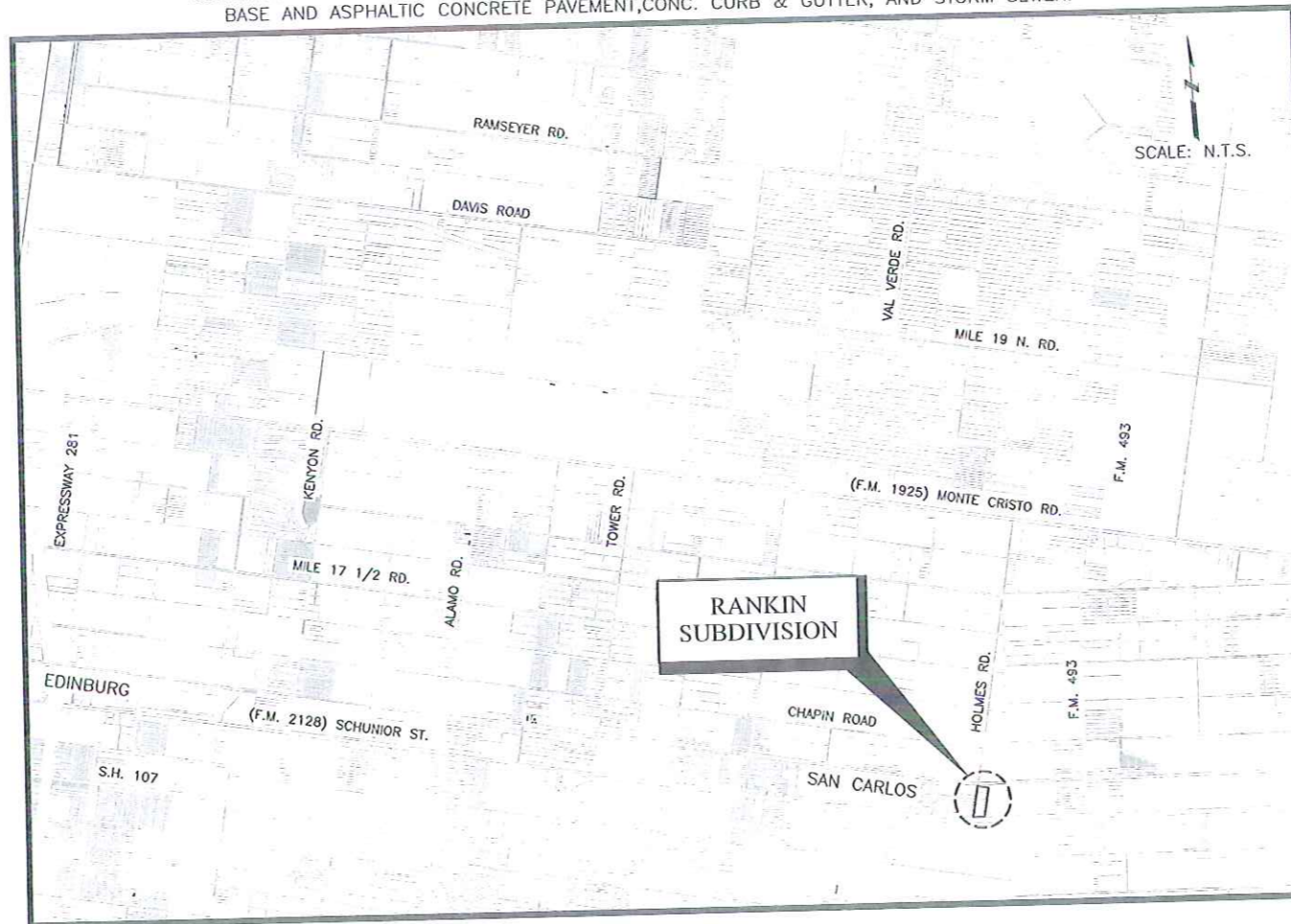
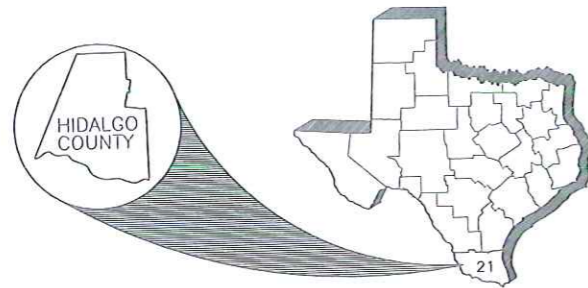


HIDALGO COUNTY PRECINCT No. 4

RANKIN SUBDIVISION CONSTRUCTION PLANS FOR BORDER COLONIA ACCESS PROGRAM ROUND III ALLOCATED CSJ: 3C-1080-603 2012

ALLOCATED	CSJ: 3C-1080-603 = RANKIN SUBDIVISION	= 2174 FT = 0.41 MILES	AREA OF DISTURBED SOIL
			3.08 AC
	TOTAL	= 2174 FT = 0.41 MILES	3.08 AC

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



LOCATION MAP

PROJECT DATA
DESIGN SPEED: 30 MPH
EXCEPTIONS: NONE
EQUATIONS: 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.

DATE: 6-10-14
Oscar Cancino, P.E.
OSCAR CANCINO, 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. SPECIAL LABOR PROVISIONS FOR STATE PROJECTS.

- RAMON GARCIA..... COUNTY JUDGE
- A.C. CUELLAR..... PRECINCT NO. 1
- HECTOR "TITO" PALACIOS..... PRECINCT NO. 2
- JOE M. FLORES..... PRECINCT NO. 3
- JOSEPH PALACIOS..... PRECINCT NO. 4

APPROVAL
HIDALGO COUNTY
COLONIA ACCESS PROGRAM DIRECTOR
DATE: 6/10/14
John Paul Fugo

HIDALGO COUNTY
COUNTY PRECINCT # 4
COMMISSIONER
DATE: _____

HIDALGO COUNTY PLANNING DEPARTMENT
PLANNING ADMINISTRATOR
DATE: _____

CONCURRENCE:
HIDALGO COUNTY DRAINAGE
DIST. No. 1 MANAGER
DATE: _____



Oscar Cancino, P.E.
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY OSCAR CANCINO, P.E., 107186
DATE: 6-10-14
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

DL, INC.
DOS LOGISTICS, INC.

T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expwy 83 Phone: (956) 968-8800
Weslaco, Tx. 78596 Fax: (956) 447-8194

W:\2012\Hidalgo County Pct. 4\Rankin Sub\Plan\01-001-01-Cover Sheet.dwg

NO. GENERAL

DESCRIPTION

G01-01	COVER SHEET
G01-02	INDEX OF SHEETS
G01-03	GENERAL NOTES
G01-04	PROJECT LAYOUT
G01-05	EXISTING AND PROPOSED TYPICAL SECTIONS
G01-06	ESTIMATE AND QUANTITY
G01-07	PROJECT QUANTITIES
G01-08	SIGNING LAYOUT

CONTROL DATA

G02-01	PROJECT CONTROL LAYOUT
G02-02	HORIZONTAL AND VERTICAL CONTROL

TRAFFIC CONTROL

G03-01	TRAFFIC CONTROL PLAN
--------	----------------------

PLAN AND PROFILE SHEETS

C01-01	PLAN AND PROFILE HOLMES RD. STA. 0+00 TO STA. 4+50
C01-02	PLAN AND PROFILE HOLMES RD. STA. 4+50 TO STA. 8+50
C01-03	PLAN AND PROFILE HOLMES RD. DRIVE STA. 8+50 TO END
C01-04	PLAN AND PROFILE CANTU DRIVE STA. 0+00 TO END
C01-05	PLAN AND PROFILE HERNANDEZ DRIVE STA. 0+00 TO END.
C01-06	PLAN AND PROFILE RANKIN STA. 0+00 TO END
C01-07	PLAN AND PROFILE HERNANDEZ DRIVE WEST STA. 0+00 TO END
C01-08	CROSS SECTIONS HOLMES RD. STA. 0+50 TO STA. 5+00
C01-09	CROSS SECTIONS HOLMES RD. STA. 5+50 TO STA. 10+00
C01-10	CROSS SECTIONS HOLMES RD. STA. 10+50 TO STA. 11+00
C01-11	CROSS SECTIONS CANTU DR. STA. 0+50 TO STA. 2+50
C01-12	CROSS SECTIONS HERNANDEZ DR. STA. 0+50 TO STA. 2+50
C01-13	CROSS SECTIONS RANKIN STA. 0+50 TO STA. 2+50
C01-14	DRIVEWAYS, SIDEWALK AND MAILBOXES LAYOUT
C01-15	DRIVEWAY/SIDEWALK TABLE

UTILITY AND DRAINAGE SHEET

C02-01	HYDRAULIC DATA SHEET
C02-02	DRAINAGE AREA MAP
C02-03	UTILITY AND DRAINAGE HOLMES RD. STA. 0+00 TO STA. 4+00
C02-04	UTILITY AND DRAINAGE HOLMES RD. STA. 4+00 TO STA. 8+00
C02-05	UTILITY AND DRAINAGE HOLMES RD. STA. 8+00 TO END
C02-06	UTILITY AND DRAINAGE CANTU DR. STA. 0+00 TO END
C02-07	UTILITY AND DRAINAGE HERNANDEZ DR. STA. 0+00 TO END
C02-08	UTILITY AND DRAINAGE RANKIN STA. 0+00 TO END

STANDARDS

C03-01	MISCELLANEOUS DETAILS
C03-02	-[D] DRIVEWAY DETAILS
C03-03	-[D] CURB & GUTTER DETAILS
C03-04	-[D] INLET TY "A" DETAIL
C03-05	-[D] TYPE "A" & TYPE "A1" MANHOLE (COMPLETE)
C03-06	-[D] MAILBOX DETAIL
C03-07	-[S] SMD (GEN)-08
C03-08	-[S] SMD (SLIP-1)-08
C03-09	-[S] SMD (SLIP-2)-08
C03-10	-[S] SMD (SLIP-3)-08
C03-11	-[S] SMD (TWT)-08
C03-12	-[S] SMD (FRP)-08
C03-13-24	-[S] BC (1)-07 TO BC (12)-07
C03-25	-SW3P
C03-26	-CONSTRUCTION EXIT TYPE 1, 2, & 3
C03-27	-[S] EC (1)-93

ABBREVIATIONS

CL.	Center Line	T.I.	Top of Inlet
TYP.	Typical	N:	Northing
PROP.	Proposed	E:	Easting
STA.	Station	&	And
RD.	Road	w/	With
N.T.S.	Not To Scale	N.G.	Natural Ground
GL.	Gas Line	FL.	Flowline
WL.	Water Line	PVM'T	Pavement
LT.	Left	BL.	Baseline
RT.	Right	SHT.	Sheet
NAD	North American Datum	LF.	Linear Feet
NAVD	North American Vertical Datum	CONC.	Concrete
IR.	Iron Rod	No.	Number
F.M.	Farm To Market Road	ELEV.	Elevation
EXIST.	Existing	TBM	Temporary Bench Mark
(H)	Horizontal	BLDG.	Building
(V)	Vertical	R.O.W.	Right of Way
APPROX.	Approximate	@	At
MH.	Manhole	PVC	Polyvinyl Chloride
RCP	Reinforced Concrete Pipe	G.V.	Gate Valve
ST.	Street	U.E.	Utility Easement
PVM'T.	Pavement	ASSEM.	ASSEMBLY



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk By:	Date



T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 968-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 INDEX OF SHEETS

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: G01-02

LEGEND

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

NOTE:

THE HORIZONTAL AND/OR VERTICAL LOCATION OF THE EXISTING UNDERGROUND UTILITIES AS ILLUSTRATED ON THESE PLANS IS APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION IN THE AREA OF SAID UTILITIES. CONTRACTOR SHALL CONTACT THE FOLLOWING AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION/EXCAVATION 'IN THE AREA OF EXISTING UTILITIES.

W:\2012\Weslaco County - Proj. A\Weslaco - Sub\Plans\02-031-02-INDEX_SHEET.dwg

GENERAL NOTES

(STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES - 2004)

1. THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE CONSTRUCTION SEQUENCE AND TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL. ALL WORK AND MATERIALS REQUIRED FOR TRAFFIC HANDLING SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED PART OF ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING". THE CONTRACTOR SHALL HAVE ENOUGH SIGNS AND BARRICADES AVAILABLE, AT ALL TIMES, TO REPLACE THOSE DAMAGED.
2. FLASHING WARNING LIGHTS AND/OR FLAGS SHALL BE USED TO CALL ATTENTION TO THE EARLY WARNING SIGNS.
3. STEADY BURN (TY C) WARNING LIGHTS SHALL BE USED TO MARK CHANNELIZING DEVICES AT NIGHT, AS NEEDED.
4. ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO OPENING ANY ROADWAY SECTION TO TRAFFIC. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES, AND CHANNELIZING DEVICES, AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS AND BARRICADES, ETC. SHALL BE CONSIDERED AS PART OF PAY ITEM 502, "BARRICADES, SIGNS AND TRAFFIC HANDLING."
5. SIGN AND/OR BARRICADE LOCATIONS SHALL BE IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (T.M.U.T.C.D.) AND THE PLANS OR TxDOT BC STANDARD SHEETS.
6. EXISTING CONNECTING ROADS AND PRIVATE DRIVES SHALL BE KEPT OPEN TO TRAFFIC AT ALL TIMES, EXCEPT AS OTHERWISE PROVIDED FOR OR APPROVED BY THE ENGINEER.
7. ALL BARRICADES, SIGNS AND TRAFFIC HANDLING, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH THE LATEST T.M.U.T.C.D.
8. WHEN CONSTRUCTION OPERATIONS RESULT IN DROP OR MORE THAN 2" NEXT TO TRAVEL WAY, A 3:1 SLOPE WILL BE REQUIRED DURING NON WORKING HOURS.
9. FOR POSTED SPEED EXCEEDING 45 MPH, ADVISORY SPEED SIGNS WITH APPROPRIATE WARNING SIGNS, SHALL BE POSTED IN THE VICINITY OF SPECIFIED WORK ZONES WITHIN THE PROJECT, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
10. LENGTH AND SPACING OF CHANNELIZING DEVICES SHALL BE AS SHOWN ON THE PLANS OR TxDOT BC STANDARDS AND THE T.M.U.T.C.D. OTHER SIGNS MAY BE USED IN ADDITION TO THOSE REQUIRED BY BARRICADE STANDARDS.
11. NON-REMOVEABLE WORK ZONE STRIPING FOR THIS PROJECT REQUIRED BY THE T.M.U.T.C.D. SHALL CONSIST OF THERMOPLASTIC MATERIAL AND SHALL BE IN ACCORDANCE WITH THE "WORK ZONE PAVEMENT MARKINGS" STANDARD WZ(STPM)-97
12. ALL WORK SHALL BE DONE EXPEDITIOUSLY DURING DAYLIGHT HOURS, AS DIRECTED BY THE ENGINEER. NECESSARY FLAGGERS AND APPROPRIATE SIGNING TO SAFETY GUIDE TRAFFIC THROUGH THE WORK AREA WILL BE REQUIRED AS DIRECTED BY THE ENGINEER.
13. REFER TO STANDARD SHEETS BC(1)-07 THROUGH BC(12)-07 FOR OTHER PERTINENT INFORMATION NOT SHOWN.
14. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC" OF THE STANDARD SPECIFICATIONS.

STAGING AREA

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A STAGING/LAYDOWN AREA. THERE WILL BE NO LAYDOWN/STAGING AREA PROVIDED BY THE COUNTY. NO ADDITIONAL COMPENSATION WILL BE AWARDED TO CONTRACTOR.

CAST-IN-PLACE CONCRETE:

1. UNLESS OTHERWISE SPECIFIED IN THE PLAN, CAST-IN-PLACE CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
1. ALL MIXING, HANDLING AND TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE.
3. THE ONLY PERSONS AUTHORIZED TO ADD WATER TO CONCRETE TRUCK AT THE JOB SITE ARE REPRESENTATIVES OF THE ENGINEER OR TESTING COMPANY.

CALICHE

1. NEW CALICHE MATERIAL GRADATION SHALL BE ARGILLACEOUS LIMESTONE, CALCAREOUS OR CALCAREOUS CLAY PARTICLES, WITH OR WITHOUT STONE CONGLOMERATE GRAVEL, SAND OR GRANULAR MATERIAL:

TYPE E GRADE 4

SIEVE No.	PERCENT RETAINED
2	0
1/2	20-60
4	40-75
40	75-85

2. NEW/EXISTING CALICHE TO BE LIME-STABILIZED AT A RATE OF 3% DRY WEIGHT. THE MIXTURE SHALL BE COMPACTED TO MINIMUM 98% DENSITY.
3. EXISTING CALICHE TO BE EXCAVATED AND STOCKPILED IN CONTRACTOR'S STAGING/LAYDOWN AREA. EXISTING & NEW CALICHED TO BE COMBINED TO ATTAIN THE REQUIRED 8 IN. DEPTH.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121

DATE: 12/7/12

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

Rev. No.	Description	Chk By:	Date



DL, INC.
DOS LOGISTICS, INC.

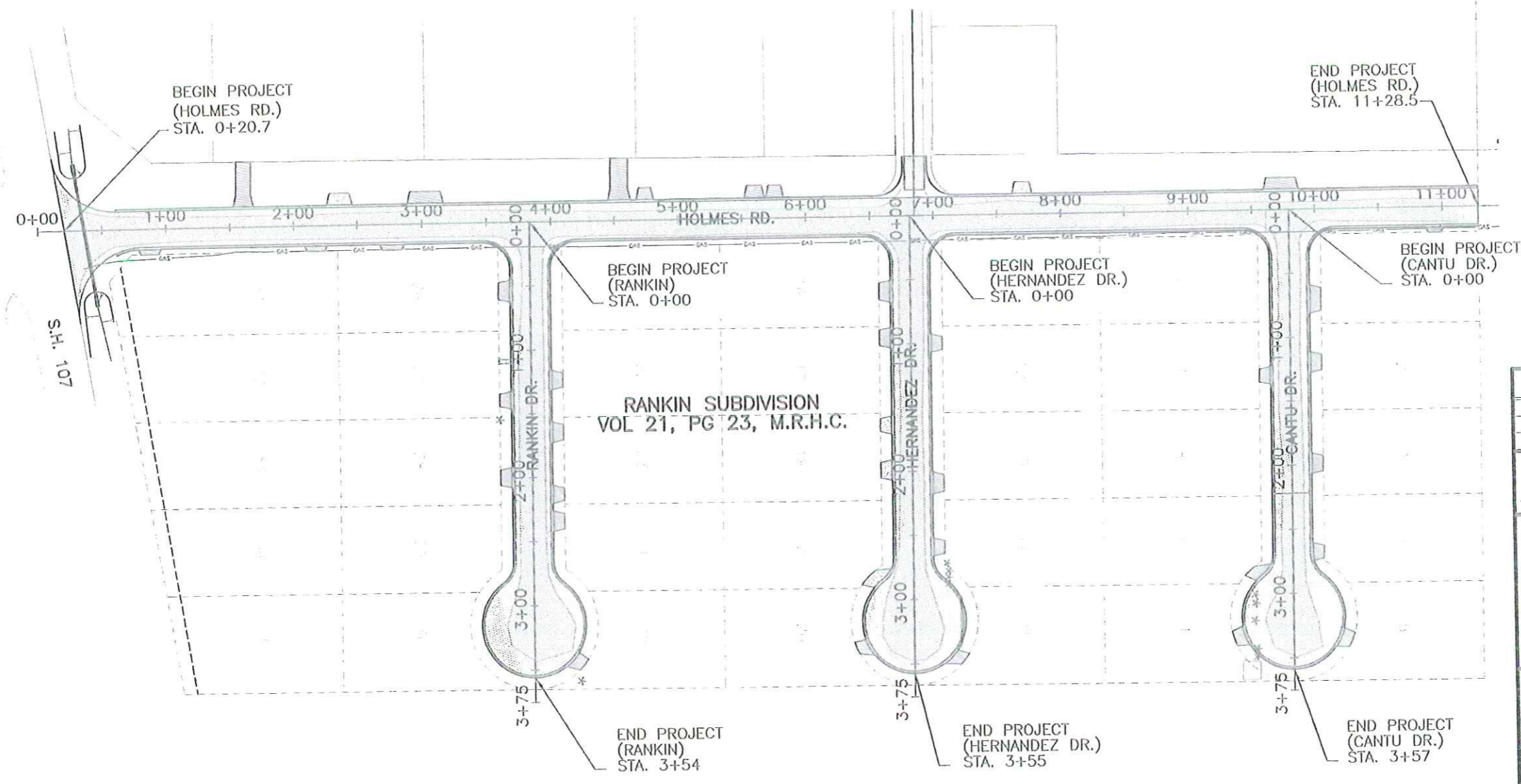
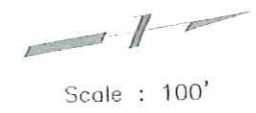
T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expy 83 Phone: (956) 968-8900
Westaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
PRECINCT No.4
RANKIN SUBDIVISION

Sheet Title:
GENERAL NOTES

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: G01-03

W:\2012\Hidalgo County, Tex. 4\Borran - 484\Hidalgo\G01-03-G01\HIDALGO NOTES.dwg



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk By:	Date



DL, INC.
 DOS LOGISTICS, INC.

T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 968-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 PROJECT LAYOUT

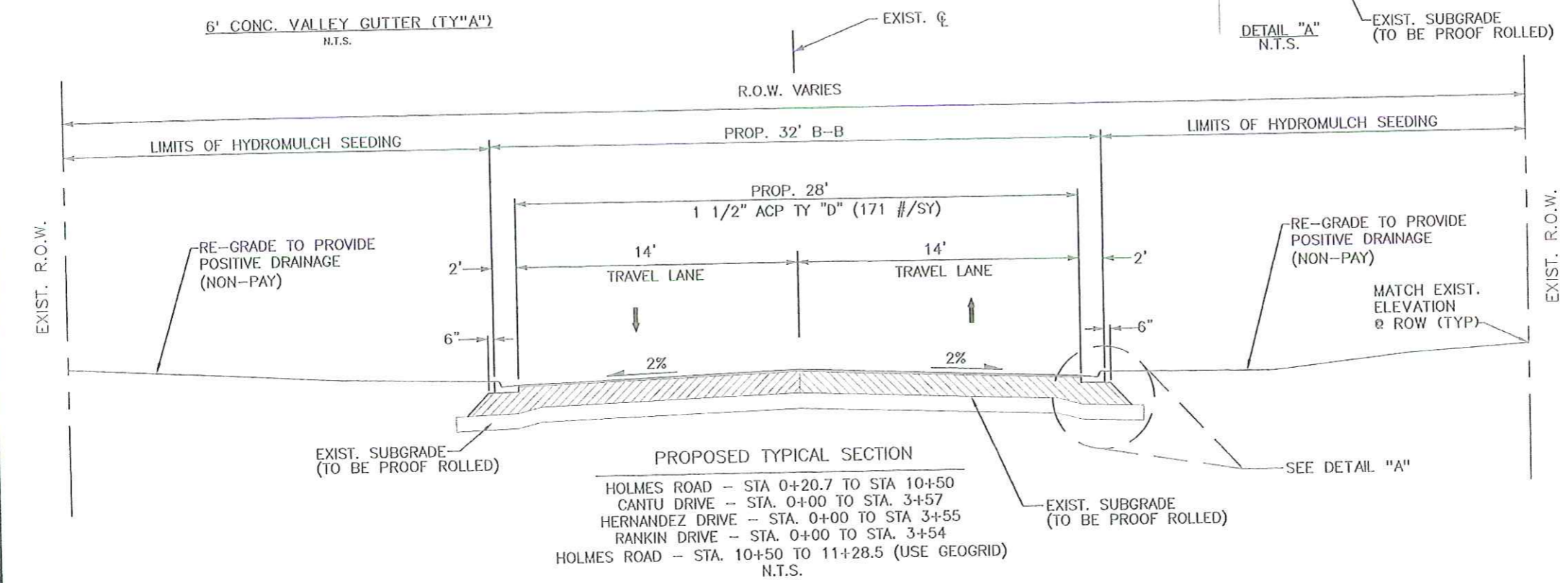
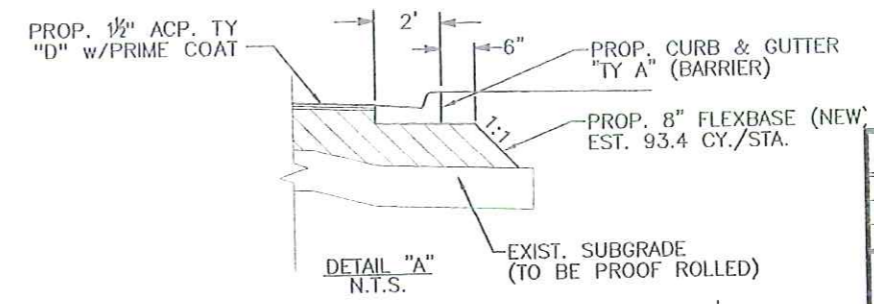
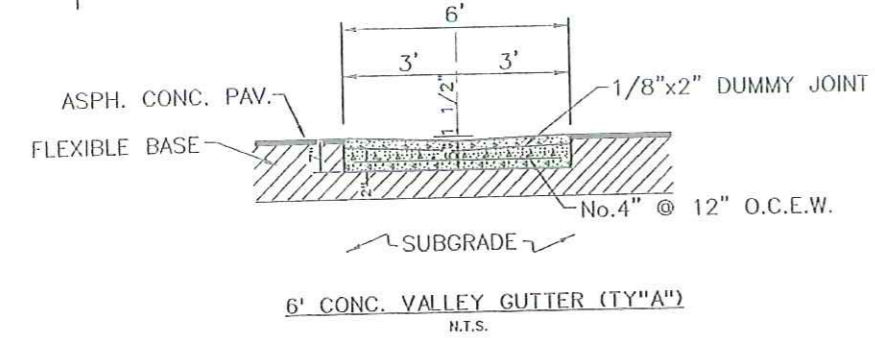
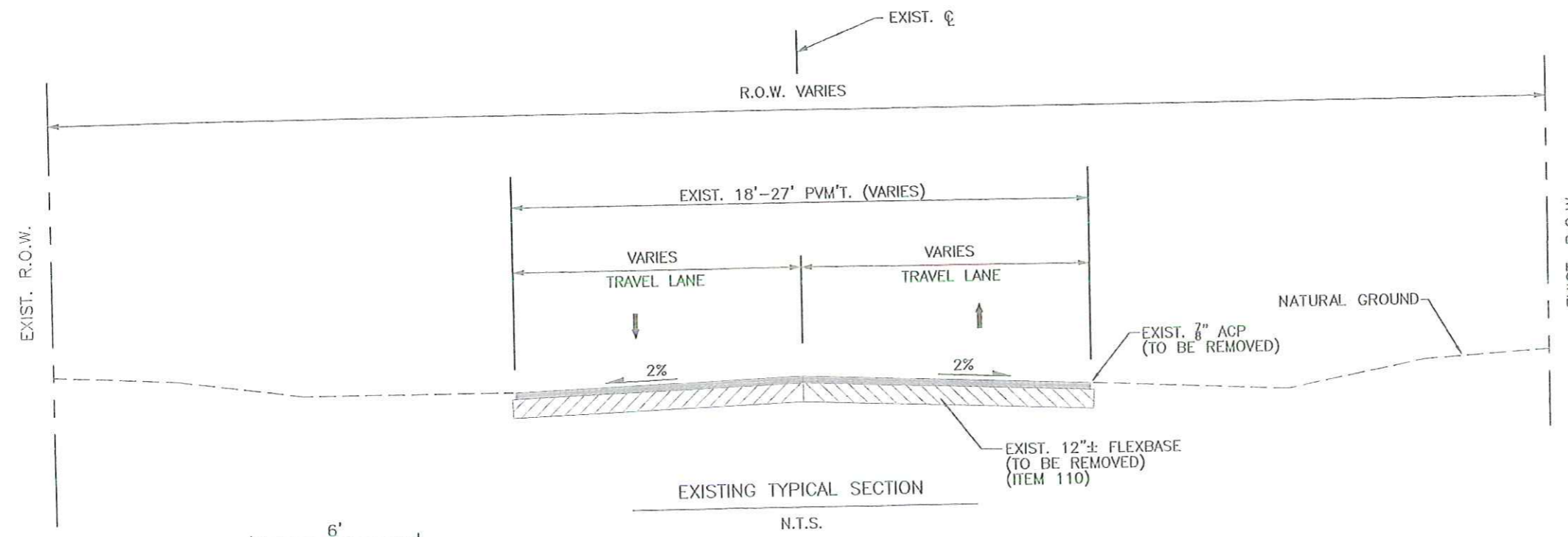
Designed By:	L.N., H.F.	Checked By:	L.N.
Drawn By:	E.B., H.F.	Sheet No.:	G01-04

W:\2012\Projects\12-04-Hidalgo County\12-04-Hidalgo County\12-04-Hidalgo County.dwg

GENERAL NOTES:
 PGL - PROFILE GRADE LINE
 PCJ - PERMISSIBLE CONSTRUCTION JOINT
 PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON THE PROPOSED ROADWAY CENTERLINE. ALL GRADING SHALL BE WITHIN R.O.W. LIMITS.
 ALL GRADING SHALL BE WITHIN THE EXISTING RIGHT OF WAY LIMITS.
 WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.
 BASEMATERIAL SHALL BE SCARIFIED AND REWORKED TO FORM THE PROPOSED 8". THE MATERIAL SHALL BE COMPACTED TO MINIMUM 98% DENSITY.
 RATE FOR ACP (TY D) WILL BE 114 LB/SY-IN.
 SEE "SUBMISSION LIMITS" SHEET FOR PROJECT LIMITS.
 SOFT SPOTS ON SUBGRADE TO BE REPAIRED BY THE COUNTY USING GEOGRID.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.



HOLMES ROAD - STA 0+20.7 TO STA 10+50
 CANTU DRIVE - STA. 0+00 TO STA. 3+57
 HERNANDEZ DRIVE - STA. 0+00 TO STA 3+54
 RANKIN DRIVE - STA. 0+00 TO STA. 3+54
 HOLMES ROAD - STA. 10+50 TO 11+28.5 (USE GEOGRID)
 N.T.S.

Rev. No.	Description	Chk By:	Date

TEXAS DEPARTMENT OF TRANSPORTATION



DL, INC.
 DOS LOGISTICS, INC.

T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 EXISTING AND PROPOSED
 TYPICAL SECTIONS

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: G01-05

RW:01023, H:01010, County: HIDALGO, SUB:V:01010, CD:01, DIST: 8, PROJ: TYPICAL SECTIONS



Scale : 100'



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
DATE: 12/9/12
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk. By:	Date

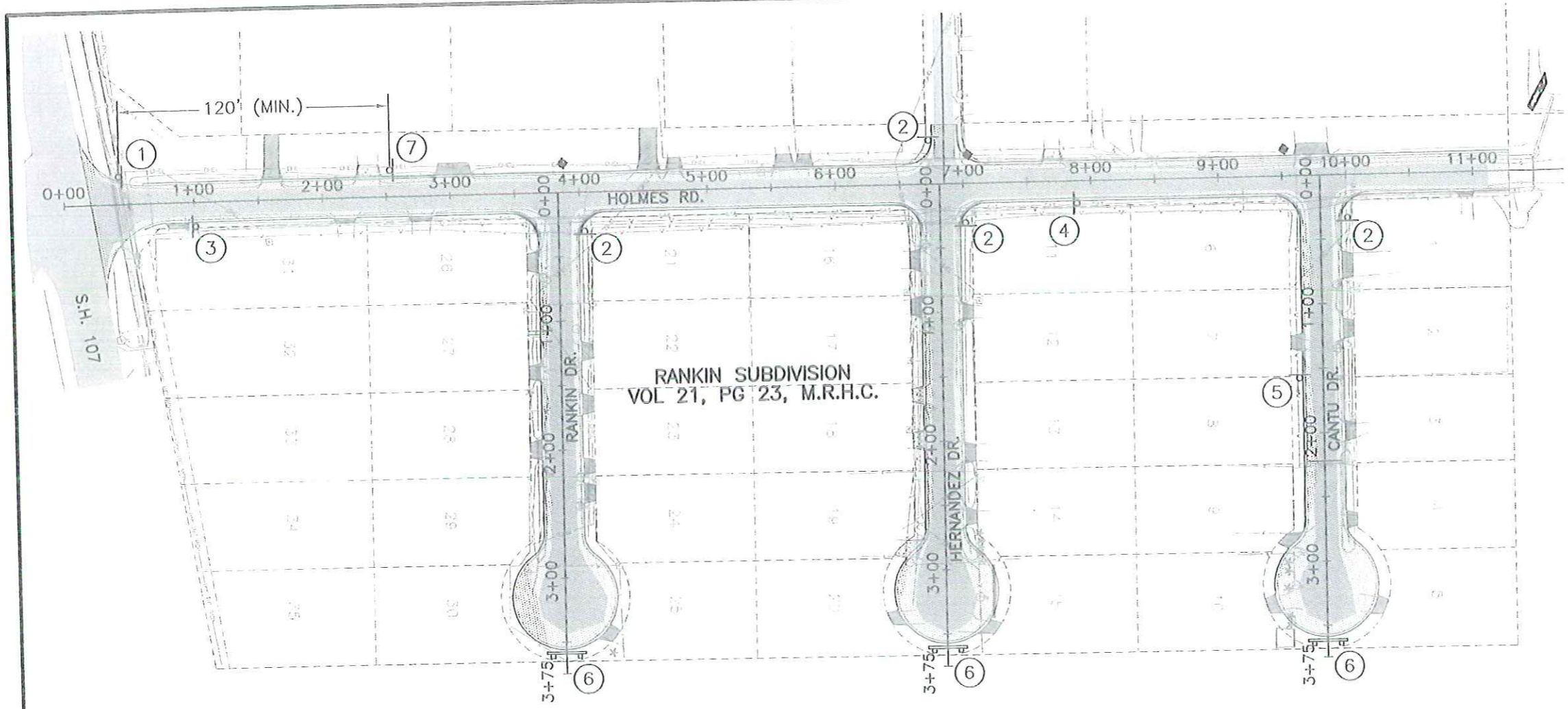


DL, INC.
DOS LOGISTICS, INC.
T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expy 83 Phone: (956) 968-8800
Westaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
PRECINCT No.4
RANKIN SUBDIVISION

Sheet Title:
SIGNS LAYOUT

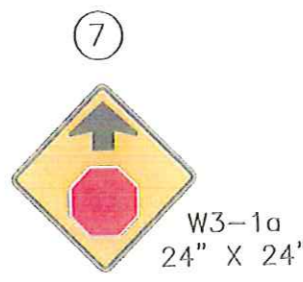
Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No.: G01-08



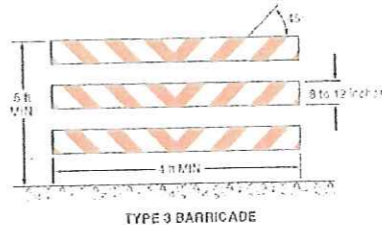
RANKIN SUBDIVISION
VOL 21, PG 23, M.R.H.C.

LEGEND

① SIGN TYPE (ITEM 644)
(REMOVE, AND REPLACE)

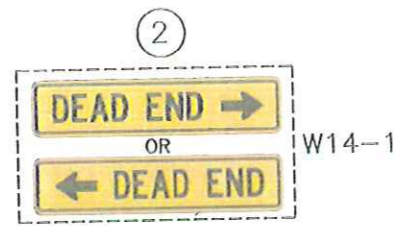


⑥

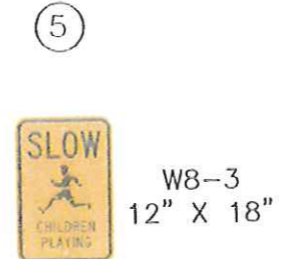
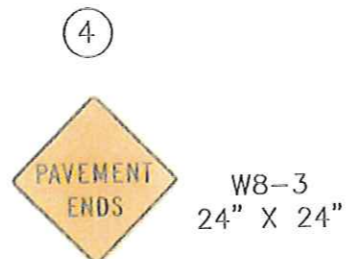
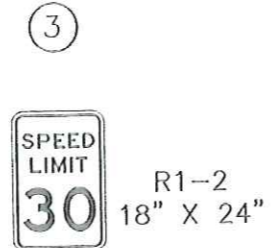
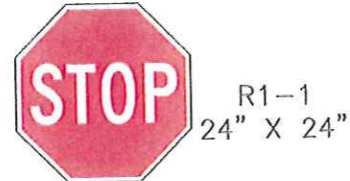
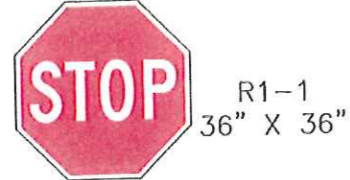
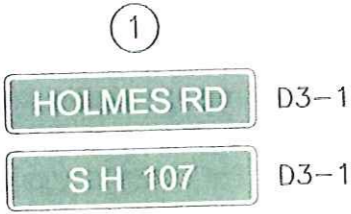


NOTE:

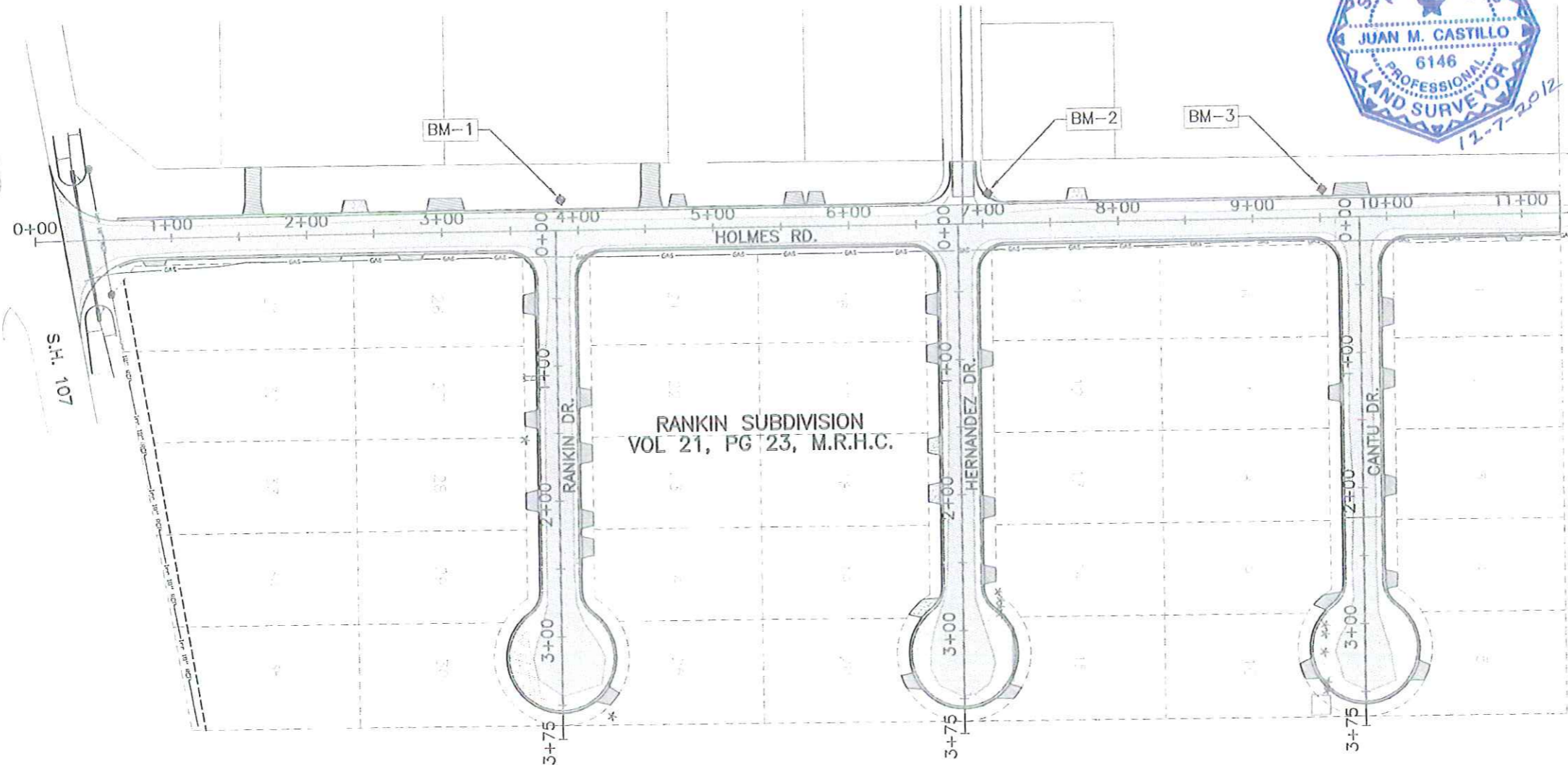
- 1.) STOP SIGN WITH TOP MOUNTED STREET NAME SIGN TO BE PAID FOR AS ONE SIGN ASSEMBLY.
- 2.) STOP SIGNS TO BE IN ACCORDANCE WITH THE M.U.T.C.D. STANDARDS.
- 3.) STREET NAME SIGN TO BE IN ACCORDANCE WITH HIDALGO COUNTY REQUIREMENTS.



HOLMES RD D3-1



W:\2012\Hidalgo County Precinct 4\Rankin Subdivision\08-2012-09\SIGNING LAYOUT.dwg



NOTES:

- 1). ALL COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983, (NA2011 ADJUSTMENT). ALL DISTANCES AND COORDINATES SHOWN ARE GRID AND MAY BE CONVERTED TO SURFACE BY MULTIPLYING THE RECIPROCAL ADJUSTED FACTOR OF 1.000040.
- 2). HORIZONTAL AND VERTICAL CONTROL WAS ESTABLISHED WITH LEICA VIVA SYSTEM, UTILIZING A CONTINUOUSLY OPERATING REFERENCE STATION NETWORK (CORS) AND REFERENCED TO NATIONAL GEODETIC SURVEY (NGS) HORIZONTAL CONTROL MONUMENTS. ALL OBSERVATIONS WERE MADE IN THE MONTH OF JULY, 2012.
- 3). VERTICAL DATUM IS NAVD88. THE GEOID MODEL USED FOR THE PROJECT IS GEOID09.
- 4). BM'S ONLY VALID FOR THE DURATION OF THE CONSTRUCTION OF STORM AND SANITARY IMPROVEMENT PROJECT.

I, JUAN M. CASTILLO, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THE INFORMATION CONTAINED IN THIS SURVEY CORRECTLY REPRESENTS THE RESULTS CONDUCTED UNDER MY SUPERVISION.

Juan M. Castillo
 JUAN M. CASTILLO, R.P.L.S. #6146

Rev. No.	Description	Chk By:	Date



1002 E. Expressway 83 Ph (956)969-4183
 Weslaco, TX 78596 Fax (956)447-8194



T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 CONTROL PROJECT LAYOUT

Designed By:	Checked By:	J.C.
Drawn By:	Sheet No.:	G02-01

W:\2012\Hidalgo County Precinct 4\Drawings\Subdivisions\G02-01-CONTROL PROJECT LAYOUT.dwg

NOTES:

- 1). ALL COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983, (NA2011 ADJUSTMENT). ALL DISTANCES AND COORDINATES SHOWN ARE GRID AND MAY BE CONVERTED TO SURFACE BY MULTIPLYING THE RECIPROCAL ADJUSTED FACTOR OF 1.000040.
- 2). HORIZONTAL AND VERTICAL CONTROL WAS ESTABLISHED WITH LEICA VIVA SYSTEM, UTILIZING A CONTINUOUSLY OPERATING REFERENCE STATION NETWORK (CORS) AND REFERENCED TO NATIONAL GEODETIC SURVEY (NGS) HORIZONTAL CONTROL MONUMENTS. ALL OBSERVATIONS WERE MADE IN THE MONTH OF JULY, 2012.
- 3). VERTICAL DATUM IS NAVD88. THE GEOID MODEL USED FOR THE PROJECT IS GEOID09.
- 4). BM'S ONLY VALID FOR THE DURATION OF THE CONSTRUCTION OF STORM AND SANITARY IMPROVEMENT PROJECT.

I, JUAN M. CASTILLO, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THE INFORMATION CONTAINED IN THIS SURVEY CORRECTLY REPRESENTS THE RESULTS CONDUCTED UNDER MY SUPERVISION.

Juan M. Castillo
 JUAN M. CASTILLO, R.P.L.S. #6146

Rev. No.	Description	Chk By:	Date

DLS
 Dos Land Surveying

1002 E. Expressway 83 Ph (956)969-4183
 Weslaco, TX 78596 Fax (956)447-8194

TEXAS DEPARTMENT OF TRANSPORTATION



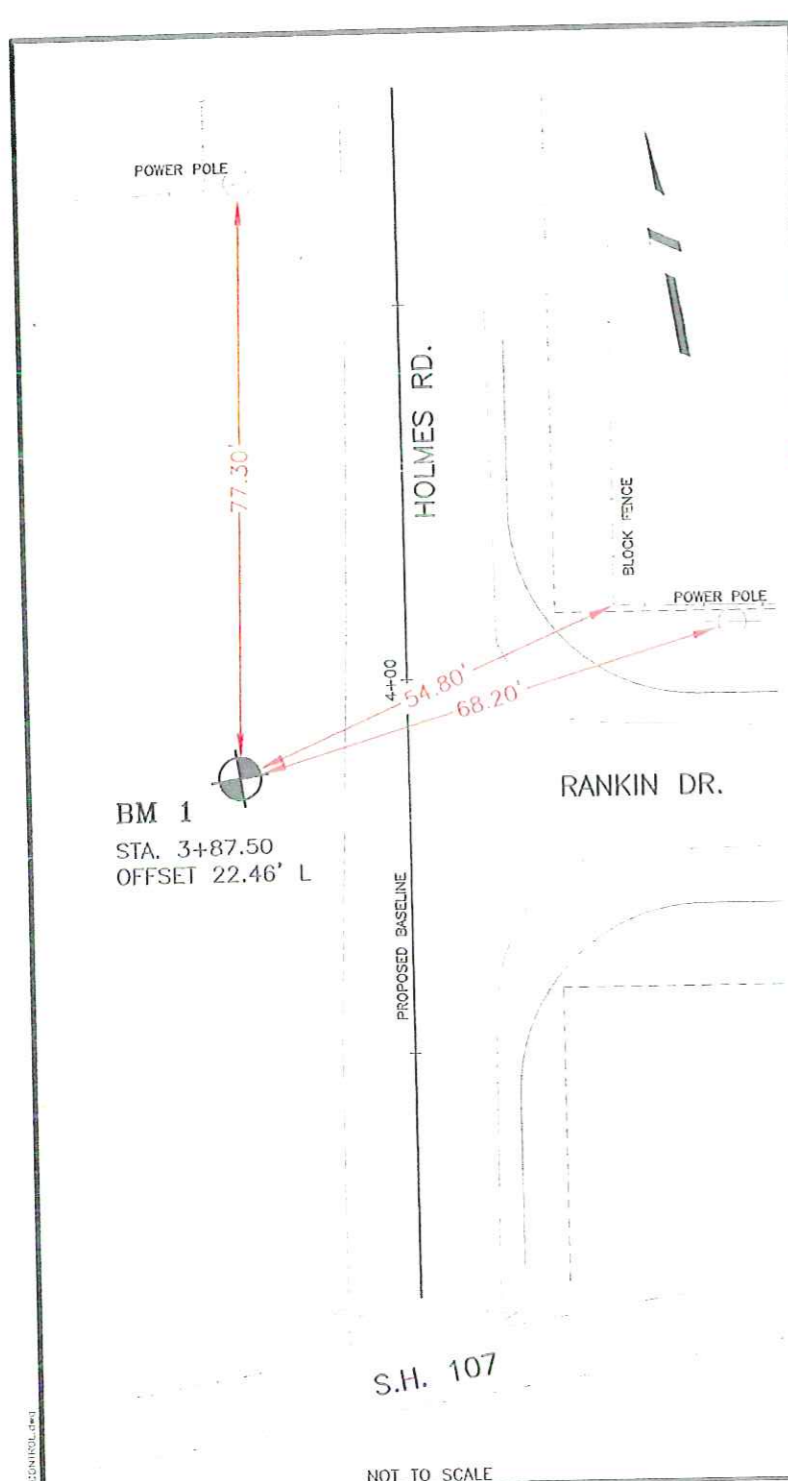
DL, INC.
 DOS LOGISTICS, INC.

T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

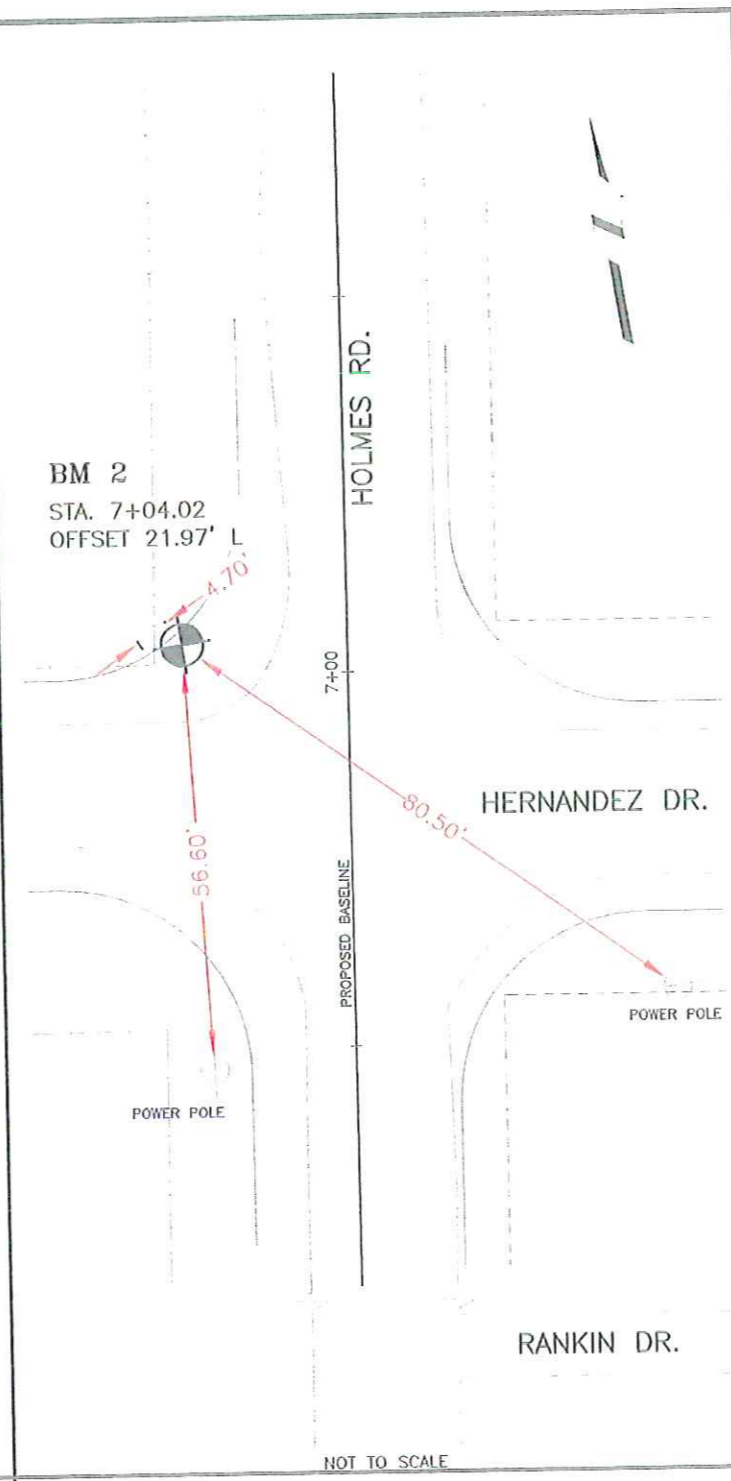
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 CONTROL PROJECT LAYOUT

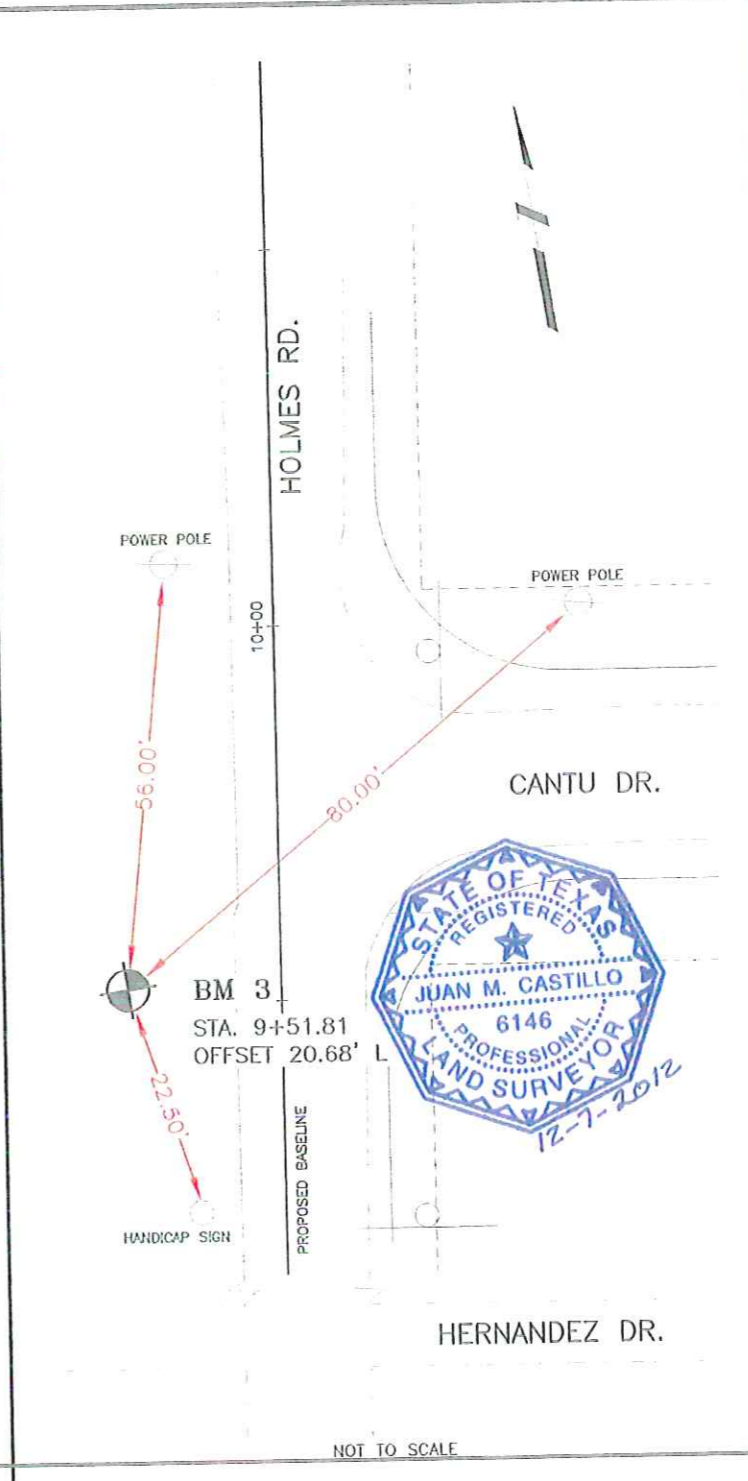
Designed By:	Checked By:	J.C.
Drawn By:	Sheet No:	G02-02



NOT TO SCALE



NOT TO SCALE



NOT TO SCALE



GRID COORDINATES

B.M.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM 1	16632451.28	1131860.80	67.62'	5/8" IRON ROD w/ DISK

NOTE:
 w/ DISK INDICATES A 1" ALUMINUM DISK

GRID COORDINATES

B.M.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM 2	16632764.24	1131908.13	64.89'	5/8" IRON ROD w/ DISK

NOTE:
 w/ DISK INDICATES A 1" ALUMINUM DISK

GRID COORDINATES

B.M.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM 3	16633009.08	1131946.28	65.01'	5/8" IRON ROD w/ DISK

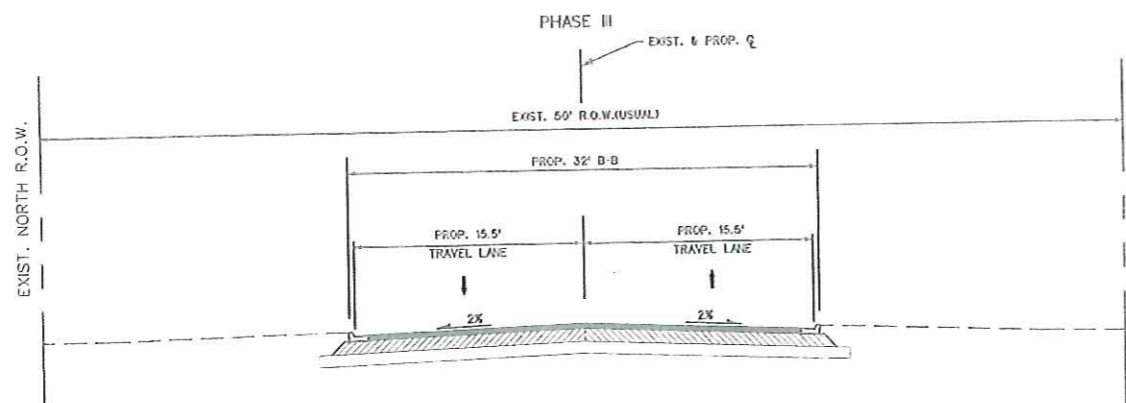
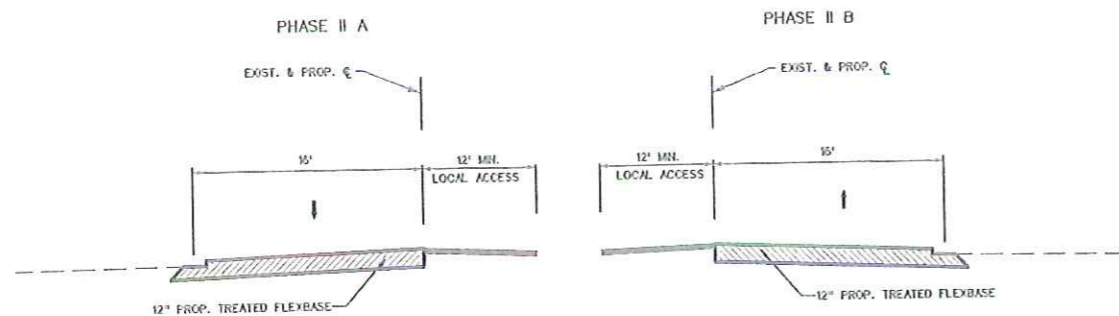
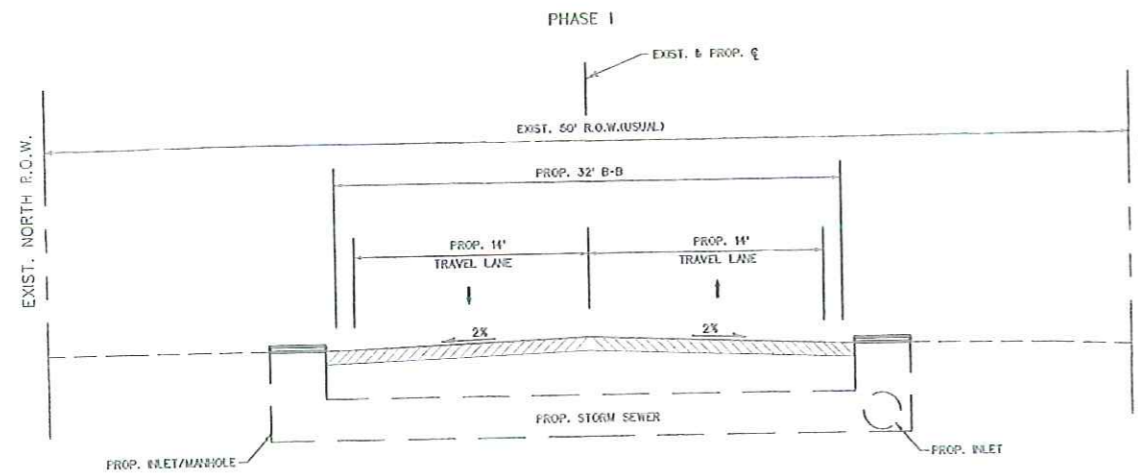
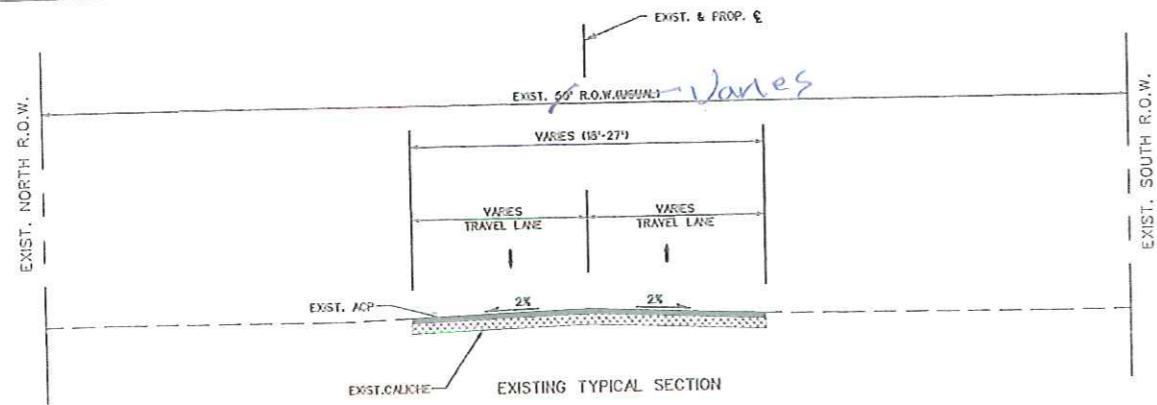
NOTE:
 w/ DISK INDICATES A 1" ALUMINUM DISK

BM 1
 Located approximately 387 feet north of the intersection of S.H. 107's westbound Lane and Holmes Road and 14 feet west of the west edge of pavement of Holmes Road.

BM 2
 Located approximately 704 feet north of the intersection of S.H. 107's westbound Lane and Holmes Road and 12.75 feet west of the west edge of pavement of Holmes Road.

BM 3
 Located approximately 950 feet north of the intersection of S.H. 107's westbound Lane and Holmes Road and 14.5 feet west of the west edge of pavement of Holmes Road.

W:\2012\Hidalgo County, P.C. -\Work\546\Plans\10-002-10-101\2012.dwg (J.M.C.) 12/7/12 10:48:11 AM



SEQUENCE OF WORK

THE CONTRACTOR SHALL SET PROJECT SIGNING AND BARRICADES AS IDENTIFIED IN BC(1)-07 BEFORE COMMENCING WORK. THE CONTRACTOR WILL BE ALLOWED TO CLOSE THE ROADWAY TO THROUGH TRAFFIC, BUT MUST ALLOW ALL LOCAL TRAFFIC EGRESS AND INGRESS AT ALL TIMES. THE CONTRACTOR WILL BE ALLOWED TO WORK ONE HALF OF THE PROPOSED SECTION AT A TIME, UNLESS OTHERWISE APPROVED BY THE ENGINEER. THE CONTRACTOR MUST MAINTAIN AN ALL WEATHER ROAD FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL REMOVE EXISTING GRASS AND TOPSOIL FROM THE SHOULDER. AFTER PREPARATION OF THE SUBGRADE AND OR FLEXBASE, THE ROADWAY SHALL BE ADEQUATELY FINISHED TO SAFELY CARRY TRAFFIC AFTER WORKING HOURS. THE CONTRACTOR SHALL WORK ONLY THAT LENGTH IN ONE WORKING DAY WHICH HE CAN ADEQUATELY FINISH TO SAFELY CARRY TRAFFIC AFTER WORKING HOURS.

PHASE I

1. SW3P CONTROLS SHALL BE INSTALLED AND SIGNS RELOCATED.
2. CONSTRUCT AND INSTALL PROP. STORM SEWER TOP OF INLETS.
3. SCARIFY AND REMOVE THE EXISTING ACP AND BASE ON HALF OF THE STREET AS SHOWN ON DETAIL.
4. CONTRATOR CAN WORK ONLY AS MUCH ROADWAY AS HE CAN COMPLETE IN THE SAME DAY.

PHASE II

1. PLACE 8' OF NEW FLEXBASE MATERIAL.
2. TREAT WITH LIME AND COMPACT PROPOSED FLEXBASE MATERIAL.
3. APPLY MC-30.

PHASE III

1. CONSTRUCT CURB & GUTTER.
2. APPLY 1 1/2" OF ACP 28' WIDE SURFACE UNDER TRAFFIC USING ONE-WAY TRAFFIC CONTROL DEVICES TO DELINEATE TRAFFIC DURING PAVING OPERATIONS.
3. PLACE MAILBOXES.
4. BACKFILL PAVEMENT EDGES.

FINAL CLEAN UP

UPON COMPLETION OF WORK AND BEFORE THE FINAL ACCEPTANCE IS MADE, THE CONTRACTOR SHALL SHAPE AND FINISH SUCH PORTIONS OF THE RIGHT-OF-WAY AS MAY HAVE BEEN DISTURBED DURING THE CONSTRUCTION AND WILL BE REQUIRED TO LEAVE THE ENTIRE RIGHT-OF-WAY IN A SMOOTH, CLEAN AND NEAT CONDITIONS TO THE SATISFACTION OF THE ENGINEER.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121

DATE:

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

Rev. No.	Description	Chk By:	Date



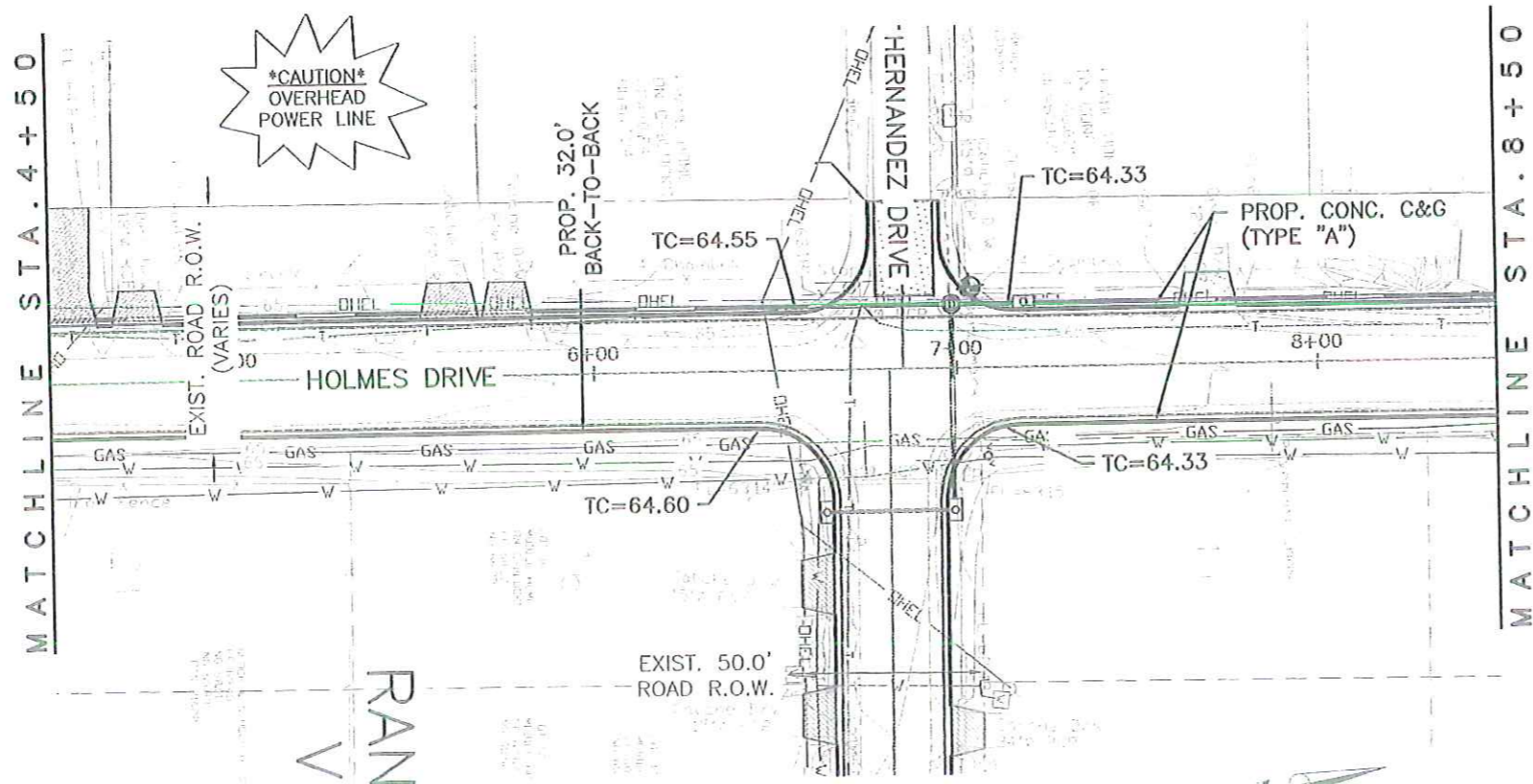
DL, INC.
DOS LOGISTICS, INC.

T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expy 83 Phone: (956) 968-8800
Westlaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
PRECINCT No.4
RANKIN SUBDIVISION

Sheet Title:
TRAFFIC CONTROL
PLAN

Designed By:	L.N., H.F.	Checked By:	L.N.
Drawn By:	E.B., H.F.	Sheet No.:	G03-01

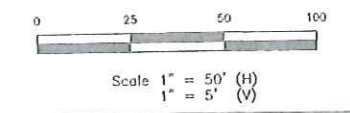


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

PLAN VIEW LEGEND

	EXISTING ROAD
	PROPOSED ASPHALT DRIVE REPAIR
	PROPOSED ASPHALT DRIVEWAY REPAIR
	PROPOSED CONCRETE DRIVEWAY REPAIR
	PROPOSED ADS/RCP PIPE
	PROPOSED STORM DRAIN PIPE
	DIRECTION OF FLOW
	TEMP. SEDIMENT CONTROL FENCE

- NOTES:
- EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 - NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED, ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk By:	Date

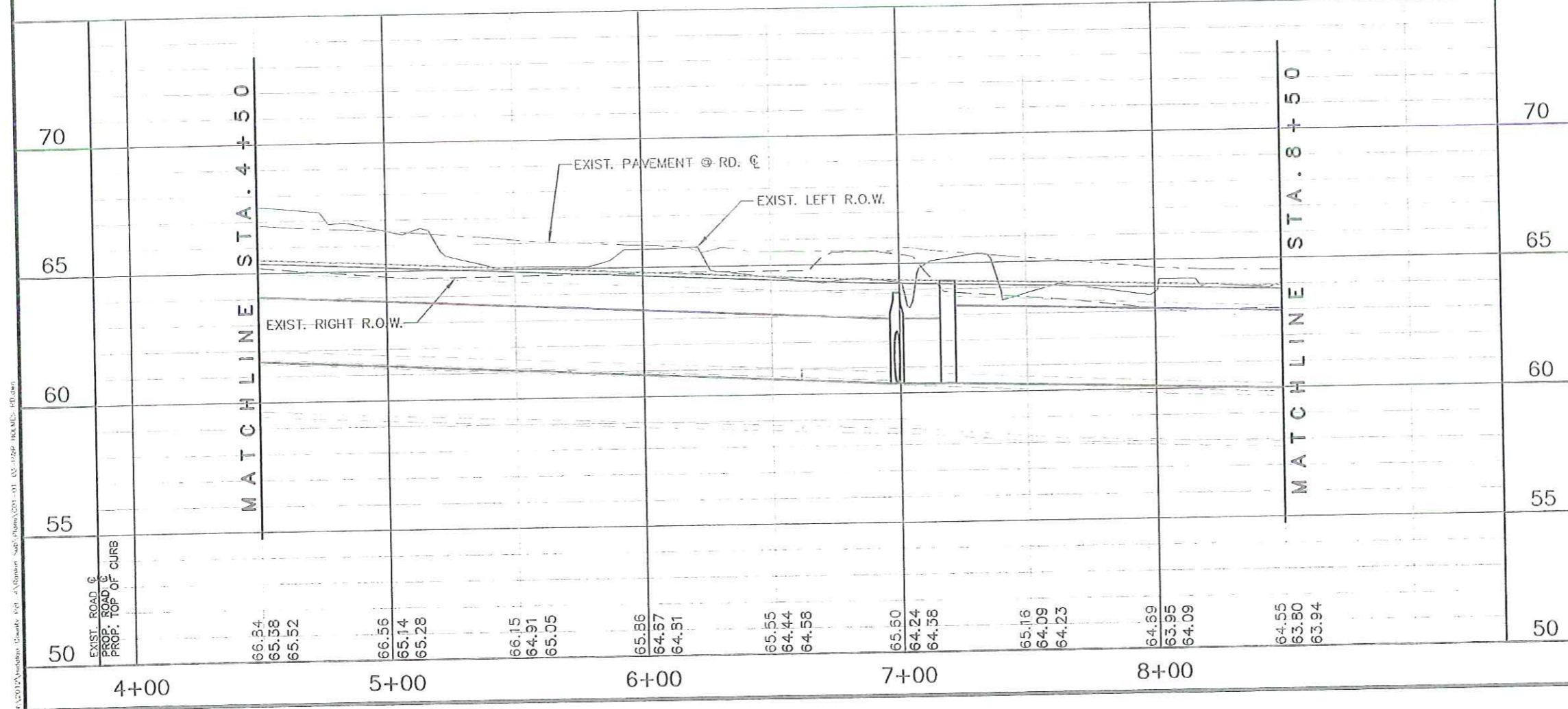


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 968-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

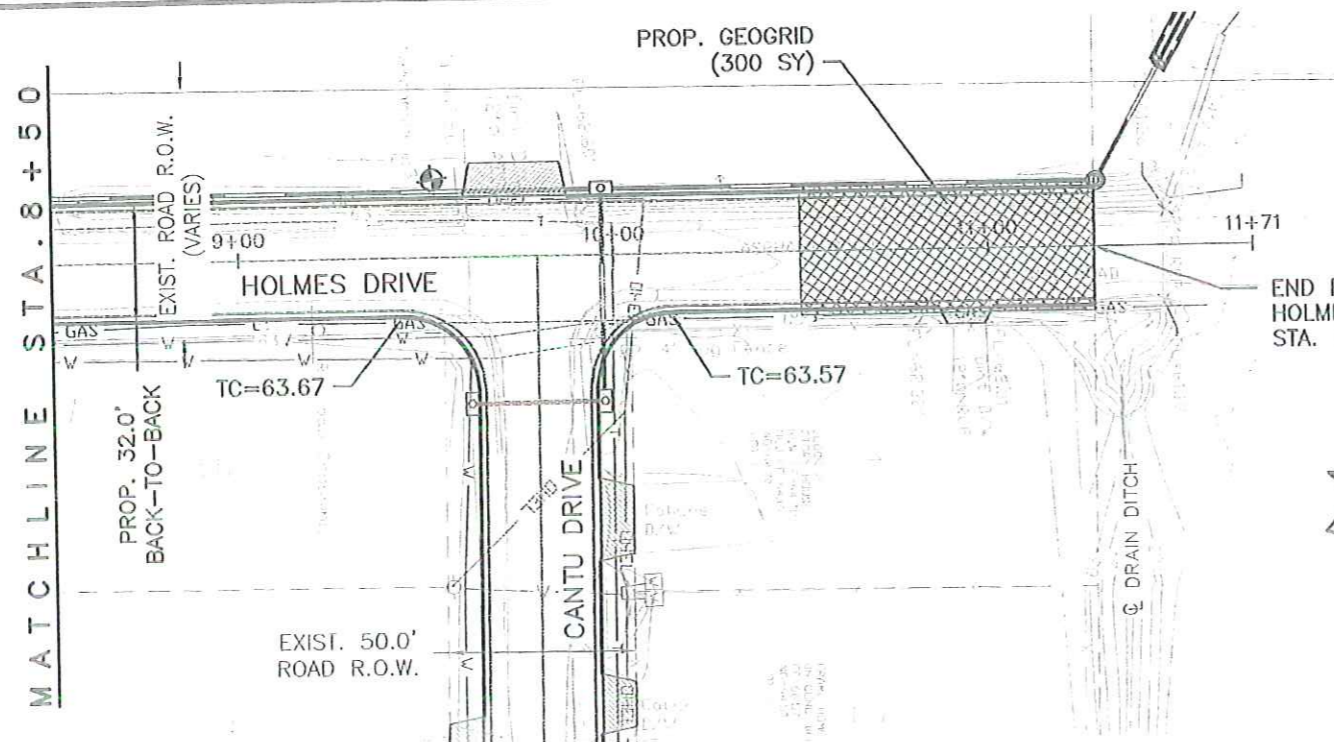
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: PLAN AND PROFILE
 HOLMES RD.
 STA. 4+50 TO STA. 8+50

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-02



W:\2012\Hidalgo County\proj\A\Station Sub\Drawings\01_03_12\04-HOLMES-10.dwg
 12/7/12 10:00 AM

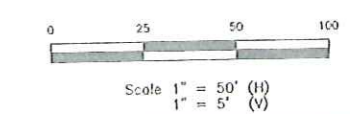


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

PLAN VIEW LEGEND

	EXISTING ROAD
	PROPOSED ASPHALT DRIVE REPAIR
	PROPOSED ASPHALT DRIVEWAY REPAIR
	PROPOSED CONCRETE DRIVEWAY REPAIR
	PROPOSED ADS/RCP PIPE
	PROPOSED STORM DRAIN PIPE
	DIRECTION OF FLOW
	TEMP. SEDIMENT CONTROL FENCE

- NOTES:
- EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 - NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED, ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk By:	Date

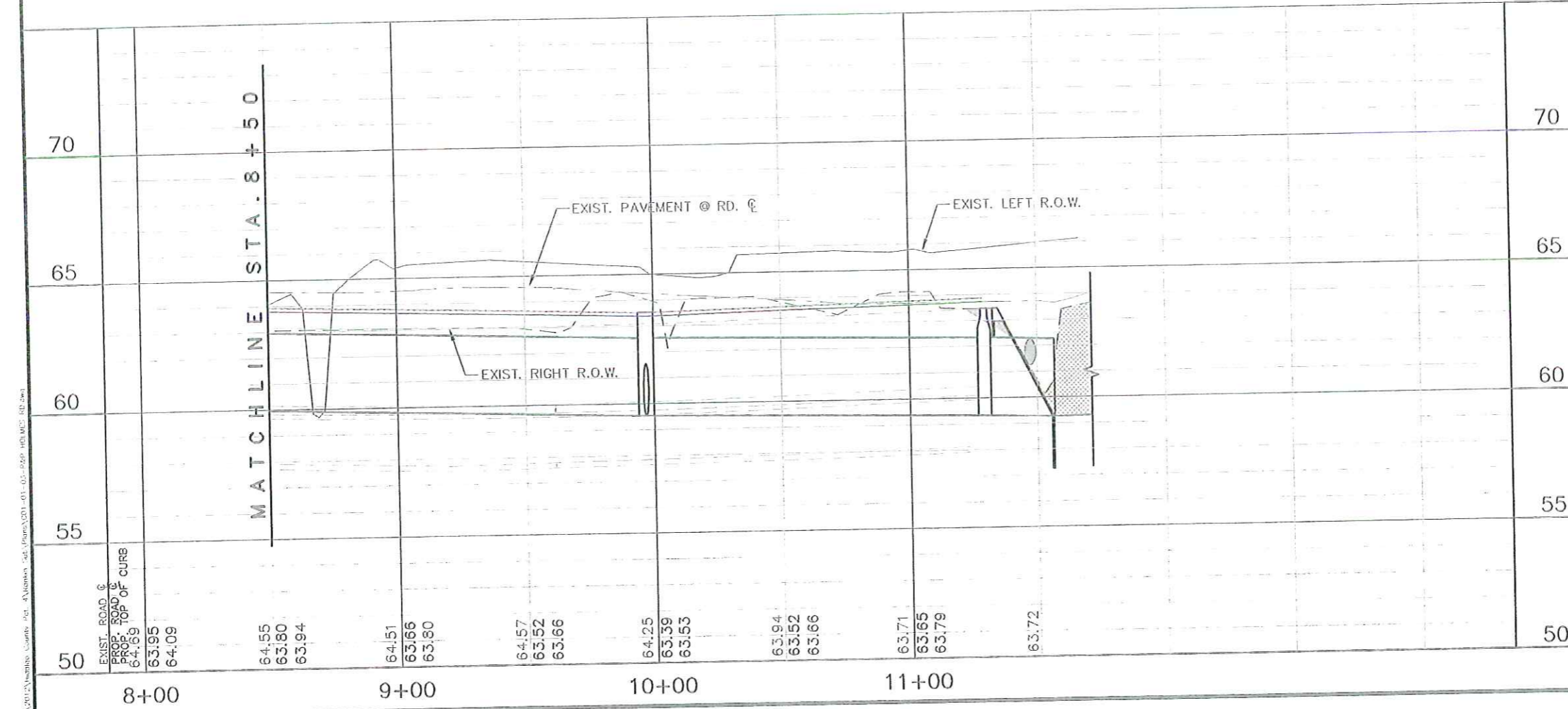


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8900
 Westlaco, Tx. 78506 Fax: (956) 447-8194

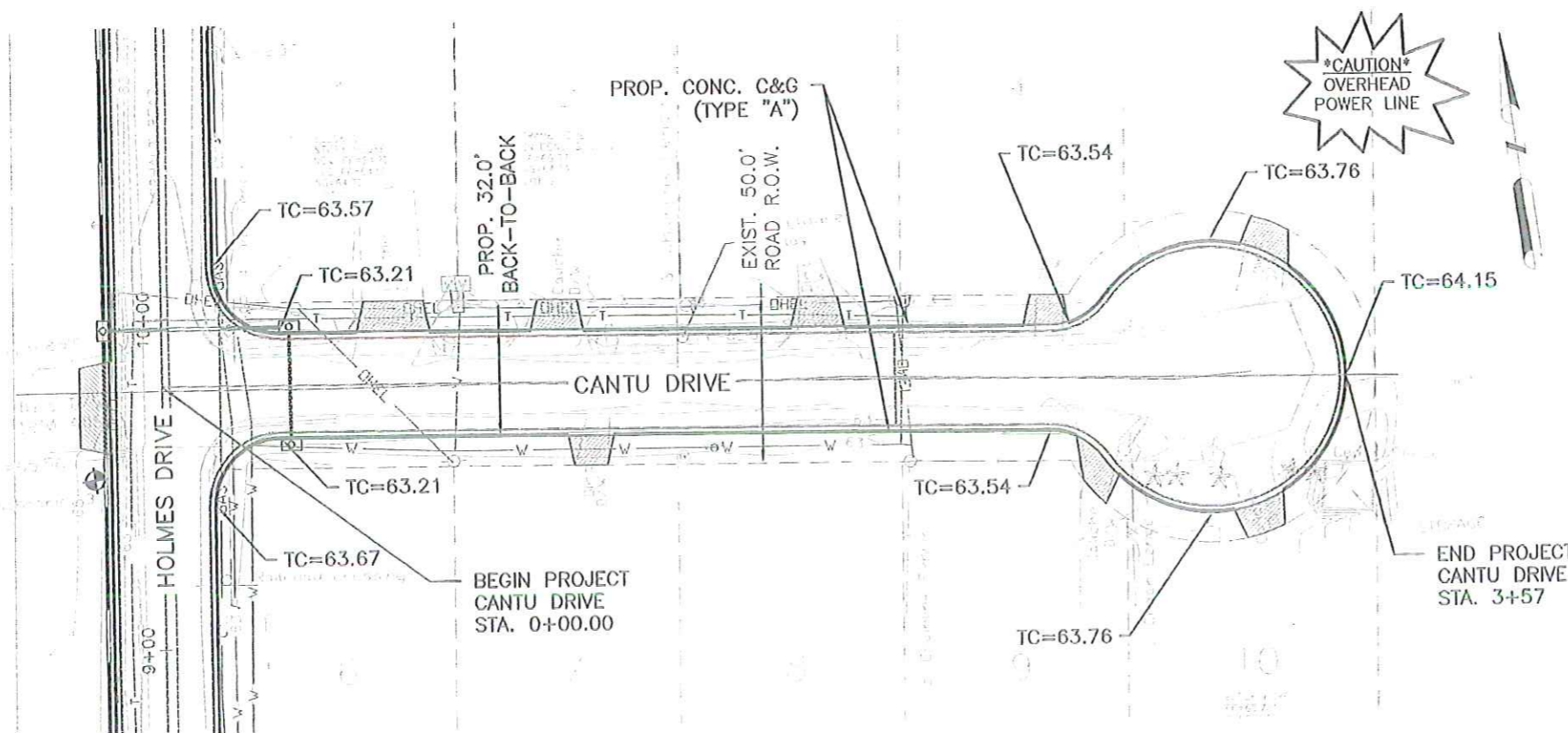
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: PLAN AND PROFILE
 HOLMES RD.
 STA. 8+50 TO END

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-03



W:\2012\Projects\Hidalgo\12-03-12\12-03-12-P&P-HOLMES RD.dwg
 12/7/12 10:45 AM L.N.

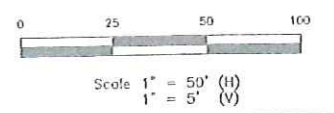


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

PLAN VIEW LEGEND

	EXISTING ROAD
	PROPOSED ASPHALT DRIVE REPAIR
	PROPOSED ASPHALT DRIVEWAY REPAIR
	PROPOSED CONCRETE DRIVEWAY REPAIR
	PROPOSED ADS/RCP PIPE
	PROPOSED STORM DRAIN PIPE
	DIRECTION OF FLOW
	TEMP. SEDIMENT CONTROL FENCE

- NOTES:**
- EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 - NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED, ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk By:	Date

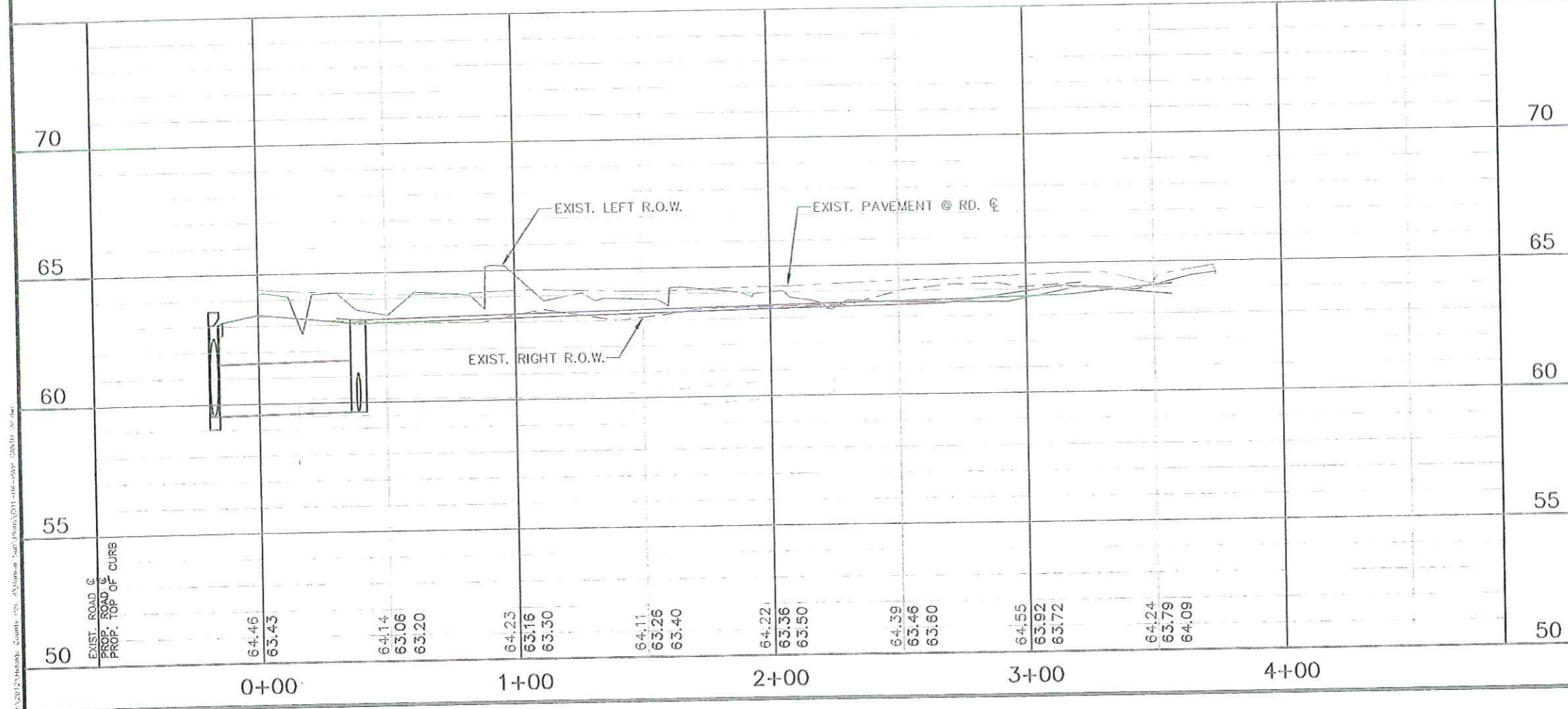


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expywy 83 Phone: (956) 968-8800
 Westaco, Tx. 78596 Fax: (956) 447-8194

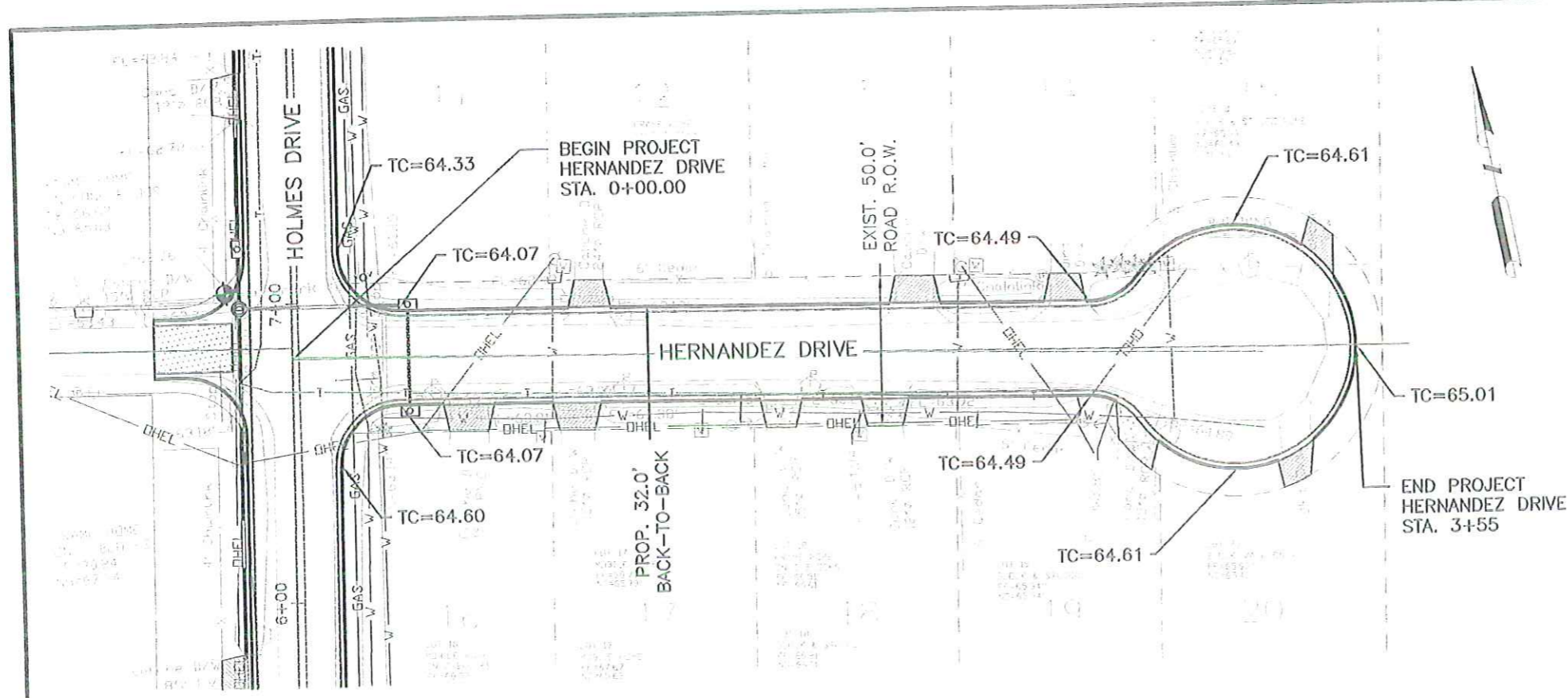
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: PLAN AND PROFILE
 CANTU DRIVE
 STA. 0+00 TO END

Designed By: LN., H.F.	Checked By: LN.
Drawn By: E.B., H.F.	Sheet No.: C01-04



12/20/12, Houston, County: 051, A:\Projects\2012\12-20-12\01-12-12\01-12-12.dwg, 12/20/12, 10:00 AM

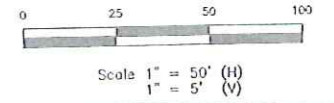


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

PLAN VIEW LEGEND

	EXISTING ROAD
	PROPOSED ASPHALT DRIVE REPAIR
	PROPOSED ASPHALT DRIVEWAY REPAIR
	PROPOSED CONCRETE DRIVEWAY REPAIR
	PROPOSED ADS/RCP PIPE
	PROPOSED STORM DRAIN PIPE
	DIRECTION OF FLOW
	TEMP. SEDIMENT CONTROL FENCE

- NOTES:**
- EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 - NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED, ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk By:	Date

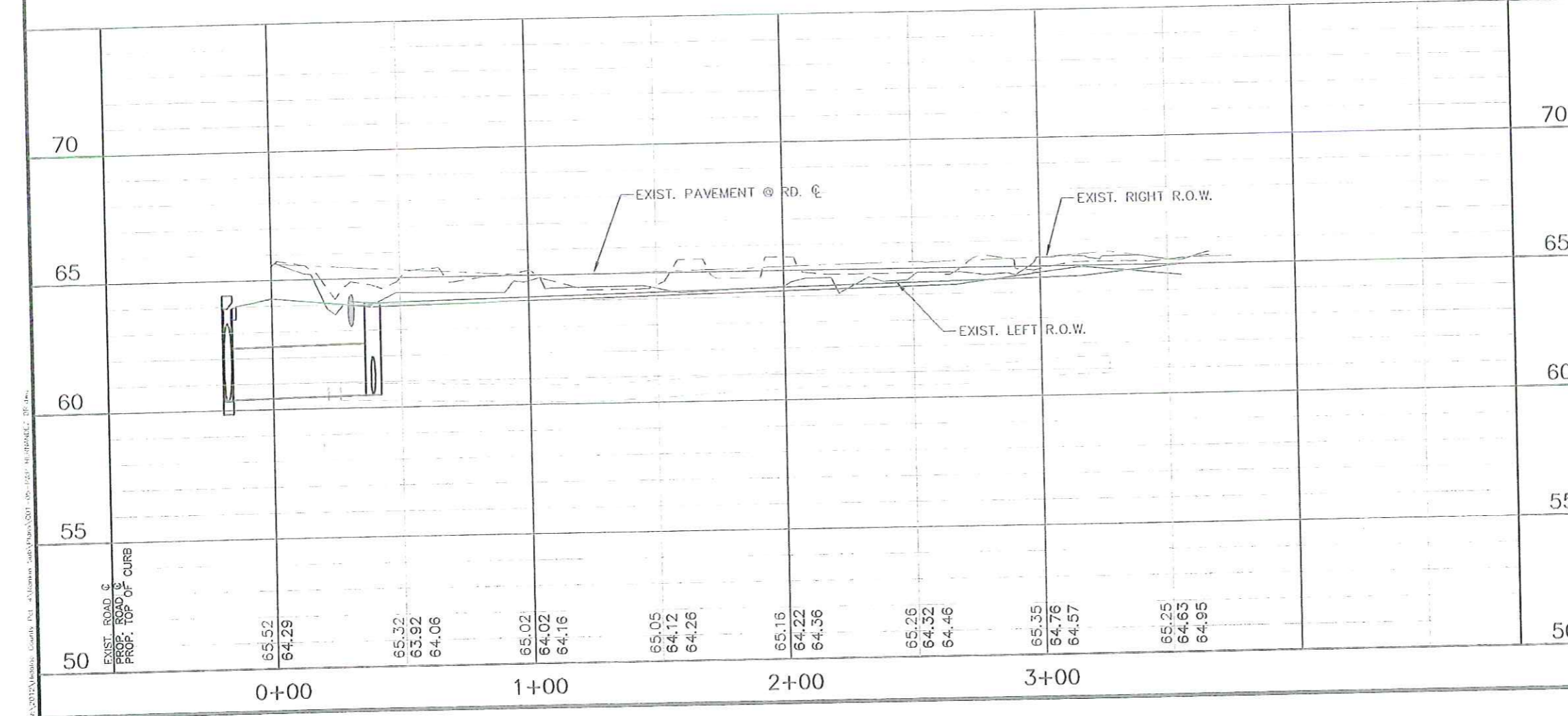


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 668-8800
 Westlaco, Tx. 78596 Fax: (956) 447-8194

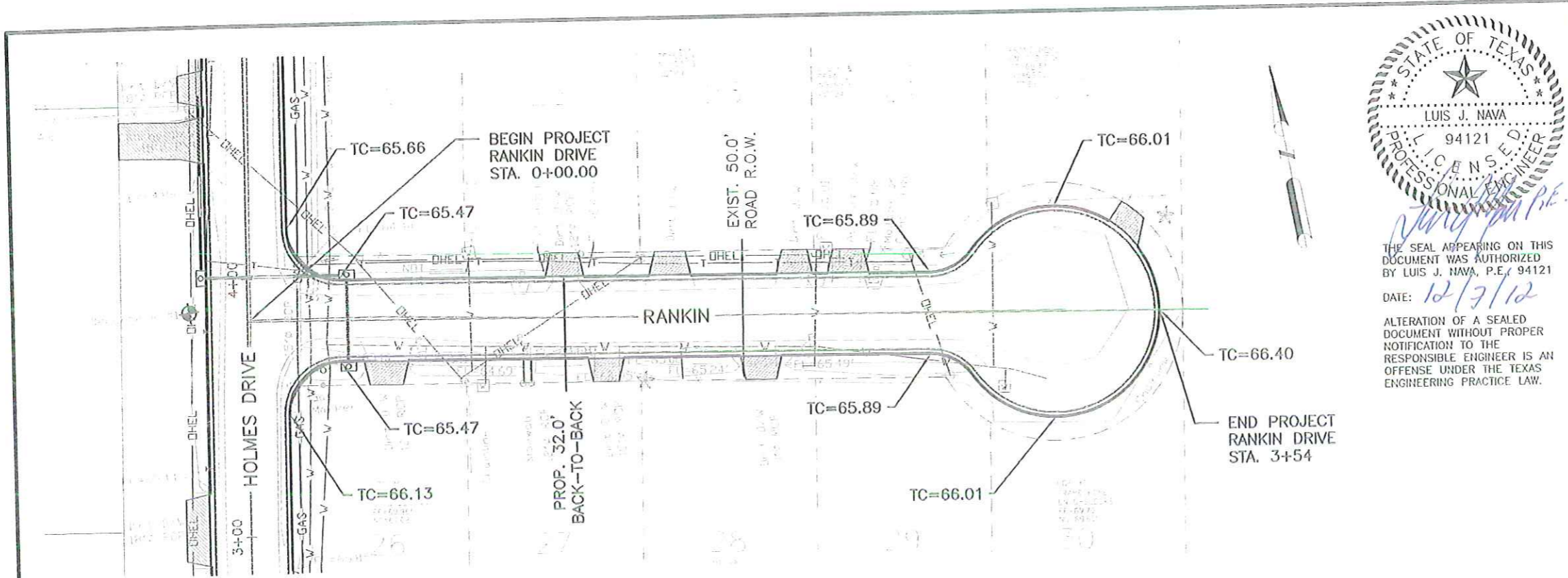
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: PLAN AND PROFILE
 HERNANDEZ DRIVE
 STA. 0+00 TO END

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-05



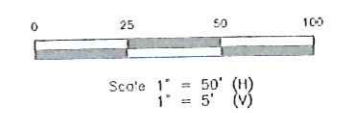
W:\2012\Hidalgo County Pct. 4\Drawings\Task\Drawings\01 - 05 - 12 - 18 - HERNANDEZ.DWG
 W:\2012\Hidalgo County Pct. 4\Drawings\Task\Drawings\01 - 05 - 12 - 18 - HERNANDEZ.DWG



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

- PLAN VIEW LEGEND**
- EXISTING ROAD
 - PROPOSED ASPHALT DRIVE REPAIR
 - PROPOSED ASPHALT DRIVEWAY REPAIR
 - PROPOSED CONCRETE DRIVEWAY REPAIR
 - PROPOSED ADS/RCP PIPE
 - PROPOSED STORM DRAIN PIPE
 - DIRECTION OF FLOW
 - TEMP. SEDIMENT CONTROL FENCE

- NOTES:**
1. EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 2. NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED. ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk By:	Date

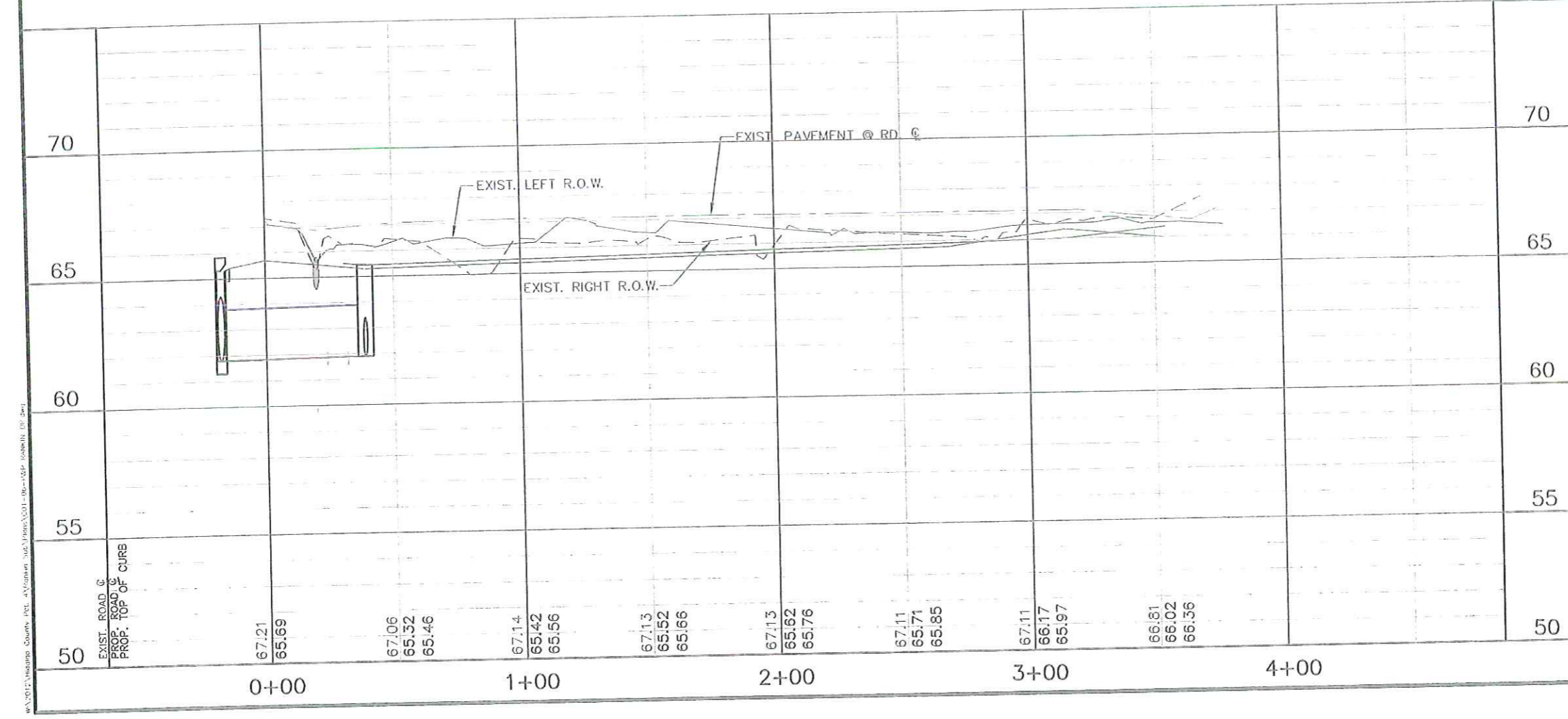


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E Expyw 83 Phone: (956) 968-8800
 Westaco, Tx. 78596 Fax: (956) 447-8194

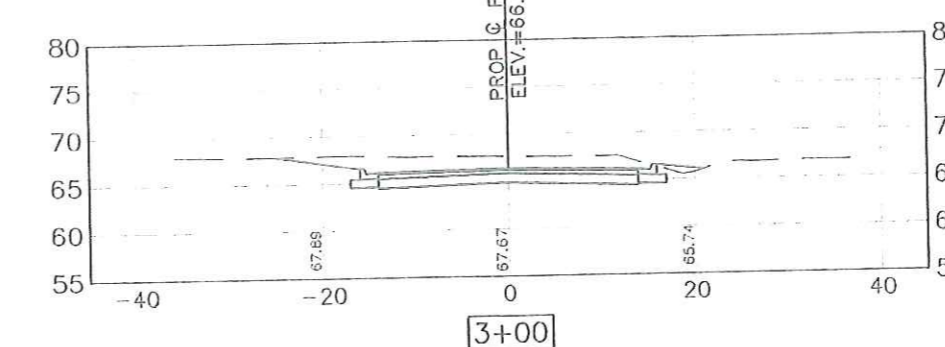
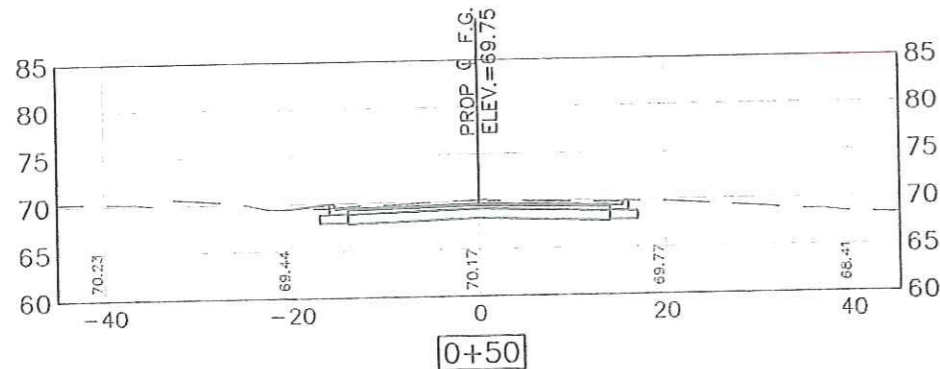
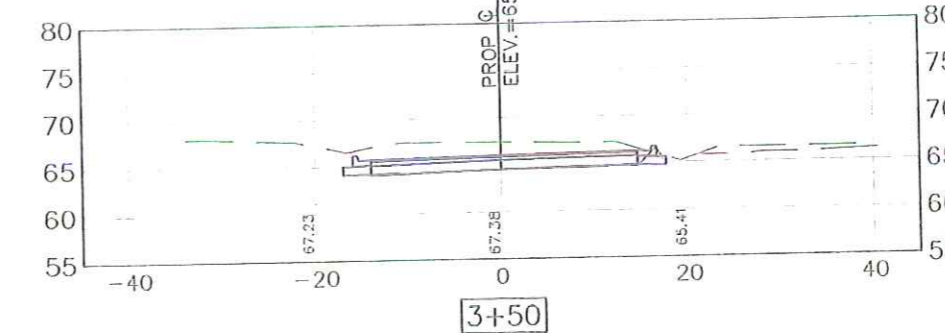
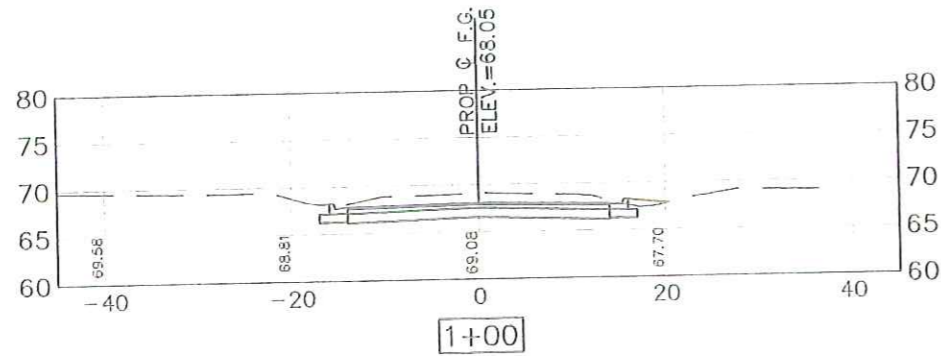
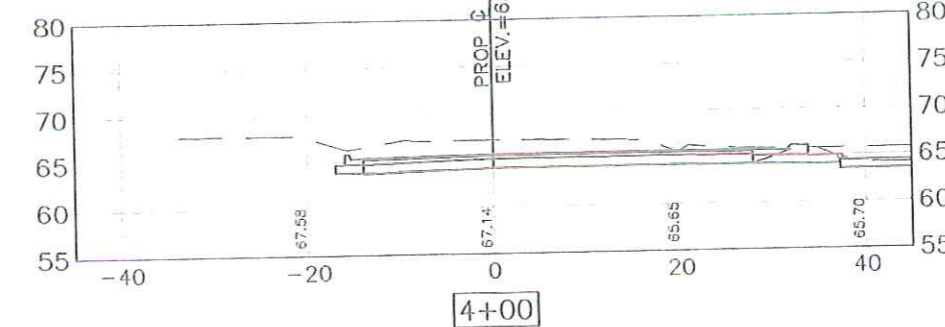
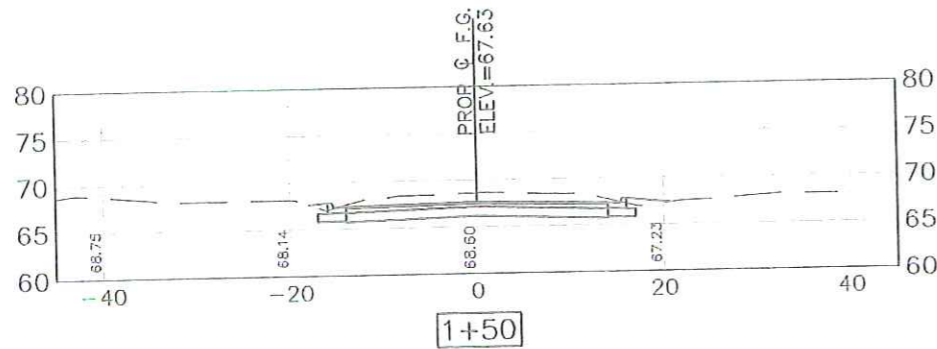
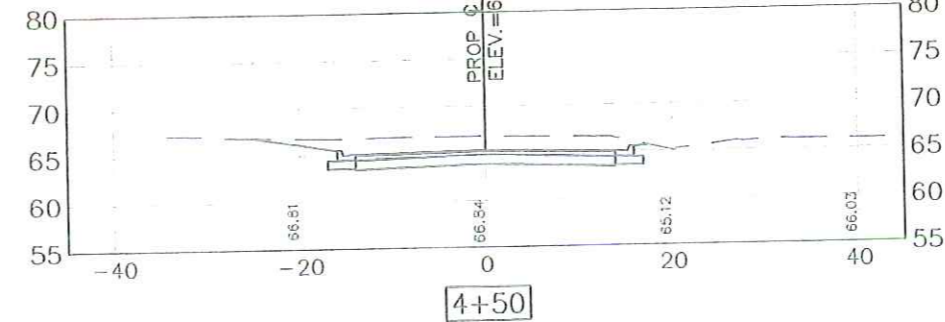
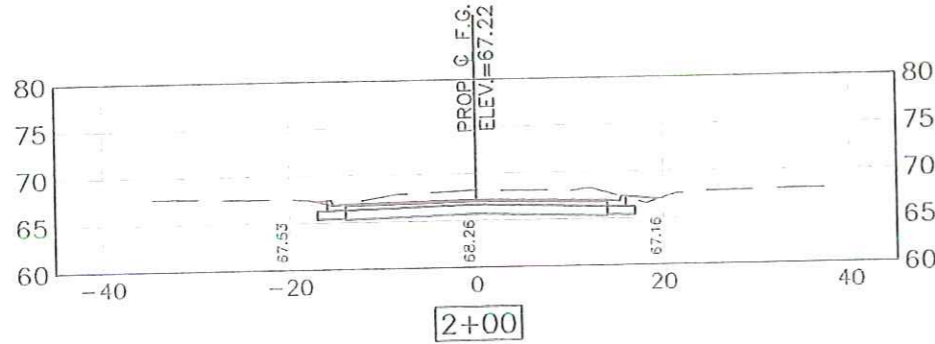
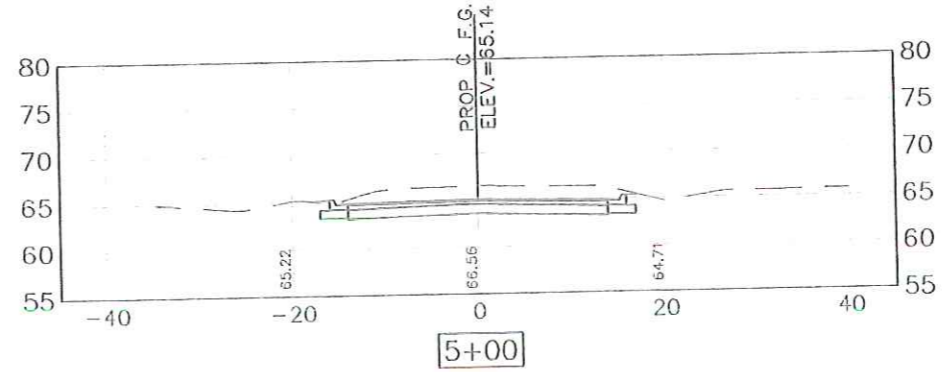
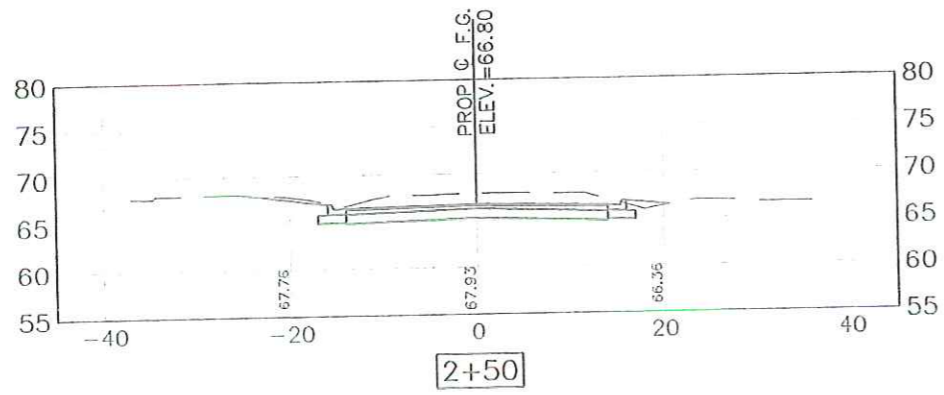
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: PLAN AND PROFILE
 RANKIN DRIVE
 STA. 0+00 TO END

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No.: C01-06



W:\2012\hidalgo\county\precinct_4\rankin_drive\plan_and_profile\rankin_drive.dwg



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E. 94121
DATE: 12/7/12

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

Rev. No.	Description	Chk. By:	Date



DL, INC.
DOS LOGISTICS, INC.
T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expwy 83 Phone: (956) 968-8800
Weslaco, Tx 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
PRECINCT No. 4
RANKIN SUBDIVISION

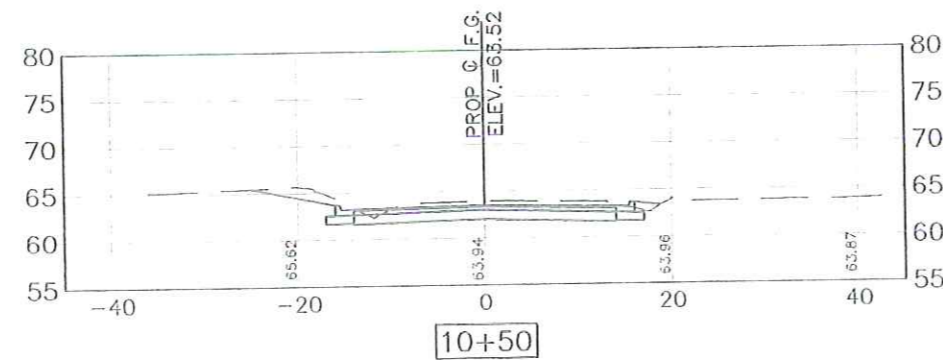
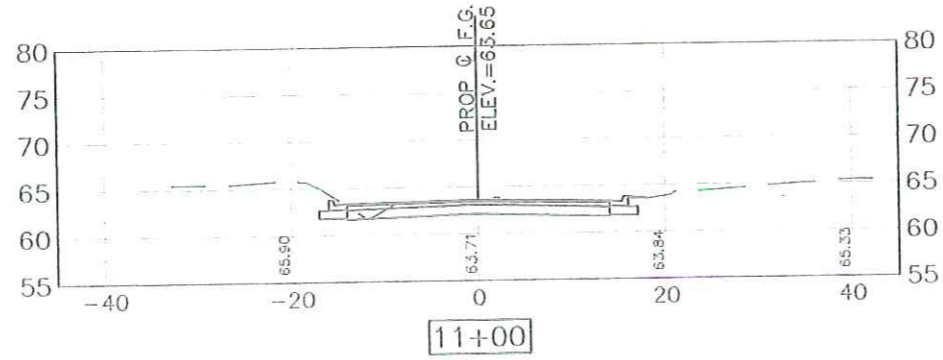
Sheet Title:
CROSS SECTIONS
HOLMES RD.
STA. 0+50 TO 5+00

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-08

12/12/12 10:48 AM C:\Users\ljohnson\Documents\C01-08 - Holmes Rd Subdivisions.dwg



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.



Rev. No.	Description	Chk. By:	Date



DL, INC.
 DOS LOGISTICS, INC.

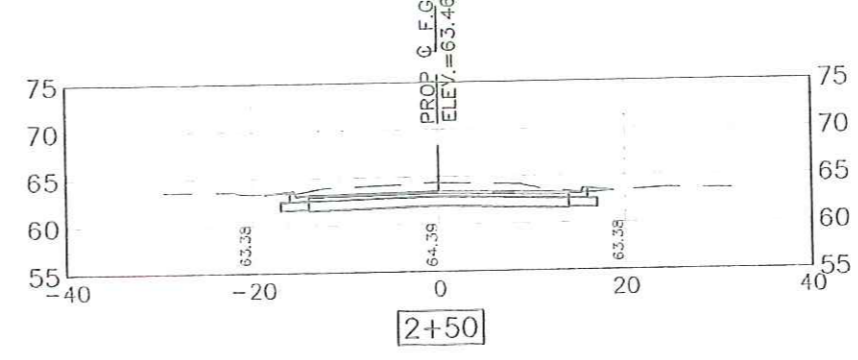
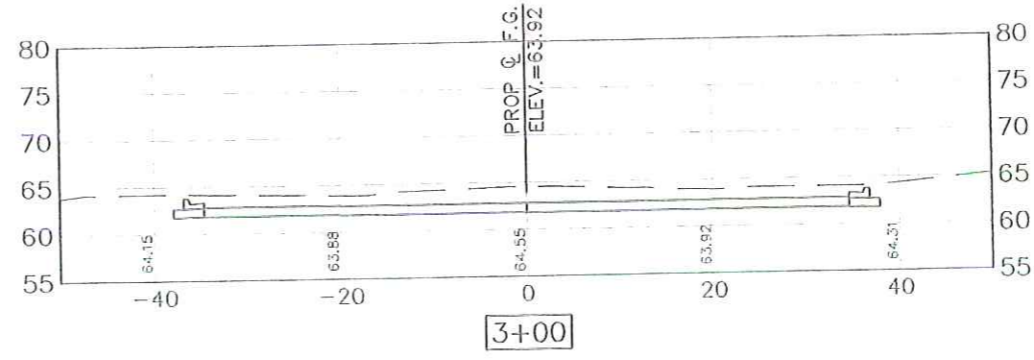
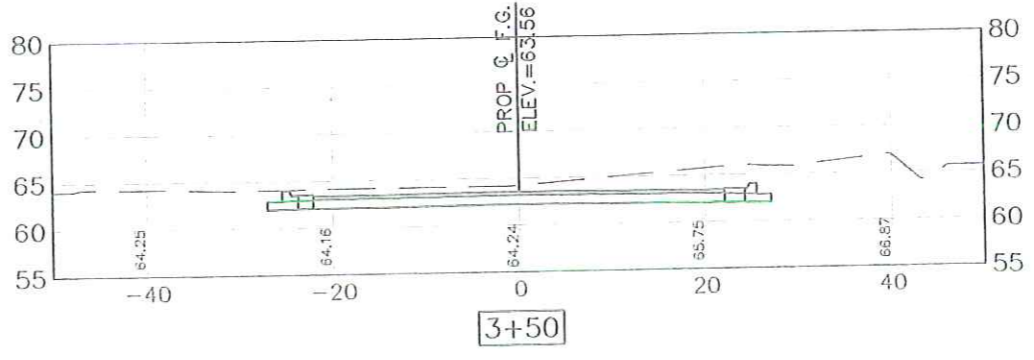
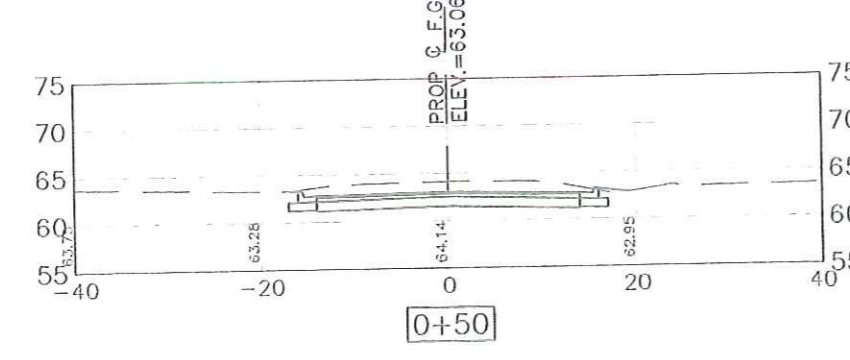
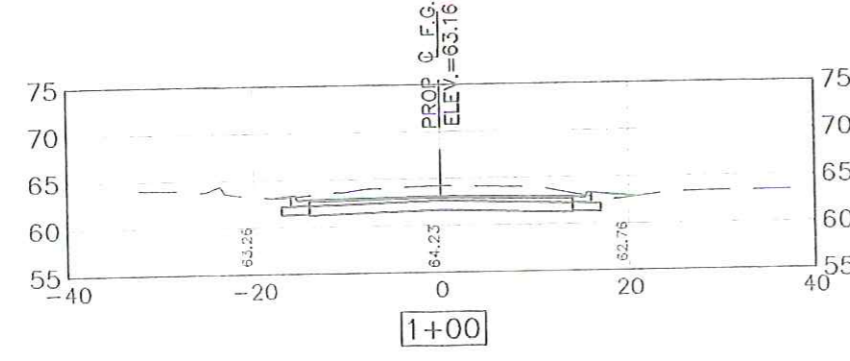
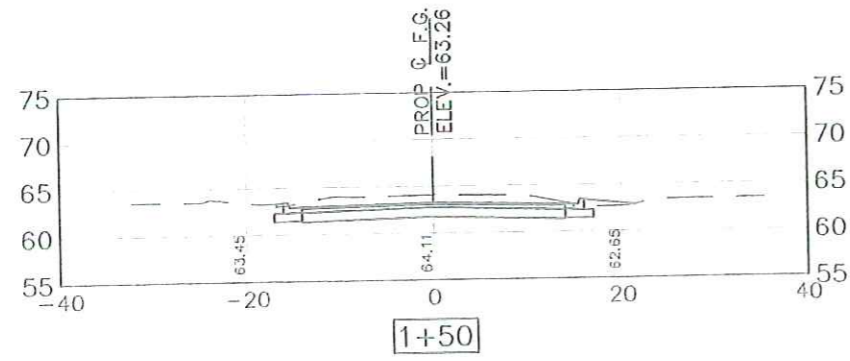
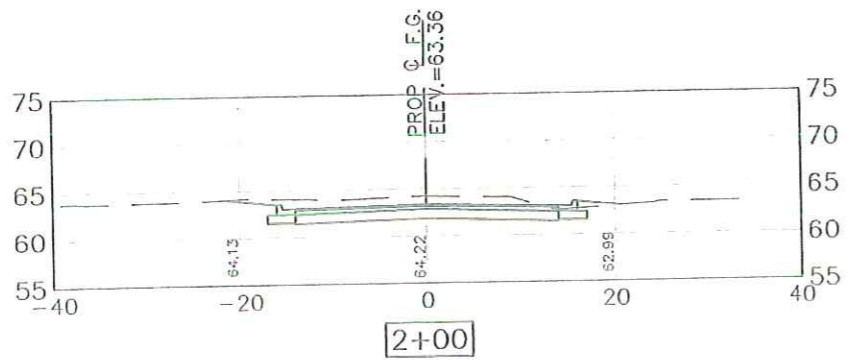
T B P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Westaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: CROSS SECTIONS
 HOLMES RD.
 STA. 10+50 TO 11+00

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-10

10-11-2012 10:45:00 AM C:\Users\j... \AppData\Local\Temp\10-11-2012 10:45:00 AM Cross Sections.dwg



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk. By:	Date



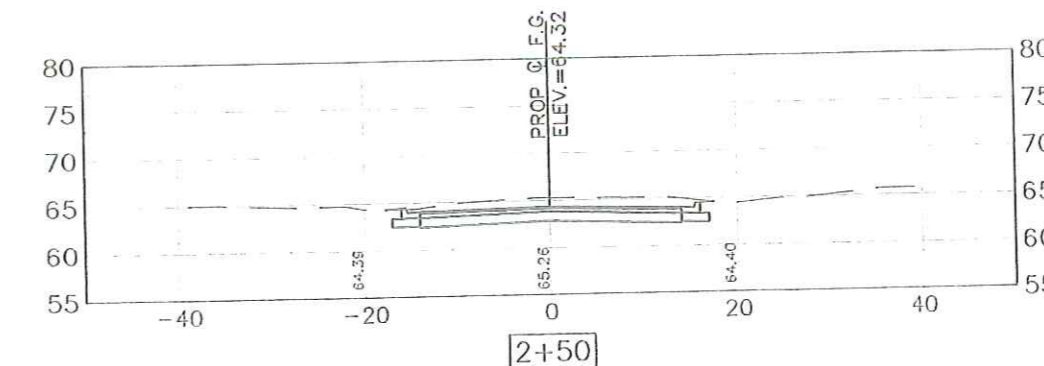
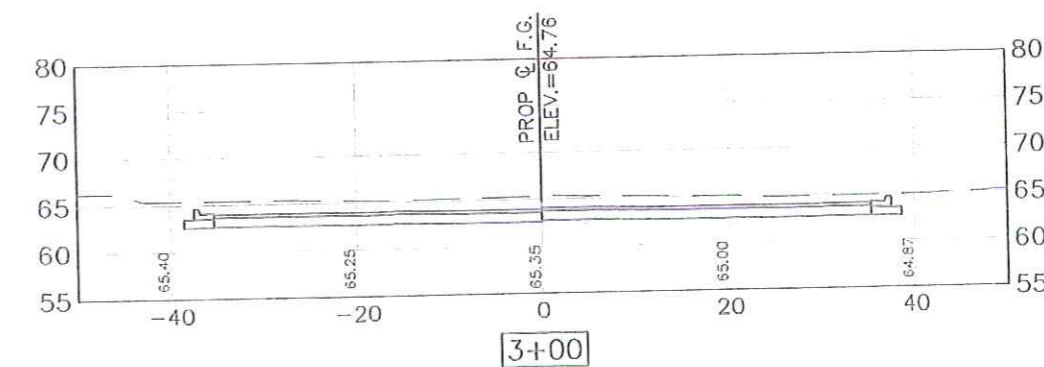
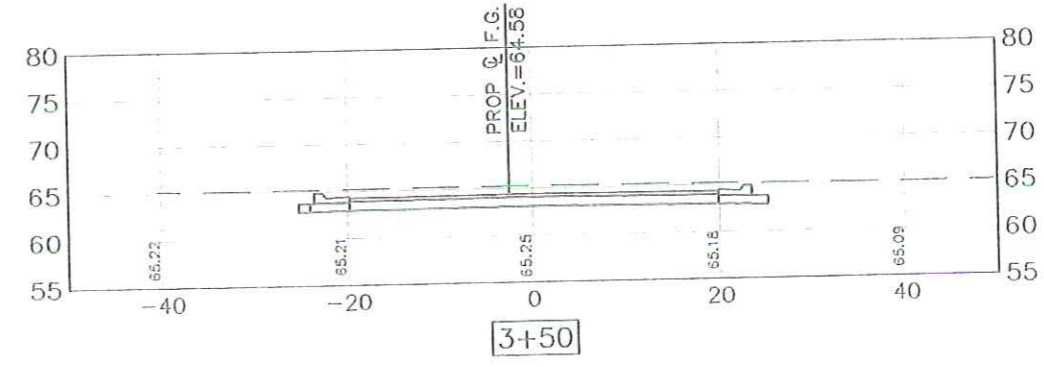
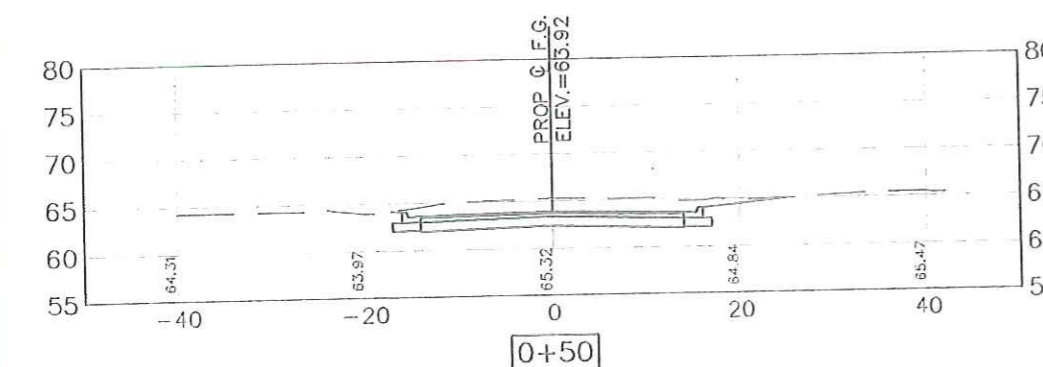
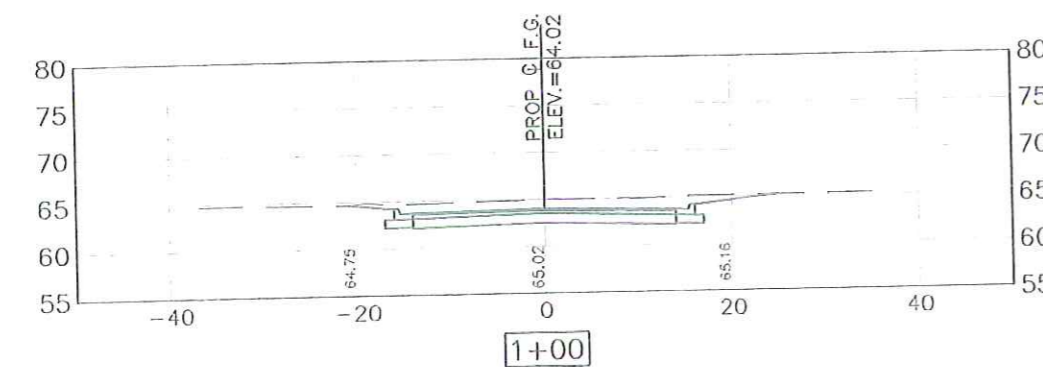
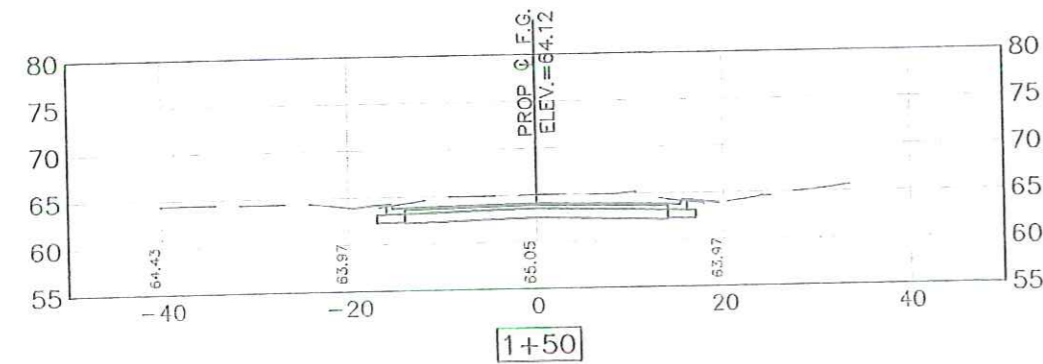
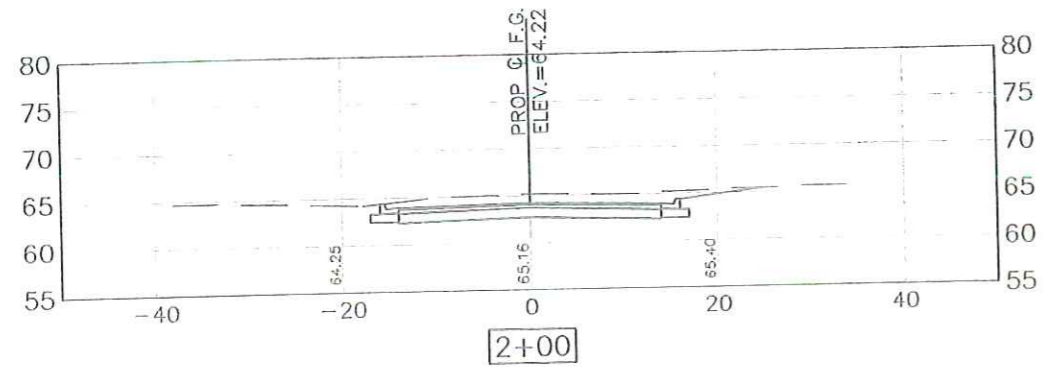
DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Westaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: CROSS SECTIONS
 CANTU DRIVE
 STA. 0+50 TO 3+50

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-11

W:\2012\Hidalgo County\01 - 4\Work\401\Drawings\01-11-C0111.dwg



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
DATE: 12/7/12
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk By:	Date



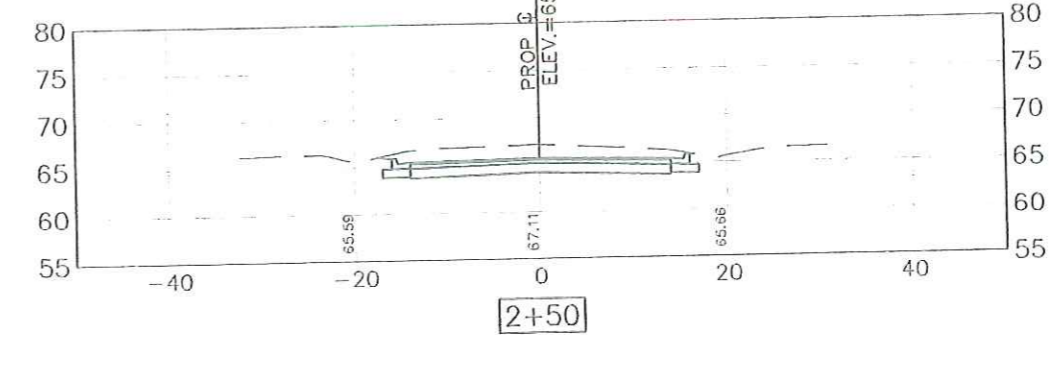
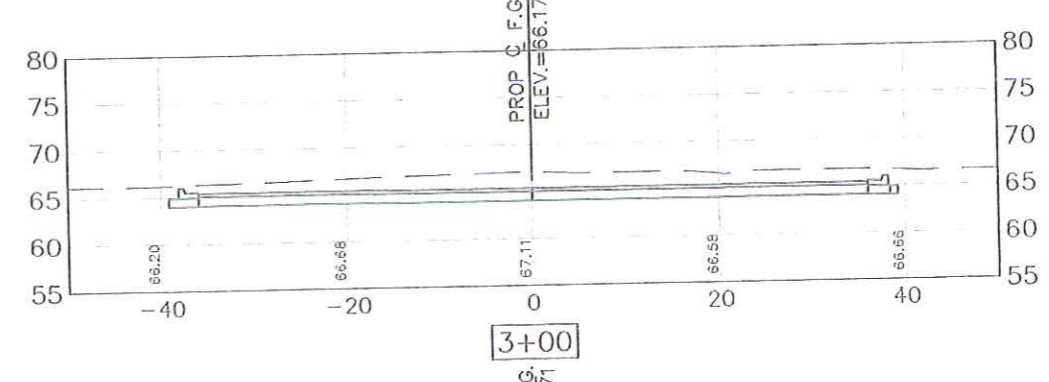
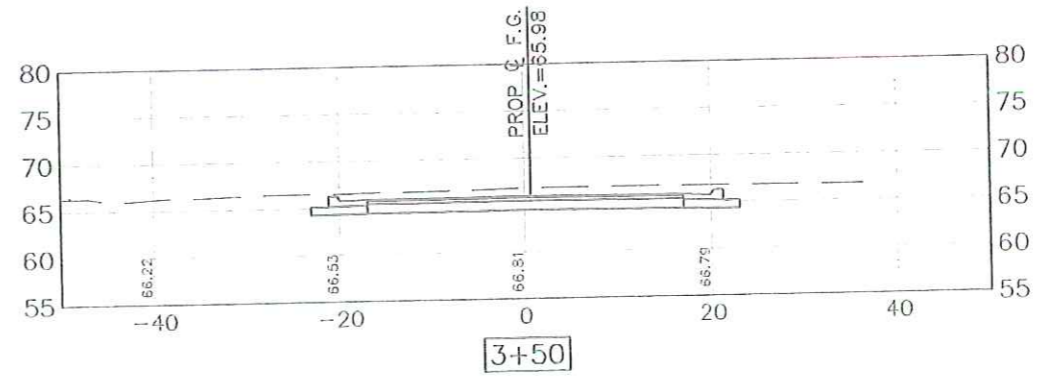
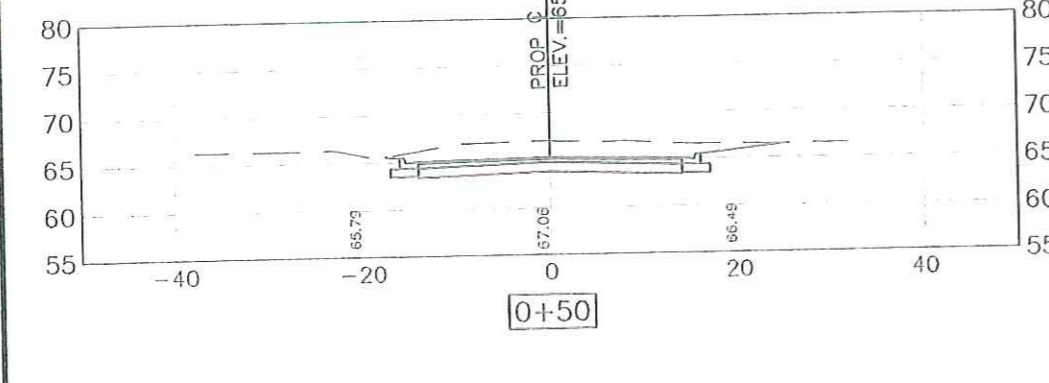
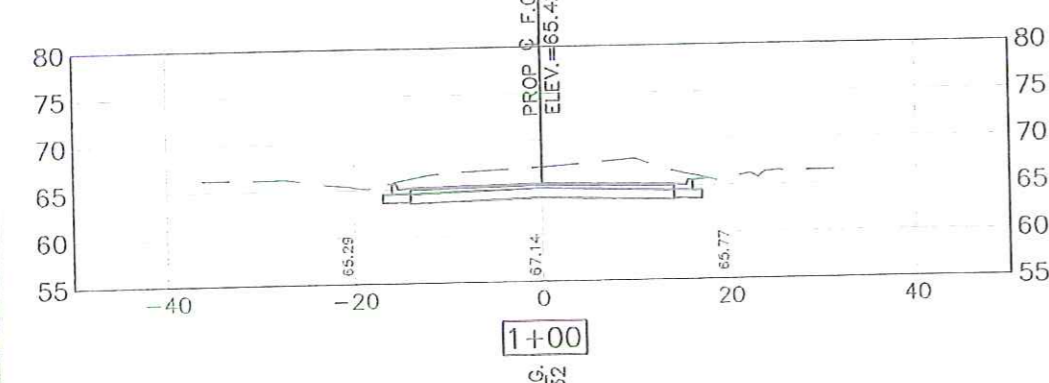
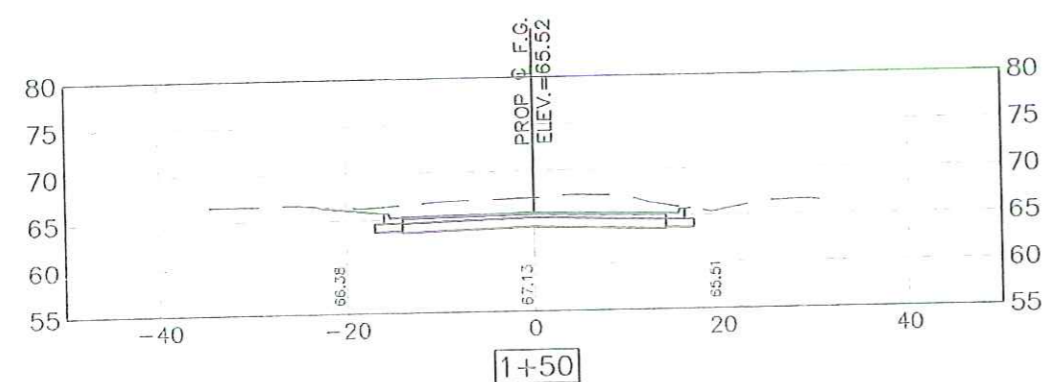
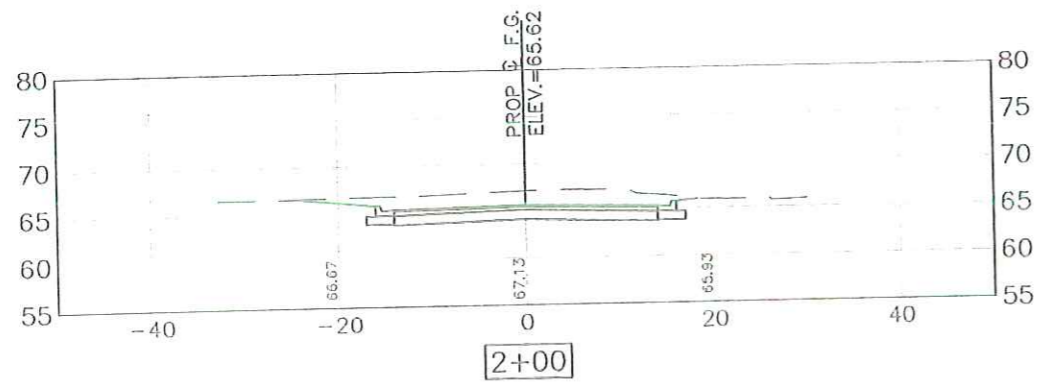
DL, INC.
DOS LOGISTICS, INC.
T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expwy 83 Phone: (956) 968-8800
Waslaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
PRECINCT No.4
RANKIN SUBDIVISION

Sheet Title:
CROSS SECTIONS
HERNANDEZ DRIVE
STA. 0+50 TO 3+50

Designed By:	L.N., H.F.	Checked By:	L.N.
Drawn By:	E.B., H.F.	Sheet No.:	C01-12

W:\2012\Hidalgo County\Proj\4\Hidalgo County\Sub\Rankin\Drawn_Section.dwg



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk By:	Date



DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Westlaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No. 4
 RANKIN SUBDIVISION

Sheet Title: CROSS SECTIONS
 RANKIN
 STA. 0+50 TO 3+50

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C01-13

REV. 2011, V:\databases\c01-13-rankin\cross_sections.dwg

DRIVEWAY TABLE HOLMES ROAD								
DRIVEWAY No.	STATION	EXIST. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ CURB & GUTTER	ASPHALT DRWY. REPAIR AREA	CONC. DRWY. REPAIR AREA	EXIST. DRWY. MATERIAL	PROP. DRWY. MATERIAL
		(FT)	(FT)	(FT)	(SY)	(SY)		
1	0+87 RT	12.8	14	18	48.11		CALICHE	ASPHALT
2	1+61 LT	12.1	12	16	14.00		DIRT	ASPHALT
3	2+18 RT	14.1	14	16	6.67		ASPHALT	ASPHALT
4	2+36 LT	15.8	16	20		18.00	CONC.	CONC.
5	2+77 RT	14.7	15	19	7.56		ASPHALT	ASPHALT
6	3+03 LT	29.6	24	28	26.00		DIRT	ASPHALT
7	4+54 LT	14.1	14	18	52.50		CALICHE	ASPHALT
8	4+74 LT	9.3	10	14	12.00		DIRT	ASPHALT
9	5+60 LT	11.5	12	16	14.00		CALICHE	ASPHALT
10	5+76 LT	9.8	10	14	12.00		CALICHE	ASPHALT
11	7+70 LT	12.2	12	16		14.00	CONC.	CONC.
12	9+74 LT	25.5	24	28	26.00		DIRT	ASPHALT
13	10+94 RT	9.6	10	14	5.33		DIRT	ASPHALT
TOTAL:					224.17	32.00		

DRIVEWAY TABLE HERNANDEZ DR.								
DRIVEWAY No.	STATION	EXIST. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ CURB & GUTTER	ASPHALT DRWY. REPAIR AREA	CONC. DRWY. REPAIR AREA	EXIST. DRWY. MATERIAL	PROP. DRWY. MATERIAL
		(FT)	(FT)	(FT)	(SY)	(SY)		
22	0+50 RT	12.9	13	17	15.00		CALICHE	ASPHALT
23	0+95 RT	11.4	12	16	14.00		CALICHE	ASPHALT
24	1+00 LT	9.6	10	14	12.00		CALICHE	ASPHALT
25	1+64 RT	9.6	10	14		12.00	CONC.	CONC.
26	1+99 RT	11.4	12	16		14.00	CONC.	CONC.
27	2+09 LT	13.2	13	17	15.00		CALICHE	ASPHALT
28	2+59 LT	9.3	10	14	12.00		DIRT	ASPHALT
29	2+82 RT	15.4	15	19		17.00	CONC.	CONC.
30	3+37 RT	10	10	14	12.00		DIRT	ASPHALT
31	3+46 LT	8.6	10	14	12.00		CALICHE	ASPHALT
TOTAL:						92.00	43.00	

DRIVEWAY TABLE CANTU DR.								
DRIVEWAY No.	STATION	EXIST. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ CURB & GUTTER	ASPHALT DRWY. REPAIR AREA	CONC. DRWY. REPAIR AREA	EXIST. DRWY. MATERIAL	PROP. DRWY. MATERIAL
		(FT)	(FT)	(FT)	(SY)	(SY)		
14	0+70 LT	18.4	18	22	20.00		CALICHE	ASPHALT
15	1+29 RT	12.4	12	16	14.00		CALICHE	ASPHALT
16	1+20 LT	10.1	10	14	12.00		DIRT	ASPHALT
17	1+99 LT	11.3	12	16	14.00		DIRT	ASPHALT
18	2+68 LT	7.9	10	14	12.00		DIRT	ASPHALT
19	2+83 RT	9.9	10	14	12.00		CALICHE	ASPHALT
20	3+35 RT	12.2	12	16	14.00		CALICHE	ASPHALT
21	3+36 LT	12.3	12	16	14.00		DIRT	ASPHALT
TOTAL:					112.00	0.00		

DRIVEWAY TABLE RANKIN DR.								
DRIVEWAY No.	STATION	EXIST. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ R.O.W. LINE	PROP. DRWY. WIDTH @ CURB & GUTTER	ASPHALT DRWY. REPAIR AREA	CONC. DRWY. REPAIR AREA	EXIST. DRWY. MATERIAL	PROP. DRWY. MATERIAL
		(FT)	(FT)	(FT)	(SY)	(SY)		
32	0+54 RT	13.32	13	17	15.00		DIRT	ASPHALT
33	1+23 LT	10.59	11	15	13.00		DIRT	ASPHALT
34	1+40 RT	9.78	10	14	12.00		DIRT	ASPHALT
35	1+65 LT	11.8	12	16	14.00		DIRT	ASPHALT
36	2+00 RT	12.4	12	16	14.00		DIRT	ASPHALT
37	2+13 LT	9.3	10	14	12.00		DIRT	ASPHALT
38	2+34 LT	11.3	12	16	14.00		ASPHALT	ASPHALT
39	3+46 LT	10.7	11	15	13.00		DIRT	ASPHALT
TOTAL:						107.00	0.00	

WALK ENTRANCE TABLE RANKIN DR.							
SIDEWALK No.	STATION	EXIST. SDWK. WIDTH @ R.O.W. LINE	PROP. SDWK. WIDTH @ R.O.W. LINE	PROP. SDWK. WIDTH @ CURB & GUTTER	CONC. SDWK. REPAIR AREA	EXIST. SDWK. MATERIAL	PROP. SDWK. MATERIAL
		(FT)	(FT)	(FT)	(SY)		
A	1+09 RT	2.7	3	3	3.00	CONC.	CONC.
TOTAL:					3.00		



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/9/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk By:	Date



DL, INC.
 DOS LOGISTICS, INC.

T.B.P.E FIRM REGISTRATION #F-9225
 1002 E. Expwy 83 Phone: (956) 968-8800
 Westaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 DRIVEWAY / SIDEWALK TABLE

Designed By: LN., H.F.	Checked By: LN.
Drawn By: E.B., H.F.	Sheet No: C01-15

PROJECT NAME : Rankin Subd
PROJECT DESCRIPTION : Drainage Improvement Project
DESIGN FREQUENCY : 10 Years
MEASUREMENT UNITS: ENGLISH

OUTPUT FOR DESIGN FREQUENCY of: 10 Years

Runoff Computation for Design Frequency.

ID	C Value	Area (acre)	Tc (min)	Tc Used (min)	Intensity (in/hr)	Supply Q (cfs)	Total Q (cfs)
A-1	0.583	3.10	10.00	10.00	8.73	0.000	15.783
	0.96	0.25	Pavement				
	0.55	2.85	Single family				
A-2	0.588	1.08	10.00	10.00	8.73	0.000	5.545
	0.96	0.10	Pavement				
	0.55	0.98	Single family				
A-3	0.592	0.98	10.00	10.00	8.73	0.000	5.065
	0.96	0.10	Pavement				
	0.55	0.88	Single family				
A-4	0.593	1.42	10.00	10.00	8.73	0.000	7.357
	0.96	0.15	Pavement				
	0.55	1.27	Single family				
A-5	0.588	1.09	10.00	10.00	8.73	0.000	5.593
	0.96	0.10	Pavement				
	0.55	0.99	Single Family				
A-6	0.595	0.73	10.00	10.00	8.73	0.000	3.792
	0.96	0.08	Pavement				
	0.55	0.65	Single Family				
A-7	0.593	1.42	10.00	10.00	8.73	0.000	7.357
	0.96	0.15	Pavement				
	0.55	1.27	Single Family				
A-8	0.589	1.26	10.00	10.00	8.73	0.000	6.481
	0.96	0.12	Pavement				
	0.55	1.14	Single Family				
A-9	0.594	0.94	10.00	10.00	8.73	0.000	4.872
	0.96	0.10	Pavement				
	0.55	0.84	Single Family				

Sag Inlets Configuration Data.

Inlet ID	Inlet Type	Inlet Length/Perim. (ft)	Grate Area (sf)	Left-Slope Long Trans (%)	Right-Slope Long Trans (%)	Gutter n	Depth DeprW (ft)	Critic Allowed (ft)	Elev. (ft)		
A-1	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	65.44
A-2	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	65.44
A-3	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	65.75
A-4	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	64.04
A-5	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	64.04
A-6	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	64.32
A-7	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	63.18
A-8	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	63.18
A-9	Curb	5.00	n/a	0.50	2.00	0.50	2.00	0.014	1.50	0.50	63.61

Sag Inlets Computation Data.

Inlet ID	Inlet Type	Inlet Length (ft)	Grate Perim. (ft)	Total Q (cfs)	Inlet Capacity (cfs)	Total Head (ft)	Ponded Head (ft)	Width Left (ft)	Width Right (ft)
A-1	Curb	5.00	n/a	n/a	15.783	6.718	1.630	16.95	16.95
A-2	Curb	5.00	n/a	n/a	5.545	6.261	0.461	11.45	11.45
A-3	Curb	5.00	n/a	n/a	5.065	6.261	0.434	11.05	11.05
A-4	Curb	5.00	n/a	n/a	7.357	6.718	0.550	12.70	12.70
A-5	Curb	5.00	n/a	n/a	5.593	6.261	0.464	11.50	11.50
A-6	Curb	5.00	n/a	n/a	3.792	6.261	0.358	9.90	9.90
A-7	Curb	5.00	n/a	n/a	7.357	6.718	0.550	12.70	12.70
A-8	Curb	5.00	n/a	n/a	6.481	6.718	0.483	12.15	12.15
A-9	Curb	5.00	n/a	n/a	4.872	6.261	0.423	10.90	10.90

Cumulative Junction Discharge Computations

Node I.D.	Node Type	Weighted C-Value	Cumulat. Dr.Area (acres)	Cumulat. Tc (min)	Intens. (in/hr)	User Supply Q (cfs)	Additional Q in Node (cfs)	Total Disch. (cfs)
A-1	Curb	0.583	3.10	10.00	8.73	0.000	0.00	15.783
A-2	Curb	0.584	4.18	10.07	8.71	0.000	0.00	21.271
A-3	Curb	0.586	5.16	10.21	8.66	0.000	0.00	26.174
A-4	Curb	0.593	1.42	10.00	8.73	0.000	0.00	7.357
A-5	Curb	0.591	2.51	10.14	8.68	0.000	0.00	12.876
MH-1	CircMh	0.587	7.67	10.93	8.41	0.000	0.00	37.913
A-6	Curb	0.588	8.40	10.98	8.40	0.000	0.00	41.499
A-7	Curb	0.593	1.42	10.00	8.73	0.000	0.00	7.357
A-8	Curb	0.591	2.68	10.14	8.68	0.000	0.00	13.759
A-9	Curb	0.589	12.02	11.63	8.19	0.000	0.00	58.039
OUT	Outfall	0.589	12.02	11.63	8.19	0.000	0.00	58.039

Conveyance Configuration Data

Run#	Node I.D.	Flowline Elev. (ft)	Shape	#	Span (ft)	Rise (ft)	Length (ft)	Slope (%)	n_value
1	A-1	61.94	Circ	1	0.00	1.50	35.00	0.14	0.013
2	A-2	61.89	Circ	1	0.00	2.00	57.00	0.16	0.013
3	A-3	61.80	Circ	1	0.00	2.50	290.00	0.49	0.013
4	A-4	60.54	Circ	1	0.00	1.50	35.00	0.14	0.013
5	A-5	60.49	Circ	1	0.00	2.00	57.00	0.19	0.013
6	MH-1	60.38	Circ	1	0.00	2.50	20.00	0.15	0.013
7	A-6	60.35	Circ	1	0.00	3.00	270.00	0.40	0.013
8	A-7	59.68	Circ	1	0.00	1.50	35.00	0.14	0.013
9	A-8	59.63	Circ	1	0.00	2.00	57.00	0.16	0.013
10	A-9	59.54	Circ	1	0.00	3.00	188.00	0.15	0.013

Conveyance Hydraulic Computations. Tailwater = 0.000 (ft)

Run#	Hydraulic US Elev (ft)	Gradeline DS Elev (ft)	Fr.Slope (%)	Depth Unif. (ft)	Actual (ft)	Velocity Unif. (f/s)	Actual (f/s)	Q (cfs)	Cap (cfs)	Loss (ft)	Junc
1	67.37	66.58	2.257	1.50	1.50	8.93	8.93	15.78	3.97	0.000	
2	66.58	66.08	0.884	2.00	2.00	6.77	6.77	21.27	8.99	0.000	
3	66.08	64.90	0.407	1.88	2.50	6.63	5.33	26.17	28.71	0.000	
4	65.25	65.08	0.490	1.50	1.50	4.16	4.16	7.36	3.97	0.000	
5	65.08	64.90	0.324	2.00	2.00	4.10	4.10	12.88	9.94	0.000	
6	64.90	64.73	0.854	2.50	2.50	7.72	7.72	37.91	15.89	0.000	
7	64.73	63.68	0.387	2.39	3.00	6.87	5.87	41.50	42.38	0.000	
8	64.07	63.89	0.490	1.50	1.50	4.16	4.16	7.36	3.97	0.000	
9	63.89	63.68	0.370	2.00	2.00	4.38	4.38	13.76	8.99	0.000	
10	63.68	62.26	0.757	3.00	3.00	8.21	8.21	58.04	25.74	0.000	

NORMAL TERMINATION OF WINSTORM.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
DATE: 12/7/12
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

Rev. No.	Description	Chk By:	Date

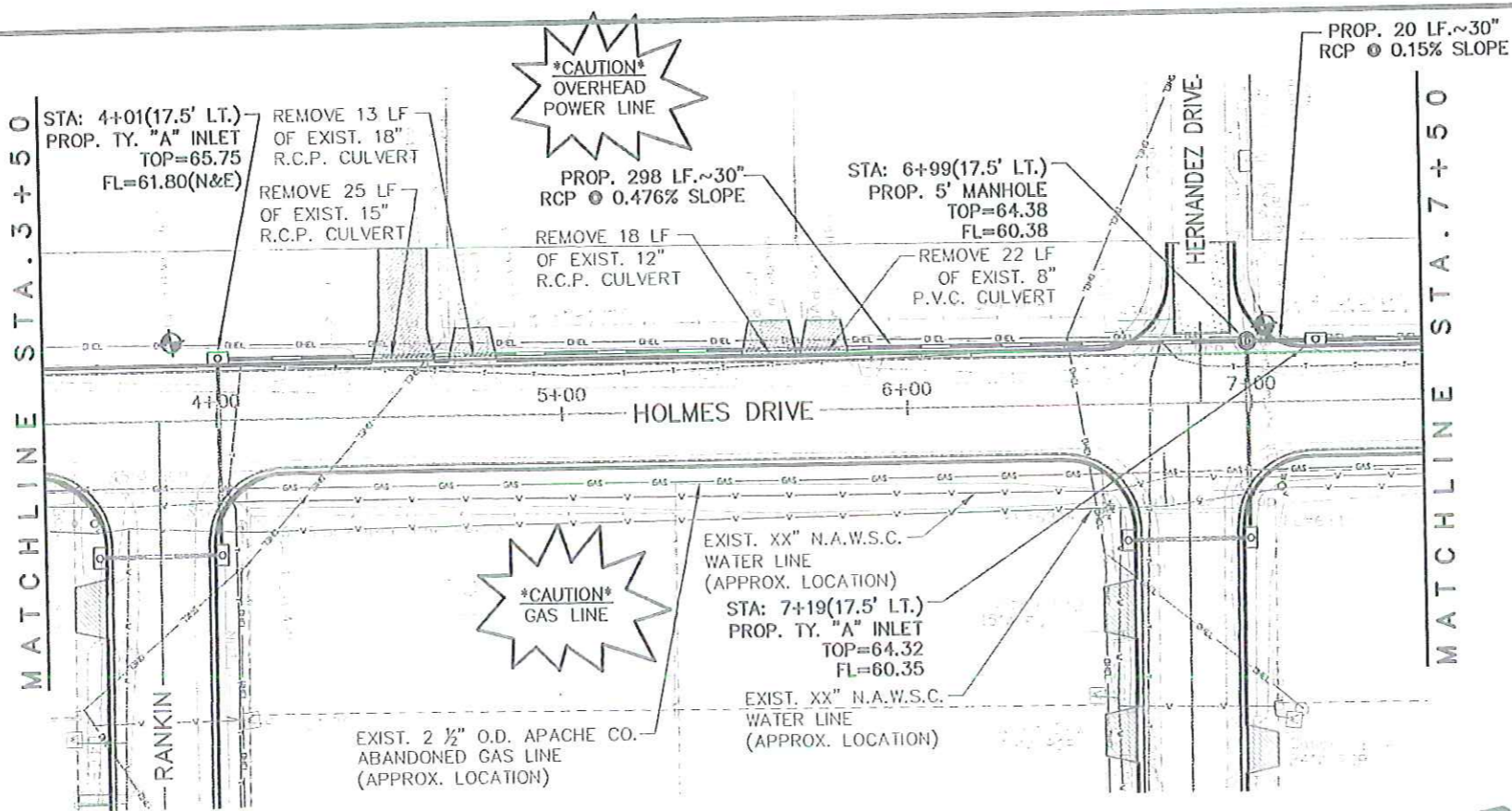


DL, INC.
DOS LOGISTICS, INC.
T.B.P.E. FIRM REGISTRATION #F-9225
1002 E. Expy 83 Phone: (956) 968-8800
Weslaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
PRECINCT No.4
RANKIN SUBDIVISION

Sheet Title:
HYDRAULIC DATA SHEET

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No.: C02-01

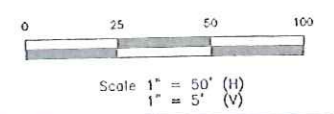


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

PLAN VIEW LEGEND

	EXISTING ROAD
	PROPOSED ASPHALT DRIVE REPAIR
	PROPOSED ASPHALT DRIVEWAY REPAIR
	PROPOSED CONCRETE DRIVEWAY REPAIR
	PROPOSED ADS/RCP PIPE
	PROPOSED STORM DRAIN PIPE
	DIRECTION OF FLOW
	TEMP. SEDIMENT CONTROL FENCE

- NOTES:**
- EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 - NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED, ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk. By:	Date

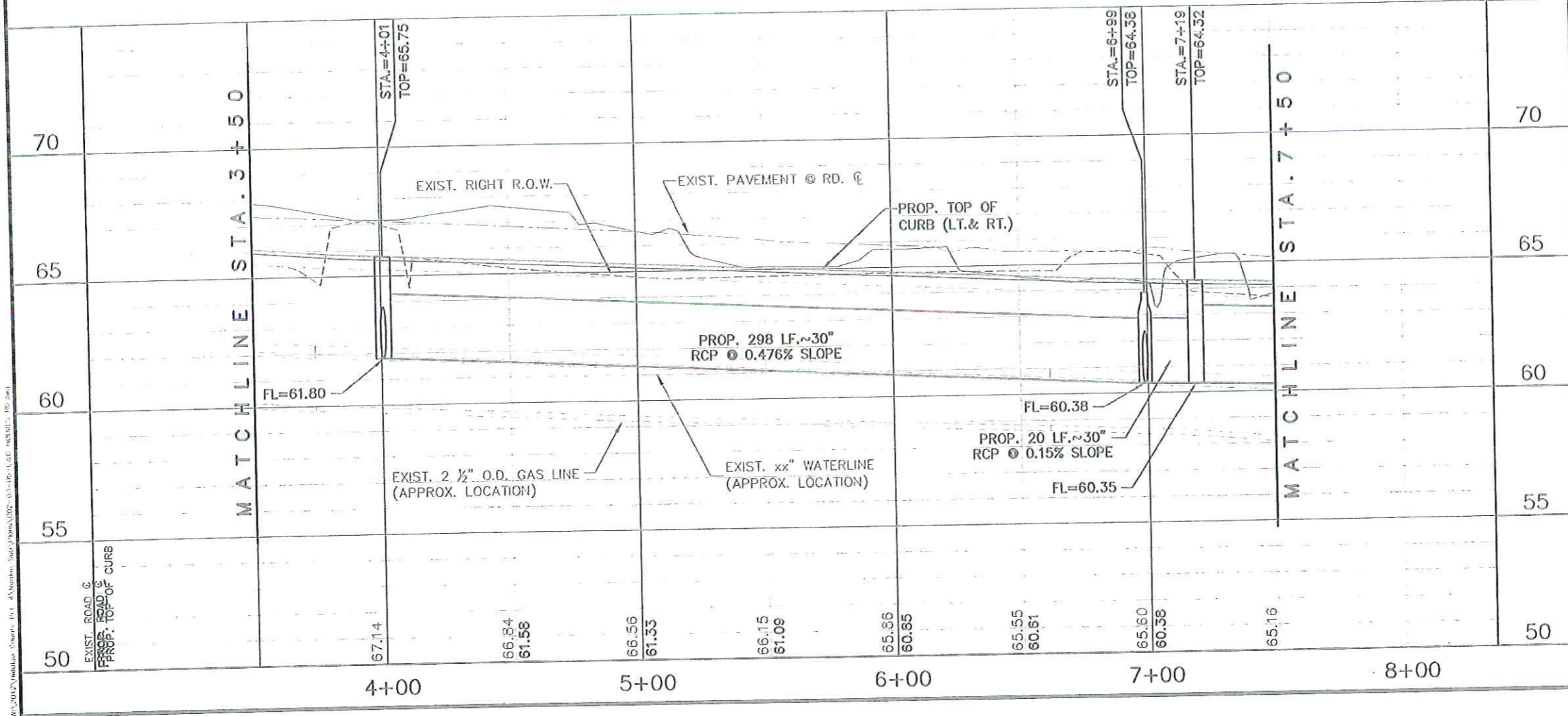


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 969-8800
 Weslaco, Tx. 78596 Fax: (956) 447-8194

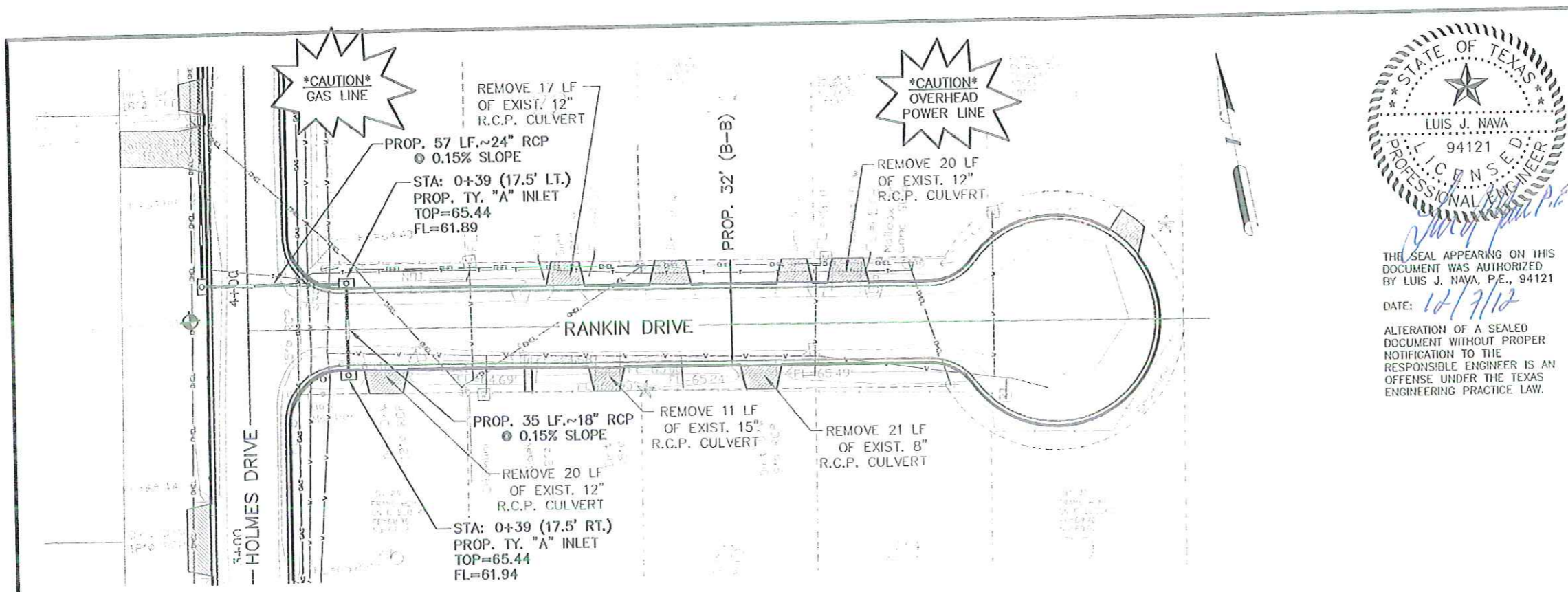
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: UTILITY AND DRAINAGE
 HOLMES RD.
 STA. 4+00 TO STA. 8+00

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C02-04



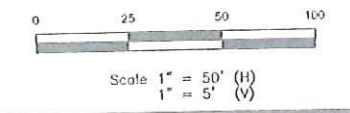
06/20/2013 10:40:00 AM C:\Users\jgarcia\Documents\Projects\12-0000\12-0000.dwg



STATE OF TEXAS
 LUIS J. NAVA
 94121
 LICENSED PROFESSIONAL ENGINEER
 THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 10/7/10

- PLAN VIEW LEGEND**
- EXISTING ROAD
 - PROPOSED ASPHALT DRIVE REPAIR
 - PROPOSED ASPHALT DRIVEWAY REPAIR
 - PROPOSED CONCRETE DRIVEWAY REPAIR
 - PROPOSED ADS/RCP PIPE
 - PROPOSED STORM DRAIN PIPE
 - DIRECTION OF FLOW
 - TEMP. SEDIMENT CONTROL FENCE

- NOTES:**
1. EXIST. UTILITIES ARE SHOWN ON PLAN & PROFILE SHEETS AT APPROXIMATE LOCATIONS. CONTRACTOR TO FIELD VERIFY DEPTH & LOCATION PRIOR TO CONSTRUCTION.
 2. NO ADDITIONAL COMPENSATION FOR UTILITY RELOCATIONS WILL BE AWARDED. ITEMS TO BE SUBSIDIARY TO THE APPROPRIATE BID ITEM.



Rev. No.	Description	Chk By:	Date

TEXAS DEPARTMENT OF TRANSPORTATION

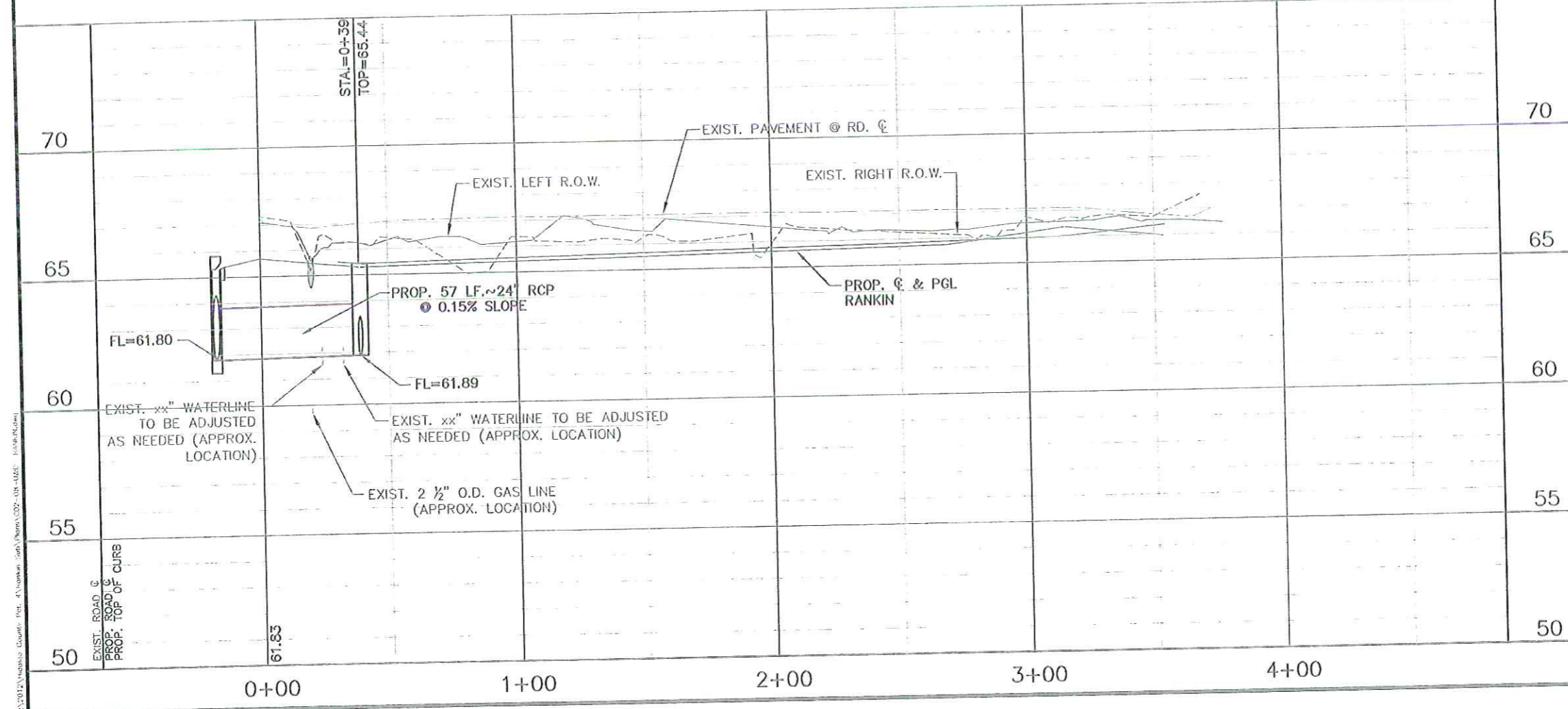


DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 968-8800
 Weslaco, Tx 78596 Fax: (956) 447-8194

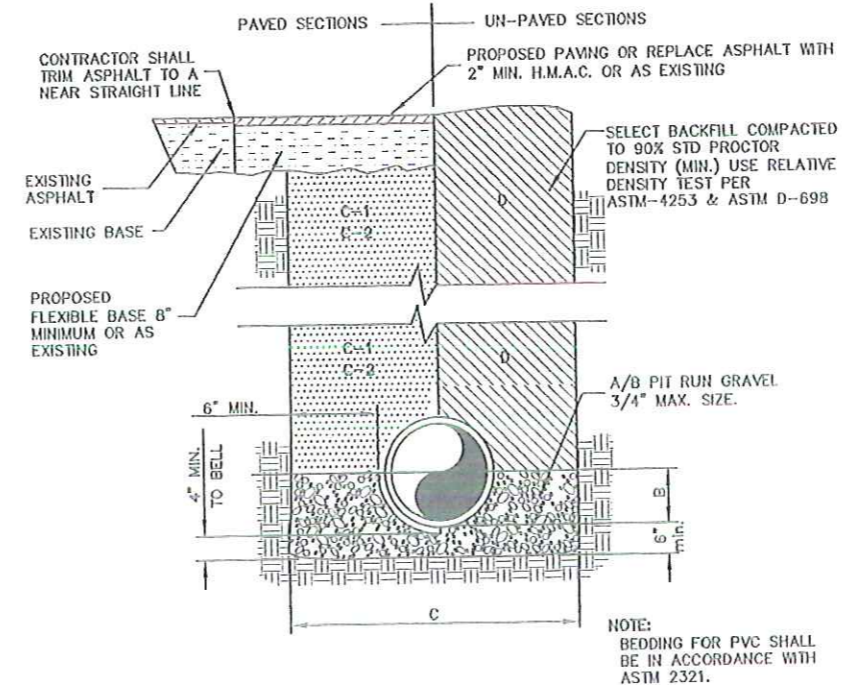
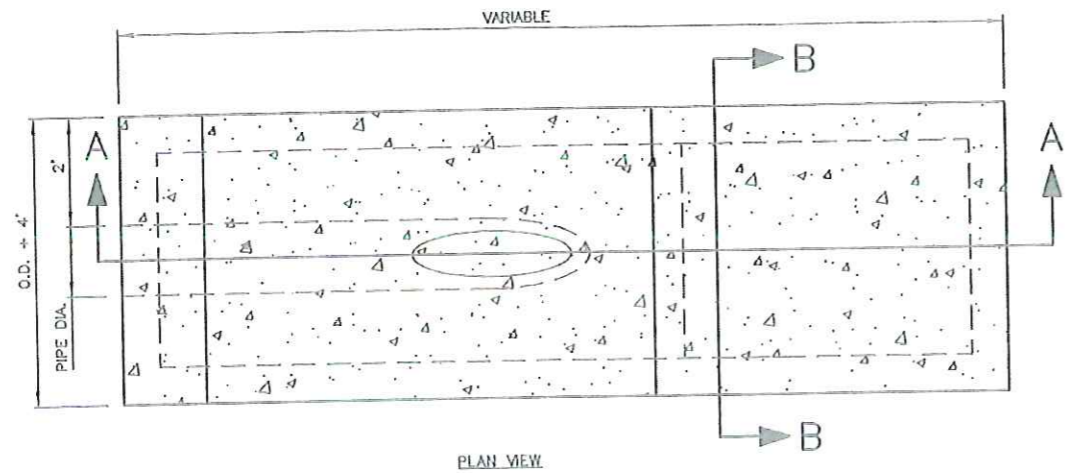
Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title: UTILITY AND DRAINAGE
 RANKIN DRIVE
 STA. 0+00 TO END

Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No: C02-08



W:\2010\Hidalgo County - Prec. 4\Drawings\02-Utility\02-08-10.dwg - 10/7/10 - LUIS NAVA

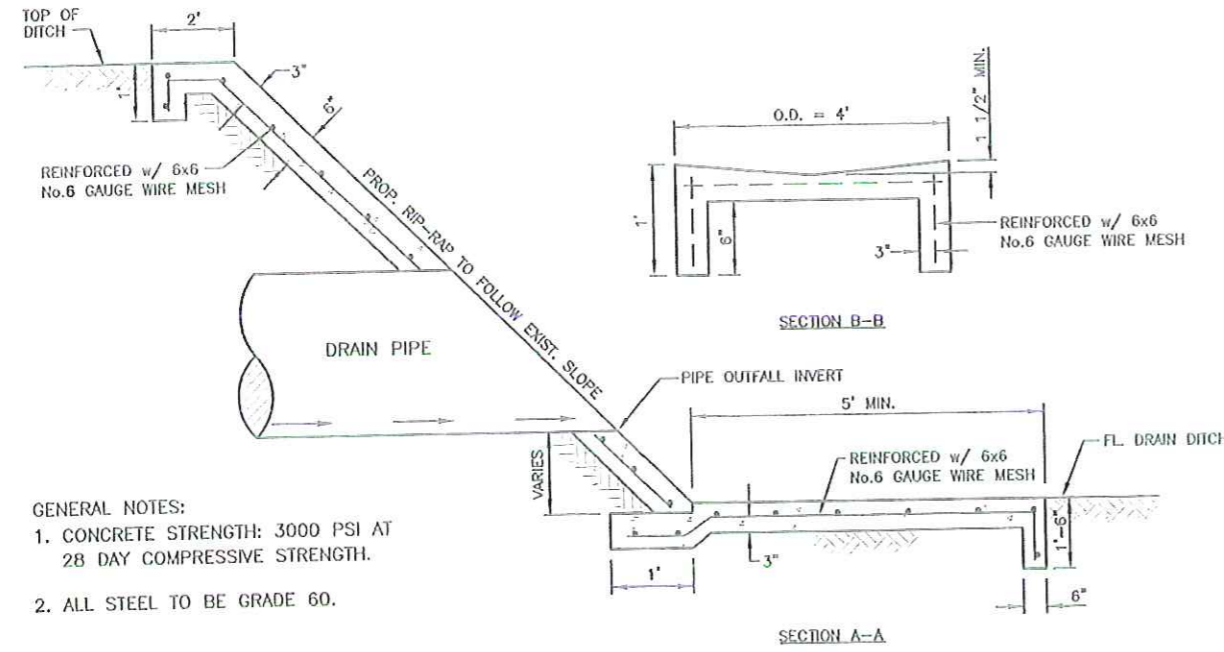


- A. GRAVEL BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE (MIN. THICKNESS = 6") - PIT RUN GRAVEL 3/4" MAX. SIZE.
- B. GRAVEL PLACED AFTER PIPE IS LAID, FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE. PIT RUN GRAVEL 3/4" MAX. SIZE.
- C. TRENCH WIDTHS SHALL BE PIPE BELL O.D. + 12".
- C-1 (CITY STREETS, PARKING AREA, DRIVEWAYS) SELECT EXCAVATED BACKFILL COMPACTED TO 95% SPD, 8" LIFTS, MECHANICAL COMPACTION.
- C-2 (STATE MAINTAINED ROADWAYS) COMPACTED SAND/CEMENT STABILIZED BACKFILL WITH 7% PORTLAND CEMENT COMPACTED AS PER ASTM D-4253 AND ASTM D-698.
- D. SELECT EARTH BACKFILL COMPACTED TO 90% STANDARD PROCTOR DENSITY (12" LIFT, MECHANICAL COMPACTION). FOUNDATION PREPARATION (WELLPOINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE. BACKFILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO 95% STD. PROCTOR DENSITY (USE RELATIVE DENSITY TEST PER ASTM D-4253 & ASTM D-698). THE THICKNESS OF EACH LOOSE LAYER SHALL NOT EXCEED 6". STRUCTURAL BACKFILL MATERIAL SHALL BE SAND, APPROVED SITE SOIL, OR OTHER APPROVED SUBSTITUTE.



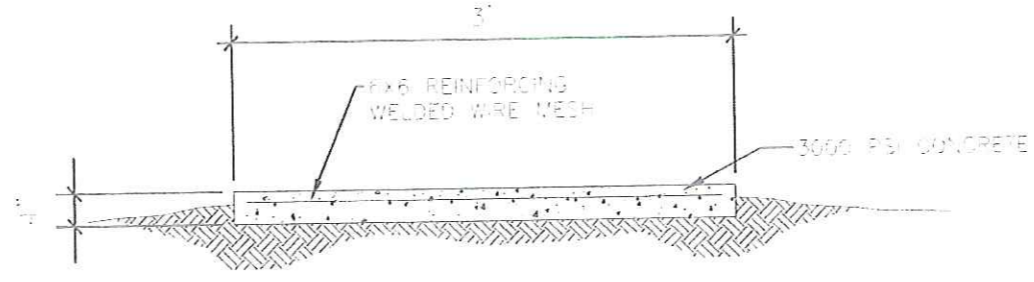
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121
 DATE: 12/7/12
 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.

TYP. STORM SEWER PIPE BEDDING DETAIL



- GENERAL NOTES:
 1. CONCRETE STRENGTH: 3000 PSI AT 28 DAY COMPRESSIVE STRENGTH.
 2. ALL STEEL TO BE GRADE 60.

CONC. SLOPE PROTECTION
 NOT TO SCALE



WALK ENTRANCE DETAIL
 NOT TO SCALE

Rev. No.	Description	Chk By:	Date

TEXAS DEPARTMENT OF TRANSPORTATION



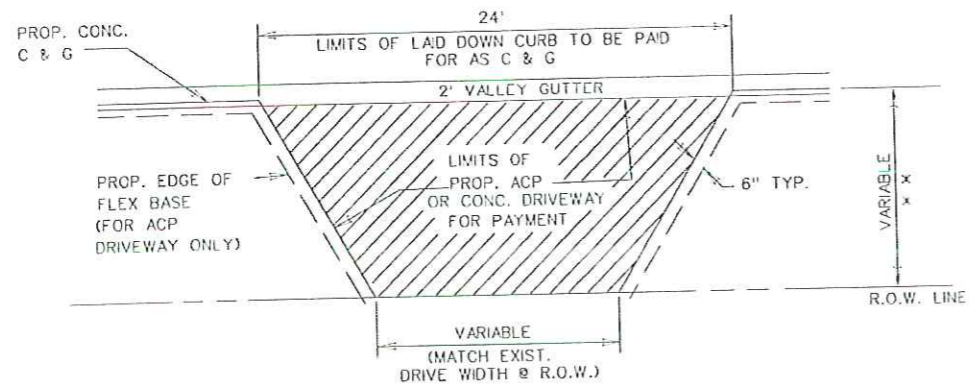
DL, INC.
 DOS LOGISTICS, INC.
 T.B.P.E. FIRM REGISTRATION #F-9225
 1002 E. Expy 83 Phone: (956) 963-8800
 Westaco, Tx. 78596 Fax: (956) 447-8194

Project: HIDALGO COUNTY
 PRECINCT No.4
 RANKIN SUBDIVISION

Sheet Title:
 MISCELLANEOUS DETAILS

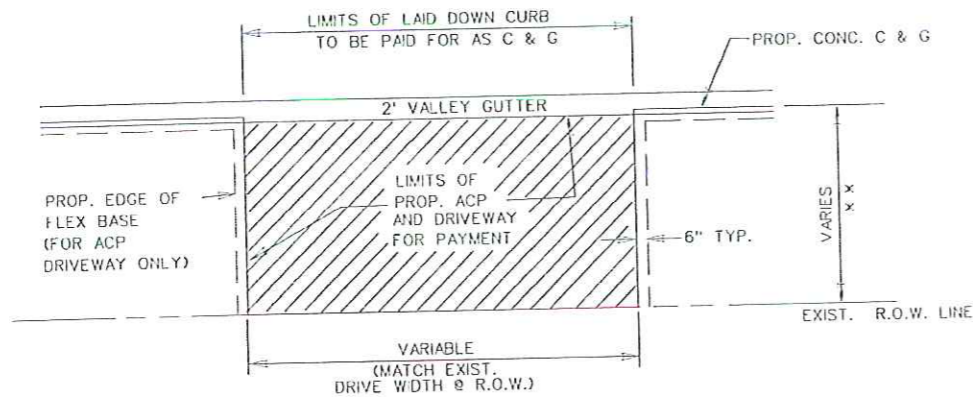
Designed By: L.N., H.F.	Checked By: L.N.
Drawn By: E.B., H.F.	Sheet No.: C03-01

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')

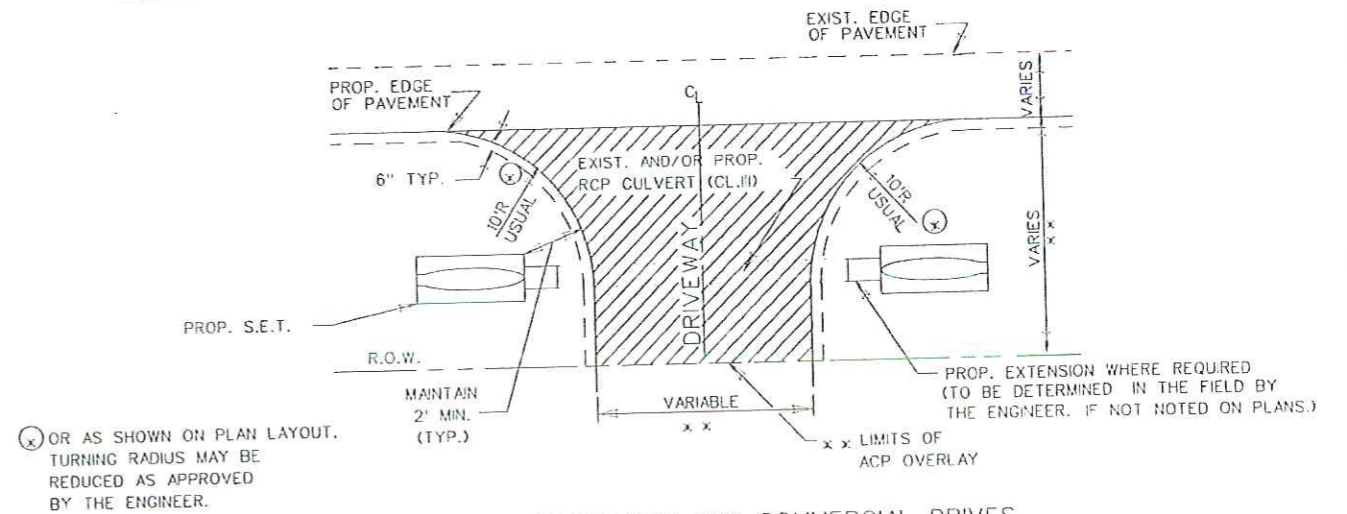
x x SEE P&P SHEETS



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

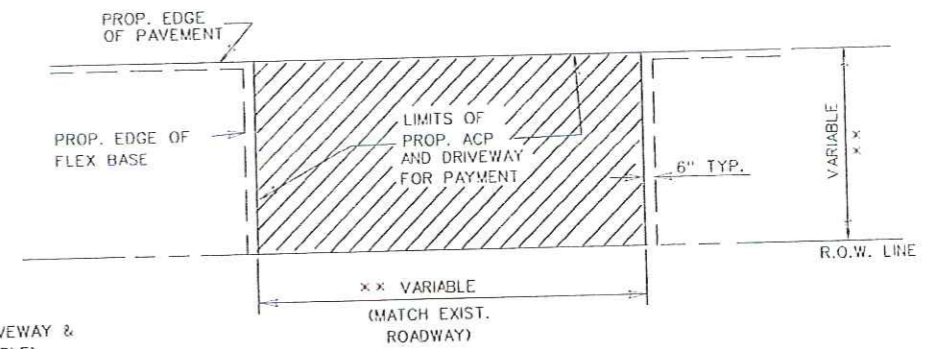
N.T.S.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



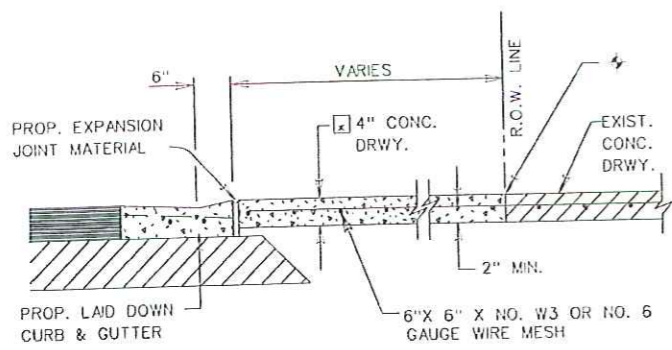
PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')

x x FOR DETAILS SEE DRIVEWAY & TURNOUT DETAILS (TABLE)



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

N.T.S.



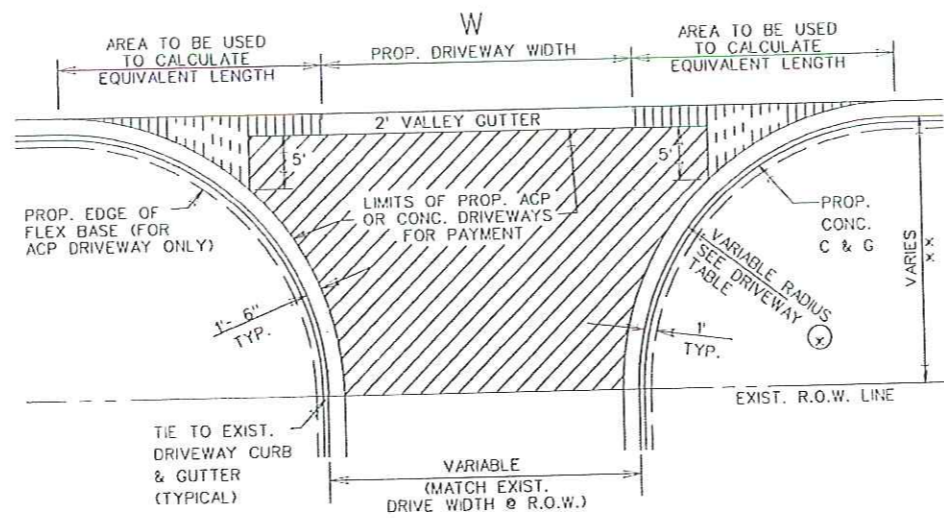
TYPICAL CONCRETE DRIVEWAY SECTION

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

6" FOR COMMERCIAL DRIVES

N.T.S.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES

N.T.S.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

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 114*/SY ACP (TY "D")

TY PB-1
EXIST. UNPAVED PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 114*/SY ACP.

TY P1
EXIST. PAVED DRIVEWAYS TO BE PAVED WITH 114*/SY ACP TY "D".

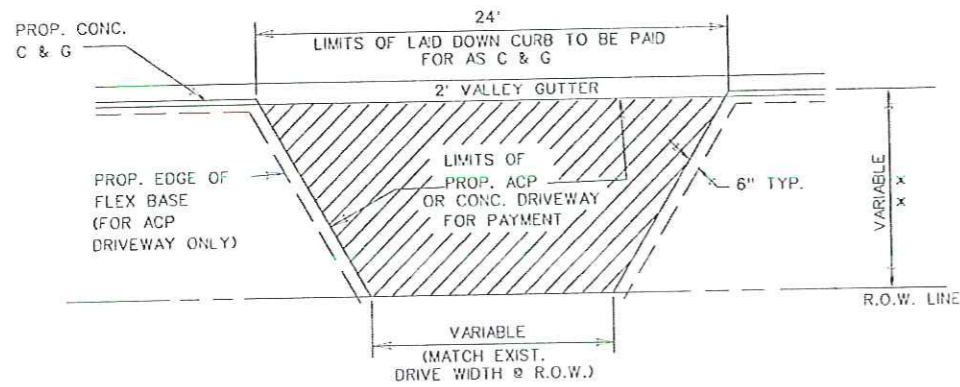
© TxDOT 2005 PHARR DISTRICT STANDARD



DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

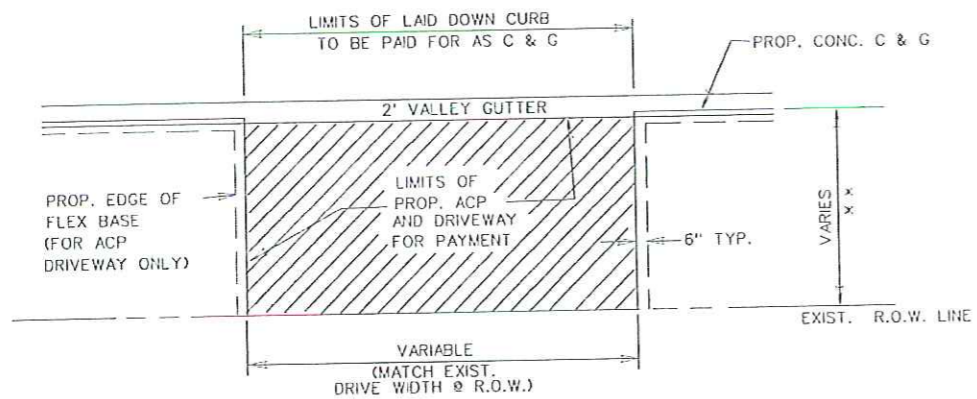
REV. 4/05	DRIVEWAY2.DGN	
PROJECT NO.	FILE NO.	SHEET NO.
6		03-02
STATE	COUNTY	CONTRACT
TEXAS	PHARR	3C 1080 940

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')

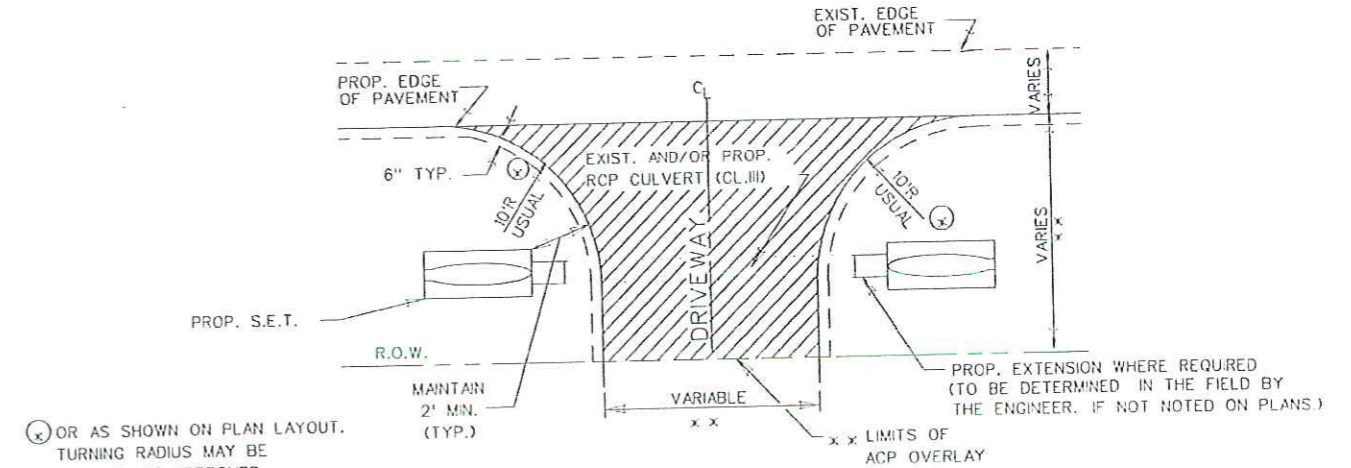
xx SEE P&P SHEETS



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

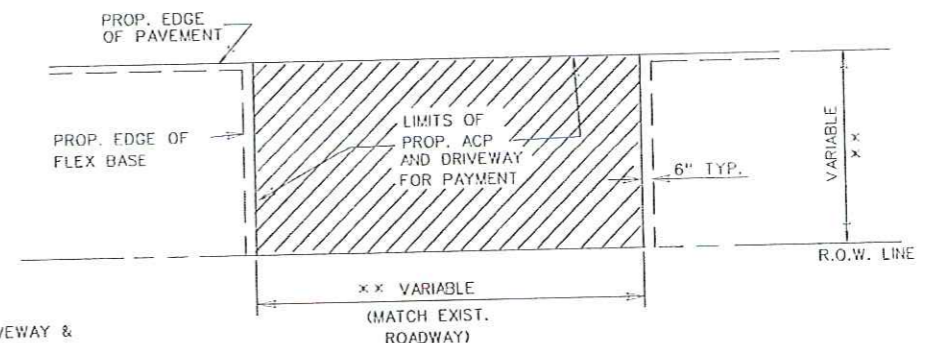
N.T.S.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



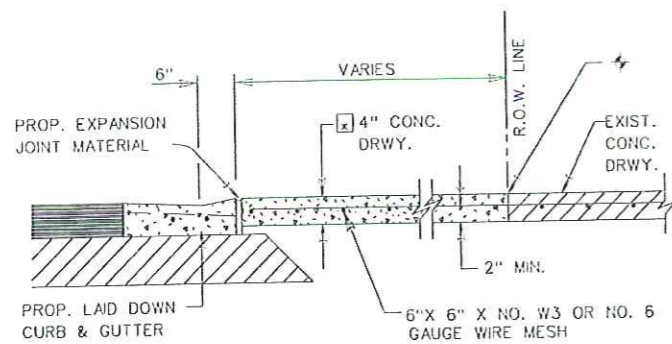
PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')

xx FOR DETAILS SEE DRIVEWAY & TURNOUT DETAILS (TABLE)



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

N.T.S.



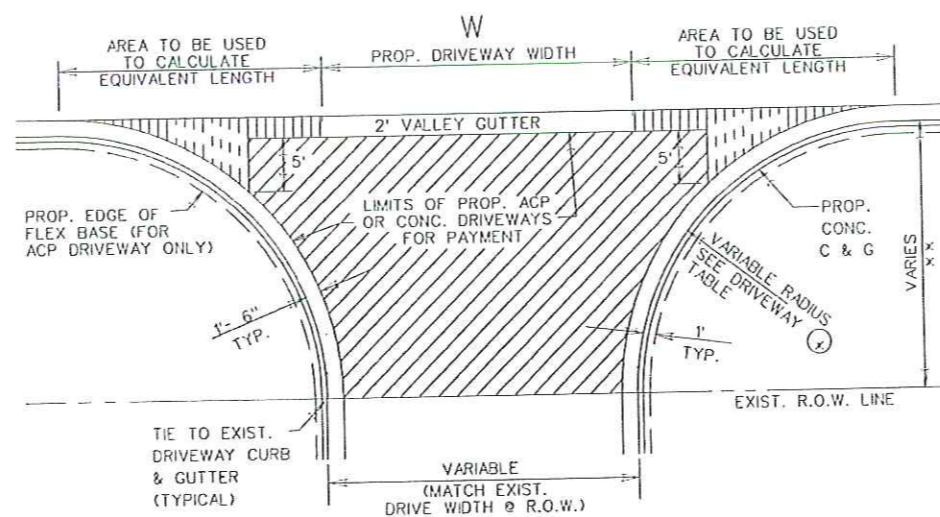
TYPICAL CONCRETE DRIVEWAY SECTION

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

6" FOR COMMERCIAL DRIVES

N.T.S.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES

N.T.S.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER = W * X1 * X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

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 114*/SY ACP (TY "D")

TY PB-1
EXIST. UNPAVED PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 114*/SY ACP.

TY P1
EXIST. PAVED DRIVEWAYS TO BE PAVED WITH 114*/SY ACP TY "D".

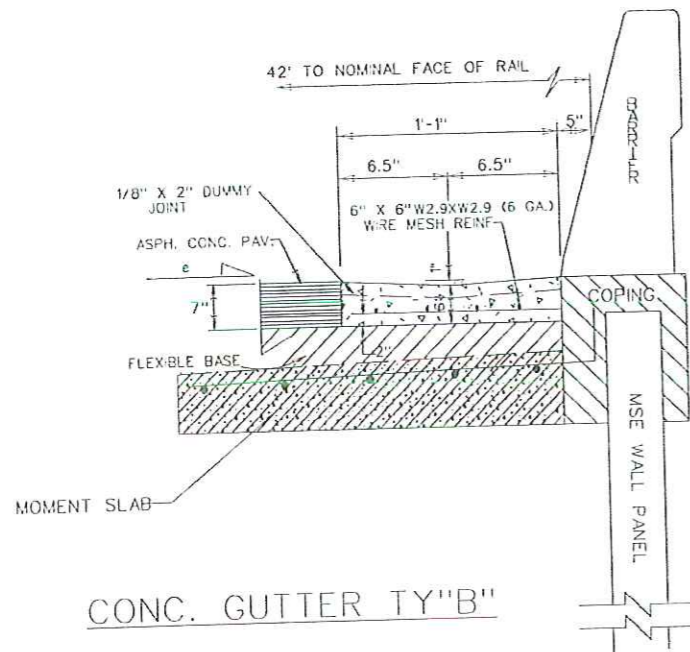
© TxDOT 2005 PHARR DISTRICT STANDARD



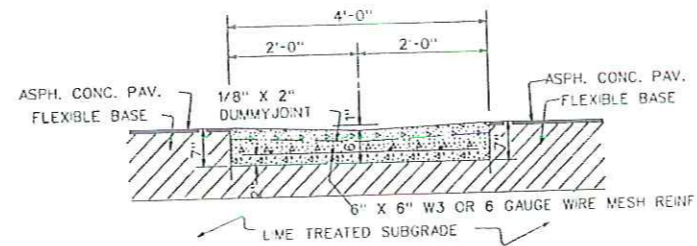
DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

REV. 4/05 DRIVEWAY2.DGN

FED. PROJ. NO.	PROJECT NO.	FILE NO.	SHEET NO.
6			CO3-02
STATE	STATE DISTRICT	COUNTY	CONT. SECT. JOB HIGHWAY NO.
TEXAS	21	PHARR	3C 1080 940

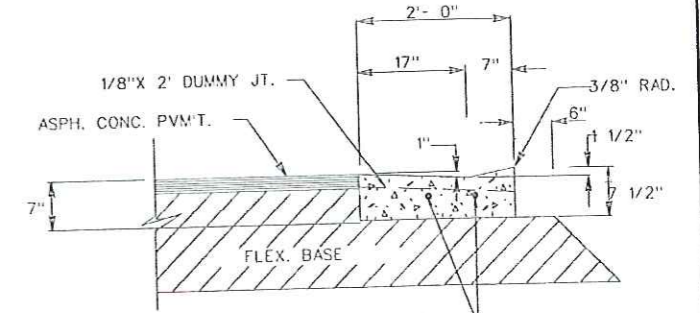


CONC. GUTTER TY "B"



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

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



(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.

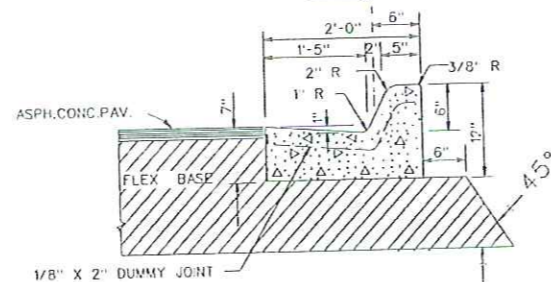
CONC. GUTTER

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.

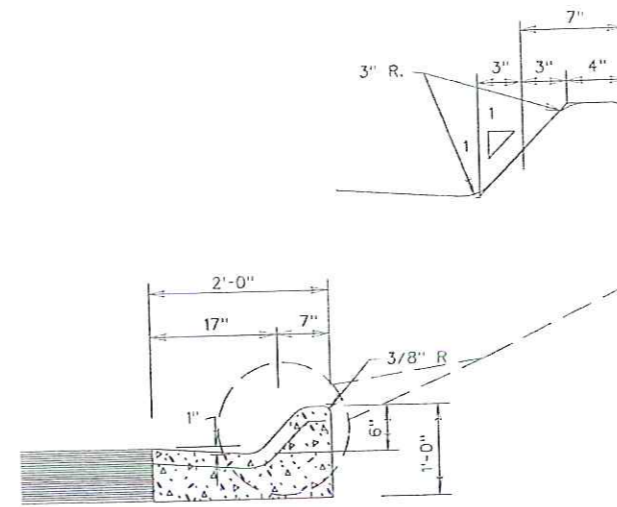
ALL HORIZONTAL DIMENSIONS AND RADII SHOWN ON PLANS, RELATING TO CURB & GUTTER, ARE TO A POINT 6" IN FROM BACK OF CURB.



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'

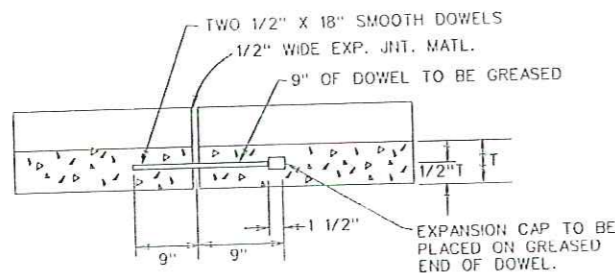


CONC. CURB & GUTTER TY. "B" (MOUNTABLE)

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'

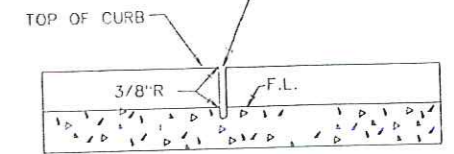


DETAIL EXPANSION JOINT

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'

JOINTS MAY BE FORMED WITH 1/2" 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 & GUTTER, CONC. MEDIAN AND ALL TYPE OF VALLEY GUTTERS JOINTS TO BE LOCATED BY THE ENGINEER.

© TxDOT 2002

PHARR DISTRICT STANDARD



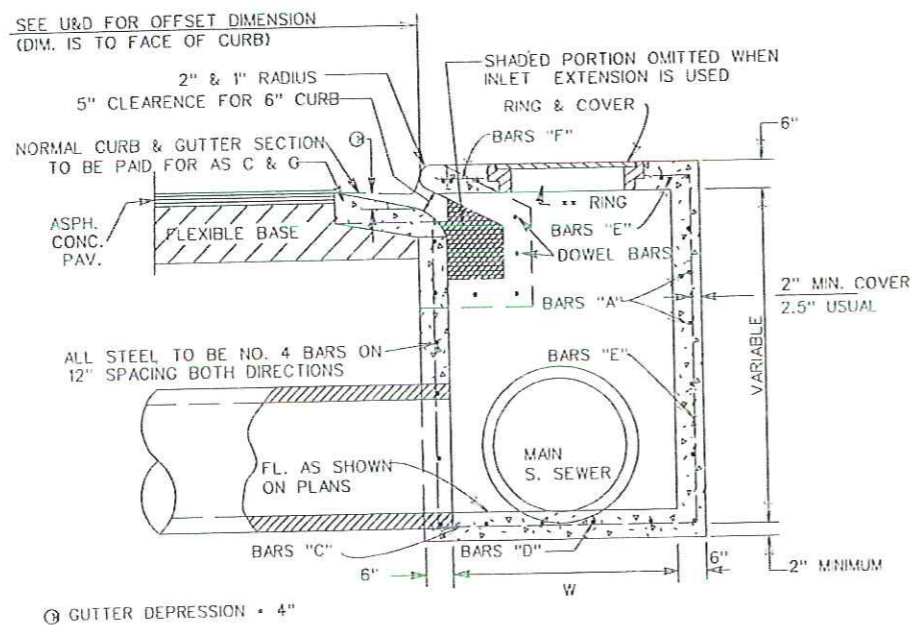
TEXAS DEPARTMENT OF TRANSPORTATION

CURB & GUTTER DETAILS

REV. 4/02

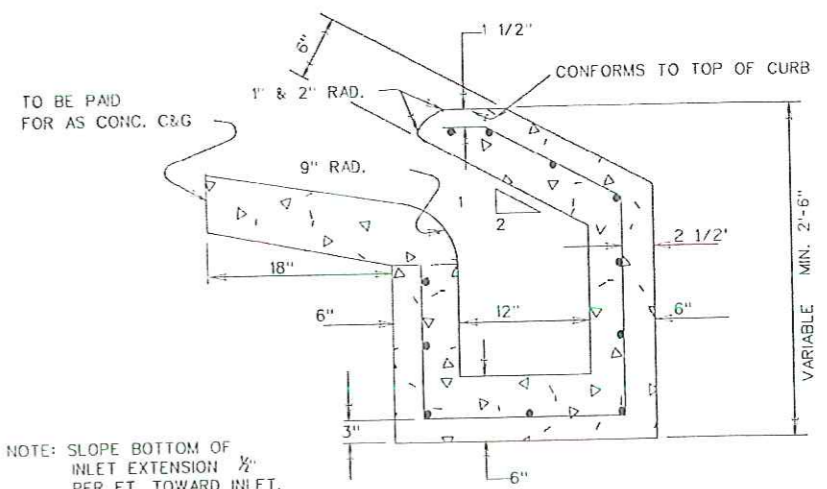
C&G.DGN

EDRD YEAR	STATE AD PROJECT NO.		FILE NO.		SHEET NO.
6					C03-03
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB
TEXAS	21	PHARR	3C	1080	940
					HIGHWAY NO.

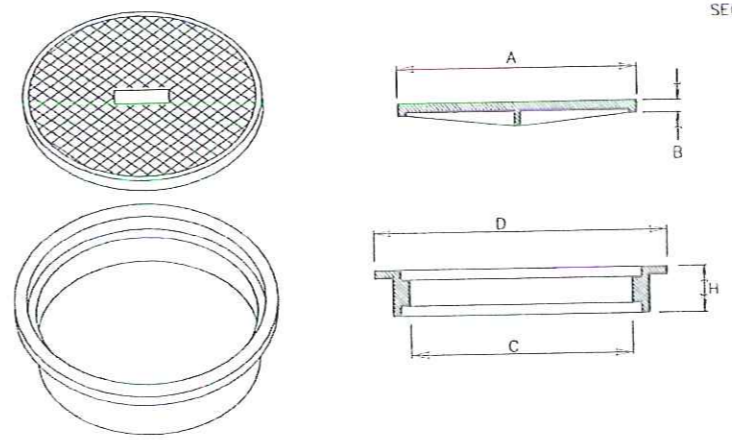


INLET TY "A"
To be used with Curb & Gutter
SECTION A-A

INLET TYPE	W	MAX PIPE SIZE ALLOW (DIA.)
A	3'-0"	24"
A-1	4'-0"	36"
A-2	5'-0"	48"
A-3	6'-0"	60"



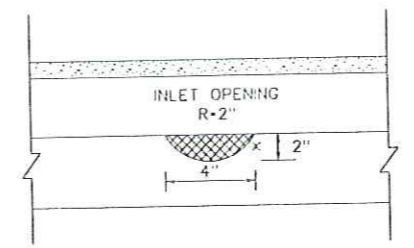
SECTION B-B
INLET EXTENSION



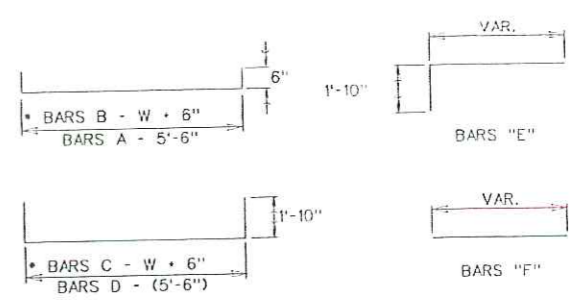
LID			RING			TOTAL WT.		
"A"	"B"	WEIGHT	"C"	"D"	"H"		WEIGHT	
25	5/8"	1"	125 lbs. (min)	24	32	5	185 lbs.	310 lbs.

RING & COVER

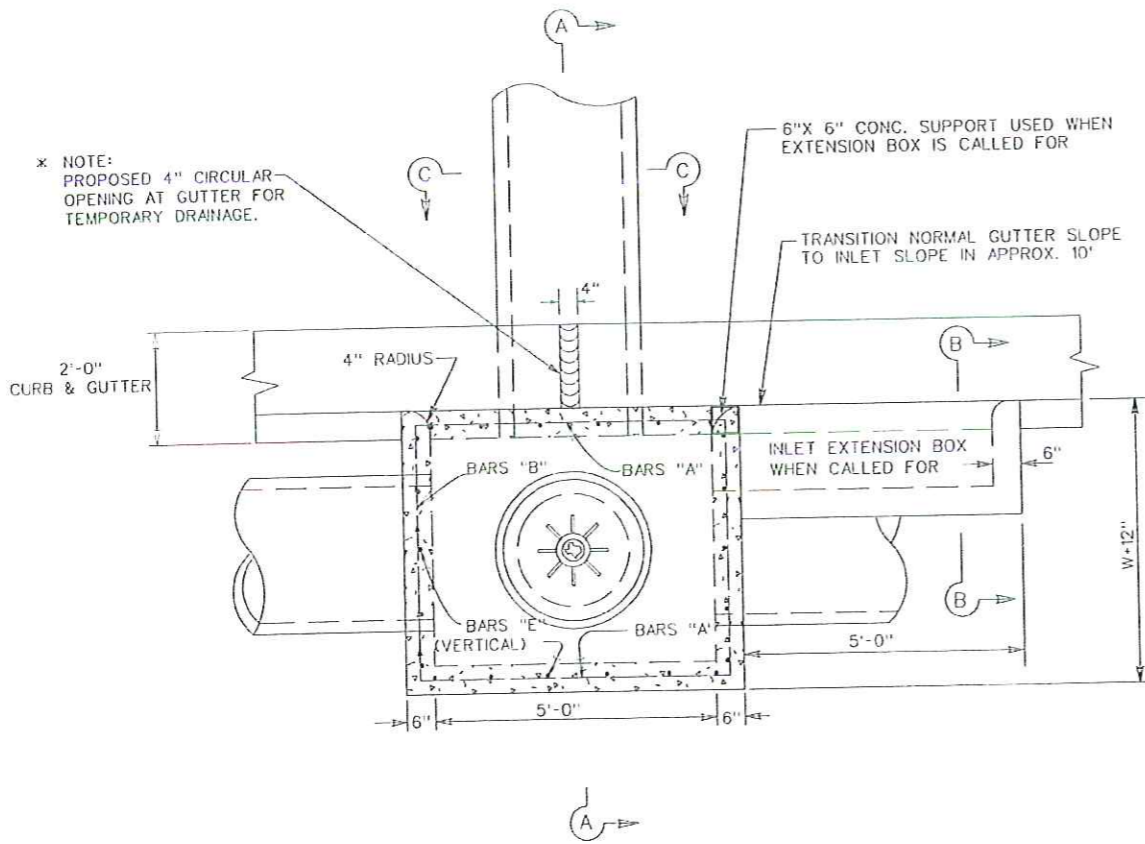
NOTE: RINGS AND COVERS OF SLIGHTLY DIFFERENT DIMENSIONS BUT APPROXIMATELY THE SAME WEIGHT MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER. RING AND COVER TO BE SUBSIDIARY.



CURB OPENING DETAIL
SECTION C-C
FRONT



REINFORCING STEEL DETAILS



PLAN

© TxDOT 2004 PHARR DISTRICT STANDARD



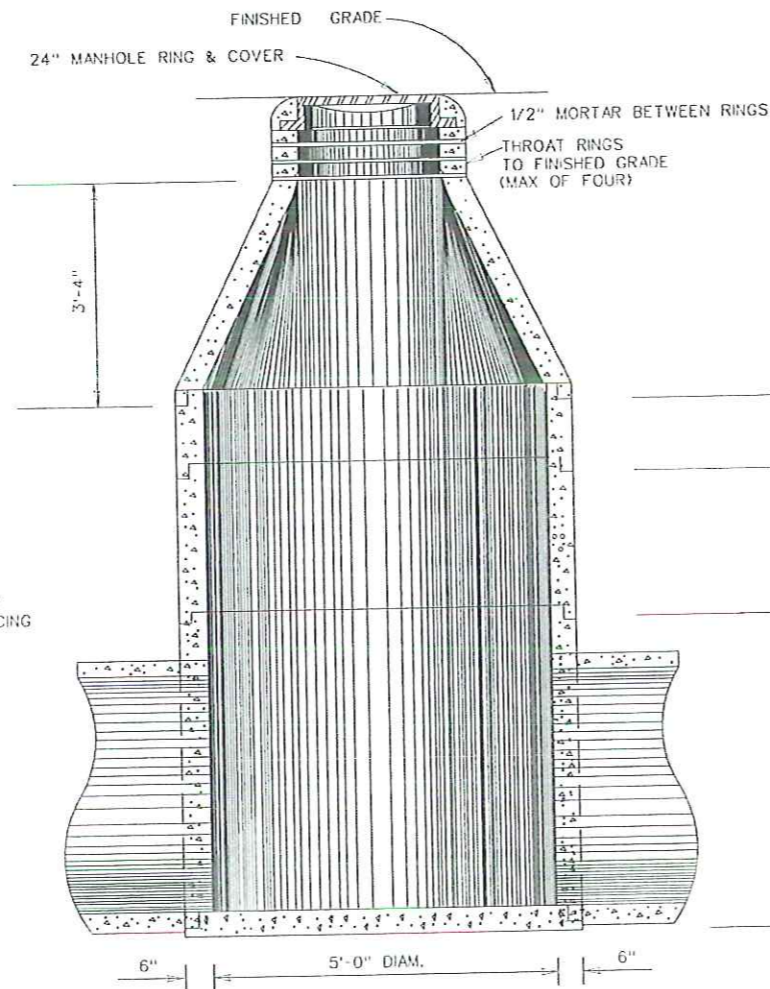
INLET TY "A" DETAIL

REV. 03/04

INLETA.DGN

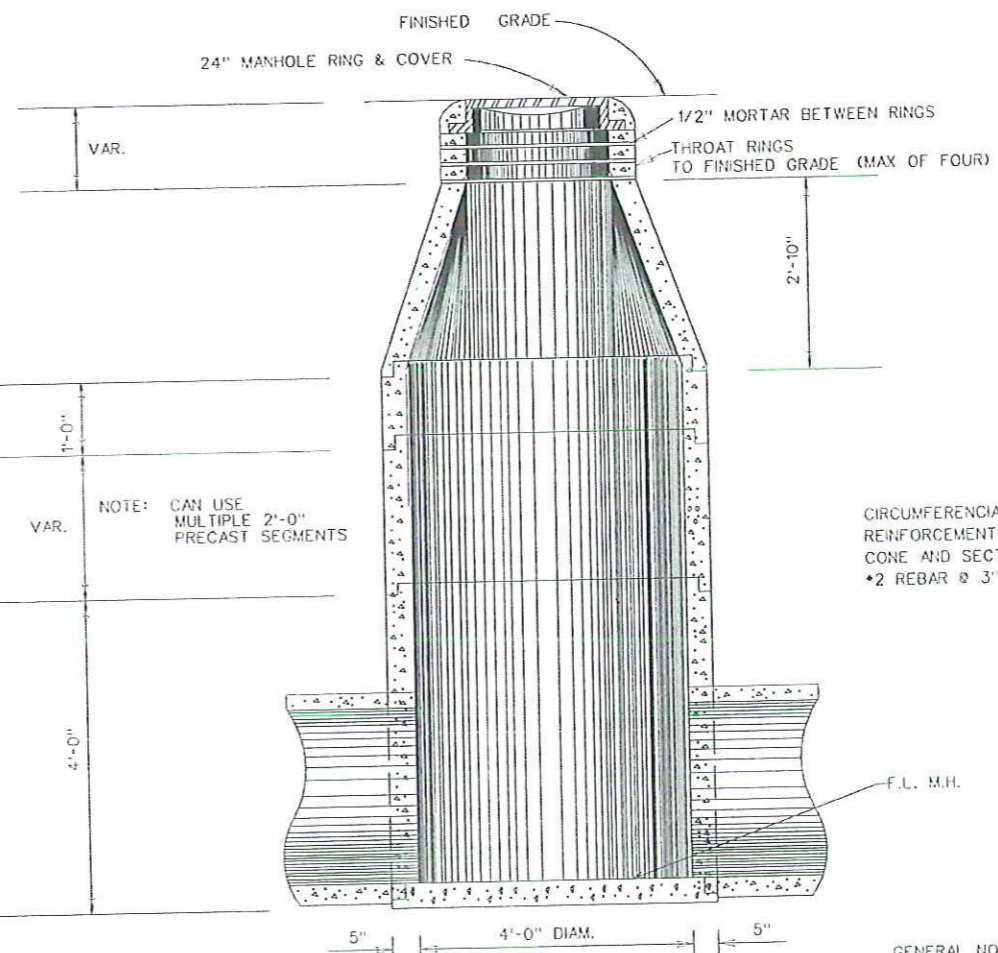
FED. DIST. NO.	PROJECT NO.	FILE NO.	SHEET NO.			
6			C03-04			
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	PHARR	3C	1080	940	

N.T.S.



CIRCUMFERENTIAL REINFORCEMENT IN CONE AND SECTIONS:
• 2 REBAR @ 3" SPACING

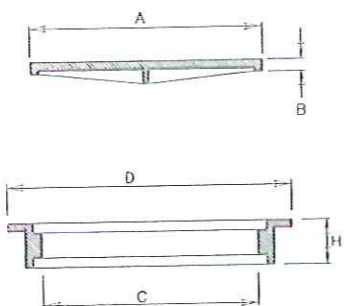
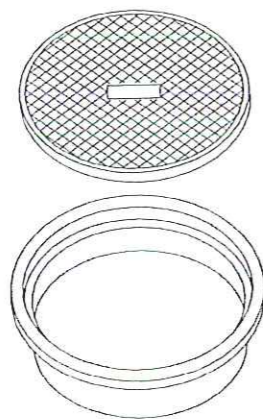
TY "A1"



CIRCUMFERENTIAL REINFORCEMENT IN CONE AND SECTIONS:
• 2 REBAR @ 3" SPACING

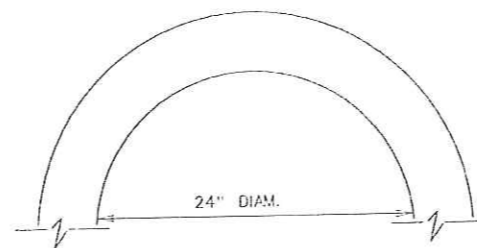
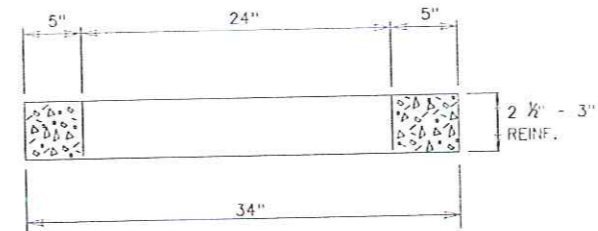
NOTE: CAN USE MULTIPLE 2'-0" PRECAST SEGMENTS

TY "A"



LID			RING		
"A"	"B"	WEIGHT	"C"	"D"	"H"
2'-2"	1"	174 lbs. (min)	2'-0"	2'-7 1/2"	5"

RING & COVER DETAILS
(FOR MANHOLE TY "A" AND "A1")
(SUBSIDIARY)



REINF. CONC. THROAT RING

GENERAL NOTES:

- FOR MANHOLES LOCATED WITHIN PAVED PORTIONS OF THE ROADWAY, THE COVER SHALL BE OF A TYPE THAT CAN BE BOLTED TO THE RING.
- RINGS AND COVERS OF SLIGHTLY DIFFERENT DIMENSIONS BUT APPROXIMATELY THE SAME WEIGHT MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.
- CONCRETE STRENGTH: 4,000 P.S.I. MIN.
- THE CONTRACTOR MAY WITH THE APPROVAL OF THE ENGINEER FURNISH MANHOLES OF EQUIVALENT STRUCTURAL DESIGN.
- ALTERNATE DESIGN DRAWINGS BEARING THE SEAL OF A REGISTERED ENGINEER WILL BE ACCEPTABLE FOR PRECAST CONSTRUCTION OF MANHOLES.

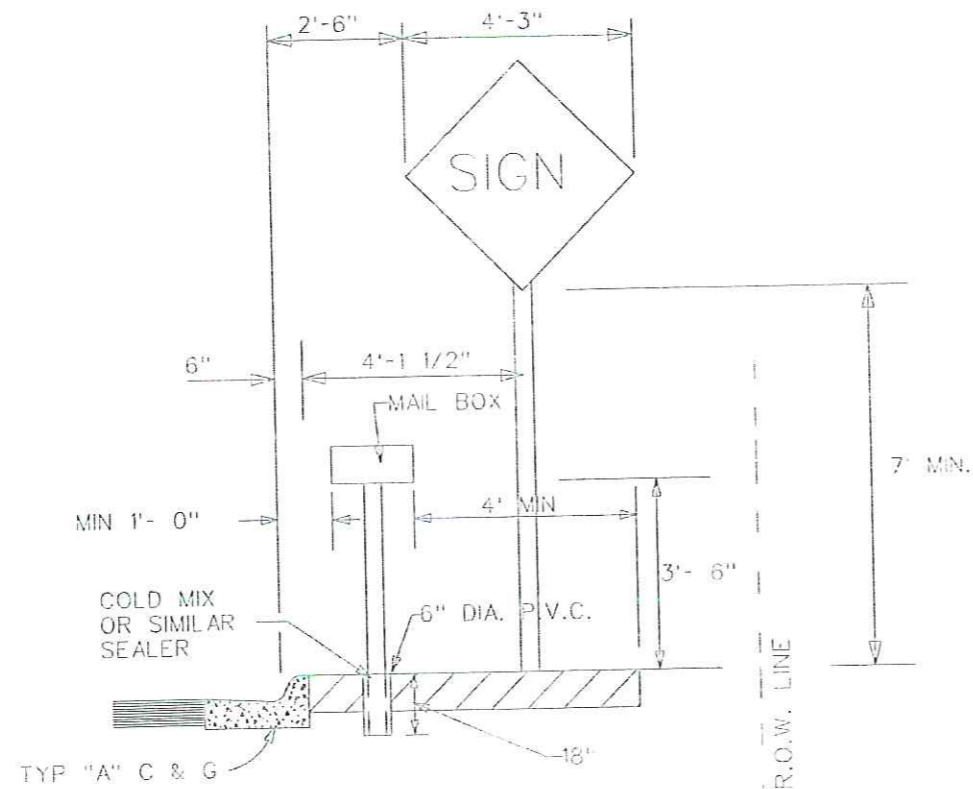
© TxDOT 2003 PHARR DISTRICT STANDARD



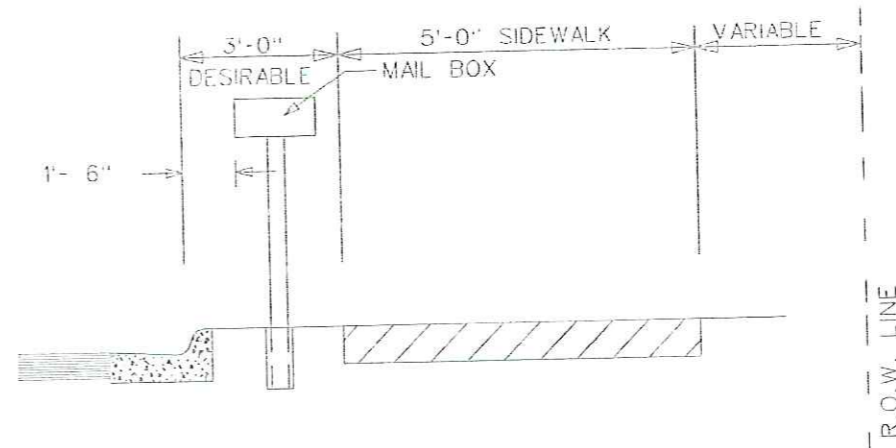
TYPE "A" & TYPE "A1"
MANHOLE
(COMPLETE)

REV. 4/02	PROJECT NO.			FILE NO.			MANHOLE1.DGN
6	STATE			COUNTY			SHEET NO. C03-05
Texas	21	PHARR	3C	1080	940	HIGHWAY NO.	

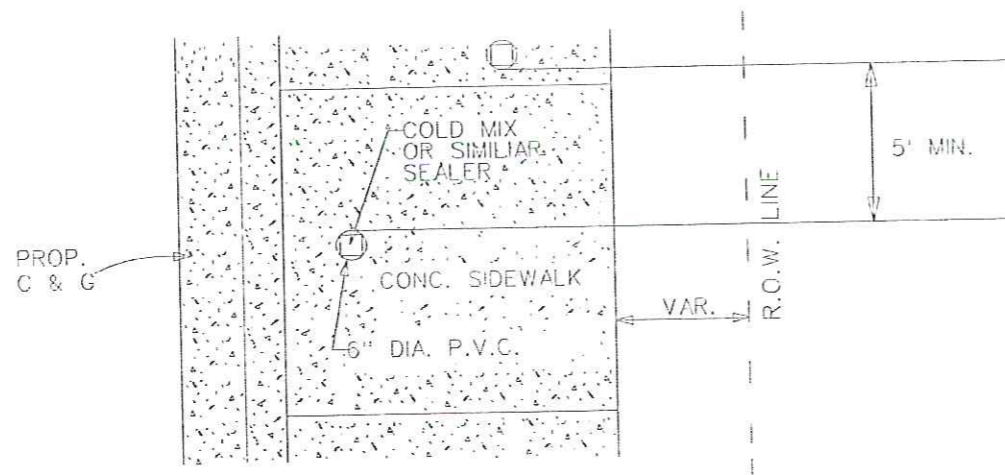
N.T.S.



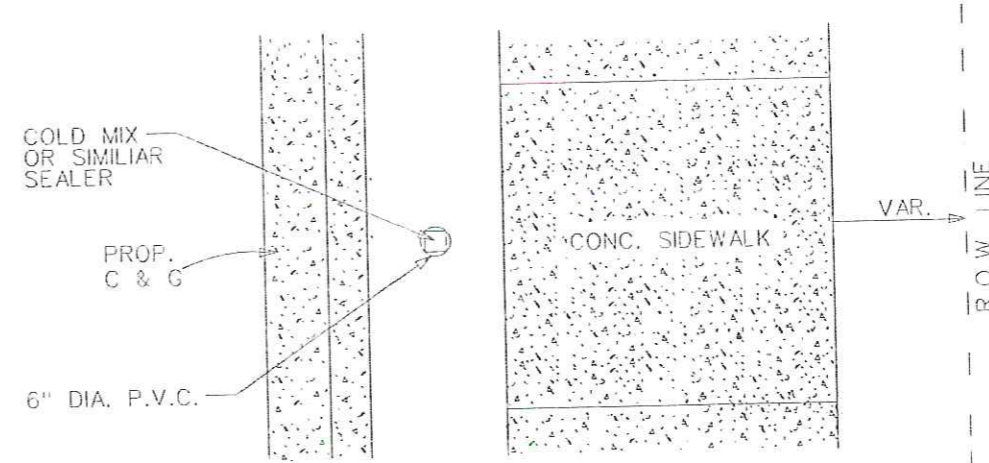
MAIL BOX CROSS SECTION (MINIMUM BORDER DISTANCE)



MAIL BOX CROSS SECTION (DESIRABLE BORDER DISTANCE)



PLAN VIEW



PLAN VIEW

© TxDOT 2003 PHARR DISTRICT STANDARDS



MAILBOX DETAIL

REV. 5/03	MALBOX.DGN		
6	STATE AND PROJECT NO.	FILE NO.	SHEET NO.
6			C03-06
STATE	COUNTY	CONT.	SECT. JOB HIGHWAY NO.
TEXAS	PHARR	3C	1080 940

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

LEVELS DISPLAYED
 ACC: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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)

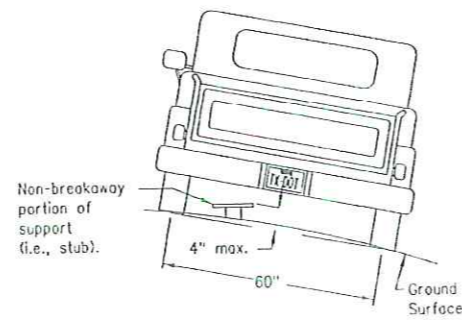
Anchor Type

- 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 - S'pbase - Concrete (see SMD(SLIP-1) to (SLIP-3))
- SB - S'pbase - 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
- TEXT 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 * 7/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL - Extruded Aluminum Sign Panels (see SMD(SLIP-3))

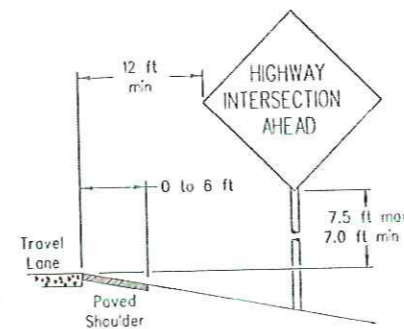
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



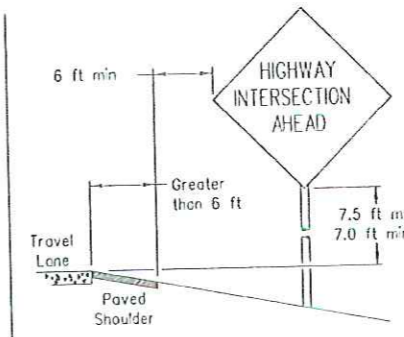
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

SIGN LOCATION

PAVED SHOULDERS

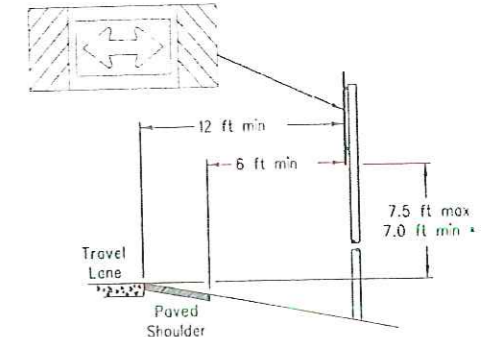


When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



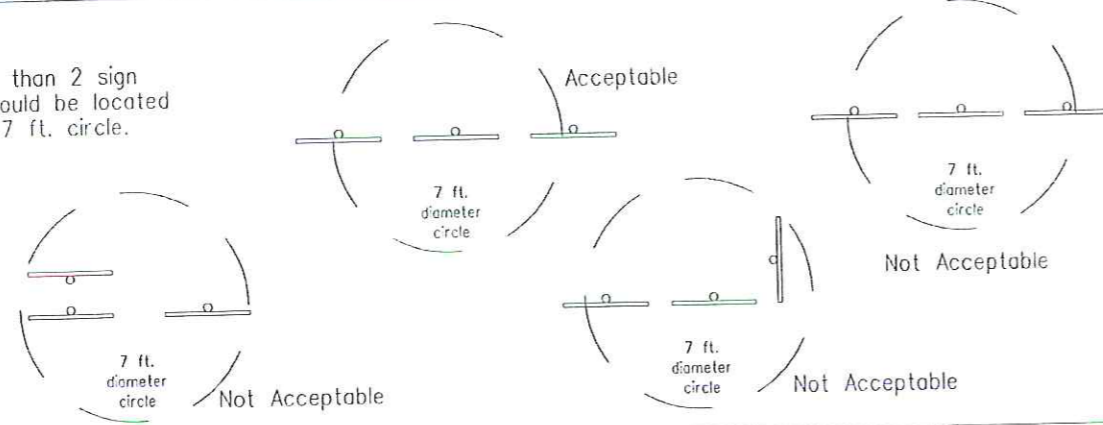
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

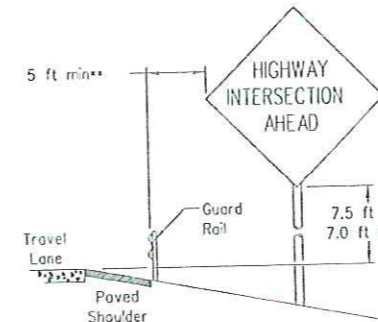


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

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

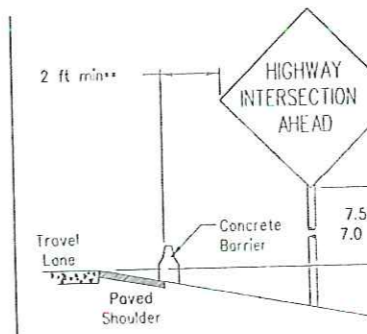


BEHIND BARRIER

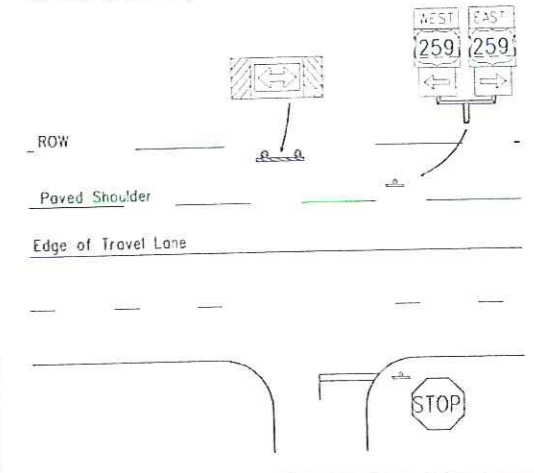


BEHIND GUARDRAIL

**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:

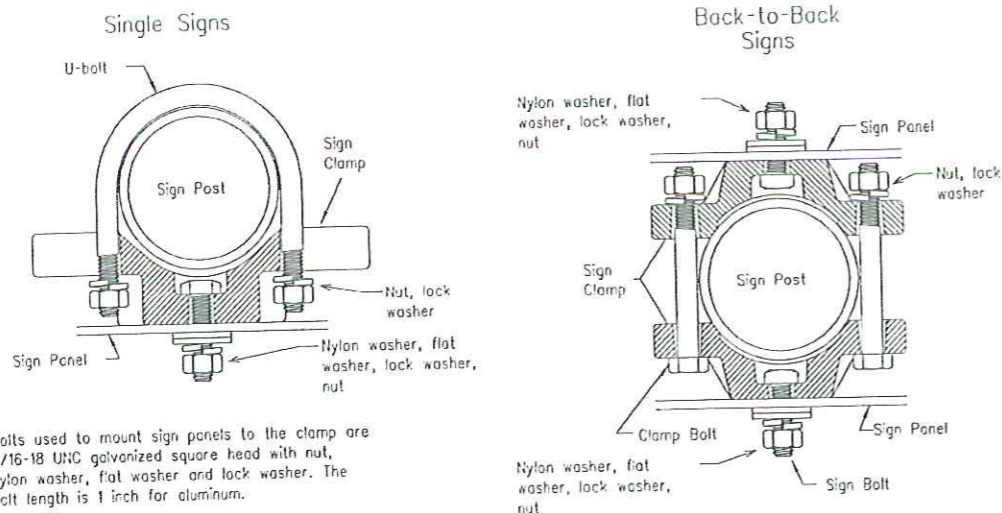
- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade of the base of the support when sign is installed on the backslope.

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

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

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

TYPICAL SIGN ATTACHMENT DETAIL



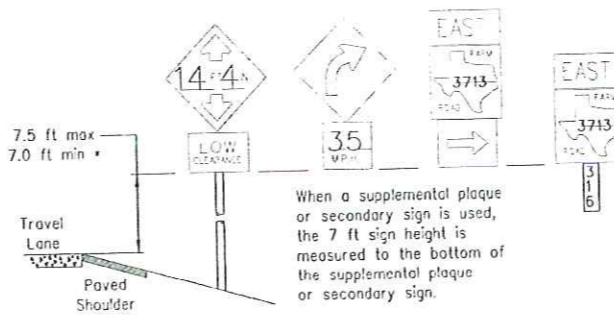
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

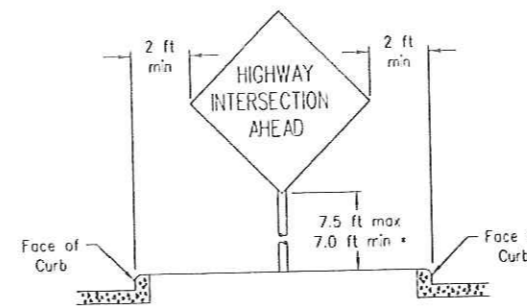
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



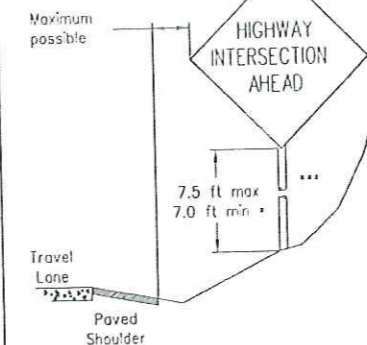
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

STANDARD PLANS
 TEXAS DEPARTMENT OF TRANSPORTATION
 Traffic Operations Division

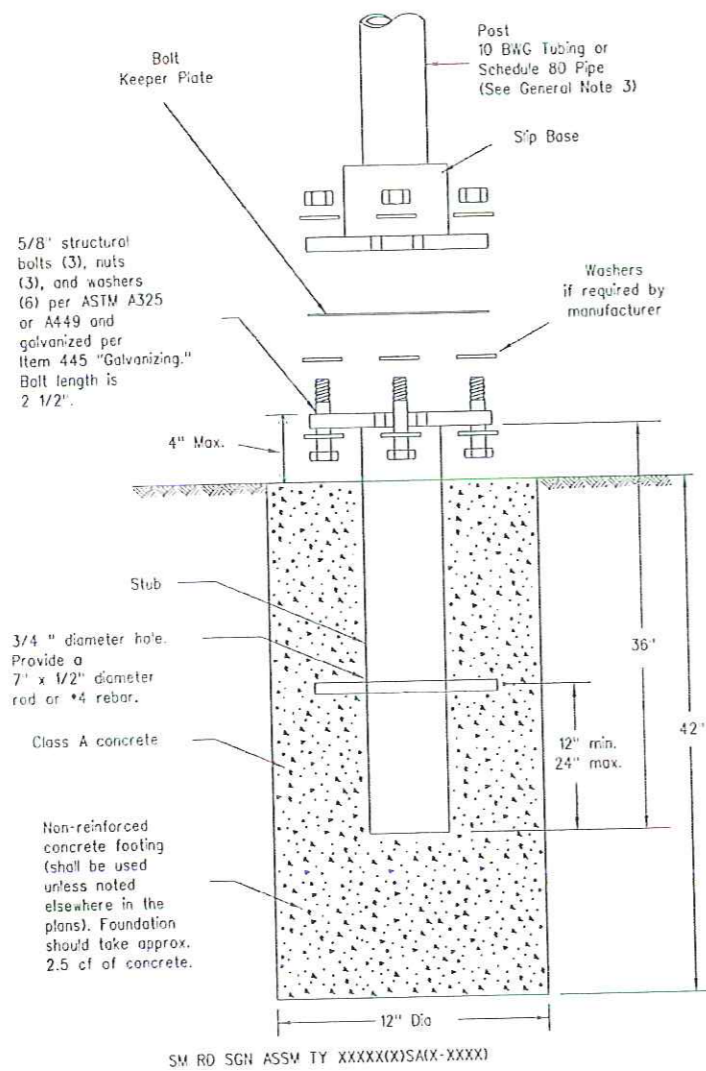
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

© TxDOT July 2002	21	6	3C	1080	940	CO3-07
REVISED	DATE	BY	REASON	FEDERAL PROJECT		SHEET
9-08	21	6				
COUNTY			CONTROL	SECTION	JOB	REVISION
PHARR			3C	1080	940	

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

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



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 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 precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metalizing 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

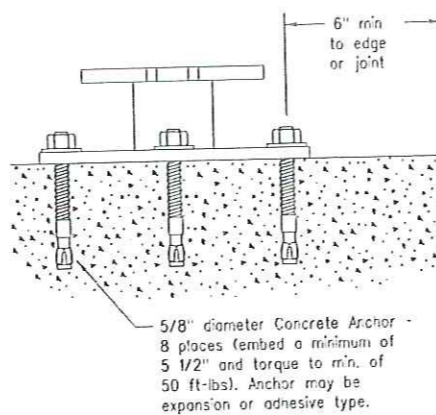
Foundation

- 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



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

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, "Epoxyes 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 3900 and 3100 psi, respectively.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

REVISED	DATE	BY	CHK'D	PROJECT	SHEET
9-08	6			PHARR	CO3-08
	COUNTY	SECTION	JOB	REVISION	
	PHARR	3C	1080 940		

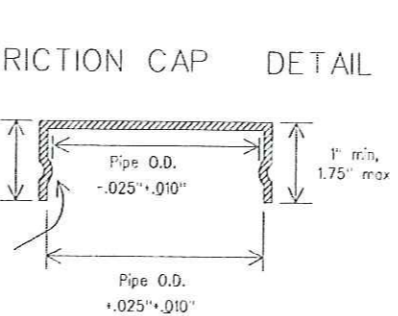
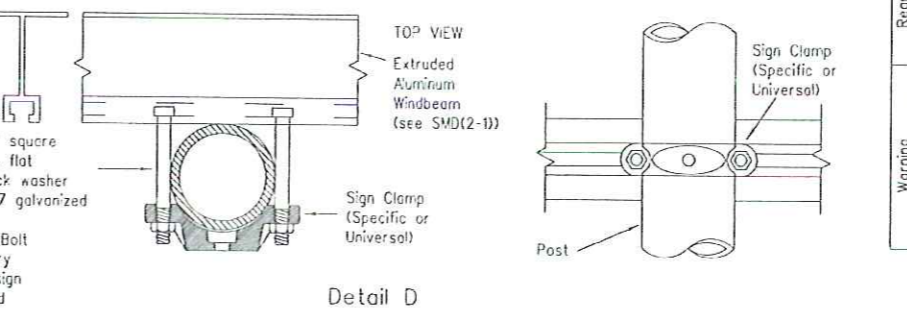
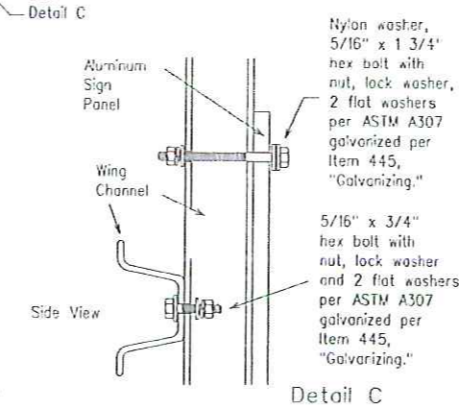
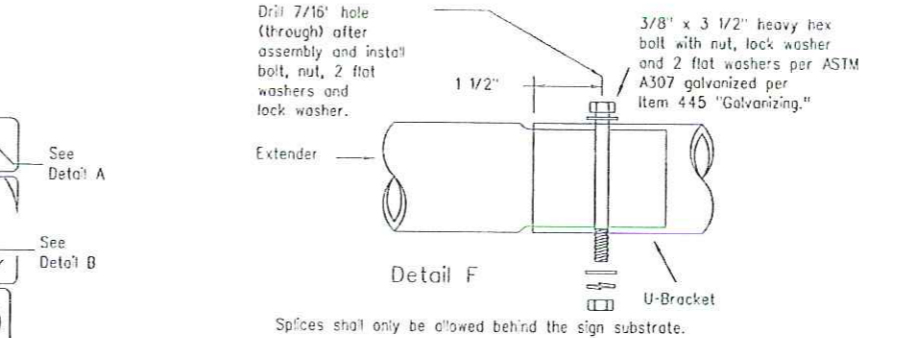
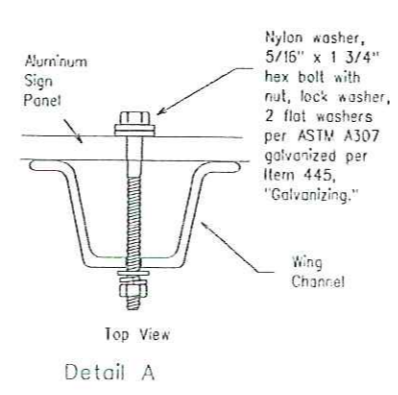
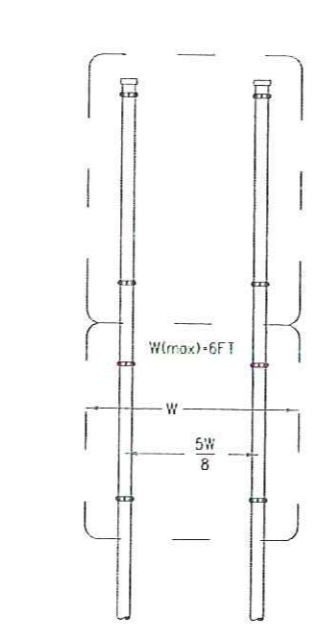
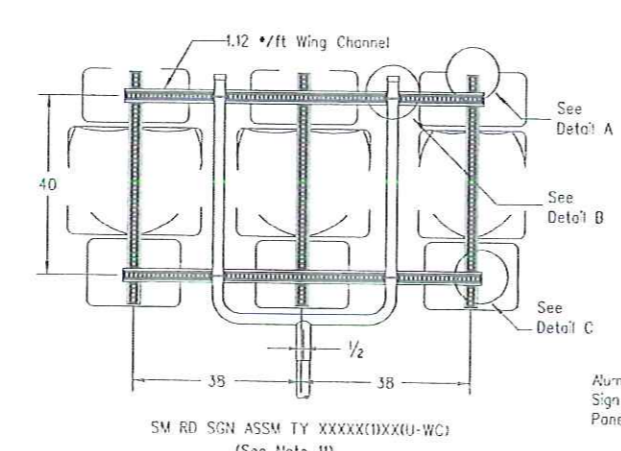
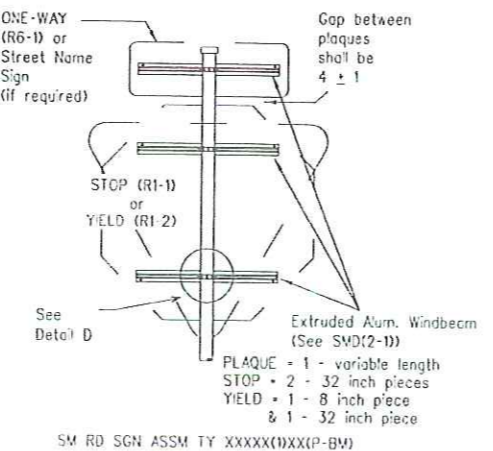
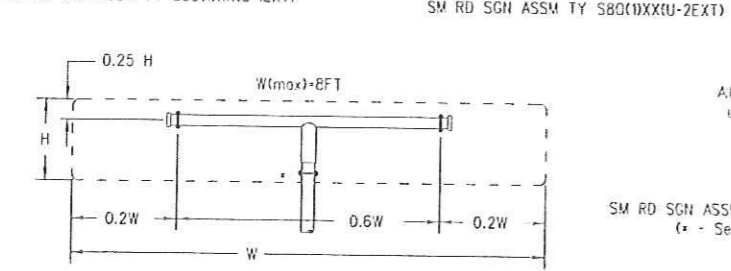
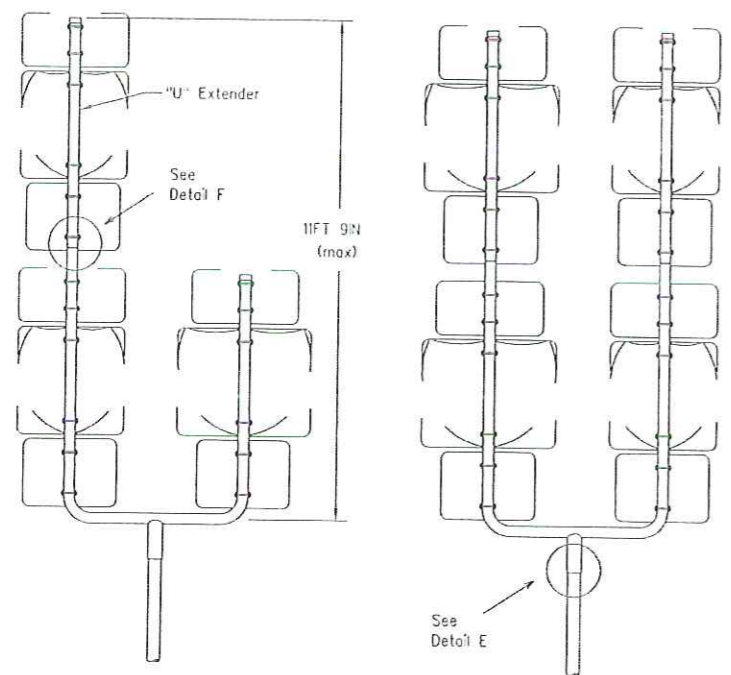
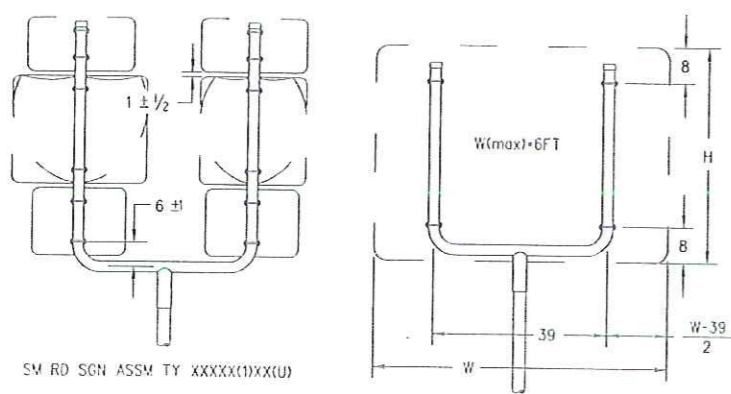
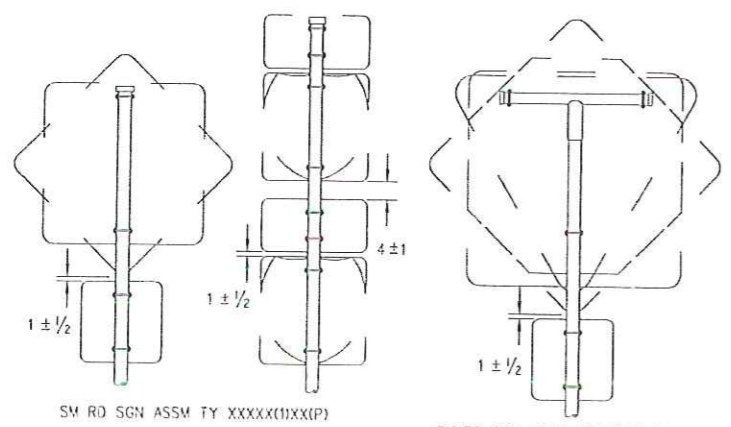
LEVELS DISPLAYED	ACC:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63	

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

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	53	54	55	56	57	58	59	60	61	62	63	64

ACC: _____



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

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."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

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

STANDARD PLANS
 TEXAS DEPARTMENT OF TRANSPORTATION
 Traffic Operations Division

**SIGN MOUNTING DETAILS
 SMALL ROADSIDE SIGNS
 TRIANGULAR SLIPBASE SYSTEM**

SMD(SLIP-2)-08

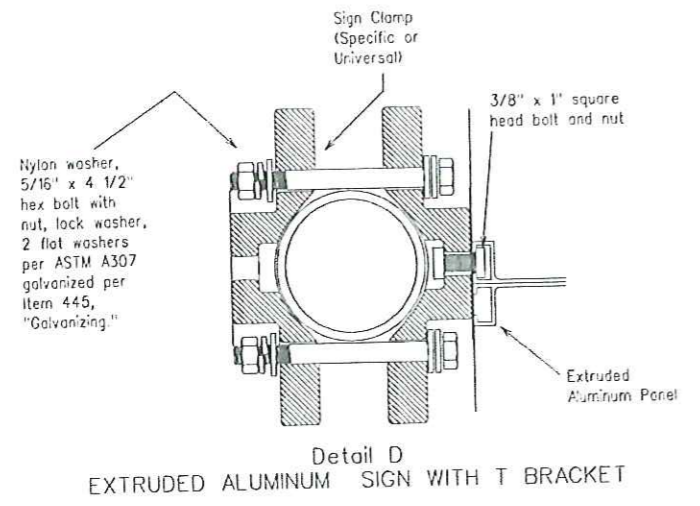
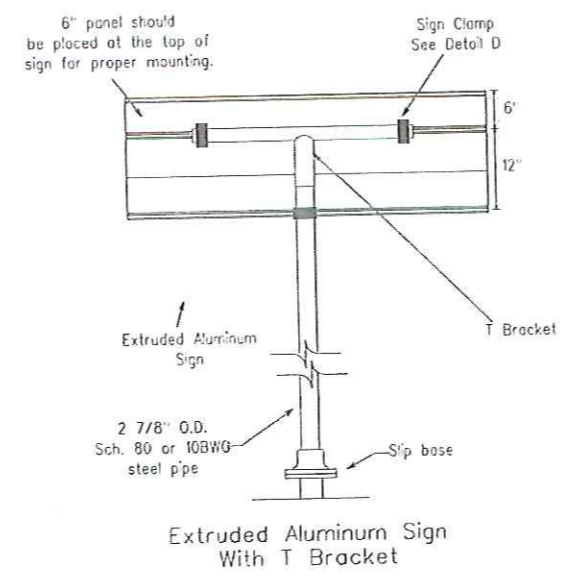
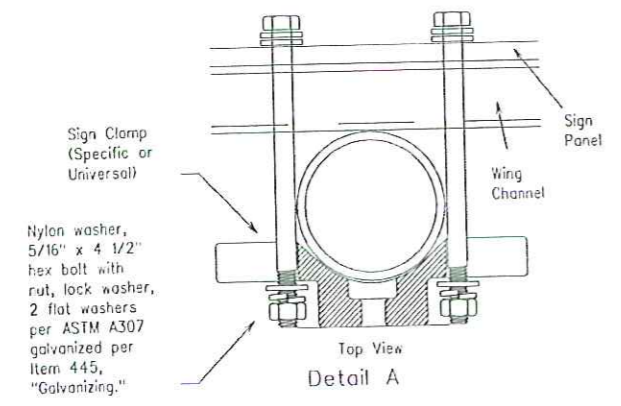
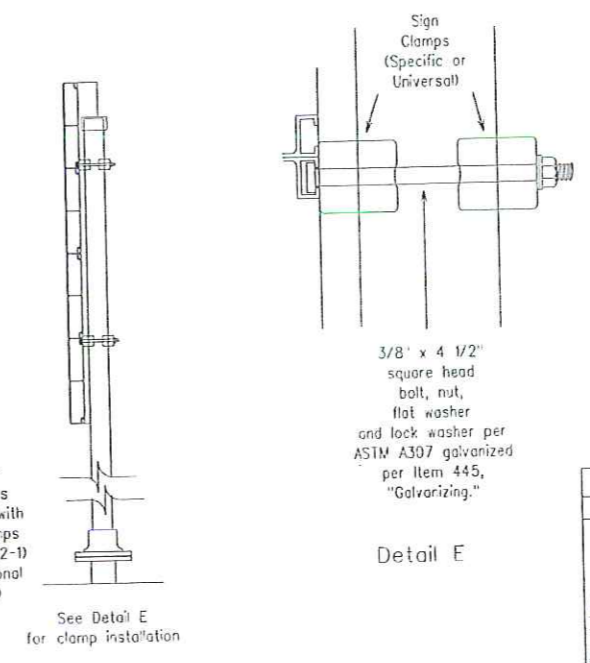
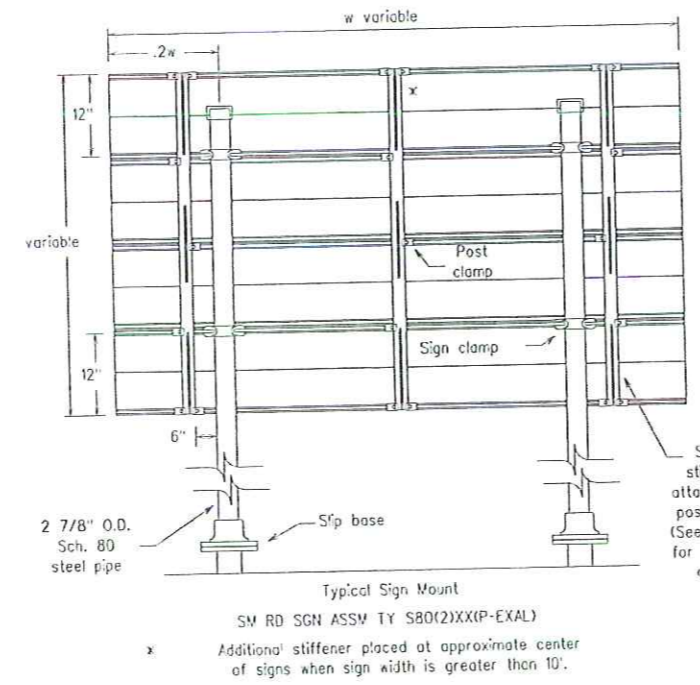
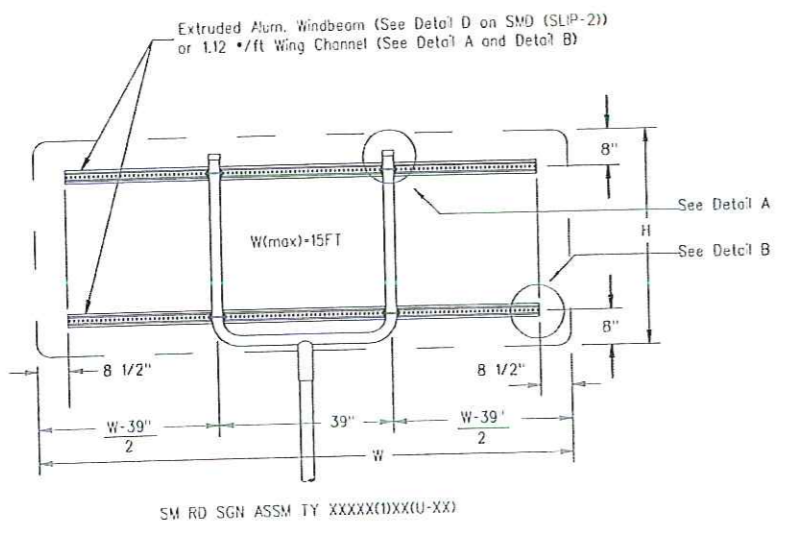
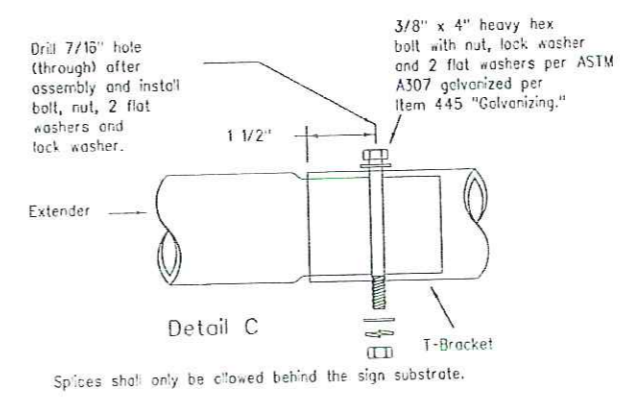
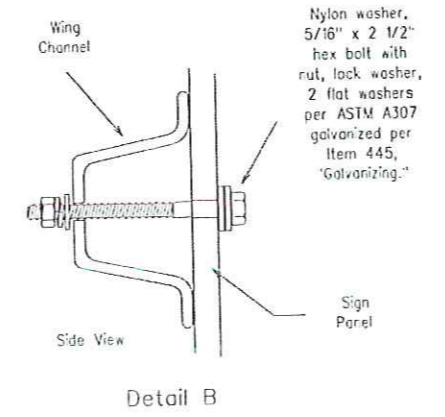
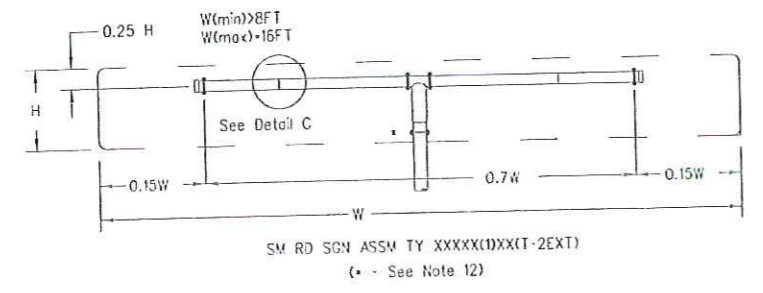
© TxDOT July 2002	24- TxDOT	04- TxDOT	06- TxDOT	08- TxDOT
REVISED 9-08	DATE 08-08	REVISION 6	FEDERAL AID PROJECT	SHEET
				C03-09
	COUNTY	DISTRICT	SECTION	JOB
	PHARR		3C	1080 940

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

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	53	54	55	56	57	58	59	60	61	62	63	64

ACC:



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 | 65 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 fit 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 fitted with Friction Caps.

REQUIRED SUPPORT	
SIGN DESCRIPTION	SUPPORT
48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) 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)
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)

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

© TxDOT 2002	REVISED	DATE	BY	REASON	FEDERAL AID PROJECT	DATE	BY
9-08		6					C03-10
			PHARR		3C	1080	940

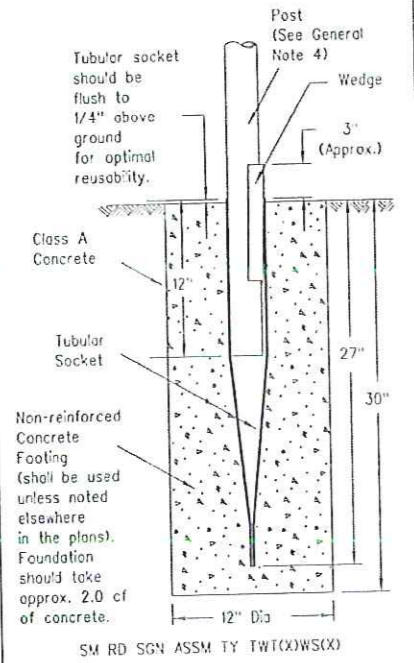
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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	53	54	55	56	57	58	59	60	61	62	63	64

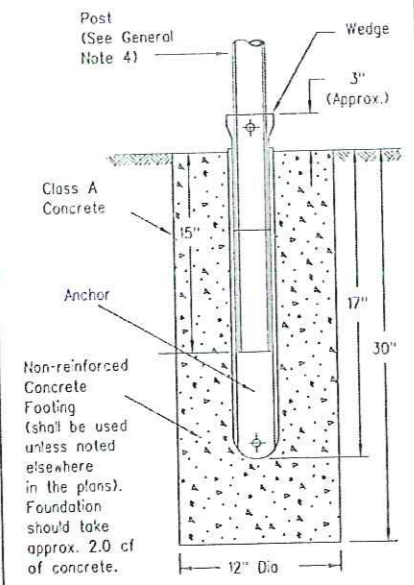
ACC: _____

Wedge Anchor Steel System



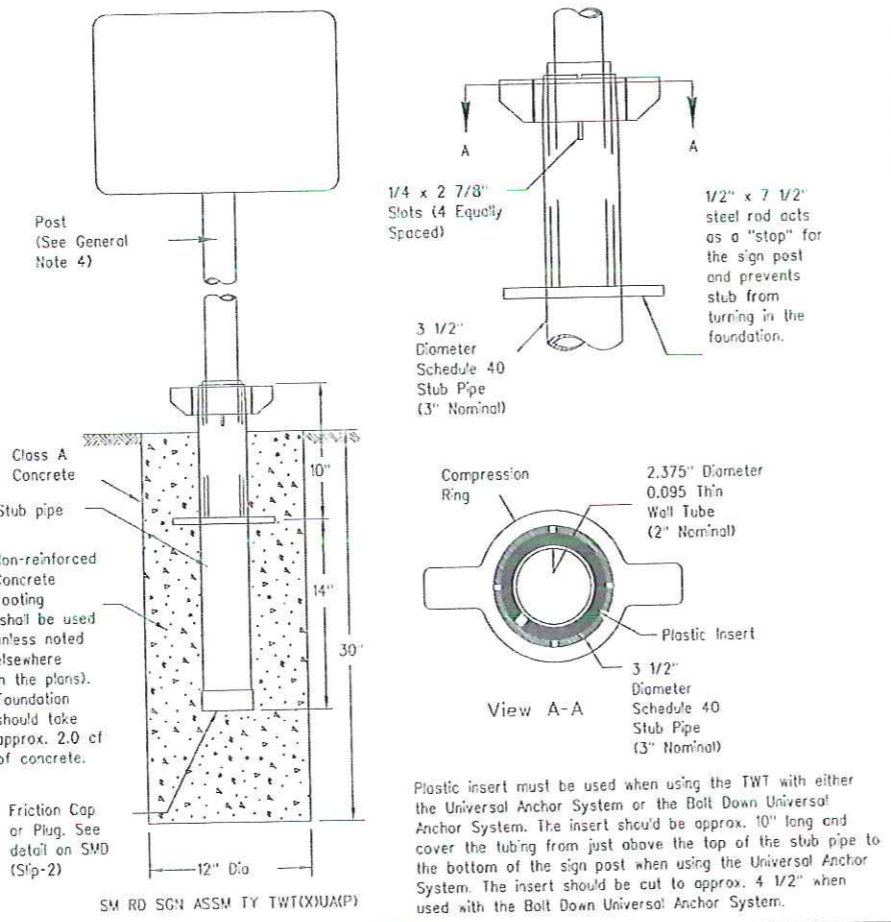
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

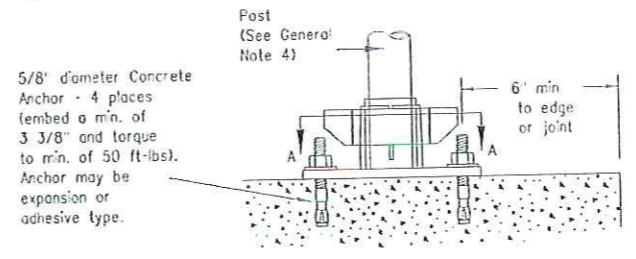


SMD RD SGN ASSM TY TWT(X)WP(X)

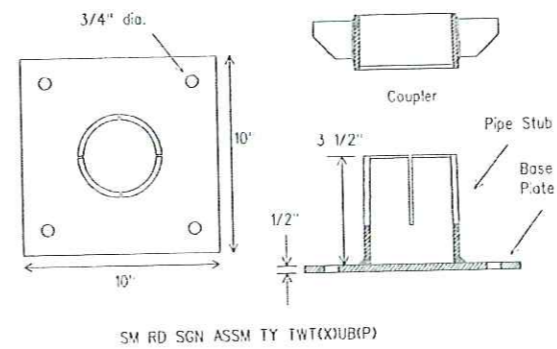
Universal Anchor System with Thin-Walled Tubing Post



SM RD SGN ASSM TY TWT(X)UAP(X)

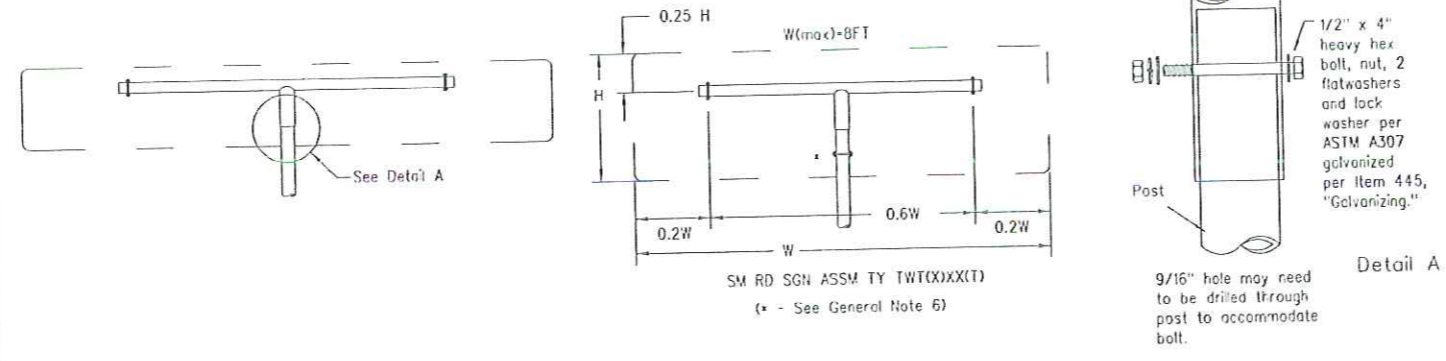


Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3/8" minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Adhesive type anchors shall have stud bolts installed with Type II epoxy per DWS-6100, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



SM RD SGN ASSM TY TWT(X)UBP(X)

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



NOTE: The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

- GENERAL NOTES:
- The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
 - The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
 - Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
 - Material used as post with this system shall conform to the following specifications:
 - 13 BWG Tubing (2.375" outside diameter) (TWT)
 - 0.095" nominal wall thickness
 - Seamless or electric-resistance welded steel tubing
 - 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
 - 18% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of .083" to .099"
 - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
 - Galvanization per ASTM 123 or ASTM A553 G210. For pre-coated steel tubing (ASTM A553), recast tube outside diameter weld seam by metalizing with zinc wire per ASTM B833.
 - Sign blanks shall be the sizes and shapes shown on the plans.
 - Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
 - Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
 - See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>

- WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE
- 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.
 - 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. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
 - Insert tubular socket into concrete until top of socket is approximately 1/4" above the concrete footing.
 - Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
 - Attach the sign to the sign post.
 - Insert the sign post into socket and align sign face with roadway.
 - Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

- UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE
- 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.
 - 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.
 - Attach the sign to the sign post.
 - Install plastic insert around bottom of post.
 - Insert sign post into base post. Lower until the post comes to rest on steel rod.
 - Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
 - Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

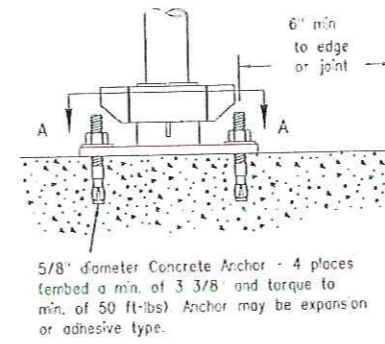
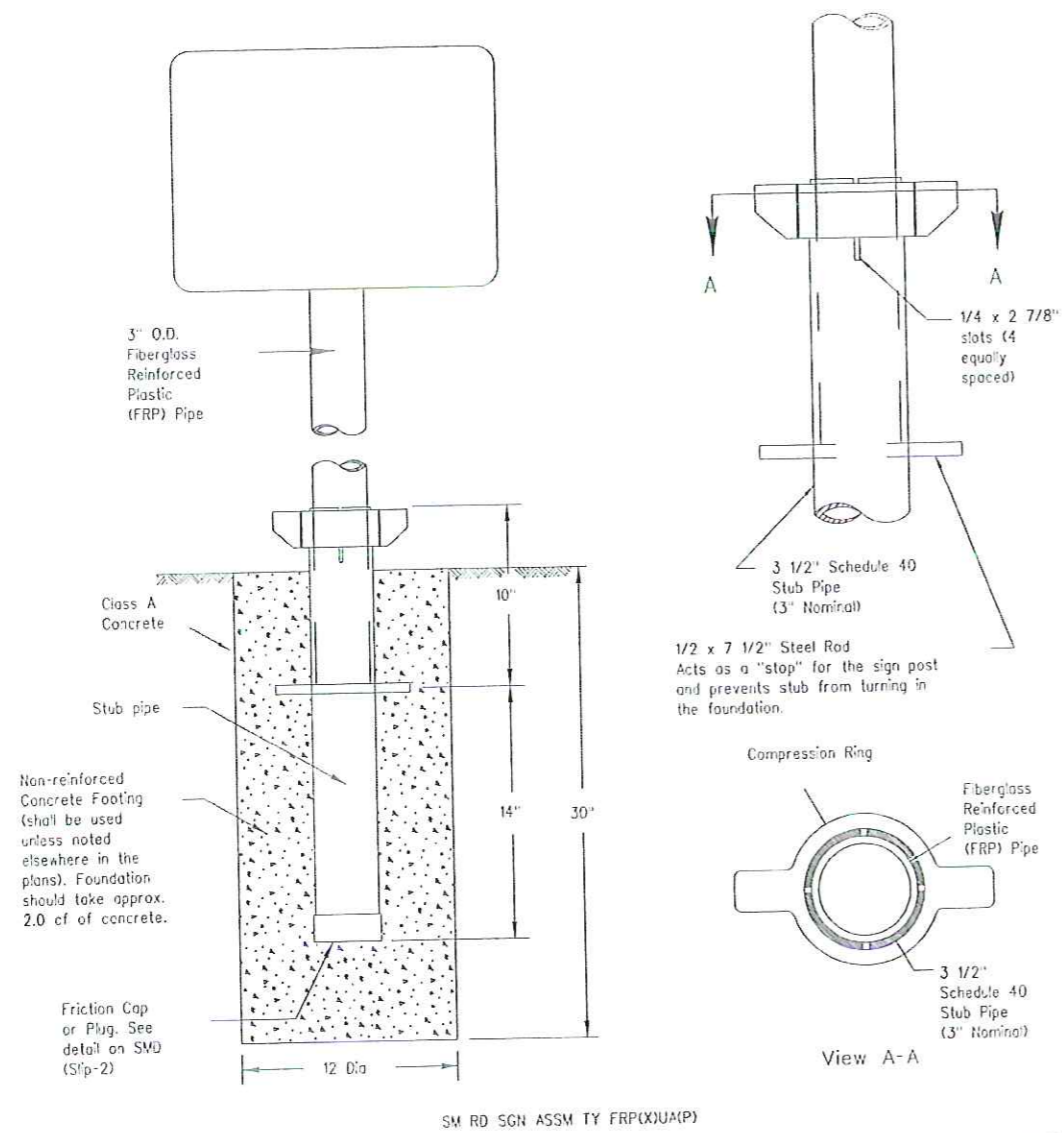
STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

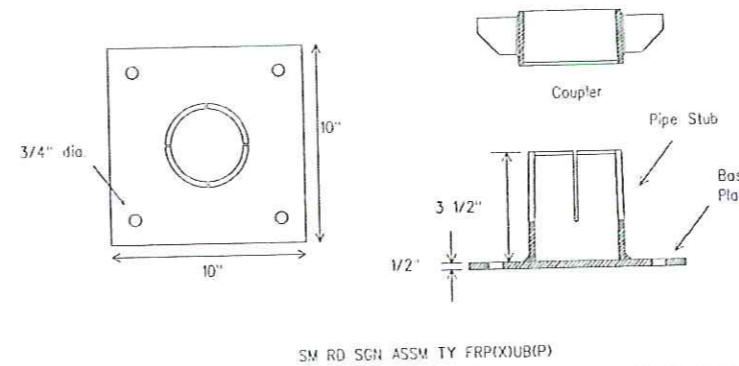
© TxDOT July 2002	PR - TxDOT	DR - TxDOT	CR - TxDOT	SR - TxDOT
REVISIONS	DATE	BY	REASON	FEDERAL AID PROJECT
9-08	6			CO3-11
COUNT	CON-REL	SECTION	JOB	DATE
PHARR	JC	1080	940	

Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type II epoxy per DMS-6100, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS



GENERAL NOTES:

- FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
- All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
- See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: <http://www.txdot.gov/publications/traffic.htm>

FRP POST REQUIREMENTS

- Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
- Thickness of FRP sign support is 0.125" ± 0.031", - 0.0".
- FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
Texas Department of Transportation
Traffic Operations Division
125 East 11th Street
Austin, Texas 78701-2483

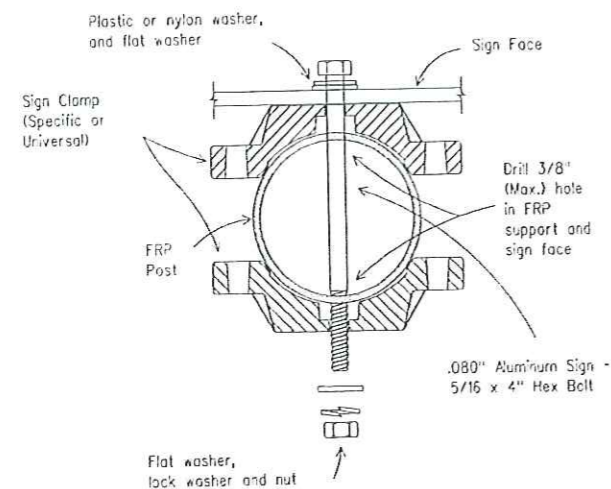
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

- 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.
- 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.
- Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
- Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
- Attach sign to FRP post.
- Insert sign post into base post. Lower until the post comes to rest on the steel rod.
- Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
- Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

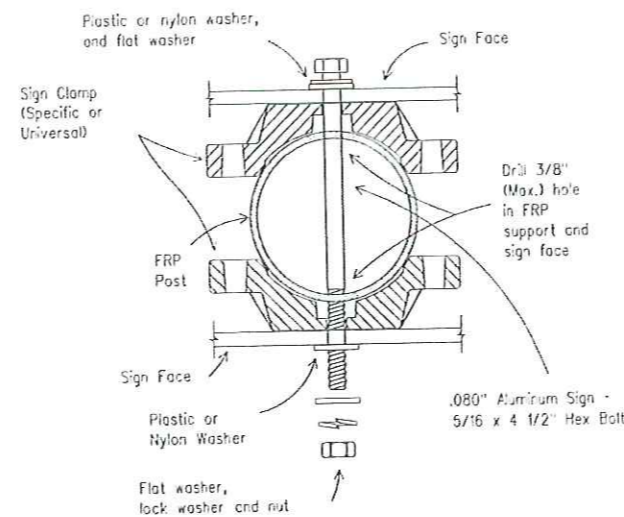
BOLT DOWN SIGN SUPPORT

- Position base plate with coupler on existing concrete.
- Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
- Attach sign to FRP post.
- Insert bottom of sign post into pipe stub.
- Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
- Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



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

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

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division
**SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST**

SMD(FRP)-08

© TxDOT July 2002	Revised	By	Checked	By	Project	Sheet
9-08	6					CO3-12
	COA	CON	SEC	APP		
	PHARR		3C	1080	940	

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

LEVELS DISPLAYED	ACC:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63	

Barricade and Construction (BC) Standard Sheets General Notes:

- The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
- The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
- Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets", the TxDOT "Roadway Design Manual" or engineering judgment.
- When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
- The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
- All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
- The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
- As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
- Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

Worker Safety Apparel Notes:

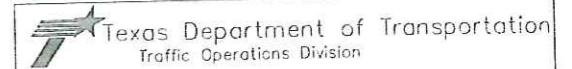
- Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure.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

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes prequalified products and their sources and may be found on-line at the web address given below or by contacting:

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

WEB ADDRESSES FOR REFERENCED DOCUMENTS

- Compliant Work Zone Traffic Control Devices List (CWZTCD)
<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>
- Traffic Engineering Standard Sheets
<http://www.txdot.gov/business/disclaim.htm>
- Material Producer List
<http://www.txdot.gov/business/producer+list.htm>
- Departmental Material Specifications (DMS)
<http://www.txdot.gov/services/construction/material+specifications/>
- Roadway Design Manual
<http://www.txdot.gov/services/general+services/manuafs.htm>



BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

1 of 12 BC(1)-07

©TxDOT 11-4-02		DN: TxDOT	CR: TxDOT	EN: TxDOT	CC: TxDOT
4-03	REVISIONS	CONT	SECT	JOB	HIGHWAY
9-07		3C	080	940	
		DIST	COUNTY	SHEET NO.	
		21	PHARR	CO3-13	

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Spacing "X"
CW20, CW21, CW22, CW23, CW25	48" x 48"	48" x 48"	30	120
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	75	900 ²

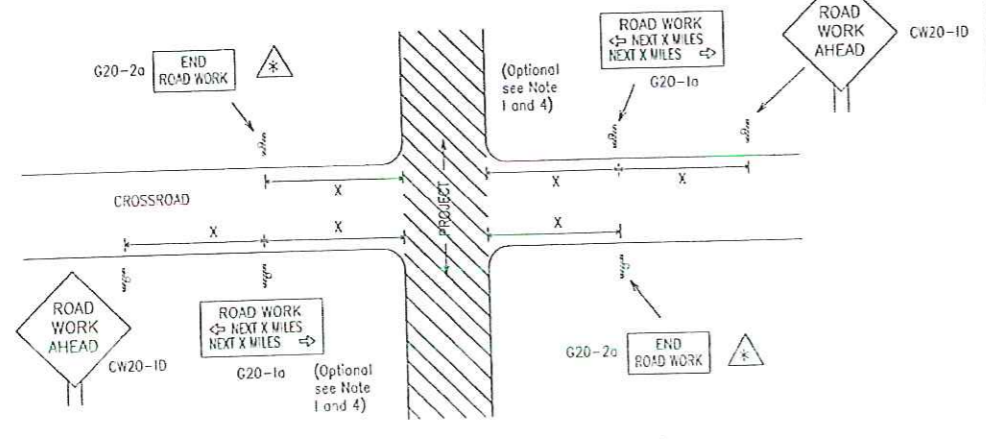
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

General Notes:

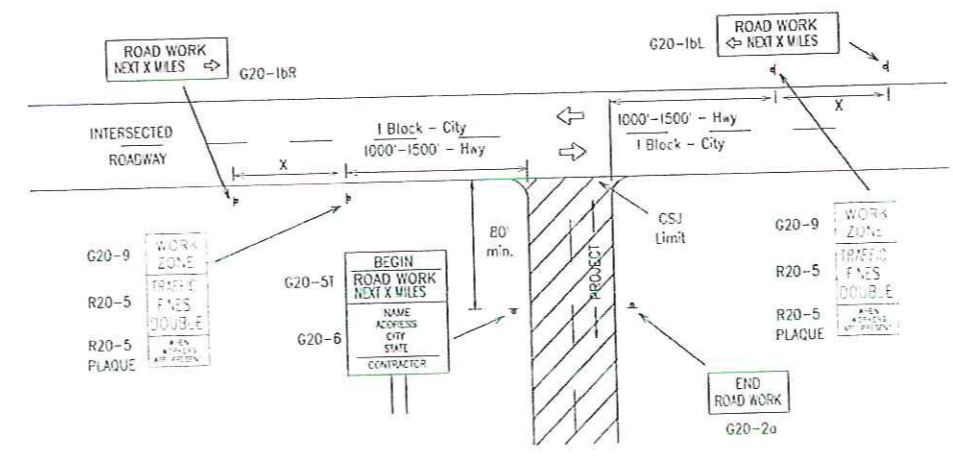
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 2 miles or more advance warning.
- 36" x 36" ROAD WORK AHEAD (CW20-ID) signs may be used 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.

TYPICAL LOCATION OF CROSSROAD SIGNS



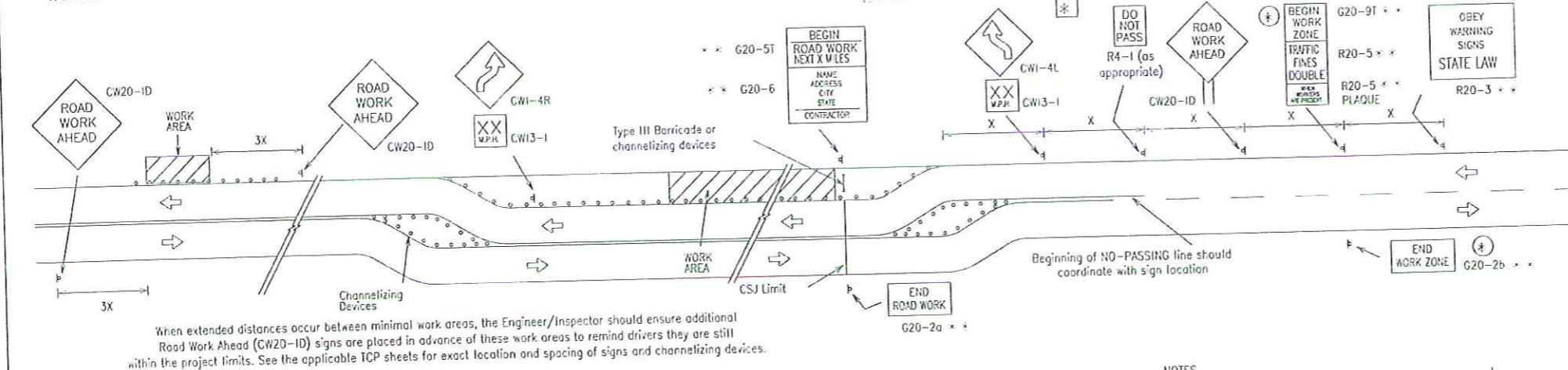
- △ May be mounted on back of CW20-ID sign with approval of engineer. (See note 2 below)
- The typical minimum signing on a crossroad approach should be a CW20-ID ROAD WORK AHEAD sign and a G20-2a END ROAD WORK sign, unless noted otherwise in plans.
 - The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-ID) 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



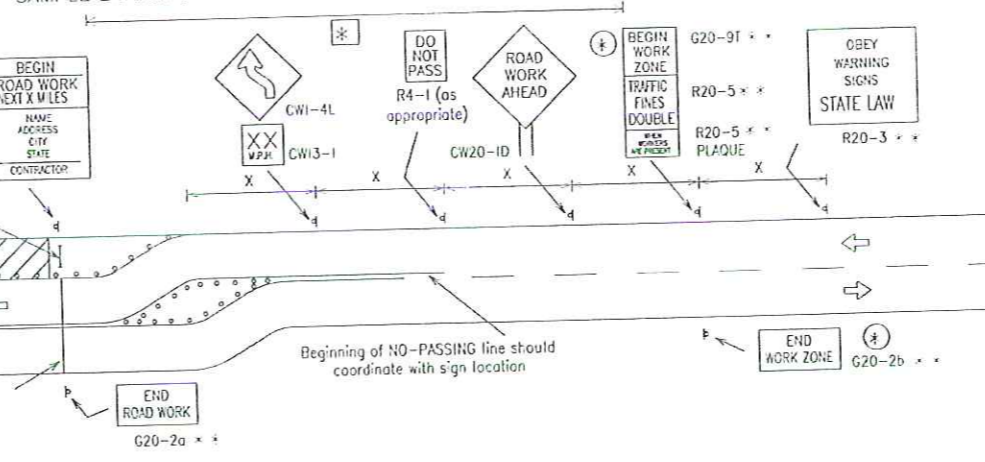
- CSJ LIMITS AT T-INTERSECTION
- The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
 - If construction closes the road at a T-intersection the Contractor shall place the G20-6 "Contractor Name" sign behind the Type III Barricades for the road closure (see BC(10) also). The G20-1a and G20-1b signs shall be replaced by the detour signing called for in the plans.

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-ID) 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 AT THE CSJ LIMITS



NOTES

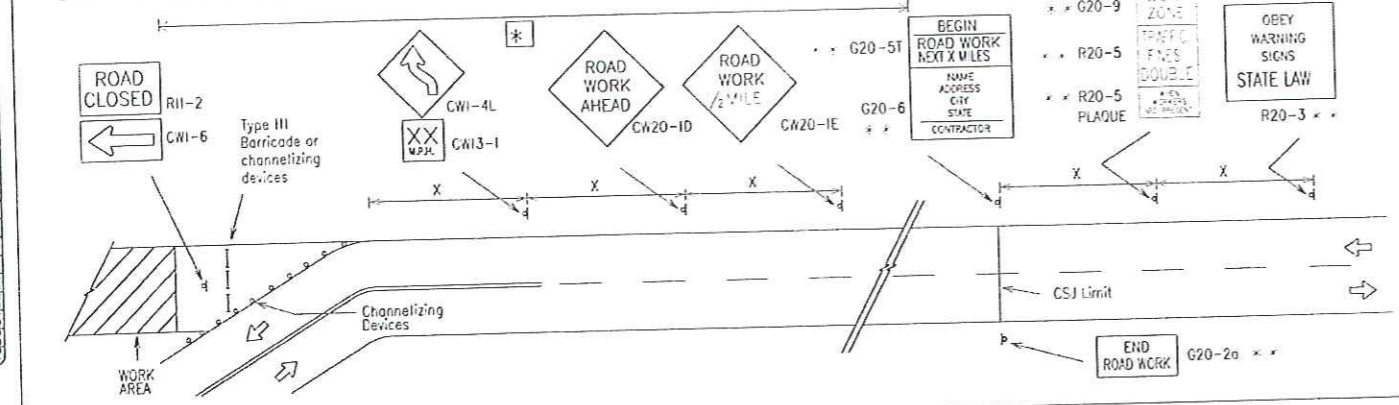
The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and G20-5T sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

⊙ 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.

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



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

2 of 12 BC(2)-07

©TxDOT 11-4-02	REV. TxDOT	REV. TxDOT	REV. TxDOT	REV. TxDOT
9-07	REV. TxDOT	REV. TxDOT	REV. TxDOT	REV. TxDOT
3C	080	940		
DIST	COUNTY			SHEET NO.
21	PHARR			CO3-14

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practices Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT disclaims any and all liability for damages resulting from its use.

LEVELS DISPLAYED

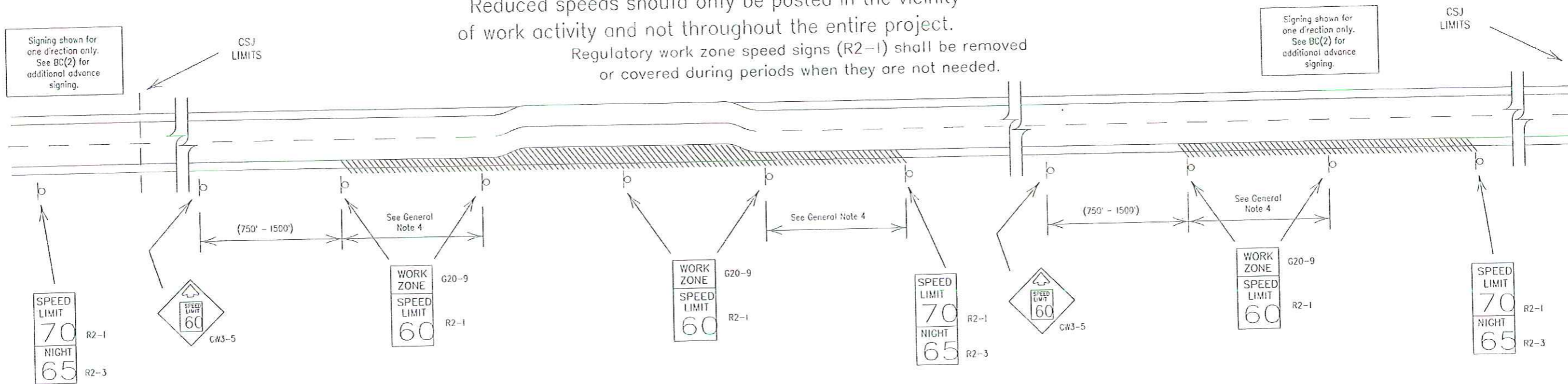
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----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

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:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - 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.

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

LEVELS DISPLAYED	ACC:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63	

Texas Department of Transportation
Traffic Operations Division

**BARRICADE AND CONSTRUCTION
WORK ZONE SPEED LIMIT
STANDARD**

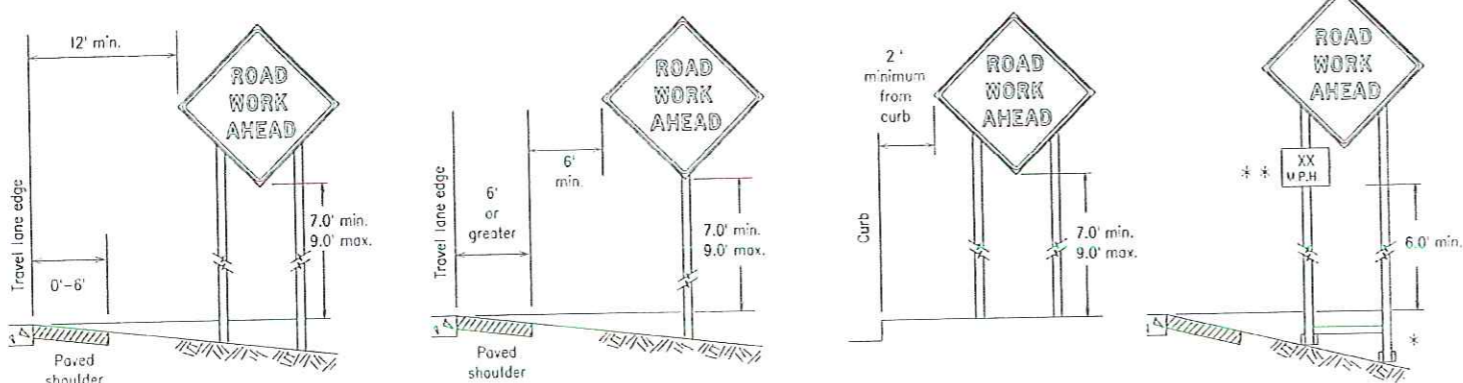
3 of 12 BC(3)-07

© TxDOT 11-4-02	DN: TxDOT	CC: TxDOT	EN: TxDOT	CC: TxDOT
9-07 REVISIONS	CONT	SECT	JOB	HIGHWAY
	3C	080	940	
	CIST	COUNTRY		SHEET NO.
	21	PHARR		CO3-15

103

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

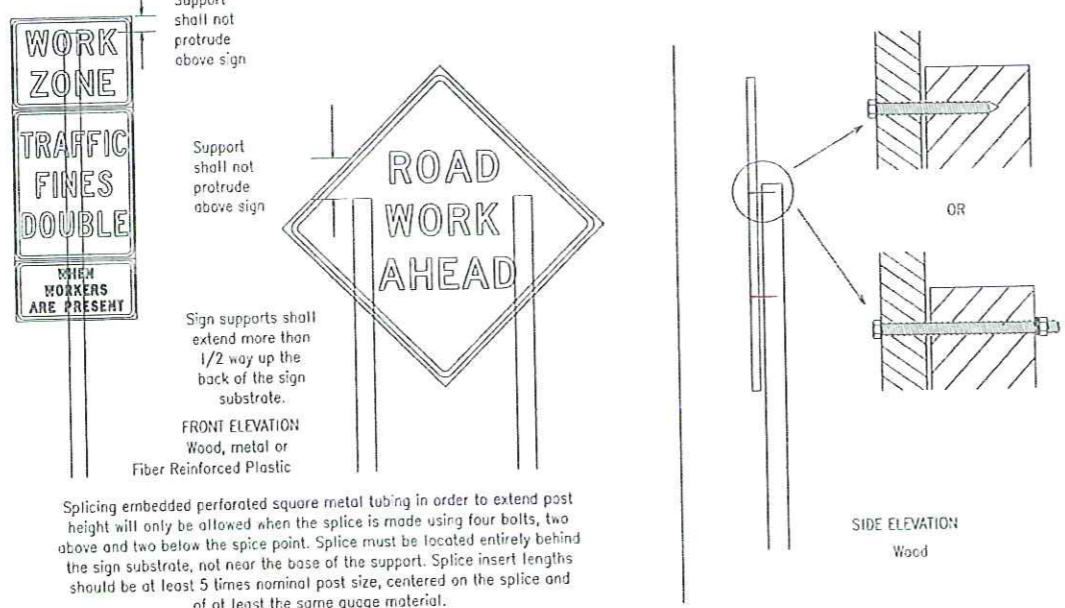
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

** 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



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.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
 - Wooden sign posts shall be painted white.
 - Barricades shall NOT be used as sign supports.
 - Nails shall NOT be used to attach signs to any support.
 - All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
 - The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
 - The 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.
 - 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.
 - 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.
 - The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.
- DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)
- 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.
 - Long-term stationary - work that occupies a location more than 3 days.
 - 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.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
- The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday, or raised to appropriate Long-term/Intermediate sign height.
- 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

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

SIGN SUBSTRATES

- The Contractor shall ensure 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.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- 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

- 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(1).
- White sheeting, meeting the requirements of DMS-8300 Type C (High Specific Intensity), shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type E (Fluorescent Prismatic), shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

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

REMOVING OR COVERING

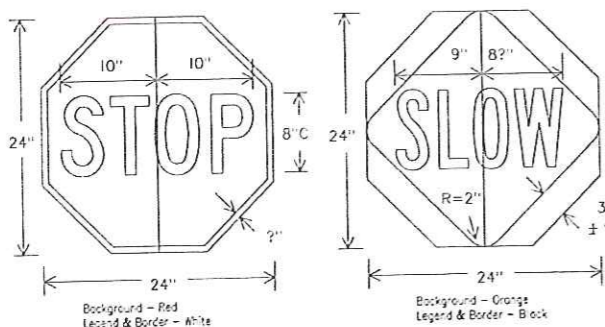
- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This type of sign support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

SIGN SUPPORT WEIGHTS

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

STOP/SLOW PADDLES

- 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.
- When used at night, the STOP/SLOW paddle shall be retroreflective.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- 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

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

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	53	54	55	56	57	58	59	60	61	62	63	64

ACC:

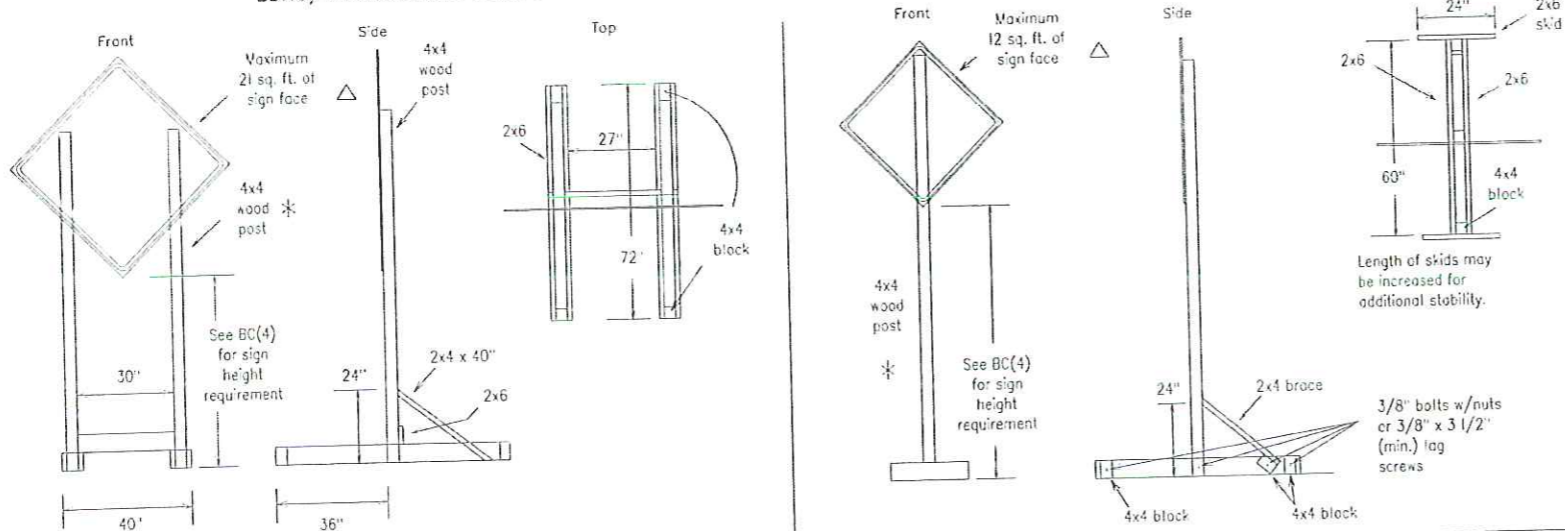
BARRICADE AND CONSTRUCTION
TEMPORARY SIGN NOTES
STANDARD

©TxDOT 11-4-02	CON. TxDOT	CON. TxDOT	CON. TxDOT	CON. TxDOT
9-07 REVISIONS	CONT SECT	JOB	HIGHWAY	
	3C	080	940	
	DIST	COUNTY	SHEET NO.	
	21	PHARR	CO 3-16	

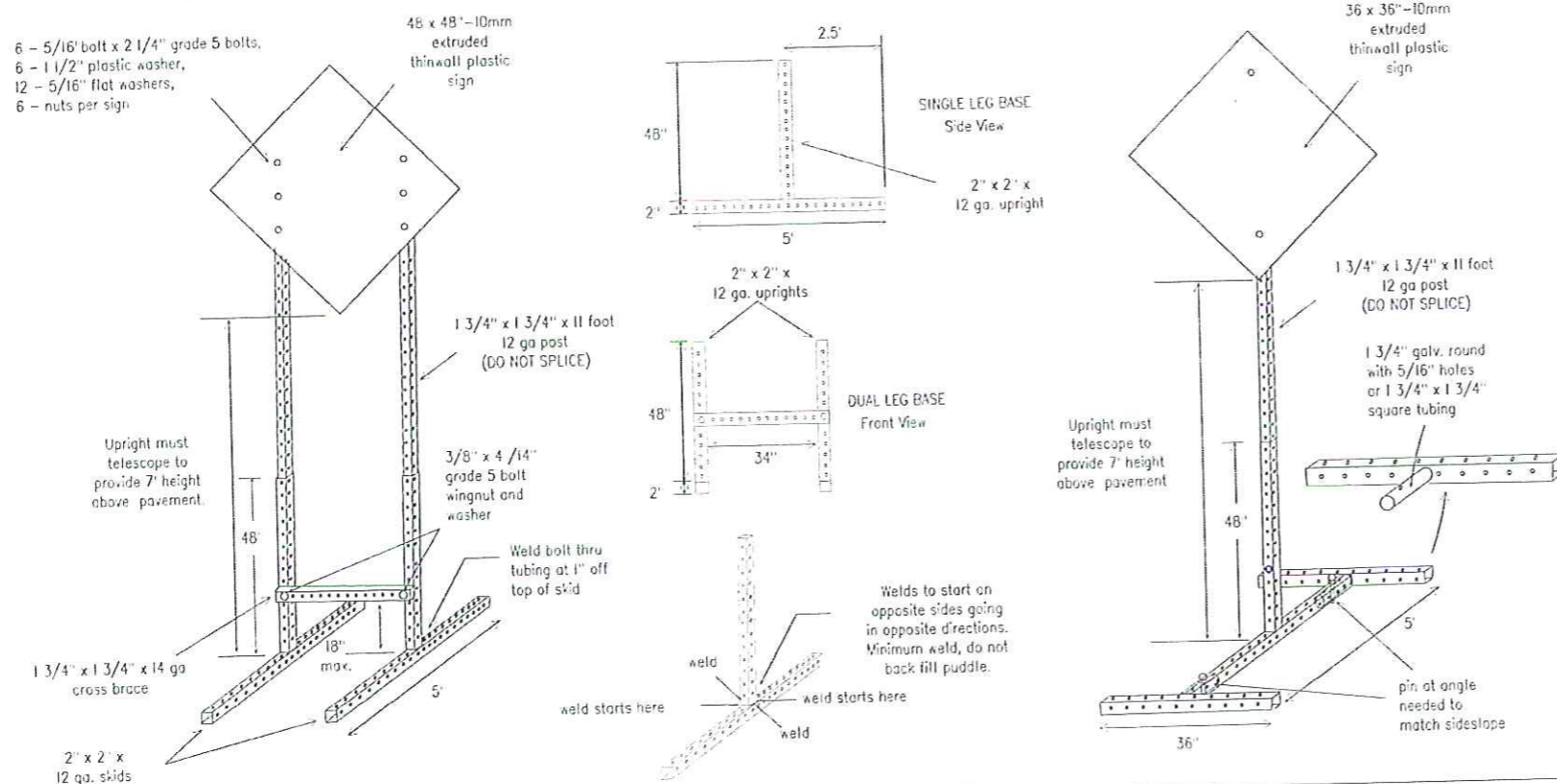
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

SKID MOUNTED WOOD SIGN SUPPORTS

LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

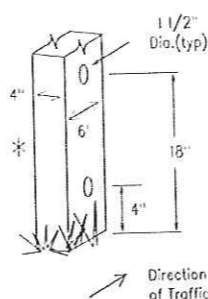


SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



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)).



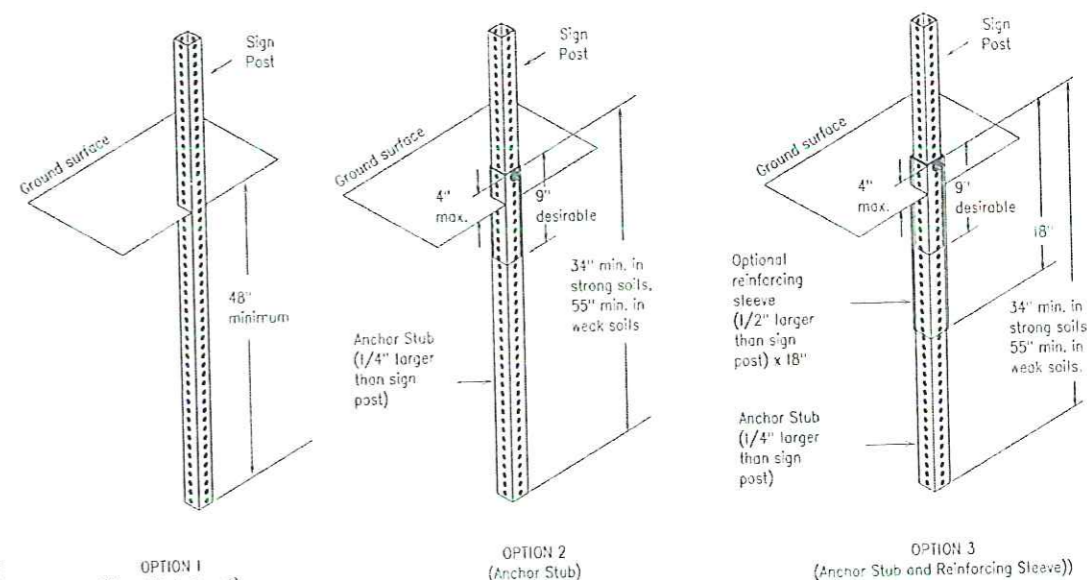
WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

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

GROUND MOUNTED SIGN SUPPORTS

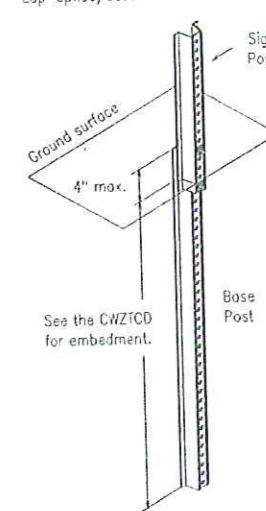
Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.

PERFORATED SQUARE METAL TUBING



WING CHANNEL

Lap-splice/base bolted anchor



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 CWZTCD 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 CWZTCD 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 pointed white.

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

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD

5 of 12

BC(5)-07

REV	DATE	BY	CHKD	DESCRIPTION
9-07	11-4-02			REVISIONS
CCNT	SECT	JOB	HIGHWAY	
3C	1080	940		
DIST	COUNTY		SHEET NO.	
21	PHARR		C03-17	

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 720 feet. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

Word or Phrase	Abb.	Word or Phrase	Abb.
Access Road	ACCS RD	Major	MAJ
Air Quality	AIR QLT	Miles	MI
Alternate	ALT	Miles Per Hour	MPH
Avenue	AVE	Minor	MNR
Best Route	BEST RTE	Monday	MON
Boulevard	BLVD	Normal	NORM
Bridge	BRDG	North	N
Cannot	CANT	Northbound (route) N	
Center	CNTR	Parking	PKING
Construction Ahead	CONST AHEAD	Parking Lot	PRK LOT
Detour Route	DETOUR RTE	Road	RD
Do Not	DONT	Right Lane	RGT LN
East	E	Saturday	SAT
Eastbound	(route) E	Service Road	SERV RD
Emergency	EMER	Shoulder	SHLDR
Emergency Vehicle	EMER VEH	Slippery	SLIP
Entrance, Enter	ENT	South	S
Express Lanes	EXP LANE	Southbound (route) S	
Expressway	EKPWY	Speed	SPD
XXXX Feet	XXXX FT	Street	ST
Fog Ahead	FOG AHD	Sunday	SUN
Freeway	FRWY, FWY	Telephone	PHONE
Freeway Blocked	FWY BLKD	Temporary	TEMP
Friday	FRI	Thursday	THURS
Hazardous Driving	HAZ DRIVING	To Downtown	TO DWTN
Hazardous Material	HAZMAT	Traffic	TRAF
High-Occupancy Vehicle	HOV	Travelers	TRVLR
Highway	HWY	Tuesday	TUES
Hours	HR	Time Minutes	TIME MIN
Information	INFO	Upper Level	UPPR LVL
It Is	ITS	Vehicle	VEH
Junction	JCT	Warning	WARN
Left	LFT	Wednesday	WED
Left Lane	LFT LN	Weight Limit	WT LIMIT
Lane Closed	LN CLSD	West	W
Lower Level	LQWR LVL	Westbound (route) W	
Maintenance	MAINT	Wet Pavement	WET PVMT
		Will Not	WONT

Roadway designation # IH-number, US-number, SH-number, FM-number
 WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

Phase I: Condition Lists

Road/Lane/Ramp Closure List

FREeway CLOSED X MILE	FRONTAGE ROAD CLOSED
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	1-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE
EXIT CLOSED	RIGHT LN TO BE CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXXXX BLVD CLOSED	

Other Condition List

ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	LANES SHIFT *

* LANES SHIFT in Phase I must be used with STAY IN LANE in Phase 2

Application Guidelines

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
- For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXX RD EXIT
USE EXIT XXX	USE EXIT 1-XX NORTH
STAY ON US XXX SOUTH	USE 1-XX E TO 1-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE *	

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXXXX TO XXXXXXX
US XXX TO FM XXXX

Warning List

SPEED LIMIT XX MPH
MAXIMUM SPEED XX MPH
MINIMUM SPEED XX MPH
ADVISORY SPEED XX MPH
RIGHT LANE EXIT
USE CAUTION
DRIVE SAFELY
DRIVE WITH CARE

** Advance Notice List

TUE-FRI XX AM-X PM
APR XX-XX X PM-X AM
BEGINS MONDAY
BEGINS MAY XX
MAY X-X XX PM-XX AM
NEXT FRI-SUN
XX AM TO XX PM
NEXT TUE AUG XX
TONIGHT XX PM-XX AM

* See Application Guidelines Note 6.

Wordings Alternatives

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS.

FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the CA20-7a Flagger Symbol, are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- A full matrix PCMS may be used to simulate a flashing arrow panel provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION
PORTABLE CHANGEABLE
MESSAGE SIGN (PCMS)
STANDARD

6 of 12

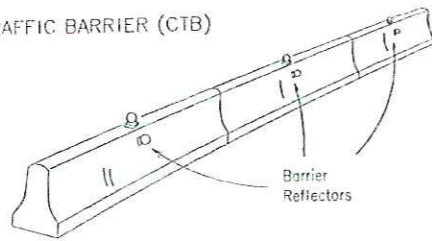
BC(6)-07

REV	DATE	BY	CHK	APP
9-07	11-4-02	REVISED		
		3C	080	940
		DIST		COUNTY
		21		PHARR
				SHEET NO. C03-18

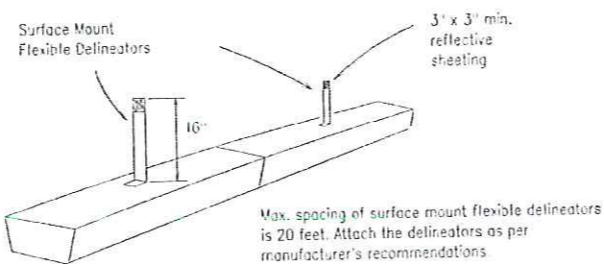
BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

- Barrier Reflectors shall be prequalified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors (Type C Delineators) can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 502.

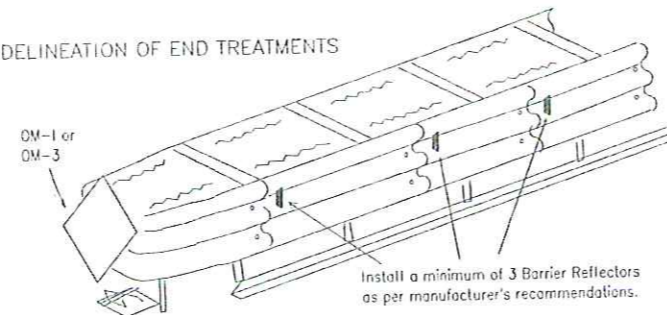
CONCRETE TRAFFIC BARRIER (CTB)



LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS



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

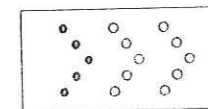
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

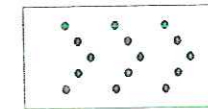
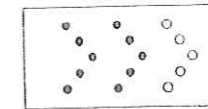
- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
- Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional) while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented. Yellow Barrier Reflectors shall be made with Type E Fluorescent Prismatic Yellow Retroreflective Sheeting. White reflectors shall be made with Type D White Prismatic Sheeting.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.

TYPICAL FLASHING ARROW PANEL

Arrow Panels may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

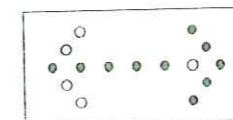


Sequential Chevron

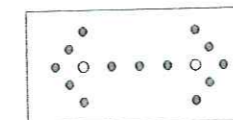


- The Flashing Arrow Panel should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
- Flashing Arrow Panels should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display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

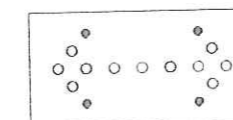
Flashing RIGHT (LEFT) ARROW



Flashing DOUBLE ARROW



Flashing CAUTION



TYPE	MINIMUM SIZE	REQUIREMENTS MINIMUM	
		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.

- The "CAUTION" display consists of four corner lamps flashing simultaneously.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
- The Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Panel SHALL NOT BE USED to laterally shift traffic.
- A full matrix 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.
- Minimum mounting height of trailer mounted arrow panels should be 7 feet from roadway to bottom of panel.

WARNING LIGHTS

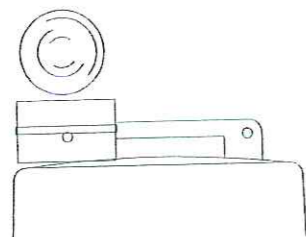
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
- 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

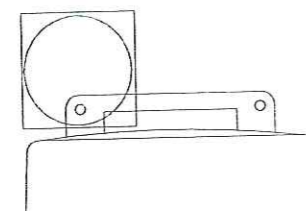
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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.
- Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lanes on detours, on lane changes, on lane closures, and on other similar conditions.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- 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

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



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



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

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation
Traffic Operations Division

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

7 of 12

BC(7)-07

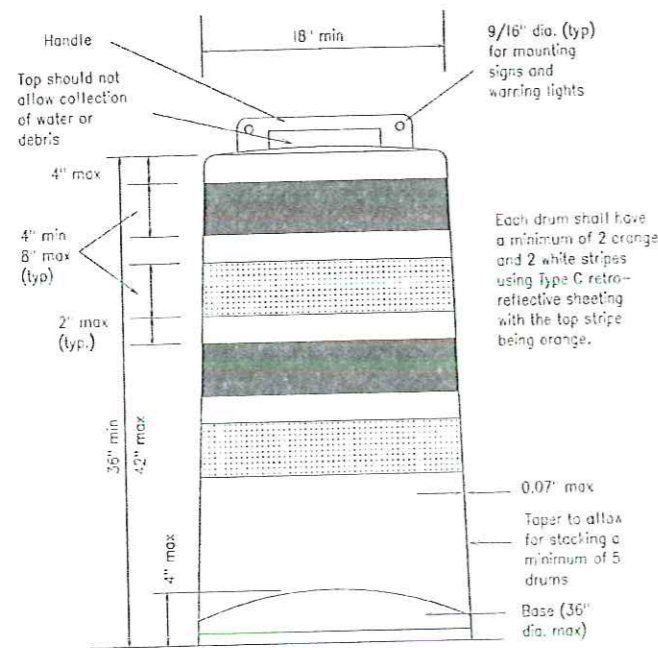
TxDOT 11-4-02		DN TxDOT	CK TxDOT	EW TxDOT	CK TxDOT
CONT	SECT	JOB	JOB	HIGHWAY	
9-07	REVISONS	3C	1080	940	
	DIST	COUNTY		SHEET NO.	
	21	PHARR		CO 3-19	

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

LEVEL DISPLAYED	ACC:
1	16
2	15
3	14
4	13
5	12
6	11
7	10
8	9
9	8
10	7
11	6
12	5
13	4
14	3
15	2
16	1

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT does not accept responsibility for the consequences of any use of this standard or for incorrect results or damages resulting from its use.

LEVELS DISPLAYED	ACC:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	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
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	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



GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- The 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:

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

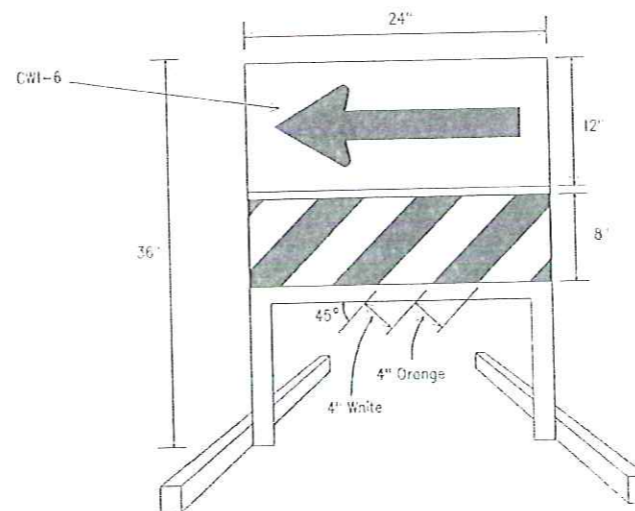
- Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.
- Drum and base shall be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

RETROREFLECTIVE SHEETING

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

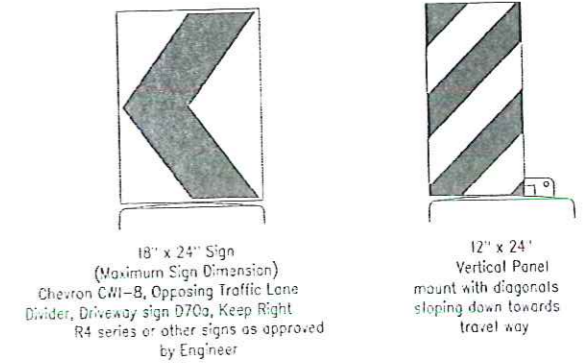
BALLAST

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



DIRECTION INDICATOR BARRICADE

- The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
- If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
- The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CWI-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.
- Double arrows on the Direction Indicator Barricade will not be allowed.
- Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.



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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

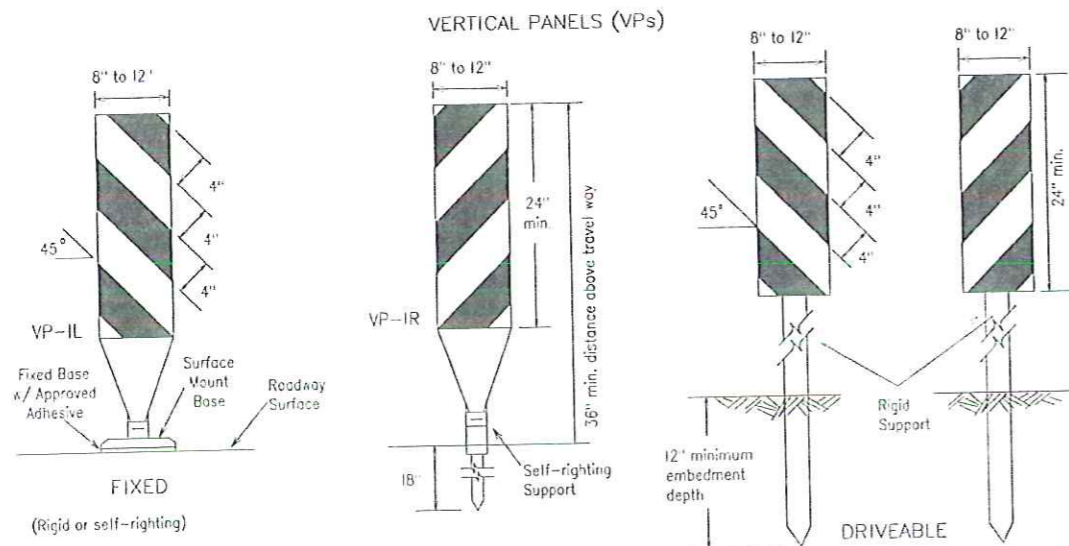
8 of 12

BC(8)-07

©TxDOT 11-4-02	EN: TxDOT	CC: TxDOT	EW: TxDOT	CM: TxDOT
4-03 REVISIONS	CONT	SECT	JOB	HIGHWAY
9-07	3C	080	940	
	DIST	COUNTY		SHEET NO.
	21	PHARR		C03-20

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

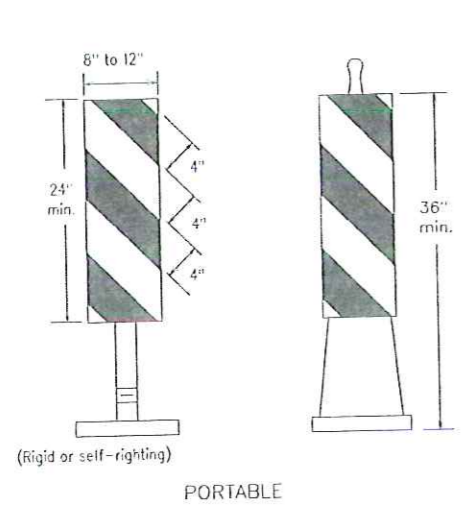
CHANNELIZING DEVICES



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 non-reflective legend. Sheeting for the chevron shall be retroreflective Type E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-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.

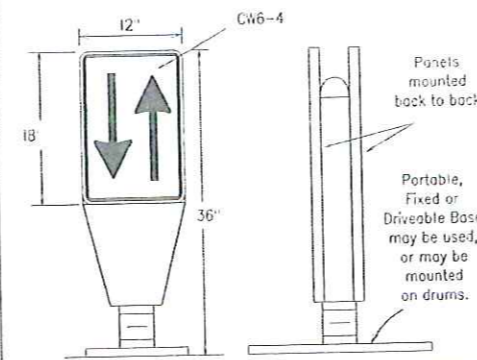
GENERAL NOTES:

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, non-reflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
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 (VPs) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VPs 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 VPs for drop-offs.
3. VPs 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. VPs 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 VPs 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 panel is greater than 36 inches, a panel stripe of 6 inches shall be used.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

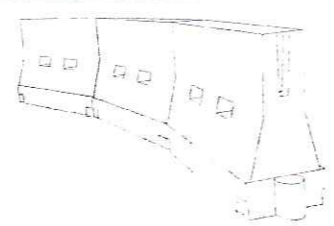


1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLDs are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base 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 OTLDs 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			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		500'	550'	600'	50'	100'-125'
55	L=WS	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'	

** 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

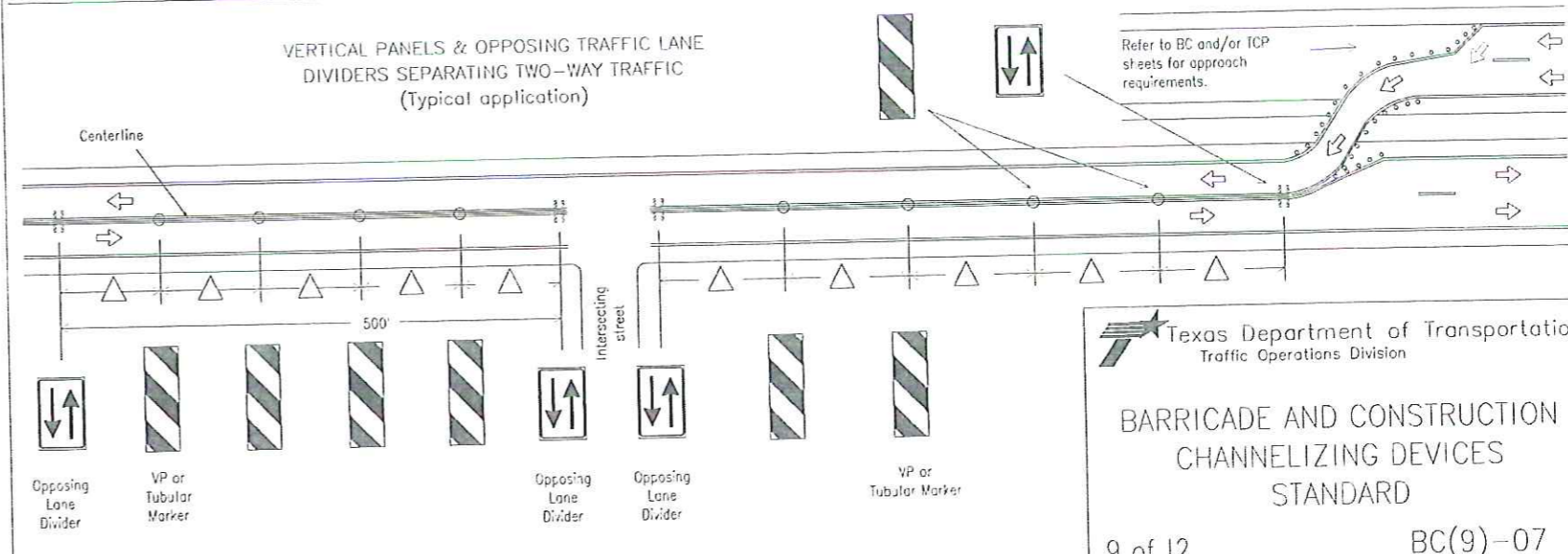
1. Longitudinal channelizing devices are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. Longitudinal channelizing devices may be used instead of a line of 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 VPs or tubular markers shall not exceed 100 feet. On roadways with speeds less than 45 MPH, spacing between the tubular markers or VPs 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 VPs. 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

9 of 12	BC(9)-07
9-07	REVISIONS
CONTRACT NO.	3C 1080
SECT.	940
JOB	21
COUNTY	PHARR
SHEET NO.	CO3-21

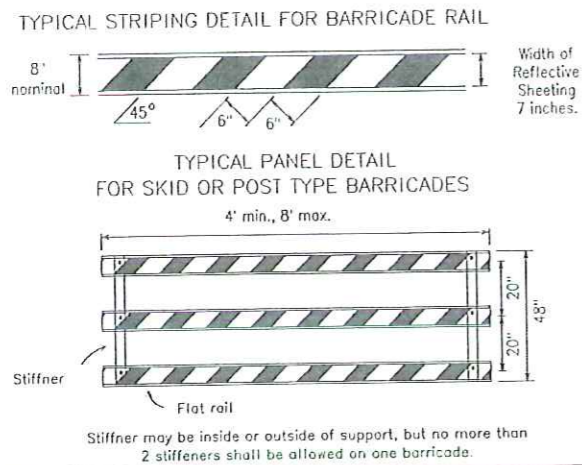
LEVELS DISPLAYED
1 19 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for any consequences resulting from its use.

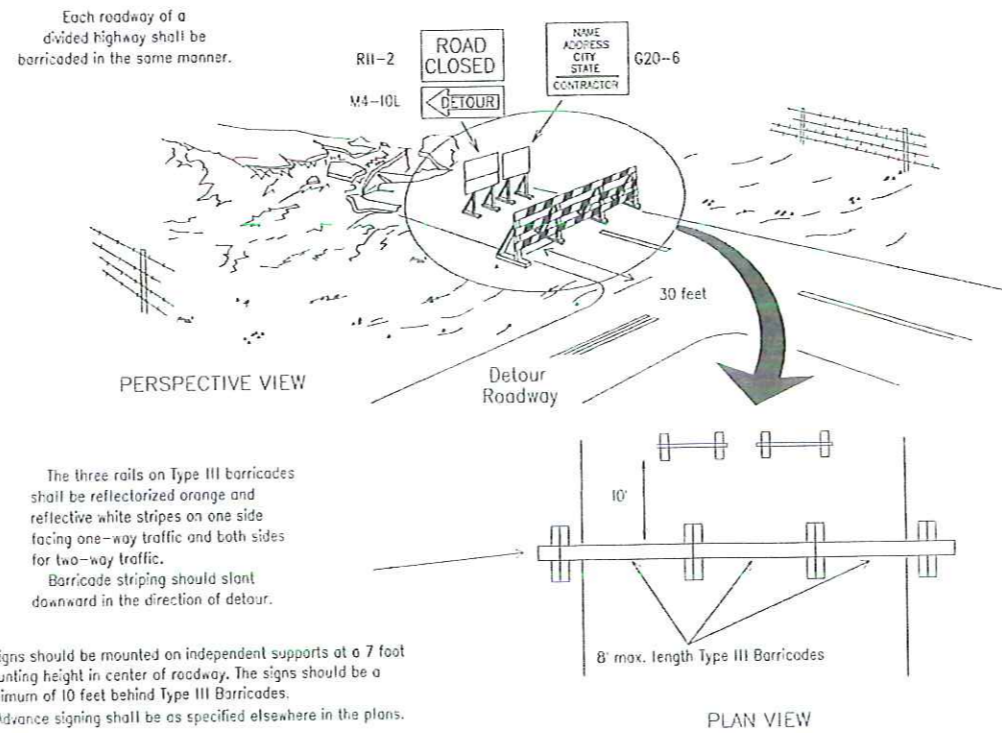
TYPE III BARRICADES

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.

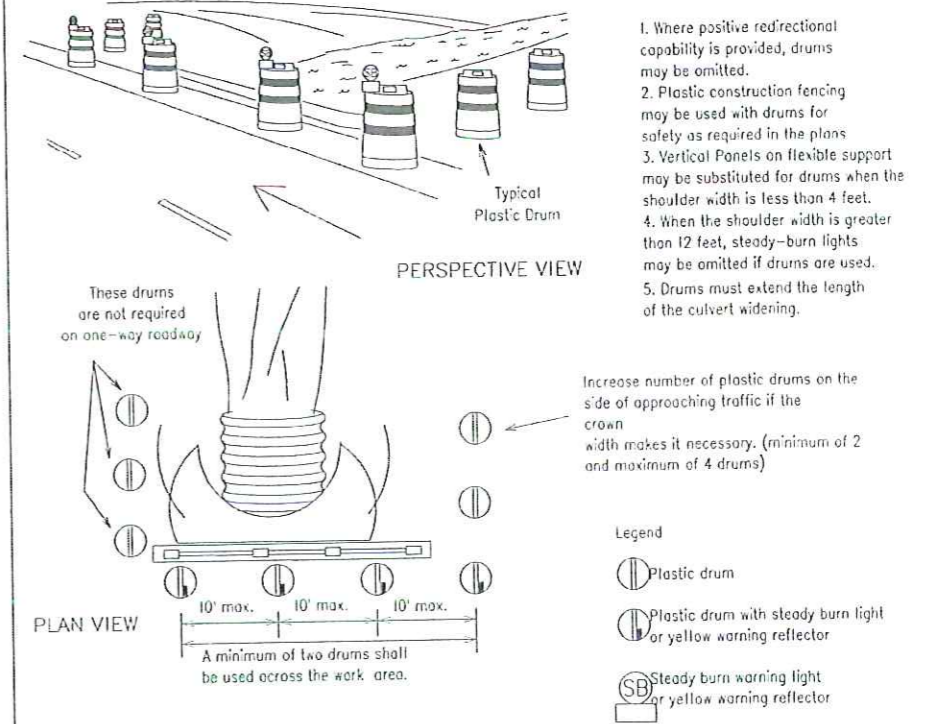


TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION



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

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

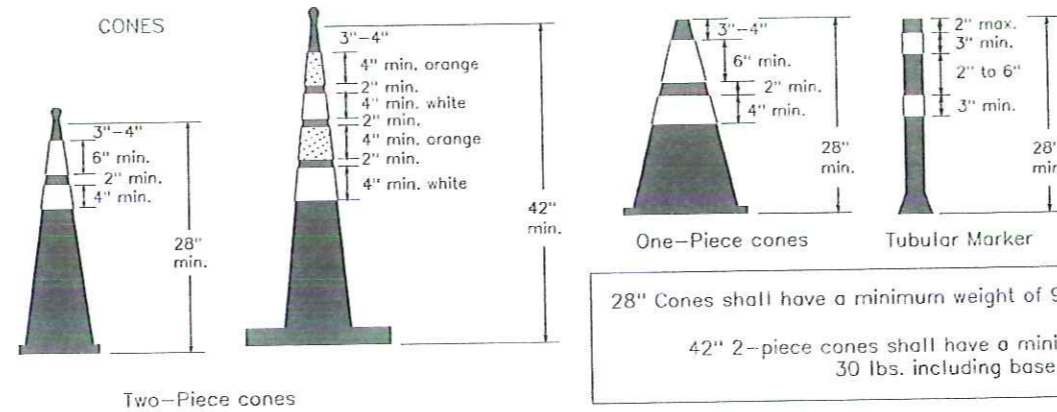


1. Where positive redirection capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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

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

- Legend
- Plastic drum
 - Plastic drum with steady burn light or yellow warning reflector
 - (SB) Steady burn warning light or yellow warning reflector

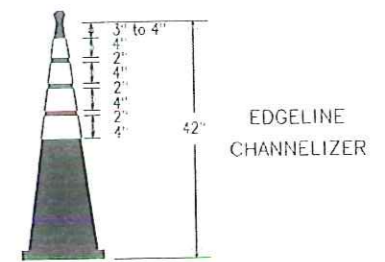
CONES



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

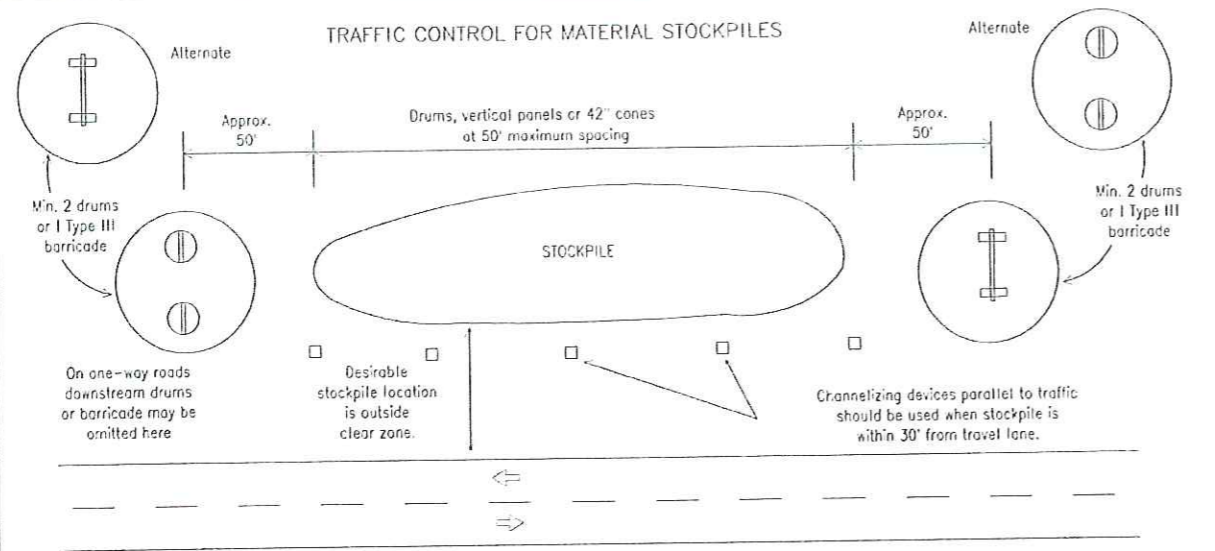
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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. 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.



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



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

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

10 of 12 BC(10)-07

©TxDOT 11-4-02	EN: TxDOT	CS: TxDOT	EW: TxDOT	CP: TxDOT
9-07	CONT	SECT	JOB	H-DRYAK
	3C	080	940	
	DIST	COUNTY	SHEET NO.	
	21	PHARR	C03-22	

109A

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. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUDC).

2. Additional supplemental pavement marking details may be found in the plans or specifications.

3. Pavement markings shall be installed in accordance with the TMUDC and as shown on the plans.

4. When short term markings are required on the plans, short term markings shall conform with the TMUDC, the plans and details as shown on the Standard Plan Sheet WZ(STPM).

5. 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 of the beginning of sections where passing is permitted.

6. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

7. 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.

8. Raised pavement markers are to be placed according to the patterns on BC(12).

9. 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.

10. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8241.

11. Removable prefabricated pavement markings shall meet the requirements of DMS-8240.

12. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.

13. 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.

14. 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.

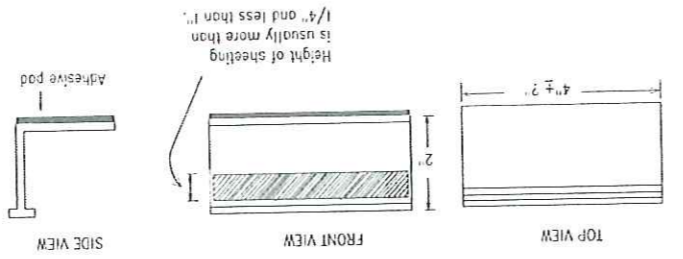
15. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

WORK ZONE PAVEMENT MARKINGS

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-pointing 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. Block-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 TABS TO THE PAVEMENT SURFACE

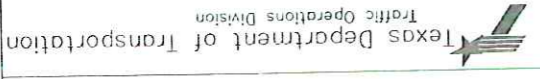
1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
3. 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.
4. 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.
5. Small design variances may be noted between tab manufacturers. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat 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.
4. 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

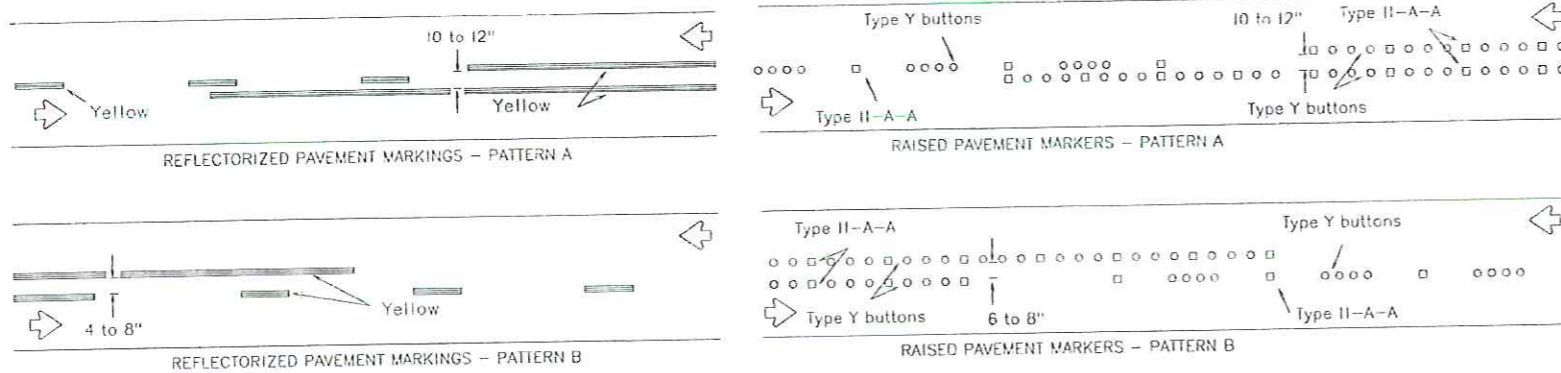
11 of 12 BC(11)-07

REV. NO.		DATE	DESCRIPTION
21	PHARR	9-07	
20		11-02	
19		1-02	
18		1-02	
17		1-02	
16		1-02	
15		1-02	
14		1-02	
13		1-02	
12		1-02	
11		1-02	
10		1-02	
9		1-02	
8		1-02	
7		1-02	
6		1-02	
5		1-02	
4		1-02	
3		1-02	
2		1-02	
1		1-02	

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

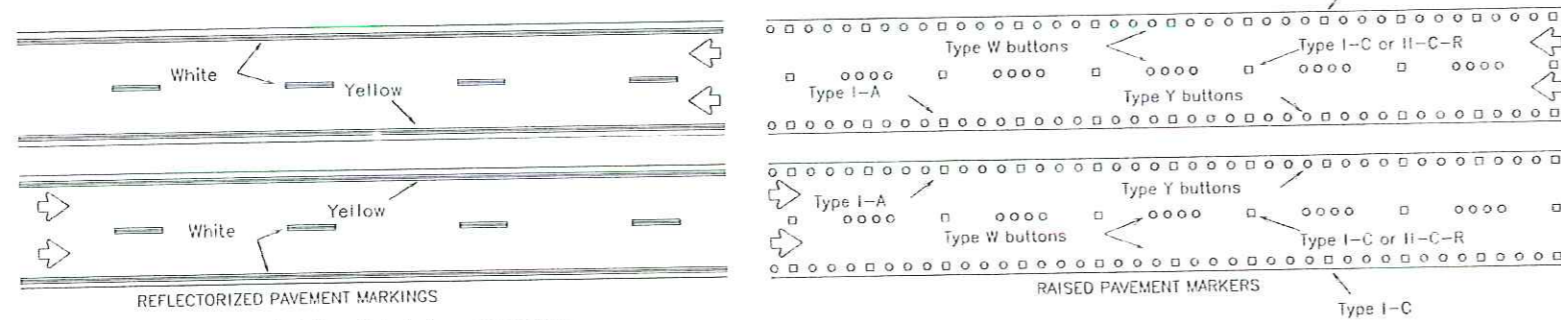
PAVEMENT MARKING PATTERNS

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



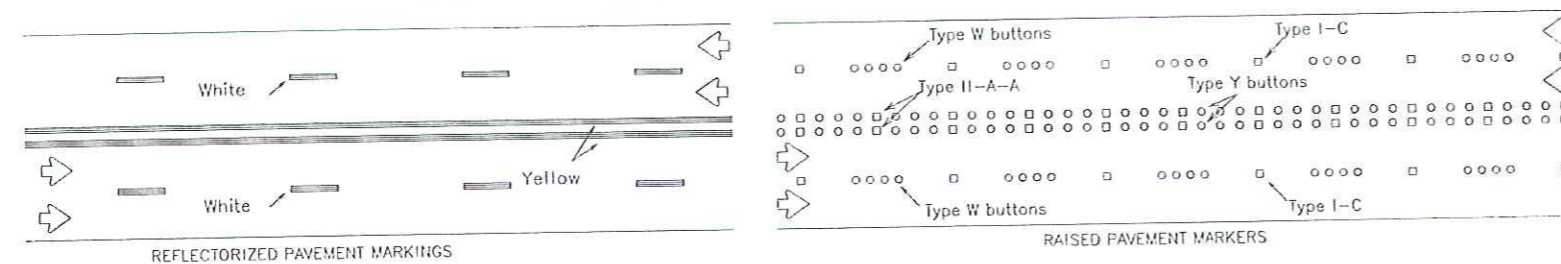
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



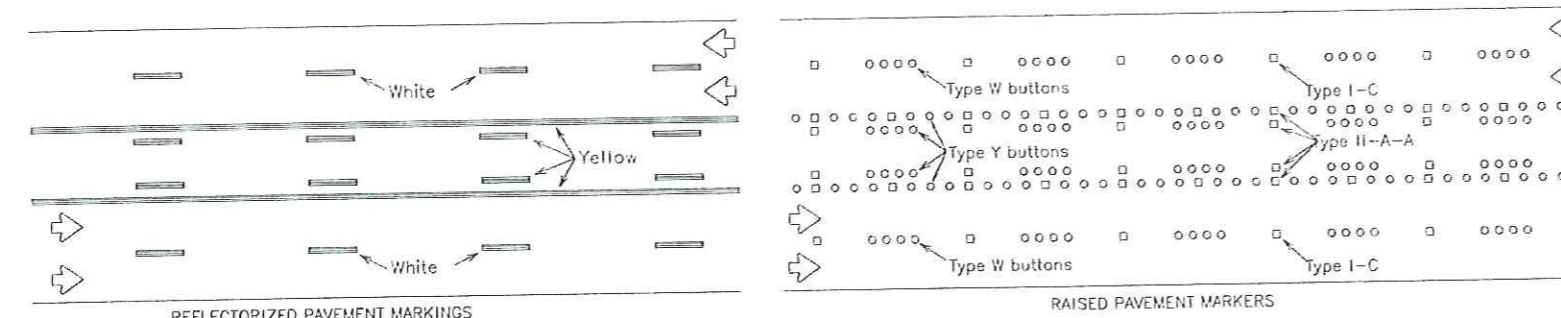
Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



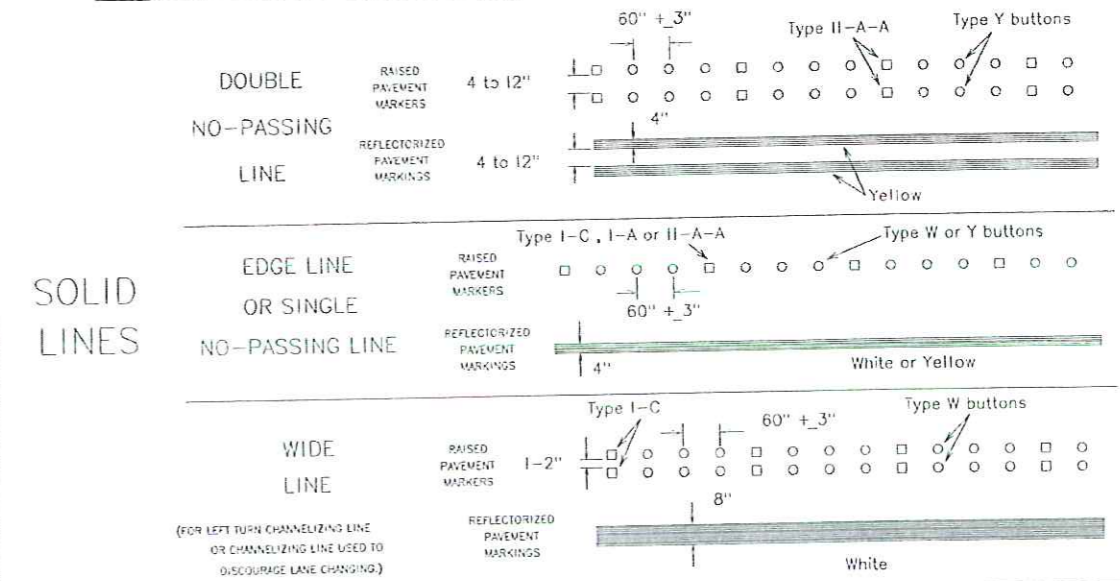
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE



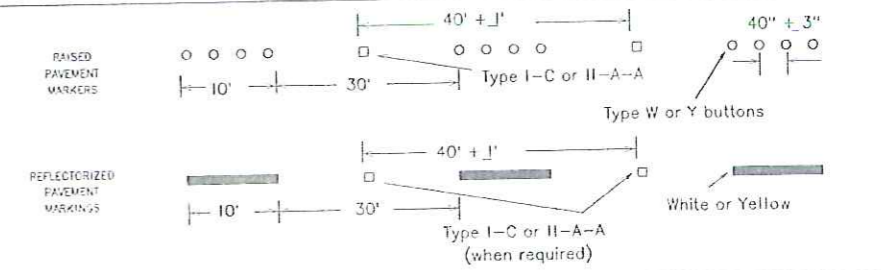
Prefabricated markings may be substituted for reflectorized pavement markings.

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



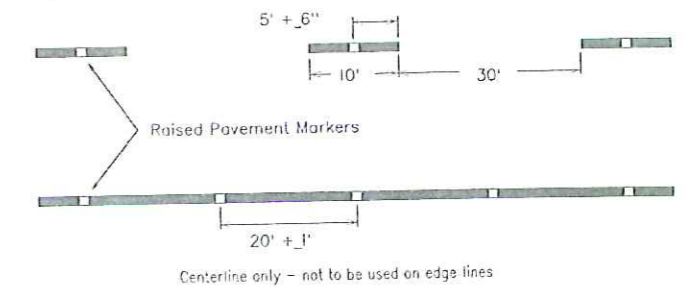
BROKEN LINE

(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."

ACC:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS STANDARD

12 of 12

BC(12)-07

© TxDOT February 1998	CM: TxDOT	CS: TxDOT	EN: TxDOT	CC: TxDOT
1-97	2-98	11-02	9-07	
REVISIONS		CONT	SECT	JOB
		3C	080	940
		DIST	COUNTY	SHEET NO.
		21	PHARR	CO3-24

109C

SITE DESCRIPTION

PROJECT LIMITS: Rankin Subdivision located at the intersection of State Highway 107 and Holmes Road

PROJECT SITE MAPS:
 *Project Location Map: Title Sheet (G01-01)
 *Drainage Patterns: Drainage Area Maps (C02-02)
 *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Typ Sects (G01-04)
 *Major Controls and Locations of Stabilization Practices: SW3P Site Map Sheets (C03-25)
 *Project Specific Locations: To be specified by Project Field Office and located in the Project SW3P File

PROJECT DESCRIPTION: Construction of local streets consisting of: Grading, Structures, Treated Flexible Base and Asphaltic Concrete Pavement, Conc. Curb & Gutter, and Storm Sewer.

MAJOR SOIL DISTURBING ACTIVITIES:
Preparing the Right Of Way, Excavation & Embankment for Roadway, Curb & Gutter, Grading, Erosion & Sediment Control, Utility and Utility Adjustment.

TOTAL PROJECT AREA: 3.08 Acres

TOTAL AREA TO BE DISTURBED: 3.08 Acres

WEIGHTED RUNOFF COEFFICIENT: 0.35

EXISTING CONDITION OF SOIL & VEGETATIVE
Level to slightly concave, moderately well drained calcareous soil.

NAME OF RECEIVING WATERS: Storm Sewer Drains into Hidalgo County Drainage District # 1 Ditches. Ultimately all Runoff into the Laguna Madre.

ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORICAL PROPERTY: A. No Endangered Species, Designated Critical Habitat or Historical Property has been found on this project site.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- | | |
|--|---|
| <input type="checkbox"/> TEMPORARY SEEDING | <input checked="" type="checkbox"/> P PRESERVATION OF NATURAL RESOURCES |
| <input type="checkbox"/> MULCHING (Hay or Straw) | <input type="checkbox"/> FLEXIBLE CHANNEL LINER |
| <input type="checkbox"/> BUFFER ZONES | <input type="checkbox"/> RIGID CHANNEL LINER |
| <input type="checkbox"/> PLANTING | <input type="checkbox"/> SOIL RETENTION BLANKET |
| <input type="checkbox"/> SEEDING | <input type="checkbox"/> COMPOST MANUFACTURED COMPOST |
| <input type="checkbox"/> SODDING | <input type="checkbox"/> OTHER: (Specify Practice) |

STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- | |
|--|
| <input checked="" type="checkbox"/> T SILT FENCES |
| <input type="checkbox"/> HAY BALES |
| <input type="checkbox"/> ROCK FILTER DAMS |
| <input type="checkbox"/> DIVERSION, INTERCEPTOR, OR PERIMETER DIKES |
| <input type="checkbox"/> DIVERSION, INTERCEPTOR, OR PERIMETER SWALES |
| <input type="checkbox"/> DIVERSION DIKE AND SWALE COMBINATIONS |
| <input type="checkbox"/> PIPE SLOPE DRAINS |
| <input type="checkbox"/> PAVED FLUMES |
| <input type="checkbox"/> ROCK BEDDING AT CONSTRUCTION EXIT |
| <input type="checkbox"/> TIMBER MATTING AT CONSTRUCTION EXIT |
| <input type="checkbox"/> CHANNEL LINERS |
| <input type="checkbox"/> SEDIMENT TRAPS |
| <input type="checkbox"/> SEDIMENT BASINS |
| <input type="checkbox"/> STORM INLET SEDIMENT TRAP |
| <input type="checkbox"/> STONE OUTLET STRUCTURES |
| <input type="checkbox"/> CURBS AND GUTTERS |
| <input checked="" type="checkbox"/> P STORM SEWERS |
| <input type="checkbox"/> VELOCITY CONTROL DEVICES |
| <input type="checkbox"/> OTHER: (Specify Practice) |

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

STORM WATER MANAGEMENT ACTIVITIES: The order of activities will be as follows:

1. Install perimeter controls, clear R.O.W. on side where construction will take place, and make required utility adjustments
2. 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 TCP.

NON-STORM WATER MANAGEMENT DISCHARGES:

Non-storm water discharges should be filtered, or held in retention basins, before being allowed to mix with storm water. These discharges consist of non-polluted ground water, spring water, foundation and/or footing drain water, and water used for dust control, pavement washing and vehicle wastewater containing no detergents.

OTHER REQUIREMENTS & PRACTICES

OTHER EROSION AND SEDIMENT CONTROLS:

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

INSPECTION: For areas of the construction site that have not been finally stabilized, area used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event 0.5 inches or greater.

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: The Contractor shall be required, on a regular basis or as may be directed by the Engineer, to dampen haul roads for dust control, stabilize construction entrances and to remove excess dirt from the roadway.

MANAGEMENT PRACTICES: (Example Below - May be used as applicable, revised or expanded)
 1. 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.
 2. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.
 3. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, or debris or other obstructions placed during construction operations that are not a part of the finished work.

OTHER:
 1. Construction materials stored on site to be provided by Project Field Office.
 2. The project SW3P File located at the project field office shall contain the N.O.I., CGP Coverage Notice, EPA NPDES Form, Signature Authorization, Certification/Qualification Statements, Inspection Reports, Required Maps, and the NPDES Permit, Part II.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY LUIS J. NAVA, P.E., 94121

DATE: 12/7/12

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

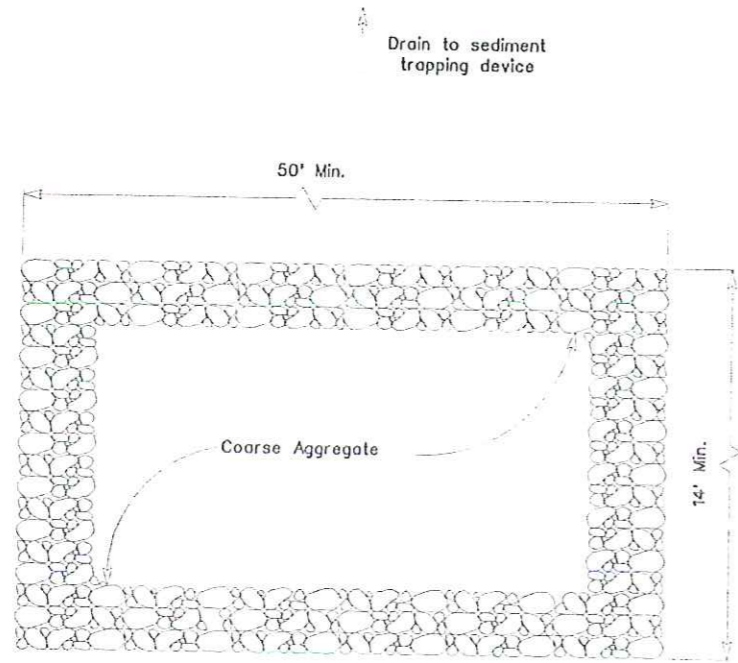
© 2004 Texas Department of Transportation

TXDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

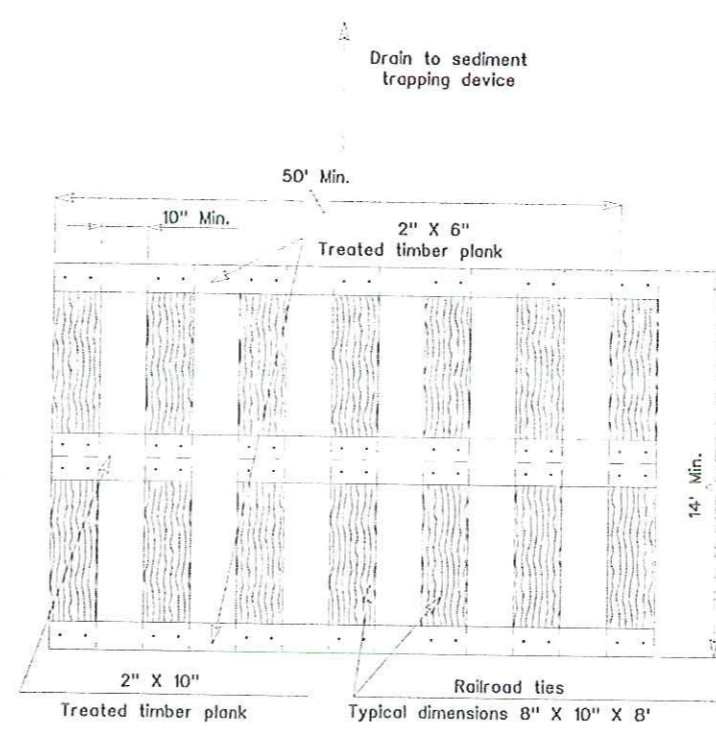
REV. 4/04

STATE	TX	COUNTY	PHARR
PROJECT NO.	5	SECTION	C03-25

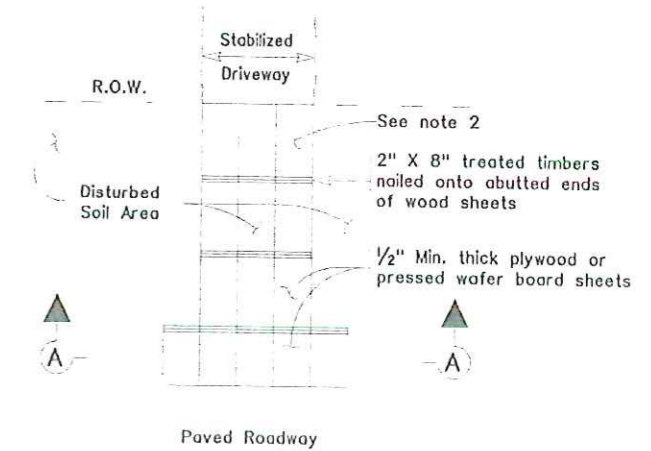
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the transmission of this standard to other persons or for incorrect results or damages resulting from its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



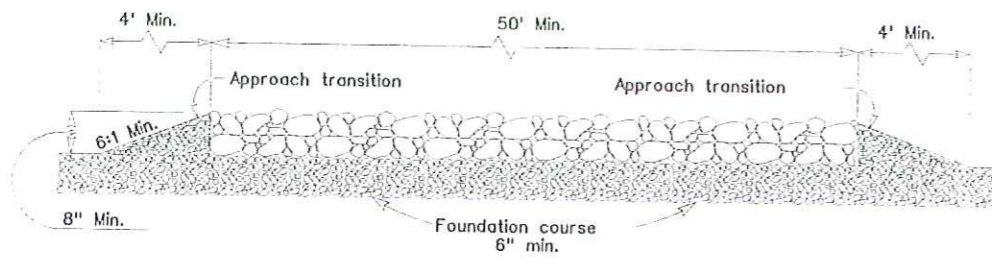
PLAN



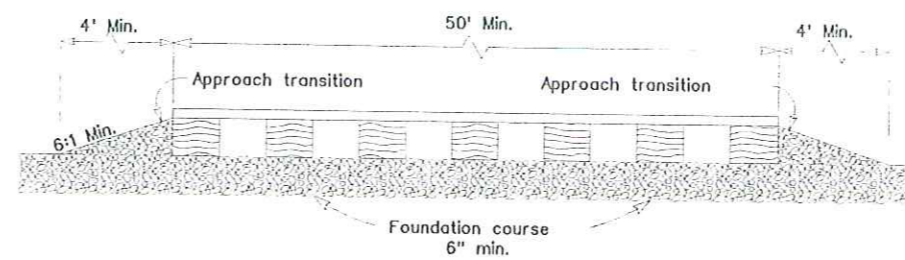
PLAN



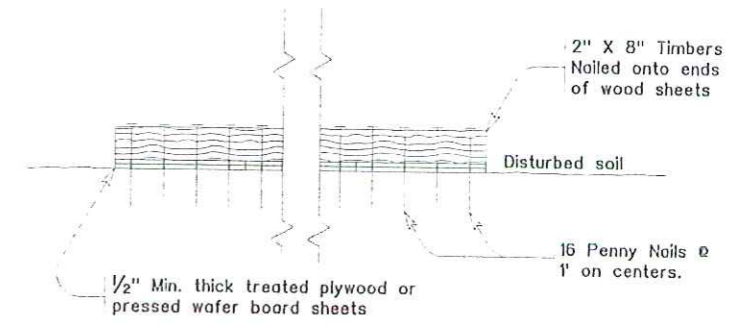
PLAN



PROFILE
CONSTRUCTION EXIT (TYPE 1)



PROFILE
CONSTRUCTION EXIT (TYPE 2)



SECTION A-A
CONSTRUCTION EXIT (TYPE 3)

GENERAL NOTES

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

GENERAL NOTES

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

GENERAL NOTES

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

Texas Department of Transportation
 Design Division Standard

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

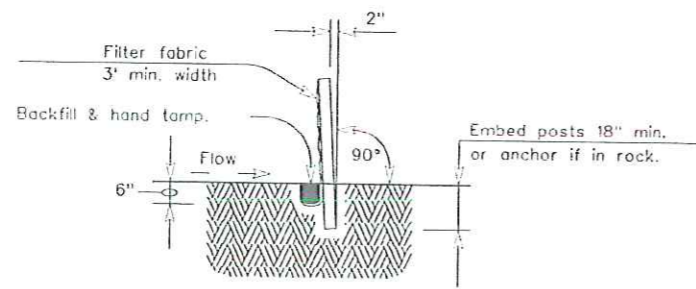
FILE	es:393.dwg	IN TxDOT	CK REB	PA BJ	CK
© TxDOT	June 1993	CONV	RECT	JOB	10-0-000
REVISIONS		DATE	DESCRIPTION	BY	APP'D

C03-26

DATE: FILE:

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

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 53 54 55 56 57 58 59 60 61 62 63



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.

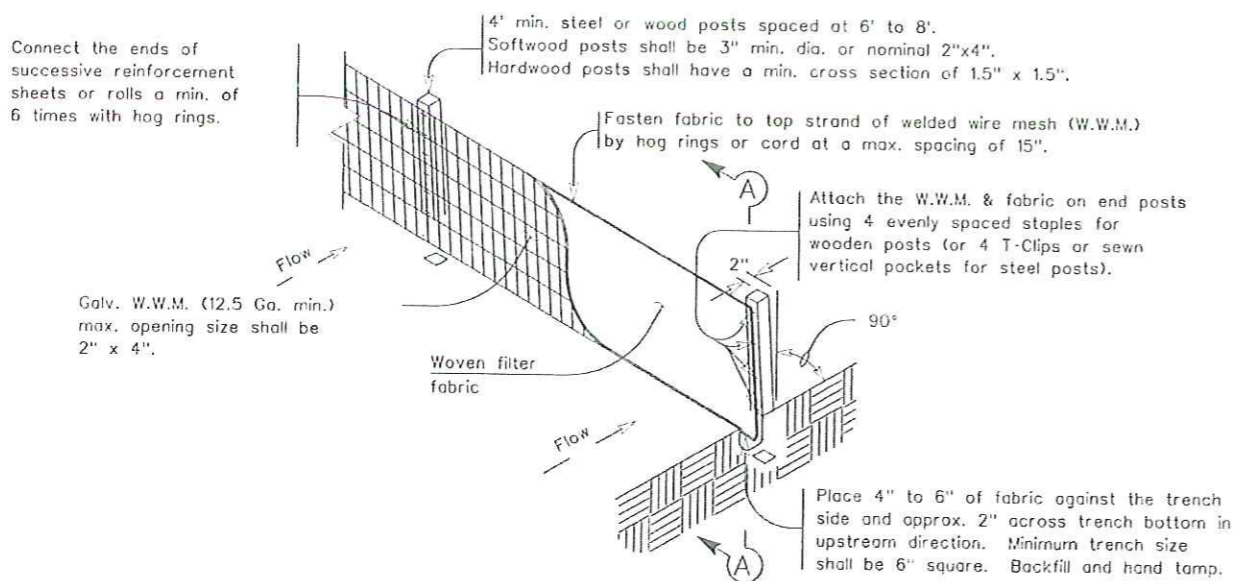
Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

PLAN SHEET LEGEND

Sediment Control Fence — SCF —

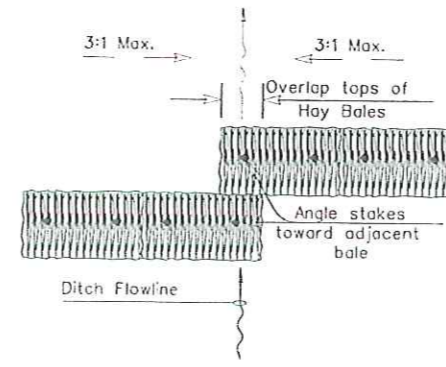
GENERAL NOTES

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

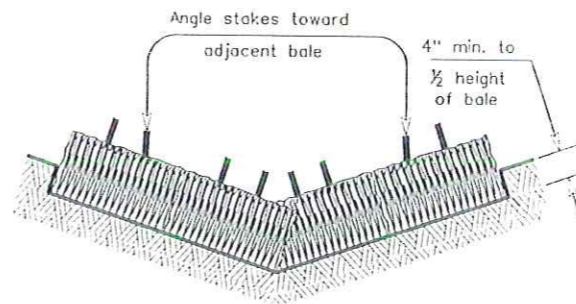


TEMPORARY SEDIMENT CONTROL FENCE

SCF



PLAN VIEW



PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay — BH —

BALED HAY USAGE GUIDELINES

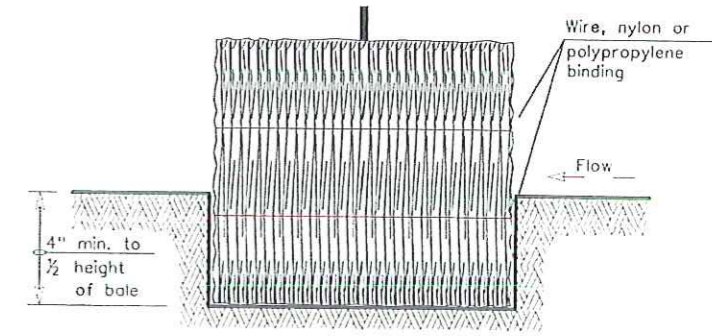
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT² of cross sectional area. Baled hay may be used at the following locations:

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

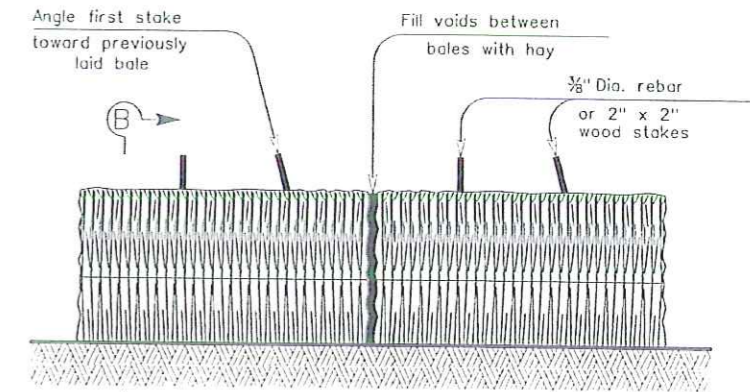
For Baled Hay installations in small ditches, the additional following considerations apply:

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

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



SECTION B-B



BALED HAY FOR EROSION CONTROL

BH

GENERAL NOTES

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

REVISION HISTORY

Texas Department of Transportation
 Design Division (Roadway)

TEMPORARY EROSION,
 SEDIMENT AND WATER
 POLLUTION CONTROL MEASURES
 FENCE & BALED HAY

EC(1)-93

FILE: EC193.DGN	DN: HEJ	CK: HEJ	DW: BOD	CK: -
© TxDOT JUNE 1993	DISTRICT	FEDERAL AD PROJECT		SHEET
REVISIONS	21			C03-27
	COUNTY	CONTROL SECT	JOB	HOWWAY
	PHARR	3C	1080 940	