FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				SHEET NO.
6	TEXAS	IR 35-2(199)171				1
STATE DIST. NO.	COUNTY		CONT.	SECT.	JOB	HIGHWAY NO.
15	BEXAR		16	7	105	IH 35

CODED BY B. NATIONS 1/91
MAPPING 2/91 POSTED B

LETTING DATE: FEBRUARY 7, 1990
WORK BEGAN: APRIL 3, 1990
DATE ACCEPTED: JUNE 20, 1990
CONTRACTOR: SHANNON-MONK, INC.
TOTAL COST: 92,933.27

CSJ 001607105

STATE OF TEXAS
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

BEXAR COUNTY - I.H. 35
PROJECT NO. IR 35-2(199)171
CONTROL 0016-07-105
AT SH-218-ENTRANCE RAMP FROM FRONTAGE ROAD
TO SH 218 CONNECTION
FOR THE CONSTRUCTION OF MISCELLANEOUS CONSTRUCTION
CONSISTING OF GRAD, BASE, & SURF

ROADWAY LENGTH = 1380 FT. = 0.261 MI.

MISC. 2-2-93

FINAL PLANS

NO EXCEPTIONS
NO EQUATIONS
NO RR XINGS

7913
03

FINAL PLANS

INDEX OF SHEETS

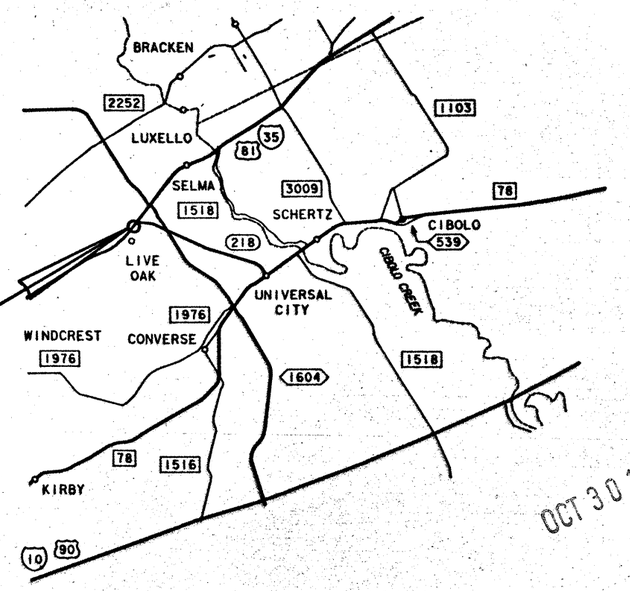
STANDARD	SHEETS (below)
12	IPM(1)
13	IPM(2) (MOD)
14	PM(2) (MOD) DIST 15
15	TCP(5-1)
16	TCP(5-2) MOD
17	TCP(2-5a) (2-5b)
18	PD-SPR
19	GFTD-87
20-26	BC(1-7)-89

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
DALE R. STEIN, JR.
56109
REGISTERED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY DALE R. STEIN, JR., P.E. 56109, ON Oct 24, 1990
Dale R Stein Jr.

PROJECT LOCATION
PROJECT NO. IR 35-2(199)171
CONTROL 0016-07-105



N

OCT 30 1990

"I HEREBY CERTIFY THAT THESE PLANS HAVE BEEN REVISED TO SHOW THE PROJECT AS ACTUALLY CONSTUCTED."
6-27-90 Dale R Stein Jr. P.E.
DATE SUPV. RESIDENT ENGINEER

SPECIFICATIONS ADOPTED BY THE STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION, SEPTEMBER 1, 1982 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS, FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, AUGUST, 1988)

FINAL PLANS

DESIGN SPEED = 50 MPH
LAYOUT SCALE: 1 IN. = 9250 FT.

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

RECOMMENDED FOR LETTING: Nov. 2, 1989
John C. Kight, P.E.
DISTRICT DESIGN ENGINEER

RECOMMENDED FOR LETTING: Nov 2 1989
Richard D. Lollar P.E.
DISTRICT ENGINEER

RECOMMENDED FOR APPROVAL:

RECOMMENDED FOR APPROVAL:

APPROVED FOR LETTING: 12-11-89
William F. Marchman P.E.
for CHIEF ENGINEER OF HIGHWAY DESIGN

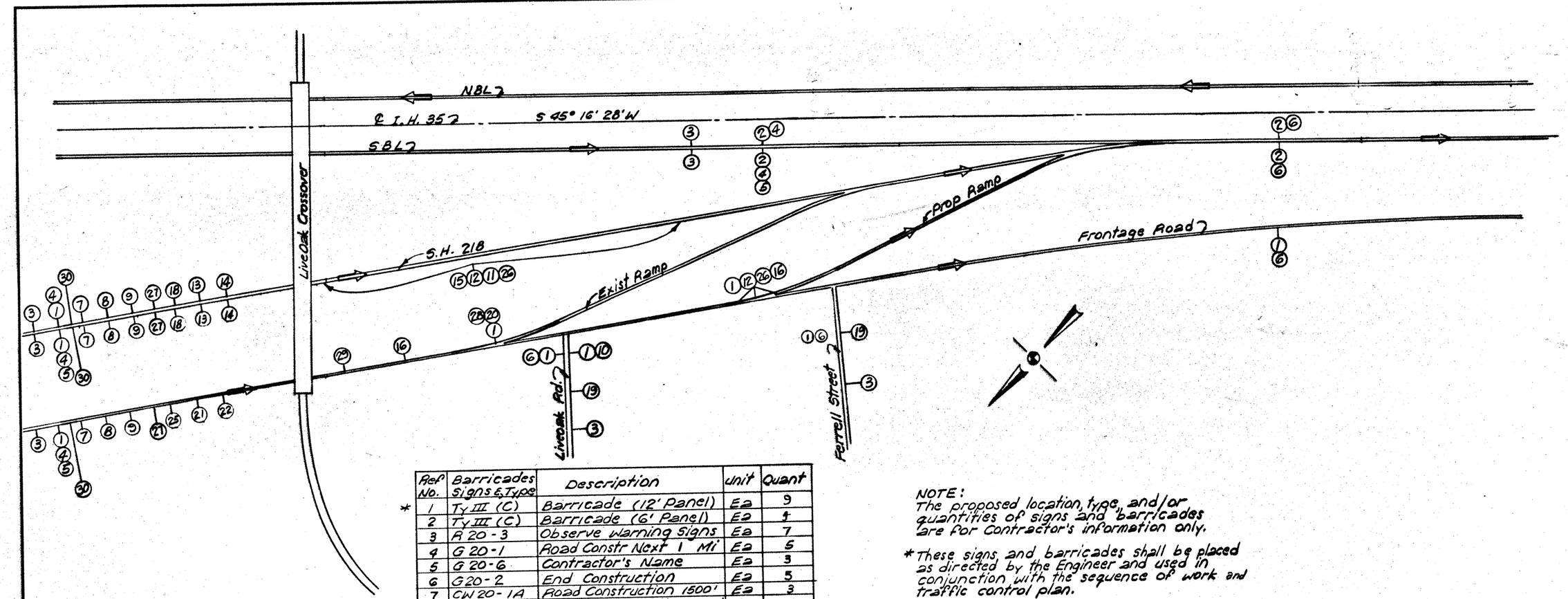
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:
DIVISION ADMINISTRATOR DATE

COUNTY Bexar PROJ. NO.
HWY. NO. LETTING DATE
DATE ACCEPTED

TICKET NUMBER C62336 COUNTY Bexar CHECKED BY JC Kight 28 to B-3316 18 to D-4
DATE FILED 7-25-90 CONTROL 16-7-105
FINAL 3 7913 TOTAL SHEETS 17 AT CARD 1 UNBOUND

IR35-2(199)171
Bexar



	Ref No.	Barricades Signs & Type	Description	Unit	Quant
*	1	Ty III (C)	Barricade (12' Panel)	Ea	9
*	2	Ty III (C)	Barricade (6' Panel)	Ea	4
	3	R 20 - 3	Observe Warning Signs	Ea	7
	4	G 20 - 1	Road Constr Next 1 Mi	Ea	5
	5	G 20 - 6	Contractor's Name	Ea	3
	6	G20 - 2	End Construction	Ea	5
	7	CW 20 - 1A	Road Construction 1500'	Ea	3
	8	CW 20 - 1B	Road Construction 1000'	Ea	3
	9	CW 20 - 1C	Road Construction 600'	Ea	3
	10	G20 - 1b	Road Constr Next 1. Mi	Ea	1
*	11	CW 1 - 8	Chevrons	Ea	10
*	12		Drums	Ea	20
	13	CW 20 - 5BR	Right Lane Closed 1000'	Ea	3
*	14	CW 4 - 2R	"	Ea	3
*	15	Ty I	Barricade	Ea	10
*	16	SCW 21 - 13 R	Shoulder Drop - OFF	Ea	1
*	17	SCW 13 - 1	xx MPH Determined @ Site	Ea	1
	18	CW 20 - 5DR	Right Lane closed Ahead	Ea	3
	19	CW 20 - 1D	Road Constr Ahead	Ea	2
*	20	R11 - 2R	Ramp Closed	Ea	1
	21	CW 20 - 5BL	Left Lane Closed 1000'	Ea	2
*	22	CW 4 - 2L	"	Ea	2
*	23	SCW 21 - 14 L	Uneven Lanes	Ea	2
*	24	SCW 21 - 14 R	Uneven Lanes	Ea	2
	25	CW 20 - 5 DL	Left Lane Closed Ahead	Ea	2
	26	ECW1 - 6A	⇗	Ea	10
	27	SCW13 - 1	45 MPH	Ea	3
*	28	M4 - 10R	Detour ⇨	Ea	1
*	29	CW 20RP-3D	Ramp Closed Ahead	Ea	1
	30	R4 - 1	Do Not Pass	Ea	3

NOTE:
The proposed location, type, and/or quantities of signs and barricades are for Contractor's information only.

* These signs, and barricades shall be placed as directed by the Engineer and used in conjunction with the sequence of work and traffic control plan.

Additional traffic control Details are outlined in the plans using the following standard plan sheets 20 thru 26 TCP (5-1), TCP (5-2) MOD, TCP (2-5a) and TCP (2-5b)

The taper length for lane closure on S.H. 218 ramp and north frontage road shall be based on 12' lane width and a speed of 45 M. P. H.

Ty I Barricades shall be placed as directed by the Engineer, behind the plastic drums with the CW1-8 (Chevron) or ECW1-6A (➡) signs mounted on them. They shall also have a warning light mounted on each sign at each setup designated for nighttime lane closures.

All permanent paint stripping will be done by state Maintenance Forces after the final ACP Mat is in place and proper notification is given.

For permanent pavement marking details, refer to plan sheets 11, 12, 13, and 14.

DALE R. STEIN, JR. 56108 REGISTERED PROFESSIONAL ENGINEER

Dale R. Stein, Jr. Oct 24, 87
Date

BARRICADES AND CONSTRUCTION SIGNING

2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	IR 35-2(199)171	2
STATE	STATE DIST. NO.	COUNTY
TEXAS	16	Bexar
CONT.	SECT.	JOB	HIGHWAY NO.
16	07	106	I.H. 35

GRADING SUMMARY

SHEET NO	STATION TO STATION	Remov Old Conc	Furn And Plac Tpsl	Oblit Aband Rd	Blad	Asph Stab Bs (Gr 4)		Riprap (Conc) (Cl. B)	Term - Anch Sect (12 Ga)	Metal Beam Gd Fence (12 Ga) (Tim Post)	Abbrev Pav Mark (White)	Constr Pav Mark (Non Remov) (4in) (W) Solid	Constr Pav Mark (Non Remov) (4in) (Y) Solid	Constr Pav Mark (Non Remov) (4in) (W) Broken	Temp Flex Reflect Adwy Mrk Tabs (Ty W)	Jiggle Bar Tile (Ty W)	Pav Mark (Reflect) (Ty II CR)	Excavation	Embank (Ord Comp) (Ty B)	Pav Mark (Reflect) (Ty 1C)	Retr Prefab Pav Mark (24 in) (White) Solid
RFF		SY	STA	STA	Hr	Ton		CY	Ea	LF	LF	LF	LF	LF	Ea	Ea	Ea	CY	CY	Ea	LF
7	-4+00 to 0+00		2.80	2.80	1.0																
8	0+00 to 11+00	234	0.75	0.75	4.0	561.04		57.43	2	425								144	228		
11	Pavement Marking Detail										243	2500	2020	320	33	275	105			53	24
	Totals	234	3.55	3.55	5.0	561.04		57.43	2	425	243	2500	2020	320	33	275	105	144	228	53	24

SMALL STRUCTURE SUMMARY

REFERENCE LISTING	SHT. PLAN	SHT. LAYOUT	DR. STR. NO.	LOCATION	DESCRIPTION	RCPipe (Cl III) (30 in) LF Est	RCPipe (Cl III) (30 in) LF Fin	Inlet Compl Ty 6 Ea Est	Inlet Compl Ty 6 Ea Fin	Safety End Treat (Ty II) (30 in) (6:1) Ea Est	Safety End Treat (Ty II) (30 in) (6:1) Ea Fin	Trench Excav Protection LF Est	Trench Excav Protection LF Fin	REFERENCE LISTING
	8	9		11.5' Lt Sta 4+50 to 285' Rt Sta 7+00	30" RCP (Cl III) x 235'-0" with Inlet Ty 3A (MOD) upstrm & Safety End Treatment (Ty II) (30 in) (6:1)	235	235	1	1	1	1	95	95	
					Totals	235	235	1	1	1	1	95	95	

~~LARGE STRUCTURE SUMMARY~~

DESCRIPTION		
	PERMANENT STRUCTURE NUMBER	
	BEGIN BRIDGE STATION	
	END BRIDGE STATION	
	LENGTH (FEET)	
	LAYOUT SHEET NUMBER	
ITEM-CODE	ITEM	UNIT

3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	IR 35-2(199)171	3
STATE	STATE DIST. NO.	COUNTY
TEXAS	15	Bexar
CONT.	SECT.	JOB	HIGHWAY NO.
16	07	105	I.H. 35

ESTIMATE SUMMARY

BEXAR COUNTY
IH 35
PROJECT IR 35-2(199)171
ROADWAY

EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	ALT	ITEM NO	DESC CODE	SP NO	DESCRIPTION	UNIT	TOTAL EST.	TOTAL FINAL
								234.000	255.000		104	006		REMOV OLD CONC (RIPRAP)	SY	234.000	255.000
								5.000	7.000		150	001		BLAD	HR	5.000	7.000
								3.550	4.000		160	001	001	FURN AND PLAC TPSL	STA	3.550	4.000
								3.550	4.000		170	001		OBLIT ABAND RD	STA	3.550	4.000
								561.040	621.250		292	010	011	ASPH STAB BS (GR 4)	TON	561.040	621.450
								90.000	96.000		320	015	004	AGGR (TY PB, GR 4)	CY	90.000	96.000
								2678.000	2760.000		320	133	004	ASPH (AC OR MC-1200) LATEX OR HFRS-2P	GAL	2678.000	2760.000
								383.000	370.520		340	023	113	ASPH CONC (TY D)(SURF)	CY	383.000	370.620
								57.430	67.920		432	008		RIPRAP (CONC)(CL B)	CY	57.430	67.920
								235.000	235.000		464	026	009	RC PIPE (CL III)(30 IN)	LF	235.000	235.000
								1.000	1.000		470	381	002	INLET (COMPL)(DROP TY 6)	EA	1.000	1.000
								1.000	1.000		477	087	002	SAFETY END TREAT (TY II)(30 IN)(6:1)	EA	1.000	1.000
								1.000	1.000		500	001	001	MOBILIZATION	LS	1.000	1.000
								2.000	2.000		502	001		BARCD,SIGN AND TRAF HANDLING	MO	2.000	2.000
								2.000	2.000		540	011		TERM-ANCH SECT (12 GA)	EA	2.000	2.000
								425.000	425.000		540	014		GAL STL BEAM GD FENCE (12 GA)(TIM POST)	LF	425.000	425.000
								2500.000	1965.000		662	014	015	CONST PAV MARK(NON-REMOV)(4IN)(W)SOLID	LF	2500.000	1965.000
								2020.000	1525.000		662	018	015	CONST PAV MARK(NON-REMOV)(4IN)(Y)SOLID	LF	2020.000	1525.000
								320.000	150.000		662	026	015	CONST PAV MARK (NON-REMOV)4IN(W) BROKEN	LF	320.000	150.000
								243.000	152.000		664	002	013	ABBREVIATED PAV MARK (WHITE)	LF	243.000	152.000
								24.000	18.000		668	006	003	RETR PREFAB PAV MARK(24IN)(WHITE)SOLID	LF	24.000	18.000
								275.000	176.000		672	004	006	JIGGLE BAR TILE (TY W)	EA	275.000	176.000
								53.000	50.000		674	002	010	PAV MARK (REFLECT)(TY IC)	EA	53.000	50.000
								105.000	79.000		674	005	010	PAV MARK (REFLECT)(TY IICR)	EA	105.000	79.000
								144.000	144.000		1128	001		EXCAVATION	CY	144.000	144.000
								228.000	228.000		1129	005		EMBANK (ORD COMP)(TY B)	CY	228.000	228.000
								95.000	95.000		4682	001		TRENCH EXCAVATION PROTECTION	LF	95.000	95.000
								33.000	86.000		6350	002		TEMP FLEX-REFLECT RDWY MRK/TABS (TY W)	EA	33.000	86.000
														STATE FORCE ACCOUNT WORK (PART)			
														SIGNS & DELINEATORS (PART)		1.000	1.000
														01 PERM PAV MARK (PAINT)	LS	1.000	1.000
														02 RELOC EXIST SIGNS AND FURN & INSTALL			
														CONTRACTOR FORCE ACT OR AGR UNIT PRICE (PART)			
														TEMP EROSN, SEDMT & WTR-POL CONT	LS	1.000	1.000

ESTIMATE & QUANTITY SHEET 4

STATE DIST. NO.	COUNTY	PROJECT NO.	SHEET NO.
15	BEXAR	IR 35-2(199)171	4

GENERAL NOTES AND SPECIFICATION DATA--

GRADING REQUIREMENTS FOR ITEM 292 ASPH STAB BS (OR 4)

	PERCENT RETAINED ON EACH SIEVE 1-3/4"	1-1/4"	7/8"	3/8"	#4	#40	SOIL CONSTANTS LL MAX	PI MAX	PI MIN	WET BALL MILL MAX
(292)	0	0-5	10-30	25-50	45-65	65-80	45	15		* 55

* THE MAXIMUM INCREASE IN MATERIAL PASSING THE NO. 40 SIEVE SHALL NOT EXCEED 20.

BASIS OF ESTIMATE

ITEM	DESCRIPTION	RATE	QUANT	UNIT
150	BLAD	0.5 HR/STA	5	HR

THE FOLLOWING FOR CONTRACTOR'S INFORMATION ONLY- NON PAY

168	SPRINK (TPSL)	500 GAL/STA	
204	SPRINK (EMB)	80 GAL/CY	
210	ROLL (FLAT WHEEL)(SURF)	1 HR/2000 SY	
211	ROLL (TAMP)(EMB)	1 HR/200 CY	
213	ROLL (MED B)(SURF)	.1 HR/2000 SY	
213	ROLL (MED B)(TPSL)	0.25 HR/STA	

ASPHALTIC CONCRETE PAVEMENT

TYPE	LOCATION	DEPTH	RATE	AREA-SY	QUANT-CY
ACP-SURF	SH 218 & NFR	1-1/2"	.0417 CY/SY	7595	317
ACP-SURF	ENT RAMP	3"	.0833 CY/SY	789	66
			TOTAL		383

ONE COURSE SURFACE TREATMENT DATA

DESCRIPTION	1 ST CRSE	TOTAL
AREA	8927 SY	8927 SY
ASPH--TYPE	-----SEE GEN NOTES--------	
ASPH--RATE(GAL/SY)	0.30	2678 GAL
AGGR--TYPE/GR	PB GR 4	
AGGR--RATE(CY/SY)	1:100	90 CY

THE FOLLOWING STANDARD DETAIL SHEETS HAVE BEEN MODIFIED: IPM(2), & PM(2).

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE TEXAS M.U.T.C.D.

THE PERMANENT STRIPING WILL BE DONE BY STATE FORCES.

IN THOSE INSTANCES WHERE FIXED FEATURES REQUIRE, THE GOVERNING SLOPES INDICATED HEREIN MAY BE VARIED FROM BETWEEN THE LIMITS AND TO THE EXTENT DETERMINED BY THE ENGINEER.

THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHOWN WITHIN THE RIGHT OF WAY ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION OPERATIONS.

THE FOLLOWING IS A LIST OF THE TELEPHONE NUMBERS OF THE UTILITY LOCATORS FOR THE VARIOUS UTILITIES THAT MAY BE ENCOUNTERED.

CITY PUBLIC SERVICE (GAS & ELECTRIC)	227-3606
S.W. BELL TELEPHONE (NORTH, WEST & DOWNTOWN)	954-4102
S.W. BELL TELEPHONE (SOUTH & EAST)	650-8228
ROGERS CABLE SYSTEM	340-8366
CITY WATER BOARD	225-7461 (EXT 388)
VALERO GAS	246-2222
AT & T	1-800-252-1138

ALL EXISTING RAISED PAVEMENT MARKINGS SHALL BE REMOVED BY THE CONTRACTOR DAILY, AS THE WORK PROGRESSES AND AS APPROVED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS. MATERIAL REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

IF WASTE AREAS OR MATERIAL SOURCES ARE REQUIRED FOR THE COMPLETION OF THIS PROJECT, SUCH AREAS SHALL NOT BE VISIBLE FROM ANY HIGHWAY ON THE TEXAS HIGHWAY SYSTEM UNLESS APPROVED IN WRITING BY THE ENGINEER.

MATERIALS LARGER THAN 4 INCHES IN SIZE WITHIN THE LIMITS OF THE RIGHT OF WAY AND NOT INCORPORATED IN THE FINISHED ROADWAY SECTION SHALL BE REMOVED FROM THE RIGHT OF WAY OR DISPOSED OF IN A MANNER SUITABLE TO THE ENGINEER AT THE ENTIRE EXPENSE OF THE CONTRACTOR.

---ITEM 5---
THE CONTRACTOR SHALL ESTABLISH AND BE RESPONSIBLE FOR THE CORRECTNESS OF ALIGNMENT, ELEVATION AND POSITION OF ALL CONSTRUCTION REQUIRED BY THE CONTRACT IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIAL PROVISION TO ITEM 5 (005---023).

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 150---
WORK UNDER THIS ITEM WILL CONSIST OF SHOULDERING UP PAVEMENT EDGES IN AREAS SHOWN IN THE PLANS.

---ITEM 292---
RAW BASE MATERIAL SHALL COME FROM A SOURCE APPROVED BY THE ENGINEER. FINAL ACCEPTANCE OF BASE MATERIAL WILL BE FROM TESTS MADE FROM THE STOCKPILE OR STOCKPILES.

NO ASPHALT MIXTURE SHALL BE PLACED WHEN THE AIR TEMPERATURE IS BELOW 50 DEGREES F DURING THE PRECEDING 24 HOUR PERIOD, EXCEPT THAT A SINGLE THICK MAT (2-1/2" COMPACTED, OR GREATER) MAY BE PLACED WHEN THE AIR TEMPERATURE IS 40 DEGREES F AND RISING.

THE ASPHALT STABILIZED BASE MIXTURE SHALL BE PLACED WITH A SPREADING AND FINISHING MACHINE EQUIPPED WITH AUTOMATIC SCREED CONTROL DEVICES UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

THE DESIGN SHALL BE IN ACCORDANCE WITH TEST METHOD TEX-126-E.

THE IN PLACE DENSITY SHALL BE MEASURED WITH THE NUCLEAR GAUGE, HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO REMOVE THREE (3) EACH, 4 INCH DIAMETER UNDISTURBED CORES FOR THE FULL DEPTH OF THE PREVIOUS DAY'S PLACEMENT, AT A POINT DIRECTED BY THE ENGINEER, FOR CORRELATION. THIS REQUIREMENT FOR UNDISTURBED CORES MAY BE LATER WAIVED, IF CORRELATIONS PROVE SATISFACTORY.

IF THE MATERIALS FURNISHED ARE FOUND TO HAVE STRIPPING CHARACTERISTICS, THE ENGINEER MAY REQUIRE THE ADDITION OF AN APPROVED ANTISTRIPPING AGENT CONFORMING TO THE REQUIREMENTS OF ITEM 3379, "ASPHALT ANTISTRIPPING AGENT (LIME)" OR ITEM 3374, "ASPHALT ANTISTRIPPING AGENT (LIQUID)". THE USE OF TEST METHOD TEX-531-C SHALL NOT BE REQUIRED TO EVALUATE THE MIX. THE COST OF THE ANTISTRIPPING ADDITIVES WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS. A TEST SECTION WITHOUT THE ANTISTRIPPING AGENT WILL NOT BE REQUIRED.

THE ASPHALT PLANT SHALL BE EQUIPPED WITH TRUCK SCALES AS DEFINED IN ITEM 520.3(1) OF THE STANDARD SPECIFICATIONS. THREE WEIGHT TICKETS BEARING THE DATE, THE TRUCK NUMBER AND THE GROSS, NET AND TARE WEIGHTS SHALL BE GIVEN THE TRUCK DRIVER BY THE CONTRACTOR'S PERSONNEL, AND THEN GIVEN TO THE STATE INSPECTOR AT THE SPREADING AND FINISHING MACHINE. THE CONTRACTOR PERIODICALLY WILL BE REQUIRED TO WEIGH LOADS OF ASPHALTIC CONCRETE ON PUBLIC SCALES OR PORTABLE PLATFORM SCALES TO INSURE THE PROPER WEIGHT OF MATERIAL.

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 292---, CONT'D

---ITEM 304---
PREVIOUSLY TESTED AGGREGATES DELIVERED TO THE PROJECT, WHICH ARE FOUND TO CONTAIN EXCESSIVE QUANTITIES OF DUST (MORE THAN 0.5 PER CENT PASSING THE NO. 40 SIEVE) DUE TO DEGRADATION DURING PRECOATING, STOCKPILING OR HAULING OPERATIONS MAY BE REJECTED BY THE ENGINEER.

---ITEM 320---
BETWEEN SEPTEMBER 1 AND MAY 1, NO ASPHALT MATERIAL SHALL BE APPLIED UNLESS, DUE TO UNUSUAL SITUATIONS, IT IS SPECIFICALLY AUTHORIZED OTHERWISE IN WRITING BY THE ENGINEER.

IT IS THE INTENT TO USE (AC-5, AC-10, AC-20) LATEX, MC 1200 (LATEX) OR HFRS-2P. MATERIAL RATES SHOWN ARE BASED ON AC AND MAY BE ADJUSTED BY THE ENGINEER DEPENDING ON THE MATERIAL USED. IN THE EVENT EMULSIONS ARE USED, A CURING PERIOD APPROVED BY THE ENGINEER SHALL ELAPSE BEFORE PLACING ANY SUBSEQUENT ASPHALT COURSES.

NO ASPHALT SHALL BE APPLIED WHEN THE AIR TEMPERATURE, AT ANY TIME, HAS BEEN BELOW 60 DEGREES F DURING THE PRECEDING 24 HOUR PERIOD UNLESS AUTHORIZED BY THE ENGINEER. THE CONTRACTOR'S ATTENTION IS CALLED TO THE STANDARD SPECIFICATION ITEM 320.1, LAST SENTENCE, "ASPHALT MATERIAL SHALL NOT BE PLACED WHEN GENERAL WEATHER CONDITIONS, IN THE OPINION OF THE ENGINEER, ARE NOT SUITABLE".

ALL PAVEMENT SHALL BE SURFACED IN LANE WIDTHS OR AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR WILL BE REQUIRED TO SET A STRING LINE FOR ALL SURFACE TREATMENT OPERATIONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ASPHALT AND AGGREGATE RATES ARE FOR ESTIMATING PURPOSES ONLY AND MAY BE VARIED BY THE ENGINEER. AGGREGATE RATES SHALL BE KEPT TO A MINIMUM AS DIRECTED BY THE ENGINEER.

THE LOCATION OF AGGREGATE STOCKPILES SHALL BE APPROVED BY THE ENGINEER. THE AGGREGATE SHALL BE FREE OF EXCESS SURFACE MOISTURE, AS DETERMINED BY THE ENGINEER, BEFORE APPLICATION.

PRECOATED AGGREGATES, OTHER THAN LRA, MAY BE PRECOATED WITH AC-10, AC-20, MS-1, CSS-1 OR PRECOAT OIL, EXCEPT THAT WHEN EMULSIONS ARE TO BE PLACED, AC-10 OR AC-20 SHALL NOT BE USED AS THE PRECOAT MATERIAL. FLUX OIL OR EMULSIONS MAY BE USED FOR PRECOATING LRA. WHEN AC-10 OR AC-20

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 320---, CONT'D
IS USED AS THE PRECOAT MATERIAL, THE AMOUNT USED SHALL NOT EXCEED 1.0 PERCENT BY WEIGHT. THE TYPE AND AMOUNT OF PRECOAT MATERIAL WILL BE APPROVED BY THE ENGINEER PRIOR TO PRODUCTION. WHEN EMULSIONS ARE USED AS THE PRECOAT MATERIAL, THE PRECOATED AGGREGATE SHALL BE ADEQUATELY DRIED TO THE SATISFACTION OF THE ENGINEER. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR/PRODUCER TO PROVIDE ADEQUATE DRYING AND CURING PERIODS BEFORE DELIVERY OF THE AGGREGATES. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY PRECOATED AGGREGATE WHICH IS IMPROPERLY COATED OR OTHERWISE UNSATISFACTORY FOR USE.

IF THE AGGREGATES TO BE PRECOATED ARE FOUND TO HAVE STRIPPING CHARACTERISTICS, THE ENGINEER MAY REQUIRE THE ADDITION OF A LIME SLURRY. LIME MEETING THE REQUIREMENTS OF ITEM 264, "HYDRATED LIME AND LIME SLURRY", SHALL BE ADDED TO THE AGGREGATE AT THE RATE OF 1% HYDRATED LIME BY WEIGHT OF AGGREGATE. THE LIME SHALL BE ADDED TO THE AGGREGATE IN SLURRY FORM AT THE COLD FEED. THE COST OF THE LIME SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM AND WILL NOT BE PAID FOR DIRECTLY. IF APPROVED BY THE ENGINEER, THE LIME SLURRY MAY BE ADDED AT THE STOCKPILE BUT NOT MORE THAN 24 HOURS IN ADVANCE OF USE.

WARNING TO CONTRACTORS: STOCKPILES OF AGGREGATE PRECOATED WITH AC MAY GENERATE EXCESSIVE HEAT BUILD-UP RESULTING IN DAMAGE TO THE ASPHALT AND/OR AGGREGATES IF ADEQUATE COOLING HAS NOT BEEN INITIALLY PROVIDED. STOCKPILES SHOWING EVIDENCE OF EXCESSIVE HEAT BUILD-UP WILL BE REJECTED.

THE PERCENTAGE BY WEIGHT OF THE LATEX ADDITIVE (SOLID BASIS) THAT IS ADDED TO AC SHALL BE 2%. WHEN USING LATEX ASPHALT, THE CONTRACTOR SHALL USE PRECAUTIONARY MEASURES TO AVOID DRIFTING OF ASPHALT ONTO TRAFFIC AND ADJACENT PROPERTY.

---ITEM 340---
BETWEEN NOVEMBER 1 AND MARCH 1, NO ASPHALTIC CONCRETE PAVEMENT SHALL BE PLACED UNLESS, DUE TO UNUSUAL SITUATIONS, IT IS SPECIFICALLY AUTHORIZED BY THE ENGINEER IN WRITING.

NO HOT MIX ASPHALTIC MIXTURE SHALL BE PLACED WHEN THE AIR TEMPERATURE IS BELOW 50 DEGREES F OR HAS BEEN BELOW 50 DEGREES F DURING THE PRECEDING 24 HOURS UNLESS AUTHORIZED BY THE ENGINEER. MAT THICKNESSES OF 1-1/2 INCHES AND LESS SHALL NOT BE PLACED WHEN THE TEMPERATURE OF THE SURFACE ON WHICH THE MAT IS TO BE PLACED IS BELOW 50 DEGREES F.

ASPHALT CONCRETE PAVEMENT SHALL BE PLACED WITH A SPREADING AND FINISHING MACHINE EQUIPPED WITH AUTOMATIC SCREED CONTROL DEVICES UNLESS

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 340---, CONT'D
OTHERWISE AUTHORIZED BY THE ENGINEER.

THE ASPHALT LAYING MACHINE SHALL NOT BE SERVED BY MORE THAN ONE PLANT AT A TIME.

VEHICLES OF THE HIGH DUMP SEMI-TRAILER TYPE WILL NOT BE ALLOWED TO DUMP DIRECTLY INTO THE FINISHING MACHINE UNLESS SPECIFICALLY AUTHORIZED BY THE ENGINEER.

THE USE OF A SINGLE DRUM VIBRATORY ROLLER FOR BREAKDOWN ROLLING WILL NOT BE ALLOWED.

AUTOMATIC PROPORTIONING DEVICES WILL BE REQUIRED ON ALL PLANTS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

THE CONTRACTOR MAY ELECT TO USE STONE SCREENINGS FOR FINE AGGREGATE AS OUTLINED IN ITEM 340.2 (1)(C). IF STONE SCREENINGS ARE USED, THE MAXIMUM AMOUNT OF COARSE AGGREGATE CONTAINED IN THE FINE AGGREGATE STOCKPILES IS INCREASED FROM 20% TO 30%.

FOR COARSE AGGREGATES, IF THE AMOUNT OF MATERIAL PASSING THE NO. 10 SCREEN IS 5% OR LESS, THE PI TEST REQUIREMENT IS WAIVED.

THE TOTAL AMOUNT OF MATERIALS RETAINED BETWEEN THE 40-80 AND 80-200 SIEVES SHALL NOT BE LESS THAN 20% OF THE PAVING MIXTURE.

THE COARSE AGGREGATE USED IN THE SURFACE COURSE OF THE TRAVEL LANES SHALL HAVE AN ABRASION LOSS OF NOT MORE THAN 37% BY WEIGHT WHEN SUBJECTED TO THE LOS ANGELES ABRASION TEST.

THE COARSE AGGREGATE USED IN THE SURFACE COURSE OF THE TRAVEL LANES WILL BE SUBJECTED TO 4 CYCLES OF THE SOUNDNESS TEST IN ACCORDANCE WITH TEST METHOD TEX-411-A. THE LOSS SHALL NOT BE GREATER THAN 30 WHEN MAGNESIUM SULPHATE IS USED. THIS TEST WILL NOT APPLY TO BLENDS WITH CRUSHED TRAPROCK OR CRUSHED FLINTROCK.

ONLY AC-20 SHALL BE USED.

THE COARSE AGGREGATE MAY BE SAMPLED DURING DELIVERY TO THE PLANT, FROM THE STOCKPILE, FROM THE COLD BINS, OR FROM THE HOT BINS AS DIRECTED BY THE ENGINEER.

IF THE MATERIALS FURNISHED ARE FOUND TO HAVE STRIPPING CHARACTERISTICS, THE ENGINEER MAY REQUIRE THE ADDITION OF AN APPROVED ANTISTRIPPING AGENT CONFORMING TO THE REQUIREMENTS OF ITEM 3373, "ASPHALT

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 340---, CONT'D
ANTISTRIPPING AGENT (LIME)", OR ITEM 9374, "ASPHALT ANTISTRIPPING AGENT (LIQUID)". THE USE OF TEST METHOD TEX-531-C SHALL NOT BE REQUIRED TO EVALUATE THE MIX. THE COST OF THE ANTISTRIPPING ADDITIVES WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS. A TEST SECTION WITHOUT THE ANTISTRIPPING AGENT WILL NOT BE REQUIRED.

THE COARSE AGGREGATE USED IN THE MAT DESIGNATED ACP (SURF) SHALL HAVE A MINIMUM POLISH VALUE OF 32. IF FLINTROCK OR TRAPROCK IS USED, THE POLISH VALUE WILL BE WAIVED, PROVIDING THE FOLLOWING CRITERIA IS MET: THAT PORTION OF THE FLINTROCK OR TRAPROCK RETAINED ON THE NO. 10 SIEVE SHALL COMPRISE OF AT LEAST 30% BY VOLUME OF THE TOTAL AGGREGATE. IN ADDITION, IF NATURALLY BLENDED OR MECHANICALLY BLENDED AGGREGATES ARE USED, THE BLENDED AGGREGATES SHALL CONTAIN AT LEAST 50% FLINTROCK OR TRAPROCK RETAINED ON THE NO. 4 SIEVE.

CRUSHED LIMESTONE OR CRUSHED DOLOMITE MAY NOT BE USED AS THE POLISH VALUE AGGREGATE.

THE LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES OR AS DIRECTED BY THE ENGINEER.

THE ASPHALT PLANT SHALL BE EQUIPPED WITH TRUCK SCALES AS DEFINED IN ITEM 520.3(1) OF THE STANDARD SPECIFICATIONS. THREE WEIGHT TICKETS BEARING THE DATE, THE TRUCK NUMBER, AND THE GROSS, NET AND TARE WEIGHTS SHALL BE GIVEN TO THE TRUCK DRIVER BY THE CONTRACTOR'S PERSONNEL, AND THEN GIVEN TO THE STATE INSPECTOR AT THE SPREADING AND FINISHING MACHINE. THE CONTRACTOR PERIODICALLY WILL BE REQUIRED TO WEIGH LOADS OF ASPHALTIC CONCRETE ON PUBLIC SCALES OR PORTABLE PLATFORM SCALES TO INSURE THE PROPER WEIGHT OF MATERIAL.

---ITEM 420---
ALL CONCRETE STRUCTURES SHALL RECEIVE A GRADE III FINISH.

---ITEM 421---
THE ENGINEER WILL SAMPLE ALL CONCRETE AND MAKE AND TEST ALL TEST BEAMS AND CYLINDERS IN ACCORDANCE WITH TEST METHODS TEX-418-A AND TEX-420-A.

THE CONTRACTOR SHALL FURNISH AND PROPERLY MAINTAIN ALL TEST MOLDS. THE TEST MOLDS SHALL MEET THE REQUIREMENTS OF TEST METHODS TEX-418-A AND TEX-420-A AND, IN THE OPINION OF THE ENGINEER, MUST BE SATISFACTORY FOR USE AT THE TIME OF USE. IN ADDITION, THE CONTRACTOR SHALL BE

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 421---, CONT'D
RESPONSIBLE FOR FURNISHING PERSONNEL TO REMOVE THE TEST SPECIMENS FROM THE MOLDS AND TRANSPORTING THEM TO THE PROPER CURING LOCATION AT THE SCHEDULE DESIGNATED BY THE ENGINEER AND IN ACCORDANCE WITH THE GOVERNING SPECIFICATION. FOR ALL CONCRETE ITEMS, THE CONTRACTOR SHALL HAVE A WHEELBARROW, OR OTHER CONTAINER ACCEPTABLE TO THE ENGINEER, AVAILABLE TO USE IN THE SAMPLING OF THE CONCRETE.

ALL LABOR AND EQUIPMENT FURNISHED BY THE CONTRACTOR WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS AND WILL NOT BE PAID FOR DIRECTLY.

---ITEM 432---
IN ALL RIPRAP SLOPES, 3 INCH DIAMETER WEEP HOLES AT 10 FOOT MAXIMUM SPACING BACKED WITH LOOSE GRADED GRAVEL OR CRUSHED STONE AND GALVANIZED HARDWARE CLOTH SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.

IN AREAS WHERE GUARD FENCE POSTS ARE TO BE PLACED IN RIPRAP, THE RIPRAP SHALL HAVE A BLOCKED OUT AREA AT LEAST 12 INCHES LARGER THAN THE POST.

---ITEM 437---
HIGH RANGE WATER REDUCERS WILL BE USED ONLY TO MEET SPECIAL REQUIREMENTS AND WILL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER ON EACH SPECIFIC PROJECT. A SATISFACTORY WORK PLAN FOR CONTROL SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL AND AN EVALUATION OF THE CONCRETE CONTAINING THE ADMIXTURE WILL BE PERFORMED BY THE ENGINEER.

---ITEM 464---
THE USE OF THE COLD APPLIED, PLASTIC ASPHALT SEWER JOINT COMPOUND WILL BE PERMITTED.

---ITEM 470---
ALTERNATE DESIGN DRAWINGS BEARING THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER WILL BE ACCEPTABLE FOR PRECAST CONSTRUCTION OF INLETS, MANHOLES AND JUNCTION BOXES. SHOP DRAWINGS WILL NOT BE REQUIRED.

---ITEM 500---
"MATERIALS ON HAND" PAYMENTS WILL NOT BE CONSIDERED IN FIGURING PERCENTAGES USED TO COMPUTE PAYMENT FOR ITEM 500, "MOBILIZATION".

GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 506---
ANY REQUIRED TEMPORARY EROSION CONTROL WORK WILL BE HANDLED AS CONTRACTOR FORCE ACCOUNT OR AGREED UNIT PRICE WORK UNDER THIS ITEM.

---ITEM 540---
TIMBER POSTS SHALL HAVE BEVELED TOPS AND SHALL NOT BE PAINTED.

AFTER THE GUARD FENCE IS INSTALLED, THE BLOCKED OUT RIPRAP AREA AROUND THE POST SHALL BE BACKFILLED FOR A DEPTH OF 4 INCHES WITH AN ASPHALTIC MIXTURE OR CONCRETE RIPRAP APPROVED BY THE ENGINEER.

---ITEM 662---
PAINT AND BEADS MAY BE PURCHASED FROM THE DEPARTMENT AND WILL BE CHARGED AS FOLLOWS:
PAINT (TRAFFIC, WHITE) $50.60 PER 5 GAL BKT OR $549.60 PER 55 GAL DRUM
PAINT (TRAFFIC, YELLOW) $41.40 PER 5 GAL BKT OR $465.00 PER 55 GAL DRUM
CENTER STRIPE GLASS BEADS $9.60 PER 50 LB BAG

---ITEM 664---
AFTER STANDARD PAVEMENT MARKINGS HAVE BEEN PLACED, THE CONTRACTOR SHALL REMOVE ALL ABBREVIATED PAVEMENT MARKINGS WHOSE LOCATION DOES NOT COINCIDE WITH THAT OF THE STANDARD MARKINGS.

---ITEM 668---
WHERE DIMENSIONAL LAYOUTS ARE NOT SHOWN ON THE PLANS, THE PLACEMENT OF 24" STOP LINES SHALL BE AS DIRECTED BY THE ENGINEER.

---ITEMS 672 & 674---
ONLY "BITUMINOUS" ADHESIVE WILL BE PERMITTED WHEN PLACING THE RAISED PAVEMENT MARKERS.

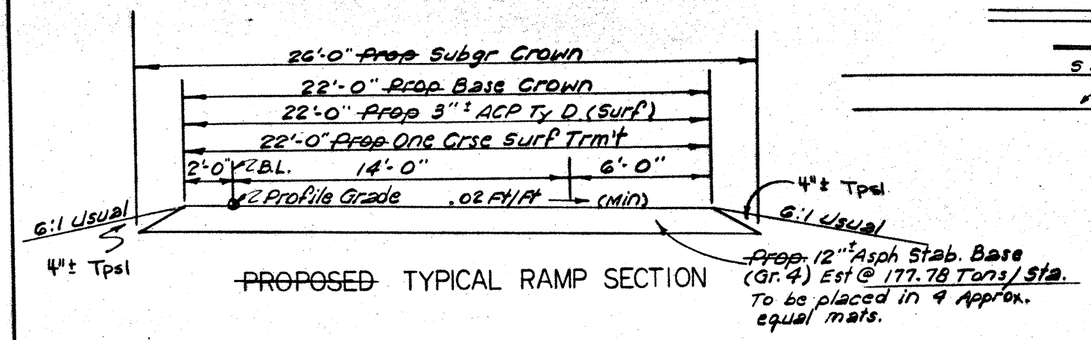
RAISED PAVEMENT MARKERS SHALL NOT BE PLACED UNTIL THE ASPHALT CONCRETE PAVEMENT SURFACE HAS CURED A MINIMUM OF 48 HOURS.

---ITEMS 1128 & 1129---
PRIOR TO CONTRACT LETTING, PRINTS OF EARTHWORK CROSS SECTIONS WILL BE AVAILABLE AT THE RESIDENT ENGINEER'S OFFICE FOR PURCHASE FROM THE DEPARTMENT BY THE PROSPECTIVE BIDDERS.

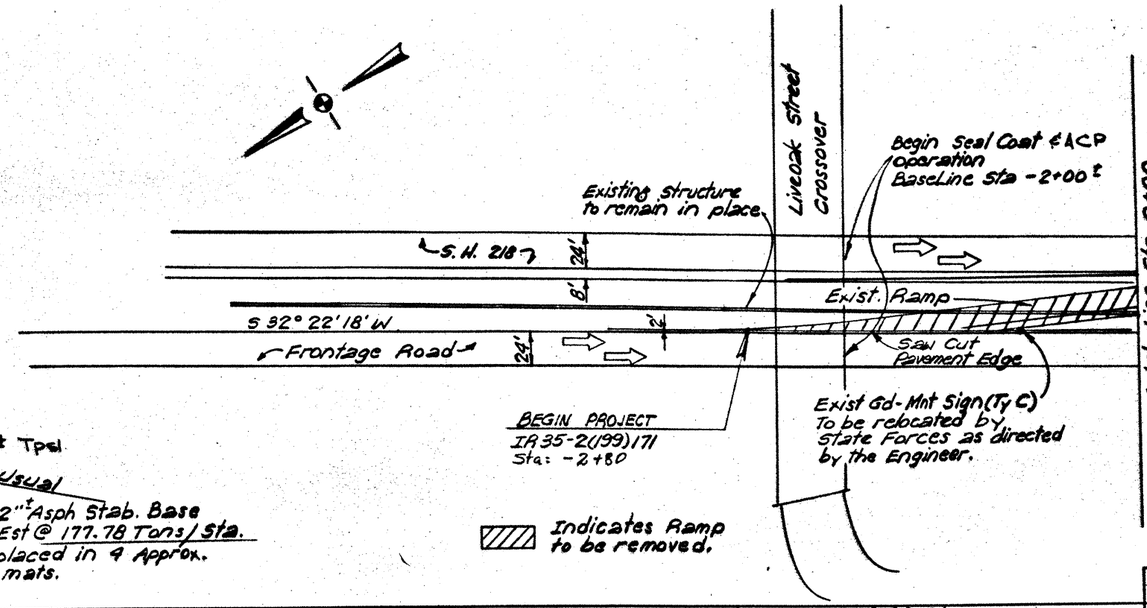
GENERAL NOTES AND SPECIFICATION DATA--

---ITEM 1129---
SPRINKLING AND ROLLING WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY. WATER USED FOR SPRINKLING SHALL CONFORM TO ITEM 204, "SPRINKLING", EXCEPT FOR MEASUREMENT AND PAYMENT.

---ITEM 6350---
TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS SHALL BE REMOVED BY THE CONTRACTOR DAILY AS THE ACP OPERATIONS PROGRESS.



~~PROPOSED~~ TYPICAL RAMP SECTION



SHEET TOTALS			
EST.	FINAL	UNIT	DESCRIPTION
2.80	3.25	STA	Oblit Aband Rd
1.0	1.0	Hr	Blading
2.80	3.25	Sta	Furn and Plac Tpsl

STATE OF TEXAS
DALE R. STEIN, JR.
56108
REGISTERED PROFESSIONAL ENGINEER

Dale R. Stein Jr. P.E. Oct 24, 97
Dale R. Stein, Jr. Date

PLAN PROFILE

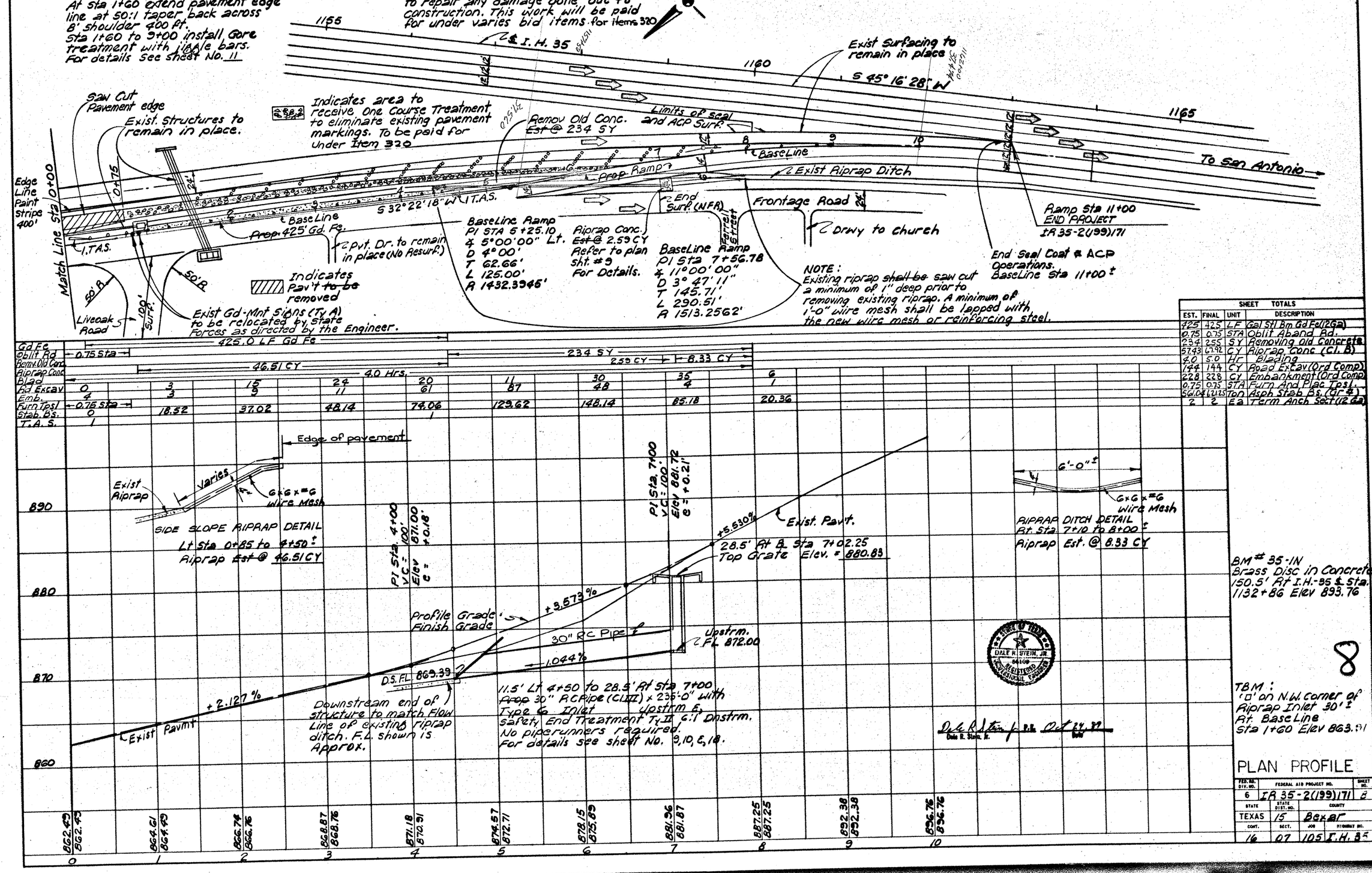
7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.			SHEET NO.
6	IR 35-2(199)171			7
STATE	STATE DIST. NO.	COUNTY		
TEXAS	15	Bexar		
CONT.	SECT.	JOB	HIGHWAY NO.	
16	07	105	I.H. 35	

NOTE:
At Sta 1+60 extend pavement edge line at 50:1 taper back across 8' shoulder 400 ft.
Sta 1+60 to 3+00 install Gore treatment with jiggle bars.
For details see sheet No. 11

NOTE:
In those areas where the front slopes are paved the Contractor will be required to repair any damage done due to construction. This work will be paid for under varies bid items for items 320

Superelevation Data Note
The ramp cross slope is graded to match the existing superelevation.



SHEET TOTALS			
EST.	FINAL	UNIT	DESCRIPTION
425	425	LF	Gal St Bm Gd Fe (12Ga)
0.75	0.75	STA	Oblit Aband Rd.
234	255	SY	Removing Old Concrete
57.43	67.92	CY	Riprap Conc (Cl. B)
4.0	5.0	Hr	Blading
144	144	CY	Road Excav (Ord Comp)
228	228	CY	Embankment (Ord Comp)
0.75	0.75	STA	Furn And Plac Topsl.
56.04	61.125	Ton	Asph Stab Bs. (Gr 2)
2	2	EA	Term Anch Sect (12 Ga)

BM # 35-IN
Brass Disc in Concrete
150.5' Rt I.H.-35 ℄ Sta. 1132+86 Elev 893.76

8

TBM:
'□' on N.W. corner of Riprap Inlet 30'± Rt. Base Line Sta 1+60 Elev 863.91

Dale R. Stein, Jr. P.E. Oct 24, 77
Date

PLAN PROFILE

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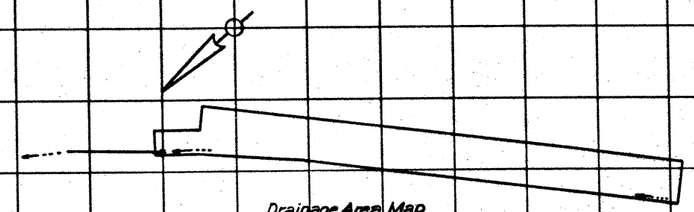
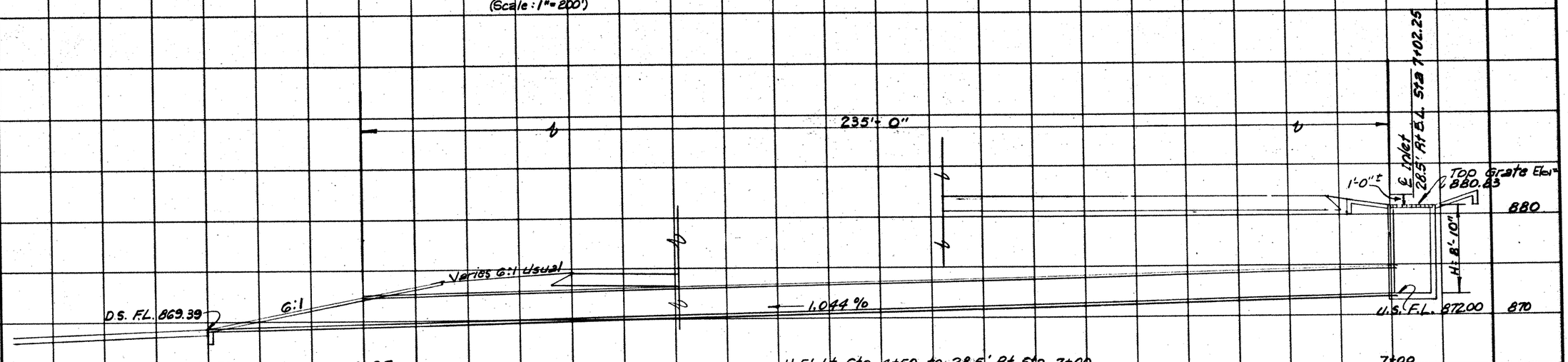
6	IR 35-2(199)171		8
STATE	STATE DIST. NO.	COUNTY	
TEXAS	15	Bexar	
CONT.	SECT.	JOB	HIGHWAY NO.
16	07	105	I.H. 35



Drainage Area Map
(Scale: 1" = 200')



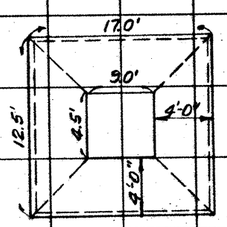
11.5' Lt Sta 4+50 to 28.5' Rt Sta 7+00
~~Prop~~ 30" RC Pipe (Cl III) x 235'-0" with Inlet
Type 6 Upstrm, Safety End Treatment
(Ty II) (30 in) (6:1) Dnstrm. No pipe runners required.
For details see sheet No 10 & 18

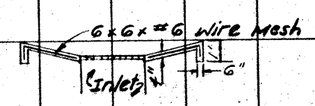
Downstream end of structure to match Flow Line of existing riprap ditch. Flow Line shown is approx. The Contractor may with the approval of the Engineer eliminate the downstream toewall.

Runoff Computations (Tc = 10 Minutes)

Acres	Freq Yrs	C x A	'I' In/Hr	'Q' CFS	'H' Grate Feet
3.9	10	3.32	8.07	27.	1'

Note: proposed 30" RCP @ 1.044% slope, Vu = 9.6'/s, capacity = 45 cfs.





Riprap Detail
Riprap ~~Est @~~ 2.59 C Y

ESTIMATED QUANTITIES

ITEM	QUANT	UNIT
Inlet Compl Ty 6	1	Ea.
RC Pipe (Cl III) 30"	235	LF
Safety End Treat (Ty II)(30 in)(6:1)	1	Ea
Trench Excavation Protection	95	LF

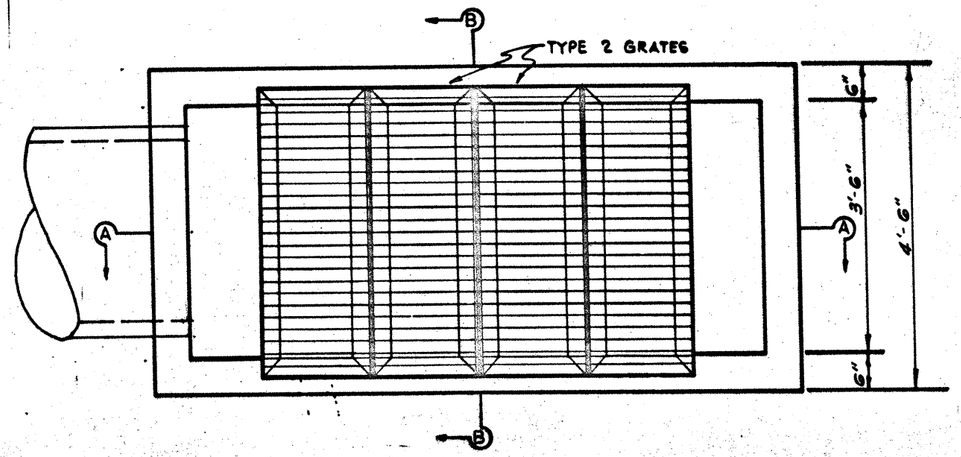
STATE OF TEXAS
DALE R. STEIN, JR.
56109
REGISTERED
PROFESSIONAL ENGINEER

Dale R. Stein Jr. P.E. Oct 24, 99
Dale R. Stein, Jr.

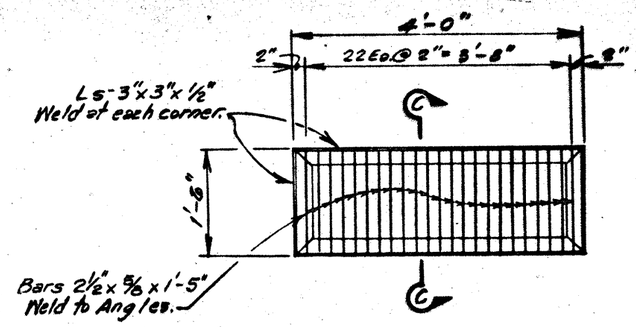
CULVERT LAYOUT

9

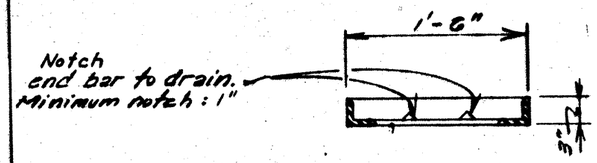
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	IR 35-2(199) 171	9
STATE	STATE DIST. NO. / COUNTY	
TEXAS	15 / Bexar	
CONT. / SECT.	JOB	HIGHWAY NO.
16 / 07	105	IH 35



REINFORCING STEEL					
Bar	No.	Size	Spacing	Length	Weight
R	13	#4	9"±	8'-2"	71
S	5	#4	9"±	11'-6"	38
T	32	#4	9"±	Varies	Varies
U	Varies	#4	9"±	8'-2"	Varies
V	Varies	#4	9"±	6'-10"	Varies

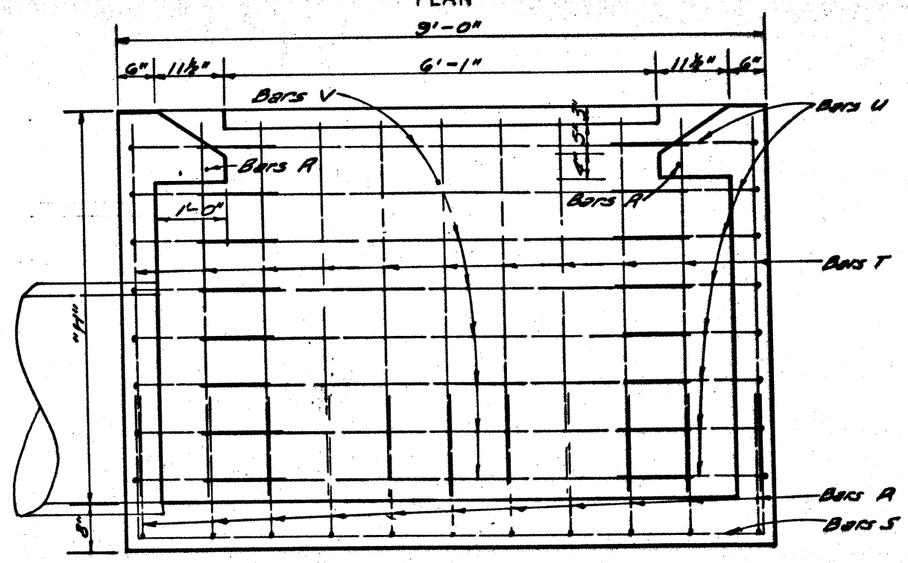


GRATE ~ TYPE 2

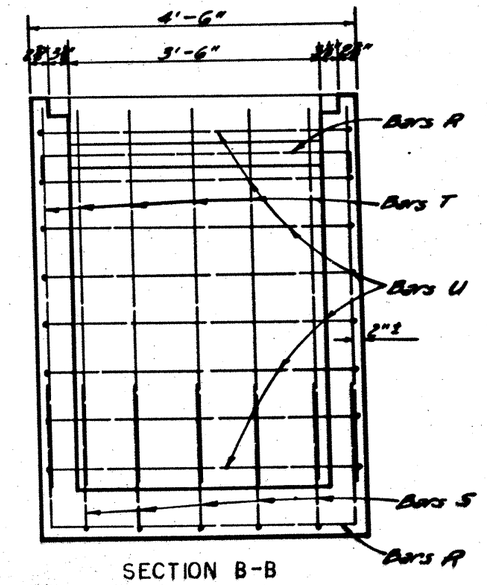


SECTION C-C

PLAN

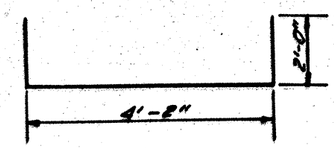


SECTION A-A

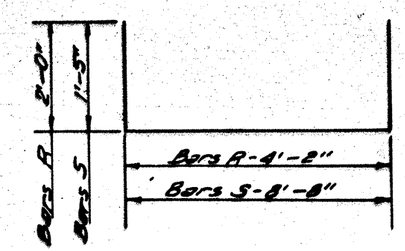


SECTION B-B

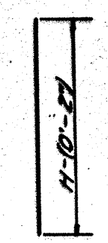
Dale R. Stein P.E. Oct 31, 89
Date



BARS U



BARS R & S



BARS T

10

DROP INLET DETAILS

DROP INLET TYPE 6

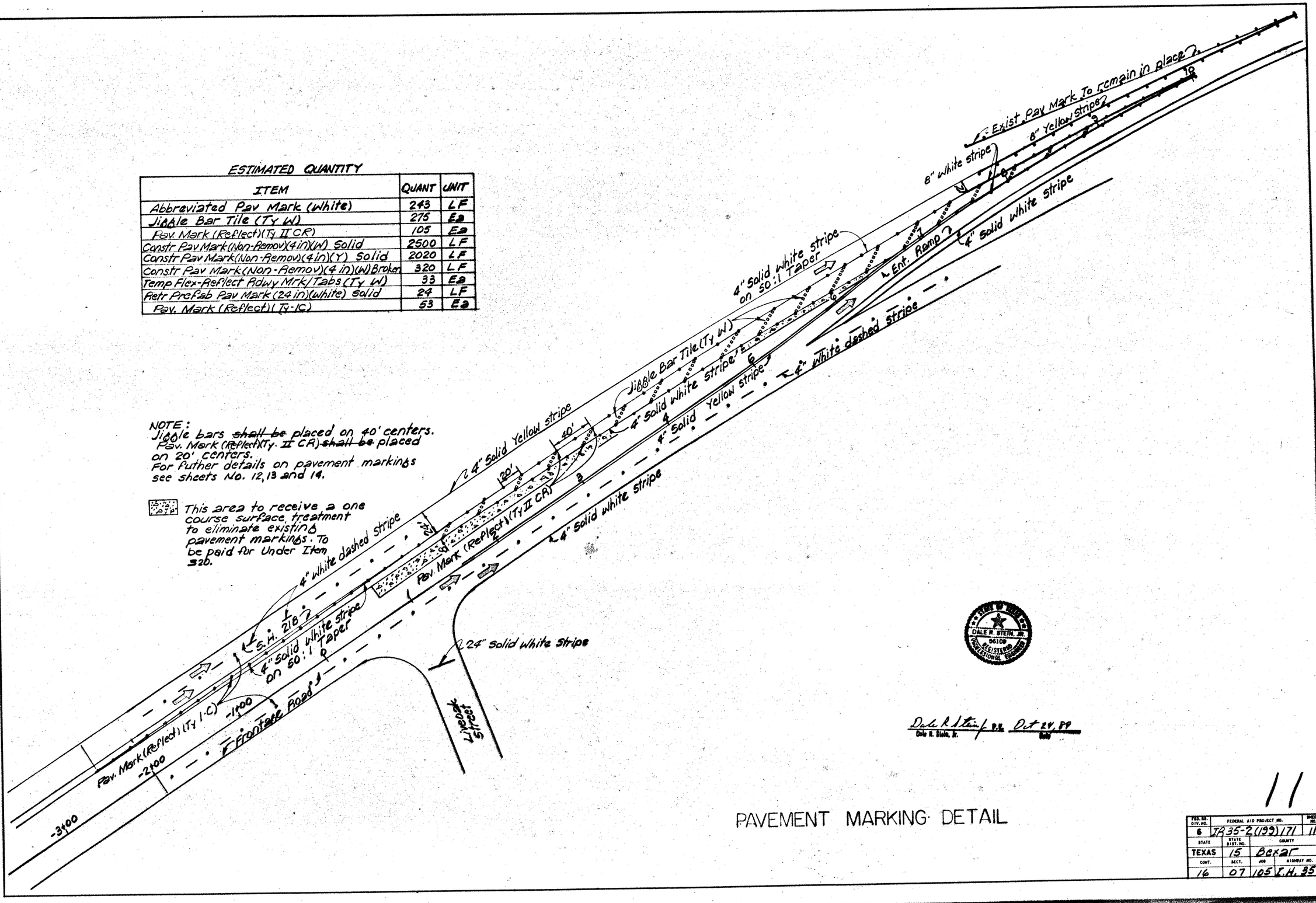
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	IR35-2(199)171				10
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.	
15	BEXAR	16	07	105	IH35	

ESTIMATED QUANTITY

ITEM	QUANT	UNIT
Abbreviated Pav Mark (White)	243	LF
Jiggle Bar Tile (Ty W)	275	EA
Pav. Mark (Reflect)(Ty II CR)	105	EA
Constr Pav Mark (Non-Remov)(4 in)(W) Solid	2500	LF
Constr Pav Mark (Non-Remov)(4 in)(Y) Solid	2020	LF
Constr Pav Mark (Non-Remov)(4 in)(W) Broken	320	LF
Temp Flex-Reflect Rdwy Mrk/Tabs (Ty W)	33	EA
Retr Prefab Pav Mark (24 in)(White) Solid	24	LF
Pav. Mark (Reflect)(Ty IC)	53	EA

NOTE:
Jiggle bars ~~shall be~~ placed on 40' centers.
Pav. Mark (Reflect)(Ty. II CR) ~~shall be~~ placed on 20' centers.
For further details on pavement markings see sheets No. 12, 13 and 14.

This area to receive a one course surface treatment to eliminate existing pavement markings. To be paid for Under Item 32b.



DALE R. STEIN, JR.
06109
REGISTERED
PROFESSIONAL ENGINEER

Dale R. Stein, P.E. Oct 24, 89
Dale R. Stein, Jr.

PAVEMENT MARKING DETAIL

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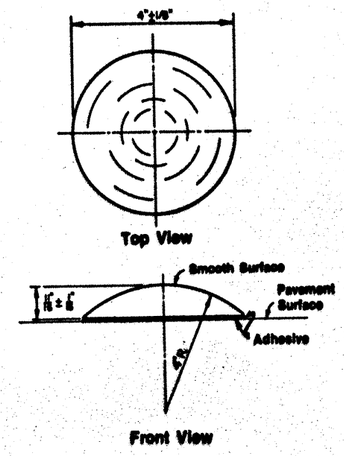
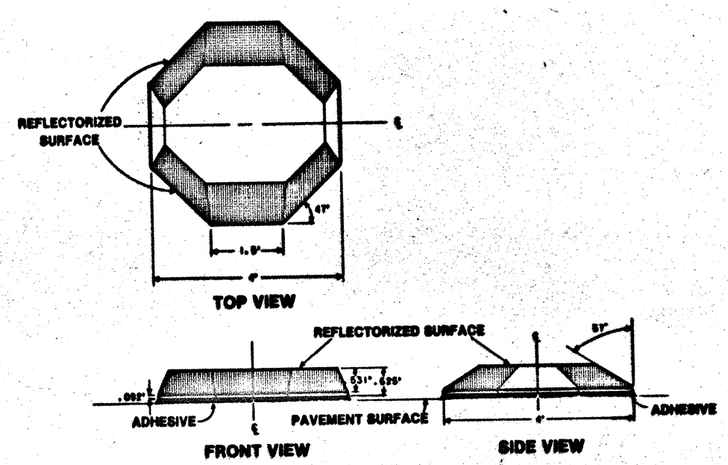
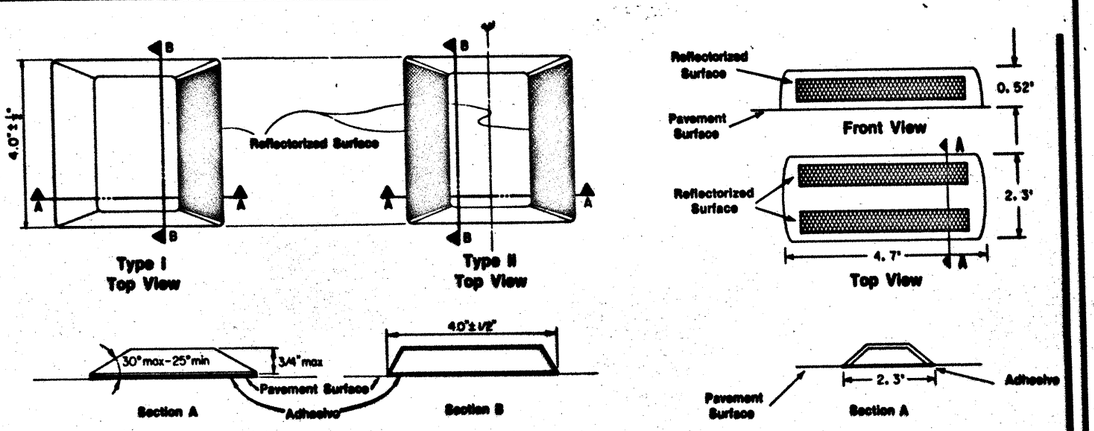
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	IR 35-2(199)171	11
STATE	STATE DIST. NO.	COUNTY
TEXAS	15	Bexar
CONT.	SECT.	JOB	HIGHWAY NO.
16	07	105	I.H. 35

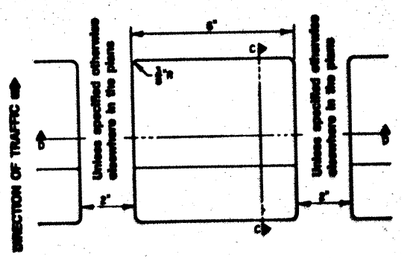


TRAFFIC BUTTONS
(NON-REFLECTORIZED)

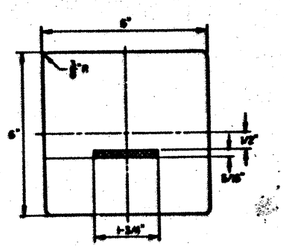




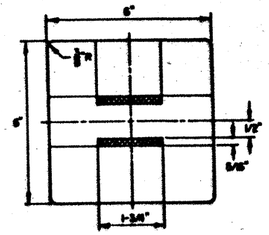
PAVEMENT MARKERS
(REFLECTORIZED)



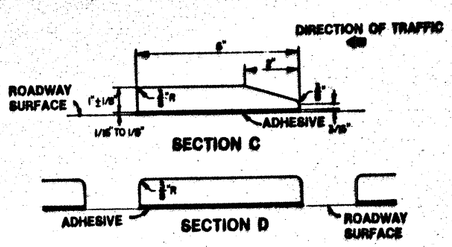
JIGGLE BAR IN PLACE
TOP VIEW

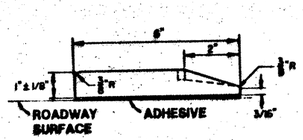


TYPE I
Top View

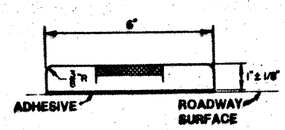


TYPE II
Top View

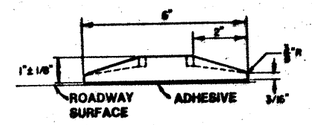




TYPE I
Side View



TYPES I & II
Front View



TYPE II
Side View

JIGGLE BAR TILES
(NONREFLECTIVE)

"JIGGLE BARS" CONSIST OF A NUMBER OF JIGGLE BAR TILES PLACED IN A LINEAR CONFIGURATION

JIGGLE BAR TILES
(REFLECTORIZED)

NOTE

ALL DIMENSIONS ARE ± 1/8" UNLESS OTHERWISE SHOWN

GENERAL NOTES:

THE PAVEMENT UPON WHICH THE TRAFFIC BUTTONS, PAVEMENT MARKERS, AND JIGGLE BAR TILE ARE TO BE PLACED SHALL BE PREPARED SUBJECT TO THE APPROVAL OF THE ENGINEER TO INSURE PROPER CLEANING OF THE PAVEMENT SURFACE. RPM'S SHALL BE BONDED TO THE ROADWAY SURFACE WITH ADHESIVE CONFORMING WITH SPECIFICATION.

UNLESS SPECIFIED ELSEWHERE IN THE PLANS, THE USUAL JIGGLE BAR SPACING IS 50' ON MEDIAN PAVED SHOULDERS, 100' ON OUTSIDE PAVED SHOULDERS. JIGGLE BARS SHALL BE ORIENTED PERPENDICULAR TO THE ROADWAY.

JIGGLE BARS SHALL ALSO BE PLACED AT SUCH OTHER LOCATIONS AS SHOWN ON THE PLAN AND PROFILE SHEETS OR WHERE DIRECTED BY THE ENGINEER.

MARKERS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED TO SPECIFY ANY PARTICULAR PRODUCT.

1. TYPE OF PAVEMENT MARKERS (REFLECTORIZED) PROVIDED ON THIS PROJECT WILL BE AT THE CONTRACTOR'S OPTION.
2. ALL PAVEMENT MARKERS PROVIDED SHALL BE OF THE SAME MANUFACTURER.

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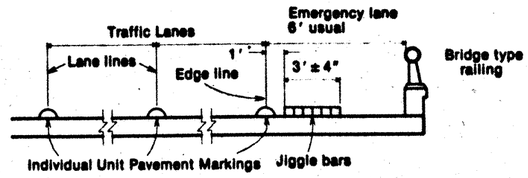
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

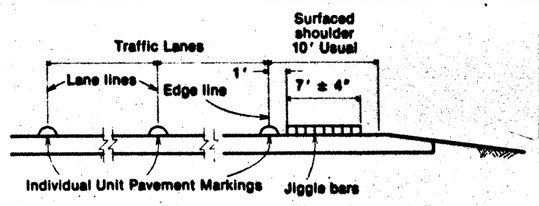
INDIVIDUAL UNIT PAVEMENT MARKINGS REFLECTIVE PAVEMENT MARKERS, TRAFFIC BUTTONS & JIGGLE BAR TILE

IPM(1)

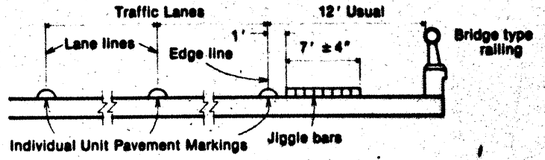
ORIGINAL DRAWING DATE: 1-81	REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DR.:	2-82 7-86	15	6	TR35-Z (199) 171	12
CK.:	7-85 10-86	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
DR.:	11-85	BEXAR	16	7	105	IH 35
CK.:						21A



ON 6' EMERGENCY LANE



ON 10' SURFACED SHOULDER

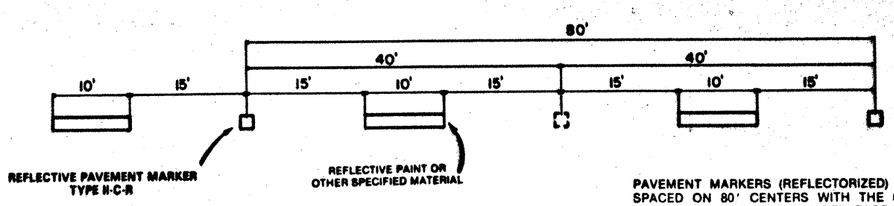


ON 12' SURFACED SHOULDER

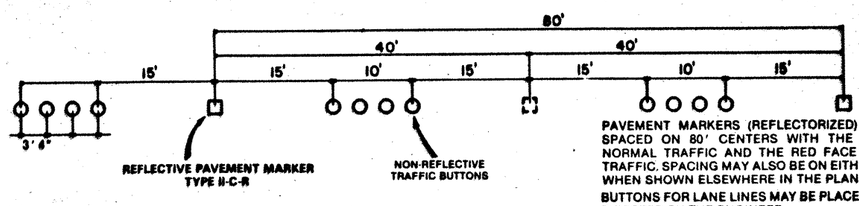
TYPICAL SECTIONS SHOWING INDIVIDUAL UNIT PAVEMENT MARKINGS & JIGGLE BAR LOCATIONS

(INDIVIDUAL UNIT PAVEMENT MARKING EDGE LINES NORMALLY USED ONLY WITH EMERGENCY LANES)

LANE LINES AND EDGE LINES MAY CONSIST OF VARIOUS MATERIALS AS CALLED FOR ELSEWHERE IN THE PLANS
JIGGLE BAR TILES USED ON EMERGENCY LANE OR SURFACED SHOULDER ARE PLACED TO REDUCE ACCIDENT POTENTIAL ASSOCIATED WITH SINGLE VEHICLE, RUN-OFF-ROAD TYPE ACCIDENTS.

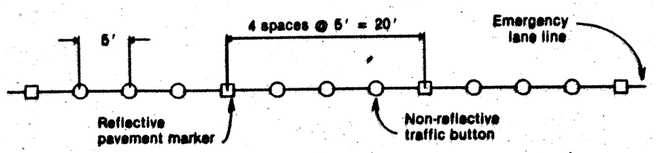


PAVEMENT MARKERS (REFLECTORIZED) TYPE II-C-R SHALL BE SPACED ON 80' CENTERS WITH THE CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC. SPACING MAY ALSO BE ON EITHER 40' OR 160' CENTERS WHEN SHOWN ELSEWHERE IN THE PLANS.

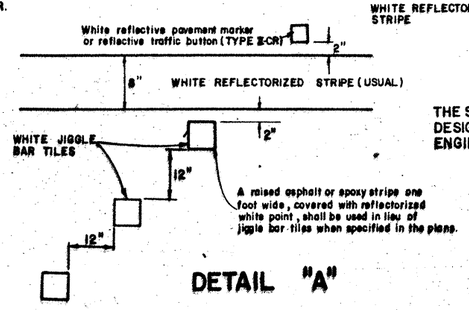


PAVEMENT MARKERS (REFLECTORIZED) TYPE II-C-R SHALL BE SPACED ON 80' CENTERS WITH THE CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC. SPACING MAY ALSO BE ON EITHER 40' OR 160' CENTERS WHEN SHOWN ELSEWHERE IN THE PLANS.
BUTTONS FOR LANE LINES MAY BE PLACED AT 5-FOOT SPACING IF DIRECTED BY THE ENGINEER.

TRAFFIC LANE LINES PAVEMENT MARKING DETAILS

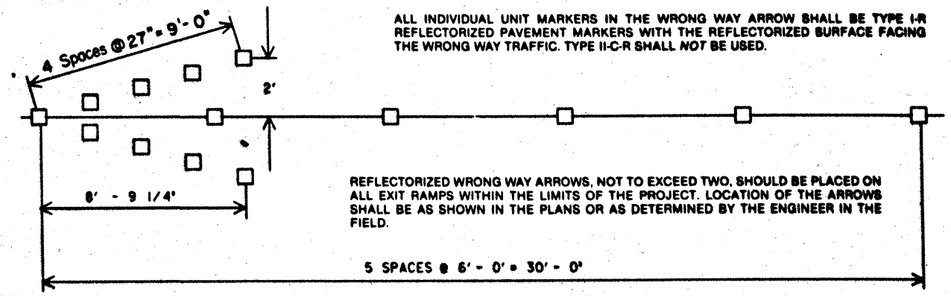


TRAFFIC BUTTONS FOR EMERGENCY LANE & SHOULDER EDGE LINES



DETAIL "A"

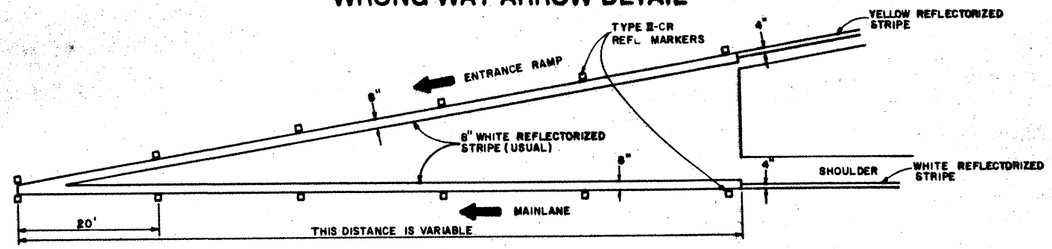
Direction of traffic



ALL INDIVIDUAL UNIT MARKERS IN THE WRONG WAY ARROW SHALL BE TYPE I-R REFLECTORIZED PAVEMENT MARKERS WITH THE REFLECTORIZED SURFACE FACING THE WRONG WAY TRAFFIC. TYPE II-C-R SHALL *NOT* BE USED.

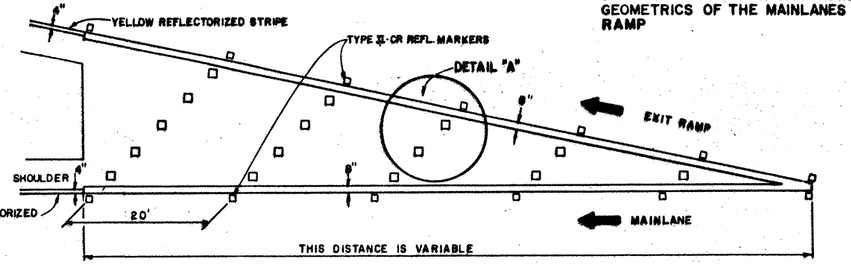
REFLECTORIZED WRONG WAY ARROWS, NOT TO EXCEED TWO, SHOULD BE PLACED ON ALL EXIT RAMPS WITHIN THE LIMITS OF THE PROJECT. LOCATION OF THE ARROWS SHALL BE AS SHOWN IN THE PLANS OR AS DETERMINED BY THE ENGINEER IN THE FIELD.

WRONG WAY ARROW DETAIL



TYPICAL ENTRANCE RAMP GORE MARKING

JIGGLE BARS MAY VARY ACCORDING TO THE GEOMETRICS OF THE MAINLANES AND THE RAMP



TYPICAL EXIT RAMP GORE MARKING

THE SHAPE OF THE GORE MARKING WILL VARY DEPENDING ON THE RAMP DESIGN AND WILL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

STATE OF TEXAS
PATRICK LANE IRWIN
45779
REGISTERED PROFESSIONAL ENGINEER

Patrick L. Irwin 12-05-88
Patrick L. Irwin Date

2-88 - ADDED ENTRANCE RAMP DETAIL

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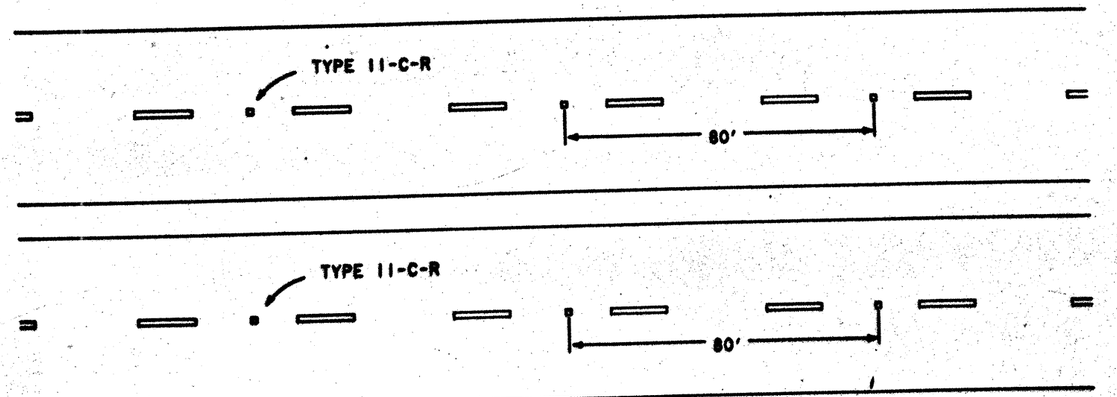
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

INDIVIDUAL UNIT PAVEMENT MARKINGS REFLECTIVE PAVEMENT MARKERS, TRAFFIC BUTTONS, & JIGGLE BARS FOR FREEWAYS

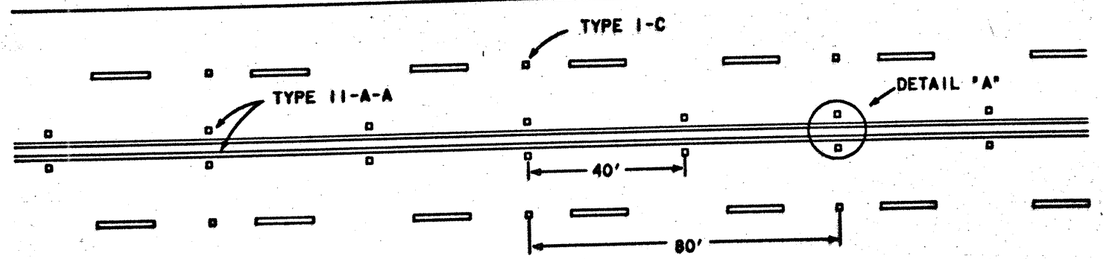
IPM(2)(MOD)

DRAWING DATE 5-74	REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN:-- CK:-- DR:-- CK:--	7-86 11-88 2-88 6-88	15	6	IR 35-2(197)171	13
		COUNTY	CONTROL	SECTION	JOB
		BEXAR	16	7	105



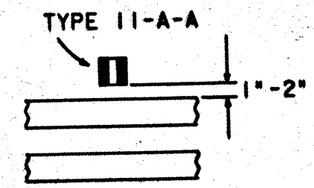
LANE LINES FOR DIVIDED HIGHWAYS

INDIVIDUAL UNIT MARKER TYPE II-C-R, CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC, SHALL BE SPACED ON 80-FOOT CENTERS EXCEPT ON VERTICAL CURVES, GRADES OVER 2 PER CENT, LESS THAN 1000 FEET LONG, HORIZONTAL CURVES, AND ON CONTINUOUSLY ILLUMINATED SECTIONS OF HIGHWAY WHERE THEY MAY BE PLACED ON 40-FOOT CENTERS IF DEEMED NECESSARY BY THE ENGINEER.

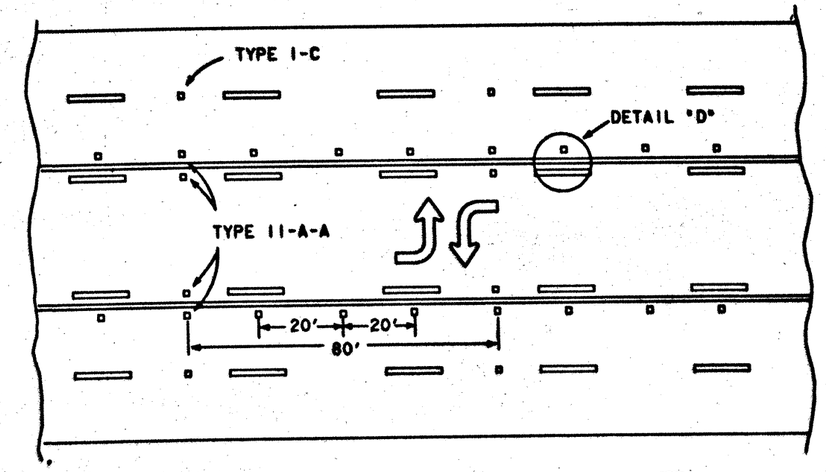


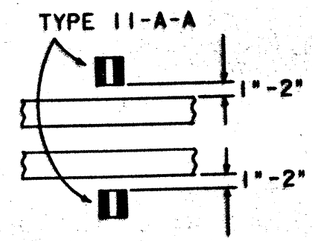
LANE LINES & CENTER LINES FOR MULTI-LANE UNDIVIDED HIGHWAYS

INDIVIDUAL UNIT MARKER TYPE I-C, CLEAR FACE TOWARD NORMAL TRAFFIC, SHALL BE PLACED ON 80-FOOT CENTERS.



DETAIL "D"





DETAIL "A"

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANE

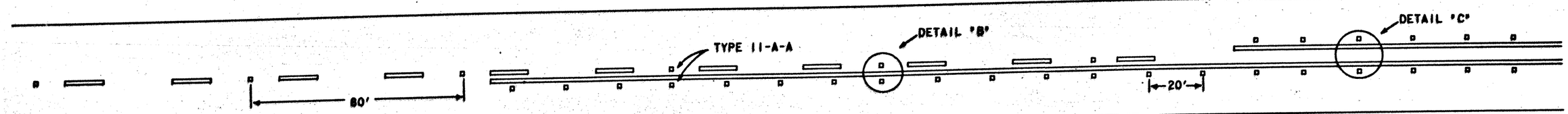
Patrick L. Sands P.E. 08-29-89
Patrick L. Sands Date

GENERAL NOTES:

ALL INDIVIDUAL UNIT MARKERS PLACED IN DASHED LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.

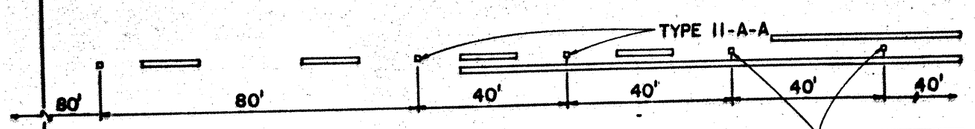
FIRST AND LAST INDIVIDUAL UNIT MARKERS IN A NO-PASSING ZONE BARRIER LINE ARE TO BE LOCATED ADJACENT TO EITHER THE MIDPOINT OF THE GAP OF THE CENTERLINE MARKING OR TO THE MIDPOINT OF THE STRIPE OF THE CENTERLINE MARKING.

ADDED CONDITION TWO FOR ROADWAYS 22' OR LESS IN WIDTH.



CONDITION ONE (1)

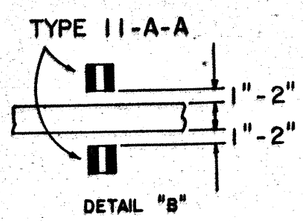
CENTER LINE & NO PASSING ZONE BARRIER LINES FOR TWO-LANE TWO-WAY HIGHWAYS



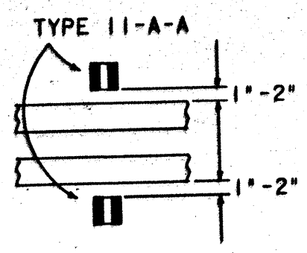
CONDITION TWO (2)

GENERAL NOTES:
CONDITION TWO(2) SHOULD BE USED FOR ROADWAYS 22' OR LESS IN WIDTH.

TYPE II-A-A MAY BE PLACED AT 40-FOOT CENTERS ON THE CENTER LINE ADJACENT TO NO PASSING ZONES FOR EITHER LANE AND AT LOCATIONS DEEMED NECESSARY BY THE ENGINEER.



DETAIL "B"



DETAIL "C"

REV. 8-29-89

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

INDIVIDUAL UNIT PAVEMENT MARKINGS USED WITH STANDARD PAVEMENT MARKINGS FOR CENTER LINES AND LANE LINES

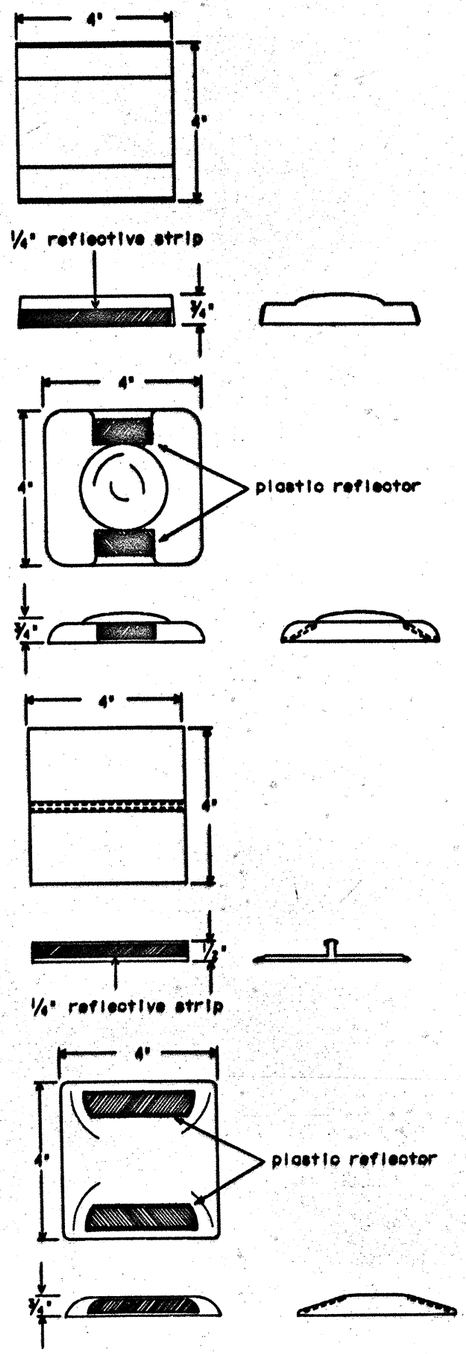
PM(2)(MOD)(DIST.15)

ORIGINAL DRAWING DATED	REVISIONS	DRAWING REVISED	PROJECT REVISED	FEDERAL AID PROJECT			SHEET
DN.			6	TP 35-2(199)	171		14
DN.		COUNTY					ENGINEER
DN.		BEXAR	16	7	105		14
DN.							220

ORIGINAL

WORK ZONE PAVEMENT MARKINGS

Raised Markers



NOTES FOR WORK ZONE PAVEMENT MARKINGS

GENERAL

1) Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
2) This sheet is to be used in conjunction with Standard Sheet TCP(5-2).
3) Raised markers and temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values additional maintenance replacement of devices should be planned, or permanent individual unit pavement markings used, as detailed on sheets IPM(1), IPM(2), PM(0), PM(1), PM(2), PM(3) or as detailed elsewhere in the plans.

RAISED MARKERS

General

1) Raised Markers detailed on this sheet will be designated Type AA (two amber reflective surfaces with yellow body); Type A (one amber reflective surface with yellow body) or Type C (one silver reflective surface with white body). Color used shall be in accordance with the TMUTCD.

Sampling & Testing

1) Pavement Markings detailed on this sheet are to be inspected and accepted by the Project Engineer or his designated representative. Sampling and testing is not normally required.

ABBREVIATED PAVEMENT MARKINGS

General

1) Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one silver reflective surface with white body).

Material

1) Temporary flexible-reflective roadway marker tabs shall meet requirements of Department Material Specification D-9-8242.
2) The body of the temporary flexible-reflective roadway marker tabs shall consist of a base and vertical wall made of polyurethane, polyester elastomer or other material approved by the Materials and Tests Division.
3) The reflective material shall be protected with an easily removable heat resistant transparent cover capable of withstanding and protecting the reflective material from the application of 400 degree F asphalt. Stapling or clipping devices used to retain the protective cover shall not protrude through the reflective material.

Sampling & Testing

1) Temporary flexible-reflective roadway marker tabs for seal coat projects detailed on this sheet are to be inspected and accepted by the Project Engineer or his designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A) Select five (5) or more temporary flexible-reflective roadway marker tabs at random from each lot or shipment and submit to the Materials and Tests Division to determine specification compliance.
   B) Select five (5) temporary flexible-reflective roadway marker tabs and submit to the following test. Affix five (5) tabs at two (2) foot intervals on an asphaltic pavement in a straight line. Using a medium size sedan, run over the markers with front and rear wheels at a speed of 35 to 40 miles per hour, four times in each direction. No more than one (1) out of five reflective surfaces shall be lost or displaced as a result of this test.

Maintenance

1) When dry, the temporary flexible-reflective roadway marker tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
2) No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of note 1.
3) The Contactor will be responsible for maintaining the abbreviated pavement markings, when they are used, until the standard pavement markings are in place. When the Contractor is responsible for placement of the standard pavement markings, no segment of roadway shall remain without standard pavement markings for a period greater than two (2) weeks unless weather conditions prohibit that placement. The standard pavement markings shall be placed as soon as weather permits.
4) After 72 hours following the seal-coat operation, provided the standard pavement markings have not been placed, any temporary flexible-reflective roadway marker tabs not meeting the visibility requirements stated in note 1, shall be replaced as directed by the Engineer.

REMOVABLE - PREFABRICATED PAVEMENT MARKINGS

Sampling & Testing

1) Removable - Prefabricated Pavement Markings shall be a material of manufacture and product code or designation shown on the list of approved materials covered by the Department Materials Specification: D-9-8241. The list of approved materials will be maintained by the Equipment and Procurement Division (File D-4).

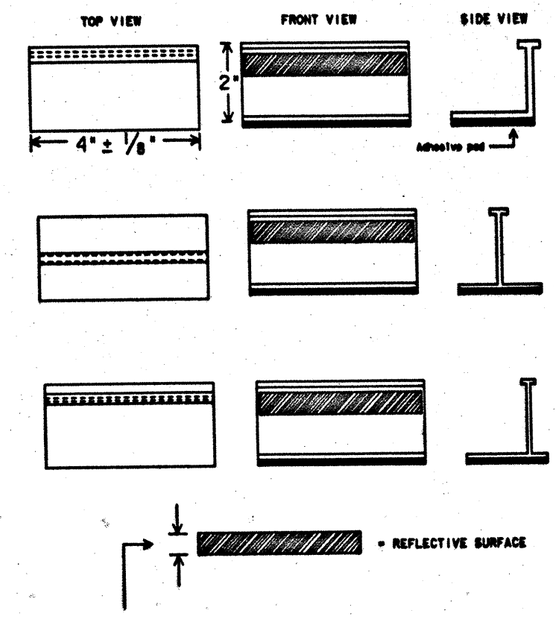
CONSTRUCTION GRADE - PREFABRICATED PAVEMENT MARKINGS (FOIL BACK)

Sampling & Testing

1) Construction Grade - Prefabricated Pavement Markings shall be a material of manufacture and product code or designation shown on the list of approved material covered by the Specification SDHPT - 550-74-01. The list of approved materials will be maintained by the Equipment and Procurement Division (File D-4).

WORK ZONE PAVEMENT MARKINGS

Temporary Flexible-Reflective Roadway Marker Tabs for Seal Coat Projects



Height of sheeting will be determined by Note 1 under Maintenance of ABBREVIATED PAVEMENT MARKINGS. Usually more than .2 inch and less than 1 inch.

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STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

Work Zone Pavement Markings

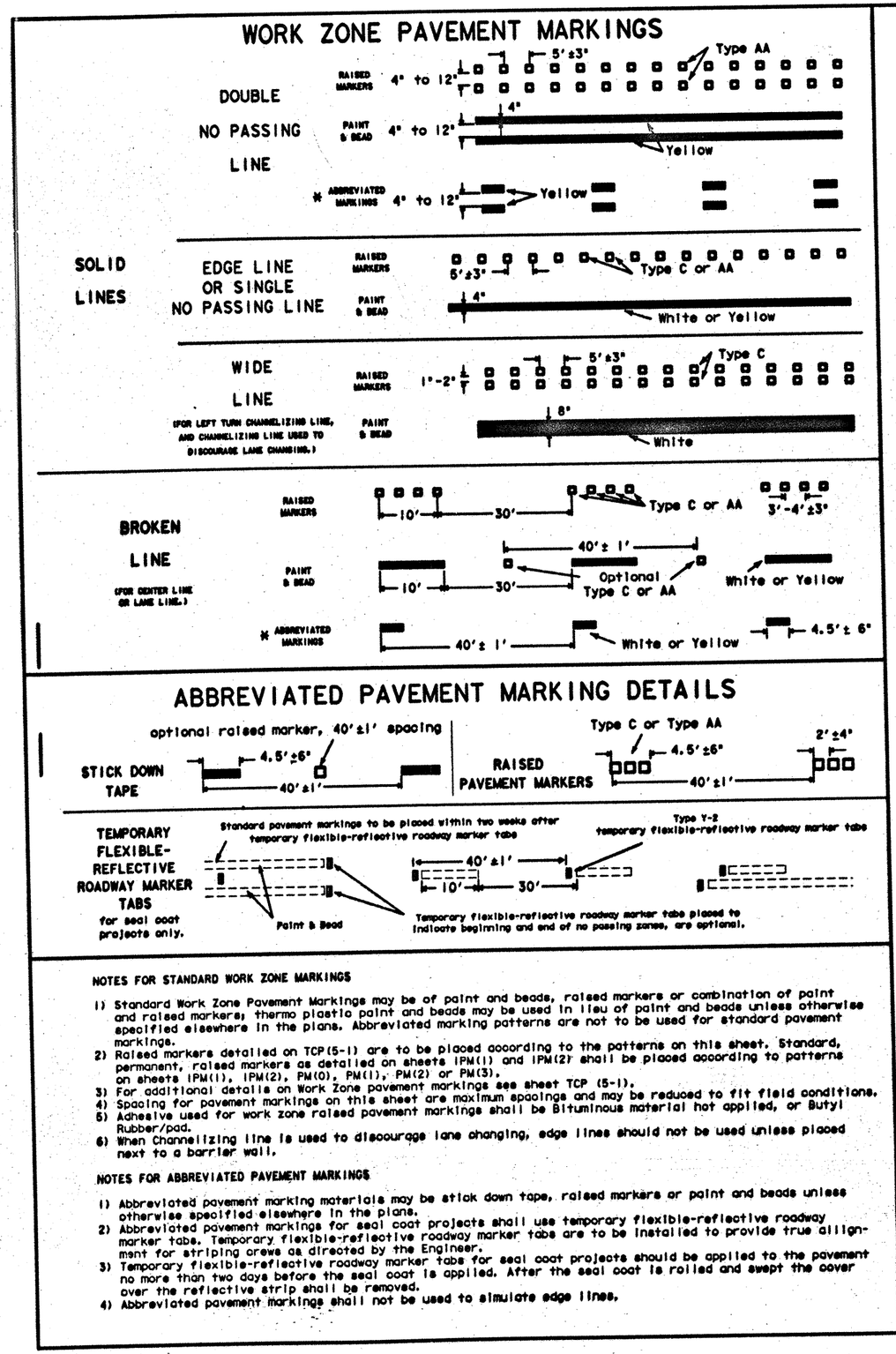
TCP (5-1)

8/88

DRAWN	DN	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
CHECKED	LR	6	TEXAS	IR 35-2(199) 171				IH 35
TRACED		STATE DIST. NO.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED		15	BEXAR		16	7	105	15

180

WORK ZONE PAVEMENT MARKINGS



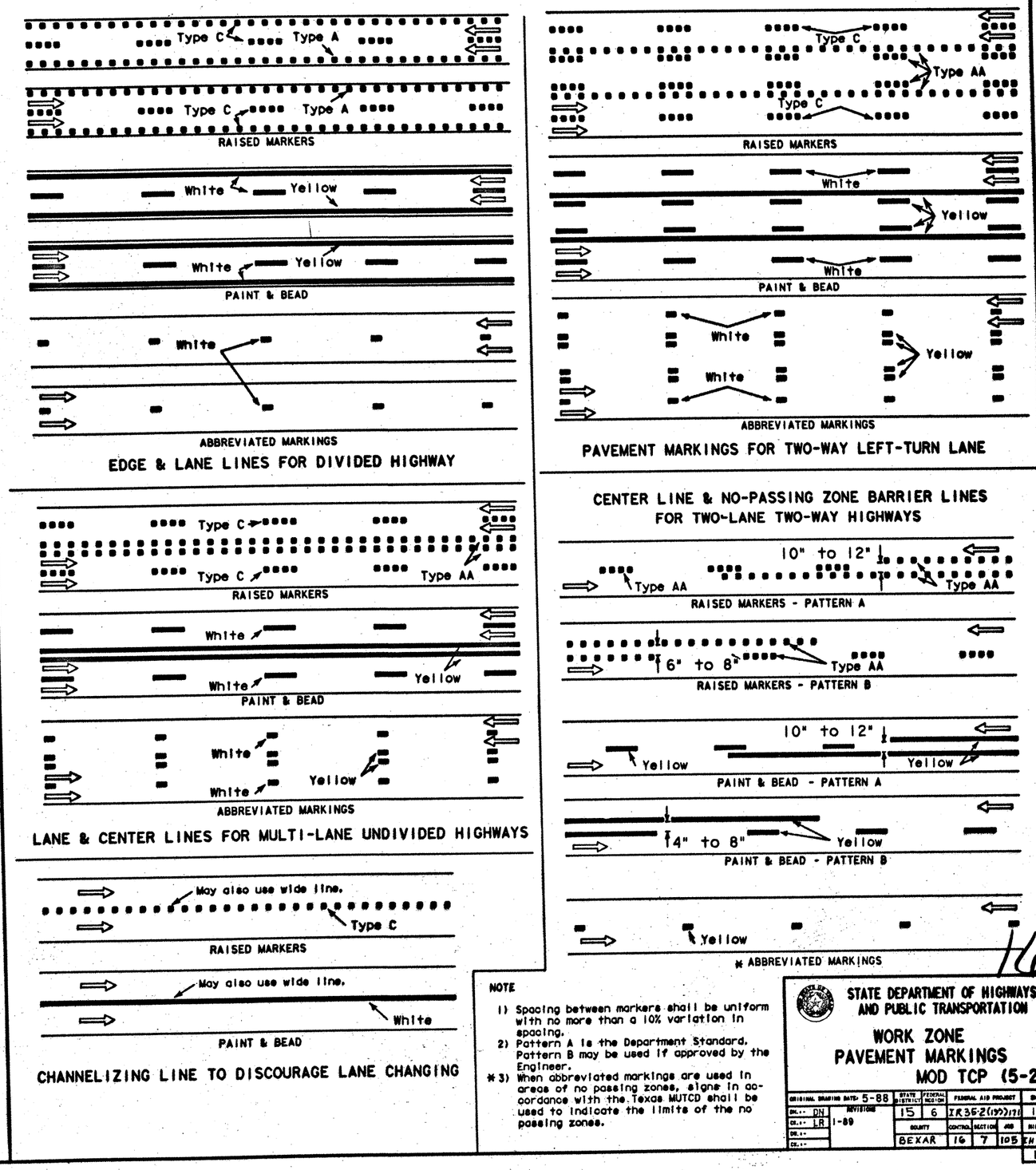
NOTES FOR STANDARD WORK ZONE MARKINGS

1) Standard Work Zone Pavement Markings may be of paint and beads, raised markers or combination of paint and raised markers; thermo plastic paint and beads may be used in lieu of paint and beads unless otherwise specified elsewhere in the plans. Abbreviated marking patterns are not to be used for standard pavement markings.
2) Raised markers detailed on TCP(5-1) are to be placed according to the patterns on this sheet. Standard, permanent, raised markers as detailed on sheets IPM(1) and IPM(2) shall be placed according to patterns on sheets IPM(1), IPM(2), PM(0), PM(1), PM(2) or PM(3).
3) For additional details on Work Zone pavement markings see sheet TCP (5-1).
4) Spacing for pavement markings on this sheet are maximum spacings and may be reduced to fit field conditions.
5) Adhesive used for work zone raised pavement markings shall be Bituminous material hot applied, or Butyl Rubber/pad.
6) When Channelizing line is used to discourage lane changing, edge lines should not be used unless placed next to a barrier wall.

NOTES FOR ABBREVIATED PAVEMENT MARKINGS

1) Abbreviated pavement marking materials may be stick down tape, raised markers or paint and beads unless otherwise specified elsewhere in the plans.
2) Abbreviated pavement markings for seal coat projects shall use temporary flexible-reflective roadway marker tabs. Temporary flexible-reflective roadway marker tabs are to be installed to provide true alignment for striping crews as directed by the Engineer.
3) Temporary flexible-reflective roadway marker tabs for seal coat projects should be applied to the pavement no more than two days before the seal coat is applied. After the seal coat is rolled and swept the cover over the reflective strip shall be removed.
4) Abbreviated pavement markings shall not be used to simulate edge lines.

PAVEMENT MARKING PATTERNS



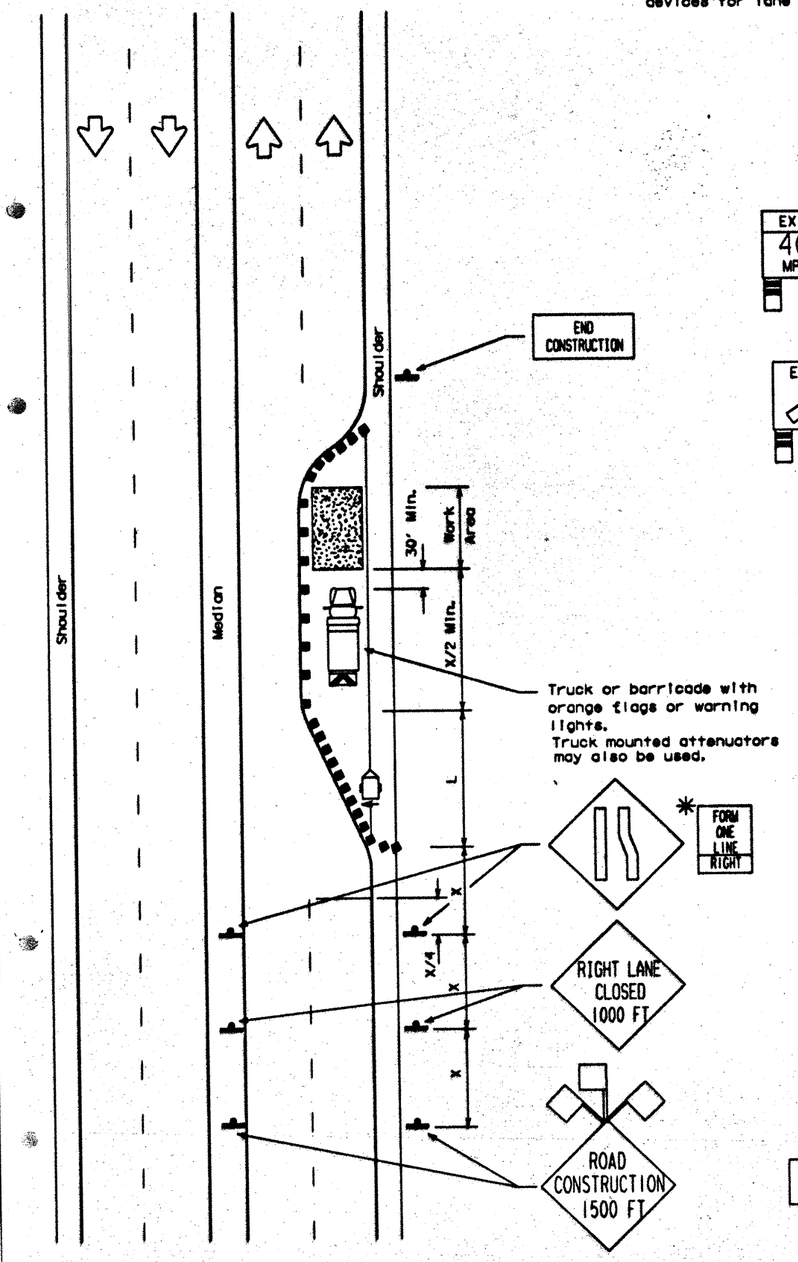
NOTE

1) Spacing between markers shall be uniform with no more than a 10% variation in spacing.
2) Pattern A is the Department Standard. Pattern B may be used if approved by the Engineer.
*3) When abbreviated markings are used in areas of no passing zones, signs in accordance with the Texas MUTCD shall be used to indicate the limits of the no passing zones.

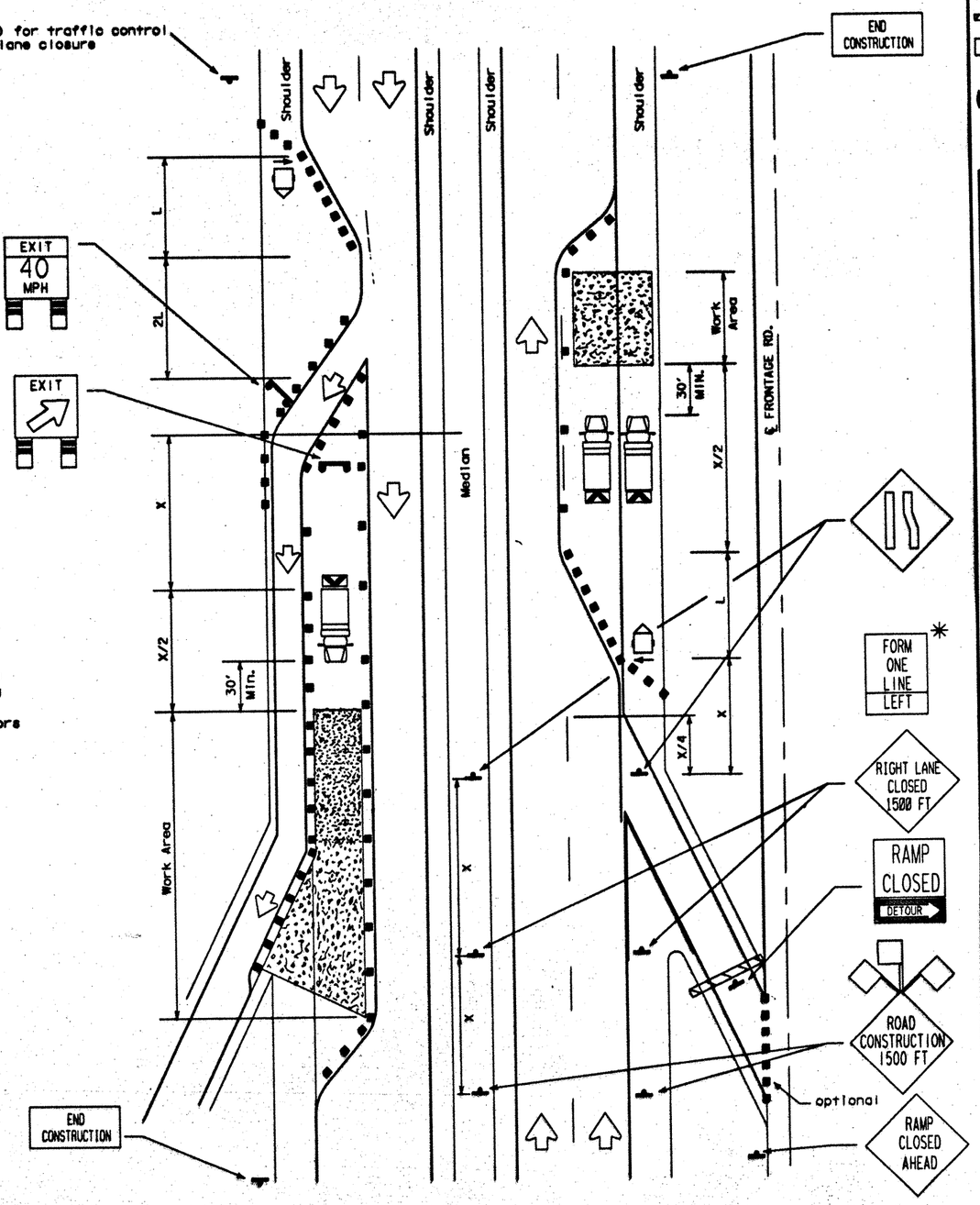
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

WORK ZONE PAVEMENT MARKINGS MOD TCP (5-2)

ORIGINAL DRAWING DATE: 5-88		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
DR.: DN	REVISIONS	15	6	IR35-2(199)171		16
CK.: LR	1-89	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
DR.:		BEXAR		16	7	105	IH 35
CK.:							191



TCP (2-5a)
Major Operations
One Lane Closure



TCP (2-5b)
Major Operations
Lane Closure Near Ramps

Legend

- Barricade
- Channelizing devices
- Flag
- Heavy Work Vehicle
- Truck Mounted Attenuator (optional)
- Trailer mounted flashing arrow board
- Flagger

Posted Speed or 85% Speed (MPH)	X Min. Distance (feet)
30 or less	80
35	120
40	160
45	240
50	320
55	500

Taper Formula:

L = (S) • (W) for speeds of 45 or more.
L = (W) • (S) • (S) / 60 for speeds of 40 or less.

Where:

L = Minimum length of taper.
S = Numerical value of posted speed limit prior to work or 85% speed.
W = Width of taper offset.

Example:

Taper length for the closure of a 12 foot lane with 55 MPH posted speed limit will be:

L=55 • 12
L=660 feet

General Notes

1. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device.

2. Channelizing devices used along the work area or along tangent sections may be supplemented with vertical panels (VP) placed on every other channelizing device. If night time conditions make it difficult to see at least two VP's, the VP's may be placed on each channelizing device.

3. In areas with safety lighting or continuous illumination the VP's may be supplemented with delineators or steady burn warning lights.

4. Work vehicles may use truck mounted attenuators.

*5. The 'FORM ONE LANE LEFT' sign may be used before the 'RIGHT LANE CLOSED 1000 FT' sign. Spacing distance between signs should be the minimum distance indicated in above table.

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STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

TRAFFIC CONTROL PLAN SHEET

							SHEET OF SHEETS	
DRAWN	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
CHECKED	6	TEXAS	IR 35-2 (199) 171				IH 35	
TRACED	STATE DIST. NO.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
CHECKED	15	BEXAR		16	7	105	17	

12/85

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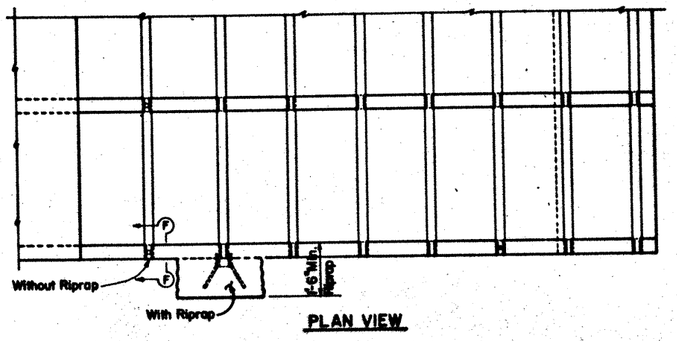
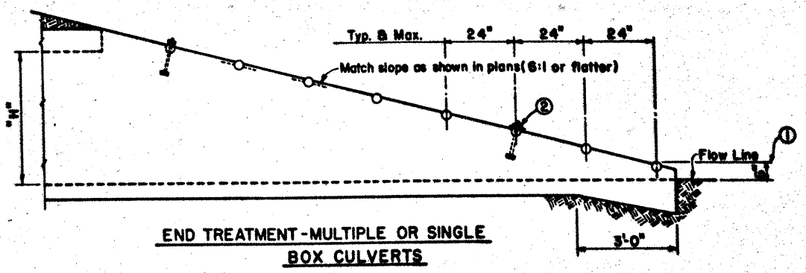
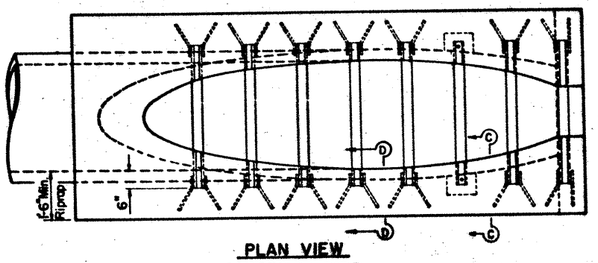


PLAN VIEW

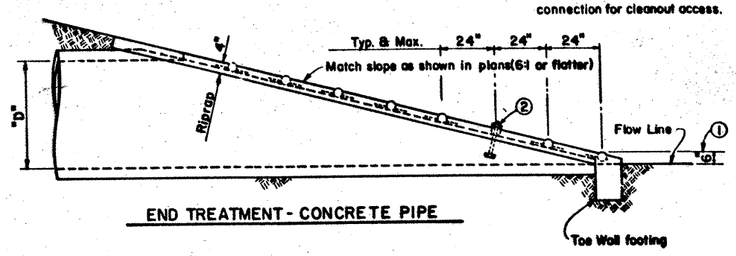


END TREATMENT - MULTIPLE OR SINGLE BOX CULVERTS

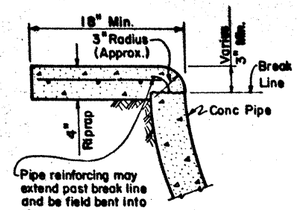
1 Top of Safety Pipe Runner (Typ.)
2 Third pipe runner to have bolted connection for cleanout access.



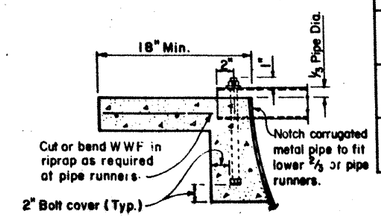
PLAN VIEW
CONCRETE PIPE



END TREATMENT - CONCRETE PIPE

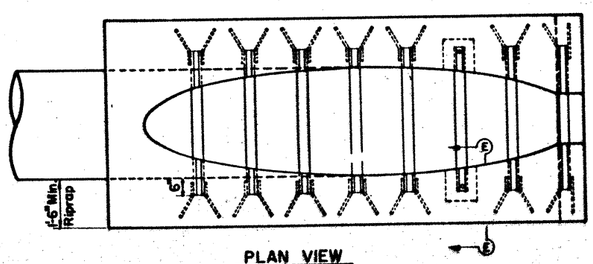


SEC. D-D

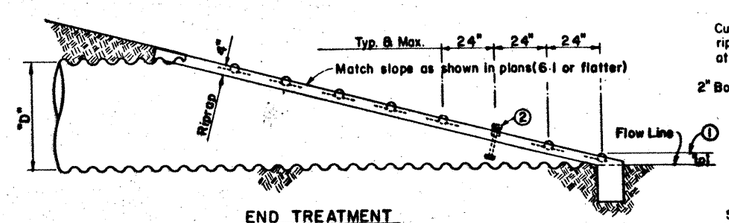


SEC. E-E

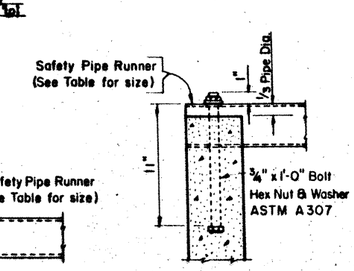
REQUIRED PIPE SIZES FOR GIVEN PIPE YIELD										
Culvert Size	Pipe Runner Length	35 ks: ASTM A53, Tyr E & S Gr. B			42 ks: ASTM A500, Gr. B			52 ks: API 5LX52		
		Nom.	OD	ID	Nom.	OD	ID	Nom.	OD	ID
30"	42"	3"XS 3½"STD	3.500 4.000	2.900 3.548	2½"XXS 3"STD	2.875 3.500	1.771 3.068	2½"XXS 3"STD	2.875 3.500	1.771 3.068
36"	48"	3"XXS 3½"XS	3.500 4.000	2.300 3.364	3"XS 3½"Std.	3.500 4.000	2.900 3.548	3"Std.	3.500	3.068
42"	54"	3"XXS 3½"XS 4"Std.	3.500 4.000 4.500	2.300 3.364 4.026	3"XXS 3½"XS 4"Std.	3.500 4.000 4.500	2.300 3.364 4.026	3"XS 3½"Std	3.500 4.000	2.900 3.548
48"	60"	3"XXS 4"XS	3.500 4.500	2.300 3.826	3"XXS 3½"XS 4"Std.	3.500 4.000 4.500	2.300 3.364 4.026	3"XXS 3½"Std	3.500 4.000	2.300 3.548
54"	66"	4"XS 5"Std.	4.500 5.563	3.826 5.047	3"XXS 4"Std.	3.500 4.500	2.300 4.026	3"XXS 3½"XS 4"Std.	3.500 4.000 4.500	2.300 3.364 4.026
60"	72"	4"XS 5"Std.	4.500 5.563	3.826 5.047	4"XS 5"Std.	4.500 5.563	3.826 5.047	3"XXS 3½"XS 4"Std.	3.500 4.000 4.500	2.300 3.364 4.026



PLAN VIEW
CORRUGATED METAL PIPE



END TREATMENT
CORRUGATED METAL PIPE



SEC. F-F

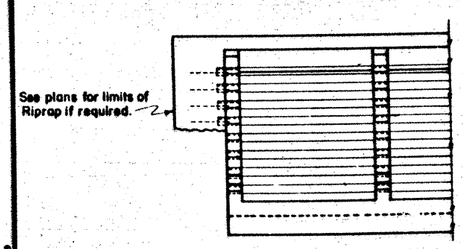
GENERAL NOTES:

These details are to be used as a guide for installation of safety pipe runners for parallel-drainage structures where out of control vehicles may impact the openings approximately perpendicular to the safety pipe runners. Some installations may require the preparation of special details. In general, safety pipe runners are installed on parallel-drainage structures at maximum spacings of approximately 24 inches.

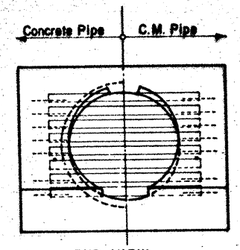
Installation of safety pipe runners for single or multiple culverts will be in accordance with the details shown if the use of safey pipe runners are specified elsewhere in the plans.

Payment for riprap (if required) toe wall footing is included in the price bid for each Safety Pipe End Treatment.

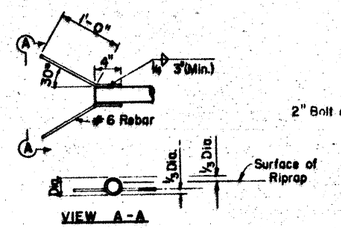
Design: Safety Pipe Runners are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, Safety Treatment of Roadside Parallel Drainage Structures, Texas Transportation Institute, June 1981.



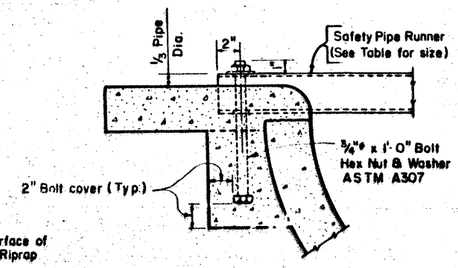
END VIEW
MULTIPLE OR SINGLE BOX CULVERTS



END VIEW
CONCRETE OR CORRUGATED METAL PIPE



VIEW A-A



SEC. C-C

Deepen and widen riprap around ends of 3rd. pipe runner and provide a bolted connection to allow cleanout access.

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

PARALLEL DRAINAGE SAFETY PIPE RUNNERS

PD-SPR

ORIGINAL DRAWING DATE: JUNE 1985		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT / ID	SHEET
DN: MPM	REVISIONS	15	6	IR35-2(149)171	18
CK: JJP	Rev 10-86 (Gen Note's)				
DW: EDS	Rev 11-87 (Added 30" Pipe to table)	COUNTY		CONTROL / SECTION / JOB	HIGHWAY
CK: MPM		BEXAR		16 7 1051	IH 35

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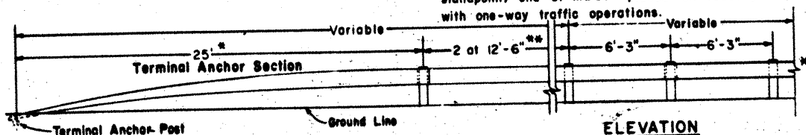
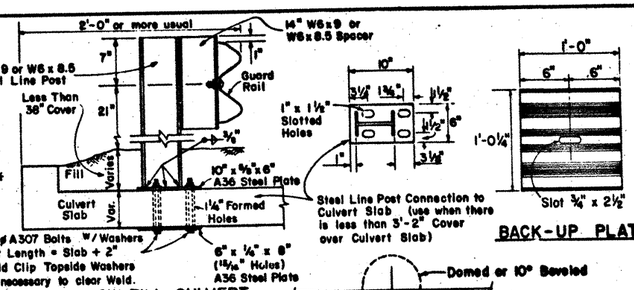
** Usual closer post spacing used for short (50' or less) sections of MBGF at bridge ends as shown elsewhere in the plans. 6'-3" spacing may be used on the downstream (from a traffic flow standpoint) end of MBGF placed on roadways with one-way traffic operations.



ELEVATION

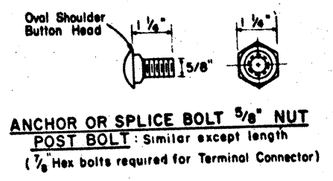
*NOTE: This dimension measured to center of splice when Terminal Connector is used.

***Connect to Terminal Anchor, Concrete Traffic Barrier, Wingwall, Bridge Rail, etc. as shown elsewhere in the plans.



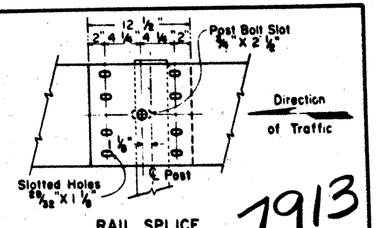
LOW FILL CULVERT POST MOUNTING

BACK-UP PLATE



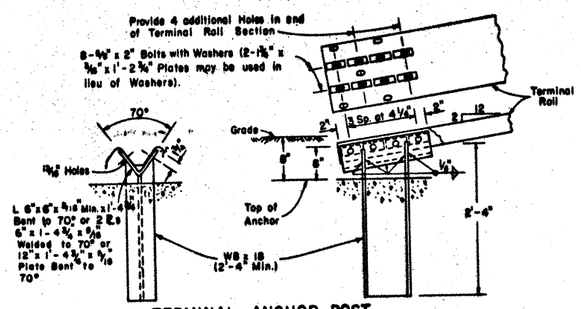
ANCHOR OR SPLICE BOLT 5/8" NUT

POST BOLT: Similar except length (7/8 Hex bolts required for Terminal Connector)



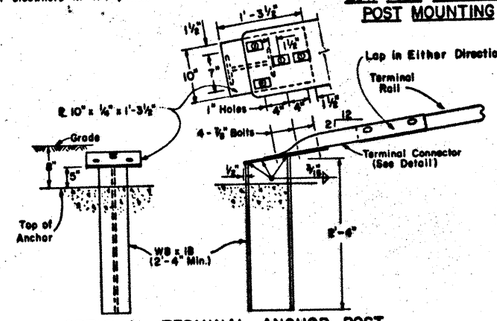
RAIL SPLICE

7913/03



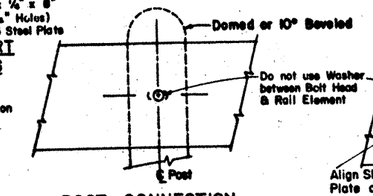
TERMINAL ANCHOR POST

NOTE: This Post requires 4 additional Holes (Shop or Field) in the Terminal Rail member with 8-5/8" Bolts and Washer Plates as shown for attachment.



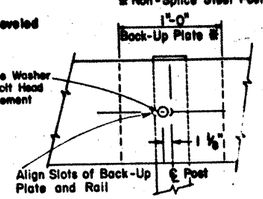
OPTIONAL TERMINAL ANCHOR POST

NOTE: This Optional Post requires the use of the 10 Ga. Terminal Connector with 4-5/8" Bolts for attachment to the Anchor Post.

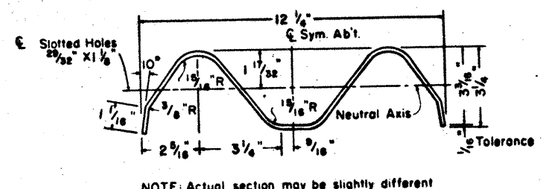


POST CONNECTION WOOD POST

Wood Post May Be Domed or Beveled

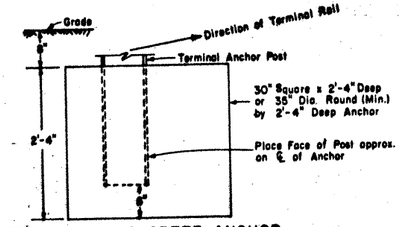


POST CONNECTION STEEL POST



NOTE: Actual section may be slightly different depending upon the manufacturer.

SECTION THRU GUARD RAIL AND BACK-UP PLATE

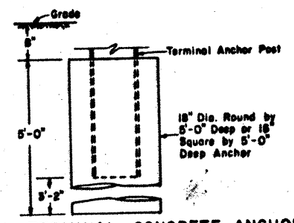


TERMINAL CONCRETE ANCHOR

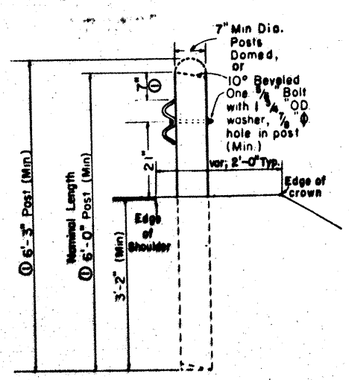
NOTE: Either Post may be used with either Anchor. No Construction Joint is allowed in the Concrete Anchor.

Terminal Rail may be bolted to Post and in twist position prior to placing Concrete Anchor.

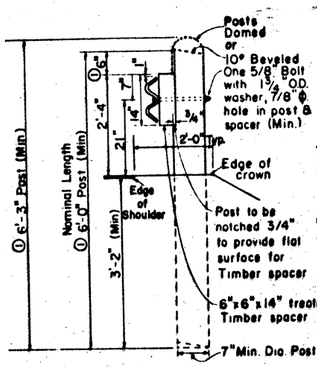
Upper 10" (Min.) of Anchor Post must be Galvanized.



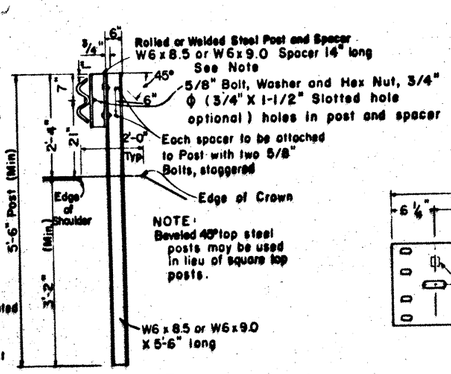
OPTIONAL TERMINAL CONCRETE ANCHOR



WOOD LINE POST



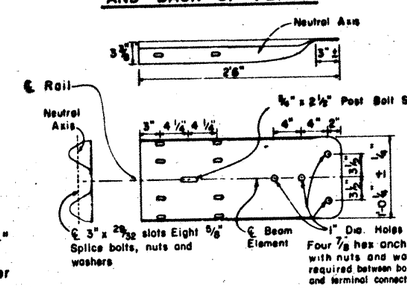
WOOD LINE POST (Blockout)



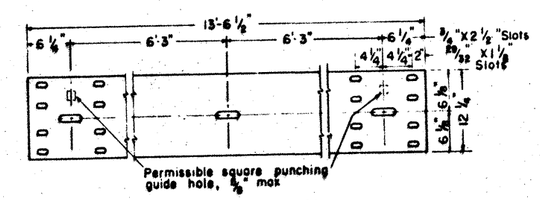
STEEL LINE POST (Blockout)

NOTE ①: Where a nominal length of 5'-6" is specified as acceptable elsewhere in the plans, these dimensions shall be reduced by 0'-6".

The designer should specify the reduced length only on highways where future ACP overlays are unlikely.



TERMINAL CONNECTOR (10 GAUGE MINIMUM)



ELEVATION OF NOMINAL 12 1/2 FOOT GUARD RAIL

(25 Foot sections may also be supplied)

GENERAL NOTES

1. THE EXACT POSITION OF GUARD FENCE SHALL BE AS SHOWN ELSEWHERE ON THE PLANS OR AS DIRECTED BY THE ENGINEER. GUARD FENCE SHALL BE TRANSITIONED TO A SMOOTH CONNECTION WITH OTHER GUARD FENCE OR STRUCTURE RAILING AS SHOWN ELSEWHERE ON PLANS.
2. AT THE OPTION OF THE CONTRACTOR THE RAIL ELEMENTS FOR THE GUARD FENCE MAY BE FURNISHED IN EITHER 12 1/2 OR 25 FOOT NOMINAL LENGTHS WITH POST BOLT SLOTS FOR CONNECTION TO POSTS.
3. BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.
4. THE TOP OF THE TERMINAL ANCHOR POST AND ALL STEEL FITTINGS THEREON SHALL BE GALVANIZED A MINIMUM OF 10" AS SHOWN.
5. WHERE SOLID ROCK IS ENCOUNTERED OR WHERE SHOWN ON THE PLANS, THE DIAMETER OF THE HOLES SHALL BE APPROXIMATELY 12 INCHES, THE BACKFILLING SHALL BE WITH A COHESIONLESS MATERIAL, AND EMBEDMENT DEPTH SHALL BE 1'-6" OR MORE AS DIRECTED BY THE ENGINEER. TIMBER POSTS SHALL NOT BE SET IN CONCRETE.
6. THE TERMINAL ANCHOR POST SHALL BE SET IN CLASS "A", "B" OR "C" CONCRETE IN ACCORDANCE WITH ITEM, "CONCRETE FOR STRUCTURES", OR SET IN CONCRETE IN ACCORDANCE WITH ITEM "CONCRETE PAVEMENT". CONCRETE SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TERMINAL RAIL SECTION AND ANCHORAGE SYSTEM.
7. TIMBER POSTS MAY BE BEVELED AT APPROXIMATELY 10 DEGREES ON THE TOP OR BOTH ENDS WITH HIGH SIDE OF TOP OF POST PLACED TOWARD THE ROADWAY OR THEY MAY BE DOMED. WHEN "BLOCKED OUT", THE UPPER PORTION OF THE POST SHALL BE NOTCHED 3/4" TO PROVIDE FLAT SURFACE FOR TIMBER SPACER. A TOLERANCE OF ± 1/8" WILL BE PERMITTED ON THE NOTCHED PORTION OF THE POST.
8. AN ANCHOR OTHER THAN TO A TERMINAL ANCHOR POST SHALL CONSIST OF A CONNECTION SIMILAR TO THE RAIL SPLICE OR SIMILAR TO THE TERMINAL CONNECTOR.
9. SPECIAL FABRICATION WILL BE REQUIRED IN INSTALLATIONS HAVING A CURVATURE OF LESS THAN 150' RADIUS.
10. POST SPACING WILL BE 6' - 3" EXCEPT THAT THE FIRST POST WILL BE 25' FROM THE TERMINAL ANCHOR POST AND THE NEXT TWO POSTS SPACED AT 12' - 6" WITH A MINIMUM OF 8 POSTS ADJACENT TO STRUCTURES SPACED AT 3' - 1 1/2",
11. THE 10 GAGE TERMINAL CONNECTORS MUST BE USED WITH THE OPTIONAL TERMINAL ANCHOR POST. EITHER ANCHOR POST MAY BE USED WITH EITHER CONCRETE ANCHOR.
12. CROWN WILL BE WIDENED TO ACCOMODATE GUARD FENCE.
13. STEEL POSTS SHALL BE BLOCKED OUT. A W6x8.5 OR W6x9.0 STEEL SPACER SHALL BE USED WITH STEEL POSTS. BACK-UP PLATES SHALL BE PROVIDED AT INTERMEDIATE (NON-SPLICE) STEEL POSTS.
14. WHEN BLOCKOUT GUARD FENCE IS SPECIFIED ELSEWHERE IN THE PLANS, A 6" x 6" x 14" TREATED TIMBER SPACER OF YELLOW PINE SHALL BE USED WITH WOOD POSTS.
15. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE BLOCKED OUT SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 21-INCHES ABOVE THE GUTTER PAN OR ROADWAY SURFACE.
16. WELDED STEEL POSTS AND SPACERS SHALL MEET THE REQUIREMENTS OF ASTM A-769. THE FLANGE WIDTH AND THICKNESS, WEB THICKNESS, AND DEPTH OF WELDED POSTS AND SPACERS SHALL EQUAL OR EXCEED THE DIMENSIONS OF A STANDARD ROLLED W6x8.5.
17. STEEL POSTS AND SPACERS SHALL MEET THE REQUIREMENTS OF ASTM A-36. BOLT HOLES SHALL BE APPROXIMATELY CENTERED BETWEEN WEB AND EDGE OF FLANGE OF SPACERS AND POSTS.
18. UNLESS OTHERWISE SHOWN IN THE PLANS, MBGF SHALL BE PLACED WITH THE FACE OF RAIL DIRECTLY ABOVE THE SHOULDER EDGE (OR CURBFACE) EXCEPT THE 25' TERMINAL ANCHOR SECTION AND ADJACENT 25' OF MBGF SHALL BE FLARED AT 25:1 (LONGITUDINAL:LATERAL) TO PROVIDE A 2' OFFSET BETWEEN BURIED ANCHOR AND SHOULDER EDGE (OR CURBFACE). FLARING THE 25' TERMINAL ANCHOR AND ADJACENT 25' MBGF IS OPTIONAL FOR ONE-WAY TRAFFIC CONDITIONS ON THE DOWNSTREAM END OF GUARD FENCE.
19. WASHERS USED WITH THE EIGHT 5/8" SPLICE BOLTS AND NUTS THAT ARE PROVIDED FOR TERMINAL CONNECTORS AND/OR TERMINAL ANCHOR POSTS SHALL BE 1 3/4" x 3" x 3/16", OR 1" I.D. AND 2" O.D. x 0.134" (ANSI B27.2) NARROW TYPE A PLAIN WASHERS.
20. BACK-UP PLATES SHALL CONFORM TO THE MATERIALS AND GALVANIZING REQUIREMENTS SPECIFIED FOR THE RAIL ELEMENT, AND SHALL BE OF THE SAME NOMINAL THICKNESS AS THE RAIL ELEMENT USED.

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

METAL BEAM GUARD FENCE GF(TD) - 87

DN	DRAWING	DATE	FED RD DIV NO	STATE	FEDERAL PROJECT NO			SHEET NO
CK DN	ORIGINAL		6	TEXAS	IR 35-2(190)171			19
DW	REVISED		STATE DIST NO	COUNTY	CONT	SECT	JOB	HIGHWAY NO
CK DW	REVISED		18	BEXAR	16	7	105	IH 35
TR								A-4
CK TR								

19

34" x 22"