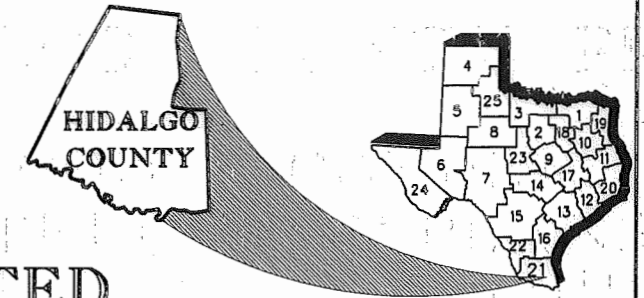


# HIDALGO COUNTY PRECINCT NO. 2

RENE A. RAMIREZ..... COUNTY JUDGE  
 ARTURO C. CUELLAR...PRECINCT NO. 1  
 HECTOR PALACIOS.....PRECINCT NO. 2  
 JOE FLORES.....PRECINCT NO. 3  
 OSCAR GARZA JR.....PRECINCT NO. 4



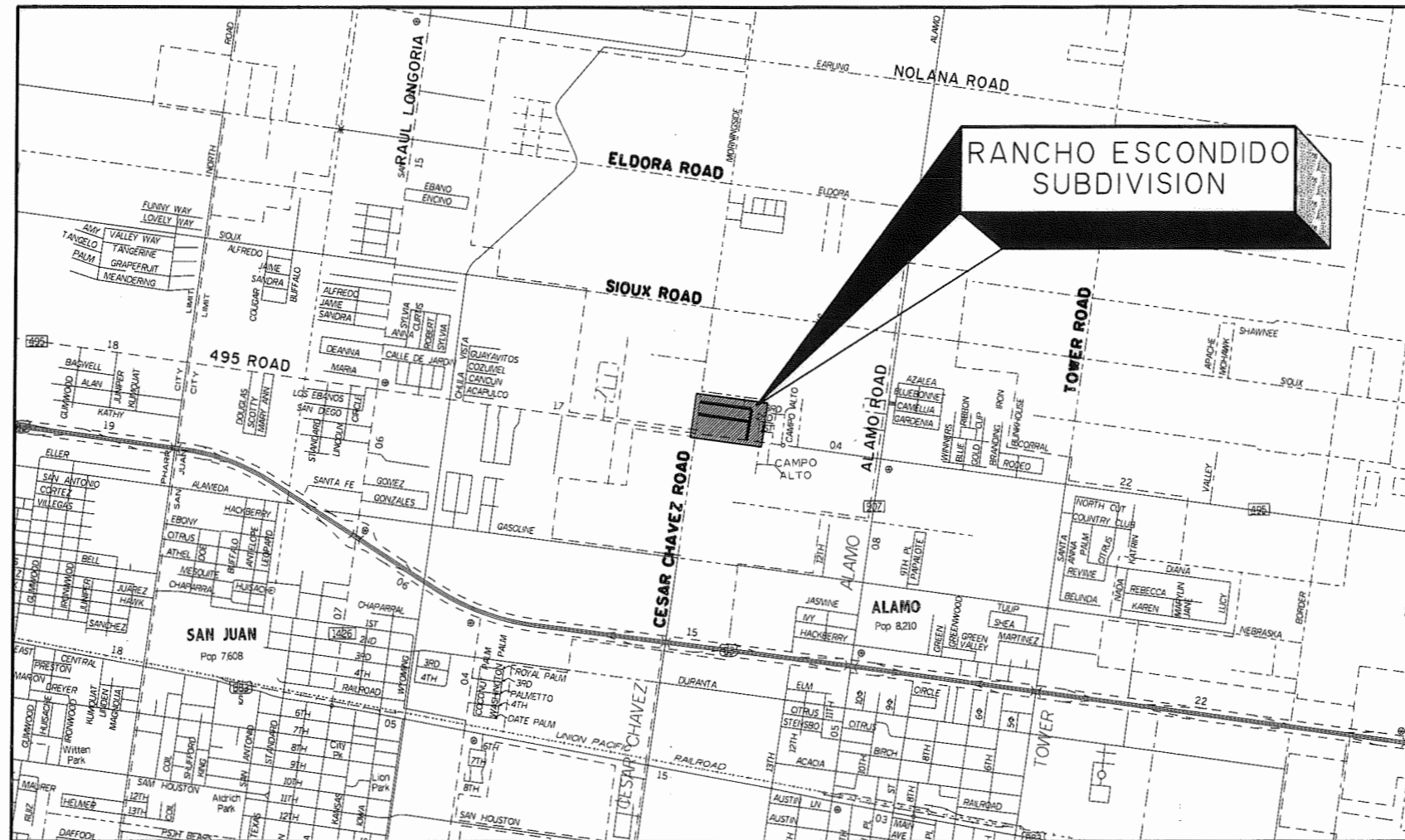
## RANCHO ESCONDIDO SUBDIVISION CONSTRUCTION PLANS FOR BORDER COLONIA ACCESS PROJECT THIRD ROUND - ALLOCATED 2010

	FEET	MILES	AREA OF DISTURBED SOIL (AC)
CSJ: 3C-1080-596- RANCHO ESCONDIDO DRIVE/CAMINO REAL DRIVE	1,819.45 FT.	0.35 MILES	2.50 AC
CSJ: 3C-1080-596- PASEO DEL SOL DRIVE	1,126.50 FT.	0.21 MILES	1.55 AC
<b>TOTAL</b>	<b>2,945.95 FT.</b>	<b>0.56 MILES</b>	<b>4.05 AC</b>

LIMITS: RANCHO ESCONDIDO SUBDIVISION (SEE PROJECT LAYOUTS)  
 CONSTRUCTION OF LOCAL STREETS CONSISTING OF: GRADING, STRUCTURES,  
 FLEXIBLE BASE, ASPHALTIC CONCRETE PAVEMENT, CONC. CURB & GUTTER,  
 & CONCRETE RIP RAP



INDEX OF SHEETS  
 SEE SHEET NO. 2



LOCATION MAP

APPROVAL COLONIA ACCESS PROGRAM	DATE: 02.15.10
<i>[Signature]</i> NAME	Exec. Dir. TITLE
APPROVAL HIDALGO COUNTY PCT. 2	DATE: 02/15/10
<i>[Signature]</i> NAME	Coma-Pct 2 TITLE
APPROVAL HIDALGO COUNTY PLANNER	DATE: 2/15/10
<i>[Signature]</i> NAME	PLAN ADM TITLE
CONCURRENCE: HIDALGO COUNTY DRAINAGE DIST. No.1	DATE: 2/22/10
<i>[Signature]</i> NAME	Dist. Mgr. TITLE

**PROJECT DATA**

DESIGN SPEED: 30 MPH  
 EXCEPTION: NONE  
 EQUATION: NONE

STANDARD SHEETS IDENTIFIED ON THE INDEX OF SHEETS HAVE  
 BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION  
 AS BEING APPLICABLE TO THIS PROJECT.

3-31-10

DATE  
*Ramiro Gutierrez, P.E.*  
 RAMIRO GUTIERREZ, P.E.

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF  
 TRANSPORTATION ON JUNE 1, 2004 AND SPECIFICATION  
 ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN  
 ON THIS PROJECT.

**R. Gutierrez Professional Engineers & Land Surveyors**  
**Engineering Corporation**  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

**SHEET NO.**

**GENERAL**

- 1 - TITLE SHEET
- 2 - INDEX OF SHEETS
- 3 - PROJECT LAYOUT
- 4 - TYPICAL SECTION & GENERAL NOTES
- 5-6 - ESTIMATE AND QUANTITY
- 7-8 - EARTHWORK TABLE
- 9 - PROJECT QUANTITIES

**TRAFFIC CONTROL PLAN**

- 10 - TRAFFIC CONTROL PLAN

**STANDARDS**

- 11-22 - [S] BC(1) - BC(12) -07

**PLAN & PROFILES**

- 23-27 - CAMINO REAL DRIVE & RANCHO ESCONDIDO DRIVE PLAN & PROFILE
- 28-30 - PASEO DEL SOL DRIVE PLAN & PROFILE
- 31 - DRIVEWAY TABLE
- 32-42 - DESIGN CROSS-SECTIONS

**STANDARDS**

- 43 - [D] DRIVEWAY DETAILS
- 44 - CONC. CURB & GUTTER DETAILS
- 45-47A - [D] MAIL BOX STANDARD

**SHEET NO.**

**DRAINAGE**

- 48 - DRAINAGE AREA MAP
- 49 - PLAN & PROFILE ROADSIDE DITCH ON CESAR CHAVEZ ROAD
- 49A - UTILITY AND DRAINAGE RANCHO ESCONDIDO DRIVE

**STANDARDS**

- 50 - [D] S.E.T.
- 50A - [D] INLET TY "A"
- 50B - [D] MANHOLE TY "A"
- 50C - [D] INLET TY "C"

**SIGNING & PAVEMENT MARKERS**

- 51 - SIGNING DETAILS

**STANDARDS**

- 52-56 - [S] SMD (1-1) (1-5)
- 57 - [S] R (1)

**ENVIRONMENTAL ISSUES**

- 58 - SW3P

**STANDARDS**

- 59 - [S] EC (1) - 93
- 60 - [S] EC (3) - 93

**LEGEND**

- [S]- STATE STANDARD
- [D]- DISTRICT STANDARD

**Professional Engineers & Land Surveyors**  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65949  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 INDEX SHEET

REVISION	DATE	BY

F.B. No.: 487,488  
 SURVEY BY: M.L.MR.DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

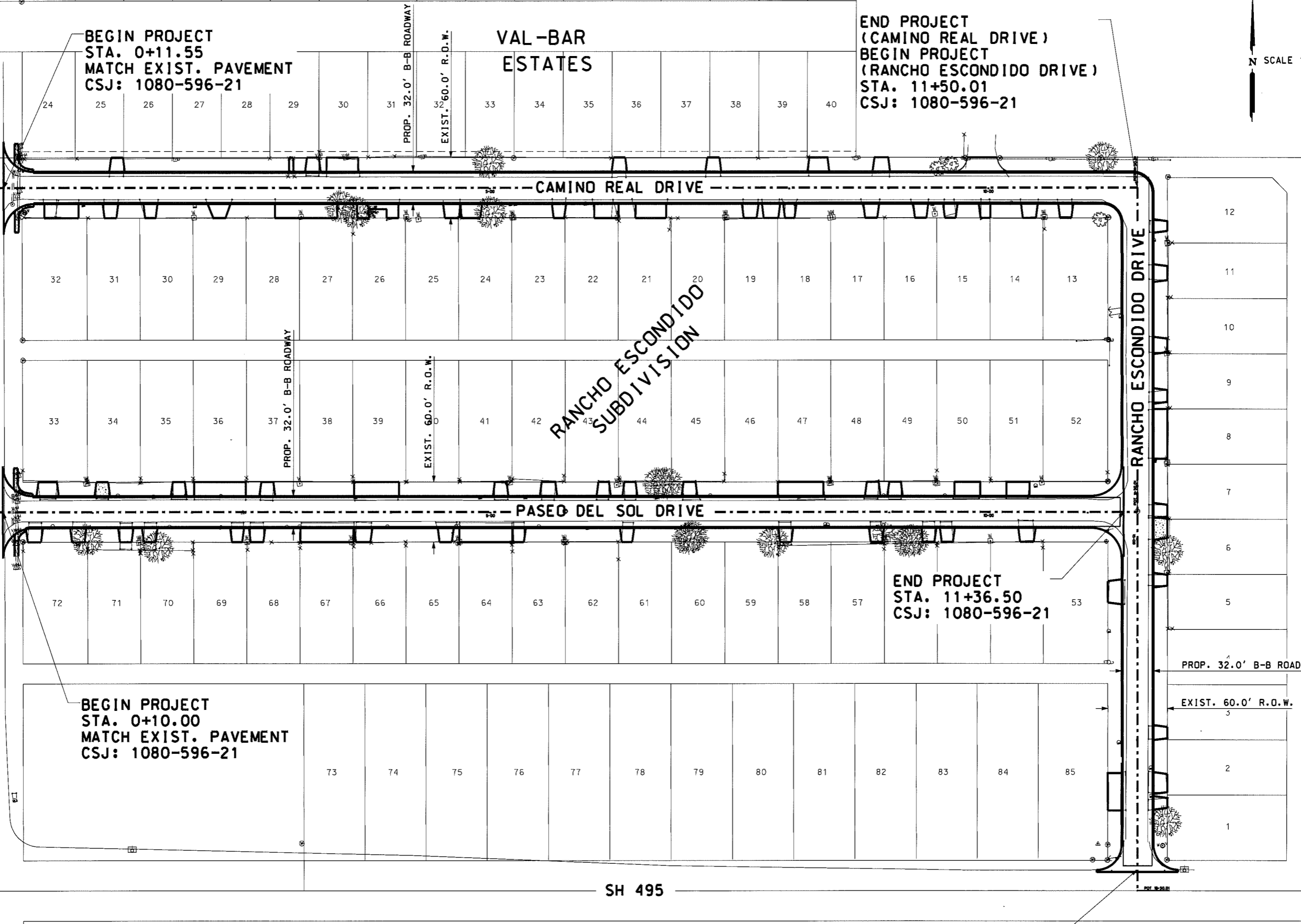
BEGIN PROJECT  
 STA. 0+11.55  
 MATCH EXIST. PAVEMENT  
 CSJ: 1080-596-21

VAL-BAR  
 ESTATES

END PROJECT  
 (CAMINO REAL DRIVE)  
 BEGIN PROJECT  
 (RANCHO ESCONDIDO DRIVE)  
 STA. 11+50.01  
 CSJ: 1080-596-21

N SCALE 1"=100'

CESAR CHAVEZ ROAD



BEGIN PROJECT  
 STA. 0+10.00  
 MATCH EXIST. PAVEMENT  
 CSJ: 1080-596-21

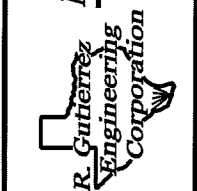
RANCHO ESCONDIDO  
 SUBDIVISION

SH 495

END PROJECT  
 STA. 11+36.50  
 CSJ: 1080-596-21

END PROJECT  
 STA. 18+31.40  
 MATCH EXIST. PVM'T  
 CSJ: 1080-596-21

Professional Engineers & Land Surveyors  
 R. Gutierrez  
 Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 PROJECT LAYOUT

REVISION	DATE	BY

F.B. No.: 487,488  
 SURVEY BY: M.L.M.P.,DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG



BASIS OF ESTIMATE (ROADWAY)												
CSJ •	ROAD NAME	ITEM 100	ITEM 110	ITEM 132	ITEM 204	ITEM 247	ITEM 260			PRIME COAT ITEM 310		ASPH. CONC. PAV.
		PREP. ② R.O.W. (STA)	EXCAV. (ROADWAY) (CY)	EMBANK (FINAL) (DENS. CONT.) (TY "C") (CY)	SPRINK DUST CONTROL 4 MG/STA ② (MG)	FLEX BASE (RD DEL) TY E GR 4 (CY)	LIME TREAT. FOR BASE (8 in.) (NEW) (SY)	LIME FOR BASE TY "A" OR "B" SLURRY 2% BY WT. NEW AND SALV. (TON)	LIME TREAT. SUBGRADE (6 in.) (SY)	② AREA (SY)	ASPH MAT'L. (MC-30) (0.2. GAL/SY) (GAL)	ITEM 340 ACP (SURF.) TY "D" (SY)
	1080-596-21 RANCHO ESCONDIDO SUBDIVISION (CAMINO REAL DRIVE) (PASEO DEL SOL DRIVE) (RANCHO ESCONDIDO DRIVE)	29.45	6,468	65	117.8	2,156	10,803	157	11,266	9,558	1,912	9,558
	TOTAL	29.45	6,468	65	117.8	2,156	10,803	157	11,266	9,558	1,912	9,558

SUMMARY OF DRAINAGE STRUCTURES										
CSJ •	ROAD NAME	ITEM 110	ITEM 464	ITEM 464	ITEM 465	ITEM 465	ITEM 465	ITEM 467	ITEM 496	ITEM 432
		EXCAV. (ROADSIDE DITCH) (CY)	RCP SEWER (CL III) 18"(LF)	8" PVC (LF)	TY "A" INLET (EA)	TY "C" INLET (EA)	TY "A" MANHOLE (EA)	S.E.T. (6:1)	② REMOVE OLD STR. (PIPE) (LF)	CONC. RIPRAP (CY)
		EST.	EST.	EST.	EST.	EST.	EST.	EST.	EST.	EST.
	1080-596-21 RANCHO ESCONDIDO SUBDIVISION (CAMINO REAL DRIVE) (PASEO DEL SOL DRIVE) (RANCHO ESCONDIDO DRIVE)	300	443	36	2	2	3	4	64	7.0
	TOTAL	300	443	36	2	2	3	4	64	7.0

SUMMARY OF "SMALL SIGNS" ITEM (644)		
CSJ	ROAD	TOTAL (EA)
	1080-596-21 RANCHO ESCONDIDO SUBDIVISION (CAMINO REAL DRIVE) (PASEO DEL SOL DRIVE) (RANCHO ESCONDIDO DRIVE)	5
	TOTAL	5

NOTE:

1.) EST. WT. OF NEW & SALVAGE FLEXIBLE BASE = 3375 lb/cy (COMPACTED DRY WT.)  
EST. WT. OF SUBGRADE = 2970 lb/cy

**LEGEND**

② FOR CONTRACTORS INFORMATION ONLY (NON-PAY)



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65946 DATE: 7-2-12 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
RANCHO ESCONDIDO  
SUBDIVISION  
ESTIMATE & QUANTITY

REVISION	DATE	BY

P.B. No.: 487,488  
SURVEY BY: ML,MR,DC  
DRAWN BY: JC  
PREPARED BY: JC  
CHECKED BY: RG

Professional Engineers & Land Surveyors  
R. Gutierrez  
Engineering  
Corporation  
130 E. PARK AVENUE  
PHARR, TEXAS 78877  
(TEL) 966 782-2557 (FAX) 966 782-2558  
FIRM No. 486



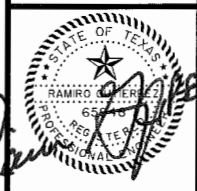
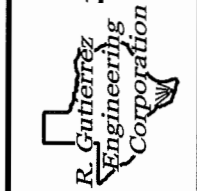
**CAMINO REAL DRIVE & RANCHO ESCONDIDO DRIVE**

Station	Material Name	End Areas (sq. ft.)	Unadjusted Volumes (cu. yd.)	Adjusted Volumes (cu. yd.)	Mult Factor	Mass Ordinate
0+20.20	DIRT					
	Excavation	19.3	0	0	1.00	
	Fill	12.7	0	0	1.00	0
0+50.00	DIRT					
	Excavation	82.9	56	56	1.00	
	Fill	0.0	7	7	1.00	49
1+00.00	DIRT					
	Excavation	81.0	152	152	1.00	
	Fill	0.0	0	0	1.00	201
1+50.00	DIRT					
	Excavation	77.3	147	147	1.00	
	Fill	0.0	0	0	1.00	348
2+00.00	DIRT					
	Excavation	75.0	141	141	1.00	
	Fill	0.0	0	0	1.00	489
2+50.00	DIRT					
	Excavation	81.4	145	145	1.00	
	Fill	0.0	0	0	1.00	634
3+00.00	DIRT					
	Excavation	76.3	146	146	1.00	
	Fill	0.0	0	0	1.00	780
3+50.00	DIRT					
	Excavation	75.5	141	141	1.00	
	Fill	0.0	0	0	1.00	921
4+00.00	DIRT					
	Excavation	71.8	136	136	1.00	
	Fill	0.0	0	0	1.00	1057
4+50.00	DIRT					
	Excavation	67.9	129	129	1.00	
	Fill	0.0	0	0	1.00	1186
5+00.00	DIRT					
	Excavation	66.9	125	125	1.00	
	Fill	0.0	0	0	1.00	1311
5+50.00	DIRT					
	Excavation	61.3	119	119	1.00	
	Fill	0.0	0	0	1.00	1430
6+00.00	DIRT					
	Excavation	58.6	111	111	1.00	
	Fill	0.1	0	0	1.00	1541
6+50.00	DIRT					
	Excavation	57.6	108	108	1.00	
	Fill	0.0	0	0	1.00	1649
7+00.00	DIRT					
	Excavation	54.5	104	104	1.00	
	Fill	0.0	0	0	1.00	1753
7+50.00	DIRT					
	Excavation	49.1	96	96	1.00	
	Fill	0.0	0	0	1.00	1849
8+00.00	DIRT					
	Excavation	52.7	94	94	1.00	
	Fill	0.0	0	0	1.00	1943
8+50.00	DIRT					
	Excavation	48.4	94	94	1.00	
	Fill	0.0	0	0	1.00	2037
9+00.00	DIRT					
	Excavation	46.1	88	88	1.00	
	Fill	0.5	0	0	1.00	2125
9+50.00	DIRT					
	Excavation	47.1	86	86	1.00	
	Fill	0.0	0	0	1.00	2211
10+00.00	DIRT					
	Excavation	41.5	82	82	1.00	
	Fill	0.2	0	0	1.00	2293
10+50.00	DIRT					
	Excavation	41.6	77	77	1.00	
	Fill	0.5	1	1	1.00	2369
11+00.00	DIRT					
	Excavation	45.5	81	81	1.00	
	Fill	0.1	1	1	1.00	2449

Station	Material Name	End Areas (sq. ft.)	Unadjusted Volumes (cu. yd.)	Adjusted Volumes (cu. yd.)	Mult Factor	Mass Ordinate
11+16.36	DIRT					
	Excavation	44.6	27	27	1.00	
	Fill	1.4	0	0	1.00	2476
11+83.10	DIRT					
	Excavation	47.5	114	114	1.00	
	Fill	0.0	2	2	1.00	2588
12+00.00	DIRT					
	Excavation	49.4	30	30	1.00	
	Fill	0.0	0	0	1.00	2618
12+50.00	DIRT					
	Excavation	42.7	85	85	1.00	
	Fill	0.7	1	1	1.00	2702
13+00.00	DIRT					
	Excavation	44.7	81	81	1.00	
	Fill	0.0	1	1	1.00	2782
13+50.00	DIRT					
	Excavation	51.5	89	89	1.00	
	Fill	0.1	0	0	1.00	2871
14+00.00	DIRT					
	Excavation	53.8	97	97	1.00	
	Fill	0.0	0	0	1.00	2968
14+50.00	DIRT					
	Excavation	50.5	97	97	1.00	
	Fill	0.0	0	0	1.00	3065
15+00.00	DIRT					
	Excavation	56.7	99	99	1.00	
	Fill	0.0	0	0	1.00	3164
15+50.00	DIRT					
	Excavation	62.8	111	111	1.00	
	Fill	0.0	0	0	1.00	3275
16+00.00	DIRT					
	Excavation	62.7	116	116	1.00	
	Fill	0.0	0	0	1.00	3391
16+50.00	DIRT					
	Excavation	62.1	116	116	1.00	
	Fill	0.0	0	0	1.00	3507
17+00.00	DIRT					
	Excavation	66.4	119	119	1.00	
	Fill	0.0	0	0	1.00	3626
17+50.00	DIRT					
	Excavation	57.3	114	114	1.00	
	Fill	0.0	0	0	1.00	3740
18+00.00	DIRT					
	Excavation	76.4	124	124	1.00	
	Fill	0.0	0	0	1.00	3864
18+20.67	DIRT					
	Excavation	71.4	57	57	1.00	
	Fill	1.2	0	0	1.00	3921

* GRAND SUMMARY TOTALS					
Material Name	Unadjusted Volumes (cu. yd.)	Adjusted Volumes (cu. yd.)	Mult Factor		
DIRT					
Excavation	3934	3934	1.00		
Fill	13	13	1.00		

**Professional Engineers & Land Surveyors**  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-16-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 EARTHWORK TABLE

REVISION	DATE	BY

FB No.: 487,488  
 SURVEY BY: ML, MR, DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

PASEO DEL SOL DRIVE

Station	Material Name	End Areas (sq. ft.)	Unadjusted Volumes (cu. yd.)	Adjusted Volumes (cu. yd.)	Mult Factor	Mass Ordinate
0+18.96	DIRT					
	Excavation	13.3	0	0	1.00	
	Fill	10.0	0	0	1.00	0
0+50.00	DIRT					
	Excavation	46.4	34	34	1.00	
	Fill	0.0	6	6	1.00	28
1+00.00	DIRT					
	Excavation	64.7	103	103	1.00	
	Fill	0.3	0	0	1.00	131
1+50.00	DIRT					
	Excavation	80.9	135	135	1.00	
	Fill	0.0	0	0	1.00	266
2+00.00	DIRT					
	Excavation	71.8	141	141	1.00	
	Fill	0.9	1	1	1.00	406
2+50.00	DIRT					
	Excavation	83.4	144	144	1.00	
	Fill	0.0	1	1	1.00	549
3+00.00	DIRT					
	Excavation	69.9	142	142	1.00	
	Fill	0.3	0	0	1.00	691
3+50.00	DIRT					
	Excavation	77.5	136	136	1.00	
	Fill	0.0	0	0	1.00	827
4+00.00	DIRT					
	Excavation	73.0	139	139	1.00	
	Fill	0.0	0	0	1.00	966
4+50.00	DIRT					
	Excavation	75.9	138	138	1.00	
	Fill	0.0	0	0	1.00	1104
5+00.00	DIRT					
	Excavation	76.0	141	141	1.00	
	Fill	0.0	0	0	1.00	1245
5+50.00	DIRT					
	Excavation	69.7	135	135	1.00	
	Fill	0.0	0	0	1.00	1380
6+00.00	DIRT					
	Excavation	65.2	125	125	1.00	
	Fill	0.9	1	1	1.00	1504
6+50.00	DIRT					
	Excavation	60.9	117	117	1.00	
	Fill	0.7	2	2	1.00	1619
7+00.00	DIRT					
	Excavation	58.8	111	111	1.00	
	Fill	1.1	2	2	1.00	1728
7+50.00	DIRT					
	Excavation	55.1	105	105	1.00	
	Fill	4.4	5	5	1.00	1828
8+00.00	DIRT					
	Excavation	59.2	106	106	1.00	
	Fill	0.0	4	4	1.00	1930
8+50.00	DIRT					
	Excavation	52.9	104	104	1.00	
	Fill	3.5	3	3	1.00	2031
9+00.00	DIRT					
	Excavation	55.4	100	100	1.00	
	Fill	0.0	3	3	1.00	2128
9+50.00	DIRT					
	Excavation	45.9	94	94	1.00	
	Fill	2.0	2	2	1.00	2220
10+00.00	DIRT					
	Excavation	44.5	84	84	1.00	
	Fill	4.9	6	6	1.00	2298
10+50.00	DIRT					
	Excavation	43.1	81	81	1.00	
	Fill	4.7	9	9	1.00	2370
11+00.00	DIRT					
	Excavation	37.2	74	74	1.00	
	Fill	1.5	6	6	1.00	2438
11+27.38	DIRT					
	Excavation	50.8	45	45	1.00	
	Fill	0.0	1	1	1.00	2482

* GRAND SUMMARY	TOTALS		
Material Name	Unadjusted Volumes (cu. yd.)	Adjusted Volumes (cu. yd.)	Mult Factor
DIRT			
Excavation	2534	2534	1.00
Fill	52	52	1.00

Professional Engineers & Land Surveyors  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 966 782-2557 • (FAX) 966 782-2558

**R. Gutierrez Engineering Corporation**

STATE OF TEXAS  
 RAMIRO GUTIERREZ  
 65488  
 REG. P.E.  
 PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65488  
 DATE: 7-16-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 EARTHWORK TABLE

FB. No.: 487,488	SURVEY BY: ML-MR-DC	BY
	DRAWN BY: JC	DATE
	PREPARED BY: JC	REVISION
	CHECKED BY: RG	

SHEET No.  
 8





## Definition of Responsibilities and Purpose of the Barricade and Construction (BC) Standard Sheets

1. The Barricade and Construction Standard Sheets (BC SHEETS) are intended to show typical examples for placement of traffic control devices, construction pavement markings, and typical construction signs. These sheets alone shall not be used for the Traffic Control Plan (TCP), but may be used to supplement the TCP. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The BC SHEETS are intended for use by the following groups:
  - a. **TxDOT Engineers**-these sheets provide typical design requirements and guidelines for TCP's, example sign placement locations, information on approved sign supports, reflective sheeting, sign substrates and other approved traffic control devices. An evaluation of field conditions and engineering judgement must be considered when designing and implementing the TCP in the field.
  - b. **TxDOT Inspectors**-these sheets show typical sign placement and guidelines. These sheets provide information on approved traffic control devices and lists responsibilities of TxDOT and Contractor personnel for implementing and maintaining the TCP.
  - c. **Contractors**-these sheets show approved devices and locations the Contractor may install and maintain on the roadway. The BC Sheets serve as a reminder that the Engineer is responsible for the design of the TCP and the Contractor may not alter the TCP without written approval of the Engineer. The Contractor is responsible for implementation of the TCP, including maintaining the traffic control devices.
3. The development and design of the TCP is the responsibility of the Engineer. The Engineer/Designer, when possible, shall ensure lane shifts and detours meet the applicable design criteria contained in the American Association of State Highway and Transportation Officials (AASHTO) "Policy on the Geometric Design of Highways and Streets" or the TxDOT "Roadway Design Manual." The Engineer or his/her assigned responsible person, typically an inspector, has the final decision on the location of all traffic control devices shown in the plans.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the location of any device without the approval of the Engineer/Inspector. Any variation in the plans shall be documented by written agreement between the Engineer/Inspector and the Contractor's Responsible Person. All agreed upon changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary or a memorandum to the project file.
5. The Engineer/Inspector shall ensure that construction work zone signs are installed with adequate spacing between the signs so the legibility of existing permanent and other work zone signs is not obstructed or compromised. All signs should fulfill a need, command attention, convey a clear and simple message, command respect of the road users and give adequate time for proper response.
6. Additional traffic control devices are needed in advance of the Control-Section-Job (CSJ) limits in those cases where a work area is at or less than 2000 feet inside the CSJ limits. Follow the applicable TCP sheets for exact spacing of signs and channelizing devices placed outside the CSJ limits.
7. The traffic control devices used in the illustrations shown on the BC sheets are examples only. The TxDOT Engineer/Inspector must evaluate field conditions and use their judgement to determine the most appropriate traffic control device to be used. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary or a memorandum to the project file.
8. As shown on BC(2), the OBSERVE WARNING SIGNS STATE LAW, BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The Engineer/Inspector should ensure adequate spacing between existing signs.
9. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor will erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
10. The Engineer/Inspector may require duplicate construction warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
11. Except for devices required by Note 8, traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer/Inspector shall specify the sign size based on the TMUTCD or the table, "Typical Construction Warning Sign Size and Spacing," shown on BC(2).
13. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas 1980." Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
14. After the traffic control devices have been installed, the Engineer/Inspector should drive the work zone area both during the day and after dark to ensure the devices are properly positioned, spaced, legible and are reflective. The Contractor shall be notified of any deficiencies and shall correct the deficiencies within an agreed upon time.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT",  
Click on "Functional Organizational Chart",  
Click on Traffic Operations Box,  
Click on "Compliant Work Zone Traffic Control Devices",  
again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.

 **STANDARD PLANS**  
**TEXAS DEPARTMENT OF TRANSPORTATION**  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

1 of 12

BC(1)-03

© TxDOT 11-4-02		DR- BAS	CR- GRB	DR- FDN	CR- CAL
REVISIONS	STATE DISTRICT	FEDERAL REGION	PROJECT NUMBER		SHEET
	6				11
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

Posted Speed	Sign Spacing "X"	Long-term Or Intermediate-term Stationary Approach Warning Signs CW20 and CW21 Series		Short-term Stationary Or Short Duration Approach Warning Signs CW21 Series		Other Warning Signs
		Standard inches	Minimum inches	Standard inches	Minimum inches	
MPH	Feet (Approx.)					
30	120	48 x 48	36 x 36	30 x 30 or 36 x 36	24 x 24 or 30 x 30	30 x 30 or 36 x 36
35	160	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
40	240					
45	320	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
50	400					
55	500 <sup>2</sup>	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
60	600 <sup>2</sup>					
65	700 <sup>2</sup>	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
70	800 <sup>2</sup>					
75	900 <sup>2</sup>	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
X	X <sup>3</sup>					

x For typical sign spacings on expressways and freeways, see Part VI of the "Texas Manual Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

Δ Minimum distance from work area to first Advance Warning sign and/or distance between each additional sign.

General Notes:

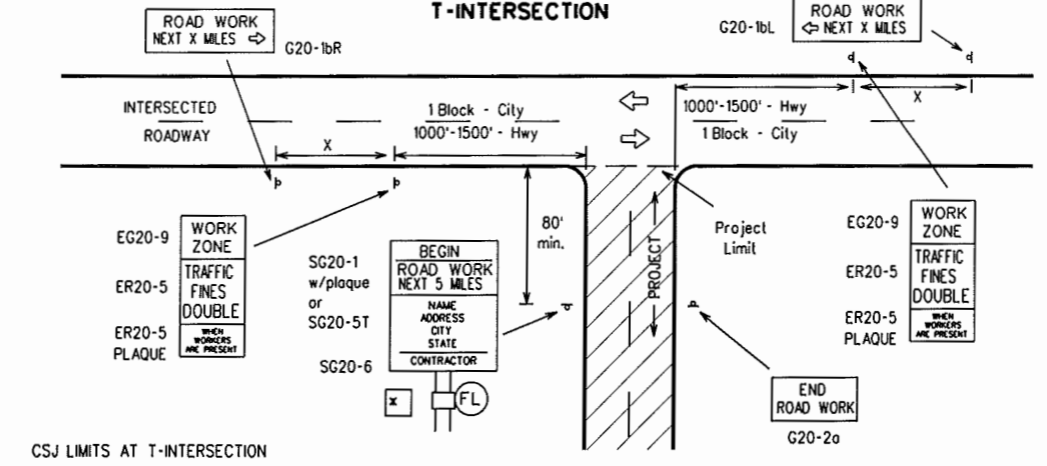
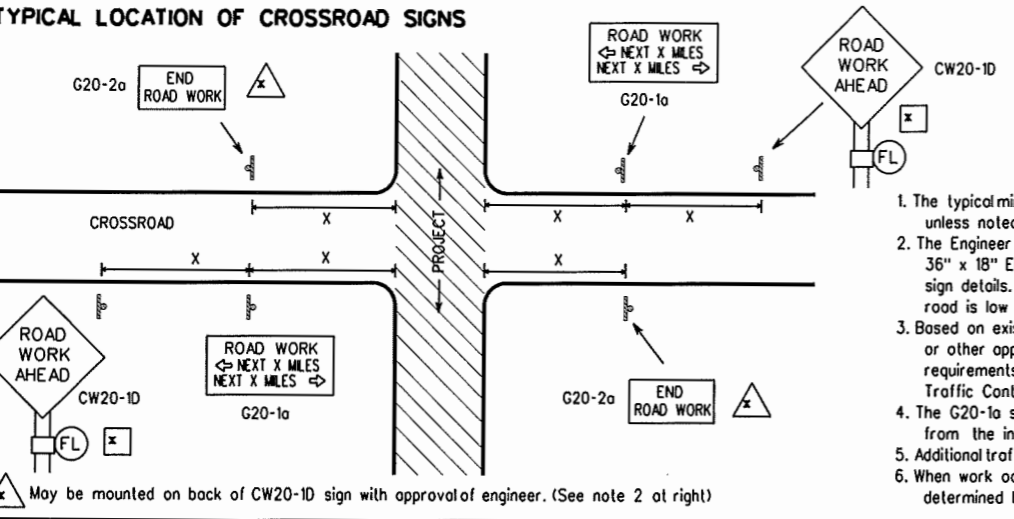
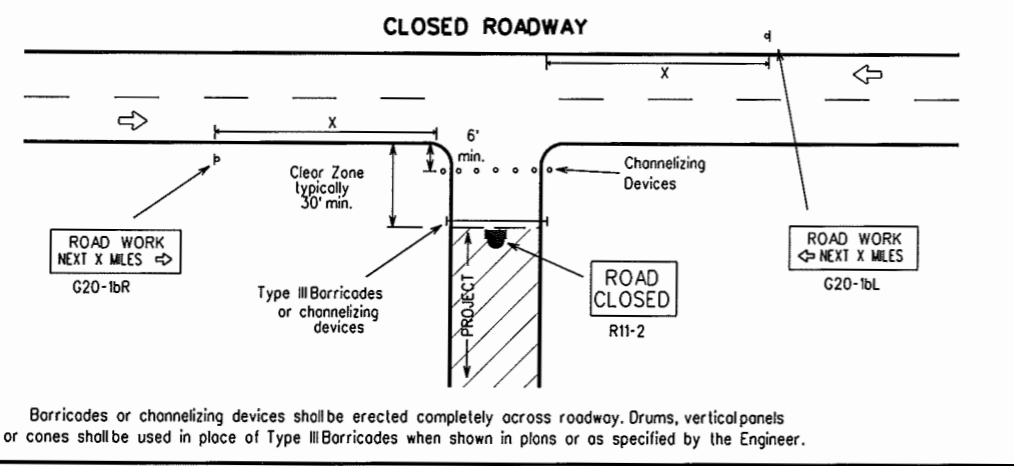
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- For use only on secondary roads or city streets where speeds are low.
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Appendix A or the "Standard Highway Sign Design" manual for complete list of available sign design sizes.
- Where two sizes are listed, see sign size listing in "TMUTCD", Appendix A or the "Standard Highway Sign Design" manual for proper size.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCO) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
 Traffic Operations Division - TE  
 Texas Department of Transportation  
 125 East 11th Street  
 Austin, Texas 78701-2483  
 Phone (512) 416-3120  
 Fax (512) 416-3299

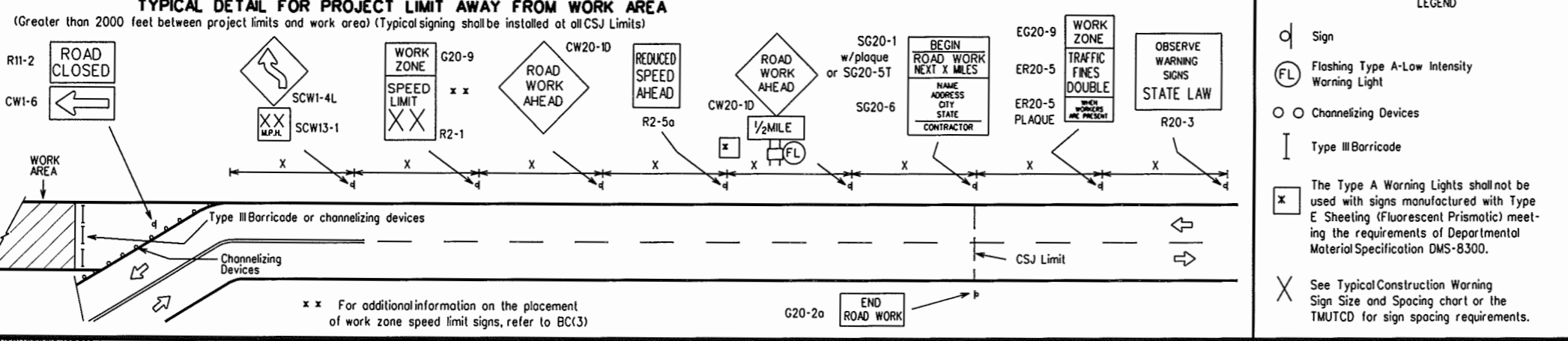
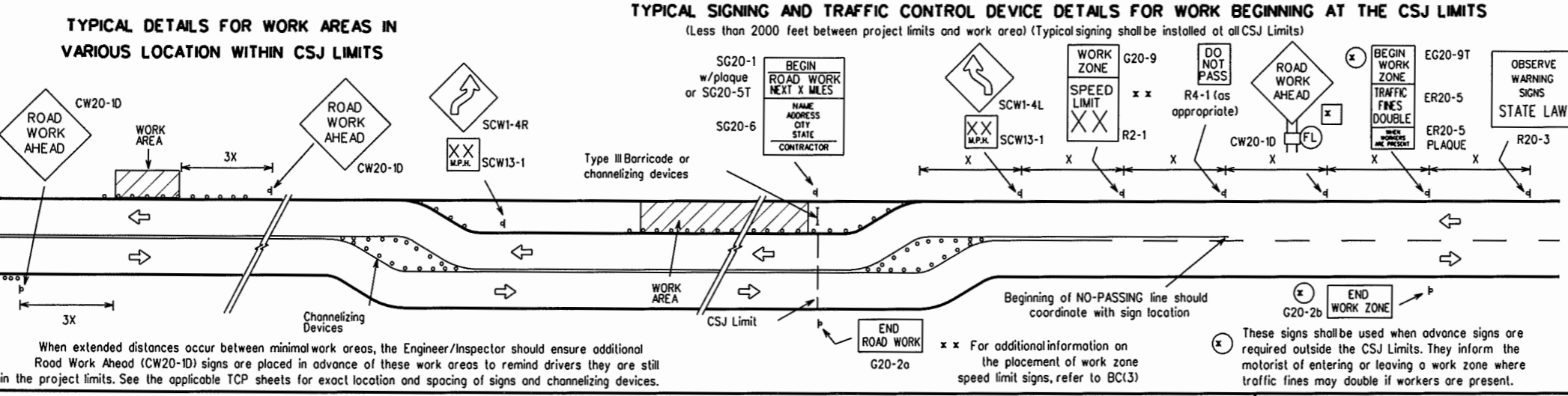
Instructions to locate the "CWZTCO" on TxDOT website are:

Start of website - www.dot.state.tx.us  
 Click on "About TxDOT".  
 Click on "Functional Organizational Chart".  
 Click on Traffic Operations Box.  
 Click on "Compliant Work Zone Traffic Control Devices".  
 Again click on "Compliant Work Zone Traffic Control Devices".  
 This site is printable.



- CSJ LIMITS AT T-INTERSECTION
- A ROAD WORK NEXT X MILES (G20-1bR/L) sign should be erected on the intersected highway as shown above.
  - The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
  - The Engineer/Inspector shall ensure that construction work zone signs are installed with adequate spacing between the signs so the legibility of existing permanent and other work zone signs is not obstructed.

- The typical minimum signing on a crossroad approach should be a CW20-1D ROAD WORK AHEAD sign and a G20-2a END ROAD WORK sign, unless noted otherwise in plans.
- The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (MCW20-1D) sign mounted back to back with the reduced size 36" x 18" END ROAD WORK (SG20-2a) sign on low volume crossroads. See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
- Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
- The G20-1a sign shall be required on major crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
- Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
- When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.



- LEGEND
- Sign
  - ⓧ Flashing Type A-Low Intensity Warning Light
  - Channelizing Devices
  - ▬ Type III Barricade
- x For additional information on the placement of work zone speed limit signs, refer to BC(3)
- x See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

**STANDARD PLANS**  
 TEXAS DEPARTMENT OF TRANSPORTATION  
 Traffic Operations Division

**BARRICADE AND CONSTRUCTION PROJECT LIMIT STANDARD**

2 of 12 BC(2)-03

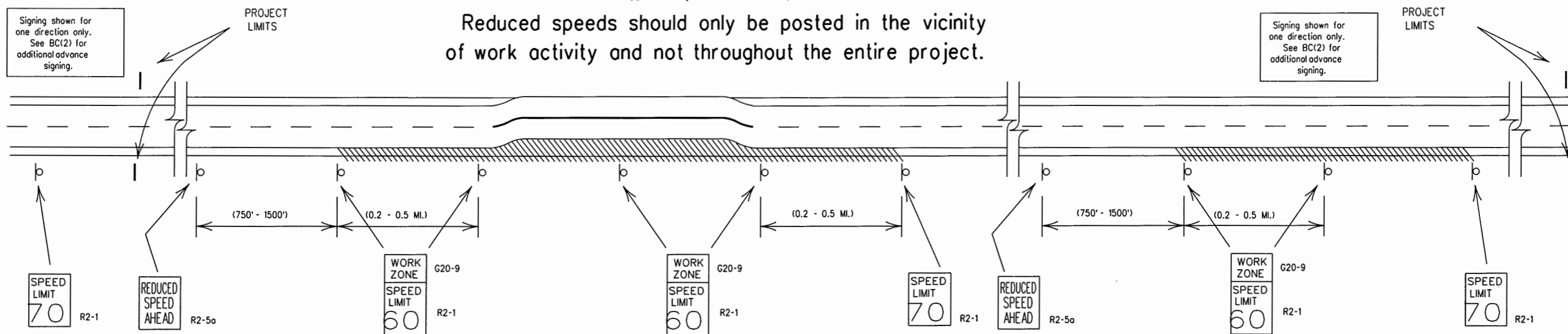
© TxDOT 11-4-02

REVISED	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	6			12
COUNTY		CONTROL SECTION	JOB	HIGHWAY
HIDALGO				

# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones,"  
and approved by the Texas Transportation Commission.

Reduced speeds should only be posted in the vicinity  
of work activity and not throughout the entire project.



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMIT signs should be posted and visible to the motorists at all times. Work activity in the area of reduced speed zone should be greater than 12 consecutive hours per day. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

### SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, work activity is within 15 feet of pavement edge or actually on the pavement.

SHORT TERM WORK ZONE SPEED LIMIT signs should be posted and visible to the motorists only when work activity is present. Work activity in the area of reduced speed should be less than 12 consecutive hours. When work activity is not present, signs should be covered with an approved sign cover or removed from work area.

## GENERAL NOTES:

- Regulatory work zone speed limits should be used only for sections of construction projects where speed controls of major importance. Regulatory work zone speed signs (R2-1) should be removed during periods when they are not needed to minimize interference with traffic.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of speed limit signs should be:
 

40 mph and greater	0.2 to 2 miles
35 mph and less	0.2 to 1 mile
- Regulatory speed limit signs shall have black legend and border on a white reflective background.
- Fabrication, erection and maintenance of REDUCED SPEED AHEAD sign, WORK ZONE plaque and SPEED LIMIT signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- Turning signs from view, laying signs over or down will not be allowed, unless otherwise noted.
- Techniques that may help reduce traffic speeds. (in order of effectiveness.)
  - Flagger stationed next to sign.
  - Law enforcement.
  - Portable changeable message sign (PCMS).
  - Low-power radar transmitter.
- Refer to "Work Zone Speed Limit Work Sheets 1 and 2" to determine when a construction speed zone should be required.



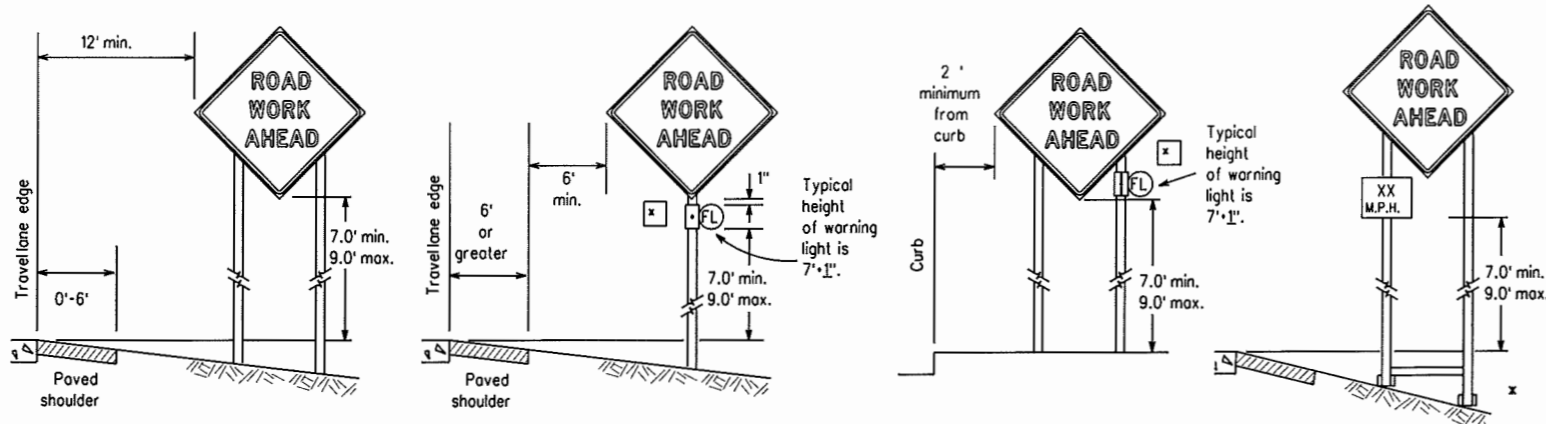
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT STANDARD

3 of 12

BC(3)-03

© TxDOT 11-4-02		DN- JWT	CK- GRB	DW- FDN	CK- CAL
STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
6					13
COUNTY	CONTROL	SECTION	JOB	HIGHWAY	
HIDALGO					

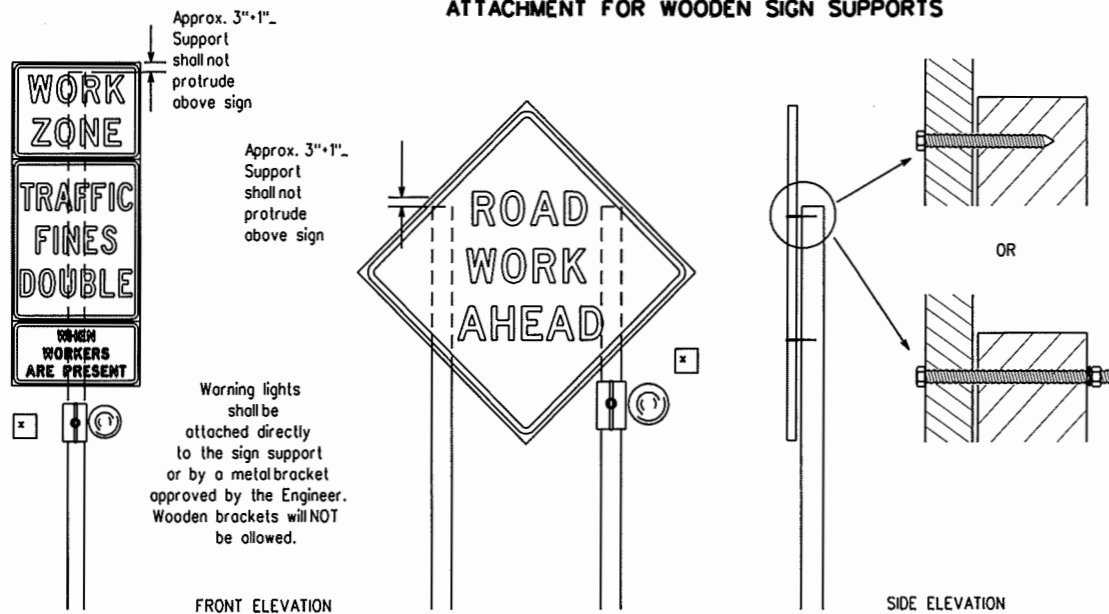
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



It is the intent of these plans to provide positive guidance to motorists throughout the project limits by the use of signs, pavement markings, delineation and/or channelizing devices. All traffic control devices shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" list (CWZTCD).

\* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

**ATTACHMENT FOR WOODEN SIGN SUPPORTS**



Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

**Nails will NOT be allowed.**

**Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Supports shall not be extended or repaired by splicing or other means.**

**GENERAL NOTES FOR WORK ZONE SIGNS**

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- Nails shall NOT be used to attach signs to any support.
- All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes. The additional signs requested by the Engineer/Inspector shall not be subsidiary.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so that the Engineer can verify the correct procedures are being followed.
- The contractor is responsible for sign installations and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
- The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

**Duration of Work (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part VI)**

- The types of sign supports, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring that the sign support and substrate meets crashworthiness and length of work requirements.
  - Long-term stationary - work that occupies a location more than 3 days.
  - Intermediate-term stationary - work that occupies a location from overnight to 3 days.
  - Short-term stationary - daytime work that occupies a location from 1 to 12 hours.
  - Short, duration - work that occupies a location up to 1 hour.
  - Mobile - work that moves intermittently or continuously. Does not stop for more than 15 minutes at a time.

**SIGN MOUNTING HEIGHT**

- The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface.
- The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday.
- Regulatory signs shall be mounted at least 7 feet, but not more than 9.0 feet, above the paved surface regardless of work duration.

**SIZE OF SIGNS**

- The Engineer may allow the use of smaller size construction warning signs on secondary roads or city streets where speeds are low if the sign size is listed as an option on the "Typical Construction Warning Sign Size and Spacing" chart shown on BC(2).
- The Contractor shall furnish the sign sizes shown in plans, the BC Sheets, the TCP sheets or as directed by the Engineer.

**SIGN SUBSTRATES**

- The Contractor shall ensure that the sign substrate is allowed for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
- "Mesh" type materials are NOT an approved sign substrate.
- All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign faces.

**REFLECTIVE SHEETING**

- ReflectORIZED signs shall be constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 or DMS-8310. The DMS specifications can be accessed from the following web address:  
[http://manuals.dot.state.tx.us:80/dynaweb/colmates/dms/8Generic\\_BookView](http://manuals.dot.state.tx.us:80/dynaweb/colmates/dms/8Generic_BookView)
- White sheeting, meeting the requirements of DMS-8300 Type C (High Specific Intensity), shall be used for signs with white background and channelizing devices.
- Orange sheeting, meeting the requirements of DMS-8300 Type E (Fluorescent Prismatic), shall be used for signs with orange backgrounds.

**SIGN LETTERS**

- All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

**REMOVING OR COVERING**

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This type of sign support meets the crashworthiness standards regardless of the direction of impact. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
- Signs installed on skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
- When signs are covered, the material used shall be opaque, such as heavy mil black plastic.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face. These materials can damage the retroreflectivity of sign sheeting.
- Signs shall be removed upon completion of the work.

**SIGN SUPPORT WEIGHTS**

- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support weights.
- Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
- Sandbags shall be made of a durable material that tears upon vehicular impact.
- Rubber (such as tire inner tubes) shall NOT be used for sandbags.
- Rubber ballasts (such as those used with cones or edgeline channelizers) shall NOT be used as sign support weights.
- Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT",  
Click on "Functional Organizational Chart",  
Click on Traffic Operations Box,  
Click on "Compliant Work Zone Traffic Control Devices",  
again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.

Ⓛ Flashing Type A - Low Intensity Warning Light

Ⓧ The Type A Warning lights shall not be used with Type E Sheeting (Fluorescent Prismatic) meeting the requirements of DMS-8300.

**CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS**

- Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
- When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

STANDARD PLANS  
Texas Department of Transportation  
Traffic Operations Division

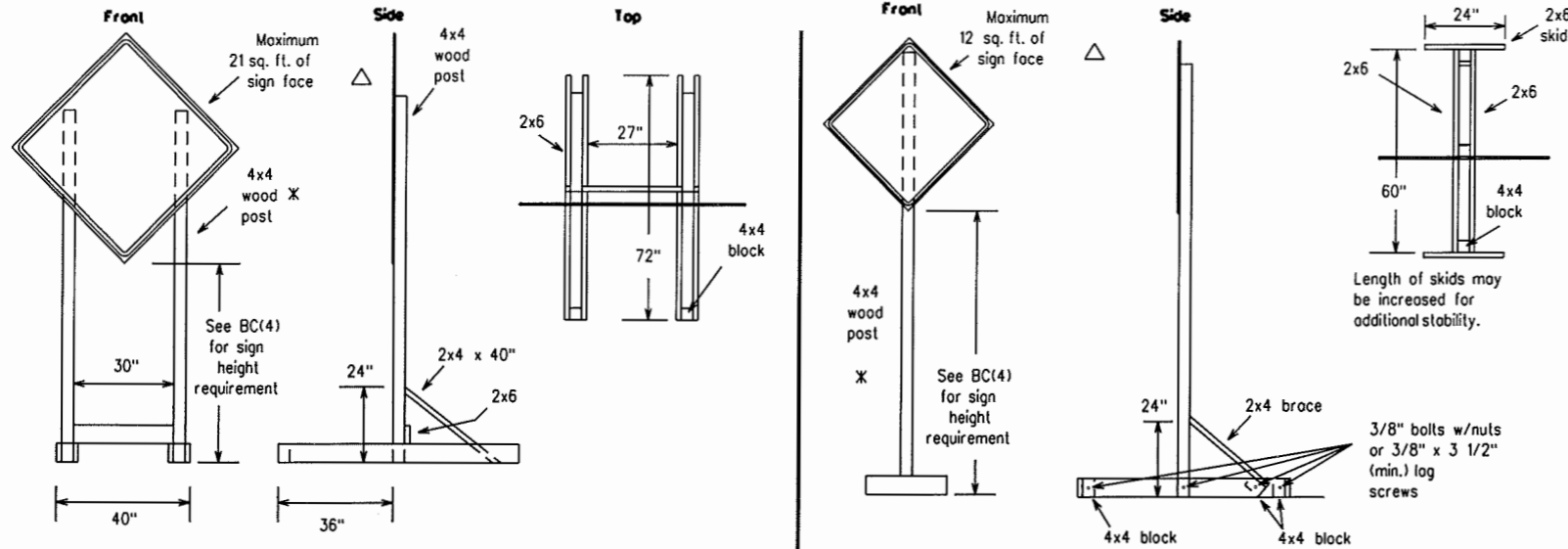
**BARRICADE AND CONSTRUCTION  
TEMPORARY SIGN NOTES  
STANDARD**

4 of 12 BC(4)-03

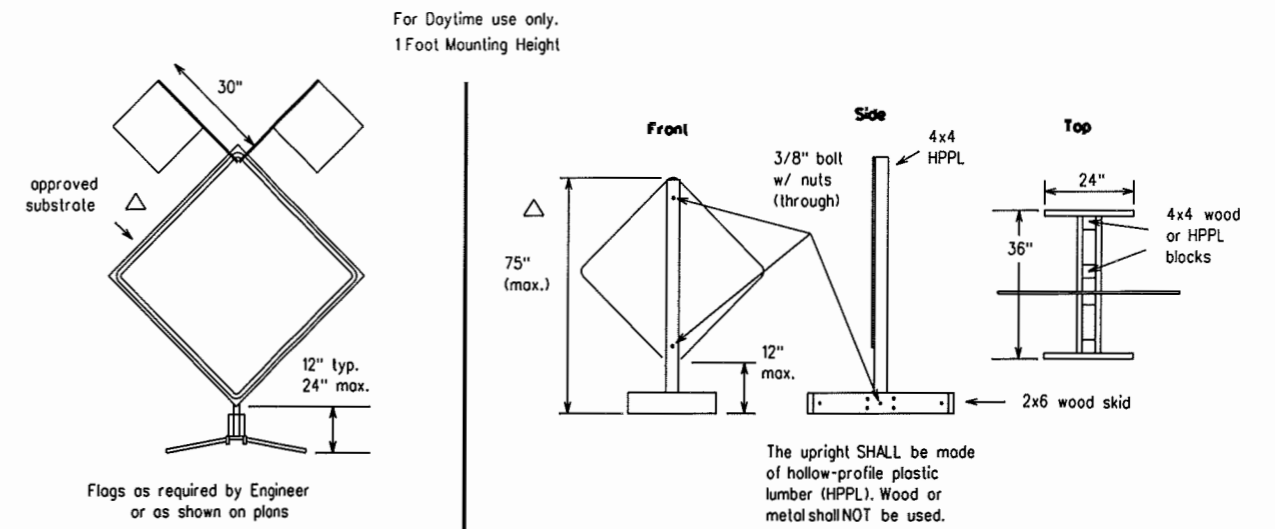
REVISONS	STATE DISTRICT	FEDERAL RECORD	FEDERAL NO PROJECT	SHEET
	6			14
	COUNTY	CONTROL	SECTION	JOB
	HIDALGO			INHWAY

## EXAMPLES OF SKID MOUNTED SIGN SUPPORTS

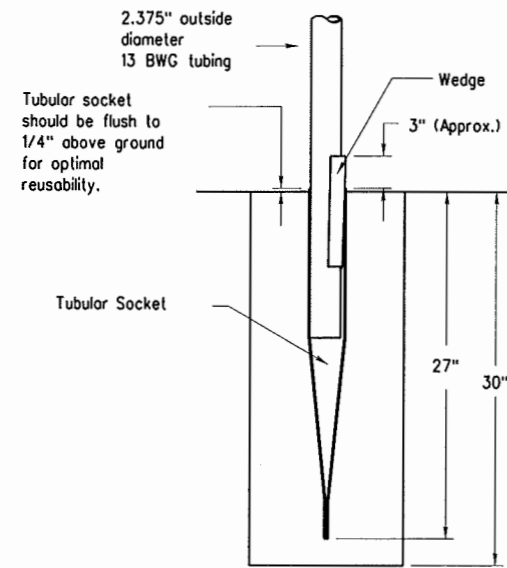
### LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □



### SHORT TERM STATIONARY/SHORT DURATION - PORTABLE SIGN SUPPORTS □



## EXAMPLES OF GROUND MOUNTED SIGN SUPPORTS



**WEDGE ANCHOR SYSTEM WITH THIN-WALL TUBE**

The wedge anchor system with thin wall tubing may be used to support up to 10 sq. ft. of sign area.

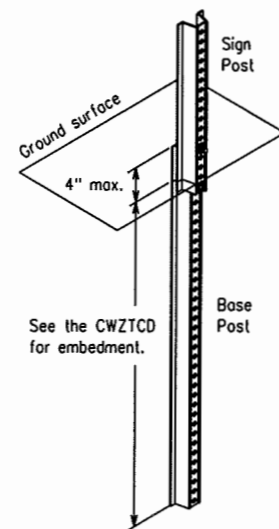
Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18 inches. When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18 inches or provide a minimum foundation depth of 30 inches. If solid rock is encountered, the socket/stub may be reduced in length as required to a min. length of 18 inches. Any material removed from the socket/stub shall be from the bottom and the clearance requirements shown above must still be adhered to. The inner surfaces of the socket/stub must remain free of debris.

Install Wedge Anchor System per manufacturer recommendations. Attach the sign to the sign post. Insert the sign post into the socket and align the sign face with the roadway. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

Supports shall be straight within 1/4 inch per 5 feet of length and shall have a smooth, uniform finish free from defects affecting strength or appearance. Any bolt holes and sheared ends shall be free from burrs.

### WING CHANNEL

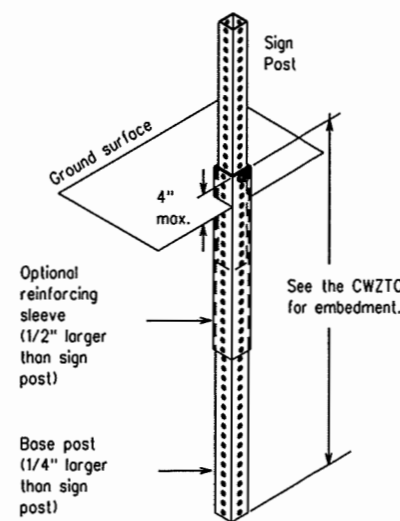
Lap-splice/base bolted anchor



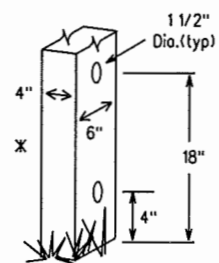
Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.

### PERFORATED SQUARE METAL TUBING

With Anchor



### WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



Nominal Post Size	Maximum No. of Posts	Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

No more than 2 sign posts shall be mounted within a 7 ft. circle.

When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

\* Sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT".  
Click on "Functional Organizational Chart".  
Click on Traffic Operations Box.  
Click on "Compliant Work Zone Traffic Control Devices".  
Again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.

**STANDARD PLANS**  
Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD

5 of 12

BC(5)-03

© TxDOT 11-4-02		DR: JWT	CR: GRB	DW: FDN	CK: CAL
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	6				15
COUNTY		CONTROL	SECTION	JOB	ROADWAY
HIDALGO					

## PORTABLE CHANGEABLE MESSAGE SIGNS

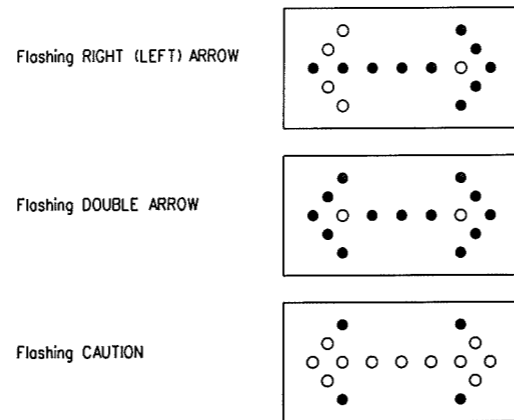
- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- PCMS placed on the shoulder or within the R-O-W, but are not behind a concrete traffic barrier shall have a minimum of four plastic drums placed perpendicular to traffic, on the upstream side of the PCMS.
- Messages on PCMS should contain no more than 8 words (four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed.
- Each phase of the message should convey a single thought.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- Specify the actual days of the week; e.g., TUES THROUGH FRI or TUES-FRI in the coming week that work activity will occur.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for two seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the words "Danger" or "Caution" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated.

Word or Phrase	Abbreviation	Word or Phrase	Abbreviation
Access Road	ACCES RD	Miles	MI
Air Quality	AIR QTY	Miles Per Hour	MPH
Avenue	AVE	Time Minutes	MIN
Best Route	BEST RTE	Monday	MON
Boulevard	BLVD	Normal	NORM
Bridge	BRDG	North	N
Cannot	CANT	Parking	PKING
Center	CNTR	Parking Lot	PRK LOT
Construction Ahead	CONST AHEAD	Road	RD
Detour Route	DETOUR RTE	Right Lane	RGT LN
East	E	Saturday	SAT
Emergency	EMER	Service Road	SERV RD
Emergency Vehicle	EMER VEH	Shoulder	SHLDR
Entrance, Enter	ENT	Slippery	SLIP
Express Lanes	EXP LANE	South	S
Expressway	EXPWY	Speed	SPD
Distance Feet	Distance FT	Street	ST
Fog Ahead	FDG AHD	Sunday	SUN
Freeway	FRWY, FWY	Telephone	PHONE
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Highway	HWY	Travelers	TRVLRS
Hours	HR	Tuesday	TUES
Information	INFO	Turnpike	TRNPK
Left	LFT	Upper Level	UPPR LVL
Left Lane	LFT LN	Warning	WARN
Lane Closed	LN CLSD	Wednesday	WED
Lower Level	LOWR LVL	Weight Limit	WT LIMIT
Maintenance	MAINT	Wet Pavement	WET PVMT
Roadway designation *	IH-number, US-number, SH-number, FM-number	West	W

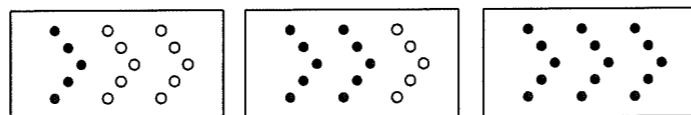
WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND CONCRETE TRAFFIC BARRIER.

## TYPICAL FLASHING ARROW PANEL

- The Flashing Arrow Panel should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
- Flashing Arrow Panels should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
- The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Panel.
- The Flashing Arrow Panel should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.



- The Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Panel SHOULD NOT BE USED to laterally shift all lanes of traffic on a multi-lane roadway at once.

### REQUIREMENTS

TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION: Flashing Arrow Panels shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW PANEL FROM THE RIGHT-OF-WAY OR PLACE THE ARROW PANEL BEHIND CONCRETE TRAFFIC BARRIER.

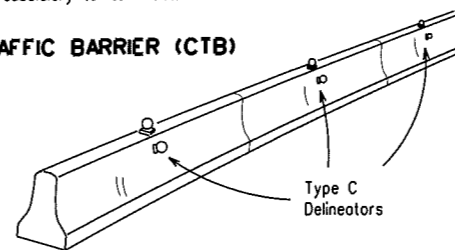
### TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the dates shown in the CWZTCD to ensure that the TMA meets the age requirements and the crashworthiness criteria established by the Federal Highway Administration (FHWA) for TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned approximately 100 feet or less in advance of the area of crew exposure without adversely affecting the work performance.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is on extended distance from the TMA.

## TYPE C DELINEATORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

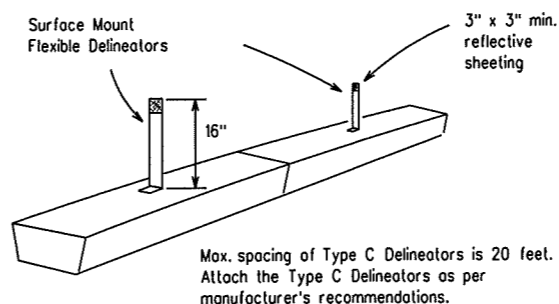
- Type C Delineators shall be prequalified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Type C Delineators can be found at the following Web site: <http://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/dms8600preg.pdf>.
- Color of delineators shall be as specified in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD). The cost of the Type C Delineators shall be considered subsidiary to Item 502.

### CONCRETE TRAFFIC BARRIER (CTB)



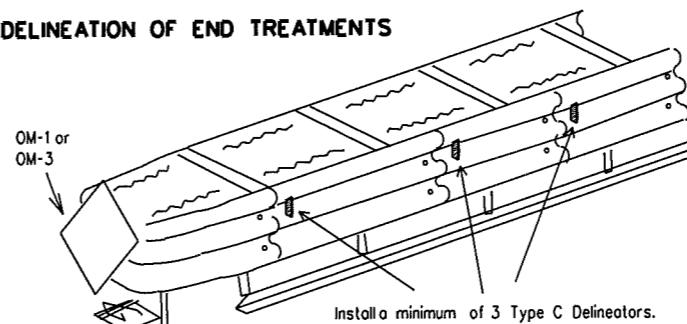
- Two (2) Type C Delineators should be mounted on each section of CTB in approximately the midsection of the CTB. The Type C Delineator on the side of the CTB shall be installed directly below the Type C Delineator mounted on top of the CTB.
- Maximum spacing of Type C Delineators is 40 feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attach Type C Delineators on CTB as per manufacturer's recommendations.
- Missing or damaged Type C Delineators shall be replaced as directed by the Engineer.

### LOW PROFILE CONCRETE BARRIER (LPCB)



Max. spacing of Type C Delineators is 20 feet. Attach the Type C Delineators as per manufacturer's recommendations.

### DELINEATION OF END TREATMENTS



Install a minimum of 3 Type C Delineators.

DELINEATION	APPROACHING TRAFFIC	
	BOTH SIDES	ONE SIDE
	OM-1	OM-3 or Vertical Panel

Attach the Type C Delineators as per manufacturer's recommendations.

## WARNING LIGHTS

- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with signs. They are intended to warn of an approaching potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type E Sheeting (Fluorescent Prismatic) meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.

## END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

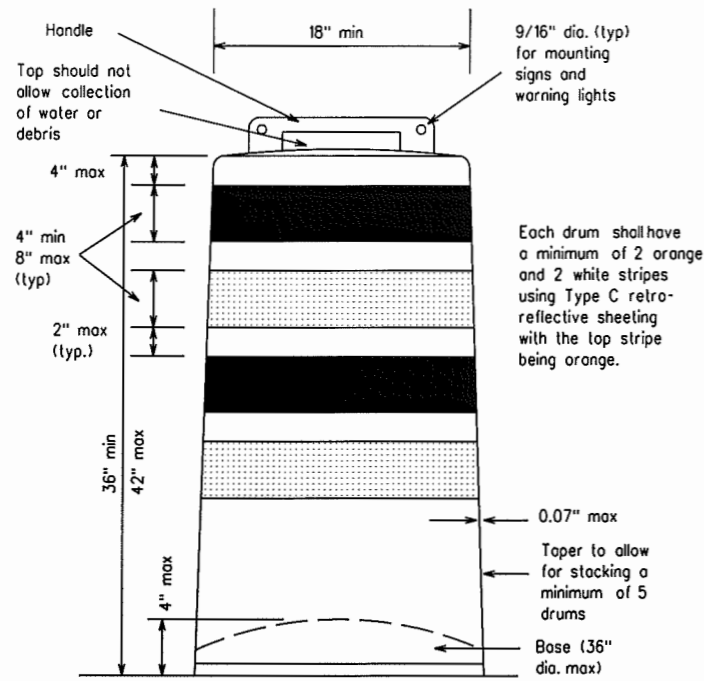
Start of website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT",  
Click on "Functional Organizational Chart",  
Click on Traffic Operations Box,  
Click on "Compliant Work Zone Traffic Control Devices",  
again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.

**STANDARD PLANS**  
Texas Department of Transportation  
Traffic Operations Division

**BARRICADE AND CONSTRUCTION  
ARROW & MESSAGE SIGNS,  
REFLECTORS & WARNING LIGHT  
STANDARD**

**6 of 12 BC(6)-03**

TxDOT	11-4-02	DR- BAS	CR- GRB	DR- FDN	CR- CAL
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET	
	6			16	
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				



**GENERAL NOTES**

- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- The Engineer/Inspector shall provide written notice to the Contractor regarding the replacement of drums or other traffic control devices. The Contractor shall have a maximum of 24 hours to replace any plastic drums or other traffic control devices identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

Prequalified plastic drums shall meet the following requirements:

**GENERAL DESIGN REQUIREMENTS**

- Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
- Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, delineator reflector unit or non-plywood sign.
- The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectORIZED space between any two adjacent stripes shall not exceed 2 inches in width.
- Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum

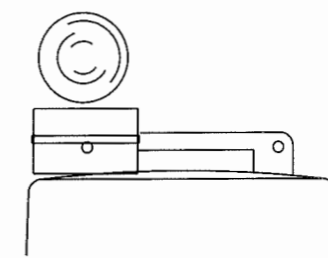
body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.  
 10. Drum and base shall be marked with manufacturer's name and model number.

**RETROREFLECTIVE SHEETING**

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Flat Surface Reflective Sheeting." High Specific Intensity (Type C) retro-reflective sheeting shall be supplied unless otherwise specified in the plans.
- The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, checking, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

**BALLAST**

- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
- Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
- The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
- When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

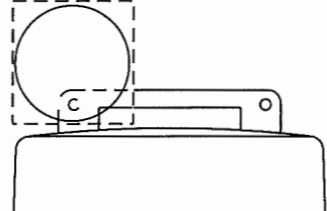


Type C Warning Light or approved substitute mounted adjacent to the travelway.

**WARNING LIGHTS AND DELINEATORS MOUNTED ON PLASTIC DRUMS**

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A flashing warning lights are not intended for delineation and shall not be used in a series.
- Type C steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
- Type A and Type C warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- Type A Class 1, Type A Class 2, or Type B Reflector Units (D & OM Standard) may be attached to drums to delineate the intended vehicular path. The color of the reflector unit shall correspond to the pavement marking it is supplementing or for which it is substituting (left edgeline-yellow or right edgeline-white). The reflective unit shall be attached to the handle of the drum using the mounting hole nearest the travel lane and shall be aligned perpendicular to approaching traffic.
- Delineators may be used as directed by the Engineer. Delineators may not be used as a substitute for warning lights.

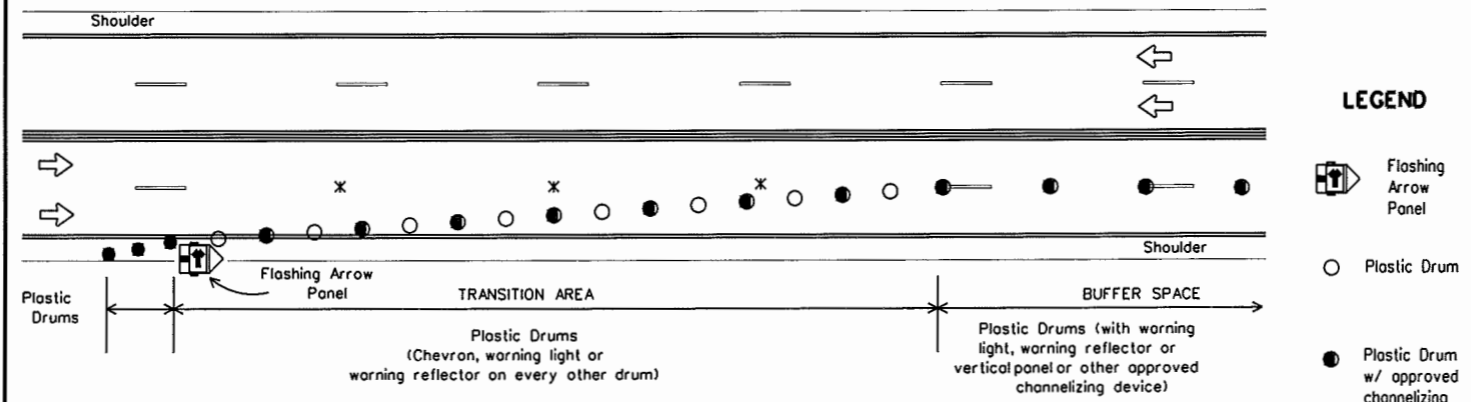
**WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C WARNING LIGHTS**



Warning reflector may be round or square. Must have a reflective surface area of at least 30 square inches

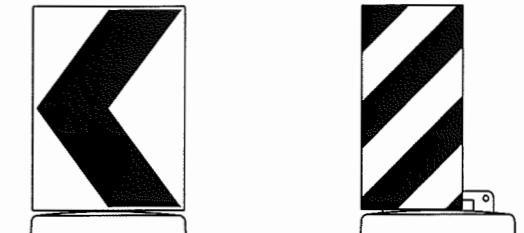
- A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
- The warning reflector shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectORIZED, including the area where attached to the drum.
- Square substrates must have a minimum of 30 square inches of reflectORIZED sheeting. They do not have to be reflectORIZED where it attaches to the drum.
- The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type D (Non-fluorescent Prismatic).
- When used near two-way traffic, both sides of the warning reflector shall be reflectORIZED.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.

**TYPICAL DETAIL OF LANE CLOSURE USING PLASTIC DRUMS AS CHANNELIZING DEVICES**



Provide adequate sight distance when placing lane closures. Do not place lane closures in vertical or horizontal curves. See BC(8) for table showing the spacing of channelizing devices in the taper and tangent section.

\* NOTE: Lane lines shall be removed when the lane closure occupies a location for longer than 2 weeks.



18" x 24" Sign (Maximum Sign Dimension) Chevron CW1-8, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer

12" x 24" Vertical Panel mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

**SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS**

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type E (Fluorescent Prismatic) sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Flat Surface Reflective Sheeting," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type C (High Specific Intensity). Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
 Traffic Operations Division - TE  
 Texas Department of Transportation  
 125 East 11th Street  
 Austin, Texas 78701-2483  
 Phone (512) 416-3120  
 Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - www.dot.state.tx.us  
 Click on "About TxDOT".  
 Click on "Functional Organizational Chart".  
 Click on Traffic Operations Box.  
 Click on "Compliant Work Zone Traffic Control Devices".  
 Again click on "Compliant Work Zone Traffic Control Devices".  
 This site is printable.

STANDARD PLANS  
 Texas Department of Transportation  
 Traffic Operations Division

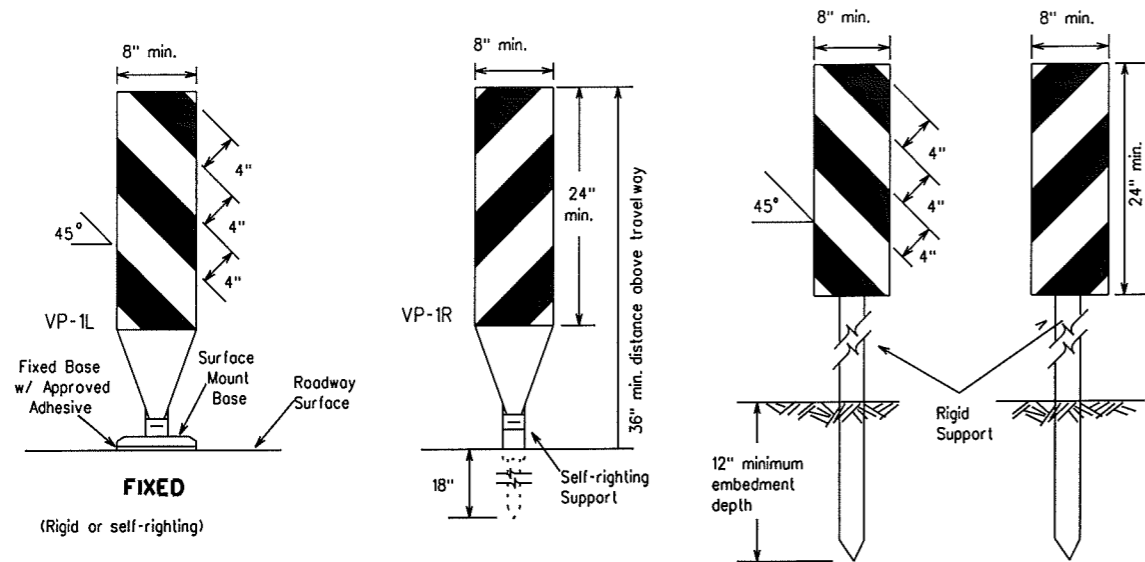
**BARRICADE AND CONSTRUCTION  
 PLASTIC DRUM  
 STANDARD**

7 of 12 BC(7)-03

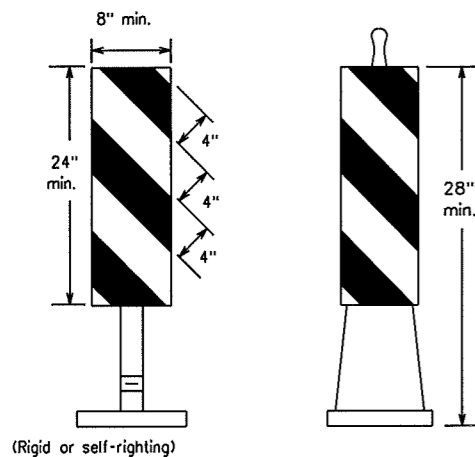
REVISIONS		DATE	BY	DESCRIPTION	SHEET
1		11-4-02	BAS	GRB	FDN
FEDERAL PROJECT		COUNTY		CONTROL	SECTION
HIDALGO					
JOB		HIGHWAY		17	

# CHANNELIZING DEVICES

## VERTICAL PANELS



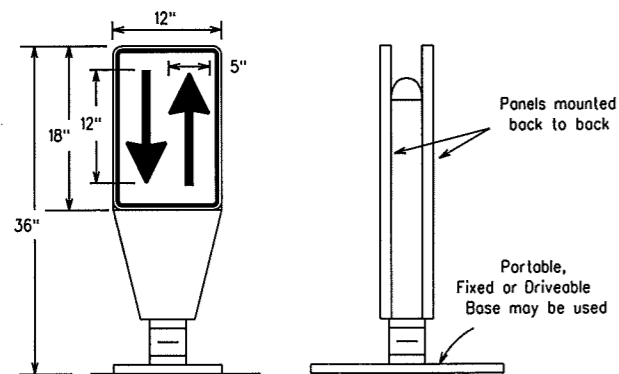
## DRIVEABLE



- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
- VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
- VP's used on expressways, freeways, and on high speed roadways shall have a minimum of 2 square feet of retro-reflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless noted otherwise.

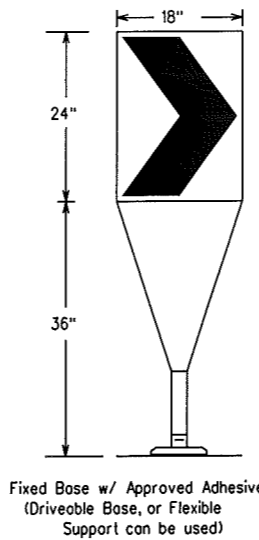
## PORTABLE

## OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust. The OTLD is placed on a flexible self-righting support that returns to an upright position when impacted by a vehicle.
- The OTLD may be used in combination with simple tubular markers or vertical panels (vp's).
- Spacing between the OTLD shall not exceed 500 feet. Tubular markers or vp's placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-8320.

## CHEVRONS



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
- Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black non-reflective legend. Sheeting for the chevron shall be retroreflective Type E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-8320.

Posted Speed	Formula	Minimum Desirable Taper Lengths x x			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'
35		205'	225'	245'	35'	70'-90'
40		265'	295'	320'	40'	80'-100'
45	L = WS	450'	495'	540'	45'	90'-110'
50		500'	550'	600'	50'	100'-125'
55		550'	605'	660'	55'	110'-140'
60		600'	660'	720'	60'	120'-150'
65		650'	715'	780'	65'	130'-165'
70	700'	770'	840'	70'	140'-175'	
75	750'	825'	900'	75'	150'-185'	

x x Taper lengths have been rounded off.  
L-Length of Taper (FT.) W-Width of Offset (FT.) S-Posted Speed (MPH)

## GENERAL NOTES:

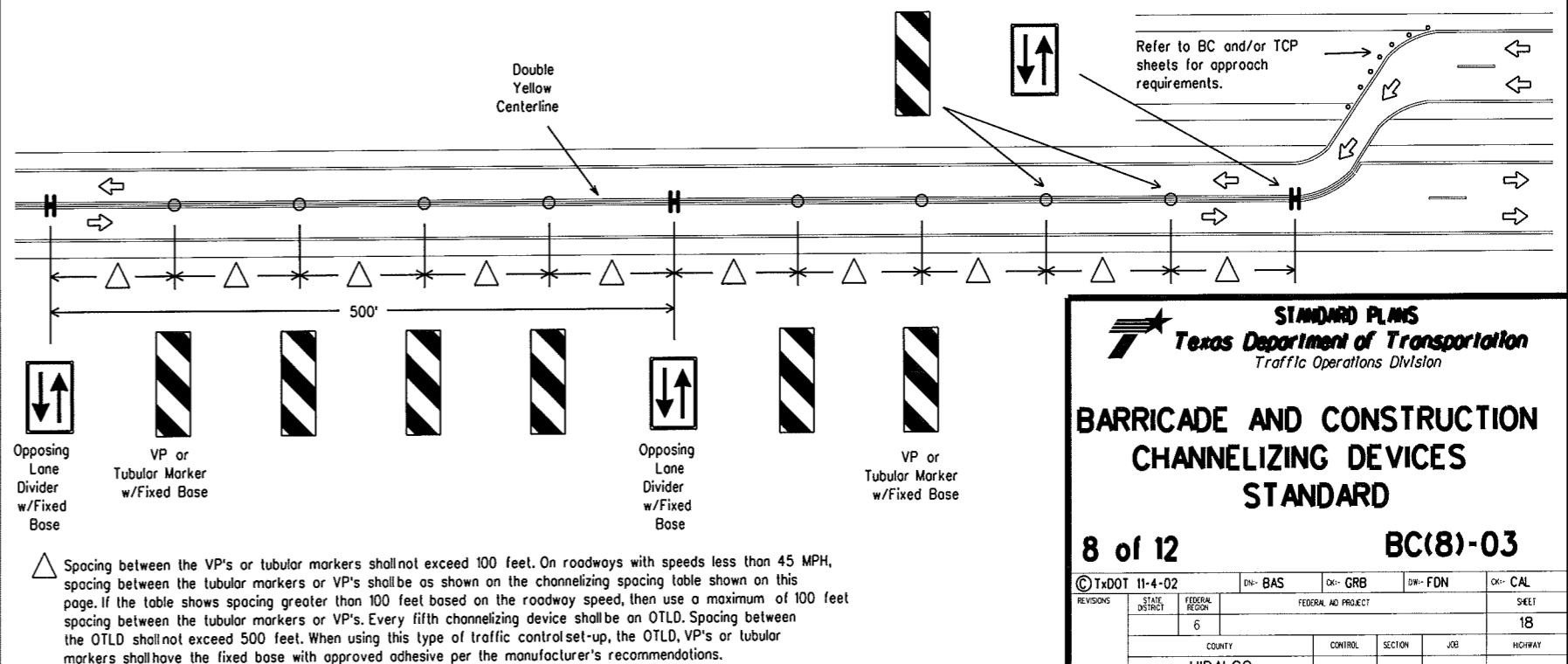
- Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
- Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- The contractor shall maintain devices in a clean condition and replace damaged, non-reflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh approximately 35 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.
- Examples on this sheet are the most commonly used channelizing devices in work zones. For other devices, refer to the CWZTCD.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start of website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT".  
Click on "Functional Organizational Chart".  
Click on Traffic Operations Box.  
Click on "Compliant Work Zone Traffic Control Devices".  
Again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.



△ Spacing between the VP's or tubular markers shall not exceed 100 feet. On roadways with speeds less than 45 MPH, spacing between the tubular markers or VP's shall be as shown on the channelizing spacing table shown on this page. If the table shows spacing greater than 100 feet based on the roadway speed, then use a maximum of 100 feet spacing between the tubular markers or VP's. Every fifth channelizing device shall be an OTLD. Spacing between the OTLD shall not exceed 500 feet. When using this type of traffic control set-up, the OTLD, VP's or tubular markers shall have the fixed base with approved adhesive per the manufacturer's recommendations.

STANDARD PLANS  
Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

8 of 12

BC(8)-03

© TxDOT 11-4-02	DS- BAS	OK- GRB	SR- FDN	OK- CAL
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	6			18
	COUNTY	CONTROL	SECTION	JOB
	HIDALGO			

**TYPE III BARRICADES**

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type III Barricades and a list of all materials used in the construction of Type III Barricades.
2. Type III Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over,

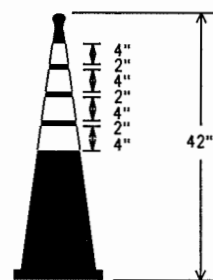
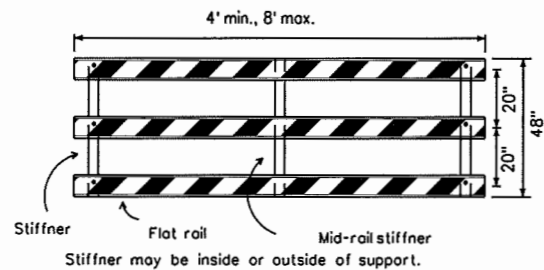
sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.

**Barricades shall NOT be used as a sign support.**

**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

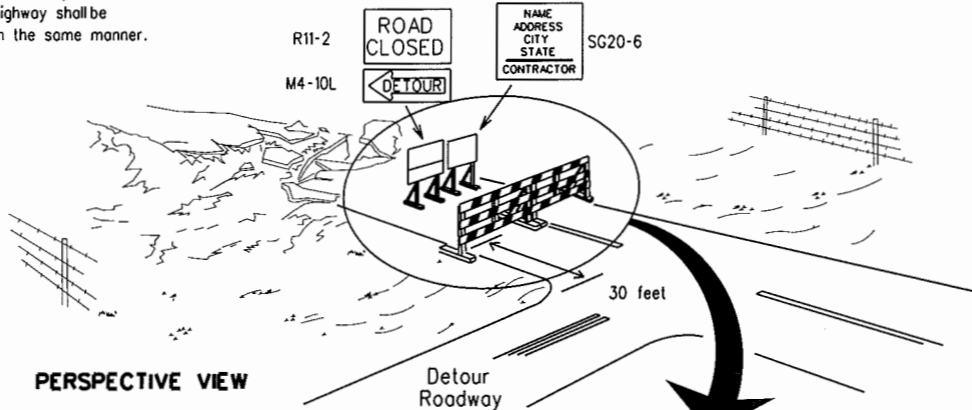


**EDGE LINE CHANNELIZER**

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

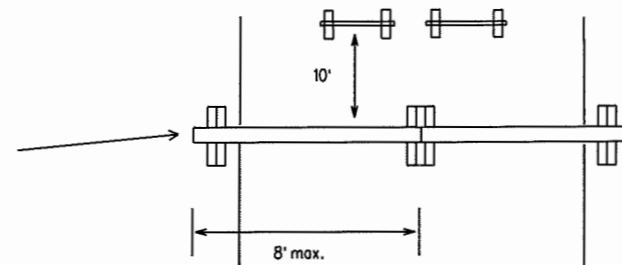
**TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION**

Each roadway of a divided highway shall be barricaded in the same manner.



**PERSPECTIVE VIEW**

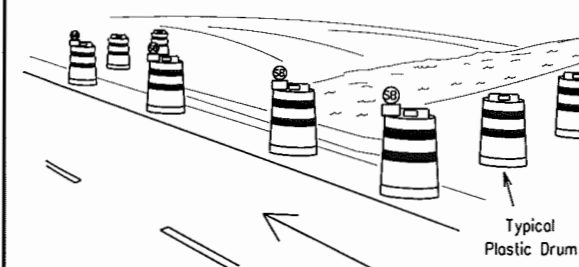
The three rails on Type III barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



**PLAN VIEW**

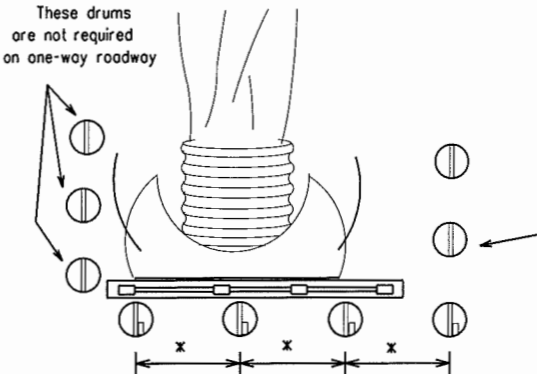
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type III Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**



**PERSPECTIVE VIEW**

These drums are not required on one-way roadway



**Legend**

- Plastic drum
- Plastic drum with steady burn light

**PLAN VIEW**

1. Where positive redirection capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.

Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

x Maximum spacing between drums shall be 10 feet. A minimum of two drums shall be used across the work area.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

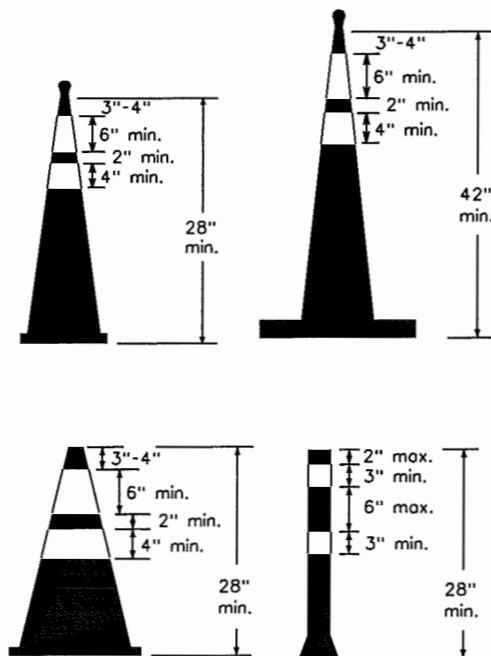
Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start of website: [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT".  
Click on "Functional Organizational Chart".  
Click on "Traffic Operations Box".  
Click on "Compliant Work Zone Traffic Control Devices".  
again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.

**28" Cones shall have a minimum weight of 9 1/2 lbs.  
42" 2-piece cones shall have a minimum weight of 30 lbs.**

**CONES**



1. Traffic cones and tubular markers shall be a minimum of 28 inches in height when used either on freeways or at nighttime.
2. Cones or tubular markers shall be predominantly orange, fluorescent red-orange, or fluorescent yellow-orange. They should be kept clean and bright for maximum visibility.
3. Cones used only for daytime operations do not require the reflectorized bands.
4. Cones used for nighttime operations shall be reflectorized. Reflectorized material shall have a smooth, sealed outer surface that displays the same approximate color during the day and night. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
5. When used at night, appropriate personnel shall ensure that cones and tubular markers remain in their proper location and in an upright position.
6. Reflectorization of cones shall consist of a minimum 6 inch band placed at least 3 inches but not more than 4 inches from the top, supplemented by a minimum 4 inch band spaced a minimum of 2 inches below the 6 inch band.
7. Reflectorization of tubular markers shall be a minimum of two 3 inch bands placed a maximum of 2 inches from the top with a maximum of 6 inches between bands. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
8. One-piece cones or tubular markers are generally suitable for temporary usage (up to 8 hours) with other channelization devices such as vertical panels, drums or two-piece cones for long term usage. Care should be taken to ensure they remain in their proper location and in an upright position.
9. Cones or tubular markers used on each project shall be of the same size and shape.
10. The handle may be designed as a hook or other shape, fabricated from non-rigid materials similar to the cone material, and may extend up to a maximum of 8 inches above the top of cone. Length of the handle shall not be considered with regard to the overall height of the cone.

**STANDARD PLANS**  
Texas Department of Transportation  
Traffic Operations Division

**BARRICADE AND CONSTRUCTION  
TYPE III BARRICADE  
& CONES STANDARD**

9 of 12 **BC(9)-03**

© TxDOT 11-4-02		REVISED	DATE	BY	REASON
1	6				
COUNTY		CONTROL	SECTION	JOB	ROADWAY
HIDALGO					

## WORK ZONE PAVEMENT MARKINGS

### GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and the sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

### RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(11).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.
3. A list of prequalified reflective raised pavement markers can be found at the following web site:  
<ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/dms4200preq.pdf>
4. A list of prequalified non-reflective traffic buttons can be found at the following web site:  
<ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/4300preq.pdf>

### PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241. A list of prequalified products can be found at the following web site:  
<ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/pavemark.pdf>
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240 or the TXDOT Purchase Specification No. 550-74-89. A list of prequalified products and a copy of the TXDOT Purchase Specifications can be found at web sites:  
<ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/pavement.pdf>  
<ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/tss/tss377.pdf>

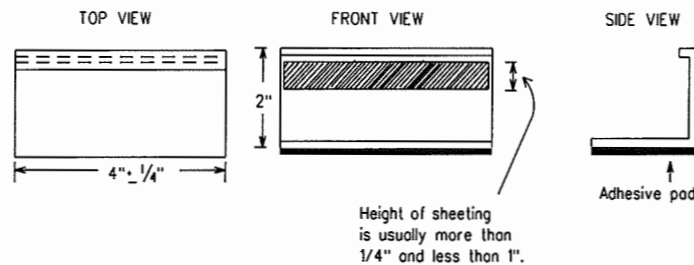
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 150 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria shall be replaced as required by the Engineer at the expense of the Contractor.

### REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway, shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than two weeks, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernible marking, by any method that does not materially damage the surface or texture of the pavement.
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.

## Temporary Flexible-Reflective Roadway Marker Tabs



**STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE**

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or 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 tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
  - B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.

## Raised Pavement Markers used as Guidemarks

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butylrubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:  
YELLOW - (two amber reflective surfaces with yellow body).  
WHITE - (one silver reflective surface with white body).

### DEPARTMENTAL MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PREFABRICATED PAVEMENT MARKINGS-PERMANENT	DMS-8240
PREFABRICATED PAVEMENT MARKINGS-REMOVABLE	DMS-8241
TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS	DMS-8242

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCO) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCO" on TxDOT website are:

Start of website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT".  
Click on "Functional Organizational Chart".  
Click on "Traffic Operations Box".  
Click on "Compliant Work Zone Traffic Control Devices".  
again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS STANDARD

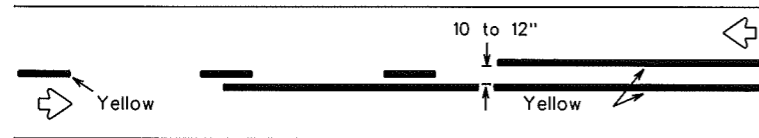
10 of 12

BC(10)-03

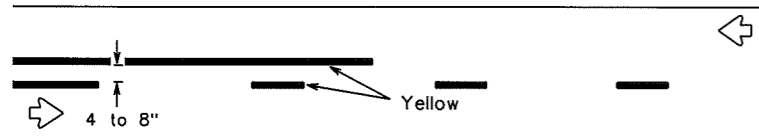
© TxDOT February 1998		DN- LR	CO- DTN	DN- FDN	CO- CAL
REVISED	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
1-97		6			20
2-98			COUNTY	CONTROL SECTION	JOB
1-02			HIDALGO		ROADWAY
11-02					

# PAVEMENT MARKING PATTERNS

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

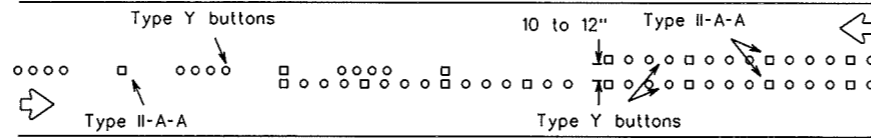


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

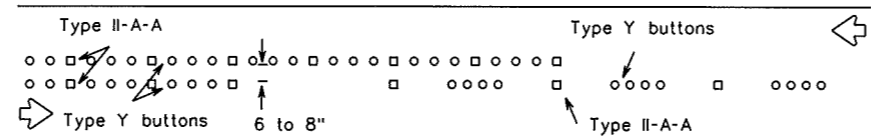


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

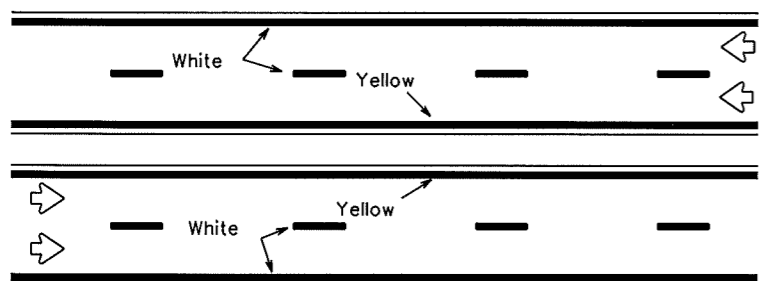


RAISED PAVEMENT MARKERS - PATTERN A



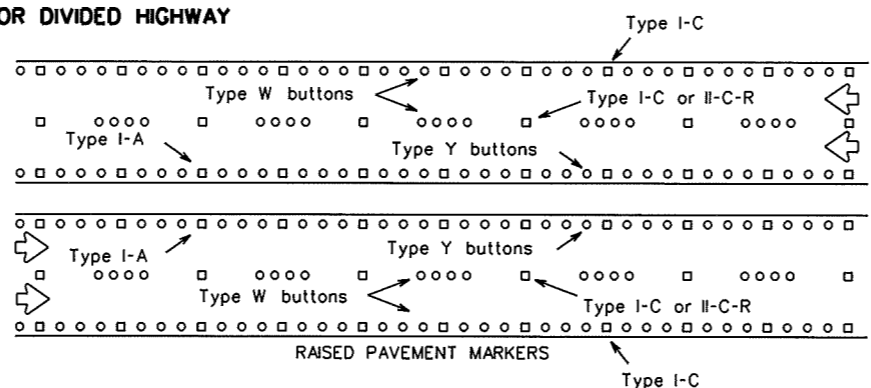
RAISED PAVEMENT MARKERS - PATTERN B

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



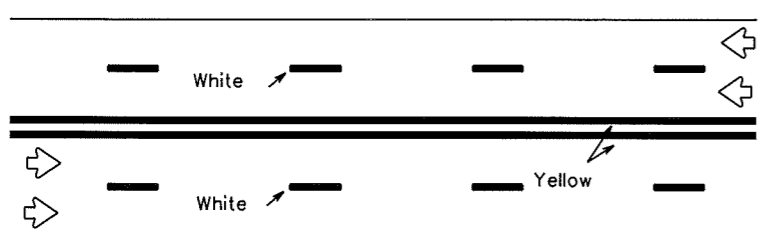
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



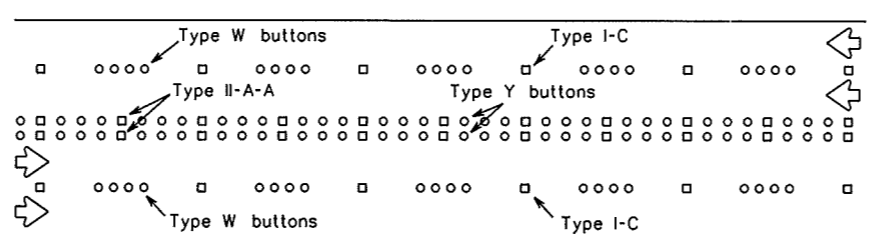
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



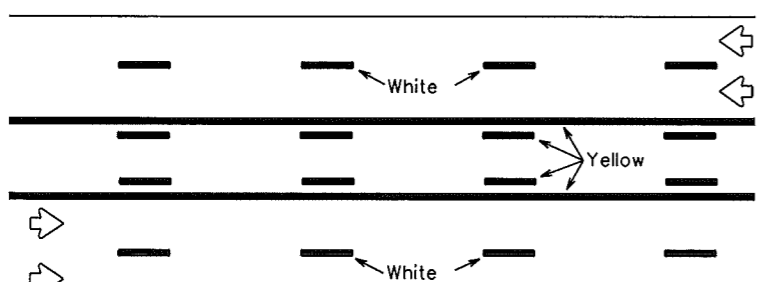
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



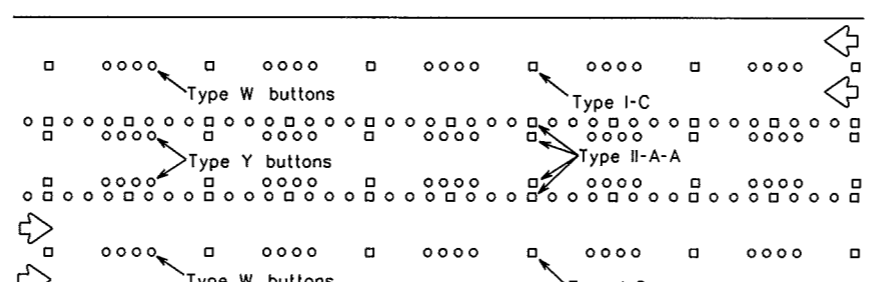
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE



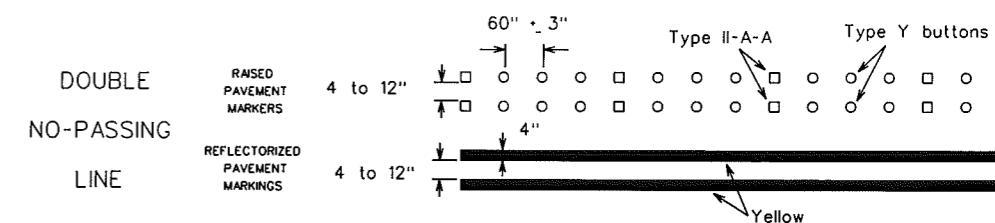
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.

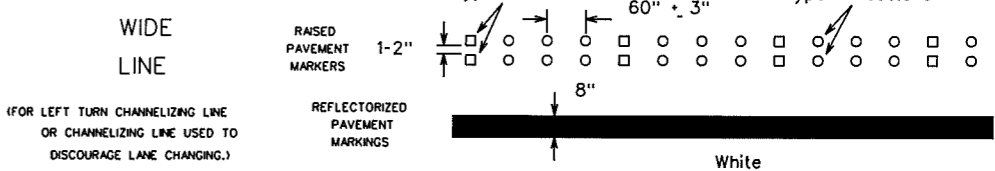
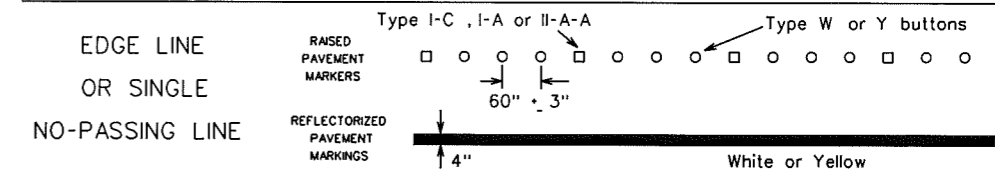


RAISED PAVEMENT MARKERS

# STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

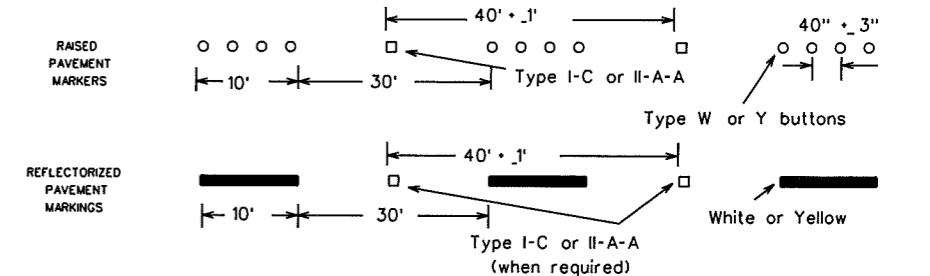


## SOLID LINES



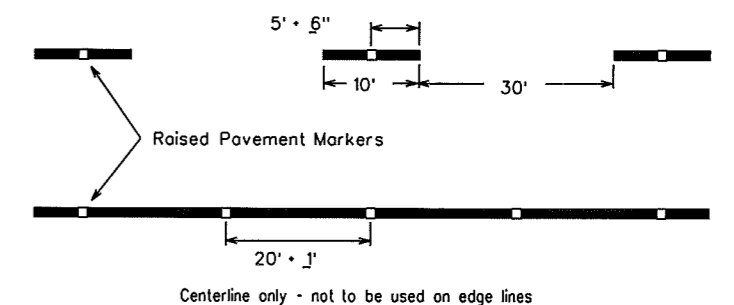
## BROKEN LINE

(FOR CENTER LINE OR LANE LINE.)



## REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT".  
Click on "Functional Organizational Chart".  
Click on Traffic Operations Box.  
Click on "Compliant Work Zone Traffic Control Devices".  
Again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item "RAISED PAVEMENT MARKERS."

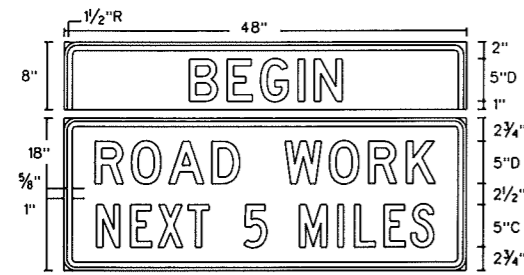
STANDARD PLANS  
Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS STANDARD

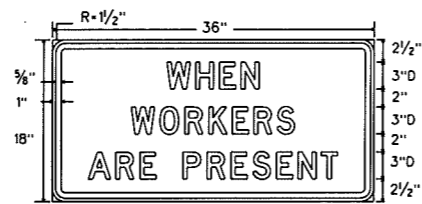
11 of 12

BC(11)-03

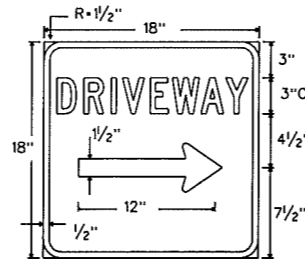
© TxDOT February 1998	REV- LR	CR- DTN	DR- FDN	CR- CAL
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AD PROJECT	SHEET
2-94		6		21
1-97				
2-98	COUNTY	CONTROL SECTION	JOB	ROADWAY
11-02	HIDALGO			



**SG20-1 w/plaque**  
48" X 26"  
Letters - Black  
Numbers - Black  
Border - Black  
Background - Orange Refl.



**ER20-5**  
Plaque  
36" X 18"  
Letters - Black  
Border - Black  
Background - White Refl.



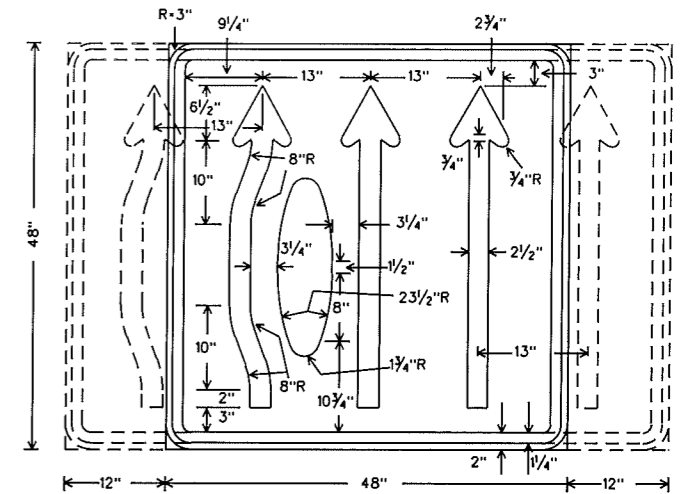
**D-70c**  
18" X 18"  
Letters - White Refl.  
Symbol - White Refl.  
Border - White Refl.  
Background - Blue Refl.



**D-70S**  
42" X 14"  
Letters - White Refl.  
Symbol - White Refl.  
Border - White Refl.  
Background - Blue Refl.

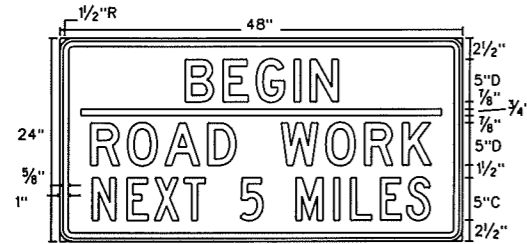
\* Alternate first line legend for D-70S

- RESTAURANT | **D70R** | 4"C
- BUSINESS | **D70B** | 4"C
- MOTEL | **D70M** | 4"C
- GAS | **D70C** | 4"C

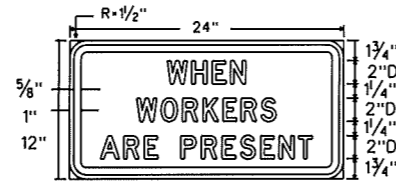


**CW24-2**  
Var. X 48"

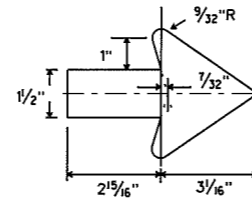
A mirror image may be used to show proper lane alignment.



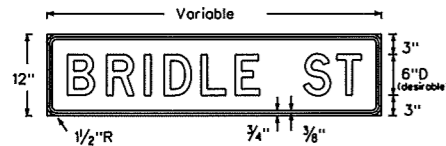
**SG20-5T**  
48" X 24"  
Letters - Black  
Numbers - Black  
Border - Black  
Background - Orange Refl.



**R20-5**  
Plaque  
24" X 12"  
Letters - Black  
Border - Black  
Background - White Refl.



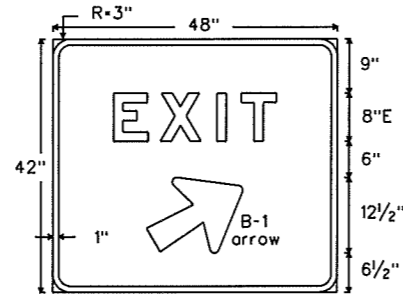
B-1 Arrow Detail



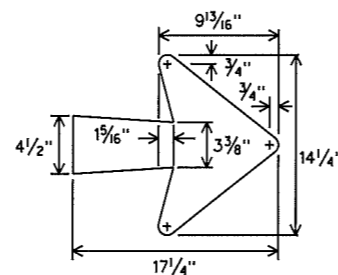
**M4-9N**  
Variable X 12"  
Letters - Black  
Border - Black  
Background - Orange Refl.

The M4-9R,L or S sign is to be used to detour local streets or roads that are not a State or Federal numbered highway; however, it should not be used in lieu of the M4-10 sign at the beginning of the de-

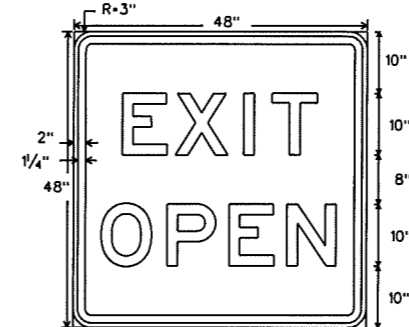
tour or to detour State or Federal numbered routes. Also, when the M4-9R,L or S sign is used, a sign (M4-9N) with the name of the street being detoured may be mounted above it.



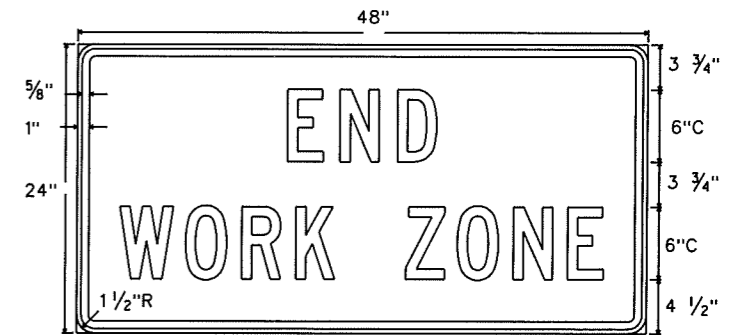
**E5-1a**  
48" X 42"  
Letters - White Refl.  
Arrow - White Refl.  
Border - White Refl.  
Background - Green Refl.



B-1 Arrow Detail



**E5-2**  
48" X 48"  
Letters - Black  
Border - Black  
Background - Orange Refl.



**G20-2b**  
48" X 24"  
Letters - Black  
Border - Black  
Background - Orange Refl.

DEPARTMENT MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
FLAT SURFACE REFLECTIVE SHEETING	DMS-8300
VINYL NON-REFLECTIVE DECAL SHEETING	DMS-8320

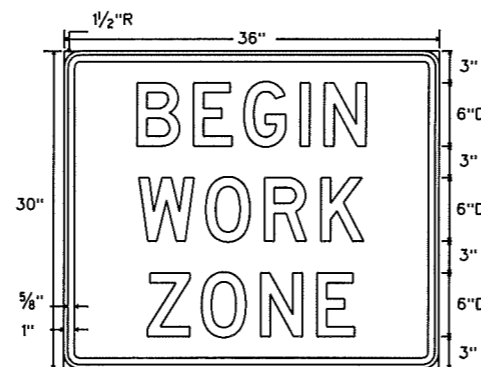
COLOR	USAGE	REFLECTIVE SHEETING OR OTHER MATERIAL
BLUE	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
RED	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
GREEN	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
ORANGE	BACKGROUND	TYPE E (FLUORESCENT PRISMATIC)
WHITE	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
YELLOW	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
BLACK	LEGEND & BORDERS	VINYL NON-REFLECTIVE DECAL SHEETING
WHITE	LEGEND & BORDERS	TYPE C (HIGH SPECIFIC INTENSITY)

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

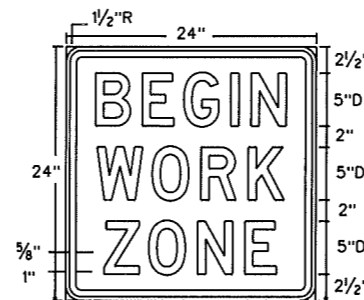
Standards Engineer  
Traffic Operations Division - TE  
Texas Department of Transportation  
125 East 11th Street  
Austin, Texas 78701-2483  
Phone (512) 416-3120  
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start of website - [www.dot.state.tx.us](http://www.dot.state.tx.us)  
Click on "About TxDOT",  
Click on "Functional Organizational Chart",  
Click on Traffic Operations Box,  
Click on "Compliant Work Zone Traffic Control Devices",  
again click on "Compliant Work Zone Traffic Control Devices".  
This site is printable.



**EG20-9T**  
36" X 30"  
Letters - Black  
Border - Black  
Background - Orange Refl.



**G20-9T**  
24" X 24"  
Letters - Black  
Border - Black  
Background - Orange Refl.

**STANDARD PLANS**  
Texas Department of Transportation  
Traffic Operations Division

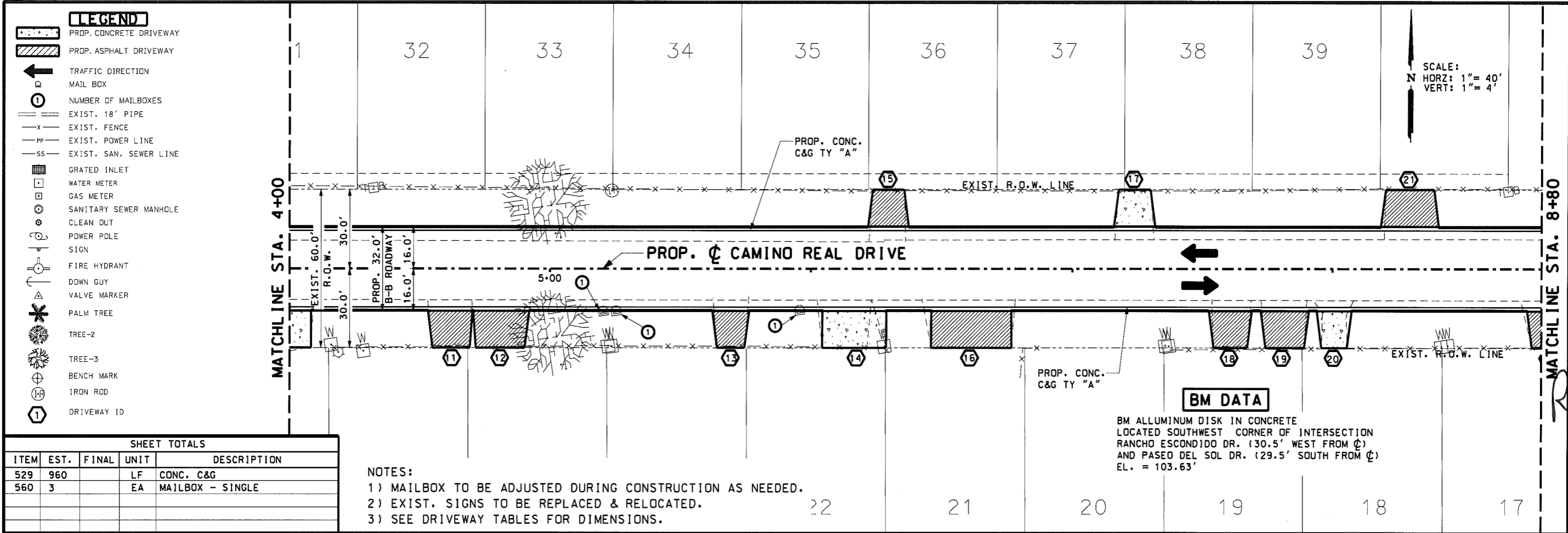
**BARRICADE AND CONSTRUCTION REGULATORY & GUIDE SIGNS STANDARDS**

12 of 12 BC(12)-03

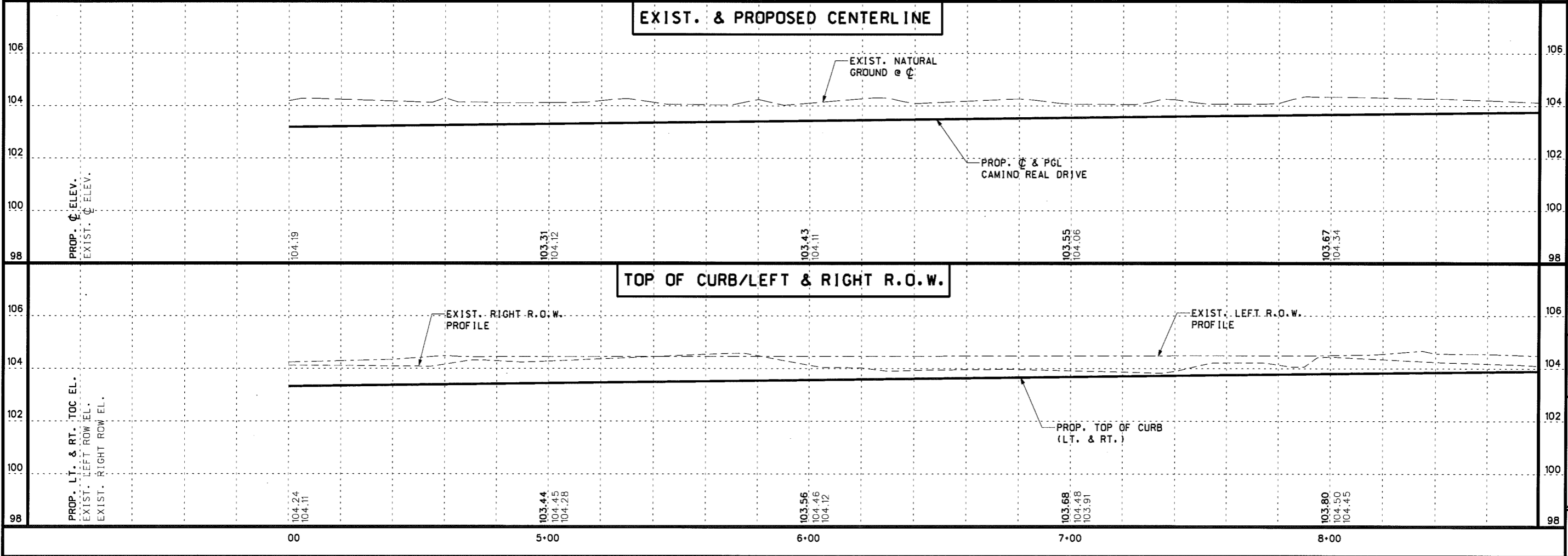
REVISIONS	DATE	BY	CHKD	APP'D	DESCRIPTION
10-99	11-02				

PROJECT NO.	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	6			22
COUNTY	CONTROL	SECTION	JOB	HIGHWAY
HIDALGO				





SHEET TOTALS				
ITEM	EST.	FINAL	UNIT	DESCRIPTION
529	960		LF	CONC. C&G
560	3		EA	MAILBOX - SINGLE



**Professional Engineers & Land Surveyors**  
 R. Gutierrez  
 Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

STATE OF TEXAS  
 RAIMIRO GUTIERREZ  
 1948  
 PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAIMIRO GUTIERREZ, P.E. 65946  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 CAMINO REAL DRIVE  
 PLAN & PROFILE

REVISION	DATE	BY

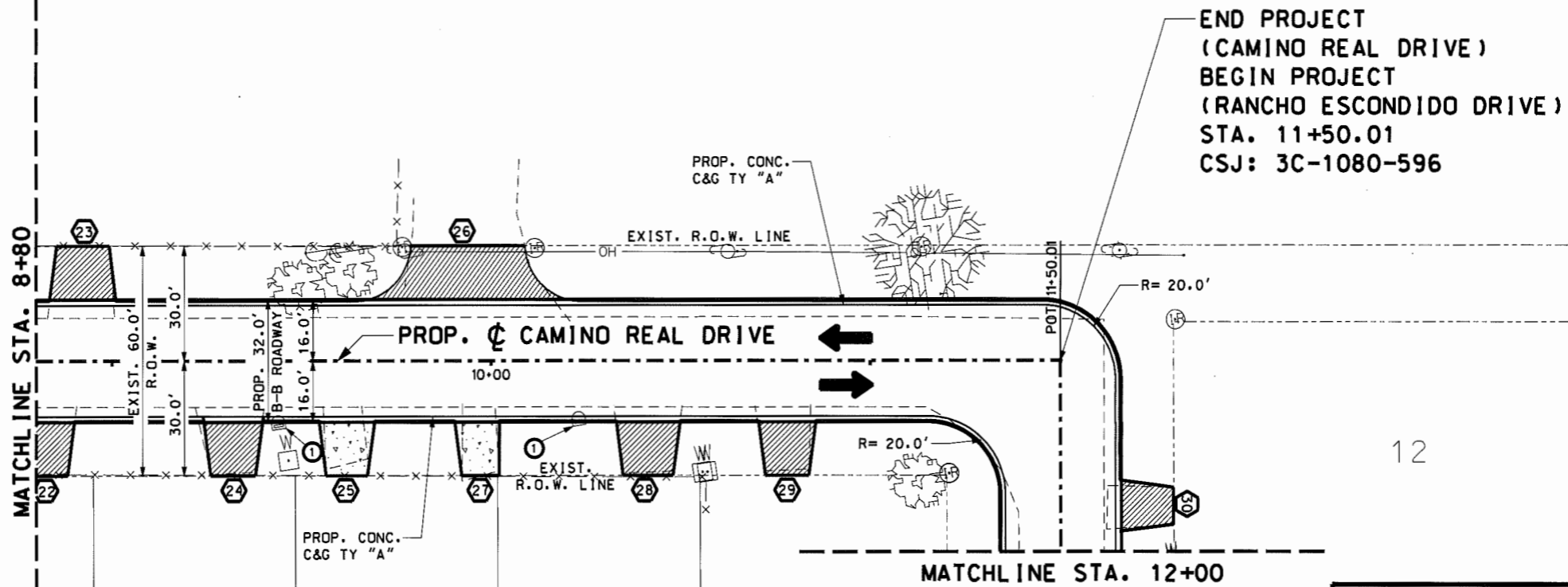
PREPARED BY: JC  
 CHECKED BY: RG

FB. No.: 487,488  
 SURVEY BY: M.L.MR.DC  
 DRAWN BY: JC

**SHEET No.**  
 24

**LEGEND**

- PROP. CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- TRAFFIC DIRECTION
- MAIL BOX
- NUMBER OF MAILBOXES
- EXIST. 18' PIPE
- EXIST. FENCE
- EXIST. POWER LINE
- EXIST. SAN. SEWER LINE
- GRATED INLET
- WATER METER
- GAS METER
- SANITARY SEWER MANHOLE
- CLEAN OUT
- POWER POLE
- SIGN
- FIRE HYDRANT
- DOWN GUY
- VALVE MARKER
- PALM TREE
- TREE-2
- TREE-3
- BENCH MARK
- IRON ROD
- DRIVEWAY ID



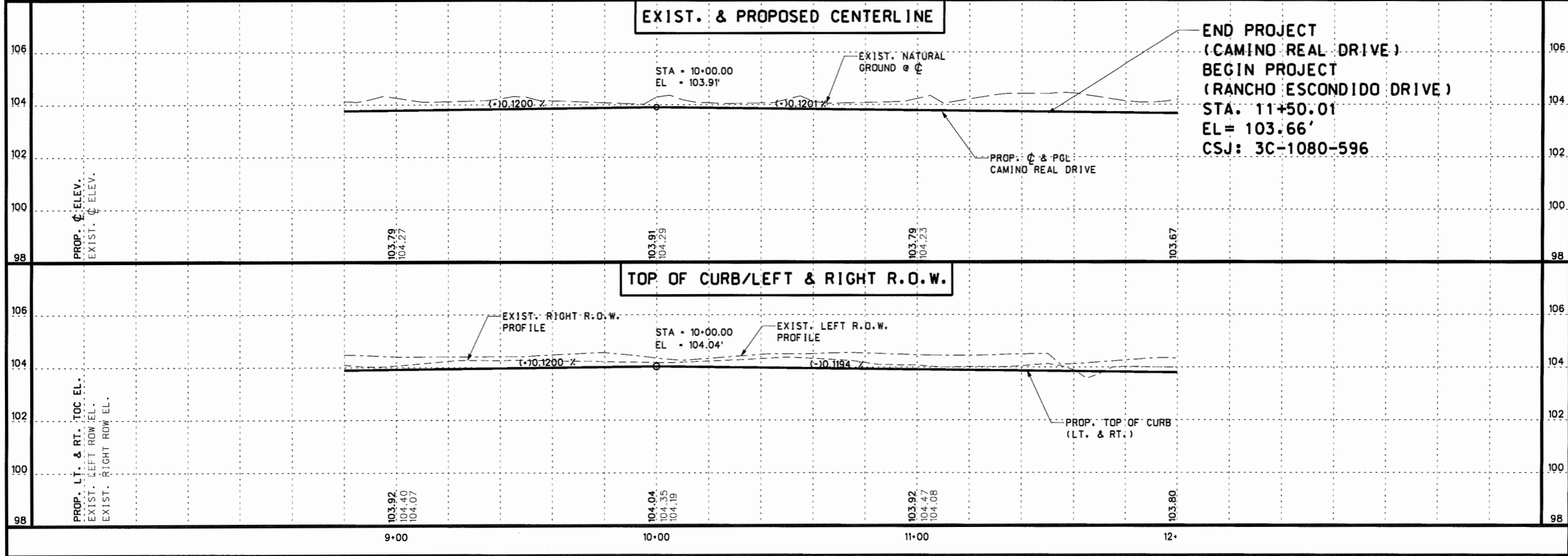
**NOTES:**  
 1) MAILBOX TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.  
 2) EXIST. SIGNS TO BE REPLACED & RELOCATED.  
 3) SEE DRIVEWAY TABLES FOR DIMENSIONS.

**BM DATA**  
 BM ALLUMINUM DISK IN CONCRETE  
 LOCATED SOUTHWEST CORNER OF INTERSECTION  
 RANCHO ESCONDIDO DR. (30.5' WEST FROM C)  
 AND PASEO DEL SOL DR. (29.5' SOUTH FROM C)  
 EL. = 103.63'

SHEET TOTALS				
ITEM	EST.	FINAL	UNIT	DESCRIPTION
529	623		LF	CONC. C&G
560	2		EA	MAILBOX - SINGLE

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

**Professional Engineers & Land Surveyors**  
**R. Gutierrez Engineering Corporation**  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 966 782-2557 • (FAX) 966 782-2568  
 FIRM No. 486



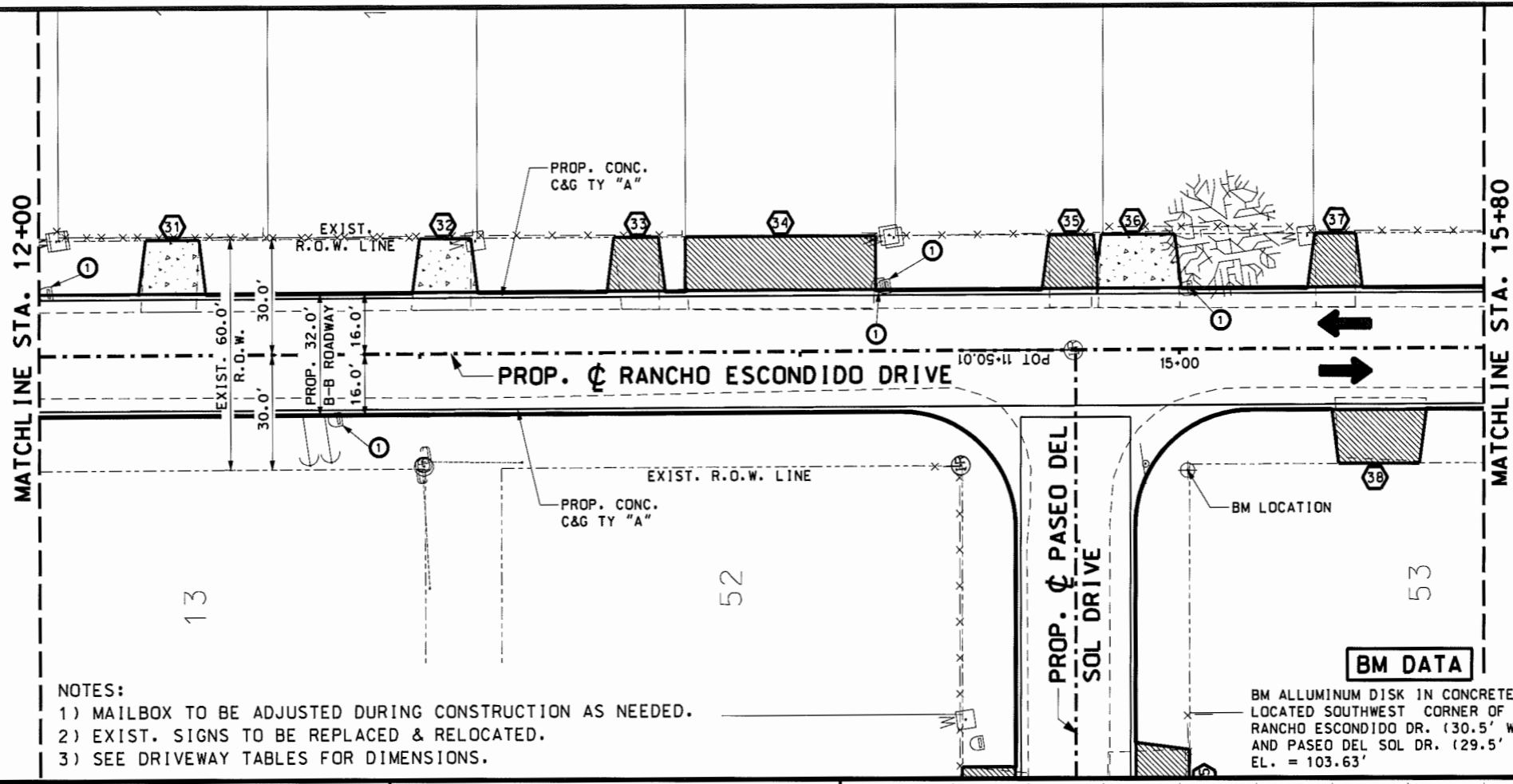
HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBDIVISION  
 CAMINO REAL DRIVE  
 PLAN & PROFILE

FB No.: 487,488	SURVEY BY: ML,MR,DC	DATE	BY
	DRAWN BY: JC	REVISION	
	PREPARED BY: JC		
	CHECKED BY: RG		

**SHEET No. 25**

- LEGEND**
- PROP. CONCRETE DRIVEWAY
  - PROP. ASPHALT DRIVEWAY
  - TRAFFIC DIRECTION
  - MAIL BOX
  - NUMBER OF MAILBOXES
  - EXIST. 18" PIPE
  - EXIST. FENCE
  - EXIST. POWER LINE
  - EXIST. SAN. SEWER LINE
  - GRATED INLET
  - WATER METER
  - GAS METER
  - SANITARY SEWER MANHOLE
  - CLEAN OUT
  - POWER POLE
  - SIGN
  - FIRE HYDRANT
  - DOWN GUY
  - VALVE MARKER
  - PALM TREE
  - TREE-2
  - TREE-3
  - BENCH MARK
  - IRON ROD
  - DRIVEWAY ID

SCALE:  
 HORZ: 1" = 40'  
 VERT: 1" = 4'



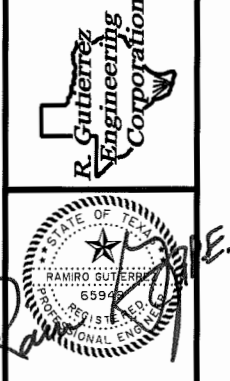
- NOTES:**
- 1) MAILBOX TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
  - 2) EXIST. SIGNS TO BE REPLACED & RELOCATED.
  - 3) SEE DRIVEWAY TABLES FOR DIMENSIONS.

**BM DATA**

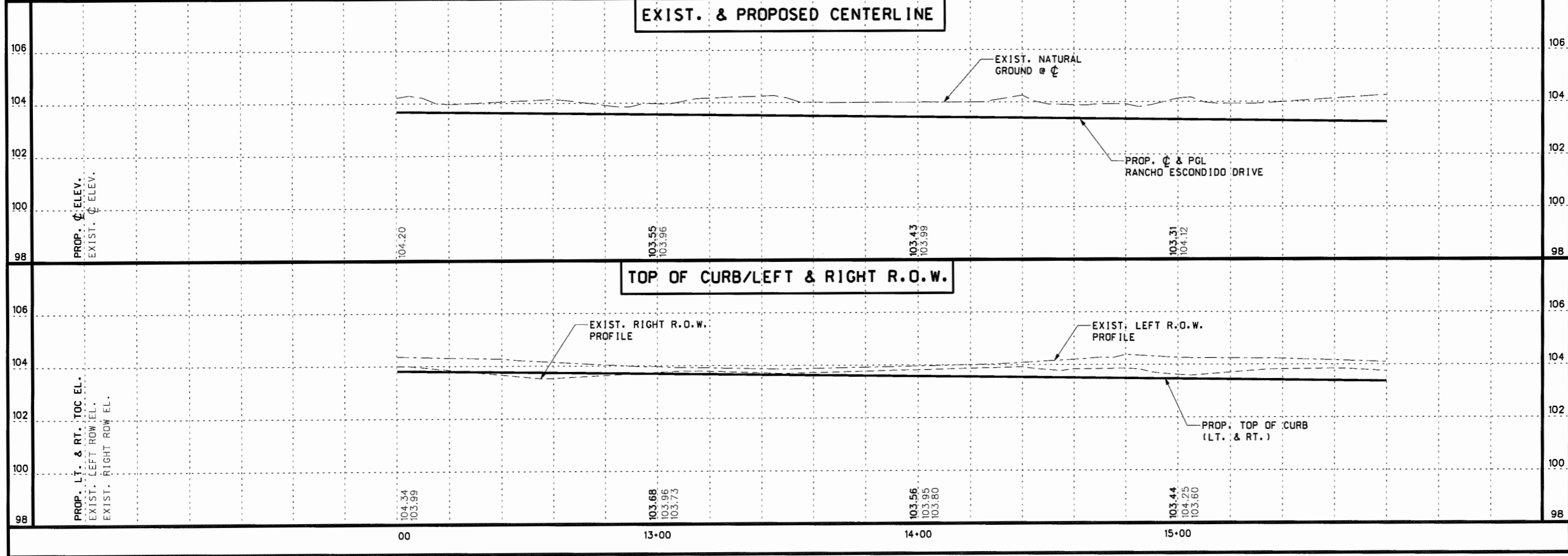
BM ALLUMINUM DISK IN CONCRETE  
 LOCATED SOUTHWEST CORNER OF INTERSECTION  
 RANCHO ESCONDIDO DR. (30.5' WEST FROM C)  
 AND PASEO DEL SOL DR. (29.5' SOUTH FROM C)  
 EL. = 103.63'

SHEET TOTALS				
ITEM	EST.	FINAL	UNIT	DESCRIPTION
529	670		LF	CONC. C&G
560	5		EA	MAILBOX - SINGLE

**Professional Engineers & Land Surveyors**  
 R. Gutierrez  
 Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65942 DATE: 7-19-10 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.



HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBDIVISION  
 RANCHO ESCONDIDO DRIVE  
 PLAN & PROFILE

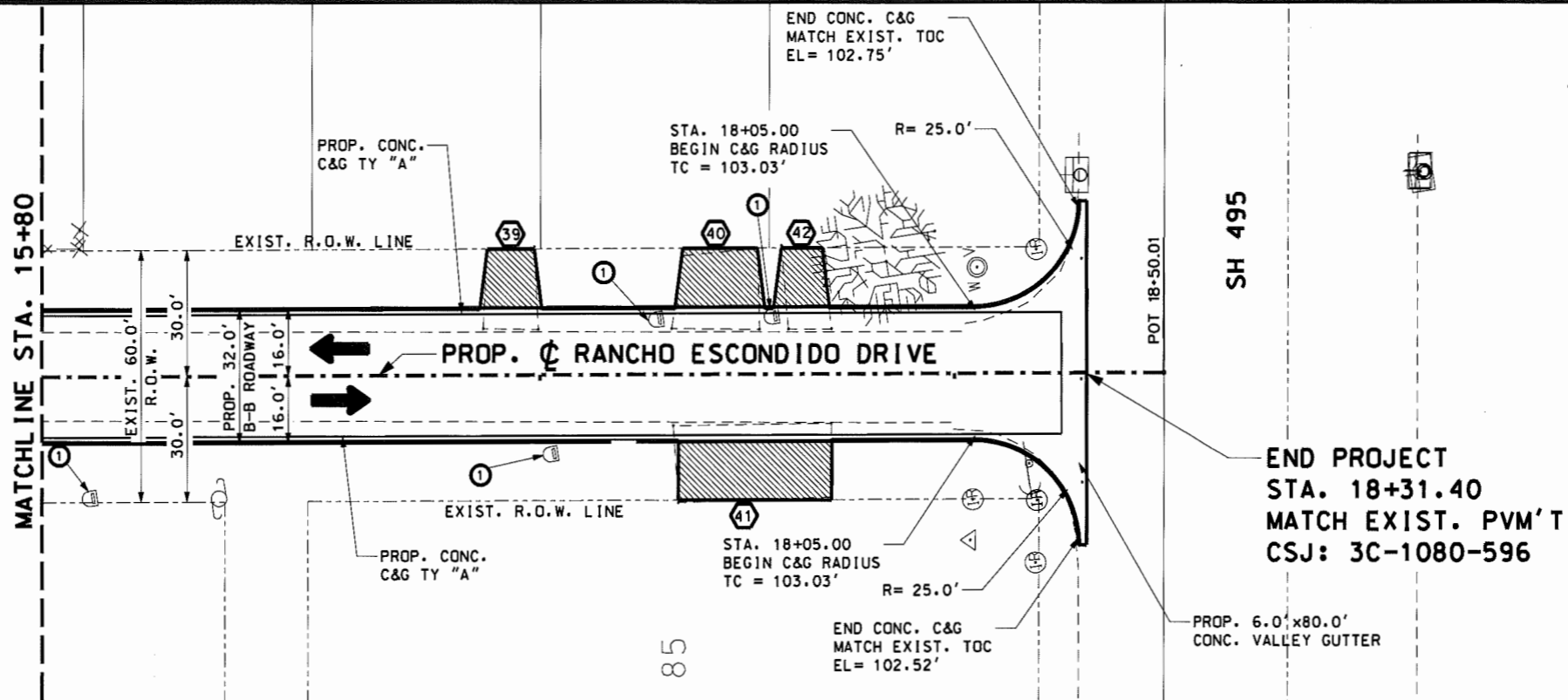
FB. No.: 487,488	SURVEY BY: ML, MR, DC	DRAWN BY: JC	PREPARED BY: JC	CHECKED BY: RG
			REVISION	DATE
				BY

**SHEET No. 26**

- LEGEND**
- PROP. CONCRETE DRIVEWAY
  - PROP. ASPHALT DRIVEWAY
  - TRAFFIC DIRECTION
  - MAIL BOX
  - NUMBER OF MAILBOXES
  - EXIST. 18' PIPE
  - EXIST. FENCE
  - EXIST. POWER LINE
  - EXIST. SAN. SEWER LINE
  - GRATED INLET
  - WATER METER
  - GAS METER
  - SANITARY SEWER MANHOLE
  - CLEAN OUT
  - POWER POLE
  - SIGN
  - FIRE HYDRANT
  - DOWN GUY
  - VALVE MARKER
  - PALM TREE
  - TREE-2
  - TREE-3
  - BENCH MARK
  - IRON ROD
  - DRIVEWAY ID

**BM DATA**

BM ALLUMINIUM DISK IN CONCRETE  
 LOCATED SOUTHWEST CORNER OF INTERSECTION  
 RANCHO ESCONDIDO DR. (30.5' WEST FROM C)  
 AND PASEO DEL SOL DR. (29.5' SOUTH FROM C)  
 EL. = 103.63'



- NOTES:**
- 1) MAILBOX TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
  - 2) EXIST. SIGNS TO BE REPLACED & RELOCATED.
  - 3) SEE DRIVEWAY TABLES FOR DIMENSIONS.

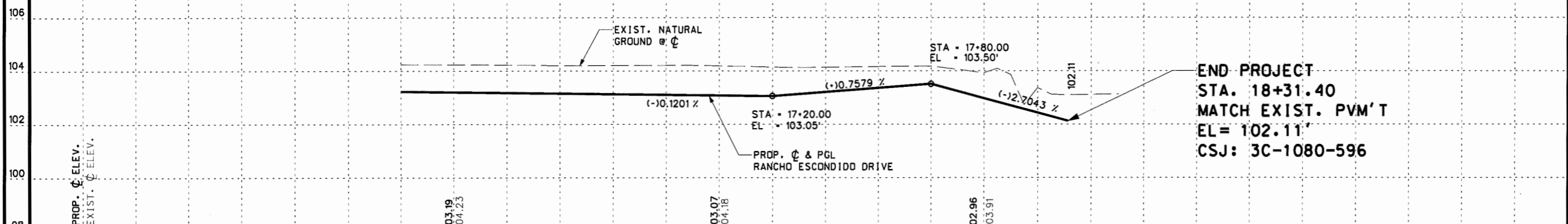
SHEET TOTALS				
ITEM	EST.	FINAL	UNIT	DESCRIPTION
529	535		LF	CONC. C&G
529	80		LF	CONC. VALLEY GUTTER
560	4		EA	MAILBOX - SINGLE

Professional Engineers & Land Surveyors  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 936 782-2567 • (FAX) 936 782-2568  
 FIRM No. 486

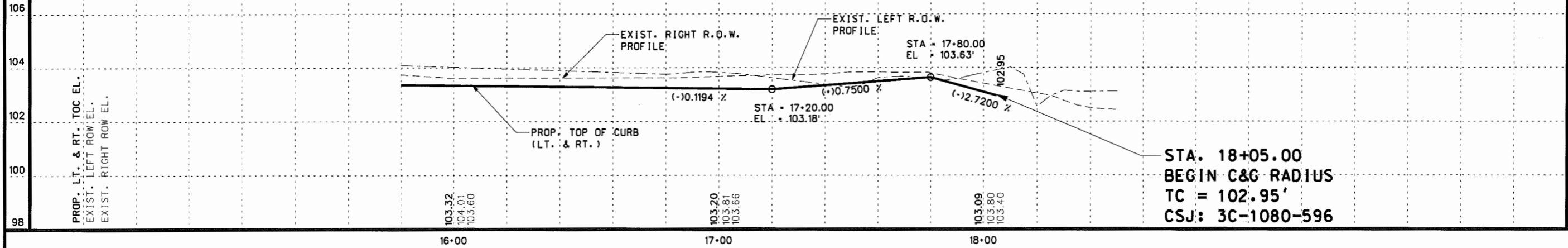
STATE OF TEXAS  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 6248  
 R. Gutierrez

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 63948  
 DATE: 7-13-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS PROFESSIONAL ENGINEERING PRACTICE LAW.

**EXIST. & PROPOSED CENTERLINE**



**TOP OF CURB/LEFT & RIGHT R.O.W.**



HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBDIVISION  
 RANCHO ESCONDIDO DRIVE  
 PLAN & PROFILE

REVISION	DATE	BY

FB. No.: 497,488  
 SURVEY BY: ML,MR,DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

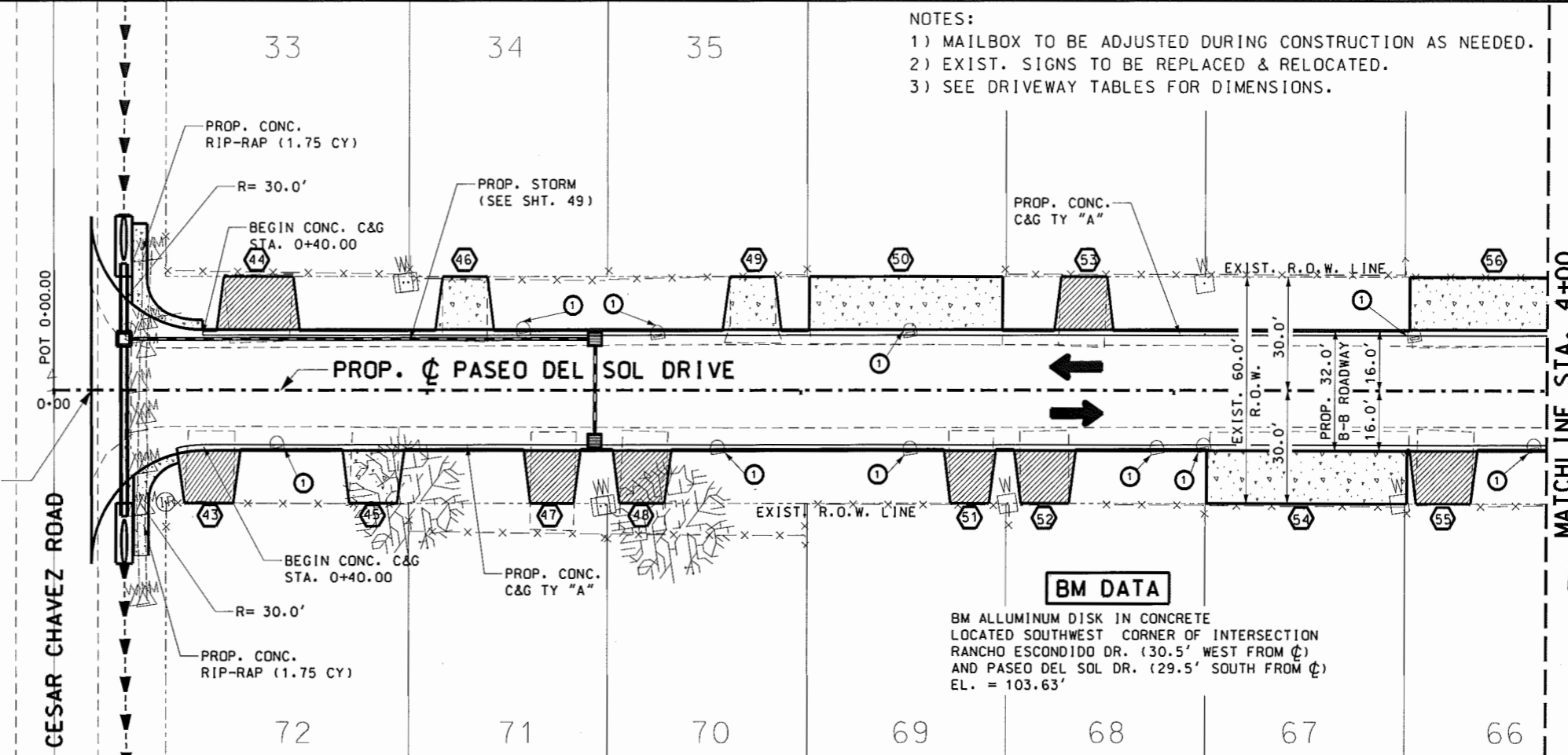
**SHEET No. 27**

- LEGEND**
- PROP. CONCRETE DRIVEWAY
  - PROP. ASPHALT DRIVEWAY
  - TRAFFIC DIRECTION
  - MAIL BOX
  - NUMBER OF MAILBOXES
  - EXIST. 18" PIPE
  - EXIST. FENCE
  - EXIST. POWER LINE
  - EXIST. SAN. SEWER LINE
  - GRATED INLET
  - WATER METER
  - GAS METER
  - SANITARY SEWER MANHOLE
  - CLEAN OUT
  - POWER POLE
  - SIGN
  - FIRE HYDRANT
  - DOWN GUY
  - VALVE MARKER
  - PALM TREE
  - TREE-2
  - TREE-3
  - BENCH MARK
  - IRON ROD
  - DRIVEWAY ID

SCALE:  
 HORZ: 1" = 40'  
 VERT: 1" = 4'

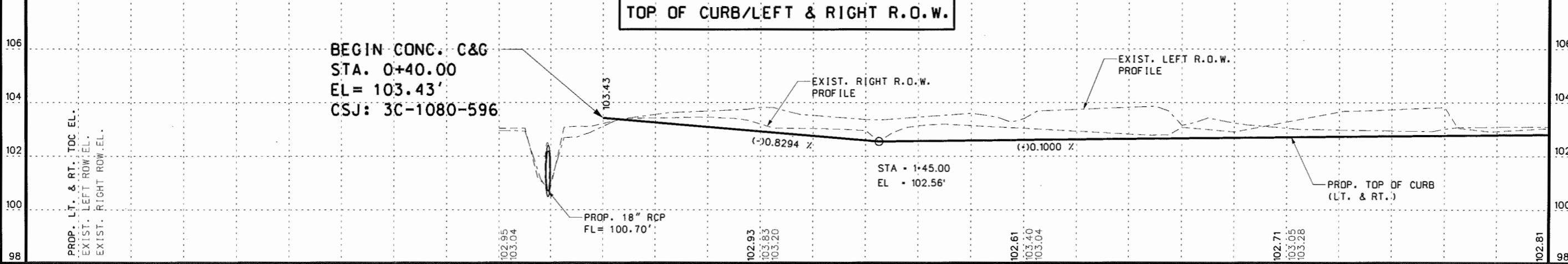
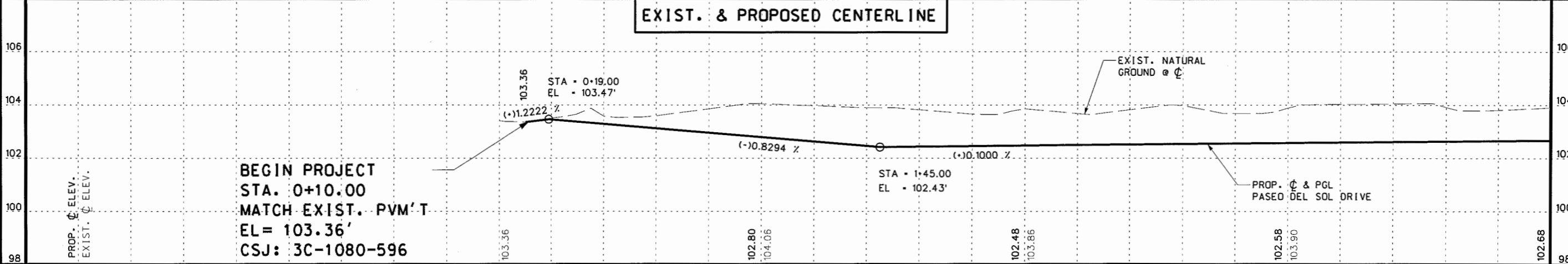
BEGIN PROJECT  
 STA. 0+10.00  
 MATCH EXIST. PVM'T  
 CSJ: 3C-1080-596

- NOTES:  
 1) MAILBOX TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.  
 2) EXIST. SIGNS TO BE REPLACED & RELOCATED.  
 3) SEE DRIVEWAY TABLES FOR DIMENSIONS.



**BM DATA**  
 BM ALLUMINUM DISK IN CONCRETE  
 LOCATED SOUTHWEST CORNER OF INTERSECTION  
 RANCHO ESCONDIDO DR. (30.5' WEST FROM C)  
 AND PASEO DEL SOL DR. (29.5' SOUTH FROM C)  
 EL. = 103.63'

SHEET TOTALS				
ITEM	EST.	FINAL	UNIT	DESCRIPTION
432	3.5		CY	CONC. RIP-RAP
529	720		LF	CONC. C&G
560	10		EA	MAILBOX - SINGLE



Professional Engineers & Land Surveyors  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78877  
 (TEL) 966 782-2557 • (FAX) 966 782-2568  
 FIRM No. 486

STATE OF TEXAS  
 ENGINEERING  
 R. Gutierrez  
 No. 2

HIDALGO COUNTY PRECINCT No. 2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 PASEO DEL SOL DRIVE  
 PLAN & PROFILE

REVISION	DATE	BY

FB. No.: 487,488  
 SURVEY BY: ML, MP, DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

**SHEET No.**  
 28

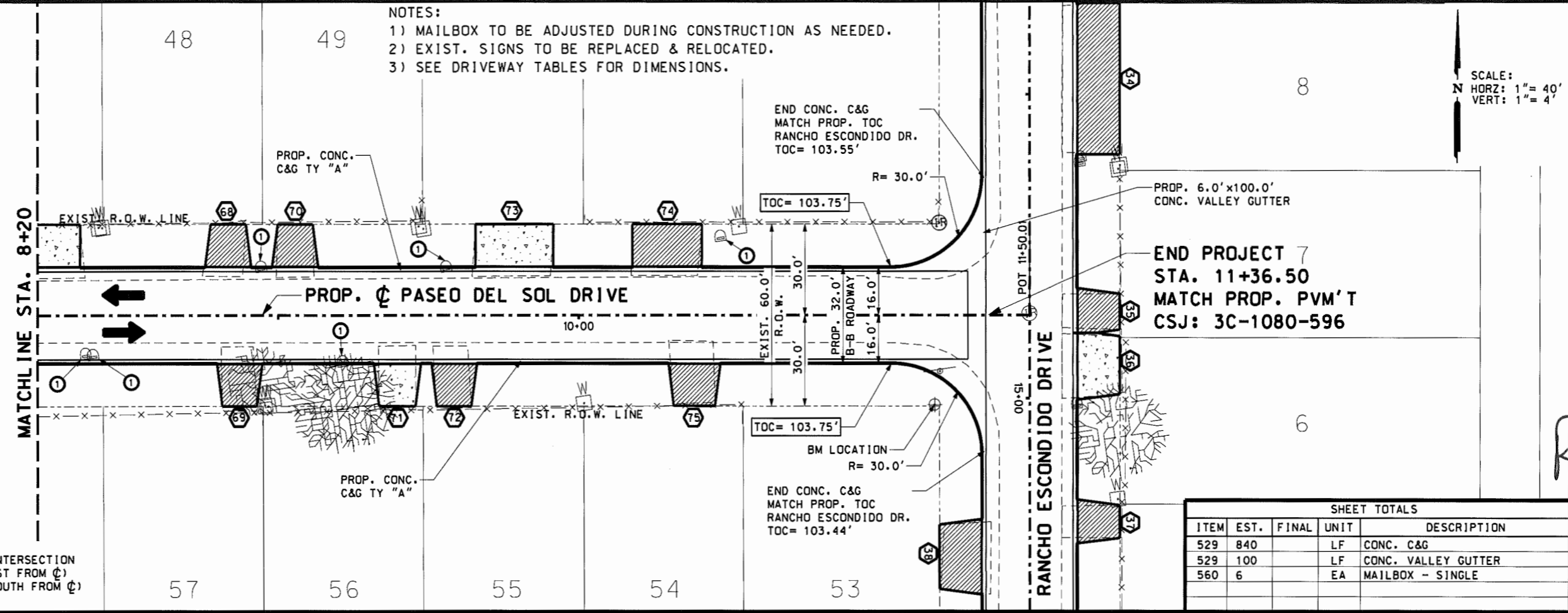


- LEGEND**
- PROP. CONCRETE DRIVEWAY
  - PROP. ASPHALT DRIVEWAY
  - TRAFFIC DIRECTION
  - MAIL BOX
  - NUMBER OF MAILBOXES
  - EXIST. 18' PIPE
  - EXIST. FENCE
  - EXIST. POWER LINE
  - EXIST. SAN. SEWER LINE
  - GRATED INLET
  - WATER METER
  - GAS METER
  - SANITARY SEWER MANHOLE
  - CLEAN OUT
  - POWER POLE
  - SIGN
  - FIRE HYDRANT
  - DOWN GUY
  - VALVE MARKER
  - PALM TREE
  - TREE-2
  - TREE-3
  - BENCH MARK
  - IRON ROD
  - DRIVEWAY ID

**BM DATA**

BM ALLUMINUM DISK IN CONCRETE  
 LOCATED SOUTHWEST CORNER OF INTERSECTION  
 RANCHO ESCONDIDO DR. (30.5' WEST FROM C)  
 AND PASEO DEL SOL DR. (29.5' SOUTH FROM C)  
 EL. = 103.63'

- NOTES:**
- 1) MAILBOX TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
  - 2) EXIST. SIGNS TO BE REPLACED & RELOCATED.
  - 3) SEE DRIVEWAY TABLES FOR DIMENSIONS.



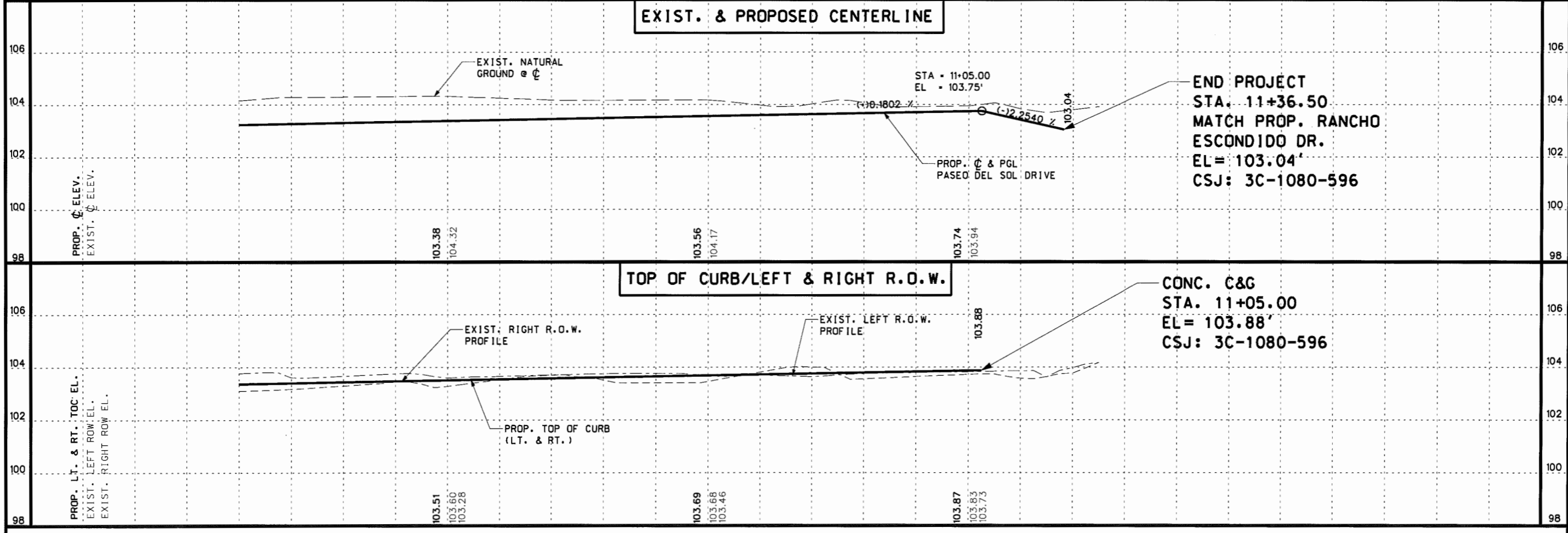
SCALE:  
 HORZ: 1" = 40'  
 VERT: 1" = 4'

END PROJECT 7  
 STA. 11+36.50  
 MATCH PROP. PVM'T  
 CSJ: 3C-1080-596

SHEET TOTALS				
ITEM	EST.	FINAL	UNIT	DESCRIPTION
529	840		LF	CONC. C&G
529	100		LF	CONC. VALLEY GUTTER
560	6		EA	MAILBOX - SINGLE

Professional Engineers & Land Surveyors  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2568  
 FRM No. 486

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 63948  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.



HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 PASEO DEL SOL DRIVE  
 PLAN & PROFILE

REVISION	DATE	BY

FB. No.: 487,488  
 SURVEY BY: ML,MR,DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

CAMINO REAL DRIVE - DRIVEWAYS (CSJ: 1080-596-21)

ID #	STATION	EXIST. DRVWY WIDTH (FT)	PROP. WIDTH CURB & GUTTER (FT)	PROP. WIDTH R-O-W LINE (FT)	EXIST. DRVWY MATERIAL (FT)	ACP DRIVEWAYS			(4") CONC. DRVWYS (SY)			
						AREA (SY)				ITEM 247 FLEX BASE 4" (CY)	ITEM 310 ASPH MAT'L (AC-10) (0.2 GAL/SY) (GAL) (2)	ITEM 340 ASPH. MAT'L ACP (SURF) (TONS) (2)
						P-1	PRB-1	PB-1				
1	0+69.40. RT	34.0'	34.0'	34.0'	CONCRETE	-	-	-	53			
2	1+18.80. RT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	22			
3	1+25.50. LT	12.0'	16.0'	12.0'	CALICHE	22	2.4	4.40	1.25			
4	1+59.10. RT	11.0'	15.0'	11.0'	CONCRETE	-	-	-	21			
5	2+28.40. RT	12.0'	24.0'	12.0'	CONCRETE	-	-	-	28			
6	3+00.40. LT	4.0'	4.0'	4.0'	CONCRETE	-	-	-	7			
7	3+15.40. RT	63.0'	63.0'	63.0'	CONCRETE	-	-	-	98			
8	3+22.00. LT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	22			
9	3+51.60. LT	32.0'	32.0'	32.0'	CONCRETE	-	-	-	50			
10	3+87.30. RT	42.0'	42.0'	42.0'	CONCRETE	-	-	-	48			
11	4+62.00. RT	14.0'	17.0'	14.0'	CALICHE	24	2.6	4.80	1.37			
12	4+80.90. RT	19.0'	22.0'	19.0'	ASPHALT	32	3.5	6.40	1.82			
13	5+69.00. RT	11.0'	15.0'	11.0'	CALICHE	21	2.4	4.20	1.20			
14	6+16.60. RT	24.0'	24.0'	24.0'	CONCRETE	-	-	-	38			
15	6+29.60. LT	12.0'	16.0'	12.0'	CALICHE	22	2.4	4.40	1.25			
16	6+61.20. RT	31.0'	31.0'	31.0'	CALICHE	48	5.3	9.60	2.74			
17	7+23.80. LT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	22			
18	7+60.70. RT	13.0'	17.0'	13.0'	CALICHE	23	2.6	4.60	1.30			
19	7+81.70. RT	15.0'	19.0'	15.0'	CALICHE	26	2.9	5.20	1.50			
20	8+00.61. RT	10.0'	14.0'	10.0'	CONCRETE	-	-	-	19			
21	8+29.36. LT	18.0'	22.0'	18.0'	CALICHE	31	3.4	6.20	1.80			
22	8+82.30. RT	12.0'	16.0'	12.0'	CALICHE	22	2.4	4.40	1.25			
23	8+92.40. LT	14.0'	18.0'	14.0'	CALICHE	25	2.8	5.00	1.40			
24	9+32.10. RT	12.0'	16.0'	12.0'	CALICHE	22	2.4	4.40	1.25			
25	9+62.00. RT	11.0'	15.0'	11.0'	CONCRETE	-	-	-	21			
26	9+93.90. LT	30.0'	52.0'	30.0'	CALICHE	64	7.1	12.80	3.65			
27	9+97.25. RT	10.0'	12.0'	10.0'	CONCRETE	-	-	-	18			
28	10+41.40. RT	13.0'	17.0'	13.0'	CALICHE	23	2.6	4.60	1.30			
29	10+78.10. RT	11.0'	15.0'	11.0'	CALICHE	20	2.2	4.00	1.14			
TOTAL						425	47.0	85.00	24.22	494		

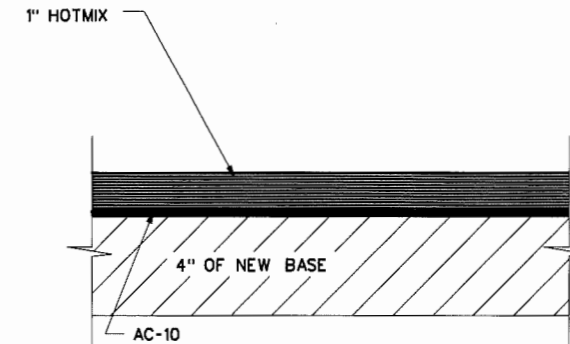
PASEO DEL SOL DRIVE - DRIVEWAYS (CSJ: 1080-596-21)

ID #	STATION	EXIST. DRVWY WIDTH (FT)	PROP. WIDTH CURB & GUTTER (FT)	PROP. WIDTH R-O-W LINE (FT)	EXIST. DRVWY MATERIAL (FT)	ACP DRIVEWAYS			(4") CONC. DRVWYS (SY)			
						AREA (SY)				ITEM 247 FLEX BASE 4" (CY)	ITEM 310 ASPH MAT'L (AC-10) (0.2 GAL/SY) (GAL) (2)	ITEM 340 ASPH. MAT'L ACP (SURF) (TONS) (2)
						P-1	PRB-1	PB-1				
43	0+41.70. RT	13.0'	17.0'	13.0'	DIRT	23	-	2.6	4.6	1.30	-	
44	0+54.80. LT	19.0'	23.0'	19.0'	CALICHE	33	-	3.6	6.6	1.90	-	
45	0+85.70. RT	13.0'	17.0'	13.0'	CONCRETE	-	-	-	-	-	23	
46	1+09.90. LT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	-	-	22	
47	1+35.50. RT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
48	1+57.70. RT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
49	1+86.80. LT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	-	-	22	
50	2+28.10. LT	52.0'	52.0'	52.0'	CONCRETE	-	-	-	-	-	81	
51	2+45.50. RT	10.0'	14.0'	10.0'	CALICHE	19	-	2.1	3.8	1.08	-	
52	2+65.48. RT	13.0'	17.0'	13.0'	CALICHE	23	-	2.8	4.6	1.30	-	
53	2+75.80. LT	12.0'	16.0'	12.0'	CALICHE	22	-	2.6	4.4	1.25	-	
54	3+35.58. RT	54.0'	54.0'	54.0'	CONCRETE	-	-	-	-	-	84	
55	3+72.20. RT	15.0'	19.0'	15.0'	CALICHE	27	-	3.0	5.4	1.53	-	
56	3+85.60. LT	45.0'	45.0'	45.0'	CONCRETE	-	-	-	-	-	70	
57	4+55.30. RT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	-	-	22	
58	4+95.40. RT	53.0'	53.0'	53.0'	CONCRETE	-	-	-	-	-	82	
59	5+10.20. LT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
60	5+28.20. RT	11.0'	14.0'	11.0'	CALICHE	20	-	2.3	4.0	1.14	-	
61	5+58.00. LT	14.0'	18.0'	14.0'	CALICHE	25	-	2.8	5.0	1.40	-	
62	6+13.40. LT	11.0'	15.0'	11.0'	CONCRETE	-	-	-	-	-	21	
63	6+36.90. RT	11.0'	15.0'	11.0'	CALICHE	21	-	2.3	4.2	1.20	-	
64	6+39.80. LT	11.0'	15.0'	11.0'	CALICHE	21	-	2.3	4.2	1.20	-	
65	6+99.70. LT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	-	-	22	
66	7+96.30. RT	11.0'	15.0'	11.0'	CALICHE	21	-	2.3	4.2	1.20	-	
67	8+11.18. LT	46.0'	46.0'	46.0'	CONCRETE	-	-	-	-	-	72	
68	8+83.40. LT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
69	8+87.20. RT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
70	9+05.70. LT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
71	9+39.80. RT	12.0'	16.0'	12.0'	CONCRETE	-	-	-	-	-	22	
72	9+58.70. RT	11.0'	15.0'	11.0'	CALICHE	21	-	2.3	4.2	1.20	-	
73	9+78.65. LT	26.0'	26.0'	26.0'	CONCRETE	-	-	-	-	-	40	
74	10+29.50. LT	23.0'	23.0'	23.0'	CALICHE	36	-	4.0	7.2	2.05	-	
75	10+38.70. RT	14.0'	18.0'	14.0'	DIRT	25	-	2.8	5.0	1.43	-	
TOTAL						469	-	51.8	92.4	26.68	583	

RANCHO ESCONDIDO DRIVE - DRIVEWAYS (CSJ: 1080-596-21)

ID #	STATION	EXIST. DRVWY WIDTH (FT)	PROP. WIDTH CURB & GUTTER (FT)	PROP. WIDTH R-O-W LINE (FT)	EXIST. DRVWY MATERIAL (FT)	ACP DRIVEWAYS			(4") CONC. DRVWYS (SY)			
						AREA (SY)				ITEM 247 FLEX BASE 4" (CY)	ITEM 310 ASPH MAT'L (AC-10) (0.2 GAL/SY) (GAL) (2)	ITEM 340 ASPH. MAT'L ACP (SURF) (TONS) (2)
						P-1	PRB-1	PB-1				
30	11+88.20. LT	10.0'	14.0'	10.0'	ASPHALT	19	-	2.2	3.8	1.08	-	
31	12+34.90. LT	14.0'	18.0'	14.0'	CONCRETE	-	-	-	-	-	25	
32	13+06.80. LT	13.0'	17.0'	13.0'	CONCRETE	-	-	-	-	-	23	
33	13+57.10. LT	12.0'	16.0'	12.0'	CALICHE	22	-	2.4	4.4	1.25	-	
34	13+94.90. LT	50.0'	50.0'	50.0'	CALICHE	78	-	8.7	15.6	4.5	-	
35	14+71.60. LT	12.0'	15.0'	12.0'	CALICHE	22	-	2.4	4.4	1.3	-	
36	14+89.26. LT	19.0'	22.0'	19.0'	CONCRETE	-	-	-	-	-	32	
37	15+40.90. LT	11.0'	15.0'	11.0'	CALICHE	21	-	2.3	4.2	1.20	-	
38	15+52.40. RT	21.0'	25.0'	21.0'	CALICHE	36	-	4.0	7.2	2.05	-	
39	16+93.00. LT	11.0'	15.0'	11.0'	CALICHE	21	-	2.3	4.2	1.2	-	
40	17+43.30. LT	18.0'	22.0'	18.0'	CALICHE	31	-	3.4	6.2	1.8	-	
41	17+51.60. RT	37.0'	37.0'	37.0'	CALICHE	58	-	6.4	11.6	3.3	-	
42	17+63.00. LT	10.0'	14.0'	10.0'	CALICHE	19	-	2.1	3.8	1.08	-	
TOTAL						327	-	36.2	65.4	18.76	80	

⊗ FOR CONTRACTORS INFORMATION ONLY (NON-PAY)



DRIVEWAY TYPICAL DETAIL

N.T.S.



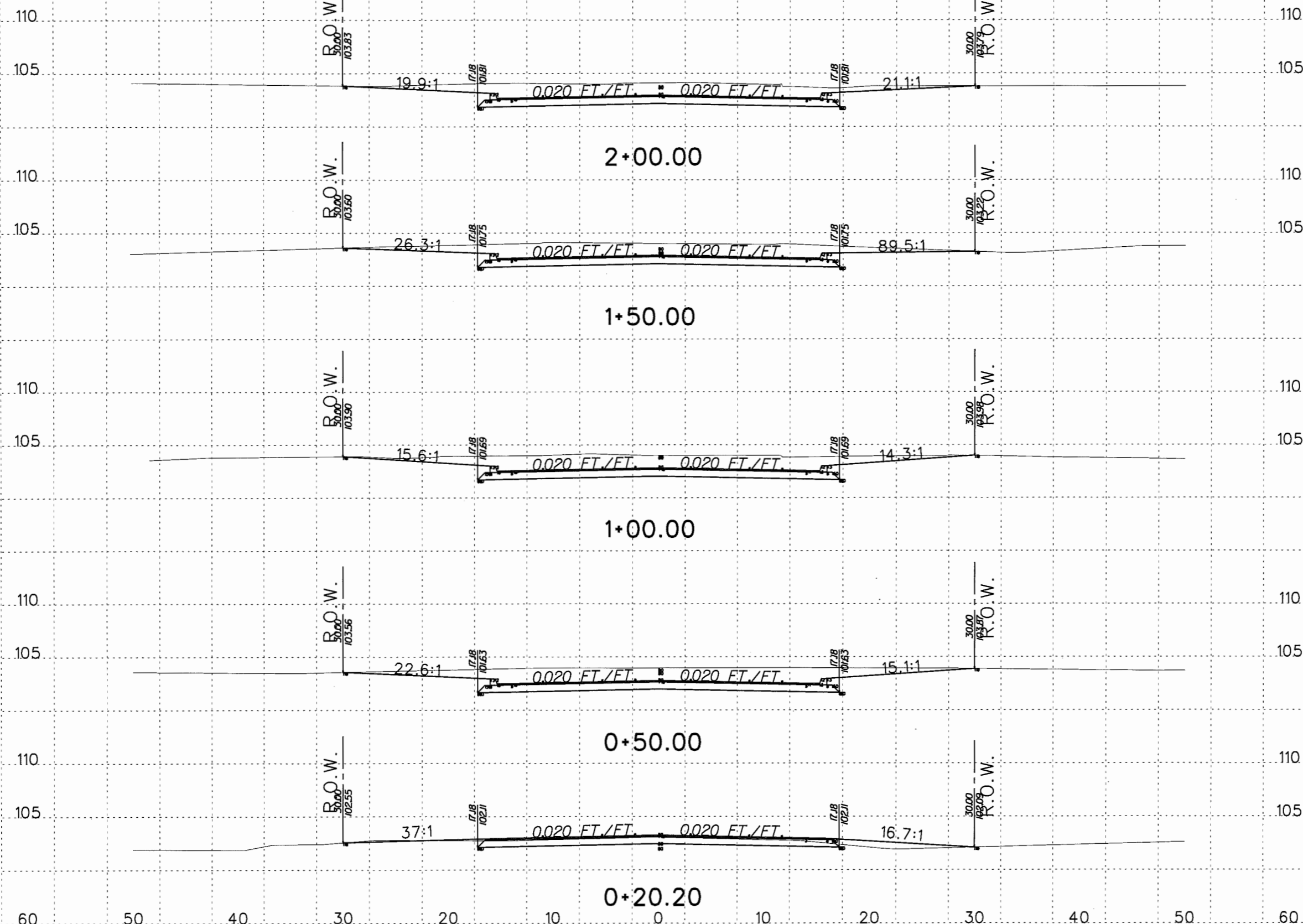
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 63948  
DATE: 7-15-10  
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
RANCHO ESCONDIDO  
SUBDIVISION  
DRIVEWAY TABLES  
LOCATION

REVISION	DATE	BY

FB. No.: 487,488  
SURVEY BY: M.L.MR,DC  
DRAWN BY: JC  
PREPARED BY: JC  
CHECKED BY: RG

Professional Engineers & Land Surveyors  
R. Gutierrez Engineering Corporation  
130 E. PARK AVENUE • PHARR, TEXAS 78677  
(TEL) 956 782-2557 • (FAX) 956 782-2558



Professional Engineers & Land Surveyors  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

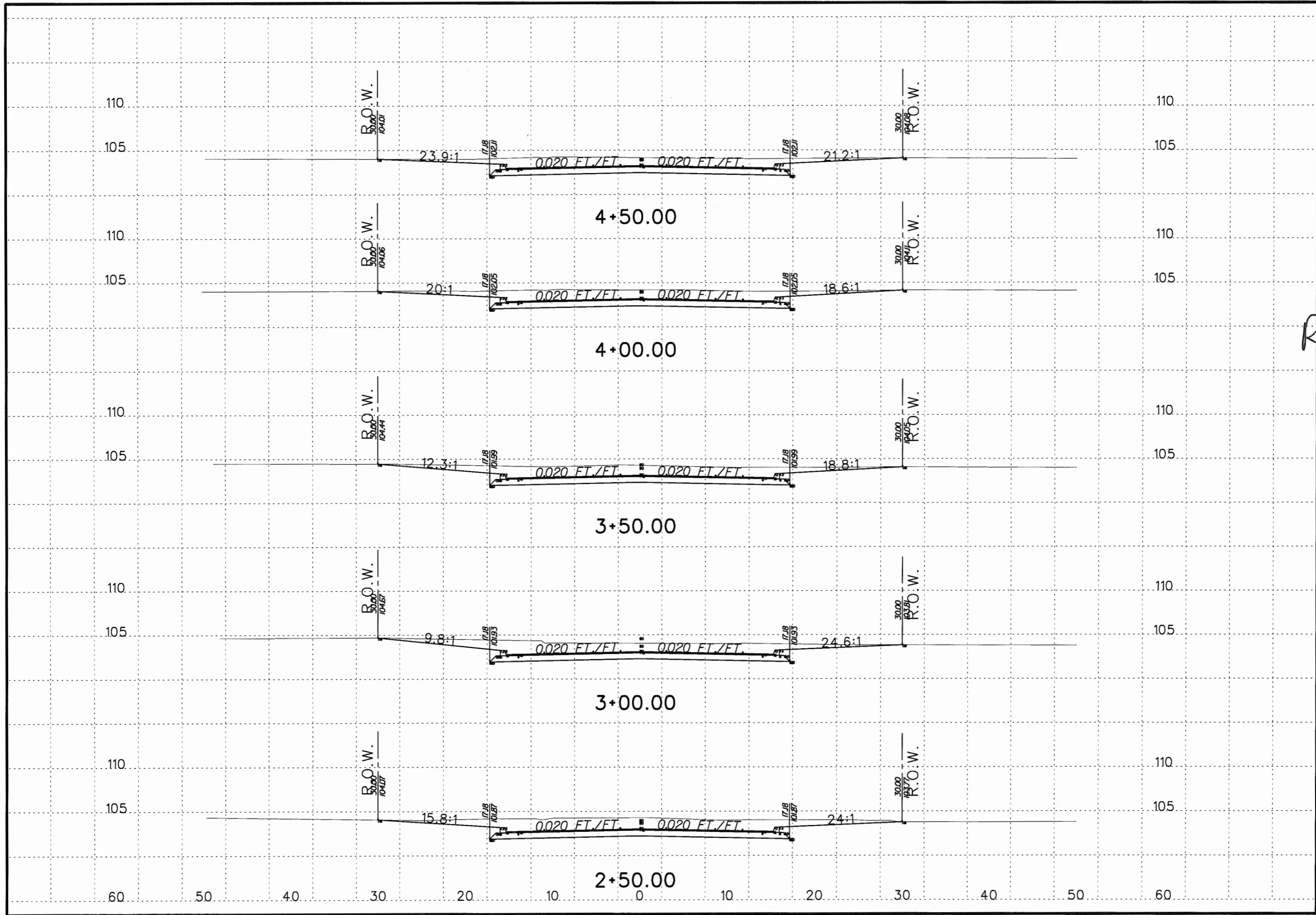


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSSECTION  
 CAMINO REAL &  
 RANCHO ESCONDIDO DRIVE  
 SHEET 1 OF 7

REVISION	DATE	BY

FB. No.:  
 SURVEY BY:  
 DRAWN BY:  
 PREPARED BY:  
 CHECKED BY:



**HIDALGO COUNTY PRECINCT No.2**  
**RANCHO ESCONDIDO SUBD.**  
**PROP. CROSSSECTION**  
**CAMINO REAL &**  
**RANCHO ESCONDIDO DRIVE**  
 SHEET 2 OF 7

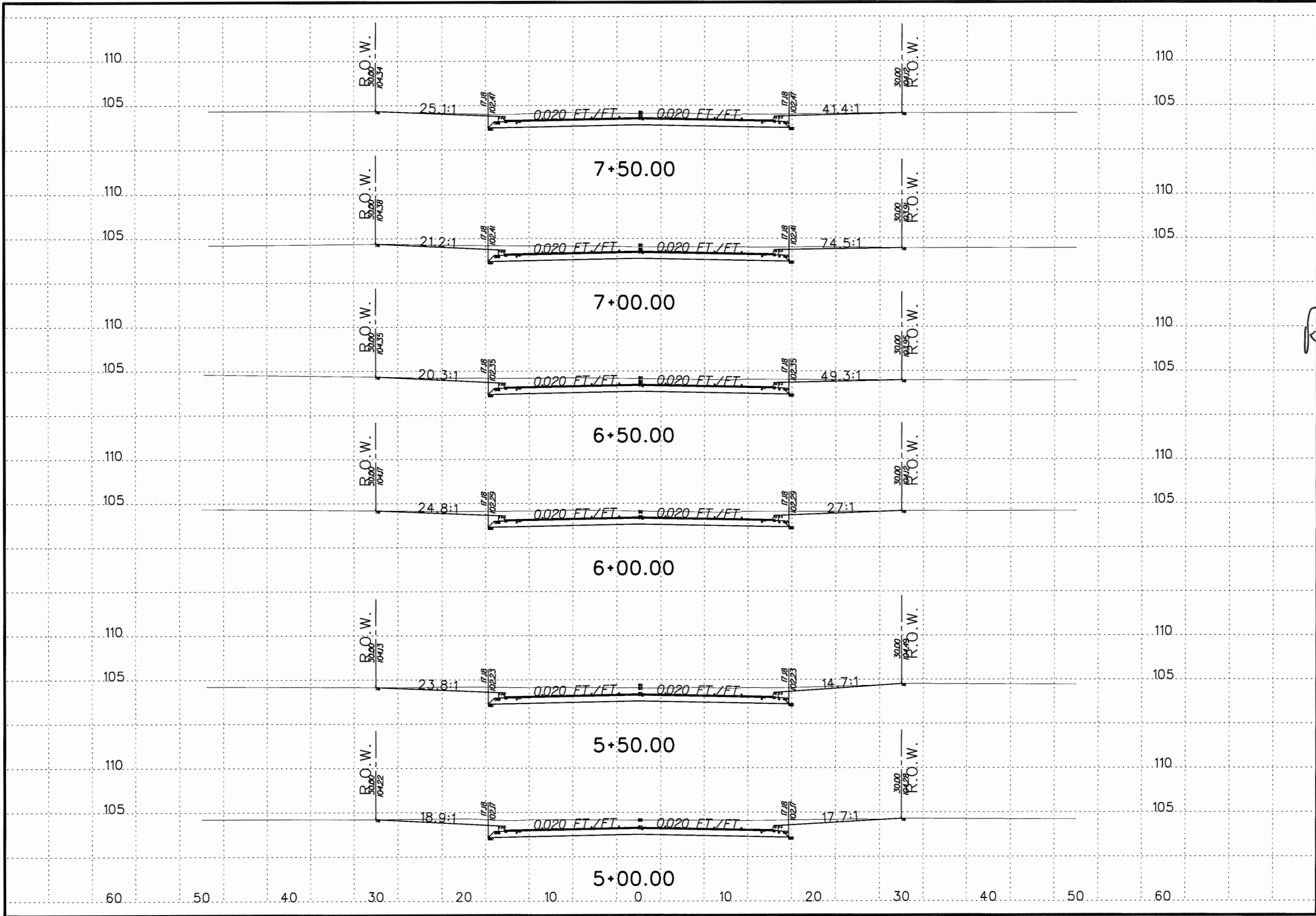
REVISION	DATE	BY

FB. No.:	SURVEY BY:	DRAWN BY:	PREPARED BY:

**SHEET No.**  
**33**

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
DATE: 7-15-10  
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

**R. Gutierrez Engineering Corporation**  
*Professional Engineers & Land Surveyors*  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486



**Professional Engineers & Land Surveyors**  
 130 E. PARK AVENUE • PHARR, TEXAS 77577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

**R. Gutierrez Engineering Corporation**

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-19-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSSECTION  
 CAMINO REAL &  
 RANCHO ESCONDIDO DRIVE  
 SHEET 3 OF 7

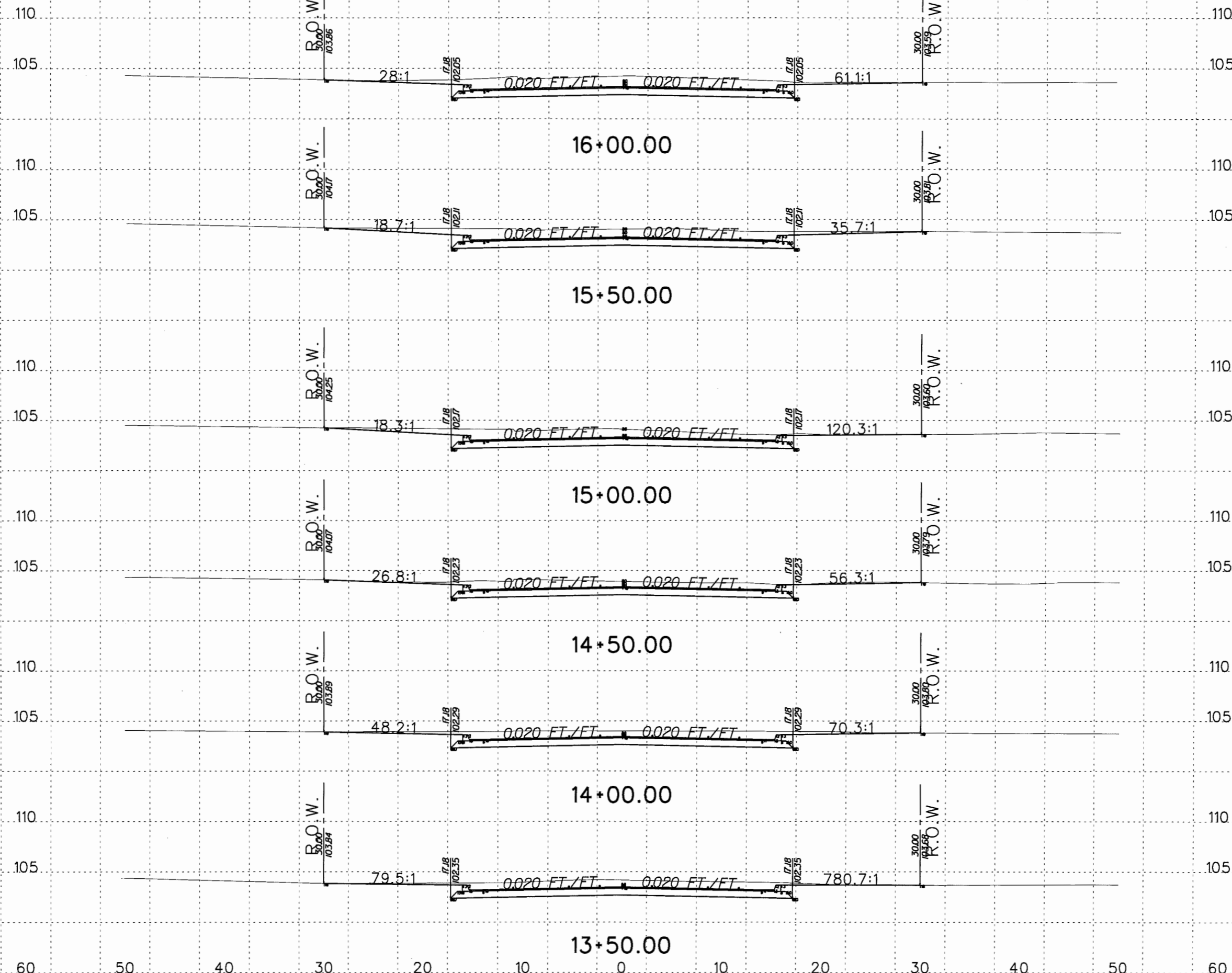
FB. No.	REVISION	DATE	BY

SURVEY BY:  
 DRAWN BY:  
 PREPARED BY:  
 CHECKED BY:

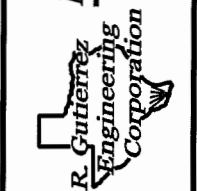
**SHEET No. 34**







Professional Engineers & Land Surveyors  
 R. Gutierrez  
 Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78877  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

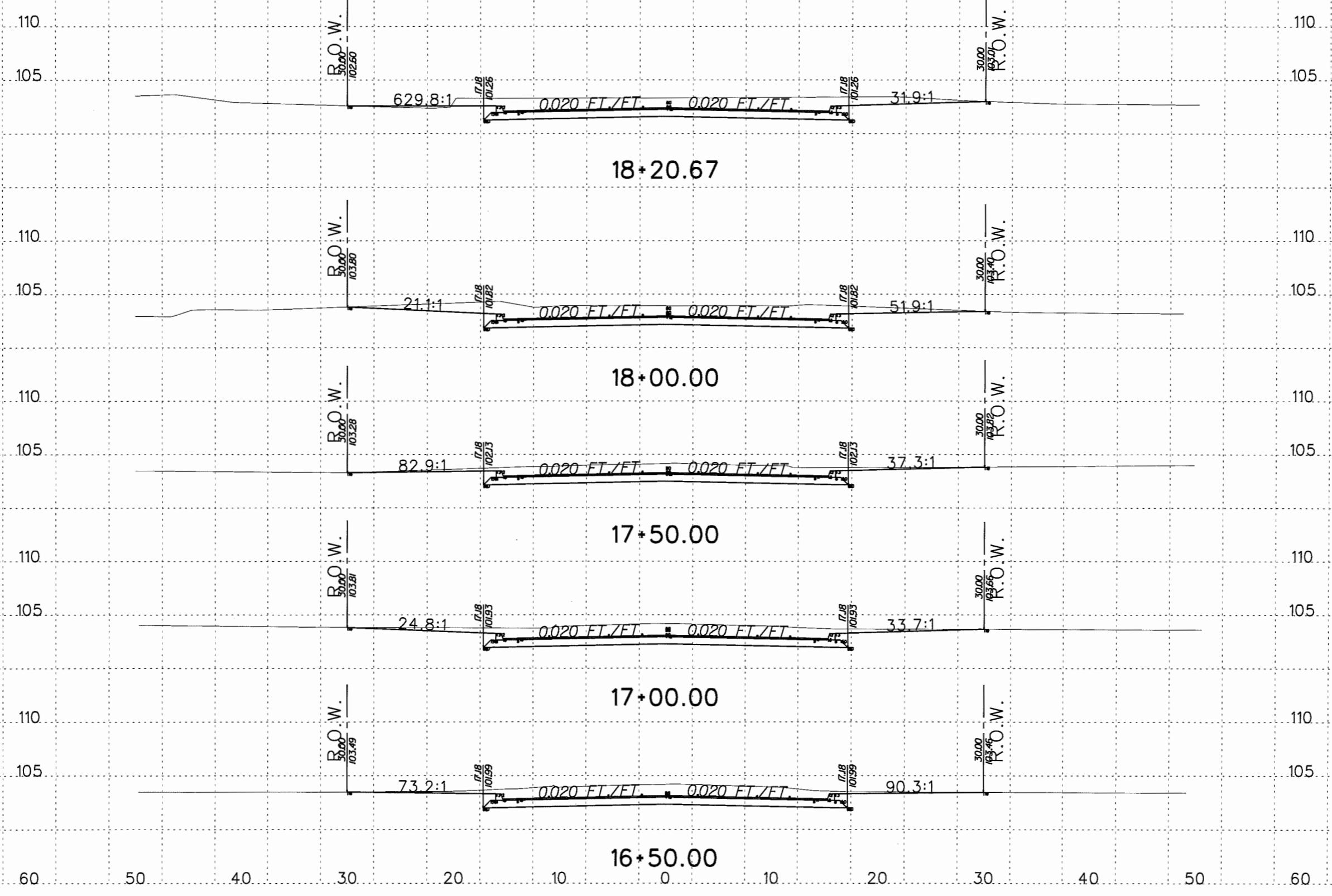


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW

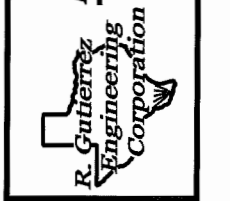
HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSECTION  
 CAMINO REAL &  
 RANCHO ESCONDIDO DRIVE  
 SHEET 6 OF 7  
 LOCATION

REVISION	DATE	BY

F.B. No.:  
 SURVEY BY:  
 DRAWN BY:  
 PREPARED BY:  
 CHECKED BY:



Professional Engineers & Land Surveyors  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78877  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

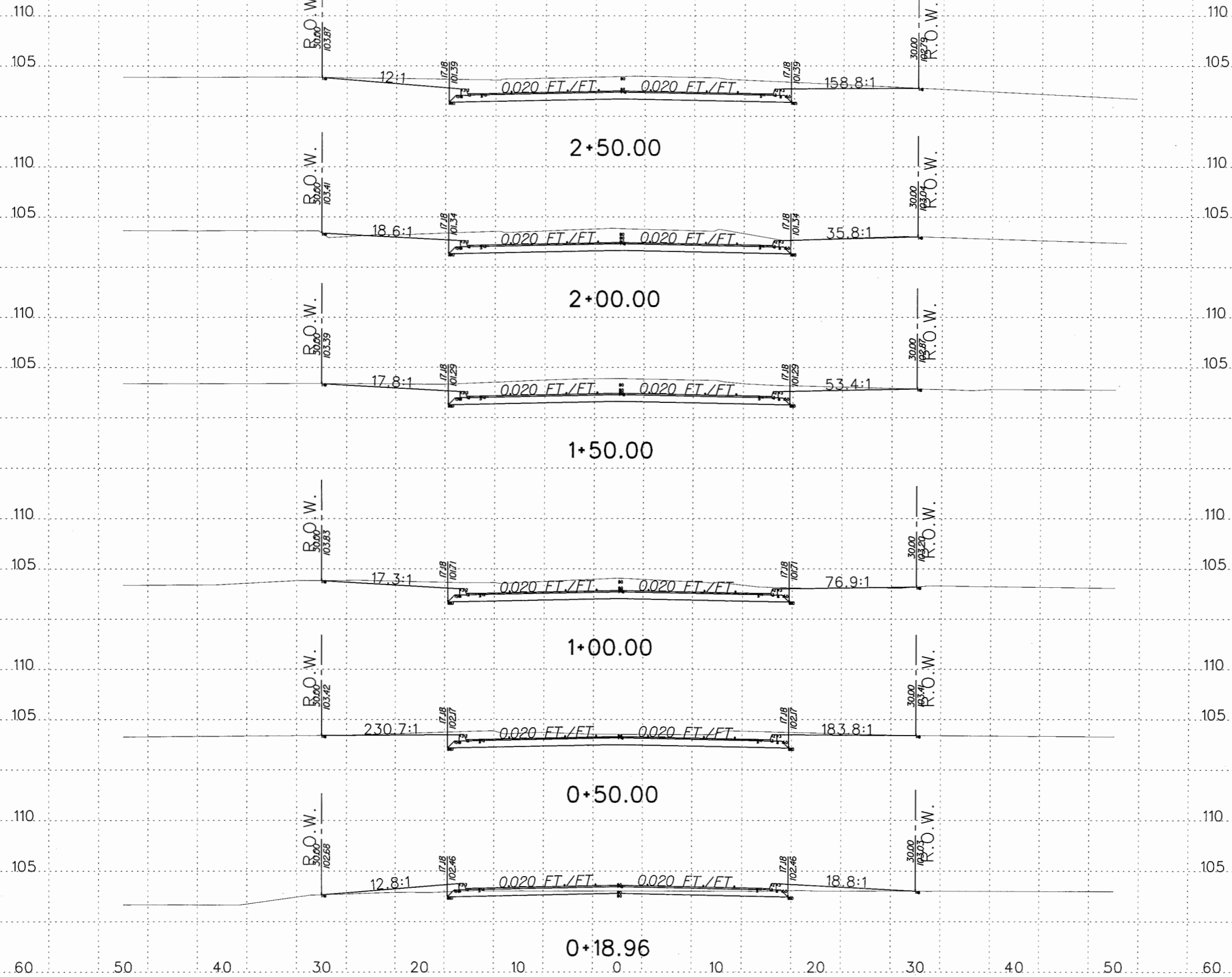


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSECTION  
 CAMINO REAL &  
 RANCHO ESCONDIDO DRIVE  
 SHEET 7 OF 7

REVISION	DATE	BY

FB. No.:  
 SURVEY BY:  
 DRAWN BY:  
 PREPARED BY:  
 CHECKED BY:



Professional Engineers & Land Surveyors  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 966 782-2557 • (FAX) 966 782-2558  
 FIRM NO. 486

**R. Gutierrez**  
 Engineering Corporation

STATE OF TEXAS  
 RAMIRO GUTIERREZ  
 65948  
 REGISTERED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-16-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

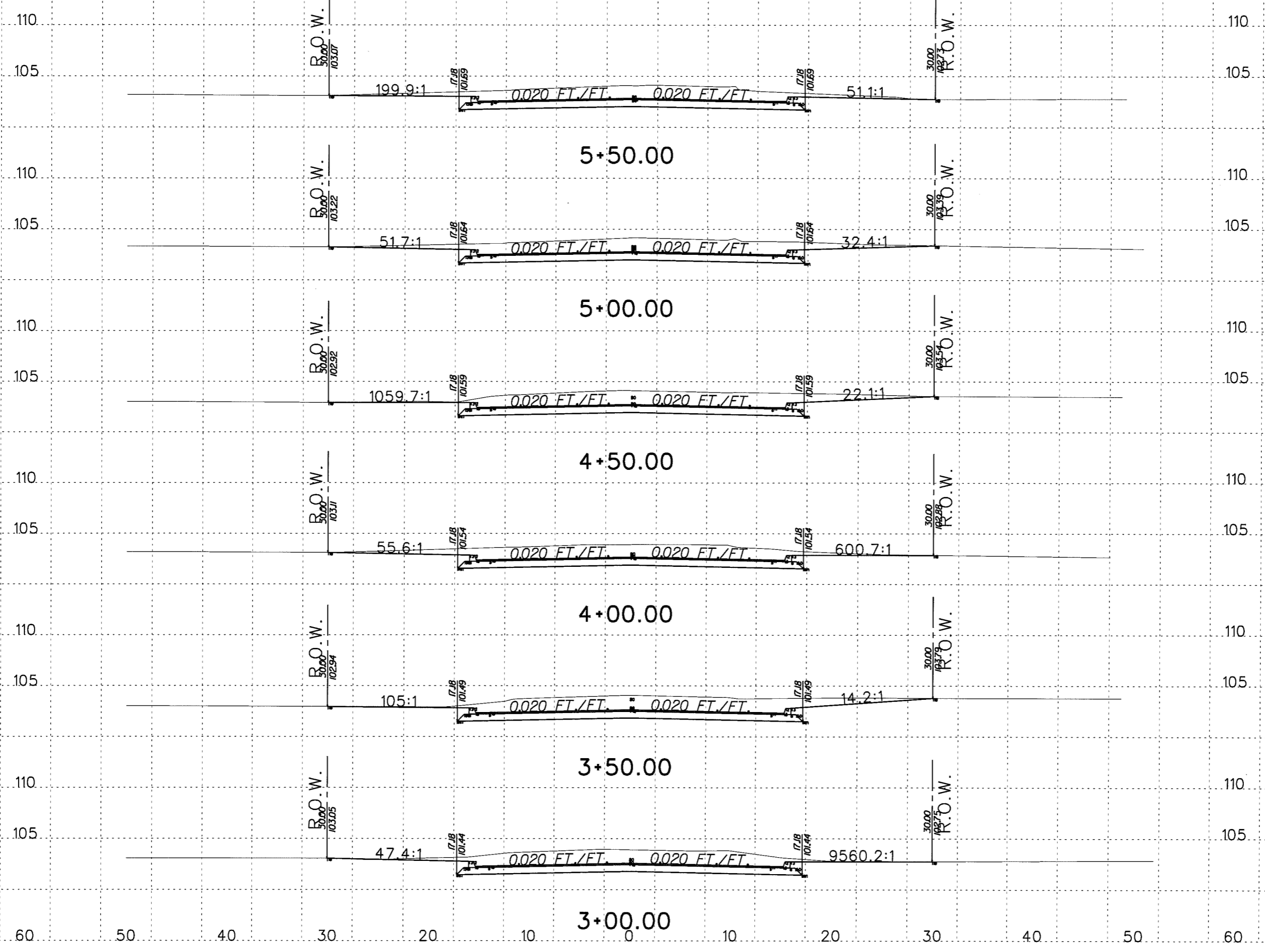
HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSSECTION  
 PASEO DEL SOL DRIVE

SHEET 1 OF 4  
 LOCATION

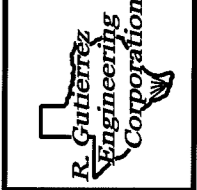
REVISION	DATE	BY

F.B. No.:	SURVEY BY:	DRAWN BY:	PREPARED BY:

**SHEET No.**  
39



Professional Engineers & Land Surveyors  
 130 E. PARK AVENUE • PHARR, TEXAS 78877  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486

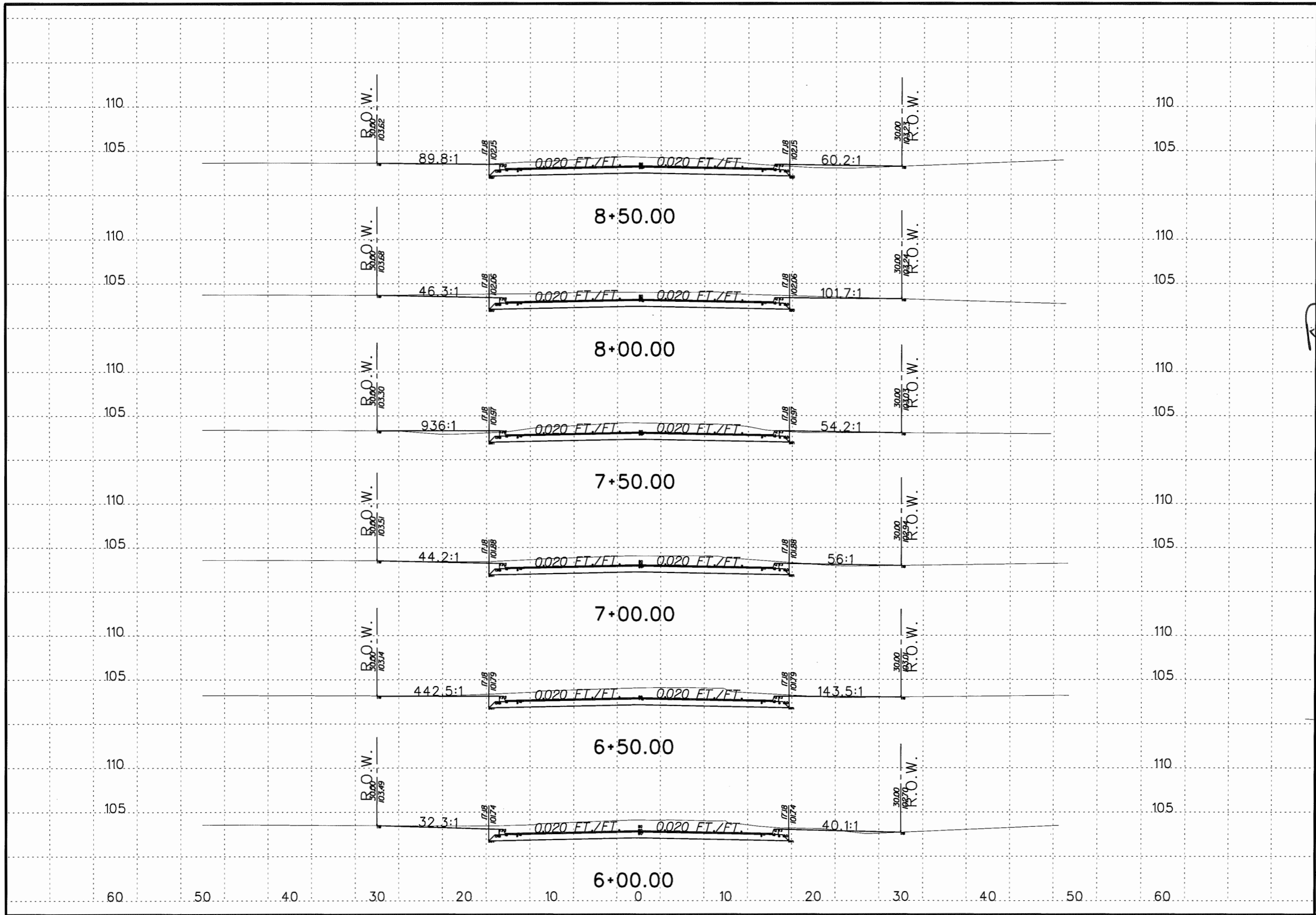


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65078  
 DATE: 7-15-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSECTION  
 PASEO DEL SOL DRIVE  
 LOCATION

REVISION	DATE	BY

SHEET No. 40



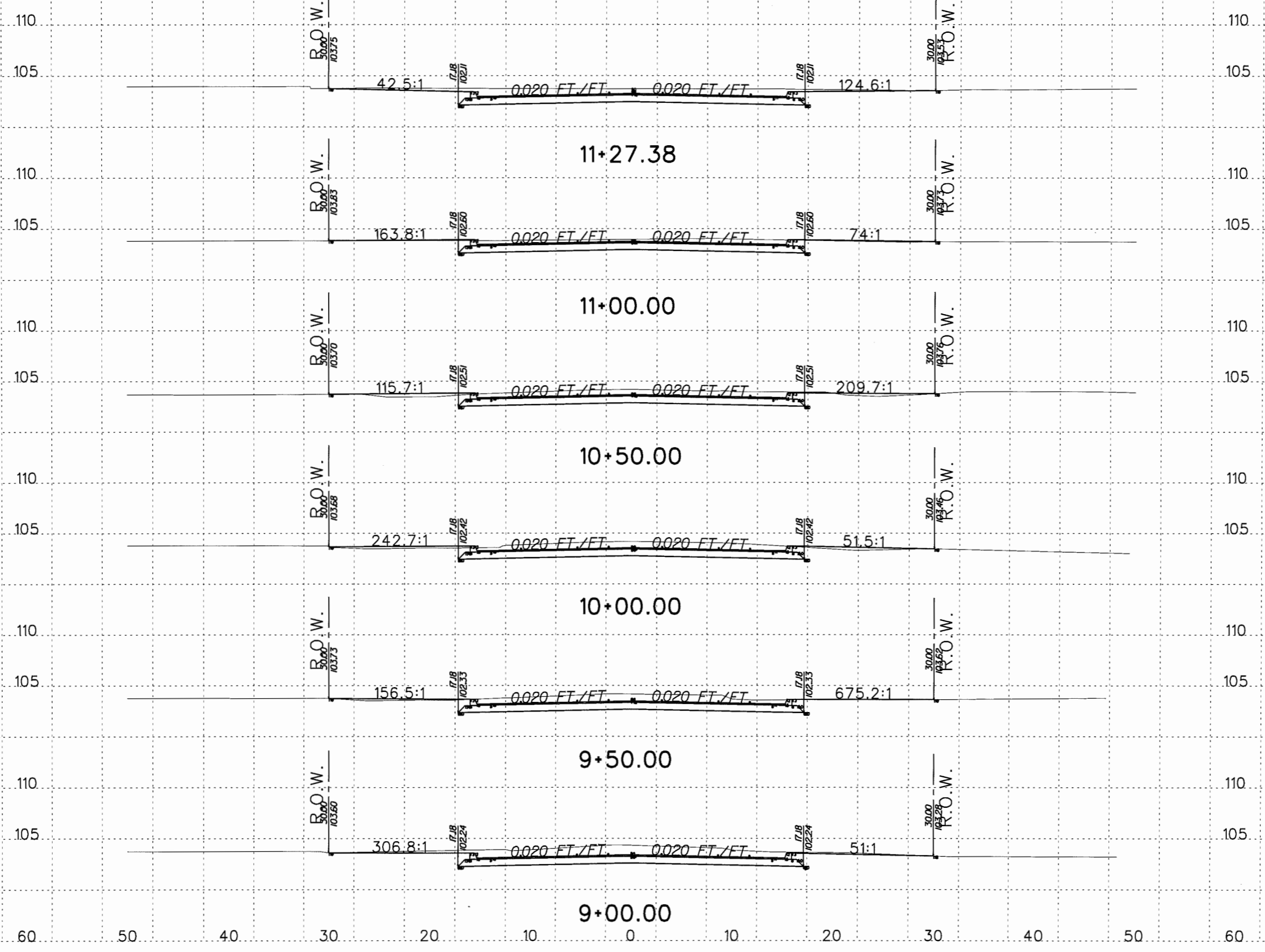
Professional Engineers & Land Surveyors  
 R. Gutierrez  
 Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558  
 FIRM No. 486



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
 DATE: 7-19-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSECTION  
 PASEO DEL SOL DRIVE  
 LOCATION

REVISION	DATE	BY



Professional Engineers & Land Surveyors  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2588  
 FIRM No. 486

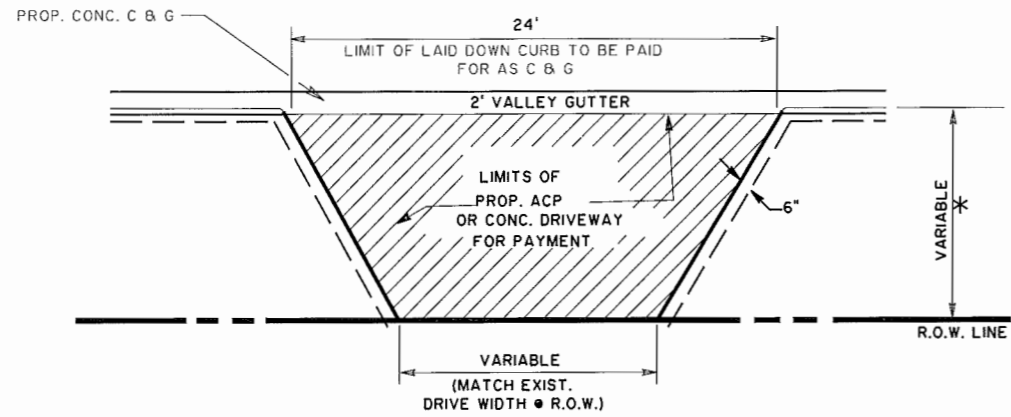


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 89948  
 DATE: 7-19-10  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBD.  
 PROP. CROSSECTION  
 PASEO DEL SOL DRIVE  
 LOCATION SHEET 4 OF 4

REVISION	DATE	BY

F.B. No.:  
 SURVEY BY:  
 DRAWN BY:  
 PREPARED BY:  
 CHECKED BY:

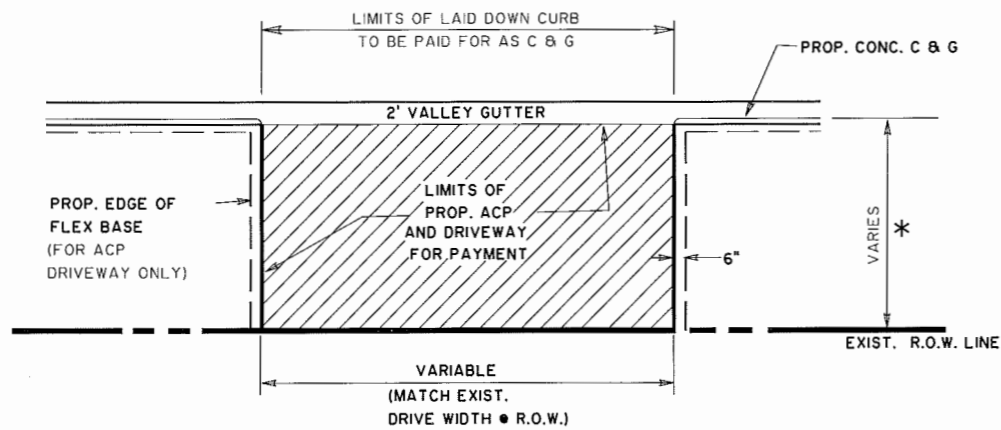


**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

(W/DRIVE LESS THAN 24' • R.O.W. LINE)

\* SEE P&P SHEETS

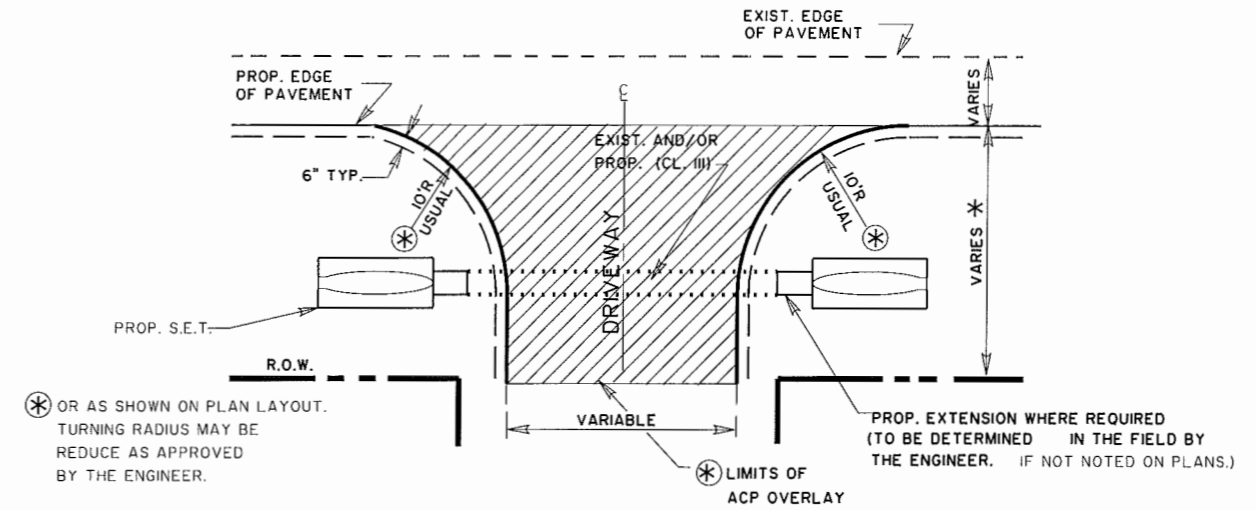
⊗ SEE NOTE BELOW



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

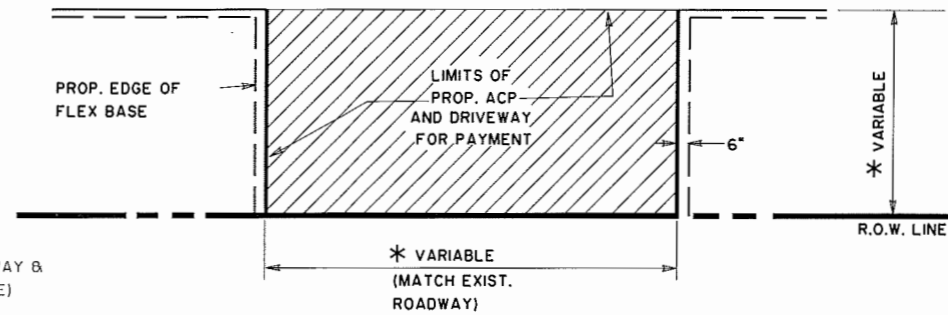
(W/DRIVE WIDTH EQUAL TO OR GREATER THAN 24')

**PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER**



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

(W/DRIVE LESS THAN 24' • R.O.W. LINE)



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

(W/DRIVE WIDTH EQUAL TO OR GREATER THAN 24')

**PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER**

\* FOR DETAILS SEE DRIVEWAY & TURNOUT DETAILS (TABLE)

⊗ NOTE:

**DRIVEWAY TYPES**

- TY PRB-1  
EXIST. PAVED CALICHE AND /OR GRAVEL DRIVEWAYS TO BE SCARIFIED AND RECONSTRUCTED WITH 4" NEW AND/OR SALVAGE FLEX. BASE TO MATCH THE PROPOSED WIDENED SECTION. THEN PRIMED AND SURFACED WITH 114#/SY ACP (TY "D")
- TY PB-1  
EXIST. UNPAVED PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 114#/SY ACP.
- TY PI  
EXIST. PAVED DRIVEWAYS TO BE PAVED WITH 114#/SY ACP TY "D".

©TXDOT 1999

PHARR DISTRICT

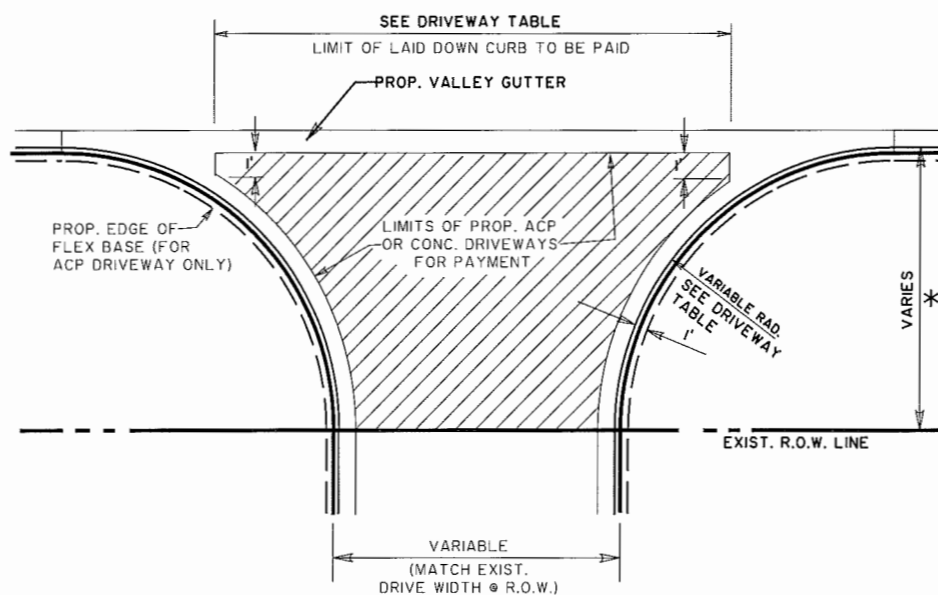
**TEXAS DEPARTMENT OF TRANSPORTATION**

**DRIVEWAY DETAILS**

REV. 6/99 DRIVEWAY.DGN

ED. NO.	PROJECT NO.	FILE NO.	SHEET NO.
6			43
STATE	STATE DIST. NO.	COUNTY	CONT. SECT. JOB HIGHWAY NO.
TEXAS	21	HIDALGO	

N.T.S.



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

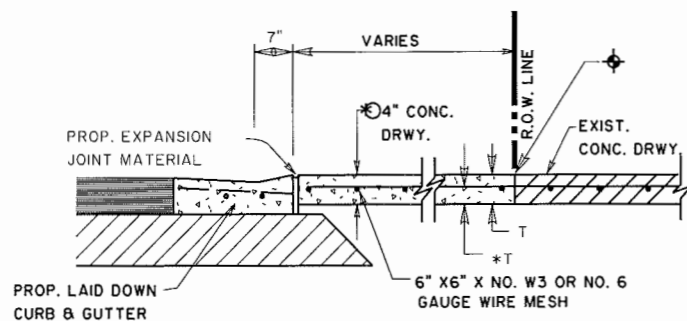
SEE P&P SHEETS FOR LOCATIONS OF DRIVES

**PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER**

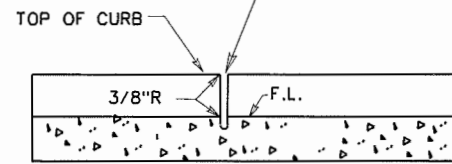
⊗ CONC. SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

⊗ 6" FOR COMMERCIAL DRIVES

**TYPICAL CONCRETE DRIVEWAY SECTION**



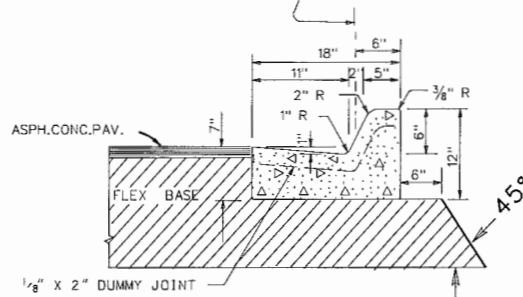
JOINTS MAY BE FORMED WITH 1/8" METAL PLATES NO FILLER REQUIRED. USUAL SPACING 10' O.C., MAX. SPACING 15' O.C.



**DETAIL DUMMY JOINT**

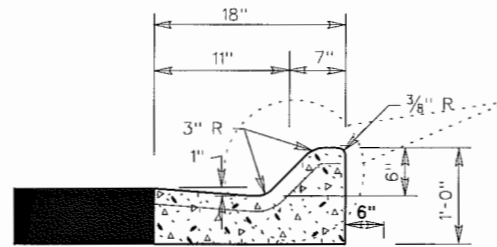
NOTE: DUMMY JOINTS TO BE USED ON CURB & CUTTER, CONC. MEDIAN AND ALL TYPE OF VALLEY GUTTERS JOINTS TO BE LOCATED BY THE ENGINEER.

ALL HORIZONTAL DIMENSIONS AND RADII SHOWN ON PLANS, RELATING TO CURB & GUTTER, ARE TO A POINT 6" IN FROM BACK OF CURB.



**CONC. CURB & GUTTER TY "A" (BARRIER)**

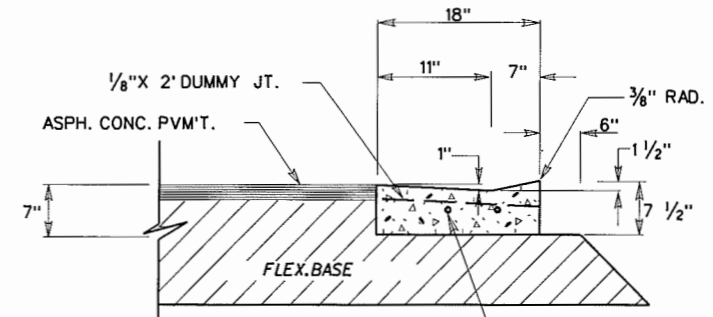
NOTE: EXPANSION JOINTS 1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUTMENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'



**CONC. CURB & GUTTER TY. "B" (MOUNTABLE)**

NOTE: WHERE PROPOSED CURB & GUTTER IS TO BE CONNECTED TO EXIST. CURB & GUTTER IT SHOULD BE DONE AT THE EXIST. GUTTER FLOW LINE ELEVATION.

1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUTMENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'



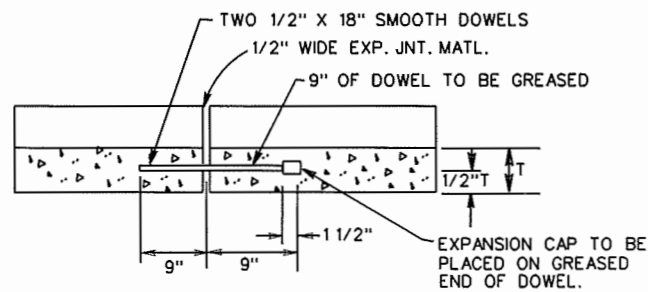
(TO BE USED ONLY ON COMMERCIAL ENTRANCES) 2-NO. 5 LONGITUDINAL REINF. BAR REINF. STEEL TO BE MADE PART OF ITEM "CONC. CURB & GUTTER." THE LENGTH OF REINFORCING STEEL WILL BE THE WIDTH OF THE PROP. COMMERCIAL ENTRANCE PLUS FOUR FEET.

**CONC. GUTTER**

NOTE:

CONCRETE GUTTER TO BE USED ONLY WHERE PERMITTED BY TEXAS DEPARTMENT OF TRANSPORTATION REGULATIONS FOR ACCESS DRIVEWAYS.

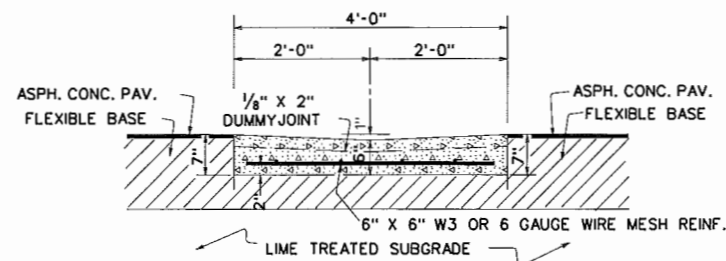
2' VALLEY GUTTER SHALL BE PAID FOR AS CONC. CURB AND GUTTER. CONCRETE CURB & GUTTER & CONCRETE CURB SHALL BE MEASURED FOR PAYMENT ALONG FACE OF CURB AT FLOW LINE.



**DETAIL EXPANSION JOINT**

LONGITUDINAL SECTION THRU CURB AND/OR C&G. REINFORCING STEEL (WHEN USED) SHALL NOT CROSS EXPANSION JOINTS. STEEL SHALL BE TERMINATED 3" MIN FROM FACE OF THE JOINT.

1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUTMENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'



**4' CONC. VALLEY GUTTER (TY "A")**

TO BE USED WHERE REQUIRED TO CARRY DRAINAGE WATER ACROSS SIDE STREETS

Professional Engineers & Land Surveyors  
R. Gutierrez Engineering Corporation  
130 E. PARK AVENUE • PHARR, TEXAS 78877  
(TEL) 956 782-2557 • (FAX) 956 782-2558



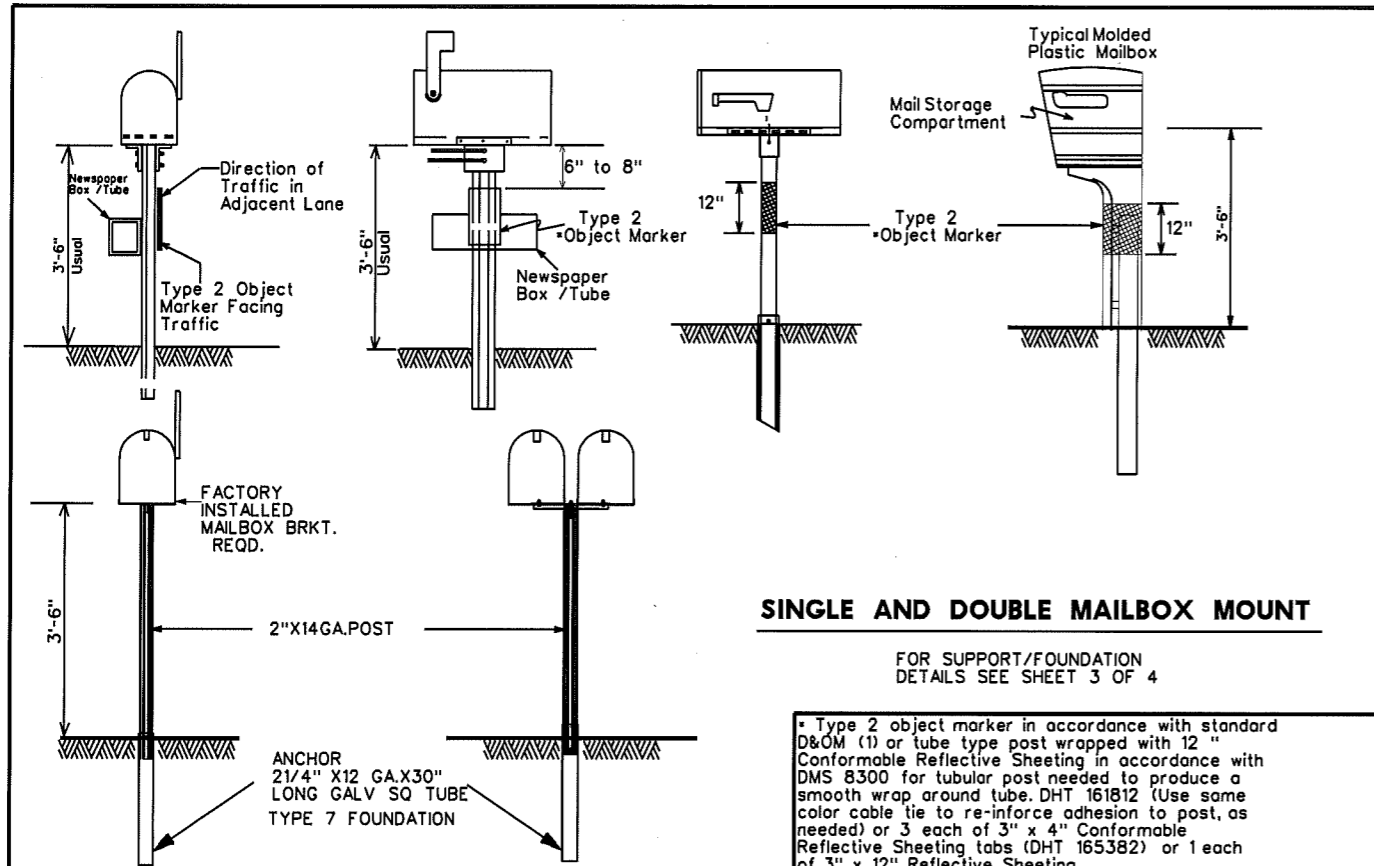
HIDALGO COUNTY PRECINCT No.2  
RANCHO ESCONDIDO  
SUBDIVISION  
CONC. CURB & GUTTER DETAILS

FB. No.: 487,488	SURVEY BY: WL,MR,DC	DRAWN BY: JC	PREPARED BY: JC	CHECKED BY: RG
DATE	REVISION	BY	DATE	BY

...Standards\C&G\_MOD.dgn

DISCLAIMER: The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

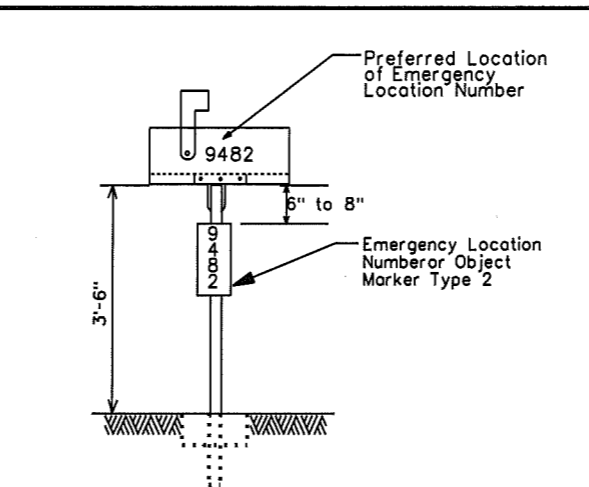
LEVEL	DATE	BY	REVISION
1			



**SINGLE AND DOUBLE MAILBOX MOUNT**

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

Type 2 object marker in accordance with standard D&OM (1) or tube type post wrapped with 12" Conformable Reflective Sheeting in accordance with DMS 8300 for tubular post needed to produce a smooth wrap around tube. DHT 161812 (Use same color cable tie to re-inforce adhesion to post, as needed) or 3 each of 3" x 4" Conformable Reflective Sheeting tabs (DHT 165382) or 1 each of 3" x 12" Reflective Sheeting.



Location Number shall be placed on a yellow, type A plate with class 1 flat surface reflective sheeting in accordance with DMS 8600. (Same type plate as used for the type 2 Object Marker) The color of numbers shall be black. Recommended sign size 6" by 15"

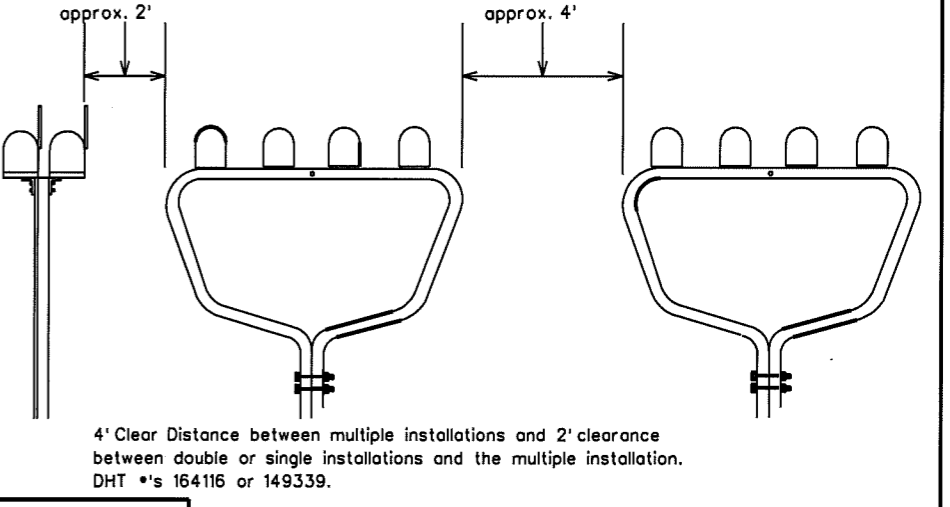
**PLACEMENT OF EMERGENCY LOCATION NUMBER**

Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

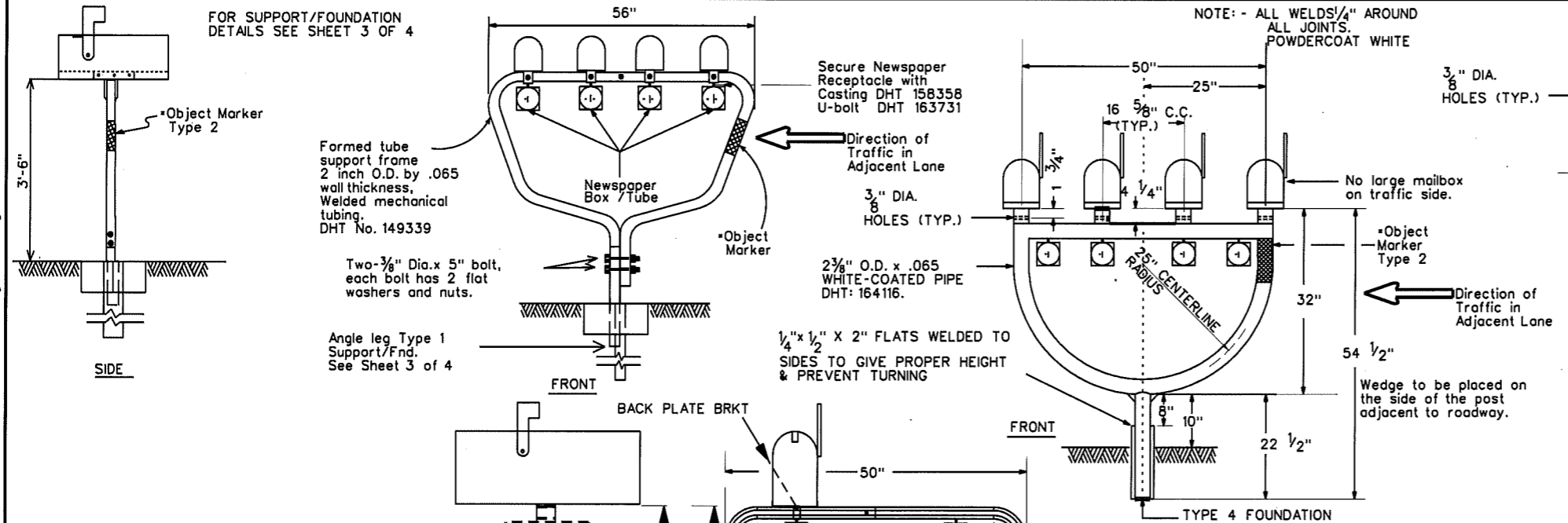
TYPICAL MAILBOX SIZE	LIGHT WEIGHT MATERIAL				
	SHEET METAL	PLASTIC			
	LENGTH	WIDTH	HEIGHT	MAXIMUM WEIGHT	
	INCHES			POUNDS	
SMALL	19 1/2	6	7	5	5
MEDIUM	22 1/2	8	11 1/2	7	7
LARGE	23 1/2*	11 1/2*	13 1/2*	10	10

\* Maximum allowed dimensions for mailbox  
\*\* Excluding Molded Plastic on 4 X 4 Post

**MAILBOX SIZES**



**MULTIPLE MAILBOX PLACEMENT**



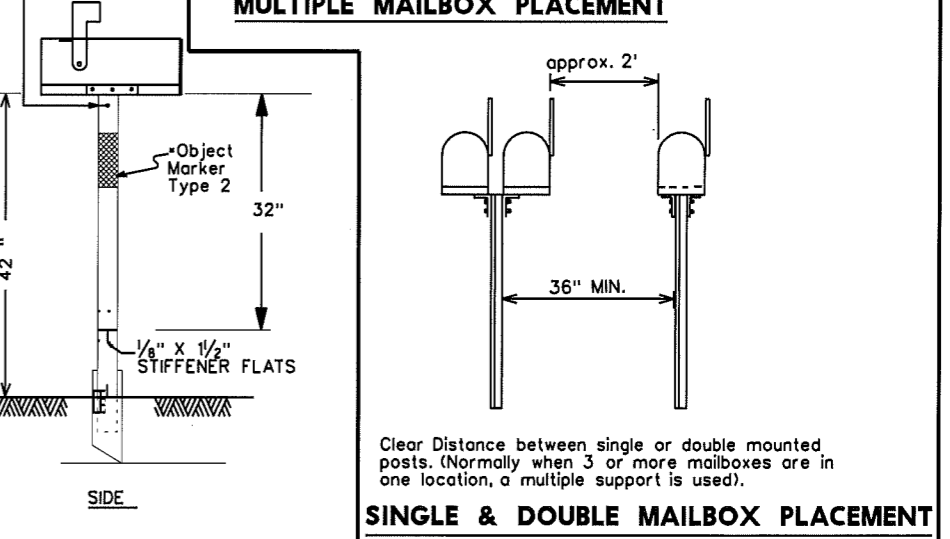
**DOUBLE AND MULTIPLE MAILBOX MOUNT**

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

**NEWSPAPER RECEPTACLE**

A light weight receptacle for newspaper delivery should be attached to the post of single and double mailboxes if the receptacle:

- Does not touch the mailbox.
- Does not present a hazard to traffic or delivery of the mail.
- Does not extend beyond the front of the mailbox.
- Does not display advertising, except the publication title.



**SINGLE & DOUBLE MAILBOX PLACEMENT**

**MULTIPLE MAILBOX MOUNT**

**INDEX OF MAILBOX DETAIL SHEETS**

1 of 4	MAILBOX MOUNTING AND SPACING
2 of 4	MAILBOX BRACKET CONNECTING DETAILS
3 of 4	MAILBOX SUPPORT / FOUNDATION
4 of 4	TABLE OF DHT NUMBERS

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

Note on DHT Number

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description.

REVISIONS

04/03/06	Added New Multiple Mount, DHT: 164116.
04/03/06	Added general note numbers 6 & 7.
10/9/2009	Added new mailbox post Sheet & title block renumbered.
11/18/05	Deleted sheet 4

08/03/06: Added Maximum weight for typical mailbox size.  
10/08/2009: Added Accessibility side note  
10/9/2009: Added new mailbox post  
11/18/05: Deleted sheet 4 of 4

Standard Plans

**Texas Department of Transportation**

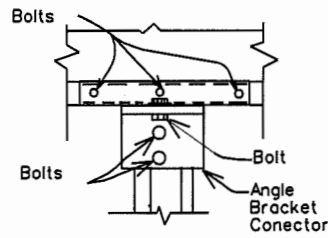
Maintenance Division

**MAILBOX MOUNTING AND SPACING**

**MB-09(1)**

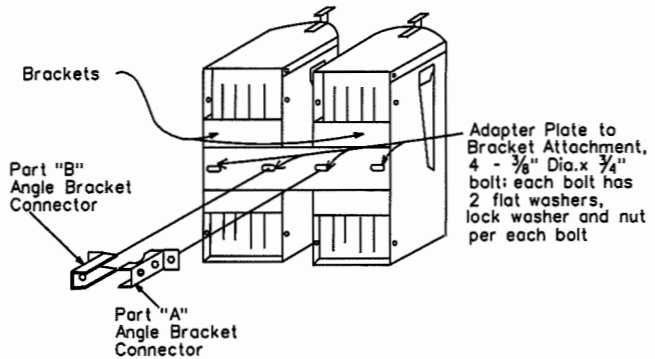
Sheet 1 of 4

FILE: MB09(1).DWG	DHT: JEQ	CK: LJB	DW: JEQ	CK: RDB	NEG:
© TxDOT OCTOBER 2009					
DIST	FED REG	FEDERAL AID PROJECT	SHEET		
	6		45		
COUNTY	CONTROL	SECT	JOB	HIGHWAY	
Hidalgo					

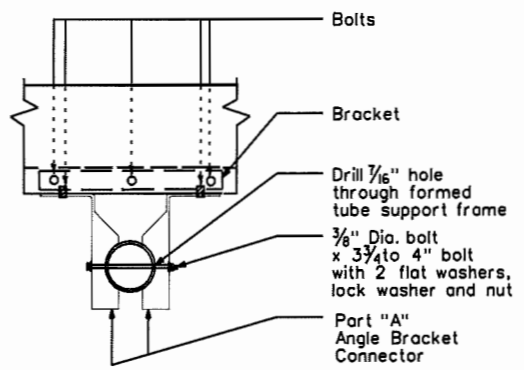


For bolt sizes see details below for "SMALL MAILBOX" and "MEDIUM AND LARGE MAILBOXES"

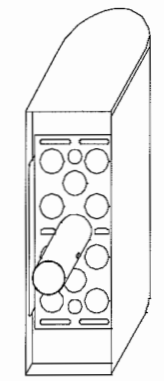
**SINGLE MAILBOX CONNECTION**



**DOUBLE MAILBOX CONNECTION**  
(Not permitted for Large Mailboxes)

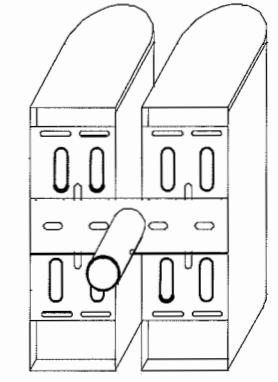


**MULTIPLE MAILBOX CONNECTION**



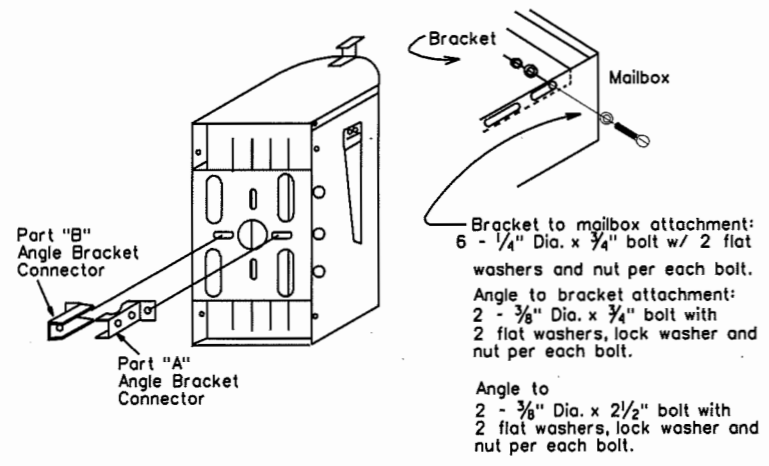
**WELDED SINGLE MAILBOX BRACKET CONNECTION**

To be used with 2 3/8" OD RR or thinwall Steel posts.

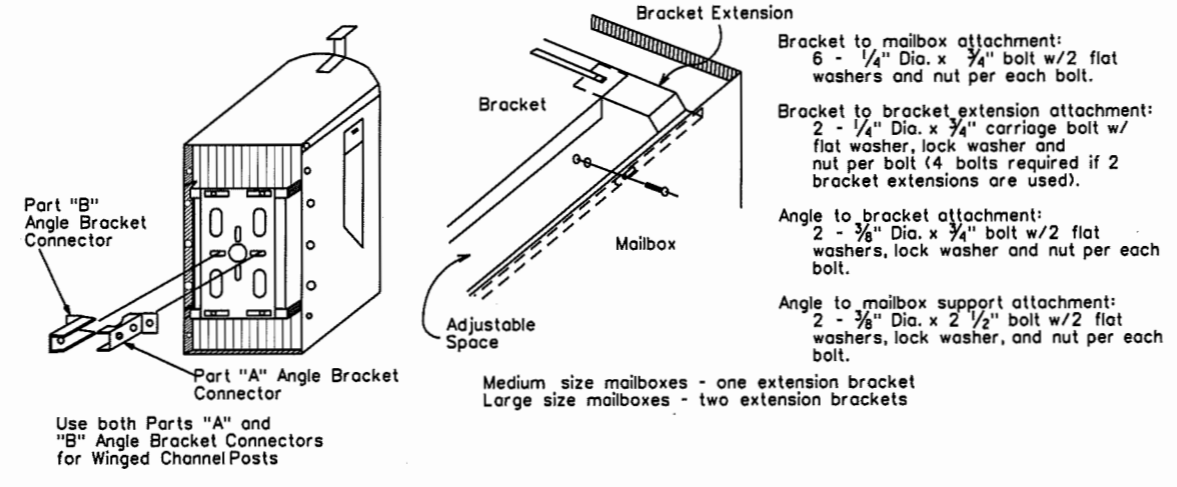


**WELDED DOUBLE MAILBOX BRACKET CONNECTION WITH ADAPTER PLATE**

To be used with thinwall Steel posts. Not to be used with RR posts.



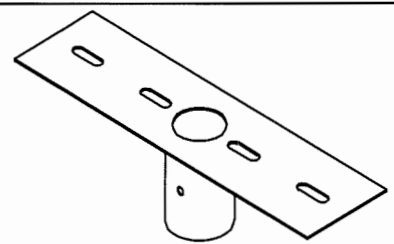
**SMALL MAILBOX**



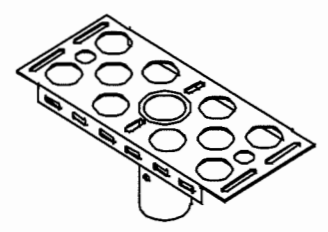
**MEDIUM AND LARGE MAILBOXES**

**GENERAL NOTES**

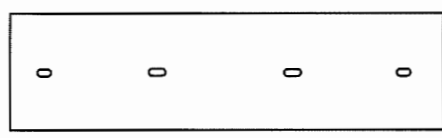
1. Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
2. Hardware for mounting mailboxes to the support/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List." Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
3. Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
4. Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
5. The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
6. Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.



**DHT 162323**

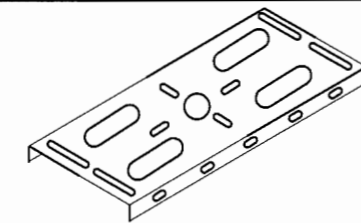


**DHT 161443**

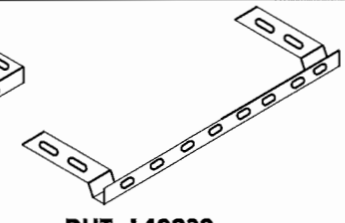


**DHT #3789**

Used for mounting two Mailboxes on the same post.

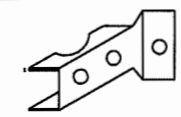


**DHT 148939**  
Mailbox Bracket



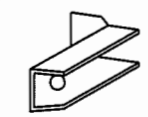
**DHT 148938**

Used for extending 6" wide bracket to attach larger mailboxes.  
Bracket Extension



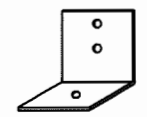
**DHT 159489**

Part "A" Angle Bracket Connector



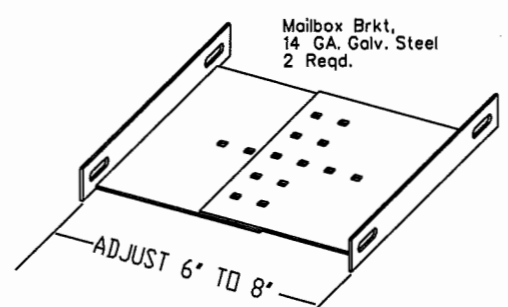
**DHT 159490**

Part "B" Angle Bracket Connector



**DHT 2917**

Angle Bracket For Temporary Mailbox



**DHT 166108**

Mailbox Brkt, 14 GA. Galv. Steel 2 Req'd.

For use with galvanized thinwall steel posts DHT • 143426 or powder-coated thinwall steel post DHT • 162911.

For use with RCR post DHT • 161442 or galvanized thinwall steel post DHT • 143426 or powder-coated thinwall steel post. DHT • 162911.

Note on DHT Number  
See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description and unit of measure.

**HARDWARE AT TXDOT REGIONAL WAREHOUSES**

Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.

Standard Plans  
**Texas Department of Transportation**  
Maintenance Division

**MAILBOX BRACKET CONNECTING DETAILS**  
**MB-09(1)**

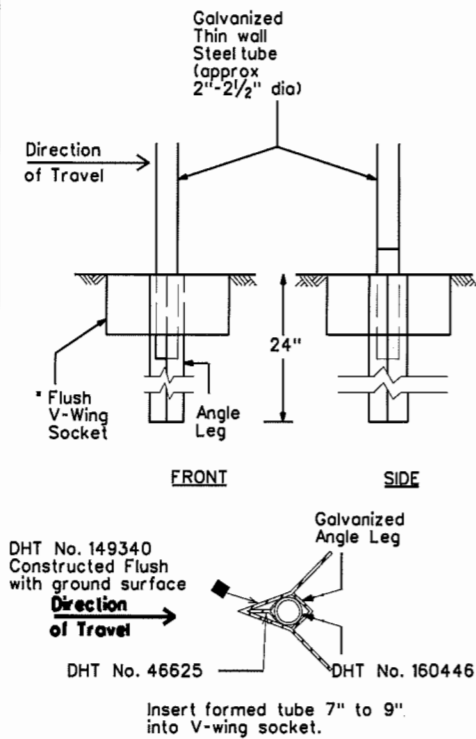
Sheet 2 of 4

FILE: MB-09(1)	DW: JED	CK: LJB	DW:	CK: BOB	NEG:
© TXDOT OCTOBER 2009	DIST	FED REG	FEDERAL AD PROJECT	SHEET	
REVISIONS			6	46	
02/02/05 Added Maximum weight for typical mailbox size.					
06/08/05 Added general note numbers 6 & 7. Sheet & title block renumbered 11/18/05 Deleted sheet 4.					
10/08/2005 Added Accessibility side note					
10/9/2009 Added new mailbox post					
COUNTY		CONTROL	SECT	JOB	HIGHWAY
HIDALGO					

DISCLAIMER: This standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TXDOT for any purpose whatsoever. TXDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

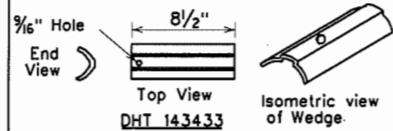
FILE: MB-09(1)	REVISED	DATE	BY

FILE: MB-09-1  
 LEVELS DISPLAYED  
 1  
 DISCLAIMER: The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



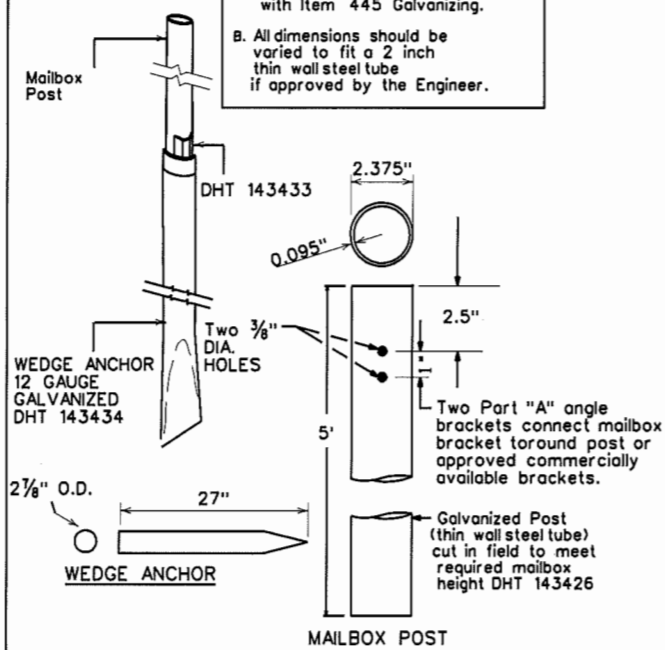
**TYPE 1 SUPPORT/FOUNDATION**

THIN WALL STEEL TUBE w/ V-LOC ANCHORAGE



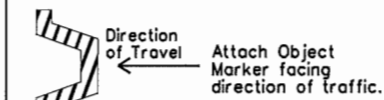
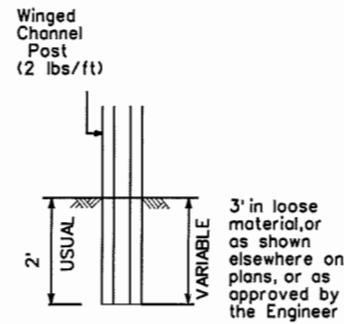
**NOTES FOR TYPE 2 SUPPORT/FOUNDATION**

- A. Galvanize steel support foundation in accordance with Item 445 Galvanizing.
- B. All dimensions should be varied to fit a 2 inch thin wall steel tube if approved by the Engineer.



**TYPE 2 SUPPORT/FOUNDATION**

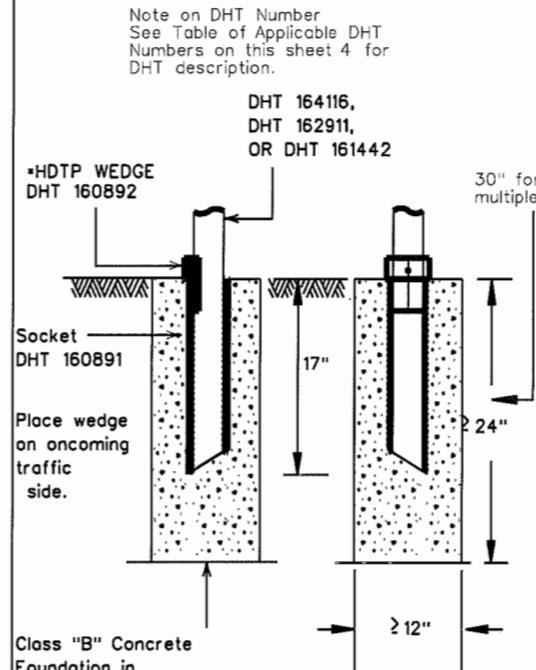
THIN WALL STEEL TUBE w/ WEDGE ANCHOR SYSTEM



DHT No. 4289 to ASTM A 1011 SS GRADE 50, STEEL.

**TYPE 3 SUPPORT/FOUNDATION**

WINGED CHANNEL POST

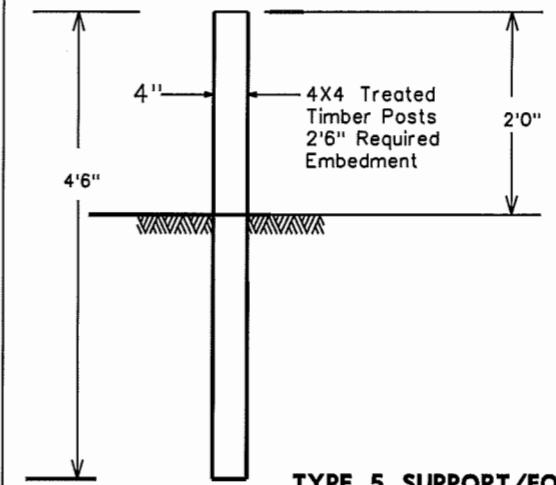


Class "B" Concrete Foundation in Accordance with Item 421 Hydraulic Cement Concrete

For RR post, galvanized thinwall steel post, or powdercoated steel post. 30" footing is for powdercoated multiple.

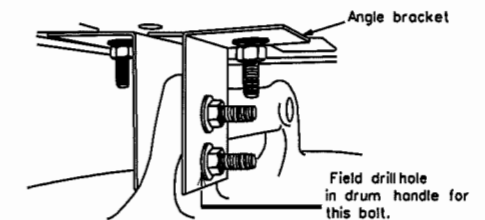
**TYPE 4 SUPPORT/FOUNDATION**

FOR WHITECOATED STEEL POST, MULTIPLE POST, AND RECYCLED RUBBER.



**ONE PIECE MOLDED PLASTIC MAILBOXES**

Molded Plastic Mailboxes shall be installed on 4"x4" treated timber posts only. The use of steel pipe or structural tubing in place of timber post is prohibited.

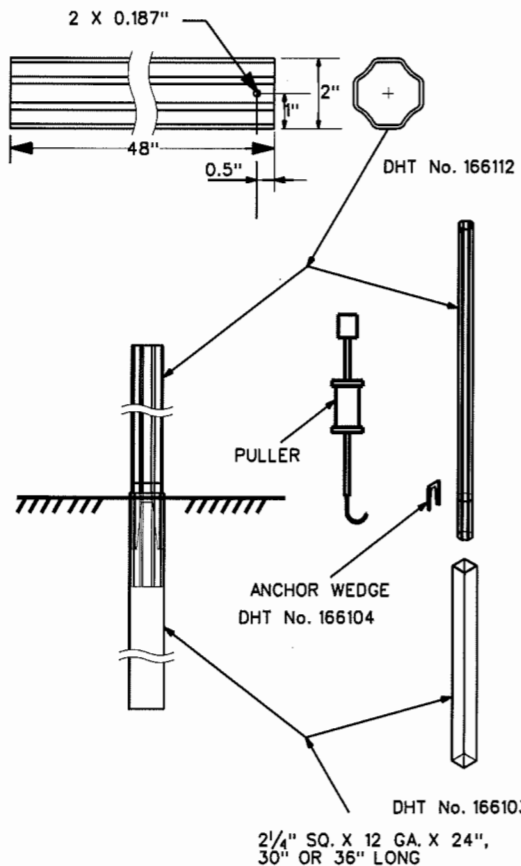


**TYPE 6 TEMPORARY MAILBOX SUPPORT**

CONNECTION DETAIL

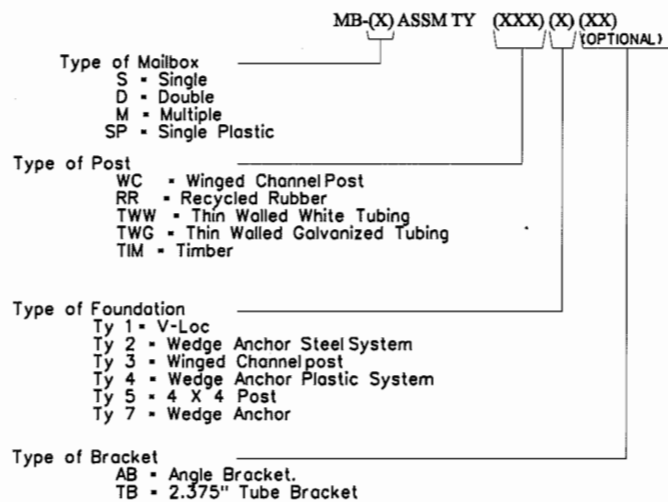
**GENERAL NOTES**

1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Type 1, 2, 3, or 4 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2.375" O.D. RCR post, thin wall steel post, and white multiple mailbox post.
4. The Type 1 support/foundation can be used for a multiple mailbox mount. DHT 149339
5. The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
6. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition.



**TYPE 7 MAILBOX SUPPORT/FOUNDATION**

CONNECTION DETAIL



DOUBLE AND LARGE MAILBOXES MUST BE ON STEEL POST.

\*HOTP: High density thermoplastic polyesters

Standard Plans  
**Texas Department of Transportation**  
 Maintenance Division

**MAILBOX SUPPORT/ FOUNDATION**

**MB-09(1)**

Sheet 3 of 4

REVISIONS

06/08/05	Added general note numbers 6 & 7. Sheet & title block renumbered. Deleted sheet 4.
08/03/06	Added DHT table mailbox descriptive codes and bid items.
10/9/2009	Added new mailbox post.
10/28/2009	Moved DHT table to sheet 4 deleted general notes 7 & 8.

FILE: MB09(1).DGN	DW: JEQ	CK: LWB	DW: JEQ	CK: ROB	NEG:
© TxDOT OCTOBER 2009		DIST	FED REG	FEDERAL AID PROJECT	
02/02/05 REVISIONS		6	47		
COUNTY		CONTROL	SECT	JOB	HIGHWAY
HIDALGO					

ED	
LEVELS	
1	

DISCLAIMER :  
 The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

TABLE OF APPLICABLE DHT NUMBERS	
DHT NUMBER	DESCRIPTION
FOUNDATIONS	
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
POSTS	
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST. FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED
166152	2" OCTAGONAL
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED
166112	2" OCTAGONAL
REFLECTIVE SHEETING	
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
CONNECTING HARDWARE	
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	PLATE FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	PLATE FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	PLATE FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL
162323	STEEL POST, GALVANIZED OR POWDERCOATED.
	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST
161443	AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING (NEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT (NEWSPAPER RECEPTACLE BRACKET)



TABLE OF DHT NUMBERS

MB-09(1)

Sheet 4 of 4

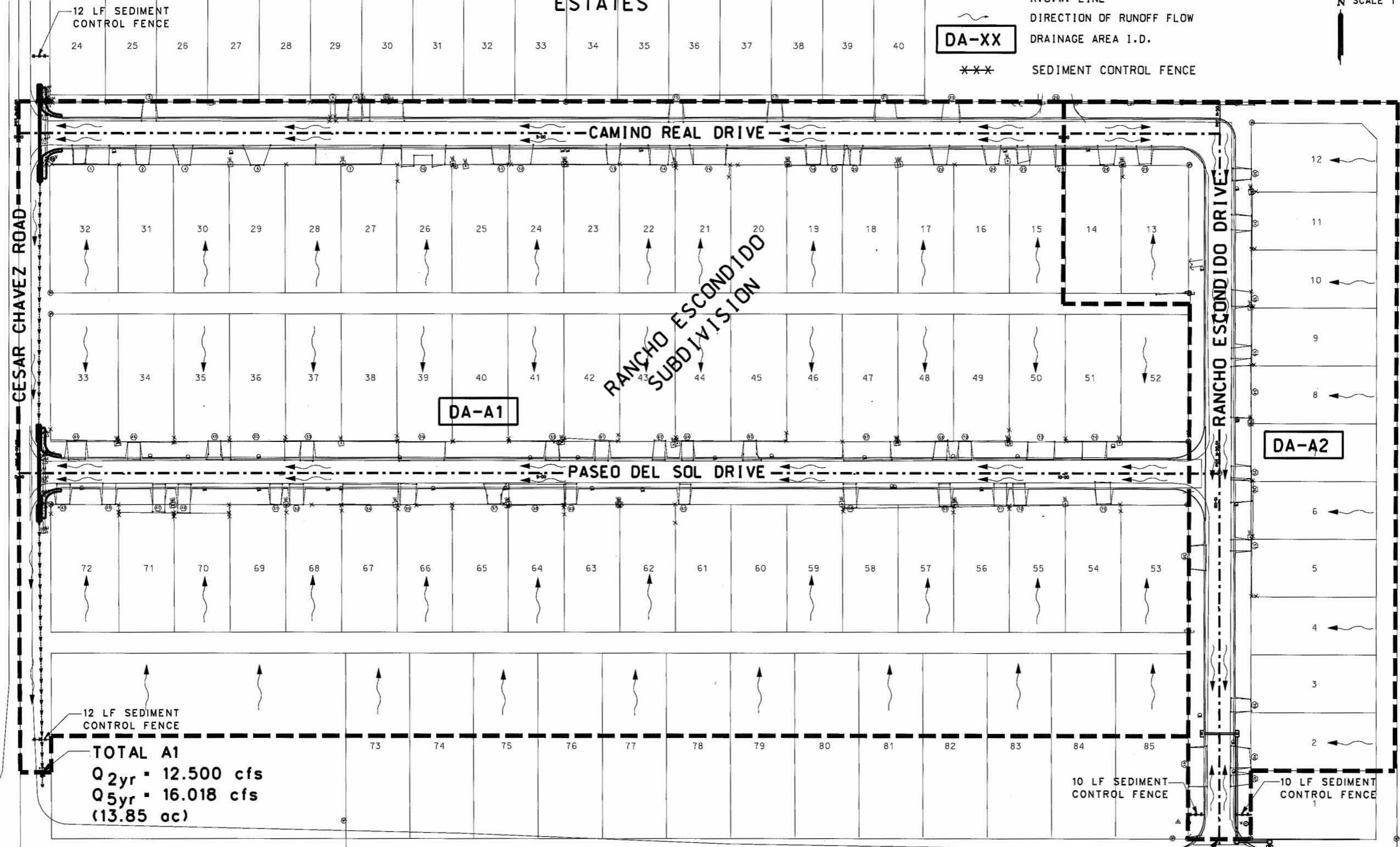
FILE: MB09(1).DGN	DW: JEQ	CK: LVB	DW: JEQ	CK: BOB	NEG:
© TxDOT OCTOBER 2009		DIST	FED REC	FEDERAL AID PROJECT	
10/28/09	REVISIONS	6			47A
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	HDALGO				

VAL-BAR  
ESTATES

LEGEND

- LIMIT OF DRAINAGE AREA
- - - R.O.W. LINE
- ~ DIRECTION OF RUNOFF FLOW
- DA-XX DRAINAGE AREA I.D.
- \*\*\* SEDIMENT CONTROL FENCE

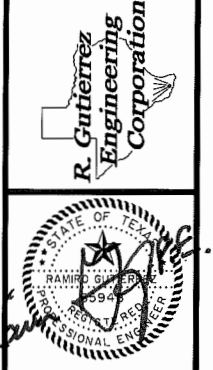
N SCALE 1"=100'



TOTAL A1  
Q<sub>2yr</sub> = 12.500 cfs  
Q<sub>5yr</sub> = 16.018 cfs  
(13.85 ac)

TOTAL A2  
Q<sub>2yr</sub> = 6.179 cfs  
Q<sub>5yr</sub> = 7.815 cfs  
(4.65 ac)

Professional Engineers & Land Surveyors  
R. Gutierrez Engineering Corporation  
130 E. PARK AVENUE • PHARR, TEXAS 78877  
(TEL) 956 782-2557 • (FAX) 956 782-2558  
PRM No. 486

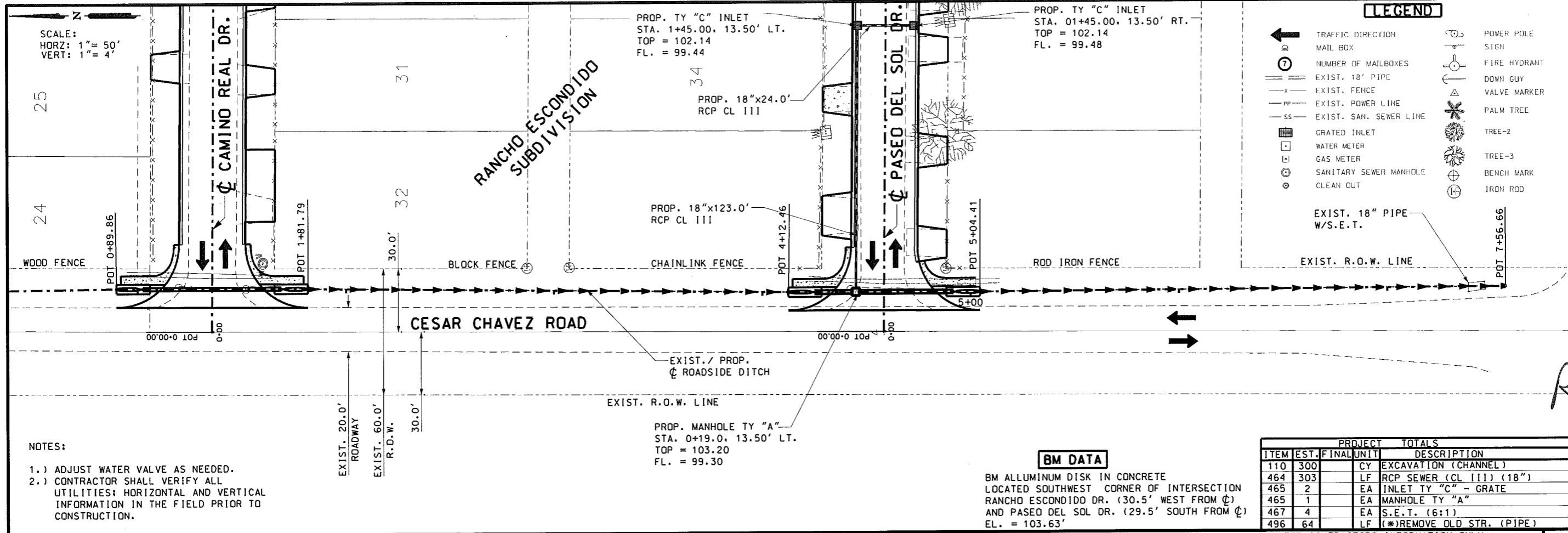


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 63948  
DATE: 3-31-10  
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT No.2  
RANCHO ESCONDIDO SUBDIVISION  
DRAINAGE AREA MAP

REVISION	DATE	BY

FB. No.: 487,488  
SURVEY BY: ML,MR,DC  
DRAWN BY: JC  
PREPARED BY: JC  
CHECKED BY: RG



**LEGEND**

↑	TRAFFIC DIRECTION	⊕	POWER POLE SIGN
Ⓜ	MAIL BOX	⊕	FIRE HYDRANT
Ⓜ	NUMBER OF MAILBOXES	⊕	DOWN GUY
—x—	EXIST. 18" PIPE	⊕	VALVE MARKER
—PP—	EXIST. FENCE	⊕	PALM TREE
—PP—	EXIST. POWER LINE	⊕	TREE-2
—SS—	EXIST. SAN. SEWER LINE	⊕	TREE-3
⊕	GRATED INLET	⊕	BENCH MARK
⊕	WATER METER	⊕	IRON ROD
⊕	GAS METER		
⊕	SANITARY SEWER MANHOLE		
⊕	CLEAN OUT		

**NOTES:**

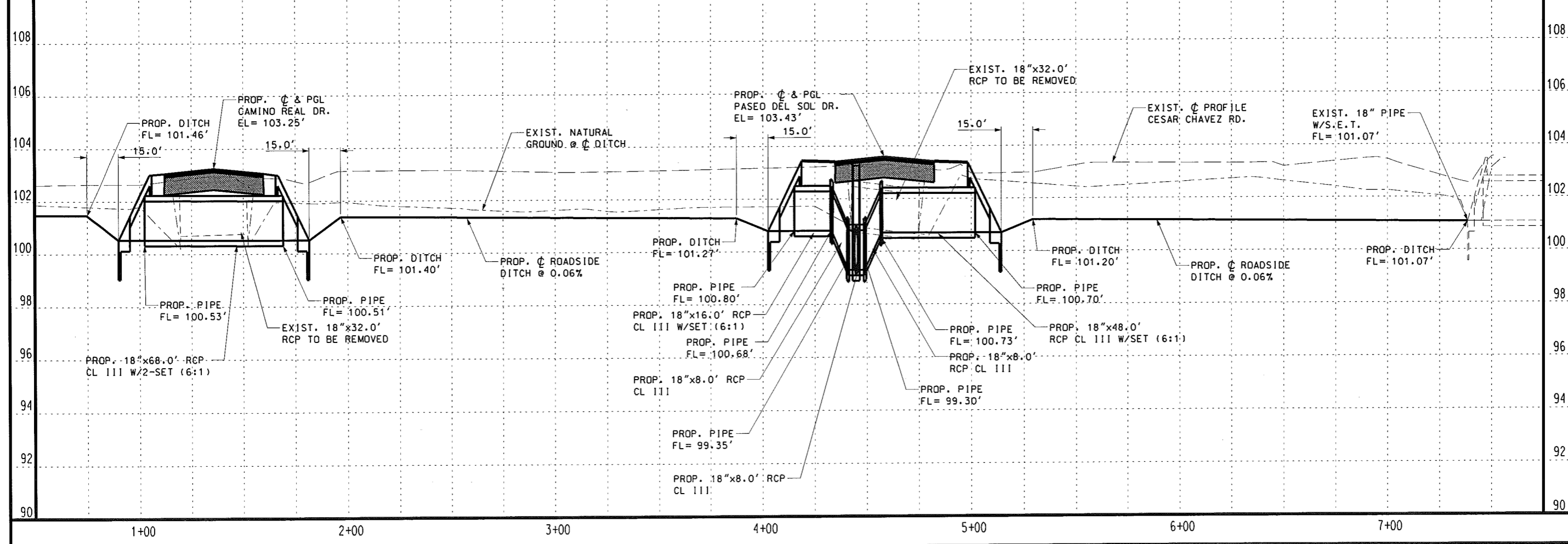
- ADJUST WATER VALVE AS NEEDED.
- CONTRACTOR SHALL VERIFY ALL UTILITIES: HORIZONTAL AND VERTICAL INFORMATION IN THE FIELD PRIOR TO CONSTRUCTION.

**BM DATA**

BM ALLUMINUM DISK IN CONCRETE LOCATED SOUTHWEST CORNER OF INTERSECTION RANCHO ESCONDIDO DR. (30.5' WEST FROM ☉) AND PASEO DEL SOL DR. (29.5' SOUTH FROM ☉) EL. = 103.63'

PROJECT TOTALS		TOTALS	
ITEM	EST.	FINAL	DESCRIPTION
110	300	CY	EXCAVATION (CHANNEL)
464	303	LF	RCP SEWER (CL III) (18")
465	2	EA	INLET TY "C" - GRATE
465	1	EA	MANHOLE TY "A"
467	4	EA	S.E.T. (6:1)
496	64	LF	(*)REMOVE OLD STR. (PIPE)

(\*):FOR CONTRACTORS INFORMATION ONLY



**Professional Engineers & Land Surveyors**  
 R. Gutierrez Engineering Corporation  
 180 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 966 782-2557 • (FAX) 966 782-2558

STATE OF TEXAS  
 RAMIRO GUTIERREZ, P.E. 65848  
 65848  
 180 E. PARK AVENUE, PHARR, TEXAS 78577

DATE: 7-16-10

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65848

ALTERNATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

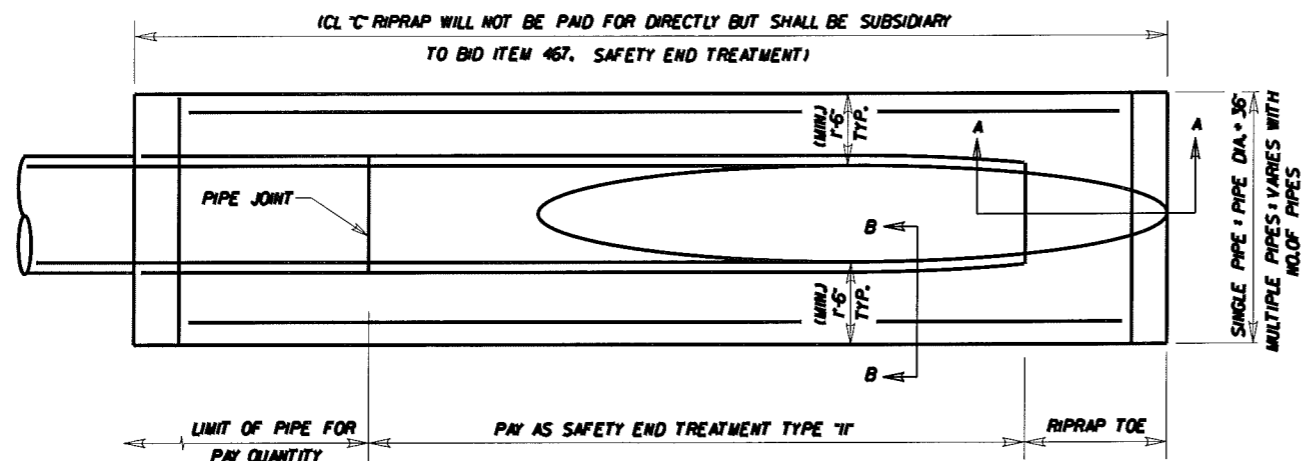
HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBDIVISION  
 ROADSIDE DITCH  
 CESAR CHAVEZ ROAD

REVISION	DATE	BY

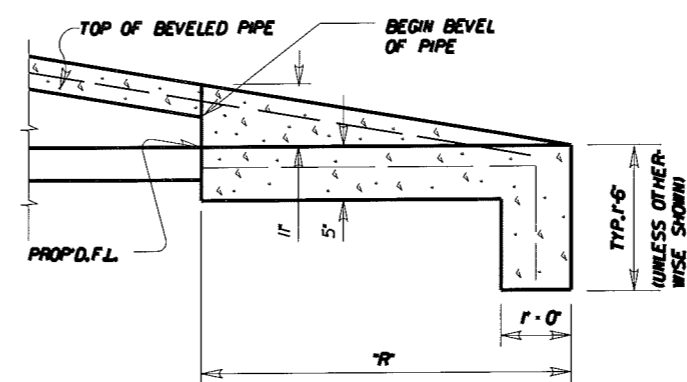
FB. No.: 487,488  
 SURVEY BY: ML,MR,DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

**SHEET No.**  
 49

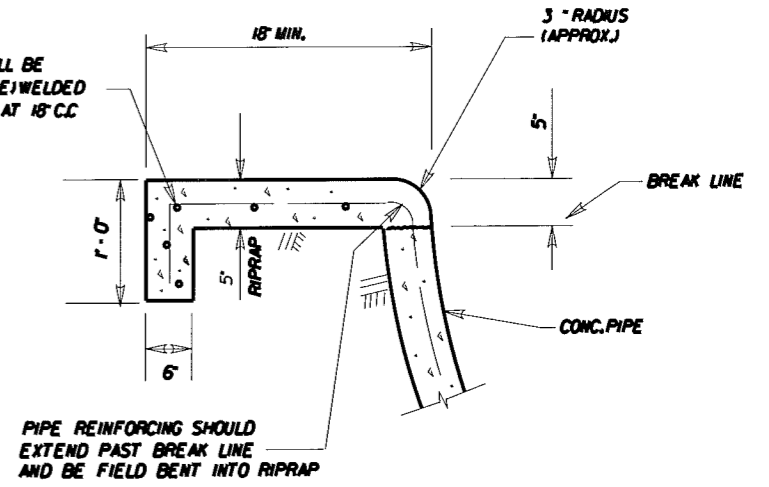




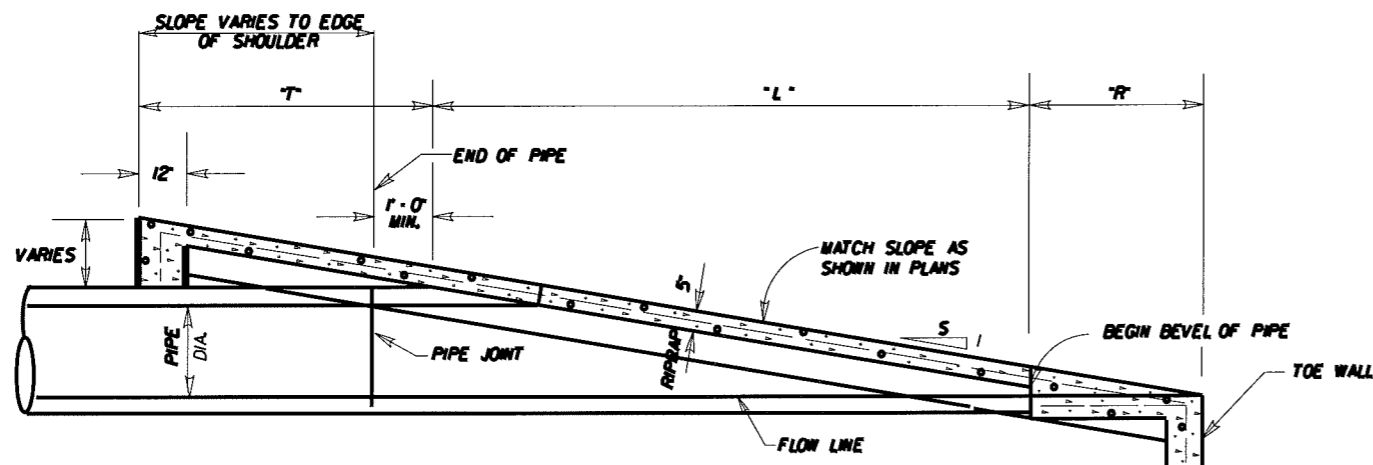
PLAN VIEW



SEC. A-A



SEC. B-B



ELEVATION SAFETY END TREATMENT

**SAFETY END TREATMENT PIPE LENGTHS**

PIPE DIA. (IN.)	"L"			
	3d	4d	5d	6d
12	2'-0"	2'-8"	3'-4"	4'-0"
15	2'-9"	3'-8"	4'-7"	5'-6"
18	3'-6"	4'-8"	5'-10"	7'-0"
24	5'-1 1/2"	6'-10"	8'-8 1/2"	10'-3"
30	6'-9"	9'-0"	11'-3"	13'-6"
36	8'-6"	11'-4"	14'-2"	17'-0"
42	10'-1 1/2"	13'-6"	16'-10 1/2"	20'-3"
48	11'-9"	15'-8"	19'-7"	23'-6"

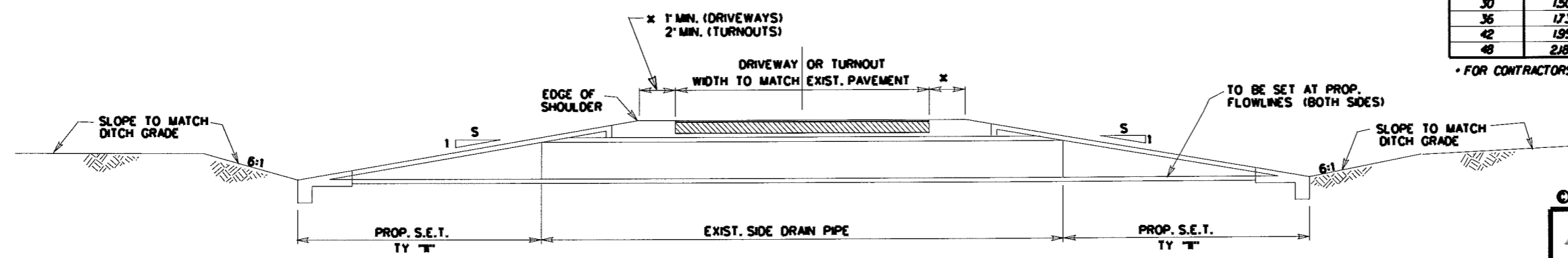
**RIPRAP TOE LENGTHS**

SLOPE	"R"		"T"
	3d	4d	
3d	2'-9"	1'-9"	
4d	3'-8"	2'-4"	
5d	4'-7"	2'-11"	
6d	5'-6"	3'-6"	

ESTIMATED RIPRAP CL "C" VOLUME (CY)

PIPE DIA. (IN.)	ESTIMATED RIPRAP CL "C" VOLUME (CY)			
	3d	4d	5d	6d
12	.88	1.11	1.34	1.57
15	.98	1.23	1.49	1.75
18	1.08	1.36	1.64	1.93
24	1.29	1.63	1.97	2.32
30	1.50	1.91	2.32	2.73
36	1.73	2.21	2.69	3.17
42	1.95	2.50	3.05	3.60
48	2.18	2.80	3.42	4.05

\* FOR CONTRACTORS INFORMATION ONLY (SINGLE PIPE)



TYPICAL SIDEDRAIN SECTION

NOTE:  
ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS. ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".

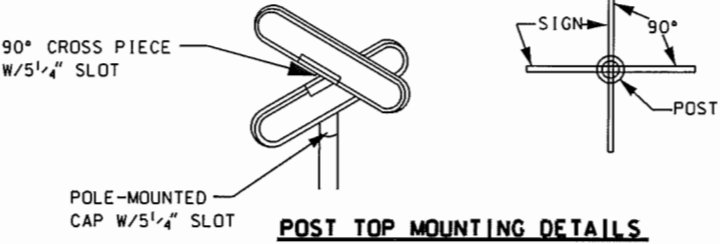
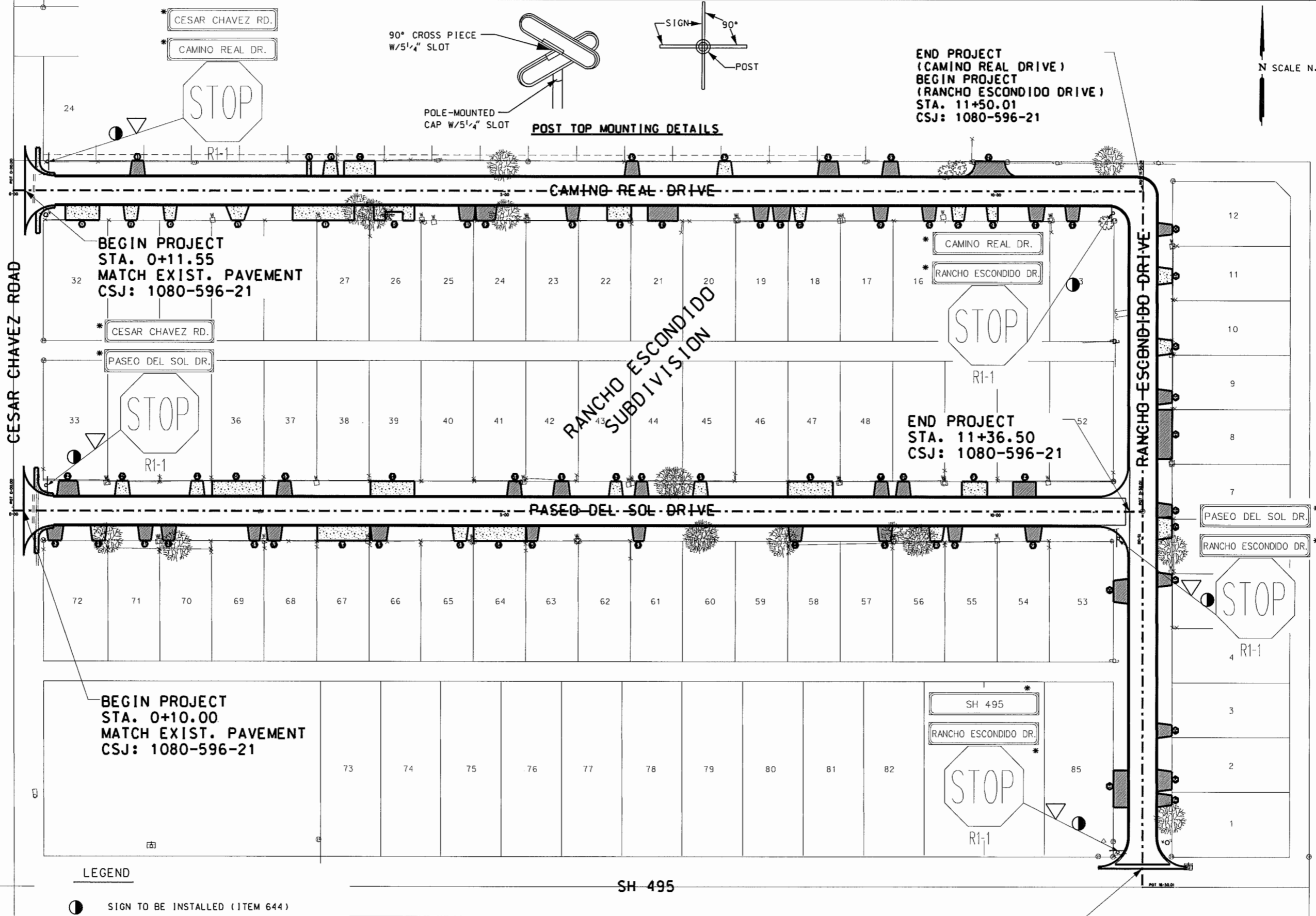
© TXDOT 1999 PHARR DISTRICT

**TEXAS DEPARTMENT OF TRANSPORTATION**

SAFETY END TREATMENT (TYPE "II") & SIDE DRAIN DETAILS

REV. 6/99 SET.DGN

STATE AD PROJECT NO.	FILE NO.	SHEET NO.
6		50
STATE	COUNTY	CONT.
TEXAS	HIDALGO	



**END PROJECT (CAMINO REAL DRIVE)  
 BEGIN PROJECT (RANCHO ESCONDIDO DRIVE)  
 STA. 11+50.01  
 CSJ: 1080-596-21**

N SCALE N.T.S.

**LEGEND**

- SIGN TO BE INSTALLED (ITEM 644)
- EXISTING / PROPOSED SIGN
- ▽ EXIST. SIGN TO BE REMOVED & REPLACED
- \* STREET NAME SIGN TO BE IN ACCORDANCE WITH CITY OF ALAMO REQUIREMENTS.

**NOTE:**  
 1.) EXISTING SIGNS TO BE REMOVED & REPLACED.  
 2.) STOP SIGN WITH TOP MOUNTED STREET NAME TO BE PAID FOR AS ONE SIGN ASSEMBLY.

**Professional Engineers & Land Surveyors**  
 R. Gutierrez Engineering Corporation  
 130 E. PARK AVENUE • PHARR, TEXAS 78577  
 (TEL) 956 782-2557 • (FAX) 956 782-2558

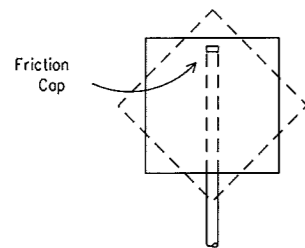
**STATE OF TEXAS**  
 REGISTERED PROFESSIONAL ENGINEER  
 RAMIRO GUTIERREZ, P.E. 65348  
 DATE: 5-4-08  
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

**HIDALGO COUNTY PRECINCT No.2  
 RANCHO ESCONDIDO SUBDIVISION  
 PROP. SIGNING DETAILS**

REVISION	DATE	BY	LOCATION

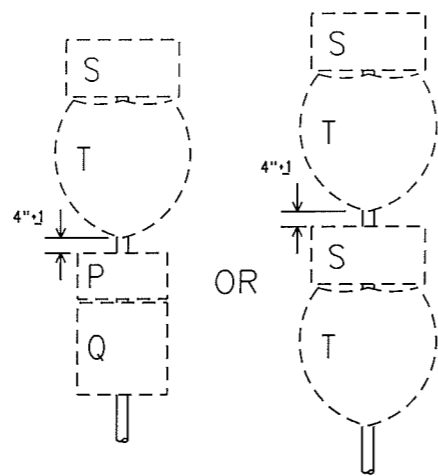
FB. No.: 487,488  
 SURVEY BY: ML,MR,DC  
 DRAWN BY: JC  
 PREPARED BY: JC  
 CHECKED BY: RG

**SHEET No. 51**



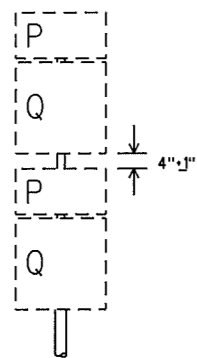
Type A

This type of mount which uses thin wall tubing or fiberglass reinforced plastic (FRP) pipe may be used to support any sign or combination of signs with a total area less than the maximum areas given for that support on SMD(1-1) with the exception of the following signs: FR6-1, W1-6 and W1-7. These signs should be mounted on a Type D-1 support.



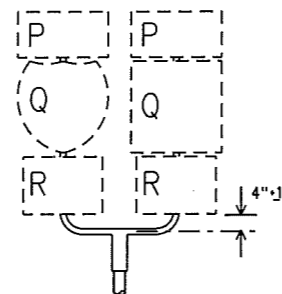
Type A-2

This type of mount may be used for up to two route markers (along with the appropriate cardinal direction markers). 36" or 45" Interstate route markers are allowable on this support. May be used as a specified optional substitute for Type B. Post shall be 2 1/2" Sch. 80.



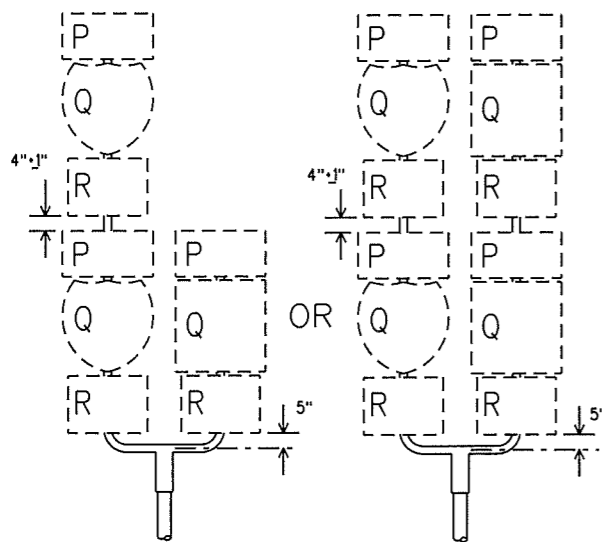
Type A-1

This type of mount may be used for up to two route markers (along with the appropriate cardinal direction markers). A 36" or 45" Interstate route marker may not be used on this support. May be used as a specified optional substitute for Type B. Post shall be 2 1/2" Sch. 10.



Type B

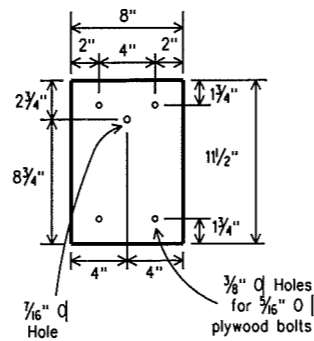
This type of mount may be used with two route markers (along with the appropriate cardinal direction markers). A 36" or 45" Interstate route marker may not be used on this support. Post shall be 2 1/2" Sch. 10.



Type C

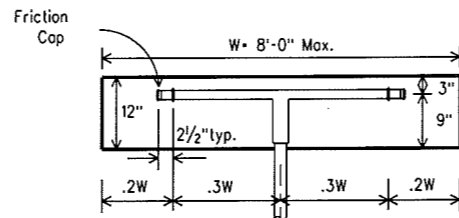
This type of mount is to be used when 3 or 4 route markers are required. If a 36" or 45" Interstate route marker is required, it should be mounted independently using a Type A mount or in conjunction with another 36" or 45" Interstate route marker using a Type A-2 mount. Post shall be 2 1/2" Sch. 80.

- P = 24"x12" Cardinal Direction Marker
- Q<sub>1</sub> = 24"x24" Interstate, US or State Route Marker
- Q<sub>2</sub> = 30"x24" Interstate or US Route Marker
- R = 21"x15" Direction Arrow
- S = 30"x15" Cardinal Direction Marker
- T<sub>1</sub> = 36"x36" (2) digit Interstate Route Marker
- T<sub>2</sub> = 45"x36" (3) digit Interstate Route Marker



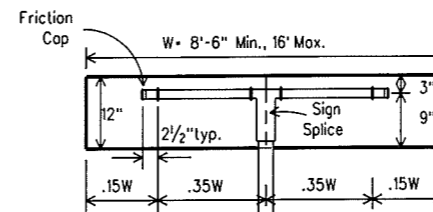
Splice Plate

Splice plates shall be 1/8" steel plate (ASTM A36) or 1/8" aluminum plate (ASTM B209 ALLOY 6061-T6 or 5052-H38). Steel shall be galvanized in accordance with ASTM A123.



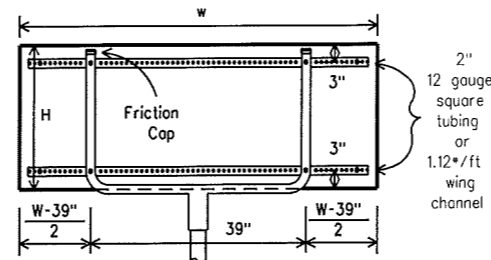
Type D-1

1. Mounting clamps are spaced 28" apart for "ONE WAY" signs (FR6-1, 48"x16"). Top of sign is 8" above centerline of "T" bar.
2. For "LARGE ARROW" signs (W1-6, 48"x24"), mounting clamps are spaced 30" apart.
3. Prefabricated 2" thin wall "T" mounted on a 2 1/2" Sch. 10 post.



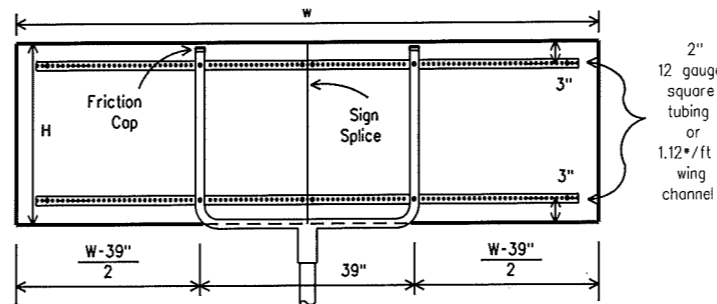
Type D-3

Prefabricated 2" thin wall "T" mounted on a 2 1/2" Sch. 10 post.



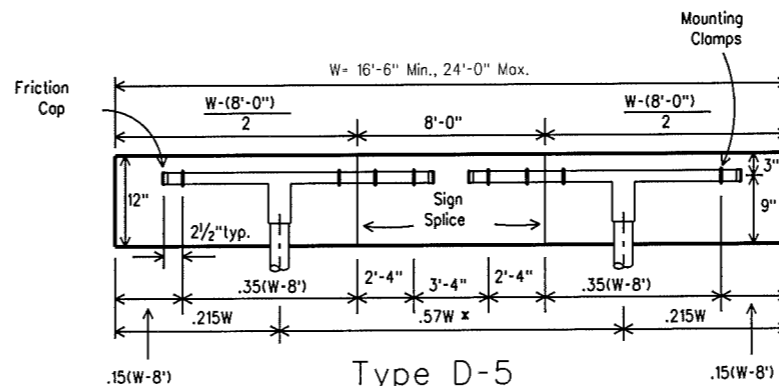
Type D-2

Prefabricated 2" thin wall "U" mounted on a 2 1/2" Sch. 10 post.



Type D-4

Prefabricated 2" thin wall "U" mounted on a 2 1/2" Sch. 80 post.

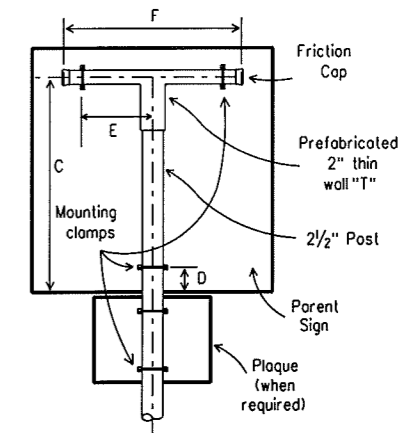


Type D-5

1. Post spacing may vary + 5% of total sign width to fit field conditions.
2. Prefabricated 2" thin wall "T" mounted on a 2 1/2" Sch. 10 post.

NOTES: (FOR TYPES D-1 THROUGH D-5)

1. Splice plate required on D-3 and D-5 mounts.
2. Sign blanks shall be 5/8" thick plywood conforming with Departmental Material Specification D-9-7100, unless otherwise noted elsewhere in the plans.



Type F

Type of Sign	2 1/2" Post	C	D	E	F	
Regulatory Signs	SR1-1	SCH 10	39"	9"	15"	35"
	FR1-2	SCH 10	43"	21"	11"	27"
	36" X 48"	SCH 10	42"	6"	9"	23"
	48" X 36"	SCH 10	30"	6"	15"	35"
	48" X 48"	SCH 10	42"	6"	15"	35"
Warning Signs	48" X 48"	SCH 10	49"	19"	15"	35"
	48" X 60"	SCH 80	54"	6"	12"	29"
School Signs	SS1-1	SCH 10	30"	6"	12"	29"
	SS2-1	SCH 10	30"	6"	12"	29"

- 1 Includes parent signs of this size which have supplementary plaque. Example: when "DO NOT ENTER" sign (SR5-1, 48" X 48") is mounted in combination with the "RAMP" plaque (R5-1T, 48" X 18"), the "DO NOT ENTER" sign is mounted as a 48" X 48" regulatory sign and the "RAMP" sign is mounted as a plaque.
- 2 "SPEED LIMIT" signs FR2-2, FR2-3 AND FR2-4 are mounted only in combination with "SPEED LIMIT" sign FR2-1 on Type G mount. "TRUCK SPEED LIMIT" sign (FR2-2A, 48" X 72") is to be mounted independently on Type G mount, see standard SMD (TY G) for details. When "WRONG WAY" sign (SR5-1A, 48" X 36") is mounted in combination with "DO NOT ENTER" sign (SR5-1, 48" X 48"), Type G mount is used.
- 3 "SCHOOL ADVANCE" (SS1-1, 48" X 48") and "SCHOOL CROSSING" (SS2-1, 48" X 48") symbol signs shall be mounted on a Type F mount.

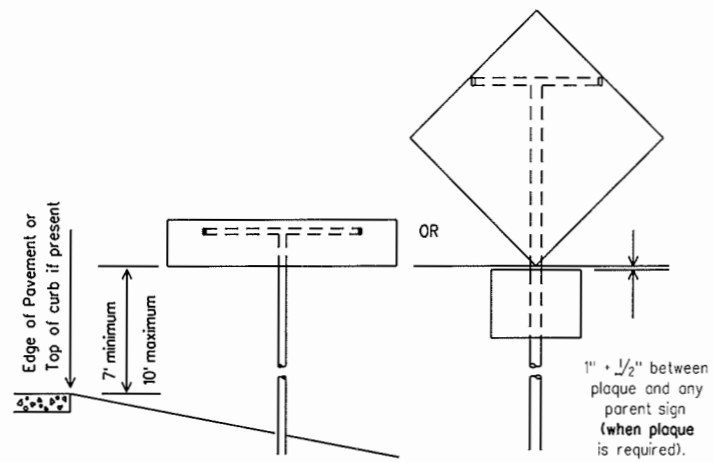
SIGN SUPPORTS SHALL NOT BE SPICED EXCEPT AS SHOWN ELSEWHERE ON SMD STANDARDS

STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION  
Traffic Operations Division

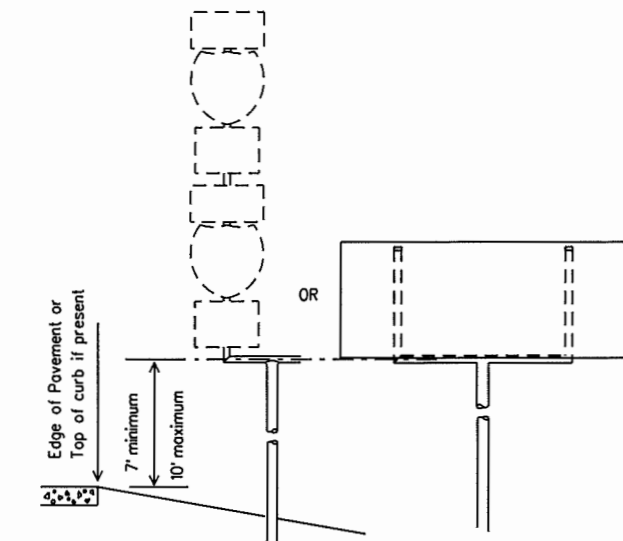
SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS

SMD(1-1)-98

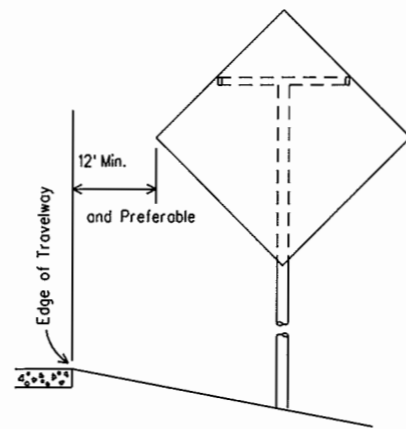
© TxDOT August 1995	DR- CRB	DR- JDM	DR- FDN	DR- DTN
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AD PROJECT	SHEET
1-97	6			52
12-98				
1-99	COUNTY	CONTROL SECTION	JOB	HIGHWAY
	HIDALGO			TERRA BONITA SUBDIVISION



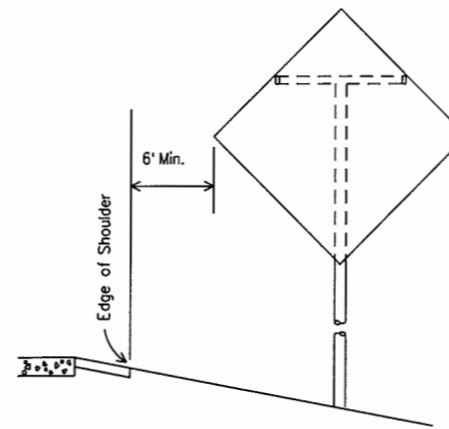
1" ± 1/2" between plaque and any parent sign (when plaque is required).



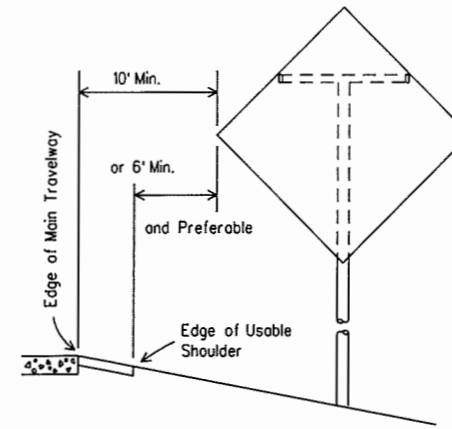
VERTICAL CLEARANCE OF SMALL SIGNS  
ALL TYPES OF ROADWAYS



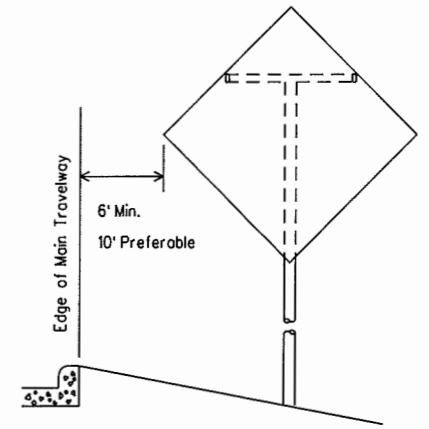
Rural Conventional Highway  
without shoulder.



Rural Conventional Highway  
with shoulder.

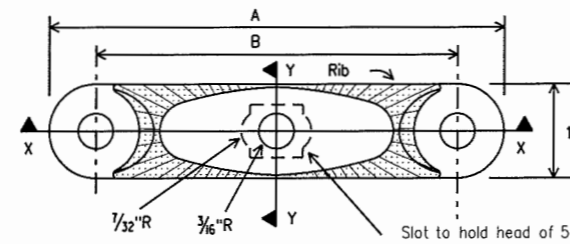


Expressways or Freeways  
without curb or with mountable curb.

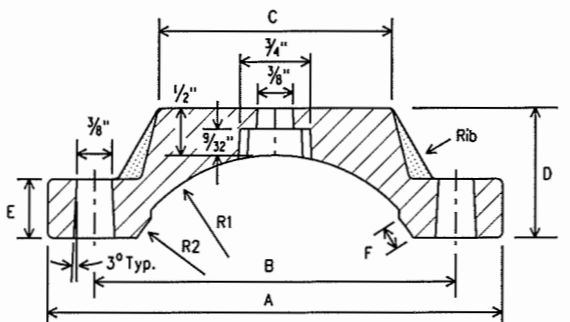


Expressways or Freeways  
with unmountable curb.

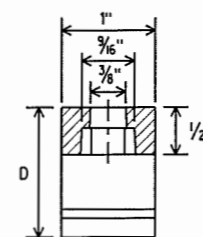
LATERAL CLEARANCE OF SMALL SIGNS  
TO THE RIGHT OR LEFT SIDE OF ROADWAY



Slot to hold head of 5/16" sq. head bolt. The bolt shall be 1" long for metal signs and 1 3/4" long for plywood signs, with full threads, a medium washer, and galv. steel or aluminum self-locking hex head nut. The bolt head must not turn in slot.



Section X-X



Section Y-Y

Pipe Clamp Casting

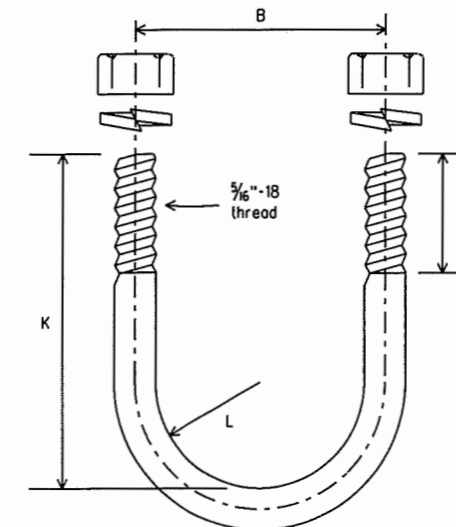
Pipe clamp casting shall be ASTM B26 or B108 aluminum alloy A444.0-T4 or 356.0-F.

All sign mounting clamp parts not made from aluminum shall be galvanized steel in conformance with ASTM A153 Class A or stainless steel.

Dimensions for Mounting Clamp

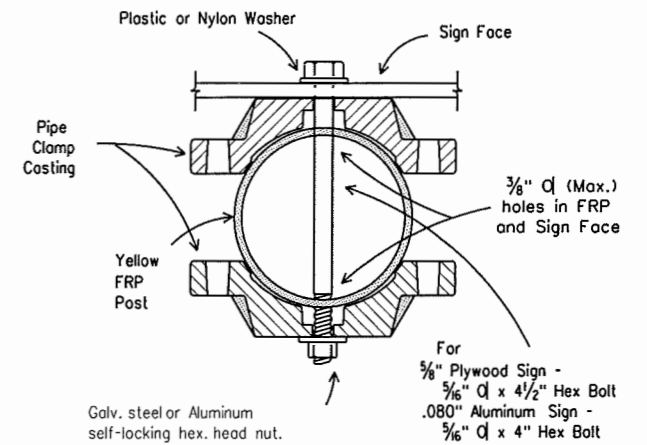
Standard Pipe Size	A	B	C	D	E	F	G	K	L	R1	R2
1/4	3 5/64	2 5/64	3/4	1 5/16	7/16	3/16	5/8	2 9/64	2 7/32	5 7/64	5 3/64
1/2	3 9/32	2 9/32	1	1 1/16	7/16	3/16	5/8	2 7/16	6 3/64	3 1/32	1 5/16
2	3 3/4	2 3/4	1 1/2	1 1/8	1/2	3/16	1	2 11/16	1 7/32	1 1/4	1 3/16
2 1/2	4 1/4	3 1/4	2	1 1/4	1/2	1/4	1	3 3/16	1 5/32	1 1/2	1 7/16
3	4 7/8	3 7/8	2 1/2	1 3/8	5/8	1/4	1	3 13/16	1 25/32	1 13/16	1 3/4

All dimensions shown are in inches.



U-Bolt

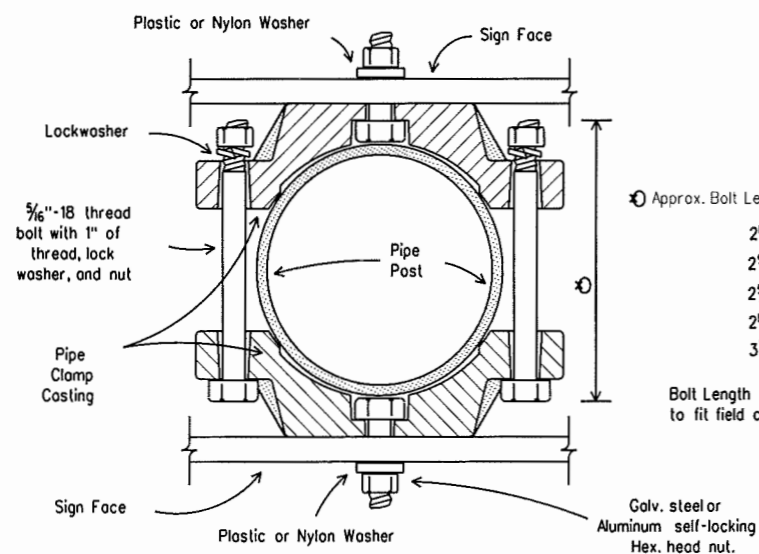
U-Bolt to be made in accordance with standard manufacturing procedure. 9/32" dia. stock is permissible. American standard regular semi-finished hex. nuts and spring lockwashers.



Typical Detail  
Yellow Fiberglass Reinforced Plastic (FRP) Mounting

GENERAL NOTES:

- All clearances apply to both rural and urban locations, except as noted.
- Where physical features of the roadway will permit, maximum lateral clearances are desirable. For frontage roads, ramps and other connecting roadways, lesser clearances may be used, but generally no less than six feet is recommended between the edge of the travelway and the edge of the sign. At intersections, signs should be positioned in the optimum location for viewing by traffic.
- Where necessary, the minimum allowable clearance of two feet may be used in urban locations on conventional highways.
- Where a sign is to be located behind guardrail, the allowable minimum clearance may be used, measured from the face of the guardrail to the near edge of the sign.
- Lateral clearances of signs mounted on left side of roadway are the same as shown above where space will permit.



Typical Detail  
Back to Back Mounting of Signs

Approx. Bolt Length	Pipe Size
2 1/8"	1/4" O
2 3/8"	1/2" O
2 5/8"	2" O
2 13/16"	2 1/2" O
3 1/8"	3" O

Bolt Length to be adjusted to fit field conditions.

MOUNTING CLAMP DETAILS

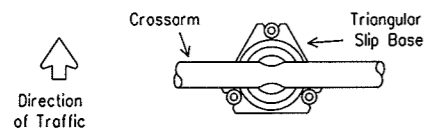
STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION  
Traffic Operations Division

SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS

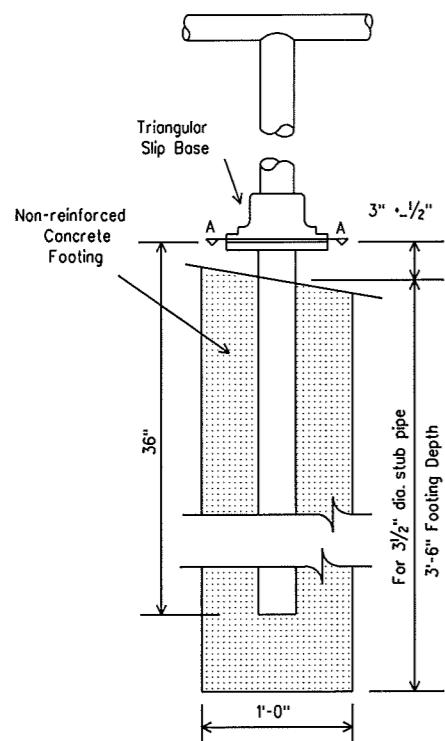
SMD(1-2)-98

© TxDOT August 1995	DN- LR	DN- DN	DN- MT	REG NO.
1-97	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
4-98	6			53
	COUNTY	CONTRACT SECTION	JOB	HIGHWAY
	Hidalgo			TERMINAL DIVISION

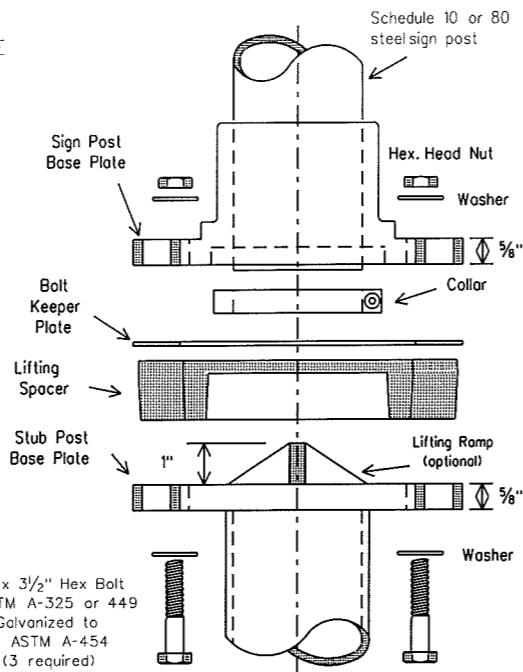
TEXAS UNIVERSAL TRIANGULAR SLIP BASE



The crossarm should be parallel to one side of the triangular slip base.

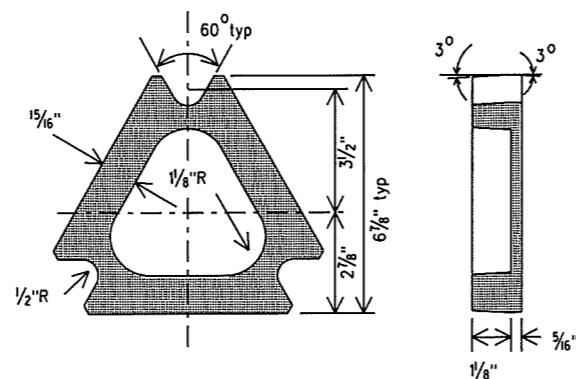


Texas Universal Triangular Slip Base shall be used for signs supported on 2 1/2" diameter pipe posts.



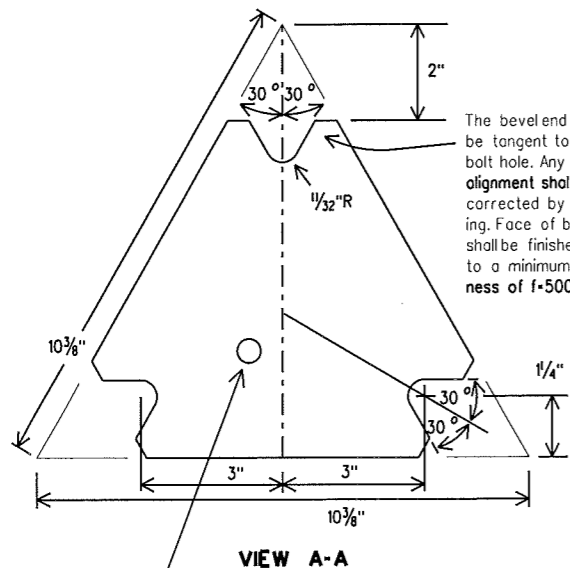
5/8" x 3/2" Hex Bolt  
ASTM A-325 or 449  
Galvanized to  
ASTM A-454  
(3 required)

NOTE: If stub post base plate does not have lifting ramp, lifting spacer should be deleted from assembly, unless plumbing shims are required.



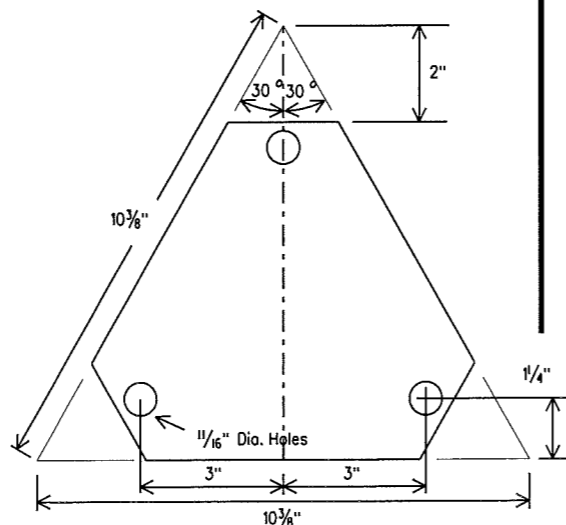
**LIFTING SPACER**  
100% Recycled ABS or Polycarbonate

The bevel end shall be tangent to the bolt hole. Any misalignment shall be corrected by grinding. Face of bevel shall be finished to a minimum smoothness of 1-500.



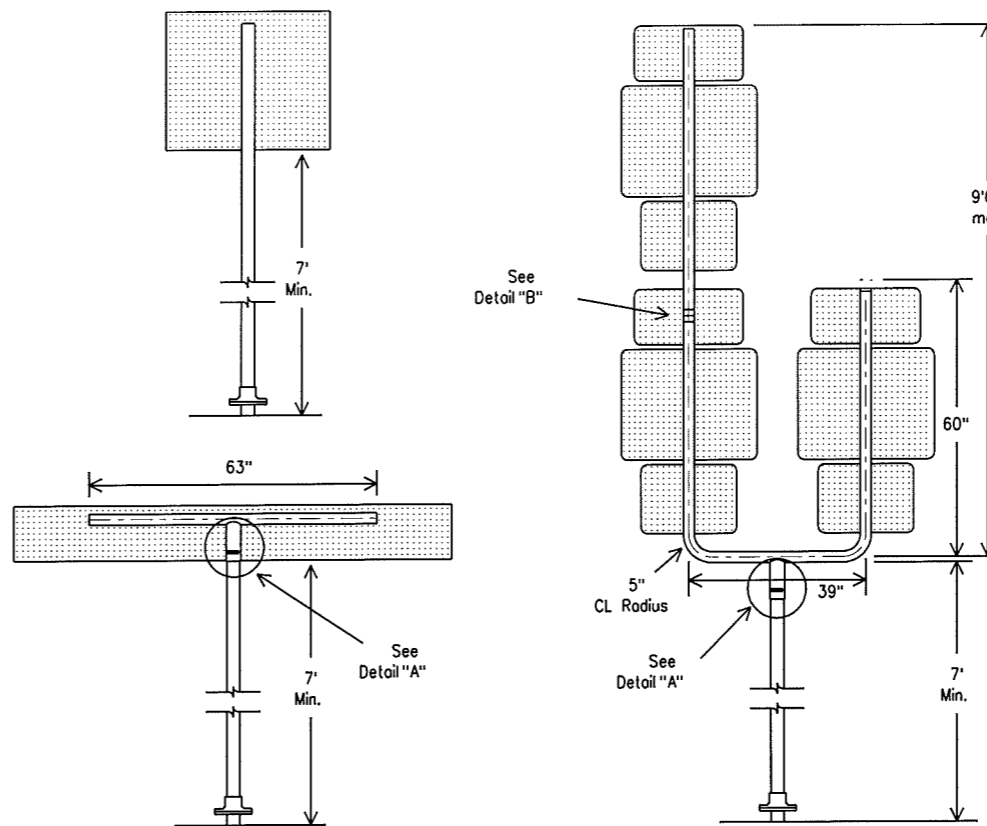
**VIEW A-A**

Provide 1/2" dia. (max.) hole in the Stub Post Base Plate within the inside radius of the stub post for galvanized drainage.

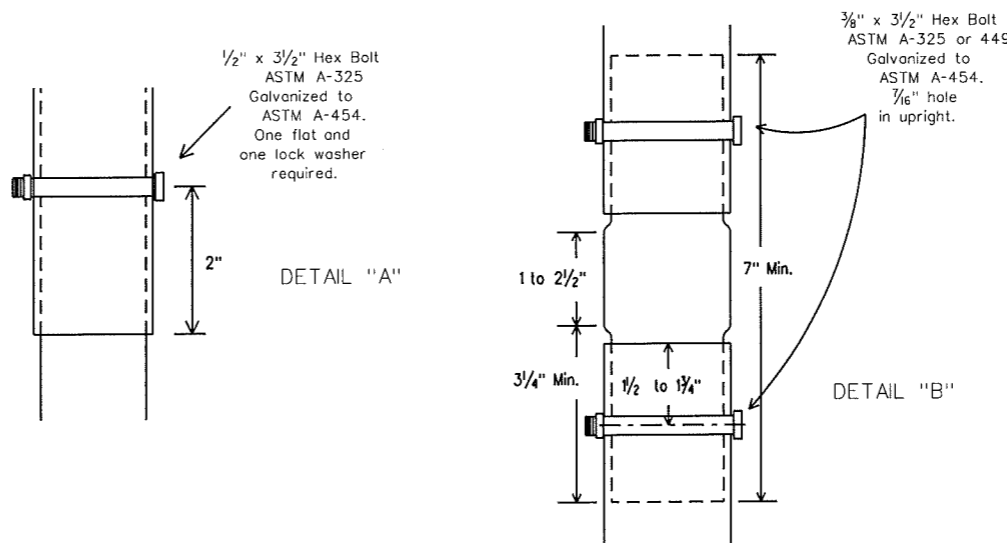


**BOLT KEEPER PLATE**  
Bolt Keeper Plate shall be 30 gauge galvanized steel.

PREFABRICATED T'S AND U'S



Refer to SMD(1-1) for "T" and "U" pipe lengths and marker combinations.



NOTE:  
1. 2 3/8" OD x .080" wall tubing swaged to 2 1/16" OD.  
2. Splices will only be allowed behind the sign substrate.

GENERAL NOTES:

- Support and design shall conform with AASHTO Standard Specifications for structural supports of Highway signs, luminaires and traffic signals with a design wind speed of 60 mph.
- Steel pipe shall be galvanized in accordance to ASTM Designation A123.
- Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18 inches. When solid rock is encountered below ground level, the foundation shall extend into the solid rock a minimum depth of 18 inches or provide a minimum foundation depth of 30 inches. Only concrete foundations shall be used in rock.

TRIANGULAR SLIP BASE NOTES:

- The Sign Post Base Plate of the Triangular Slip Base shall have the same exterior dimensions as the bottom plate.
- The Base Plates shall conform with the requirements of ASTM-A36, A441 or A572 Grade 50.
- All structural steel shall be galvanized in accordance with ASTM A153. The entire support shall be galvanized from the top down to a minimum depth of 6 inches into the foundation. All nuts, bolts and washers shall be galvanized in accordance with the zinc specification of ASTM B454.
- All high strength bolts shall conform to ASTM-A325 (ASTM A449 may be substituted for ASTM-A325 provided proper bolt head, nut and/or washer clearances are maintained). All high strength nuts shall be of such capacity as to develop the bolt strength.

BOLTING PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

- Assemble Sign Post, Bolt Keeper Plate and Stub Post with bolts and flat washers as shown.
- Shim as required to plumb post. If shims are needed lifting spacer must be used. Shims shall be placed between stub post base plate and lifting spacer.
- Slide the slipbase casting onto lower end of the sign support.
- Drive a chisel or a flat-blade screwdriver into the cut on the locking collar to slightly pry the collar open. Slide the collar onto the end of the pipe so the edge of pipe is between the face of the locking collar and the inside end of the edge bevel. A dead-blow hammer may be useful in positioning the collar correctly. Remove the tool used to pry the collar open. Torque the setscrew to 40 to 60 foot-pounds (480 to 720 inch-pounds).
- Place and align bolt keeper plate on slip plate and lift assembled sign and support into position.
- Place one washer on each bolt and insert them through keeper plate and the notches on the slip plate and casting. After inserting each bolt, place one washer and a nut on the bolt and hand-tighten all three.
- Tighten all the bolts to approximately 80 foot-pounds (960 inch-pounds) working around the support in approximately 10 foot-pound increments to assure a balanced tension in the bolts.  
**DO NOT OVERTIGHTEN**

STANDARD PLANS  
Texas Department of Transportation  
Traffic Operations Division

SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS

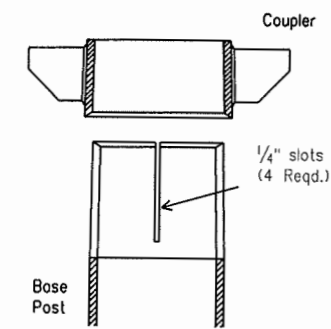
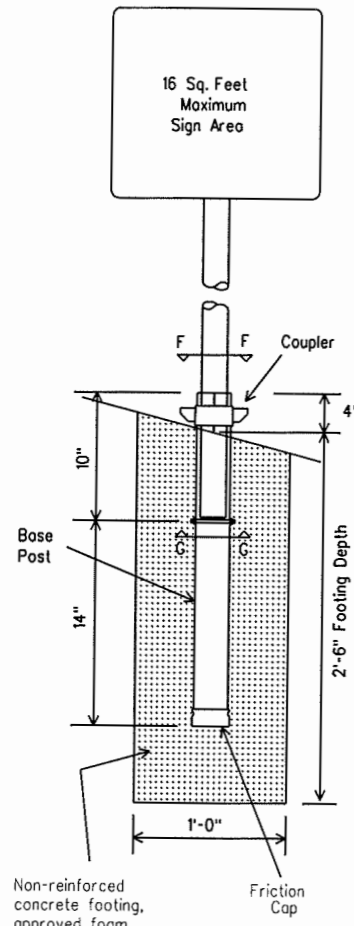
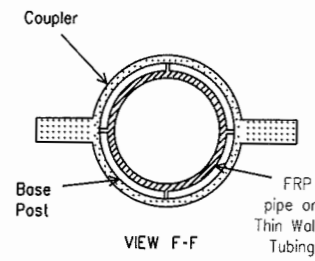
SMD(1-3)-98

Sept 2001  
Installation details added.  
Changed specified bolt torques.

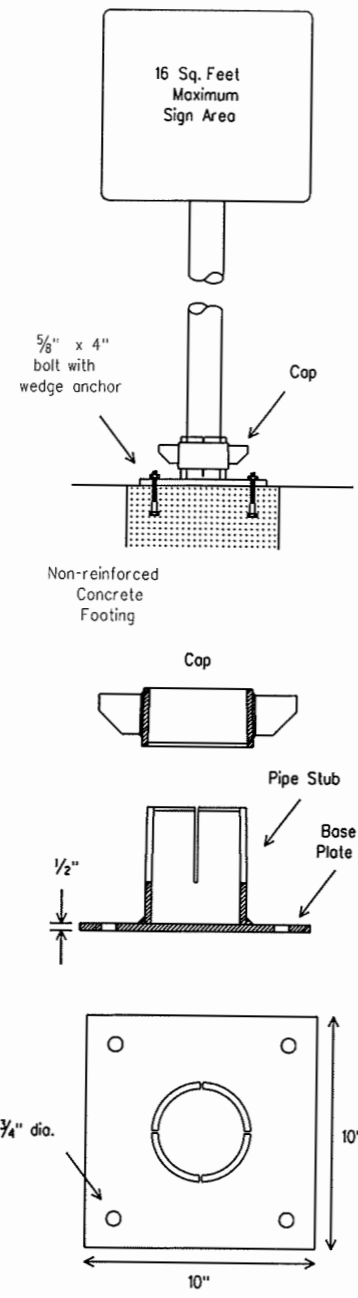
© TxDOT August 1995		DR: GRB	CD: JDM	DF: FDN	CK: DTN
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
1-96		6			54
1-97			COUNTY	CONTROL SECTION	JOB
12-98			HIDALGO		TERRA BONITA SUBDIVISION
1-99					

**UNIVERSAL ANCHOR SYSTEM  
TYPE A**

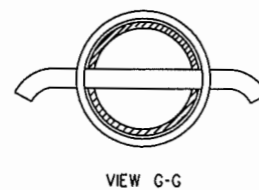
For FRP or Thin Wall Tubing



**BOLT DOWN SIGN SUPPORT  
TYPE A**

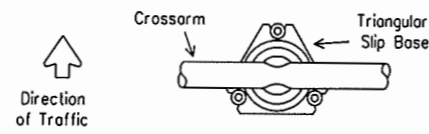


NOTE: When Thin Wall Tubing is used, rubber insert must be placed in base post.

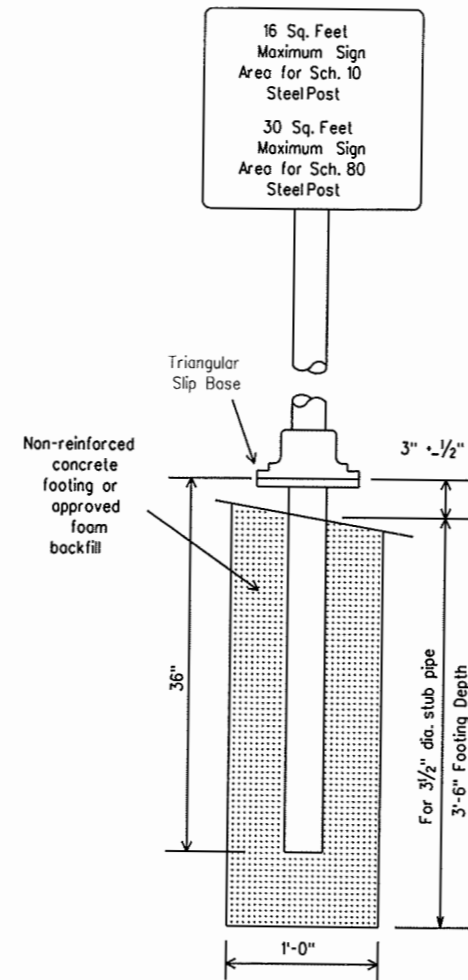


**TEXAS UNIVERSAL  
TRIANGULAR SLIP BASE**

Types A, A-1, A-2, B, C, D-1, D-2, D-3, D-4, D-5 and F.  
For additional information on types, refer to SMD(1-1).



The crossarm should be parallel to one side of the triangular slip base.

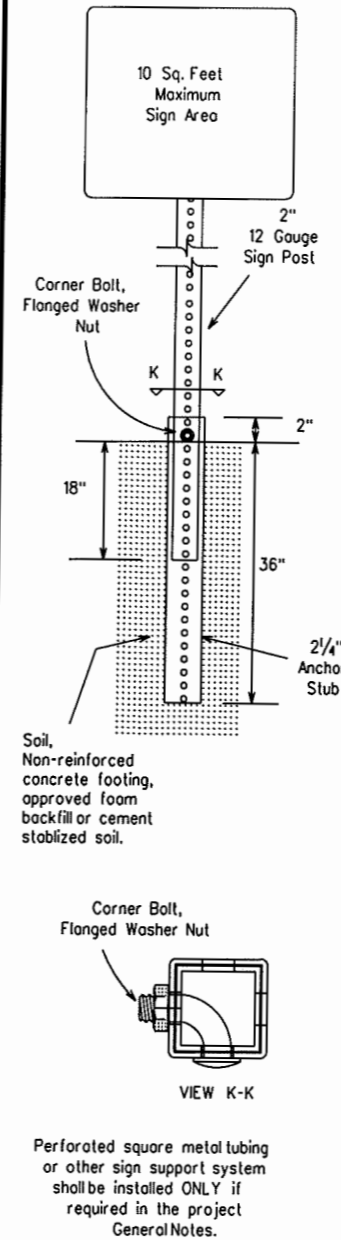


Triangular Slip Base shall be used for signs supported on 2 1/2" diameter pipe posts.

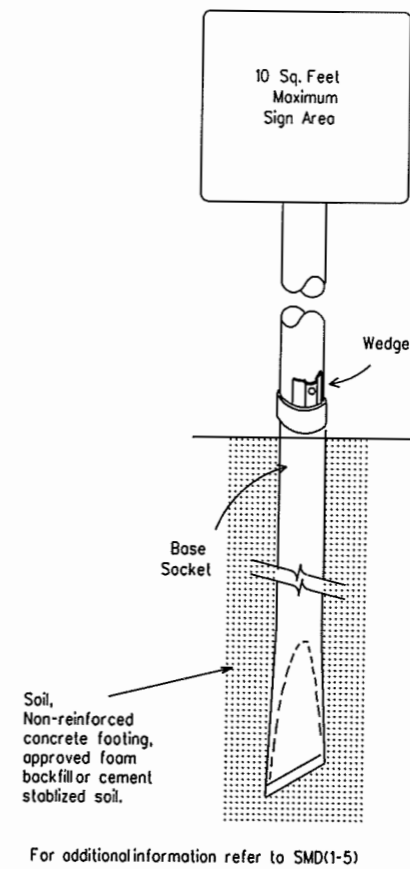
SIGN POST SELECTION	
MOUNT TYPE	2 1/2" POST
A, A-1	Sch.10
A-2	Sch.80
B	Sch.10
C	Sch.80
D-1, D-2, D-3, D-5	Sch.10
D-4	Sch.80

For additional information refer to SMD(1-3)

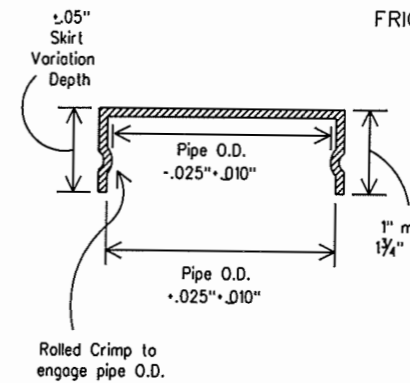
**PERFORATED SQUARE METAL TUBING  
(DRIVEABLE)  
TYPE U**



**WEDGE ANCHOR THIN WALL  
(DRIVEABLE)  
TYPE A**



**FRICION CAP DETAIL**



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirement of ASTM B633 Class FE/ZN 8.

**GENERAL NOTES:**

The project General Notes may specify a particular sign support. Support and design shall conform with AASHTO Standard Specifications for structural supports of Highway signs, luminaires and traffic signals with a design wind speed of 70 mph. Steel pipe shall be galvanized in accordance to ASTM Designation A123. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18 inches. When solid rock is encountered below ground level, the foundation shall extend into the solid rock a minimum depth of 18 inches or provide a minimum foundation depth of 30 inches. Only concrete foundations shall be used in rock.

**FRP SUPPORTS**

Materials and fabrication shall conform to the requirements of Department Material Specification D-9-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans. Thickness of FRP sign support is 0.125 inch ± 0.031 inch, - 0.0 inch. For FRP sign supports, all bolts, nuts, screws, washers and other miscellaneous hardware, shall be type 304 stainless steel or galvanized in accordance to ASTM Designation: A-153, Class C or D, B-695 Class 50 or B633 Class FE/ZN 8 unless otherwise specified. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dualpost installation may be used for signs up to and including 32 square feet. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:

TX DOT  
Traffic Operations Division  
125 E. 11th Street  
Austin, Tx 78701-2483.

STANDARD PLANS  
Texas Department of Transportation  
Traffic Operations Division

**SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS**

SMD(1-4)-98

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
1-97		6		55
12-98				
1-99	COUNTY	CONTROL	SECTION	JOB
	HIDALGO			TERRA BONITA SUBDIVISION

© TxDOT August 1995

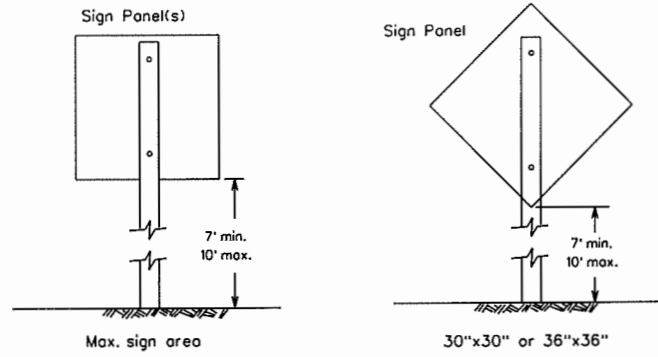
DR- GRB

CR- JDM

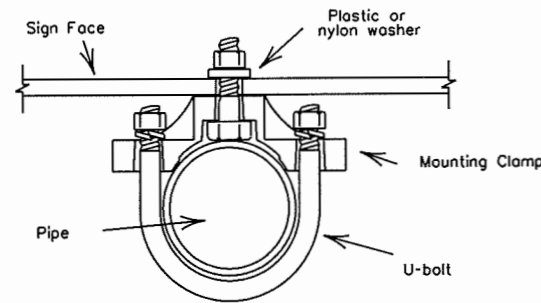
DR- FDN

CR- DTN

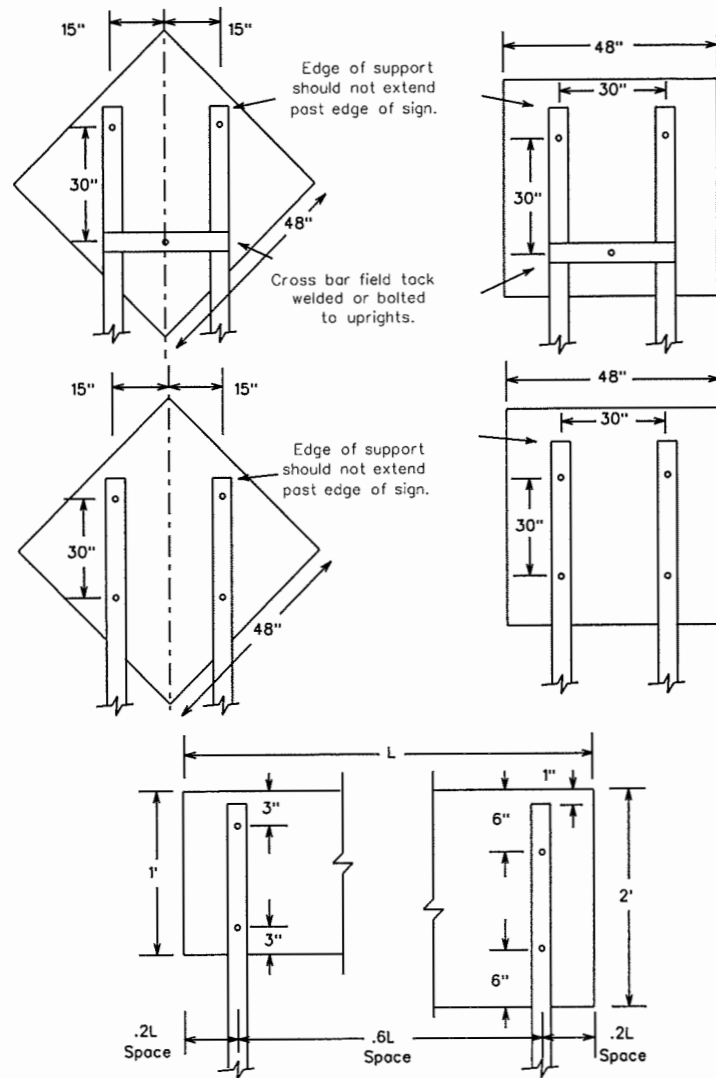
### SINGLE POST INSTALLATION TYPE 1



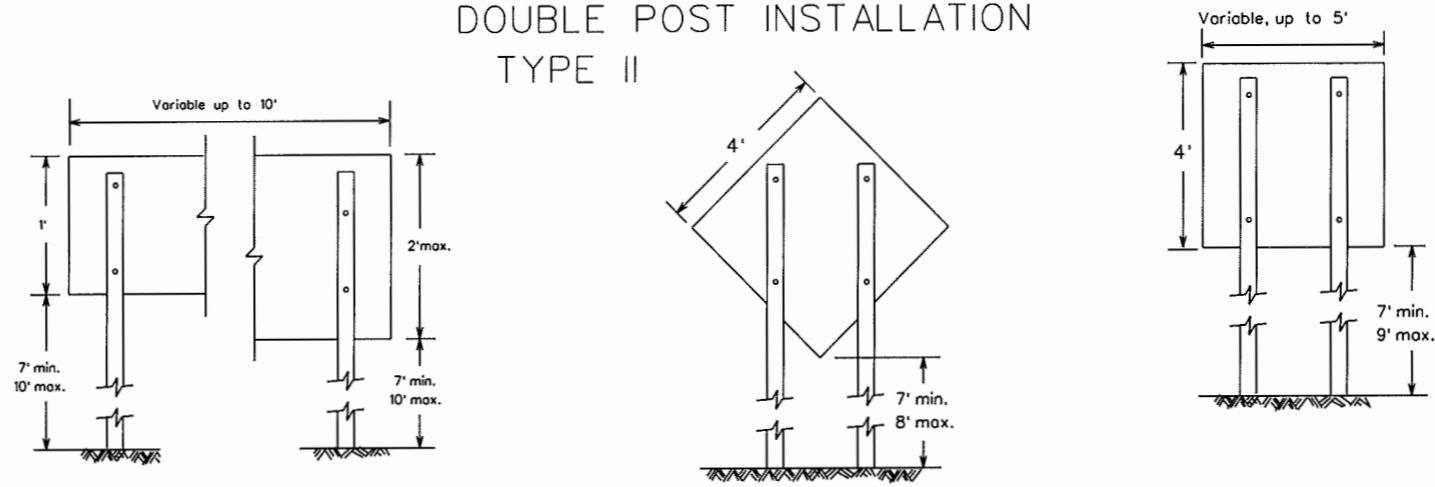
### TYPICAL CLAMP DETAIL



### SIGN ATTACHMENT DETAILS

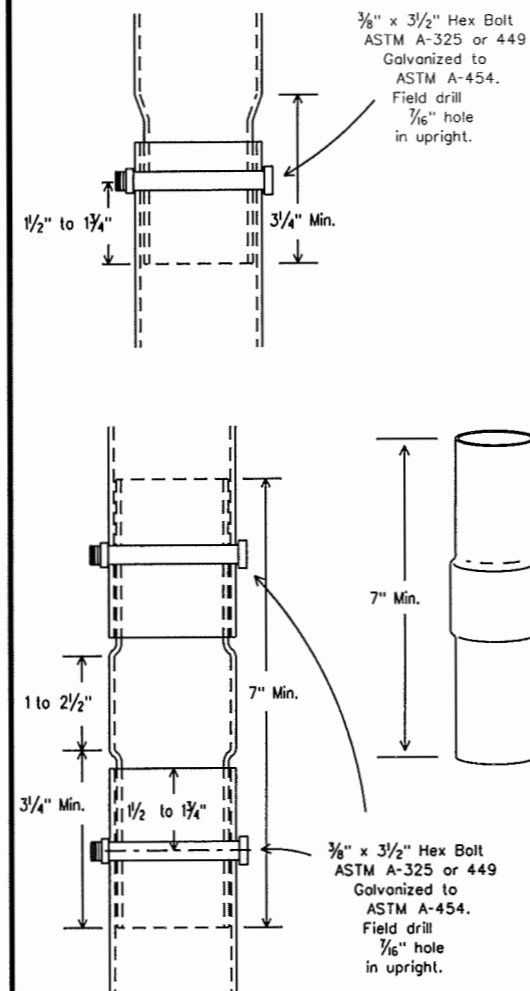


### DOUBLE POST INSTALLATION TYPE II



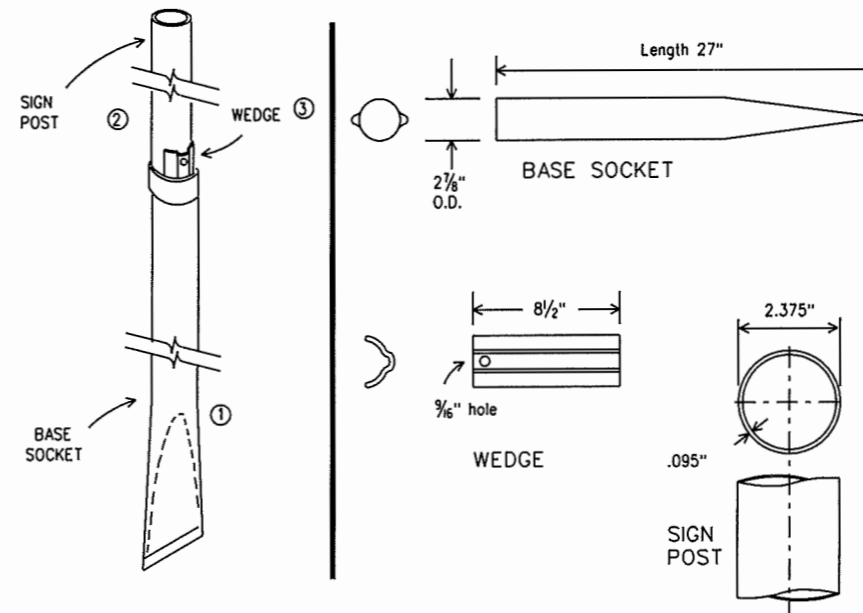
1. This sheet should be used with SMD(1-2) and SMD(1-4).
2. See standard sheet SMD(1-2) and TMUTCD for horizontal and vertical clearances.
3. Type I or Type II supports may be used for various sign combinations and or shapes not to exceed the specified maximum sign area.
4. A cross bar between supports and/or behind sign may be used to prevent supports from leaning in areas of soft soils.
5. Cross bars may be made of winged channeelpost 1.12"/ft., 2.0"/ft., 2" perforated square metal tubing (12 ga) or other similar material.
6. Educational plaques may be installed below parent signs or single supports for sign areas up to 9 square feet.

### SPLICE TECHNIQUES THIN WALL TUBE



- NOTE:
1.  $2\frac{3}{8}$ " OD x .080" wall tubing swaged to  $2\frac{1}{16}$ " OD.
  2. Splices will only be allowed behind the sign substrate.

### TYPICAL ASSEMBLY



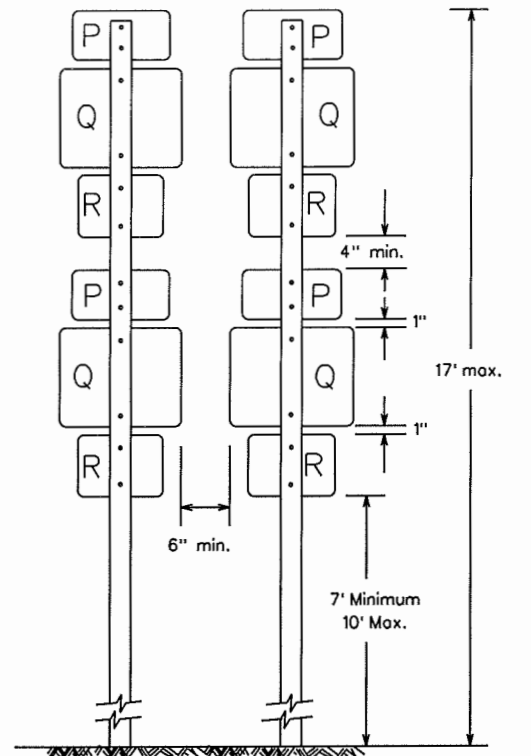
### GENERAL NOTES FOR WEDGE ANCHOR THIN WALL TUBE SIGN SUPPORT:

1. The BASE SOCKET is formed from  $2\frac{7}{8}$ " O.D. x 12 gauge galvanized pipe.
2. The WEDGE is formed from 11 gauge steel galvanized per ASTM A525.
3. The SIGN POST is 2.375" O.D. x .095" thin wall steel tubing.
4. Steel Supports shall be made from new material and shall be corrosion resistant. Steel supports shall be galvanized in accordance with ASTM Designations A123 or A525 (G-90 or better).
5. Supports shall be straight within  $\frac{1}{4}$  inch per 5 feet of length and shall have a smooth, uniform finish free from defects affecting strength or appearance. Any bolt holes and sheared ends shall be free from burrs. Bases of multisection supports shall not extend more than 5 inches above ground when installed.
6. Bolts, nuts, screws, washers and other miscellaneous hardware shall be galvanized in accordance to ASTM Designation: A153 Class C or D, or B695 Class 50.

### RECOMMENDED ASSEMBLY PROCEDURE

- ① Drive the BASE SOCKET into the ground until the top of BASE SOCKET is approximately flush with ground level. A flanged tool placed on top of the BASE SOCKET may be helpful. BASE SOCKET MUST be driven plumb.
- ② Insert SIGN POST into BASE SOCKET and align the sign face with the roadway.
- ③ Drive the WEDGE between the BASE SOCKET and SIGN POST, thereby locking the SIGN POST inside the BASE SOCKET.

### ROUTE MARKER ASSEMBLY FOR TWO POST SUPPORT



- P1 - 24"x12" Cardinal Direction Marker
- Q1 - 24"x24" Interstate, U.S. or State Route Marker
- Q2 - 30"x24" Interstate or U.S. Route Marker
- R - 21"x15" Direction Arrow
- P2 - 30"x15" Cardinal Direction Marker
- Q3 - 36"x36" (2) digit Interstate Route Marker
- Q4 - 45"x36" (3) digit Interstate Route Marker

EQUIV. SIGN AREA SQ.FT.	EQUIV. SIGN AREA SQ.FT.
P1 = 1	P2 = 3
Q1 = 3	Q3 = 6
Q2 = 4	Q4 = 7
R = 1	

TYPICAL MARKER COMBINATIONS FOR EACH SUPPORT	EQUIV. AREA
2P1 + 2Q1 + 2R	10 sq.ft.
P1 + 2Q1 + 2R	9 sq.ft.
2Q1 + 2P1	8 sq.ft.
Q1 + R	4 sq.ft.
P2 + Q3	9 sq.ft.
P1 + Q1 + R	5 sq.ft.
P2 + Q4	10 sq.ft.

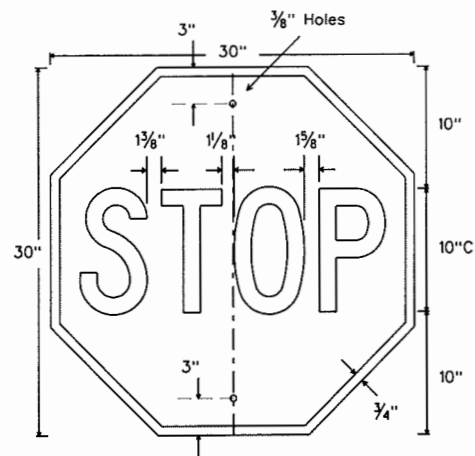
STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION  
Traffic Operations Division

### SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS

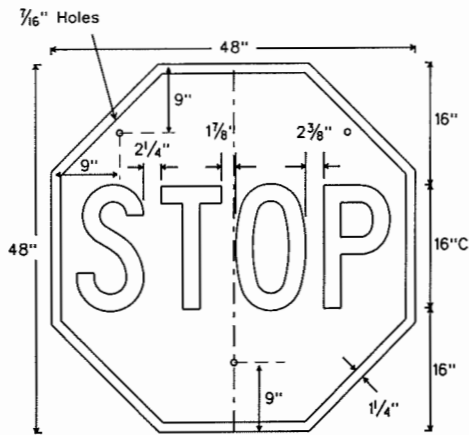
SMD(1-5)-98

REVISIONS	STATE DISTRICT	FEDERAL REGION	DATE	BY	CHK	APP	SHEET
1-97	6						56
12-98							
1-99							

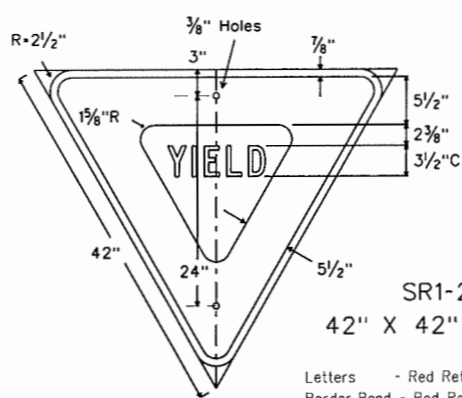
COUNTY: HIDALGO CONTROL: SECTION: JOB: HIGHWAY: TERRA BORATA SUBDIVISION



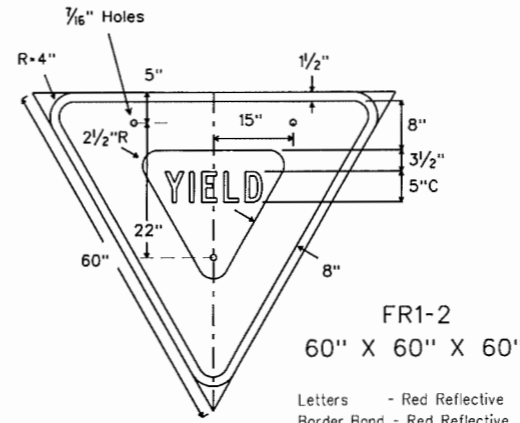
R1-1  
30" X 30"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



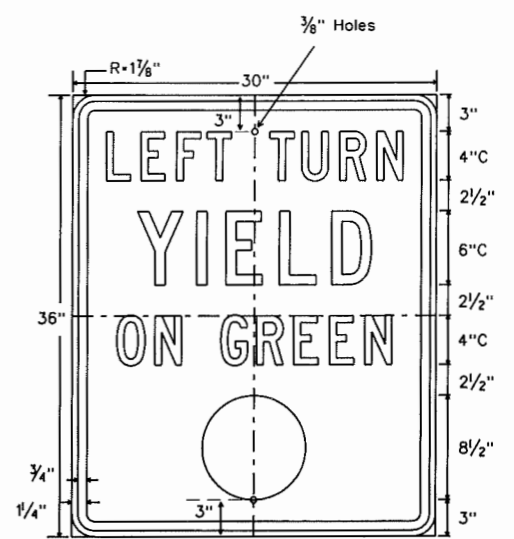
SR1-1  
48" X 48"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



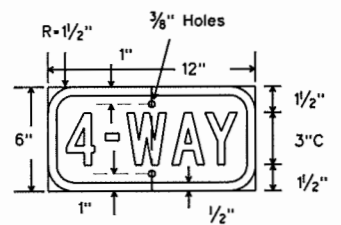
SR1-2  
42" X 42" X 42"  
Letters - Red Reflective  
Border Band - Red Reflective  
Background - White Reflective



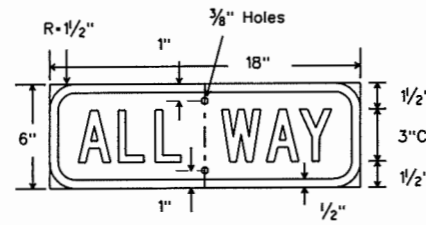
FR1-2  
60" X 60" X 60"  
Letters - Red Reflective  
Border Band - Red Reflective  
Background - White Reflective



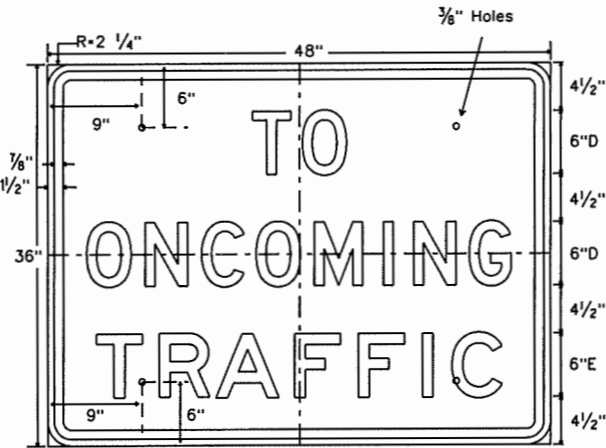
R10-12  
30" X 36"  
Letters - Black  
Border - Black  
Circle - Green Refl.  
Background - White Refl.



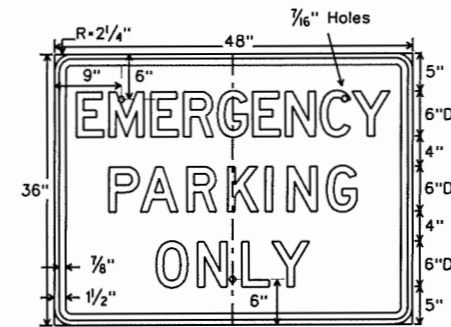
R1-3  
12" X 6"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



R1-4  
18" X 6"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



SR1-2b  
48" X 36"  
Legend - Black  
Background - White Refl.

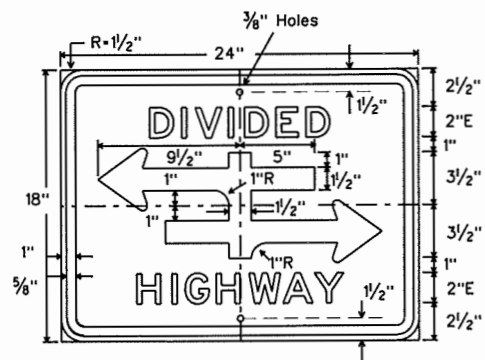


FR8-4  
48" X 36"  
Legend - Black  
Background - White Refl.  
\* reduce spacing 50%

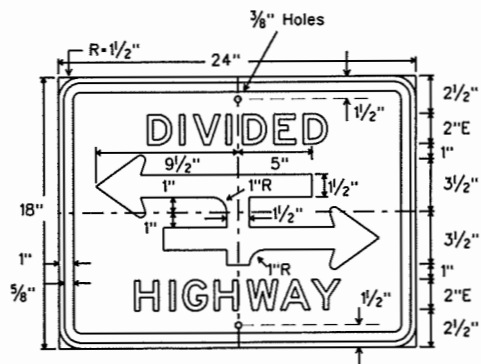
DEPARTMENT MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS 7100
ALUMINUM SIGN BLANKS	DMS 7110
FLAT SURFACE REFLECTIVE SHEETING	DMS 8300
VINYL NON-REFLECTIVE SHEETING	DMS 8320

SIGN SHEETING		
COLOR	USAGE	MATERIAL TYPE
GREEN	LEGEND	TYPE C (HIGH SPECIFIC INTENSITY)
RED	LEGEND/BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
WHITE	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
WHITE	LEGEND & BORDERS	TYPE C (HIGH SPECIFIC INTENSITY)
BLACK	LEGEND & BORDERS	VINYL NON-REFLECTIVE SHEETING

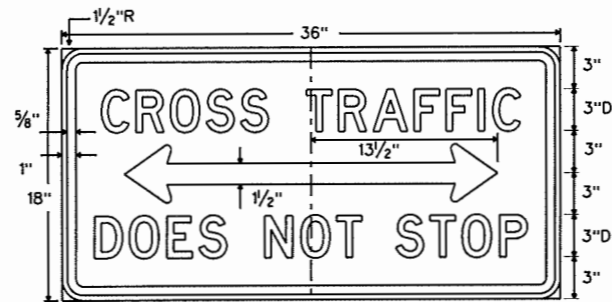
GENERAL NOTES:  
The alphabets and lateral spacing between letters and numerals shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways", latest edition, and any approved changes thereto. Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.  
Colored legends shall be applied by screening process with transparent colored ink, transparent colored overlay film, cut-out white reflective sheeting applied to colored background, colored sheeting or combination thereof. Black legends shall be applied by screening process, cut-out vinyl non-reflective decal sheeting or combination thereof. Check table for sheeting type if used.  
Sign blanks shall be any material that meets the DMS requirements for permanent sign substrates.



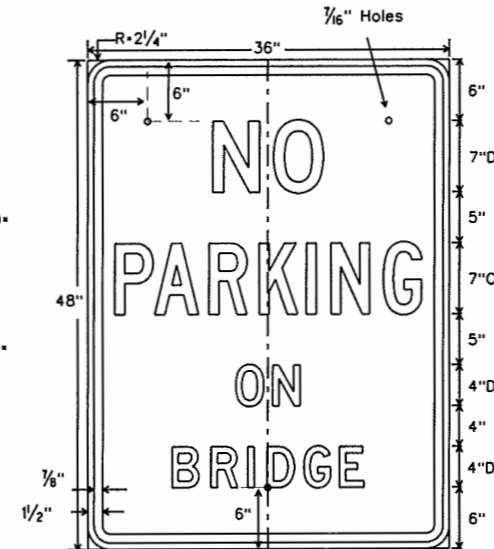
R6-3  
24" X 18"  
Legend - Black  
Background - White Refl.



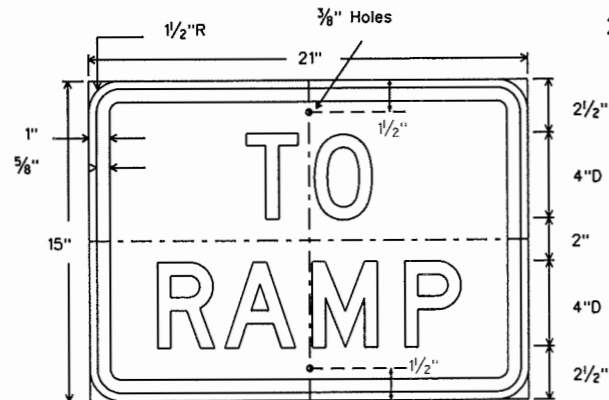
R6-3a  
24" X 18"  
Legend - Black  
Background - White Refl.



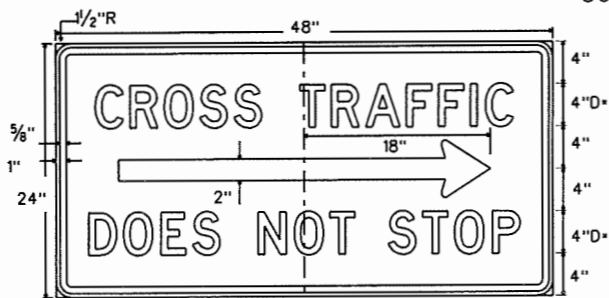
R1-5b  
36" X 18"  
Legend - Black  
Background - White Refl.  
\* reduce spacing 15%



ER8-1T  
36" X 48"  
Letters - Red Reflective  
Border - Red Reflective  
Background - White Reflective  
\* reduce spacing 50%



R1-2a  
21" X 15"  
Legend - Black  
Background - White Refl.



SR1-5R  
48" X 24"  
Legend - Black  
Background - White Refl.  
\* reduce spacing 15%

2/01 Revision  
All ground mounted signs to use High Specific Intensity sheeting

STANDARD PLANS  
Texas Department of Transportation  
Traffic Operations Division

REGULATORY SIGNS

R(1)-01

REVISIONS	STATE DISTRICT	FEDERAL REGION	DATE	BY	PROJECT	SHEET
7-90						57
8-95						
4-98						
2-01						

**SITE DESCRIPTION**

PROJECT LIMITS: CAMINO REAL DRIVE  
PASEO DEL SOL DRIVE  
RANCHO ESCONDIDO DRIVE

PROJECT DESCRIPTION: CONSTRUCTING TO REHABILITATE EXISTING ROADWAY CONSISTING OF GRADING, STORM SEWER STRUCTURES, FLEXIBLE BASE, LIME-TREATED SUBGRADE, ASPHALTIC CONCRETE PAVEMENT, CURB & GUTTER, STRUCTURES, & SIGNING.

MAJOR SOIL DISTURBING ACTIVITIES: Soil Disturbing activities will include: Preparing the Right of Way, Excavation & Embankment for the Roadway, Curb & Gutter, Grading, Erosion & Sediment Control, Utilities and Utility Adjustments

TOTAL PROJECT AREA: 4.05 Acres

TOTAL AREA TO BE DISTURBED: 4.05 Acres

WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): 0.39

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: Existing soil condition is Hidalgo Assoc. Level to convex, well drained calcareous soil.

NAME OF RECEIVING WATERS: Storm sewer drains into Hidalgo County Drainage District #1 Drain Ditches. Ultimately all runoff drains into the Laguna Madre.

HISTORICAL STRUCTURES: None

ENDANGERED SPECIES: None

**EROSION AND SEDIMENT CONTROLS**

**SOIL STABILIZATION PRACTICES:**

- TEMPORARY SEEDING
- PERMANENT PLANTING, SODDING, OR SEEDING
- MULCHING
- SOIL RETENTION BLANKET
- BUFFER ZONES
- PRESERVATION OF NATURAL RESOURCES

OTHER: Disturbed areas on which construction activity has ceased (temporarily or permanently) shall be stabilized within 14 days unless activities are scheduled to resume within 21 days.

**STRUCTURAL PRACTICES:**

- TEMPORARY SILT FENCES
- HAY BALES
- ROCK BERMS
- DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- DIVERSION DIKE AND SWALE COMBINATIONS
- PIPE SLOPE DRAINS
- PAVED FLUMES
- ROCK BEDDING AT CONSTRUCTION EXIT
- TIMBER MATTING AT CONSTRUCTION EXIT
- CHANNEL LINERS
- SEDIMENT TRAPS
- SEDIMENT BASINS
- STORM INLET SEDIMENT TRAP
- STONE OUTLET STRUCTURES
- CURBS AND GUTTERS
- STORM SEWERS
- VELOCITY CONTROL DEVICES

OTHER: \_\_\_\_\_

**NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:**

- The order of activities will be as follows:
1. Install perimeter controls, clear R.O.W. on side where construction will take place, and make required utility adjustments
  2. Construct proposed roadway.
  3. Construct roadway section up to TY "D" stage as shown on TCP.

STORM WATER MANAGEMENT: Storm water drainage will be provided by storm sewer networks. This storm drain system will carry drainage within the row to low points in the highway where cross drainage may occur and ultimately to the designated outfall.

**OTHER EROSION AND SEDIMENT CONTROLS:**

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to creeks and drainage ways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: An inspection will be performed by a TxDOT Inspector every week as well as after every half inch or more of rain (as recorded on a non-freezing rain gauge to be located at the Project Site). An Inspection and Maintenance Report will be made per each inspection. Based on the inspection results, the controls shall be revised per the inspection report.

WASTE MATERIALS: All waste materials will be collected and stored in a securely lidded dumpster. All trash and construction debris from the site will be deposited as necessary at a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): At a minimum, any products in the following categories to be hazardous: Paints, Acids for cleaning masonry surfaces, Cleaning Solvents, Asphalt products, Chemical additives for soil stabilization, or Concrete curing compounds and additives. In the event of a spill which may be hazardous, the spill coordinator should be contacted immediately. Emptying of excess concrete should not be allowed on site. Likewise, washout of concrete trucks should not be performed on site. These discharges are considered non-allowable non-storm water discharges. Concrete trucks should never be allowed to dump into storm drains or sanitary sewers.

SANITARY WASTE: All sanitary waste will be collected from the portable units as necessary or as required by local regulation by a licensed sanitary waste management contractor.

**OFFSITE VEHICLE TRACKING:**

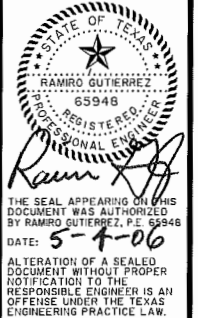
- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY
- STABILIZED CONSTRUCTION ENTRANCE

OTHER: \_\_\_\_\_

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wet land, water body or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.

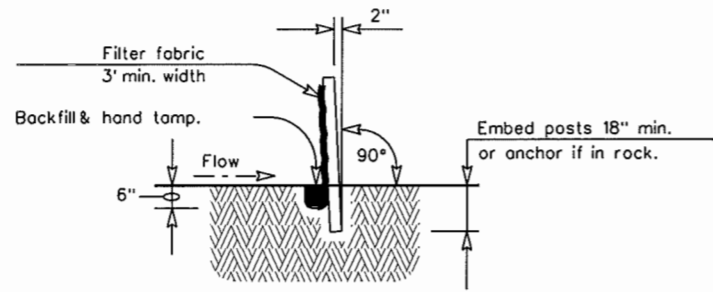
*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

**Professional Engineers & Land Surveyors**  
**R. Gutierrez Engineers Corporation**  
 130 E. PARK AVENUE • PHARR, TEXAS 78877  
 (TEL) 956 782-2557 • (FAX) 956 782-2558



HIDALGO COUNTY PRECINCT No. 2  
 RANCHO ESCONDIDO  
 SUBDIVISION  
 POLLUTION PREVENTION  
 PLAN (SW3P)  
 LOCATION

FB. No.: 487,488	SURVEY BY: ML, MR, DC	DRAWN BY: JC	PREPARED BY: JC	CHECKED BY: RG



**SECTION A-A**

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

**PLAN SHEET LEGEND**

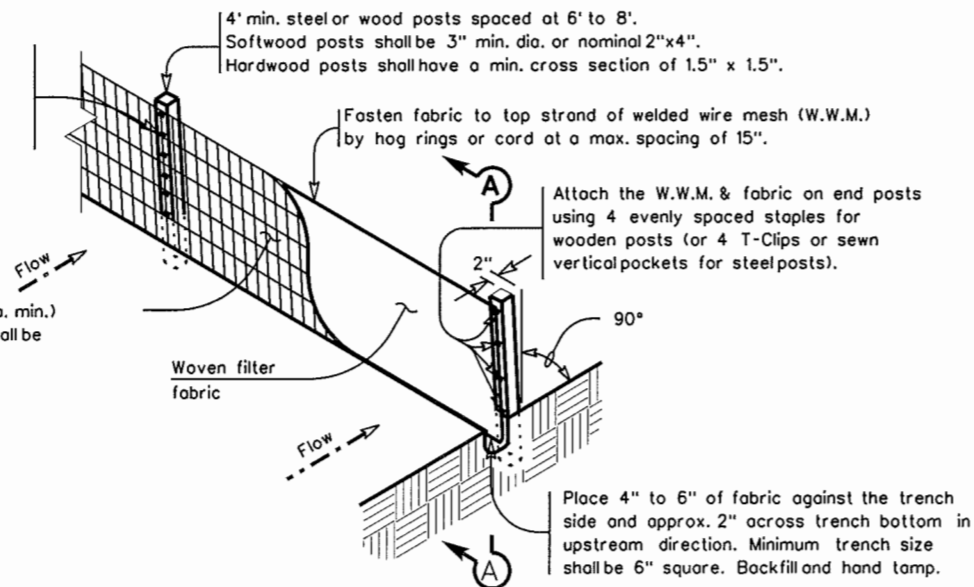
Sediment Control Fence — (SCF) —

**GENERAL NOTES**

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

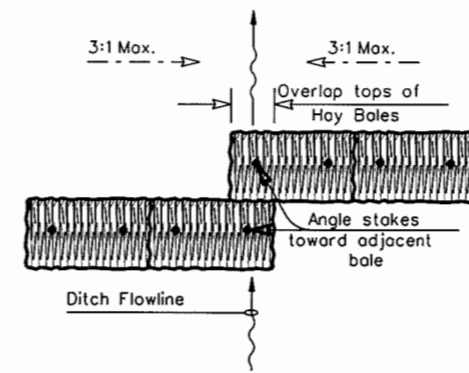
Connect the ends of successive reinforcement sheets or rolls a min. of 6 times with hog rings.

Galv. W.W.M. (12.5 Ga. min.) max. opening size shall be 2" x 4".

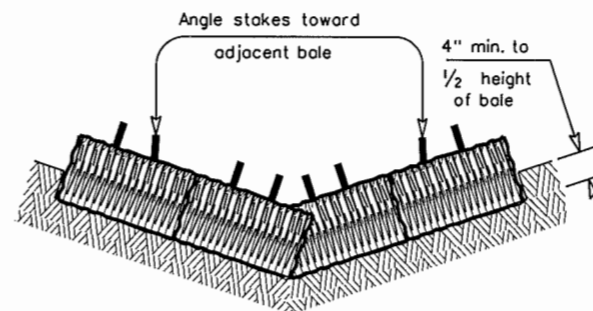


**TEMPORARY SEDIMENT CONTROL FENCE**

— (SCF) —



**PLAN VIEW**



**PROFILE VIEW**

**PLANS SHEET LEGEND**

Baled Hay — (BH) —

**BALED HAY USAGE GUIDELINES**

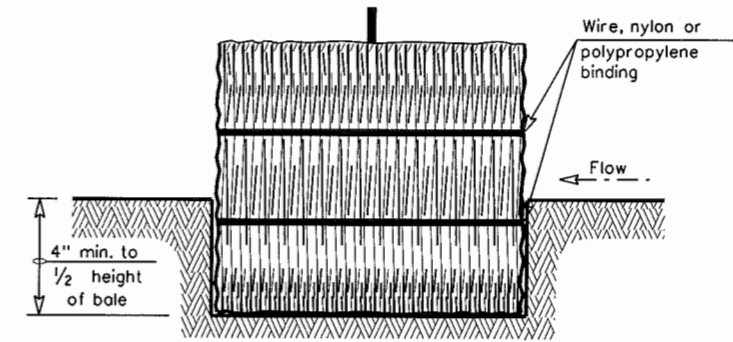
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT<sup>2</sup> of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than 1/2 acre.

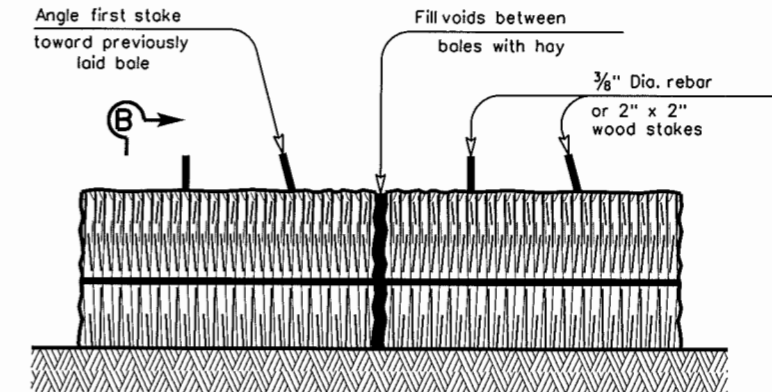
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



**SECTION B-B**



**BALED HAY FOR EROSION CONTROL**

— (BH) —

**GENERAL NOTES**

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible 1/2 the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with 3/8" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation  
Design Division (Roadway)

**TEMPORARY EROSION,  
SEDIMENT AND WATER  
POLLUTION CONTROL MEASURES**

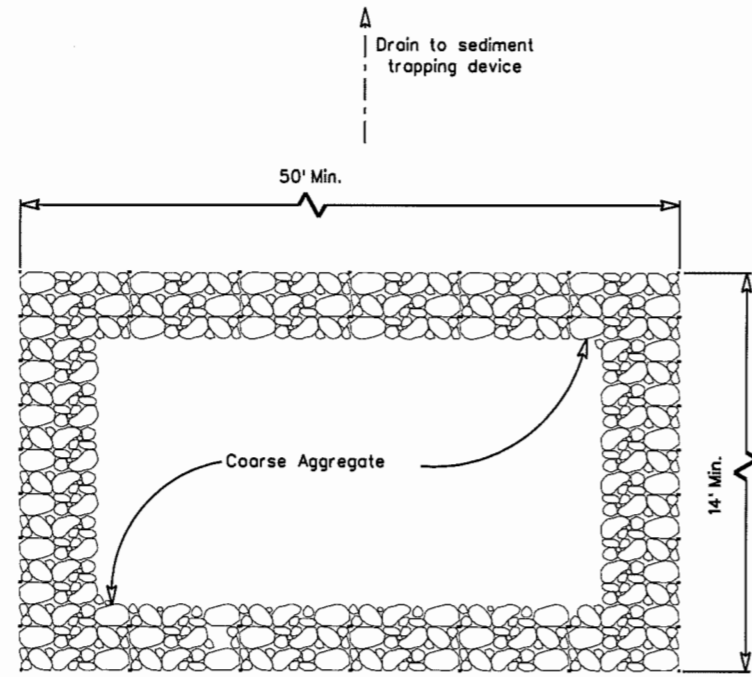
**FENCED & BALED HAY**

**EC(1)-93**

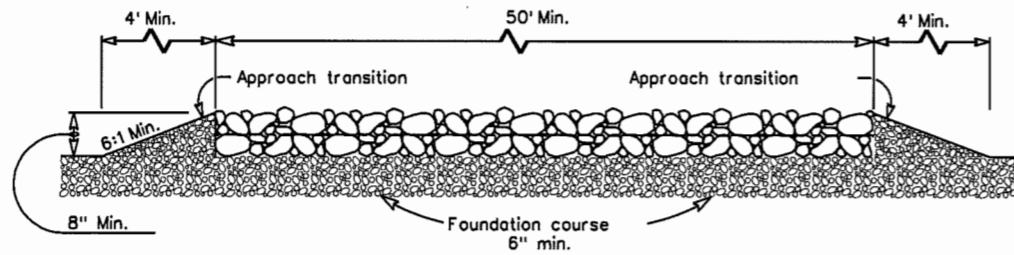
FILE: EC193.DGN	DN: HEJ	CK: HEJ	DW: BGD	CK:
© TxDOT JUNE 1993	DISTRICT	FEDERAL AID PROJECT	SHEET	
REVISIONS		COUNTY		59
		CONTROL	SECT	JOB
				HIGHWAY

DISCLAIMER: The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for the publication of this standard. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

LEVELS	
1	



**PLAN**

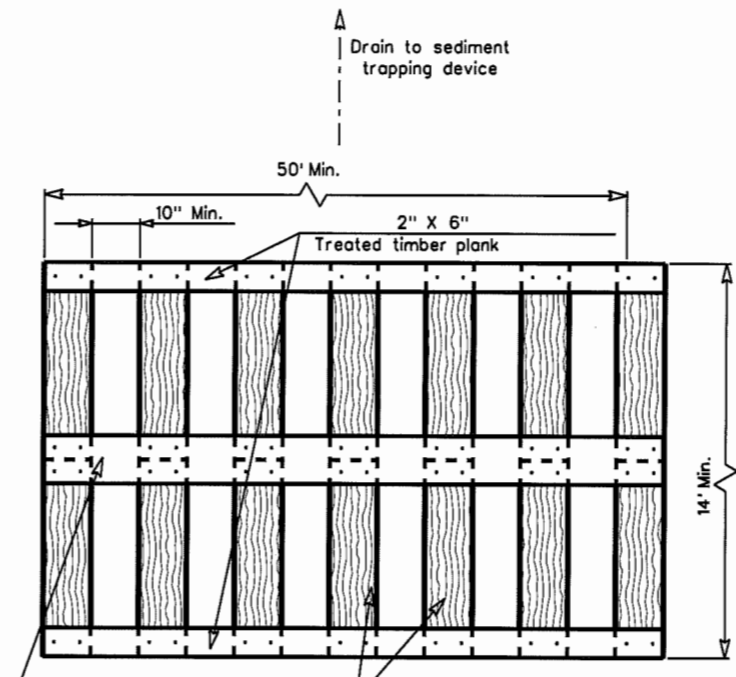


**PROFILE**

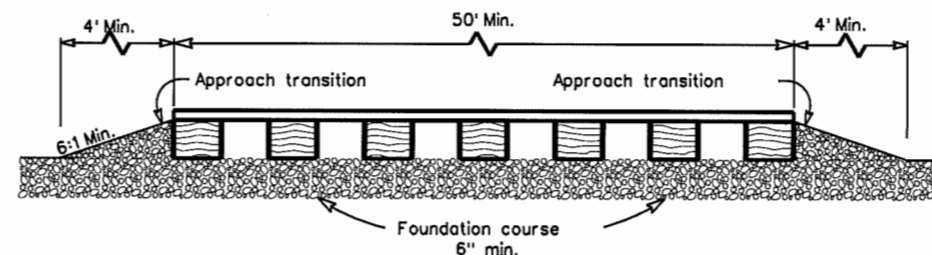
**CONSTRUCTION EXIT (TYPE 1)**

**GENERAL NOTES**

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



**PLAN**

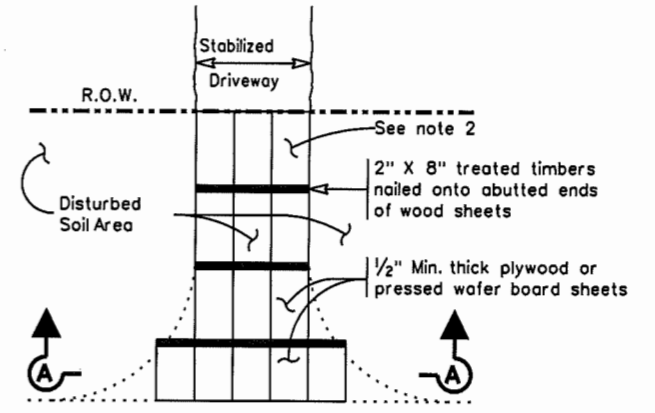


**PROFILE**

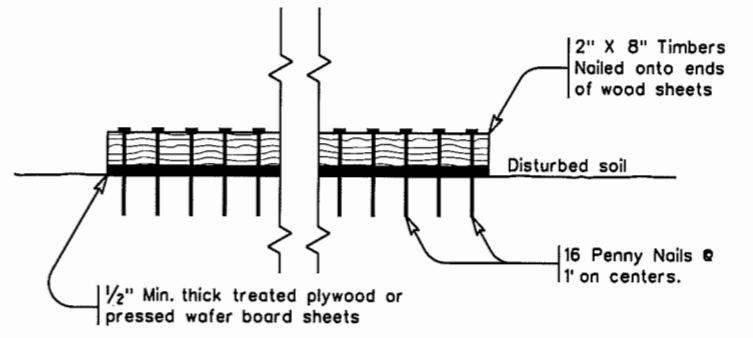
**CONSTRUCTION EXIT (TYPE 2)**

**GENERAL NOTES**

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



**PLAN**



**SECTION A-A**

**CONSTRUCTION EXIT (TYPE 3)**

**GENERAL NOTES**

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

**Texas Department of Transportation**  
 Design Division (Roadway)

TEMPORARY EROSION,  
 SEDIMENT AND WATER  
 POLLUTION CONTROL MEASURES  
 CONSTRUCTION EXITS  
 EC(3)-93

FILE#	EC393.DGN	DN#	HEJ	CK#	HEJ	DW#	BGD	CR#	
© TxDOT	JUNE 1993	DISTRICT		FEDERAL AID PROJECT				SHEET	60
REVISIONS		COUNTY		CONTROL SECT		JOB		HIGHWAY	