

RAMON GARCIA.....COUNTY JUDGE  
JOEL QUINTANILLA.....PRECINCT NO. 1  
HECTOR PALACIOS.....PRECINCT NO. 2  
JOE FLORES.....PRECINCT NO. 3  
OSCAR GARZA JR.....PRECINCT NO. 4

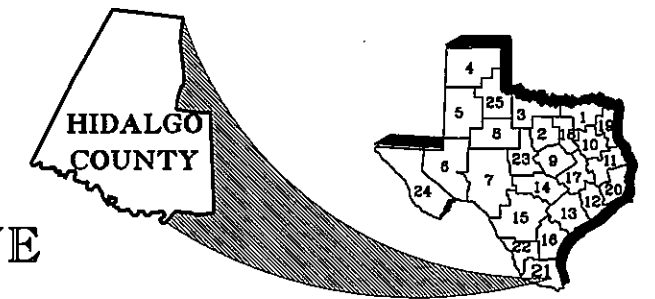
# HIDALGO COUNTY PRECINCT NO.2

## PENTECOSTAL SUBDIVISION

### CONSTRUCTION PLANS FOR BORDER

### COLONIA ACCESS PROJECT SECOND ROUND - COMPETITIVE

### 2010

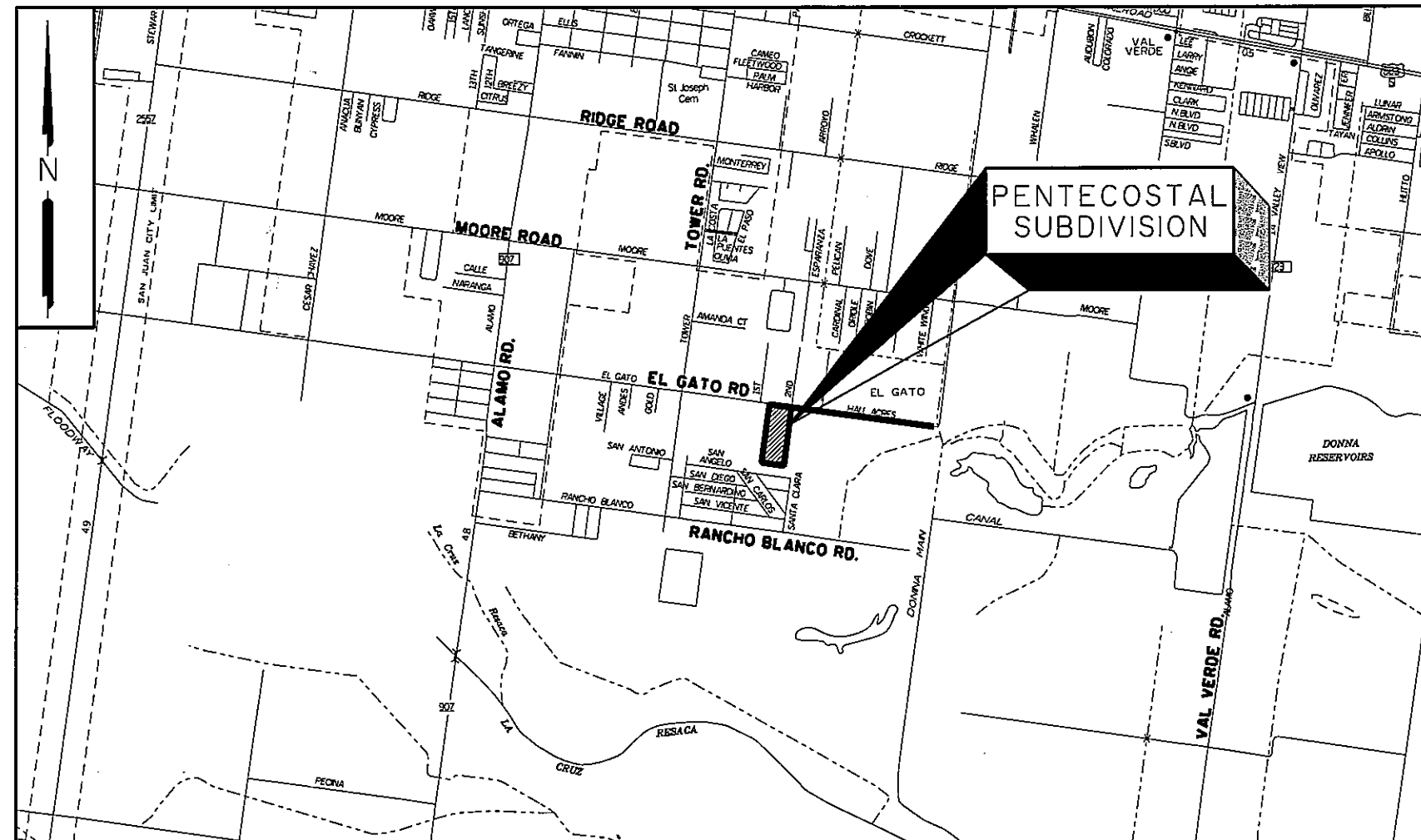


|                                |              |            | AREA OF DISTURBED SOIL (AC) |
|--------------------------------|--------------|------------|-----------------------------|
| CSJ: 1080-557-21 - LOPEZ DRIVE | 1,023.30 FT. | 0.19 MILES | 1.28 AC                     |
|                                |              |            |                             |
| TOTAL                          | 1,023.30 FT. | 0.19 MILES | 1.28 AC                     |

LIMITS: PENTECOSTAL SUBDIVISION (SEE PROJECT LAYOUTS)  
CONSTRUCTION OF LOCAL STREETS CONSISTING OF: GRADING, STRUCTURES,  
LIME TREATED SUBGRADE, FLEXIBLE BASE, ASPHALTIC CONCRETE PAVEMENT,  
CONC. CURB & GUTTER, STORM SEWER

#### INDEX OF SHEETS

SEE SHEET NO. 2



LOCATION MAP

|                                                       |                  |
|-------------------------------------------------------|------------------|
| APPROVAL<br>COLONIA ACCESS PROGRAM                    | DATE: 02-15-2010 |
| <i>[Signature]</i>                                    | Exec. Dir.       |
| APPROVAL<br>HIDALGO COUNTY COMMISSIONER PCT. 2        | DATE: 02/23/10   |
| <i>[Signature]</i>                                    | Comm. Pct. 2     |
| APPROVAL<br>HIDALGO COUNTY PLANNER                    | DATE: 2/25/11    |
| <i>[Signature]</i>                                    | PLAN ADM         |
| CONCURRENCE:<br>HIDALGO COUNTY DRAINAGE<br>DIST. No.1 | DATE: 2/27/11    |
| <i>[Signature]</i>                                    | Dist. Mgr.       |



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948

DATE: 1-19-11  
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

#### 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.

1-19-11

DATE

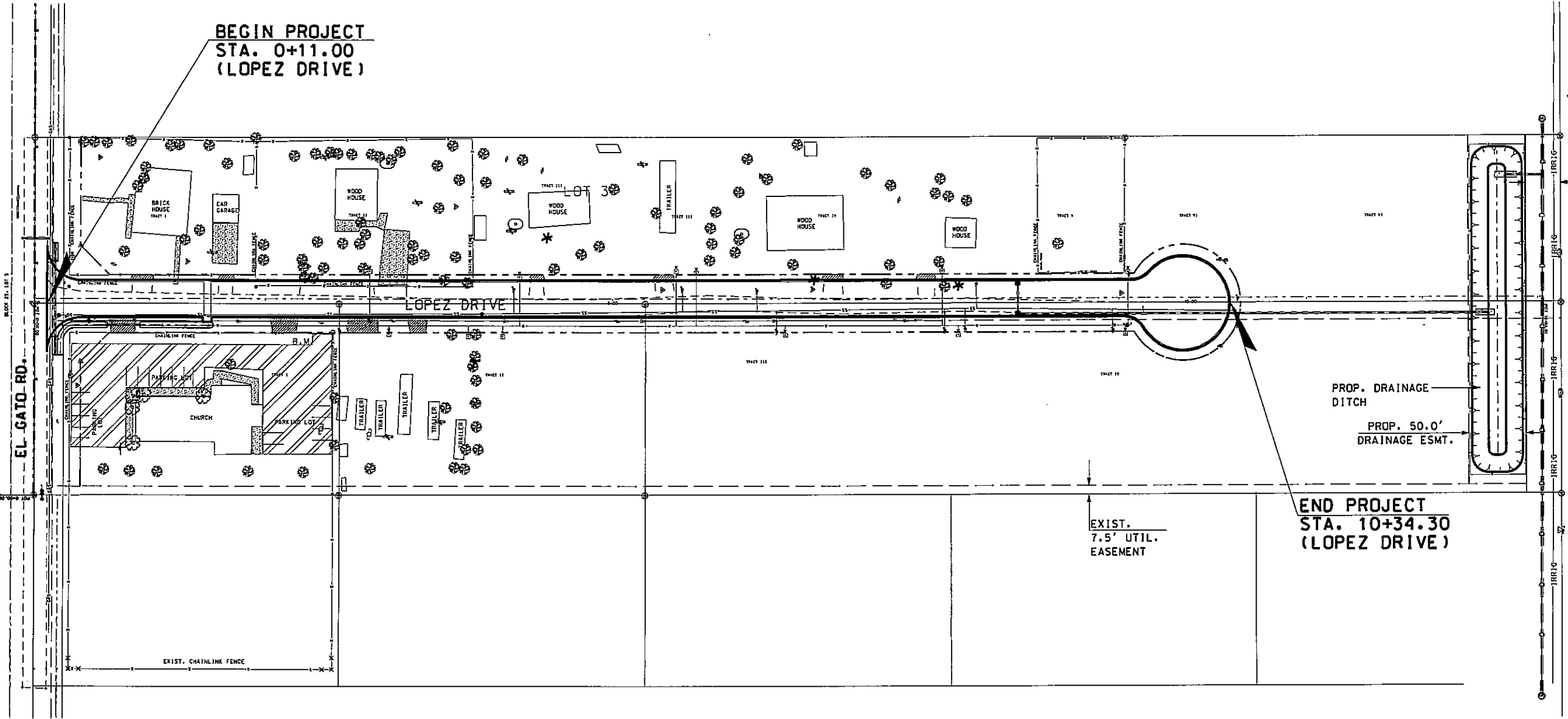
*[Signature]* P.E.  
RAMIRO GUTIERREZ, P.E.

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



SCALE: 1"=100'



Professional Engineers & Land Surveyors  
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FIRM No. 486

STATE OF TEXAS  
R. Gutierrez  
Professional Engineer  
No. 65948

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
DATE: 2-9-11  
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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
PROJECT LAYOUT

| FB. No.: | SURVEY BY: | DRAWN BY: | PREPARED BY: | CHECKED BY: | REVISION | DATE | BY | LOCATION |
|----------|------------|-----------|--------------|-------------|----------|------|----|----------|
|          |            |           |              |             |          |      |    |          |
|          |            |           |              |             |          |      |    |          |
|          |            |           |              |             |          |      |    |          |
|          |            |           |              |             |          |      |    |          |

SHEET No.  
3



| BASIS OF ESTIMATE (ROADWAY) |                                 |                    |                       |                              |                                        |                                   |                                        |                                         |                                                                              |            |                                        |                         |
|-----------------------------|---------------------------------|--------------------|-----------------------|------------------------------|----------------------------------------|-----------------------------------|----------------------------------------|-----------------------------------------|------------------------------------------------------------------------------|------------|----------------------------------------|-------------------------|
| CSJ                         | ROAD NAME                       | ITEM 100           | ITEM 110              | ITEM 110                     | ITEM 132                               | ITEM 204                          | FLEXIBLE BASE                          |                                         |                                                                              | PRIME COAT |                                        | ASPH. CONC. PAV.        |
|                             |                                 | ⊗                  |                       |                              |                                        | ⊗                                 | ITEM 247                               | ITEM 260                                |                                                                              | ITEM 310   |                                        |                         |
|                             |                                 | PREP. R.O.W. (STA) | EXCAV. (ROADWAY) (CY) | EXCAV. (DRAINAGE DITCH) (CY) | EMBANK (FINAL) (DENS CONT) (TY C) (CY) | SPRINK DUST CONTROL (MG/STA) (MG) | FLEX BASE (RD DEL) TY D GR 6 CL 4 (CY) | LIME TREAT. FOR BASE (8 in.) (NEW) (SY) | LIME FOR BASE TY "A" SLURRY "B" OR "C" SLURRY 1/2 BY WT. NEW AND SALV. (TON) | AREA (SY)  | ASPH MAT'L. (MC-30) (0.2 GAL/SY) (GAL) |                         |
|                             |                                 |                    |                       |                              |                                        |                                   |                                        |                                         |                                                                              |            |                                        | ITEM 340                |
|                             |                                 |                    |                       |                              |                                        |                                   |                                        |                                         |                                                                              |            |                                        | ACP (SURF.) TY "D" (SY) |
| 1080-557-21                 | LOPEZ DR. (0+11.00 TO 10+34.30) | 10.23              | 1898                  |                              | 8                                      | 40.92                             | 920                                    | 4,104                                   | 14.1                                                                         | 3,644.0    | 728.8                                  | 3,644.0                 |
|                             | EL GATO ROADSIDE                |                    |                       | 429                          |                                        |                                   |                                        |                                         |                                                                              |            |                                        |                         |
|                             | DETENTION SWALE                 |                    |                       | 1475                         |                                        |                                   |                                        |                                         |                                                                              |            |                                        |                         |
| TOTAL                       |                                 | 10.23              | 1898                  | 1904                         | 8                                      | 40.92                             | 920                                    | 4,104                                   | 14.1                                                                         | 3,644.0    | 728.8                                  | 3,644.0                 |

| CSJ         | ROAD NAME                       | ITEM 550<br>CHAINLINK<br>FENCE<br>(INSTALL)<br>(LF) |
|-------------|---------------------------------|-----------------------------------------------------|
|             |                                 | EST.                                                |
| 1080-557-21 | LOPEZ DR. (0+11.00 TO 10+34.30) | 665                                                 |
|             |                                 |                                                     |
|             |                                 |                                                     |
|             | TOTAL                           | 665                                                 |

| SUMMARY OF DRAINAGE STRUCTURES |                                 |                                       |                                                  |                                           |                                          |                                |      |                                       |                                       |                             |                             |                                  |                                               |                                  |                                  |                           |
|--------------------------------|---------------------------------|---------------------------------------|--------------------------------------------------|-------------------------------------------|------------------------------------------|--------------------------------|------|---------------------------------------|---------------------------------------|-----------------------------|-----------------------------|----------------------------------|-----------------------------------------------|----------------------------------|----------------------------------|---------------------------|
| CSJ                            | ROAD NAME                       | ITEM 400<br>STRUCT.<br>EXCAV.<br>(CY) | ITEM 400<br>CUT &<br>RESTORE<br>PAVEMENT<br>(LF) | ITEM 402<br>TRENCH<br>EXCAV.<br>PROT.(LF) | ITEM 432<br>CONC.<br>RIPRAP (4")<br>(CY) | ITEM 464<br>RCP SEWER (CL III) |      | ITEM 465<br>TY "A"<br>MANHOLE<br>(EA) | ITEM 465<br>TY "M"<br>MANHOLE<br>(EA) | ITEM 467<br>S.E.T.<br>(6:1) | ITEM 467<br>S.E.T.<br>(3:1) | ITEM 465<br>INLET TY "C"<br>(EA) | *ITEM 496<br>REMOVE<br>OLD STR.<br>(PIPE)(LF) | ITEM 481<br>10" PVC PIPE<br>(LF) | ITEM 481<br>12" PVC PIPE<br>(LF) | TIDEFLEX<br>VALVE<br>(EA) |
|                                |                                 | EST.                                  | EST.                                             | EST.                                      | EST.                                     | EST.                           | EST. | EST.                                  | EST.                                  | EST.                        | EST.                        | EST.                             | EST.                                          | EST.                             | EST.                             | EST.                      |
| 1080-557-21                    | LOPEZ DR. (0+11.00 TO 10+34.30) | 75                                    | 215                                              | 172                                       | 21.9                                     | 1028                           | -    | -                                     | 1                                     | 23                          | 4                           | 2                                | 386                                           | 30                               | 32                               | 1                         |
|                                |                                 |                                       |                                                  |                                           |                                          |                                |      |                                       |                                       |                             |                             |                                  |                                               |                                  |                                  |                           |
|                                |                                 |                                       |                                                  |                                           |                                          |                                |      |                                       |                                       |                             |                             |                                  |                                               |                                  |                                  |                           |
|                                | TOTAL                           | 75                                    | 215                                              | 172                                       | 21.9                                     | 1028                           | -    | -                                     | 1                                     | 23                          | 4                           | 2                                | 386                                           | 30                               | 32                               | 1                         |

| SUMMARY OF TEMPORARY EROSION SEDIMENTATION<br>AND ENVIRONMENTAL & CONTROLS |                                  |                                                         |                                                         |                                                        |                                                  |                                                  |                                                                |                                          |                                                    |
|----------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------|------------------------------------------|----------------------------------------------------|
| CSJ                                                                        | ROAD                             | ITEM 506<br>TEMPORARY SEDIMENT<br>CONTROL FENCE<br>(LF) | ITEM 506<br>CONST. EXITS<br>TY (2)<br>(INSTALL)<br>(SY) | ITEM 506<br>CONST. EXITS<br>TY (2)<br>(REMOVE)<br>(SY) | ITEM 164<br>CELL FIB. SEED<br>TEMP. WARM<br>(SY) | ITEM 164<br>CELL FIB. SEED<br>TEMP. COOL<br>(SY) | ITEM 164<br>CELL FIB. SEED<br>(PERM) (RURAL)<br>(CLAY)<br>(SY) | * ITEM 166<br>FERTILIZER<br>(*)<br>(TON) | Ⓢ ITEM 168<br>VEGETATED<br>WATERING<br>(*)<br>(MG) |
|                                                                            |                                  | EST.                                                    | EST.                                                    | EST.                                                   | EST.                                             | EST.                                             | EST.                                                           | EST.                                     | EST.                                               |
| 1080-557-21                                                                | LOPEZ DR. (10+11.00 TO 10+34.30) | 538                                                     | 84                                                      | 84                                                     | 1,017                                            | 1,017                                            | 2,034                                                          | 0.02                                     | 68.34                                              |
|                                                                            |                                  |                                                         |                                                         |                                                        |                                                  |                                                  |                                                                |                                          |                                                    |
|                                                                            |                                  |                                                         |                                                         |                                                        |                                                  |                                                  |                                                                |                                          |                                                    |
|                                                                            | TOTAL                            | 538                                                     | 84                                                      | 84                                                     | 1,017                                            | 1,017                                            | 2,034                                                          | 0.02                                     | 68.34                                              |

| CSJ         | ROAD NAME                       | ITEM 529<br>CONC CURB &<br>GUTTER (TY "A")<br>(BARRIER)<br>(LF) |
|-------------|---------------------------------|-----------------------------------------------------------------|
|             |                                 | EST.                                                            |
| 1080-557-21 | LOPEZ DR. (0+11.00 TO 10+34.30) | 2,050.00                                                        |
|             |                                 |                                                                 |
|             | TOTAL                           | 2,050.00                                                        |

| SUMMARY OF MAILBOXES<br>(ITEM 560) |                                 |                |                |                  |
|------------------------------------|---------------------------------|----------------|----------------|------------------|
| CSJ                                | ROAD NAME                       | SINGLE<br>(EA) | DOUBLE<br>(EA) | MULTIPLE<br>(EA) |
|                                    |                                 | EST            | EST            | EST              |
| 1080-557-21                        | LOPEZ DR. (0+11.00 TO 10+34.30) | -              | -              | 2                |
|                                    |                                 |                |                |                  |
|                                    |                                 |                |                |                  |
|                                    | TOTAL:                          | -              | -              | 2                |

| SUMMARY OF DRIVEWAYS AND TURNOUTS<br>(ITEM 530) |                                 |                    |                       |                    |                          |                               |               |          |
|-------------------------------------------------|---------------------------------|--------------------|-----------------------|--------------------|--------------------------|-------------------------------|---------------|----------|
| CSJ                                             | ROAD                            | DRIVEWAYS TY PRB-1 |                       |                    |                          | DRIVEWAYS<br>CONCRETE<br>(SY) | TURNOUTS (SY) |          |
|                                                 |                                 | (SY)               | FLEX BASE<br>(CY) (*) | MC-30<br>(GAL) (*) | ACP (SURF)<br>(TONS) (*) |                               | TY PRB1       | CONCRETE |
|                                                 |                                 | EST                | EST                   | EST                | EST                      | EST                           | EST           | EST      |
| 1080-557-21                                     | LOPEZ RD. (0+11.00 TO 10+34.30) | 179.0              | 19.8                  | 35.8               | 10.2                     | 14.0                          | -             | -        |
|                                                 | TOTAL                           | 179.0              | 19.8                  | 35.8               | 10.2                     | 14.0                          |               |          |

| SUMMARY OF<br>SANITARY SEWER<br>ADJUSTMENTS |                                 |                                                         |
|---------------------------------------------|---------------------------------|---------------------------------------------------------|
| CSJ                                         | ROAD NAME                       | ITEM 479<br>ADJUST<br>SANITARY<br>SEWER MANHOLE<br>(EA) |
|                                             |                                 | EST.                                                    |
| 1080-557-21                                 | LOPEZ DR. (0+11.00 TO 10+34.30) | 2                                                       |
|                                             |                                 |                                                         |
|                                             |                                 |                                                         |
|                                             | TOTAL                           | 2                                                       |

| SUMMARY OF "SMALL SIGNS"<br>ITEM (644) |                                 |            |
|----------------------------------------|---------------------------------|------------|
| CSJ                                    | ROAD                            | TOTAL (EA) |
|                                        |                                 | EST.       |
| 1080-557-21                            | LOPEZ DR. (0+11.00 TO 10+34.30) | 1          |
|                                        |                                 |            |
|                                        |                                 |            |
|                                        | TOTAL                           | 1          |

- Ⓢ FOR CONTRACTORS INFORMATION ONLY (NON-PAY)
- Ⓢ VEGETATIVE WATERING IS BASED ON A RATE OF 6780 GAL/AC/8 CYCLES.
- \* THE TONNAGE OF FERTILIZER IS BASED ON A RATE THAT WILL PROVIDE 100 LBS. OF NITROGEN PER ACRE AS IS BASED ON FERTILIZER CONTENT (N-P-K) OF 10-5-5,
- Ⓢ EST. WT. OF NEW & SALVAGE FLEXIBLE BASE = 3375 lb/cy (COMPACTED DRY WT.)  
EST. WT. OF SUBGRADE = 2970 LB/CY
- Ⓢ SUBSIDIARY TO VARIOUS BID ITEMS, NO DIRECT PAY.

**R. Gutierrez  
Engineering  
Corporation**

HIDALGO COUNTY PRECINCT NO.2  
PENTECOSTAL SUBDIVISION  
ESTIMATE & QUANTITIES

100

1

**LINE**

## NOTES

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SHEET No.

5

## LOPEZ ROAD - EARTHWORK TABLE

| Station | Material Name | End Areas<br>(sq. ft.) | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Multi<br>Factor | Mass<br>Ordinate |
|---------|---------------|------------------------|------------------------------------|----------------------------------|-----------------|------------------|
| 0+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 33.7                   | 0                                  | 0                                | 1.00            |                  |
|         | Fill          | 2.2                    | 0                                  | 0                                | 1.00            | 0                |
| 1+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 42.8                   | 71                                 | 71                               | 1.00            |                  |
|         | Fill          | 0.0                    | 2                                  | 2                                | 1.00            | 69               |
| 1+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 51.7                   | 87                                 | 87                               | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 156              |
| 2+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 42.2                   | 87                                 | 87                               | 1.00            |                  |
|         | Fill          | 0.2                    | 0                                  | 0                                | 1.00            | 243              |
| 2+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 51.1                   | 86                                 | 86                               | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 329              |
| 3+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 44.2                   | 88                                 | 88                               | 1.00            |                  |
|         | Fill          | 0.9                    | 1                                  | 1                                | 1.00            | 416              |
| 3+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 44.0                   | 82                                 | 82                               | 1.00            |                  |
|         | Fill          | 0.0                    | 1                                  | 1                                | 1.00            | 497              |
| 4+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 45.4                   | 83                                 | 83                               | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 580              |
| 4+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 34.6                   | 74                                 | 74                               | 1.00            |                  |
|         | Fill          | 0.3                    | 0                                  | 0                                | 1.00            | 654              |
| 5+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 34.0                   | 63                                 | 63                               | 1.00            |                  |
|         | Fill          | 0.8                    | 1                                  | 1                                | 1.00            | 716              |
| 5+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 45.0                   | 73                                 | 73                               | 1.00            |                  |
|         | Fill          | 0.0                    | 1                                  | 1                                | 1.00            | 788              |
| 6+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 50.4                   | 88                                 | 88                               | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 876              |
| 6+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 46.0                   | 89                                 | 89                               | 1.00            |                  |
|         | Fill          | 0.6                    | 1                                  | 1                                | 1.00            | 964              |
| 7+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 48.5                   | 87                                 | 87                               | 1.00            |                  |
|         | Fill          | 0.4                    | 1                                  | 1                                | 1.00            | 1050             |
| 7+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 61.6                   | 102                                | 102                              | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 1152             |
| 8+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 57.2                   | 110                                | 110                              | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 1262             |
| 8+50.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 61.6                   | 110                                | 110                              | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 1372             |
| 9+00.00 | DIRT          |                        |                                    |                                  |                 |                  |
|         | Excavation    | 62.3                   | 115                                | 115                              | 1.00            |                  |
|         | Fill          | 0.0                    | 0                                  | 0                                | 1.00            | 1487             |

| Station  | Material Name | End Areas<br>(sq. ft.) | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Mult<br>Factor | Mass<br>Ordinate |
|----------|---------------|------------------------|------------------------------------|----------------------------------|----------------|------------------|
| 9+40.90  | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 54.7                   | 89                                 | 89                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1576             |
| 9+50.00  | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 55.0                   | 18                                 | 18                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1594             |
| 9+60.00  | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 76.2                   | 24                                 | 24                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1618             |
| 9+70.00  | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 103.8                  | 33                                 | 33                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1651             |
| 9+80.00  | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 116.1                  | 41                                 | 41                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1692             |
| 9+90.00  | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 122.1                  | 44                                 | 44                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1736             |
| 10+00.00 | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 123.3                  | 45                                 | 45                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1781             |
| 10+10.00 | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 113.4                  | 44                                 | 44                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1825             |
| 10+20.00 | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 93.2                   | 38                                 | 38                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1863             |
| 10+30.00 | DIRT          |                        |                                    |                                  |                |                  |
|          | Excavation    | 52.8                   | 27                                 | 27                               | 1.00           |                  |
|          | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 1890             |

| * GRAND SUMMARY TOTALS                                |
|-------------------------------------------------------|
| Material Name      Unadjusted      Adjusted      Mult |
| Volumes      Volumes      Factor                      |
| (cu. yd.)      (cu. yd.)      -----                   |
| DIRT                                                  |
| Excavation      1898      1898      1.00              |
| Fill      8      8      1.00                          |

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DATE: 1-19-11  
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**HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
EARTHWORK TABLE**

[illegible]

**SHEET No.**  
**6**

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

# EL GATO ROAD - EARTHWORK TABLE

| Station                                 | Material Name | End Areas<br>(sq. ft.) | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Mult<br>Factor | Mass<br>Ordinate |
|-----------------------------------------|---------------|------------------------|------------------------------------|----------------------------------|----------------|------------------|
| 2+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 5.4                    | 0                                  | 0                                | 1.00           |                  |
|                                         | Fill          | 0.1                    | 0                                  | 0                                | 1.00           | 0                |
| 3+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 6.7                    | 11                                 | 11                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 11               |
| 3+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 7.0                    | 13                                 | 13                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 24               |
| 4+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 6.7                    | 13                                 | 13                               | 1.00           |                  |
|                                         | Fill          | 1.1                    | 1                                  | 1                                | 1.00           | 36               |
| SKIP STATION RANGE = 4+62.00 to 5+30.00 |               |                        |                                    |                                  |                |                  |
| 4+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 3.6                    | 6                                  | 6                                | 1.00           |                  |
|                                         | Fill          | 4.3                    | 3                                  | 3                                | 1.00           | 39               |
| 5+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 0.9                    | 0                                  | 0                                | 1.00           |                  |
|                                         | Fill          | 2.2                    | 0                                  | 0                                | 1.00           | 39               |
| SKIP STATION RANGE = 5+72.00 to 6+23.00 |               |                        |                                    |                                  |                |                  |
| 5+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 1.3                    | 2                                  | 2                                | 1.00           |                  |
|                                         | Fill          | 0.7                    | 2                                  | 2                                | 1.00           | 39               |
| 6+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 7.6                    | 1                                  | 1                                | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 40               |
| 6+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 8.9                    | 15                                 | 15                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 55               |
| 7+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 11.7                   | 19                                 | 19                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 74               |
| SKIP STATION RANGE = 7+35.00 to 8+03.00 |               |                        |                                    |                                  |                |                  |
| 7+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 11.8                   | 2                                  | 2                                | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 76               |
| 8+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 8.3                    | 10                                 | 10                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 86               |
| 8+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 8.5                    | 16                                 | 16                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 102              |
| 9+30.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 8.3                    | 15                                 | 15                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 117              |
| 9+80.00 DIRT                            |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 9.1                    | 16                                 | 16                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 133              |
| 10+30.00 DIRT                           |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 9.0                    | 17                                 | 17                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 150              |
| 10+80.00 DIRT                           |               |                        |                                    |                                  |                |                  |
|                                         | Excavation    | 6.5                    | 14                                 | 14                               | 1.00           |                  |
|                                         | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 164              |

| Station                                   | Material Name | End Areas<br>(sq. ft.) | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Mult<br>Factor | Mass<br>Ordinate |
|-------------------------------------------|---------------|------------------------|------------------------------------|----------------------------------|----------------|------------------|
| SKIP STATION RANGE = 11+00.00 to 11+75.00 |               |                        |                                    |                                  |                |                  |
| 11+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 10.2                   | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 170              |
| 11+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.3                    | 1                                  | 1                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 171              |
| 12+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.5                    | 9                                  | 9                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 180              |
| 12+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.4                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 186              |
| 13+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.2                    | 4                                  | 4                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 190              |
| 13+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.3                    | 7                                  | 7                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 197              |
| 14+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.7                    | 9                                  | 9                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 206              |
| SKIP STATION RANGE = 14+43.00 to 15+10.00 |               |                        |                                    |                                  |                |                  |
| 14+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 11.1                   | 4                                  | 4                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 210              |
| 15+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.1                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 215              |
| 15+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.4                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 220              |
| 16+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.5                    | 7                                  | 7                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 227              |
| 16+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.5                    | 7                                  | 7                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 234              |
| 17+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.3                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 239              |
| 17+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.1                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 244              |
| SKIP STATION RANGE = 17+96.00 to 18+50.00 |               |                        |                                    |                                  |                |                  |
| 18+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 12.9                   | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 249              |
| 18+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.6                    | 10                                 | 10                               | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 259              |
| 19+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.3                    | 8                                  | 8                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 267              |
| 19+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.8                    | 7                                  | 7                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 274              |

Professional Engineers & Land Surveyors  
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FIRM No. 486

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65548  
DATE: 1-19-11  
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  
PENTECOSTAL SUBDIVISION  
EARTHWORK TABLE  
LOCATION

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

SHEET No.  
7

EL GATO ROAD - EARTHWORK TABLE

| Station                                   | Material Name | End Areas<br>(sq. ft.) | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Mult<br>Factor | Mass<br>Ordinate |
|-------------------------------------------|---------------|------------------------|------------------------------------|----------------------------------|----------------|------------------|
| 20+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.6                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 280              |
| 20+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.2                    | 8                                  | 8                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 288              |
| SKIP STATION RANGE = 21+27.00 to 21+85.00 |               |                        |                                    |                                  |                |                  |
| 21+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.8                    | 9                                  | 9                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 297              |
| 21+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.1                    | 0                                  | 0                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 297              |
| 22+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.8                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 303              |
| 22+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.7                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 309              |
| 23+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.2                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 314              |
| 23+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.8                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 320              |
| 24+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 1.3                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.1                    | 0                                  | 0                                | 1.00           | 325              |
| 24+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 6.1                    | 7                                  | 7                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 332              |
| 25+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.4                    | 11                                 | 11                               | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 343              |
| 25+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.5                    | 9                                  | 9                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 352              |
| 26+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 3.0                    | 7                                  | 7                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 359              |
| 26+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.7                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 364              |
| 27+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.2                    | 5                                  | 5                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 369              |
| 27+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.8                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 375              |
| 28+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 4.4                    | 8                                  | 8                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 383              |
| 28+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.5                    | 6                                  | 6                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 389              |

| Station                                   | Material Name | End Areas<br>(sq. ft.) | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Mult<br>Factor | Mass<br>Ordinate |
|-------------------------------------------|---------------|------------------------|------------------------------------|----------------------------------|----------------|------------------|
| 29+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.7                    | 8                                  | 8                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 397              |
| 29+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 6.9                    | 12                                 | 12                               | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 409              |
| SKIP STATION RANGE = 29+98.00 to 32+00.00 |               |                        |                                    |                                  |                |                  |
| 30+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.7                    | 4                                  | 4                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 413              |
| 30+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.7                    | 0                                  | 0                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 413              |
| 31+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 5.1                    | 0                                  | 0                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 413              |
| 31+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.2                    | 0                                  | 0                                | 1.00           |                  |
|                                           | Fill          | 0.5                    | 0                                  | 0                                | 1.00           | 413              |
| 32+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 2.9                    | 3                                  | 3                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 416              |
| 32+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 1.0                    | 4                                  | 4                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 420              |
| 33+30.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 0.3                    | 1                                  | 1                                | 1.00           |                  |
|                                           | Fill          | 0.3                    | 0                                  | 0                                | 1.00           | 421              |
| 33+80.00 DIRT                             |               |                        |                                    |                                  |                |                  |
|                                           | Excavation    | 1.8                    | 2                                  | 2                                | 1.00           |                  |
|                                           | Fill          | 0.0                    | 0                                  | 0                                | 1.00           | 423              |

| G R A N D S U M M A R Y T O T A L S |                                    |                                  |                |  |
|-------------------------------------|------------------------------------|----------------------------------|----------------|--|
| Material Name                       | Unadjusted<br>Volumes<br>(cu. yd.) | Adjusted<br>Volumes<br>(cu. yd.) | Mult<br>Factor |  |
| DIRT                                |                                    |                                  |                |  |
| Excavation                          | 429                                | 429                              | 1.00           |  |
| * Fill                              | 6                                  | 6                                | 1.00           |  |

\* NOTE: DITCH EMBANKMENT SHALL BE SUBSIDIARY TO ITEM 110 "EXCAVATION CHANNEL".

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DATE: 1-19-11  
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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
EARTHWORK TABLE

LOCATION

BY

DATE

REVISION

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

SHEET No.  
8

[illegible]

**R. Guierrez**  
**Engineering**  
**Corporation**

*Professional Engineers & Land Surveyors*

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(TEL) 956 782-2557 • (FAX) 956 782-2558  
FIRM No. 486

**HIDALGO COUNTY PRECINCT NO. 2**

**PENTECOSTAL SUBDIVISION**

**PROJECT QUANTITIES**

|              |
|--------------|
| SURVEY BY:   |
| DRAWN BY:    |
| PREPARED BY: |
| CHECKED BY:  |

**SHEET No.**  
**9**

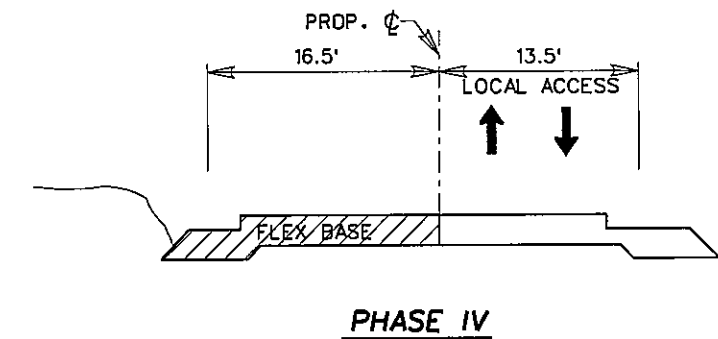
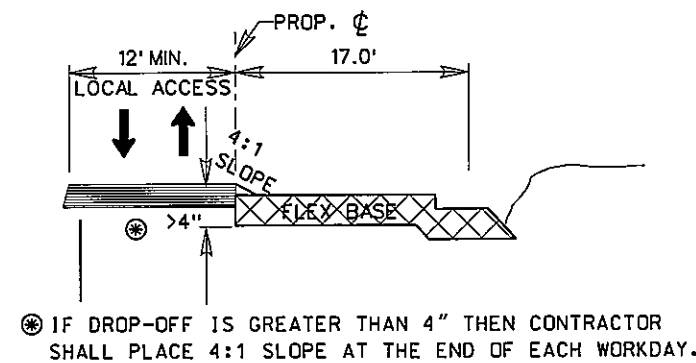
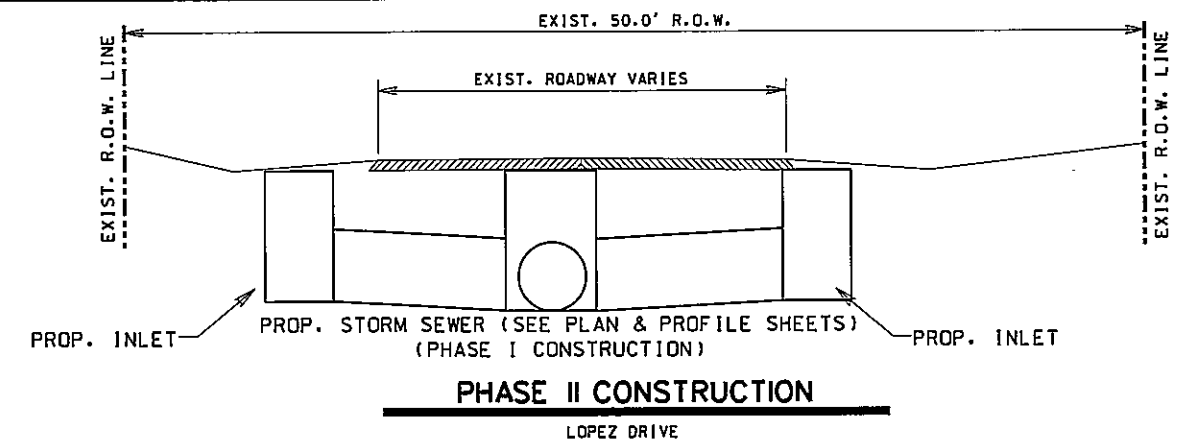
# GENERAL NOTES:

- 1.) THE CONTRACTOR SHALL PROVIDE PROJECT BARRICADES & CONSTRUCTION WARNING SIGNS THRU OUT PROJECT WHICH COINCIDE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. THE CONTRACTOR MAY SUBMIT A TRAFFIC CONTROL PLAN FOR THE APPROVAL OF THE PROJECT ENGINEER.
- 2.) THE CONTRACTOR SHALL TAKE ALL OF THE PRECAUTIONS IN DEALING WITH EXISTING UTILITIES AND SERVICES.
- 3.) THE CONTRACTOR SHALL MAINTAIN INGRESS AND EGRESS TO ALL PROPERTY OWNERS DURING THE VARIOUS PHASES OF CONSTRUCTION. CONTRACTOR TO COMMUNICATE WITH PROPERTY OWNERS AND KEEP THEM ADVISED AS TO THE ANTICIPATED CONSTRUCTION OPERATIONS.
- 4.) THE CONTRACTOR SHALL PROVIDE A SIX (6) INCH COMPACTED CALICHE SURFACE ROAD AT ALL TIMES FOR THE LOCAL TRAFFIC.
- 5.) EXCAVATED MATERIAL SHALL BE HANDLED BY THE CONTRACTOR IN SUCH A WAY THAT IT SHALL NOT BLOCK DRAINAGE.
- 6.) STOP SIGNS OF INTERSECTING STREETS SHALL BE ADJUSTED DURING THE VARIOUS CONSTRUCTION PHASES.
- 7.) MAIL BOXES SHALL BE ADJUSTED AND MAINTAINED BY THE CONTRACTOR DURING THE VARIOUS CONSTRUCTION PHASES.
- 8.) THE CONSTRUCTION SEQUENCE MAY BE ADJUSTED TO ALLOW FOR THE EXCAVATION OF THE FULL ROADWAY WIDTH. HOWEVER, THE CONTRACTOR SHALL PROOF-ROLL THE EXCAVATED SUBGRADE, REPAIR ANY SOFT SPOTS, AND PLACE A MINIMUM 6" CALICHE BASE MATERIAL ON THE SUBGRADE PRIOR TO THE END OF THE WORKING DAY. NO UNCOVERED RAW SUBGRADE SHALL BE ALLOWED AT THE END OF THE WORKING DAY.

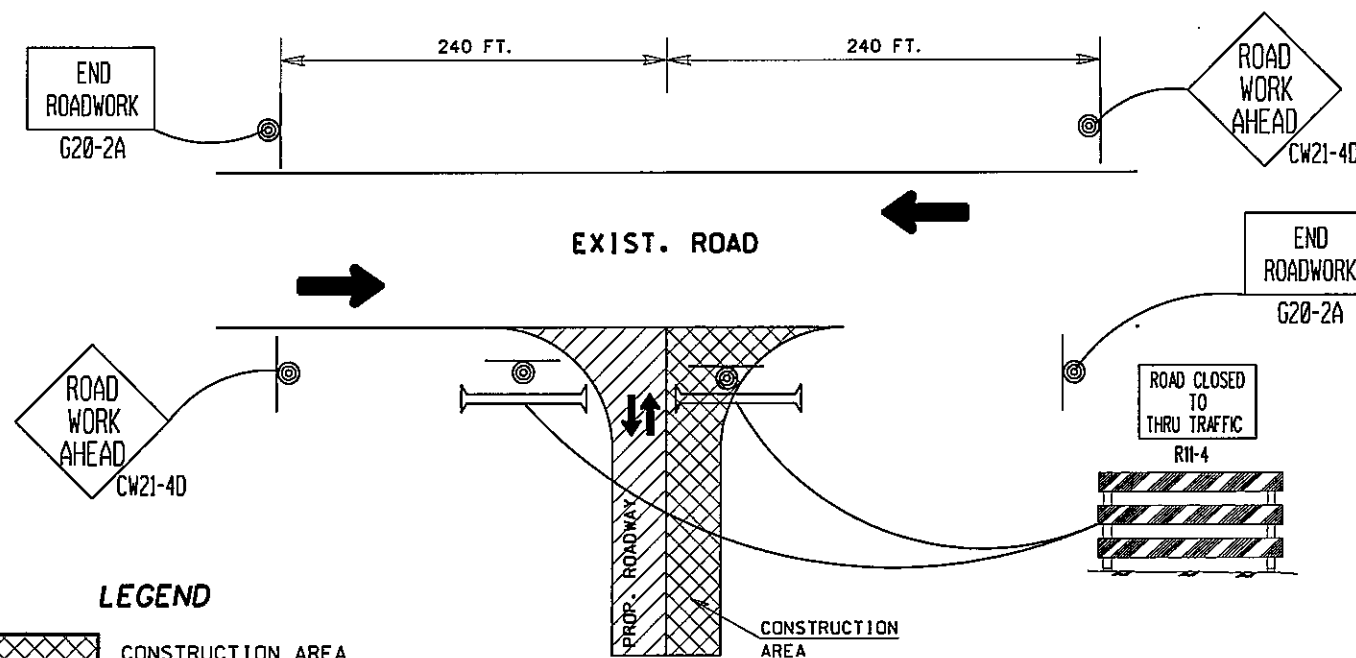
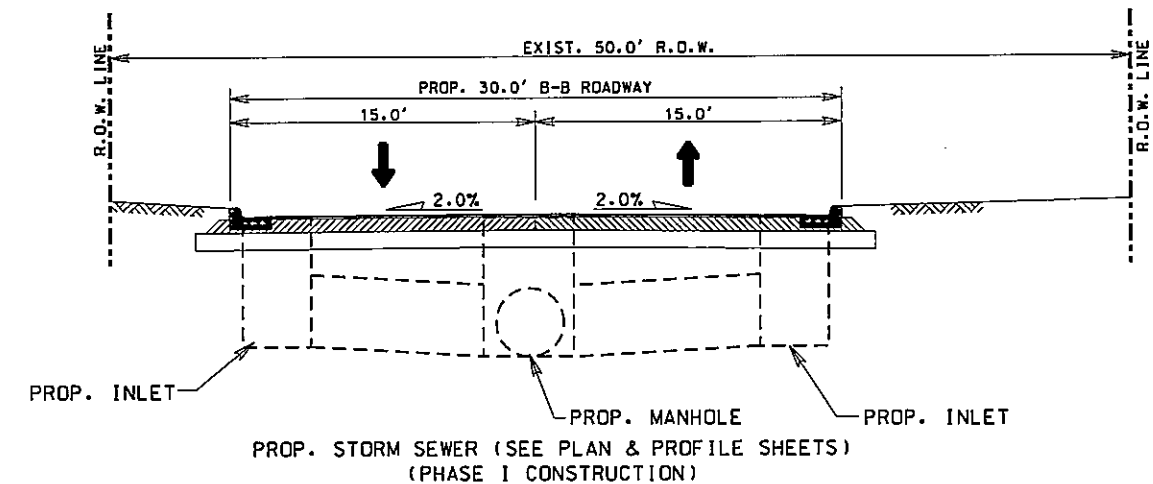
## SEQUENCE OF CONSTRUCTION:

### PHASE PROJECT

- 1.) INSTALL ALL NECESSARY TRAFFIC CONTROL DEVICES.
- 2.) INSTALL PROPOSED STORM SEWER SYSTEM.
- 3.) CONSTRUCT BASE COURSE ON ONE-HALF OF STREET AS SHOWN IN DETAIL.
- 4.) CONSTRUCT OTHER HALF OF BASE COURSE ON STREET AS SHOWN ON DETAIL.
- 5.) CONSTRUCT CURB & GUTTER.
- 6.) CONSTRUCT ASPHALTIC CONCRETE SURFACE.



### PHASE III



## LEGEND

- CONSTRUCTION AREA PHASE II
- CONSTRUCTION AREA PHASE III

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R. Gutierrez  
Engineering Corporation

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HIDALGO COUNTY PRECINCT No. 2  
PENTECOSTAL SUBDIVISION  
TRAFFIC CONTROL PLAN

LOCATION

BY

DATE

REVISION

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DRAWN BY:  
PREPARED BY:  
CHECKED BY:

**SHEET No.**  
10

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1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

Texas Department of Transportation  
Traffic Operations Division - TE  
Phone (512) 416-3134

Complete Work Zone Traffic Control Devices List (CWZTC)  
<http://www.txdot.gov/publications/traffic.htm>

Texas Manual on Uniform Traffic Control Devices (TMUTCD)  
<http://www.txdot.gov/publications/traffic.htm>

**Standard Highway Sign Designs for Texas (SHSD)**  
<http://www.txdot.gov/publications/traffic.htm>

**Trafic Engineering Standard Sheets**  
<http://www.txdot.gov/business/disclaim.htm>

**Material Producer List**  
<http://www.isdol.org/business/producer%20list.htm>

Department of Material Specifications (DMS)  
<http://www.fdot.gov/services/construction/material-specifications/>

Roadway Design Manual  
<http://www.fdot.gov/services/general-services/manuals.htm>



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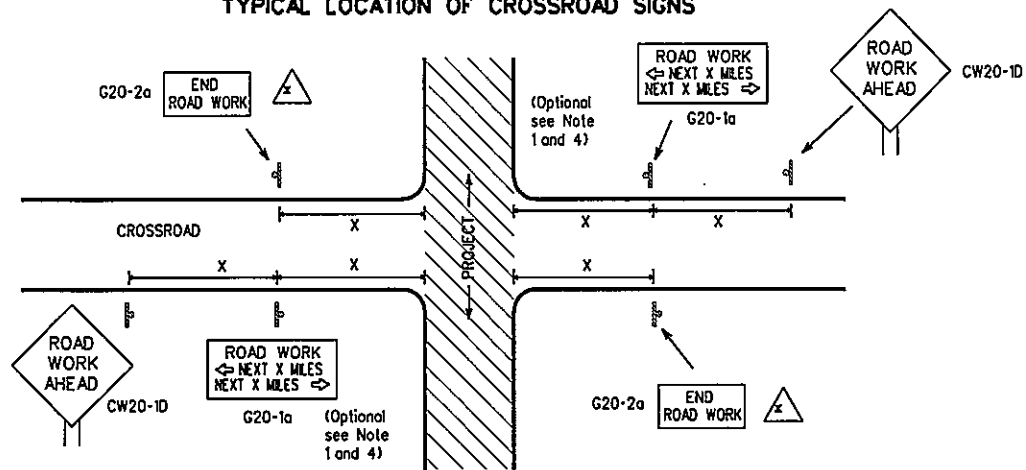
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|                                              |  | CONT        | SECT | JOB       |           | HIGHWAY   |
|                                              |  |             |      |           |           |           |
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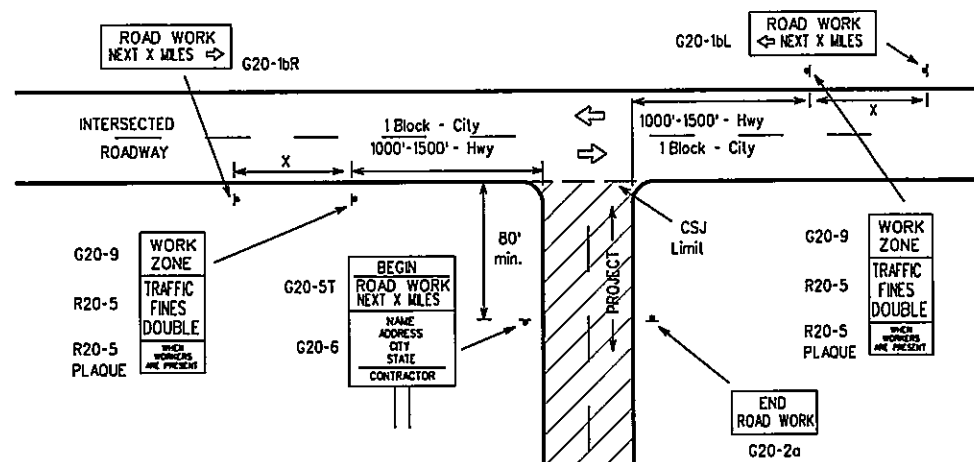
### TYPICAL LOCATION OF CROSSROAD SIGNS



△ May be mounted on back of CW20-1D sign with approval of engineer. (See note 2 below)

- 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 (CW20-1D) sign mounted back to back with the reduced size 36" x 18" END ROAD WORK (G20-2a) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). 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 at high volume 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.

### T-INTERSECTION



#### CSJ LIMITS AT T-INTERSECTION

- 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.
- If construction closes the road at a T-intersection the Contractor shall place the G20-6 "Contractor Name" sign behind the Type III Barricades for the road closure (see BC(1D) also). The G20-1bL and G20-1bR signs shall be replaced by the detour signing called for in the plans.

### TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

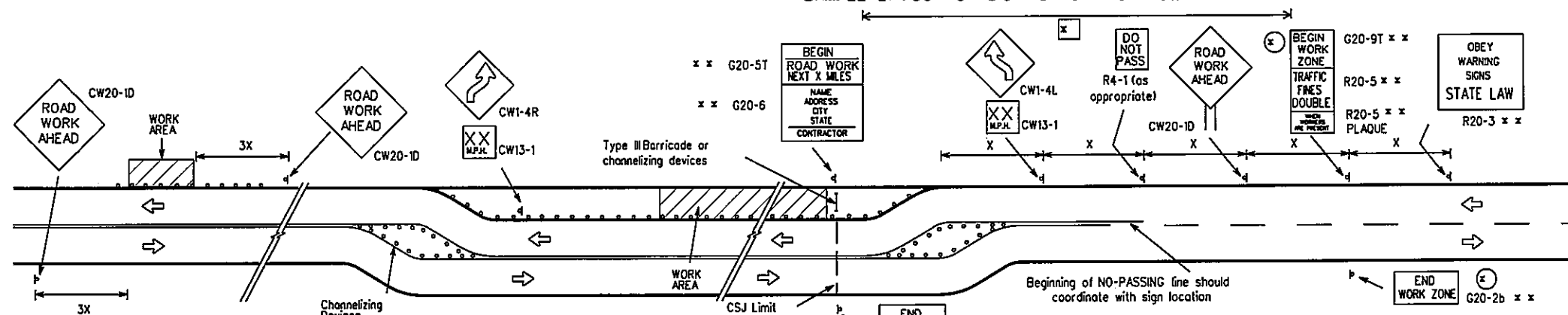
| Sign Number or Series                 | SIZE              |                    | SPACING          |                                |
|---------------------------------------|-------------------|--------------------|------------------|--------------------------------|
|                                       | Conventional Road | Expressway/Freeway | Posted Speed MPH | Sign Spacing "X" Feet (Apprx.) |
| CW20                                  | 48" x 48"         | 48" x 48"          | 30               | 120                            |
| CW21                                  |                   |                    | 35               | 160                            |
| CW22                                  |                   |                    | 40               | 240                            |
| CW23                                  |                   |                    | 45               | 320                            |
| CW25                                  |                   |                    | 50               | 400                            |
| CW1, CW2, CW7, CW8, CW9, CW11, CW14   | 36" x 36"         | 48" x 48"          | 55               | 500 <sup>2</sup>               |
| CW3, CW4, CW5, CW6, CW8-3, CW10, CW12 | 48" x 48"         | 48" x 48"          | 60               | 600 <sup>2</sup>               |
|                                       |                   |                    | 65               | 700 <sup>2</sup>               |
|                                       |                   |                    | 70               | 800 <sup>2</sup>               |
|                                       |                   |                    | 75               | 900 <sup>2</sup>               |
|                                       |                   |                    | 80               | 1000 <sup>2</sup>              |
|                                       |                   |                    | *                | *                              |

- \* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.
- △ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

#### General Notes:

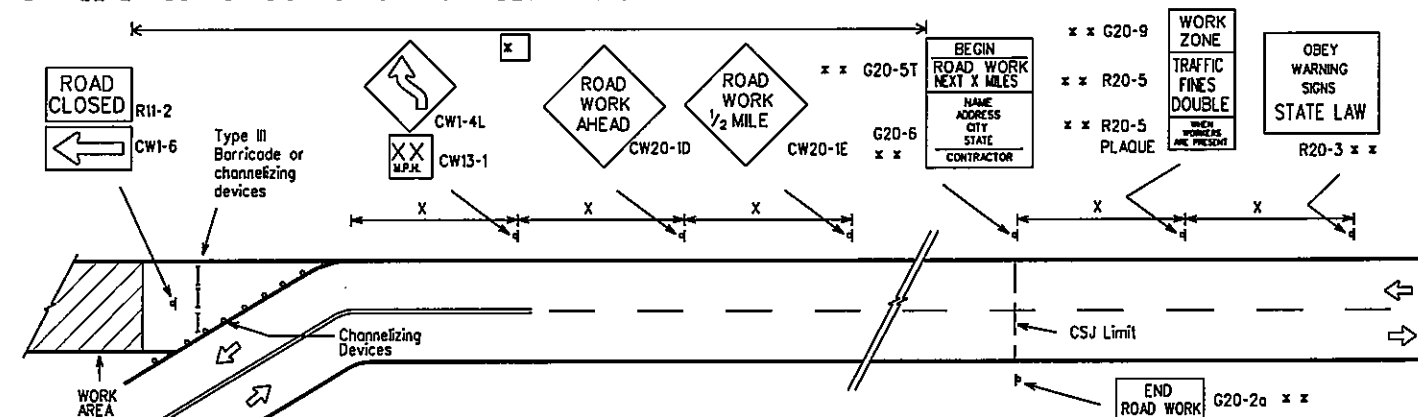
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" ROAD WORK AHEAD (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

### WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work areas, the Engineer/Inspector should ensure additional Road Work Ahead (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

### SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



#### NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and G20-5T sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The G20-9T and G20-2b shall be used when advance signs are required outside the CSJ limits. They inform the motorist of entering or leaving a work zone where traffic fines may double if workers are present.
- Required CSJ Limit signing. See Note 10 on BC(1).
- Area for placement of "ROAD WORK AHEAD" sign and other signs or devices as called for on the Traffic Control Plan.

#### LEGEND

- Sign
- Channelizing Devices
- I Type III Barricade
- X See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.



R20-3  
Legend/Border - Black  
Background - White

Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION PROJECT LIMIT STANDARD

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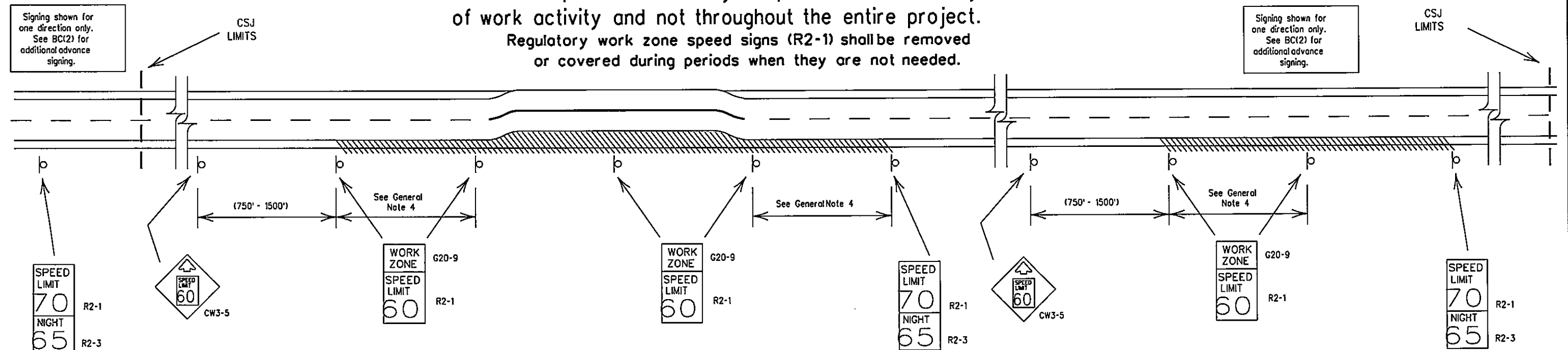
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| © TxDOT 11-4-02 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



## 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, when approved as described above, should be posted and visible to the motorist when work activity is present. 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, when 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. When work activity is not present, signs shall be removed or covered. (See Removing or Covering on BC(4)).

## GENERAL NOTES:

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of work zone 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 (See "Reflective Sheeting" on BC(4)).
- Fabrication, erection and maintenance of the CW3-5 sign, G20-9 plaque and the R2-1 and R2-3 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 include but are not limited to:
  - A. Law enforcement.
  - B. Flagger stationed next to sign.
  - C. Portable changeable message sign (PCMS).
  - D. Low-power (drone) radar transmitter.
  - E. Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.

Texas Department of Transportation  
Traffic Operations Division

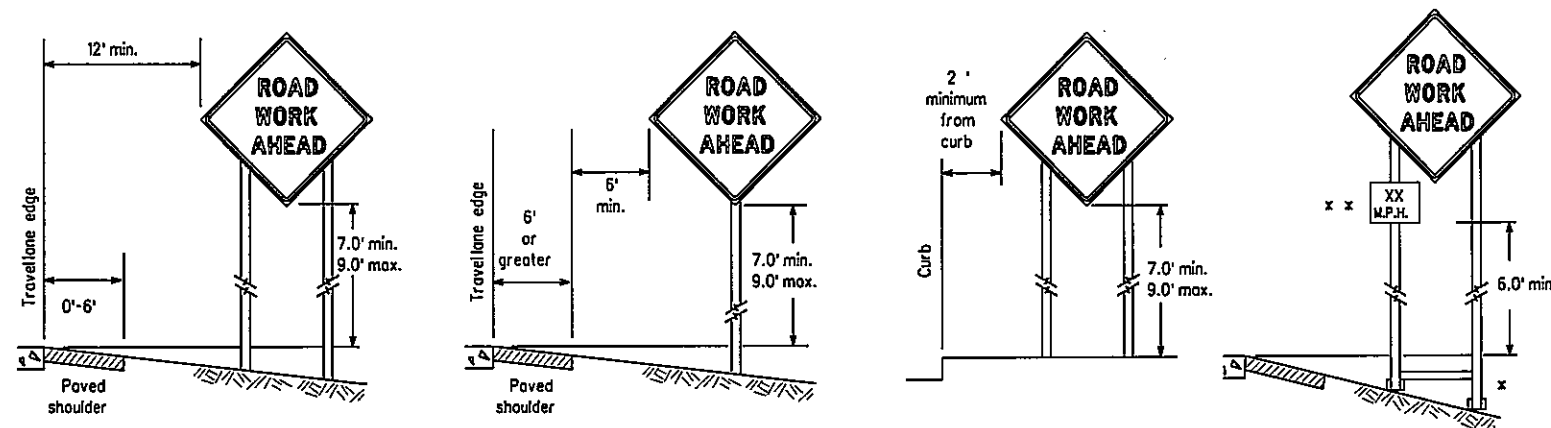
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT STANDARD

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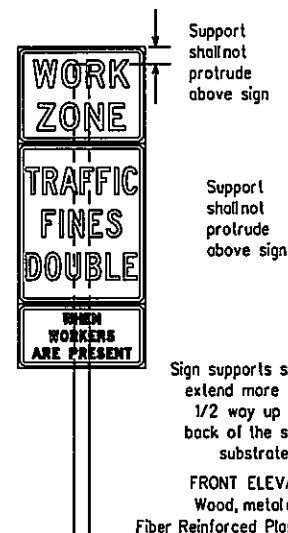
## TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



\* When placing skid supports on uneven 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.

\* \* When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

## ATTACHMENT FOR SIGN SUPPORTS

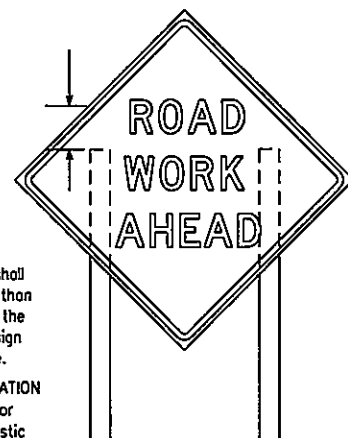


Support shall not protrude above sign

Support shall not protrude above sign

Sign supports shall extend more than 1/2 way up the back of the sign substrate.

FRONT ELEVATION  
Wood, metal or  
Fiber Reinforced Plastic

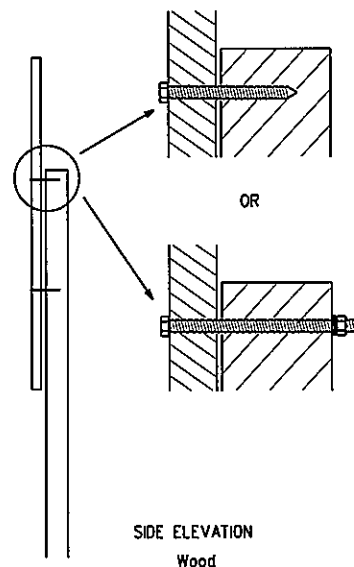


Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

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.

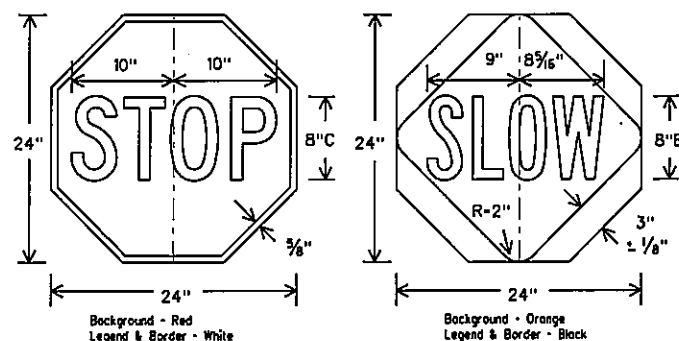
Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.



SIDE ELEVATION  
Wood

## STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectORIZED.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



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

1. 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.
2. 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.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. 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.
6. 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.

## GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
  2. Wooden sign posts shall be painted white.
  3. Barricades shall NOT be used as sign supports.
  4. Nails shall NOT be used to attach signs to any support.
  5. 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.
  6. 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.
  7. 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 the Engineer can verify the correct procedures are being followed.
  8. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
  9. 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 inch.
  10. 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 Uniform Traffic Control Devices" Part 6)**
1. The types of sign supports, sign mounting height, 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 the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
    - a. Long-term stationary - work that occupies a location more than 3 days.
    - b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
    - c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
    - d. Short, duration - work that occupies a location up to 1 hour.
    - e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

## SIGN MOUNTING HEIGHT

1. The bottom of Long-term/intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. 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.
3. Long-term/intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday, or raised to appropriate Long-term/intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

## SIZE OF SIGNS

1. 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(12).
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

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations 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.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. 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 face.

## REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(11).
2. White sheeting, meeting the requirements of DMS-8300 Type C (High Specific Intensity), shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type E (Fluorescent Prismatic), shall be used for rigid signs with orange backgrounds.

## SIGN LETTERS

1. 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

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. 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.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face. These materials can damage the retroreflectivity of sheeting.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

## SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact.
6. Rubber (such as tire inner tubes) shall NOT be used for sandbags.
7. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
8. 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.
9. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.



## BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES STANDARD

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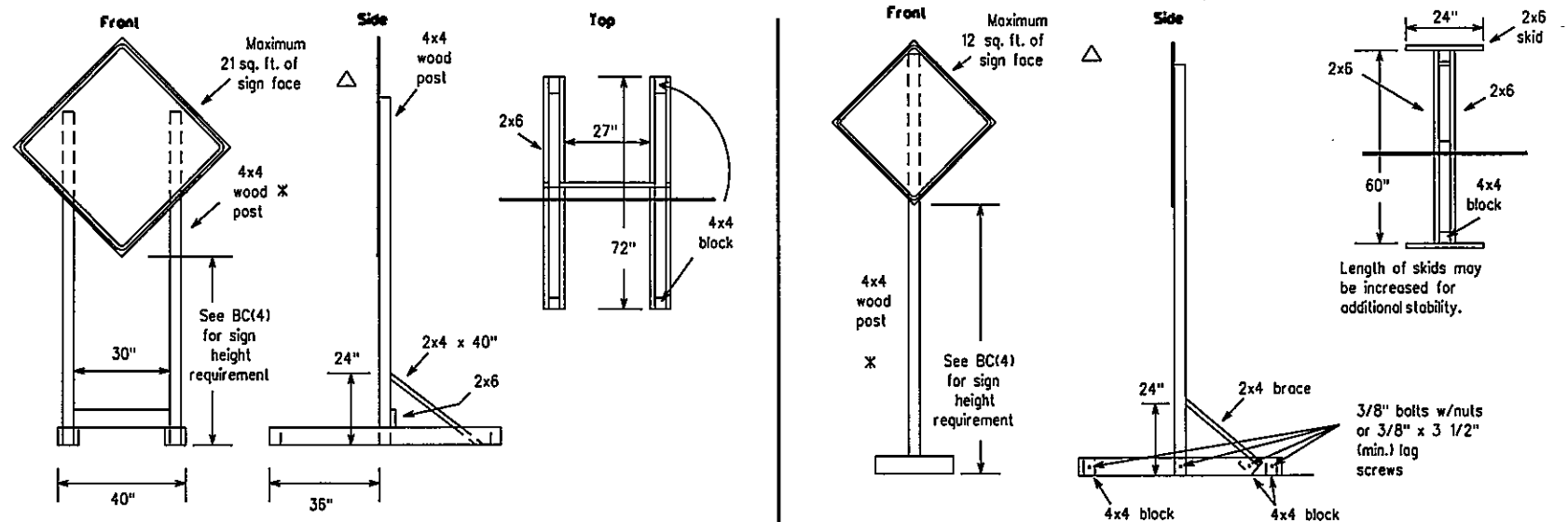
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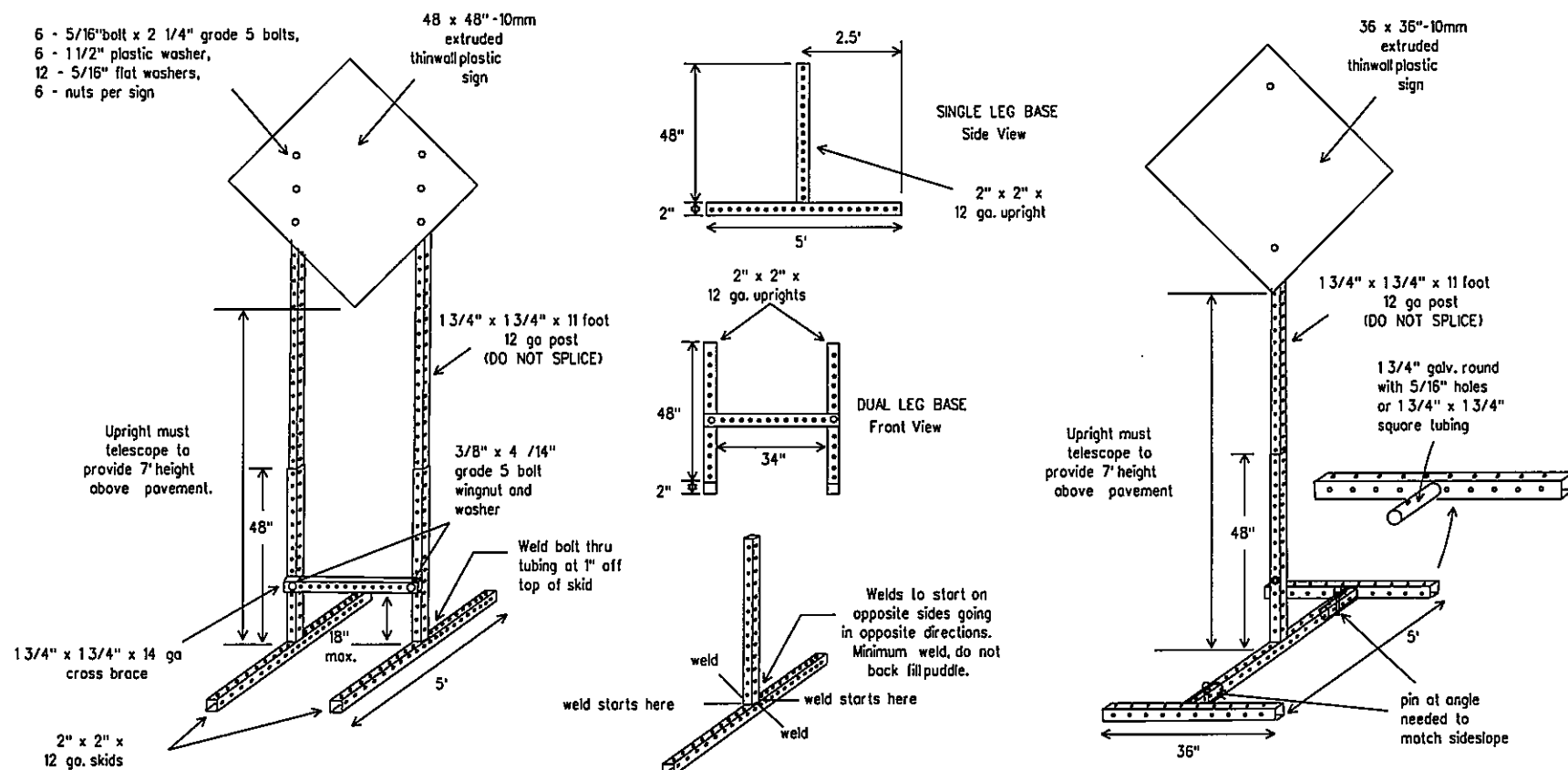
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## SKID MOUNTED WOOD SIGN SUPPORTS

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

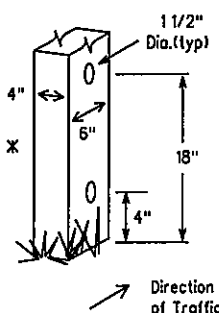


## SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



### WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).



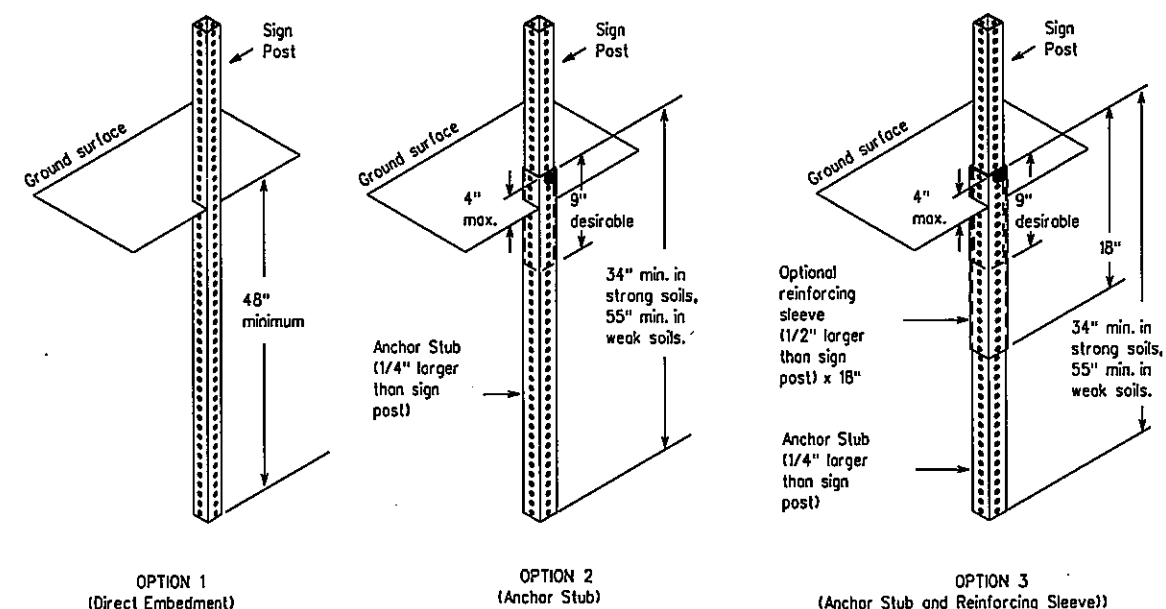
### WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

| Nominal Post Size | Maximum No. of Posts | Maximum 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                      |

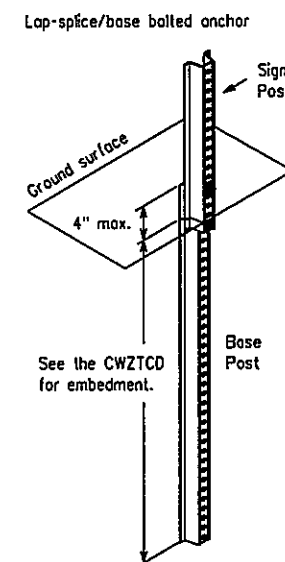
## GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCO 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



### WING CHANNEL



### GENERAL NOTES

- Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
- More details of approved Long/Intermediate and Short Term supports can be found on the CWZTCO list. See BC(1) for website location.
- No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCO List.
- 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."

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

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

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## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD

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(The Engineer may approve other messages not specifically covered here.)

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DATE: \_\_\_\_\_  
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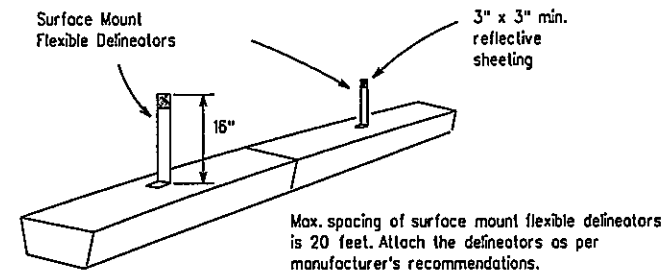
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**RAFFIC BARRIER (CTB)**

The diagram shows a cross-section of a concrete barrier with a T-shaped profile. Three circular reflectors are mounted on the top surface. Arrows point from the text "Barrier Reflectors" to these reflectors.

- LOW PROFILE CONCRETE BARRIER (LPCB)**



**DELINEATION OF END TREATMENTS**

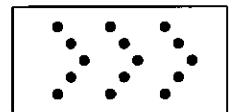
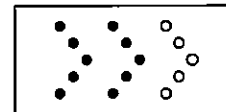
OM-1 or OM-3

Install a minimum of 3 Barrier Reflectors as per manufacturer's recommendations.

|             |                     |                                 |
|-------------|---------------------|---------------------------------|
|             | APPROACHING TRAFFIC |                                 |
|             | BOTH SIDES          | ONE SIDE                        |
| DELINEATION | OM-1                | OM-3<br>or<br>Vertical<br>Panel |

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.

### Sequential Chevron



1. 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.
2. 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.
3. 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.
4. The Flashing Arrow Panel should be able to display the following symbols:

- ## 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 OR GUARDRAIL.

11. The Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Panel SHALL NOT BE USED to laterally shift traffic.
13. A fullmatrix PCMS may be used to simulate a Flashing Arrow Panel provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted arrow panels should be 7 feet from roadway to bottom of panel.

A diagram showing a mechanical assembly. A circular component, labeled 'C', is positioned on the left. To its right is a rectangular component, labeled 'O'. The circular component is partially enclosed by a dashed rectangular box. The rectangular component is positioned below the circular component and to the right of the dashed box.

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

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a 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.
4. Type-C and Type D 360 degree 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".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. 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.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D 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.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. 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.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. 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.
6. 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).
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. 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.
4. Refer to the CWZTCD for a list of approved TMAs.
5. TMAs are required on freeways unless otherwise noted in the plans.
6. A TMA should be used anytime that it can be positioned approximately 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
7. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.



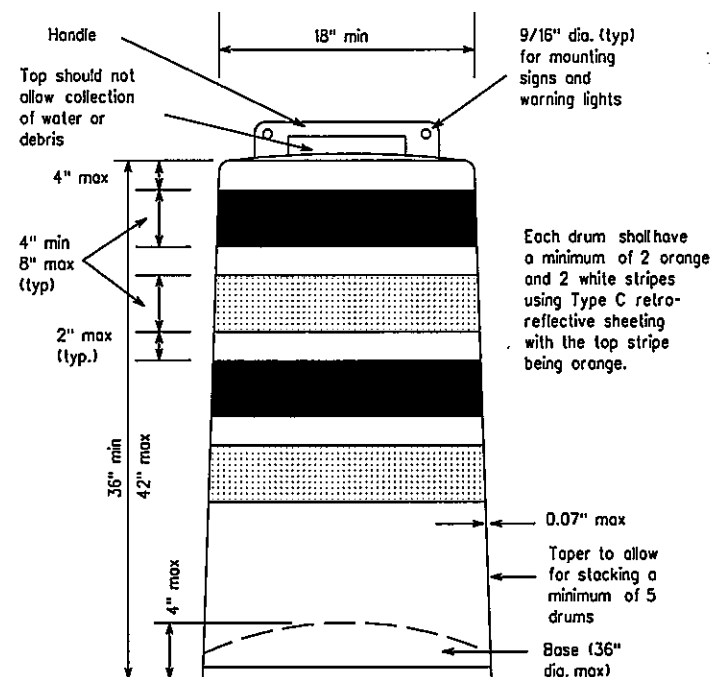
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Traffic Operations Division

# BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR STANDARD

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BC(7)-07

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### GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. 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).
5. 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.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

## GENERAL DESIGN REQUIREMENTS

Prequalified plastic drums shall meet the following requirements:

1. 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.
2. 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.
3. 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.
4. 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.
5. 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, warning reflector unit or approved compliant sign.
6. 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.
7. 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.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.

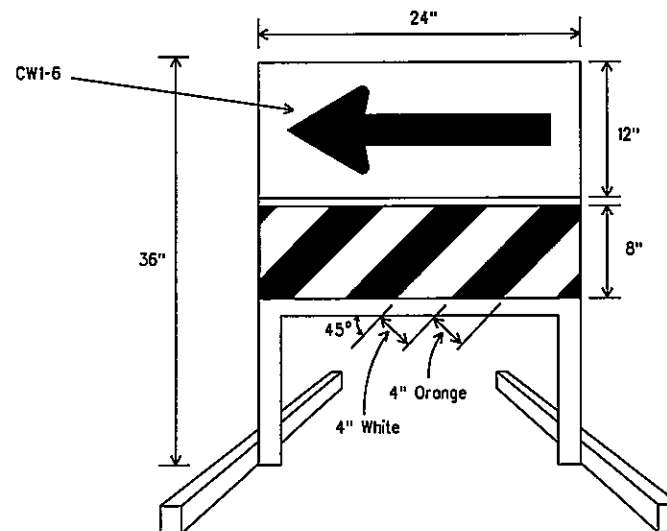
9. Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.
10. Drum and base shall be marked with manufacturer's name and model number.

### RETROREFLECTIVE SHEETING

1. 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) retroreflective sheeting shall be supplied unless otherwise specified in the plans.
2. 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, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

## BALLAST

1. 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.
2. 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.
3. 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.
4. 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.
5. Ballast shall not be placed on top of drums.
6. Adhesives may be used to secure base of drums to pavement.

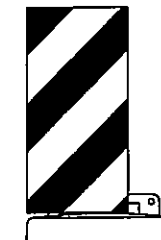


**DIRECTION INDICATOR BARRICADE**

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type E Fluorescent Prismatic Orange above a rail with type C High Specific Intensity retroreflective sheeting in alternation 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CW2TCD List. Ballast shall be as approved by the manufacturers instructions.



18" x 24" Sign  
(Maximum Sign Dimension)  
Chevron CW1-8, Opposing Traffic Lane  
Divider, 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 Metalsign  
substrates shall NOT be used on  
plastic drums**

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

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. 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, "Sign Face Material," unless otherwise specified in the plans.
3. 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.
4. 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.
5. Signs shall be installed using a 1/2 inch ball (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.



# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

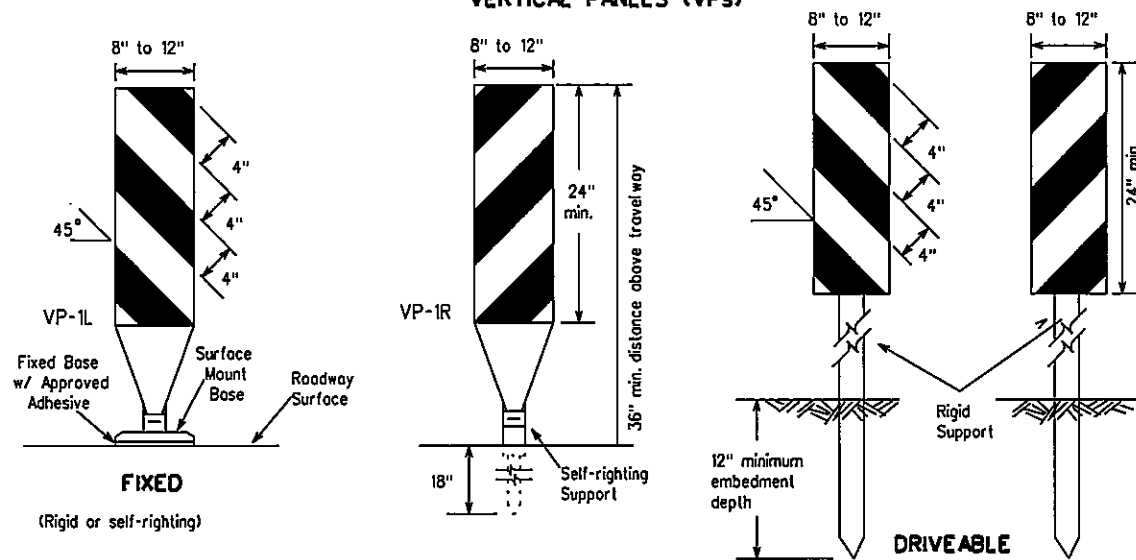
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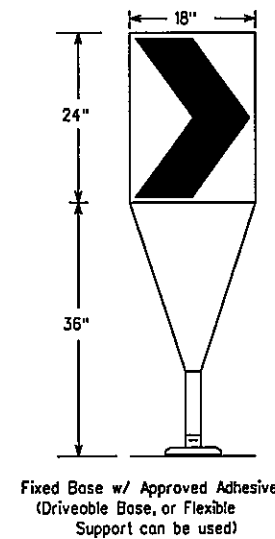
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## CHANNELIZING DEVICES

### VERTICAL PANELS (VPs)



### CHEVRONS



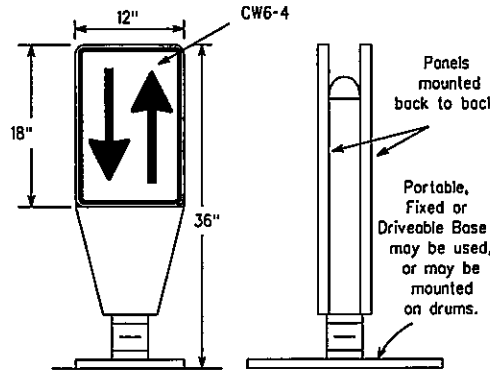
1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. 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.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective 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-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

### GENERAL NOTES:

1. 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).
2. 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.
3. 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).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh approximately 35 lbs.
6. 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.
7. 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.
8. Examples on this sheet are commonly used channelizing devices in work zones. For other devices, refer to the CWZTCD.

1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. 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.
3. 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.
4. VP's used on expressways and freeways or other high speed roadways, shall have a minimum of 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panels is greater than 36 inches, a panel stripe of 6 inches shall be used.

### OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

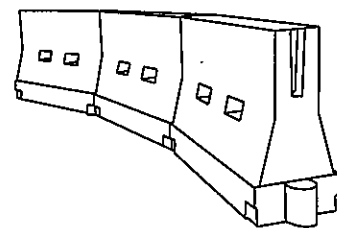


1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with simple tubular markers or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. Tubular markers or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. 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-8300.

| Posted Speed | Formula               | Minimum Desirable Taper Lengths * 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           |                       | 450'                                | 495'       | 540'       | 45'                                               | 90'-110'     |
| 50           | L = WS                | 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'    |
| 80           |                       | 800'                                | 880'       | 960'       | 80'                                               | 160'-195'    |

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

### HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS



### LONGITUDINAL CHANNELIZING DEVICES

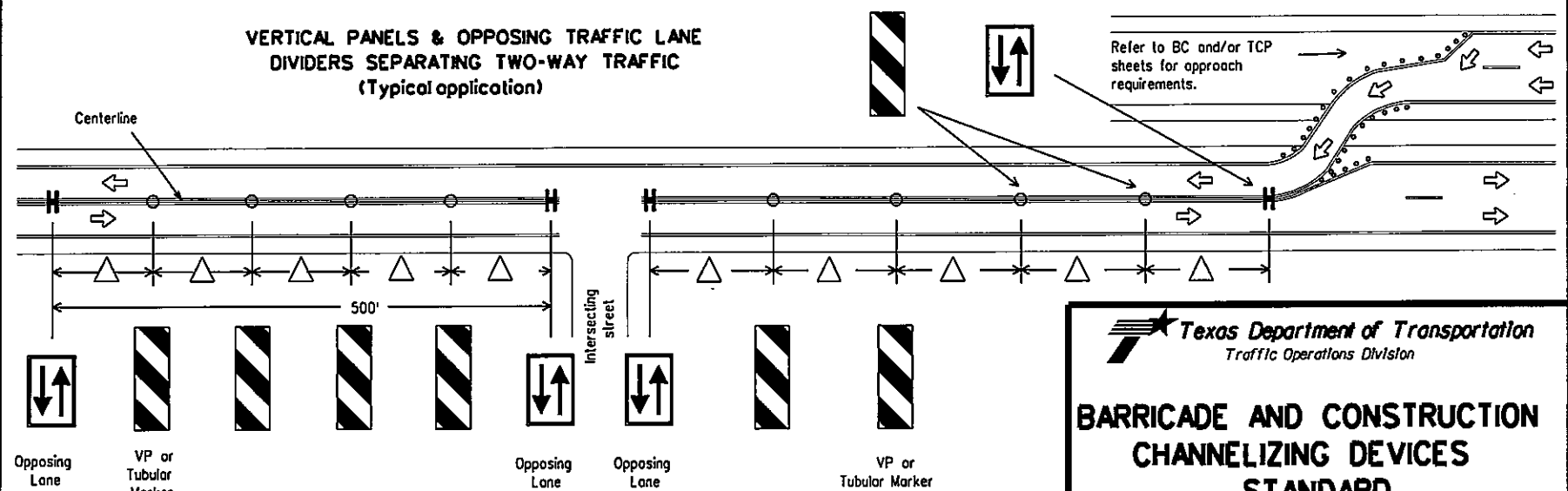
1. Longitudinal channelizing devices are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are designed to be used in work zones to channelize traffic or as barriers.
2. Longitudinal channelizing devices may be used instead of a line of cones or drums.
3. Longitudinal channelizing devices shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Longitudinal channelizing devices should not be used to provide positive protection for obstacles, pedestrians or workers.
5. Longitudinal channelizing devices shall be retroreflective, or supplemented with retroreflective delineation as required for temporary barriers on BC(7)-07.

### WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long cones and the top of the unit shall be not less than 32 inches in height.

### VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS SEPARATING TWO-WAY TRAFFIC (Typical application)



△ 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, except when the OTLD must be spaced closer to accommodate an intersection. Spacing between the OTLD shall not exceed 500 feet.

Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

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|                 |           |           |           | SHEET NO. |
|                 |           |           |           | 19        |

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## TYPE III BARRICADES

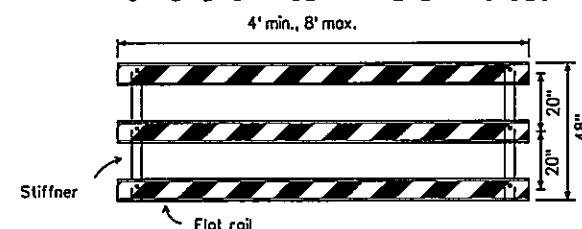
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type III Barricades and a list of all materials used in the construction of Type III Barricades.
2. Type III Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades 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. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
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, 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. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. 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.
9. Sheeting for barricades shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

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

### TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



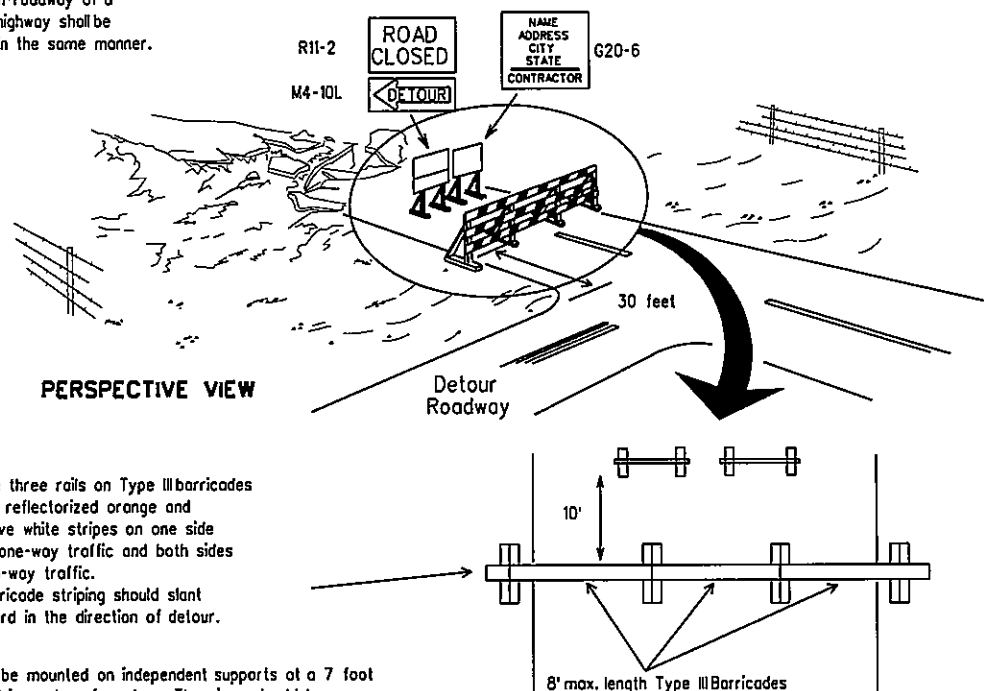
### TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

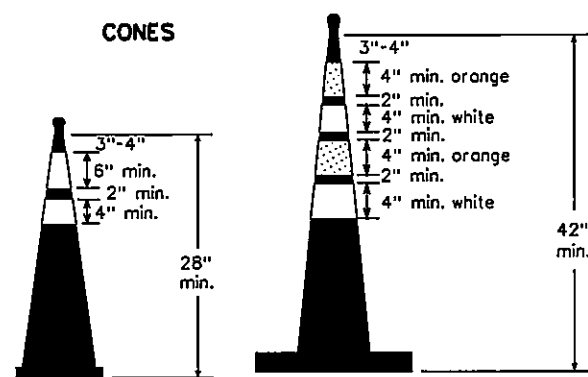
## TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION

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

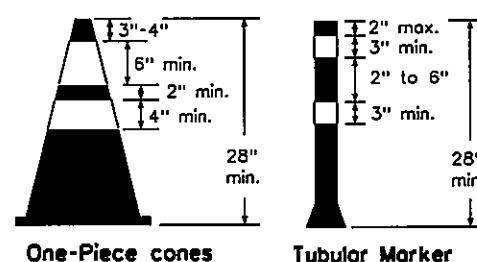


1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type III Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

### CONES



### Two-Piece cones

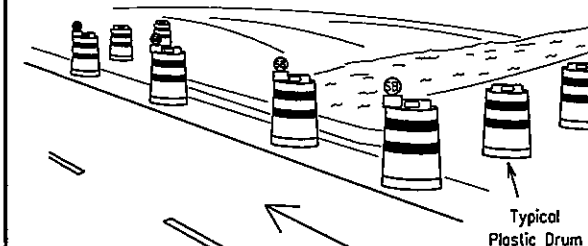


**28" Cones shall have a minimum weight of 9 1/2 lbs.**

**42" 2-piece cones shall have a minimum weight of 30 lbs. including base.**

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 and tubular markers 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 28" 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 42" cones shall be provided by alternating 4 to 6" orange and white stripes with orange on top.
8. 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.
9. 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.
10. Cones or tubular markers used on each project shall be of the same size and shape.
11. 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.

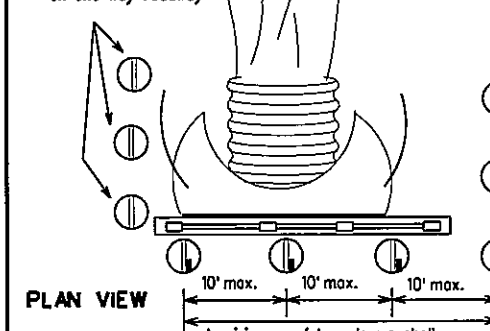
## CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Typical Plastic Drum

### PERSPECTIVE VIEW

These drums are not required on one-way roadway

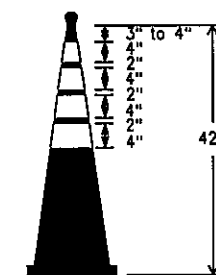


### PLAN VIEW

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)

### Legend

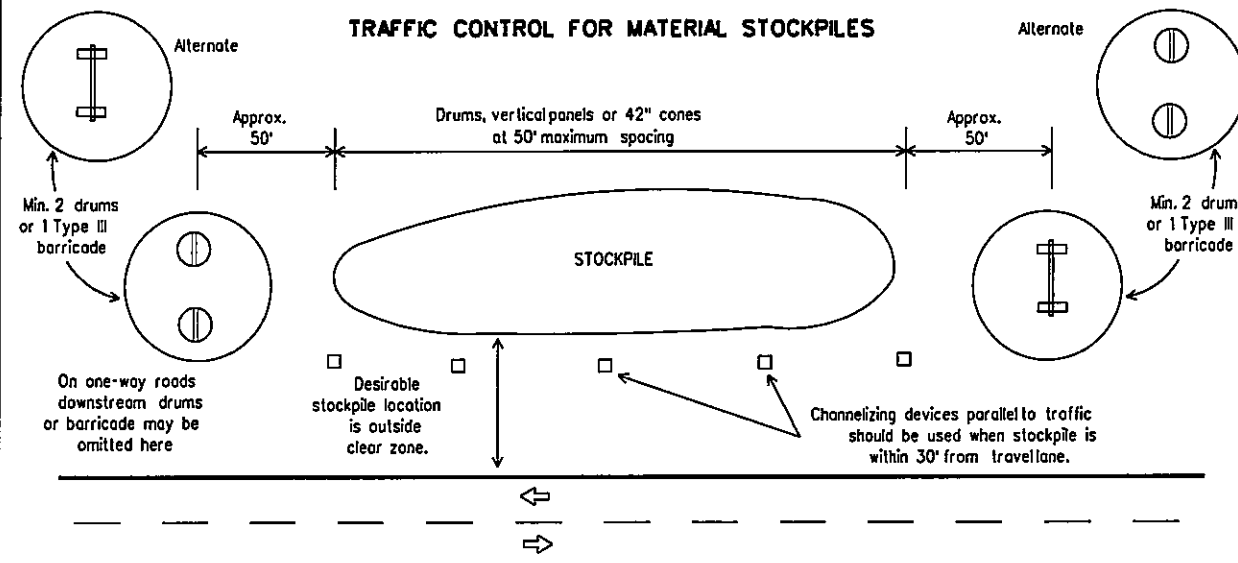
- Plastic drum
- Plastic drum with steady burn light or yellow warning reflector
- Steady burn warning light or yellow warning reflector



### 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. It is not intended to be used in transitions or tapers.
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 encapsulated bead (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

## TRAFFIC CONTROL FOR MATERIAL STOCKPILES



Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

10 of 12

BC(10)-07

| © TxDOT 11-4-02 | DW: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|-----------------|-----------|-----------|-----------|-----------|
| 9-07            | REVISIONS | CONT      | SECT      | JOB       |
|                 |           | DIST      | COUNTY    | SHEET NO. |
|                 |           |           |           | 20        |

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DATE:  
FILE:

## 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 PASS WITH CARE signs at the beginning of 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(12).
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.

### PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foilback) shall meet the requirements of DMS-8240.

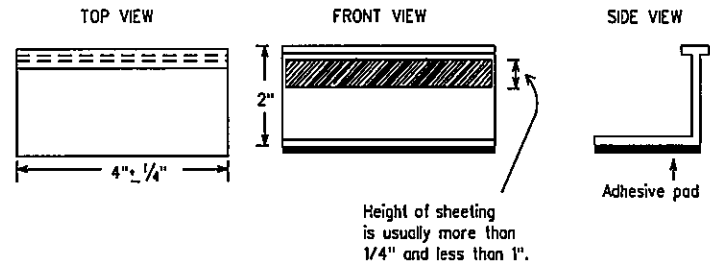
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

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 160 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 within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

### 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 discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
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.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

## 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.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on sealcoat work.

## 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 butyl rubber 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 |

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS STANDARD

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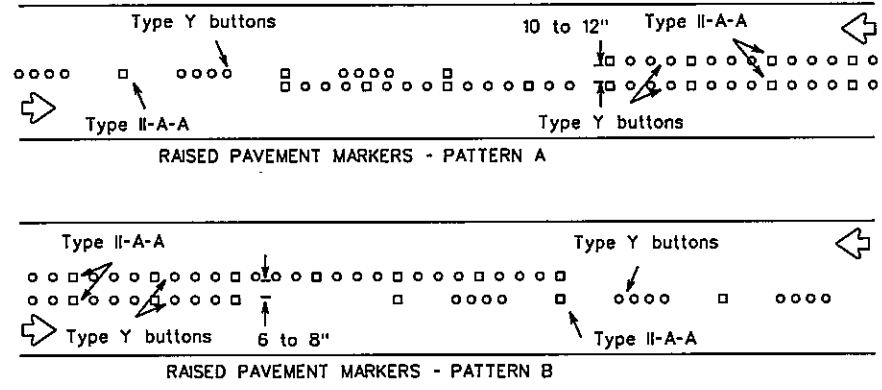
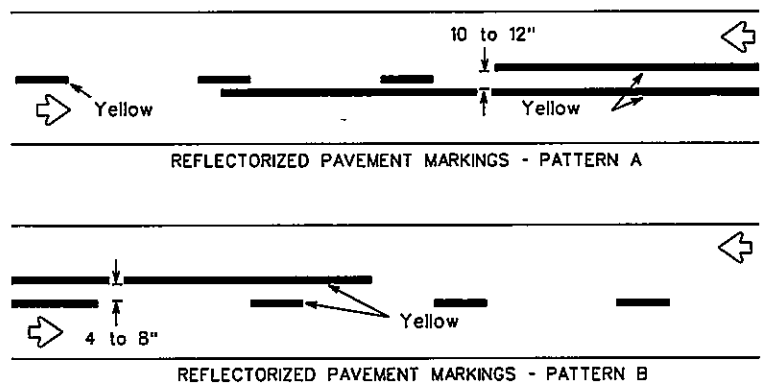
BC(11)-07

|                       |           |           |           |           |
|-----------------------|-----------|-----------|-----------|-----------|
| © TxDOT February 1998 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
| 2-98                  | REVISIONS | CONT      | SECT      | JOB       |
| 1-02                  |           |           |           |           |
| 11-02                 |           |           |           |           |
| 9-07                  |           |           |           |           |
|                       | DIST      | COUNTY    |           | SHEET NO. |
|                       |           |           |           | 21        |

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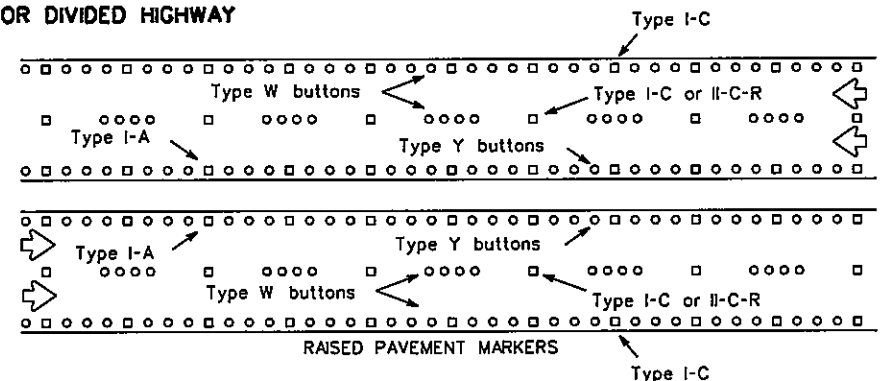
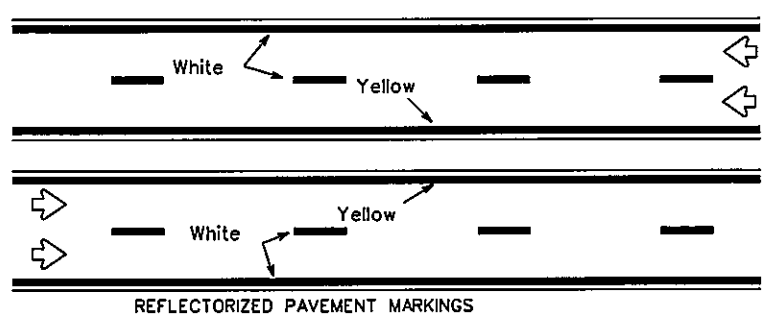
## PAVEMENT MARKING PATTERNS

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



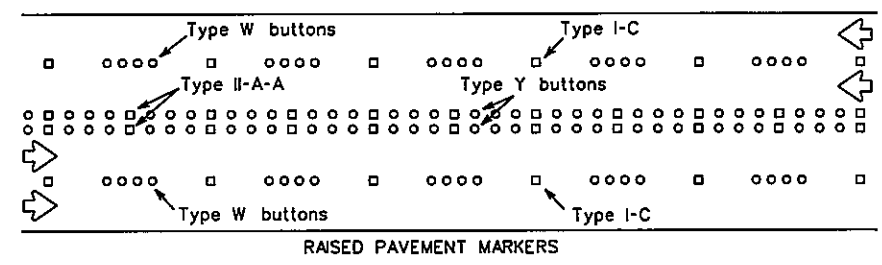
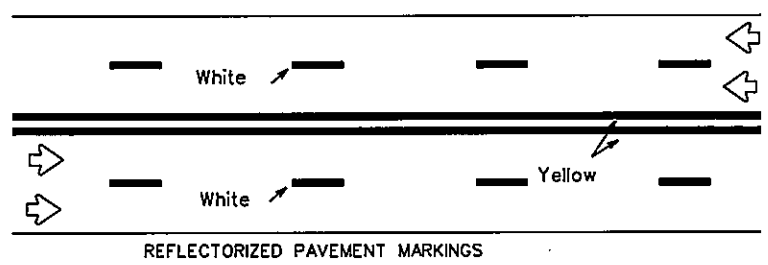
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

### EDGE & LANE LINES FOR DIVIDED HIGHWAY



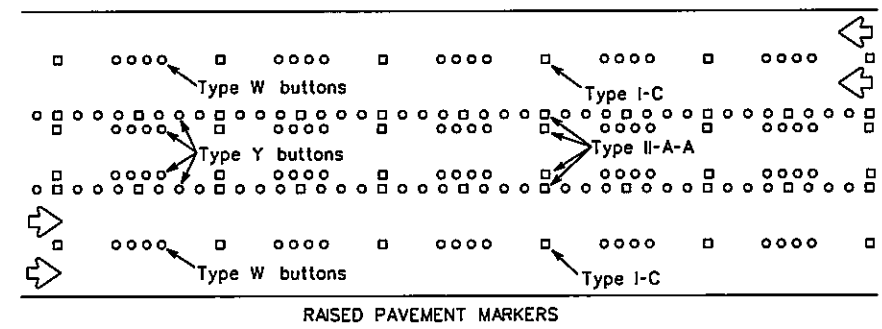
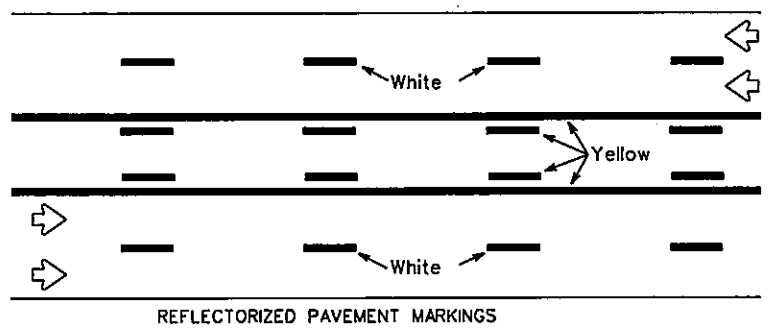
Prefabricated markings may be substituted for reflectorized pavement markings.

### LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



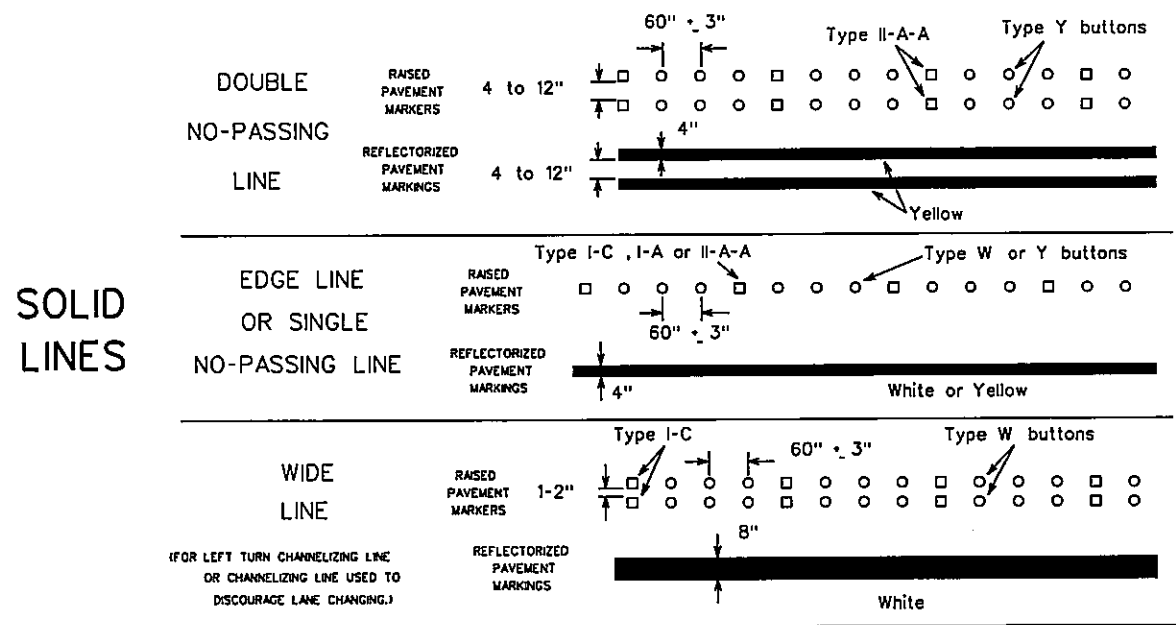
Prefabricated markings may be substituted for reflectorized pavement markings.

### TWO-WAY LEFT TURN LANE



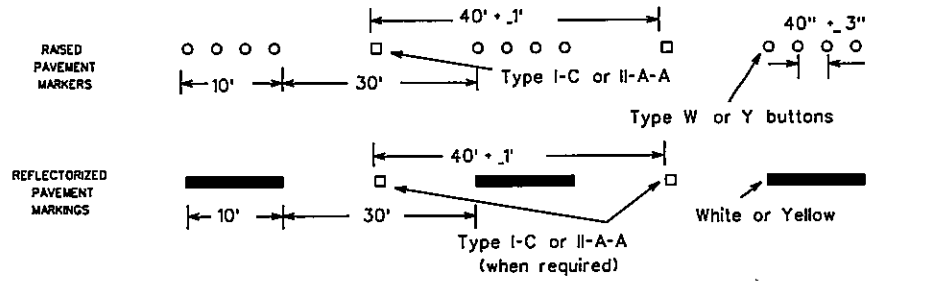
Prefabricated markings may be substituted for reflectorized pavement markings.

## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



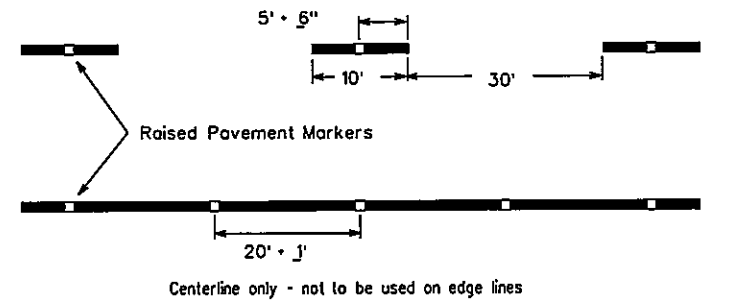
### BROKEN LINE

(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.



Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

Texas Department of Transportation  
Traffic Operations Division

## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS STANDARD

12 of 12 BC(12)-07

|                      |           |           |           |           |
|----------------------|-----------|-----------|-----------|-----------|
| ©TxDOT February 1998 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
| 1-97                 | REVISIONS | CONT      | SECT      | JOB       |
| 2-98                 |           |           |           |           |
| 11-02                |           |           |           |           |
| 9-07                 |           |           |           |           |
|                      |           | DIST      | COUNTY    | SHEET NO. |
|                      |           |           |           | 22        |

DATE: FILE:

# LEGEND

- PROP. CONC. DRIVE/SIDEWALK
- PROP. ASPHALT DRIVE
- SIGN
- MAIL BOX
- POWER POLE
- IRON ROD (No. 4 Rebar)
- CONTROL POINT
- CPS (COTTON PICKER SPINDLE)
- WATER METER
- WATER VALVE
- VALVE MARKER
- WATER VALVE MARKER
- FLUSH VALVE
- BENCHMARK
- FENCE
- TREE
- TREE BUSH
- TREE
- TREE
- EXIST. MAILBOXES TO BE REMOVED & REPLACED
- MULTIPLE MAILBOX NUMBER OF MAILBOXES
- DRIVEWAY ID

BEGIN PROJECT  
STA. 0+11.00  
MATCH EXIST.  
PAVEMENT  
CSJ: 1080-557-21

CAUTION:  
EXIST. GAS LINE

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

NOT TO BE PAID FOR DIRECTLY  
BUT TO BE CONSIDERED SUBSIDIARY  
TO THE VARIOUS BID ITEMS.

EL GATO ROAD

LOPEZ DRIVE

EXIST. R.O.W. LINE

PARKING LOT

SEE SHEET  
58 FOR DETAILS

NOTES:

- 1.) MAILBOXES TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
- 2.) ADJUST SAN. SEWER MANHOLES AS NEEDED.
- 3.) ADJUST WATER VALVE AS NEEDED.
- 4.) CONTRACTOR SHALL VERIFY ALL UTILITIES; HORIZONTAL AND VERTICAL INFORMATION IN THE FIELD PRIOR TO CONSTRUCTION.
- 5.) EXIST. SIGN TO BE REPLACED & RELOCATED.
- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

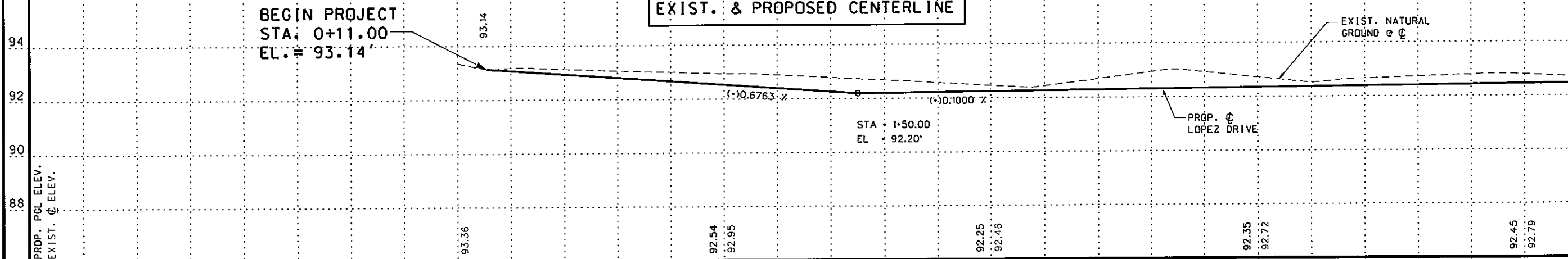
| ITEM | EST. | FINAL | UNIT | DESCRIPTION                |
|------|------|-------|------|----------------------------|
| 529  | 29   |       | LF   | CONC. VALLEY GUTTER (6.0') |
| 529  | 2050 |       | LF   | CONC. C&G                  |
| 560  | 2    |       | EA   | MAILBOX - MULTIPLE         |

## BM DATA

ALUMINUM DISK ON CONCRETE LOCATED  
257.0' SOUTH OF INTERSECTION OF  
EL GATO ROAD AND LOPEZ DRIVE ON  
THE WEST SIDE. FENCE CORNER.  
ELEV. = 92.28'

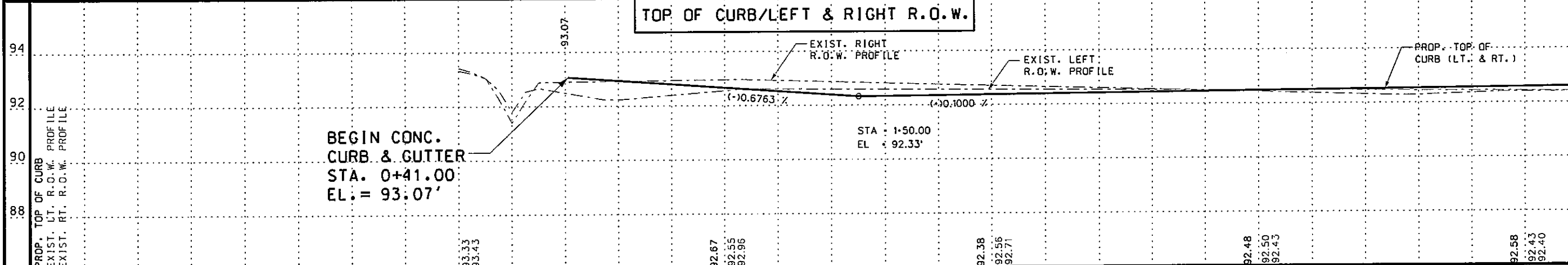
## EXIST. & PROPOSED CENTERLINE

BEGIN PROJECT  
STA. 0+11.00  
EL. = 93.14'

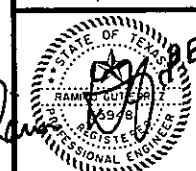


## TOP OF CURB/LEFT & RIGHT R.O.W.

BEGIN CONC.  
CURB & GUTTER  
STA. 0+41.00  
EL. = 93.07'



MATCHLINE STA. 4+20

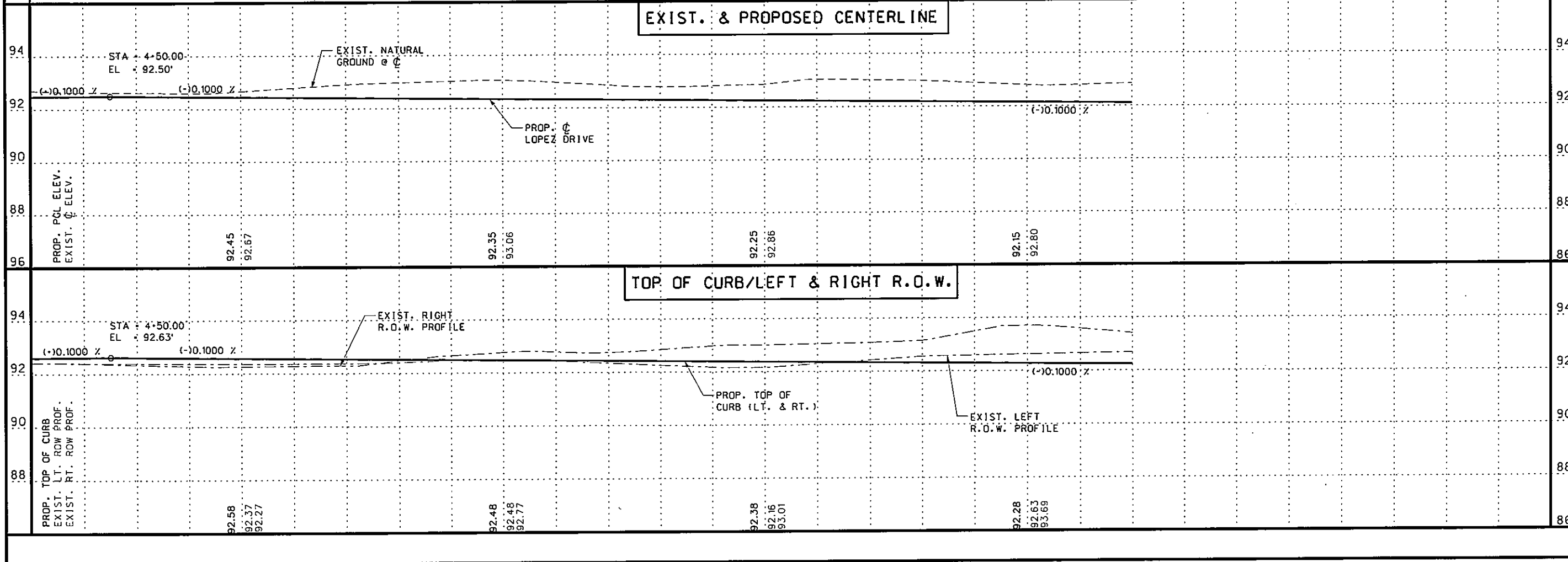
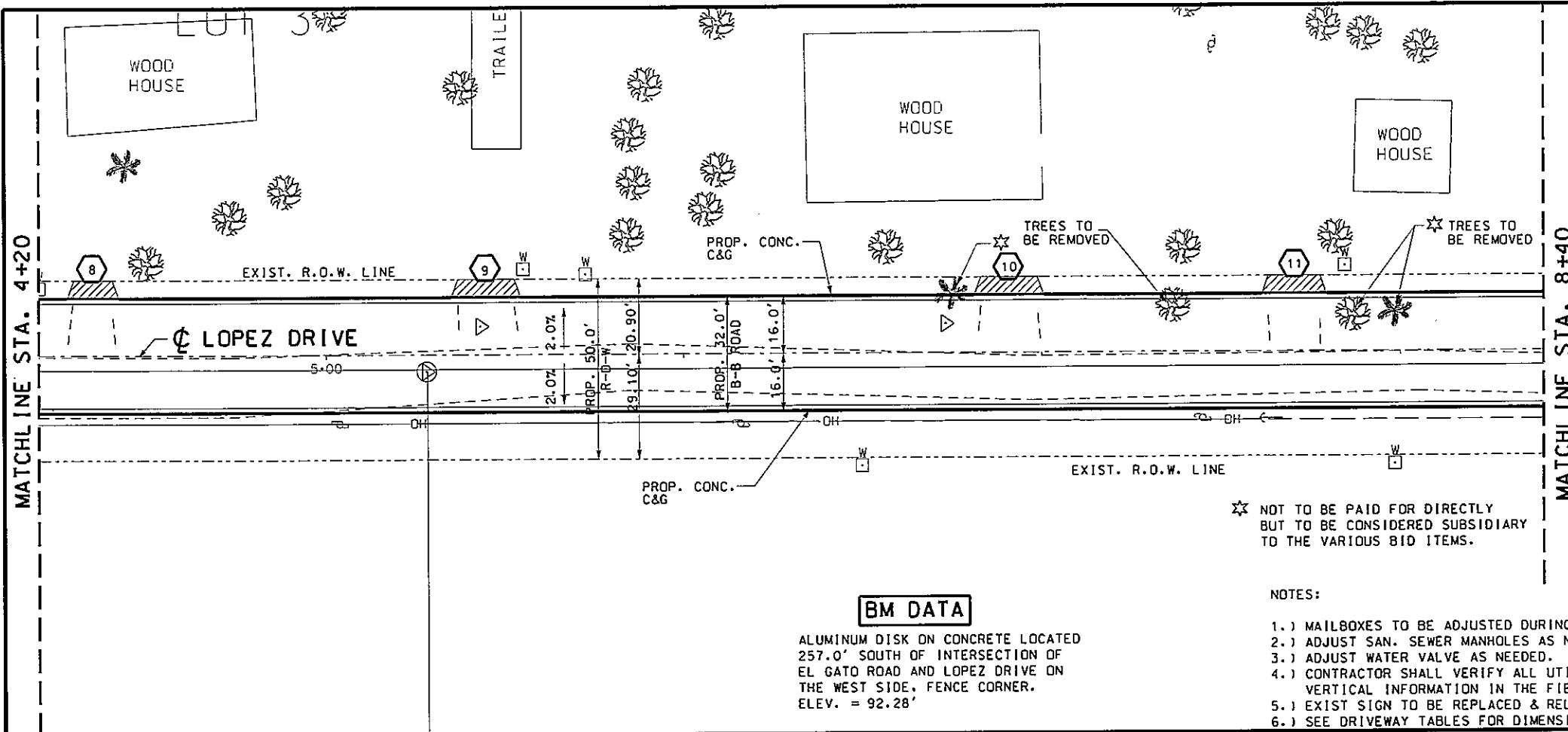


THE SEAL APPEARING ON THIS  
DOCUMENT WAS AUTHORIZED  
BY RAMON GUTIERREZ, P.E. 65948  
DATE: 1-19-11  
ALTERATION OF A SEALED  
DOCUMENT WITHOUT PROPER  
NOTIFICATION TO THE  
RESPONSIBLE ENGINEER IS AN  
OFFENSE UNDER THE TEXAS  
ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
PLAN AND PROFILE

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

SHEET No.  
23



**LEGEND**

- PROP. CONC. DRIVE/SIDEWALK
- PROP. ASPHALT DRIVE
- SIGN
- MAIL BOX
- POWER POLE
- IRON ROD (Ho. 4 Rebar)
- CONTROL POINT
- CPS (COTTON PICKER SPINDLE)
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- WATER VALVE
- VALVE MARKER
- WATER VALVE MARKER
- FLUSH VALVE
- BENCHMARK
- FENCE
- TREE
- TREE BUSH
- TREE
- TREE
- EXIST. MAILBOXES TO BE REMOVED & REPLACED
- MULTIPLE MAILBOX NUMBER OF MAILBOXES
- DRIVEWAY ID

**Professional Engineers & Land Surveyors**

**R. Gutierrez Engineering Corporation**

130 E. PARK AVENUE • PHARR, TEXAS 78577

(TEL) 361 782-2557 • (FAX) 361 782-2558

FORM No. 486

**THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65949**

**DATE: 6-19-11**

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**HIDALGO COUNTY PRECINCT NO. 2**

**PENTECOSTAL SUBDIVISION**

**PLAN AND PROFILE**

**LOCATION**

**REVISION**

**DATE**

**BY**

**FB. No.:**

**SURVEY BY:**

**DRAWN BY:**

**PREPARED BY:**

**CHECKED BY:**

**SHEET No. 24**



| PENTECOSTAL SUBDIVISION - DRIVEWAYS (CSJ: 1080-557-21) |              |                         |                                  |                               |                            |                         |       |       |                             |                                                   |                                      |                                 |                                            |     |     |     |     |     |
|--------------------------------------------------------|--------------|-------------------------|----------------------------------|-------------------------------|----------------------------|-------------------------|-------|-------|-----------------------------|---------------------------------------------------|--------------------------------------|---------------------------------|--------------------------------------------|-----|-----|-----|-----|-----|
| ID #                                                   | STATION      | EXIST. DRVWY WIDTH (FT) | PROP. WIDTH @ CURB & GUTTER (FT) | PROP. WIDTH @ R-O-W LINE (FT) | EXIST. DRVWY MATERIAL (FT) | ACP DRWY AREA<br>⊗ (SY) |       |       | ITEM 247<br>FLEX BASE<br>4" | ITEM 310<br>ASPH MAT'L<br>(MC-30)<br>(0.2 GAL/SY) | ITEM 340<br>ASPH MAT'L<br>ACP (SURF) | (4")<br>CONC.<br>DRVWYS<br>(SY) | ⊕ ITEM 496<br>REMOVE OLD STR. PIPE<br>(LF) |     |     |     |     |     |
|                                                        |              |                         |                                  |                               |                            | P-1                     | PRB-1 | PB-1  | (CY)                        | (GAL)                                             | (TON)                                |                                 | 10"                                        | 12" | 14" | 15" | 18" | 24" |
| 1                                                      | 0+76.94. RT. | 20.0                    | 24.0                             | 20.0                          | ACP                        |                         |       | 32.5  | 3.6                         | 6.5                                               | 1.9                                  |                                 |                                            |     |     |     |     |     |
| 2                                                      | 0+93.75. LT. | 17.0                    | 21.0                             | 17.0                          | DIRT                       |                         |       | 10.5  | 1.2                         | 2.1                                               | 0.6                                  |                                 |                                            |     |     |     |     |     |
| 3                                                      | 1+66.00. LT. | 12.0                    | 16.0                             | 12.0                          | DIRT                       |                         |       | 7.5   | 0.8                         | 1.5                                               | 0.4                                  |                                 |                                            |     |     |     |     |     |
| 4                                                      | 2+16.40. RT. | 20.0                    | 24.0                             | 20.0                          | ACP                        |                         |       | 32.5  | 3.6                         | 6.5                                               | 1.9                                  |                                 |                                            |     |     |     |     |     |
| 5                                                      | 2+85.00. RT. | 26.0                    | 30.0                             | 26.0                          | DIRT                       |                         |       | 38.0  | 4.2                         | 7.6                                               | 2.2                                  |                                 |                                            |     |     |     |     |     |
| 6                                                      | 3+10.00. LT. | 25.0                    | 29.0                             | 25.0                          | CONC.                      |                         |       |       |                             |                                                   |                                      | 14.0                            |                                            |     |     |     |     |     |
| 7                                                      | 3+32.00. RT. | 14.0                    | 18.0                             | 14.0                          | DIRT                       |                         |       | 22.5  | 2.5                         | 4.5                                               | 1.3                                  |                                 |                                            |     |     |     |     |     |
| 8                                                      | 4+35.00. LT. | 12.0                    | 16.0                             | 12.0                          | DIRT                       |                         |       | 6.8   | 0.8                         | 1.4                                               | 0.4                                  |                                 |                                            |     |     |     |     |     |
| 9                                                      | 5+45.00. LT. | 16.0                    | 20.0                             | 16.0                          | DIRT                       |                         |       | 9.7   | 1.1                         | 1.9                                               | 0.6                                  |                                 |                                            |     |     |     |     |     |
| 10                                                     | 6+90.80. LT. | 16.0                    | 20.0                             | 16.0                          | DIRT                       |                         |       | 9.8   | 1.1                         | 2.0                                               | 0.6                                  |                                 |                                            |     |     |     |     |     |
| 11                                                     | 7+70.50. LT. | 15.0                    | 19.0                             | 15.0                          | DIRT                       |                         |       | 9.0   | 1.0                         | 1.8                                               | 0.5                                  |                                 |                                            |     |     |     |     |     |
| TOTAL:                                                 |              |                         |                                  |                               |                            |                         |       | 178.8 | 19.8                        | 35.8                                              | 10.2                                 | 14.0                            |                                            |     |     |     |     |     |



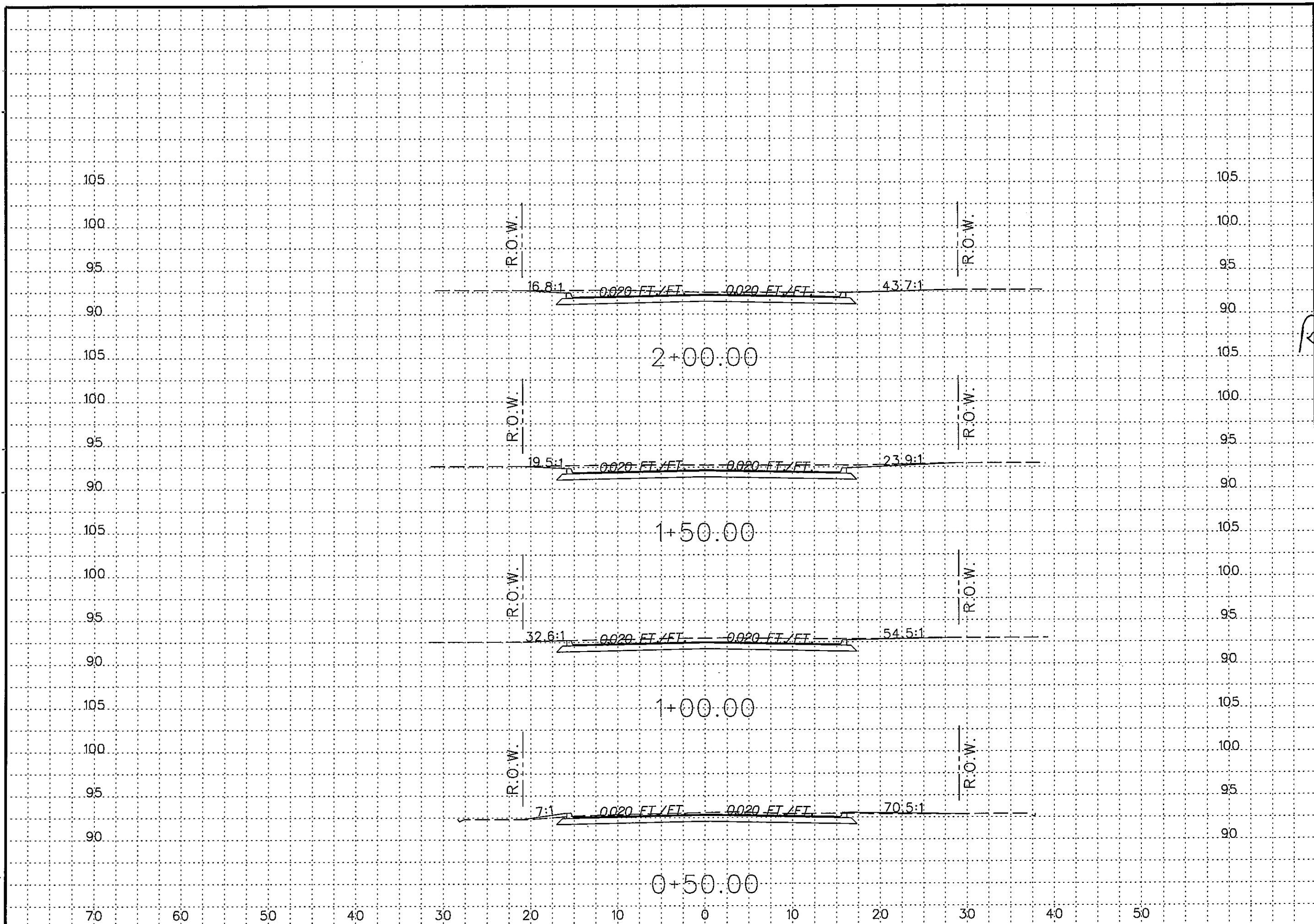
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HIDALGO COUNTY PRECINCT NO. 2  
 PENTECOSTAL SUBDIVISION  
 PLAN AND PROFILE

## NOTATION

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|--------------|--|--|--|--|
| FB. No.:     |  |  |  |  |
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| PREPARED BY: |  |  |  |  |
| CHECKED BY:  |  |  |  |  |

SHEET No.  
26



Professional Engineers & Land Surveyors  
R. Gutierrez  
Engineering Corporation  
180 E. PARK AVENUE • PHARR, TEXAS 78577  
(TEL) 956 782-2557 • (FAX) 956 782-2558  
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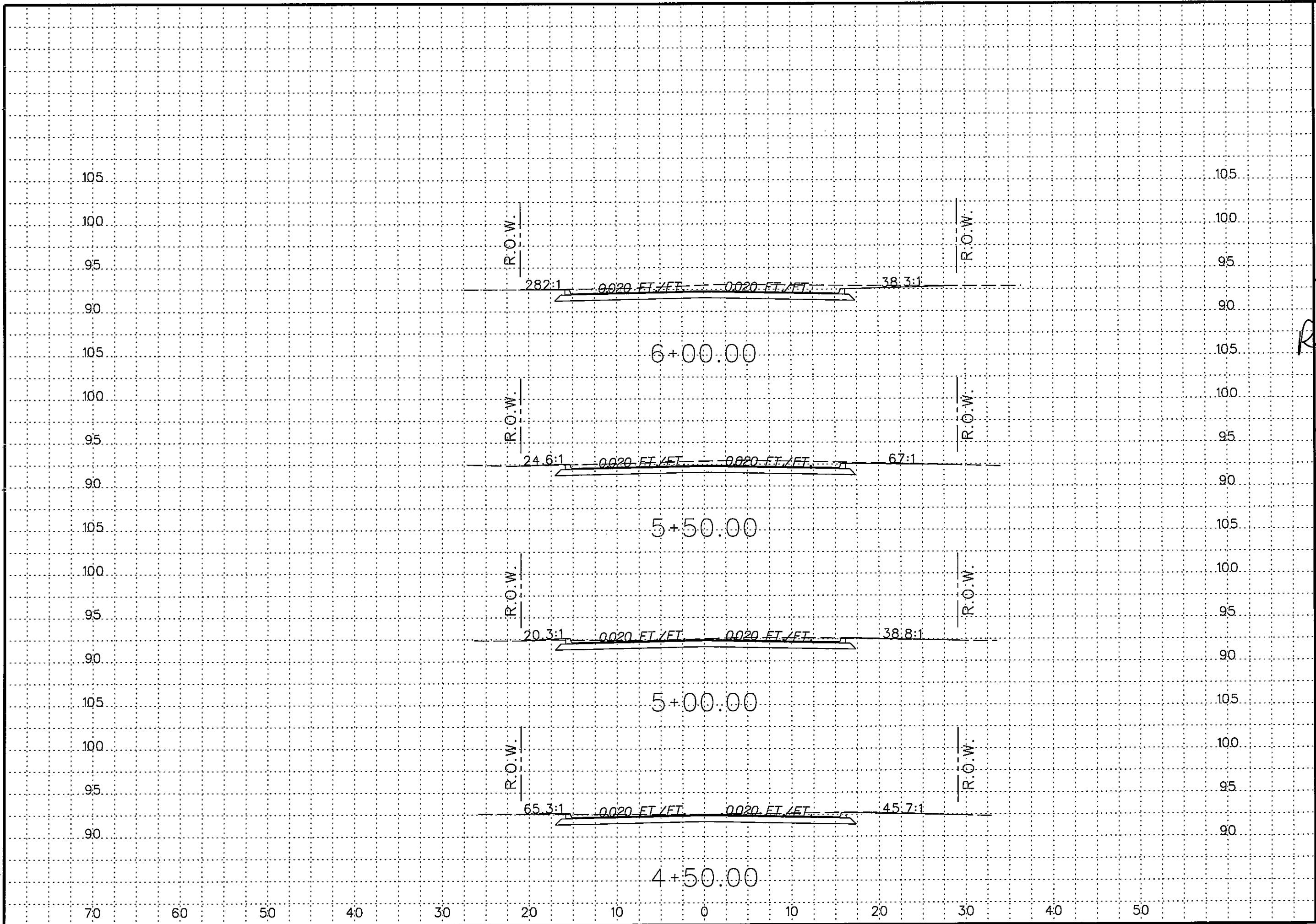
HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
LOPEZ DRIVE  
DESIGN CROSS-SECTION

| REVISION | DATE | BY |
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SHEET No.  
27





Professional Engineers & Land Surveyors  
130 E. PARK AVENUE • PLANO, TEXAS 75077  
(TEL) 956 782-2557 • (FAX) 956 782-2558  
FIRM No. 486

**R. Gutierrez Engineering Corporation**

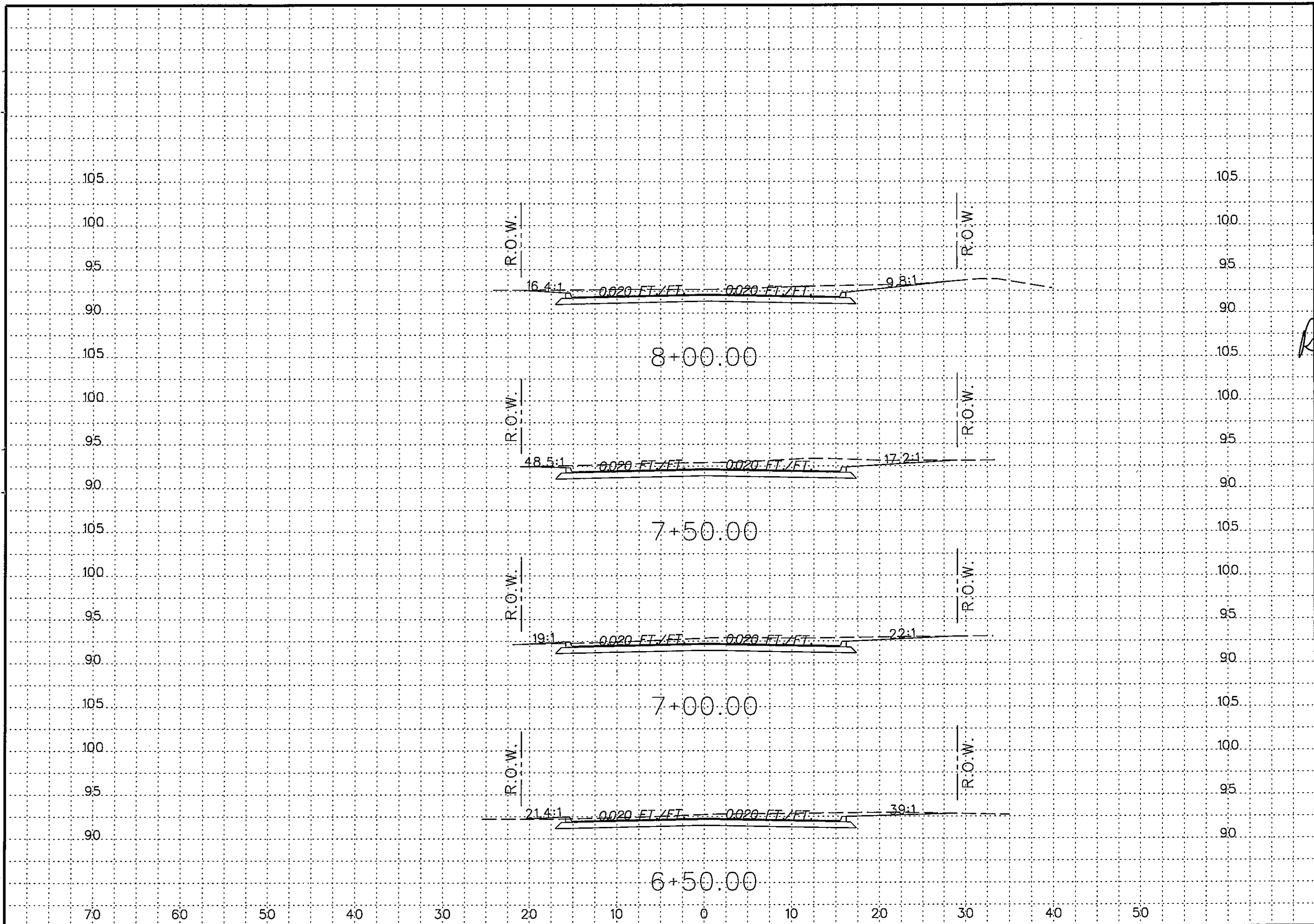
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PENTECOSTAL SUBDIVISION  
LOPEZ DRIVE  
DESIGN CROSS-SECTION

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Professional Engineers & Land Surveyors  
R. Gutierrez  
Engineering Corporation  
130 E. PARK AVENUE • PHARR, TEXAS 78577  
(TEL) 956 782-2557 • (FAX) 956 782-2558  
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STATE OF TEXAS  
RAMIRO GUTIERREZ  
Professional Engineer  
No. 55948  
DATE: 1-19-11  
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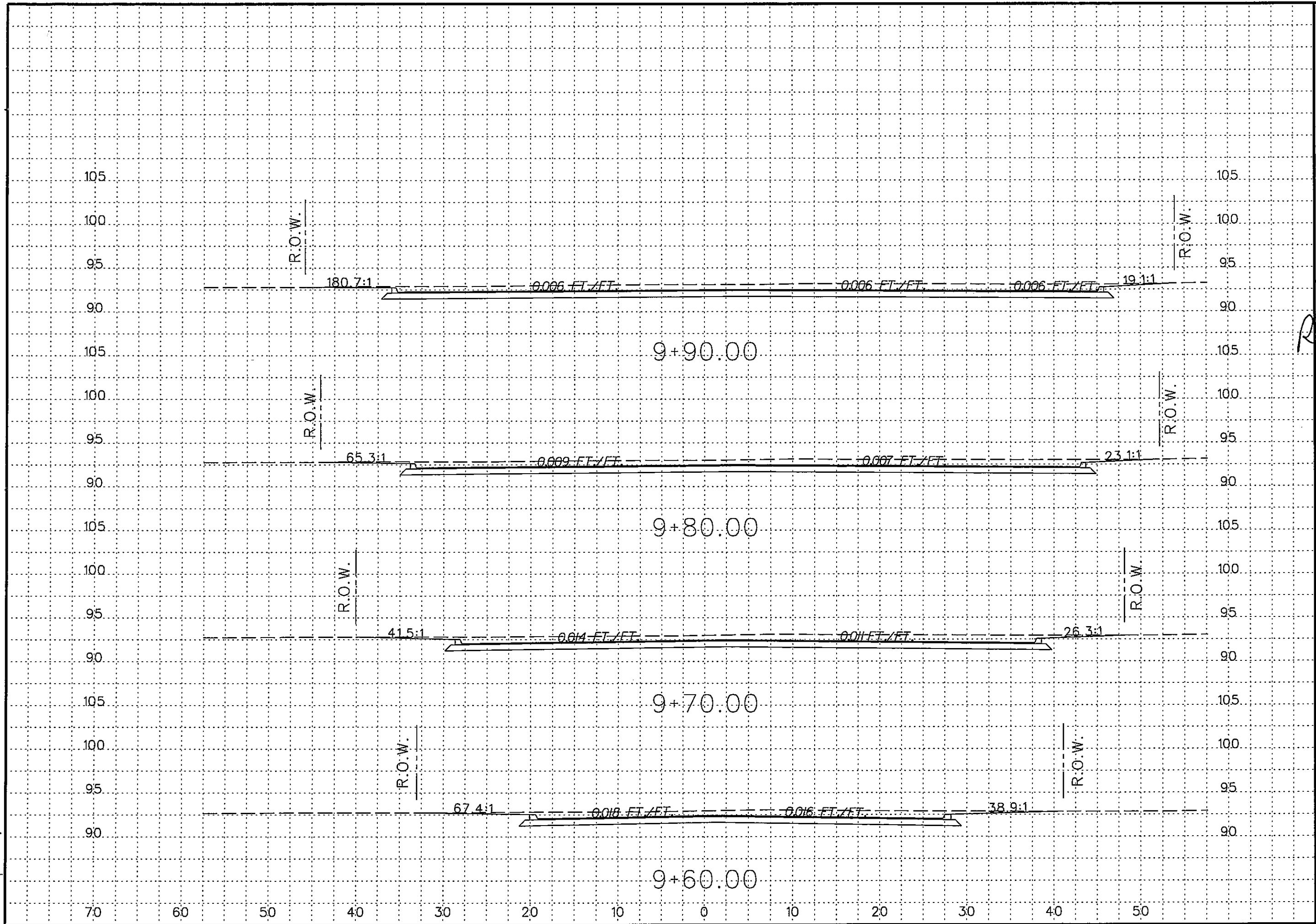
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PENTECOSTAL SUBDIVISION  
LOPEZ DRIVE  
DESIGN CROSS-SECTION

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30





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FIRM No. 486

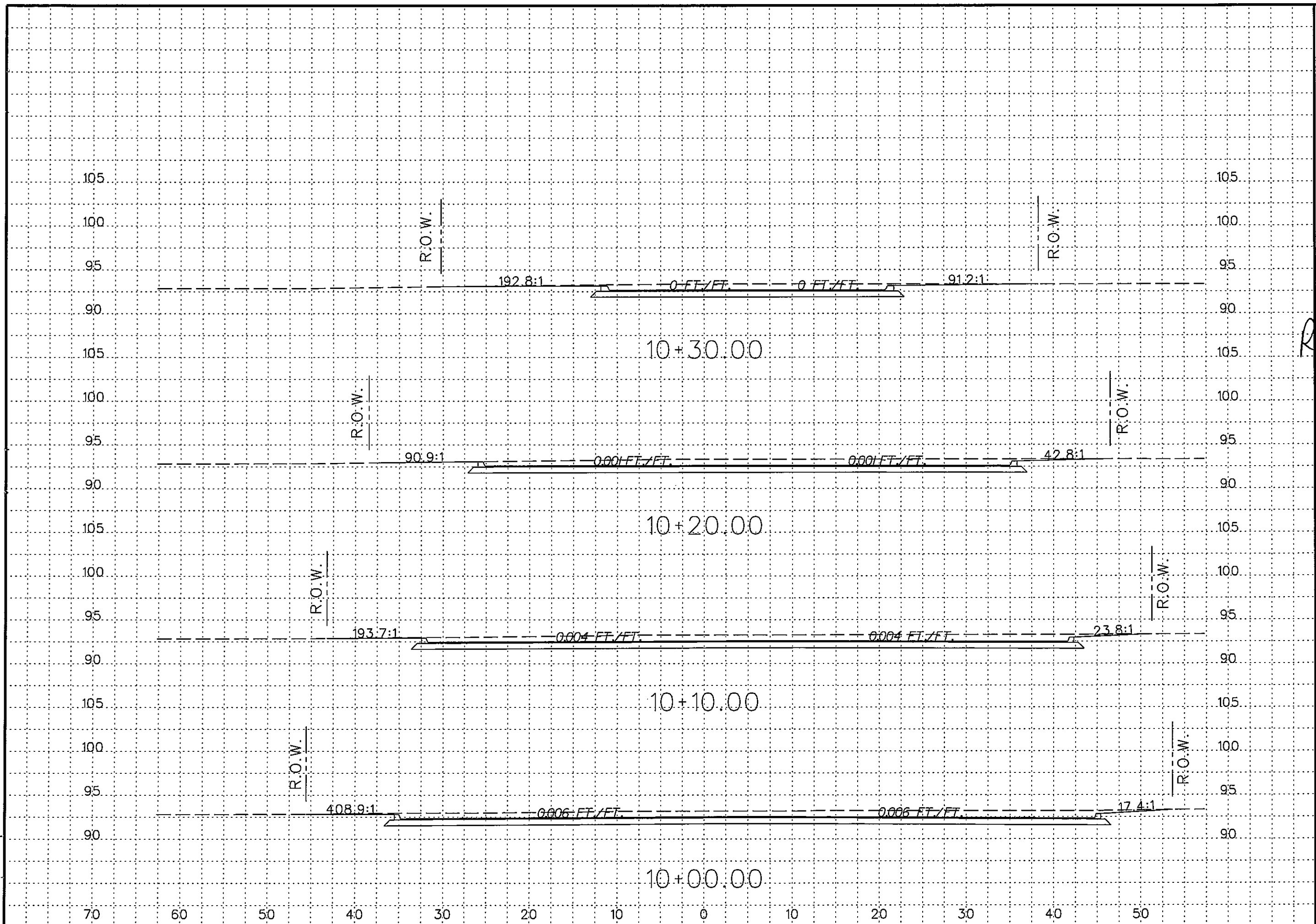
**R. Gutierrez**  
Engineering Corporation

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**32**



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**R. Gutierrez Engineering Corporation**

STATE OF TEXAS  
RAMIRO GUTIERREZ  
65548  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
EXPIRATION DATE 12/31/2011

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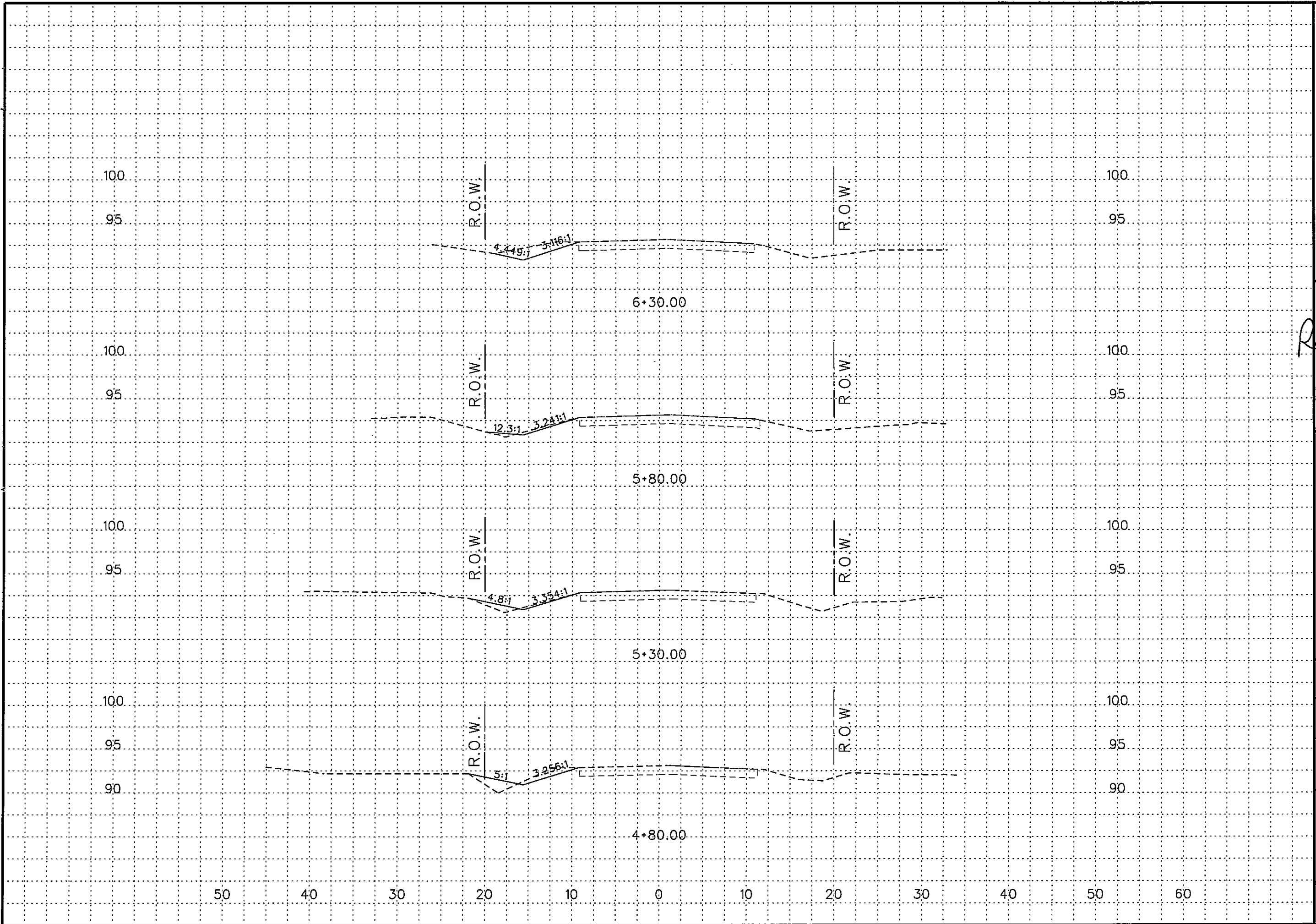
HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
LOPEZ DRIVE  
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**SHEET No. 33**





Professional Engineers & Land Surveyors

R. Gutierrez

Engineering Corporation

100 E. PARK AVENUE

PHARR, TEXAS 76577

(TEL) 956 762-2557

(FAX) 956 762-2558

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STATE OF TEXAS

RAMIRO GUTIERREZ

6548

REGISTERED PROFESSIONAL ENGINEER

*Ramiro Gutierrez*

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HIDALGO COUNTY PRECINCT No.2

PENTECOSTAL SUBDIVISION

EL GATO ROAD

DESIGN CROSS-SECTION

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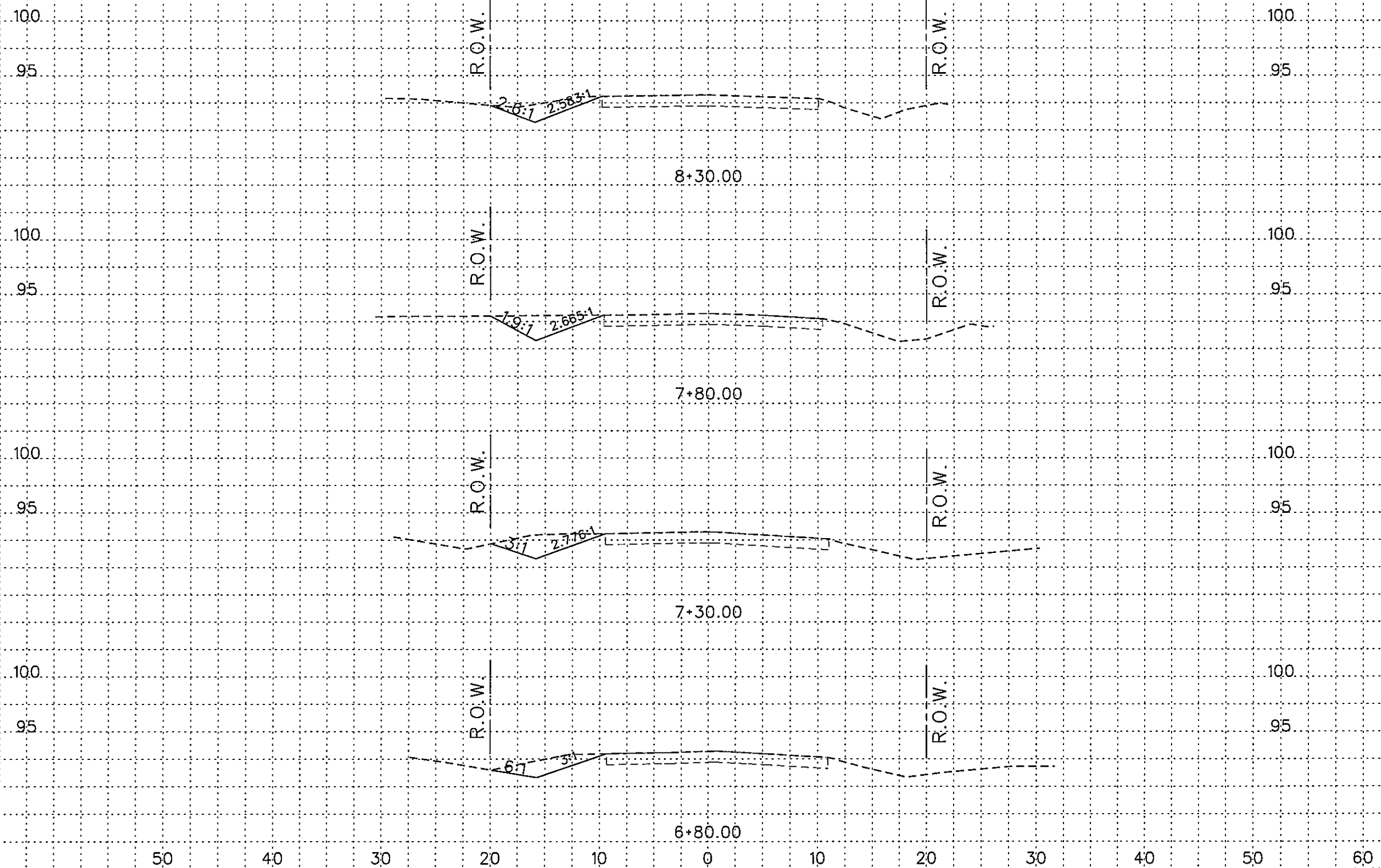
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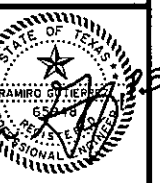
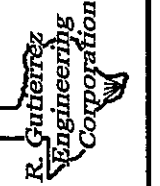
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35

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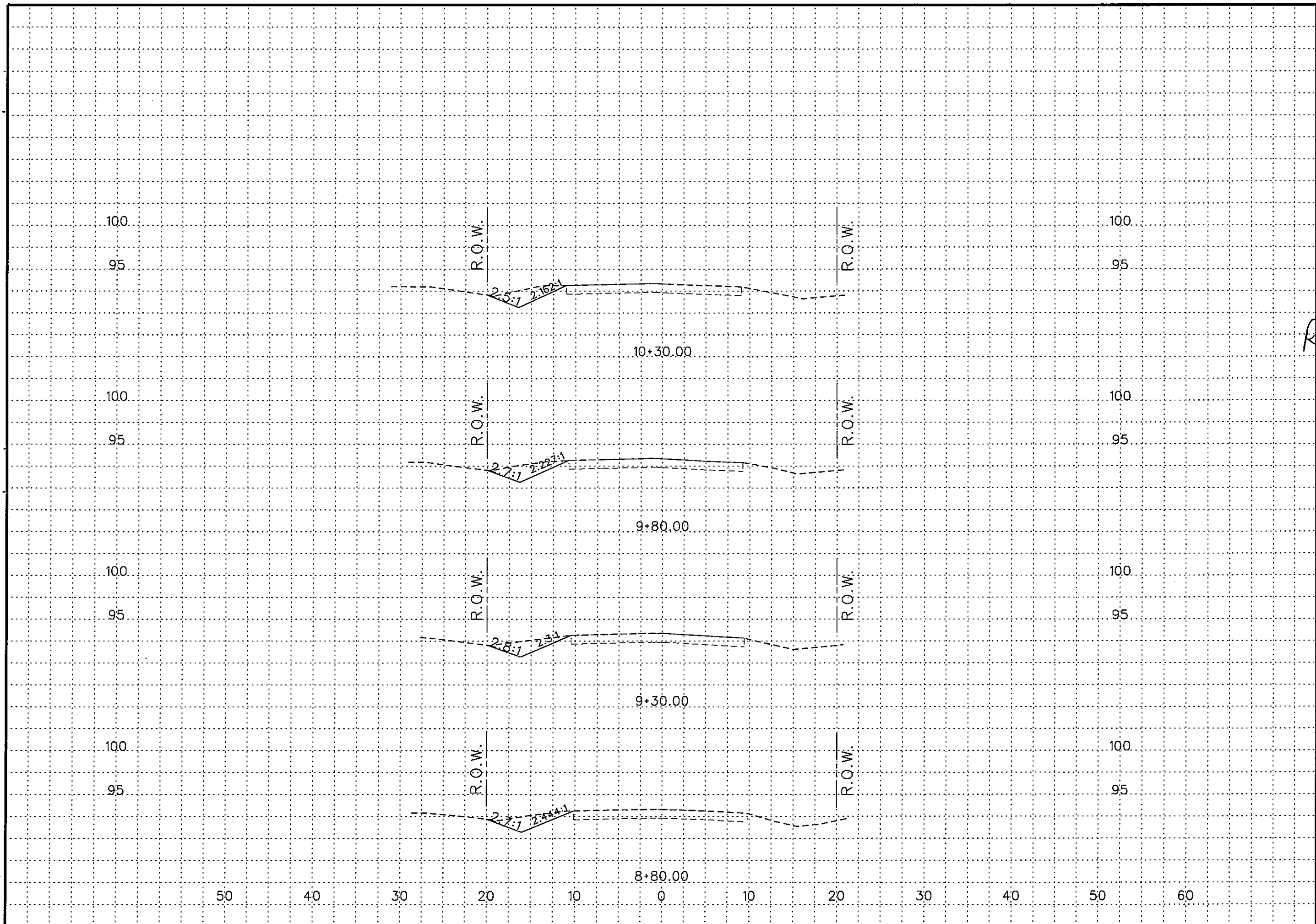


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130 E PARK AVENUE • PHARR, TEXAS 78577  
(TEL) 956 782-2557 • (FAX) 956 782-2558  
FIRM No. 486

**R. Gutierrez Engineering Corporation**

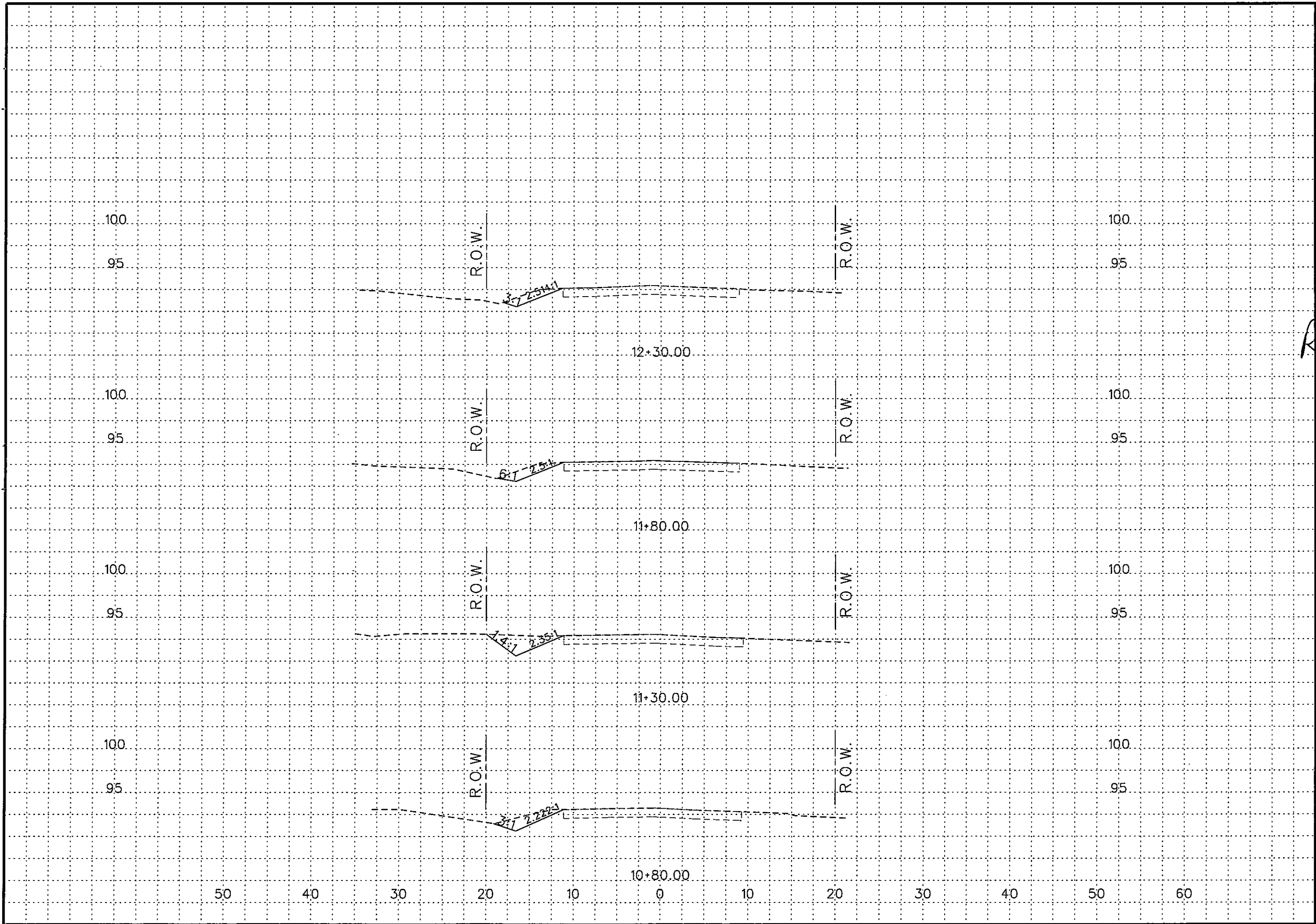
STATE OF TEXAS  
RAMIRO GUTIERREZ  
REGISTERED PROFESSIONAL ENGINEER  
No. 12345  
1-19-11

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R. Gutierrez Engineering Corporation  
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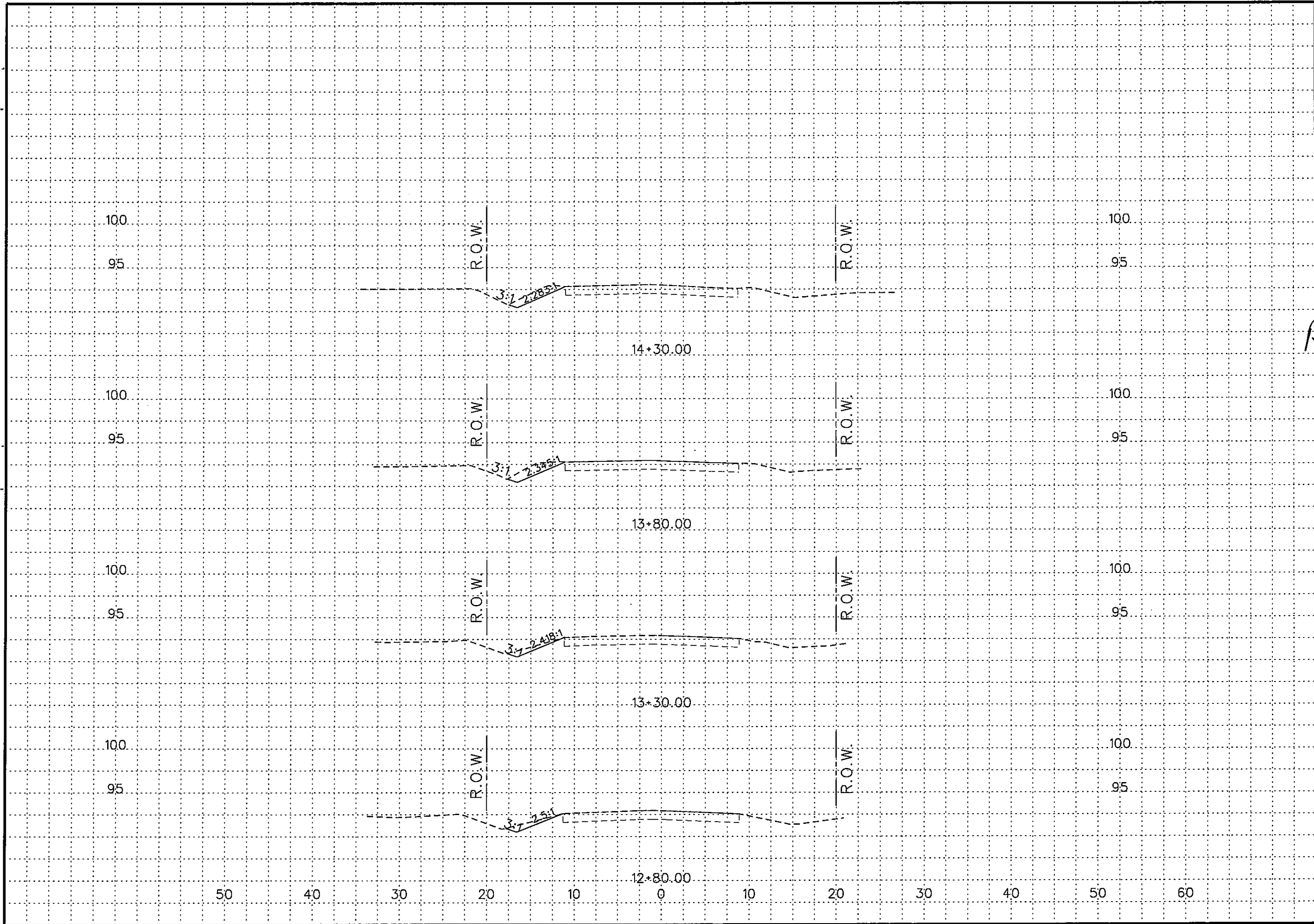
STATE OF TEXAS  
RAMIRO GUTIERREZ  
65948  
Professional Engineer  
Civil Engineering

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HIDALGO COUNTY PRECINCT No.2  
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SHEET No.  
38



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R. Guierrez Engineering Corporation

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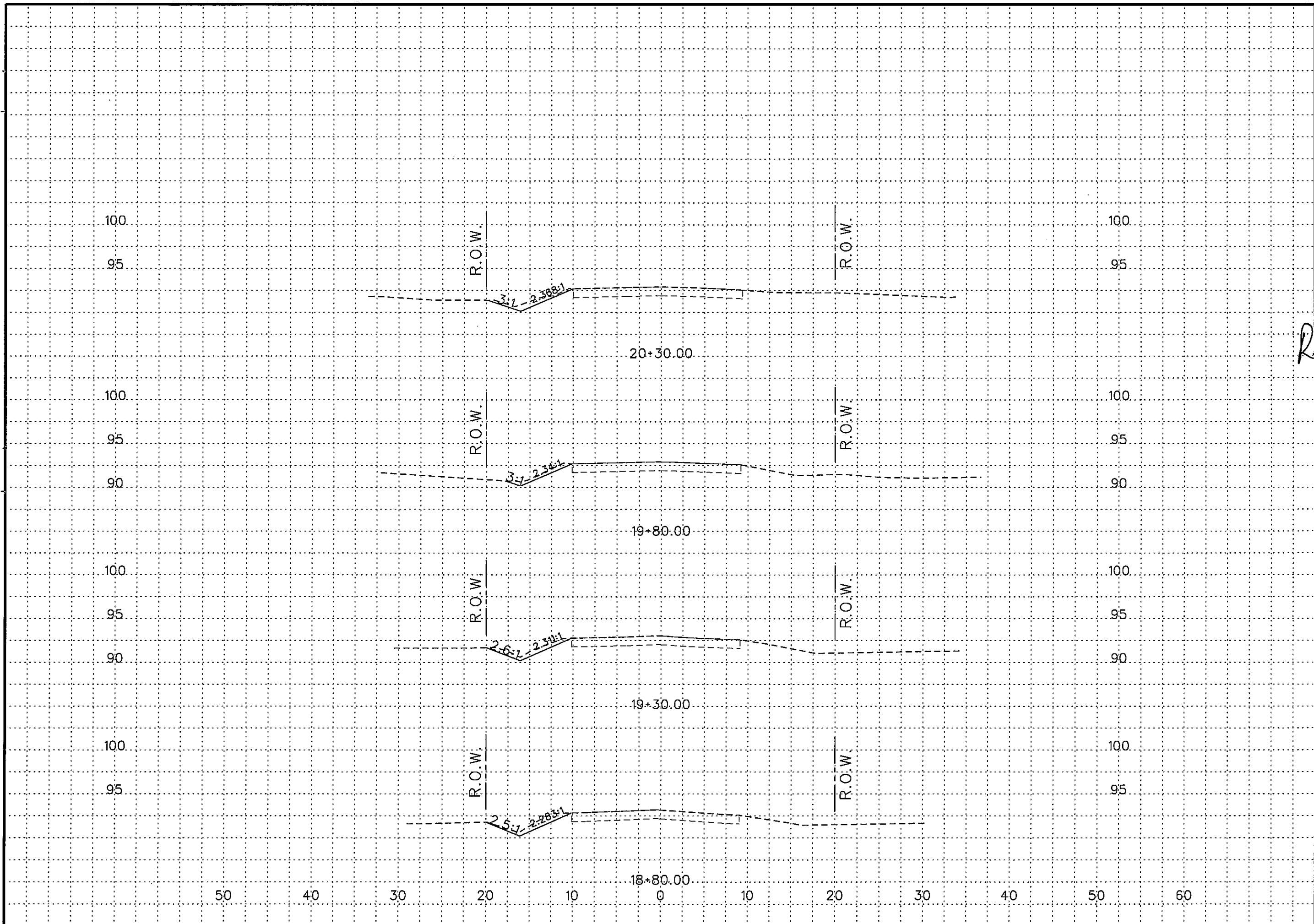
HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
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**39**







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**R. Gutierrez**  
Engineering Corporation

STATE OF TEXAS  
RAMIRO GUTIERREZ  
65440  
Professional Engineer  
Civil Engineering

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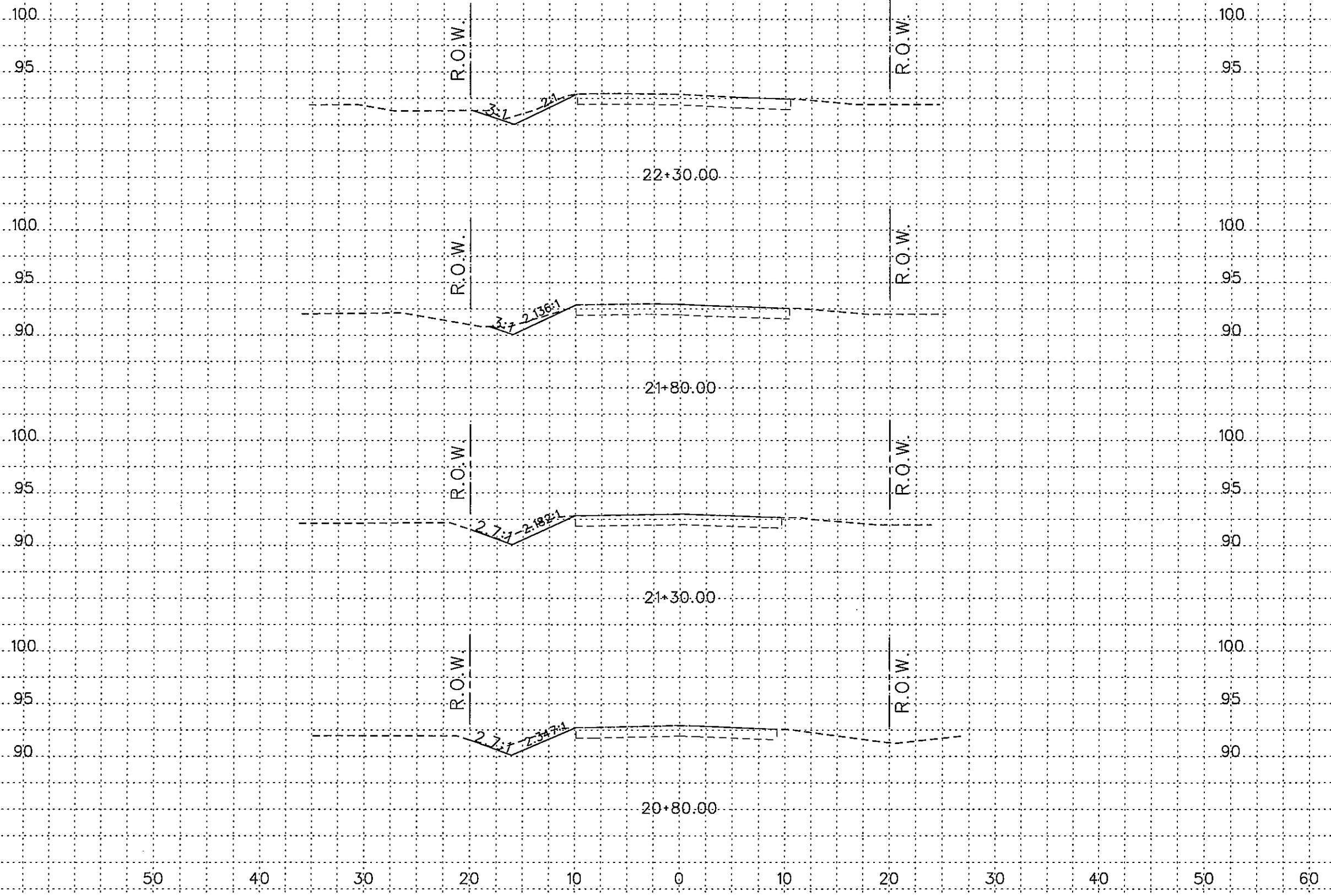
HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
EL GATO ROAD  
DESIGN CROSS-SECTION

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Professional Engineers & Land Surveyors  
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Engineering Corporation  
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(TEL) 956 782-2557 • (FAX) 956 782-2558  
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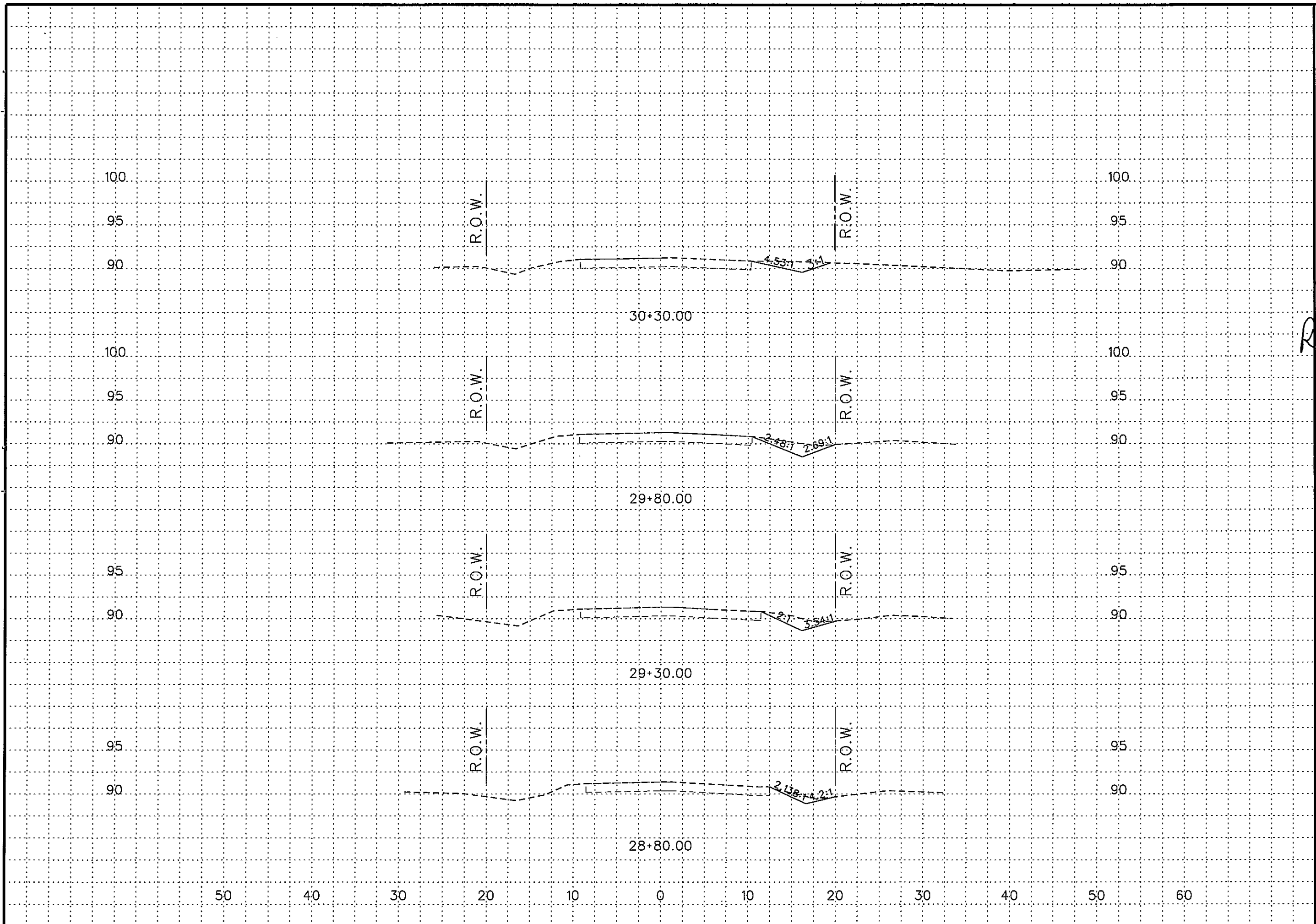
HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
EL GATO ROAD  
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(TEL) 956 782-2557 • (FAX) 956 782-2558  
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**R. Gutierrez**  
Engineering Corporation

STATE OF TEXAS  
RAMIRO GUTIERREZ  
65948  
REGISTERED PROFESSIONAL ENGINEER

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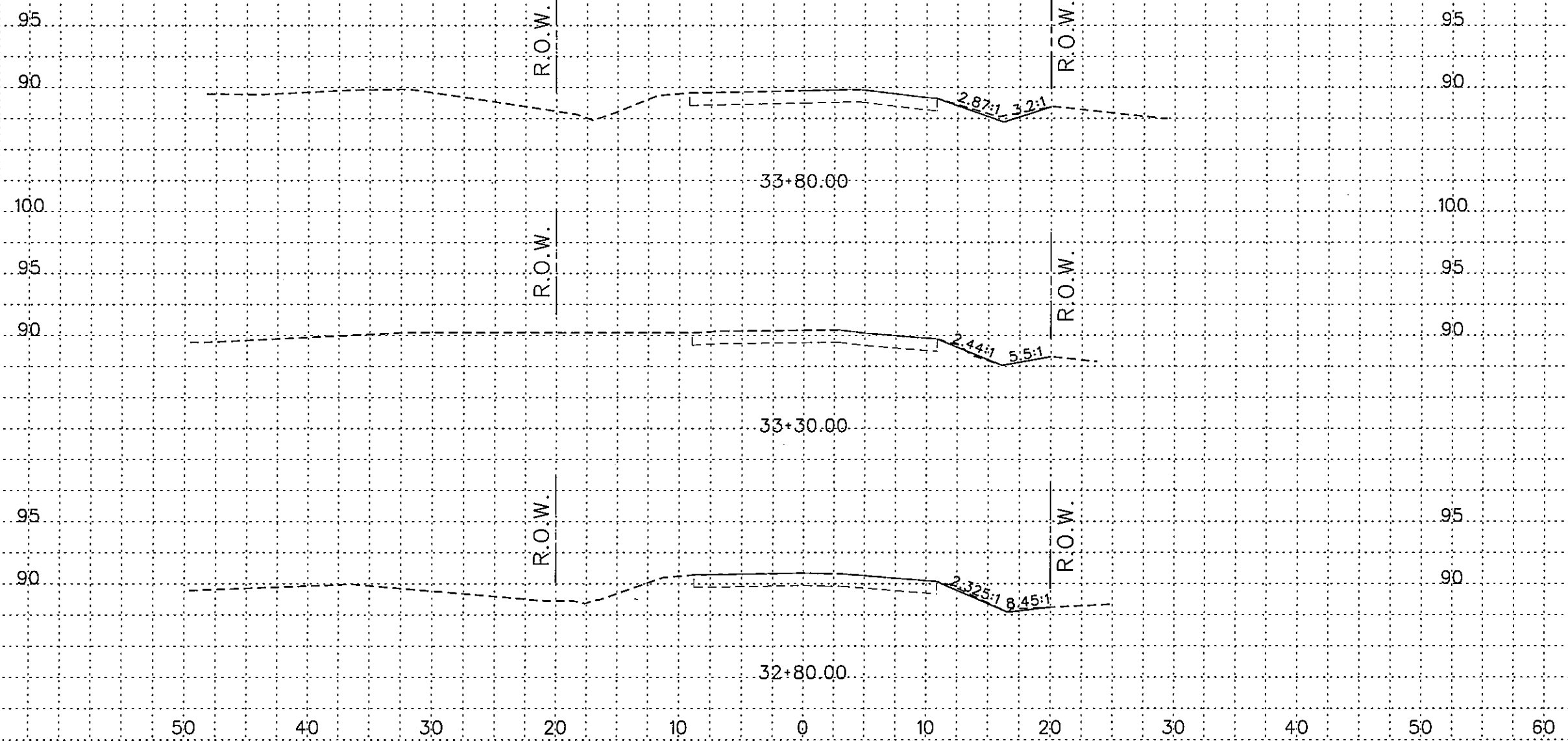
HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
EL GATO ROAD  
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**SHEET No.**  
**47**





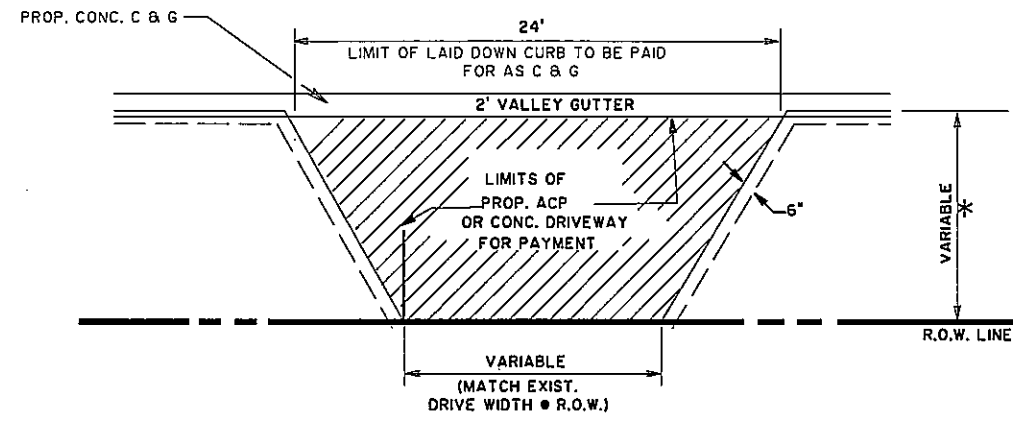
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HIDALGO COUNTY PRECINCT No.2  
PENTECOSTAL SUBDIVISION  
EL GATO ROAD  
DESIGN CROSS-SECTION

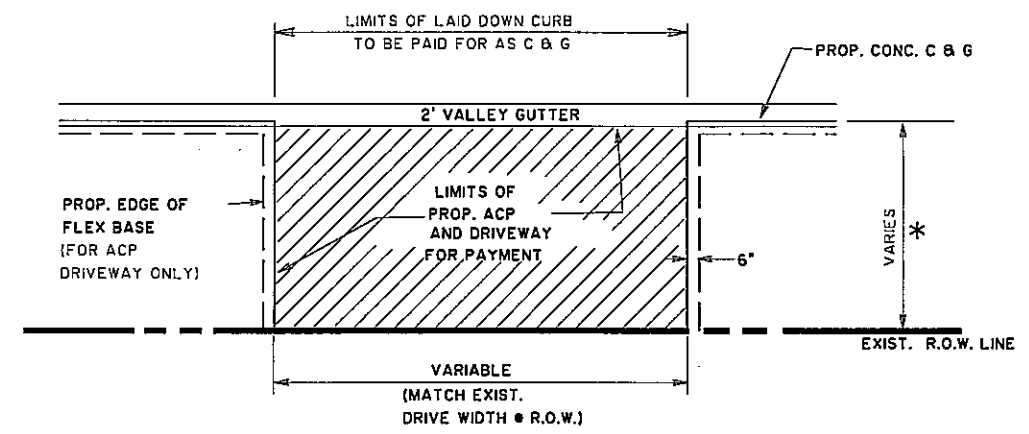
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**PLAN OF PRIVATE AND COMMERCIAL DRIVES**  
(W/DRIVE LESS THAN 24' • R.O.W. LINE)

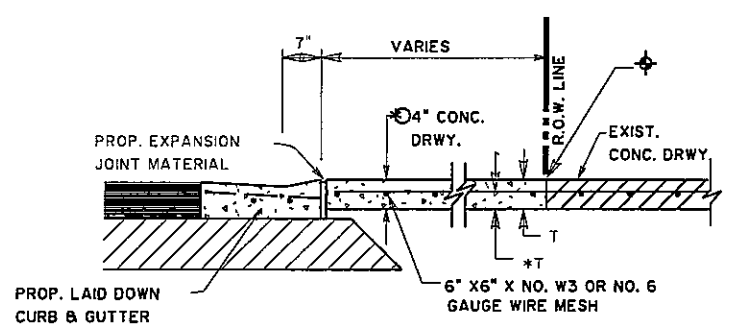
⊗ SEE NOTE BELOW

\* SEE P&P SHEETS



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**  
(W/DRIVE WIDTH EQUAL TO OR GREATER THAN 24')

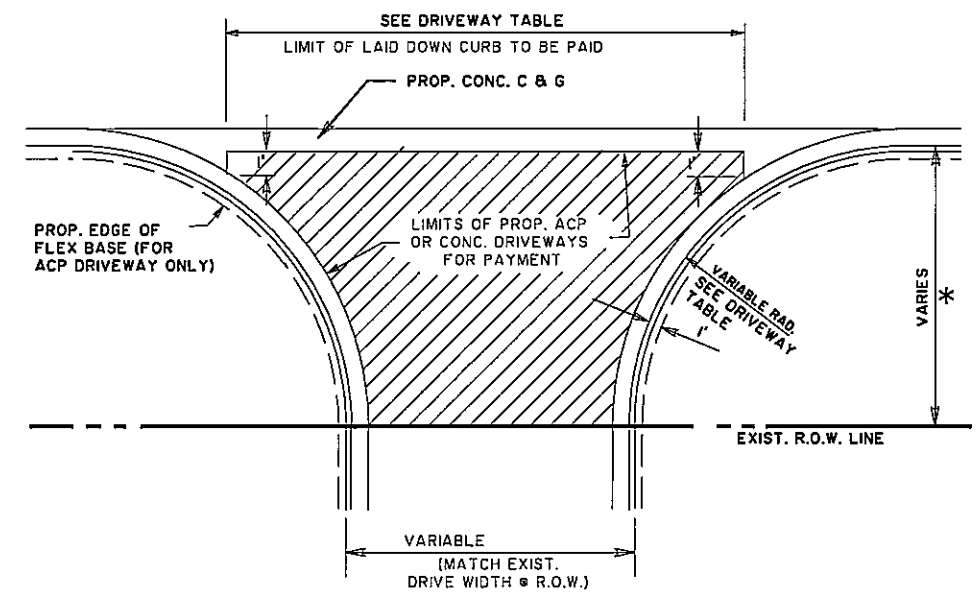
**PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER**



**TYPICAL CONCRETE DRIVEWAY SECTION**

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

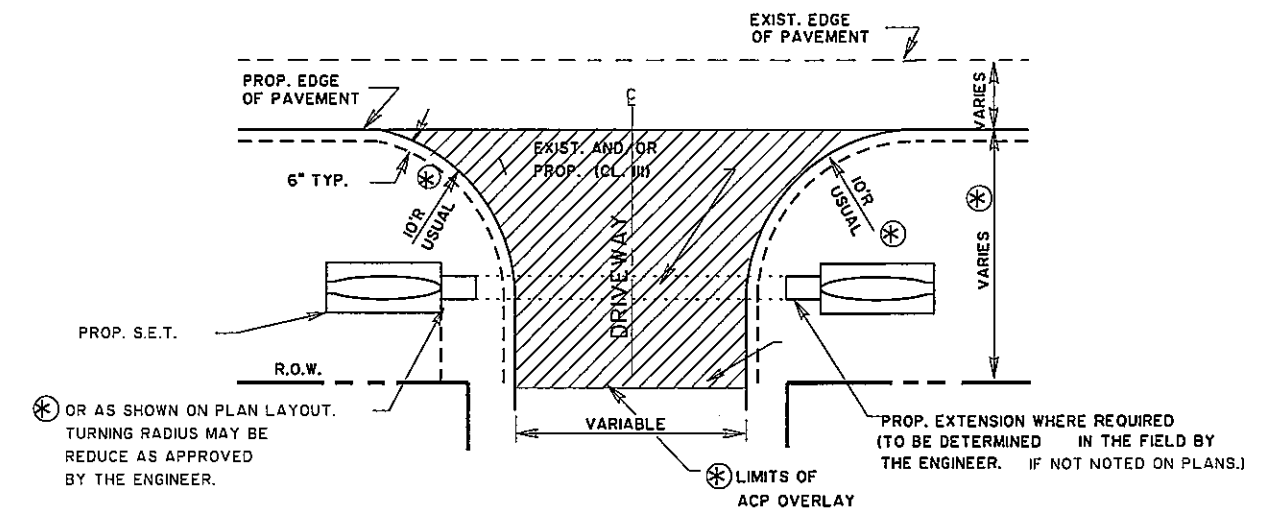
⊗ 6" FOR COMMERCIAL DRIVES



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

SEE P&P SHEETS FOR LOCATIONS OF DRIVES

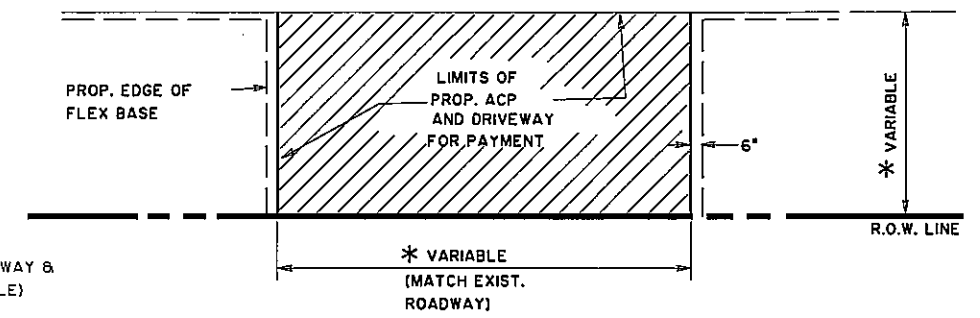
**PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER**



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

\*W/DRIVE LESS THAN 24' • R.O.W. LINE)

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



**PLAN OF PRIVATE AND COMMERCIAL DRIVES**

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

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

- NOTE:** TY PRB-1  
EXIST. PAVED CALICHE AND /OR GRAVEL DRIVEWAYS TO BE SCARIFIED AND RECONSTRUCTED WITH 3" NEW AND/OR SALVAGE FLEX. BASE TO MATCH THE PROPOSED WIDENED SECTION. THEN PRIMED AND SURFACED WITH 1/4# /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 1/4# /SY ACP.
- TY P1  
EXIST. PAVED DRIVEWAYS TO BE PAVED WITH 1/4# /SY ACP TY "D".

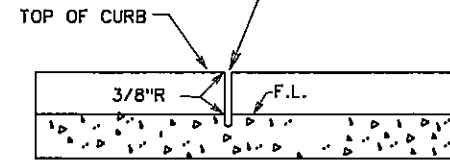
©TXDOT 1999 PHARR DISTRICT

**TEXAS DEPARTMENT OF TRANSPORTATION**

**DRIVEWAY DETAILS**

|           |             |              |           |
|-----------|-------------|--------------|-----------|
| REV. 6/99 |             | DRIVEWAY.DGN |           |
| ED. NO.   | PROJECT NO. | FILE NO.     | SHEET NO. |
| 6         |             |              | 50        |
| STATE     | COUNTY      | CONT.        | SECT.     |
| TEXAS     | HIDALGO     |              |           |

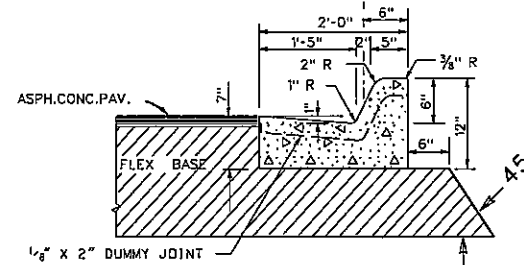
JOINTS MAY BE FORMED WITH 1/8" METAL PLATES NO FILLER REQUIRED. USUAL SPACING 10' O.C., MAX. SPACING 15' O.C.



**DETAIL DUMMY JOINT**

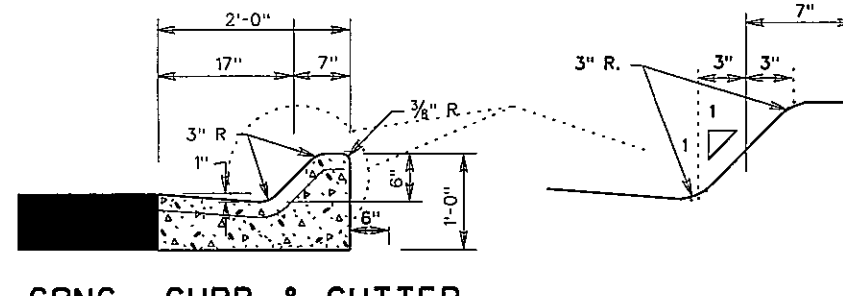
NOTE: DUMMY JOINTS TO BE USED ON CURB & CUTTER, CONC. MEDIAN AND ALL TYPE OF VALLEY GUTTERS JOINTS TO BE LOCATED BY THE ENGINEER.

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)**

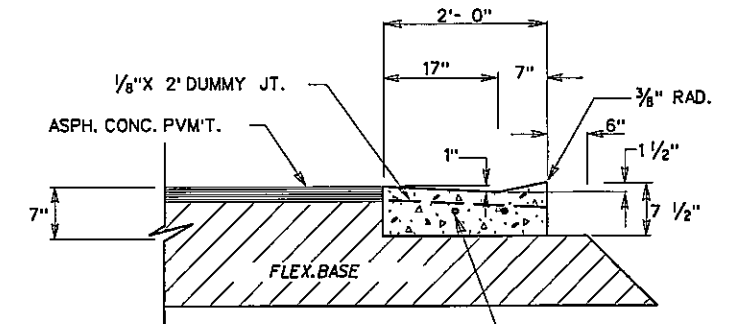
NOTE: EXPANSION JOINTS 1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUTMENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'



**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.

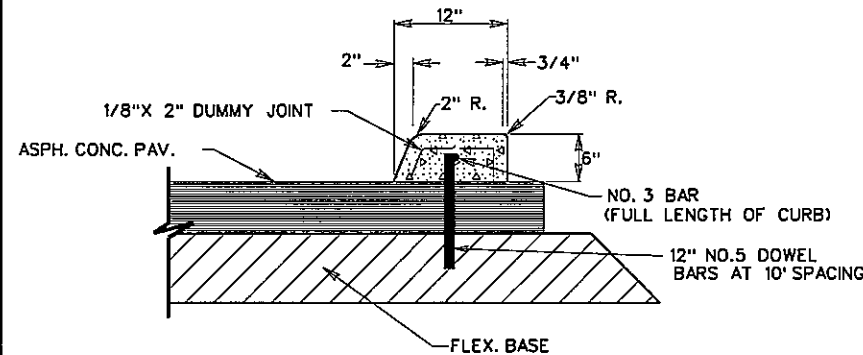
1/2" PREMOLDED EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHERE CONC. CURB & GUTTER ABUTS CONC. CURB, OR WHERE CONC. CURB & GUTTER OR CONC. CURB ABUT INLETS, BRIDGE WINGWALLS, BRIDGE ABUTMENTS AND/OR ANY OTHER LOCATIONS SPECIFIED BY THE ENGINEER. MAX. SPACING = 105'



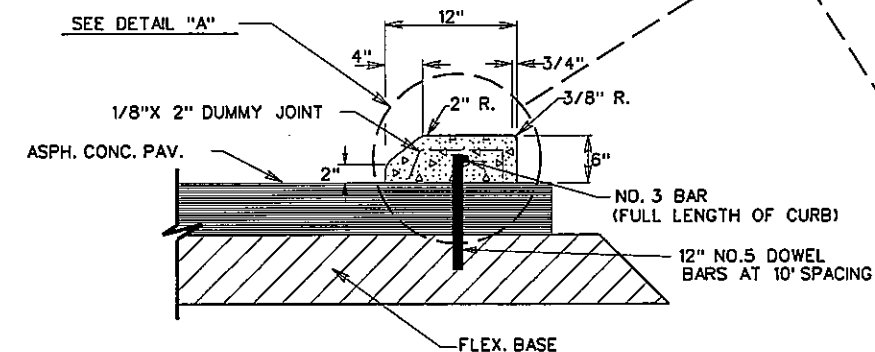
(TO BE USED ONLY ON COMMERCIAL ENTRANCES) 2-NO. 5 LONGITUDINAL REINF. BAR REINF. STEEL TO BE MADE PART OF ITEM "CONC. CURB & GUTTER." THE LENGTH OF REINFORCING STEEL WILL BE THE WIDTH OF THE PROP. COMMERCIAL ENTRANCE PLUS FOUR FEET.

**CONC. GUTTER**

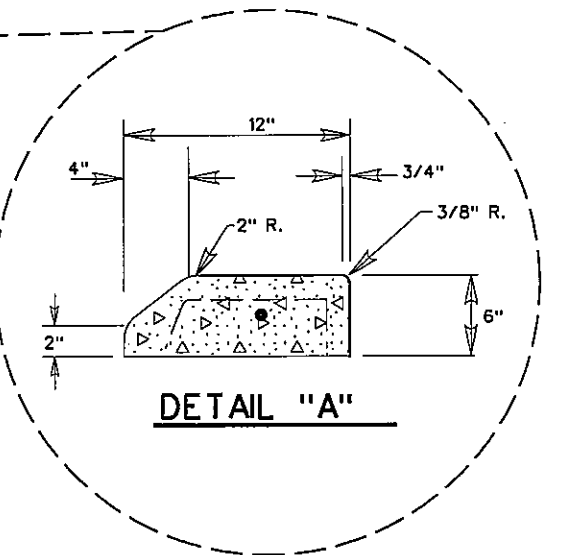
NOTE: CONCRETE GUTTER TO BE USED ONLY WHERE PERMITTED BY TEXAS DEPARTMENT OF TRANSPORTATION REGULATIONS FOR ACCESS DRIVEWAYS. 2' VALLEY GUTTER SHALL BE PAID FOR AS CONC. CURB AND GUTTER. CONCRETE CURB & GUTTER & CONCRETE CURB SHALL BE MEASURED FOR PAYMENT ALONG FACE OF CURB AT FLOW LINE.



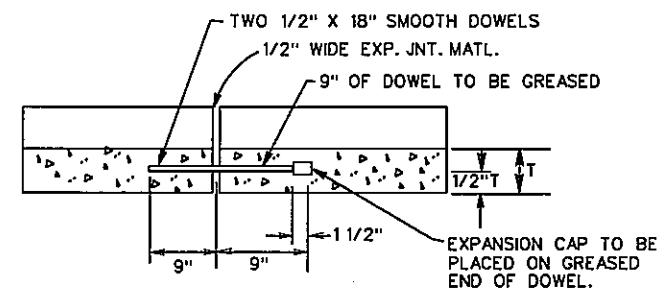
**CONC. CURB TY "A" (BARRIER)**



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



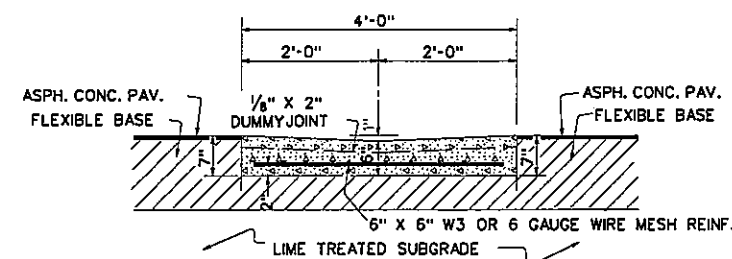
**DETAIL "A"**



**DETAIL EXPANSION JOINT**

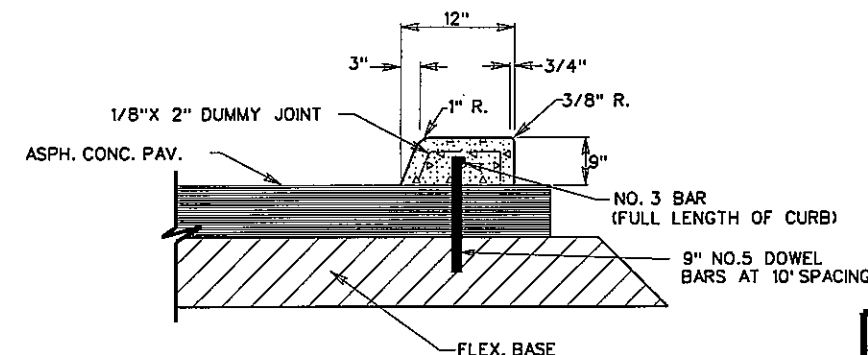
LONGITUDINAL SECTION THRU CURB AND/OR C&G. REINFORCING STEEL (WHEN USED) SHALL NOT CROSS EXPANSION JOINTS. STEEL SHALL BE TERMINATED 3" ± 1" FROM FACE OF THE JOINT.

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



**CONC. CURB TY "C" (BARRIER)**

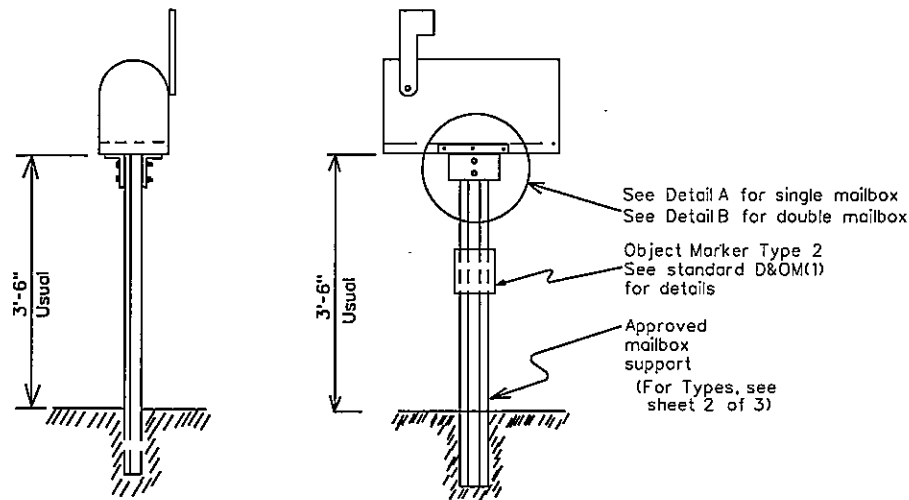
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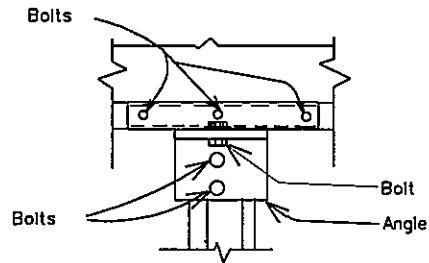
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|-------------------------------------------|-------------------|----------|-----------|-------|-----|-------------|--|--|--|
|                                           |                   |          |           |       |     |             |  |  |  |
| <b>TEXAS DEPARTMENT OF TRANSPORTATION</b> |                   |          |           |       |     |             |  |  |  |
| <b>CONC. CURB &amp; GUTTER DETAILS</b>    |                   |          |           |       |     |             |  |  |  |
| <b>REV. 6/99</b>                          |                   |          |           |       |     |             |  |  |  |
| <b>C&amp;G.DGN</b>                        |                   |          |           |       |     |             |  |  |  |
| ED. NO.                                   | STATE PROJECT NO. | FILE NO. | SHEET NO. |       |     |             |  |  |  |
| 6                                         |                   |          | 51        |       |     |             |  |  |  |
| STATE                                     | STATE DIST.       | COUNTY   | CONT.     | SECT. | JOB | HIGHWAY NO. |  |  |  |
| TEXAS                                     | 21                | Hidalgo  |           |       |     |             |  |  |  |

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|                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| LEVELS DISPLAYED | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
|------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

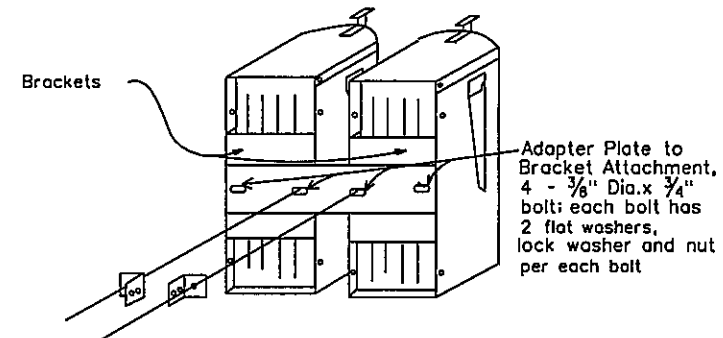


**SINGLE AND DOUBLE MAILBOX MOUNT**

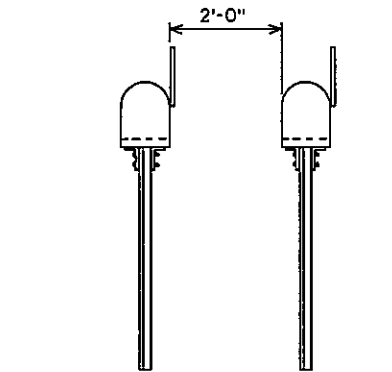


For bolt sizes see notes for  
Standard Mailbox Attachment Details

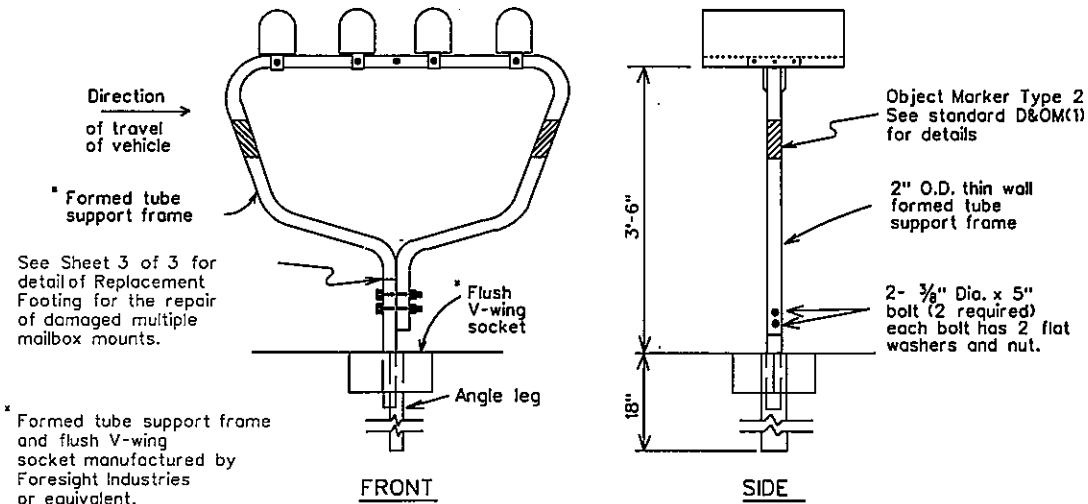
**DETAIL A  
SINGLE MAILBOX MOUNT**



**DETAIL B  
DOUBLE MAILBOX MOUNT**  
(Not permitted for No. 2 Mailboxes)



**TWO SINGLE  
MAILBOX INSTALLATIONS**

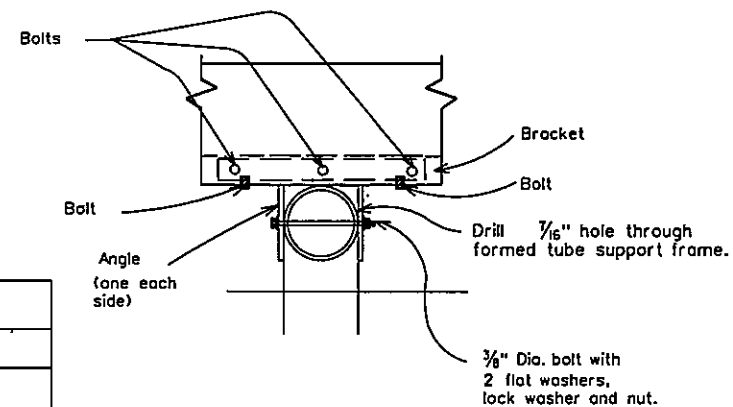


\* Formed tube support frame  
and flush V-wing  
socket manufactured by  
Foresight Industries  
or equivalent.

Maximum insertion depth of  
formed tube support frame  
into V-wing socket is 9".  
Minimum insertion depth is 7".

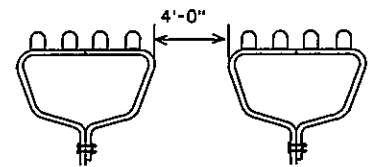
| Permissible Number of Mailboxes<br>on Multiple Support:        |             |
|----------------------------------------------------------------|-------------|
| All Size No. 1                                                 | - 5 Maximum |
| Combination Various Sizes<br>with no more than 2 Size<br>No. 2 | - 4 Maximum |
| All Size No. 2                                                 | - 3 Maximum |

**MULTIPLE MAILBOX MOUNT**



**SECTION B-B**

For bolt sizes see notes for  
Standard Mailbox Attachments Details

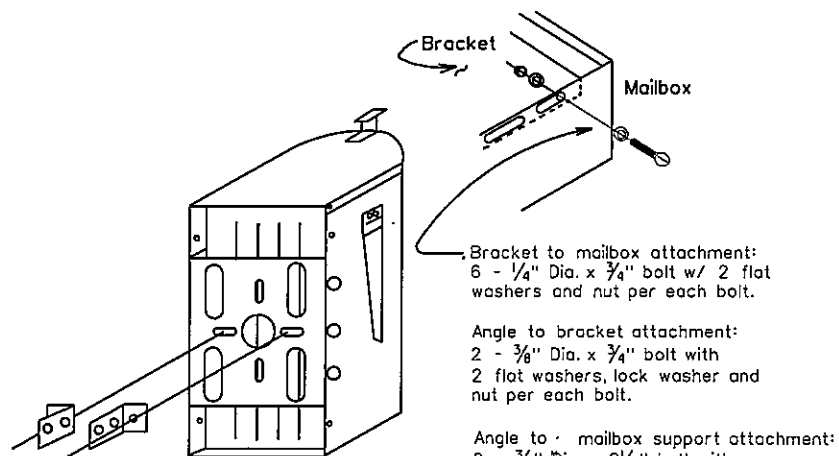


**TWO OR MORE MULTIPLE  
MAILBOX INSTALLATIONS**

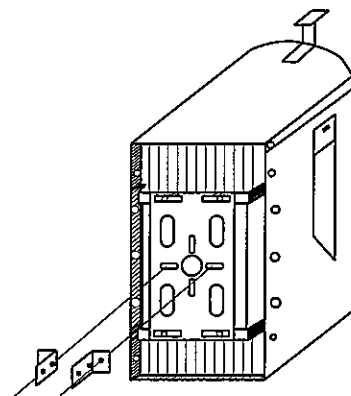
For General Notes See sheet 2 of 3.

See Sheet 3 of 3 for Adapter  
Plate, Angle Bracket and Bracket  
Extension Hardware Details.

Bracket may be installed with edge  
down on size No. 1 mailboxes.



**SIZE NO. 1 MAILBOX**



**SIZE NO. 1 1/2 AND NO. 2 MAILBOX**

**STANDARD MAILBOX ATTACHMENT DETAILS**

Bracket to mailbox attachment:  
6 - 1/4" Dia. x 3/4" bolt w/ 2 flat  
washers and nut per each bolt.

Bracket to bracket extension attachment:  
2 - 1/4" Dia. x 3/4" carriage bolt w/  
flat washer, lock washer and  
nut per bolt (4 bolts required if 2  
bracket extensions are used).

Angle to bracket attachment:  
2 - 3/8" Dia. x 3/4" bolt w/ 2 flat  
washers, lock washer and nut per each  
bolt.

Angle to mailbox support attachment:  
2 - 3/8" Dia. x 2 1/2" bolt w/ 2 flat  
washers, lock washer, and nut per each  
bolt.

**Texas Department of Transportation**  
Construction & Maintenance Division (Maintenance)

**MAILBOX MOUNTING DETAILS**

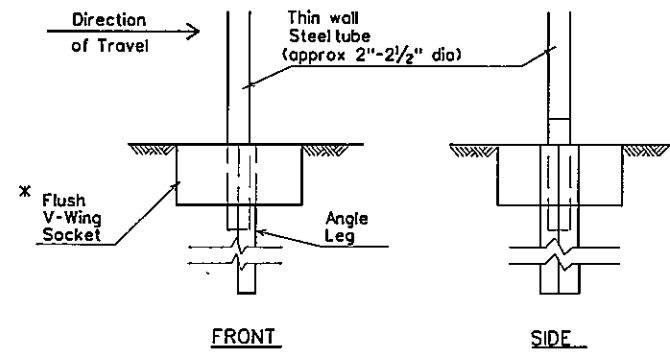
**MB-96**

Sheet 1 of 3

|              |          |        |         |                     |     |         |
|--------------|----------|--------|---------|---------------------|-----|---------|
| FILE#        | MB96.DGN | DN#    | CK#     | DW#                 | CK# | NEG#    |
| © TxDOT 1996 |          | DIST   | FED REG | FEDERAL AID PROJECT |     | SHEET   |
| REVISIONS    |          | 5      |         |                     |     | 52      |
|              |          | COUNTY | CONTROL | SECT                | JOB | HIGHWAY |

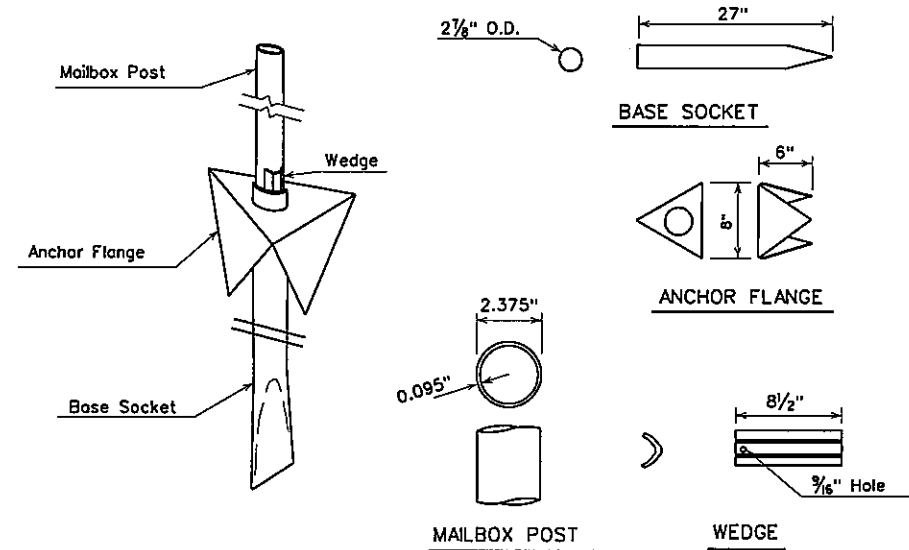
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| LEVELS DISPLAYED |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1                | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |    |
| 17               | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 33               | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |
| 49               | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |    |



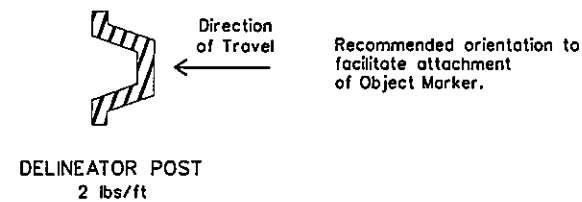
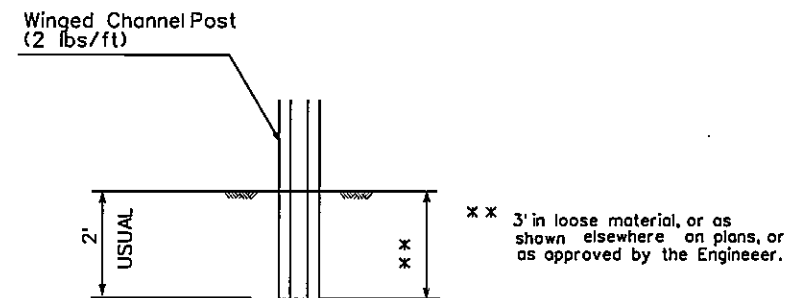
\* See General Note 6.

**TYPE 1 SUPPORT/FOUNDATION**  
THIN WALL STEEL TUBE w/ V-LOC ANCHORAGE



All dimensions may be varied to fit 2 inch thin wall steel tube post if approved by Engineer

**TYPE 2 SUPPORT/FOUNDATION**  
THIN WALL STEEL TUBE w/ANCHOR FLANGE



**TYPE 3 SUPPORT/FOUNDATION**  
DELINEATOR POST

**NOTES FOR TYPE 2 SUPPORT/FOUNDATION**

1. The Base Socket is formed from 2 3/8" O.D. x 12 gauge galvanized pipe.
2. The Anchor Flange is formed from 12 gauge galvanized steel made to A-525. Only needed for soft soils as determined by the Engineer.
3. The Wedge is formed from 11 gauge galvanized steel made to ASTM A-525.
4. The Mailbox Post is 2.375" O.D. 0.095" thin wall steel tubing.
5. Steel Support Foundation unit shall be made from new material and shall be corrosion resistant. The unit shall be galvanized in accordance with ASTM designation A-123, A-525, G-90 or better. In addition, steel members of the support that are in direct contact with earth must be galvanized to ASTM Designation G-90 and coated with one mil of clear approved coating, or galvanized in accordance with ASTM Designation A-123.

**GENERAL NOTES**

1. Bolts, nuts, washers and other miscellaneous hardware shall be galvanized in accordance to ASTM Designation: A-153, Class C or D, or B-454, Class 40. All bolts shall meet ASTM designation A-307.
2. Foundation and post must be driven plumb. Recommended procedure is to drive post or foundation about 10"-12", stop and check for straightness, front to back, side to side. Make adjustments, continue to drive an additional 10"-12", repeat check, make final adjustments, complete installation.
3. The 2 lbs/ft. winged channel posts for the Type 3 support shall conform to the requirements of departmental materials specification D-9-7130.
4. Hardware for mounting mailboxes to support/foundation furnished by Foresight Industries or equivalent may be used when approved by the Engineer.
5. Where more than two mailboxes are to be mounted at one location a multiple mailbox mount shall be used.
6. The formed tube support frame for the multiple mailbox mount and the Type 1 mailbox support system are patented and manufactured by Foresight Products Inc.
7. Any support or foundation on these standards may be used for mounting single or double mailboxes.



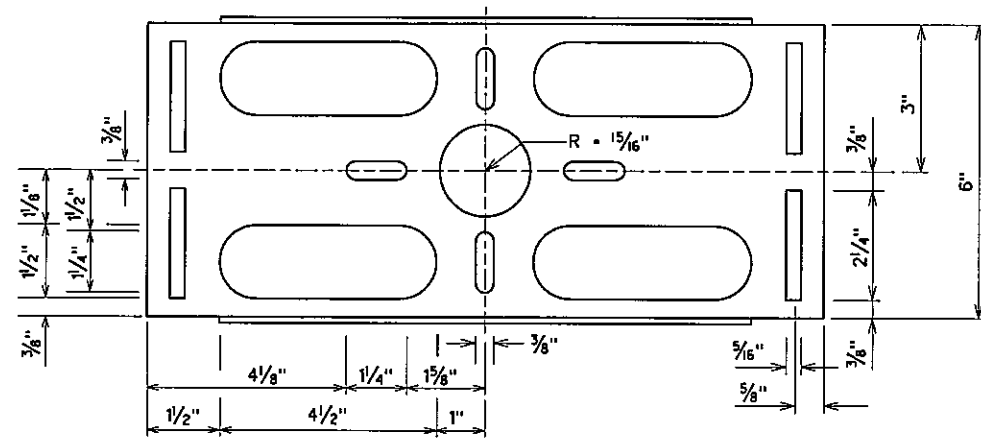
**MAILBOX SUPPORT/FOUNDATION DETAILS**

**MB-96**

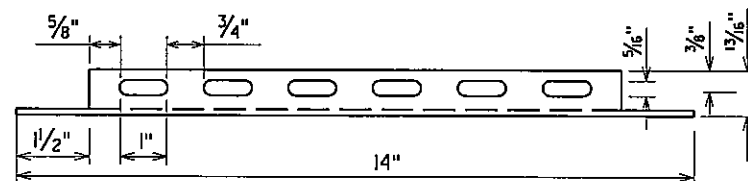
Sheet 2 of 3

|                |     |        |         |                     |         |
|----------------|-----|--------|---------|---------------------|---------|
| FILE: MB96.DGN | DN: | CK:    | DW:     | CK:                 | NEG:    |
| © TxDOT 1996   |     |        |         |                     |         |
| REVISIONS      |     | DIST   | FED REQ | FEDERAL AID PROJECT | SHEET   |
|                |     | 6      |         |                     | 53      |
|                |     | COUNTY | CONTROL | SECT                | JOB     |
|                |     |        |         |                     | HIGHWAY |

|   | LEVELS DISPLAYED |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1                | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 5 | 7                | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 4 | 8                | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
| 3 | 9                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| 2 | 0                | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| 1 | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| 0 | 2                | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

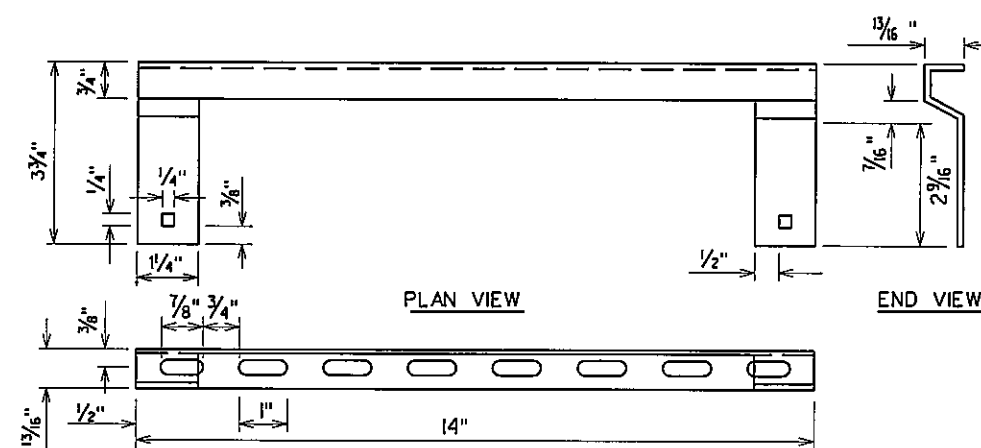


PLAN VIEW



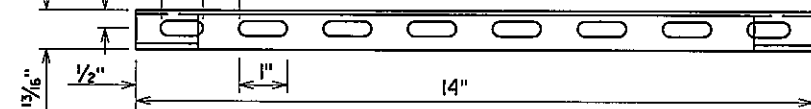
SIDE VIEW

**BRACKET**



PLAN VIEW

END VIEW



SIDE VIEW

## BRACKET EXTENSION

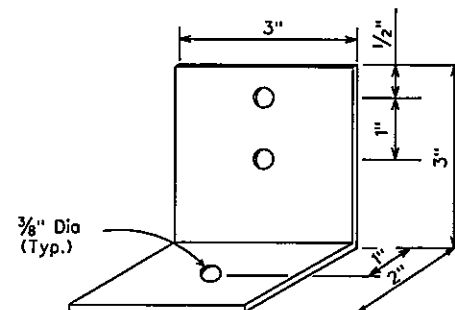
**Object Marker Notes:**

Object Markers for mailbox support should be the OM-2SR or OM-2VP (6" x 12"). Object markers shall conform to Department Material Specification D-9-8500. Attachment of Object Marker to support may be:

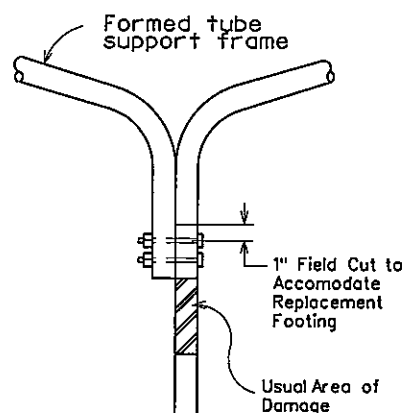
- 1) For round or tubular support, with pressure sensitive adhesive.
- 2) For winged channelsupport, with reflective material on aluminum or plastic substrate and attached by nut/bolt with washers or pop rivet.

The marker is to be placed between 6" and 8" below the bottom of the mailbox.

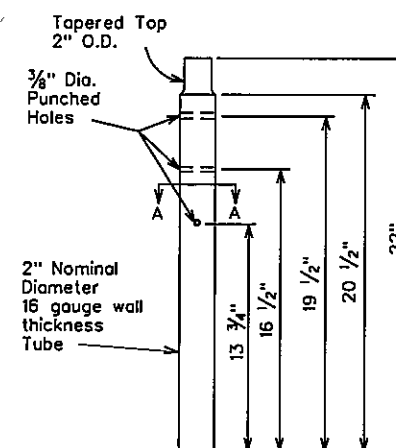
On two-way two lane highways, a marker is to be placed on each side of the support.



## ANGLE



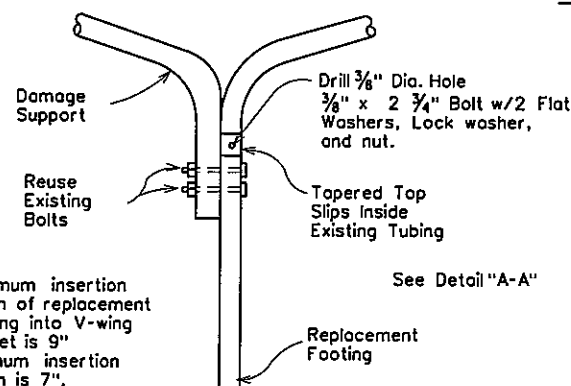
TYPICAL MULTIPLE MAILBOX  
MOUNT

REPLACEMENT  
FOOTING

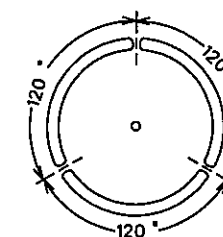
NOTES:

Only damaged multiple mailbox mounts having no visible damage other than to the portion of the footing that is to be discarded may be repaired.

Material for the repair footing is to be AISI-1008 hot rolled carbon steel. The unit shall be galvanized.

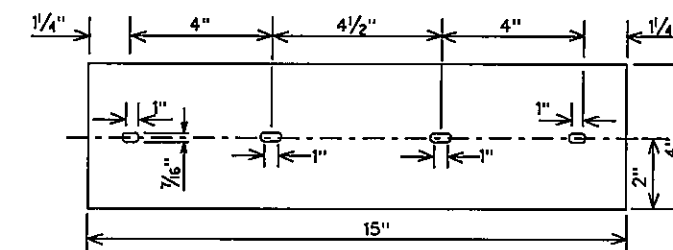


REPAIR DETAIL



DETAIL "A-A"

**DETAIL OF REPLACEMENT FOOTING**  
FOR REPAIR OF MULTIPLE MAILBOX MOUNT



Holes Shall Have a Diameter of  $\frac{7}{16}$ ".

## ADAPTER PLATE

Hardware for mounting mailboxes to support/foundation furnished by Foresight Industries or equivalent may be used when approved by the Engineer.

The bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet conforming to ASTM A-525(G-90).

The angle shall be constructed of 14 gauge steel sheet and the adapter plate shall be constructed of 12 gauge steel sheet. The angle and adapter plate shall be fabricated in accordance with ASTM A-123 or constructed of galvanized steel sheet conforming to ASTM A-525(G-90).

Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.



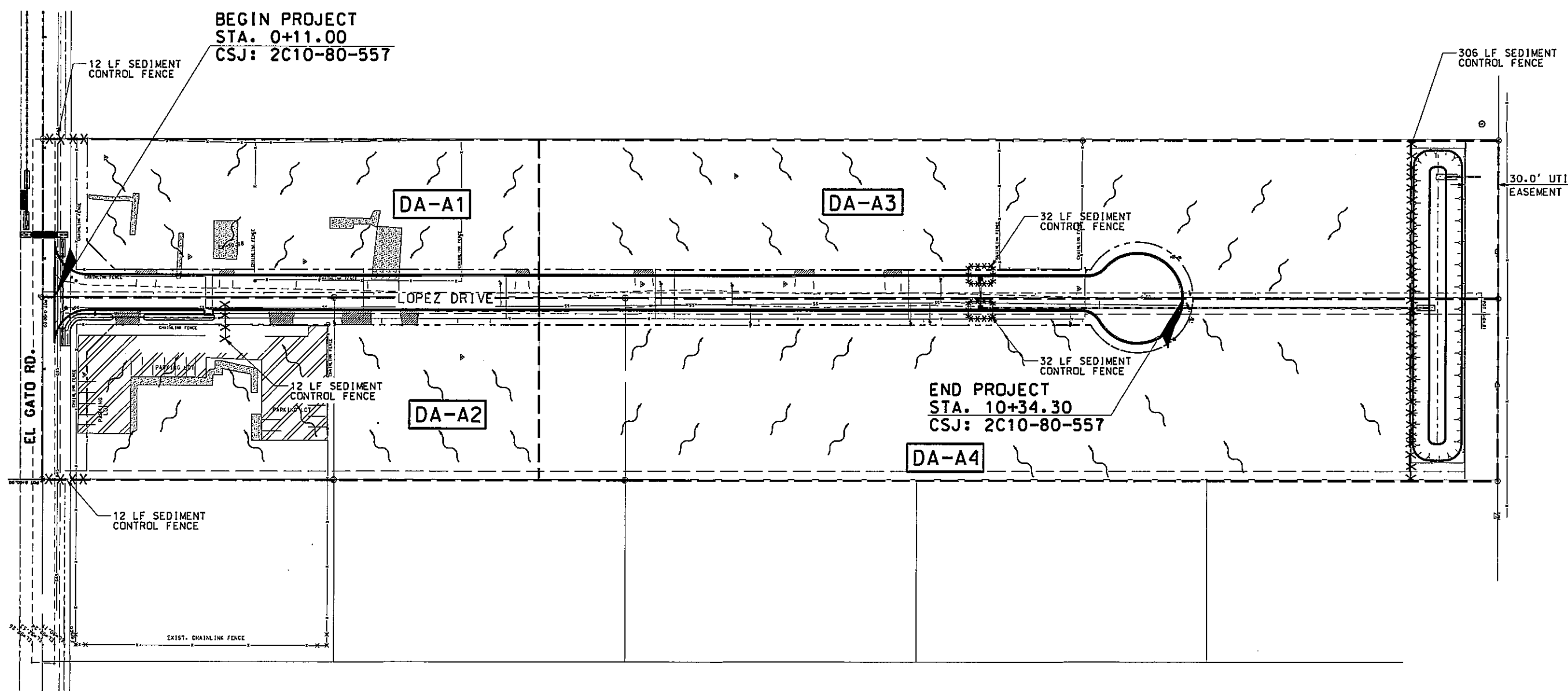
## STANDARD MAILBOX HARDWARE

MB-96

Sheet 3 of 3

|              |          |      |         |                     |      |      |         |
|--------------|----------|------|---------|---------------------|------|------|---------|
| FILE#        | MB95.DGN | DN#  | CK#     | DW#                 | CK#  | NEG# |         |
| © TXDOT 1995 |          | DIST | FED REG | FEDERAL AID PROJECT |      |      | SHEET   |
| REVISIONS    |          | 6    |         |                     |      | 54   |         |
| COUNTY       |          |      |         | CONTROL             | SECT | JOB  | HIGHWAY |
|              |          |      |         |                     |      |      |         |

SCALE: 1"=100'



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

| PROJECT TOTALS (CSJ: 1080-557-21) |      |       |      | DESCRIPTION                                         |
|-----------------------------------|------|-------|------|-----------------------------------------------------|
| ITEM                              | EST. | FINAL | UNIT |                                                     |
| 506                               | 538  |       | LF   | SEDIMENT CONTROL FENCE (INCLUDES ALONG EL GATO RD.) |
|                                   |      |       |      |                                                     |
|                                   |      |       |      |                                                     |

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

STATE OF TEXAS  
RAMIRO GUTIERREZ  
65978  
Professional Engineer  
Civil Engineering

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
DATE: 2-9-11  
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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
DRAINAGE AREA MAP

| BY | DATE | REVISION |
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SHEET No.  
55

BM DATA

ALUMINUM DISK ON CONCRETE LOCATED  
257.0' SOUTH OF INTERSECTION OF  
EL GATO ROAD AND LOPEZ DRIVE ON  
THE WEST SIDE, FENCE CORNER.  
ELEV. = 92.28'

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

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R. Gutierrez  
Engineering Corporation  
130 E. PARK AVENUE • PHARR, TEXAS 78577  
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FPM No. 486



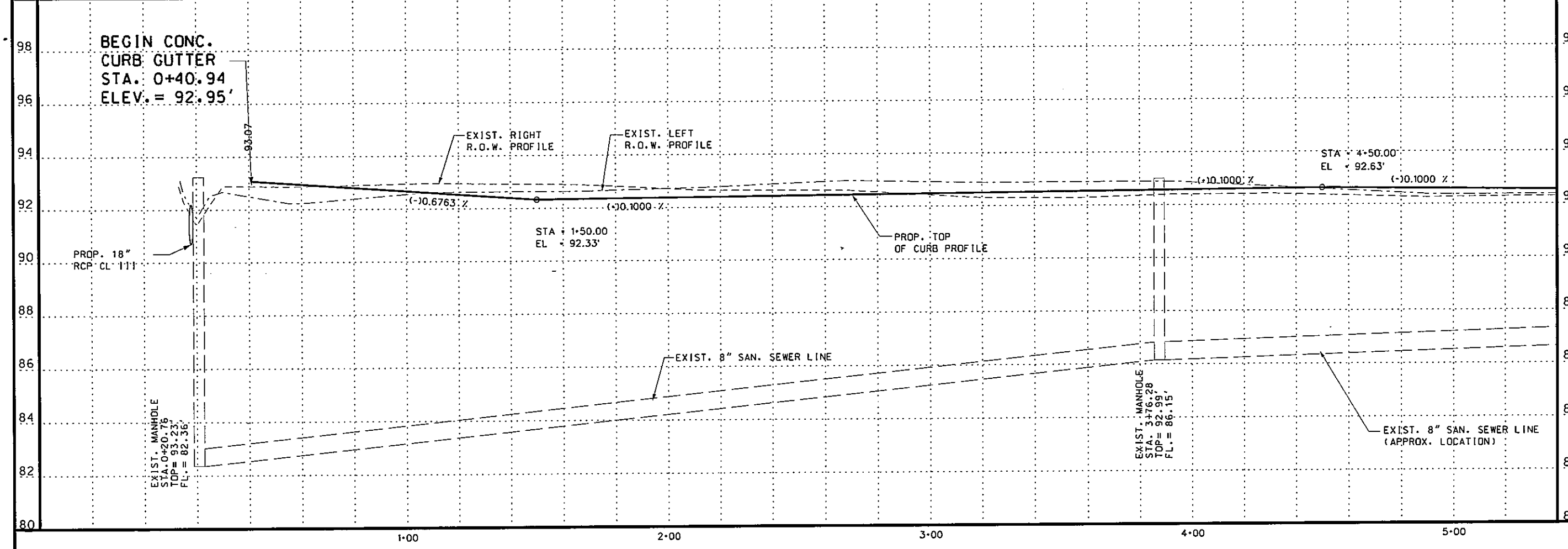
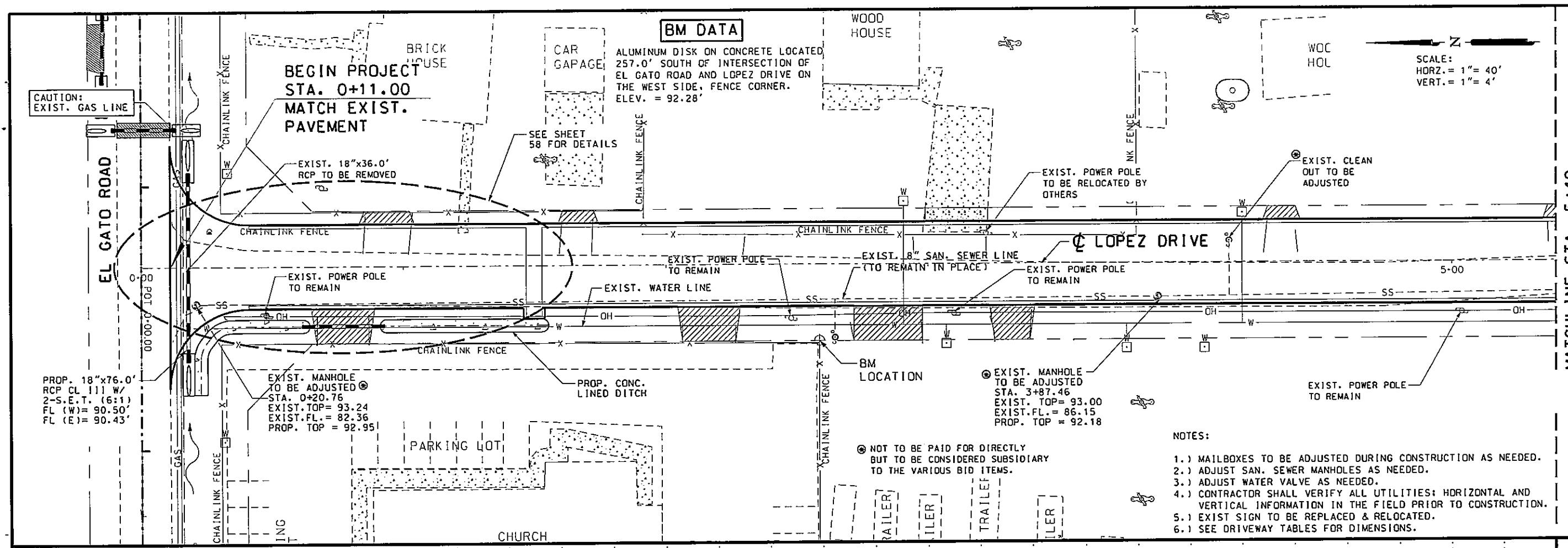
THE SEAL APPEARING ON THIS  
DOCUMENT WAS AUTHORIZED  
BY RAMIRO GUTIERREZ, P.E. 65948  
DATE: 1-19-11  
ALTERATION OF A SEALED  
DOCUMENT WITHOUT PROPER  
NOTIFICATION TO THE  
RESPONSIBLE ENGINEER IS AN  
OFFENSE UNDER THE TEXAS  
ENGINEERING PRACTICE LAW.

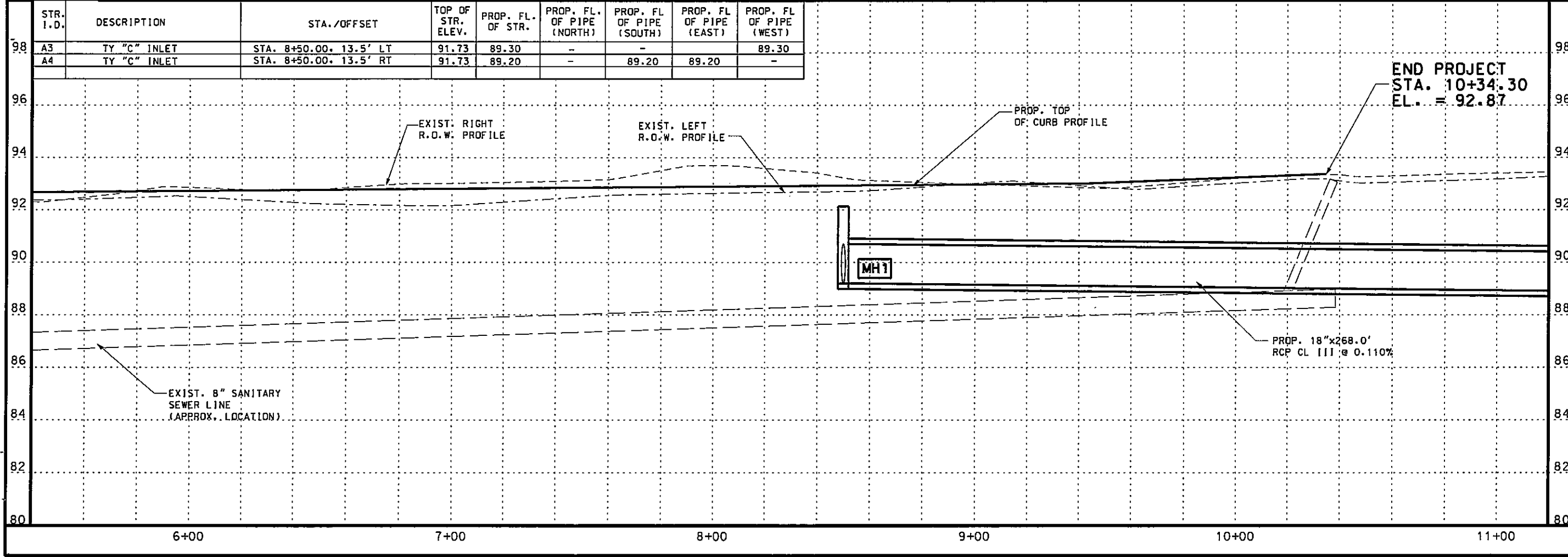
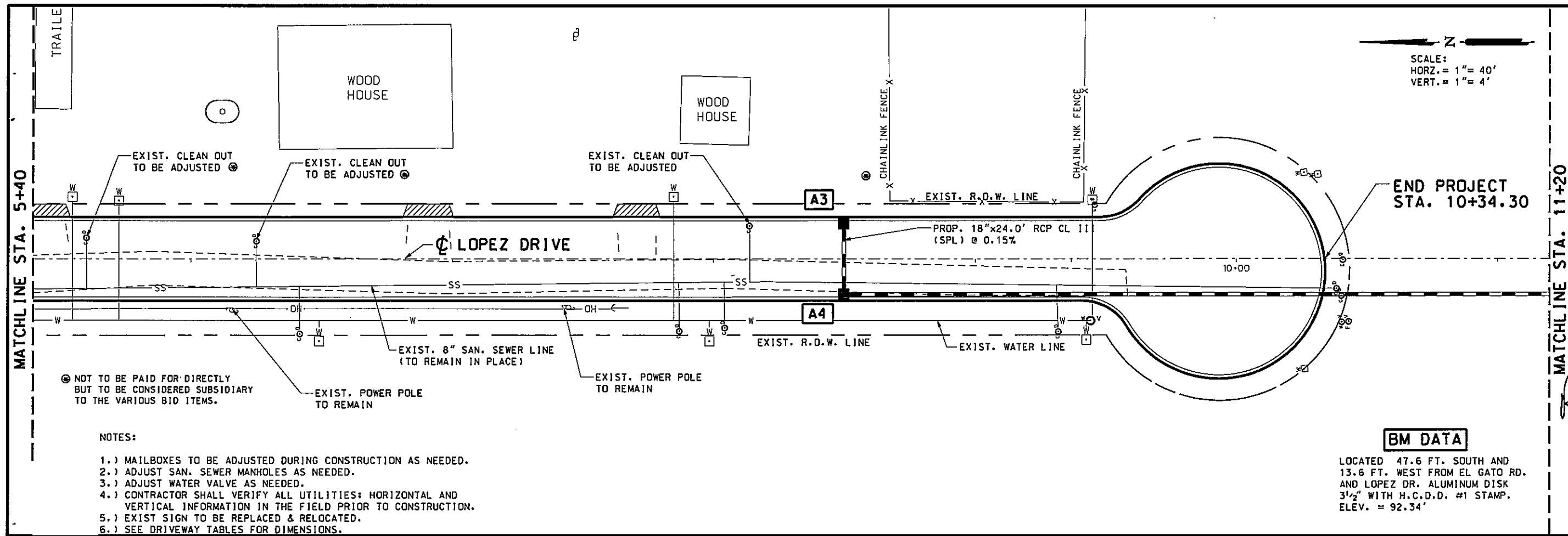
HIDALGO COUNTY PRECINCT No. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE

| NO. | REVISION | DATE | BY |
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SHEET No.  
56





Professional Engineers & Land Surveyors

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FIRM No. 486

STATE OF TEXAS

SEAL OF R. GUTIERREZ, P.E. 65848

DATE: 2-9-11

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

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HIDALGO COUNTY PRECINCT No. 2

PENTECOSTAL SUBDIVISION

UTILITY AND DRAINAGE

LOCATION

BY

DATE

REVISION

FB. No.

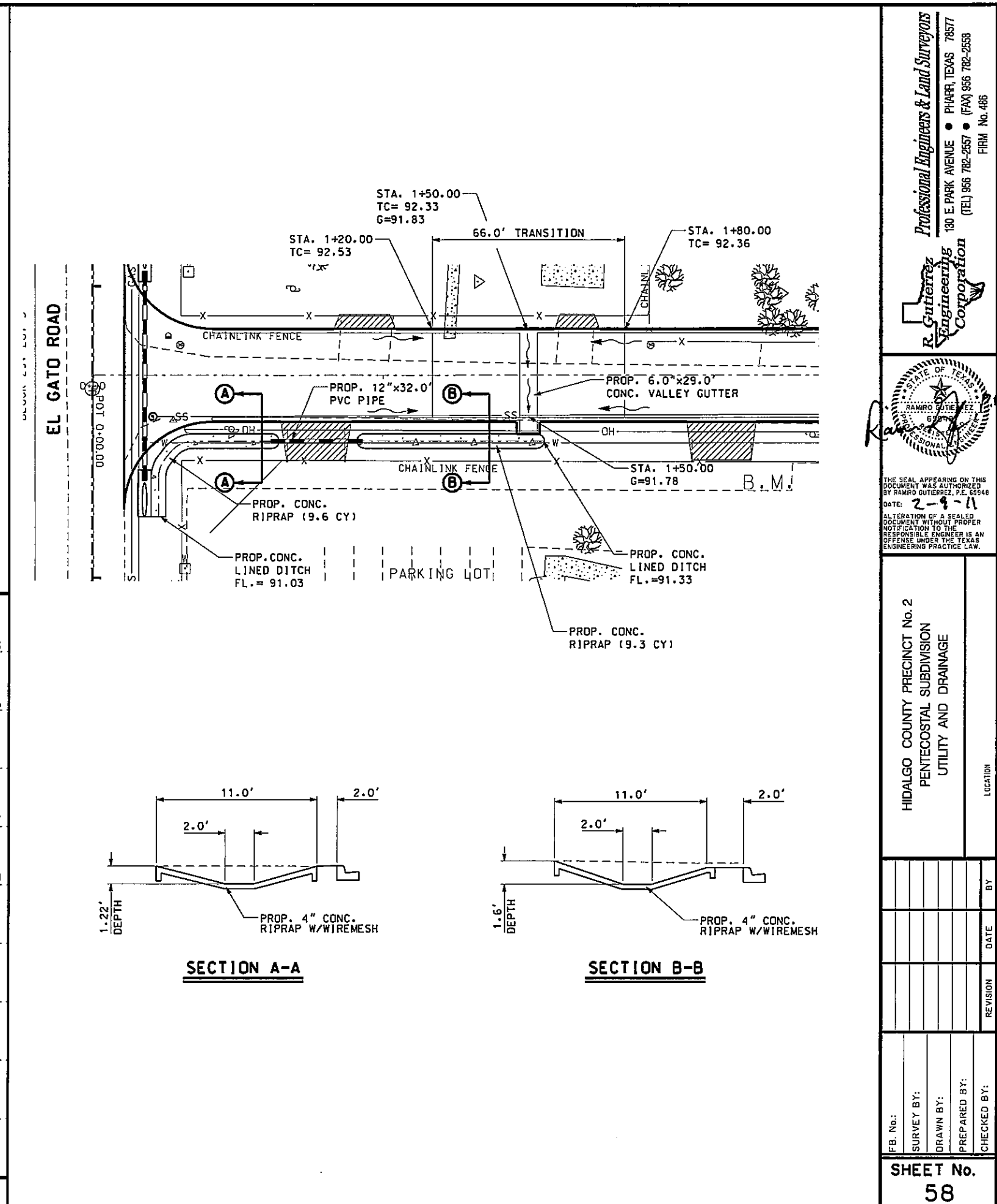
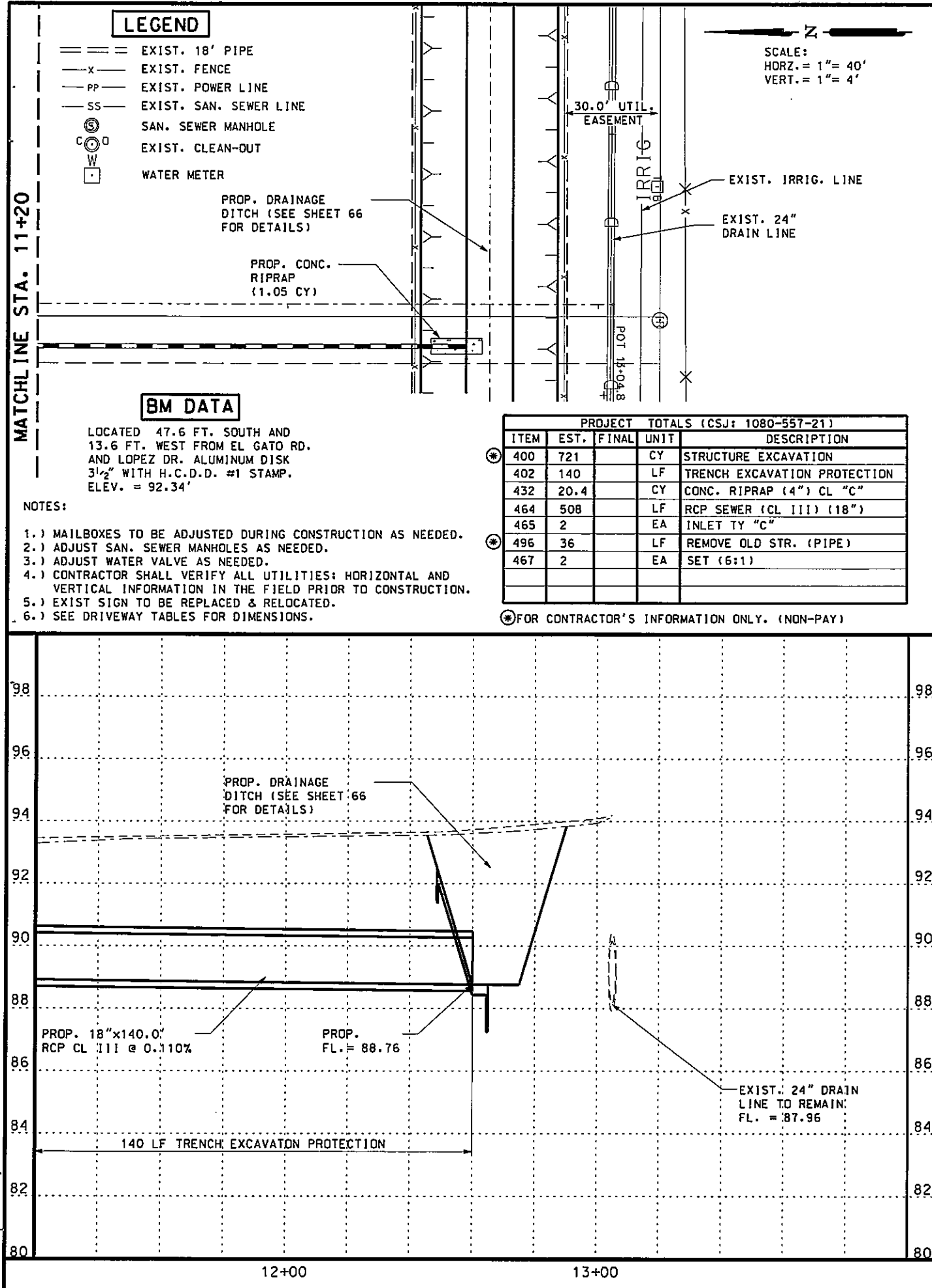
SURVEY BY:

DRAWN BY:

PREPARED BY:

CHECKED BY:

SHEET No. 57



# BM DATA

ALUMINUM DISK ON CONCRETE LOCATED 257.0' SOUTH OF INTERSECTION OF EL GATO ROAD AND LOPEZ DRIVE ON THE WEST SIDE, FENCE CORNER. ELEV. = 92.28'

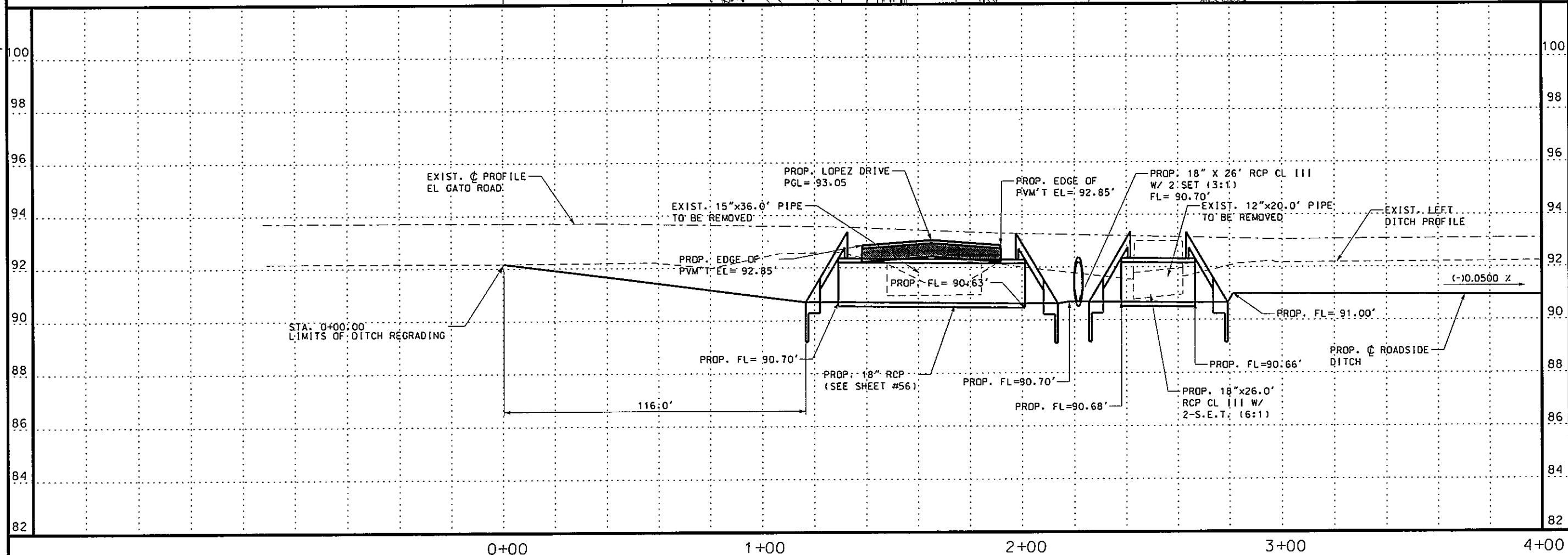
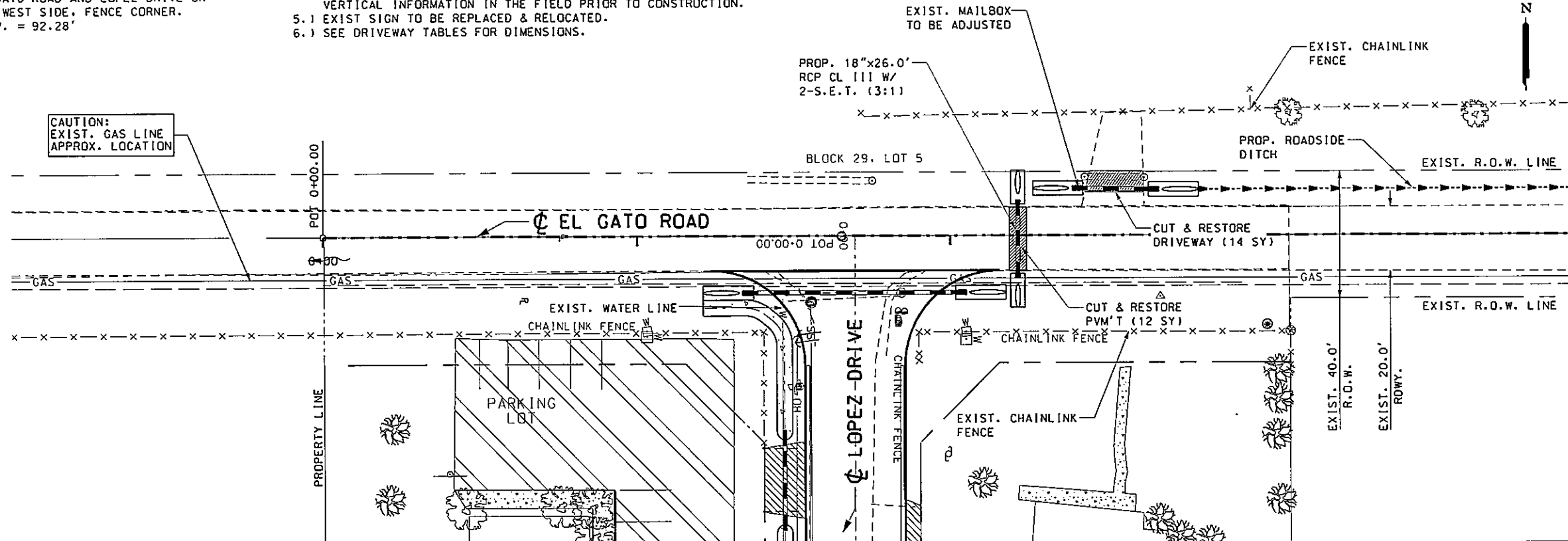
## NOTES:

- 1.) MAILBOXES TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
- 2.) ADJUST SAN. SEWER MANHOLES AS NEEDED.
- 3.) ADJUST WATER VALVE AS NEEDED.
- 4.) CONTRACTOR SHALL VERIFY ALL UTILITIES; HORIZONTAL AND VERTICAL INFORMATION IN THE FIELD PRIOR TO CONSTRUCTION.
- 5.) EXIST SIGN TO BE REPLACED & RELOCATED.
- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

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

## LEGEND

- SIGN
- MAIL BOX
- POWER POLE
- IRON ROD (No. 4 Rebar)
- CONTROL POINT
- CPS (COTTON PICKER SPINDLE)
- WATER METER
- WATER VALVE
- VALVE MARKER
- WATER VALVE MARKER
- FLUSH VALVE
- BENCHMARK
- FENCE
- TREE
- TREE BUSH
- TREE
- TREE
- SEDIMENT CONTROL FENCE



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FIRM No. 486



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DATE: 1-19-11  
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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE  
ROADSIDE DITCH EL GATO RD.  
SHEET 1 OF 7

| BY | DATE | REVISION |
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SHEET No. 59

ALUMINUM DISK ON CONCRETE LOCATED  
257.0' SOUTH OF INTERSECTION OF  
EL GATO ROAD AND LOPEZ DRIVE ON  
THE WEST SIDE, FENCE CORNER.  
ELEV. = 92.28'

NOTES:

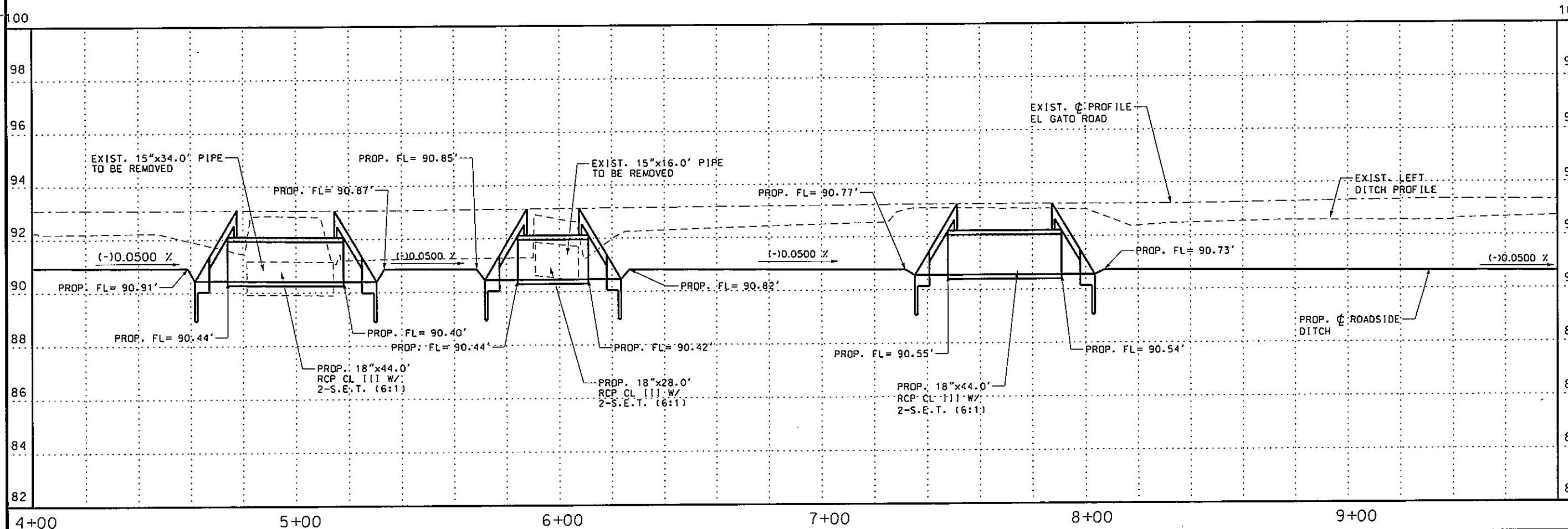
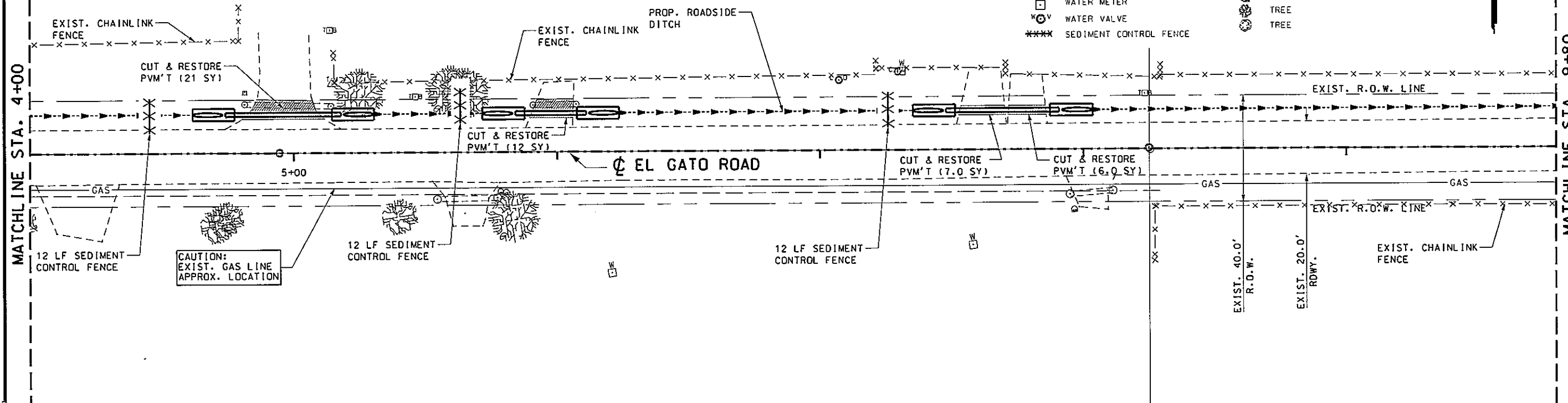
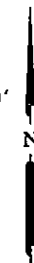
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- 2.) ADJUST SAN. SEWER MANHOLES AS NEEDED.
- 3.) ADJUST WATER VALVE AS NEEDED.
- 4.) CONTRACTOR SHALL VERIFY ALL UTILITIES; HORIZONTAL AND VERTICAL INFORMATION IN THE FIELD PRIOR TO CONSTRUCTION.
- 5.) EXIST SIGN TO BE REPLACED & RELOCATED.
- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

**LEGEND**

- |                                                                                     |                             |
|-------------------------------------------------------------------------------------|-----------------------------|
|  | SIGNAL                      |
|  | MAIL BOX                    |
|  | POWER POLE                  |
|  | IRON ROD (No. 4 Rebar)      |
|  | CONTROL POINT               |
|  | CPS (COTTON PICKER SPINDLE) |
|  | WATER METER                 |
|  | WATER VALVE                 |
|  | SEDIMENT CONTROL FENCE      |

- |  |                    |
|--|--------------------|
|  | VALVE MARKER       |
|  | WATER VALVE MARKER |
|  | FLUSH VALVE        |
|  | BENCHMARK          |
|  | FENCE              |
|  | TREE               |
|  | TREE BUSH          |
|  | TREE               |
|  | TREE               |

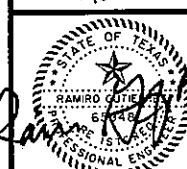
SCALE:  
HORIZ. = 1" = 40'  
VERT. = 1" = 4'



***Professional Engineers & Land Surveyors***  
317 E. PARK AVENUE • PHARR, TEXAS 78577  
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FIRM No. 496



R. Gutierrez  
Engineering  
Corporation



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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE  
ROADSIDE DITCH EL GATO RD.

**SHEET 2 OF 7**

[illegible]

SHEET  
60

# BM DATA

ALUMINUM DISK ON CONCRETE LOCATED 257.0' SOUTH OF INTERSECTION OF EL GATO ROAD AND LOPEZ DRIVE ON THE WEST SIDE, FENCE CORNER. ELEV. = 92.28'

## NOTES:

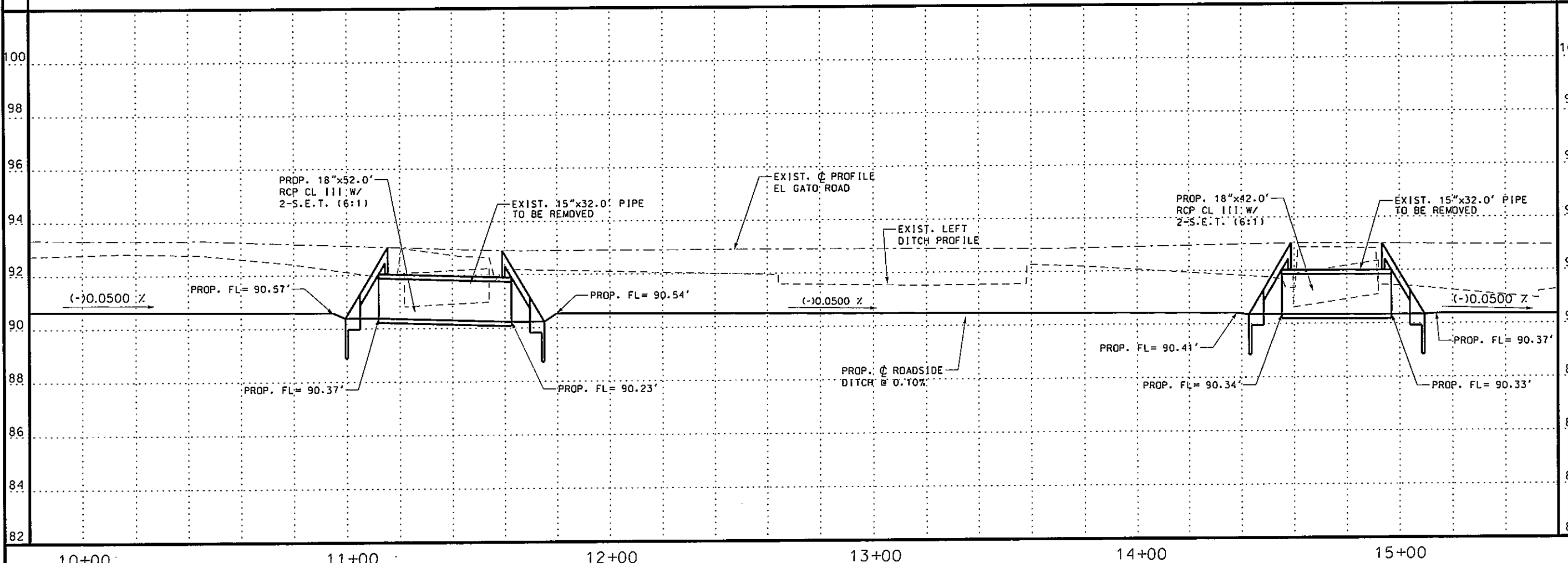
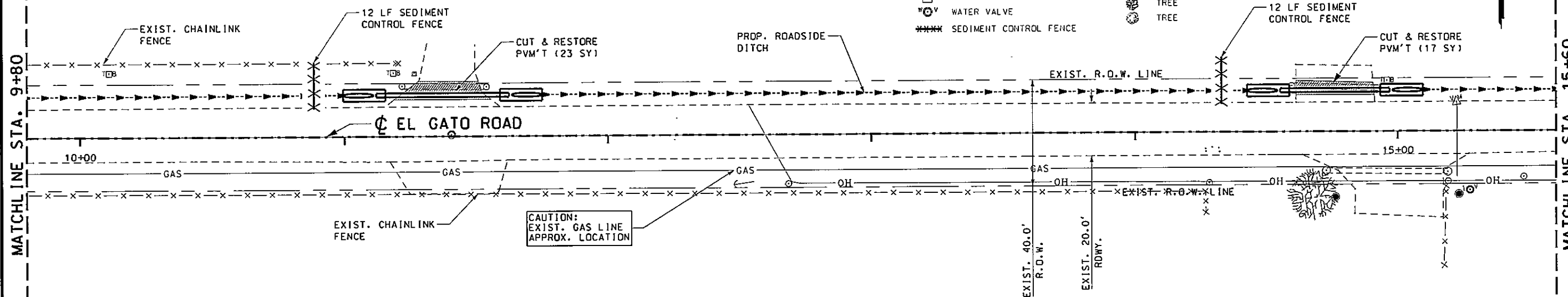
- 1.) MAILBOXES TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
- 2.) ADJUST SAN. SEWER MANHOLES AS NEEDED.
- 3.) ADJUST WATER VALVE AS NEEDED.
- 4.) CONTRACTOR SHALL VERIFY ALL UTILITIES: HORIZONTAL AND VERTICAL INFORMATION IN THE FIELD PRIOR TO CONSTRUCTION.
- 5.) EXIST SIGN TO BE REPLACED & RELOCATED.
- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

## LEGEND

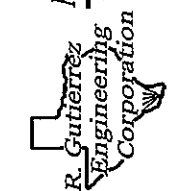
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|--|-----------------------------|--|--------------------|
|  | SIGN                        |  | VALVE MARKER       |
|  | MAIL BOX                    |  | WATER VALVE MARKER |
|  | POWER POLE                  |  | FLUSH VALVE        |
|  | IRON ROD (No. 4 Pebar)      |  | BENCHMARK          |
|  | CONTROL POINT               |  | FENCE              |
|  | CPS (COTTON PICKER SPINDLE) |  | TREE               |
|  | WATER METER                 |  | TREE BUSH          |
|  | WATER VALVE                 |  | TREE               |
|  | SEDIMENT CONTROL FENCE      |  | TREE               |

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

N



Professional Engineers & Land Surveyors  
R. Gutierrez Engineering Corporation  
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(TEL) 936 782-2557 • (FAX) 936 782-2558  
FIRM No. 486



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMPO GUTIERREZ, P.E. 655948  
DATE: 1-19-11  
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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE  
ROADSIDE DITCH EL GATO RD.  
SHEET 3 OF 7

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SHEET No. 61

# BM DATA

ALUMINUM DISK ON CONCRETE LOCATED  
257.0' SOUTH OF INTERSECTION OF  
EL GATO ROAD AND LOPEZ DRIVE ON  
THE WEST SIDE, FENCE CORNER.  
ELEV. = 92.28'

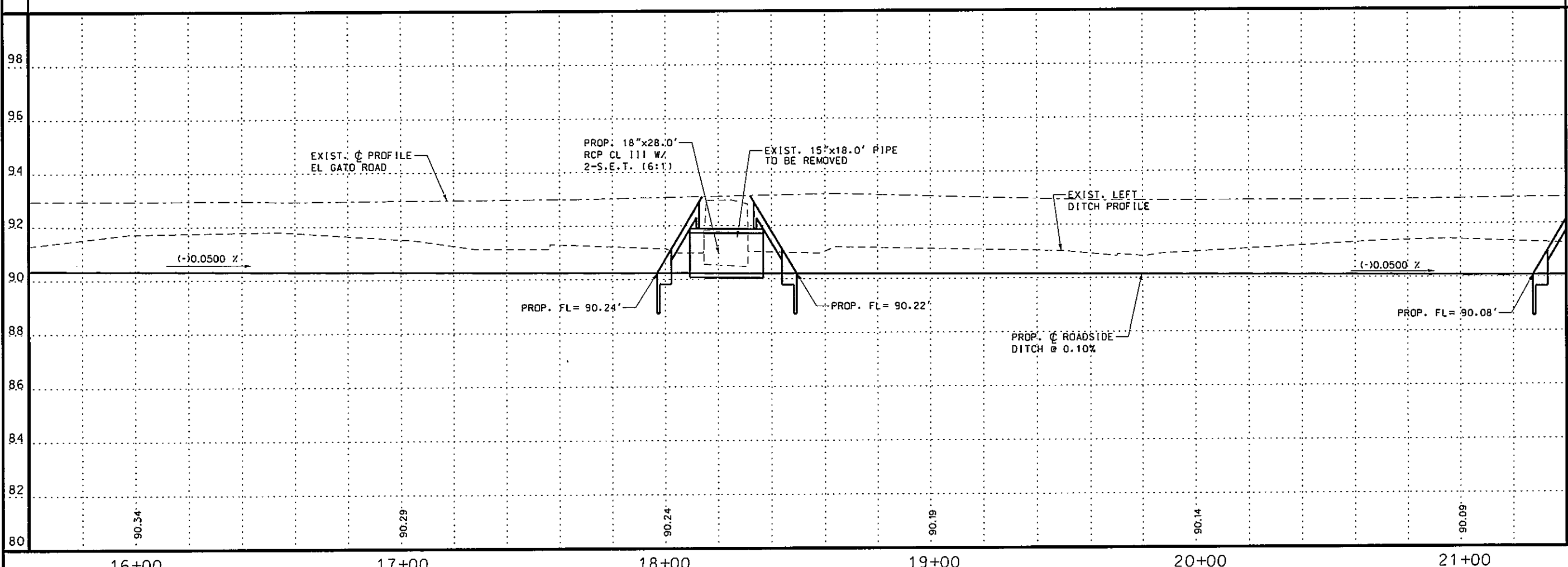
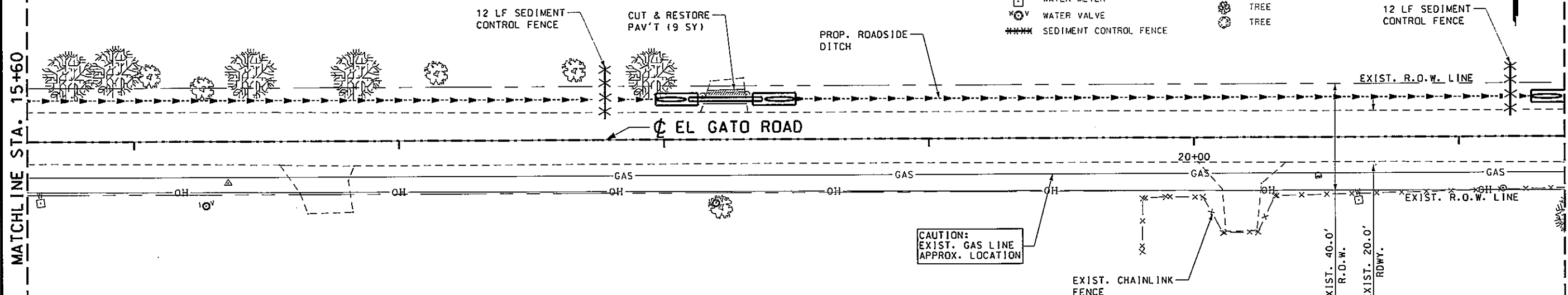
## NOTES:

- 1.) MAILBOXES TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
- 2.) ADJUST SAN. SEWER MANHOLES AS NEEDED.
- 3.) ADJUST WATER VALVE AS NEEDED.
- 4.) CONTRACTOR SHALL VERIFY ALL UTILITIES: HORIZONTAL AND VERTICAL INFORMATION IN THE FIELD PRIOR TO CONSTRUCTION.
- 5.) EXIST SIGN TO BE REPLACED & RELOCATED.
- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

## LEGEND

- |  |                             |  |                    |
|--|-----------------------------|--|--------------------|
|  | SIGN                        |  | VALVE MARKER       |
|  | MAIL BOX                    |  | WATER VALVE MARKER |
|  | POWER POLE                  |  | FLUSH VALVE        |
|  | IRON ROD (No. 4 Rebar)      |  | BENCHMARK          |
|  | CONTROL POINT               |  | FENCE              |
|  | CPS (COTTON PICKER SPINDLE) |  | TREE               |
|  | WATER METER                 |  | TREE BUSH          |
|  | WATER VALVE                 |  | TREE               |
|  | SEDIMENT CONTROL FENCE      |  | TREE               |

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



Professional Engineers & Land Surveyors

R. Gutierrez Engineering Corporation

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FIRM No. 486

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DATE: 1-19-11

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HIDALGO COUNTY PRECINCT NO. 2

PENTECOSTAL SUBDIVISION

UTILITY AND DRAINAGE

ROADSIDE DITCH EL GATO RD.

SHEET 4 OF 7

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CHECKED BY:

**SHEET No.**

**62**

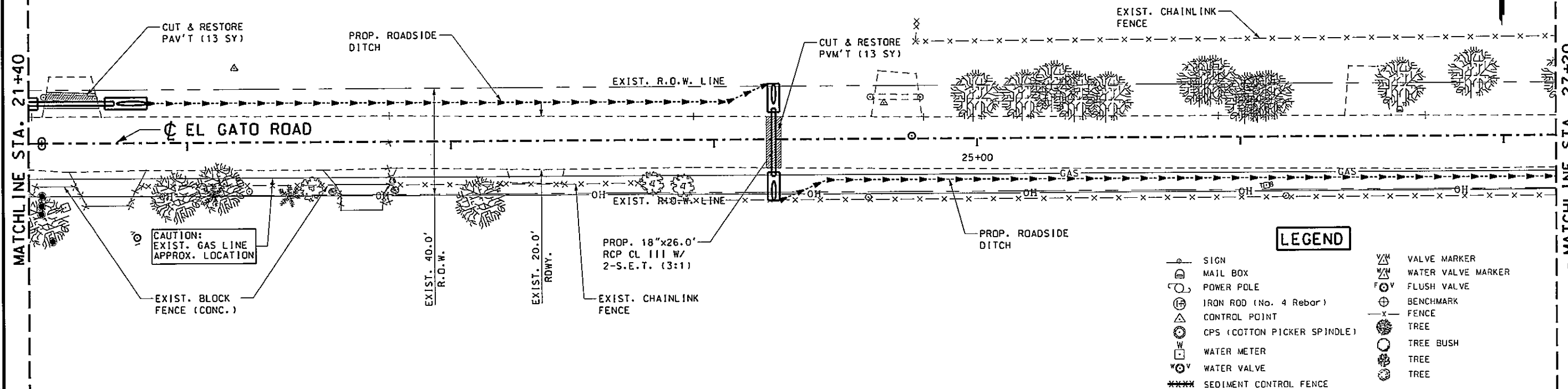
# BM DATA

ALUMINUM DISK ON CONCRETE LOCATED 257.0' SOUTH OF INTERSECTION OF EL GATO ROAD AND LOPEZ DRIVE ON THE WEST SIDE, FENCE CORNER. ELEV. = 92.28'

## NOTES:

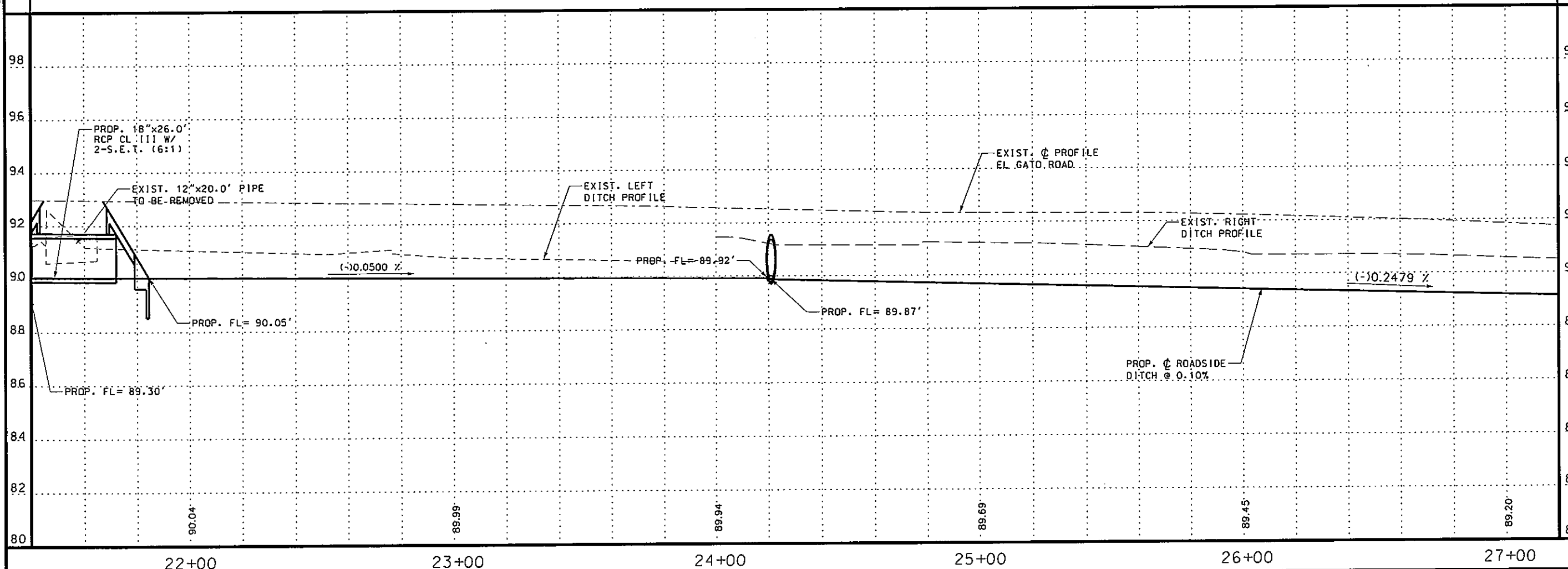
- 1.) MAILBOXES TO BE ADJUSTED DURING CONSTRUCTION AS NEEDED.
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- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

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



## LEGEND

- |  |                             |  |                    |
|--|-----------------------------|--|--------------------|
|  | SIGN                        |  | VALVE MARKER       |
|  | MAIL BOX                    |  | WATER VALVE MARKER |
|  | POWER POLE                  |  | FLUSH VALVE        |
|  | IRON ROD (No. 4 Rebar)      |  | BENCHMARK          |
|  | CONTROL POINT               |  | FENCE              |
|  | CPS (COTTON PICKER SPINDLE) |  | TREE               |
|  | WATER METER                 |  | TREE BUSH          |
|  | WATER VALVE                 |  | TREE               |
|  | SEDIMENT CONTROL FENCE      |  | TREE               |



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FIRM No. 486

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DATE: 1-19-11  
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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE  
ROADSIDE DITCH EL GATO RD.  
SHEET 5 OF 7

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SHEET No.  
63

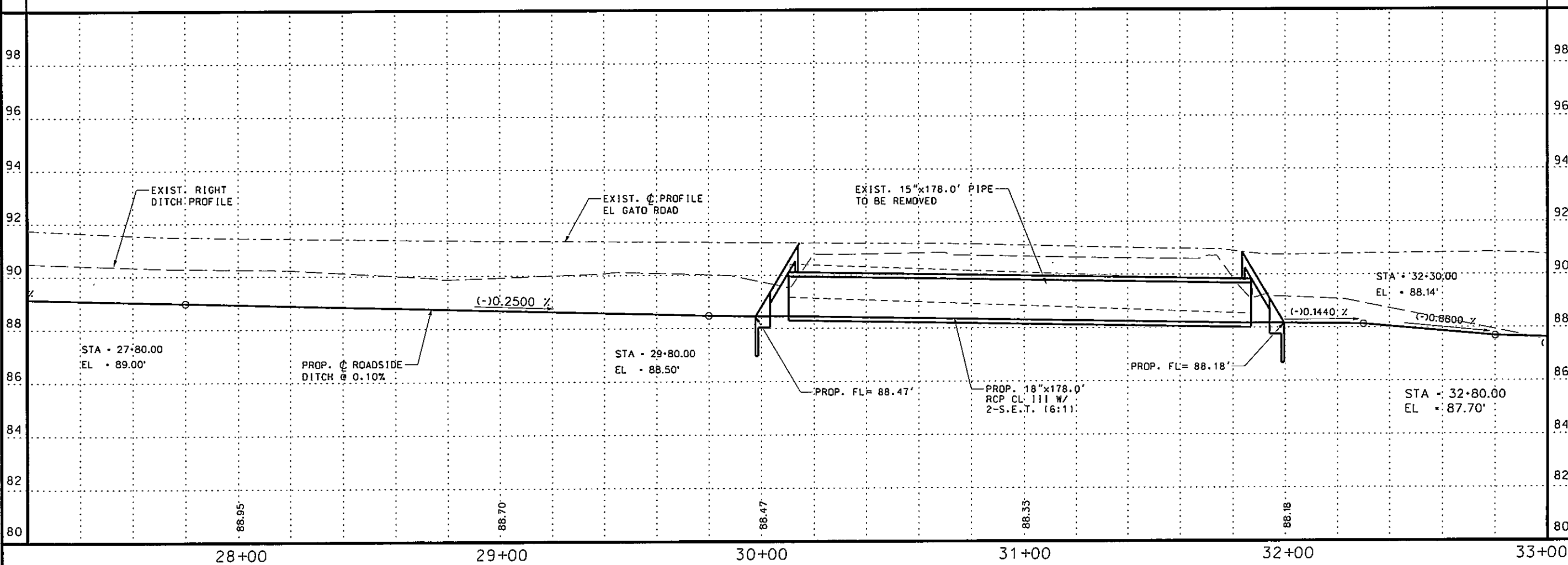
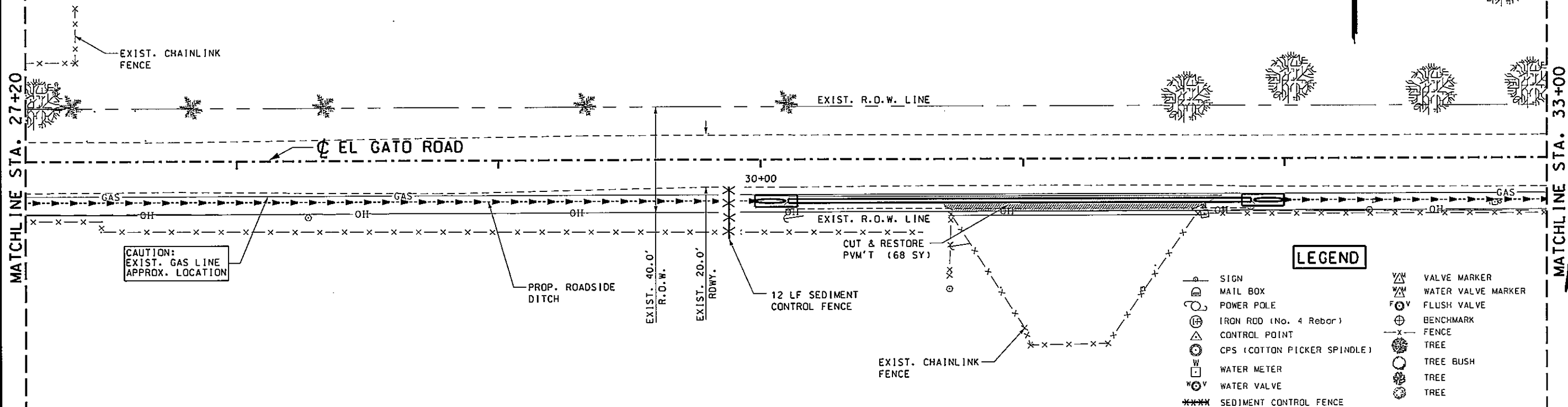
# BM DATA

ALUMINUM DISK ON CONCRETE LOCATED  
257.0' SOUTH OF INTERSECTION OF  
EL GATO ROAD AND LOPEZ DRIVE ON  
THE WEST SIDE, FENCE CORNER.  
ELEV. = 92.28'

## NOTES:

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



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HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE  
ROADSIDE DITCH EL GATO RD.  
SHEET 6 OF 7

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PREPARED BY:  
CHECKED BY:

**SHEET No.**  
**64**

NOTES:

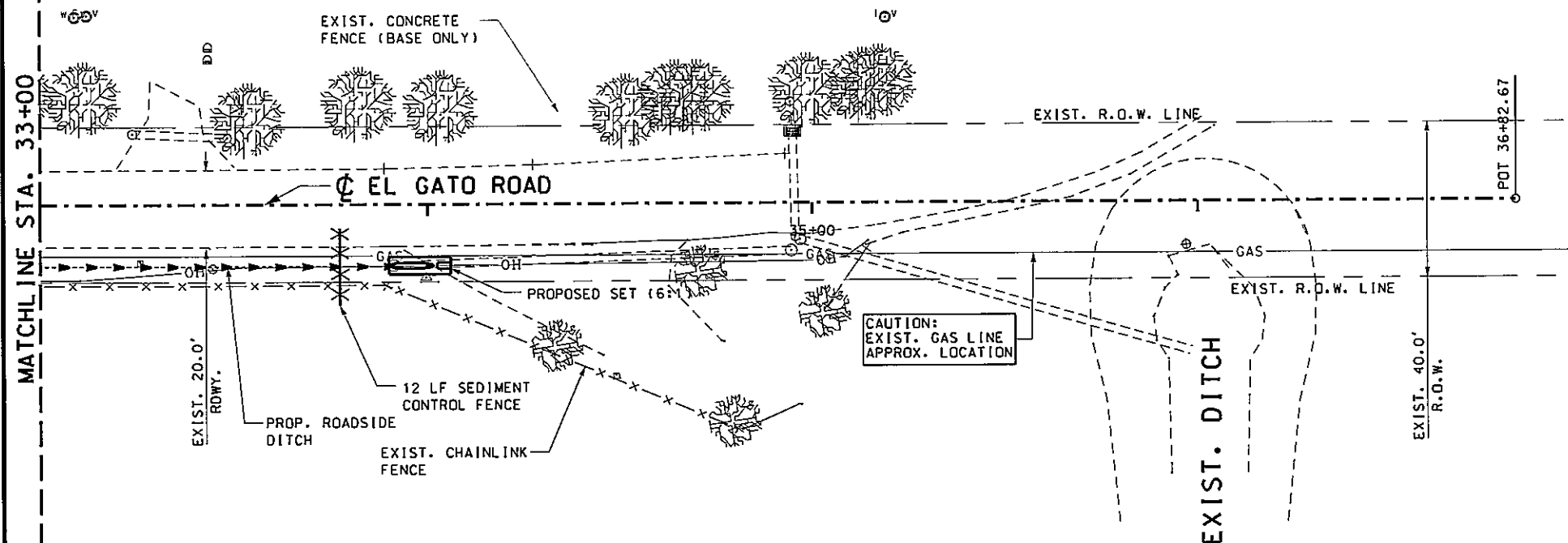
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- 5.) EXIST SIGN TO BE REPLACED & RELOCATED.
- 6.) SEE DRIVEWAY TABLES FOR DIMENSIONS.

LEGEND

- SIGN
- MAIL BOX
- POWER POLE
- IRON ROD (No. 4 Rebar)
- CONTROL POINT
- CPS (COTTON PICKER SPINDLE)
- WATER METER
- WATER VALVE
- VALVE MARKER
- WATER VALVE MARKER
- FLUSH VALVE
- BENCHMARK
- FENCE
- TREE
- TREE BUSH
- TREE
- SEDIMENT CONTROL FENCE

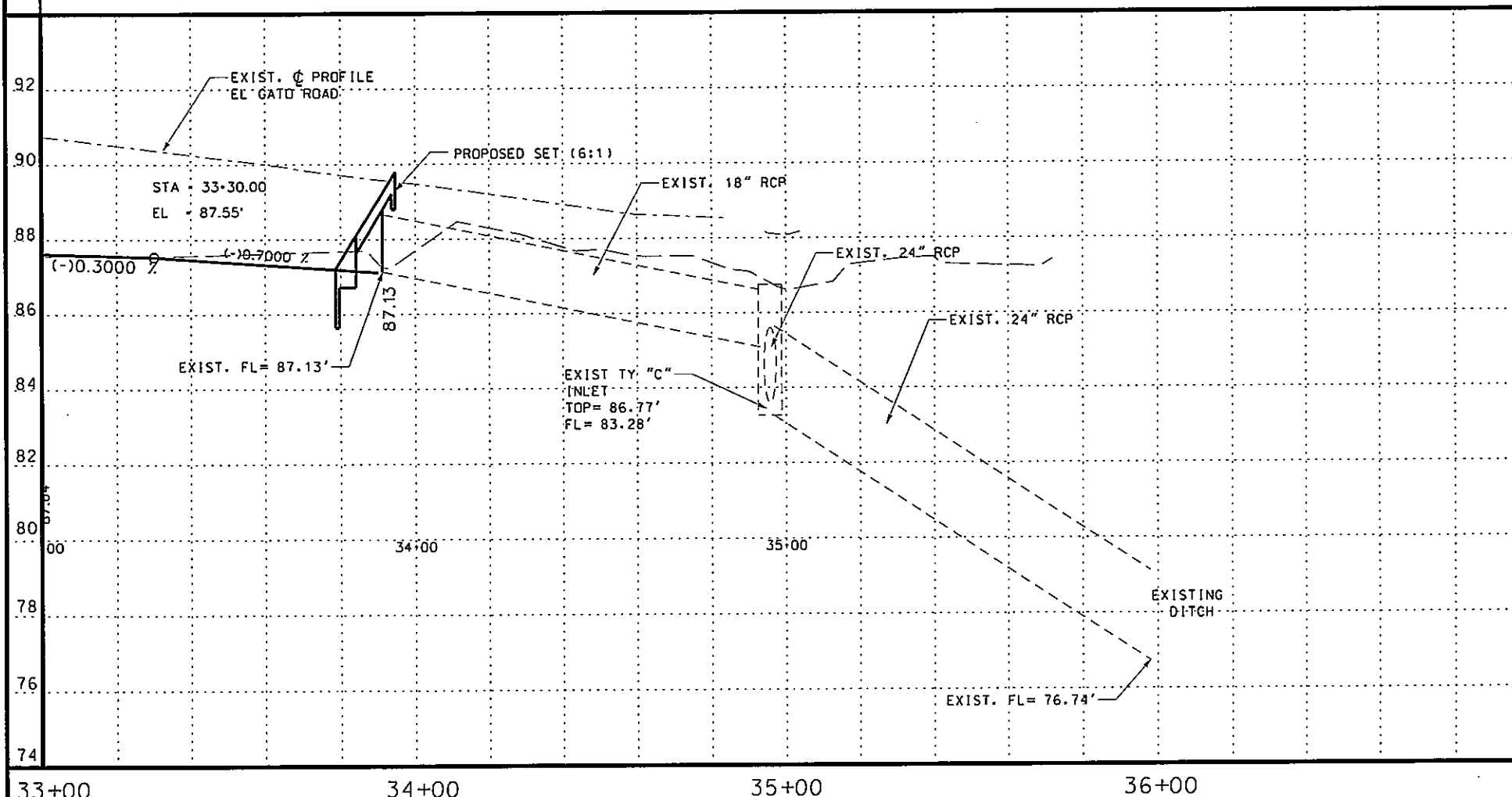
SCALE:  
HORIZ. = 1" = 40'  
VERT. = 1" = 4'

N



BM DATA

ALUMINUM DISK ON CONCRETE LOCATED 257.0' SOUTH OF INTERSECTION OF EL GATO ROAD AND LOPEZ DRIVE ON THE WEST SIDE. FENCE CORNER. ELEV. = 92.28'



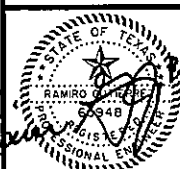
| PROJECT TOTALS |      |       |      |                                       |
|----------------|------|-------|------|---------------------------------------|
| ITEM           | EST. | FINAL | UNIT | DESCRIPTION                           |
| 110            | 810  |       | CY   | EXCAVATION (CHANNEL) (ROADSIDE DITCH) |
| 400            | 315  |       | CY   | STRUCTURE EXCAVATION                  |
| 400            | 215  |       | SY   | CUT & RESTORE PVM'T                   |
| 464            | 520  |       | LF   | RCP SEWER (CL III) (18")              |
| 467            | 4    |       | EA   | S.E.T. (3:1)                          |
| 467            | 19   |       | EA   | S.E.T. (6:1)                          |
| 496            | 350  |       | LF   | REMOVE OLD STR. (PIPE)                |
| 506            | 108  |       | LF   | SEDIMENT CONTROL FENCE                |
| 560            | 1    |       | EA   | MAILBOX INSTALL (SINGLE)              |

FOR CONTRACTORS INFORMATION ONLY (NON-PAY)

QUANTITIES REFLECT ALONG EL GATO ROAD ONLY.

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



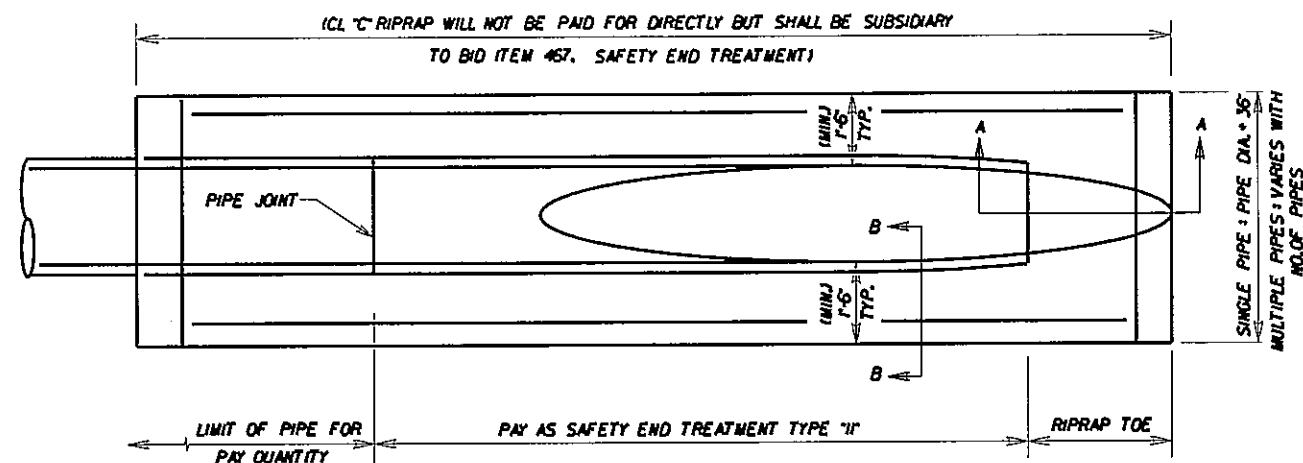
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 52948  
DATE: 1-24-11  
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT NO. 2  
PENTECOSTAL SUBDIVISION  
UTILITY AND DRAINAGE  
ROADSIDE DITCH EL GATO RD.  
SHEET 7 OF 7

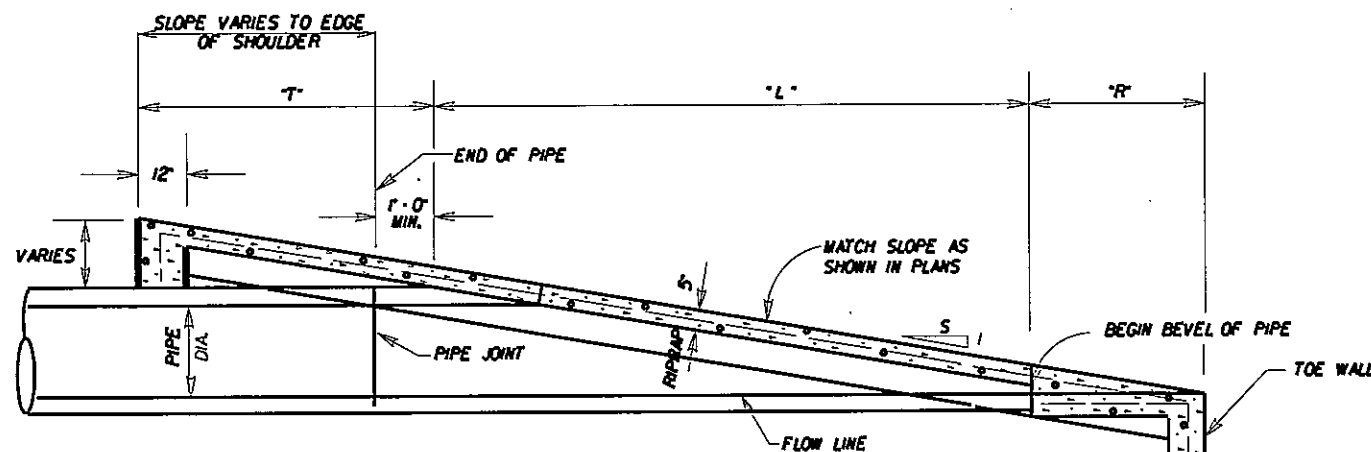
| FB. No. | SURVEY BY: | DRAWN BY: | PREPARED BY: | CHECKED BY: | REVISION | DATE | BY |
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|         |            |           |              |             |          |      |    |

SHEET No.  
65

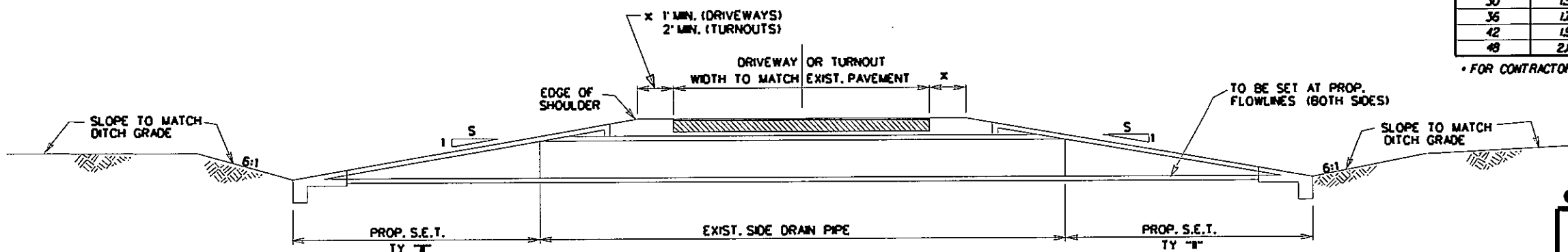




PLAN VIEW



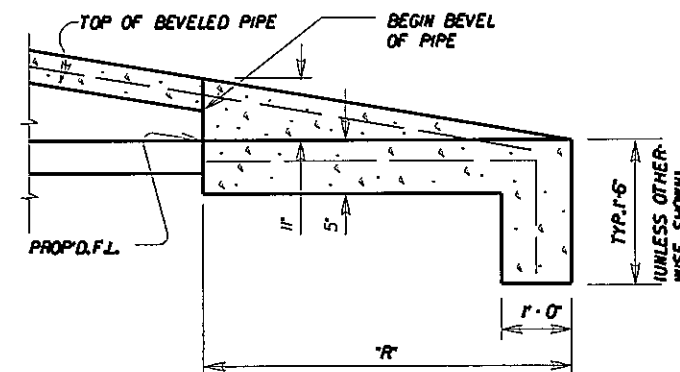
ELEVATION  
SAFETY END TREATMENT



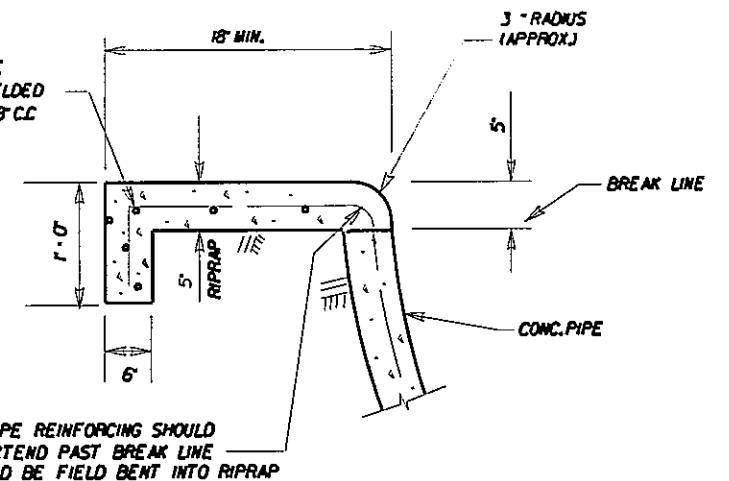
TYPICAL SIDEDRAIN SECTION

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".



SEC.A-A



SEC.B-B

SAFETY END TREATMENT PIPE LENGTHS

| PIPE DIA.<br>(IN.) | 36         | 48     | 60          | 72     |
|--------------------|------------|--------|-------------|--------|
| 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'-1/2"    | 6'-10" | 8'-6 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"    |
|-------|-------|--------|
| 3:1   | 2'-9" | 1'-9"  |
| 4:1   | 3'-8" | 2'-4"  |
| 5:1   | 4'-7" | 2'-11" |
| 6:1   | 5'-6" | 3'-6"  |

ESTIMATED RIPRAP CL "C" VOLUME (CY)

| PIPE DIA.<br>(IN.) | 36   | 48   | 60   | 72   |
|--------------------|------|------|------|------|
| 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)

TXDOT 1999

PHARR DISTRICT



TEXAS DEPARTMENT OF TRANSPORTATION

SAFETY END TREATMENT

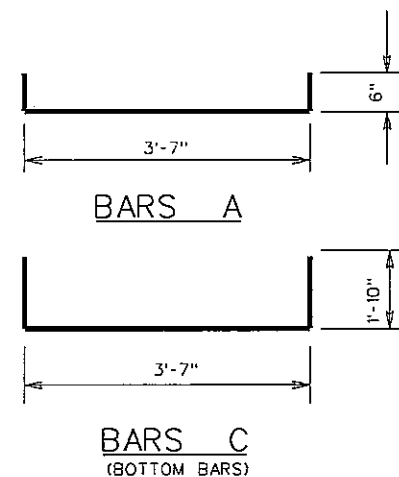
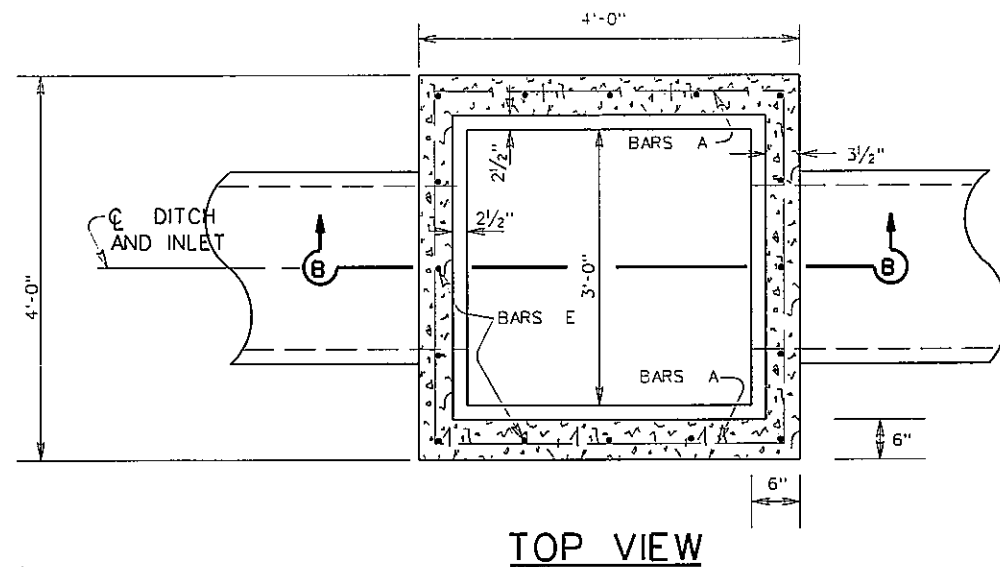
(TYPE "II")

&

SIDE DRAIN DETAILS

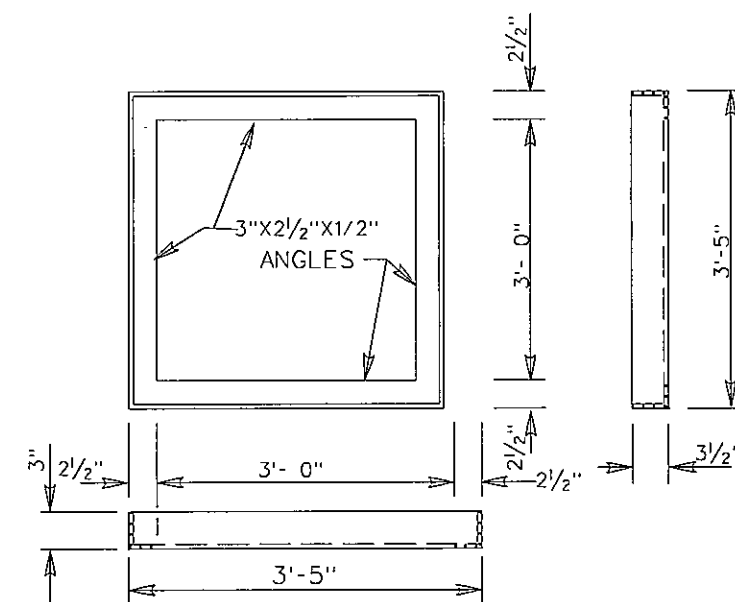
REV. 6/99 SET.DGN

| STATE | STATE DISTRICT | COUNTY  | CONT. | SECT. | JOB | HIGHWAY NO. |
|-------|----------------|---------|-------|-------|-----|-------------|
| TEXAS | 21             | HIDALGO |       |       |     |             |



## REINFORCING STEEL DETAILS

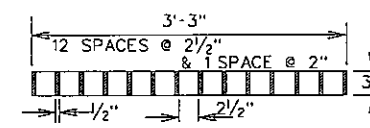
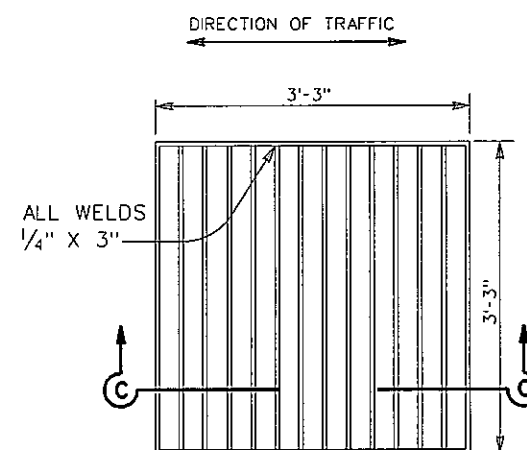
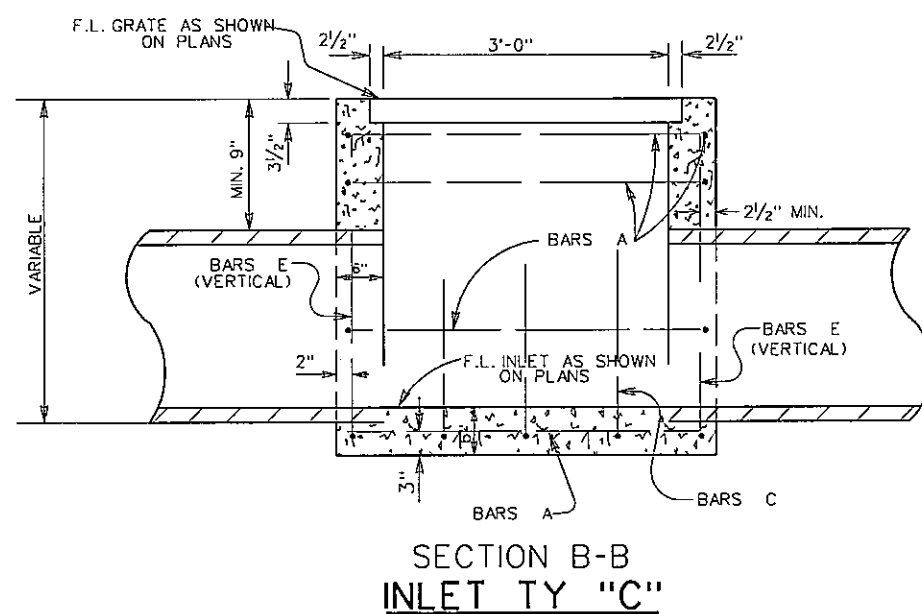
NOTE: ALL STEEL TO BE NO. 4 BARS ON  
12" SPACING IN BOTH DIRECTIONS



## FRAME DETAIL

FRAME INLET GRATE TO BE SUBSIDIARY

GENERAL NOTES:  
TY "C" INLET TO BE USED  
FOR PIPES LESS OR EQUAL TO 24"



WELDED STEEL INLET GRATE

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PHARR DISTRICT STANDARD



TEXAS DEPARTMENT OF TRANSPORTATION

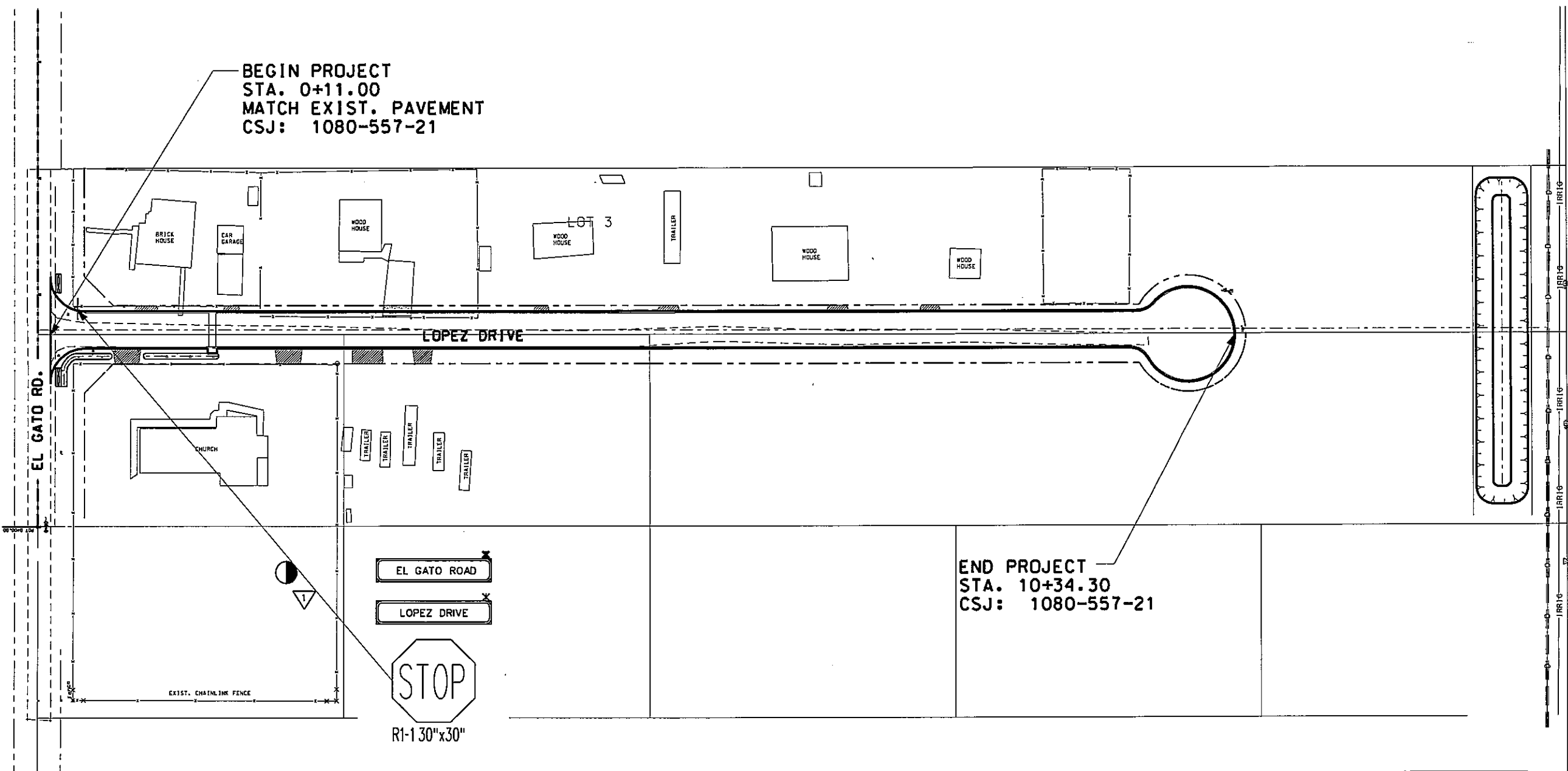
TY "C" INLET DETAILS

REV. 4/02

INLET.CGN

|                    |                    |                         |  |  |          |       |     |              |  |
|--------------------|--------------------|-------------------------|--|--|----------|-------|-----|--------------|--|
| ED. RD.<br>HY. NO. |                    | FEDERAL AID PROJECT NO. |  |  | FILE NO. |       |     | SHEET<br>NO. |  |
| 6                  |                    |                         |  |  |          |       |     | 68           |  |
| STATE              | STATE<br>DIST. NO. | COUNTY                  |  |  | CONT.    | SECT. | JOB | HIGHWAY      |  |
| TEXAS              | 21                 |                         |  |  |          |       |     |              |  |

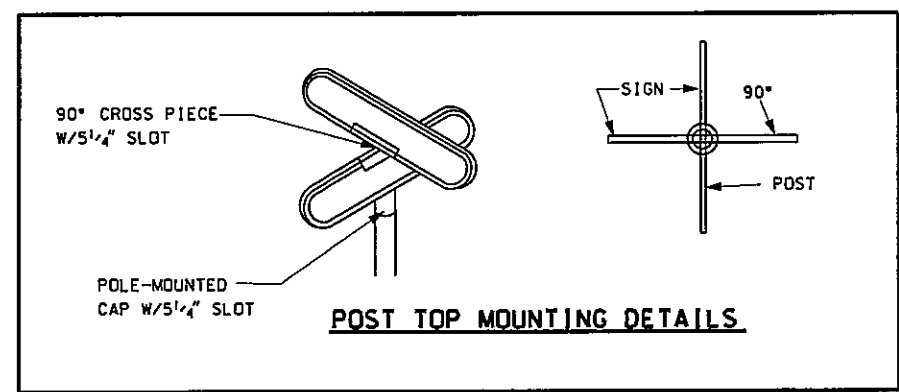
SCALE: 1"=100'



LEGEND

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

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



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 FIRM No. 486

HIDALGO COUNTY PRECINCT NO. 2  
 PENTECOSTAL SUBDIVISION  
 LAYOUT SIGNING

LOCATION

| REVISION | DATE | BY |
|----------|------|----|
|          |      |    |
|          |      |    |
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FB. No.:  
 SURVEY BY:  
 DRAWN BY:  
 PREPARED BY:  
 CHECKED BY:

SHEET No.  
**69**

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## SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

### Post Type

FRP - Fiberglass Reinforced Plastic Pipe (see SMD(FRP))  
TWT - Thin-Walled Tubing (see SMD(TWT))  
10BWG - 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))  
S80 - Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

### Number of Posts (1 or 2)

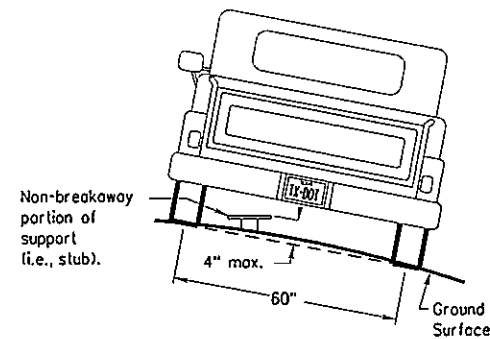
### Anchor Type

UA - Universal Anchor - Concrete (see SMD(FRP) and (TWT))  
UB - Universal Anchor - Bolted down (see SMD(FRP) and (TWT))  
WS - Wedge Anchor Steel - (see SMD(TWT))  
WP - Wedge Anchor Plastic (see SMD(TWT))  
SA - Slipbase - Concrete (see SMD(SLIP-1) to (SLIP-3))  
SB - Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

### Sign Mounting Designation

P - Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))  
T - Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))  
U - Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))  
IF REQUIRED  
1EXT or 2EXT - Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))  
BM - Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))  
WC - 1.12 x 1/16 Wing Channel (see SMD(SLIP-1) to (SLIP-3))  
EXAL - Extruded Aluminum Sign Panels (see SMD(SLIP-3))

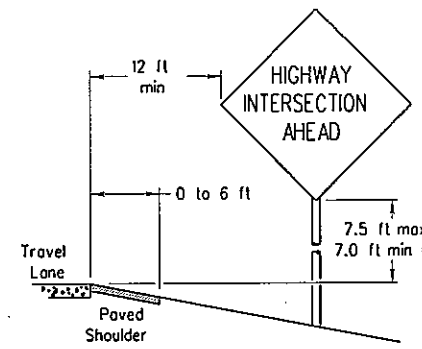
## REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheelpaths).

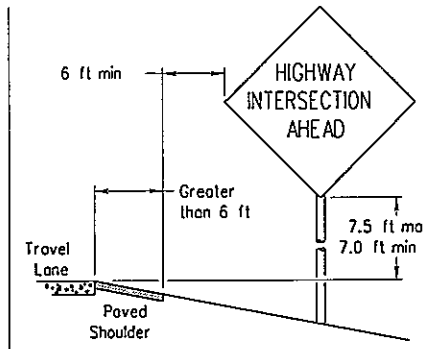
## SIGN LOCATION

### PAVED SHOULDERS



#### LESS THAN 6 FT. WIDE

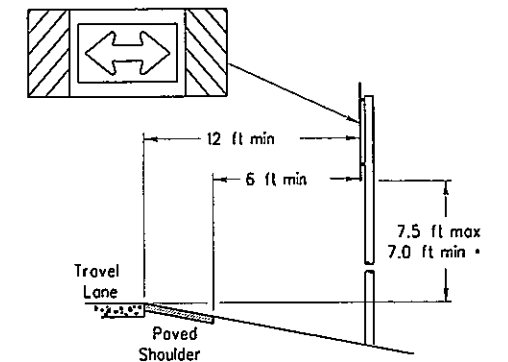
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



#### GREATER THAN 6 FT. WIDE

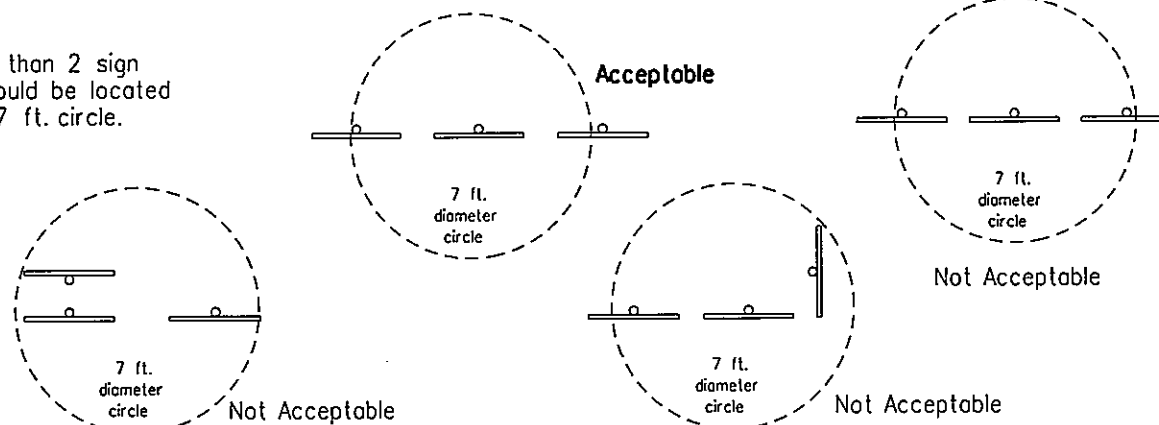
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

### T-INTERSECTION

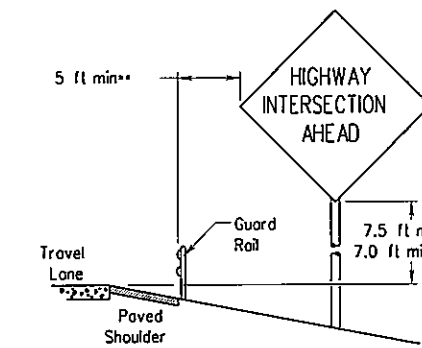


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

No more than 2 sign posts should be located within a 7 ft. circle.

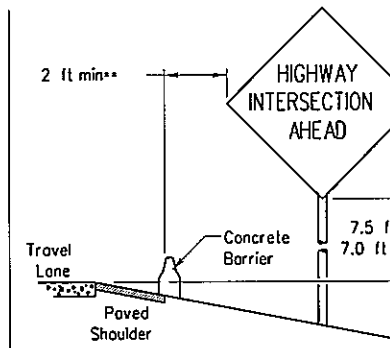


### BEHIND BARRIER

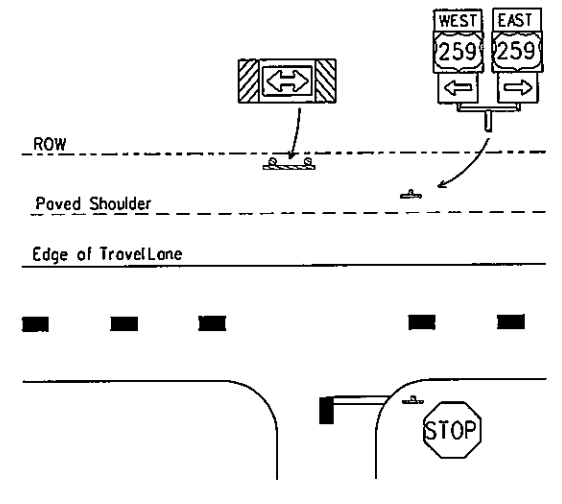


#### BEHIND GUARDRAIL

\*\*Sign clearance based on distance required for proper guard rail or concrete barrier performance.



#### BEHIND CONCRETE BARRIER



• Signs shall be mounted using the following condition that results in the greatest sign elevation:

- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

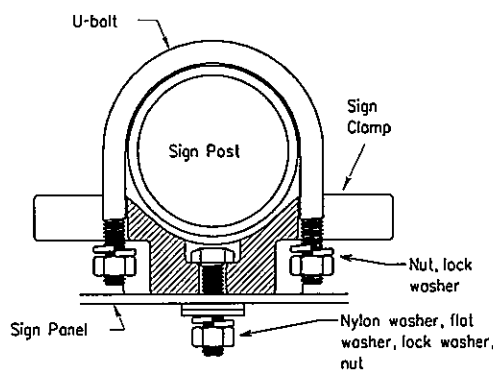
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:  
<http://www.txdot.gov/publications/traffic.htm>

## TYPICAL SIGN ATTACHMENT DETAIL

### Single Signs

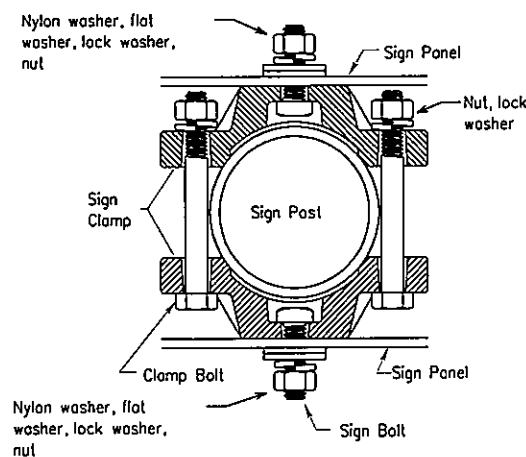


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

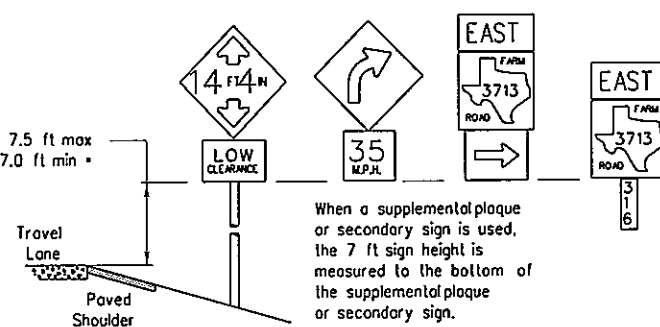
Sign clamps may be either the specific size clamp or the universal clamp.

### Back-to-Back Signs



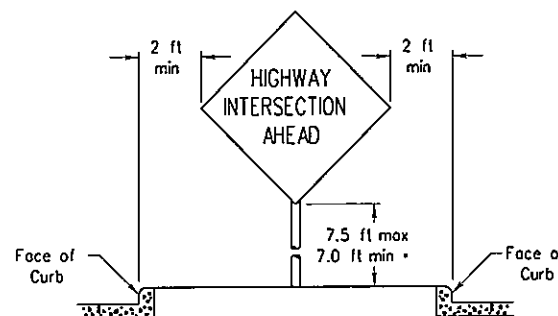
| Pipe Diameter  | Approximate Bolt Length |                 |
|----------------|-------------------------|-----------------|
|                | Specific Clamp          | Universal Clamp |
| 2" nominal     | 3"                      | 3 or 3 1/2"     |
| 2 1/2" nominal | 3 or 3 1/2"             | 3 1/2 or 4"     |
| 3" nominal     | 3 1/2 or 4"             | 4 1/2"          |

### SIGNS WITH PLAQUES

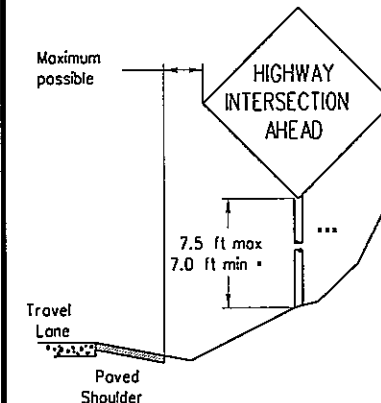


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

### CURB & GUTTER OR RAISED ISLAND



### RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

\*\*\* Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

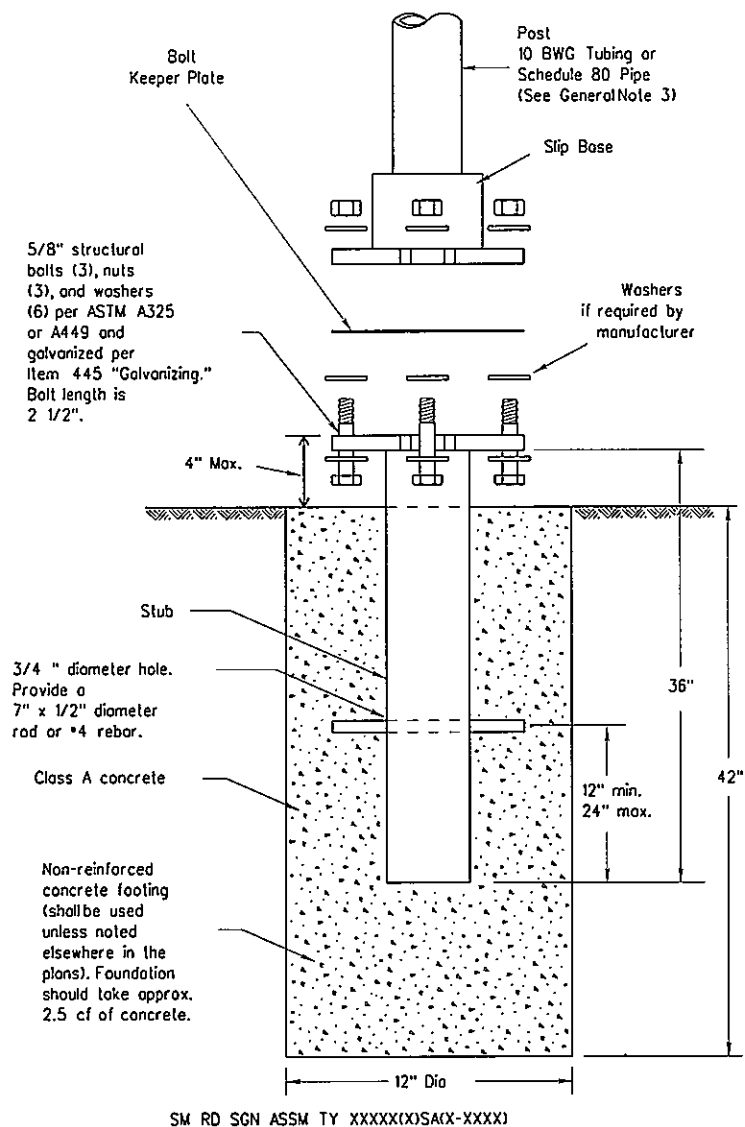


## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

|                   |           |           |  |           |  |           |  |           |  |
|-------------------|-----------|-----------|--|-----------|--|-----------|--|-----------|--|
| © TxDOT July 2002 |           | DN: TxDOT |  | CK: TxDOT |  | DN: TxDOT |  | CK: TxDOT |  |
| 9-08              | REVISIONS | CONT SECT |  | JOB       |  | HIGHWAY   |  |           |  |
|                   |           |           |  |           |  |           |  |           |  |
|                   |           | DIST      |  | COUNTY    |  |           |  | SHEET NO. |  |
|                   |           |           |  |           |  |           |  | 70        |  |

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. [http://www.txdot.gov/business/producer\\_list.htm](http://www.txdot.gov/business/producer_list.htm) The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
- Material used as post with this system shall conform to the following specifications:
  - 10 BWG Tubing (2.875" outside diameter)
  - 0.134" nominal wall thickness
  - Seamless or electric-resistance welded steel tubing or pipe
  - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
  - Other steels may be used if they meet the following:
    - 55,000 PSI minimum yield strength
    - 70,000 PSI minimum tensile strength
    - 20% minimum elongation in 2"
  - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
  - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
  - Galvanization per ASTM A123 or ASTM A653 G210. For pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
- Schedule 80 Pipe (2.875" outside diameter)
  - 0.276" nominal wall thickness
  - Steel tubing per ASTM A500 Gr C
  - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
    - 46,000 PSI minimum yield strength
    - 62,000 PSI minimum tensile strength
    - 21% minimum elongation in 2"
  - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
  - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
  - Galvanization per ASTM A123
- See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

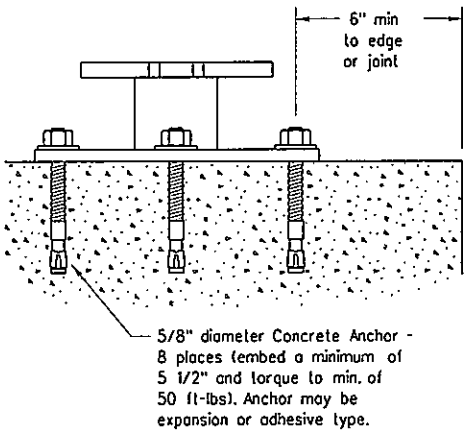
Foundation

- Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
- The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
- Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
- Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
- The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

- Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
- Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3800 and 3100 psi, respectively.



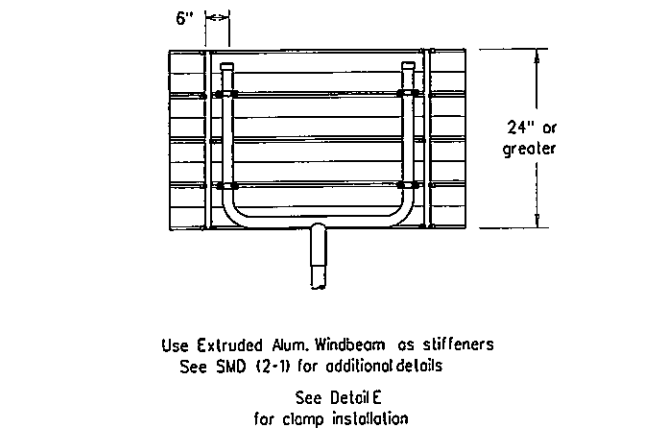
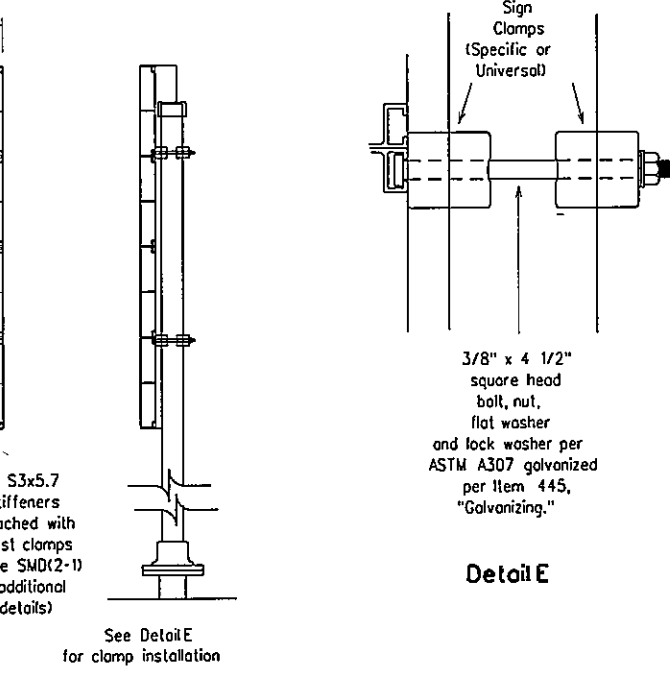
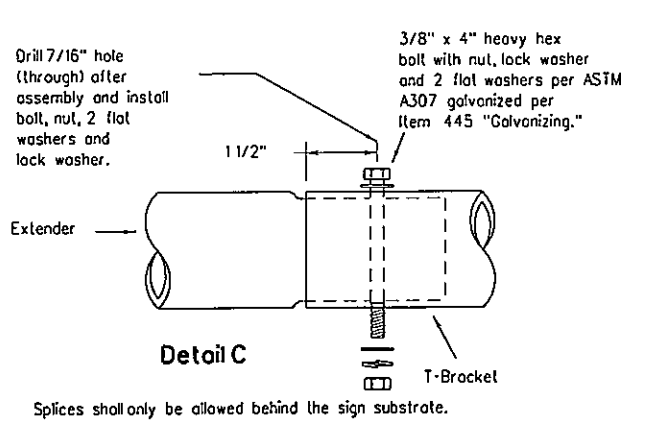
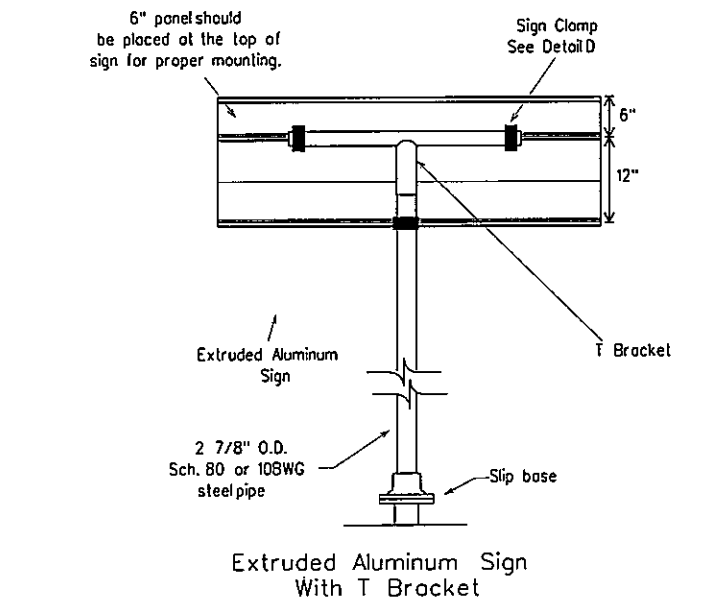
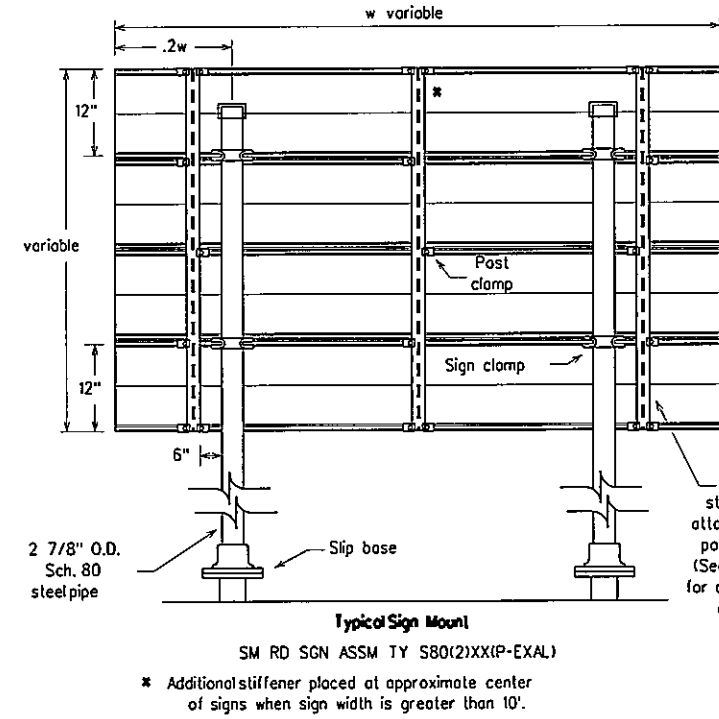
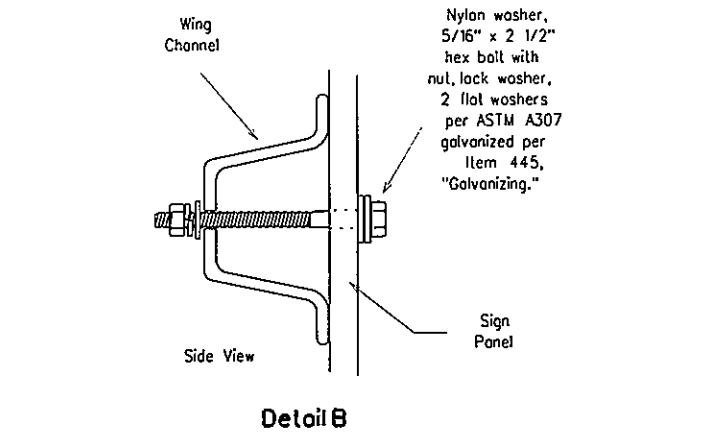
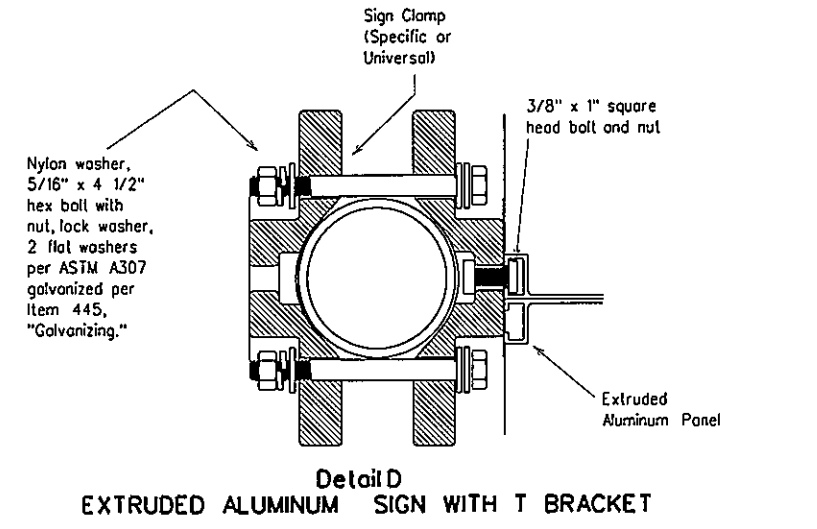
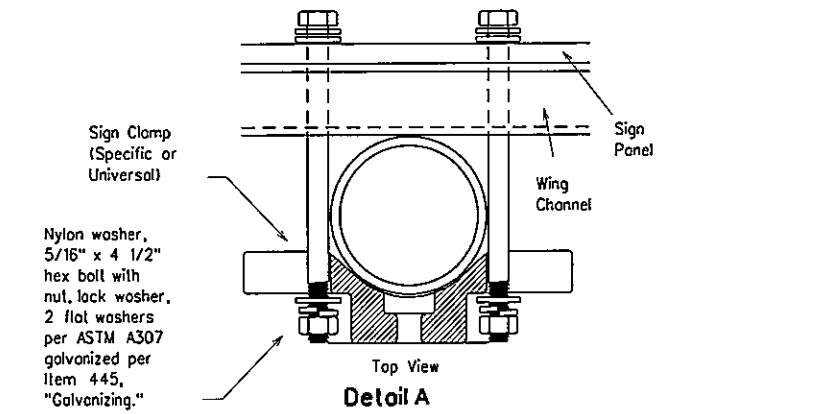
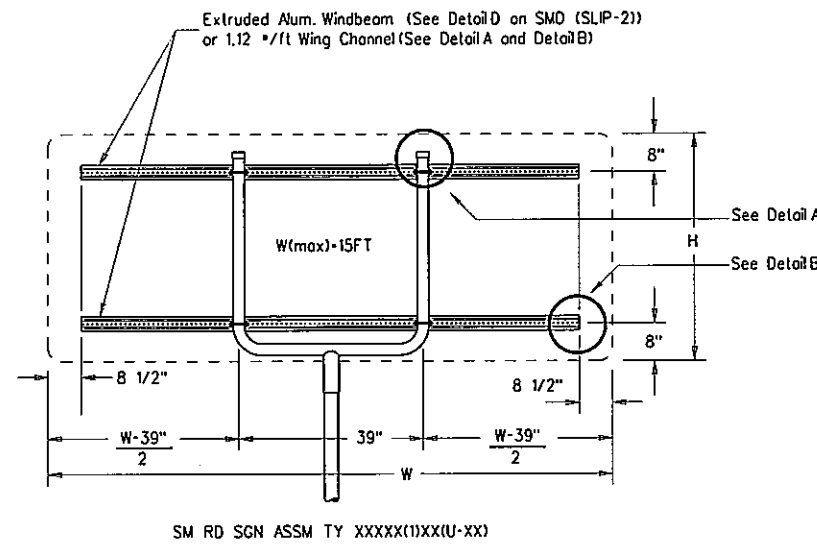
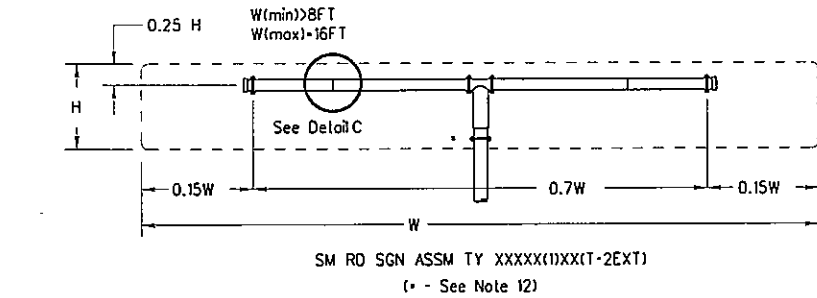
SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

| © TxDOT July 2002 | DATE    | BY   | CHK    | DATE | BY        | CHK | DATE |
|-------------------|---------|------|--------|------|-----------|-----|------|
| 9-08              | REVISED | CONT | SECT   | JOB  | HIGHWAY   |     |      |
|                   |         | DIST | COUNTY |      | SHEET NO. |     |      |

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DATE: FILE:



GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG       | 1          | 16 SF          |
| 10 BWG       | 2          | 32 SF          |
| Sch 80       | 1          | 32 SF          |
| Sch 80       | 2          | 64 SF          |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be filled with Friction Caps.

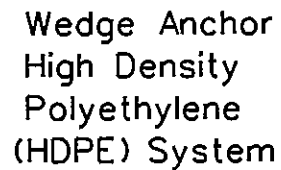
| REQUIRED SUPPORT |                                          |                                         |
|------------------|------------------------------------------|-----------------------------------------|
| SIGN DESCRIPTION |                                          | SUPPORT                                 |
| Regulatory       | 48-inch STOP sign (R1-1)                 | TY 10BWG(1)XX(T)<br>TY 10BWG(1)XX(P-BM) |
|                  | 60-inch YIELD sign (R1-2)                | TY 10BWG(1)XX(T)<br>TY 10BWG(1)XX(P-BM) |
|                  | 48x16-inch ONE-WAY sign (R6-1)           | TY 10BWG(1)XX(T)<br>TY 10BWG(1)XX(P-BM) |
|                  | 36x48, 48x36, and 48x48-inch signs       | TY 10BWG(1)XX(T)                        |
|                  | 48x60-inch signs                         | TY S80(1)XX(T)                          |
| Warning          | 48x48-inch signs (diamond or square)     | TY 10BWG(1)XX(T)                        |
|                  | 48x60-inch signs                         | TY S80(1)XX(T)                          |
|                  | 48-inch Advance School X-ing sign (S1-1) | TY 10BWG(1)XX(T)                        |
|                  | 48-inch School X-ing sign (S2-1)         | TY 10BWG(1)XX(T)                        |
|                  | Large Arrow sign (W1-6 & W1-7)           | TY 10BWG(1)XX(T)                        |

Texas Department of Transportation  
Traffic Operations Division

**SIGN MOUNTING DETAILS**  
**SMALL ROADSIDE SIGNS**  
**TRIANGULAR SLIPBASE SYSTEM**  
**SMD(SLIP-3)-08**

|                   |           |           |           |           |           |
|-------------------|-----------|-----------|-----------|-----------|-----------|
| © TxDOT July 2002 |           | CH: TXDOT | CK: TXDOT | DW: TXDOT | CK: TXDOT |
| 9-08              | REVISIONS | CONT      | SECT      | JOB       | HIGHWAY   |
|                   |           | DIST      | COUNTY    |           | SHEET NO. |
|                   |           |           |           | 72        |           |

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### Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



3/4" dia.

10"

10"

Coupler

3 1/2"

1/2"

Pipe St

Bo Pl

SM RD SGN ASSM TY TWT(X)UB(P)

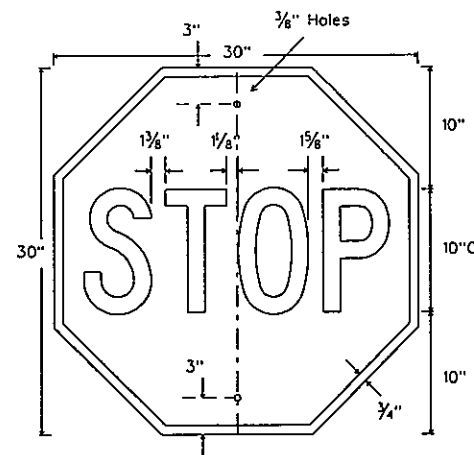


1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

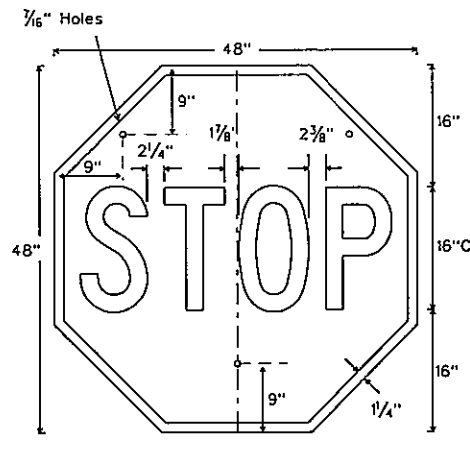


**SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
WEDGE & UNIVERSAL ANCHOR  
WITH THIN WALL TUBING POST  
SMD(TWT)-08**

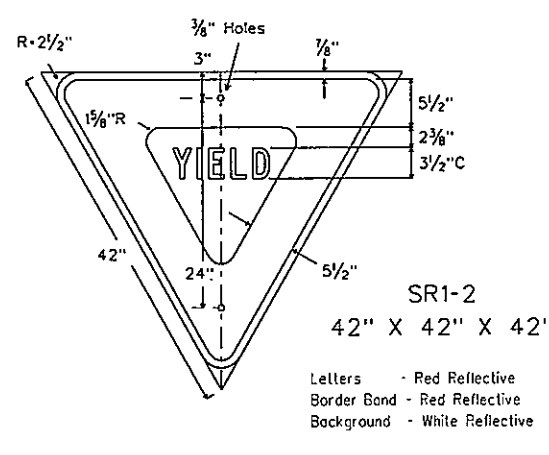
|                   |           |           |      |           |  |           |  |           |  |
|-------------------|-----------|-----------|------|-----------|--|-----------|--|-----------|--|
| © TxDOT July 2002 |           | DW: TXDOT |      | CK: TXDOT |  | DW: TXDOT |  | CK: TXDOT |  |
| 9-08              | REVISIONS | CONT      | SECT | JOB       |  | HIGHWAY   |  |           |  |
|                   |           |           |      |           |  |           |  |           |  |
|                   |           |           |      |           |  |           |  |           |  |
|                   |           |           |      |           |  |           |  |           |  |
|                   |           | DIST      |      | COUNTY    |  |           |  | SHEET NO. |  |
|                   |           |           |      |           |  |           |  | 73        |  |



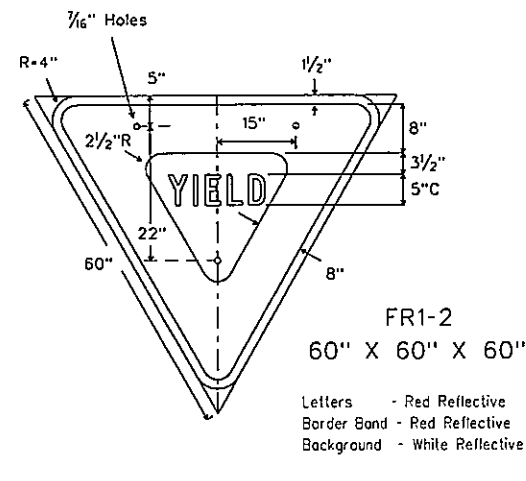
R1-1  
30" X 30"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



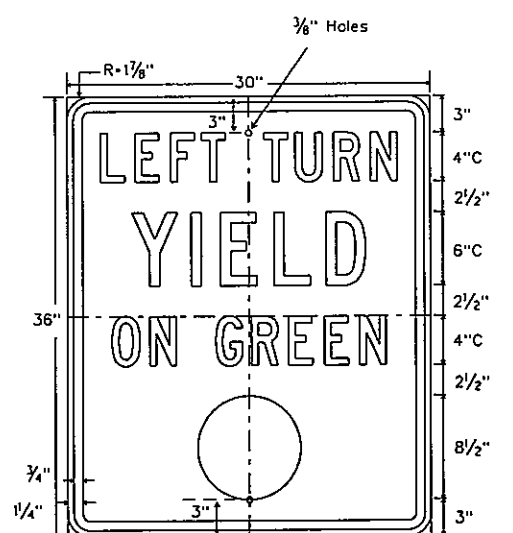
SR1-1  
48" X 48"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



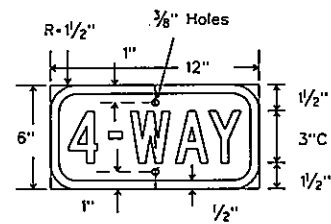
SR1-2  
42" X 42" X 42"  
Letters - Red Reflective  
Border Band - Red Reflective  
Background - White Reflective



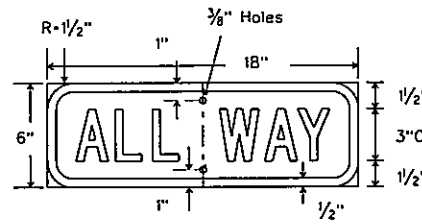
FR1-2  
60" X 60" X 60"  
Letters - Red Reflective  
Border Band - Red Reflective  
Background - White Reflective



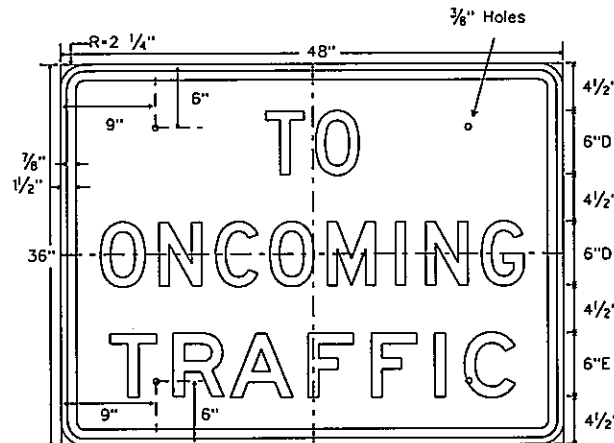
R10-12  
30" X 36"  
Letters - Black  
Border - Black  
Circle - Green Refl.  
Background - White Refl.



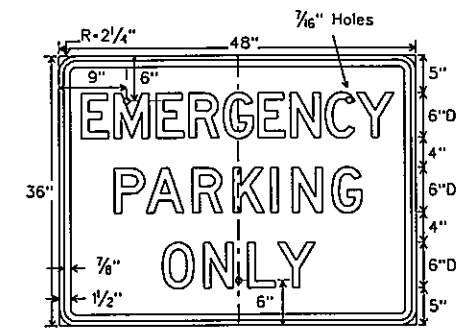
R1-3  
12" X 6"  
Letters - White Reflective  
Border - White Reflective  
Background - Red Reflective



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.  
FR8-7  
STOPPING  
\* 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 |  |  |

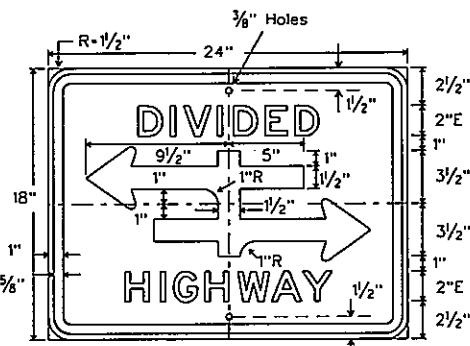
| SIGN SHEETING |                   |                                  |
|---------------|-------------------|----------------------------------|
| COLOR         | USAGE             | MATERIAL TYPE                    |
| GREEN         | LEGEND            | TYPE C (HIGH SPECIFIC INTENSITY) |
| RED           | 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:

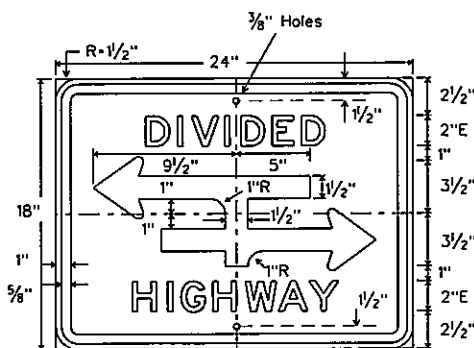
The alphabets and lateral spacing between letters and numerals shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways", latest edition, and any approved changes thereto. Lateral spacing of text shall provide a balanced appearance. All materials shall conform 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.

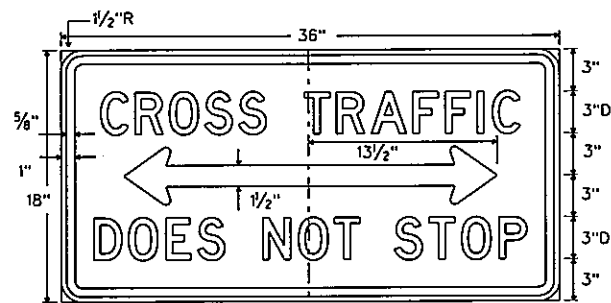
Sign blanks shall be any material that meets the DMS requirements for permanent sign substrates.



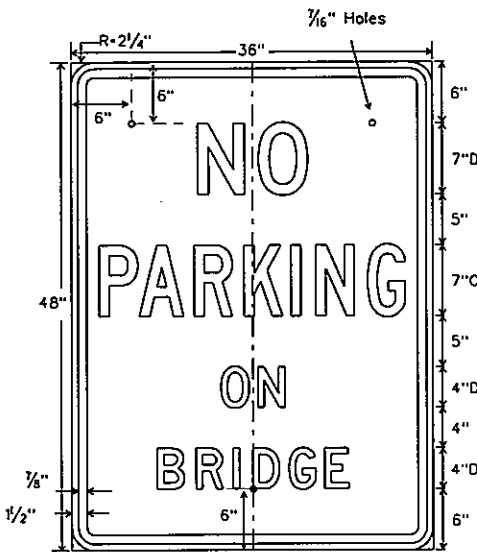
R6-3  
24" X 18"  
Legend - Black  
Background - White Refl.



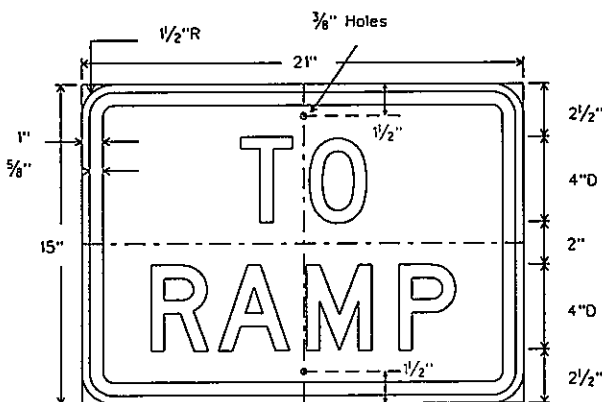
R6-3a  
24" X 18"  
Legend - Black  
Background - White Refl.



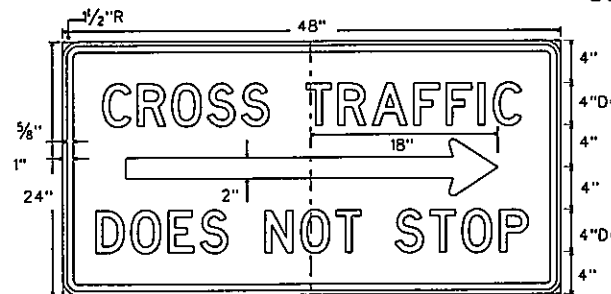
R1-5b  
36" X 18"  
Legend - Black  
Background - White Refl.



ER8-1T  
36" X 48"  
Letters - Red Reflective  
Border - Red Reflective  
Background - White Reflective



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



SR1-5R  
48" X 24"  
Legend - Black  
Background - White Refl.

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 | DATE | BY | APP'D | REASON |
|-----------|------|----|-------|--------|
| 7-90      |      |    |       |        |
| 8-95      |      |    |       |        |
| 4-98      |      |    |       |        |
| 2-01      |      |    |       |        |

|        |         |                     |         |
|--------|---------|---------------------|---------|
| STATE  | FEDERAL | FEDERAL AID PROJECT | SHEET   |
| TX     | 6       |                     | 74      |
| COUNTY | CONTROL | SECTION             | JOB     |
|        |         |                     | HIGHWAY |

7 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32  
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1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956  
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1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982  
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2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047  
2048 2049 2050 2051 2052 2053 2054 2055 2056

## SITE DESCRIPTION

PROJECT LIMITS: PENTECOSTAL SUBDIVISION

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: 130 Acres

TOTAL AREA TO BE DISTURBED: 130 Acres

WEIGHTED RUNOFF COEFFICIENT  
(AFTER CONSTRUCTION): 0.39

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: Existing soil conditions 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:

- |               |                                         |
|---------------|-----------------------------------------|
| <u>  X  </u>  | TEMPORARY SEEDING                       |
| <u>  X  </u>  | PERMANENT PLANTING, SODDING, OR SEEDING |
| <u>      </u> | MULCHING                                |
| <u>      </u> | SOIL RETENTION BLANKET                  |
| <u>      </u> | BUFFER ZONES                            |
| <u>  X  </u>  | 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:**

- |           |                                             |
|-----------|---------------------------------------------|
| <u>X</u>  | TEMPORARY SILT FENCES                       |
| <u>  </u> | HAY BALES                                   |
| <u>  </u> | ROCK BERMS                                  |
| <u>  </u> | DIVERSION, INTERCEPTOR, OR PERIMETER DIKS   |
| <u>  </u> | DIVERSION, INTERCEPTOR, OR PERIMETER SWALES |
| <u>  </u> | DIVERSION DIKE AND SWALE COMBINATIONS       |
| <u>  </u> | PIPE SLOPE DRAINS                           |
| <u>  </u> | PAVED FLUMES                                |
| <u>  </u> | ROCK BEDDING AT CONSTRUCTION EXIT           |
| <u>  </u> | TIMBER MATTING AT CONSTRUCTION EXIT         |
| <u>  </u> | CHANNEL LINERS                              |
| <u>  </u> | SEDIMENT TRAPS                              |
| <u>  </u> | SEDIMENT BASINS                             |
| <u>  </u> | STORM INLET SEDIMENT TRAP                   |
| <u>  </u> | STONE OUTLET STRUCTURES                     |
| <u>X</u>  | CURBS AND GUTTERS                           |
| <u>X</u>  | STORM SEWERS                                |
| <u>  </u> | 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 ROW on side where construction will take place, and make required utility adjustments
2. Install Proposed trunk lines/Inlets, Install silt fence along roadway storm sewer network outfalls as shown on Plan & Profile Sheets.
3. Construct proposed roadway.
4. Construct roadway section up to TY "D" stage as shown on T.C.P.

**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: Alteration 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:

- X HAUL ROADS DAMPENED FOR DUST CONTROL  
X LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN  
X EXCESS DIRT ON ROAD REMOVED DAILY  
X 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."

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R. Gutierrez  
Engineering  
Corporation



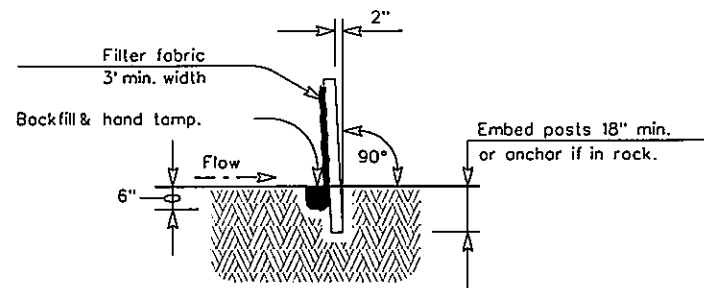
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948  
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ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

HIDALGO COUNTY PRECINCT NO. 2  
 PENTECOSTAL SUBDIVISION  
 POLLUTION PREVENTION  
 PLAN (SW3P)

NO. 1145A3

[illegible]

SHEET No.  
75



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.

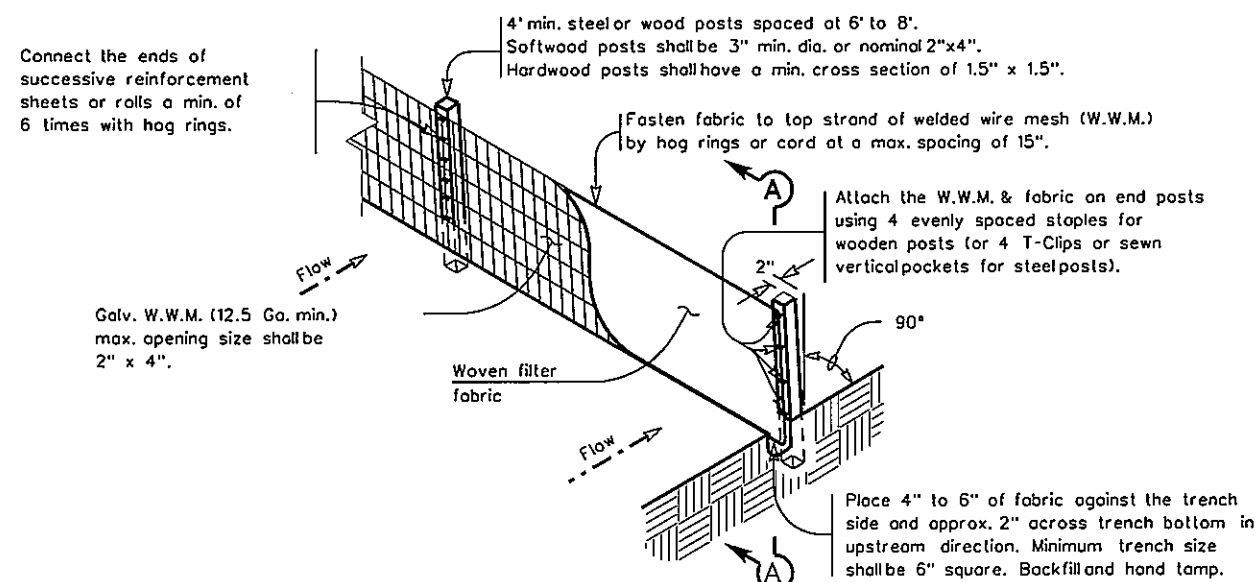
#### PLAN SHEET LEGEND

Sediment Control Fence

SCF

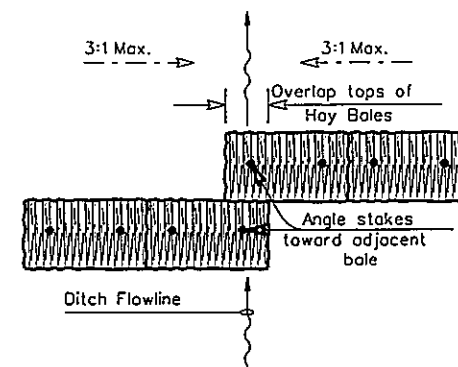
#### GENERAL NOTES

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

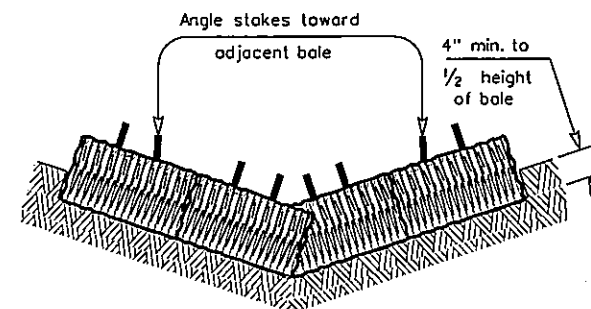


TEMPORARY SEDIMENT CONTROL FENCE

SCF



PLAN VIEW



PROFILE VIEW

#### PLANS SHEET LEGEND

Baled Hay

BH

#### BALED HAY USAGE GUIDELINES

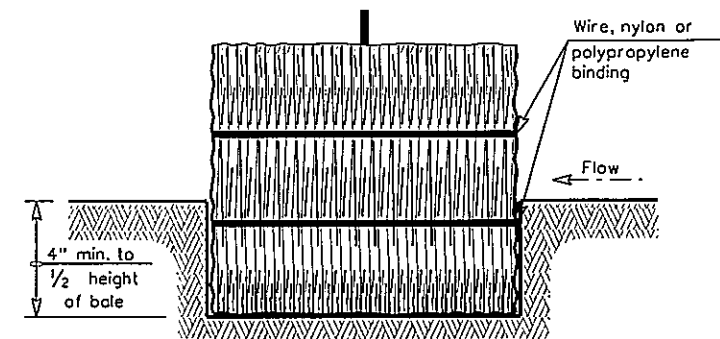
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate 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.

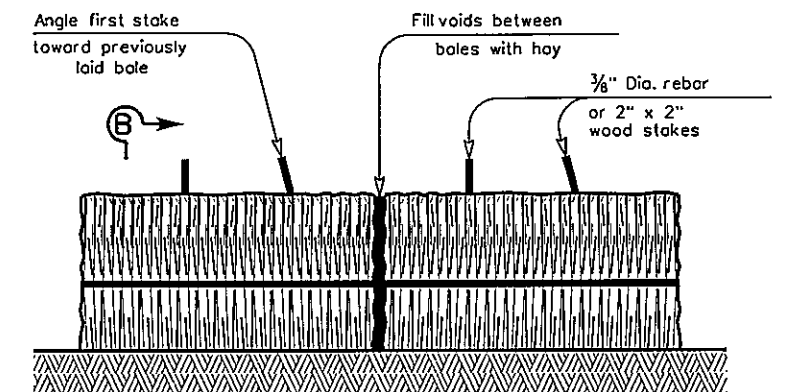
For Baled Hay installations in small ditches, the additional following considerations apply:

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 vegetable 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  
TEMPORARY EROSION,  
SEDIMENT AND WATER  
POLLUTION CONTROL MEASURES  
FENCE & BALED HAY  
EC(1)-93

|               |                 |          |                   |             |
|---------------|-----------------|----------|-------------------|-------------|
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| MODIFICATIONS | 6               | TEXAS    |                   | 76          |
|               | STATE DIST. NO. | COUNTY   | CONTR. SECT.      | JOB         |
|               | CHARTER         | HOU. CO. |                   | HIGHWAY NO. |