
15	1617	7, 10

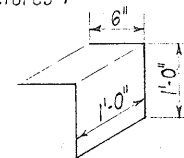


GENERAL NOTES:

Chamfer all exposed corners $\frac{3}{4}$ ".
All dimensions relating to reinforcing steel are to centers of bars.

Existing bars exposed by break-back shall be cleaned and bent into position to provide a tie to the new concrete extension.

The removal of the existing structure to the break-back line shown will not be paid for directly but shall be considered subsidiary to the bid item "Class 'A' Concrete for Extending Structures".



Bars U (Isometric)
These steps shall be placed 1'-0" c-c as directed by the Engineer.

Straight Bars

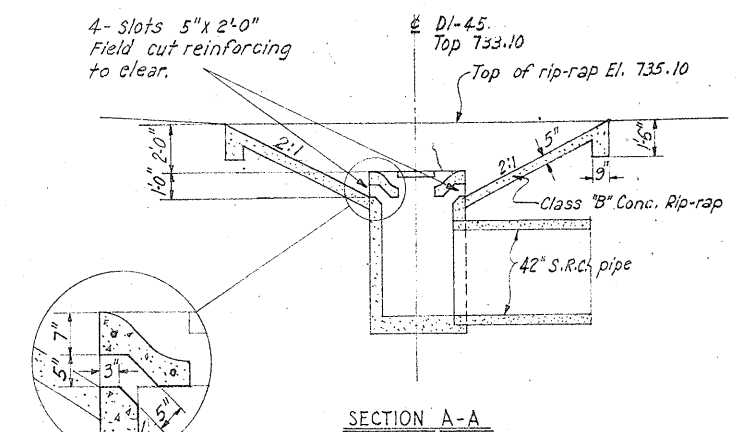
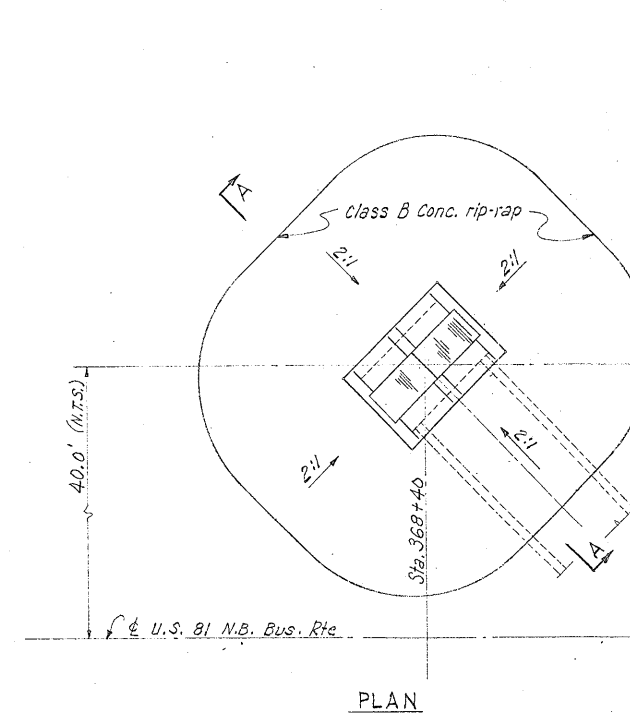
BILL OF REINFORCING STEEL

Bar	A	B	C	D	E	F	G	H	L1	L2	M	N	U
Size	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	3/4"
Number	13	14	12	7	2	12	11	1	6	6	11	11	9
Spacing	6"	10"	10"	7"	19"	8 1/2"	8"	10"	10"	10"	7"	7"	12"
Length	4'-8"	11'-5"	6'-7"	5'-4"	5'-4"	13'-2"	19'-0"	10'-0"	4'-8"	5'-7"	11'-4"	7'-8"	4'-0"
Weight	41	176	53	25	7	106	140	7	18	22	83	56	54

SPECIAL CULVERT EXTENSION WITH MANHOLE (MH-11S)

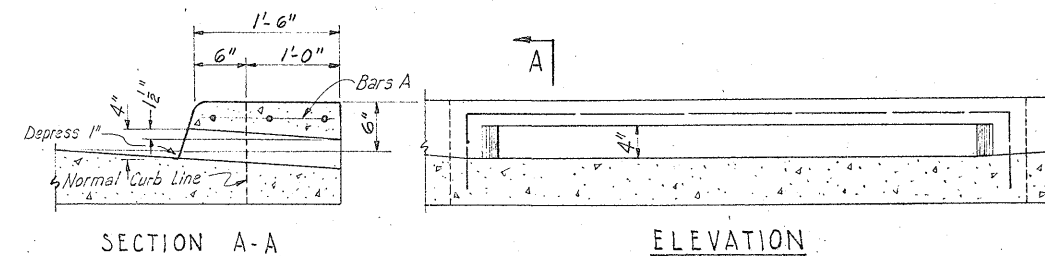
STA. 69+99.8 EXIST. U.S. 81 (Bus. Route)
EXIST. 4'x3'x42' NC-7

For Quantities See Sheet No. 134



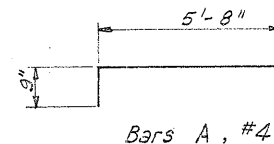
SPECIAL DETAILS AT DROP INLET DI-45

For other details and inlet quantities see Sheet No. 231



SECTION A-A

ELEVATION



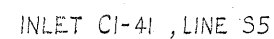
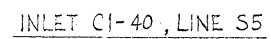
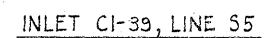
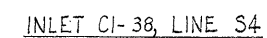
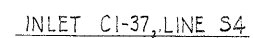
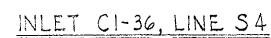
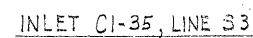
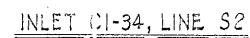
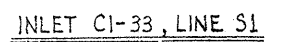
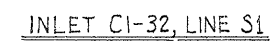
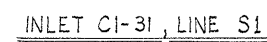
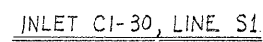
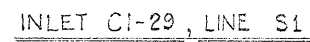
Bars A, #4

DETAILS OF SPECIAL CURB SLOT

SUMMARY OF SPECIAL CURB SLOTS			
LOCATION	Shown on Plan Sheet No.	Class "A" Conc. (Inlets, Sidewalks & N.H.) Cu. Yds.	Reinforcing Steel Lbs.
14' Lt. Sta. 124+49.42, Conn. "F"	37	0.29	14
14' Lt. Sta. 129+94.70, Conn. "F"	37	0.29	14
34' Rt. Sta. 122+97, Conn. "F"	38	0.29	14
Lt. Sta. 384+55.6 S.B.B.R.	36	0.42	14
Lt. Sta. 391+00 S.B.B.R.	37	0.19	14
Rt. Sta. 92+00 N.B.B.R.	40	0.42	14
Total F-31(18)		1.60	84

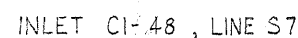
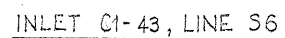
MISCELLANEOUS DRAINAGE DETAILS

FED. RD. DIV. NO.	STATE	PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088(2), F31(18)	232
STATE DIST. NO.	COUNTY	CONT. SECT. JOB	HIGHWAY NO.
15	Bexar	17,10,10,7,13,26	U.S. 81



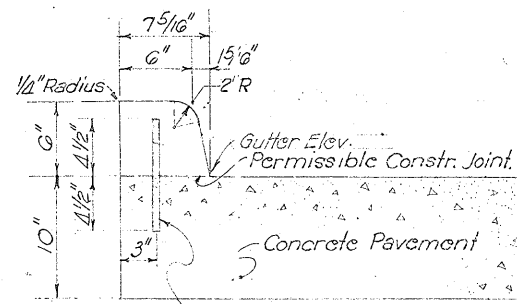
GENERAL NOTES:
All Concrete shall be Class "A". Chamfer exposed corners $\frac{3}{4}$ ".
Dimensions relating to reinforcing steel are to centers of bars.
Reinforcing steel shall be cut and bent to clear sewer pipes.

TYPE 3 CURB INLETS

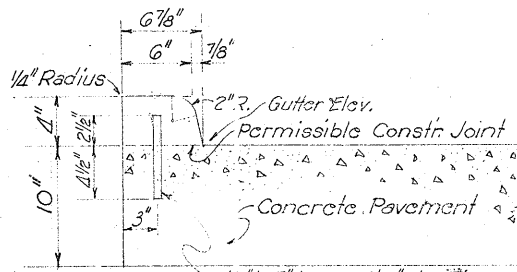


FED (2004) Dist. No.	STATE	FEDERAL AID-PROJECT NO.	SHEET 23
6	TEXAS	F13(17)N1088(2)F3(18)	233
STATE (2004)	COUNTY	CONTRACT No.	SECTION No.
15	Bexar	1617 7.10	2513 U.S.81

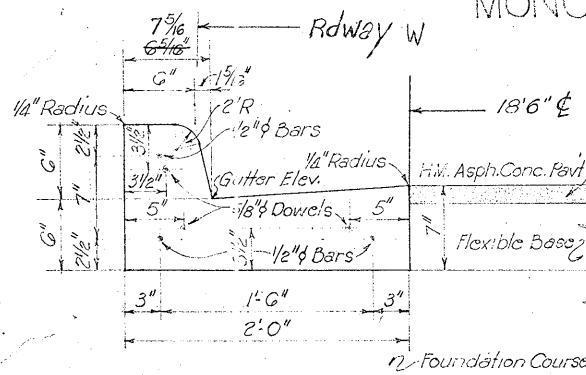
Joints in Monolithic Curb shall be spaced to conform with joints in the conc. pavt. The joints shall be formed with a metal template and the template removed after initial set of conc. Resulting joint to be grooved with approved grooving tool.



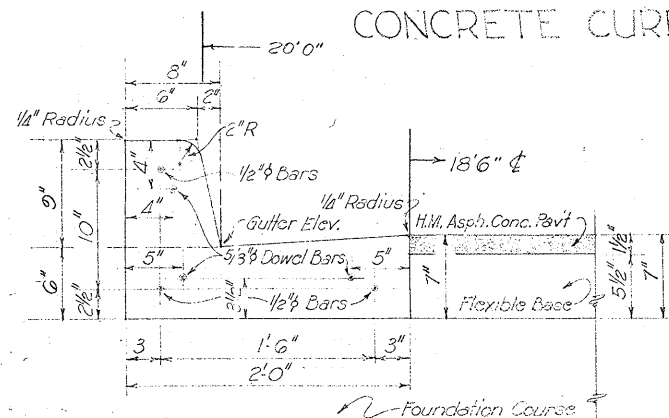
SECTION MONOLITHIC CURB TYPE-1



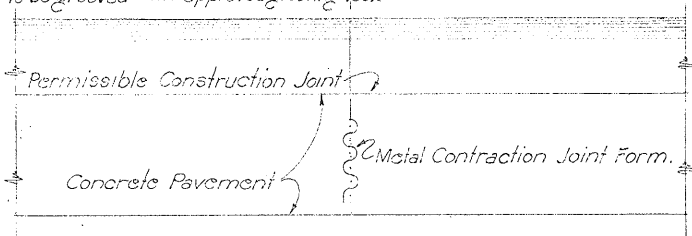
SECTION MONOLITHIC CURB TYPE-2



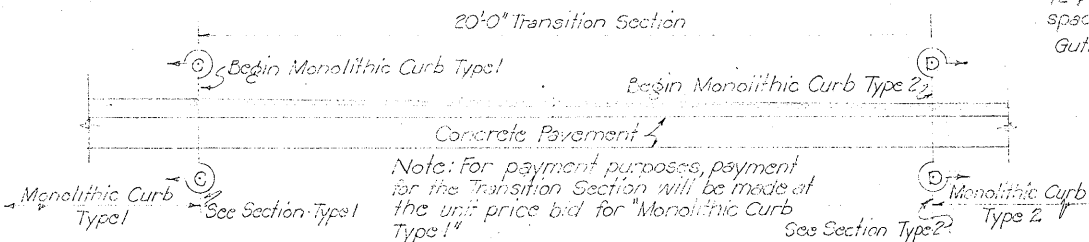
SECTION CONCRETE CURB & GUTTER TYPE-3



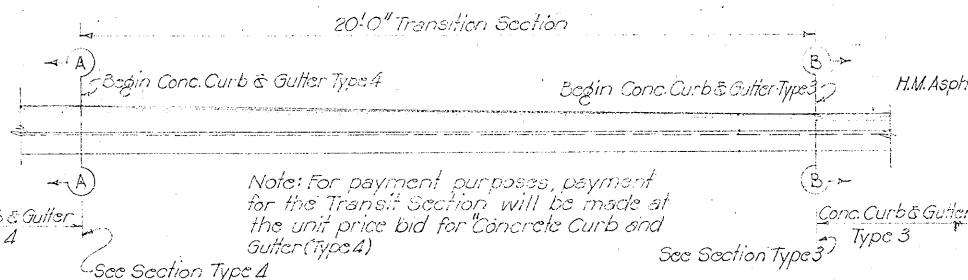
SECTION CONCRETE CURB & GUTTER TYPE-4



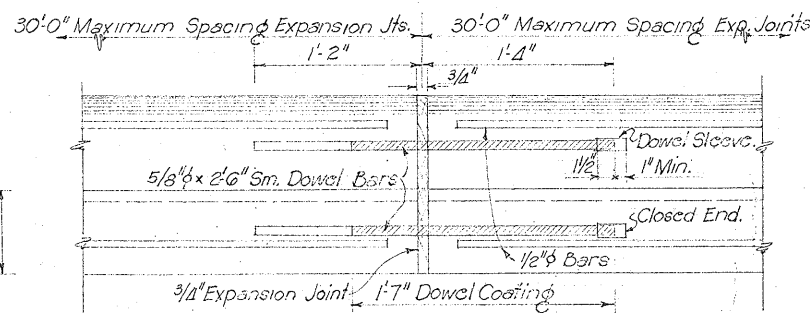
ELEVATION AT CONTRACTION JOINTS MONOLITHIC CURB TYPE-1



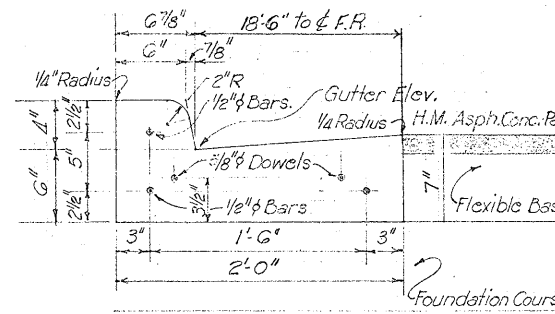
ELEVATION TRANSITION SECTION TYPE-1 TO TYPE-2



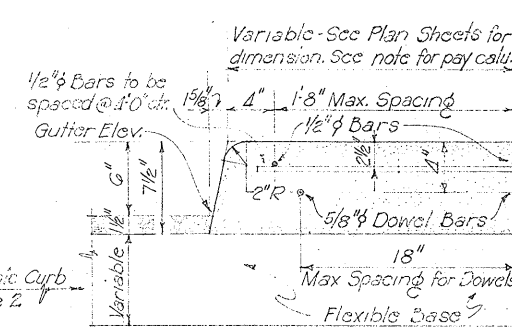
ELEVATION TRANSITION SECTION TYPE-4 TO TYPE-3



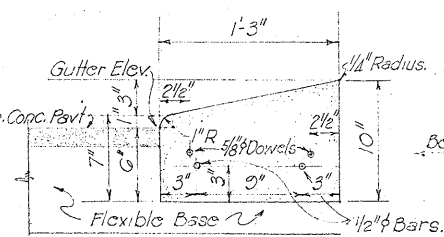
ELEVATION AT EXPANSION JOINT CONCRETE CURB & GUTTER TYPE-4



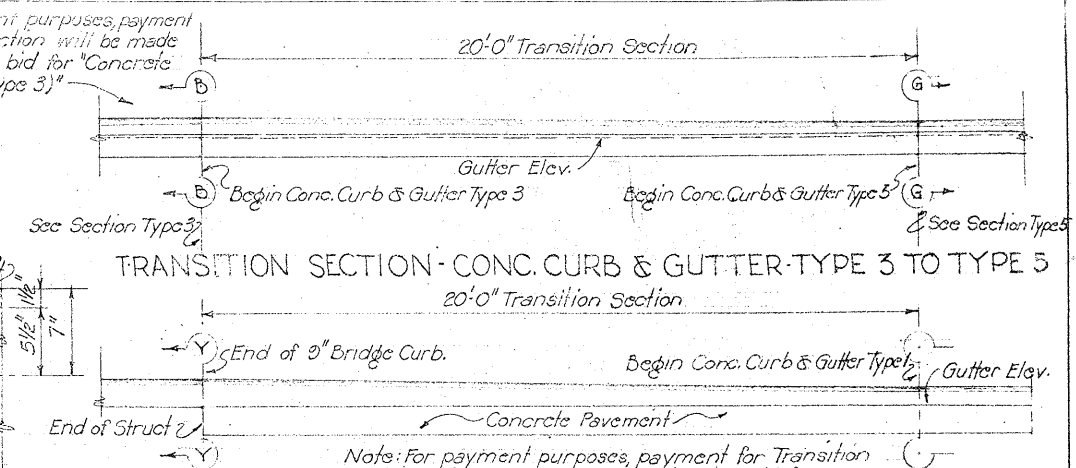
SECTION CONCRETE CURB & GUTTER TYPE-5



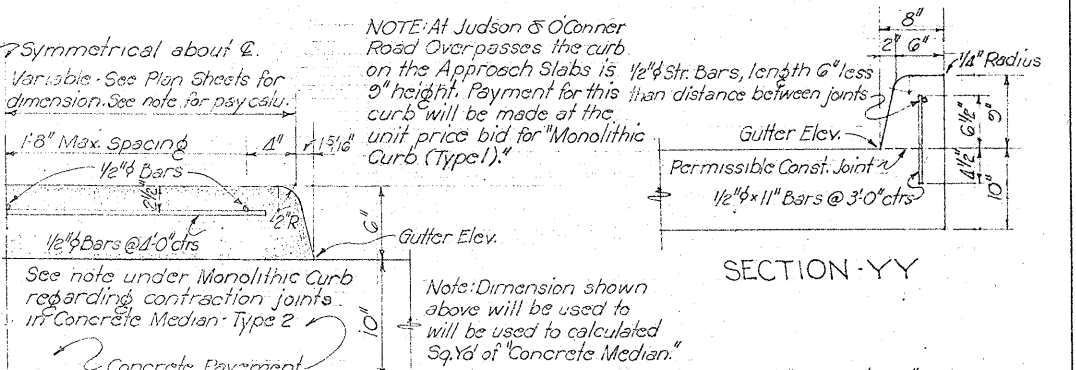
SECTION TYPE-2 CONCRETE MEDIAN TYPE-1 & TYPE-2



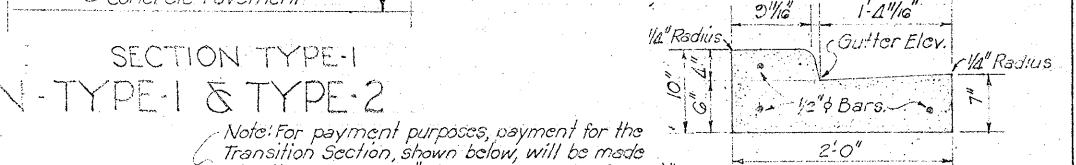
SECTION CONC. CURB TYPE-6



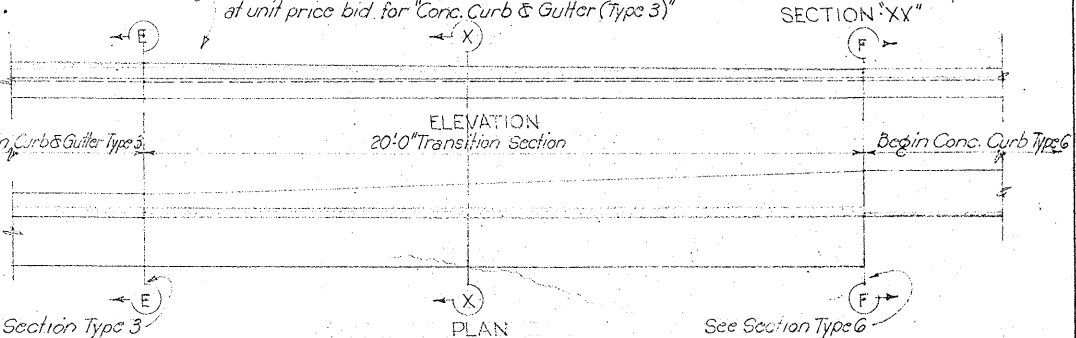
TRANSITION SECTION CONC. CURB & GUTTER TYPE 3 TO TYPE 5



SECTION YY



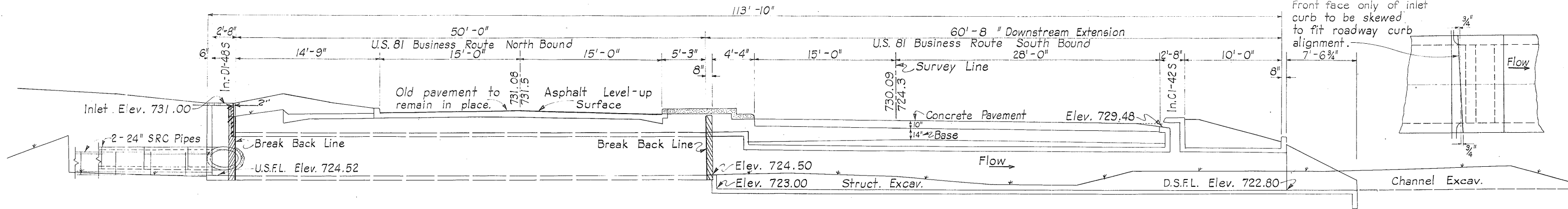
SECTION TYPE-1 CONCRETE MEDIAN TYPE-1 & TYPE-2



TRANSITION SECTION CONC. CURB & GUTTER TYPE-3 TO CURB TYPE-6

DETAILS OF MONOLITHIC CURB, CURB AND GUTTER, CURB & CONCRETE MEDIAN

DESIGN	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
C	TEXAS	7-3(10) IN 1033(2) F5(18)	234
STATE	COUNTY	CONTRACT SECTION	HIGHWAY NO.
15	DEXAR	16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26	US-81



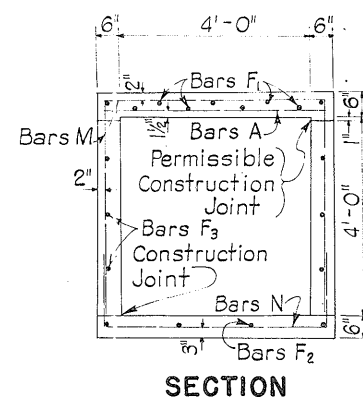
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class "A" Conc. for Extending Structures	C.Y.	21.09
Class "A" Conc. (Inlets)	C.Y.	2.03
Reinforcing Steel	Lbs.	3015
Unclass. Struct. Excav. (Culverts)	C.Y.	25.41
Unclass. Struct. Excav. (Inlets)	C.Y.	7.0
Grate & Frame	Each	1

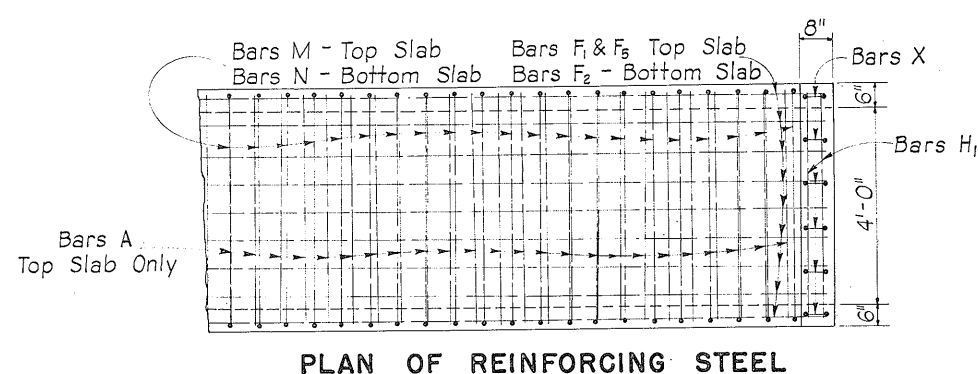
STA. 373+21
Existing 4'X4'X50'-0" NC-7 to be extended 60'-8" downstream. FW-N Standard Wings downstream only.

BILL OF REINFORCING STEEL

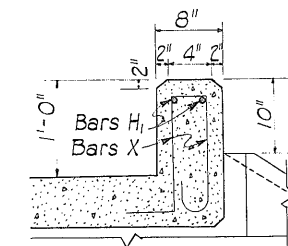
Bars	Number	Size	Spacing	Length	Weight
A	142	4	6"	4'-8"	443
C	4	4	14"	1'-9"	5
F	6	4	15" ±	4'-1"	16
F ₁	9	4	14" ±	45'-0" 45' 10" 45' 10" 45' 10"	271
F ₂	4	4	18" ±	60'-7" 60' 7" 61' 5"	162
F ₃	6	4	14" ±	60'-7" 60' 7" 61' 5"	243
F ₄	9	4	14"	4'-1"	25
F ₅	9	4	14"	10'-10"	65
G	5	4	14"	4'-6"	15
H ₁	2	4	4'-9"	4'-9"	6
J ₁	6	4	8"	6'-6"	26
K	6	4	10 3/4"	2'-8"	11
L	4	4	4'-9"	3'-0"	8
L ₁	4	4	4'-2"	4'-2"	11
M	113	4	7"	13'-4"	1006
N	106	4	7"	7'-8"	543
R ₁	4	4	12"	6'-8"	18
R ₂	8	4	7'-0"	7'-0"	37
S ₁	2	4	3'-8"	3'-8"	5
S ₂	4	4	2'-8"	2'-8"	7
S ₃	6	4	4'-4"	4'-4"	17
S ₄	3	4	11"	2'-2"	4
S ₅	8	4	18" ±	3'-0"	16
S ₆	6	4	15"	3'-0"	12
T	5	4	14"	2'-7"	9
U ₁	4	4	18" ±	3'-3"	9
W ₁	4	4	18" ±	3'-6"	9
X	6	4	11"	3'-11"	16
Total					3015



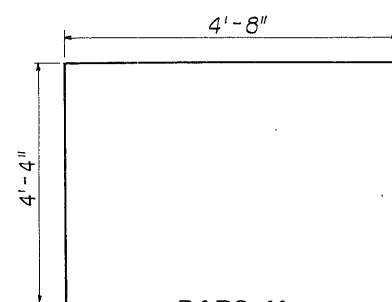
SECTION



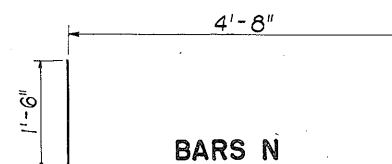
PLAN OF REINFORCING STEEL



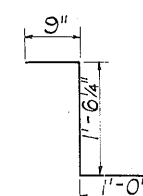
SECTION THRU CURB



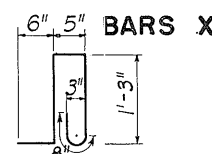
BARS M



BARS N



BARS U₁



BARS X

Design: H20-S16 in accordance with A.A.S.H.O. 1944 Standard Specifications and revisions there to.

GENERAL NOTES

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

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

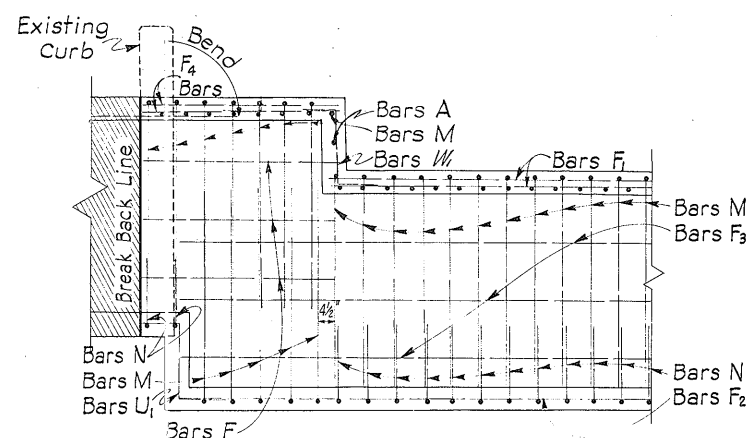
Existing bars exposed by break-back shall be cleaned and bent into position to provide a tie to the new concrete extension.

The removal of the existing structure to the break-back line shown will not be paid for directly but shall be considered subsidiary work to the bid item "Class 'A' Concrete for Extending Structures".

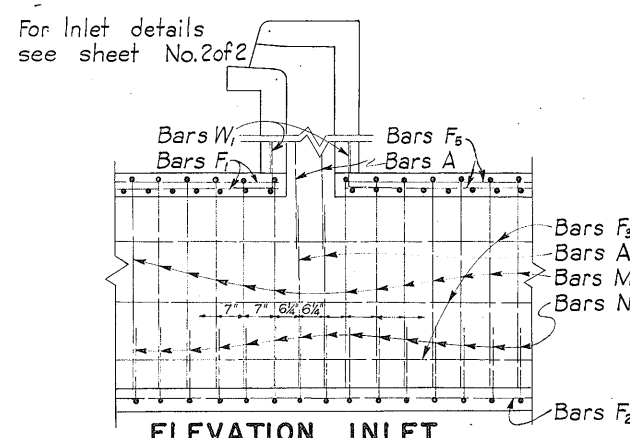
TEXAS HIGHWAY DEPARTMENT
CULVERT EXTENSION
4'X4'X110'-8" NC-7 MODIFIED
STA. 373+21 - SOUTHBOUND LANE
U.S. HWY. 81 BUSINESS ROUTE
SHEET 1 OF 2

BC-3

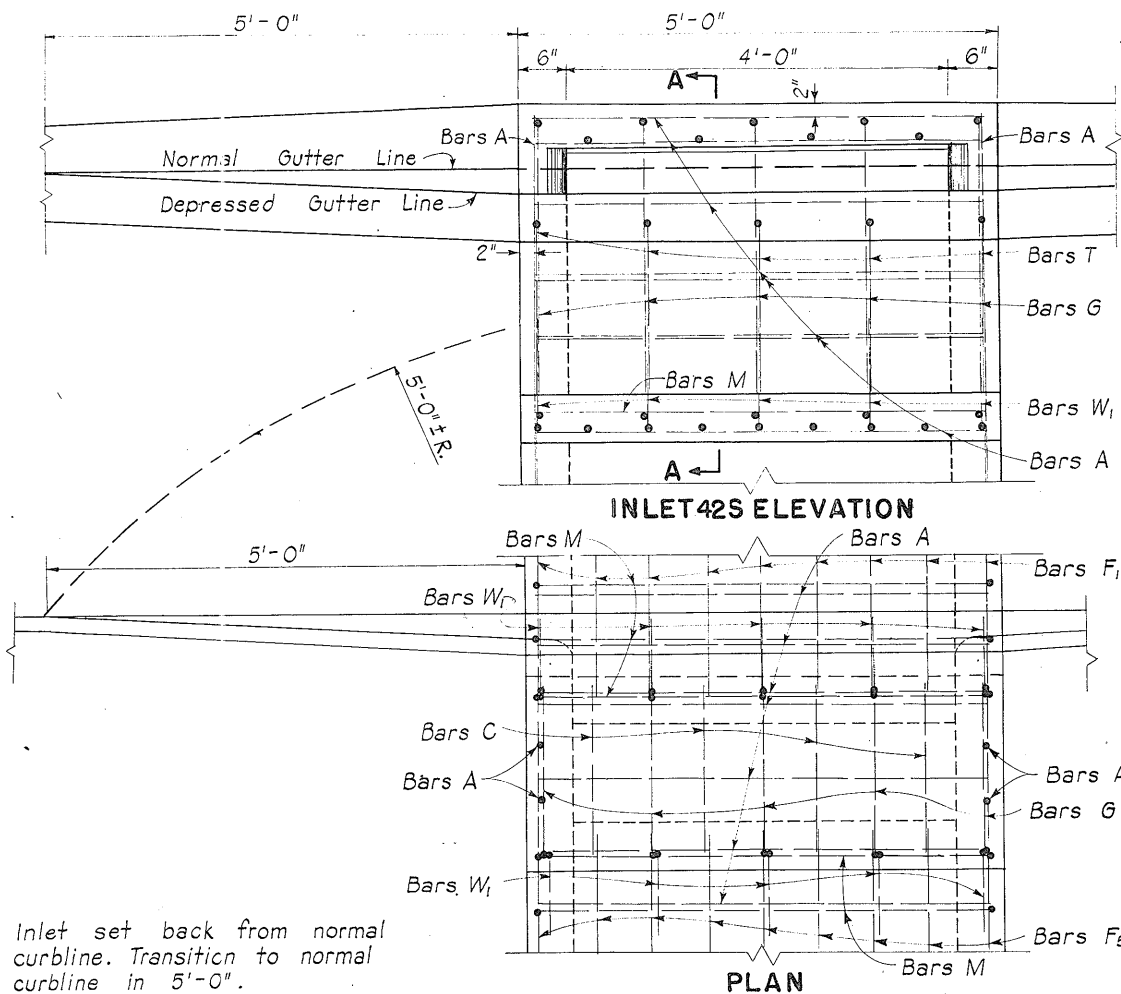
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
15	TEXAS	F 31 (18)	235
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	Bexar	16 7	26 U.S. 81



ELEVATION INLET A



ELEVATION INLET

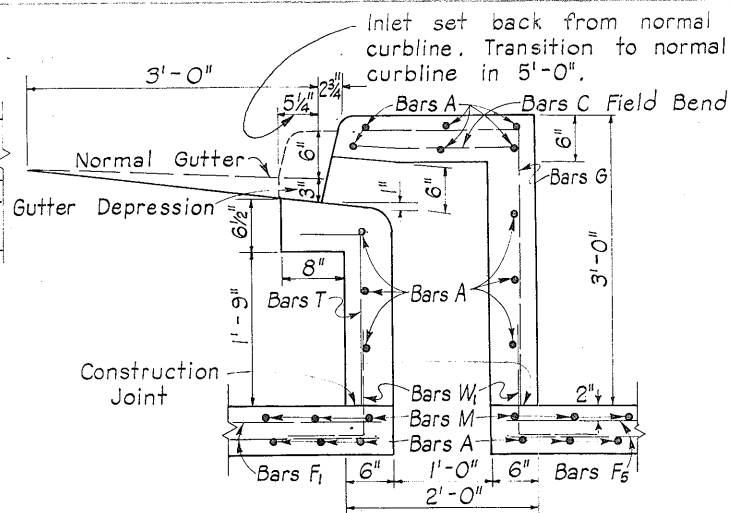


Inlet set back from normal curbline. Transition to normal curbline in 5'-0".

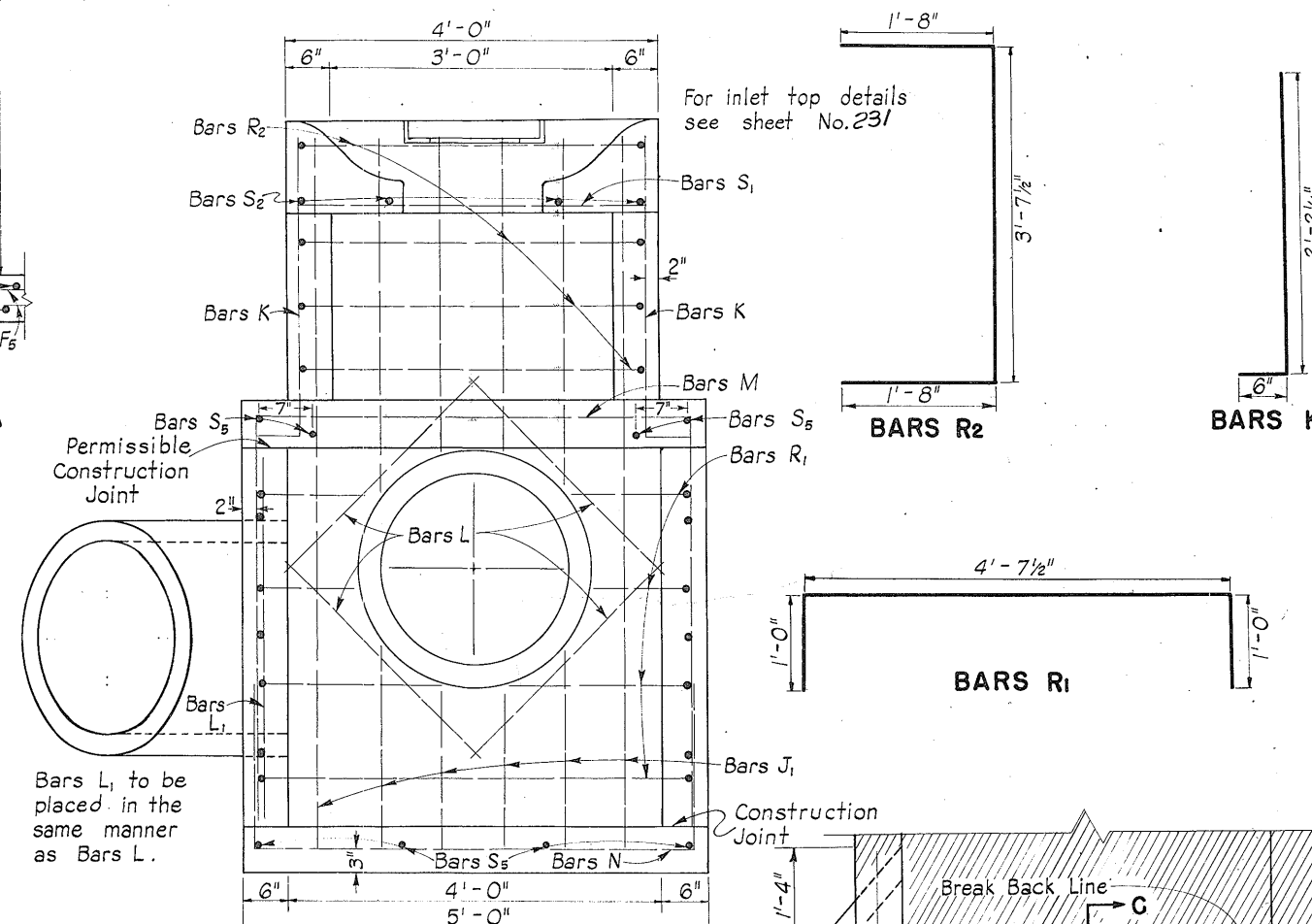
NOTE: The item "Class 'A' Concrete (Inlets)" is to be paid for from the outside surface of the top slab for Curb Inlet-42S, and from the break-back line for the Drop Inlet-48S.

The item "Unclassified Structural Excavation (Inlets)" is to be paid for the excavation at the Drop Inlet on the upstream end of the culvert.

The removal of the existing concrete to the break-back line shown on the upstream end shall be considered subsidiary work to the bid item "Class 'A' Concrete for Extending Structures".

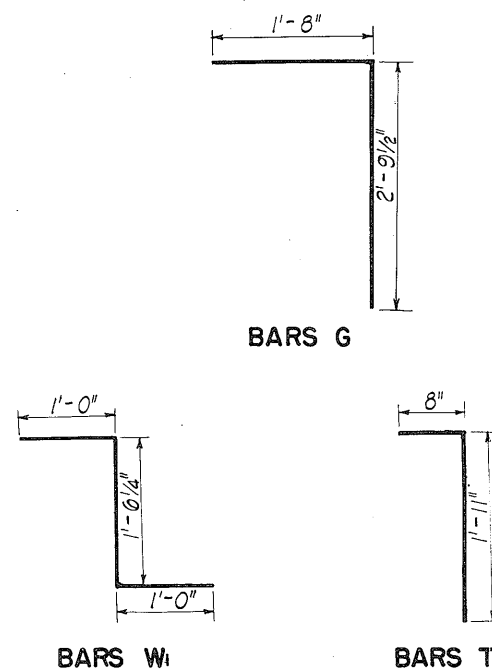
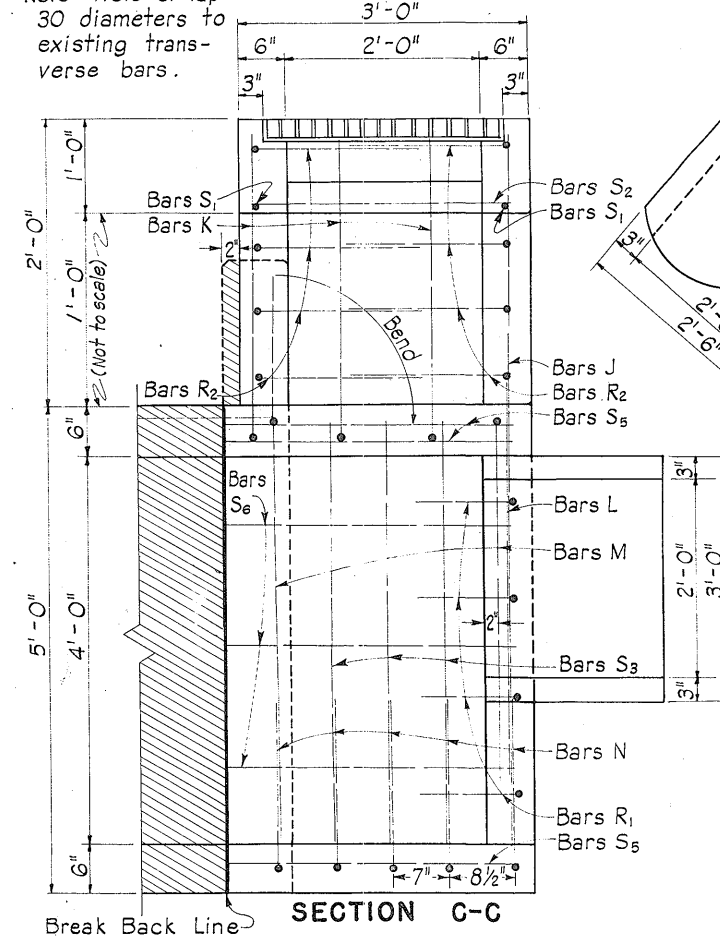


SECTION A-A



Note: Weld or lap 30 diameters to existing transverse bars.

SECTION B-B



TEXAS HIGHWAY DEPARTMENT
CULVERT EXTENSION
CURB & DROP INLETS FOR
4'X4'X110'-8" NC-7 MODIFIED
STA. 373+21 - SOUTHBOUND LANE
U.S. HWY. 81 BUSINESS ROUTE
SHEET 2 OF 2

FED. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	236
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB
15	Bexar	10 7	26

BC-3

BILL OF REINFORCING STEEL (60' EXTENSION)

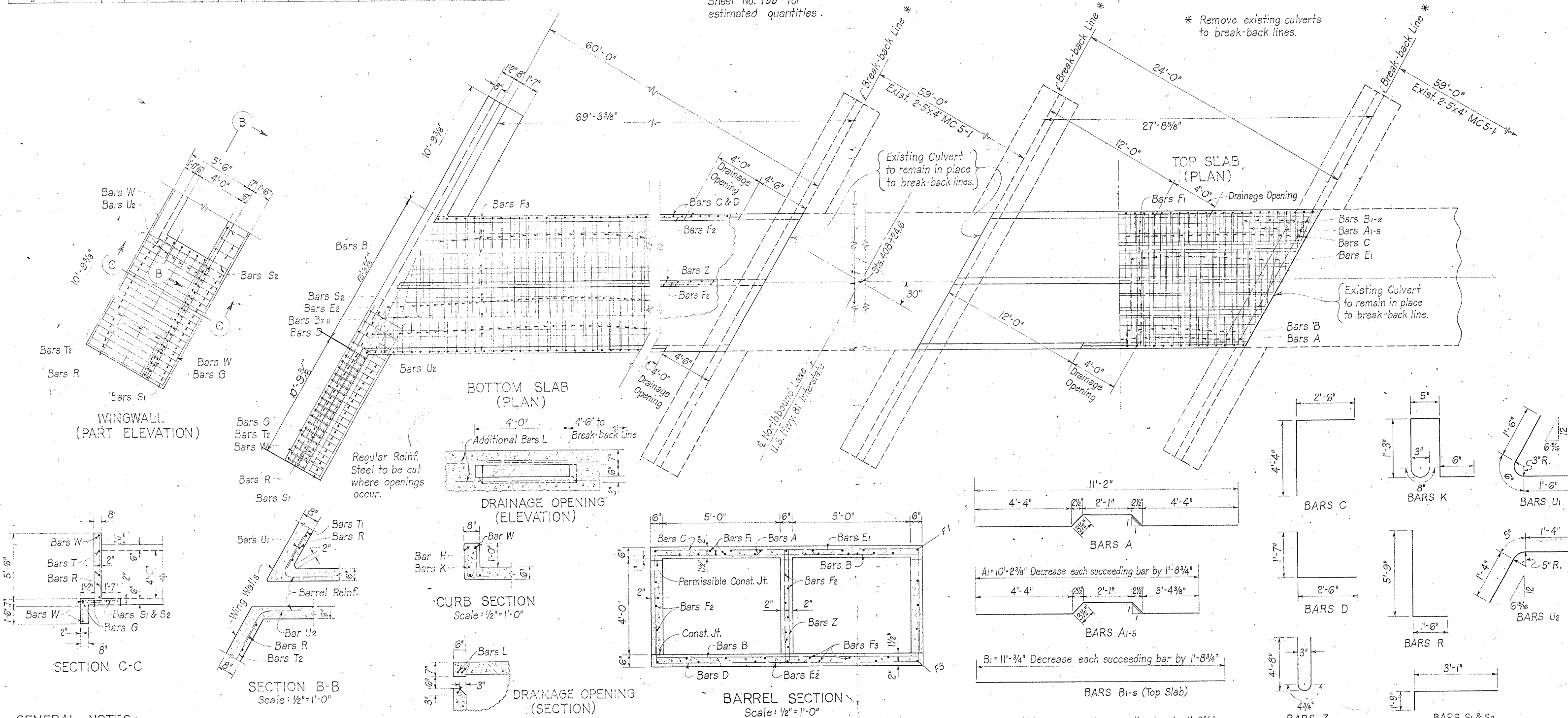
Bar	A	A1-5	B	B1-11	C	D	E1	E2	F1	F2	F3	G	H	K	R	S1	S2	T1	T2	U1	U2	W	Z	L
Number	64	10	12	22	188	188	70	120	19	12	13	4	1	14	38	38	13	3	3	6	6	12	71	6
Size	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ
Spacing	12"	12"	12"	12"	9"	9"	12"	7"	~	~	~	12"	~	12"	7"	7"	12"	18"	18"	9"	9"	12"	12"	~
Length	11'-4"	6'-10"	11'-7"	6'-9"	6'-10"	4'-11"	4'-8"	4'-8"	70'-6"	70'-6"	70'-6"	10'-8"	12'-11"	3'-11"	7'-3"	4'-10"	4'-10"	10'-2"	10'-8"	3'-6"	3'-11"	17'-8"	9'-6"	5'-8"
Weight	485	46	947	99	858	512	218	374	895	535	612	28	9	37	184	123	42	20	21	14	12	142	450	23

Notes: See Culvert Layout Sheet No. 135 for estimated quantities.

BILL OF REINFORCING STEEL (24' CONNECTION)

Bar	A	A1-5	B	B1-11	C	D	E1	E2	F1	F2	F3	Z	L
Number	21	10	41	22	74	74	27	47	19	12	13	29	6
Size	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ	1/2" φ
Spacing	12"	12"	12"	12"	9"	9"	12"	7"	~	~	~	12"	~
Length	11'-4"	6'-10"	11'-2"	6'-9"	6'-10"	4'-11"	4'-8"	4'-8"	27'-4"	27'-4"	27'-4"	9'-6"	5'-8"
Weight	159	46	306	99	337	202	84	147	347	219	237	184	23

* Remove existing culverts to break-back lines.



GENERAL NOTES:

Design Loading: H 20-44 or H 20 S16-44 in accordance with A.A.S.H.O. 1943 Standard Specifications and T.H.D. Supplement No. 1.

All concrete shall be Class A. Chamfer exposed corners 4".

Quantities of reinforcing steel shown herein include one 20 diameter lap for all bars exceeding 60 feet in length.

Construction Joint shown at flow line may be raised a maximum of 3" at the option of the contractor. Adjust length of vertical steel as required.

The bottom slab of the barrel, wing footings and tie walls shall be placed in one continuous operation.

Existing bars exposed by break-back shall be cleaned and bent into position to provide a tie to the new concrete extension and connection.

The removal of the existing structures to the break-back lines shown will not be paid for directly, but shall be considered subsidiary work to the bid item "Class 'A' Concrete for Extending Structures."

Reinforcing Steel in this culvert shall be field cut and field bent to clear all Drainage Openings. This work will not be paid for directly, but shall be considered subsidiary to the various bid items.

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

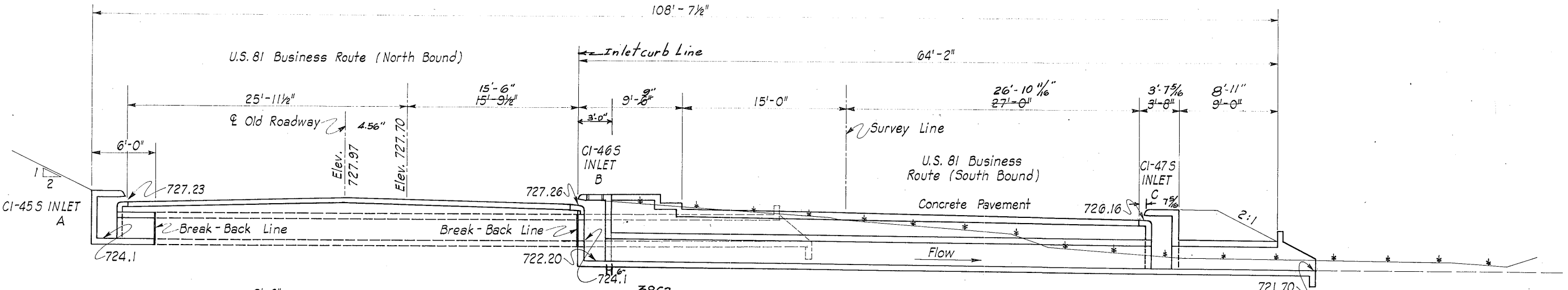
Wings shall be constructed monolithically with the barrel. If construction joints are used near the top of the barrel walls, these joints shall continue through the wings.

TEXAS HIGHWAY DEPARTMENT
CULVERT EXTENSION
 2-5'X4' MC 5-1 MODIFIED
 30° RT. FWD. SKEW
 STA. 408+24.6 (NORTHBOUND LANE U.S. HWY. 81 INTERSTATE)
 SCALE: 1/4" = 1'-0"

BC-4

FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
15	TEXAS	FI-1088 (2)	237
COUNTY	CONTRACT	SECTION	JOB
Bexar	17	10	13
ROUTE NO.	CONTRACT	SECTION	JOB
U.S. 81	17	10	13

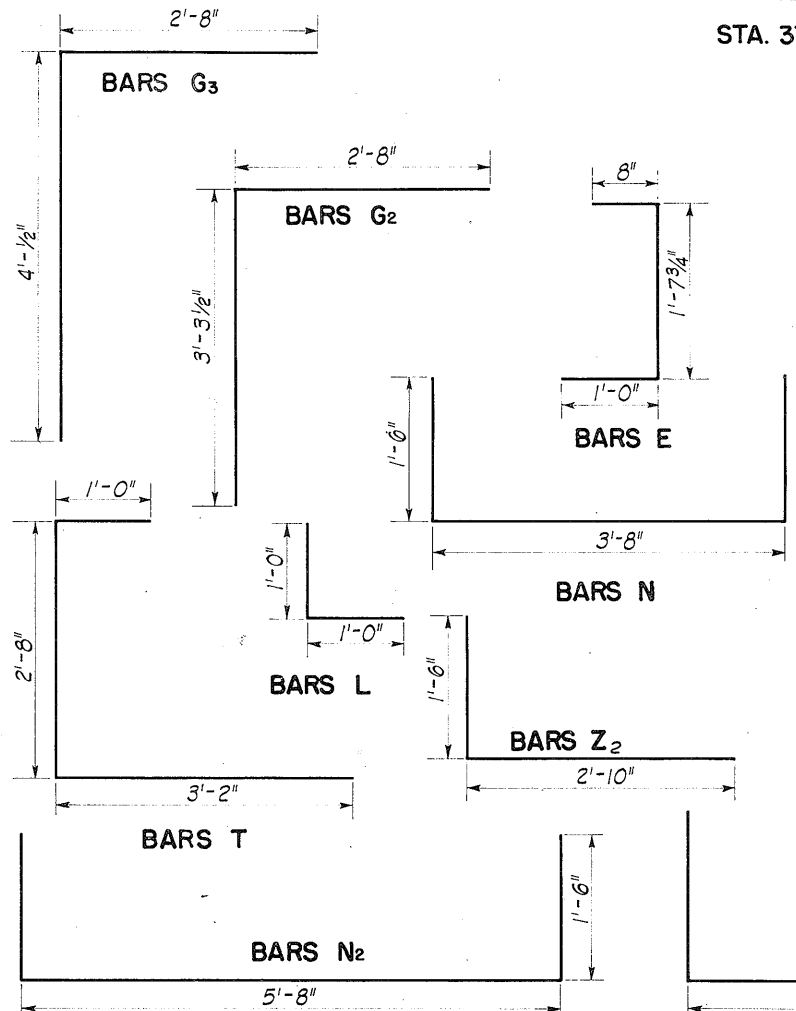
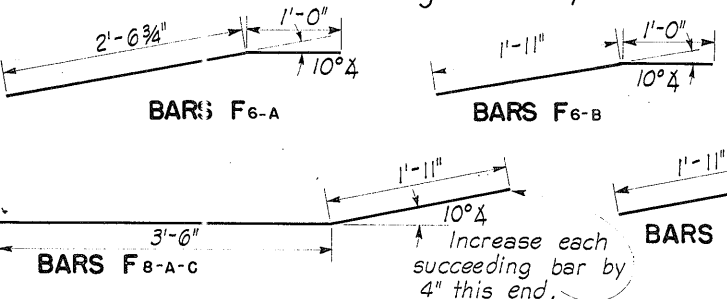
5 bars in CI 465
5 bars in CI 475
5 bars in CI 455
10 bars in each inlet
5 bars in each inlet



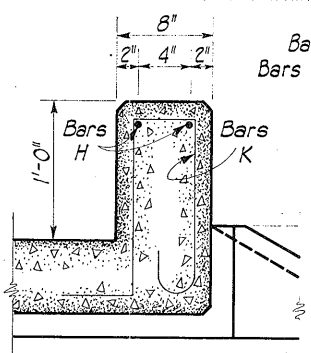
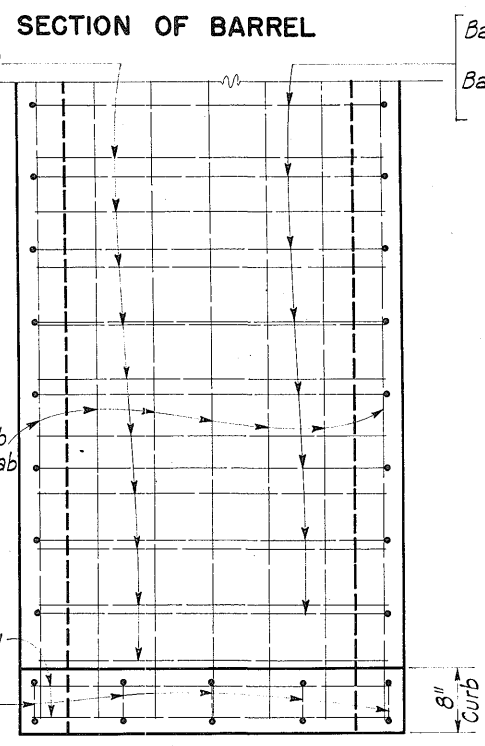
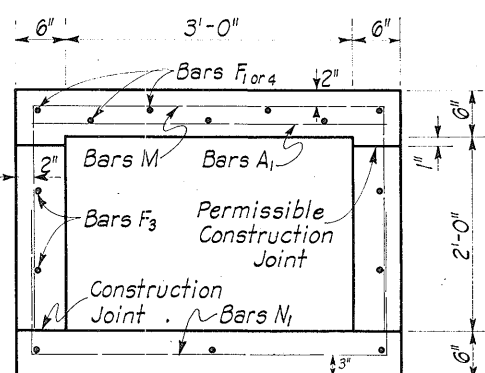
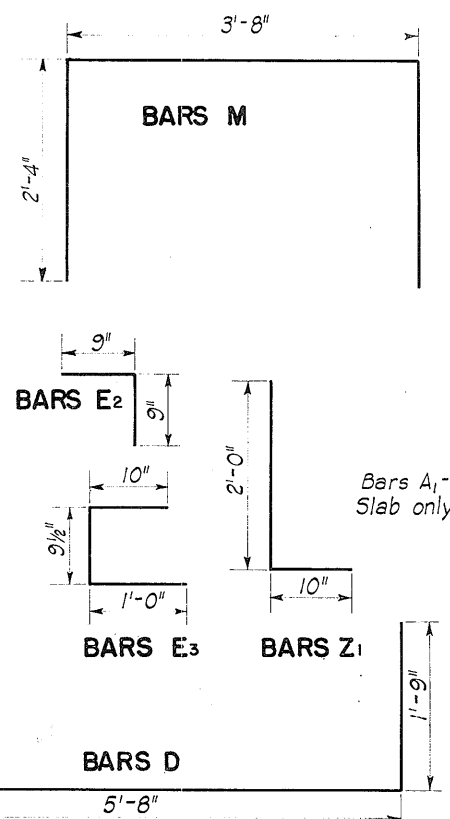
BILL OF REINFORCING STEEL

BAR	NUMBER	SIZE	SPACING	LENGTH	WEIGHT
A ₁	108	#4	7"	3'-8"	128
A ₂	30	#4	10"	5'-8"	114
B	10	#4	10"	3'-8"	39
C	15	#4	4"	2'-8"	27
D	10	#4	6 1/2"	9'-2"	61
E ₁	3 1/2	#4	13 1/2"	3'-4"	7
E ₂	5 1/2	#4	13 1/2"	1'-6"	5
E ₃	3 1/2	#4	13 1/2"	2'-10"	6
F ₁	7	#4	14"	49'-10"	233
F ₂	3	#4	20 1/2"	75'-4"	151
F ₃	4	#4	10"	49'-10"	133
F ₄	7	#4	14"	9'-10"	46
F ₅	4	#4	10"	9'-10"	26
F _{6-A}	2	#4	10"	3'-7"	5
F _{6-B}	2	#4	10"	2'-11"	4
F _{7-A}	1	#4	14"	2'-11"	2
F _{7-B}	1	#4	14"	3'-1"	2
F _{7-C}	1	#4	14"	3'-2"	2
F _{7-D}	1	#4	14"	3'-3"	2
F _{7-E}	1	#4	14"	3'-4"	2
F _{7-F}	1	#4	14"	3'-6"	2
F _{7-G}	1	#4	14"	3'-7"	2
F _{8-A}	1	#4	20 1/2"	5'-5"	4
F _{8-B}	1	#4	20 1/2"	5'-9"	4
F _{8-C}	1	#4	20 1/2"	6'-1"	4
G ₁	6	#4	13 1/2"	5'-2"	21
G ₂	6	#4	13 1/2"	6'-0"	24
G ₃	6	#4	13 1/2"	6'-9"	27
H	2	#4	3'-9"	5	
K	5	#4	11 1/4"	3'-11"	13
L	6	#4	13 1/2"	2'-0"	8
M	88	#4	9"	8'-4"	434
N ₁	88	#4	9"	6'-8"	348
N ₂	12	#4	8'-8"	69	
T	10	#4	8 3/4"	6'-10"	46
Y ₁	10	#4	8"	5'-1"	34
Y ₂	8	#4	10"	5'-10"	31
Y ₃	8	#4	10 1/2"	4'-1"	22
Z ₁	4	#4	10 1/4"	2'-10"	8
Z ₂	6	#4	14"	4'-4"	17
TOTAL					2318 Lbs. 2363

*This bar should have been 65'-4" Long incl. 10" Lap



STA. 375+39.7 SOUTH BOUND LANE (BUSINESS ROUTE)
Existing 3'x2'x60' culvert on 10° Rt. Forward
Skew to be extended 64'-2" normal to & downstream. FW-N Standard Wings downstream only.



SECTION THRU CURB

ESTIMATE & QUANTITY

ITEM	UNIT	QUANTITY
Class "A" Concrete for Extend. Struct.	C.Y.	22.07
Reinforcing Steel	Lbs.	2363
Manhole Ring & Cover	Ea.	3
Structural Excavation (Culv.)	C.Y.	31
Class "A" Concrete (Inlets)	C.Y.	2.27
Unclass. Struct. Excav. (Inlets)	C.Y.	13

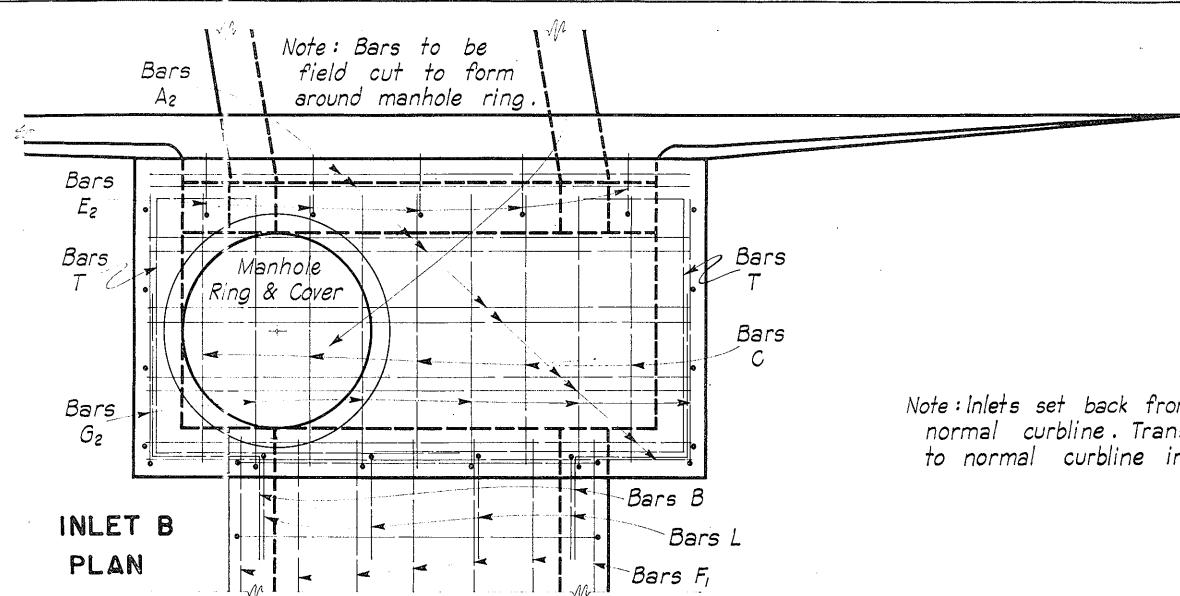
GENERAL NOTES:

This design is adopted from Texas Highway Department Standard for "Single Culverts - Normal," 5C-N.
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.
Existing bars exposed by break-back shall be cleaned and bent into position to provide a tie to the new concrete extension.
The removal of the existing structure to the break-back line shown will not be paid for directly but shall be considered subsidiary work to the bid item "Class 'A' Concrete for Extending Culverts".
The quantities for the new wings are included hereon. Refer to the Standard "Flared Wings - Normal" (FW-N) for wing details.

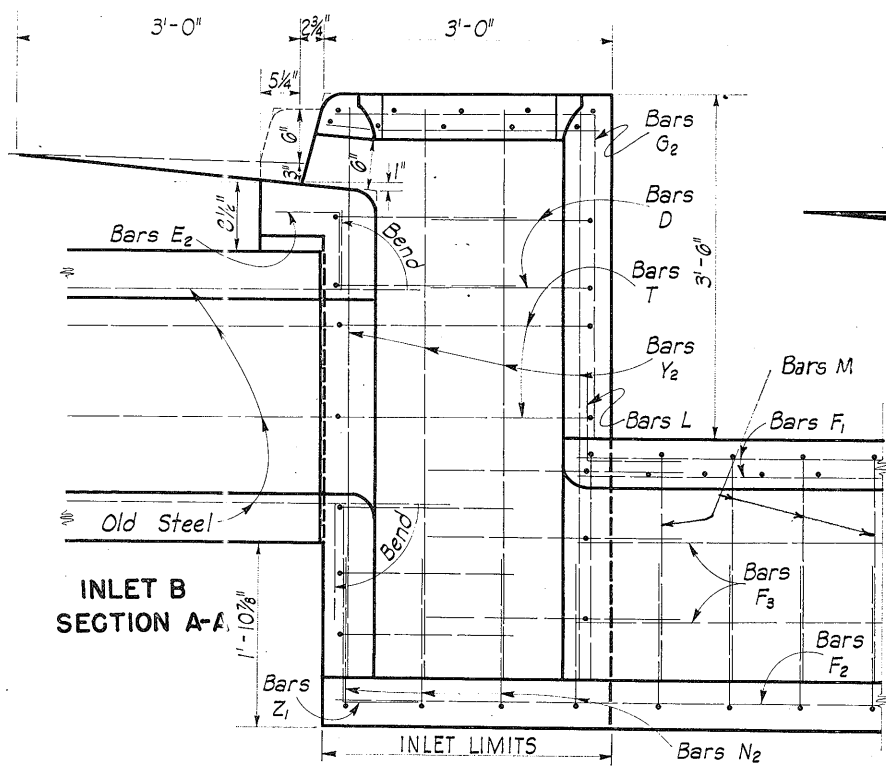
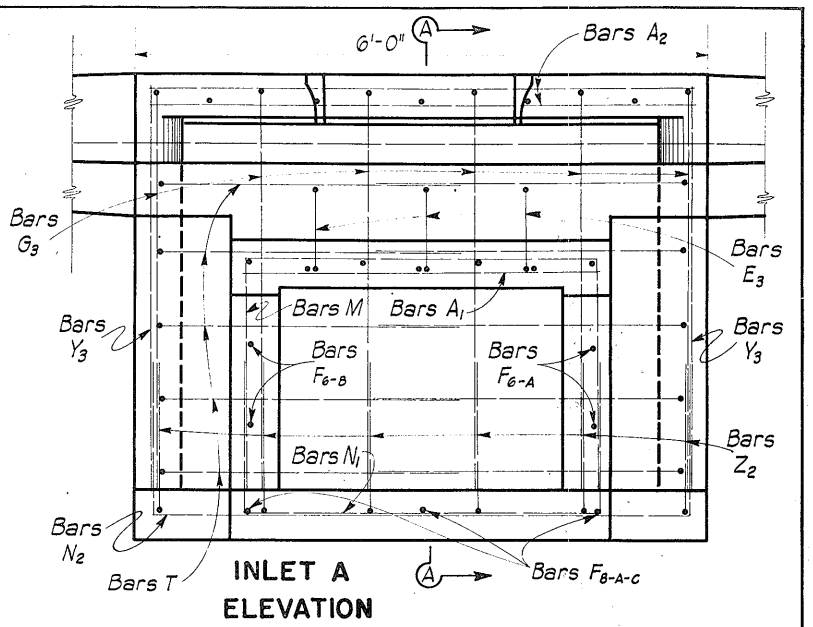
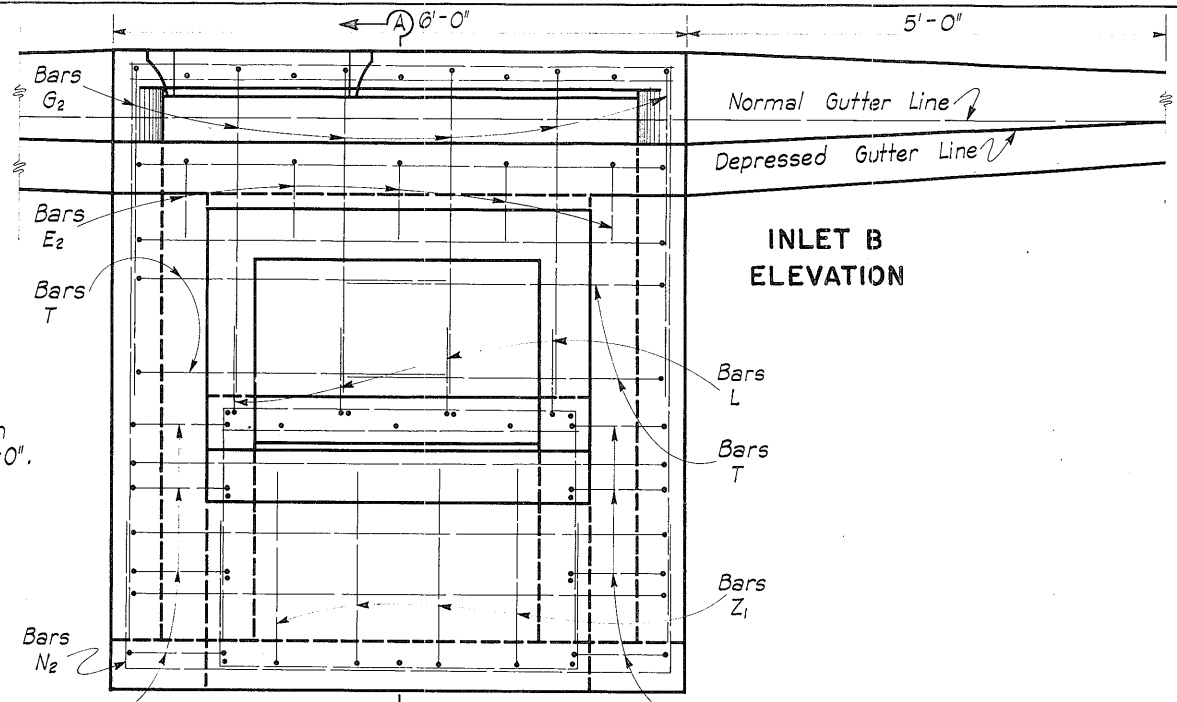
TEXAS HIGHWAY DEPARTMENT
CULVERT EXTENSION
FOR 3'x2'x60' 10° RT. FWD. SKEW
STA. 375+39.7-SOUTH BOUND LANE
U.S. HWY. NO. 81 - BUSINESS ROUTE
SHEET 1 of 2

BC-5

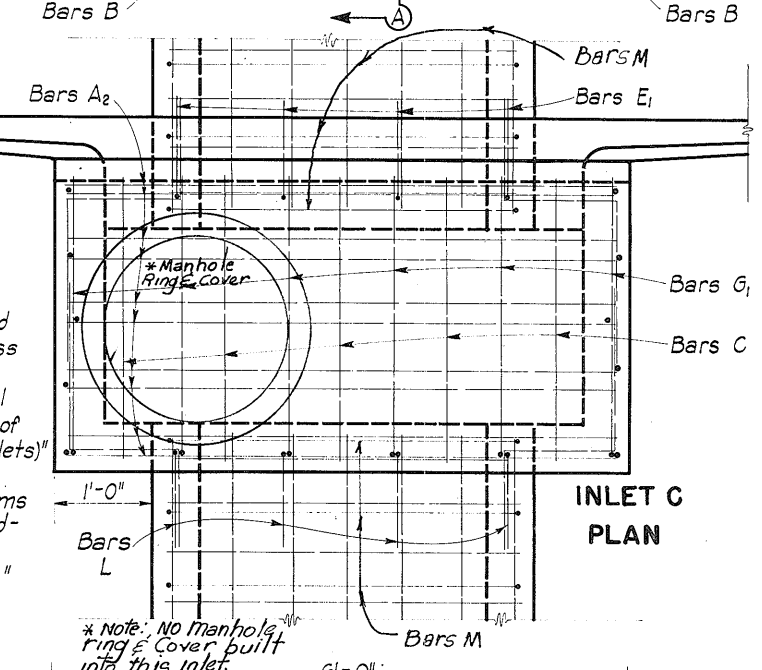
FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
15	TEXAS	F31 (18)	238
COUNTY	CONTRACT	SECTION	JOB
Bexar	16	7	26 U.S. 81



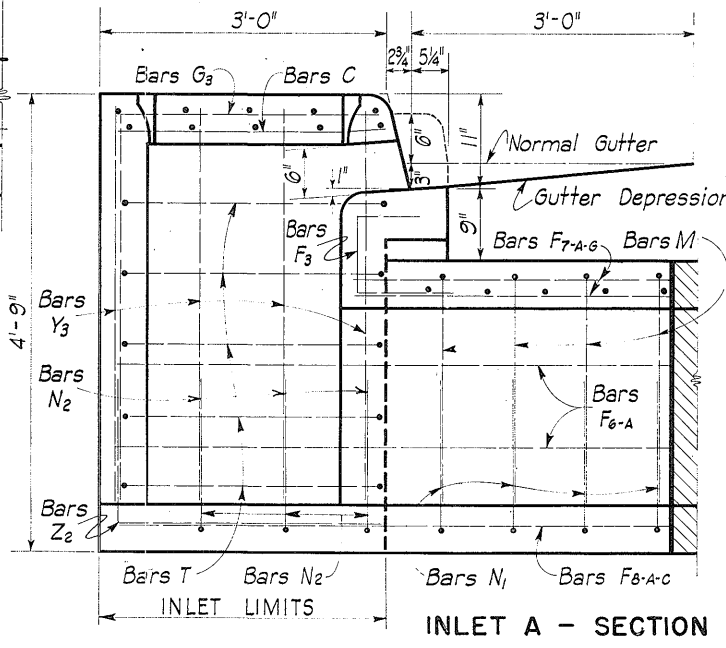
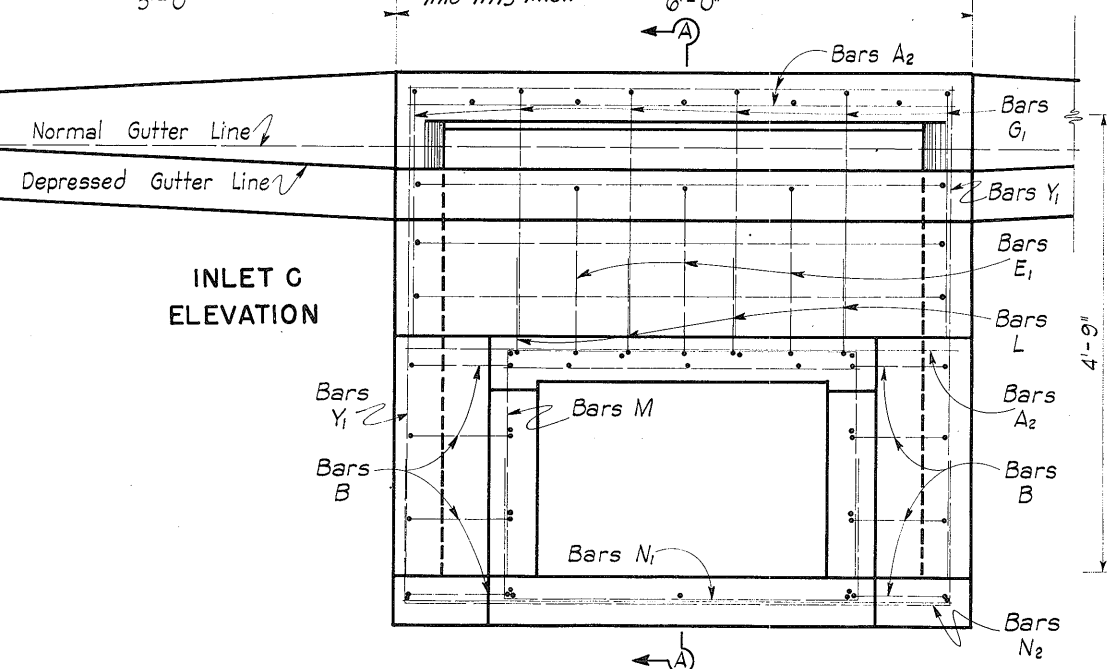
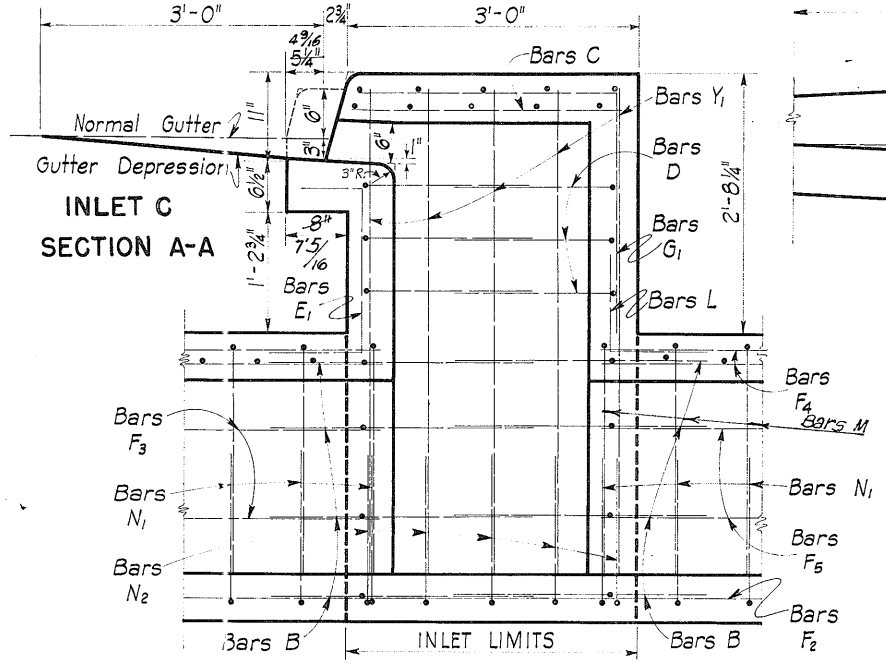
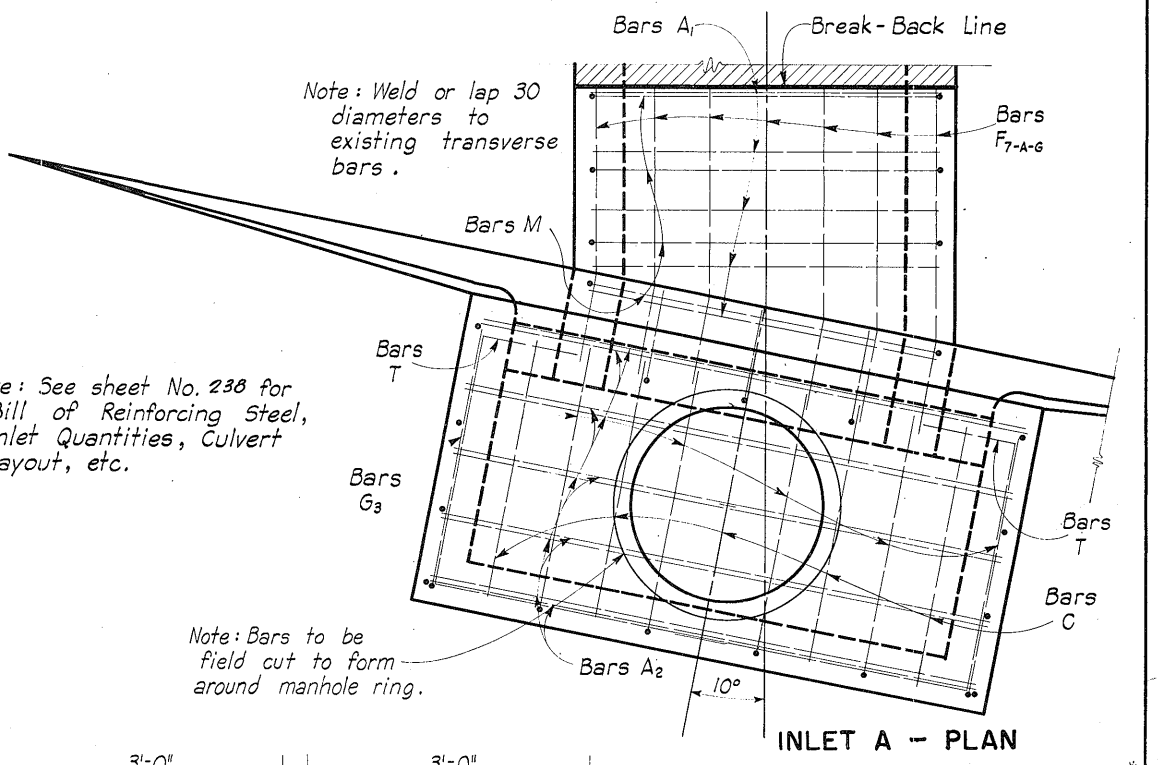
Note: Inlets set back from normal curbline. Transition to normal curbline in 5'-0".



Note: Inlets will be paid for under item of "Class 'A' Concrete (Inlets)". Excavation for Inlets will be paid for under item of "Unclass. Struct. Excav. (Inlets)". Other Conc. & Excav. are to be paid for under items "Class 'A' Conc. for Extending Struct." & "Unclass. Struct. Excav. (Culverts)".



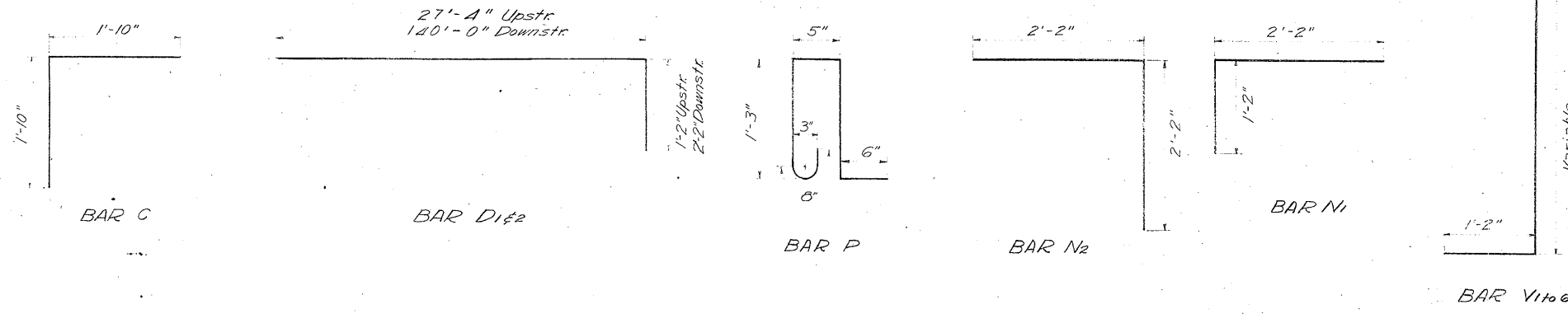
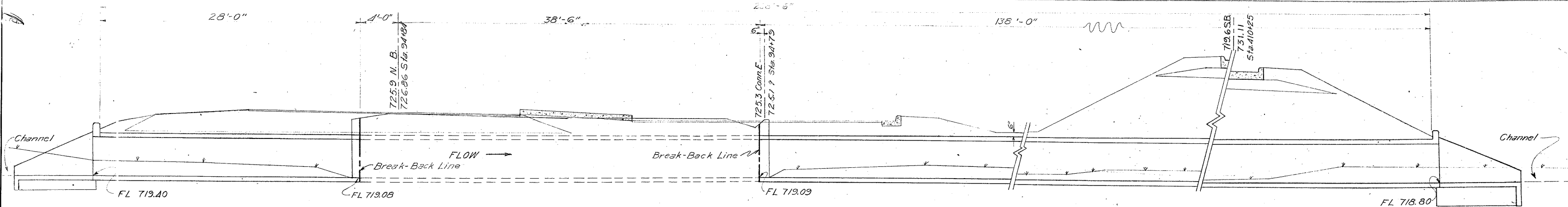
Note: See sheet No. 238 for Bill of Reinforcing Steel, Inlet Quantities, Culvert Layout, etc.



TEXAS HIGHWAY DEPARTMENT
CURB INLET DETAILS
 FOR
 3'X2' CULVERT EXTENSION
 STA. 375+39.7 - SOUTH BOUND LANE
 U.S. HWY. NO. 81 - BUSINESS ROUTE
 SHEET 2 of 2

BC-5

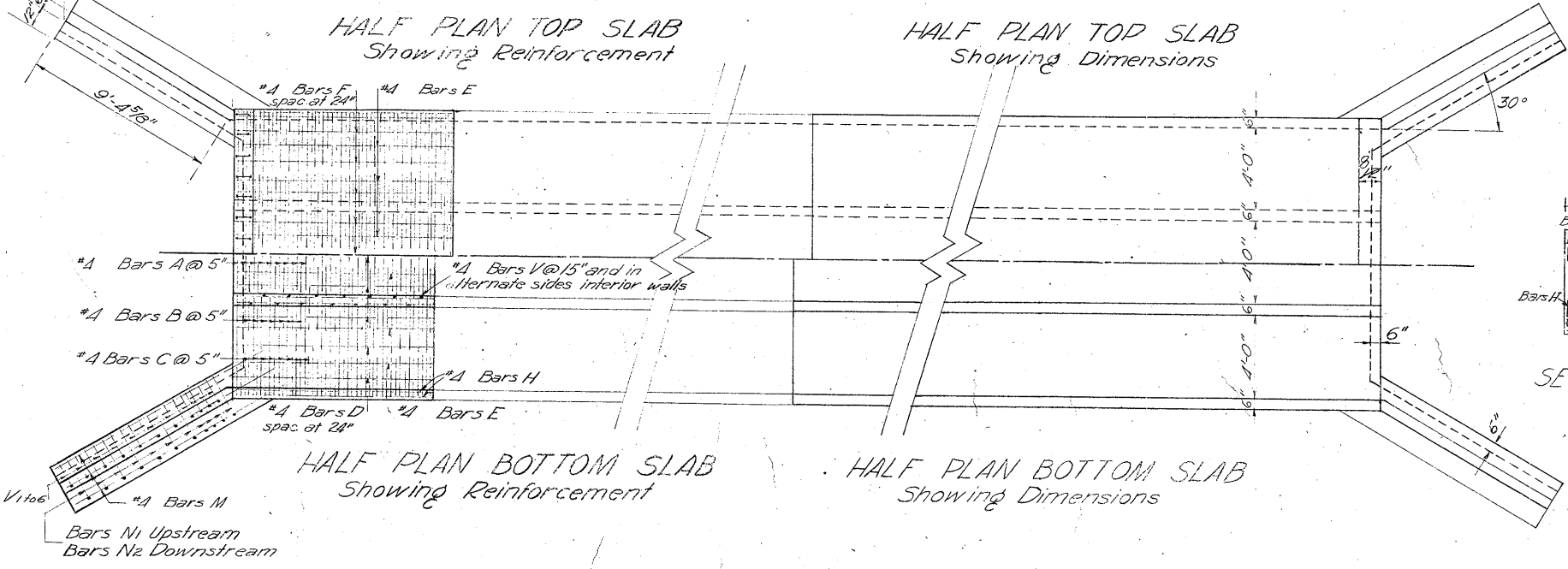
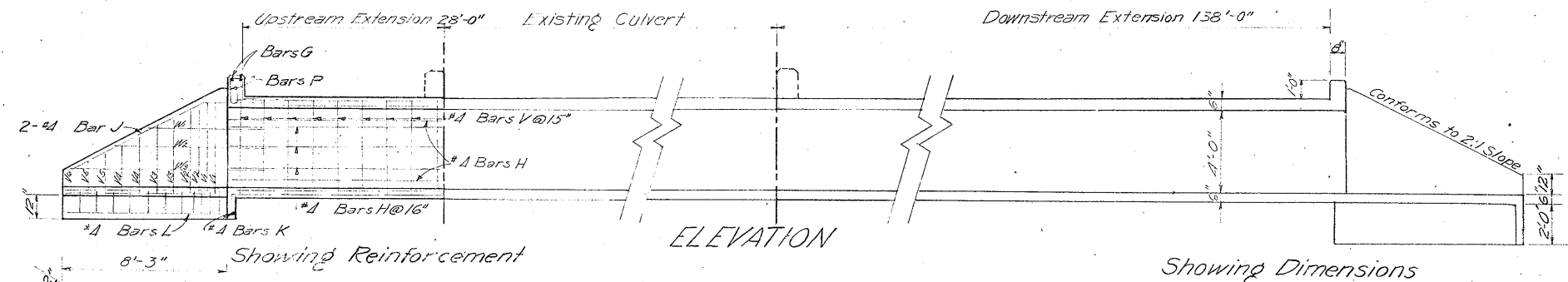
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	239
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	16 7 26	U.S. 81



Bill of Reinforcing Steel

Bars with suffix (1) denotes Upstr Extension
Bars with suffix (2) denotes Downstr Extension

Mark	No.	Size	Spec.	Length	Weight	
A	280	4	5"	13'-6"	6255	1214
B	1602	4	5"	3'-2"	3262	3385
C	1342	4	5"	3'-8"	3777	3919
D1	9	4	24"	29'-6"	177	
D2	9	4	24"	142'-2"	854	
E1	12	4	24"	28'-6"	228	
E2	12	4	24"	140'-2"	1124	
F1	9	4	24"	28'-6"	171	
F2	9	4	24"	140'-2"	843	
G	4	4	-	13'-6"	36	
H1	20	4	16"	28'-6"	381	
H2	20	4	16"	140'-2"	1872	
J	8	4	-	12'-1"	65	
K	2	4	-	14'-0"	19	
L	4	4	-	11'-0"	29	
M	12	4	-	12'-0"	96	
N1	22	4	-	3'-4"	49	
N2	22	4	-	4'-4"	64	
P	28	4	12"	3'-11"	73	
V1	8	4	6"	6'-0"	32	
V2	8	4	6"	5'-6"	29	
V3	8	4	12"	4'-9"	25	
V4	8	4	12"	3'-10"	20	
V5	8	4	12"	3'-0"	16	
V6	4	4	12"	2'-7"	7	
V	769	4	15"	4'-6"	2417	
W1	4	4	16"	5'-8"	15	
W2	4	4	16"	7'-5"	20	
W3	4	4	16"	10'-4"	28	
Total					22550#	23,108



ESTIMATED QUANTITIES

Reinforcing Steel	22,550#	23,108#
Class "A" Concrete for Extending Structures	161.06 CY	142.77 CY
Unclass. Struct. Excav. (Culverts)	179 CY	132.86 CY
	176 CY	163.40 CY

GENERAL NOTES:

All concrete shall be Class "A". Chamfer exposed corners 3/4".

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

Quantities of reinforcing steel shown herein include one 20 diameter lap for all bars exceeding 60 feet in length.

Existing bars exposed by break-back shall be cleaned and bent into position to provide a tie to the extension.

The removal of the existing structure to the break-back lines shown will not be paid for directly, but shall be considered auxiliary work to the bid item "Class A" Conc. for Extending Structures.

TEXAS HIGHWAY DEPARTMENT

LENGTHENING DETAILS

FOR

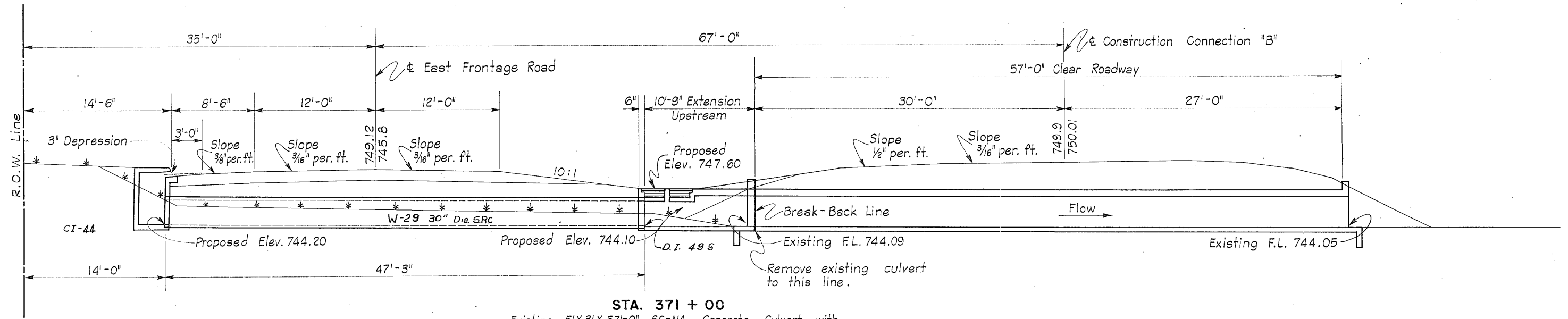
EXISTING 3'-4"x42'-6" CULVERT TO BE EXTENDED 28' UPSTREAM AND 138' DOWNSTREAM

STA. 410+25 SOUTH BOUND BUS. ROUTE

Design: H20-S16 in accordance with A.A.S.H.O. 1944 Standard Specifications and revisions there to.

BC-6

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	F 31 (18)	240
STATE DIST. NO.	COUNTY	CONTRACT NO.	SECTION NO.
15	Sear	16	7 26



STA. 371 + 00
Existing 5'X3'X 57'-0" SC-NA Concrete Culvert with
FW-N Wings to be extended 10'-9" Upstream (Special)
Scale 1" = 5'

BILL OF REINFORCING STEEL

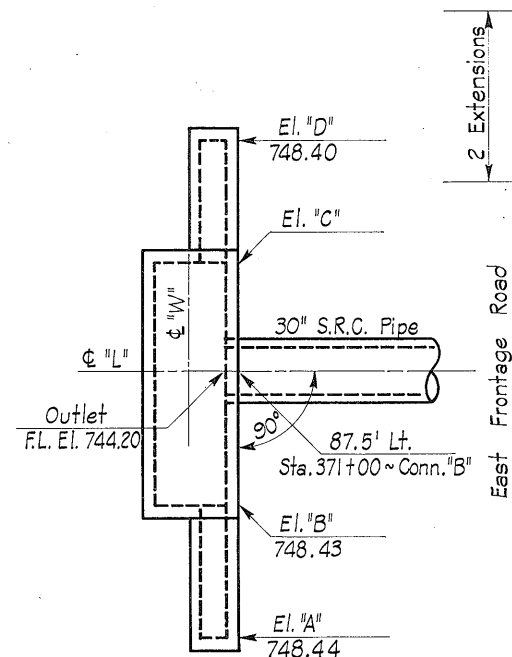
Mark	No.	Size	Spacing	Length	Weight
B	26	4	7" ±	5'-4"	93
C	24	4	7 3/4"	1'-8"	27
D ₁₋₉	18	4	7 3/4"	Av. 5'-6 1/2"	67
E ₁₋₉	18	4	7 3/4"	Av. 2'-7 1/2"	32
F	6	4	6 3/4"	4'-5"	18
L	13	4	8 1/2"	10'-8"	93
M	16	4	8 1/2"	4'-7"	49
N	16	4	8 1/2"	5'-6"	59
O	16	4	8 1/2"	8'-2"	87
P	10	4	11"	10'-8"	71
Q	5	4	11"	13'-0"	43
R	8	4	8 1/2"	6'-2"	33
S	26	4	8 1/2"	3'-2"	55
T	4	4	—	3'-0"	8
T ₁	4	4	—	3'-8"	10
U	4	4	—	3'-8"	10
X ₂	4	4	—	3'-8"	22
Y	1	4	—	2'-0"	14
Z ₂	8	4	—	2'-0"	11
Z ₂	1	4	—	3'-8"	21
K	8	4	—	Av. 3'-1 1/2"	17

Unclass. Struct. Excav. (Curb Inlet) 24 7.42 C.Y.
Class "A" Concrete (Inlets) 5.11 C.Y.
Reinforcing Steel 840 # 823 #
Class "A" Concrete (Invert Shaping) None
Manhole Ring & Cover 1
Unclass. Struct. Excav. (Culverts) BC-8 5 C.Y.
Unclass. Struct. Excav. (Pipes) W-29 18 C.Y.

CURB INLET CI-44

10 FT. INLET & 2-5 FT. EXTENSIONS

See Sheet No. 221 for details.



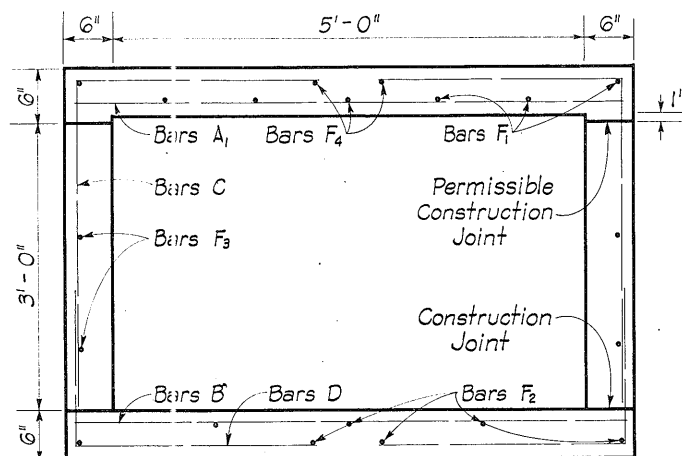
Variable Dimensions
H = 4'-7 3/4"
W = 2'-6"
L = 10'-0"
D = 3"

*Note
Detail shows this to be Z₁ + Z₂
(Length should be 21'-8")

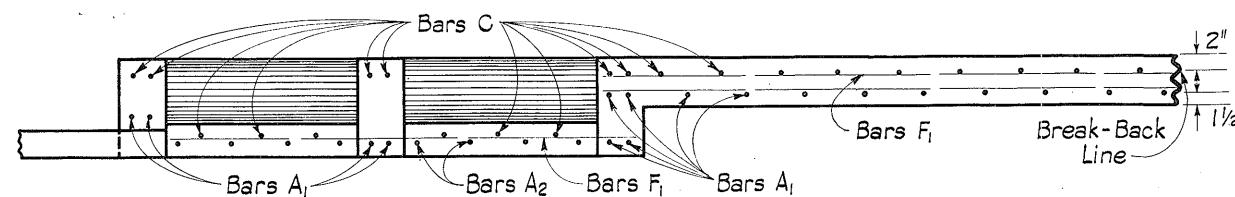
TEXAS HIGHWAY DEPARTMENT
LENGTHENING DETAILS
FOR
EXISTING 5'X3'X 57'
SC-NA BOX CULVERT
STA. 371 + 00 (CONNECTION "B")
SHEET 1 OF 2

BC-8

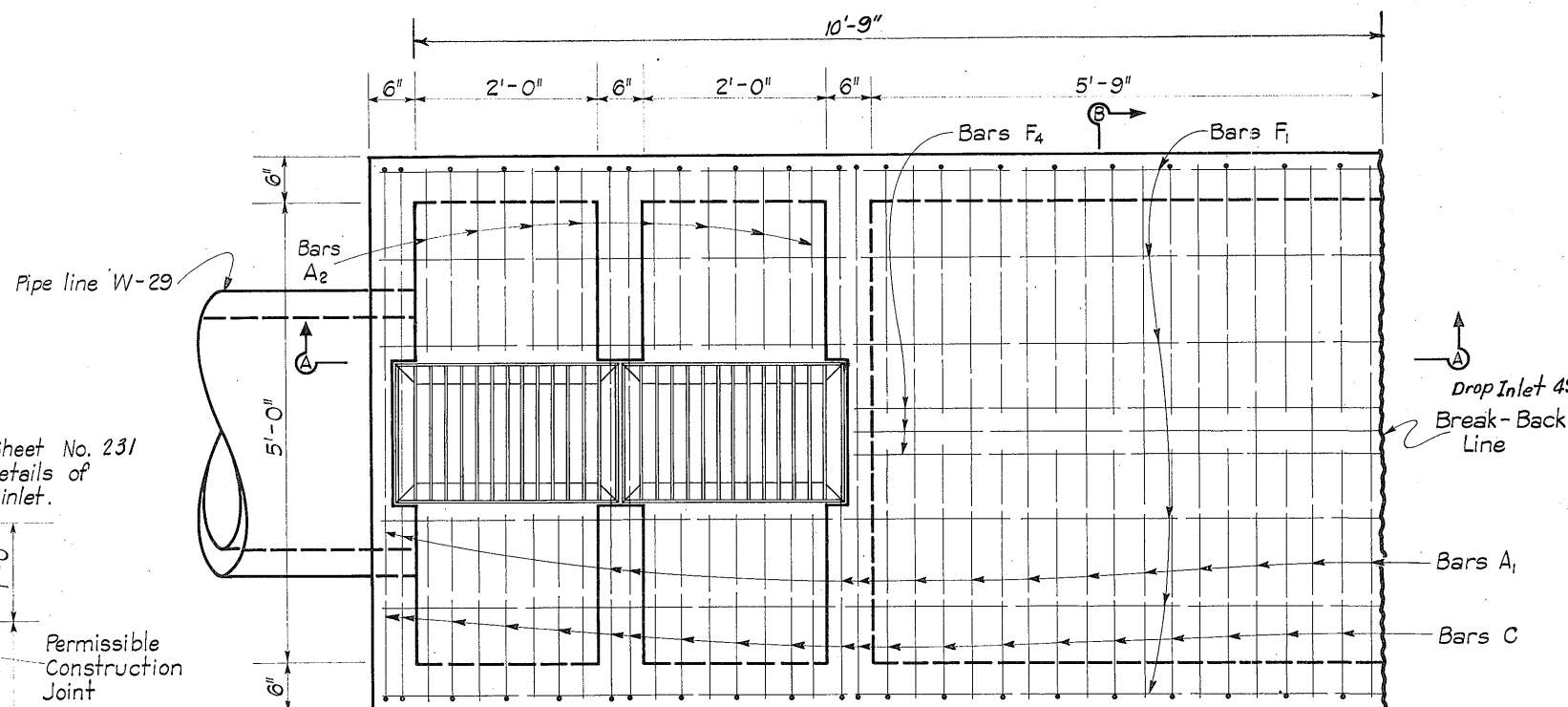
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088 (2)	241
STATE DIST. NO.	COUNTY	CONT. SECT. JOB	HIGHWAY NO.
15	Bexar	17 10 3	US 81



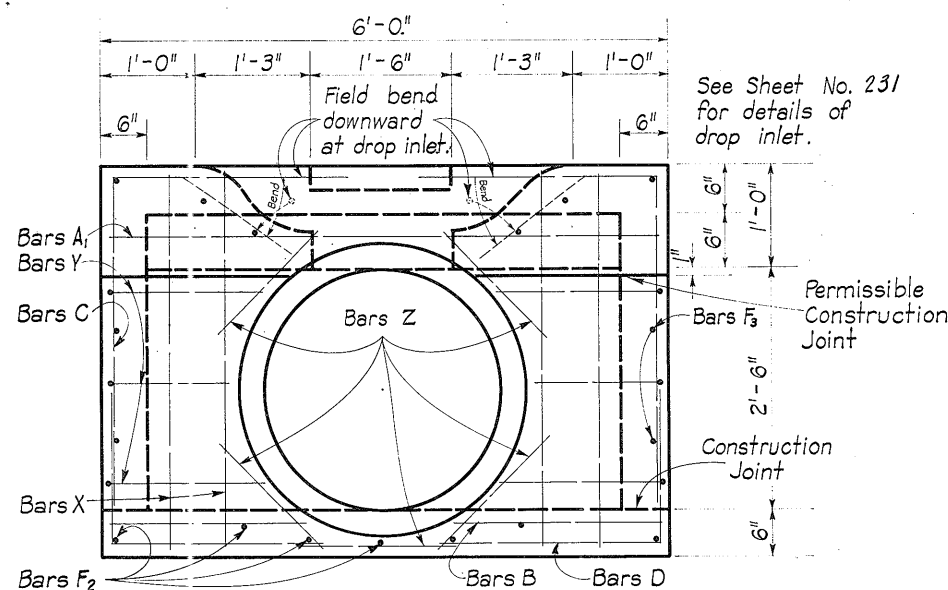
SECTION B-B



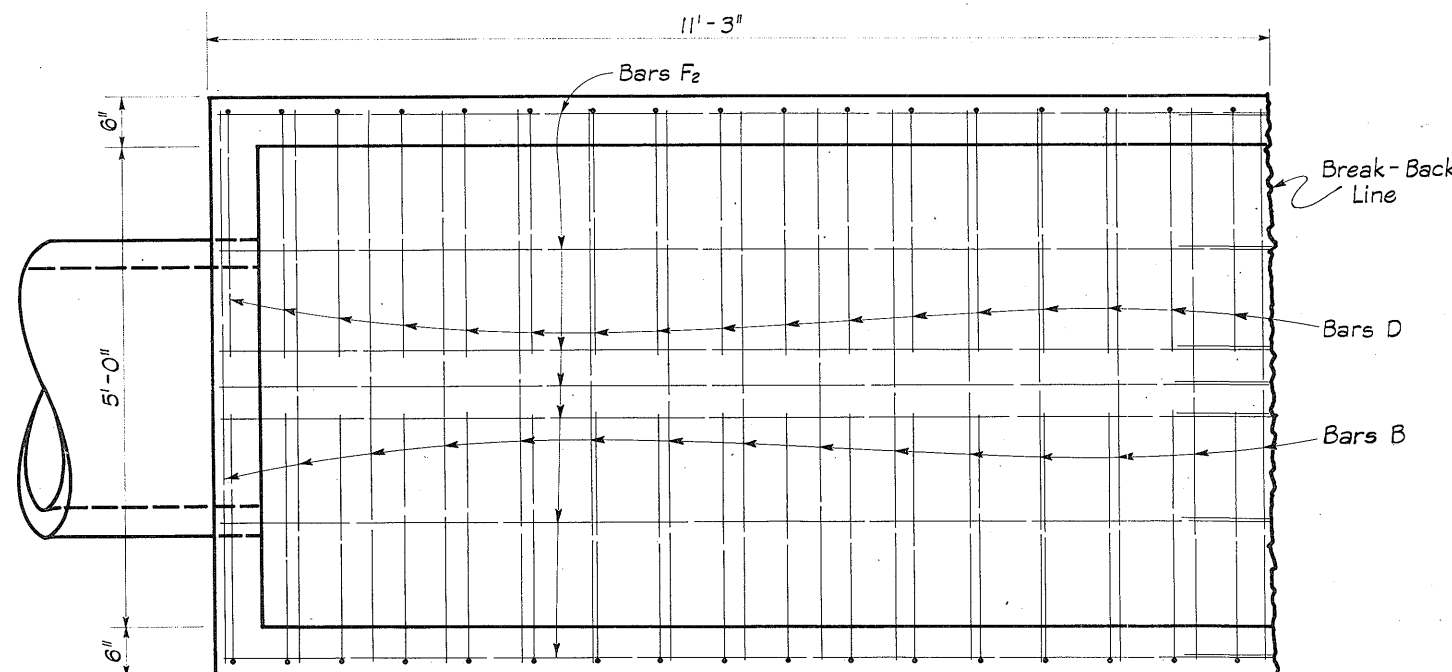
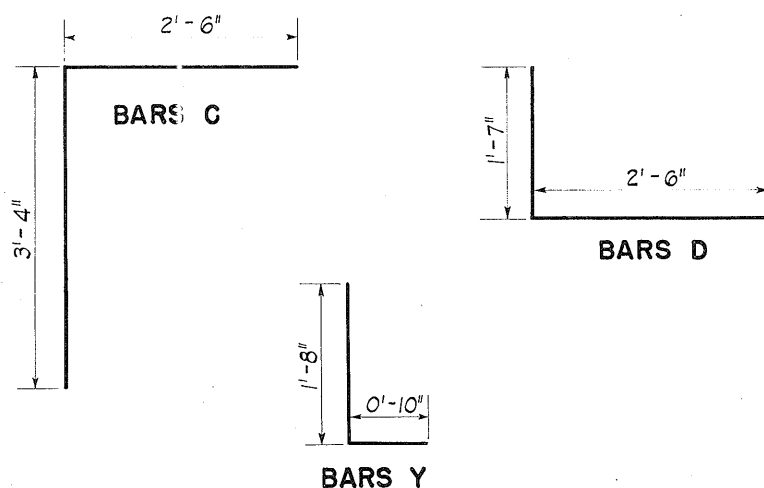
SECTION A-A



PLAN OF REINFORCING STEEL - TOP SLAB



ELEVATION - END WALL REINFORCING STEEL



PLAN OF REINFORCING STEEL - BOTTOM SLAB

BILL OF REINFORCING STEEL
FOR CULVERT EXTENSION

Bar	Number	Size	Spacing	Length	Weight
A ₁	17	5	8"±	5'-8"	100
A ₂	16	5	7"±	1'-11"	32
B	15	4	9 1/2"±	5'-8"	57
C	42	4	8"±	5'-10"	164
D	34	4	8"±	4'-1"	93
F ₁	6	4	12"±	11'-2"	45
F ₂	7	4	18"±	11'-2"	52
F ₃	4	4	14"	11'-2"	30
F ₄	3	4	12"±	6'-0"	12
X	4	4	7"	3'-8"	10
Y	6	4	12"	2'-6"	10
Z	5	4	—	1'-8"	6

ESTIMATED QUANTITIES

Item	Unit	Quantity
Class 'A' Concrete for Extending Structures	C.Y.	3.00
Reinforcing Steel	Lb.	611
Unclassified Structural Excav. (Culv.)	C.Y.	245
30" Diam. Std. Reinf. Concrete Pipe	L.F.	48
Grate & Frame	Ea.	2
Class 'A' Concrete (Inlets)	C.Y.	.99
Unclassified Structural Excavation (Inlets)	C.Y.	—

GENERAL NOTES :

Design: H20 or H20-S16 Loading in accordance with A.A.S.H.O. 1944 Standard Specifications and revisions thereto.

All concrete shall be Class 'A'. Chamfer exposed corners 3/4".

All dimensions relating to reinforcing steel are to centers of bars. The centers of the outermost bars shall be placed 2" from the concrete surface except in the top slab as shown.

Construction joint shown at flow line may be raised a maximum of 6" at the option of the Contractor. Adjust length of vertical steel as required.

For details of curb inlet see Sheet No. 221

Existing bars exposed by break-back shall be cleaned and bent into position to provide a tie to the new concrete extension.

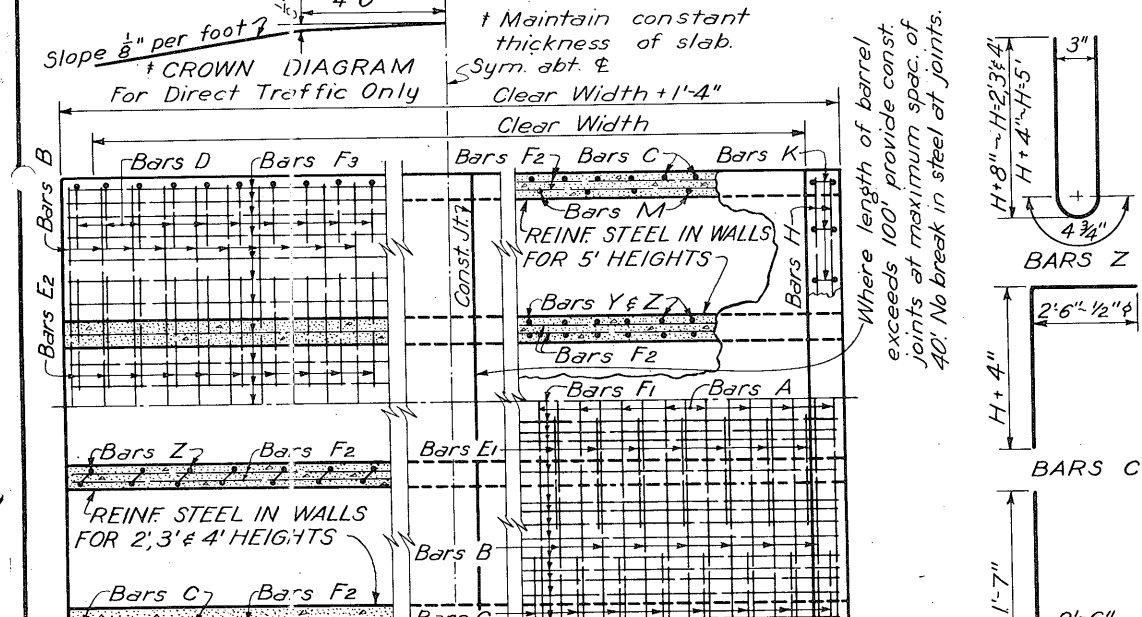
The removal of the existing structure to the break-back line shown will not be paid for directly but shall be considered subsidiary work to the bid item "Class 'A' Concrete for Extending Structures".

TEXAS HIGHWAY DEPARTMENT
LENGTHENING DETAILS
FOR
EXISTING 5'X3'X57'
SC-NA BOX CULVERT
STA. 371 + 00 (CONNECTION "B")
SHEET 2 OF 2
SCALE 1"=1'-0"

BC-8

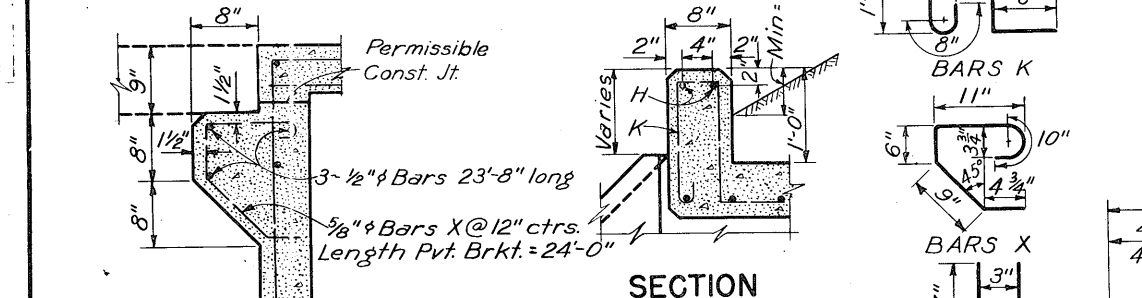
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088 (2)	242
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB HIGHWAY NO.
15	Bexar	17 10 3	US 81

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

[illegible]

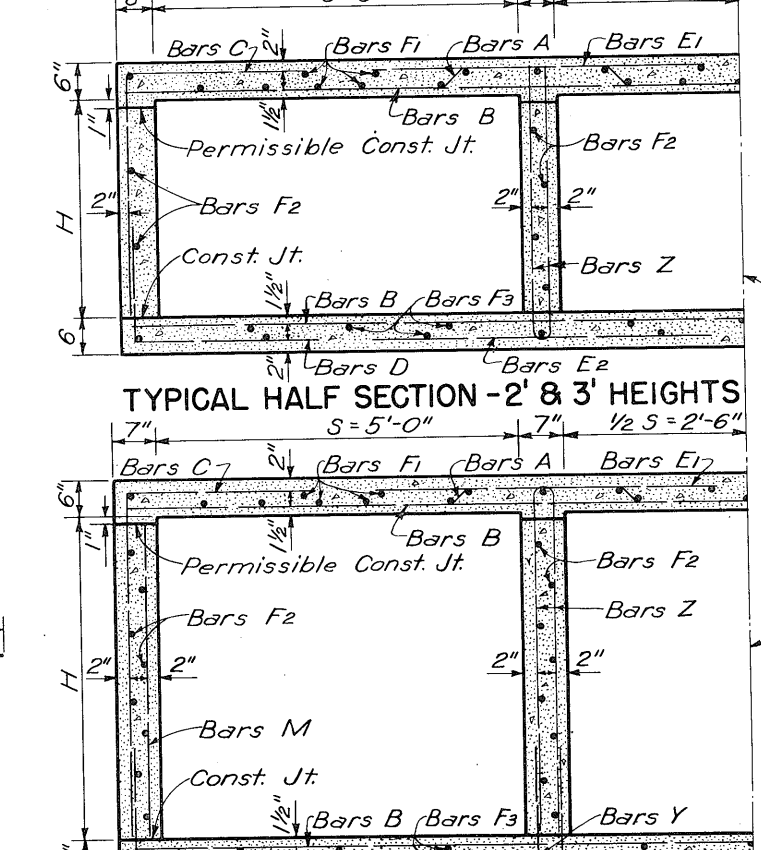
BOTTOM SLAB TOP SLAB BARS D

NOTE: TOP & BOTTOM SLAB REINFORCING STEEL
SIMILAR FOR CULVERT SIZES SHOWN ON THIS SHEET.

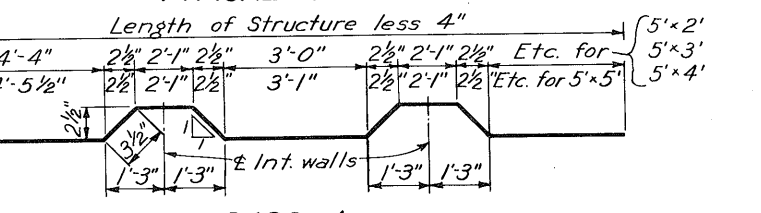


PAVEMENT BRACKET

to be used only when called
for on plans. BARS Y



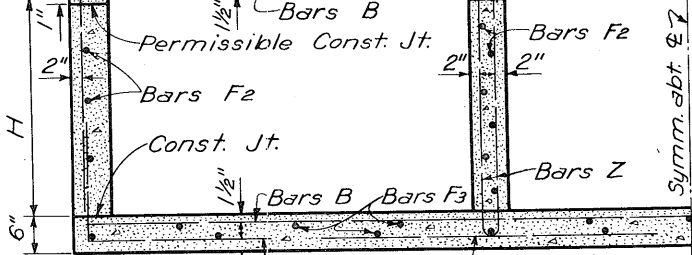
TYPICAL HALF SECTION - 5' HEIGHT



Symm. abt. &

CULVERT SIZE		NO. OF SPANS	LENGTH OF STRUCT.	*BARREL QUANTITIES		QUANTITIES P.L.F. BBL.	
S	H			CONC.	STEEL	CONC.	STEEL
				CU.YDS.	LBS	CU.YDS.	LBS.
5' x 2'	2	11'-6"	24.91	3637	0.537	77.23	
	3	17'-0"	36.10	5364	0.778	113.86	
	4	22'-6"	47.31	7084	1.019	150.49	
	5	28'-0"	58.46	8813	1.259	187.11	
	6	33'-6"	69.65	10,533	1.500	223.75	
5' x 3'	2	11'-6"	27.45	3779	0.593	80.34	
	3	17'-0"	39.48	5568	0.852	118.34	
	4	22'-6"	51.48	7349	1.111	156.28	
	5	28'-0"	63.49	9140	1.370	194.24	
	6	33'-6"	75.55	10921	1.630	232.20	
5' x 4'	2	11'-6"	29.94	4046	0.648	86.13	
	3	17'-0"	42.82	5959	0.926	126.77	
	4	22'-6"	55.69	7863	1.204	167.41	
	5	28'-0"	68.52	9778	1.481	208.04	
	6	33'-6"	81.40	11,682	1.759	248.78	
5' x 5'	2	11'-9"	34.99	4870	0.759	103.93	
	3	17'-4"	49.55	6996	1.074	149.18	
	4	22'-11"	64.10	9109	1.389	194.44	
	5	28'-6"	78.66	11,238	1.704	239.69	
	6	34'-11"	93.21	13,263	2.019	284.95	

$\frac{8}{1} \quad \frac{9-9}{2} \quad \frac{9}{2} \quad \frac{8}{1} \quad \frac{12-6}{2} \quad \frac{6}{2}$



TYPICAL HALF SECTION - 4' HEIGHT

These quantities do not include paving brackets, toe walls or wings.

2'- PVT. BRACKETS	
24'-0" LONG	
CONCRETE	STEEL
Cu. Yd.	Lb.

Design Loading: H20-44 or H20 S16-44 in accordance with A.A.S.H.O. 1949 Standard Specifications and T.H.D. Supplement No. 1.

All concrete shall be Class A. Chamfer exposed corners $\frac{3}{4}$ ".

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

Quantities of reinforcing steel shown hereon are for 4.4'-0" clear width between headwalls and include one 30 diameter lap for all bars exceeding 40 feet in length. Barrels having a length of over 80 feet shall have quantities recalculated to include an additional 30 diameter lap for all longitudinal bars.

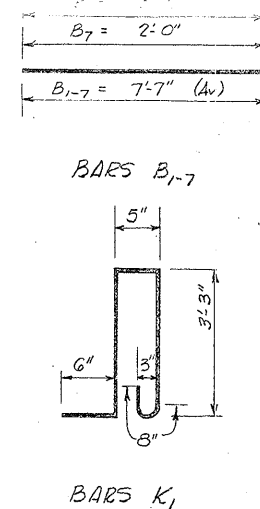
Construction Joint shown at flow line may be raised a maximum of 6" at the option of the contractor. Adjust length of vertical

MULTIPLE BOX CULVERTS
SIZES 5'x2', 5'x3', 5'x4', 5'x5'
DIRECT TRAFFIC TO 4'-0" ELL

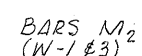
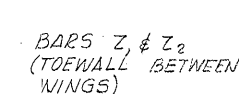
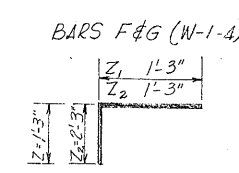
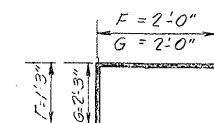
MC5-1

DN. : <u>W.H.</u>	DRAWING	DATE	FEDERAL AND PROTECTIVE		NO.
CK. DN.: <u>RMM</u>	<u>Original</u>	<u>July, 1949</u>	DIV. NO.	STATE	
OW. : <u>MDA</u>			6	TEXAS	F-1088(2) 243
CK. DW.: <u>KM</u>			STATE	COUNTY	CONTROL NO. SECTION NO. JOB NO. HIGHWAY NO.
TR. : <u>AOB</u>			DIST. NO.		
<u>AOB</u>			15	BEXAR	17 10 13 U.S. 81

2 SPANS ~ 6' x 3'												2 SPANS ~ 6' x 4'												2 SPANS ~ 6' x 5'												2 SPANS ~ 6' x 6'															
MARK	B	C	D	E1	E2	F1	F2	F3	H	K	Z	B	C	D	E1	E2	F1	F2	F3	H	K	Z	B	C	D	E1	E2	F1	F2	F3	H	K	M	Y	Z	B	C	D	E1	E2	F1	F2	F3	H	K	M	Y	Z			
NUMBER	136	156	156	91	91	34	16	30	4	28	46	136	156	156	91	91	34	24	30	4	28	46	136	156	156	91	91	34	48	30	4	28	62	46	46	136	156	156	91	91	34	48	30	4	28	62	46	46			
SIZE	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ		
SPACING	8"	7"	7"	6"	6"	~	18"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	16"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	12"	12"	12"
LENGTH	13'-2"	5'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	13'-2"	3'-11"	7'-6"	13'-2"	6'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	13'-2"	3'-11"	9'-6"	13'-5"	7'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	13'-5"	3'-11"	4'-11"	3'-4"	10'-10"	13'-5"	8'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	13'-5"	3'-11"	5'-11"	3'-4"	12'-10"			
WEIGHT	1196	608	425	506	506	526	248	464	35	73	230	1196	712	425	506	506	526	371	464	35	73	292	1219	816	425	506	506	526	743	464	36	73	204	102	333	1219	920	425	506	506	526	743	464	36	73	245	102	394			
3 SPANS ~ 6' x 3'												3 SPANS ~ 6' x 4'												3 SPANS ~ 6' x 5'												3 SPANS ~ 6' x 6'															
NUMBER	136	156	156	182	182	52	24	44	4	42	92	136	156	156	182	182	52	36	44	4	42	92	136	156	156	182	182	52	64	44	4	42	62	92	92	136	156	156	182	182	52	64	44	4	42	62	92	92			
SIZE	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ		
SPACING	8"	7"	7"	6"	6"	~	18"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	16"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	12"	12"	12"
LENGTH	19'-8"	5'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	19'-8"	3'-11"	7'-6"	19'-8"	6'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	19'-8"	3'-11"	9'-6"	20'-0"	7'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	20'-0"	3'-11"	4'-11"	3'-4"	10'-10"	20'-0"	8'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	20'-0"	3'-11"	5'-11"	3'-4"	12'-10"			
WEIGHT	1787	608	425	1012	1012	805	371	681	53	110	461	1787	712	425	1012	1012	805	557	681	53	110	584	1817	816	425	1012	1012	805	991	681	53	110	204	205	666	1817	920	425	1012	1012	805	991	681	53	110	245	205	788			
4 SPANS ~ 6' x 3'												4 SPANS ~ 6' x 4'												4 SPANS ~ 6' x 5'												4 SPANS ~ 6' x 6'															
NUMBER	136	156	156	273	273	70	32	58	4	54	138	136	156	156	273	273	70	48	58	4	54	138	136	156	156	273	273	70	80	58	4	54	62	138	138	136	156	156	273	273	70	80	58	4	54	62	138	138			
SIZE	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ		
SPACING	8"	7"	7"	6"	6"	~	18"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	16"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	12"	12"	12"
LENGTH	26'-2"	5'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	26'-2"	3'-11"	7'-6"	26'-2"	6'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	26'-2"	3'-11"	9'-6"	26'-7"	7'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	26'-7"	3'-11"	4'-11"	3'-4"	10'-10"	26'-7"	8'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	26'-7"	3'-11"	5'-11"	3'-4"	12'-10"			
WEIGHT	2377	608	425	1518	1518	1083	495	898	70	141	691	2377	712	425	1518	1518	1083	743	898	70	141	876	2415	816	425	1518	1518	1083	1238	898	71	141	204	307	998	2415	920	425	1518	1518	1083	1238	898	71	141	245	307	1183			
5 SPANS ~ 6' x 3'												5 SPANS ~ 6' x 4'												5 SPANS ~ 6' x 5'												5 SPANS ~ 6' x 6'															
NUMBER	136	156	156	364	364	88	40	72	4	68	184	136	156	156	364	364	88	60	72	4	68	184	136	156	156	364	364	88	96	72	4	68	62	184	184	136	156	156	364	364	88	96	72	4	68	62	184	184			
SIZE	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ		
SPACING	8"	7"	7"	6"	6"	~	18"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	16"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	12"	12"	12"
LENGTH	32'-8"	5'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	32'-8"	3'-11"	7'-6"	32'-8"	6'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	32'-8"	3'-11"	9'-6"	33'-2"	7'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	33'-2"	3'-11"	4'-11"	3'-4"	10'-10"	33'-2"	8'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	33'-2"	3'-11"	5'-11"	3'-4"	12'-10"			
WEIGHT	2968	608	425	2023	2023	1362	619	1114	87	178	922	2968	712	425	2023	2023	1362	929	1114	87	178	1168	3013	816	425	2023	2023	1362	1486	1114	89	178	204	409	1331	3013	920	425	2023	2023	1362	1486	1114	89	178	245	409	1577			
6 SPANS ~ 6' x 3'												6 SPANS ~ 6' x 4'												6 SPANS ~ 6' x 5'												6 SPANS ~ 6' x 6'															
NUMBER	136	156	156	455	455	106	48	86	4	80	230	136	156	156	455	455	106	72	86	4	80	230	136	156	156	455	455	106	112	86	4	82	62	230	230	136	156	156	455	455	106	112	86	4	82	62	230	230			
SIZE	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	5/8"φ	5/8"φ	3/4"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ	1/2"φ		
SPACING	8"	7"	7"	6"	6"	~	18"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	16"	~	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	8"	7"	7"	6"	6"	~	15"	~	12"	18"	12"	12"	12"	12"	12"	12"
LENGTH	39'-2"	5'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	39'-2"	3'-11"	7'-6"	39'-2"	6'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	39'-2"	3'-11"	9'-6"	39'-9"	7'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	39'-9"	3'-11"	4'-11"	3'-4"	10'-10"	39'-9"	8'-10"	4'-1"	5'-4"	5'-4"	23'-2"	23'-2"	23'-2"	39'-9"	3'-11"	5'-11"	3'-4"	12'-10"			
WEIGHT	3559	608	425	2529	2529	1641	743	1331	105	210	1152	3559	712	425	2529	2529	1641	1114	1331	105	210	1460	3611	816	425	2529	2529	1641	1734	1331	106	215	205	512	1664	3611	920	425	2529	2529	1641	1734	1331	106	215	245	512	1971			

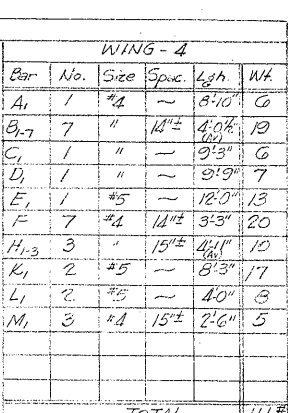


MCW-FI-20 Details shown
for Wings & Towall are complete:
All concrete shall be Class "A"
Chamfer all exposed corners
3/4" unless specified otherwise.
All dimensions relating
reinforcing steel are to center of
bars.
Towalls for culvert and wing
walls shall be omitted when struc-
ture is founded on solid rock.

[illegible]

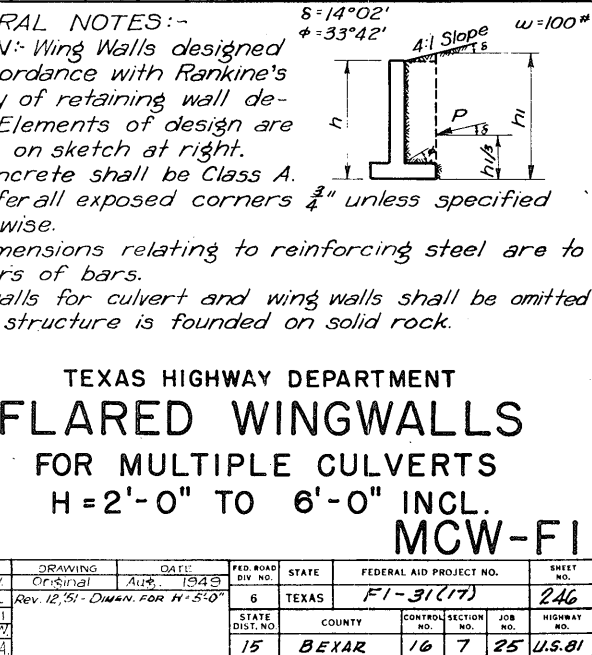
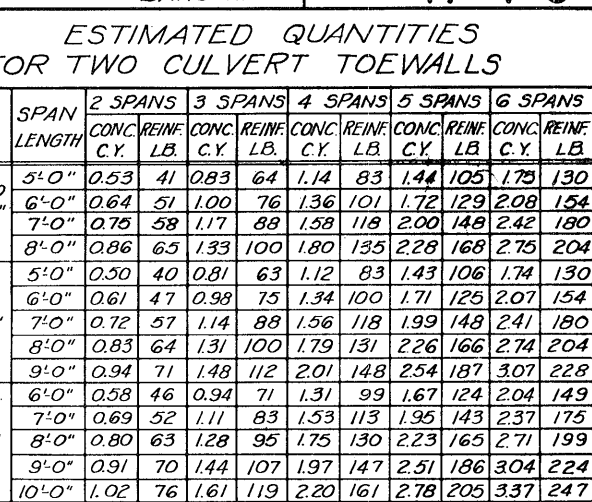
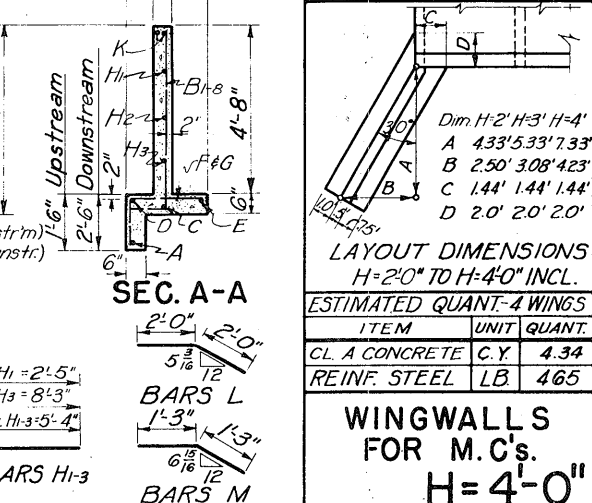
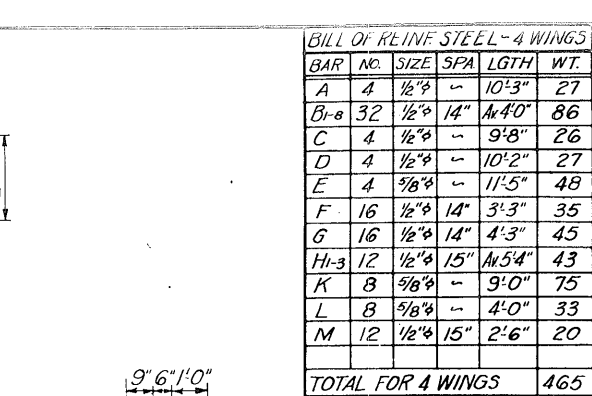
DESCRIPTION	CLASS 'A'	REINF.
	CONC. (W/L)	STEEL
	C.Y.	Lb.
2-6'x4'x 280'-20" BARREL	216.02	29,258
WING - 1	* 2.15	* 187
WING - 2	1.33	130
WING - 3	* 1.38	* 157
WING - 4	0.91	111
CONT 16-7-25 TOTALS	221.79	29,843

* Includes quantities for toewall
under barrel proper.



TEXAS HIGHWAY DEPARTMENT
2-6'x4'x280' MC G-2-20° SKEW. &
MCW-FI-20°
STA. 244+40

DN. >	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK DN. >			6	TEXAS	F1 - 31 (17)	245
DW. >						
CK DW. >			STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.
TR. >			15	Bexar	16	7
CK TR. >						25
						11581



½" φ BARS M IN TOP SLAB

No.	Spa.	Length	Weight	"X"	"Y"
61	9"	8'-5"	34.3	3'-9"	2'-4"
61	9"	10'-5"	42.5	3'-9"	3'-4"
78	7"	9'-6"	49.5	4'-0"	2'-4"
78	7"	11'-6"	59.9	4'-0"	3'-4"
78	7"	13'-6"	70.3	4'-0"	4'-4"

½" φ BARS N IN BOTTOM SLAB

No.	Spa.	Length	Weight	"X"	"Y"
61	9"	6'-9"	27.5	3'-9"	
61	9"	6'-9"	27.5	3'-9"	
78	7"	7'-10"	40.8	4'-0"	
78	7"	7'-10"	40.8	4'-0"	
78	7"	7'-10"	40.8	4'-0"	

***Construction Joint shown at flow line on Sections Nos. 1, 2 & 3 may be raised a maximum of 6" at the option of the contractor, adjust length of vertical U steel as required.**

For Direct Traffic construct slab to conform to crown of roadway, maintaining constant thickness of slab.

HALF SEC. TYPE 1

HALF SEC. TYPE 2

HALF SEC. TYPE 3

Where length of barrel exceeds 100' provide construction joints at max. spacing of 40'. No break in steel at joints.

Part Plan-Reinf. Steel 3x2 To 4x4

Part Plan-Reinf. Steel 5x2 To 10x10

GENERAL NOTES:

Design: H20 or H20-S16 Loading in accordance with A.A.S.H.O. 1949 Standard Specifications and revisions thereto.

All concrete shall be Class A. Chamfer exposed corners ¾". All dimensions relating to reinforcing steel are to centers of bars.

Quantities of reinforcing steel shown hereon are for 44'-0" clear width between headwalls and include one 30 diameter lap for all bars exceeding 40 feet in length. Barrels having a length over 80 feet shall have quantities recalculated to include an additional 30 diameter lap for all longitudinal bars.

TEXAS HIGHWAY DEPARTMENT

SINGLE CULVERTS - 15° SKEW

3'x2' TO 10'x10'

DIRECT TRAFFIC & FILL TYPES

SC 15° A, B & C

SECTION THRU CURB

TABLE:

DESIGN	WH	DRAWING	DATE	PER. BY	CITY	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CL. DR.	R.M.M.	Original	May 1949					
DR.	M.D.A.							
CL. DR.	K.M.							
TR.	A.O.B.							
CL. FR.	K.M.							

TABLE:

CL. UNIT	CONTROL SECTION NO.	JOB NO.	REMARKS
6	TEXAS	F1-31(17)	249
15	DEXAR	16 7 25	U.S.B.

TABLE OF DIMENSIONS												* TOTAL QUANT.	
WING												CONC. REINF.	
S	H	FT	T	Z	L	R	W	V	D	Y		CY	LBS.
3 x 2	14'	6"	3'-6"	6'-1"	6'-1"	6'-1"	2'-6"	8"	10"	1'-0"	4.75	395	
3 x 3	14'	6"	3'-6"	7'-10"	7'-10"	7'-10"	2'-6"	8"	10"	1'-0"	7.09	560	
4 x 2	12'	6"	3'-6"	6'-1"	6'-1"	6'-1"	2'-6"	8"	10"	1'-0"	4.88	400	
4 x 3	12'	6"	4'-6"	7'-10"	7'-10"	7'-10"	2'-6"	8"	10"	1'-0"	7.23	566	
4 x 4	12'	6"	5'-6"	9'-6"	9'-6"	9'-6"	3'-5"	8"	10"	1'-0"	10.08	1006	
5 x 2	8'	6"	3'-6"	6'-1"	6'-1"	6'-1"	2'-6"	8"	10"	1'-0"	5.12	406	
5 x 3	8'	6"	4'-6"	7'-10"	7'-10"	7'-10"	2'-6"	8"	10"	1'-0"	7.36	572	
5 x 4	8'	6"	5'-6"	9'-6"	9'-6"	9'-6"	3'-5"	8"	10"	1'-0"	10.22	1012	
5 x 5	8'	6"	6'-6"	11'-3"	11'-3"	11'-3"	4'-0"	8"	10"	1'-0"	13.69	1648	
6 x 3	8'	6"	4'-6"	7'-10"	7'-10"	7'-10"	2'-6"	8"	10"	1'-0"	7.49	577	
6 x 4	8'	6"	5'-6"	9'-6"	9'-6"	9'-6"	3'-5"	8"	10"	1'-0"	10.36	1019	
6 x 5	8'	6"	6'-6"	11'-3"	11'-3"	11'-3"	4'-0"	8"	10"	1'-0"	13.83	1655	
6 x 6	8'	6"	7'-6"	13'-0"	13'-0"	13'-0"	4'-8"	8"	10"	1'-0"	17.98	2335	
7 x 3	8'	6"	4'-6"	7'-10"	7'-10"	7'-10"	2'-6"	8"	10"	1'-0"	7.67	583	
7 x 4	8'	6"	5'-6"	9'-6"	9'-6"	9'-6"	3'-5"	8"	10"	1'-0"	10.63	1025	
7 x 5	8'	6"	6'-6"	11'-3"	11'-3"	11'-3"	4'-0"	8"	10"	1'-0"	14.14	1662	
7 x 6	8'	6"	7'-6"	13'-0"	13'-0"	13'-0"	4'-8"	8"	10"	1'-0"	18.34	2343	
7 x 7	8'	6"	8'-6"	14'-10"	14'-10"	14'-10"	5'-2"	9"	10"	1'-0"	24.90	3485	
8 x 4	4'	6"	5'-6"	9'-6"	9'-6"	9'-6"	3'-5"	8"	10"	1'-0"	10.77	1032	
8 x 5	4'	6"	6'-6"	11'-3"	11'-3"	11'-3"	4'-0"	8"	10"	1'-0"	14.29	1669	
8 x 6	4'	6"	7'-6"	13'-0"	13'-0"	13'-0"	4'-8"	8"	10"	1'-0"	18.51	2351	
8 x 7	4'	6"	8'-6"	14'-10"	14'-10"	14'-10"	5'-2"	9"	10"	1'-0"	25.08	3494	
8 x 8	4'	6"	9'-6"	16'-6"	16'-6"	16'-6"	5'-9"	10"	10"	1'-0"	32.81	5421	
8 x 4	6'	7"	5'-7"	9'-8"	9'-8"	9'-8"	3'-5"	8"	10"	1'-0"	10.91	1032	
8 x 5	6'	7"	6'-7"	11'-5"	11'-5"	11'-5"	4'-0"	8"	10"	1'-0"	14.46	1669	
8 x 6	6'	7"	7'-7"	13'-2"	13'-2"	13'-2"	4'-8"	8"	10"	1'-0"	18.71	2351	
8 x 7	6'	7"	8'-7"	14'-10"	14'-10"	14'-10"	5'-2"	9"	10"	1'-0"	25.19	3494	
8 x 8	6'	7"	9'-7"	16'-7"	16'-7"	16'-7"	5'-9"	10"	10"	1'-0"	33.10	5421	
8 x 4	8'	7"	5'-7"	9'-9"	9'-9"	9'-9"	3'-5"	8"	10"	1'-0"	11.05	1032	
8 x 5	8'	7"	6'-7"	11'-6"	11'-6"	11'-6"	4'-0"	8"	10"	1'-0"	14.62	1669	
8 x 6	8'	7"	7'-7"	13'-2"	13'-2"	13'-2"	4'-8"	8"	10"	1'-0"	18.80	2351	
8 x 7	8'	7"	8'-7"	14'-11"	14'-11"	14'-11"	5'-2"	9"	10"	1'-0"	25.43	3494	
8 x 8	8'	7"	9'-7"	16'-8"	16'-8"	16'-8"	5'-9"	10"	10"	1'-0"	33.38	5421	
9 x 5	6'	7"	6'-7"	11'-5"	11'-5"	11'-5"	4'-0"	8"	10"	1'-0"	14.61	1684	
9 x 6	6'	7"	7'-7"	13'-2"	13'-2"	13'-2"	4'-8"	8"	10"	1'-0"	18.88	2367	
9 x 7	6'	7"	8'-7"	14'-10"	14'-10"	14'-10"	5'-2"	9"	10"	1'-0"	25.37	3511	
9 x 8	6'	7"	9'-7"	16'-7"	16'-7"	16'-7"	5'-9"	10"	10"	1'-0"	33.30	5440	
9 x 9	6'	7"	10'-7"	18'-4"	18'-4"	18'-4"	6'-4"	12"	10"	1'-0"	43.14	6905	
9 x 5	8'	8"	6'-8"	11'-7"	11'-7"	11'-7"	4'-0"	8"	10"	1'-0"	14.89	1683	
9 x 6	8'	8"	7'-8"	13'-3"	13'-3"	13'-3"	4'-8"	8"	10"	1'-0"	20.00	2367	
9 x 7	8'	8"	8'-8"	15'-0"	15'-0"	15'-0"	5'-4"	9"	10"	1'-0"	26.67	3511	
9 x 8	8'	8"	9'-8"	16'-9"	16'-9"	16'-9"	6'-0"	11"	10"	1'-0"	35.50	5440	
9 x 9	8'	8"	10'-8"	18'-6"	18'-6"	18'-6"	6'-6"	12"	10"	1'-0"	45.01	6905	
10 x 5	4'	7"	6'-7"	11'-5"	11'-5"	11'-5"	4'-0"	8"	10"	1'-0"	14.76	1691	
10 x 6	4'	7"	7'-7"	13'-2"	13'-2"	13'-2"	4'-8"	8"	10"	1'-0"	19.05	2376	
10 x 7	4'	7"	8'-7"	14'-10"	14'-10"	14'-10"	5'-2"	9"	10"	1'-0"	25.55	3520	
10 x 8	4'	7"	9'-7"	16'-7"	16'-7"	16'-7"	5'-9"	10"	10"	1'-0"	33.50	5450	
10 x 9	4'	7"	10'-7"	18'-4"	18'-4"	18'-4"	6'-4"	12"	10"	1'-0"	43.36	6916	
10 x 10	4'	7"	11'-7"	20'-1"	20'-1"	20'-1"	7'-0"	13"	10"	1'-0"	55.63	8866	
10 x 5	6'	8"	6'-8"	11'-7"	11'-7"	11'-7"	4'-0"	8"	10"	1'-0"	15.10	1691	
10 x 6	6'	8"	7'-8"	13'-3"	13'-3"	13'-3"	4'-8"	8"	10"	1'-0"	20.18	2376	
10 x 7	6'	8"	8'-8"	15'-0"	15'-0"	15'-0"	5'-4"	9"	10"	1'-0"	26.86	3520	
10 x 8	6'	8"	9'-8"	16'-9"	16'-9"	16'-9"	6'-0"	11"	10"	1'-0"	35.71	5450	
10 x 9	6'	8"	10'-8"	18'-6"	18'-6"	18'-6"	6'-6"	12"	10"	1'-0"	45.25	6916	
10 x 10	6'	8"	11'-8"	20'-2"	20'-2"	20'-2"	7'-0"	13"	10"	1'-0"	56.24	8866	
10 x 5	8'	8"	6'-8"	11'-7"	11'-7"	11'-7"	4'-0"	8"	10"	1'-0"	15.17	1691	
10 x 6	8'	8"	7'-8"	13'-4"	13'-4"	13'-4"	4'-9"	8"	10"	1'-0"	20.39	2376	
10 x 7	8'	8"	8'-8"	15'-1"	15'-1"	15'-1"	5'-4"	9"	10"	1'-0"	27.12	3520	
10 x 8	8'	8"	9'-8"	16'-10"	16'-10"	16'-10"	6'-0"	11"	10"	1'-0"	36.02	5450	
10 x 9	8'	8"	10'-8"	18'-7"	18'-7"	18'-7"	6'-6"	12"	10"	1'-0"	45.62	6916	
10 x 10	8'	8"	11'-8"	20'-3"	20'-3"	20'-3"	7'-0"	13"	10"	1'-0"	56.65	8866	

*These Total Quantities are for 4 Wing Walls and 2 Aprons.

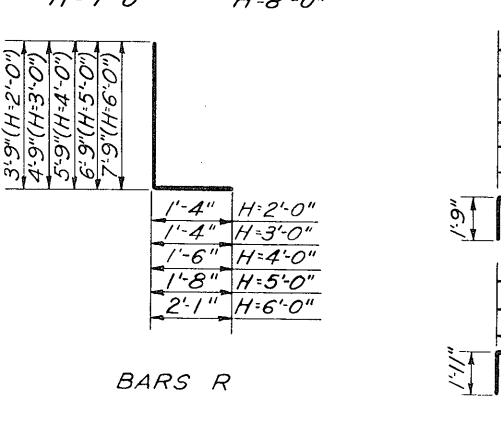
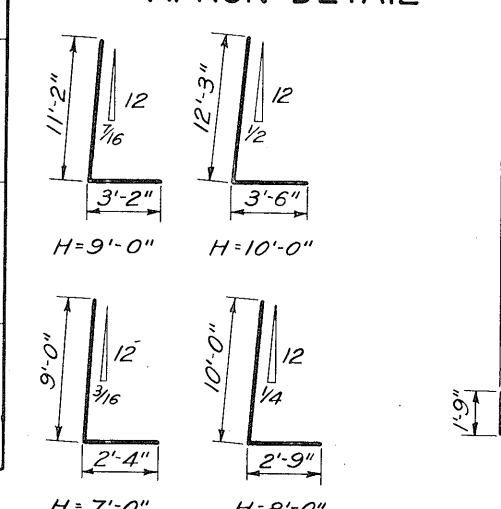
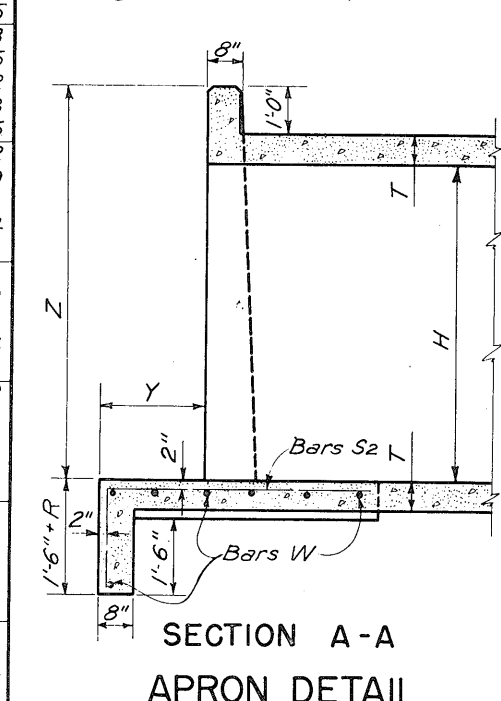
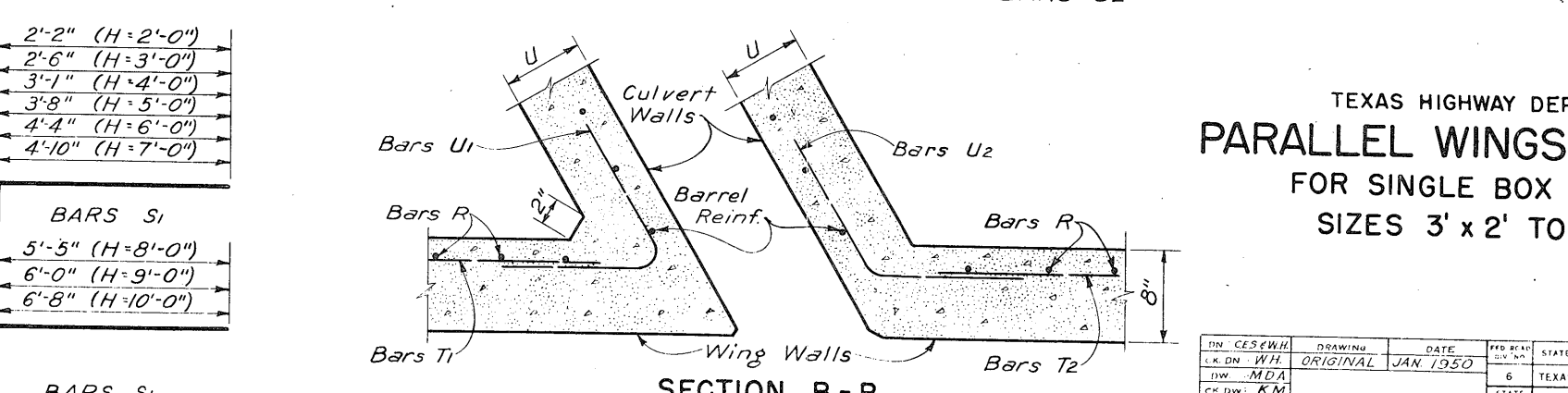
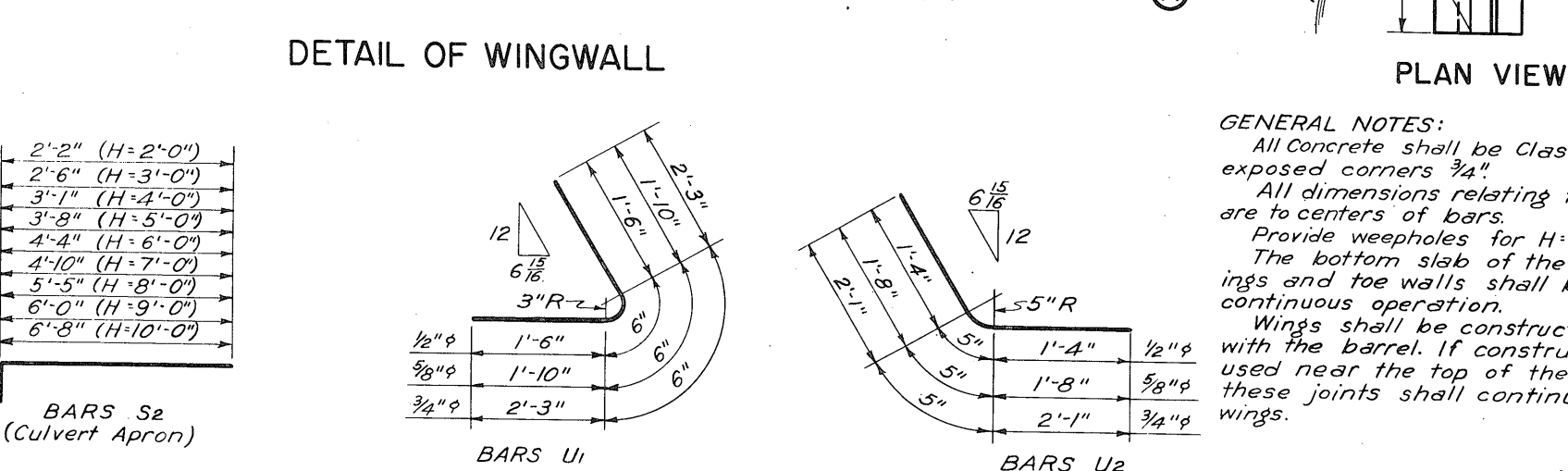
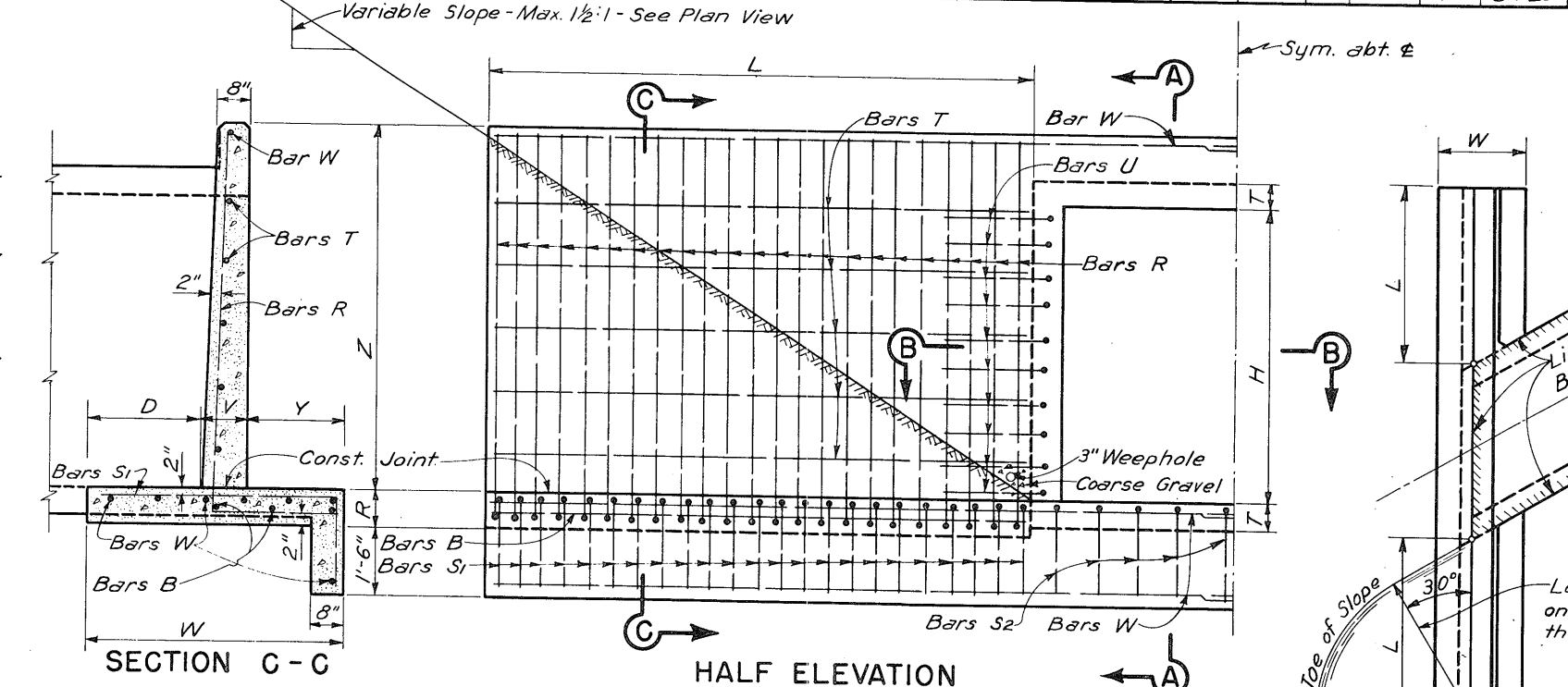


TABLE OF REINFORCING STEEL FOR 4 WINGWALLS																														
ARS R			BARS S ₁						$\frac{1}{2}" \phi$ BARS T ₁ @ 18"			$\frac{1}{2}" \phi$ BARS T ₂ @ 18"			BARS U ₁ @ 9"			BARS U ₂ @ 9"			$\frac{1}{2}" \phi$ BARS W @ 12"			TOTAL						
SPAC	LGTH	WT.	NO.	SIZE	SPAC	LGTH	WT.	NO.	LGTH	WT.	NO.	LGTH	WT.	NO.	SIZE	LGTH	WT.	NO.	SIZE	LGTH	WT.	NO.	SIZE	LGTH	WT.	NO.	LGTH	WT.	WEIGHT.	
12"	5'-1"	95	28	$\frac{1}{2}" \phi$	12"	3'-11"	73	2	5'-6"	7	2	6'-0"	8	6	$\frac{1}{2}" \phi$	3'-6"	14	6	$\frac{1}{2}" \phi$	3'-1"	12	20	9'-10"	131						369
11"	6'-1"	146	36	$\frac{1}{2}" \phi$	11"	4'-3"	102	4	7'-3"	19	4	7'-9"	21	8	$\frac{1}{2}" \phi$	3'-6"	19	8	$\frac{1}{2}" \phi$	3'-1"	16	20	12'-9"	170						532
7"	7'-3"	329	68	$\frac{1}{2}" \phi$	7"	4'-10"	219	6	8'-11"	36	6	9'-5"	38	12	$\frac{1}{2}" \phi$	3'-6"	28	12	$\frac{1}{2}" \phi$	3'-1"	25	24	15'-3"	244						967
8"	8'-5"	597	68	$\frac{3}{8}" \phi$	8"	5'-5"	384	8	10'-8"	57	8	11'-2"	60	16	$\frac{1}{2}" \phi$	3'-6"	37	16	$\frac{1}{2}" \phi$	3'-1"	33	28	18'-4"	343						1597
7"	9'-10"	943	92	$\frac{5}{8}" \phi$	7"	6'-1"	583	8	12'-5"	66	8	12'-11"	69	16	$\frac{3}{4}" \phi$	4'-2"	70	16	$\frac{5}{8}" \phi$	3'-9"	63	28	20'-1"	376						2270
5'	11'-4"	1560	132	$\frac{3}{8}" \phi$	5 1/2"	6'-7"	906	10	14'-3"	95	10	14'-9"	99	20	$\frac{5}{8}" \phi$	4'-2"	87	20	$\frac{5}{8}" \phi$	3'-9"	78	32	21'-10"	467						3406
6"	12'-9"	2528	132	$\frac{3}{4}" \phi$	6"	7'-4"	1453	12	15'-11"	128	12	16'-5"	132	24	$\frac{3}{4}" \phi$	5'-0"	180	24	$\frac{3}{4}" \phi$	4'-7"	165	36	23'-8"	569						5325
5 1/2"	14'-4"	3444	160	$\frac{3}{4}" \phi$	5 1/2"	7'-11"	1903	12	17'-9"	142	12	18'-3"	146	24	$\frac{3}{4}" \phi$	5'-0"	180	24	$\frac{3}{4}" \phi$	4'-7"	165	36	25'-5"	611						6781
5"	15'-9"	4542	192	$\frac{3}{4}" \phi$	5"	8'-7"	2474	14	19'-6"	182	14	20'-0"	187	28	$\frac{3}{4}" \phi$	5'-0"	210	28	$\frac{3}{4}" \phi$	4'-7"	193	40	27'-1"	724						8720



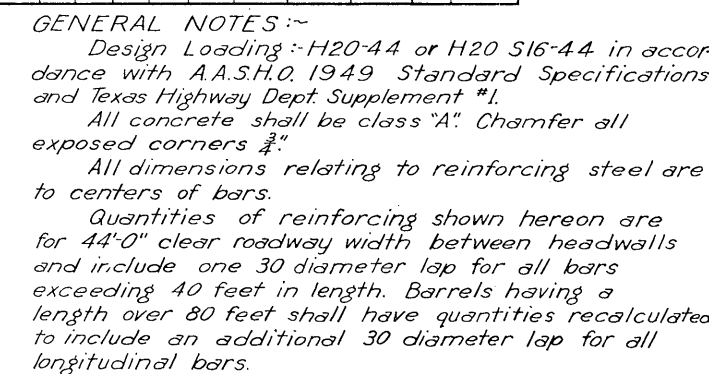
GENERAL NOTES:
 All Concrete shall be Class A. Chamfer all exposed corners 3/4".
 All dimensions relating to reinforcing steel are to centers of bars.
 Provide weepholes for H=5'-0" and greater.
 The bottom slab of the barrel, wing footings and toe walls shall be placed in one continuous operation.
 Wings shall be constructed monolithic with the barrel. If construction joints are used near the top of the barrel walls these joints shall continue through the wings.

TEXAS HIGHWAY DEPARTMENT
PARALLEL WINGS 30° SKEW
 FOR SINGLE BOX CULVERTS
 SIZES 3' x 2' TO 10' x 10'

PW-30°

DR. C.E. SWH	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
C.K. ON. WH.	ORIGINAL	JAN. 1950	6	TEXAS	F1-31(17)	253
CH. DW. K.M.						
CR. TR. A.O.B.						
CR. TR. MDA						

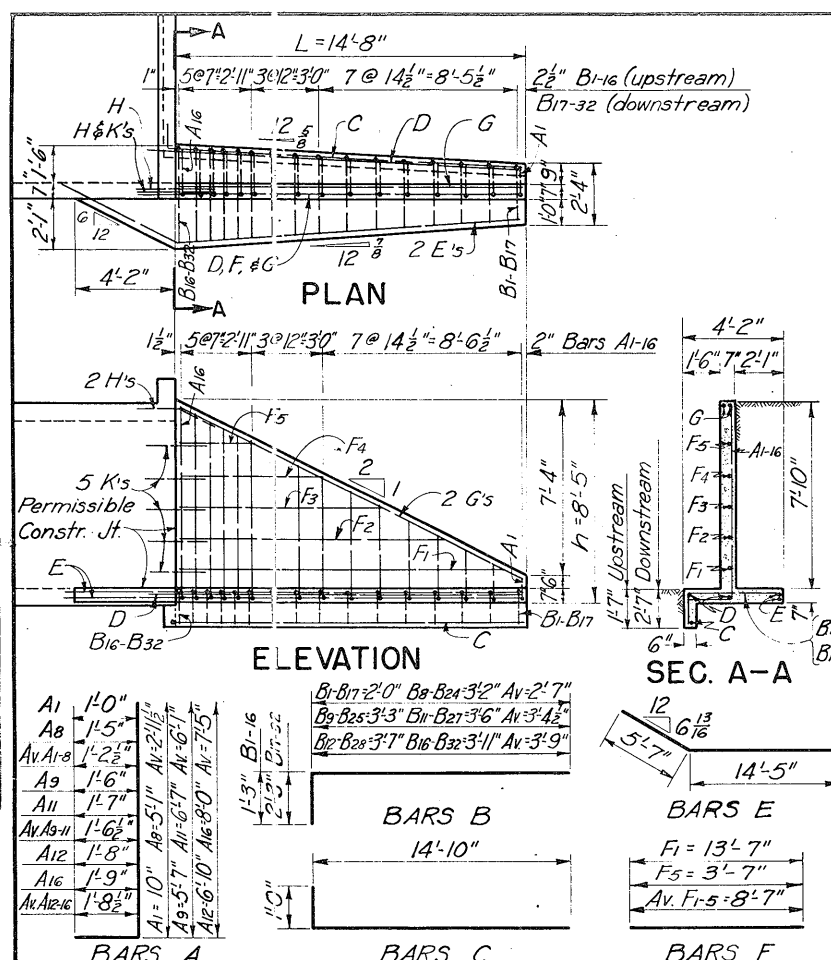
BARS C



TEXAS HIGHWAY DEPARTMENT
SINGLE CULVERT - 45° SKEW
6' x 3' TO 10' x 10'
HIGH FILL TYPES

SC 45° B & C

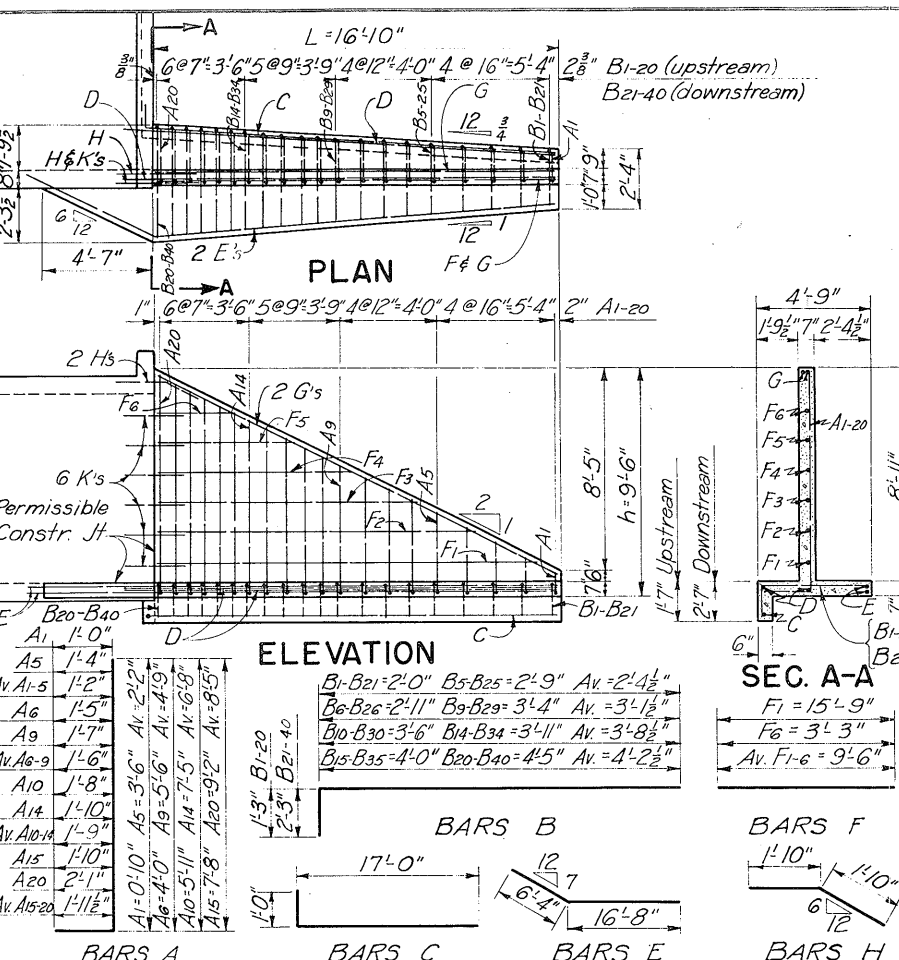
DN - W.H.	DRAWING	DATE	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET
CK DN - RMM			6	TEXAS	F1- 31(17)	255
DW - HLG						
CK DW - MDA			STATE DIST. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
TR. DW - AOB			15	BEXAR	16	7
						HIGHWAY NO.



ESTIMATED QUANTITIES-4 WINGS

ITEM	Unit	Quantity
Cl. A Concrete	Cu. Yd.	11.40
Reinforcing Steel	Lb.	896

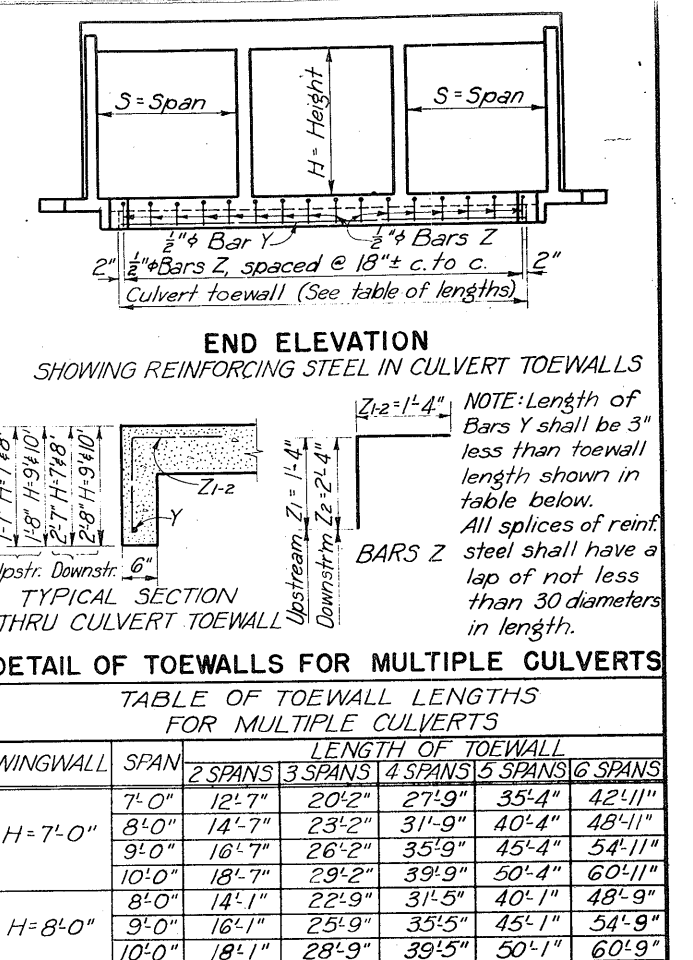
STRAIGHT WING WALLS FOR M.C.S.
H=7'-0"



ESTIMATED QUANTITIES-4 WINGS

ITEM	Unit	Quantity
Cl. A Concrete	Cu. Yd.	14.28
Reinforcing Steel	Lb.	1,303

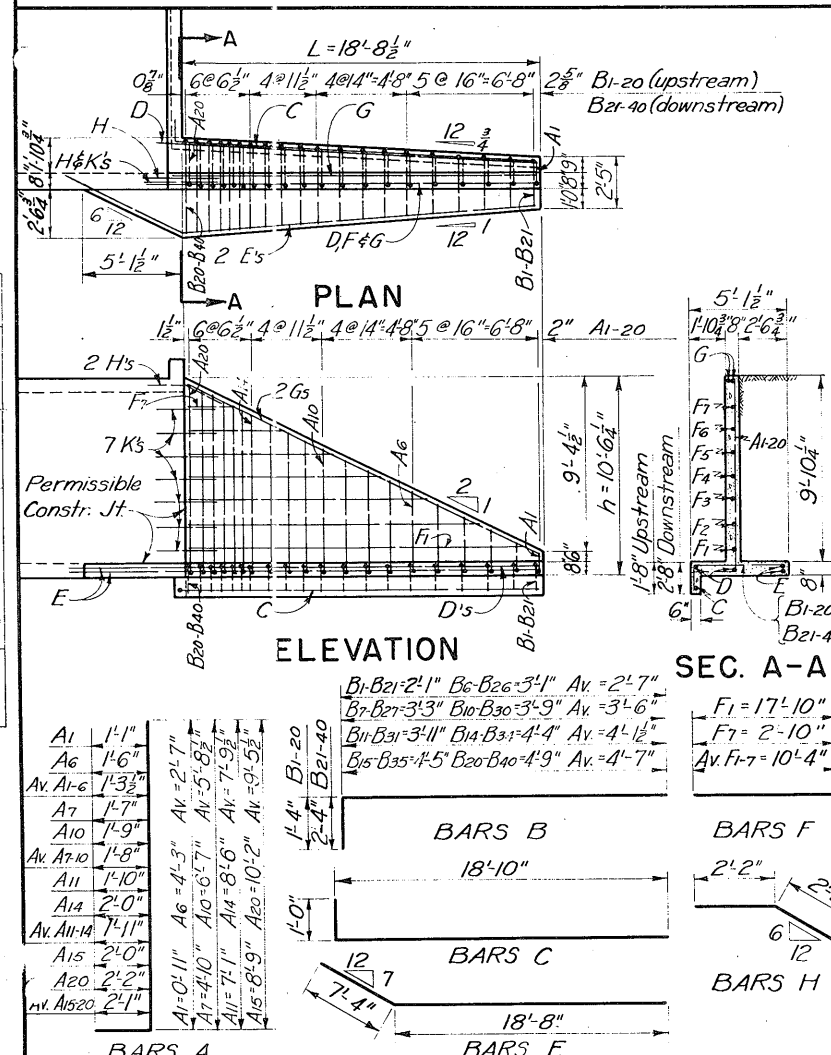
STRAIGHT WING WALLS FOR M.C.S.
H=8'-0"



ESTIMATED QUANTITIES-4 WINGS

ITEM	Unit	Quantity
Cl. A Concrete	Cu. Yd.	14.28
Reinforcing Steel	Lb.	1,303

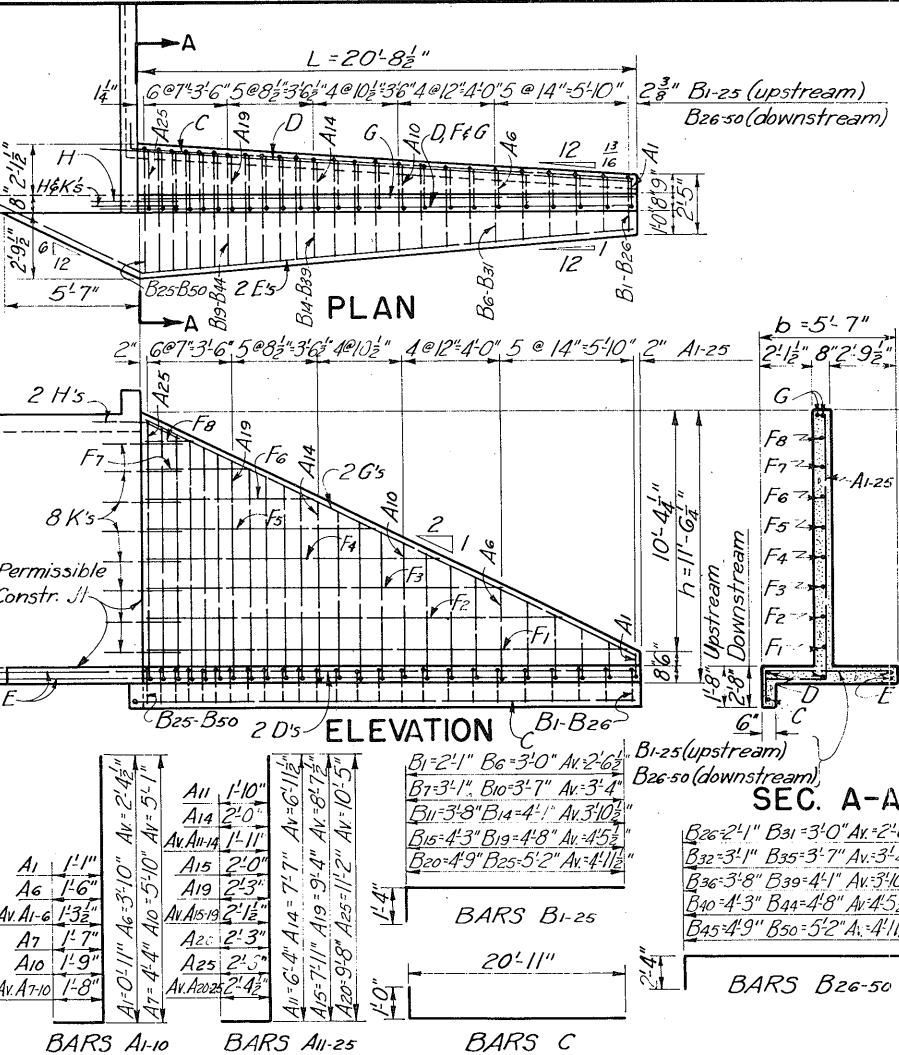
STRAIGHT WING WALLS FOR M.C.S.
H=9'-0"



ESTIMATED QUANTITIES-4 WINGS

ITEM	Unit	Quantity
Cl. A Concrete	Cu. Yd.	19.31
Reinforcing Steel	Lb.	1,804

STRAIGHT WING WALLS FOR M.C.S.
H=10'-0"



ESTIMATED QUANTITIES-4 WINGS

ITEM	Unit	Quantity
Cl. A Concrete	Cu. Yd.	22.92
Reinforcing Steel	Lb.	2,452

STRAIGHT WING WALLS FOR M.C.S.
H=10'-0"

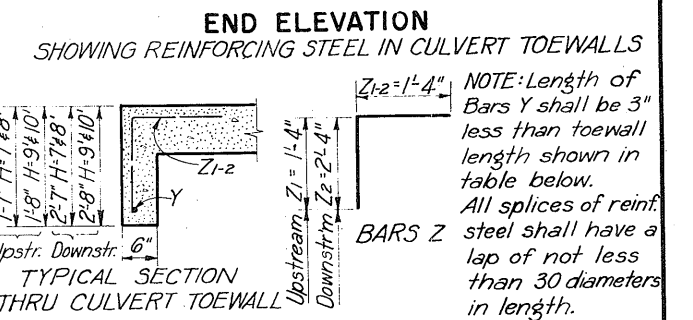


TABLE OF TOEWALL LENGTHS FOR MULTIPLE CULVERTS						
WINGWALL	SPAN	LENGTH OF TOEWALL				
		2 SPANS	3 SPANS	4 SPANS	5 SPANS	6 SPANS
H=7'-0"	7'-0"	12'-7"	20'-2"	27'-9"	35'-4"	42'-11"
	8'-0"	14'-7"	23'-2"	31'-9"	40'-4"	48'-11"
	9'-0"	16'-7"	26'-2"	35'-9"	45'-4"	54'-11"
	10'-0"	18'-7"	29'-2"	39'-9"	50'-4"	60'-11"
H=8'-0"	8'-0"	14'-1"	22'-9"	31'-5"	40'-1"	48'-9"
	9'-0"	16'-1"	25'-9"	35'-5"	45'-1"	54'-9"
	10'-0"	18'-1"	28'-9"	39'-5"	50'-1"	60'-9"
H=9'-0"	9'-0"	15'-10 ¹ / ₂ "	25'-6 ¹ / ₂ "	35'-2 ¹ / ₂ "	44'-10 ¹ / ₂ "	54'-6 ¹ / ₂ "
	10'-0"	17'-10 ¹ / ₂ "	28'-6 ¹ / ₂ "	39'-2 ¹ / ₂ "	49'-10 ¹ / ₂ "	60'-6 ¹ / ₂ "
H=10'-0"	10'-0"	17'-5"	28'-1"	38'-9"	49'-5"	60'-1"

ESTIMATED QUANTITIES 2 TOEWALLS FOR MULTIPLE CULVERTS											
WINGWALL	SPAN	2 SPANS		3 SPANS		4 SPANS		5 SPANS		6 SPANS	
		Conc. C.Y.	Reinf. Lb.	Conc. C.Y.	Reinf. Lb.	Conc. C.Y.	Reinf. Lb.	Conc. C.Y.	Reinf. Lb.	Conc. C.Y.	Reinf. Lb.
H=7'-0"	7'-0"	068	54	109	86	150	118	191	149	232	180
	8'-0"	079	66	125	99	172	135	218	172	265	207
	9'-0"	093	72	147	111	201	153	255	193	309	232
	10'-0"	100	79	158	124	215	167	272	213	329	257
H=8'-0"	8'-0"	078	61	126	98	175	135	223	172	271	206
	9'-0"	091	71	145	110	199	149	254	193	308	231
	10'-0"	098	79	155	123	219	166	271	212	329	256
H=9'-0"	9'-0"	089	68	144	110	198	149	253	192	307	231
	10'-0"	097	79	154	123	212	166	270	212	327	256
H=10'-0"	10'-0"	094	78	152	123	209	166	267	212	325	256

GENERAL NOTES:
Design: Wing Walls designed in accordance with Rankine's theory of retaining wall design. Elements of design are shown on sketch at right.
All concrete shall be Class A. Chamfer all exposed corners 1/4" unless specified otherwise.
All dimensions relating to reinforcing steel are to centers of bars.
Toewalls for wingwalls and culverts shall be omitted when structure is founded on solid rock.

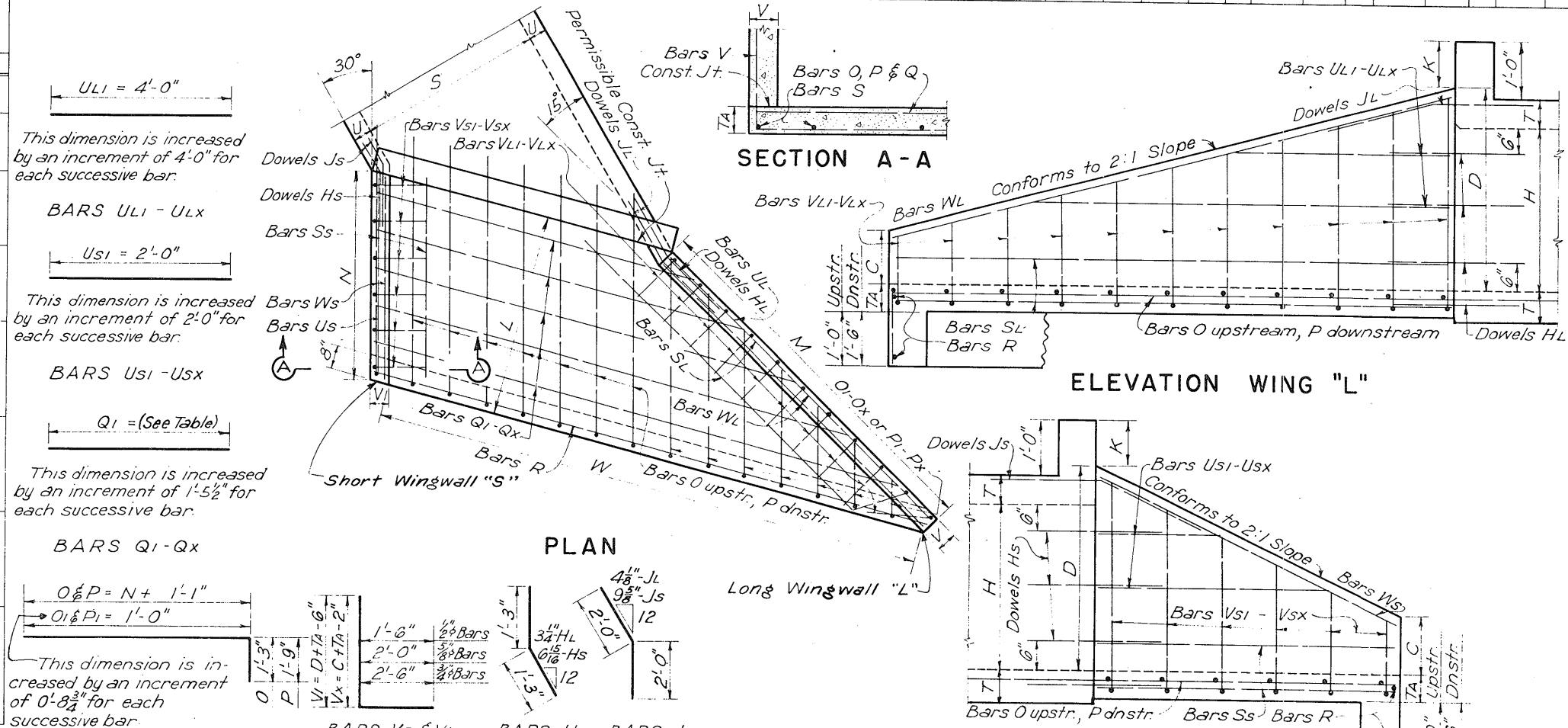
TEXAS HIGHWAY DEPARTMENT
STRAIGHT WING WALLS FOR MULTIPLE CULVERTS
H=7'-0" TO 10'-0" INCL.
FMCW-S2

ON: A.B.L. DRAWING: Original DATE: Jan 1950
CK: N.R.B. DW: A.B.L. Rev Oct 1950-Dimen. H=8'
TR: C.W.W. CK: W.H.B.

FED. ROAD DIST. NO. 6 STATE TEXAS FEDERAL AID PROJECT NO. F1-1088(2) SHEET NO. 256
COUNTY DEXAR HIGHWAY 17 10 13 U.S. 81

CULVERT SIZE	TABLE OF DIMENSIONS										TABLE OF REINFORCING STEEL FOR 2 WINGS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	S	H	L	M	N	V	W	C	D	TA	TYPE			TOTAL QUANT.		Bars H ^{1/2} 2' 6" Long @ 12"		8 Bars J 4' x 4' 0"		Bars O 2' 6" @ 12"		Bars O1-Ox 2' 6" @ 12"		Bars P 2' 6" @ 12"		Bars P1-Px 2' 6" @ 12"		Bars Q1-Qx 2' 6" @ 12"				Bars R 4'-2"		Bars Ss 2' 6"		Bars SL 2' 6"		Bars Us 2' 6"		Bars UL 2' 6"		Bars Vs-1-Vs-x				Bars VL-1-VL-x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
											A	B	C	Conc.	Steel	2' 6" Long @ 12"	4' x 4' 0"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"	2' 6" @ 12"

LVERT SIZE		4-Bars Ws			4-Bars Wl			
S	H	Size	Lgth.	Wt.	Size	Lgth.	Wt.	
3x		2	3'-9"	10	2	6'-1"	16	
4x		2	3'-9"	10	2	6'-1"	16	
5x		2	3'-9"	10	2	6'-1"	16	
6x		2	3'-9"	10	2	6'-1"	16	
7x		2	3'-9"	10	2	6'-1"	16	
8x		2	3'-9"	10	2	6'-1"	16	
9x		2	3'-9"	10	2	6'-1"	16	
10x		2	3'-9"	10	2	6'-1"	16	



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 3/4" except as otherwise noted.
 Quantities of reinforcing steel include one 30 diameter lap for all bars exceeding 40' in length.

TEXAS HIGHWAY DEPARTMENT
FLARED WINGS - 45° SKEW
 FOR SINGLE BOX CULVERTS
 SIZES 3'X2' TO 10'X10'

FW-45°

NO.	REV.	DATE	BY	CHECKED
1	1	10-1-58	W. J. G.	W. J. G.
2	1	10-1-58	W. J. G.	W. J. G.
3	1	10-1-58	W. J. G.	W. J. G.
4	1	10-1-58	W. J. G.	W. J. G.
5	1	10-1-58	W. J. G.	W. J. G.
6	1	10-1-58	W. J. G.	W. J. G.
7	1	10-1-58	W. J. G.	W. J. G.
8	1	10-1-58	W. J. G.	W. J. G.
9	1	10-1-58	W. J. G.	W. J. G.
10	1	10-1-58	W. J. G.	W. J. G.

TABLE OF DIMENSIONS AND QUANTITIES FOR TWO TYPE B HEADWALLS

57

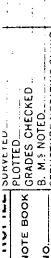
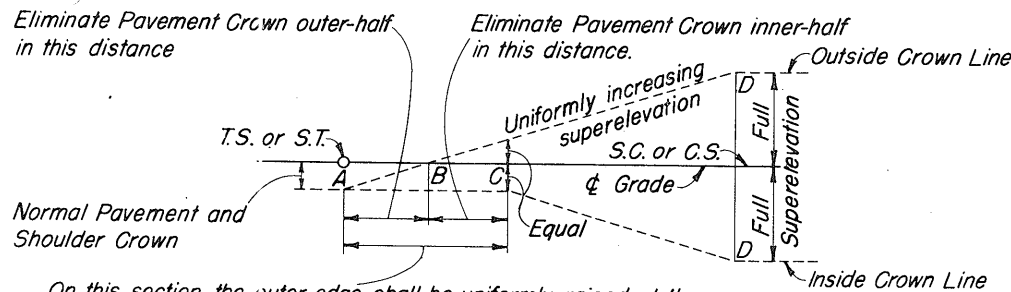
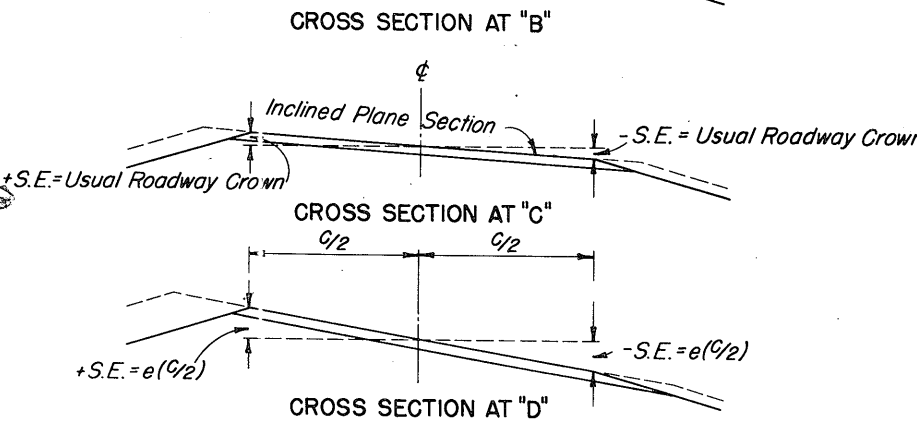
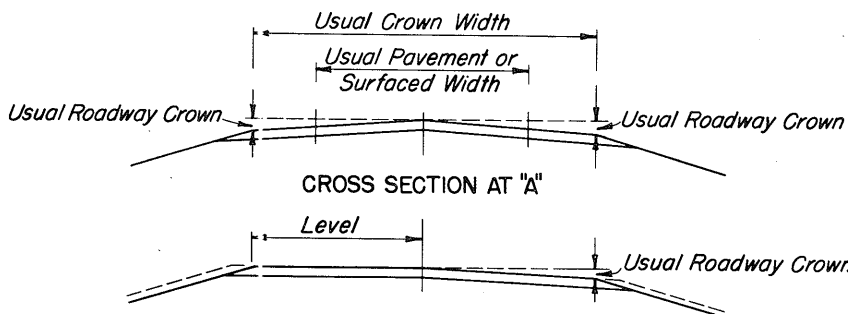


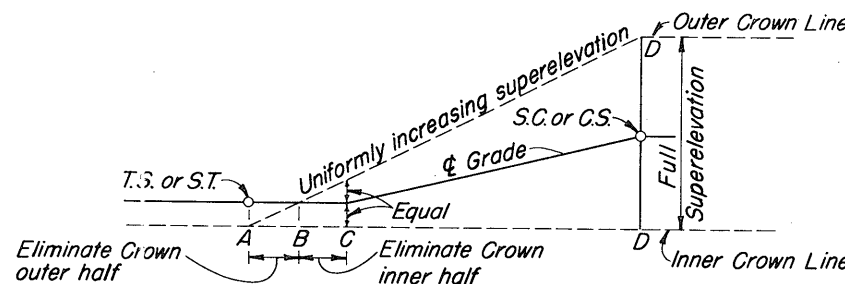
TABLE OF DIMENSIONS										BILL OF REINFORCING STEEL FOR TWO COMPLETE HEADWALLS																				* TOTAL QUANTITIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
NO. OF PIPE	PIPE DIA.	D	G	K	X	H	Y	W	S	L	BARS A1-Ax 1/2" φ @ 12" ±		BARS B 3/8" φ @ 15" ±		BARS B1-Bx 3/8" φ @ 15"		CS-2'0" CI-2'0" 1/2" φ @ 12" 1/2" φ @ 12" ±		BARS DSI-Dsx 3/8" φ @ 12" ±		BARS DLI-DLx 3/8" φ @ 12" ±		BARS E 8-3/8" φ		BARS F		BARS G 4-3/8" φ		BARS Ss 6-1/2" φ		BARS SL 6-1/2" φ		BARS Vsi-Vsx 1/2" φ @ 12" ±		BARS VLi-VLx 1/2" φ @ 12" ±		BARS Ws 2-3/8" φ		BARS WL 2-3/8" φ		STEEL		CONC.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
											No.	Av. Lgth.	Wt.	No.	Lgth.	Wt.	No.	Av. Lgth.	Wt.	No.	Wt.	No.	Wt.	No.	Av. Lgth.	Wt.	Lgth.	Wt.	No.	Size	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	Lgth.	Wt.	LBS.	C.Y.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
1	12"	~	12"	3'1 3/8"	2'0"	1'0"	2'10 3/8"	1'0"	11"		2	3'2"	4	6	2'6"	6	-	-	-	2	3	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



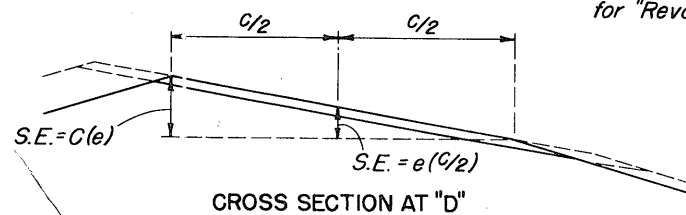
On this section, the outer edge shall be uniformly raised at the same rate as the superlevation is introduced on the remainder of the transition, until an inclined plane section is attained at "C", with the outer edge above the center by the same amount as the normal crown. Minus superlevation of inner edge shall then begin.



REVOLVED ABOUT CENTER LINE



Note: Cross Sections at A, B, & C are the same as shown above for "Revolved About Center Line."



REVOLVED ABOUT INNER CROWN LINE

SUPERELEVATION WIDENING & SPIRAL TABLES

TABLE 1 PRIMARY HIGHWAYS

D	e	W		Ls	Θs	p	K	Xc	Yc
		20' PVT.	22' PVT.						
0 to 1°00'		0.0	0.0						
1°00'	.02	0.0	0.0						
1°30'	.03	0.0	0.0						
2°00'	.05	0.0	0.0	300	3.00	1.31	150.0	299.9	5.24
2°30'	.06	2.0	0.0	360	4.50	2.35	180.0	359.8	9.42
3°00'	.07	2.0	0.0	400	6.00	3.49	199.9	399.6	13.95
3°30'	.08	4.0	2.0	440	7.70	4.93	219.9	439.2	19.69
4°00'	.09	4.0	2.0	500	10.00	7.26	249.7	498.5	29.02
4°30'	.10	4.0	2.0	500	11.25	8.17	249.7	498.1	32.64
5°00'	.10	4.0	2.0	500	12.50	9.08	249.6	497.6	36.24

TABLE 2 FEEDER ROADS

D	e	W		Ls	Θs	p	K	Xc	Yc
		20' PVT.	22' PVT.						
0 to 1°00'		0.0	0.0						
1°00'	.02	0.0	0.0						
1°30'	.03	0.0	0.0						
2°00'	.04	0.0	0.0	240	2.40	0.84	120.0	240.0	3.35
2°30'	.04	2.0	0.0	260	3.25	1.22	130.0	259.9	4.91
3°00'	.04	2.0	0.0	300	4.50	1.96	150.0	299.8	7.85
3°30'	.04	4.0	2.0	300	5.25	2.29	150.0	299.8	9.16
4°00'	.05	4.0	2.0	300	6.00	2.62	149.9	299.7	10.46
4°30'	.05	4.0	2.0	300	6.75	2.94	149.9	299.6	11.77
5°00'	.05	4.0	2.0	300	7.50	3.27	149.9	299.5	13.07
6°00'	.06	4.0	2.0	360	10.80	5.64	179.8	358.7	22.56
7°00'	.07	4.0	2.0	400	14.00	8.12	199.6	397.6	32.43
8°00'	.08	4.0	2.0	440	17.60	11.21	219.3	435.9	44.74
9°00'	.08	4.0	2.0	440	19.80	12.61	219.1	434.7	50.25
10°00'	.08	4.0	2.0	440	22.00	13.99	218.9	433.6	55.72

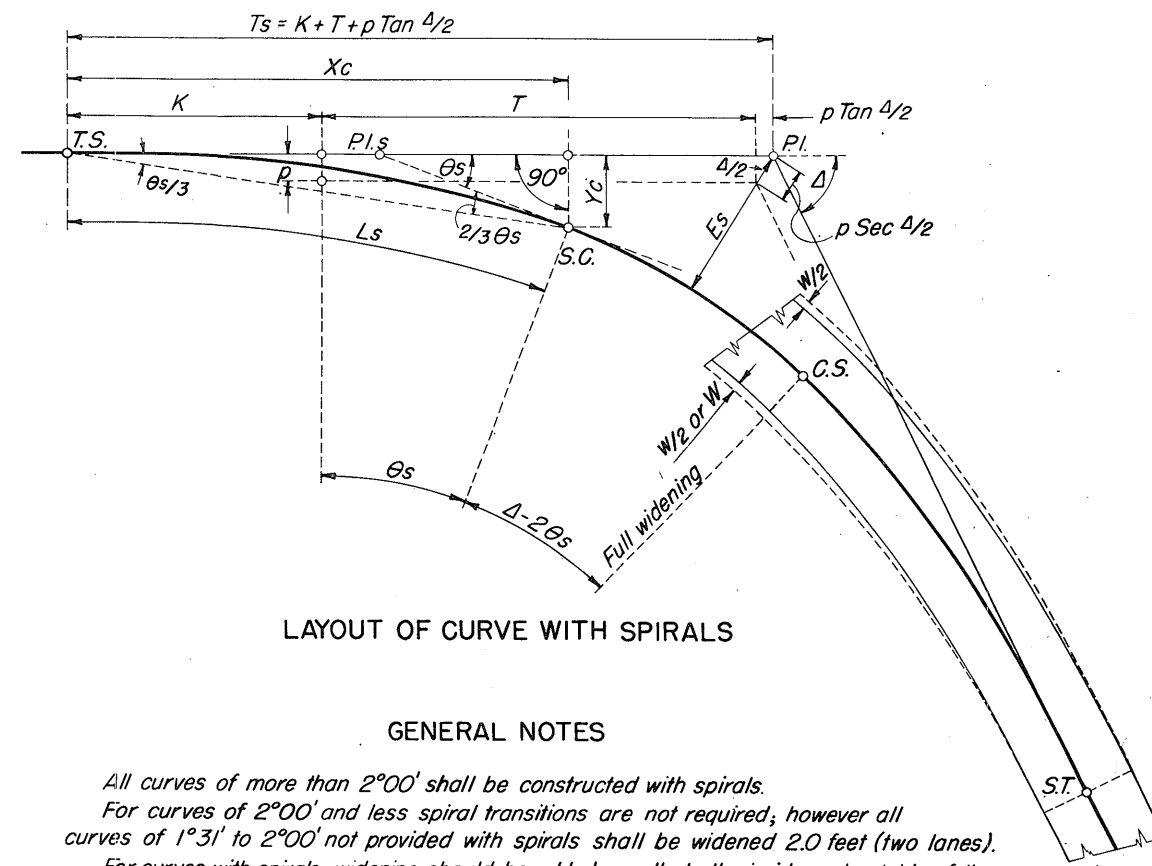
SYMBOLS & FORMULAE

P.I. = Point of intersection of the main tangents.
 Δ = Intersection angle between the main tangents of the entire curve.
D = Degree of the circular curve.
R = Radius of the circular curve.
E = External of the circular curve.
T.S. & S.T. = "Tangent to Spiral" and "Spiral to Tangent," common point of tangent and spiral.
S.C. & C.S. = "Spiral to Curve" and "Curve to Spiral," common point of circular curve and spiral.
S.C.S. = "Spiral to Curve to Spiral," common point of end and beginning transitions of curve transitional throughout.
e = Full superlevation per foot of crown width.
W = Total extra widening through the circular portion of the curve.
 Θ_s = The spiral angle = $LsD/200$. Intersection angle between the tangent of the complete curve and the tangent at the S.C. or C.S.
Ls = Length of spiral (or length of transition for superlevation and widening of circular curves).
L.C. = Straight line chord distance, T.S. to S.C. or S.T. to C.S.
Xc = Distance from the T.S. to a point on the main tangent opposite the S.C. = $Ls - .00003Ls(\Theta_s)^2$
Yc = Right angle distance from a point on the tangent opposite the S.C. to the S.C. = $Xc \tan^{\Theta_s/3}$
Ts = Tangent distance P.I. to T.S. or P.I. to S.T. = $K + T + (p \tan \frac{1}{2}\Delta)$.
T = Tangent of circular curve.
K = Distance from the T.S. or S.T. to a point on the tangent opposite the P.C. or P.T. of the circular curve produced = $Xc - R \sin \Theta_s$.
p = Offset distance of the circular curve from the tangent = $.00000727 (Ls)^2 D$ or approximately $\frac{1}{4} Yc$.
Es = External of the offset circular curve = $E + p \sec \frac{1}{2}\Delta$.

DETAILS FOR ATTAINING SUPERELEVATION

Superelevation values ("e") shown in the tables are superelevations per foot of pavement width to be obtained at the S.C. and C.S. and throughout the circular curve. Superelevation for any point on the spiral is to be obtained in accordance with the diagrams shown above except in cases where center lines of curves are not on uniform grade, in which case a profile of the outer and inner crown lines are to be plotted and the grades adjusted to secure a satisfactory riding surface and appearance. On rigid pavement types, where the crown is to be left in the pavement, the plane referred to in the diagram shall be construed to mean a plane through the pavement edges.

Short vertical curves may be inserted if desired, at points "A," "C," and "D." They may be inserted by eye adjustment of stakes or forms in the field. (See diagrams).



LAYOUT OF CURVE WITH SPIRALS

GENERAL NOTES

All curves of more than 2°00' shall be constructed with spirals.
For curves of 2°00' and less spiral transitions are not required; however all curves of 1°31' to 2°00' not provided with spirals shall be widened 2.0 feet (two lanes).
For curves with spirals, widening should be added equally to the inside and outside of the pavement.
For curves without spirals, the widening shall be added to the inside of the pavement.
Center stripes shall always be placed to divide the pavement equally between the traffic lanes.
The widening on transitions shall begin at the T.S. with zero, shall increase uniformly to a maximum at the S.C. or C.S., shall remain constant throughout the circular portion of the curve and diminish to zero at the S.T.
In constructing one half the widening on the outside of spiraled curves, the tangent outside edge of the pavement shall be extended and adjusted into the curve of the widened spiral to avoid a reversal of curvature near the T.S.
Curves for which spiral transitions are not provided shall have the superlevation and widening introduced in the same manner and over the same length as the preferred lengths of spirals given in the tables.
A straight line slope shall be used on all superelevated curves, except for rigid pavements on curves of 2°30' and less, where the normal pavement crown shall be retained, unless otherwise provided in the plans.
The width of traffic lanes on curves shall not be less than 10', 11', or 12' as given in the tables for the respective degrees of curve, regardless of the normal pavement width.
For pavements with normal lane widths of 12' or more, widening in excess of the normal lane width is not required, but may be used if conditions warrant.
The spiral lengths shown in Tables 1 and 2 are preferred lengths and are based on an acceleration rate of 2 feet per second per second toward the center of the curve, modified to restrict the rise of the outside crown line to a slope of 1/250 with respect to the centerline grade. (Revolving about the centerline). The crown width is assumed as 36' for Table 1 and 30' for Table 2 and the crown slope as $\frac{3}{16}$ " per ft.
Where superlevation is revolved about the inner crown line the preferred transition lengths given in the Tables are approximately correct; however the transition length shall be such that the slope of the rise of the outside crown with respect to the inside crown shall not exceed 1/150.
Maximum safe speed in miles per hour = $\sqrt{15R(e + 0.15)}$.

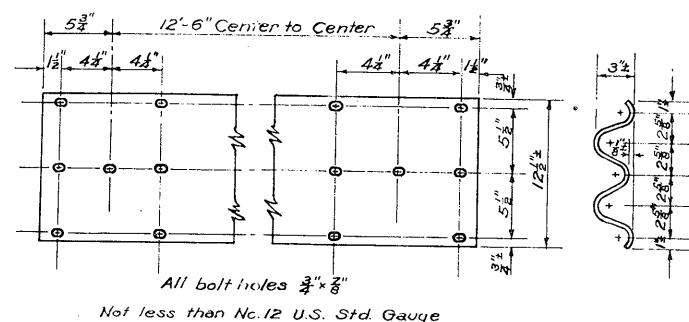
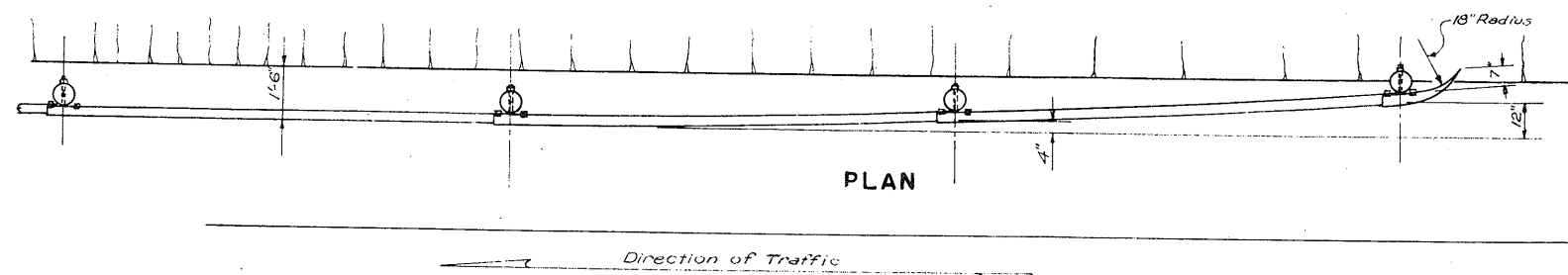
FOR SPIRAL LENGTH TO BE USED ON THIS PROJECT AND OTHER IDENTIFYING DATA, REFER TO PLAN-PROFILE SHEETS OR TO THE TYPICAL CROSS SECTION SHEET.

TEXAS STATE HIGHWAY DEPARTMENT CURVE STANDARD FOR SUPERELEVATION, WIDENING & SPIRAL TRANSITIONS

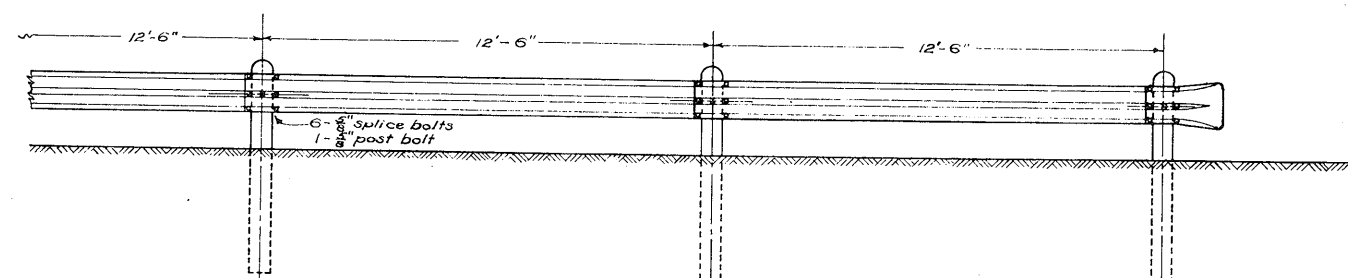
SWC - 39

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS		261
STATE DIST. NO.	COUNTY	CONTROL SECTION NO.	JOB NO.
	Bexar		

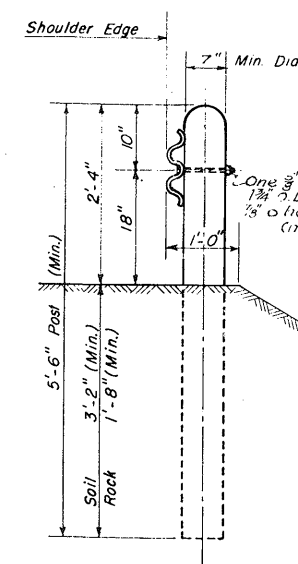
REVISED OCTOBER, 1945



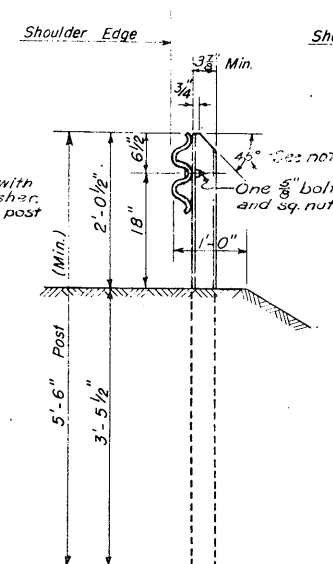
DETAIL OF PLATE



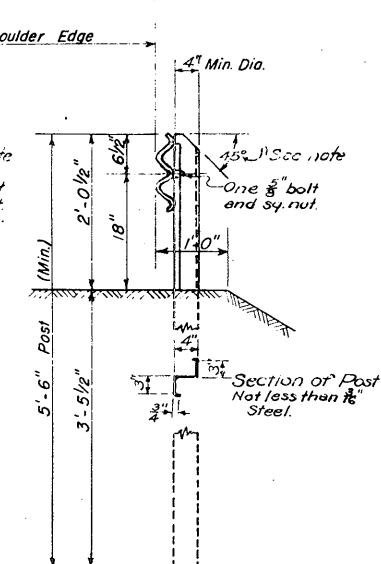
ELEVATION



WOOD POST

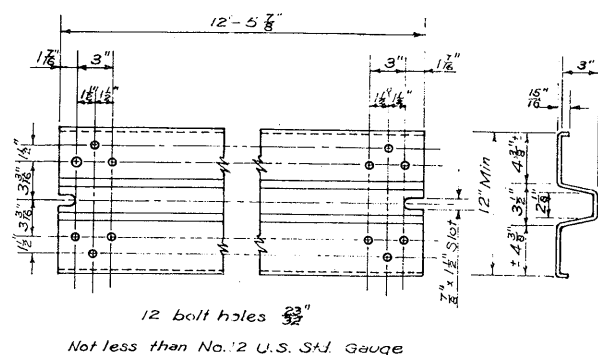
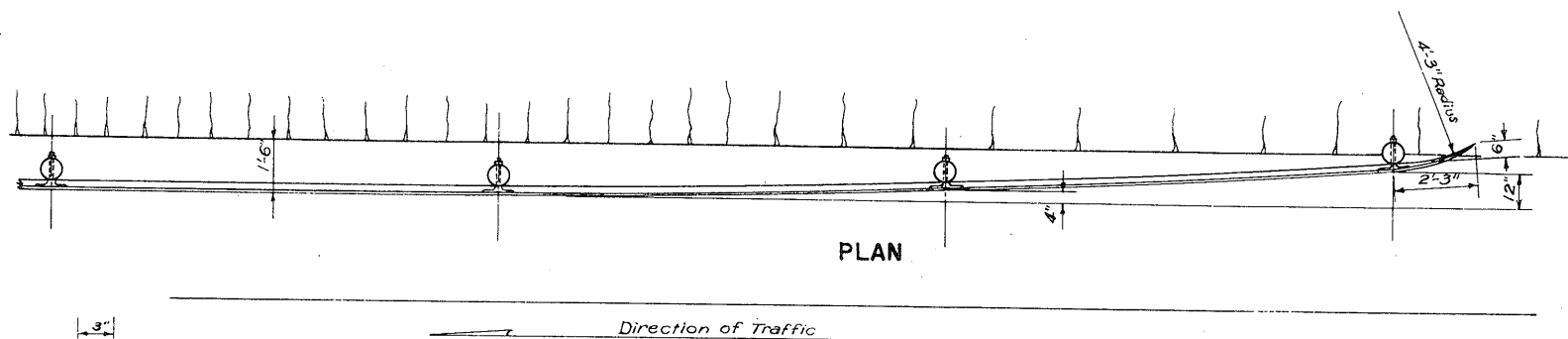


STEEL POSTS

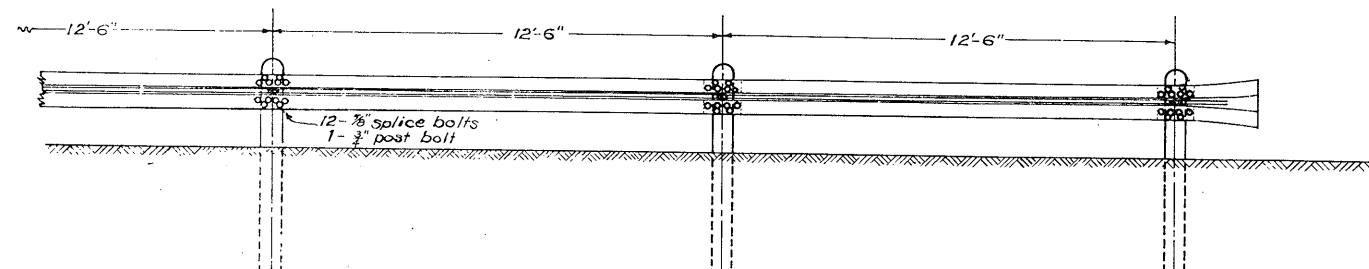


I-4"x 7.5# x 5'-6" long 4" L Pressed Steel Post 5'-6" long

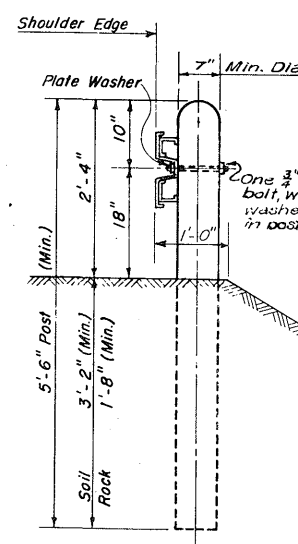
TYPE 5 FLEX BEAM



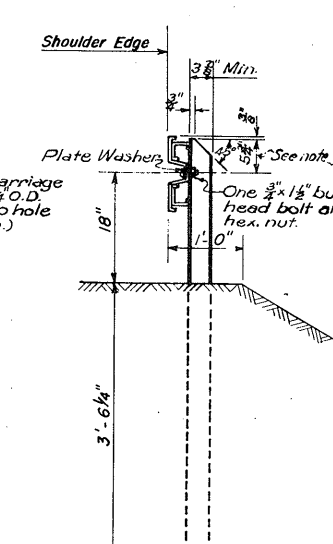
DETAIL OF PLATE



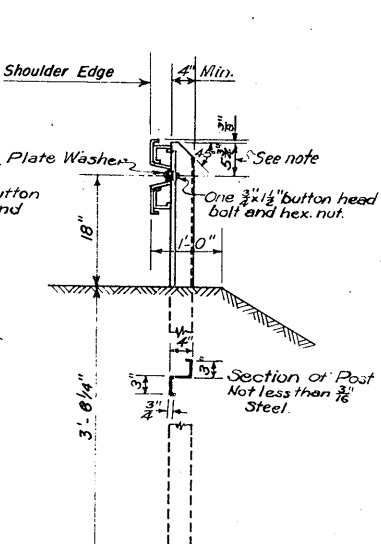
ELEVATION



WOOD POST

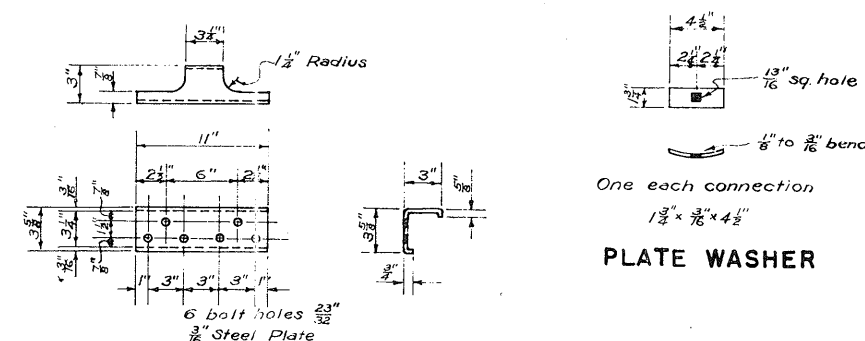


STEEL POSTS



I-4"x 7.5# x 5'-6" long 4" L Pressed Steel Post 5'-6" long

TYPE 6 SAFETY BEAM



DETAIL OF ANGLE CONNECTION

GENERAL NOTES

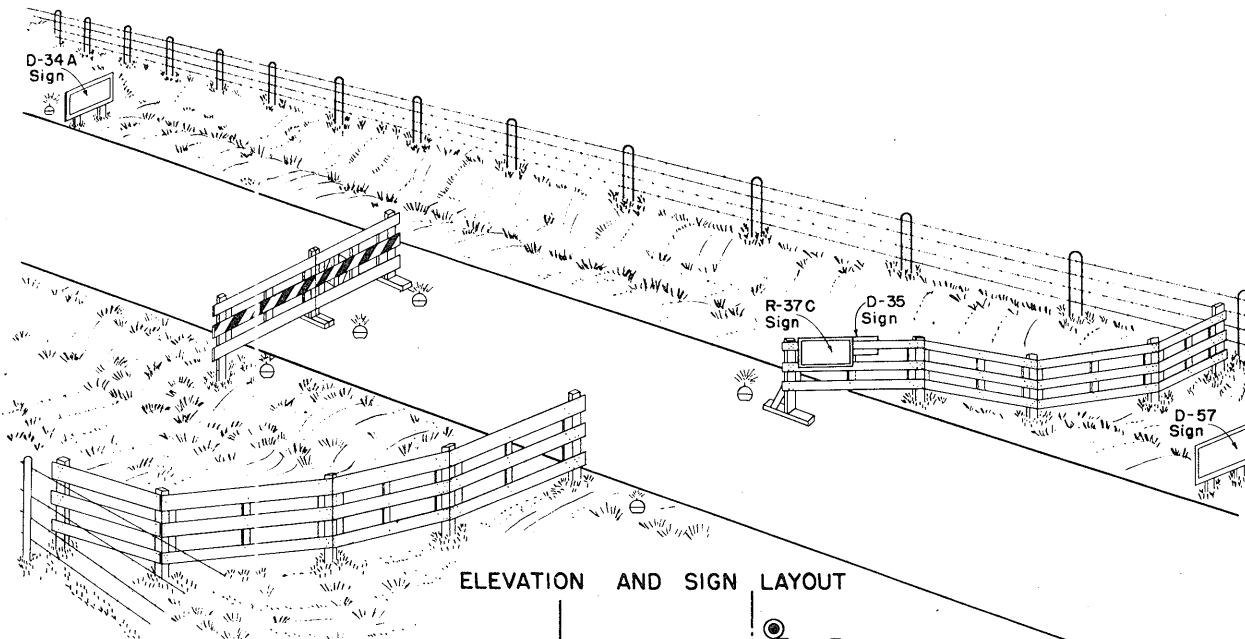
See Specifications for Material Requirements and Construction Methods.
Detail Drawings and samples of plate and fittings must be submitted to and approved by the Texas Highway Department.
The type of Guard Rail Plate and type of Post selected by the Contractor shall be used uniformly throughout the job.
Where Guard Fence Plate sections are specified for Bridge Railing, the same type of Guard Fence Plate shall be used for Guard Fence connecting to the bridge rail.
Each end of each length of Guard Fence shall flare out from the roadway center line as detailed, except guard fence terminating at bridges. In this case construct according to details in plans.
Bolts for attachment of rail to posts shall be of sufficient length to extend the full thickness of the nut, and shall not project more than $\frac{3}{4}$ " beyond the nut.
Square steel plate washers, not less than $1\frac{1}{2}$ " on a side, will be permitted in lieu of the round washers shown.
Square top steel posts may be used in lieu of beveled posts.

TEXAS STATE HIGHWAY DEPARTMENT STEEL PLATE GUARD FENCE BEAM TYPES

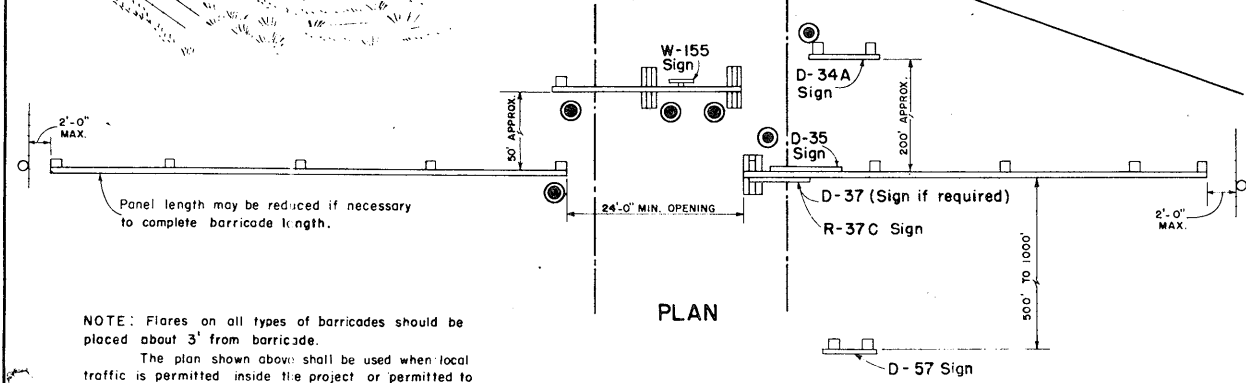
GF-52

REVISIONS			
DATE	DESCRIPTION	BY	APPROVED

STATE	COUNTY	SECTION	PROJECT NO.	DATE
TEXAS	FL-31(17)	FI-1080(2)	FBI(18)	262
15	DEXAR	16,17	7,10	13,25,34 U.S.C.



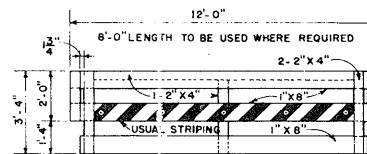
ELEVATION AND SIGN LAYOUT



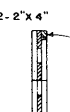
PLAN

BARRICADE "A"

NOTE: Flares on all types of barricades should be placed about 3' from barricade.
The plan shown above shall be used when local traffic is permitted inside the project or permitted to use the road beyond the intersection with the temporary route.
Diagonal black stripes and $\frac{3}{4}$ " clear reflector buttons are required only on panels and gates across the travelway.

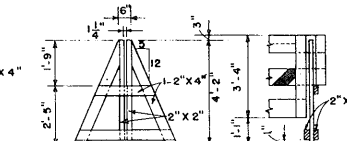


FRONT VIEW

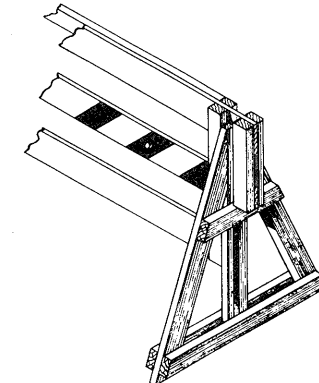


SECTION

PANEL

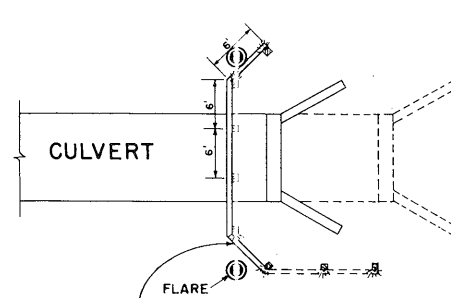


STAND



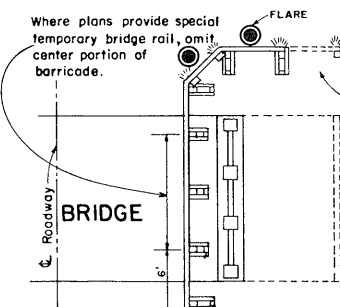
ASSEMBLY

BARRICADE "C"



CULVERT

FLARE



BRIDGE

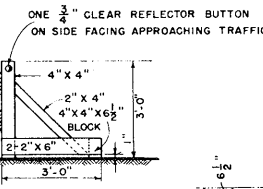
Where plans provide special temporary bridge rail, omit center portion of barricade.

One $\frac{3}{4}$ " clear reflector button in each end post facing approaching traffic.

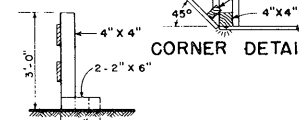
Use posts instead of stands when possible.

See striping detail for skewed panel.

BARRICADE "F"

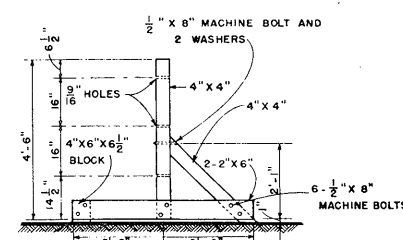


STAND

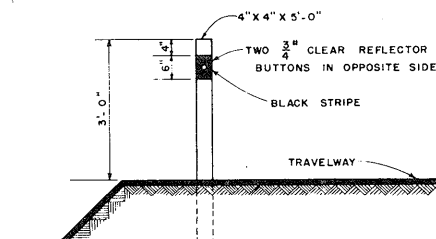


CORNER DETAIL

MODIFIED STAND FOR NARROW BRIDGE
DETAILS FOR BARRICADE "F"

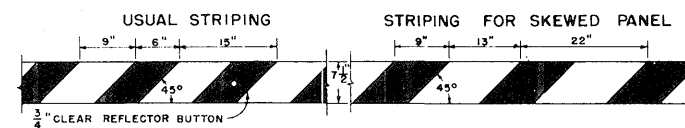


STAND FOR "B"
(OPTIONAL FOR "A" & "D")

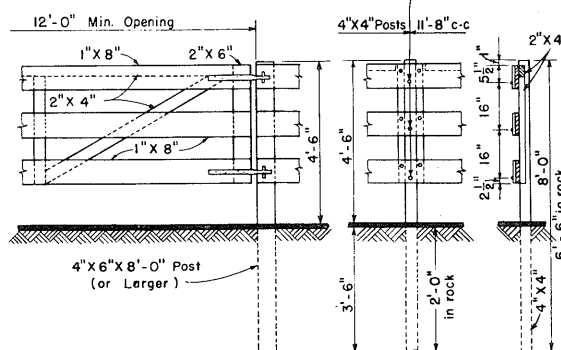


POST
BARRICADE

HOLD-DOWN STRAP FOR "A", "B" & "D"



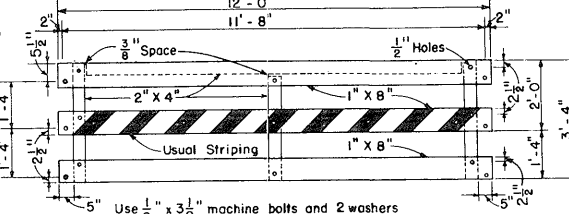
DETAILS OF STRIPING



TYPICAL GATE CONSTRUCTION
FOR BARRICADE "A"

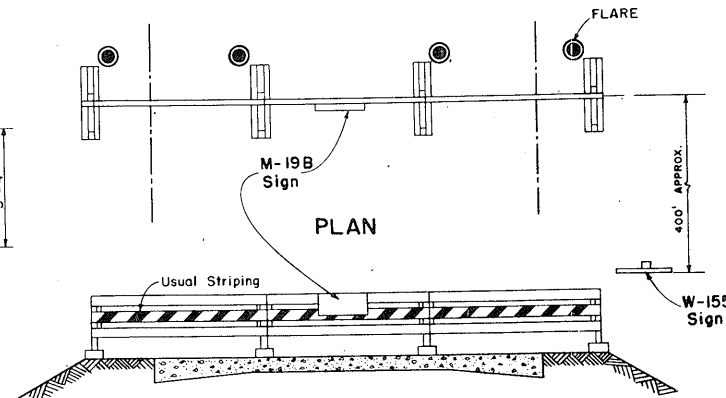
NOTE: When the road is closed to all traffic one panel and gate section shall be used to form a continuous barricade across the right-of-way.

POST
FOR "A" & "D"
PANELS



PANEL FOR "A", "B" & "D"

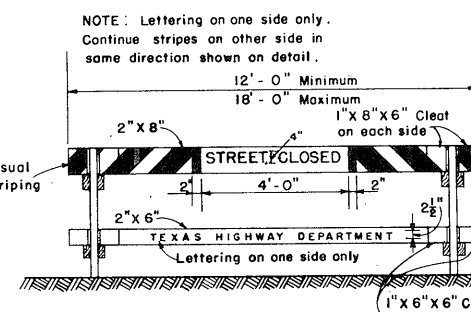
NOTE: Diagonal black stripes and $\frac{3}{4}$ " clear reflector buttons to be used as specified under each barricade.



ELEVATION

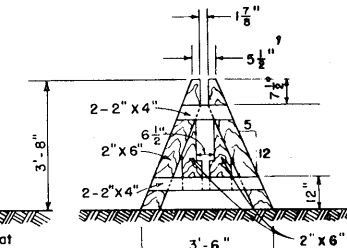
NOTE: Diagonal black stripes and $\frac{3}{4}$ " clear reflector buttons are required on each panel.

BARRICADE "B"

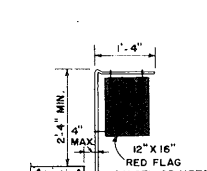


ELEVATION

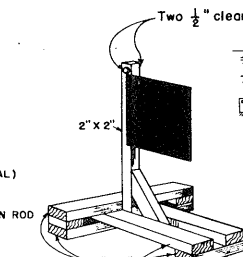
BARRICADE "E"



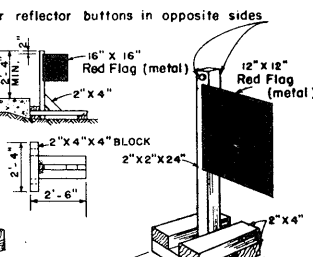
STAND



FLAG STAKE



FLAG STAND "A"



FLAG STAND "B"

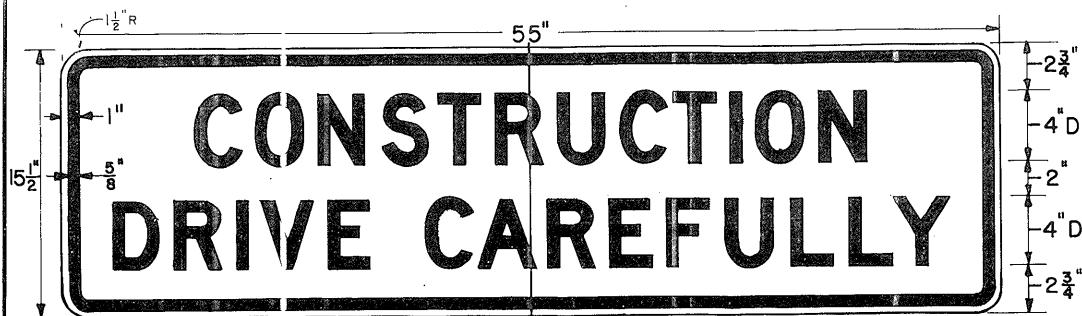
TEXAS HIGHWAY DEPARTMENT

BARRICADE & WARNING SIGNS

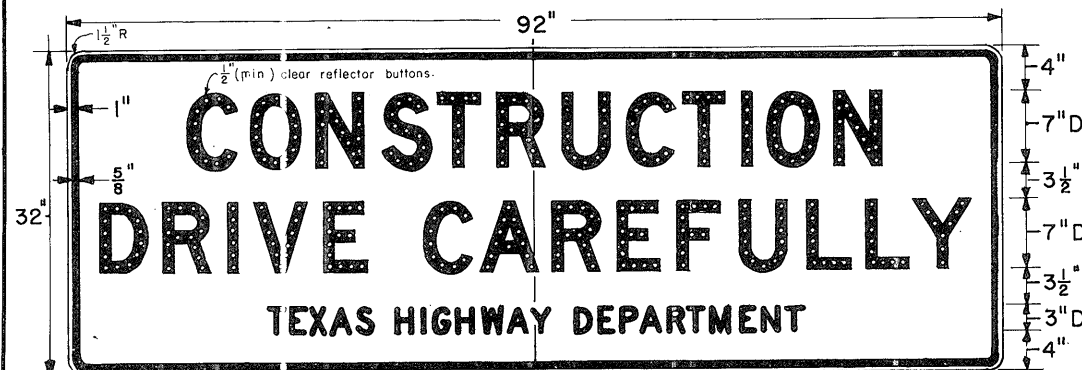
SHEET 1 OF 2

BW 54 (1)

DN.	S.H.D.	DRAWING	DATE	FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
CK. DN.	R.B.B.			6	TEXAS	F1-31(17), F1-1088(1), F31(18)	263
CK. DW.	E.W.D.				COUNTY	CONT. SECT. JOB	NO.
TR.	R.B.B.			15	DEKAR	16, 17, 10, 13, 14	U.S. 81
CK. TR.	E.W.D.						



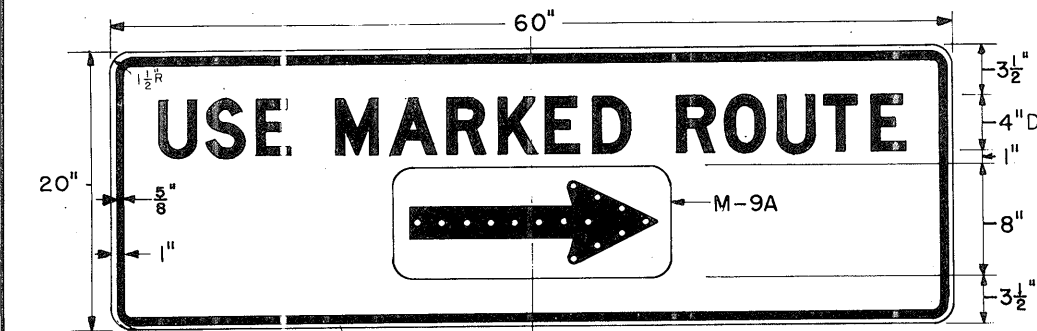
D-34



D-34 A



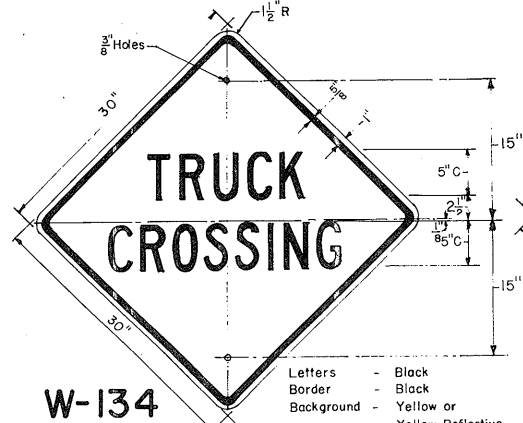
D-35



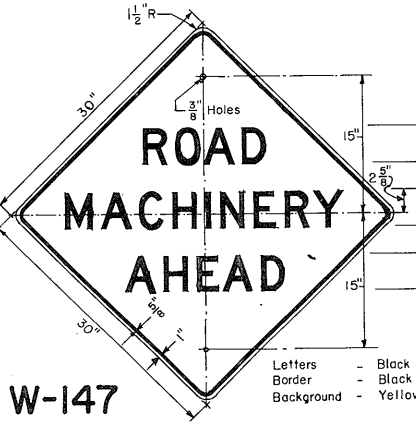
D-37



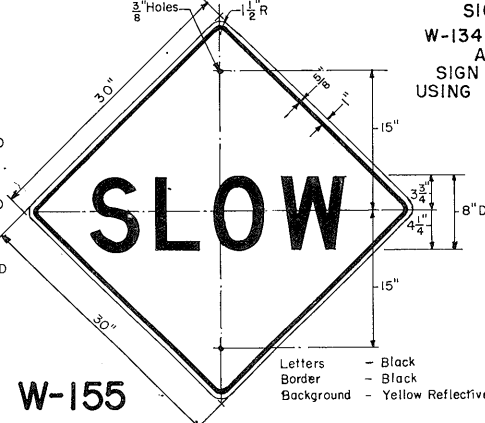
D-57



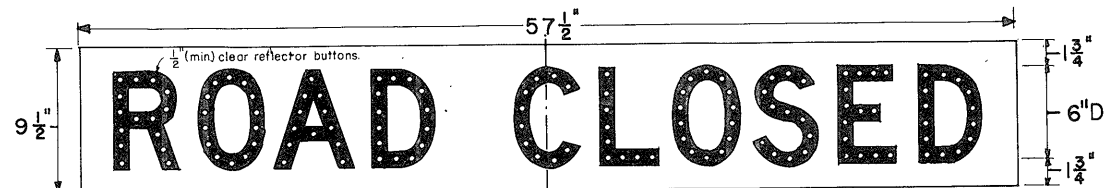
W-134



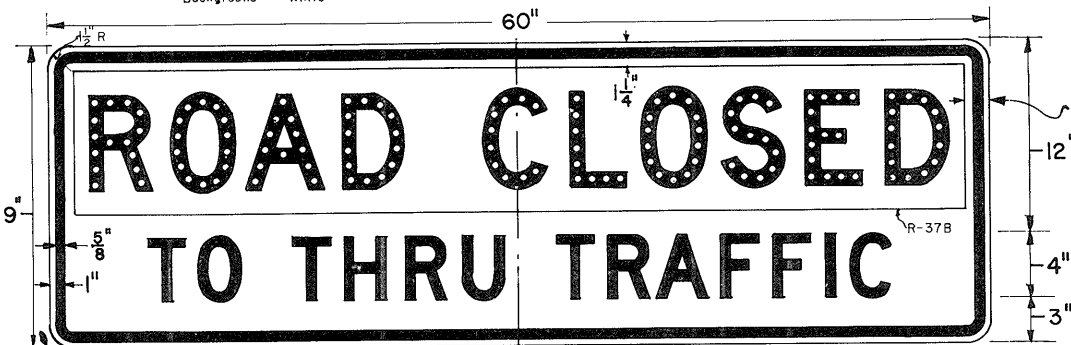
W-147



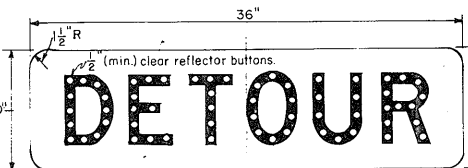
W-155



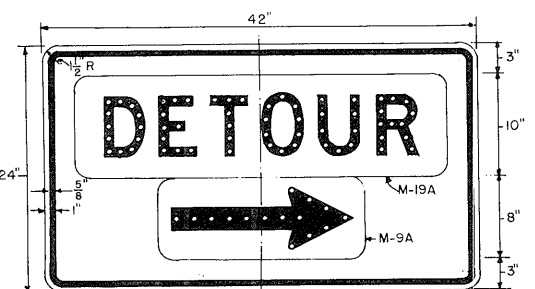
R-37 B



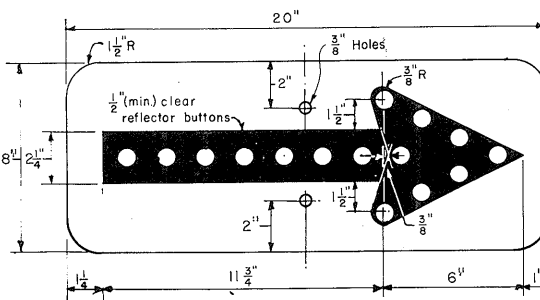
R-37 C



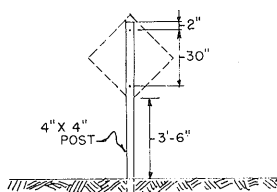
M-19A



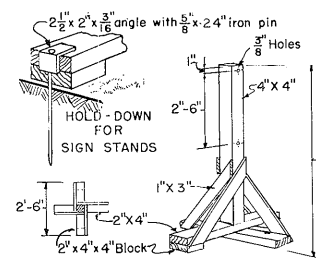
M-19 B



M-9A



POST FOR
SIGNS
W-134 & W-155
AND
SIGN D-57
USING 2 POSTS



PORTABLE STAND FOR
SIGNS
W-134, W-147 & W-155

GENERAL NOTES

Barricade "A" and accompanying signs shall be used at each end of construction projects closed to all traffic, or closed to all but local traffic, and at points where through traffic is turned onto a temporary route. The plan on sheet 1 shall be used when local traffic is permitted inside the project or permitted to use the road beyond the intersection with the temporary route. When the road is closed to all traffic, one panel and gate section shall be used to form a continuous barricade across the right-of-way.

Barricade "B" and accompanying signs shall be used at the beginning of detours to divert traffic onto the specially prepared roadbed along or near the edge of the right-of-way or around a structure. Sign M-19B shall be used on the barricade and Sign W-155 shall be used in advance of the barricade as indicated on barricade layout.

Barricade "C" and Sign D-34 are for temporary use to control traffic within the limits of a project whenever it is necessary to confine traffic to a specific area on account of some particular construction operation. The areas through which traffic is routed may be the shoulders, ditches, around windrows of materials, excavated trenches, etc. Sign W-155 shall be used in advance of the barricade and flagmen shall be used to direct traffic while work is in progress. If it is necessary that barricades remain in place at night, a sufficient number of flares shall be used to outline the travelway and mark the hazards.

Barricade "D" and accompanying signs shall be used at each end of project only when some form of work is being performed which creates a traffic hazard throughout the entire length of the project. In case of several short sections, which are separated by intervals of considerable distance, each individual section shall be barricaded with this type barricade. This type barricade may also be used at important county road approaches. Sign D-34A shall be used in back of the barricade. When there are a number of short sections barricaded, Sign D-34 may be substituted for sign D-34A. Barricades shall be removed upon completion of work and elimination of the hazard on any section. In all cases the barricade shall be so located as to most advantageously warn and direct traffic, and shall be within 1,000 feet of the terminus of such section.

Barricade "E" and accompanying sign shall be used on city streets which are closed to traffic and as advance warning on streets approaching closed areas. When this barricade is used to close a street, a sufficient number of units shall be used to block the entire street. This barricade may also be used to confine traffic to one side of the street or highway for the protection of workmen, maintenance repairs, open trenches, etc., in which case the R-37B sign shall be omitted.

Barricade "C", with appropriate standard signs, may be substituted for Barricade "E" if desirable.

Barricade "F" shall be used on culvert or bridge widening jobs when traffic is routed over the structure. It shall be erected so as to provide maximum roadway width for traffic and allow sufficient space for efficient construction operations behind the barricade.

Signs D-34A, D-35 and D-57 shall be used at each end of all projects open to any public travel, and to supplement Barricades "A" and "B". Other standard signs, Post Barricades, and Flags shall be used as required by plans or as directed by the Engineer to protect and direct traffic.

Barricades, Signs and Flags shall be supplemented by lights placed so as not to interfere with the visibility of reflector buttons or reflectorized surfaces, and lights shall be maintained in continuous operation from sunset to sunrise. Lights may be oil flares or flashing electric type.

Barricades shall be constructed of clean, sound lumber cut to the nominal dimensions shown on these details and surfaced on two sides. Barricades shall be of first-class workmanship, and all surfaces above ground shall be painted with an approved brand of white paint to secure thorough coverage and a uniform white color. In no case shall less than two coats be used. The paint for barricade stripes (and Barricade "E") shall be an approved brand of gloss black paint applied to secure uniform coverage.

Signs for Barricades shall be made from wood or metal conforming with the requirements specified below.

Metal for sign plates shall be 12, 14 or 16 gauge steel which conforms with Texas Highway Department "Special Specification for Steel Plates for Highway Markers."

Wood for signs shall be 1 inch stock B and B grade kiln dried lumber or equal, or water-proof resinbonded Exterior grade Plywood, Douglas Fir Plywood Association or equal. All wooden signs made up of two or more boards shall have a 1"x6" cleat fastened to back of the sign at each end and extending full depth of the sign. In addition to cleats, the boards shall be fastened together with 1/2 inch corrugated fasteners spaced at not more than 12 inch centers and driven from the back of the sign. In localities where untreated wood rots rapidly, it is recommended that wood used for signs be treated with either Chromated Zinc Chloride, Wolman Salts, or Penta-chlorophenol.

The designation of Metal and Wood as primary materials for signs shall not be interpreted to exclude other suitable materials now or hereafter available.

Paints and coloration shall be similar to Texas Highway Department standards as outlined in Texas Manual on Uniform Traffic Control Devices for Streets and Highways. Where Yellow is specified it shall conform with color cards for "Highway Yellow" available from U.S. Bureau of Public Roads.

Reflectorization may be by means of approved reflective coatings on the sign background. Either Glass Reflector Buttons or Crystal Plastic Reflector Buttons conforming with Texas Highway Department Reflector Button Specifications may be used as an alternate means of reflectorization. Size and spacing of reflector buttons shall be as shown on details. All reflecting elements shall reflect white light, except that if a reflecting coating is used as a background of a yellow sign, it shall reflect yellow light.

Diagonal black stripes and reflector buttons shall be as indicated on plans or on these details.

Barricades designed for moving or reuse, except "C" and "E", shall be erected with bolts. The Contractor shall maintain each barricade and sign in a condition equal to that required by these details.

In construction of legs for portable barricades, steel may be substituted for timber, provided that the width of base will not be less than that shown on the standard detail.

All sign lettering shall be clear, open rounded type capital letters as approved by the Joint Committee on Uniform Traffic Control Devices, its sponsoring agencies and as published by the Bureau of Public Roads. Striping and lettering shall be of first class workmanship equivalent to that of Highway Department standard signs.

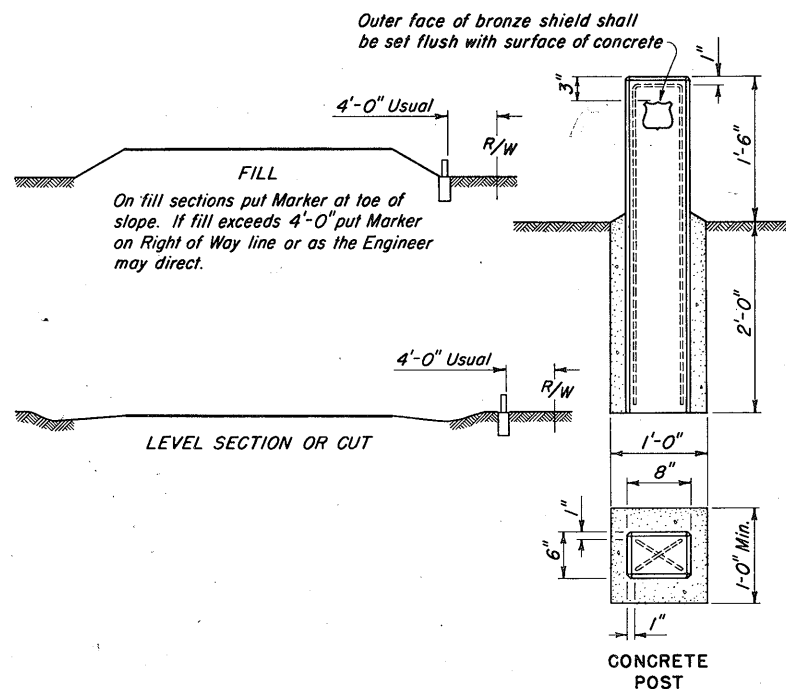
TEXAS HIGHWAY DEPARTMENT

BARRICADES & WARNING SIGNS

Sheet 2 of 2.

BW 54 (2)

DN - S.H.D.	DRAWING	DATE	FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK. DN - R.F.J.			6	TEXAS	F1-31 (17), F1-1088(2), F31(6)	264
CK. DW - E.W.D.						
TR - R.F.J.						
CK. TR - E.W.D.						



FEDERAL AID MARKER

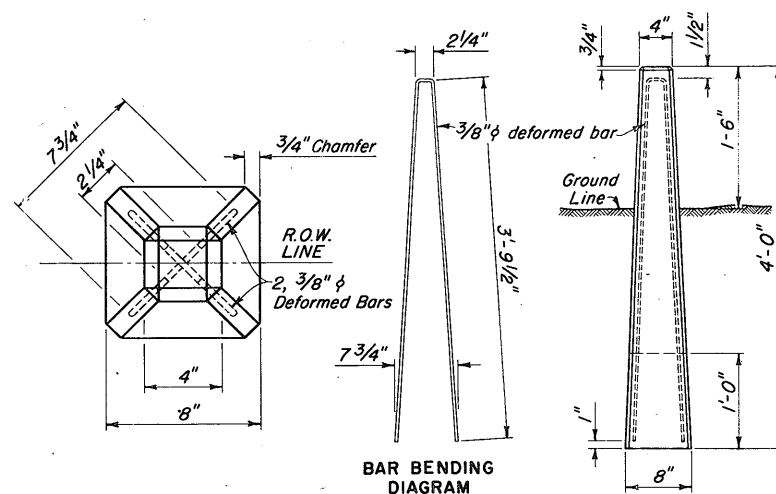
Markers shall be placed as directed.

The bronze shield will be furnished to the Contractor without charge on application to the Texas Highway Department through the Resident Engineer.

Posts shall be precast concrete with all corners chamfered $\frac{1}{2}$ ".

All reinforcing bars shall be $\frac{1}{2}$ " in diameter.

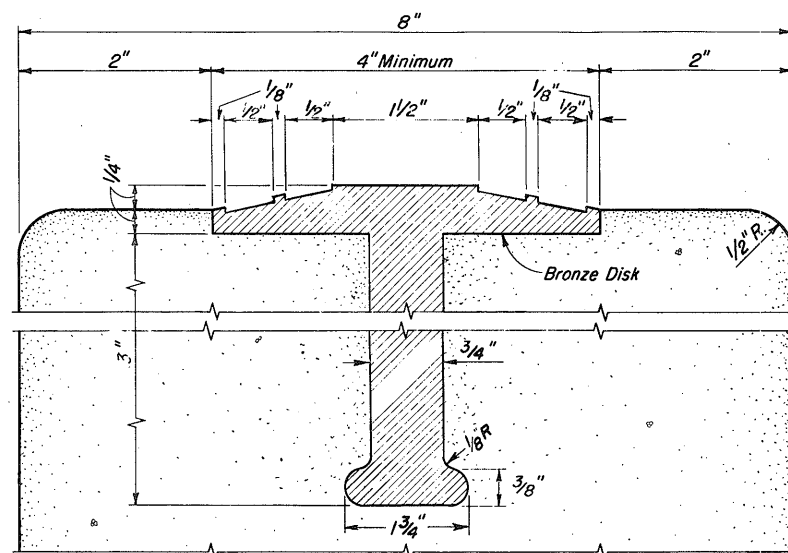
Work and materials involved in furnishing and placing posts and bases and installing bronze markers shall be considered as subsidiary to the various pay items of the contract, and no direct compensation will be made therefor.



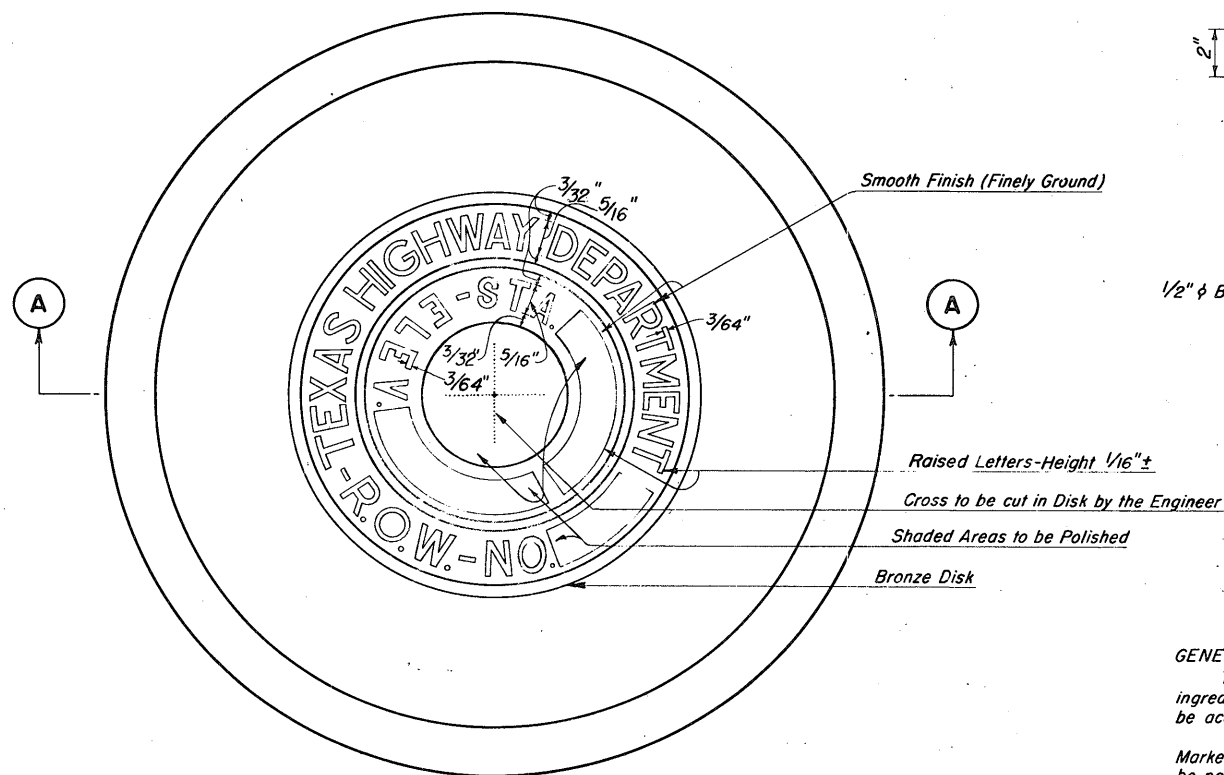
RIGHT-OF-WAY MARKER - TYPE I

Type I Right-of-Way Markers shall be precast concrete, and shall be installed at designated points to the depth, lines, and grades established by the Engineer.

In case the material to be excavated consists of rock or hard clay, this Marker may be shortened 12" if so directed by the Engineer.



SECTION THRU TOP OF MARKER



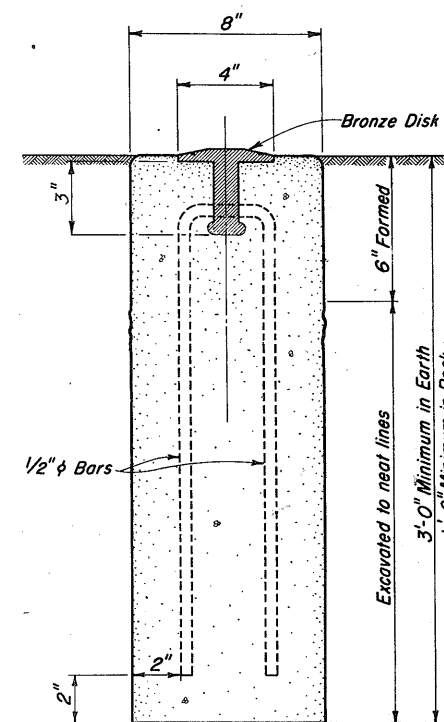
TOP VIEW OF MARKER

RIGHT-OF-WAY MARKER - TYPE II

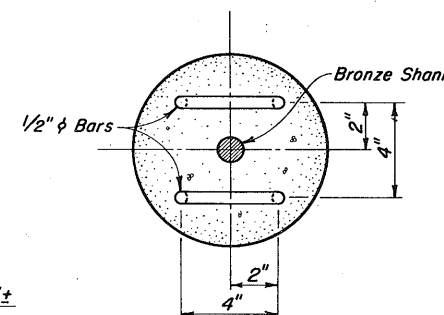
Type II Right-of-Way Markers shall be poured in place concrete, and bronze disks shall be set to correct line and grade as directed by the Engineer.

Bronze disks shall be of Architectural Bronze having the following composition: Copper 85%, Tin 5%, Lead 5%, Zinc 5%. Excavation for Markers shall be made to neat lines except for the top 6" of the Marker which shall be formed with removable forms of sheet metal or other suitable material. The top part of the Marker around the bronze disk shall receive a steel trowel finish. The bronze disk will be furnished to the Contractor without charge on application to the Engineer.

After the concrete has taken its final set, the Engineer will stencil required survey data and, with chisel or center punch, cut cross marking exact location of Right-of-Way Line in the bronze disk.



SECTION AA



CROSS SECTION THRU MARKER

GENERAL NOTES:

The requirements for the absolute volume mix design and the weighing of the ingredients for the concrete in all Markers will be waived. Mixing of concrete may be accomplished in any manner satisfactory to the Engineer.

The work performed and materials furnished in constructing Right-of-Way Markers, measured as provided in Item 514 of the Standard Specifications, shall be paid for at contract unit price bid for "Right-of-Way Markers (Type I)," or "Right-of-Way Markers (Type II)."

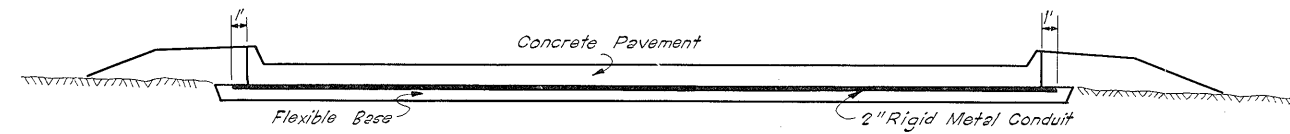
Federal Project Markers will not be paid for directly, but shall be considered subsidiary to the various pay items of the contract.

TEXAS HIGHWAY DEPARTMENT RIGHT-OF-WAY & PROJECT MARKERS

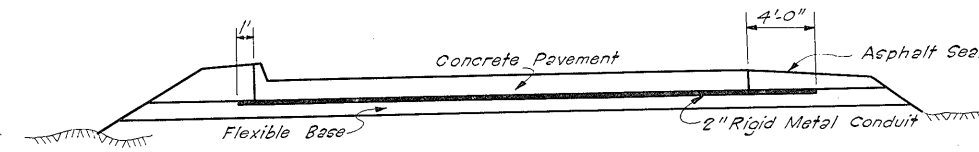
M-47

APPROVED: <i>Robert</i>	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
ENGINEER OF ROAD DESIGN	6 TEXAS	FI-31(7), FI-1080(2), F31(18)	265
REVISED: Aug. 1, 1947	STATE DIST. NO.	COUNTY	SECTION NO.
May 20, 1948	15	DEKAR	16, 17
Oct. 18, 1951			7, 10
			13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

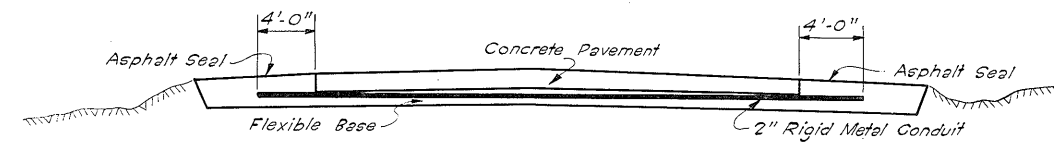
WVERT			TYPE	SECTION	DIMEN- SIONS		TCTAL QUANTITIES		QUANTITIES PLF OF BARREL		BARS A IN TOP SLAB		BARS B IN BOTTOM SLAB		BARS C WALLS TOP CORNER		BARS D IN BOTTOM CORNERS		62-1/2" BARS E @ 18" C to C		1/2" BARS F Length = 46'-4"		BARS H 4'-1/2"		1/2" BARS K @ 12-3/4" C		1/2" BARS M IN TOP SLAB		1/2" BARS N IN BOTTOM SLAB							
S	H				T	U	Conc	Reinf	Conc	Reinf	No.	Size	Spac	Length	Weight	No.	Size	Spac	Length	Weight	Dim	No.	Size	Spac	Length	Weight	Dim	No.	Weight	No.	Spac	Length	Weight	Dim		
3	2	1	6	6	14	10.27	1,271	0.222	26.92	78	1/2"	7"	3'-8"	191																						
3	2	1	6	6	14	11.94	1,353	0.259	28.70	78	1/2"	7"	3'-8"	191																						
4	3	1	6	6	12	12.00	1,740	0.259	37.06	91	1/2"	6"	4'-8"	284																						
4	3	1	6	6	12	13.66	1,844	0.296	39.35	91	1/2"	6"	4'-8"	284																						
4	3	1	6	6	12	15.36	2,011	0.333	42.98	91	1/2"	6"	4'-8"	284																						
5	3	2	6	6	8	13.73	2,103	0.296	44.87	68	3/8"	8"	5'-8"	402	58	1/2"	9"	5'-8"	220	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439
5	3	2	6	6	8	15.41	2,194	0.333	46.87	68	3/8"	8"	5'-8"	402	58	1/2"	9"	5'-8"	220	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439
5	3	2	6	6	8	17.05	2,346	0.370	50.21	68	3/8"	8"	5'-8"	402	58	1/2"	9"	5'-8"	220	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439
5	3	2	6	6	8	20.45	2,968	0.444	63.66	68	3/8"	8"	5'-10"	413	58	1/2"	9"	5'-10"	226	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439	2'-4"	136	1/2"	8"	4'-10"	439
6	3	2	6	6	6	17.14	2,523	0.370	53.75	78	3/8"	7"	6'-8"	543	61	1/2"	9"	6'-8"	272	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666
6	3	2	6	6	6	18.81	2,682	0.407	57.22	78	3/8"	7"	6'-8"	543	61	1/2"	9"	6'-8"	272	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666
6	3	2	6	6	6	22.13	3,312	0.481	70.85	78	3/8"	7"	6'-10"	556	61	1/2"	9"	6'-10"	278	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666
6	3	2	6	6	6	24.14	3,450	0.525	73.88	78	3/8"	7"	6'-10"	556	61	1/2"	9"	6'-10"	278	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666	3'-4"	146	1/2"	7"	6'-10"	666
7	5	3	6	6	4	19.91	2,934	0.432	62.69	78	3/8"	7"	7'-8"	624	91	1/2"	6"	7'-8"	466	156	1/2"	7"	5'-10"	608	3'-4"	156	1/2"	7"	5'-10"	608	3'-4"	156	1/2"	7"	5'-10"	608
7	5	3	6	6	4	21.66	3,100	0.469	66.32	78	3/8"	7"	7'-8"	624	91	1/2"	6"	7'-8"	466	156	1/2"	7"	5'-10"	608	3'-4"	156	1/2"	7"	5'-10"	608	3'-4"	156	1/2"	7"	5'-10"	608
7	5	3	6	6	4	25.05	3,581	0.544	76.76	78	3/8"	7"	7'-10"	637	91	1/2"	6"	7'-10"	476	136	1/2"	8"	7'-10"	711	5'-4"	136	1/2"	8"	7'-10"	711	5'-4"	136	1/2"	8"	7'-10"	711
7	5	3	6	6	4	27.01	3,713	0.587	79.65	78	3/8"	7"	7'-10"	637	91	1/2"	6"	7'-10"	476	136	1/2"	8"	7'-10"	711	5'-4"	136	1/2"	8"	7'-10"	711	5'-4"	136	1/2"	8"	7'-10"	711
7	5	3	6	6	4	28.97	3,970	0.630	85.22	78	3/8"	7"	7'-10"	637	91	1/2"	6"	7'-10"	476	136	1/2"	8"	7'-10"	711	5'-4"	136	1/2"	8"	7'-10"	711	5'-4"	136	1/2"	8"	7'-10"	711
8	5	3	6	6	4	23.53	3,588	0.509	76.92	78	3/8"	7"	8'-8"	705	68	3/8"	8"	8'-8"	615	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830
8	5	3	6	6	4	26.92	4,248	0.584	90.94	78	3/8"	7"	8'-10"	718	68	3/8"	8"	8'-10"	626	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830
8	5	3	6	6	4	28.88	4,411	0.627	94.50	78	3/8"	7"	8'-10"	718	68	3/8"	8"	8'-10"	626	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830
8	5	3	6	6	4	30.84	4,698	0.670	100.74	78	3/8"	7"	8'-10"	718	68	3/8"	8"	8'-10"	626	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830	4'-4"	182	1/2"	6"	6'-10"	830
8	5	3	6	6	4	35.33	5,046	0.770	108.74	78	3/8"	7"	9'-0"	732	68	3/8"	8"	9'-0"	638	198	1/2"	5"	10'-10"	1,432	8'-4"	198	1/2"	5"	10'-10"	1,432	8'-4"	198	1/2"	5"	10'-10"	1,432
9	5	3	7	7	4	30.21	5,060	0.655	108.99	64	3/8"	8"	9'-10"	945	84	3/8"	9"	9'-10"	861	128	1/2"	8"	8'-3"	1,101	5'-5"	128	1/2"	8"	8'-3"	1,101	5'-5"	128	1/2"	8"	8'-3"	1,101
9	5	3	7</																																	



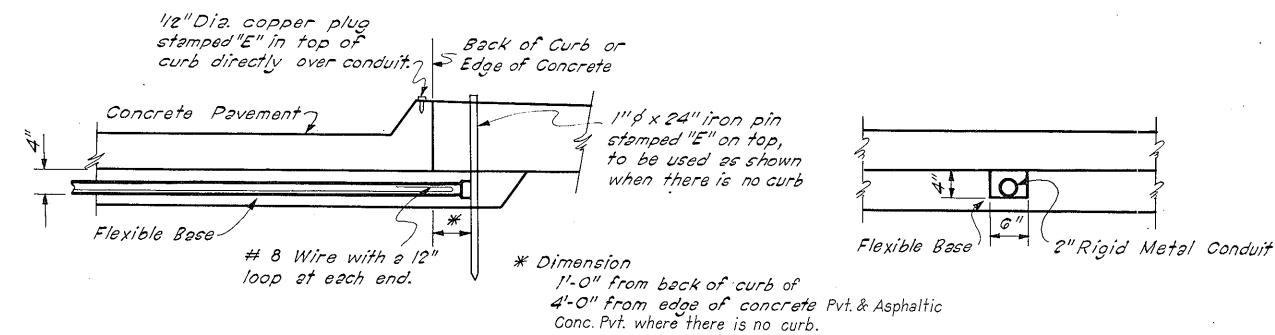
TYPE 1 INSTALLATION
(CURB BOTH SIDES)



TYPE 2 INSTALLATION
(CURB ONE SIDE)



TYPE 3 INSTALLATION
(NO CURBS)



RIGID METAL CONDUIT

DETAIL

SECTION

NOTE:
Across Frontage Roads, the bottom of the conduit trench shall be at least ten inches below the finished roadway surface. 1" pins and plugs shall be installed at ends of all frontage road conduits.

TO ACCOMPANY FIELD
CHANGE REQUEST NO. 4
INSTALLATION DETAILS
RIGID METAL CONDUIT

SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	FI-1088(12), FI-91(17), F-31(18)	
STATE DIST. NO.	COUNTY	CONT. SECT.	JOB NO.
15	BEXAR	16-17 7-10 23 12-26	U.S. 6

FIELD CHANGE NO.