CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
21	HIDALGO		1

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

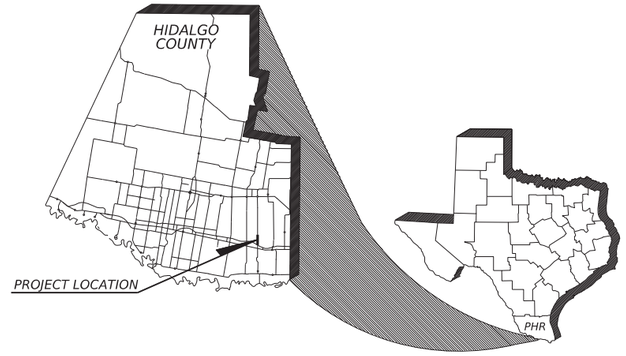
STATE PROJECT NUMBER C 1228-3-50

CSJ: 1228-03-050

NET LENGTH OF PROJECT = 8,590 FEET = 1.62 MILES

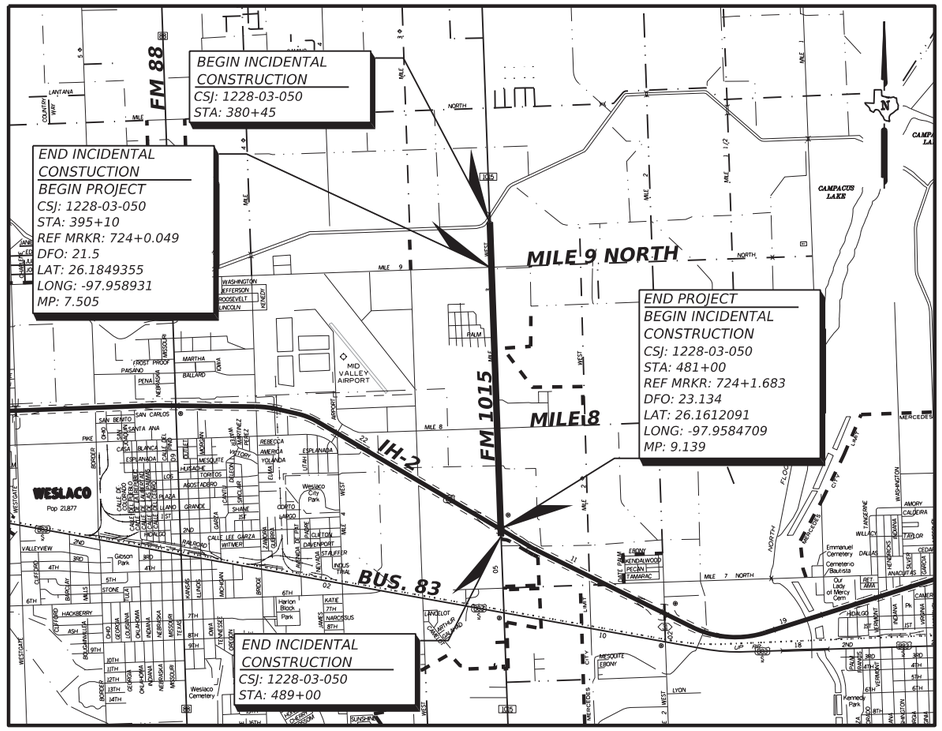
HIDALGO COUNTY
FM 1015 (INTERNATIONAL BLVD)

FROM: MILE 9 NORTH
TO: IH-2



FOR THE CONSTRUCTION OF:

REHABILITAION OF AN EXISTING URBAN 5-LANE NON-FREEWAY FACILITY CONSISTING OF GRADING, LIME TREATED SUBGRADE, CEMENT TREATED FLEXIBLE BASE, ASPHALTIC CONCRETE PAVEMENT,CURB & GUTTER, SIDEWALKS, PAVEMENT MARKINGS, SIGNING, AND TRAFFIC SIGNALS.



VICINITY MAP
NOT TO SCALE

PROJECT DATA

DESIGN SPEED:
55 MPH

HIGHWAY FUNCTIONAL CLASS:
URBAN PRINCIPAL ARTERIAL

TRAFFIC VOLUMES:
2021 ADT 24,227
2040 ADT 29,557

PERCENT TRUCKS: 4.5%

EXCEPTIONS: NONE

EQUATIONS: NONE

RAILROAD CROSSINGS: NONE

LOCAL ENTITIES

CITY OF WESLACO CONCURRENCE:
DocuSigned by: Alberto J Aldana, P.E. 8078E21E921644F...
NAME
DATE: 6/30/2023
City Engineer
TITLE

HCID No. 9 CONCURRENCE:
DocuSigned by: Randal Winston P.E. F059B0B30C384FD...
NAME
DATE: 7/26/2023
7/26/2023
TITLE

INDEX OF SHEETS

SEE SHEET NO. 2

FINAL PLANS

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED: _____

DATE WORK ACCEPTED: _____

FINAL CONTRACT COST:$ _____

CONTRACTOR: _____

LIST OF APPROVED FIELD CHANGES, CHANGE ORDERS & SUPPLEMENTAL AGREEMENTS:

THIS IS TO CERTIFY THAT ALL CONSTRUCTION SUBSTANTIAL WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS SPECIFICATIONS AND CONTRACT.ALL PROPOSED CONSTRUCTION WAS COMPLETED UNLESS OTHERWISE NOTED.

_____ _____
HECTOR SILLER, P.E. *DATE*
PHARR AREA ENGINEER

Registered Accessibility Specialist (RAS) Inspection Required

TDLR No. TABS2023009746

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000---008).

RECOMMENDED FOR LETTING: *DATE:* 7/28/2023
DocuSigned by: Pedro R. Alvarez EABA335C2DAA48C...
PHARR DISTRICT ENGINEER

SUBMITTED FOR LETTING: *DATE:* 7/26/2023
DocuSigned by: Romualdo Mena Jr 8D395A956F70440...
PHARR DISTRICT CENTRAL DESIGN SUPERVISOR

FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM1015 - Title Sheet.dgn
DATE: 6/30/2023 12:07:02 PM

SHEET NO.	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3-4	PROJECT LAYOUT
5-6	EXISTING TYPICAL SECTIONS
7-8	PROPOSED TYPICAL SECTIONS
9-11	SUMMARY TABLES OF ESTIMATED QUANTITIES
12	SUMMARY OF MATERIALS TRAFFIC SIGNALS
13-22	GENERAL NOTES AND SPECIFICATIONS
23-26	ESTIMATE & QUANTITY SHEET
27	OMITTED
28	EARTHWORK SUMMARY
	TRAFFIC CONTROL PLAN DETAILS
29	TCP GENERAL NOTES
30-32	TCP SEQUENCE OF CONSTRUCTION
33-34	TCP PHASING LAYOUT
35-37	TCP ADVANCED WARNING SIGNS LAYOUT
38	TRAFFIC CONTROL PLAN PHASE I STEP I TYPICAL SECTIONS
39-42	TRAFFIC CONTROL PLAN PHASE I STEP I
43	TRAFFIC CONTROL PLAN PHASE I STEP II TYPICAL SECTIONS
44-47	TRAFFIC CONTROL PLAN PHASE I STEP II
48	TRAFFIC CONTROL PLAN PHASE II STEP I TYPICAL SECTIONS
49-53	TRAFFIC CONTROL PLAN PHASE II STEP I
54	TRAFFIC CONTROL PLAN PHASE II STEP II TYPICAL SECTIONS
55-59	TRAFFIC CONTROL PLAN PHASE II STEP II
60-62	CRASH CUSHION SUMMARY SHEET
63	TEMPORARY SIGNAL TCP PHASE 2 STEP 1 FM 1015 @ MILE 9 RD.
64	TEMPORARY SIGNAL TCP PHASE 1 STEP 1 FM 1015 @ MILE 8 RD.
65	TEMPORARY SIGNAL TCP PHASE 1 STEP 1 FM 1015 @ IH2 FRTG. RD.
66	TEMPORARY SIGNAL TCP PHASE 1 STEP 2 FM 1015 @ IH2 FRTG RD.
	TRAFFIC CONTROL PLAN STANDARDS
67-78	[S] BC(1)-21 THRU BC(12)-21
79	[S] TCP(1-4)-18
80-83	[S] TCP(2-1)-18 THRU TCP(2-3)-18 & TCP(2-5)-18
84-86	[S] TCP(3-1)-13, TCP(3-3)-14 & TCP(3-4)-13
87-89	[S] WZ(STPM)-23, WZ(UL)-13, WZ(RCD)-13
90-94	[S] WZ(BTS-1)-13,WZ(BTS-2)-13, WZ(BRK)-13, WZ(RS)-22 & WZ(TD)-17
95-96	[S] SSCB(2)-10
97	[S] QGUARD(M10)(N)-20
98	[S] TAU(M)(N)-19
99-100	[S] LPCB-13
101	[S] TREATMENT FOR VARIOUS EDGE CONDITIONS
	STRUCTURAL REMOVAL DETAILS
102-105	REMOVAL LAYOUTS
	ROADWAY DETAILS
106-111	SURVEY CONTROL INDEX
112-115	HORIZONTAL & VERTICAL CONTROL SHEET
116-117	ROADWAY DATA SHEET
118-132	PLAN AND PROFILE
133	INTERSECTION LAYOUT MILE 9 @ FM 1015
134	INTERSECTION LAYOUT MILE 8 @ FM 1015
135-136	DRIVEWAY TABLES
137	INLET LID REMOVE & REPLACE DETAIL
	ROADWAY STANDARD
138	[D] DRIVEWAY PROFILE DETAILS
139	[D] DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)
140	[D] DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)
141	[D] CURB & GUTTER DETAILS
142	[D] CONCRETE CURB DETAILS
143	[S] CCCG-22
144	[D] PAVEMENT RECONNECT AREAS DETAILS
145	[D] SIDEWALK & WHEELCHAIR RAMP DESIGN GUIDE
146-149	[S] PED-18
150	[S] MB(1)-21
151	[S] MB(2)-21
152	[S] MB(3)-21
153	[S] MB(4)-21
154	[S] MBP(1)-22
155	[S] MBP(2)-22
156	[D] MAILBOX DETAIL
157	[S] CURB AND GUTTER TRANSITION DETAILS FOR PCU INLET
158	[S] CONCRETE PAVEMENT DETAILS TRANSITION SLAB TRANS-20
	TRAFFIC SIGNAL DETAILS
159	TRAFFIC SIGNAL LAYOUT EXISTING CONDITION FM 1015 @ MILE 9 RD.
160-161	TRAFFIC SIGNAL LAYOUT PROPOSED INSTALLATION FM 1015 @ MILE 9 RD.
162	TRAFFIC SIGNAL LAYOUT EXISTING CONDITION FM 1015 @ MILE 8 RD.
163-164	TRAFFIC SIGNAL LAYOUT PROPOSED INSTALLATION FM 1015 @ MILE 8 RD.
165-166	TRAFFIC SIGNAL LAYOUT EXISTING CONDITION FM 1015 @ IH2 FRTG. RD.
167-168	TRAFFIC SIGNAL LAYOUT PROPOSED INSTALLATION FM 1015 @ IH2 FRTG. RD.
	TRAFFIC SIGNAL STANDARDS
169-176	[S] ED(1)-14, ED(3)-14, ED(4)-14, ED(5)-14, ED(6)-14, ED(7)-14, ED(8)-14 & ED(10)-14
177-178	[S] SP-100(1)-12 & SP-100(2)-12
179	[S] TS-FD-12
180	[S] TS-CF-21
181	[S] TS-BP-20
182	[S] LUM-A-12
183	[D] ELECTRICAL SERVICE DESIGN WITH SIGNAL CONTROLLER
184-186	[D] TRAFFIC SIGNAL CONSTRUCTION DETAILS
187	[S] LD(1)-03
188	[S] LD(2)-03
189	[S] CFA-12

SHEET NO.	SIGNING DETAILS
190-193	SIGNING LAYOUT
194	SUMMARY OF SMALL SIGNS TO BE REMOVED OR RELOCATED
195	SIGN DETAILS
196-200	SUMMARY OF SMALL SIGNS
201	OMITTED
	SIGNING STANDARDS
202	[S] SMD(GEN)-08
203-205	[S] SMD(SLIP-1)-08 THRU SMD(SLIP-3)-08
206-208	[S] TSR(3)-13 THRU TSR(5)-13
	PAVEMENT MARKINGS DETAILS
209-211	PAVEMENT MARKINGS LAYOUT
	PAVEMENT MARKINGS STANDARDS
212-215	[S] PM(1)-22, PM(2)-22 , PM(3)-22 & PM(4)-22A
216	[S] D & OM(1) - 20
217	[S] D & OM(2) - 20
218	[S] D & OM(3) - 20
219	[S] D & OM(5) - 20
220	[S] D & OM(6) - 20
221	[S] D & OM(VIA) - 20
	ENVIRONMENTAL ISSUES DETAILS
222-223	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)
224-226	EPIC SHEET SUPPLEMENTALS TPWD BMPs
227-228	STORMWATER POLLUTION PREVENTION PLAN (SWP3)
229-231	SWP3 LAYOUTS
232	CONSTRUCTION EXIT INSTALLATION LOG
	ENVIRONMENTAL ISSUES STANDARDS
233-235	[S] EC(1)-16 THRU EC(3)-16
236-238	[S] EC(9)-16

LEGEND:
[S] STATE STANDARD
[D] DISTRICT STANDARD

THE STANDARD SHEETS 67-101,138-158,202-208,212-221 & 233-238 HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

06-30-2023
DATE

JOSE L. CARDENAS, P.E.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

THE STANDARD SHEETS 169-189 HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

06.30.2023
DATE

NAYELY PARRA, P.E.

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

FM 1015

INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		02

DATE: 6/30/2023 10:29:33 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM1015 - Index of Sheets.dgn

CK DW CK DW

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

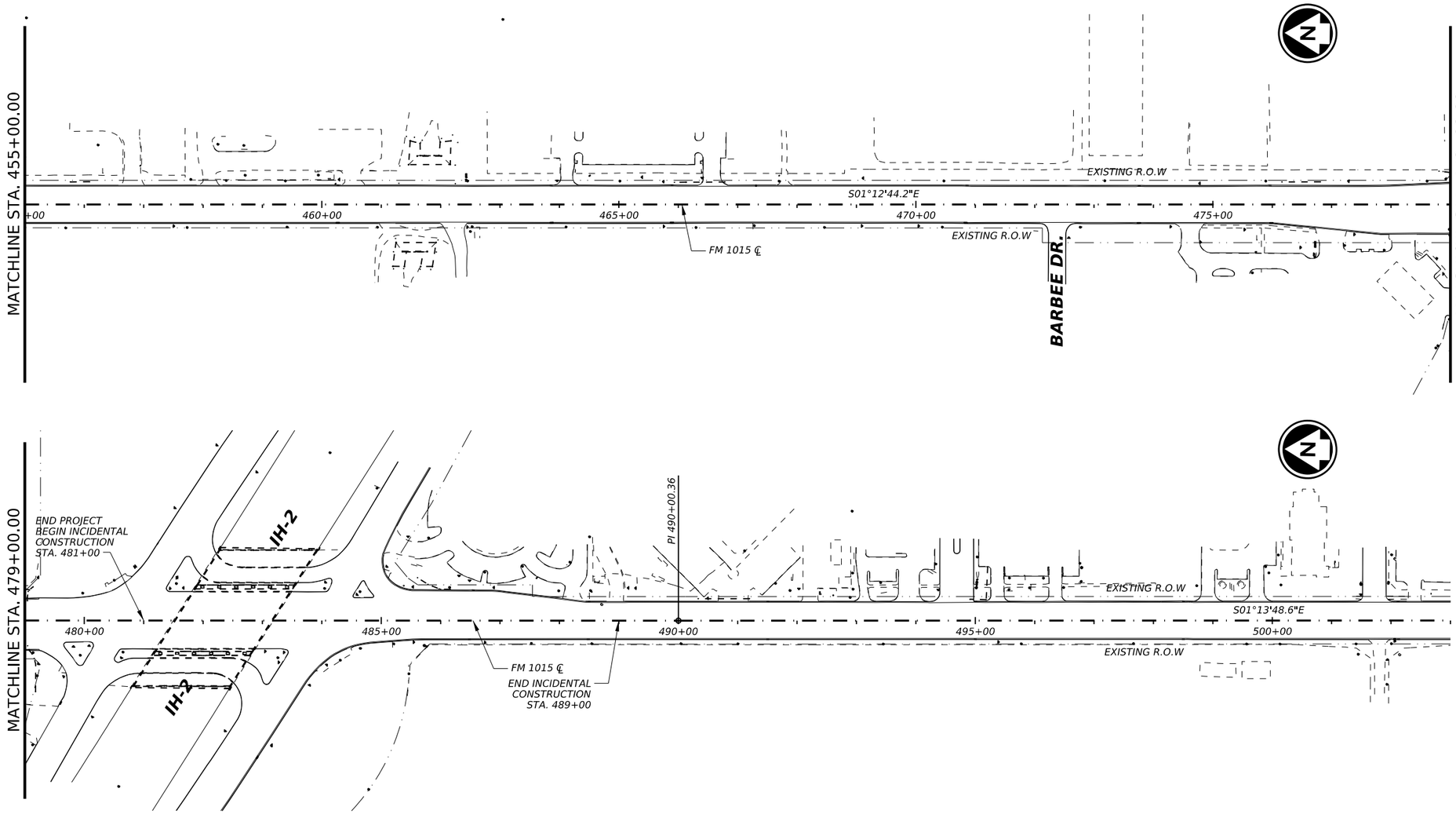
FM 1015

PROJECT LAYOUT

SCALE: 1"=200' SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		03

DATE: 6/12/2023 4:09:14 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0749446\Project Layout 01.dgn



DATE: 1/16/2023 10:19:15 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0749446\Project_Layout_02.dgn

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

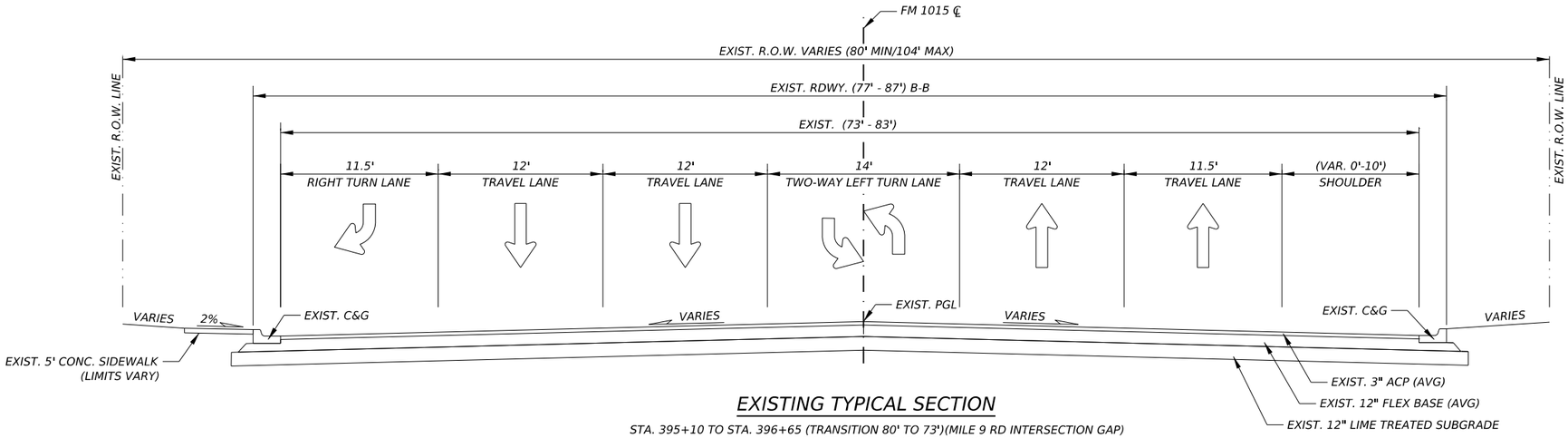
Texas Department of Transportation

FM 1015

PROJECT LAYOUT

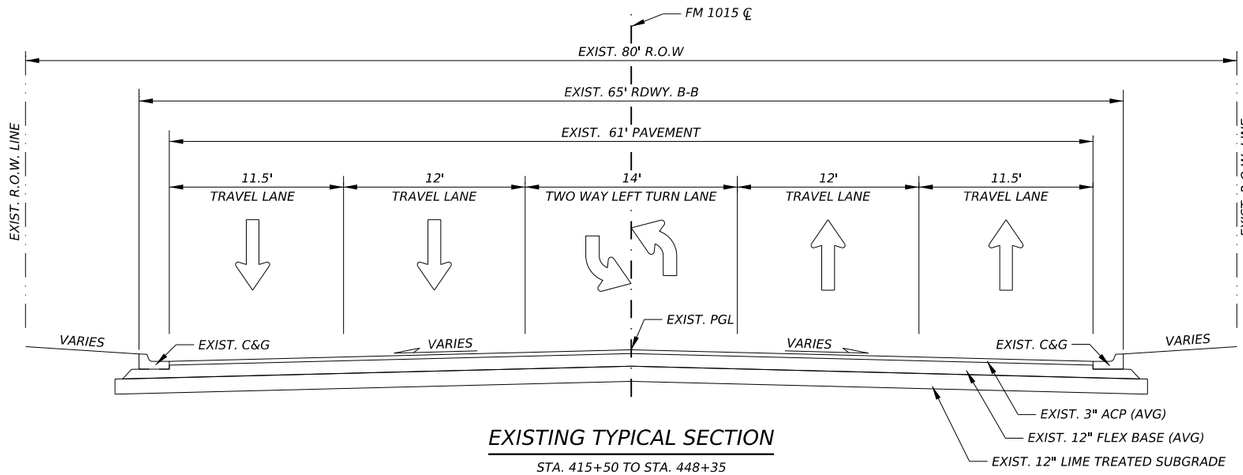
SCALE: 1"=200' SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		04



EXISTING TYPICAL SECTION

STA. 395+10 TO STA. 396+65 (TRANSITION 80' TO 73')(MILE 9 RD INTERSECTION GAP)
STA. 396+65 TO STA. 397+65 (EXIST. 73' ROADWAY)
STA. 397+65 TO STA. 401+50 (TRANSITION 73' TO 83 ')
STA. 401+50 TO STA. 412+50 (EXIST. 83' ROADWAY)
STA. 412+50 TO STA. 415+50 (TRANSITION 83' TO 73')



EXISTING TYPICAL SECTION

STA. 415+50 TO STA. 448+35
STA. 448+35 TO STA. 449+50 (MILE 8 RD. INTERSECTION GAP)
STA. 449+50 TO STA. 475+95

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
L.T.L.	- LEFT TURN LANE
TWLTL	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER

GENERAL NOTES

ALL REMOVED/MILLED ASPHALT SHALL BECOME PROPERTY OF THE CONTRACTOR AND TO BE REMOVED UNDER ITEM 305 & 354.

ANY EXCESS FLEX BASE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND BE REMOVED UNDER ITEM 105. THE 10" (AVG) FLEX BASE MATERIAL SHALL BE SALVAGED IN ACCORDANCE TO ITEM 251.

A STATION IS EQUIVALENT TO 100 FT. STATIONING IS APPROXIMATE, FIELD CONDITIONS MAY VARY BETWEEN EXISTING TYPICAL SECTIONS.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

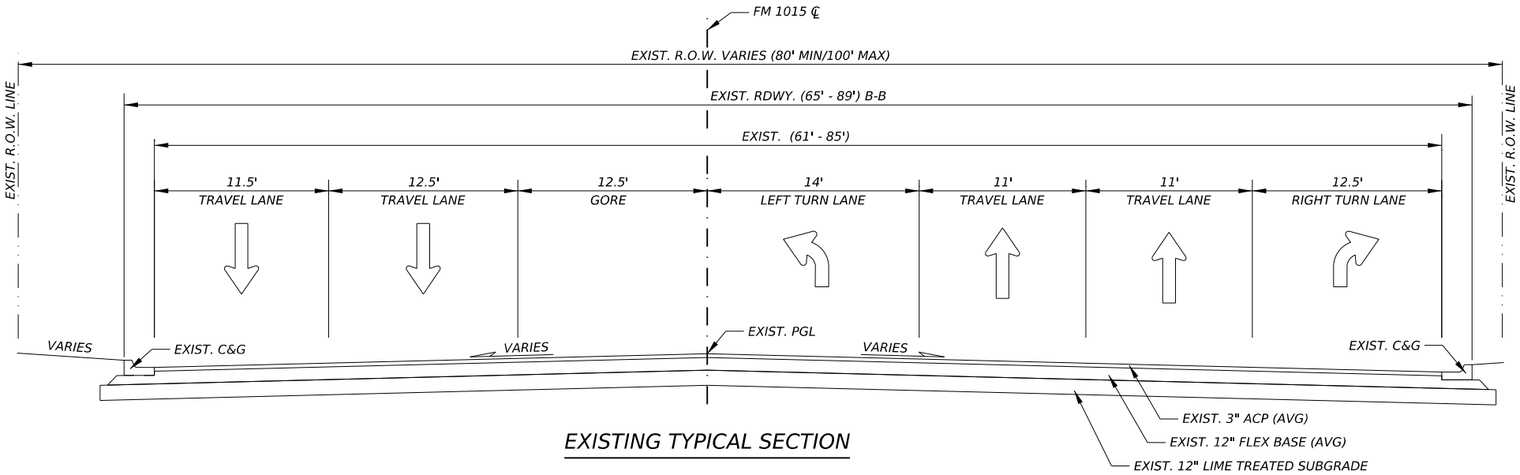
FM 1015

EXISTING TYPICAL SECTIONS

NOT TO SCALE SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		05

DATE: 6/29/2023 10:25:22 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenasid\0681696\FM1015 - ExistingTypicals.dgn



EXISTING TYPICAL SECTION

STA. 475+95 TO STA. 477+92 (TRANSITION 61' TO 80')
STA. 477+92 TO STA. 479+24 (TRANSITION 80' TO 85')

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
L.T.L.	- LEFT TURN LANE
TWLTL	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER

GENERAL NOTES

ALL REMOVED/MILLED ASPHALT SHALL BECOME PROPERTY OF THE CONTRACTOR AND TO BE REMOVED UNDER ITEM 305 & 354.

ANY EXCESS FLEX BASE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND BE REMOVED UNDER ITEM 105. THE 10" (AVG) FLEX BASE MATERIAL SHALL BE SALVAGED IN ACCORDANCE TO ITEM 251.

A STATION IS EQUIVALENT TO 100 FT. STATIONING IS APPROXIMATE, FIELD CONDITIONS MAY VARY BETWEEN EXISTING TYPICAL SECTIONS.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

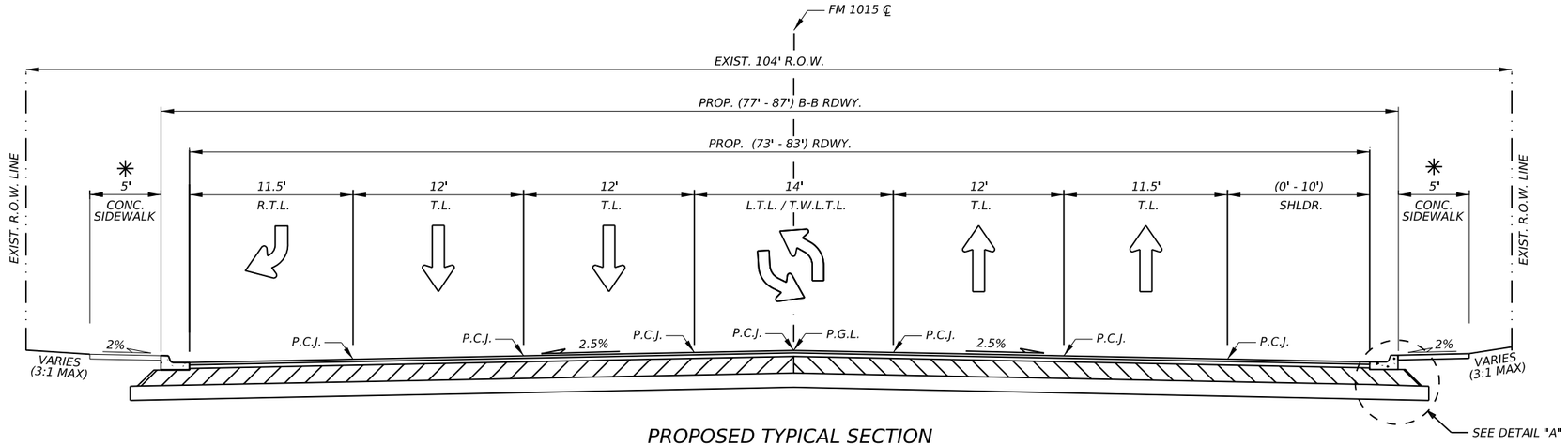
EXISTING TYPICAL SECTIONS

NOT TO SCALE SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		06

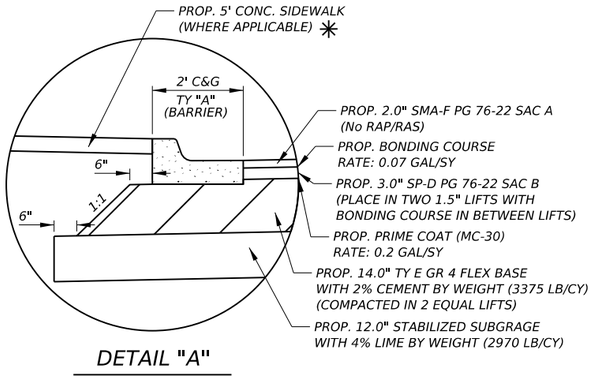
DATE: 6/29/2023 10:26:21 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM1015 - ExistingTypicals.dgn

CK
DW
CK
DW

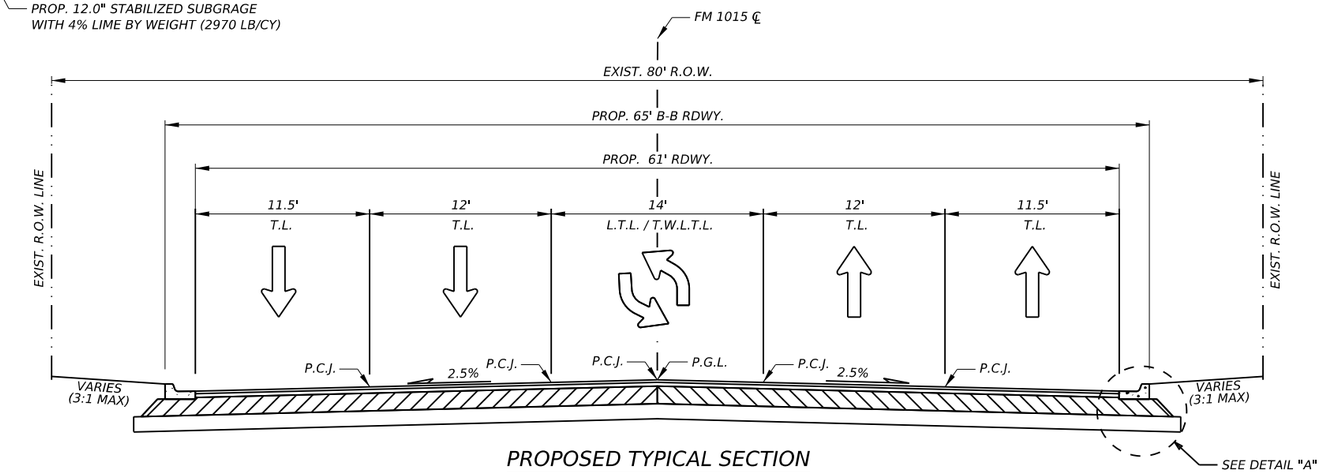


PROPOSED TYPICAL SECTION

STA. 395+10 TO STA. 396+65 (TRANSITION 80' TO 73')(MILE 9 RD INTERSECTION GAP)
STA. 396+65 TO STA. 397+65 (73' ROADWAY)
STA. 397+65 TO STA. 401+50 (TRANSITION 73' TO 83 ')
STA. 401+50 TO STA. 412+50 (83' ROADWAY)
STA. 412+50 TO STA. 415+50 (TRANSITION 83' TO 61')



DETAIL "A"



PROPOSED TYPICAL SECTION

STA. 415+50 TO STA. 448+35
STA. 448+35 TO STA. 449+50 (MILE 8 RD. INTERSECTION GAP)
STA. 449+50 TO STA. 475+95

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
L.T.L.	- LEFT TURN LANE
T.W.L.T.L.	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER

GENERAL NOTES

WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

WHERE POSSIBLE, OR UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON THE STRIPING LINES AS SHOWN ON THE PAVEMENT MARKING LAYOUTS.

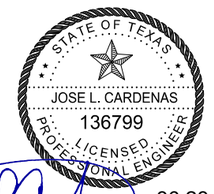
114 #/SY OF ACP IS EQUIVALENT TO 1" DEPTH OF ACP.

THE SUBGRADE SHALL BE SHAPED AS PER TYPICAL PAVEMENT DETAIL "A". ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.

THE TOP 4" (MIN) OF FLEX BASE SHALL BE NEW MATERIAL WHERE SALVAGE IS PART OF FLEXIBLE BASE (ITEM 251).

A STATION IS EQUIVALENT TO 100 FT.

✳ SEE PLAN & PROFILE SHEETS FOR LIMITS OF PROPOSED CONCRETE SIDEWALK WHERE APPLICABLE.



06.30.23

Texas Department of Transportation

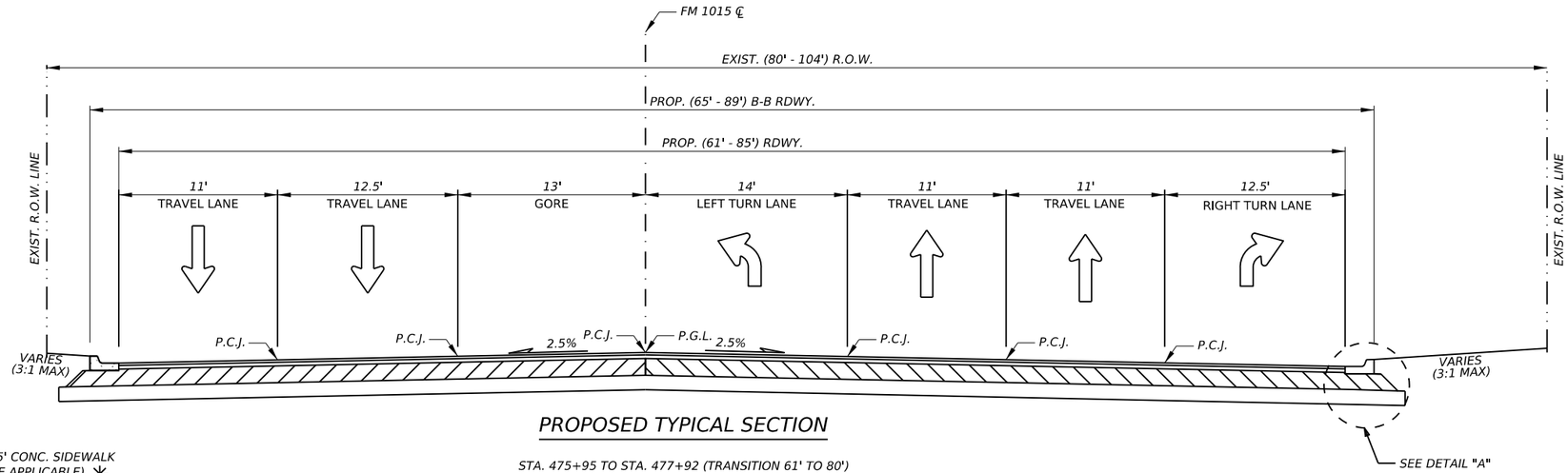
FM 1015

PROPOSED TYPICAL SECTIONS

NOT TO SCALE SHEET 1 OF 2

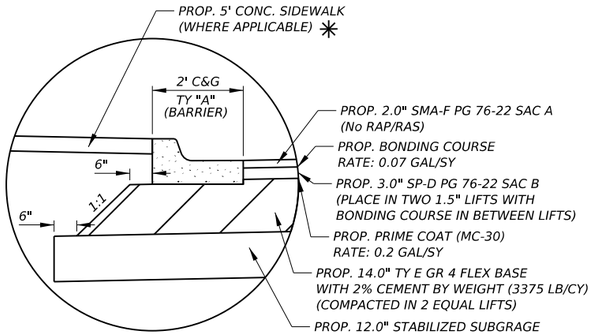
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		07

DATE: 6/12/2023 4:09:34 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM1015 - ProposedTypicals.dgn



PROPOSED TYPICAL SECTION

STA. 475+95 TO STA. 477+92 (TRANSITION 61' TO 80')
STA. 477+92 TO STA. 479+24 (TRANSITION 80' TO 85')



DETAIL "A"

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
L.T.L.	- LEFT TURN LANE
T.W.L.T.L.	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER

GENERAL NOTES

WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

WHERE POSSIBLE, OR UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON THE STRIPING LINES AS SHOWN ON THE PAVEMENT MARKING LAYOUTS.

114 #/SY OF ACP IS EQUIVALENT TO 1" DEPTH OF ACP.

THE SUBGRADE SHALL BE SHAPED AS PER TYPICAL PAVEMENT DETAIL "A". ALL GRADING SHALL BE WITHIN THE R.O.W. LIMITS.

THE TOP 4" (MIN) OF FLEX BASE SHALL BE NEW MATERIAL WHERE SALVAGE IS PART OF FLEXIBLE BASE (ITEM 251).

A STATION IS EQUIVALENT TO 100 FT.

✳ SEE PLAN & PROFILE SHEETS FOR LIMITS OF PROPOSED CONCRETE SIDEWALK WHERE APPLICABLE.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

PROPOSED TYPICAL SECTIONS

NOT TO SCALE SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		08

DATE: 6/12/2023 4:09:35 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM1015 - ProposedTypicals.dgn

SUMMARY OF PTCB & CRASH CUSHION ITEMS

LOCATION	512 6001	512 6025	512 6049	512 6009	512 6033	512 6057	512 6010	512 6034	512 6058	545 6003	545 6005	545 6013
	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	PORT CTB (MOVE)(SGL SLP)(TY 1)	PORT CTB (REMOVE)(SGL SLP)(TY 1)	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	PORT CTB (MOVE)(LOW PROF)(TY 1)	PORT CTB (REMOVE)(LOW PROF)(TY 1)	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	PORT CTB (MOVE)(LOW PROF)(TY 2)	PORT CTB (REMOVE)(LOW PROF)(TY 2)	CRASH CUSH ATTEN (MOVE & RESET)	CRASH CUSH ATTEN (REMOVE)	CRASH CUSH ATTEN (INSTL)(R)(N)(TL3)
	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA
TRAFFIC CONTROL PLAN SHEETS												
PHASE I STEP I												
SHEET 1 OF 4												
SHEET 2 OF 4	1000											3
SHEET 3 OF 4	650			900			160					3
SHEET 4 OF 4												
PHASE I STEP I SUBTOTAL	**1650**			**900**			**160**					**6**
PHASE I STEP II												
SHEET 1 OF 4												
SHEET 2 OF 4		1000								5		
SHEET 3 OF 4		650		340	900	1240		40	160	1		4
SHEET 4 OF 4												
PHASE I STEP II SUBTOTAL		**1650**		**340**	**900**	**1240**		**40**	**160**	**6**		**4**
PHASE II STEP I												
SHEET 1 OF 5												
SHEET 2 OF 5		1230								10		4
SHEET 3 OF 5	990	420										15
SHEET 4 OF 5	540											5
SHEET 5 OF 5												
PHASE II STEP I SUBTOTAL	**1530**	**1650**								**10**		**24**
PHASE II STEP II												
SHEET 1 OF 5		350										
SHEET 2 OF 5		1560								15	15	
SHEET 3 OF 5	60	1270								17	17	
SHEET 4 OF 5	150									2	2	
SHEET 5 OF 5												
PHASE II STEP II SUBTOTAL	**210**	**3180**	**3390**							**34**	**34**	
PROJECT TOTALS	**3390**	**6480**	**3390**	**1240**	**900**	**1240**	**160**	**40**	**160**	**50**	**34**	**34**

SUMMARY OF WORK ZONE PAVEMENT MARKING ITEMS

LOCATION	662 6005	662 6006	662 6008	662 6012	662 6016	662 6035	662 6037	662 6048	662 6050
	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	WK ZN PAV MRK NON-REMOV (W)6"(DOT)	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	WK ZN PAV MRK NON-REMOV (Y)6"(BRK)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	WK ZN PAV MRK REMOV (REFL) TY I-C	WK ZN PAV MRK REMOV (REFL) TY II-A-A
	LF	LF	LF	LF	LF	LF	LF	EA	EA
TRAFFIC CONTROL PLAN SHEETS									
PHASE I STEP I									
SHEET 1 OF 4			660						
SHEET 2 OF 4			2192		24		5862		118
SHEET 3 OF 4		36	2220	205	22		4376		70
SHEET 4 OF 4									
PHASE I STEP I SUBTOTAL		**36**	**5072**	**205**	**46**		**10238**		**188**
PHASE I STEP II									
SHEET 1 OF 4							756		20
SHEET 2 OF 4			1373		24		6924		149
SHEET 3 OF 4		24	2308	227	13		4420		56
SHEET 4 OF 4		36							
PHASE I STEP II SUBTOTAL		**60**	**3681**	**227**	**37**		**12100**		**225**
PHASE II STEP I									
SHEET 1 OF 5	20		1649				1620	2	41
SHEET 2 OF 5	80		2501	1518	49		4548	82	62
SHEET 3 OF 5			2400				4800		60
SHEET 4 OF 5	300		2593		24	300	5874	16	123
SHEET 5 OF 5	800			390	118	600	4122	62	152
PHASE II STEP I SUBTOTAL	**1200**		**9143**	**1908**	**191**	**900**	**20964**	**162**	**438**
PHASE II STEP II									
SHEET 1 OF 5			819		49		3668		88
SHEET 2 OF 5			1960	1270			4800	64	60
SHEET 3 OF 5			2400				4800		60
SHEET 4 OF 5	310		2100		24	10	8480	16	210
SHEET 5 OF 5									
PHASE II STEP II SUBTOTAL	**310**		**7279**	**1270**	**73**	**10**	**21748**	**80**	**418**
PROJECT TOTALS	**1510**	**96**	**25175**	**3610**	**347**	**910**	**65050**	**242**	**1269**

SUMMARY OF ELIMINATE EXIST. PAVEMENT MARKING ITEMS

LOCATION	677 6001	677 6003	677 6005	677 6007	677 6008	677 6012
	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (12")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)
	LF	LF	LF	LF	EA	EA
TRAFFIC CONTROL PLAN SHEETS						
PHASE I STEP I						
SHEET 1 OF 4	120					
SHEET 2 OF 4	3561					
SHEET 3 OF 4	4085					
SHEET 4 OF 4						
PHASE I STEP I SUBTOTAL	**7766**					
PHASE I STEP II						
SHEET 1 OF 4	400					
SHEET 2 OF 4	1111		48	12		
SHEET 3 OF 4					1	1
SHEET 4 OF 4						
PHASE I STEP II SUBTOTAL	**1511**		**48**	**12**	**1**	**1**
PHASE II STEP I						
SHEET 1 OF 5	2610					
SHEET 2 OF 5	3184	1518	144		4	4
SHEET 3 OF 5	3000					
SHEET 4 OF 5	1046					
SHEET 5 OF 5						
PHASE II STEP I SUBTOTAL	**9840**	**1518**	**144**		**4**	**4**
PHASE II STEP II						
SHEET 1 OF 5	793					
SHEET 2 OF 5						
SHEET 3 OF 5						
SHEET 4 OF 5						
SHEET 5 OF 5						
PHASE II STEP II SUBTOTAL	**793**					
PROJECT TOTALS	**19910**	**1518**	**192**	**12**	**5**	**5**

SUMMARY OF WORK ZONE TABS

LOCATION	662 6109	662 6110
	WK ZN PAV MRK SHT TERM (TAB)TY W	WK ZN PAV MRK SHT TERM (TAB)TY Y
	EA	EA
TCP		
PHASE III	1953	2173
PROJECT TOTALS	**1953**	**2173**

Texas Department of Transportation

FM 1015

SUMMARY TABLES OF ESTIMATED QUANTITIES

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		09

DATE: 7/25/2023 3:39:35 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM 1015 - Summary Tables of Estimated Quantities.dgn

SUMMARY OF ROADWAY ITEMS (1 OF 2)

LOCATION	FLEX BASE					SUBGRADE		ASPHALT					MILLING
	105 6158	247 6225	251 6159	275 6001	275 6065	260 6011	260 6043	305 6016	310 6009	3077 6066	3080 6013	3084 6001	354 6045
	REMOV STAB BASE AND ASPH PAV (12") ✳	BS (RDWY DEL)(TY E GR 4)(FNAL POS)	REWORK BS MATL (TY B)(10")(DC)(ORG POS)	CEMENT	CEM TRT(MX EXST MTL & NEW BS)(14")	LIME TRT (EXST MATL) (12")	LIME (HYD, COM OR QK)(SLURRY)	SALV, HAUL & STKPL RCL APH PV (3")	PRIME COAT (MC-30)	SP MIXES SP-D SAC-B PG76-22	STONE-MTRX -ASPH SMA-F SAC-A PG76-22	BONDING COURSE	PLANE ASPH CONC PAV (2")
	CY	CY	CY	TON	SY	SY	TON	SY	GAL	TON	TON	GAL	SY
PHASE I													
STA. 447+90 TO STA. 479+24	1254	2534	6336	299	22810	23158	459	21460	4353	3722		1502	
PHASE II													
STA. 395+10 TO STA. 447+90	2327	4637	11592	548	41730	42316	838	39970	7994	6835		2798	
PHASE III													
STA. 380+45 TO STA. 479+24											8523	5212	
INCIDENTAL CONSTRUCTION													
STA. 380+45 TO STA. 395+10													13022
PROJECT TOTALS	3581	7171	17928	847	64540	65474	1297	61430	12347	10557	8523	9512	13022

NOTES:

✳ ITEM 105-6158 QUANTITY IS CALCULATED FOR 2" OF EXISTING FLEX BASE NOT BEING SALVAGED.

NEW ASPHALTIC MATERIAL 1" = 114 LB/SY.

BONDING COURSE RATE = 0.07 GAL/SY. RATE IS FOR ESTIMATING PURPOSES ONLY.

PRIME COAT (MC-30) RATE = 0.2 GAL/SY.

ESTIMATED WEIGHT OF FLEX BASE = 3375 LB/CY COMPACTED DRY WEIGHT

ESTIMATED WEIGHT OF SUBGRADE = 2970 LB/CY

ALL SURPLUSS MATERIAL (ITEM 105 & ITEM 305) SHALL BECOME PROPERTY OF THE CONTRACTOR.

(#) FOR CONTRACTOR'S INFORMATION ONLY.

SUMMARY OF ROADWAY ITEMS (2 OF 2)

LOCATION	100 6002	134 6001	204 6003	360 6080	465 6557	479 6004	496 6002	529 6028	529 6029	529 6031	530 6004	530 6005	531 6004	531 6008	531 6013	531 6001	560 6014
	PREPARING ROW	BACKFILL (TY A)	SPRINKLING (DUST CONTROL)	CONC PVMT(CRCP) (TRANSITION SLAB)	◐ INLET (CURB)(SPL)	ADJUSTING MANHOLES (SANITARY)	◑ REMOV STR (INLET)	CONC CURB & GUTTER (TY B) (MOUNTABLE)	CONC CURB & GUTTER (TY A)	CONC CURB & GUTTER(VA LLEY GUTTER)(48")	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CURB RAMPS (TY 1)	CURB RAMPS (TY 5)	CURB RAMPS (TY 10)	CONC SIDEWALKS (4")	MAILBOX INSTALL-S (TWG-POST) TY 4
	STA	STA	MG	SY	EA	EA	EA	LF	LF	LF	SY	SY	EA	EA	EA	SY	EA
PLAN AND PROFILE SHEETS																	
SHEET 1 OF 15	4	4	16					796			60	557			1	167	
SHEET 2 OF 15	6	6	24		4	1	4	1057		229		132			4	407	
SHEET 3 OF 15	6	6	24		4	1	4	1171			15	89			1	360	4
SHEET 4 OF 15	6	6	24		2	2	2	1080		143	37	227			2	205	6
SHEET 5 OF 15	6	6	24		2		2	1117		70	32	103					1
SHEET 6 OF 15	6	6	24		4	1	4	932		228	54	116					1
SHEET 7 OF 15	6	6	24		2		2	1079		76	59	109					
SHEET 8 OF 15	6	6	24		2	1	2	1129		64	19	164					2
SHEET 9 OF 15	6	6	24		4		4	1200			57	138					6
SHEET 10 OF 15	6	6	24		2		2	1195			60	414					
SHEET 11 OF 15	6	6	24		2	1	2	1200			30	47					
SHEET 12 OF 15	6	6	24		4	2	4	1200			36	81					1
SHEET 13 OF 15	6	6	24		4		4		1200		47	16					
SHEET 14 OF 15	6	6	24		4		4		1167	58	91	21					
SHEET 15 OF 15	2.5	2.5	10	102					392	47		44					
INTERSECTION LAYOUTS																	
MILE 9 @ FM 1015													2	3		49	
MILE 8 @ FM 1015													4	2		114	
PROJECT TOTALS	85	85	338	102	40	9	40	13156	2759	915	597	2258	6	5	8	1302	21

NOTES:

◑ BID ITEM USED TO PAY FOR REMOVAL OF EXISTING INLET LID ONLY (SEE FM 1015 INLET LID REMOVE & REPLACE DETAIL SHEET).

◐ BID ITEM USED TO PAY FOR REPLACEMENT OF EXISTING INLET LID ONLY, ANY NECESSARY ADJUSTMENTS OF INLET LID ARE SUBSIDIARY TO ITEM 465 (SEE FM 1015 INLET LID REMOVE & REPLACE DETAIL SHEET).

MAILBOXES TO BE SUPPLIED BY CONTRACTOR (SUBSIDIARY TO ITEM 560).

SUMMARY OF BARRICADES & TMA ITEMS

LOCATION	502 6001	6185 6002	6185 6005
	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY) ✳	TMA (MOBILE OPERATION) ✳✳
	MO	DAY	DAY
CSJ: 1228-03-050	19		
PHASE I STEP I		96	
PHASE I STEP II		96	
PHASE II STEP I		160	
PHASE II STEP II		178	
PHASE III		50	25
PROJECT TOTALS	19	580	25

NOTES:

✳ QUANTITIES ARE FOR 2 STATIONARY TMAs AS PER GENERAL NOTES FOR ITEM 6185.

✳✳ QUANTITIES ARE FOR 1 MOBILE TMA AS PER GENERAL NOTES FOR ITEM 6185.

SUMMARY OF EARTHWORK ITEMS

	110 6001
CSJ: 1228-03-050	EXCAVATION (ROADWAY)
	CY
THROUGHOUT THE PROJECT	19050
PROJECT TOTALS	19050

Texas Department of Transportation

FM 1015

SUMMARY TABLES OF ESTIMATED QUANTITIES

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		10

DATE: 7/25/2023 3:39:47 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM 1015 - Summary Tables of Estimated Quantities.dgn

SUMMARY OF REMOVAL ITEMS

LOCATION	(#)	(#)	104 6017	104 6022	104 6026	104 6036
	REMOVE CALICHE (DRIVEWAY)	REMOVE ASPHALT (DRIVEWAY)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB AND GUTTER)	REMOVE CONC (GUTTER)	REMOVING CONC (SIDEWALK OR RAMP)
	SY	SY	SY	LF	LF	SY
STRUCTURAL REMOVAL SHEETS						
SHEET 1 OF 4		235	108	3205	465	1086
SHEET 2 OF 4	16	611	145	3909	973	23
SHEET 3 OF 4		330	149	4121	651	187
SHEET 4 OF 4		126	160	3145	315	
PROJECT TOTALS	**16**	**1302**	**562**	**14380**	**2404**	**1296**

NOTES:

(#) FOR CONTRACTOR'S INFORMATION ONLY.

SUMMARY OF SIGNING ITEMS

LOCATION	636 6001	644 6027	644 6030	644 6076
	ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TYS80(1)SA(P)	IN SM RD SN SUP&AM TYS80(1)SA(T)	REMOVE SM RD SN SUP&AM
	SF	EA	EA	EA
SIGNING LAYOUTS				
SHEET 1 OF 4	14	5	1	4
SHEET 2 OF 4		9		9
SHEET 3 OF 4	28	6	2	4
SHEET 4 OF 4		13		11
PROJECT TOTALS	**42**	**33**	**3**	**28**

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6309	666 6306	666 6321	666 6318	666 6036	666 6042	666 6141	666 6048	666 6054	666 6078	672 6007	672 6009
	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	REFL PAV MRK TY I (W)(WORD)(100MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A
	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA
PAVEMENT MARKING LAYOUTS												
SHEET 1 OF 3	4901	2258	8964	2003	1735	61		449	14	10	200	245
SHEET 2 OF 3		1684	6462	1300	430			321	8	4	106	193
SHEET 3 OF 3		887	4745	634	394		338	117	6	4	64	161
PROJECT TOTALS	**4901**	**4829**	**20171**	**3937**	**2559**	**61**	**338**	**887**	**28**	**18**	**370**	**599**

SUMMARY OF SWP3 ITEMS

LOCATION	160 6005	164 6027	164 6029	166	168 6001	506 6021	506 6024	506 6041	506 6043
	FURNISHING AND PLACING TOPSOIL	CELL FBR MLCH SEED(PERM)(URBAN)(CLAY)	CELL FBR MLCH SEED(TEMP)(WARM)	✻ FERTILIZER (#)	# VEGETATIVE WATERING	CONSTRUCTION EXITS (INSTALL) (TY 2)	CONSTRUCTION EXITS (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	CY	SY	SY	AC	MG	SY	SY	LF	LF
SWP3 LAYOUTS									
SHEET 1 OF 3		4065	4065	0.8	65			300	300
SHEET 2 OF 3		4920	4920	1.03	84			300	300
SHEET 3 OF 3		3777	3777	0.55	45			150	150
SEE CONSTRUCTION EXIT TABLE						624	624		
PROJECT TOTALS	**50**	**12762**	**12762**	**2**	**194**	**624**	**624**	**750**	**750**

NOTES:

TOPSOIL TO BE USED AS NEEDED AND AS DIRECTED BY THE ENGINEER.

✻ FERTILIZER APPLICATION RATE = 500 LB/AC.

\# VEGETATIVE WATERING APPLICATION RATE = 6.8 MG/AC/CYCLE @ 13 CYCLES.

PERMANENT SEEDING TO BE DONE AFTER ROADWAY CONSTRUCTION IS COMPLETED.

EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
CONTRACTOR SHALL CONSULT WITH THE FIELD ENGINEER BEFORE ANY CONTROL DEVICE IS INSTALLED.

(#) FOR CONTRACTOR'S INFORMATION ONLY.

DATE: 7/25/2023 3:40:18 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681696\FM 1015 - Summary Tables of Estimated Quantities.dgn

Texas Department of Transportation

FM 1015

SUMMARY TABLES OF ESTIMATED QUANTITIES

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		11

SUMMARY OF TRAFFIC SIGNAL ITEMS

ITEM	DESC CODE	ITEM DESCRIPTION	UNIT	(1) FM 1015 AT MILE 9 RD EST	(2) FM 1015 AT MILE 8 RD EST	(3) FM 1015 AT IH2 FRTG EST						TOTALS
416	6030	DRILL SHAFT (TRF SIG POLE) (24 IN)	LF	6	6							12
618	6016	CONDT (PVC)(SCH 40)(1")	LF	80	120	150						350
618	6023	CONDT (PVC)(SCH 40)(2")	LF	1100	1180							2280
618	6033	CONDT (PVC)(SCH 40)(4")	LF	247	255							502
618	6059	CONDT (PVC)(SCH 80)(4")(BORE)	LF	254	205							459
620	6007	ELEC CONDR (NO. 8) BARE	LF	531	425	1335						2291
620	6009	ELEC CONDR (NO.6) BARE	LF		95	320						415
620	6010	ELEC CONDR (NO.6) INSULATED	LF		190	640						830
621	6005	TRAY CABLE (4 CONDR)(12 AWG)	LF	345	290	1935						2570
624	6002	GROUND BOX TY A (122311)W/APRON	EA	13	15	2						30
625	6003	ZINC-COAT STL WIRE STRAND (3/8 IN)	LF	990	840							1830
680	6002	INSTALL HWY TRF SIG (ISOLATED)	EA	1	1	1						3
✳680		LUMINAIRE W/LED (250W EQ)	EA	2		4						6
✳680		SIGN "LT TRN YIELD FL YEL ARR"R10-17T 30"x30"	EA	3	2							5
✳680		SIGN "STREET NAME"	EA			2						2
680	6004	REMOVING TRAFFIC SIGNALS	EA	1	1	1						3
681	6001	TEMP TRAF SIGNALS	EA	1	1	1						3
682	6001	VEH SIG SEC (12") LED (GRN)	EA	8	8	13						29
682	6002	VEH SIG SEC (12") LED (GRN ARW)	EA	3	2	2						7
682	6003	VEH SIG SEC (12") LED (YEL)	EA	8	8	13						29
682	6004	VEH SIG SEC (12") LED (YEL ARW)	EA	6	4	2						12
682	6005	VEH SIG SEC (12") LED (RED)	EA	8	8	13						29
682	6006	VEH SIG SEC (12") LED (RED ARW)	EA	3	2							5
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8	1	12						21
682	6060	BACK PLATE w/REFL BRDR (3 SEC)	EA	8	8	11						27
682	6049	BACK PLATE w/REFL BRDR (4 SEC)	EA	3	2							5
682	6050	BACK PLATE w/REFL BRDR (5 SEC)	EA			2						2
684	6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	1316	1300	3450						6066
684	6010	TRF SIG CBL (TY A)(12 AWG)(5 CONDR)	LF	2151	2130	5620						9901
684	6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	520	405	830						1755
684	6080	TRF SIG CBL (TY C)(14 AWG)(2 CONDR)SHIELDED LOOP LEAD-IN	LF	1554	1715	2015						5284
687	6001	PED POLE ASSEMBLY	EA	1	1							2
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8	1	12						21
688	6003	PED DETECTOR CONTROLLER UNIT	EA	1		1						2
688	6004	VEH LP DETECT (SAW CUT)	LF	488	424	812						1724
✳688		1/C #14 AWG LOOP WIRE (XHHW)	LF	1024	1032	1924						3980
✳6292		RVDS CABLE	LF	705	815	1440						2690
6292	6001	RVDS (PRESENCE DETECTION ONLY)	EA	4		4						8

✳ QUANTITIES SHOWN ARE FOR THE CONTRACTORS INFORMATION ONLY. THESE ITEMS ARE SUBSIDIARY TO VARIOUS OTHER ITEMS.

DATE: 6/12/2023 4:10:40 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_FM1015N_E&Q.dgn

Pharr District Central Design

Texas Department of Transportation

FM 1015 (N)
SUMMARY OF MATERIALS
TRAFFIC SIGNAL

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		12

2014 SPECS GENERAL NOTES:

****

General Requirements and Covenants to ITEMS 1 thru 9:

For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act."

Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination regarding TxDOT underground lines.

ITEM 2: Instructions to Bidders

Contractor questions on this project are to be addressed to the following individual(s):

Hector Siller, P.E., Pharr Area Engineer; Hector.Siller@txdot.gov
Jesus Noriega, P.E., Assist. Area Engineer; Jesus.Noriega@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals. Questions may also be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

Information found on TxDOT's FTP server will be considered for informational purposes only. (Index of /pub/txdot-info/Pre-Letting Responses/Pharr District/21-Pharr District (Construction) (state.tx.us))

ITEM 5: Control of the Work

The responsibility for the construction surveying on this contract will be in accordance with Article 5.9.1., "Method A."

Prior to contract letting, bidders may obtain a free computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the actual cross-sections in additional to, or instead of the electronic files are requested, they will be available at the Engineer's office for borrowing by copying companies for the purpose of making copies for the bidder at the bidder's expense.

ITEM 7: Legal Relations and Responsibilities

Roadway or Lane closures during the following key dates and/or special events are prohibited:

- National Holidays
- The day before a National Holiday
- During emergency events such as natural disasters or as directed by the Engineer

ITEM 8: Prosecution and Progress

Working days will be computed and charged in accordance with Article 8.3.1.4. Standard Workweek.

Prepare progress schedules using the Critical Path Method (CPM).

ITEM 100: Preparing Right of Way

Preparation of right of way will be done in accordance with the construction phasing shown on the Traffic Control Plans. Performance of this item will not be allowed outside of the project's current construction phase without prior approval by the Engineer.

Removal of all existing vegetation and trees within the ROW will be subsidiary to prep ROW.

ITEM 132: Embankment

Embankment (DENS CONT) shall be Type C with a max. PI of 40. Material used as embankment material in the top two feet below the bottom of Flexible Base shall meet the following requirements based on preliminary tests and such other tests found necessary by the Engineer.

1. The material shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

It is the Contractor's responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

ITEM 134: Backfilling Pavement Edges

Areas to be backfilled shall extend approximately 3-ft out from the edges of the proposed overlay. Final slopes shall be uniform and smooth. The 100-foot station payment includes backfilling of both sides.

Backfill Ty A shall not contain particles more than two inches in size and shall have a minimum PI of 10 and a maximum PI of 20.

Any additional backfill material necessary due to pre-existing edge conditions or to replace existing fill removed during blading operations will not be paid for directly. It will be considered subsidiary to this bid Item.

ITEM 160: Topsoil

Use topsoil as needed and directed by the Project Engineer for select problem areas. Unless otherwise approved by the Project Engineer, use topsoil from approved sources outside the right of way as per standard specifications. Existing topsoil is to be salvaged and retained for re-use on the project as topsoil.

ITEM 164: Seeding for Erosion Control

During drill seeding operations, application methods shall be in accordance with the method shown in the Standard Specification Book.

SS-1 Tacking Agent shall be a ratio of 2:1, two (Emulsion) to one (water) and applied at a rate of 0.05 gallons per square yard. The SS-1 Tacking Agent required for Drill Seed operations, will not be paid for directly, but will be subsidiary to Item 164 “Drill Seeding.” Watering shall not be used with the Drill Seed Method. A biodegradable tacking agent may be used in lieu of the SS-1 tacking agent in accordance with the manufacturer’s recommendations when approved by the Engineer.

Cool Season or Warm Season Grasses shall be included as part of Item 164 (See Table 3 and/or Table 4 in the Standard Specification Book or dates and seed type).

Seed mixture shall be as specified under Item 164.

ITEM 166: Fertilizer

Fertilizer rate is based on a rate of 100 Lbs. of Nitrogen per acre. The Nitrogen-Phosphorous Potassium (NPK) ratio shall include a minimum of 5% Phosphorous and 5% Potassium.

Fertilizer shall be homogenized.

ITEM 247: Flexible Base

Flexible Base Type E will be composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand, or granular materials when these materials are in situ with the caliche.

Flexible Base (TY E GR 4) caliche shall conform to the following requirements:

Retained on Sq. Sieve:	**Percent Retained**
2”	0
½”	20-60
No. 4	40-75
No. 40	70-90
Max. PI	15
Max. Wet Ball PI	15
Wet Ball Mill Max. Amount	50
Min. Comp. Strength PSI	150 at 15 PSI lateral pressure
Triaxial Test	Tex-117-E

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No.40 sieve shall be determined (Wet Ball PI).

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.
For water added under Item 247, the sulfate content will not exceed 3000-ppm and the chloride content will not exceed 3000-ppm.

ITEM 251: Reworking Base Courses

Quantities of Flexible Base to be salvaged, shown on the typical sections, are for estimating purposes only. All acceptable base material encountered in existing base is to be salvaged as directed by the Engineer regardless of the quantities involved.

Salvaged base shall be used in the bottom course on any of the proposed roadway and/or turnout sections.

Salvaged base may be used on any of the proposed driveway sections.

All surplus salvage base not used on the project will remain the property of the Contractor, unless otherwise directed by Engineer.

ITEM 260: Lime Treatment (Road-Mixed)

The Contractor's attention is called to the fact that certain existing and/or proposed structures are within the limits of the lime-treated Subgrade. Unless otherwise directed by the Engineer, these structures shall be installed before the final rolling of this Subgrade. It shall be the Contractor's responsibility to perform the proper lime treating operation without damage to these structures.

The slurry method of applying lime will be required, except when the lime is to be added to naturally wet materials as directed by the Engineer.

For this project, the Engineer will direct a random number of lime trucks to be check weighed.

The percent of density as determined by Tex-121-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

Proof roll all constructed lime treated subgrade and bases courses in accordance with Item 216, “Proof Rolling.” Correct soft spots as directed. Correction of soft spots in the subgrade or base courses will be at the Contractor’s expense.

Contractor is to place an underseal and/or pavement course as indicated on plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor’s expense.

Allow the mixture to mellow for a minimum period of 48 hours for all types of lime utilized. Additional time might be required due to sulfate and organic testing requirements, as directed by Engineer.

ITEM 275: Cement Treatment (Road-Mixed)

The percent of density as determined by Tex-120-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

Proof roll all constructed cement treated subgrade and bases courses in accordance with Item 216, “Proof Rolling.” Correct soft spots as directed. Correction of soft spots in the subgrade or base courses will be at the Contractor’s expense.

Contractor is to place an underseal and/or pavement course as indicated on plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor’s expense.

ITEM 3096: Asphalts, Oils, and Emulsions

Temporary ramps/detours and driveways may use Performance Grade Binder 64-22.

ITEM 301: Asphalt Antistripping Agents

Hydrated Lime shall be added as an Antistripping additive between the rates of 1% minimum and 2.0% maximum by weight for Items 292, 3076, 3077, and 3080. If the Hamburg Wheel Test cannot be met within these limits, Liquid Antistripping agents as approved by the Engineer may be used in conjunction with lime for Items 3076, 3077, and 3080.

ITEM 310: Prime Coat

The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

All existing Flexible Base, which may become exposed by the milling operation, shall be primed at the rate of 0.2 Gal/SY.

Do not apply subsequent courses over the initial prime coat no earlier than 12 hours after the prime coat was applied, unless otherwise authorized or directed by the Engineer.

ITEM 3077: Superpave Mixtures

The Contractor shall exercise diligence in the application of "Bonding Course" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

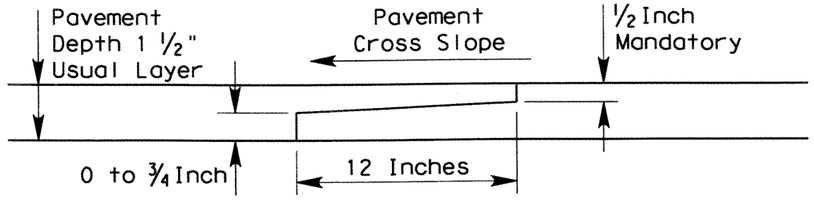
Blading (not to exceed more than 3-ft from the pavement edge) may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid Item. The cost of this blading will not be paid for directly but shall be considered subsidiary to this bid Item.

All surplus RAP from this project will remain the property of the Contractor.

Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

Aggregates used on shoulders and ramps are required to meet SAC requirements.

All unconfined longitudinal joints shall be constructed with a joint maker providing a maximum ½-inch vertical edge and a minimum 6:1 edge taper or as approved by the Engineer. The Engineer may waive this requirement when no impacts to the traveling public are foreseen.



NOTCHED WEDGE JOINT

The engineer may allow for variances to the dimensions shown.

Public and private driveways need to have a smooth vertical transition between the edge of pavement and the existing driveways. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 3077.

The use of RAP and RAS (recycled asphalt shingles) will not be allowed as part of the mix design for the final riding surface.

Use a release agent from the Department's MPL to clean and to coat the inside of truck beds for hauling equipment. Hauling equipment shall be cleaned prior to hauling material to job site. Submit a copy of the bill of lading to the Engineer as part of the QCP. Ensure the pavement is free from any spillage of hydraulic oil or diesel from construction equipment. The Department may reject trucks that contain any foreign material and suspend production if the pavement is contaminated by any pollutants mentioned above.

The percentage of RAS used in the total mix shall not exceed 3% when allowed.

SAC B aggregate must have material properties that require 10 or less on the magnesium sulfate soundness test and 20 or less on the Micro-Deval test.

ITEM 3080: Stone-Matrix Asphalt

The Contractor shall exercise diligence in the application of "Bonding Course" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

Blading (not to exceed more than 3-ft from the pavement edge) may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid Item. The cost of this blading will not be paid for directly but shall be considered subsidiary to this bid Item.

All surplus RAP from this project will remain the property of the Contractor.

Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

Aggregates used on shoulders and ramps are required to meet SAC requirements.

Public and private driveways need to have a smooth vertical transition between the edge of pavement and the existing driveways. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 3080.

The use of RAP and RAS (recycled asphalt shingles) will not be allowed as part of the mix design for the final riding surface.

Use a release agent from the Department's MPL to clean and to coat the inside of truck beds for hauling equipment. Hauling equipment shall be cleaned prior to hauling material to job site. Submit a copy of the bill of lading to the Engineer as part of the QCP. Ensure the pavement is free from any spillage of hydraulic oil or diesel from construction equipment. The Department may reject trucks that contain any foreign material and suspend production if the pavement is contaminated by any pollutants mentioned above.

The percentage of RAS used in the total mix shall not exceed 3% when allowed.

SAC B aggregate must have material properties that require 10 or less on the magnesium sulfate soundness test and 20 or less on the Micro-Deval test.

ITEM 3084 – Bonding Course

The minimum application rates are listed in Table BC.

The target shear bond strengths are listed in Table BCS. The informational test cores shall be taken once a shift for first 5 lots of placement or a change to placement method of bonding course, bonding material, or hot mix material. The remaining informational test cores shall be taken once every 3 lots for surface mix. Informational tests are not required for non-surface mix beyond the first 5 lots unless there is a change to placement method of bonding course, bonding material, or hot mix material. Results from these informational tests will not be used for specification compliance.

Table BC

Material	Minimum Application Rate (gal. per square yard)
TRAIL – Emulsified Asphalt	0.06
TRAIL – Hot Asphalt	0.12
Spray Applied Underseal Membrane	0.10

Table BCS (For Informational Tests)

Material	Target Shear Bond Strength (Tex-249-F psi)
SMA – Stone-Matrix Asphalt	60.0
All Other Materials	40.0

ITEM 354: Planing and Texturing Pavement

Contractor is to place seal coat or ACP layer(s) as indicated on plans within 14-calendar days of planing/milling operation unless otherwise directed by the Engineer.

All planing/milling operation drop offs greater than 1-inch need to have a 3:1 slope taper unless otherwise directed by the Engineer. The cost of the 3:1 slope taper is subsidiary to Item 354.

For full width planing/milling locations, Contractor is to place seal coat or ACP layer(s) as indicated on the plans within 2-calendar days of the planing/milling operation unless otherwise directed by the Engineer. Contractor will not be allowed to move onto the next planing/milling location or seal coat/ACP overlay location until the exposed area is covered as per above. Contractor cannot get paid for the planing/milling operation until exposed area is covered as per above.

ITEM 416: Drilled Shaft Foundations

Payment for furnishing and installing anchor bolts mounted in drill shafts will be included in the unit price bid for the various diameter drill shafts.

The Contractor shall coordinate with the utility companies to verify utility locations before drilling foundations.

The Contractor shall form, or provide a smooth finish, the portions of drilled shaft that project above the ground line. Place a ¾ inch chamfer on the top edge of each pole foundation. This work will not be paid for directly but will be considered subsidiary to this bid Item.

All drilled shaft foundations will be based on the lengths shown on the plans or those established in writing. Adequate calculations for measurements of foundations have been made in accordance with Article 9.1. of the Standard Specifications. Increases or decreases in the quantities required by change in design will be measured as specified and the revised quantities will be the basis for payment.

In the presence of excess ground water and/or unstable conditions in sub-grade soils prevents excavation to the line and depths indicated on the plans for “Drilled Shaft Foundation”, other proposed methods of foundation installation such as casing, etc. shall be submitted for review and approved by the Engineer.

ITEM 421: Hydraulic Cement Concrete

Provide Sulfate Resistant Concrete for all concrete piling and drilled shafts.

Provide equipment at the batch plant for determining the free moisture and/or absorption of aggregates in accordance with applicable TXDOT Test.

Provide the following items for concrete batch inspection in accordance with specifications outlined in DMS-10101, “Computer Equipment”:

(1) One Desktop Microcomputer or One Laptop Microcomputer
(2) One Integrated Printer/Scanner/Copier/Fax Unit
(3) Contractor-Furnished Software
(4) Hardware

Submit to the Engineer for approval the project locations for all Portland Cement concrete washout areas prior to starting any concrete work.
Fiber Reinforced Concrete is not permitted.

ITEM 465: Junction Boxes, Manholes, and Inlets

For TY PSL with RG, FG, or SFG lid inlets, provide Class B concrete riprap with (6”x6” W3xW3 (No. 6 gauge) welded wire fabric) for any side that is touching the natural ground. The riprap will be 4-in thick and 3-ft wide with an 8-in deep by 6-in wide toe unless otherwise shown in the plans. The cost will be subsidiary to Item 465, unless otherwise shown in the plans.

For all inlet extensions, provide a temporary circular curb/inlet extension opening for drainage during construction. The circular opening will be a 4-in Diameter by 2-in deep slot that matches the statewide PCO standard. Fill curb circular curb/inlet extension opening with epoxy and mortar as per Item 429 Concrete Structure Repair specifications. Epoxy and mortar are subsidiary to Item 465.

ITEM 502: Barricades, Signs, and Traffic Handling

Shadow vehicles equipped with Truck-Mounted Attenuators are required for traffic handling. See notes for Item 6185: Truck Mounted Attenuator/Trailer Attenuator, for additional references pertaining to the TMAs.

Replace/relocate all regulatory signs removed due to construction operations with the same sign on fixed support(s) immediately upon its removal. First obtain Project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

Relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

These signs shall be relocated to a location in accordance with the Latest Version of the “Texas Manual on Uniform Traffic Control Devices”. In no case will a sign be removed without a replacement sign and support(s) being readily available and a location established. Removal and

relocation of these signs required for traffic control will not be paid for directly but shall be considered subsidiary to Item 502.

From the beginning to the end of the project, all traffic control devices need to be in acceptable condition as per the Texas Quality Guidelines for Work Zone Traffic Control Devices.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The "Safety Contingency" is not intended to be used in lieu of bid Items established by the contract.
Remove and dispose of all litter, debris, objectionable material, excess materials that accumulate at the base of all traffic control devices as directed by the Engineer.

ITEM 504: Field Office and Laboratory

Furnish (1) Field Office (Type C).

The Contractor will furnish a Type D Structure (Asphalt Mix Laboratory) modified by the following.

Laboratory room:

The other room of this building will be used as a laboratory and will include access to a bathroom facility from the interior. The laboratory and bathroom facility will have the walls, ceiling and floor insulated such that the air temperature can always be maintained at 76 degrees Fahrenheit.

Furnish for the Department's use in the asphalt laboratory one (1) desktop computer.

ITEM 506: Temporary Erosion, Sedimentation, and Environmental Controls

Before starting each phase of construction, review with the Engineer the SW3P used for temporary erosion control as outlined on the plans. Before construction, place the temporary erosion and sedimentation control features as shown on the SW3P. Location of Construction Exits are to be approved by the Engineer. After completing earthwork operations, restore and reseed the disturbed areas in accordance with the Department's specifications for permanent or temporary erosion control. Before starting grading operations and during the project duration, place the temporary or permanent erosion control measures to prevent sediment from leaving the right of way.

The Contractor Force Account "Erosion Control Maintenance" that has been established for this project is intended to be utilized for work zone Best Management Practice (BMP) maintenance, to improve the effectiveness of the Environmental Controls that may need maintenance attention and/or require replacement while the project is still under the construction stage. These procedures will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent BMP management reviews on the project. The "Erosion Control Maintenance" is not intended to be used in lieu of bid Items established by the contract.

ITEM 512: Portable Traffic Barrier

During the various construction phases, provide drainage slots in every temporary concrete traffic barrier used for traffic control in order to handle temporary drainage. Provide any additional drainage measures needed as directed by the Engineer.

ITEM 529: Concrete Curb, Gutter, and Combined Curb and Gutter

Before final acceptance of the project, remove discoloration caused by tire marks, mud, asphalt, paint, or other similar material by any method satisfactory to the Engineer to achieve a uniform color and texture of the finished surface exposed to view.

Curb attached to the MBGF thrie-beam transition section will be subsidiary to the MBGF transition.

ITEM 530: Intersections, Driveways, and Turnouts

Prime coat shall meet the requirements of Item 310.

Public and private driveways need to have a smooth vertical transition tie-in between the proposed driveway and the existing driveway. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 530.

ITEM 531: Sidewalks

Construct ¼-inch thick score joints at a maximum 6-foot spacing and expansion joints at a maximum 18 foot spacing. Construct a joint in the center of the sidewalk if it is over 15-feet wide. For steel reinforcement, use 6x6-inch spacing with #3 bars or 6x6 – D6 welded wire fabric.

ITEM 560: Mailbox Assemblies

Coordinate and verify final mailbox locations with TxDOT and the US Postmaster.

ITEM 585: Ride Quality for Pavement Surfaces

Use Surface Test Type "B" for service roads and ramps.

Quality control results shall be submitted to TxDOT the next working day after each day's paving.

Pavement areas with public turnout intersections that carry major traffic volumes will not be subjected to inertial profiler testing. These areas shall be evaluated using the 10-ft. straightedge.

Diamond grinding shall be used to remove localized roughness.

Use Surface Test Type B pay adjustment schedule 2 to evaluate ride quality of the travel lanes in accordance with Item 585, "Ride Quality for Pavement Surfaces." This includes ramps and service road travel lanes.

ITEM 610: Roadway Illumination Assemblies

Luminaires shown on the proposed Traffic Signal installation layout sheets may be shown at an angle for clarity. All luminaires shown shall be installed perpendicular to the main roadway under construction.

In addition to ED (3)-14, each cable for luminaires shall be identified in each ground box, pole base, or other accessible location with yellow electrical tape wrapped around the cable. The tape marking shall be at least 2 inches.

All luminaires on traffic signal poles shall be rated for 240 vac. All safety lighting poles shall be serviced for 480 vac.

Luminaires installed on traffic signal poles will not be paid for directly but shall be considered subsidiary to the various bid Items of the project.

ITEM 618: Conduit

All conduit ends in pole bases, controllers and ground boxes shall be plugged with 4 to 6 inches of polyurethane sealant or its equivalent after cables are in place.

Conduit shall be placed in a straight line not to exceed 2.0 feet in any direction. The depth of the conduit shall be 2.0 feet except when crossing a roadway where the depth shall not be more than 3.0 feet nor less than 1.0 foot below the bottom of the base material in the roadway when placed by the jacking or boring method. Any evidence of damage to the roadway during the jacking or boring operation shall be sufficient grounds to stop the method being used.

Conduit runs under paved roadways or driveways shall be jacked or bored and then pushed across. At these locations, galvanized rigid metal may be used. All other runs shall be made by trenching. Existing pavement which will be removed, reconstructed, or overlaid with new pavement may be trenched across. Trenches for conduit runs shall be a minimum 2 feet deep and 4 inches wide. The conduit shall be placed on a 2-inch sand cushion and then backfilled with a minimum of 6 inches sand fill. The remainder of the trench shall be backfilled with flexible base, soil or two-sack concrete as required by location of conduit on the project or as directed. The top 3 inches shall match the existing surface material.
All conduit elbows and rigid extensions required to be installed on PVC conduit systems will not be paid for separately but will be considered subsidiary to the various bid Items.
Use materials from prequalified Material Producer List as shown on the Texas Department of Transportation (TxDOT) - Construction Division's (CST) Material Producer List. Category is "Roadway Illumination and Electrical Supplies."

ITEM 620: Electrical Conductors

For Flashing Beacons (Item 685) and Ped poles (Item 687) within the project, provide single-pole breakaway disconnects.

Use Bussman HEBW, Littelfuse LEB, Ferraz-Shawmut FEB, or equal on ungrounded conductors.

For all grounded conductors use Bussman HET, Littelfuse LET, Ferraz-Shawmut FEBN, or equal on ungrounded conductors. For all grounded conductors use Bussman HET, Littelfuse LET, Ferraz Shawmut FEBN, or equal. These breakaway connectors have a white colored marking and a permanently installed solid neutral.

ITEM 621: Tray Cable

Connect luminaires on traffic signal poles using a 4-conductor tray cable with conductor colors of red, black, and green #12 AWG (XHHW). The white (neutral) conductor will not be needed and will be capped.

ITEM 628: Electrical Services

Arrange for and cooperate with the utility company to provide electrical power for the service(s) shown and as required by the plans. A meter will be required on all electrical services.

ITEMS 636: Signs

Complete sign blanks and panels shall be handled and stored at the job site in such a manner that corners, edges and faces are not damaged. Finished sign blanks shall be stored in either a

weatherproof warehouse or outside and off the ground in a vertical position. All paper, cardboard and chemically treated separators and packaging shall be removed prior to outside storage.

ITEM 644: Small Roadside Sign Assemblies

All signs shall be installed as shown in the plans and in accordance with the current edition of the "Texas Manual on Uniform Traffic Control Devices" and the “Sign Crew Field Book” (SCFB). All signs shall be erected according to the locations shown on the signing layout sheets except that a sign may be shifted in order to secure a more desirable location. All sign locations will be staked as shown in the plans and as approved. It is the intent of the plans to erect all roadside traffic signs with the sign edge a minimum of 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the travel lane. In curb and gutter sections, the sign edge shall be a minimum of 2 feet from the face of the curb.

For this project, aluminum type sign blanks as provided for under Item 636 will be required for all proposed signing installed under Item 644. Aluminum sign blanks less than 7.5 square feet shall be 0.08-inch-thick, sign blanks 7.5 to 15 square feet shall be 0.100-inch-thick and sign blanks greater than 15 square feet shall be 0.125 inch thick.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of these Items.

Sign types which design details are not shown on the plans shall conform with the latest edition of the Department's "Standard Highway Sign Design for Texas" Manual.

Signs shown to be removed shall include the complete sign installation and separate the sign post at the concrete foundation. The concrete foundation shall be disposed in accordance with this bid Item. Except for concrete foundations, all removed sign panels, sign posts, and hardware shall remain then property of the Department. All removed sign installations shall be completely disassembled. All salvageable sections of sign panels shall be recycled by TxDOT. The removed sign material will be required to be hauled to the maintenance yard closest to the project. No signs shall be removed without prior approval.

ITEM 656: Foundations for Traffic Control Devices

The dimensions shown on the plans for location of signal pole foundations, conduit and other items may be varied to meet existing conditions as approved.

The work area shall be cleaned up and all loose material resulting from the contract operations shall be removed from the work area each day before work is suspended.

No traffic signal pole shall be placed on the foundations prior to seven (7) days following placement of concrete.

ITEMS 662 and 666: Work Zone Pavement Markings and Retroreflectorized Pavement Markings

For expressway projects, provide channelizing devices at the ramp connections when temporary pavement marking tabs are placed. These channelizing devices will be subsidiary to Item 502.

All permanent pavement markings and work zone pavement markings for this project under these Items shall be 0.100 inches (100 mil) thick thermoplastic.

Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity in accordance with the requirements of Tex 828-B, or that fail to meet minimum retro reflectivity requirements for longitudinal pavement markings when required, will be addressed per the requirements of the specification. The roadway will be re-striped at no additional compensation.

Pavement surface preparation for markings and markers will not be paid for directly but shall be considered subsidiary to Item 666.

Prior to any striping operations, an on-site coordination meeting between all the parties involved will be required to review striping details and requirements to ensure quality work.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

ITEM 677: Eliminating Existing Pavement Markings and Markers

Asphalt and aggregate types and grades shall be as approved in writing when a surface treatment is used to eliminate existing pavement markings.

ITEM 680: Highway Traffic Signals

The installation of highway traffic signals shall consist of the following principal Items:

1. Furnishing and installing 16-phase full traffic actuated controllers, base mounted cabinets, conflict monitors, load switches and loop amplifiers.
2. Furnishing and installing either steel mast arm poles, or steel strain poles and span wire and pedestal poles (as shown on plans), electrical service, luminaires, signal heads, signal cables, pedestrian heads and pedestrian push buttons with signs that meet the "Americans with Disabilities Act" Standards, loop detectors, ground boxes, conduit runs and controller concrete foundations.
3. Removal and disposal of existing signal material specified in the plans.

4. All other Items not listed above which are needed to provide for complete traffic signal installations and for proper signal operation as called for in the plans and specifications shall be furnished and installed.

Any deviation of location for proposed signal work shall be as approved.

Signal controller

The signal installations shall be wired in accordance with the phase diagrams in the plans. The proposed base mounted cabinet shall contain 16-phase conflict monitor which display the "R-Y-G" and "Walk" phases. In addition to detecting phasing conflicts, the conflict monitor shall also be able to detect multiple signal head indications within every phase. The conflict monitor shall continue to operate in the event of a power supply failure in the timer and shall be able to retain in memory the time and date of the failure detection. Time changes shall be programmable in the field without replacing components or use of external devices. The full-actuated controller shall meet N.E.M.A. Specifications.

A controller manufacturer's technician shall be required to load initial timing programs into the controllers as called for in the plans. Once the traffic signals are turned on, the same technician shall monitor the signal operation and traffic movement and shall adjust settings for best signal operation. The technician shall provide the State with a certification that the timing plan and coordination has been established according to the plans. This certification shall include a record showing all settings and functions programmed into the timer and any related units.

The controller must be delivered with two sets of wiring diagrams and operating manuals enclosed in a weatherproof bag.

All wiring not covered by the plans and specifications shall be in accordance with the latest edition of the National Electrical Code.

Existing utilities

The exact location of existing underground utilities shall be verified with the utility companies prior to construction to avoid conflict with or damage to these utilities.

Coordination with the utility companies will be required to make any adjustments, due to utility conflicts, as defined in the specifications or deemed necessary.

Uniformity in Equipment

1. All traffic signal heads furnished shall be by the same manufacturer.
2. All signal fittings and pipe brackets shall be of an approved metallic material and of the same design and manufacturer.
3. All traffic signal poles furnished shall be by the same manufacturer.
4. All loop detector amplifiers furnished shall be by the same manufacturer.

Handling of Traffic

Roads and streets shall always be kept open to traffic. The setting of loop detectors shall be arranged so as to close only one lane of a roadway at a time. The installation of signal heads, poles and conduit shall also be arranged so as to permit the continuous movement of traffic in both directions at all times.

All construction operations shall be conducted to provide the least possible interference to traffic as shown on the plans, as provided for in the specifications and/or as directed. All signing, barricading, and handling of traffic shall conform to the current edition of the "Texas Manual on Uniform Traffic Control Devices".

Sequence of work

1. The existing traffic signal installations shall always remain in operation during construction of the proposed traffic signal installations or modifications.
2. The complete removal of the specified existing traffic signals or specified Items will be required when the proposed traffic signal installations are in place and operational.
3. All labor, tools, and materials used to remove the specified existing traffic signal material shall not be paid for directly but be considered subsidiary to the various items of work.
4. Final inspection shall be conducted in conjunction with the district signal shop.

ITEM 682: Vehicle and Pedestrian Signal Heads

All signal heads shall be covered with burlap from the time of installation until the signal is placed in operation. All signal heads shall be of polycarbonate material and yellow in color. Signal heads shall have standard detachable visors. LEDs shall be furnished for all traffic signal heads.

Signal heads shall be positioned carefully to provide the best view of signal indications to motorists. All signal heads shall be installed to a neat overall appearance. Nominal height for signal heads above pavement surface shall be 18 feet 6 inches, plus/minus 3 inches.

Pedestrian signal heads shall be positioned carefully to provide the best view to pedestrians.

ITEM 682: Vehicle and Pedestrian Signal Heads

All flashing beacon heads shall be covered with burlap from the time of installation until they are placed in operation. All flashing beacon heads shall be of polycarbonate material and yellow in color. Flashing beacon heads shall have standard detachable visors. LEDs shall be furnished for all traffic signal heads.

Flashing beacon heads shall be positioned carefully to provide the best view of head indications to motorists. All beacon heads shall be installed to a neat overall appearance.

Nominal height for flashing beacon heads above pavement surface shall be 18 feet 6 inches, plus/minus 3 inches.

ITEM 684: Traffic Signal Cables

All signal cable shall be #12 AWG; 2/c loop. Lead-In shall be #14 AWG shielded and loop wires in pavement.

ITEM 686: Traffic Signal Pole Assemblies (Steel)

The locations for the proposed traffic signal poles are approximate. The exact locations will be determined in the field in coordination with the District Signal Shop.
Erection and/or removal of poles and luminaries located near any overhead electrical power lines shall be accomplished using established industry and utility safety practices. The appropriate utility company shall be consulted with prior to beginning such work.

ITEM 688: Pedestrian Detectors and Vehicle Loop Detectors

The Contractor shall install loop vehicle detectors in accordance with the Intersection layouts in the plans or as directed. Each loop detector Lead-In cable shall be tagged inside the controller cabinet with its loop number. The loop amplifiers shall indicate the loop and phase of control or direction of control. Loop wires in street shall be #14 AWG. Pedestrian detectors shall meet the minimum requirements called for by the "Americans with Disabilities Act".

Loop detector lead-in cable shall be continuous from ground box to the controller.

Splices for loop wire will be permitted only at ground boxes or pole base with approved weatherproof splice kits.

A minimum length of 2.0 feet for each cable shall be left in each ground box.

ITEM 6185: Truck Mounted Attenuator/Trailer Attenuator

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan for the project, provide 2 additional shadow vehicle(s) with TMA as per TCP (1-4) -18 as detailed on General Note 5 of this standard sheet;
or as per TCP (2-2) -18 as detailed on General Note 7 of this standard sheet.
or as per TCP (2-3) -18 as detailed on General Note 8 of this standard sheet.
or as per TCP (2-5) -18 as detailed on General Note 4 of this standard sheet.

Therefore, 3 total shadow vehicles with TMA will be required on this project for the type of work as shown on the plans. The Contractor will be responsible for determining if one or more of his construction operations will be ongoing at the same time and thus determine the total number of TMAs needed for the project.

ITEM 6292: Radar Vehicle Detection System for Signalized Intersection Control

Radar presence detection device must utilize true-presence detection. Systems using locking algorithms to attempt presence detection will not be accepted. In addition, radar systems will not be allowed to use extensions/delays or place the controller on locking detection to aid in the presence detection.

The radar presence detection device must be able to detect up to 10 lanes with a minimum offset of 6’ and have at least 16 zones and channels per unit.

The radar presence detection device software must not require internet for configuration

Communication and power to the radar devices shall be via continuous cable run of up to 1,000 feet without the use of repeaters.

Final placement of radar devices to be approved by the Engineer.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 1228-03-050 **DISTRICT** Pharr **COUNTY** Hidalgo
HIGHWAY FM 1015

			CONTROL SECTION JOB		**1228-03-050**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00182353**		
			COUNTY		**Hidalgo**		
			HIGHWAY		**FM 1015**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	85.000		85.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	562.000		562.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	14,380.000		14,380.000	
	104-6026	REMOVE CONC (GUTTER)	LF	2,404.000		2,404.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY	1,296.000		1,296.000	
	105-6158	REMOV STAB BASE AND ASPH PAV (12")	CY	3,581.000		3,581.000	
	110-6001	EXCAVATION (ROADWAY)	CY	19,050.000		19,050.000	
	134-6001	BACKFILL (TY A)	STA	85.000		85.000	
	160-6005	FURNISHING AND PLACING TOPSOIL	CY	50.000		50.000	
	164-6027	CELL FBR MLCH SEED(PERM)(URBAN)(CLAY)	SY	12,762.000		12,762.000	
	164-6029	CELL FBR MLCH SEED(TEMP)(WARM)	SY	12,762.000		12,762.000	
	168-6001	VEGETATIVE WATERING	MG	194.000		194.000	
	204-6003	SPRINKLING (DUST CONTROL)	MG	338.000		338.000	
	247-6225	FL BS (RDWY DEL)(TY E GR 4)(FNAL POS)	CY	7,171.000		7,171.000	
	251-6159	REWORK BS MATL (TY B)(10")(DC)(ORG POS)	CY	17,928.000		17,928.000	
	260-6011	LIME TRT (EXST MATL) (12")	SY	65,474.000		65,474.000	
	260-6043	LIME (HYD, COM OR QK)(SLURRY)	TON	1,297.000		1,297.000	
	275-6001	CEMENT	TON	847.000		847.000	
	275-6065	CEM TRT(MX EXST MTL & NEW BS)(14")	SY	64,540.000		64,540.000	
	305-6016	SALV, HAUL & STKPL RCL APH PV (3")	SY	61,430.000		61,430.000	
	310-6009	PRIME COAT (MC-30)	GAL	12,347.000		12,347.000	
	354-6045	PLANE ASPH CONC PAV (2")	SY	13,022.000		13,022.000	
	360-6080	CONC PVMT(CRCP)(TRANSITION SLAB)	SY	102.000		102.000	
	416-6030	DRILL SHAFT (TRF SIG POLE) (24 IN)	LF	12.000		12.000	
	465-6557	INLET (CURB)(SPL)	EA	40.000		40.000	
	479-6004	ADJUSTING MANHOLES (SANITARY)	EA	9.000		9.000	
	496-6002	REMOV STR (INLET)	EA	40.000		40.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	19.000		19.000	
	506-6021	CONSTRUCTION EXITS (INSTALL) (TY 2)	SY	624.000		624.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	624.000		624.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	750.000		750.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	750.000		750.000	
	512-6001	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	LF	3,390.000		3,390.000	
	512-6009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	1,240.000		1,240.000	
	512-6010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	160.000		160.000	
	512-6025	PORT CTB (MOVE)(SGL SLP)(TY 1)	LF	6,240.000		6,240.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 1228-03-050 **DISTRICT** Pharr **COUNTY** Hidalgo
HIGHWAY FM 1015

			CONTROL SECTION JOB		**1228-03-050**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00182353**		
			COUNTY		**Hidalgo**		
			HIGHWAY		**FM 1015**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	512-6033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	900.000		900.000	
	512-6034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	40.000		40.000	
	512-6037	PORT CTB (STKPL)(SGL SLP)(TY 1)	LF	240.000		240.000	
	512-6049	PORT CTB (REMOVE)(SGL SLP)(TY 1)	LF	3,390.000		3,390.000	
	512-6057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	1,240.000		1,240.000	
	512-6058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	160.000		160.000	
	529-6028	CONC CURB & GUTTER (TY B) (MOUNTABLE)	LF	13,156.000		13,156.000	
	529-6029	CONC CURB & GUTTER (TY A)	LF	2,759.000		2,759.000	
	529-6031	CONC CURB & GUTTER(VALLEY GUTTER)(48")	LF	915.000		915.000	
	530-6004	DRIVEWAYS (CONC)	SY	597.000		597.000	
	530-6005	DRIVEWAYS (ACP)	SY	2,258.000		2,258.000	
	531-6001	CONC SIDEWALKS (4")	SY	1,302.000		1,302.000	
	531-6004	CURB RAMPS (TY 1)	EA	6.000		6.000	
	531-6008	CURB RAMPS (TY 5)	EA	5.000		5.000	
	531-6013	CURB RAMPS (TY 10)	EA	8.000		8.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA	50.000		50.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)	EA	34.000		34.000	
	545-6013	CRASH CUSH ATTEN (INSTL)(R)(N)(TL3)	EA	34.000		34.000	
	560-6014	MAILBOX INSTALL-S (TWG-POST) TY 4	EA	21.000		21.000	
	618-6016	CONDT (PVC) (SCH 40) (1")	LF	350.000		350.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF	2,280.000		2,280.000	
	618-6033	CONDT (PVC) (SCH 40) (4")	LF	502.000		502.000	
	618-6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	459.000		459.000	
	620-6007	ELEC CONDR (NO.8) BARE	LF	2,291.000		2,291.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	415.000		415.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	830.000		830.000	
	621-6005	TRAY CABLE (4 CONDR) (12 AWG)	LF	2,570.000		2,570.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	30.000		30.000	
	625-6003	ZINC-COAT STL WIRE STRAND (3/8")	LF	1,830.000		1,830.000	
	636-6001	ALUMINUM SIGNS (TY A)	SF	42.000		42.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	33.000		33.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	3.000		3.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	28.000		28.000	
	662-6005	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	LF	1,510.000		1,510.000	
	662-6006	WK ZN PAV MRK NON-REMOV (W)6"(DOT)	LF	96.000		96.000	
	662-6008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	LF	25,175.000		25,175.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF	3,610.000		3,610.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 1228-03-050 **DISTRICT** Pharr **COUNTY** Hidalgo
HIGHWAY FM 1015

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**1228-03-050**			
		PROJECT ID		**A00182353**			
		COUNTY		**Hidalgo**			
		HIGHWAY		**FM 1015**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	662-6016	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	347.000		347.000	
	662-6035	WK ZN PAV MRK NON-REMOV (Y)6"(BRK)	LF	910.000		910.000	
	662-6037	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF	65,050.000		65,050.000	
	662-6048	WK ZN PAV MRK REMOV (REFL) TY I-C	EA	242.000		242.000	
	662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	1,269.000		1,269.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	1,953.000		1,953.000	
	662-6110	WK ZN PAV MRK SHT TERM (TAB)TY Y	EA	2,173.000		2,173.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	2,559.000		2,559.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	61.000		61.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	887.000		887.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	28.000		28.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	18.000		18.000	
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF	338.000		338.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	4,829.000		4,829.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	4,901.000		4,901.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	3,937.000		3,937.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	20,171.000		20,171.000	
	672-6007	REFL PAV MRKR TY I-C	EA	370.000		370.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	599.000		599.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	19,910.000		19,910.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	1,518.000		1,518.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF	192.000		192.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	12.000		12.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5.000		5.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	5.000		5.000	
	680-6002	INSTALL HWY TRF SIG (ISOLATED)	EA	3.000		3.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA	3.000		3.000	
	681-6001	TEMP TRAF SIGNALS	EA	3.000		3.000	
	682-6001	VEH SIG SEC (12")LED(GRN)	EA	29.000		29.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA	7.000		7.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA	29.000		29.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA	12.000		12.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA	29.000		29.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA	5.000		5.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	21.000		21.000	
	682-6049	BACKPLATE W/REFL BRDR(4 SEC)	EA	5.000		5.000	
	682-6050	BACKPLATE W/REFL BRDR(5 SEC)	EA	2.000		2.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 1228-03-050 **DISTRICT** Pharr **COUNTY** Hidalgo
HIGHWAY FM 1015

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**1228-03-050**			
		PROJECT ID		**A00182353**			
		COUNTY		**Hidalgo**			
		HIGHWAY		**FM 1015**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	682-6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	27.000		27.000	
	684-6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	6,066.000		6,066.000	
	684-6010	TRF SIG CBL (TY A)(12 AWG)(5 CONDR)	LF	9,901.000		9,901.000	
	684-6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	1,755.000		1,755.000	
	684-6080	TRF SIG CBL (TY C)(14 AWG)(2 CONDR)	LF	5,284.000		5,284.000	
	687-6001	PED POLE ASSEMBLY	EA	2.000		2.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	21.000		21.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	2.000		2.000	
	688-6004	VEH LP DETECT (SAWCUT)	LF	1,724.000		1,724.000	
	3077-6066	SP MIXESSP-DSAC-B PG76-22	TON	10,557.000		10,557.000	
	3080-6013	STONE-MTRX-ASPH SMA-F SAC-A PG76-22	TON	8,523.000		8,523.000	
	3084-6001	BONDING COURSE	GAL	9,512.000		9,512.000	
	6185-6002	TMA (STATIONARY)	DAY	580.000		580.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	25.000		25.000	
	6292-6001	RVDS(PRESENCE DETECTION ONLY)	EA	8.000		8.000	
	08	CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS	1.000		1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS	1.000		1.000	

OMITTED

Texas Department of Transportation

FM 1015

OMITTED

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		27

Baseline Station	Station Quantities								
	Cut				Fill				Mass
	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Ordinate
395+10.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
396+00.00	1.00	335.49	559.15	559.15	1.00	0.00	0.00	0.00	559.15
397+00.00	1.00	143.75	887.49	887.49	1.00	0.00	0.00	0.00	1446.63
398+00.00	1.00	141.21	527.71	527.71	1.00	0.00	0.00	0.00	1974.34
399+00.00	1.00	144.90	529.83	529.83	1.00	0.00	0.00	0.00	2504.17
400+00.00	1.00	139.17	526.05	526.05	1.00	0.00	0.00	0.00	3030.21
401+00.00	1.00	147.88	531.57	531.57	1.00	0.00	0.00	0.00	3561.78
402+00.00	1.00	150.52	552.59	552.59	1.00	0.00	0.00	0.00	4114.36
403+00.00	1.00	151.49	559.27	559.27	1.00	0.00	0.00	0.00	4673.64
404+00.00	1.00	148.51	555.55	555.55	1.00	0.00	0.00	0.00	5229.19
405+00.00	1.00	146.07	545.52	545.52	1.00	0.00	0.00	0.00	5774.71
406+00.00	1.00	147.22	543.13	543.13	1.00	0.00	0.00	0.00	6317.83
407+00.00	1.00	146.43	543.79	543.79	1.00	0.00	0.00	0.00	6861.62
408+00.00	1.00	141.81	533.78	533.78	1.00	0.00	0.00	0.00	7395.40
409+00.00	1.00	136.32	515.06	515.06	1.00	0.00	0.00	0.00	7910.47
410+00.00	1.00	139.55	510.87	510.87	1.00	0.00	0.00	0.00	8421.34
411+00.00	1.00	142.37	522.07	522.07	1.00	0.00	0.00	0.00	8943.41
412+00.00	1.00	149.45	540.41	540.41	1.00	0.00	0.00	0.00	9483.82
413+00.00	1.00	142.25	540.18	540.18	1.00	0.00	0.00	0.00	10024.00
414+00.00	1.00	123.26	491.68	491.68	1.00	0.00	0.00	0.00	10515.68
415+00.00	1.00	110.49	432.86	432.86	1.00	0.00	0.00	0.00	10948.54
416+00.00	1.00	114.41	416.48	416.48	1.00	0.00	0.00	0.00	11365.02
417+00.00	1.00	117.75	429.92	429.92	1.00	0.00	0.00	0.00	11794.94
418+00.00	1.00	119.66	439.65	439.65	1.00	0.00	0.00	0.00	12234.59
419+00.00	1.00	117.92	439.97	439.97	1.00	0.00	0.00	0.00	12674.56
420+00.00	1.00	116.61	434.33	434.33	1.00	0.00	0.00	0.00	13108.89
421+00.00	1.00	116.29	431.30	431.30	1.00	0.00	0.00	0.00	13540.19
422+00.00	1.00	109.67	418.44	418.44	1.00	0.00	0.00	0.00	13958.63
423+00.00	1.00	102.57	393.03	393.03	1.00	0.00	0.00	0.00	14351.66
424+00.00	1.00	100.26	375.60	375.60	1.00	0.00	0.00	0.00	14727.26
425+00.00	1.00	99.72	370.32	370.32	1.00	0.00	0.00	0.00	15097.58
426+00.00	1.00	102.07	373.68	373.68	1.00	0.00	0.00	0.00	15471.26
427+00.00	1.00	107.81	388.68	388.68	1.00	0.00	0.00	0.00	15859.94
428+00.00	1.00	105.76	395.51	395.51	1.00	0.00	0.00	0.00	16255.45
429+00.00	1.00	112.43	404.07	404.07	1.00	0.00	0.00	0.00	16659.51
430+00.00	1.00	112.92	417.31	417.31	1.00	0.00	0.00	0.00	17076.83
431+00.00	1.00	111.94	416.39	416.39	1.00	0.00	0.00	0.00	17493.22
432+00.00	1.00	111.29	413.37	413.37	1.00	0.00	0.00	0.00	17906.59
433+00.00	1.00	115.59	420.13	420.13	1.00	0.00	0.00	0.00	18326.73
434+00.00	1.00	119.17	434.73	434.73	1.00	0.00	0.00	0.00	18761.46
435+00.00	1.00	119.42	441.84	441.84	1.00	0.00	0.00	0.00	19203.29
436+00.00	1.00	126.61	455.61	455.61	1.00	0.00	0.00	0.00	19658.90
437+00.00	1.00	130.93	476.93	476.93	1.00	0.00	0.00	0.00	20135.83
438+00.00	1.00	130.68	484.46	484.46	1.00	0.00	0.00	0.00	20620.29
439+00.00	1.00	118.59	461.60	461.60	1.00	0.00	0.00	0.00	21081.89
440+00.00	1.00	109.11	421.67	421.67	1.00	0.00	0.00	0.00	21503.56
441+00.00	1.00	106.41	399.11	399.11	1.00	0.00	0.00	0.00	21902.66
442+00.00	1.00	108.13	397.29	397.29	1.00	0.00	0.00	0.00	22299.96
443+00.00	1.00	112.43	408.44	408.44	1.00	0.00	0.00	0.00	22708.40
444+00.00	1.00	108.88	409.83	409.83	1.00	0.00	0.00	0.00	23118.23
445+00.00	1.00	111.34	407.82	407.82	1.00	0.00	0.00	0.00	23526.05
446+00.00	1.00	109.25	408.50	408.50	1.00	0.00	0.00	0.00	23934.56
447+00.00	1.00	109.32	404.76	404.76	1.00	0.00	0.00	0.00	24339.32
448+00.00	1.00	109.33	404.91	404.91	1.00	0.00	0.00	0.00	24744.23
449+00.00	1.00	202.13	576.78	576.78	1.00	0.00	0.00	0.00	25321.01
450+00.00	1.00	110.21	578.41	578.41	1.00	0.00	0.00	0.00	25899.43
451+00.00	1.00	115.11	417.26	417.26	1.00	0.00	0.00	0.00	26316.69
452+00.00	1.00	107.97	413.10	413.10	1.00	0.00	0.00	0.00	26729.78
453+00.00	1.00	111.78	406.93	406.93	1.00	0.00	0.00	0.00	27136.72
454+00.00	1.00	112.42	415.17	415.17	1.00	0.00	0.00	0.00	27551.89
455+00.00	1.00	106.69	405.74	405.74	1.00	0.00	0.00	0.00	27957.63
456+00.00	1.00	108.08	397.70	397.70	1.00	0.00	0.00	0.00	28355.33
457+00.00	1.00	114.31	411.83	411.83	1.00	0.00	0.00	0.00	28767.16
458+00.00	1.00	111.75	418.63	418.63	1.00	0.00	0.00	0.00	29185.79
459+00.00	1.00	117.13	423.85	423.85	1.00	0.00	0.00	0.00	29609.64
460+00.00	1.00	108.31	417.49	417.49	1.00	0.00	0.00	0.00	30027.13
461+00.00	1.00	98.78	383.50	383.50	1.00	0.00	0.00	0.00	30410.63
462+00.00	1.00	102.54	372.82	372.82	1.00	0.00	0.00	0.00	30783.45
463+00.00	1.00	99.04	373.30	373.30	1.00	0.00	0.00	0.00	31156.75
464+00.00	1.00	108.67	384.65	384.65	1.00	0.00	0.00	0.00	31541.40
465+00.00	1.00	109.71	404.40	404.40	1.00	0.00	0.00	0.00	31945.80
466+00.00	1.00	111.06	408.83	408.83	1.00	0.00	0.00	0.00	32354.63
467+00.00	1.00	112.59	414.18	414.18	1.00	0.00	0.00	0.00	32768.81
468+00.00	1.00	109.50	411.27	411.27	1.00	0.00	0.00	0.00	33180.08
469+00.00	1.00	106.50	399.99	399.99	1.00	0.00	0.00	0.00	33580.07
470+00.00	1.00	106.09	393.69	393.69	1.00	0.00	0.00	0.00	33973.75
471+00.00	1.00	99.17	380.12	380.12	1.00	0.00	0.00	0.00	34353.87
472+00.00	1.00	101.80	372.16	372.16	1.00	0.00	0.00	0.00	34726.04
473+00.00	1.00	104.44	381.91	381.91	1.00	0.00	0.00	0.00	35107.95
474+00.00	1.00	102.26	382.76	382.76	1.00	0.00	0.00	0.00	35490.71
475+00.00	1.00	97.80	370.47	370.47	1.00	0.00	0.00	0.00	35861.17
476+00.00	1.00	102.55	371.00	371.00	1.00	0.00	0.00	0.00	36232.18
477+00.00	1.00	97.89	371.18	371.18	1.00	0.00	0.00	0.00	36603.36
478+00.00	1.00	107.54	380.43	380.43	1.00	0.00	0.00	0.00	36983.79
479+00.00	1.00	116.86	415.56	415.56	1.00	0.00	0.00	0.00	37399.34
479+24.00	1.00	113.08	102.19	102.19	1.00	0.00	0.00	0.00	37501.54
Grand Total:			37501.54	37501.54			0.00	0.00	

EXCAVATION (ROADWAY) = TOTAL EXCAVATION (CUT) - EXISTING ACP - EXISTING FLEX BASE

TOTAL EXCAVATION (CUT) = 37502 CY

EXISTING ACP (CY) = 4994 CY

EXISTING FLEX BASE (CY) = 13458 CY

EXCAVATION (ROADWAY) = 37502 CY - 4994 CY - 13458 CY = 19050 CY

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

EARTHWORK SUMMARY

NOT TO SCALE SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		28

DATE: 6/12/2023 4:10:55 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenasid0681696\FM1015 Earthwork Summary.dgn

CK
DW
CK
DW

GENERAL NOTES AND SPECIFICATIONS DATA:

USE A POWER-BROOM WHEN CLEANING THE ROADWAY AS NEEDED.

REMOVE & DISPOSE ALL MATERIAL NOT DEEMED SALVAGEABLE BY THE ENGINEER, UNLESS OTHERWISE SHOWN ON THE PLANS.

ON EXISTING PAVEMENT THAT WILL REMAIN IN PLACE, SAND BLAST OR SURFACE TREAT IN ORDER TO REMOVE EXISTING STRIPING.

DO NOT BLOCK DRAINAGE WHEN HANDLING & STOCKPILING EXCAVATED MATERIAL.

MAINTAIN ACCESS TO DRIVEWAYS AND INTERSECTIONS THROUGH ALL PHASES OF CONSTRUCTION.

MAINTAIN POSITIVE DRAINAGE DURING ALL PHASES OF CONSTRUCTION.

ALWAYS COMPLETE THE PROPOSED DRIVEWAYS DURING THEIR TCP PHASE BEFORE SWITCHING TRAFFIC TO A NEW PHASE UNLESS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES:

AT THE COMMENCEMENT OF THE PROJECT, ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCEPTABLE CONDITION, AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AS PER GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES AND FEATURES.

NOTIFY THE AREA ENGINEER(AE) IN WRITING(E-MAIL IS ACCEPTABLE) ONCE THE TRAFFIC CONTROL PLAN(TCP) AND ALL TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED AS PER PLANS ON THE PROJECT SO THAT THE DEPARTMENT'S RESPONSIBLE PERSON ACCOMPANIED BY THE CONTRACTOR'S RESPONSIBLE PERSON CAN CONDUCT A NIGHT INSPECTION ON THE SAID TCP AND TRAFFIC CONTROL DEVICES. COMMENCEMENT OF WORK WILL NOT BE AUTHORIZED NOR ALLOWED UNTIL THE AE NOTIFIES THE CONTRACTOR IN WRITING(E-MAIL IS ACCEPTABLE) TO PROCEED WITH THE WORK.

CONTRACTOR SHALL HAVE A SUFFICIENT AMOUNT OF TRAFFIC CONTROL DEVICES IN ACCEPTABLE CONDITION TO REPLACE ANY DAMAGED TRAFFIC CONTROL DEVICE WITHIN 24 HOURS OF NOTIFICATION.

PROVIDE ADDITIONAL SIGNS AND BARRICADES AS NECESSARY TO ADDRESS FIELD CONSTRUCTIBILITY & VISIBILITY. THESE ADDITIONAL SIGNS WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

REMOVE OR COMPLETELY COVER ALL EXISTING SIGNS WHICH ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN.

ADJUST STOP SIGNS AS NEEDED ON INTERSECTING STREETS DURING THE VARIOUS CONSTRUCTION PHASES. DO NOT REMOVE ANY EXISTING STOP SIGNS UNTIL TEMPORARY SIGNS ARE IN PLACE.

COORDINATE THE TRAFFIC CONTROL PLAN AND THE VARIOUS SEQUENCES OF CONSTRUCTION WITH ADJACENT CONSTRUCTION PROJECTS IF APPLICABLE, TO ENSURE THE UNINTERRUPTED AND SAFE FLOW OF TRAFFIC.

NOTIFY THE ENGINEER IN WRITING WHEN MAJOR TRAFFIC CHANGES ARE TO BE MADE. NOTIFICATIONS MUST BE GIVEN A MINIMUM OF THREE WORKING DAYS PRIOR TO THE CHANGE.

ALL WORK ZONE PAVEMENT MARKINGS FOR THIS PROJECT SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.

SAFETY:

PROTECT EXPOSED PITS THAT MUST REMAIN OPEN DURING NON-WORKING HOURS AS PER OSHA REQUIREMENTS.

PROJECT SPECIFIC NOTES:

THIS TRAFFIC CONTROL PLAN (TCP), PHASING AND SEQUENCE OF CONSTRUCTION SERVES AS A GUIDE FOR THE SAFE TRAFFIC HANDLING DURING CONSTRUCTION OF THE PROJECT. THE TCP DOES NOT ATTEMPT TO ADDRESS EVERY ASPECT OF CONSTRUCTION THAT IS REQUIRED DURING EACH OF THE PROPOSED PHASES. THE TCP DOES NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF CONSTRUCTING THE COMPLETE ROADWAY AND ANY OTHER RELATED ITEMS, AS NOTED IN THE PLANS AND SPECIFICATIONS.

CONTRACTOR SHALL NOTIFY THE PROPER CITY, COUNTY, E.M.S., FIRE DEPARTMENT POLICE DEPARTMENT, TEXAS D.P.S. AND TXDOT OFFICIALS WHEN MAJOR TRAFFIC CHANGES ARE TO BE MADE. NOTIFICATIONS MUST BE GIVEN A MINIMUM OF THREE (3) DAYS PRIOR THE CHANGE.

CONTRACTOR SHALL COORDINATE WITH TXDOT AND/OR PROPERTY OWNERS PRIOR TO SELECTING A STAGING/STOCKPILING AREA. CONTRACTOR SHALL NOT STOCKPILE ANY MATERIAL IN PRIVATE PROPERTY. STAGING/STOCKPILING AREA IS SUBJECT TO THE APPROVAL OF THE PROJECT ENGINEER.

CONTRACTOR SHALL NOTIFY AND COORDINATE WITH PROPERTY OWNERS, BUSINESSES AND ANY AFFECTED INDIVIDUALS/ENTITIES PRIOR TO CLOSING LANES, DRIVEWAYS, ENTRANCES, ACCESSES, ETC. TO AVOID ACCESSIBILITY ISSUES DURING THE PROJECT.

THE PORTION OF THIS PROJECT WHICH COINCIDES WITH EXISTING ROADS AND/OR PRIVATE DRIVES SHALL BE KEPT OPEN TO TRAFFIC AT ALL TIMES, UNLESS OTHERWISE PROVIDED FOR OR APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL KEEP TRAVELED SURFACES USED IN HIS HAULING OPERATIONS CLEAR AND FREE OF DIRT, DEBRIS, OR OTHER OBSTRUCTIONS. THIS SURFACE CLEARING AND CLEANING OPERATIONS WILL BE PERFORMED IMMEDIATELY UPON THE OCCURANCE OF DEBRIS ON THE TRAVEL LANES.

FOR THE PURPOSES OF THIS TRAFFIC CONTROL PLAN, THE FOLLOWING DEFINITIONS SHALL APPLY:

PEAK HOURS
MONDAY.-FRIDAY. 6:00 A.M. TO 9:00 A.M.
MONDAY.-FRIDAY. 4:00 P.M. TO 7:00 P.M.
OFF-PEAK HOURS
MONDAY.-FRIDAY. 9:00 A.M. TO 4:00 P.M.
MONDAY.-FRIDAY. 7:00 P.M. TO 10:00 P.M.
NIGHTTIME HOURS
MONDAY.-FRIDAY. 10:00 P.M. TO 6:00 A.M.
WEEKEND HOURS
FRIDAY. 10:00 P.M. TO MONDAY. 6:00 A.M.

CONTRACTOR SHALL REMOVE ALL CONFLICTING PAVEMENT MARKINGS AS SHOWN ON THE PLANS. FAILURE TO ELIMINATE CONFLICTING PAVEMENT MARKINGS NOT ADHERING TO ITEM 502 WILL RESULT IN A PENALTY THAT WILL NOT ALLOW CONTRACTOR TO MOVE TO NEXT TCP PHASE/STEP.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Pharr District Central Design

Texas Department of Transportation

FM 1015

TCP
GENERAL NOTES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		29

DATE: 1/14/2023 1:42:54 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP General Notes.dgn

CK
DW
CK
DW

SEQUENCE OF CONSTRUCTION

NO PHASE/STEP OF CONSTRUCTION SHALL START UNTIL COMPLETION OF THE PREVIOUS PHASE/STEP, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

INSTALL PROJECT LIMITS AND ADVANCED WARNING SIGNS, CROSSROADS BARRICADES/SIGNS, AS SHOWN ON THE TRAFFIC CONTROL PLANS (TCP), IN ACCORDANCE WITH THE TMUTCD AND/OR AS DIRECTED BY THE ENGINEER. THESE SIGNS SHALL BE ERECTED AND PLACED PRIOR TO COMMENCING ANY PROPOSED ROADWAY CONSTRUCTION AND SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT UNTIL COMPLETION AND ACCEPTANCE OF THE PROJECT BY TXDOT.

RELOCATION OF EXISTING UTILITIES CONFLICTING WITH THE PROPOSED ROADWAY AND DRAINAGE IMPROVEMENTS. UTILITIES SHOWN ON PLANS ARE FOR INFORMATION PURPOSES ONLY AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL INFORMATION, THEREFORE THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO VERIFY UTILITIES PRIOR TO CONSTRUCTION.

TO ACCOMMODATE THE VARIOUS PHASES OF CONSTRUCTION, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE TEMPORARY ADJUSTMENTS AND RELOCATION OF EXISTING SIGNAL HEADS, POLES, CONCRETE TRAFFIC BARRIER, SIGNING, AND ANY OTHER INCIDENTAL WORK NECESSARY TO PROVIDE FOR PROPER TRAFFIC SIGNAL OPERATION. THE ADJUSTMENTS AND RELOCATIONS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502, "BARRICADES, SIGNS AND TRAFFIC HANDLING."

ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO OPENING ANY SECTION TO TRAFFIC. SIGNS ADDITIONAL TO THOSE REQUIRED BY THE BARRICADE STANDARDS OR DEEMED NECESSARY AND APPROVED BY THE ENGINEER WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

TEMPORARY EROSION CONTROL DEVICES MUST BE INSTALLED PRIOR TO THE START OF ANY CONSTRUCTION.

PHASE I STEP I

1. PRIOR TO COMMENCING WITH ANY SOIL DISTURBING ACTIVITIES FOR THIS PHASE, INSTALL EROSION CONTROL DEVICES AS SHOWN ON THE PLANS AND ASSOCIATED SW3P STANDARDS. THESE DEVICES SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE OF THE PROJECT BY TXDOT.
2. INSTALL ALL TEMPORARY CONSTRUCTION SIGNS INCLUDING REDUCED SPEED LIMIT SIGNS, CHANNELIZING DEVICES, BARRICADES, AND SINGLE SLOPE CONCRETE BARRIER AS SHOWN ON THE TRAFFIC CONTROL PLAN (TCP) AND/OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL REMOVE ALL EXISTING CONFLICTING STRIPING AND RAISED REFLECTIVE MARKERS, AND INSTALL WORK-ZONE STRIPING AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
3. ADJUST EXISTING TRAFFIC SIGNALS IN ACCORDANCE WITH THE TEMPORARY SIGNAL LAYOUTS, THEN TRAFFIC SHALL BE SHIFTED TO THE LEFT SIDE OF FM 1015 AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
4. REMOVE AND SALVAGE PARTS OF THE EXISTING PAVEMENT WHICH WILL NO LONGER BE REQUIRED FOR HANDLING TRAFFIC.
5. REHABILITATE THE WEST SIDE OF FM 1015 ROADWAY FROM STA. 449+55 TO STA. 479+24 AS SHOWN IN THE PLANS, INCLUDING PAVEMENT STRUCTURE (EXCEPT THE FINAL 2.0" SMA F LIFT WHICH WILL BE PLACED DURING PHASE III CONSTRUCTION), REPLACE CONCRETE CURB AND GUTTER, DRIVEWAYS, SIDEWALKS AND ADJUSTMENT OF INLETS AS SPECIFIED IN THE PLAN AND PROFILE SHEETS.
6. CONTRACTOR SHALL THEN FOCUS ON CONSTRUCTING MAJOR INTERSECTION TURN-OUTS FOR MILE 8 FROM STA. 447+90 TO STA. 449+55. CONTRACTOR SHALL REFER TO "TRAFFIC CONTROL PLAN CONSTRUCTION SEQUENCE FOR PUBLIC & PRIVATE DRIVEWAYS" SHEET FOR ACCESS MANAGEMENT.
7. AFTER COMPLETION OF ROADWAY CONSTRUCTION FOR PHASE I STEP I, CONTRACTOR SHALL BEGIN INSTALLATION OF WORK ZONE PAVEMENT MARKINGS ON FINISHED CONSTRUCTION AREA BEFORE MOVING TRAFFIC TO PHASE I STEP II. CONTRACTOR SHALL ALSO BEING PLACING TEMPORARY AND/OR PERMANENT SEEDING PER THE SW3P LAYOUTS BEFORE PROCEEDING WITH THE FOLLOWING STEP.

PHASE I STEP II

1. PRIOR TO COMMENCING WITH ANY SOIL DISTURBING ACTIVITIES FOR THIS PHASE, INSTALL EROSION CONTROL DEVICES AS SHOWN ON THE PLANS AND ASSOCIATED SW3P STANDARDS. THESE DEVICES SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE OF THE PROJECT BY TXDOT.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER

06.30.23

Pharr District Central Design

Texas Department of Transportation

FM 1015

TCP
SEQUENCE OF CONSTRUCTION

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		30

DATE: 6/30/2023 9:54:41 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Sequence of Construction.dgn

2. INSTALL ALL TEMPORARY CONSTRUCTION SIGNS INCLUDING REDUCED SPEED LIMIT SIGNS, CHANNELIZING DEVICES, BARRICADES, AND SINGLE SLOPE CONCRETE BARRIER AS SHOWN ON THE TRAFFIC CONTROL PLAN (TCP) AND/OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL REMOVE ALL EXISTING CONFLICTING STRIPING AND RAISED REFLECTIVE MARKERS, AND INSTALL WORK-ZONE STRIPING AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
3. ADJUST EXISTING TRAFFIC SIGNALS IN ACCORDANCE WITH THE TEMPORARY SIGNAL LAYOUTS, THEN TRAFFIC SHALL BE SHIFTED TO THE LEFT SIDE OF FM 1015 AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
4. REMOVE AND SALVAGE PARTS OF THE EXISTING PAVEMENT WHICH WILL NO LONGER BE REQUIRED FOR HANDLING TRAFFIC.
5. REHABILITATE THE EAST SIDE OF FM 1015 ROADWAY FROM STA. 449+55 TO STA. 479+24 AS SHOWN IN THE PLANS, INCLUDING PAVEMENT STRUCTURE (EXCEPT THE FINAL 2.0" SMA F LIFT WHICH WILL BE PLACED DURING PHASE III CONSTRUCTION), REPLACE CONCRETE CURB AND GUTTER, DRIVEWAYS, SIDEWALKS AND ADJUSTMENT OF INLETS AS SPECIFIED IN THE PLAN AND PROFILE SHEETS.
6. CONTRACTOR SHALL THEN FOCUS ON CONSTRUCTING MAJOR INTERSECTION TURN-OUTS FOR MILE 8 FROM STA. 447+90 TO STA. 449+55. CONTRACTOR SHALL REFER TO "TRAFFIC CONTROL PLAN CONSTRUCTION SEQUENCE FOR PUBLIC & PRIVATE DRIVEWAYS" SHEET FOR ACCESS MANAGEMENT.
7. AFTER COMPLETION OF ROADWAY CONSTRUCTION FOR PHASE I STEP I, CONTRACTOR SHALL BEGIN INSTALLATION OF WORK ZONE PAVEMENT MARKINGS ON FINISHED CONSTRUCTION AREA BEFORE MOVING TRAFFIC TO PHASE II STEP I. CONTRACTOR SHALL BEGIN PLACING TEMPORARY AND/OR PERMANENT SEEDING PER THE SW3P LAYOUTS BEFORE PROCEEDING WITH THE FOLLOWING STEP.
8. PRIOR TO COMMENCING PHASE II CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL DEVICES, BARRICADES, AND SINGLE SLOPE CONCRETE BARRIER NEEDED FOR FOLLOWING PHASE OF CONSTRUCTION. AFTER REMOVAL OF ALL DEVICES, CONTRACTOR SHALL REMOVE ALL TEMPORARY STRIPING, AND STRIPE THE COMPLETED ROADWAY AND INCIDENTAL CONSTRUCTION AREAS WITH WORK ZONE PAVEMENT MARKINGS AS THE FINAL STRIPING CONFIGURATION AS SHOWN ON THE STRIPING LAYOUTS. AFTER APPROVAL BY ENGINEER CONTRACTOR MAY BEGIN STAGING FOR PHASE II.

PHASE II STEP I

1. PRIOR TO COMMENCING WITH ANY SOIL DISTURBING ACTIVITIES FOR THIS PHASE, INSTALL EROSION CONTROL DEVICES AS SHOWN ON THE PLANS AND ASSOCIATED SW3P STANDARDS. THESE DEVICES SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE OF THE PROJECT BY TXDOT.
2. INSTALL ALL TEMPORARY CONSTRUCTION SIGNS INCLUDING REDUCED SPEED LIMIT SIGNS, CHANNELIZING DEVICES, BARRICADES, AND SINGLE SLOPE CONCRETE BARRIER AS SHOWN ON THE TRAFFIC CONTROL PLAN (TCP) AND/OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL REMOVE ALL EXISTING CONFLICTING STRIPING AND RAISED REFLECTIVE MARKERS, AND INSTALL WORK-ZONE STRIPING AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
3. ADJUST EXISTING TRAFFIC SIGNALS IN ACCORDANCE WITH THE TEMPORARY SIGNAL LAYOUTS, THEN TRAFFIC SHALL BE SHIFTED TO THE EAST SIDE OF FM 1015 AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
4. REMOVE AND SALVAGE PARTS OF THE EXISTING PAVEMENT WHICH WILL NO LONGER BE REQUIRED FOR HANDLING TRAFFIC.
5. REHABILITATE THE WEST SIDE OF FM 1015 ROADWAY FROM STA. 396+55 TO STA. 447+90 AS SHOWN IN THE PLANS, INCLUDING PAVEMENT STRUCTURE (EXCEPT THE FINAL 2.0" SMA F LIFT WHICH WILL BE PLACED DURING PHASE III CONSTRUCTION), REPLACE CONCRETE CURB AND GUTTER, DRIVEWAYS, SIDEWALKS AND ADJUSTMENT OF INLETS AS SPECIFIED IN THE PLAN AND PROFILE SHEETS.
6. CONTRACTOR SHALL THEN FOCUS ON CONSTRUCTING MAJOR INTERSECTION TURN-OUTS FOR MILE 9 FROM STA. 395+10 TO STA. 396+55 WITH NON-STOP CONSTRUCTION OPERATIONS. CONTRACTOR SHALL REFER TO "TRAFFIC CONTROL PLAN CONSTRUCTION SEQUENCE FOR PUBLIC & PRIVATE DRIVEWAYS" SHEET FOR ACCESS MANAGEMENT.
7. AFTER COMPLETION OF ROADWAY CONSTRUCTION FOR PHASE II STEP I, CONTRACTOR SHALL BEGIN INSTALLATION OF WORK ZONE PAVEMENT MARKINGS ON FINISHED CONSTRUCTION AREA BEFORE MOVING TRAFFIC TO PHASE II STEP II. CONTRACTOR SHALL ALSO BEING PLACING TEMPORARY AND/OR PERMANENT SEEDING PER THE SW3P LAYOUTS BEFORE PROCEEDING WITH THE FOLLOWING STEP.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER

06.30.23

Pharr District Central Design

Texas Department of Transportation

FM 1015

TCP
SEQUENCE OF CONSTRUCTION

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		31

DATE: 6/30/2023 9:54:57 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Sequence of Construction.dgn

CK
DW
CK
DW

PHASE II STEP II

1. PRIOR TO COMMENCING WITH ANY SOIL DISTURBING ACTIVITIES FOR THIS PHASE, INSTALL EROSION CONTROL DEVICES AS SHOWN ON THE PLANS AND ASSOCIATED SW3P STANDARDS. THESE DEVICES SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE OF THE PROJECT BY TXDOT.
2. INSTALL ALL TEMPORARY CONSTRUCTION SIGNS INCLUDING REDUCED SPEED LIMIT SIGNS, CHANNELIZING DEVICES, BARRICADES, AND SINGLE SLOPE CONCRETE BARRIER AS SHOWN ON THE TRAFFIC CONTROL PLAN (TCP) AND/OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL REMOVE ALL EXISTING CONFLICTING STRIPING AND RAISED REFLECTIVE MARKERS, AND INSTALL WORK-ZONE STRIPING AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
3. ADJUST EXISTING TRAFFIC SIGNALS IN ACCORDANCE WITH THE TEMPORARY SIGNAL LAYOUTS, THEN TRAFFIC SHALL BE SHIFTED TO THE WEST SIDE OF FM 1015 AS SHOWN ON THE TCP TYPICAL SECTIONS AND LAYOUTS.
4. REMOVE AND SALVAGE PARTS OF THE EXISTING PAVEMENT WHICH WILL NO LONGER BE REQUIRED FOR HANDLING TRAFFIC.
5. REHABILITATE THE EAST SIDE OF FM 1015 ROADWAY FROM STA. 396+55 TO STA. 447+90 AS SHOWN IN THE PLANS, INCLUDING PAVEMENT STRUCTURE (EXCEPT THE FINAL 2.0" SMA F LIFT WHICH WILL BE PLACED DURING PHASE III CONSTRUCTION), REPLACE CONCRETE CURB AND GUTTER, DRIVEWAYS, SIDEWALKS AND ADJUSTMENT OF INLETS AS SPECIFIED IN THE PLAN AND PROFILE SHEETS.
6. CONTRACTOR SHALL THEN FOCUS ON CONSTRUCTING MAJOR INTERSECTION TURN-OUTS FOR MILE 9 FROM STA. 395+10 TO STA. 396+55 WITH NON-STOP CONSTRUCTION OPERATIONS. CONTRACTOR SHALL REFER TO "TRAFFIC CONTROL PLAN CONSTRUCTION SEQUENCE FOR PUBLIC & PRIVATE DRIVEWAYS" SHEET FOR ACCESS MANAGEMENT.
7. PRIOR TO COMMENCING PHASE III CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL DEVICES, BARRICADES, AND SINGLE SLOPE CONCRETE BARRIER NEEDED FOR FOLLOWING PHASE OF CONSTRUCTION. AFTER REMOVAL OF ALL DEVICES, CONTRACTOR SHALL REMOVE ALL TEMPORARY STRIPING, AND STRIPE THE COMPLETED ROADWAY AND INCIDENTAL CONSTRUCTION AREAS WITH WORK ZONE PAVEMENT MARKINGS AS THE FINAL STRIPING CONFIGURATION AS SHOWN ON THE STRIPING LAYOUTS. AFTER APPROVAL BY ENGINEER CONTRACTOR MAY BEGIN STAGING FOR PHASE III.

PHASE III FINAL OVERLAY & CLEAN UP

1. PRIOR TO BEGINNING OF THE FINAL OVERLAY, CONTRACTOR SHALL HAVE ALL EROSION CONTROL DEVICES IN PLACE AND IN GOOD CONDITION AS SHOWN ON THE SW3P LAYOUTS.
2. ALL CONCRETE FLAT WORK, DRIVEWAYS AND TURNOUTS SHALL BE COMPLETED BEFORE FINAL 2.0 INCH LIFT OF SMA-F IS PLACED.
3. FINALIZE FORESLOPES ON BOTH LEFT AND RIGHT SIDES OF THE NEWLY CONSTRUCTED ROADWAY, THIS INCLUDES SHAPING AND FINISHING THE PORTIONS OF THE RIGHT-OF-WAY THAT MAY HAVE BEEN DISTURBED ONCE ROAD WORK HAS BEEN COMPLETED AND BEFORE FINAL ACCEPTANCE LEAVE ENTIRE RIGHT-OF-WAY IN A SMOOTH NEAT CONDITION.
4. THE CONTRACTOR SHALL PLACE FINAL PERMANENT SEEDING ON ALL AREAS NOT PREVIOUSLY SEEDED, DISTURBED DURING FINAL GRADING OF FORESLOPES, OR AREAS THAT UNSUCCESSFULLY GREW IN PREVIOUS PHASES. CONTRACTOR SHALL ALSO PICK UP ALL CONSTRUCTION MATERIAL AND TRASH LEFT BEHIND DURING CONSTRUCTION; THIS SHALL BE COMPLETED PRIOR TO FINAL ACCEPTANCE OF PROJECT.
5. CLEAN EXISTING PAVEMENT SURFACE FROM ANY DEBRIS, DIRT FROM VEHICLE TRACKING AND LOOSE AGGREGATE FROM SURFACE.
6. CONTRACTOR TO MILL AREAS AS SPECIFIED IN THE PLAN AND PROFILE LAYOUTS USING APPLICABLE TCP STANDARDS.
7. AFTER CONTRACTOR HAS MILLED THE INCIDENTAL AREA FROM STA. 380+45 (EDGE OF BRIDGE) TO STA. 395+10, CONTRACTOR CAN PLACE BONDING COURSE LAYER AS PER SPECIFICATIONS AND THEN LAY THE FINAL 2.0" SMA-F LIFT OF THE ENTIRE ROADWAY SURFACE IN ACCORDANCE WITH THE PROPOSED TYPICAL SECTIONS AND APPLICABLE TXDOT STANDARDS.
8. AFTER FINAL LIFT OF SMA-F HAS PASSED DENSITY REQUIREMENTS, THE CONTRACTOR SHALL INSTALL FINAL PAVEMENT MARKINGS AS SHOWN ON THE PAVEMENT MARKING LAYOUTS AND APPLICABLE STANDARDS. PRIOR TO PLACEMENT OF PERMANENT PAVEMENT MARKINGS, THE PAVEMENT SURFACE SHALL BE PREPARED IN ACCORDANCE TO ITEM 678. THE PREPARATION OF PAVEMENT SURFACE IS SUBSIDIARY TO ITEMS 666, 668, AND 672. TEMPORARY WORKZONE TABS SHALL BE PLACED AT THE END OF THE WORKDAY DURING OVERLAY OPERATIONS WHERE PROPOSED STRIPING HAS NOT BEEN COMPLETED. THE CONTRACTOR SHALL BE AWARE, DEPENDING ON THE SEQUENCE OF WORK, THE STRIPING CREW MAY HAVE SEVERAL MOVE INS. ALL SHORT-TERM FLEXIBLE ROADWAY TABS SHALL BE REPALCED AS NEEDED WITHIN THAT 14 DAY PERIOD.
9. INSTALL ANY REMAINING SIGNS AND COMPLETE ALL MISCELLANEOUS WORK TO FINISH THE PROJECT AS DIRECTED BY THE ENGINEER.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Pharr District Central Design

Texas Department of Transportation

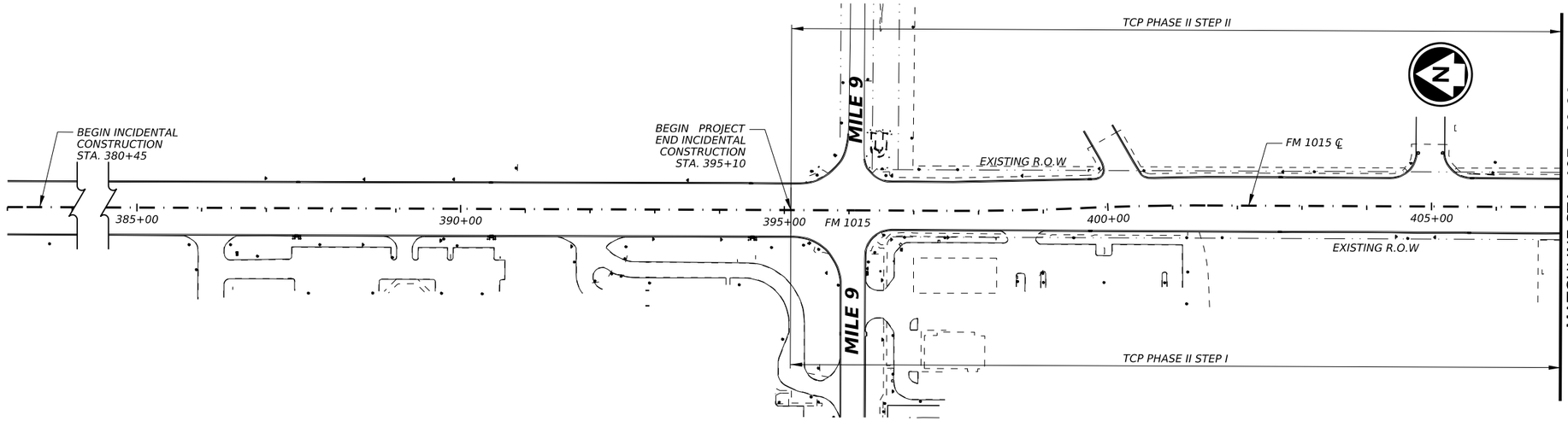
FM 1015

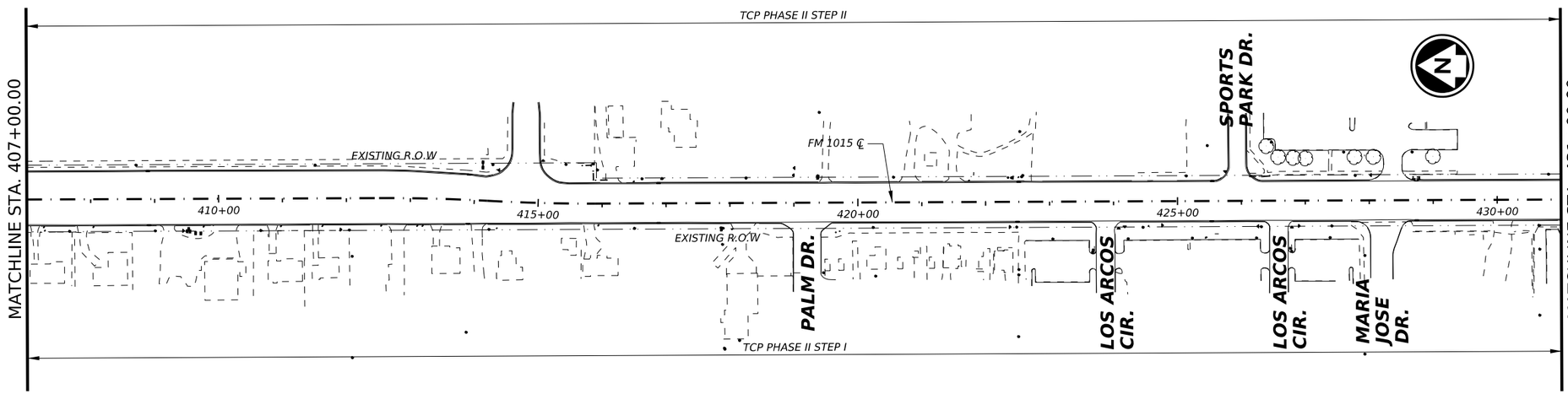
TCP
SEQUENCE OF CONSTRUCTION

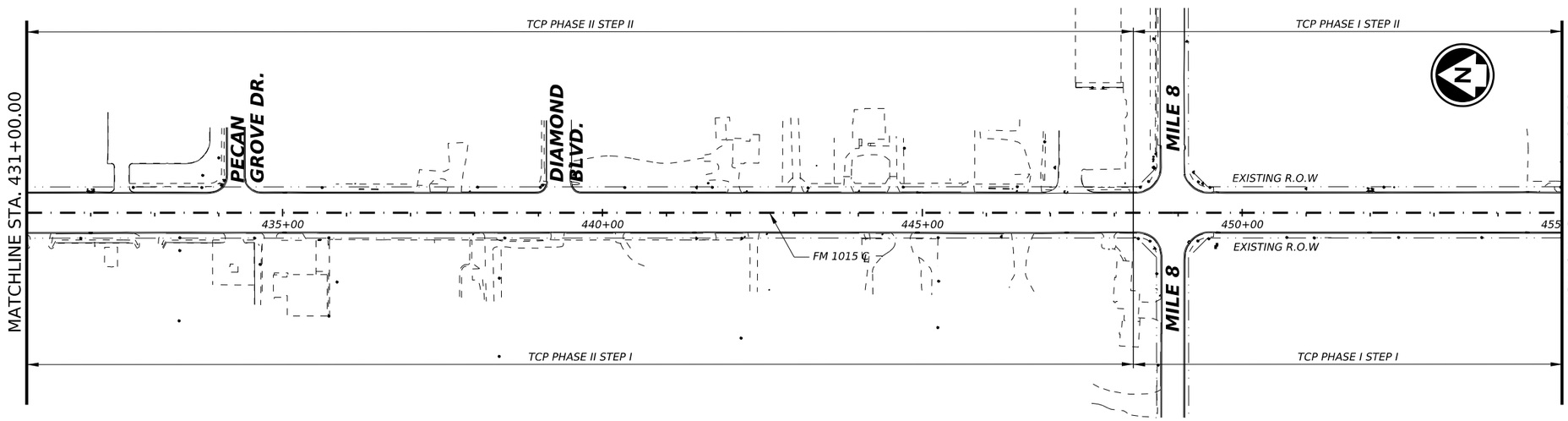
SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		32

DATE: 6/30/2023 9:55:14 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Sequence of Construction.dgn







STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Pharr District Central Design

Texas Department of Transportation

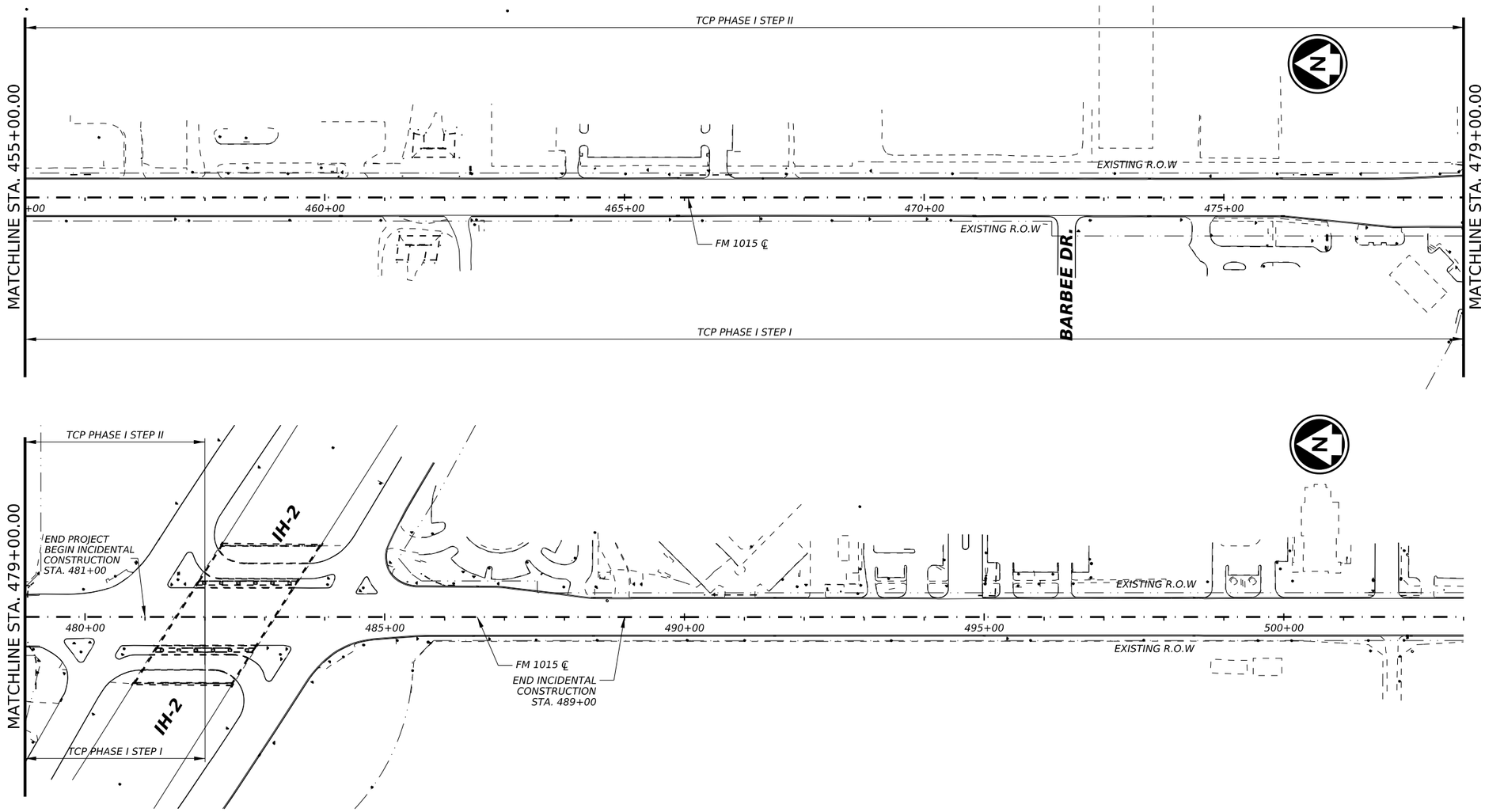
FM 1015

TCP PHASING LAYOUT

SCALE: 1"=200' SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		33

DATE: 6/30/2023 9:46:31 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0879398\Phasing Layout_01.dgn



STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Pharr District Central Design

Texas Department of Transportation

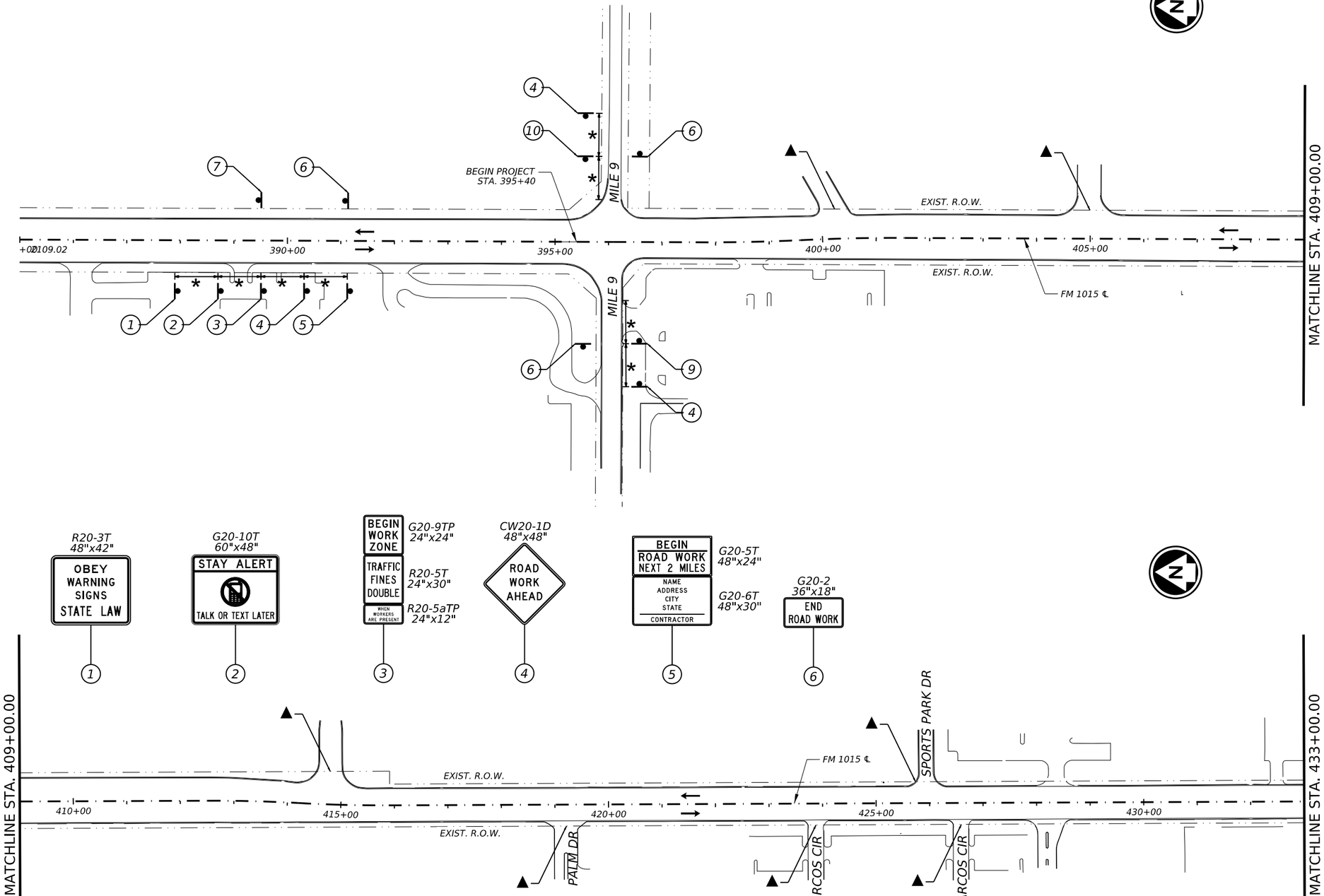
FM 1015

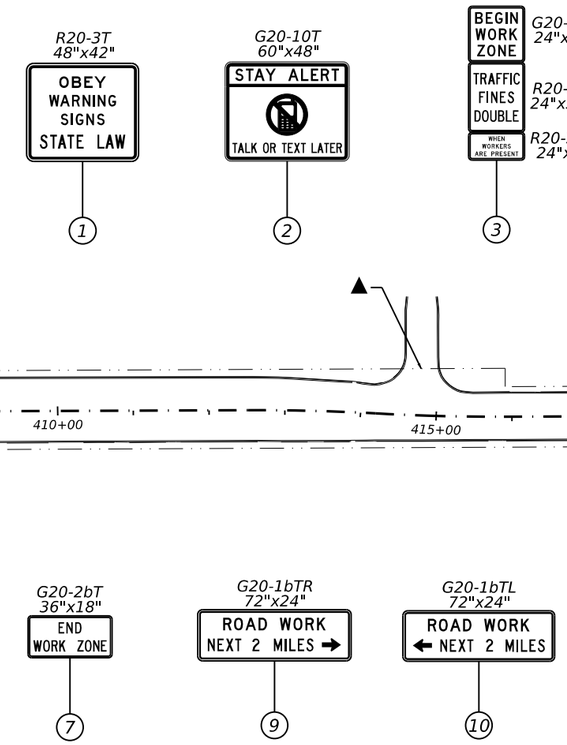
TCP
PHASING LAYOUT

SCALE: 1"=200' SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		34

DATE: 6/30/2023 9:47:02 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0879398\Phasing_Layout_02.dgn



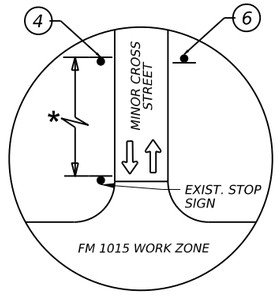


LEGEND

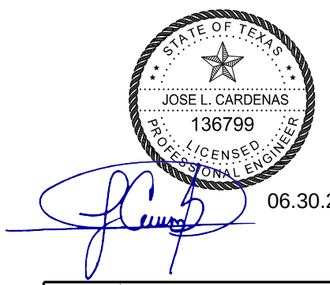
℄ - CENTER LINE
R.O.W. - RIGHT OF WAY
- CONSTRUCTION SIGN
- DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

1. * THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR SIGN SPACING AND ADDITIONAL SIGNING.
2. ADVANCED WARNING SIGNS SHALL REMAIN IN PLACE THROUGHOUT ALL PHASES OF CONSTRUCTION, AND REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. SIGNS MAY BE ADJUSTED DUE TO FIELD CONDITIONS OR AS APPROVED BY THE ENGINEER.
4. FOR PEDESTRIAN CONTROL, REFER TO WZ (BTS-2)-13.
5. SIGNS NOT TO SCALE.
6. SEE "DETAIL A" - MINOR STREET ADVANCED SIGNING LAYOUT.



▲DETAIL "A"
N.T.S.



06.30.23

Texas Department of Transportation

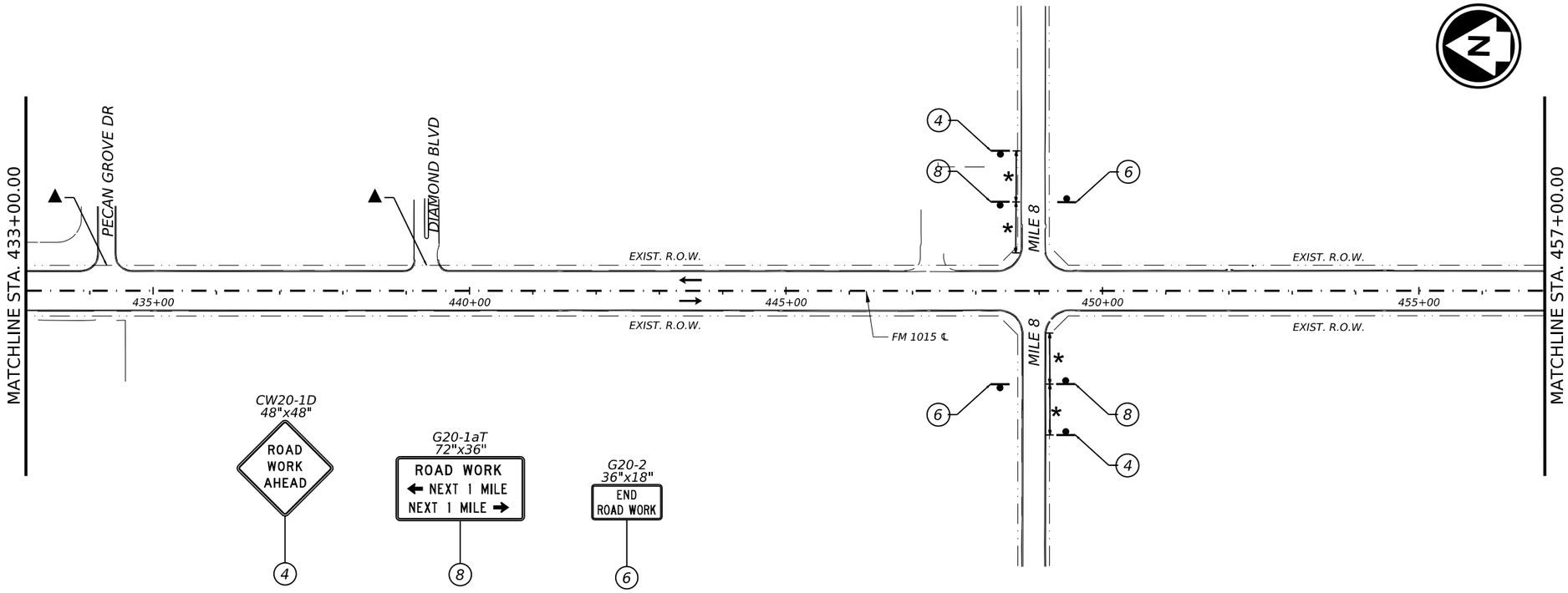
FM 1015

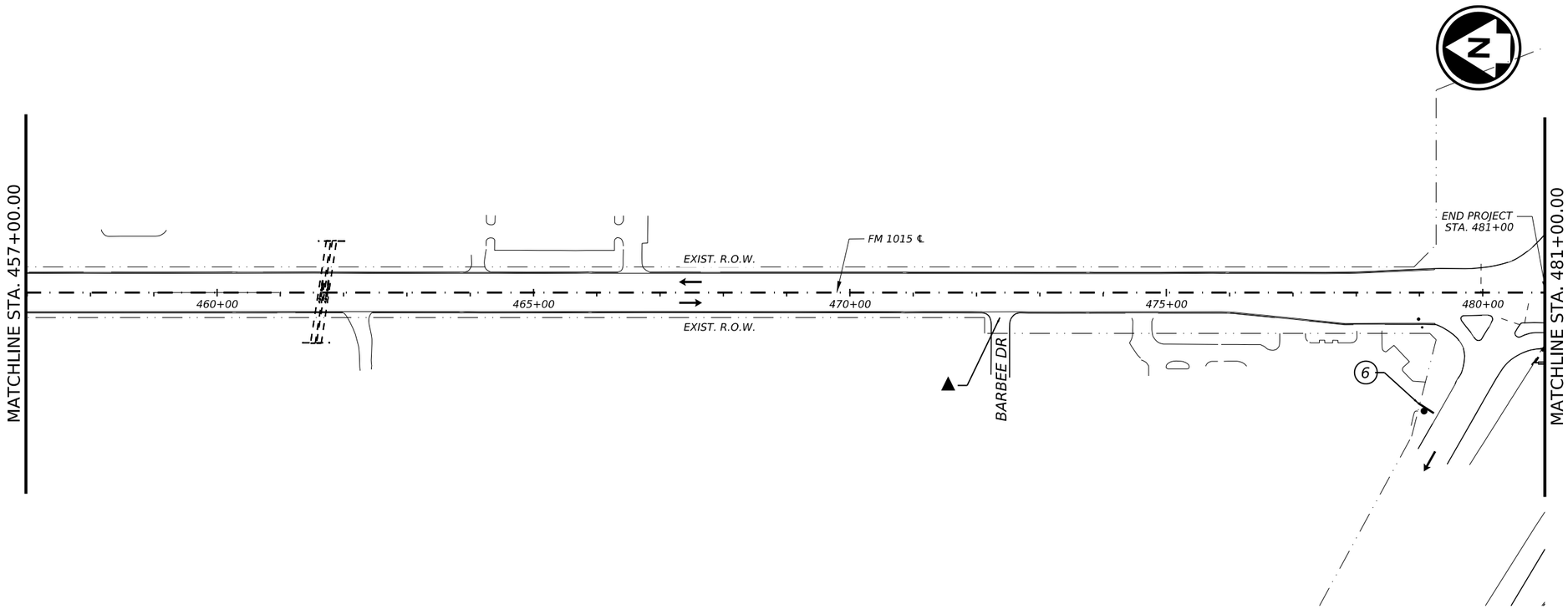
TCP
ADVANCED WARNING
SIGNS LAYOUT

SCALE:1"=200' SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		35

DATE: 6/30/2023 10:02:24 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0763183\FM1015-Advanced Warning Signs_01.dgn



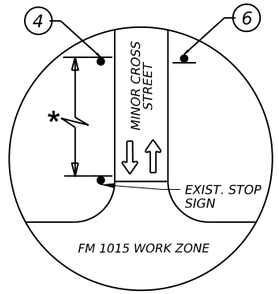


LEGEND

℄ - CENTER LINE
R.O.W. - RIGHT OF WAY
- CONSTRUCTION SIGN
- DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

1. * THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR SIGN SPACING AND ADDITIONAL SIGNING.
2. ADVANCED WARNING SIGNS SHALL REMAIN IN PLACE THROUGHOUT ALL PHASES OF CONSTRUCTION, AND REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. SIGNS MAY BE ADJUSTED DUE TO FIELD CONDITIONS OR AS APPROVED BY THE ENGINEER.
4. FOR PEDESTRIAN CONTROL, REFER TO WZ (BTS-2)-13.
5. SIGNS NOT TO SCALE.
6. SEE "DETAIL A" - MINOR STREET ADVANCED SIGNING LAYOUT.



▲DETAIL "A"
N.T.S.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

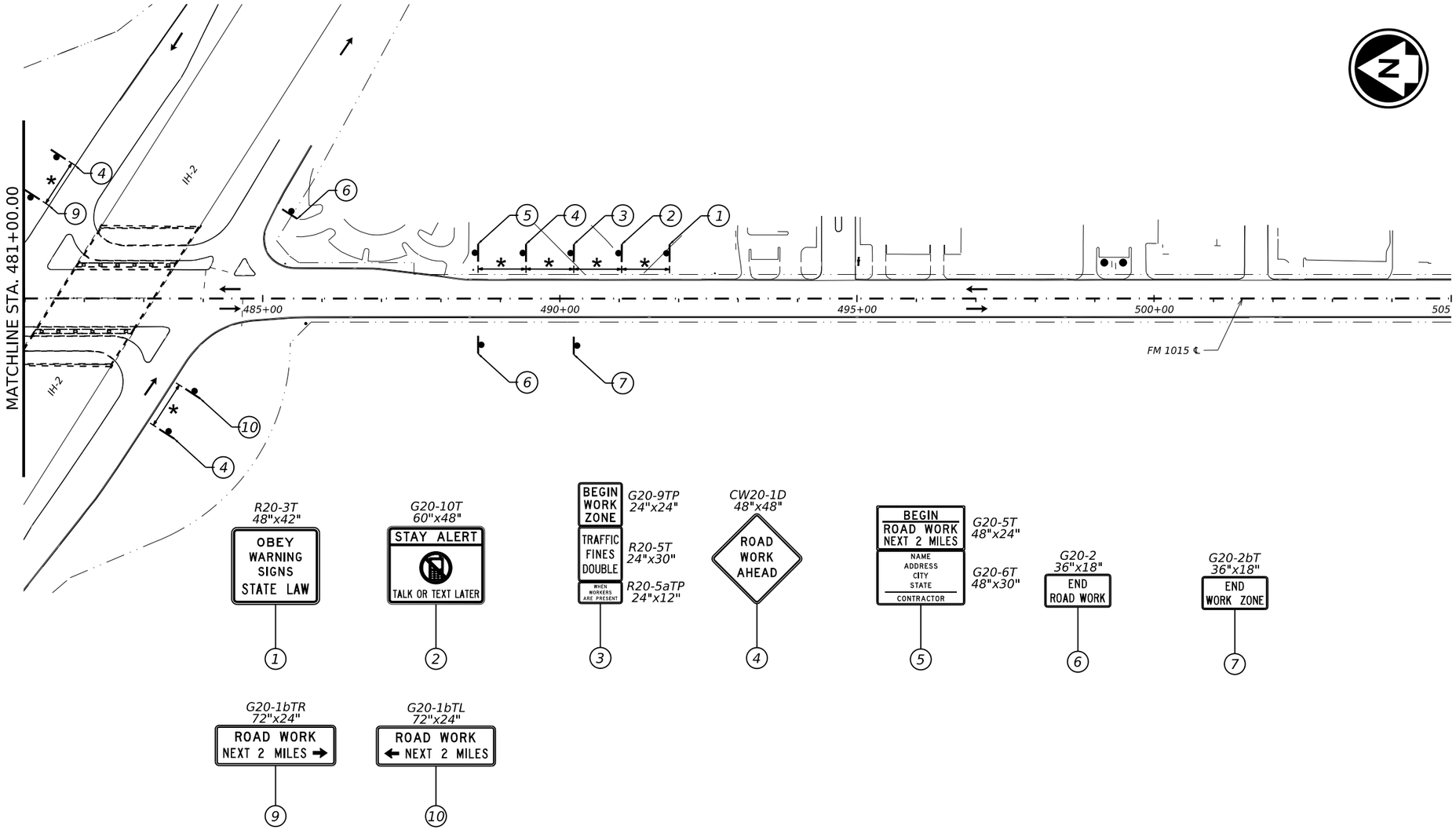
FM 1015

TCP
ADVANCED WARNING
SIGNS LAYOUT

SCALE:1"=200' SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		36

DATE: 6/30/2023 10:03:07 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenasid\0763183\FM1015- Advanced Warning Signs 02.dgn

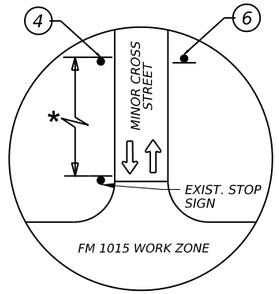


LEGEND

℄ - CENTER LINE
R.O.W. - RIGHT OF WAY
- CONSTRUCTION SIGN
- DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

1. ✱ THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR SIGN SPACING AND ADDITIONAL SIGNING.
2. ADVANCED WARNING SIGNS SHALL REMAIN IN PLACE THROUGHOUT ALL PHASES OF CONSTRUCTION, AND REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. SIGNS MAY BE ADJUSTED DUE TO FIELD CONDITIONS OR AS APPROVED BY THE ENGINEER.
4. FOR PEDESTRIAN CONTROL, REFER TO WZ (BTS-2)-13.
5. SIGNS NOT TO SCALE.
6. SEE "DETAIL A" - MINOR STREET ADVANCED SIGNING LAYOUT.



▲DETAIL "A"
N.T.S.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

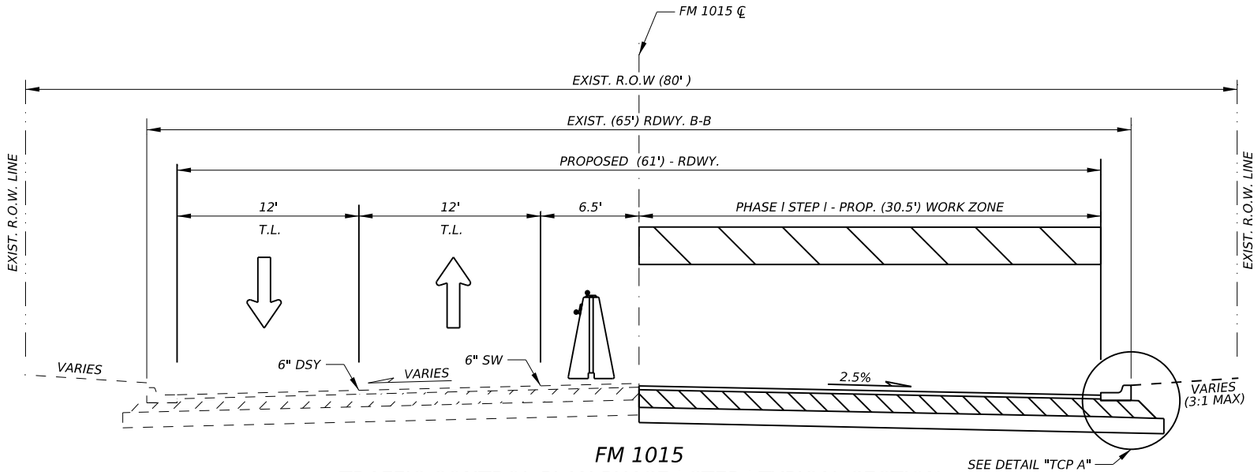
TCP
ADVANCED WARNING
SIGNS LAYOUT

SCALE:1"=200' SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		37

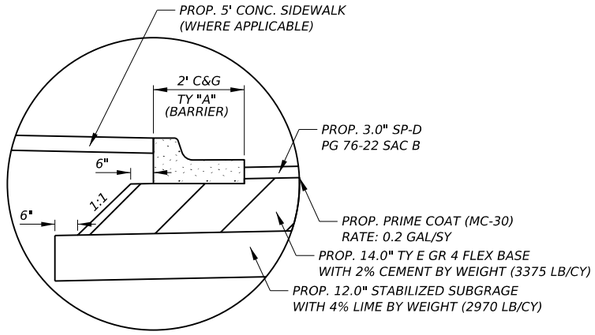
DATE: 6/30/2023 10:03:53 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenasid\0763183\FM1015- Advanced Warning Signs 03.dgn

CK
DW
CK
DW

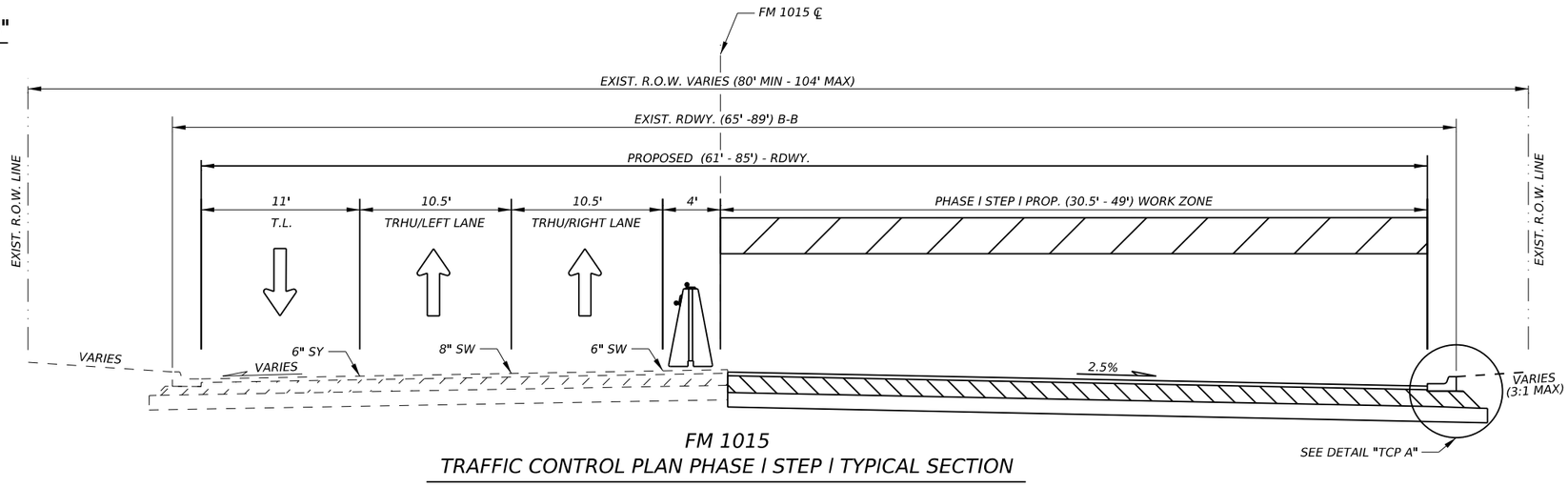


FM 1015
TRAFFIC CONTROL PLAN PHASE I STEP I TYPICAL SECTION

STA. 447+90 TO STA. 476+00



DETAIL "TCP A"



FM 1015
TRAFFIC CONTROL PLAN PHASE I STEP I TYPICAL SECTION

STA. 476+00 TO STA. 479+24

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
TWLTL.	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER
N.T.S.	- NOT TO SCALE
SW_R	- SOLID WHITE (REMOVABLE)
SY_R	- SOLID YELLOW (REMOVABLE)
DSY_R	- DOUBLE SOLID YELLOW (REMOVABLE)
SW	- SOLID WHITE (NON-REMOVABLE)
SY	- SOLID YELLOW (NON-REMOVABLE)
DSY	- DOUBLE SOLID YELLOW (NON-REMOVABLE)

- DIRECTION OF TRAFFIC FLOW

- PLASTIC BARREL WITH REFLECTOR AS PER BC STANDARDS

- SINGLE SLOPE CONCRETE BARRIER (SSCB) AS PER BC STANDARDS

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

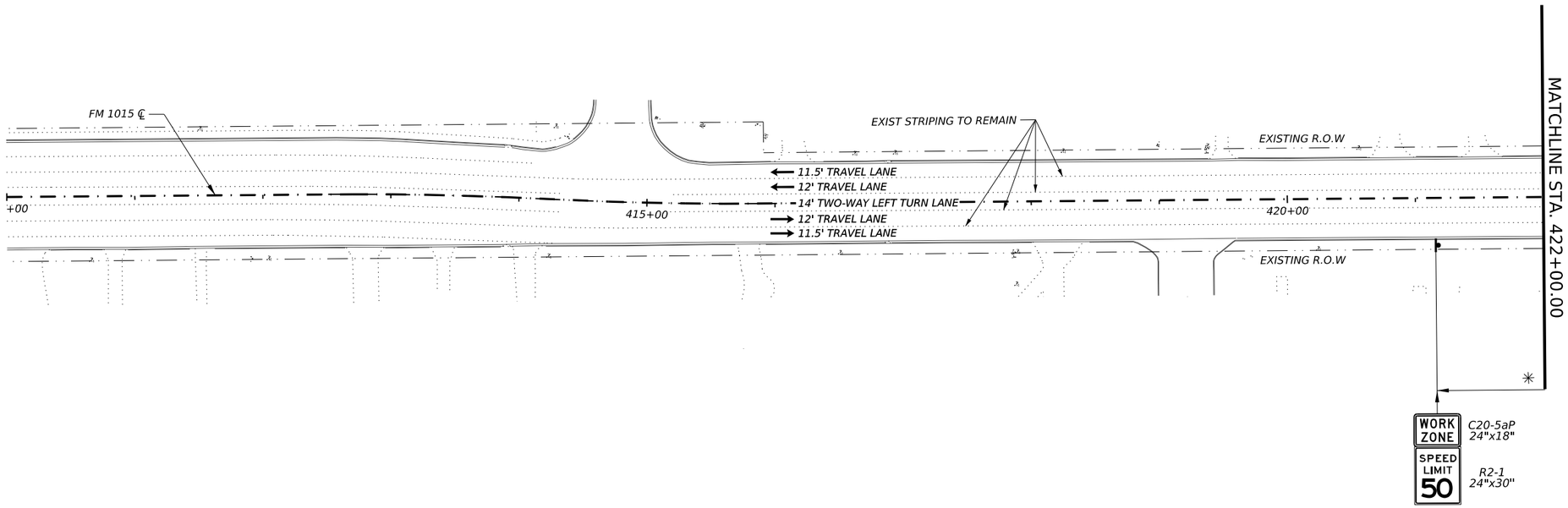
FM 1015

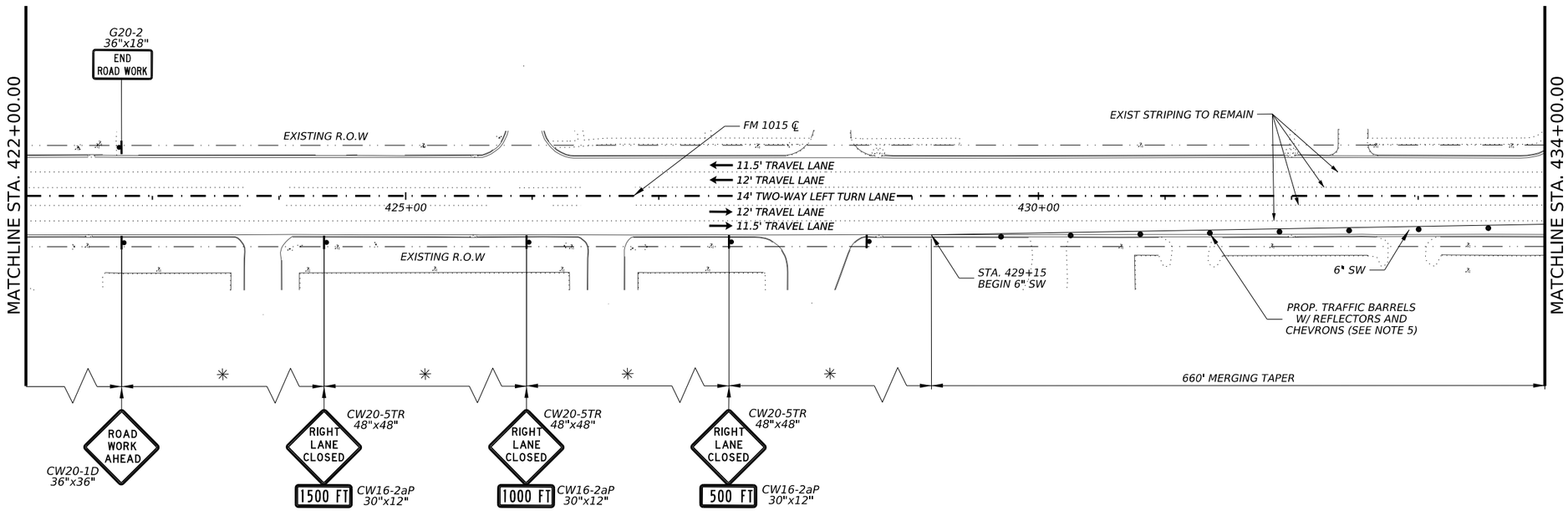
TRAFFIC CONTROL PLAN PHASE I STEP I TYPICAL SECTIONS

NOT TO SCALE SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		38

DATE: 6/12/2023 3:45:06 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Typical Sections.dgn





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

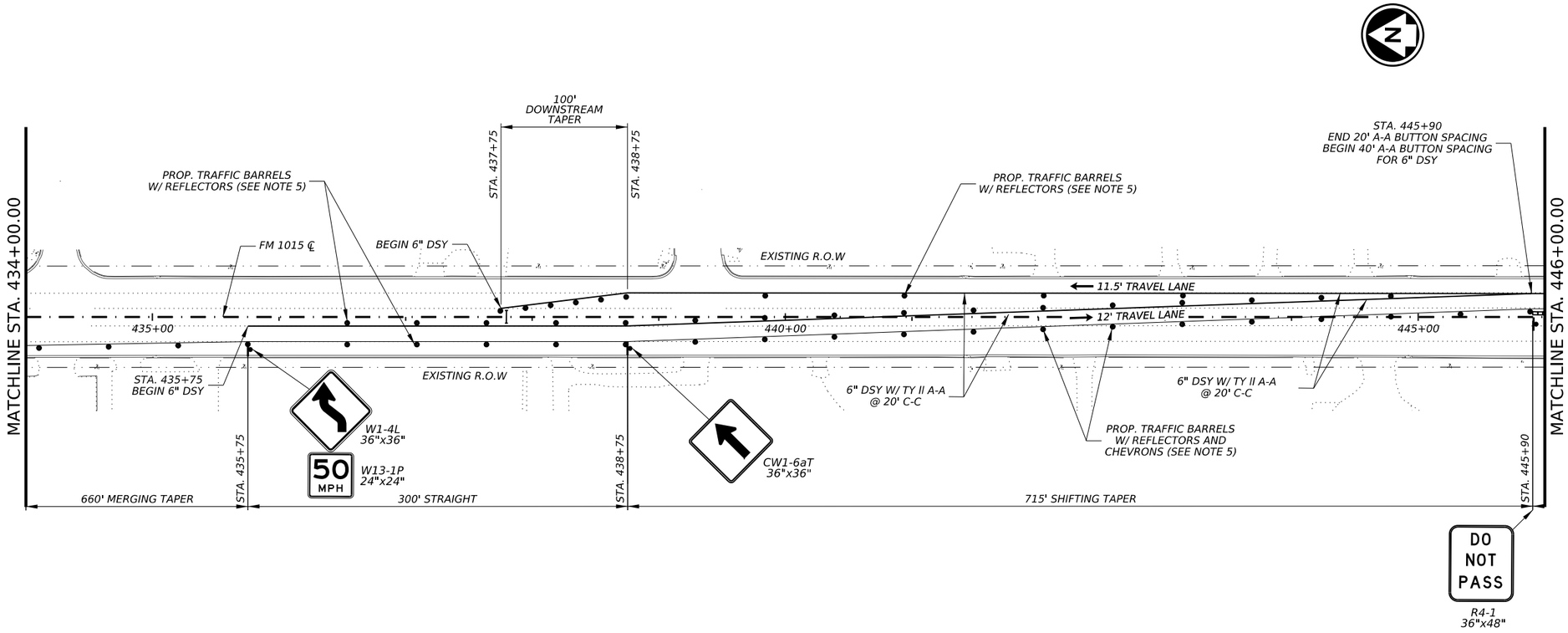
FM 1015

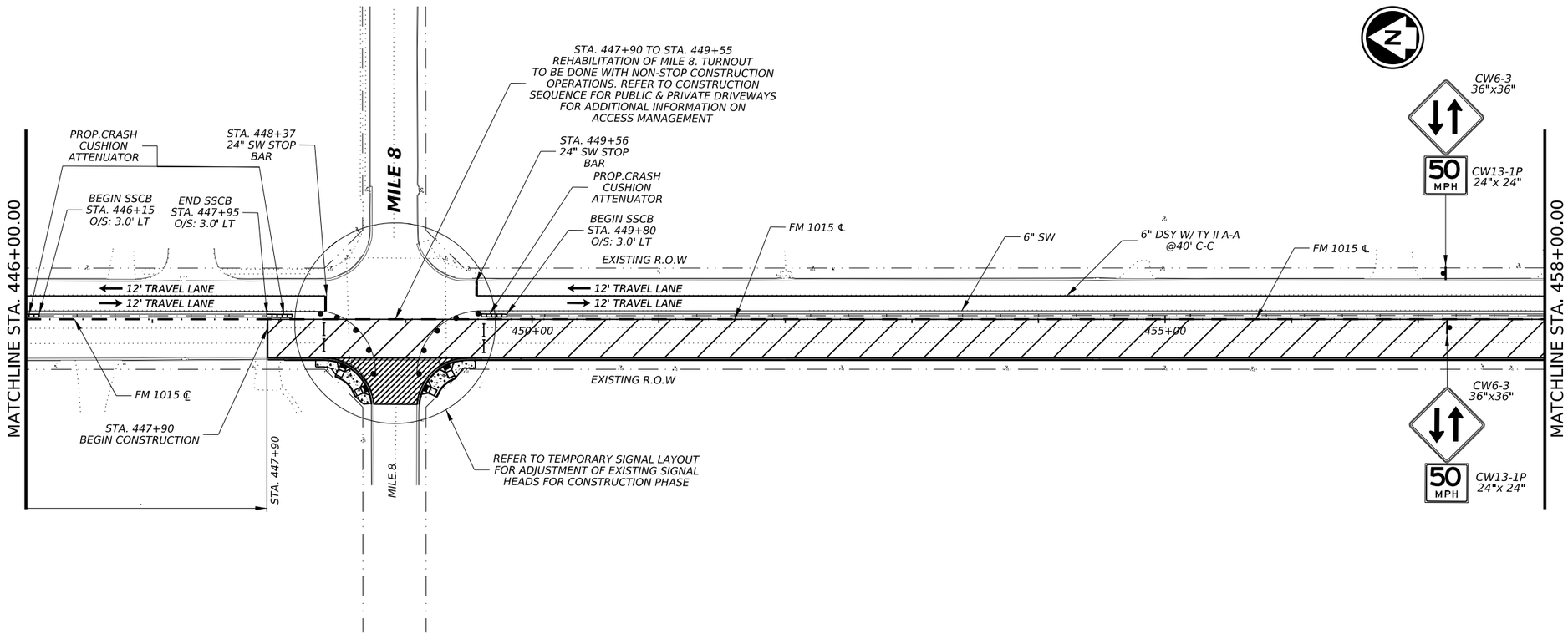
TRAFFIC CONTROL PLAN PHASE I - STEP I

SCALE:1"=100' SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		39

DATE: 6/12/2023 3:45:15 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step I Sheet 1.dgn





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

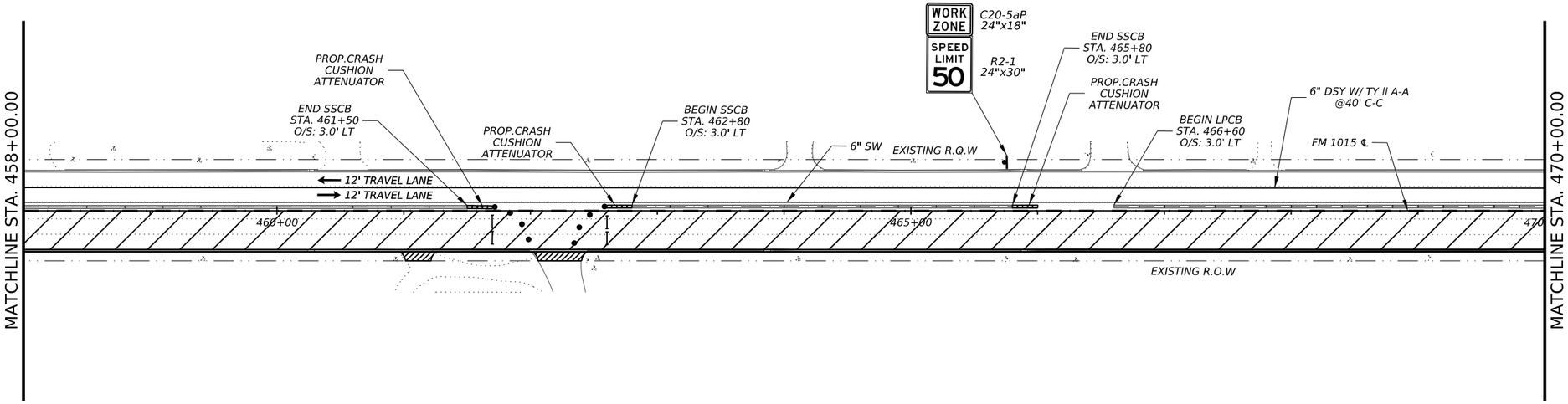
FM 1015

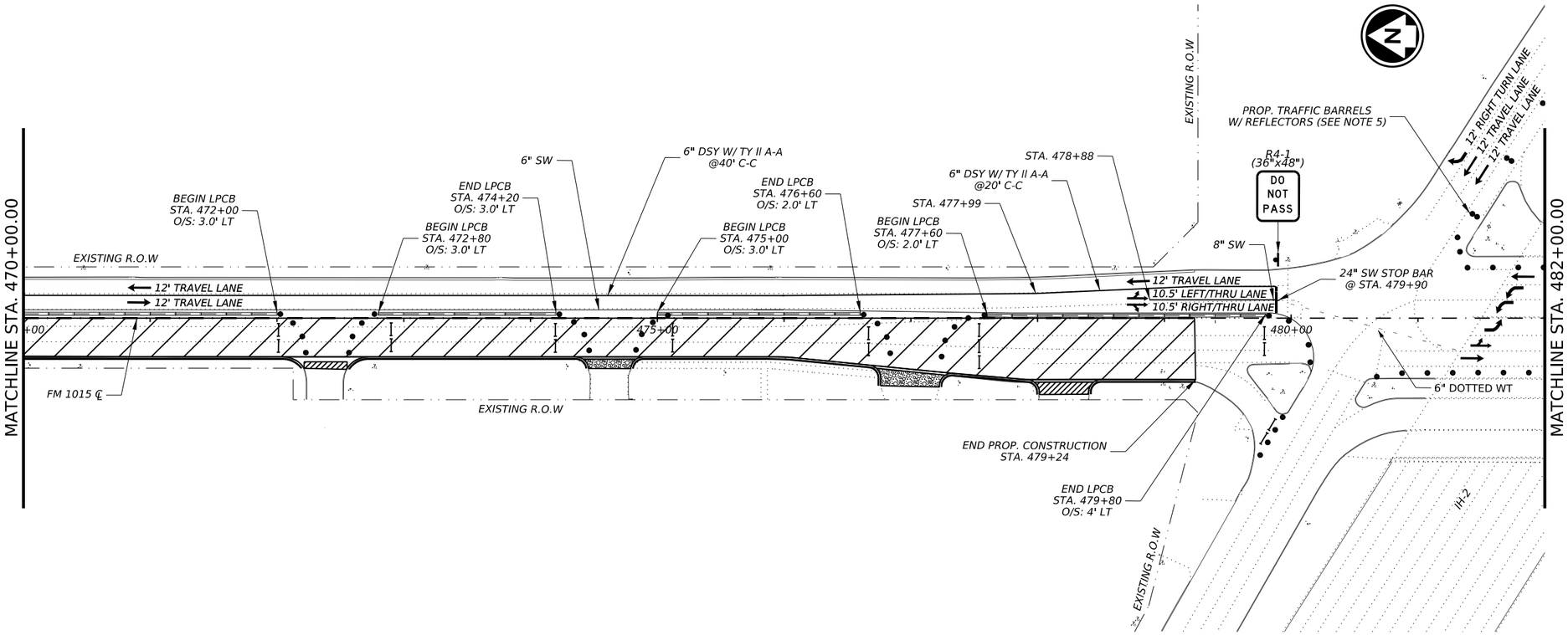
TRAFFIC CONTROL PLAN PHASE I - STEP I

SCALE:1"=100' SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		40

DATE: 6/12/2023 3:45:21 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step I Sheet 2.dgn





LEGEND

- TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R SOLID YELLOW (REMOVABLE)
- SW_R SOLID WHITE (REMOVABLE)
- DSY DOUBLE SOLID YELLOW (NON-REMOV)
- SY SOLID YELLOW (NON-REMOV)
- SW SOLID WHITE (NON-REMOV)
- BY BROKEN YELLOW (NON-REMOV)
- BW BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.
6. EXISTING STRIPING AT IH-2 CONCRETE INTERSECTION TO REMAIN IN PLACE, IT WILL BE RESTRIPED ON PROJECT WITH CSJ: 1228-03-051.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

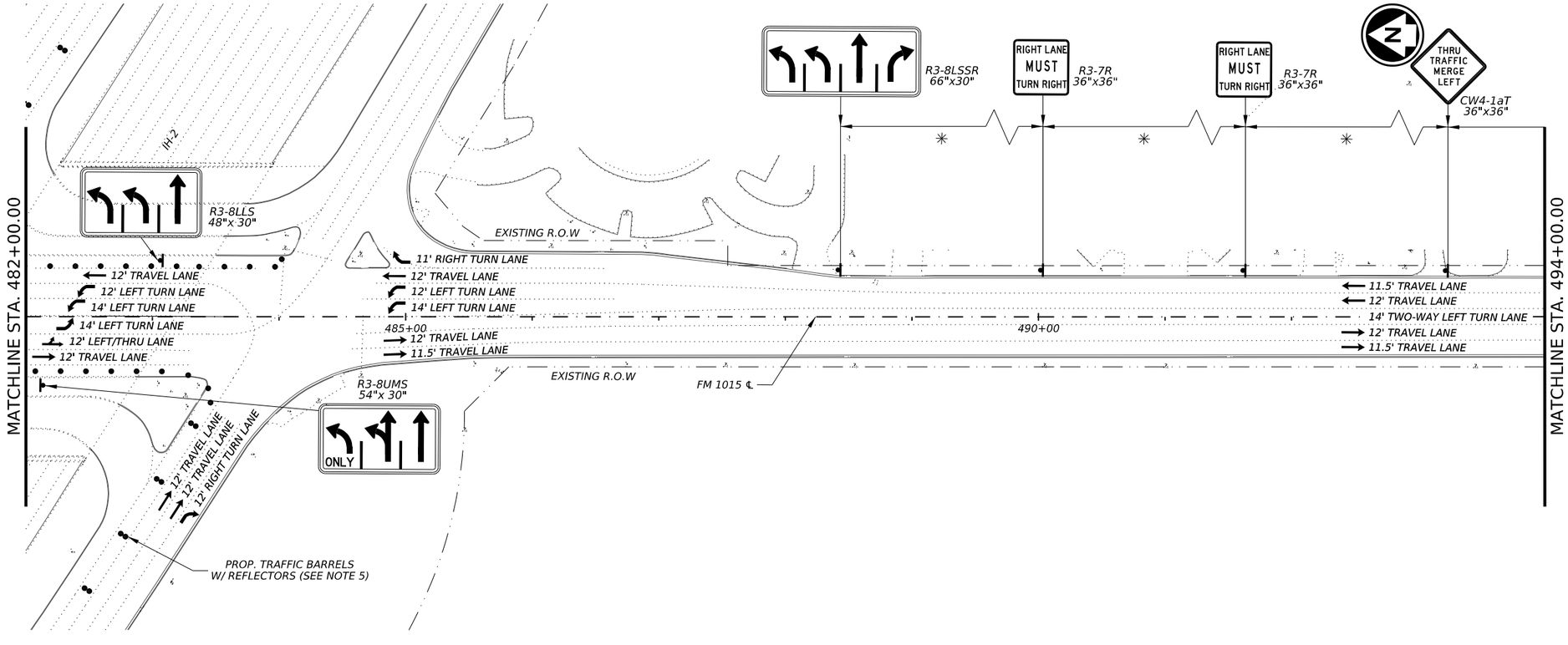
FM 1015

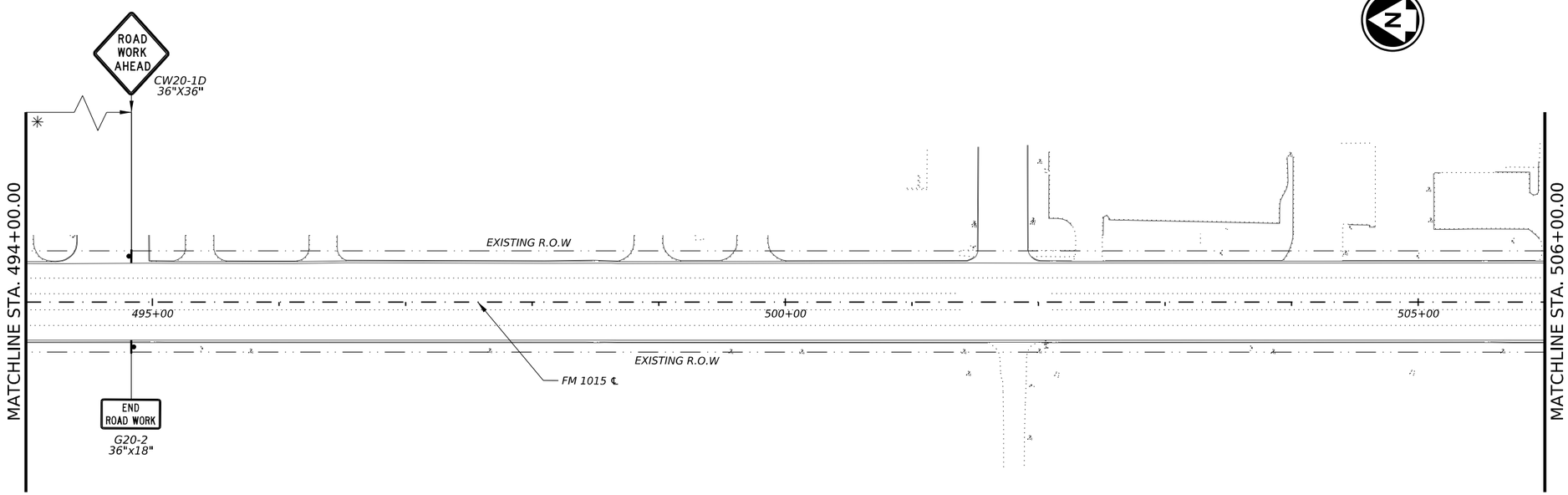
TRAFFIC CONTROL PLAN PHASE I - STEP I

SCALE:1"=100' SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		41

DATE: 6/29/2023 1:26:40 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step I Sheet_3.dgn





LEGEND

- (#) TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R SOLID YELLOW (REMOVABLE)
- SW_R SOLID WHITE (REMOVABLE)
- DSY DOUBLE SOLID YELLOW (NON-REMOV)
- SY SOLID YELLOW (NON-REMOV)
- SW SOLID WHITE (NON-REMOV)
- BY BROKEN YELLOW (NON-REMOV)
- BW BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.
6. EXISTING STRIPING AT IH-2 CONCRETE INTERSECTION TO REMAIN IN PLACE, IT WILL BE RESTRIPED ON PROJECT WITH CSJ: 1228-03-051.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

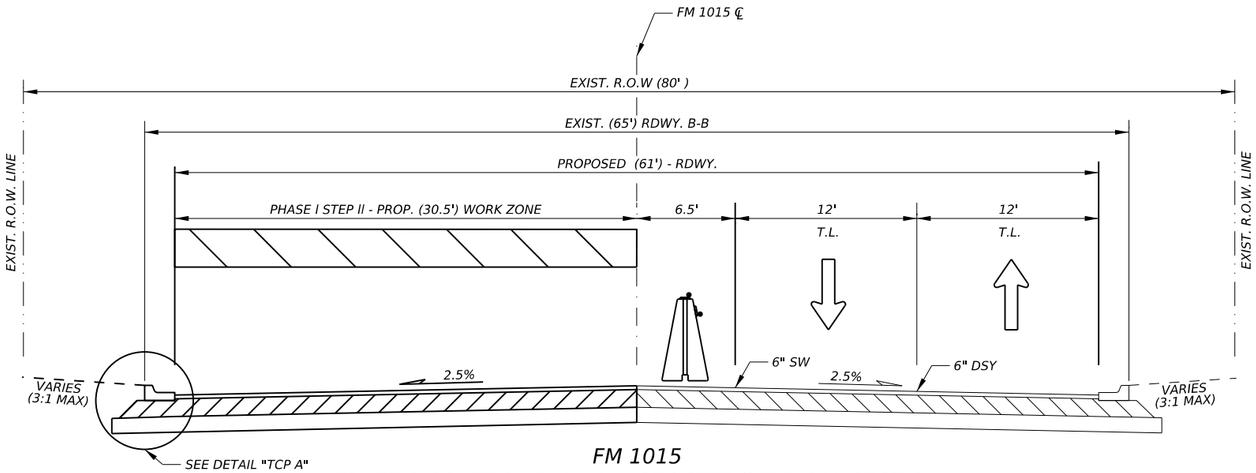
FM 1015

TRAFFIC CONTROL PLAN PHASE I - STEP I

SCALE:1"=100' SHEET 4 OF 4

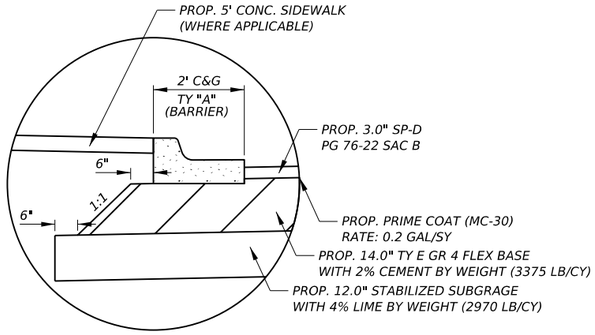
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		42

DATE: 6/29/2023 1:27:01 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step I Sheet 4.dgn

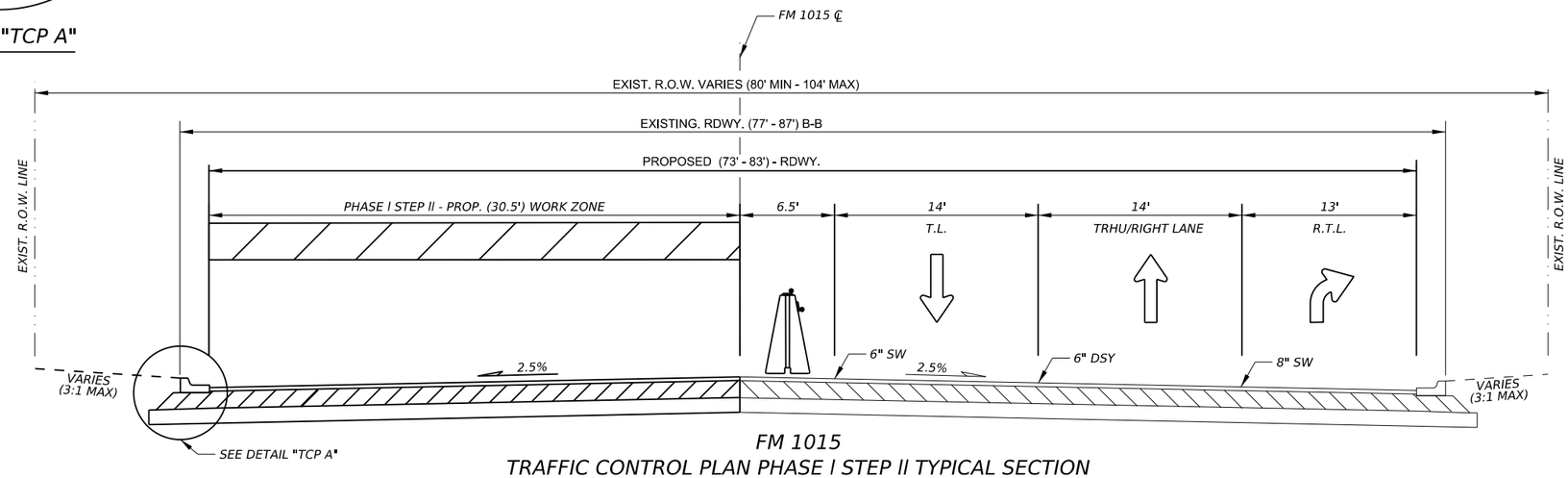


FM 1015
TRAFFIC CONTROL PLAN PHASE I STEP II TYPICAL SECTION

STA. 447+90 TO STA. 476+00



DETAIL "TCP A"



FM 1015
TRAFFIC CONTROL PLAN PHASE I STEP II TYPICAL SECTION

STA. 476+00 TO STA. 479+24

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
TWLTL.	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER
N.T.S.	- NOT TO SCALE
SW_R	- SOLID WHITE (REMOVABLE)
SY_R	- SOLID YELLOW (REMOVABLE)
DSY_R	- DOUBLE SOLID YELLOW (REMOVABLE)
SW	- SOLID WHITE (NON-REMOVABLE)
SY	- SOLID YELLOW (NON-REMOVABLE)
DSY	- DOUBLE SOLID YELLOW (NON-REMOVABLE)

- DIRECTION OF TRAFFIC FLOW

- PLASTIC BARREL WITH REFLECTOR AS PER BC STANDARDS

- SINGLE SLOPE CONCRETE BARRIER (SSCB) AS PER BC STANDARDS

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

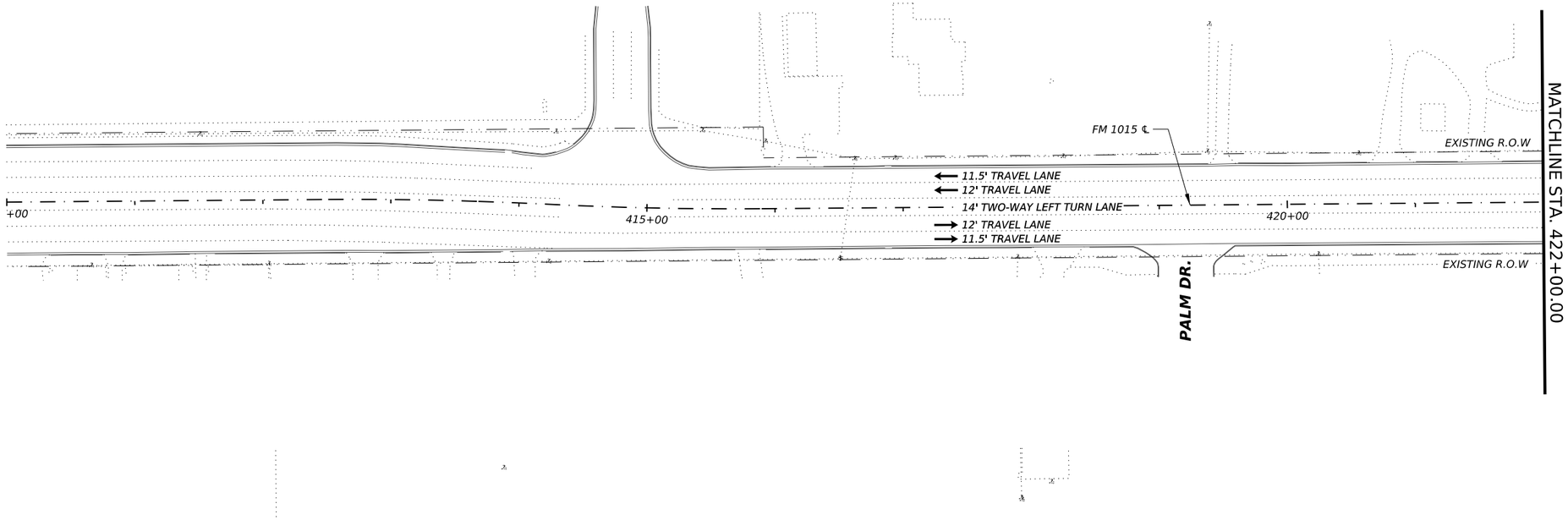
FM 1015

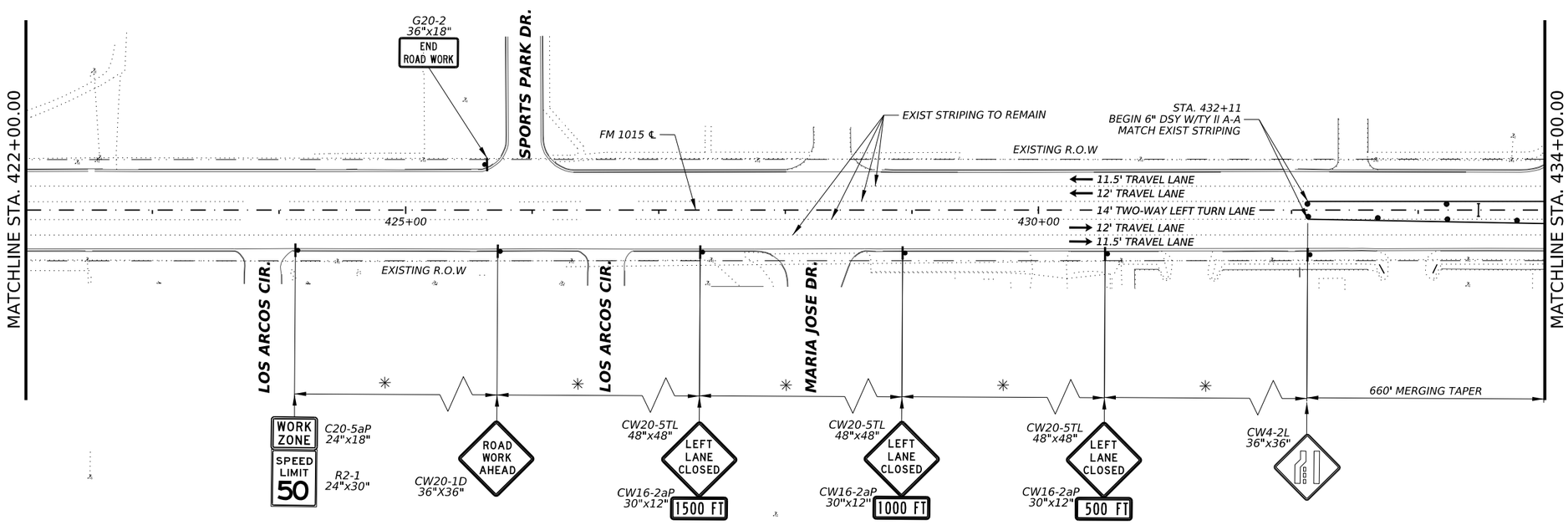
TRAFFIC CONTROL PLAN
PHASE I STEP II
TYPICAL SECTIONS

NOT TO SCALE SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		43

DATE: 6/12/2023 3:45:43 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Typical Sections.dgn





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

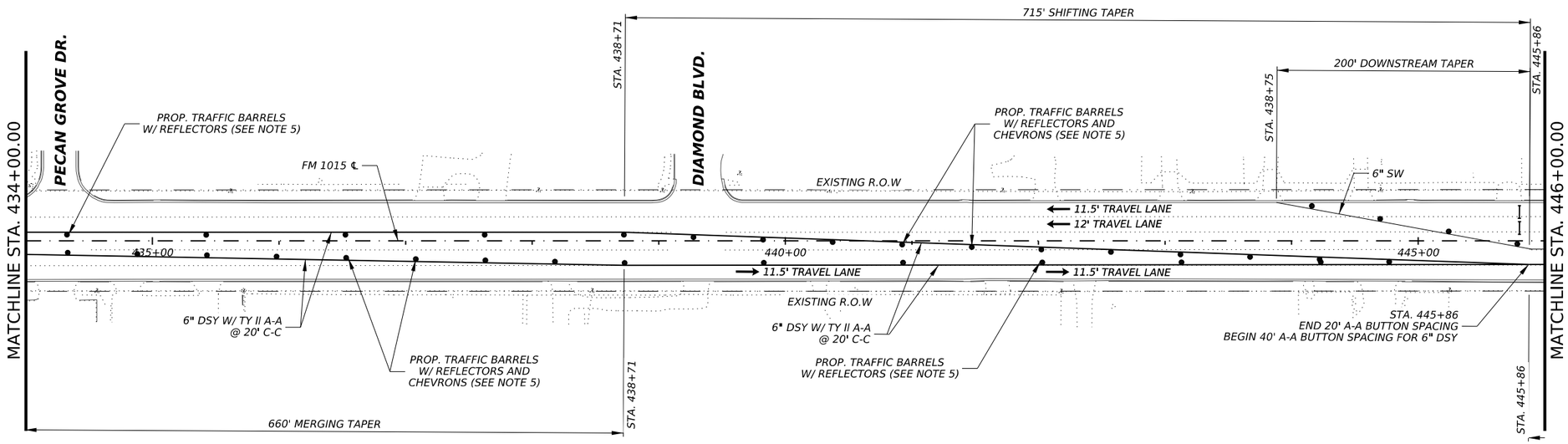
FM 1015

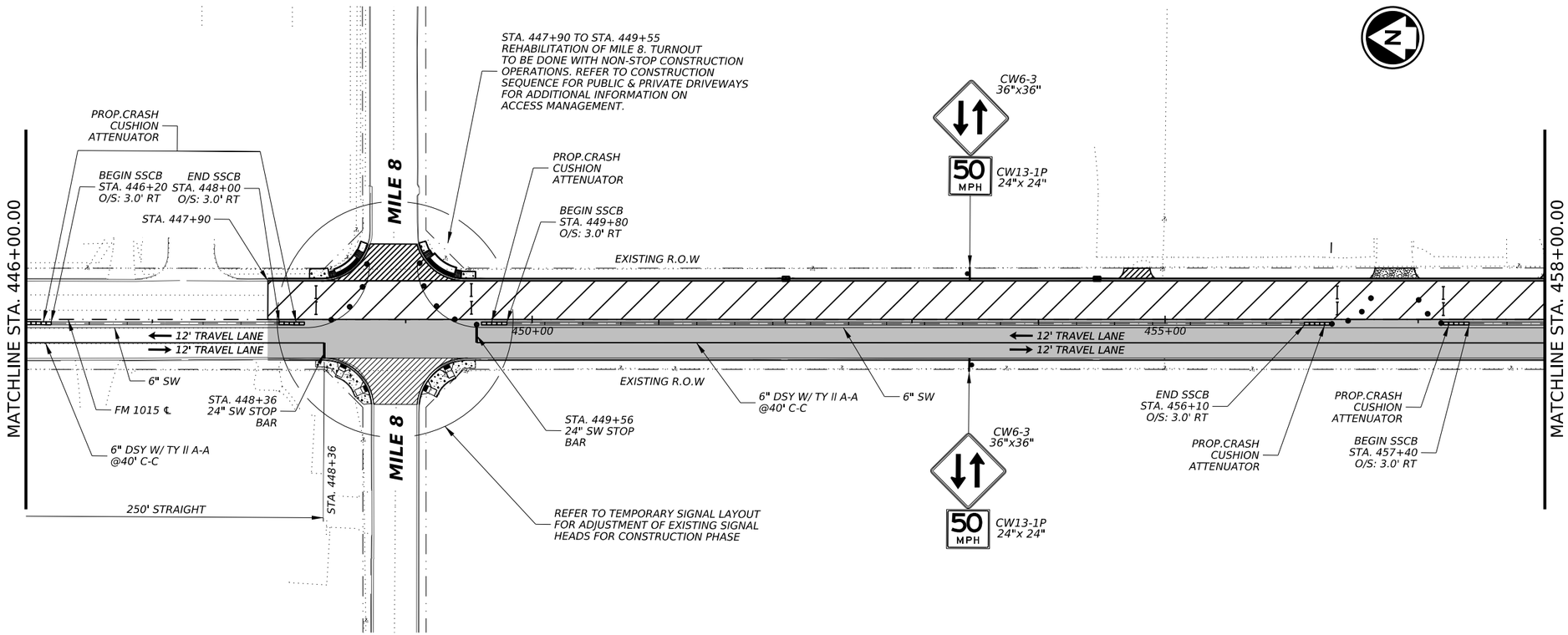
TRAFFIC CONTROL PLAN PHASE I - STEP II

SCALE:1"=100' SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		44

DATE: 6/12/2023 3:45:52 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step II Sheet 1.dgn





LEGEND

- TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R SOLID YELLOW (REMOVABLE)
- SW_R SOLID WHITE (REMOVABLE)
- DSY DOUBLE SOLID YELLOW (NON-REMOV)
- SY SOLID YELLOW (NON-REMOV)
- SW SOLID WHITE (NON-REMOV)
- BY BROKEN YELLOW (NON-REMOV)
- BW BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

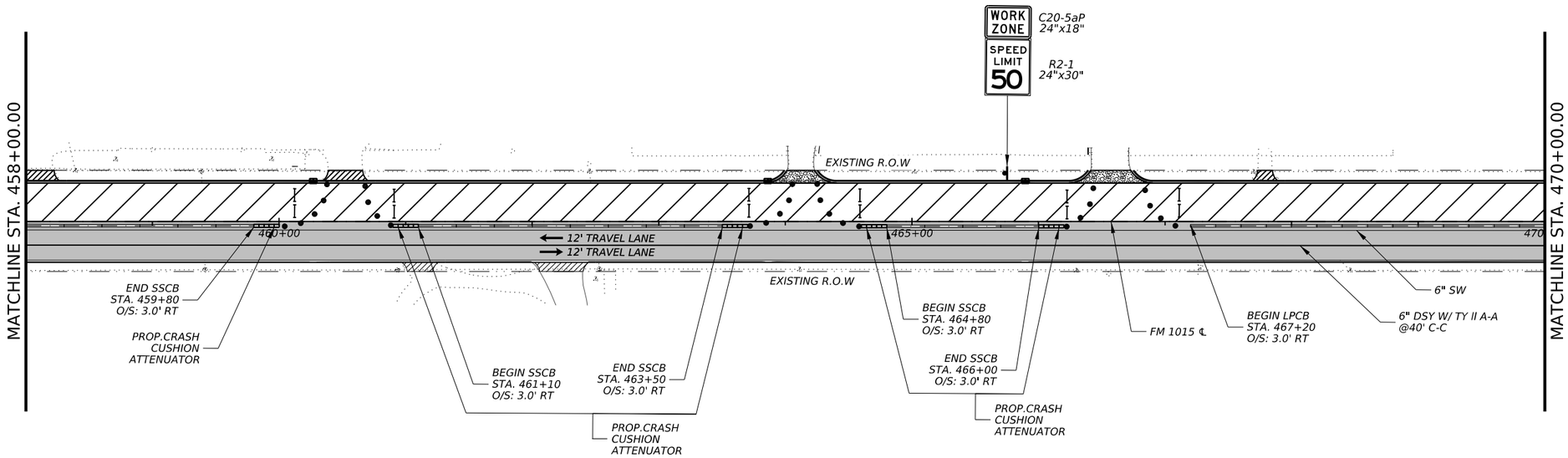
FM 1015

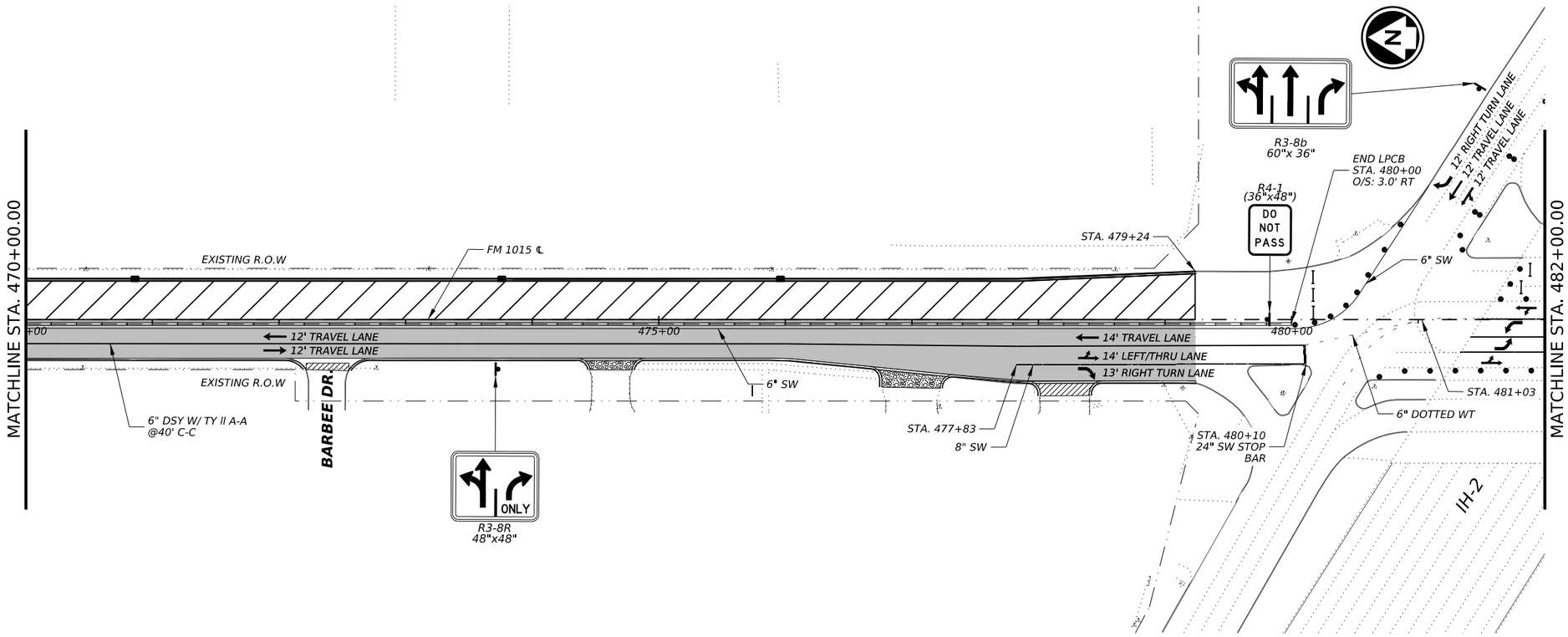
TRAFFIC CONTROL PLAN
PHASE I - STEP II

SCALE:1"=100' SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		45

DATE: 6/12/2023 3:45:58 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step II Sheet 2.dgn





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.
6. EXISTING STRIPING AT IH-2 CONCRETE INTERSECTION TO REMAIN IN PLACE, IT WILL BE RESTRIPED ON PROJECT WITH CSJ: 1228-03-051.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

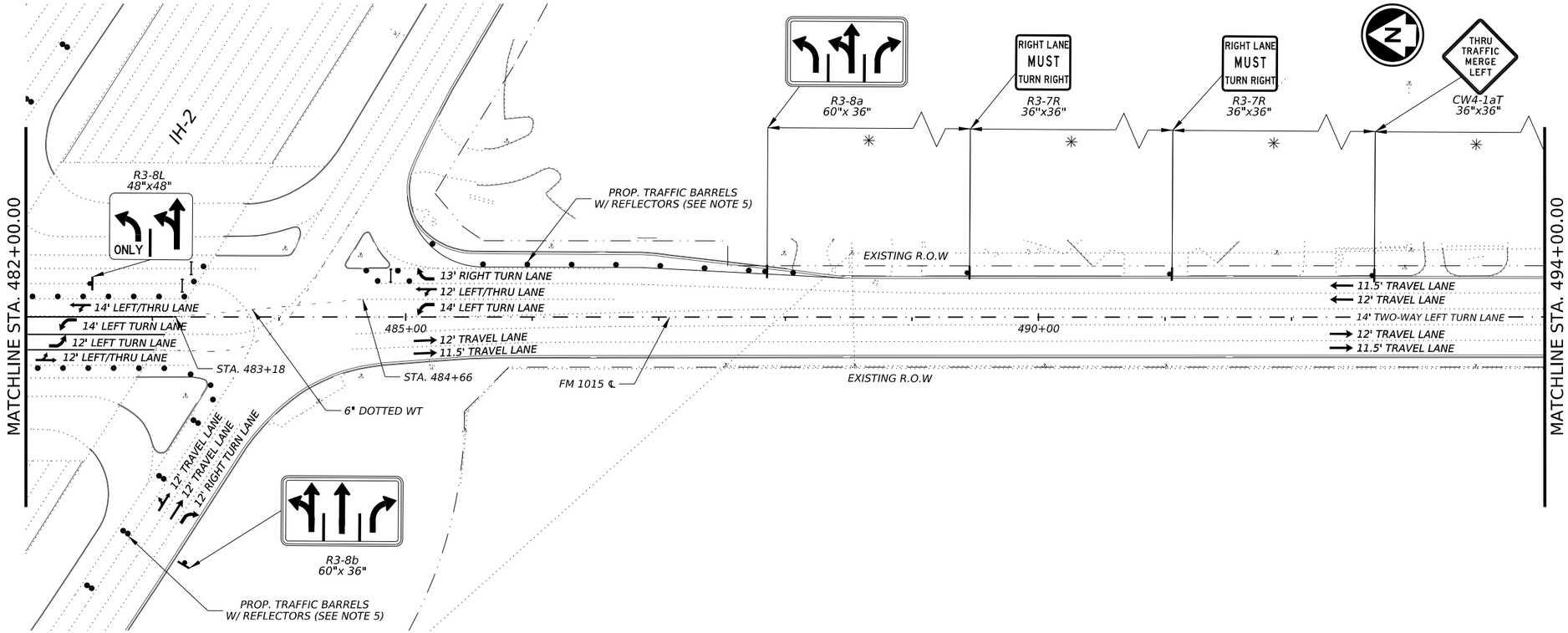
FM 1015

TRAFFIC CONTROL PLAN PHASE I - STEP II

SCALE:1"=100' SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		46

DATE: 6/29/2023 1:27:21 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step II Sheet_3.dgn



LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.
6. EXISTING STRIPING AT IH-2 CONCRETE INTERSECTION TO REMAIN IN PLACE, IT WILL BE RESTRIPED ON PROJECT WITH CSJ: 1228-03-051.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

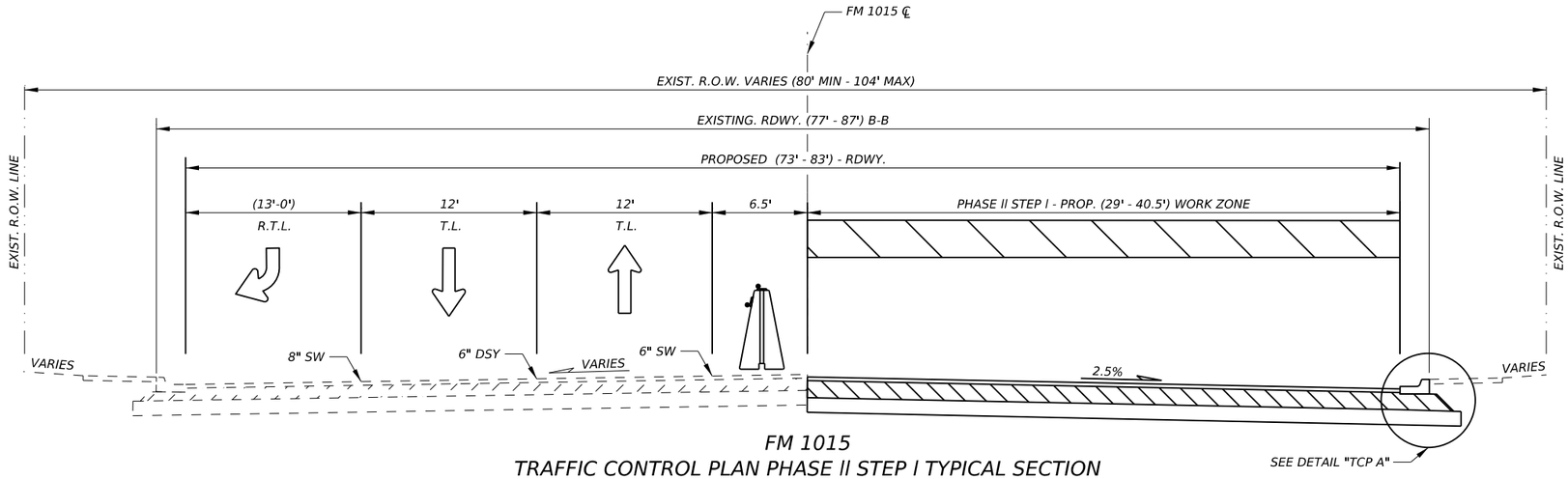
FM 1015

TRAFFIC CONTROL PLAN PHASE I - STEP II

SCALE:1"=100' SHEET 4 OF 4

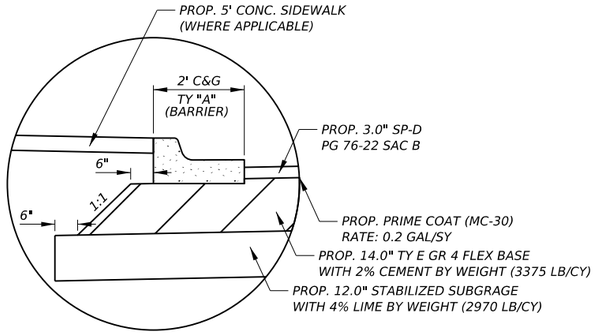
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		47

DATE: 6/29/2023 1:27:40 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0755768\FM1015 TCP Phase I Step II Sheet 4.dgn

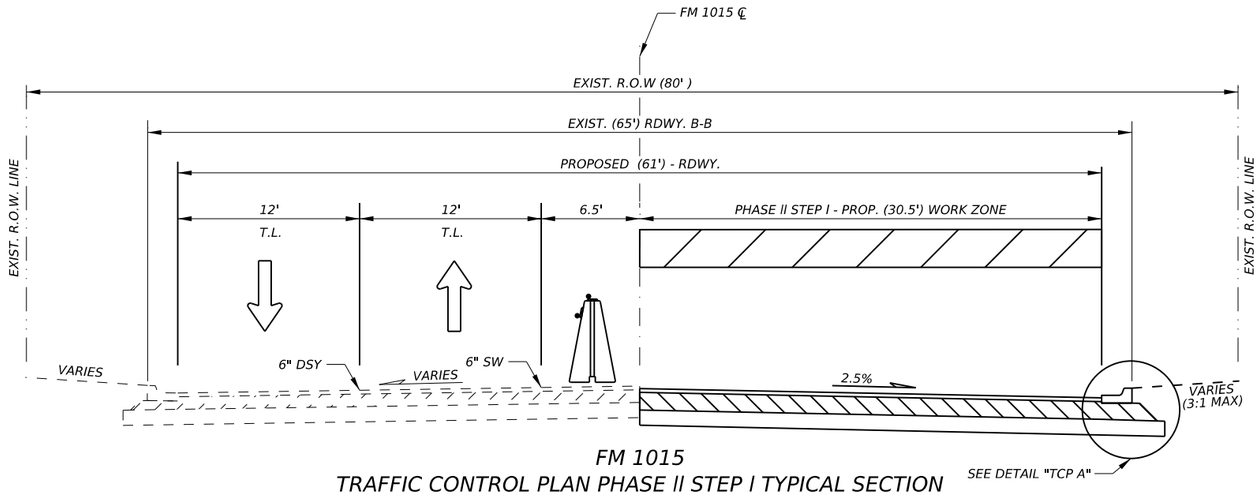


FM 1015
TRAFFIC CONTROL PLAN PHASE II STEP I TYPICAL SECTION

STA. 395+10 TO STA. 415+50



DETAIL "TCP A"



FM 1015
TRAFFIC CONTROL PLAN PHASE II STEP I TYPICAL SECTION

STA. 415+50 TO STA. 447+90

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
TWLTL.	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER
N.T.S.	- NOT TO SCALE
SW_R	- SOLID WHITE (REMOVABLE)
SY_R	- SOLID YELLOW (REMOVABLE)
DSY_R	- DOUBLE SOLID YELLOW (REMOVABLE)
SW	- SOLID WHITE (NON-REMOVABLE)
SY	- SOLID YELLOW (NON-REMOVABLE)
DSY	- DOUBLE SOLID YELLOW (NON-REMOVABLE)

- DIRECTION OF TRAFFIC FLOW

- PLASTIC BARREL WITH REFLECTOR AS PER BC STANDARDS

- SINGLE SLOPE CONCRETE BARRIER (SSCB) AS PER BC STANDARDS

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

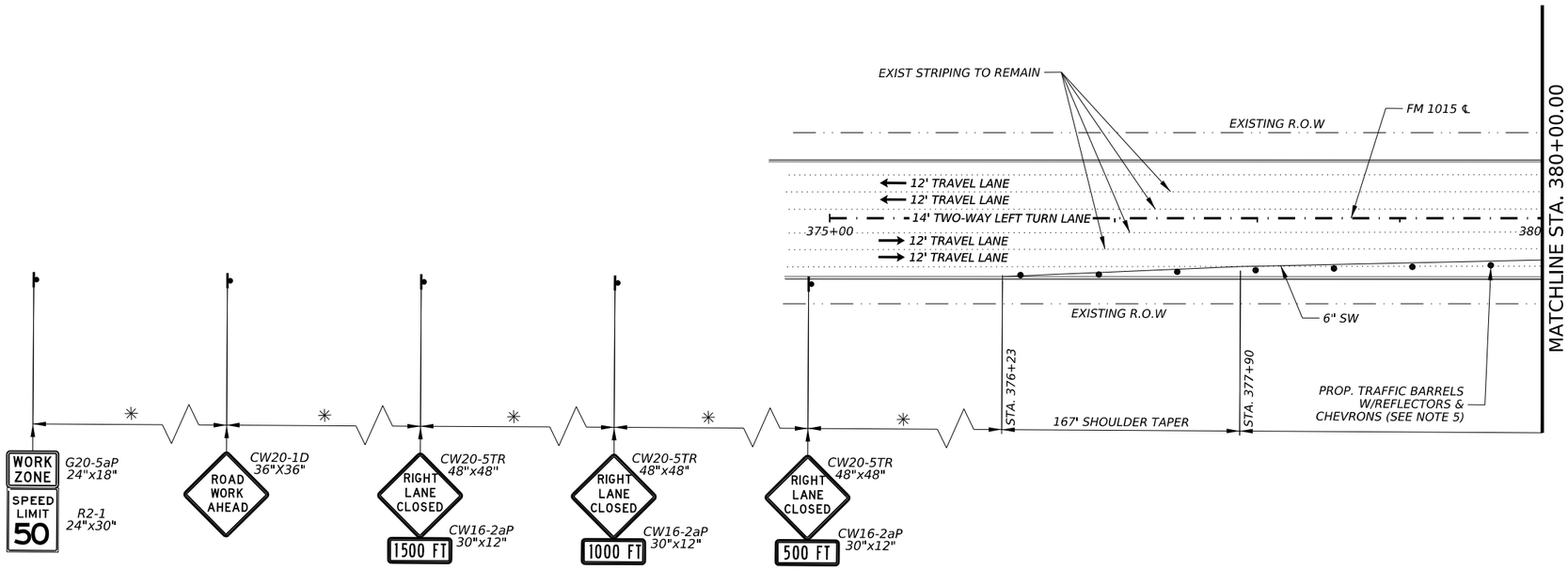
FM 1015

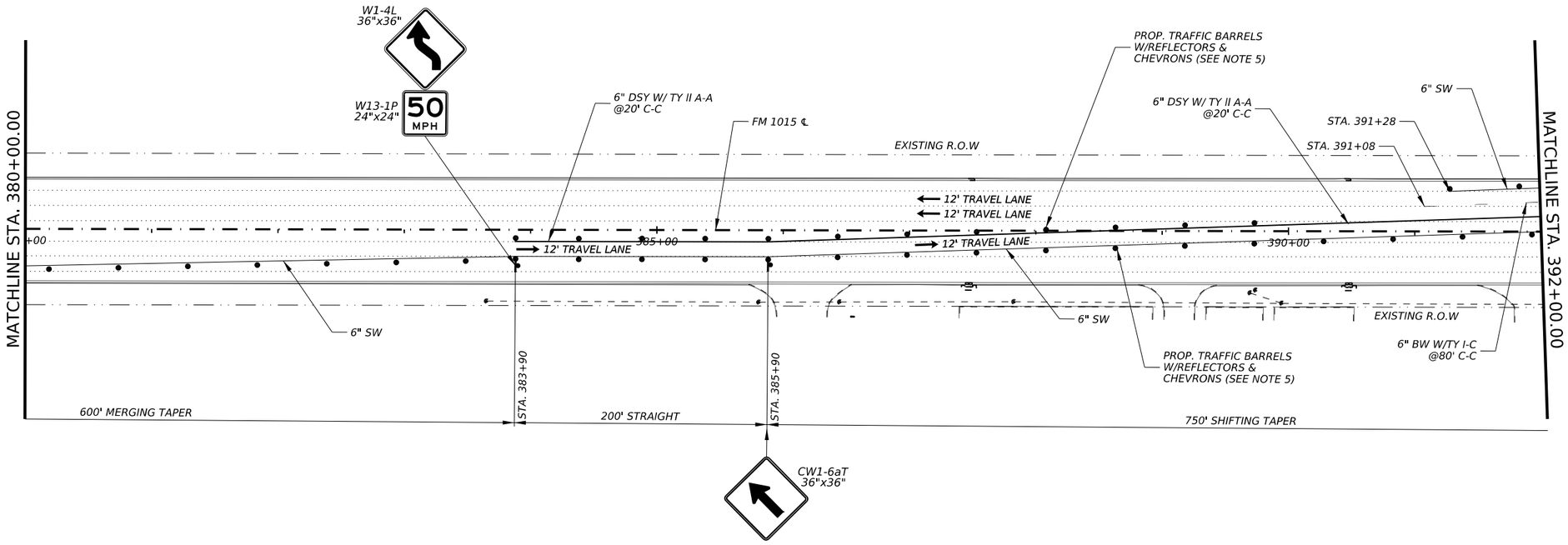
TRAFFIC CONTROL PLAN
PHASE II STEP I
TYPICAL SECTIONS

NOT TO SCALE SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		48

DATE: 6/12/2023 3:46:18 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Typical Sections.dgn





LEGEND

#	TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
	PROP. TY III BARRICADE
	PROP. CONSTRUCTION SIGN
	TRAFFIC BARREL W/ REFLECTORS
	CONSTRUCTED PREVIOUS PHASE
	PROP. ROAD CONSTRUCTION
	PROP. CUT & RESTORE PAVEMENT AREA
DSY_R	DOUBLE SOLID YELLOW (REMOVABLE)
SY_R	SOLID YELLOW (REMOVABLE)
SW_R	SOLID WHITE (REMOVABLE)
DSY	DOUBLE SOLID YELLOW (NON-REMOV)
SY	SOLID YELLOW (NON-REMOV)
SW	SOLID WHITE (NON-REMOV)
BY	BROKEN YELLOW (NON-REMOV)
BW	BROKEN WHITE (NON-REMOV)
	DIRECTION OF TRAFFIC FLOW
	SINGLE SLOPE CONCRETE BARRIER (SSCB)
	CRASH CUSHION ATTENUATOR
✳	REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

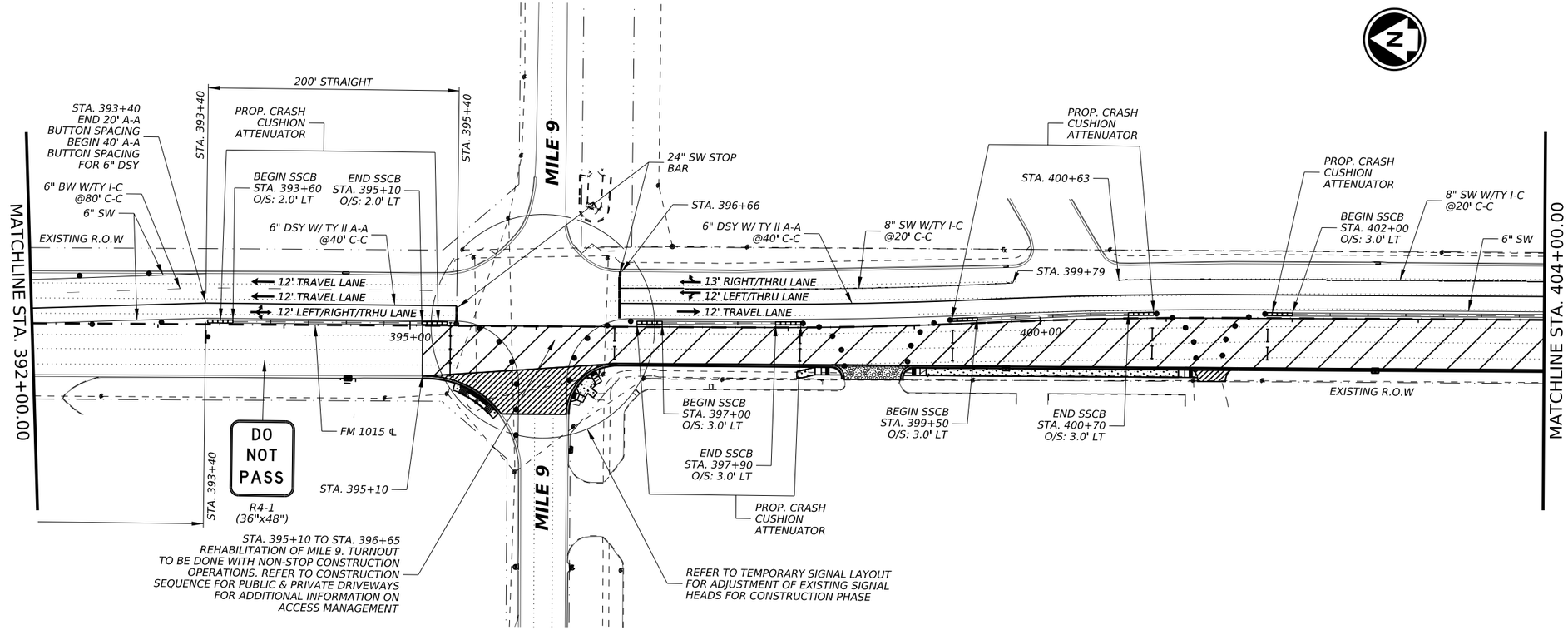
TRAFFIC CONTROL PLAN PHASE II - STEP I

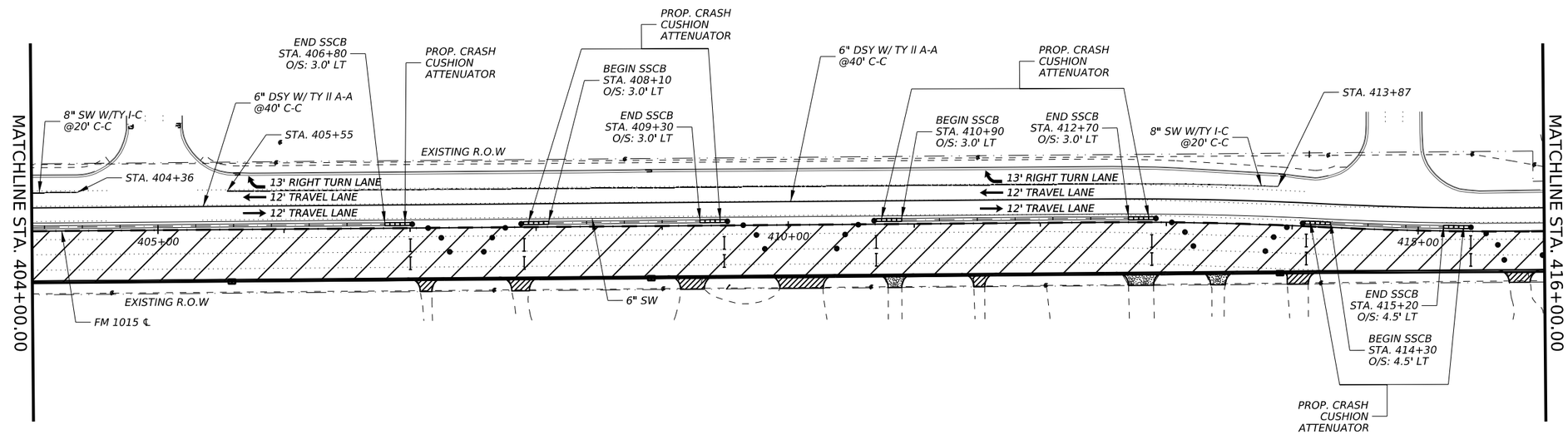
SCALE:1"=100' SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		49

DATE: 6/12/2023 3:46:27 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015 TCP Phase II Step I Sheet_1.dgn

CK:
DW:
CK:
DN:





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

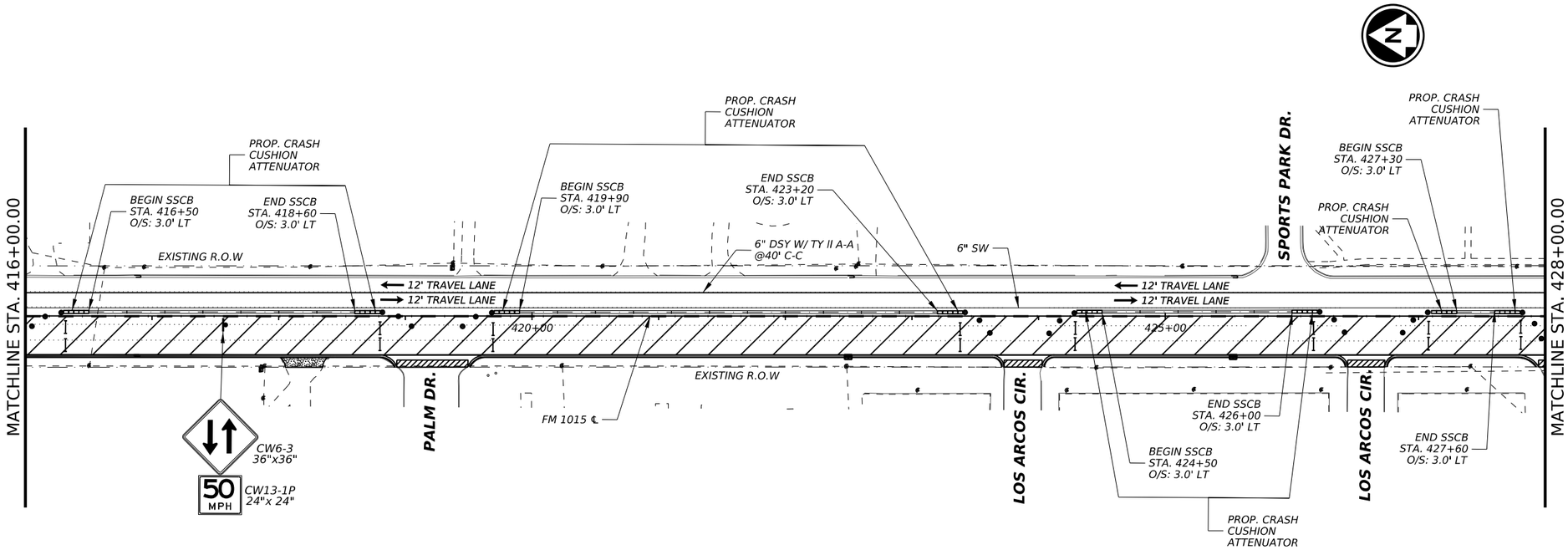
TRAFFIC CONTROL PLAN PHASE II - STEP I

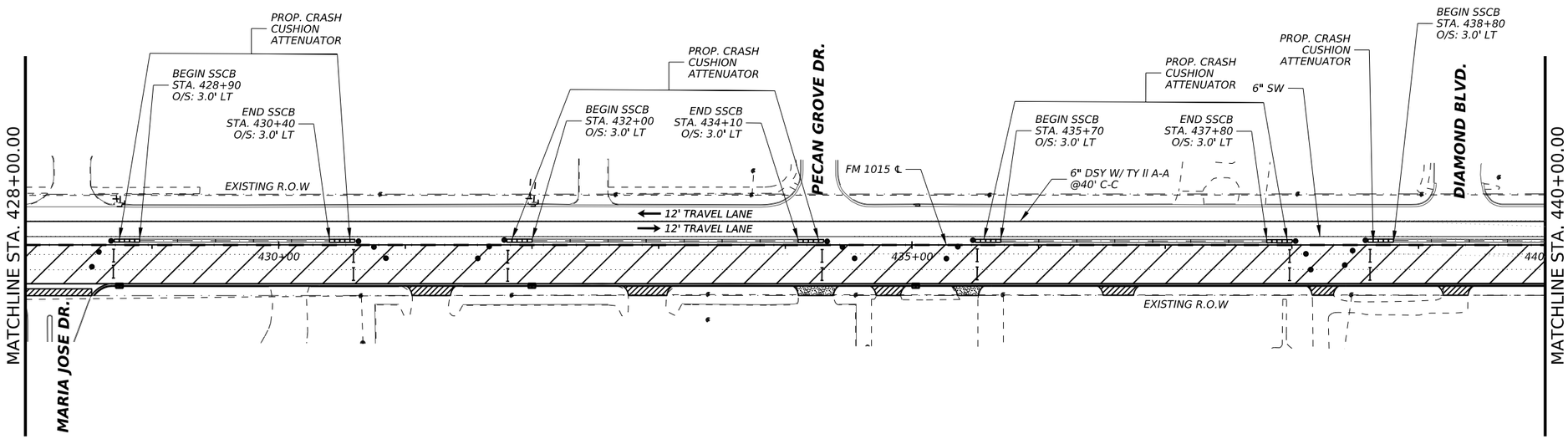
SCALE:1"=100' SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		50

DATE: 6/12/2023 3:46:35 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015 TCP Phase II Step I Sheet 2.dgn

CK:
DW:
CK:
DW:





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

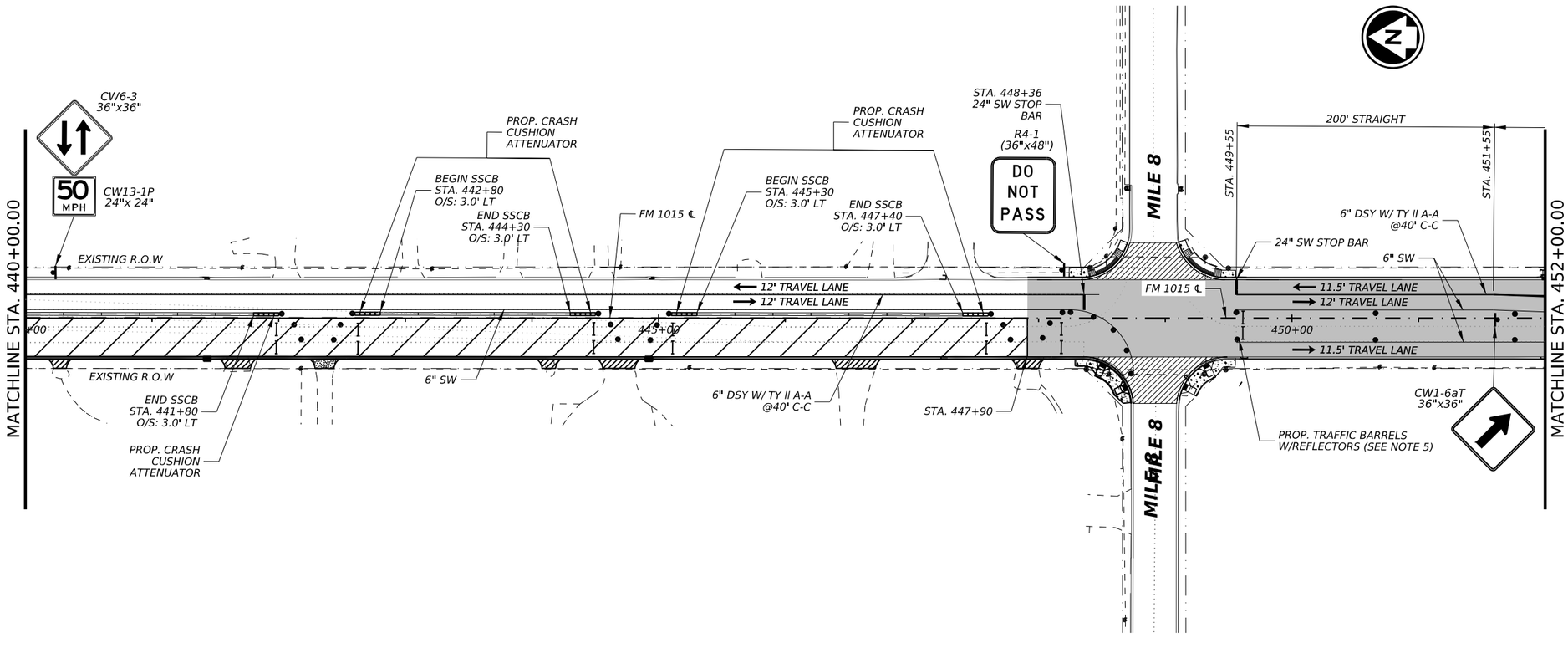
FM 1015

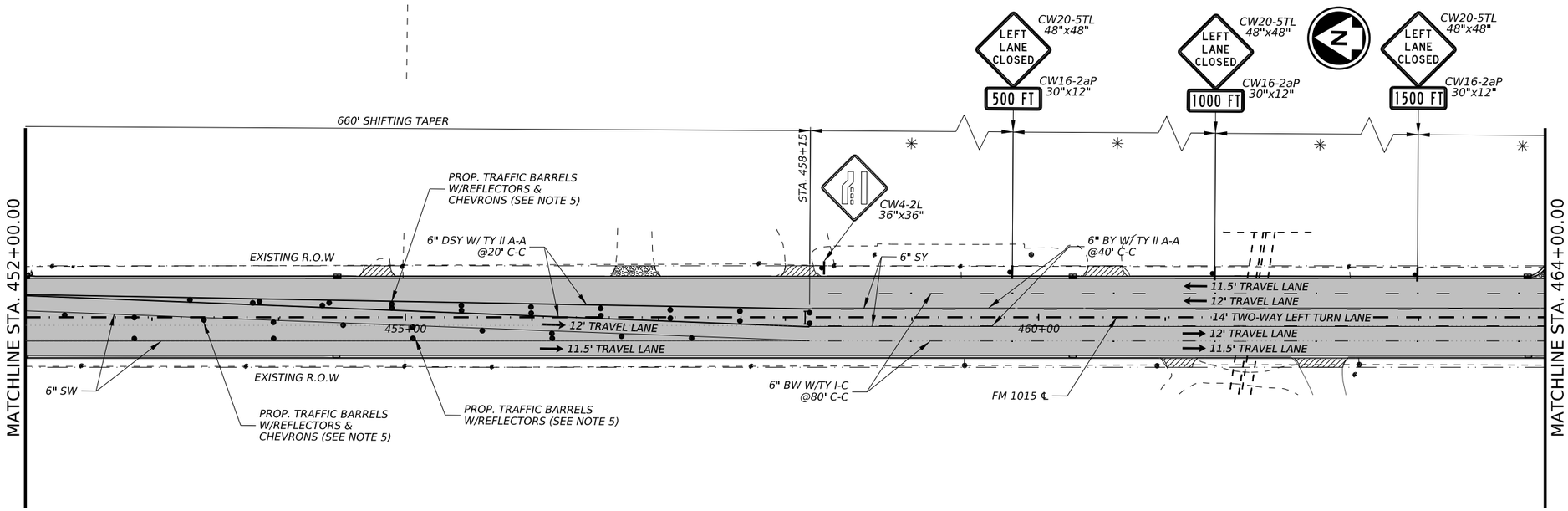
TRAFFIC CONTROL PLAN
PHASE II - STEP I

SCALE:1"=100' SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		51

DATE: 6/12/2023 3:46:43 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015 TCP Phase II Step I Sheet 3.dgn





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- SW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

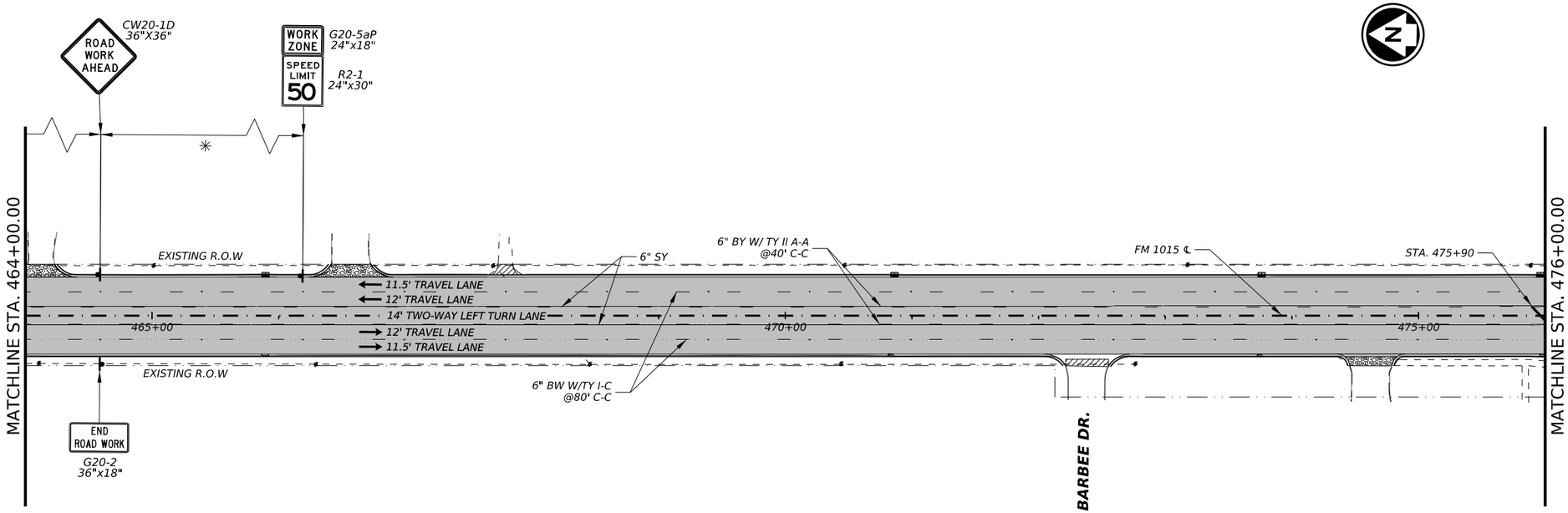
TRAFFIC CONTROL PLAN
PHASE II - STEP I

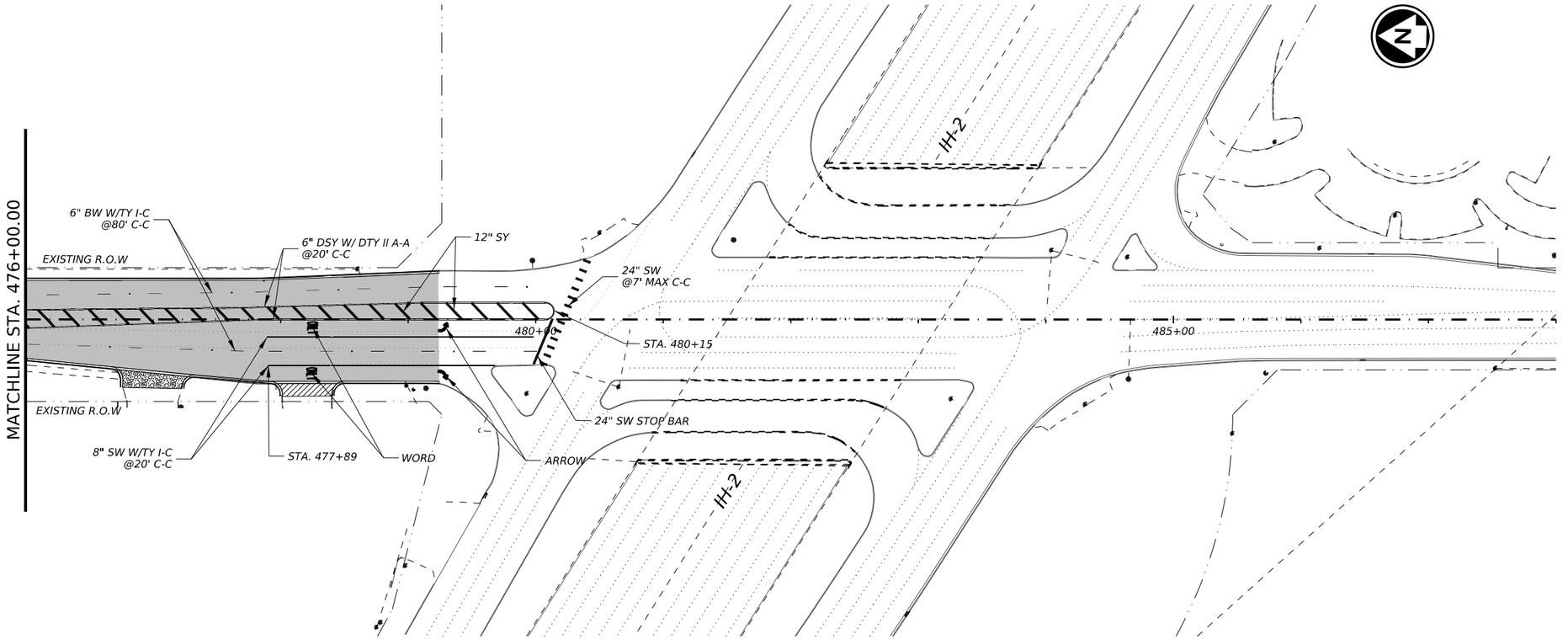
SCALE:1"=100' SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		52

DATE: 6/12/2023 3:46:50 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015 TCP Phase II Step I Sheet 4.dgn

CK:
DW:
CK:
DW:





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

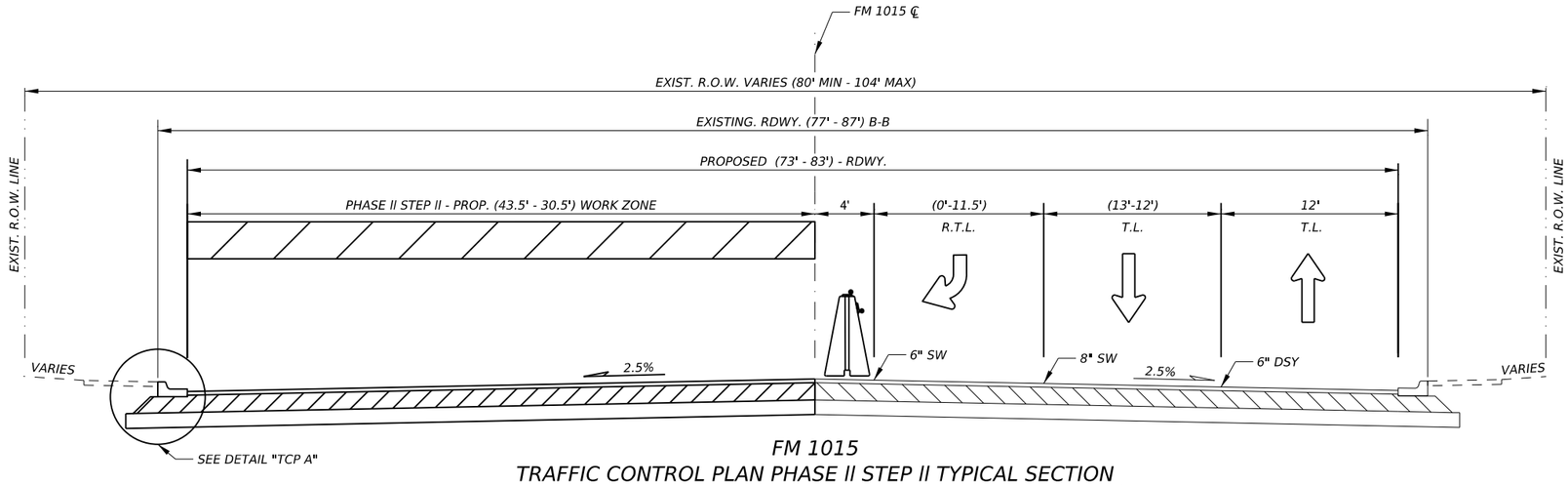
TRAFFIC CONTROL PLAN
PHASE II - STEP I

SCALE:1"=100' SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		53

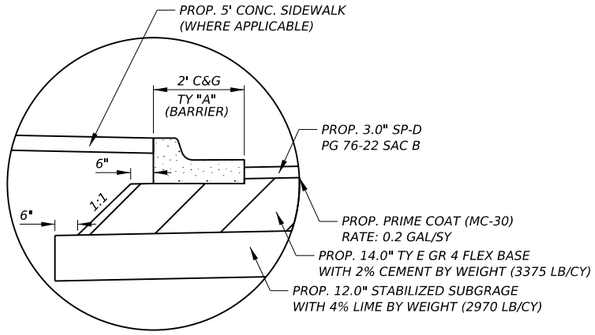
DATE: 6/12/2023 3:46:58 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015 TCP Phase II Step I Sheet 5.dgn

CK: DW: CK: DW:

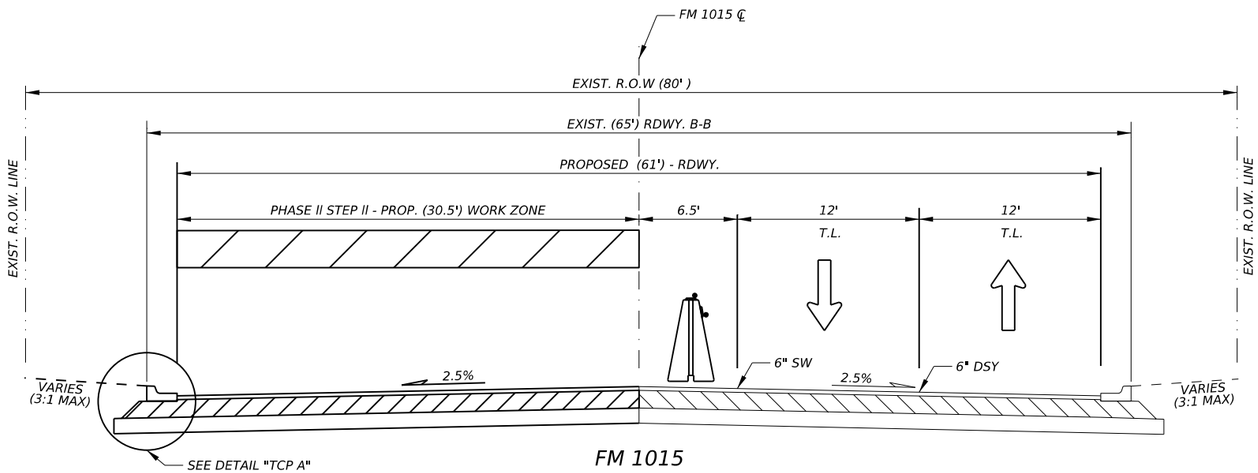


FM 1015
TRAFFIC CONTROL PLAN PHASE II STEP II TYPICAL SECTION

STA. 395+10 TO STA. 415+50



DETAIL "TCP A"



FM 1015
TRAFFIC CONTROL PLAN PHASE II STEP II TYPICAL SECTION

STA. 415+50 TO STA. 447+90

LEGEND

℄	- CENTERLINE
EXIST.	- EXISTING
PROP.	- PROPOSED
RDWY.	- ROADWAY
P.G.L.	- PROFILE GRADE LINE
P.C.J.	- PERMISSIBLE CONSTRUCTION JOINT
R.T.L.	- RIGHT TURN LANE
T.L.	- TRAVEL LANE
TWLTL.	- TWO WAY LEFT TURN LANE
SHLDR.	- SHOULDER
R.O.W.	- RIGHT OF WAY
A.C.P.	- ASPHALT CONCRETE PAVEMENT
CONC.	- CONCRETE
F-F	- FACE TO FACE
B-B	- BACK TO BACK
C&G	- CURB AND GUTTER
N.T.S.	- NOT TO SCALE
SW_R	- SOLID WHITE (REMOVABLE)
SY_R	- SOLID YELLOW (REMOVABLE)
DSY_R	- DOUBLE SOLID YELLOW (REMOVABLE)
SW	- SOLID WHITE (NON-REMOVABLE)
SY	- SOLID YELLOW (NON-REMOVABLE)
DSY	- DOUBLE SOLID YELLOW (NON-REMOVABLE)

- DIRECTION OF TRAFFIC FLOW

- PLASTIC BARREL WITH REFLECTOR AS PER BC STANDARDS

- SINGLE SLOPE CONCRETE BARRIER (SSCB) AS PER BC STANDARDS

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

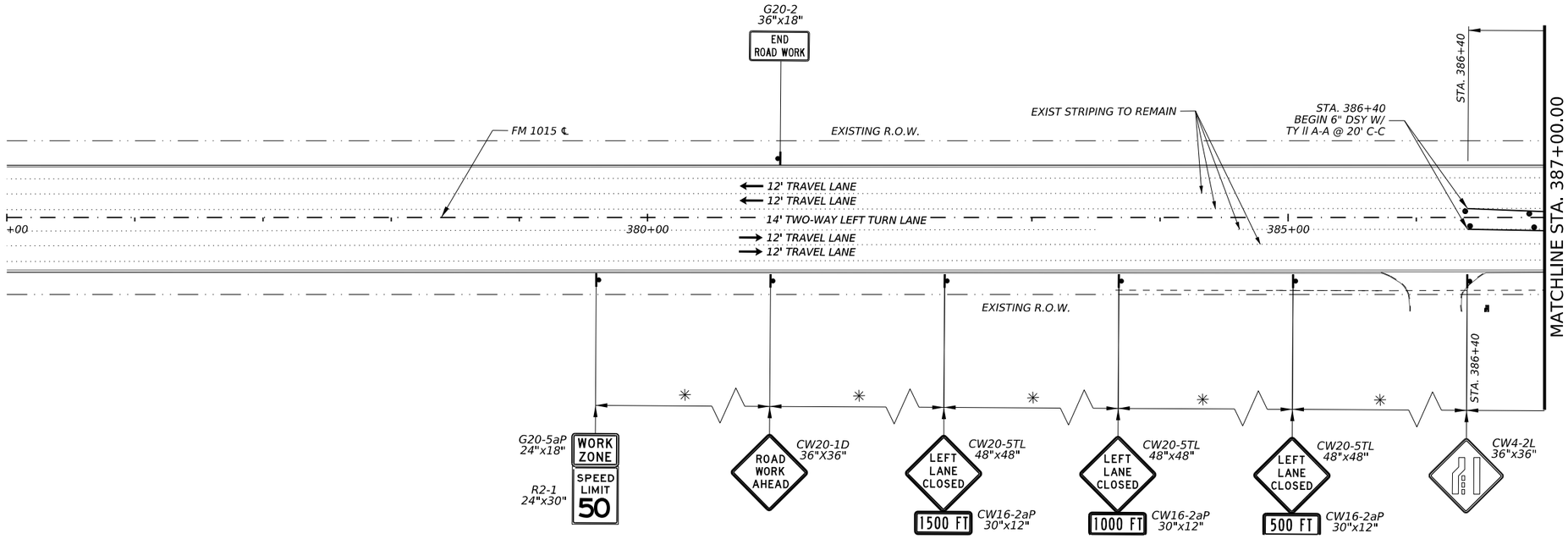
TRAFFIC CONTROL PLAN
PHASE II STEP II
TYPICAL SECTIONS

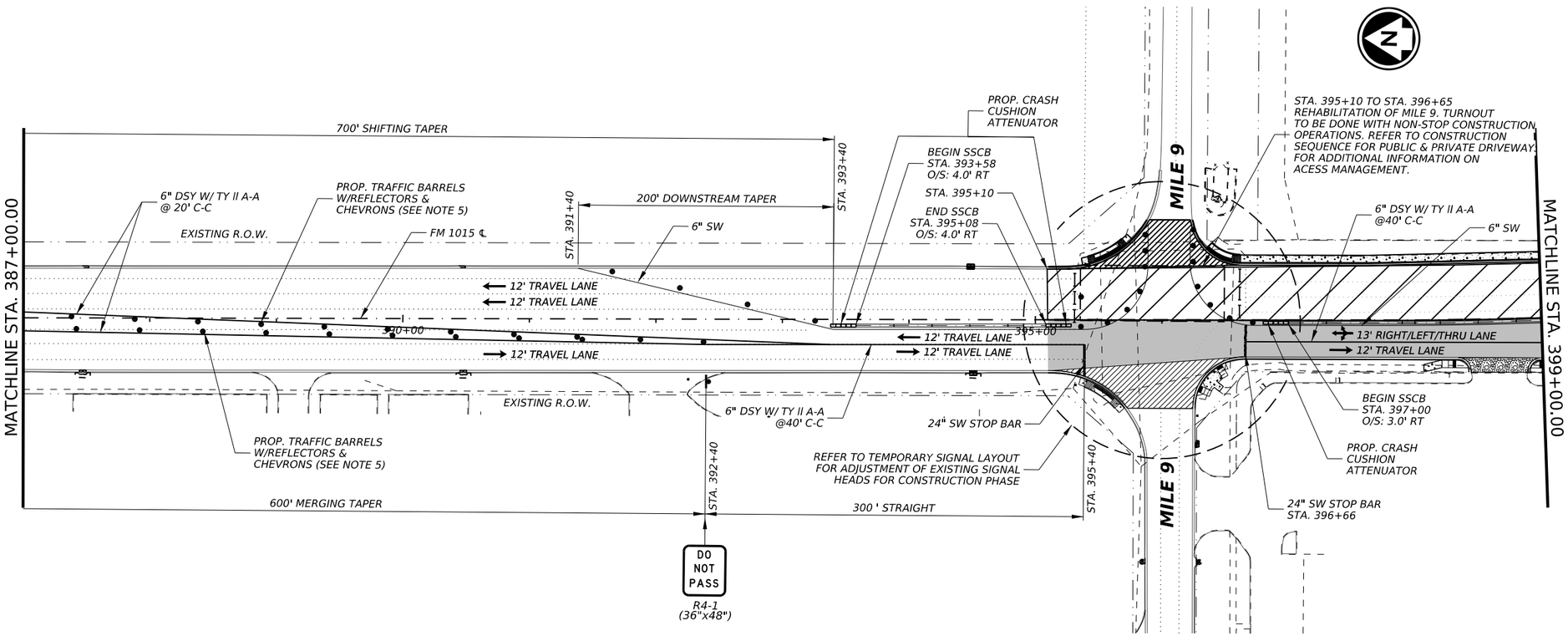
NOT TO SCALE SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		54

DATE: 6/12/2023 3:47:04 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681700\TCP Typical Sections.dgn

CK
DW
CK
DW





LEGEND

- TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R SOLID YELLOW (REMOVABLE)
- SW_R SOLID WHITE (REMOVABLE)
- DSY DOUBLE SOLID YELLOW (NON-REMOV)
- SY SOLID YELLOW (NON-REMOV)
- SW SOLID WHITE (NON-REMOV)
- BY BROKEN YELLOW (NON-REMOV)
- BW BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

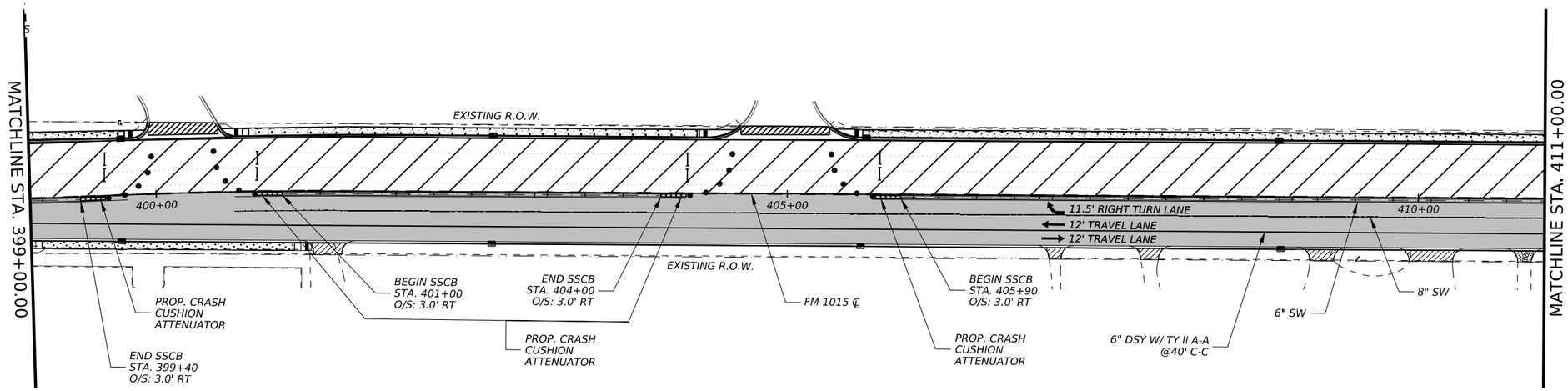
FM 1015

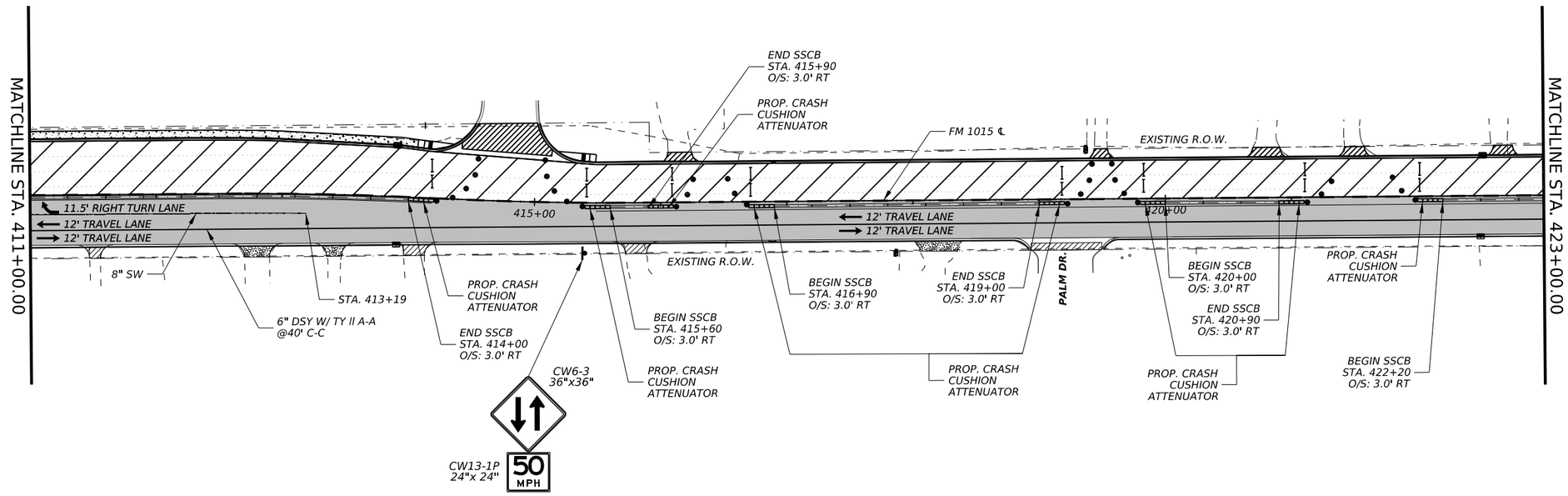
TRAFFIC CONTROL PLAN
PHASE II - STEP II

SCALE:1"=100' SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		55

DATE: 6/12/2023 3:47:13 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015_TCP_Phase II Step II Sheet 1.dgn





LEGEND

- # — TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R — DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R — SOLID YELLOW (REMOVABLE)
- SW_R — SOLID WHITE (REMOVABLE)
- DSY — DOUBLE SOLID YELLOW (NON-REMOV)
- SY — SOLID YELLOW (NON-REMOV)
- SW — SOLID WHITE (NON-REMOV)
- BY — BROKEN YELLOW (NON-REMOV)
- BW — BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

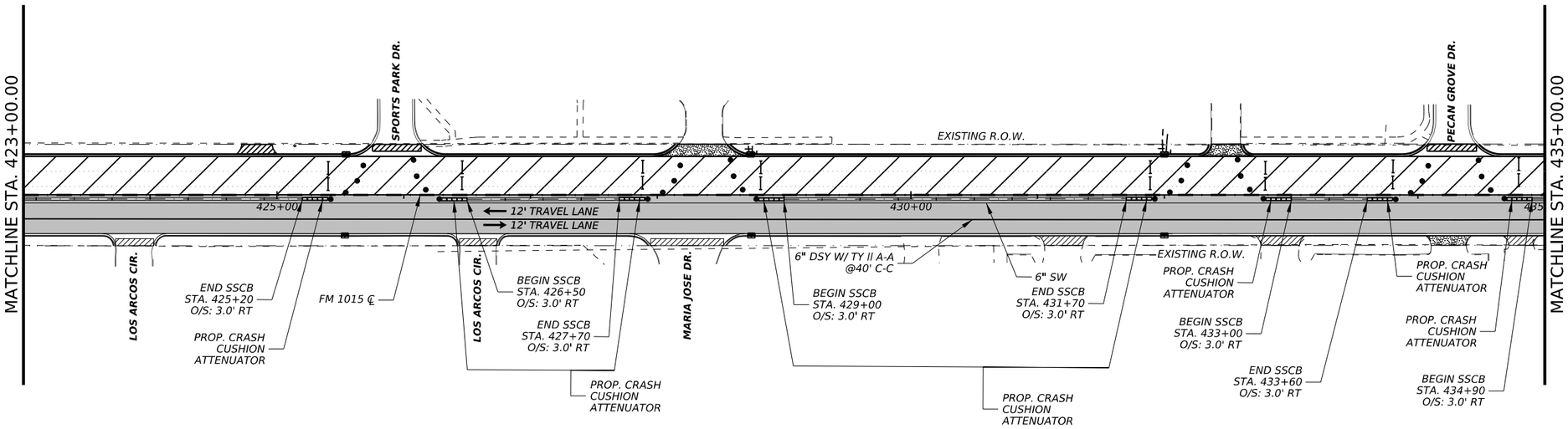
FM 1015

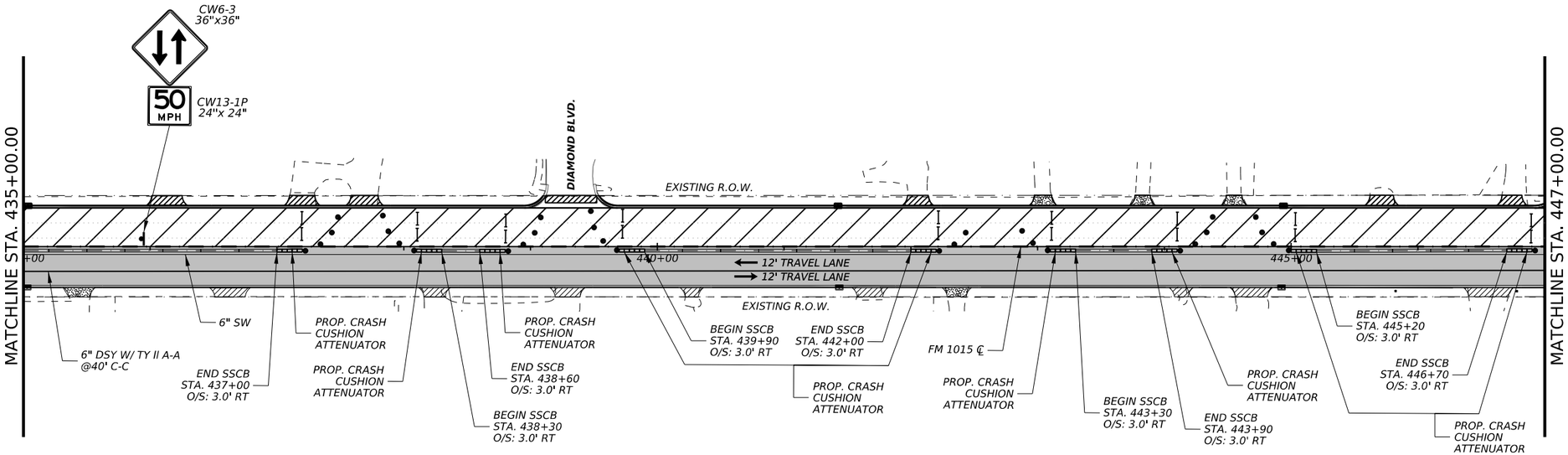
TRAFFIC CONTROL PLAN PHASE II - STEP II

SCALE:1"=100' SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		56

DATE: 6/12/2023 3:47:20 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015_TCP_Phase II Step II Sheet_2.dgn





LEGEND

- TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R SOLID YELLOW (REMOVABLE)
- SW_R SOLID WHITE (REMOVABLE)
- DSY DOUBLE SOLID YELLOW (NON-REMOV)
- SY SOLID YELLOW (NON-REMOV)
- SW SOLID WHITE (NON-REMOV)
- BY BROKEN YELLOW (NON-REMOV)
- BW BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

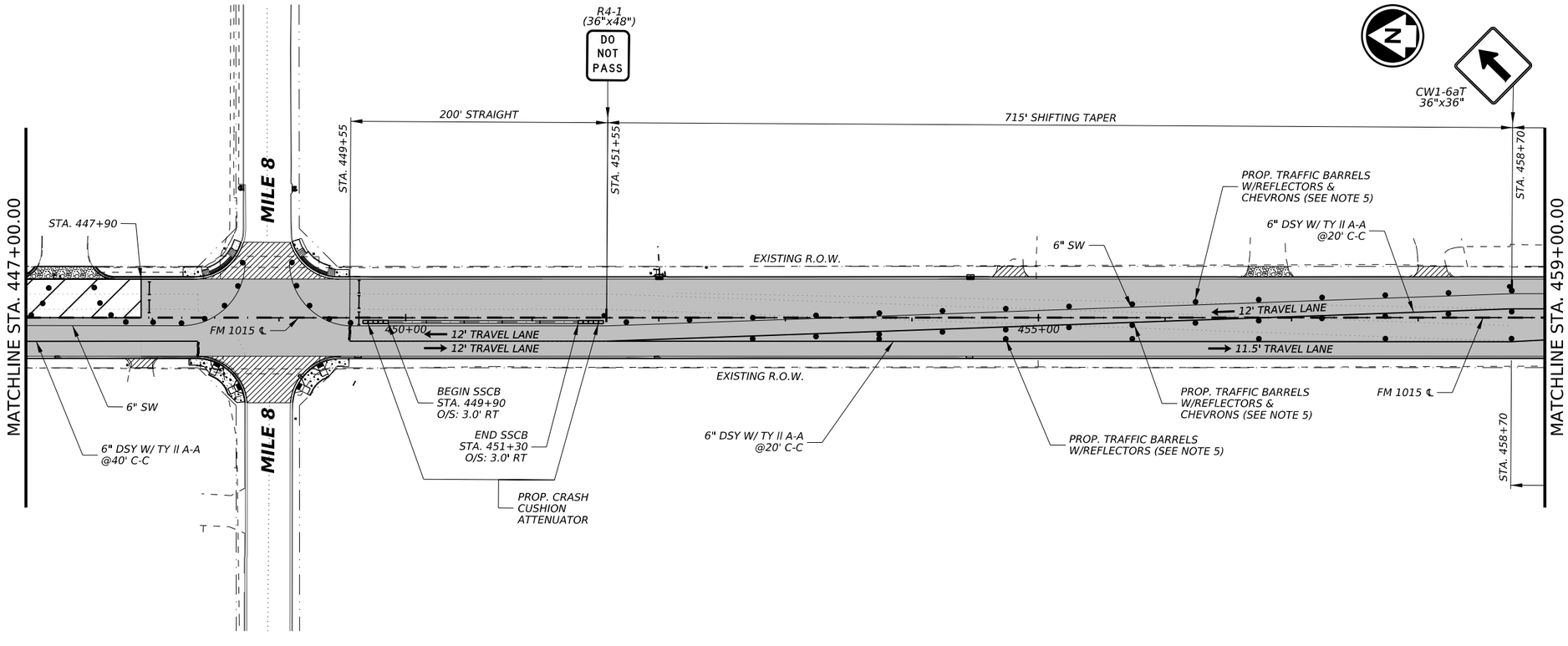
FM 1015

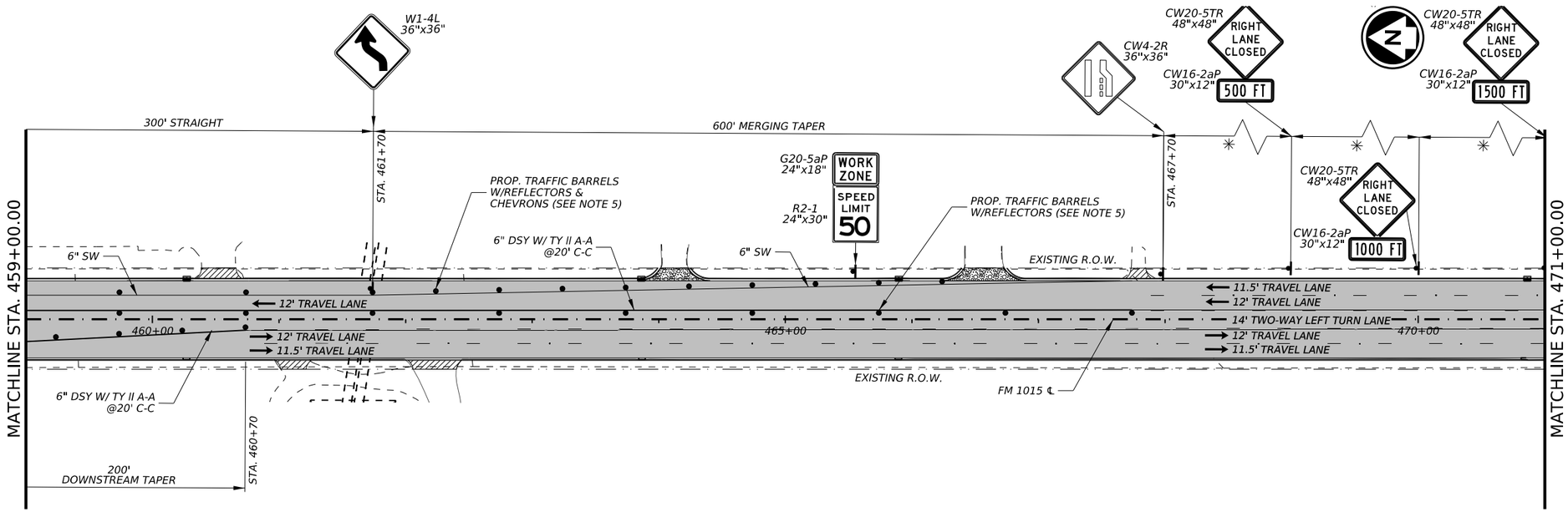
TRAFFIC CONTROL PLAN
PHASE II - STEP II

SCALE:1"=100' SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		57

DATE: 6/12/2023 3:47:27 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015_TCP_Phase II Step II_Sheet_3.dgn





LEGEND

- (#) TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
- PROP. TY III BARRICADE
- PROP. CONSTRUCTION SIGN
- TRAFFIC BARREL W/ REFLECTORS
- CONSTRUCTED PREVIOUS PHASE
- PROP. ROAD CONSTRUCTION
- PROP. CUT & RESTORE PAVEMENT AREA
- DSY_R DOUBLE SOLID YELLOW (REMOVABLE)
- SY_R SOLID YELLOW (REMOVABLE)
- SW_R SOLID WHITE (REMOVABLE)
- DSY DOUBLE SOLID YELLOW (NON-REMOV)
- SY SOLID YELLOW (NON-REMOV)
- SW SOLID WHITE (NON-REMOV)
- BY BROKEN YELLOW (NON-REMOV)
- BW BROKEN WHITE (NON-REMOV)
- DIRECTION OF TRAFFIC FLOW
- SINGLE SLOPE CONCRETE BARRIER (SSCB)
- CRASH CUSHION ATTENUATOR
- REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

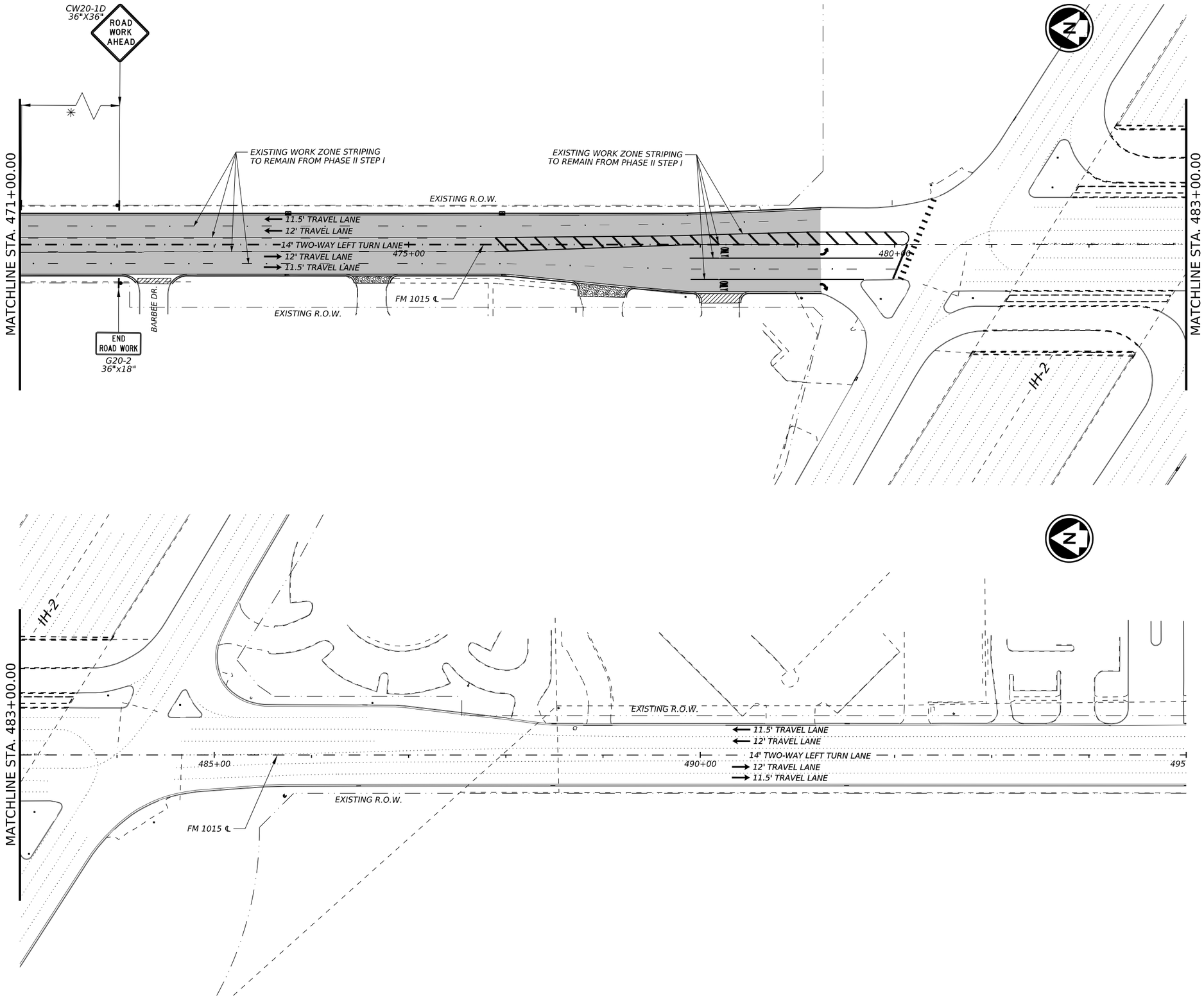
FM 1015

TRAFFIC CONTROL PLAN
PHASE II - STEP II

SCALE:1"=100' SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		58

DATE: 6/12/2023 3:47:33 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015 TCP Phase II Step II Sheet 4.dgn



LEGEND

#	TRAFFIC SIGN ID (SEE SIGNS INVENTORY)
	PROP. TY III BARRICADE
	PROP. CONSTRUCTION SIGN
	TRAFFIC BARREL W/ REFLECTORS
	CONSTRUCTED PREVIOUS PHASE
	PROP. ROAD CONSTRUCTION
	PROP. CUT & RESTORE PAVEMENT AREA
DSY_R	DOUBLE SOLID YELLOW (REMOVABLE)
SY_R	SOLID YELLOW (REMOVABLE)
SW_R	SOLID WHITE (REMOVABLE)
DSY	DOUBLE SOLID YELLOW (NON-REMOV)
SY	SOLID YELLOW (NON-REMOV)
SW	SOLID WHITE (NON-REMOV)
BY	BROKEN YELLOW (NON-REMOV)
BW	BROKEN WHITE (NON-REMOV)
	DIRECTION OF TRAFFIC FLOW
	SINGLE SLOPE CONCRETE BARRIER (SSCB)
	CRASH CUSHION ATTENUATOR
✳	REFER TO BC STANDARDS FOR SIGN SPACING

NOTES

1. ALL STATIONS AND OFFSETS ARE BASED ON FM 1015 ALIGNMENT. SEE "ROADWAY DATA SHEETS" FOR PROPOSED CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS, FINAL POSITION SHALL BE APPROVED BY ENGINEER.
3. EXIST. PAVEMENT MARKINGS TO BE REMOVED AS NECESSARY WITHIN LIMITS OF TRAFFIC CONTROL SEQUENCE.
4. STATIONS FOR SSCB ARE APPROXIMATE AND MAY BE ALTERED TO MEET FIELD CONDITIONS.
5. REFER TO BC STANDARDS FOR TRAFFIC BARREL SPACING.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

TRAFFIC CONTROL PLAN PHASE II - STEP II

SCALE:1"=100' SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		59

DATE: 6/12/2023 3:47:40 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0747805\FM1015_TCP_Phase II Step II_Sheet_5.dgn

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC.#	N	W	N	W	N	W
1	PHASE I STEP I	40	FM 1015	446+15 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
2	PHASE I STEP I	40	FM 1015	447+95 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
3	PHASE I STEP I	40	FM 1015	449+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
4	PHASE I STEP I	41	FM 1015	461+50 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
5	PHASE I STEP I	41	FM 1015	462+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
6	PHASE I STEP I	41	FM 1015	465+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
7	PHASE I STEP II	45	FM 1015	446+20 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	1			x			
8	PHASE I STEP II	45	FM 1015	448+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	2			x			
9	PHASE I STEP II	45	FM 1015	449+80 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	3			x			
10	PHASE I STEP II	45	FM 1015	456+10 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	4			x			
11	PHASE I STEP II	45	FM 1015	457+40 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	5			x			
12	PHASE I STEP II	46	FM 1015	459+80 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	6			x			
13	PHASE I STEP II	46	FM 1015	461+10 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
14	PHASE I STEP II	46	FM 1015	463+50 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
15	PHASE I STEP II	46	FM 1015	464+80 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
16	PHASE I STEP II	46	FM 1015	466+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
17	PHASE II STEP I	50	FM 1015	393+60 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	7			x			
18	PHASE II STEP I	50	FM 1015	395+10 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	8			x			
19	PHASE II STEP I	50	FM 1015	397+00 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	9			x			
20	PHASE II STEP I	50	FM 1015	397+90 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	10			x			
21	PHASE II STEP I	50	FM 1015	399+50 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	11			x			
22	PHASE II STEP I	50	FM 1015	400+70 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	12			x			
23	PHASE II STEP I	50	FM 1015	402+00 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	13			x			
24	PHASE II STEP I	50	FM 1015	406+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	14			x			
25	PHASE II STEP I	50	FM 1015	408+10 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	15			x			
26	PHASE II STEP I	50	FM 1015	409+30 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'			x	16			x			
27	PHASE II STEP I	50	FM 1015	410+90 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
28	PHASE II STEP I	50	FM 1015	412+70 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
29	PHASE II STEP I	50	FM 1015	414+30 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
												TOTALS	13		16							

LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwyise.htm

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		
	PHR	HIDALGO		
	FEDERAL AID PROJECT			SHEET NO.
				60

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC.#	N	W	N	W	N	W
30	PHASE II STEP I	50	FM 1015	415+20 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
31	PHASE II STEP I	51	FM 1015	416+50 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
32	PHASE II STEP I	51	FM 1015	418+60 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
33	PHASE II STEP I	51	FM 1015	419+90 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
34	PHASE II STEP I	51	FM 1015	423+20 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
35	PHASE II STEP I	51	FM 1015	424+50 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
36	PHASE II STEP I	51	FM 1015	426+00 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
37	PHASE II STEP I	51	FM 1015	427+30 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
38	PHASE II STEP I	51	FM 1015	427+60 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
39	PHASE II STEP I	51	FM 1015	428+90 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
40	PHASE II STEP I	51	FM 1015	430+40 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
41	PHASE II STEP I	51	FM 1015	432+00 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
42	PHASE II STEP I	51	FM 1015	434+10 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
43	PHASE II STEP I	51	FM 1015	435+70 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
44	PHASE II STEP I	51	FM 1015	437+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
45	PHASE II STEP I	51	FM 1015	438+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
46	PHASE II STEP I	52	FM 1015	441+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
47	PHASE II STEP I	52	FM 1015	442+80 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
48	PHASE II STEP I	52	FM 1015	444+30 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
49	PHASE II STEP I	52	FM 1015	445+30 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
50	PHASE II STEP I	52	FM 1015	447+40 LT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'	x						x			
51	PHASE II STEP II	55	FM 1015	393+58 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	17			x			
52	PHASE II STEP II	55	FM 1015	395+08 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	18			x			
53	PHASE II STEP II	55	FM 1015	397+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	19			x			
54	PHASE II STEP II	56	FM 1015	399+40 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	20			x			
55	PHASE II STEP II	56	FM 1015	401+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	21			x			
56	PHASE II STEP II	56	FM 1015	404+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	22			x			
57	PHASE II STEP II	56	FM 1015	405+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	23			x			
58	PHASE II STEP II	56	FM 1015	414+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	24			x			
												TOTALS	21	8	8							

LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwyise.htm

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		
	PHR	HIDALGO		
	FEDERAL AID PROJECT			SHEET NO.
				61

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC.#	N	W	N	W	N	W
59	PHASE II STEP II	56	FM 1015	415+60 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	25			x			
60	PHASE II STEP II	56	FM 1015	415+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	26			x			
61	PHASE II STEP II	56	FM 1015	416+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	27			x			
62	PHASE II STEP II	56	FM 1015	419+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	28			x			
63	PHASE II STEP II	56	FM 1015	420+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	29			x			
64	PHASE II STEP II	56	FM 1015	420+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	30			x			
65	PHASE II STEP II	56	FM 1015	422+20 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	31			x			
66	PHASE II STEP II	57	FM 1015	425+20 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	32			x			
67	PHASE II STEP II	57	FM 1015	426+50 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	33			x			
68	PHASE II STEP II	57	FM 1015	427+70 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	34			x			
69	PHASE II STEP II	57	FM 1015	429+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	35			x			
70	PHASE II STEP II	57	FM 1015	431+70 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	36			x			
71	PHASE II STEP II	57	FM 1015	433+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	37			x			
72	PHASE II STEP II	57	FM 1015	433+60 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	38			x			
73	PHASE II STEP II	57	FM 1015	434+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	39			x			
74	PHASE II STEP II	57	FM 1015	437+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	40			x			
75	PHASE II STEP II	57	FM 1015	438+30 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	41			x			
76	PHASE II STEP II	57	FM 1015	438+60 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	42			x			
77	PHASE II STEP II	57	FM 1015	439+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	43			x			
78	PHASE II STEP II	57	FM 1015	442+00 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	44			x			
79	PHASE II STEP II	57	FM 1015	443+30 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	45			x			
80	PHASE II STEP II	57	FM 1015	443+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	46			x			
81	PHASE II STEP II	57	FM 1015	445+20 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	47			x			
82	PHASE II STEP II	57	FM 1015	446+70 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	48			x			
83	PHASE II STEP II	58	FM 1015	449+90 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	49			x			
84	PHASE II STEP II	58	FM 1015	451+30 RT	TL-3	BI	N/A	N/A	SINGLE SLOPE CONCRETE BARRIER	24"	42"	30'		x	x	50			x			
85																						
86																						
87																						
												TOTALS		26	26							

LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwyise.htm

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		
	PHR	HIDALGO		
	FEDERAL AID PROJECT			SHEET NO.
				62

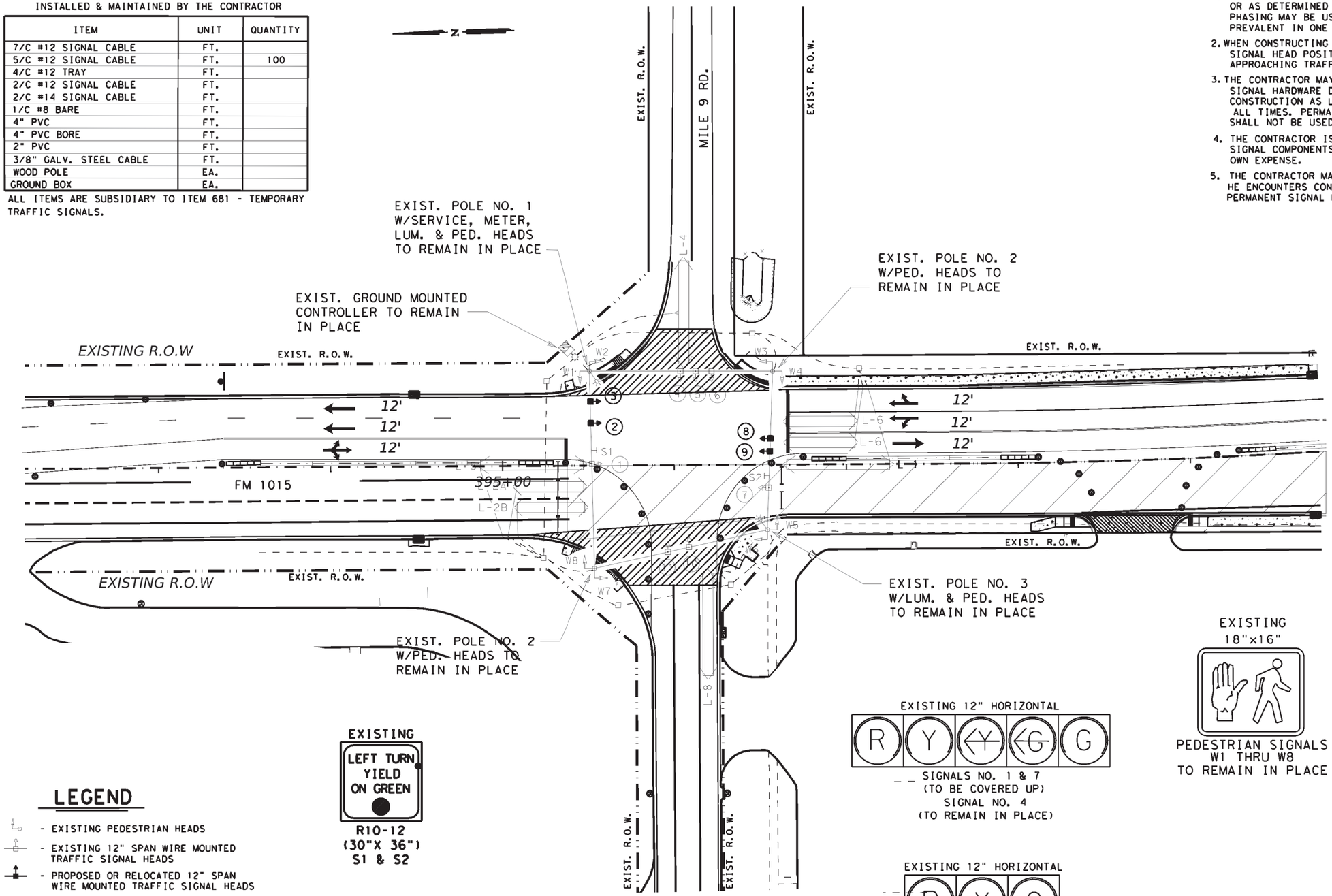
TEMPORARY TRAFFIC SIGNAL HARDWARE TO BE FURNISHED, INSTALLED & MAINTAINED BY THE CONTRACTOR

ITEM	UNIT	QUANTITY
7/C #12 SIGNAL CABLE	FT.	
5/C #12 SIGNAL CABLE	FT.	100
4/C #12 TRAY	FT.	
2/C #12 SIGNAL CABLE	FT.	
2/C #14 SIGNAL CABLE	FT.	
1/C #8 BARE	FT.	
4" PVC	FT.	
4" PVC BORE	FT.	
2" PVC	FT.	
3/8" GALV. STEEL CABLE	FT.	
WOOD POLE	EA.	
GROUND BOX	EA.	

ALL ITEMS ARE SUBSIDIARY TO ITEM 681 - TEMPORARY TRAFFIC SIGNALS.

NOTES:

1. SIGNAL PHASING & TIMING SHALL BE SET TO FIXED OPERATIONS OR AS DETERMINED BY THE ENGINEER IN THE FIELD. SPLIT PHASING MAY BE USED IF HEAVY LEFT TURN MOVEMENTS ARE PREVALENT IN ONE OR MORE APPROACHES.
2. WHEN CONSTRUCTING THE ASSIGNED PART OF THE INTERSECTION, SIGNAL HEAD POSITIONS SHOULD BE SHIFTED TO FACE THE APPROACHING TRAFFIC AS NECESSARY.
3. THE CONTRACTOR MAY USE THE EXISTING OR TEMPORARY SIGNAL HARDWARE DURING THE DIFFERENT TCP PHASES OF CONSTRUCTION AS LONG AS SIGNALS ARE OPERATIONAL AT ALL TIMES. PERMANENT PROPOSED SIGNAL HEAD ASSEMBLIES SHALL NOT BE USED DURING THE TCP PHASES.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY TRAFFIC SIGNAL COMPONENTS AND IF DAMAGED, SHALL REPAIR AT HIS OWN EXPENSE.
5. THE CONTRACTOR MAY CHOOSE TO USE TEMPORARY WOOD POLES IF HE ENCOUNTERS CONFLICTS USING THE EXISTING OR PROPOSED PERMANENT SIGNAL POLES.

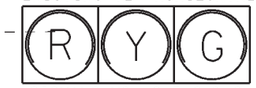


EXISTING
LEFT TURN YIELD ON GREEN
R10-12
(30"X 36")
S1 & S2

EXISTING 12" HORIZONTAL

SIGNALS NO. 1 & 7
(TO BE COVERED UP)
SIGNAL NO. 4
(TO REMAIN IN PLACE)

EXISTING 12" HORIZONTAL



SIGNALS NO. 2, 3, 8 & 9
(RELOCATE AS SHOWN)
SIGNALS NO. 5, 6, 10 & 11
(TO REMAIN IN PLACE)

EXISTING
18"x16"

PEDESTRIAN SIGNALS
W1 THRU W8
TO REMAIN IN PLACE

EXISTING
PUSH BUTTON ON

R10-4b SIGN &
PEDESTRIAN PUSH BUTTON
W1 THRU W8
TO REMAIN IN PLACE

LEGEND

- EXISTING PEDESTRIAN HEADS
- EXISTING 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- PROPOSED OR RELOCATED 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXISTING LUMINAIRE
- EXISTING GROUND BOX
- EXISTING LOOP DETECTOR
- EXISTING FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- EXISTING CONDUIT (SIZE & TYPE AS SPECIFIED)
- EXISTING CONDUIT BORE (SIZE & TYPE AS SPECIFIED)

TEMPORARY SIGNAL DIAGRAM

INTERSECTION OF
FM 1015/MILE 9 RD.
HIDALGO COUNTY
CSJ: 1228-03-050

* NOTE: THIS LAYOUT SHALL ALSO APPLY FOR TCP PH. 2 -ST. 2. ADJUST HEADS POSITIONING AS REQUIRED & COVER UP LEFT TURN SIGNAL AS REQUIRED.

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED PROFESSIONAL ENGINEER

06.30.2023

Texas Department of Transportation

FM 1015
①
TEMPORARY SIGNAL
* TCP PHASE 2 STEP 1
FM 1015 @ MILE 9 RD.

SCALE: 1" = 60' SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		63

DATE: 6/12/2023 3:59:00 PM
FILE: c:\txdot\pw onlinet\txdot5\jose.cardenas\d0824809\TCPSIG M19 P2 S1.dgn

TEMPORARY TRAFFIC SIGNAL HARDWARE TO BE FURNISHED, INSTALLED & MAINTAINED BY THE CONTRACTOR

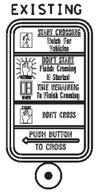
ITEM	UNIT	QUANTITY
7/C #12 SIGNAL CABLE	FT.	
5/C #12 SIGNAL CABLE	FT.	100
4/C #12 TRAY	FT.	
2/C #12 SIGNAL CABLE	FT.	
2/C #14 SIGNAL CABLE	FT.	
1/C #8 BARE	FT.	
4" PVC	FT.	
4" PVC BORE	FT.	
2" PVC	FT.	
3/8" GALV. STEEL CABLE	FT.	
WOOD POLE	EA.	
GROUND BOX	EA.	

ALL ITEMS ARE SUBSIDIARY TO ITEM 681 - TEMPORARY TRAFFIC SIGNALS.

EXISTING

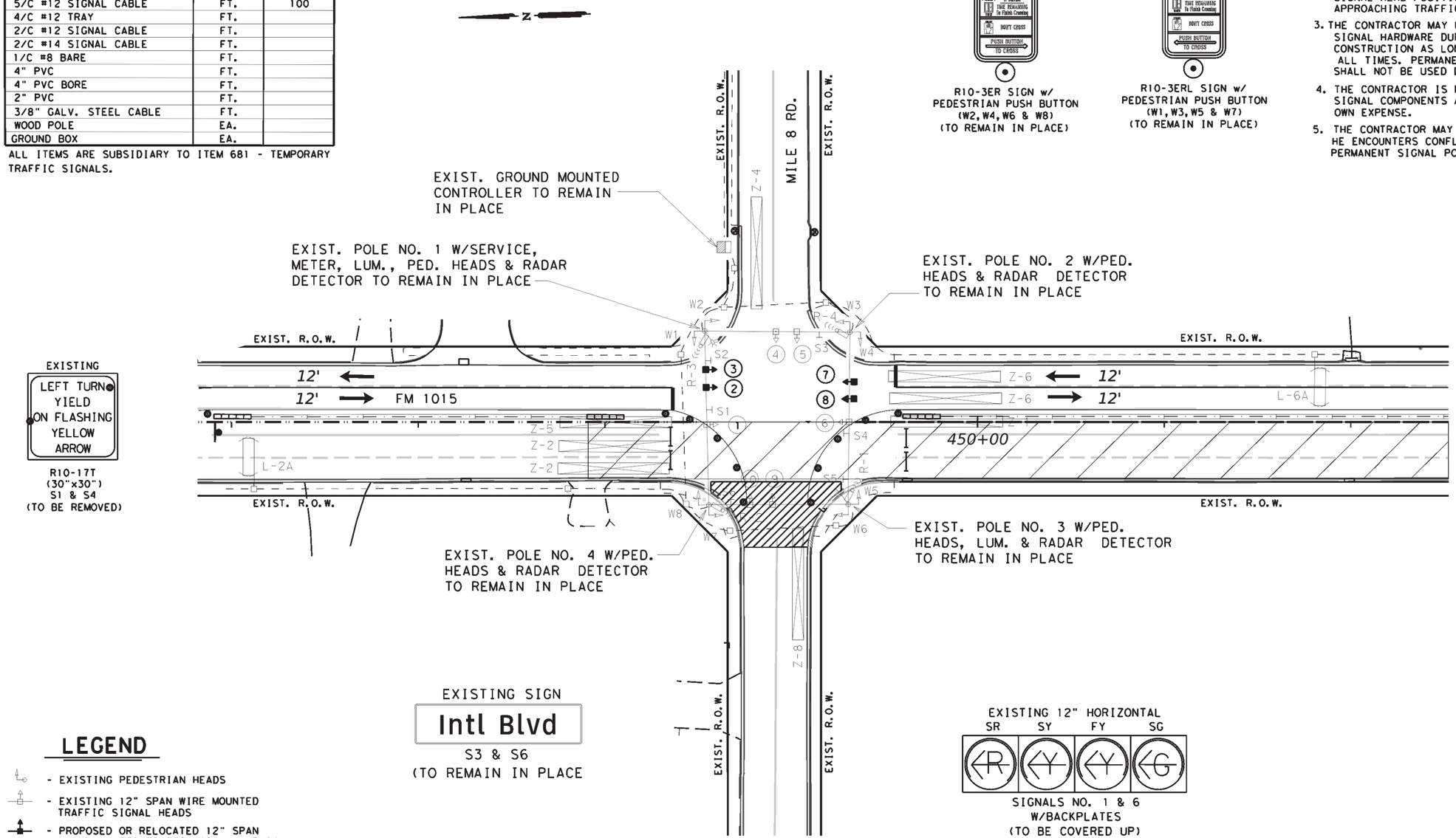
R10-3ER SIGN w/ PEDESTRIAN PUSH BUTTON (W2, W4, W6 & W8) (TO REMAIN IN PLACE)

EXISTING

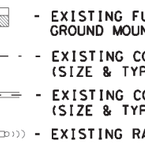


R10-3ERL SIGN w/ PEDESTRIAN PUSH BUTTON (W1, W3, W5 & W7) (TO REMAIN IN PLACE)

1. SIGNAL PHASING & TIMING SHALL BE SET TO FIXED OPERATIONS OR AS DETERMINED BY THE ENGINEER IN THE FIELD. SPLIT PHASING MAY BE USED IF HEAVY LEFT TURN MOVEMENTS ARE PREVALENT IN ONE OR MORE APPROACHES.
2. WHEN CONSTRUCTING THE ASSIGNED PART OF THE INTERSECTION, SIGNAL HEAD POSITIONS SHOULD BE SHIFTED TO FACE THE APPROACHING TRAFFIC AS NECESSARY.
3. THE CONTRACTOR MAY USE THE EXISTING OR TEMPORARY SIGNAL HARDWARE DURING THE DIFFERENT TCP PHASES OF CONSTRUCTION AS LONG AS SIGNALS ARE OPERATIONAL AT ALL TIMES. PERMANENT PROPOSED SIGNAL HEAD ASSEMBLIES SHALL NOT BE USED DURING THE TCP PHASES.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY TRAFFIC SIGNAL COMPONENTS AND IF DAMAGED, SHALL REPAIR AT HIS OWN EXPENSE.
5. THE CONTRACTOR MAY CHOOSE TO USE TEMPORARY WOOD POLES IF HE ENCOUNTERS CONFLICTS USING THE EXISTING OR PROPOSED PERMANENT SIGNAL POLES.

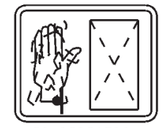


EXISTING



R10-17T (30"x30") S1 & S4 (TO BE REMOVED)

EXISTING 18" x 16"



LED PEDESTRIAN SIGNALS w/COUNTDOWN (W1 THRU W8) (TO REMAIN IN PLACE)

EXISTING SIGN

S3 & S6 (TO REMAIN IN PLACE)

EXISTING SIGN

S2 & S5 (TO REMAIN IN PLACE)

LEGEND

- EXISTING PEDESTRIAN HEADS
- EXISTING 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- PROPOSED OR RELOCATED 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXISTING LUMINAIRE
- EXISTING GROUND BOX
- EXISTING LOOP DETECTOR
- EXISTING RADAR DETECTOR ZONE
- EXISTING FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- EXISTING CONDUIT (SIZE & TYPE AS SPECIFIED)
- EXISTING CONDUIT BORE (SIZE & TYPE AS SPECIFIED)
- EXISTING RADAR PRESENCE DETECTOR (STOP BAR)

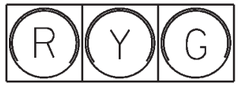
TEMPORARY SIGNAL DIAGRAM

INTERSECTION OF FM 1015/MILE 8 RD. HIDALGO COUNTY CSJ: 1228-03-050

EXISTING 12" HORIZONTAL

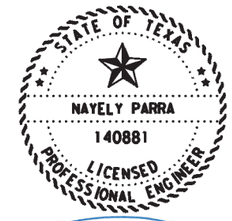
SIGNALS NO. 1 & 6 W/BACKPLATES (TO BE COVERED UP)

EXISTING 12" HORIZONTAL



SIGNALS NO. 2, 3, 7 & 8 W/BACKPLATES (RELOCATE AS SHOWN) SIGNALS NO. 4, 5, 9 & 10 W/BACKPLATES (TO REMAIN IN PLACE)

* NOTE: THIS LAYOUT SHALL ALSO APPLY FOR TCP PH. 1 -ST. 2, PH. 2-ST. 1 & PH. 2 -ST. 2. ADJUST HEADS POSITIONING AS REQUIRED & COVER UP LEFT TURN SIGNAL AS REQUIRED.



06.30.2023

Texas Department of Transportation

FM 1015
②
TEMPORARY SIGNAL
* TCP PHASE 1 STEP 1
FM 1015 @ MILE 8 RD.

SCALE: 1" = 60' SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		64

DATE: 6/12/2023 4:00:10 PM
FILE: c:\txdot\pw online\txdot15\jose.cardenas\d0824808\TCPSIG MI8 P1 S1.dgn

TEMPORARY TRAFFIC SIGNAL HARDWARE TO BE FURNISHED, INSTALLED & MAINTAINED BY THE CONTRACTOR

ITEM	UNIT	QUANTITY
7/C #12 SIGNAL CABLE	FT.	
5/C #12 SIGNAL CABLE	FT.	125
4/C #12 TRAY	FT.	
2/C #12 SIGNAL CABLE	FT.	
2/C #14 SIGNAL CABLE	FT.	
1/C #8 BARE	FT.	
4" PVC	FT.	
4" PVC BORE	FT.	
2" PVC	FT.	
3/8" GALV. STEEL CABLE	FT.	350'
WOOD POLE	EA.	1
GROUND BOX	EA.	

ALL ITEMS ARE SUBSIDIARY TO ITEM 681 - TEMPORARY TRAFFIC SIGNALS.

EXISTING
INTL BLVD
S3, S7
(TO REMAIN IN PLACE)

EXISTING
E FRONTAGE Rd
S6, S9
(TO REMAIN IN PLACE)

EXISTING
W FRONTAGE Rd
S2
(TO REMAIN IN PLACE)
S5
(RELOCATE AS SHOWN)

EXISTING
ONE WAY
R6-1R
S1
(RELOCATE AS SHOWN)

EXISTING
ONE WAY
R6-1L
S4, S8
(TO REMAIN IN PLACE)

EXISTING 12" HORIZONTAL
R Y G
SIGNALS NO. 1, 2, 6 & 7
(RELOCATE AS SHOWN)
SIGNALS NO. 3, 4, 8, 9, 10, 11 & 13
(TO REMAIN IN PLACE)

EXISTING 12" HORIZONTAL
R Y ← G G
SIGNALS NO. 5 & 12
(TO REMAIN IN PLACE)

PROP. TEMPORARY WOOD POLE NO. 11 & 3/8" GALV. SPAN WIRE

EXIST. POLE NO. 6 W/ 36' & 44' MAST ARMS, LUM. & PED. HEAD TO REMAIN IN PLACE

EXIST. PED. POLE NO. 5 W/PED. HEAD TO REMAIN IN PLACE

EXIST. PED. POLE NO. 4 W/PED. HEADS TO REMAIN IN PLACE

EXIST. POLE NO. 3 W/ 44' MAST ARM & LUM. TO REMAIN IN PLACE

EXIST. PED. POLE NO. 10 W/PED. HEAD TO REMAIN IN PLACE

EXIST. PED. POLE NO. 7 W/PED. HEADS TO REMAIN IN PLACE

IH 2 EB FRTG

EXIST. R.O.W.

FM 1015

EXIST. PED. POLE NO. 2 W/PED. HEADS TO REMAIN IN PLACE

IH 2 WB FRTG

EXIST. GROUND BOXES & CONDUIT TO REMAIN IN PLACE (TYP.)

EXIST. TS2 NEMA GROUND MOUNTED CONTROLLER TO REMAIN IN PLACE

EXIST. POLE NO. 1 W/ 36' & 44' MAST ARMS, LUM. & PED. HEAD TO REMAIN IN PLACE

IH 2 EXPWY

EXIST. POLE NO. 8 W/ 44' MAST ARM, SERVICE & LUM. TO REMAIN IN PLACE

EXIST. PED. POLE NO. 9 W/PED. HEADS TO REMAIN IN PLACE

EXISTING
PUSH BUTTON ON

R10-4b SIGN & PEDESTRIAN PUSH BUTTON W1 THRU W12 (TO REMAIN IN PLACE)

18"×16"

PEDESTRIAN SIGNALS W1 THRU W12 (TO REMAIN IN PLACE)

TEMPORARY SIGNAL DIAGRAM

INTERSECTION OF FM 1015/IH2 FRTG. RD. HIDALGO COUNTY CSJ: 1228-03-050

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED PROFESSIONAL ENGINEER
06.30.2023

Pharr District Central Design

Texas Department of Transportation

③
TEMPORARY SIGNAL
TCP PHASE 1 STEP 1
FM 1015 @ IH2 FRTG. RD.

SCALE: 1" = 60' SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		65

DATE: 6/12/2023 4:02:54 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0824808\TCPSIG_IH2_P1_S1.dgn

TEMPORARY TRAFFIC SIGNAL HARDWARE TO BE FURNISHED, INSTALLED & MAINTAINED BY THE CONTRACTOR

ITEM	UNIT	QUANTITY
7/C #12 SIGNAL CABLE	FT.	
5/C #12 SIGNAL CABLE	FT.	125
4/C #12 TRAY	FT.	
2/C #12 SIGNAL CABLE	FT.	
2/C #14 SIGNAL CABLE	FT.	
1/C #8 BARE	FT.	
4" PVC	FT.	
4" PVC BORE	FT.	
2" PVC	FT.	
3/8" GALV. STEEL CABLE	FT.	210'
WOOD POLE	EA.	1
GROUND BOX	EA.	

ALL ITEMS ARE SUBSIDIARY TO ITEM 681 - TEMPORARY TRAFFIC SIGNALS.

EXISTING
INTL BLVD
S3, S7
(TO REMAIN IN PLACE)

EXISTING
E FRONTAGE Rd
S6, S9
(TO REMAIN IN PLACE)

EXISTING
W FRONTAGE Rd
S2
(TO REMAIN IN PLACE)
S5
(RELOCATE AS SHOWN)

EXISTING
ONE WAY
R6-1R
S1
(RELOCATE AS SHOWN)

EXISTING
ONE WAY
R6-1L
S4, S8
(TO REMAIN IN PLACE)

EXISTING 12" HORIZONTAL
R Y G
SIGNALS NO. 1, 2, 6 & 7
(RELOCATE AS SHOWN)
SIGNALS NO. 3, 4, 8, 9, 10, 11 & 13
(TO REMAIN IN PLACE)

EXISTING 12" HORIZONTAL
R Y G G G
SIGNALS NO. 5 & 12
(TO REMAIN IN PLACE)

TEMPORARY WOOD POLE & 3/8" GALV. SPAN WIRE

LPCB
Lt. 480+00
S: 3.0' RT

EXIST. POLE NO. 6 W/ 36' & 44' MAST ARMS, LUM. & PED. HEAD TO REMAIN IN PLACE

EXIST. PED. POLE NO. 5 W/PED. HEAD TO REMAIN IN PLACE

EXIST. PED. POLE NO. 4 W/PED. HEADS TO REMAIN IN PLACE

EXIST. POLE NO. 3 W/ 44' MAST ARM & LUM. TO REMAIN IN PLACE

EXIST. PED. POLE NO. 10 W/PED. HEAD TO REMAIN IN PLACE

EXIST. PED. POLE NO. 7 W/PED. HEADS TO REMAIN IN PLACE

IH 2 EB FRTG

EXIST. R.O.W.

ACP/CONCRETE JOINT

L-18C

L-18B

L-18A

(4)L-18

6" SW

12' 12' 12'

W1 W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11

(3)L-25

13' 12' 14'

L-25A L-25B

FM 1015

485+00

12' 11.5'

L-16A (3)L-16

14' 14' 13'

L-16B

PROP. TEMPORARY WOOD POLE & 3/8" GALV. SPAN WIRE

EXIST. PED. POLE NO. 2 W/PED. HEADS TO REMAIN IN PLACE

6" DOT GROUND BOXES & CONDUIT TO REMAIN IN PLACE (TYP.)

EXIST. TS2 NEMA GROUND MOUNTED CONTROLLER TO REMAIN IN PLACE

EXIST. POLE NO. 1 W/ 36' & 44' MAST ARMS, LUM. & PED. HEAD TO REMAIN IN PLACE

EXIST. POLE NO. 8 W/ 44' MAST ARM, SERVICE & LUM. TO REMAIN IN PLACE

EXIST. PED. POLE NO. 9 W/PED. HEADS TO REMAIN IN PLACE

IH 2 WB FRTG

IH 2 EXPWY

(4)L-45

12' 12' 12'

L-45A L-45B L-45C

R-2

EXISTING
PUSH BUTTON ON

R10-4b SIGN & PEDESTRIAN PUSH BUTTON W1 THRU W12 (TO REMAIN IN PLACE)

EXISTING 18"x16"

PEDESTRIAN SIGNALS W1 THRU W12 (TO REMAIN IN PLACE)

TEMPORARY SIGNAL DIAGRAM

INTERSECTION OF FM 1015/IH2 FRTG. RD. HIDALGO COUNTY CSJ: 1228-03-050

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED PROFESSIONAL ENGINEER

06.30.2023

Pharr District Central Design

Texas Department of Transportation

③

TEMPORARY SIGNAL
TCP PHASE 1 STEP 2
FM 1015 @ IH2 FRTG. RD.

SCALE: 1" = 60' SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		66

DATE: 6/12/2023 4:03:34 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0824808\TCPSIG_IH2_P1_S2.dgn

DATE: 6/12/2023 2:38:53 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. 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).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. 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.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER 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. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. 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 NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and 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.

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation

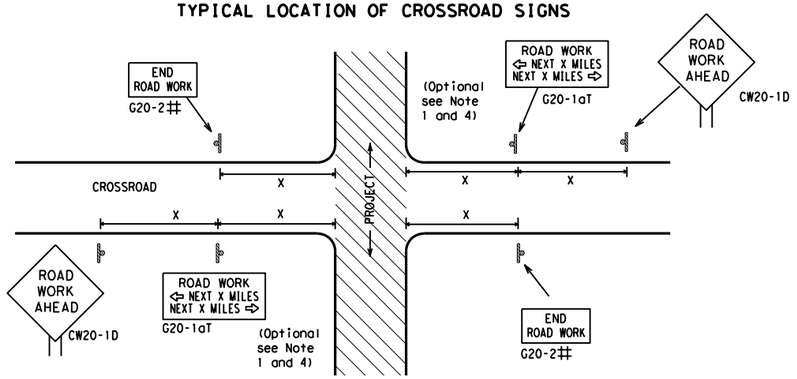
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	PHR	HIDALGO		67
5-10 5-21				

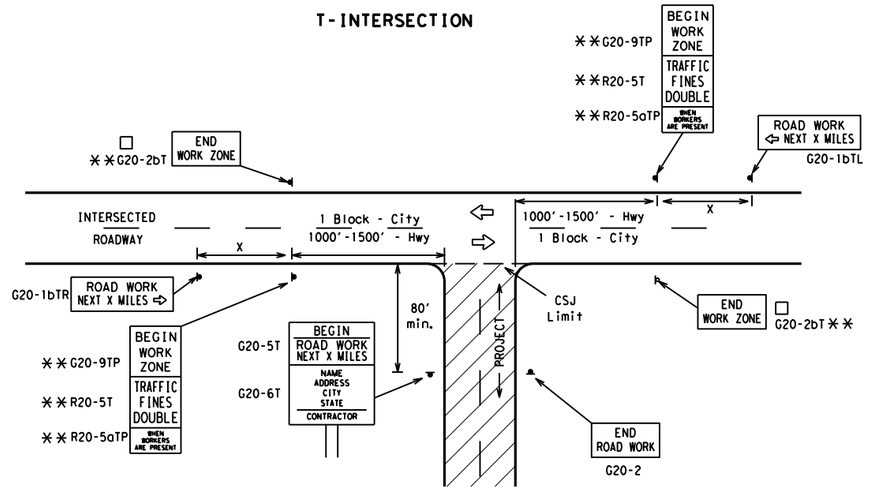
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) 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 as per TMUTCD Part 5. This information shall be shown in the plans.
3. 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.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)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.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. 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

1. 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.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign △ Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
*	*[3]

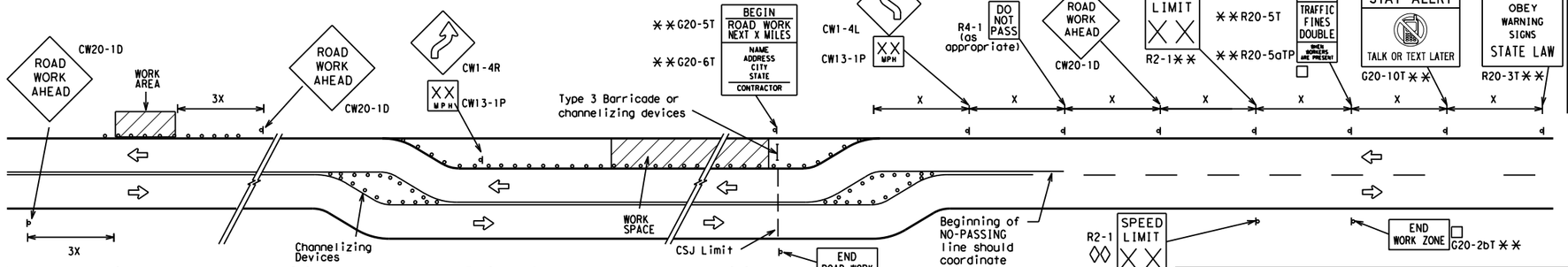
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

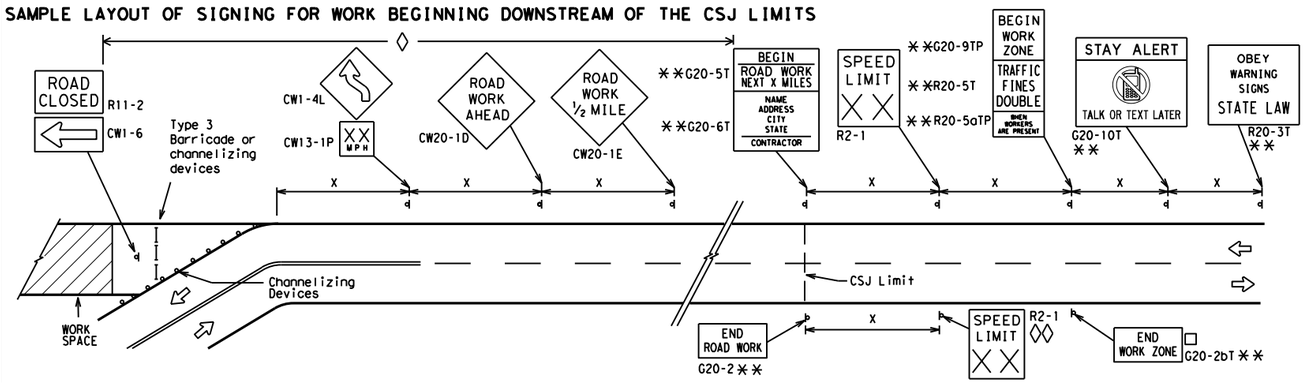
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(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 "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
⊢⊣	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		68

DATE: 6/12/2023 2:38:53 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

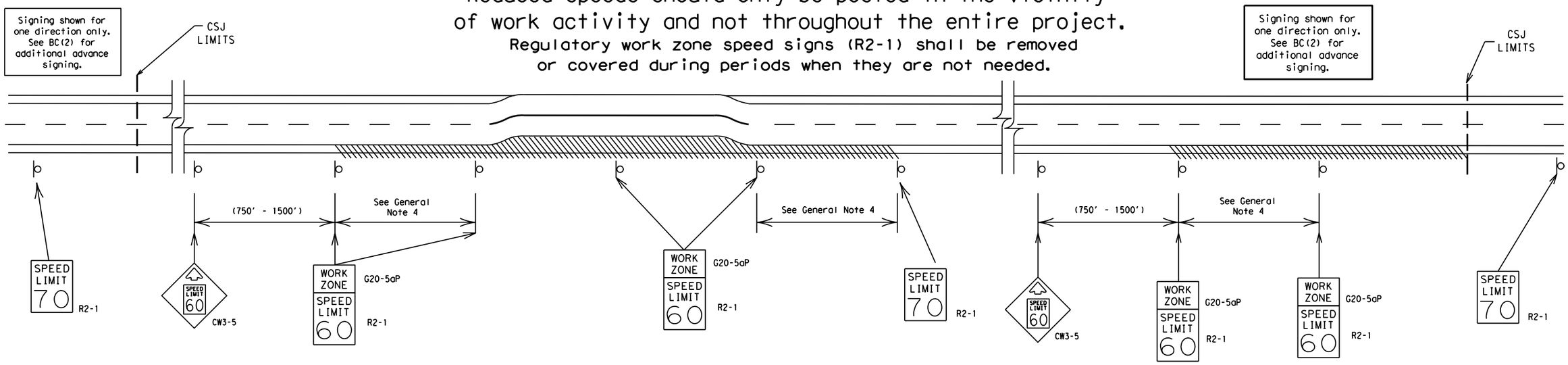
DATE: 6/12/2023 2:38:53 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

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:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) 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 may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

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

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. 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
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation

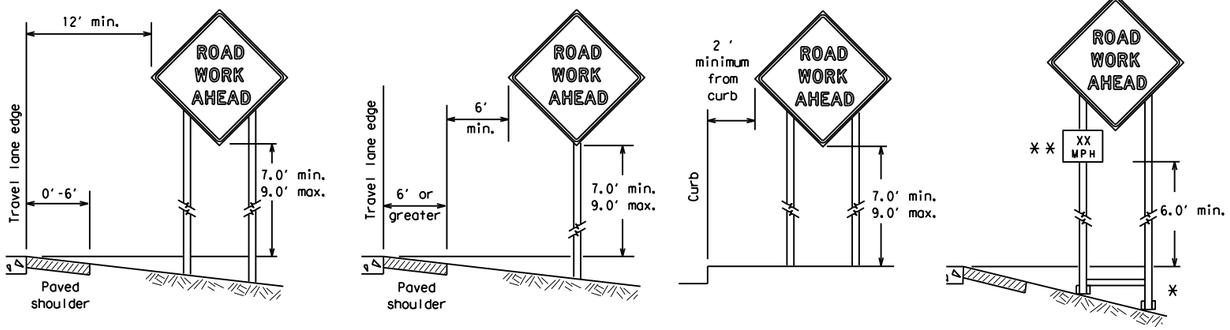
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		69

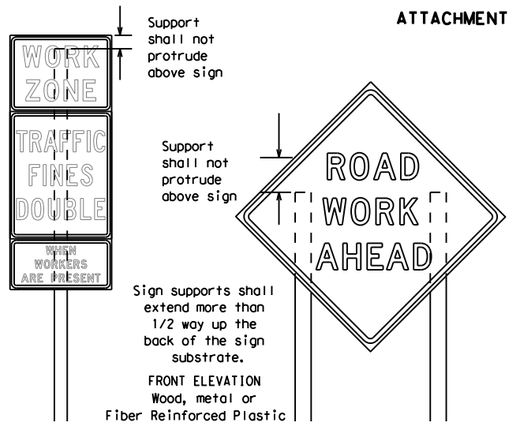
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

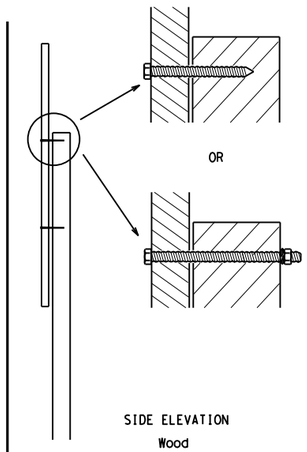


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** 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





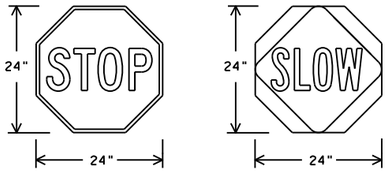
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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 spice 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.

STOP/SLOW PADDLES

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



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. 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.
5. 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.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. 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.
7. 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.
8. 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.
9. 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)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

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

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

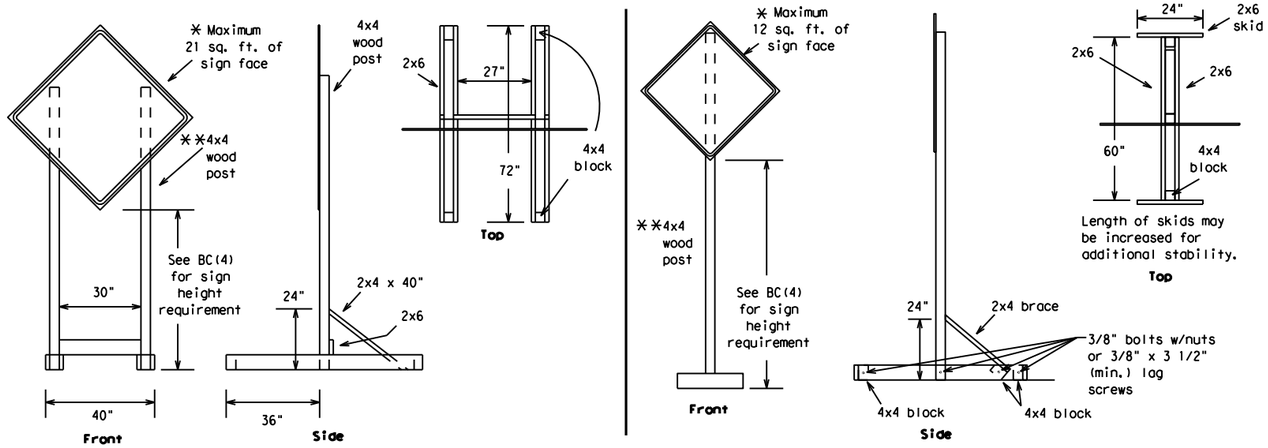
Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

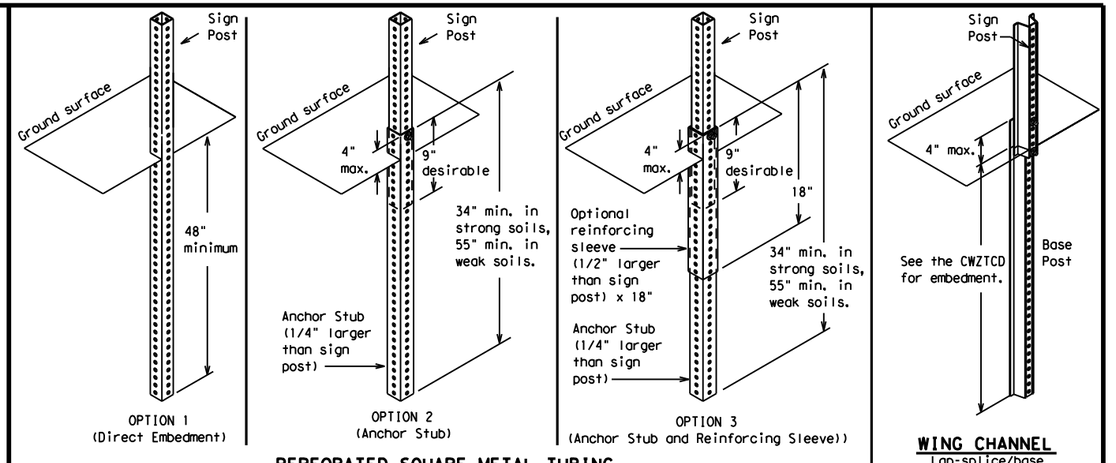
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		70

DATE: 6/12/2023 2:38:54 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn



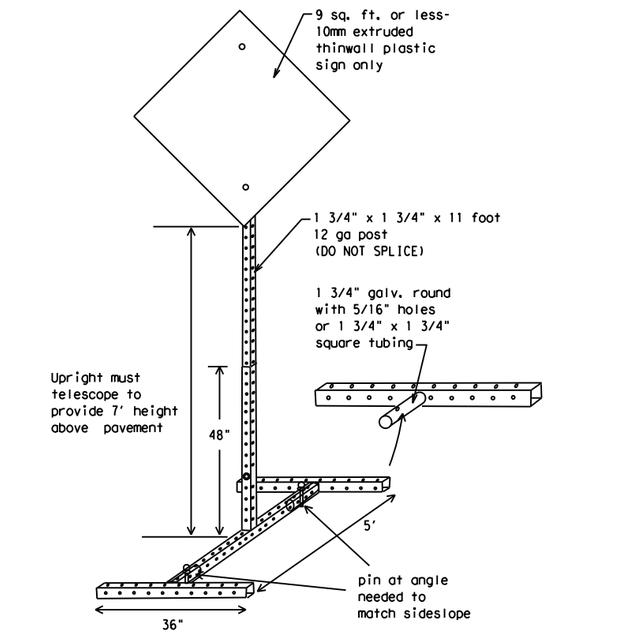
SKID MOUNTED WOOD SIGN SUPPORTS

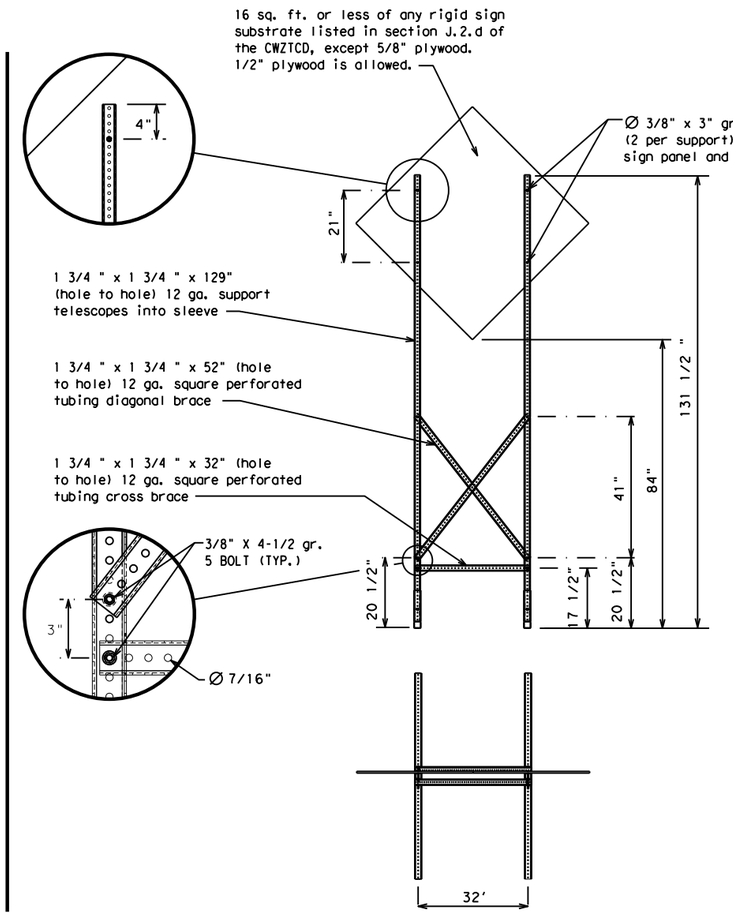
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

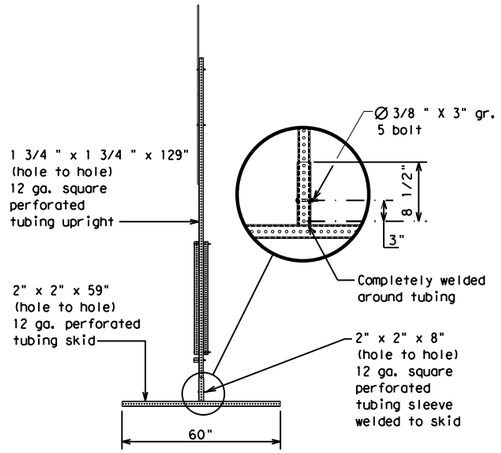


GROUND MOUNTED SIGN SUPPORTS

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.







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED 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)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. 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.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		71

DATE: 6/12/2023 2:38:54 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

DATE: 6/12/2023 2:38:55 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

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

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. 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.
3. 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.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. 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.
8. 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.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. 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.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. 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, unless shown in the TMUTCD.
15. 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 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. 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	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation * IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: 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
- I-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
- XXXXXXXX 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 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-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
- XXXXXXX 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

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. 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.
6. 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.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. 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, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. 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.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) 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.
3. 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.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation

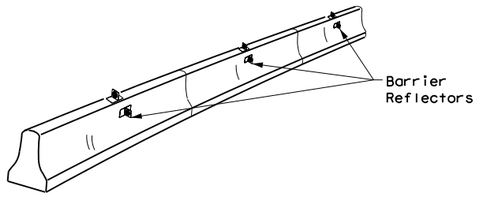
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

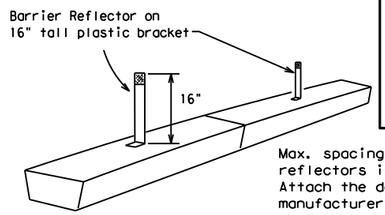
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		72

1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

3. 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.
4. 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.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

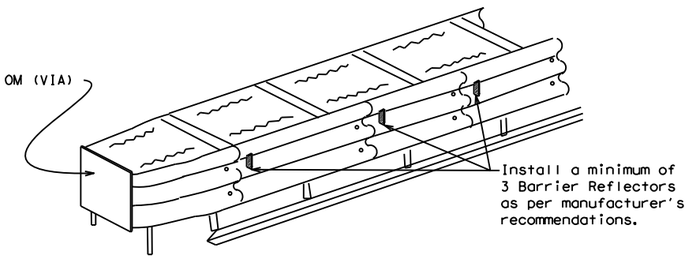


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

LOW PROFILE CONCRETE BARRIER (LPCB)

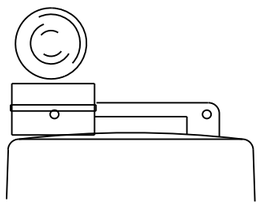


DELINEATION OF END TREATMENTS

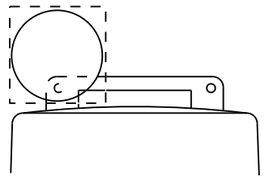
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

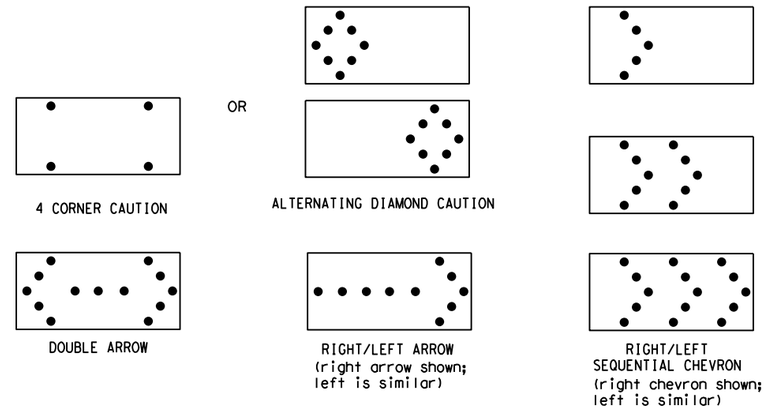
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

Arrow Boards 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.

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



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board 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.
8. 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.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. 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 Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		73

DATE: 6/12/2023 2:38:55 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

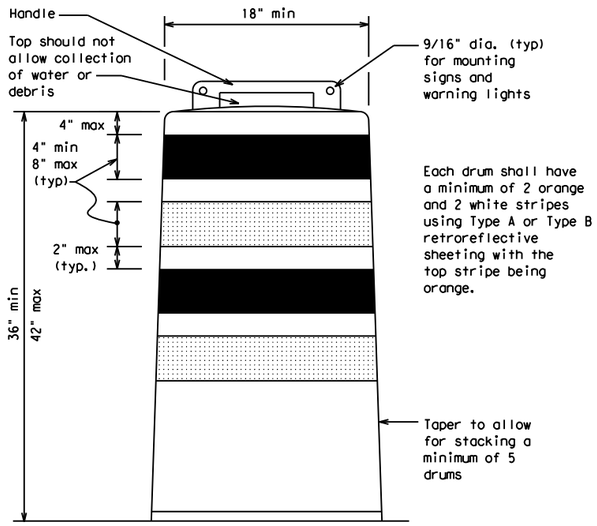
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

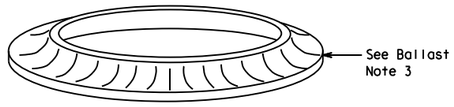
RETROREFLECTIVE SHEETING

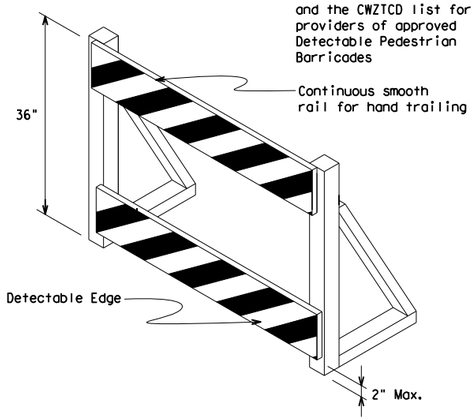
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. 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.
5. 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.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

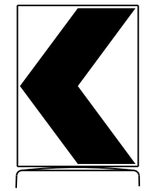




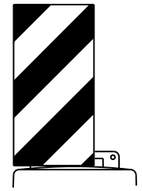


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation | Traffic Safety Division Standard

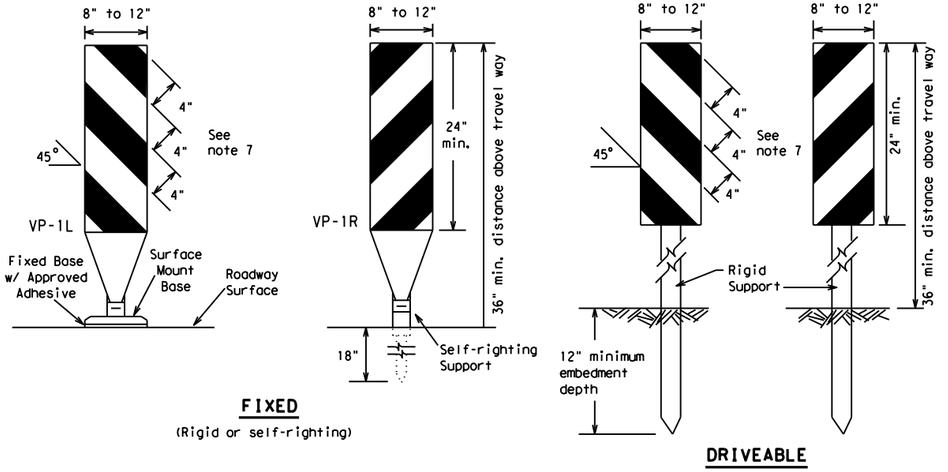
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	PHR	HIDALGO		74
7-13				

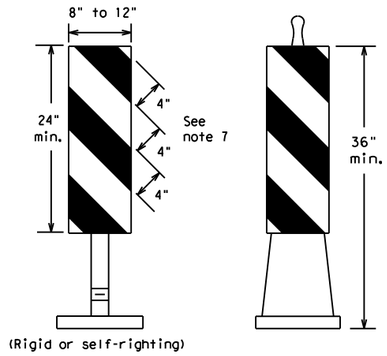
102

DATE: 6/12/2023 2:38:56 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn



FIXED
(Rigid or self-righting)

DRIVEABLE

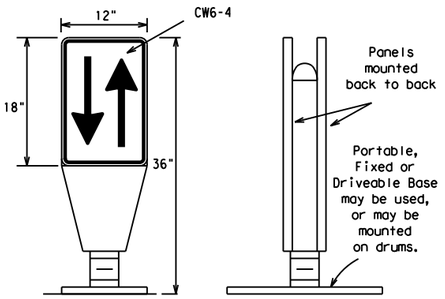


(Rigid or self-righting)

PORTABLE

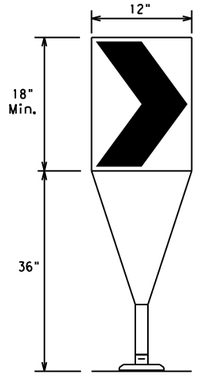
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



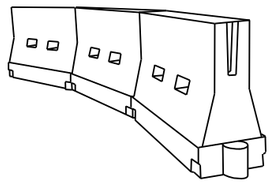
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet 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.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 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.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs 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. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

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 Manual for Assessing Safety Hardware (MASH) 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 a 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 canes and the top of the unit shall not be less than 32 inches in height.

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

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150′	165′	180′	30′	60′
35		205′	225′	245′	35′	70′
40		265′	295′	320′	40′	80′
45	L = WS	450′	495′	540′	45′	90′
50		500′	550′	600′	50′	100′
55		550′	605′	660′	55′	110′
60		600′	660′	720′	60′	120′
65		650′	715′	780′	65′	130′
70		700′	770′	840′	70′	140′
75		750′	825′	900′	75′	150′
80		800′	880′	960′	80′	160′

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

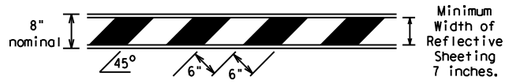
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		75

103

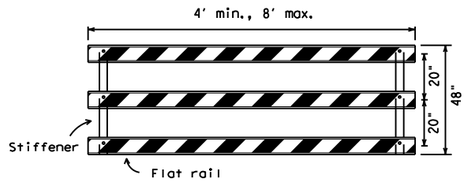
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 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 A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



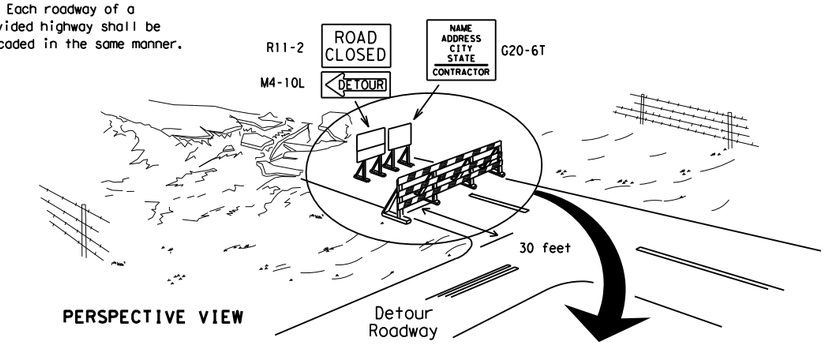
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

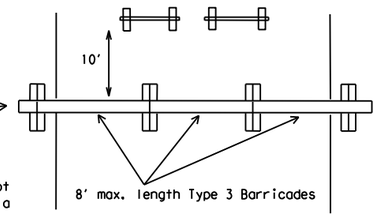
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

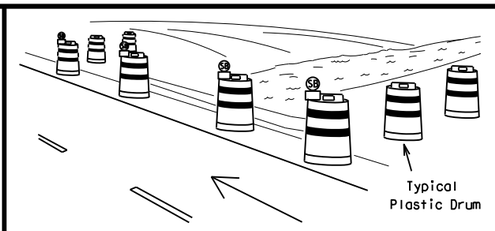
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

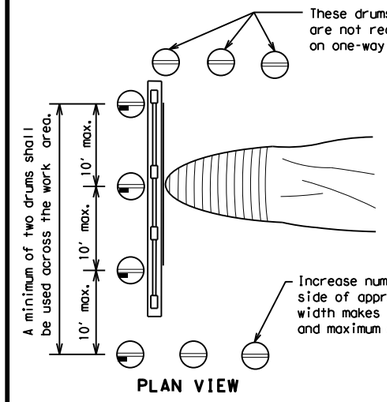
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

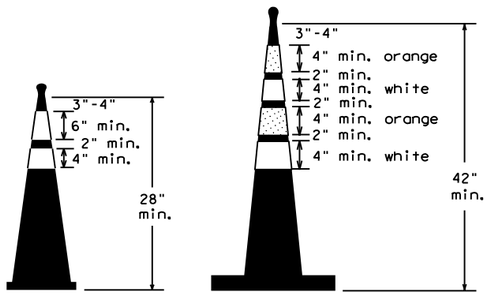
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

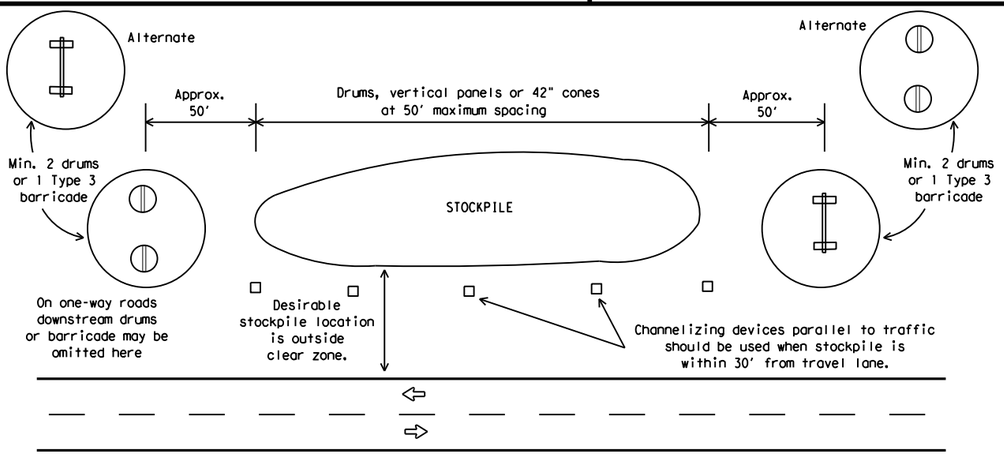
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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 predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		76

104

DATE: 6/12/2023 2:38:56 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

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

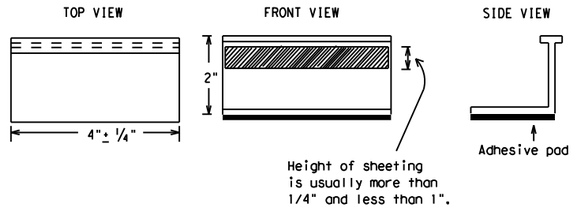
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, 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 as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



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

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on 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.

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
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	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).

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	PHR	HIDALGO		77
11-02 8-14				

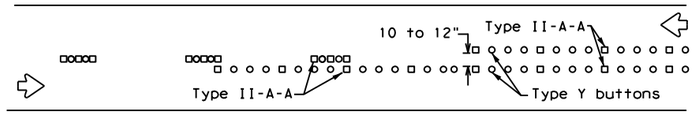
105

DATE: 6/12/2023 2:38:57 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

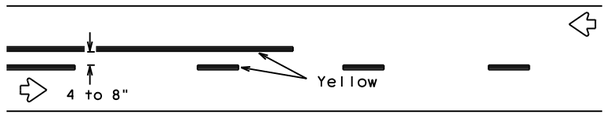
DATE: 6/12/2023 2:38:57 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\bc-21.dgn

PAVEMENT MARKING PATTERNS

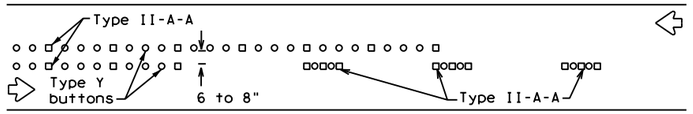
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



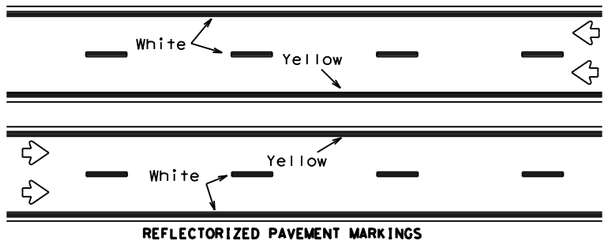
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



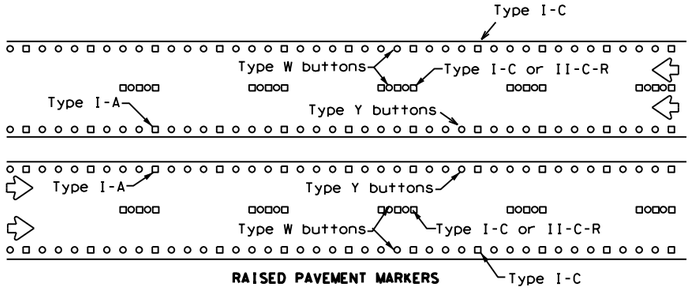
RAISED PAVEMENT MARKERS - PATTERN B

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

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



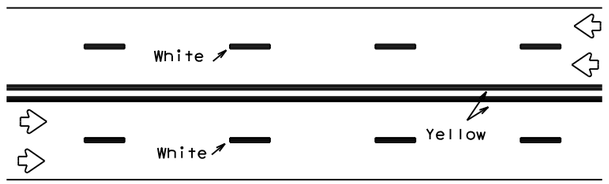
REFLECTORIZED PAVEMENT MARKINGS



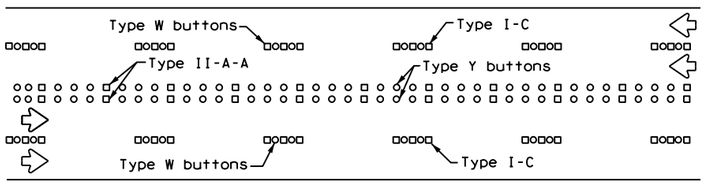
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



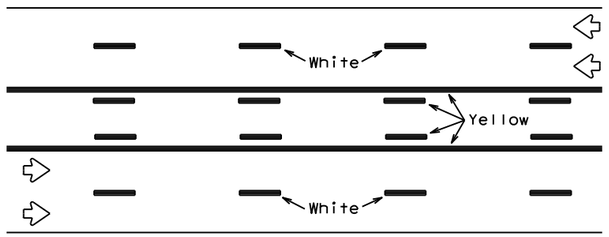
REFLECTORIZED PAVEMENT MARKINGS



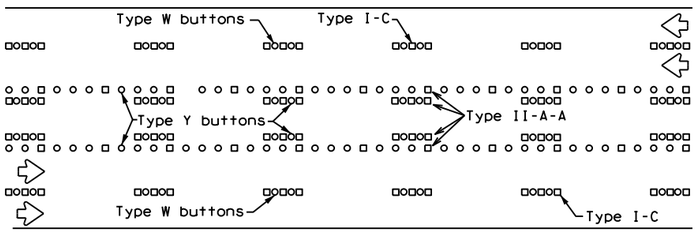
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

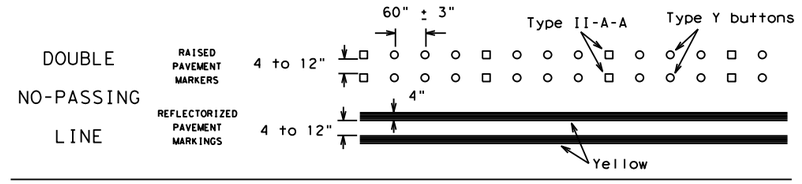
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

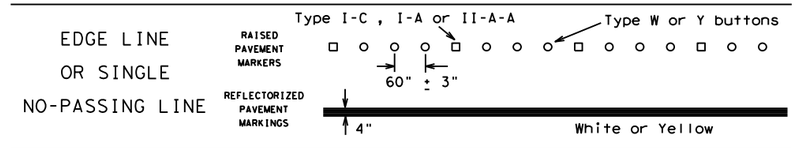
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

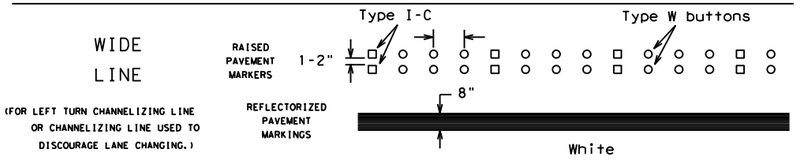


EDGE LINE OR SINGLE NO-PASSING LINE



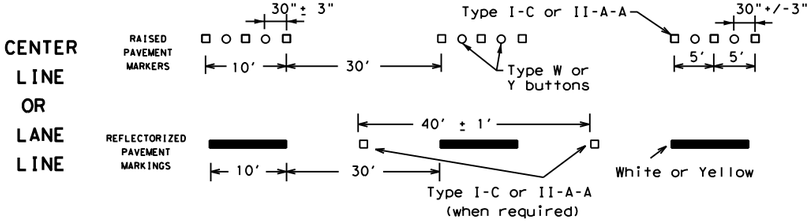
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

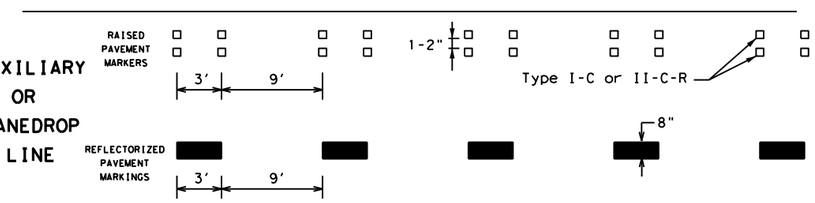


BROKEN LINES

CENTER LINE OR LANE LINE

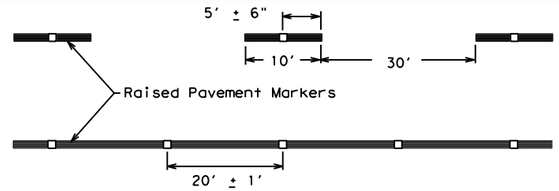


AUXILIARY OR LANEDROP LINE



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.



Centerline only - not to be used on edge lines

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."

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

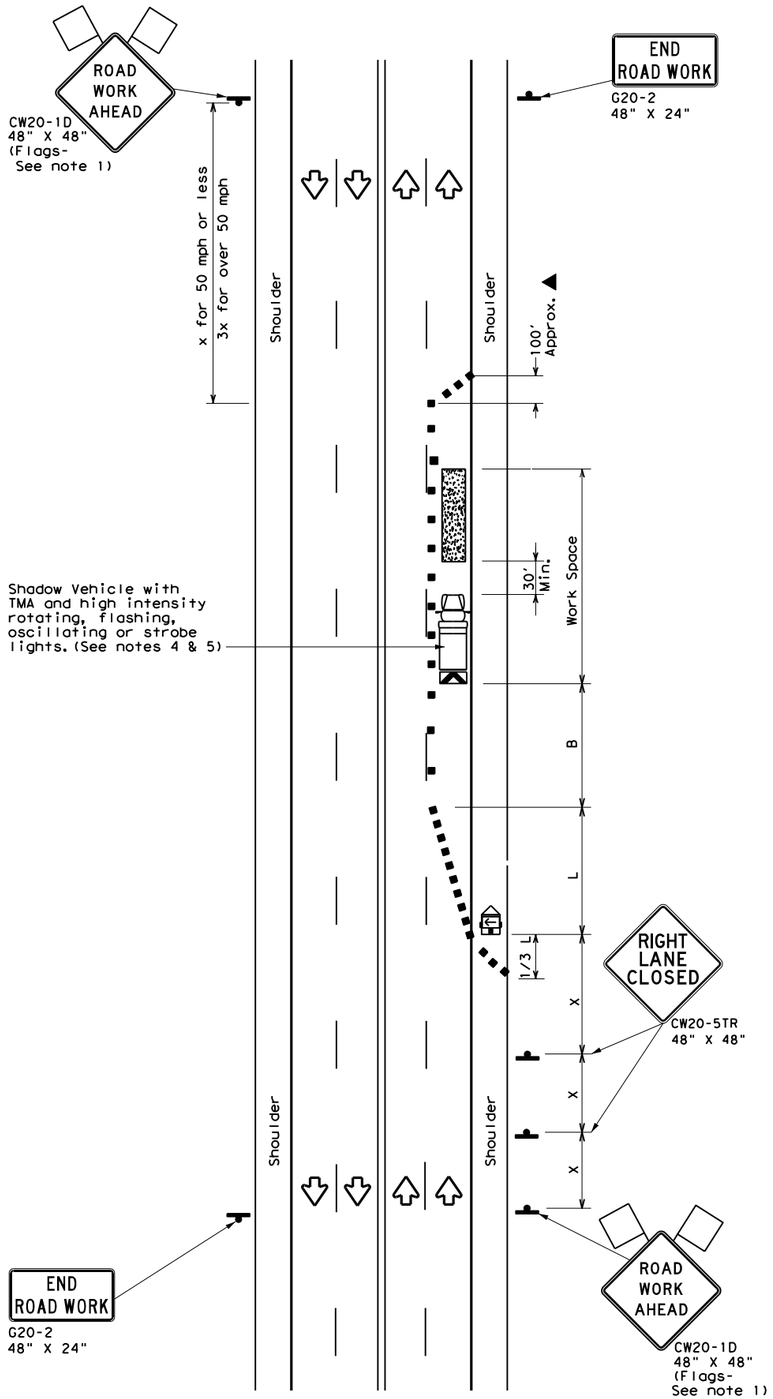
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		78

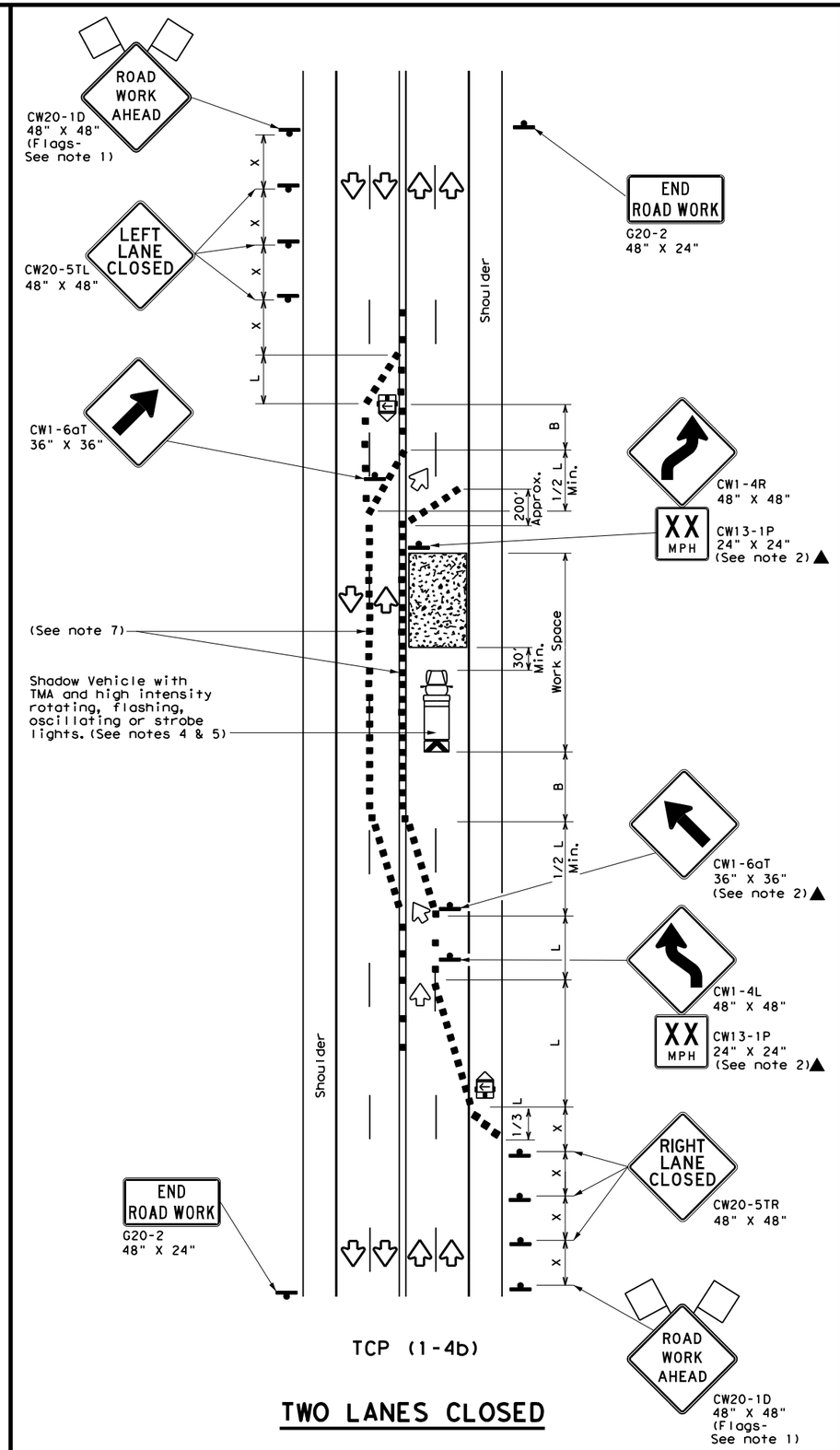
106

DATE: 6/12/2023 2:39:05 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp1-4-18.dgn



TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

6. If this TCP is used for a left lane closure , CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

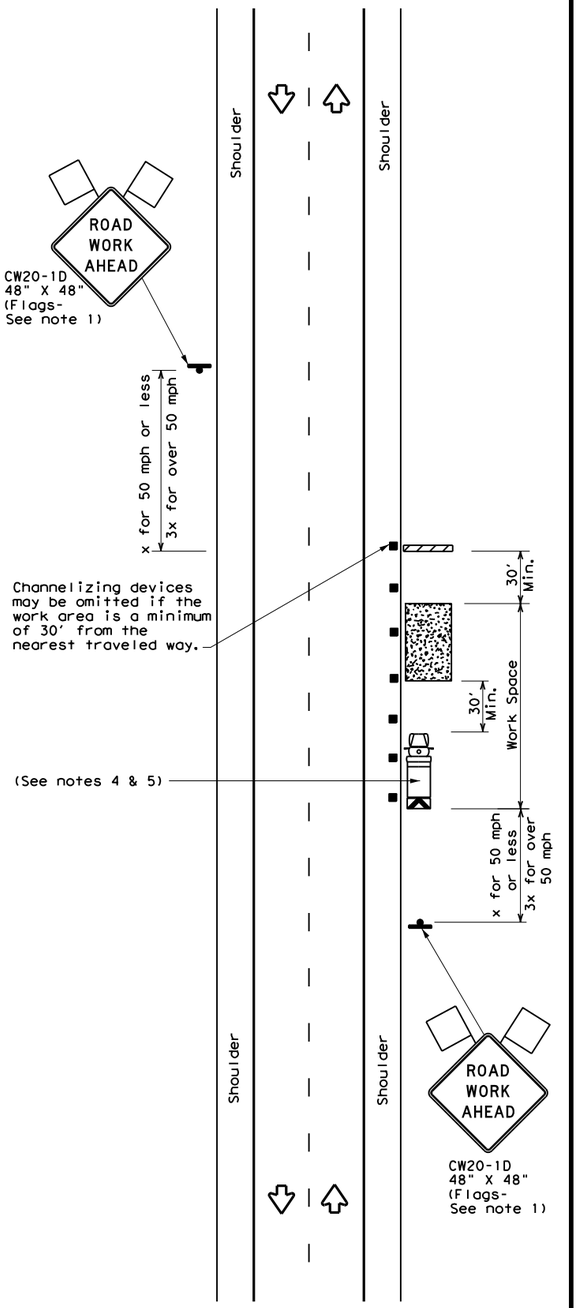
Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

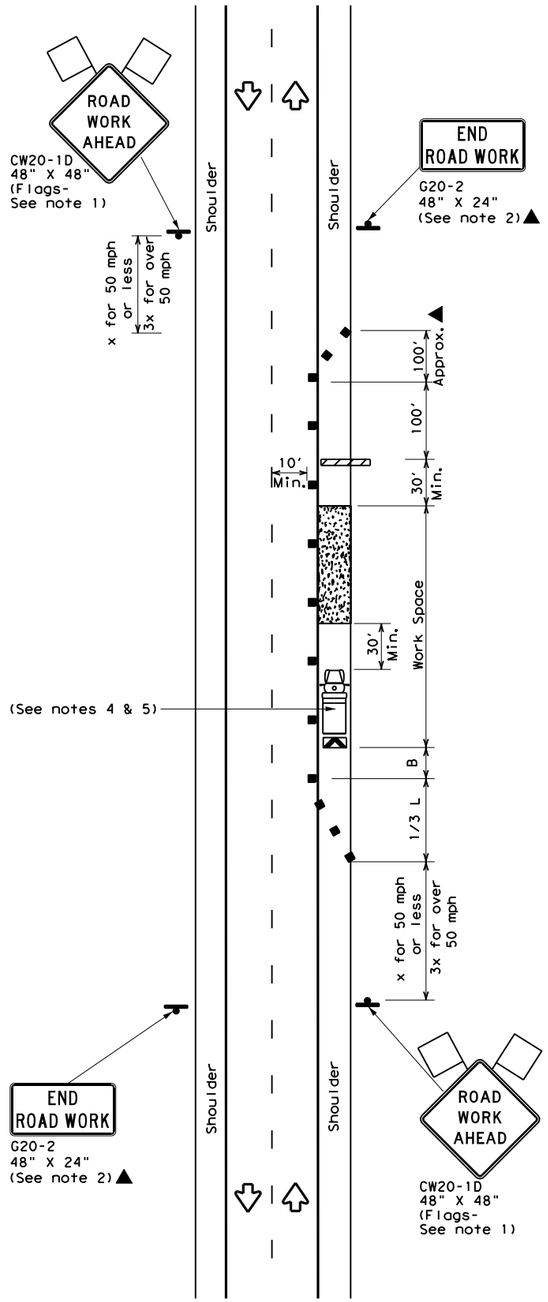
FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	PHR	HIDALGO		79
1-97 2-18				

DATE: 6/12/2023 2:39:12 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp2-1-18.dgn



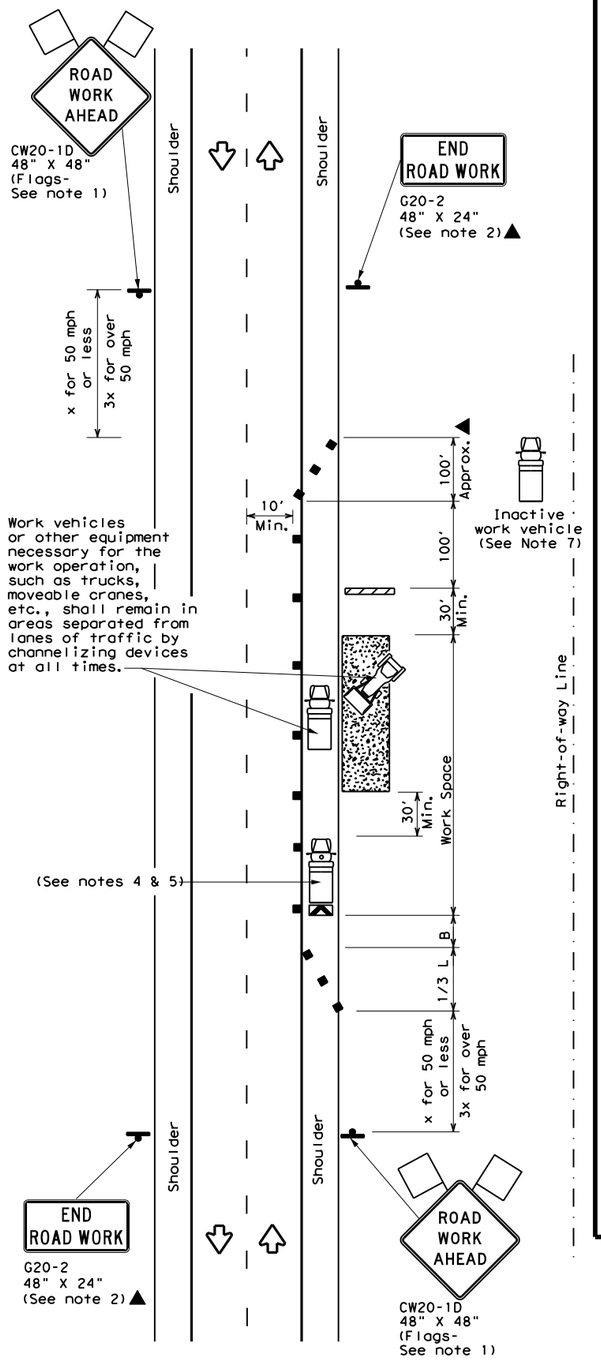
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

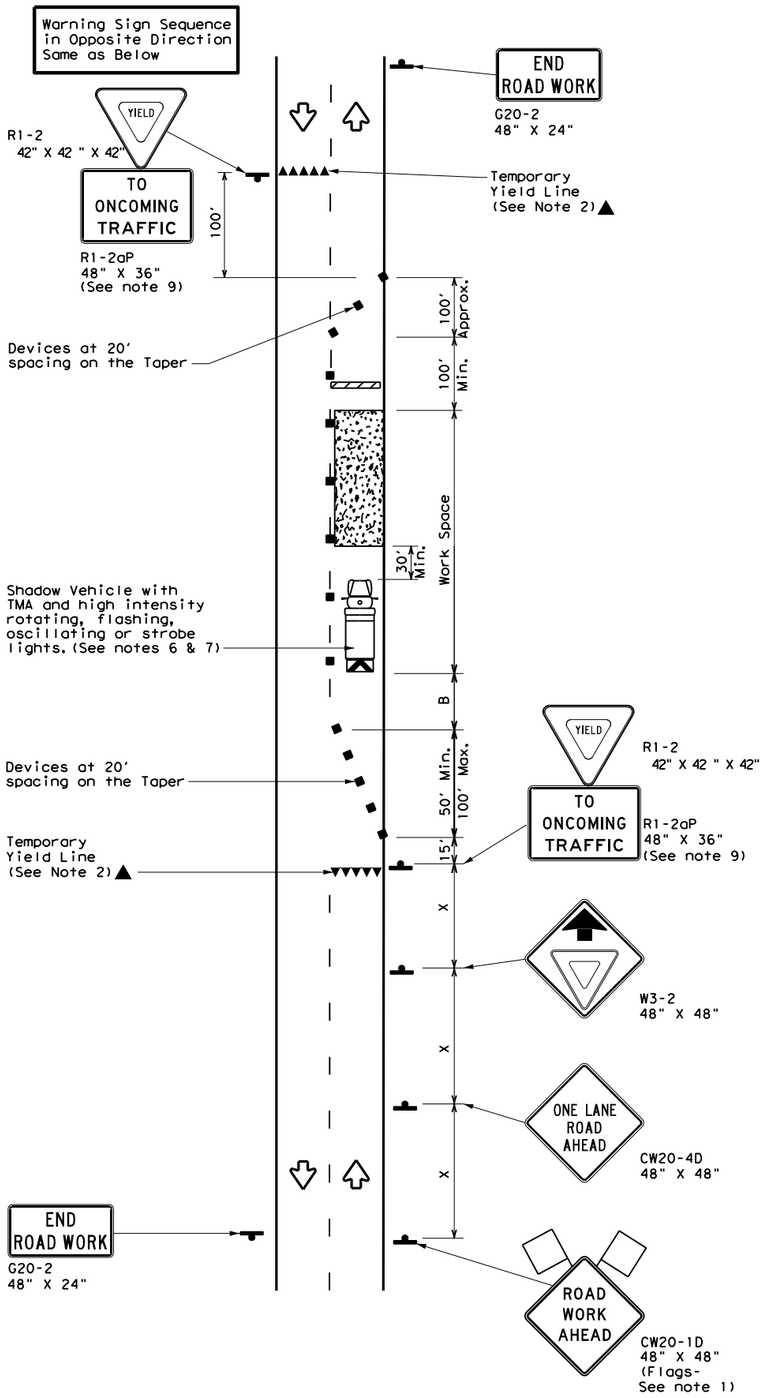
Texas Department of Transportation

Traffic Operations Division Standard

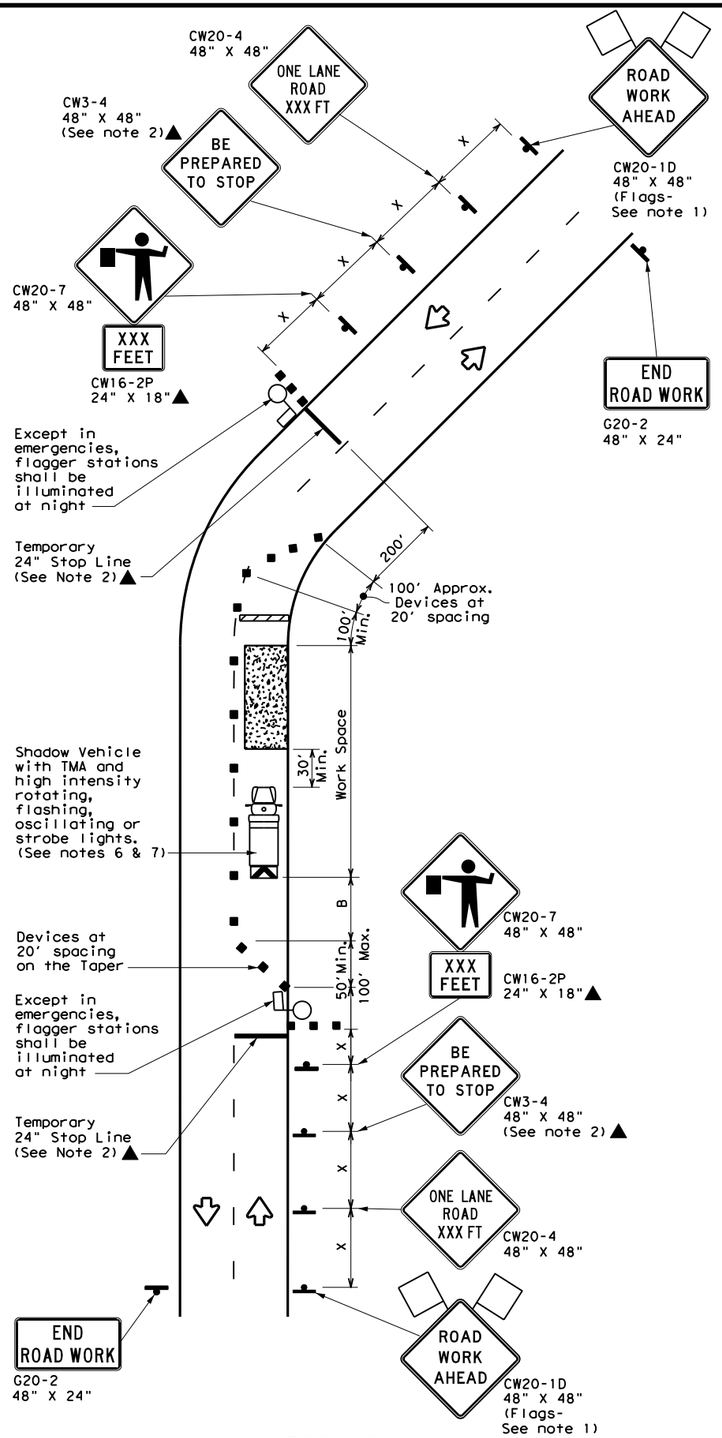
TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	PHR	HIDALGO		80
1-97 2-18				



TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation | *Traffic Operations Division Standard*

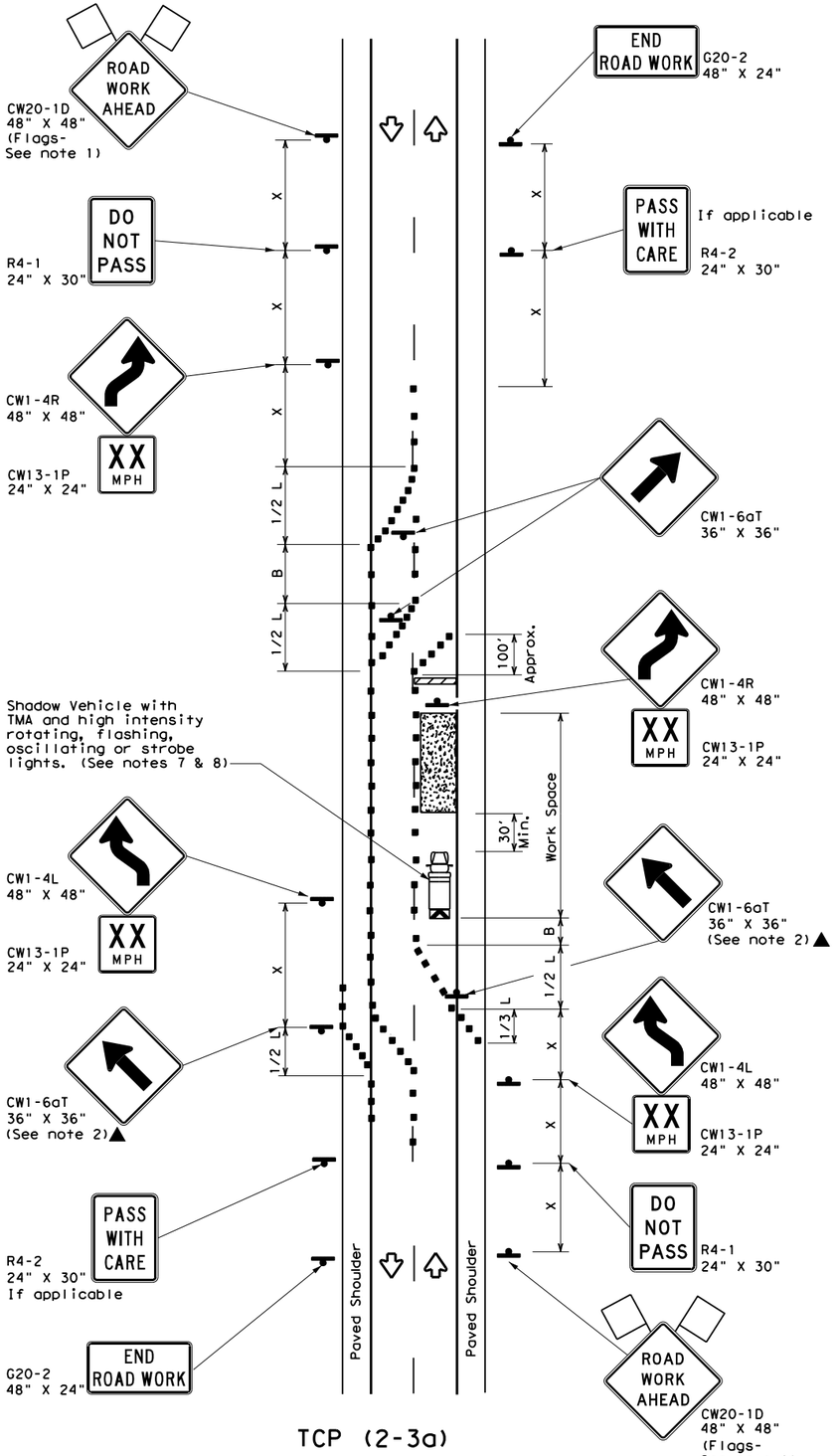
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	PHR	HIDALGO		81
4-98 2-18				

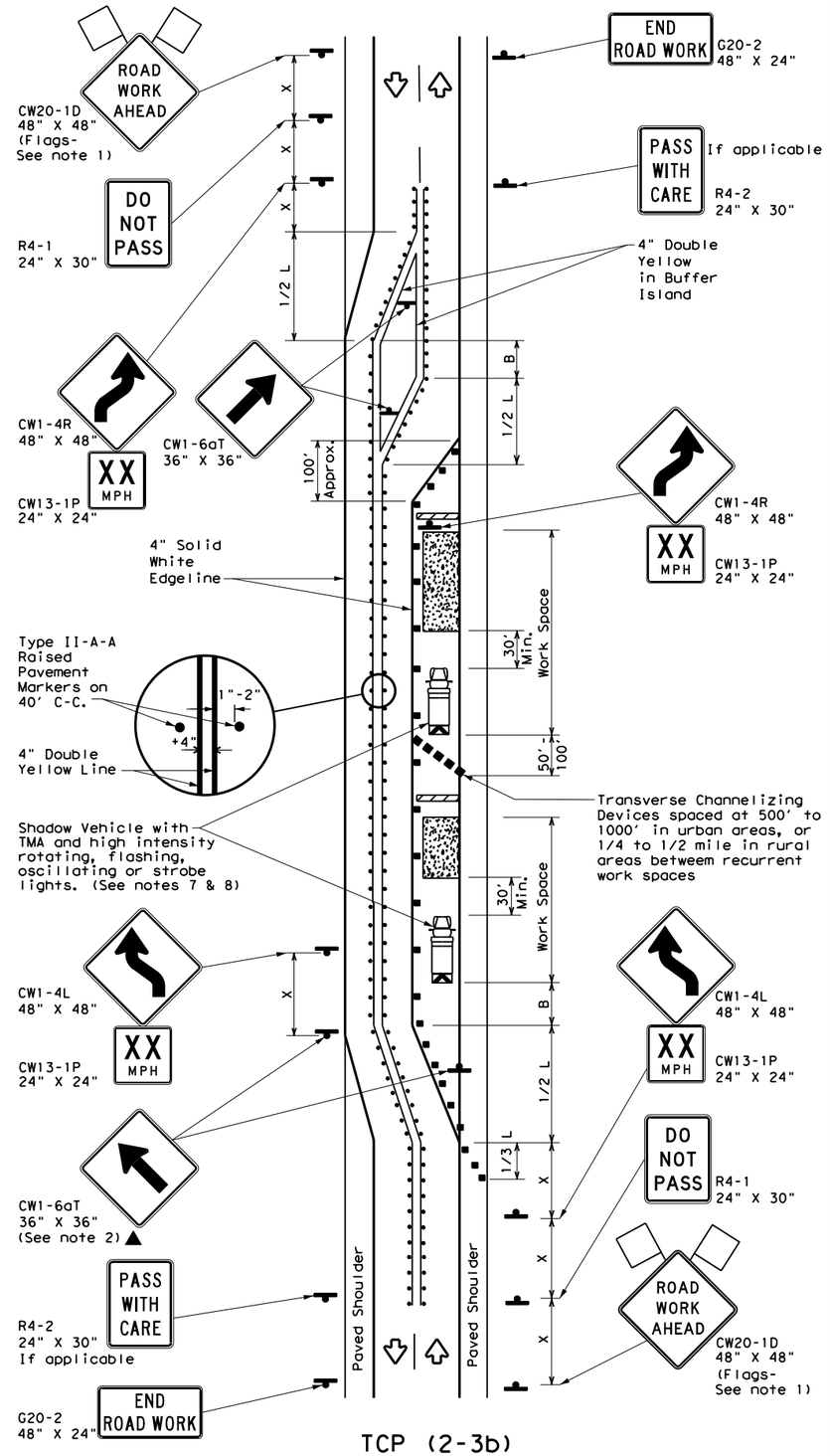
DATE: 6/12/2023 2:39:20 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp2-2-18.dgn

DATE: 6/12/2023 2:39:26 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp2-3-18.dgn



TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

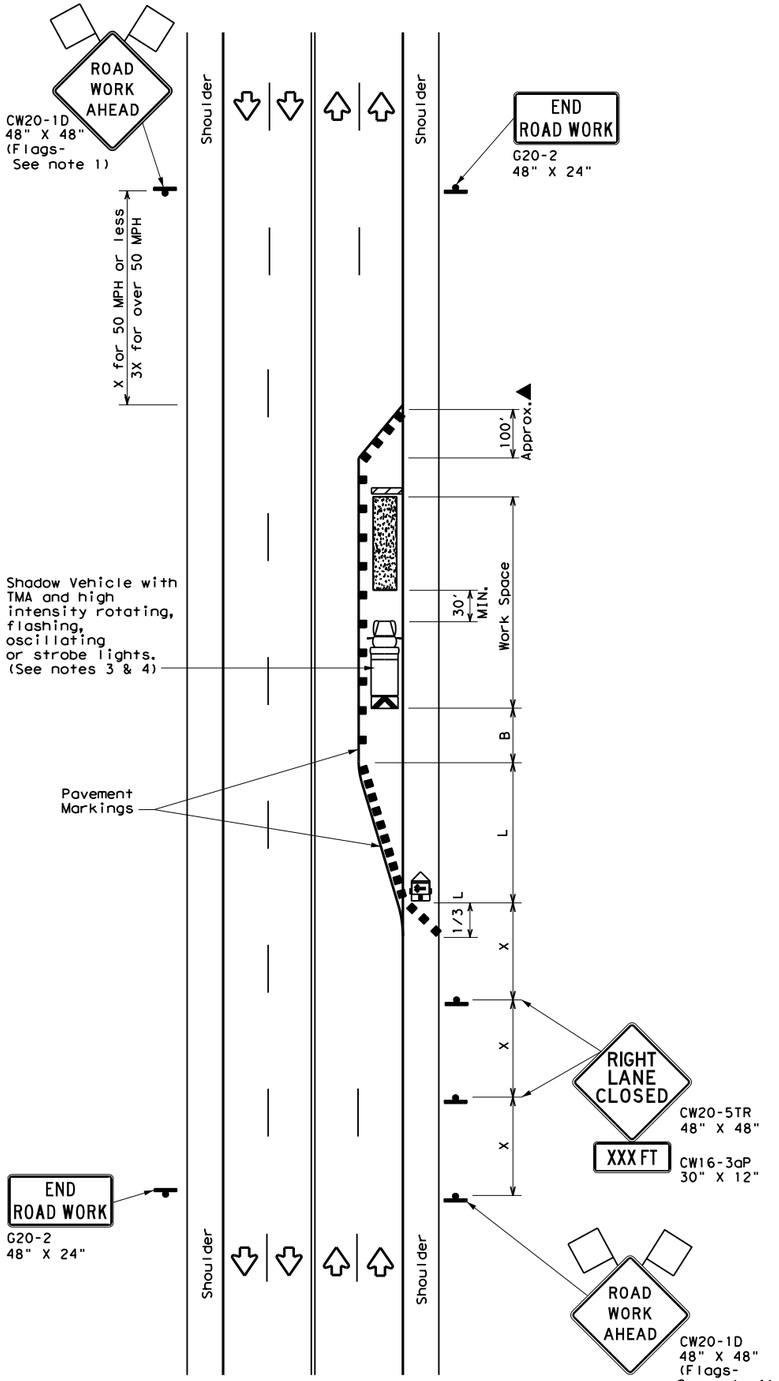
9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

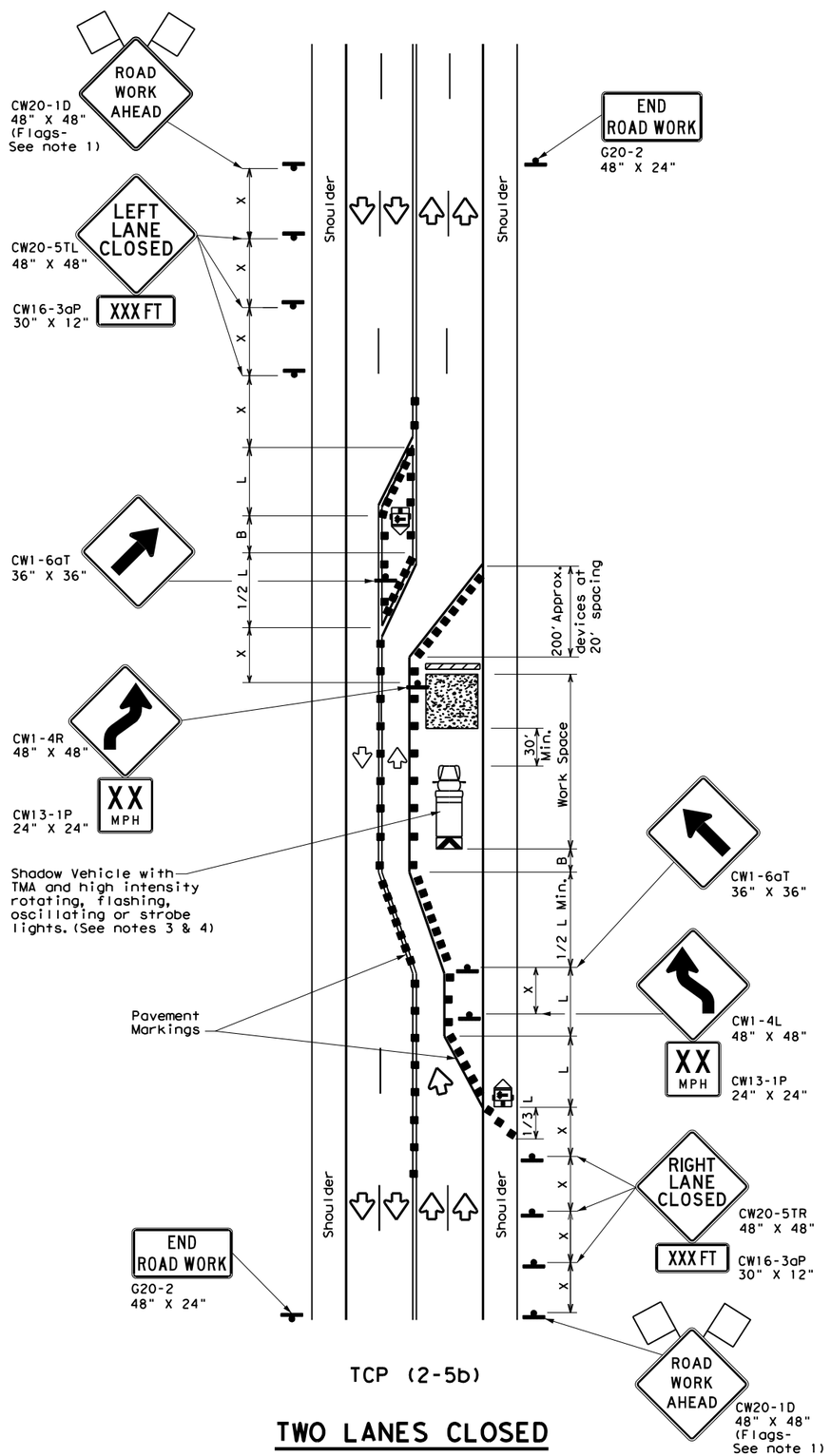
TCP(2-3)-18

FILE: tcp(2-3)-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	PHR	HIDALGO		82
4-98 2-18				



TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew epoxure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation

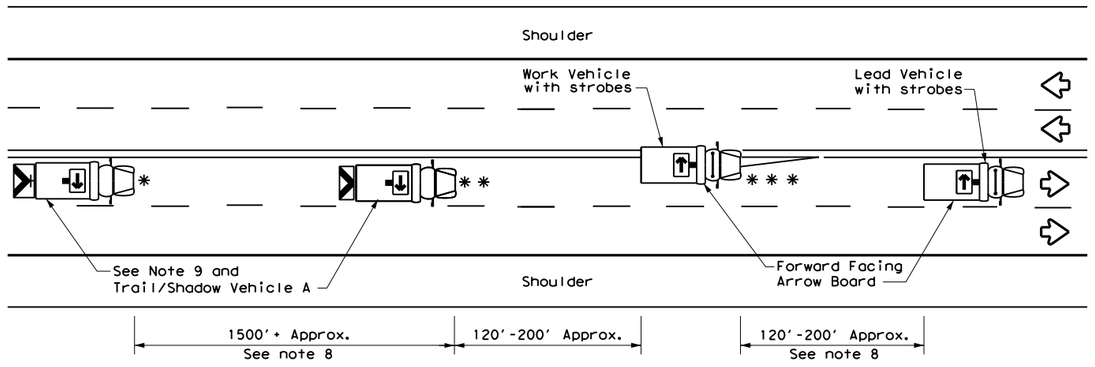
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

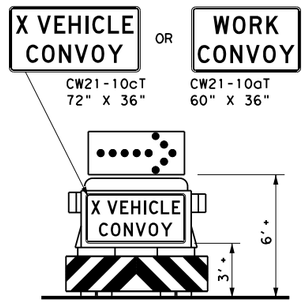
FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 2-12 1-97 3-03 4-98 2-18	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		83

DATE: 6/12/2023 2:39:32 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp2-5-18.dgn



TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

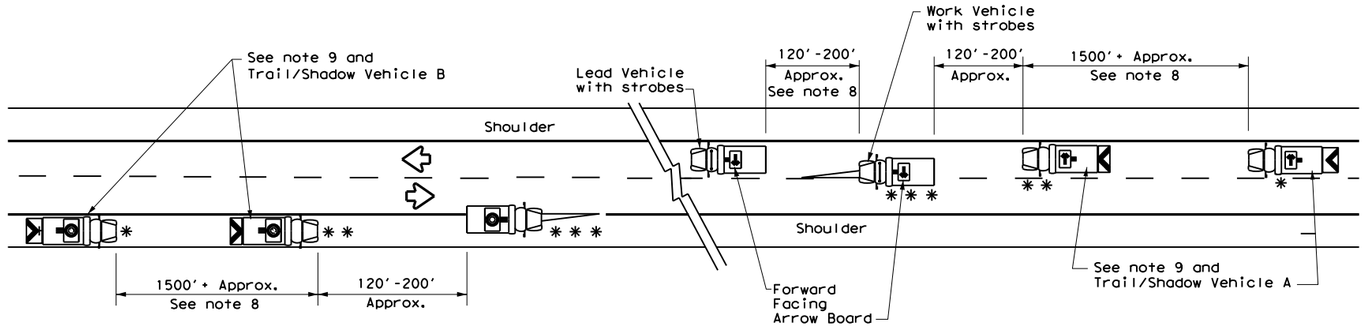
with RIGHT Directional display Flashing Arrow Board

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.

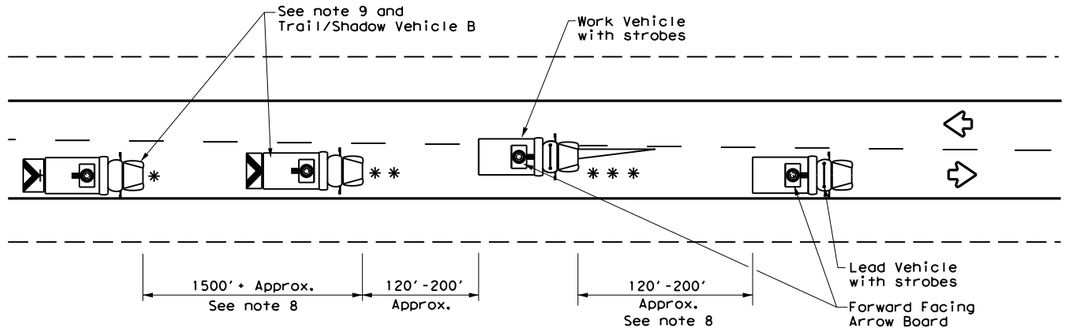


WORK ON SHOULDER

WORK ON TRAVEL LANE

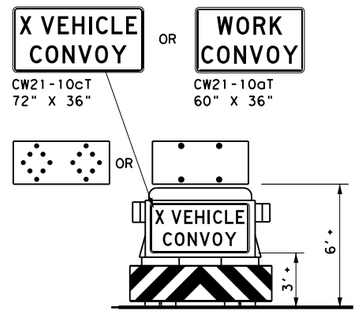
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



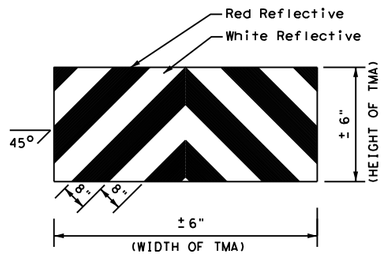
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

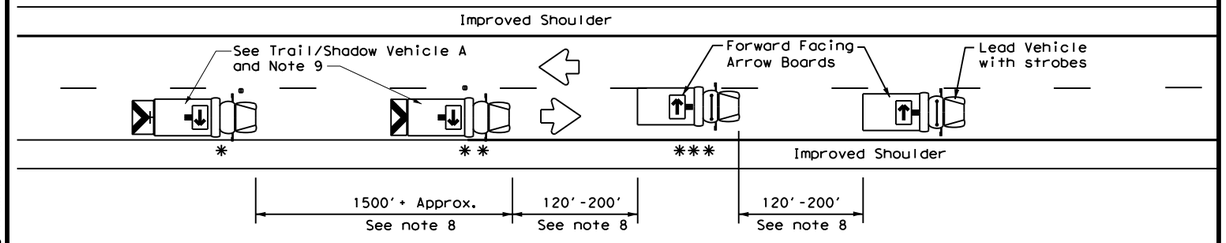
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

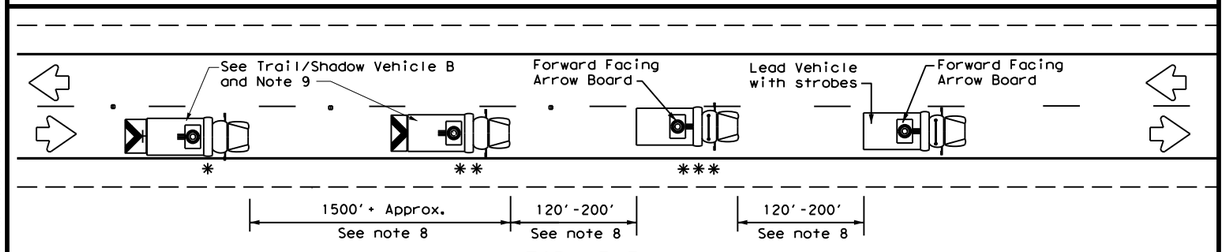
FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		84

DATE: 6/12/2023 2:39:39 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp3-1-13.dgn



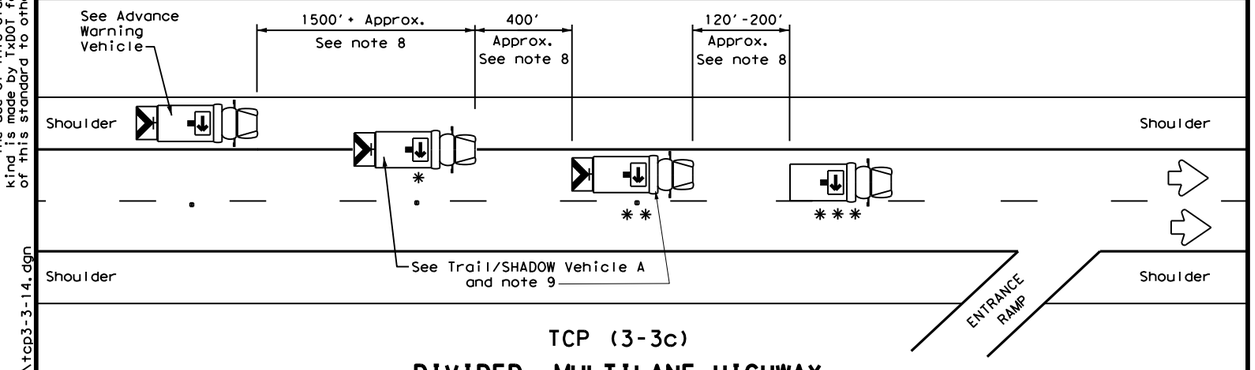
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS
(WORK ON TRAVEL LANE)



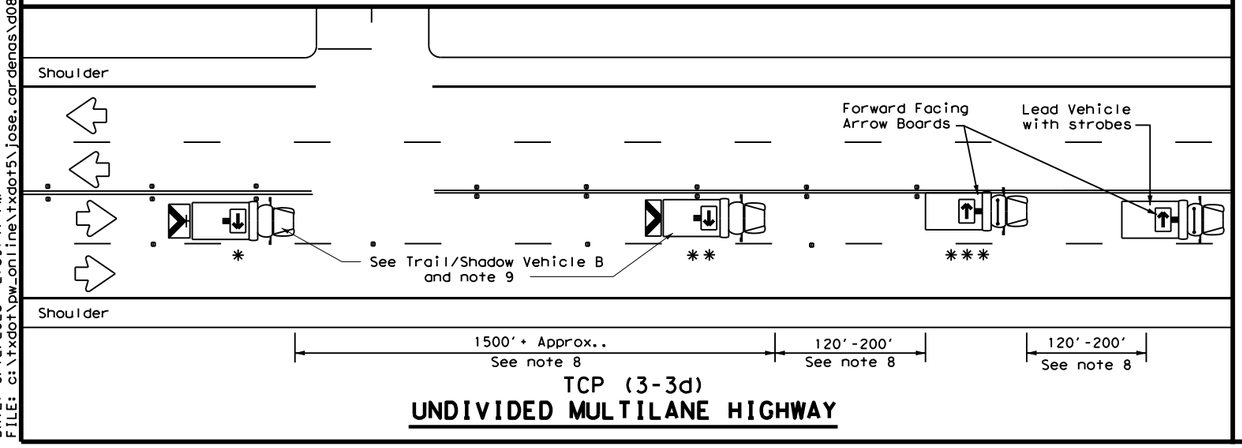
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS
(WORK ON TRAVEL LANE)



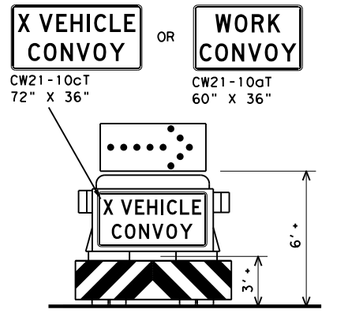
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



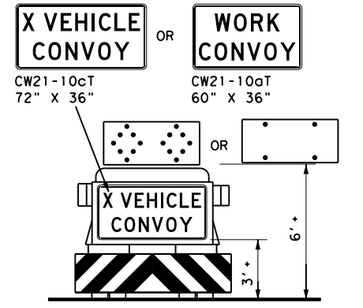
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



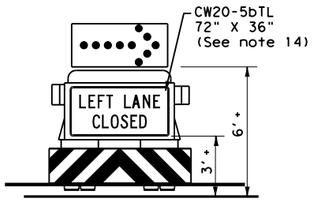
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

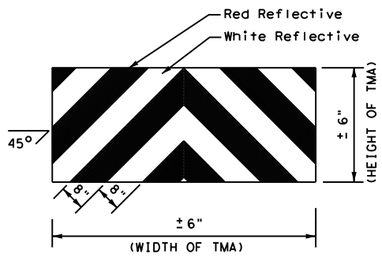


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

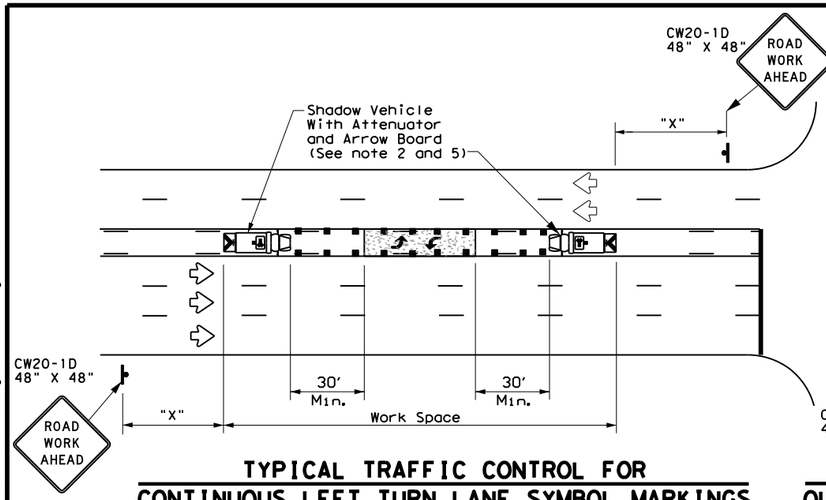
Texas Department of Transportation

Traffic Operations Division Standard

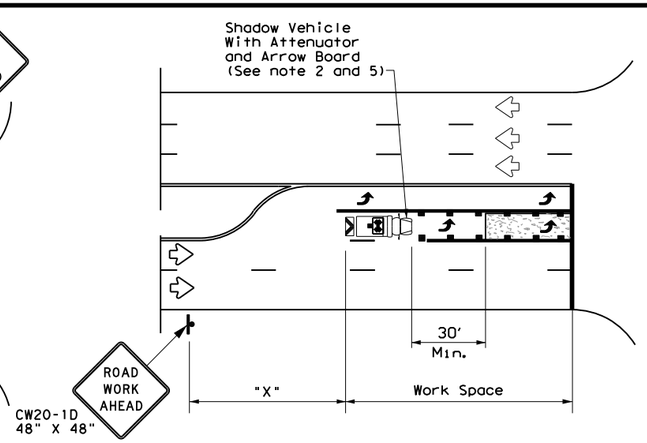
TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL
TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	PHR	HIDALGO		85
1-97 7-14				

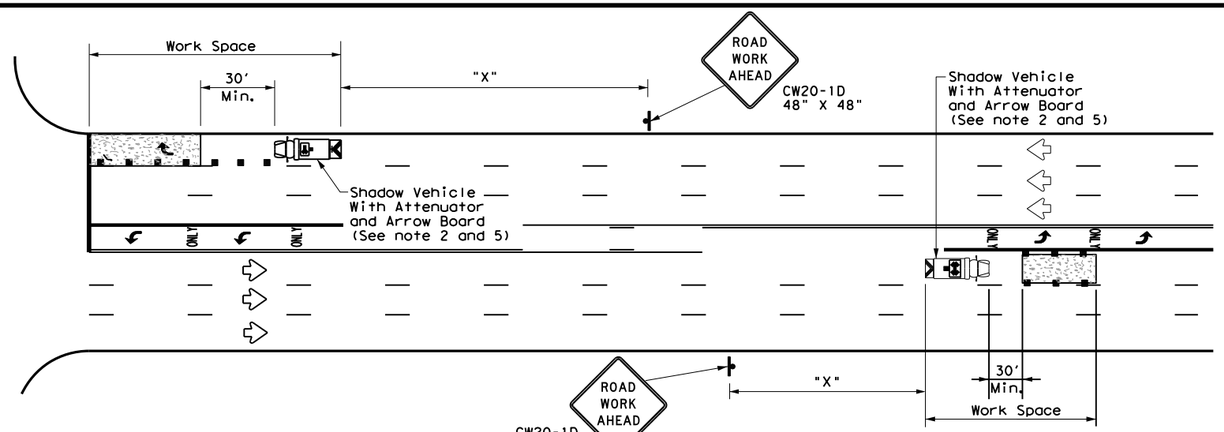
DATE: 6/12/2023 2:39:47 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp3-3-14.dgn



TYPICAL TRAFFIC CONTROL FOR CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

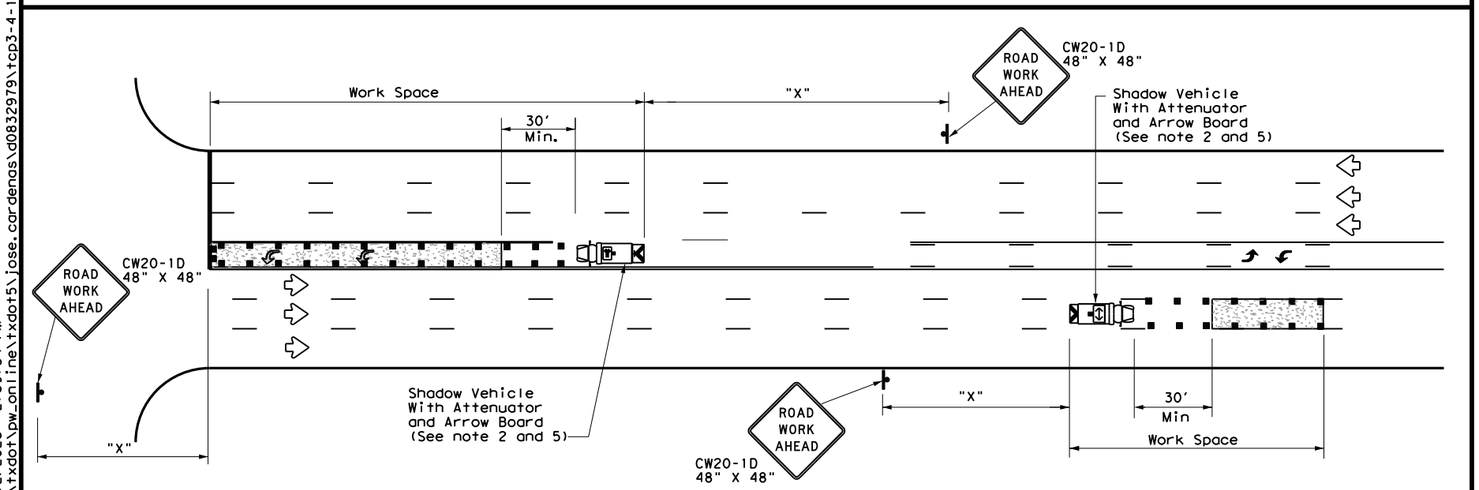


TYPICAL TRAFFIC CONTROL FOR OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR CENTER LANE MARKINGS

LEGEND

*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		Channelizing Devices

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

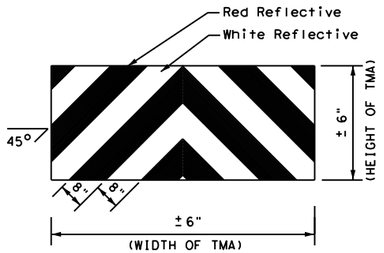
* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

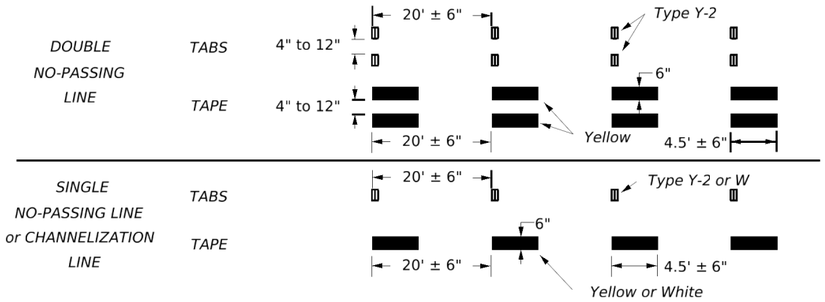
TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

TCP(3-4)-13

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		86

DATE: 6/12/2023 2:39:54 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\tcp3-4-13.dgn

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



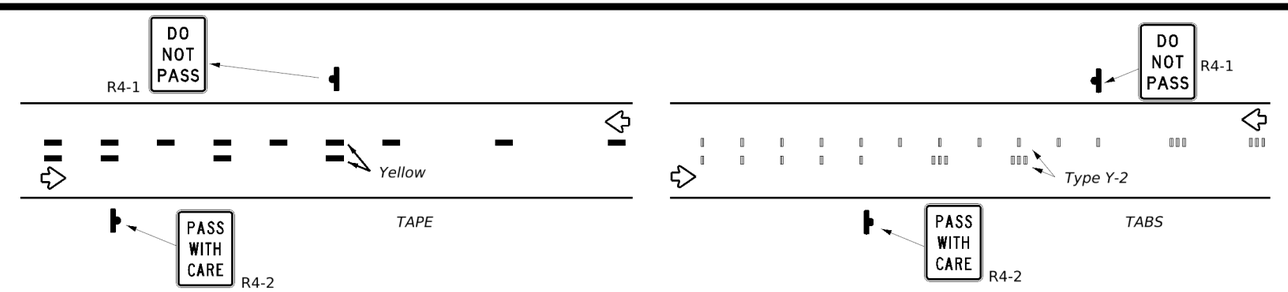
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

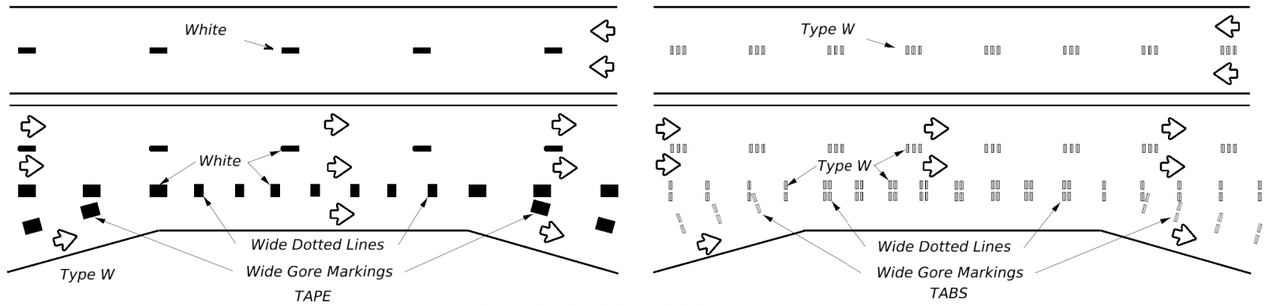
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

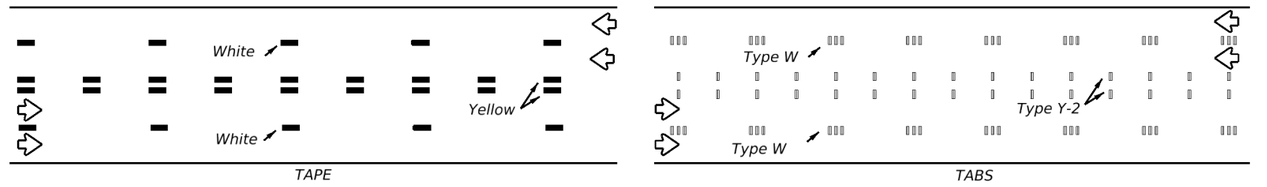
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



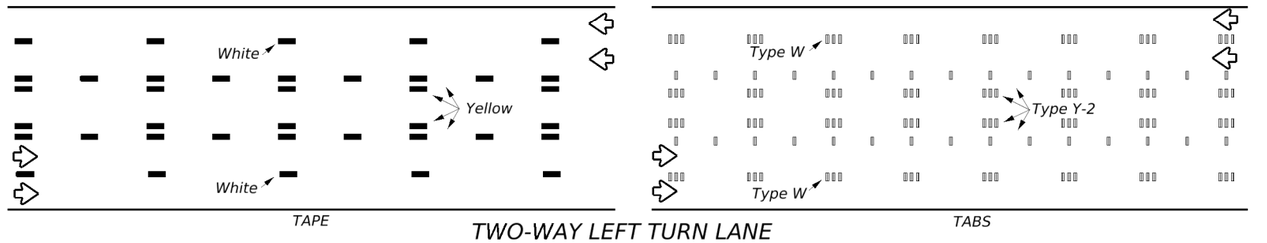
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



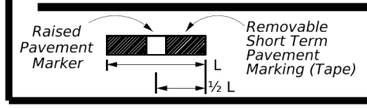
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

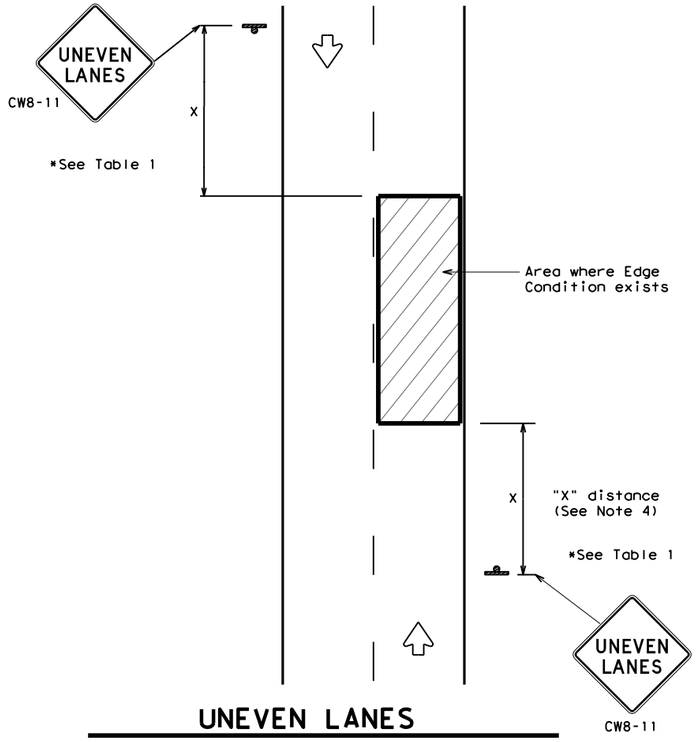
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

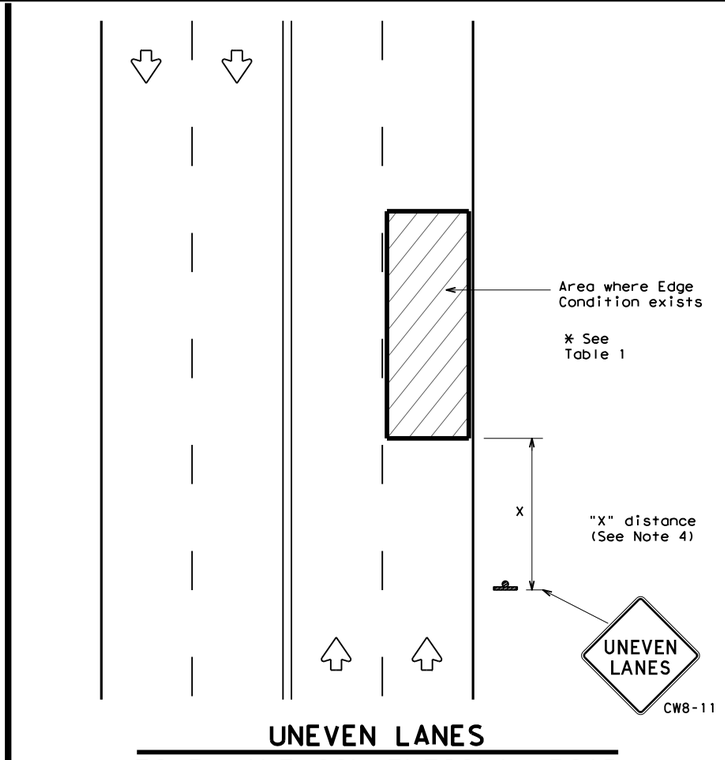
FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
4-92 7-13	DIST	COUNTY		SHEET NO.
1-97 2-23	PHR	HIDALGO		87
3-03				

111

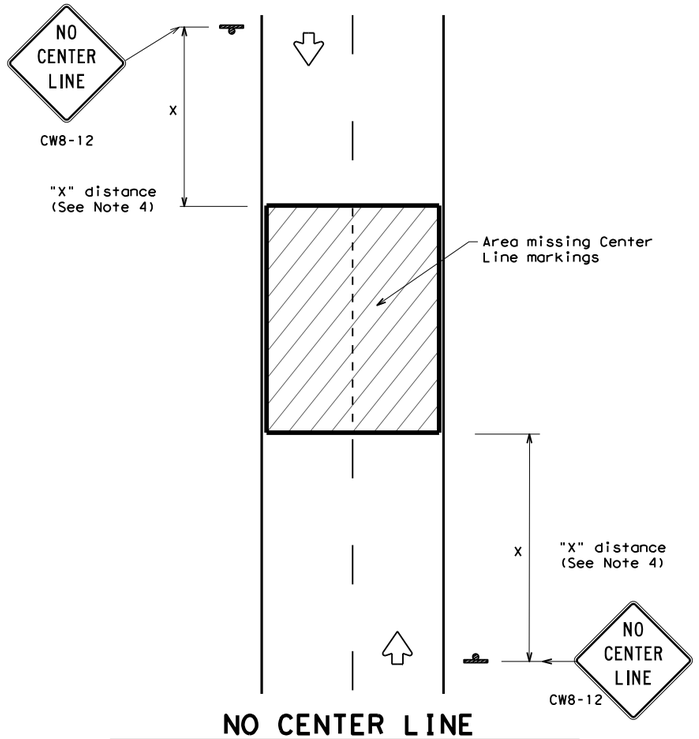
DATE: 6/12/2023 2:40:04 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wz(stpm)-23.dgn



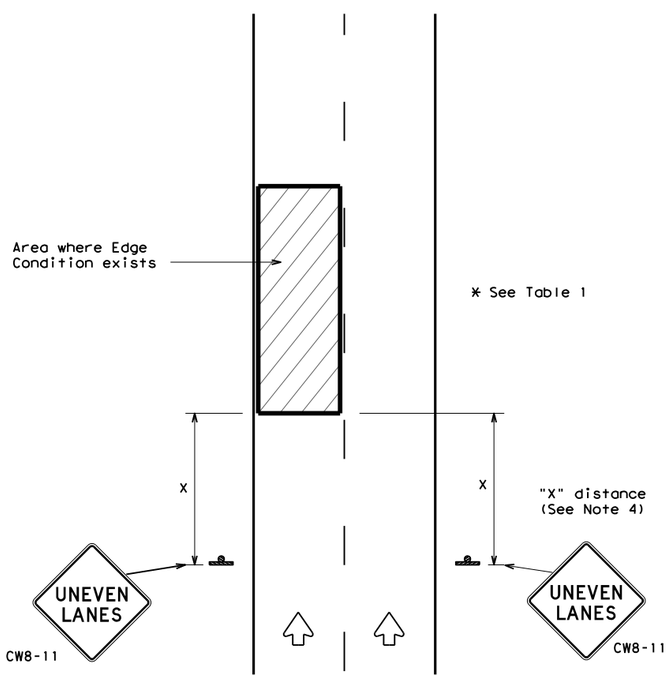
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

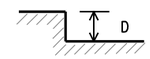
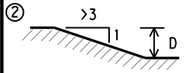
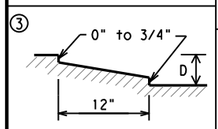
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

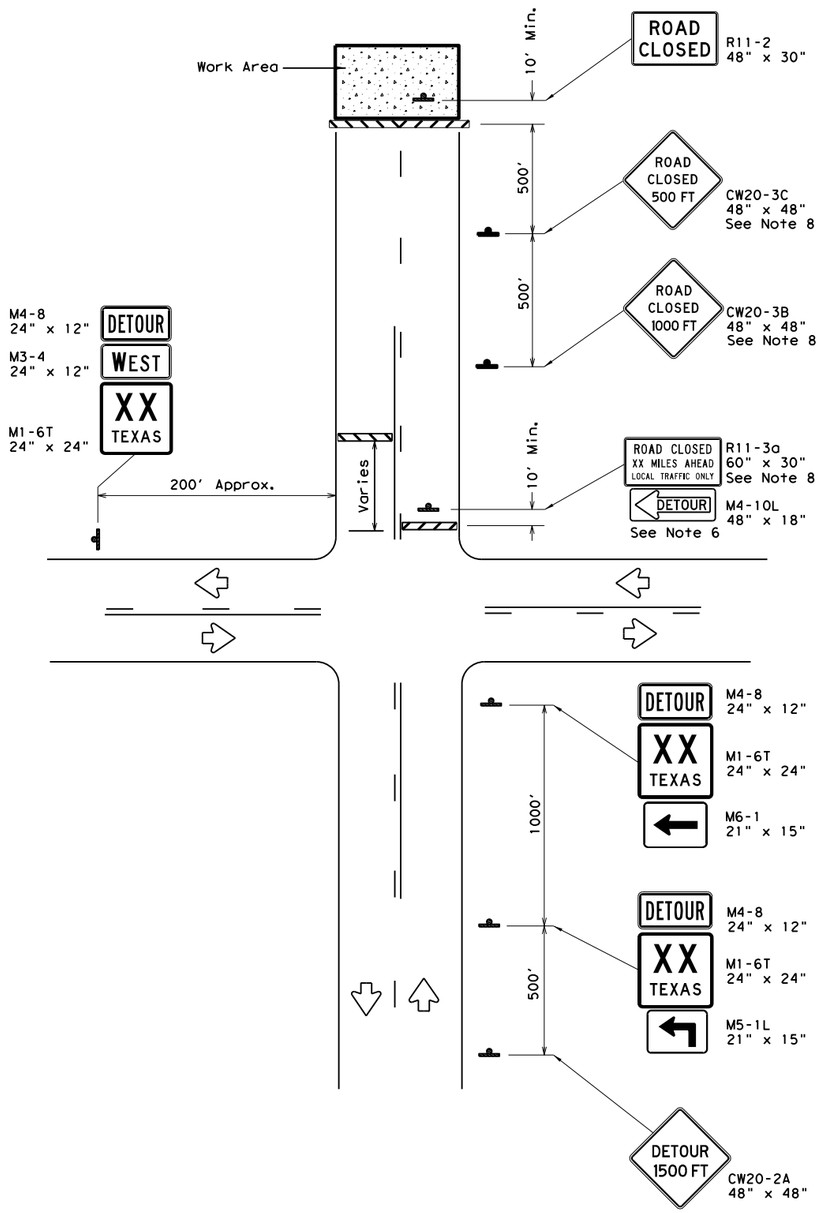
SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	PHR	HIDALGO		88

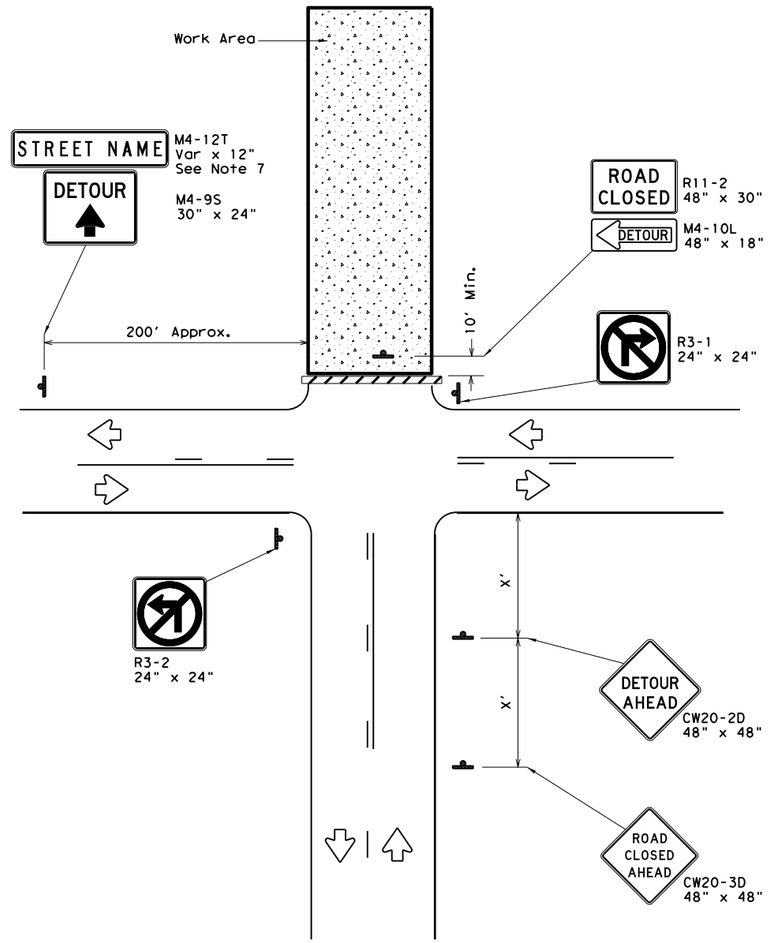
DATE: 6/12/2023 2:40:13 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wzul-13.dgn

DATE: 6/12/2023 2:40:20 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wzrcd-13.dgn



ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

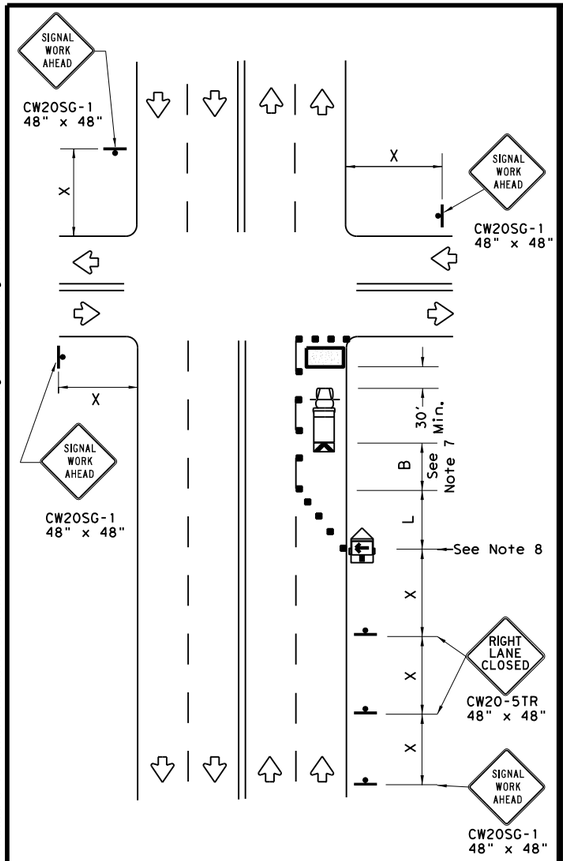
Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

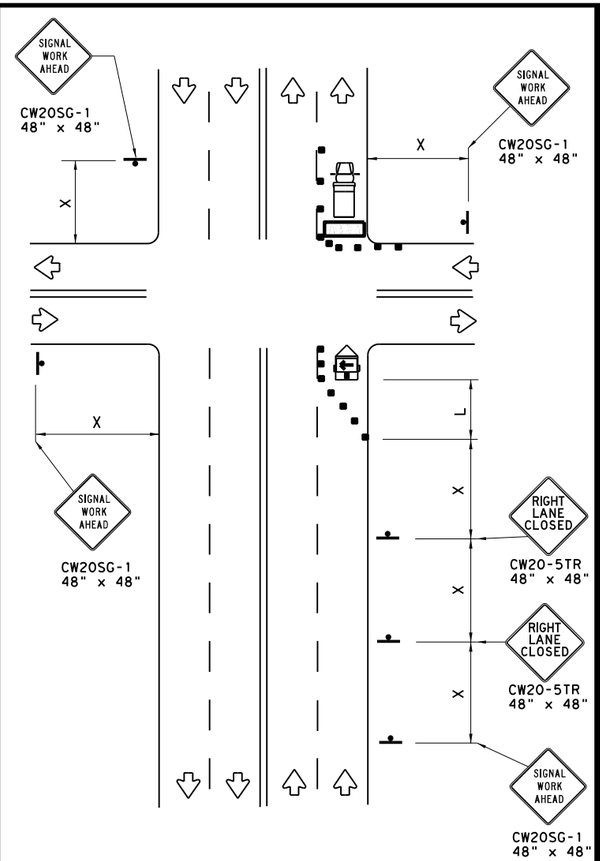
WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	PHR	HIDALGO		89



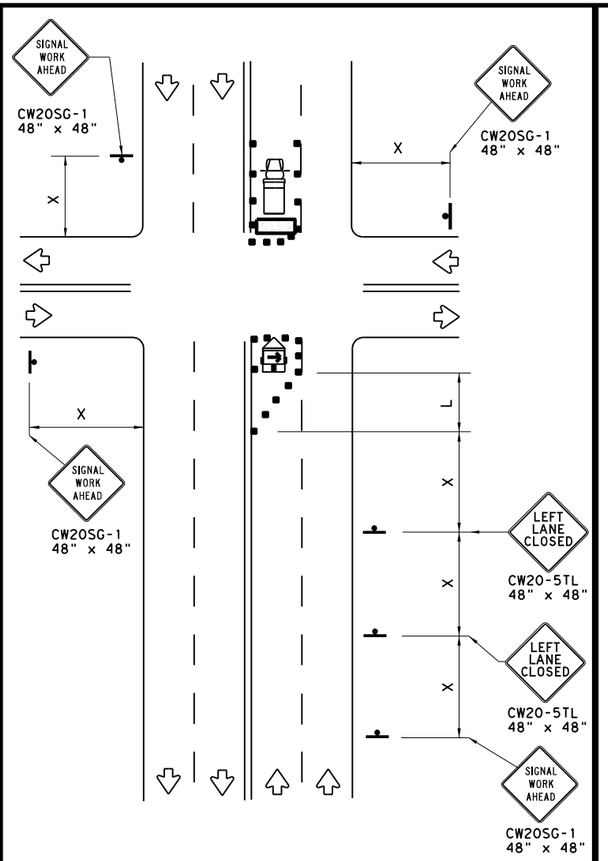
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



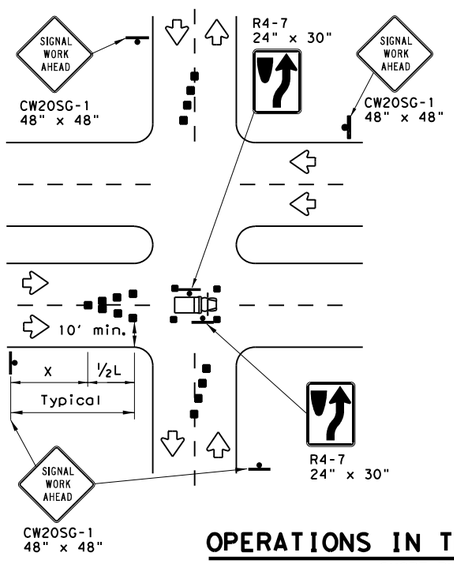
FAR SIDE RIGHT LANE CLOSURE

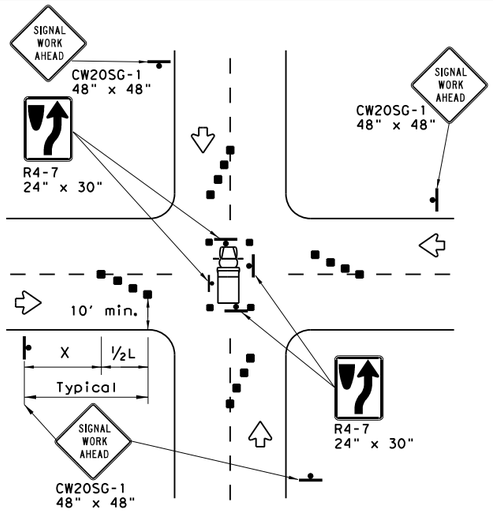
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

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

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

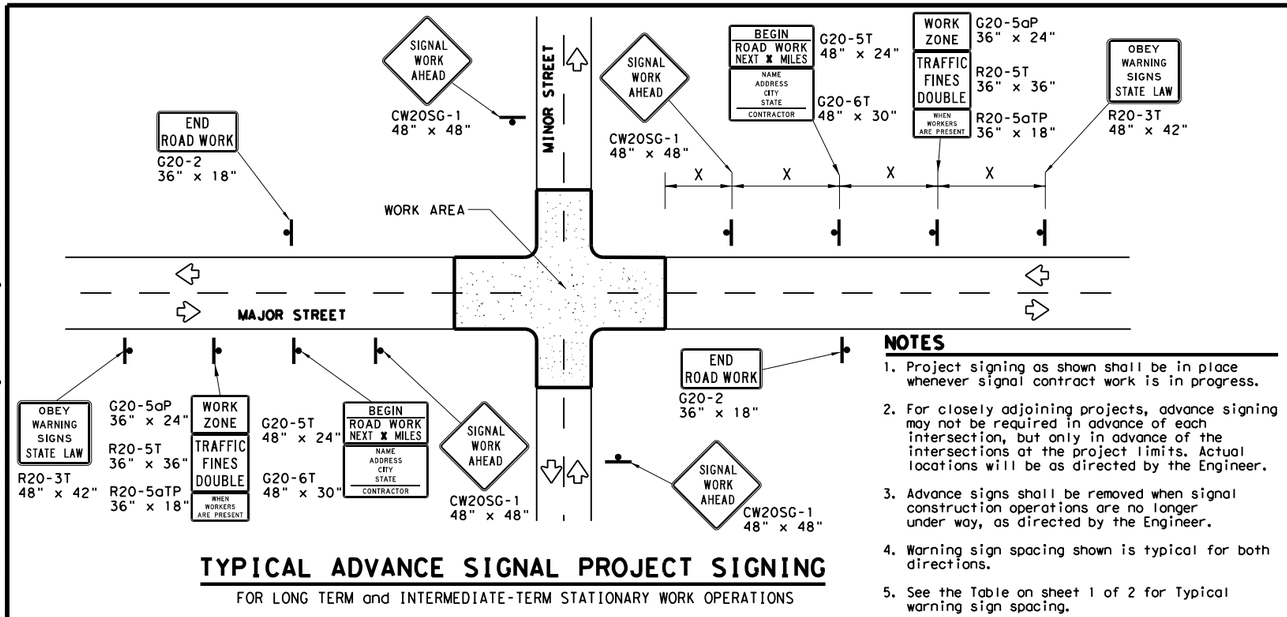
Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	PHR	HIDALGO		90

DATE: 6/12/2023 2:40:26 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wzbts-13.dgn



TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. 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, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

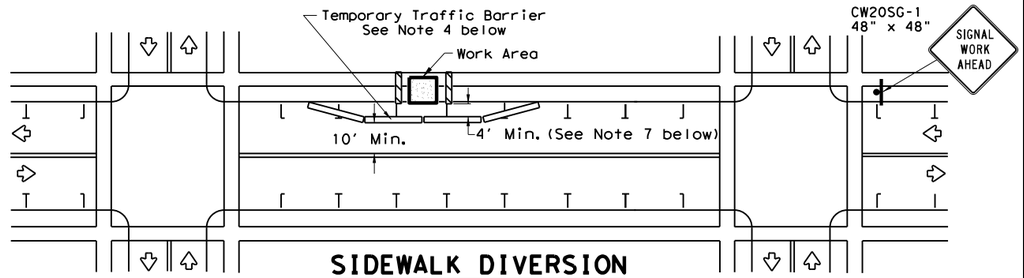
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber, such as tire inner tubes, shall not be used.
6. 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.
7. 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 fastners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

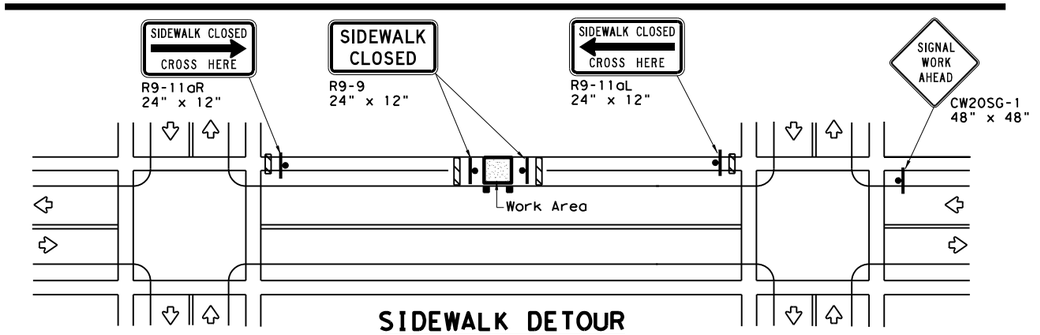
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
WHITE	BACKGROUND	TYPE A SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

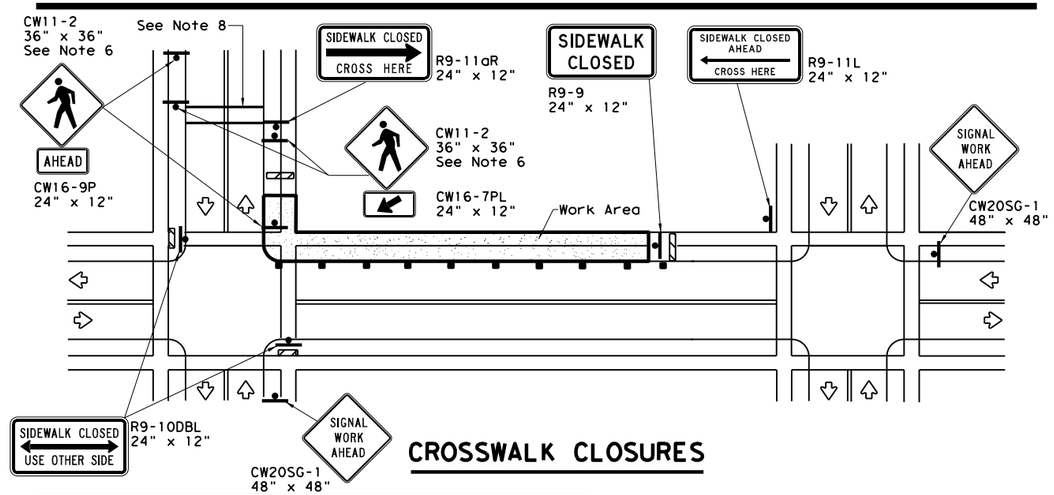
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

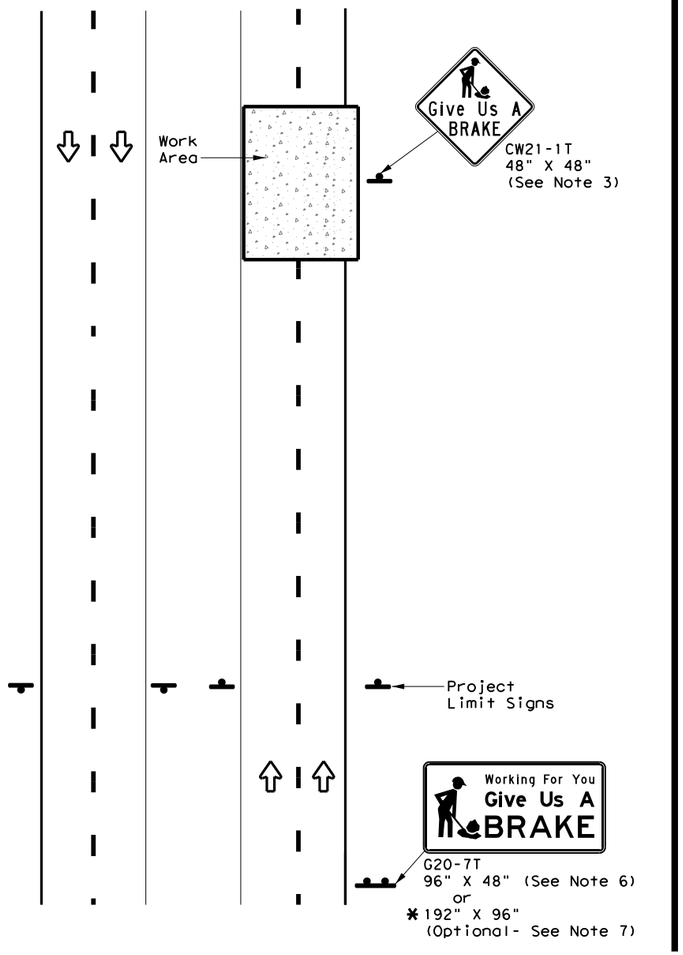
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

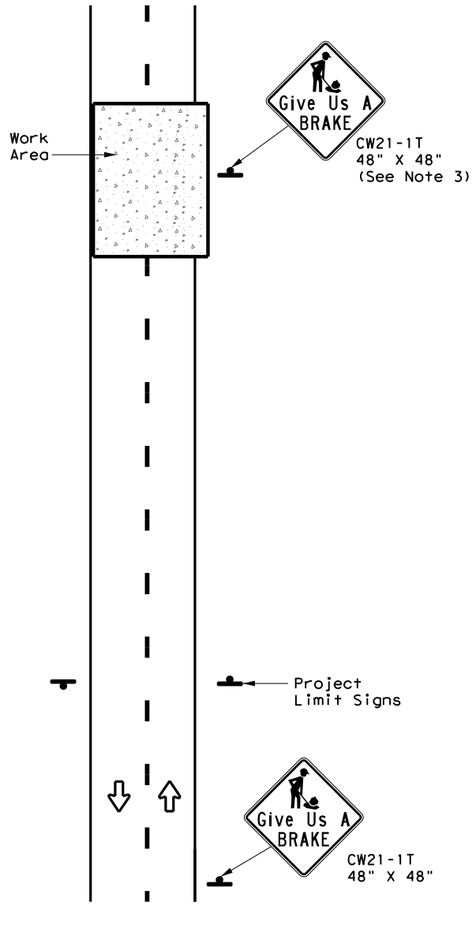
FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	PHR	HIDALGO		91

DATE: 6/12/2023 2:40:27 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wzbts-13.dgn

DATE: 6/12/2023 2:40:35 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wzbrk-13.dgn



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
8. 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.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

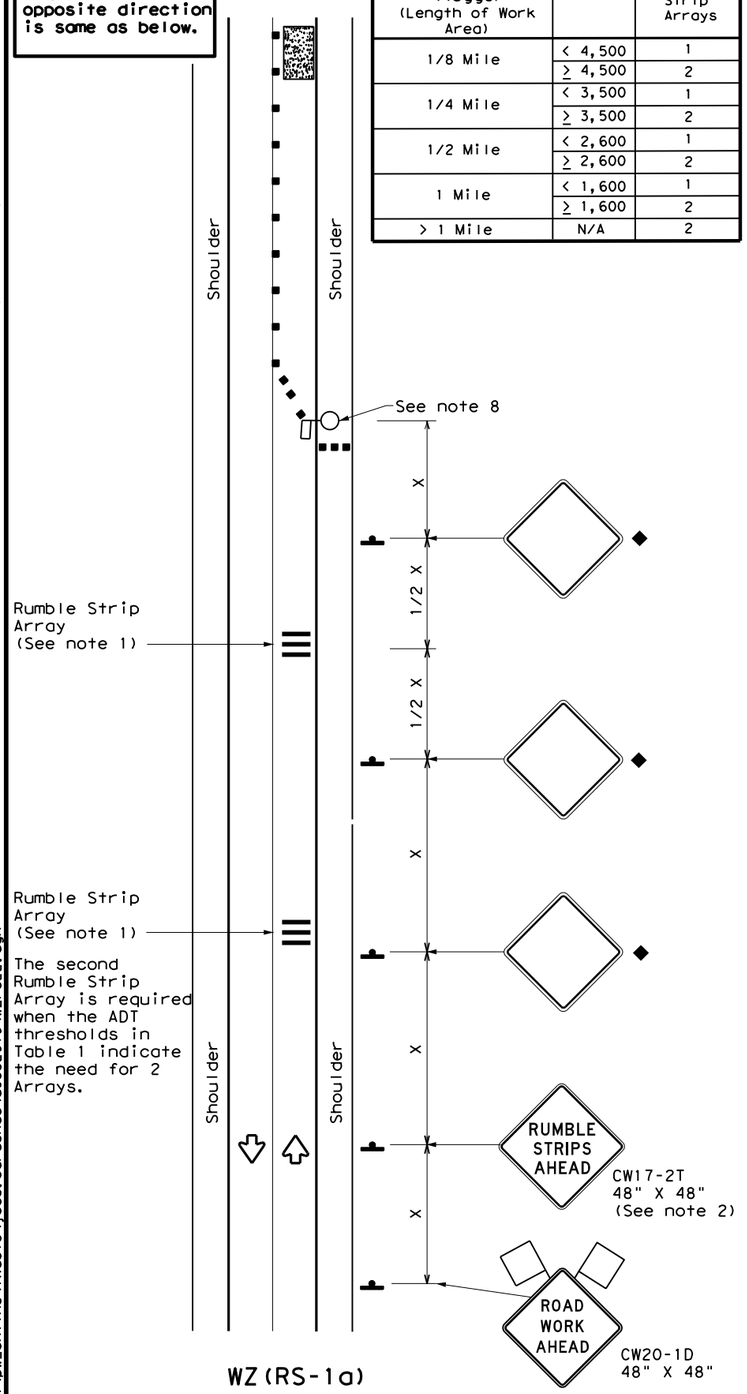
WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	PHR	HIDALGO		92

DATE: 6/12/2023 2:40:42 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\wzrs22.dgn

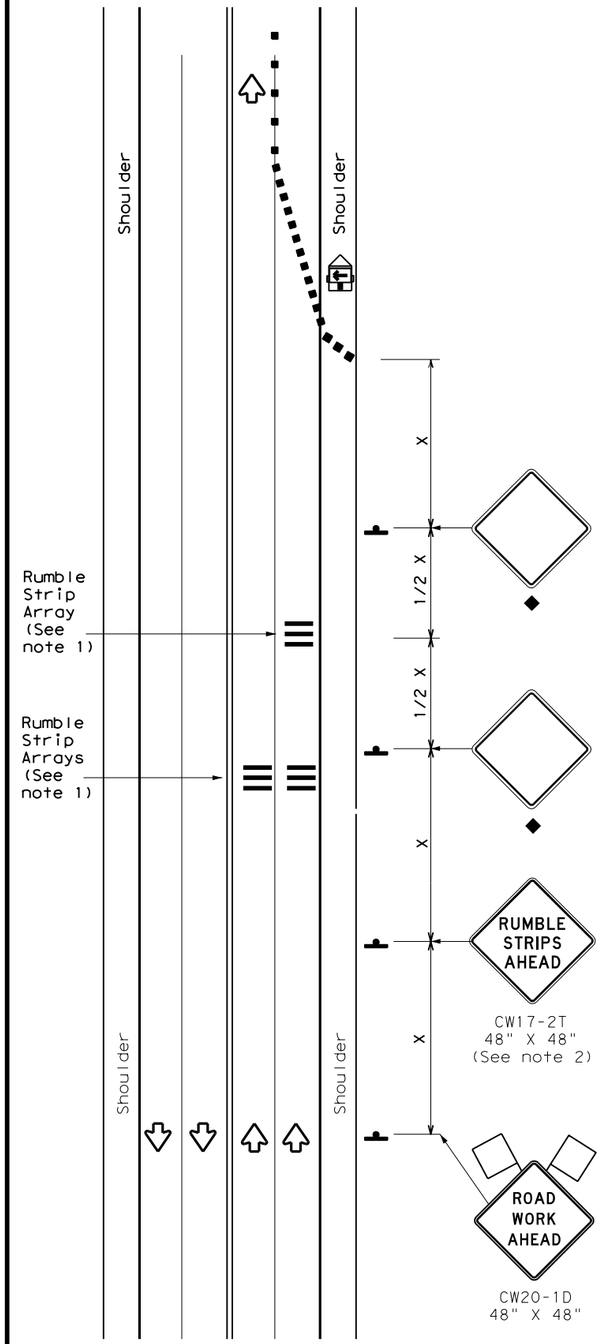
Warning sign and rumble strip sequence in opposite direction is same as below.

TABLE 1		
Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

1. Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
2. The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
3. Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
4. Remove Temporary Rumble Strips before removing the advanced warning signs.
5. Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
6. Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
7. This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
8. The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
9. Replace defective Temporary Rumble Strips as directed by the Engineer.
10. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Panel	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.

* For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

TABLE 2	
Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35' +

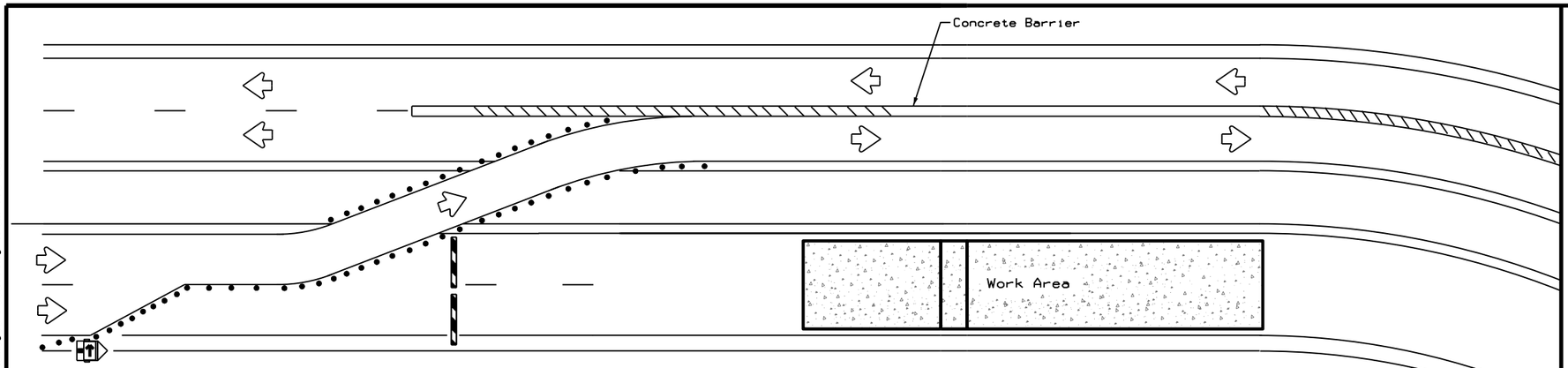
Texas Department of Transportation — Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 1-22 4-16	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		93

117



NOTES:

1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

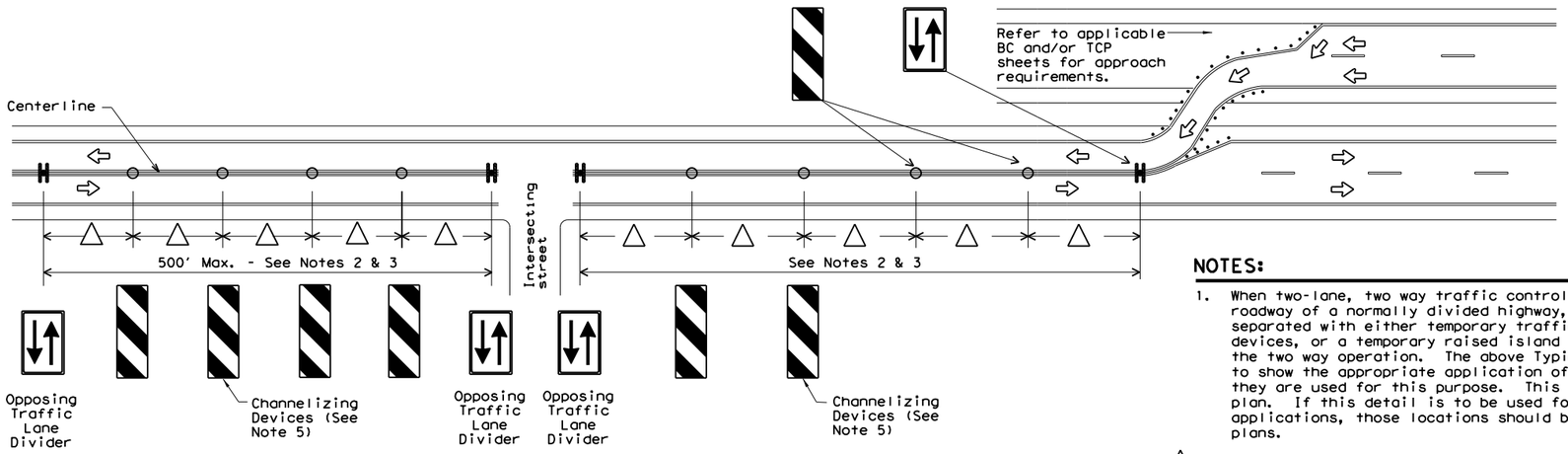
BARRIER DELINEATION WITH MODULAR GLARE SCREENS

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List" CWZTCD)describes pre-qualified products and their sources and may be found at the following web address:

http://www.txdot.gov/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.

△2. Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation

Traffic Operations Division Standard

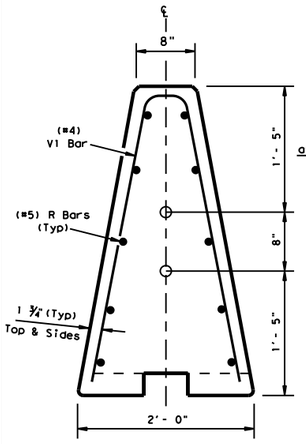
TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

FILE: wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 2-17 3-03 7-13	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		94

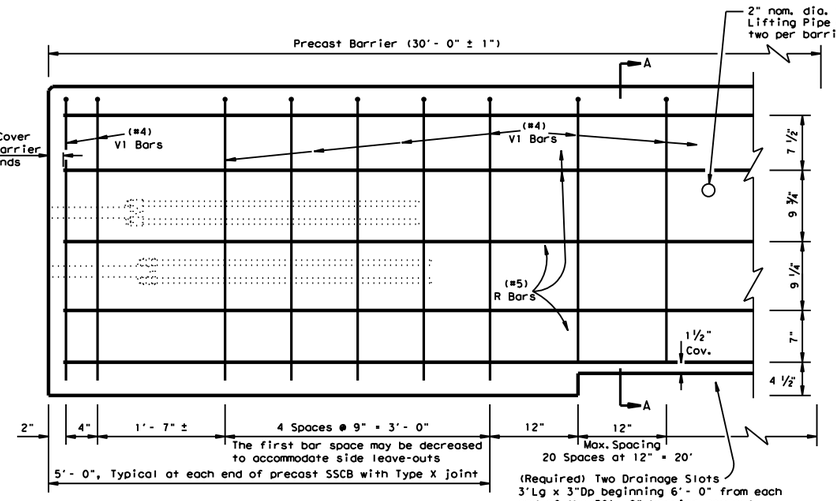
110

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\sscb210.dgn



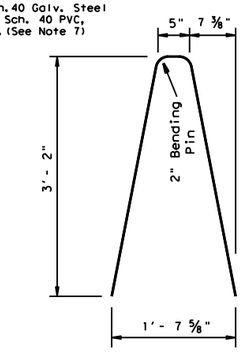
End View
Precast Barrier

Pipe locations for Joint Type X connection



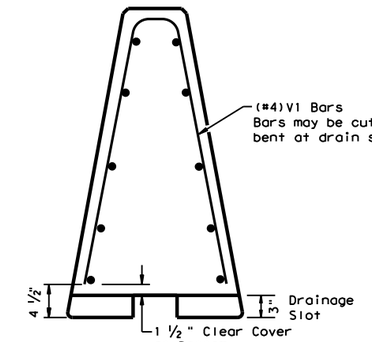
Reinforcement for Precast (SSCB)
Single Slope Concrete Barrier (Type 1)

Showing reinforcement for Joint Connection (Type X)



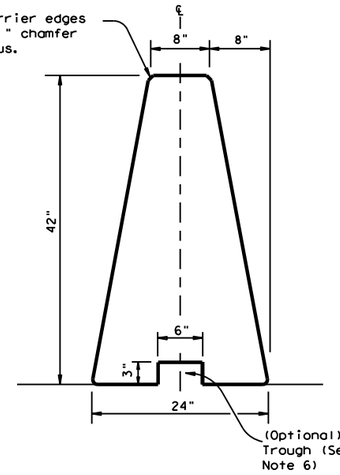
V1 Bar
#4 Rebar

Note:
V1 Bars above the drainage slots may bent to accomadate 1 ½" clear cover as directed by the Engineer.



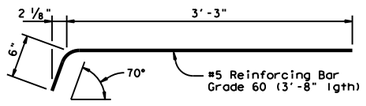
Section A-A
Steel Placement at (Required) Drainage Slots

All precast barrier edges shall have a ¾" chamfer or tooled radius.



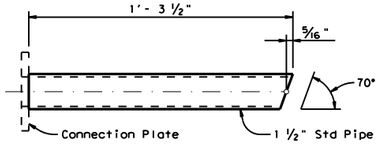
Single Slope Concrete Traffic Barrier

Precast SSCB barrier may be connected to cast-in-place SSBC. The joint connection "Types" may be used in the cast-in-place barrier, to match the precast barrier connection.



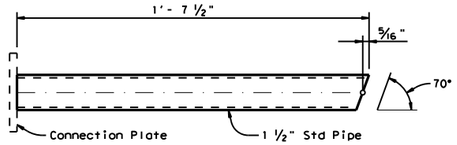
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



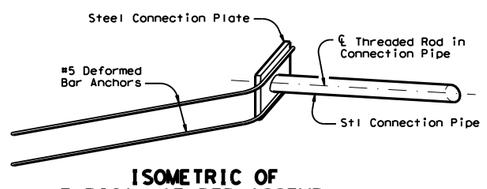
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.



LOWER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.

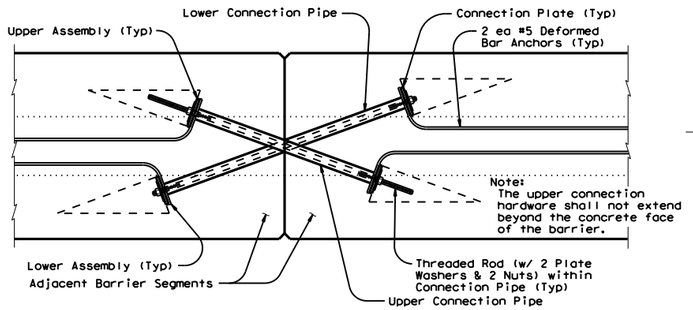


ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

General Notes

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a ¾" chamfer or a tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items.
9. All steel assemblies shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

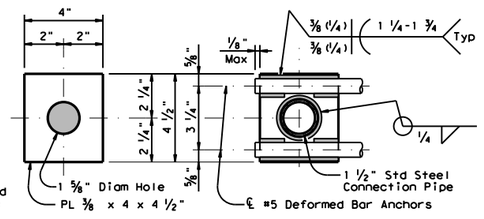
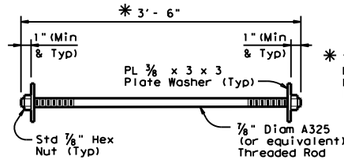


PLATE DIMENSIONS **WELDING DETAILS**

CONNECTION PLATE DETAILS

One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.

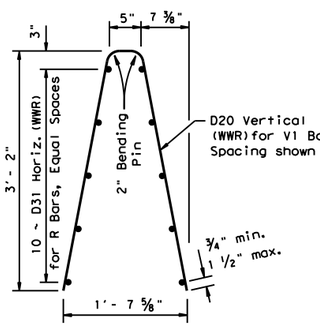


* The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.

CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts) (w/ Two (2) PL ⅜ x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

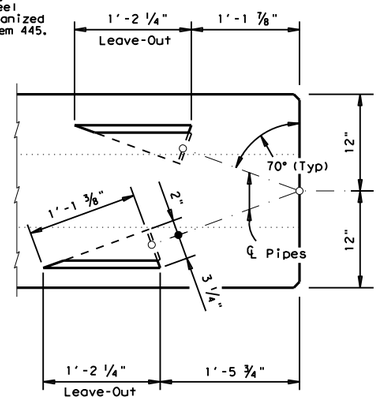
Weight of one precast 30 ft. (SSCB) segment = Approx. 10.5 Tons or 717 lbs per ft.



Welded Wire Reinforcement (WWR) Option for Bars R and V1

(WWR) General Notes

1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



BARRIER PLAN AT JOINT

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

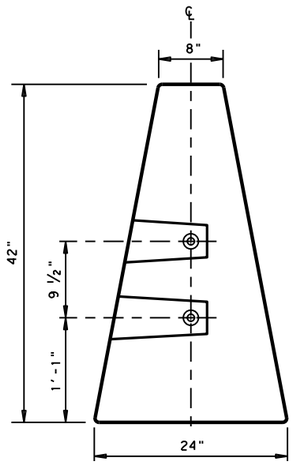
SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER (TYPE 1)

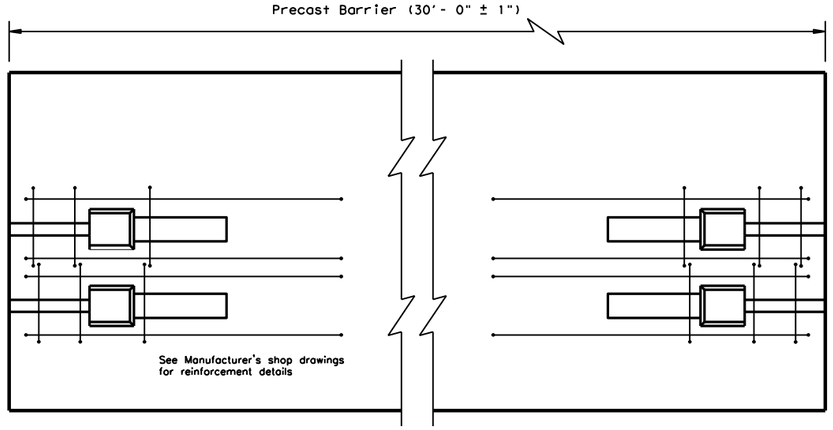
SSCB(2)-10

FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: BD	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		95

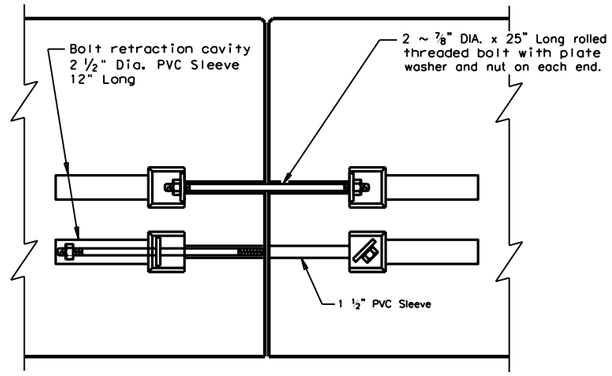
DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\sscb210.dgn



END VIEW
"QUICK-BOLT" POCKET LOCATIONS

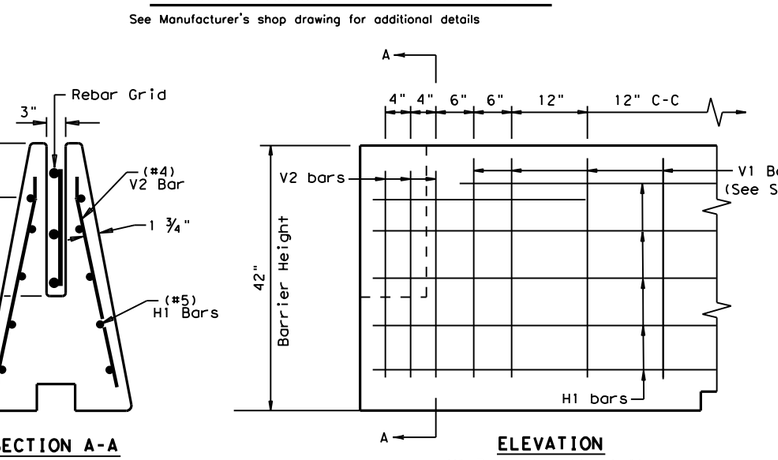


ELEVATION VIEW
"QUICK-BOLT" (SSCB)
See Manufacturer's shop drawing for additional details

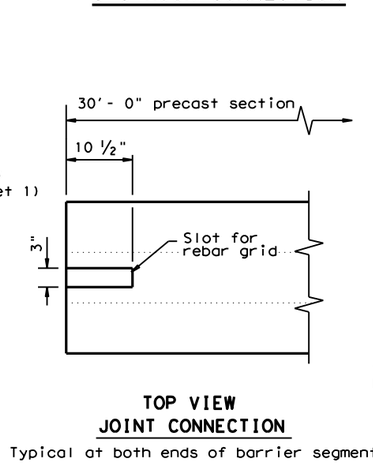


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

Joint Connection (Type Q)



TOP VIEW
PRECAST (SSCB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details



VIEW FROM ABOVE
J-J HOOK CONNECTION

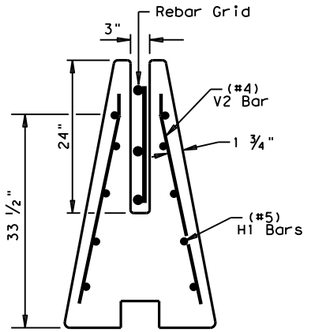
END VIEW

Proprietary Joint Connections (SSCB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

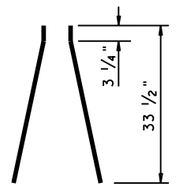
If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.



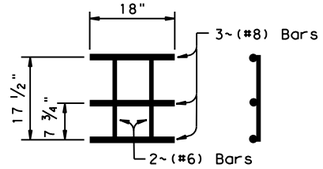
SECTION A-A
Showing (Type R) Rebar Grid

ELEVATION
V1 Bars (See Sheet 1)

TOP VIEW
JOINT CONNECTION
Typical at both ends of barrier segment



(#4) V2 BARS
6 ~ two piece bars per barrier segment



WELDED REBAR GRID

Joint Connection (Type R)

SHEET 2 OF 2

Texas Department of Transportation | Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER
(TYPE 1)

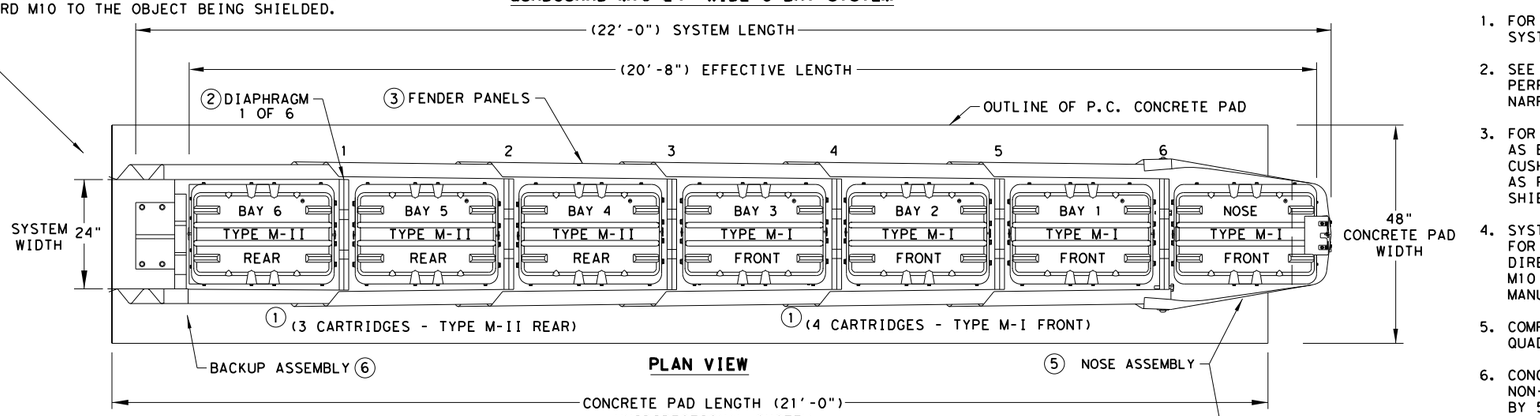
SSCB(2)-10

FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		96

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\qguardm10n20.dgn

NOTE:
A TRANSITION MAY BE REQUIRED TO INSTALL THE QUADGUARD M10 TO THE OBJECT BEING SHIELDED.

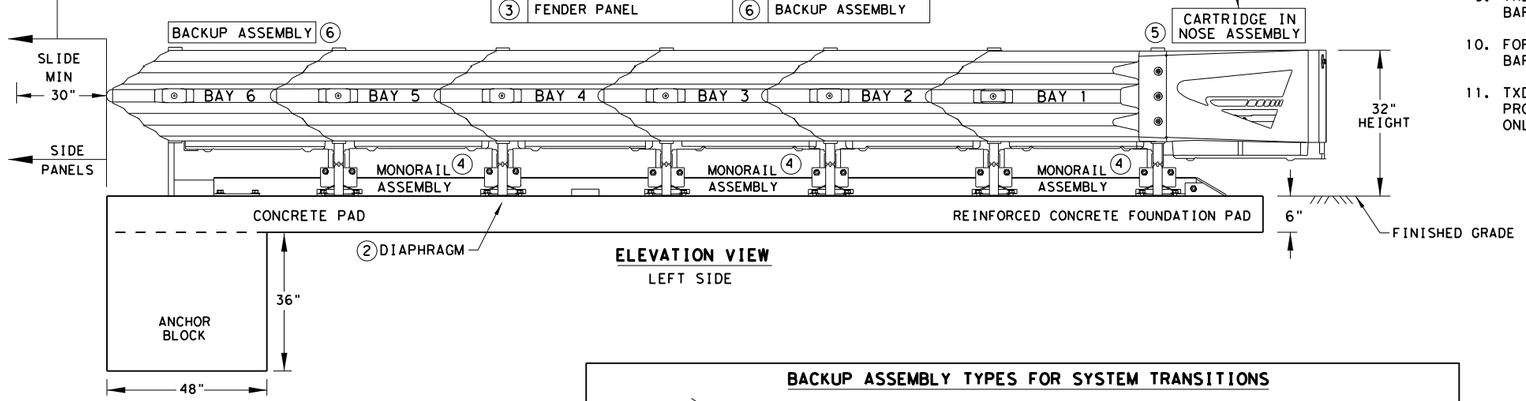
QUADGUARD M10 24" WIDE 6-BAY SYSTEM



PLAN VIEW

KEY		KEY	
(1)	QUADGUARD CARTRIDGE	(4)	MONORAILS
(2)	DIAPHRAGM	(5)	NOSE ASSEMBLY
(3)	FENDER PANEL	(6)	BACKUP ASSEMBLY

NOTE:
PROVISION SHALL BE MADE FOR REAR FENDER SIDE PANELS TO SLIDE REARWARD UPON IMPACT, 30" MIN.



ELEVATION VIEW
LEFT SIDE

NOTES:
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR CONCRETE PAD AND ANCHOR BLOCK INSTALLATION REQUIREMENTS.

A MANUFACTURER'S DRAWING PACKAGE UNIQUE AND SPECIFIC FOR THE QUADGUARD M10 (N) INSTALATION AND DETAILED INFORMATION REGARDING THE TYPE OF BACKUP ASSEMBLY FOR THE REQUIRED TRANSITION WILL BE PROVIDED TO THE ENGINEER AND INSTALLER.

6" REINFORCED CONCRETE PAD REQUIRES THE INSTALLATION OF AN ANCHOR BLOCK AS SHOWN ON THE MANUFACTURER'S DRAWING PACKAGE.

8" NON-REINFORCED CONCRETE PAD MAY NOT REQUIRE AN ANCHOR BLOCK, IF THE PAD IS INSTALLED AGAINST AN IMMOVABLE CONCRETE BACKUP.

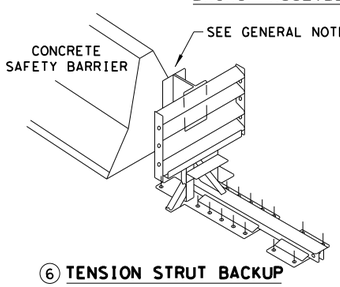
CONCRETE PAD AND ANCHOR BLOCK COMBINATIONS SHALL BE CONFIRMED WITH THE MANUFACTURER BASED UPON SITE SPECIFIC DATA (SSD).

NOTE:
THE QUADGUARD M10 24" WIDE 6-BAY - NARROW SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 3.

TL-3 MODEL #	QM10024	CARTRIDGE TYPES IN BAYS		
BAYS	6	TYPE-MII	TYPE-MI	TYPE-MI
DIAPHRAGMS	6	3	3	1
WIDTH	24"	REAR	FRONT	NOSE

TL-2 MODEL #	QM7024	CARTRIDGE TYPES IN BAYS		
BAYS	3	TYPE-MII	TYPE-MI	TYPE-MI
DIAPHRAGMS	3	1	2	1
WIDTH	24"	REAR	FRONT	NOSE

BACKUP ASSEMBLY TYPES FOR SYSTEM TRANSITIONS



(6) TENSION STRUT BACKUP

SYSTEM TRANSITIONS TYPES	
1	QUAD-BEAM TO CONCRETE SAFETY BARRIER
2	QUAD-BEAM TO CONCRETE BRIDGE RAIL
3	QUAD-BEAM TO CONCRETE END SHOE
4	QUAD-BEAM TO THRIE-BEAM RAIL
5	QUAD-BEAM TO W-BEAM RAIL

NOTE:
TRANSITION ASSEMBLIES FOR THE QUADGUARD M10 TO THRIE-BEAM OR W-BEAM FENCE REQUIRES I-BEAM POSTS:

ALL POSTS W6X8.5/9 I-BEAMS (78" LONG).

NOTES:
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR THE CORRECT BACKUP ASSEMBLY AND TRANSITION PANELS OR SIDE PANELS USED FOR STANDARD AND BI-DIRECTIONAL INSTALLATIONS: AT DIVIDED-HIGHWAY MEDIANS OR UNDIVIDED ROADWAYS WHERE THE SYSTEM IS EXPOSED TO IMPACTS FROM ONE OR TWO DIFFERENT DIRECTIONS OF TRAFFIC FLOW.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE QUADGUARD M10 SYSTEM AND IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY - ENERGY ABSORPTION INC. AT 1(888)323-6374.
2. SEE THE RECENT QUADGUARD M10 PRODUCT DESCRIPTION ASSEMBLY MANAUAL FOR IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITIONS AND THE DRAWING PACKAGE FOR THE NARROW 24" SYSTEM BEFORE INSTALLING THE QUADGUARD M10 SYSTEM AT ANY GIVEN LOCATION.
3. FOR BI-DIRECTIONAL TRAFFIC: THE PLACEMENT OF THE QUADGUARD M10 IS RESTRICTED. AS BI-DIRECTIONAL TRAFFIC APPROACHES THE REAR OF THE QUADGUARD M10 THE CRASH CUSHION MUST BE PLACED SUCH THAT THE TRAFFIC SIDE OF CRASH CUSHION IS AT LEAST AS FAR FROM ADJACENT TRAVEL LANE LINE AS THE TRAFFIC SIDE OF BARRIER/OBJECT BEING SHIELDED.
4. SYSTEM TRANSITION: APPROPRIATE TRANSITION PANELS OR SIDE PANELS WILL BE REQUIRED FOR PROPER IMPACT PERFORMANCE. THE CORRECT PANEL(S) TO USE WILL DEPEND ON THE DIRECTION OF TRAFFIC FLOW AND WHAT TYPE OF BARRIER OR ROAD FEATURE THE QUADGUARD M10 SYSTEM IS SHIELDING. SEE THE QUADGUARD M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL FOR FURTHER DETAILS.
5. COMPONENTS FOR THE QUADGUARD M10 BACKUP AND REINFORCING DETAILS ARE SHOWN ON THE QUADGUARD M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL.
6. CONCRETE PAD SHALL BE 6" MIN. REINFORCED 28MPa [4,000 PSI] (P.C.) OR 8" MIN. NON-REINFORCED 28MPa [4,000 PSI] CONCRETE ROADWAY MEASURING AT LEAST 12'-0" WIDE BY 50'-0" LONG. ANCHOR BLOCK IS NOT REQUIRED WHEN USING 8" CONCRETE PAD INSTALLED AGAINST AN IMMOVABLE STRUCTURE, E.G. CONCRETE WALL.
7. IF THE CROSS-SLOPE VARIES MORE THAN 2% OVER THE LENGTH OF THE SYSTEM, THE CONCRETE PAD WILL REQUIRE LEVELING. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
8. THE INSTALLATION AREA SHOULD BE FREE OF CURBS, ELEVATED OBJECTS,OR DEPRESSIONS.
9. THE QUADGUARD M10 SYSTEM SHOULD BE INSTALLED APPROXIMATELY PARALLEL WITH THE BARRIER.
10. FOR THE TENSION STRUT BACKUP THE DISTANCE BETWEEN THE BACK OF BACKUP AND THE BARRIER WALL SHOULD NOT EXCEED 7" IN ANY CASE.
11. TXDOT HAS ONLY APPROVED THE 24" WIDE QUADGUARD M10 SYSTEM. THE QUADGUARD M10 PRODUCT DESCRIPTION AND ASSEMBLEY MANUAL INCLUDES SYSTEM WIDTH OF 24". ONLY THE 24" SYSTEM IS ALLOWED TO BE INSTALLED ON TEXAS ROADWAYS.

FOUNDATION & ANCHORING REQUIREMENTS
FOUNDATION TYPES: A, B, C, & D

FOUNDATION TYPE: A	REINFORCED CONCRETE PAD OR ROADWAY
FOUNDATION:	6" MINIMUM DEPTH (P.C.C.)
ANCHORAGE:	7" STUDS EMBEDDED 5 ½" - APPROVED ADHESIVE
FOUNDATION TYPE: B	ASPHALT OVER P.C.C.
FOUNDATION:	3" MIN. (A.C.) OVER 3" MIN. (P.C.C.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 ½" - APPROVED ADHESIVE
FOUNDATION TYPE: C	ASPHALT OVER SUBBASE
FOUNDATION:	6" MIN. (A.C.) OVER 6" MIN. (C.S.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 ½" - APPROVED ADHESIVE
FOUNDATION TYPE: D	ASPHALT ONLY
FOUNDATION:	8" MIN. (A.C.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 ½" - APPROVED ADHESIVE

KEY:
ASPHALT CONCRETE (A.C.)
COMPACTED SUBBASE (C.S.)
PORTLAND CEMENT CONCRETE (P.C.C.)

NOTE: SEE TRINITY'S PRODUCT DESCRIPTION ASSEMBLY MANUAL FOR THE APPROVED ADHESIVE.

IF THE UNIT IS ANCHORED TO ASPHALTIC CONCRETE, IT SHOULD BE RELOCATED TO FRESH, UNDISTURBED ASPHALT AND RE-ANCHORED AFTER EACH IMPACT TO ENSURE ADEQUATE FUTURE PERFORMANCE.

TENSION STRUT BACKUP MAY BE USED IN CONSTRUCTION ZONES ON ASPHALT CONCRETE (A.C.) FOR TEMPORARY USE ONLY.

Texas Department of Transportation — Design Division Standard

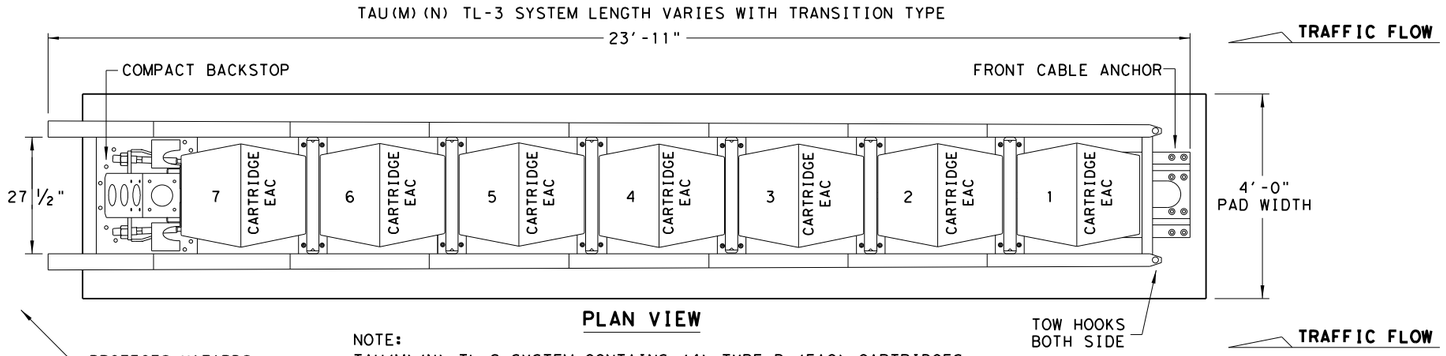
TRINITY HIGHWAY ENERGY ABSORPTION QUADGUARD M10 (MASH TL-3 & TL-2 NARROW-24"ONLY)

QGUARD(M10)(N)-20

REUSABLE

FILE: qguardm10n20.dgn	DN:TxDOT	CK:KM	DW:VP	CK:AG
©TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		97

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\taumn19.dgn



PLAN VIEW

NOTE:
TAU(M)(N) TL-2 SYSTEM CONTAINS (4) TYPE B (EAC) CARTRIDGES. INSTALLED ON ROADWAYS WITH MAXIMUM SPEEDS OF 45 MPH.

ELEVATION VIEW

END VIEW

NOTE:
PAD THICKNESS VARIES - SEE FOUNDATION OPTIONS

NOTES:
TRANSITIONS AND ATTACHMENTS TO VARIOUS BARRIER SHAPES, RAILINGS AND BI-DIRECTIONAL TRAFFIC FLOWS ARE AVAILABLE. SEE MANUFACTURER'S INSTALLATION INSTRUCTIONS MANUAL FOR ADDITIONAL TRANSITION DETAILS.

NOTE:
CONCRETE FOUNDATION PAD LENGTH VARIES WITH TL-3 AND TL-2 SYSTEMS, SEE SYSTEM & FOUNDATION LENGTH TABLE.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
2. REFER TO THE LATEST (LTS) INSTALLATION INSTRUCTION MANUAL FOR IMPORATANT SAFETY MESSAGES, COMPLETE SYSTEM ASSEMBLY, AND ANCHOR INSTALLATION REQUIREMENTS FOR THE NINE (9) DIFFERENT SITE TRANSITIONS.
3. INSTALLATION DETAILS FOR THE COMPACT BACKSTOP, FRONT CABLE ANCHOR AND FOUNDATION OPTIONS ARE SHOWN ON THE INSTALLATION INSTRUCTION MANUAL FURNISHED TO THE ENGINEER.
4. CONCRETE SHALL BE CLASS "S" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 P.S.I.
5. IF THE CROSS-SLOPES VARIES MORE THAN 2% OVER THE LENGTH OF THE SYSTEM, THE CONCRETE PAD WILL REQUIRE LEVELING. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%
6. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
7. THE TAU(M)(N) SYSTEM SHOULD BE APPROXIMATELY PARALLEL WITH THE BARRIER OR CENTER LINE OF MERGING BARRIERS.
8. THIS DRAWING REPRESENTS THE UNIVERSAL TAU(M)(N) TL-3 SYSTEM, A RE-DIRECTIVE NON-GATING CRASH CUSHION THAT CAN PROTECT HAZARDS UP TO 30-INCHES IN WIDTH. ALSO AVAILABLE IN TL-2 CONFIGURATION.

FOUNDATION OPTIONS
6" REINFORCED CONCRETE
8" UNREINFORCED CONCRETE
ASPHALT OVER CONCRETE WITH MINIMUM 6" EMBEDMENT IN CONCRETE
* 6" ASPHALT OVER 6" COMPACT SUBBASE
* 8" MINIMUM ASPHALT

SYSTEM & FOUNDATION LENGTH TABLE	
SYSTEM LENGTH	FOUNDATION LENGTH
TL-2 = 15'-5"	TL-2 = 15'-4"
TL-3 = 23'-11"	TL-3 = 23'-10"

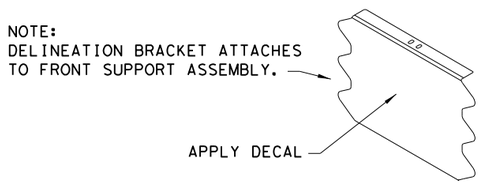
* NOTE:
REQUIRES AN ASPHALT ANCHORAGE PACKAGE: INCLUDES ADDITIONAL BRACES FOR THE FRONT CABLE ANCHOR AND THE COMPACT BACKSTOP, AND ASPHALT HARDWARE KIT. THE TL-3 ASPHALT CONFIGURATION ALSO REQUIRES NESTED SLIDER PANELS AND SHIMS AT THE LAST TWO BAYS. SEE MANUFACTURER'S INSTALLATION INSTRUCTION MANUAL FOR DETAILS.

NOTE:
SEE MANUFACTURER'S INSTALLATION INSTRUCTION MANUAL FOR FOUNDATION SPECIFICATIONS THAT INCLUDE, STONE AGGREGATE MIX, COMPRESSION STRENGTH, STEEL SIZE, ANCHOR SIZE, AND EMBEDMENT DEPTH.

TRANSITION OPTIONS	
USE THE COMPACT BACKSTOP	VERTICAL WALL
	CONCRETE TRAFFIC BARRIERS
	W-BEAM GUARDRAIL
	THRIE BEAM GUARDRAIL

NOTE:
FOR BI-DIRECTIONAL TRANSITION PANELS AND BRIDGE RAIL END SHOE DETAILS. SEE MANUFACTURER'S INSTALLATION INSTRUCTIONS MANUAL.

** NOTE:
ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.



DELINEATION BRACKET

NOTE:
APPLY A HIGH REFLECTIVE DECAL TO THE DELINEATION BRACKET. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALs ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

BILL OF MATERIALS FOR TAU(M)(N) TL-3 & TL-2 SYSTEMS		QUANTITIES	
PART NUMBER	PART DESCRIPTION	TL-3 SYSTEM	TL-2 SYSTEM
BSI-1708019-00	SLIDING PANEL GALVANIZED TAU(M)(N)	14	8
BSI-1708030-00	END PANEL, THRIE BEAM, GALV, TAU(M)(N)	2	2
BSI-1706001-00	CABLE ASSEMBLY, 7 BAY, TAU(M)(N)	2	-
BSI-1805036-00	CABLE ASSEMBLY, 4 BAY, TAU(M)(N)	-	2
BSI-1708018-00	FRONT CABLE ANCHOR	1	1
BSI-1707034-00	COMPACT BACKSTOP	1	1
B030703	MIDDLE SUPPORT ASSEMBLY	6	3
B030704	FRONT SUPPORT	1	1
B010722	ENERGY ABSORBING CARTRIDGE, TYPE B	7	4
K001005	TAU-II FRONT SUPPORT LEG KIT	1	1
BSI-1709083-KT	TETHER KIT (INCLUDES ALL HARDWARE)	1	1
BSI-1809041-KT	SLIDER KIT (INCLUDES ALL HARDWARE)	7	4
BSI-1808033-KT	CABLE GUIDE KIT (INCLUDES ALL HARDWARE)	6	3
BSI-1809040-KT	TOW HOOK KIT (INCLUDES ALL HARDWARE)	1	1
BSI-1808034-KT	DELINEATION BRACKET KIT(INCLUDES ALL HARDWARE)	1	1
BSI-1808035-KT	END PANEL MOUNT KIT (INCLUDES ALL HARDWARE)	1	1
BSI-1808036-KT	CONCRETE ANCHORING KIT	1	1
** SEE NOTE	HIGH REFLECTIVE DECAL	1	1
ECN 3883	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

NOTES:
UPGRADE KITS ARE AVAILABLE TO RETROFIT EXISTING NCHRP 350 TAU-II SYSTEMS TO MASH COMPLIANT SYSTEMS. SEE MANUFACTURER'S PRODUCT INFORMATION.

THE TAU(M)(N) UNIDIRECTIONAL SYSTEM IS FREE STANDING AND IS NOT REQUIRED TO BE CONNECTED TO THE HAZARD.

TRANSITIONS TO GUARD FENCE, BRIDGE RAILS AND ROADSIDE BARRIERS SHALL BE IN ACCORDANCE WITH TxDOT'S POLICY.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE UNIVERSAL TAU(M)(N) SYSTEM, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTION MANUAL.

REUSABLE

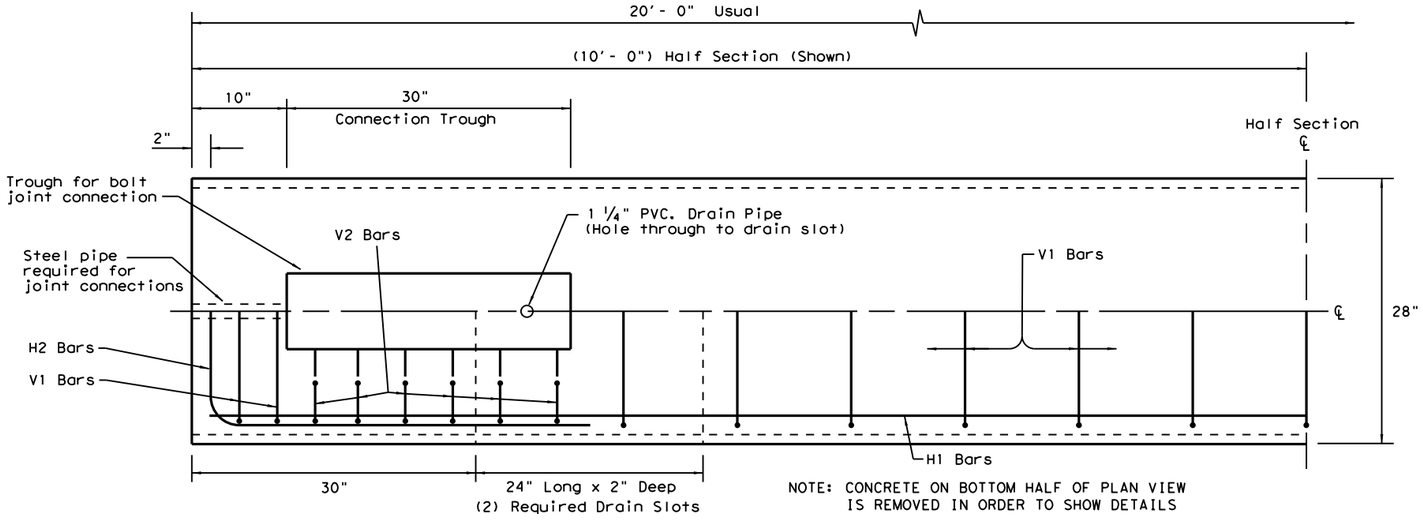
Texas Department of Transportation — Design Division Standard

LINDSAY TRANSPORTATION SOLUTIONS

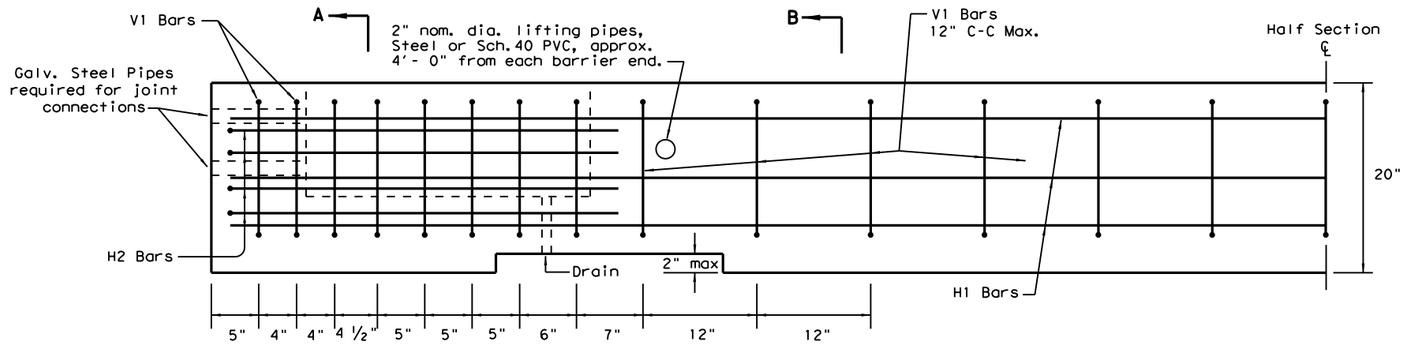
UNIVERSAL CRASH CUSHION (MASH TL-3 & TL-2)

TAU(M)(N)-19

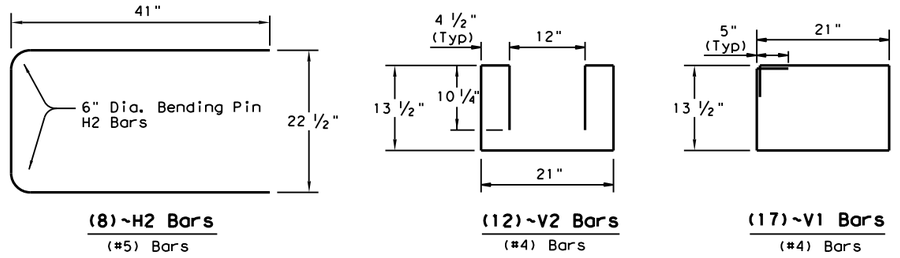
FILE: taumn19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
©TxDOT: APRIL 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		98



PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



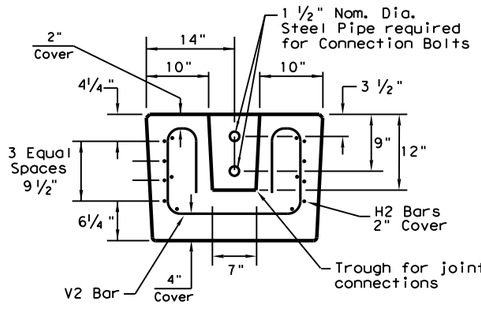
(8)~H2 Bars (#5) Bars

(12)~V2 Bars (#4) Bars

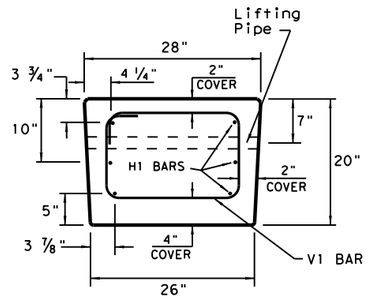
(17)~V1 Bars (#4) Bars

REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A



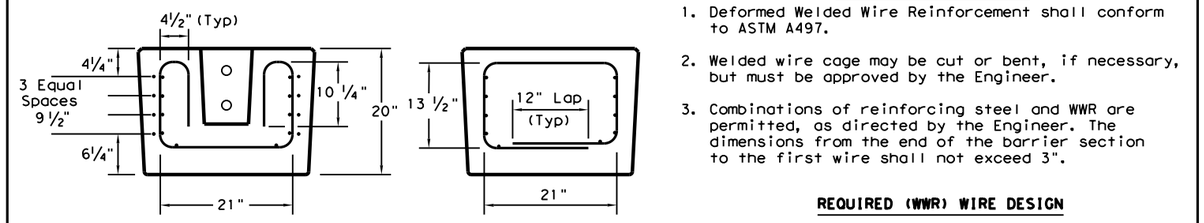
SECTION B-B

GENERAL NOTES

1. Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
2. Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
3. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
4. Precast LPCB barrier length shall be 20 ft.
5. All barrier edges shall have ¾" chamfer or a tooled radius.
6. Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts." and is considered subsidiary.
7. Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445, "Galvanizing."
8. Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

FOR CONTRACTORS INFORMATION ONLY

(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



SECTION A-A SECTION B-B

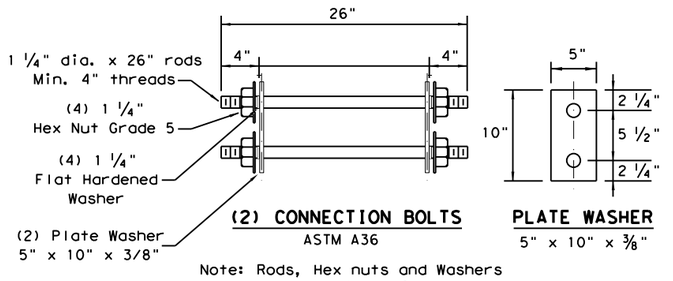
(WWR) GENERAL NOTES

1. Deformed Welded Wire Reinforcement shall conform to ASTM A497.
2. Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
3. Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".

REQUIRED (WWR) WIRE DESIGN

8 ~ (D31) Horizontal Wires (Equally spaced)
10 ~ (D20) Horizontal Wires (Equally spaced)
29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)

WELDED WIRE REINFORCEMENT (WWR)- OPTIONAL REINFORCING



(2) CONNECTION BOLTS ASTM A36

PLATE WASHER 5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

SHEET 1 OF 2

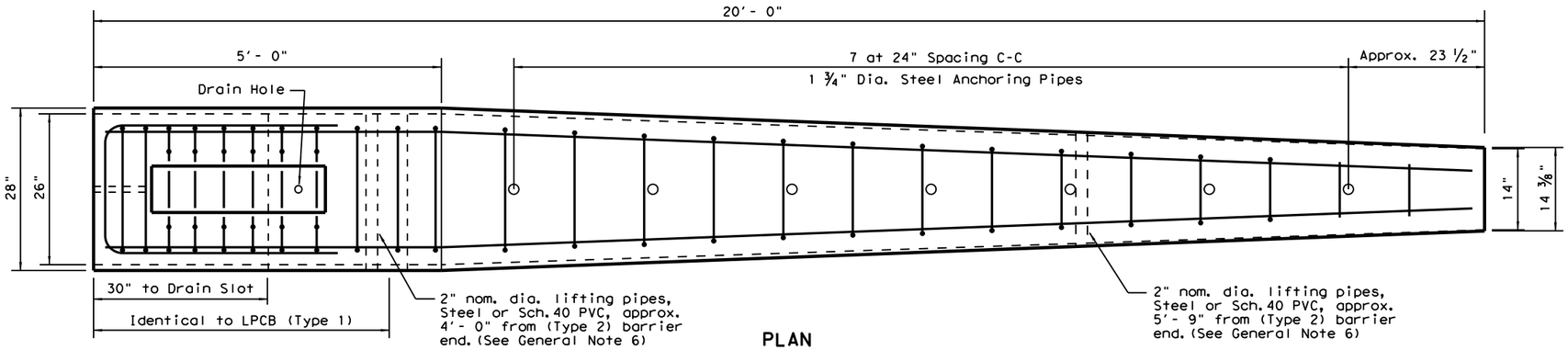
Texas Department of Transportation — Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 1)
LPCB-13

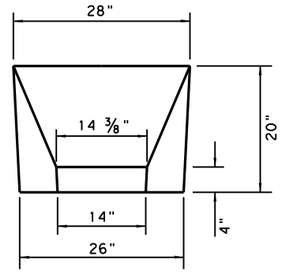
FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		99

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\lpcb13.dgn

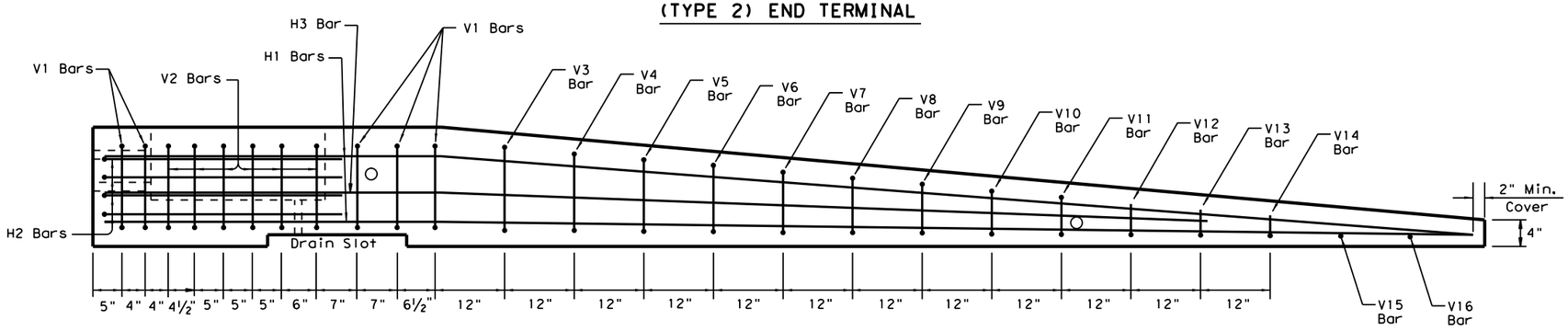
DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\lpcb13.dgn



PLAN
(TYPE 2) END TERMINAL



APPROACH VIEW

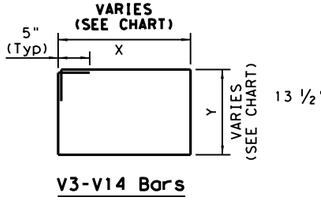


ELEVATION
(TYPE 2) END TERMINAL

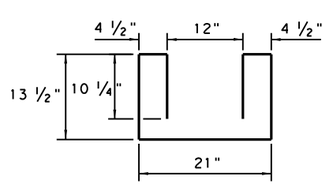
Note:
Anchoring pipes not shown in Elevation View

TYPE 2 - NOTES

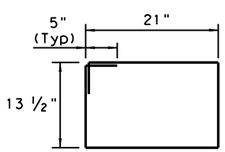
1. Welded wire reinforcment (WWR) is "not" an option for Type 2 Barrier.
2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement of the end treatment. The use of non-pinned end treatment does not affect the performance or the deflection of the Low-Profile barrier system.
4. The anchor pins are all the same length and are to be driven flush with the top of the (Type 2) barrier surface.
5. The bends in the H3 and H1 bars are slight, no formal bend is necessary.
6. The Type 2 barrier segment must be lifted from the rear first, to prevent cracking of sloped section.
7. See LPCB sheet 1 for additional information.



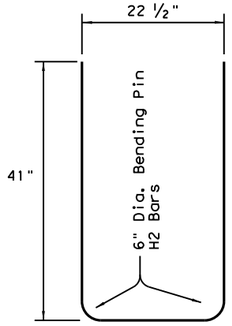
V3-V14 Bars



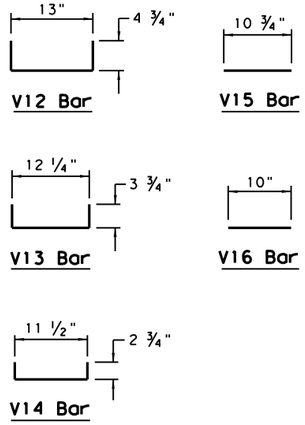
(6)~V2 Bars



(5)~V1 Bars



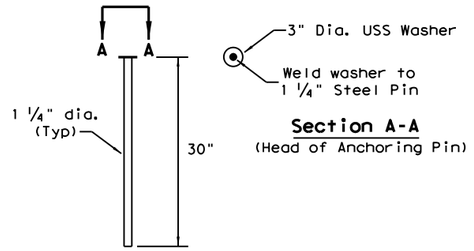
(4)~H2 Bars
(#5) Bars



Note: All V Bars are (#4)

BAR (#4)	X (IN.)	Y (IN.)
V3 BAR	20 ¼	14 ½
V4 BAR	19 ½	13 ½
V5 BAR	18 ½	12 ¼
V6 BAR	17 ½	11 ¼
V7 BAR	17	10 ¼
V8 BAR	16 ¼	9
V9 BAR	15 ½	8
V10 BAR	14 ½	7
V11 BAR	13 ¾	6

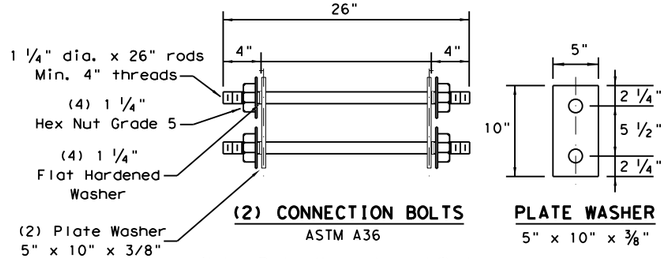
REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



(7) Anchor Pins
ASTM A36 Steel

Section A-A
(Head of Anchoring Pin)

(See Note 3)

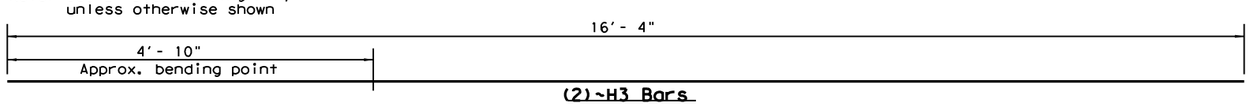


(2) CONNECTION BOLTS
ASTM A36

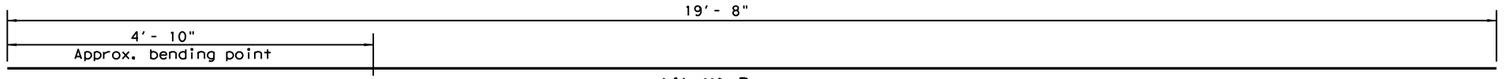
PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

Note: Use 2" Dia. Bending Pin, unless otherwise shown



(2)~H3 Bars
(#5) Bar



Note: Bends on H1 and H3 bars are slight and do not require formal bends.

(4)~H1 Bars
(#5) Bar

FOR CONTRACTORS INFORMATION ONLY

(TYPE 2) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	1.65
REINFORCING STEEL	LBS	240
TOTAL BARRIER WT.	LBS	7000

Texas Department of Transportation

Design Division Standard

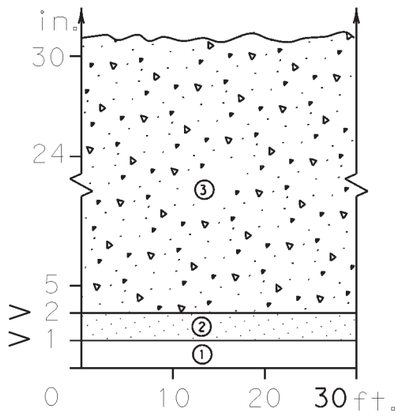
LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 2)
LPCB-13

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		100

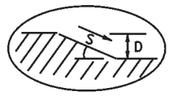
DATE: 6/12/2023 2:41:25 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832979\edgecon-21.dgn

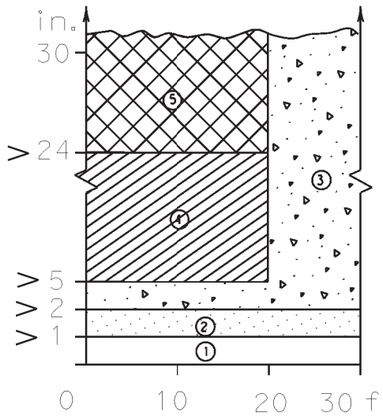
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet

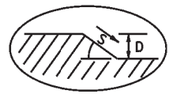


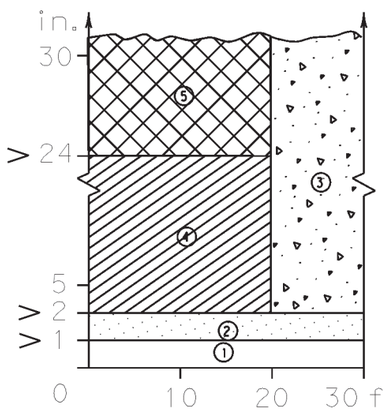
Edge Condition I
S = (3:1) (or flatter)



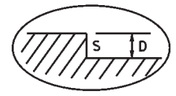


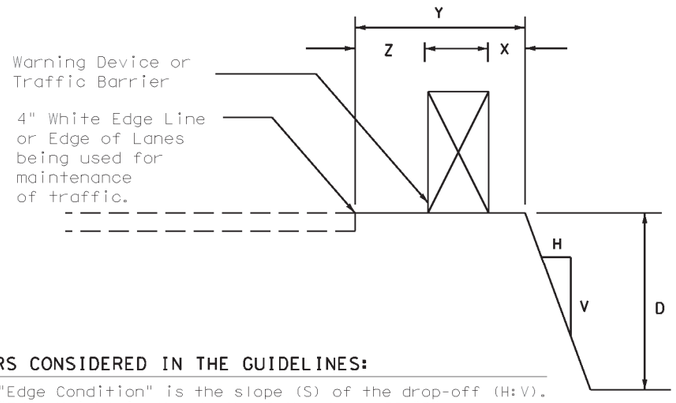
Edge Condition II
S = ((2.99):1) to (1:1)





Edge Condition III
S is steeper than (1:1)





FACTORS CONSIDERED IN THE GUIDELINES:

1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".

2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.

3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.

4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.

5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
⑤	Check indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

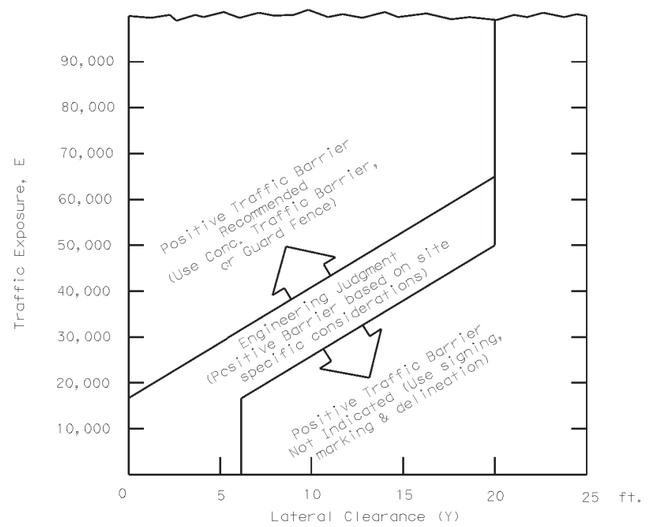
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.

3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.

4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 (▩)



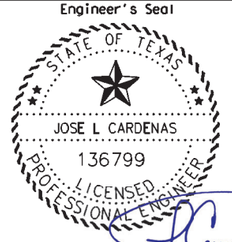
1. E = ADT x T
Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.

3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

Engineer's Seal



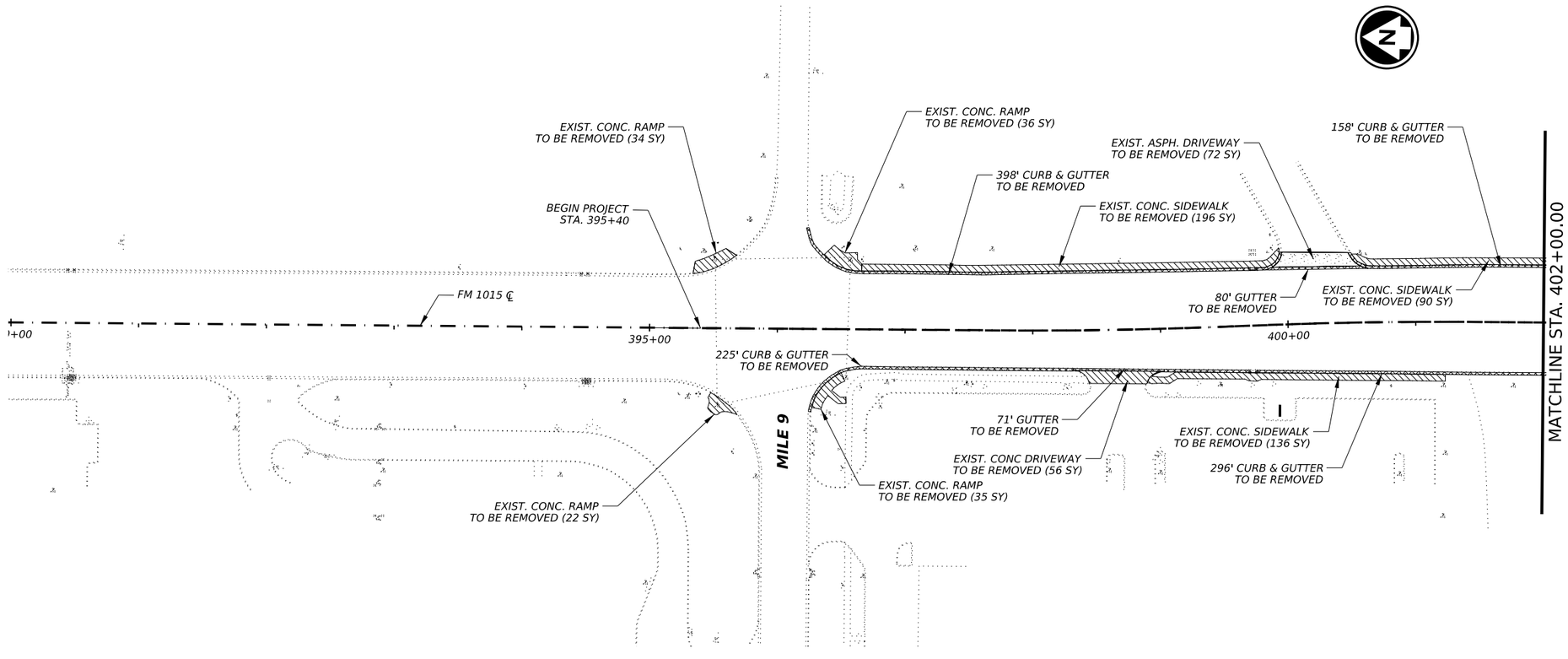
Date 06/30/2023

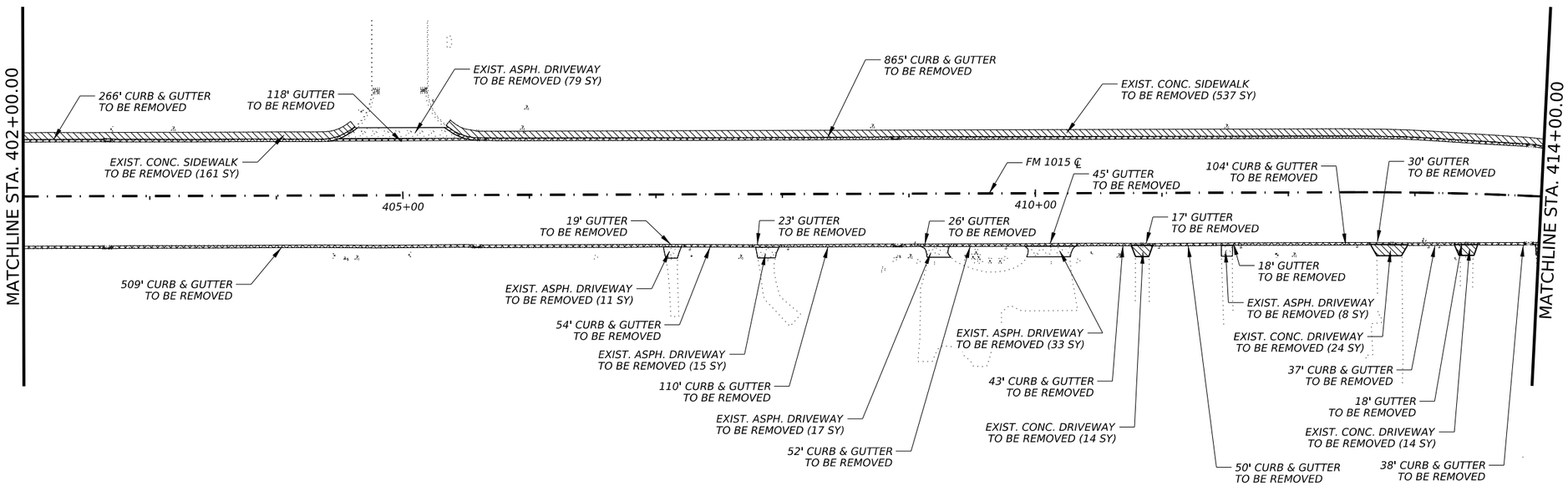
Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE	edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT	August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS		1228	03	050	FM 1015
03-01 08-01 9-21		DIST	COUNTY		SHEET NO.
		PHR	HIDALGO		101





LEGEND

- CONCRETE TO BE REMOVED
- CALICHE TO BE REMOVED
- ASPHALT TO BE REMOVED

NOTES

1. DRIVEWAYS SHALL BE SAW CUT AT R.O.W. LINE OR SPECIFIED LIMITS. SAW CUT SHALL BE SUBSIDIARY TO ITEM 104.
2. ANY ADDITIONAL ITEMS NOT SPECIFICALLY CALLED OUT FOR REMOVAL SHALL BE CONSIDERED SUBSIDIARY TO ITEM 100 PREP. R.O.W.
3. QUANTITIES SHOWN FOR REMOVAL OF CALICHE (GRAVEL) AND ASPHALT DRIVEWAYS IS FOR CONTRACTOR INFORMATION ONLY. REMOVAL IS SUBSIDIARY TO ITEM 100 PREP. R.O.W.
4. EXISTING CONCRETE PAVEMENT TO BE REMOVED PER TCP PHASE CONSTRUCTION. REFER TO TRAFFIC CONTROL PLANS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

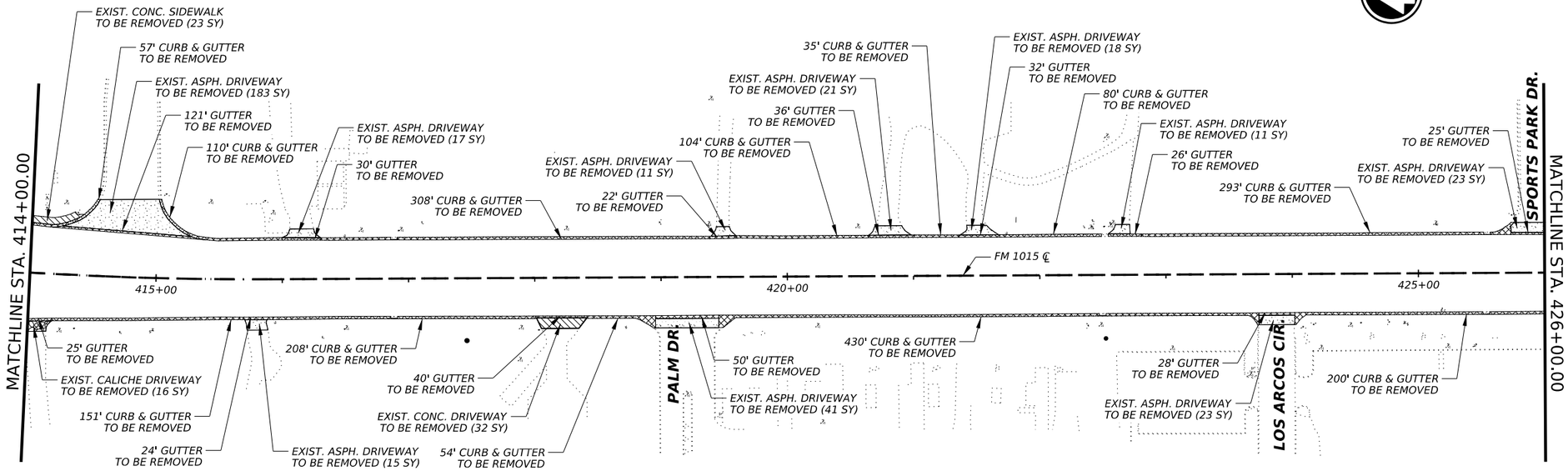
REMOVAL LAYOUTS

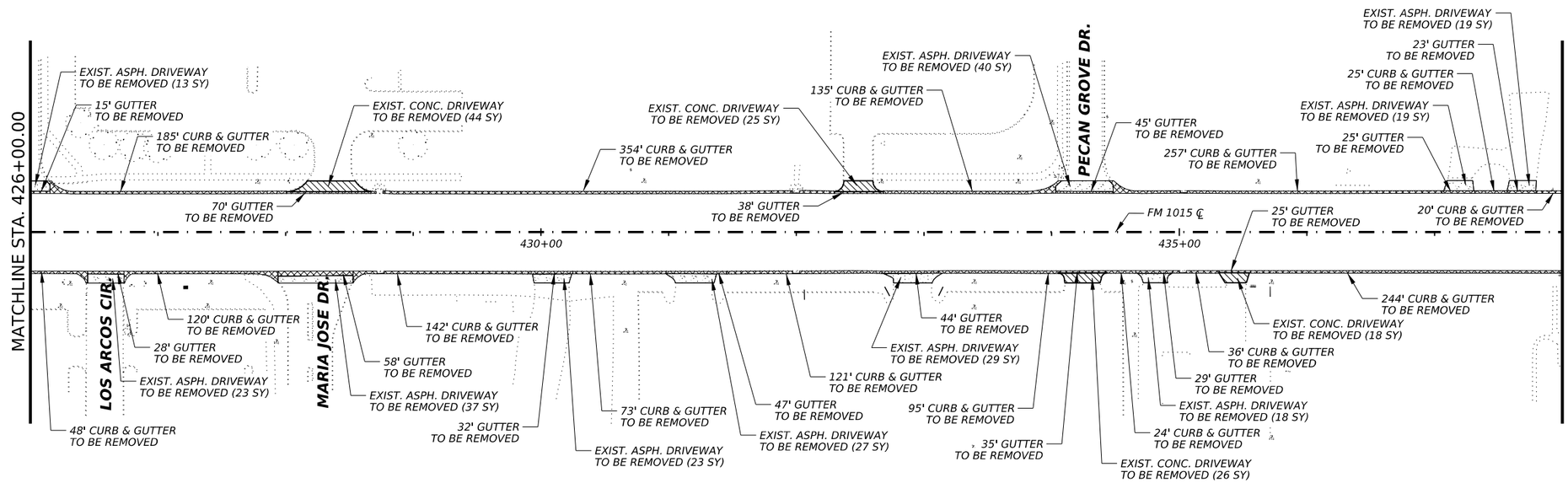
SCALE: 1" = 100'

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		102

DATE: 6/12/2023 2:02:21 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745189\FM1015_REMOVAL_01.dgn





LEGEND

- CONCRETE TO BE REMOVED
- CALICHE TO BE REMOVED
- ASPHALT TO BE REMOVED

NOTES

1. DRIVEWAYS SHALL BE SAW CUT AT R.O.W. LINE OR SPECIFIED LIMITS. SAW CUT SHALL BE SUBSIDIARY TO ITEM 104.
2. ANY ADDITIONAL ITEMS NOT SPECIFICALLY CALLED OUT FOR REMOVAL SHALL BE CONSIDERED SUBSIDIARY TO ITEM 100 PREP. R.O.W.
3. QUANTITIES SHOWN FOR REMOVAL OF CALICHE (GRAVEL) AND ASPHALT DRIVEWAYS IS FOR CONTRACTOR INFORMATION ONLY. REMOVAL IS SUBSIDIARY TO ITEM 100 PREP. R.O.W.
4. EXISTING CONCRETE PAVEMENT TO BE REMOVED PER TCP PHASE CONSTRUCTION. REFER TO TRAFFIC CONTROL PLANS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

REMOVAL LAYOUTS

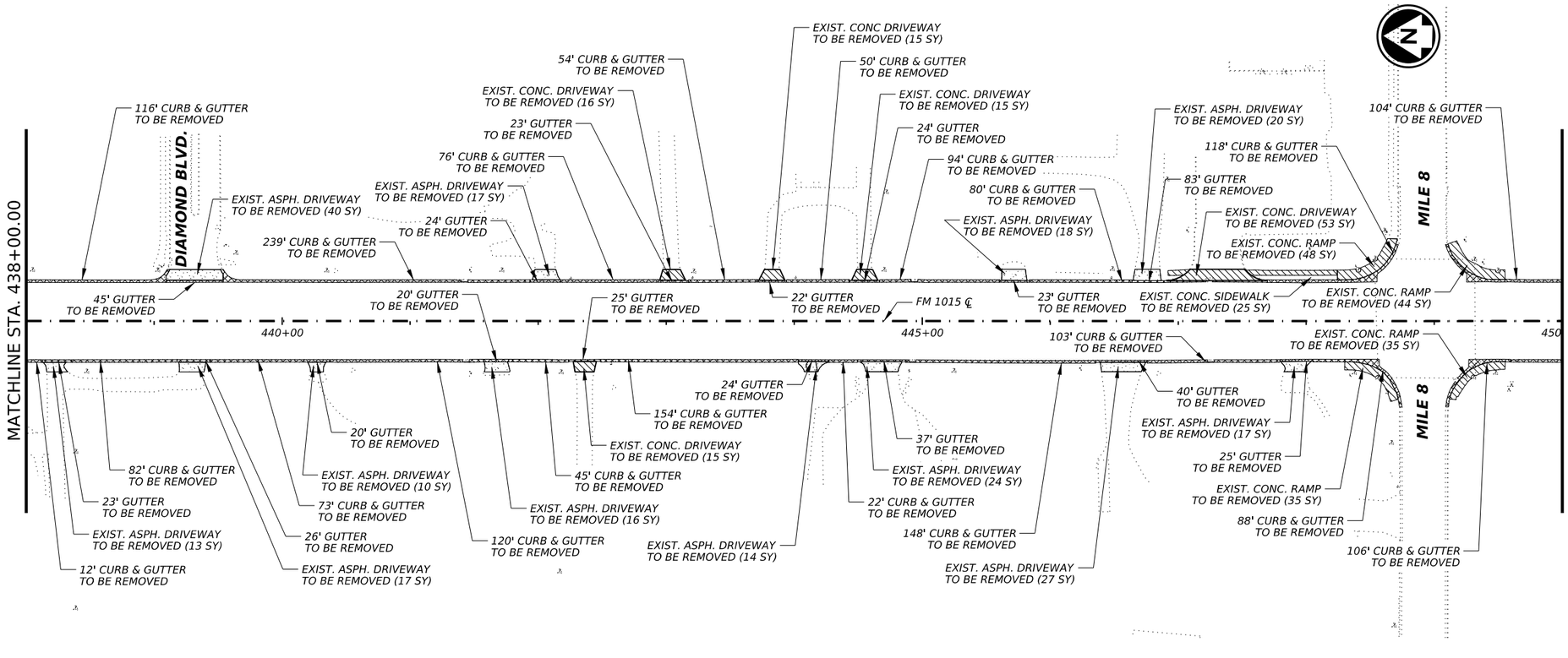
SCALE: 1" = 100'

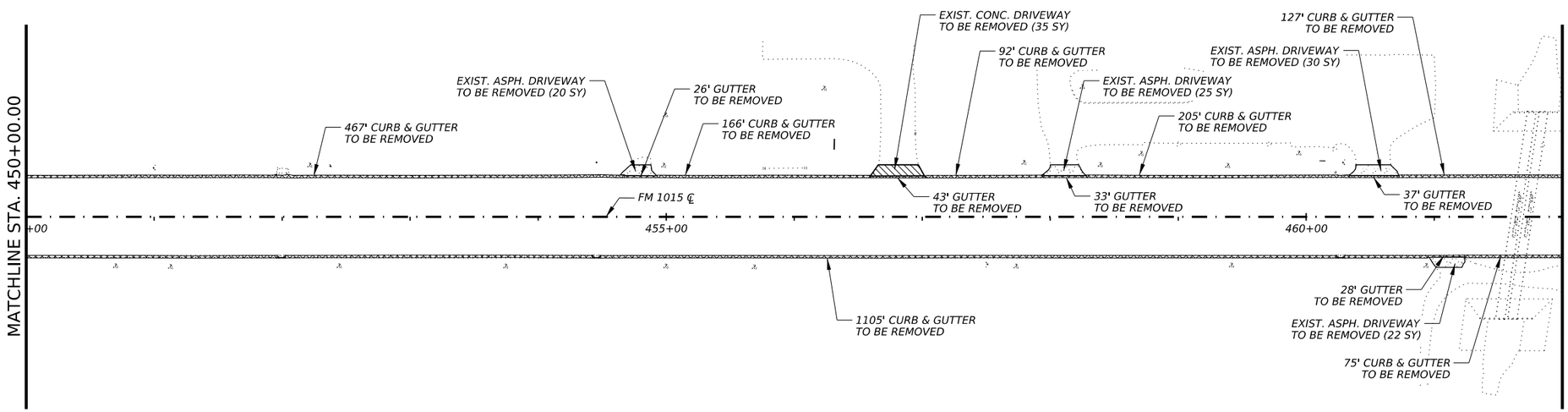
SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	103

DATE: 6/12/2023 2:02:31 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745189\FM1015_REMOVAL_02.dgn





STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

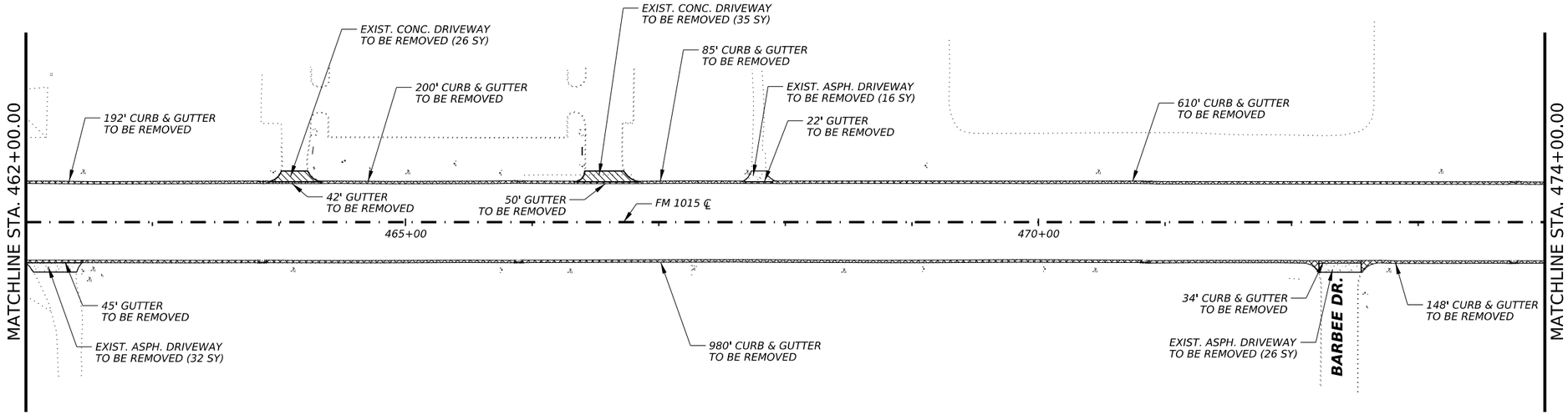
FM 1015

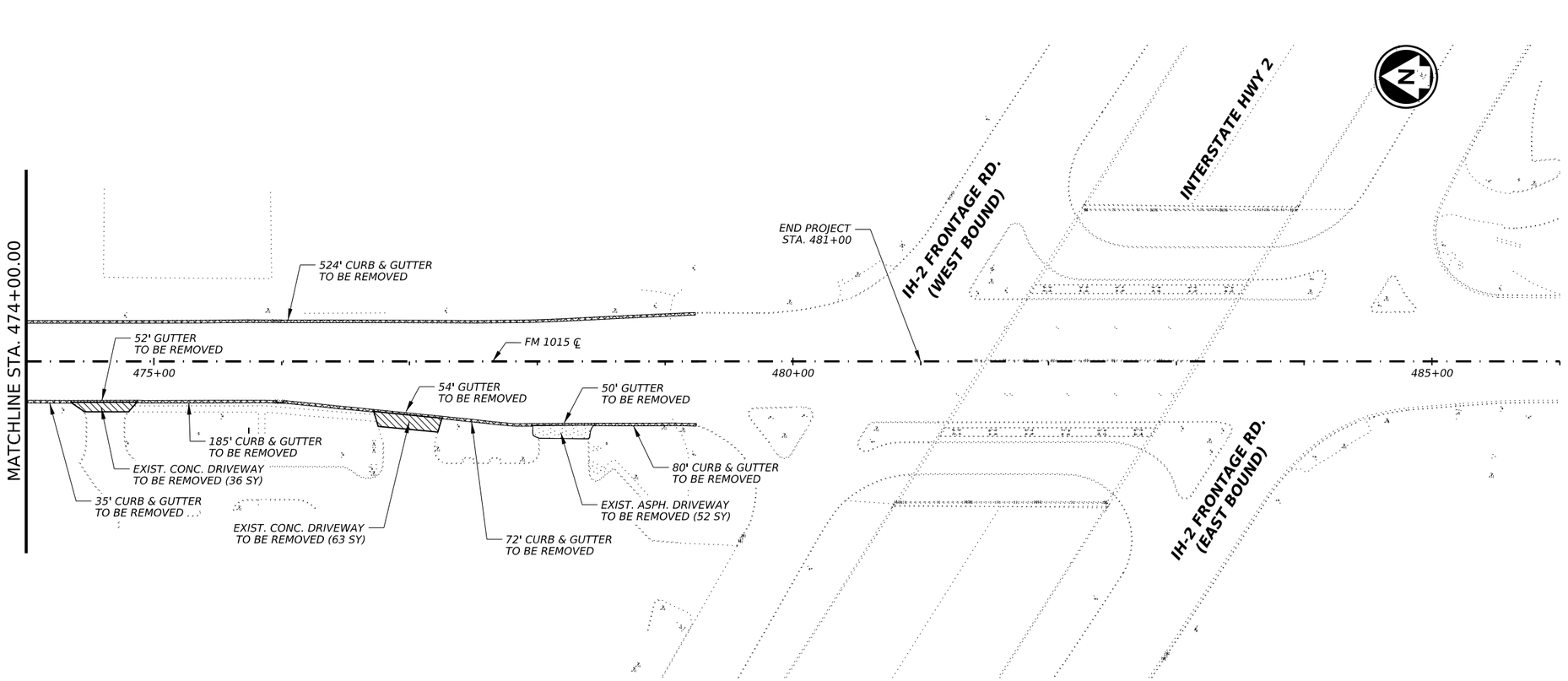
REMOVAL LAYOUTS

SCALE: 1" = 100' SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		104

DATE: 6/12/2023 2:02:40 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745189\FM1015_REMOVAL_03.dgn





LEGEND

- CONCRETE TO BE REMOVED
- CALICHE TO BE REMOVED
- ASPHALT TO BE REMOVED

NOTES

1. DRIVEWAYS SHALL BE SAW CUT AT R.O.W. LINE OR SPECIFIED LIMITS. SAW CUT SHALL BE SUBSIDIARY TO ITEM 104.
2. ANY ADDITIONAL ITEMS NOT SPECIFICALLY CALLED OUT FOR REMOVAL SHALL BE CONSIDERED SUBSIDIARY TO ITEM 100 PREP. R.O.W.
3. QUANTITIES SHOWN FOR REMOVAL OF CALICHE (GRAVEL) AND ASPHALT DRIVEWAYS IS FOR CONTRACTOR INFORMATION ONLY. REMOVAL IS SUBSIDIARY TO ITEM 100 PREP. R.O.W.
4. EXISTING CONCRETE PAVEMENT TO BE REMOVED PER TCP PHASE CONSTRUCTION. REFER TO TRAFFIC CONTROL PLANS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

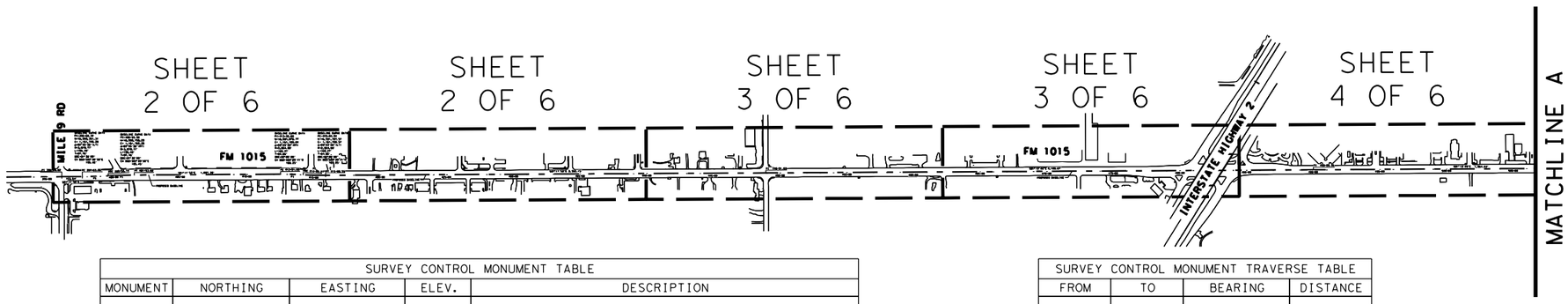
REMOVAL LAYOUTS

SCALE: 1" = 100'

SHEET 4 OF 4

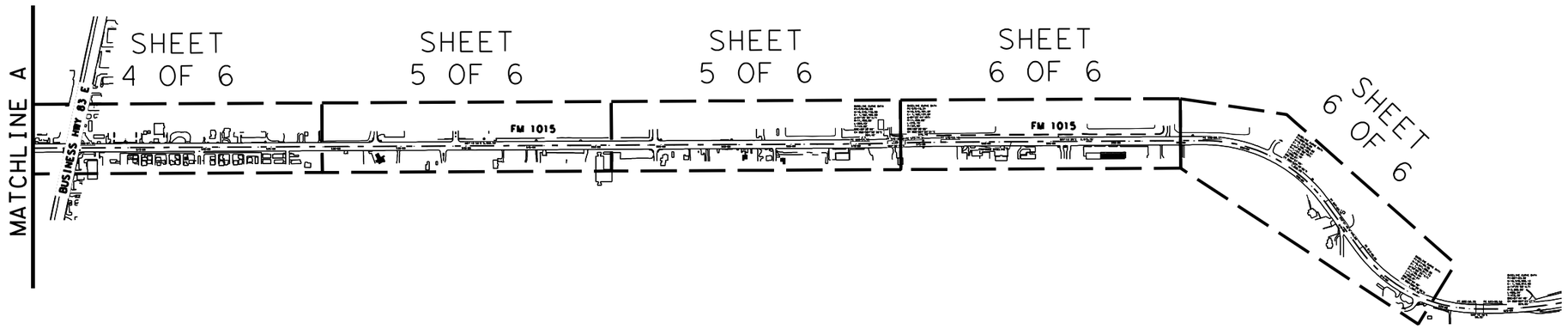
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		105

DATE: 6/12/2023 2:02:54 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745189\FM1015_REMOVAL_04.dgn



SURVEY CONTROL MONUMENT TABLE				
MONUMENT	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-1	16,593,546.31	1,161,794.91	66.15′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-2	16,592,671.39	1,161,827.87	65.50′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-3	16,591,787.38	1,161,831.19	66.81′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-4	16,590,588.20	1,161,848.88	67.56′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-5	16,589,829.42	1,161,867.31	67.40′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-6	16,588,514.98	1,161,888.98	67.16′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-7	16,587,622.90	1,161,830.16	67.45′	SET 5/8"I.R. W/TxDOT ALUMINUM CAP IN CONCRETE
BM-8	16,586,586.63	1,161,852.52	67.67′	SET 5/8"I.R. W/TxDOT ALUMINUM CAP IN CONCRETE
BM-9	16,585,546.01	1,161,866.19	68.72′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-10	16,584,736.25	1,161,973.88	68.82′	SET 3-1/4" TxDOT ALUMINUM CAP IN BRICK ISLAND
BM-11	16,583,646.60	1,162,008.96	71.79′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-12	16,583,011.04	1,162,006.69	72.77′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-13	16,581,824.72	1,162,028.63	75.84′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-14	16,580,760.56	1,162,050.71	80.00′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-15	16,579,872.97	1,162,071.49	72.26′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-16	16,579,078.11	1,162,101.67	69.69′	SET 3-1/4" TxDOT ALUMINUM CAP IN HEADWALL
BM-17	16,577,718.45	1,162,114.54	67.35′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-18	16,576,825.58	1,162,038.33	65.93′	SET 3-1/4" TxDOT ALUMINUM CAP IN HEADWALL
BM-19	16,575,697.99	1,162,090.36	67.73′	SET 5/8"I.R. W/TxDOT ALUMINUM CAP IN CONCRETE
BM-20	16,574,606.46	1,162,112.48	70.90′	SET 3-1/4" TxDOT ALUMINUM CAP IN SIDEWALK
BM-21	16,573,628.47	1,162,211.94	71.61′	SET 5/8"I.R. W/TxDOT ALUMINUM CAP IN CONCRETE
BM-22	16,572,703.01	1,161,889.36	68.22′	SET 5/8"I.R. W/TxDOT ALUMINUM CAP IN CONCRETE
BM-23	16,571,869.50	1,160,948.69	74.42′	SET 5/8"I.R. W/TxDOT ALUMINUM CAP IN CONCRETE

SURVEY CONTROL MONUMENT TRAVERSE TABLE			
FROM	TO	BEARING	DISTANCE
BM-1	BM-2	S02°09′27"E	875.53′
BM-2	BM-3	S00°12′56"E	884.02′
BM-3	BM-4	S00°50′42"E	1,199.31′
BM-4	BM-5	S01°23′30"E	759.00′
BM-5	BM-6	S00°56′41"E	1,314.62′
BM-6	BM-7	S03°46′20"W	894.02′
BM-7	BM-8	S01°14′10"E	1,036.52′
BM-8	BM-9	S00°45′09"E	1,040.71′
BM-9	BM-10	S07°34′31"E	816.89′
BM-10	BM-11	S01°50′38"E	1,090.22′
BM-11	BM-12	S00°12′16"W	635.56′
BM-12	BM-13	S01°03′33"E	1,186.53′
BM-13	BM-14	S01°11′20"E	1,064.39′
BM-14	BM-15	S01°20′27"E	887.83′
BM-15	BM-16	S02°10′29"E	795.43′
BM-16	BM-17	S00°32′31"E	1,359.73′
BM-17	BM-18	S04°52′43"W	896.11′
BM-18	BM-19	S02°38′31"E	1,128.79′
BM-19	BM-20	S01°09′40"E	1,091.76′
BM-20	BM-21	S05°48′23"E	983.03′
BM-21	BM-22	S19°13′00"W	980.07′
BM-22	BM-23	S48°27′23"W	1,256.81′



GRAPHIC SCALE

0 500 1000 1500

1" = 1000'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

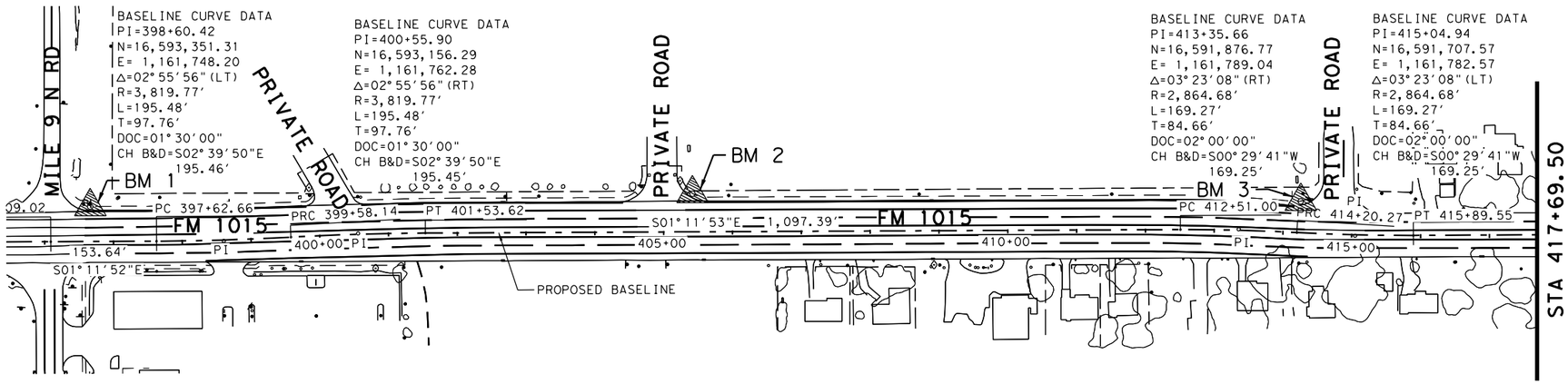
AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

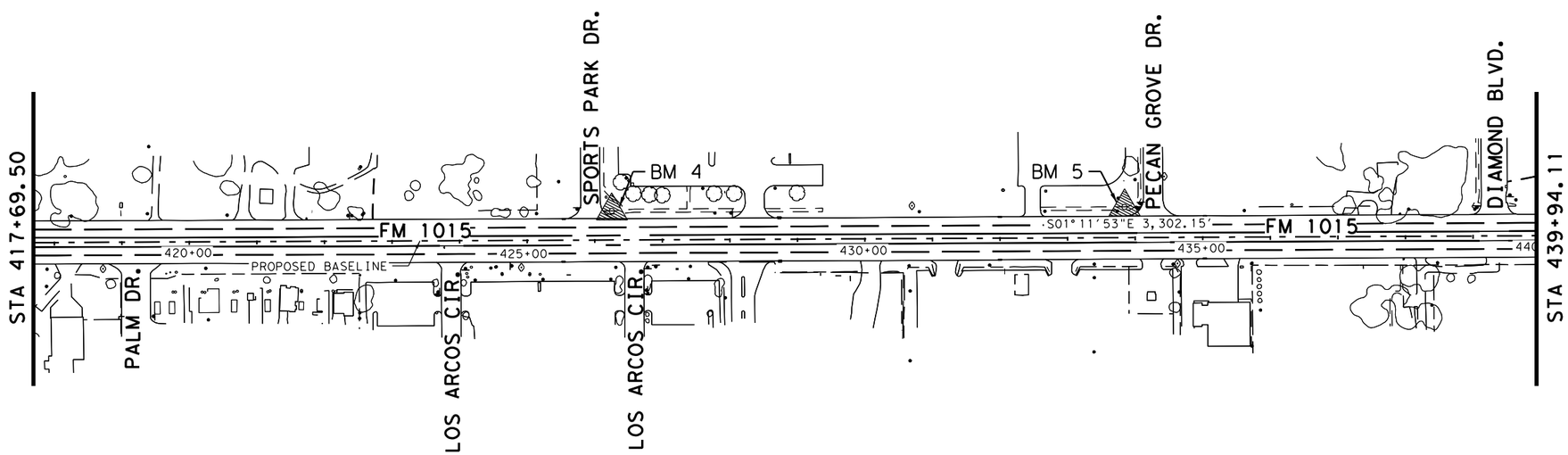
Texas Department of Transportation

FM 1015
SURVEY CONTROL INDEX

1 OF 6

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	106





GRAPHIC SCALE

0 100 200 300

1" = 200'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

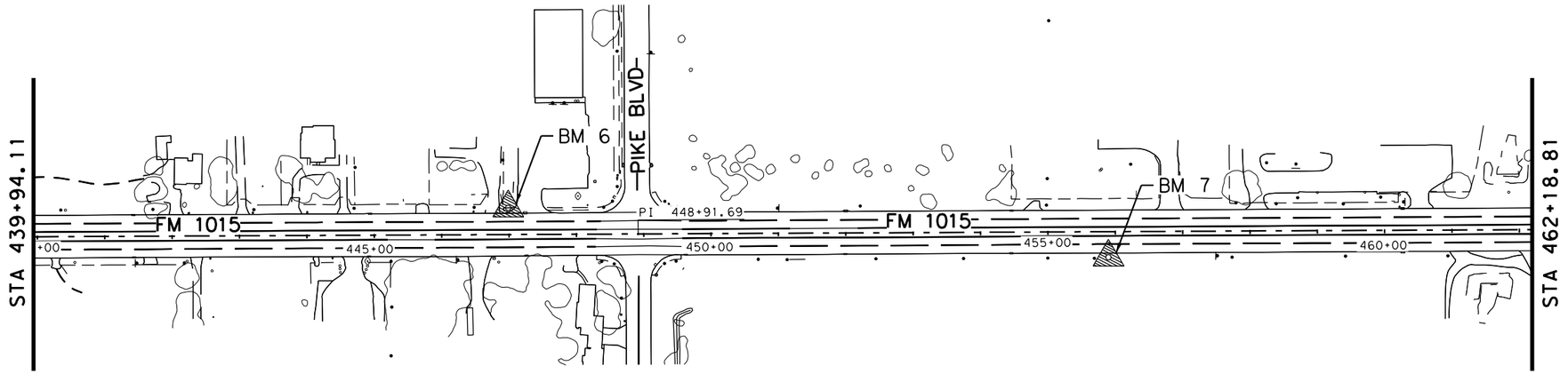
THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

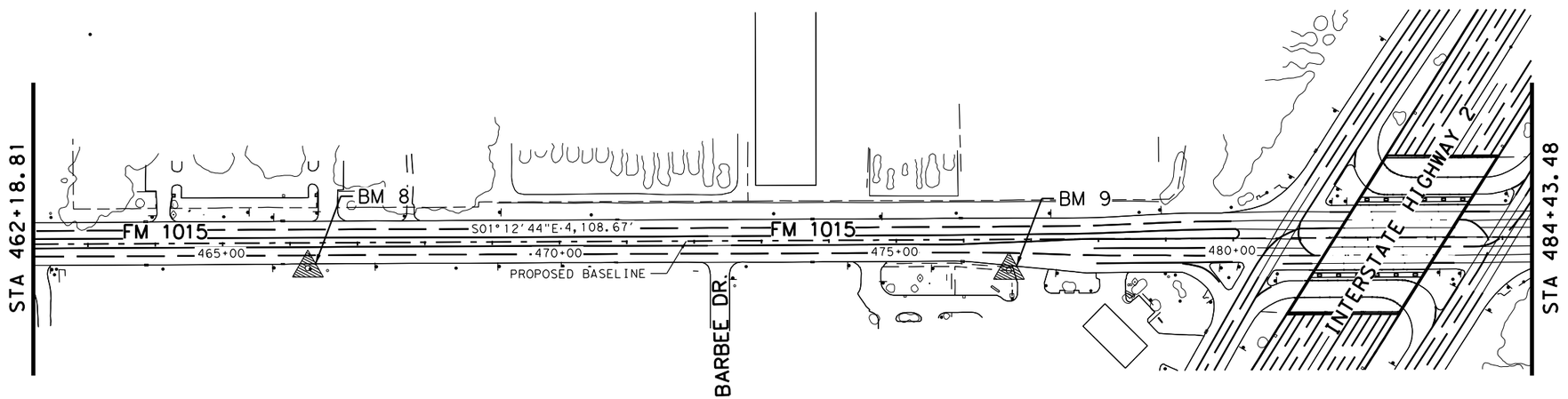
AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

FM 1015
SURVEY CONTROL INDEX

2 OF 6

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	107





GRAPHIC SCALE

0 100 200 300

1" = 200'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

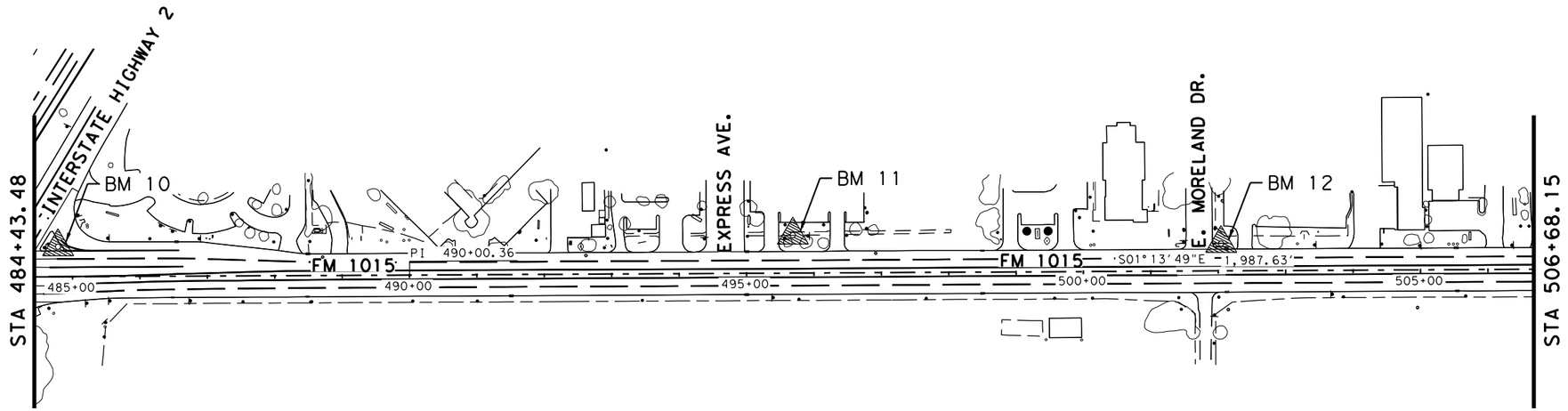
AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

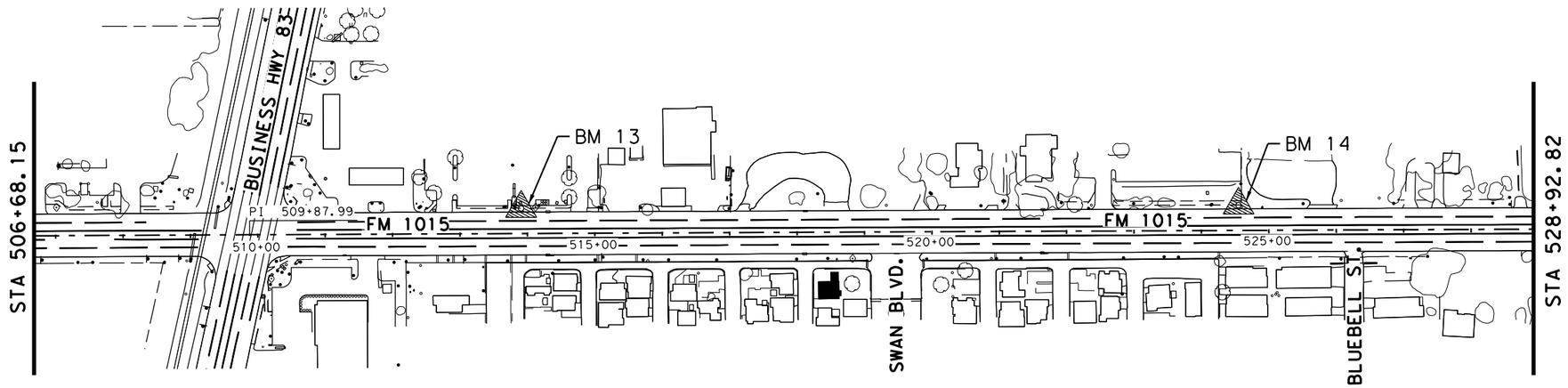
Texas Department of Transportation

FM 1015
SURVEY CONTROL INDEX

3 OF 6

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	108





GRAPHIC SCALE

0 100 200 300

1" = 200'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

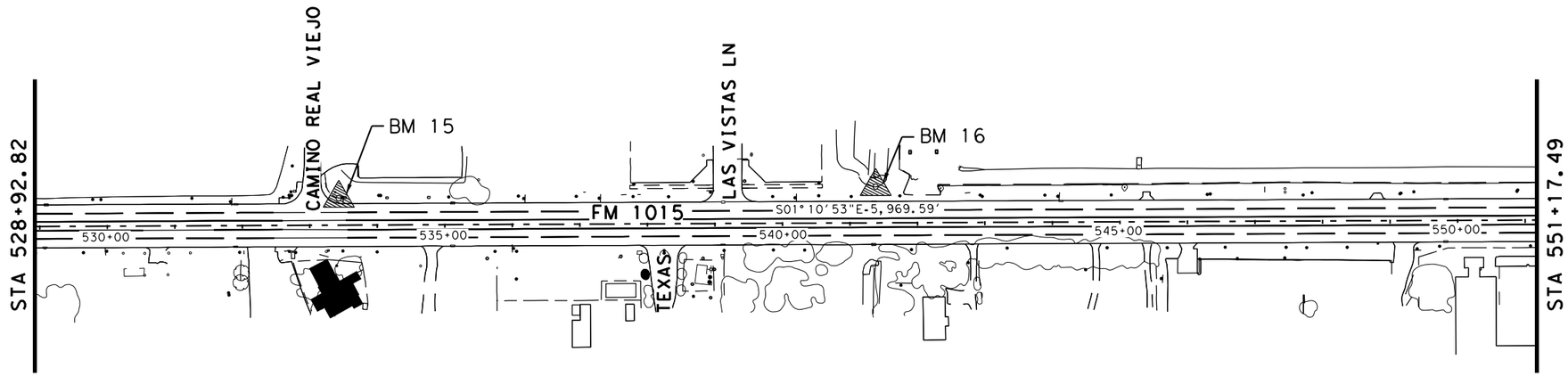
THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

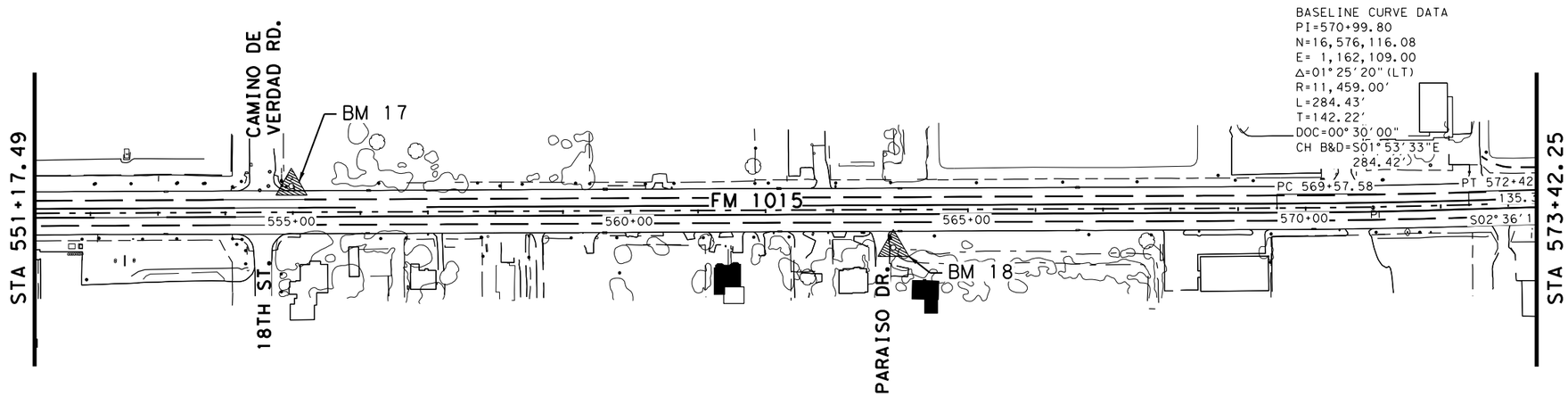
AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

FM 1015
SURVEY CONTROL INDEX

4 OF 6

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	109





GRAPHIC SCALE

0 100 200 300

1" = 200'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

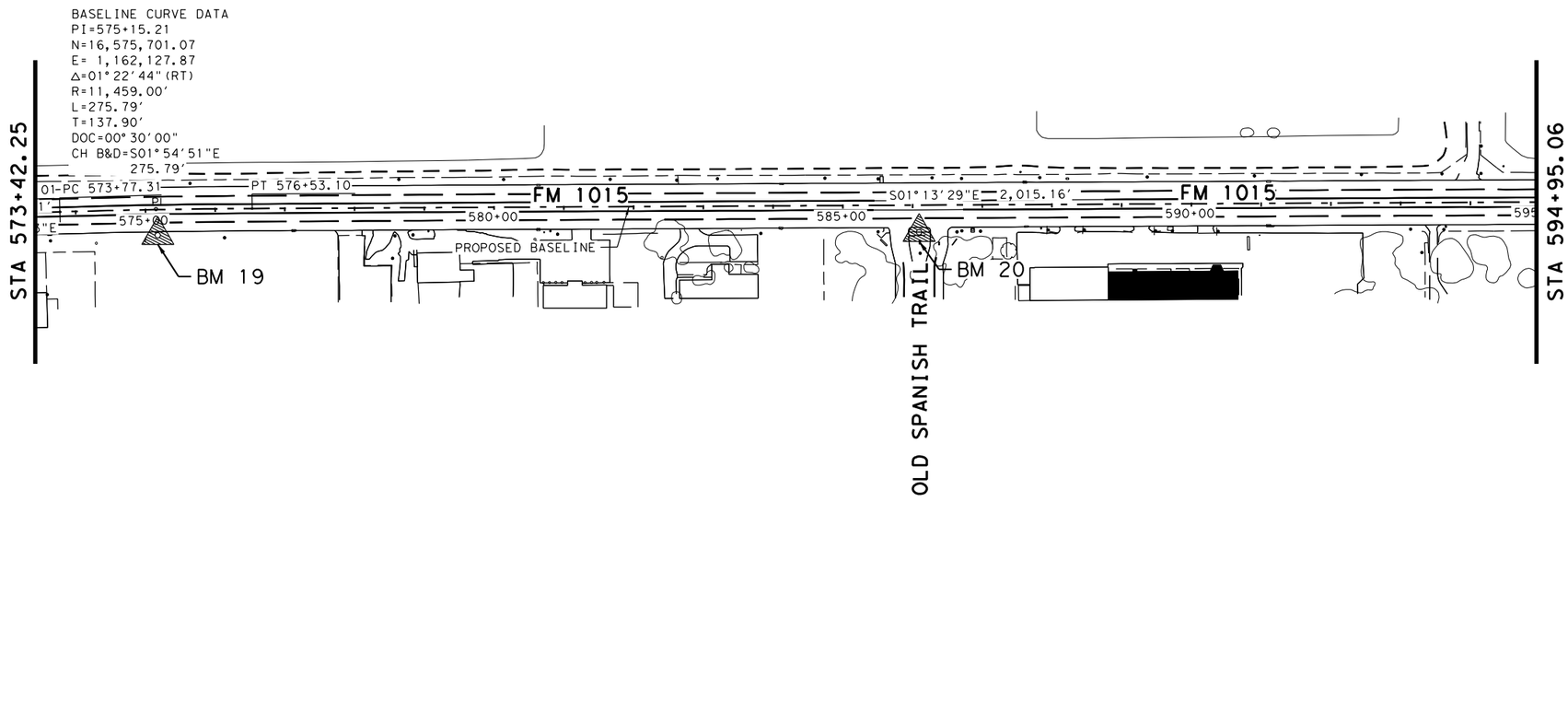
AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

FM 1015
SURVEY CONTROL INDEX

5 OF 6

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	110



GRAPHIC SCALE

0 100 200 300

1" = 200'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

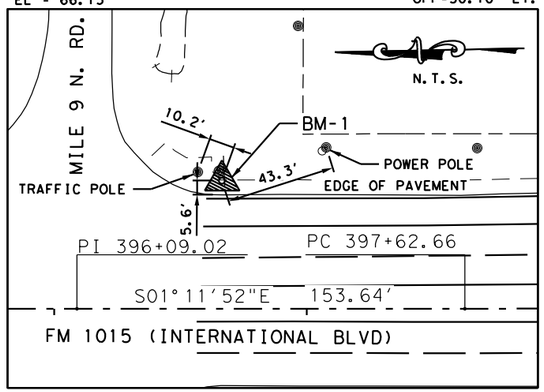
FM 1015
SURVEY CONTROL INDEX

6 OF 6

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	111

BM-1
N = 16,593,546.31
E = 1,161,794.91
EL = 66.15'

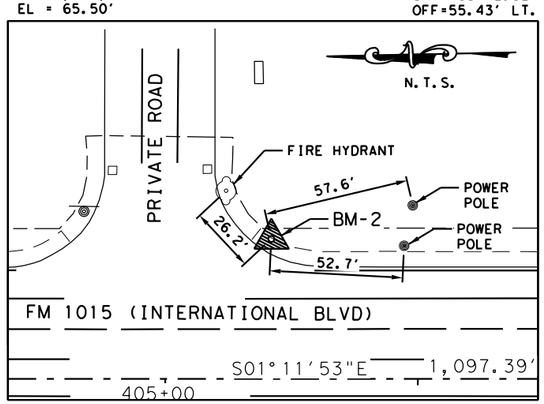
STA=396+66.74
OFF=50.70' LT.



BM-1 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 78' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND MILE 9 N. RD. AND 45' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 5.6' EAST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, 10.2' SOUTHWEST OF A TRAFFIC POLE, AND 43.3' NORTHWEST OF A POWER POLE.

BM-2
N = 16,592,671.39
E = 1,161,827.87
EL = 65.50'

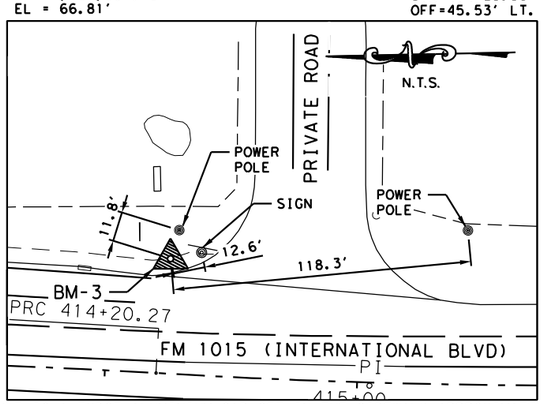
STA=405+42.02
OFF=55.43' LT.



BM-2 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 0.2 MILES SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND MILE 9 N. RD. AND 50' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.)AND 26.2' SOUTHWEST OF A FIRE HYDRANT, 57.6' NORTHWEST OF A POWER POLE, AND 52.7' NORTH OF A POWER POLE.

BM-3
N = 16,591,787.38
E = 1,161,831.19
EL = 66.81'

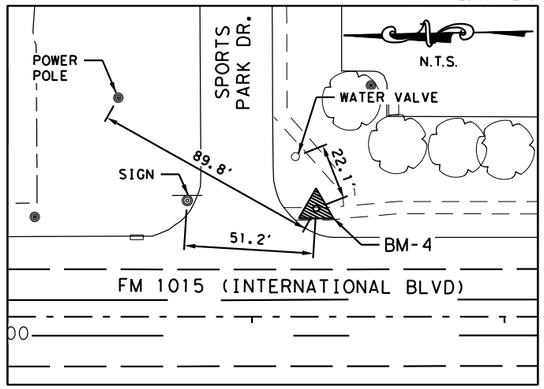
STA=414+23.38
OFF=45.53' LT.



BM-3 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 0.35 MILES SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND MILE 9 N. RD. AND 43' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 11.8' NORTHWEST OF A POWER POLE, 12.6' NORTH OF A SIGN, AND 118.3' NORTH OF A POWER POLE.

BM-4
N = 16,590,588.20
E = 1,161,848.88
EL = 67.56'

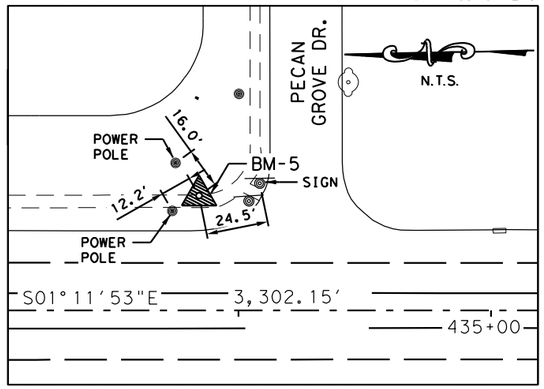
STA=426+25.40
OFF=42.88' LT.



BM-4 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 55' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND SPORTS PARK DR. AND 42' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.)AND 51.2' SOUTH OF A SIGN, 89.8' SOUTHWEST OF A POWER POLE, AND 22.1' WEST OF A WATER VALVE.

BM-5
N = 16,589,829.42
E = 1,161,867.31
EL = 67.40'

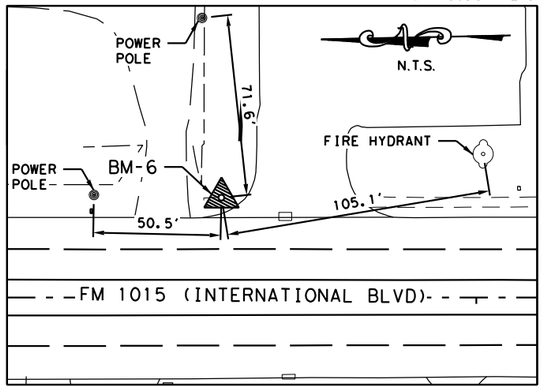
STA=433+84.40
OFF=45.45' LT.



BM-5 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 65' NORTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND PECAN GROVE DR. AND 45' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.)AND 12.2' SOUTHEAST OF A POWER POLE, 16.0' SOUTHWEST OF A POWER POLE, AND 24.5' NORTH OF A SIGN.

BM-6
N = 16,588,514.98
E = 1,161,888.98
EL = 67.16'

STA=446+99.00
OFF=39.64' LT.



BM-6 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 200' NORTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND EAST PIKE BLVD. AND 39' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 71.6' WEST OF A POWER POLE, 50.5' SOUTH OF A POWER POLE, AND 105.1' NORTH OF A FIRE HYDRANT.

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

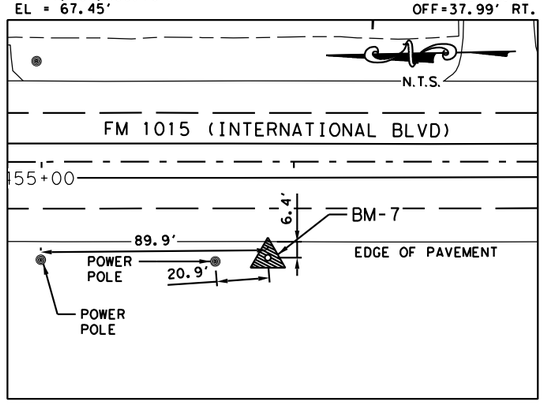
FM 1015
HORIZONTAL AND VERTICAL CONTROL SHEET

1 OF 4

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	112

BM-7
N = 16,587,622.90
E = 1,161,830.16
EL = 67.45'

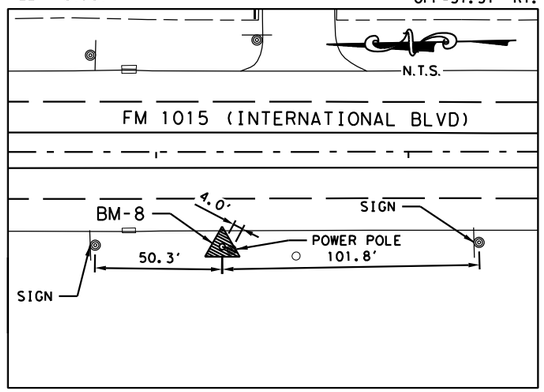
STA=455+89.65
OFF=37.99' RT.



BM-7 IS A TXDOT ALUMINIUM CAP SET IN CONCRETE APPROXIMATELY 0.13 MILES SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND EAST PIKE BLVD. AND 39' WEST OF THE CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 20.9' SOUTH OF A POWER POLE, 89.9' SOUTH OF A POWER POLE, AND 6.4' WEST OF THE EDGE OF PAVEMENT.

BM-8
N = 16,586,586.63
E = 1,161,852.52
EL = 67.67'

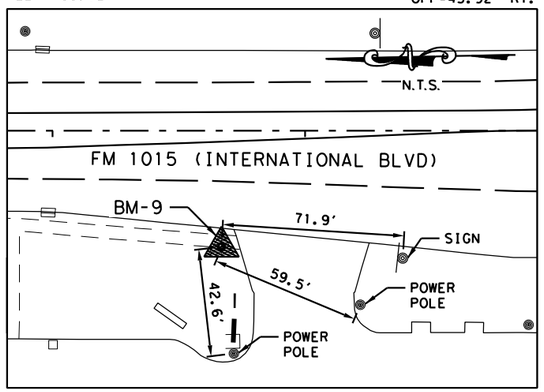
STA=466+26.16
OFF=37.57' RT.



BM-8 IS A TXDOT ALUMINIUM CAP SET IN CONCRETE APPROXIMATELY 0.12 MILES NORTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND BARBEE DR. AND 39' WEST OF THE CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 4.0' NORTHEAST OF A POWER POLE, 50.3' SOUTH OF A SIGN, AND 101.8' NORTH OF A SIGN.

BM-9
N = 16,585,546.01
E = 1,161,866.19
EL = 68.72'

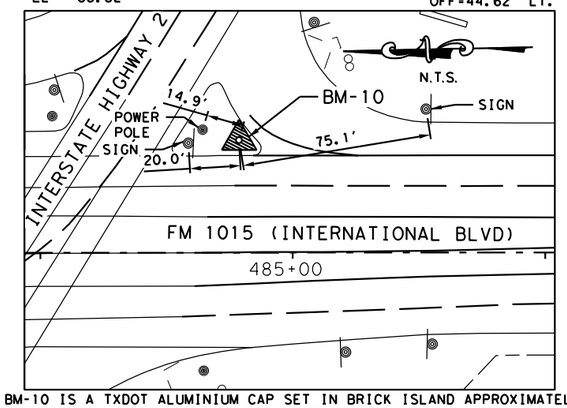
STA=476+66.84
OFF=45.92' RT.



BM-9 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 430' SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND BARBEE DR. AND 50' WEST OF THE CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 71.9' NORTH OF A SIGN, 59.5' NORTHEAST OF A POWER POLE, AND 42.6' EAST OF A POWER POLE.

BM-10
N = 16,584,736.25
E = 1,161,973.88
EL = 68.82'

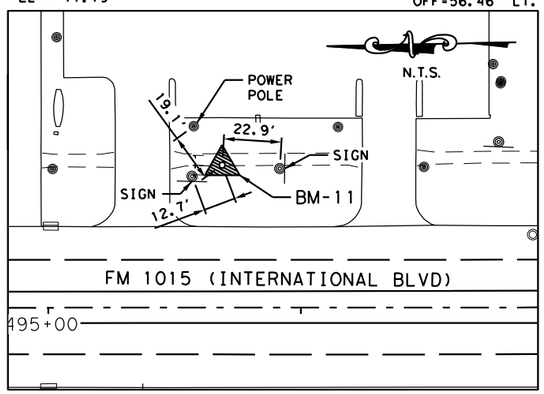
STA=484+78.69
OFF=44.62' LT.



BM-10 IS A TXDOT ALUMINIUM CAP SET IN BRICK ISLAND APPROXIMATELY 81' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND EAST EXPRESSWAY 83 AND 45' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 75.1' NORTH OF A SIGN, 14.9' SOUTH OF A POWER POLE, AND 20.0' SOUTH OF A SIGN.

BM-11
N = 16,583,646.60
E = 1,162,008.96
EL = 71.79'

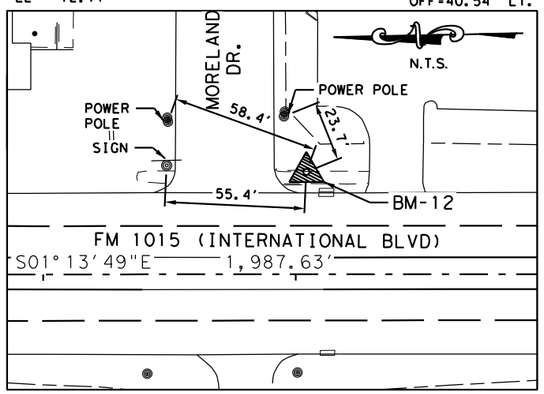
STA=495+68.86
OFF=56.46' LT.



BM-11 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 0.12 MILES NORTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND MORELAND DR. AND 56' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 22.9' NORTH OF A SIGN, 12.7' SOUTH OF A SIGN, AND 19.1' SOUTHWEST OF A POWER POLE.

BM-12
N = 16,583,011.04
E = 1,162,006.69
EL = 72.77'

STA=502+04.22
OFF=40.54' LT.



BM-12 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 49' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND MORELAND DR. AND 41' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 55.4' SOUTH OF A SIGN, 58.4' SOUTHWEST OF A POWER POLE, AND 23.7' WEST OF A POWER POLE.

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

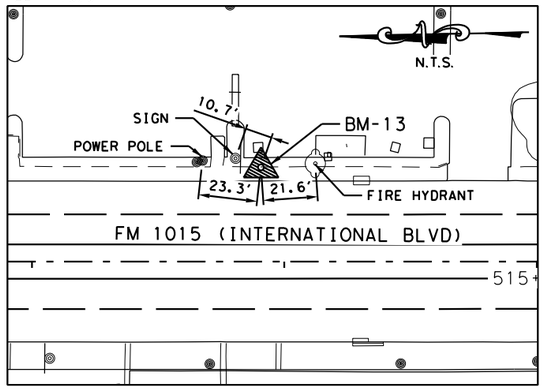
Texas Department of Transportation

FM 1015
HORIZONTAL AND VERTICAL CONTROL SHEET

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	113

BM-13
N = 16,581,824.72
E = 1,162,028.62
EL = 75.84'

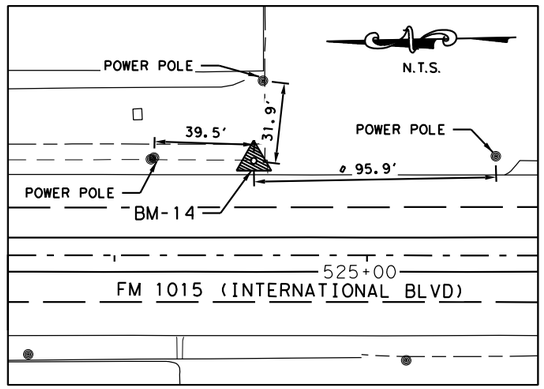
STA=513+90.72
OFF=37.35' LT.



BM-13 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 403' SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND BUSINESS HWY 83 AND 38' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 10.7' SOUTH OF A SIGN, 23.3' SOUTH OF A POWER POLE, AND 21.6' NORTH OF A FIRE HYDRANT.

BM-14
N = 16,580,760.56
E = 1,162,050.71
EL = 80.00'

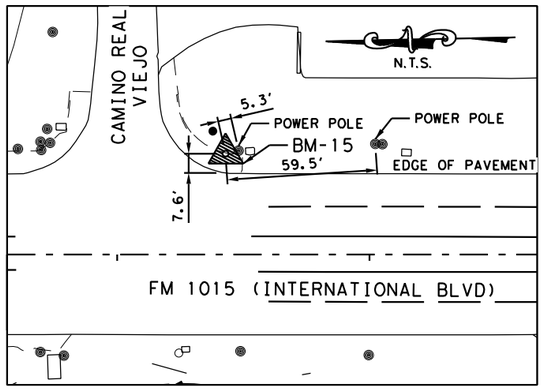
STA=524+55.10
OFF=37.49' LT.



BM-14 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 0.28 MILES SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND BUSINESS HWY 83 AND 37' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 39.5' SOUTH OF A POWER POLE, 31.9' WEST OF A POWER POLE, AND 95.9' NORTH OF A POWER POLE.

BM-15
N = 16,579,872.97
E = 1,162,071.49
EL = 72.26'

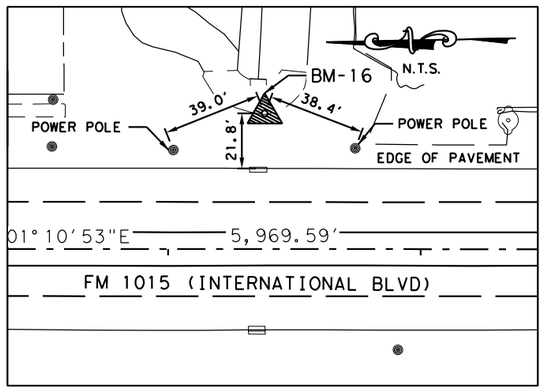
STA=533+42.93
OFF=39.95' LT.



BM-15 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 60' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND CAMINO REAL VIEJO AND 39' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 5.3' NORTH OF A POWER POLE, 7.6' EAST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, AND 59.5' NORTH OF A POWER POLE.

BM-16
N = 16,579,078.11
E = 1,162,101.67
EL = 69.69'

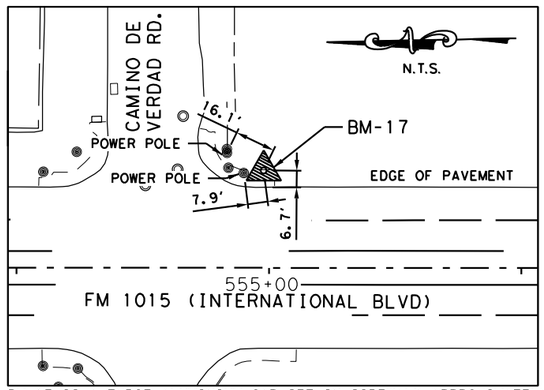
STA=541+38.24
OFF=53.74' LT.



BM-16 IS A TXDOT ALUMINIUM CAP SET IN HEADWALL OF DRAINAGE STRUCTURE APPROXIMATELY 0.16 MILES SOUTH OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND CAMINO REAL VIEJO AND 54' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 39.0' SOUTHEAST OF A POWER POLE, 21.8'EAST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, AND 38.4'NORTHEAST OF A POWER POLE.

BM-17
N = 16,577,718.45
E = 1,162,114.54
EL = 67.35'

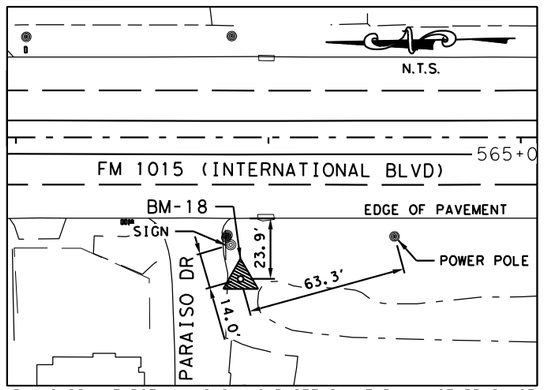
STA=554+97.88
OFF=38.57' LT.



BM-17 IS A TXDOT ALUMINIUM CAP SET IN SIDEWALK APPROXIMATELY 61' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND CAMINO DE VERDAD RD. AND 39' EAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 16.1' SOUTHWEST OF A POWER POLE, 6.7' EAST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, AND 7.9' SOUTH OF A POWER POLE.

BM-18
N = 16,576,825.58
E = 1,162,038.33
EL = 65.93'

STA=563+88.99
OFF=56.03' RT.



BM-18 IS A TXDOT ALUMINIUM CAP SET IN HEADWALL OF DRAINAGE STRUCTURE APPROXIMATELY 61' SOUTHWEST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND PARAISO DR. AND 57' WEST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 14.0' SOUTHWEST OF A SIGN, 23.9' WEST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, AND 63.3' NORTHWEST OF A POWER POLE.

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

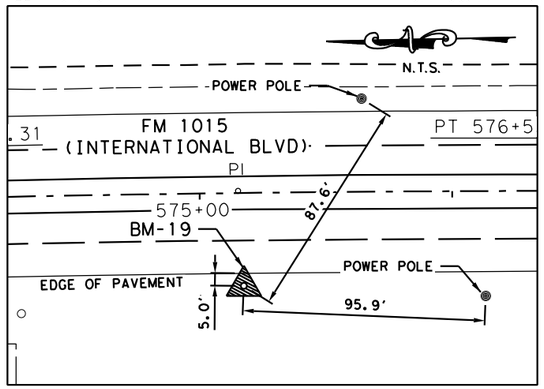
FM 1015
HORIZONTAL AND VERTICAL CONTROL SHEET

3 OF 4

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	114

BM-19
N = 16,575,697.99
E = 1,162,090.36
EL = 67.73'

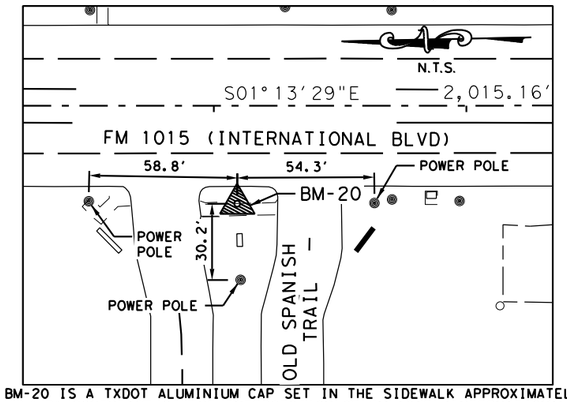
STA=575+17.04
OFF=36.77' RT.



BM-19 IS A TXDOT ALUMINIUM CAP SET IN CONCRETE APPROXIMATELY 0.22 MILES SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND PARAISO DR. AND 37' WEST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 87.6' NORTHWEST OF A POWER POLE, 5.0' WEST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, AND 95.9' NORTH OF A POWER POLE.

BM-20
N = 16,574,606.46
E = 1,162,112.48
EL = 70.90'

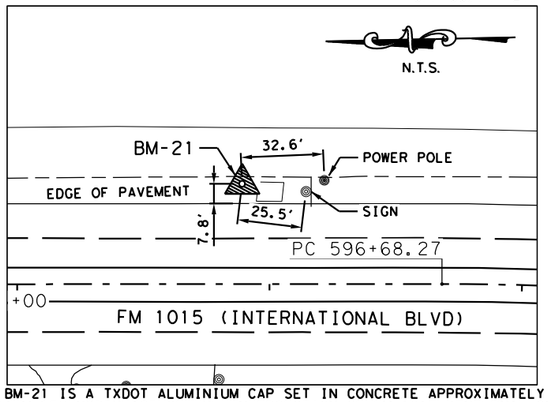
STA=586+09.24
OFF=38.78' RT.



BM-20 IS A TXDOT ALUMINIUM CAP SET IN THE SIDEWALK APPROXIMATELY 44.7' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND THE SOUTH INTERSETION OF OLD SPANISH TRAIL AND 38' WEST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 54.3' NORTH OF A POWER POLE, 58.8' SOUTH OF A POWER POLE, AND 30.2' EAST OF A POWER POLE.

BM-21
N = 16,573,628.47
E = 1,162,211.94
EL = 71.61'

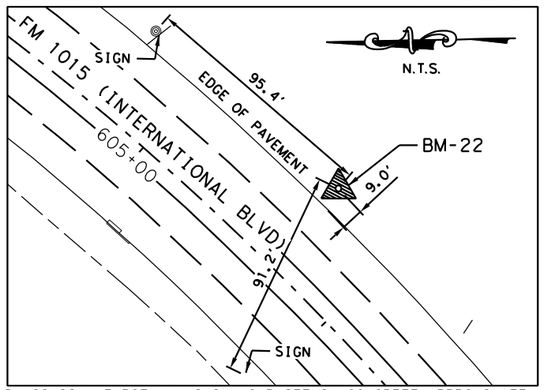
STA=595+89.13
OFF=39.74' LT.



BM-21 IS A TXDOT ALUMINIUM CAP SET IN CONCRETE APPROXIMATELY 0.11 MILES NORTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND LAKEVIEW DR. AND 42' WEST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 32.6' NORTH OF A POWER POLE, 25.5' NORTH OF A SIGN, AND 7.8' EAST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT.

BM-22
N = 16,572,703.01
E = 1,161,889.36
EL = 68.22'

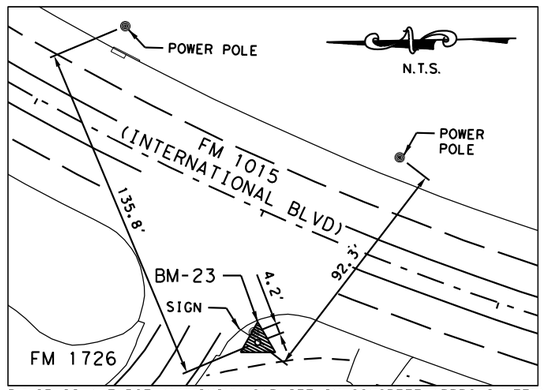
STA=605+66.56
OFF=40.66' LT.



BM-22 IS A TXDOT ALUMINIUM CAP SET IN CONCRETE APPROXIMATELY 384' SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND PARAISO DR. AND 42' NORTHEAST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 91.2' SOUTHEAST OF A SIGN, 9.0' EAST OF AND PERPENDICULAR TO THE EDGE OF PAVEMENT, AND 95.4' SOUTHWEST OF A SIGN.

BM-23
N = 16,571,869.50
E = 1,160,948.69
EL = 74.42'

STA=618+18.26
OFF=48.68' RT.



BM-23 IS A TXDOT ALUMINIUM CAP SET IN CONCRETE APPROXIMATELY 60 SOUTHEAST OF THE INTERSECTION OF FM 1015 (INTERNATIONAL BLVD.) AND FM 1726 AND 49' SOUTHWEST OF CENTERLINE OF FM 1015 (INTERNATIONAL BLVD.) AND 92.3' NORTHWEST OF A POWER POLE, 4.2' SOUTHWEST OF A SIGN, AND 135.8' SOUTHWEST OF A SIGN.

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00004.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM RTK/GPS NETWORK. ALL POINTS WERE ESTABLISHED AFTER CHECKING INTO TXDOT PRIMARY CONTROL POINT PHR-109-0080. VERTICAL VALUES WERE ESTABLISHED FROM DIGITAL LEVEL LOOPS AND HOLDING BM-1 GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS ESTABLISHED IN FEBRUARY 2022.

SURVEYOR CERTIFICATION: THE CONTROL POINTS SHOWN HEREON WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
07/05/22

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E.

AG3 Group, LLC
ENGINEERING • SURVEY • CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

FM 1015
HORIZONTAL AND VERTICAL CONTROL SHEET

4 OF 4

FED RD DIV NO	STATE	PROJECT NO			HWY NO
6	TEXAS				FM 1015
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
PHR 21	HIDALGO	1228	03	050 051	115

HORIZONTAL ALIGNMENT REVIEW REPORT

		Station	Northing	Easting
Element: Linear				
POT	( )	375+00.00	16595711.19	1161697.871
PI	( )	396+09.02	16593602.65	1161742.944
Tangential Direction:		S01°13'28.524"E		
Tangential Length:		2109.024		
Element: Linear				
PI	( )	396+09.02	16593602.65	1161742.944
PC	( )	397+62.66	16593449.05	1161746.156
Tangential Direction:		S01°11'52.426"E		
Tangential Length:		153.637		
Element: Circular				
PC	( )	397+62.66	16593449.05	1161746.156
PI	( )	398+60.42	16593351.31	1161748.2
CC	( )		16593528.9	1165565.095
PRC	( )	399+58.14	16593253.8	1161755.24
Radius:		3819.774		
Delta:		02°55'55.764	Left	
Degree of Curvature (Arc):		01°29'59.922"		
Length:		195.48		
Tangent:		97.761		
Chord:		195.459		
Middle Ordinate:		1.25		
External:		1.251		
Back Tangent Direction:		S01°11'52.426"E		
Back Radial Direction:		S88°48'07.574"W		
Chord Direction:		S02°39'50.308"E		
Ahead Radial Direction:		S85°52'11.810"W		
Ahead Tangent Direction:		S04°07'48.190"E		
Element: Circular				
PRC	( )	399+58.14	16593253.8	1161755.24
PI	( )	400+55.90	16593156.3	1161762.281
CC	( )		16592978.7	1157945.386
PT	( )	401+53.62	16593058.56	1161764.325
Radius:		3819.774		
Delta:		02°55'55.523	Right	
Degree of Curvature (Arc):		01°29'59.922"		
Length:		195.475		
Tangent:		97.759		
Chord:		195.454		
Middle Ordinate:		1.25		
External:		1.251		
Back Tangent Direction:		S04°07'48.190"E		
Back Radial Direction:		S85°52'11.810"W		
Chord Direction:		S02°39'50.428"E		
Ahead Radial Direction:		S88°48'07.334"W		
Ahead Tangent Direction:		S01°11'52.666"E		
Element: Linear				
PT	( )	401+53.62	16593058.56	1161764.325
PC	( )	412+51.00	16591961.41	1161787.268
Tangential Direction:		S01°11'52.666"E		
Tangential Length:		1097.386		
Element: Circular				
PC	( )	412+51.00	16591961.41	1161787.268
PI	( )	413+35.66	16591876.77	1161789.038
CC	( )		16591901.52	1158923.214
PRC	( )	414+20.27	16591792.17	1161785.806
Radius:		2864.68		
Delta:		03°23'08.085	Right	
Degree of Curvature (Arc):		02°00'00.274"		
Length:		169.273		
Tangent:		84.661		
Chord:		169.248		
Middle Ordinate:		1.25		
External:		1.251		
Back Tangent Direction:		S01°11'52.666"E		
Back Radial Direction:		S88°48'07.334"W		
Chord Direction:		S00°29'41.376"W		
Ahead Radial Direction:		N87°48'44.581"W		
Ahead Tangent Direction:		S02°11'15.419"W		
Element: Circular				
PRC	( )	414+20.27	16591792.17	1161785.806
PI	( )	415+04.94	16591707.57	1161782.575
CC	( )		16591682.82	1164648.398
PT	( )	415+89.55	16591622.93	1161784.345
Radius:		2864.68		
Delta:		03°23'08.202	Left	
Degree of Curvature (Arc):		02°00'00.274"		
Length:		169.274		
Tangent:		84.662		
Chord:		169.25		
Middle Ordinate:		1.25		
External:		1.251		
Back Tangent Direction:		S02°11'15.419"W		
Back Radial Direction:		N87°48'44.581"W		
Chord Direction:		S00°29'41.318"W		
Ahead Radial Direction:		S88°48'07.217"W		
Ahead Tangent Direction:		S01°11'52.783"E		
Element: Linear				
PT	( )	415+89.55	16591622.93	1161784.345
PI	( )	448+91.69	16588321.5	1161853.384
Tangential Direction:		S01°11'52.783"E		
Tangential Length:		3302.145		
Element: Linear				
PI	( )	448+91.69	16588321.5	1161853.384
PI	( )	490+00.36	16584213.75	1161940.31
Tangential Direction:		S01°12'44.209"E		
Tangential Length:		4108.67		
Element: Linear				
PI	( )	490+00.36	16584213.75	1161940.31
PI	( )	509+87.99	16582226.58	1161982.982
Tangential Direction:		S01°13'48.596"E		
Tangential Length:		1987.626		
Element: Linear				
PI	( )	509+87.99	16582226.58	1161982.982
PC	( )	569+57.58	16576258.27	1162106.07
Tangential Direction:		S01°10'53.323"E		
Tangential Length:		5969.588		
Element: Circular				
PC	( )	569+57.58	16576258.27	1162106.07
PI	( )	570+99.80	16576116.08	1162109.003
CC	( )		16576494.54	1173562.634
PT	( )	572+42.01	16575974	1162115.463
Radius:		11459		
Delta:		01°25'19.756	Left	
Degree of Curvature (Arc):		00°30'00.024"		
Length:		284.427		
Tangent:		142.221		
Chord:		284.42		
Middle Ordinate:		0.882		
External:		0.883		
Back Tangent Direction:		S01°10'53.323"E		
Back Radial Direction:		S88°49'06.677"W		
Chord Direction:		S01°53'33.201"E		
Ahead Radial Direction:		S87°23'46.921"W		
Ahead Tangent Direction:		S02°36'13.079"E		
Element: Linear				
PT	( )	572+42.01	16575974	1162115.463
PC	( )	573+77.31	16575838.84	1162121.61
Tangential Direction:		S02°36'13.079"E		
Tangential Length:		135.305		
Element: Circular				
PC	( )	573+77.31	16575838.84	1162121.61
PI	( )	575+15.21	16575701.08	1162127.874
CC	( )		16575318.3	1150674.439
PT	( )	576+53.10	16575563.2	1162130.821
Radius:		11459		
Delta:		01°22'44.340	Right	
Degree of Curvature (Arc):		00°30'00.024"		
Length:		275.793		
Tangent:		137.903		
Chord:		275.786		
Middle Ordinate:		0.83		
External:		0.83		
Back Tangent Direction:		S02°36'13.079"E		
Back Radial Direction:		S87°23'46.921"W		
Chord Direction:		S01°54'50.909"E		
Ahead Radial Direction:		S88°46'31.261"W		
Ahead Tangent Direction:		S01°13'28.739"E		
Element: Linear				
PT	( )	576+53.10	16575563.2	1162130.821
PC	( )	596+68.27	16573548.5	1162173.891
Tangential Direction:		S01°13'28.739"E		
Tangential Length:		2015.163		
Element: Circular				
PC	( )	596+68.27	16573548.5	1162173.891
PI	( )	602+58.88	16572958.02	1162186.513
CC	( )		16573523.77	1161017.155
PT	( )	607+60.45	16572601.44	1161715.692
Radius:		1157		
Delta:		54°05'08.938	Right	
Degree of Curvature (Arc):		04°57'07.555"		
Length:		1092.18		
Tangent:		590.613		
Chord:		1052.078		
Middle Ordinate:		126.499		
External:		142.028		
Back Tangent Direction:		S01°13'28.739"E		
Back Radial Direction:		S88°46'31.261"W		
Chord Direction:		S25°49'05.730"W		
Ahead Radial Direction:		N37°08'19.801"W		
Ahead Tangent Direction:		S52°51'40.199"W		
Element: Linear				
PT	( )	607+60.45	16572601.44	1161715.692
PC	( )	612+06.05	16572332.41	1161360.467
Tangential Direction:		S52°51'40.199"W		
Tangential Length:		445.605		
Element: Circular				
PC	( )	612+06.05	16572332.41	1161360.467
PI	( )	617+68.96	16571992.56	1160911.733
CC	( )		16571433.2	1162041.495
PT	( )	622+50.29	16571429.65	1160913.501
Radius:		1128		
Delta:		53°02'28.048	Left	
Degree of Curvature (Arc):		05°04'45.887"		
Length:		1044.237		
Tangent:		562.906		
Chord:		1007.347		
Middle Ordinate:		118.695		
External:		132.653		
Back Tangent Direction:		S52°51'40.199"W		
Back Radial Direction:		N37°08'19.801"W		
Chord Direction:		S26°20'26.175"W		
Ahead Radial Direction:		S89°49'12.151"W		
Ahead Tangent Direction:		S00°10'47.849"E		
Element: Linear				
PT	( )	622+50.29	16571429.65	1160913.501
PC	( )	623+08.50	16571371.44	1160913.684
Tangential Direction:		S00°10'47.849"E		
Tangential Length:		58.215		
Element: Circular				
PC	( )	623+08.50	16571371.44	1160913.684
PI	( )	627+23.82	16570956.12	1160914.988
CC	( )		16571381.74	1164193.667
PT	( )	631+34.74	16570554.24	1161019.766
Radius:		3280		
Delta:		14°25'58.334	Left	
Degree of Curvature (Arc):		01°44'48.561"		
Length:		826.236		
Tangent:		415.316		
Chord:		824.053		
Middle Ordinate:		25.982		
External:		26.189		
Back Tangent Direction:		S00°10'47.849"E		
Back Radial Direction:		S89°49'12.151"W		
Chord Direction:		S07°23'47.016"E		
Ahead Radial Direction:		S75°23'13.817"W		
Ahead Tangent Direction:		S14°36'46.183"E		
Element: Linear				
PT	( )	631+34.74	16570554.24	1161019.766
PI	( )	639+22.33	16569792.12	1161218.466
Tangential Direction:		S14°36'46.183"E		
Tangential Length:		787.595		
Element: Linear				
PI	( )	639+22.33	16569792.12	1161218.466
PC	( )	642+23.57	16569500.52	1161294.039
Tangential Direction:		S14°31'45.587"E		
Tangential Length:		301.239		
Element: Circular				
PC	( )	642+23.57	16569500.52	1161294.039
PI	( )	644+15.74	16569314.5	1161342.248
CC	( )		16567156.12	1152248.028
PRC	( )	646+07.85	16569126.66	1161382.77
Radius:		9344.867		
Delta:		02°21'21.862	Right	
Degree of Curvature (Arc):		00°36'47.253"		
Length:		384.272		
Tangent:		192.163		
Chord:		384.245		
Middle Ordinate:		1.975		
External:		1.976		
Back Tangent Direction:		S14°31'45.587"E		
Back Radial Direction:		S75°28'14.413"W		
Chord Direction:		S13°21'04.657"E		
Ahead Radial Direction:		S77°49'36.274"W		
Ahead Tangent Direction:		S12°10'23.726"E		
Element: Circular				
PRC	( )	646+07.85	16569126.66	1161382.77
PI	( )	648+03.22	16568935.68	1161423.967
CC	( )		16571097.2	1170517.512
PT	( )	649+98.53	16568746.59	1161473.111
Radius:		9344.867		
Delta:		02°23'43.455	Left	
Degree of Curvature (Arc):		00°36'47.253"		
Length:		390.687		
Tangent:		195.372		
Chord:		390.659		
Middle Ordinate:		2.042		
External:		2.042		
Back Tangent Direction:		S12°10'23.726"E		
Back Radial Direction:		S77°49'36.274"W		
Chord Direction:		S13°22'15.453"E		
Ahead Radial Direction:		S75°25'52.819"W		
Ahead Tangent Direction:		S14°34'07.181"E		
Element: Linear				
PT	( )	649+98.53	16568746.59	1161473.111
POT	( )	657+99.83	16567971.05	1161674.67
Tangential Direction:		S14°34'07.181"E		
Tangential Length:		801.299		

DATE: 6/12/2023 2:11:56 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745201\FM1015_Roadway Data sheet.dgn

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

ROADWAY DATA SHEET

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		116

VERTICAL ALIGNMENT REVIEW REPORT

	Station	Elevation
Element: Linear		
POT	395+15.00	66.405
VPI	396+08.45	66.576
Tangent Grade:	0.002	
Tangent Length:	93.45	
Element: Linear		
VPI	396+08.45	66.576
VPI	399+72.40	65.681
Tangent Grade:	-0.002	
Tangent Length:	363.947	
Element: Linear		
VPI	399+72.40	65.681
VPI	402+66.47	66.177
Tangent Grade:	0.002	
Tangent Length:	294.075	
Element: Linear		
VPI	402+66.47	66.177
VPI	405+60.34	66.569
Tangent Grade:	0.001	
Tangent Length:	293.871	
Element: Linear		
VPI	405+60.34	66.569
VPI	408+90.38	67.018
Tangent Grade:	0.001	
Tangent Length:	330.037	
Element: Linear		
VPI	408+90.38	67.018
VPI	411+82.14	67.665
Tangent Grade:	0.002	
Tangent Length:	291.763	
Element: Linear		
VPI	411+82.14	67.665
VPC	413+08.35	67.312
Tangent Grade:	-0.003	
Tangent Length:	126.211	
Element: Symmetrical Parabola		
VPC	413+08.35	67.312
VPI	413+90.85	67.081
VPT	414+73.35	67.376
VLP	413+80.73	67.211
Length:	165	
Entrance Grade:	-0.003	
Exit Grade:	0.004	
r = 100 * (g2 - g1) / L:	0.386	
K = l / (g2 - g1):	258.95	
Middle Ordinate:	0.131	
Element: Linear		
VPT	414+73.35	67.376
VPI	416+88.45	68.146
Tangent Grade:	0.004	
Tangent Length:	215.097	
Element: Linear		
VPI	416+88.45	68.146
VPC	419+12.75	68.935
Tangent Grade:	0.004	
Tangent Length:	224.303	
Element: Symmetrical Parabola		
VPC	419+12.75	68.935
VPI	419+45.24	69.049
VPT	419+77.72	68.979
VHP	419+52.88	69.006
Length:	64.965	
Entrance Grade:	0.004	
Exit Grade:	-0.002	
r = 100 * (g2 - g1) / L:	-0.877	
K = l / (g2 - g1):	114	
Middle Ordinate:	-0.046	
Element: Linear		
VPT	419+77.72	68.979
VPI	422+50.75	68.384
Tangent Grade:	-0.002	
Tangent Length:	273.035	
Element: Linear		
VPI	422+50.75	68.384
VPI	425+54.04	67.815
Tangent Grade:	-0.002	
Tangent Length:	303.286	
Element: Linear		
VPI	425+54.04	67.815
VPI	428+73.88	67.45
Tangent Grade:	-0.001	
Tangent Length:	319.84	
Element: Linear		
VPI	428+73.88	67.45
VPI	431+99.96	66.929
Tangent Grade:	-0.002	
Tangent Length:	326.076	
Element: Linear		
VPI	431+99.96	66.929
VPI	435+03.25	67.265
Tangent Grade:	0.001	
Tangent Length:	303.296	
Element: Linear		
VPI	435+03.25	67.265
VPI	438+03.16	67.774
Tangent Grade:	0.002	
Tangent Length:	299.908	
Element: Linear		
VPI	438+03.16	67.774
VPI	441+43.02	67.403
Tangent Grade:	-0.001	
Tangent Length:	339.86	
Element: Linear		
VPI	441+43.02	67.403
VPI	444+93.17	66.877
Tangent Grade:	-0.002	
Tangent Length:	350.145	
Element: Linear		
VPI	444+93.17	66.877
VPI	447+25.01	67.094
Tangent Grade:	0.001	
Tangent Length:	231.843	
Element: Linear		
VPI	447+25.01	67.094
VPI	448+91.14	67.135
Tangent Grade:	0	
Tangent Length:	166.128	
Element: Linear		
VPI	448+91.14	67.135
VPI	449+61.81	67.462
Tangent Grade:	0.005	
Tangent Length:	70.669	
Element: Linear		
VPI	449+61.81	67.462
VPI	451+99.82	67.954
Tangent Grade:	0.002	
Tangent Length:	238.015	
Element: Linear		
VPI	451+99.82	67.954
VPI	454+45.94	68.324
Tangent Grade:	0.002	
Tangent Length:	246.118	
Element: Linear		
VPI	454+45.94	68.324
VPI	457+03.83	68.617
Tangent Grade:	0.001	
Tangent Length:	257.892	
Element: Linear		
VPI	457+03.83	68.617
VPI	460+26.95	68.282
Tangent Grade:	-0.001	
Tangent Length:	323.119	
Element: Linear		
VPI	460+26.95	68.282
VPI	463+86.46	67.946
Tangent Grade:	-0.001	
Tangent Length:	359.511	
Element: Linear		
VPI	463+86.46	67.946
VPI	465+89.45	68.299
Tangent Grade:	0.002	
Tangent Length:	202.995	
Element: Linear		
VPI	465+89.45	68.299
VPI	468+08.44	68.54
Tangent Grade:	0.001	
Tangent Length:	218.986	
Element: Linear		
VPI	468+08.44	68.54
VPI	470+85.01	68.086
Tangent Grade:	-0.002	
Tangent Length:	276.571	
Element: Linear		
VPI	470+85.01	68.086
VPI	473+75.78	67.924
Tangent Grade:	-0.001	
Tangent Length:	290.765	
Element: Linear		
VPI	473+75.78	67.924
VPI	475+97.38	68.693
Tangent Grade:	0.003	
Tangent Length:	221.602	
Element: Linear		
VPI	475+97.38	68.693
VPI	478+78.35	69.377
Tangent Grade:	0.002	
Tangent Length:	280.967	
Element: Linear		
VPI	478+78.35	69.377
POT	479+26.12	68.857
Tangent Grade:	-0.011	
Tangent Length:	47.775	

DATE: 6/12/2023 2:11:57 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745201\FM1015 Roadway Data sheet.dgn

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

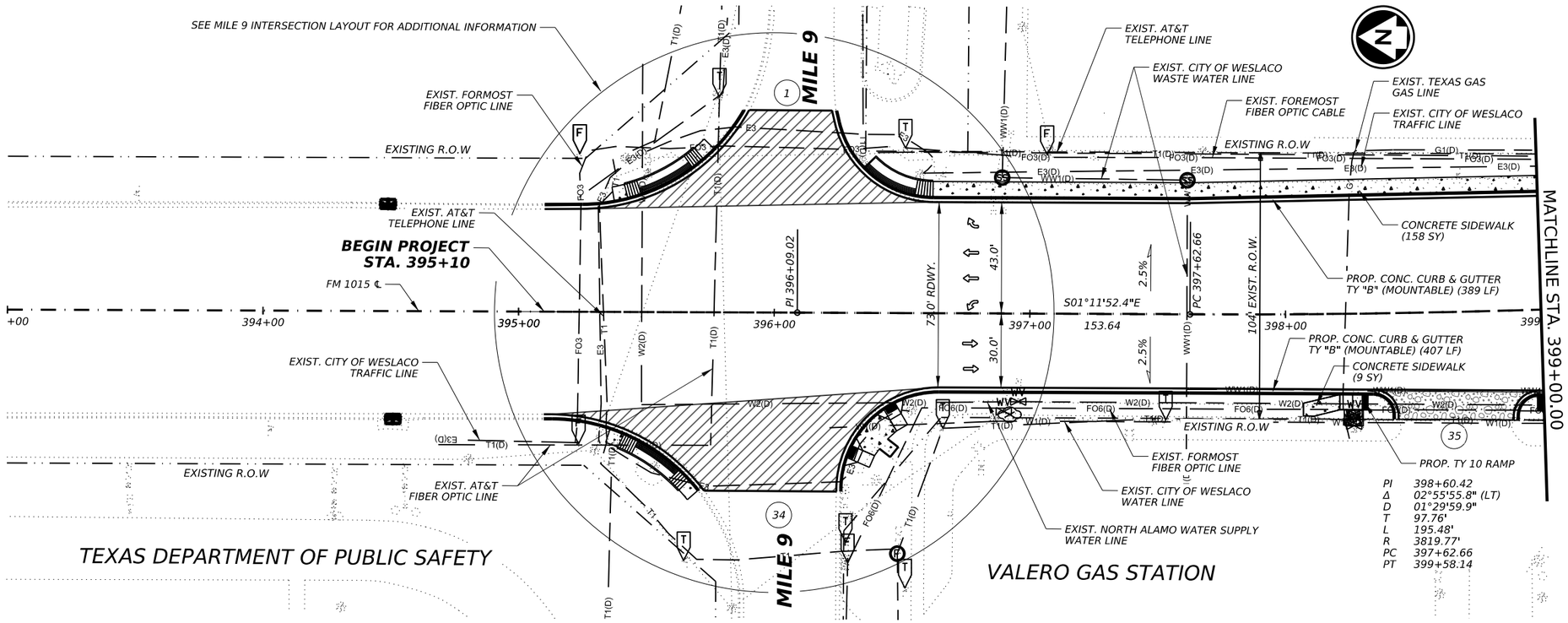
Texas Department of Transportation

FM 1015

ROADWAY DATA SHEET

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		117

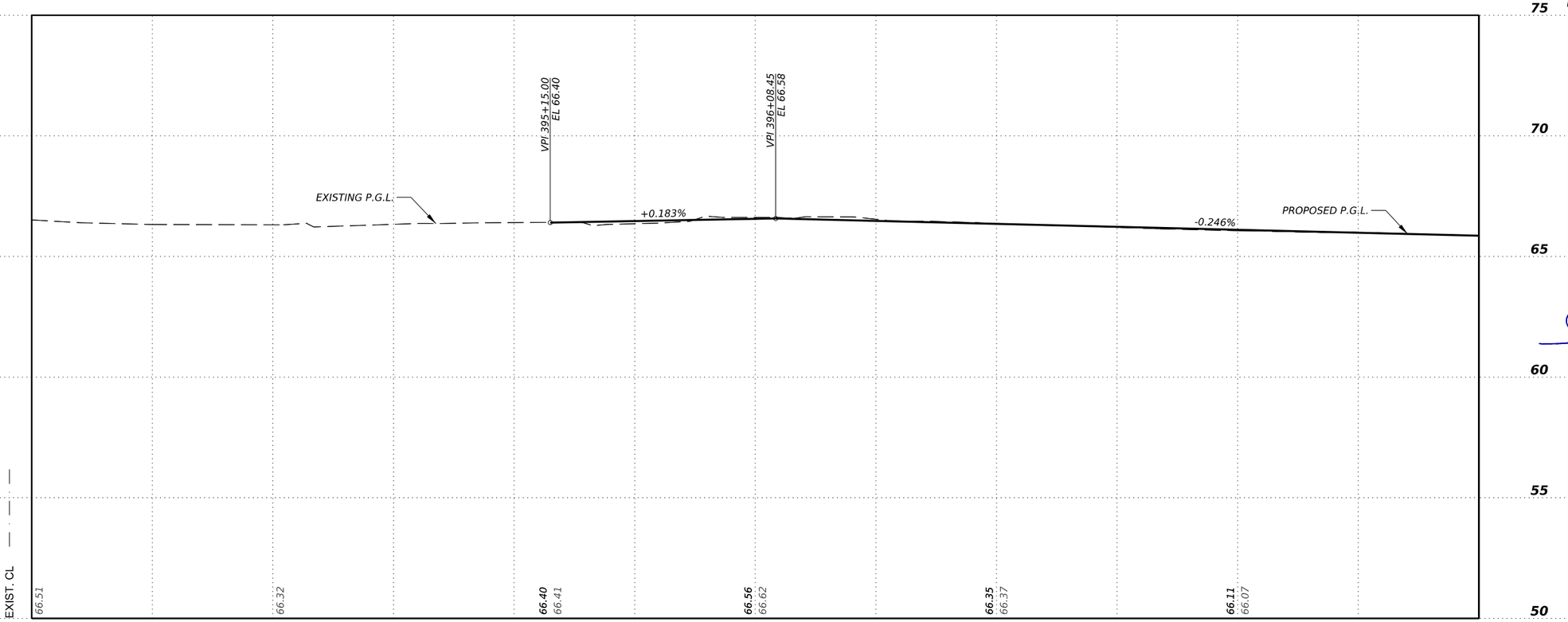


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

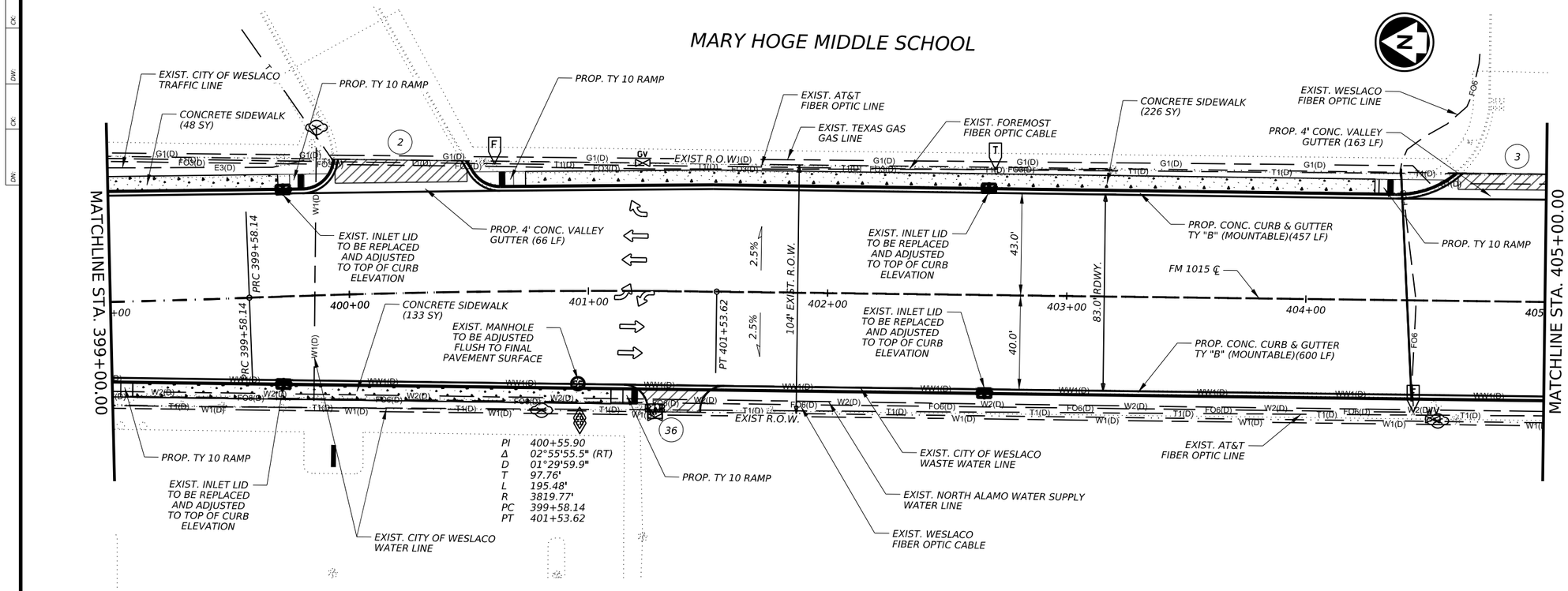
FM 1015

PLAN AND PROFILE

SHEET 1 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		118

DATE: 6/12/2023 2:12:12 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-01.dgn

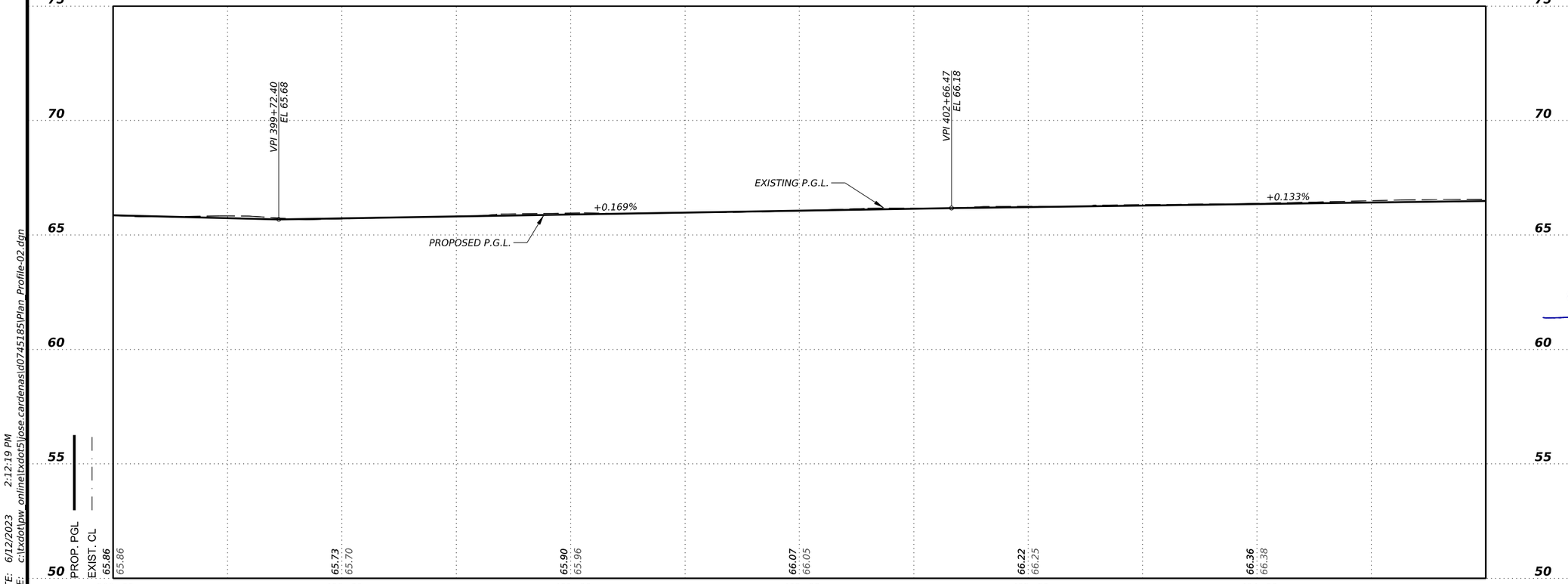


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

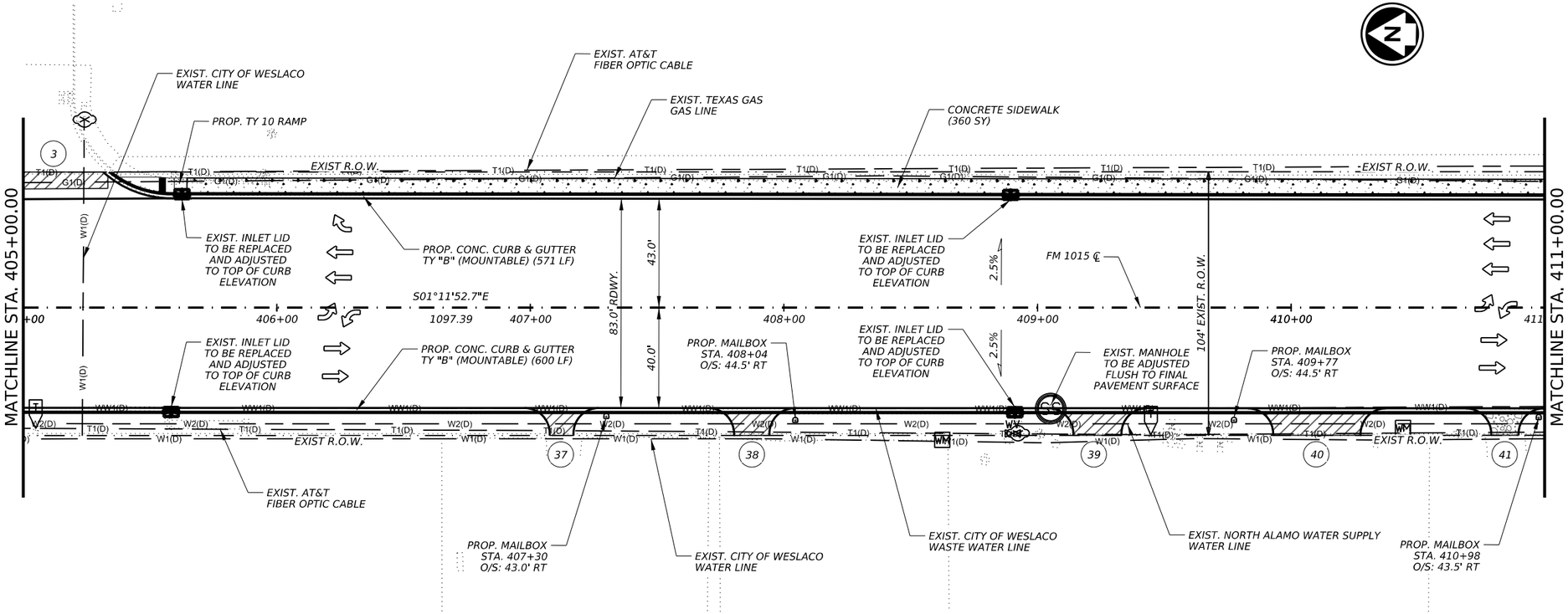
FM 1015

PLAN AND PROFILE

SHEET 2 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		119

DATE: 6/12/2023 2:12:19 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-02.dgn

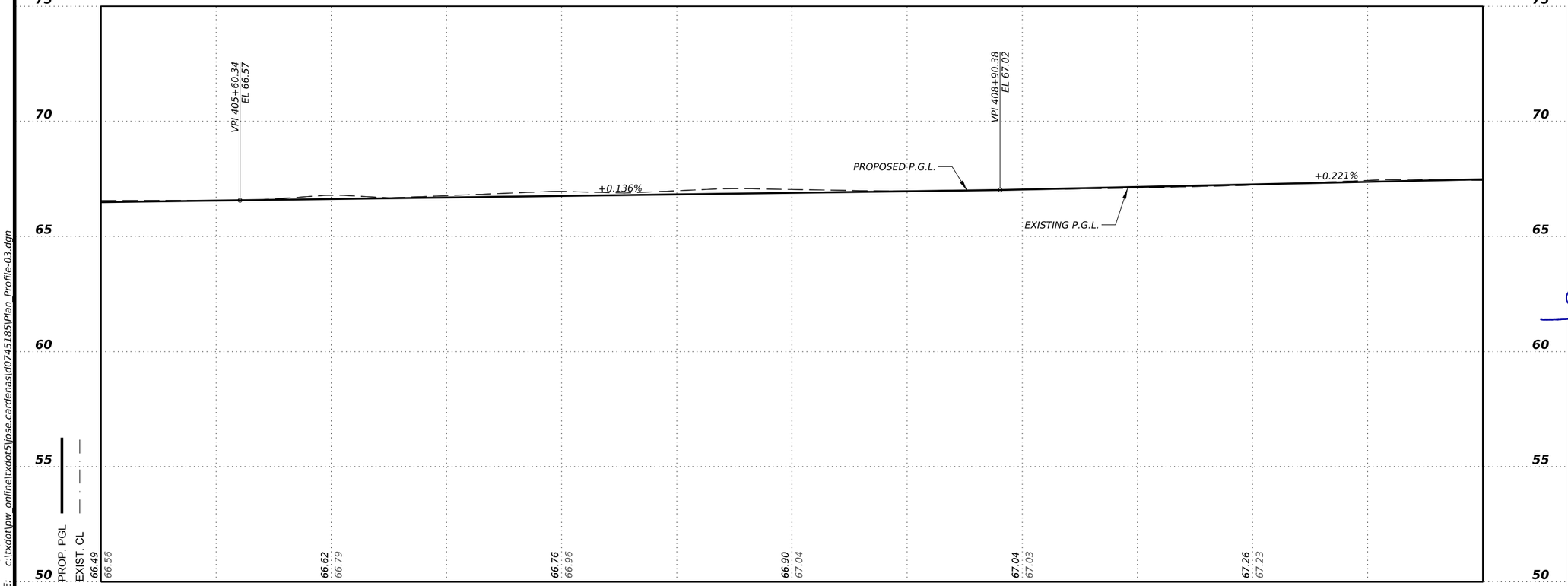


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB — PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

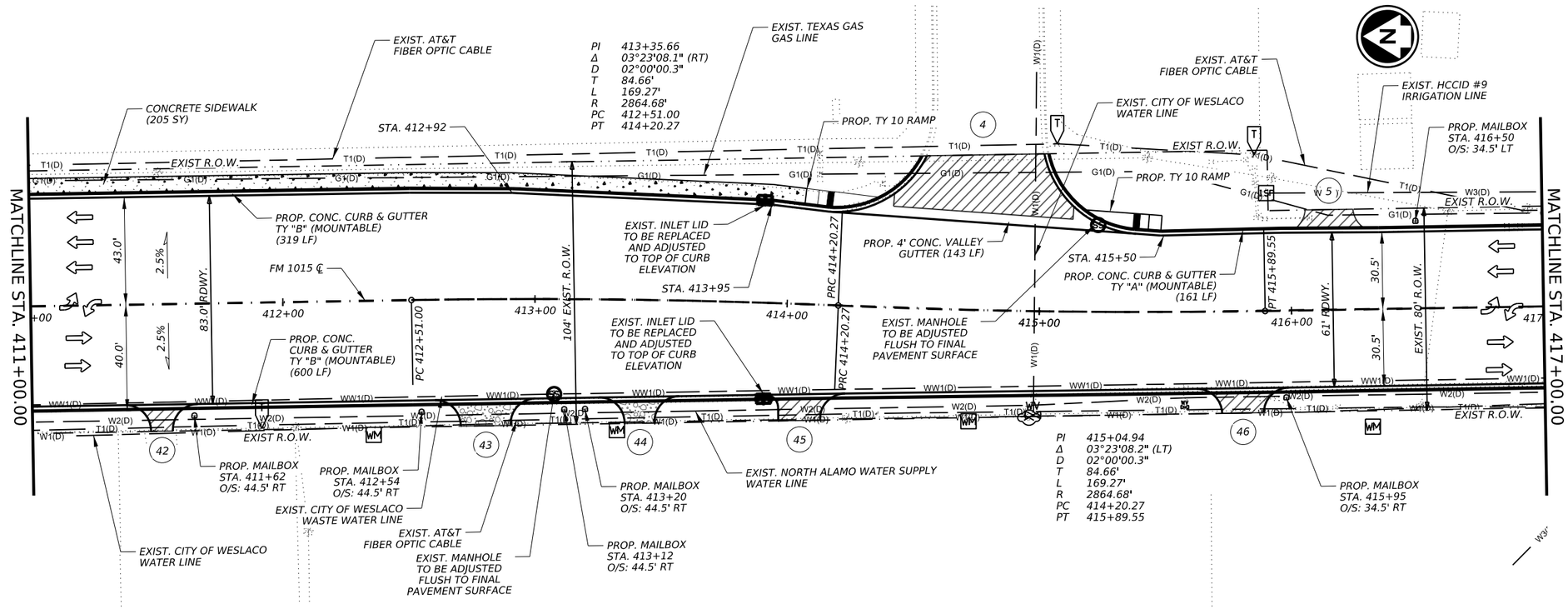
FM 1015

PLAN AND PROFILE

SHEET 3 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		120

DATE: 6/12/2023 2:12:25 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-03.dgn

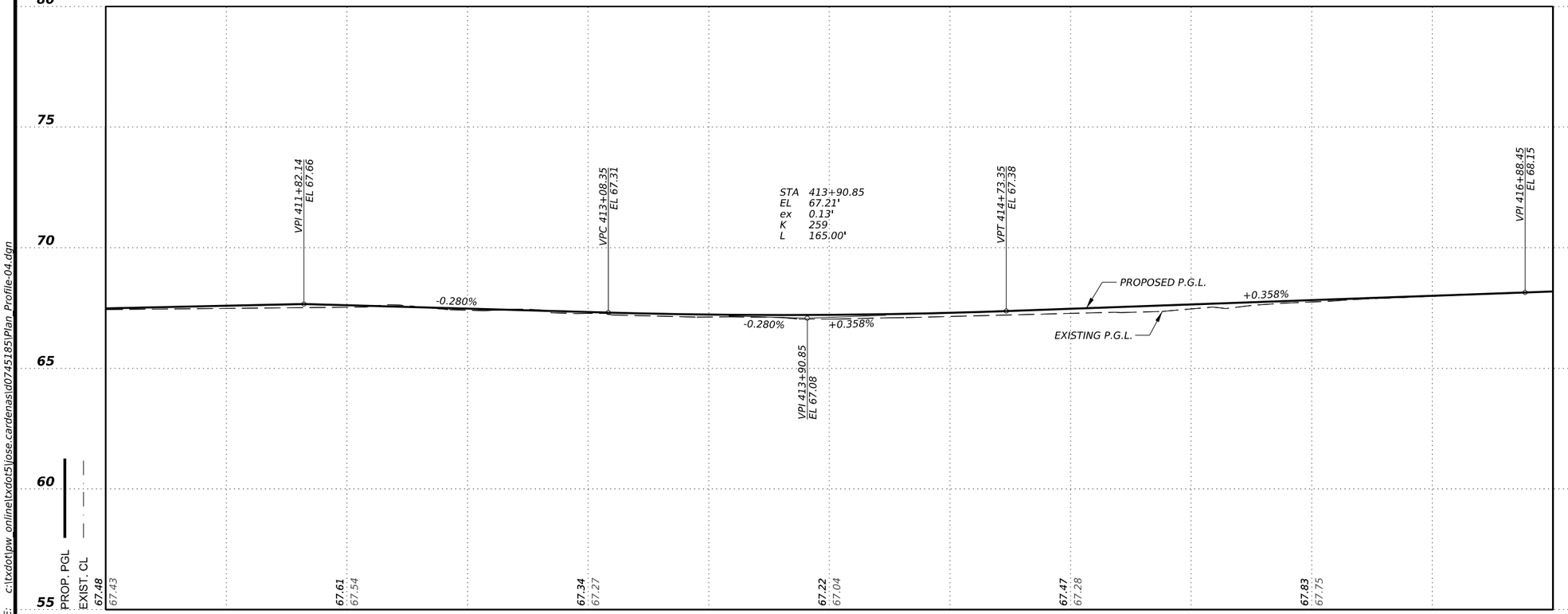


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

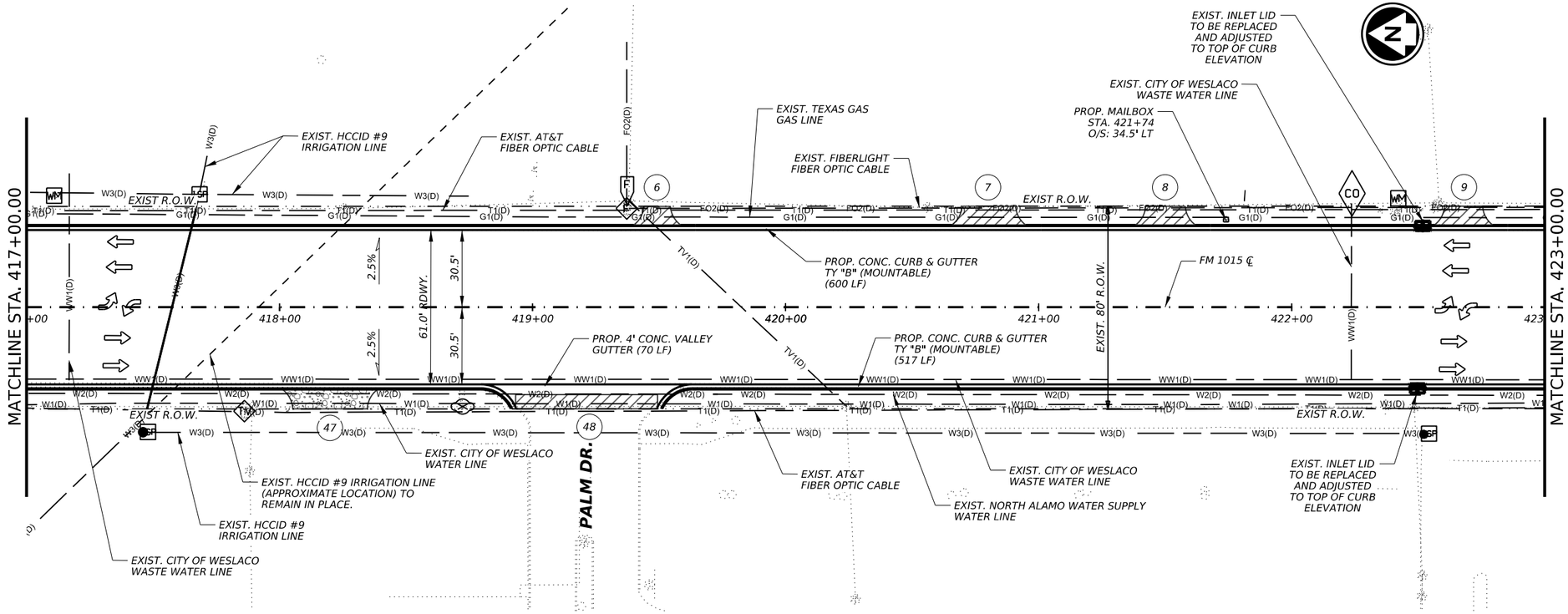
FM 1015

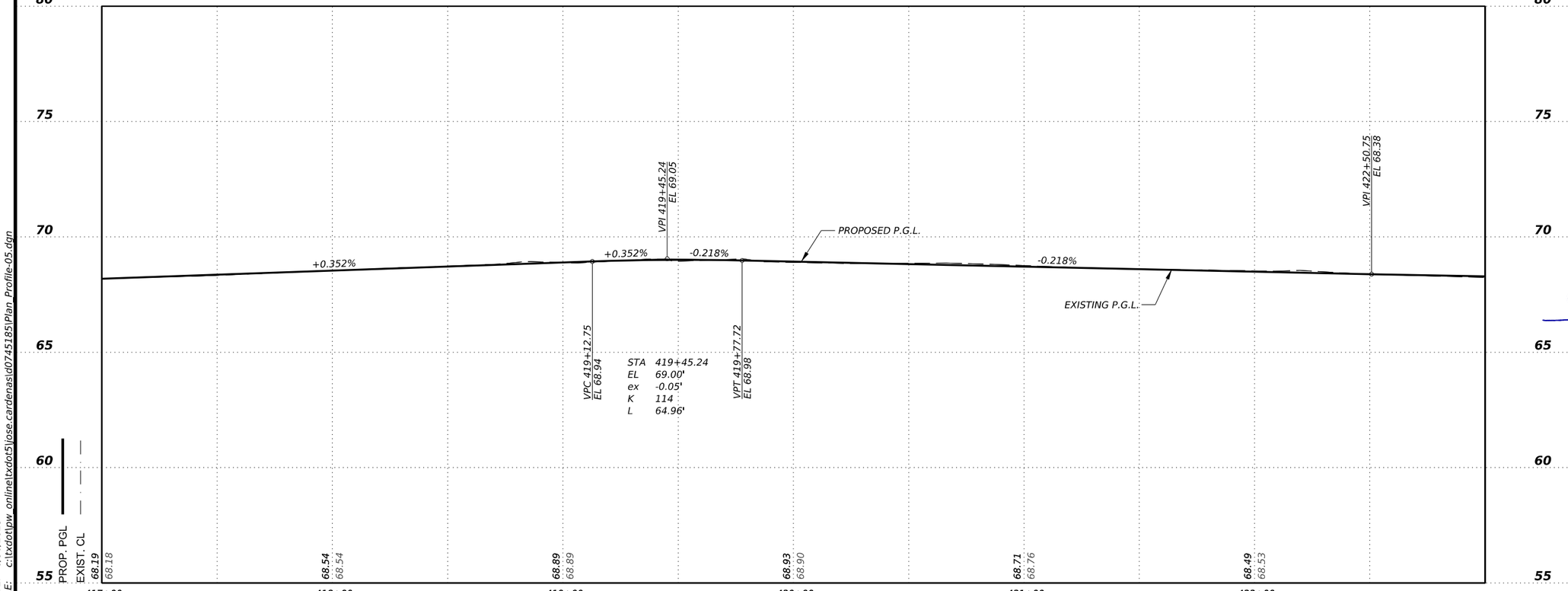
PLAN AND PROFILE

SHEET 4 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		121

DATE: 6/12/2023 2:12:32 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-04.dgn





LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.

SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

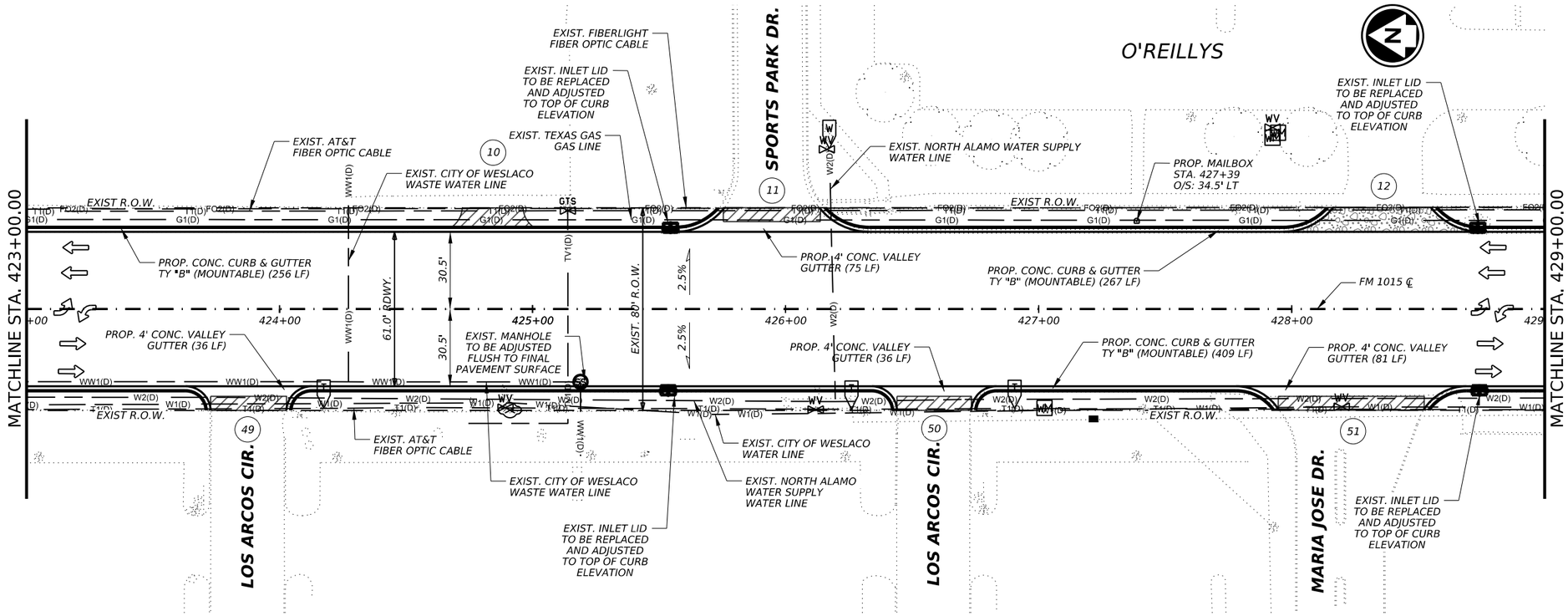
FM 1015

PLAN AND PROFILE

SHEET 5 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		122

DATE: 6/30/2023 12:57:21 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-05.dgn

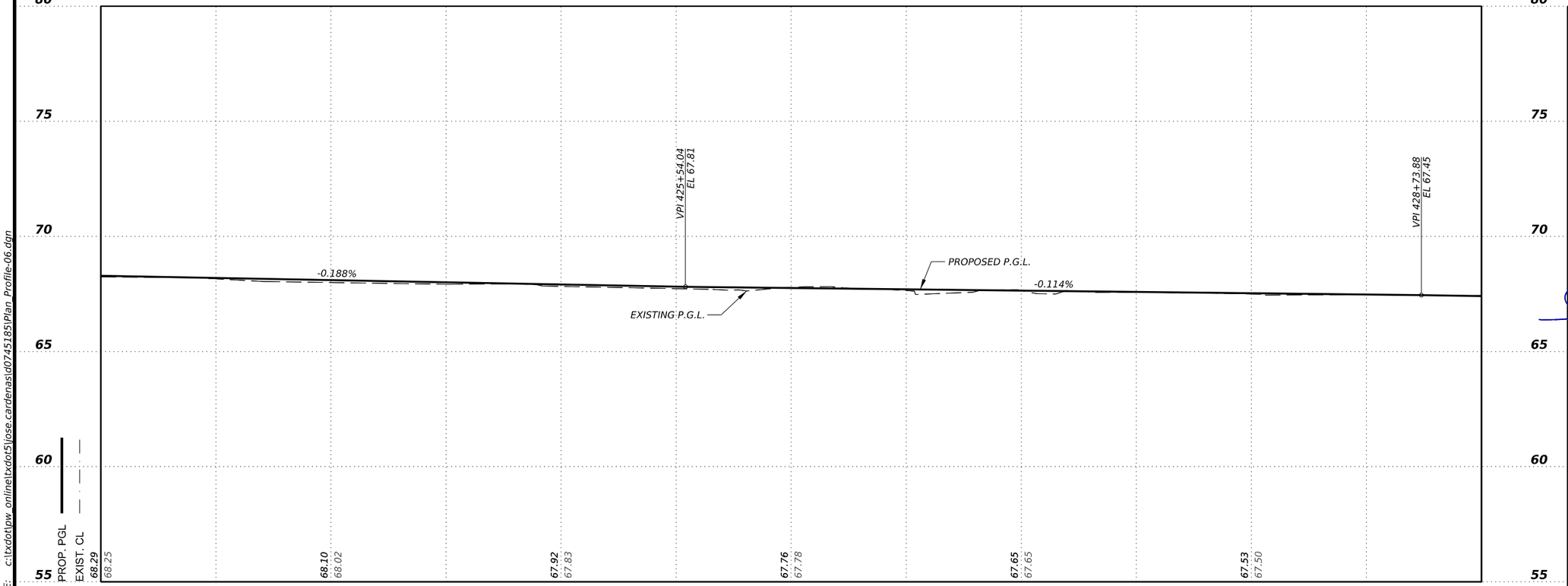


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

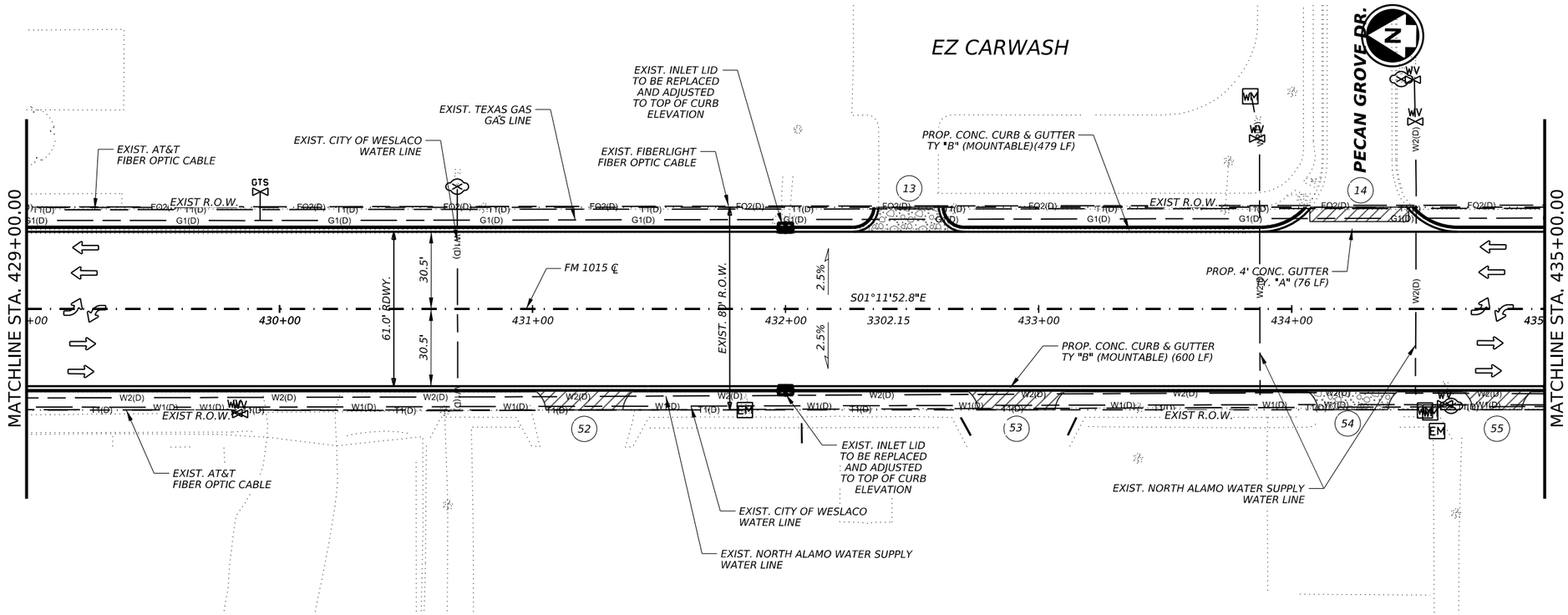
FM 1015

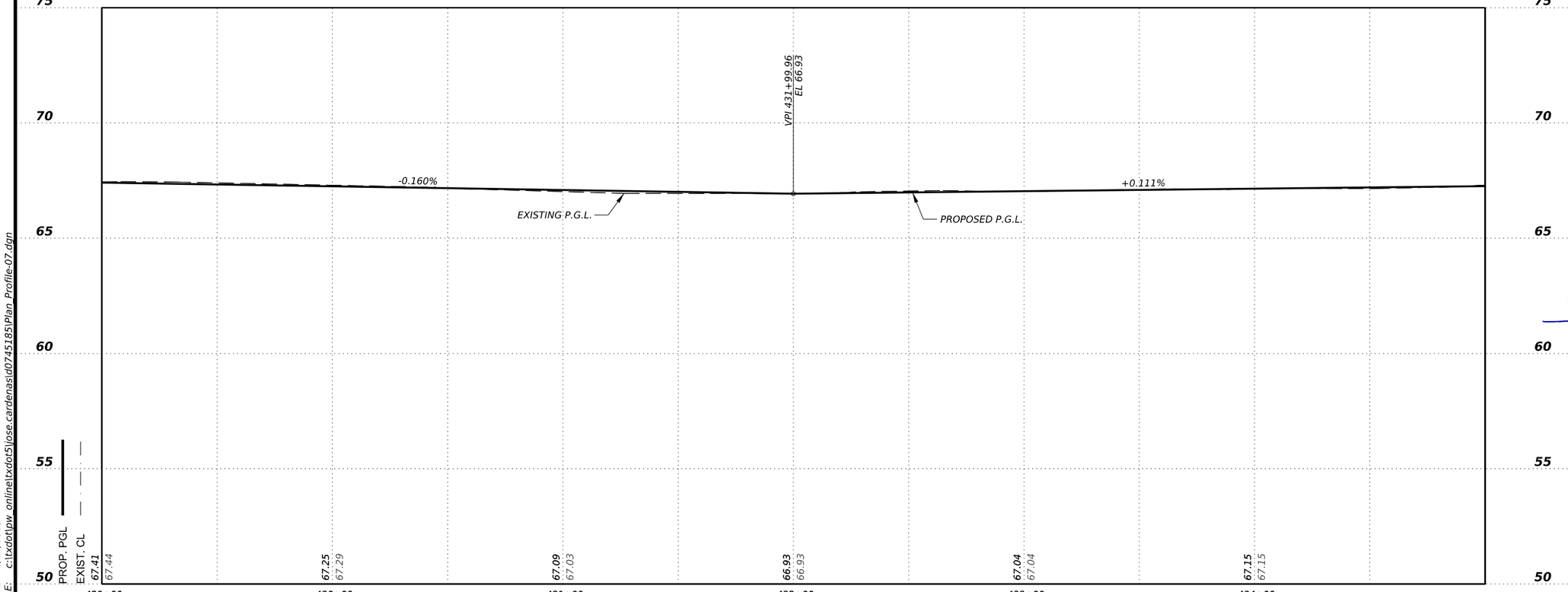
PLAN AND PROFILE

SHEET 6 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		123

DATE: 6/12/2023 2:12:46 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-06.dgn





LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.

SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

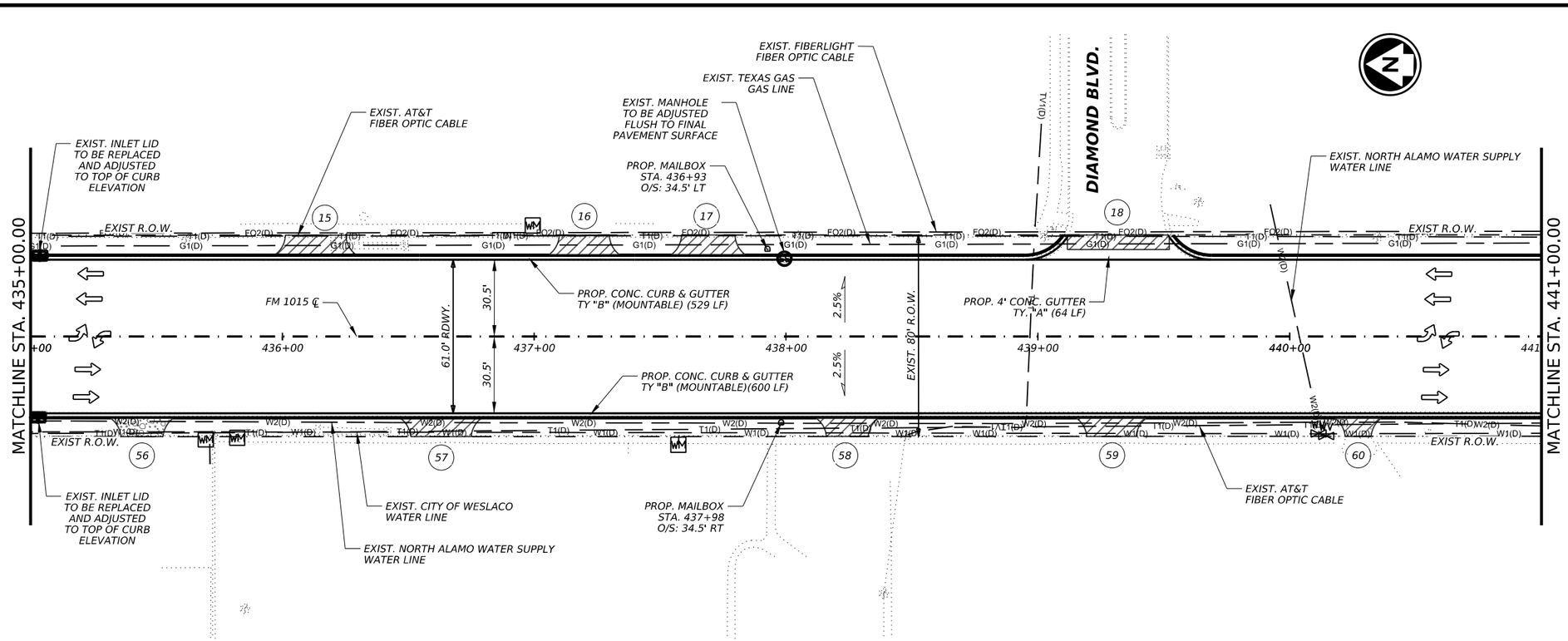
FM 1015

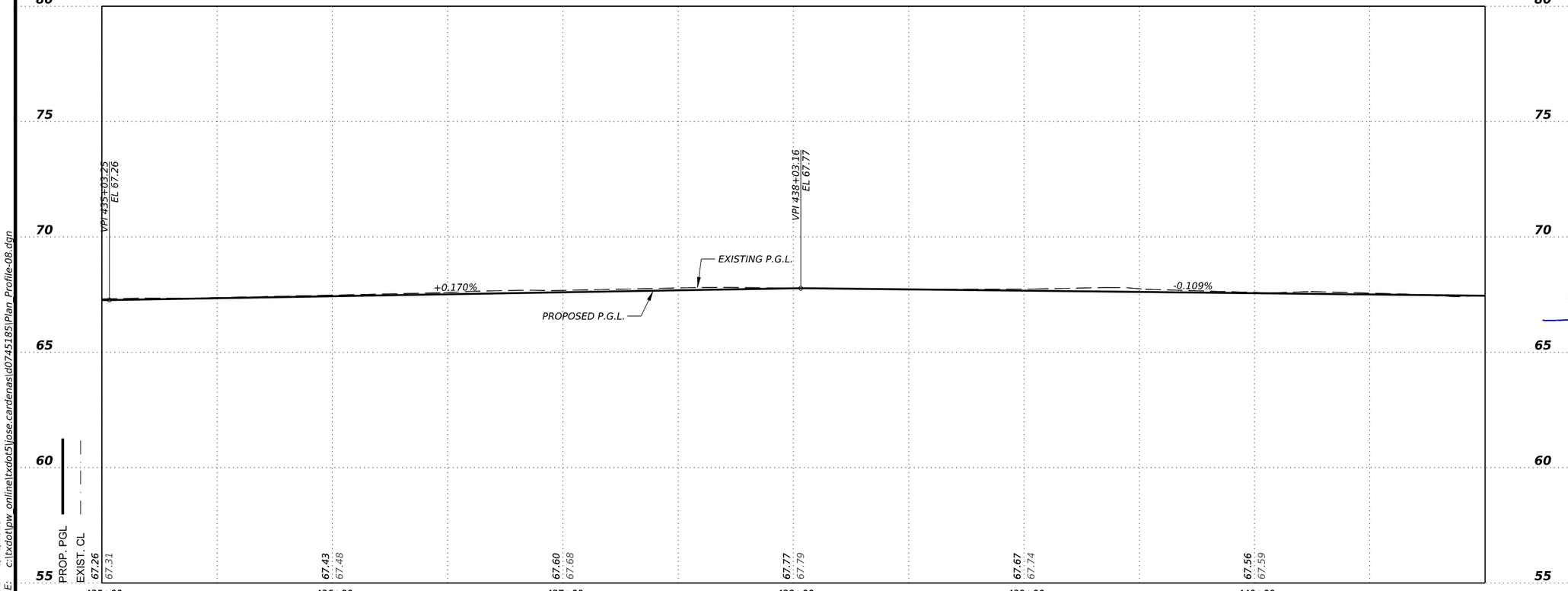
PLAN AND PROFILE

SHEET 7 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		124

DATE: 6/12/2023 2:12:52 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-07.dgn





LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.

SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

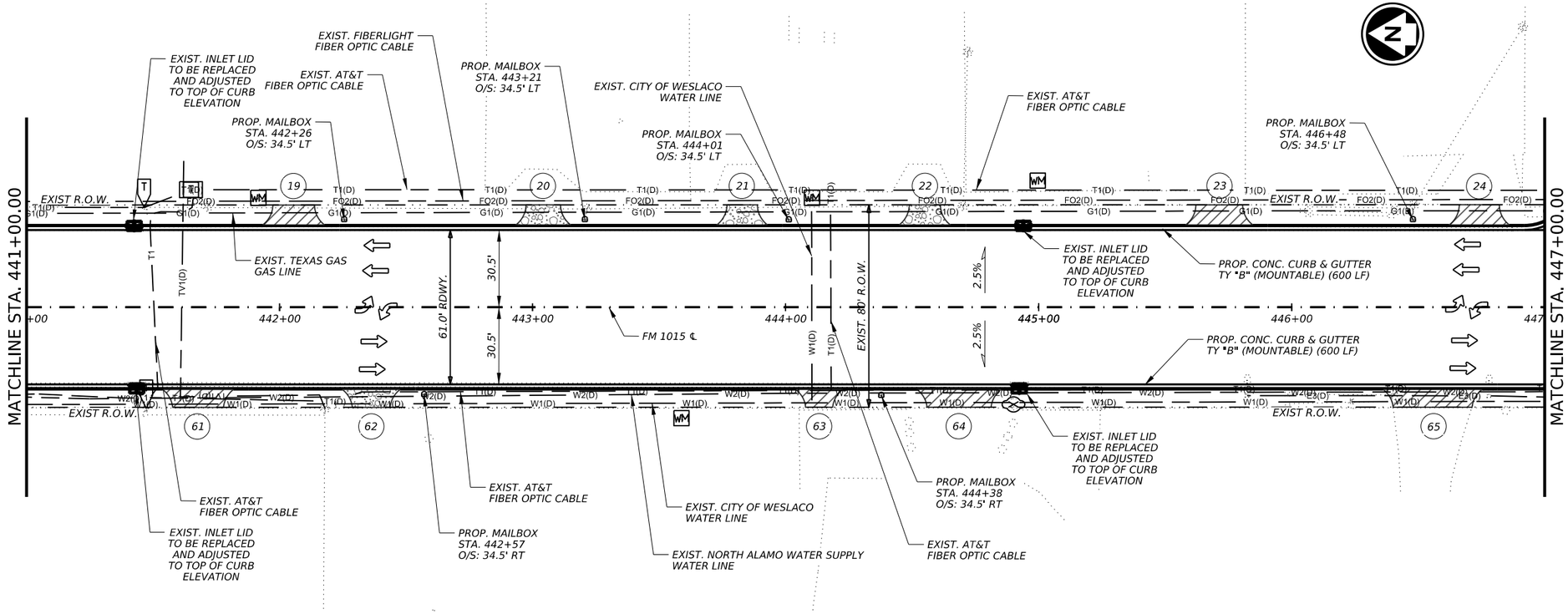
FM 1015

PLAN AND PROFILE

SHEET 8 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		125

DATE: 6/12/2023 2:13:00 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-08.dgn

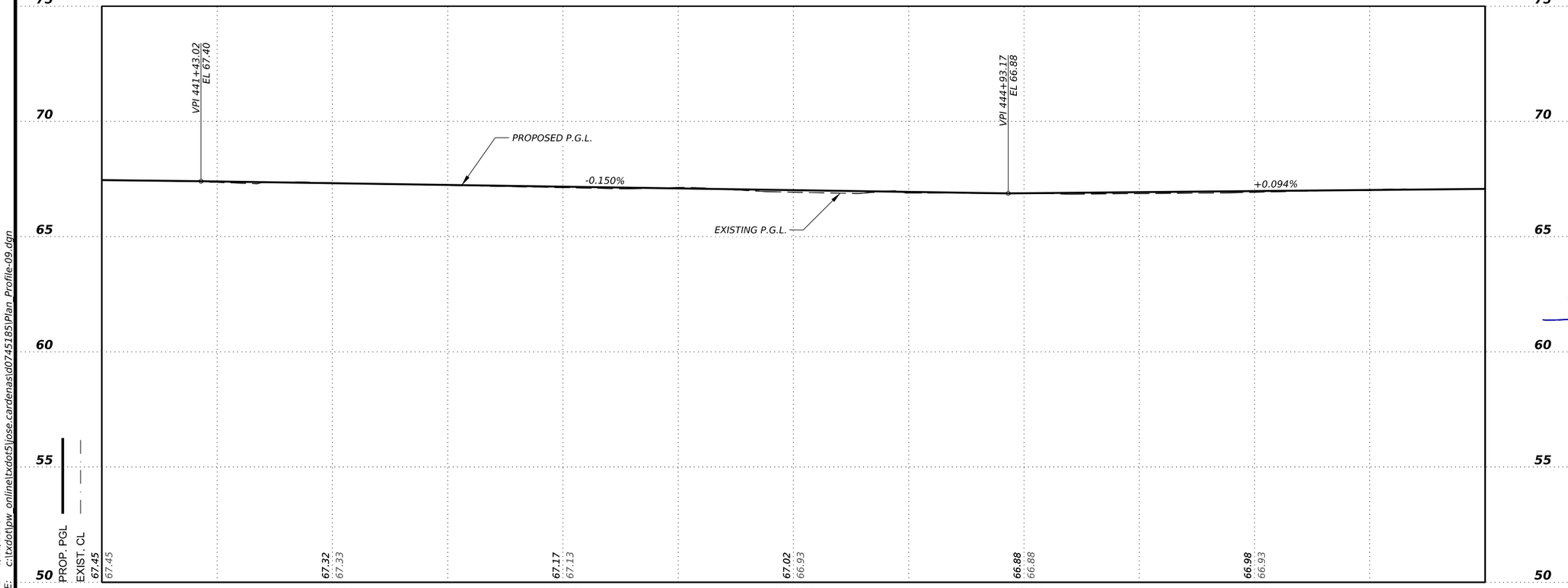


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

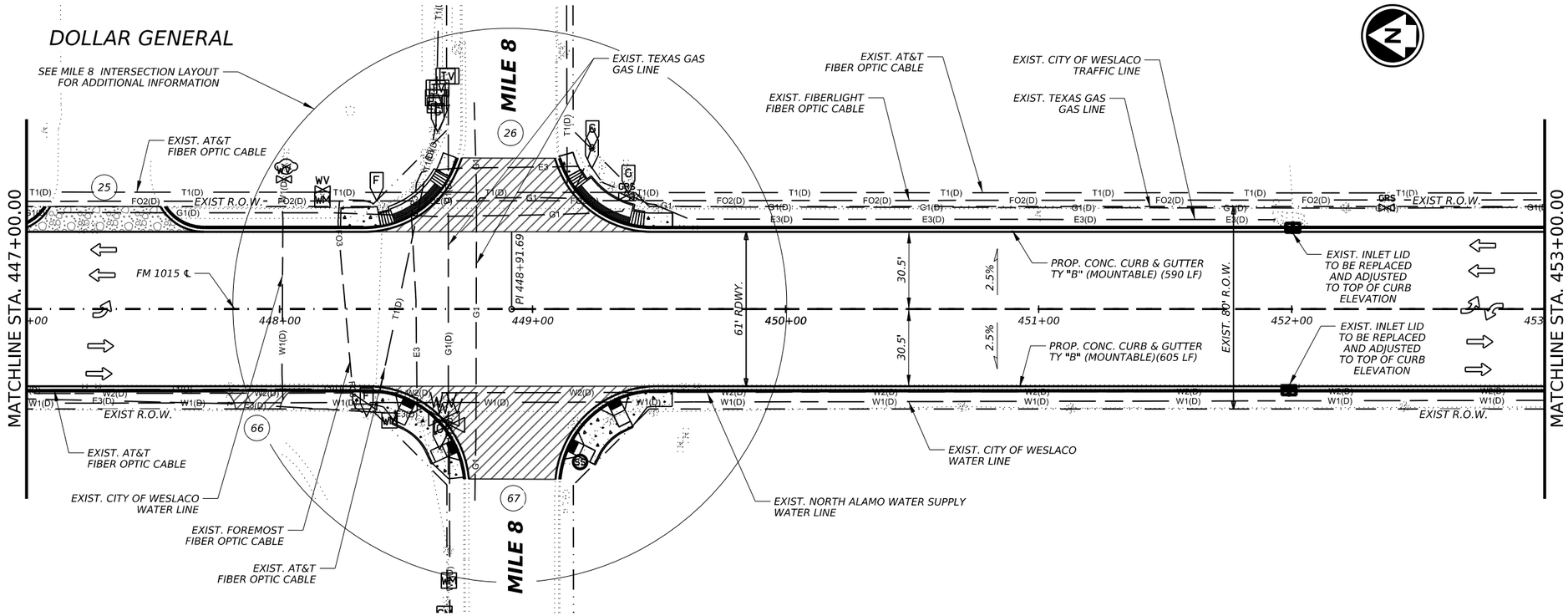
FM 1015

PLAN AND PROFILE

SHEET 9 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		126

DATE: 6/12/2023 2:13:07 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-09.dgn

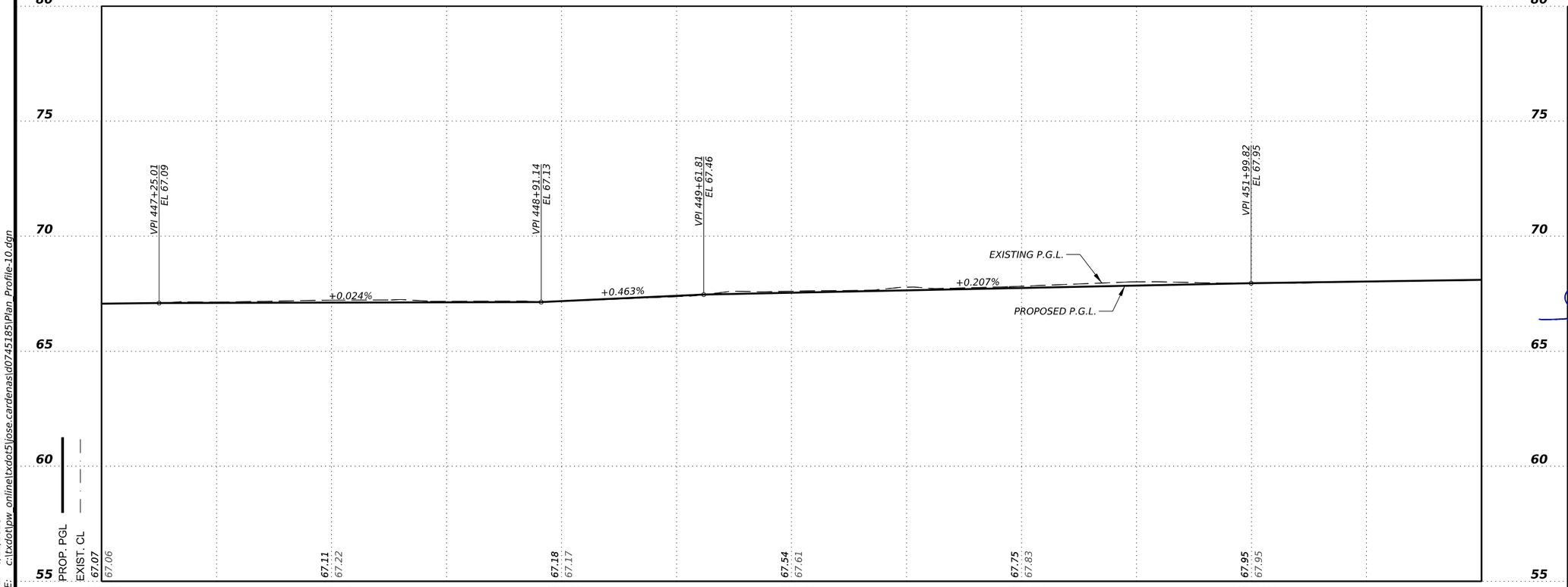


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

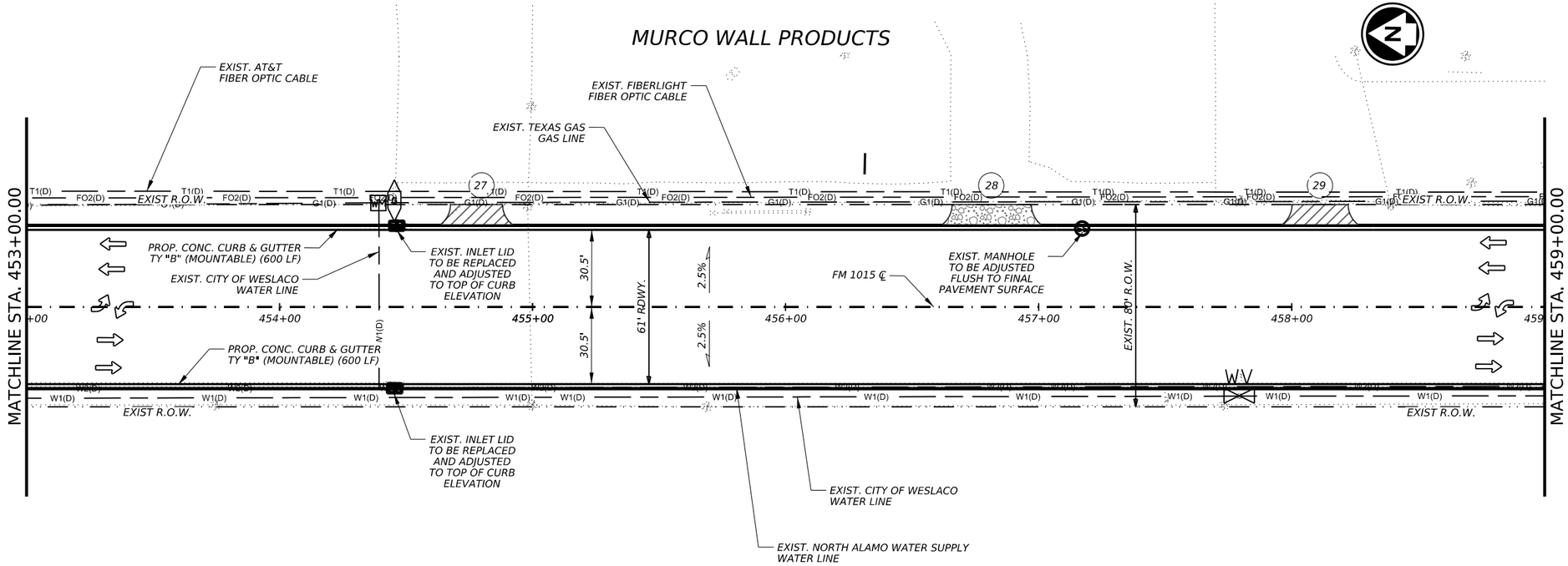
FM 1015

PLAN AND PROFILE

SHEET 10 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		127

DATE: 6/12/2023 2:13:14 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-10.dgn

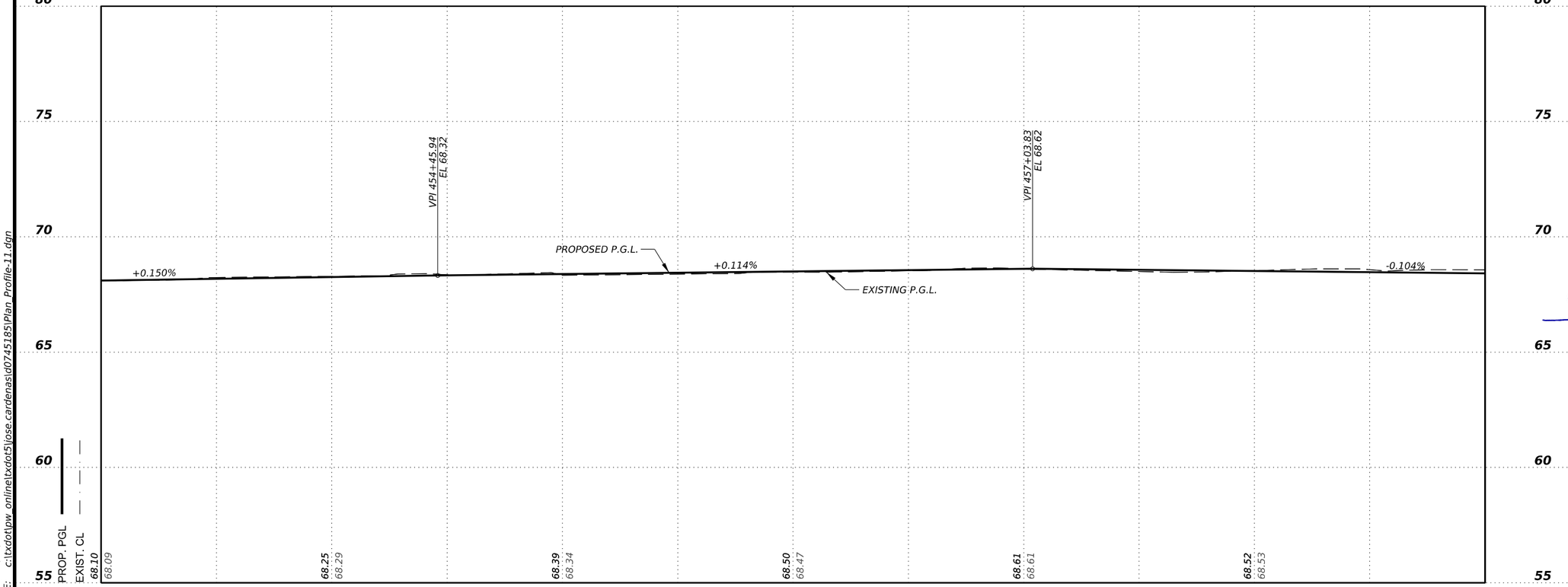


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

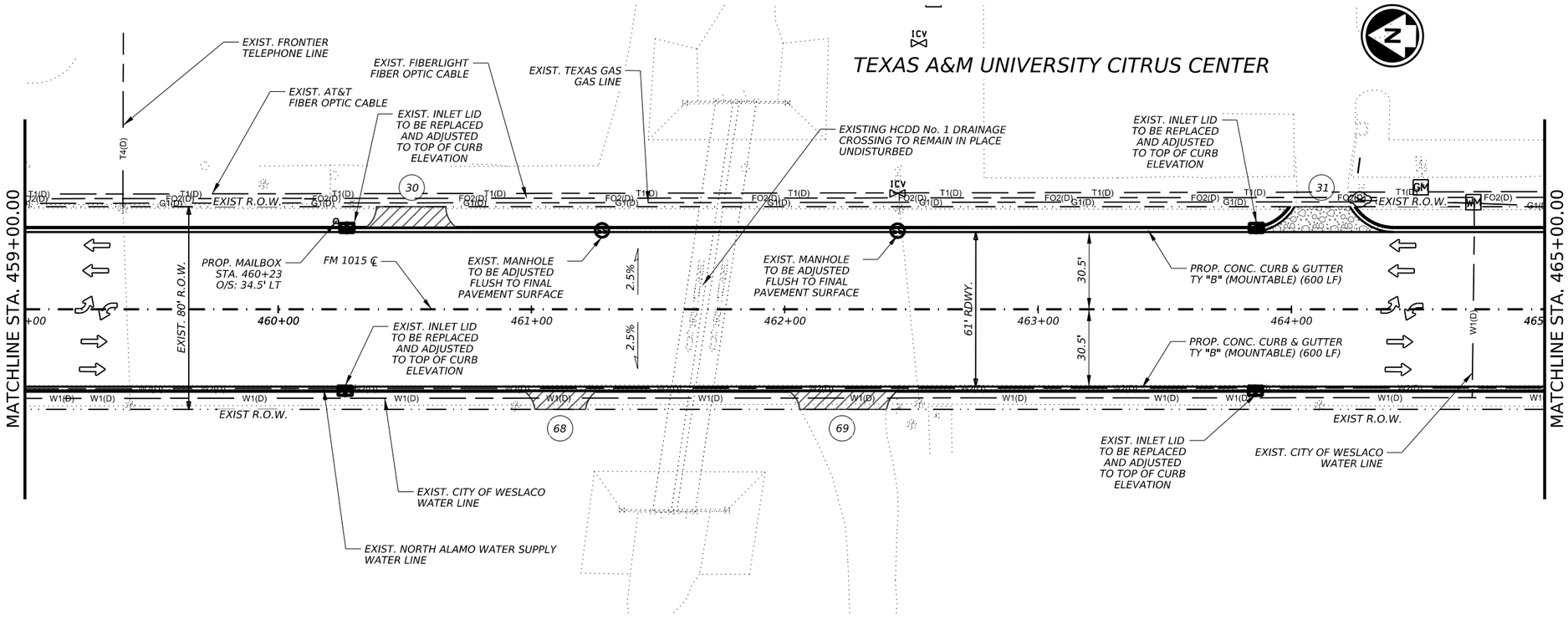
FM 1015

PLAN AND PROFILE

SHEET 11 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		128

DATE: 6/12/2023 2:13:22 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-11.dgn

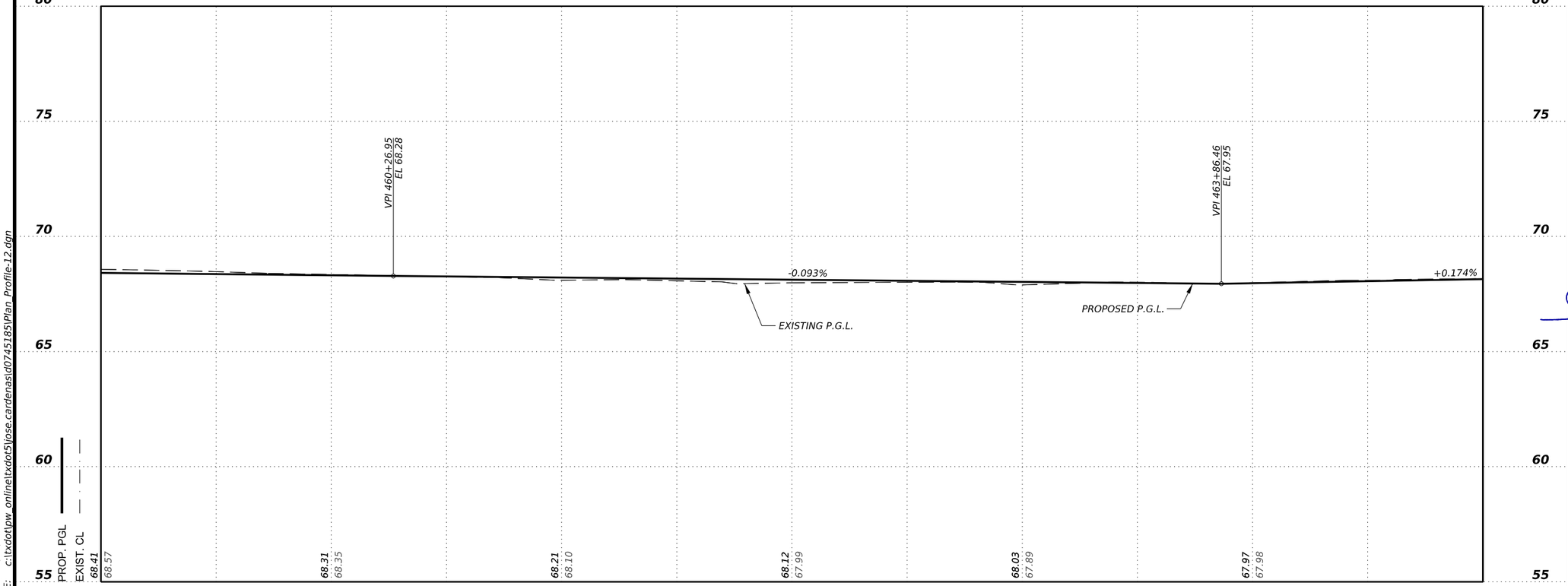


LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.



SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

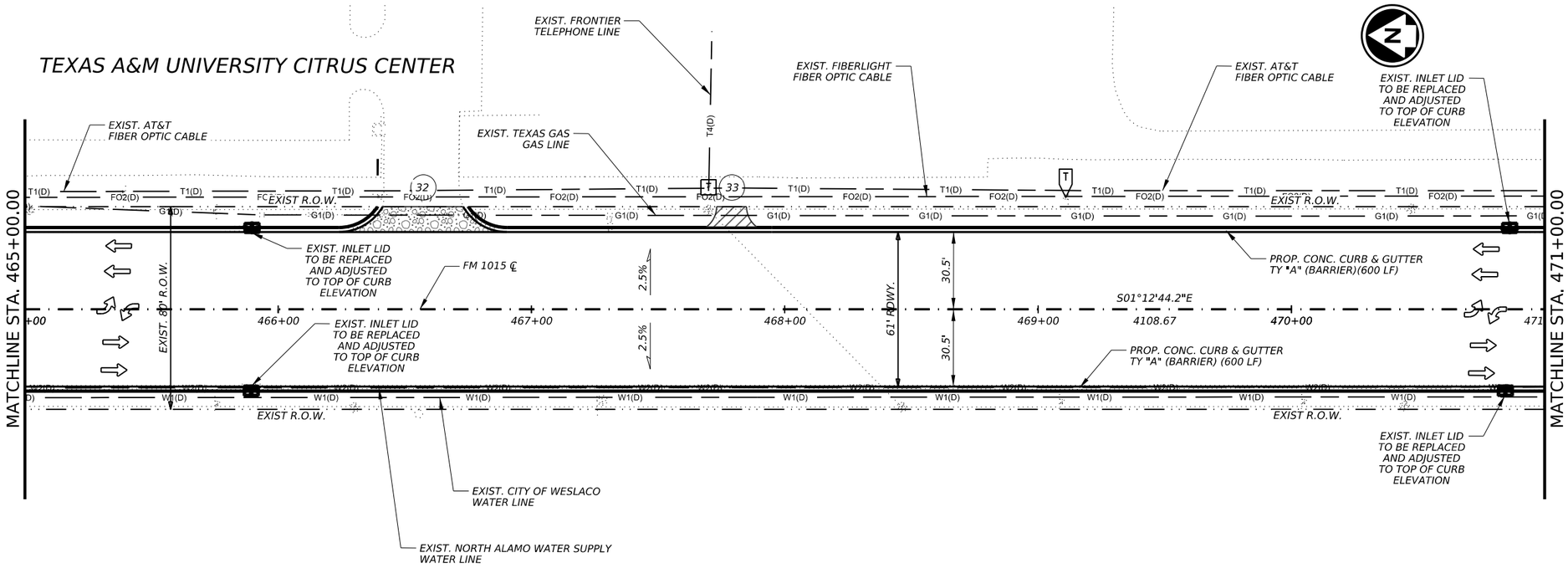
FM 1015

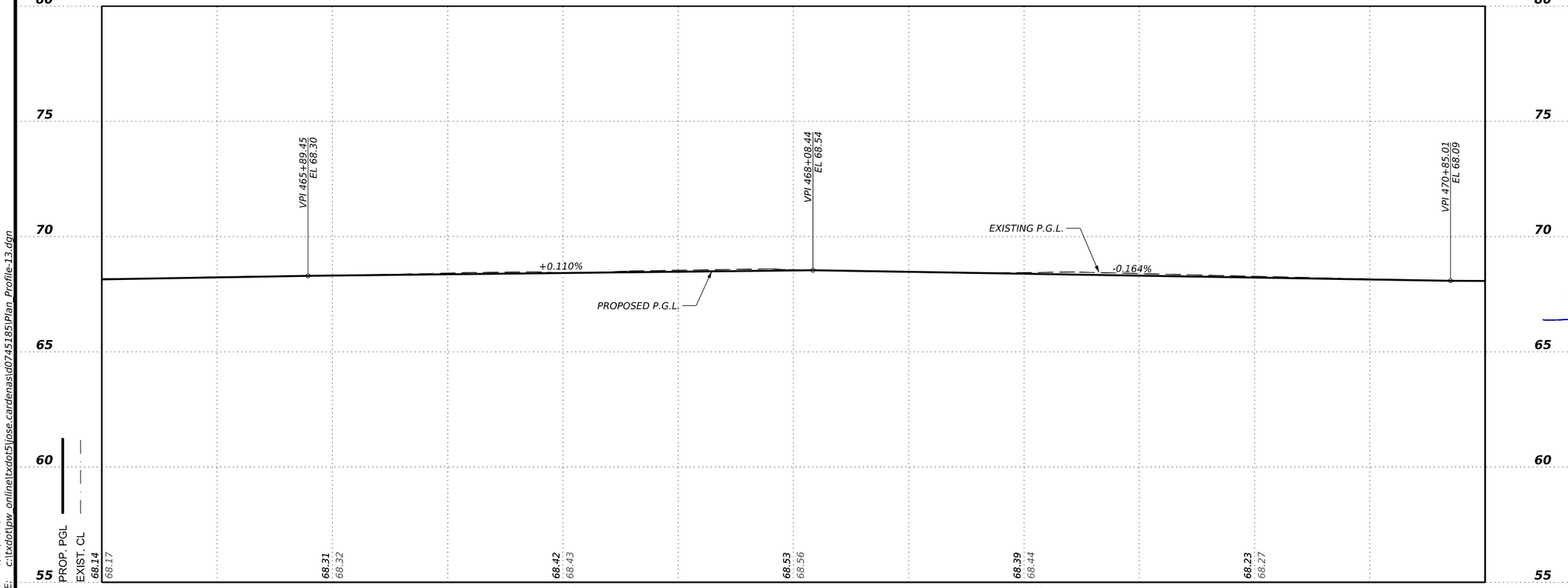
PLAN AND PROFILE

SHEET 12 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		129

DATE: 6/12/2023 2:13:29 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-12.dgn





LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.

SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

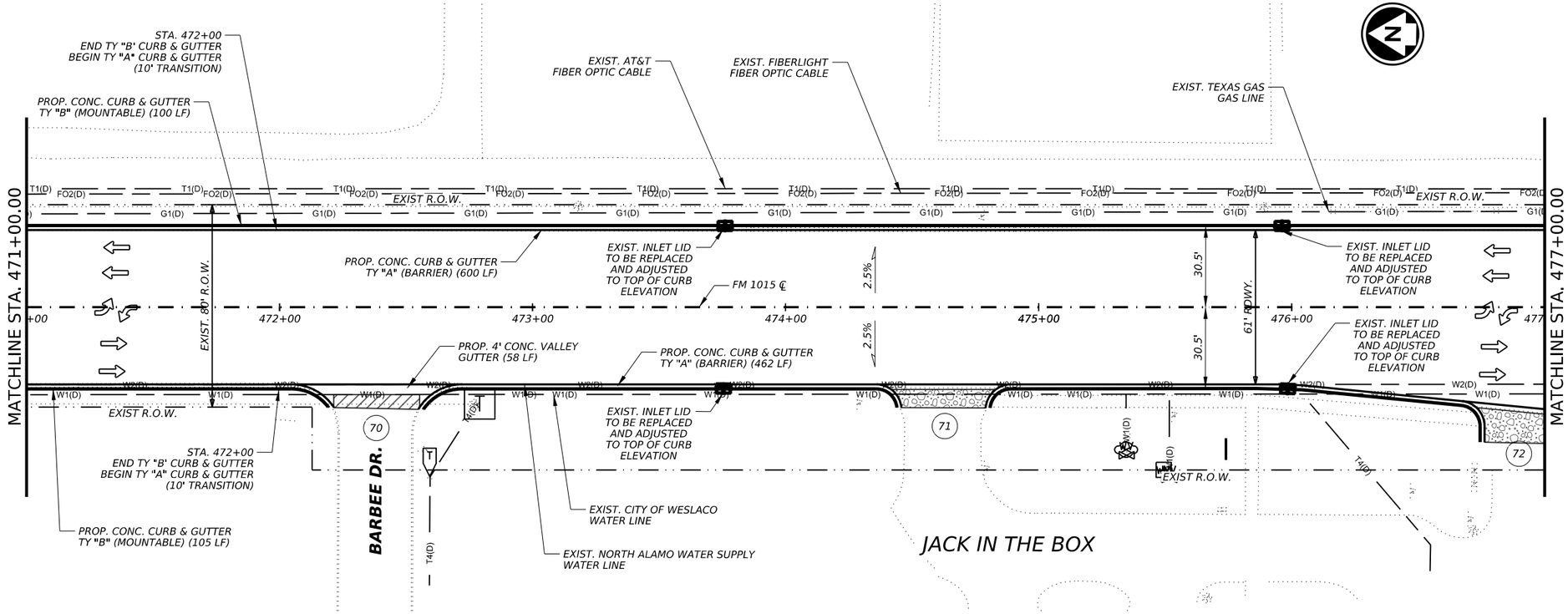
FM 1015

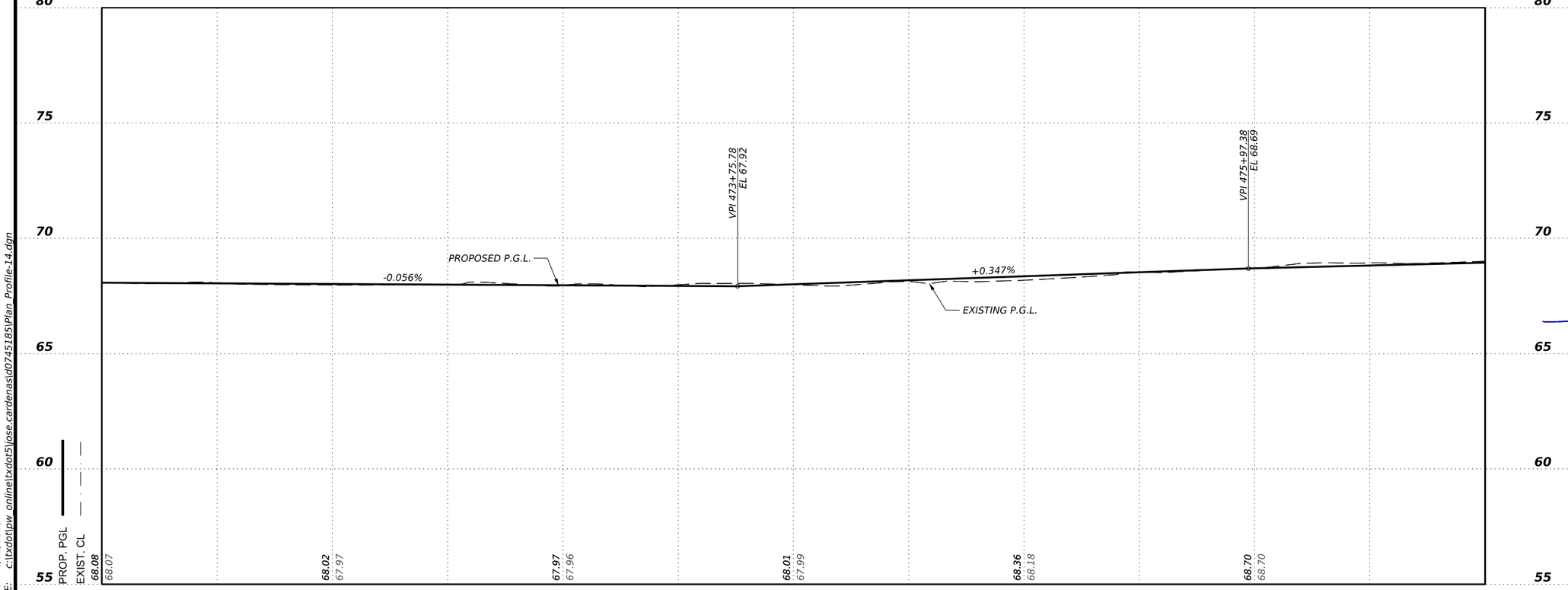
PLAN AND PROFILE

SHEET 13 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		130

DATE: 6/12/2023 2:13:36 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-13.dgn





LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.

SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

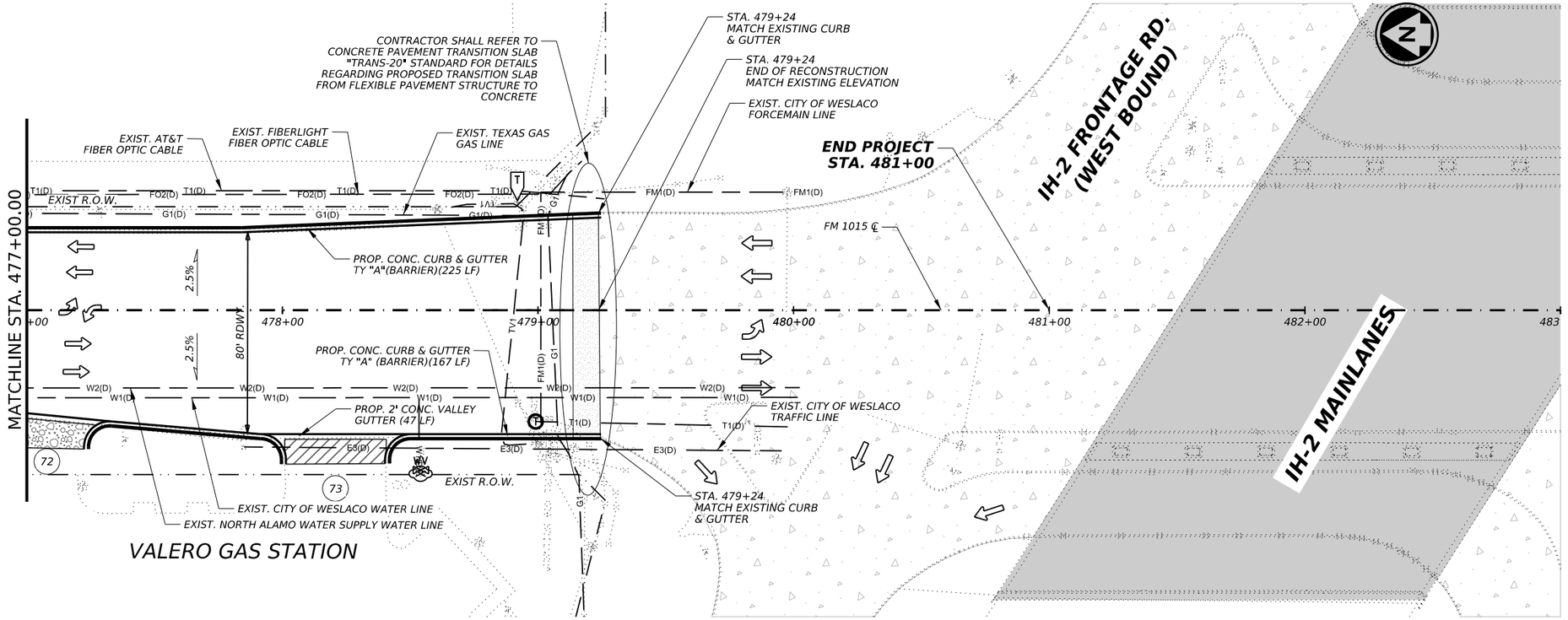
FM 1015

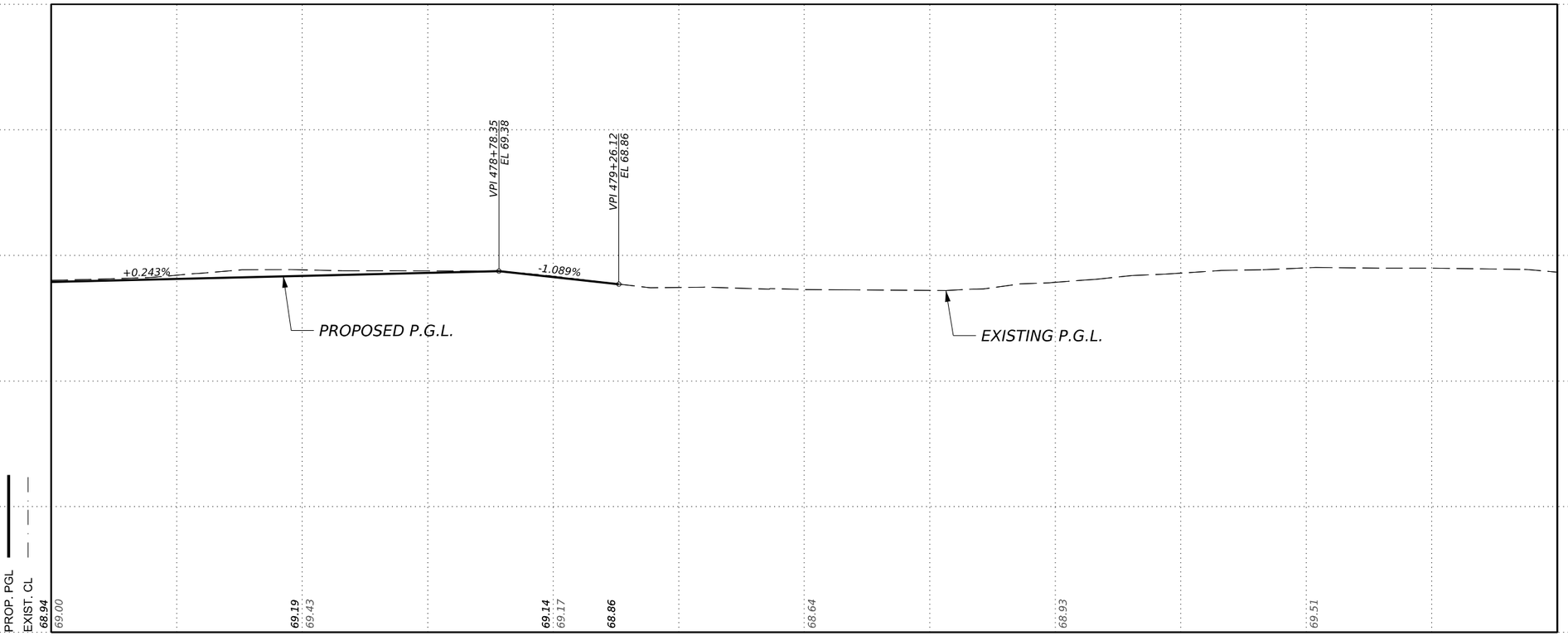
PLAN AND PROFILE

SHEET 14 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		131

DATE: 6/12/2023 2:13:44 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-14.dgn





LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER
- MB PROPOSED MAILBOX

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL, RELOCATION, AND INSTALLATION OF MAILBOX TO BE PAID UNDER 560.

SCALE:
HORZ- 0 50
VERT- 0 5

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

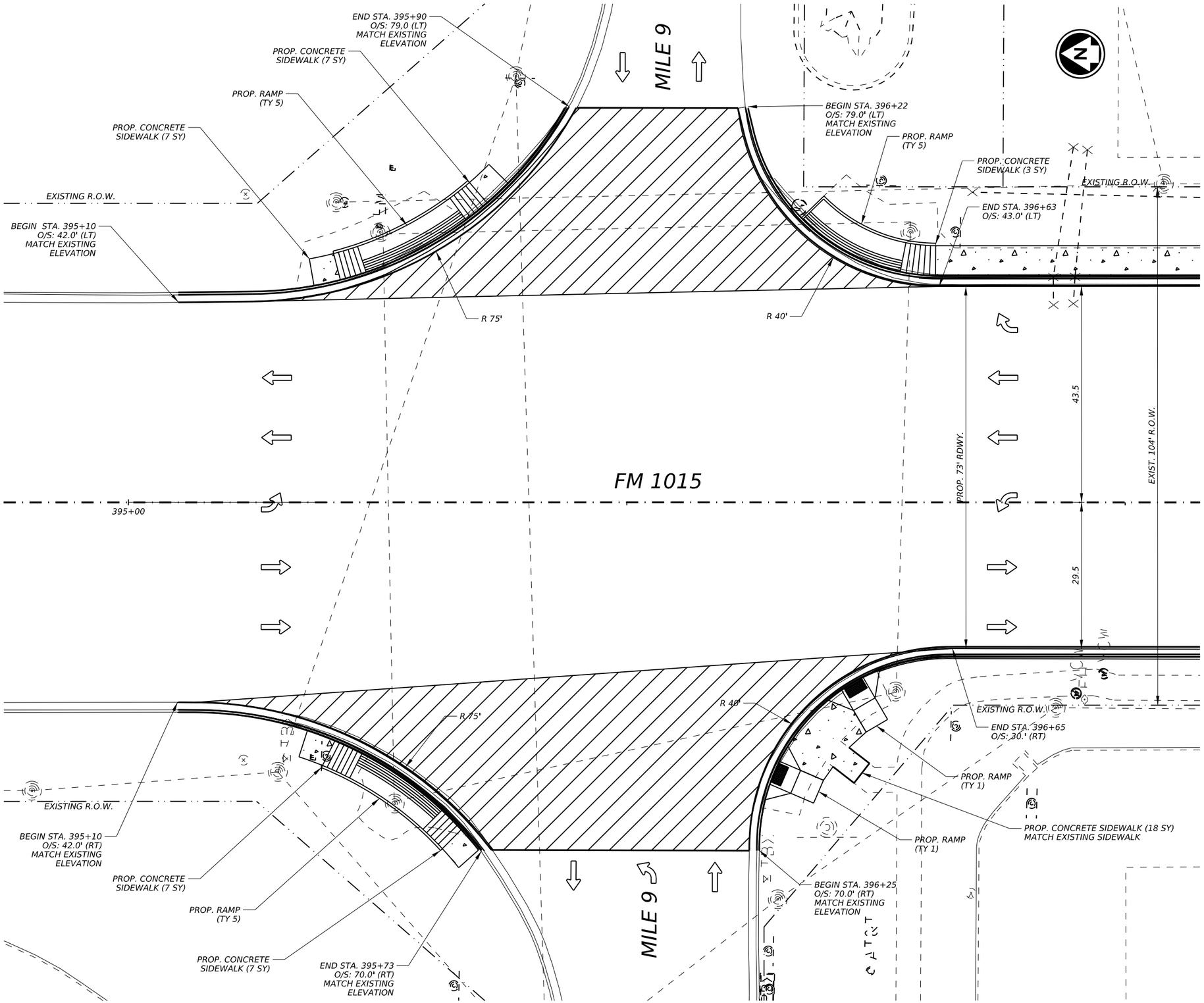
FM 1015

PLAN AND PROFILE

SHEET 15 OF 15

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		132

DATE: 6/12/2023 2:13:52 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745185\Plan_Profile-15.dgn



LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

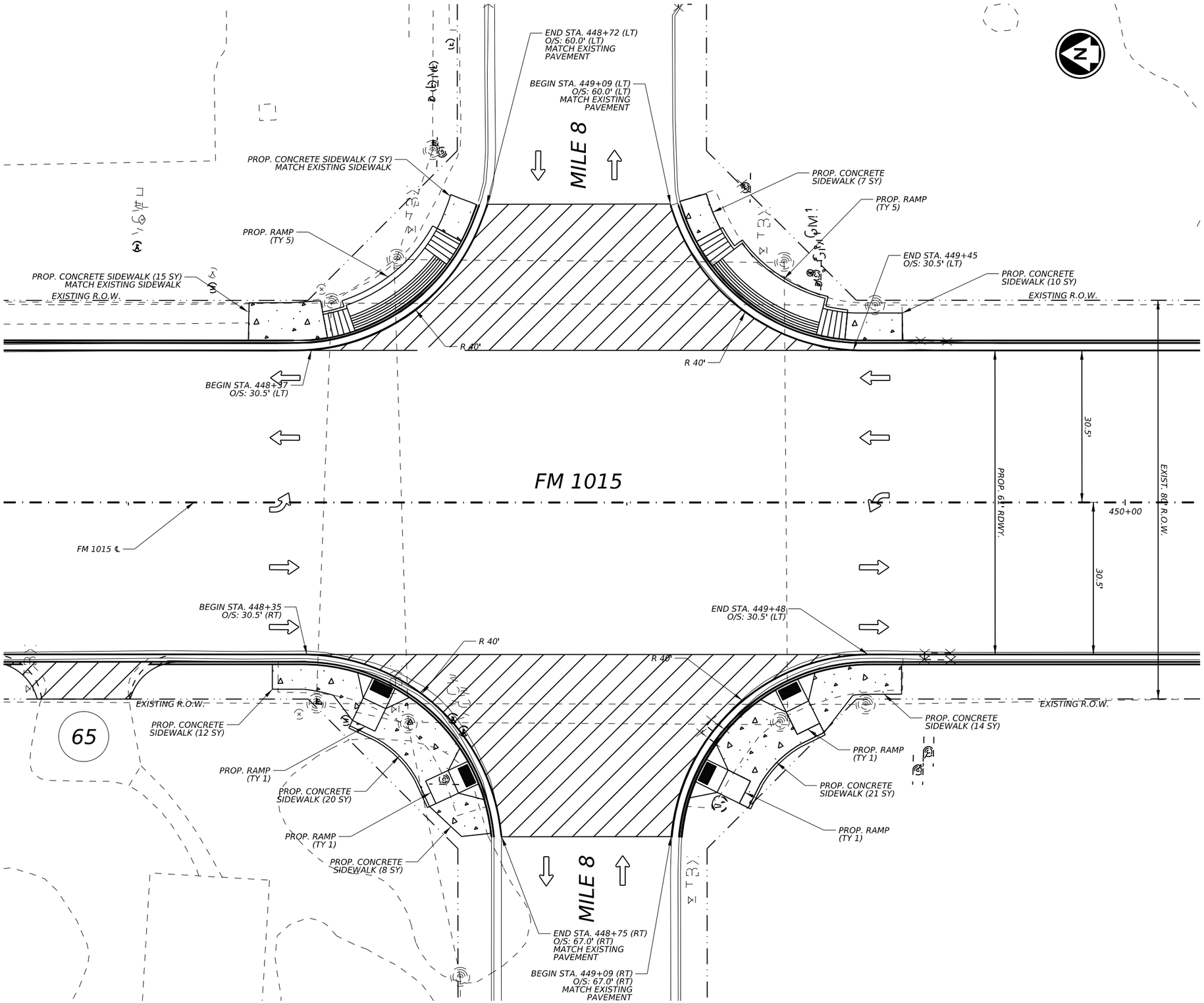
FM 1015

INTERSECTION LAYOUT
MILE 9 @ FM 1015

SCALE: 1"=20' SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		133

DATE: 6/12/2023 2:14:02 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0824799\Mile 9.dgn



LEGEND

- PROP.CONCRETE DRIVEWAY
- PROP. ASPHALT DRIVEWAY
- PROP. 2" MILL & INLAY
- PROP. MILLING
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY NUMBER

NOTES

1. ALL STATIONS ARE BASED ON FM 1015 ALIGNMENT. ALL OFFSETS ARE NOMINAL TO FACE OF CURB.
2. SEE "ROADWAY DATA SHEETS" FOR CENTERLINE DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.
3. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO RECONSTRUCTION OF EXISTING DRIVEWAY, FENCE, AND FENCE GATE. ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. REFER TO DRIVEWAY SUMMARY SHEET FOR DRIVEWAY QUANTITIES.
4. CONTRACTOR SHALL TAKE CAUTION WHEN WORKING AROUND INLETS NOT SPECIFIED TO BE ADJUSTED. ANY DAMAGES TO EXISTING INLETS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE AREA OFFICE PRIOR TO ADJUSTMENT OF INLETS AND FOR ANY INLETS DAMAGED DURING CONSTRUCTION.
5. ALL UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION OF ALL UTILITIES WITHIN ROADWAY FOOTPRINT. ANY DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

INTERSECTION LAYOUT
MILE 8 @ FM 1015

SCALE: 1"=20' SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		134

DATE: 6/12/2023 2:14:10 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0824799\Mile 8.dgn

DRWY NO.	ALIGNMENT (FM 1015 ALIGNMENT)	EXIST. DRWY WIDTH (FT.)	PROP WIDTH @ EDGE OF PAVEMENT (FT.)	PROP WIDTH @ R.O.W. LINE (FT.)	PROP. WIDTH OF DRWY (FT.)	DRIVEWAYS ITEMS				PROP. RAD. (FT.)		PROPOSED DRWY. R.O.W. PENETRATION	
						530-6005			530-6004				
	STATION, O/S					TY PB-1 (SY)	TY PBS1 (SY)	TY PBS2 (SY)	CONC (SY)	LEFT	RIGHT	L	W
1	396+12 LT	85	138	32	85			248		75	40		
2	400+20 LT	52	82	52	52	51				15	15		
3	404+98 LT	68	123	68	68	56				40	40		
4	414+79 LT	46	132	46	46	153				42	42		
5	416+15 LT	19	39	19	19	21				10	10		
6	419+49 LT	10	30	10	10	13				10	10		
7	420+80 LT	21	29	21	21	19				10	10		
8	421+50 LT	15	35	15	15	18				10	10		
9	422+68 LT	13	32	15	15	18				10	10		
10	424+84 LT	21	32	24	24	22				10	10		
11	425+94 LT	36	74	37	37		23			25	25		
12	428+36 LT	35	70	39	39				54	25	25		
13	432+49 LT	21	42	24	24				30	10	10		
14	434+26 LT	39	77	39	39		25			25	25		
15	436+13 LT	20	32	24	24	23				10	10		
16	437+20 LT	20	39	20	20	23				10	10		
17	437+69 LT	20	40	21	21	23				10	10		
18	439+32 LT	40	72	40	40		26			18	18		
19	442+05 LT	16	36	16	16	20				10	10		
20	443+04 LT	13	22	14	14				14	10	10		
21	443+83 LT	12	20	12	12				13	10	10		
22	444+55 LT	12	21	12	12				13	10	10		
23	445+71 LT	19	26	18	18	19				10	10		
24	446+74 LT	19	24	16	16	16				10	10		
25	447+30 LT	40	77	43	43				60	20	20		
26	448+90 LT	37	108	37	37			185		40	40		
27	454+78 LT	16	29	21	21	21				10	10		
28	456+81 LT	31	40	31	31				30	10	10		
29	458+11 LT	22	42	22	22	26				10	10		
30	460+53 LT	28	47	28	28	31				10	10		
31	464+12 LT	22	54	22	22				36	20	20		
32	466+57 LT	31	63	32	32				47	20	20		
33	467+79 LT	12	30	12	12	16				10	10		
34	396+07 RT	101	152	52	101			309		75	40		
35	398+67 RT	43	69	44	44				60	12.5	12.5		
36	401+36 RT	11	42	22	22	25				10	10		
37	407+12 RT	14	30	10	10	14				10	10		
38	407+87LT	18	34	14	14	18				10	10		
39	409+22 RT	23	36	16	16	20				10	10		
40	410+10 LT	42	55	35	35	37				10	10		
41	410+84 RT	17	31	11	11				15	10	10		
42	411+51 RT	9	29	9	9	13				10	10		
43	412+80 RT	29	40	20	20				23	10	10		
44	413+41 RT	18	30	10	10				14	10	10		
45	414+04 RT	23	37	17	17	20				10	10		
46	415+80 RT	18	37	17	17	20				10	10		
47	418+20 RT	40	50	30	30				32	10	10		
48	419+20 RT	78	83	50	50		35			15	15		
49	423+88 RT	50	50	30	30		18			10	10		
50	426+59 RT	44	49	29	29		18			10	10		

NOTES

1. LOCATIONS LISTED ON THE TABLE ARE APPROXIMATE. EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER AS REQUIRED. ALL STATIONING BASED ON PROPOSED ALIGNMENT.
2. SEE PROPOSED ROADWAY & MEDIAN LAYOUTS SHEETS FOR ADDITIONAL INFORMATION OF DRIVEWAY LOCATIONS.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

DRIVEWAY TABLES

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		135

DATE: 6/22/2023 3:25:41 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745201\FM1015 Driveway Tables.dgn

CK DW CK DW

DRWY NO.	ALIGNMENT (FM 1015 ALIGNMENT) STATION, O/S	EXIST. DRWY WIDTH (FT.)	PROP WIDTH @ EDGE OF PAVEMENT (FT.)	PROP WIDTH @ R.O.W. LINE (FT.)	PROP. WIDTH OF DRWY (FT.)	DRIVEWAYS ITEMS 530-6005 TY PB-1 (SY)	530-6005 TY PBS1 (SY)	530-6005 TY PBS2 (SY)	530-6004 CONC (SY)	PROP. RAD. (FT.) LEFT	PROP. RAD. (FT.) RIGHT	PROPOSED DRWY. R.O.W. PENETRATION L	PROPOSED DRWY. R.O.W. PENETRATION W
51	428+24 RT	73	89	57	57		35			25	20		
52	431+20 RT	40	49	30	30	31				10	10		
53	432+91 RT	48	52	30	30	32				10	10		
54	434+24 RT	35	47	28	28				29	10	10		
55	434+81 RT	28	39	19	19	21				10	10		
56	435+44 RT	24	37	17	17				19	10	10		
57	436+50 RT	20	33	24	24	20				10	10		
58	438+24 RT	19	25	17	17	15				10	10		
59	439+29 RT	21	39	19	19	21				10	10		
60	440+27 RT	15	30	10	10	13				10	10		
61	441+67 RT	18	28	20	20	18				10	10		
62	442+36 RT	18	35	15	15				17	10	10		
63	444+13 RT	6	30	10	10	13				10	10		
64	444+68 RT	33	46	25	25	26				10	10		
65	446+56 RT	35	39	31	31	26				10	10		
66	447+91 RT	24	26	18	18	16				10	10		
67	448+92 RT	112	112	34	34			213		40	40		
68	461+11 RT	27	40	20	20	21				10	10		
69	462+23 RT	44	42	34	34	29				10	10		
70	472+38 RT	53	67	33	33		21			20	20		
71	474+63 RT	50	53	33	33				29	10	10		
72	476+99 RT	54	66	46	46				62	10	10		
73	478+21 RT	50	60	39	39	44				10	10		
TOTALS						1102	201	955	597				

NOTES

1. LOCATIONS LISTED ON THE TABLE ARE APPROXIMATE. EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER AS REQUIRED. ALL STATIONING BASED ON PROPOSED ALIGNMENT.
2. SEE PROPOSED ROADWAY & MEDIAN LAYOUTS SHEETS FOR ADDITIONAL INFORMATION OF DRIVEWAY LOCATIONS.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

DRIVEWAY TABLES

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		136

DATE: 6/22/2023 3:26:00 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745201\FM1015 Driveway Tables.dgn

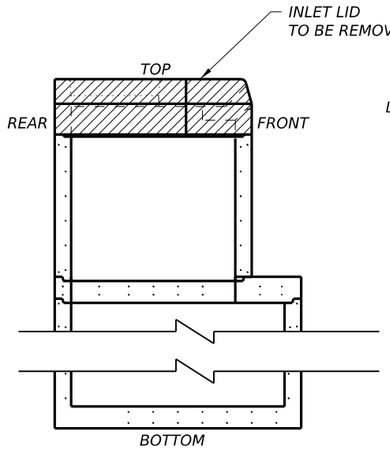
CK DW CK DW

NOTES

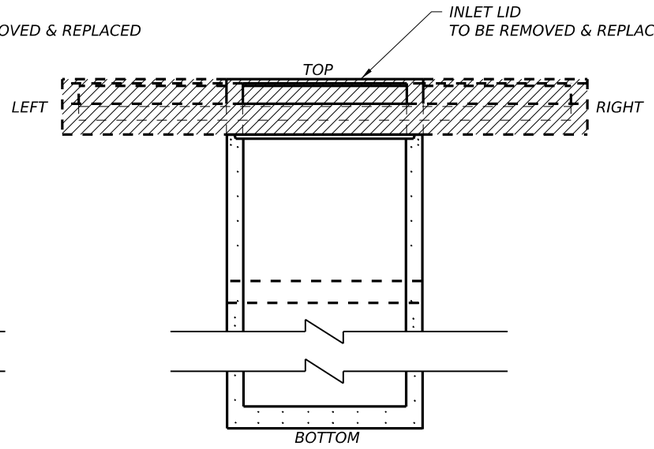
REMOVAL OF INLET LIDS SHALL BE PAID UNDER ITEM 496-6002.
REPLACEMENT OF INLET LIDS SHALL BE PAID UNDER ITEM 465-6557.

LEGEND

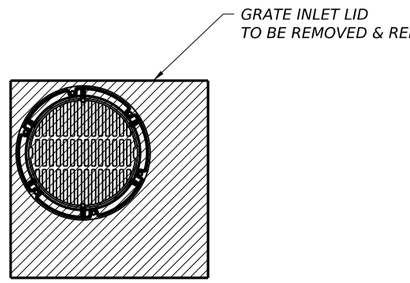
SECTION TO BE REMOVED/REPLACED



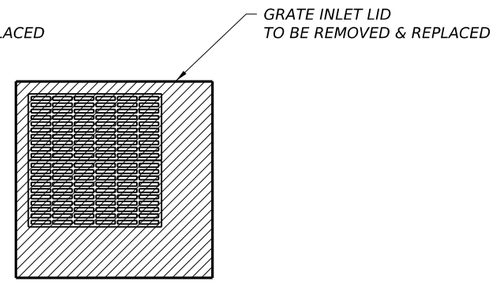
CURB SIDE VIEW



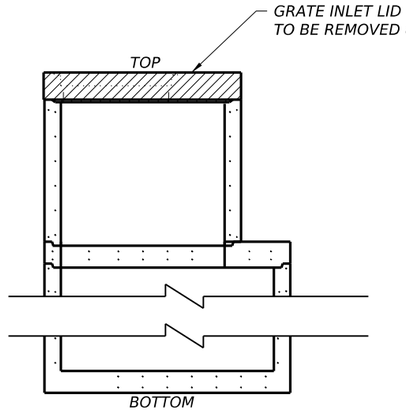
THROAT ELEVATION VIEW



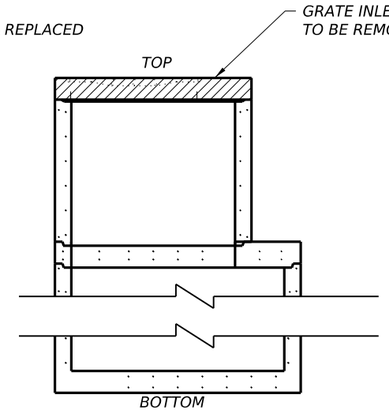
PLAN VIEW



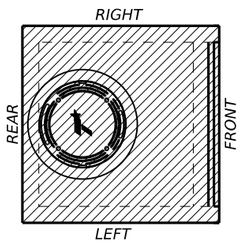
PLAN VIEW



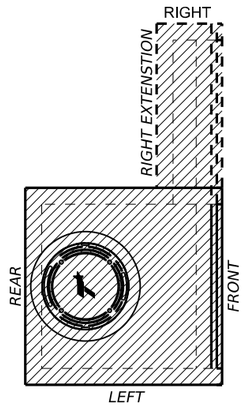
SIDE VIEW



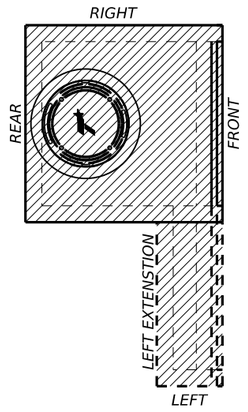
SIDE VIEW



PLAN VIEW



PLAN VIEW



PLAN VIEW

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

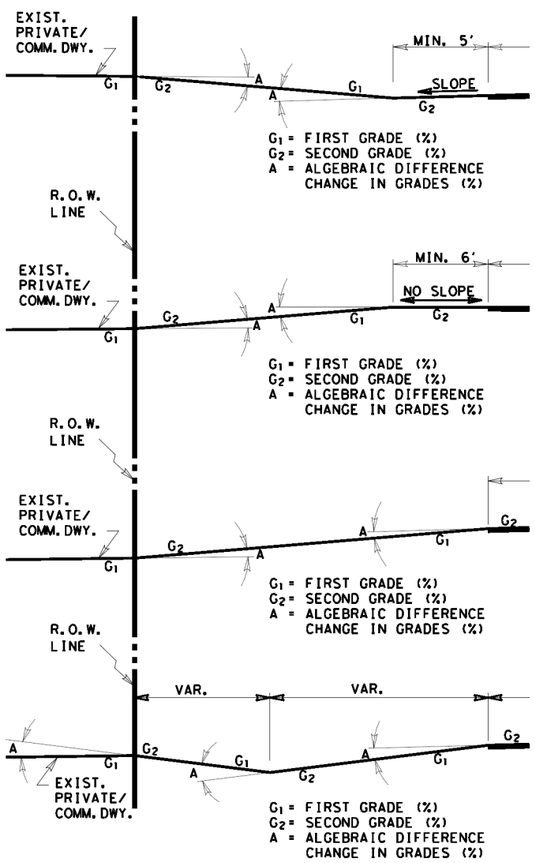
INLET LID
REMOVE & REPLACE
DETAIL

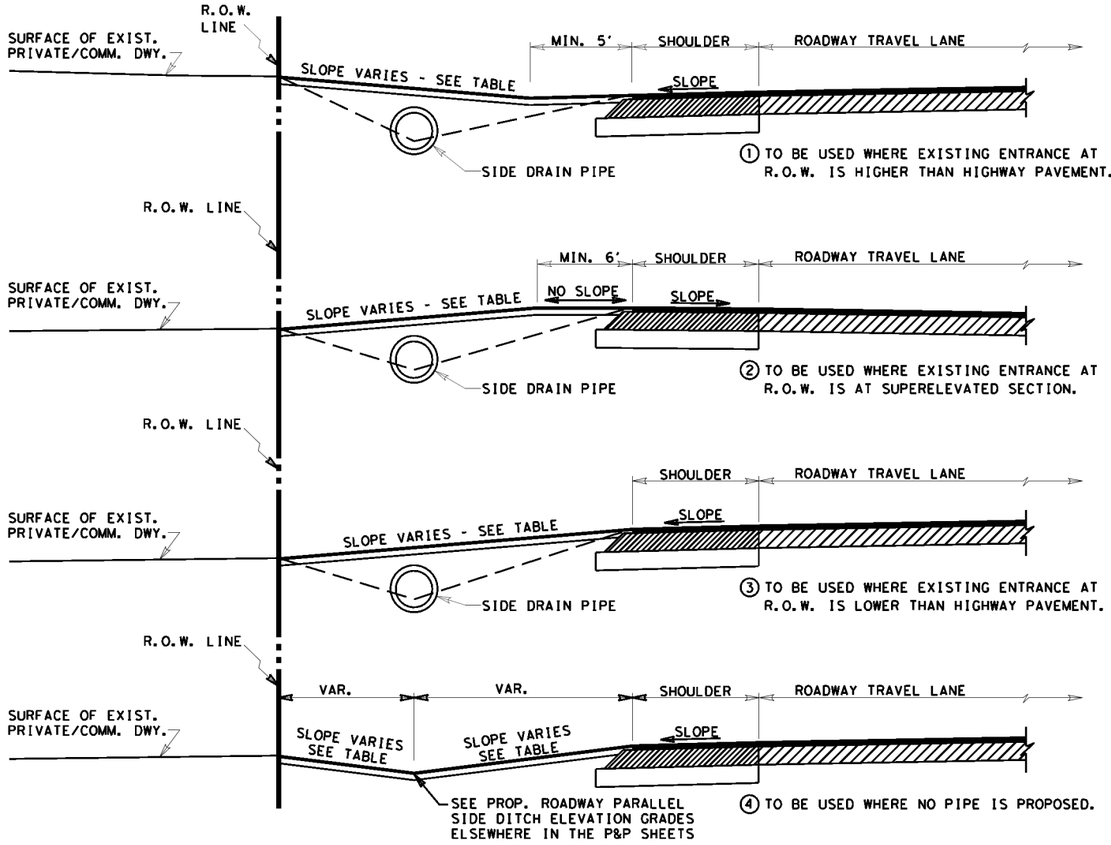
NOT TO SCALE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		137

DATE: 6/12/2023 2:14:25 PM
FILE: c:\txdot\pw_online\txdot55\jose.cardenas\d0745201\Inlet Detail.dgn

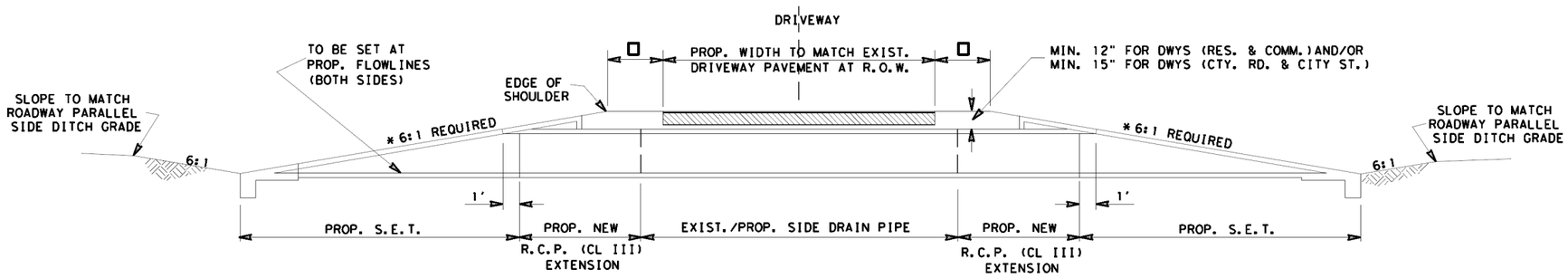




TYPICAL ENTRANCE PROFILE FOR DRIVEWAYS W/OUT C&G

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX.
RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% DESIRABLE
RESIDENTIAL DRIVEWAYS @ A = 8% DESIRABLE
FORMULA, A=G2-G1



□ - 1' MIN. ON DRIVEWAYS (RES. & COMM.)
2' MIN. ON DRIVEWAYS (COUNTY RD. & CITY ST.)

* - 6:1 SLOPE REQUIRED

NOTES:

ALL ENTRANCES CONSTRUCTED ON THIS PROJECT ARE SUBJECT TO CONCURRENCE WITH EXISTING GOVERNING REGULATIONS AS SET OUT BY THE STATE - TEXAS TRANSPORTATION COMMISSION.

ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING DRIVEWAY GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

ALL FLEXIBLE BASE USED FOR PRIVATE DRIVES & COMMERCIAL DRIVES WILL NOT REQUIRE LIME TREATMENT.

EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER.

PROP. WIDTH OF DRIVEWAYS TO MATCH EXISTING WIDTH AT R.O.W. LINE.

114 #/SY ACP (COMPACTED) IS EQUAL TO 1 IN. DEPTH,
171 #/SY ACP (COMPACTED) IS EQUAL TO 1½ IN. DEPTH.

SIDE DRAIN PIPES TO BE INSTALLED WHERE ROADWAY DITCH DRAINAGE IS NECESSARY, AS INDICATED ON PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SIDE DRAIN PIPES TO BE INSTALLED WITH A MINIMUM OF 12" COVER WITH PROPOSED RESIDENTIAL & COMMERCIAL DRIVEWAY MATERIAL OR 15" COVER WITH PROPOSED COUNTY ROAD & CITY STREET ROADWAY MATERIAL.

AVERAGE DRIVEWAY DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS (ELSEWHERE IN PLANS) ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL DRIVEWAY DIMENSIONS MAY BE CHANGED BY THE ENGINEER BASED ON EXISTING FIELD CONDITIONS.

THE RATE OF PRIME COAT SHALL BE 0.10 GAL/SY FOR PRIVATE AND/OR COMMERCIAL DRIVEWAYS AND 0.20 GAL/SY FOR PUBLIC DRIVEWAYS (COUNTY ROADS AND/OR CITY STREETS).

TYPICALLY A CHANGE IN GRADE OF THREE PERCENT (3%) OR LESS AND A DISTANCE BETWEEN CHANGES IN GRADE OF AT LEAST ELEVEN FEET (11') ACCOMMODATES MOST VEHICLES. HOWEVER, LITERATURE SUGGESTS THAT A SIX PERCENT (6%) TO EIGHT PERCENT (8%) CHANGE IN GRADE MAY OPERATE EFFECTIVELY. INDIVIDUAL SITE CONDITIONS SHOULD BE EVALUATED TO ACCOMMODATE THE VEHICLE FLEET USING THE DRIVEWAY.

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY PROFILE DETAILS

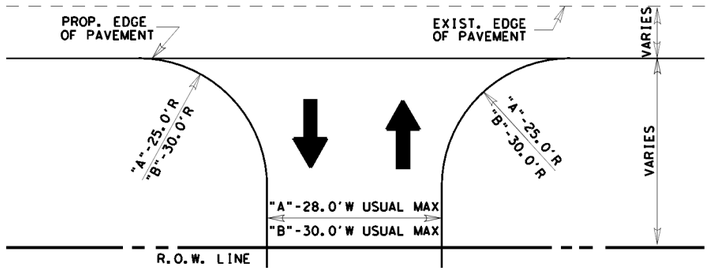
REV. 3/2020

DRIVEWAY1.DGN

CSJ NO. DIV. NO.	STATE AID PROJECT NO.	FILE NO.	SHEET NO.
6			138

STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015

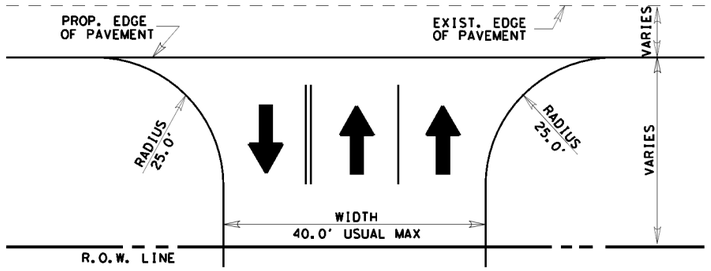
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



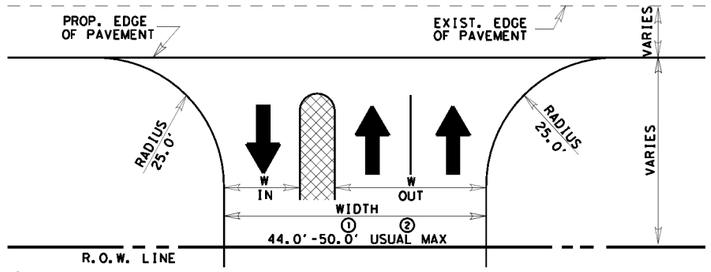
"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES① PER HOUR

① - *DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS*

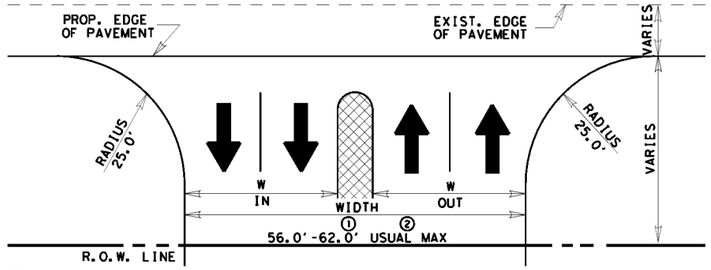


ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)



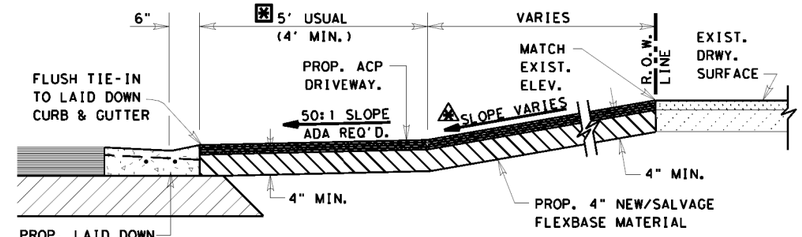
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



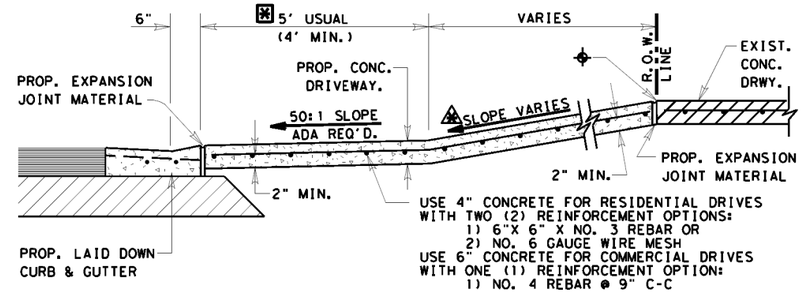
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

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

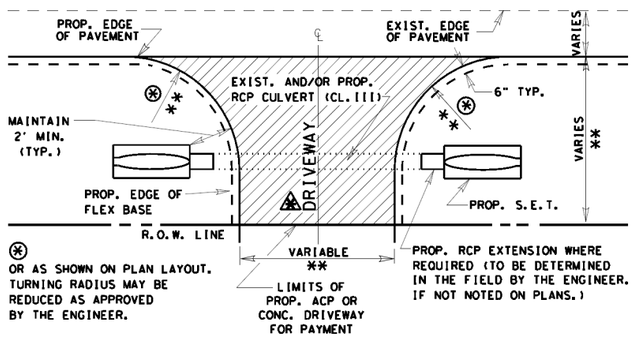
⊠ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⚠ ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% MAX.
RESIDENTIAL DRIVEWAYS @ A = 8% MAX.

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX.
RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER

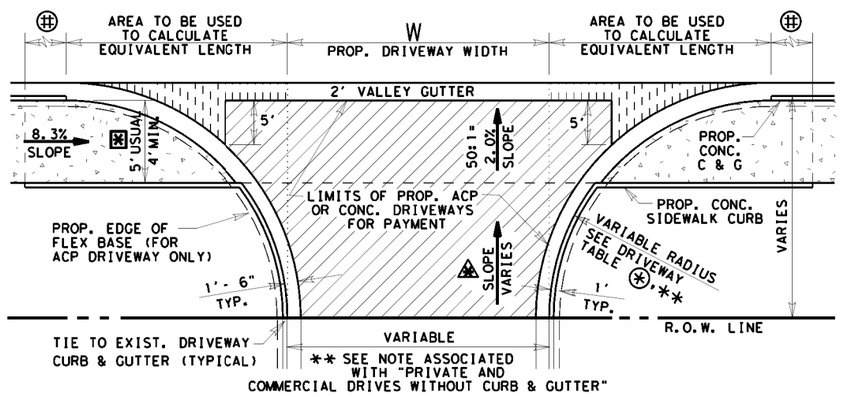


PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES
N.T.S.

⊠ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⊕ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

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 PB-1
EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 171#/SY ACP. (HMA-D PG 64-22 SAC B MEETING ITEM 340)

CONCRETE (RESIDENTIAL)
EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)
EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

PHARR DISTRICT STANDARD

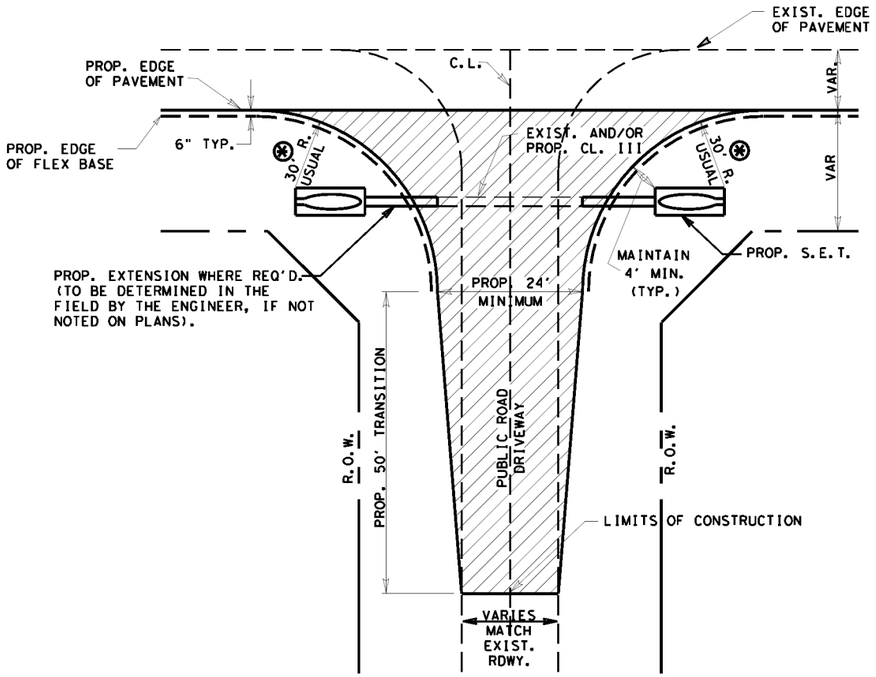
TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

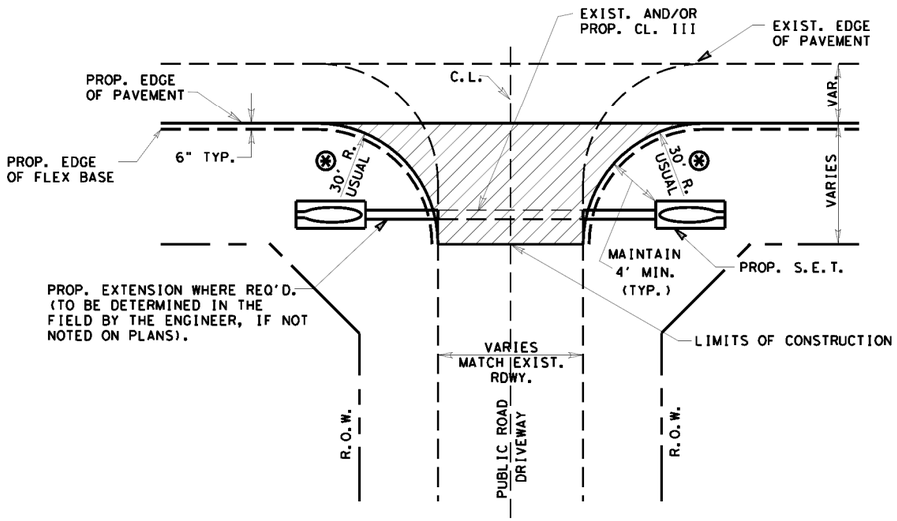
REV. 08/22

DRIVEWAY2.DGN

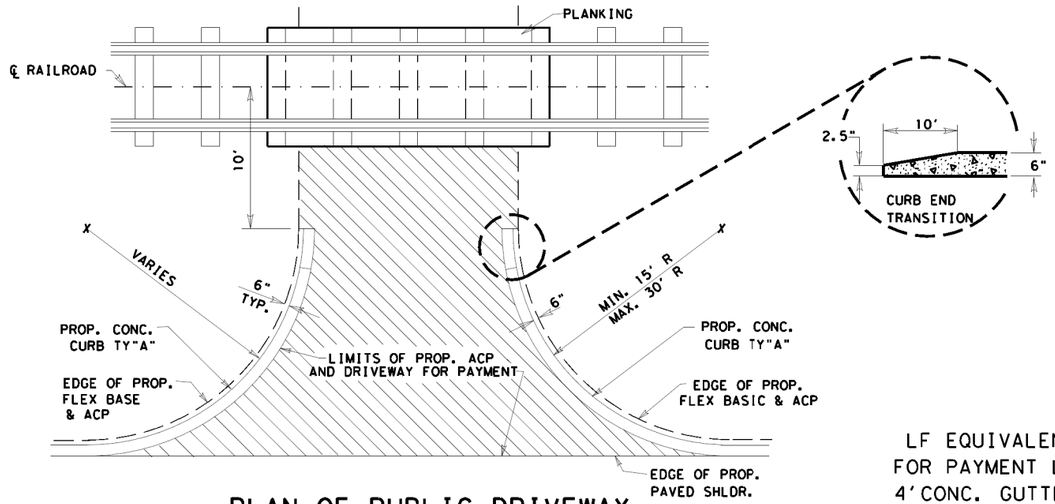
FED.RD. DIV. NO.	PROJECT NO.		FILE NO.			SHEET NO.
6						139
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015



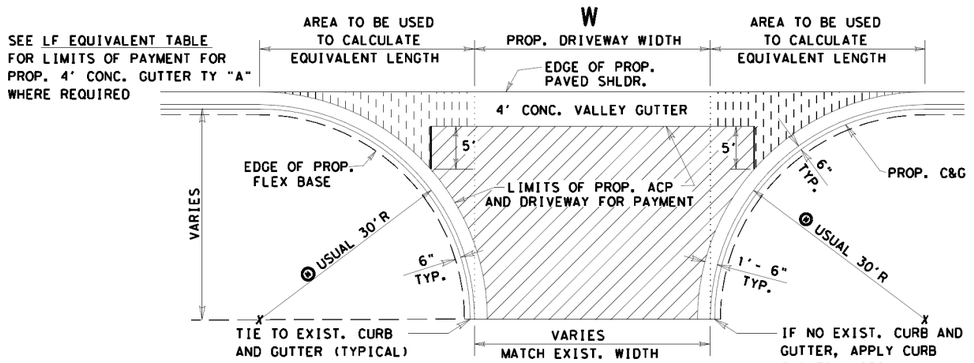
TYPICAL DETAIL
(WHEN EXIST. ROADWAY WIDTH LESS THAN 24'.)



TYPICAL DETAIL
(WHEN EXIST. ROADWAY WIDTH EQUAL TO OR GREATER THAN 24'.)



PLAN OF PUBLIC DRIVEWAY ADJACENT TO R.R. CROSSING



PLAN OF PUBLIC DRIVEWAY

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 4'CONC. GUTTER TY."A"

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 / 4') Equivalent LF Length
10	3
15	7
20	12
25	19
30	27
35	37
40	48
45	61
50	75
55	91
60	109
65	127
70	148
75	170

TY PBS1

EXIST. PAVED/UNPAVED PUBLIC DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 12" LIME TREAT. SUBGRADE, 8" FLEX. BASE 1% LIME, THEN PRIMED AND SURFACED WITH 171#/SY ACP. (HMA-D PG 64-22 SAC B MEETING ITEM 340)

TY PBS2

EXIST. DRIVEWAY TO BE CONSTRUCTED SAME AS PROPOSED ROADWAY.

GENERAL NOTES:

AVERAGE DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS ARE FOR ESTIMATING PURPOSES ONLY.

LOCATIONS LISTED ON THE TABLE ARE APPROXIMATE, EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER AS REQUIRED.

⊛ SEE DRIVEWAY TABLE, TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

SEE TABLE OF DRIVEWAYS FOR TOTAL LENGTH OF PROP. 4' CONC. VALLEY GUTTER FOR EACH LOCATION.

PHARR DISTRICT STANDARD

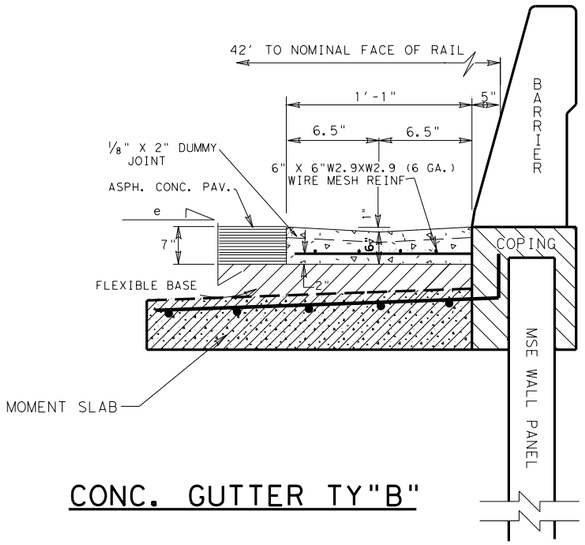
TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)

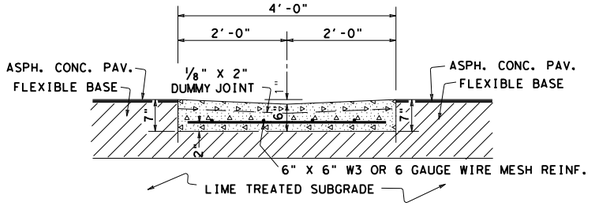
REV. 8/22

DRIVEWAY3.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						140
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015

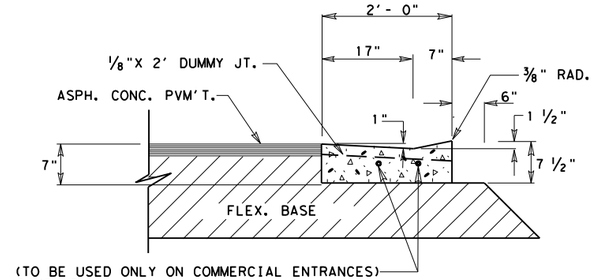


CONC. GUTTER TY"B"



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

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



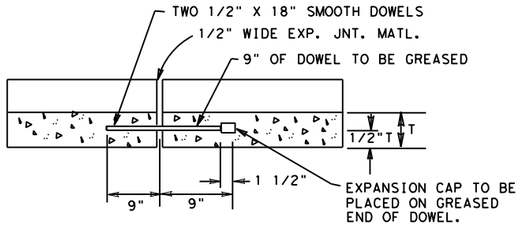
(TO BE USED ONLY ON COMMERCIAL ENTRANCES)
2-NO. 5 LONGITUDINAL REINF. BAR REINF. STEEL TO BE MADE PART OF ITEM "CONC. CURB & GUTTER." THE LENGTH OF REINFORCING STEEL WILL BE THE WIDTH OF THE PROP. COMMERCIAL ENTRANCE PLUS FOUR FEET.

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.

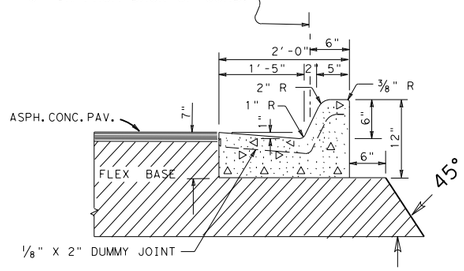


DETAIL EXPANSION JOINT

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'

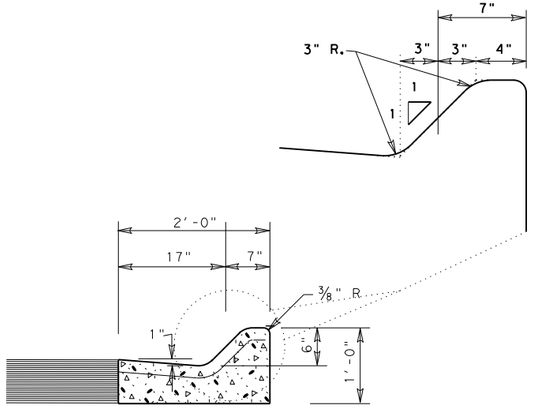
ALL HORIZONTAL DIMENSIONS AND RADII SHOWN ON PLANS, RELATING TO CURB & GUTTER, ARE TO A POINT 6" IN FROM BACK OF CURB.



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'

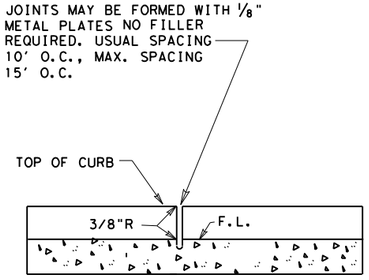


CONC. CURB & GUTTER TY. "B" (MOUNTABLE)

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'

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



DETAIL DUMMY JOINT

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

PHARR DISTRICT STANDARD

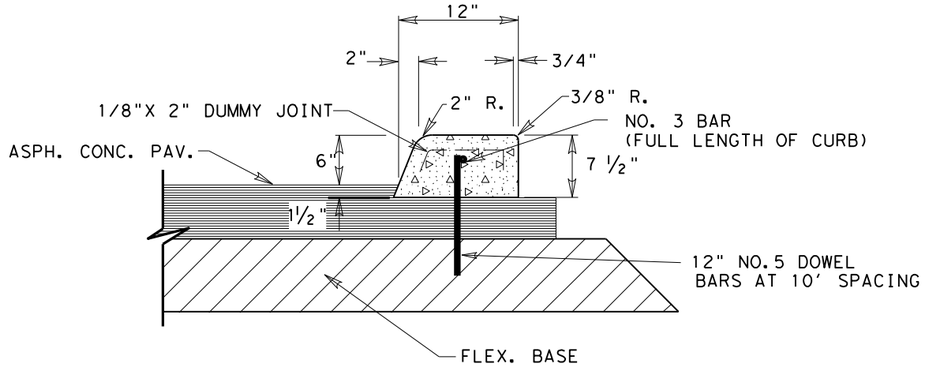
TEXAS DEPARTMENT OF TRANSPORTATION

CURB & GUTTER DETAILS

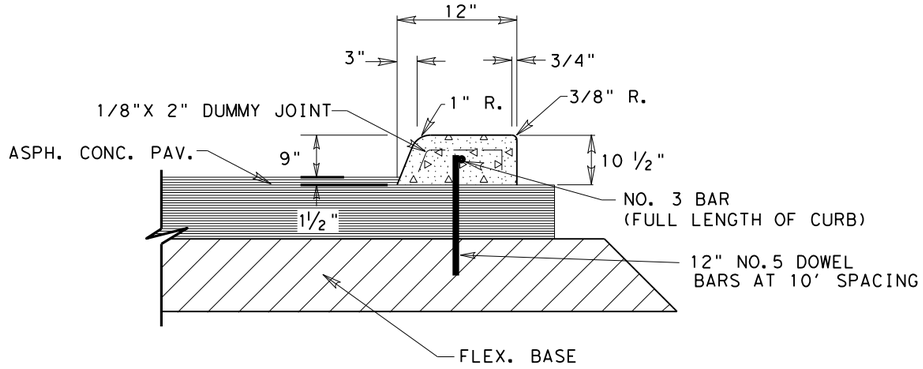
REV. 4/02

C&G. DGN

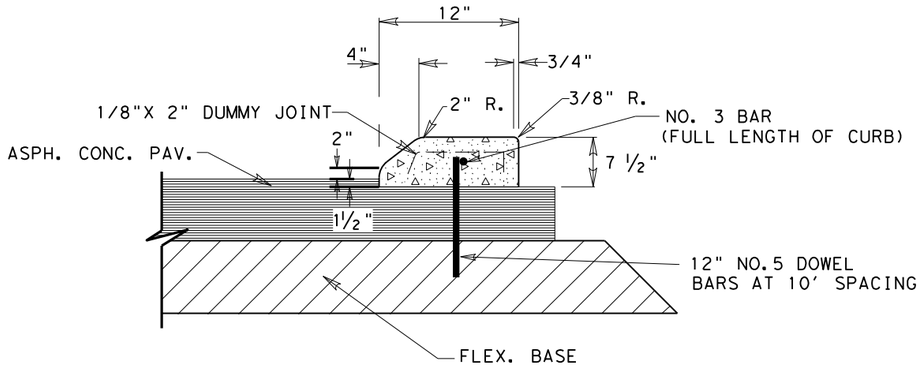
FED. RD. DIV. NO.	STATE AID PROJECT NO.	FILE NO.			SHEET NO.
6	C-1228-3-50	SHEET 1 OF 1			141
STATE	STATE DIST. NO. / COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21 HIDALGO	1228	03	050	FM 1015



CONC. CURB TY "A" (BARRIER)



CONC. CURB TY "C" (BARRIER)



CONC. CURB TY "B" (MOUNTABLE)

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

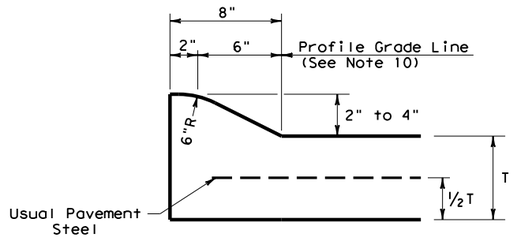
CONCRETE CURB DETAILS

REV. 6/04

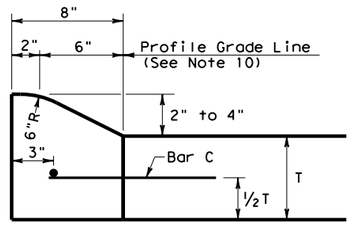
CURB.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6	C-1228-3-50		SHEET 1 OF 1			142
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015

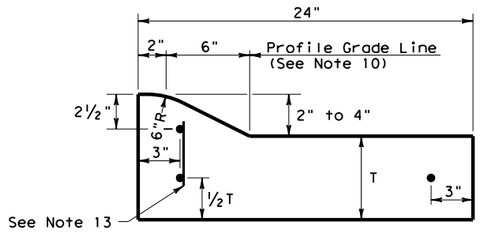
DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\CCCG22.dgn



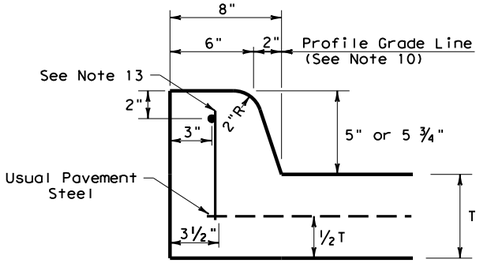
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



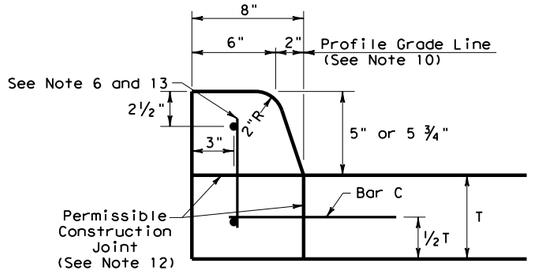
TYPE I CURB
2" - 4" HEIGHT



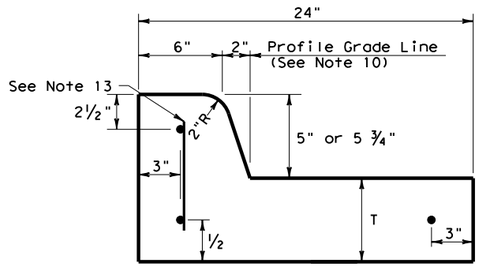
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



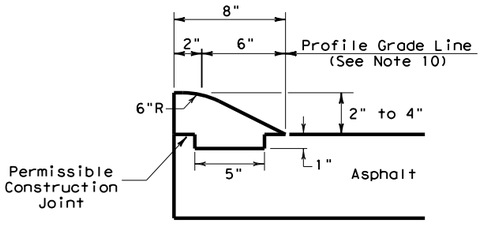
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



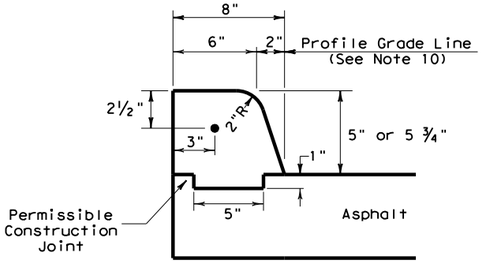
TYPE II CURB
5" - 5 ¾" HEIGHT



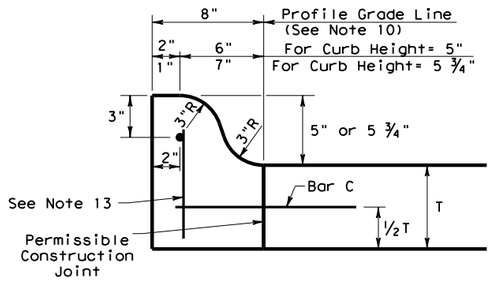
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



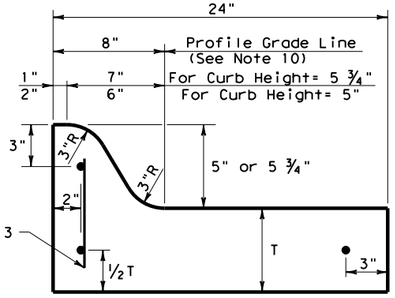
TYPE III CURB (KEYED)
2" - 4" HEIGHT



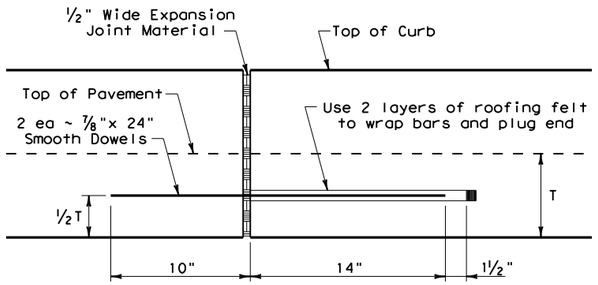
TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



TYPE IIa CURB
5" - 5 ¾" HEIGHT

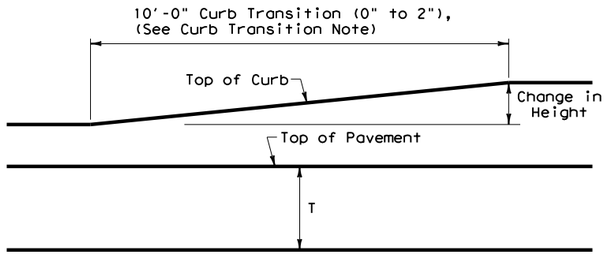


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

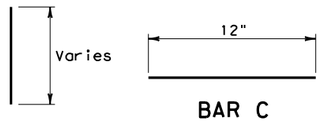
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

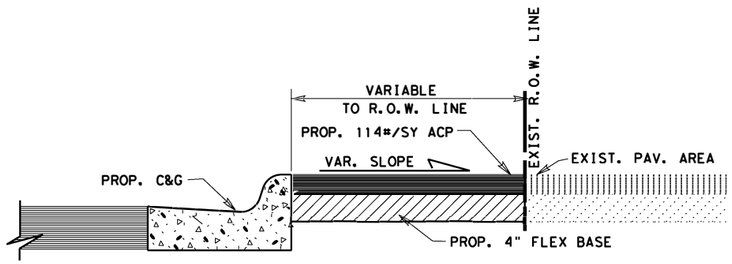
Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

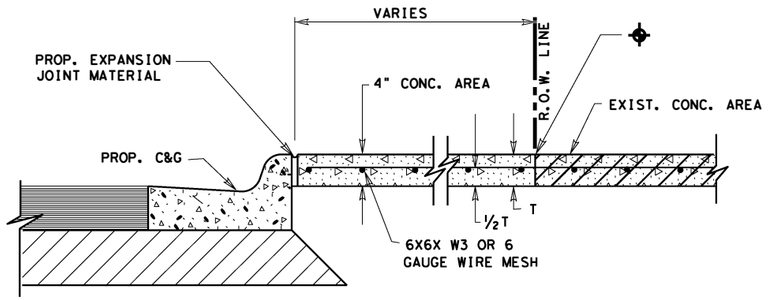
CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		143



RECONNECTING EXIST. PAVED AREAS

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



RECONNECTING EXIST. CONCRETE AREAS

RECONNECTING AREAS

STATION LIMITS		LENGTH (FT.)	WIDTH (FT.)	AREAS (SY) ASPH.	AREAS (SY) CONC.
BEG.	END				
TOTAL:					

TO BE PAID FOR AS DRIVEWAY TY PBI

TO BE PAID FOR AS CONCRETE DRIVEWAY

PHARR DISTRICT STANDARD

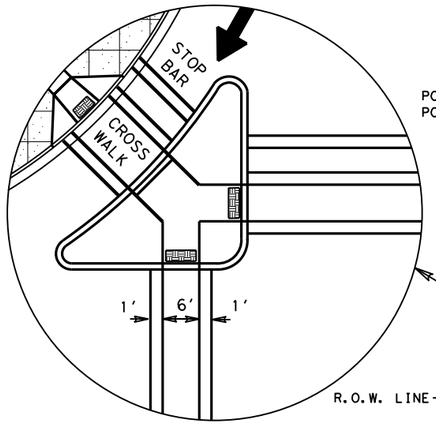
TEXAS DEPARTMENT OF TRANSPORTATION

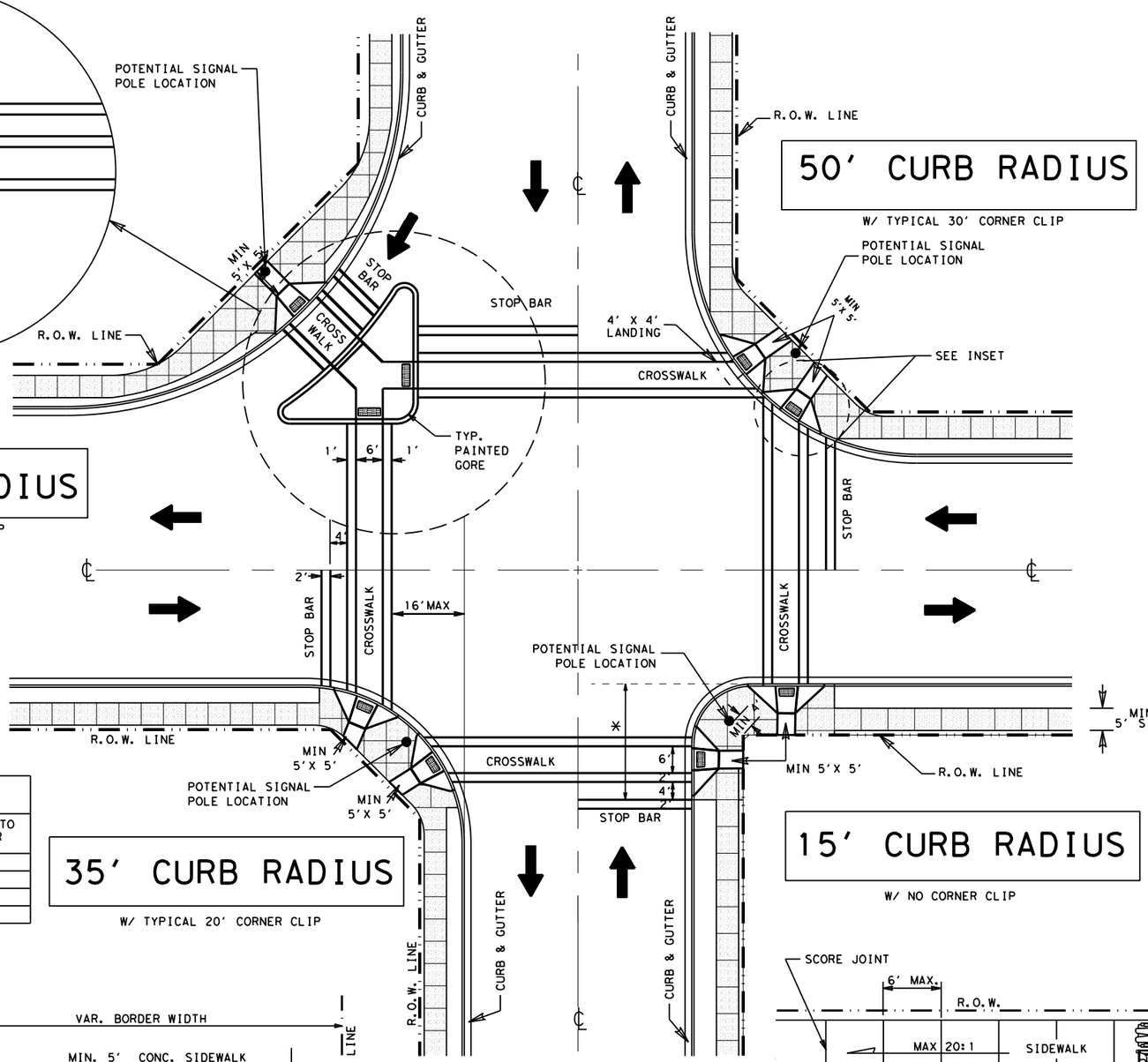
PAVEMENT RECONNECT AREAS DETAILS

REV. 4/02

PAVEMENT.DGN

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6			SHEET 1 OF 1			144
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015





75' CURB RADIUS

W/ TYPICAL 45' CORNER CLIP

50' CURB RADIUS

W/ TYPICAL 30' CORNER CLIP

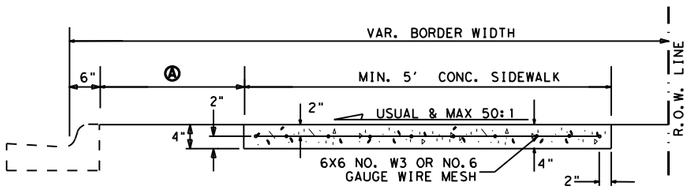
35' CURB RADIUS

W/ TYPICAL 20' CORNER CLIP

15' CURB RADIUS

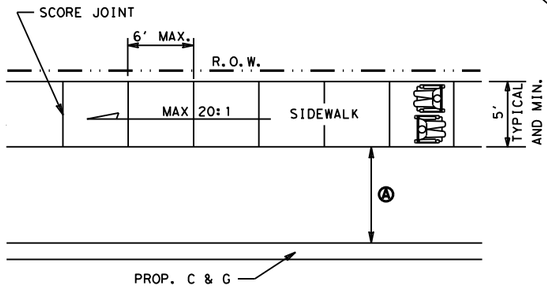
W/ NO CORNER CLIP

* FOR 90° INTERSECTION		
RADIUS	DISTANCE TO RAMP CONTROL	DISTANCE TO STOPBAR
5' R	10'	16'
10' R	15'	21'
15' R	20'	26'
>20' R	25'	30'



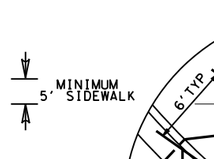
TYPICAL CONC. SIDEWALK

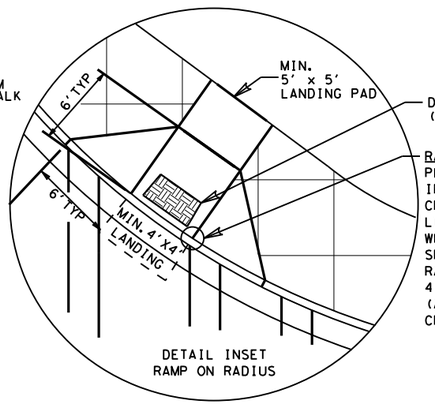
TYPICAL WHEEL CHAIR RAMP LOCATION



SCORE JOINTS 1/4" THICKNESS
EXPANSION JOINT EVERY 30'
JOINT IN CENTER OF SIDEWALK IF OVER 15' WIDE.

PLAN VIEW





RAMP CONTROL: PLACE RAMP CORNER IN ALIGNMENT W/ CROSS WALK INSIDE LINE TO MAXIMIZE WHEELCHAIR TURNING SPACE. RAMPS SHALL HAVE MIN 4' MANEUVERING SPACE (AT CENTER) WITHIN CROSSWALK.

GENERAL NOTES

- ALL RAMPS SHALL HAVE A 5' x 5' LANDING PAD.
- RAMP CENTER TO BE PERPENDICULAR TO FACE OF CURB. A PERPENDICULAR RAMP MAY BE LOCATED WITHIN THE RADIUS OF A CURBLINE.
- SIDEWALK GRADE TO BE PARALLEL TO TOP OF CURB AND GUTTER UNLESS OTHERWISE SHOWN ON PLANS OR DIRECTED BY THE ENGINEER.
- SIDEWALK WIDTH AS SHOWN ELSEWHERE IN PLANS. MIN WIDTH 5'. PROVIDE DROPPED CURBS AT INTERSECTIONS. ALL CONCRETE SHALL BE CLASS "A" PROPOSED SIDEWALKS TO MATCH EXIST. SIDEWALK.
- NO VERTICAL CHANGES SHALL EXCEED 1/4" IN ELEVATION AT ADJOINING SURFACES.
- TO PROVIDE ACCESS TO PEDESTRIAN BUTTON, SIDEWALK / LANDING PAD SHALL EXTEND AND/ OR ABUT TO SIGNAL POLE CONC. FOUNDATION.
- COLOR TEXTURIZED CONCRETE SHALL BE USED TO COLOR AREAS AT RAMPS. COLOR SHALL BE " BRICK RED " AS PER L.M. SCOFIELD COMPANY STANDARDS COLOR A-26 OR EQUAL. COLOR TEXTURIZED CONCRETE SHALL BE SUBSIDIARY TO CURB RAMP ITEM
- IF THE DETAIL IS TO BE USED IN A PLAN SET, IT MUST BE SIGNED AND SEALED.

Ⓐ DESIRABLE 3' OR GREATER FOR HIGH SPEED TRAFFIC. FOR BORDER WIDTHS OF 8' OR LESS, PLACE SIDEWALK ADJACENT TO CURB.

Texas Department of Transportation

SIDEWALK & WHEELCHAIR RAMP DESIGN GUIDE

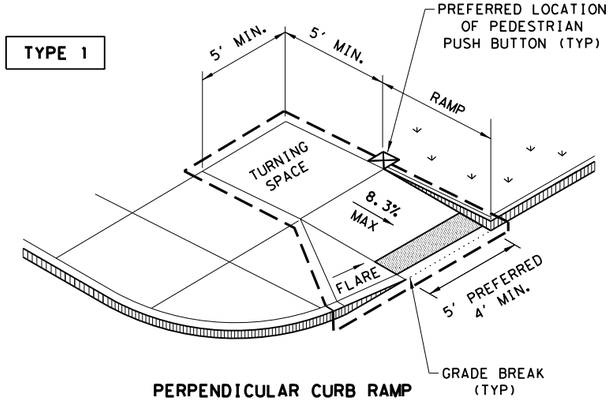
REV. 5/18

SIDEWALK.DGN

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						145
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015

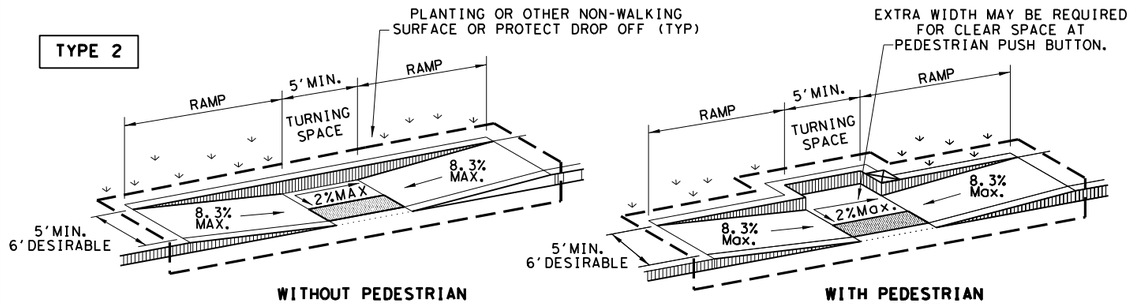
DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\ped18.dgn

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

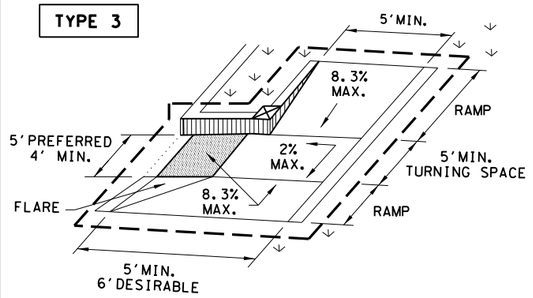


WITHOUT PEDESTRIAN PUSH BUTTON

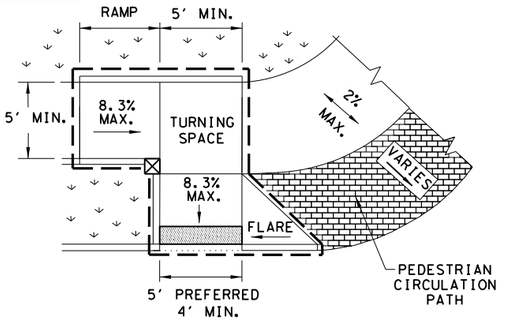
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

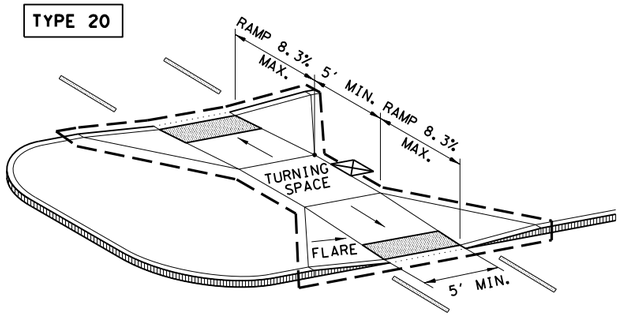


TYPE 6



COMBINATION CURB RAMPS

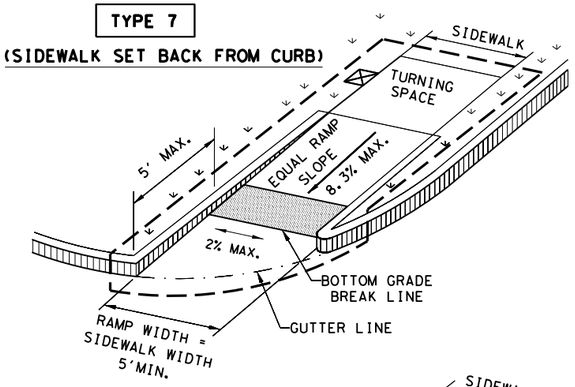
TYPE 20



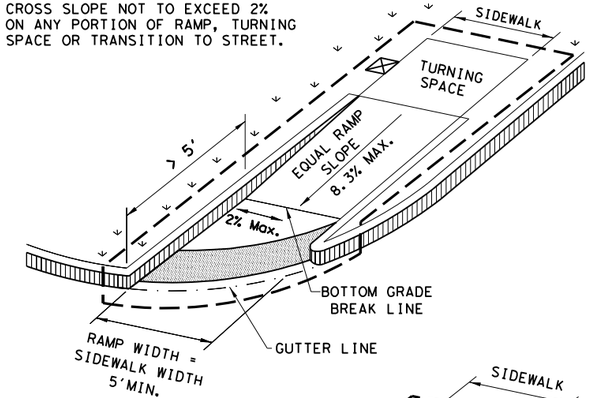
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

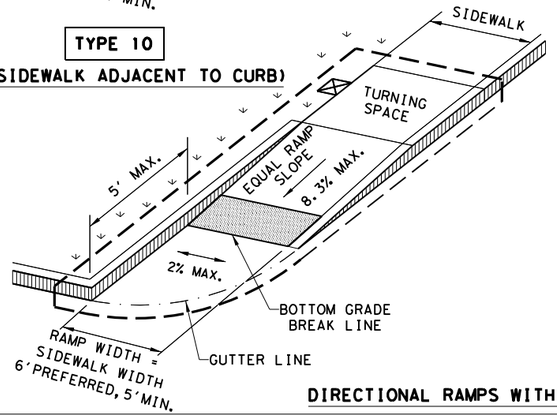


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

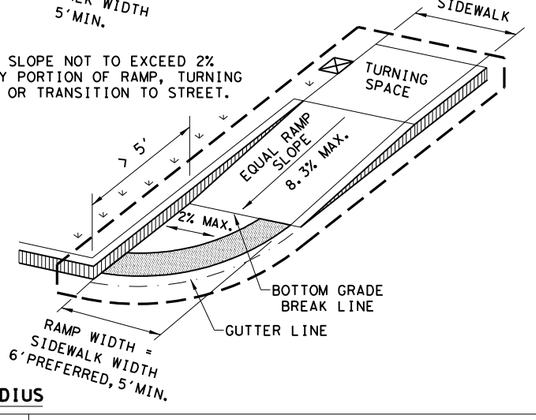


TYPE 10

(SIDEWALK ADJACENT TO CURB)

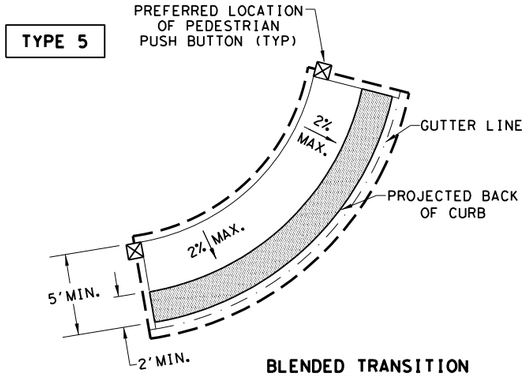


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



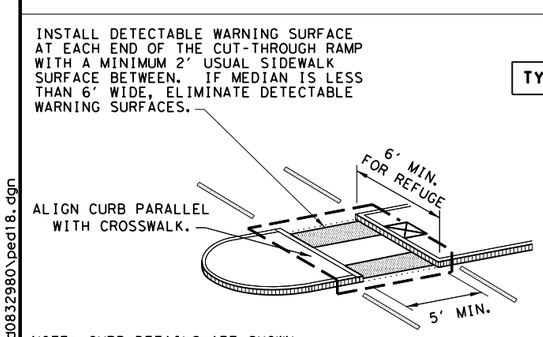
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



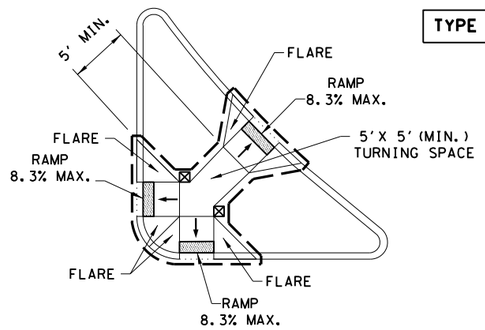
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

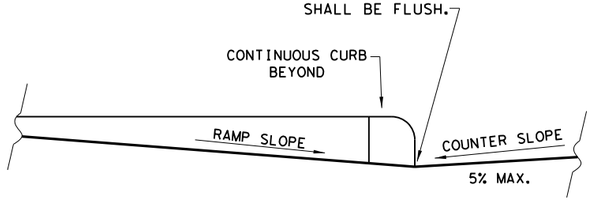


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE. ☒

GUTTER LINE — · —

GRADE BREAK .....

RAMP LIMITS OF PAYMENT — —

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		146

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\ped18.dgn

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

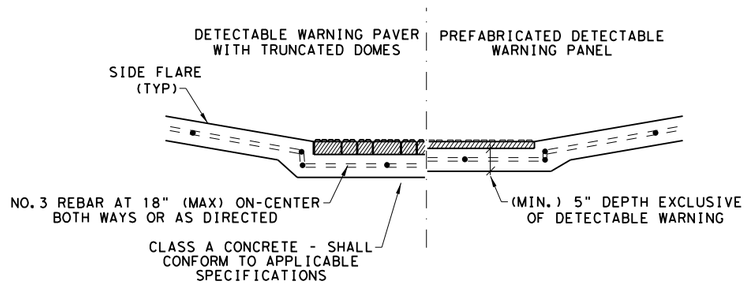
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

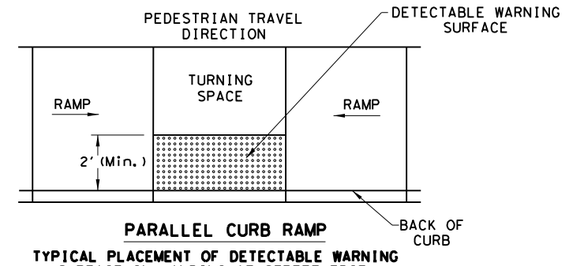
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.



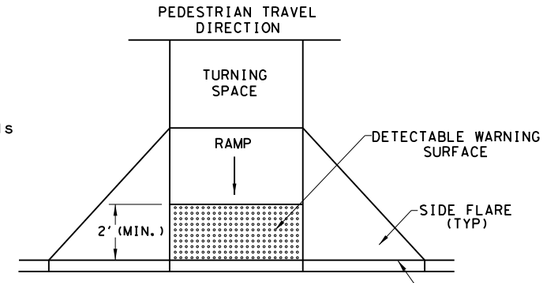
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



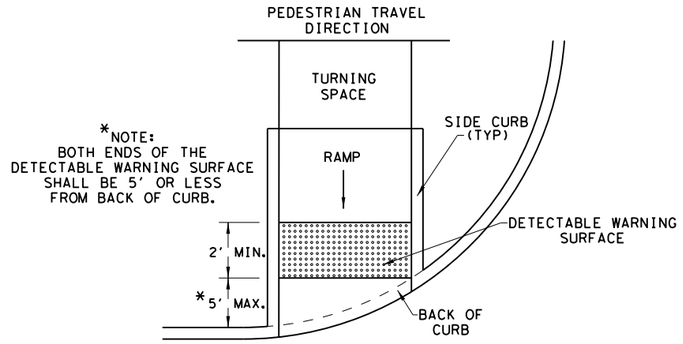
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation | Design Division Standard

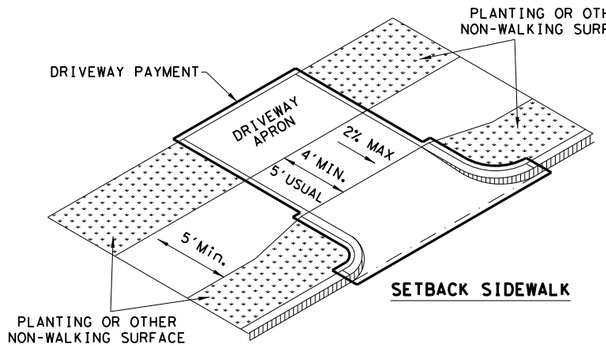
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

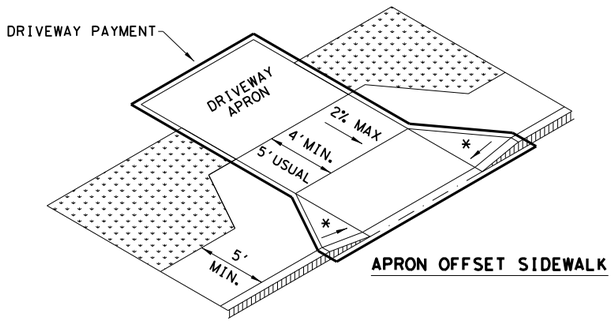
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS	1228	03	050	FM 1015	
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.	
	PHR	HIDALGO		147	

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\ped18.dgn

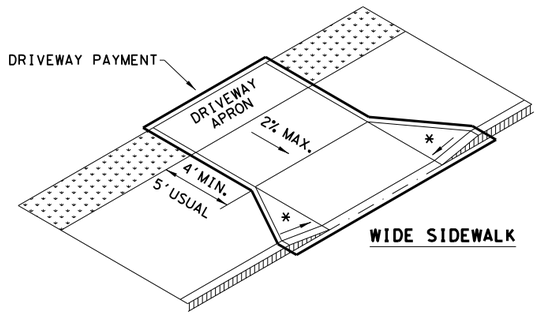
SIDEWALK TREATMENT AT DRIVEWAYS



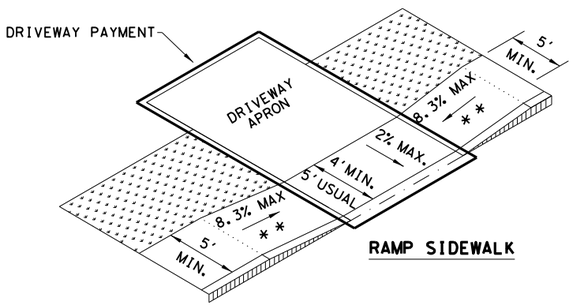
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

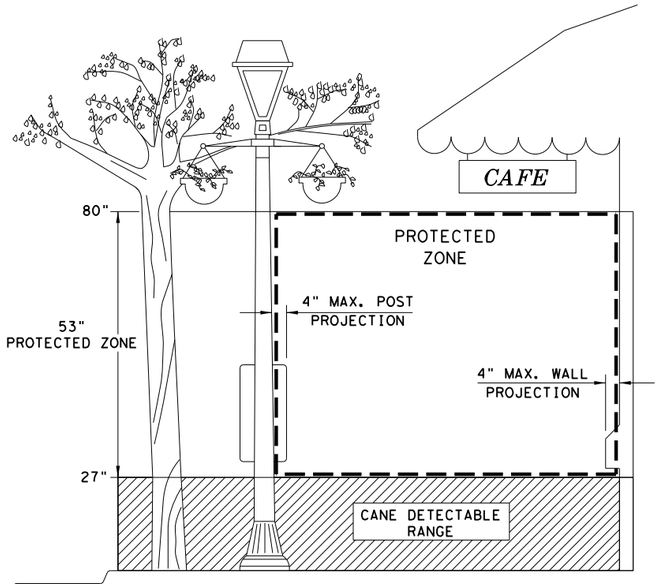


RAMP SIDEWALK

NOTES:

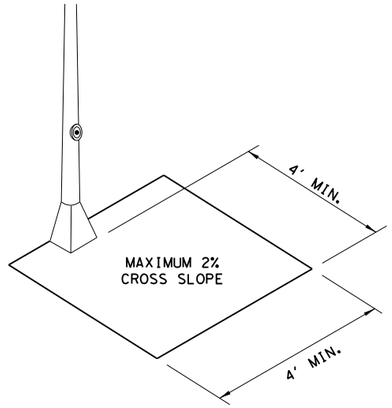
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

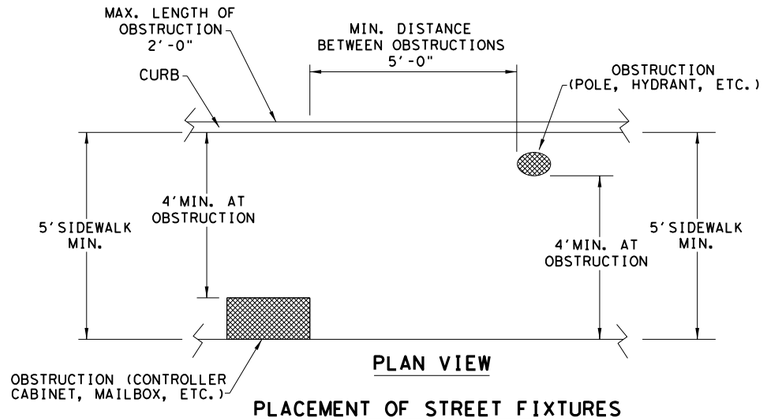


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



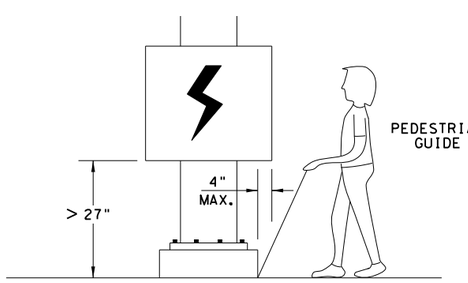
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW

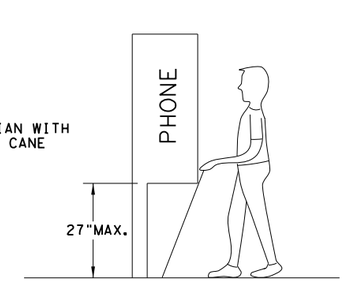
PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



PEDESTRIAN WITH GUIDE CANE

WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

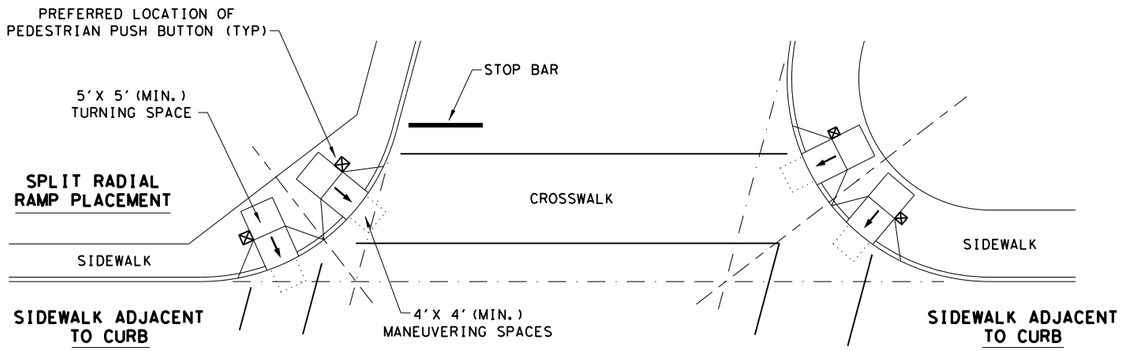
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		148

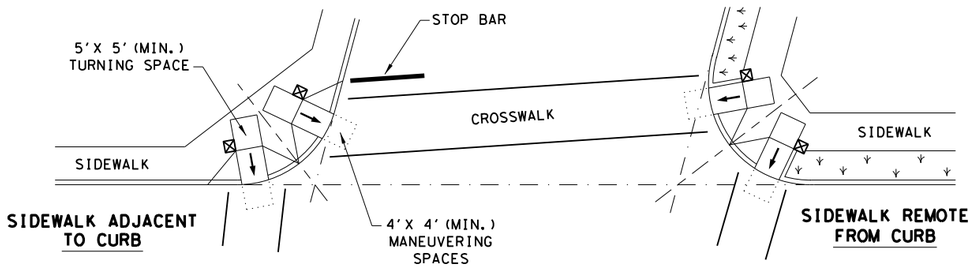
DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\ped18.dgn

TYPICAL CROSSING LAYOUTS

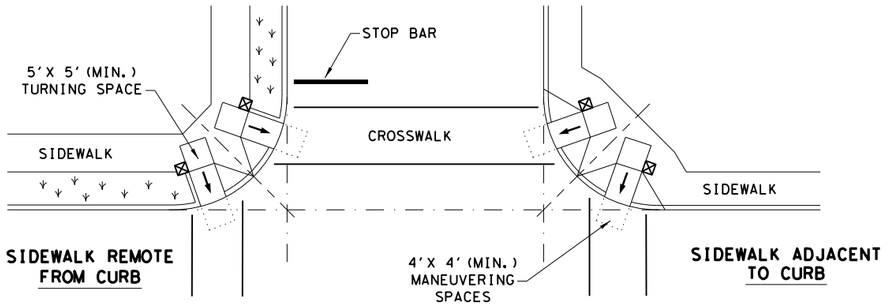
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



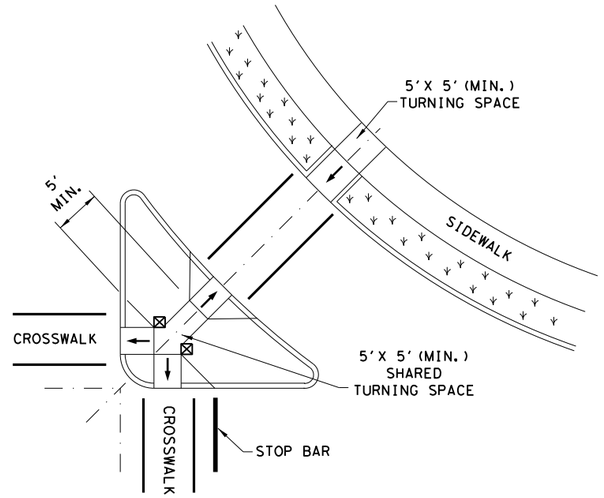
SKEWED INTERSECTION WITH "LARGE" RADIUS



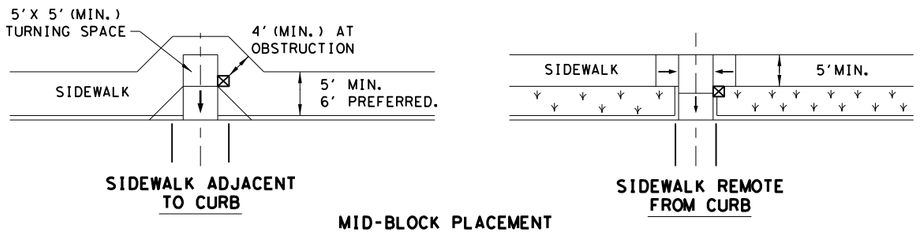
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

Texas Department of Transportation

Design Division Standard

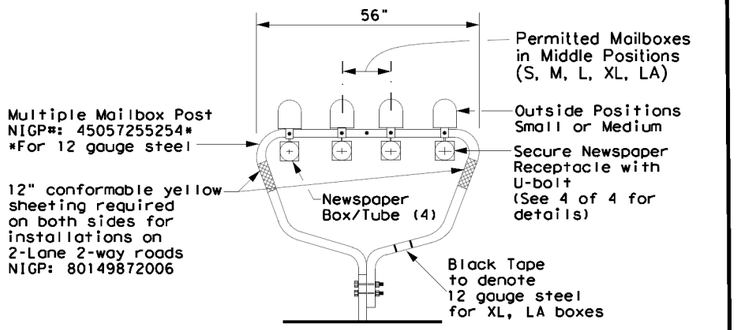
PEDESTRIAN FACILITIES CURB RAMPS

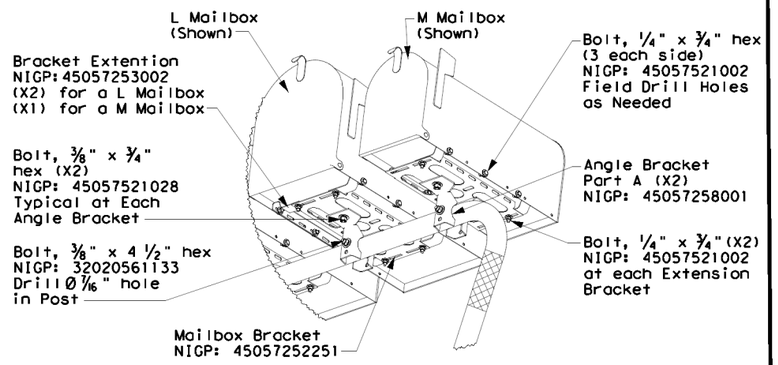
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
REVISED 08, 2005	DIST	COUNTY		SHEET NO.
REVISED 06, 2012	PHR	HIDALGO		149
REVISED 01, 2018				

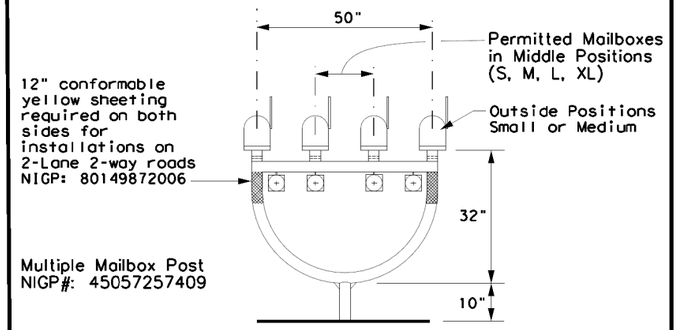
DATE: 6/12/2023 2:32:02 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\mb-21(1).dgn

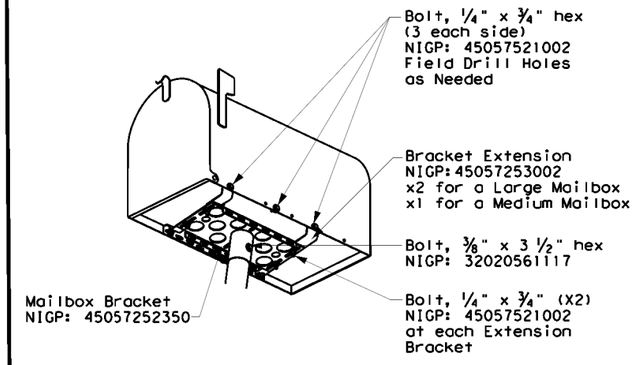
TYPE 1 - MULTIPLE





TYPE 4 - MULTIPLE





MAILBOX SIZES

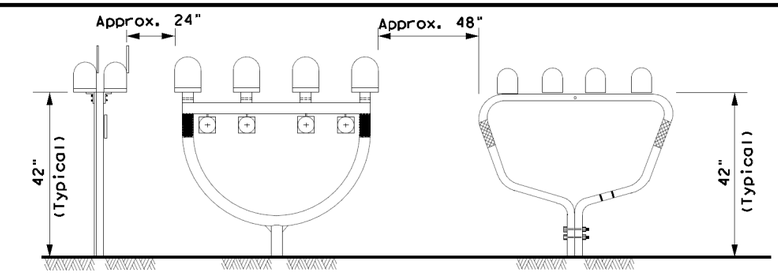
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

GENERAL NOTES:

1. Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
2. Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

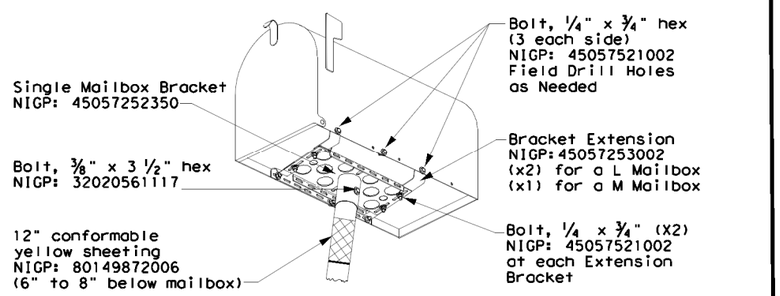
TYPICAL INSTALLATION MEASUREMENTS

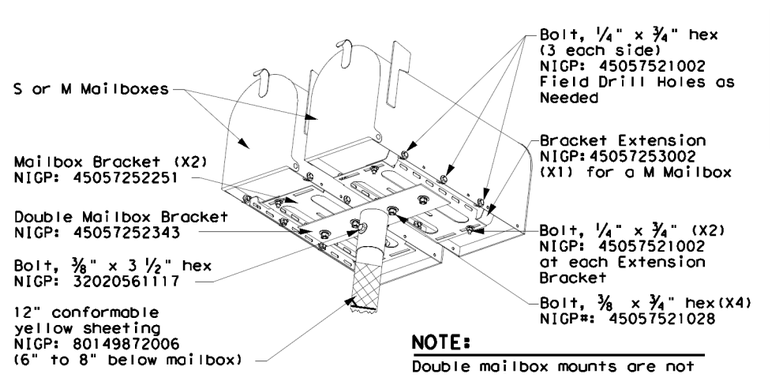


NOTE:

Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

TYPE 2 and 4 - SINGLE/DOUBLE

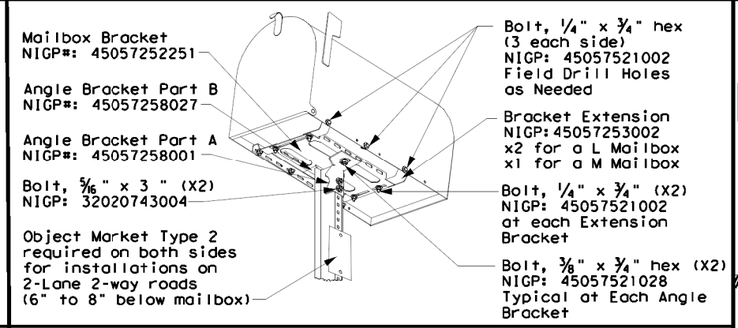


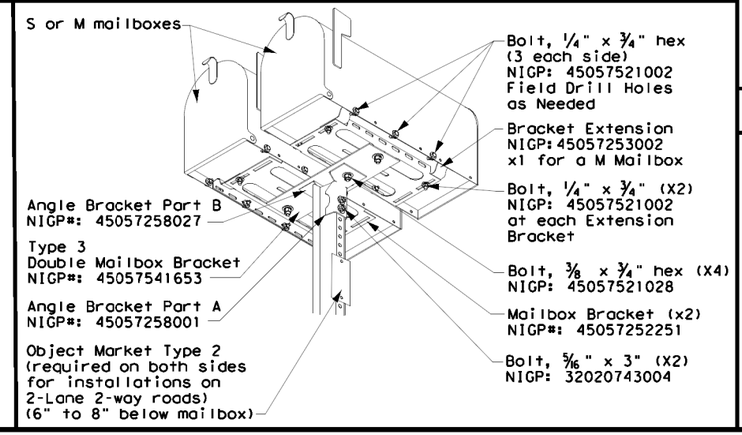


NOTE:

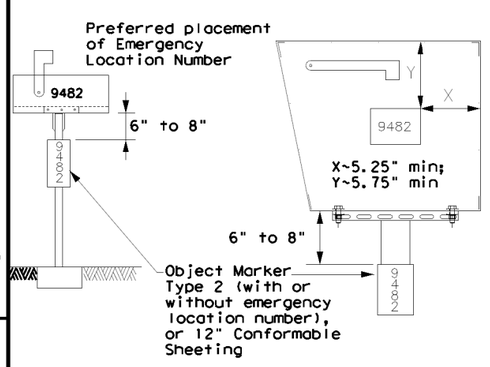
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

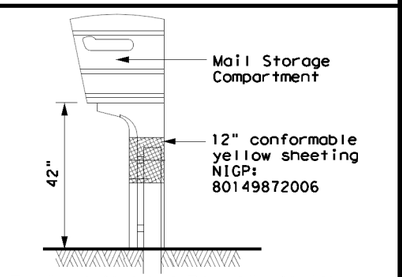


NOTES:

1. Location numbers are provided by homeowner. Minimum size 1" height.
2. Location number is typically placed on the mailbox in a contrasting color.
3. Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
4. Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
5. See 3 of 4 for Foundation details.
6. See 4 of 4 for Hardware details.

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation — Maintenance Division Standard

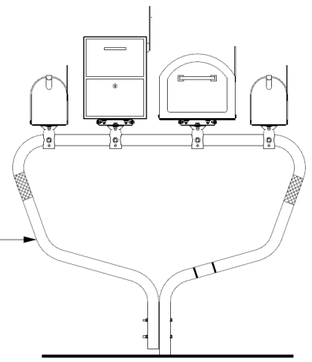
MAILBOX MOUNTING AND ASSEMBLY

MB(1)-21

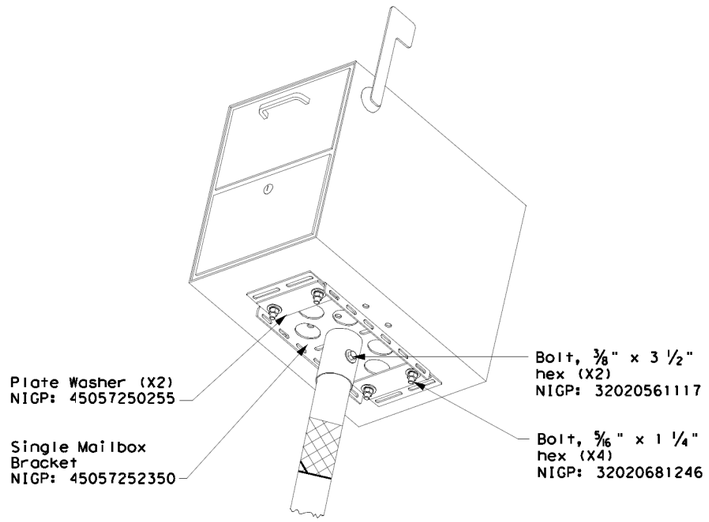
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		150

DATE: 6/12/2023 2:32:06 PM
FILE: c:\txdot\pw_online\txdot5\iose_cardenas\d0832980\mb-21(1).dgn

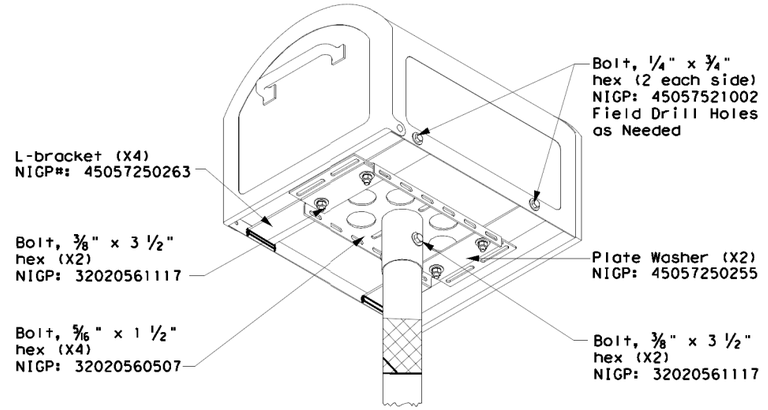
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

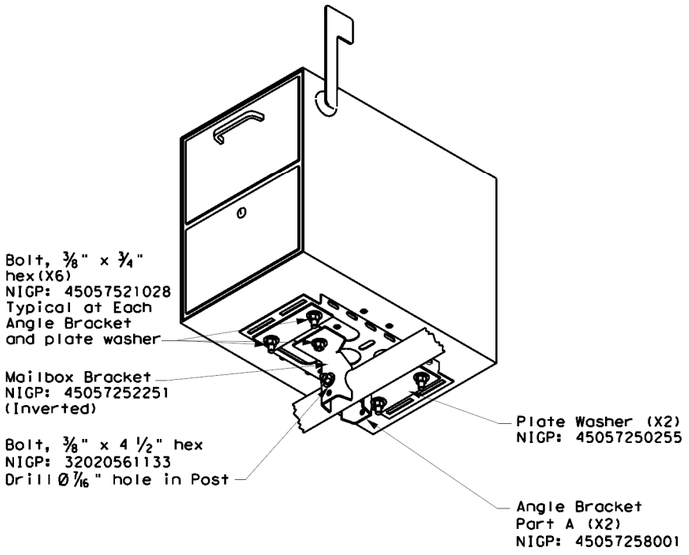


TYPE 2/4 - SINGLE XL MAILBOX

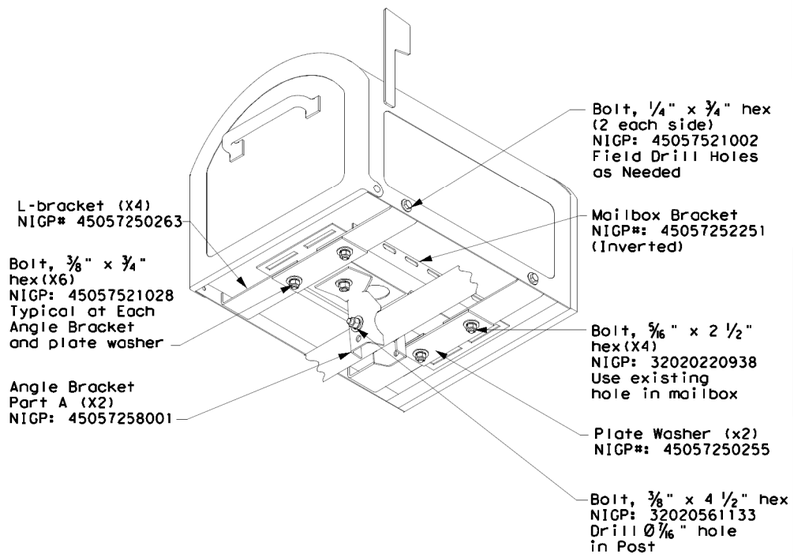


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

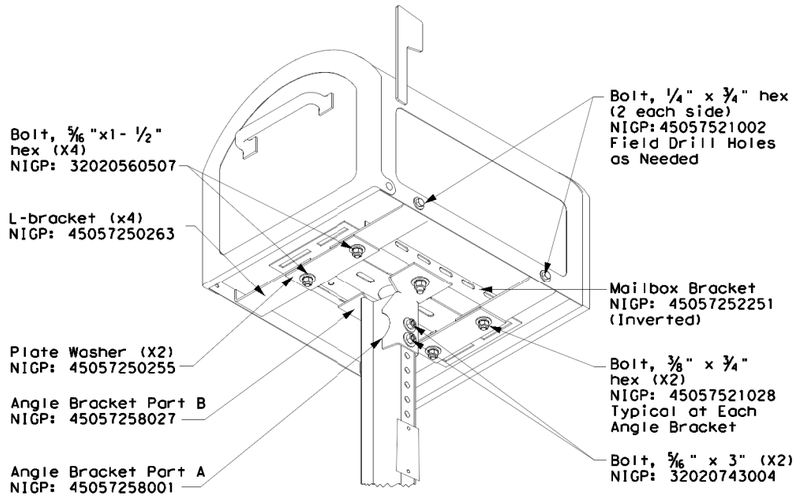
TYPE 1 MULTI - LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI - XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation — Maintenance Division Standard

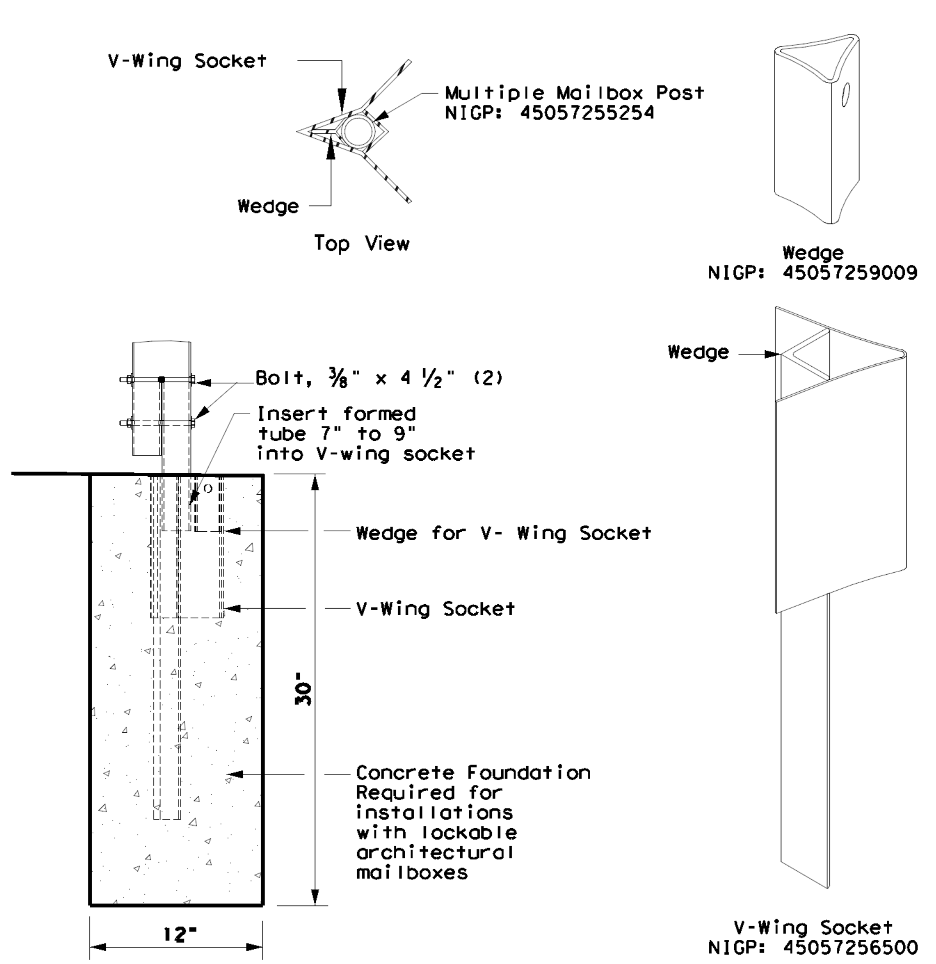
XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

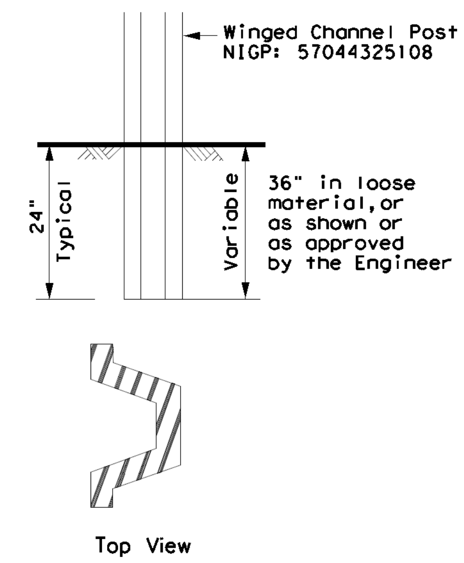
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		151

TYPE 1 - SUPPORT/FOUNDATION

Thin Wall Tube w/ V-LOC Anchorage



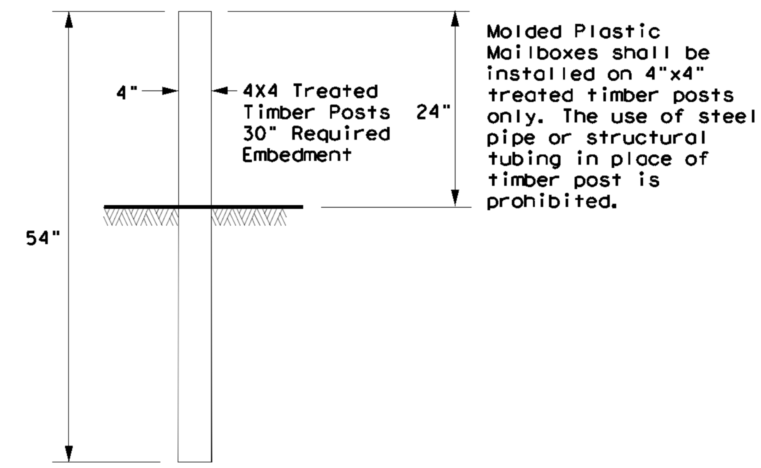
TYPE 3 - SUPPORT/FOUNDATION



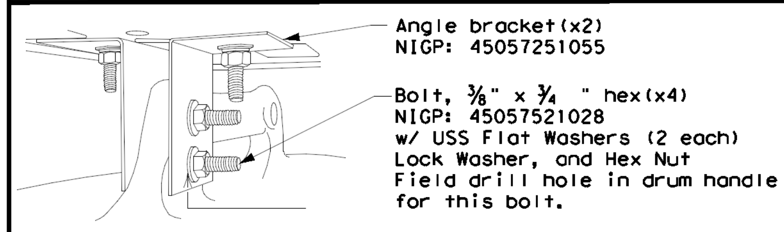
NOTES:

1. Attach Object Marker (OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT



Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

NOTES:

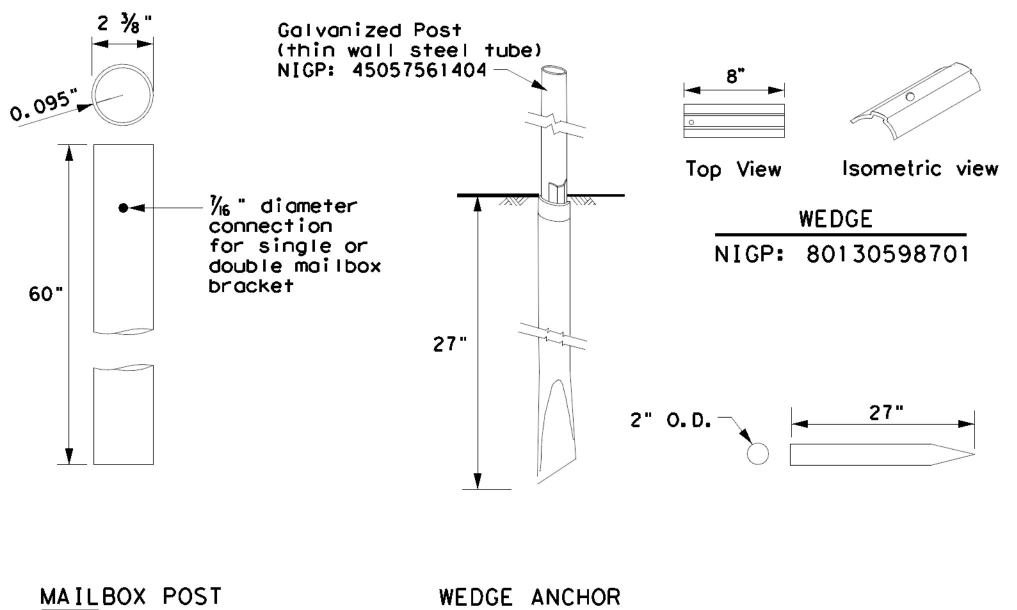
1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

GENERAL NOTES:

1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition, only on Type 1, Type 2, and Type 4

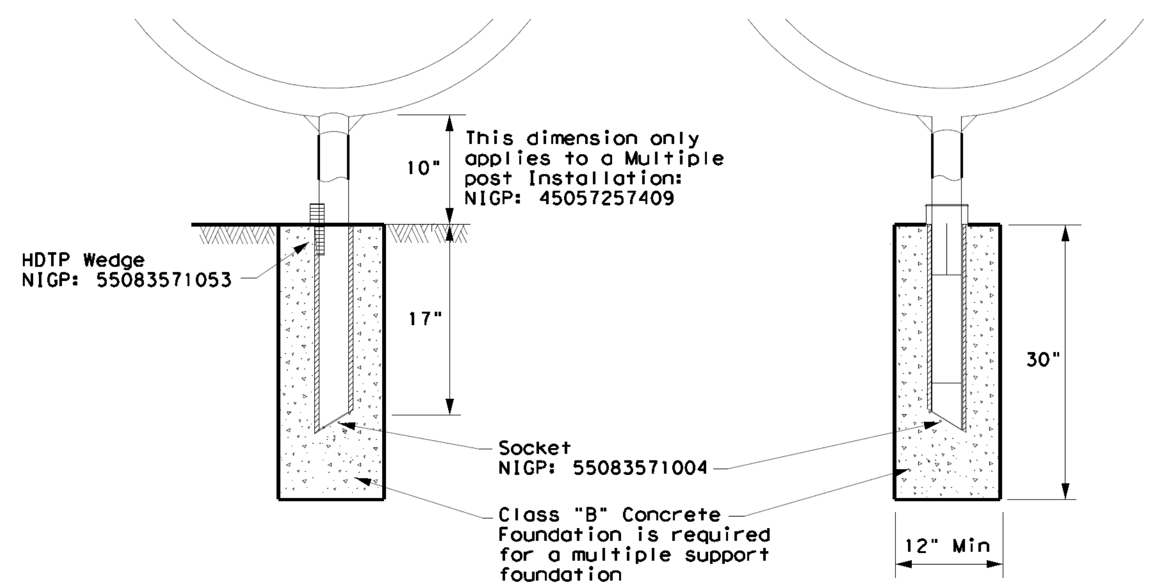
TYPE 2 - SUPPORT/FOUNDATION

Thin Wall Steel Tube w/Wedge Anchor System



TYPE 4 - SUPPORT/FOUNDATION

Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



SHEET 3 OF 4

Texas Department of Transportation — Maintenance Division Standard

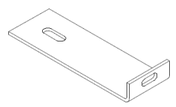
MAILBOX SUPPORT AND FOUNDATION

MB(3)-21

FILE: MB-21.dgn	DN:	CK:	DW:	CK:
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015	1228	03	050	FM 1015
6/2005 1/2011	DIST		COUNTY	SHEET NO.
11/2006 7/2014	PHR		HIDALGO	152

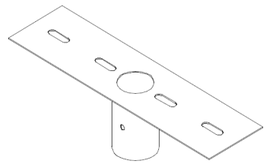
DATE: 6/12/2023 2:32:09 PM
FILE: [illegible]

TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL	Molded Plastic	S, or M
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)	4x4 Timber	Construction Barrel
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket forXL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252343 (Double Mount Bracket) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	None	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete	None	None



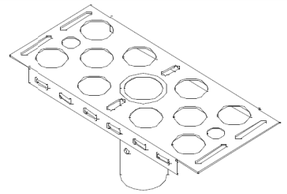
NIGP: 45057250263

L-Bracket x4 for
XL sized mailboxes



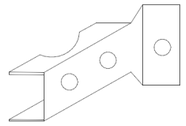
NIGP: 45057252343

Double Mailbox Bracket
For Type 2 and Type 4
double mount



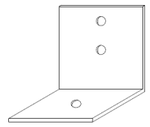
NIGP: 45057252350

Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



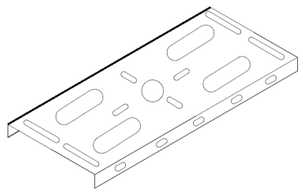
NIGP: 45057258001

Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



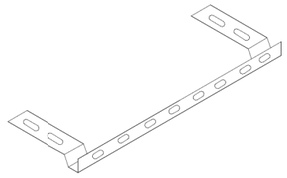
NIGP: 45057251055

Type 6 Angle Bracket
(2 per mailbox)



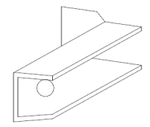
NIGP: 45057252251

Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



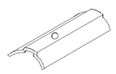
NIGP: 45057253002

Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



NIGP: 45057258027

Part "B" Angle Bracket
For Type 3 single
and double



NIGP: 80130598701

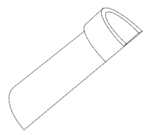
Wedge for Type 2

NIGP: 45057250255

Plate Washer for Architecural
and XL Mailboxes

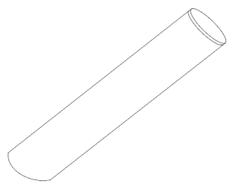
NIGP: 45057541653

Type 3 double mailbox bracket



NIGP: 55083571053

Type 4 Mailbox Wedge

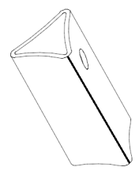


NIGP: 55083571004

Type 4 Mailbox Socket

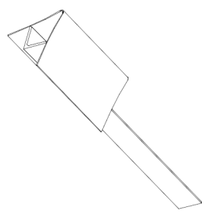
NIGP: 80130238407

Type 2 Wedge Anchor



NIGP: 45057259009

Wedge for Type 1 V-wing Socket



NIGP: 45057256500

V-wing Socket for
Type 1 Foundation

NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

1. Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
2. A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS

MB-(X) ASSM TY (XXX) (X)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- MP = Molded Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

SHEET 4 OF 4

Texas Department of Transportation

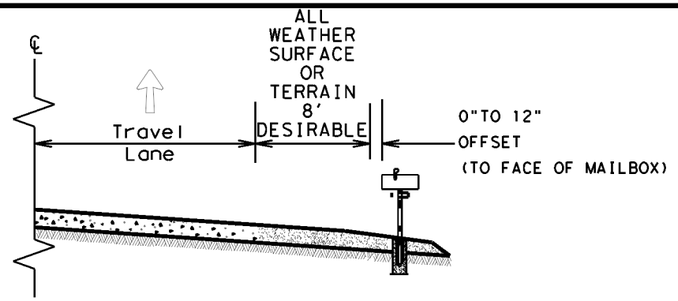
Maintenance Division Standard

NIGP PARTS LIST AND COMPATIBILITY

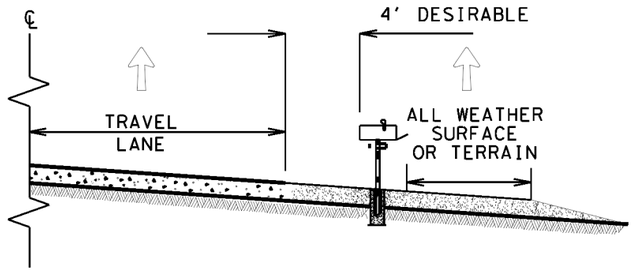
MB(4)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		153

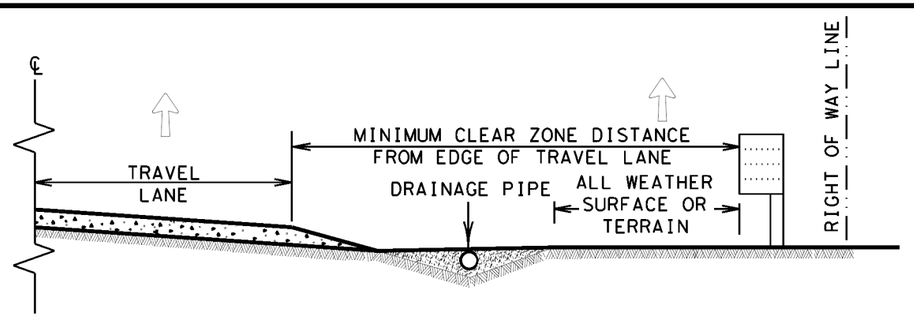
DATE: 6/12/2023 2:32:12 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\mb-21(1).dgn



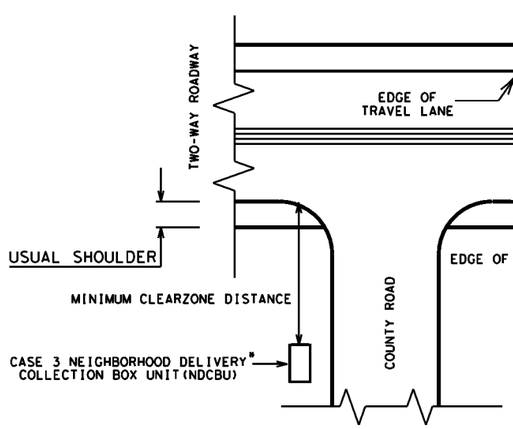
CASE 1. OFF TRAVEL WAY DELIVERY

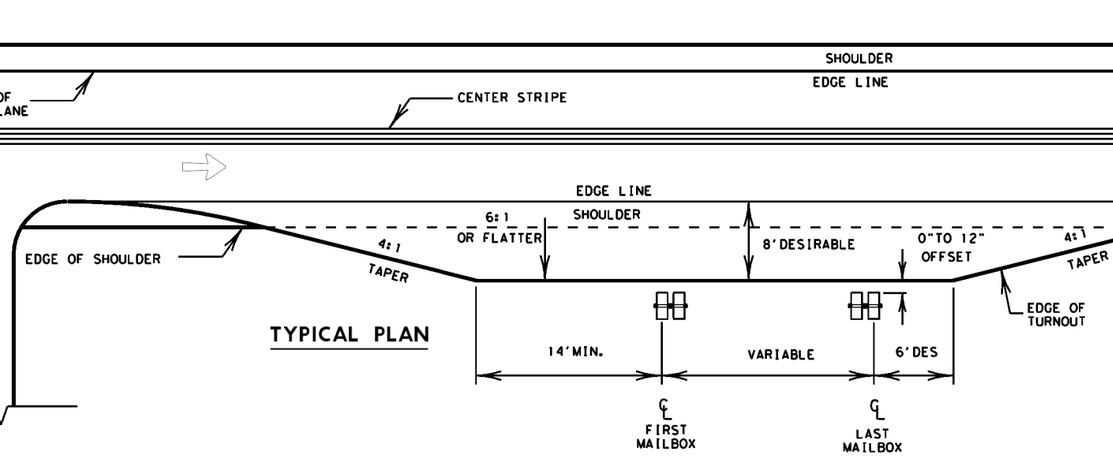


CASE 2. BACK SIDE DELIVERY

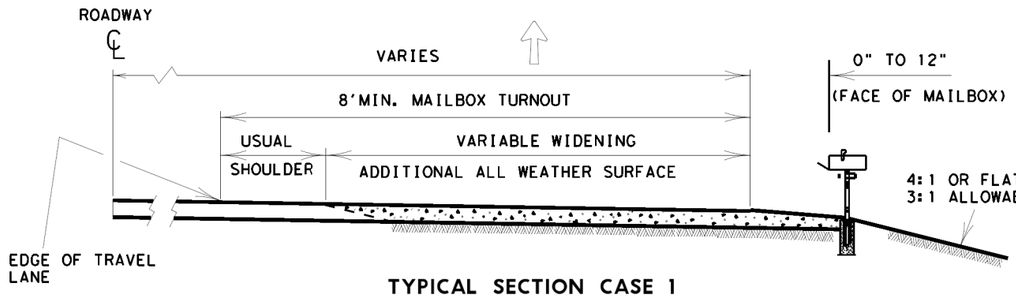


CASE 3. DELIVERY NEAR RIGHT OF WAY LINE





TYPICAL PLAN



TYPICAL SECTION CASE 1

GENERAL NOTES:

1. CASE 1 IS THE MOST COMMON METHOD.
2. TURN OUT BEHIND MAILBOX FOR CASE 2 WILL NORMALLY BE ALLOWED FOR NATURAL TERRAIN THAT WILL SERVE AS AN ALL WEATHER SURFACE.
3. ALL WEATHER DRIVEWAYS FOR CASE 3 MAILBOXES LOCATED AT THE RIGHT OF WAY LINE SHOULD NORMALLY BE PLACED IN CONJUNCTION WITH COUNTY ROADS OR OTHER CONNECTING COMMUNITY ROADS OR STREETS. WHEN 3 OR MORE MULTI-RACKS ARE ANTICIPATED, THE USE OF AN NDCBU IS RECOMMENDED. ONLY RURAL PATRONS LOCATED ON STATE MAINTAINED HIGHWAYS MAY HAVE A MAILBOX OR NDCBU SLOT ON TXDOT RIGHT OF WAY.

* NDCBU MAY BE INSTALLED ON COUNTY ROAD ROW WITH APPROVAL OF COUNTY.

MAIL DELIVERY VEHICLE TRAVEL DIRECTION

Texas Department of Transportation

Maintenance Division Standard

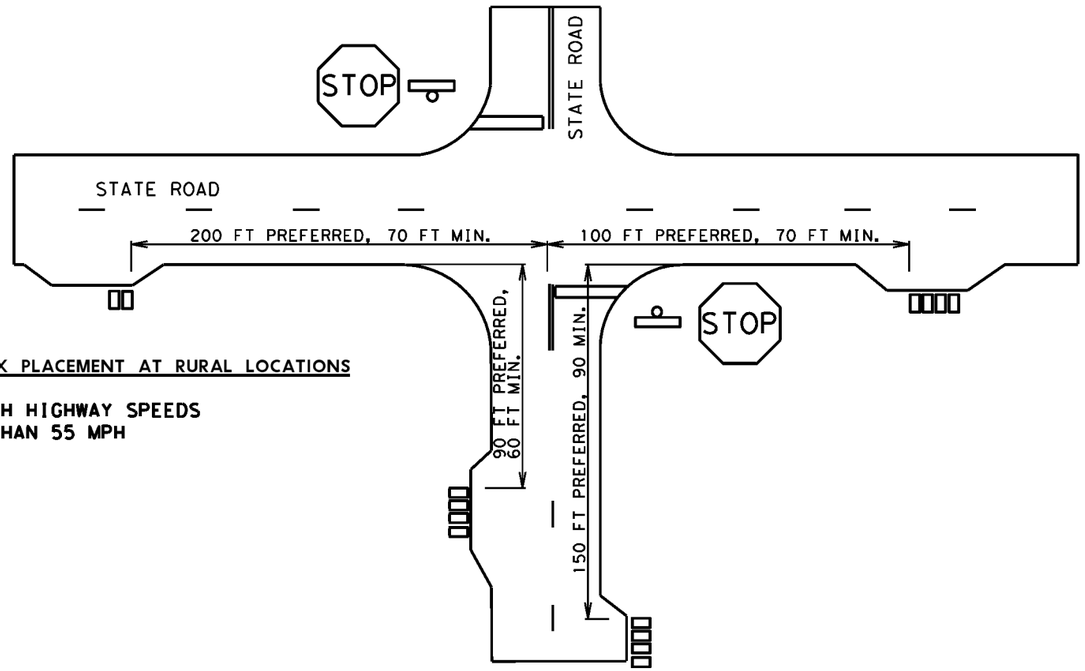
Guideline

MAILBOX SIDE ROAD PLACEMENT AND TURNOUTS

MBP(1)-22

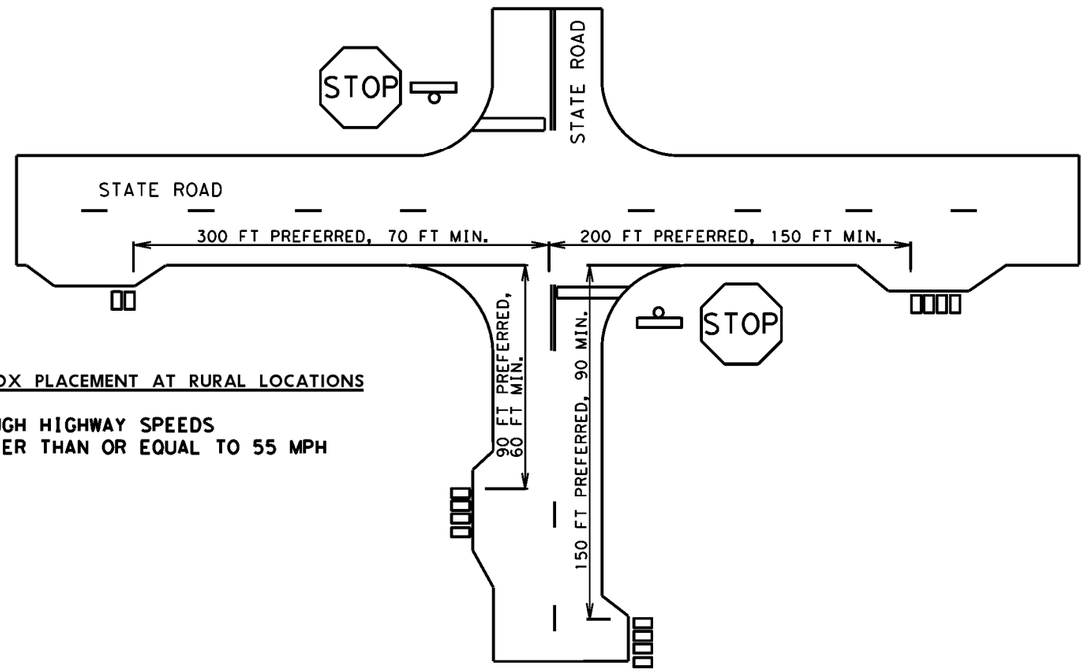
FILE: MBP-22.DGN	DN: VS	CK:	DW: VS	CK:
© TxDOT OCTOBER 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 12/2012 5/2014	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		154

DATE: 6/12/2023 2:33:30 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0896672\mbp-22.dgn



MAILBOX PLACEMENT AT RURAL LOCATIONS

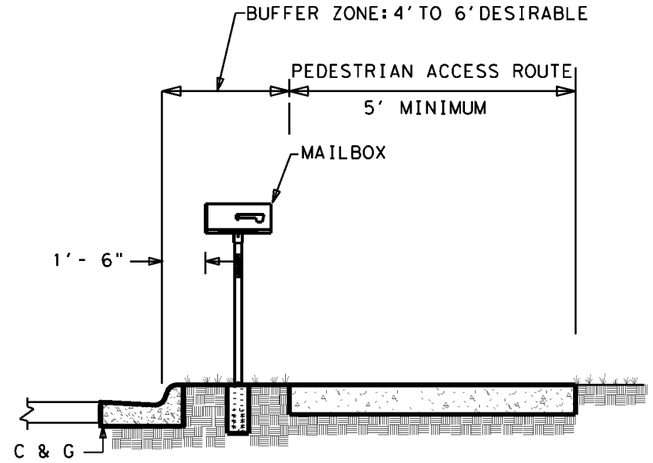
THROUGH HIGHWAY SPEEDS
LESS THAN 55 MPH



MAILBOX PLACEMENT AT RURAL LOCATIONS

THROUGH HIGHWAY SPEEDS
GREATER THAN OR EQUAL TO 55 MPH

CURB AND GUTTER MAILBOX INSTALLATION



NOTES:
1. A NON-TRAVERSABLE SURFACE MUST BE INSTALLED NEAR THE MAILBOX (NATURAL VEGETATION OR OTHER) IN THE BUFFER ZONE. ALTERNATIVELY, A BASE WITH A MINIMUM HEIGHT OF 2.5 INCHES MAY BE INSTALLED SO THAT THE EDGE OF THE MAILBOX DOES NOT EXTEND OUT MORE THAN 4 INCHES HORIZONTALLY BEYOND THE BASE.

2. THE SIDEWALK WIDTH MAY BE REDUCED TO 4 FOOT FOR SHORT DISTANCES AROUND THE MAILBOX IF NEEDED.

3. MAINTAIN A MINIMUM OF 5 FEET BETWEEN OBSTRUCTIONS IN THE PEDESTRIAN ACCESS ROUTE.

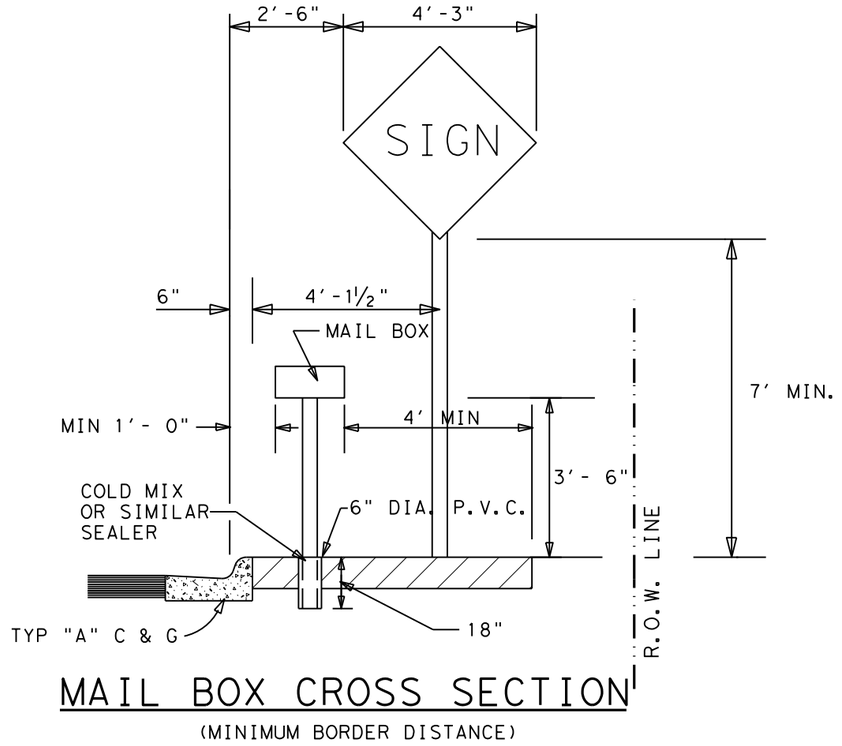
Texas Department of Transportation | Maintenance Division Standard

MAILBOX PLACEMENT CURBS & INTERSECTIONS

MBP(2)-22

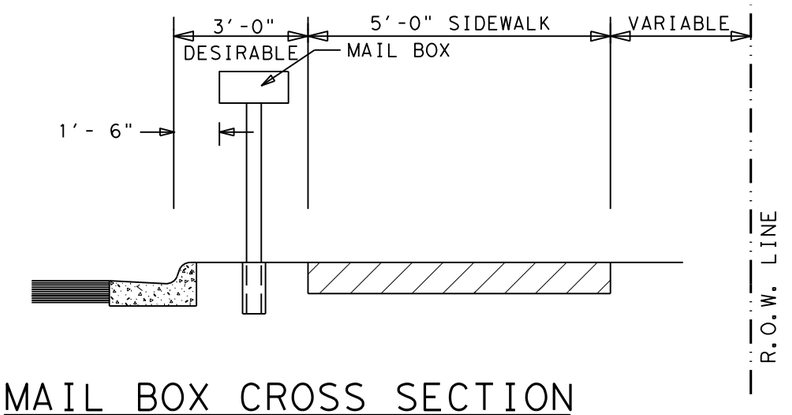
FILE: MBP-22.DGN	DN: VS	CK:	DW: VS	CK:
© TxDOT OCTOBER 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 12/2012 5/2014	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		155

DATE: 6/12/2023 2:33:34 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0896672\mbp-22.dgn



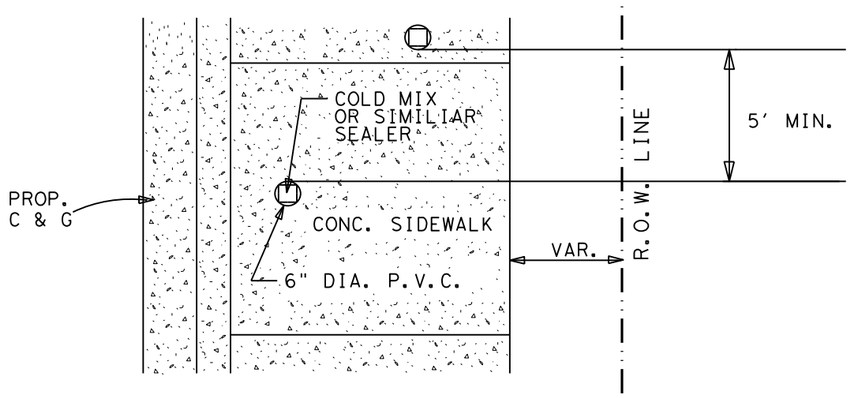
MAIL BOX CROSS SECTION

(MINIMUM BORDER DISTANCE)

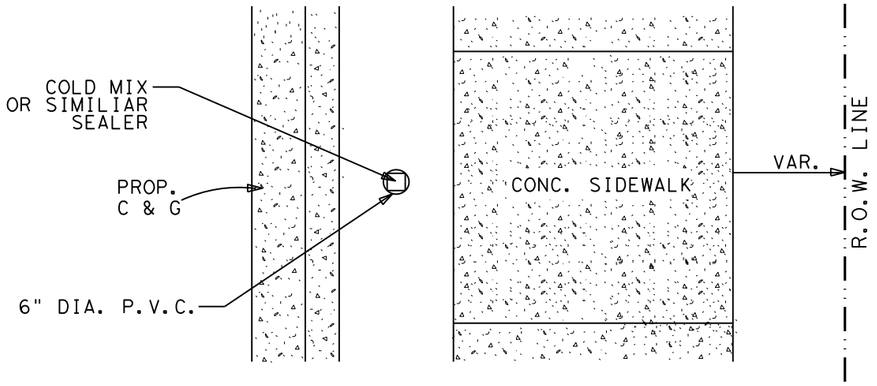


MAIL BOX CROSS SECTION

(DESIRABLE BORDER DISTANCE)



PLAN VIEW



PLAN VIEW

PHARR DISTRICT STANDARDS

TEXAS DEPARTMENT OF TRANSPORTATION

MAILBOX DETAIL

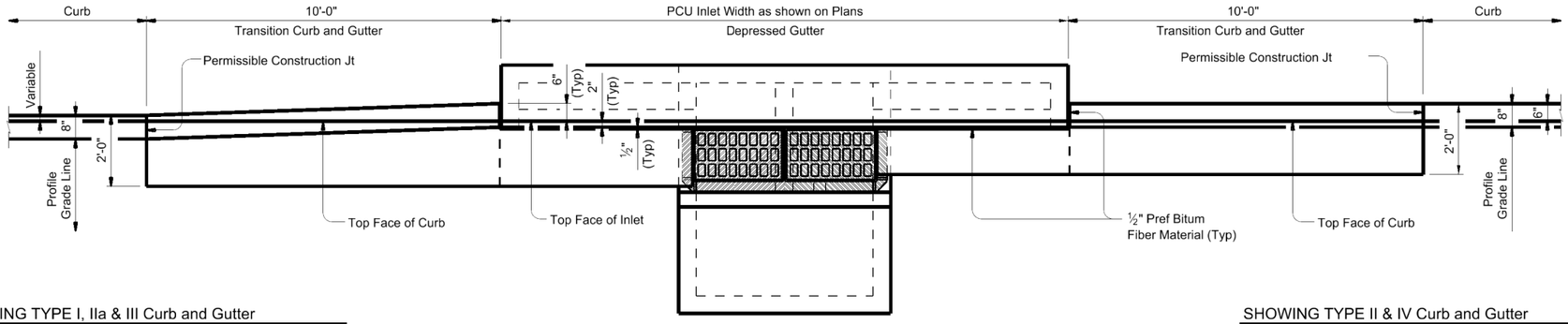
REV. 5/03

MAILBOX.DGN

FED. RD. DIV. NO.	STATE AID PROJECT NO.	FILE NO.	SHEET NO.
6			156

STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	HIDALGO	1228	03	050	FM 1015

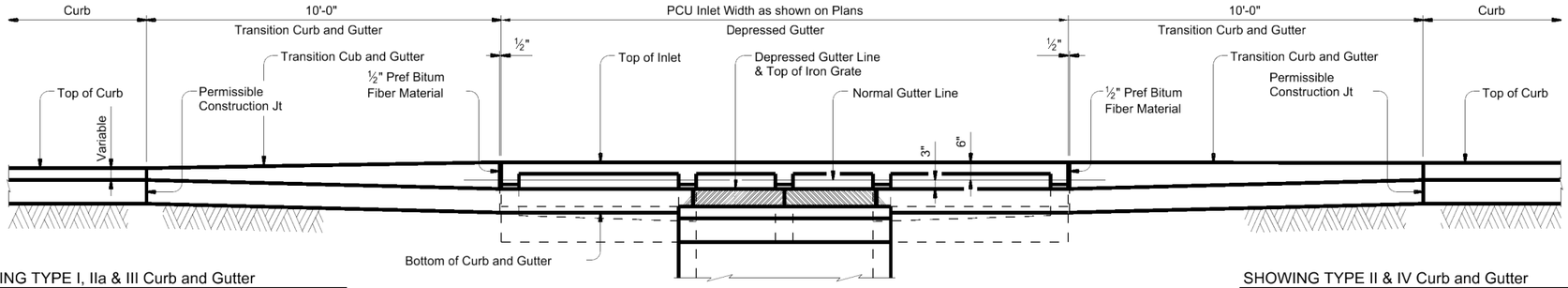
DATE: 6/12/2023 2:34:21 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\prestd14-20.dgn



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

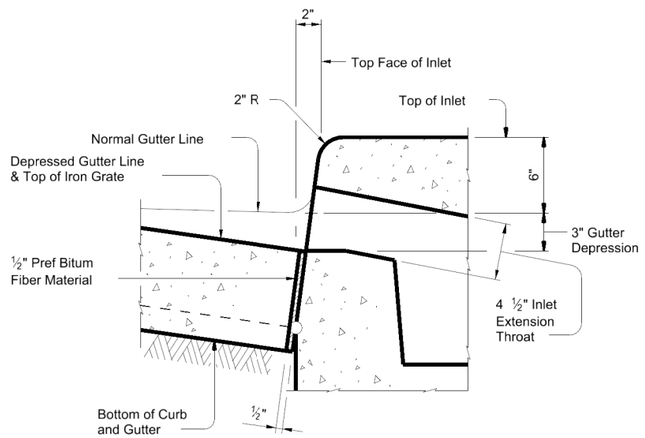
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

Reinforcing steel not shown for clarity.

CONSTRUCTION NOTES:
Align top face of curb with PCU Inlet as shown.

MATERIAL NOTES:
Provide ½" Preformed Bituminous Fiber Material.

GENERAL NOTES:
See Precast Curb Inlet Under Roadway standard PCU for details and notes not shown.
See Concrete Curb and Curb and Gutter standard CCCG-12 for details and notes not shown.
Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
Preformed Bituminous Fiber Material is subsidiary to PCU Inlet.

Texas Department of Transportation

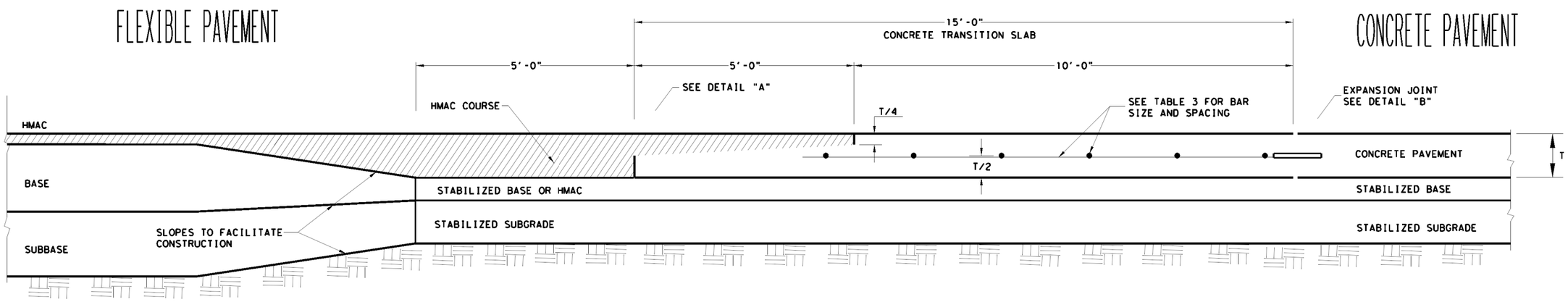
Bridge Division Standard

CURB AND GUTTER TRANSITION DETAILS FOR PCU INLET

CGT-PCU

FILE: prestd14-20.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		157

DATE: 6/13/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832980\transitslab20.dgn



TYPICAL JUNCTION OF CONCRETE PAVEMENT WITH FLEXIBLE PAVEMENT

(NOT TO SCALE)

DETAIL "A"

DETAIL "B"

GENERAL NOTES

1. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATIONS FOR "CONCRETE PAVEMENT" AND "REINFORCING STEEL."
2. DETAILS FOR PAVEMENT WIDTH AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS.
3. MATCH THE LONGITUDINAL JOINTS OF THE CONCRETE TRANSITION SLAB WITH ADJOINING CONCRETE PAVEMENT. PROVIDE EQUIVALENT TIEBARS OR TRANSVERSE BARS AT THESE LONGITUDINAL JOINTS, SEE TABLE NO. 2.
4. REFER TO DMS-6310, "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
5. TRANSITION SLABS WILL BE PAID UNDER ITEM 360, "CONCRETE PAVEMENTS."

TABLE NO. 1 DOWELS (SMOOTH BARS)

SLAB THICKNESS T (IN.)	BAR DIA. AND LENGTH	SPACING (IN.)
7 TO 7.5	1" X 18"	12
8 TO 10	1 1/4" X 18"	12
10 TO 13	1 1/2" X 18"	12

TABLE NO. 2 TIE BARS (DEFORMED BARS)

SLAB THICKNESS T (IN.)	BAR SIZE	SPACING (IN.)
7 TO 7.5	#5	24
8 TO 13	#6	24

TABLE NO. 3 TRANSITION SLAB STEEL (DEFORMED BARS)

SLAB THICKNESS T (IN.)	BAR SIZE	SPACING (IN.) TRANSVERSE DIRECTION	SPACING (IN.) LONGITUDINAL DIRECTION
7 TO 7.5	#5	24	12
8 TO 13	#6	24	12

ADJUST SPACING OF LONGITUDINAL BARS AS NEEDED TO ACCOMDATE DOWEL BAR SPACING.

Texas Department of Transportation — Design Division Standard

CONCRETE PAVEMENT DETAILS TRANSITION SLAB

T-7 to 13 INCHES

TRANS-20

FILE: transitslab20.dgn	DN: TxDOT	DN: TxDOT	DW: AN	CK: KM
© TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		158

EXISTING TIMING CHART

PHASE	1	2	3	4	5	6	7	8
STREET	FM 1015		MILE 9		FM 1015		MILE 9	
MOVEMENT	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
MIN GREEN	5	20		10	5	20	5	10
EXTENSION	1.5	2		2	1.5	2	1.5	2
MAXIMUM I	15	40	NOT USED	20	15	40	10	20
MAXIMUM II	15	40		20	15	40	10	20
YELLOW	4	4		4	4	4	4	4
ALL RED	1	2		1	1	2	1	1
WALK		7		7		7		7
DON'T WALK		20		15		20		15
RECALL		2				2		
MEMORY	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF

EXISTING

R10-4b SIGN &
PEDESTRIAN PUSH BUTTON
TO BE REMOVED
W1 THRU W8

EXISTING
18"x16"

PEDESTRIAN SIGNALS
TO BE REMOVED
W1 THRU W8

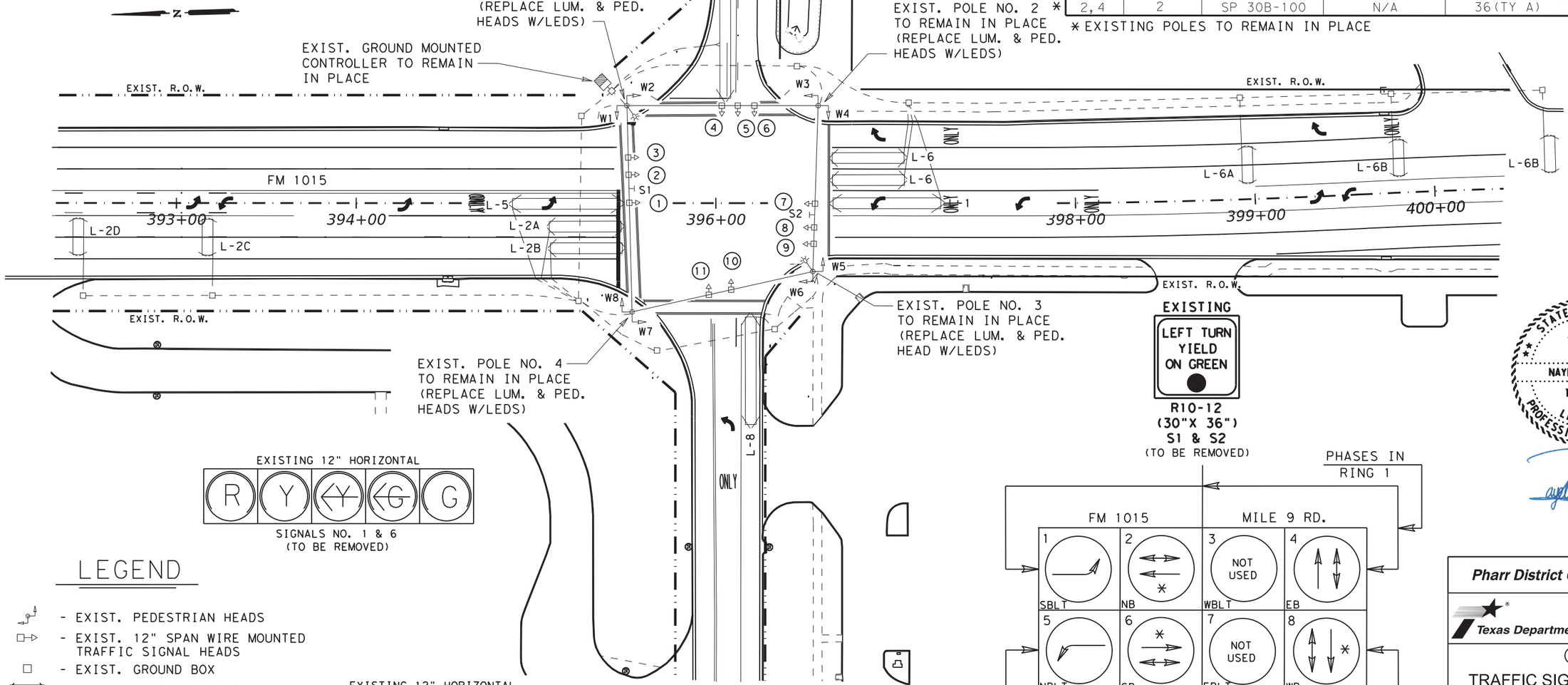
EXISTING LOOP DETECTOR CHART

LOOP	SIZE	WIRE LENGTH	SAW CUT	AMPLIFIER NO.	SETTING	FUNCTION	DELAY TIMING
L-1	6'x60'			1	PRESENCE	CALL & EXTEND Ø 1	
L-2A, B	6'x40'			2	PRESENCE	CALL & EXTEND Ø 2	
L-2C, D	6'x20'			9	PRESENCE	CALL & EXTEND Ø 2	
L-4	6'x60'			4	PRESENCE	CALL & EXTEND Ø 4	
L-5	6'x60'			5	PRESENCE	CALL & EXTEND Ø 5	
L-6(2)	6'x40'			6	PRESENCE	CALL & EXTEND Ø 6	
L-6A, B	6'x20'			11	PRESENCE	CALL & EXTEND Ø 6	
L-8	6'x60'			8	PRESENCE	CALL & EXTEND Ø 8	

TRAFFIC SIGNAL POLES

	POLE NUMBER	QUANTITY	SIGNAL POLE DESIGNATION	MAST ARM DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
*	1, 3	2	SPL 30B-100	N/A	36(TY A)	
*	2, 4	2	SP 30B-100	N/A	36(TY A)	

* EXISTING POLES TO REMAIN IN PLACE



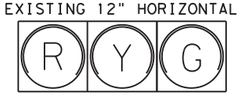
EXISTING

R10-12
(30"X 36")
S1 & S2
(TO BE REMOVED)

EXISTING 12" HORIZONTAL

SIGNALS NO. 1 & 6
(TO BE REMOVED)

EXISTING 12" HORIZONTAL



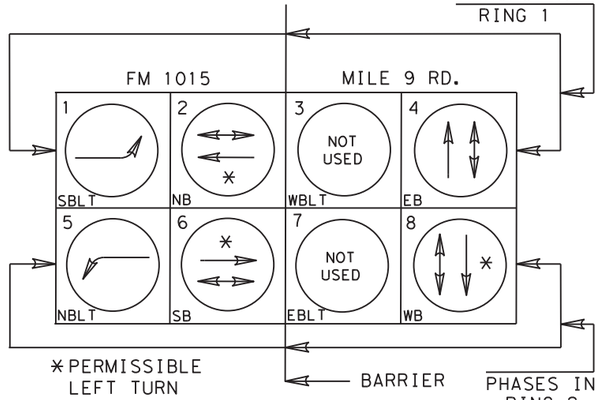
SIGNALS NO.
2, 3, 4, 5, 7, 8, 9 & 10
(TO BE REMOVED)

LEGEND

- EXIST. PEDESTRIAN HEADS
- EXIST. 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXIST. GROUND BOX
- EXIST. LOOP DETECTOR
- EXIST. FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- EXIST. CONDUIT (SIZE & TYPE AS SPECIFIED)
- EXIST. LUMINAIRE

EXISTING CONDITION

INTERSECTION OF
FM 1015 & MILE 9 RD.
IN HIDALGO COUNTY
CSJ: 1228-03-050



EXISTING PHASING DIAGRAM

06.30.2023

Pharr District Central Design

Texas Department of Transportation

①

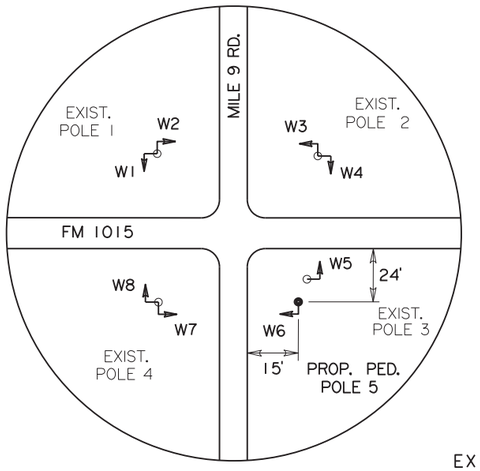
TRAFFIC SIGNAL LAYOUT
EXISTING CONDITION
FM 1015 @ MILE 9 RD.

SCALE: 1" = 60'

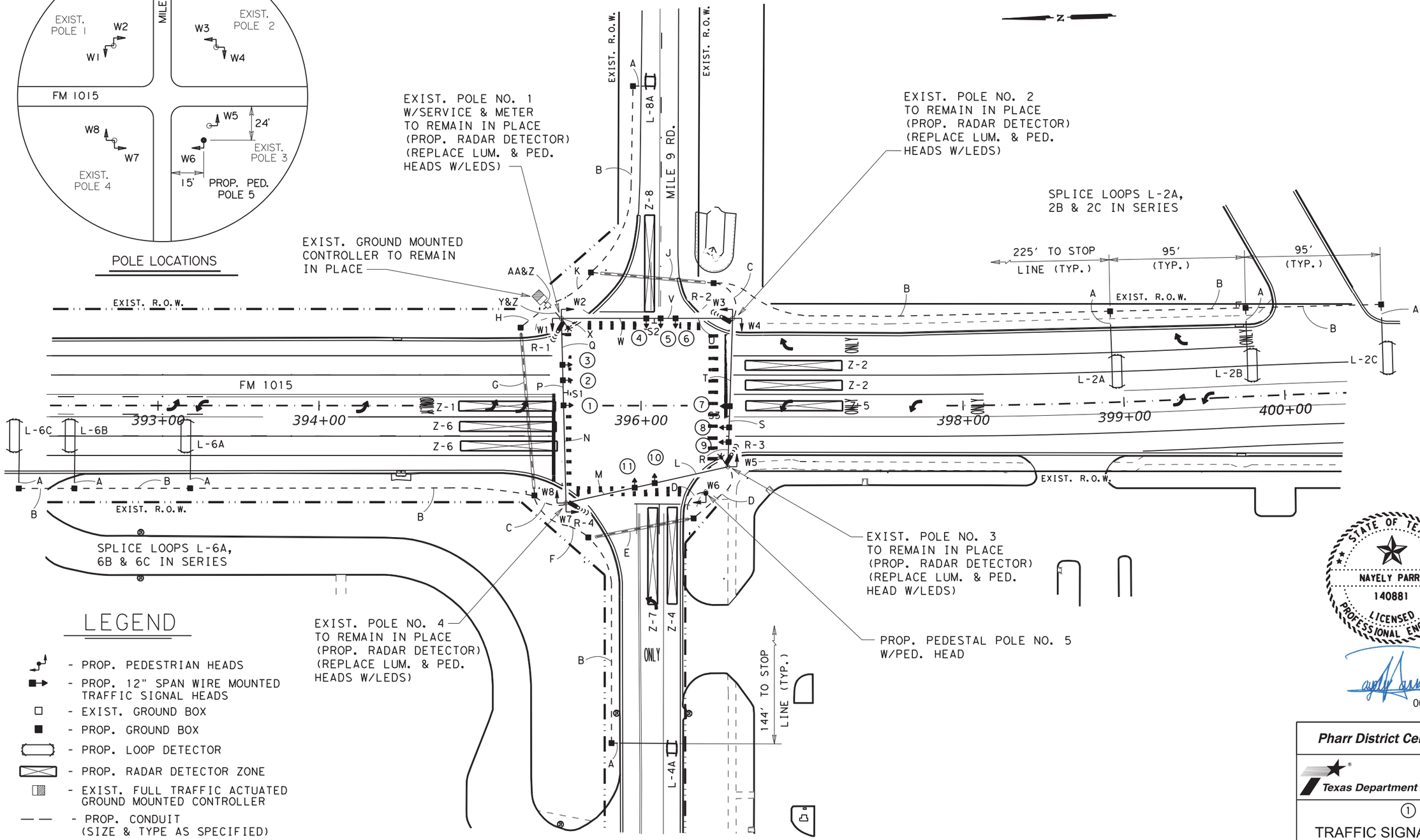
SHEET 1 OF 3

© 2023	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		159

DATE: 6/12/2023 2:48:09 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_MILE9_B.dgn



POLE LOCATIONS



LEGEND

- PROP. PEDESTRIAN HEADS
- PROP. 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXIST. GROUND BOX
- PROP. GROUND BOX
- PROP. LOOP DETECTOR
- PROP. RADAR DETECTOR ZONE
- EXIST. FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- PROP. CONDUIT (SIZE & TYPE AS SPECIFIED)
- PROP. LUMINAIRE
- PROP. CONDUIT BORE (SIZE & TYPE AS SPECIFIED)
- PROP. RADAR PRESENCE DETECTOR (STOP BAR)

PROPOSED DIAGRAM

INTERSECTION OF
FM 1015 & MILE 9 RD.
IN HIDALGO COUNTY
CSJ: 1228-03-050

DATE: 6/12/2023 2:48:17 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_MILE9_A.dgn

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED
PROFESSIONAL ENGINEER
06.30.2023

Pharr District Central Design

Texas Department of Transportation

①

TRAFFIC SIGNAL LAYOUT
PROPOSED INSTALLATION
FM 1015 @ MILE 9 RD.

SCALE: 1" = 60' SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		160

ELECTRICAL CHART

ITEM	TOTAL QTY.	RUN NUMBER / RUN LENGTH(FT)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	G	R	S	T	U	V	W	X	Y	Z	AA
		RUN LENGTH(FT)	80	1100	73	70	68	44	108	24	78	36	65	70	75	25	50	20	35	65	45	25	65	30	20	30	10
POWER		1/C-#6																						②		②	
		1/C-#8																									
GROUND		1/C-#6 BARE																						①		①	
	531′	1/C-#8 BARE			1	1	1	1	1	1	1	1													1		1
SIGNAL CABLE	1316′	2/C-#12			2	1	2	2	4	4	2	2													2		8
	345′	4/C-#12 TRAY											1	1	1	1	1							2			
	2151′	5/C-#12			2	1	2	2	4	4	2	2		1	1	1	2		1	1	1	2	2	4	6		12
	520′	7/C-#12														1	1			1	1	1	2	3	3		3
	705′	RVDS CABLE													1			1	1	1	2	2	2	4	4		4
LOOP	160′	1/C-#14 LOOP WIRE	2																								
	1554′	2/C-#14 (SHIELDED)		1					2	2	1	2															4
CONDUIT	80′	1" PVC	1																							①	
	1100′	2" PVC		1																							
		2" PVC BORE																									
	247′	4" PVC			1	1		1		1		1													①		②
	254′	4" PVC BORE					1		1		1																

②EXISTING CONDUIT & WIRE TO REMAIN IN PLACE

TIMING CHART

PHASE	1	2	3	4	5	6	7	8
STREET	FM 1015		MILE 9		FM 1015		MILE 9	
MOVEMENT	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
MIN GREEN	5	20		10	5	20	5	10
EXTENSION	1.5	2		2	1.5	2	1.5	2
MAXIMUM I	15	40	NOT USED	20	15	40	10	20
MAXIMUM II	15	40		20	15	40	10	20
YELLOW	4	4		4	4	4	4	4
ALL RED	1	2		1	1	2	1	1
WALK		7		7		7		7
DON'T WALK		20		15		20		15
RECALL		2				2		
MEMORY	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF

LOOP DETECTOR CHART

LOOP	SIZE	WIRE LENGTH	SAW CUT	AMPLIFIER NO.	SETTING	FUNCTION	DELAY TIMING
L-2A, B, C	6′x20′	420′	210′	2	PRESENCE	CALL & EXTEND Ø 2	
L-4A	6′x6′	132′	54′	4	PRESENCE	CALL & EXTEND Ø 4	
L-6A, B, C	6′x20′	390′	195′	6	PRESENCE	CALL & EXTEND Ø 6	
L-8A	6′x6′	82′	29′	8	PRESENCE	CALL & EXTEND Ø 8	
TOTAL:		1,024′	488′				

RADAR DETECTOR CHART

RADAR/ DETECTOR ZONE	DETECTOR RACK NO.	SETTING	FUNCTION	DELAY TIMING
R-1/Z-1, Z-6	1/2	PRESENCE	CALL & EXTEND Ø 1 & Ø 6	
R-2/Z-8	4	PRESENCE	CALL & EXTEND Ø 8	
R-3/Z-2, Z-5	5/6	PRESENCE	CALL & EXTEND Ø 2 & Ø 5	
R-4/Z-4, Z-7	7/8	PRESENCE	CALL & EXTEND Ø 4 & Ø 7	

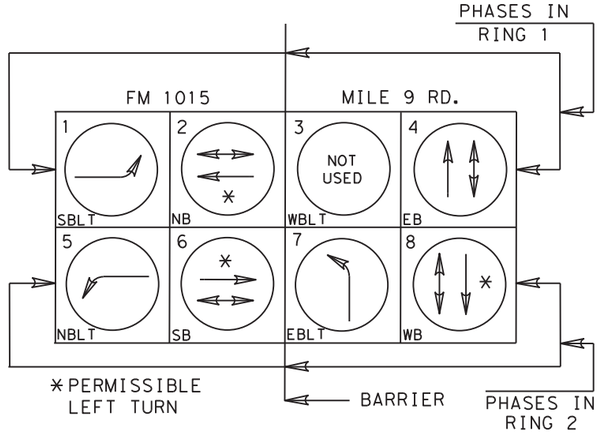
TRAFFIC SIGNAL POLES

	POLE NUMBER	QUANTITY	SIGNAL POLE DESIGNATION	MAST ARM DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
*	1	1	SPL 30B-100	N/A	36(TY A)	
*	2	1	SP 30B-100	N/A	36(TY A)	
*	3	1	SPL 30B -100	N/A	36(TY A)	
*	4	1	SP 30B-100	N/A	36(TY A)	
	5	1	PEDESTAL POLE	N/A	24(TY A)	6′

*EXISTING POLES TO REMAIN IN PLACE

NOTES

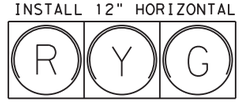
1. THE CONTRACTOR SHALL FURNISH & INSTALL SIGNAL HEADS, PED. POLE, RADAR DETECTORS, LUMINAIRES, FLASHING YELLOW ARROW (FYA) CAPABLE CONTROLLER UNIT, CONDUIT, CABLES, LOOP DETECTORS & GROUND BOXES AS SHOWN.
2. THE LOCATION SHOWN FOR PED. POLE, RADAR DETECTORS, CONDUIT RUNS, GROUND BOXES & LOOP DETECTORS IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE PHARR DISTRICT TRAFFIC SECTION.
3. ALL SIGNAL CABLE SHALL BE #12 AWG, SERVICE CABLE SHALL BE #6 AWG, 2/C LOOP LEAD-IN CABLE SHALL BE #14 AWG SHIELDED AND LOOP WIRES IN STREET SHALL BE #14 AWG.
5. ALL TRAFFIC SIGNAL HEADS SHALL HAVE BACKPLATES.
6. THE LUMINAIRES SHALL BE OPERATED UNDER THEIR OWN PHOTO ELECTRIC CONTROL, IF APPLICABLE.
7. THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES AS TO THE EXACT LOCATION OF THE EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT WITH OR DAMAGE TO THESE UTILITIES.
8. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS, DUE TO UTILITY CONFLICTS, AS DEFINED IN THE SPECIFICATIONS OR DEEMED NECESSARY BY THE ENGINEER.



PHASING DIAGRAM

R10-17T (30"x30") S1, S2 & S3

SIGNALS NO. 1, 4 & 7 W/BACKPLATES

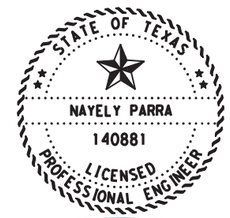


SIGNALS NO. 2, 3, 5, 6, 8, 9, 10 & 11 W/BACKPLATES

R10-3ER SIGN w/ PEDESTRIAN PUSH BUTTON INSTALLED ON SIGNAL POLES (W2, W4, W6 & W8)

LED PEDESTRIAN SIGNALS w/COUNTDOWN (W1 THRU W8)

R10-3ERL SIGN w/ PEDESTRIAN PUSH BUTTON INSTALLED ON SIGNAL POLES (W1, W3, W5 & W7)



06.30.2023

Pharr District Central Design

Texas Department of Transportation

①

TRAFFIC SIGNAL LAYOUT
PROPOSED INSTALLATION
FM 1015 @ MILE 9 RD.

SCALE: 1" = 60' SHEET 3 OF 3

© 2023	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		161

DATE: 6/12/2023 2:48:18 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_MILE9_A.dgn

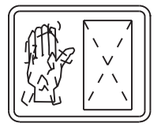
EXISTING TIMING CHART

PHASE	1	2	3	4	5	6	7	8
STREET	FM 1015		MILE 8		FM 1015		MILE 8	
MOVEMENT	NBLT	SB	EBLT	WB	SBLT	NB	WBLT	EB
MIN GREEN	5	20		10	5	20		10
EXTENSION	1.5	2		2	1.5	2		2
MAXIMUM I	15	40		20	15	40		20
MAXIMUM II	15	40		20	15	40		20
YELLOW	4	4	NOT USED	4	4	4	NOT USED	4
ALL RED	1	2		1	1	2		1
WALK		7		7		7		7
DON'T WALK		20		15		20		15
RECALL		2				2		
MEMORY	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF

EXISTING

R10-3ER SIGN w/ PEDESTRIAN PUSH BUTTON (W2, W4 & W8) (TO REMAIN IN PLACE) (REMOVE W6))

EXISTING 18" x 16"



LED PEDESTRIAN SIGNALS w/COUNTDOWN (W1 - W5 & W7, W8) (TO REMAIN IN PLACE) (REMOVE W6)

EXISTING

R10-3ERL SIGN w/ PEDESTRIAN PUSH BUTTON (W1, W3, W5 & W7) (TO REMAIN IN PLACE)

EXISTING LOOP DETECTOR CHART

LOOP	SIZE	WIRE LENGTH	SAW CUT	AMPLIFIER NO.	SETTING	FUNCTION	DELAY TIMING
L-2A, B	6'x20'			2	PRESENCE	CALL & EXTEND Ø 2	
L-6A, B	6'x20'			6	PRESENCE	CALL & EXTEND Ø 6	
TOTAL:							

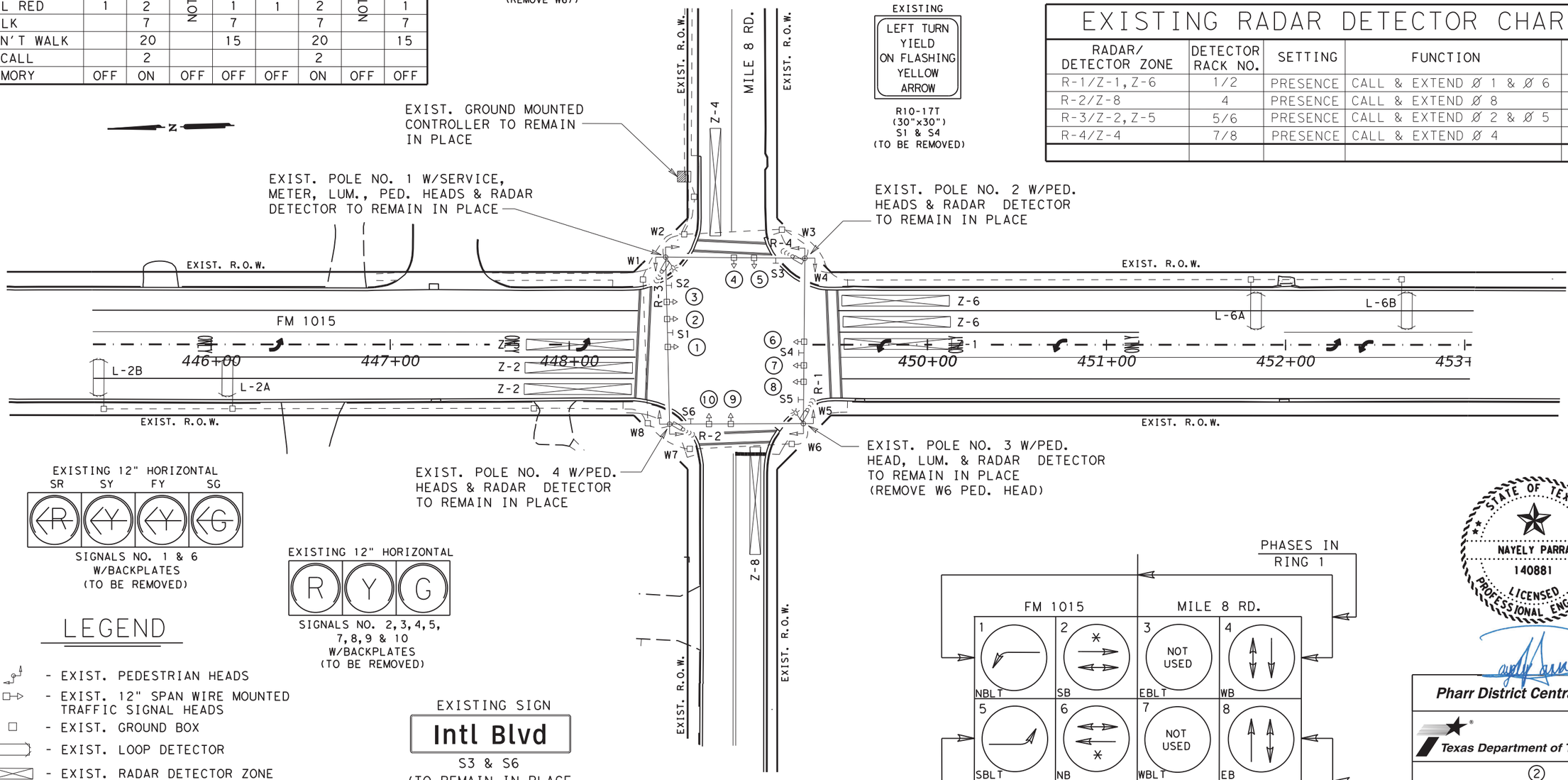
EXISTING RADAR DETECTOR CHART

RADAR/ DETECTOR ZONE	DETECTOR RACK NO.	SETTING	FUNCTION	DELAY TIMING
R-1/Z-1, Z-6	1/2	PRESENCE	CALL & EXTEND Ø 1 & Ø 6	
R-2/Z-8	4	PRESENCE	CALL & EXTEND Ø 8	
R-3/Z-2, Z-5	5/6	PRESENCE	CALL & EXTEND Ø 2 & Ø 5	
R-4/Z-4	7/8	PRESENCE	CALL & EXTEND Ø 4	

EXISTING

LEFT TURN YIELD ON FLASHING YELLOW ARROW

R10-17T (30"x30") S1 & S4 (TO BE REMOVED)



EXISTING 12" HORIZONTAL

SIGNALS NO. 1 & 6 W/BACKPLATES (TO BE REMOVED)

EXISTING 12" HORIZONTAL

SIGNALS NO. 2, 3, 4, 5, 7, 8, 9 & 10 W/BACKPLATES (TO BE REMOVED)

LEGEND

- EXIST. PEDESTRIAN HEADS
- EXIST. 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXIST. GROUND BOX
- EXIST. LOOP DETECTOR
- EXIST. RADAR DETECTOR ZONE
- EXIST. FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- EXIST. CONDUIT (SIZE & TYPE AS SPECIFIED)
- EXIST. LUMINAIRE
- EXIST. RADAR PRESENCE DETECTOR (STOP BAR)

EXISTING SIGN

Intl Blvd

S3 & S6 (TO REMAIN IN PLACE

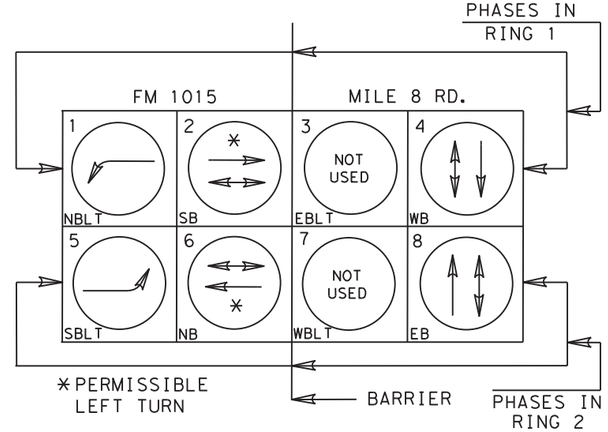
EXISTING SIGN

Pike Blvd

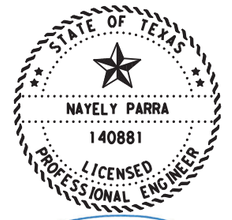
S2 & S5 (TO REMAIN IN PLACE

EXISTING CONDITION

INTERSECTION OF FM 1015 & MILE 8 RD. IN HIDALGO COUNTY CSJ: 1228-03-050



EXISTING PHASING DIAGRAM



06.30.2023

Pharr District Central Design

Texas Department of Transportation

②

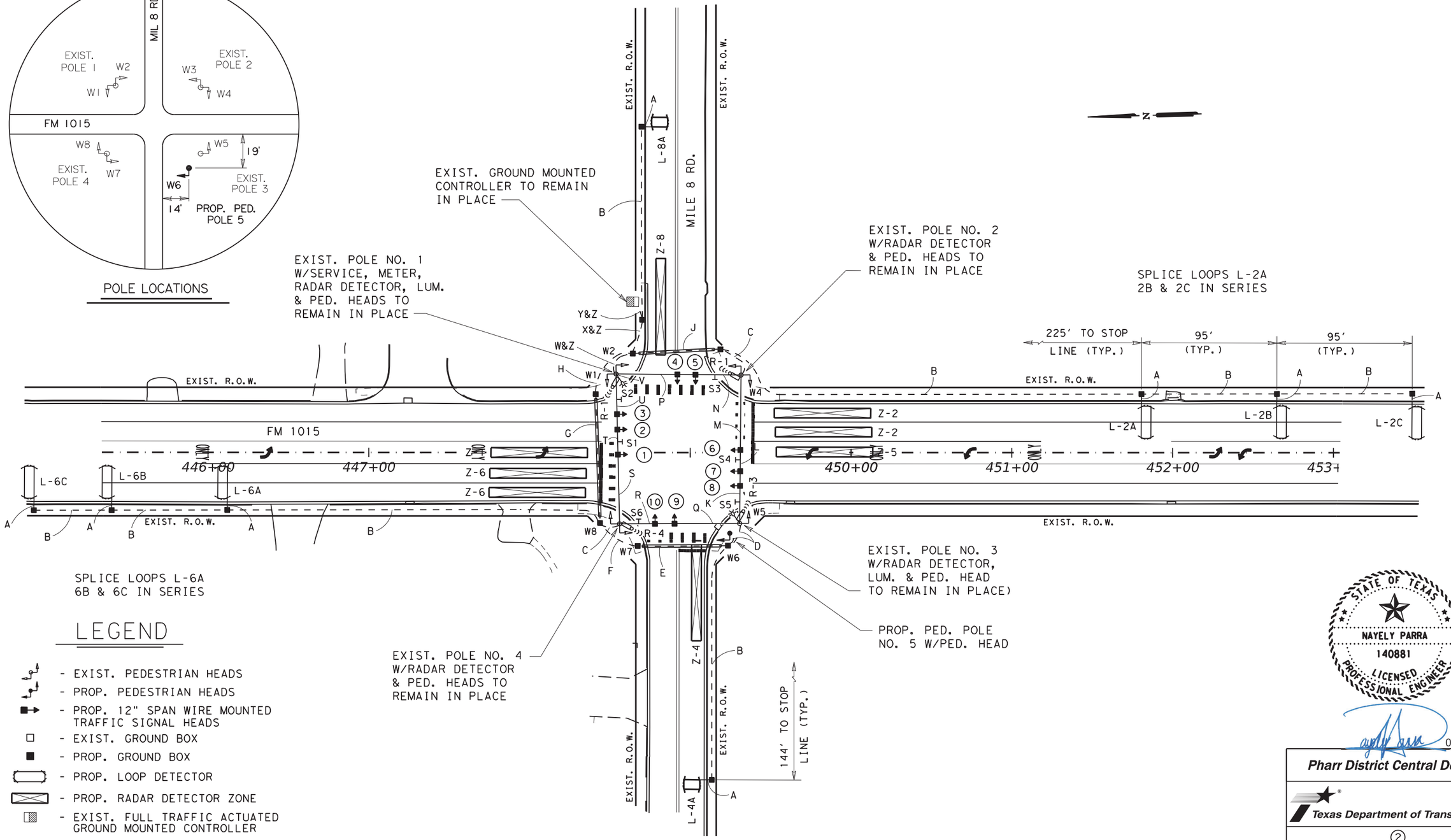
TRAFFIC SIGNAL LAYOUT
EXISTING CONDITION
FM 1015 @ MILE 8 RD.

SCALE: 1" = 60' SHEET 1 OF 3

© 2023	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		162

DATE: 6/12/2023 2:48:25 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_MILE8_B.dgn

POLE LOCATIONS



LEGEND

- EXIST. PEDESTRIAN HEADS
- PROP. PEDESTRIAN HEADS
- PROP. 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXIST. GROUND BOX
- PROP. GROUND BOX
- PROP. LOOP DETECTOR
- PROP. RADAR DETECTOR ZONE
- EXIST. FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- PROP. CONDUIT (SIZE & TYPE AS SPECIFIED)
- EXIST. LUMINAIRE
- PROP. CONDUIT BORE (SIZE & TYPE AS SPECIFIED)
- EXIST. RADAR PRESENCE DETECTOR (STOP BAR)

PROPOSED DIAGRAM

INTERSECTION OF
FM 1015 & MILE 8 RD.
IN HIDALGO COUNTY
CSJ: 1228-03-050

DATE: 6/12/2023 2:48:34 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_MILE8_A.dgn

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED
PROFESSIONAL ENGINEER

06.30.2023

Pharr District Central Design

Texas Department of Transportation

②

TRAFFIC SIGNAL LAYOUT
PROPOSED INSTALLATION
FM 1015 @ MILE 8 RD.

SCALE: 1" = 60' SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		163

ELECTRICAL CHART

ITEM	TOTAL QTY.	RUN NUMBER / RUN LENGTH (FT)	A 60	B 1180	C 50	D 40	E 60	F 30	G 85	H 40	J 60	K 40	L 30	M 55	N 35	P 60	Q 55	R 45	S 55	T 20	U 45	V 35	W 20	X 25	Y 15	Z 60
POWER	190′	1/C-#6																				2				2
		1/C-#8																								
GROUND	95′	1/C-#6 BARE																				1				1
	425′	1/C-#8 BARE			1	1	1	1	1	1	1												1	1	1	
SIGNAL CABLE	1300′	2/C-#12			2	1	2	2	4	4	2												2	8	8	
	290′	4/C-#12 TRAY															1	1	1	1	1	2				
	2130′	5/C-#12			2	1	2	2	4	4	2		1	1	1	2		1	1	1	2	4	6	12	12	
	405′	7/C-#12												1	1	1				1	1	2	2	2	2	
	815′	RVDS CABLE										1	1	1	2	2			1	1	1	4	4	4	4	
LOOP	120′	1/C-#14 LOOP WIRE	2																							
	1715′	2/C-#14 (SHIELDED)		1			1	1	2	2	1													3	4	
CONDUIT	120′	1" PVC	1																							1
	1180′	2" PVC		1																						
		2" PVC BORE																								
	255′	4" PVC			1	1		1		1												1	1	1	1	
	205′	4" PVC BORE					1		1		1															

ⓟ EXISTING CONDUIT & WIRE TO REMAIN IN PLACE

TIMING CHART

PHASE	1	2	3	4	5	6	7	8
STREET	FM 1015		MILE 8		FM 1015		MILE 8	
MOVEMENT	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
MIN GREEN	5	20		10	5	20		10
EXTENSION	1.5	2		2	1.5	2		2
MAXIMUM I	15	40	NOT USED	20	15	40	NOT USED	20
MAXIMUM II	15	40		20	15	40		20
YELLOW	4	4		4	4	4		4
ALL RED	1	2		1	1	2		1
WALK		7		7		7		7
DON'T WALK		20		15		20		15
RECALL		2				2		
MEMORY	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF

LOOP DETECTOR CHART

LOOP	SIZE	WIRE LENGTH	SAW CUT	AMPLIFIER NO.	SETTING	FUNCTION	DELAY TIMING
L-2A, B, C	6′x20′	348′	174′	2	PRESENCE	CALL & EXTEND Ø 2	
L-4A	6′x10′	108′	38′	4	PRESENCE	CALL & EXTEND Ø 4	
L-6A, B, C	6′x20′	348′	174′	6	PRESENCE	CALL & EXTEND Ø 6	
L-8A	6′x10′	108′	38′	8	PRESENCE	CALL & EXTEND Ø 8	
TOTAL:		912′	424′				

EXISTING SIGN

Intl Blvd

S3 & S6
(TO REMAIN IN PLACE

TRAFFIC SIGNAL POLES

	POLE NUMBER	QUANTITY	SIGNAL POLE DESIGNATION	MAST ARM DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
*	1	1	SPL 30B-100	N/A	36(TY A)	
*	2	1	SP 30B-100	N/A	36(TY A)	
*	3	1	SPL 30B -100	N/A	36(TY A)	
*	4	1	SP 30B-100	N/A	36(TY A)	
	5	1	PEDESTAL POLE	N/A	24(TY A)	6′

* EXISTING POLES TO REMAIN IN PLACE

EXISTING RADAR DETECTOR CHART

RADAR/ DETECTOR ZONE	DETECTOR RACK NO.	SETTING	FUNCTION	DELAY TIMING
* R-1/Z-1, Z-6	1/2	PRESENCE	CALL & EXTEND Ø 1 & Ø 6	
* R-2/Z-8	4	PRESENCE	CALL & EXTEND Ø 8	
* R-3/Z-2, Z-5	5/6	PRESENCE	CALL & EXTEND Ø 2 & Ø 5	
* R-4/Z-4	7/8	PRESENCE	CALL & EXTEND Ø 4	

*EXISTING RADAR DETECTORS TO REMAIN IN PLACE

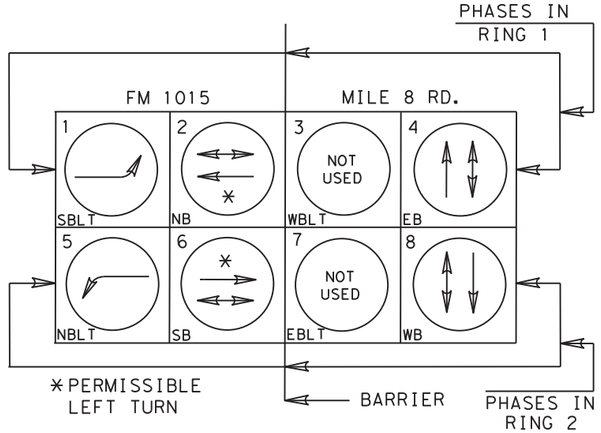
EXISTING SIGN

Pike Blvd

S2 & S5
(TO REMAIN IN PLACE

NOTES

1. THE CONTRACTOR SHALL FURNISH & INSTALL SIGNAL HEADS, FLASHING YELLOW ARROW (FYA) CAPABLE CONTROLLER UNIT, CONDUIT, CABLES, LOOP DETECTORS & GROUND BOXES AS SHOWN.
2. THE LOCATION SHOWN FOR CONDUIT RUNS, GROUND BOXES & LOOP DETECTORS IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE PHARR DISTRICT TRAFFIC SECTION.
3. ALL SIGNAL CABLE SHALL BE #12 AWG, SERVICE CABLE SHALL BE #6 AWG, 2/C LOOP LEAD-IN CABLE SHALL BE #14 AWG SHIELDED AND LOOP WIRES IN STREET SHALL BE #14 AWG.
5. ALL TRAFFIC SIGNAL HEADS SHALL HAVE BACKPLATES.
6. THE LUMINAIRES SHALL BE OPERATED UNDER THEIR OWN PHOTO ELECTRIC CONTROL, IF APPLICABLE.
7. THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES AS TO THE EXACT LOCATION OF THE EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT WITH OR DAMAGE TO THESE UTILITIES.
8. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS, DUE TO UTILITY CONFLICTS, AS DEFINED IN THE SPECIFICATIONS OR DEEMED NECESSARY BY THE ENGINEER.



PHASING DIAGRAM

INSTALL

LEFT TURN YIELD ON FLASHING YELLOW ARROW

R10-17T (30"x30")
S1 & S4

INSTALL 12" HORIZONTAL

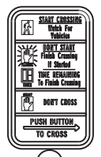
SR SY FY SG

SIGNALS NO. 1 & 6 W/BACKPLATES

INSTALL 12" HORIZONTAL

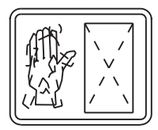
R Y G

SIGNALS NO. 2, 3, 4, 5, 7, 8, 9 & 10 W/BACKPLATES



R10-3ER SIGN w/ PEDESTRIAN PUSH BUTTON INSTALLED ON SIGNAL POLES (W2, W4 & W8) EXISTING (W6) PROPOSED

18" x 16"



LED PEDESTRIAN SIGNALS w/COUNTDOWN (W1-W5, W7, W8) EXISTING (W6) PROPOSED

EXISTING

R10-3ERL SIGN w/ PEDESTRIAN PUSH BUTTON INSTALLED ON SIGNAL POLES (W1, W3, W5 & W7) (TO REMAIN IN PLACE)

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED PROFESSIONAL ENGINEER

06.30.2023

Pharr District Central Design

Texas Department of Transportation

② TRAFFIC SIGNAL LAYOUT PROPOSED INSTALLATION FM 1015 @ MILE 8 RD.

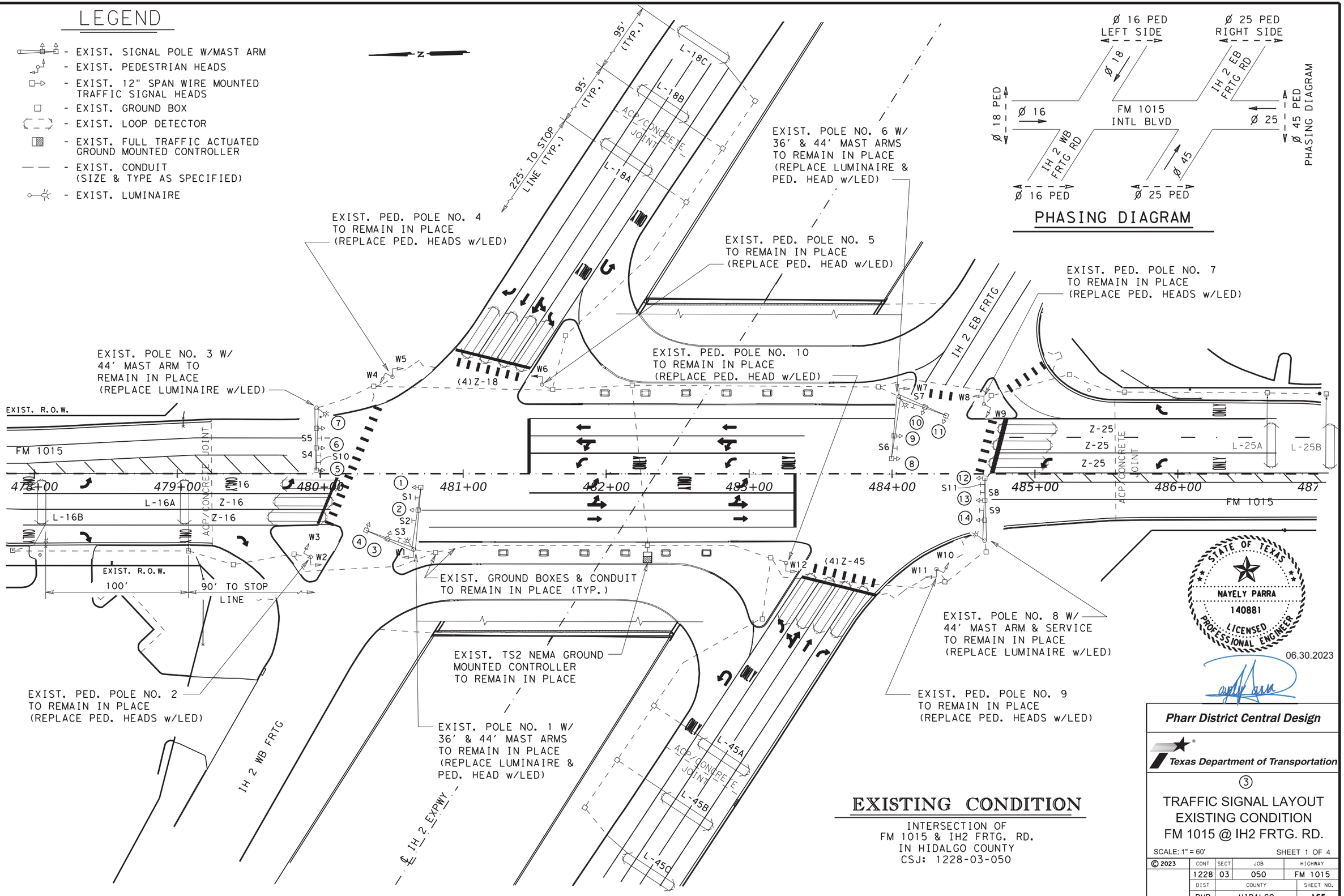
SCALE: 1" = 60' SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		164

DATE: 6/12/2023 2:48:34 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_MILE8_A.dgn

LEGEND

- EXIST. SIGNAL POLE W/MAST ARM
- EXIST. PEDESTRIAN HEADS
- EXIST. 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXIST. GROUND BOX
- EXIST. LOOP DETECTOR
- EXIST. FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- EXIST. CONDUIT (SIZE & TYPE AS SPECIFIED)
- EXIST. LUMINAIRE



PHASING DIAGRAM

EXISTING CONDITION

INTERSECTION OF
FM 1015 & IH2 FRTG. RD.
IN HIDALGO COUNTY
CSJ: 1228-03-050

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED
PROFESSIONAL ENGINEER

06.30.2023

Pharr District Central Design

Texas Department of Transportation

③

TRAFFIC SIGNAL LAYOUT
EXISTING CONDITION
FM 1015 @ IH2 FRTG. RD.

SCALE: 1" = 60'

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		165

DATE: 6/12/2023 2:48:41 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_IH2_FRTG_B.dgn

EXISTING LOOP DETECTOR CHART

LOOP	SIZE	WIRE LENGTH	SAW CUT	AMPLIFIER NO.	SETTING	FUNCTION	DELAY TIMING
L-25A, B	6'x30'			1	PRESENCE	CALL & EXTEND Ø 25	
L-45A	6'x40'			2	PRESENCE	CALL & EXTEND Ø 45	
L-45B	6'x40'			2	PRESENCE	CALL & EXTEND Ø 45	
L-45C	6'x40'			2	PRESENCE	CALL & EXTEND Ø 45	
L-16A	6'x30'			3	PRESENCE	CALL & EXTEND Ø 16	
L-16B	6'x30'			3	PRESENCE	CALL & EXTEND Ø 16	
L-18A	6'x40'			4	PRESENCE	CALL & EXTEND Ø 18	
L-18B	6'x40'			4	PRESENCE	CALL & EXTEND Ø 18	
L-18C	6'x40'			4	PRESENCE	CALL & EXTEND Ø 18	
TOTAL:							

EXISTING TIMING CHART

PHASE	25	45	L-R	4516	16	18	R-L	1825
STREET	FM1015	EB-FRTG	FM1015	FM1015	FM1015	WB-FRTG	FM1015	FM1015
MOVEMENT	NB	EB	Clearance Interval When Skip	Clearance Intvl for Std Seq	SB	WB	Clearance Interval When Skip	Clearance Intvl for Std Seq
MIN GREEN	15	7	5	5	14	6	5	5
EXTENSION	2	2	1	1	2	2	1	1
MAXIMUM I	31	23	6	6	26	20	6	6
MAXIMUM II								
YELLOW	4	4	4	4	4	4	4	4
ALL RED	1	1	1	1	1	1	1	1
WALK	7	7			7	7		
DON'T WALK	17	37			17	37		
RECALL	MIN	MEM OFF	MEM OFF	MEM OFF	MIN	MEM OFF	MEM OFF	MEM OFF

(TO REMAIN IN PLACE)

EXISTING TRAFFIC SIGNAL POLES

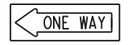
POLE NUMBER	QUANTITY	SIGNAL POLE DESIGNATION	MAST ARM DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
1, 6	2	DMA 44-36L-100	44III-36II-100	36(TY B)	
2, 4, 5	3	PEDESTAL POLE	N/A	24(TY A)	
7, 9, 10	3	PEDESTAL POLE	N/A	24(TY A)	
3, 8	2	SMA 44L-100	44 III-100	36(TY B)	

(EXISTING POLES TO REMAIN IN PLACE)

EXISTING

R6-1R
S1
(TO REMAIN IN PLACE)

EXISTING



R6-1L
S4, S8
(TO REMAIN IN PLACE)

EXISTING

S2, S5
(TO REMAIN IN PLACE)

EXISTING

R10-4b SIGN &
PEDESTRIAN PUSH BUTTON
W1 THRU W12
(TO BE REMOVED)

EXISTING
18"x16"

PEDESTRIAN SIGNALS
W1 THRU W12
(TO BE REMOVED)

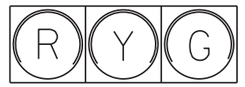
EXISTING

S3, S7
(TO REMAIN IN PLACE)

EXISTING

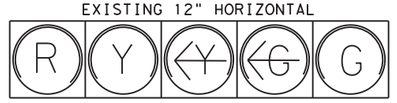
S6, S9
(TO REMAIN IN PLACE)

EXISTING 12" HORIZONTAL



SIGNALS NO. 1, 2, 3, 4, 6,
7, 8, 9, 10, 11 & 13
W/BACKPLATES

EXISTING 12" HORIZONTAL



SIGNALS NO. 5 & 12
W/BACKPLATES
(TO BE REMOVED)

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED
PROFESSIONAL ENGINEER

06.30.2023

Pharr District Central Design

Texas Department of Transportation

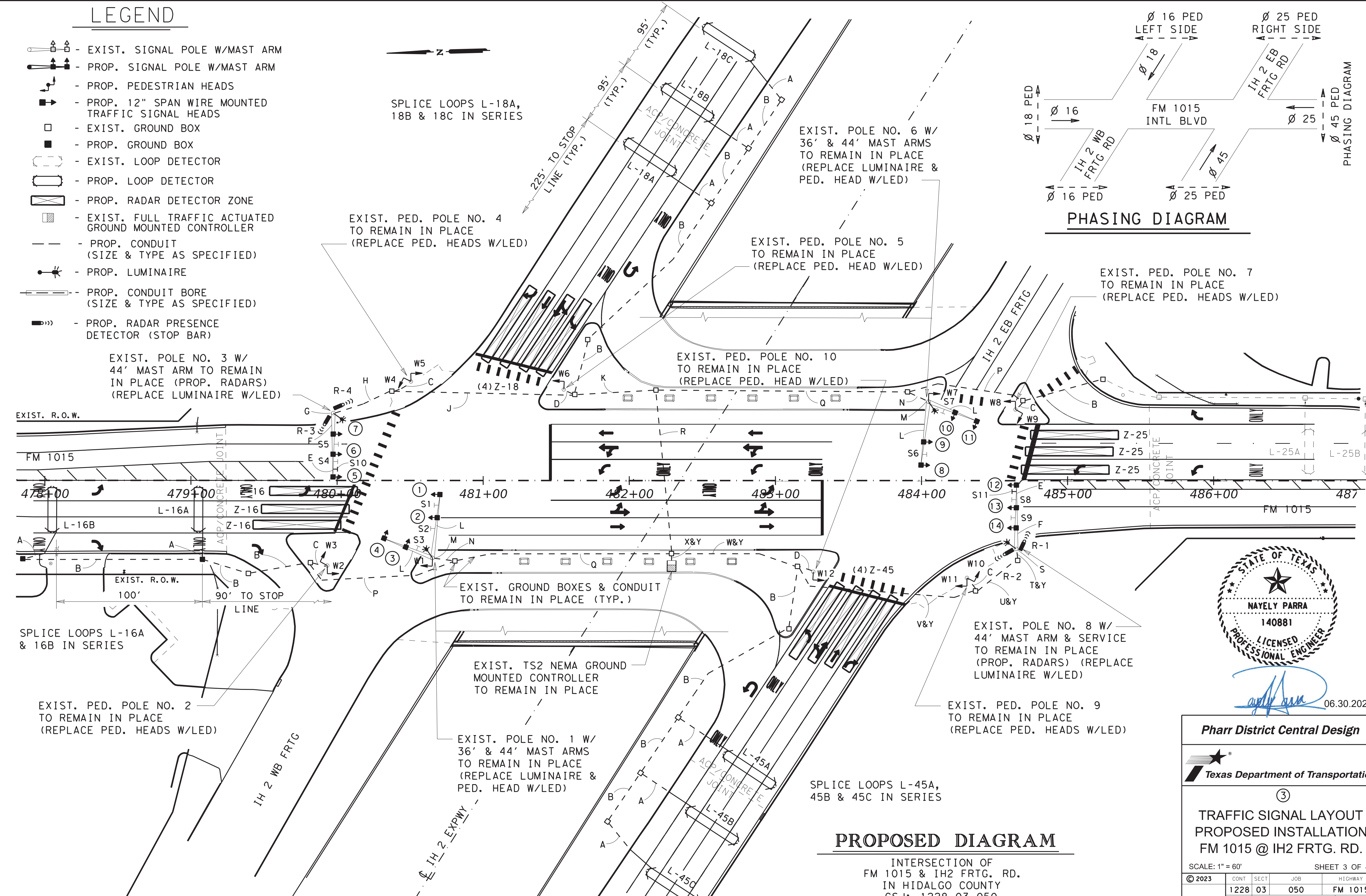
③

TRAFFIC SIGNAL LAYOUT
EXISTING CONDITION
FM 1015 @ IH2 FRTG. RD.

SCALE: 1" = 60' SHEET 2 OF 4

© 2023	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		166

DATE: 6/12/2023 2:48:41 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_IH2_FRTG_B.dgn


LEGEND
- EXIST. SIGNAL POLE W/MAST ARM
- PROP. SIGNAL POLE W/MAST ARM
- PROP. PEDESTRIAN HEADS
- PROP. 12" SPAN WIRE MOUNTED TRAFFIC SIGNAL HEADS
- EXIST. GROUND BOX
- PROP. GROUND BOX
- EXIST. LOOP DETECTOR
- PROP. LOOP DETECTOR
- PROP. RADAR DETECTOR ZONE
- EXIST. FULL TRAFFIC ACTUATED GROUND MOUNTED CONTROLLER
- PROP. CONDUIT (SIZE & TYPE AS SPECIFIED)
- PROP. LUMINAIRE
- PROP. CONDUIT BORE (SIZE & TYPE AS SPECIFIED)
- PROP. RADAR PRESENCE DETECTOR (STOP BAR)
N
SPLICE LOOPS L-18A, 18B & 18C IN SERIES
95' (TYP.)
95' (TYP.)
225' TO STOP LINE (TYP.)
ACP/CONCRETE JOINT
EXIST. POLE NO. 6 W/ 36' & 44' MAST ARMS TO REMAIN IN PLACE (REPLACE LUMINAIRE & PED. HEAD W/LED)
EXIST. PED. POLE NO. 4 TO REMAIN IN PLACE (REPLACE PED. HEADS W/LED)
EXIST. PED. POLE NO. 5 TO REMAIN IN PLACE (REPLACE PED. HEAD W/LED)
EXIST. PED. POLE NO. 7 TO REMAIN IN PLACE (REPLACE PED. HEADS W/LED)
EXIST. POLE NO. 3 W/ 44' MAST ARM TO REMAIN IN PLACE (PROP. RADARS) (REPLACE LUMINAIRE W/LED)
EXIST. PED. POLE NO. 10 TO REMAIN IN PLACE (REPLACE PED. HEAD W/LED)
IH 2 EB FRTG
EXIST. R.O.W.
FM 1015
478+00
479+00
480+00
481+00
482+00
483+00
484+00
485+00
486+00
487
(4)Z-18
(4)Z-45
Z-16
Z-25
L-16A
L-16B
L-25A
L-25B
L-18A
L-18B
L-18C
L-45A
L-45B
L-45C
100'
90' TO STOP LINE
SPLICE LOOPS L-16A & 16B IN SERIES
EXIST. GROUND BOXES & CONDUIT TO REMAIN IN PLACE (TYP.)
EXIST. TS2 NEMA GROUND MOUNTED CONTROLLER TO REMAIN IN PLACE
EXIST. POLE NO. 8 W/ 44' MAST ARM & SERVICE TO REMAIN IN PLACE (PROP. RADARS) (REPLACE LUMINAIRE W/LED)
EXIST. PED. POLE NO. 2 TO REMAIN IN PLACE (REPLACE PED. HEADS W/LED)
EXIST. POLE NO. 1 W/ 36' & 44' MAST ARMS TO REMAIN IN PLACE (REPLACE LUMINAIRE & PED. HEAD W/LED)
EXIST. PED. POLE NO. 9 TO REMAIN IN PLACE (REPLACE PED. HEADS W/LED)
SPLICE LOOPS L-45A, 45B & 45C IN SERIES
IH 2 WB FRTG
℄ IH 2 EXPWY
ONLY
Ø 16 PED LEFT SIDE
Ø 25 PED RIGHT SIDE
Ø 18
Ø 18 PED
Ø 16
FM 1015 INTL BLVD
IH 2 EB FRTG RD
Ø 25
Ø 45 PED
IH 2 WB FRTG RD
Ø 45
Ø 16 PED
Ø 25 PED
PHASING DIAGRAM

PROPOSED DIAGRAM

INTERSECTION OF
FM 1015 & IH2 FRTG. RD.
IN HIDALGO COUNTY
CSJ: 1228-03-050

STATE OF TEXAS
NAYELY PARRA
140881
LICENSED PROFESSIONAL ENGINEER
06.30.2023

Pharr District Central Design

Texas Department of Transportation

③

TRAFFIC SIGNAL LAYOUT
PROPOSED INSTALLATION
FM 1015 @ IH2 FRTG. RD.

SCALE: 1" = 60'
SHEET 3 OF 4

© 2023	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST		COUNTY	SHEET NO.
	PHR		HIDALGO	167

DATE: 6/12/2023 2:48:48 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0787148\TS_IH2_FRTG_A.dgn

ELECTRICAL CHART

ITEM	TOTAL QTY.	RUN NUMBER / RUN LENGTH(FT)	A 150	B 1050	C 75	D 40	E 40	F 70	G 35	H 50	J 125	K 60	L 180	M 80	N 45	P 200	Q 335	R 120	S 35	T 10	U 40	V 135	W 90	X 10	Y 285
POWER	640′	1/C-#6																	2						2
		1/C-#8																							
GROUND	320′	1/C-#6 BARE																	1						1
	1335′	1/C-#8 BARE			1	1				1	1	1			1	1	1	1		1	1	1	1	1	
SIGNAL CABLE	3450′	2/C-#12			2	1					2	3			1	2	3	6				2	3	12	
	1935′	4/C-#12 TRAY							1	1	1	1		1	1		1	2	4	3	3	3	3		
	5620′	5/C-#12			2	1		1	1	1	3	4	1	2	3	2	5	9	1	1	1	3	4	18	
	830′	7/C-#12					1	1	1	1	1	1						1	1	1	1	1	1		
	1440′	RVDS CABLE							2	2	2	2						2	2	2	2	2	2	4	
LOOP	300′	1/C-#14 LOOP WIRE	2																						
	2015′	2/C-#14 (SHIELDED)		1								1				1	1	2					1	4	
CONDUIT	150′	1" PVC	1																						①
		2" PVC		①																					
		2" PVC BORE																							
		4" PVC			①	①				①	①	①			①	①	①	①	①	①	①	①	①	①	
		4" PVC BORE																							

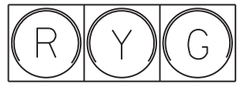
Ⓟ EXISTING CONDUIT TO REMAIN IN PLACE

TRAFFIC SIGNAL POLES

	POLE NUMBER	QUANTITY	SIGNAL POLE DESIGNATION	MAST ARM DESIGNATION	FOUNDATION TYPE	FOUNDATION DEPTH
*	1, 6	2	DMA 44-36L-100	44III-36II-100	36(TY B)	
*	2, 4, 5	3	PEDESTAL POLE	PEDESTAL POLE	24(TY A)	
*	7, 9, 10	3	PEDESTAL POLE	PEDESTAL POLE	24(TY A)	
*	3, 8	2	SMA 44L-100	44 III-100	36(TY B)	

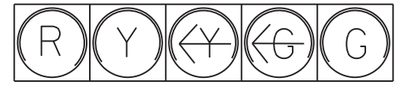
* EXISTING POLES TO REMAIN IN PLACE

INSTALL 12" HORIZONTAL



SIGNALS NO. 1, 2, 3, 4, 6, 7, 8, 9, 10, 11 & 13 W/BACKPLATES

INSTALL 12" HORIZONTAL



SIGNALS NO. 5 & 12 W/BACKPLATES

EXISTING TIMING CHART

PHASE	25	45	L-R	4516	16	18	R-L	1825
STREET	FM1015	EB-FRTG	FM1015	FM1015	FM1015	WB-FRTG	FM1015	FM1015
MOVEMENT	NB	EB	Clearance Interval When Skip	Clearance Intvl for Std Seq	SB	WB	Clearance Interval When Skip	Clearance Intvl for Std Seq
MIN GREEN	15	7	5	5	14	6	5	5
EXTENSION	2	2	1	1	2	2	1	1
MAXIMUM I	31	23	6	6	26	20	6	6
MAXIMUM II								
YELLOW	4	4	4	4	4	4	4	4
ALL RED	1	1	1	1	1	1	1	1
WALK	7	7			7	7		
DON'T WALK	17	37			17	37		
RECALL	MIN	MEM OFF	MEM OFF	MEM OFF	MIN	MEM OFF	MEM OFF	MEM OFF

(TO REMAIN IN PLACE)

EXISTING

R6-1R
S1
(TO REMAIN IN PLACE)

EXISTING

R6-1L
S4, S8
(TO REMAIN IN PLACE)

LOOP DETECTOR CHART

	LOOP	SIZE	WIRE LENGTH	SAW CUT	AMPLIFIER NO.	SETTING	FUNCTION	DELAY TIMING
*	L-25A, B	6′x30′			1	PRESENCE	CALL & EXTEND Ø 25	
	L-45A	6′x40′	220′	110′	2	PRESENCE	CALL & EXTEND Ø 45	
	L-45B	6′x40′	220′	110′	2	PRESENCE	CALL & EXTEND Ø 45	
	L-45C	6′x40′	220′	110′	2	PRESENCE	CALL & EXTEND Ø 45	
	L-16A	6′x30′	172′	86′	3	PRESENCE	CALL & EXTEND Ø 16	
	L-16B	6′x30′	176′	88′	3	PRESENCE	CALL & EXTEND Ø 16	
	L-18A	6′x40′	204′	102′	4	PRESENCE	CALL & EXTEND Ø 18	
	L-18B	6′x40′	204′	102′	4	PRESENCE	CALL & EXTEND Ø 18	
	L-18C	6′x40′	208′	104′	4	PRESENCE	CALL & EXTEND Ø 18	
	TOTAL:		1624′	812′				

* EXISTING LOOP DETECTORS TO REMAIN IN PLACE

NOTES

1. THE CONTRACTOR SHALL FURNISH & INSTALL SIGNAL HEADS, LUMINAIRES, PEDESTRIAN HEADS, RADARS, CONDUITS, CABLES, LOOP DETECTORS & GROUND BOXES AS SHOWN.
2. THE LOCATION SHOWN FOR RADARS, CONDUIT RUNS, GROUND BOXES & LOOP DETECTORS IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED IN THE FIELD BY THE ENGINEER IN COORDINATION WITH THE PHARR DISTRICT TRAFFIC SECTION.
3. ALL SIGNAL CABLE SHALL BE #12 AWG, SERVICE CABLE SHALL BE #6 AWG, 2/C LOOP LEAD-IN CABLE SHALL BE #14 AWG SHIELDED AND LOOP WIRES IN STREET SHALL BE #14 AWG.
5. ALL TRAFFIC SIGNAL HEADS SHALL HAVE BACKPLATES.
6. THE LUMINAIRES SHALL BE OPERATED UNDER THEIR OWN PHOTO ELECTRIC CONTROL, IF APPLICABLE.
7. THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES AS TO THE EXACT LOCATION OF THE EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT WITH OR DAMAGE TO THESE UTILITIES.
8. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS, DUE TO UTILITY CONFLICTS, AS DEFINED IN THE SPECIFICATIONS OR DEEMED NECESSARY BY THE ENGINEER.

RADAR DETECTOR CHART

RADAR/ DETECTOR ZONE	DETECTOR RACK NO.	SETTING	FUNCTION	DELAY TIMING
R-1/Z-25	1	PRESENCE	CALL & EXTEND Ø 25	
R-2/Z-45	3	PRESENCE	CALL & EXTEND Ø 45	
R-3/Z-16	5	PRESENCE	CALL & EXTEND Ø 16	
R-4/Z-18	7	PRESENCE	CALL & EXTEND Ø 18	

EXISTING

S3, S7
(TO REMAIN IN PLACE)

EXISTING

S6, S9
(TO REMAIN IN PLACE)

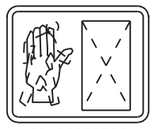
EXISTING

S2, S5
(TO REMAIN IN PLACE)

INSTALL

R10-3ER SIGN w/ PEDESTRIAN PUSH BUTTON INSTALLED ON SIGNAL POLES (W2, W4, W6, W8, W10 & W12)

INSTALL 18" x 16"

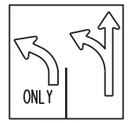


LED PEDESTRIAN SIGNALS w/COUNTDOWN (W1 THRU W12)

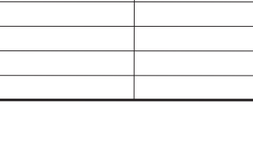
INSTALL

R10-3ERL SIGN w/ PEDESTRIAN PUSH BUTTON INSTALLED ON SIGNAL POLES (W1, W3, W5, W7, W9 & W11)

INSTALL SIGN (30"x30")



R3-8L
S10, S11



06.30.2023

Pharr District Central Design

Texas Department of Transportation

③

TRAFFIC SIGNAL LAYOUT
PROPOSED INSTALLATION
FM 1015 @ IH2 FRTG. RD.

SCALE: 1" = 60' SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		168

DATE: 6/12/2023 2:48:48 PM
FILE: c:\txdot\pw_online\txdot5\jose.cordenos\d0787148\TS_IH2_FRTG_A.dgn

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		1228	03	050	FM 1015
		DIST	COUNTY		SHEET NO.
		PHR	HIDALGO		169

71A

DATE: 6/12/2023 3:22:58 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed1-14.dgn

DATE: 6/12/2023 3:23:04 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed3-14.dgn

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.
12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

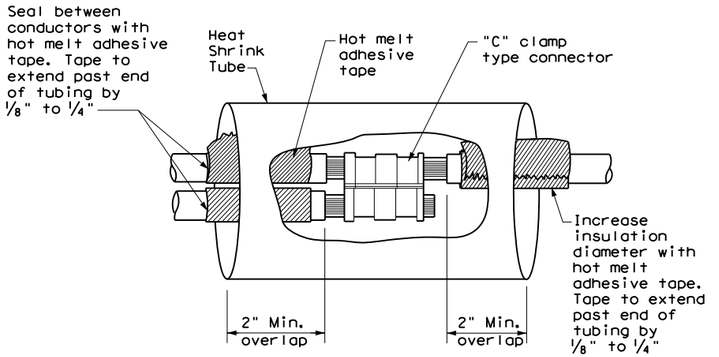
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

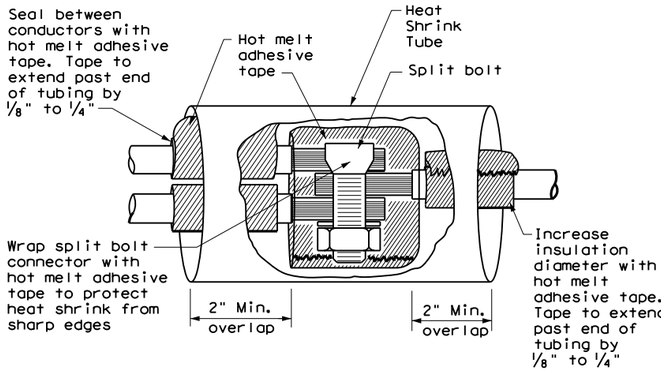
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

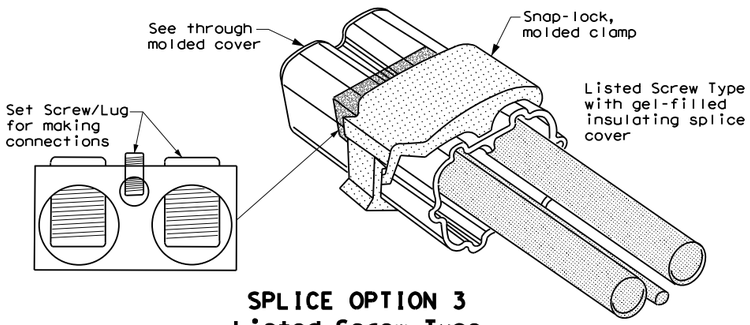
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

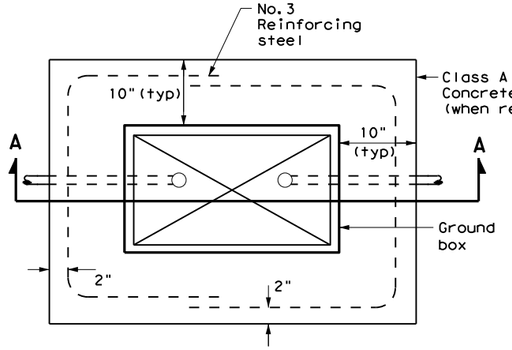
ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

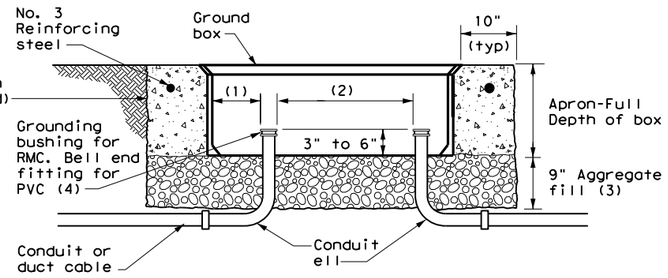
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		170

71C

DATE: 6/12/2023 3:23:11 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed4-14.dgn



PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

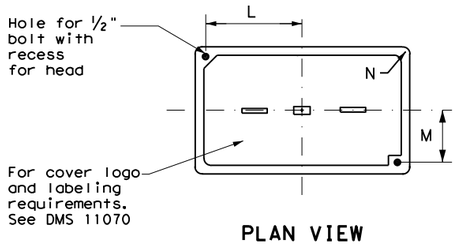
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

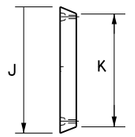
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

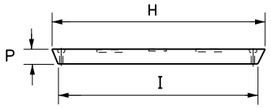
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		171

DATE: 6/12/2023 3:23:16 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed5-14.dgn

ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

*ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

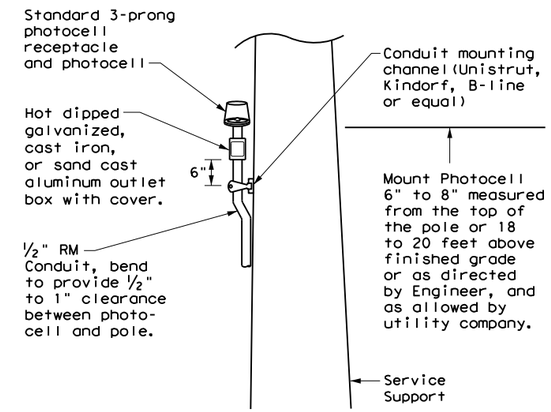
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

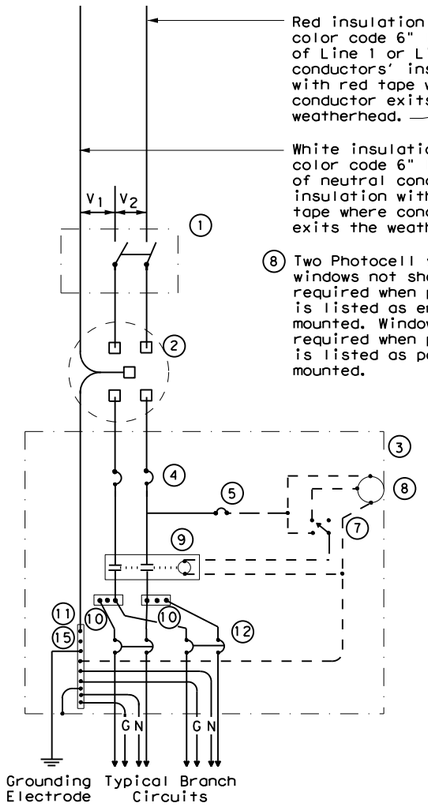
Texas Department of Transportation

Traffic Operations Division Standard

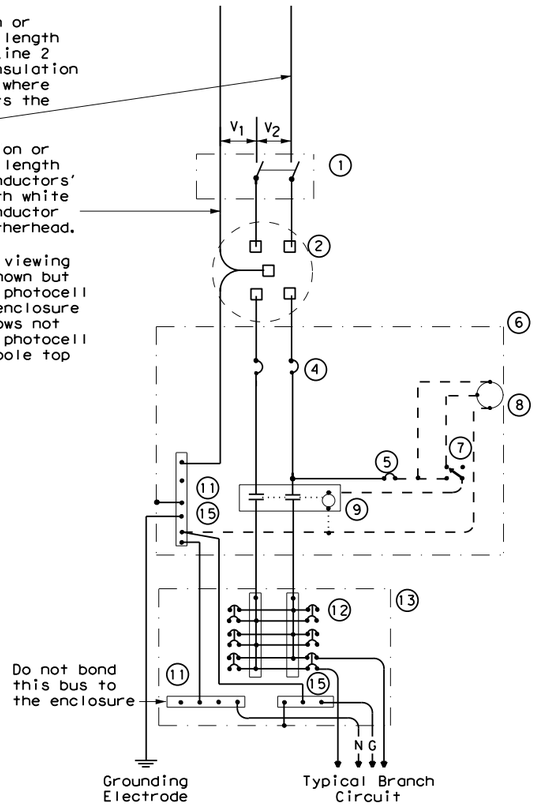
ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

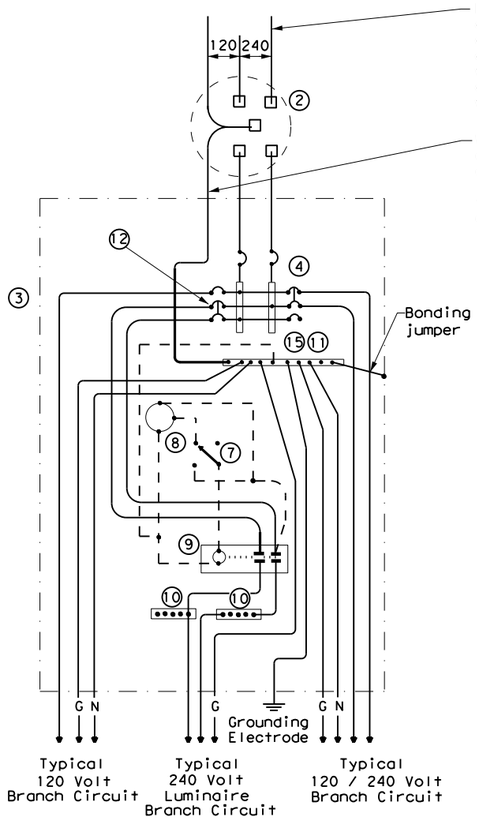
FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		172



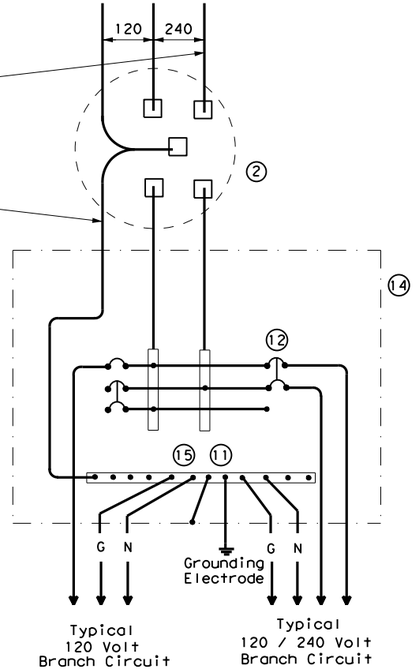
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
- - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		173

71F

DATE: 6/12/2023 3:23:22 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed6-14.dgn

SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.

2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.

3. Provide and install galvanized ¾ in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized ¾ in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 ¼ in. to 3 ½ in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.

4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.

6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.

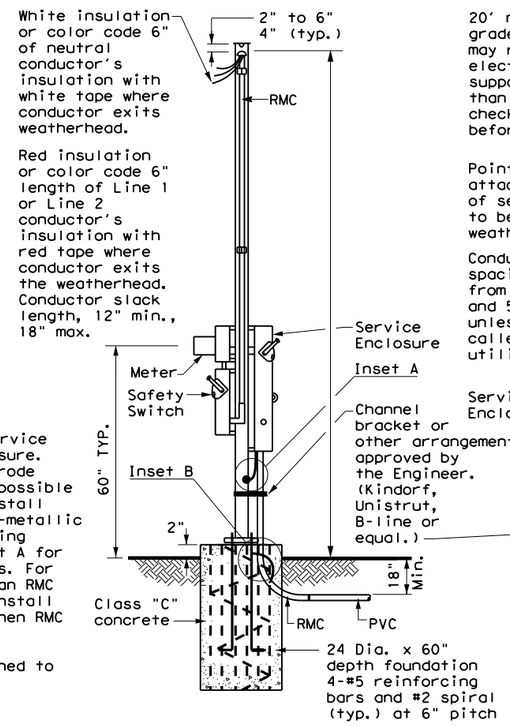
7. Drill and tap steel poles and frames for ½ in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.

8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.

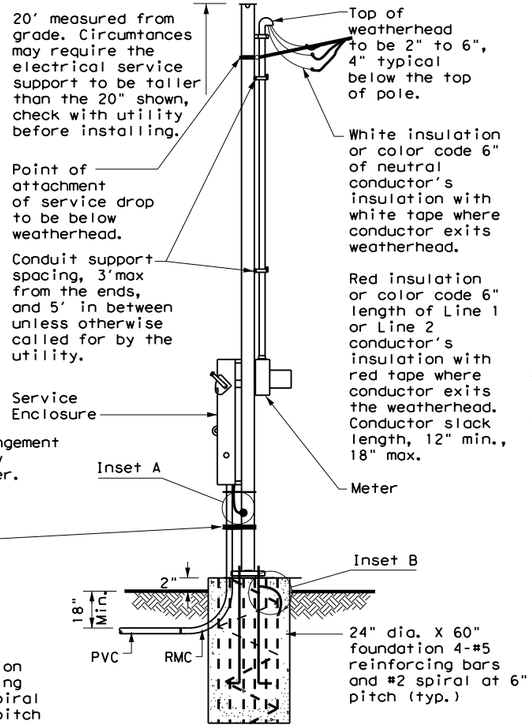
9. Provide ¼" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.

10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.

11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

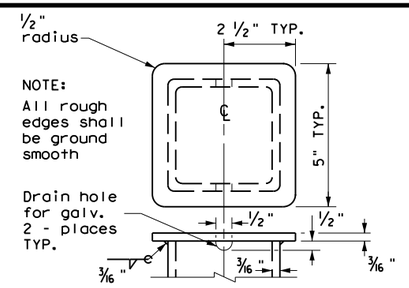


WITH SAFETY SWITCH

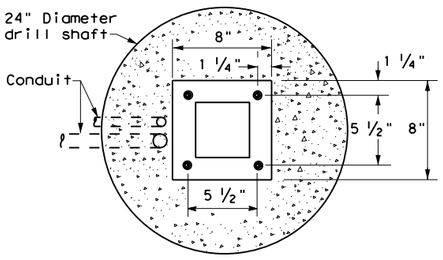


WITHOUT SAFETY SWITCH

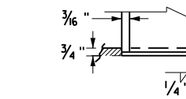
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE



POLE TOP PLATE

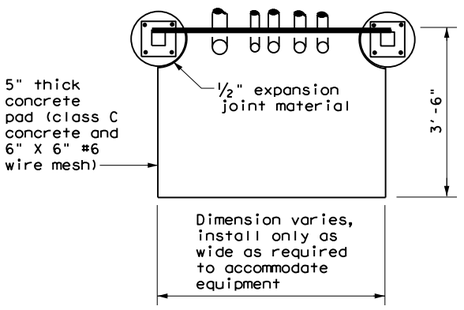


BASE PLATE DETAIL



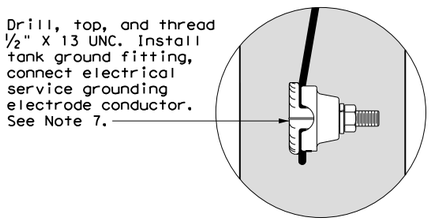
BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP



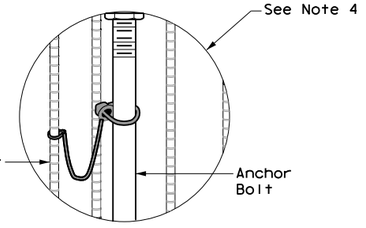
TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)

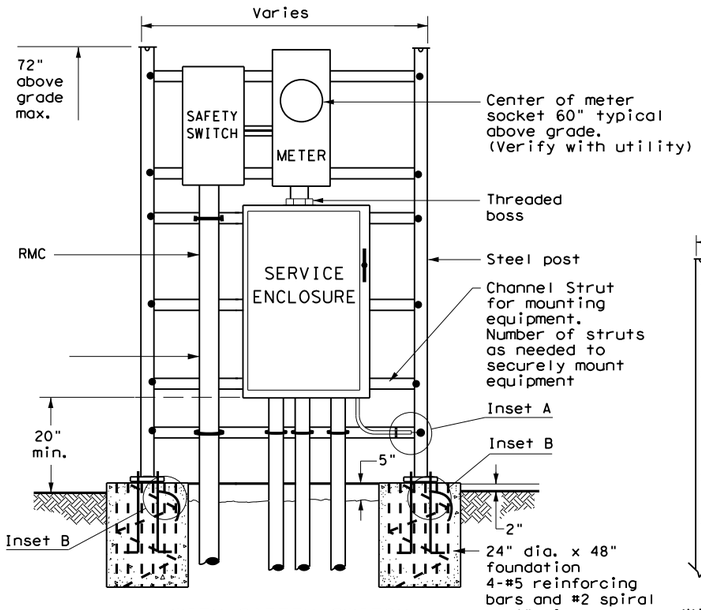


FRONT VIEW

INSET A

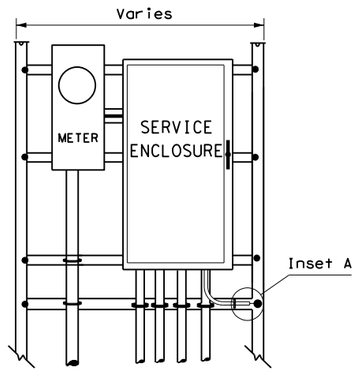


INSET B



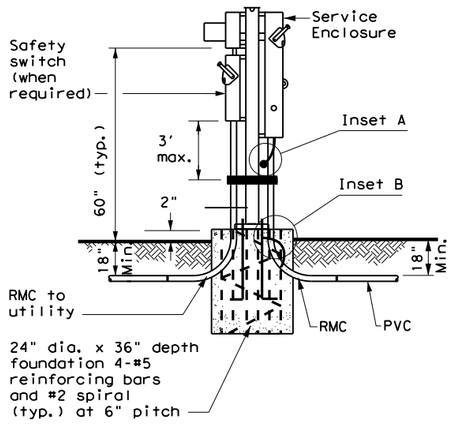
WITH SAFETY SWITCH

FRONT VIEW

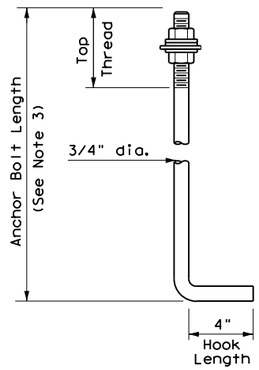


WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF(U) - UNDERGROUND SERVICE



WITH SAFETY SWITCH



HOOKED ANCHOR DETAIL

SERVICE SUPPORT TYPE SP(U) - UNDERGROUND SERVICE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-14

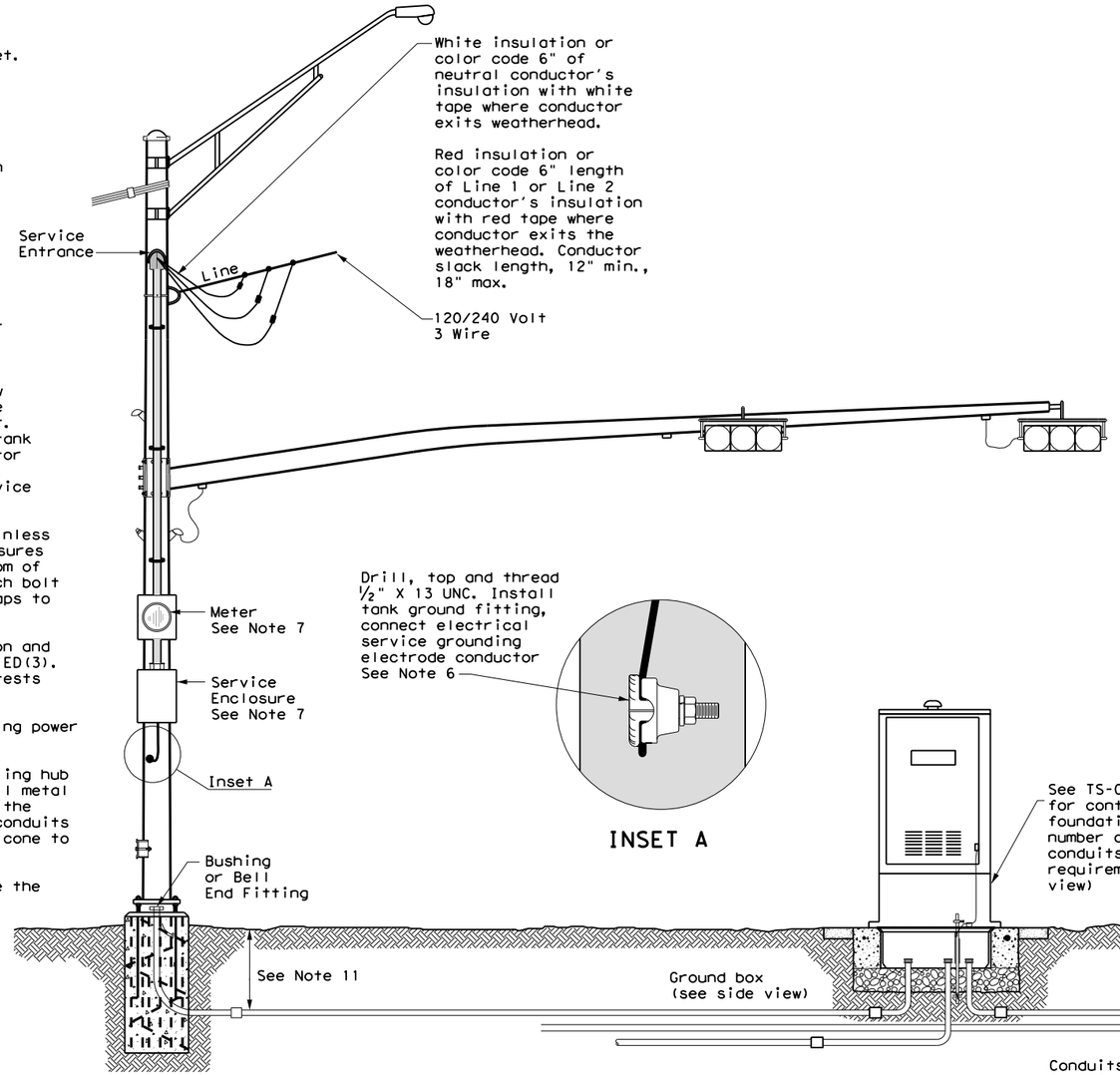
FILE: ed7-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		174

71G

DATE: 6/12/2023 3:23:28 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed7-14.dgn

TRAFFIC SIGNAL NOTES

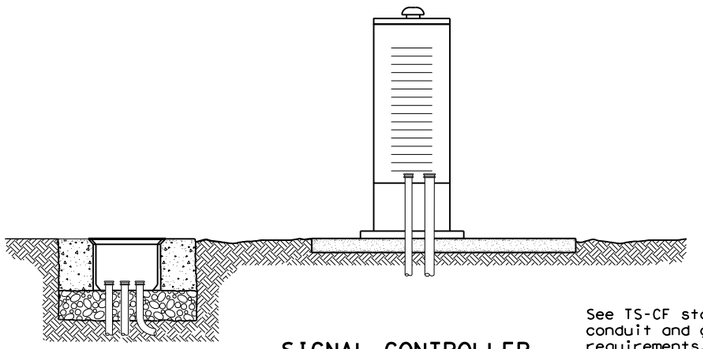
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

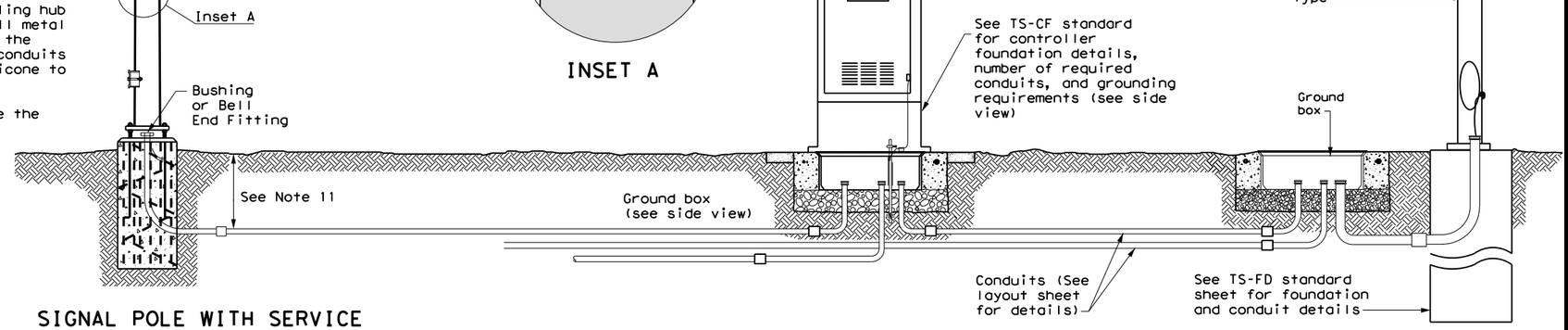
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

Texas Department of Transportation — Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		175

71H

DATE: 6/12/2023 3:23:34 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed8-14.dgn

DATE: 6/12/2023 3:23:40 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ed10-14.dgn

TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrial service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 5/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1 1/2 in. to 1 5/8 in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, 1/4 in. minimum diameter by 1 1/2 in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

(1) Class 5 pole, height as required

(2) Service drop from utility company (attached below weatherhead)

(3) Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)

(4) Safety switch (when required)

(5) Meter (when required)

(6) Service enclosure

(7) 6 AWG bare grounding electrode conductor in 1/2 in. PVC to ground rod - extend 1/2 in. PVC 6 in. underground.

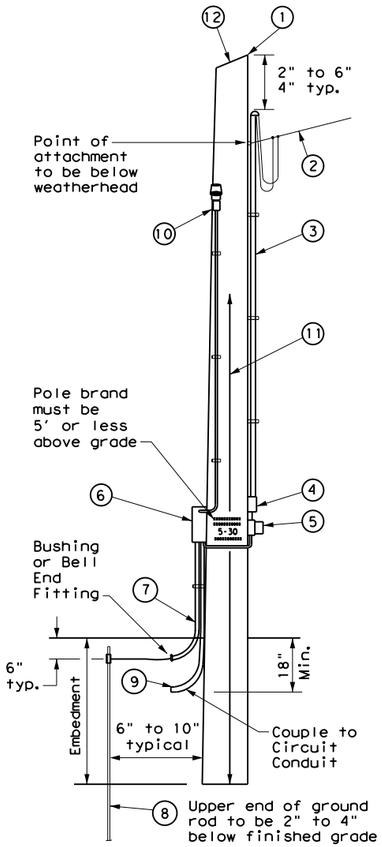
(8) 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.

(9) RMC same size as branch circuit conduit.

(10) See pole-top mounted photocell detail on ED(5).

(11) When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.

(12) When required by utility, cut top of pole at an angle to enhance rain run off.

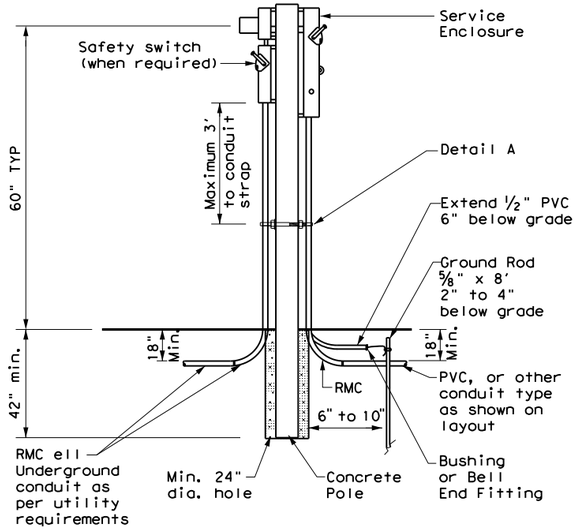


SERVICE SUPPORT TYPE TP (O)

GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

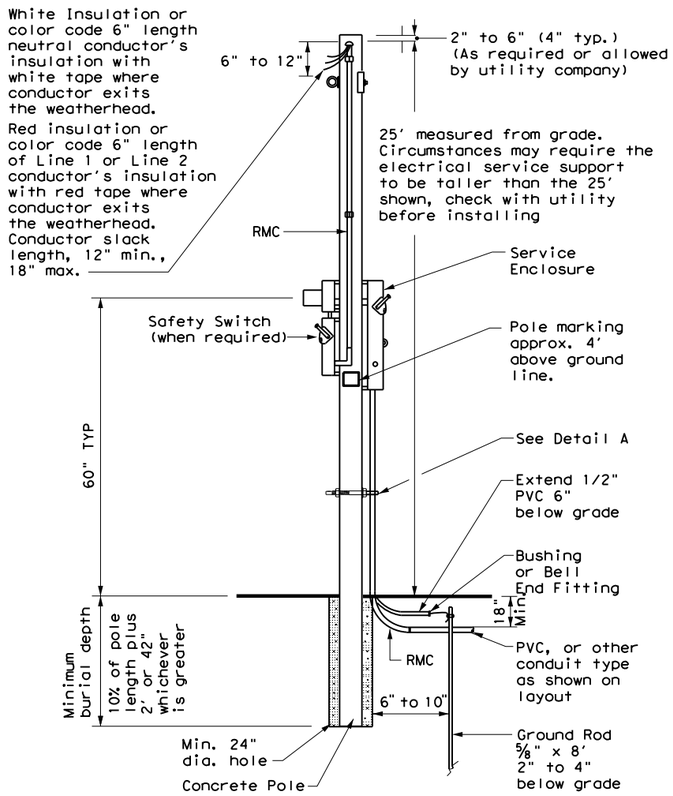
Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



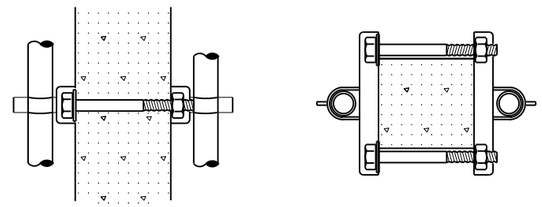
CONCRETE SERVICE SUPPORT

Underground (U)



CONCRETE SERVICE SUPPORT

Overhead (O)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

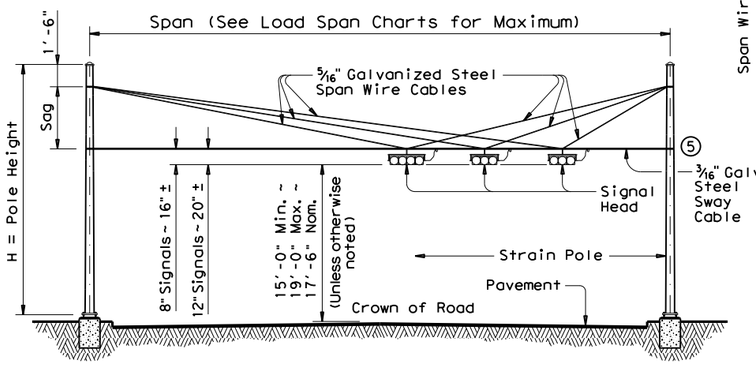
ED(10)-14

FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		176

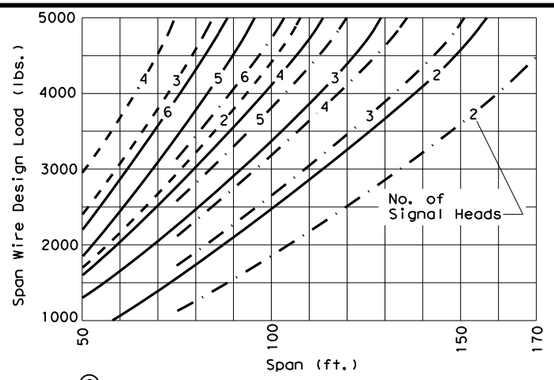
71K

STRAIN POLE DESCRIPTION	Pole Type	Foundation Type	Maximum Permissible Span Wire Load (lbs.)
26' Pole	A	36-A	4900
30' Pole	B	36-A	4300
30' Pole with Lum.	B	36-A	4000
30' Pole with 20' Mast Arm	C	36-B	4400
30' Pole with 24' Mast Arm	C	36-B	4000
30' Pole with 28' Mast Arm	C	36-B	3600
30' Pole with 32' Mast Arm	C	36-B	3300
30' Pole with 36' Mast Arm	C	36-B	2900
30' Pole with 20' Mast Arm & Lum.	C	36-B	4100
30' Pole with 24' Mast Arm & Lum.	C	36-B	3800
30' Pole with 28' Mast Arm & Lum.	C	36-B	3400
30' Pole with 32' Mast Arm & Lum.	C	36-B	3000
30' Pole with 36' Mast Arm & Lum.	C	36-B	2500
34' Pole	D	36-B	5200
34' Pole with Lum.	D	36-B	4900

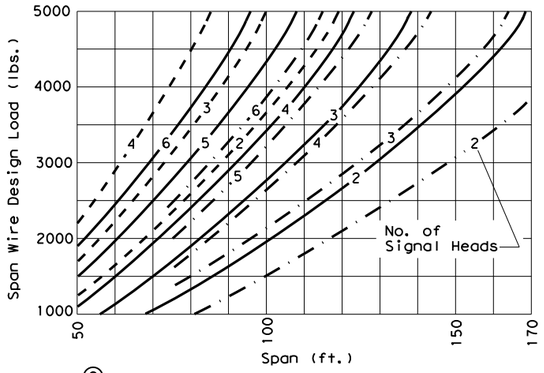
② Numbers on Load Span Charts indicate the number of signal heads on the span. The total span wire design load is based on one 5-section head and one or more additional 3-section head(s). Design wind pressures on cables are assumed as 1.6 lb/ft. Weight of span wire cables (one per signal head) is assumed as 0.65 lb/ft which includes an allowance for conductor cables and miscellaneous hardware. The effect of the sway cable on load distribution is ignored as it is assumed to break at design wind conditions. When a pole supports 2 spans, the span wire design loads for both spans should be added vectorially to determine the design load for that pole.



STRAIN POLE ELEVATIONS HORIZONTAL SIGNALS



② SIGNALS WITH 12-INCH LENS

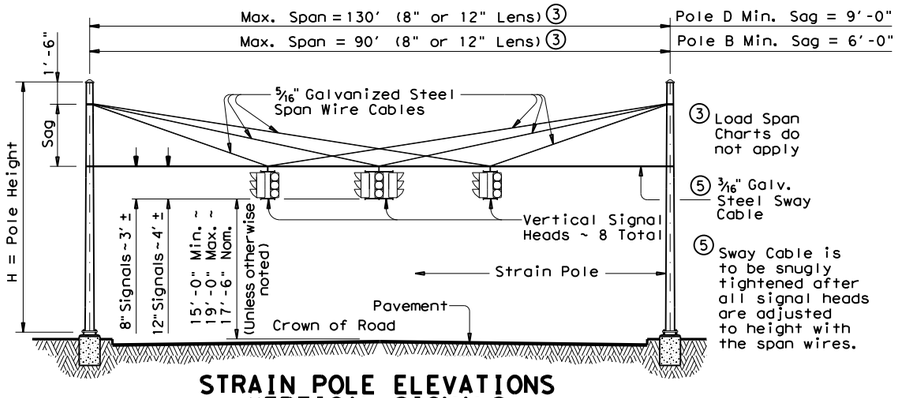


② SIGNALS WITH 8-INCH LENS

Signal Head Type	Wt. Per Head	Wind Area ◆
5-Section, 12" Lens	125 lbs	9.6 sq. ft.
5-Section, 8" Lens	70 lbs	4.8 sq. ft.
3-Section, 12" Lens	75 lbs	5.64 sq. ft.
3-Section, 8" Lens	45 lbs	3.0 sq. ft.

◆ Effective projected design wind area (actual area times drag coefficient)

- - - - - - Sag = 4'-6" (26' or 30' Pole)
——— Sag = 8'-0" (30' or 34' Pole)
— · — · — Sag = 11'-6" (34' Pole)



STRAIN POLE ELEVATIONS VERTICAL SIGNALS

(Mast arms are not used with vertical signals)

Pole Type	ROUND POLES D_B in.	ROUND POLES D_T in.	ROUND POLES (4)thk in.	ROUND POLES H ft.	POLYGONAL POLES D_B in.	POLYGONAL POLES D_T in.	POLYGONAL POLES (4)thk in.	POLYGONAL POLES H ft.
A	12.5	8.9	.239	26	13.0	9.0	.239	26
B	13.5	9.3	.239	30	14.0	9.0	.239	30
C	15.5	11.3	.239	30	16.0	11.0	.239	30
D	15.5	10.7	.239	34	16.0	11.0	.239	34

D_B = Pole Base O.D. D_T = Pole Top O.D. H = Pole Height

④ Thickness shown are minimum, thicker materials may be used.

SHIPPING PARTS LIST

Poles (Without Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, 2 clamp-on simplex and 1 pipe plug.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 1 pipe plug.		
	Description	Designation	Quantity	Description	Designation	Quantity
A				26' Strain Pole	SP 26 A-100	
B	30' Strain Pole	SPL 30 B-100		30' Strain Pole	SP 30 B-100	
D	34' Strain Pole	SPL 34 D-100		34' Strain Pole	SP 34 D-100	

Poles (With Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, clamp-on simplex and 3 pipe plugs.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 3 pipe plugs.		
	Description	Designation	Quantity	Description	Designation	Quantity
C	30' SPw/TS Arm	SPL 30 C-100		30' SPw/TS Arm	SP 30 C-100	

Traffic Signal Arms (For Type C poles)

Nominal Arm Length	Type I Arm (1 Signal): Ship each Type I Arm with the following hardware attached: 2 CGB Connectors, 1 clamp with bolts and washers		Type II Arm (2 Signals): Ship each Type II Arm with the following hardware attached: ① 1 Bracket Assembly, 3 CGB Connectors and 1 clamp with bolts and washers		Type III Arm (3 Signals): Ship each Type III Arm with the following hardware attached: ① 2 Bracket Assemblies, 4 CGB Connectors and 1 clamp with bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-100					
24	24I-100		24 II -100			
28	28I-100		28 II -100			
32			32 II -100		32 III -100	
36			36 II -100		36 III -100	

Anchor Bolt Assemblies (1 per pole)

Templates may be removed for shipment.

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 ¾"	3'-10"	
2"	4'-3"	

Each Anchor Bolt Assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Luminaire Arms

Nominal Arm Length	Quantity
8' Arm	

① See Sheet "DMA-100"

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(100 MPH WIND ZONE)

SP-100(1)-12

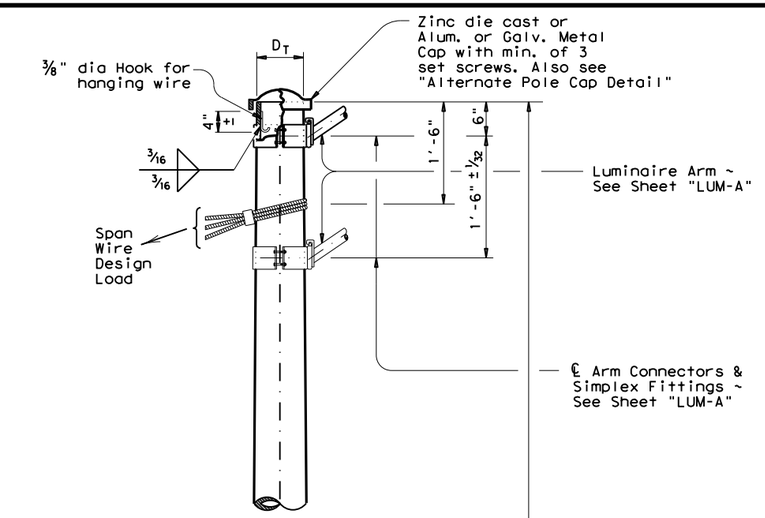
DN: MS	CK: JSY	DW: BR	CK: JSY

REVISIONS
6-96
1-12

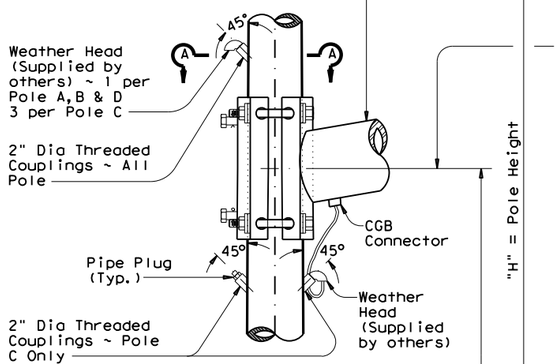
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		177

121A

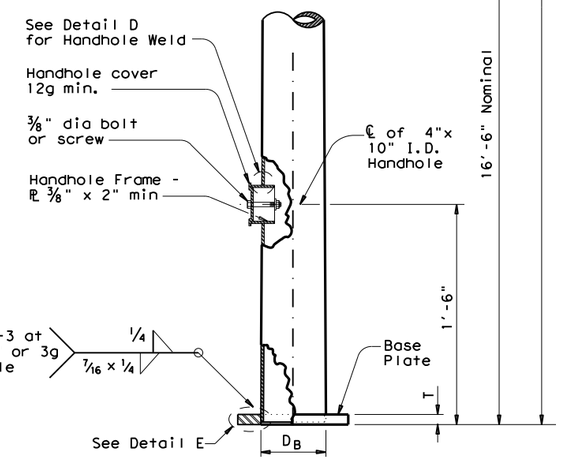
DATE: 6/12/2023 3:23:46 PM
FILE: c:\txdot\pw\online\txdot5\jose.cardenas\d0832981\sp100.dgn



DETAIL A

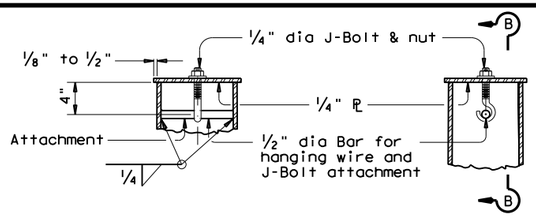


DETAIL B



DETAIL C

POLE ELEVATION



SECTION B-B

ALTERNATE POLE CAP DETAIL

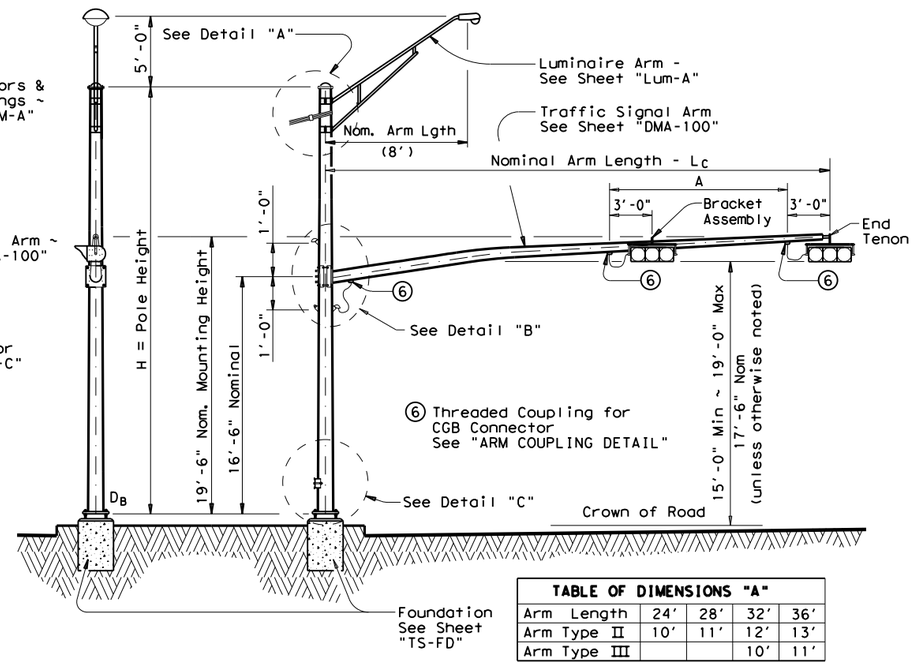
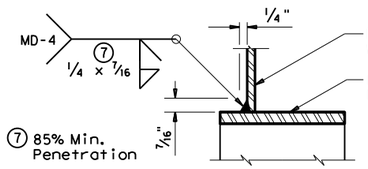
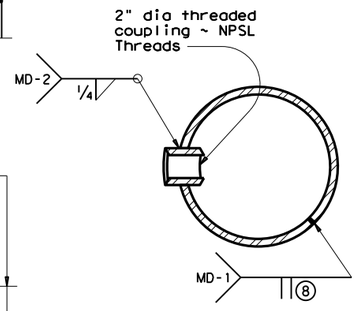


TABLE OF DIMENSIONS "A"				
Arm Length	24'	28'	32'	36'
Arm Type II	10'	11'	12'	13'
Arm Type III			10'	11'

STRUCTURE ASSEMBLY

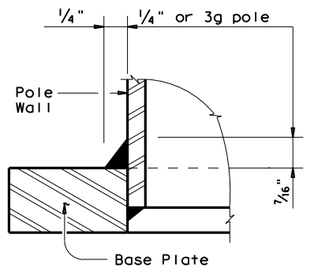


DETAIL D



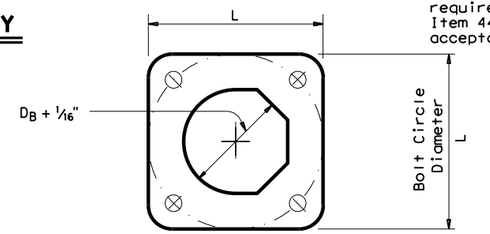
SECTION A-A

(Pole Coupling and Seam Weld Details)

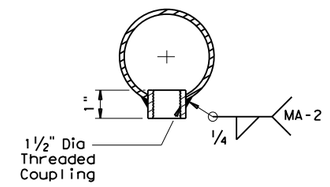


DETAIL E

⑧ 60% Min. penetration, except 100% penetration within 6" of circumferential base welds.



BASE PLATE PLAN



ARM COUPLING DETAIL

MATERIALS	
Round Shafts or Polygonal Shafts ⑨	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ⑩
Plates ⑨	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 except where noted
Pin Bolts	ASTM A325
Pipe ⑨	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Steel Cable	ASTM A475, 7 Wire Utilities Grade
Misc. Hardware	Galvanized steel or stainless steel or as noted

⑨ ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

⑩ ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 100 mph plus a 1.3 gust factor. The maximum permissible span wire design loads tabulated are calculated at a stress load of 1.4 times the basic allowable stress. A simultaneous wind on the pole, mast arm, and luminaire is also included.

See standard sheet "DMA-100" for details of clamp-on traffic signal arms, sheet "MA-C" for traffic signal arm connection details, sheet "LUM-A" for luminaire arm and connection details, and sheet "TS-FD" for anchor bolt and foundation details.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Foundation Type	Anchor Bolt Diameter	Bolt Hole Diameter	Bolt Circle Diameter	Base PL Dim. L x T
36-A	1 3/4"	2"	19"	19" x 1 3/4"
36-B	2"	2 1/4"	21"	21" x 2"

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(100 MPH WIND ZONE)

SP-100(2)-12

REVISIONS	DN: MS	CK: JSY	DW: BR	CK: JSY
6-96 1-12	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		178

121B

DATE: 6/12/2023 3:23:46 PM
FILE: c:\txdot\pw*online\txdot5\jose.cardenas\d0832981\sp100.dgn

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

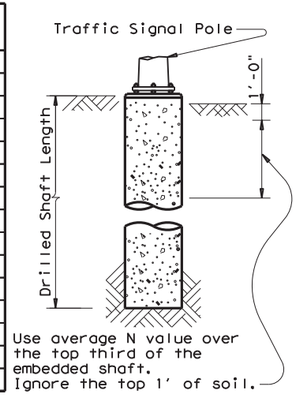
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
FM 1015 @ Mile 9 Rd.	10	24-A	1	6				
FM 1015 @ Mile 8 Rd.	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				12				

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'



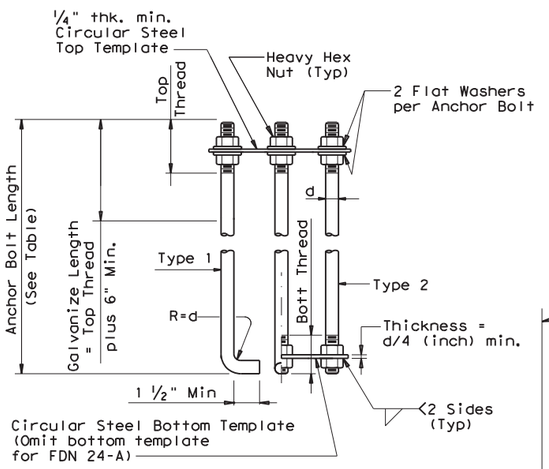
Use average N value over the top third of the embedded shaft. Ignore the top 1' of soil.

ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

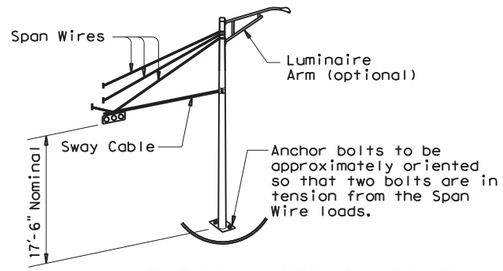
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



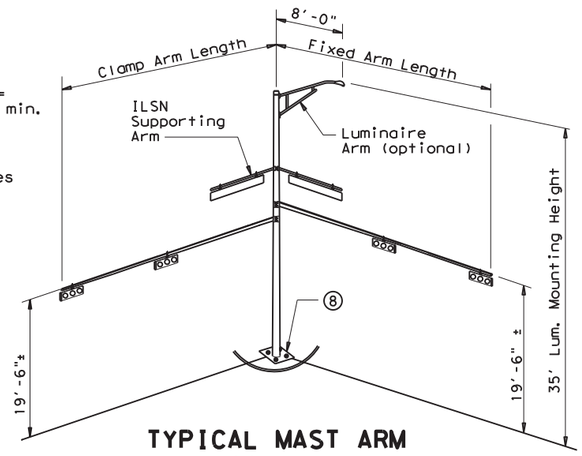
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

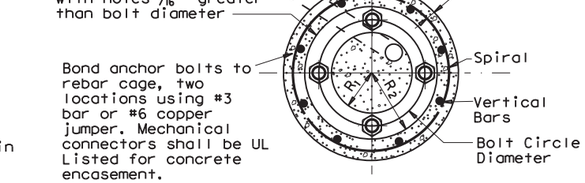
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



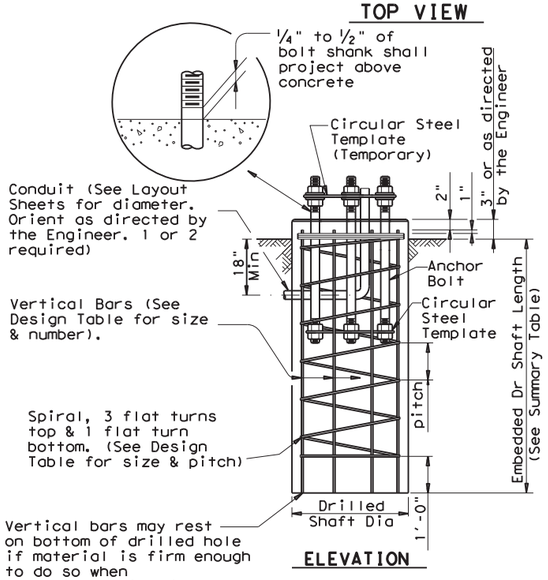
TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



TOP VIEW



ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

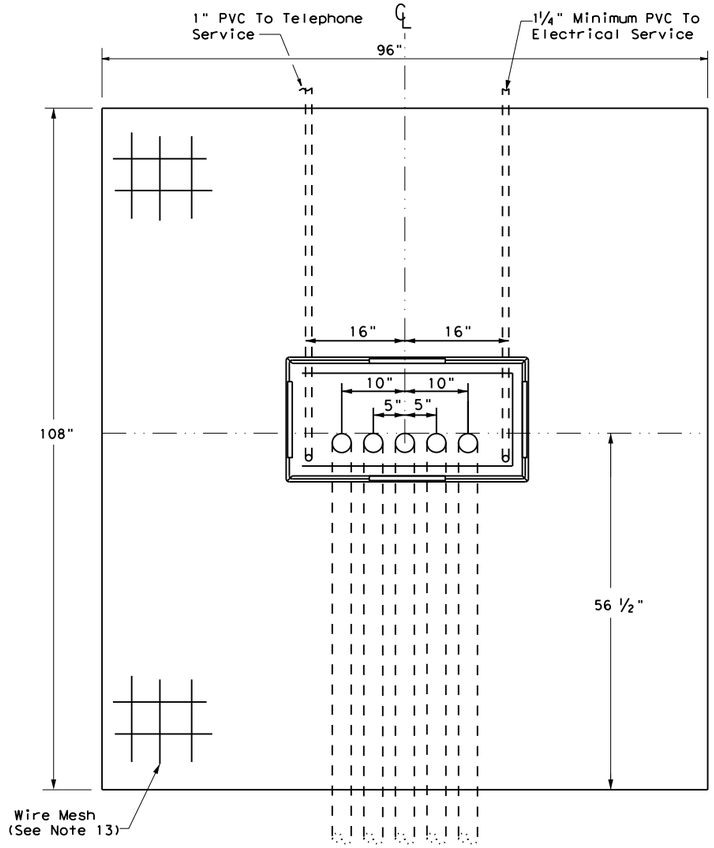
Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

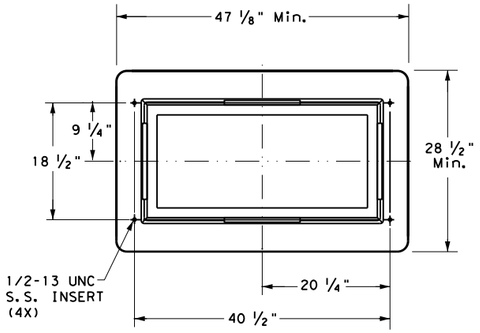
TS-FD-12

REVISIONS	DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
5-96 11-99 1-12	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		179

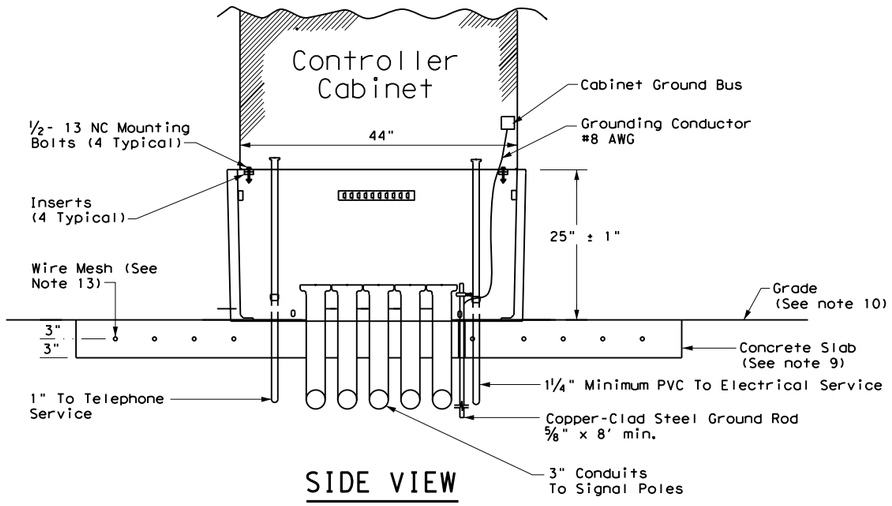
DATE: 6/12/2023 3:23:52 PM
FILE: c:\txdot\pw\online\txdot5\jose.cardenas\d0832981\ts-fd.dgn



TOP VIEW



CABINET BASE



SIDE VIEW

TRAFFIC SIGNAL CONTROLLER BASE:

1. Provide a traffic signal controller base (cabinet base) manufactured of polymer concrete material consisting of calcareous and siliceous stone; glass fibers and thermoset polyester resin. The polymer concrete cabinet base must be reinforced on the inside of the cabinet base with fiberglass matting. Provide one of the following bases: Armorcast Part # A6001848X24, Quazite Model # PG3048Z709, or other as approved by TxDOT Traffic Safety Division.
2. The polymer concrete material must have a minimum compressive strength of 10,300 pounds per square inch (psi), minimum flexural strength of 3600 psi, and minimum shear strength of 3600 psi.
3. The polymer concrete cabinet base must conform to the dimensions shown and must accommodate a standard TxDOT basemount cabinet.
4. Supply the cabinet base with four 1#2"-13 UNC stainless steel inserts for attachment of the cabinet to the base. Inserts must withstand a minimum torque of 50 ft-lb and a minimum straight pull out strength of 750 lbs.
5. Provide the cabinet base with 4 cable racks mounted one on each side of the base 2" to 7 " from the top edge of the base. Unless approved otherwise, cable racks must be 1-1/2 x 9#16x 3#16inch steel channel with eight T-slots spaced at 1-1/2 inches. The cable racks must easily accommodate the insertion of tie wraps to attach field wiring to the racks to serve as strain relief. Secure cable racks to the base using 1#2"-13 UNC stainless steel screws and inserts.
6. The cabinet base, when secured to the concrete slab with controller cabinet attached, must withstand a minimum wind load of 125 mph or a 850 lb force applied at 49" above the bottom of the base without causing the base or cabinet to come out of their anchored position or cause any permanent deformation. The manufacturer must supply certification by an independent testing laboratory or sealed by a Texas Licensed Professional Engineer. Provide the cabinet base with hardware for attachment to a concrete slab.
7. The traffic signal base must be permanently marked either by impress or by permanent ink with the manufacturer's model number and name or logo.
8. Seal the base to the concrete with a silicone caulk bead and fastened to the slab per manufacturer's instructions.

CONCRETE SLAB:

9. Traffic signal controller pad must be a portland cement concrete slab poured in place, must conform to the dimensions shown, and must be level.
10. Grade earthwork such that it is flush with the concrete pad on all four sides, unless otherwise shown on the plans. Subsidiary to ITEM 680, four inch rip rap may be used in lieu of earthwork. Slopes shall gradually contour to match plans.
11. Bond a #8 AWG copper ground wire and an 8 ft ground rod bonded to the reinforcing mesh by a suitable UL Listed clamp and terminated to the cabinet grounding bus for the purpose of providing a local ground for the electrical grounding conductor. The electrical grounding conductor specified in Item 680-3.A.4 is required and must be terminated to the cabinet ground bus.
12. Install a PVC sleeve to prevent the ground rod from direct embedment in the slab.
13. Provide welded wire mesh 6X6-W2.9 X W2.9 for reinforcement. Provide joints and splices in the mesh with a minimum 6-inch overlap. Center the mesh between top and bottom and provide a minimum 3 inch cover on the edges.
14. Provide Class B concrete minimum for the slab in accordance with Item 421. Construct the slab in accordance with Item 531.

CONDUITS:

15. Stub up and run 3-inch conduits through the slab to the various traffic signal poles and ground boxes as shown on the layouts. Install the number of conduits as shown on layouts plus two additional 3 inch conduits for future use. Terminate the conduits with a bushing between 2 and 4-inches above the slab.
16. Extend conduits for future use at least 18-inches from the edge of the slab, terminate underground with a coupling, and cap and seal so that the seal can be removed without damaging the coupling. This must also apply to unused telephone conduit.
17. Stub up two separate conduits through the slab from the electrical and telephone services. Run the conduit for the electrical feed directly to the electrical service enclosure. Run the conduit for the telephone line directly to the telephone service, usually located on the same pole as the electrical service. Telephone must not under any circumstance share a conduit with any other function.
18. Terminate electric and telephone conduits above the slab with a coupling. After the base is installed, extend the conduits above the top of the base and secure to the base using a steel one-hole strap or similar suitable substitute.

CONTROLLER CABINET:

19. Anchor the controller cabinet to the base using four stainless steel 1/2-13 NC bolts.
20. The silicone caulk bead specified in Item 680.3.B must be RTV 133.

PAYMENT:

21. Bid TS-CF as subsidiary to Item 680.

Texas Department of Transportation

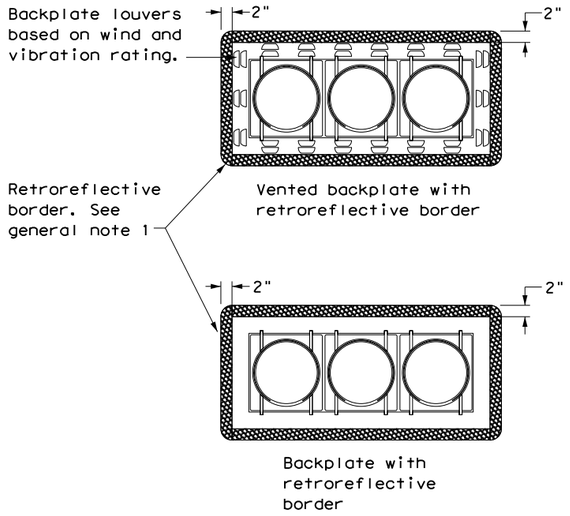
Traffic Safety Division Standard

TRAFFIC SIGNAL CONTROLLER CABINET BASE AND PAD
TS-CF-21

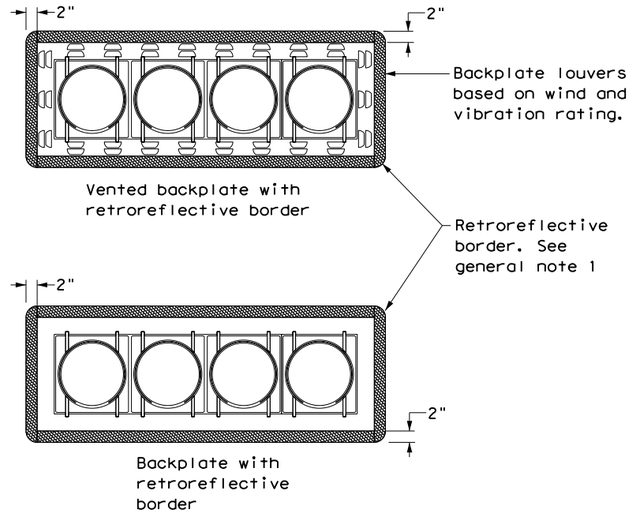
FILE: ts-cf-21.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
12-04	DIST	COUNTY		SHEET NO.
2-21	PHR	HIDALGO		180

DATE: 6/12/2023 3:23:58 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ts-cf-21.dgn

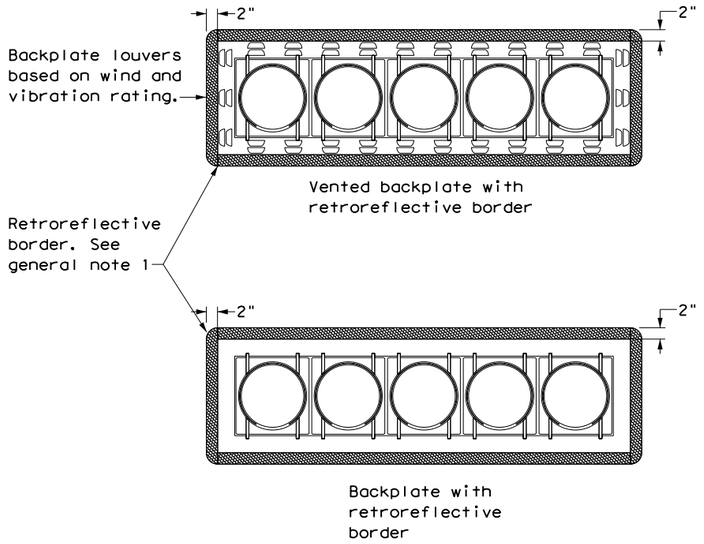
DATE: 6/12/2023 3:24:04 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832981\ts-bp-20.dgn



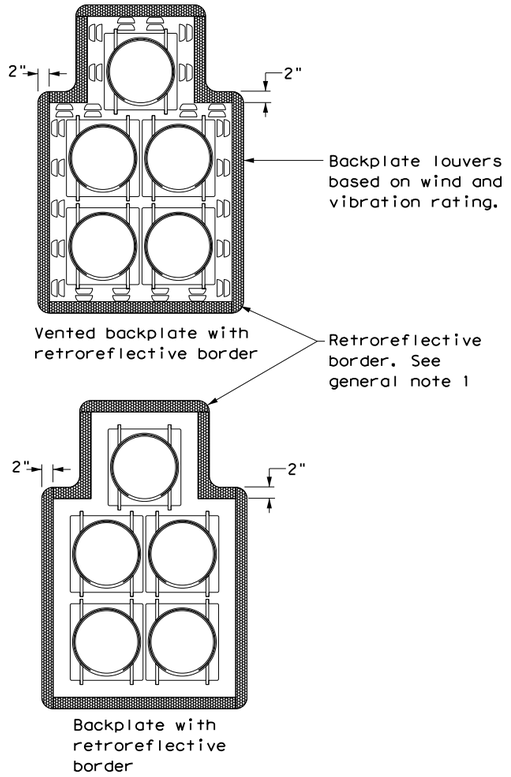
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



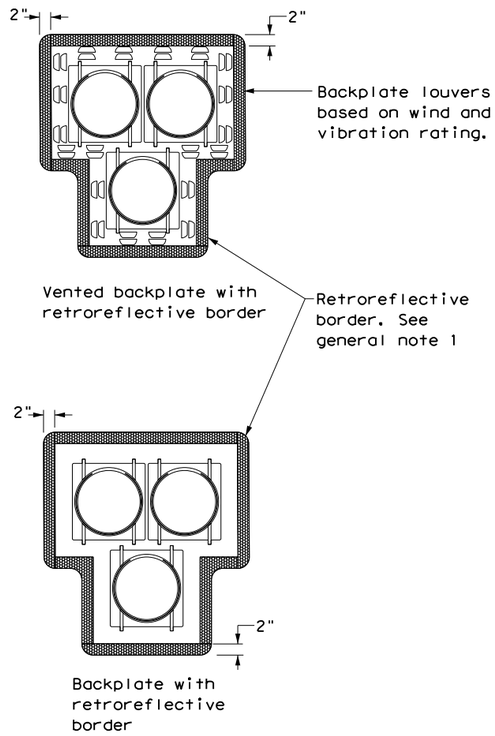
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

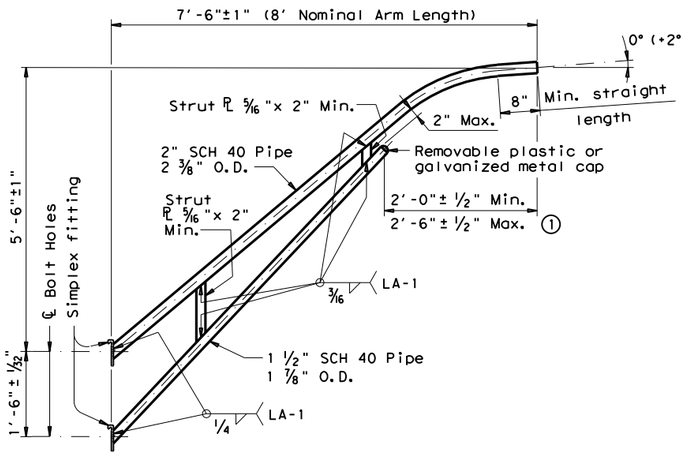
Texas Department of Transportation

Traffic Safety Division Standard

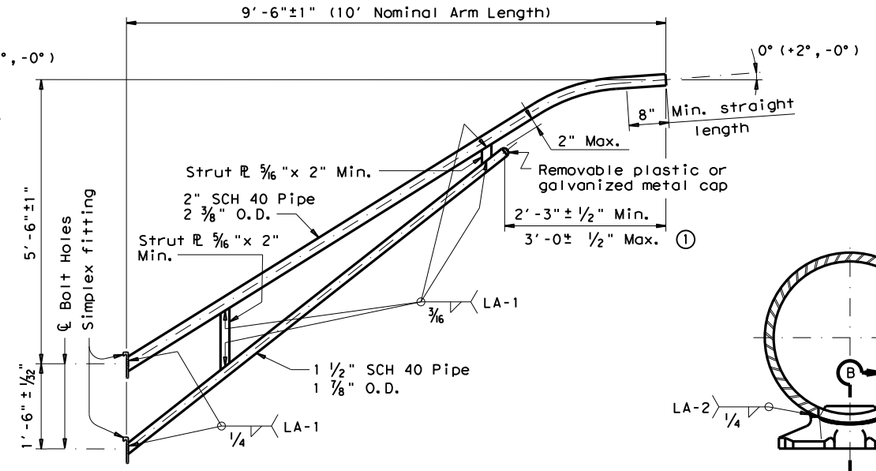
TRAFFIC SIGNAL HEAD WITH BACKPLATE
TS-BP-20

FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		181

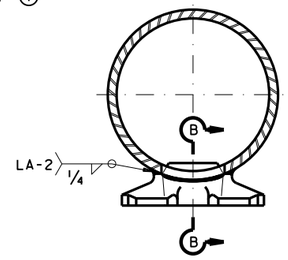
DATE: 6/12/2023 3:24:10 PM
FILE: c:\txdot\pw\online\txdot5\jose.cardenas\d0832981\lum-a.dgn



8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

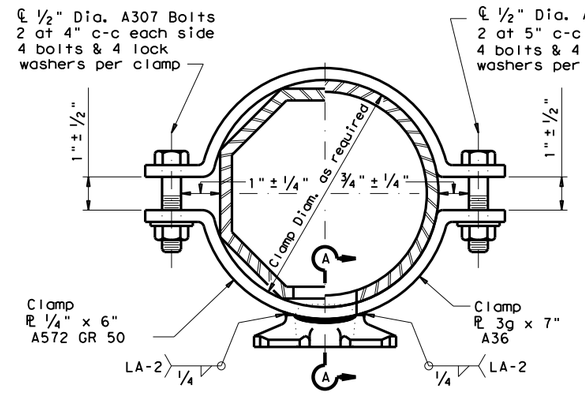
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

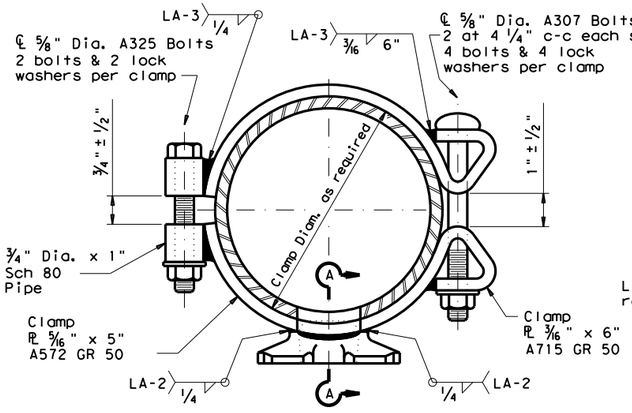
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



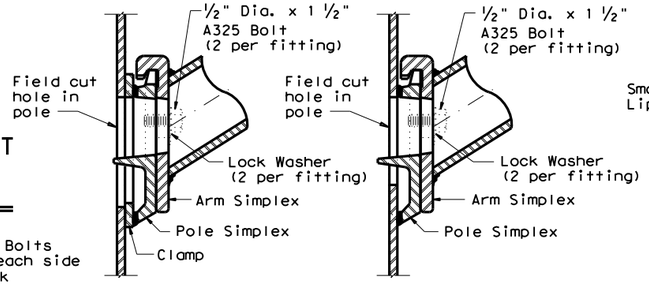
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



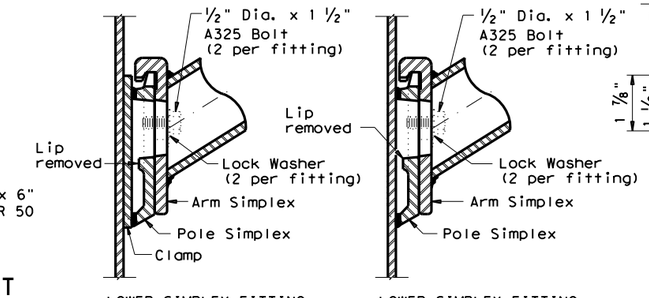
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)



UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING

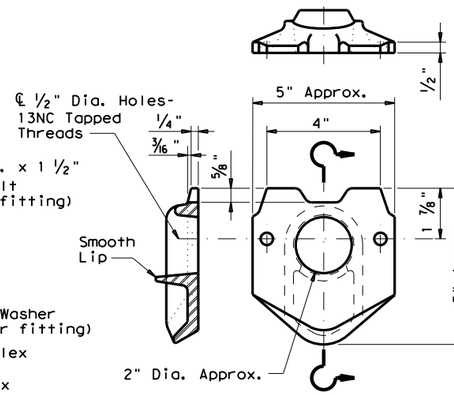


LOWER SIMPLEX FITTING

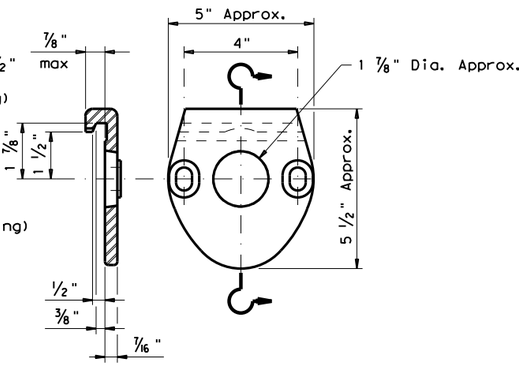
SECTON A-A

LOWER SIMPLEX FITTING

SECTON B-B



POLE SIMPLEX DETAIL



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

DN: LEH	CK: JSY	DW: LTT	CK: TEB

REVISIONS
5-96
1-99
1-12

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	182

ELECTRICAL SERVICE DATA

Service Pole No.	Sheet No.	Electrical Service Description (see ED (4)-03)	Service Conduit Size	Service Conductors No. / Size	Safety Switch Amps	Main Disconnect		Two-Pole Contactor Amps	Panelbd./ Loadcenter Amp Rating (min)	Circuit No.	Branch Ckt. Bkr. Pole / Amps	Branch Circuit Amps	KVA Load
						Switch Amp/Fuse	Ckt. Bkr. Pole / Amp						

NOTES:

ENSURE MAIN SERVICE DROP IS BELOW WEATHERHEAD.

BREAKER BOX & METER BOX SHALL BE ATTACHED TO WOOD POLE BY GALVANIZED CHANNEL (SEE DETAIL "B").

BOLT BOX TO GALVANIZED CHANNEL MOUNTED FLUSH WITH POLE.

CONDUIT SHALL BE ATTACHED TO POLE WITH H.D. 2-HOLE STRAPS AND 1½"x1/4" #8 S.S. SCREW OR LAG BOLT.

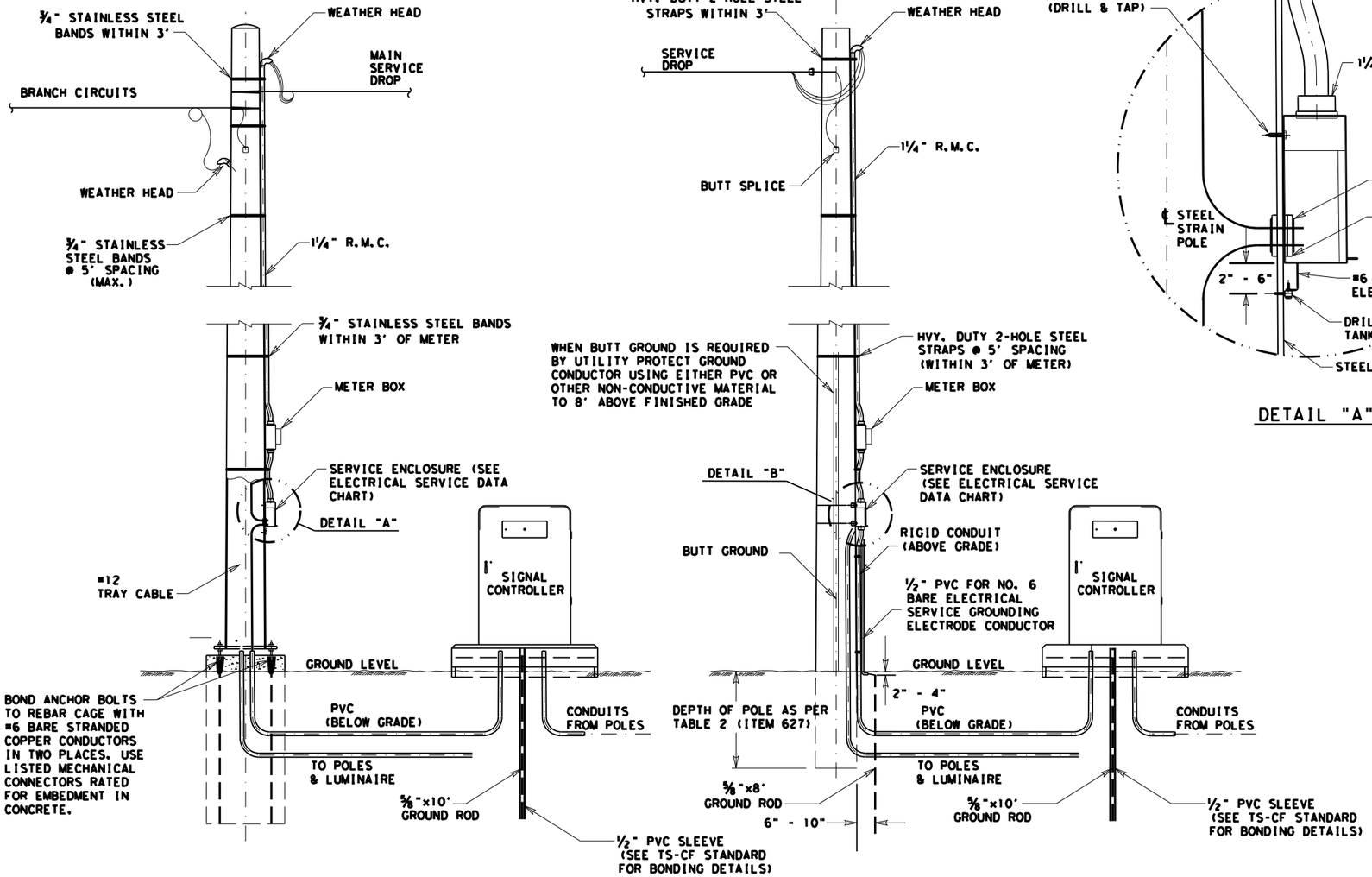
ALL EXPOSED CONDUIT SHALL BE RIGID METAL CONDUIT EXCEPT CONDUIT USED ON ELECTRICAL SERVICE GROUNDING ELECTRODE CONDUCTOR.

WHEN SERVICE IS CONNECTED WITHIN 100' OF THE CONTROLLER, NO PULL BOX SHALL BE USED.

DISTRIBUTION TO LUMINAIRE SHALL BE OUT OF THE SERVICE BREAKER BOX. EACH LUMINAIRE SHALL HAVE A SEPARATE PHOTO CONTROL.

FURNISH & INSTALL 3 PRONG WEATHERPROOF LOCKTYPE BASE WITH PHOTO CELL TO CONTROL ILLUMINATION SIGN WHICH IS ATTACHED TO TRAFFIC SIGNAL SUPPORTS. LOCKBASE & PHOTO CELL SHALL BE INSTALLED ON TRAFFIC SIGNAL POLE NEAREST CABINET.

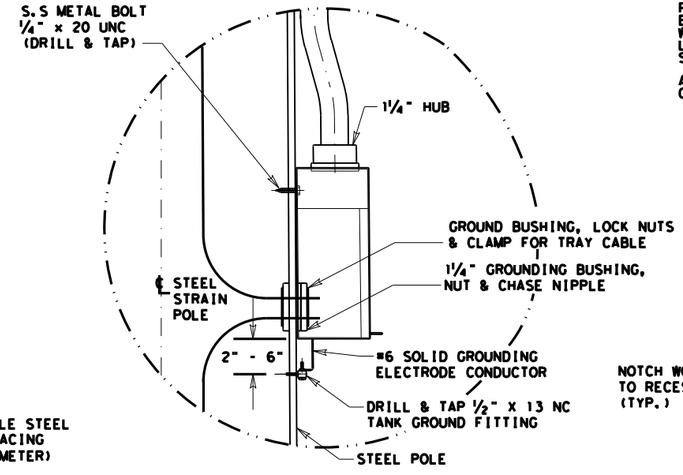
ALL CONDUIT & CONDUCTORS FROM SERVICE TO CONTROLLER CABINET SHALL BE AS PER PLANS.



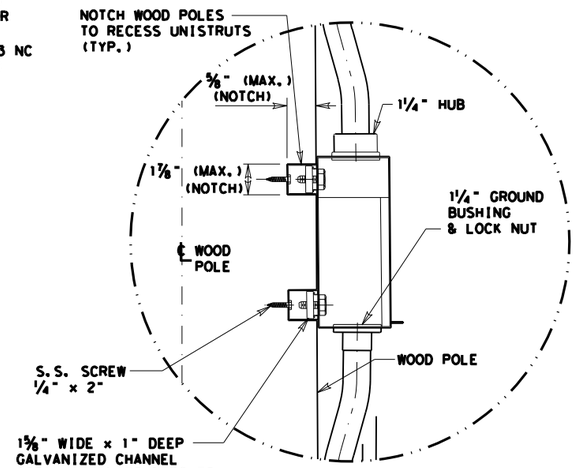
STEEL STRAIN POLE

WOOD POLE

ELECTRICAL SERVICE



DETAIL "A"



DETAIL "B"

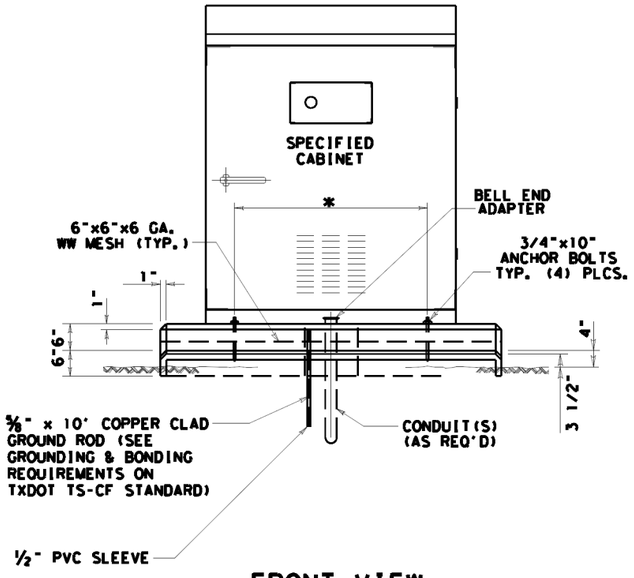
PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

ELECTRICAL SERVICE DESIGN WITH SIGNAL CONTROLLER

SHEET 1 OF 1

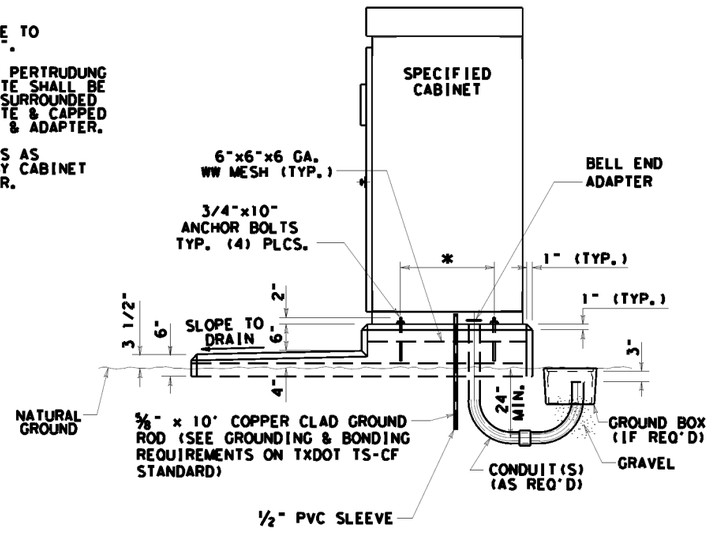
DN: OG	DRAWING	DATE	FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
CK DN: JSL	ORIGINAL	APR. 2010	6	TEXAS		183
DW: OG		MAY 2017	STATE DIST. NO.	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
CK DW: JSL			21	HIDALGO	1228 / 03 / 050	FM 1015



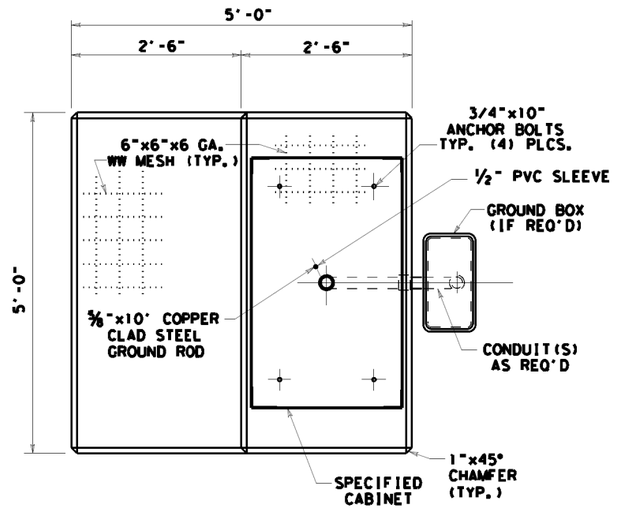
FRONT VIEW

NOTES:

1. ALL CONCRETE TO BE CLASS "A".
2. ALL CONDUIT PERTRUDUNG THRU CONCRETE SHALL BE COMPLETELY SURROUNDED WITH CONCRETE & CAPPED WITH A BELL & ADAPTER.
3. * ANCHOR BOLTS AS SPECIFIED BY CABINET MANUFACTURER.

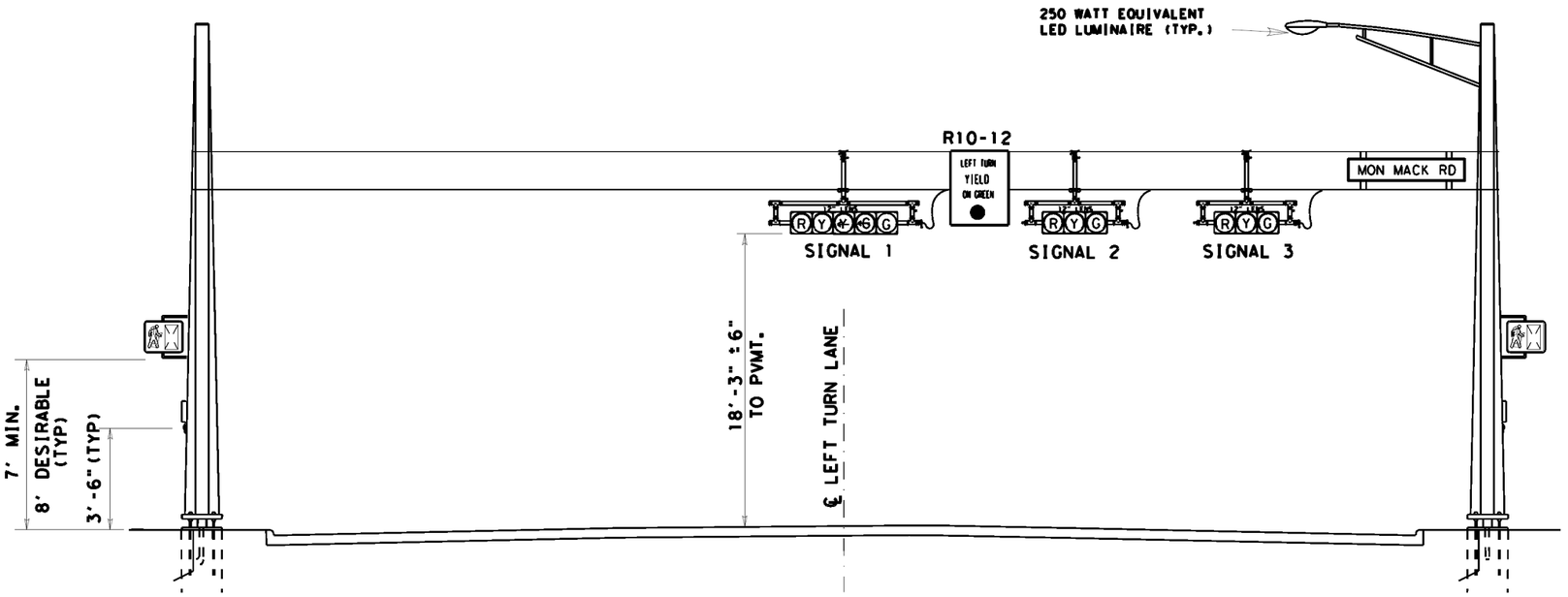


SIDE VIEW



TOP VIEW

DETAIL OF BASE MOUNT CABINET FOUNDATION



ELEVATION VIEW

DISTRICT STANDARD PLANS

TEXAS DEPARTMENT OF TRANSPORTATION

PHARR DISTRICT STANDARD

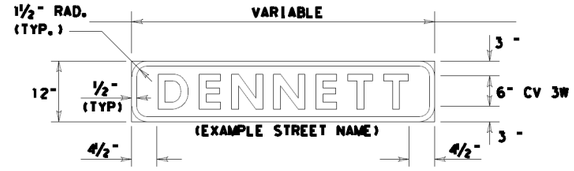
TRAFFIC SIGNAL CONSTRUCTION DETAILS

CONTROLLER FOUNDATON & LOOP DETECTOR INSTALLATION

SHEET 1 OF 3

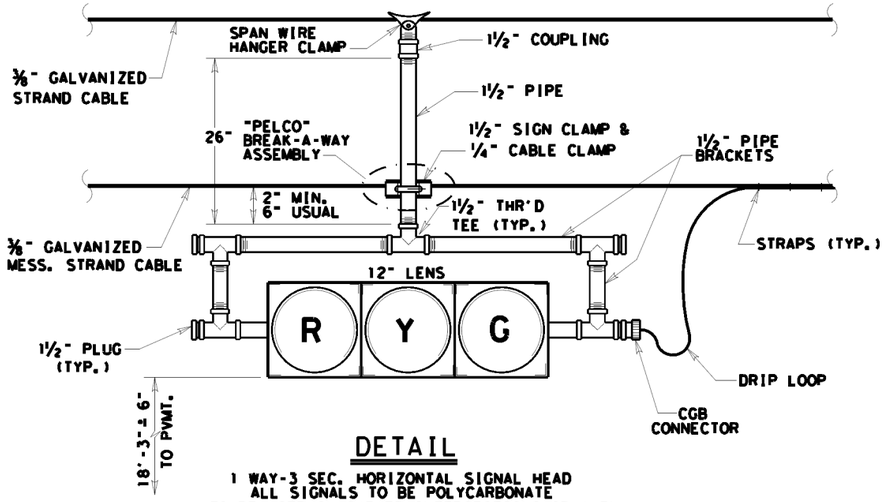
DN: GV	DRAWING	DATE	FED.RD. DIV.NO.	STATE	PROJECT NO.	SHEET NO.
CK DN: JSL	ORIGINAL	APR. 2010	6	TEXAS		184
DW: GV	REV.	JUL 2015 AUG 2016 FEB 2020	STATE DIST. NO.	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
CK DW: JSL			PHARR	HIDALGO	1228 03 050	M 101

D3-1



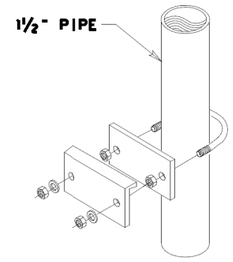
LETTERS & BORDER - WHITE (REFL)
BACKGROUND - GREEN (REFL)
MOUNT TYPE - SPAN WIRE OR MAST ARM

STREET NAME SIGN

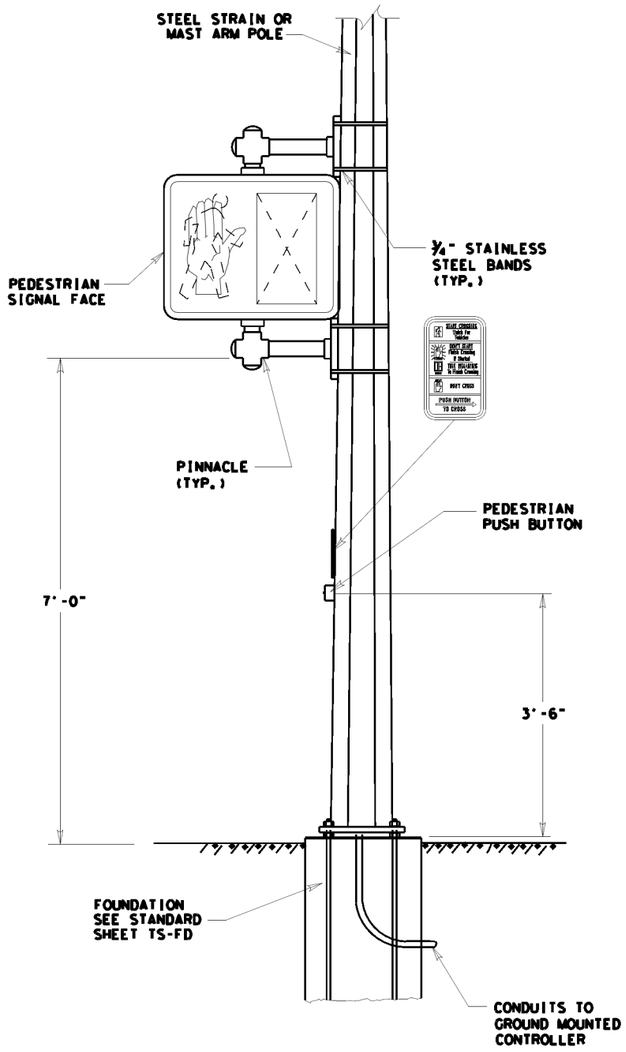


DETAIL

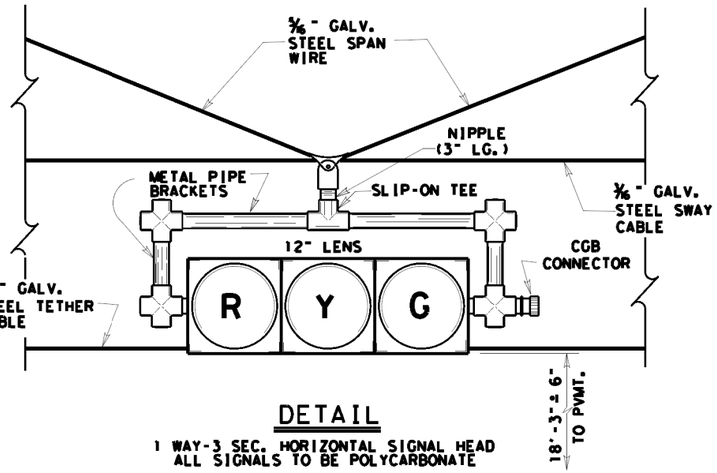
1 WAY-3 SEC. HORIZONTAL SIGNAL HEAD
ALL SIGNALS TO BE POLYCARBONATE
(TO BE USED ON SKEWED INTERSECTIONS OR WHEN SIGNAL POLES ARE NOT SQUARED TO EACH OTHER)



DETAIL-"PELCO" BREAK-A-WAY ASSEMBLY

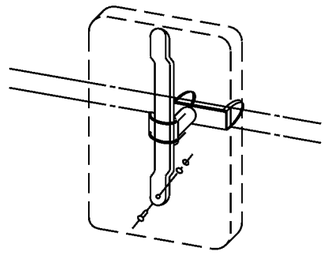


DETAIL-PEDESTRIAN SIGNALS



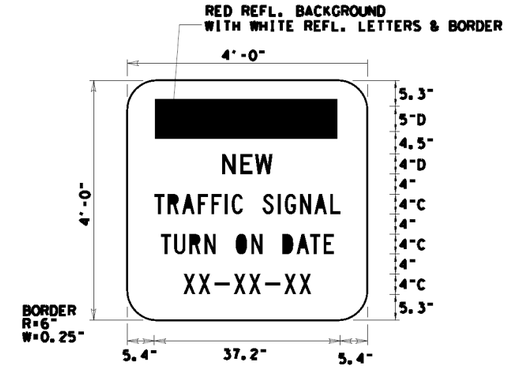
DETAIL

1 WAY-3 SEC. HORIZONTAL SIGNAL HEAD
ALL SIGNALS TO BE POLYCARBONATE

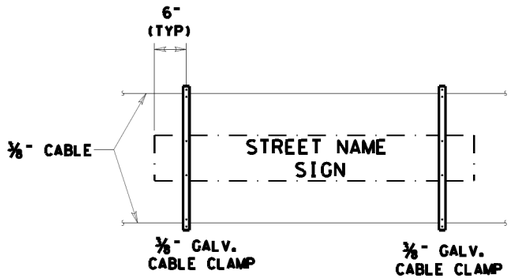


SIGN BRACKET

NOTE: THESE BRACKETS, USED IN PAIRS FOR LONGER SIGN, OR IN SINGLE UNITS FOR SMALLER SIGNS.



SPECIAL SIGN DETAIL



STREET NAME SIGN MOUNTING DETAIL

DISTRICT STANDARD PLANS

TEXAS DEPARTMENT OF TRANSPORTATION

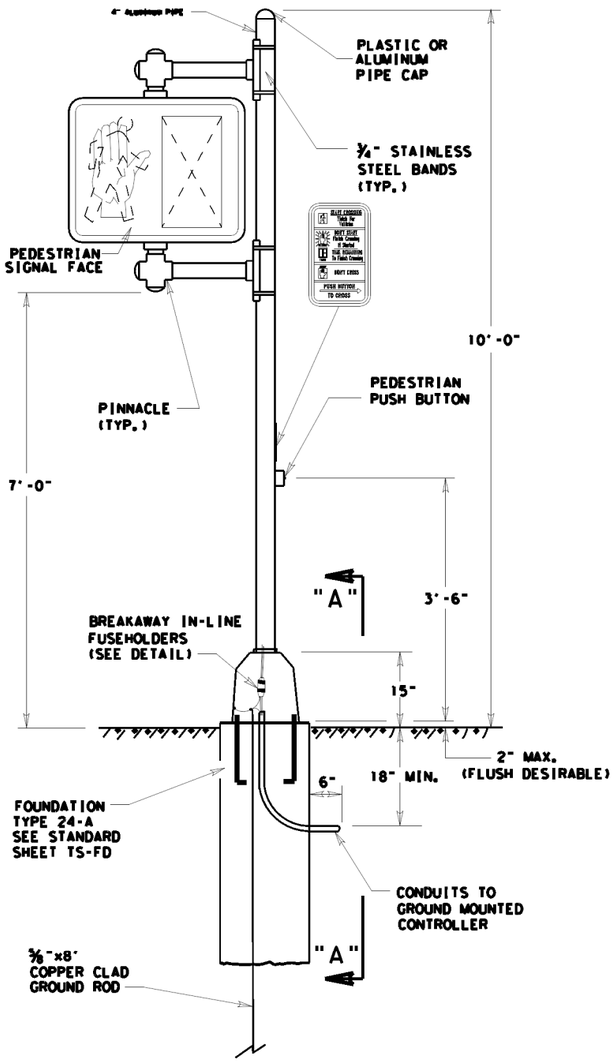
PHARR DISTRICT STANDARD

TRAFFIC SIGNAL CONSTRUCTION DETAILS

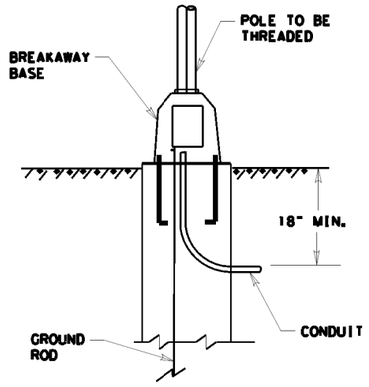
MISCELLANEOUS DETAILS

SHEET 2 OF 3

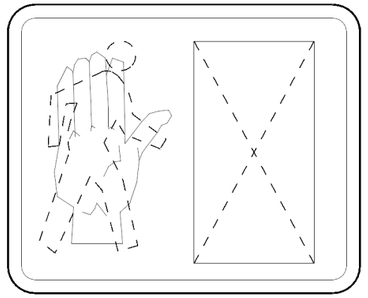
DN: OG	DRAWING	DATE	FED.RD. DIV.NO.	STATE	PROJECT NO.	SHEET NO.
CK DN: JSL	ORIGINAL	APR. 2010	6	TEXAS		185
DW: OG	REV.	MAY 2016 AUG 2016	STATE DIST.NO.	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
CK DW: JSL			PHARR	HIDALGO	1228 / 03 / 050	FM 1015



PEDESTAL POLE DETAIL



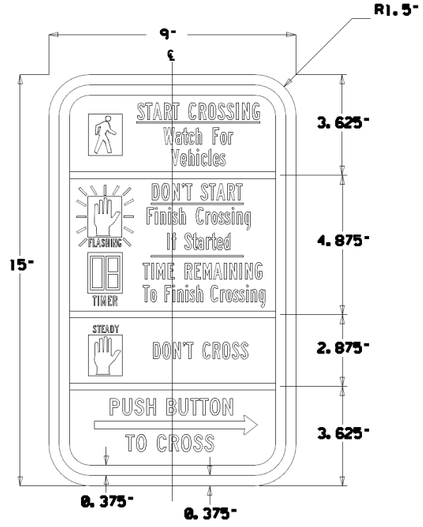
SECTION "A A"

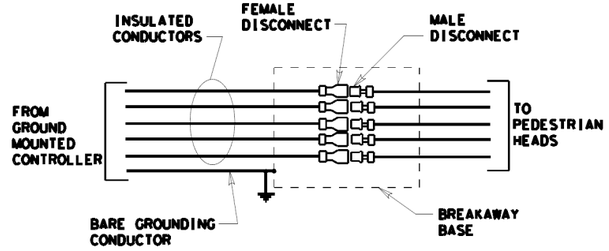


18"x16" LED PEDESTRIAN SIGNAL HEAD w/COUNTDOWN

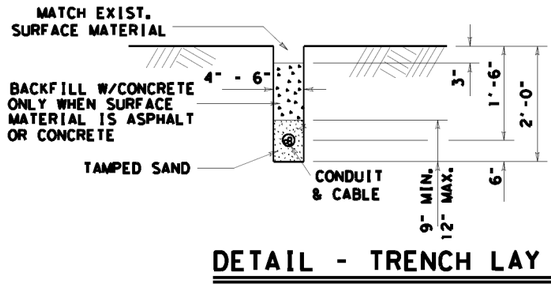
- LEGEND:
  BLACK
- BACKGROUND:
  WHITE (RETROREFLECTIVE)
- 08. HAND SYMBOL:
  ORANGE (RETROREFLECTIVE)
  ON BLACK
- PEDESTRIAN SYMBOL:
  WHITE (RETROREFLECTIVE)
  ON BLACK

NOTE:
REFER TO THE STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD) FOR MORE DETAILS AND DIMENSIONS REGARDING SIGN R10-3e



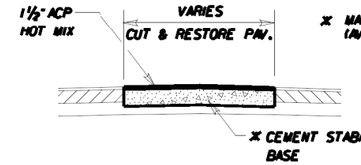


BREAKAWAY IN-LINE FUSEHOLDERS



NOTE:
ALL TRENCHES ARE TO BE MADE ONLY PARALLEL TO THE STREET. ALL CONDUIT RUNS CROSSING THE STREET SHALL BE PUSHED AND NO CUTS MADE IN THE SURFACE.

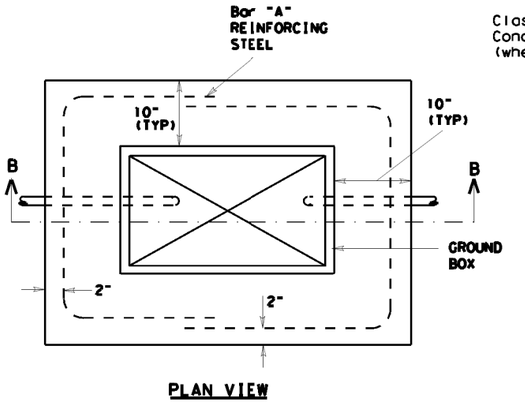
DETAIL - TRENCH LAY CONDUIT

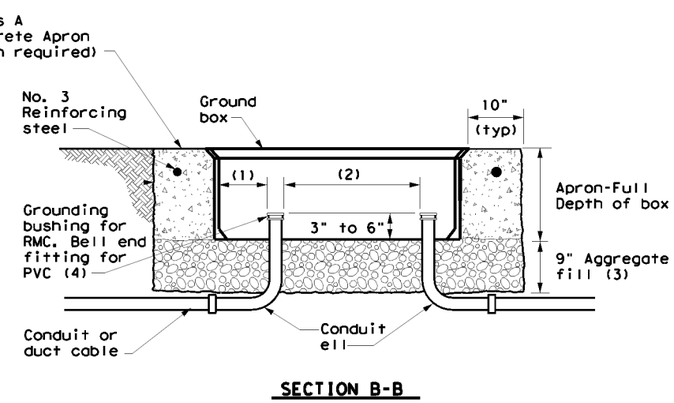


DETAIL - CUT AND RESTORE PAVEMENT

NOTES:

1. BREAKAWAY ELECTRICAL QUICK-DISCONNECTS SHALL BE WATERTIGHT BUSSMANN HEB SERIES OR EQUAL.
2. DRILL POLE FOR WIRE ENTRY. USE BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.
3. POLE SHAFT SHALL BE ONE PIECE SCHEDULE 40 ALUMINUM PIPE, ASTM B429 OR B221 (ALLOY 6601-T6), DO NOT USE ALUMINUM CONDUIT.





APRON FOR GROUND BOXES

(Where required)

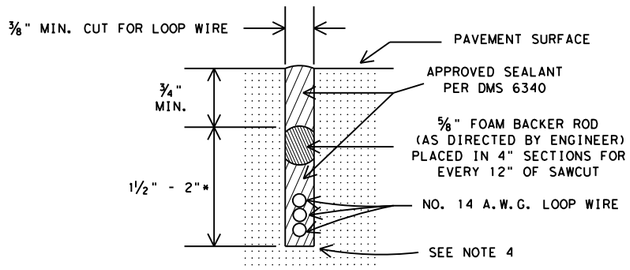
DISTRICT STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
PHARR DISTRICT STANDARD

TRAFFIC SIGNAL CONSTRUCTION DETAILS

MISCELLANEOUS DETAILS

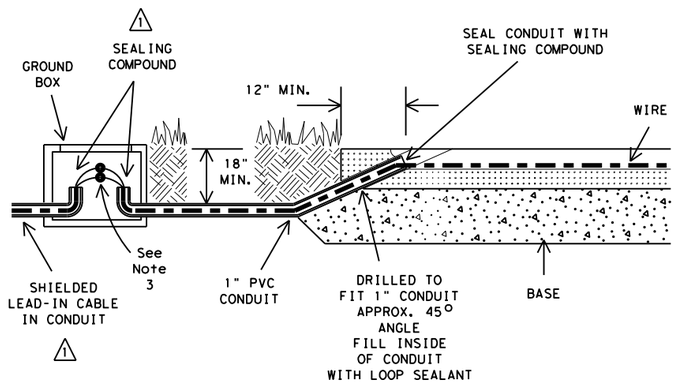
SHEET 3 OF 3

DN: OG	DRAWING	DATE	FED.RD. DIST.NO.	STATE	PROJECT NO.	SHEET NO.
CK DW: JSL	ORIGINAL	APR. 2010	6	TEXAS		186
DW: OG	REV. JUL. 2015 MAY 2016 AUG 2016 APR 2017		STATE DIST. NO.	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	HIGHWAY NO.
CK DW: JSL			PHARR	HIDALGO	1228 / 03 / 050	FM 1015

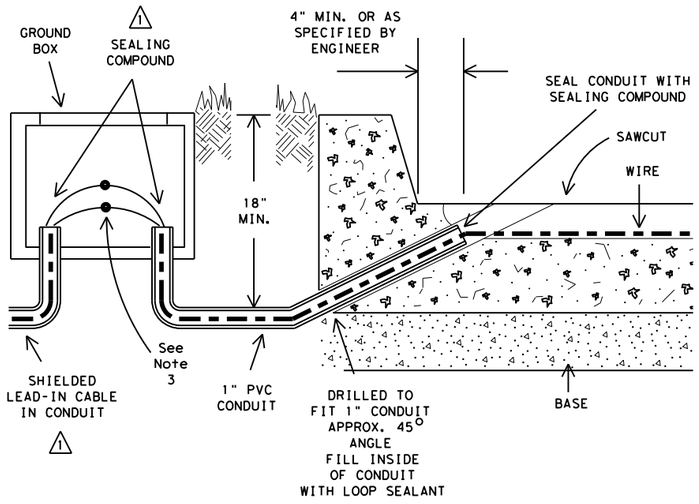


LOOP SAW CUT CROSS-SECTION

* SAWCUTS IN BRIDGE DECKS ARE TYPICALLY 1" DEPTH MAXIMUM
SAWCUTS IN BRIDGE DECKS AND ACROSS EXPANSION JOINTS
SHALL BE AS APPROVED BY ENGINEER



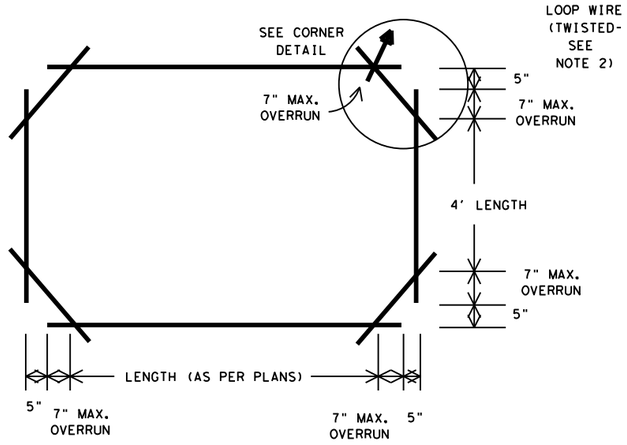
TYPICAL LEAD IN CONFIGURATION (WITHOUT CURBING)



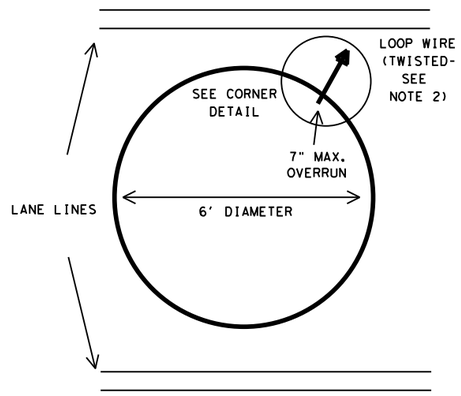
TYPICAL LEAD IN CONFIGURATION (WITH CURBING)

TYPICAL LOOP DETECTOR LAYOUTS

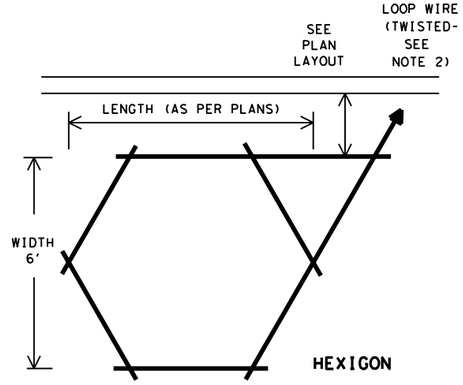
(AS SPECIFIED IN PLANS)



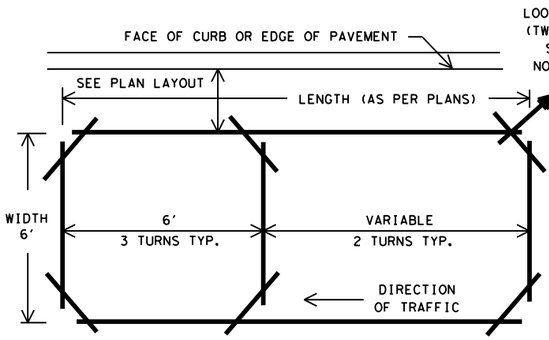
RECTANGULAR



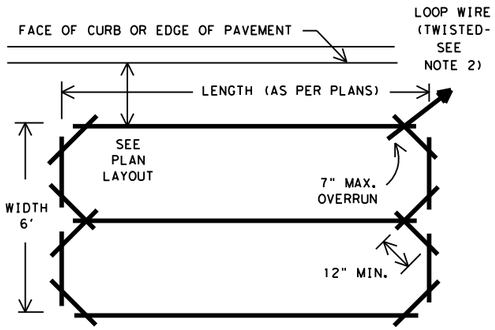
CIRCULAR



HEXIGON



POWER HEADER



QUADRAPOLE

GENERAL NOTES:

1. The pavement cut is to be made with a concrete saw to neat lines and loose material removed. The cut shall be clean and dry when the wire and sealing compound is placed.
2. Loop wire shall be 14 AWG Stranded Type XHHW. Wire from the loop to the ground box shall be twisted a minimum of 5 turns per foot. No splices shall be permitted in the loop or in the run to the ground box.
3. The home run cable from the pull box to the controller shall be IMSA 50-2 shielded cable and shall be soldered to the loop wire. The solder joints shall be sealed with Scotchcast or other method acceptable to the Engineer. The shield shall be grounded only at the controller end. Loop home run cable shall be two conductor 14 AWG shielded, Type XHHW.
4. All wire placed in the saw cut shall be sealed by fully encapsulating it in a sealant acceptable to the Engineer. Sealing compound shall be in accordance with DMS 6340.
5. The loop location, confirguration and number of turns shall be as indicated on the plans or as directed by the Engineer.

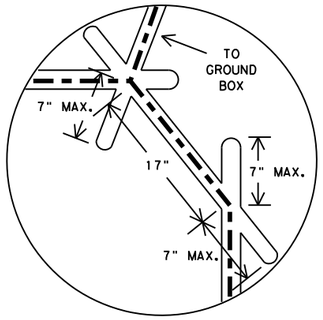
Recommended Number of Turns for Loop Detectors

LOOP PERIMETER SIZE (FT.)	NUMBER OF TURNS	APPROXIMATE LOOP SIZES INCLUDED
24' or Less	3 or 4	5' x 5', 6' x 6'
25' - 110'	2 or 3	6' x 10', 6' x 45'
110' or More	1 or 2	6' x 50' or Longer

6. A separate saw cut shall be made from each loop to the edge of pavement or as specified by the Engineer.
7. Splices between the loop lead-in cable and loop detector shall be made only in the ground box near the loop it is serving.
8. Circular loops may use prewound loops encased in continuous pvc tubing. Sawcut width may be adjusted to accommodate tubing.
9. The lead-in wire in the circular loop shall be coiled at the 3 inch drilled corner to reduce bending stress.
10. Loop duct may be used as specified by Engineer.

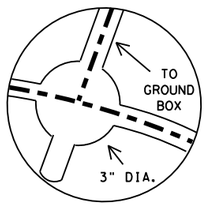
For additionnal information refer to "Texas Traffic Signal Detector" manual, TTI Report 1163-1.

TYPICAL CORNER DETAILS

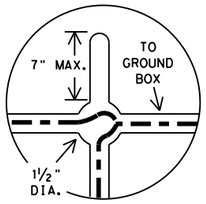


RECTANGULAR & HEXIGON LOOP
SAWCUT CORNER DETAIL

7" OVERRUN BASED ON 24" DIAMETER SAW BLADE



CIRCULAR LOOP
DRILLED CORNER DETAIL



RECTANGULAR & HEXIGON LOOP (ALT.)
DRILLED CORNER DETAIL

Texas Department of Transportation
Traffic Operations Division

LOOP DETECTOR INSTALLATION DETAILS

LD(1)-03

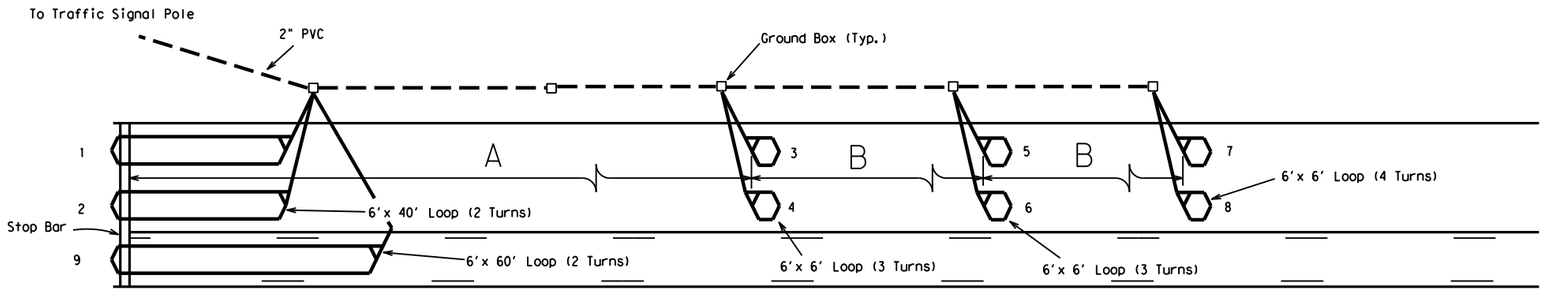
REVISIONS
2-99
1-03

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

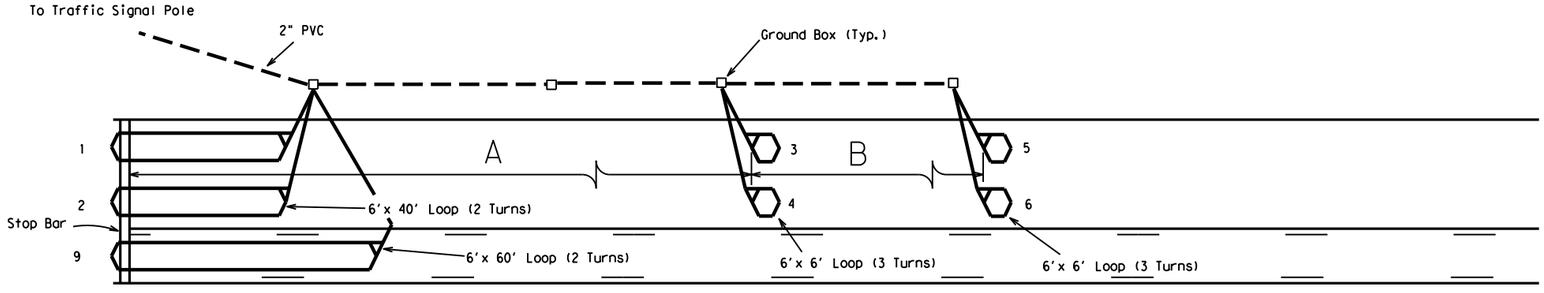
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	187

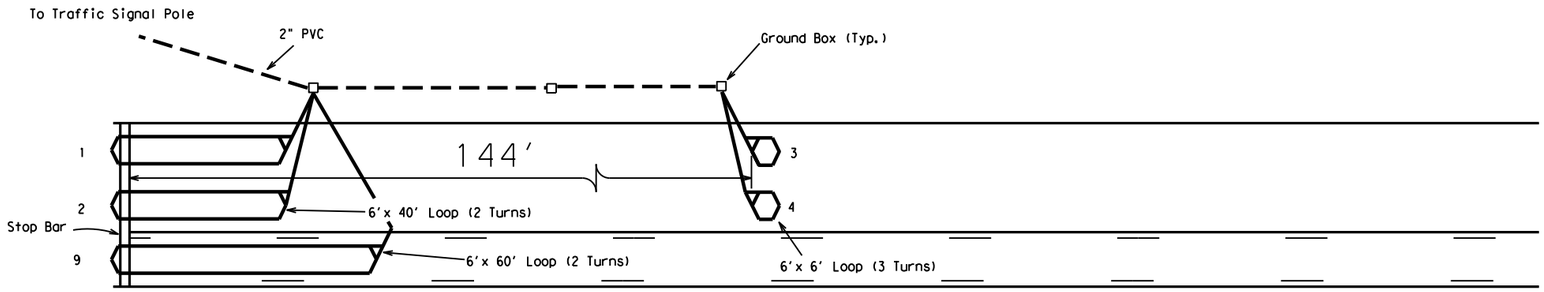
DATE: 6/12/2023 3:24:22 PM
FILE: c:\txdot\pwonline\txdot5\jose.cardenas\d0832981\ld-03.dgn



55 MPH (A=225', B=95') 60 MPH (A=275', B=100')
65 MPH (A=320', B=110') 70 MPH (A=350', B=125')



35 MPH (A=90', B=100') 40 MPH (A=110', B=130')
45 MPH (A=175', B=115') 50 MPH (A=220', B=130')



30 MPH

GENERAL NOTES:

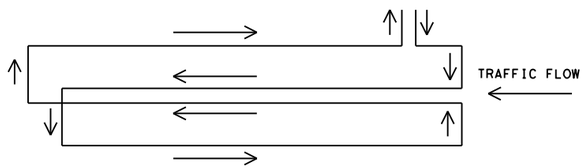
Loops 1 and 2 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 3 thru 6 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

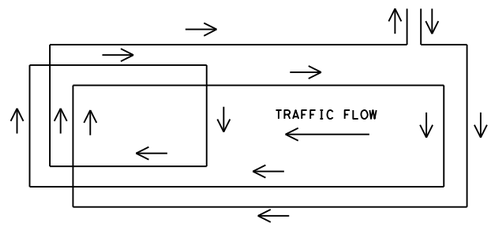
Loops 7 and 8 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loop 9 shall be connected to the controller cabinet by means of a loop lead-in (2/C #14 AWG). Loop 9 shall be placed only when a left turn lane exists.

LOOP WINDING DETAILS



QUADRAPOLE LOOP



POWER HEADER LOOP

Texas Department of Transportation
Traffic Operations Division

LOOP DETECTOR PLACEMENT DETAILS

LD(2)-03

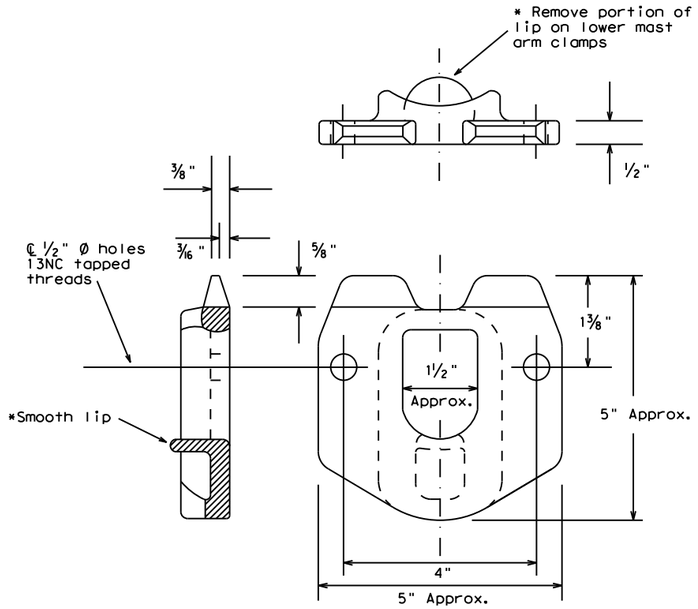
REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	188

DATE: 6/12/2023 3:24:22 PM
FILE: c:\txdot\pw\online\txdot5\jose.cardenas\d0832981\ld-03.dgn



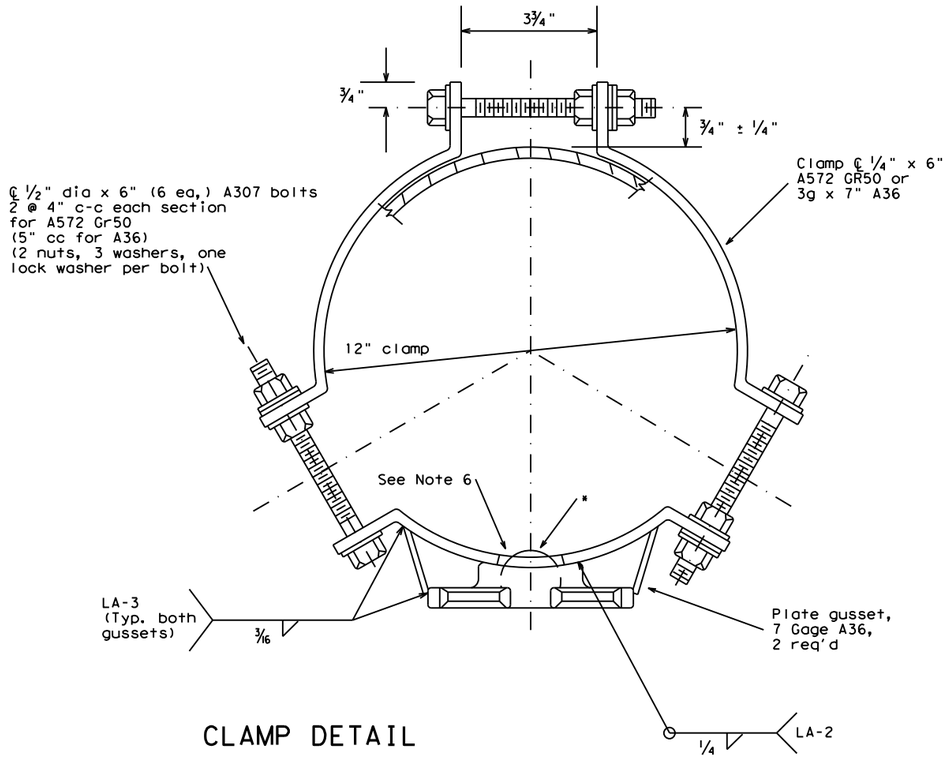
POLE SIMPLEX DETAILS

OTHER MATERIALS:

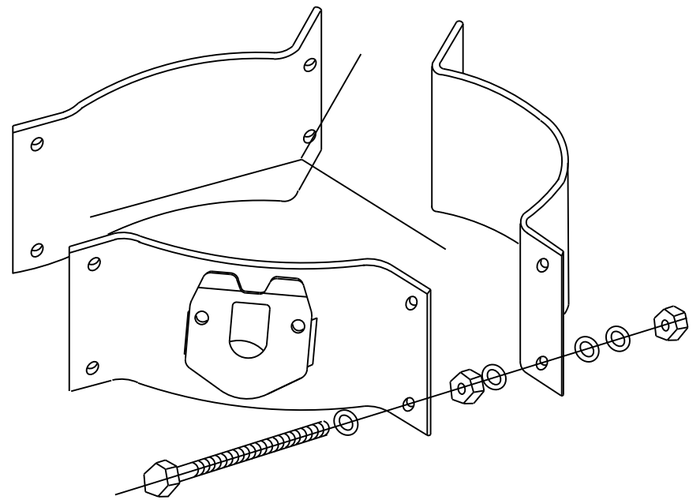
1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, ½in. X 1½in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. Design conforms to 1994 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" and interim revisions thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft.,12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.



CLAMP DETAIL



PROJECTION

For 8.9 - 12 inch diameter Signal Poles
(Two req'd for each mast arm)

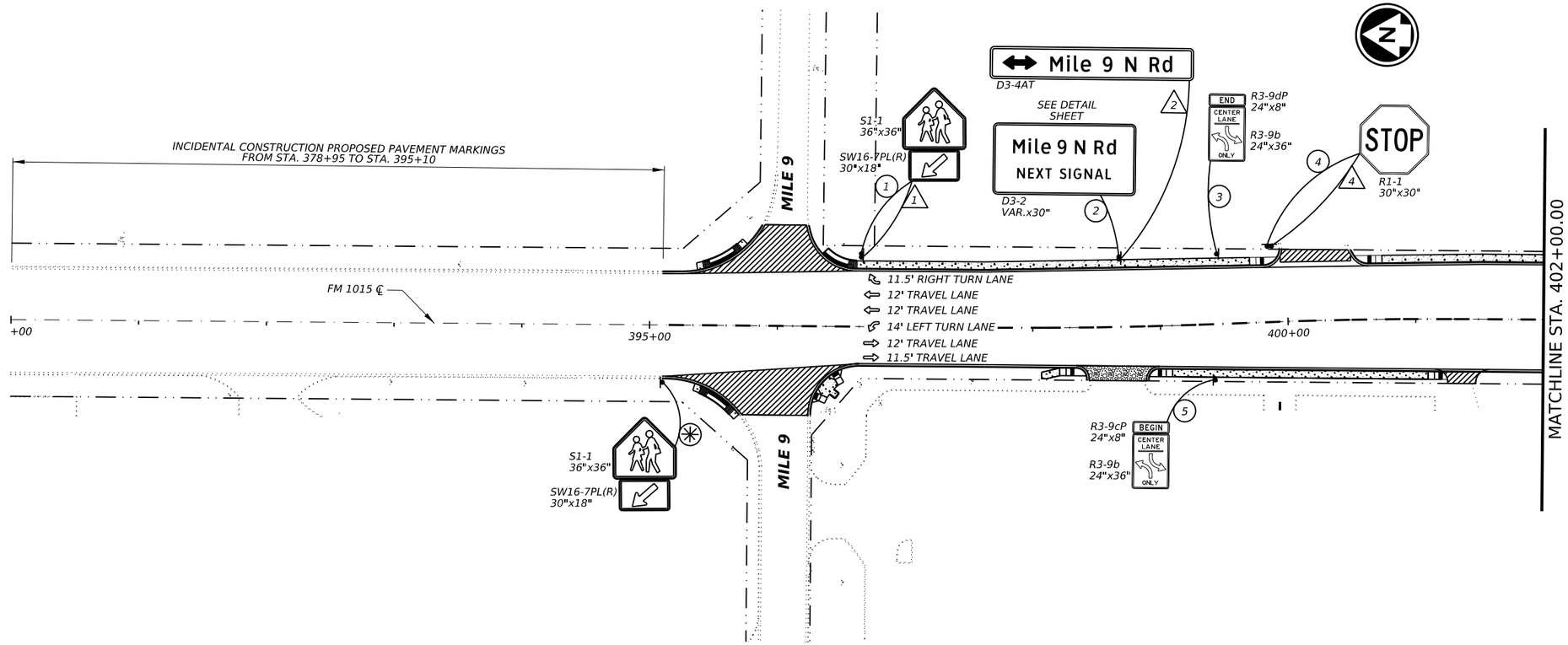
Texas Department of Transportation
Traffic Operations Division

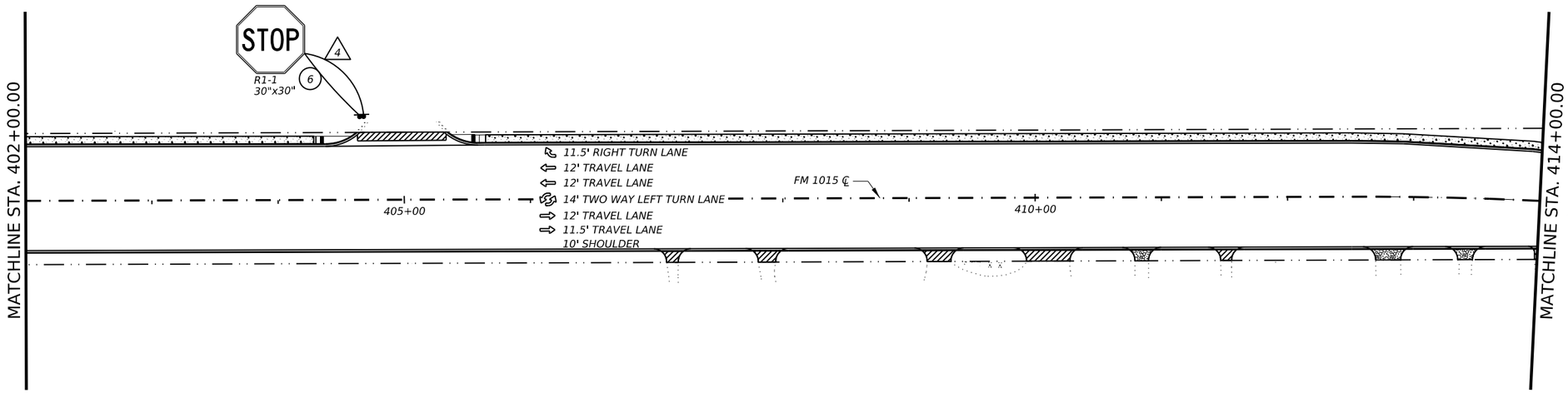
CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

© TxDOT	DN: KAB	CK: RES	DW: FDN	CK: CAL
REVISIONS	CONT	SECT	JOB	HIGHWAY
11-99	1228	03	050	FM 1015
1-12	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		189

DATE: 6/12/2023 3:24:28 PM
FILE: c:\txdot\pw*online\txdot5\jose.cardenas\d0832981\cfa.dgn





LEGEND

- EXISTING SIGN TO REMAIN IN PLACE
- SIGN TO BE INSTALLED (ITEM 644)
- SIGNS TO BE REMOVED (ITEM 644)
- SIGNS TO BE RELOCATED (ITEM 644)
- EXISTING STREET NAME SIGNS TO BE RELOCATED BY OTHERS
- DIRECTION OF TRAFFIC FLOW

NOTES

1. ALL SIGNS TO BE REMOVED SHOULD BE DELIVERED AT THE PHARR MAINTENANCE YARD:

   521 W. FERGUSON
   PHARR, TX 78572

2. THE CONTRACTOR SHALL MAKE THE PRECAUTIONARY MEASURES TO PREVENT DAMAGE TO SIGNS DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. DAMAGED SIGNS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

3. EXISTING STREET SIGNS ON TOP OF STOP SIGNS ARE TO BE REMOVED BY THE CONTRACTOR AND TO BE DELIVERED TO LOCAL ENTITY. UPON PROJECT COMPLETION LOCAL ENTITY IS TO INSTALL REPLACEMENT SIGNS.

4. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS DUE TO CONFLICTS WITH ANY SIGNS TO BE INSTALLED OR RELOCATED.

5. ANY EXISTING SIGN DESIGNATED TO BE RELOCATED CAN BE REPLACED AT THE DISTRECTION OF THE ENGINEER DEPENDING ON CURRENT FIELD CONDITIONS.

6. REFER TO ALL APPLICABLE TXDOT SIGNING STANDARD SHEETS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

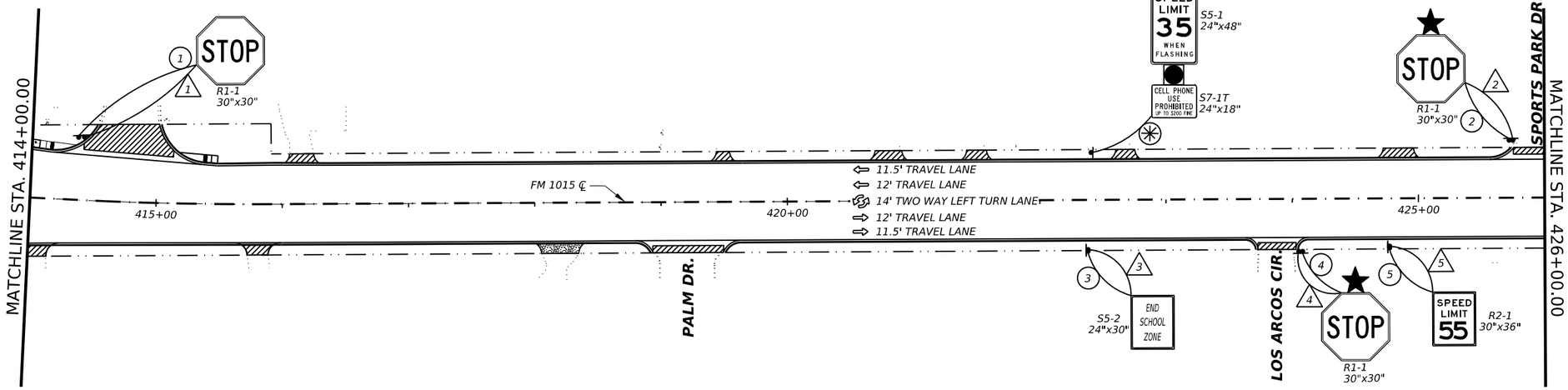
SIGNING LAYOUT

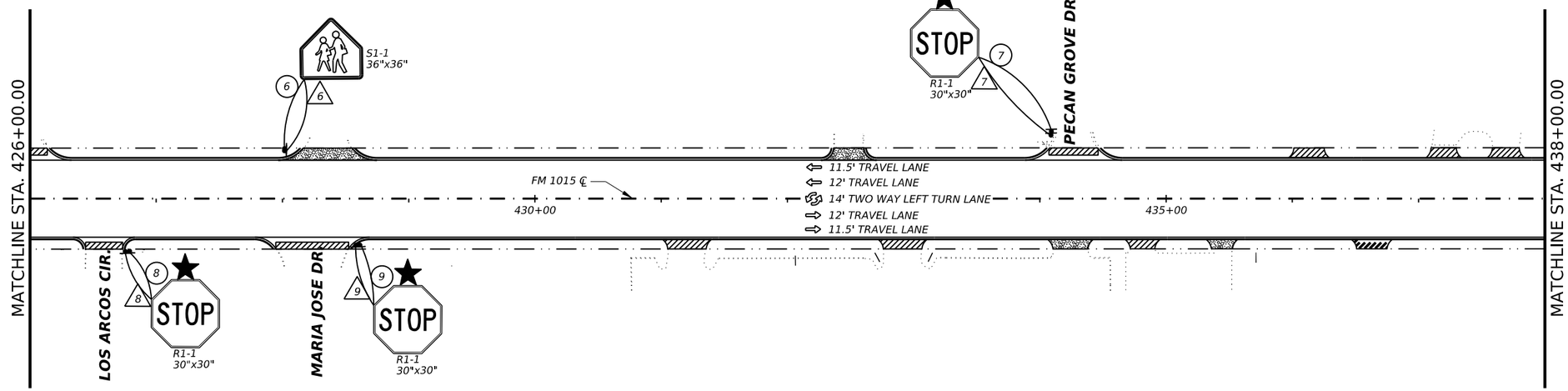
SCALE:1"=100' SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	190

DATE: 6/12/2023 3:26:32 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_SIGNING_01.dgn





LEGEND

- EXISTING SIGN TO REMAIN IN PLACE
- SIGN TO BE INSTALLED (ITEM 644)
- SIGNS TO BE REMOVED (ITEM 644)
- SIGNS TO BE RELOCATED (ITEM 644)
- EXISTING STREET NAME SIGNS TO BE RELOCATED BY OTHERS
- DIRECTION OF TRAFFIC FLOW

NOTES

1. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED SHALL BE REMOVED AND STORED AT THE PHARR MAINTENANCE YARD:

   521 W. FERGUSON
   PHARR, TX 78572

2. THE CONTRACTOR SHALL MAKE THE PRECAUTIONARY MEASURES TO PREVENT DAMAGE TO SIGNS DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. DAMAGED SIGNS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

3. EXISTING STREET SIGNS ON TOP OF STOP SIGNS ARE TO BE REMOVED BY THE CONTRACTOR AND TO BE DELIVERED TO LOCAL ENTITY. UPON PROJECT COMPLETION LOCAL ENTITY IS TO INSTALL REPLACEMENT SIGNS.

4. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS DUE TO CONFLICTS WITH ANY SIGNS TO BE INSTALLED OR RELOCATED.

5. ANY EXISTING SIGN DESIGNATED TO BE RELOCATED CAN BE REPLACED AT THE DISTRECTION OF THE ENGINEER DEPENDING ON CURRENT FIELD CONDITIONS.

6. REFER TO ALL APPLICABLE TXDOT SIGNING STANDARD SHEETS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

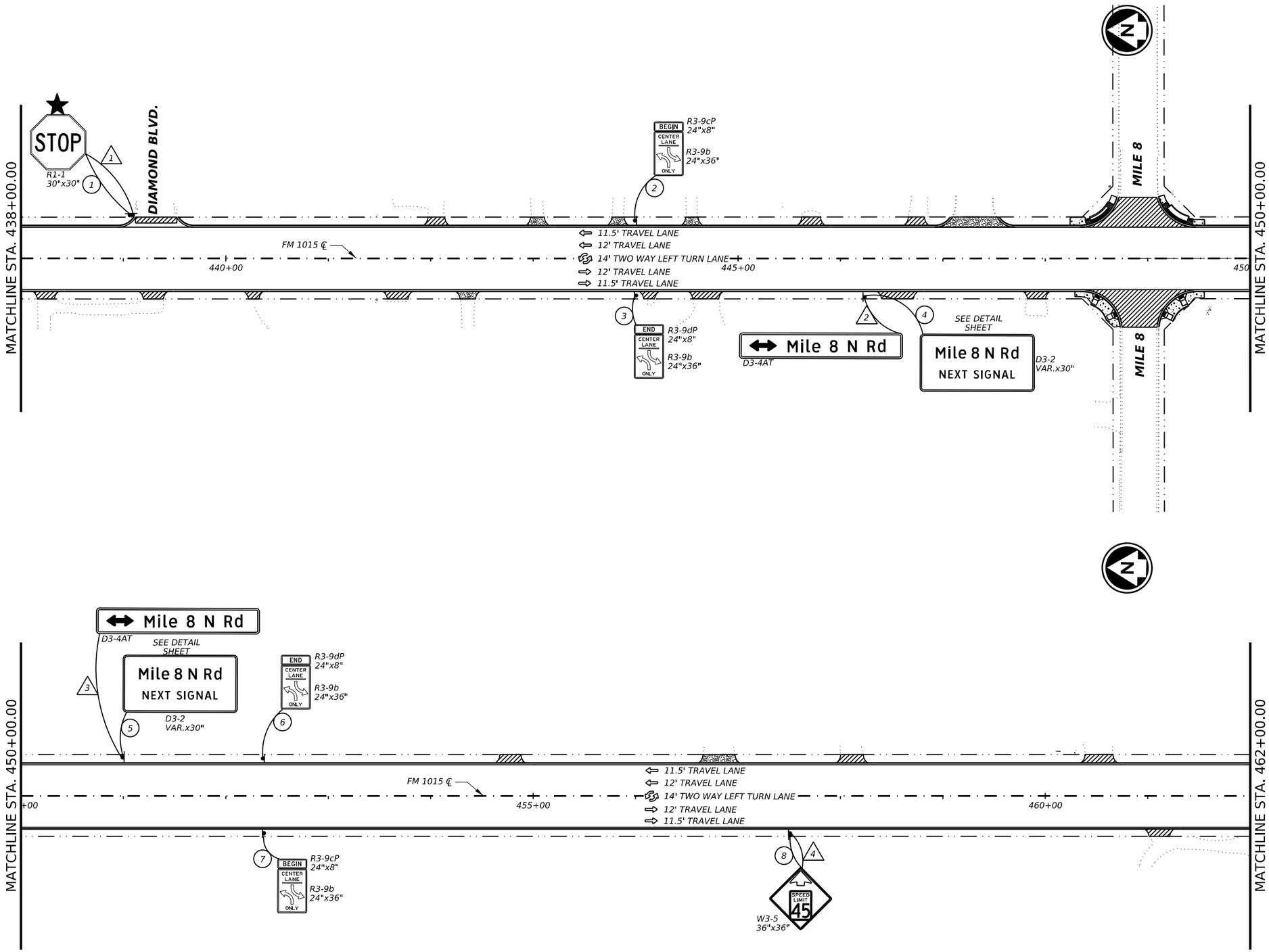
SIGNING LAYOUT

SCALE:1"=100' SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	191

DATE: 6/12/2023 3:26:39 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015 SIGNING 02.dgn



LEGEND

- EXISTING SIGN TO REMAIN IN PLACE
- SIGN TO BE INSTALLED (ITEM 644)
- SIGNS TO BE REMOVED (ITEM 644)
- SIGNS TO BE RELOCATED (ITEM 644)
- EXISTING STREET NAME SIGNS TO BE RELOCATED BY OTHERS
- DIRECTION OF TRAFFIC FLOW

NOTES

1. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED SHALL BE REMOVED AND STORED AT THE PHARR MAINTENANCE YARD:

   521 W. FERGUSON
   PHARR, TX 78572

2. THE CONTRACTOR SHALL MAKE THE PRECAUTIONARY MEASURES TO PREVENT DAMAGE TO SIGNS DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. DAMAGED SIGNS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

3. EXISTING STREET SIGNS ON TOP OF STOP SIGNS ARE TO BE REMOVED BY THE CONTRACTOR AND TO BE DELIVERED TO LOCAL ENTITY. UPON PROJECT COMPLETION LOCAL ENTITY IS TO INSTALL REPLACEMENT SIGNS.

4. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS DUE TO CONFLICTS WITH ANY SIGNS TO BE INSTALLED OR RELOCATED.

5. ANY EXISTING SIGN DESIGNATED TO BE RELOCATED CAN BE REPLACED AT THE DISTRECTION OF THE ENGINEER DEPENDING ON CURRENT FIELD CONDITIONS.

6. REFER TO ALL APPLICABLE TXDOT SIGNING STANDARD SHEETS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

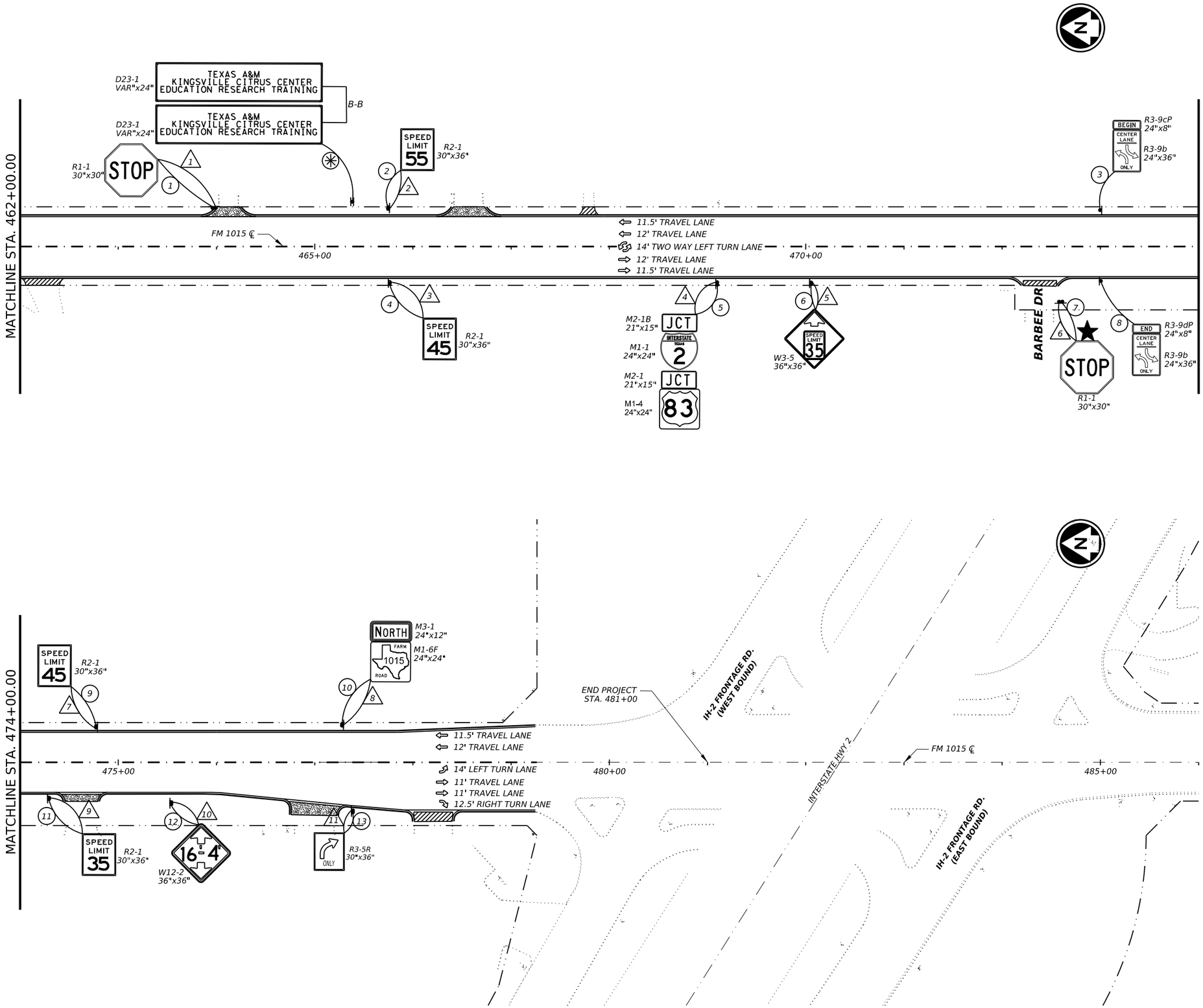
FM 1015

SIGNING LAYOUT

SCALE:1"=100' SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		192

DATE: 6/12/2023 3:26:46 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015 SIGNING 03.dgn



LEGEND

- EXISTING SIGN TO REMAIN IN PLACE
- SIGN TO BE INSTALLED (ITEM 644)
- SIGNS TO BE REMOVED (ITEM 644)
- SIGNS TO BE RELOCATED (ITEM 644)
- EXISTING STREET NAME SIGNS TO BE RELOCATED BY OTHERS
- DIRECTION OF TRAFFIC FLOW

NOTES

1. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED SHALL BE REMOVED AND STORED AT THE PHARR MAINTENANCE YARD:

   521 W. FERGUSON
   PHARR, TX 78572

2. THE CONTRACTOR SHALL MAKE THE PRECAUTIONARY MEASURES TO PREVENT DAMAGE TO SIGNS DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. DAMAGED SIGNS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

3. EXISTING STREET SIGNS ON TOP OF STOP SIGNS ARE TO BE REMOVED BY THE CONTRACTOR AND TO BE DELIVERED TO LOCAL ENTITY. UPON PROJECT COMPLETION LOCAL ENTITY IS TO INSTALL REPLACEMENT SIGNS.

4. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO MAKE ANY ADJUSTMENTS DUE TO CONFLICTS WITH ANY SIGNS TO BE INSTALLED OR RELOCATED.

5. ANY EXISTING SIGN DESIGNATED TO BE RELOCATED CAN BE REPLACED AT THE DISTRECTION OF THE ENGINEER DEPENDING ON CURRENT FIELD CONDITIONS.

6. REFER TO ALL APPLICABLE TXDOT SIGNING STANDARD SHEETS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

SIGNING LAYOUT

SCALE:1"=100' SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015

DIST	COUNTY	SHEET NO.
PHR	HIDALGO	193

DATE: 6/12/2023 3:26:53 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_SIGNING_04.dgn

SUMMARY OF SIGN REMOVAL

				644-6076
PLAN SHEET NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	REMOVE SM RD SN SUP & AM (EA)
1 of 4				
	1	S1-1	SCHOOL ADVANCE CROSSING	1
		SW16-7PL(R)	ARROW	
	2	D3-4AT	MILE 9 N Rd	1
	3	R1-1	STOP	1
	4	R1-1	STOP	1
			SHEET TOTAL	4
2 of 4				
	1	R1-1	STOP	1
	2	R1-1	STOP	1
	3	S5-2	END SCHOOL ZONE	1
	4	R1-1	STOP	1
	5	R2-1	SPEED LIMIT (55 MPH)	1
	6	S1-1	SCHOOL ADVANCE CROSSING	1
	7	R1-1	STOP	1
	8	R1-1	STOP	1
	9	R1-1	STOP	1
			SHEET TOTAL	9
3 of 4				
	1	R1-1	STOP	1
	2	D3-4AT	MILE 8 N Rd	1
	3	D3-4AT	MILE 8 N Rd	1
	4	W3-5	SPEED LIMIT 45 AHEAD	1
			SHEET TOTAL	4
4 of 4				
	1	R1-1	STOP	1
	2	R2-1	SPEED LIMIT (55 MPH)	1
	3	R2-1	SPEED LIMIT (45 MPH)	1
	4	M2-1B	JUNCTION	1
		M1-1	INTERSTATE 2	
		M2-1	JUNCTION	
		M1-4	US 83	
	5	W3-5	SPEED LIMIT 35 AHEAD	1
	6	R1-1	STOP	1
	7	R2-1	SPEED LIMIT (45 MPH)	1
	8	M3-3	SOUTH	1
		M1-6F	FARM ROAD 1015	
	9	R2-1	SPEED LIMIT (45 MPH)	1
	10	W12-2	CLEARANCE 16'-4"	1
	11	R3-5R	RIGHT ARROW (ONLY)	1
			SHEET TOTAL	11
			SUBTOTAL	28

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

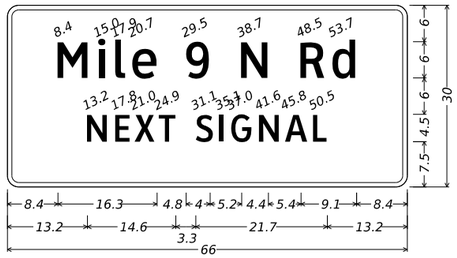
SUMMARY OF SMALL SIGNS TO BE REMOVED OR RELOCATED

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		194

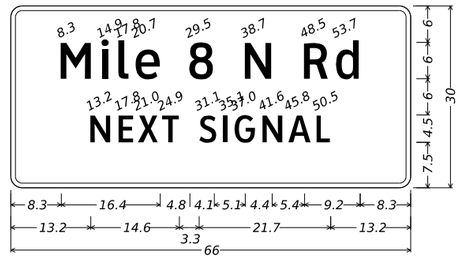
DATE: 6/12/2023 3:27:00 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_Summary Sign Removal.dgn

CK DW CK DW



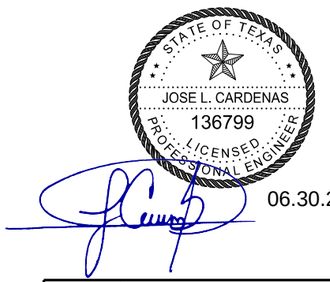
D3-2(1)_VARx30;
1.9" Radius, 0.8" Border, White on Green;
"Mile 9 N Rd", ClearviewHwy-3-W;
"NEXT SIGNAL", ClearviewHwy-3-W;

SHEET 1 OF 4 SIGN 2



D3-2(1)_VARx30;
1.9" Radius, 0.8" Border, White on Green;
"Mile 8 N Rd", ClearviewHwy-3-W;
"NEXT SIGNAL", ClearviewHwy-3-W;

SHEET 3 OF 4 SIGNS 2 & 3



06.30.23

Texas Department of Transportation

FM 1015

SIGN DETAILS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		195

DATE: 6/12/2023 3:27:06 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015 Sign Details.dgn

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION: PREFABRICATED	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"		
CSJ: 1228-03-050												
1												
	1	S1-1		36x36	✓		S80	1	SA	P		
		SW16-7PL(R)		30X18								
	2	D3-2		66x30	✓		S80	1	SA	T		
	3	R3-9DP		24"X8"	✓		S80	1	SA	P		
		R3-9B		24"X36"								
	4	R1-1		36"x36"	✓		S80	1	SA	P		
	5	R3-9CP		24"X8"	✓		S80	1	SA	P		
		R3-9B		24"X36"								

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. *Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.*

2. *For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.*

3. *For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).*

4. *Existing street signs (D3-1G) to be replaced by City of Weslaco.*

Texas Department of Transportation

Traffic Operations Division Standard

FM 1015 SUMMARY OF SMALL SIGNS

SOSS

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
	REVISIONS	1228	03	050	FM 1015
4-16		DIST	COUNTY		SHEET NO.
8-16		PHR	HIDALGO		196

18

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION: PREFABRICATED	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"		
CSJ: 1228-03-050												
	6	*R1-1*	STOP	*30"x30"*	✓		*S80*	*1*	*SA*	*P*		
2												
	1	*R1-1*	STOP	*30"x30"*	✓		*S80*	*1*	*SA*	*P*		
	2	*R1-1*	STOP	*30"x30"*	✓		*S80*	*1*	*SA*	*P*		
	3	*S5-2*	END SCHOOL ZONE	*24x30*	✓		*S80*	*1*	*SA*	*P*		
	4	*R1-1*	STOP	*30"x30"*	✓		*S80*	*1*	*SA*	*P*		
	5	*R2-1*	SPEED LIMIT 55	*30X36*	✓		*S80*	*1*	*SA*	*P*		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. *Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.*

2. *For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.*

3. *For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).*

4. *Existing street signs (D3-1G) to be replaced by City of Weslaco.*

Texas Department of Transportation

Traffic Operations Division Standard

FM 1015
SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
4-16	DIST	COUNTY		SHEET NO.
8-16	PHR	HIDALGO		197

18

DATE: 6/12/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_Sign Prop Small Signs.dgn

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION: PREFABRICATED	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"		
CSJ: 1228-03-050												
2												
	6	S1-1		36x36	✓		S80	1	SA	P		
	7	R1-1		30"x30"	✓		S80	1	SA	P		
	8	R1-1		30"x30"	✓		S80	1	SA	P		
	9	R1-1		30"x30"	✓		S80	1	SA	P		
3												
	1	R1-1		30"x30"	✓		S80	1	SA	P		
	2	R3-9CP R3-9B		24"X8" 24"X36"	✓		S80	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. *Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.*
2. *For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.*
3. *For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).*
4. *Existing street signs (D3-1G) to be replaced by City of Weslaco.*

Texas Department of Transportation

Traffic Operations Division Standard

FM 1015
SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
4-16 8-16	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		198

18

DATE: 6/12/2023 3:27:13 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_Sign Prop Small Signs.dgn

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
CSJ: 1228-03-050												
3	3	R3-9DP		24"X8"	✓		S80	1	SA	P		
		R3-9B		24"X36"								
	4	D3-2		66x30	✓		S80	1	SA	T		
	5	D3-2		66x30	✓		S80	1	SA	T		
	6	R3-9DP		24"X8"	✓		S80	1	SA	P		
		R3-9B		24"X36"								
	7	R3-9CP		24"X8"	✓		S80	1	SA	P		
		R3-9B		24"X36"								
	8	W3-5		36x36	✓		S80	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. *Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.*
2. *For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.*
3. *For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).*
4. *Existing street signs (D3-1G) to be replaced by City of Weslaco.*

Texas Department of Transportation

Traffic Operations Division Standard

FM 1015 SUMMARY OF SMALL SIGNS

SOSS

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		1228	03	050	FM 1015
4-16 8-16		DIST	COUNTY		SHEET NO.
		PHR	HIDALGO		199

18

DATE: 6/12/2023 3:27:13 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_Sign Prop Small Signs.dgn

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)					BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		TY = TYPE
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY N TY S
CSJ: 1228-03-050												
4	1	R1-1		30"x30"	✓		S80	1	SA	P		
	2	R2-1		30X36	✓		S80	1	SA	P		
	3	R3-9CP		24"X8"	✓		S80	1	SA	P		
		R3-9B		24"X36"								
	4	R2-1		30X36	✓		S80	1	SA	P		
	5	M2-1B		21X15								
		M1-1		24X24	✓		S80	1	SA	P		
		M2-1		21X15								
		M1-4		24X24								
	6	W3-5		36x36	✓		S80	1	SA	P		
	7	R1-1		30"x30"	✓		S80	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. *Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.*
2. *For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.*
3. *For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).*
4. *Existing street signs (D3-1G) to be replaced by City of Weslaco.*

SHEET 5 OF 5

Texas Department of Transportation

Traffic Operations Division Standard

FM 1015
SUMMARY OF SMALL SIGNS

SOSS

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		1228	03	050	FM 1015
4-16		DIST	COUNTY		SHEET NO.
8-16		PHR	HIDALGO		200

18

DATE: 6/12/2023 3:27:14 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745188\FM1015_Sign_Prop_Small_Signs.dgn

OMITTED

Texas Department of Transportation

FM 1015

OMITTED

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		201

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)

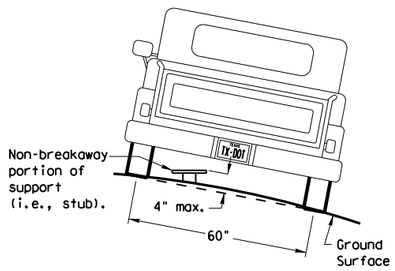
Anchor Type

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

Sign Mounting Designation

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

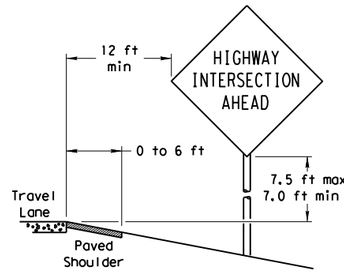
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

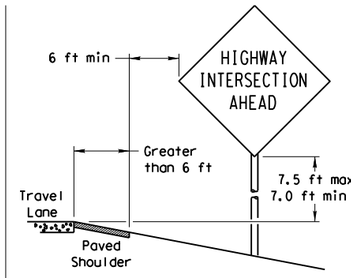
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

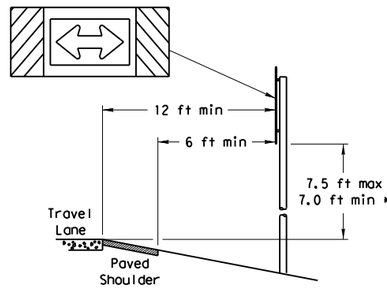
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



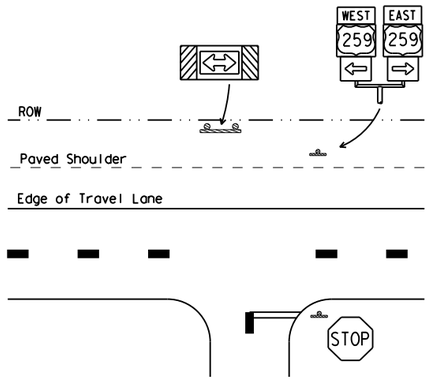
GREATER THAN 6 FT. WIDE

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

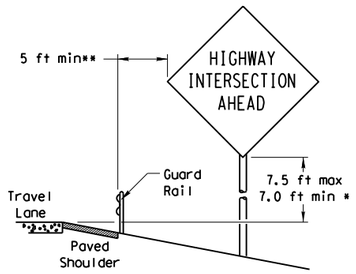
T-INTERSECTION



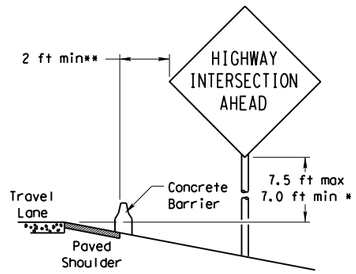
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

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.

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

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

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

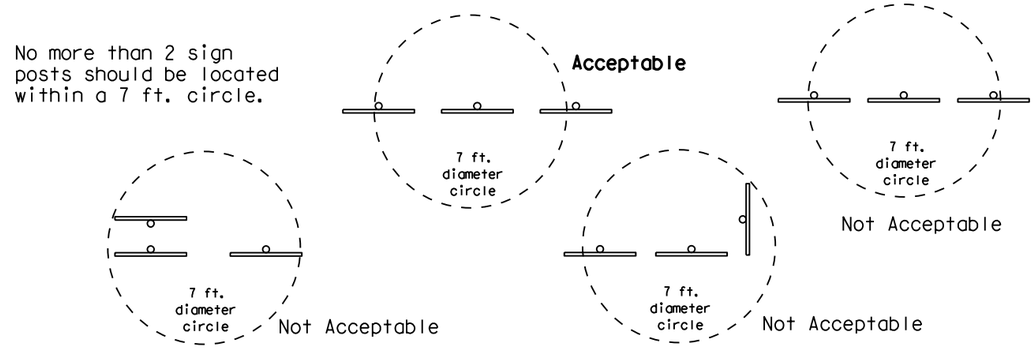
The maximum values may be increased when directed by the Engineer.

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

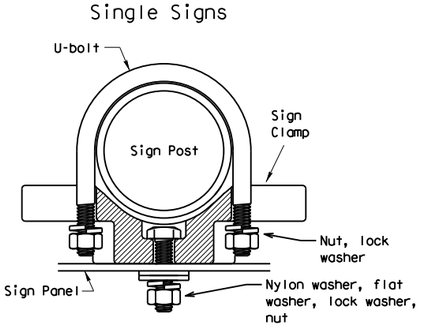
The website address is:
http://www.txdot.gov/publications/traffic.htm

**BEHIND GUARDRAIL and BEHIND CONCRETE BARRIER

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



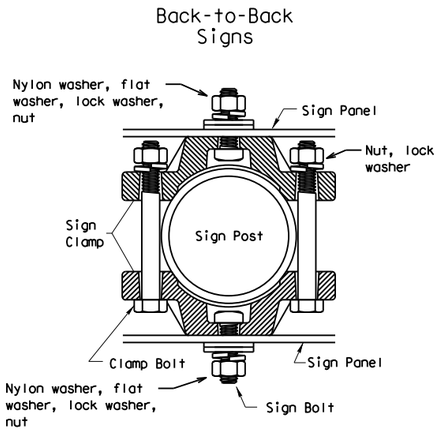
TYPICAL SIGN ATTACHMENT DETAIL



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.

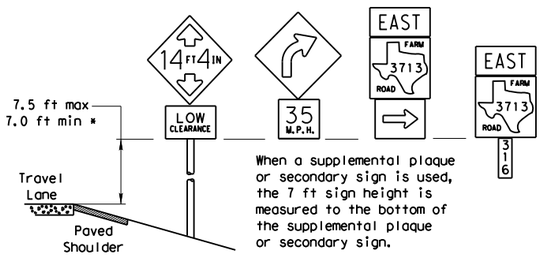
When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending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

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



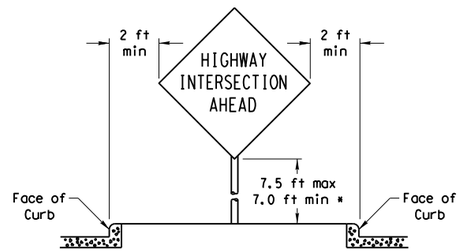
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



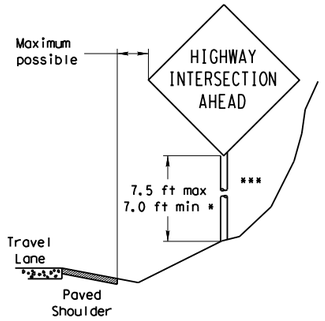
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

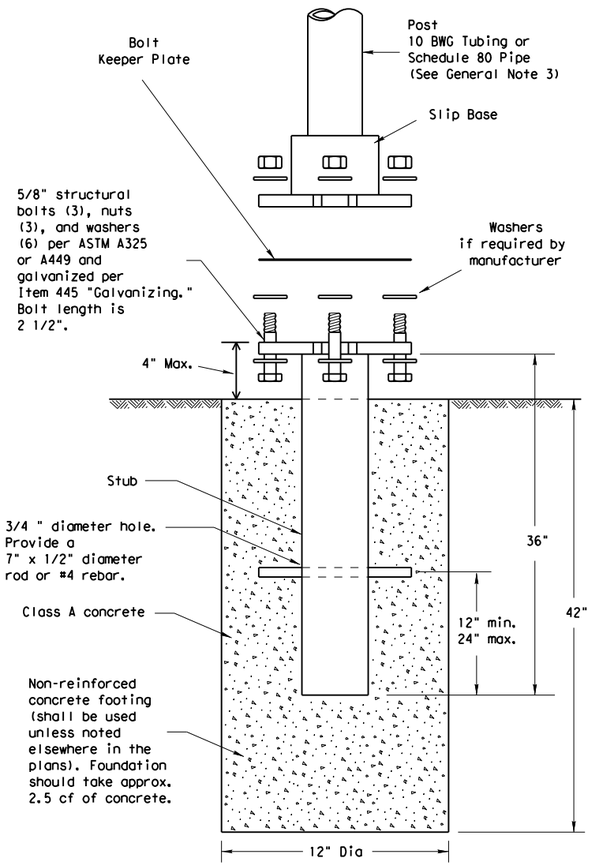
SMD(GEN)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		202

DATE: 6/12/2023 3:29:54 PM
FILE: c:\txdot\pwonline\txdot5\jose.cardenas\d0832982\SMD-GEN-08.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

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:

1. 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.
2. 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 metallizing with zinc wire per ASTM B833.

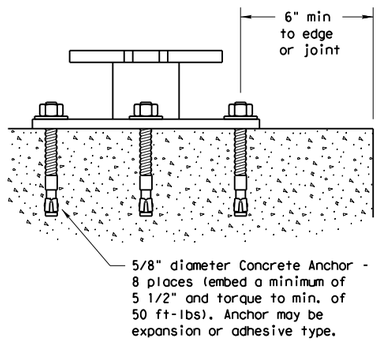
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. 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
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. 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.
2. 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.
3. 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.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. 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.
2. 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, "Epoxies 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.

Texas Department of Transportation
Traffic Operations Division

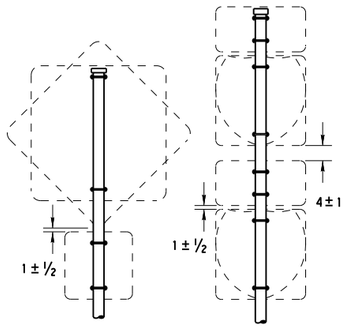
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

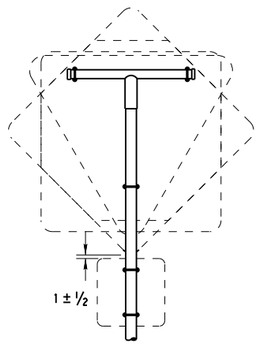
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS 9-08			

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		203

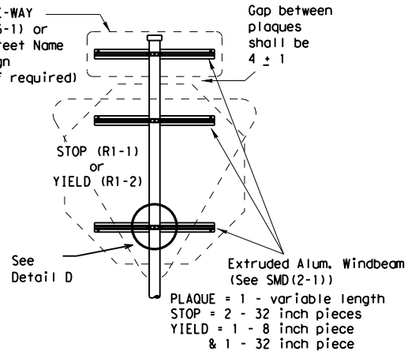
DATE: 6/12/2023 3:30:02 PM
FILE: c:\txdot\pw*online\txdot5\jose.cardenas\d0832982\SMD-SLIP-1-08.dgn



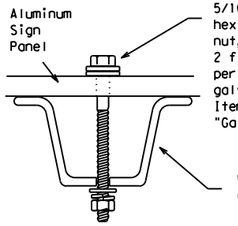
SM RD SGN ASSM TY XXXXX(1)XX(P)



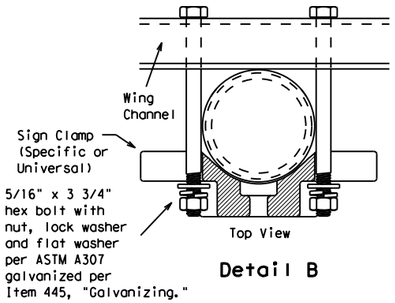
SM RD SGN ASSM TY XXXXX(1)XX(T)



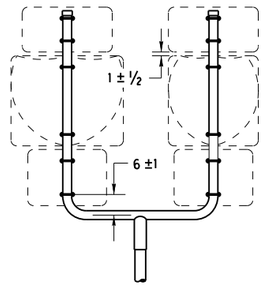
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



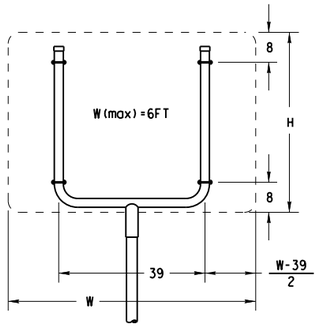
Detail A



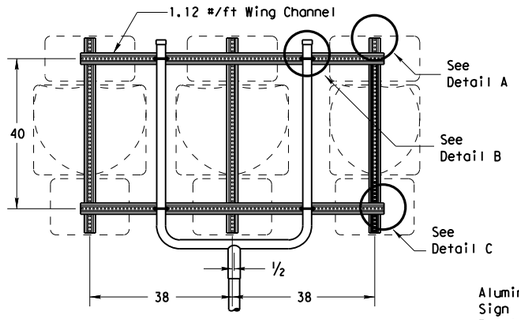
Detail B



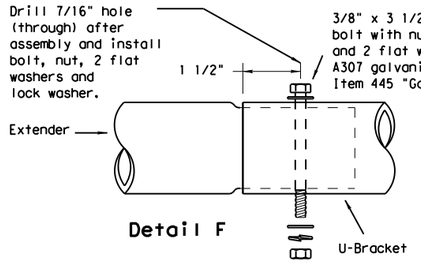
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

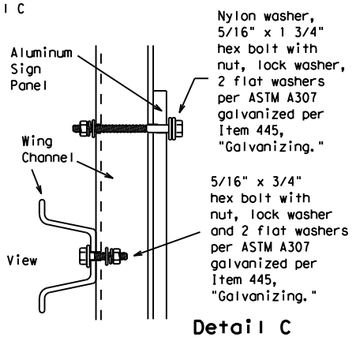


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

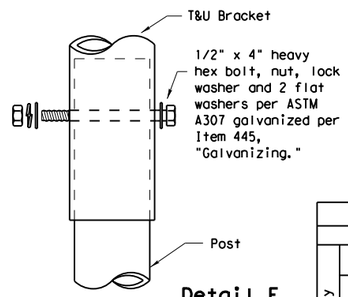


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C



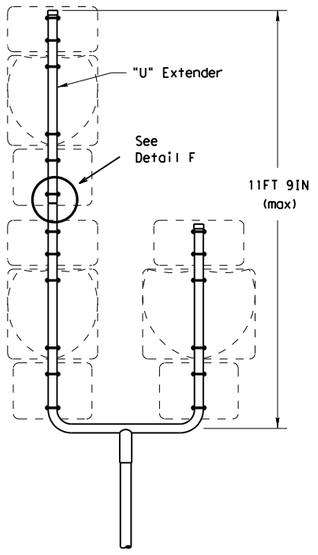
Detail E

GENERAL NOTES:

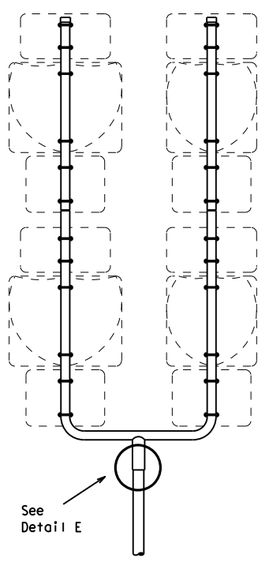
1.

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

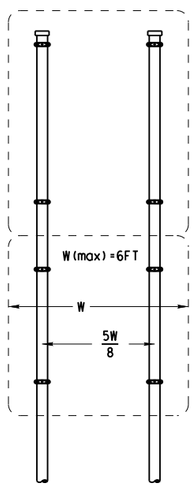
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material 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.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. 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.
7. 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.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. 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."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. 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.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.



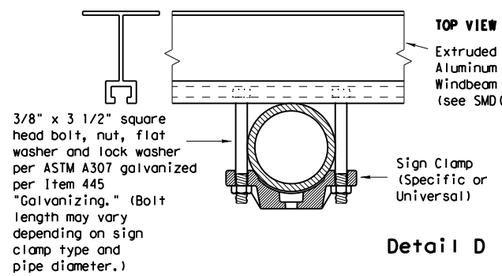
SM RD SGN ASSM TY S80(1)XX(U-1EXT)



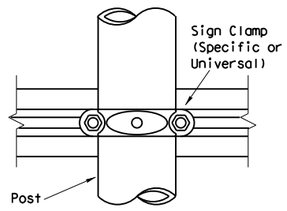
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



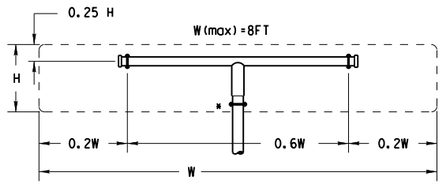
SM RD SGN ASSYM TY XXXXX(2)XX(P)



Detail D



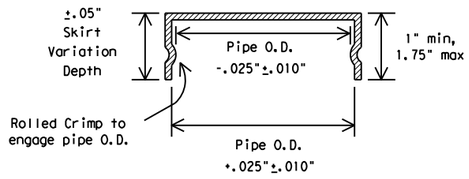
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)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



SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

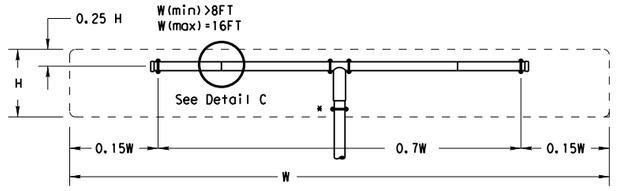
SMD(SLIP-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		204

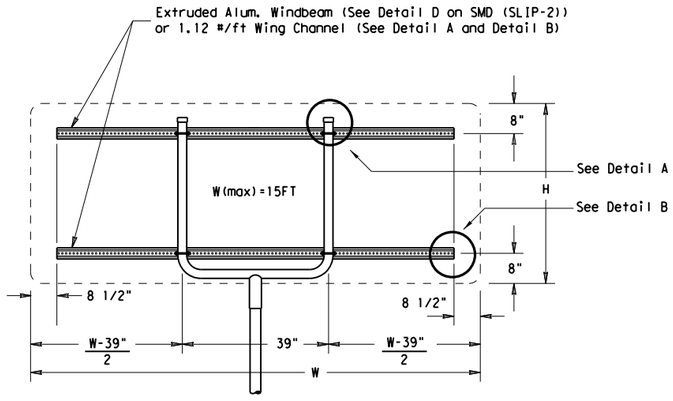
9-08 REVISIONS

DATE: 6/12/2023 3:30:09 PM
FILE: c:\txdot\pw*online\txdot5\jose.cardenas\d0832982\SMD-SLIP-2-08.dgn

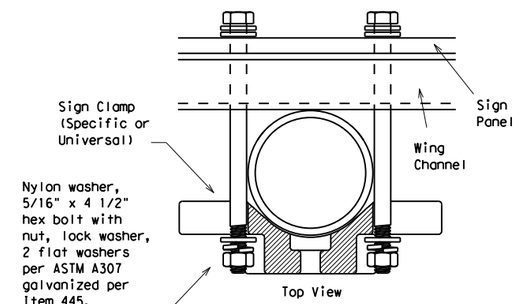
DATE: 6/12/2023 3:30:15 PM
FILE: c:\txdot\pwonline\txdot5\jose.cardenas\d0832982\SMD-SLIP-3-08.dgn



SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)

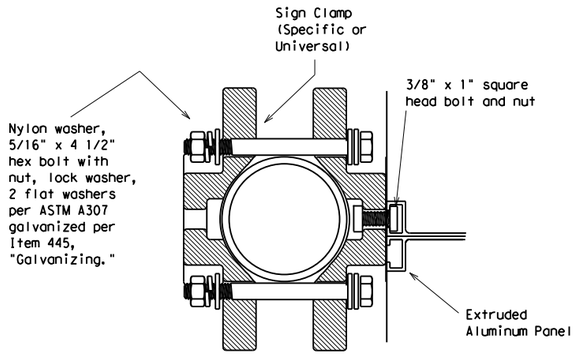


SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

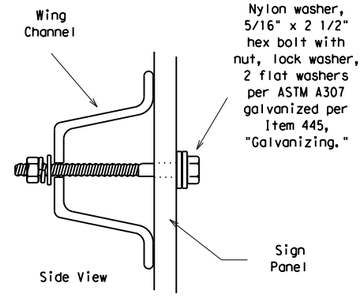


Top View

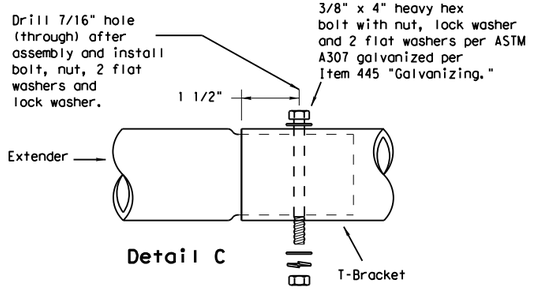
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

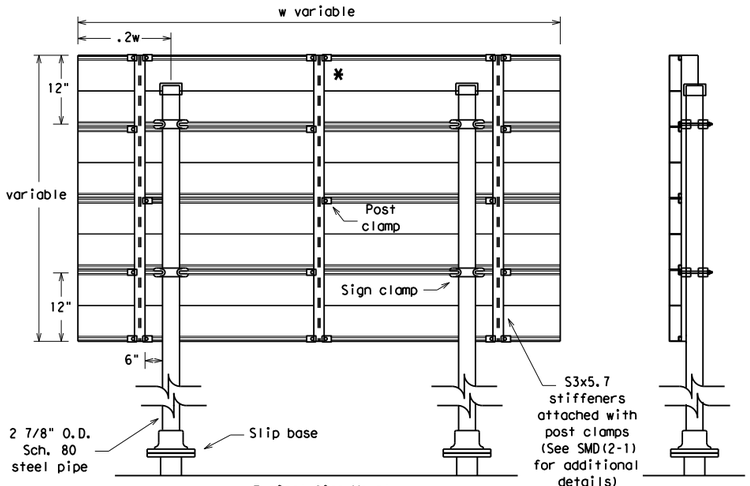


Detail B



Detail C

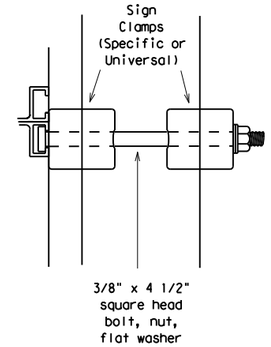
Splices shall only be allowed behind the sign substrate.



Typical Sign Mount

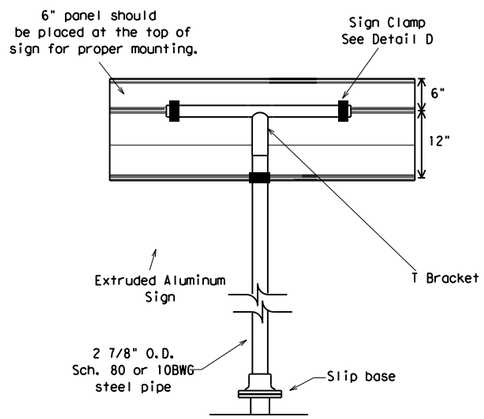
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

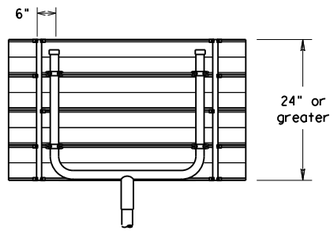


See Detail E
for clamp installation

Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

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

1. 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.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. 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.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. 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.
6. 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.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. 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."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. 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.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	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)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

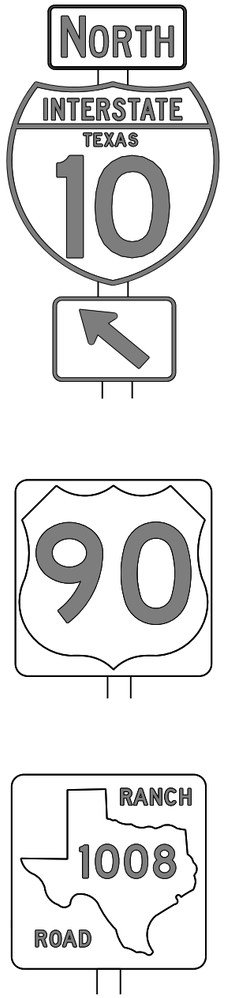
SMD(SLIP-3)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		205

DATE: 6/12/2023 3:30:21 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832982\TSR3-13.dgn

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

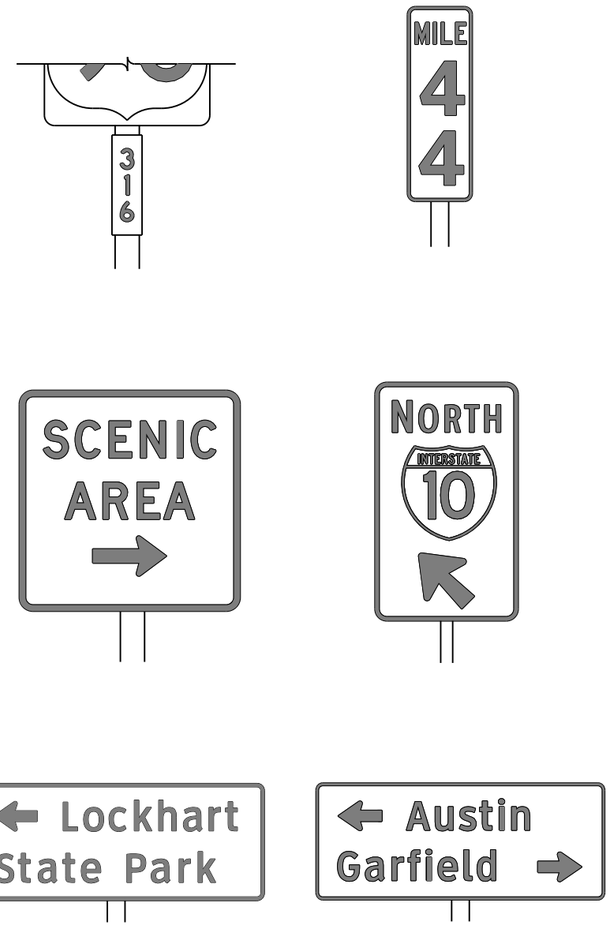
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

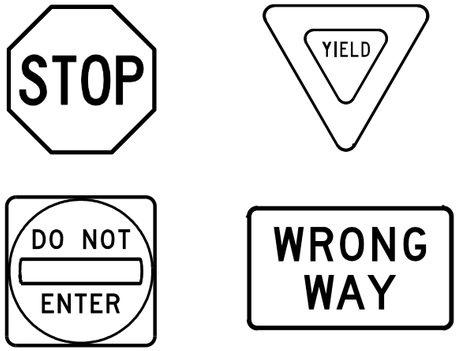
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	PHR	HIDALGO		206

DATE: 6/12/2023 3:30:27 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832982\TSR4-13.dgn

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

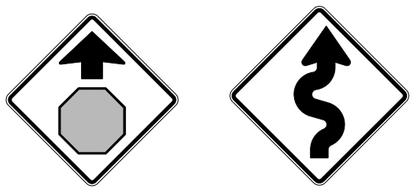
ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

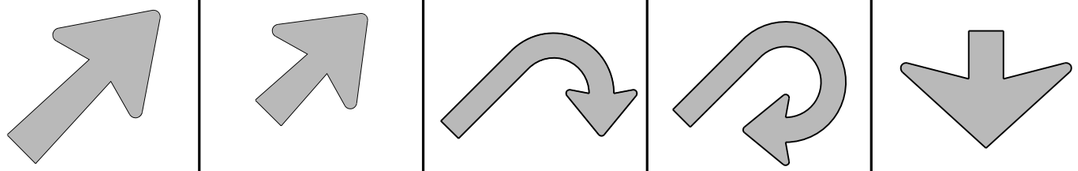
TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		207

DATE: 6/12/2023 3:30:35 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832982\TSR5-13.dgn

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

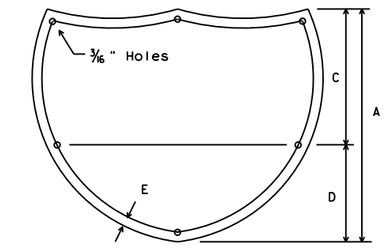
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

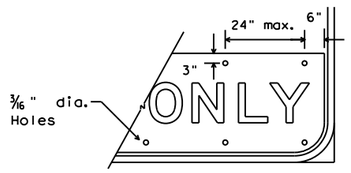
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

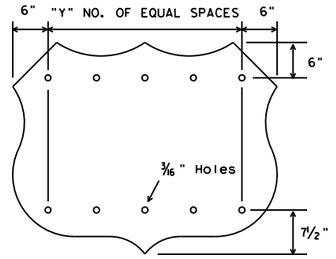


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

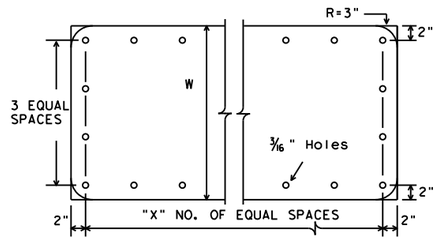


EXIT ONLY PANEL



U.S. ROUTE MARKERS

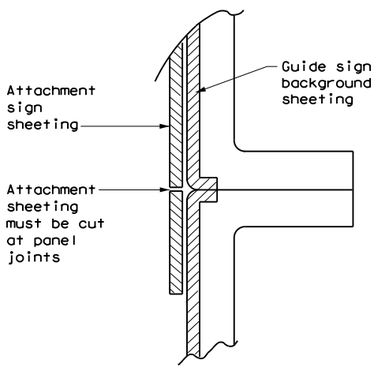
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

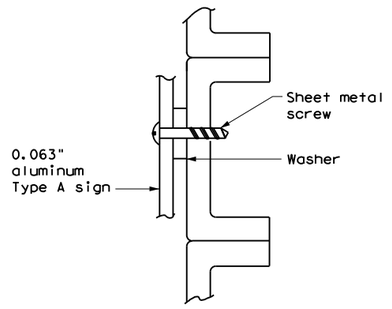
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



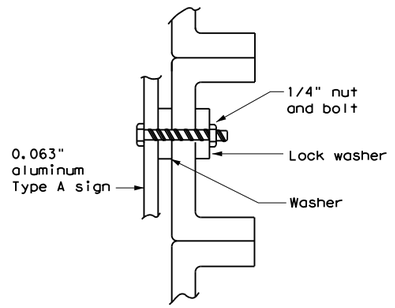
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



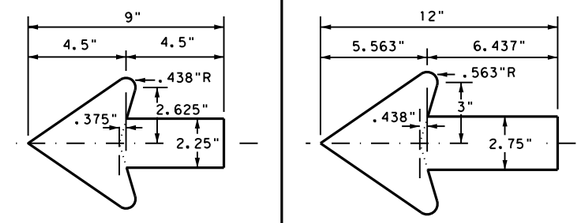
NUT/BOLT ATTACHMENT

NOTE:

Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.

Standard arrow to be used with 8 inch letters.

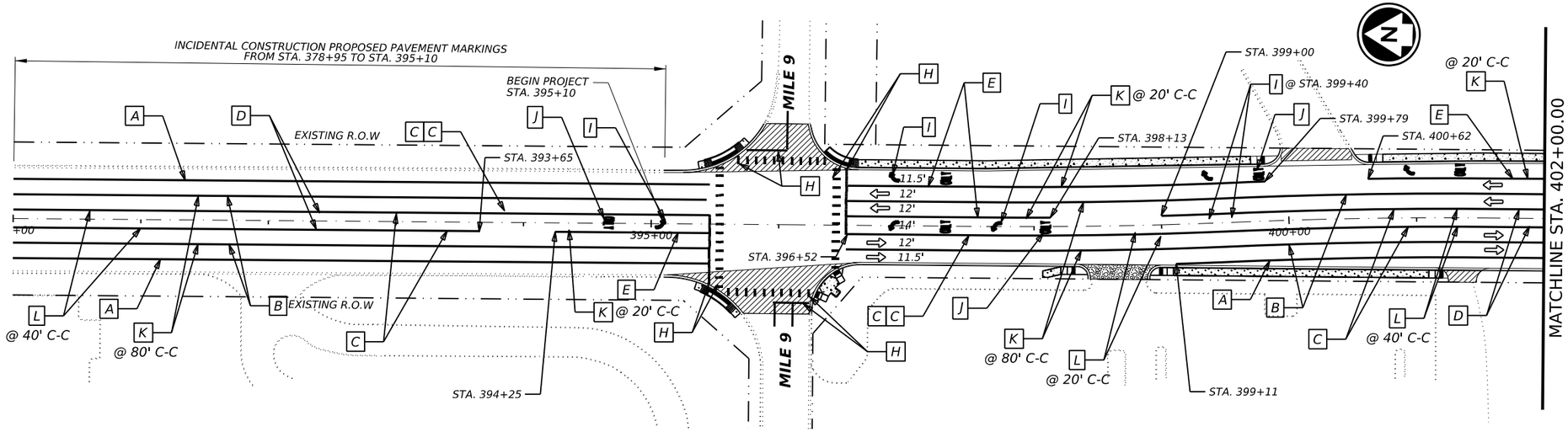
Texas Department of Transportation

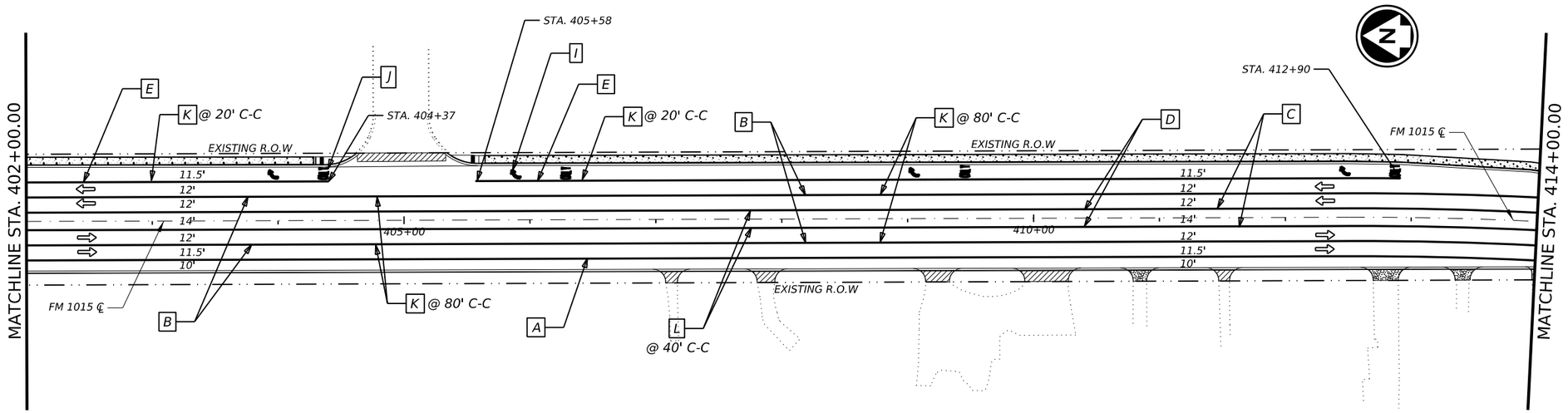
Traffic Operations Division Standard

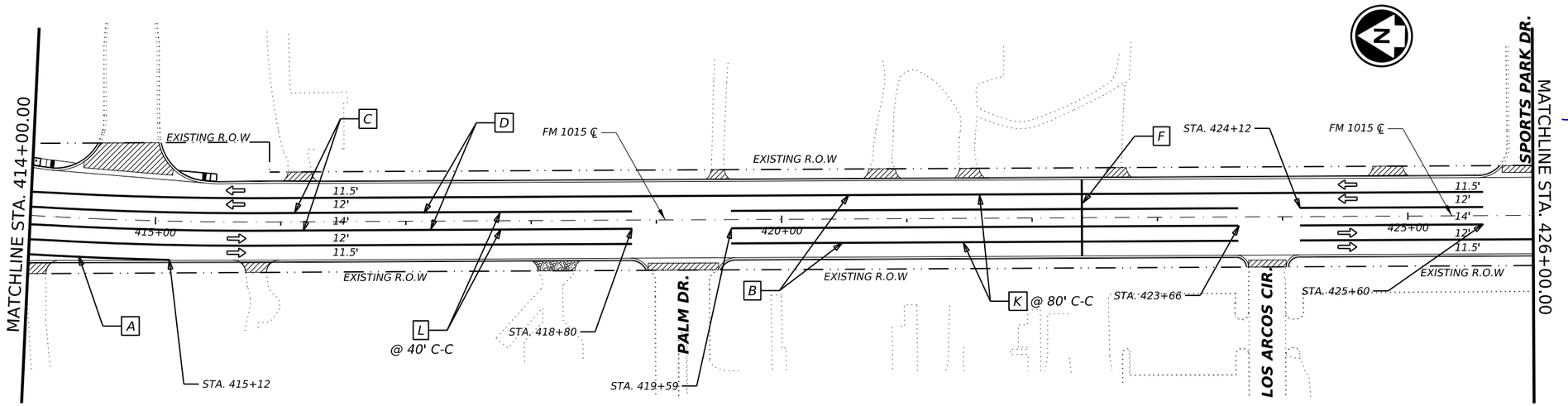
TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	PHR	HIDALGO		208







LEGEND

- A - 6" SOLID WHITE LINE (TYP.)
- B - 6" BROKEN WHITE LINE (TYP.)
- C - 6" SOLID YELLOW LINE (TYP.)
- D - 6" BROKEN YELLOW LINE (TYP.)
- E - 8" SOLID WHITE LINE (TYP.)
- F - 12" SOLID WHITE (TYP.)
- G - 12" SOLID YELLOW LINE (TYP.)
- H - 24" SOLID WHITE (TYP.)
- I - SINGLE DIRECTIONAL ARROW (TYP.)
- J - WORD (TYP.)
- K - TYPE I-C (TYP.)
- L - TYPE II-A-A (TYP.)
- M - TYPE II-C-R (TYP.)

@ - AT
C-C - CENTER TO CENTER
EOP - EDGE OF PAVEMENT
⇦ - DIRECTION OF TRAFFIC FLOW

NOTES

1. THE PAVEMENT SURFACE SHALL BE FREE OF DELETERIOUS MATERIAL BEFORE APPLICATION OF PERMANENT STRIPING AND PAVEMENT MARKERS. IF THE SURFACE NEEDS TO BE CLEANED, AS DETERMINED BY THE AREA ENGINEER, THE PREPARATION OF PAVEMENT SURFACE SHALL BE SUBSIDIARY TO ITEM 666, 668 AND 672.
2. ALL PERMANENT PAVEMENT MARKINGS SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.
3. SEE APPLICABLE TXDOT PAVEMENT MARKING STANDARDS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

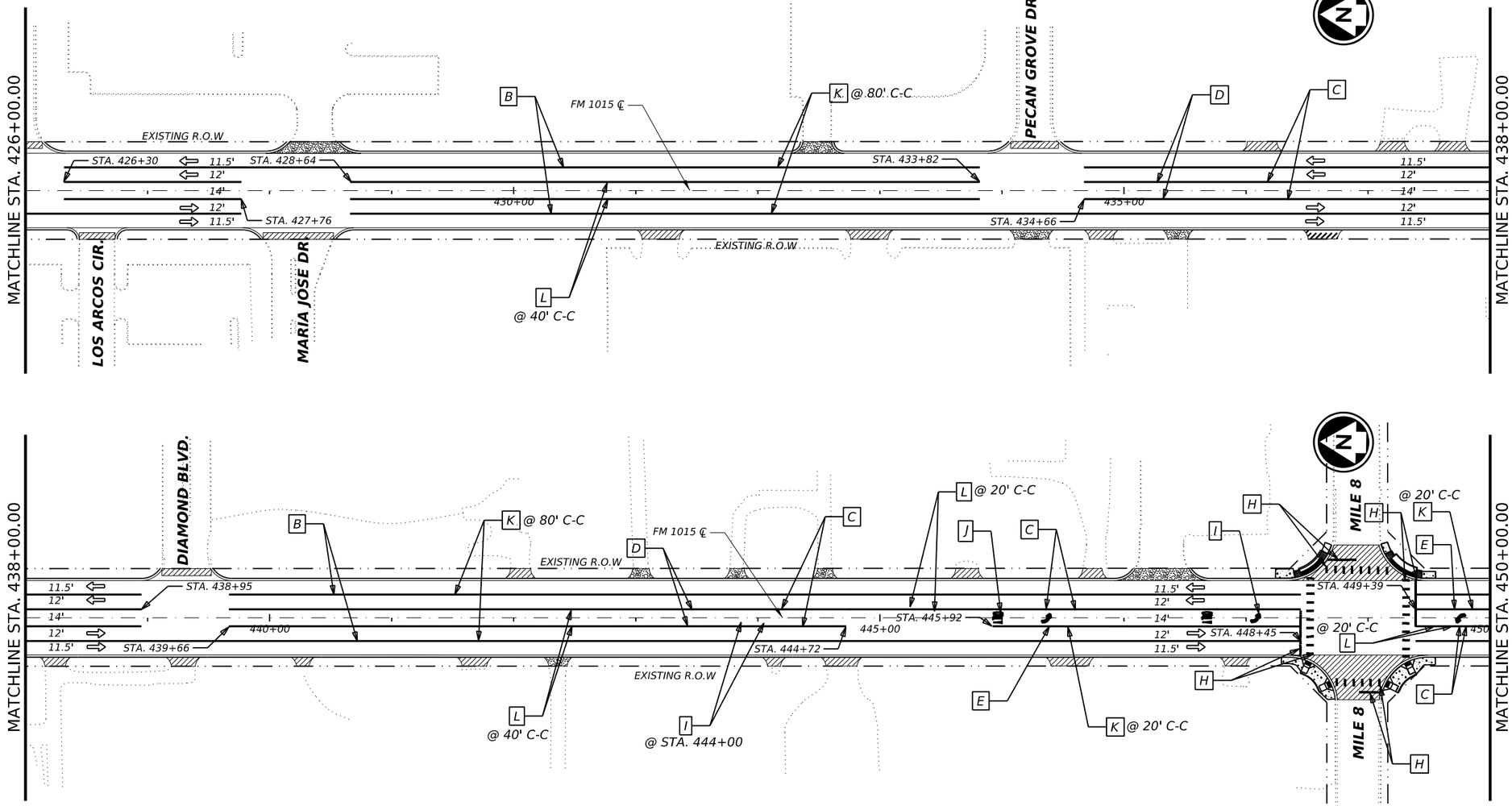
FM 1015

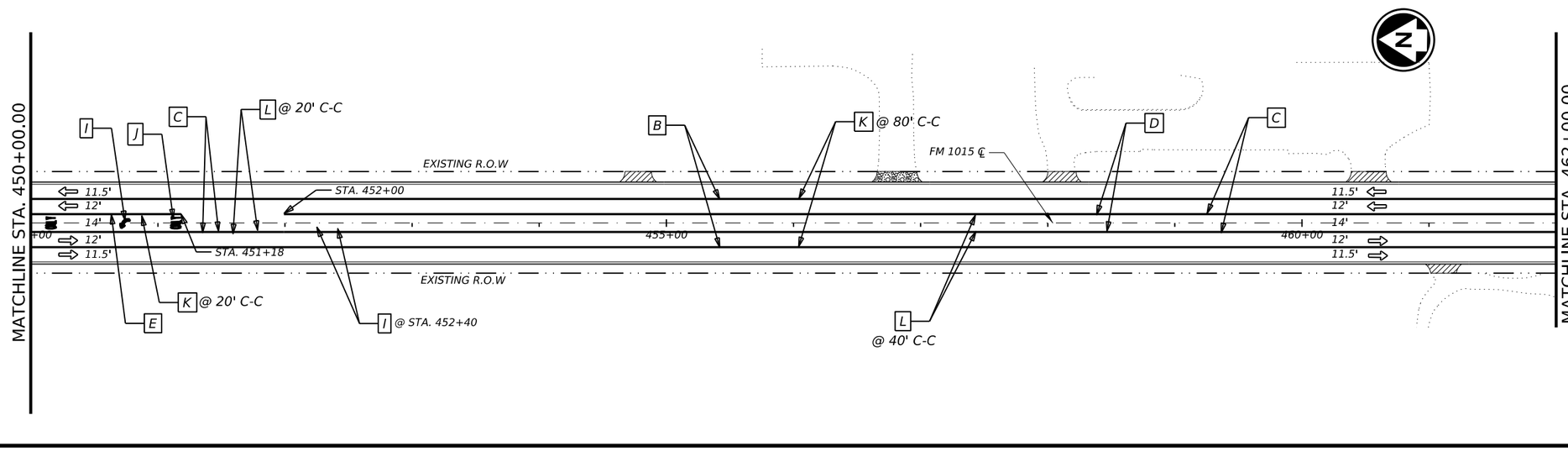
PAVEMENT MARKINGS LAYOUT

SCALE:1"=100' SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		209

DATE: 6/30/2023 10:15:45 AM
FILE: c:\txdot\pw_online\txdot05\jose.cardenas\d0745187\FM1015_PM_01.dgn





LEGEND

- A - 6" SOLID WHITE LINE (TYP.)
- B - 6" BROKEN WHITE LINE (TYP.)
- C - 6" SOLID YELLOW LINE (TYP.)
- D - 6" BROKEN YELLOW LINE (TYP.)
- E - 8" SOLID WHITE LINE (TYP.)
- F - 12" SOLID WHITE (TYP.)
- G - 12" SOLID YELLOW LINE (TYP.)
- H - 24" SOLID WHITE (TYP.)
- I - SINGLE DIRECTIONAL ARROW (TYP.)
- J - WORD (TYP.)
- K - TYPE I-C (TYP.)
- L - TYPE II-A-A (TYP.)
- M - TYPE II-C-R (TYP.)

@ - AT
C-C - CENTER TO CENTER
EOP - EDGE OF PAVEMENT
⇦ - DIRECTION OF TRAFFIC FLOW

NOTES

1. THE PAVEMENT SURFACE SHALL BE FREE OF DELETERIOUS MATERIAL BEFORE APPLICATION OF PERMANENT STRIPING AND PAVEMENT MARKERS. IF THE SURFACE NEEDS TO BE CLEANED, AS DETERMINED BY THE AREA ENGINEER, THE PREPARATION OF PAVEMENT SURFACE SHALL BE SUBSIDIARY TO ITEM 666, 668 AND 672.

2. ALL PERMANENT PAVEMENT MARKINGS SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.

3. SEE APPLICABLE TXDOT PAVEMENT MARKING STANDARDS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

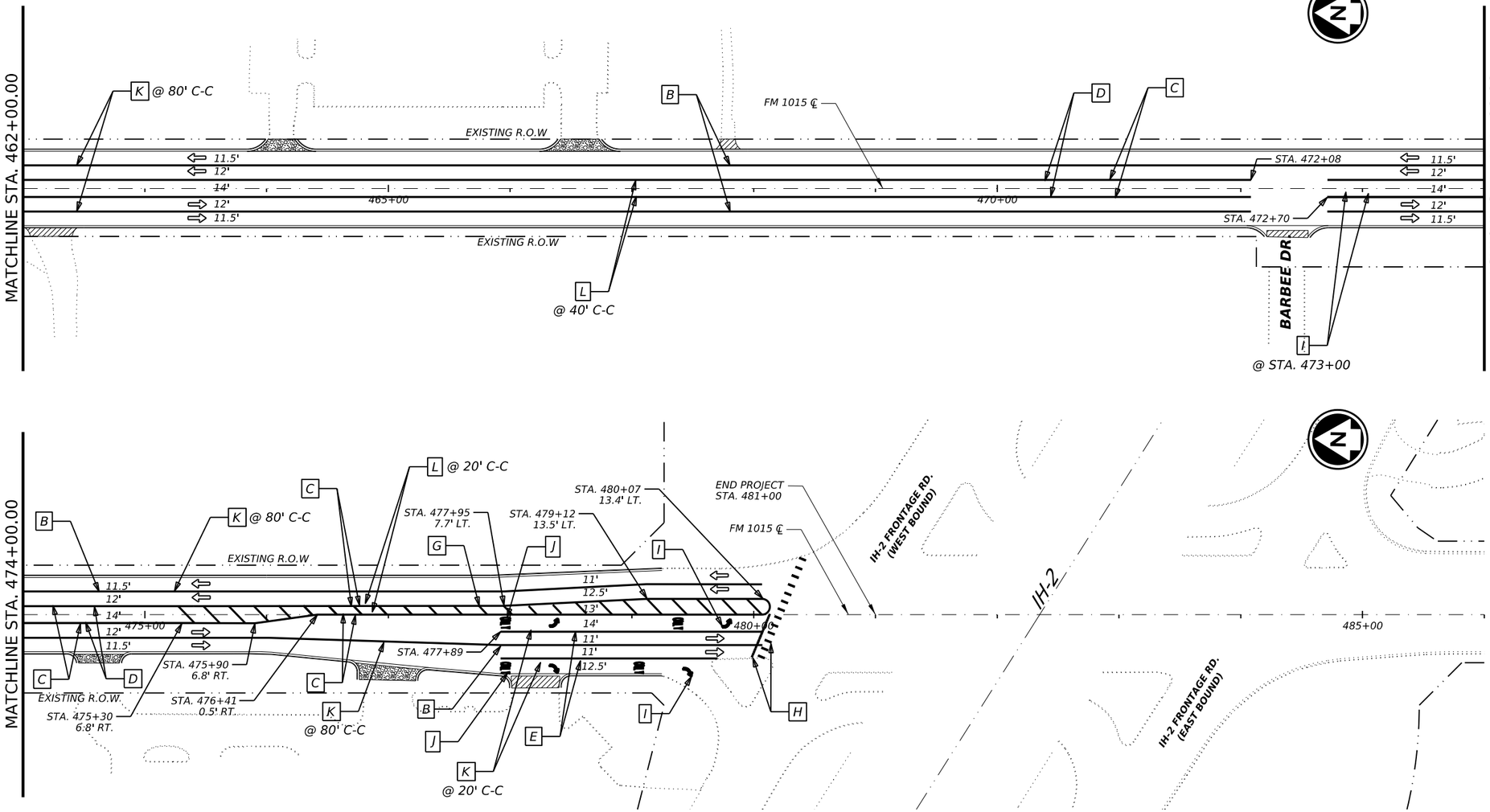
FM 1015

PAVEMENT MARKINGS LAYOUT

SCALE:1"=100' SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		210

DATE: 6/30/2023 10:16:14 AM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0745187\FM1015_PM_02.dgn



LEGEND

- A - 6" SOLID WHITE LINE (TYP.)
- B - 6" BROKEN WHITE LINE (TYP.)
- C - 6" SOLID YELLOW LINE (TYP.)
- D - 6" BROKEN YELLOW LINE (TYP.)
- E - 8" SOLID WHITE LINE (TYP.)
- F - 12" SOLID WHITE (TYP.)
- G - 12" SOLID YELLOW LINE (TYP.)
- H - 24" SOLID WHITE (TYP.)
- I - SINGLE DIRECTIONAL ARROW (TYP.)
- J - WORD (TYP.)
- K - TYPE I-C (TYP.)
- L - TYPE II-A-A (TYP.)
- M - TYPE II-C-R (TYP.)

@ - AT
C-C - CENTER TO CENTER
EOP - EDGE OF PAVEMENT
⇦ - DIRECTION OF TRAFFIC FLOW

NOTES

1. THE PAVEMENT SURFACE SHALL BE FREE OF DELETERIOUS MATERIAL BEFORE APPLICATION OF PERMANENT STRIPING AND PAVEMENT MARKERS. IF THE SURFACE NEEDS TO BE CLEANED, AS DETERMINED BY THE AREA ENGINEER, THE PREPARATION OF PAVEMENT SURFACE SHALL BE SUBSIDIARY TO ITEM 666, 668 AND 672.

2. ALL PERMANENT PAVEMENT MARKINGS SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.

3. SEE APPLICABLE TXDOT PAVEMENT MARKING STANDARDS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

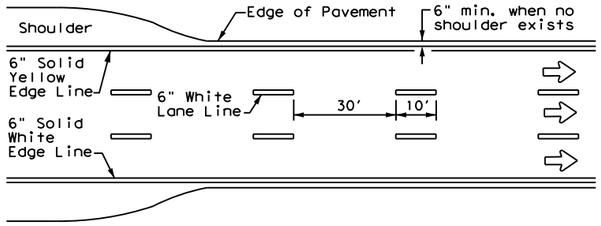
FM 1015

PAVEMENT MARKINGS LAYOUT

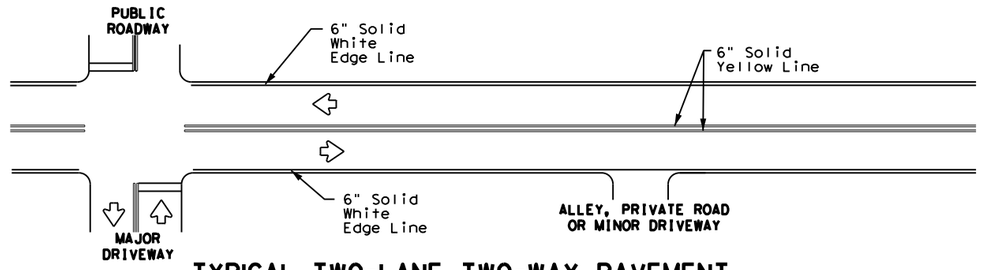
SCALE:1"=100' SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		211

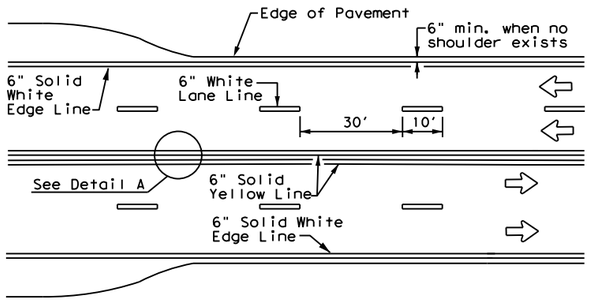
DATE: 6/30/2023 10:16:37 AM
FILE: c:\txdot\pw online\txdot5\jose.cardenas\d0745187\FM1015 PM 03.dgn

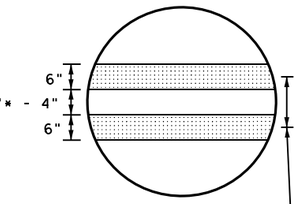


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS





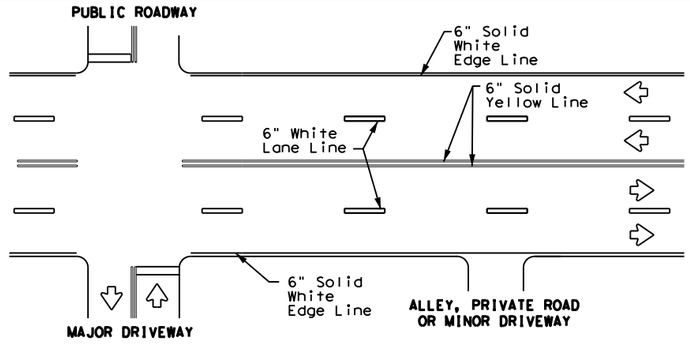
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

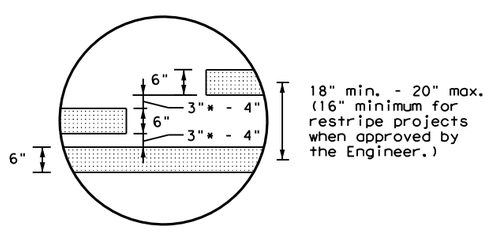
* 2" minimum for restripe projects when approved by the Engineer.

** 8" minimum for restripe projects when approved by the Engineer.



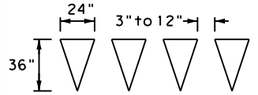
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



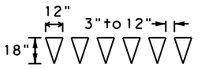
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

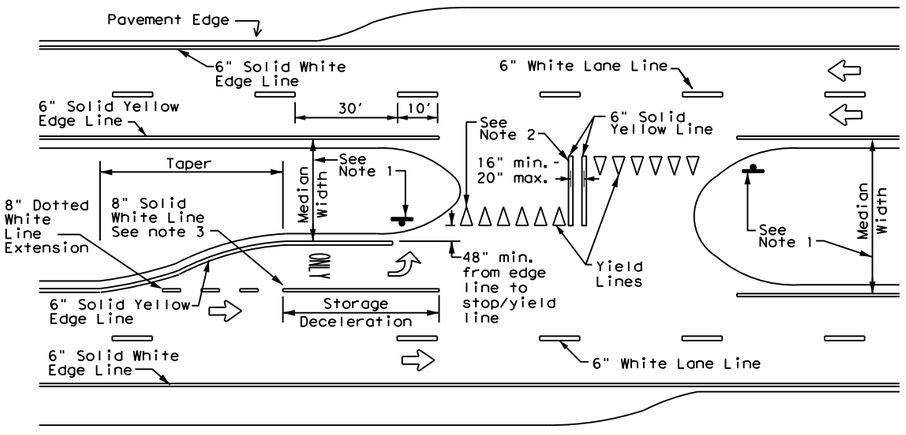


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

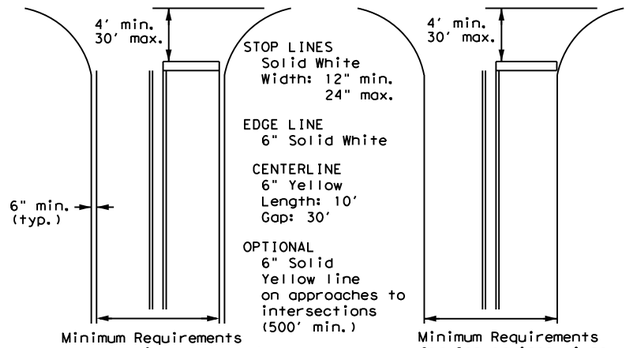
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

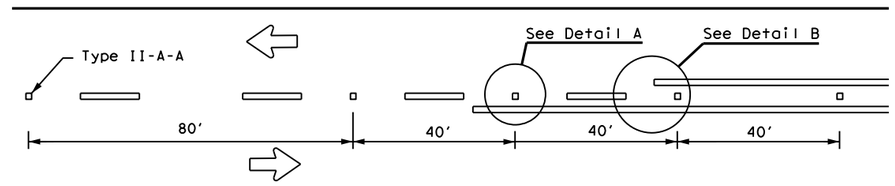
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	1228	03	050	FM 1015
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	PHR	HIDALGO		212

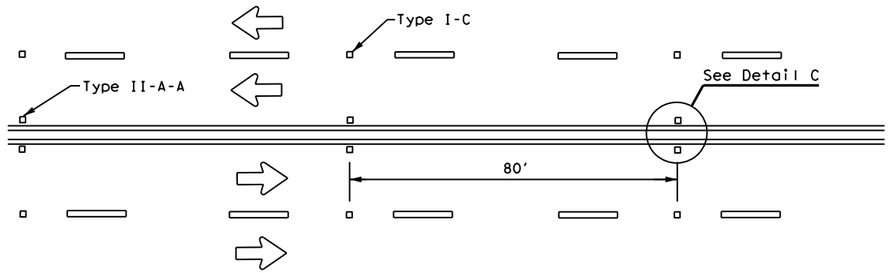
22A

DATE: 6/12/2023 3:34:44 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\pm1-22.dgn

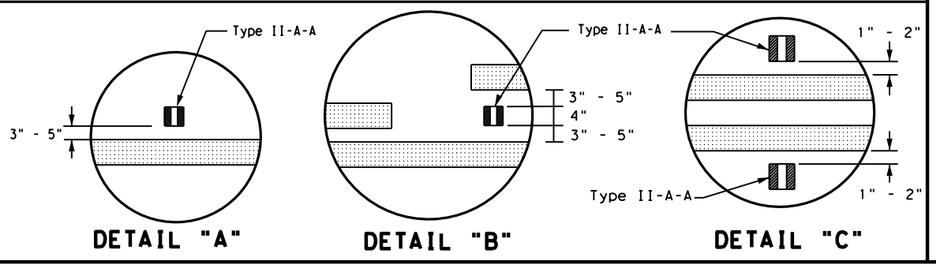
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

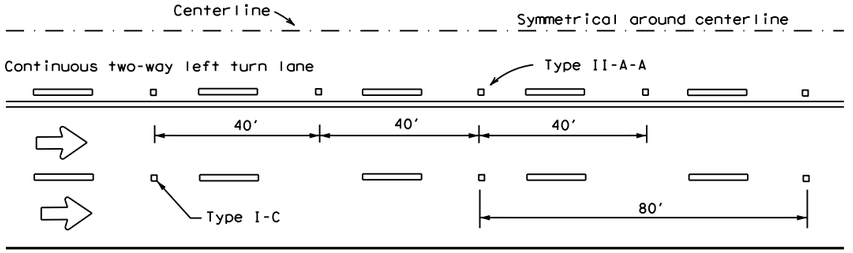


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

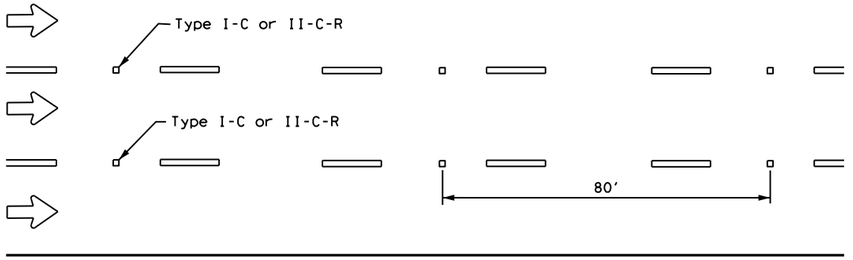


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



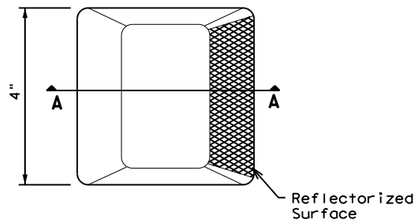
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

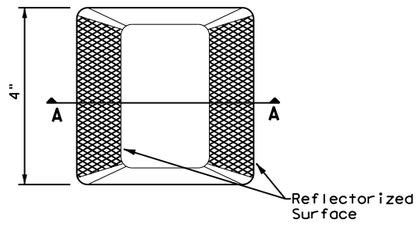
See Note 3.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

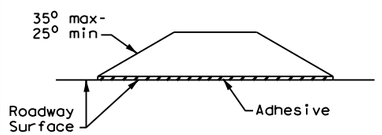
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

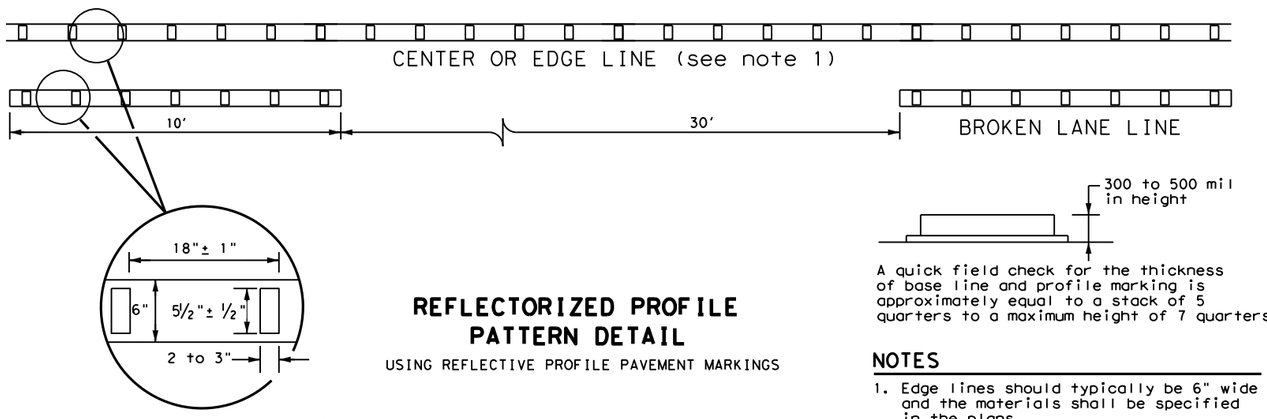


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

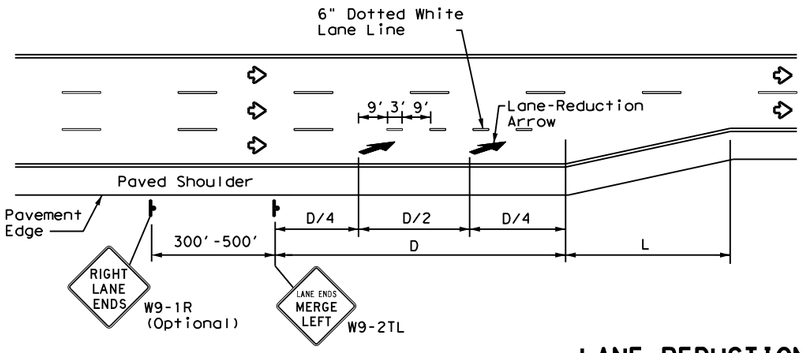
Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		213

22B

DATE: 6/12/2023 3:34:50 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\pm2-22.dgn

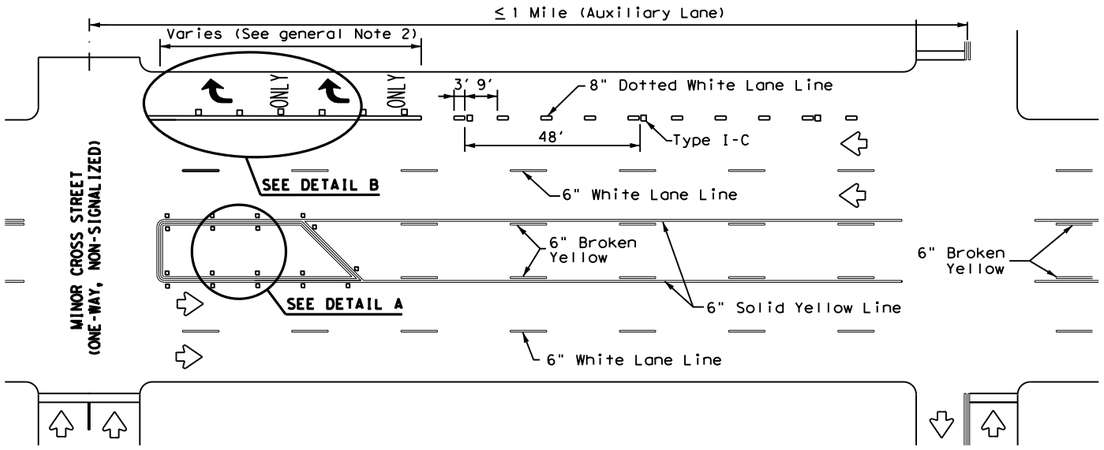


LANE REDUCTION

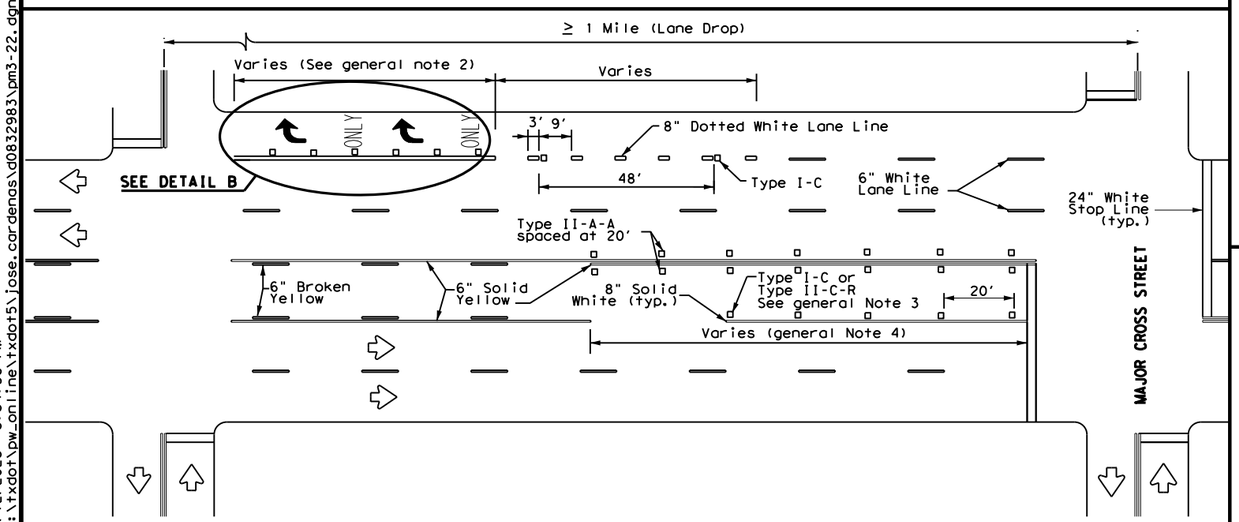
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

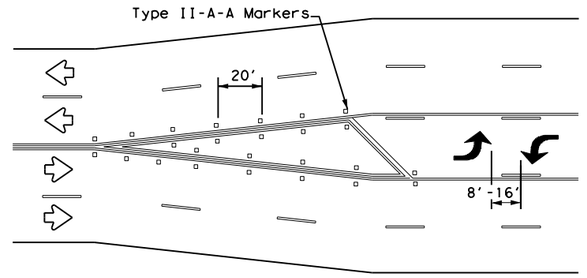
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

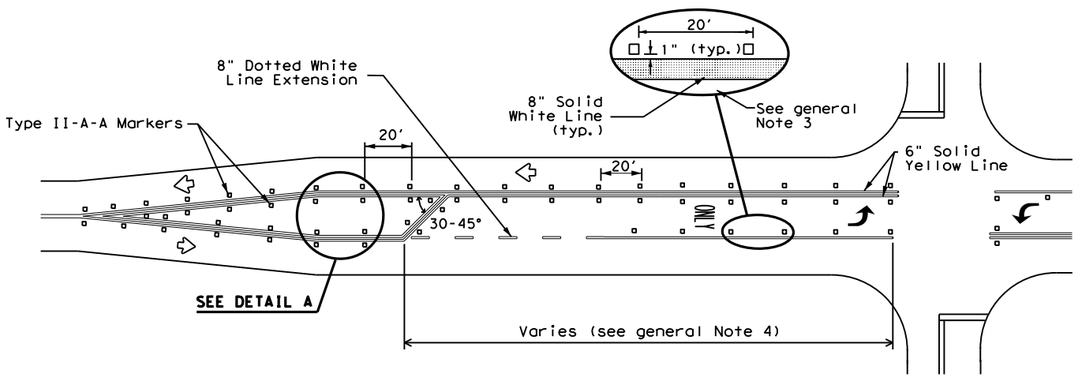
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

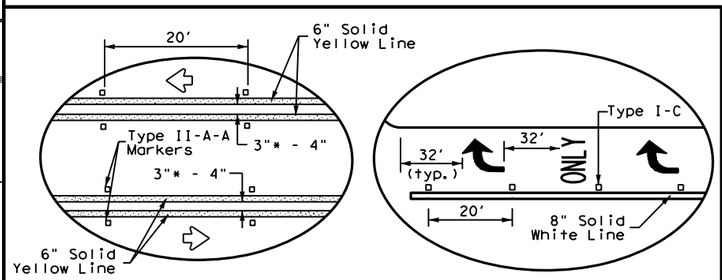
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

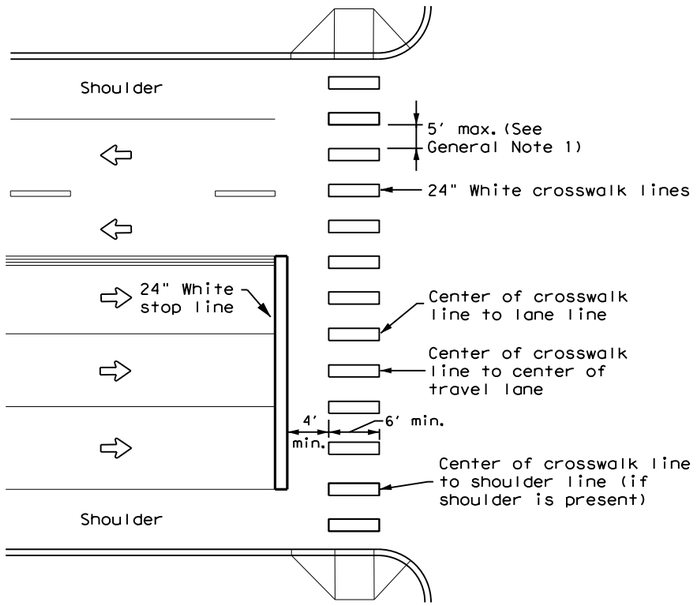
TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		214

22C

DATE: 6/12/2023 3:34:56 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\pm3-22.dgn



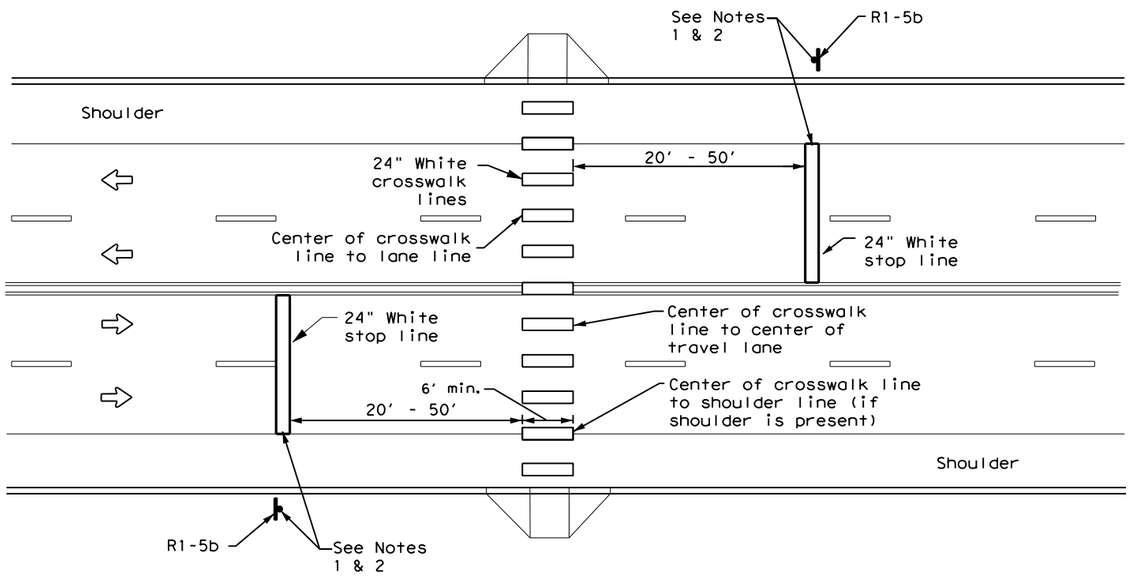
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

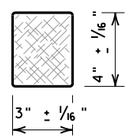
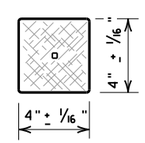
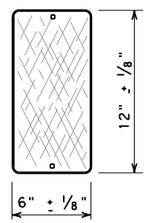
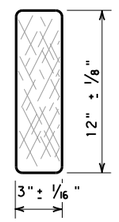
PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
6-20	DIST	COUNTY		SHEET NO.
6-22	PHR	HIDALGO		215
12-22				

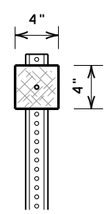
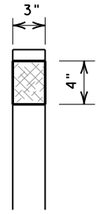
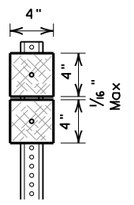
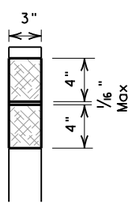
22D

DATE: 6/12/2023 3:35:02 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\pm4-22a.dgn

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

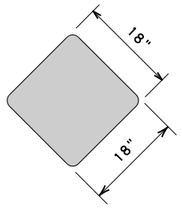
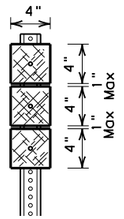
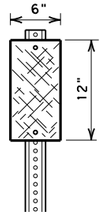
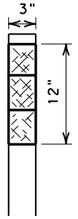
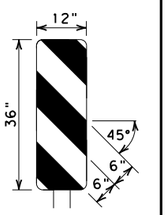
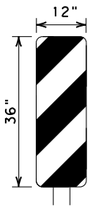
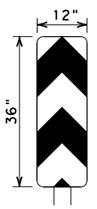
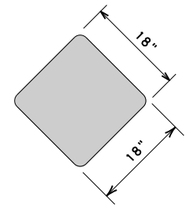
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

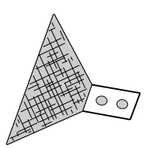
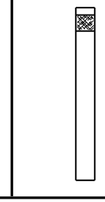
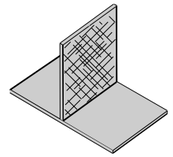
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

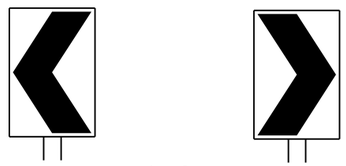
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE

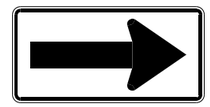


SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	PHR	HIDALGO		216

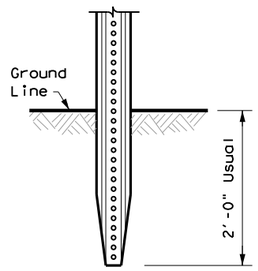
20A

DATE: 6/12/2023 3:35:08 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\dom1-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

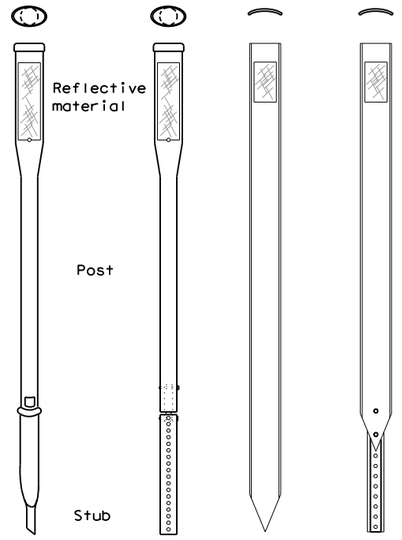


NOTES

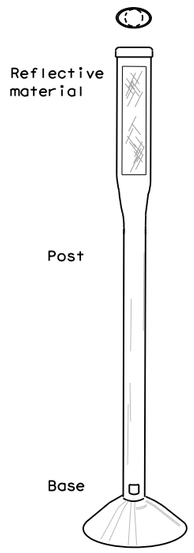
1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

FLEXIBLE POSTS (YFLX, WFLX)

GND



SRF



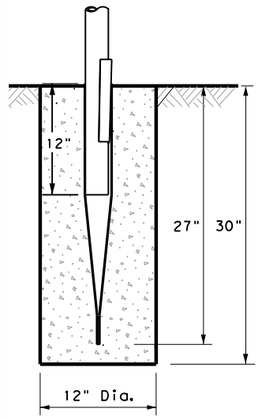
EMBEDDED | SURFACE MOUNT

NOTES

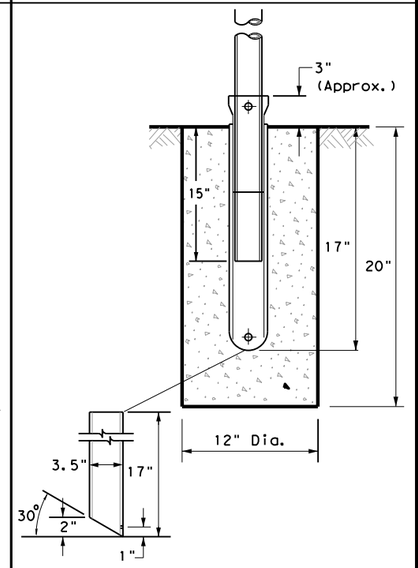
1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

WEDGE ANCHOR SYSTEMS

WAS



WAP



STEEL | PLASTIC

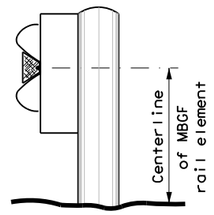
NOTE

1. Install per manufacturer's recommendations.

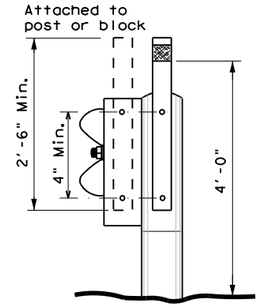
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

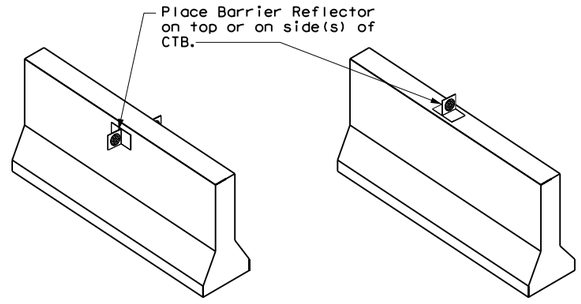
GF1



GF2



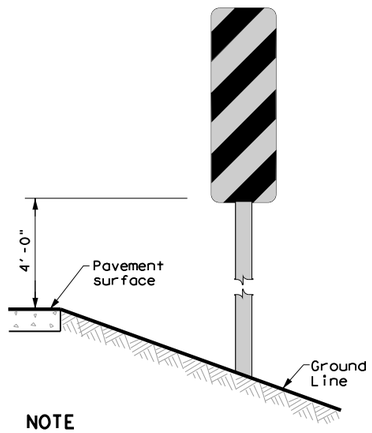
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

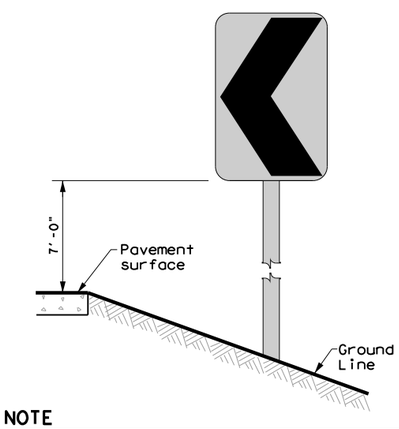
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

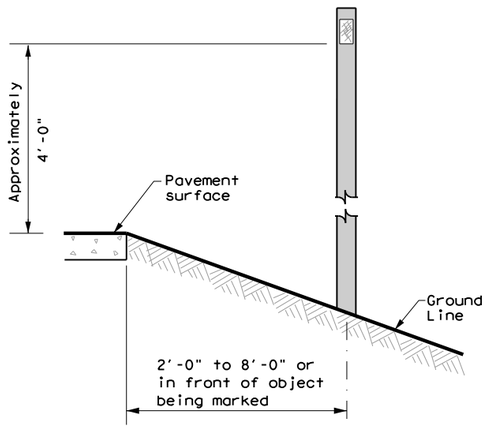
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	PHR	HIDALGO		217

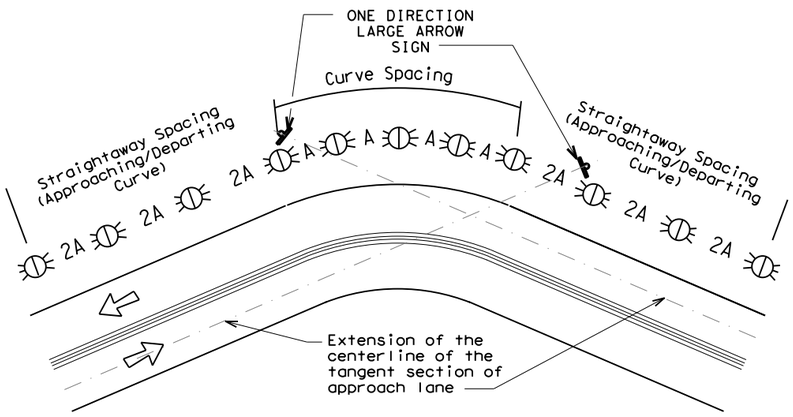
20B

DATE: 6/12/2023 3:35:14 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\dom2-20.dgn

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

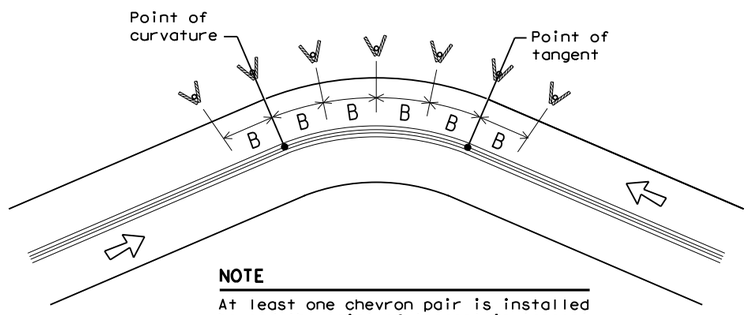
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

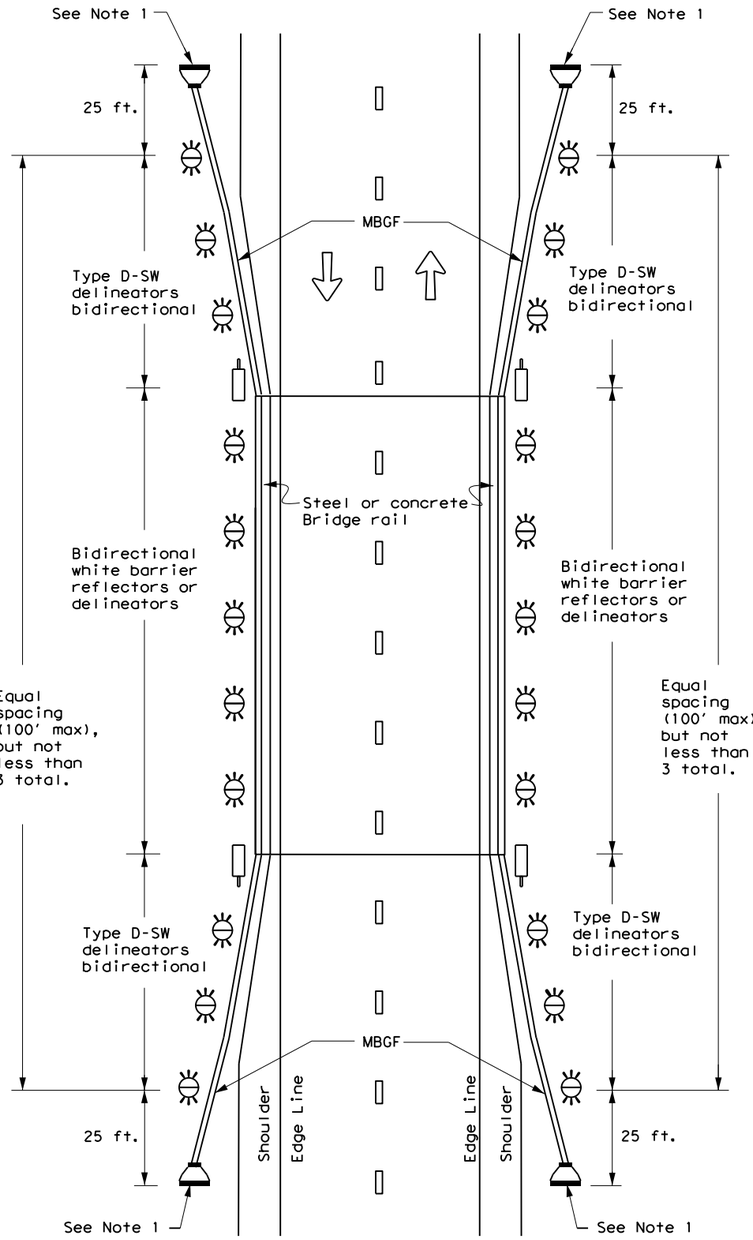
FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	PHR	HIDALGO		218

20C

DATE: 6/12/2023 3:35:24 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\dom3-20.dgn

DATE: 6/12/2023 3:35:30 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\dom5-20.dgn

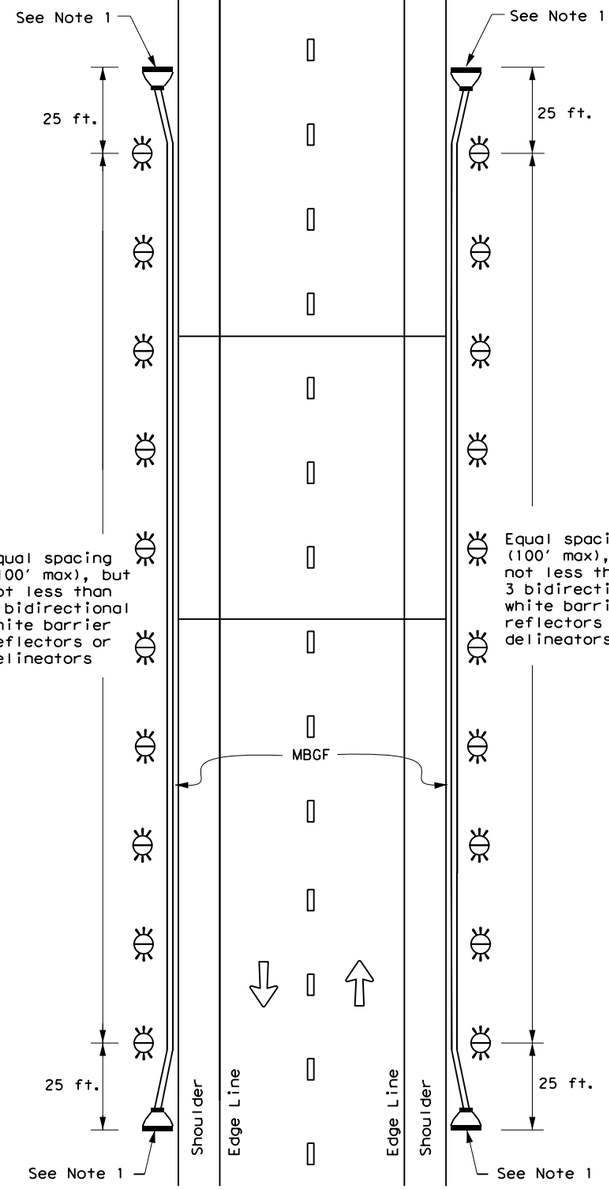
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

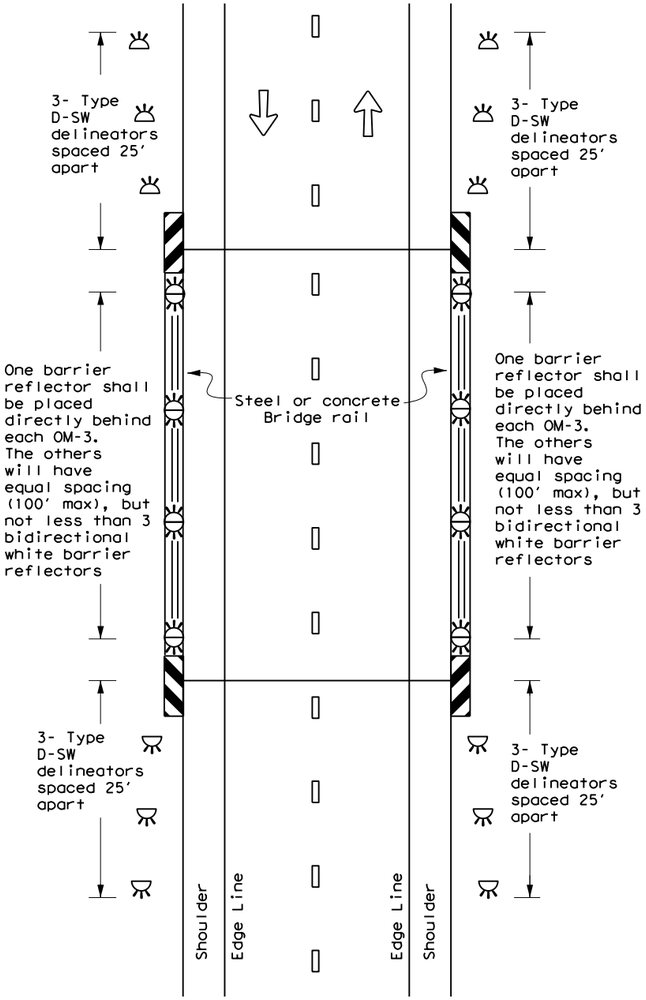
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

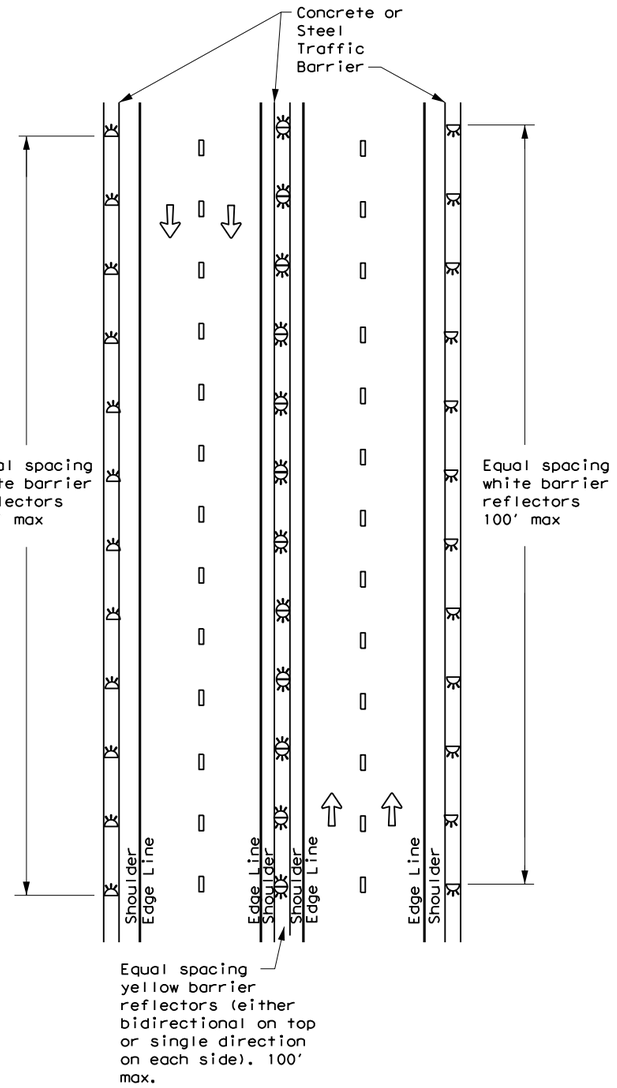
FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
7-20	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		219

20E

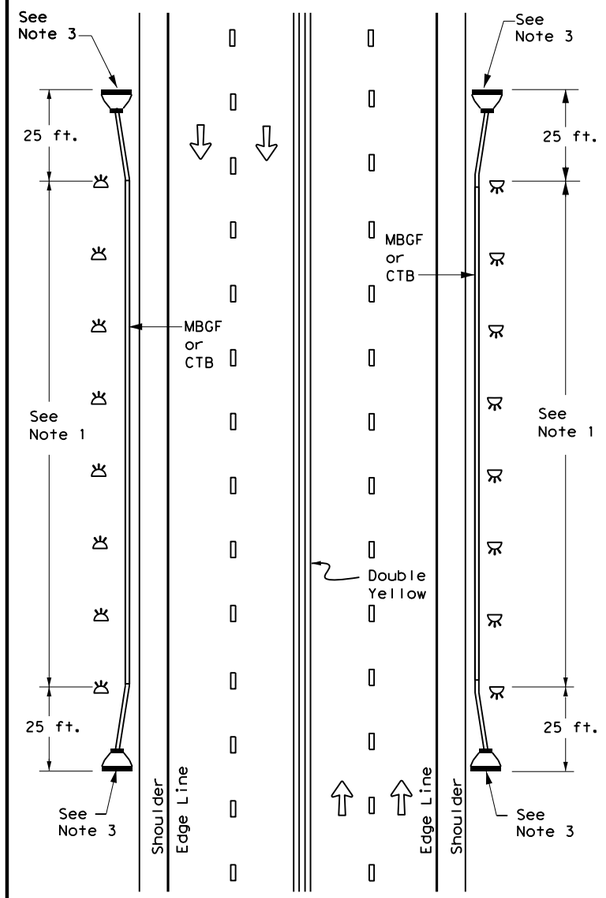
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 6/12/2023 3:35:36 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\dom6-20.dgn

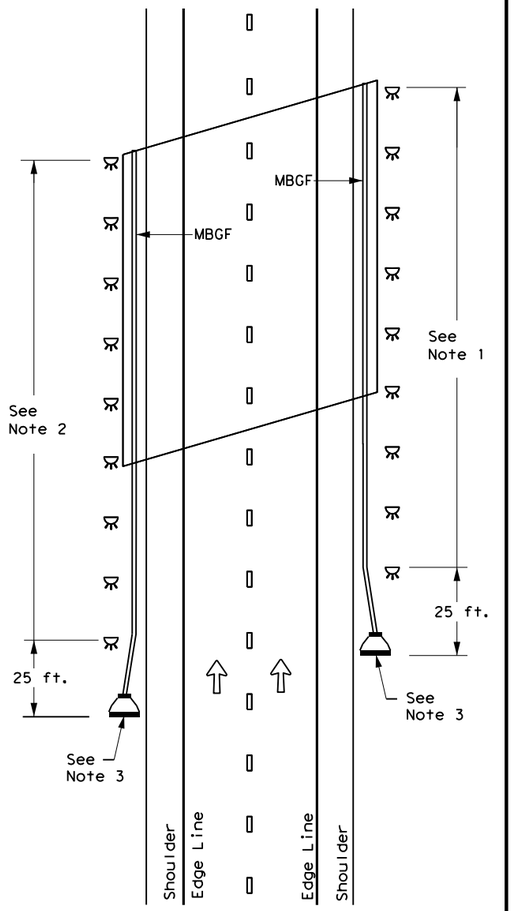
CONTINUOUS CONCRETE OR STEEL BARRIER



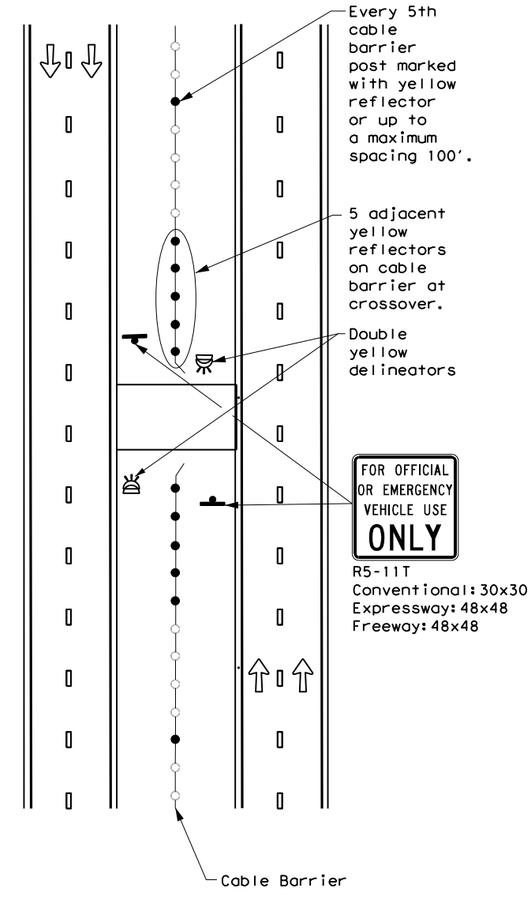
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100' max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100' max.)
2. Equal spacing (100' max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3)in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

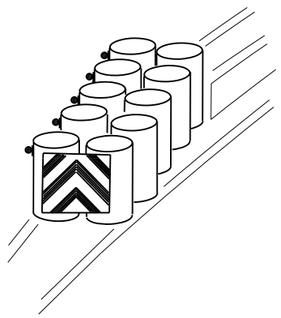
Texas Department of Transportation

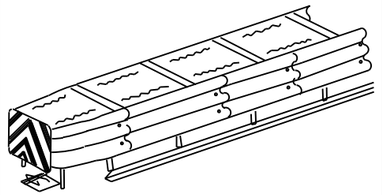
Traffic Safety Division Standard

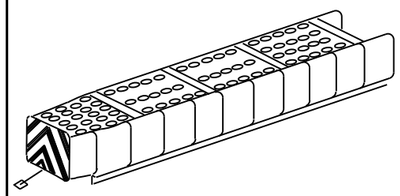
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

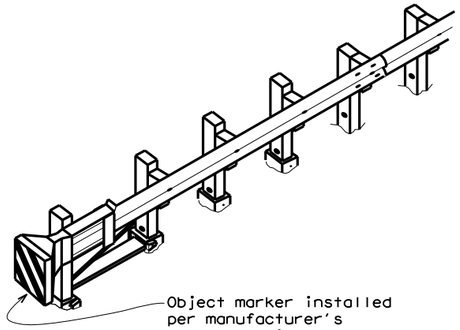
D & OM(6)-20

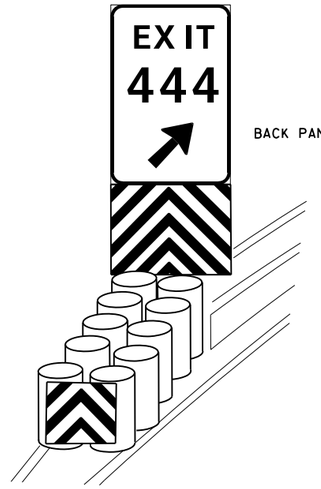
FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
7-20	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		220

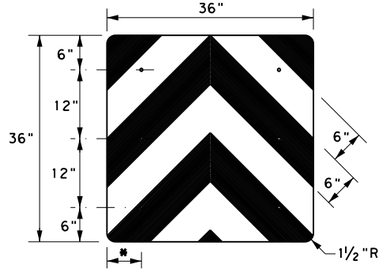


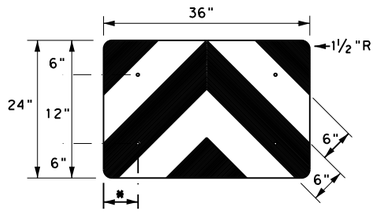




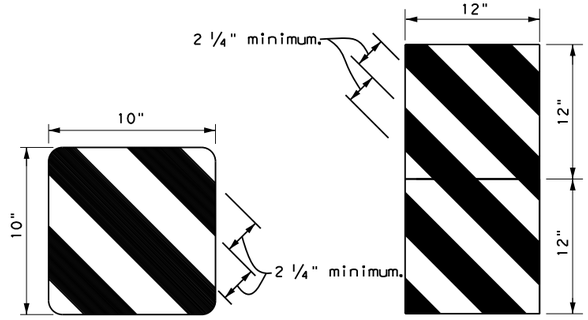




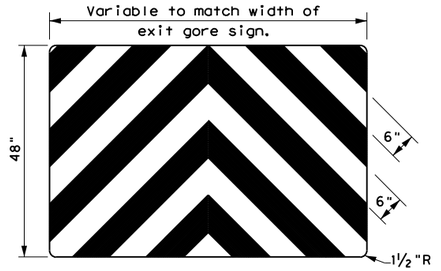


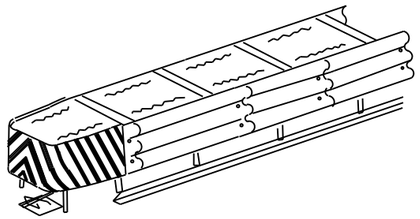


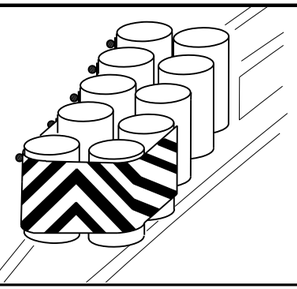
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

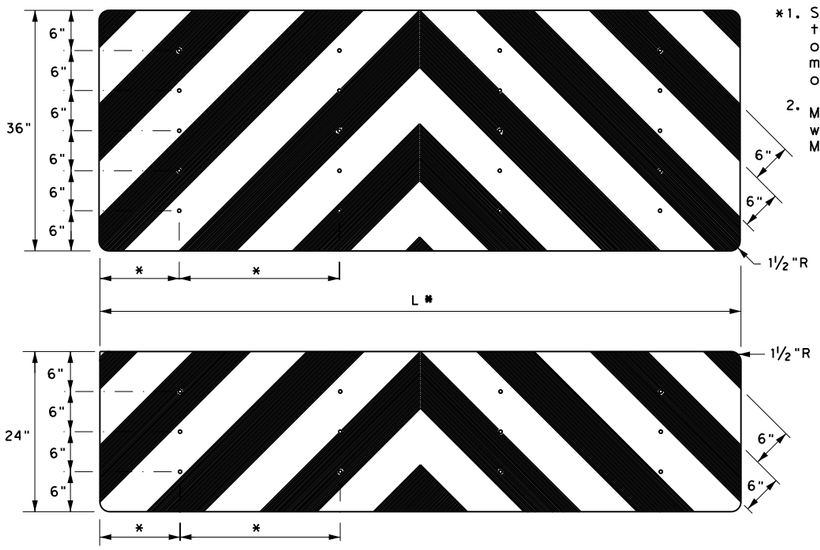


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	PHR	HIDALGO		221
4-98 7-20				

20G

DATE: 6/12/2023 3:35:43 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832983\domvia-20.dgn

During the planning phase of project development, the following Environmental Permits, Issues and Commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities as additional environmental clearances may be required.

I. Clean Water Act, Section 402; Stormwater Pollution Prevention

Action Items Required : ☐ No Action Required

1. ☒ The contractor must implement the SW3P by installing Best Management Practices (BMPs) as indicated in the construction plans and maintained appropriately throughout construction. BMPs must be in place prior to the start of construction. The SW3P may need to be revised as necessary as construction progresses.

2. ☒ For all construction PSL's off the ROW, the contractor must certify compliance with all applicable laws, rules and regulations pertaining to the preservation of cultural resources, natural resources and the environment.

3. ☒ Based on the acreage of impact, select the appropriate box below:

   ☐ This project will disturb less than 1 acre of soil and is not part of a larger common plan of development; therefore, a NOI and TPDES Site Notice are not required for this project.

   or

   ☐ This project will disturb equal to or more than 1 acre of soil but less than 5 acres; therefore a NOI is not required but a TPDES Site Notice is required. The Construction Site Notice (CSN) is required to be posted at the construction site in a publicly accessible location for review by the public, TCEQ, EPA and other Inspectors.

   or

   ☒ This project will disturb equal to or more than 5 acres of soil and will require a NOI and TPDES Site Notice. The NOI and Site Notice are required to be posted at the construction site in a publicly accessible location.

4. ☒ Need to address MS4 requirements (Cameron & Hidalgo Counties only) ☐ MS4 requirements not needed

II. Clean Water Act, Sections 401 and 404 Compliance

Action Items Rquired : ☐ No Action Required

1. ☒ Filling, dredging or excavating in any water bodies, rivers, creeks, streams, wetlands or wet areas is prohibited unless specified in the USACE permit and approved by the Engineer. The contractor shall adhere to all agreements, mitigation plans, and BMPs required by the NWP as regulated by the USACE.

   The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

   ☒ No Permit Required

   ☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

   ☐ Nationwide Permit 14 - PCN Required (1/10th to <1/2 acre, 1/3 in tidal waters)

   ☐ Individual 404 Permit Required

   ☐ Other Nationwide Permit Required: NWP#_____

2. ☒ The contractor is responsible for obtaining new or revised Section 404 permit(s) for Contractor initiated changes in construction methods that change Impacts To Waters Of The U.S., including wetlands. The Contractor will ensure that the water quality of the State will be maintained and not degraded.

3. ☒ Best Management Practices for applicable Section 401 General Conditions:

General Condition 12 - Categories I and II BMPs required

Category I (Erosion Control)

☐ Temporary Vegetation	☐ Interceptor Swale	☒ Mulch Filter Berms and/or Socks
☐ Blankets, Matting	☐ Diversion Dike	☒ Compost Filter Berms and/or Socks
☐ Mulch	☒ Erosion Control Compost	☐ Compost Blankets
☐ Sodding		

Category II (Sedimentation Control)

☒ Silt Fence	☐ Hay (Straw) Bale Dike	☒ Mulch Filter Berms and/or Socks
☐ Rock Berm	☐ Brush Berms	☒ Compost Filter Berms and/or Socks
☐ Triangular Filter Dike	☐ Sediment Basins	☐ Stone Outlet Sediment Traps
☐ Sand Bag Berm	☒ Erosion Control Compost	

General Condition 21 - Category III BMPs required

Category III (Post-Construction TSS Control)

☐ Vegetative Filter Strips	☐ Wet Basins	☐ Mulch Filter Berms and/or Socks
☐ Retention/Irrigation	☐ Grassy Swales	☐ Compost Filter Berms and/or Socks
☐ Extended Detention Basin	☐ Vegetation-Lined Ditches	☐ Sand Filter Systems
☐ Constructed Wetlands	☒ Erosion Control Compost	☐ Sedimentation Chambers

II. Clean Water Act, Sections 401 and 404 Compliance - Continued:

4. ☒ The Contractor's designated and qualified Contractor Responsible Person Environmental (CRPe) will monitor the project site daily to ensue compliance with SW3P and TPDES General Permit TXR 150000. Daily Monitoring Reports shall be provided to TxDOT within 48 hours, in accordance with Item 506.3.1.

5. ☒ Other Project Specific Actions:

   1. Contractor must sweep roadway & remove loss aggregate along the edge of pavement upon completed daily activities.
   2. Contractor shall not place removed aggregate along adjacent grass areas.
   3. The project location and limits are near stream (water) crossings. No PSL's are allowed in the vicinity of the stream.

III. Cultural Resources

Action Items Required : ☐ No Action Required

1. ☒ Refer to the 2014 TxDOT Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges, Item 7.7.1., in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

2. ☐ Other Project Specific Actions:

IV. Vegetation Resources

Action Items Required : ☐ No Action Required

1. ☒ In accordance with the 2014 TxDOT Standard Specifications; Item 164 - Seeding For Erosion Control; provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed by the Engineer for all seeding and replanting of right of way where possible. (Required for Urban Settings)

2. ☐ In accordance with Executive Order 13112 on invasive species and the Executive Memorandum on Beneficial Landscaping, native species of plants shall be used for all seeding and replanting of right of way where possible for rural roadways. (Required for Rural Settings)

3. ☒ Preserve vegetation where possible throughout the project and minimize clearing, grubbing and excavation within stream banks, bed and approach sections.

4. ☐ Other Project Specific Actions:

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

BMP: Best Management Practice	NWP: Nationwide Permit
CGP: Construction General Permit	PCN: Pre-Construction Notification
CRPe: Contractor Responsible Person Environmental	PSL: Project Specific Location
DSHS: Texas Department of State Health Services	SPCC: Spill Prevention Control and Countermeasure
FEMA: Federal Emergency Management Agency	SW3P: Storm Water Pollution Prevention Plan
FHWA: Federal Highway Administration	TCEQ: Texas Commission on Environmental Quality
MOA: Memorandum of Agreement	THC: Texas Historical Commission
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MSAT: Mobile Source Air Toxic	TxDOT: Texas Department of Transportation
MBTA: Migratory Bird Treaty Act	T&E: Threatened and Endangered Species
NOI: Notice of Intent	USACE: U.S. Army Corp of Engineers
NOT: Notice of Termination	USFWS: U.S. Fish and Wildlife Service

Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM 1015
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	
CONTROL	SECTION	JOB	SHEET NO.
1228	03	050	222

Date Printed: X-X-XX

V. Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species and Migratory Birds

Action Items Required : ☐ No Action Required

1. ☒ Under the Migratory Bird Treaty Act (MBTA) of 1918, codified at 16 U.S.C. § 703-712 and as enforced by the USFWS, the proposed construction work will not remove active nests from bridges, trees, ground and other structures during migratory bird nesting season, (February 1st. through October 1st.). If the Contractor needs to perform work within the right of way during nesting season, a qualified Biologist shall conduct a survey to determine if active nests are present. If present, the Contractor shall maintain a buffer zone around the nest(s) as directed by the Biologist. The buffer zone will be protected from clearing and disturbance until such time as the Biologist has determined that the nest(s) is no longer active. Prior to the nesting season, existing bridges and culverts should be treated against migratory bird nesting by utilizing Bird Exclusion Methods. Bird Exclusion Methods should be monitored and maintained throughout the nesting season. Refer to Standard Bird Exclusion Details.

2. ☒ There is the potential for the presence of state-listed species & species of concern in the project area and state law prohibits the taking (incidental or otherwise) of state-listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or share by any means or devices. If any listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

3. ☒ Other Project Specific Actions:

   1. Federal and State Listed Species:
      Black spotted newt (Notophthalmus meridionalis),
      Mexican tree frog (Smilisca baudinii), sheep frog (Hypopachus variolosus),
      South Texas siren (Siren intermedia texana), white-lipped frog (Litoria infrafrenata),
      southern yellow bat (Lasiurus ega), & Texas indigo snake (Drymarchon melanrus erebennus).

   2. No work shall be occur from dusk to dawn.
      Construction & maintenance activities shall occur only during daylight hours.

   3. See EPIC Sheet Supplementals for TPWD BMPs.

VI. Hazardous Materials on Contamination Issues

Action Items Required : ☐ No Action Required

General (applies to all projects):

Comply with the Hazard Communication Act (HCA) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the HCA.

Maintain an adequate supply of on-site spill response materials as indicated in the MSDS. In the event of a spill, take immediate action to mitigate the spill as indicated in the MSDS and in accordance with safe work practices. Contact the TxDOT Pharr District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (identified as not normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of contaminant substances

Any other evidence indicating possible hazardous materials or contamination discovered on site.

1. ☒ If potentially hazardous material and/or contaminated media (i.e.: soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, assure that such materials and contamination are handled according to applicable federal and state regulations, cease work in the immediate area and contact the Engineer immediately.

VI. Hazardous Materials on Contamination Issues - Continued:

2. Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

   ☐ Yes ☒ No

   If "No", then no further action required.
   If "Yes", then TxDOT is responsible for completing an asbestos assessment/inspection.

3. Are the results of the asbestos inspection positive (is asbestos present)?

   ☐ Yes ☒ No

   If "Yes", then TxDOT must retain a Texas Department of State Health Services (DSHS) licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled abatement activities and/or demolition.

   If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

4. ☐ The Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and an Asbestos Consultant in order to minimize construction delays and subsequent claims.

VII. Other Environmental Issues

Action Items Required : ☐ No Action Required

1. ☒ Noise

   Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of equipment mufflers.

2. ☒ Air

   Contractor shall practice common dust control techniques such as surface chemical treatment or watering of unpaved road surfaces and vehicle speed reduction shall be implemented to minimize and prevent airborne dust during construction.

   Contractor should minimize MSAT by utilizing measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increase use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

BMP: Best Management Practice	NWP: Nationwide Permit
CGP: Construction General Permit	PCN: Pre-Construction Notification
CRPe: Contractor Responsible Person Environmental	PSL: Project Specific Location
DSHS: Texas Department of State Health Services	SPCC: Spill Prevention Control and Countermeasure
FEMA: Federal Emergency Management Agency	SW3P: Storm Water Pollution Prevention Plan
FHWA: Federal Highway Administration	TCEQ: Texas Commission on Environmental Quality
MOA: Memorandum of Agreement	THC: Texas Historical Commission
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MSAT: Mobile Source Air Toxic	TxDOT: Texas Department of Transportation
MBTA: Migratory Bird Treaty Act	T&E: Threatened and Endangered Species
NOI: Notice of Intent	USACE: U.S. Army Corp of Engineers
NOT: Notice of Termination	USFWS: U.S. Fish and Wildlife Service

Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

(EPIC)

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM 1015
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	SHEET NO.
CONTROL	SECTION	JOB	
1228	03	050	223

Date Printed: X-X-XX

TPWD BMPs

Under Section 12.0011 of the Texas Parks and Wildlife Code, Texas Parks and Wildlife Department (TPWD) is charged with "providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects" and "providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources."

The purpose of this section is to provide beneficial management practices (BMP) that should be implemented during construction, and maintenance activities statewide for transportation projects with the goal of avoidance and minimization of impacts to natural resources. Statewide Standard BMP pertain to all fish and wildlife species, including state-listed species and other Species of Greatest Conservation Need (SGCN). Implementing the recommendations as outlined below will improve conservation of species and their habitat.

☒ General Design/Construction BMPs

- ☒ Prior to start of construction, information will be provided to personnel of the potential for all state-listed threatened species or other SGCN to occur within the project area and should be advised of relevant rules and regulations to protect plants, fish, and wildlife.
- ☒ Contractor should avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.
- ☐ Contractors should install wildlife exclusion fencing and should examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.
- ☐ Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas.
- ☐ Contractor should use woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
- ☒ Project staging areas, stockpiles, temporary construction easements, and other project related sites should be situated in previously disturbed areas to avoid or minimize impacts to sensitive or unique habitats including intact native vegetation, floodplains, riparian corridors, wetlands, playa lakes, and habitat for wildlife species.
- ☐ When lighting is added, consider wildlife impacts from light pollution and incorporating dark-sky practices into design strategies. Minimize sky glow by focusing light downward, with full cutoff luminaries to avoid light emitting above the horizontal. The minimum amount of night-time lighting needed for safety and security should be used.

☒ Vegetation BMPs

- ☒ Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided. Impacted vegetation should be replaced with in-kind on- site replacement /restoration of native vegetation.
- ☐ It is strongly recommended that trees greater than 12 inches in diameter at breast height (DBH) that are removed be replaced. TPWD 5/32 s experience indicates that for ecologically effective replacement, a ratio of three trees for every one (3:1) lost should be provided to either on-site or off-site. Trees less than 12 inches DBH should be replaced at a 1:1 ratio.
- ☐ The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.
- ☐ The use of seed mix that contains seeds from only regional ecotype native species is recommended

☐ Invasive Species BMPs

- ☐ For all work in water bodies designated as 3/32 infested 5/32 or 3/32 positive 5/32 for invasive zebra (Dreissena polymorpha) OR quagga mussels (Dreissena bugensis) as well as waters downstream of these lakes, all machinery, equipment, vessels, or vehicles coming in contact with such waters should be cleaned prior to leaving the site to remove any mud, plants, organisms, or debris, water drained (if applicable), and dried completely before use in another water body to prevent the potential spread of invasive mussels.
- ☐ Care should be taken to prevent the spread of aquatic and terrestrial invasive plants during construction activities.
- ☐ Care should be taken to avoid the spread of aquatic invasive plants such as giant Salvinia (Salvinia molesta), common salvinia (Salvinia minima), hydrilla (Hydrilla verticillata), water hyacinth (Eichhornia spp.), Eurasian watermilfoil (Myriophyllum spicatum), water lettuce (Pistia stratiotes), and alligatorweed (Alternanthera philoxeroides) from infested water bodies into areas not currently infested. All machinery, equipment, vessels, boat trailers, or vehicles coming in contact with waters containing aquatic invasive plant species should be cleaned prior to leaving the site to remove all aquatic plant material and dried completely before use on another water body to prevent the potential spread of invasive plants. Removed plants should be transported for disposal in a secure manner to prevent dispersal.
- ☐ Only native or non-invasive plants should be planted. Care should be taken to avoid mowing invasive giant reed (Arundo donax), which spreads by fragmentation, and to clean equipment if inadvertently mowed to prevent spread. If using hay bales for sediment control, use locally grown weed-free hay to prevent the spread of invasive species. Leave the hay bales in place and allow them to break down, as this acts as mulch assisting in revegetation.

☐ Stream Crossings BMPs

- ☐ Riparian buffer zones should remain undisturbed.

☐ Dewatering BMPs

- ☐ Impact avoidance measures for aquatic organisms, including all native fish and freshwater mussel species, regardless of state-listing status, should be considered during project planning and construction activities.

☐ Wildlife Crossing BMPs

- ☐ Incorporate wildlife crossings with fencing, particularly in areas that bisect wildlife travel corridors or seasonal movement routes to avoid further habitat fragmentation and minimize wildlife-vehicle interactions.

☐ Rare Plant BMPs

- ☐ Avoid impacts and minimize unavoidable impacts. Plant locations should be protected with temporary barrier fencing and contractors should be instructed to avoid protected areas. Conducting construction outside of the growing season or after a plant has produced mature fruit is the preferred way to avoid/minimize impacts to SGCN plant populations. Staging areas, stockpiles, and other project related sites on TxDOT ROW should not impact SGCN plant populations. After construction begins, minimize herbicide use near SGCN plant populations (if possible, use hand-held spot sprayers, several meters from rare plants, on still or days with little wind).

Pharr District Contact No. 956-702-6100

☐ Rare Plants BMPs (Continued)

- ☐ If there are unintended impacts to SGCN populations, these impacts should be reported to TPWD Transportation Staff.
- ☐ During project period, conduct work during times of the year when plants are dormant and/or conditions minimize disturbance of the habitat.

☒ Bird BMPs

- ☒ Avoid vegetation clearing activities during the general bird nesting season, February 15th to October 1st to minimize adverse impacts to birds.
- ☒ Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
- ☒ Minimize extended human presence near nesting birds during construction and maintenance activities. Protect sensitive habitat areas with temporary barriers or fencing to limit human foot- traffic and off-road vehicle use to alert and discourage contractors from causing any unintentional impacts.
- ☒ Minimize construction noise above ambient levels during general bird nesting season to minimize adverse impacts on birds.
- ☒ Minimize construction lighting during the general bird nesting season by scheduling work activities between dawn and dusk.

☐ Rookeries BMPs

- ☐ In general, nesting dates for herons and egrets range from early February to late August in Texas, depending on the species. Great blue herons (GBHE) (Ardea herodis) are usually the first to nest. When GBHE get disrupted from the nest and abandon nesting, then the other species of herons and egrets may not attempt to nest at the colony that year.
- ☐ If rookeries are encountered, avoid and minimize disturbance during nesting to protect rookery species and their habitat.
- ☐ Vegetation clearing in a primary buffer area of 300 meters (984 feet) from a rookery or heronry periphery should be avoided. Utilizing areas that have already been cleared within this buffer area may be acceptable depending on site-specific characteristics. Additionally, human foot-traffic or machinery use should not occur within this buffer area during the nesting season.
- ☐ Clearing activities or construction using heavy machinery in a secondary buffer area of 1000 meters (3281 feet) from the heronry periphery should be avoided during the breeding season (courting and nesting).

Revised 02/24/2022

List of Abbreviations

BMP: Best Management Practice	MSAT: Mobile Source Air Toxic	TCEQ: Texas Commission on Environmental Quality
CGP: Construction General Permit	MBTA: Migratory Bird Treaty Act	THC: Texas Historical Commission
CRPe: Contractor Responsible Person Environmental	NOI: Notice of Intent	TPDES: Texas Pollutant Discharge Elimination System
DSHS: Texas Department of State Health Services	NOT: Notice of Termination	TPWD: Texas Parks and Wildlife Department
FEMA: Federal Emergency Management Agency	NWP: Nationwide Permit	TxDOT: Texas Department of Transportation
FHWA: Federal Highway Administration	PCN: Pre-Construction Notification	T&E: Threatened and Endangered Species
MOA: Memorandum of Agreement	PSL: Project Specific Location	USACE: U.S. Army Corp of Engineers
MOU: Memorandum of Understanding	SPCC: Spill Prevention Control and Countermeasure	USFWS: U.S. Fish and Wildlife Service
MS4: Municipal Separate Stormwater Sewer System	SW3P: Storm Water Pollution Prevention Plan	

Texas Department of Transportation

PHARR DISTRICT

EPIC SHEET SUPPLEMENTALS

TPWD BMPs

SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM 1015
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	SHEET NO.
CONTROL	SECTION	JOB	
1228	03	050	224

Date Printed: X-X-XX

☐ Fish BMPs

- ☐ The following Fish BMP apply to projects for all fish species in waters of the state to minimize impacts to water quality and aquatic passage from transportation projects.
- ☐ For projects in waters of the state and work is adjacent to water: follow Water Quality and Stream Crossing BMPs.
- ☐ For projects in waters of the state and work is in the water: follow Water Quality, Stream Crossing, and Dewatering BMP.

☐ Aquatic Invertebrate BMPs

- ☐ For projects within the range of a SGCN or state-listed species and work is adjacent to water: Water Quality and Stream Crossing BMP
- ☐ For projects within the range of a SGCN or state-listed species and work is in the water: Water Quality, Stream Crossing, and Dewatering BMP.
- ☐ For spring-seep associated caddisflies (Cheumatopsyche morsei, Chimarra holzenthali, and Hydroptila ouachita): Avoid or minimize impacts to the natural riparian buffer along stream channel including native shrubs and trees.

☐ Crayfish BMP

- ☐ For projects within the range of a SGCN or state-listed species and work is adjacent to water: Water Quality and Stream Crossing BMP.
- ☐ For projects within the range of a SGCN or state-listed species and work is in the water: Water Quality, Stream Crossing, and Dewatering BMP.
- ☐ Avoid or minimize impacts to the natural riparian buffer that provides terrestrial and aquatic plant matter for the diet of most crayfish species.

☐ Freshwater Mussel BMP

- ☐ In addition to Water Quality and Stream Crossing BMP, follow the most recent, $^{7}/_{32}$ TPWD$^{9}/_{32}$ TxDOT Annual Work Plan for Pre-Construction Surveys, Aquatic Resources Relocations, and Other Best Management Practices to Avoid, Minimize, and Mitigate Impacts to Freshwater Resources.$^{9}/_{32}$
- ☐ When work is adjacent to the water: Water Quality BMP implemented as part of the Texas Commission on Environmental Quality (TCEQ) Stormwater Pollution Prevention Plan (SWPPP) for a construction general permit or any conditions of the 401 Water Quality Certification for the project will be implemented.

☒ Insect Pollinator BMP

- ☐ Deep soil disturbances, such as, tilling or deep disking in areas that host aggregations of ground- nesting bees should be avoided. Tilling and disking also may promote the invasion or germination of non-native plants. Different species of native ground-nesting bees prefer different soil conditions, although research suggests that many ground nesting bees prefer sandy, loamy sand or sandy loam soils. In areas with these soil types consider leaving open patches of soil.
- ☐ Allow dead trees to stand (so long as they do not pose a risk to property or people) and protect shrubs and herbaceous plants with pithy or hollow stems (e.g., cane fruits, sumac, elderberry), as these provide nesting habitat for tunnel-nesting native bees.
  Retain dead or dying branches whenever it is safe and practical at the edges of the ROW. Wood- boring beetle larvae often fill dead trees and branches with narrow tunnels into which tunnel- nesting bees will establish nests. Additionally, bumble bees may choose to nest in wood piles.
- ☐ Retain rotting logs at edges of the ROW where some bee species may burrow tunnels in which to nest.

☒ Insect Pollinator BMP (Continued)

- ☐ Protect sloped or well-drained ground sites where plants are sparse and direct access to soil is available. These are the areas where ground-nesting bees may dig nests. Turning the soil destroys all ground nests that are present at that depth and hinders the emergence of bees that are nesting deeper in the ground.
- ☒ Protect grassy thickets, or other areas of dense, low cover from mowing or other disturbance. These are the sites where bumble bees might find the nest cavities they need, as well as annual and perennial wildflowers that can provide important food resources.
- ☐ Where available and economical, native plants and seed should be procured from local eco-type providers. Seed mixes should be diverse and include as many ecoregion natives as possible ensuring full season floral resources. Species by Texas ecoregion can be found in the Texas Management Recommendations for Native Insect Pollinators in Texas document: https://tpwd.texas.gov/publications/pwdpubs/media/pwd*bk*w7000*1813.pdf
- ☐ Planting at least three different native flowering plants within each of three blooming periods are recommended (spring, summer, early fall) in high rainfall regions of Texas. In drier regions of the state, a target of three native flowering plants within each of two blooming periods can be used.

☐ Small Mammal BMP

For Coues' rice rat (Oryzomys couesi aquaticus):

- ☐ Minimize impacts to wetland, resaca, oxbow Conversion of property containing cave or cliff features to transportation purposes should be avoided.lake, and marsh habitats
- ☐ Water Quality BMP

☐ Fossorial Mammal BMP

- ☐ When a construction zone is adjacent to active BTPD burrows or pocket gopher mounds, erect barriers to discourage individuals moving through or into the construction area.
- ☐ When seeding or revegetation is planned in an area adjacent to BTPD burrows or pocket gopher mounds, a vegetative barrier should be considered in the planting to discourage dispersal into the ROW.

☒ Bat BMP

- ☒ For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.
- ☒ For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
- ☒ If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
- ☐ Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.

Pharr District Contact No. 956-702-6100

☒ Bat BMP (Continued)

- ☐ If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features.
- ☒ Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) from April 1 through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warms periods (nighttime temperatures = 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.
- ☒ Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
- ☐ Retain mature, large diameter hardwood forest species and native/ornamental palm trees.
- ☒ In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

☒ Aquatic Amphibian and Reptile BMP

For projects within existing right-of-way (ROW) when work is in water or will permanently impact a water feature and potential habitat exists for the target species complete the following:

- ☒ Minimize impacts to wetlands, temporary and permanent open water features, including depressions, and riverine habitats.
- ☐ Maintain the existing hydrologic regime and any connections between wetlands and other aquatic features.
- ☒ Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.
- ☐ Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
- ☒ Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
- ☒ When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and refugia/overwinter sites (e.g., brush and debris piles, crayfish burrows, aquatic logjams, and leaf packs).

Revised 02/24/2022

List of Abbreviations

BMP: Best Management Practice	MSAT: Mobile Source Air Toxic	TCEQ: Texas Commission on Environmental Quality
CGP: Construction General Permit	MBTA: Migratory Bird Treaty Act	THC: Texas Historical Commission
CRPe: Contractor Responsible Person Environmental	NOI: Notice of Intent	TPDES: Texas Pollutant Discharge Elimination System
DSHS: Texas Department of State Health Services	NOT: Notice of Termination	TPWD: Texas Parks and Wildlife Department
FEMA: Federal Emergency Management Agency	NWP: Nationwide Permit	TxDOT: Texas Department of Transportation
FHWA: Federal Highway Administration	PCN: Pre-Construction Notification	T&E: Threatened and Endangered Species
MOA: Memorandum of Agreement	PSL: Project Specific Location	USACE: U.S. Army Corp of Engineers
MOU: Memorandum of Understanding	SPCC: Spill Prevention Control and Countermeasure	USFWS: U.S. Fish and Wildlife Service
MS4: Municipal Separate Stormwater Sewer System	SW3P: Storm Water Pollution Prevention Plan	

Texas Department of Transportation

PHARR DISTRICT

EPIC SHEET SUPPLEMENTALS

TPWD BMPs

SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM 1015
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	SHEET NO.
CONTROL	SECTION	JOB	
1228	03	050	225

Date Printed: X-X-XX

☒ Aquatic Amphibian and Reptile BMP (Continued)

- ☒ If gutters and curbs are part of the roadway design, install gutters that do not include the side box inlet and include sloped (i.e., mountable) curbs to allow small animals to leave roadway. If this modification to the entire curb system is not possible, install sections of sloped curb on either side of the storm water drain for several feet to allow small animals to leave the roadway. Priority areas for these design recommendations are those with nearby wetlands or other aquatic features.

For projects that require acquisition of additional ROW and work within that new ROW is in water or will permanently impact a water feature, implement BMP for projects within existing ROW above plus those below:

- ☐ For sections of roadway adjacent to wetlands or other aquatic features, install wildlife barriers that prevent climbing. Barriers should terminate at culvert openings in order to funnel animals under the road. The barriers should be of the same length as the adjacent feature or 80 feet long in each direction, or whichever is the lesser of the two.
- ☐ For culvert extensions and culvert replacement/installation, incorporate measures to funnel animals toward culverts such as concrete wingwalls and barrier walls with overhangs.
- ☐ When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Biotechnical streambank stabilization methods using live native vegetation, or a combination of vegetative and structural materials should be used.

☒ Terrestrial Amphibian and Reptile BMP

- ☒ For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling
- ☒ Avoid or minimize disturbing or removing cover objects, such as downed trees, rotting stumps, brush piles, and leaf litter. If avoidance or minimization is not practicable, consider removing cover objects prior to the start of the project and replace them at project completion.
- ☐ Examine heavy equipment stored on site before use, particularly after rain events when reptile and amphibian movements occur more often, to ensure use will not harm individuals that might be seeking temporary refuge.
- ☒ Due to increased activity (mating) of reptiles and amphibian during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (March-May) season.
  Also, timing ground disturbing activities before October when reptiles and amphibians become less active and may be using burrows in the project area is also encouraged.
- ☐ If Texas tortoises (Gopherus berlandieri) or box turtles (Terrepene spp.) are present in a project area, they should be removed from the area and relocated between 100 and 200 meters from the project area. After removal of the individuals, the area that will be disturbed during active construction and project specific locations should be fenced off to exclude reentry by turtles, tortoises, and other reptiles. The exclusion fence should be constructed and maintained as follows:
  - The exclusion fence should be constructed with metal flashing or drift fence material.
  - Rolled erosion control mesh material should not be used.
  - The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
  - The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated.

☐ Terrestrial Amphibian and Reptile BMP (Continued)

- ☐ After project is complete, revegetate disturbed areas with an appropriate locally sourced native seed mix. If erosion control blankets or mats will be used, the product should not contain nylon netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.

☒ Black-spotted newt/Mexican Burrowing toad/ Mexican treefrog/ Strecker's chorus frog/White-lipped frog/Woodhouse's toad

- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Terrestrial Amphibian and Reptile BMP
- ☒ Water Quality BMP
- ☒ Vegetation BMP

☒ Sheep Frog

- ☒ Minimize disturbance to burrows or downed woody debris
- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Terrestrial Amphibian and Reptile BMP
- ☒ Water Quality BMP
- ☒ Vegetation BMP

☒ South Texas Siren (Large Form)

- ☒ Minimize impacts to warm, shallow waters with vegetative cover such as ponds and ditches
- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Water Quality BMP

☒ Black-striped snake/ Eastern box turtle/Northern cat-eyed snake/Plateau spot-tailed earless lizard/ Reticulate collared lizard/ Slender glass lizard/ Speckler racer/Tamaulipan spot-tailed earless lizard/ Texas Indigo snake/ Western box turtle/Western hognose snake/Western massasauga

- ☐ Terrestrial Amphibian and Reptile BMP
- ☐ Vegetation BMP

☒ Rio Grande River Cooter

- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Water Quality BMP

☒ Texas Horned Lizard

- ☒ Avoid harvester ant mounds in the selection of Project Specific Locations (PSLs).
- ☒ Terrestrial Amphibian and Reptile BMP
- ☐ Vegetation BMP

☐ Texas Tortoise

- ☐ Utility trenches should be covered overnight or visually inspected before filling to avoid burial of the species
- ☐ Terrestrial Amphibian and Reptile BMP
- ☐ Vegetation BMP

Pharr District Contact No. 956-702-6100

OTHER PERTINENT INFORMATION

☐ Trifold Available

- ☐ Ocelot information
- ☐ Pelican information
- ☐ Ashy dogweed

☐ Stockcards Available

- ☐ Mitigatory Bird Treaty Act
- ☐ Texas Tortoise
- ☐ Harvester Ants and Horn Lizards

Revised 02/24/2022

List of Abbreviations

BMP: Best Management Practice	MSAT: Mobile Source Air Toxic	TCEQ: Texas Commission on Environmental Quality
CGP: Construction General Permit	MBTA: Migratory Bird Treaty Act	THC: Texas Historical Commission
CRPe: Contractor Responsible Person Environmental	NOI: Notice of Intent	TPDES: Texas Pollutant Discharge Elimination System
DSHS: Texas Department of State Health Services	NOT: Notice of Termination	TPWD: Texas Parks and Wildlife Department
FEMA: Federal Emergency Management Agency	NWP: Nationwide Permit	TxDOT: Texas Department of Transportation
FHWA: Federal Highway Administration	PCN: Pre-Construction Notification	T&E: Threatened and Endangered Species
MOA: Memorandum of Agreement	PSL: Project Specific Location	USACE: U.S. Army Corp of Engineers
MOU: Memorandum of Understanding	SPCC: Spill Prevention Control and Countermeasure	USFWS: U.S. Fish and Wildlife Service
MS4: Municipal Separate Stormwater Sewer System	SW3P: Storm Water Pollution Prevention Plan	

Texas Department of Transportation

PHARR DISTRICT

EPIC SHEET SUPPLEMENTALS

TPWD BMPs

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6			FM 1015
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	SHEET NO.
CONTROL	SECTION	JOB	
1228	03	050	226

Date Printed: X-X-XX

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
1228-03-050

1.2 PROJECT LIMITS:
From: *MILE 9 NORTH*

To: *IH-2*

1.3 PROJECT COORDINATES:
BEGIN: (Lat) *26.1849 (N)* ,(Long) *97.9589(W)*

END: (Lat) *26.1612 (N)* ,(Long) *97.9585 (W)*

1.4 TOTAL PROJECT AREA (Acres): *16.9 Acres*

1.5 TOTAL AREA TO BE DISTURBED (Acres): *13.7 Acres*

1.6 NATURE OF CONSTRUCTION ACTIVITY:
REHABILITATION OF EXISTING 5-LANE NON-FREEWAY FACILITY CONSISTING OF GRADING, LIME TREATED SUBGRADE, CEMENT TREATED FLEXIBLE BASE, ASPHALTIC CONCRETE PAVEMENT, CURB & GUTTER, SIDEWALKS, PAVEMENT MARKINGS, SIGNING, AND TRAFFIC SIGNALS

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Hidalgo Sandy Clay Loam, 0 to 1% Slopes	*Well drained, negligible rate of runoff*
Raymondville Clay Loam, 0 to 1% Slopes	*Moderately well drained, medium rate of runoff*

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):
PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

X PSLs determined during preconstruction meeting
☐ PSLs determined during construction
☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

X Mobilization
X Install sediment and erosion controls
X Blade existing topsoil into windrows, prep ROW, clear and grub
X Remove existing pavement
X Grading operations, excavation, and embankment
☐ Excavate and prepare subgrade for proposed pavement widening
☐ Remove existing culverts, safety end treatments (SETs)
☐ Remove existing metal beam guard fence (MBGF), bridge rail
X Install proposed pavement per plans
☐ Install culverts, culvert extensions, SETs
☐ Install mow strip, MBGF, bridge rail
X Place flex base
X Rework slopes, grade ditches
☐ Blade windrowed material back across slopes
X Revegetation of unpaved areas
X Achieve site stabilization and remove sediment and erosion control measures
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

X Sediment laden stormwater from stormwater conveyance over disturbed area
X Fuels, oils, and lubricants from construction vehicles, equipment, and storage
X Solvents, paints, adhesives, etc. from various construction activities
X Transported soils from offsite vehicle tracking
X Construction debris and waste from various construction activities
X Contaminated water from excavation or dewatering pump-out water
X Sanitary waste from onsite restroom facilities
X Trash from various construction activities/receptacles
X Long-term stockpiles of material and waste
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.11 RECEIVING WATERS:
Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
Drainage ditches flowing into Lower Laguna Madre	** Laguna Madre (2491); Impaired for Bacteria, Depressed dissolved oxygen in water*

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

X Development of plans and specifications
X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
X Post Construction Site Notice
X Submit NOI/CSN to local MS4
X Perform SWP3 inspections
X Maintain SWP3 records and update to reflect daily operations
X Complete and submit Notice of Termination to TCEQ
X Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

X Day To Day Operational Control
X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
X Post Construction Site Notice
X Submit NOI/CSN to local MS4
X Maintain schedule of major construction activities
X Install, maintain and modify BMPs
X Complete and submit Notice of Termination to TCEQ
X Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
City of Weslaco, TX (TXR040262)

STATE OF TEXAS
JOSE L CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
21			227
STATE	STATE DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
1228	03	050	FM 1015

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☒ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☒ ☐ Temporary Seeding
- ☐ ☒ Permanent Planting, Sodding or Seeding
- ☒ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☒ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☒ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☒ ☐ Sediment Control Fence
- ☒ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☒ ☐ Sedimentation Basin
  - ☐ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☒ Excess dirt/mud on road removed daily
- ☒ Haul roads dampened for dust control
- ☒ Loaded haul trucks to be covered with tarpaulin
- ☒ Stabilized construction exit
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☒ Chemical Management
- ☒ Concrete and Materials Waste Management
- ☒ Debris and Trash Management
- ☒ Dust Control
- ☒ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

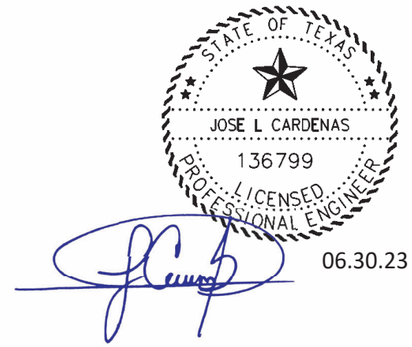
- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.



STORMWATER POLLUTION PREVENTION PLAN (SWP3)

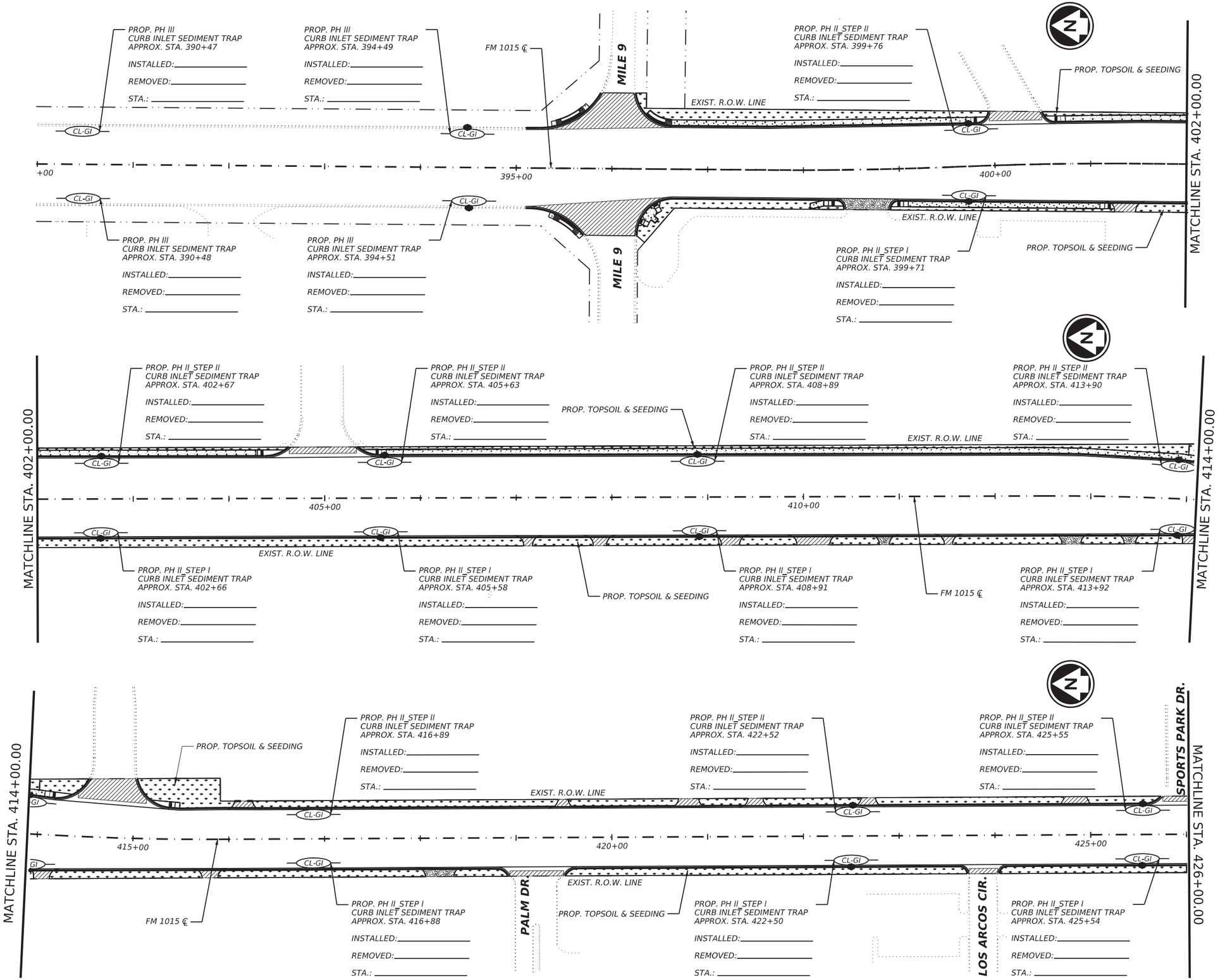
Sheet 2 of 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
21		228

STATE	STATE DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.
1228	03	050	FM 1015



LEGEND

- CL-GI - PROP. BIODEGRADABLE EROSION CONTROL LOG (12") (15 LF/ EA)
- DI-ST - PROP. BIODEGRADABLE EROSION CONTROL LOG (12") (40 LF/ EA)
- PROP. CONSTRUCTION EXIT (TYPE 2)
- PROP. SEEDING AREA
- TRAFFIC DIRECTION FLOW

NOTES

1. THE CONTRACTOR MUST CONTACT THE ENGINEER BEFORE PLACEMENT OF ANY EROSION CONTROL DEVICES.
2. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION.DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
3. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
4. REFER TO THE TEMPORARY EROSION CONTROL STANDARDS FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL STAGE CONSTRUCTION OPERATIONS TO MINIMIZE DISTURBED AREAS. DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME IN 21 DAYS.
6. REFER TO SUMMARY OF ESTIMATED QUANTITIES FOR APPLICATION RATES FOR VEGETATIVE WATERING AND FERTILIZER.
7. CONSTRUCTION EXITS ARE TO BE LOCATED AND INSTALLED AND INSTALLED BASED ON FIELD CONDITIONS AND AS APPROVED BY THE ENGINEER. THE LOCATION OF CONSTRUCTION EXIT SHOULD BE SUFFICIENT FOR CONTINUOUS USE BY THE CONTRACTOR DURING CONSTRUCTION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

SWP3 LAYOUTS

SCALE:1"=100' SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		229

DATE: 6/12/2023 3:39:23 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0746060\FM1015_SW3P_01.dgn

LEGEND

- CL-GI - PROP. BIODEGRADABLE EROSION CONTROL LOG (12") (15 LF/ EA)
- DI-ST - PROP. BIODEGRADABLE EROSION CONTROL LOG (12") (40 LF/ EA)
- PROP. CONSTRUCTION EXIT (TYPE 2)
- PROP. SEEDING AREA
- TRAFFIC DIRECTION FLOW

NOTES

1. THE CONTRACTOR MUST CONTACT THE ENGINEER BEFORE PLACEMENT OF ANY EROSION CONTROL DEVICES.
2. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION.DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
3. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
4. REFER TO THE TEMPORARY EROSION CONTROL STANDARDS FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL STAGE CONSTRUCTION OPERATIONS TO MINIMIZE DISTURBED AREAS. DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME IN 21 DAYS.
6. REFER TO SUMMARY OF ESTIMATED QUANTITIES FOR APPLICATION RATES FOR VEGETATIVE WATERING AND FERTILIZER.
7. CONSTRUCTION EXITS ARE TO BE LOCATED AND INSTALLED AND INSTALLED BASED ON FIELD CONDITIONS AND AS APPROVED BY THE ENGINEER. THE LOCATION OF CONSTRUCTION EXIT SHOULD BE SUFFICIENT FOR CONTINUOUS USE BY THE CONTRACTOR DURING CONSTRUCTION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER
06.30.23

Texas Department of Transportation

FM 1015

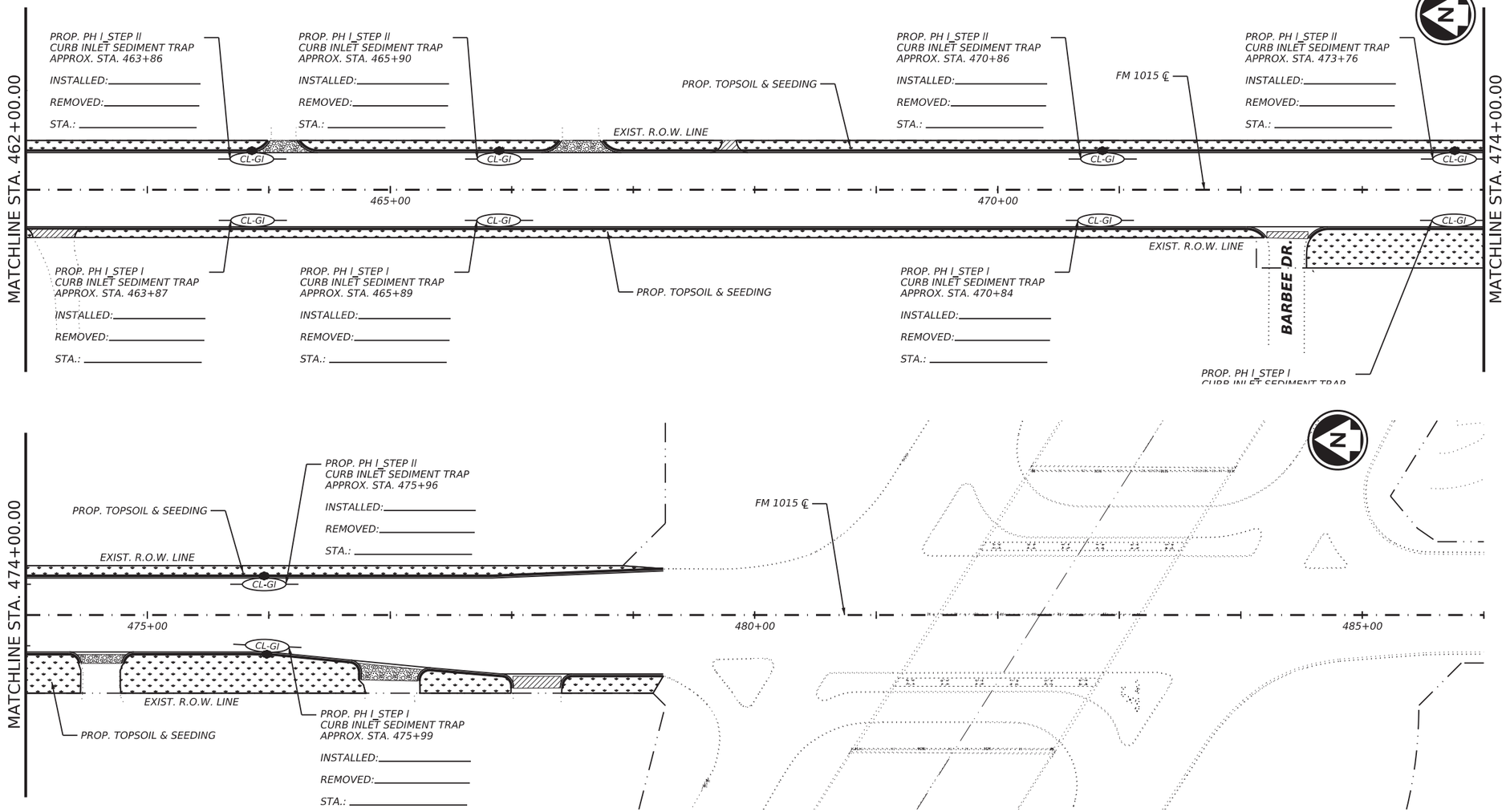
SWP3 LAYOUTS

SCALE:1"=100' SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		230

DATE: 6/12/2023 3:39:31 PM
FILE: c:\txdot\pw_online\txdot15\jose.cardenas\d0746060\FM1015_SW3P_02.dgn

CK DW CK DW



LEGEND

- CL-GI - PROP. BIODEGRADABLE EROSION CONTROL LOG (12") (15 LF/ EA)
- DI-ST - PROP. BIODEGRADABLE EROSION CONTROL LOG (12") (40 LF/ EA)
- PROP. CONSTRUCTION EXIT (TYPE 2)
- PROP. SEEDING AREA
- TRAFFIC DIRECTION FLOW

NOTES

1. THE CONTRACTOR MUST CONTACT THE ENGINEER BEFORE PLACEMENT OF ANY EROSION CONTROL DEVICES.
2. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION.DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
3. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.
4. REFER TO THE TEMPORARY EROSION CONTROL STANDARDS FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL STAGE CONSTRUCTION OPERATIONS TO MINIMIZE DISTURBED AREAS. DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME IN 21 DAYS.
6. REFER TO SUMMARY OF ESTIMATED QUANTITIES FOR APPLICATION RATES FOR VEGETATIVE WATERING AND FERTILIZER.
7. CONSTRUCTION EXITS ARE TO BE LOCATED AND INSTALLED AND INSTALLED BASED ON FIELD CONDITIONS AND AS APPROVED BY THE ENGINEER. THE LOCATION OF CONSTRUCTION EXIT SHOULD BE SUFFICIENT FOR CONTINUOUS USE BY THE CONTRACTOR DURING CONSTRUCTION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

FM 1015

SWP3 LAYOUTS

SCALE:1"=100' SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		231

DATE: 6/12/2023 3:39:37 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0746060\FM1015_SW3P_03.dgn

CK

DW

CK

DW

FM 1015 CONSTRUCTION EXIT INSTALLATION LOG

TRAFFIC CONTROL PLAN PHASE/STEP	STATION	LEFT	RIGHT	DATE INSTALLED	DATE REINSTALLED (IF APPLICABLE)	DATE REMOVED	QUANTITY (SY)
PHASE I STEP I							78
							78
PHASE I STEP II							78
							78
PHASE II STEP I							78
							78
PHASE II STEP II							78
							78
TOTAL							624

NOTES

1. CONTRACTOR AT MINIMUM SHALL INSTALL 1 (ONE) CONSTRUCTION EXIT PER PHASE.

2. FINAL LOCATION OF PROPOSED CONSTRUCTION EXITS WILL BE PER CONTRACTOR'S DISCRETION, BUT SHALL BE IN COMPLIANCE WITH TDPES REQUIREMENTS AND BE APPROVED BY THE ENGINEER PRIOR TO COMMENCING WITH CONSTRUCTION. THE FINAL LOCATION OF THE CONSTRUCTION EXIT SHALL BE SUFFICIENT FOR CONTINUOUS USE BY THE CONTRATOR DURING CONSTRUCTION.

STATE OF TEXAS
JOSE L. CARDENAS
136799
LICENSED
PROFESSIONAL ENGINEER

06.30.23

Texas Department of Transportation

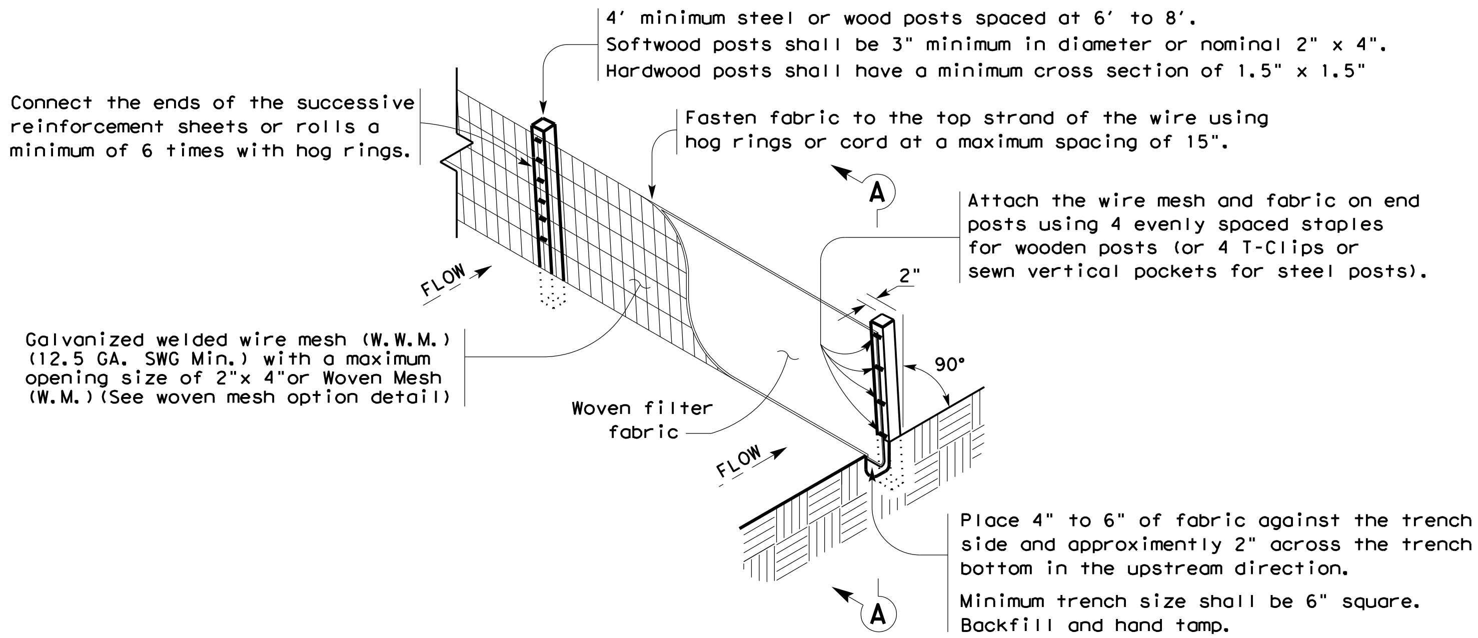
FM 1015

CONSTRUCTION EXIT INSTALLATION LOG

SHEET 1 OF 1

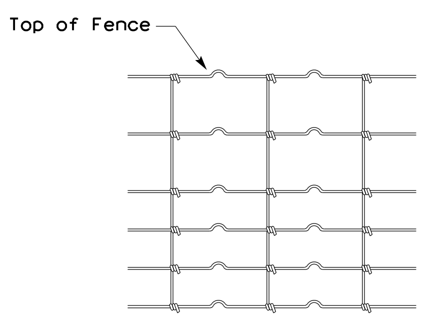
CONT	SECT	JOB	HIGHWAY
1228	03	050	FM 1015
DIST	COUNTY		SHEET NO.
PHR	HIDALGO		232

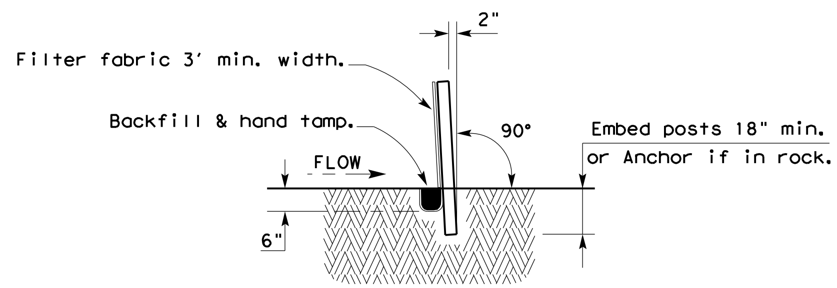
DATE: 6/12/2023 3:39:44 PM
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0681707\FM1015_CONSTRUCTIONEXIT.dgn



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

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 maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

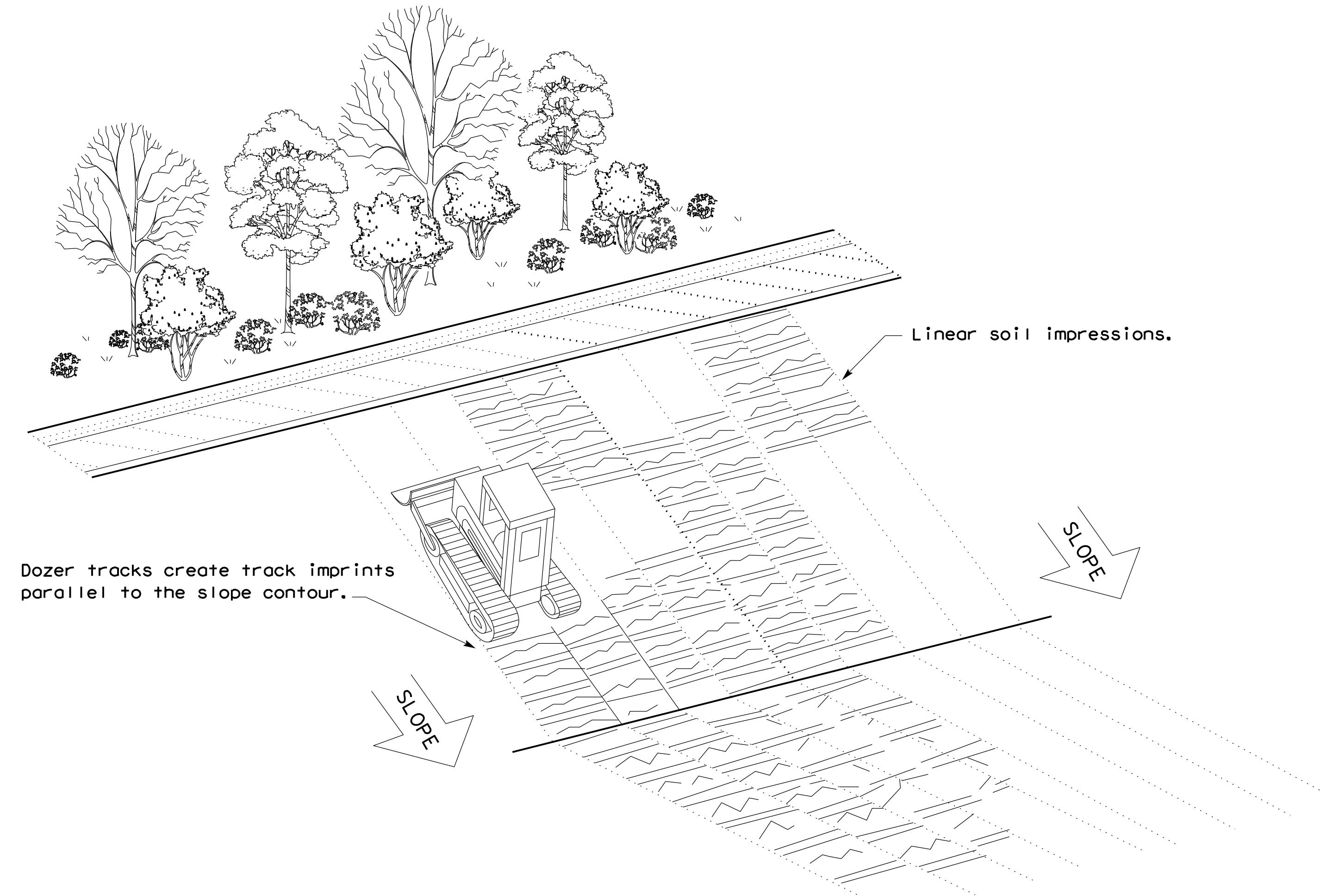
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

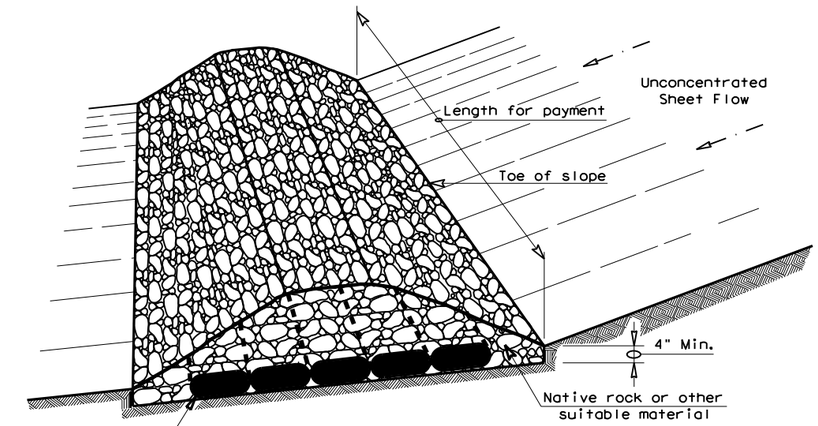
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST		COUNTY	SHEET NO.
	PHR		HIDALGO	233

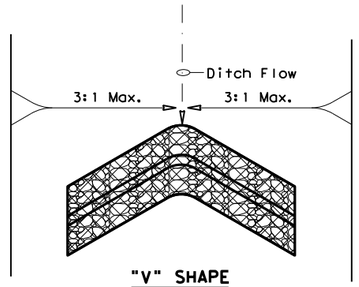
cf1tTxdot\pw_online\txdot5\jose.cardenas\d0832984\EC-1-16.dgn
6/30/2023

DATE: 6/30/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832984\EC-2-16.dgn

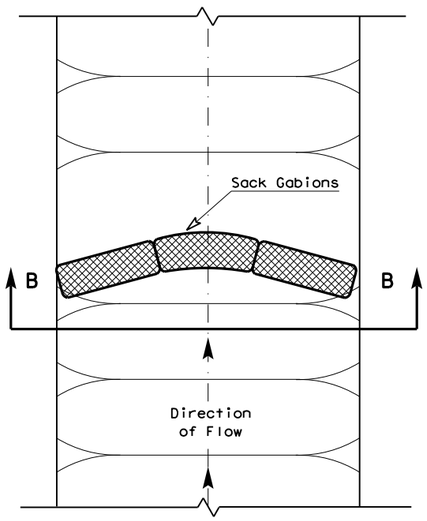


FILTER DAM AT TOE OF SLOPE

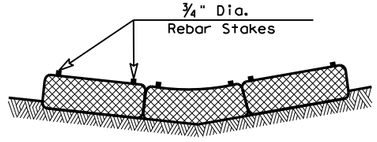
RFD1



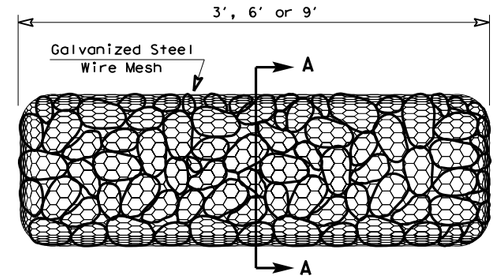
"V" SHAPE PLAN VIEW



PLAN VIEW

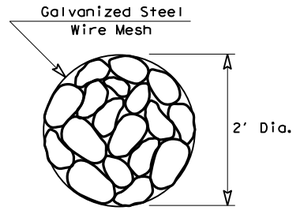


SECTION B-B

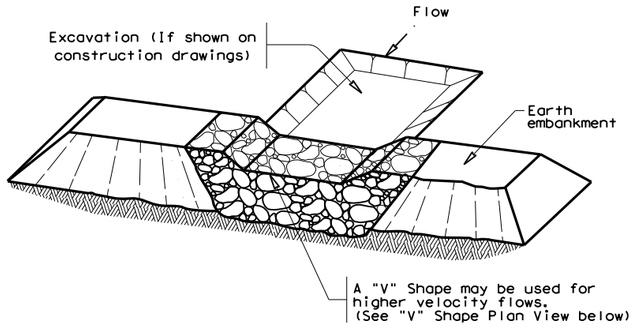


TYPE 4 (SACK GABIONS)

RFD4

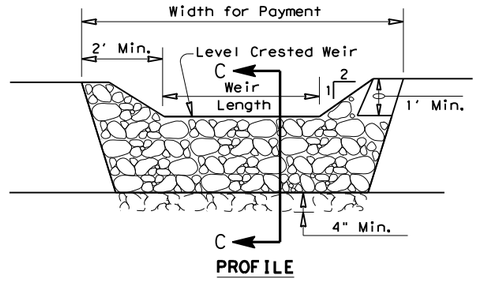


SECTION A-A

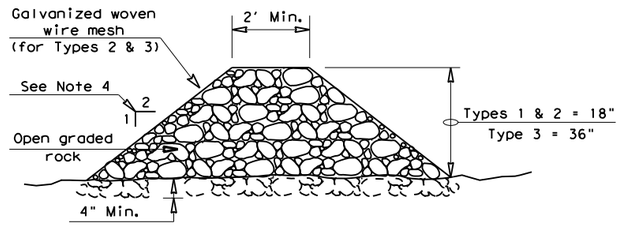


FILTER DAM AT SEDIMENT TRAP

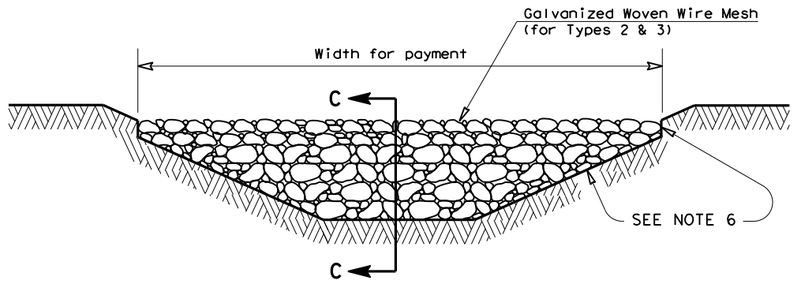
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation — Design Division Standard

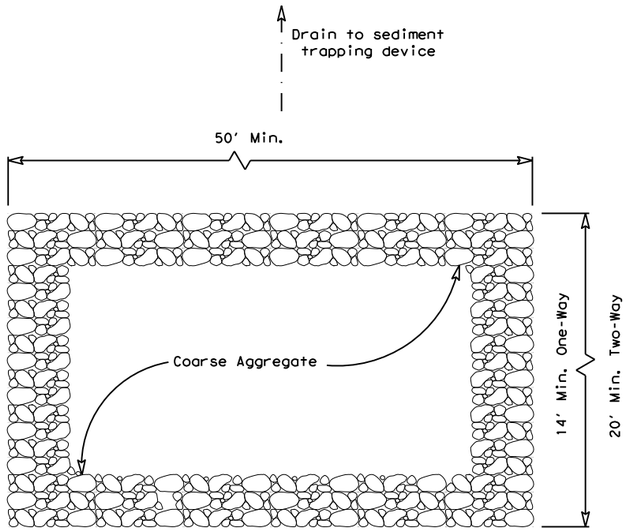
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

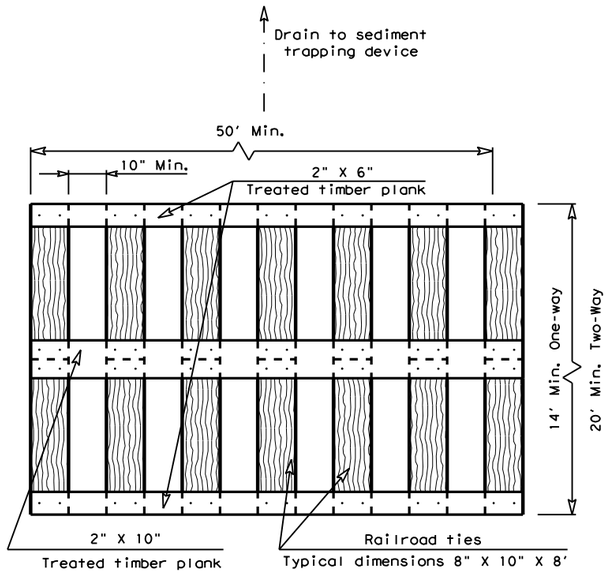
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		234

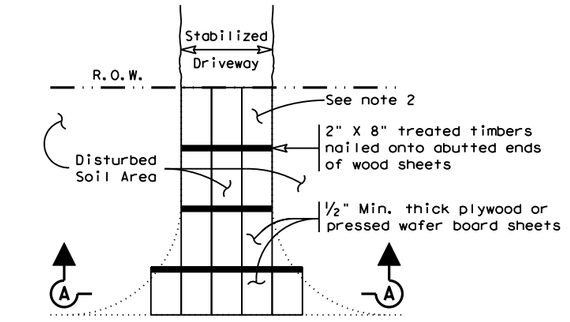
DATE: 6/30/2023
FILE: c:\txdot\DW_online\txdot5\jose.cardenas\d0832984\EC-3-16.dgn



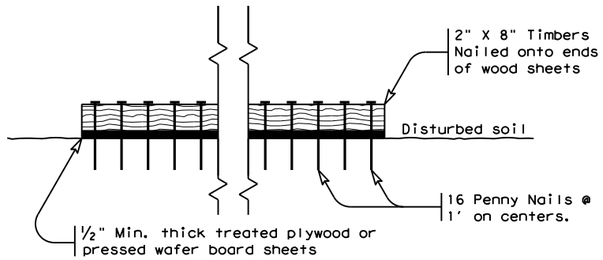
PLAN VIEW



PLAN VIEW



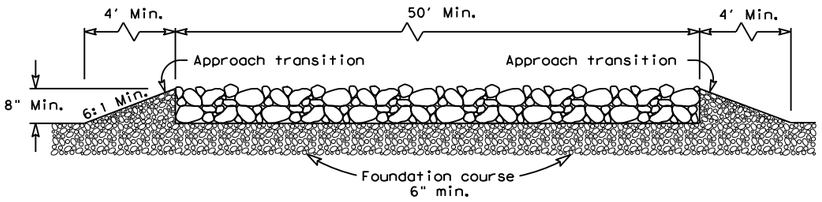
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

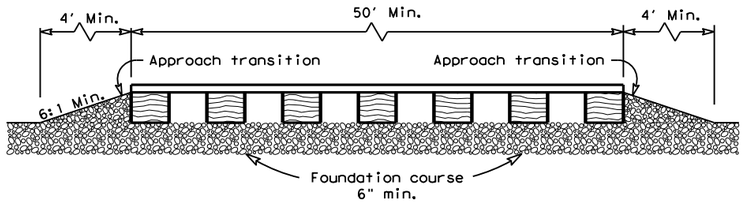
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

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 materialas 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.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

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 ½"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.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

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

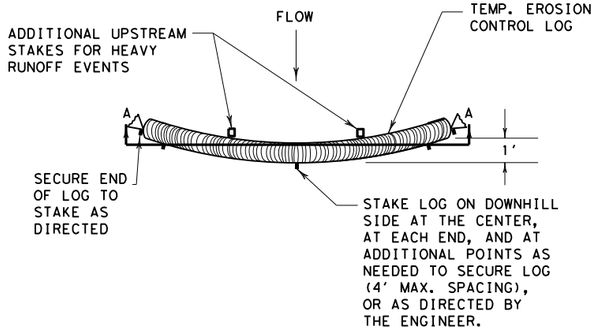
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

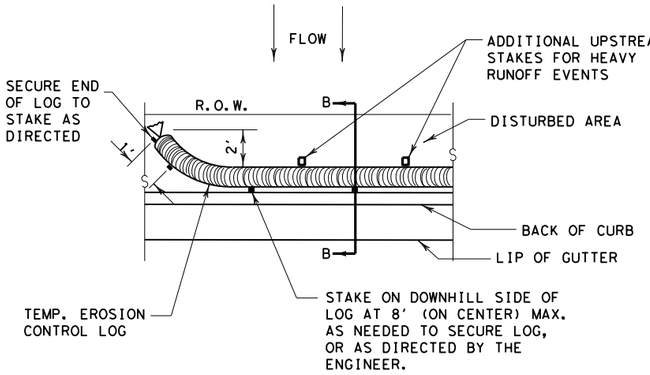
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	1228	03	050	FM 1015
	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		235

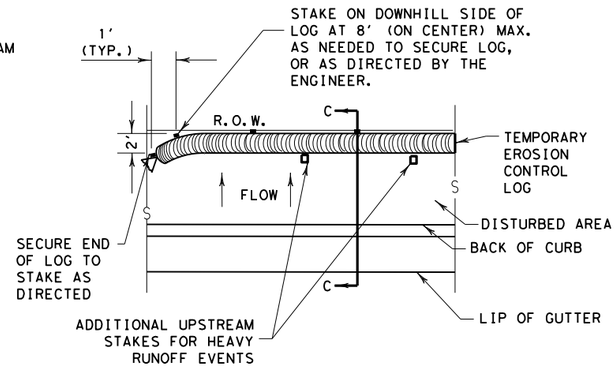
DATE: 6/30/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832984\EC-9-16.dgn



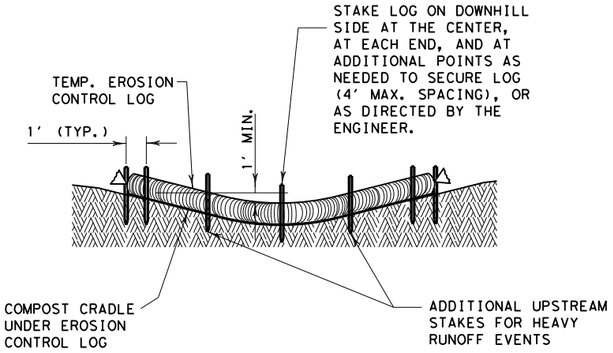
PLAN VIEW



PLAN VIEW



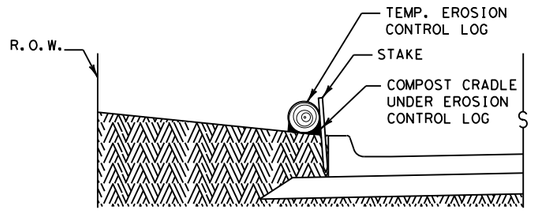
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

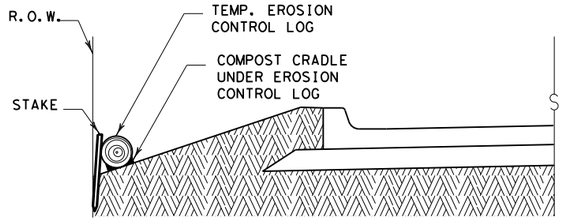
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

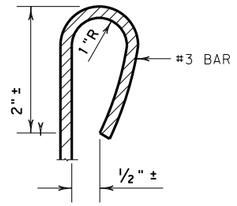
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

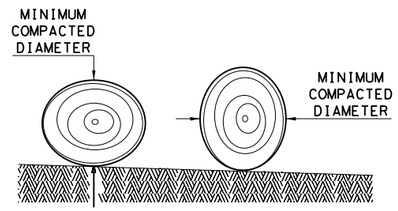
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation

Design Division Standard

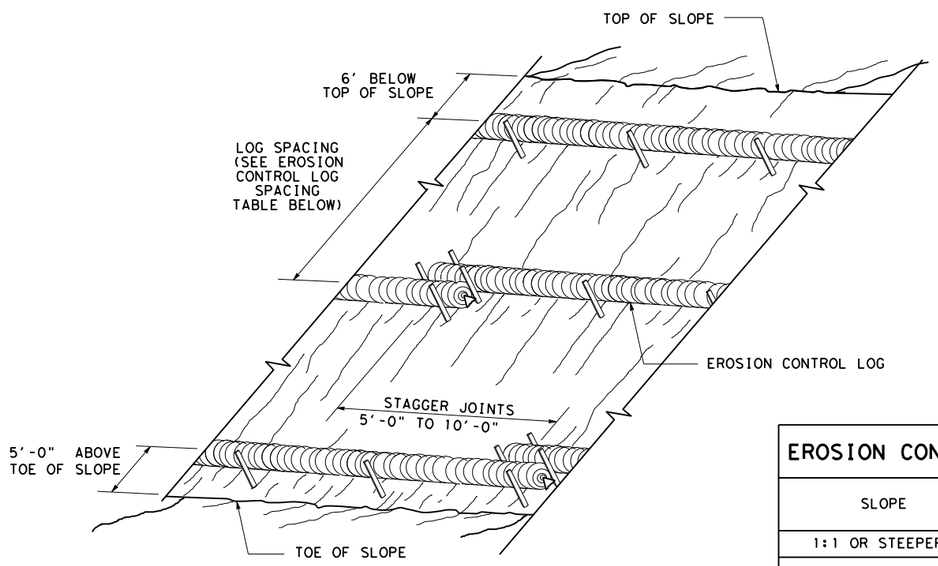
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

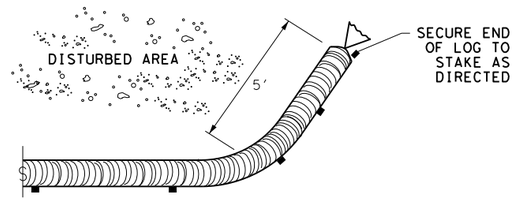
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	1228	03	050	FM 1015	
	DIST	COUNTY		SHEET NO.	
	PHR	HIDALGO		236	

DATE: 6/30/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832984\EC-9-16.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

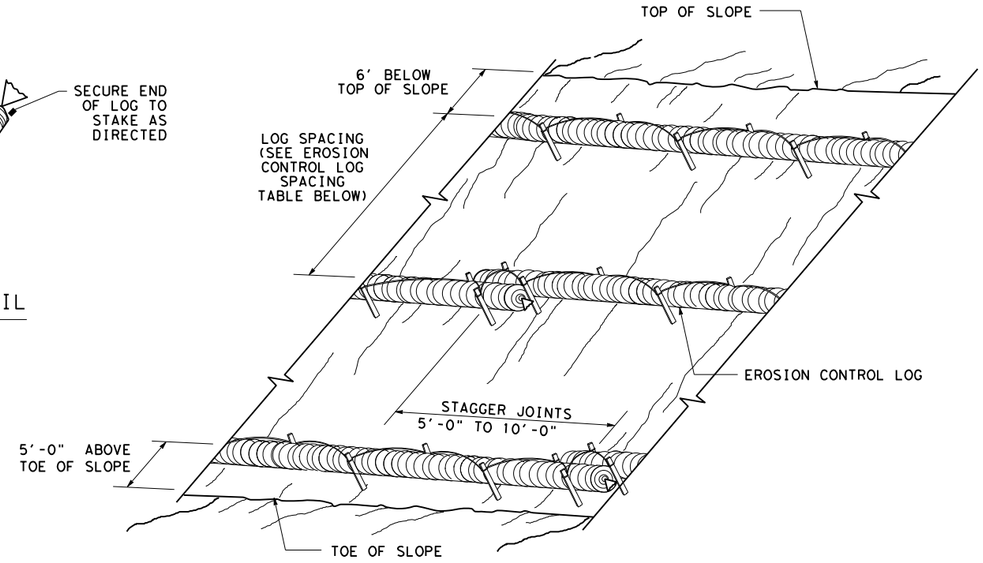
CL-SST



END SECTION RAP DETAIL

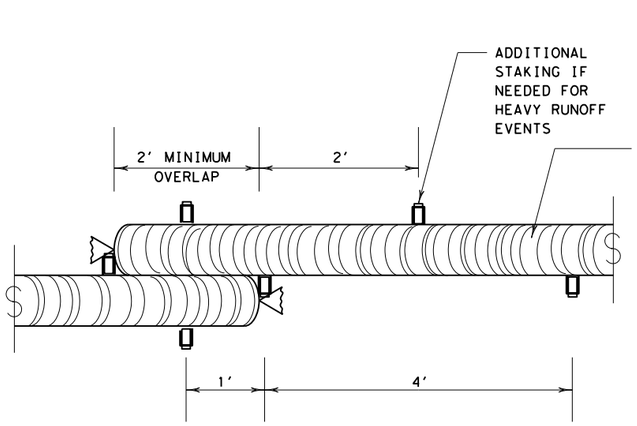
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

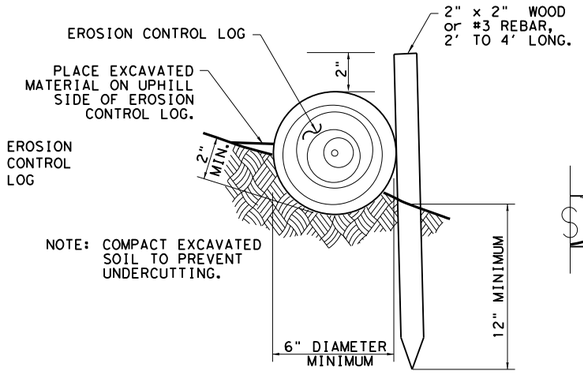
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

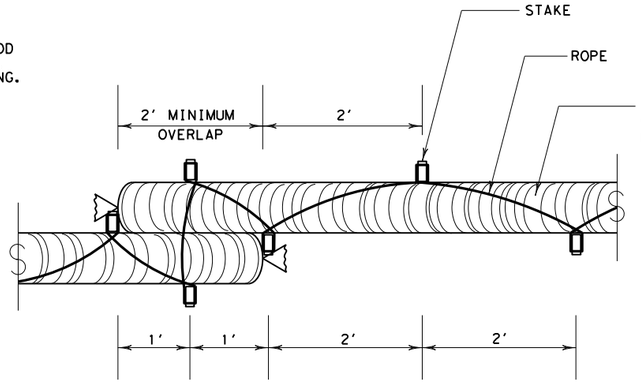


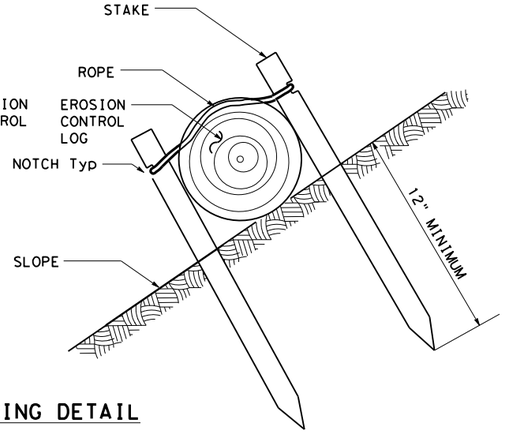


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

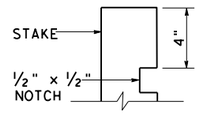
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

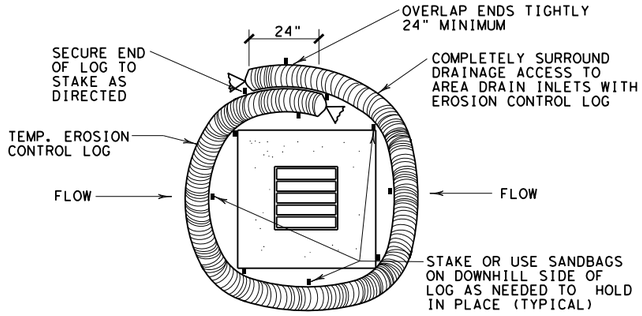
Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

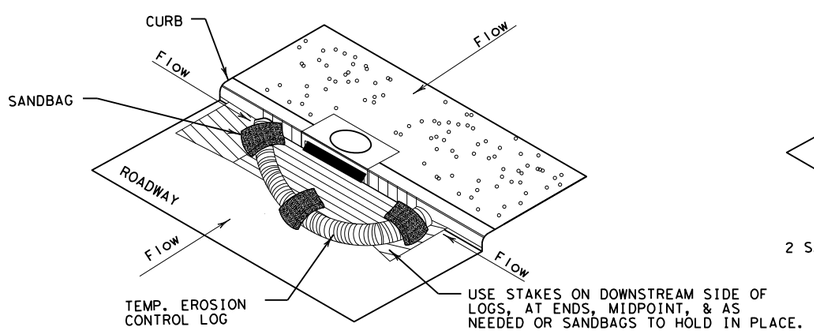
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	1228	03	050		FM 1015	
	DIST	COUNTY			SHEET NO.	
	PHR	HIDALGO			237	

DATE: 6/30/2023
FILE: c:\txdot\pw_online\txdot5\jose.cardenas\d0832984\EC-9-16.dgn



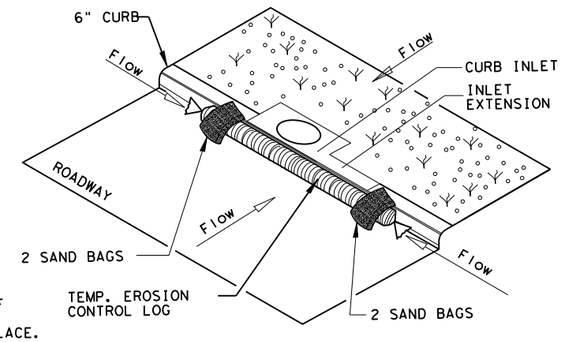
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

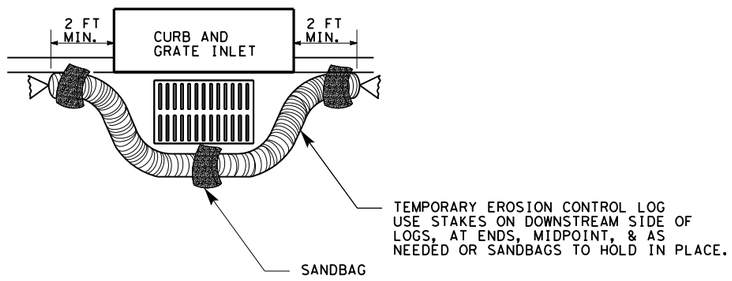
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

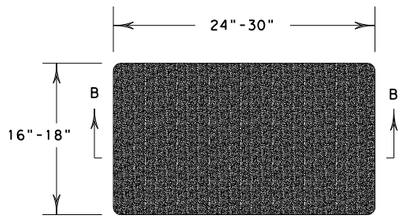
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
REVISIONS	1228	03	050	FM 1015		
	DIST	COUNTY		SHEET NO.		
	PHR	HIDALGO		238		