HAYS COUNTY

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-MODAL PROJECT (OLD KYLE ROAD)

OLD KYLE ROAD

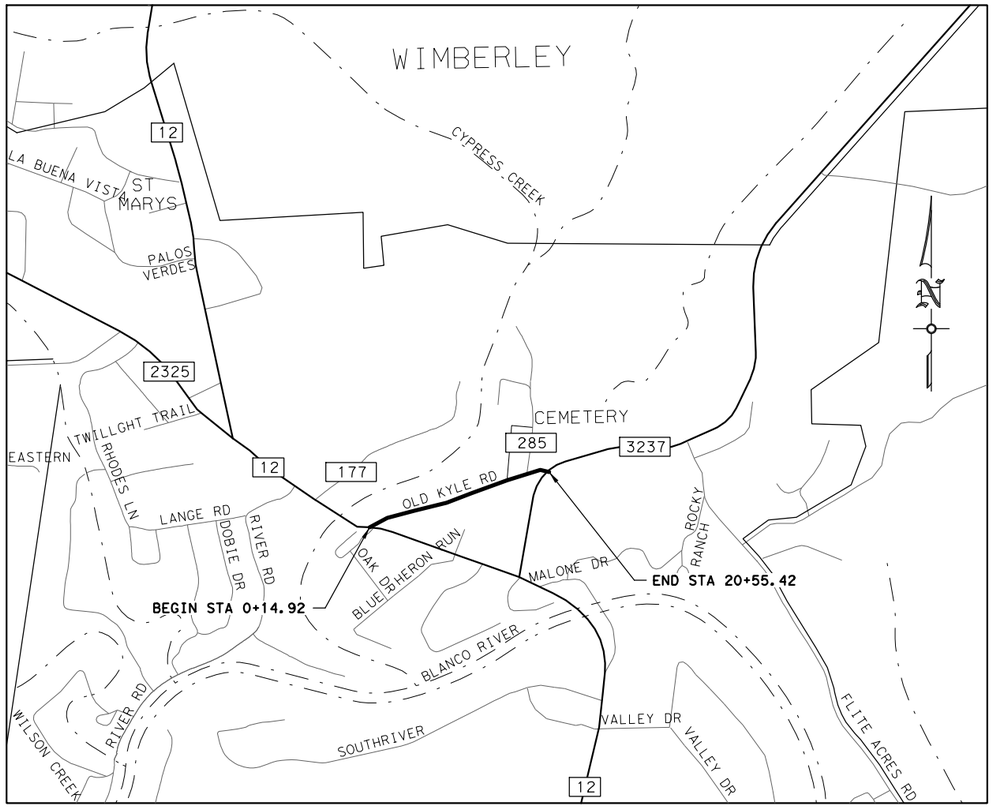
DESCRIPTION : WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-MODAL PROJECT

CLASSIFICATION : COLLECTOR

DESIGN SPEED = 25 MPH

PROJECT LENGTH = 2,040 LF

A.D.T. (2021) = 3,908

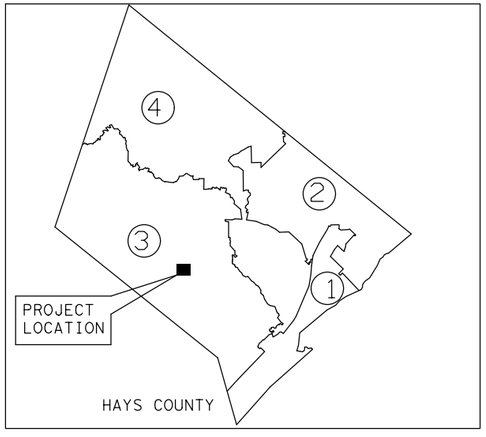


LOCATION MAP
NTS

100% SUBMITTAL

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED
TDLR NO. EABPRJ

REQUIRED SIGNS SHALL BE PLACED IN ACCORDANCE WITH STANDARD SHEETS BC(1)-14 THRU BC(12)-14 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.:



TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES ADOPTED ON NOVEMBER 1, 2014 AND ALL APPLICABLE SPECIAL PROVISIONS AND SPECIAL SPECIFICATIONS AS INDICATED IN THE BID DOCUMENTS SHALL GOVERN ON THIS PROJECT.

CALL BEFORE YOU DIG!
Texas 811 Know what's below. Call before you dig.
PARTICIPANTS REQUEST 48 HOURS NOTICE BEFORE YOU DIG, DRILL, OR BLAST - STOP AND CALL 811
THE LONE STAR NOTIFICATION COMPANY AT 1-800-669-8344

PREPARED BY:
ARDURRA GROUP, INC. (DESIGN CONSULTANT)

BRYAN J. SPINA, P.E. _____ DATE
PROJECT MANAGER

THIS DOCUMENT IS FOR INTERIM REVIEW AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING, PERMIT OR OTHER UNAUTHORIZED PURPOSES. THESE DOCUMENTS/PLANS WERE AUTHORIZED TO BE RELEASED.

BY: BRYAN J. SPINA , P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

APPROVED BY:

_____ _____
DATE

APPROVED BY:

_____ _____
DATE

JERRY BORCHERDING
HAYS COUNTY ENGINEER

ARDURRA
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8918 Tesoro Dr., Suite 401
San Antonio, Texas 78217
Phone: (210) 822-2232
www.Ardurra.com

Engineering License #F-10053

Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

INDEX OF SHEETS

THE STANDARD DRAWINGS SHOWN IN THE INDEX OF SHEETS ABOVE AND IDENTIFIED HEREIN BY THE SYMBOL * HAVE BEEN SELECTED BY ME OR UNDER MY DIRECT SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

5/10/2024
BRYAN J. SPINA, P.E.
PROJECT MANAGER
DATE

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BY: BRYAN J. SPINA, P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

INDEX OF SHEETS

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	2

TRAFFIC CONTROL SUMMARY		403 6001*	502 6001	508 6001	512 6009	512 6010	512 6033	512 6034	512 6057	512 6058	662 6004
SHT. NO.	LOCATION	TEMPORARY SPECIAL SHORING	BARRICADES, SIGNS, AND TRAFFIC HANDLING	CONSTRUCTING DETOURS	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	PORT CTB (MOVE) (LOW PROF) (TY 1)	PORT CTB (MOVE) (LOW PROF) (TY 2)	PORT CTB (REMOVE) (LOW PROF) (TY 1)	PORT CTB (REMOVE) (LOW PROF) (TY 2)	WK ZN PAV MRK NON REMOV (W)4"(SLD)
		SF	MO	SY	LF	LF	LF	LF	LF	LF	LF
	OLD KYLE RD.										
19, 24, 27	BEGIN TO STA 8+00	2360	6	256	560	180	500	120	560	180	3115
20, 25, 29	STA 8+00 TO STA 16+00	1200	6	838	720	100	560	40	720	100	3200
21, 26, 30	STA 16+00 TO STA END		6	175	520	260	280	40	520	260	1824
	PROJECT TOTAL	3560	18	1269	1800	540	1340	200	1800	540	8139

* CONTRACTOR TO USE TEMPORARY SPECIAL SHORING DUE TO LIMITED SPACE, AS APPROVED BY ENGINEER

ROADWAY SUMMARY		100 6002	104 6015	104 6017	104 6021	110 6001	132 6004	160 6003	162 6002	432 6002	450 6103	529 6007	529 6015	529 6020
SHT. NO.	LOCATION	PREPARING ROW	REMOVE SIDEWALKS	REMOVE DRIVEWAYS	REMOVE CONCRETE CURB	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DES CONT) (TY B)	FURNISHING AND PLACING TOPSOIL (4")	BLOCK SODDING	RIPRAP (CONC)(5IN) (MEDIAN)	RAIL (TY PR11)	CONC CURB & GUTTER (TY I)	CONC CURB (TY C1)	CONC CURB & GUTTER (ARMOR CURB)
		STA	SY	SY	LF	CY	CY	SY	SY	CY	LF	LF	LF	LF
	OLD KYLE RD.													
57	BEGIN TO STA 4+00	3.9	333	64	640	678	61	508	508	9		1650	50	
58	STA 4+00 TO STA 8+00	4.0	44	202	225	677	25	249	249	7		1375		
59	STA 8+00 TO STA 12+00	4.0				956	35	897	897	9	44	1490		14
60	STA 12+00 TO STA 15+00	3.0	6			587	57	359	359	8		1205		
61	STA 15+00 TO STA 18+00	3.0	32	408		539	4	207	207	7		1155		
62	STA 18+00 TO END	2.6	130			504	56	366	366	17		970		
	PROJECT TOTAL	20.4	545	674	865	3940	239	2585	2585	57	44	7845	50	14

ROADWAY SUMMARY		529 6024	530 6004	531 6003	531 6004	531 6005	531 6006	552 6002	560 6025	752 6005	752 6006
SHT. NO.	LOCATION	CONC CURB (MOUNTABLE)	DRIVEWAYS (CONC)	CONCRETE SIDEWALKS	CURB RAMPS (TYPE 1)	CURB RAMPS (TYPE 2)	CURB RAMPS (TYPE 3)	WIRE FENCE (TY A)	RELOCATE EXISTING MAILBOX	TREE REMOVAL (4"-12" DIA)	TREE REMOVAL (12"-18" DIA)
		LF	SY	SY	EA	EA	EA	LF	EA	EA	EA
	OLD KYLE RD.										
57	BEGIN TO STA 4+00		85	487	1	1			1		
58	STA 4+00 TO STA 8+00		404	517		2			4		
59	STA 8+00 TO STA 12+00		51	566				320	1	4	2
60	STA 12+00 TO STA 15+00		146	243		2		220	1		4
61	STA 15+00 TO STA 18+00		213	279					1		
62	STA 18+00 TO END	142	12	346	1	2	1			5	1
	PROJECT TOTAL	142	911	2438	2	7	1	540	8	9	7

ROADWAY SUMMARY		752 6007	752 6008	752 6010	3076 6001	3076 6010	5033 6002
SHT. NO.	LOCATION	TREE REMOVAL (18"-24" DIA)	TREE REMOVAL (24"-30" DIA)	TREE REMOVAL (36"-42" DIA)	D-GR HMA TY-B PG64-22 (7" COMP. DEPTH)	D-GR HMA TY-D PG76-22 (2" COMP. DEPTH)	REMOVABLE BOLLARD
		EA	EA	EA	SY	SY	EA
	OLD KYLE RD.						
57	BEGIN TO STA 4+00				1412	1228	3
58	STA 4+00 TO STA 8+00			1	1312	1141	5
59	STA 8+00 TO STA 12+00	2	1		1385	1204	1
60	STA 12+00 TO STA 15+00	1	1		964	838)	
61	STA 15+00 TO STA 18+00				963	838)	1
62	STA 18+00 TO END		1		1427	1241	4
	PROJECT TOTAL	3	3	1	7463	6489	14

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BY: BRYAN J. SPINA , P.E.

LICENSE NO.: 103776 DATE: 5/13/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

OVERALL QUANTITIES

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	3

DRAINAGE SUMMARY		420 6009	432 6002	432 6017	464 6005	464 6007	464 6008	465 6207	465 6379	466 6235	479 6001	531 XXXX
SHT. NO.	LOCATION	CL C CONC (COLLAR)	RIPRAP (CONC)(5IN)	RIPRAP (STONE TY R) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	INLET (COMPL) (CURB)(TY 1) (10')	INLET (COMPL) (EXTENSION) (10')	HEADWALL (CH-PW-S) (DIA 24)	ADJUSTING MANHOLES	SIDEWALK DRAIN
		EA	CY	CY	LF	LF	LF	EA	LF	EA	EA	EA
	OLD KYLE RD.											
93	BEGIN TO STA 4+00	3	7			26	23	2	1		2	1
94	STA 4+00 TO STA 8+00											
95	STA 8+00 TO STA 12+00		8	2	12					2		
96	STA 12+00 TO STA 15+00											
97	STA 15+00 TO STA 18+00											
98	STA 18+00 TO END											
	PROJECT TOTAL	3	14	2	12	26	23	2	1	2	2	1

PAVEMENT MARKING AND SW3P SUMMARY		506 6001	506 6011	506 6036	506 6038	506 6039	506 6047	644 6060	644 6061	666 6012	666 6030	666 6048	666 6099
SHT. NO.	LOCATION	ROCK FILTER DAMS (INSTALL)(TY I)	ROCK FILTER DAMS (REMOVE)(TY I)	SANDBAGS FOR EROSION CONTROL (6")	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	TEMP SDMT CONT FENCE (INLET PROTECTION)	IN SM RD SN SUP&AM TYTWT(1) WS(P)	IN SM RD SN SUP&AM TYTWT(1) WS(T)	REFL PAV MRK TY I (W) (4") (SLD)	REFL PAV MRK TY I (W) (8") (DOT)	REFL PAV MRK TY I (W) (24") (SLD)	REFL PAV MRK TY II (W) (18") (YLD TRI)
		LF	LF	LF	LF	LF	LF	EA	EA	LF	LF	LF	EA
	OLD KYLE RD.												
108	BEGIN TO STA 8+00			112	260	260	35	3	1	19		124	8
109	STA 8+00 TO STA 16+00	40	40	16	830	830		2		8		36	7
110	STA 16+00 TO STA END				871	871		9			50	78	
	PROJECT TOTAL	40	40	128	1961	1961	35	14	1	27	50	238	15

PAVEMENT MARKING AND SW3P SUMMARY		666 6111	666 6170	666 6176	666 6182	666 6198	666 6202
SHT. NO.	LOCATION	REFL PAV MRK TY I (W) (BIKE SYMBOL)	REFL PAV MRK TY II (W) (4") (SLD)	REFL PAV MRK TY II (W) (8") (DOT)	REFL PAV MRK TY II (W) (24") (SLD)	REFL PAV MRK TY II (W) (18") (YLD TRI)	REFL PAV MRK TY II (W) (BIKE SYMBOL)
		EA	LF	LF	LF	EA	EA
	OLD KYLE RD.						
108	BEGIN TO STA 8+00	4	19		124	8	4
109	STA 8+00 TO STA 16+00	4	8		36	7	4
110	STA 16+00 TO STA END	4		50	78		4
	PROJECT TOTAL	12	27	50	238	15	12

STRUCTURAL SUMMARY					
SHT. NO.	LOCATION	8' PRE-FAB PEDESTRIAN BOARDWALK	DRILLED SHAFT PIERS	INTRMEDIATE CONCRETE PIER CAPS	CONC ABUT INCLUDING WINGWALLS
		EA	EA	CY	CY
	OLD KYLE RD.				
149	STA 12+50 TO STA 14+44.61	1	26	26	18
	PROJECT TOTAL	1	26	26	18

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BY: BRYAN J. SPINA , P.E.

LICENSE NO.: 103776 DATE: 5/13/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

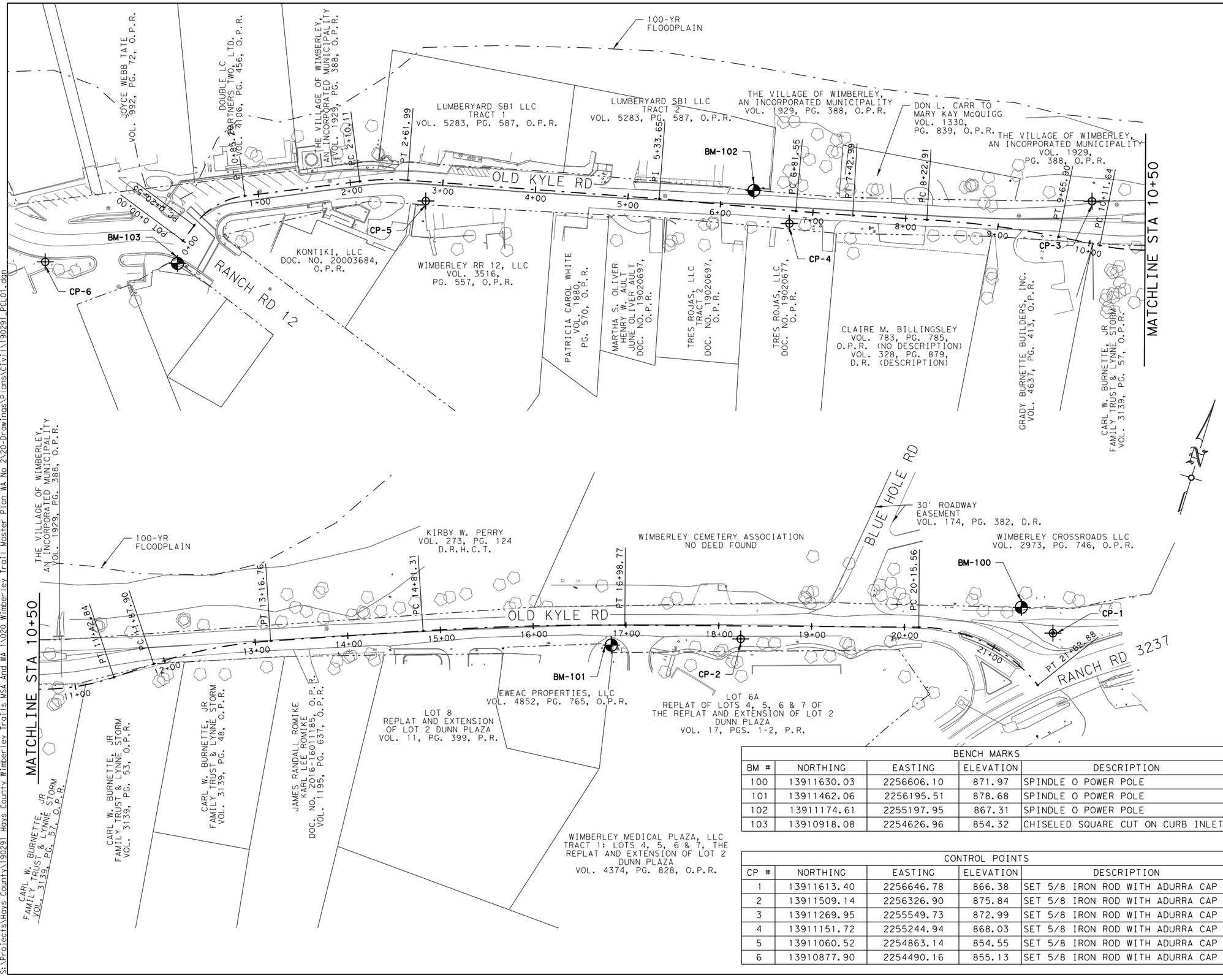
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

OVERALL QUANTITIES

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	4



BENCH MARKS				
BM #	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	13911630.03	2256606.10	871.97	SPINDLE O POWER POLE
101	13911462.06	2256195.51	878.68	SPINDLE O POWER POLE
102	13911174.61	2255197.95	867.31	SPINDLE O POWER POLE
103	13910918.08	2254626.96	854.32	CHISELED SQUARE CUT ON CURB INLET

CONTROL POINTS				
CP #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	13911613.40	2256646.78	866.38	SET 5/8 IRON ROD WITH ADURRA CAP
2	13911509.14	2256326.90	875.84	SET 5/8 IRON ROD WITH ADURRA CAP
3	13911269.95	2255549.73	872.99	SET 5/8 IRON ROD WITH ADURRA CAP
4	13911151.72	2255244.94	868.03	SET 5/8 IRON ROD WITH ADURRA CAP
5	13911060.52	2254863.14	854.55	SET 5/8 IRON ROD WITH ADURRA CAP
6	13910877.90	2254490.16	855.13	SET 5/8 IRON ROD WITH ADURRA CAP

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BY: SALVADOR A. SALAS, R.P.L.S.

LICENSE NO.: 6612 DATE: 5/10/2024

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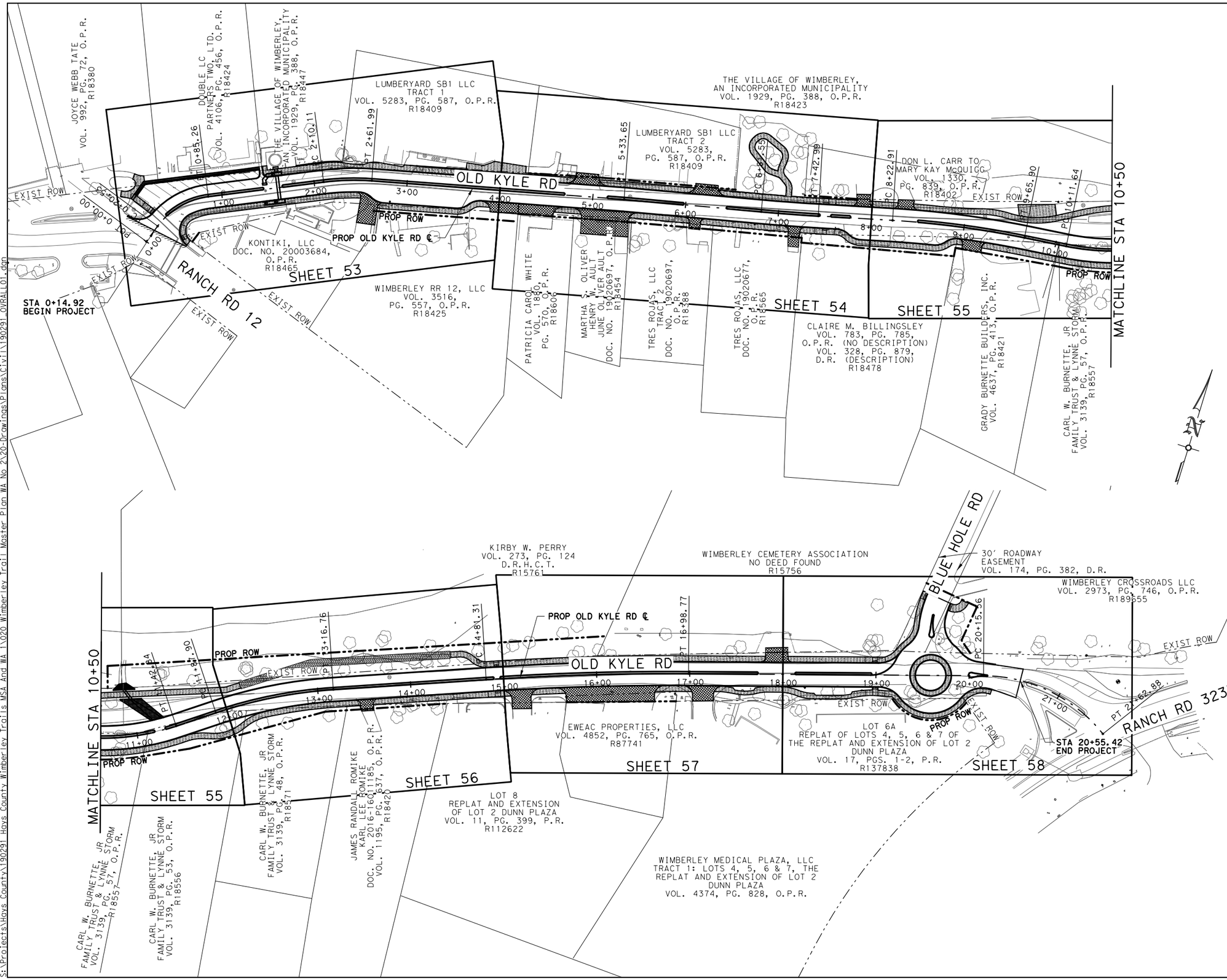
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PROJECT CONTROL LAYOUT

HORIZ. SCALE: 1"=100'
0 50 100
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	5

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_PCL01.dgn



LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

OVERALL PROJECT LAYOUT

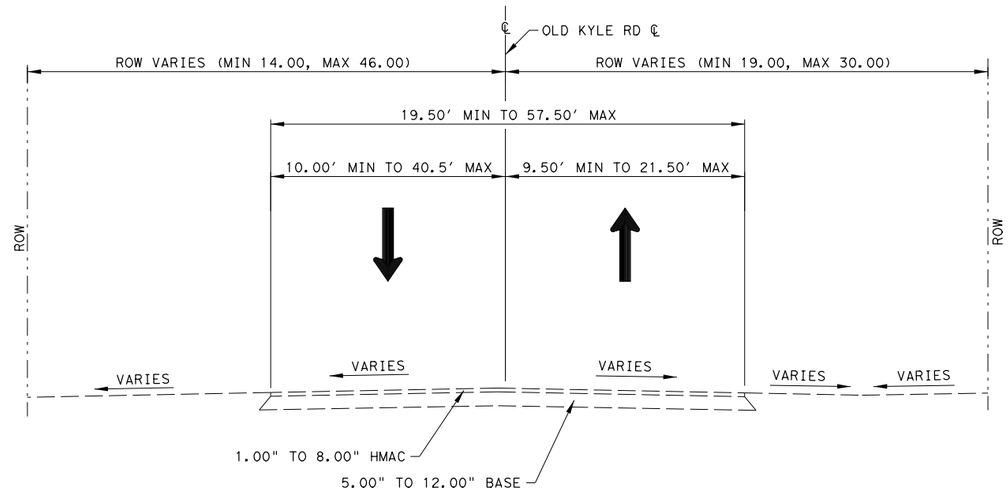
HORIZ. SCALE: 1"=100'

0 50 100

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	6

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_OVRALL01.dgn



OLD KYLE ROAD EXISTING TYPICAL SECTION

STA 0+14.92 TO STA 20+55.42

SCALE: NTS

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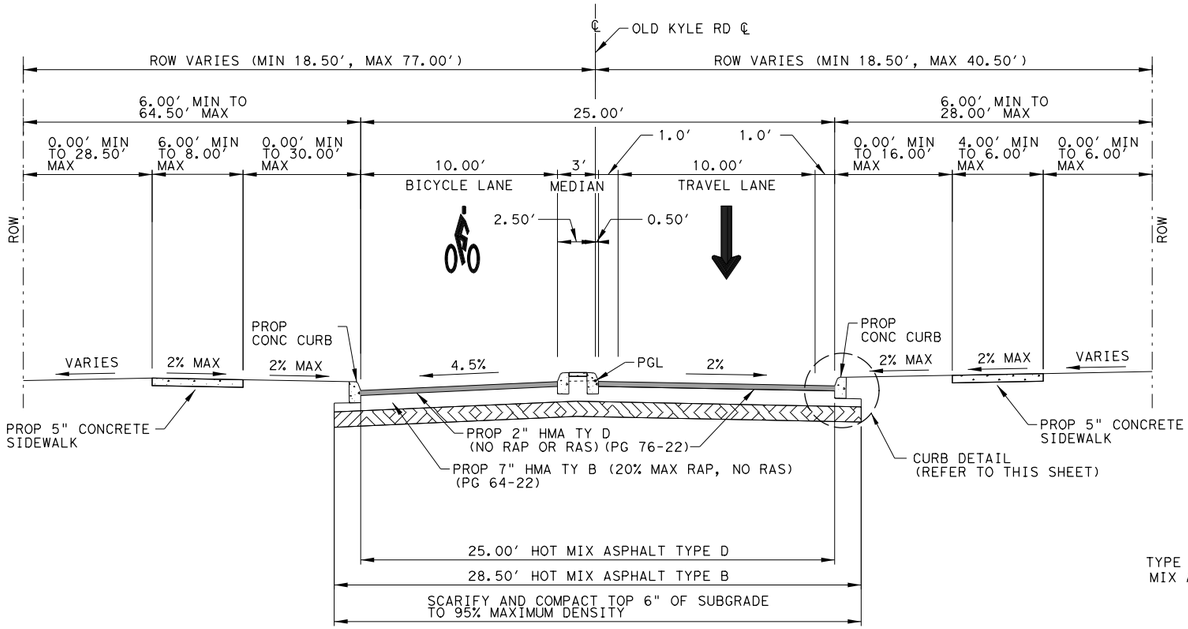
EXISTING TYPICAL SECTION

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	7



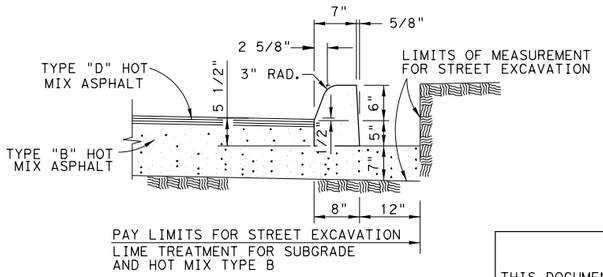
OLD KYLE ROAD PROPOSED TYPICAL SECTION (1)

STA 1+00.00 TO STA 1+50.00

SCALE: NTS

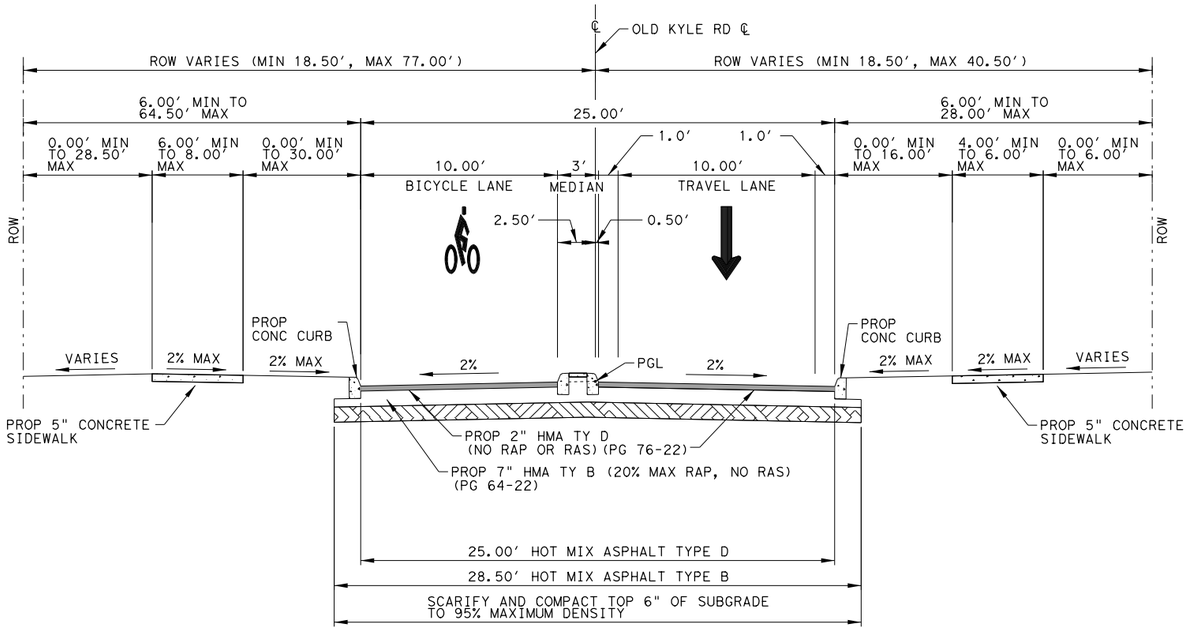
TRANSITIONS

BEGIN	TO
(1) STA 1+00.00	(1) STA 1+50.00 TO (2) STA 2+50.00
(2) STA 7+00.00	(2) STA 7+50.00 TO (3) STA 8+50.00
(3) STA 14+00.00	(3) STA 14+00.00 TO (2) STA 15+00.00
(2) STA 17+50.00	(2) STA 17+50.00 TO (4) STA 18+50.00
(4) STA 18+50.00	(4) STA 18+50.00 TO END



CURB DETAIL

SCALE: NTS



OLD KYLE ROAD PROPOSED TYPICAL SECTION (2)

STA 2+50.00 TO STA 7+50.00
STA 15+00.00 TO STA 17+50.00

SCALE: NTS

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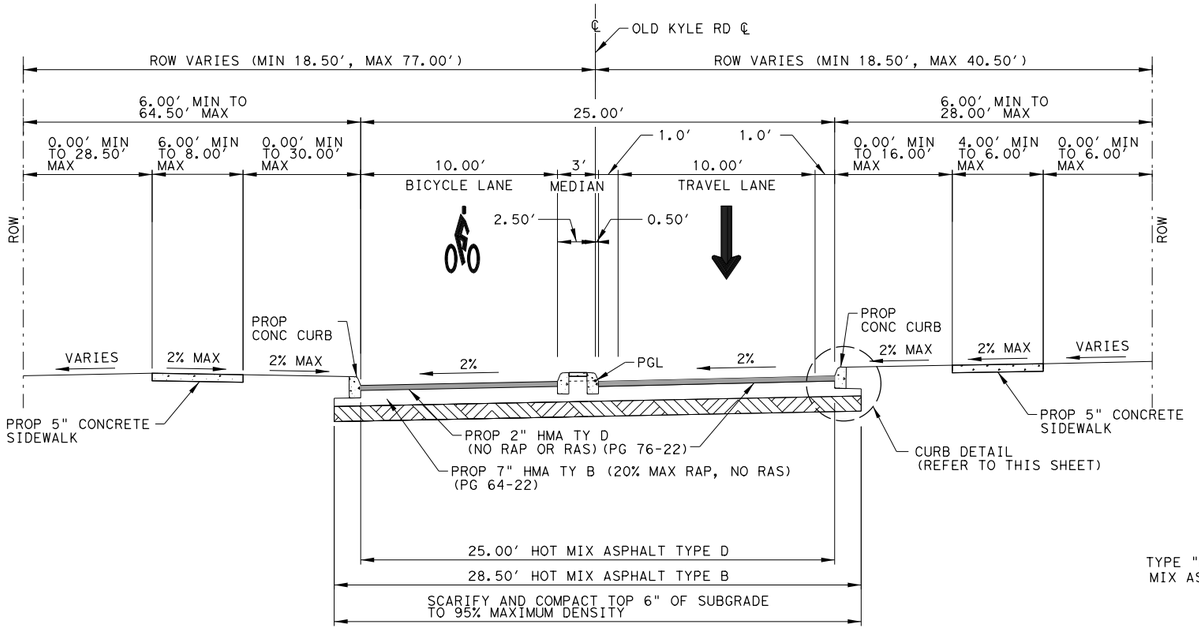
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PROPOSED TYPICAL SECTION
SHEET 1 OF 2

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	8



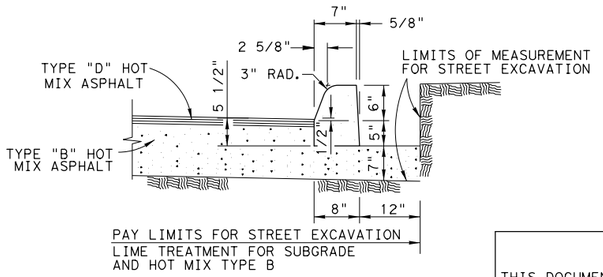
OLD KYLE ROAD PROPOSED TYPICAL SECTION (3)

STA 8+50.00 TO STA 14.00.00

SCALE: NTS

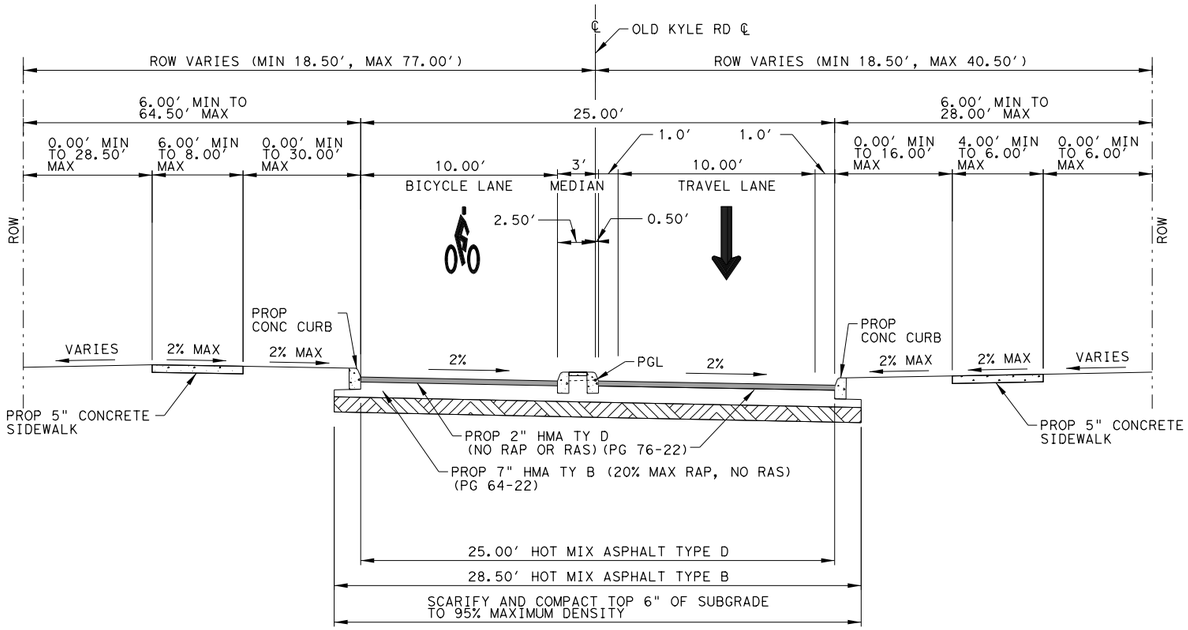
TRANSITIONS

BEGIN	TO		
(1) STA 1+50.00	TO	(1) STA 1+00.00	
(2) STA 7+50.00	TO	(2) STA 2+50.00	
(3) STA 14+00.00	TO	(3) STA 8+50.00	
(2) STA 17+50.00	TO	(2) STA 15+00.00	
(4) STA 18+50.00	TO	(4) STA 18+50.00	
		END	



CURB DETAIL

SCALE: NTS



OLD KYLE ROAD PROPOSED TYPICAL SECTION (4)

STA 18+50.00 TO STA 20+55.42

SCALE: NTS

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PROPOSED TYPICAL SECTION SHEET 2 OF 2

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	9

CONSTRUCTION PLAN NOTES

ITEM	DESCRIPTION	**RATE
**204	SPRINKLING	
	(DUST)	30 GAL/CY
	(ITEM 132)	30 GAL/CY
	(ITEM 247)	30 GAL/CY
**210	ROLLING (FLAT WHEEL)	
	(ITEM 247)	1 HR/200 TON
	(ITEM 316)	1 HR/6000 SY
**210	ROLLING (TAMPING AND HEAVY TAMPING)	1 HR/200 CY
**210	ROLLING (LT PNEUMATIC TIRE)	
	(ITEM 132)	1 HR/500 CY
	(ITEM 247)	1 HR/200 TON
	(ITEM 316 - SEAL COAT)	1 HR/6000 SY
	(ITEM 316 - TWO COURSE)	1 HR/3000 SY
3076	DENSE-GRADED HOT-MIX ASPHALT AND SUPERPAVE	110 LB/SY/IN
	TACK COAT	0.08 GAL/SY

GENERAL

REFERENCES TO MANUFACTURER'S TRADE NAME OR CATALOG NUMBERS ARE FOR THE PURPOSE OF IDENTIFICATION ONLY. SIMILAR MATERIALS FROM OTHER MANUFACTURERS ARE PERMITTED IF THEY ARE OF EQUAL QUALITY, COMPLY WITH THE SPECIFICATIONS FOR THIS PROJECT, AND ARE APPROVED.

IF WORK IS PERFORMED AT CONTRACTOR'S OPTION, WHEN INCLEMENT WEATHER IS IMPENDING, AND THE WORK IS DAMAGED BY SUBSEQUENT PRECIPITATION, THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REPLACING THE WORK, IF REQUIRED.

THE ROADBED WILL BE FREE OF ORGANIC MATERIAL PRIOR TO PLACING ANY SECTION OF THE PAVEMENT STRUCTURE.

EQUIP ALL CONSTRUCTION EQUIPMENT USED IN ROADWAY WORK WITH HIGHLY VISIBLE OMNIDIRECTIONAL FLASHING WARNING LIGHTS.

PROVIDE A SMOOTH, CLEAN SAWCUT ALONG THE EXISTING ASPHALT OR CONCRETE PAVEMENT STRUCTURE, AS DIRECTED. CONSIDER SUBSIDIARY TO THE PERTINENT ITEMS.

CONSTRUCT ALL MANHOLES/VALVES TO FINAL PAVEMENT ELEVATIONS PRIOR TO THE PLACEMENT OF FINAL SURFACE. IF THE MANHOLES/VALVES ARE GOING TO BE EXPOSED TO TRAFFIC, PLACE TEMPORARY ASPHALT AROUND THE MANHOLE/VALVE TO PROVIDE A 50:1 TAPER. THE ASPHALT TAPER IS SUBSIDIARY TO THE ACP WORK.

KEEP THE ROADWAY FREE OF DEBRIS AND SEDIMENT CAUSED BY CONSTRUCTION ACTIVITIES. DISPOSE OF ALL MATERIAL IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. THIS WORK IS SUBSIDIARY.

DAMAGE TO EXISTING PIPES AND SET'S DUE TO CONTRACTOR OPERATIONS WILL BE REPAIRED AT CONTRACTOR'S EXPENSE.

ALL LOCATIONS USED FOR STORING CONSTRUCTION EQUIPMENT, MATERIALS, AND STOCKPILES OF ANY TYPE, WITHIN THE RIGHT OF WAY, WILL BE AS DIRECTED. USE OF RIGHT OF WAY FOR THESE PURPOSES WILL BE RESTRICTED TO THOSE LOCATIONS WHERE DRIVER SIGHT DISTANCE TO BUSINESSES AND SIDE STREET INTERSECTIONS IS NOT OBSTRUCTED AND AT OTHER LOCATIONS WHERE AN UNSIGHTLY APPEARANCE WILL NOT EXIST. THE CONTRACTOR WILL NOT HAVE EXCLUSIVE USE OF RIGHT OF WAY BUT WILL COOPERATE IN THE USE OF THE RIGHT OF WAY WITH THE CITY/COUNTY AND VARIOUS PUBLIC UTILITY COMPANIES AS REQUIRED.

ITEM 5 - CONTROL OF THE WORK

PLACE CONSTRUCTION STAKES AT INTERVALS OF NO MORE THAN 100 FT. THIS WORK IS SUBSIDIARY.

ELECTRONIC SHOP DRAWING SUBMITTALS.

SUBMIT ELECTRONIC SHOP DRAWING SUBMITTALS ACCORDING TO THE CURRENT GUIDE TO ELECTRONIC SHOP DRAWING SUBMITTAL WHICH CAN BE FOUND ONLINE AT, HTTPS://WWW.TXDOT.GOV/BUSINESS/RESOURCES/HIGHWAY/BRIDGE/SHOP-DRAWING-SUBMITTAL-CYCLE.HTML.

PRE-APPROVED PRODUCERS CAN BE FOUND ONLINE AT, HTTPS://WWW.TXDOT.GOV/BUSINESS/RESOURCES/MATERIALS/MATERIAL-PRODUCER-LIST.HTML.

COOPERATING WITH JOINT BID UTILITIES.

THE ENGINEER WILL DESIGNATE A UTILITY INSPECTOR AT THE PRE-CONSTRUCTION MEETING. ATTEND A UTILITY PRECONSTRUCTION MEETING WITH THE UTILITY OWNER. ALL DESIGNATED SAFETY POINTS OF CONTACT, INCLUDING TRAFFIC CONTROL, SHALL BE PRESENT AT THE UTILITY PRECONSTRUCTION MEETING.

UTILITY CONTRACTORS MUST PROVIDE, FOR INFORMATION PURPOSES ONLY UNLESS STATED OTHERWISE, THE FOLLOWING INFORMATION 60 CALENDAR DAYS PRIOR TO BEGINNING UTILITY WORK:

A. IF AVAILABLE, A COPY OF THE CONTRACTOR'S SAFETY HANDBOOK.
B. DESIGNATE A SAFETY POINT OF CONTACT WITH OSHA 30-HOUR CERTIFICATION CARD.
C. DESIGNATE AND PROVIDE WRITTEN SUMMARY OF QUALIFICATIONS FOR AN EXCAVATION SAFETY POINT OF CONTACT MEETING REQUIREMENTS FOR A TRENCH AND EXCAVATION COMPETENT PERSON PER OSHA ETOOL: CONSTRUCTION - TRENCHING AND EXCAVATIONS - COMPETENT PERSON ℞ OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA.GOV)
D. TEMPORARY SPECIAL SHORING DESIGN IN ACCORDANCE WITH ITEM 403 FOR EXCAVATIONS 5FT. OR GREATER IN DEPTH, INCLUDING BORE PITS (DEPARTMENT RESERVES THE RIGHT TO REJECT DESIGNS).
E. TRENCH EXCAVATION PROTECTION PLANS, BEARING THE SEAL OF A LICENSED PROFESSIONAL ENGINEER, IN ACCORDANCE WITH ITEM 402.

ALL DURATIONS EXCLUDE UTILITY OWNER HOLIDAYS.

PROVIDE A COMPLETE PACKAGE OF INFORMATION FOR ALL RESUBMITTALS. SUBMIT EACH ITEM AND INDIVIDUAL COMPONENTS OF THAT ITEM UNDER SEPARATE COVER.

PRIOR TO SUBMITTING A RFI, MEET AND DISCUSS WITH TXDOT/HAYS COUNTY AND THE UTILITY INSPECTOR. INCLUDE A PROPOSED SOLUTION, EXISTING AND PROPOSED LINE ELEVATIONS, AND REDLINE OF PROPOSED CHANGES WITH THE RFI. MAKE NOTE OF ADJACENT UTILITIES IN THE RFI IF IT INCLUDES RELOCATION OF A LINE. SUBMIT RFIS VIA EMAIL TO TXDOT AND THE UTILITY INSPECTOR.

COMPLETE PRE-TESTING AND HAVE THE UTILITY INSPECTOR VERIFY PRIOR TO FORMAL TESTING AND INSPECTION. SUBMIT EMAIL TO TXDOT/HAYS COUNTY AND THE UTILITY INSPECTOR REQUESTING A FORMAL TEST AND INSPECTION 14 CALENDAR DAYS BEFORE THE TEST DATE. PAY RETEST FEES DIRECTLY TO UTILITY OWNER AT CURRENT RATES.

SUBMIT AN EMAIL TO THE UTILITY INSPECTOR IDENTIFYING THE LINES, VALVES, LOCATION, AND DATE OF SHUT OFFS OR LIMITED SERVICE 21 CALENDAR DAYS BEFORE FOR ALL LINES AND 60 CALENDAR DAYS BEFORE FOR WATER LINES 24 IN. OR GREATER. THE UTILITY OWNER WILL CONDUCT A TEST SHUT OFF BEFORE ACTUAL SHUT OFF. DO NOT SHUT OFF POWER OR WATER LINES 24 IN. OR GREATER BETWEEN JUNE 1ST AND AUGUST 31ST. PROVIDE A VERBAL NOTIFICATION 7 CALENDAR DAYS AND WRITTEN NOTIFICATION 72 HOURS BEFORE IMPACT TO SERVICE TO ALL CUSTOMERS.

REMOVAL OF TREES AND BRUSH WITHIN 15 FEET OF PROPOSED POWER LINES IS REQUIRED AND SUBSIDIARY.

NOTIFY THE UTILITY OWNER AND TXDOT/HAYS COUNTY 60 CALENDAR DAYS PRIOR TO COMPLETION OF ELECTRICAL, COMMUNICATION OR DATA INFRASTRUCTURE. COORDINATE WITH THE UTILITY OWNER TO SCHEDULE REQUIRED UTILITY OWNER WORK TO COMPLETE THEIR PORTION OF UTILITY INSTALLATION. ALLOW 90 CALENDAR DAY DURATION FOR THE UTILITY OWNER TO COMPLETE THEIR PORTION OF THE WORK. IF THE UTILITY WORK REQUIRES MULTIPLE OWNERS TO ADJUST UPON COMPLETION OF THE WORK, ALLOW SEPARATE AND SEQUENTIAL 90 CALENDARS DAY DURATION FOR EACH UTILITY OWNER.

PROVIDE AN ELECTRONIC PDF OF AS-BUILTS WITHIN 28 CALENDAR DAYS OF A LINE BECOMING ACTIVE. INCLUDE GPS COORDINATES OF ITEMS NOT INSTALLED PER ORIGINAL PLANS INCLUDING METERS, MANHOLES, VALVES, BENDS, AND FIRE HYDRANT LOCATIONS IN THE AS-BUILTS. INCLUDE LIMITS OF ENCASEMENTS SUCH AS STEEL AND FLOWABLE FILL. INCLUDE FINAL VERSION OF RFI'S AND REVISED PLAN SHEETS.

ITEM 6 - CONTROL OF MATERIALS

GIVE A MINIMUM OF 1 BUSINESS DAY NOTICE FOR MATERIALS, WHICH REQUIRE INSPECTION AT THE PLANT.

FOR STRUCTURES WITH PAINT CONTAINING HAZARDOUS MATERIALS, PROVIDE LOCATIONS OF MATERIAL REMOVAL 60 DAYS PRIOR TO BEGIN REMOVAL. FOR METAL ELEMENTS TO BE REMOVED, MECHANICAL SHEAR OR UNBOLTING FOR REMOVAL AND DISPOSAL DOES NOT REQUIRE PAINT ABATEMENT BUT REQUIRES 60 DAY ADVANCE NOTICE.

FOR FEDERALLY FUNDED CONTRACTS, COMPLY WITH THE LATEST PROVISIONS OF BUILD AMERICA, BUY AMERICA ACT (BABA ACT) OF THE BIPARTISAN INFRASTRUCTURE LAW, BY SUBMITTING A NOTARIZED ORIGINAL OF THE TXDOT CONSTRUCTION MATERIAL BUY AMERICA CERTIFICATION FORM FOR ALL ITEMS CLASSIFIED AS CONSTRUCTION MATERIALS. THIS FORM IS NOT REQUIRED FOR MATERIALS CLASSIFIED AS A MANUFACTURED PRODUCT. REFER TO THE BUY AMERICA MATERIAL CLASSIFICATION SHEET, LOCATED AT THE FOLLOWING LINK, FOR CLARIFICATION ON MATERIAL CATEGORIZATION. BUY AMERICA MATERIAL CLASSIFICATION SHEET (TXDOT.GOV)

ITEM 7 - LEGAL RELATIONS AND RESPONSIBILITIES

TXDOT/HAYS COUNTY WILL COORDINATE WITH TDLR REGARDING PEDESTRIAN ELEMENTS AND SIDEWALKS. THE CONTRACTOR WILL PROCURE AND PROVIDE ALL PERMITS, LICENSES, AND INSPECTIONS; PAY ALL CHARGES, FEES, AND TAXES REGARDING TDLR RULES GOVERNING INDUSTRIALIZED HOUSING AND BUILDINGS.

ROADWAY CLOSURES DURING KEY DATES AND/OR SPECIAL EVENTS ARE PROHIBITED. SEE NOTES FOR ITEM 502 FOR THE KEY DATES AND/OR SPECIAL EVENTS.

REFER TO THE ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) PLAN SHEETS FOR ADDITIONAL REQUIREMENTS AND PERMITS.
WHEN ANY ABANDONED WELL IS ENCOUNTERED, CEASE CONSTRUCTION OPERATIONS IN THIS AREA AND NOTIFY THE ENGINEER WHO WILL COORDINATE THE PROPER PLUGGING PROCEDURES. A WATER WELL DRILLER LICENSED IN THE STATE OF TEXAS MUST BE USED TO PLUG A WELL.

PERFORM MAINTENANCE OF VEHICLES OR EQUIPMENT AT DESIGNATED MAINTENANCE SITES. KEEP A SPILL KIT ON-SITE DURING FUELING AND MAINTENANCE. THIS WORK IS SUBSIDIARY.

MAINTAIN POSITIVE DRAINAGE FOR PERMANENT AND TEMPORARY WORK FOR THE DURATION OF THE PROJECT. BE RESPONSIBLE FOR ANY ITEMS ASSOCIATED WITH THE TEMPORARY OR INTERIM DRAINAGE AND ALL RELATED MAINTENANCE. THIS WORK IS SUBSIDIARY.

SUSPEND ALL ACTIVITIES NEAR ANY SIGNIFICANT RECHARGE FEATURES, SUCH AS SINKHOLES, CAVES, OR ANY OTHER SUBTERRANEAN OPENINGS THAT ARE DISCOVERED DURING CONSTRUCTION OR CORE SAMPLING. DO NOT PROCEED UNTIL THE DESIGNATED GEOLOGIST OR TCEQ REPRESENTATIVE IS PRESENT TO EVALUATE AND APPROVE REMEDIAL ACTION.

LOCATE ABOVEGROUND STORAGE TANKS KEPT ON-SITE FOR CONSTRUCTION PURPOSES IN A CONTAINED AREA AS TO NOT ALLOW ANY EXPOSURE TO SOILS. THE CONTAINMENT WILL BE SIZED TO CAPTURE 150% OF THE TOTAL CAPACITY OF THE STORAGE TANKS.

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HAYS COUNTY

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REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

GENERAL NOTES

SCALE: N.T.S.

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PSL IN EDWARDS AQUIFER RECHARGE AND CONTRIBUTING ZONE.

OBTAIN WRITTEN APPROVAL FROM THE ENGINEER FOR ALL ON OR OFF RIGHT OF WAY PSLS NOT SPECIFICALLY ADDRESSED IN THE PLANS. PROVIDE A SIGNED SKETCH OF THE LOCATION 30 BUSINESS DAYS PRIOR TO USE OF THE PSL. INCLUDE A LIST OF MATERIALS, EQUIPMENT AND PORTABLE FACILITIES THAT WILL BE STORED AT THE PSL. TXDOT WILL COORDINATE WITH THE NECESSARY AGENCIES. APPROVAL OF THE PSL IS NOT GUARANTEED. UN APPROVED PSL IS NOT A COMPENSABLE IMPACT.

MIGRATORY BIRDS AND BATS.

MIGRATORY BIRDS AND BATS MAY BE NESTING WITHIN THE PROJECT LIMITS AND CONCENTRATED ON ROADWAY STRUCTURES SUCH AS BRIDGES AND CULVERTS. REMOVE ALL OLD AND UNOCCUPIED MIGRATORY BIRD NESTS FROM ANY STRUCTURES, TREES, ETC. BETWEEN SEPTEMBER 16 AND FEBRUARY 28. PREVENT MIGRATORY BIRDS FROM RE-NESTING BETWEEN MARCH 1 AND SEPTEMBER 15. PREVENTION SHALL INCLUDE ALL AREAS WITHIN 25 FT. OF PROPOSED WORK. ALL METHODS USED FOR THE REMOVAL OF OLD NESTING AREAS AND THE PREVENTION OF RE-NESTING MUST BE SUBMITTED TO TXDOT 30 BUSINESS DAYS PRIOR TO BEGIN WORK. THIS WORK IS SUBSIDIARY.

IF ACTIVE NESTS ARE ENCOUNTERED ON-SITE DURING CONSTRUCTION, ALL CONSTRUCTION ACTIVITY WITHIN 25 FT. OF THE NEST MUST STOP. CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED.

TREE AND BRUSH TRIMMING AND REMOVAL.

WORK WILL BE CONDUCTED SEPTEMBER 16 THRU FEBRUARY 28. WORK CONDUCTED OUTSIDE THIS TIMEFRAME WILL REQUIRE A BIRD SURVEY. SUBMIT A SURVEY REQUEST TO TXDOT 30 BUSINESS DAYS PRIOR TO BEGIN WORK.

IF WITHIN THE REMOVAL TIME PERIOD, REMOVAL WORK MAY BE CONDUCTED DURING DELAYED START PERIOD USING PROPER TRAFFIC CONTROL PER TCP STANDARDS.

UPON BEGIN REMOVAL OPERATIONS, ALL REMOVAL WORK FOR THE PROJECT MUST BE COMPLETED WITHIN 21 CALENDAR DAYS. COMPLETION OF REMOVAL INCLUDES REMOVING FROM ROW OR MULCHING OF ALL DEBRIS.

NO EXTENSION OF TIME OR COMPENSATION WILL BE GRANTED FOR A DELAY OR SUSPENSION DUE TO THE ABOVE BIRD, BAT, AND TREE/BRUSH REQUIREMENTS.

LAW ENFORCEMENT PERSONNEL.

SUBMIT CHARGE SUMMARY AND INVOICES USING THE DEPARTMENT FORMS.

PATROL VEHICLES MUST BE CLEARLY MARKED TO CORRESPOND WITH THE OFFICER'S AGENCY AND EQUIPPED WITH APPROPRIATE LIGHTS TO IDENTIFY THEM AS LAW ENFORCEMENT. FOR PATROL VEHICLES NOT OWNED BY A LAW ENFORCEMENT AGENCY, MARKINGS WILL BE RETROREFLECTIVE AND LEGIBLE FROM 100 FT. FROM BOTH SIDES AND THE REAR OF THE VEHICLE. LIGHTS WILL BE HIGH INTENSITY AND VISIBLE FROM ALL ANGLES.

NO PAYMENT WILL BE MADE FOR LAW ENFORCEMENT PERSONNEL NEEDED FOR MOVING EQUIPMENT OR PAYMENT FOR DRIVE TIME TO/FROM THE EVENT SITE. A MINIMUM NUMBER OF HOURS IS NOT GUARANTEED. PAYMENT IS FOR WORK PERFORMED. IF THE CONTRACTOR HAS A FIELD OFFICE, PROVIDE AN OFFICE LOCATION FOR A SUPERVISORY OFFICER WHEN EVENT REQUIRES A SUPERVISING OFFICER. THIS WORK IS SUBSIDIARY.

A MAXIMUM COMBINED RATE OF $70 PER HOUR FOR THE LAW ENFORCEMENT PERSONNEL AND THE PATROL VEHICLE WILL BE ALLOWED. ANY SCHEDULING FEE IS SUBSIDIARY PER STANDARD SPECIFICATION 502.4.2.

CANCEL LAW ENFORCEMENT PERSONNEL WHEN THE EVENT IS CANCELED. CANCELLATION, MINIMUMS OR "SHOW UP" FEES WILL NOT BE PAID WHEN CANCELLATION IS MADE 12 HOURS PRIOR TO BEGINNING OF THE EVENT. FAILURE TO CANCEL WITHIN 12 HOURS WILL NOT BE CAUSE FOR PAYMENT FOR CANCELLATION, MINIMUMS, OR "SHOW UP" TIME. PAYMENT OF ACTUAL "SHOW UP" TIME TO THE EVENT SITE DUE TO CANCELLATION WILL BE ON A CASE-BY-CASE BASIS AT A MAXIMUM OF 2 HOURS PER OFFICER.

ALTERATIONS TO THE CANCELLATION AND MAXIMUM RATE MUST BE APPROVED BY THE ENGINEER OR PRE-DETERMINED BY OFFICIAL POLICY OF THE OFFICERS GOVERNING AUTHORITY.

BACK UP ALARM.

FOR HOURS 9 P TO 5 A, UTILIZE A NON-INTRUSIVE, SELF-ADJUSTING NOISE LEVEL REVERSE SIGNAL ALARM. THIS IS NOT APPLICABLE TO HOTMIX OR SEAL COAT OPERATIONS. THIS IS SUBSIDIARY.

ITEM 8 - PROSECUTION AND PROGRESS

THE SEQUENCE OF WORK SHOWN ON THE PLANS DEMONSTRATES A VOLUME OF WORK AVAILABLE IN EACH PHASE OF CONSTRUCTION THAT WILL ENSURE THE CONTRACTOR IS NOT IMPACTED BY THE UNCLEAR ROW, RAILROAD, AND UTILITIES. A DEVIATION FROM THE SEQUENCE OF WORK SHOWN ON THE PLANS MUST BE APPROVED BY THE ENGINEER.

THE ROAD-USER COST LIQUIDATED DAMAGES ARE $XXX.XX PER DAY.

ELECTRONIC VERSIONS OF SCHEDULES WILL BE SAVED IN PRIMAVERA P6 FORMAT.

SUBSTANTIALLY COMPLETE THE PROJECT IN __ WORKING DAYS.

ITEM 100 - PREPARING RIGHT OF WAY

PREP ROW MUST NOT BEGIN UNTIL ACCESSIBLE TREES DESIGNATED FOR PRESERVATION HAVE BEEN PROTECTED, ITEMS LISTED IN THE EPIC HAVE BEEN ADDRESSED, AND SW3P CONTROLS INSTALLED IN ACCESSIBLE AREAS.

BACKFILL MATERIAL WILL BE TYPE B EMBANKMENT USING ORDINARY COMPACTION.

FOLLOW ITEM 752.4 WORK METHODS AND ITEM 752 GENERAL NOTES WHEN REMOVING OR WORKING ON OR NEAR TREES AND BRUSH.

UNLESS SHOWN OTHERWISE IN THE PLANS OR A DESIGNATED NON-MOW AREA, PERFORM TRIMMING OR REMOVAL FOR AREAS WITHIN 30 FT. OF EDGE OF PAVEMENT UNDER CONSTRUCTION. TRIM OR REMOVE TO PROVIDE MINIMUM OF 5 FT. OF HORIZONTAL CLEARANCE AND 7 FT. OF VERTICAL CLEARANCE FOR THE FOLLOWING: SIDEWALKS, PATHS, GUARD FENCE, RAILS, SIGNS, OBJECT MARKERS, AND STRUCTURES. TRIM TO PROVIDE A MINIMUM OF 14 FT. VERTICAL CLEARANCE UNDER ALL TREES. THIS WORK IS SUBSIDIARY.

ITEM 110 - EXCAVATION

THE ENGINEER WILL DEFINE UNSUITABLE MATERIAL.

ITEM 132 - ALL EMBANKMENT

THE ENGINEER WILL DEFINE UNSUITABLE MATERIAL. MATERIAL WHICH THE CONTRACTOR MIGHT DEEM TO BE UNSUITABLE DUE TO MOISTURE CONTENT WILL NOT BE CONSIDERED UNSUITABLE MATERIAL.

PRIOR TO BEGIN EMBANKMENT OF EXISTING AREA, CORRECT OR REPLACE UNSTABLE MATERIAL TO A DEPTH OF 6 IN. BELOW EXISTING GRADE. EMBANKMENT AREAS WILL BE INSPECTED PRIOR TO BEGINNING WORK.

ROCK OR BROKEN CONCRETE PRODUCED BY THE PROJECT IS ALLOWED IN EARTH EMBANKMENTS. THE SIZE OF THE ROCK OR BROKEN CONCRETE WILL NOT EXCEED THE LAYER THICKNESS REQUIREMENTS IN SECTION 132.3.4., "COMPACTION METHODS." THE MATERIAL WILL NOT BE PLACED VERTICALLY WITHIN 5 FT. OF THE FINISHED SUBGRADE ELEVATION.

EMBANKMENT PLACED VERTICALLY WITHIN 5 FT. OF THE FINISHED SUBGRADE ELEVATION OR WITHIN THE EDGES OF THE SUBGRADE AND TREATED WITH LIME, CEMENT, OR OTHER CALCIUM BASED ADDITIVES MUST HAVE A SULFATE CONTENT LESS THAN 3000 PPM. ALLOW 5 BUSINESS DAYS FOR TESTING. TREATMENT OF SULFATE MATERIAL 3000 PPM TO 7000 PPM REQUIRES 7 DAYS OF MELLOWING AND CONTINUOUS WATER CURING, IN ACCORDANCE TXDOT GUIDELINES FOR TREATMENT OF SULFATE-RICH SOILS AND BASES IN PAVEMENT STRUCTURES (9/2005). MATERIAL OVER 7000 PPM IS NOT ALLOWED.

ITEM 160 - TOPSOIL

OFF-SITE TOPSOIL WILL HAVE A MINIMUM PI OF 25.

NO SANDY LOAM ALLOWED.

CONSTRUCT TOPSOIL STOCKPILES OF NO MORE THAN FIVE (5) FEET IN HEIGHT.

IT IS PERMISSIBLE TO USE TOPSOIL DIKES FOR EROSION CONTROL BERMS WITHIN THE RIGHT OF WAY, AS DIRECTED.

SEED OR TRACK SLOPES WITHIN 14 DAYS OF PLACEMENT.

SALVAGE TOPSOIL FROM SITES OF EXCAVATION AND EMBANKMENT. MAXIMUM SALVAGE DEPTH IS 6 INCHES.

WINDROWING OF TOPSOIL OBTAINED FROM THE RIGHT OF WAY (ROW) IS NOT ALLOWED.

ITEM 168 - VEGETATIVE WATERING

WATER ALL AREAS OF PROJECT TO BE SEEDED OR SODDED.

MAINTAIN THE SEEDBED IN A CONDITION FAVORABLE FOR THE GROWTH OF GRASS. WATERING CAN BE POSTPONED IMMEDIATELY AFTER A RAINFALL ON THE SITE OF 5/64 INCH OR GREATER BUT WILL BE RESUMED BEFORE THE SOIL DRIES OUT. CONTINUE WATERING UNTIL FINAL ACCEPTANCE.

VEGETATIVE WATERING RATES AND QUANTITIES ARE BASED ON 5/64 INCH OF WATERING PER WEEK OVER A 3-MONTH WATERING CYCLE. THE ACTUAL RATES USED AND PAID FOR WILL BE AS DIRECTED AND WILL BE BASED ON PREVAILING WEATHER CONDITIONS TO MAINTAIN THE SEEDBED.

OBTAIN WATER AT A SOURCE THAT IS METERED (FURNISH A CURRENT CERTIFICATION OF THE METER BEING USED) OR FURNISH THE MANUFACTURER'S SPECIFICATIONS SHOWING THE TANK CAPACITY FOR EACH TRUCK USED. NOTIFY THE ENGINEER, EACH DAY THAT WATERING TAKES PLACE, BEFORE WATERING, SO THAT METER READINGS OR TRUCK COUNTS CAN BE VERIFIED.

ITEM 204 - SPRINKLING

APPLY WATER FOR DUST CONTROL AS DIRECTED. WHEN DUST CONTROL IS NOT BEING MAINTAINED, CEASE OPERATIONS UNTIL DUST CONTROL IS MAINTAINED. CONSIDER SUBSIDIARY TO THE PERTINENT ITEMS.

ITEM 216 - PROOF ROLLING

CORRECT AND PERFORM "PROOF ROLLING" RETEST AT THE CONTRACTOR'S EXPENSE, TO THE SATISFACTION OF THE ENGINEER, WHEN INITIAL "PROOF ROLLING" YIELDS A FAILING RESULT.

ITEM 300S - SURFACE COURSES AND PAVEMENTS

IF AN UNDER SEAL IS NOT PROVIDED, FURNISH A TACK COAT. APPLY TACK COAT AT 0.08 GAL/SY (RESIDUAL). APPLY NON-TRACKING TACK COAT USING MANUFACTURER RECOMMEND RATES.

ITEM 320 - EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT

USE OF MOTOR GRADER IS ALLOWED FOR PLACEMENT OF MIXTURES GREATER THAN 10 INCHES FROM THE RIDING SURFACE, WHEN HOT-MIX IS USED IN LIEU OF FLEXIBLE BASE, OR AS ALLOWED.

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REVISIONS

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ITEM 341, 344, & 3076 THRU 348/3082 - HOT-MIX ASPHALT PAVEMENT

CORE HOLES MAY BE FILLED WITH AN ASPHALTIC PATCHING MATERIAL MEETING THE REQUIREMENTS OF DMS-9203 OR WITH SCM MEETING REQUIREMENTS OF DMS-9202.

REMOVE AND DISPOSE OF OFF THE ROW AUDIBLE/PROFILE MARKINGS, REFLECTORIZED MARKINGS, AND RAISED MARKERS.

INSTALL TRANSVERSE BUTT JOINTS WITH 50 FT. H: 1 IN. V TRANSITION FROM THE NEW ACP TO THE EXISTING SURFACE. INSTALL A BUTT JOINT WITH 24 IN. H: 1 IN. V TRANSITION FROM THE NEW ACP TO A DRIVEWAY, PULLOUT OR INTERSECTION. SAW CUT THE EXISTING PAVEMENT AT THE BUTT JOINTS. THIS WORK IS SUBSIDIARY.

USE A DEVICE TO CREATE A MAXIMUM 3H:1V NOTCHED WEDGE JOINT ON ALL LONGITUDINAL JOINTS OF 2 IN. OR GREATER. THIS WORK IS SUBSIDIARY.

PRIOR TO MILLING, CORE THE EXISTING PAVEMENT TO VERIFY THICKNESS. THIS WORK IS SUBSIDIARY.

ENSURE PLACEMENT SEQUENCE TO AVOID EXCESS DISTANCE OF LONGITUDINAL JOINT LAP BACK NOT TO EXCEED ONE DAY'S PRODUCTION RATES.

SUBMIT ANY PROPOSED ADJUSTMENTS OR CHANGES TO A JMF BEFORE PRODUCTION OF THE NEW JMF.

TACK EVERY LAYER. DO NOT DILUTE TACK COAT. APPLY IT EVENLY THROUGH A DISTRIBUTOR SPRAY BAR.

PROVIDE A MINIMUM TRANSITION OF 10' FOR INTERSECTIONS, 10' FOR COMMERCIAL DRIVEWAYS, AND 6' FOR RESIDENTIAL DRIVEWAYS UNLESS OTHERWISE SHOWN ON THE PLANS.

IRREGULARITIES WILL REQUIRE THE REPLACEMENT OF A FULL LANE WIDTH USING AN ASPHALT PAVER. REPLACE THE ENTIRE SUBLOT IF THE IRREGULARITIES ARE GREATER THAN 40% OF THE SUBLOT AREA.

LIME OR AN APPROVED ANTI-STRIPPING AGENT MUST BE USED WHEN CRUSHED GRAVEL IS UTILIZED TO MEET A SAC "A" REQUIREMENT.

WHEN USING RAP OR RAS, INCLUDE THE MANAGEMENT METHODS OF PROCESSING, STOCKPILING, AND TESTING THE MATERIAL IN THE QCP SUBMITTED FOR THE PROJECT. IF RAP AND RAS ARE USED IN THE SAME MIX, THE QCP MUST DOCUMENT THAT BOTH OF THESE MATERIALS HAVE DEDICATED FEEDER BINS FOR EACH RECYCLED MATERIAL. BLENDING OF RAP AND RAS IN ONE FEEDER BIN OR IN A STOCKPILE IS NOT PERMITTED.

ASPHALT CONTENT AND BINDER PROPERTIES OF RAP AND RAS STOCKPILES MUST BE DOCUMENTED WHEN RECYCLED ASPHALT CONTENT GREATER THAN 20% IS UTILIZED.
NO RAS IS ALLOWED IN SURFACE COURSES.

DEPARTMENT APPROVED WARM-MIX ADDITIVES IS REQUIRED FOR ALL SURFACE MIX APPLICATION WHEN RAP IS USED. DOSAGE RATES WILL BE APPROVED DURING JMF APPROVAL.

THE HAMBURG WHEEL TEST WILL HAVE A MINIMUM RUT DEPTH OF 3MM EXCEPT FOR SMA WITH HPG OR PG 76.

ITEMS 341/3076 - DENSE-GRADED HOT-MIX ASPHALT

USE THE SGC FOR DESIGN AND PRODUCTION TESTING OF ALL MIXTURES. DESIGN ALL TYPE D MIXTURES AS A SURFACE MIX, MAXIMUM 15% RAP AND NO RAS. CONTRACTOR MAY NOT USE A SUBSTITUTE PG BINDER FOR 76-22. WHEN USING SUBSTITUTE BINDERS, MOLD SPECIMENS FOR MIX DESIGN AND PRODUCTION AT THE TEMPERATURE REQUIRED FOR THE SUBSTITUTE BINDER USED TO PRODUCE THE HMA.

THE HAMBURG WHEEL MINIMUM NUMBER OF PASSES FOR PG 64 OR LOWER IS REDUCED TO 7,000. THE ENGINEER MAY ACCEPT HAMBURG WHEEL TEST RESULTS FOR PRODUCTION AND PLACEMENT IF NO MORE THAN 1 OF THE 5 MOST RECENT TESTS IS BELOW THE SPECIFIED NUMBER OF PASSES AND THE FAILING TEST IS NO MORE THAN 2,000 PASSES BELOW THE SPECIFIED NUMBER OF PASSES.

ITEM 400 - EXCAVATION AND BACKFILL FOR STRUCTURES

UNLESS SHOWN ON THE PLANS, THE FOLLOWING BACKFILL WILL APPLY TO CUTTING AND RESTORING FLEXIBLE PAVEMENT. BACKFILL WITH CEMENT-STABILIZED BACKFILL. THE CEMENT-STABILIZED BACKFILL IS SUBSIDIARY.

CAP THE BACKFILL WITH TYPE B HOT-MIX TO A DEPTH EQUAL TO THE ADJACENT HOT-MIX. AT LOCATIONS WHERE THE BACKFILL SURFACE IS FINAL, PLACE 1-1/2 IN. TYPE D FOR THE SURFACE. THE MINIMUM HOT-MIX DEPTH WILL BE 4 IN.

SAW-CUT THE PAVEMENT AT THE EDGE OF THE EXCAVATION. THIS WORK IS SUBSIDIARY.

ITEM 416 - DRILLED SHAFT FOUNDATIONS

STAKE ALL FOUNDATIONS, FOR APPROVAL, BEFORE BEGINNING DRILLING OPERATIONS.

OBTAIN APPROVAL OF PLACEMENT PRIOR TO PLACING CONCRETE.

REMOVE SPOILS FROM A FLOOD PLAIN AT THE END OF EACH WORKDAY.

ITEM 420 - CONCRETE SUBSTRUCTURES

DO NOT USE PMDF IN AREAS WHERE A "FREE JOINT" IS INDICATED IN THE PLANS.

MASS PLACEMENTS ARE DEFINED AS PLACEMENTS WITH A LEAST DIMENSION GREATER THAN OR EQUAL TO 5 FT. OR DESIGNATED ELSEWHERE ON THE PLANS.

THE "H" VALUES SHOWN ON BRIDGE LAYOUTS ARE ESTIMATED COLUMN HEIGHTS. CALCULATE THE ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS.

PERFORM WORK DURING GOOD WEATHER UNLESS OTHERWISE DIRECTED. IF WORK IS PERFORMED AT CONTRACTOR'S OPTION, WHEN INCLEMENT WEATHER IS IMPENDING, AND THE WORK IS DAMAGED BY THE WEATHER, THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REPAIRS/REPLACEMENT.

UPON COMPLETION OF THE STRUCTURE, STENCIL THE NATIONAL BRIDGE INVENTORY (NBI) NUMBER (STRUCTURE NUMBER) USING BLACK PAINT AND 4 IN. TALL NUMBERS AT 4 LOCATIONS DESIGNATED BY TXDOT. THIS WORK IS SUBSIDIARY.

BONDING AGENTS ARE REQUIRED AT CONSTRUCTION JOINTS. DO NOT USE MEMBRANE CURING FOR STRUCTURAL CONCRETE AS DEFINED IN ITEM 421, TABLE 8.

REMOVE ALL LOOSE FORMWORK AND OTHER MATERIALS FROM THE FLOODPLAIN OR DRAINAGE AREAS DAILY.

ITEM 432 - RIPRAP

SAW-CUT EXISTING RIPRAP THEN EPOXY 12 IN. LONG NO. 3 OR NO. 4 BARS 6 IN. DEEP AT A MAXIMUM SPACING OF 18 IN. IN EACH DIRECTION TO TIE NEW RIPRAP TO EXISTING RIPRAP. THIS WORK IS SUBSIDIARY.

ITEM 465 - JUNCTION BOXES, MANHOLES, AND INLETS
MAINTAIN DRAINAGE AT CURB INLETS UNTIL THE FINAL ROADWAY SURFACE IS PLACED. FOR INLETS NOT PLACED IN ROADWAY, CONSTRUCT CAST-IN-PLACE REINFORCED CONCRETE APRON AS SHOWN IN THE STANDARDS. THIS WORK IS SUBSIDIARY.

BACKFILL SHALL USE COHESIONLESS MATERIAL PER ITEM 400 OR FLOWABLE FILL IF WIDTH BETWEEN STRUCTURE AND EXTENT OF EXCAVATION IS 2 FT. OR LESS. THIS IS SUBSIDIARY.

ITEM 466 - HEADWALLS AND WINGWALLS

REMOVE ALL LOOSE FORMWORK AND MATERIALS FROM THE WATERWAY AT THE END OF EACH WORK WEEK OR PRIOR TO A RAIN EVENT. DEBRIS THAT FALLS INTO THE WATERWAY MUST BE REMOVED AT THE END OF EACH WORK DAY. UPON COMPLETION OF THE STRUCTURE, STENCIL THE NATIONAL BRIDGE INVENTORY (NBI) NUMBER (STRUCTURE NUMBER) USING BLACK PAINT AND 4 IN. TALL NUMBERS AT 4 LOCATIONS DESIGNATED BY TXDOT. THIS WORK IS SUBSIDIARY.

ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING

FOR ROADWAYS WITHOUT DEFINED ALLOWABLE CLOSURE TIMES, NIGHTTIME LANE CLOSURES WILL BE ALLOWED FROM 8 P TO 6 A.

NO CLOSURES WILL BE ALLOWED ON THE WEEKENDS, WORKING DAY PRIOR, AND WORKING DAY AFTER THE NATIONAL HOLIDAYS DEFINED IN THE STANDARD SPECIFICATIONS, GOOD FRIDAY, AND EASTER WEEKEND.

ONE-WAY TRAFFIC CONTROL, INCLUDING WORK PERFORMED UNDER ITEM 510, MUST BE SET UP TO PROVIDE A MAXIMUM OF 20 MINUTES OF DELAY TO THE TRAVELING PUBLIC.

SUBMIT REQUEST FOR TRAFFIC DETOURS AND FULL ROADWAY CLOSURES 168 HOURS PRIOR TO IMPLEMENTATION. SUBMIT REQUEST FOR NIGHTTIME WORK 96 HOURS TO IMPLEMENTATION DATE.

CANCELLATIONS OF ACCEPTED CLOSURES (NOT APPLICABLE TO FULL CLOSURES OR DETOURS) DUE TO WEATHER WILL NOT REQUIRE RESUBMISSION IN ACCORDANCE WITH THE ABOVE RESTRICTIONS IF THE WORK IS COMPLETED DURING THE NEXT ALLOWABLE CLOSURE TIME.

CLOSURES THAT CONFLICT WITH ADJACENT CONTRACTOR WILL BE PRIORITIZED ACCORDING TO CRITICAL PATH WORK PER LATEST SCHEDULE. CONFLICTING CRITICAL PATH OR NON-CRITICAL WORK WILL BE APPROVED FOR FIRST LCN SUBMITTED. DENIAL OF A CLOSURE DUE TO PRIORITIZATION OR OTHER REASONS WILL NOT BE REASON FOR TIME SUSPENSION, DELAY, OVERHEAD, ETC.

MEET WITH THE ENGINEER PRIOR TO LANE CLOSURES TO ENSURE THAT SUFFICIENT EQUIPMENT, MATERIALS, DEVICES, AND WORKERS WILL BE USED. TAKE IMMEDIATE ACTION TO MODIFY CURRENT AND FUTURE TRAFFIC CONTROL, IF AT ANY TIME THE QUEUE BECOMES GREATER THAN 20 MINUTES.

CONSIDER INCLEMENT WEATHER PRIOR TO IMPLEMENTING THE LANE CLOSURES. DO NOT SET UP TRAFFIC CONTROL WHEN THE PAVEMENT IS WET.

COVER, RELOCATE, OR REMOVE EXISTING SMALL SIGNS THAT CONFLICT WITH TRAFFIC CONTROL.

INSTALL ALL PERMANENT SIGNS, DELINEATION, AND OBJECT MARKERS REQUIRED FOR THE OPERATION OF THE ROADWAY BEFORE OPENING TO TRAFFIC. USE OF TEMPORARY MOUNTS IS ALLOWED OR MAY BE REQUIRED UNTIL THE PERMANENT MOUNTS ARE INSTALLED OR NOT IMPACTED BY CONSTRUCTION. MAINTAIN THE TEMPORARY MOUNTS. THIS WORK IS SUBSIDIARY.

PLACE A 28-INCH CONE, MEETING REQUIREMENTS OF BC (10) AND TY III BARRICADES, ON TOP OF FOUNDATIONS THAT HAVE PROTRUDING STUDS. THIS WORK IS SUBSIDIARY.

EDGE CONDITION TREATMENT TYPES MUST BE IN ACCORDANCE WITH THE TXDOT STANDARD. INSTALLATION AND REMOVAL OF A SAFETY SLOPE IS SUBSIDIARY.

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 ENGINEER MAY CHOOSE TO USE EXISTING BID ITEMS IF IT DOES NOT SLOW THE IMPLEMENTATION OF ENHANCEMENT.

ITEM 504 - FIELD OFFICE AND LABORATORY

ALL LABS AND OFFICES WILL INCLUDE CLEANING AT LEAST ONCE A WEEK. THE CLEANING WILL INCLUDE SWEEPING AND MOPPING OF FLOORS, CLEANING THE TOILET AND LAVATORY, AND EMPTYING WASTEBASKETS. SPACE HEATERS ARE NOT CONSIDERED ADEQUATE HEATING.

PROJECTS WITH HMAC, FURNISH A TYPE D STRUCTURE FOR THE ENGINEER'S EXCLUSIVE USE. THE STRUCTURE WILL INCLUDE HIGH SPEED INTERNET SERVICE WITH WIFI SIGNAL, ONE DESK, TWO CHAIRS, AND ONE FILE CABINET. PROVIDE A MINIMUM OF THREE 120-VOLT CIRCUITS WITH 20-AMP BREAKERS AND AT MOST TWO GROUNDED CONVENIENCE OUTLETS PER CIRCUIT.

PROVIDE A TYPE E FIELD OFFICE STRUCTURE WITH AT LEAST 400 SQ. FT. OF GROSS FLOOR AREA IN ROOM(S) 8 FT. HIGH. THE STRUCTURE WILL INCLUDE HIGH SPEED INTERNET SERVICE WITH WIFI SIGNAL, MINIMUM OF TWO DESKS, FOUR CHAIRS, AND A STORAGE CABINET. THE CABINET WILL BE LOCKABLE AND A MINIMUM OF 3 FT WIDE BY 2 FT DEEP BY 3 FT HIGH. IF A FIELD OFFICE IS REQUIRED, A CONCRETE TESTING FACILITY WILL BE REQUIRED REGARDLESS OF QUANTITY OF CONCRETE.

THIS DOCUMENT IS FOR INTERIM REVIEW AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING, PERMIT OR OTHER UNAUTHORIZED PURPOSES. THESE DOCUMENTS/PLANS WERE AUTHORIZED TO BE RELEASED.

BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

GENERAL NOTES

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	12

ITEM 506 - TEMPORARY EROSION, SEDIMENTATION, AND ENV CONTROLS

IF SW3P PLAN SHEETS ARE NOT PROVIDED, PLACE THE CONTROL MEASURES AS DIRECTED.
INSTALL, MAINTAIN, REMOVE CONTROL MEASURES IN AREAS OF THE RIGHT OF WAY UTILIZED BY THE CONTRACTOR THAT ARE OUTSIDE THE LIMITS OF DISTURBANCE REQUIRED FOR CONSTRUCTION. PERMANENTLY STABILIZE THE AREA. THIS WORK IS SUBSIDIARY.

EROSION CONTROL MEASURES MUST BE INITIATED IMMEDIATELY IN AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. VERTICAL TRACK ALL EXPOSED SOIL, STOCKPILES, AND SLOPES. RE-TRACK AFTER EACH RAIN EVENT OR EVERY 14 DAYS, WHICHEVER OCCURS FIRST. SHEEP FOOT ROLLER IS ALLOWED FOR VERTICAL TRACKING. THIS WORK IS SUBSIDIARY.

FOR ROUTINE OR ANTICIPATED DEWATERING, NOTIFY THE ENGINEER 72 HOURS BEFORE BEGINNING DEWATERING. NOTIFY THE ENGINEER WITHIN 1 HOUR OF BEGINNING EMERGENCY OR RECENT RAINFALL DEWATERING. WATER LOCATED WITHIN THE ROW THAT WILL LEAVE THE ROW MUST APPEAR FREE OF POLLUTANTS SUCH AS SUSPENDED SEDIMENT, OIL SHEEN, FLOATING SOLIDS, ETC. DIRTY WATER MUST PASS THRU ADEQUATE BMPS PRIOR TO LEAVING THE ROW TO PREVENT DISCHARGE OF DIRTY WATER. BYPASS PUMPING OF WATER FOUND IN A NAVIGABLE WATERWAY THAT ENTERS FROM OUTSIDE THE ROW AND IS DISCHARGED DOWNSTREAM OF THE ROW WILL NOT REQUIRE THE USE OF BMPS. DEWATERING BMPS WILL BE PAID FOR IN CONFORMANCE WITH THE APPLICABLE BID ITEMS. HOWEVER, IF THE NECESSARY BMP ITEM IS NOT INCLUDED IN THE CONTRACT, PAYMENT FOR THE BMP WILL BE IN ACCORDANCE WITH ARTICLE 9.7., "PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT METHOD." THE ACT OF DEWATERING AND THE EQUIPMENT USED TO DEWATER WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO PERTINENT BID ITEMS.

UNLESS A SPECIFIC PAY ITEM IS PROVIDED IN THE PLANS, THE INSTALLATION OF THE 6:1 OR FLATTER FOR RFD SIDE SLOPES IN THE SAFETY ZONE WILL BE SUBSIDIARY TO PERTINENT BID ITEMS.

ITEM 508 - CONSTRUCTING DETOURS

DETOUR TYPICAL SECTION MUST MATCH THE ADJACENT ROADWAY SECTION, UNLESS SHOWN ON THE PLANS.

FLEXIBLE BASE WILL BE TYPE A GRADE 5 PLACED USING ORDINARY COMPACTION. BASE COMPRESSIVE STRENGTHS ARE WAIVED FOR ROADWAYS NOT LISTED IN ITEM 502, TABLE 1.

ITEM 512 - PORTABLE TRAFFIC BARRIER

DESIGNATED SOURCE BARRIER STOCKPILE LOCATIONS: SH 45 JUST WEST OF US 183 SOUTH, SH 130 @ HAROLD GREEN, OR SH 130 @ GREG MANOR RD. UPON COMPLETION OF THE PROJECT, DESIGNATED SOURCE PTB DEEMED UNSALVAGEABLE BY THE ENGINEER WILL BECOME THE PROPERTY OF THE CONTRACTOR AND PAID FOR REMOVAL USING ITEM 104. CONNECTION HARDWARE IS NOT AVAILABLE FOR DESIGNATED SOURCE, FURNISH AND RETAIN ALL HARDWARE TO INSTALL THE PTB.

ANY INCREASE IN TEMPORARY BARRIER QUANTITIES THAT OCCUR DUE TO CONTRACTOR CHANGES IN THE SEQUENCE OF WORK OR THE TRAFFIC CONTROL PLAN WILL NOT BE PAID.

ITEM 528, 529, 530, 531, & 536 - MISCELLANEOUS CONSTRUCTION

REINFORCEMENT WILL BE IN ACCORDANCE WITH SECTION 432.3.1 UNLESS SHOWN ON THE PLANS. FIBER REINFORCEMENT IS NOT ALLOWED. GFRP IS ALLOWED REINFORCEMENT FOR ALL APPLICATIONS. CLASS A AND B CONCRETE ARE ALLOWED TO USE COARSE AGGREGATE GRADES 1-8.

UNLESS SHOWN ON THE PLANS, ALL CONCRETE WILL BE 5 IN. THICK AND HAVE 2 IN. SAND, BASE, OR RAP BEDDING. FURNISH BASE MEETING THE REQUIREMENT FOR ANY TYPE OR GRADE IN ACCORDANCE WITH ITEM 247. COMPRESSIVE STRENGTHS FOR FLEXIBLE BASE ARE WAIVED. RAP MUST BE 100% PASSING A 1 IN. SIEVE. BEDDING AND FLEXIBLE BASE MUST BE PLACED USING ORDINARY COMPACTION.

EXPANSION JOINTS WILL BE PLACED EVERY 40 FT. EXPANSION JOINTS MUST BE 1 IN. WIDE ASPHALT BOARD AND FLUSH WITH THE SURFACE. THE BOTTOM OF THE ASPHALT BOARD WILL BE AT HALF THE DEPTH OF THE CONCRETE. THE REINFORCEMENT WILL BE CONTINUOUS THRU THE EXPANSION JOINT.

SIDEWALK CROSS SLOPE MUST NOT EXCEED 1.5%.

IF ROOTS ARE ENCOUNTERED VERIFY WITH THE ENGINEER BEFORE ACCOMMODATING OR REMOVING 2 IN. DIAMETER OR LARGER ROOTS. ROOT REMOVAL MUST BE IN ACCORDANCE WITH SECTION 752.4.2. ROOTS MAY REMAIN IN THE BEDDING OR BASE. FOR IMPROVEMENTS WITHIN 6 IN. OF A ROOT, THE CONCRETE THICKNESS MAY BE REDUCED BY 1 IN. AND THE BEDDING INCREASED BY 1 IN. TO MINIMIZE IMPACTS TO THE ROOTS. ADJUST BEDDING AND SURFACE PROFILE TO PROVIDE A 1 IN. BEDDING CUSHION AROUND THE ROOTS. THE SURFACE PROFILE MAY BE ADJUSTED TO THE EXTENT ALLOWED BY ADA. THIS WORK IS SUBSIDIARY.

ITEM 530 - INTERSECTIONS, DRIVEWAYS, AND TURNOUTS

NOTIFY PROPERTY OWNERS AT LEAST 48 HR. BEFORE BEGINNING WORK ON THEIR DRIVEWAY. USE A MEANS AND METHODS TO CONSTRUCT THE DRIVEWAY WHILE MAINTAINING ACCESS TO THE PROPERTY AT ALL TIMES. FULL CLOSURE OF A DRIVEWAY IS ALLOWED FOR RECONSTRUCTION IF DURATION AND ALTERNATE ACCESS ARE APPROVED BY ENGINEER. INSTALL AND MAINTAIN MATERIAL ACROSS A WORK ZONE AS TEMPORARY ACCESS. THIS WORK IS SUBSIDIARY.

FOR CONC, THE PAVEMENT STRUCTURE WILL BE 6 IN. THICK AND HAVE 3 IN. FLEXIBLE BASE BEDDING UNLESS DETAILED ON THE PLANS.

ITEM 560 - MAILBOX ASSEMBLIES

ALL WEDGE ANCHOR SOCKETS MUST BE SET IN A CONCRETE FOUNDATION PER TYPE 4 SUPPORT/FOUNDATION DETAIL ON MB STANDARDS.

ITEM 585 - RIDE QUALITY FOR PAVEMENT SURFACES

USE SURFACE TEST TYPE B PAY SCHEDULE 3 TO EVALUATE RIDE QUALITY OF TRAVEL LANES, INCLUDING SERVICE ROADS.

ITEM 644 - SMALL ROADSIDE SIGN ASSEMBLIES

TRIANGULAR SLIP BASE MUST BE THE CLAMP STYLE TO SECURE THE POST TO THE SLIP BASE. SET SCREW STYLE SLIP BASE WILL NOT BE ALLOWED.

ITEM 658 - DELINEATOR AND OBJECT MARKER ASSEMBLIES

INSTALLATION AND MAINTENANCE OF PORTABLE CTB REFLECTORS WILL BE SUBSIDIARY TO THE BARRIER.

FLEXIBLE POSTS YFLX AND WFLX MUST BE TUBULAR IN SHAPE. THE "FLAT" FLEXIBLE POSTS ARE NOT ALLOWED.

CTB DELINEATORS MUST BE PLACED ON TOP OF THE CTB.

ITEM 662 - WORK ZONE PAVEMENT MARKINGS

NOTIFY THE ENGINEER AT LEAST 24 HOURS IN ADVANCE OF WORK FOR THIS ITEM.

MAINTAIN REMOVABLE AND SHORT-TERM MARKINGS DAILY. REMOVE WITHIN 48 HOURS AFTER PERMANENT STRIPING HAS BEEN COMPLETED.

ITEM 668 IS NOT ALLOWED FOR USE AS ITEM 662.

ITEM 666 - RETROFEFLECTORIZED PAVEMENT MARKINGS

NOTIFY THE ENGINEER AT LEAST 24 HR. BEFORE BEGINNING WORK.

THE CENTER-TO-CENTER MINIMUM WIDTH FOR DOUBLE YELLOW SOLID STRIPES MUST BE 18 IN. FOR ALL ROADWAYS.

WHEN THE RAISED PORTION OF A PROFILE MARKING IS PLACED AS A SEPARATE OPERATION FROM THE PAVEMENT MARKING, THE RAISED PORTION MUST BE PLACED FIRST THEN COVERED WITH TY I.

WHEN USING BLACK SHADOW TO COVER EXISTING STRIPE APPLY A NON-RETROREFLECTIVE ANGULAR ABRASIVE BEAD DROP. THE MARKING COLOR SHALL BE ADJUSTED TO RESEMBLE THE PAVEMENT COLOR. IF ITEM 677 IS NOT USED PRIOR TO PLACEMENT OF BLACK SHADOW, SCRAPE THE TOP OF THE MARKING WITH A BLADE OR LARGE PIECE OF EQUIPMENT UNLESS SURFACE IS A SEAL COAT. THE SCRAPING OF THE MARKING IS SUBSIDIARY.

ITEM 677 - ELEIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS

DISPOSE OF REMOVED MATERIALS AND DEBRIS AT LOCATIONS OFF THE RIGHT OF WAY.

ELIMINATION USING A PAVEMENT MARKING WILL NOT BE ALLOWED IN LIEU OF METHODS LISTED IN SPECIFICATION.

REMOVE PAVEMENT MARKINGS OUTSIDE THE LIMITS OF THE NEW SURFACE BY A BLASTING METHOD.

USE A TRAIL OR A NON-RETROREFLECTIVE PAINT TO COVER STRIPE REMNANTS THAT REMAIN AFTER ELIMINATION.

THE TEST REQUIREMENTS FOR THESE MATERIALS ARE WAIVED. THE PAINT COLOR SHALL BE ADJUSTED TO RESEMBLE THE EXISTING PAVEMENT COLOR. INSTALLATION AND MAINTENANCE IS SUBSIDIARY.

ITEM 752 - TREE AND BRUSH REMOVAL

FOLLOW ITEM 752.4 WORK METHODS AND ITEM 752 GENERAL NOTES WHEN REMOVING OR WORKING ON OR NEAR TREES AND BRUSH EVEN IF ITEM 752 IS NOT INCLUDED AS A PAY ITEM.

FLAILING EQUIPMENT IS NOT ALLOWED. BURNING BRUSH IS NOT ALLOWED IN URBAN AREAS OR ON ROW. USE HAND METHODS OR OTHER MEANS OF REMOVAL IF DOING WORK BY MECHANICAL METHODS IS IMPRACTICAL.

PRIOR TO BEGIN TREE PRUNING, SEND EMAIL CONFIRMATION TO THE ENGINEER THAT TRAINING AND DEMONSTRATION OF WORK METHODS HAS BEEN PROVIDED TO THE EMPLOYEES. THIS WORK IS SUBSIDIARY.

SHREDDED VEGETATION MAY BE BLENDED, AT A RATE NOT TO EXCEED 15 PERCENT BY VOLUME, WITH ITEM 160 IF THE MAXIMUM DIMENSION IS NOT GREATER THAN 2 IN.

ITEM 6001 - PORTABLE CHANGEABLE MESSAGE SIGN

PROVIDE 2 PCMS. PROVIDE A REPLACEMENT WITHIN 12 HOURS. PCMS WILL BE AVAILABLE FOR TRAFFIC CONTROL, EVENT NOTICES, ROADWAY CONDITIONS, SERVICE ANNOUNCEMENTS, ETC.

PLACE PCMS 10 CALENDAR DAYS PRIOR TO BEGIN WORK STATING, OROAD WORK BEGIN SOON, CONTACT 832-7000 FOR INFO@.

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BY: BRYAN J. SPINA , P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

GENERAL NOTES

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	12A

CONSTRUCTION SEQUENCE

SEQUENCE OF WORK

1. THE SEQUENCE OF WORK WILL BE AS FOLLOWS UNLESS OTHERWISE DIRECTED/APPROVED BY HAYS COUNTY.
2. PRIOR TO BEGINNING WORK IN ANY PHASE OF THE PROJECT, PLACE ALL ROADSIDE SIGNS ON TEMPORARY SUPPORTS AT AN APPROVED LOCATION AND AS WORK PROGRESSES AND/OR DIRECTED BY THE HAYS COUNTY. CONTRACTOR SHALL FOLLOW TXDOT STANDARDS FOR BARRICADES AND CONSTRUCTION. CONTRACTOR TO SET UP ALL OLD KYLE ROAD DETOUR SIGNS PRIOR TO CONSTRUCTION ACTIVITIES.
3. CONTRACTOR SHALL PLACE ALL SW3P CONTROLS AND TREE PROTECTION WITHIN EACH PHASE PER THE PLANS PRIOR TO THE START OF CONSTRUCTION FOR THAT PHASE.
4. THE FOLLOWING ADJUSTMENTS WILL BE COMPLETED BY OTHERS PRIOR TO CONSTRUCTION:
   a. OVERHEAD UTILITY POLES ON BOTH SIDES OF THE ROADWAY TO THE RIGHT-OF-WAY.
   b. OVERHEAD UTILITY POLES WITH ILLUMINATION.
   c. EXISTING PROPERTY FENCE RELOCATION TO NEW ROW.
5. OLD KYLE ROAD FROM FARM TO MARKET ROAD 3237 TO RANCH ROAD 12 WILL BE CONSTRUCTED IN FOUR (4) PHASES AS NOTED IN THIS NARRATIVE.

PHASE 1: TEMPORARY WIDENING ALONG SOUTHBOUND OLD KYLE ROAD

1. INSTALL EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE SW3P LAYOUT AND STANDARDS NECESSARY FOR PHASE 1.
2. PROVIDE ONE LANE OF TRAFFIC AT ALL TIMES. USE FLAGGERS AS NECESSARY TO MAINTAIN THE REQUIRED TRAFFIC PATTERN WHEN CONSTRUCTION VEHICLES ARE REQUIRED TO ENTER AN EXISTING TRAFFIC LANE FOR A PERIOD OF TIME.
3. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRICADES, BARRIERS, AND CHANNELIZING DEVICES AND SHIFT OVER TRAFFIC TO THE NORTHBOUND SIDE OF OLD KYLE ROAD PER TCP LAYOUTS AND APPLICABLE TXDOT STANDARDS FROM FARM TO MARKET ROAD TO RANCH ROAD 12. CLOSE ROAD TO ONLY ONE LANE OF WESTBOUND TRAFFIC.
4. CONSTRUCT TEMPORARY WIDENING ALONG THE SOUTHBOUND LANES OF OLD KYLE ROAD USING 6" TYPE B HMACP ACCORDING TO THE PHASE 1 TCP TYPICAL SECTIONS AND LAYOUTS.
5. REMOVE THE EXISTING PROPERTY FENCE ALONG THE SOUTHBOUND SIDE OF OLD KYLE ROAD AT LOCATIONS SHOWN IN THE PLANS AND INSTALL TEMPORARY FENCING ALONG THE PROPOSED RIGHT-OF-WAY TO ALLOW CONSTRUCTION OF FUTURE PHASES.
6. MAINTAIN 3:1 MAX SIDE SLOPES AT THE END OF EACH DAY'S WORK FOR PAVEMENT DROP-OFFS GREATER THAN 2" AT LOCATIONS WITHOUT CONCRETE BARRIERS.
7. COMPLETE ALL WORK IN THIS PHASE BEFORE STARTING PHASE 2.

PHASE 2A: EASTBOUND BLUE HOLE ROAD

1. INSTALL EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE SW3P LAYOUT AND STANDARDS NECESSARY FOR PHASE 2A.
2. PROVIDE ONE LANE OF TRAFFIC, AT ALL TIMES. USE FLAGGERS AS NECESSARY TO MAINTAIN THE REQUIRED TRAFFIC PATTERN WHEN CONSTRUCTION VEHICLES ARE REQUIRED TO ENTER AN EXISTING TRAFFIC LANE FOR A PERIOD OF TIME.
3. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRICADES, BARRIERS, AND CHANNELIZING DEVICES AND SHIFT OVER TRAFFIC TO THE WESTBOUND SIDE OF BLUE HOLE ROAD PER THE PHASE 2 TCP LAYOUTS AND APPLICABLE TXDOT STANDARDS FROM OLD KYLE ROAD TO 90' NORTH. CLOSE ROAD TO ONLY ONE LANE OF NORHTBOUND TRAFFIC.
4. INSTALL TEMPORARY FENCING ALONG THE PROPOSED RIGHT-OF-WAY OR TEMPORARY CONSTRUCTION EASEMENT TO ALLOW CONSTRUCTION OF FUTURE PHASES.
5. CONSTRUCT THE SUBGRADE AND TYPE B HOT MIX ASPHALTIC PAVEMENT BASE LAYER, CURB, AND SIDEWALKS ON THE EASTBOUND SIDE OF BLUE HOLE ROAD ACCORDING TO THE PHASE 2A TCP TYPICAL SECTIONS AND LAYOUTS.
6. INSTALL ANY APPLICABLE TOPSOIL, SEED/SOD, AND SIGNS THAT WILL NOT BE AFFECTED BY FUTURE PHASES.
7. MAINTAIN 3:1 MAX SIDE SLOPES AT THE END OF EACH DAY'S WORK FOR PAVEMENT DROP-OFFS GREATER THAN 2" AT LOCATIONS WITHOUT CONCRETE BARRIERS.
8. COMPLETE ALL WORK BEFORE STARTING PHASE 2B.

PHASE 2B: WESTBOUND BLUE HOLE ROAD

1. INSTALL EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE SW3P LAYOUT AND STANDARDS NECESSARY FOR PHASE 2B.
2. PROVIDE ONE LANE OF TRAFFIC, AT ALL TIMES. USE FLAGGERS AS NECESSARY DURING NON-PEAK TRAFFIC HOURS.
3. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRICADES, BARRIERS, AND CHANNELIZING DEVICES AND SHIFT OVER TRAFFIC TO THE EASTBOUND SIDE OF BLUE HOLE ROAD PER THE PHASE 2 TCP LAYOUTS AND APPLICABLE TXDOT STANDARDS FROM OLD KYLE ROAD TO 90' NORTH. CLOSE ROAD TO ONLY ONE LANE OF NORHTBOUND TRAFFIC.
4. INSTALL TEMPORARY FENCING ALONG THE PROPOSED RIGHT-OF-WAY OR TEMPORARY CONSTRUCTION EASEMENT TO ALLOW CONSTRUCTION OF FUTURE PHASES.
5. CONSTRUCT THE SUBGRADE AND TYPE B HOT MIX ASPHALTIC PAVEMENT BASE LAYER, CURB, AND SIDEWALKS ON THE EASTBOUND SIDE OF BLUE HOLE ROAD ACCORDING TO THE PHASE 2B TCP TYPICAL SECTIONS AND LAYOUTS.
6. INSTALL ANY APPLICABLE TOPSOIL, SEED/SOD, AND SIGNS THAT WILL NOT BE AFFECTED BY FUTURE PHASES.
7. MAINTAIN 3:1 MAX SIDE SLOPES AT THE END OF EACH DAY'S WORK FOR PAVEMENT DROP-OFFS GREATER THAN 2" AT LOCATIONS WITHOUT CONCRETE BARRIERS.
8. COMPLETE ALL WORK BEFORE STARTING PHASE 2C.

PHASE 2C: STORM DRAIN MAIN AND INLET, AND NORTHBOUND OLD KYLE ROAD

1. INSTALL EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE SW3P LAYOUT AND STANDARDS NECESSARY FOR PHASE 2.
2. PROVIDE ONE LANE OF TRAFFIC, AT ALL TIMES. USE FLAGGERS AS NECESSARY DURING NON-PEAK TRAFFIC HOURS.
3. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRICADES, BARRIERS, AND CHANNELIZING DEVICES AND SHIFT OVER TRAFFIC TO THE NORTHBOUND SIDE OF OLD KYLE ROAD PER THE PHASE 2 TCP LAYOUTS AND APPLICABLE TXDOT STANDARDS FROM FARM TO MARKET ROAD TO RANCH ROAD 12. CLOSE ROAD TO ONLY ONE LANE OF WESTBOUND TRAFFIC.
4. REMOVE THE EXISTING PROPERTY FENCE ALONG THE NORTHBOUND SIDE OF OLD KYLE ROAD AT LOCATIONS SHOWN IN THE PLANS AND INSTALL TEMPORARY FENCING ALONG THE PROPOSED RIGHT-OF-WAY OR TEMPORARY CONSTRUCTION EASEMENT TO ALLOW CONSTRUCTION OF FUTURE PHASES.
5. CONSTRUCT THE NORTHERN STORM DRAIN MAIN ALONG WITH ALL LATERALS AND INLETS ALONG THE NORTHBOUND SIDE OF OLD KYLE ROAD
6. CONSTRUCT THE NORTHBOUND DRAINAGE CHANNEL, CULVERT, AND OUTFALL ALONG THE NORTHBOUND SIDE OF OLD KYLE ROAD
7. CONSTRUCT THE SUBGRADE AND TYPE B HOT MIX ASPHALTIC PAVEMENT BASE LAYER, CURB, SIDEWALKS, AND DRIVEWAYS ON THE NORTHBOUND SIDE OF OLD KYLE ROAD ACCORDING TO THE PHASE 2 TCP TYPICAL SECTIONS AND LAYOUTS.
8. INSTALL ANY APPLICABLE TOPSOIL, SEED/SOD, AND SIGNS THAT WILL NOT BE AFFECTED BY FUTURE PHASES.
9. MAINTAIN 3:1 MAX SIDE SLOPES AT THE END OF EACH DAY'S WORK FOR PAVEMENT DROP-OFFS GREATER THAN 2" AT LOCATIONS WITHOUT CONCRETE BARRIERS.
10. COMPLETE ALL WORK IN THIS PHASE BEFORE STARTING PHASE 3.

PHASES 3: STORM DRAIN MAIN AND INLET, AND SOUTHBOUND OLD KYLE ROAD

1. INSTALL EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE SW3P LAYOUT AND STANDARDS NECESSARY FOR PHASE 3.
2. PROVIDE ONE LANE OF TRAFFIC, AT ALL TIMES. USE FLAGGERS AS NECESSARY DURING NON-PEAK TRAFFIC HOURS.
3. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRICADES, BARRIERS, AND CHANNELIZING DEVICES AND SHIFT OVER TRAFFIC TO THE SOUTHBOUND SIDE OF OLD KYLE ROAD PER THE PHASE 3 TCP LAYOUTS AND APPLICABLE TXDOT STANDARDS FROM FARM TO MARKET ROAD TO RANCH ROAD 12. CLOSE ROAD TO ONLY ONE LANE OF WESTBOUND TRAFFIC.
4. CONSTRUCT THE REMAINDER OF THE NORTHERN STORM DRAIN MAIN ALONG WITH ALL LATERALS AND INLETS ALONG THE SOUTHBOUND SIDE OF OLD KYLE ROAD
5. CONSTRUCT THE SUBGRADE AND TYPE B HOT MIX ASPHALTIC PAVEMENT BASE LAYER, CURB, SIDEWALKS, AND DRIVEWAYS ON THE NORTHBOUND SIDE OF OLD KYLE ROAD ACCORDING TO THE PHASE 3 TCP TYPICAL SECTIONS AND LAYOUTS.
6. INSTALL ANY APPLICABLE TOPSOIL, SEED/SOD, AND SIGNS THAT WILL NOT BE AFFECTED BY FUTURE PHASES.
7. MAINTAIN 3:1 MAX SIDE SLOPES AT THE END OF EACH DAY'S WORK FOR PAVEMENT DROP-OFFS GREATER THAN 2" AT LOCATIONS WITHOUT CONCRETE BARRIERS.
8. COMPLETE ALL WORK IN THIS PHASE BEFORE STARTING PHASE 4.

PHASES 4: FINAL PHASE

1. PLACE TEMPORARY PAVEMENT MARKINGS BASED ON THE PERMANENT PAVEMENT MARKING LAYOUT AND OPEN OLD KYLE ROAD TO FULL TRAFFIC.
2. REMOVE ALL REMAINING TEMPORARY WIDENING (NO SEPARATE PAY ITEM).
3. CONSTRUCT ROADWAY MEDIANS PER THE PROPOSED TYPICAL SECTIONS ALONG OLD KYLE ROAD
4. CONSTRUCT FINAL 2.0" LIFT OF TYPE D HOT MIX ASPHALTIC PAVEMENT SURFACE LAYER USING TXDOT TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS STANDARD (7-1) AND TXDOT TCP MOBILE OPERATIONS STANDARD (3-1).
5. INSTALL FINAL PAVEMENT MARKINGS AND SIGNS USING TXDOT TCP MOBILE OPERATIONS STANDARDS (3-1) AND (3-3).
6. PERFORM ANY REMAINING FINAL GRADING AND PLACE ANY REMAINING TOPSOIL AND SEEDING AND/OR SODDING.
7. REMOVE ALL TEMPORARY SW3P DEVICES AND TREE PROTECTION, AS DIRECTED.
8. PERFORM FINAL CLEANUP.

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

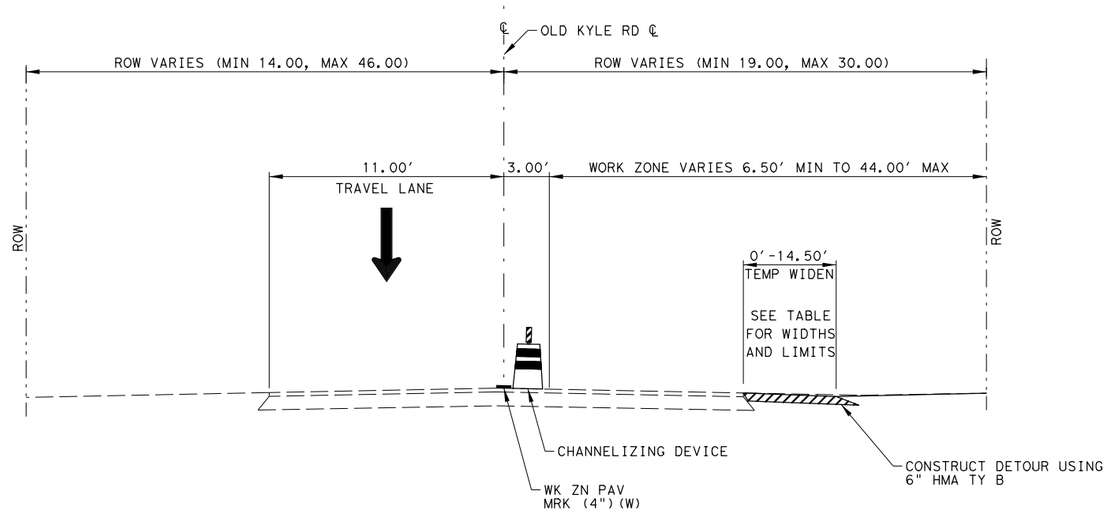
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

CONSTRUCTION AND PHASING NOTES

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	14



OLD KYLE ROAD TCP PHASE 1 SECTION

SCALE: NTS

TEMP WIDENING TABLE		
STA.	WIDTH	NOTE
4+98	0′	BEGIN CONSTR DETOUR
5+35	1′	
8+85	8′	
9+20	14.50′	
12+11	14.50′	
12+82	6′	
14+36	2′	
14+45	0′	END CONSTR DETOUR
16+78	0	BEGIN CONSTR DETOUR
16+80	2.5′	
17+08	4′	
19.84	5′	
20+20	0	END CONSTR DETOUR

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BY: BRYAN J. SPINA , P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

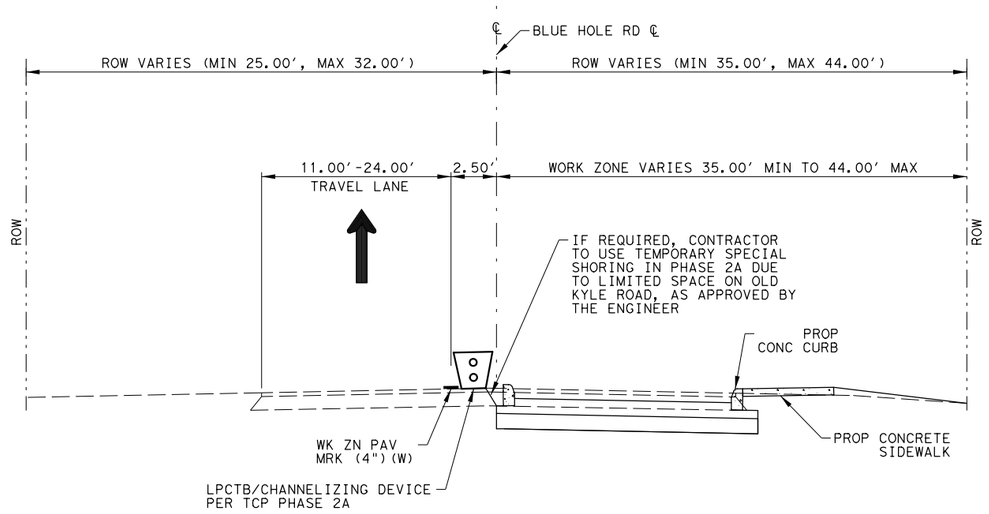
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TCP PHASE 1
TYPICAL SECTIONS

SCALE: N.T.S.

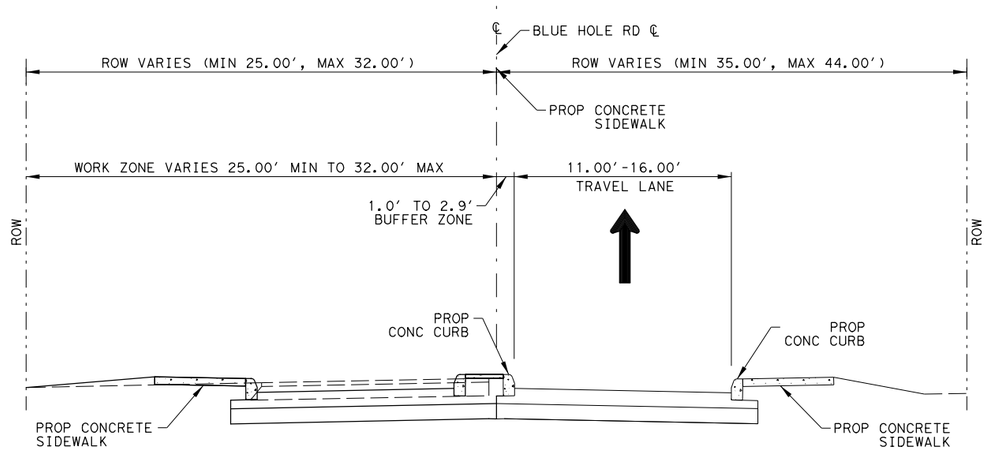
DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	15

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TCP_TYPSECT01.dgn



BLUE HOLE ROAD TCP PHASE 2A SECTION

SCALE: NTS



BLUE HOLE ROAD TCP PHASE 2B SECTION

SCALE: NTS

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

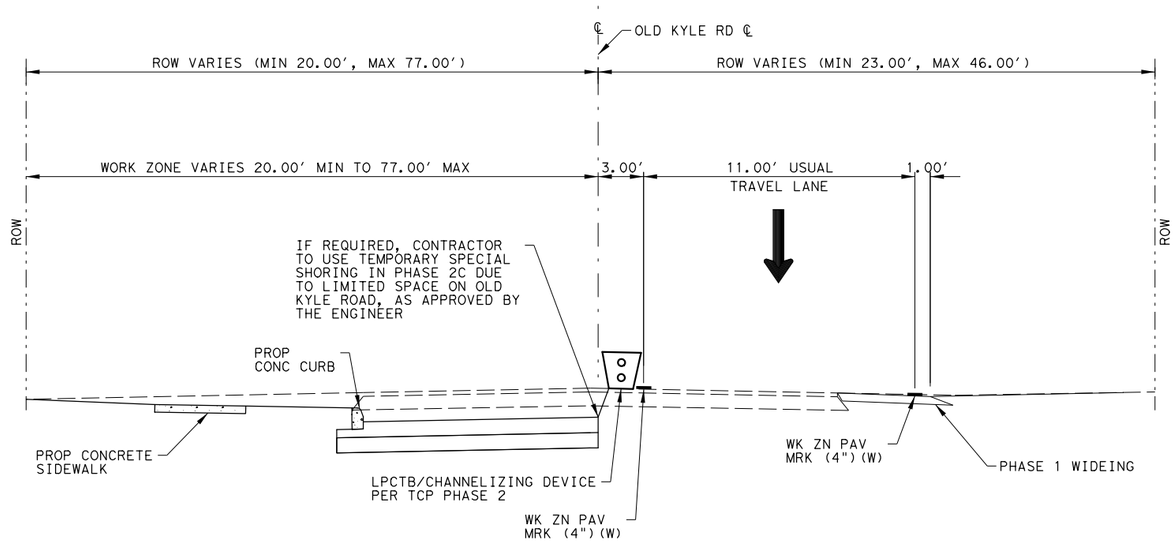
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TCP PHASE 2A & 2B
TYPICAL SECTIONS

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	16



OLD KYLE ROAD TCP PHASE 2C SECTION

SCALE: NTS

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LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

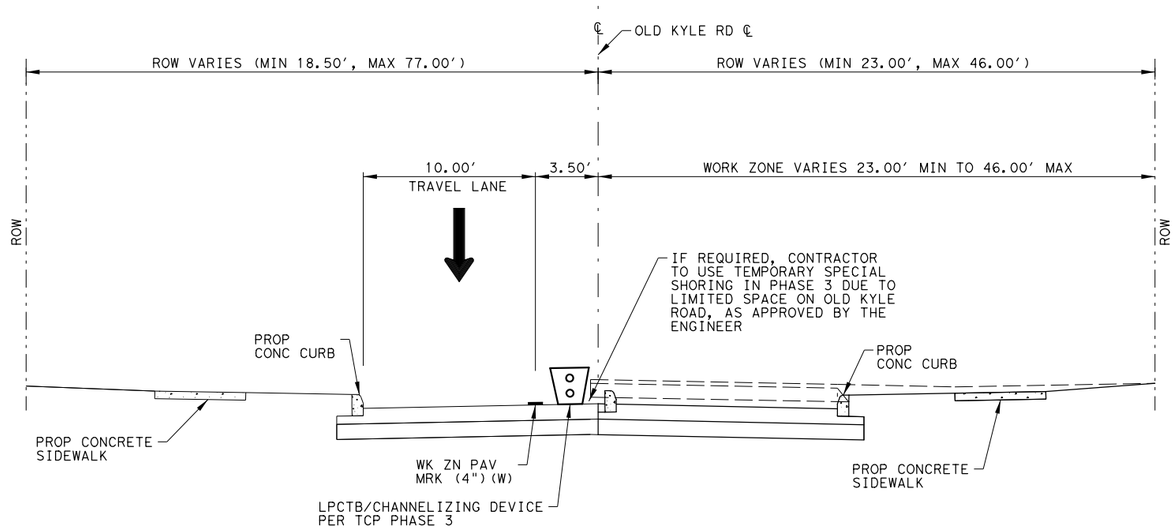
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TCP PHASE 2C TYPICAL SECTIONS

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	17



OLD KYLE ROAD TCP PHASE 3 SECTION

SCALE: NTS

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

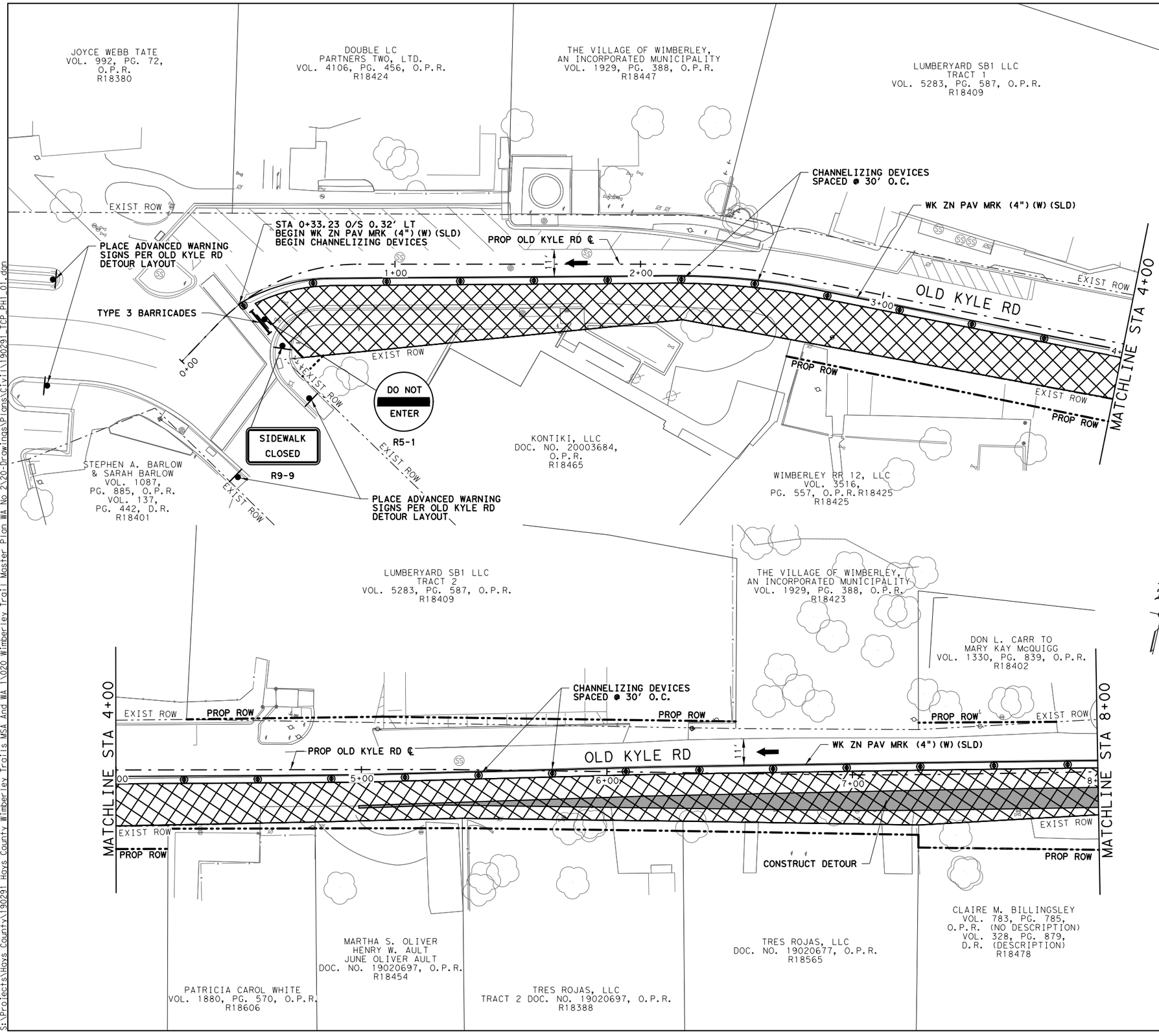
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TCP PHASE 3
TYPICAL SECTIONS

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	18



NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.
2. CONTRACTOR TO KEEP CROSSWALKS OPEN AT THE INTERSECTION OF OLD KYLE RD AND RANCH RD 12 DURING TCP PHASE 1

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
- LOW PROFILE CONC BARRIER

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

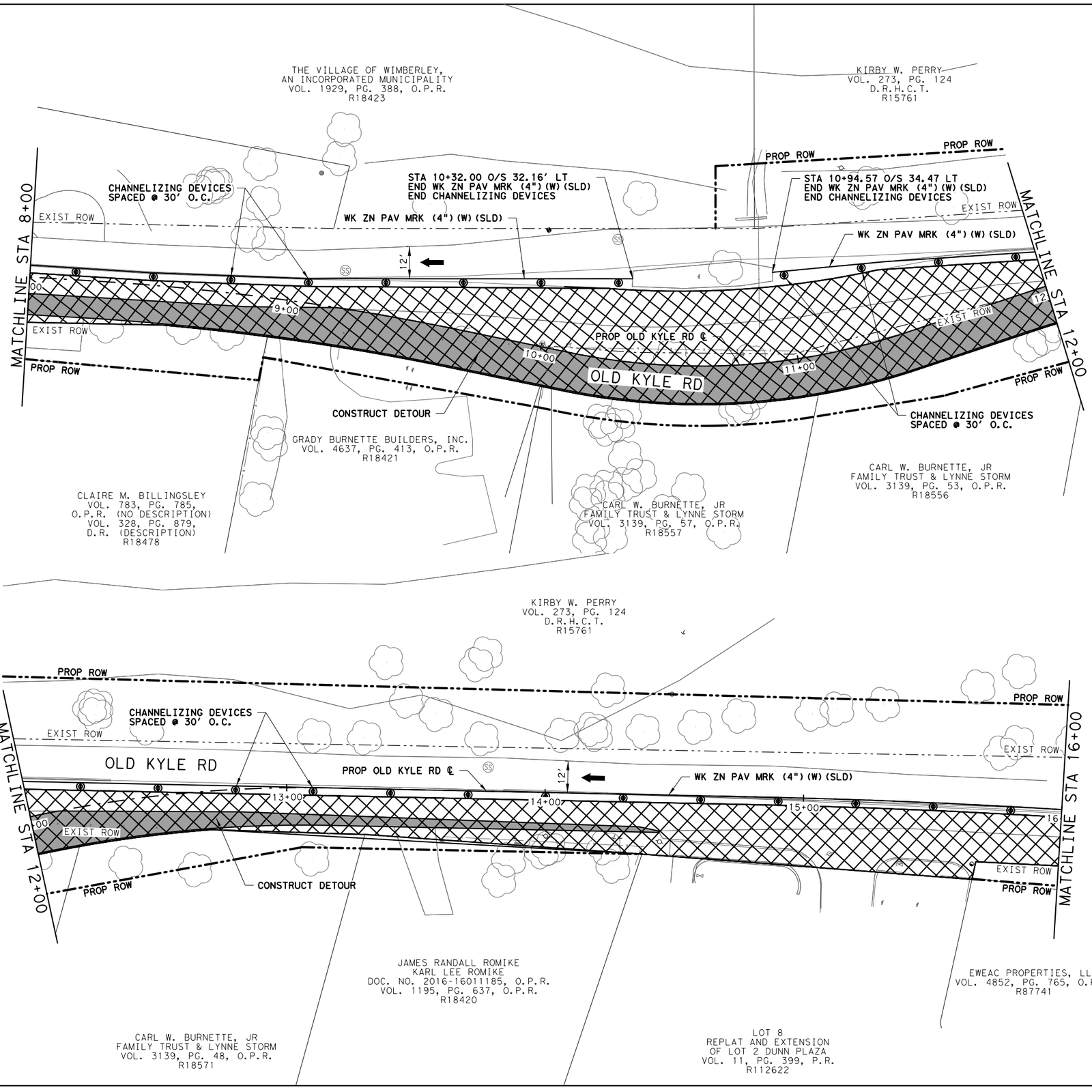
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 1 STA 0+00 TO STA 8+00 SHEET 1 OF 3

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	19

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TCP_PH1_01.dgn



NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
- LOW PROFILE CONC BARRIER

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 1
STA 8+00 TO STA 16+00
SHEET 2 OF 3

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	20

Plotted by: hhinostroza
5/10/2024
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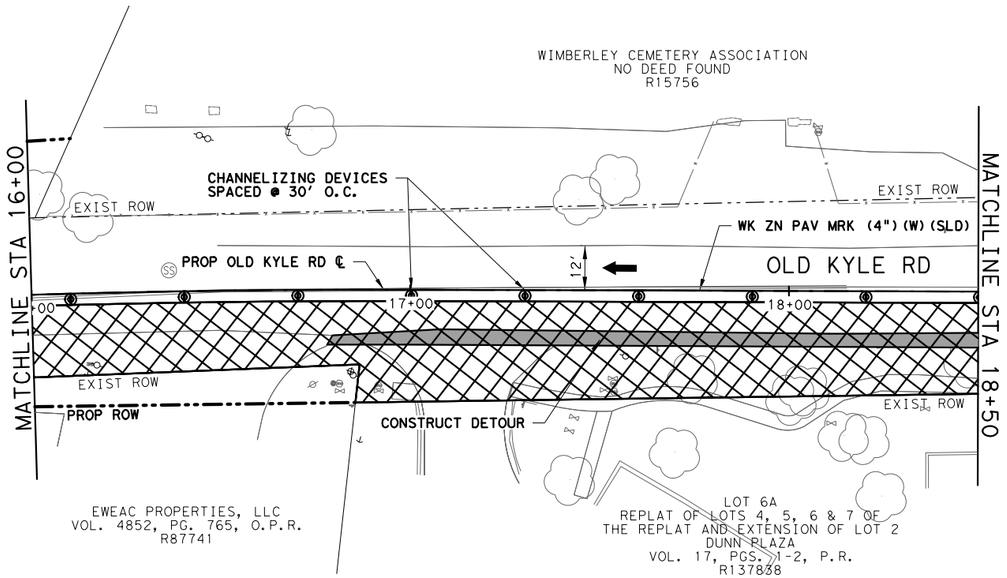

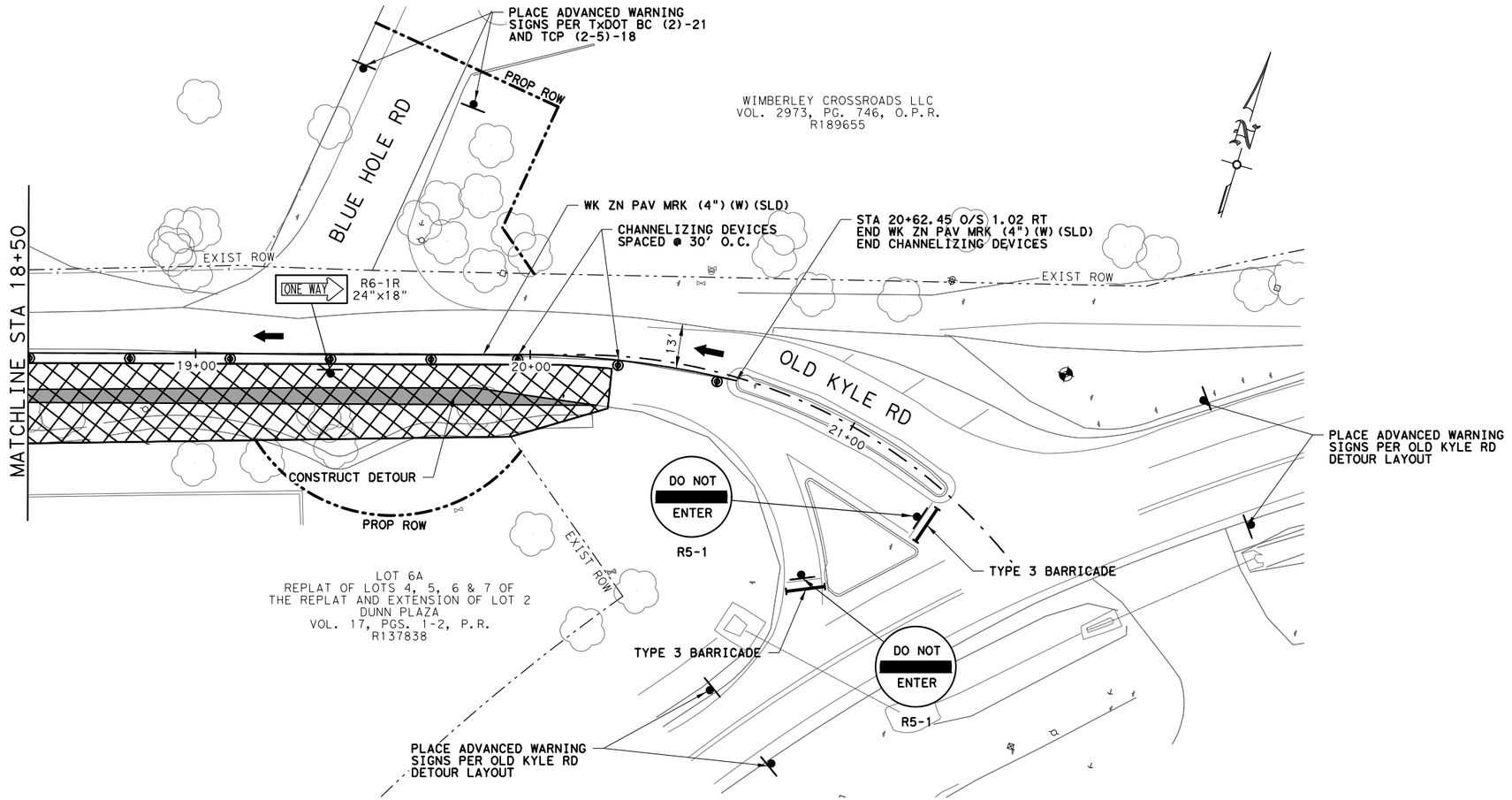

NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
- LOW PROFILE CONC BARRIER

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 1 STA 16+00 TO END SHEET 3 OF 3

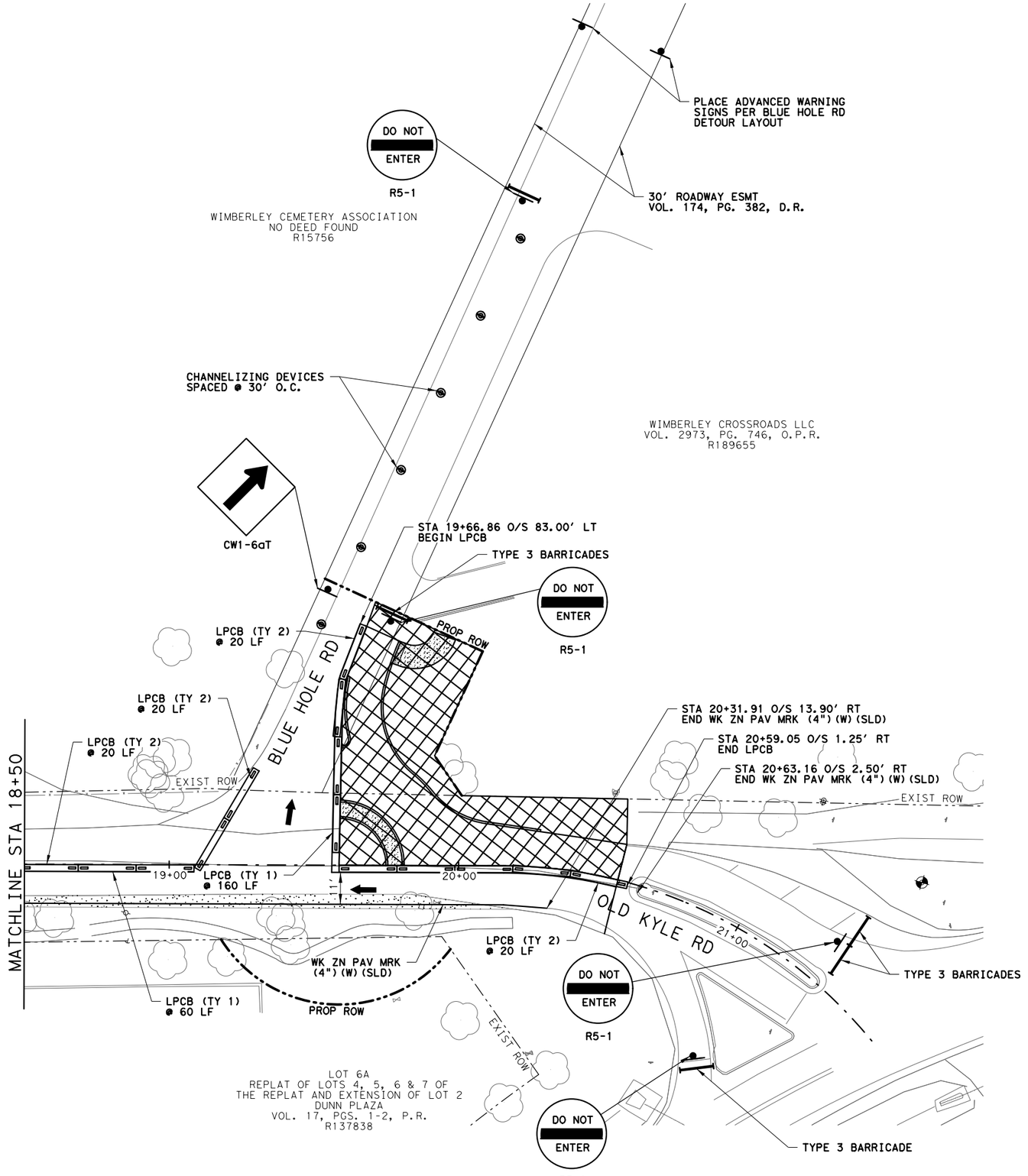
HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	21

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TCP_PH1_03.dgn



NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.
2. IF REQUIRED, CONTRACTOR TO USE TEMPORARY SPECIAL SHORING AS NOTED IN TCP TYPICAL SECTION IN PHASE 2A DUE TO LIMITED SPACE ON BLUE HOLE, AS APPROVED BY THE ENGINEER

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
- LOW PROFILE CONC BARRIER

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 2A STA 18+50 TO END

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	22

Plotted by: hhinostroza
5/10/2024
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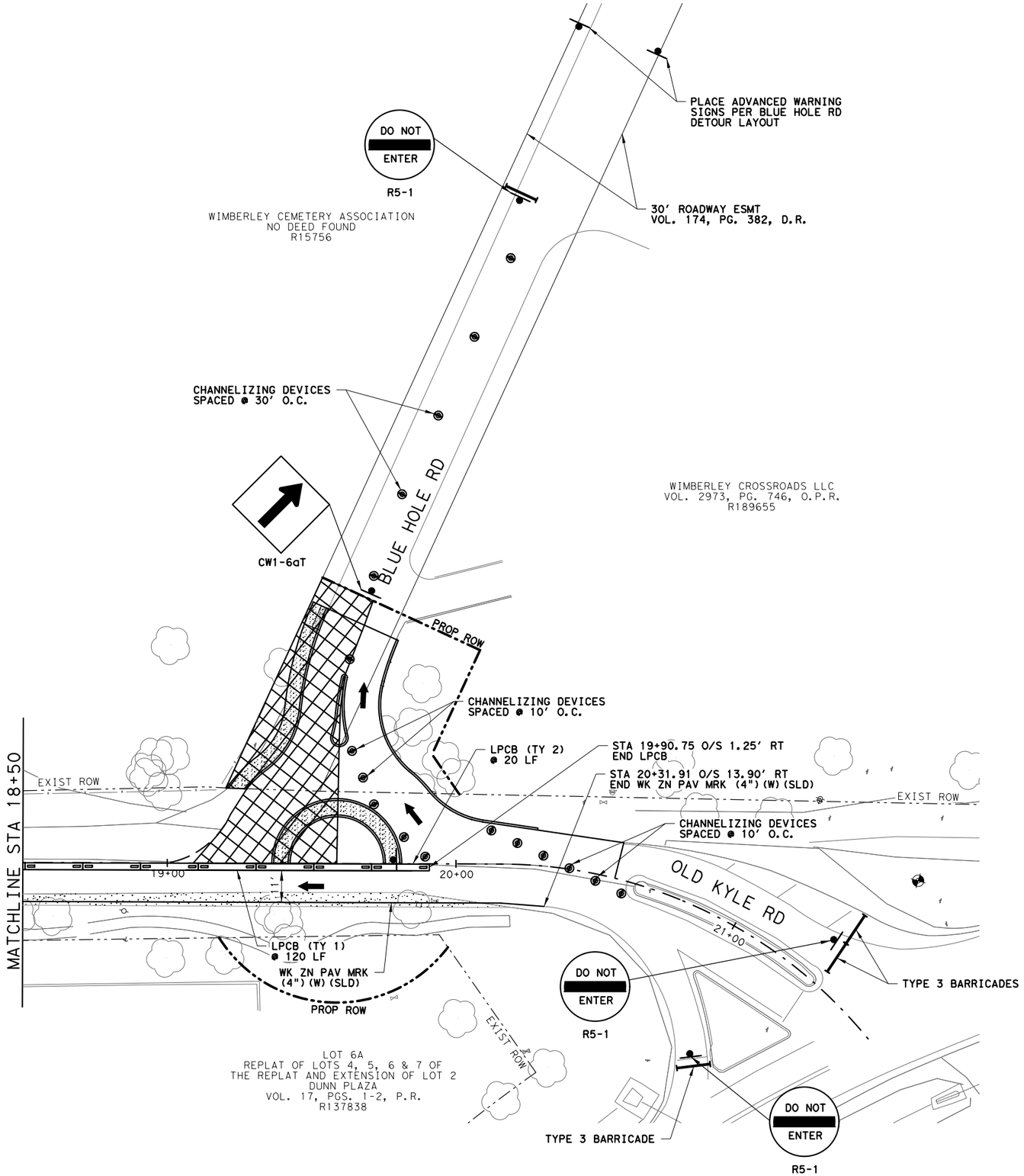

NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
- LOW PROFILE CONC BARRIER

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 2B STA 18+50 TO END

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	23

Plotted by: hhinostroza
5/10/2024
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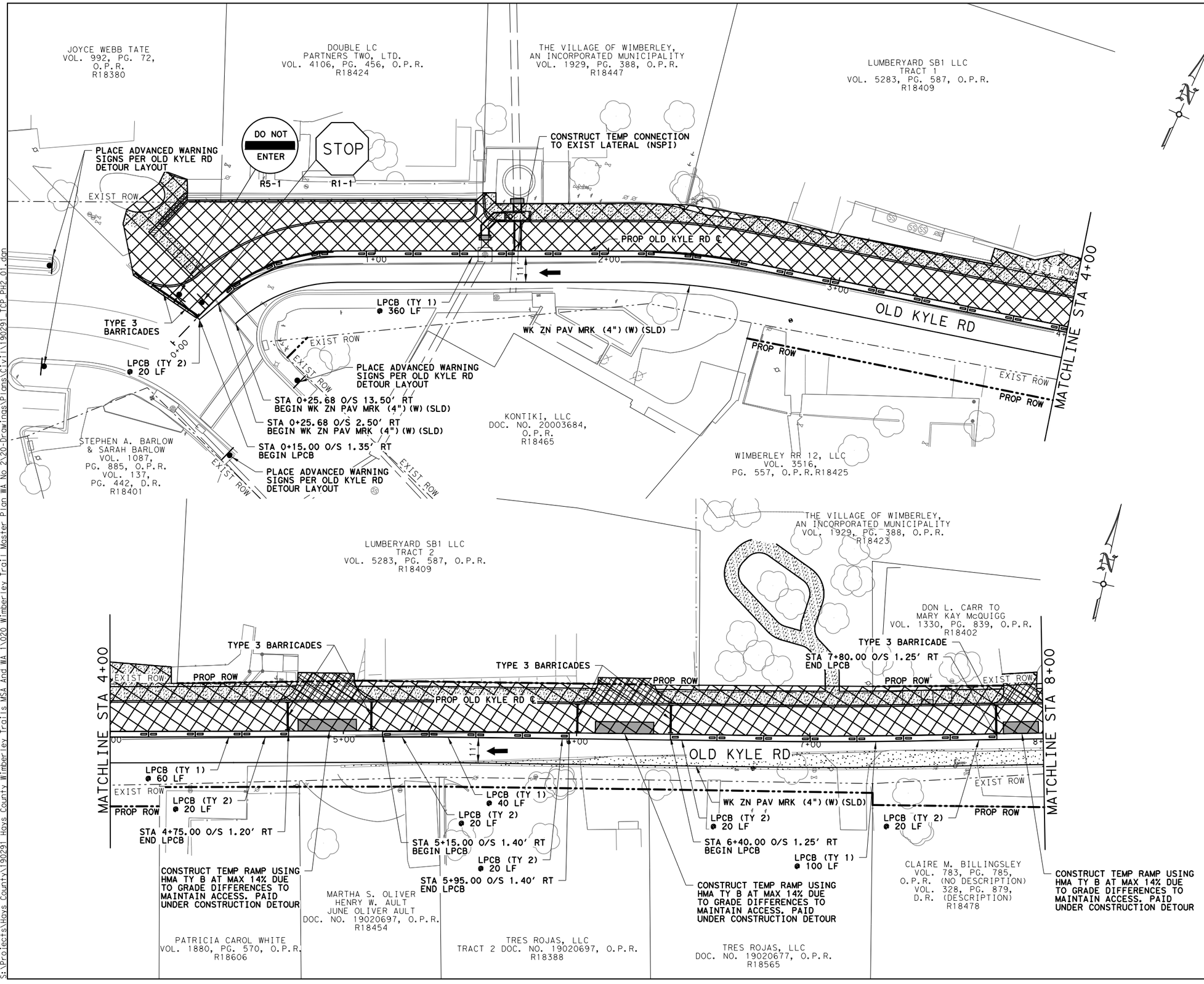

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Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 2C STA 0+00 TO STA 8+00 SHEET 1 OF 3

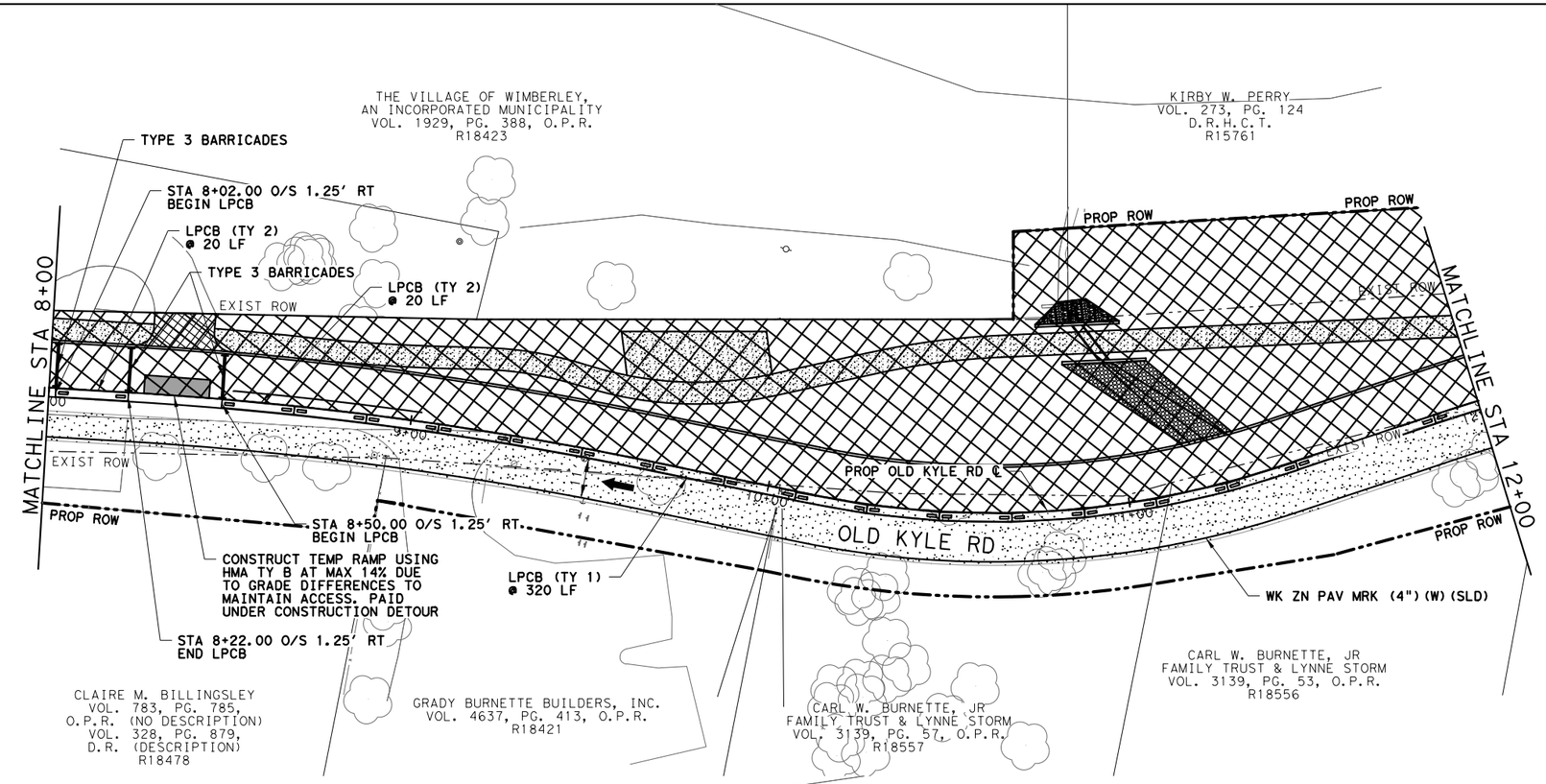
HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	24

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TCP_PH2_01.dgn



NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.
2. IF REQUIRED, CONTRACTOR TO USE TEMPORARY SPECIAL SHORING AS NOTED IN TCP TYPICAL SECTIONS IN PHASE 2C DUE TO LIMITED SPACE ON OLD KYLE ROAD, AS APPROVED BY THE ENGINEER

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
- LOW PROFILE CONC BARRIER

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 2C
STA 8+00 TO STA 16+00
SHEET 2 OF 3

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	25

Plotted by: hhinostroza
5/10/2024
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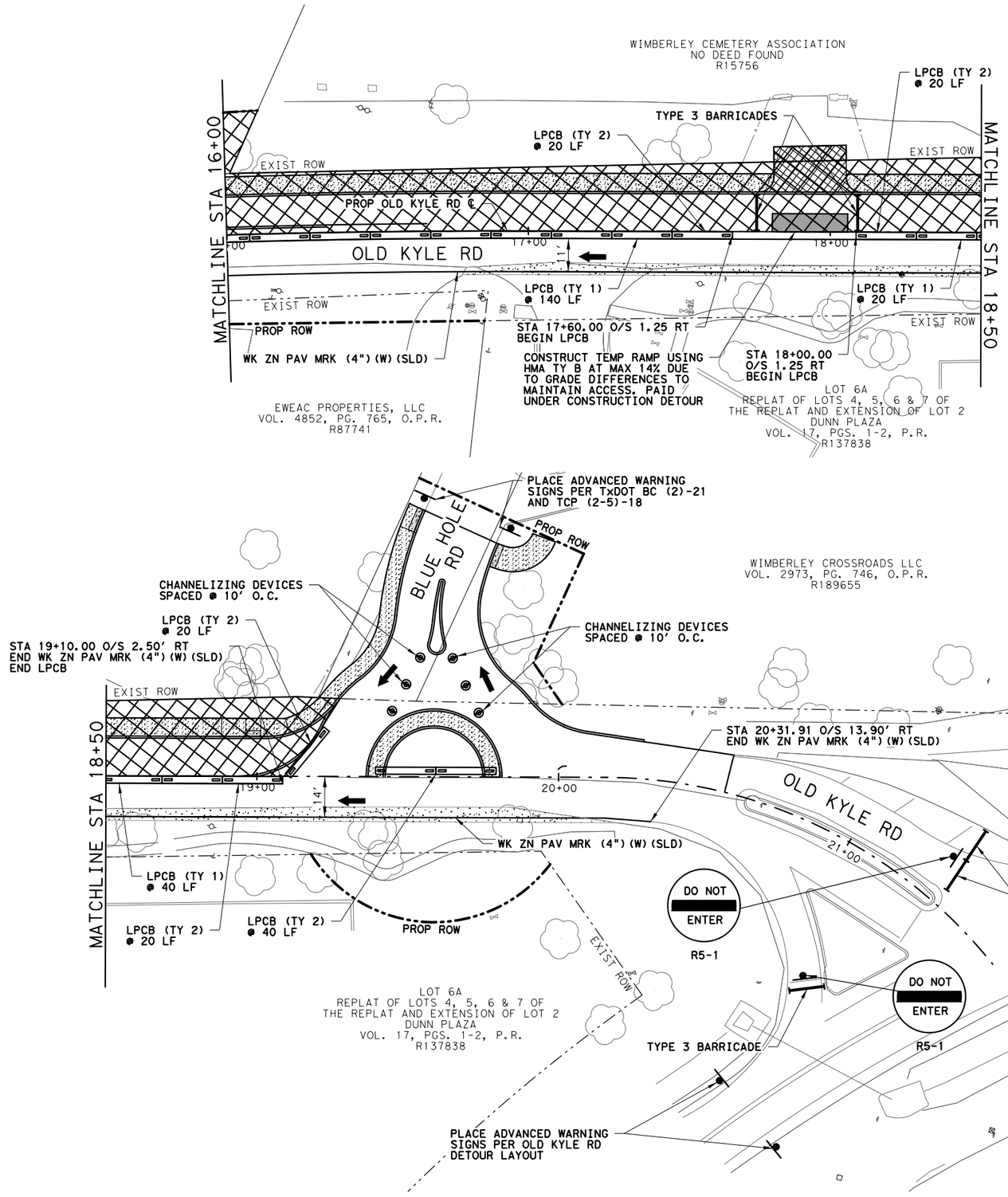

NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

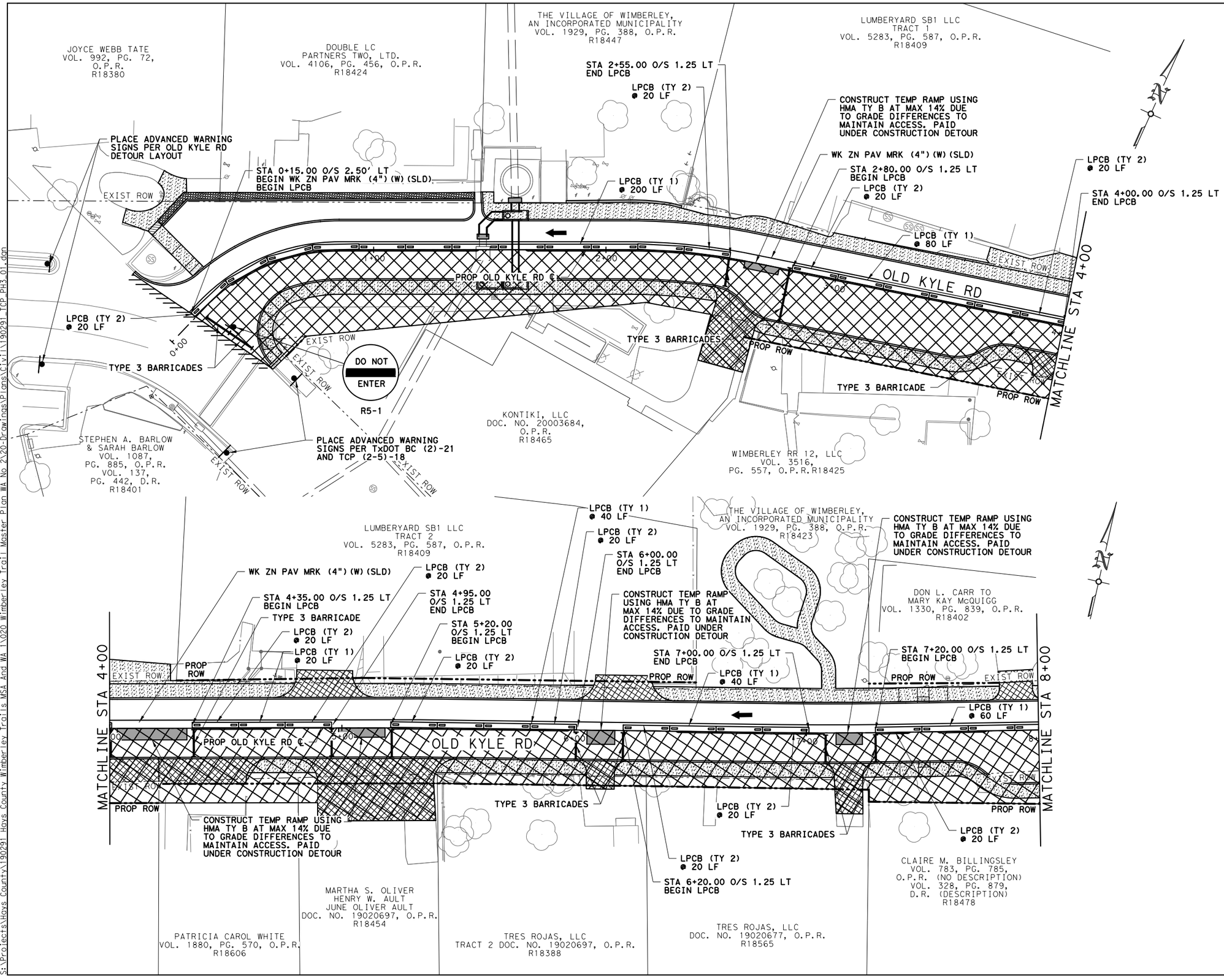
TRAFFIC CONTROL PLAN PHASE 2C
STA 16+00 TO END
SHEET 3 OF 3

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	26



NOTE:

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2. IF REQUIRED, CONTRACTOR TO USE TEMPORARY SPECIAL SHORING AS NOTED IN TCP TYPICAL SECTIONS IN PHASE 3 DUE TO LIMITED SPACE ON OLD KYLE ROAD, AS APPROVED BY THE ENGINEER

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 3
STA 0+00 TO STA 8+00
SHEET 1 OF 3

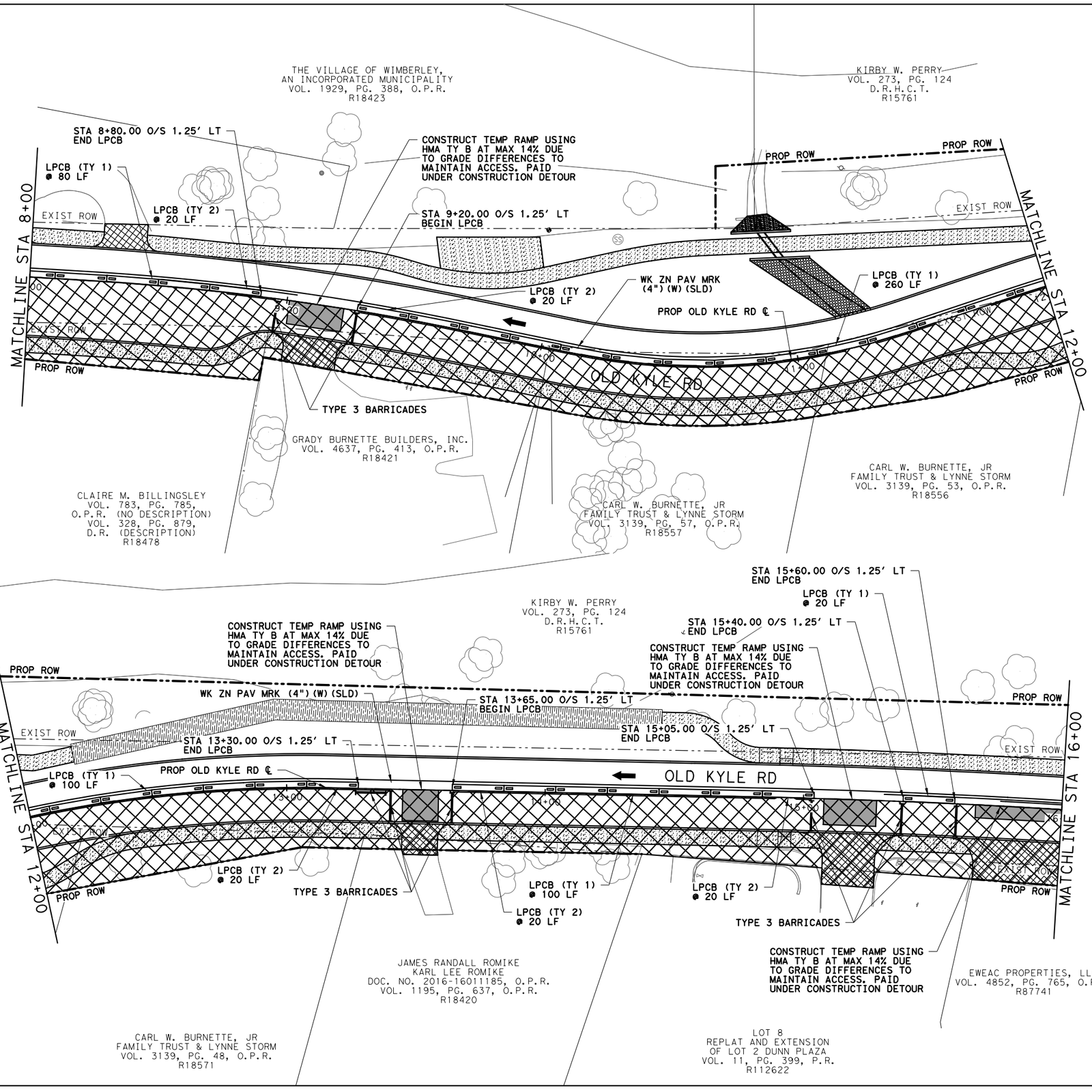
HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	27

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA \020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TCP_PH3_01.dgn



NOTE:

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2. IF REQUIRED, CONTRACTOR TO USE TEMPORARY SPECIAL SHORING AS NOTED IN TCP TYPICAL SECTIONS IN PHASE 3 DUE TO LIMITED SPACE ON OLD KYLE ROAD, AS APPROVED BY THE ENGINEER

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 3 STA 8+00 TO STA 16+00 SHEET 2 OF 3

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	28

Plotted by: hhinostroza
5/10/2024
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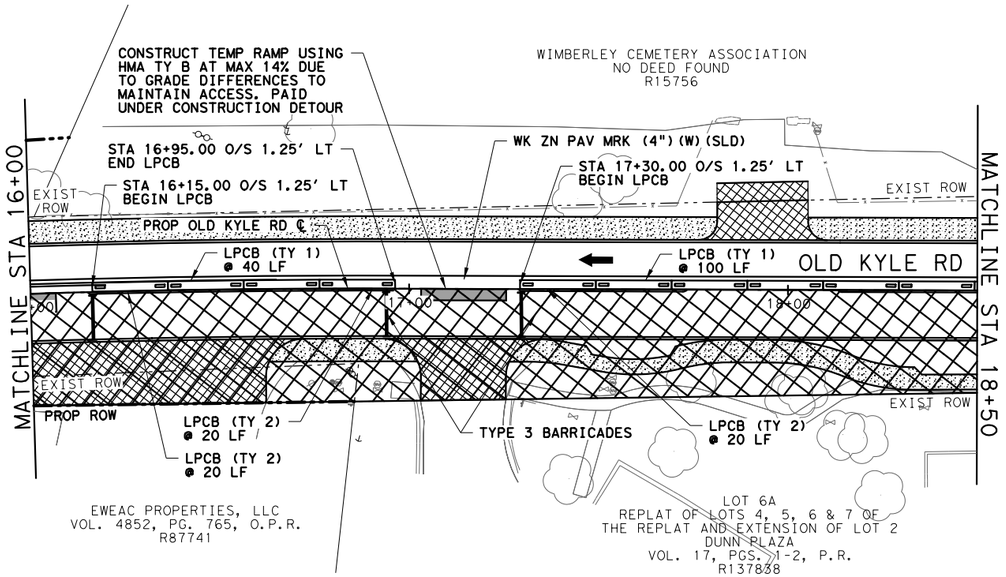

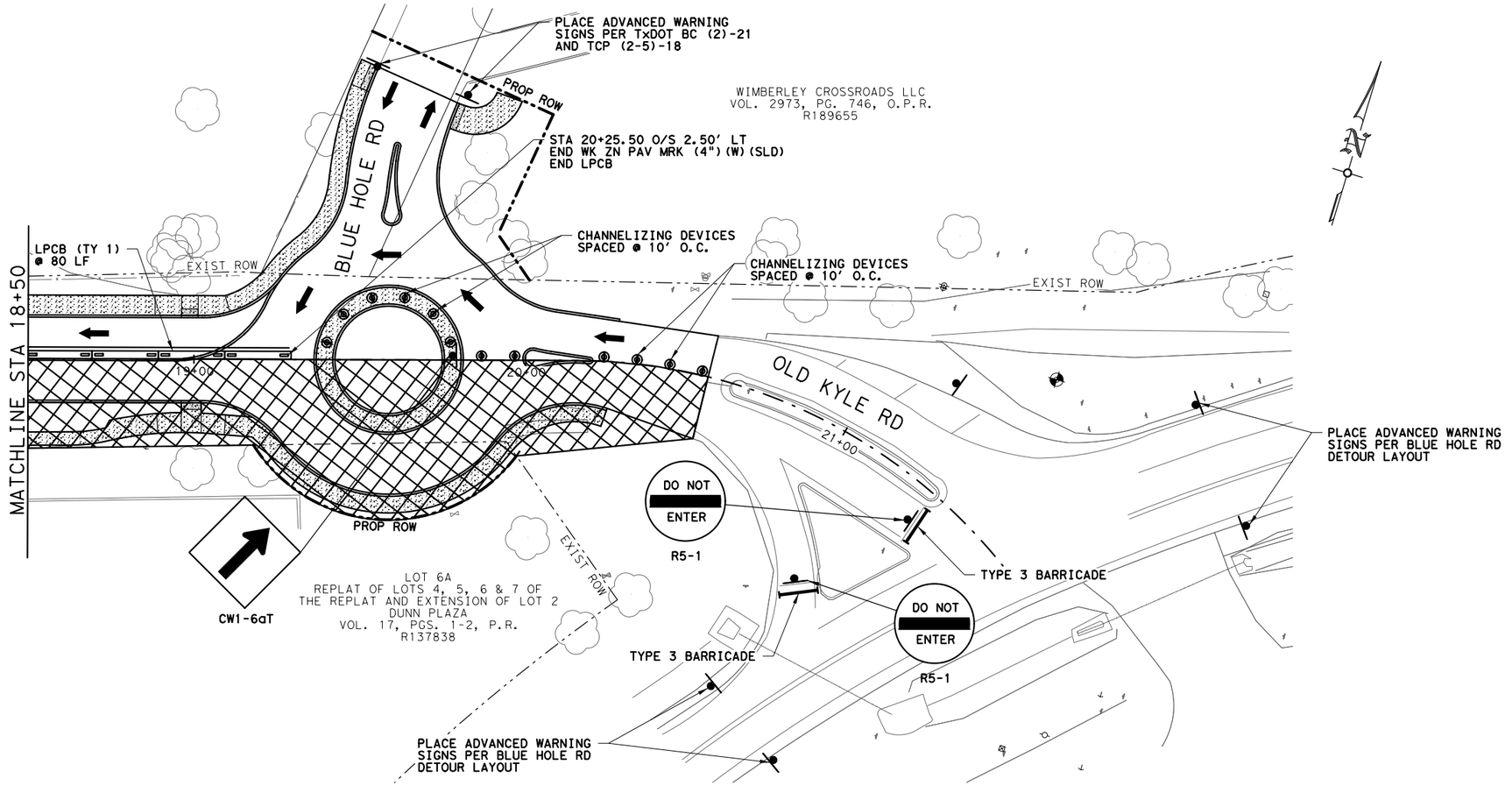

NOTE:

1. SEE DETOUR LAYOUT FOR ADDITIONAL ADVANCED WARNING SIGNS.

LEGEND

- CONC SIDEWALK
- CONSTR DETOUR/TEMP DRIVEWAY
- TEMP PAVEMENT
- WORK ZONE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL DIRECTION
- PROP TCP STRIPING / BUTTONS
- TYPE 3 BARRICADES
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

TRAFFIC CONTROL PLAN PHASE 3 STA 16+00 TO END SHEET 3 OF 3

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	29

Plotted by: hhinostroza
5/10/2024
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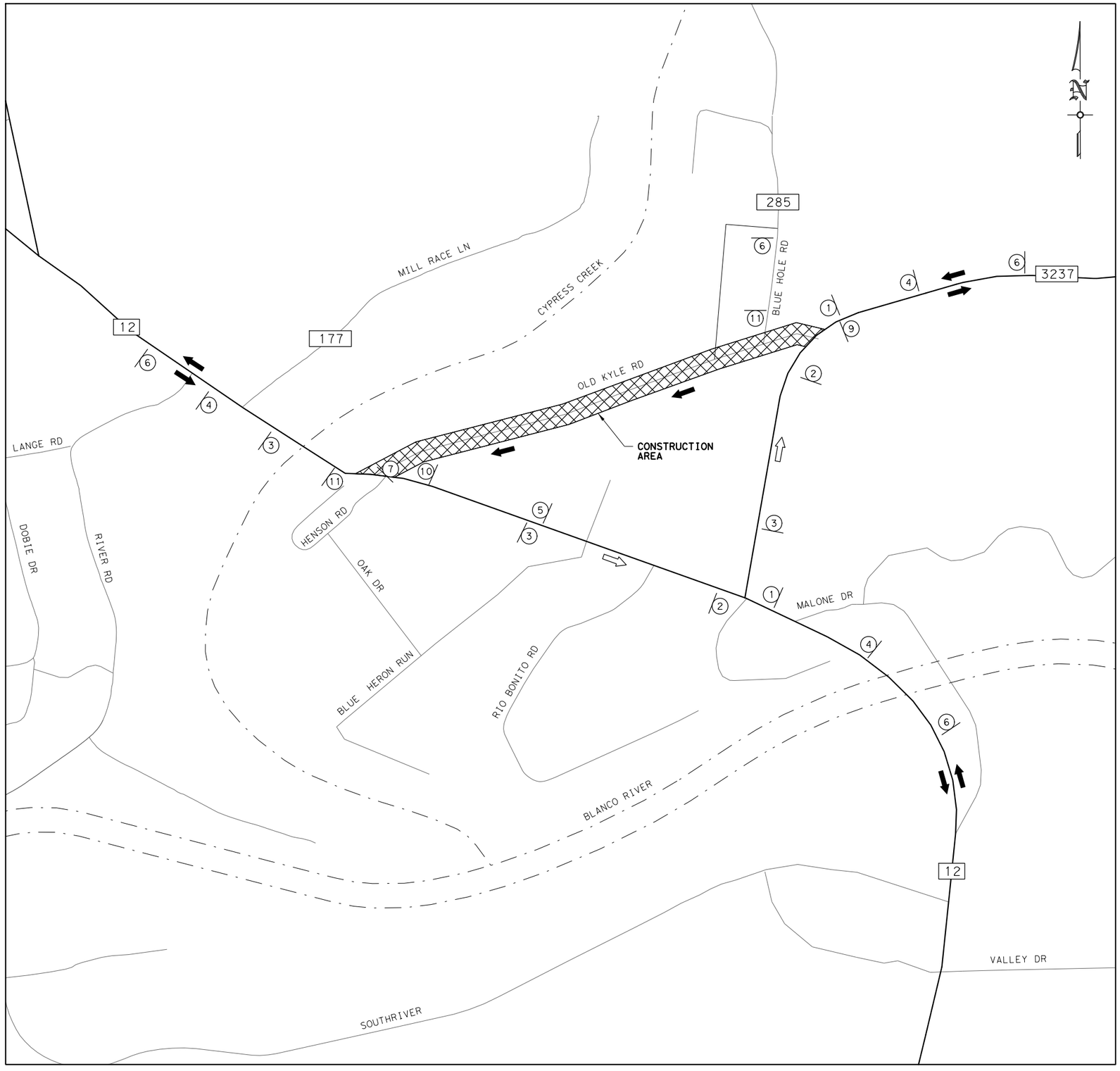

SIGNS

1	OLD KYLE RD / DETOUR + M4-9AR	M4-9N 30"x12", M4-9AR 30"x30"
2	OLD KYLE RD / DETOUR + M4-9AL	M4-9N 30"x12", M4-9AL 30"x30"
3	OLD KYLE RD / DETOUR + M4-9S	M4-9N 30"x12", M4-9S 30"x24"
4	DETOUR AHEAD / OLD KYLE RD	C3RDXD 48"x48", M4-9N 30"x12"
5	ROAD CLOSED AHEAD / OLD KYLE RD	C3RDXD 48"x48", M4-9N 30"x12"
6	ROAD CONSTRUCTION AHEAD / OLD KYLE RD	C3RDXD 48"x48", M4-9N 30"x12"
7	ROAD CLOSED	R11-2 48"x30"
8	ROAD CLOSED TO THRU TRAFFIC	R11-4 60"x30"
9	END DETOUR	M4-8a 24"x18"
10		R3-1 24"x24"
11		R3-2 24"x24"
12	ONE WAY	R6-1R 24"x18"
13	ONE WAY	R6-1L 24"x18"

LEGEND

- DETOUR ROUTE
- CONSTRUCTION AREA
- DETOUR TRAFFIC
- FLOW TRAFFIC

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

OLD KYLE RD DETOUR LAYOUT

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	30

Plotted by: hhinostroza
5/10/2024
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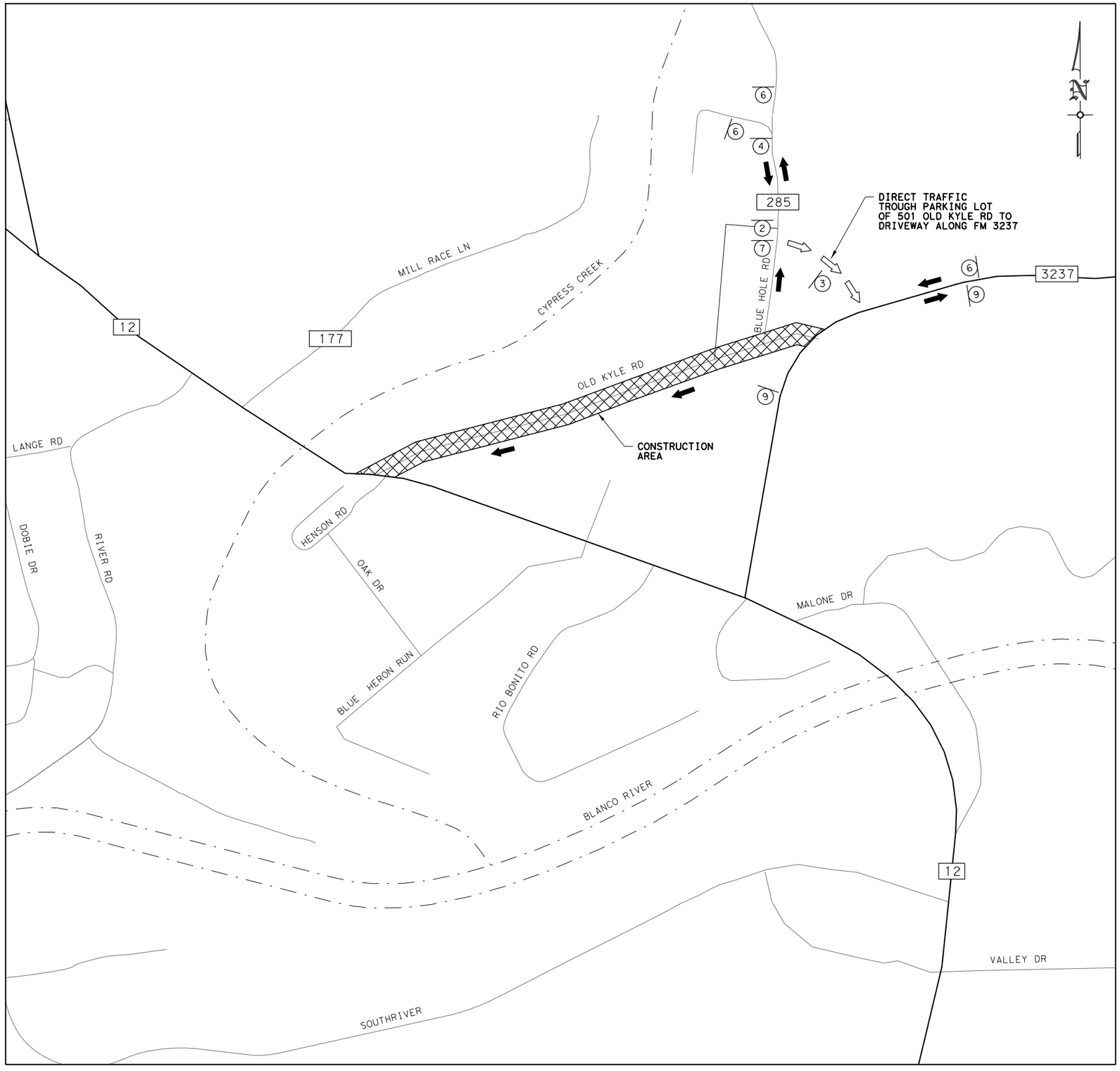

SIGNS

1. OLD KYLE RD / DETOUR — M4-9N 30"x12" / M4-9AR 30"x30"
2. OLD KYLE RD / DETOUR — M4-9N 30"x12" / M4-9AL 30"x30"
3. OLD KYLE RD / DETOUR — M4-9N 30"x12" / M4-9S 30"x24"
4. DETOUR AHEAD — C3RDXD 48"x48" / M4-9N 30"x12" / OLD KYLE RD
5. ROAD CLOSED AHEAD — C3RDXD 48"x48" / M4-9N 30"x12" / OLD KYLE RD
6. ROAD CONSTRUCTION AHEAD — C3RDXD 48"x48" / M4-9N 30"x12" / OLD KYLE RD
7. ROAD CLOSED — R11-2 48"x30"
8. ROAD CLOSED TO THRU TRAFFIC — R11-4 60"x30"
9. END DETOUR — M4-8a 24"x18"
10. R3-1 24"x24"
11. R3-2 24"x24"
12. ONE WAY — R6-1R 24"x18"
13. ONE WAY — R6-1L 24"x18"

LEGEND

- DETOUR ROUTE
- CONSTRUCTION AREA
- DETOUR TRAFFIC
- FLOW TRAFFIC

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

BLUE HOLE RD DETOUR LAYOUT

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	31

5/10/2024
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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

Texas Department of Transportation

Traffic Safety Division Standard

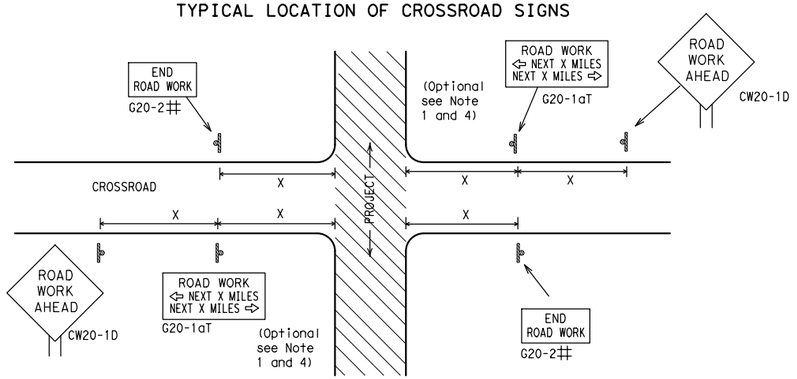
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13				
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21				32

5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\bc-21.dgn

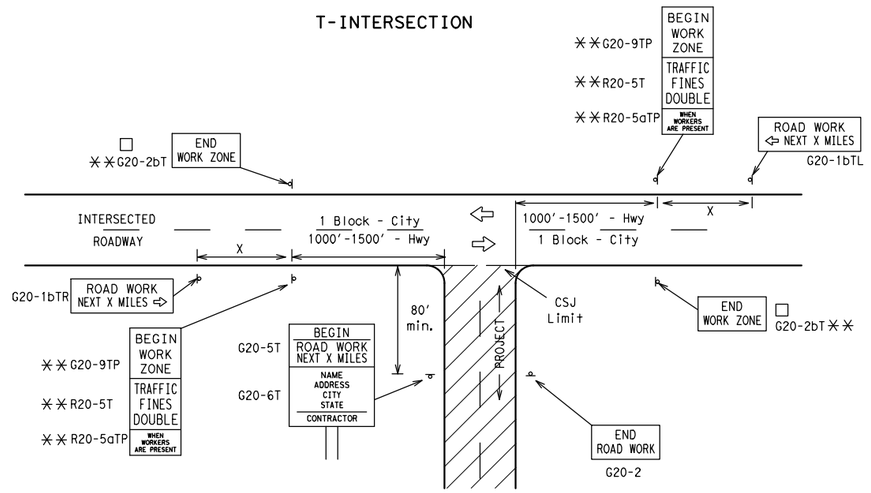
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

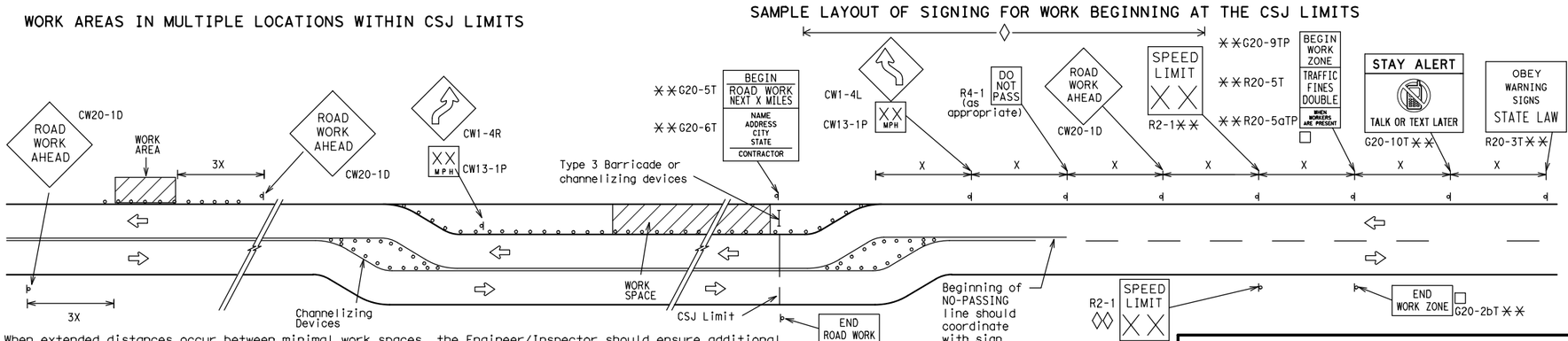
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

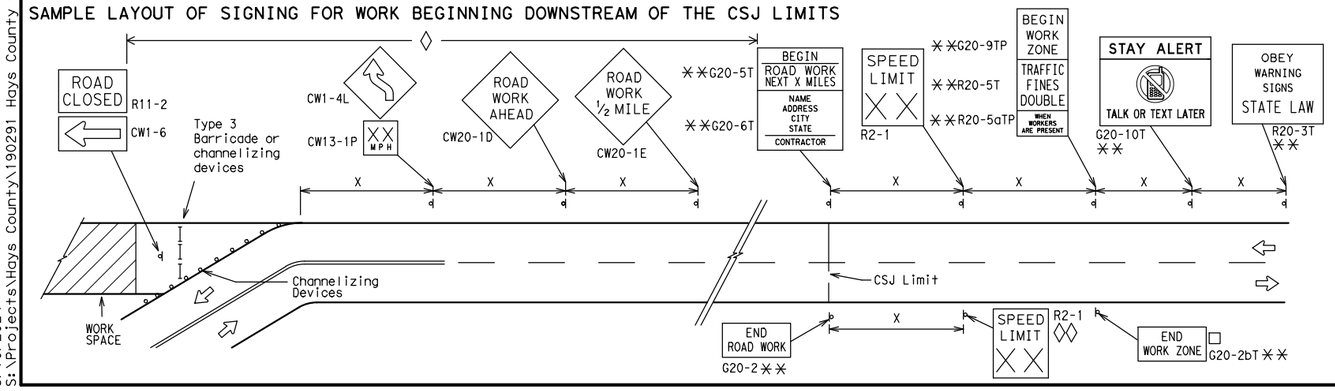
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may 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 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

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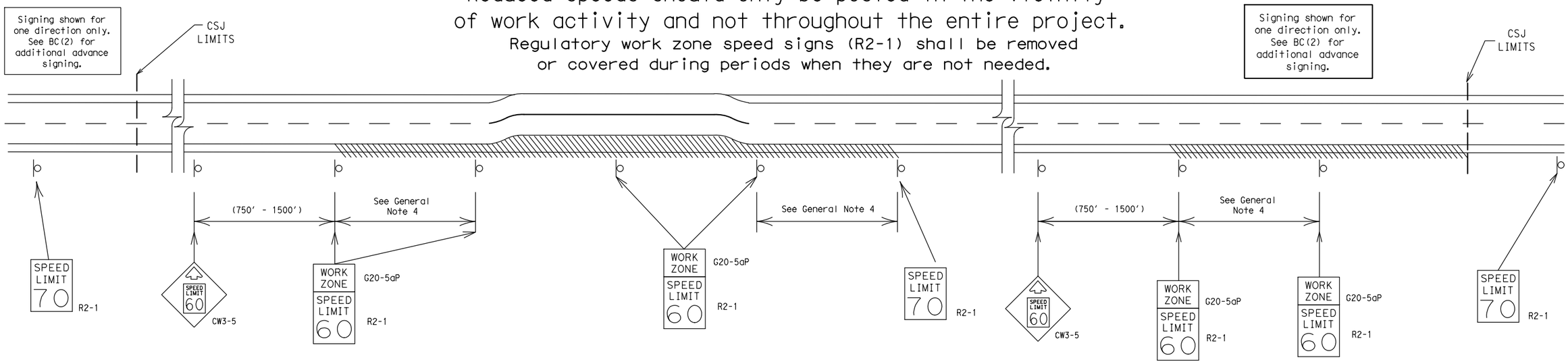
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

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

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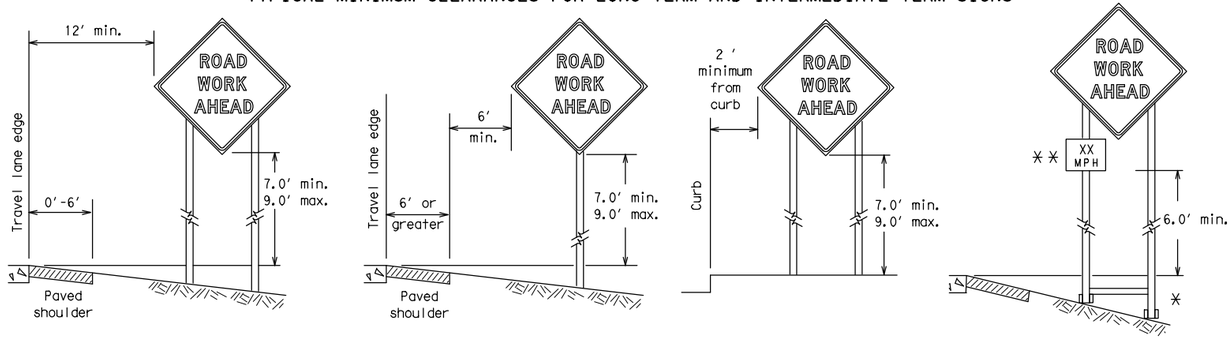
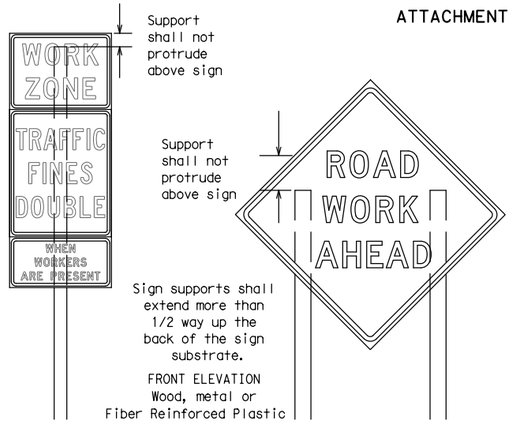
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

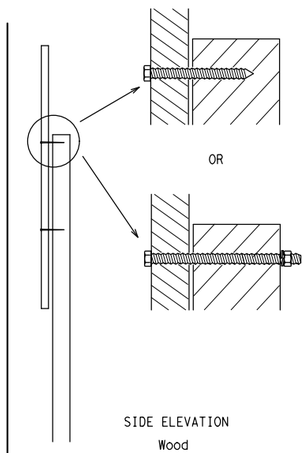


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





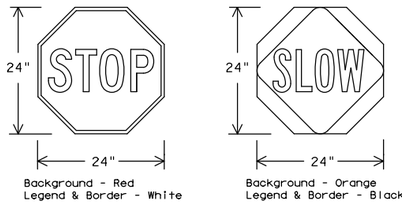
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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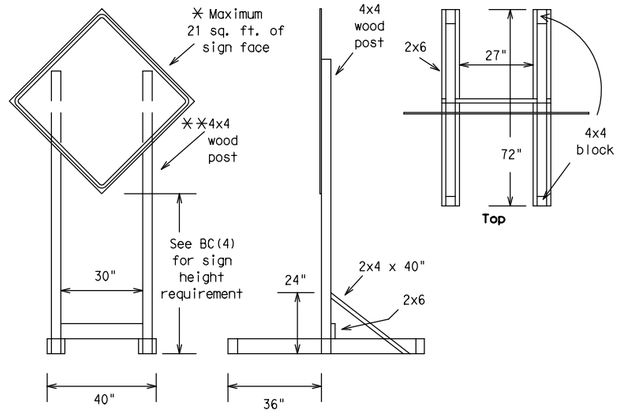
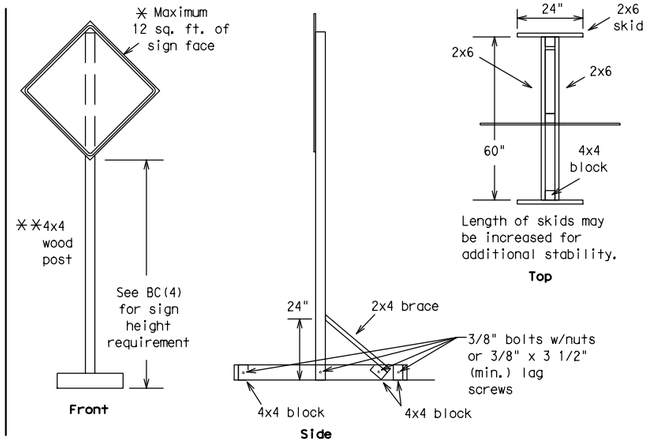
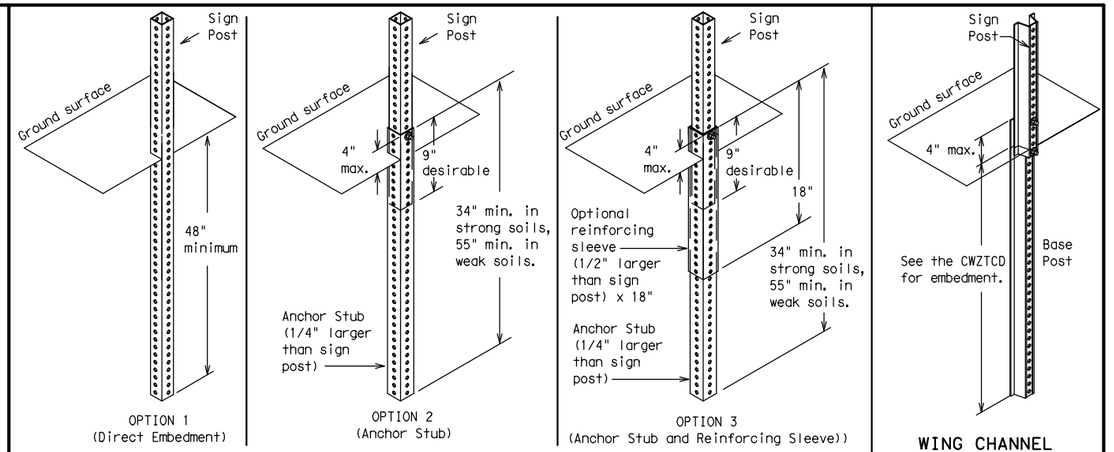




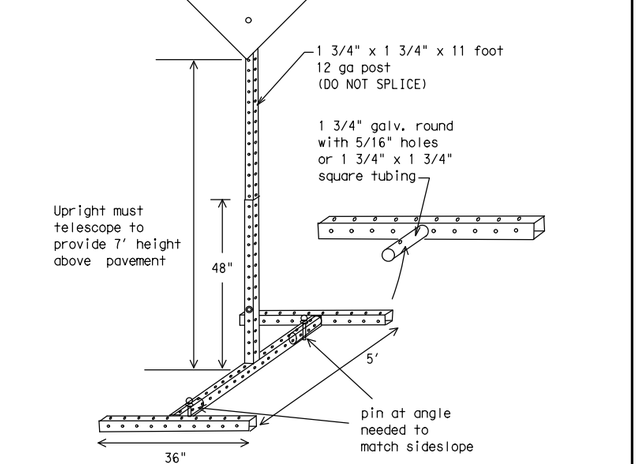
SKID MOUNTED WOOD SIGN SUPPORTS

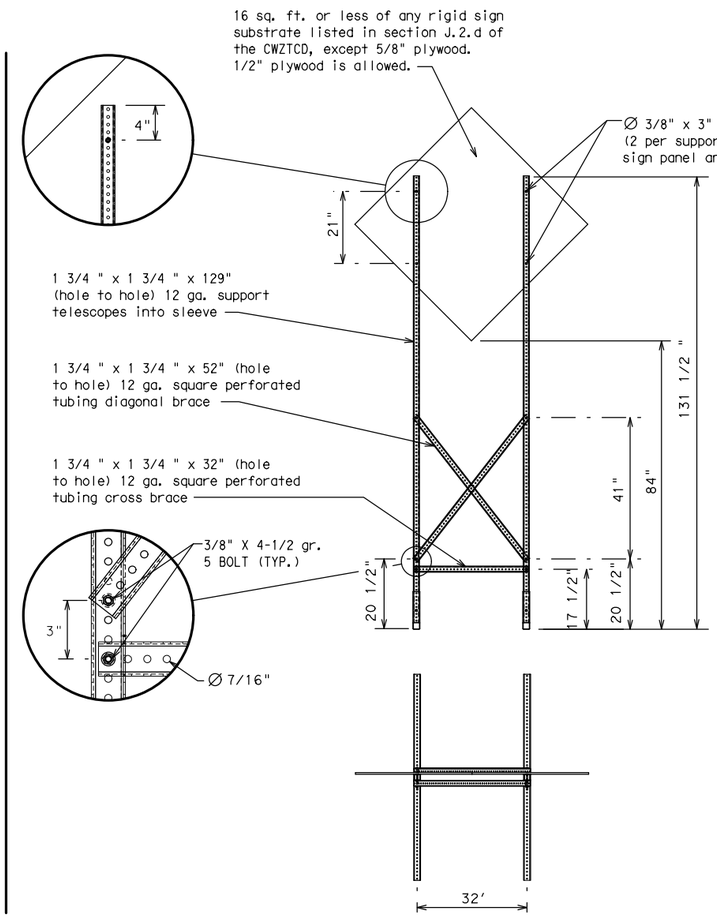
✳ LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

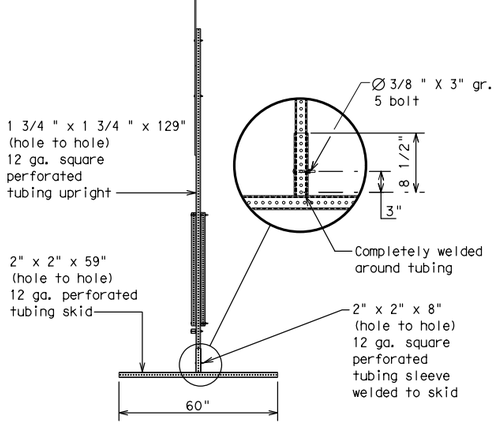


GROUND MOUNTED SIGN SUPPORTS

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

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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

WORD OR PHRASE	ABBREVIATION
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				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				37

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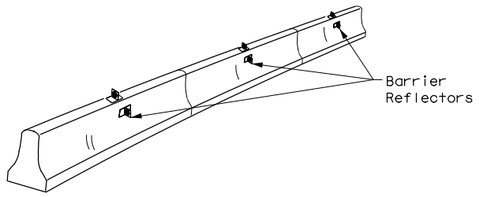
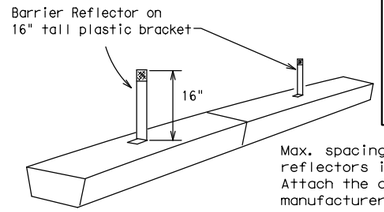
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020-Drawings\Plans\Civil\Standards\bc-21.dgn
Wimberley Trail Master Plan WA No 2

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.

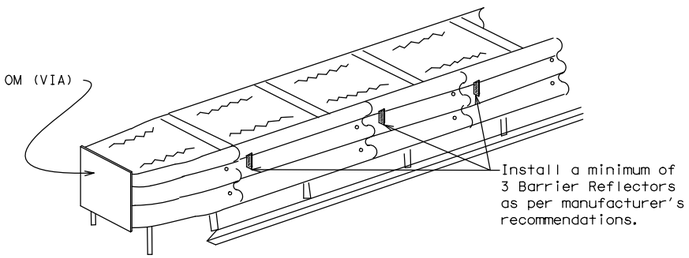


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

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.

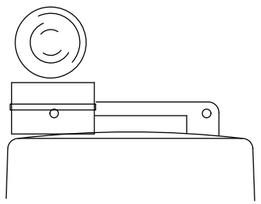


DELINEATION OF END TREATMENTS

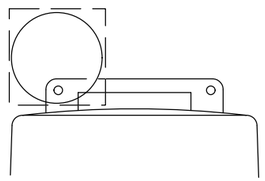
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

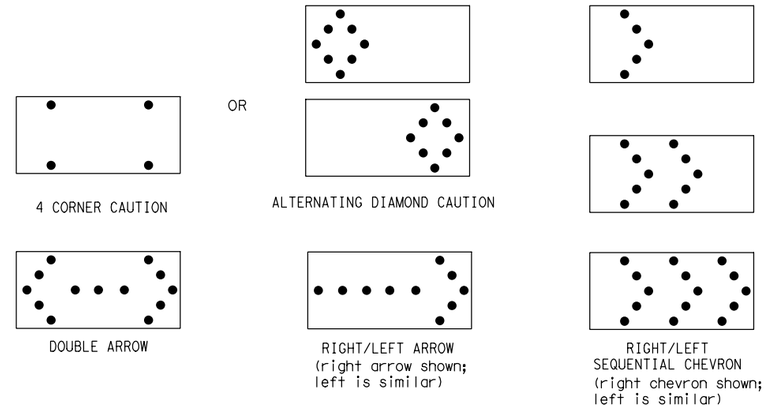
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				38

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

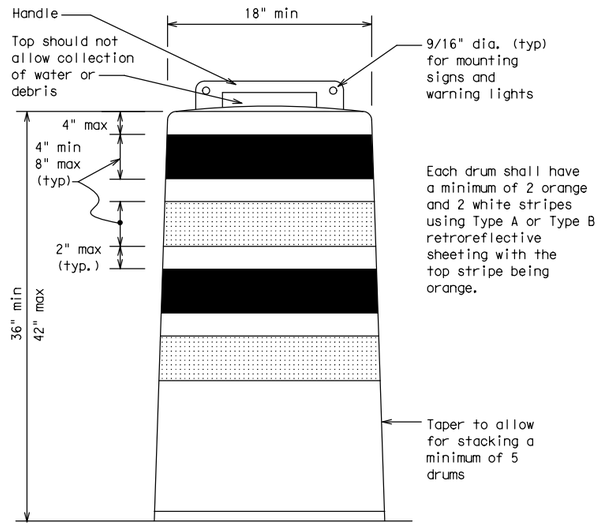
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

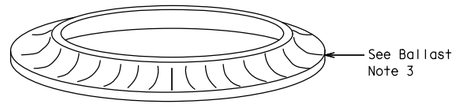
RETROREFLECTIVE SHEETING

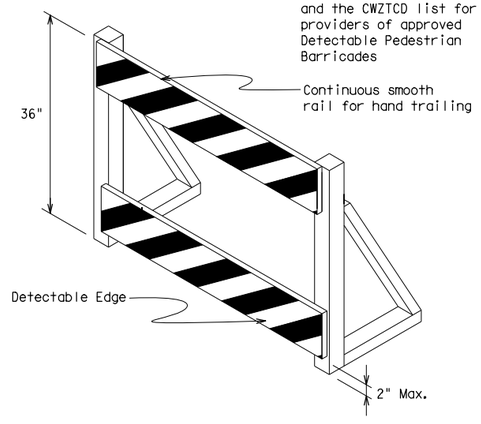
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

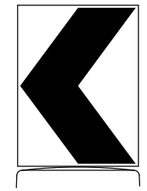




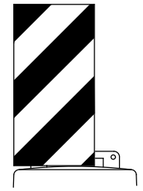


DETECTABLE PEDESTRIAN BARRICADES

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

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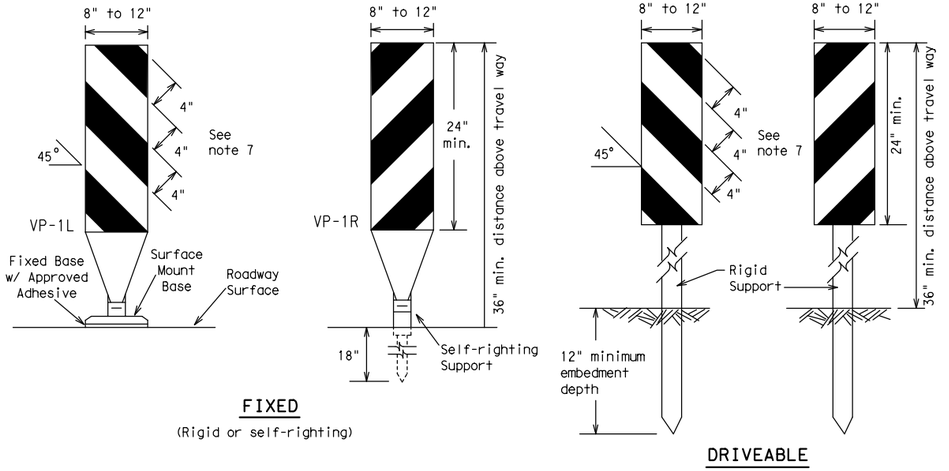


FIXED

(Rigid or self-righting)

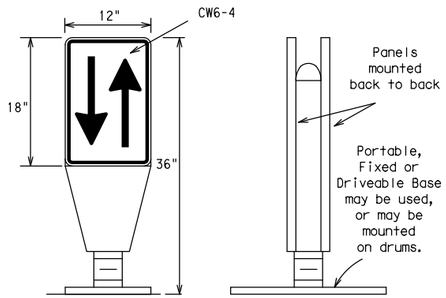
DRIVEABLE

(Rigid or self-righting)

PORTABLE

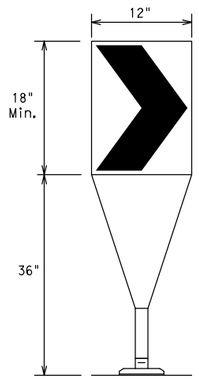
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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)



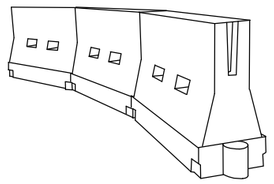
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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 ✻✻			Suggested Maximum Spacing of Channelizing Devices	
		10′ Offset	11′ Offset	12′ Offset	On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′
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

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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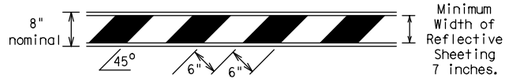
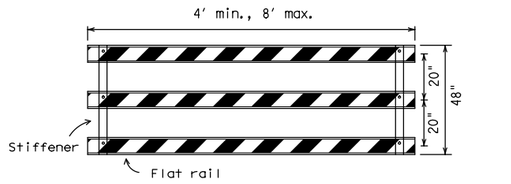
TYPE 3 BARRICADES

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.



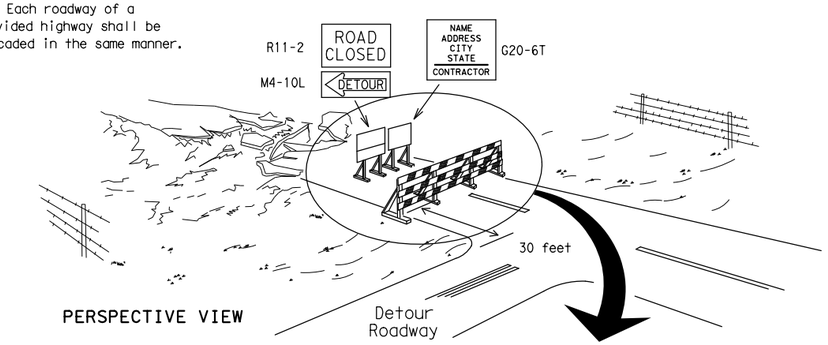
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

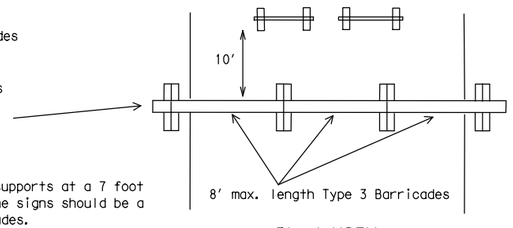
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

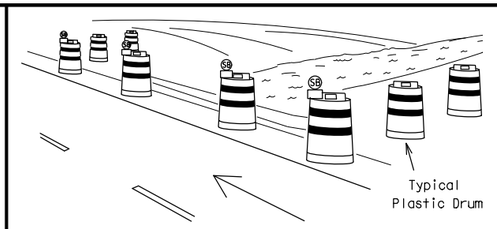
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

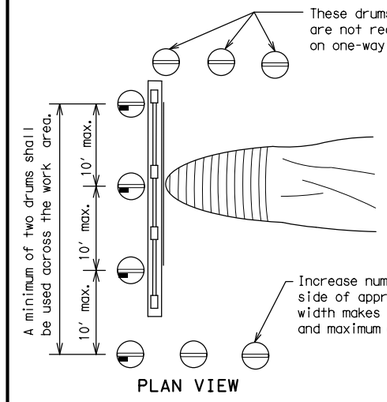
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

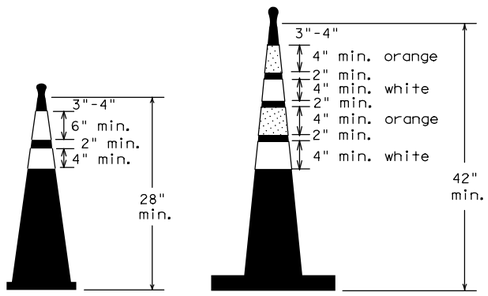
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



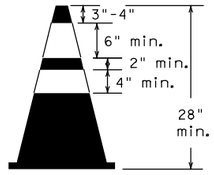
PLAN VIEW

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

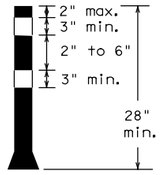
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

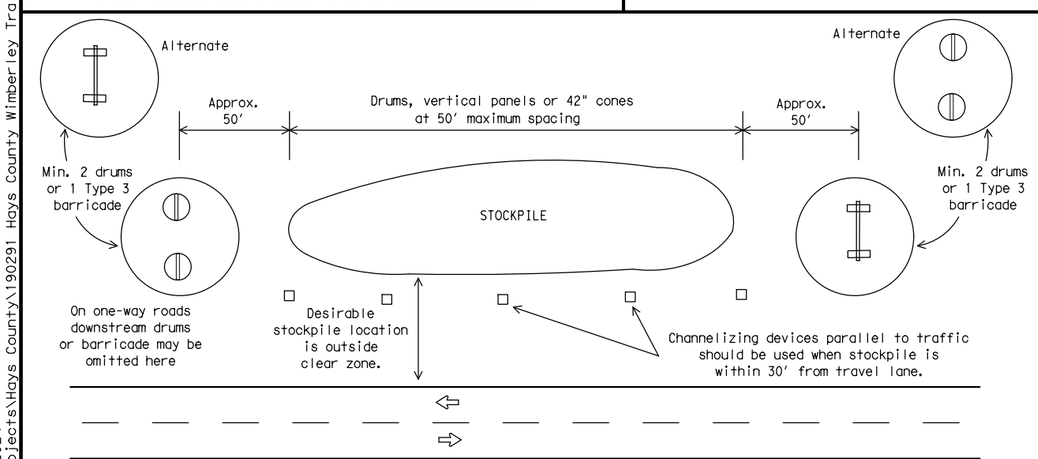


Tubular Marker

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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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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.

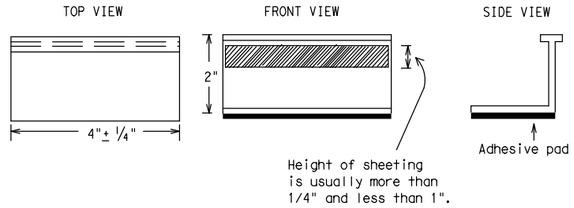
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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).

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BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

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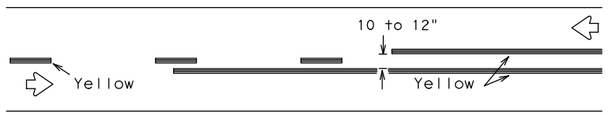
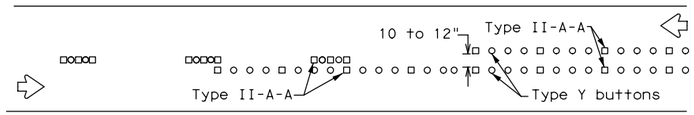
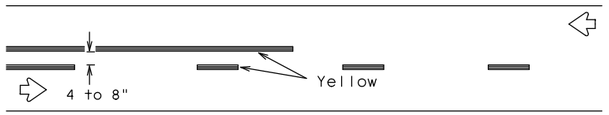
PAVEMENT MARKING PATTERNS



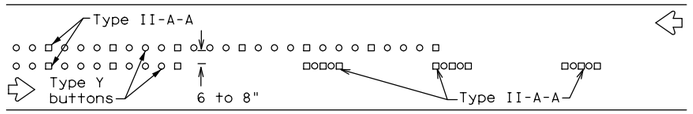
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



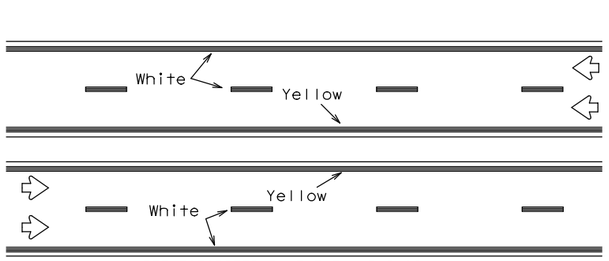
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



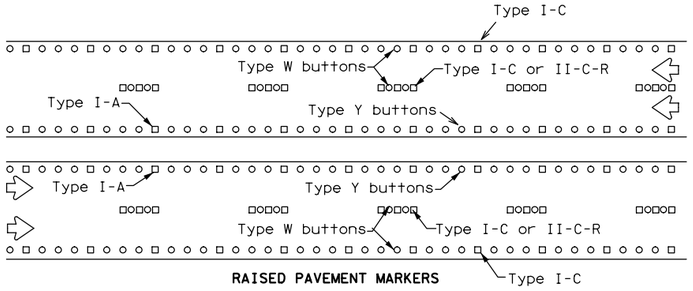
RAISED PAVEMENT MARKERS - PATTERN B

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



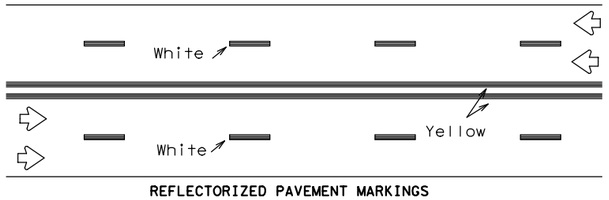
REFLECTORIZED PAVEMENT MARKINGS



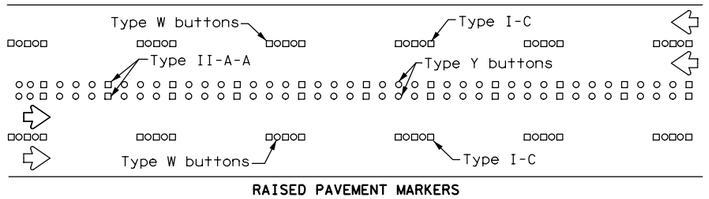
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



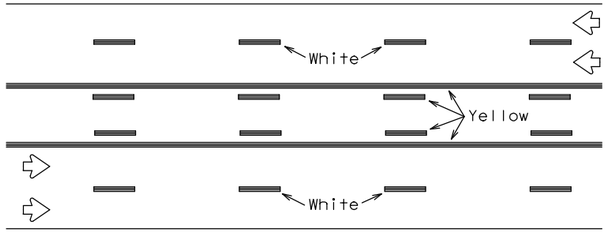
REFLECTORIZED PAVEMENT MARKINGS



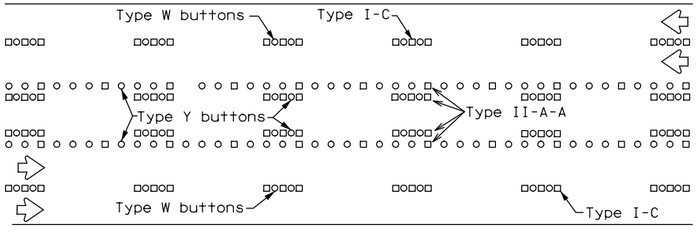
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

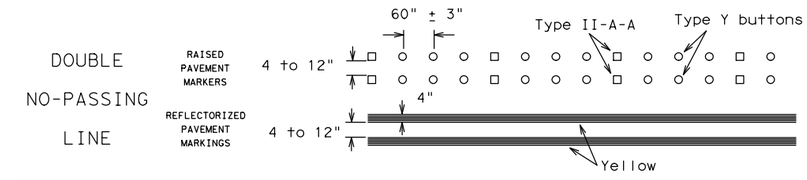
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

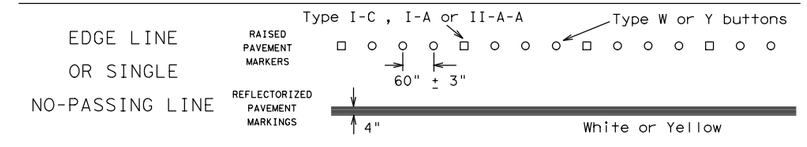
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

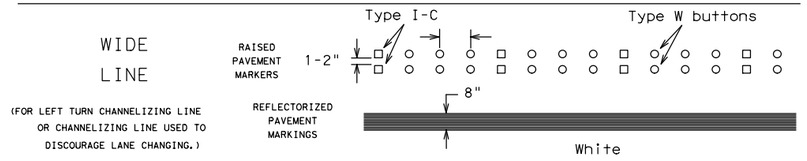


EDGE LINE OR SINGLE NO-PASSING LINE



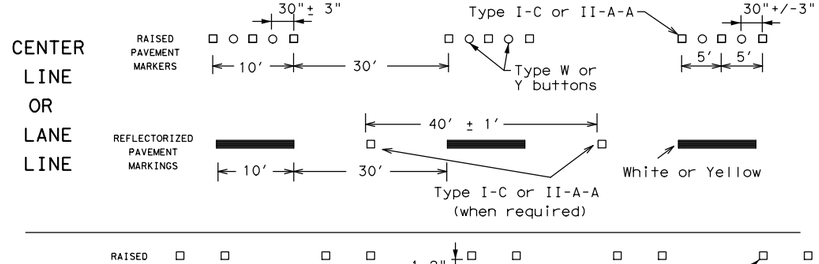
WIDE LINE

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

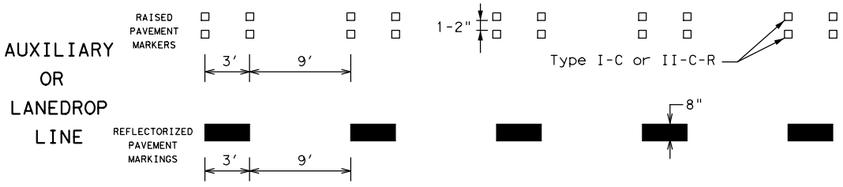


BROKEN LINES

CENTER LINE OR LANE LINE

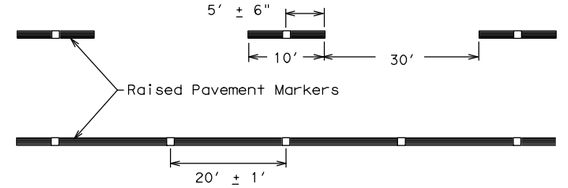


AUXILIARY OR LANEDROP LINE



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."

Texas Department of Transportation

Traffic Safety Division Standard

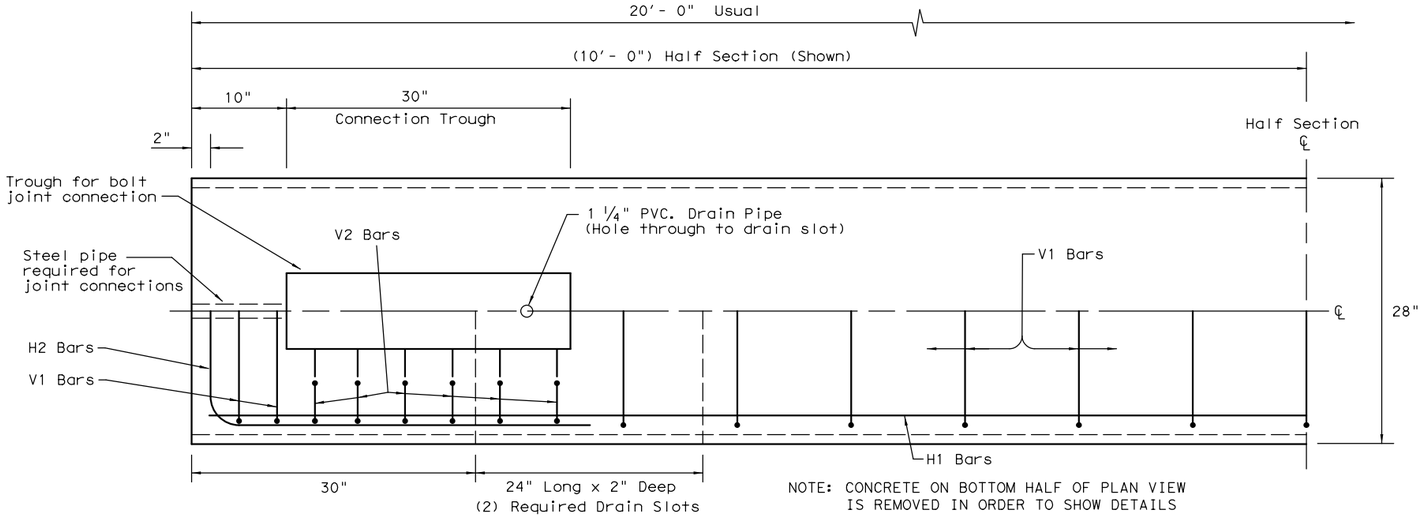
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

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	DIST	COUNTY		SHEET NO. 43

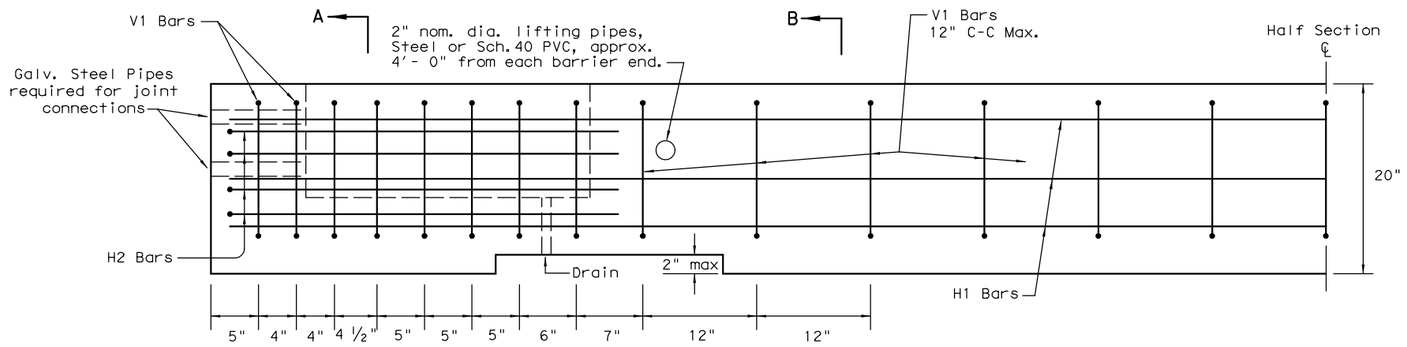
106

DATE:
FILE:

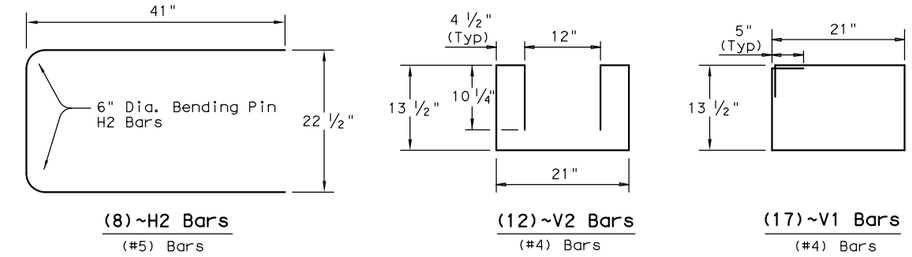


NOTE: CONCRETE ON BOTTOM HALF OF PLAN VIEW IS REMOVED IN ORDER TO SHOW DETAILS

PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



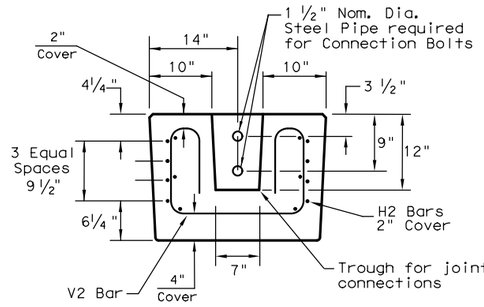
(8)~H2 Bars (#5) Bars

(12)~V2 Bars (#4) Bars

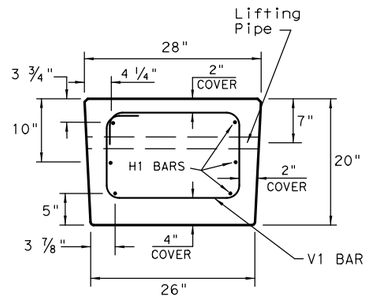
(17)~V1 Bars (#4) Bars

REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A



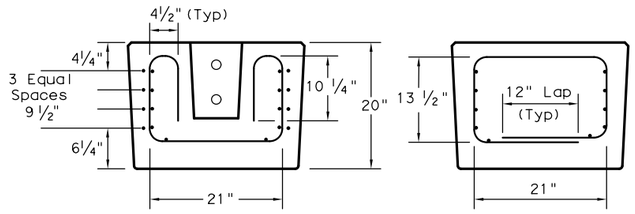
SECTION B-B

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

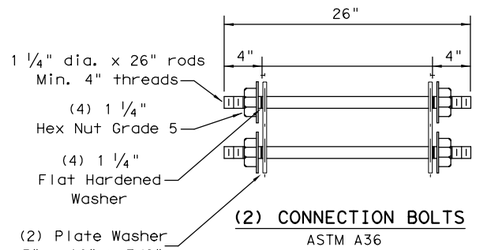
(WWR) GENERAL NOTES

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

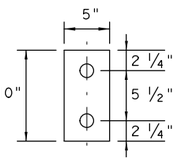


PLATE WASHER
5" x 10" x ⅜"

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:
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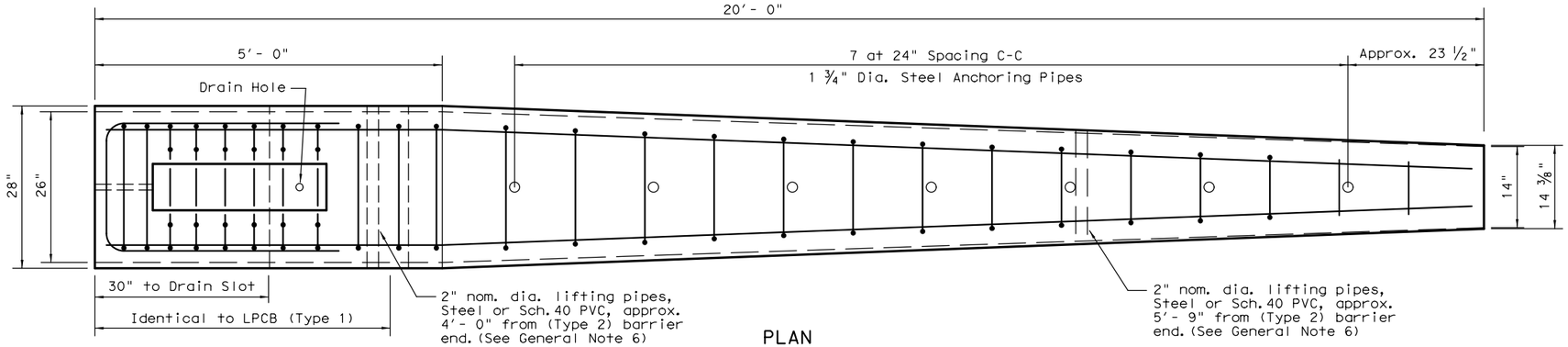
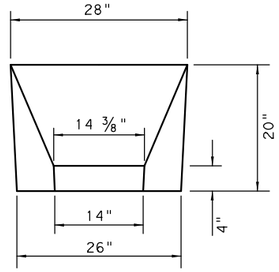
REVISIONS				
	DIST	COUNTY		SHEET NO.
				44

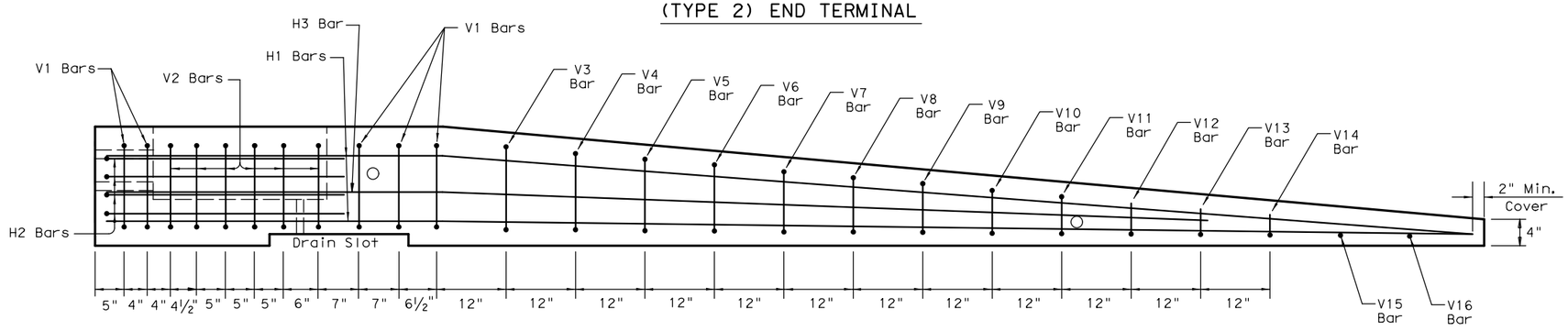
DATE:
FILE:



PLAN
(TYPE 2) END TERMINAL



APPROACH VIEW

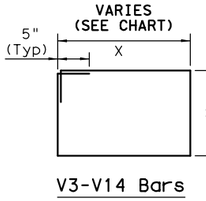


ELEVATION
(TYPE 2) END TERMINAL

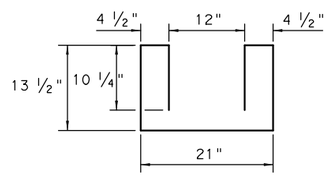
Note:
Anchoring pipes not shown in Elevation View

TYPE 2 - NOTES

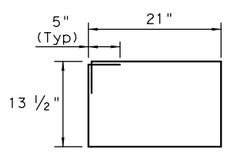
1. Welded wire reinforcment (WWR) is "not" an option for Type 2 Barrier.
2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement 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.



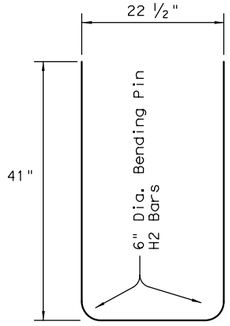
V3-V14 Bars



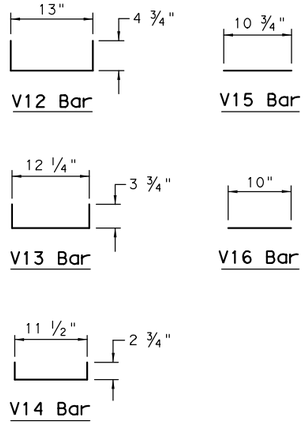
(6)~V2 Bars



(5)~V1 Bars



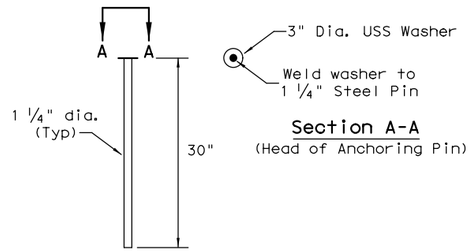
(4)~H2 Bars
(#5) Bars



Note: All V Bars are (#4)

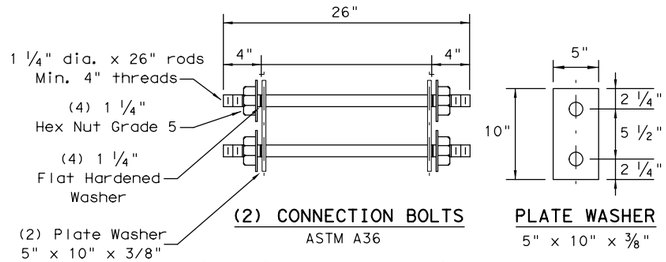
BAR (#4)	X (IN.)	Y (IN.)
V3 BAR	20 ¼	14 ½
V4 BAR	19 ½	13 ½
V5 BAR	18 ½	12 ¼
V6 BAR	17 ½	11 ¼
V7 BAR	17	10 ¼
V8 BAR	16 ¼	9
V9 BAR	15 ½	8
V10 BAR	14 ½	7
V11 BAR	13 ¾	6

REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



Section A-A
(Head of Anchoring Pin)

(7) Anchor Pins (See Note 3)
ASTM A36 Steel

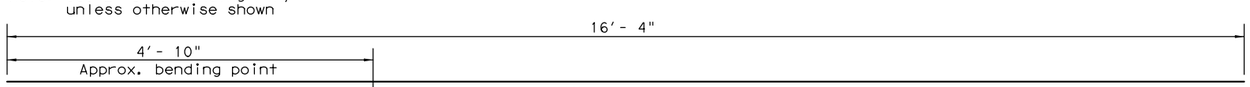


(2) CONNECTION BOLTS
ASTM A36

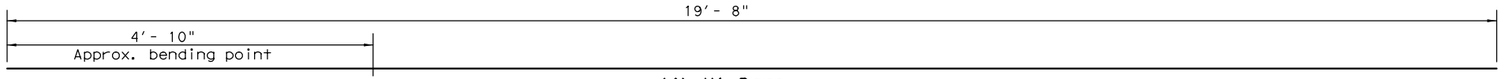
PLATE WASHER
5" x 10" x ⅜"

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

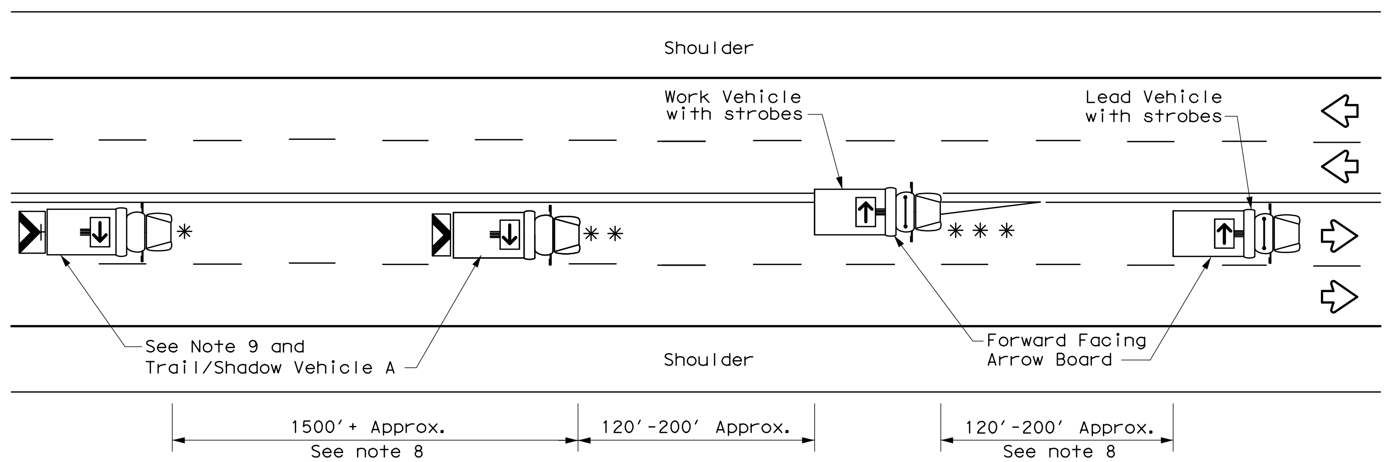
FOR CONTRACTORS INFORMATION ONLY

(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

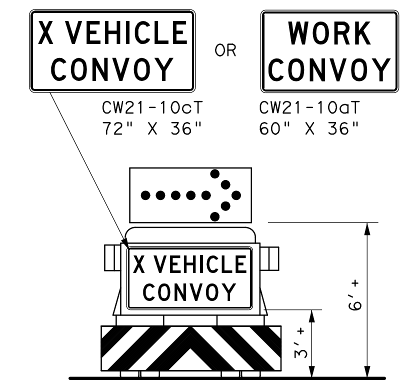
LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 2)
LPCB-13

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				45



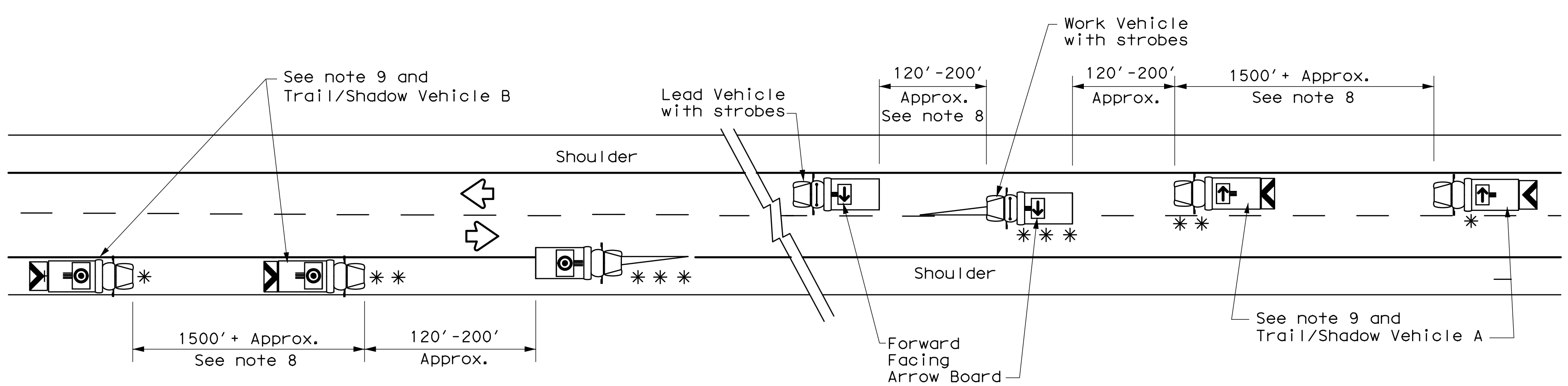
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



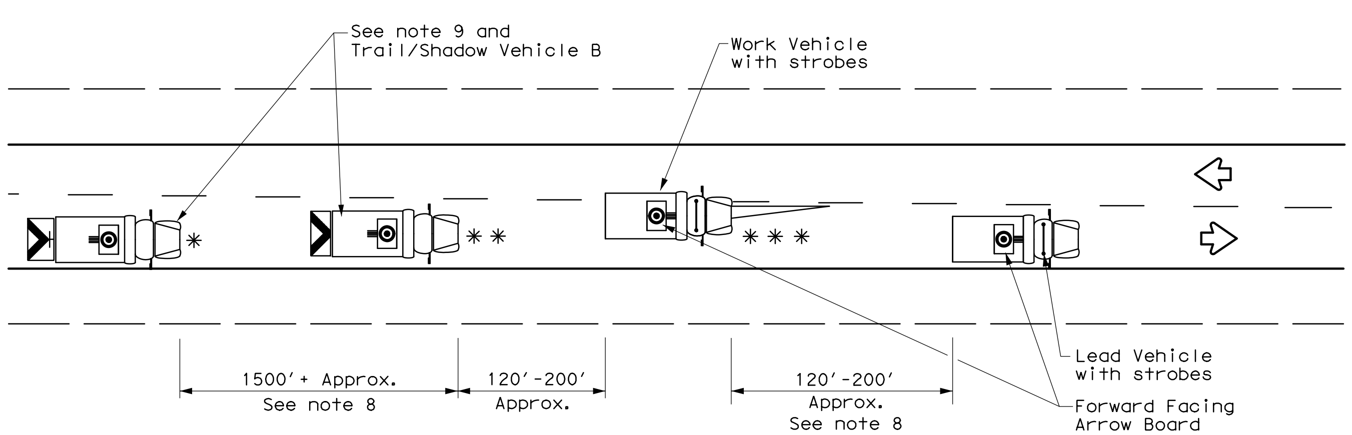
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board



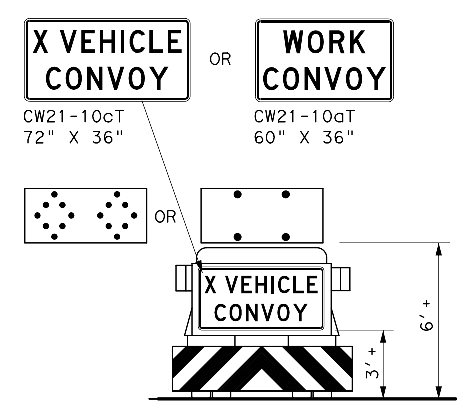
TCP (3-1b)

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

LEGEND

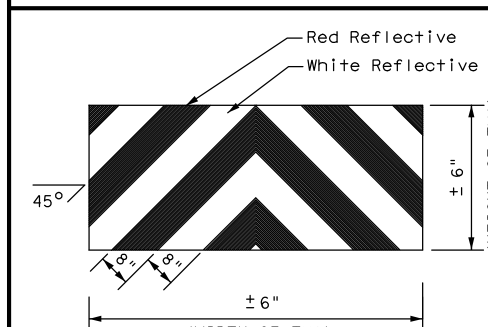
Symbol	Meaning	Symbol	Meaning
*	Trail Vehicle		ARROW BOARD DISPLAY
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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.



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	DIST		COUNTY	SHEET NO. 46

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5/10/2024
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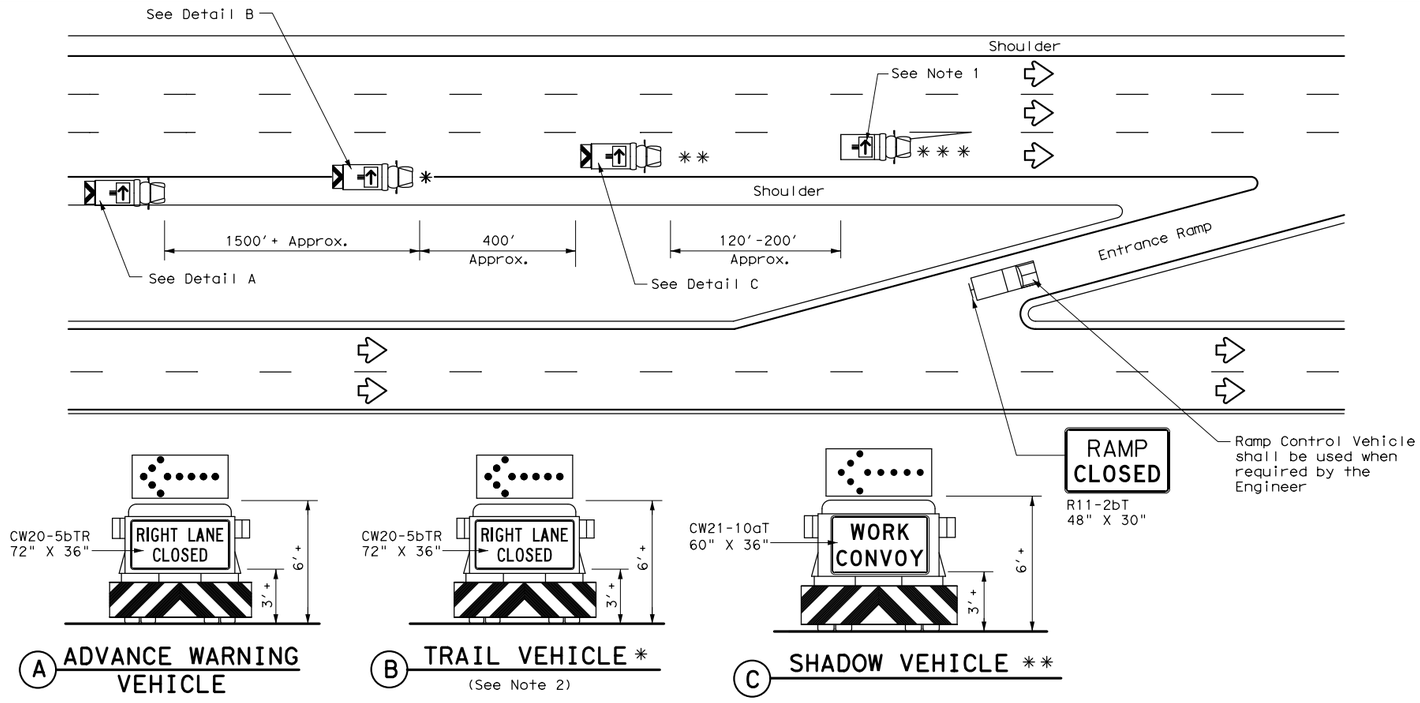
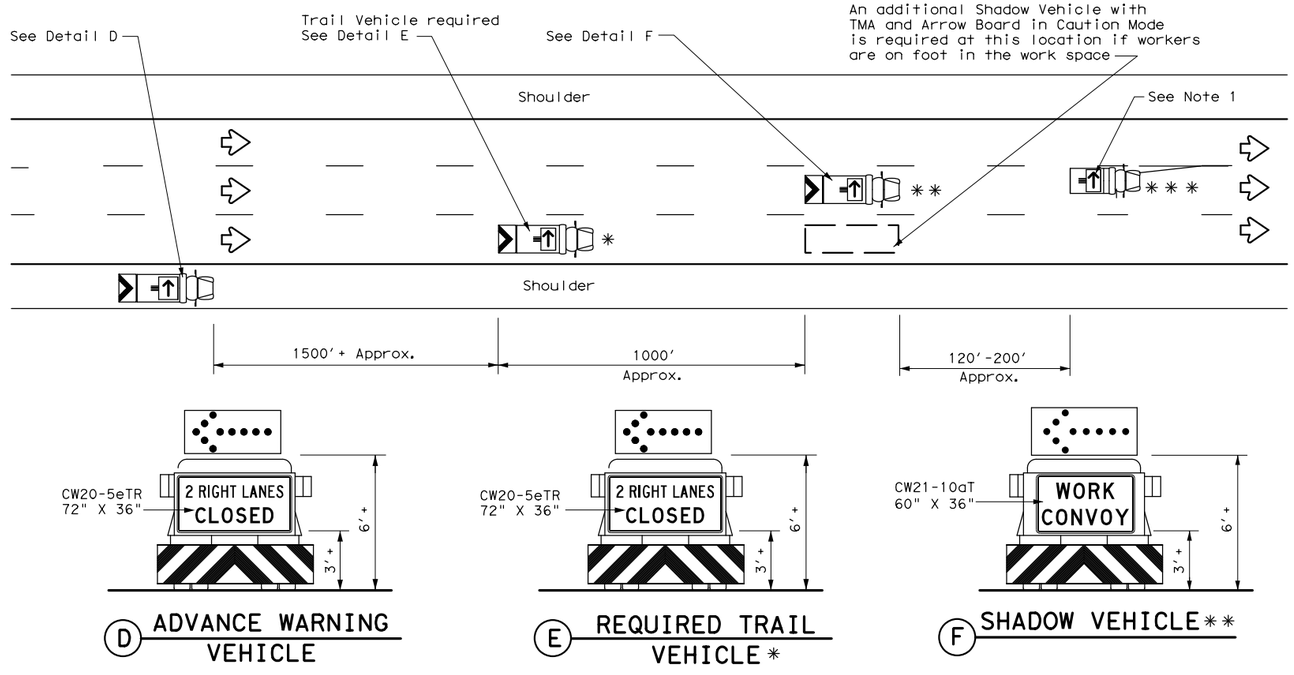


RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



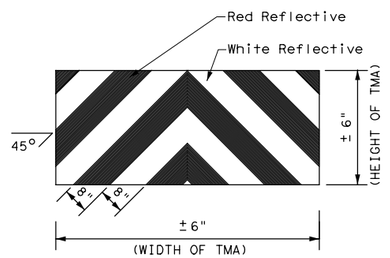
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. 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.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
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 may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a 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, must 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. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	DIST	COUNTY		SHEET NO. 47

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5/10/2024
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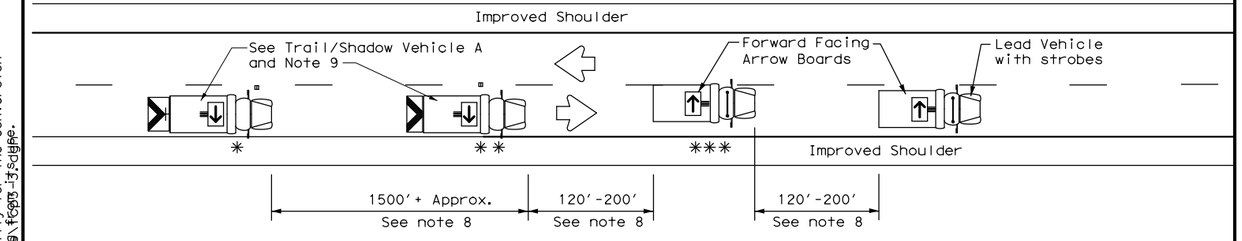
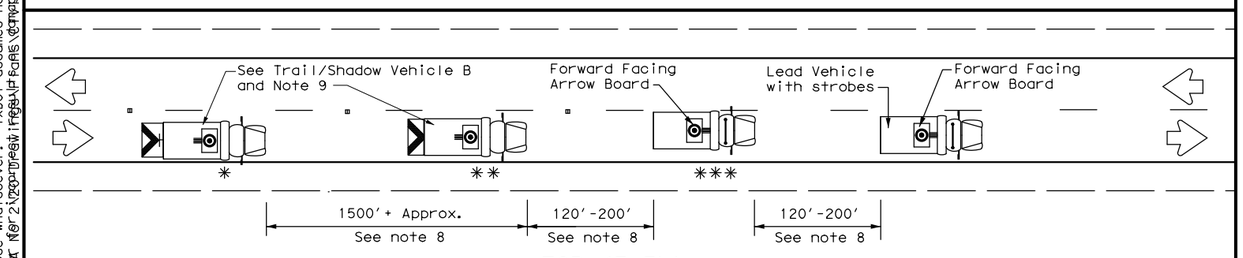


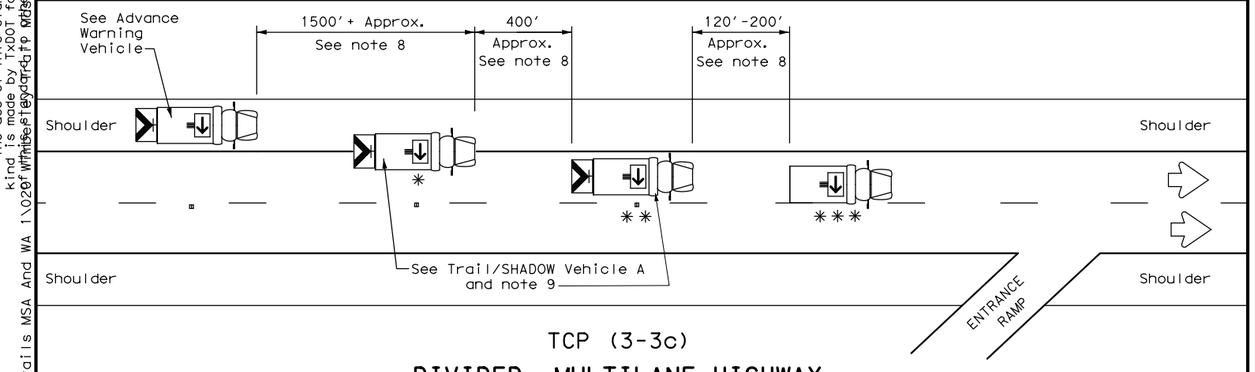
TCP (3-3a)

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



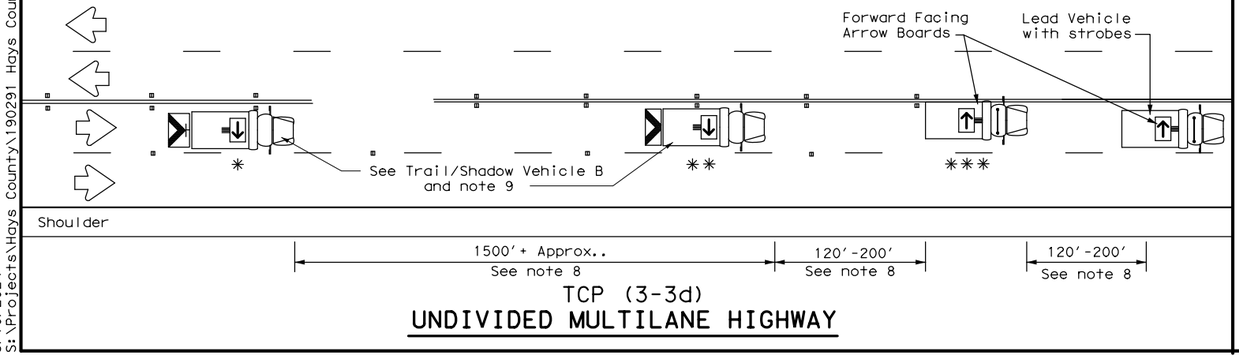
TCP (3-3b)

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



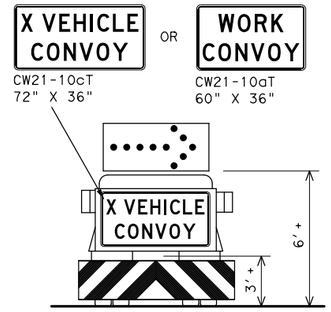
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



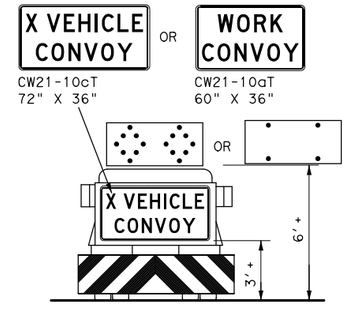
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



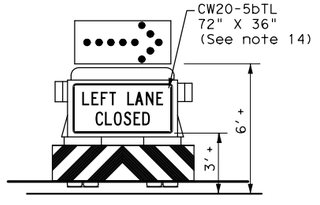
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

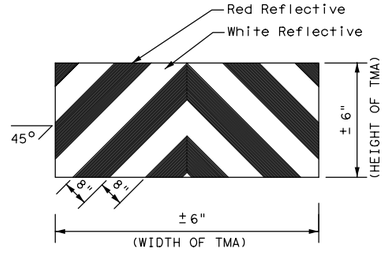


TRAIL/SHADOW VEHICLE B

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				
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				48
1-97 7-14				

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5/10/2024
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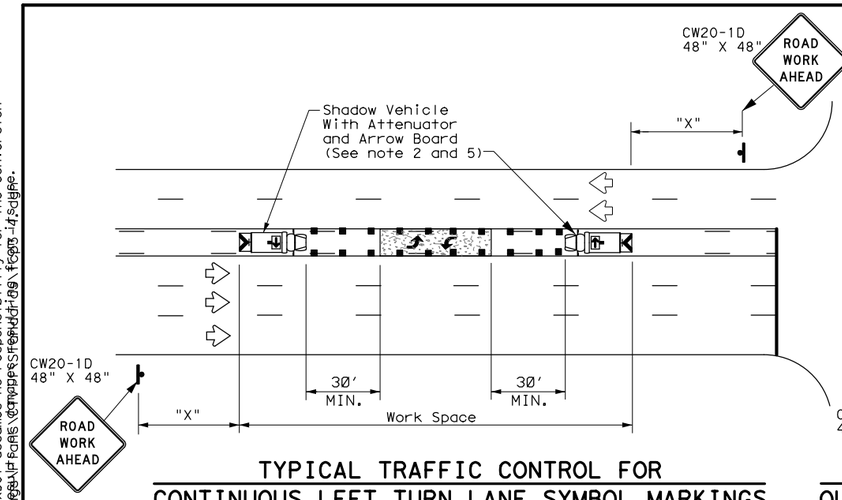
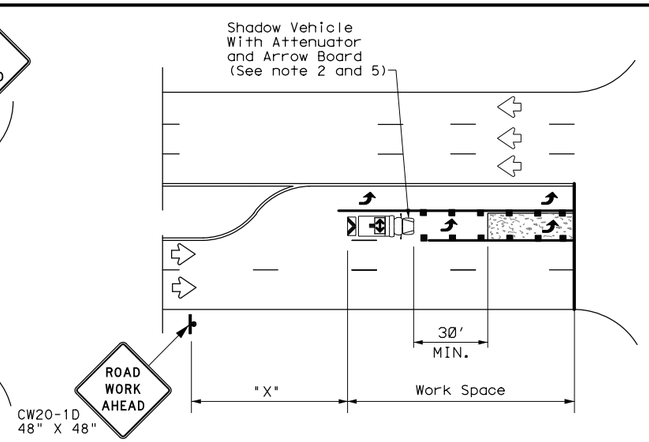
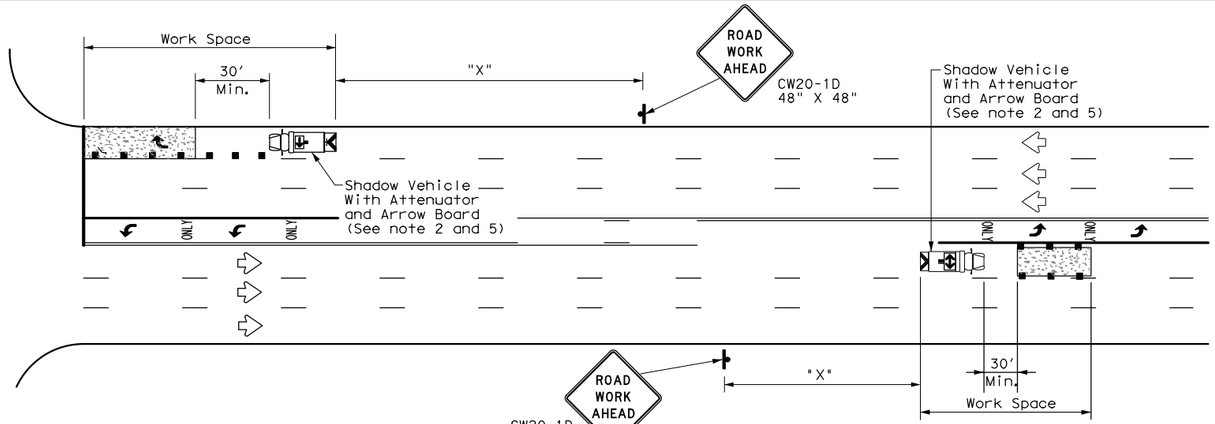


TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

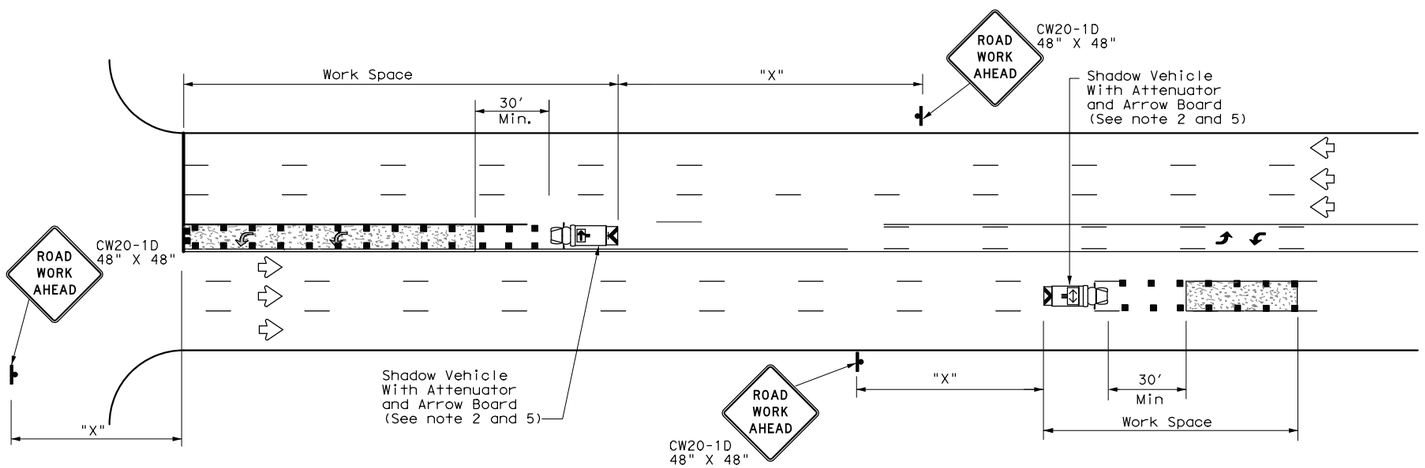


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



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

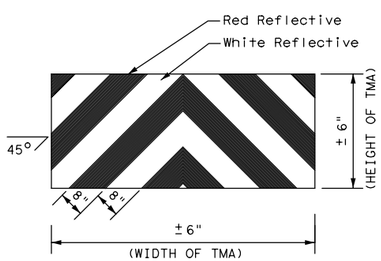
1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take 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				
	DIST	COUNTY		SHEET NO.
				49

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DATE:
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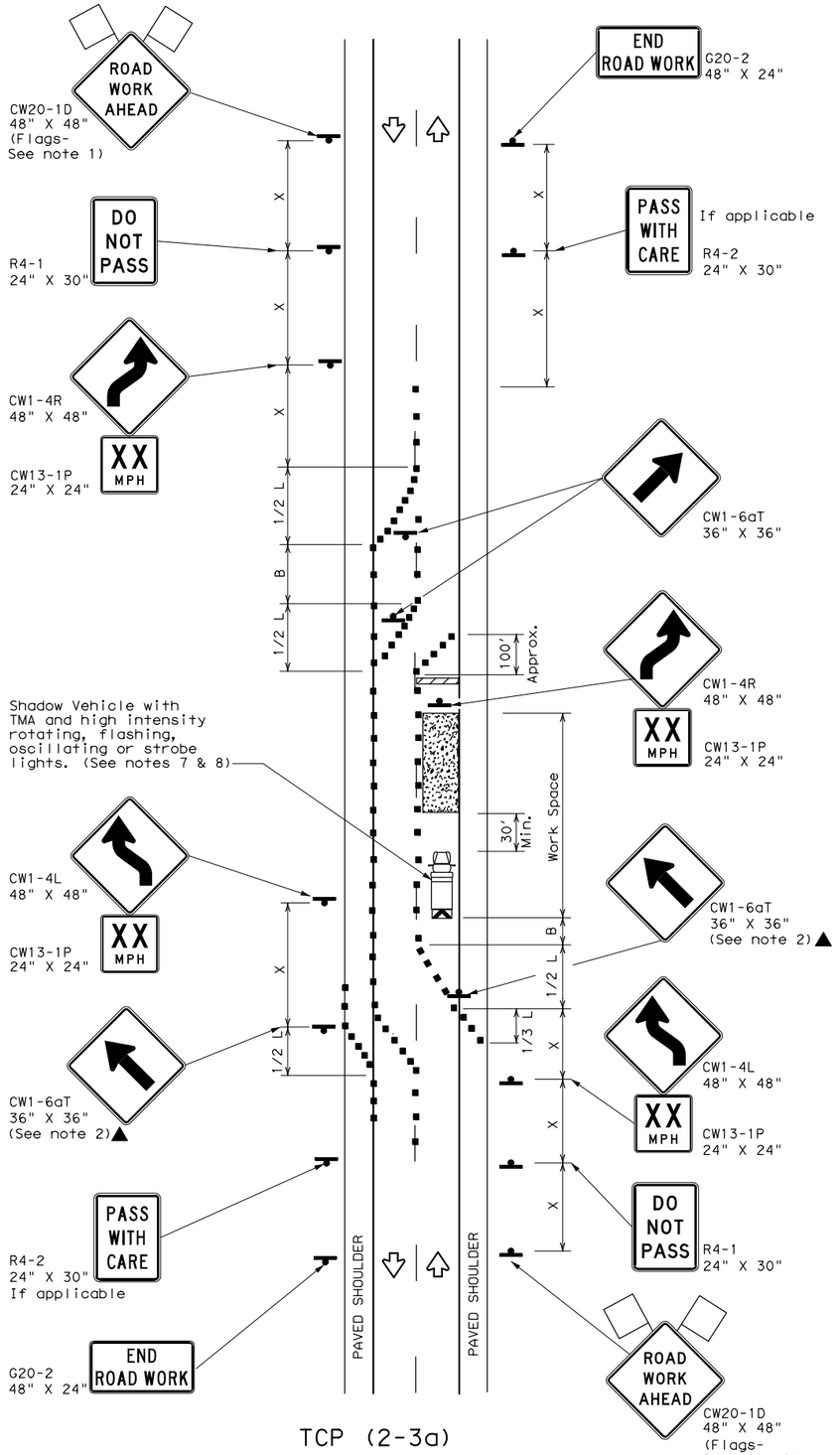
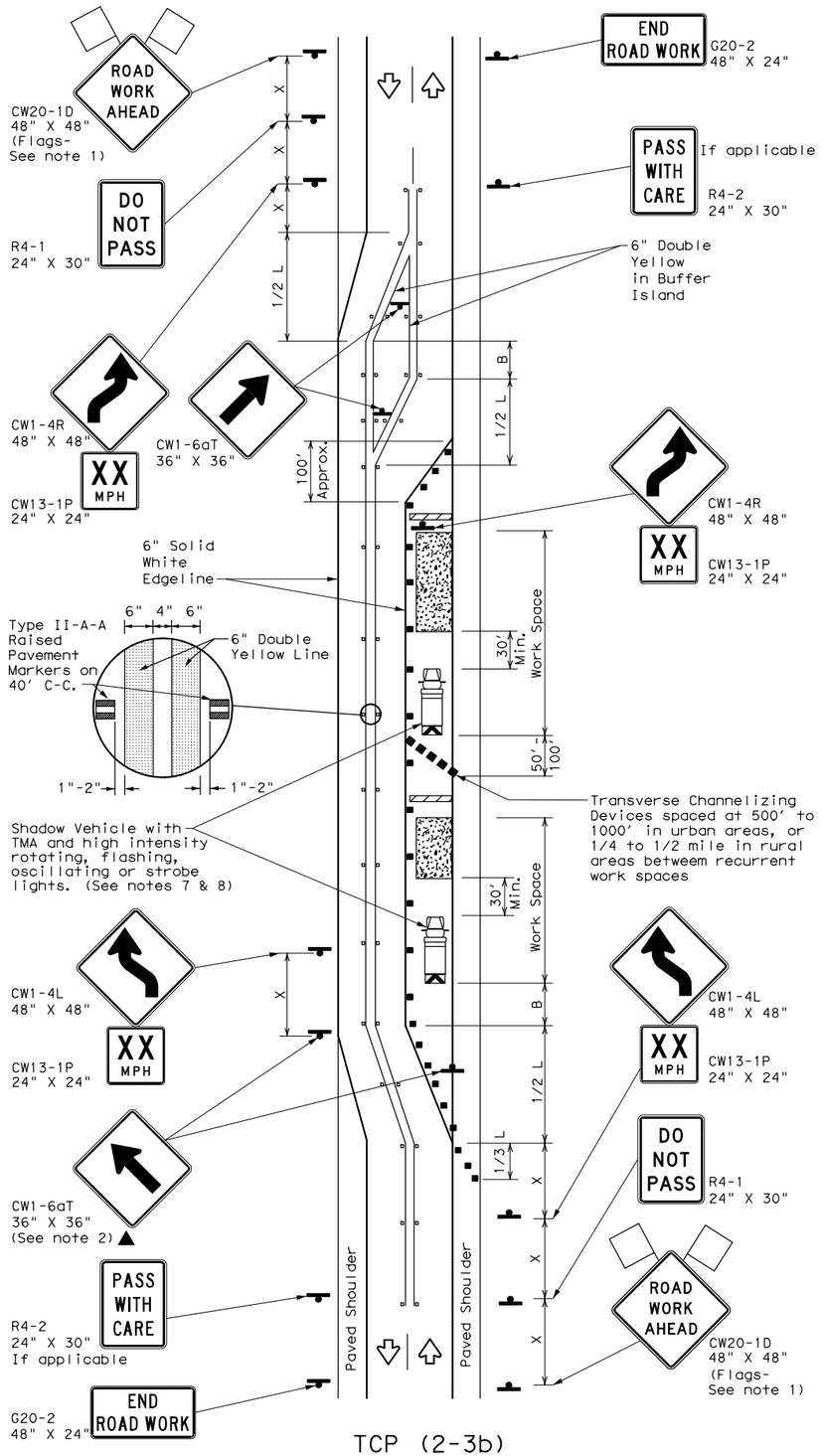


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

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 Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
©TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18 8-95 3-03 4-23 1-97 2-12	DIST	COUNTY		SHEET NO. 50

DATE:
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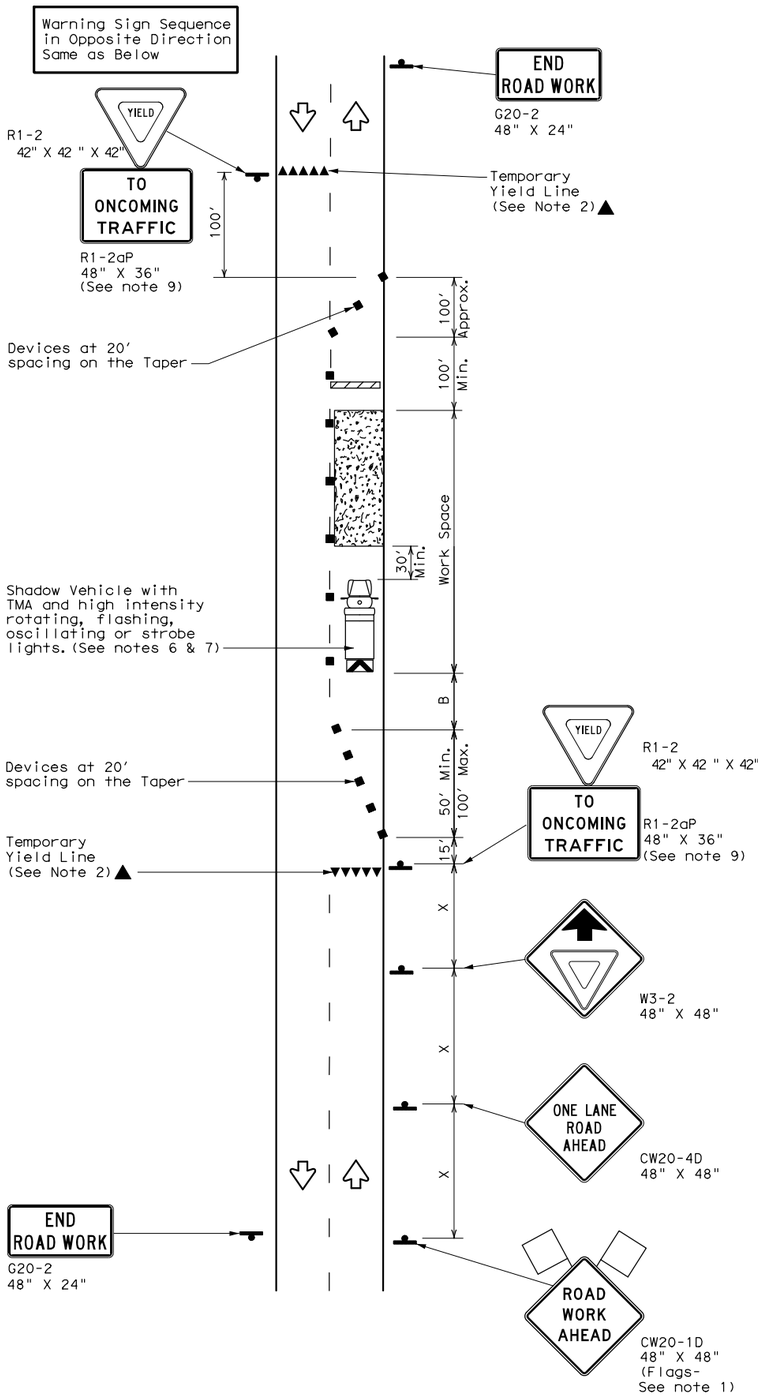
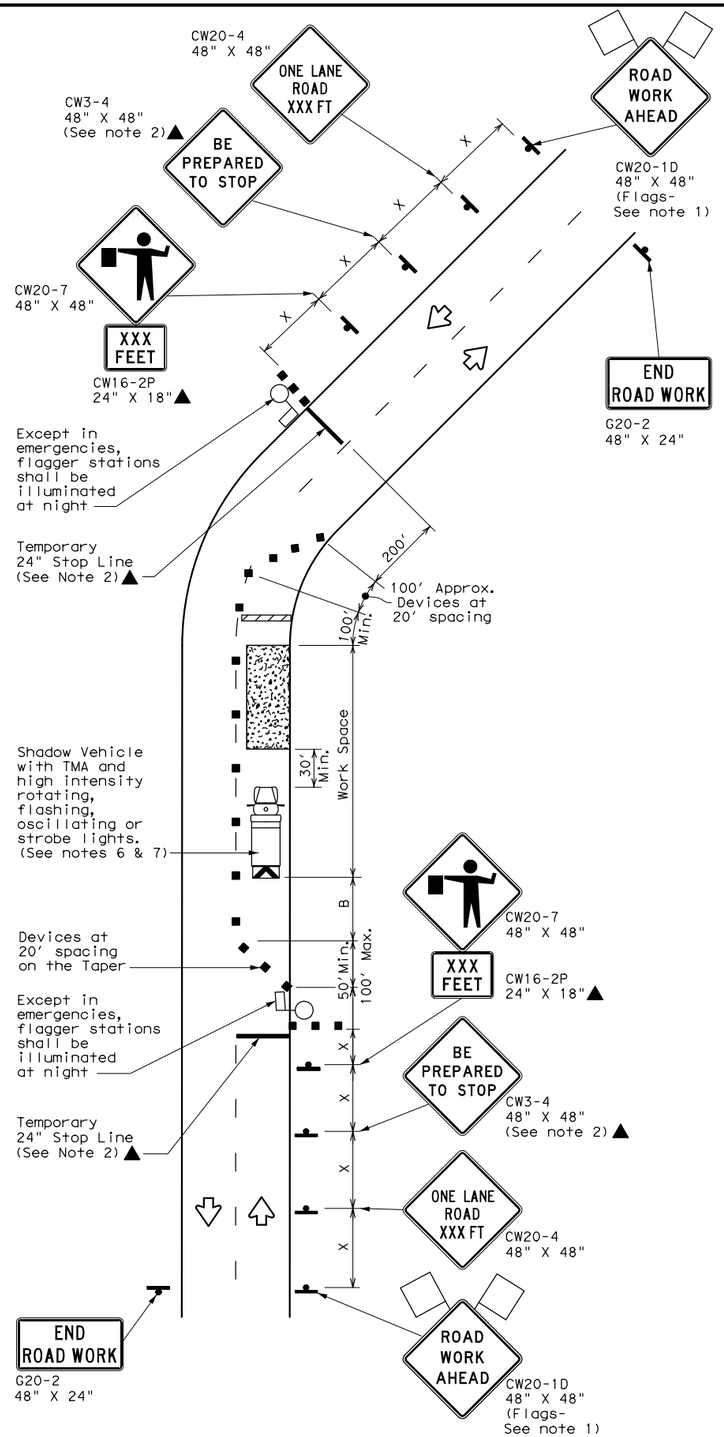


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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:
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REVISIONS				
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12				51
4-98 2-18				

5/10/2024
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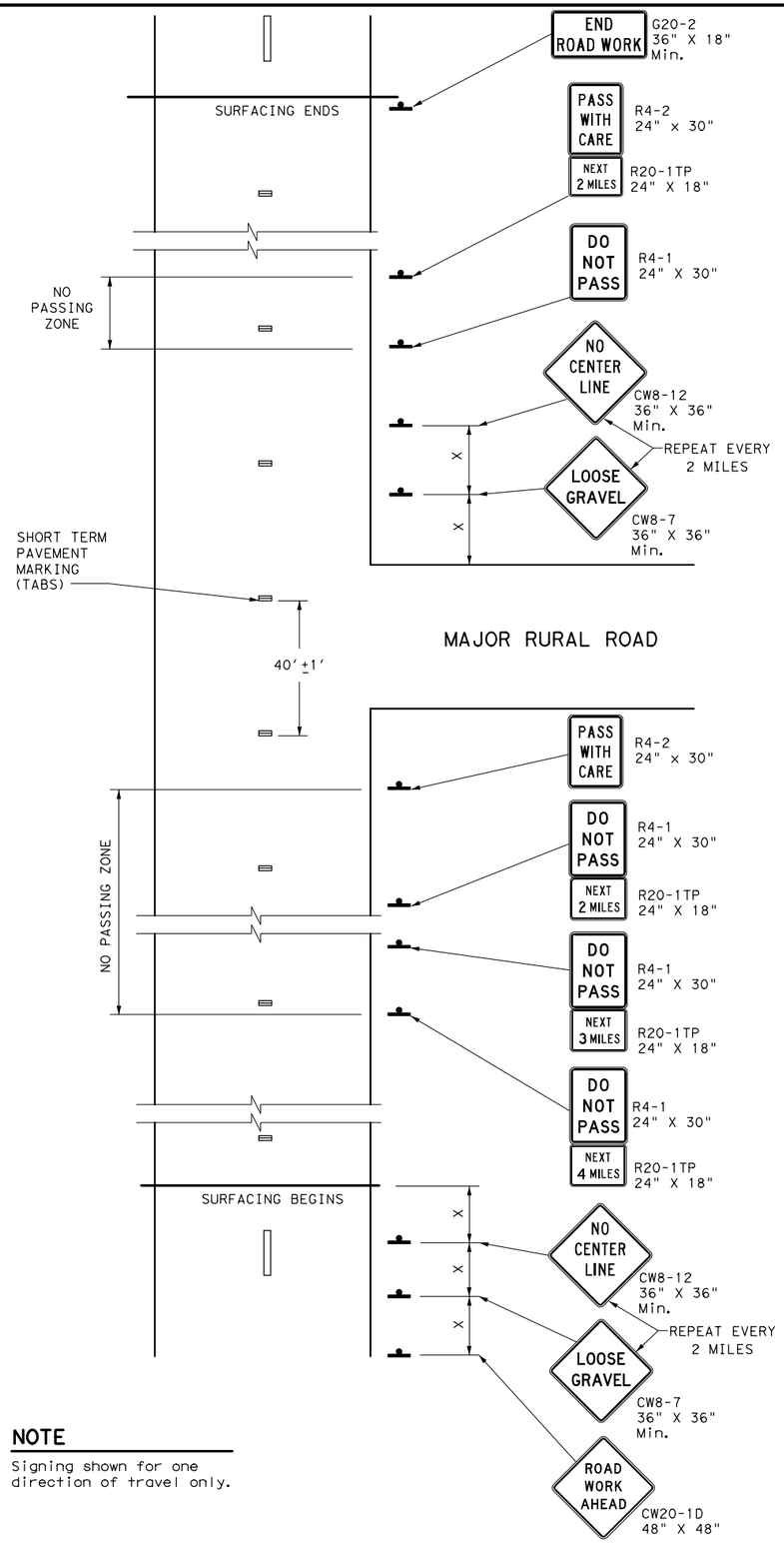
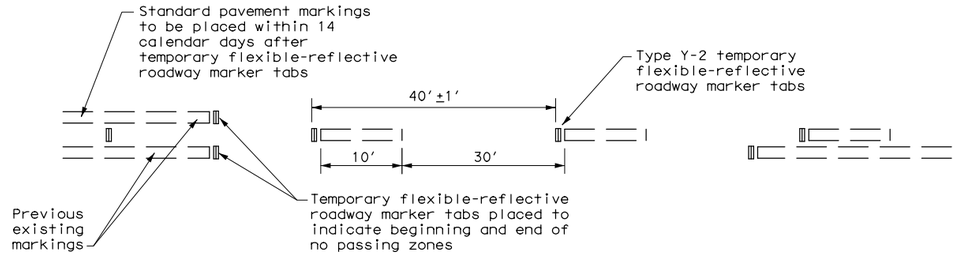


NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.

D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity obliterates the existing center line markings(low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement
no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T)sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

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

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP(7-1)-13

FILE: tcp7-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
4-92 4-98	DIST	COUNTY		SHEET NO.
1-97 7-13				52

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WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

TABS: 4" to 12", 20' ± 6", Type Y-2

TAPE: 4" to 12", 20' ± 6", 6", Yellow, 4.5' ± 6"

SINGLE NO-PASSING LINE or CHANNELIZATION LINE

TABS: 20' ± 6", Type Y-2 or W

TAPE: 20' ± 6", 6", 4.5' ± 6", Yellow or White

BROKEN LINES
(FOR CENTER LINE OR LANE LINE)

TABS: 40' ± 1', Type Y-2 or W, 1' ± 3"

TAPE: 40' ± 1', 6", 4.5' ± 6", Yellow or White

WIDE DOTTED LINES
(FOR LANE DROP LINES)

TABS: 12' ± 6", 4" ± 1", 3' ± 3", Type W

TAPE: 12", 12' ± 6", 3' ± 3", White

WIDE GORE MARKINGS

TABS: 20' ± 6", 4" ± 1", Type W

TAPE: 12", 20' ± 6", 4.5' ± 6", White

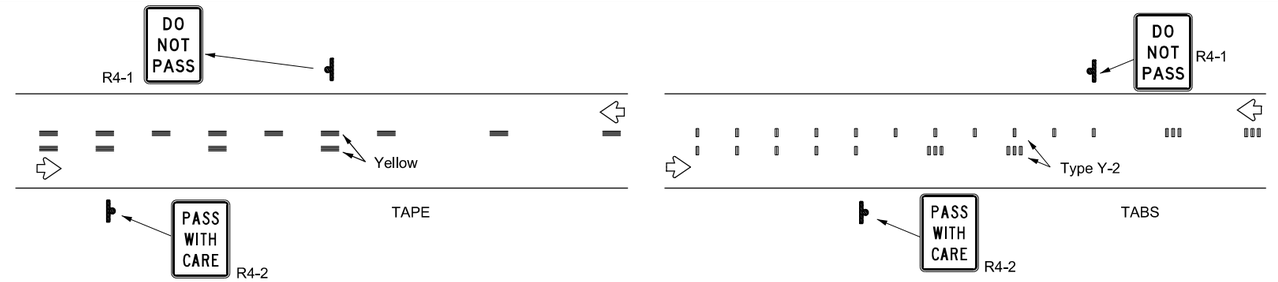
NOTES:

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.

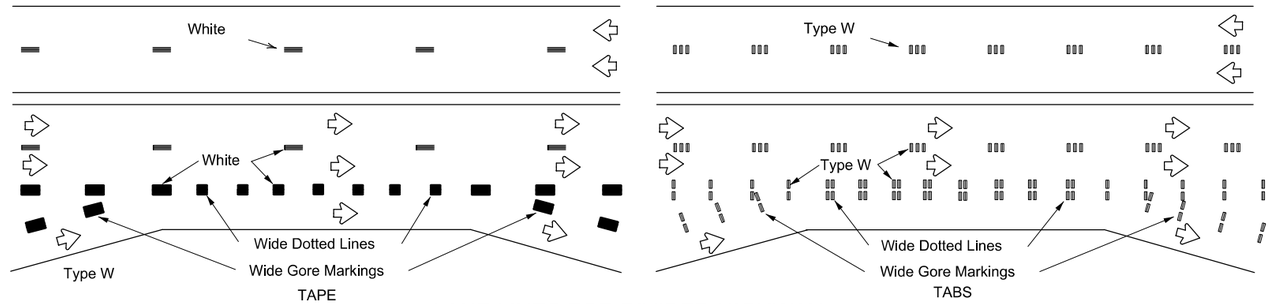
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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.

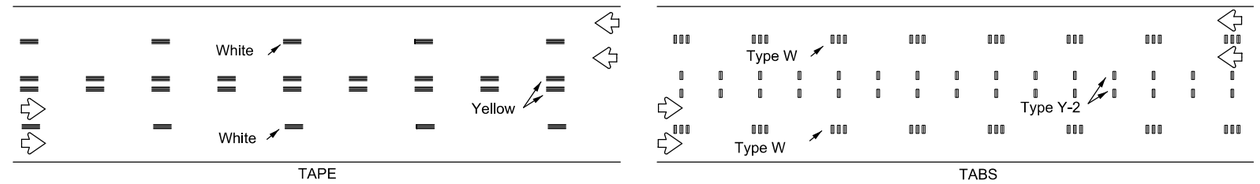
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



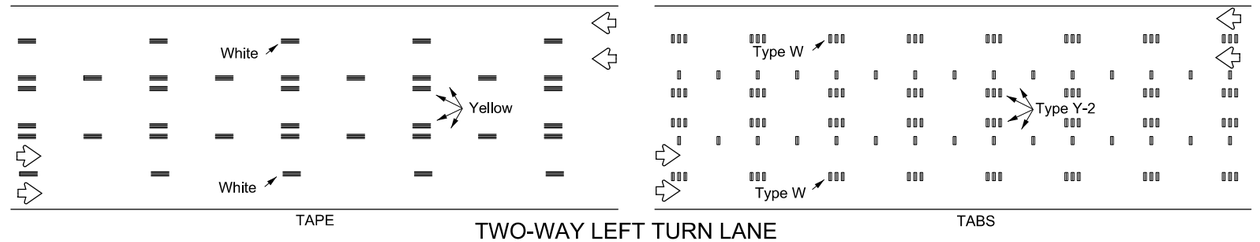
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



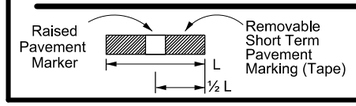
LANE LINES FOR DIVIDED HIGHWAY



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

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REVISIONS 4-92 7-13 1-97 2-23 3-03	DIST	COUNTY		SHEET NO. 53

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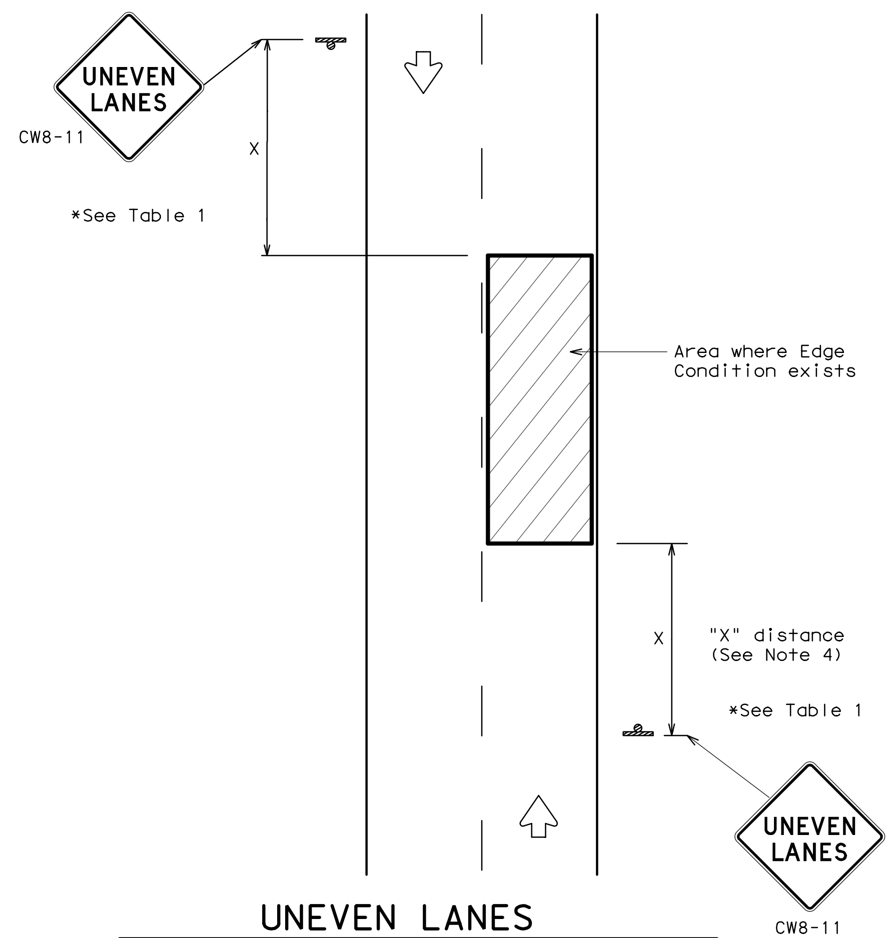
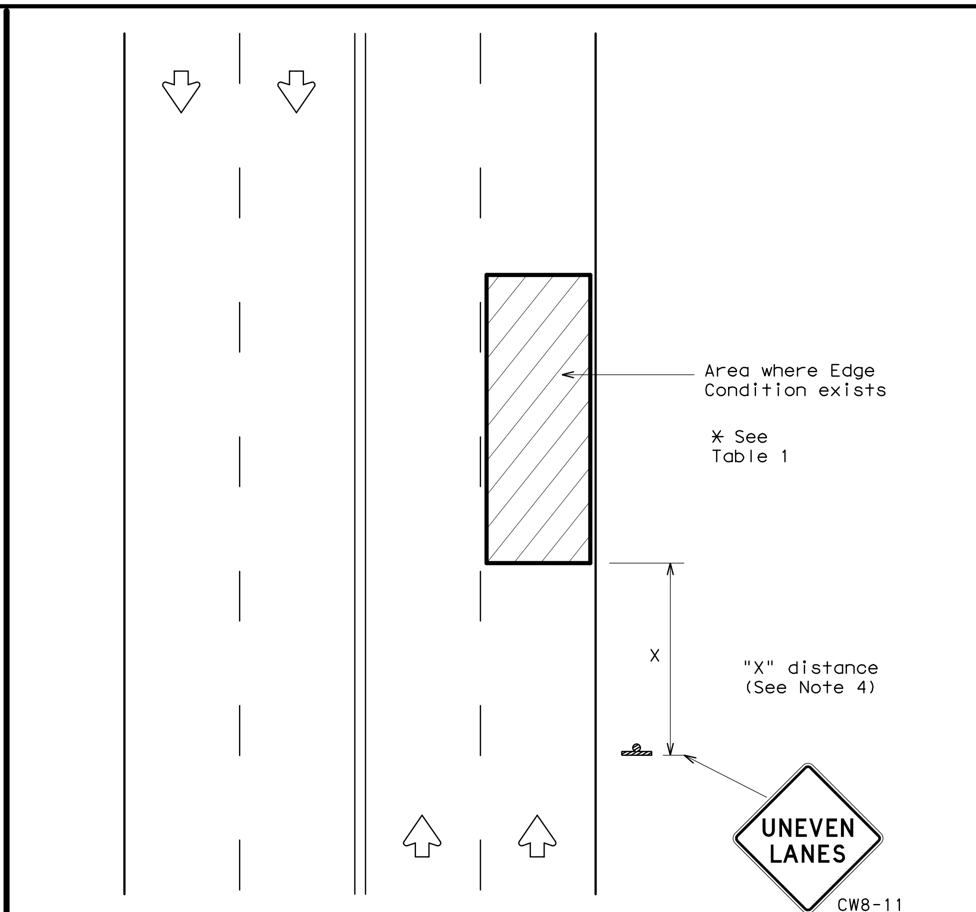
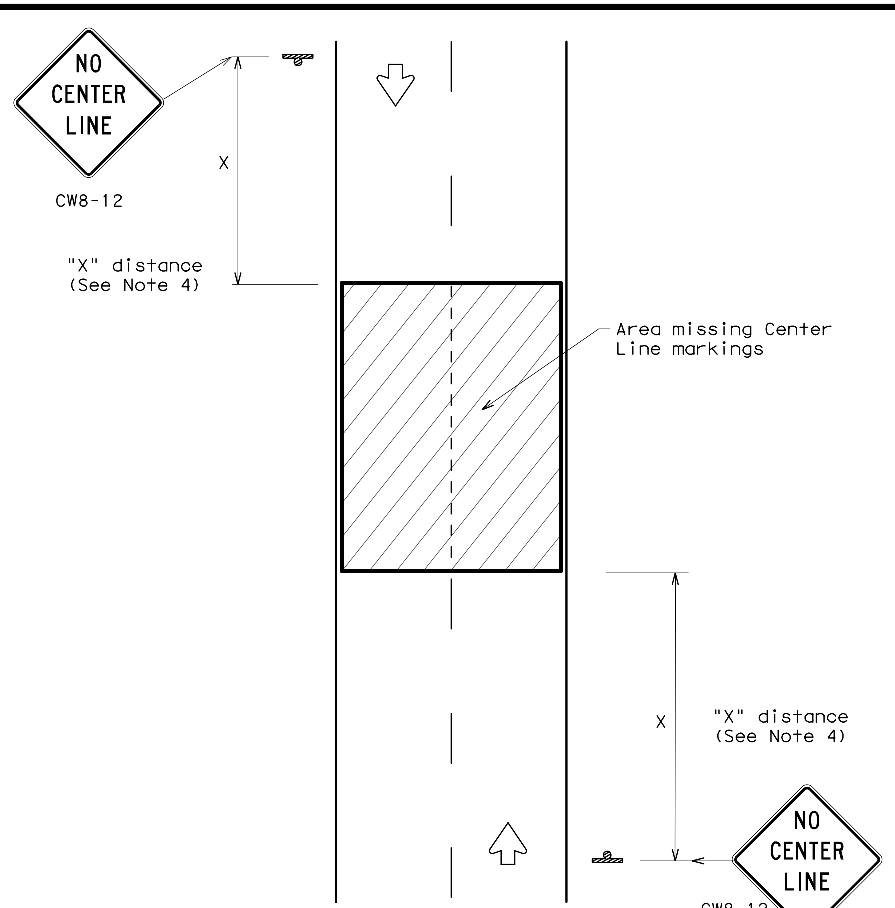


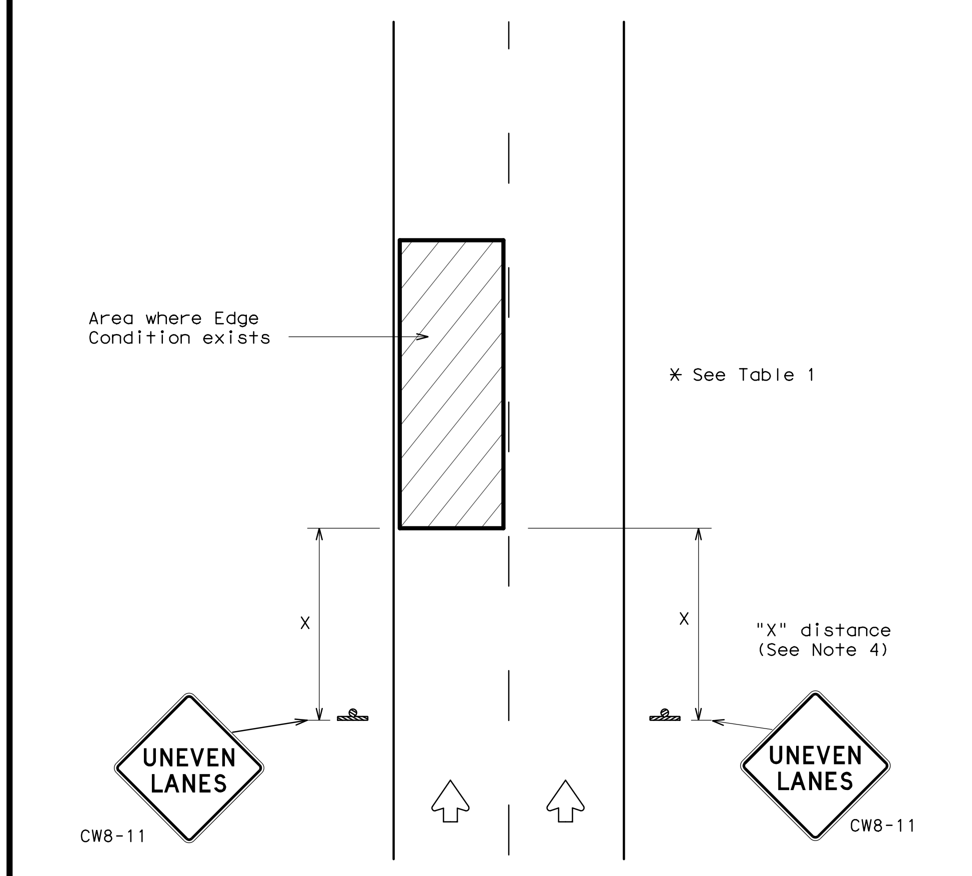
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



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 D	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 >3 1 D	Less than or equal to 3"	Sign: CW8-11
③ 0" to 3/4" D 12" 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
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REVISIONS 8-95 2-98 7-13 1-97 3-03	DIST	COUNTY		SHEET NO. 54

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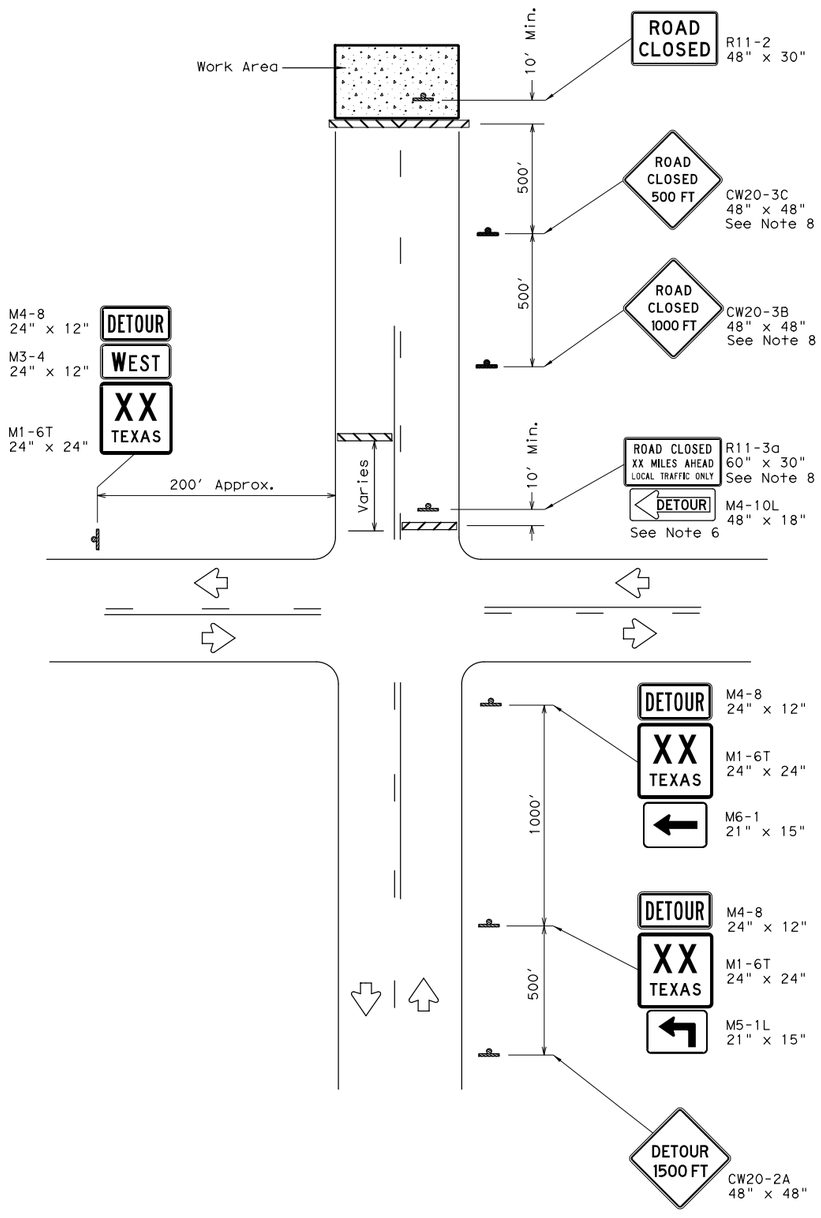
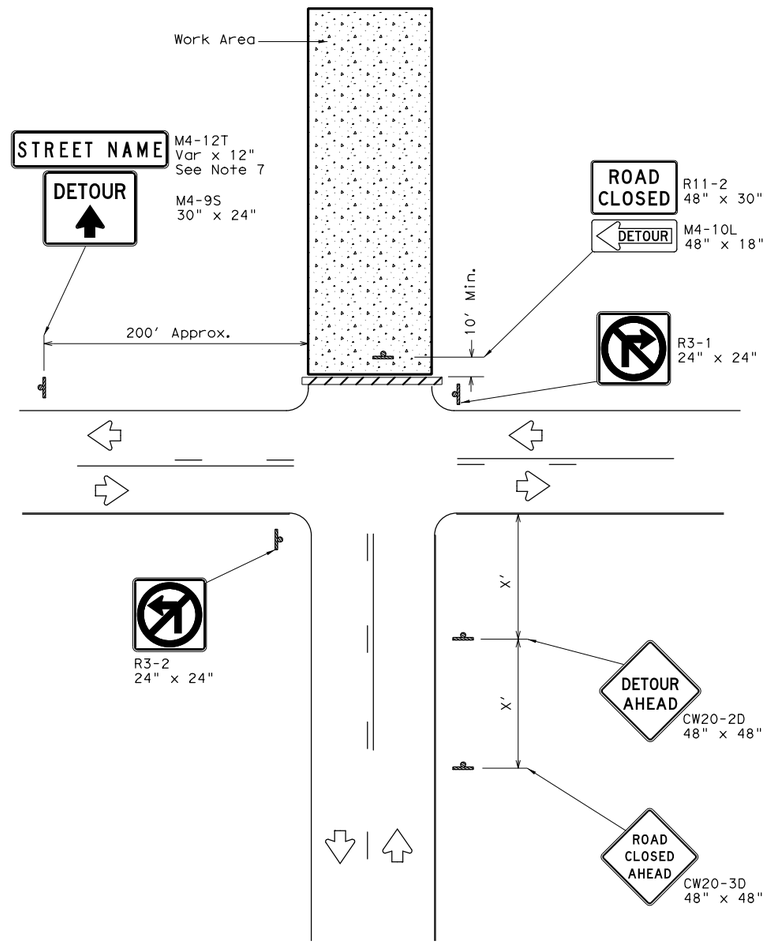


ROAD CLOSURE BEYOND THE INTERSECTION

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
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REVISIONS				
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03				55

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Chain OLDKYLE contains:
OK1 CUR OK2 CUR OK3 OK4 CUR OK5 CUR OK6 CUR OK7 CUR OK8 CUR OK9 CUR OK10

Beginning chain OLDKYLE description

Point OK1 N 13,910,943.10 E 2,254,625.46 Sta 0+00.00

Course from OK1 to PC OK2 N 19° 28′ 00.66" E Dist 20.53

Curve Data					
Curve OK2					
P.I. Station	0+54.78	N	13,910,994.75	E	2,254,643.71
Delta =	46° 21′ 27.69"	(RT)			
Degree =	71° 37′ 11.01"				
Tangent =	34.25				
Length =	64.73				
Radius =	80.00				
External =	7.02				
Long Chord =	62.98				
Mid. Ord. =	6.46				
P.C. Station	0+20.53	N	13,910,962.45	E	2,254,632.30
P.T. Station	0+85.26	N	13,911,008.77	E	2,254,674.96
C.C.		N	13,910,935.79	E	2,254,707.72
Back = N	19° 28′ 00.66" E				
Ahead = N	65° 49′ 28.35" E				
Chord Bear = N	42° 38′ 44.51" E				

Course from PT OK2 to PC OK3 N 65° 49′ 28.35" E Dist 124.86

Curve Data					
Curve OK3					
P.I. Station	2+36.14	N	13,911,070.56	E	2,254,812.61
Delta =	11° 25′ 51.94"	(RT)			
Degree =	22° 02′ 12.62"				
Tangent =	26.02				
Length =	51.87				
Radius =	260.00				
External =	1.30				
Long Chord =	51.79				
Mid. Ord. =	1.29				
P.C. Station	2+10.11	N	13,911,059.91	E	2,254,788.87
P.T. Station	2+61.99	N	13,911,076.30	E	2,254,837.99
C.C.		N	13,910,822.71	E	2,254,895.35
Back = N	65° 49′ 28.35" E				
Ahead = N	77° 15′ 20.30" E				
Chord Bear = N	71° 32′ 24.33" E				

Course from PT OK3 to OK4 N 77° 15′ 20.30" E Dist 271.67

Point OK4 N 13,911,136.23 E 2,255,102.96 Sta 5+33.65

Course from OK4 to PC OK5 N 78° 08′ 07.07" E Dist 147.90

Curve Data					
Curve OK5					
P.I. Station	7+12.27	N	13,911,172.96	E	2,255,277.77
Delta =	1° 45′ 36.91"	(LT)			
Degree =	2° 51′ 53.24"				
Tangent =	30.72				
Length =	61.44				
Radius =	2,000.00				
External =	0.24				
Long Chord =	61.44				
Mid. Ord. =	0.24				
P.C. Station	6+81.55	N	13,911,166.64	E	2,255,247.70
P.T. Station	7+42.99	N	13,911,180.20	E	2,255,307.63
C.C.		N	13,913,123.91	E	2,254,836.50
Back = N	78° 08′ 07.07" E				
Ahead = N	76° 22′ 30.16" E				
Chord Bear = N	77° 15′ 18.62" E				

Course from PT OK5 to PC OK6 N 76° 22′ 30.16" E Dist 79.92

Curve Data					
Curve OK6					
P.I. Station	8+94.53	N	13,911,215.89	E	2,255,454.90
Delta =	8° 11′ 32.60"	(RT)			
Degree =	5° 43′ 46.48"				
Tangent =	71.61				
Length =	142.98				
Radius =	1,000.00				
External =	2.56				
Long Chord =	142.86				
Mid. Ord. =	2.55				
P.C. Station	8+22.91	N	13,911,199.02	E	2,255,385.30
P.T. Station	9+65.90	N	13,911,222.67	E	2,255,526.19
C.C.		N	13,910,227.16	E	2,255,620.86
Back = N	76° 22′ 30.16" E				
Ahead = N	84° 34′ 02.76" E				
Chord Bear = N	80° 28′ 16.46" E				

Course from PT OK6 to PC OK7 N 84° 34′ 02.76" E Dist 45.75

Curve Data					
Curve OK7					
P.I. Station	10+78.79	N	13,911,233.36	E	2,255,638.58
Delta =	30° 04′ 00.55"	(LT)			
Degree =	22° 55′ 05.92"				
Tangent =	67.14				
Length =	131.19				
Radius =	250.00				
External =	8.86				
Long Chord =	129.69				
Mid. Ord. =	8.56				
P.C. Station	10+11.64	N	13,911,227.00	E	2,255,571.73
P.T. Station	11+42.84	N	13,911,272.35	E	2,255,693.24
C.C.		N	13,911,475.88	E	2,255,548.07
Back = N	84° 34′ 02.76" E				
Ahead = N	54° 30′ 02.20" E				
Chord Bear = N	69° 32′ 02.48" E				

Course from PT OK7 to PC OK8 N 54° 30′ 02.20" E Dist 45.07

Curve Data					
Curve OK8					
P.I. Station	12+52.69	N	13,911,336.14	E	2,255,782.67
Delta =	14° 45′ 57.34"	(RT)			
Degree =	11° 27′ 32.96"				
Tangent =	64.79				
Length =	128.86				
Radius =	500.00				
External =	4.18				
Long Chord =	128.50				
Mid. Ord. =	4.15				
P.C. Station	11+87.90	N	13,911,298.52	E	2,255,729.93
P.T. Station	13+16.76	N	13,911,359.08	E	2,255,843.27
C.C.		N	13,910,891.46	E	2,256,020.28
Back = N	54° 30′ 02.20" E				
Ahead = N	69° 15′ 59.54" E				
Chord Bear = N	61° 53′ 00.87" E				

Course from PT OK8 to PC OK9 N 69° 15′ 59.54" E Dist 164.55

Curve Data					
Curve OK9					
P.I. Station	15+90.09	N	13,911,455.84	E	2,256,098.89
Delta =	4° 09′ 11.61"	(RT)			
Degree =	1° 54′ 35.49"				
Tangent =	108.78				
Length =	217.46				
Radius =	3,000.00				
External =	1.97				
Long Chord =	217.41				
Mid. Ord. =	1.97				
P.C. Station	14+81.31	N	13,911,417.33	E	2,255,997.16
P.T. Station	16+98.77	N	13,911,486.88	E	2,256,203.15
C.C.		N	13,908,611.62	E	2,257,059.22
Back = N	69° 15′ 59.54" E				
Ahead = N	73° 25′ 11.15" E				
Chord Bear = N	71° 20′ 35.35" E				

Course from PT OK9 to PC OK10 N 73° 25′ 11.15" E Dist 316.79

Curve Data					
Curve OK10					
P.I. Station	20+94.54	N	13,911,599.82	E	2,256,582.46
Delta =	51° 09′ 27.81"	(RT)			
Degree =	34° 43′ 28.97"				
Tangent =	78.98				
Length =	147.32				
Radius =	165.00				
External =	17.93				
Long Chord =	142.48				
Mid. Ord. =	16.17				
P.C. Station	20+15.56	N	13,911,577.28	E	2,256,506.76
P.T. Station	21+62.88	N	13,911,555.00	E	2,256,647.49
C.C.		N	13,911,419.14	E	2,256,553.85
Back = N	73° 25′ 11.15" E				
Ahead = S	55° 25′ 21.04" E				
Chord Bear = S	81° 00′ 04.94" E				

Ending chain OLDKYLE description

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BY: BRYAN J. SPINA, P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

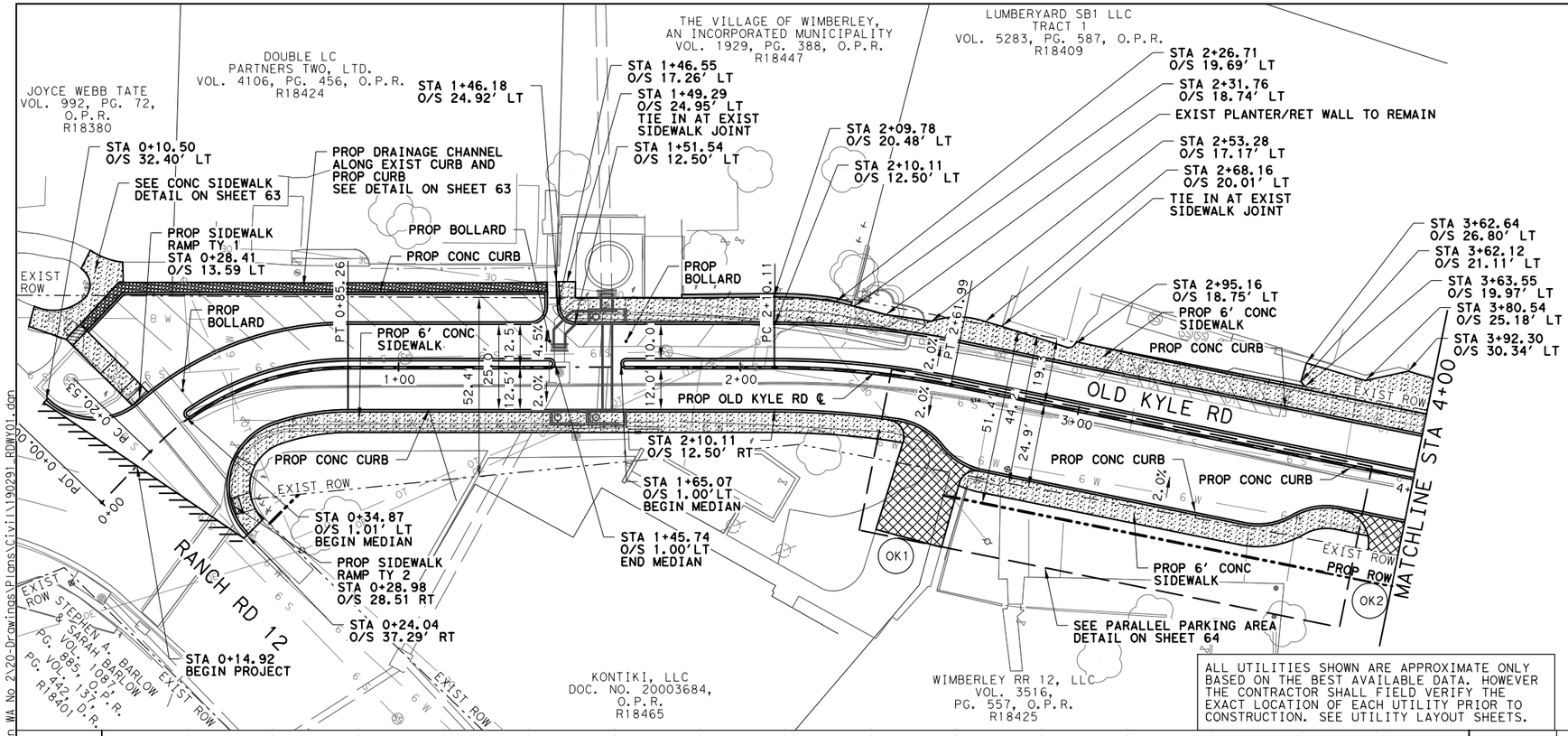
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

HORIZONTAL ALIGNMENT DATA

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	56



SUPERELEVATION TABLE			
STA	LEFT SLOPE	RIGHT SLOPE	COMMENTS
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0+01.00	-4.50	-2.00	END TRANSITION
1+50.00	-4.50	-2.00	BEGIN TRANSITION
2+48.29	-2.00	-2.00	END TRANSITION

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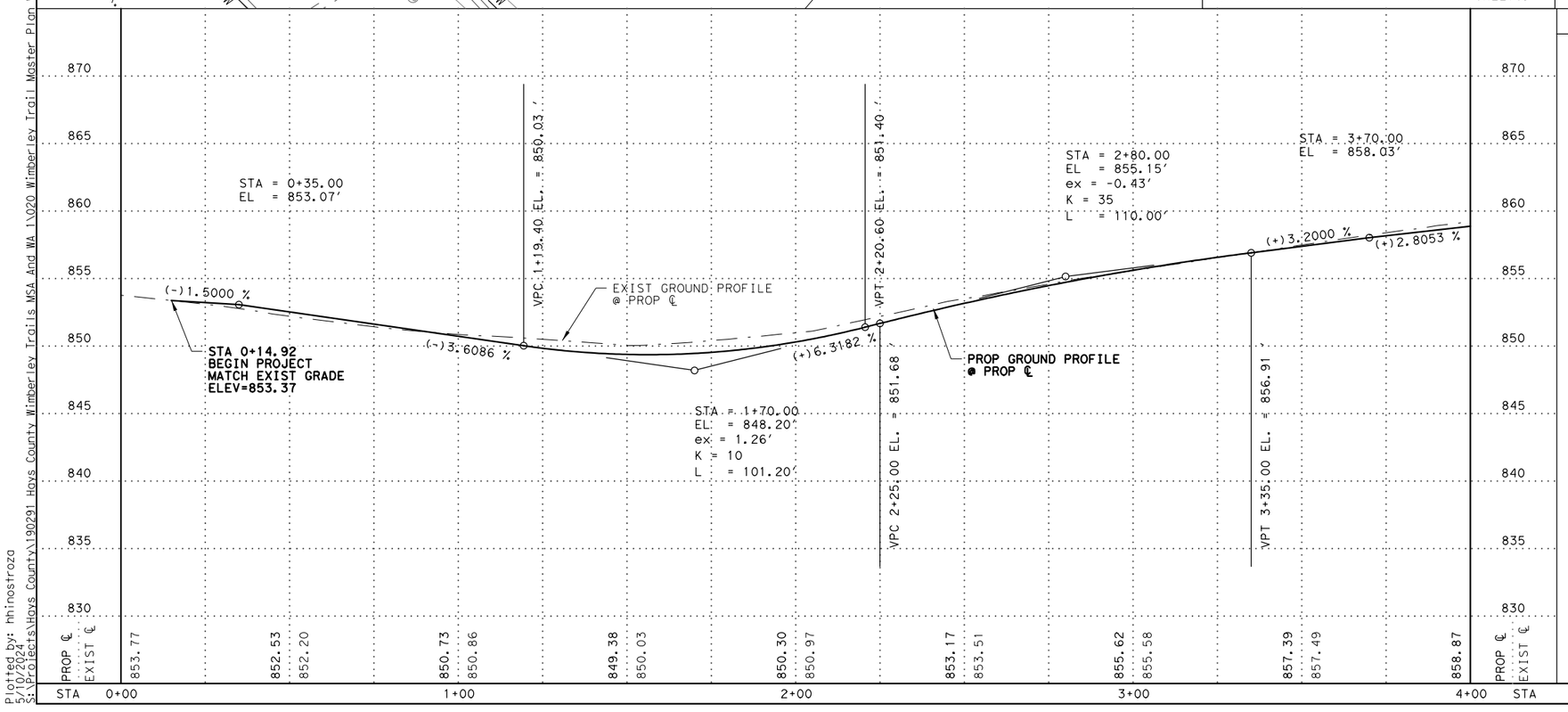

LEGEND

- S WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT UNDERGROUND TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- UE UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- (X) DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

ROADWAY IMPROVEMENTS PLAN AND PROFILE STA 0+00 TO STA 4+00

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	57

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No. 2\20-Drawings\Plans\Civil\190291_ROWY01.dgn

SUPERELEVATION TABLE			
STA	LEFT SLOPE	RIGHT SLOPE	COMMENTS
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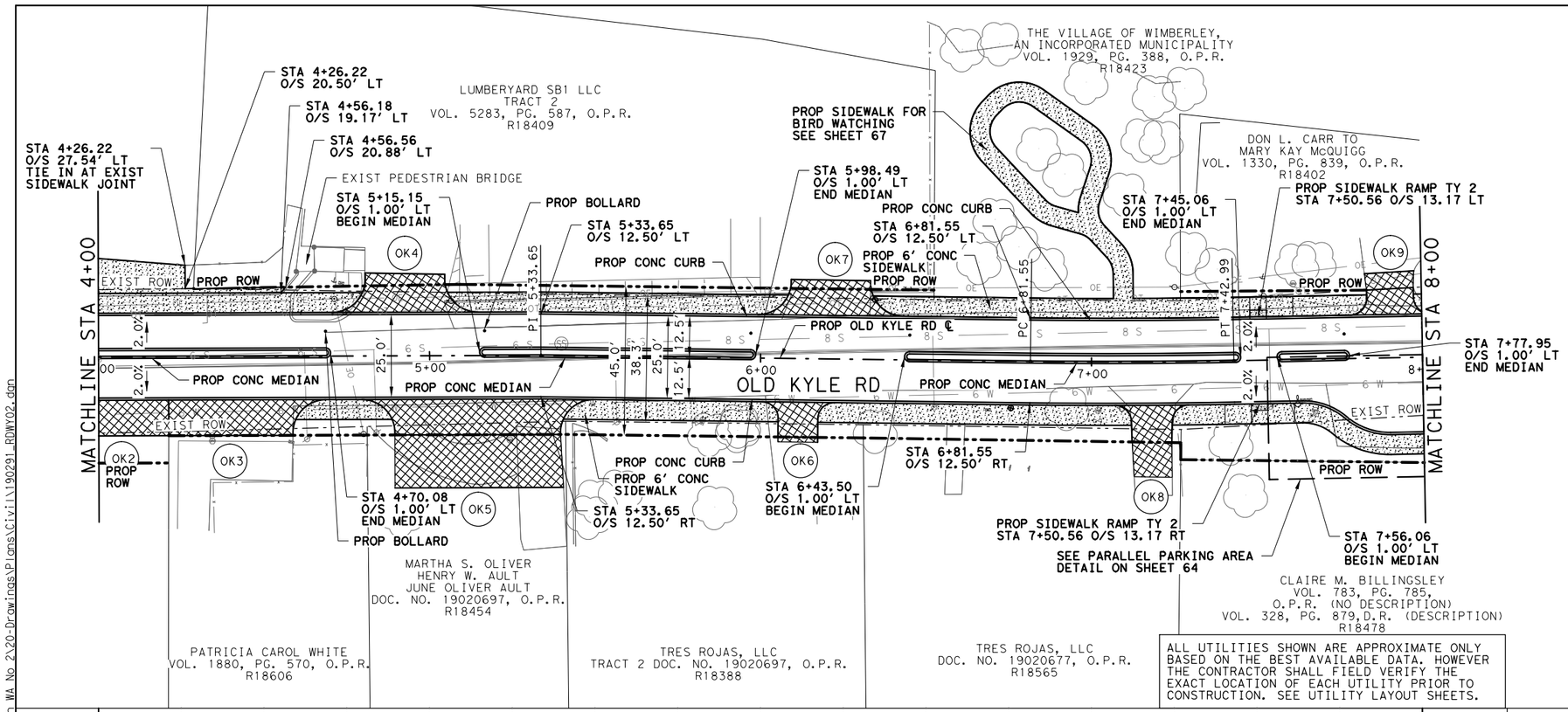
8+50.00	-2.00	2.00	END TRANSITION



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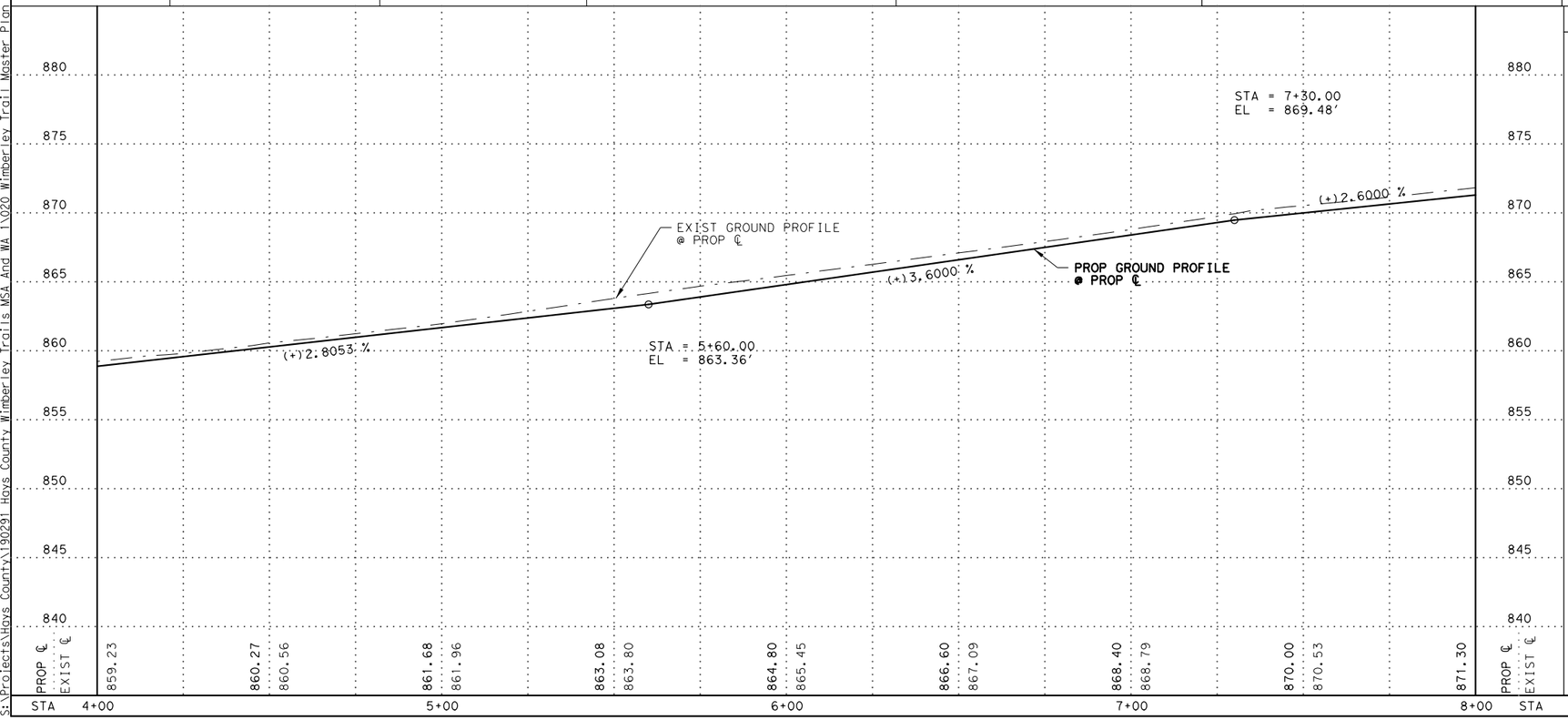

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
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- SIGN
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- REMOVE & RELOCATE FENCE

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

ROADWAY IMPROVEMENTS PLAN AND PROFILE STA 4+00 TO STA 8+00

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	58

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY02.dgn

SUPERELEVATION TABLE			
STA	LEFT SLOPE	RIGHT SLOPE	COMMENTS
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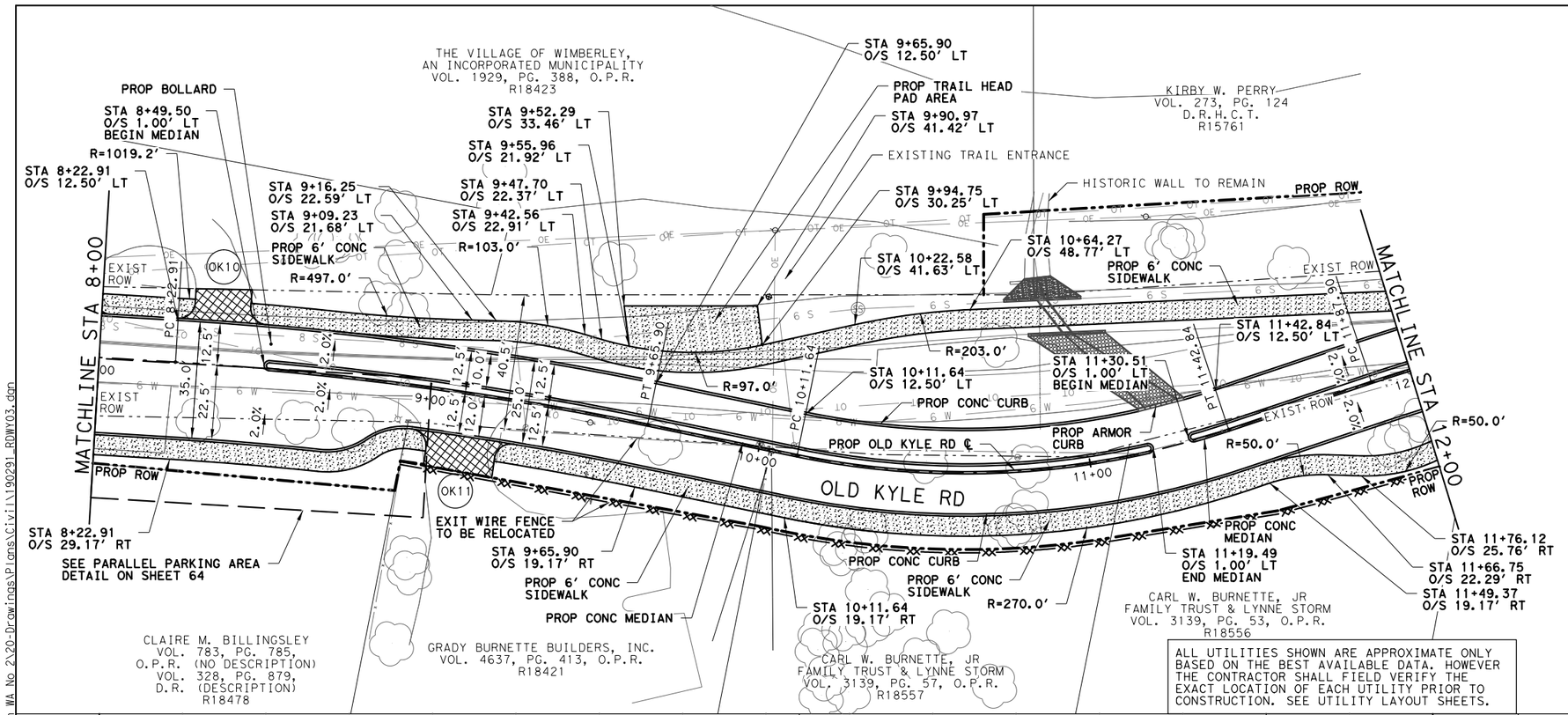
8+50.00	-2.00	2.00	END TRANSITION



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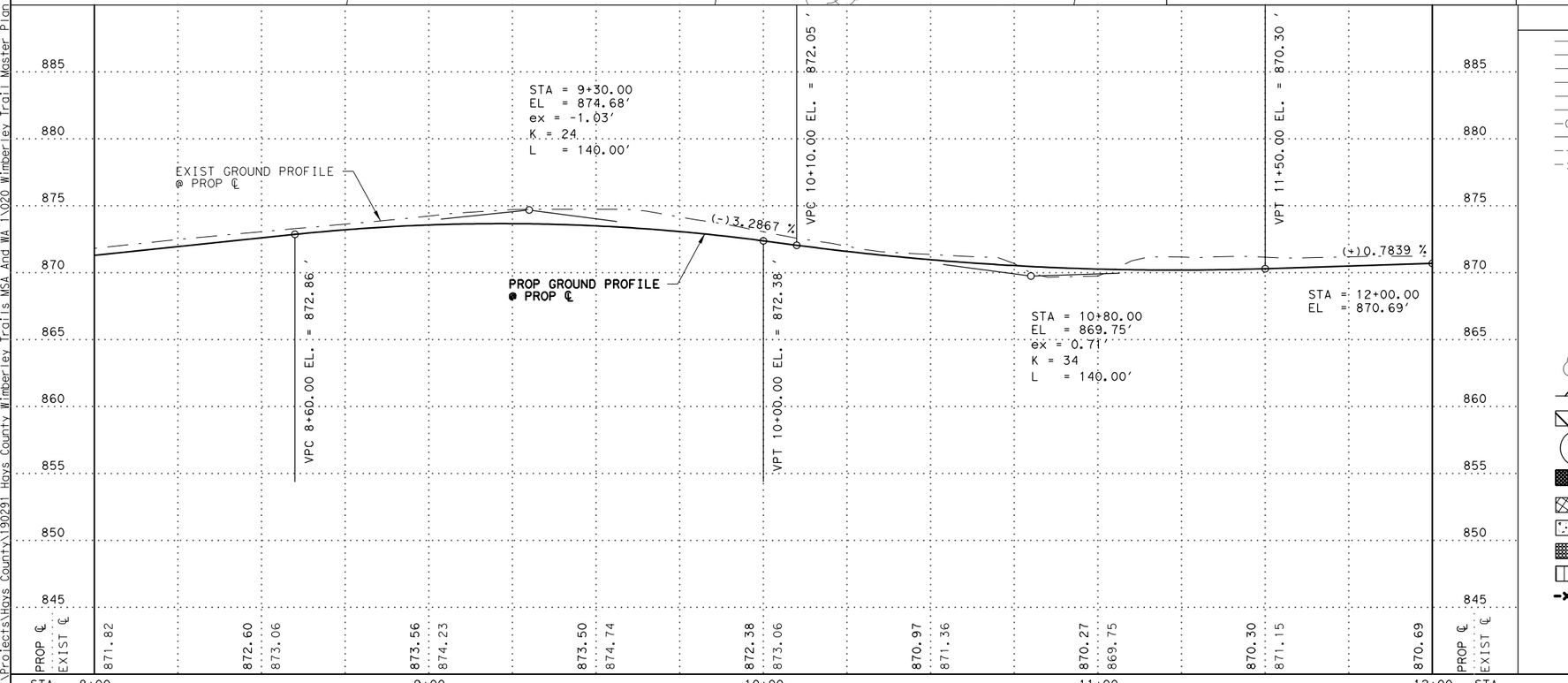

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
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- CLEAN OUT
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- AT&T
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- DRIVEWAY NO.
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LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

ROADWAY IMPROVEMENTS PLAN AND PROFILE STA 8+00 TO STA 12+00

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	59

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY03.dgn

SUPERELEVATION TABLE			
STA	LEFT SLOPE	RIGHT SLOPE	COMMENTS
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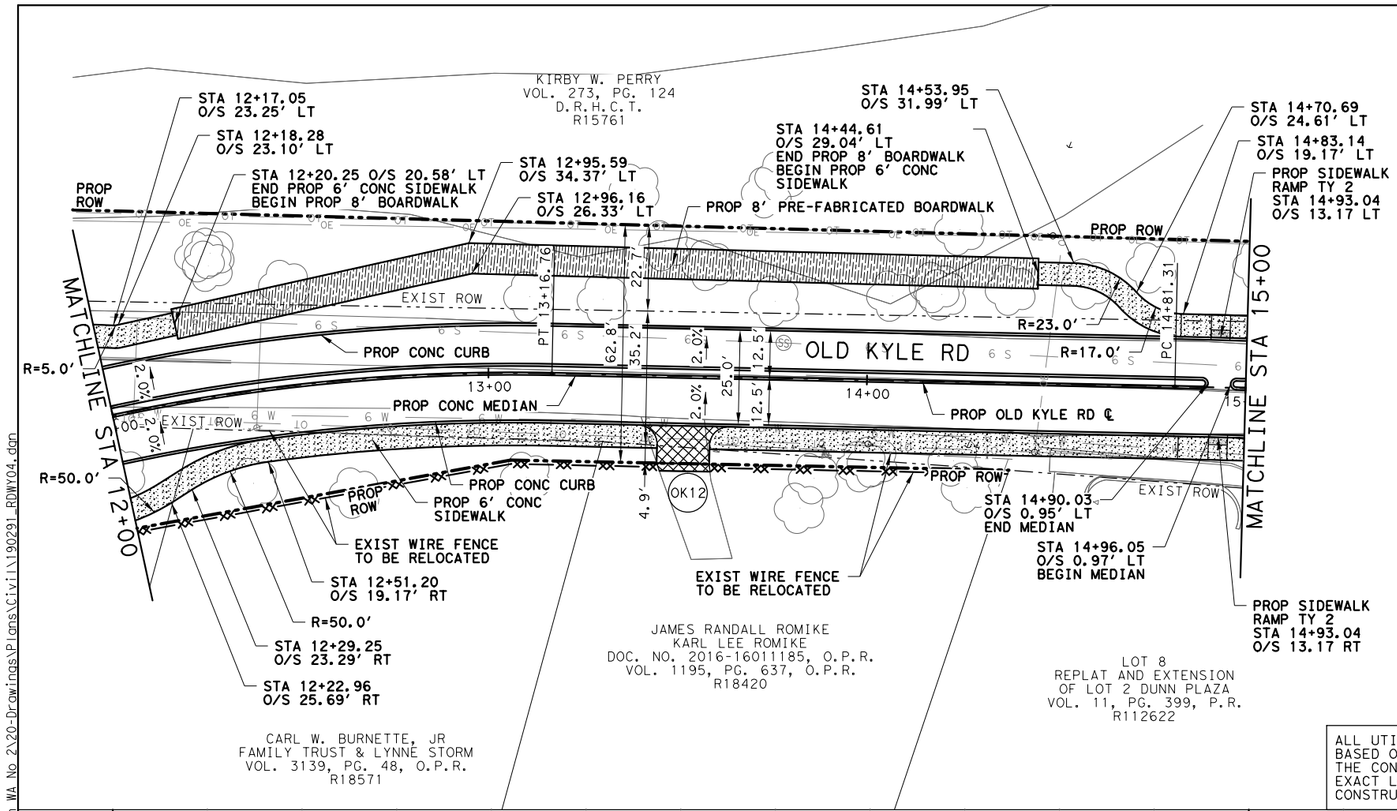
15+00.00	-2.00	-2.00	END TRANSITION



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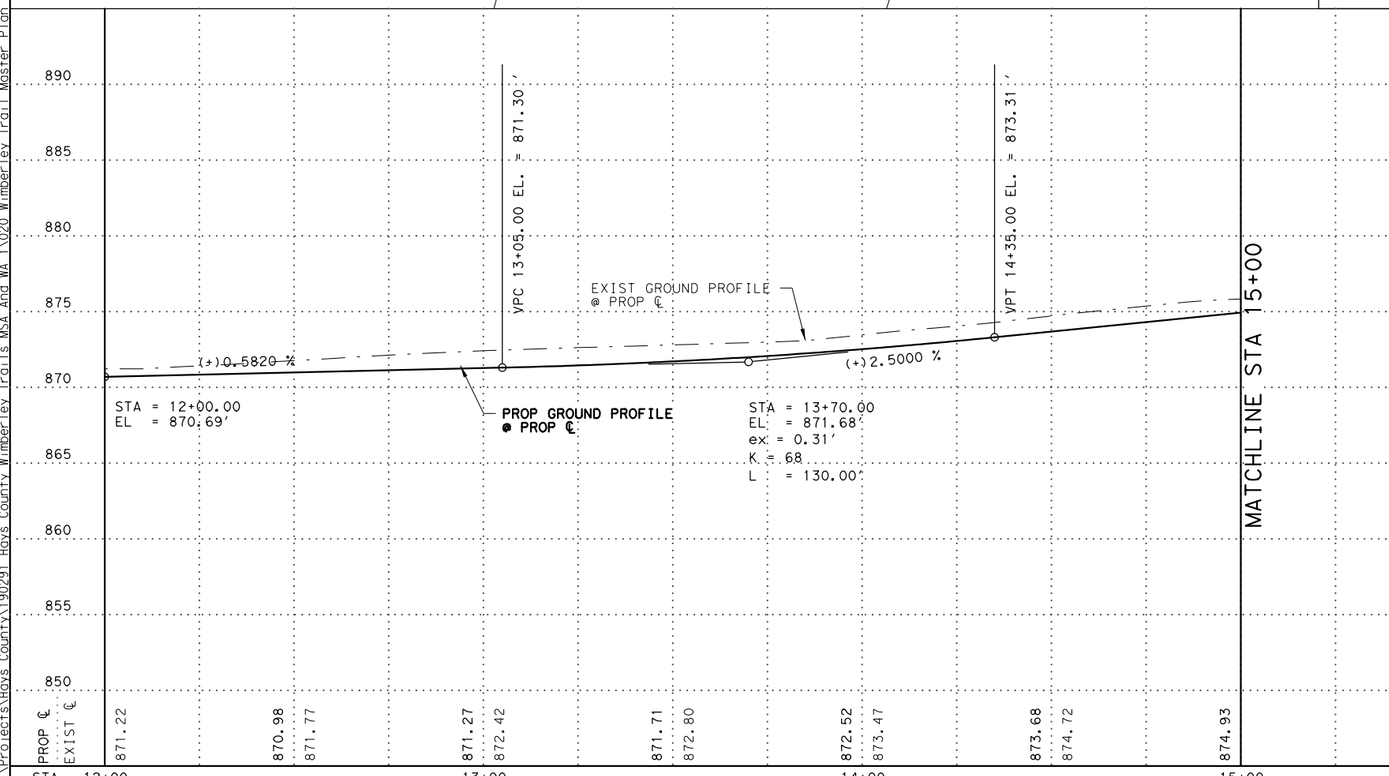

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
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- GUY WIRE
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- MAIL BOX
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- CLEAN OUT
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- DRIVEWAY NO.
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

ROADWAY IMPROVEMENTS PLAN AND PROFILE STA 12+00 TO STA 15+00

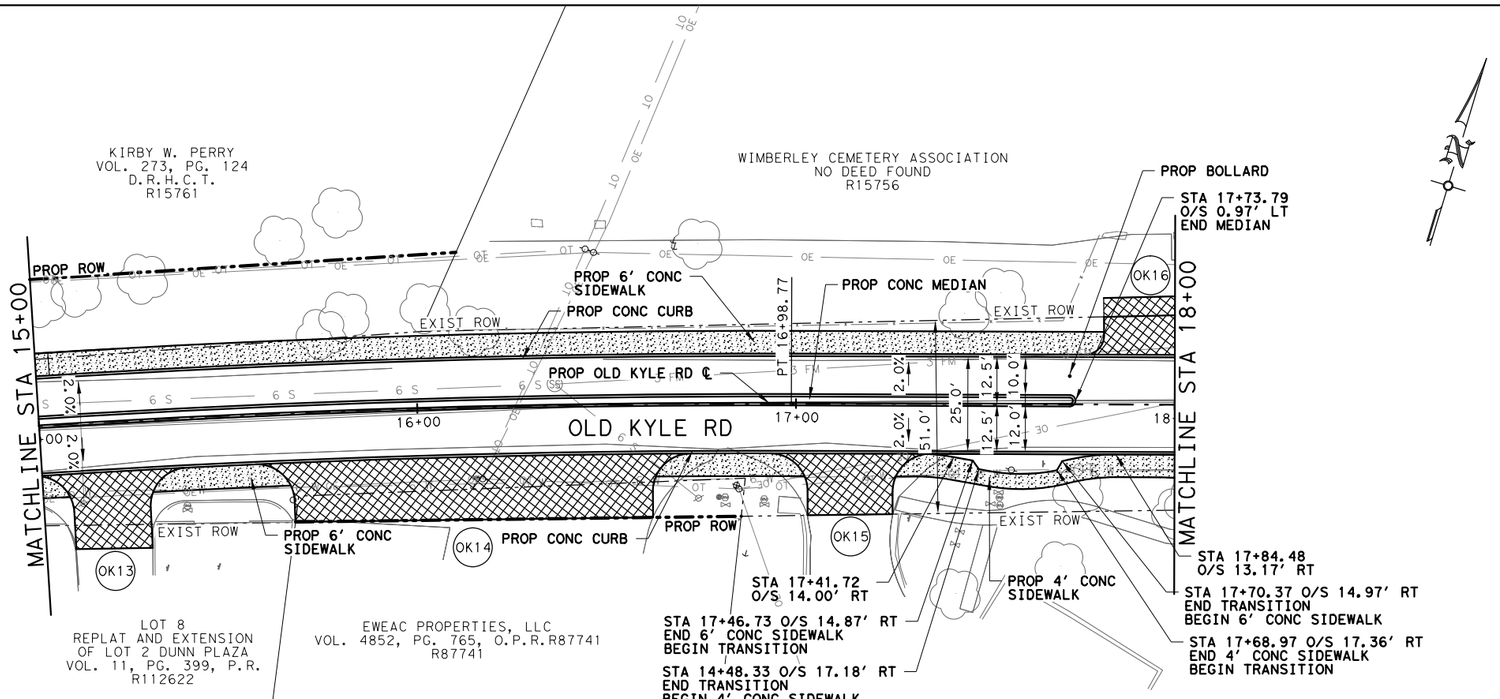
HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)

VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	60

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY04.dgn

SUPERELEVATION TABLE			
STA	LEFT SLOPE	RIGHT SLOPE	COMMENTS
17+50.00	-2.00	-2.00	BEGIN TRANSITION
18+50.00	2.00	-2.00	END TRANSITION



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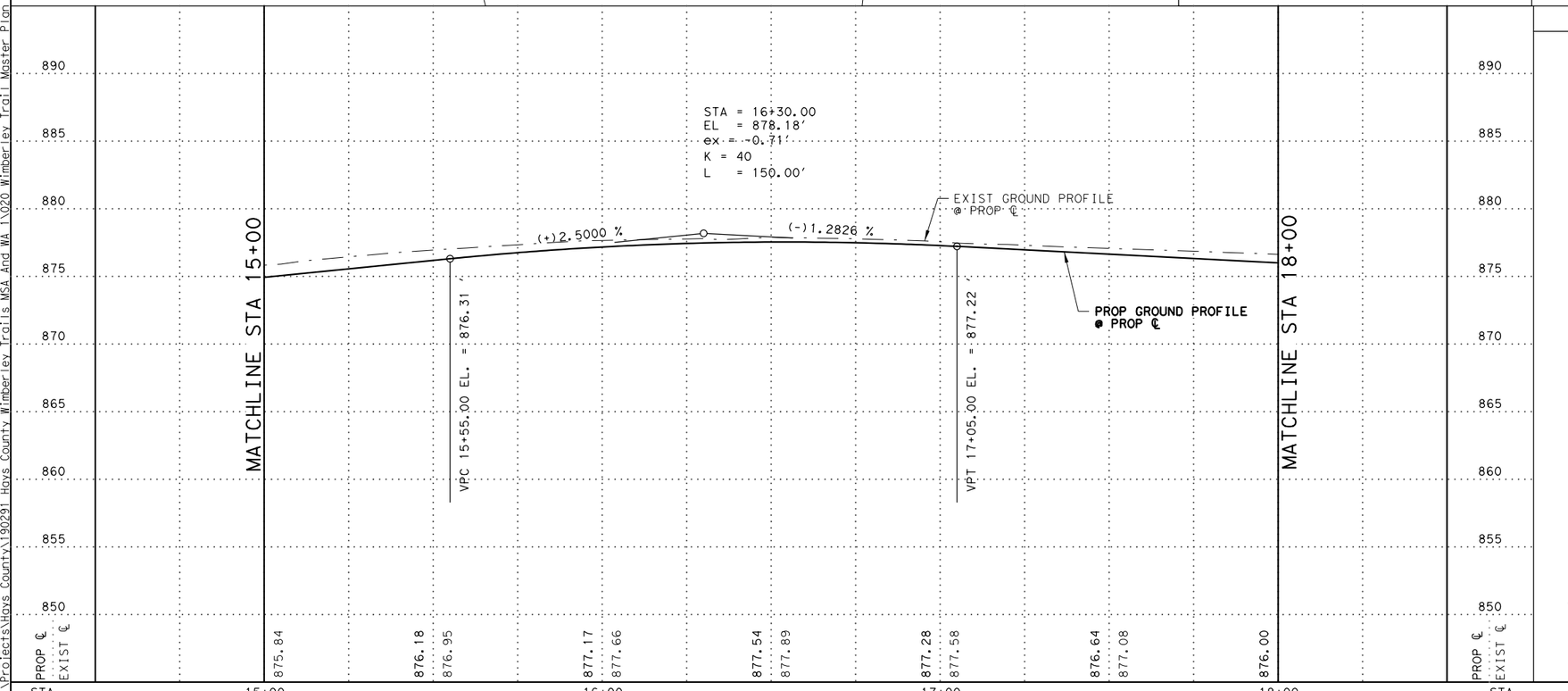

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

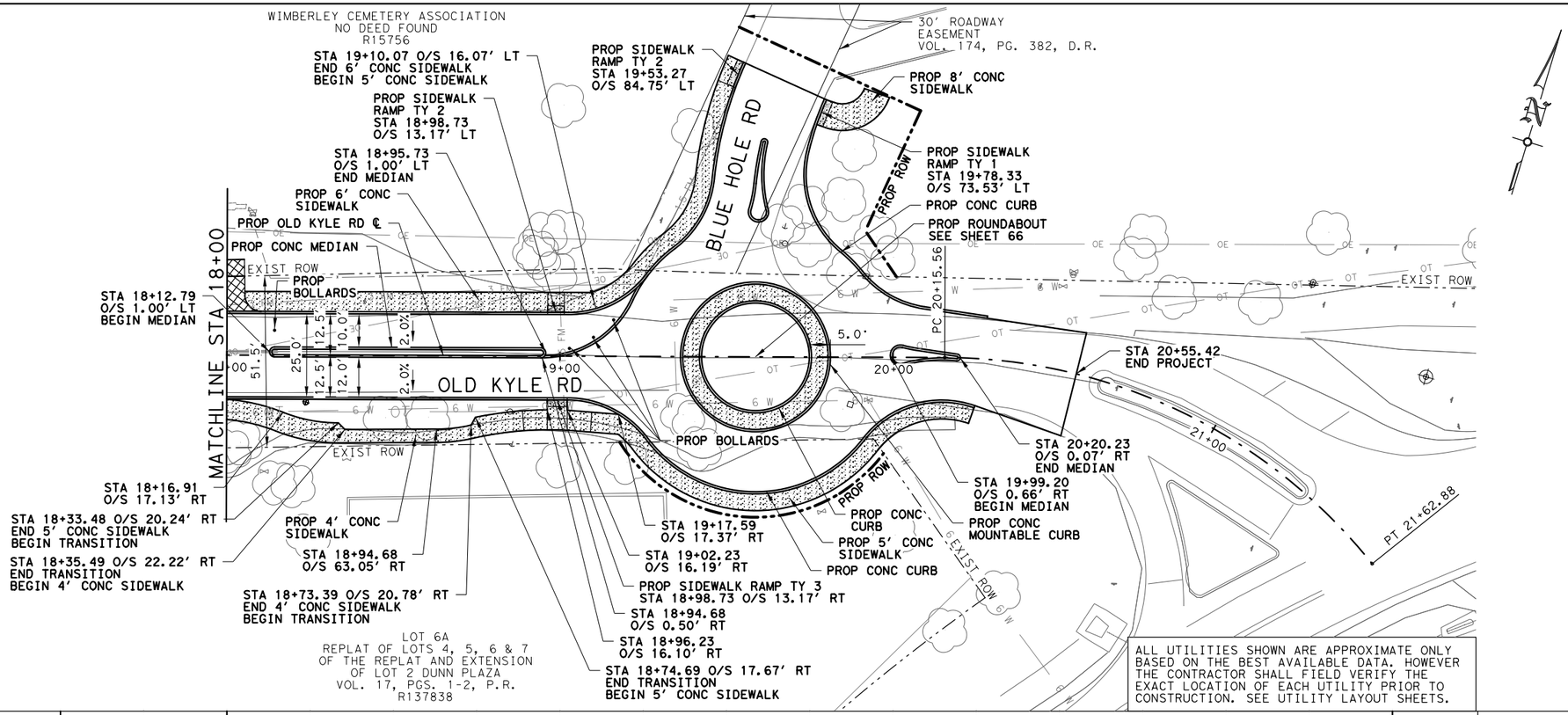
ROADWAY IMPROVEMENTS PLAN AND PROFILE STA 15+00 TO STA 18+00

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

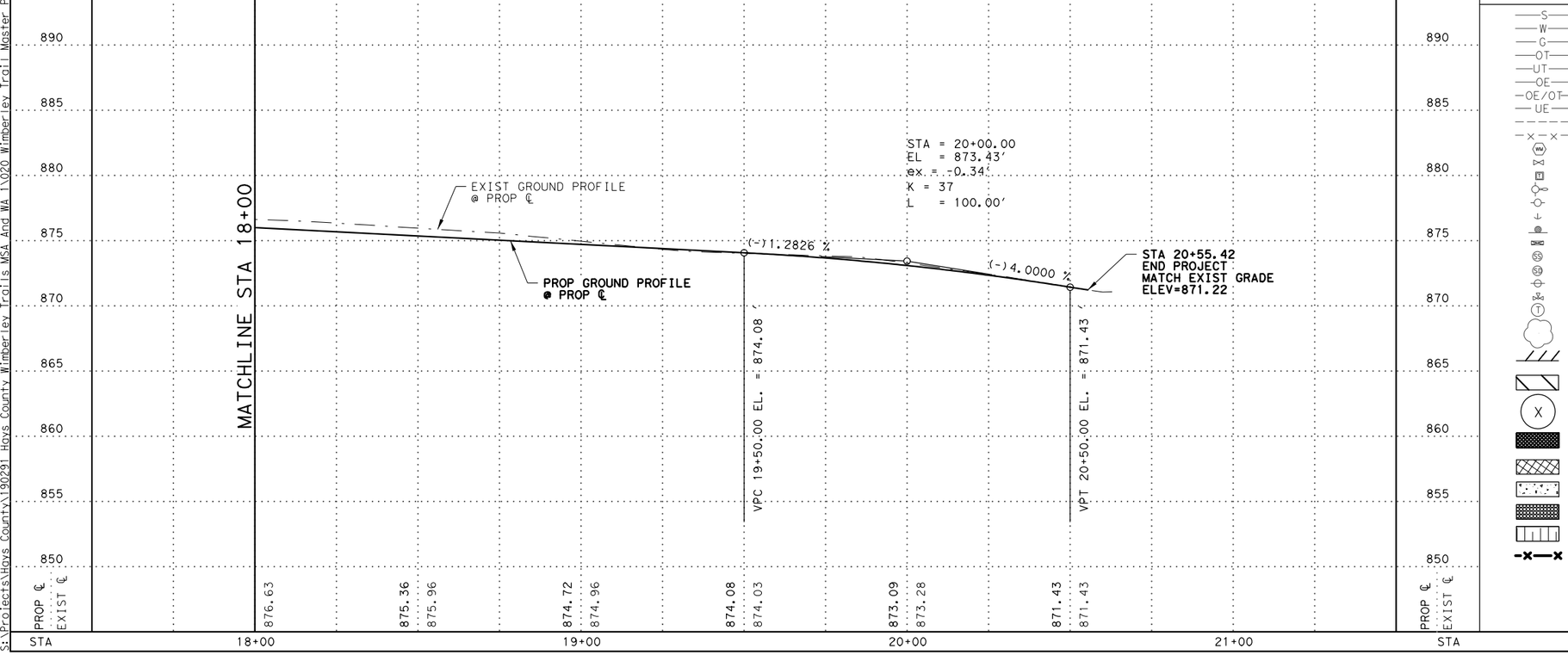
DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	61

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY05.dgn

SUPERELEVATION TABLE			
STA	LEFT SLOPE	RIGHT SLOPE	COMMENTS
17+50.00	-2.00	-2.00	BEGIN TRANSITION
18+50.00	2.00	-2.00	END TRANSITION



ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

- S WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT UNDERGROUND TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- UE UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- (X) DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

THIS DOCUMENT IS FOR INTERIM REVIEW AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING, PERMIT OR OTHER UNAUTHORIZED PURPOSES. THESE DOCUMENTS/PLANS WERE AUTHORIZED TO BE RELEASED.

BY: BRYAN J. SPINA, P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

HAYS COUNTY

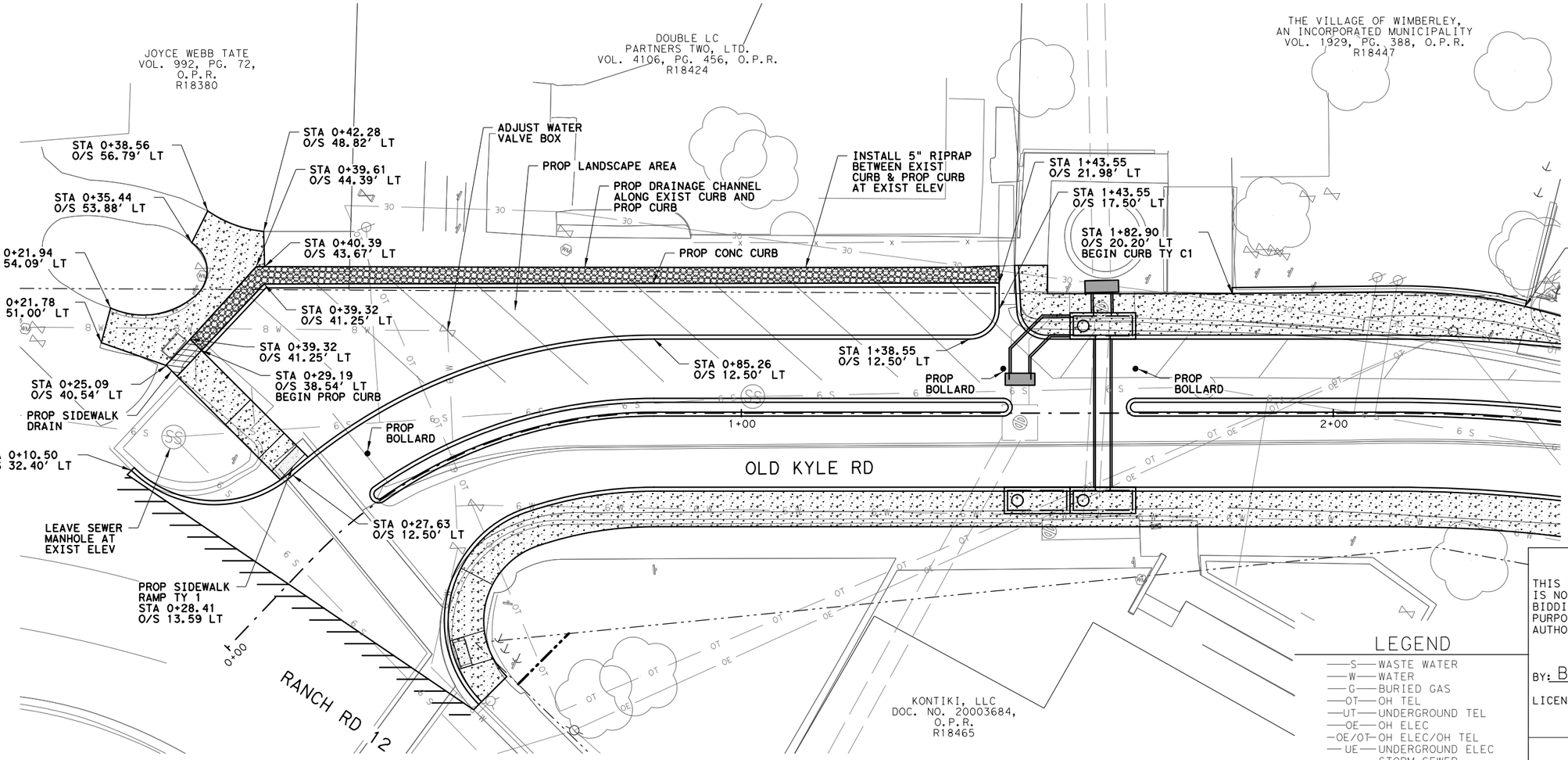
NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

ROADWAY IMPROVEMENTS PLAN AND PROFILE
STA 18+00 TO STA 20+55.42

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	62



LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
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- GUY WIRE
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- EXIST TREE
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- (X) DRIVEWAY NO.
- COMM CONC DRIVEWAY
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- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- SIDEWALK DRAIN
- REMOVE & RELOCATE FENCE

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

ROADWAY IMPROVEMENTS ENLARGED PLAN

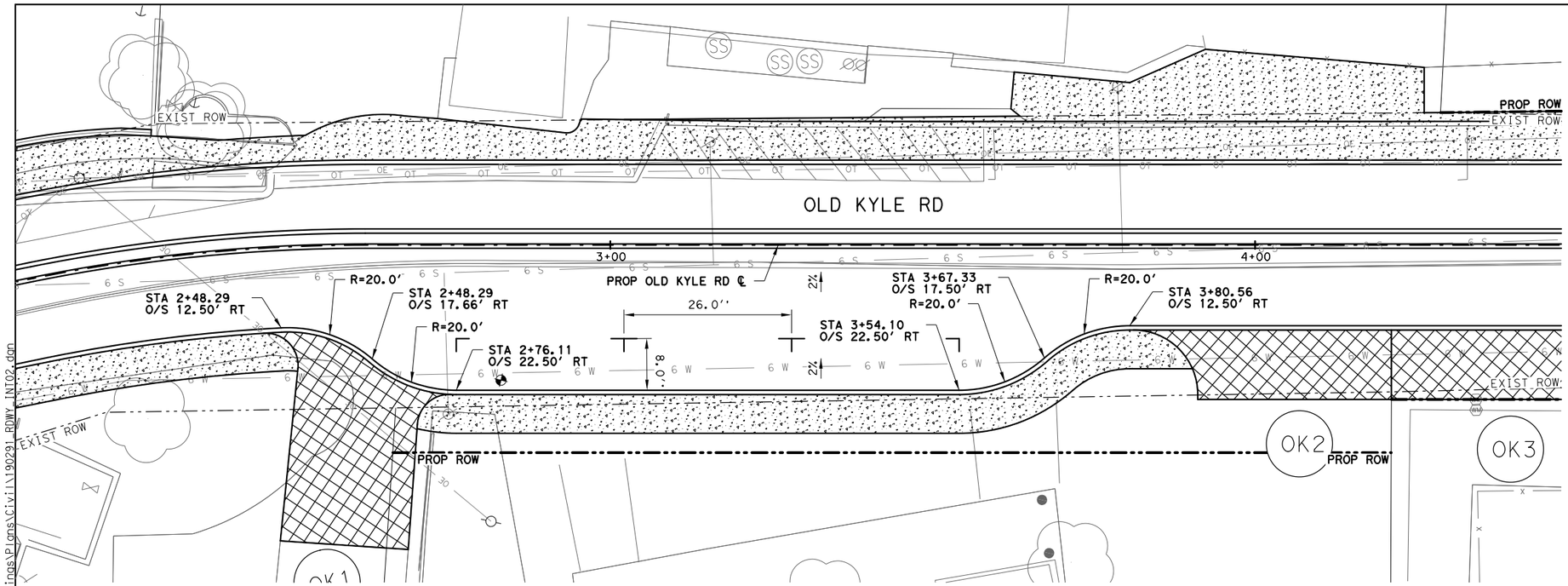
HORIZ. SCALE: 1"=20'

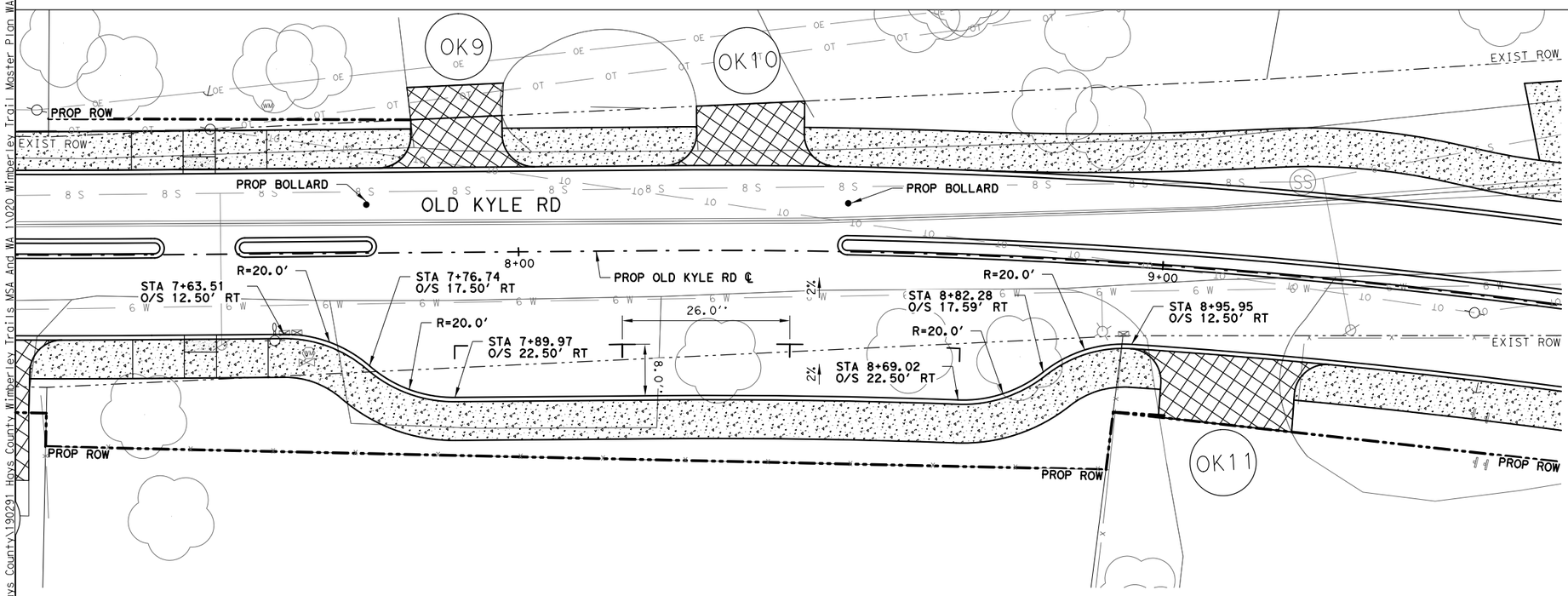
0 10 20

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	63

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY07.dgn





LEGEND

- 8 S — WASTE WATER
- 8 W — WATER
- G — BURIED GAS
- OT — OH TEL
- UGT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- FO — UNDERGROUND FIBER OPTIC
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- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST SHRUB
- EXIST TREE
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- (X) DRIVEWAY NO.
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DIRECTION OF FLOW

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PARALLEL PARKING DETAILS

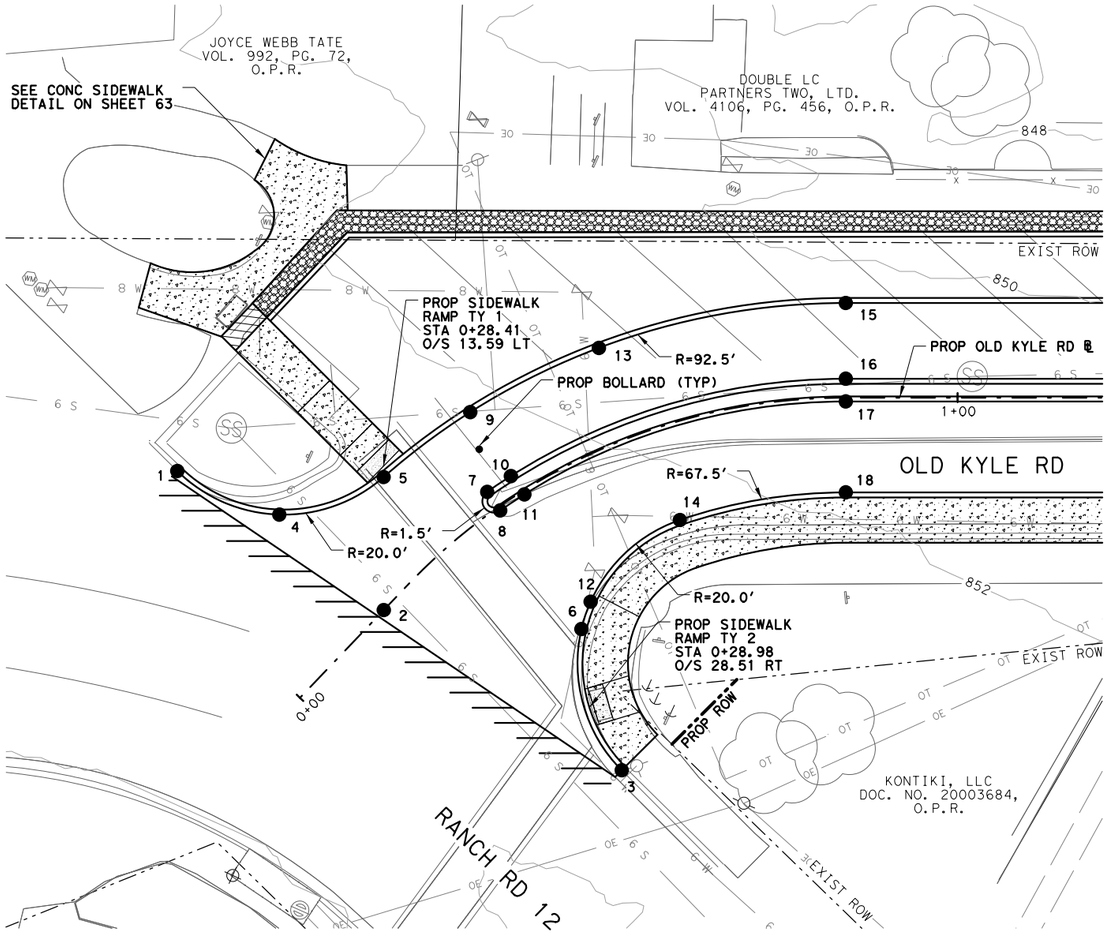
HORIZ. SCALE: 1"=20'

0 10 20

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	64

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY_INT02.dgn



OLD KYLE RD AND RANCH RD				
PT #	STA	O/S	ELEV	DESC
1	0+10.50	32.40' LT	852.41	FL
2	0+16.03	BASELINE	853.37	ELEV
3	0+24.04	37.29' RT	853.69	FL
4	0+15.63	18.68' LT	853.00	FL
5	0+27.63	12.50' LT	852.92	FL
6	0+36.09	19.47' RT	852.92	FL
7	0+36.35	2.50' LT	852.96	FL
8	0+36.35	0.50' RT	852.86	FL
9	0+40.00	12.50 LT	852.53	FL
10	0+40.00	2.50 LT	852.82	FL
11	0+40.20	0.50' RT	852.76	FL
12	0+40.00	17.15 RT	852.90	FL
13	0+56.44	12.50' LT	851.95	FL
14	0+58.80	12.50' RT	852.14	FL
15	0+85.26	12.50' LT	850.76	FL
16	0+85.26	2.50' LT	851.16	FL
17	0+85.26	0.50' RT	851.25	FL
18	0+85.26	12.50' RT	851.07	FL

LEGEND

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

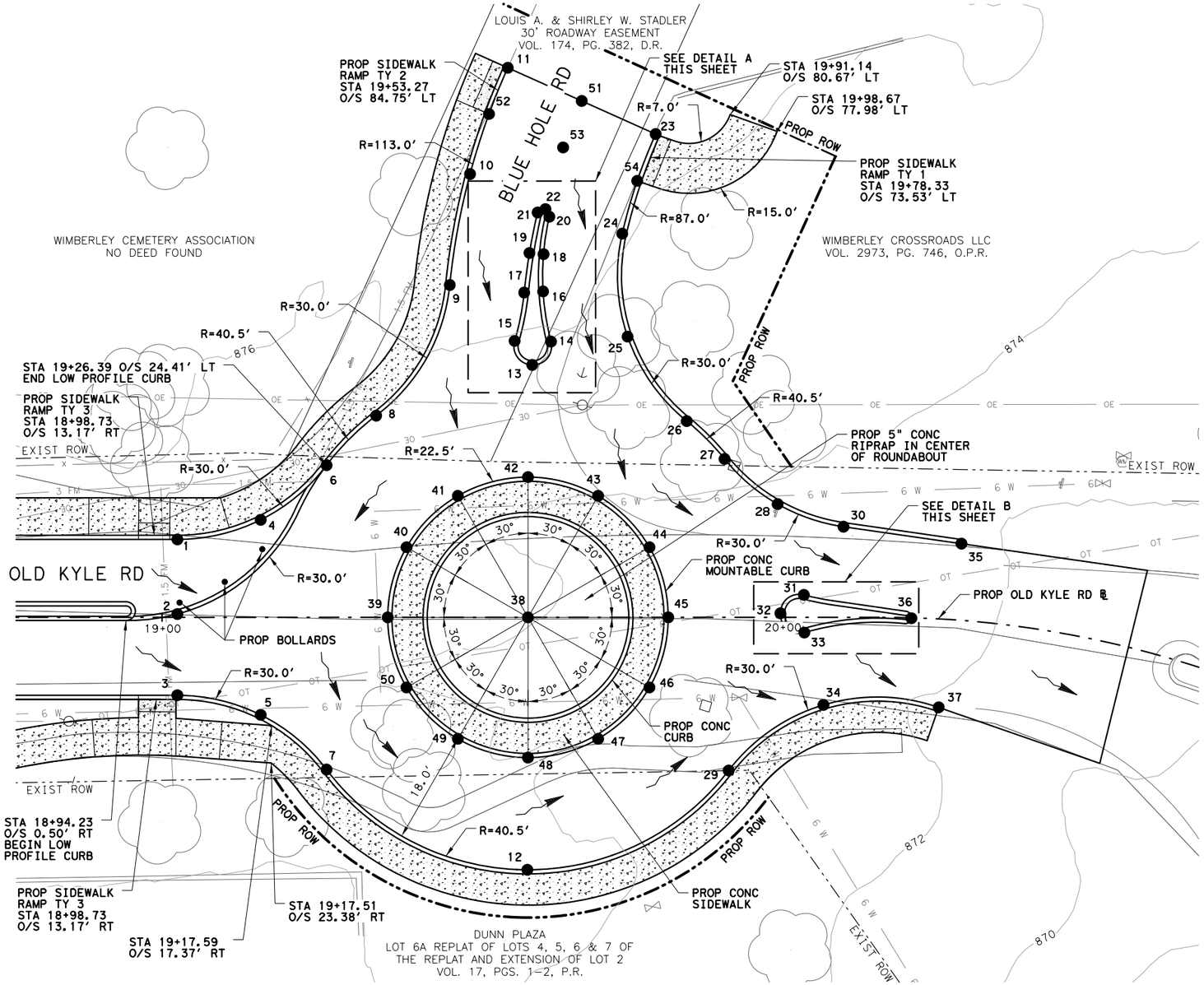
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

INTERSECTION LAYOUT
OLD KYLE RD AND RANCH RD 12

HORIZ. SCALE: 1"=20'
0 10 20
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	65

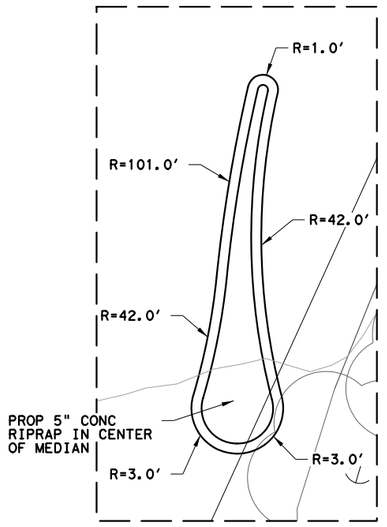
Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY_INT01.dgn



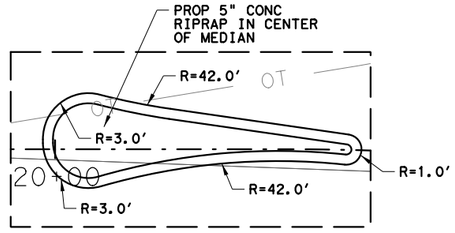
OLD KYLE RD AND BLUE HOLE RD				
PT #	STA	O/S	ELEV	DESC
1	19+02.46	12.50' LT	874.94	FL
2	19+02.46	BASELINE	874.69	ELEV
3	19+02.46	12.50' RT	874.44	FL
4	19+15.83	15.64 LT	874.95	FL
5	19+15.83	15.64' RT	874.21	FL
6	19+26.39	24.41' LT	874.96	FL
7	19+26.39	24.41' RT	873.99	FL
8	19+34.35	32.36' LT	875.30	FL
9	19+46.16	53.31' LT	876.25	FL
10	19+49.41	71.11' LT	876.69	FL
11	19+55.47	88.16' LT	877.10	FL
12	19+58.61	40.50' RT	873.55	FL
13	19+59.39	40.49' LT	875.17	FL
14	19+62.40	44.25' LT	875.50	FL
15	19+56.57	44.35' LT	875.50	FL
16	19+61.13	52.29' LT	875.90	FL
17	19+58.10	52.11' LT	876.14	FL
18	19+58.10	52.11' LT	876.00	FL

OLD KYLE RD AND BLUE HOLE RD				
PT #	STA	O/S	ELEV	DESC
19	19+58.94	58.45' LT	876.20	FL
20	19+62.13	64.27' LT	876.35	FL
21	19+60.26	64.94' LT	876.45	FL
22	19+61.51	65.50' LT	876.40	FL
23	19+79.19	77.53' LT	876.50	FL
24	19+79.83	61.56' LT	876.08	FL
25	19+74.69	45.04' LT	875.25	FL
26	19+84.18	31.47' LT	874.40	FL
27	19+90.24	25.41' LT	873.95	FL
28	19+98.76	18.17' LT	873.57	FL
29	19+90.90	24.57' LT	872.96	FL
30	20+09.33	14.54' LT	873.17	FL
31	20+02.96	3.61' LT	873.11	FL
32	19+99.20	0.66' LT	873.14	FL
33	20+03.04	2.44' RT	872.74	FL
34	20+06.11	14.05' RT	872.50	FL
35	20+27.38	12.28' LT	872.55	FL
36	20+20.23	0.07' RT	872.50	FL

OLD KYLE RD AND BLUE HOLE RD				
PT #	STA	O/S	ELEV	DESC
37	20+25.45	14.17' RT	872.05	FL
38	19+58.71	BASELINE	873.95	ELEV
39	19+36.21	BASELINE	874.25	FL
40	19+39.22	11.25' LT	874.35	FL
41	19+47.46	19.49' LT	874.50	FL
42	19+58.71	22.50' LT	874.63	FL
43	19+69.96	19.49' LT	874.35	FL
44	19+78.19	11.25' LT	873.81	FL
45	19+81.21	BASELINE	873.54	FL
46	19+78.19	11.25' RT	873.60	FL
47	19+69.96	19.49' RT	873.68	FL
48	19+58.71	22.50' RT	873.73	FL
49	19+47.46	19.49' RT	873.86	FL
50	19+39.22	11.25' RT	874.12	FL
51	19+67.33	82.85' lt	876.80	ELEV
52	19+52.45	80.75' LT	876.34	FL
53	19+64.35	75.39' LT	876.64	ELEV
54	19+76.24	70.02' LT	876.34	FL



DETAIL A



DETAIL B

LEGEND

- 8 S — WASTE WATER
- 8 W — WATER
- G — BURIED GAS
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

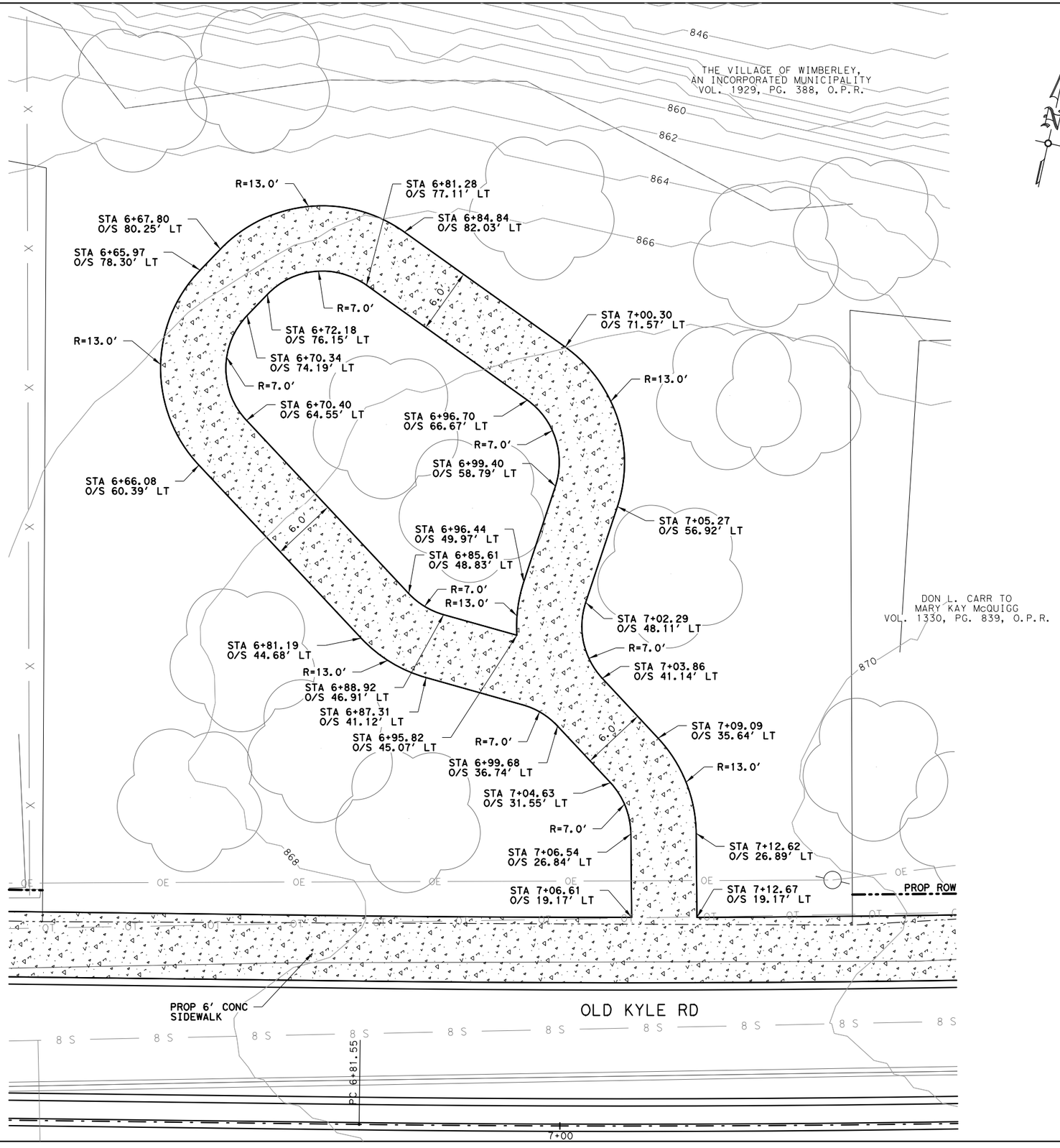
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

ROUNDABOUT LAYOUT OLD KYLE RD AND BLUE HOLE RD

HORIZ. SCALE: 1"=20'
0 10 20
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	66

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No. 2\20-Drawings\Plans\Civil\190291_RDWY_RND01.dgn



LEGEND

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROP SIDEWALK FOR BIRD WATCHING

HORIZ. SCALE: 1"=10'
0 5 10
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	67

Plotted by: hhinostroza
5/10/2024
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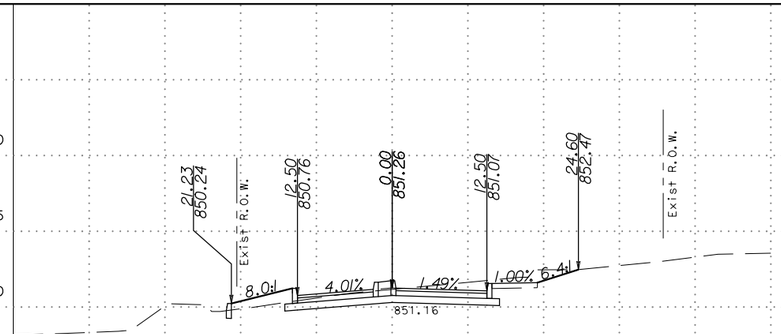

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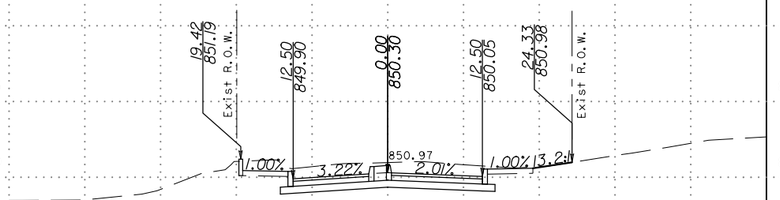
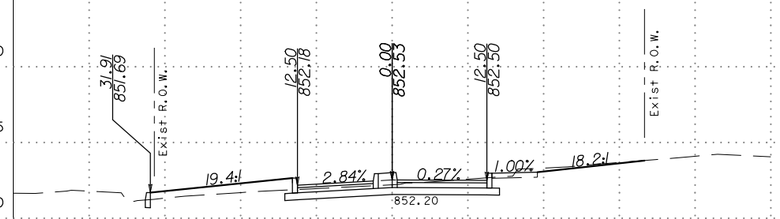


STA 2+00.00



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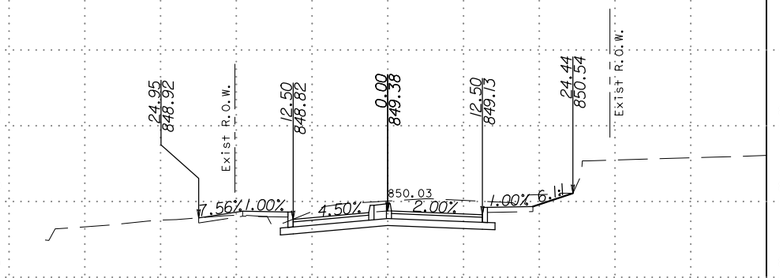
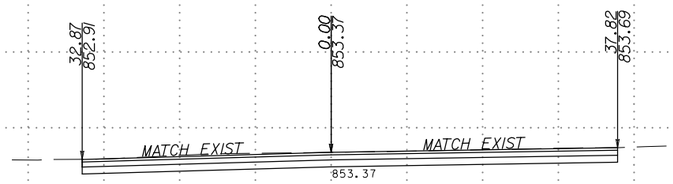
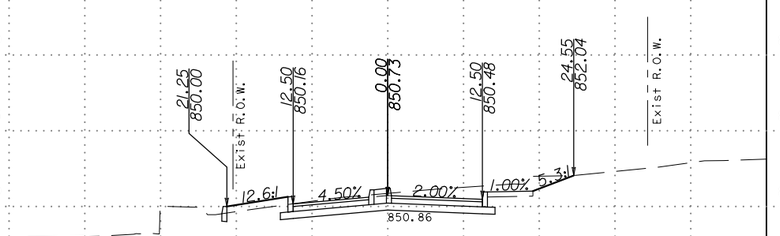


STA 1+50.00



STA 0+14.91



STA 1+00.00

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

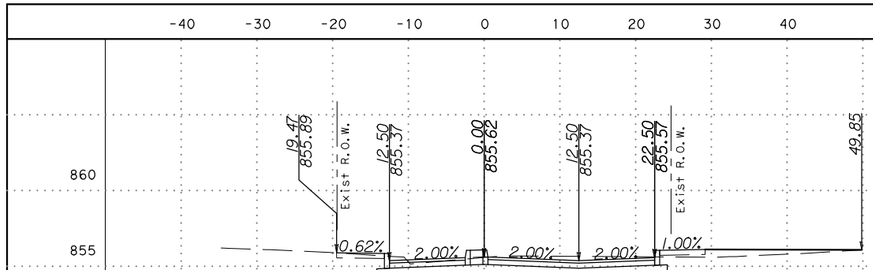
PROPOSED CROSS-SECTIONS SHEET 1 OF 9

HORIZ. SCALE: 1"=20' (0 10 20) SCALE IN FEET

VERT. SCALE: 1"=10' (0 5 10) SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	68

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_RDWY_XSEC01.dgn



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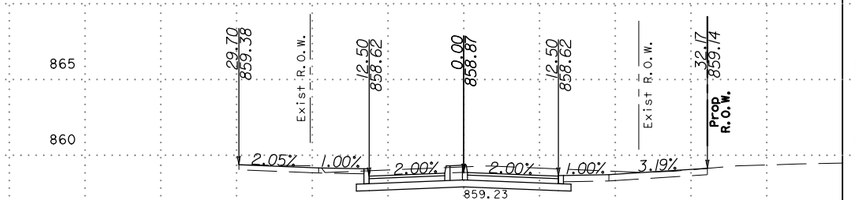

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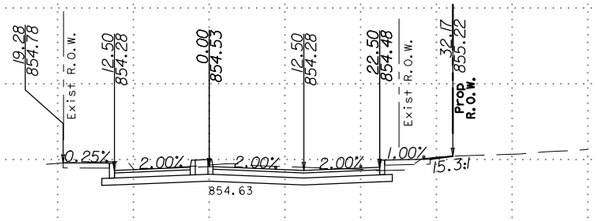

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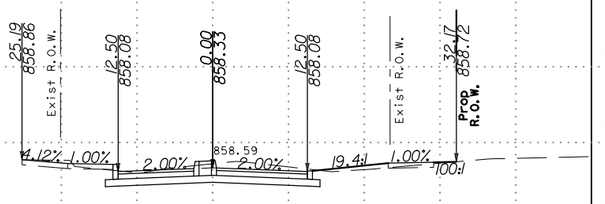

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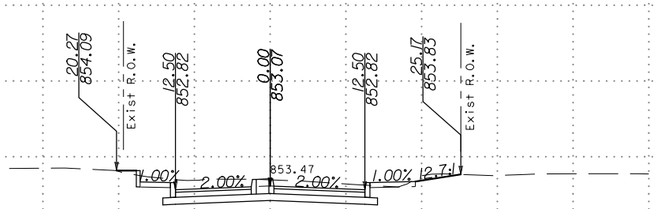

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HAYS COUNTY

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REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 2 OF 9

HORIZ. SCALE: 1"=20' (0 10 20 SCALE IN FEET)

VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	69

Plotted by: hhinostroza
5/10/2024
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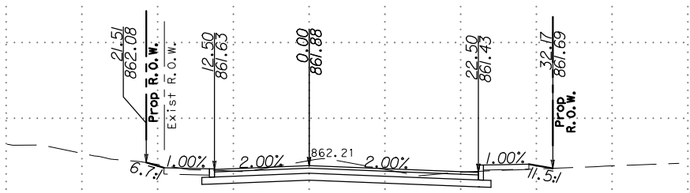

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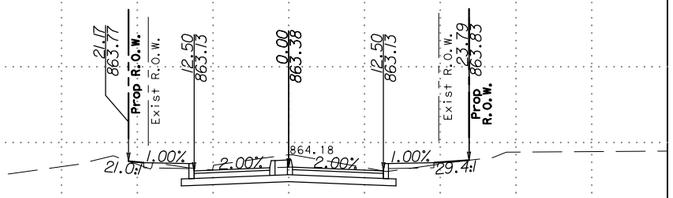
STA 6+00.00

STA 4+55.09



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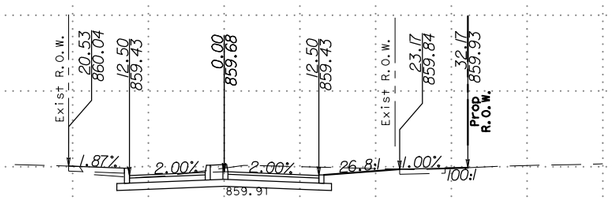

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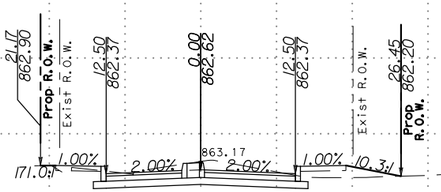

STA 5+33.55

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LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 3 OF 9

HORIZ. SCALE: 1"=20' (0 10 20 SCALE IN FEET)

VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	70

Plotted by: hhinostroza
5/10/2024
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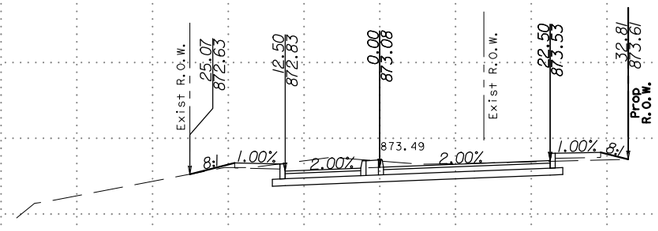
STA 7+63.51



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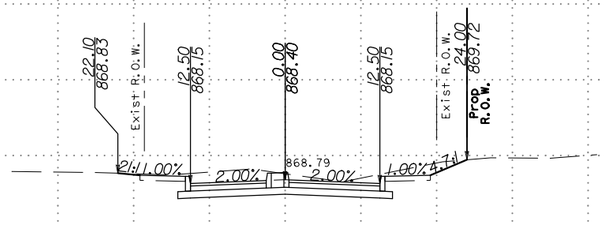

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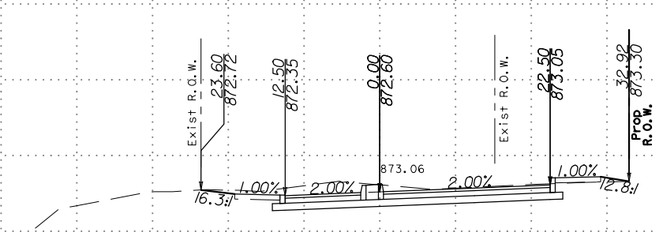

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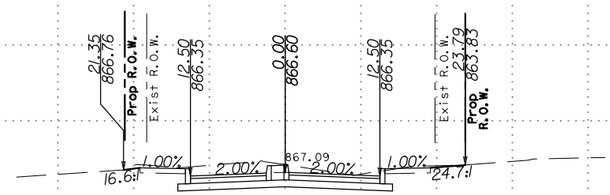

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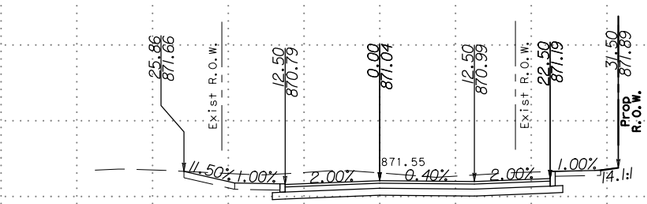

STA 7+89.97

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 4 OF 9

HORIZ. SCALE: 1"=20' (0 10 20 SCALE IN FEET)

VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	71

Plotted by: hhinostroza
5/10/2024
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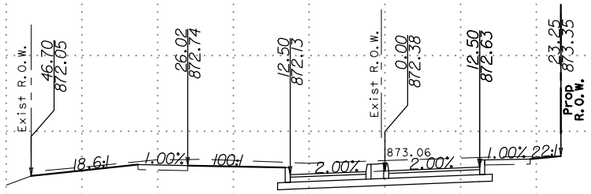

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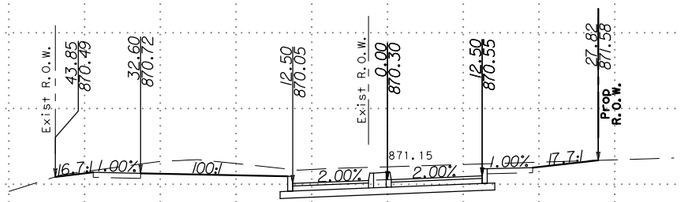

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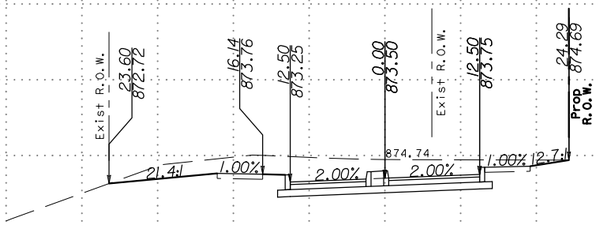

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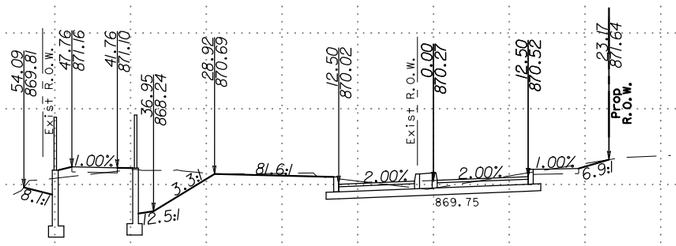

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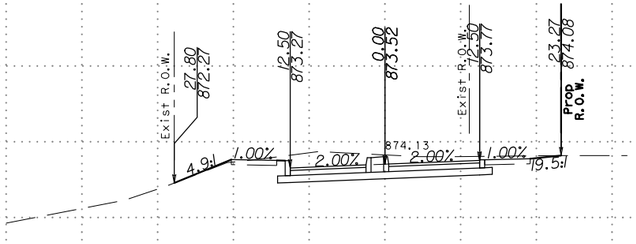

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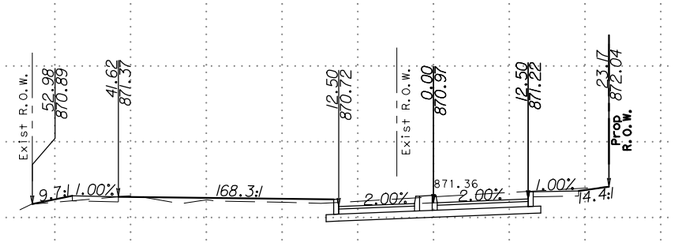

STA 10+50.00

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LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 5 OF 9

HORIZ. SCALE: 1"=20' (0 10 20 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	72

Plotted by: hhinostroza
5/10/2024
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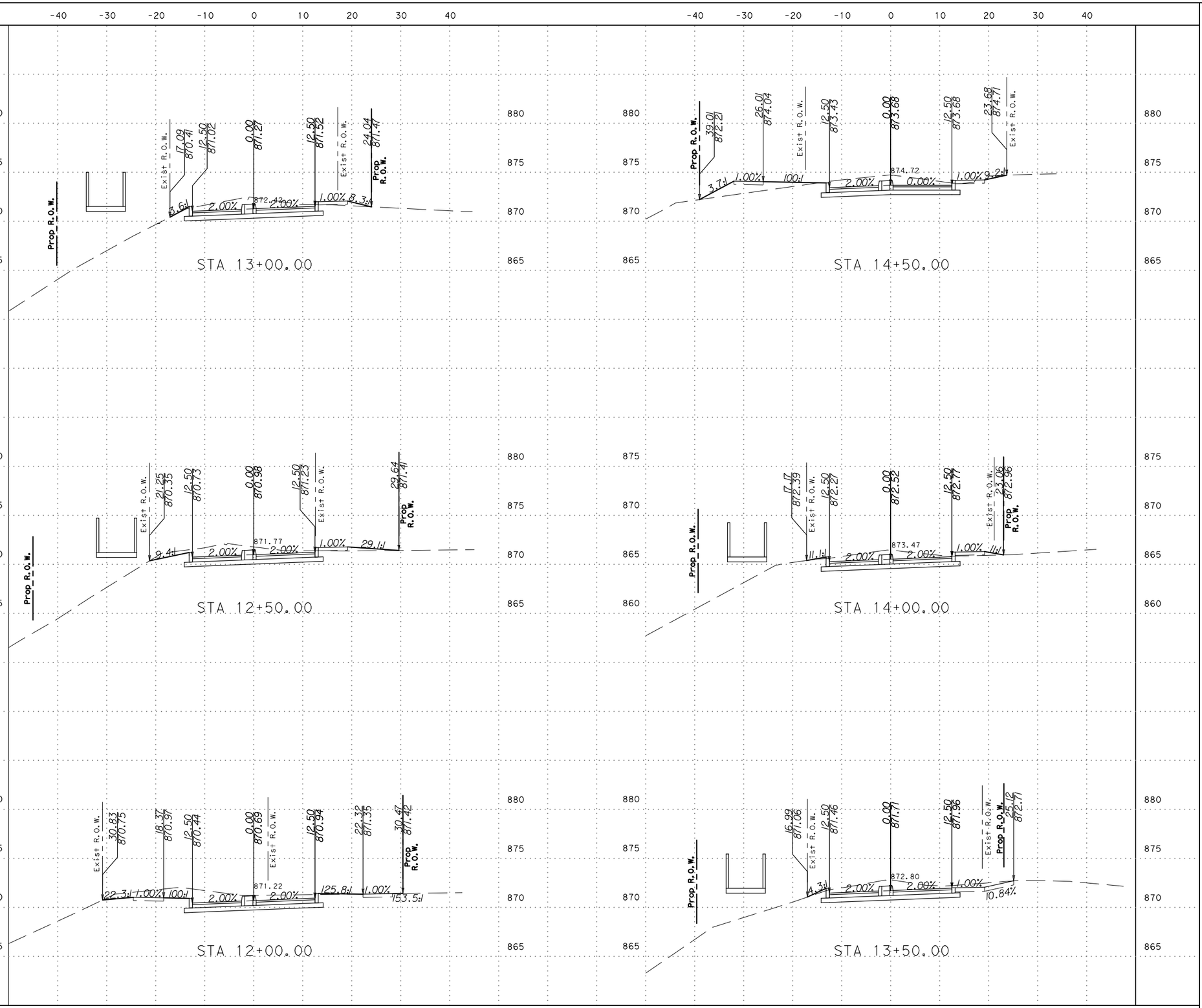

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NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 6 OF 9

HORIZ. SCALE: 1"=20' (0 10 20 SCALE IN FEET)

VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	73

Plotted by: hhinostroza
5/10/2024
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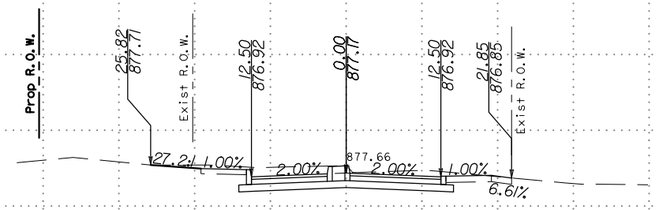

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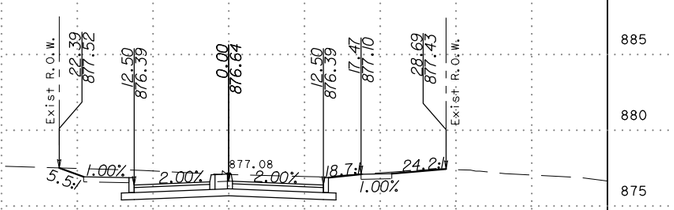

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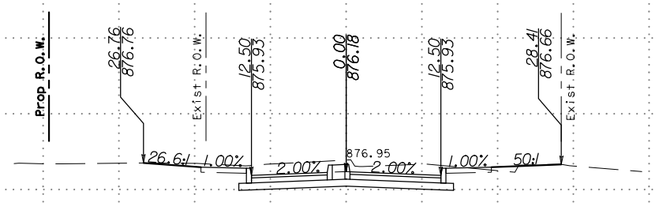

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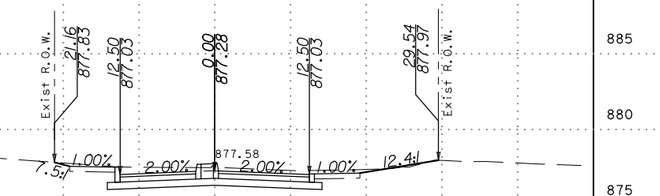

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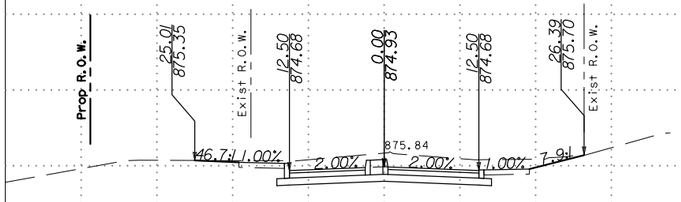

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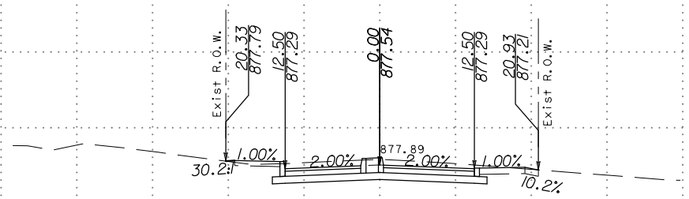

STA 16+50.00

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NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 7 OF 9

HORIZ. SCALE: 1"=20' (0, 10, 20) SCALE IN FEET

VERT. SCALE: 1"=10' (0, 5, 10) SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	74

Plotted by: hhinostroza
5/10/2024
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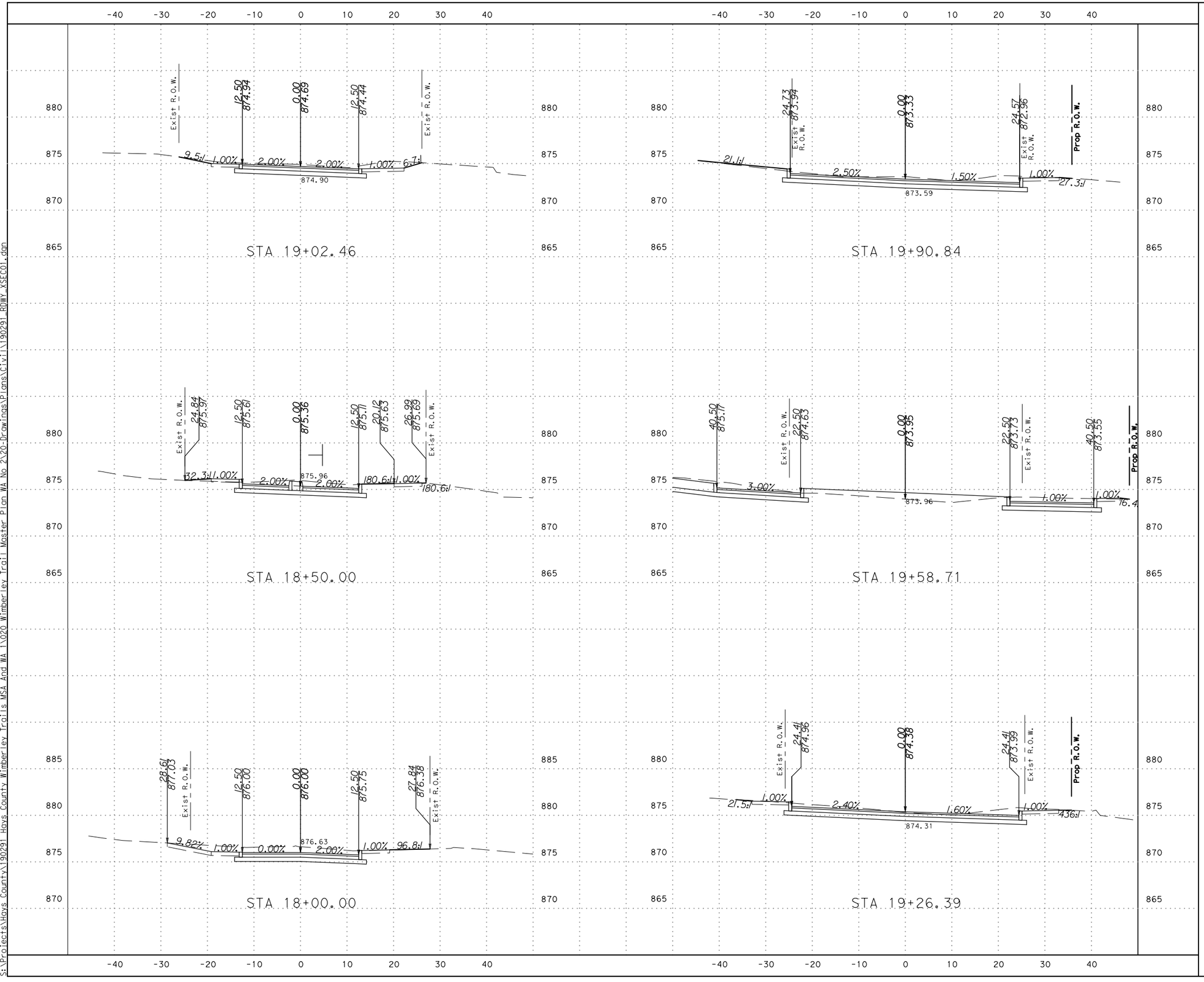

Plotted by: hhinostroza
5/10/2024
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LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

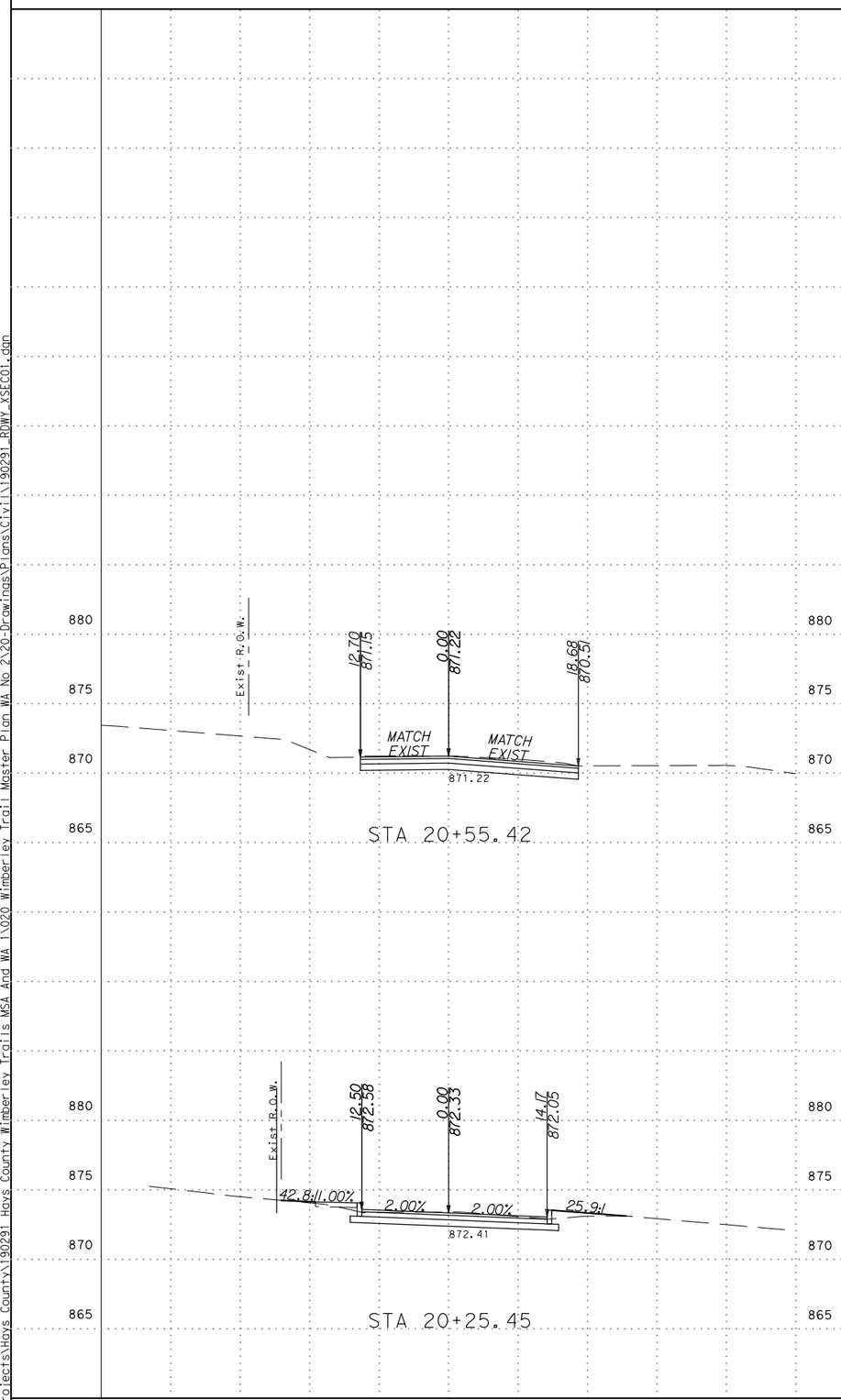
NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS SHEET 8 OF 9

HORIZ. SCALE: 1"=20' (0 10 20) SCALE IN FEET
VERT. SCALE: 1"=10' (0 5 10) SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	75



Plotted by: hhinostroza
5/10/2024
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

PROPOSED CROSS-SECTIONS

SHEET 9 OF 9

HORIZ. SCALE: 1"=20' (0 10 20) SCALE IN FEET

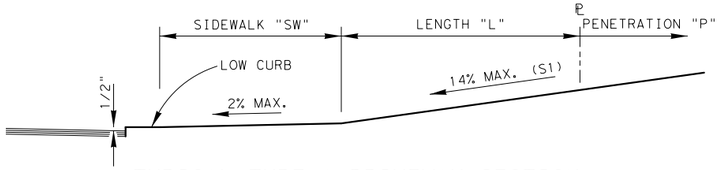
VERT. SCALE: 1"=10' (0 5 10) SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	76

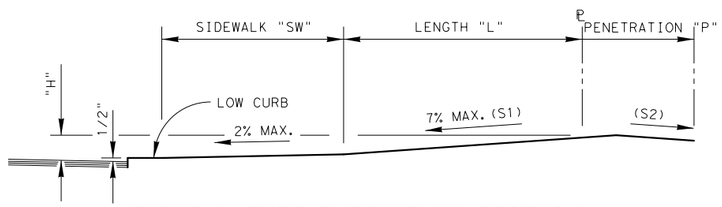
NOTE:
REFER TO DRIVEWAY CROSS-SECTIONS

DRIVEWAY SUMMARY

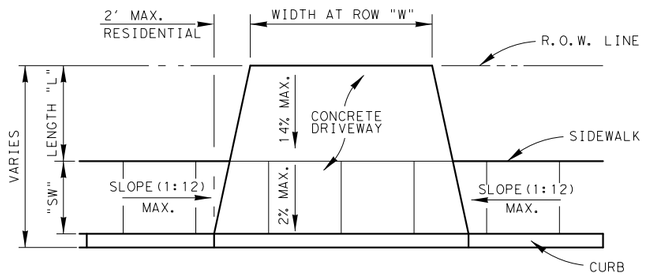
SHT	DRVWY NO.	DRVWY CNTRLN STATION	LT/RT	PENETRATION (FT) "P"	DRIVEWAY TYPE (A or B)	SLOPE (%) "S1"	SLOPE (%) "S2"	SIDEWALK WIDTH (FT) "SW"	HEIGHT (FT) "H"	EXISTING DRVWY MATERIAL	EXISTING WIDTH @ ROW (FT)	DRIVEWAY DIMENSIONS		503.1
												PROPOSED WIDTH @ ROW (FT) "W"	LENGTH "L" (FT)	PORTLAND CEMENT CONCRETE DRVWY (SY)
58	OK1	2+58.02	RT	17.50	A	1.60	0.00	6.00	0.61	ASPHALT	11.00	20.20	10.50	71.00
59	OK2	4+03.12	RT	0.00	A	1.80	0.00	6.00	0.25	ASPHALT	30.03	30.03	5.43	43.00
59	OK3	4+39.90	RT	0.00	A	5.40	0.00	6.00	0.46	ASPHALT	37.57	37.52	4.68	52.00
59	OK4	4+92.61	LT	3.51	B	2.00	-2.70	6.00	0.20	ASPHALT	25.00	2.08	5.59	40.00
59	OK5	5+14.46	RT	16.00	A	0.10	0.00	6.00	0.11	ASPHALT	50.84	50.09	5.43	170.00
59	OK6	6+11.53	RT	1.50	A	9.40	0.00	6.00	0.76	BASE	28.66	12.00	4.25	19.00
59	OK7	6+21.00	LT	2.68	A	1.10	0.00	6.00	0.20	ASPHALT	24.22	24.41	2.67	37.00
59	OK8	7+18.11	RT	10.50	A	11.10	0.00	6.00	1.94	BASE	12.35	12.00	4.80	33.00
59	OK9	7+90.52	LT	5.00	A	10.10	0.00	6.00	0.87	BASE	14.16	14.16	1.63	24.00
60	OK10	8+35.89	LT	0.00	A	5.30	0.00	6.00	0.39	BASE	16.79	16.79	3.50	22.00
60	OK11	9+11.58	RT	0.00	A	7.40	0.00	6.00	0.54	BASE	22.99	20.80	4.61	29.00
61	OK12	13+51.86	RT	2.00	A	9.30	0.00	6.00	0.74	BASE	13.35	13.85	3.86	22.00
62	OK13	15+18.11	RT	6.25	A	3.90	0.00	6.00	0.64	ASPHALT	23.00	20.22	7.97	56.00
62	OK14	16+14.32	RT	0.00	B	2.00	-6.30	6.00	0.45	ASPHALT	94.00	94.38	10.50	196.00
62	OK15	17+14.37	RT	0.00	A	3.80	0.00	6.00	0.58	ASPHALT	22.63	22.63	10.04	50.00
62	OK16	17+93.29	LT	5.00	A	9.70	0.00	6.00	1.10	GRAVEL	24.00	24.00	4.20	47.00
													TOTAL	911.00



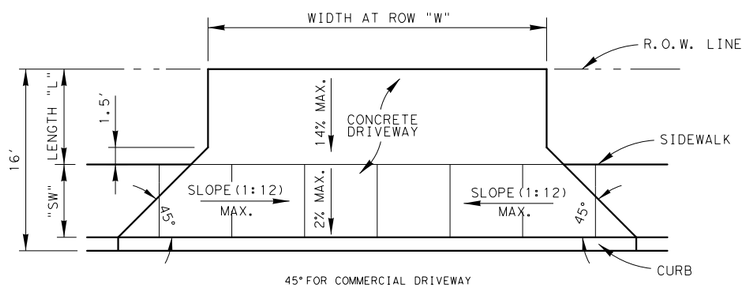
TYPICAL TYPE A DRIVEWAY SECTION
WITH SIDEWALK ABUTTING CURB



TYPICAL TYPE B DRIVEWAY SECTION
WHERE PROPERTY IS LOWER THAN STREET



TYPICAL RESIDENTIAL DRIVEWAY PLAN VIEW



TYPICAL LEFT COMMERCIAL DRIVEWAY PLAN VIEW

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BY: BRYAN J. SPINA, P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

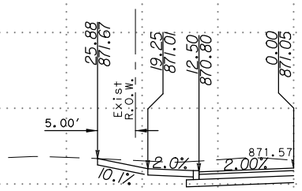
NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

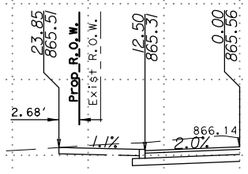
DRIVEWAY SUMMARY SHEET

SCALE: N.T.S.

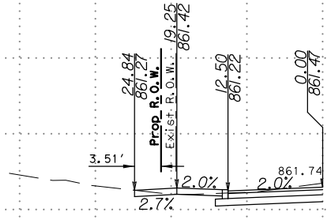
DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	77



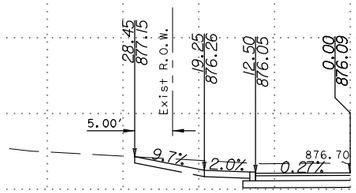
STA 7+90.52
DRIVEWAY# OK9
OLD KYLE RD



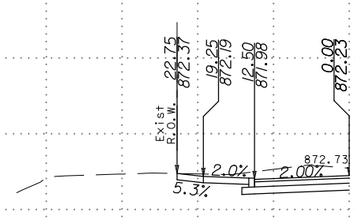
STA 6+21.00
DRIVEWAY# OK7
OLD KYLE RD



STA 4+92.61
DRIVEWAY# OK4
OLD KYLE RD



STA 17+93.29
DRIVEWAY# OK16
OLD KYLE RD



STA 8+35.89
DRIVEWAY# OK10
OLD KYLE RD

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LICENSE NO.: 103776 DATE: 5/10/2024

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Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

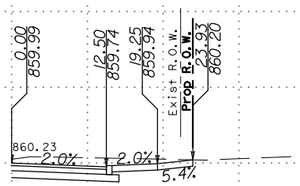
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

LEFT DRIVEWAY CROSS-SECTIONS SHEET 1 OF 1

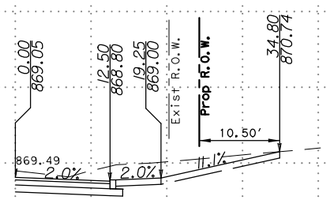
HORIZ. SCALE: 1"=20'
0 10 20
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	78

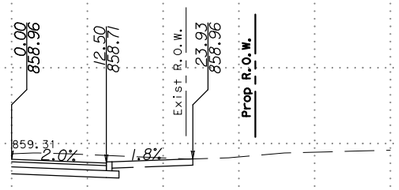
Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRVWY_LT_XSEC01.dgn



STA 4+39.90
DRIVEWAY# OK3
OLD KYLE RD



STA 7+18.11
DRIVEWAY# OK8
OLD KYLE RD



STA 4+03.12
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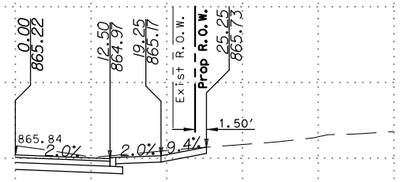
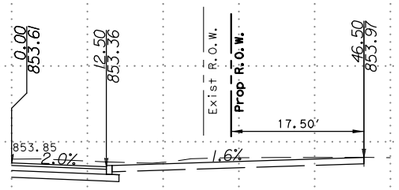
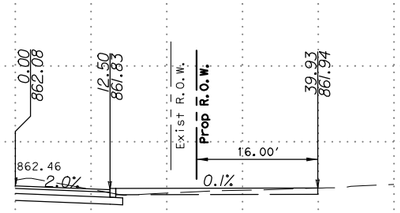
OLD KYLE RD



STA 6+11.53
DRIVEWAY# OK6
OLD KYLE RD



STA 2+58.02
DRIVEWAY# OK1
OLD KYLE RD



STA 5+14.46
DRIVEWAY# OK5
OLD KYLE RD

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LICENSE NO.: 103776 DATE: 5/10/2024

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Surveying Firm 10126502

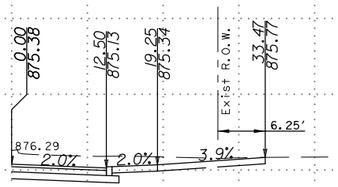
HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

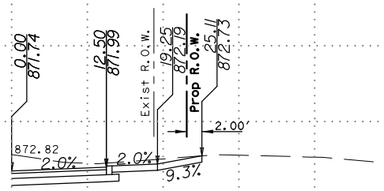
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)
RIGHT DRIVEWAY CROSS-SECTIONS SHEET 1 OF 2

HORIZ. SCALE: 1"=20'
0 10 20
SCALE IN FEET

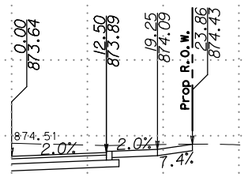
DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	79



STA 15+18.11
DRIVEWAY# OK13
OLD KYLE RD



STA 13+51.86
DRIVEWAY# OK12
OLD KYLE RD



STA 9+11.57
DRIVEWAY# OK11
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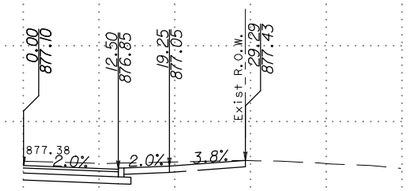
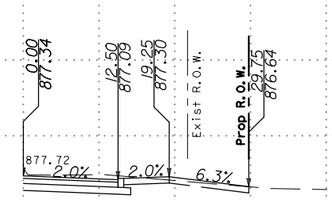


STA 17+14.10
DRIVEWAY# OK15
OLD KYLE RD



STA 16+14.31
DRIVEWAY# OK14
OLD KYLE RD

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

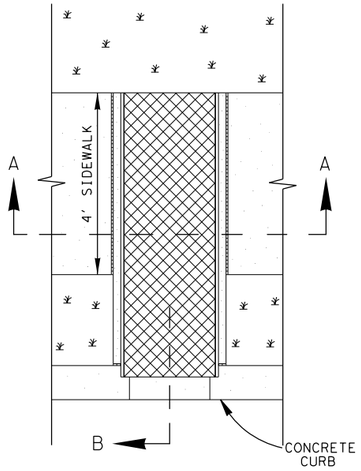
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

RIGHT DRIVEWAY CROSS-SECTIONS SHEET 2 OF 2

HORIZ. SCALE: 1"=20'
0 10 20
SCALE IN FEET

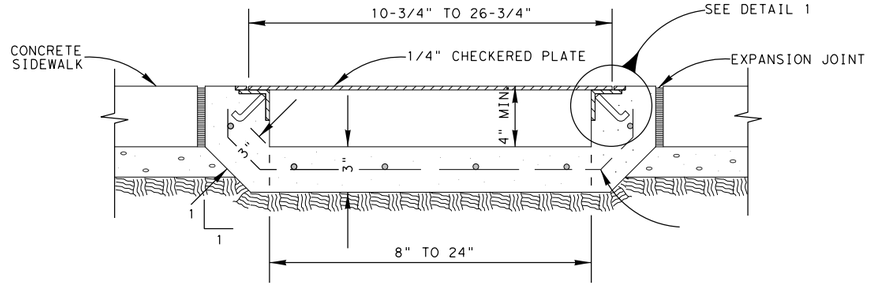
DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	80

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRVWY_RT_XSEC01.dgn



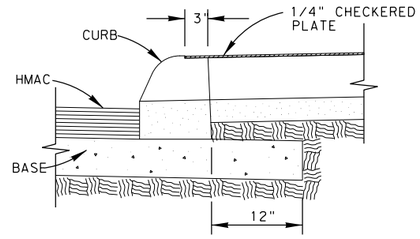
CONCRETE SIDEWALK DRAIN DETAIL

SCALE : NTS



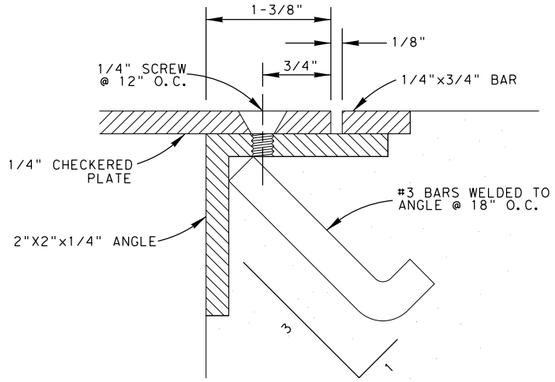
SECTION A-A

SCALE : NTS



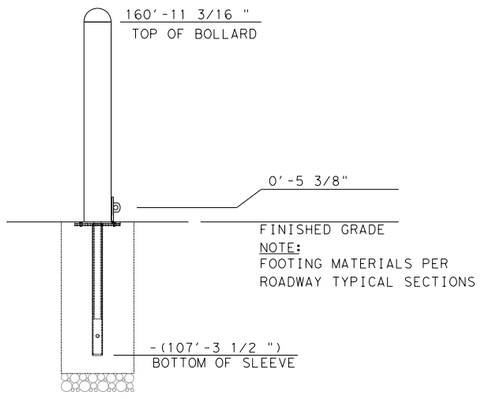
SECTION B

SCALE : NTS



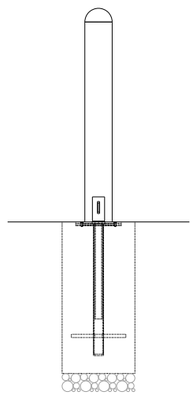
DETAIL 1

SCALE : NTS



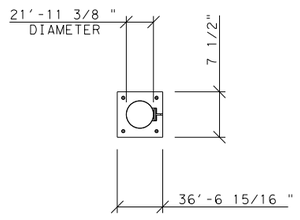
SIDE

SCALE: NTS



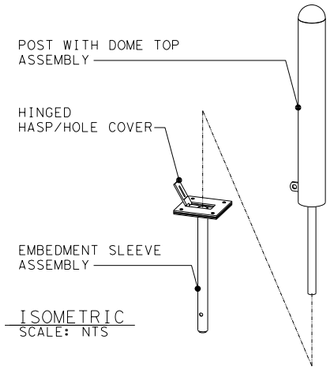
BACK

SCALE: NTS



TOP

SCALE: NTS



ISOMETRIC

SCALE: NTS

REMOVABLE BOLLARD DETAIL

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LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

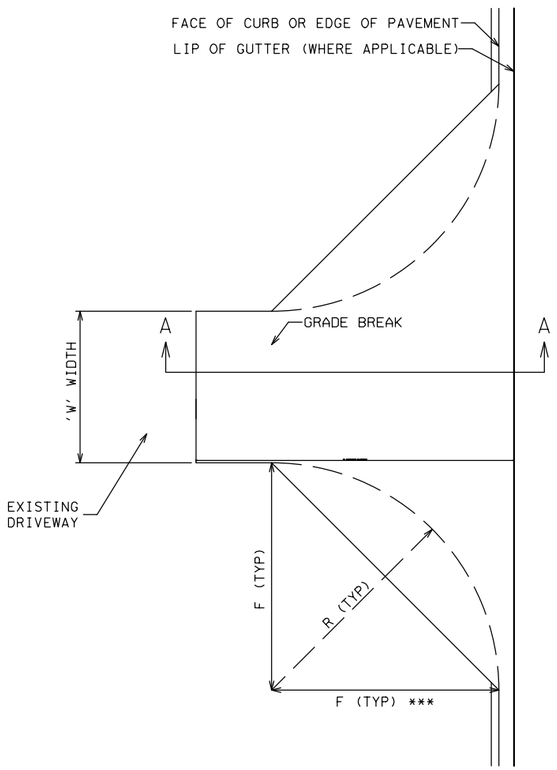
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

MISCELLANEOUS DETAILS

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	81



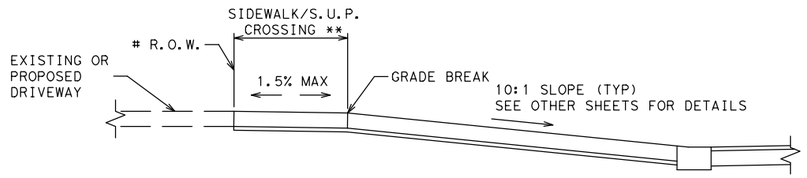
DRIVEWAY PLAN

FLARE OR RADIUS	FARM/RANCH	RESIDENTIAL	COMMERCIAL
"F" OR "R" (FT)	25	25	25

THESE ARE STANDARD DIMENSIONS UNLESS OTHERWISE SHOWN ELSEWHERE ON THE PLANS.

FLARES ARE TYPICALLY USED FOR SUBURBAN/URBAN (CURBED) ROADWAYS. RADII ARE TYPICALLY USED FOR RURAL OR UNCURBED ROADWAYS.

*** THIS 'F' DIMENSION MAY BE REDUCED TO KEEP WORK WITHIN THE ROW.

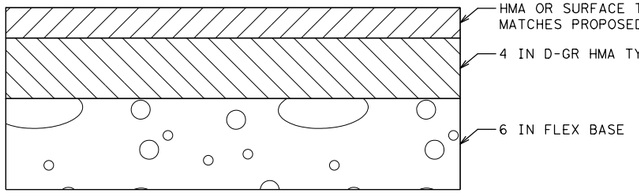


ACTUAL TIE-IN SHOWN ELSEWHERE IN PLANS OR AS DIRECTED

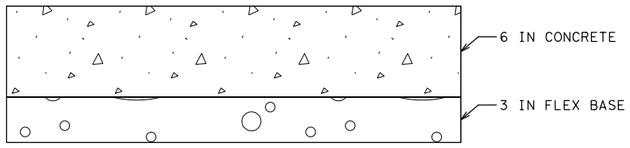
DRIVEWAY WITH GUTTER SECTION A-A

ENSURE GRADE BREAK DOES NOT EXCEED 8% UNLESS OTHERWISE DIRECTED. PROVIDE ABSOLUTE MINIMUM SIDEWALK CROSSING WIDTH OF 4' FOR DRIVEWAYS WIDTH OF 20' OR LESS

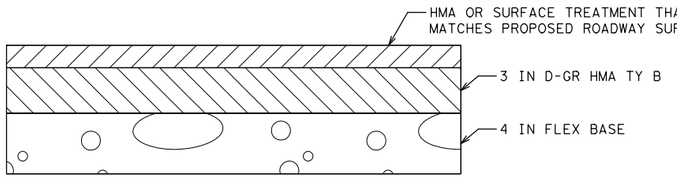
** LOCATE SIDEWALK CROSSING TO ALIGN WITH ADJACENT SIDEWALK; SIDEWALK/S.U.P. WIDTH AND LOCATION SHOWN ELSEWHERE ON THE PLANS.



HMA OR SURFACE TREATEMENT - COMMERCIAL



CONCRETE - ALL DRIVEWAY TYPES



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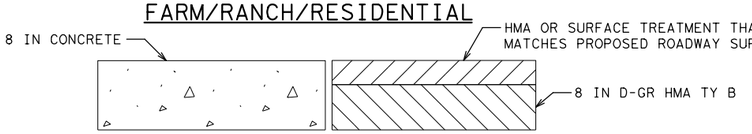
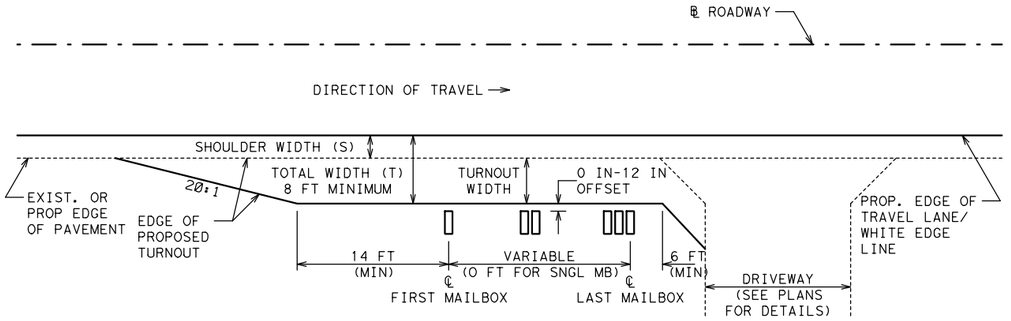
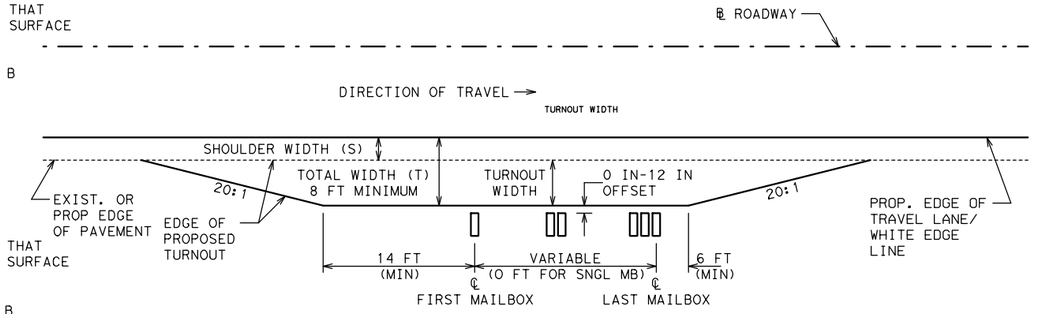


FAST TRACK ACP (TYPE 3) OR CONCRETE

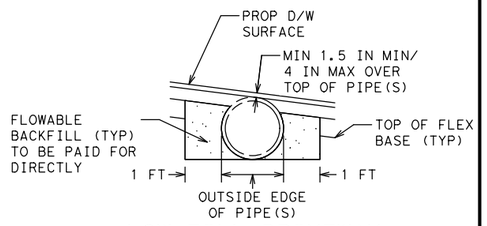
DRIVEWAY AND TURNOUT TYPICAL SECTIONS



MAILBOX TURNOUT PLAN WITH DRIVEWAY



MAILBOX TURNOUT PLAN WITHOUT DRIVEWAY



LOW FILL DRIVEWAY

ONLY ONE PIPE SHOWN
SEE ELSEWHERE ON THE PLANS FOR SPECIFIC DRIVEWAY DETAILS

GENERAL NOTES

PROVIDE EXPANSION 20 FT C-C FOR WIDTH OR LENGTH OVER 25 FT. EXPANSION JOINT PER AUS STANDARD FOR SIDEWALK (MCPSWMD).

REINFORCEMENT WILL BE IN ACCORDANCE WITH ITEM 432.3.1 USING NO. 3 OR NO. 4 BARS.

FIBER REINFORCEMENT IS NOT ALLOWED. CLASS A CONCRETE IS ALLOWED TO USE COARSE AGGREGATE GRADES 1-8.

IN LIEU OF PFC OR TOM, SURFACE MUST BE 1.5" D-GR HMA TY D. IF SURFACE IS A MULTIPLE COURSE SURFACE TREATEMENT, ALL COURSES MUST BE PLACED ON DRIVEWAY. SURFACE HMA IS PG 76-22. NON SURFACE HMA IS PG 64-22 AND MAY BE BLADE LAID.

FURNISH BASE MEETING THE REQUIREMENTS FOR ANY TYPE OR GRADE IN ACCORDANCE WITH ITEM 247. BASE COMPRESSIVE STRENGTHS ARE WAIVED.

THE BASE UNDER THE CONCRETE MAY BE REPLACED WITH CONCRETE AT A RATIO OF 3 INCHES OF BASE EQUALS 2 INCHES OF CONCRETE.

FAST TRACK DRIVEWAYS MUST BE CLOSED, CONSTRUCTED, AND REOPENED WITHIN 24 HOURS.

IF ROOTS ARE ENCOUNTERED VERIFY WITH THE ENGINEER PRIOR TO ACCOMMODATING OR REMOVING 2 IN. DIAMETER OR LARGER ROOTS. ROOT REMOVAL MUST BE IN ACCORDANCE WITH ITEM 752.4.2. ROOTS MAY REMAIN IN THE BASE. FOR IMPROVEMENTS WITHIN 6 IN. OF A ROOT, THE CONCRETE THICKNESS MAY BE REDUCED BY 1 IN. AND THE BASE INCREASED BY 1 IN. TO MINIMIZE IMPACTS TO THE ROOTS. ADJUST BASE AND SURFACE PROFILE TO PROVIDE A 1 IN. BASE CUSHION AROUND THE ROOTS. THE SURFACE PROFILE MAY BE ADJUSTED TO THE EXTENT ALLOWED BY ADA. THIS WORK IS SUBSIDIARY.

Texas Department of Transportation | Austin District Standard

DRIVEWAYS AND MAILBOX TURNOUTS

DWMB-22 (AUS)

CONT	SECT	JOB	HIGHWAY

REVISIONS
01/16: SHEET CREATED
04/19: APPROVED
11/20: TABLE REVISED, GN ADDED, PLAN & PROFILE MODIFIED
01/22: ADDED TURNOUT INFO

DIST	COUNTY	SHEET NO.
		82

5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\dwmb-22.dgn

5/10/2024
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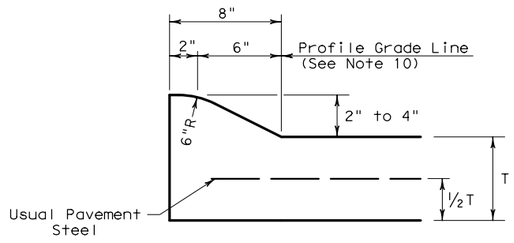
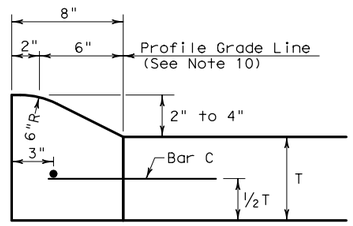


TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



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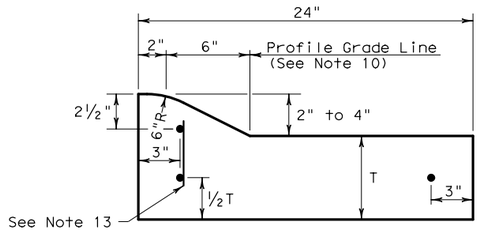
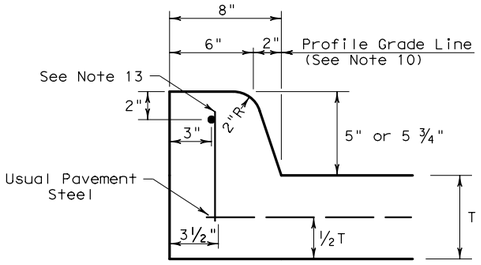
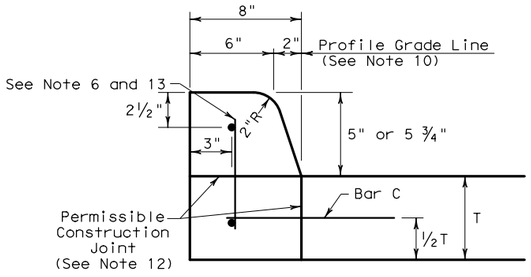
2" - 4" HEIGHT



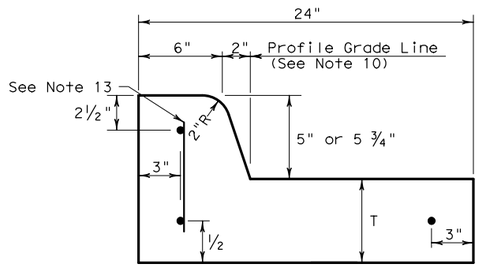
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



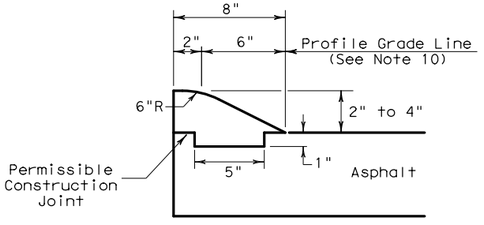
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



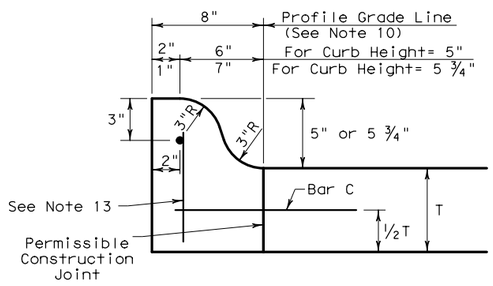
TYPE II CURB
5" - 5 ¾" HEIGHT



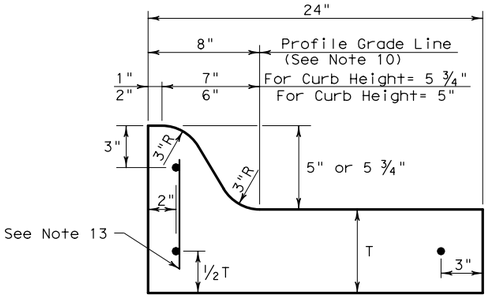
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



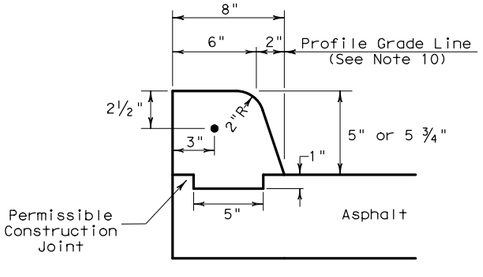
TYPE III CURB (KEYED)
2" - 4" HEIGHT



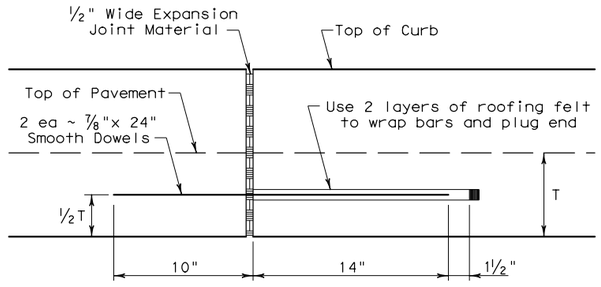
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

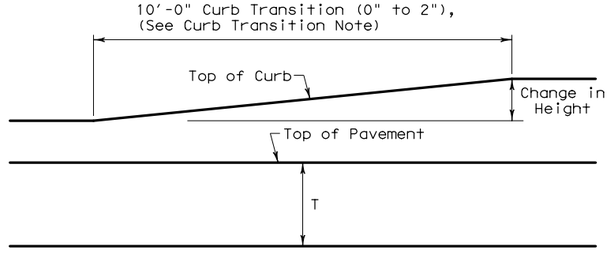


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

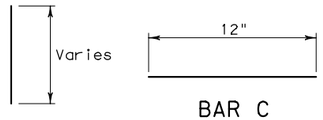
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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

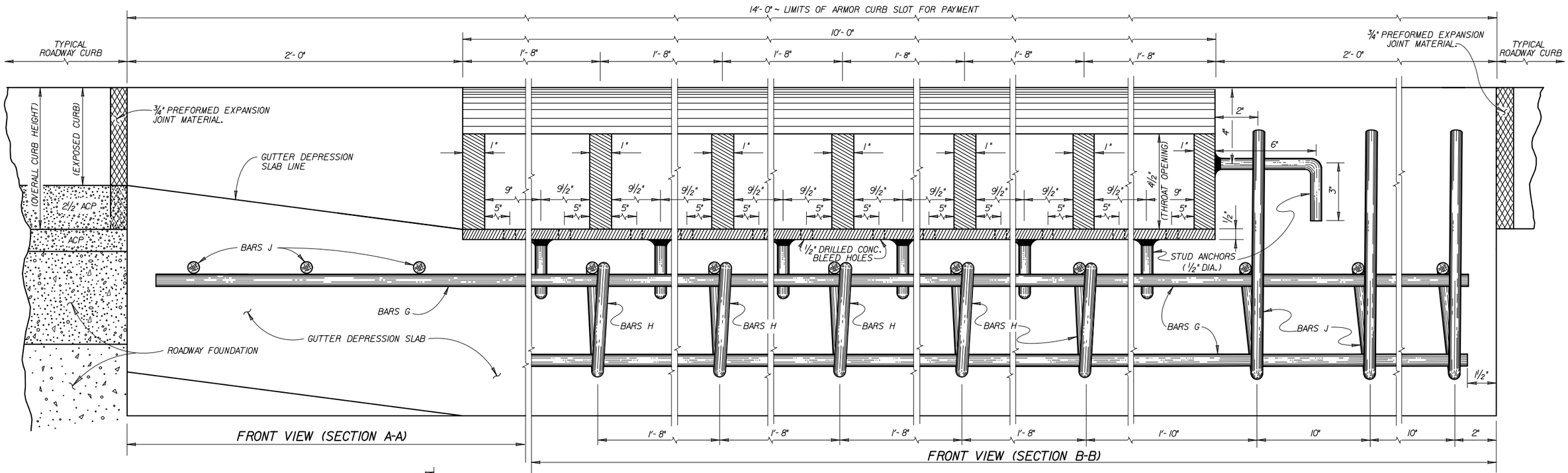
Texas Department of Transportation

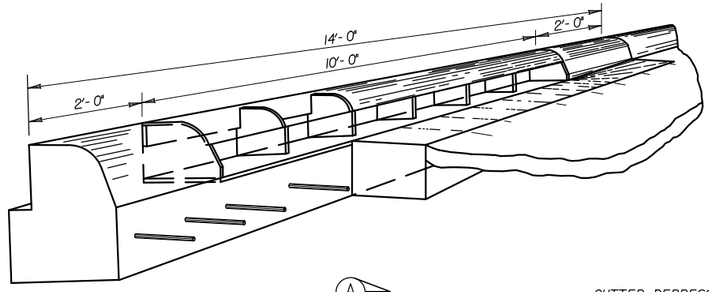
Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

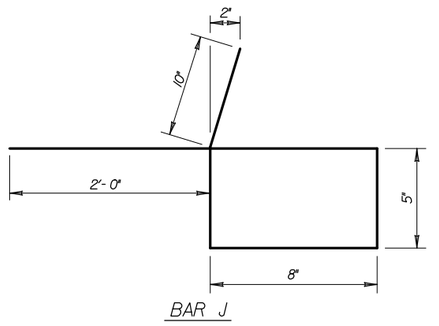
CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				83

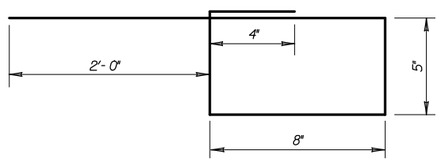




SIDE VIEW SECTION



BAR J



BAR H

ESTIMATED QUANTITIES
FOR REINFORCING STEEL & CONCRETE

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'-9"	64
H	5	#4	1'-8"	4'-6"	15
J	6	#4	8"	5'-0"	20
TOTAL WEIGHT *				LBS.	99
CONCRETE FOR FOUNDATION *				C.Y.	0.47
CONCRETE FOR GUTTER DEPRESSION *				C.Y.	0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT		
STUD ANCHORS (1/2" DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:

ALL CONCRETE SHALL BE CL."A".

ALL STEEL SHALL BE ASTM A36.

ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.

ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED UNDER ITEM 445.

ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.

THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

ARMOR CURB SLOT
WITH CONCRETE FOUNDATION
SAN ANTONIO DISTRICT STANDARDS

10/95
REV. 07/01
REV. 12/04

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			84
STATE	STATE DISTRICT	COUNTY	
TEXAS	SAT		
CONT.	SECT.	JOB	HIGHWAY NO.

5/10/2024
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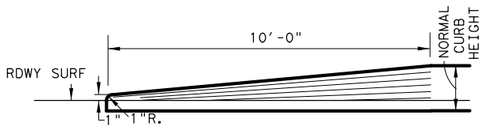
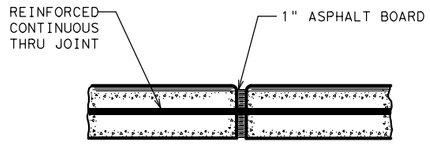
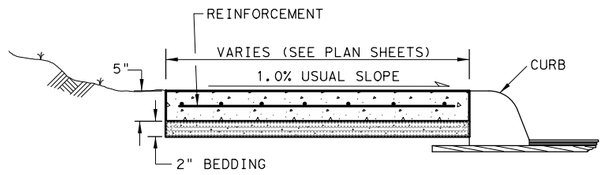


TRANSITION FOR CONCRETE CURB ENDS



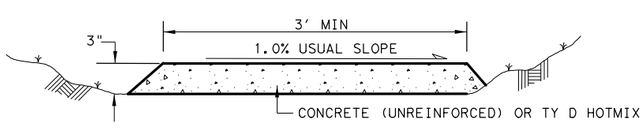
EXPANSION JOINT DETAIL



SIDEWALK & SHARED USE PATH (S.U.P.) TYP. SECT.

SIDEWALK OR S.U.P. EXPANSION JOINTS ARE TO BE AT A MAX. SPACING OF 40' AND COINCIDE WITH THE CURB EXPANSION JOINTS (WHEN ADJACENT TO CURB).

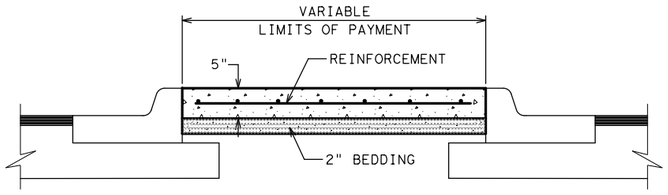
NOTE: TOOLED OR SAWED CONTRACTION JOINTS ARE NOT ALLOWED.



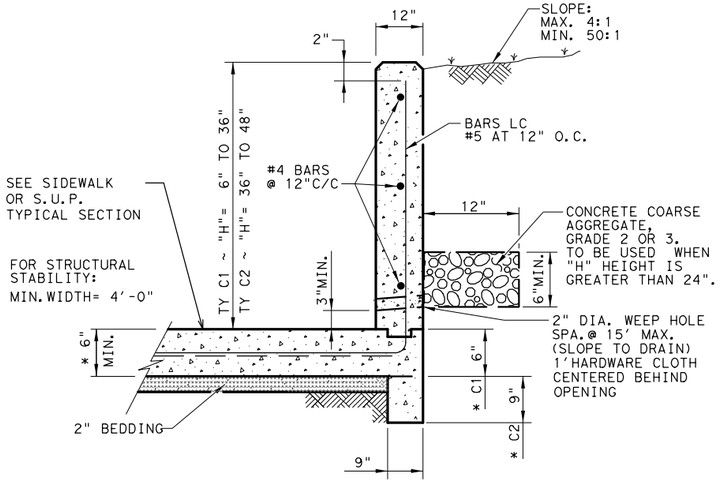
TEMPORARY SIDEWALK & SHARED USE PATH (S.U.P.)

CONC SIDEWALK (SPECIAL) (TYPE B)

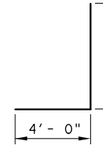
1. EXPANSION JOINTS, BEDDING, AND TOOL JOINTS ARE NOT REQUIRED.
2. PROVIDE 5' X 5' PASSING AREA AT INTERVALS NOT TO EXCEED 200'.
3. 4' TALL ORANGE CONSTRUCTION FENCE REQUIRED IF DROP OFF GREATER THAN 6" ADJACENT TO SIDEWALK.
4. ALL MATERIAL AND TESTING REQUIREMENTS ARE WAIVED.
5. INSTALLATION, MAINTENANCE, FENCE, AND REMOVAL ARE SUBSIDIARY TO SIDEWALK ITEM.
6. EXCAVATION AND EMBANKMENT TO PROVIDE ADA COMPLIANCE WILL BE PAID USING PERTINENT BID ITEMS.
7. LOCATION AS DIRECTED BY ENGINEER.



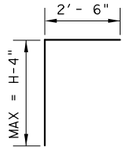
RIPRAP MEDIAN DETAIL



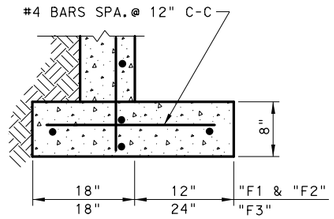
CONC CURB (TY C1) & (TY C2)



BAR LC



BAR LF



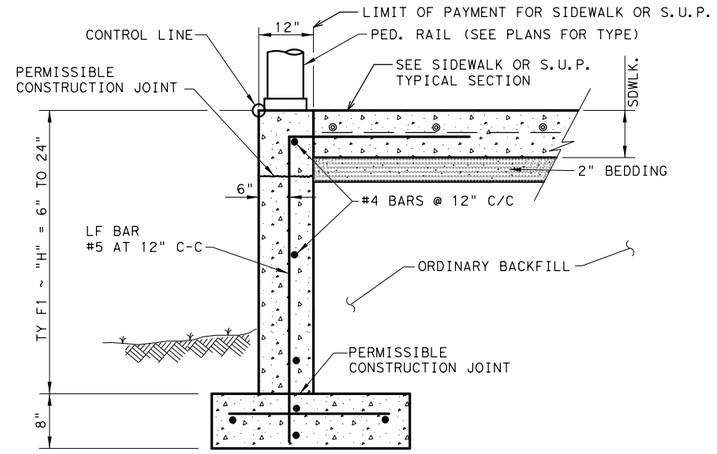
FOOTING DETAIL

SIDEWALK, SHARED USE PATH, AND MEDIAN NOTES

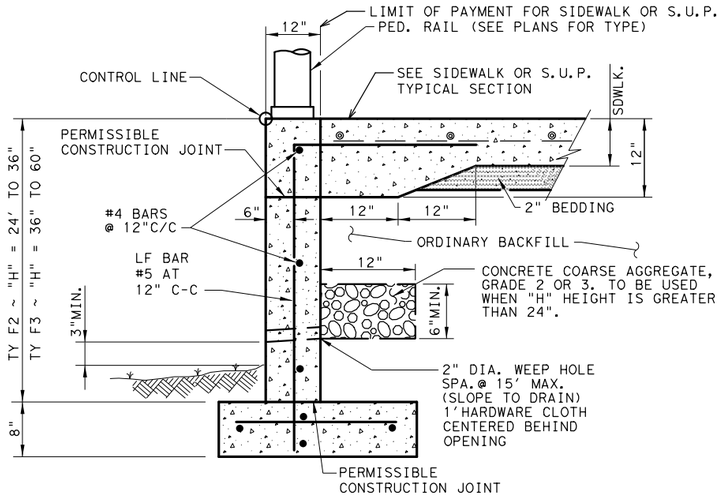
Reinforcement will be in accordance with Item 432.3.1. Fiber reinforcement is not allowed. Class A and B Concrete are allowed to use Coarse Aggregate Grades 1-8.

Bedding may be sand, base, or RAP bedding. Furnish base meeting the requirement for any type or grade in accordance with Item 247. Base compressive strengths are waived. RAP must be 100% passing a 1 in. sieve. Bedding must be placed using ordinary compaction.

If roots are encountered verify with the Engineer prior to accommodating or removing 2 in. diameter or larger roots. Root removal must be in accordance with Item 752.4.2. Roots may remain in the bedding or base. For improvements within 6 in. of a root, the concrete thickness may be reduced by 1 in. and the bedding increased by 1 in. to minimize impacts to the roots. Adjust bedding and surface profile to provide a 1 in. bedding cushion around the roots. The surface profile may be adjusted to the extent allowed by ADA. This work is subsidiary.



CONC CURB (TY F1)‡



CONC CURB (TY F2) & (TY F3)‡

CONCRETE CURB NOTES:
All Concrete, including adjacent sidewalk or S.U.P., shall be Class "C".
All Reinforcing Steel shall be Grade 60.
Minimum 4' sidewalk width for CONC CURB (TYPES C1 & C2).

‡ Until the sidewalk is complete, lateral support for the "F" curbs will be required.

ALL WORK SHOWN BEYOND TYPICAL SIDEWALK, S.U.P., AND PED RAIL IS SUBSIDIARY.

DESIGN SOIL PARAMETERS:
Soil Unit Wt. = 120 pcf
Phi = 30 Degrees
Cohesion = 50 psf
Min. PI = 15
Max. PI = 30
SURCHARGE:
TYPE F CURB q = 2' Adjacent to sidewalk
Max. slope behind TYPE C Curb = 4:1
Min. Factor of Safety against sliding is 1.5.
Designed in accordance with current AASHTO Standards and Interim Specifications.

NOT TO SCALE

Texas Department of Transportation | Austin District Standard

MISCELLANEOUS CURB, PATH, SIDEWALK, AND MEDIAN DETAILS

MCPSWMD-23 (AUS)

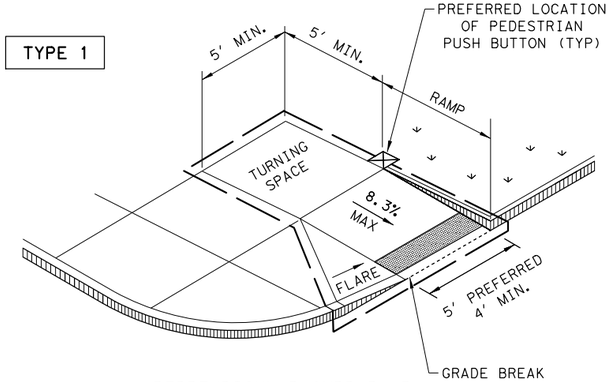
REVISIONS
04/19: APPROVED
02/23: ADDED TEMP S/W

CONT	SECT	JOB	HIGHWAY

DIST	COUNTY	SHEET NO.
		85

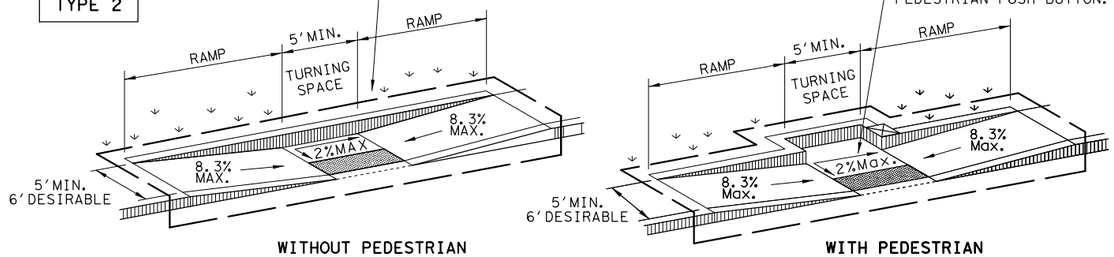
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\ped18.dgn

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

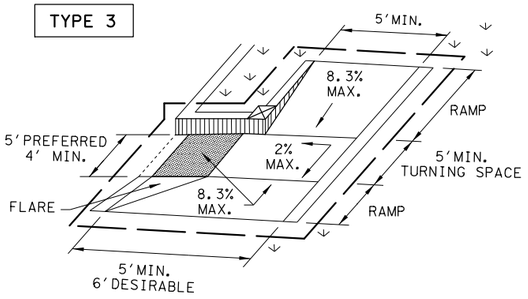


WITHOUT PEDESTRIAN PUSH BUTTON

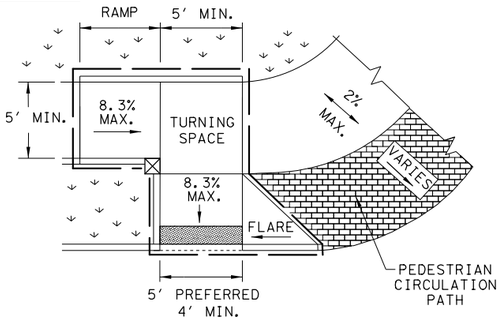
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

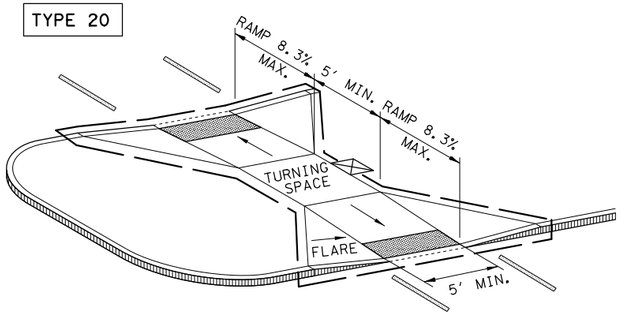


TYPE 6



COMBINATION CURB RAMPS

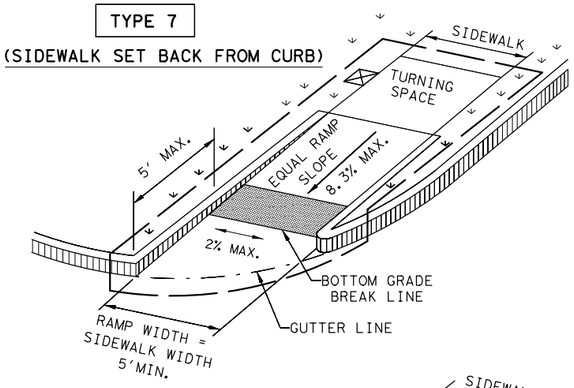
TYPE 20



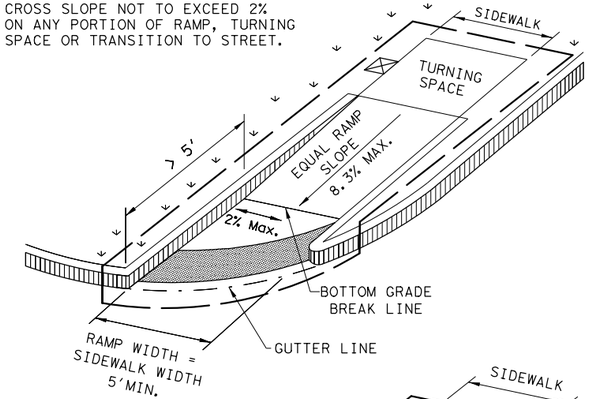
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

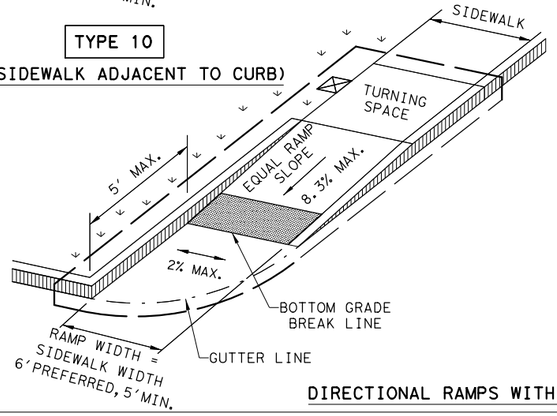


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

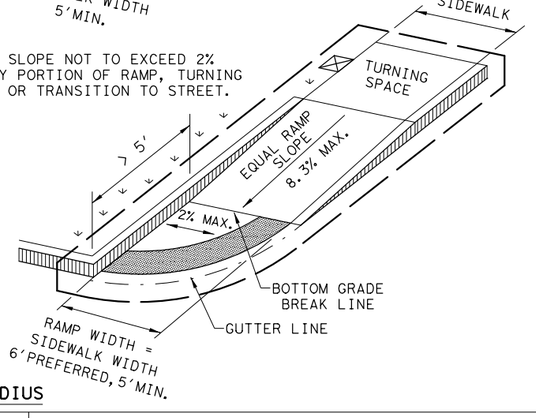


TYPE 10

(SIDEWALK ADJACENT TO CURB)

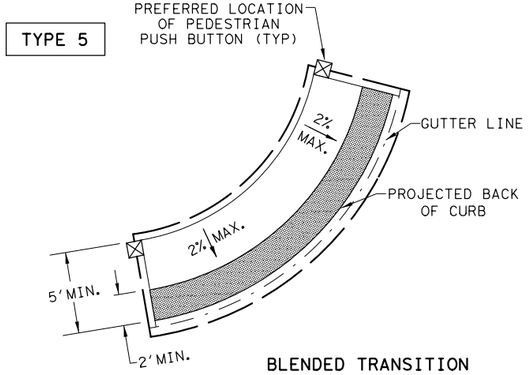


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

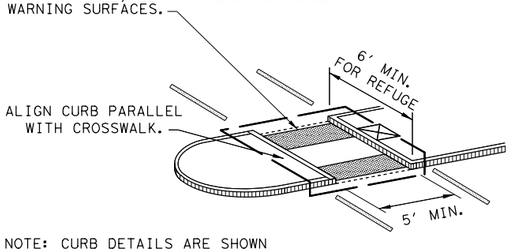
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

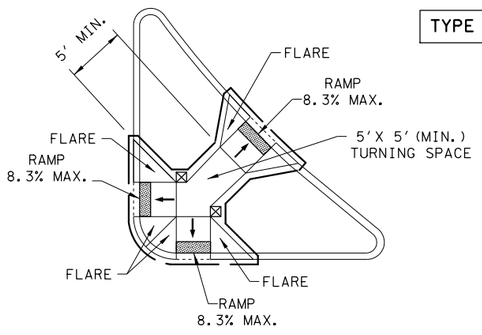
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



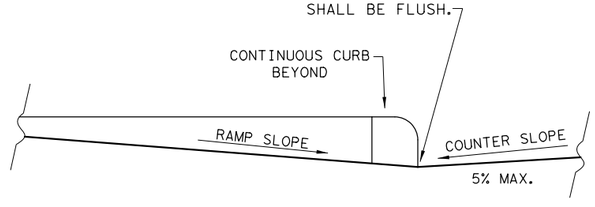
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



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

SHEET 1 OF 4

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				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				86
REVISED 01,2018				

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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

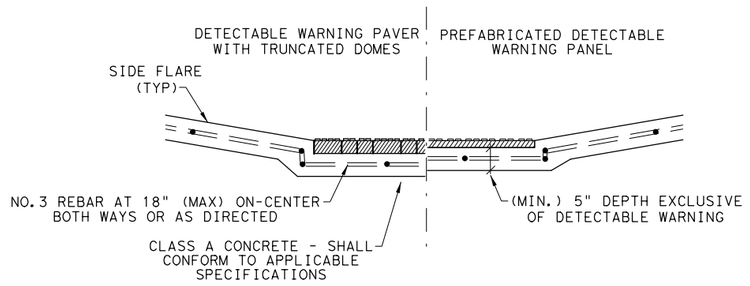
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

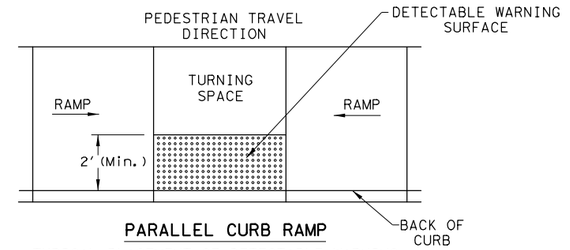
SIDEWALKS

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.



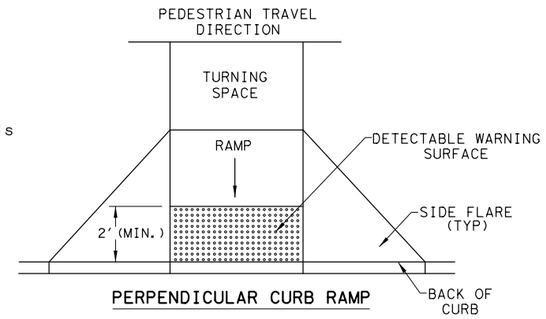
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



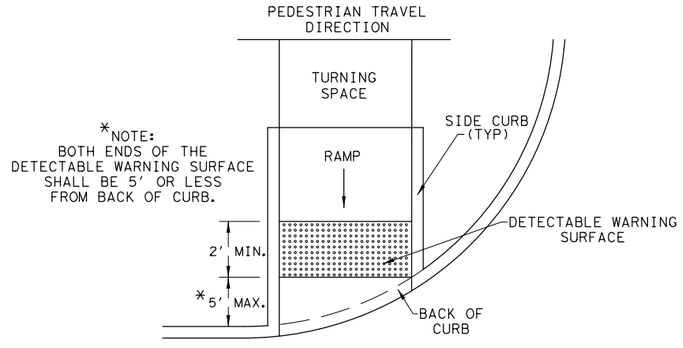
PARALLEL CURB RAMP

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
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REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				87
REVISED 01,2018				

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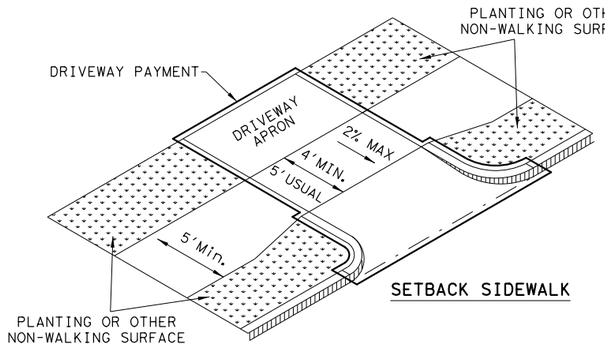
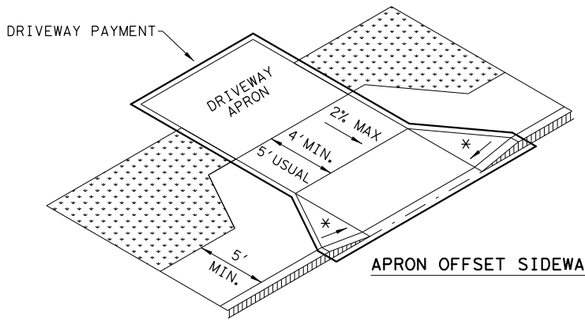
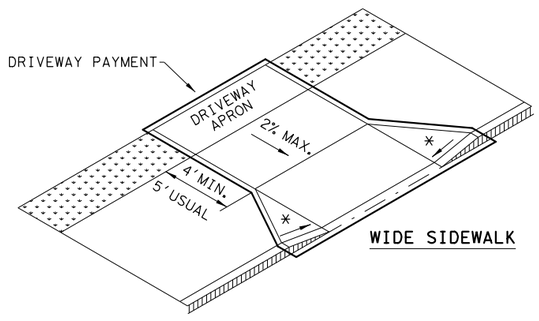
SIDEWALK TREATMENT AT DRIVEWAYS



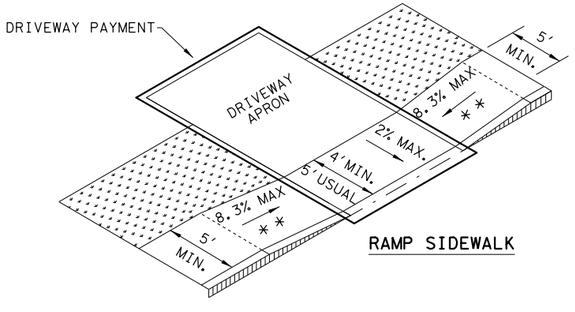
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

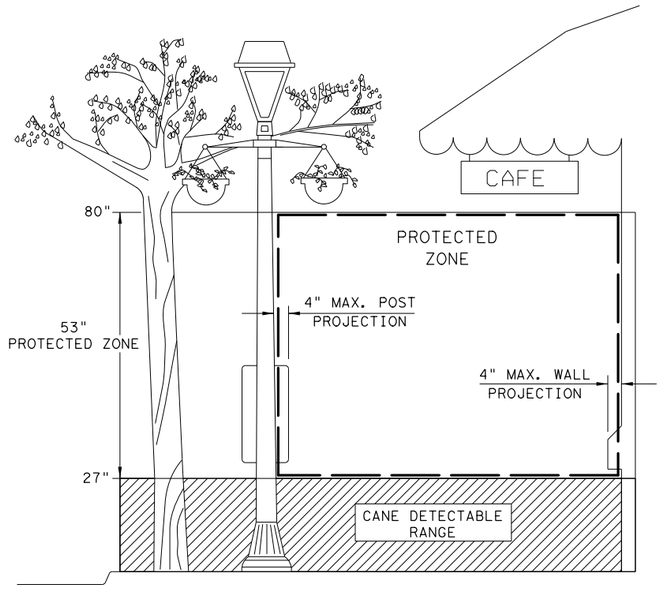


RAMP SIDEWALK

NOTES:

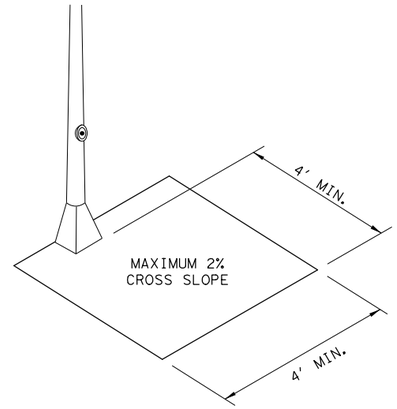
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

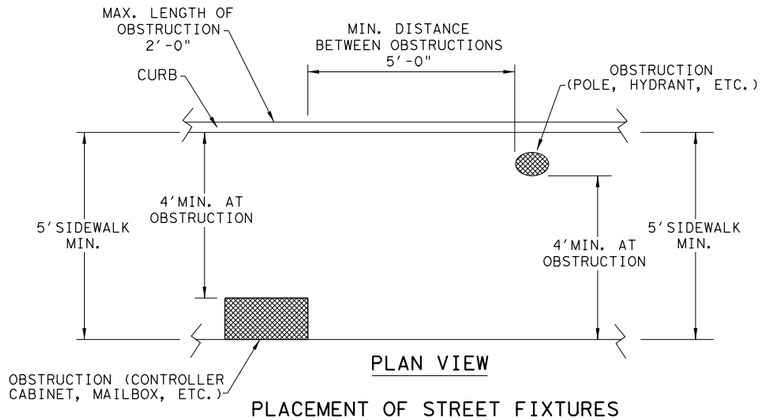


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



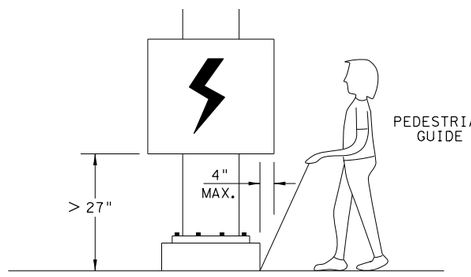
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



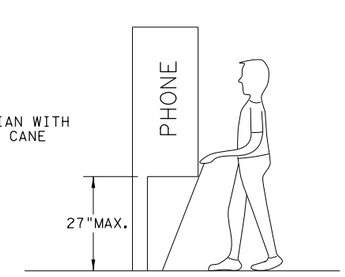
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



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	
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REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
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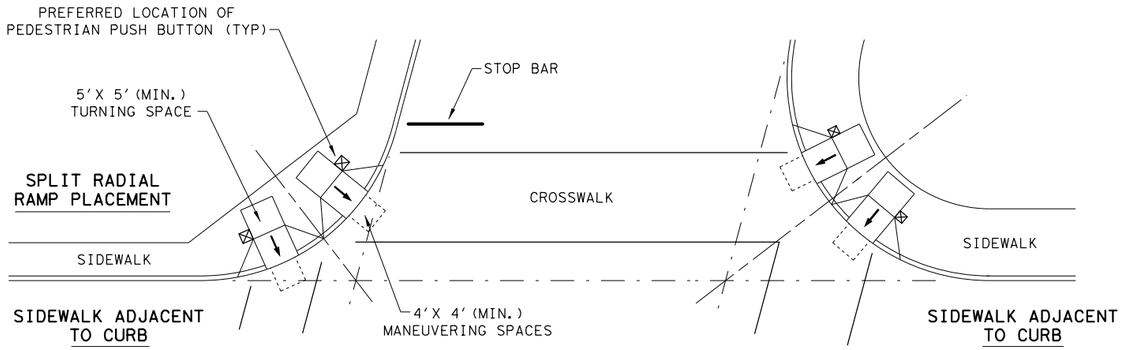
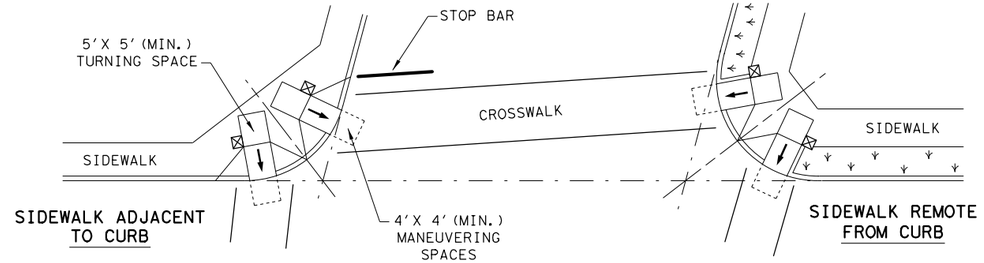
TYPICAL CROSSING LAYOUTS

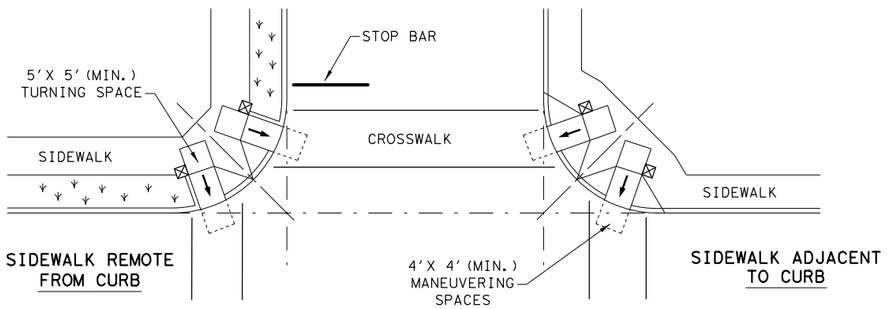
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



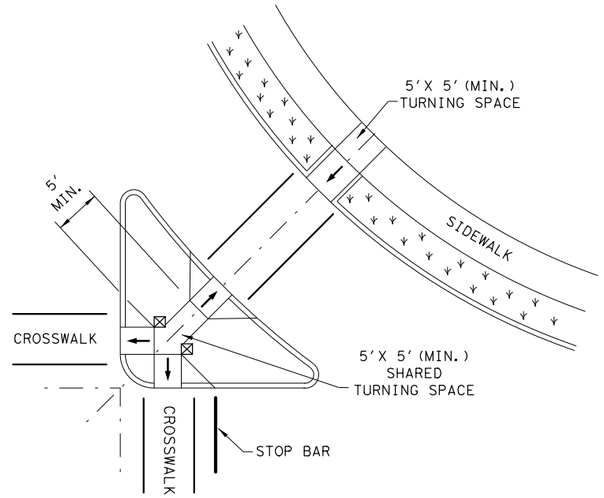
SKEWED INTERSECTION WITH "LARGE" RADIUS



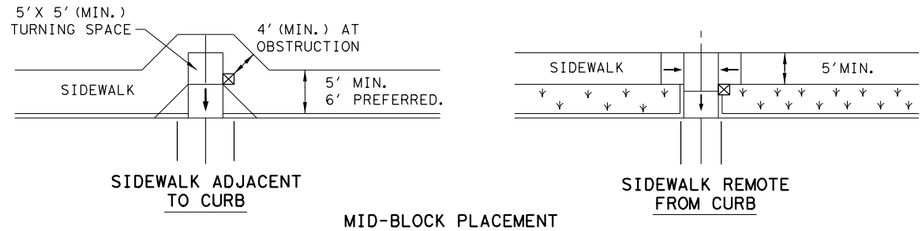
SKEWED INTERSECTION WITH "SMALL" RADIUS



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.

SHEET 4 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
				89

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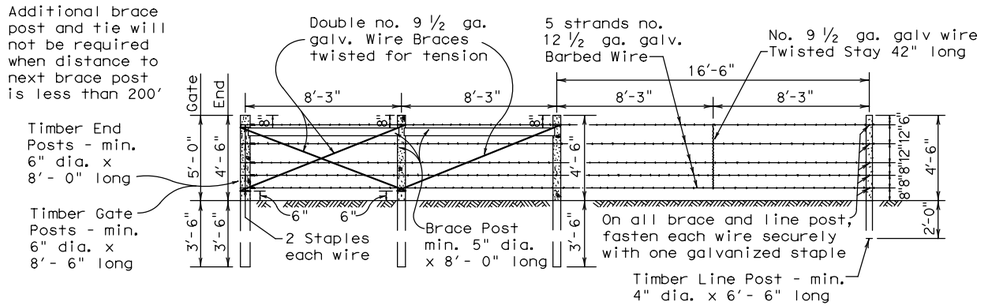
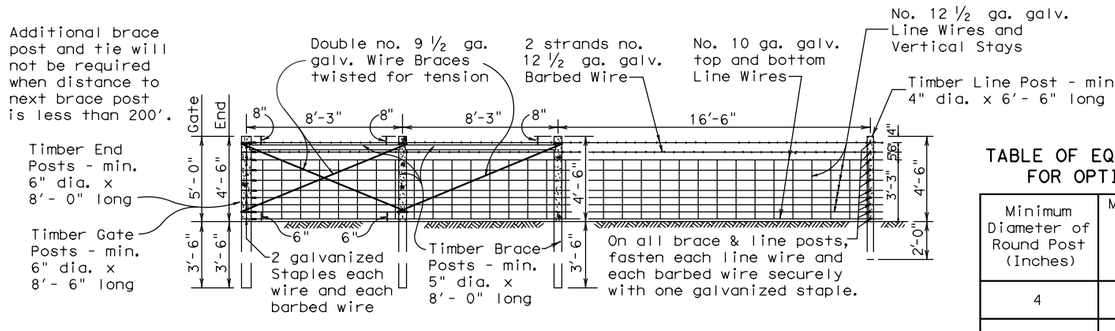


SECTION GALVANIZED BARBED WIRE FENCE WITH WOOD POSTS

Bracing Detail Used at Ends and Gates

TYPE "A" FENCE

(See General Note 6)



SECTION GALVANIZED WOVEN WIRE FENCE WITH WOOD POSTS

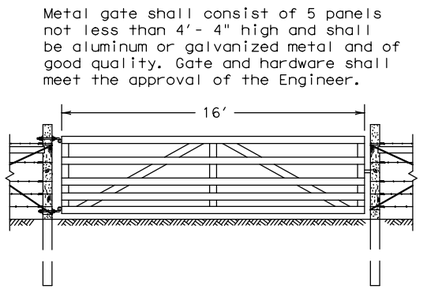
Bracing Detail Used at Ends and Gates

TYPE "B" FENCE

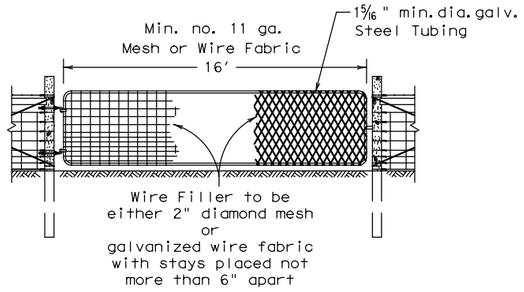
(See General Note 6)

TABLE OF EQUIVALENT SIZES FOR OPTIONAL SHAPE

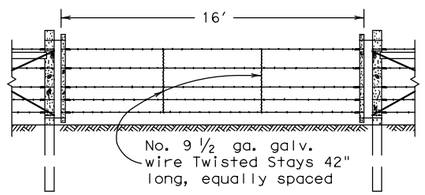
Minimum Diameter of Round Post (Inches)	Minimum Equivalent Dimension for Each Side of Square Post (Inches)
4	3 ½
5	4 ½
6	5 ¼



DETAIL TYPE 1 GATE



DETAIL TYPE 2 GATE

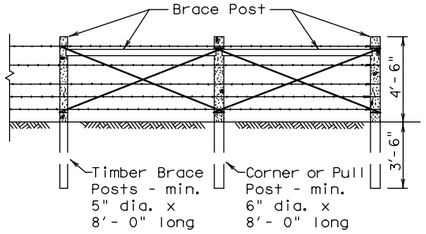


DETAIL TYPE 3 GATE

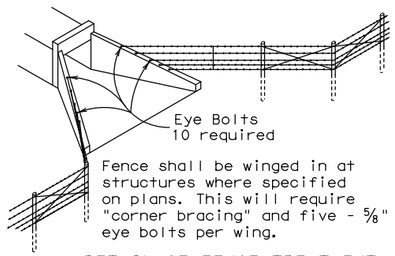
GENERAL NOTES

1. Any high point which interferes with the placing of wire mesh shall be excavated to provide 2" clearance.
2. Latches for Type 1 and Type 2 gates shall be good commercial quality and design latches of the spring, fork or chain type. All latches shall be suitable for the gate and shall be approved by the Engineer.
3. Hinges for Type 2 gates shall be commercial design approved by the Engineer suitable for post and gate.
4. Concrete shall be of the design and consistency approved by the Engineer and shall contain not less than 4 sacks of cement per cubic yard. Concrete footings are to be crowned at the top to shed water.
5. If rock is encountered at a depth less than the embedded depth required, a 15" or larger diameter hole shall be drilled for the post and the post shall be set in concrete. If rock is encountered at a depth of 1'- 6" or more below the ground surface, the hole shall be drilled to the required depth. If rock is encountered at a depth less than 1'- 6" below the ground surface, the holes shall be drilled a minimum of 2'- 0" into the rock or to the depth whichever is the lesser depth.
6. Barbed Wire shall be in accordance with ASTM A 121 (Class 1) Design designation 12-2-4-1 4R or 12-2-5-1 4R, or as approved by the Engineer.

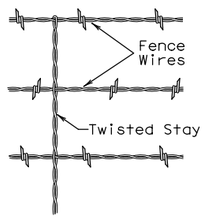
   Woven Wire Fence (Type B) shall be in accordance with ASTM A 116 (Class 1) No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
7. The location of gates and corner posts will be as indicated elsewhere on these plans.
8. Square wood posts may be used in lieu of round posts provided minimum equivalent size requirements, as shown are met. All wood posts shall be in accordance with Item 552, "Wire Fence."



CORNER OR PULL POST ASSEMBLY

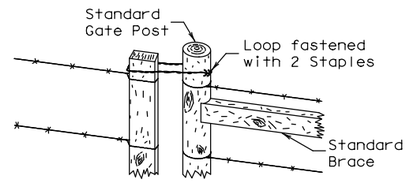


DETAIL OF FENCE TREATMENT AT STRUCTURES



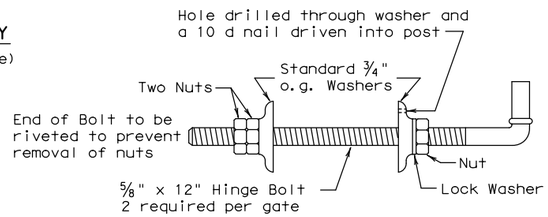
DETAIL OF STAY

(Barbed wire fence)

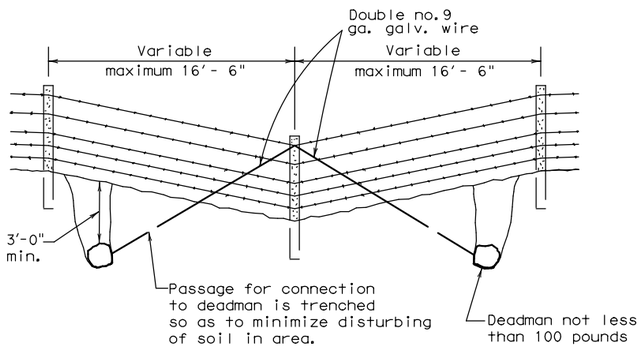


Loop to be made from two strands twisted no. 9 ½ ga. galv. smooth wire, and to be securely fastened to gate post with two galv. staples.

DETAIL FASTENER TYPE 3 GATE

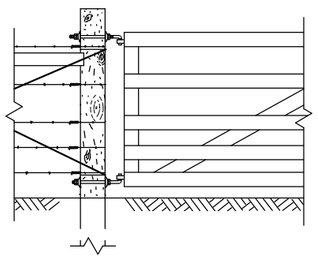


DETAIL OF GATE HINGE BOLT ASSEMBLY

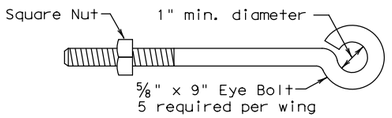


DETAIL OF FENCE SAG

(Single Line Connection)



DETAIL SHOWING INSTALLATION OF HINGES OF TYPE 1 & 2 GATE



DETAIL OF EYE BOLT

Texas Department of Transportation

Design Division Standard

BARBED WIRE AND WOVEN WIRE FENCE

(WOOD POSTS)

WF(1)-10

FILE: wf110.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				90

Drainage ID	DA Area (Acre)	TC Existing (Calculated)	TC Existing (Used) min	Existing Intensities (Inches/Hour)				C Value (Existing)				Peak Flow (Existing) - cfs			
				10 YR	25 YR	50 YR	100 YR	10 YR	25 YR	50 YR	100 YR	10 YR	25 YR	50 YR	100 YR
DA1	0.71	12.57	12.57	6.92	8.46	9.74	11.02	0.69	0.73	0.77	0.82	3.39	4.40	5.32	6.39
DA2	1.23	14.04	14.04	6.56	8.01	9.20	10.41	0.65	0.70	0.73	0.78	5.24	6.88	8.30	9.98
DA3	2.97	10.45	10.45	7.44	9.12	10.53	11.91	0.58	0.62	0.65	0.70	12.81	16.79	20.33	24.76
DA4	0.10	1.19	10.00	7.55	9.26	10.70	12.10	0.82	0.87	0.91	0.96	0.62	0.81	0.97	1.16
DA5	3.43	16.56	16.56	6.13	7.47	8.56	9.69	0.54	0.59	0.62	0.67	11.34	15.07	18.26	22.11
DA6	0.51	2.77	10.00	7.55	9.26	10.70	12.10	0.69	0.73	0.77	0.82	2.66	3.47	4.21	5.05
DA7	0.86	7.61	10.00	7.55	9.26	10.70	12.10	0.80	0.85	0.89	0.94	5.19	6.76	8.17	9.76
DA8	1.27	19.75	19.75	5.73	6.98	7.99	9.04	0.67	0.72	0.75	0.80	4.87	6.35	7.64	9.18
DA9	3.63	12.68	12.68	6.89	8.43	9.70	10.98	0.59	0.63	0.67	0.71	14.76	19.39	23.54	28.41
DA10	16.68	13.01	13.01	6.81	8.33	9.58	10.83	0.51	0.56	0.59	0.64	57.92	77.54	94.56	114.80

THIS DOCUMENT IS FOR INTERIM REVIEW AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING, PERMIT OR OTHER UNAUTHORIZED PURPOSES. THESE DOCUMENTS/PLANS WERE AUTHORIZED TO BE RELEASED.

BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

8918 Tesoro Dr., Suite 401
San Antonio, Texas 78217
Phone: (210) 822-2232
www.Ardurra.com

Engineering License #F-10053

Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

EXIST DRAINAGE AREA MAP

HORIZ. SCALE: 1"=200'

0 100 200

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	91

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DAMEX01.dgn

Drainage ID	DA Area (Acre)	TC Ultimate (Calculated)	TC Ultimate (Used) min	Ultimate Intensities (Inches/Hour)				C Value (Ultimate)				Peak Flow (Ultimate) - cfs			
				10 YR	25 YR	50 YR	100 YR	10 YR	25 YR	50 YR	100 YR	10 YR	25 YR	50 YR	100 YR
DA1	0.71	12.57	12.57	6.92	8.46	9.74	11.02	0.70	0.75	0.78	0.83	3.44	4.48	5.41	6.49
DA2	1.23	14.04	14.04	6.56	8.01	9.20	10.41	0.67	0.71	0.75	0.80	5.40	7.03	8.48	10.18
DA3	2.97	10.45	10.45	7.44	9.12	10.53	11.91	0.60	0.64	0.68	0.72	13.26	17.40	21.17	25.51
DA4	0.10	1.19	10.00	7.55	9.26	10.70	12.10	0.82	0.87	0.91	0.96	0.62	0.80	0.97	1.16
DA5	3.43	16.56	16.56	6.13	7.47	8.56	9.69	0.58	0.61	0.65	0.69	12.19	15.71	19.00	22.94
DA6	0.51	2.77	10.00	7.55	9.26	10.70	12.10	0.70	0.75	0.78	0.83	2.70	3.52	4.27	5.12
DA7	0.86	7.61	10.00	7.55	9.26	10.70	12.10	0.80	0.85	0.89	0.94	5.19	6.78	8.20	9.78
DA8	1.27	19.75	19.75	5.73	6.98	7.99	9.04	0.69	0.73	0.77	0.81	5.02	6.47	7.78	9.33
DA9	3.63	12.68	12.68	6.89	8.43	9.70	10.98	0.62	0.65	0.69	0.73	15.51	20.04	24.29	29.25
DA10	16.68	13.01	13.01	6.81	8.33	9.58	10.83	0.57	0.60	0.64	0.68	64.74	83.90	101.87	123.08

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NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

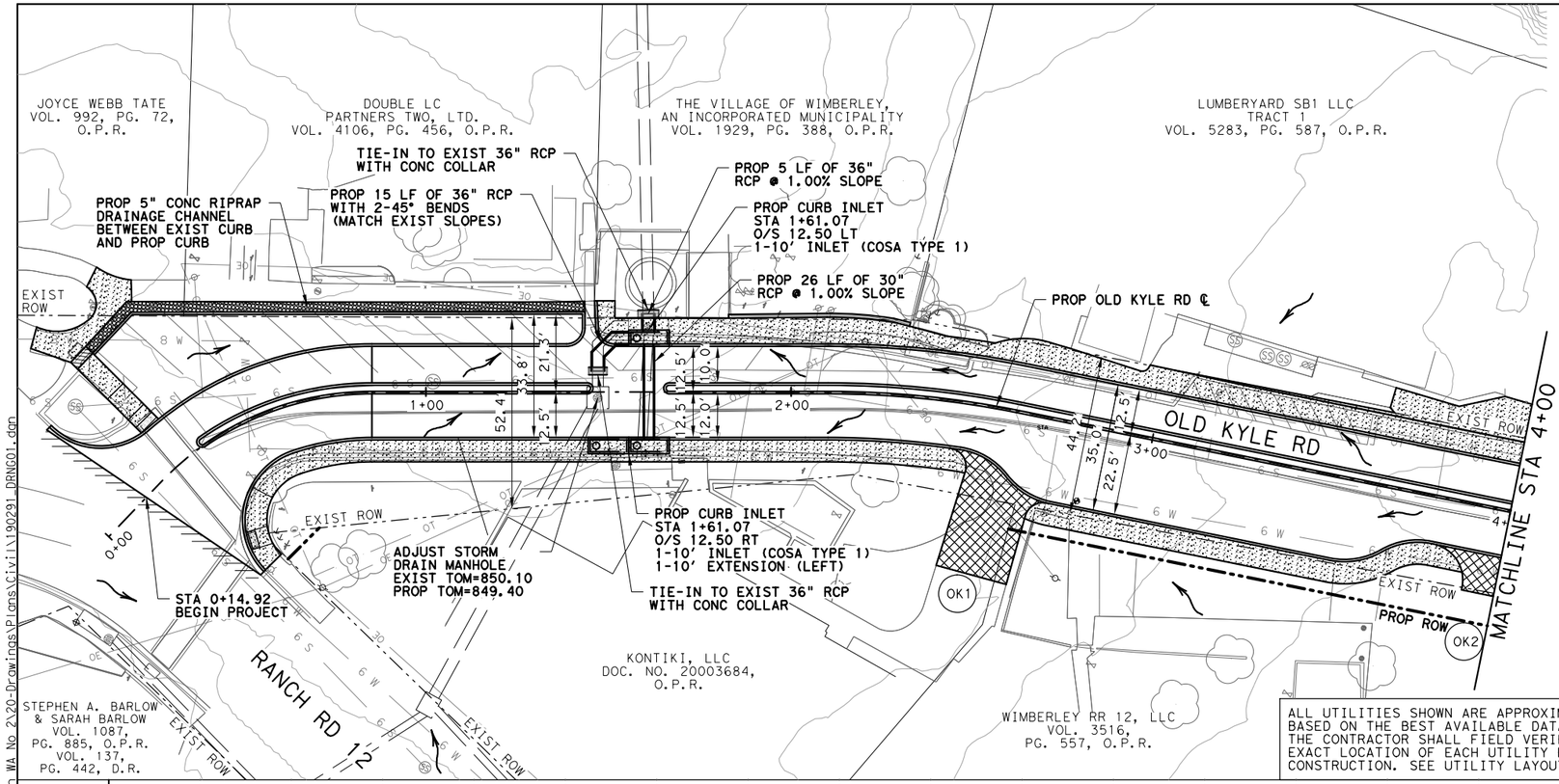
PROP DRAINAGE AREA MAP

HORIZ. SCALE: 1"=200'

0 100 200

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	92



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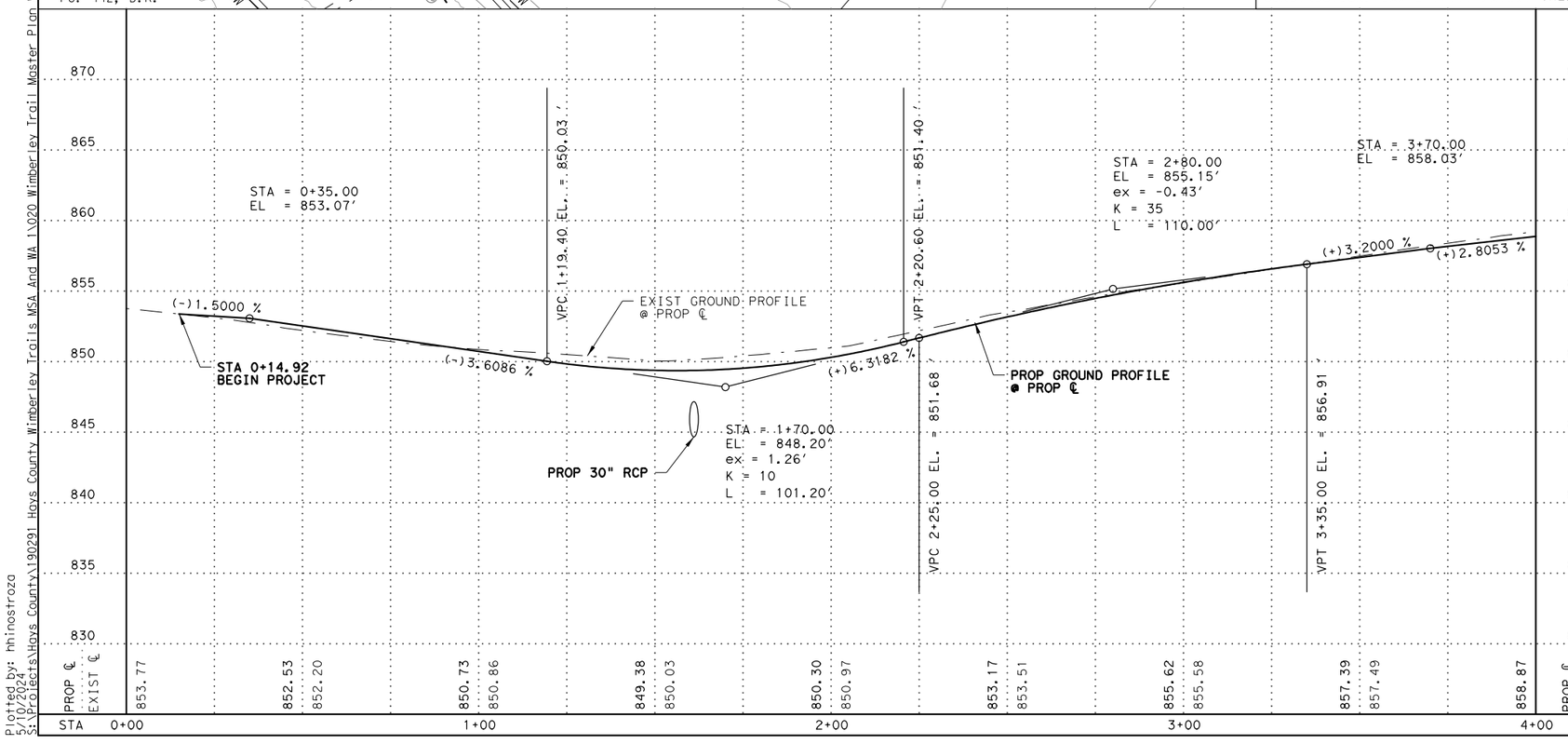

LEGEND

- S WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT UNDERGROUND TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- UE UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

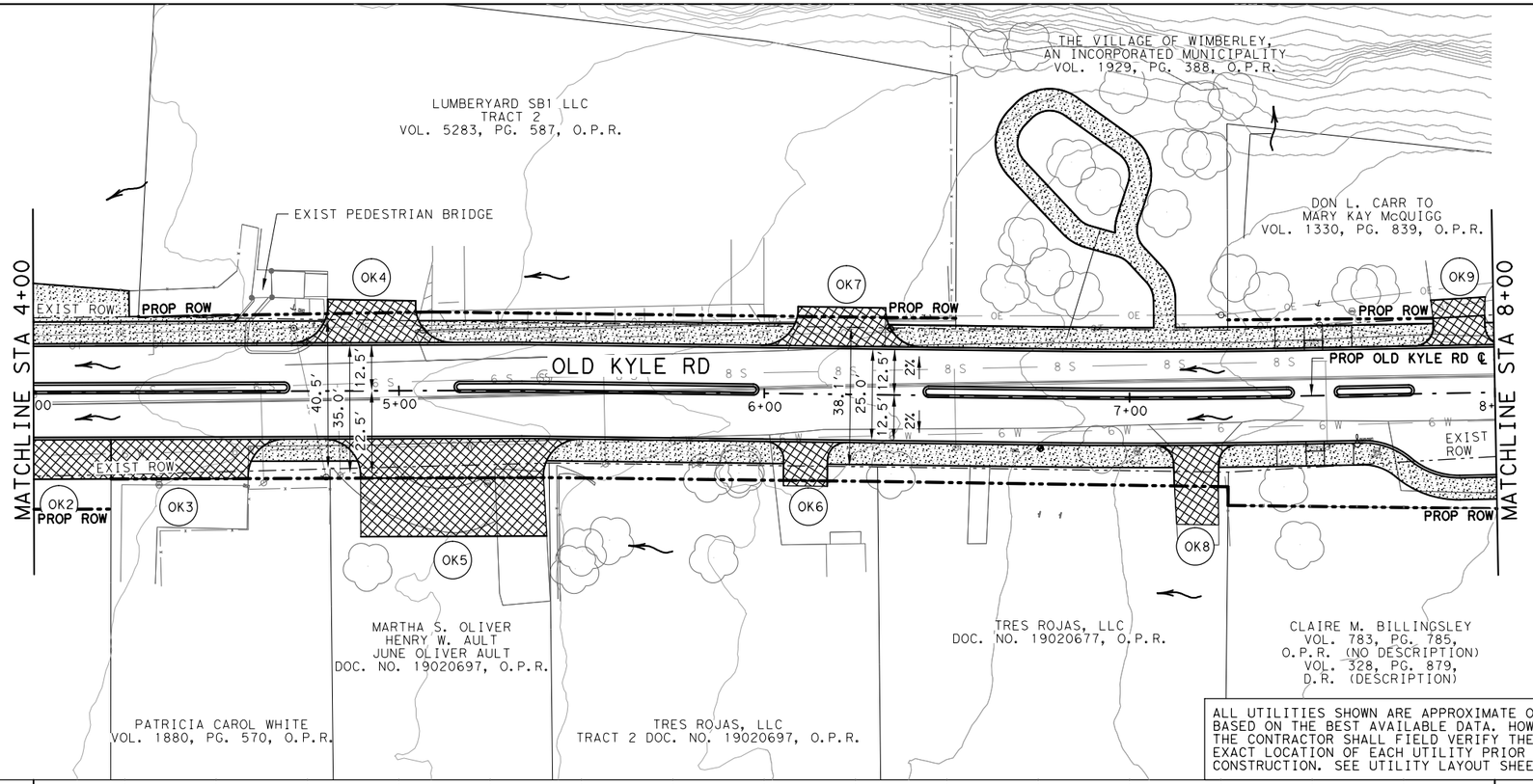
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

DRAINAGE IMPROVEMENTS PLAN AND PROFILE STA 0+00 TO STA 4+00

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	93

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRNG01.dgn



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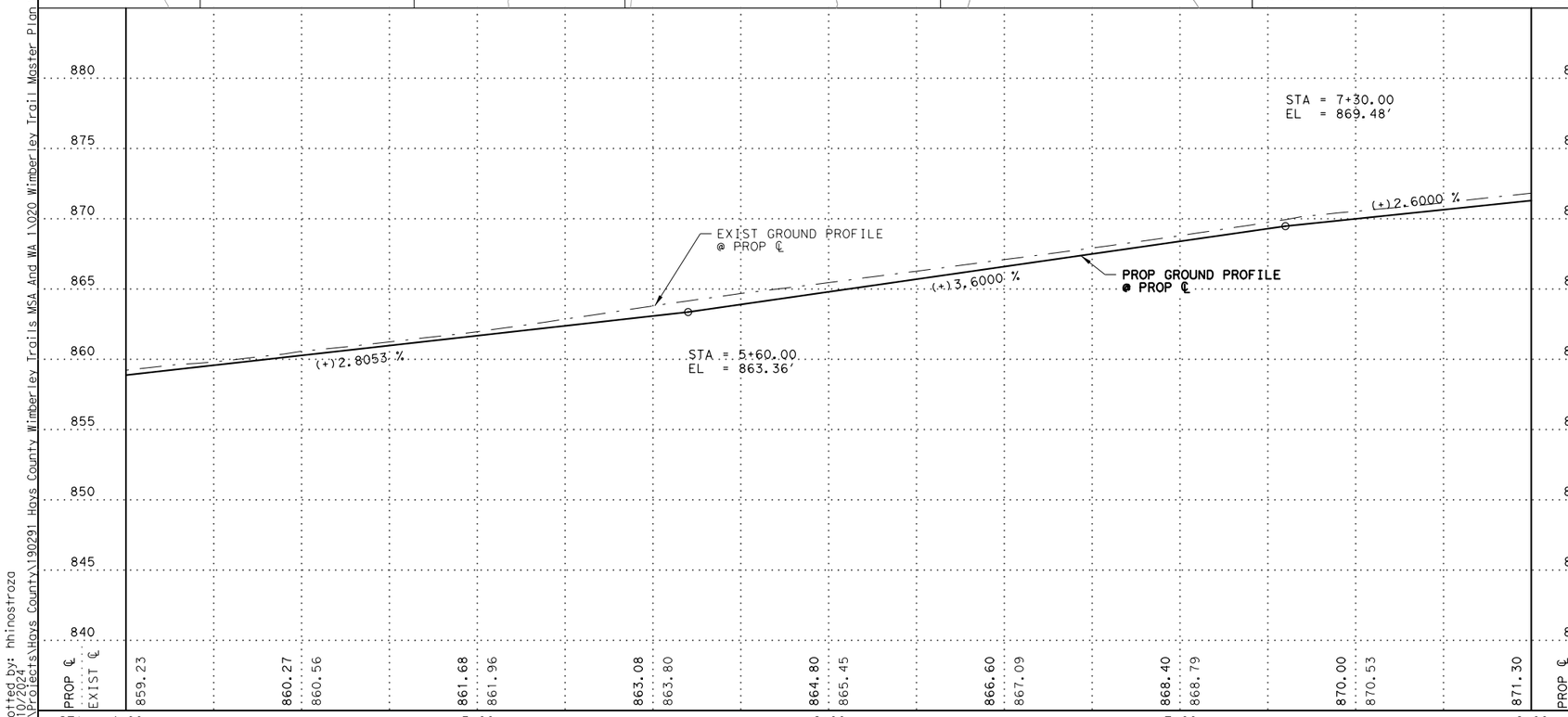

LEGEND

- S WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT UNDERGROUND TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- UE UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

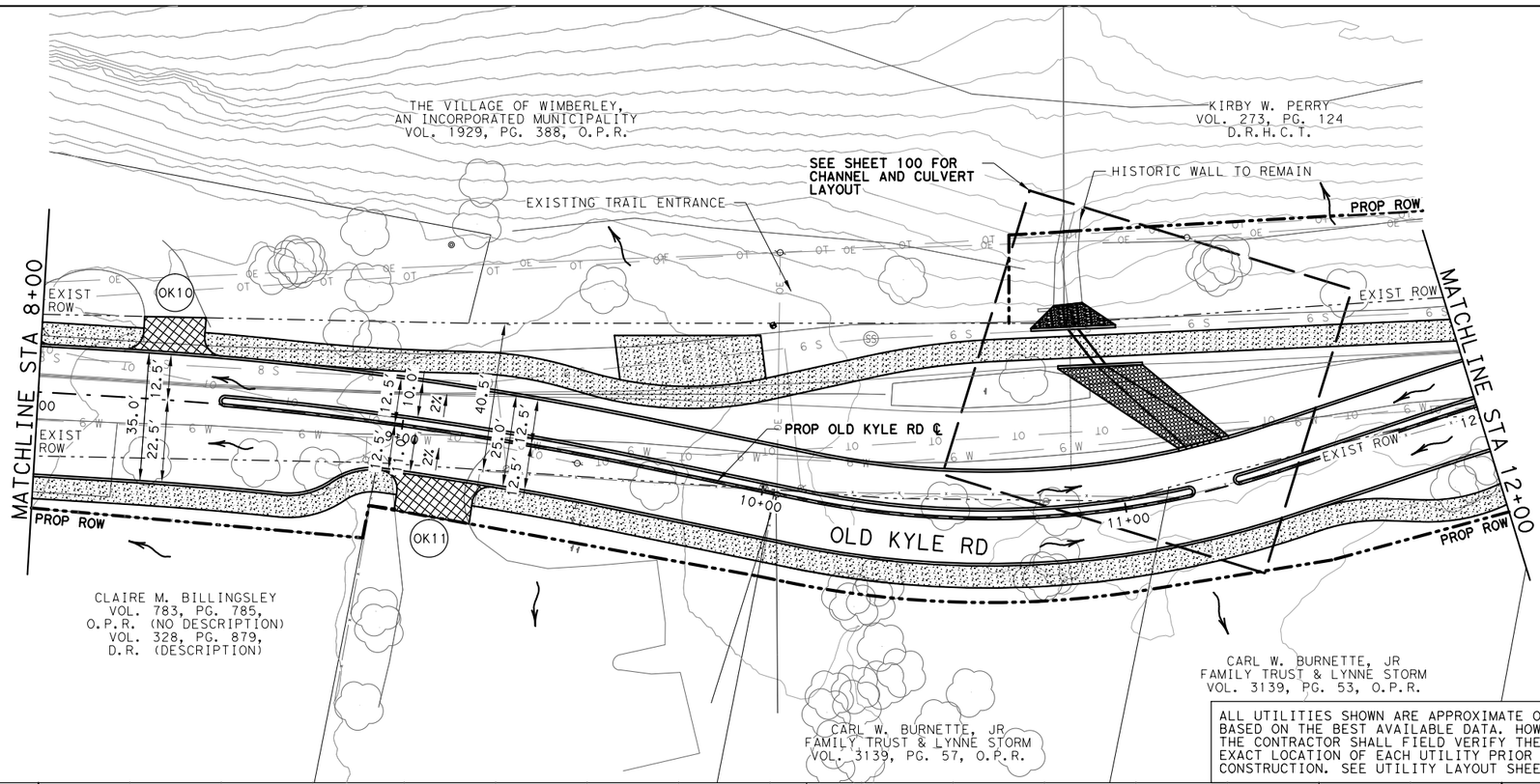
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

DRAINAGE IMPROVEMENTS PLAN AND PROFILE STA 4+00 TO STA 8+00

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	94

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRN002.dgn



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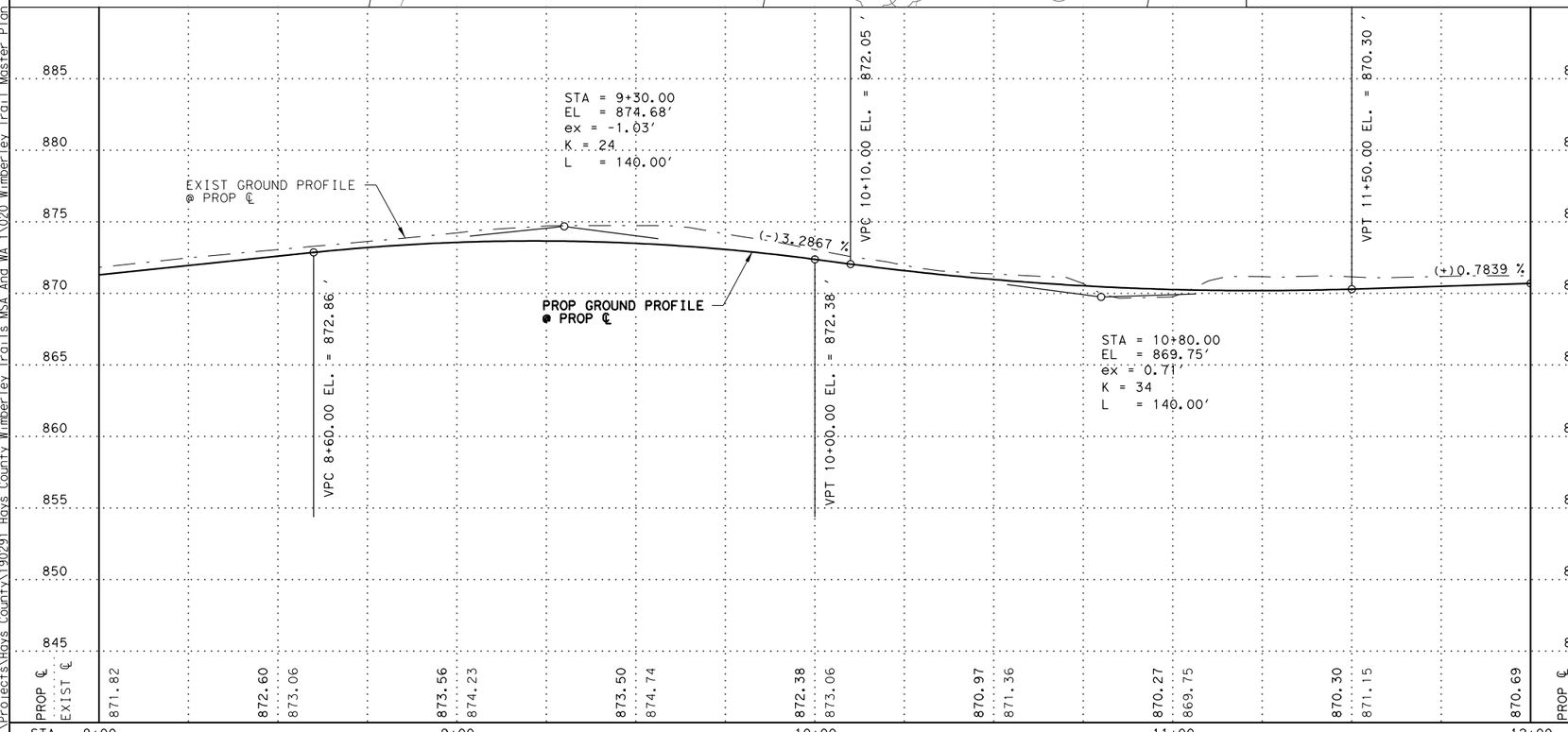

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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BY: BRYAN J. SPINA, P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

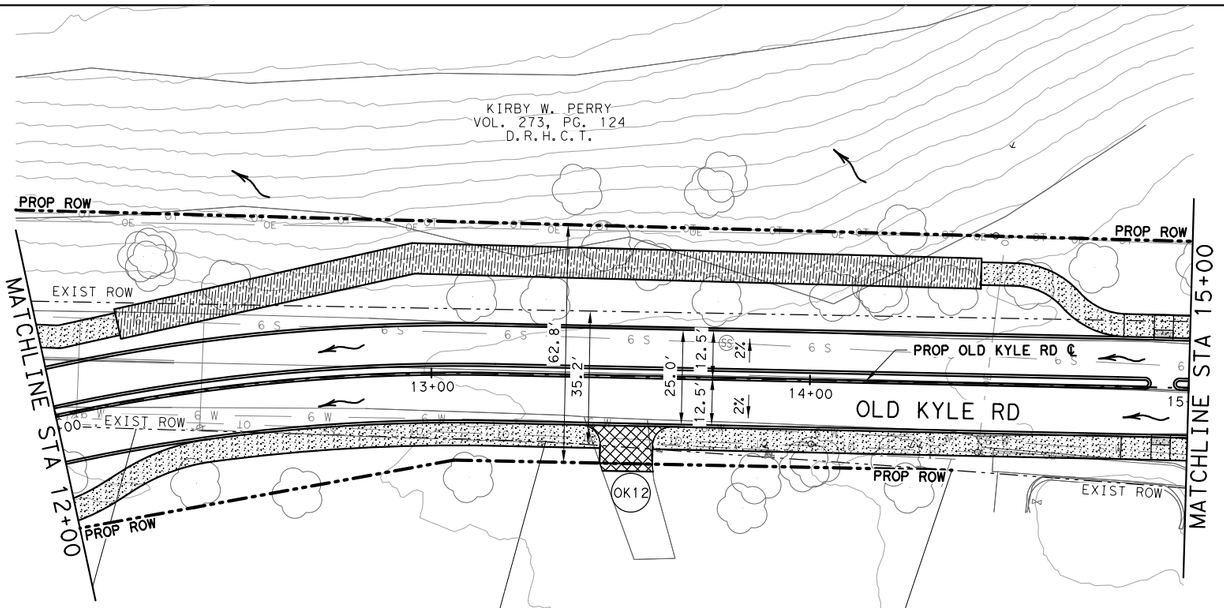
DRAINAGE IMPROVEMENTS PLAN AND PROFILE STA 8+00 TO STA 12+00

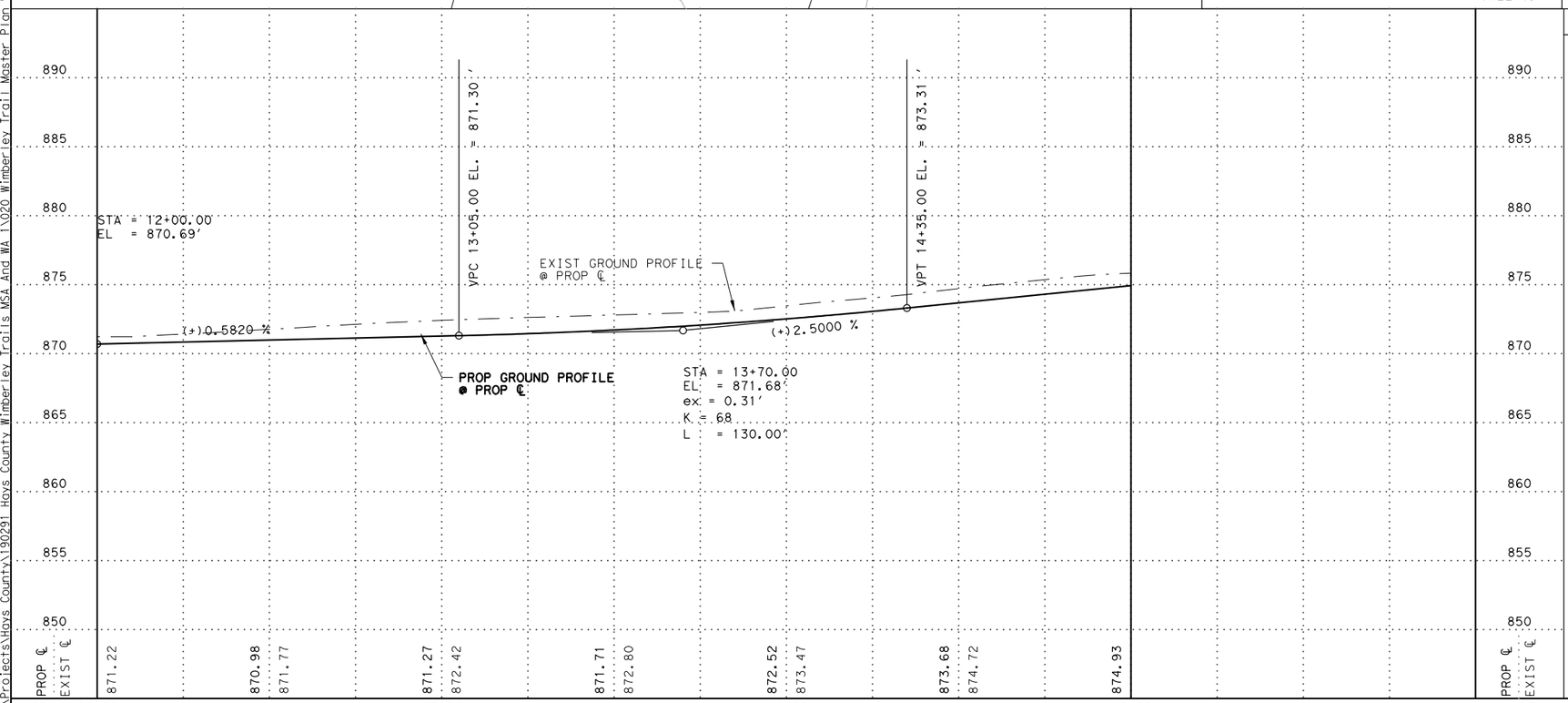
HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:
CHK DGN:

DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	95

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRN003.dgn





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LEGEND

- S WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT UNDERGROUND TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- UE UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- (X) DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

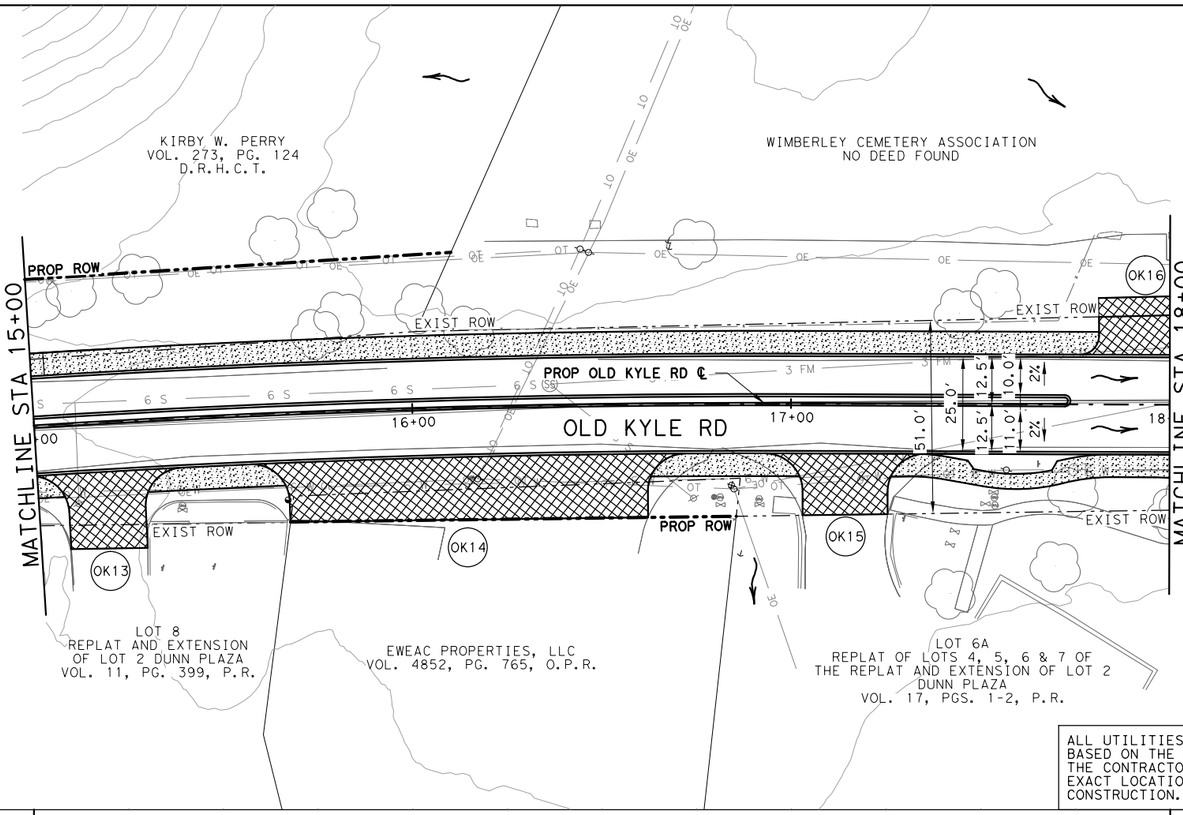
DRAINAGE IMPROVEMENTS PLAN AND PROFILE STA 12+00 TO STA 15+00

HORIZ. SCALE: 1"=40' (0 20 40) SCALE IN FEET

VERT. SCALE: 1"=10' (0 5 10) SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	96

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRN004.dgn



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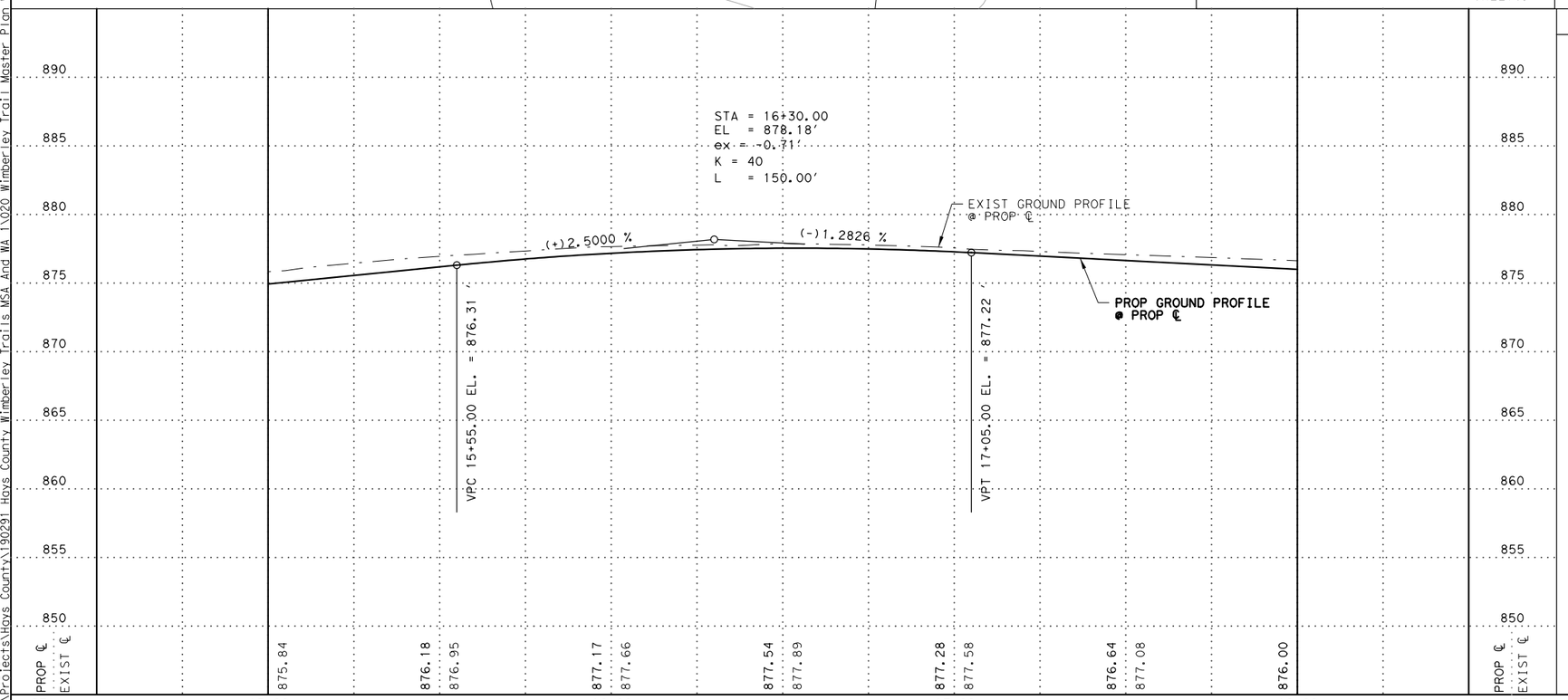

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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BY: BRYAN J. SPINA , P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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San Antonio, Texas 78217
Phone: (210) 822-2232
www.Ardurra.com
Engineering License #F-10053
Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

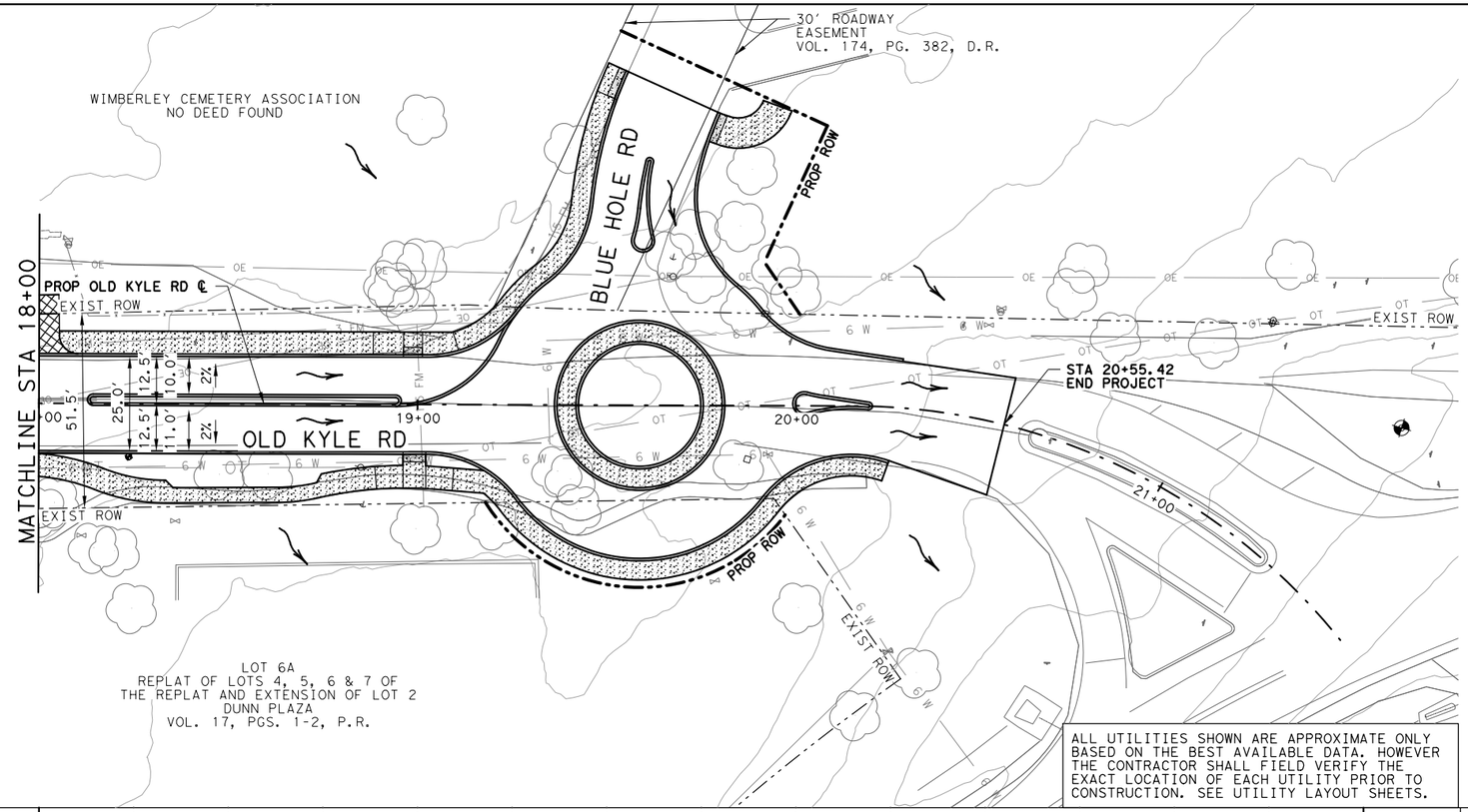
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

DRAINAGE IMPROVEMENTS PLAN AND PROFILE STA 15+00 TO STA 18+00

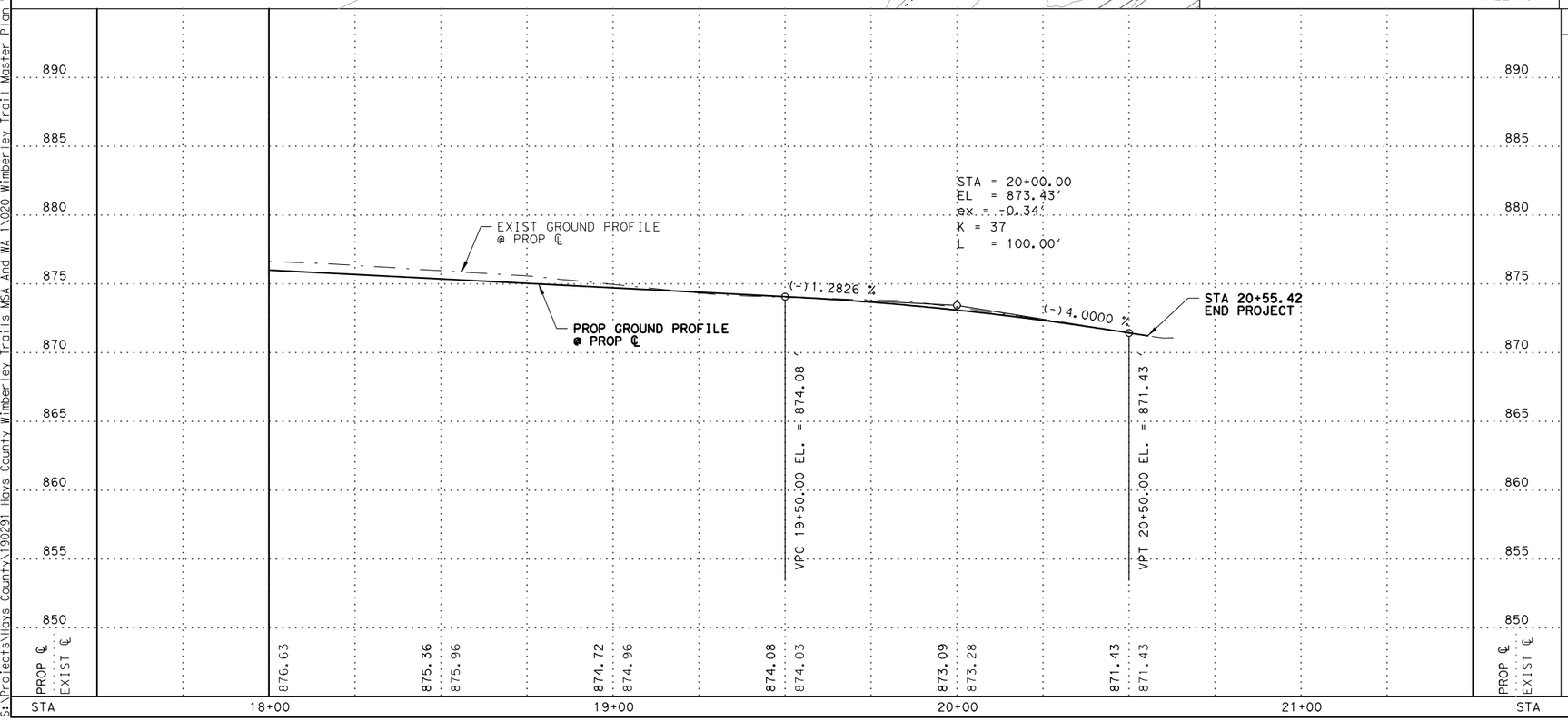
HORIZ. SCALE: 1"=40' (0, 20, 40 SCALE IN FEET)

VERT. SCALE: 1"=10' (0, 5, 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	97



ALL UTILITIES SHOWN ARE APPROXIMATE ONLY BASED ON THE BEST AVAILABLE DATA. HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH UTILITY PRIOR TO CONSTRUCTION. SEE UTILITY LAYOUT SHEETS.



LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DRAINAGE CHANNEL
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

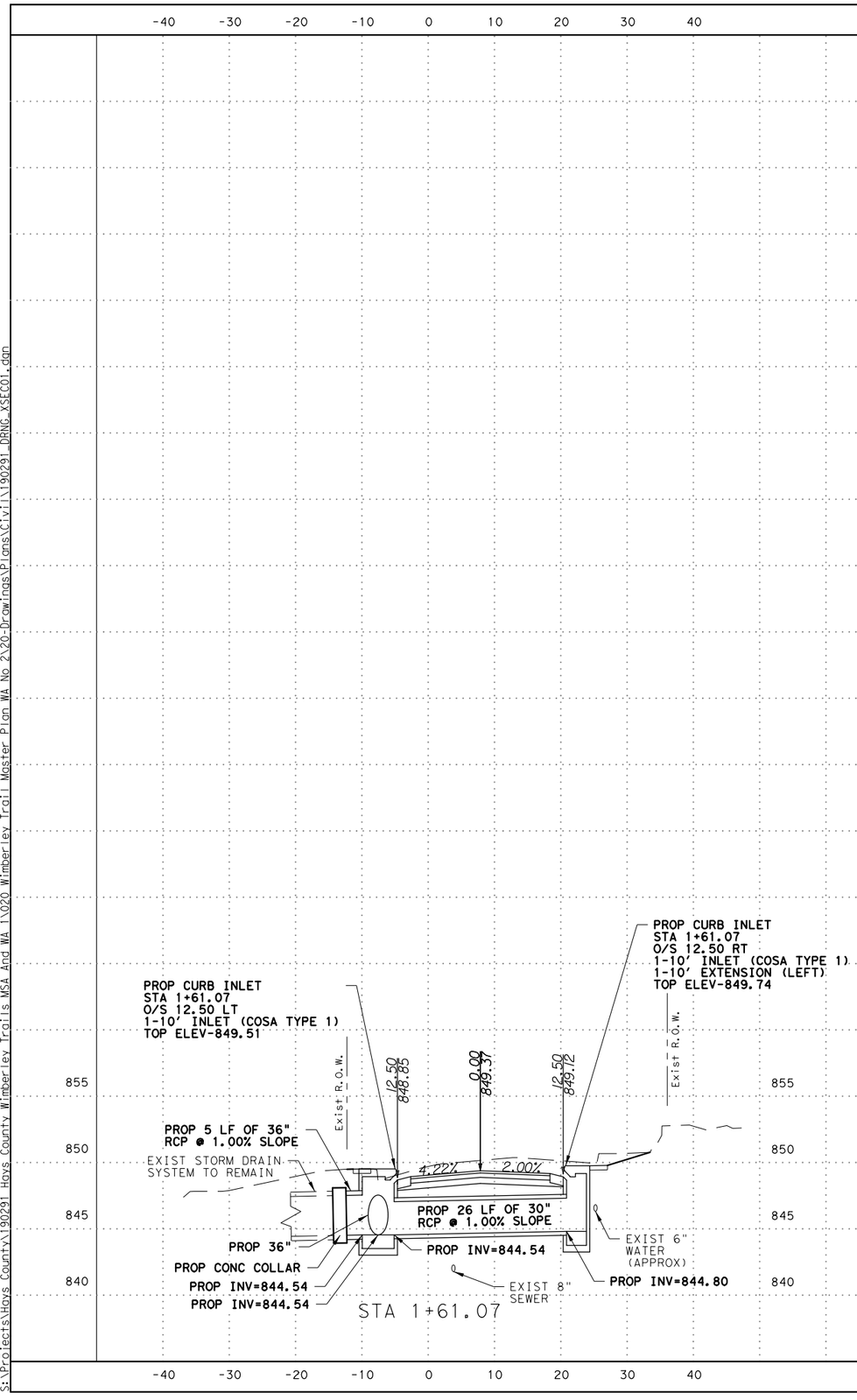
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

DRAINAGE IMPROVEMENTS PLAN AND PROFILE
STA 18+00 TO STA 20+55.42

HORIZ. SCALE: 1"=40' (0 20 40 SCALE IN FEET)
VERT. SCALE: 1"=10' (0 5 10 SCALE IN FEET)

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	98

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRNG06.dgn



Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_DRNG_XSEC01.dgn

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

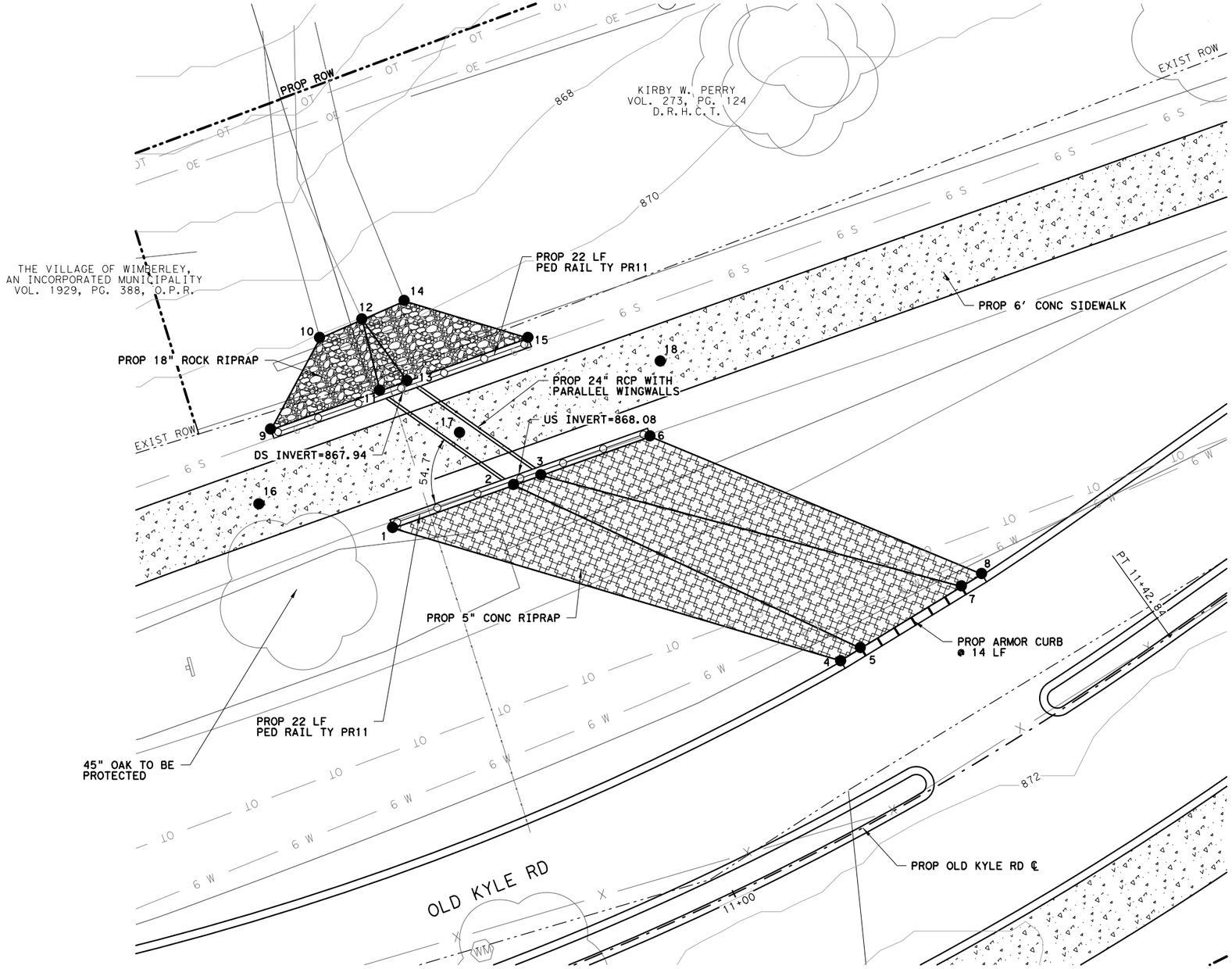
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

STORM DRAIN CROSS-SECTIONS

HORIZ. SCALE: 1"=20'
0 10 20
SCALE IN FEET

VERT. SCALE: 1"=10'
0 5 10
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	99



LEGEND

- 8 S — WASTE WATER
- 8 W — WATER
- G — BURIED GAS
- OT — OH TEL
- UGT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- FO — UNDERGROUND FIBER OPTIC
- UE — UNDERGROUND ELEC
- C — UNDERGROUND CABLE
- X — X — EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST SHRUB
- EXIST TREE
- MATCH EXIST PAVEMENT
- X — DRIVEWAY NO.
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DIRECTION OF FLOW

UPSTREAM CHANNEL				
PT #	STA	O/S	ELEV	DESC
1	10+85.03	39.93 LT	871.08	ELEV
2	10+97.88	39.14 LT	868.08	FL
3	11+00.77	38.89 LT	868.08	FL
4	11+17.61	13.25 LT	870.62	ELEV
5	11+19.72	13.30 LT	869.93	FL
6	11+12.22	37.59 LT	871.08	ELEV
7	11+30.28	13.30 LT	869.94	FL
8	11+32.39	13.25 LT	870.63	ELEV

DOWNSTREM OUTLET				
PT #	STA	O/S	ELEV	DESC
9	10+76.97	51.43 LT	870.37	ELEV
10	10+85.50	57.12 LT	869.18	ELEV
11	10+89.28	51.05 LT	867.94	FL
12	10+90.56	57.17 LT	867.79	FL
13	10+92.35	50.88 LT	867.94	FL
14	10+95.61	57.14 LT	868.88	ELEV
15	11+05.86	49.76 LT	870.42	ELEV

SIDEWALK				
PT #	STA	O/S	ELEV	DESC
16	10+73.12	45.90 LT	871.28	ELEV
17	10+95.12	45.13 LT	871.16	ELEV
18	11+16.78	42.79 LT	871.00	ELEV

NOTE:

1. CONTRACTOR TO REGRADE FOR POSITIVE DRAINAGE

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

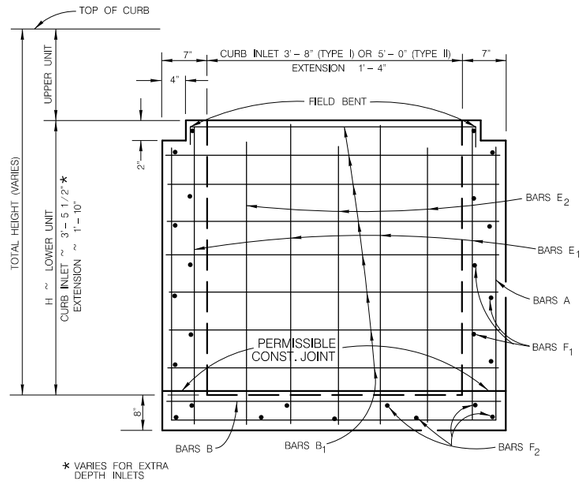
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

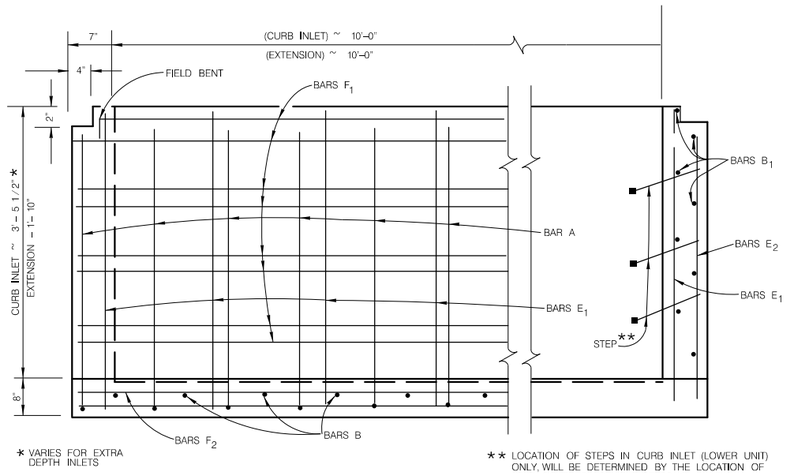
DRAINAGE CULVERT LAYOUT

HORIZ. SCALE: 1"=10'
0 5 10
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	100



SECTION A–A



SECTION B–B

REINFORCING STEEL

LOWER UNIT 10'X 3'-8" (TYPE I)

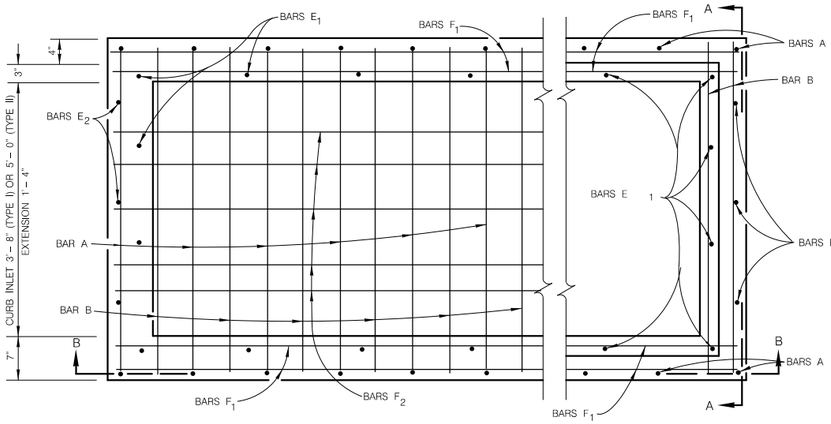
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-6"
B_1	VARIES	#4	12"	4'-6"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	9	#4	—	10'-10"

LOWER UNIT 10'X 5'-0" (TYPE II)

BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'-10"
B_1	VARIES	#4	12"	5'-10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	11	#4	—	10'-10"

GENERAL NOTES

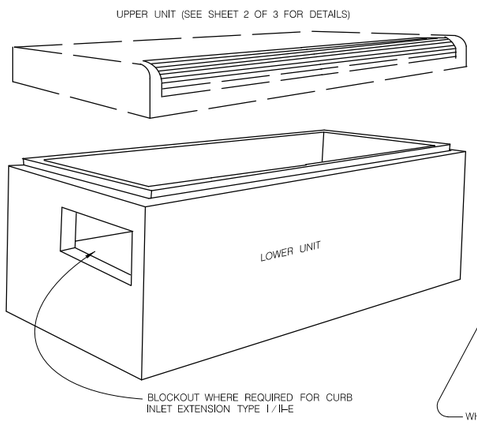
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL–C).
2. TYPE C–II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN–LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A–615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK–FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

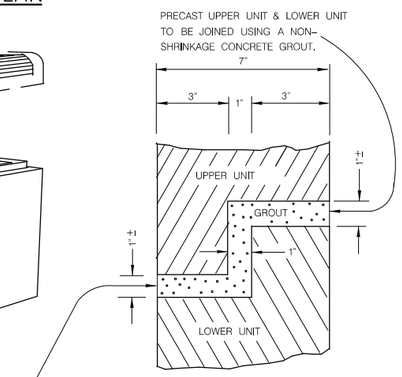


FLOOR STEEL

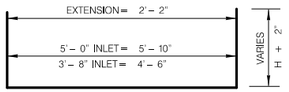
WALL STEEL

PLAN



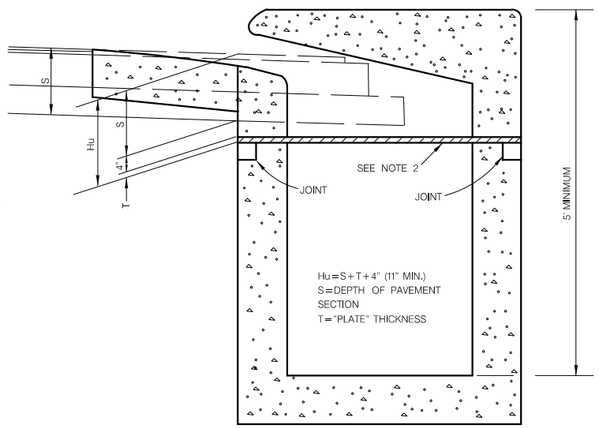


JOINT DETAIL



BARS A

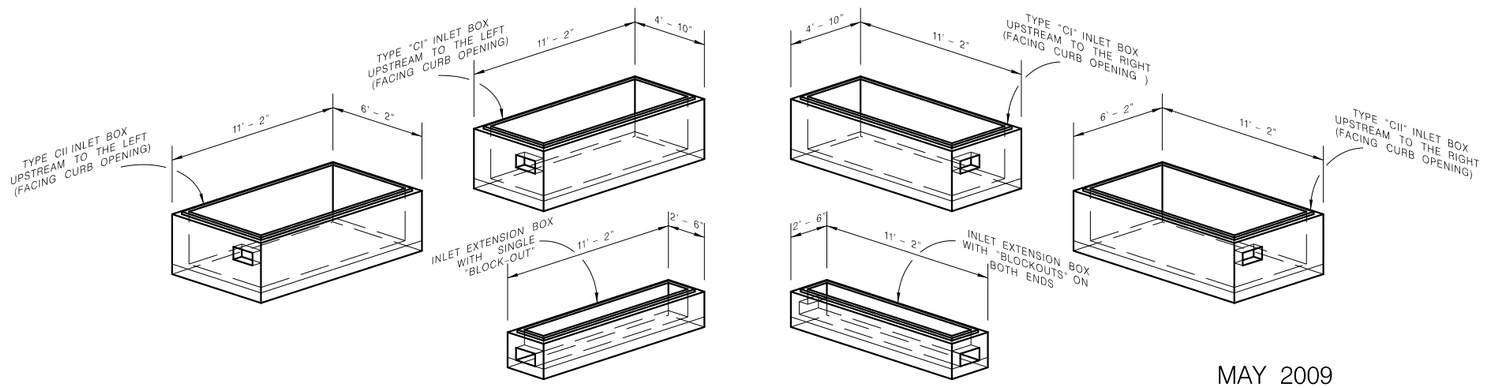
(LOWER UNIT)



PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND /OR EXTENSION.



CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

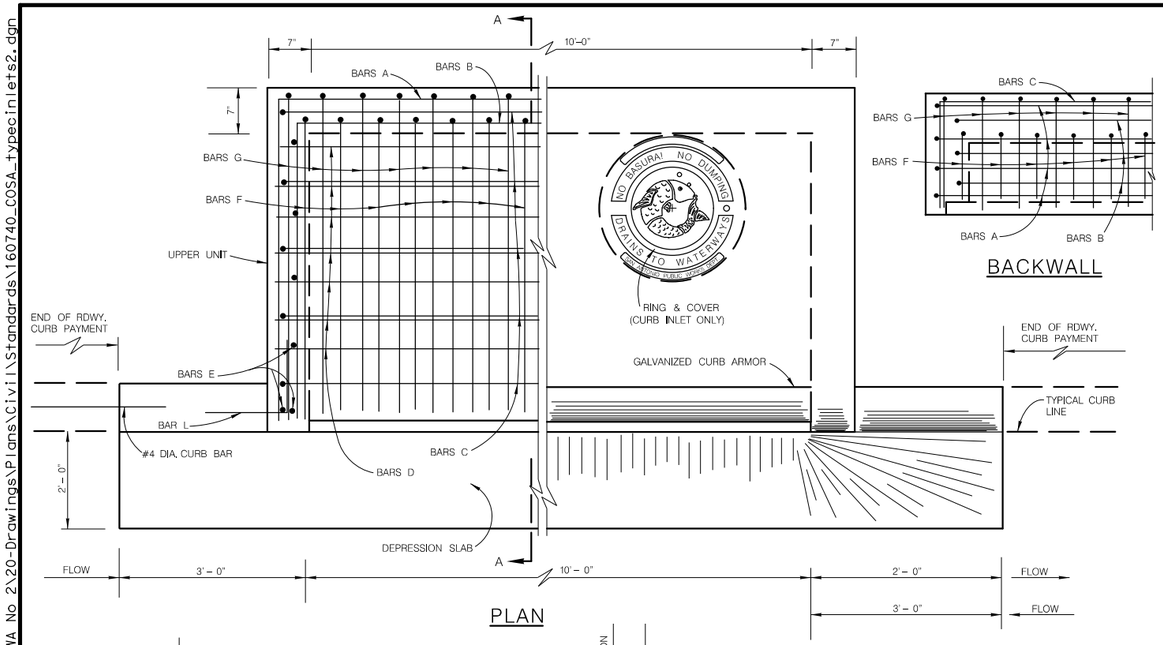
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

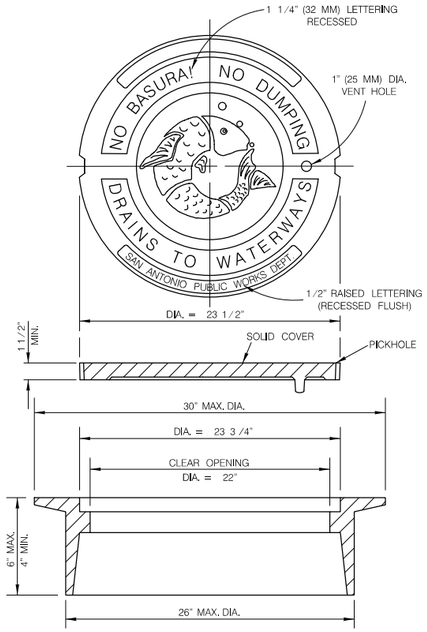
SHEET 1 OF 3

% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.: 101



PLAN

BACKWALL



MANHOLE LID & RING DETAIL
(ITEM 409)

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

REINFORCING STEEL (FOR Hu=11")

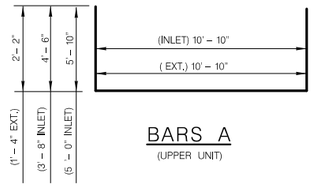
UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'-10"	53
B	3	#4	—	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-8"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'-6"	60
B	3	#4	—	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	231
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					759 LBS.

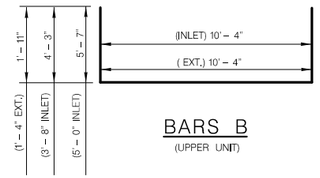
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

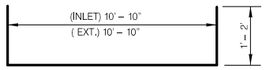
UPPER UNIT (ONLY)		C.Y.
10' X 3'-8"	CURB INLET	1.9
10' X 5'-0"	CURB INLET	2.7
10'	EXTENSION	1.0



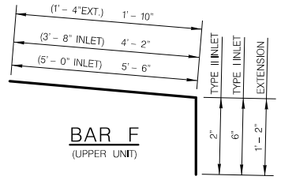
BARS A
(UPPER UNIT)



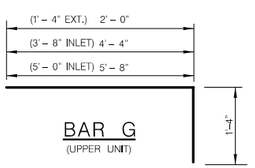
BARS B
(UPPER UNIT)



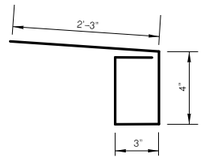
BAR C
(UPPER UNIT)



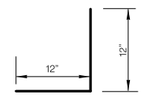
BAR F
(UPPER UNIT)



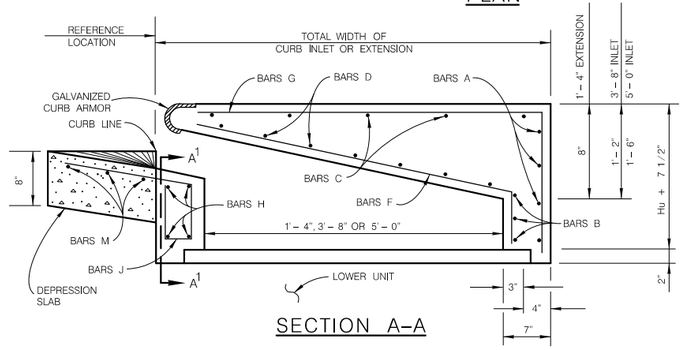
BAR G
(UPPER UNIT)



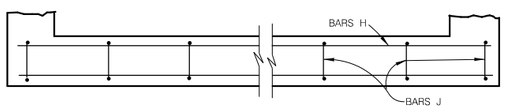
BAR J
(UPPER UNIT)



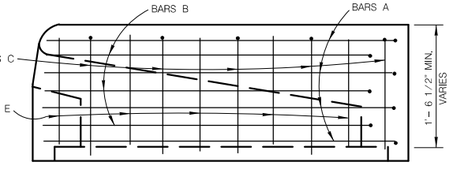
BAR L
(UPPER UNIT)



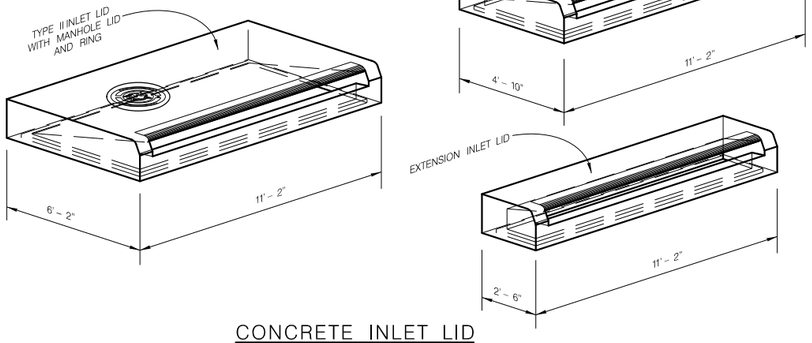
SECTION A-A



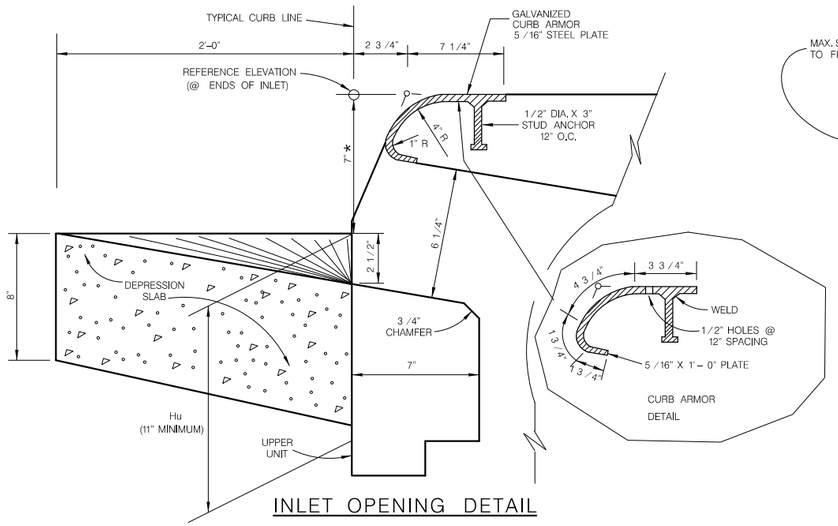
SECTION A^1 - A^1



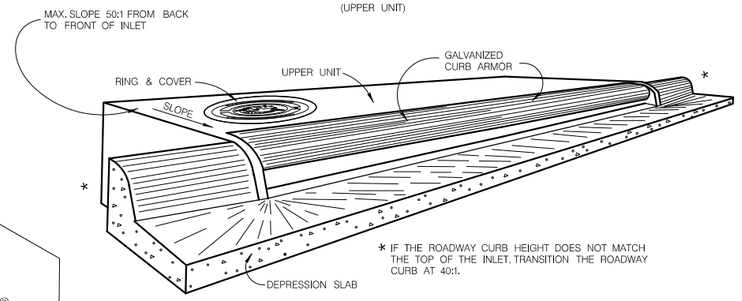
END WALL



CONCRETE INLET LID
CONFIGURATIONS
(UPPER UNITS)



INLET OPENING DETAIL



* IF THE ROADWAY CURB HEIGHT DOES NOT MATCH THE TOP OF THE INLET, TRANSITION THE ROADWAY CURB AT 40:1.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

MAY 2009

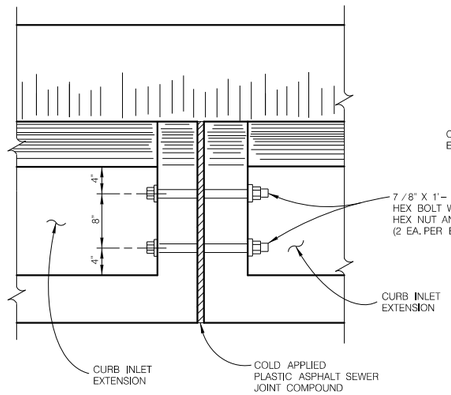
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

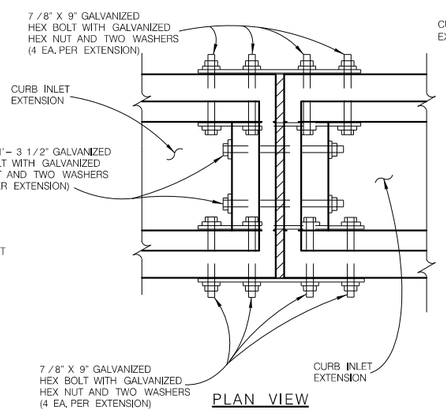
SHEET 2 OF 3

% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.: 102

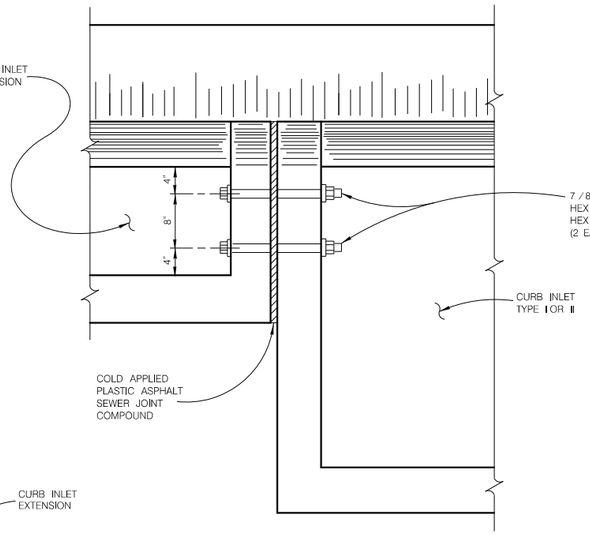
5/10/2024
Plotted by: hhinostroza
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\160740_COSA_typeinlets2.dgn



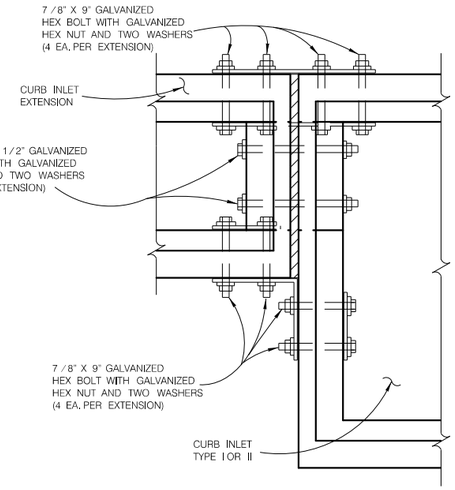
PLAN VIEW



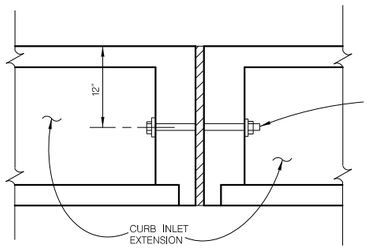
PLAN VIEW



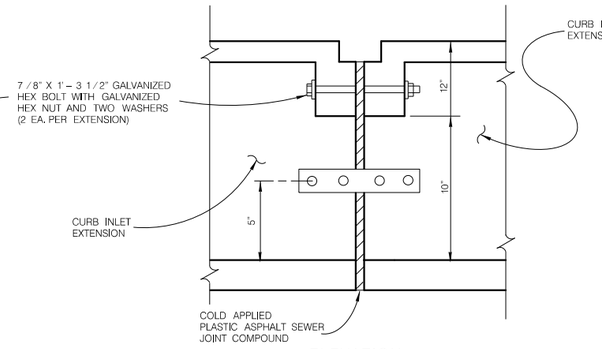
PLAN VIEW



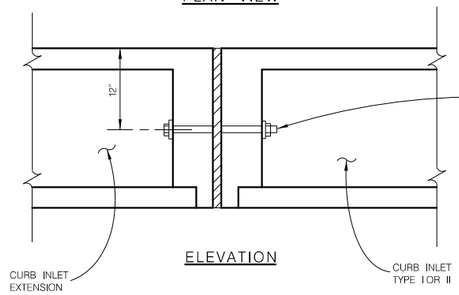
PLAN VIEW



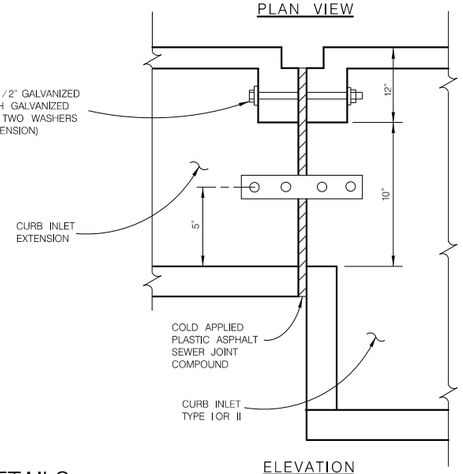
ELEVATION



ELEVATION



ELEVATION



ELEVATION

UPPER UNIT

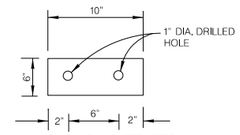
LOWER UNIT

UPPER UNIT

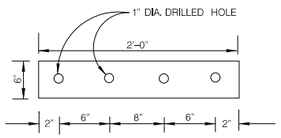
LOWER UNIT

INLET BOLTING DETAILS

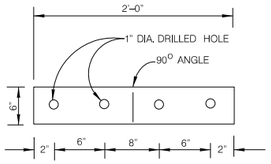
SHOWING EXTENSION TO EXTENSION



3/8" X 6" X 10" GALVANIZED STEEL BOLTING EXTENSION TO CURB INLET
2 EACH REQUIRED

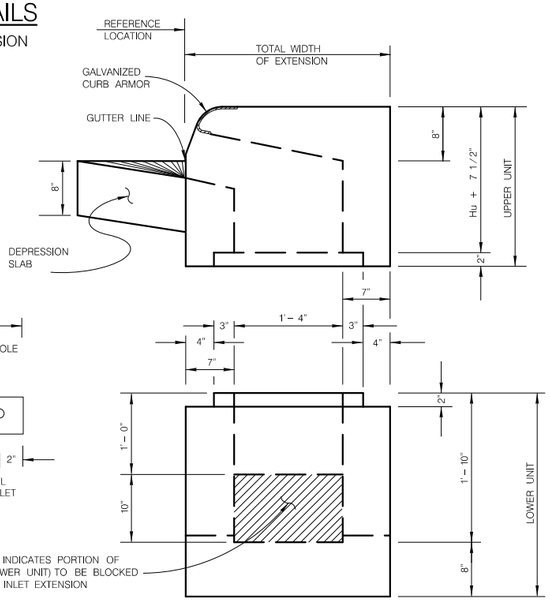


3/8" X 6" X 24" GALVANIZED STEEL BOLTING EXTENSION TO CURB INLET
2 EACH REQUIRED
BOLTING EXTENSION TO EXTENSION
4 EACH REQUIRED



3/8" X 6" X 24" GALVANIZED STEEL BOLTING EXTENSION TO CURB INLET
1 EACH REQUIRED

PLATES

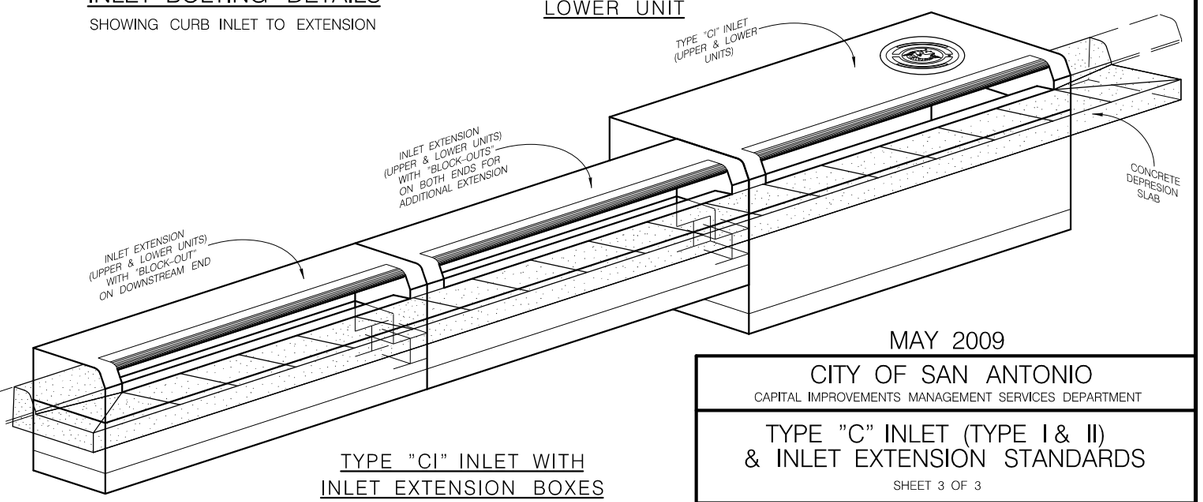


SECTION A-A CURB INLET EXTENSION TYPE E

DIRECTION OF FLOW

INLET BOLTING DETAILS

SHOWING CURB INLET TO EXTENSION



TYPE "CI" INLET WITH INLET EXTENSION BOXES

UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15'-2"	41
B	3	#4	—	14'-2"	28
C	3	#4	11"	13'-2"	26
D	3	#4	6"	10'-10"	22
E	8	#4	11"	1'-2"	6
F	21	#6	6"	2'-0"	63
G	22	#6	6"	3'-4"	110
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6'-2"	49
B	11	#4	12"	2'-2"	16
B_1	3	#4	12"	2'-2"	4
E_1	18	#4	18" ±	2'-3"	27
E_2	4	#4	18" ±	2'-1"	6
F_1	16	#4	12" ±	10'-10"	116
F_2	5	#4	—	10'-10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

MAY 2009

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

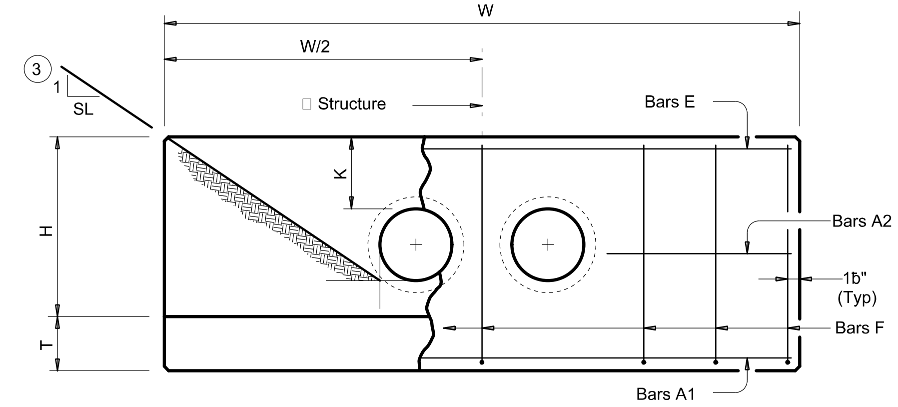
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

SHEET 3 OF 3

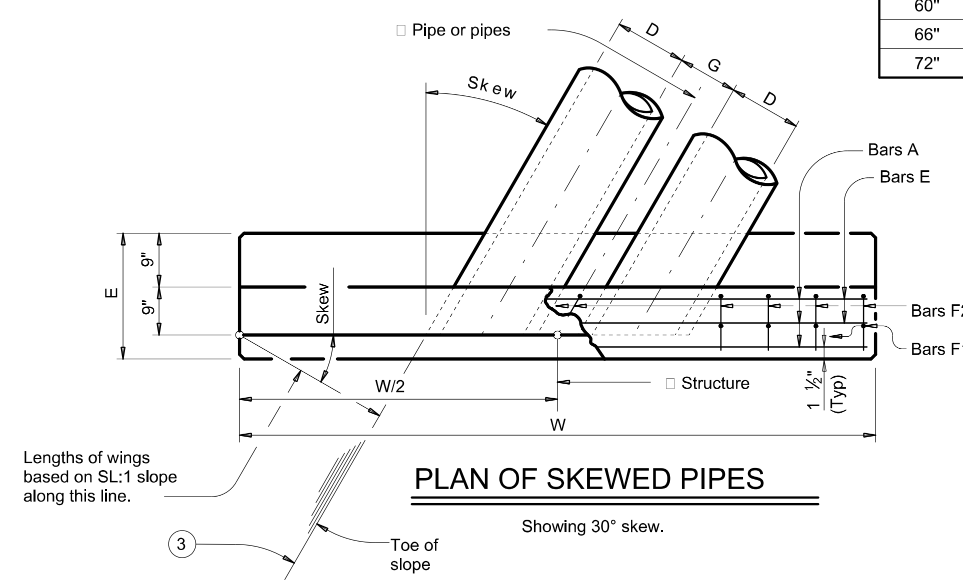
% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.: 103

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	15° Skew						30° Skew						45° Skew					
		Values for One Pipe			Values To Be Added for Each Addt'l Pipe			Values for One Pipe			Values To Be Added for Each Addt'l Pipe			Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' - 4"	124	1.1	1' - 9 ¾"	15	0.2	10' - 5"	130	1.2	2' - 0"	16	0.2	12' - 9"	159	1.5	2' - 5 ¾"	17	0.3
	15"	10' - 7"	136	1.3	2' - 3"	17	0.2	11' - 10"	159	1.5	2' - 6"	18	0.2	14' - 6"	191	1.8	3' - 0 ¾"	20	0.3
	18"	11' - 11"	165	1.5	2' - 9"	19	0.3	13' - 3"	174	1.7	3' - 1"	29	0.3	16' - 3"	207	2.1	3' - 9 ¼"	33	0.4
	21"	13' - 2"	203	1.9	3' - 2 ¼"	31	0.4	14' - 9"	233	2.1	3' - 6 ¾"	33	0.4	18' - 0"	276	2.6	4' - 4 ¼"	36	0.5
	24"	14' - 6"	240	2.1	3' - 8 ¼"	34	0.4	16' - 2"	251	2.4	4' - 1 ¾"	36	0.5	19' - 10"	318	2.9	5' - 0 ¾"	39	0.6
	27"	15' - 9"	258	2.5	4' - 0 ¾"	38	0.5	17' - 7"	292	2.8	4' - 6 ¼"	39	0.6	21' - 7"	342	3.4	5' - 6 ¼"	44	0.7
	30"	17' - 1"	297	2.8	4' - 5 ¾"	40	0.6	19' - 1"	311	3.1	5' - 0"	42	0.6	23' - 4"	388	3.8	6' - 1 ¾"	47	0.8
	33"	18' - 5"	320	3.3	4' - 9 ¾"	43	0.6	20' - 6"	358	3.6	5' - 4 ¾"	46	0.7	25' - 1"	439	4.4	6' - 7 ¼"	51	0.9
	36"	19' - 8"	401	4.0	5' - 3"	47	0.9	21' - 11"	422	4.5	5' - 10 ¾"	50	0.9	26' - 10"	517	5.5	7' - 2 ¼"	55	1.2
	42"	22' - 3"	476	5.0	6' - 0 ¾"	53	1.1	24' - 10"	528	5.6	6' - 8 ¾"	56	1.2	30' - 5"	634	6.9	8' - 3"	76	1.4
	48"	25' - 11"	577	6.6	6' - 9 ¾"	60	1.3	28' - 10"	637	7.3	7' - 7 ¼"	79	1.5	35' - 4"	791	9.0	9' - 3 ¾"	88	1.8
	54"	28' - 6"	711	7.8	7' - 9"	83	1.6	31' - 9"	781	8.7	8' - 8"	81	1.8	38' - 11"	958	10.7	10' - 7 ¼"	97	2.2
	60"	31' - 1"	805	9.2	8' - 6 ¼"	91	1.9	34' - 8"	881	10.2	9' - 6 ¼"	97	2.1	42' - 5"	1,113	12.5	11' - 8"	124	2.6
	66"	33' - 8"	907	10.6	9' - 0 ¾"	98	2.1	37' - 6"	1,028	11.8	10' - 1 ¼"	102	2.4	46' - 0"	1,235	14.5	12' - 4 ¼"	132	2.9
	72"	36' - 3"	1,071	12.1	9' - 8"	105	2.4	40' - 5"	1,207	13.5	10' - 9 ¼"	110	2.6	49' - 6"	1,446	16.6	13' - 2 ¼"	141	3.2
3:1	12"	13' - 6"	178	1.6	1' - 9 ¾"	15	0.2	15' - 0"	189	1.8	2' - 0"	15	0.2	18' - 5"	237	2.2	2' - 5 ¾"	17	0.2
	15"	15' - 3"	212	1.9	2' - 3"	17	0.2	17' - 0"	223	2.1	2' - 6"	17	0.3	20' - 10"	276	2.6	3' - 0 ¾"	20	0.3
	18"	17' - 1"	231	2.3	2' - 9"	19	0.3	19' - 1"	259	2.5	3' - 1"	29	0.3	23' - 4"	318	3.1	3' - 9 ¼"	32	0.4
	21"	18' - 11"	306	2.7	3' - 2 ¼"	31	0.4	21' - 1"	339	3.0	3' - 6 ¾"	33	0.4	25' - 10"	413	3.7	4' - 4 ¼"	36	0.5
	24"	20' - 8"	345	3.1	3' - 8 ¾"	35	0.4	23' - 1"	384	3.5	4' - 1 ¾"	36	0.5	28' - 3"	462	4.2	5' - 0 ¾"	40	0.6
	27"	22' - 6"	376	3.7	4' - 0 ¾"	38	0.5	25' - 1"	438	4.1	4' - 6 ¼"	39	0.6	30' - 9"	522	5.0	5' - 6 ¼"	44	0.7
	30"	24' - 4"	422	4.1	4' - 5 ¾"	40	0.6	27' - 2"	466	4.6	5' - 0"	42	0.6	33' - 3"	578	5.6	6' - 1 ¾"	47	0.8
	33"	26' - 2"	476	4.8	4' - 10"	43	0.6	29' - 2"	522	5.3	5' - 4 ¾"	46	0.7	35' - 9"	644	6.5	6' - 7 ¼"	51	0.9
	36"	27' - 11"	590	5.9	5' - 3"	47	0.8	31' - 2"	645	6.6	5' - 10 ¾"	50	0.9	38' - 2"	787	8.0	7' - 2 ¼"	56	1.2
	42"	31' - 7"	684	7.3	6' - 0 ¼"	53	1.1	35' - 3"	776	8.2	6' - 8 ¾"	56	1.2	43' - 2"	933	10.0	8' - 3"	79	1.4
	48"	36' - 9"	880	9.6	6' - 9 ¾"	61	1.3	41' - 0"	953	10.7	7' - 7 ¼"	81	1.5	50' - 2"	1,166	13.1	9' - 3 ¾"	88	1.8
	54"	40' - 5"	1,065	11.4	7' - 9"	85	1.6	45' - 0"	1,185	12.7	8' - 8"	89	1.8	55' - 2"	1,435	15.5	10' - 7 ¼"	97	2.2
	60"	44' - 0"	1,224	13.3	8' - 6 ¼"	93	1.9	49' - 1"	1,356	14.8	9' - 6 ¼"	96	2.1	60' - 1"	1,635	18.2	11' - 8"	124	2.6
	66"	47' - 7"	1,357	15.4	9' - 1"	98	2.1	53' - 1"	1,497	17.2	10' - 1 ¼"	103	2.3	65' - 1"	1,892	21.1	12' - 4 ¼"	130	2.9
	72"	51' - 3"	1,624	17.7	9' - 8"	105	2.3	57' - 2"	1,787	19.7	10' - 9 ¼"	109	2.6	70' - 0"	2,218	24.1	13' - 2 ¼"	139	3.2
4:1	12"	17' - 7"	232	2.1	1' - 9 ¾"	15	0.2	19' - 8"	259	2.4	2' - 0"	16	0.2	24' - 0"	314	2.9	2' - 5 ¾"	18	0.2
	15"	19' - 11"	272	2.5	2' - 3"	17	0.2	22' - 3"	301	2.8	2' - 6"	18	0.3	27' - 3"	361	3.5	3' - 0 ¾"	21	0.3
	18"	22' - 3"	313	3.0	2' - 9"	19	0.3	24' - 10"	344	3.3	3' - 1"	29	0.3	30' - 5"	427	4.0	3' - 9 ¼"	32	0.4
	21"	24' - 7"	407	3.6	3' - 2 ¼"	31	0.4	27' - 5"	446	4.0	3' - 6 ¾"	33	0.4	33' - 7"	549	4.9	4' - 4 ¼"	36	0.5
	24"	26' - 11"	455	4.1	3' - 8 ¾"	35	0.4	30' - 0"	499	4.5	4' - 1 ¾"	36	0.5	36' - 9"	609	5.6	5' - 0 ¾"	40	0.6
	27"	29' - 3"	514	4.8	4' - 0 ¾"	38	0.5	32' - 7"	562	5.4	4' - 6 ¼"	40	0.6	39' - 11"	703	6.6	5' - 6 ¼"	43	0.7
	30"	31' - 7"	568	5.4	4' - 5 ¾"	40	0.6	35' - 3"	620	6.0	5' - 0"	42	0.6	43' - 2"	768	7.4	6' - 1 ¾"	49	0.8
	33"	33' - 11"	634	6.2	4' - 10"	43	0.7	37' - 10"	710	7.0	5' - 4 ¾"	46	0.7	46' - 4"	848	8.5	6' - 7 ¼"	52	0.9
	36"	36' - 3"	776	7.7	5' - 3"	48	0.9	40' - 5"	868	8.6	5' - 10 ¾"	49	0.9	49' - 6"	1,058	10.6	7' - 2 ¼"	56	1.1
	42"	40' - 11"	921	9.6	6' - 0 ¼"	53	1.0	45' - 7"	1,022	10.7	6' - 8 ¾"	57	1.2	55' - 10"	1,262	13.1	8' - 3"	78	1.4
	48"	47' - 7"	1,152	12.6	6' - 10"	61	1.3	53' - 1"	1,268	14.0	7' - 7 ¼"	80	1.5	65' - 1"	1,587	17.2	9' - 3 ¾"	86	1.8
	54"	52' - 3"	1,416	14.9	7' - 9 ¼"	86	1.6	58' - 4"	1,589	16.6	8' - 8"	89	1.8	71' - 5"	1,924	20.4	10' - 7 ¼"	95	2.2
	60"	56' - 11"	1,606	17.5	8' - 6 ¾"	92	1.9	63' - 6"	1,806	19.5	9' - 6 ¼"	95	2.1	77' - 9"	2,192	23.9	11' - 8"	122	2.6
	66"	61' - 7"	1,819	20.2	9' - 0 ¾"	97	2.1	68' - 8"	2,019	22.5	10' - 1 ¼"	101	2.4	84' - 2"	2,472	27.6	12' - 4 ¼"	131	2.9
	72"	66' - 3"	2,150	23.2	9' - 8"	104	2.4	73' - 11"	2,379	25.9	10' - 9 ¼"	108	2.6	90' - 6"	2,937	31.7	13' - 2 ¼"	138	3.2
6:1	12"	25' - 11"	342	3.1	1' - 9 ¾"	15	0.2	28' - 10"	374	3.5	2' - 0"	16	0.2	35' - 4"	456	4.3	2' - 5 ¾"	17	0.2
	15"	29' - 3"	390	3.7	2' - 3"	17	0.2	32' - 7"	442	4.2	2' - 6"	18	0.2	39' - 11"	549	5.1	3' - 0 ¾"	20	0.3
	18"	32' - 7"	459	4.4	2' - 9"	20	0.3	36' - 4"	515	4.9	3' - 1"	29	0.3	44' - 7"	629	6.0	3' - 9 ¼"	33	0.4
	21"	36' - 0"	608	5.3	3' - 2 ¼"	31	0.4	40' - 2"	660	5.9	3' - 6 ¾"	33	0.4	49' - 2"	823	7.2	4' - 4 ¼"	38	0.5
	24"	39' - 4"	672	6.0	3' - 8 ¾"	35	0.4	43' - 11"	748	6.7	4' - 1 ¾"	36	0.5	53' - 9"	920	8.2	5' - 0 ¾"	42	0.6
	27"	42' - 8"	770	7.1	4' - 0 ¾"	38	0.5	47' - 8"	852	8.0	4' - 6 ¼"	41	0.5	58' - 4"	1,039	9.7	5' - 6 ¼"	45	0.7
	30"	46' - 1"	839	8.0	4' - 5 ¾"	40	0.6	51' - 5"	949	8.9	5' - 0"	44	0.6	62' - 11"	1,162	10.9	6' - 1 ¾"	48	0.8
	33"	49' - 5"	947	9.2	4' - 10"	45	0.7	55' - 2"	1,040	10.3	5' - 4 ¾"	48	0.7	67' - 6"	1,292	12.6	6' - 7 ¼"	50	0.9
	36"	52' - 10"	1,151	11.4	5' - 3"	49	0.8	58' - 11"	1,287	12.7	5' - 10 ¾"	51	1.0	72' - 1"	1,583	15.6	7' - 2 ¼"	55	1.1
	42"	59' - 6"	1,365	14.2	6' - 0 ¼"	55	1.0	66' - 5"	1,530	15.8	6' - 8 ¾"	57	1.2	81' - 4"	1,875	19.4	8' - 3"	76	1.4
	48"	69' - 4"	1,737	18.5	6' - 10"	59	1.3	77' - 4"	1,942	20.7	7' - 7 ¼"	79	1.5	94' - 9"	2,368	25.3	9' - 3 ¾"	86	1.8
	54"	76' - 1"	2,138	22.0	7' - 9 ¼"	83	1.6	84' - 10"	2,378	24.6	8' - 8"	87	1.8	103' - 11"	2,912	30.1	10' - 7 ¼"	95	2.2
	60"	82' - 10"	2,426	25.8	8' - 6 ¾"	90	1.9	92' - 5"	2,681	28.8	9' - 6 ¼"	94	2.1	113' - 2"	3,294	35.3	11' - 8"	122	2.6
	66"	89' - 7"	2,730	29.9	9' - 0 ¾"	96	2.1	99' - 11"	3,038	33.3	10' - 1 ¼"	101	2.4	122' - 4"	3,697	40.8	12' - 4 ¼"	130	2.9
	72"	96' - 3"	3,218	34.2	9' - 8"	102	2.4	107' - 5"	3,580	38.2	10' - 9 ¼"	108	2.6	131' - 6"	4,372	46.8	13' - 2 ¼"	139	3.2

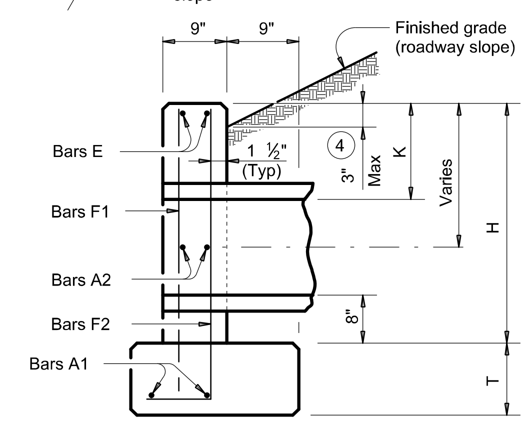


ELEVATION



PLAN OF SKEWED PIPES

Showing 30° skew.



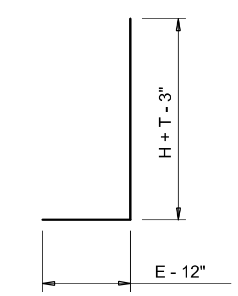
SECTION AT CENTER OF PIPE

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (5)	H	T	E
12"	0' - 9"	1' - 0"	2' - 8"	0' - 9"	1' - 9"
15"	0' - 11"	1' - 0"	2' - 11"	0' - 9"	1' - 9"
18"	1' - 2"	1' - 0"	3' - 2"	0' - 9"	1' - 9"
21"	1' - 4"	1' - 0"	3' - 5"	0' - 9"	2' - 0"
24"	1' - 7"	1' - 0"	3' - 8"	0' - 9"	2' - 0"
27"	1' - 8"	1' - 0"	3' - 11"	0' - 9"	2' - 3"
30"	1' - 10"	1' - 0"	4' - 2"	0' - 9"	2' - 3"
33"	1' - 11"	1' - 0"	4' - 5"	0' - 9"	2' - 6"
36"	2' - 1"	1' - 0"	4' - 8"	1' - 0"	2' - 6"
42"	2' - 4"	1' - 0"	5' - 2"	1' - 0"	2' - 9"
48"	2' - 7"	1' - 3"	5' - 11"	1' - 0"	3' - 0"
54"	3' - 0"	1' - 3"	6' - 5"	1' - 0"	3' - 3"
60"	3' - 3"	1' - 3"	6' - 11"	1' - 0"	3' - 6"
66"	3' - 3"	1' - 3"	7' - 5"	1' - 0"	3' - 9"
72"	3' - 4"	1' - 3"	7' - 11"	1' - 0"	4' - 0"

TABLE OF REINFORCING STEEL (6)

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' - 6"	~
E	#5	~	2
F	#5	1' - 0"	~



BARS F2

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

(1) Total quantites include one 3'-1" lap for bars over 60' in length.

(2) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(3) Indicated slope is perpendicular to centerline pipe or pipes.

(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

(6) Quantities shown are for one structure end only (one headwall).

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR SKEWED PIPE CULVERTS

CH-PW-S

FILE: chpwsste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO. 104

5/10/2024
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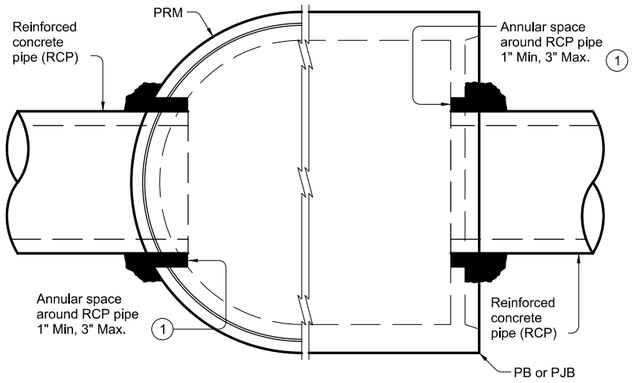
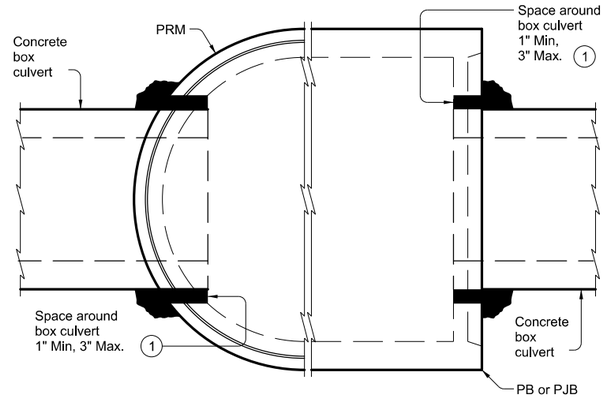


PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF PLAN



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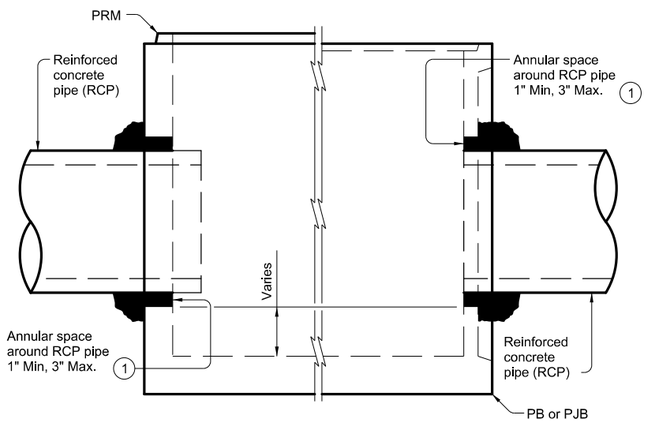
PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

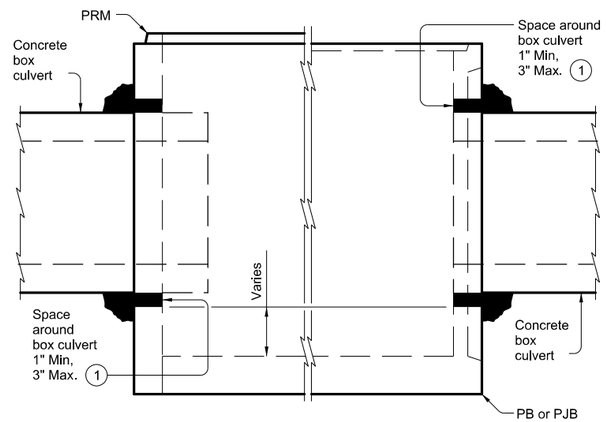
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

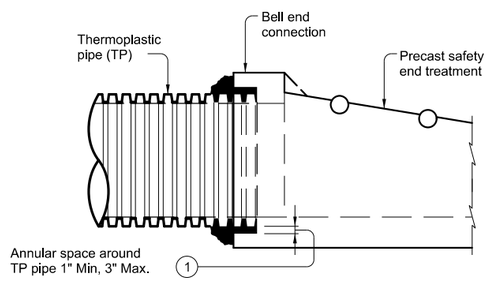
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

(1) Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.

Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

GENERAL NOTES:

See applicable standards for notes and details not shown:
- Precast Base (PB)
- Precast Junction Box (PJB)
- Precast Round Manhole (PRM)
- Precast Safety End Treatments C/D Square (PSET-SC)
- Precast Safety End Treatments P/D Square (PSET-SP)

Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains".

Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe".

Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.

Payment for grouted connections is considered subsidiary to other bid Items.

Texas Department of Transportation

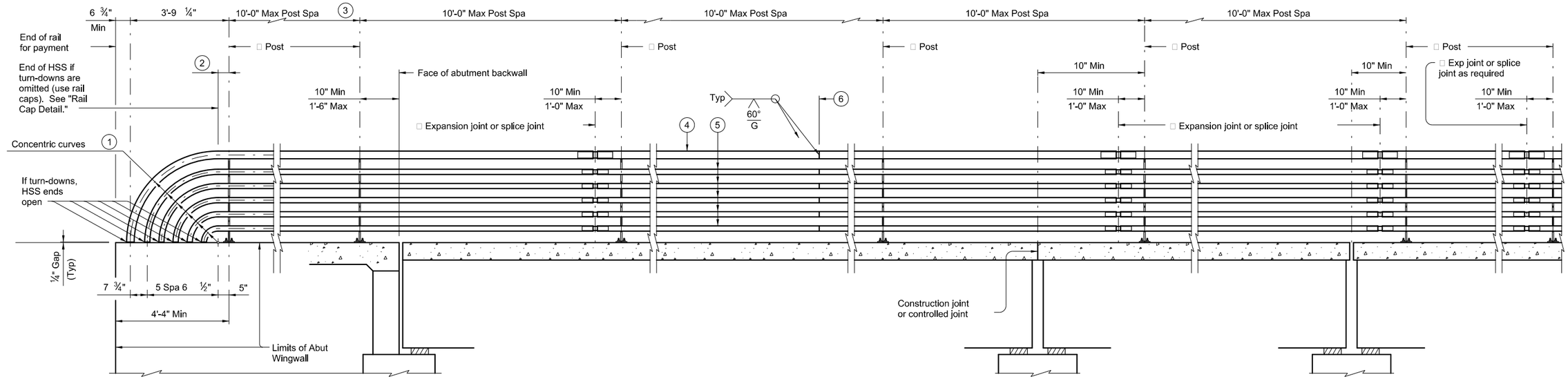
Bridge Division Standard

PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

FILE: pbgcstd1-20.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				105

DATE:
FILE:

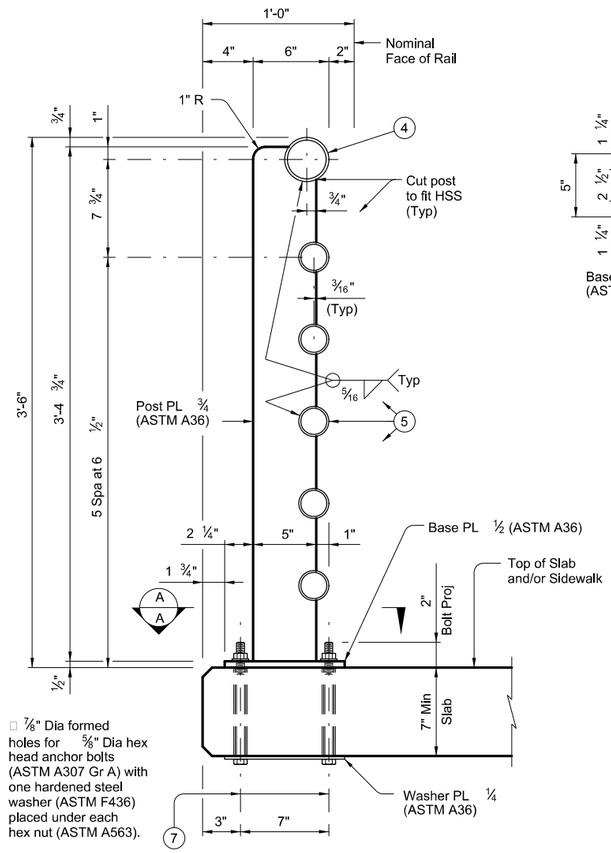


AT ABUTMENTS

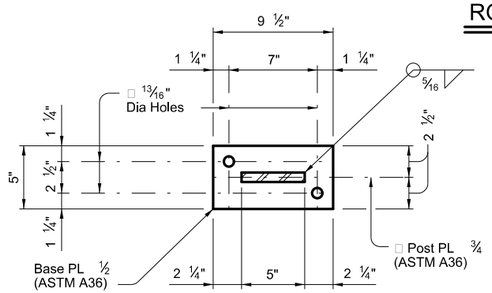
AT BENTS WITHOUT SLAB EXP JOINTS

AT BENTS WITH SLAB EXP JOINTS

ROADWAY ELEVATION OF RAIL

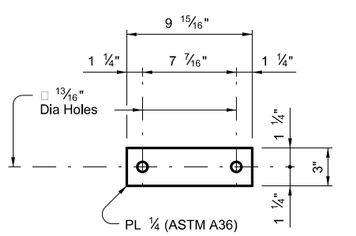


ON BRIDGE SLAB

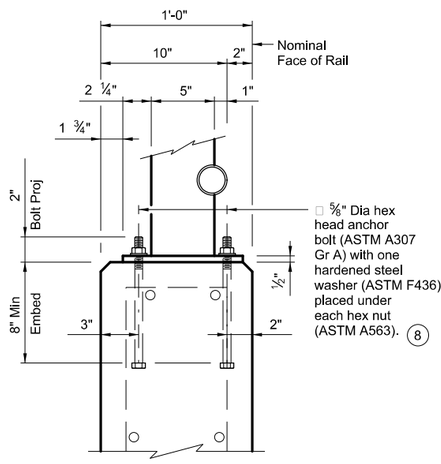


SECTION A-A

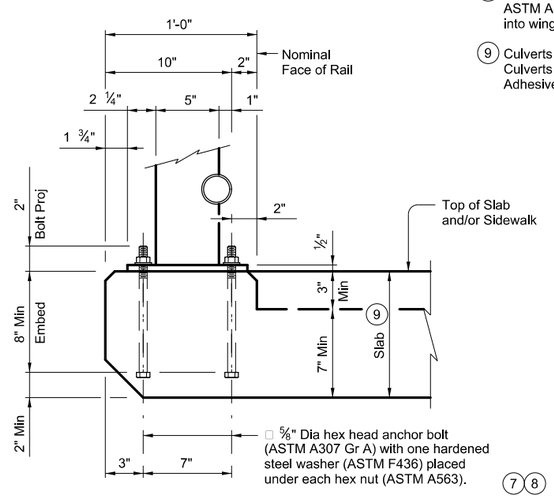
Showing base plate detail.



WASHER PLATE DETAIL



ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS



ON CULVERTS WITH OR WITHOUT CURBS

Used with 1'-0" Min thick parallel wings on culverts.

SECTIONS THRU RAIL

1. Portion of railing with turn-downs to be used or omitted as indicated on Bridge Layout.
2. 10" Min ~ 1'-6" Max if turn-downs are omitted.
3. Min of 2 posts required on wingwall.
4. HSS 3.500 x 0.216 (Rail Member)
5. HSS 2.375 x 0.154 (Rail Member)
6. One shop splice per panel is permitted (with minimum 85 percent penetration). The weld may be square groove or single V groove. Grind smooth.
7. At Contractor's option, adhesive anchors may be used. Adhesive anchors must be ⅝" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 5" into slabs or culverts without curbs. See "Material Notes" for adhesive anchor requirements.
8. At Contractor's option, adhesive anchors may be used. Adhesive anchors must be ⅝" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 7" into wingwalls or culverts with curbs. See "Material Notes" for adhesive anchor requirements.
9. Culverts without curbs for cast-in-place anchor bolts require a 10" Min slab thickness. Culverts with curbs for cast-in-place anchor bolts require a curb plus slab thickness of 10" Min. Adhesive anchors may be used with a 7" Min slab thickness or culverts with curbs.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PEDESTRIAN RAIL

TYPE PR11

FILE: RL-PR11-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR	
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REVISIONS					
	DIST	COUNTY		SHEET NO.	

DATE:
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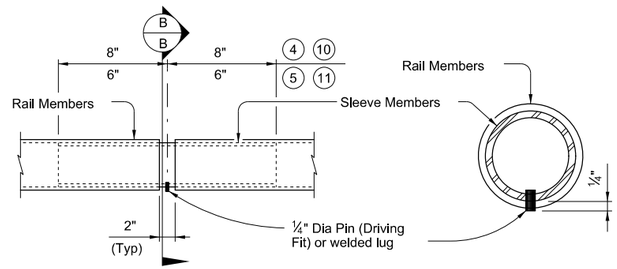
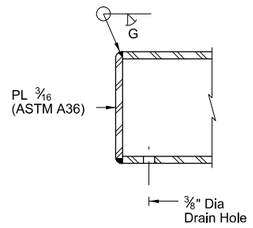


AT SPLICES OR EXP JTS

SECTION B-B

PIPE SPLICE DETAIL



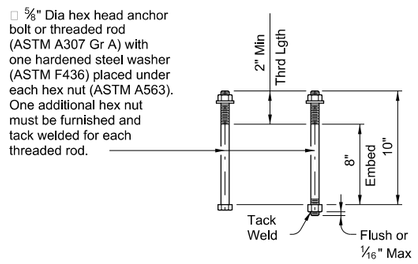
RAIL CAP DETAIL

(4) HSS 3.500 x 0.216 (Rail Member)

(5) HSS 2.375 x 0.154 (Rail Member)

(10) HSS 2.875 x 0.203 (Sleeve Member)

(11) HSS 1.900 x 0.145 (Sleeve Member)



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

CONSTRUCTION NOTES:

Panel lengths of railing must be attached to a minimum of three posts except at abutment wingwalls.

At the Contractor's option anchor bolts may be an adhesive anchorage system. See "Material Notes."

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

Face of rail and posts must be vertical transversely unless otherwise approved. Posts must be perpendicular to adjacent roadway grade. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.

For curved railing applications, fabricate the HSS rail to the radius when the radius is 600' or less. Submit shop drawings for approval when tubes are required to be fabricated to a radius. Shop drawings must be submitted to the Engineer for approval.

Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

MATERIAL NOTES:

Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.

Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel." Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.

Anchor bolts must be ⅝" Dia ASTM A307 Gr A with one hardened steel washer (ASTM F436) placed under each hex nut or ASTM A307 Gr A threaded rods with one tack welded hex nut each and with one hex nut with one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements.

Optional adhesive anchorage system must be ⅝" Dia ASTM A307 Gr A fully threaded rods with one hex nut and one hardened steel washer (ASTM F436). Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into slab, wingwalls, or culvert curbs using a Type III, Class C, D, E, or F anchor adhesive. Anchor adhesive chosen must be able to achieve a nominal bond strength in tension, Na, of a single anchor of 10 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

For all rails, submit erection drawings showing section lengths, splice locations, rail post spacing and anchor bolt setting for approval.

Average weight of railing is 30 plf.

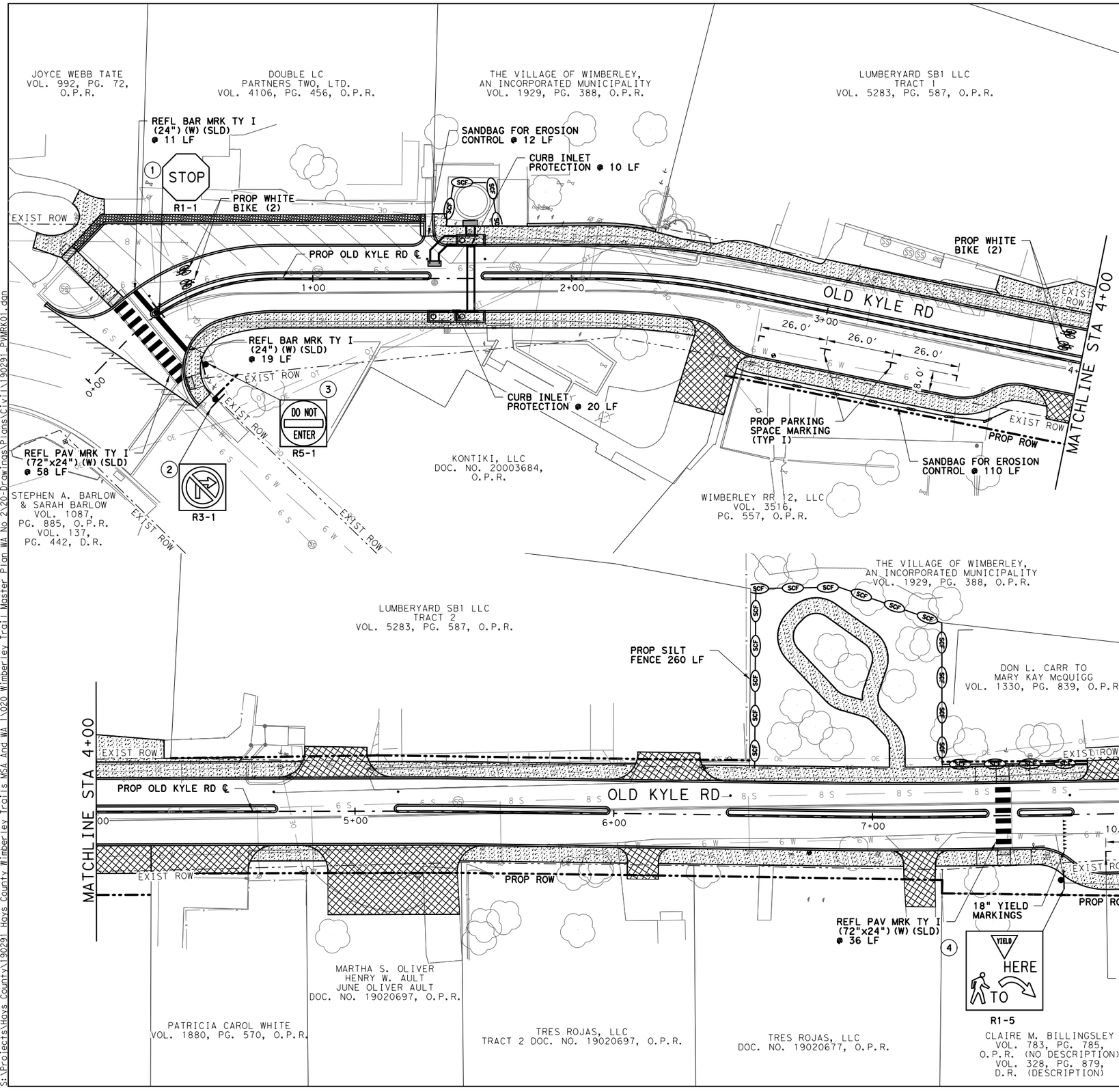
Texas Department of Transportation

Bridge Division Standard

PEDESTRIAN RAIL

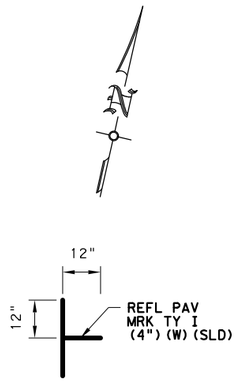
TYPE PR11

FILE: RL-PR11-19.dgn	DN: TAR		CK: TBE	DW: JTR		CK: TAR
©TxDOT September 2019	CONT	SECT	JOB		HIGHWAY	
REVISIONS						
	DIST	COUNTY				SHEET NO.



LEGEND

- 8 S — WASTE WATER
- 8 W — WATER
- G — BURIED GAS
- OT — OH TEL
- UGT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- FO — UNDERGROUND FIBER OPTIC
- UE — UNDERGROUND ELEC
- C — UNDERGROUND CABLE
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST SHRUB
- EXIST TREE
- MATCH EXIST PAVEMENT
- (X) DRIVEWAY NO.
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DIRECTION OF FLOW
- SCF — SILT CONTROL FENCE
- SANDBAG FOR EROSION CONTROL
- RFD — ROCK FILTER DAM



PARKING SPACE MARKING DETAIL

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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San Antonio, Texas 78217
Phone: (210) 822-2232
www.Ardurra.com

Engineering License #F-10053

Ardurra Group, Inc. (dba LNV, LLC)
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PAVEMENT MARKING AND SW3P LAYOUT

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	108

Plotted by: hhinostroza
5/10/2024
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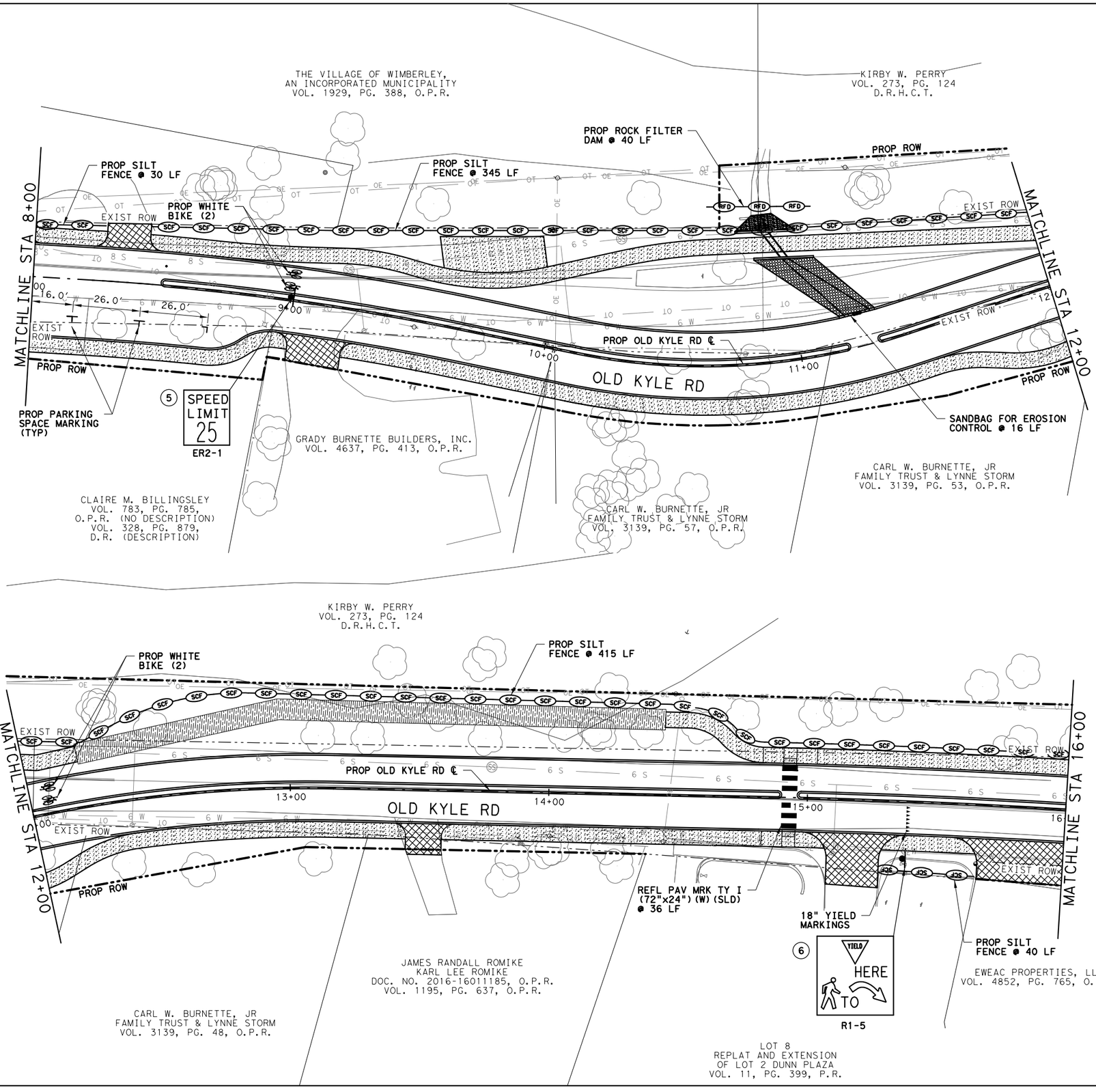

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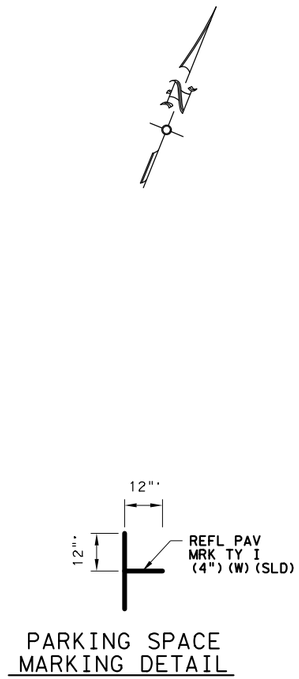
- SANBAG FOR EROSION CONTROL
- RFD ROCK FILTER DAM



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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

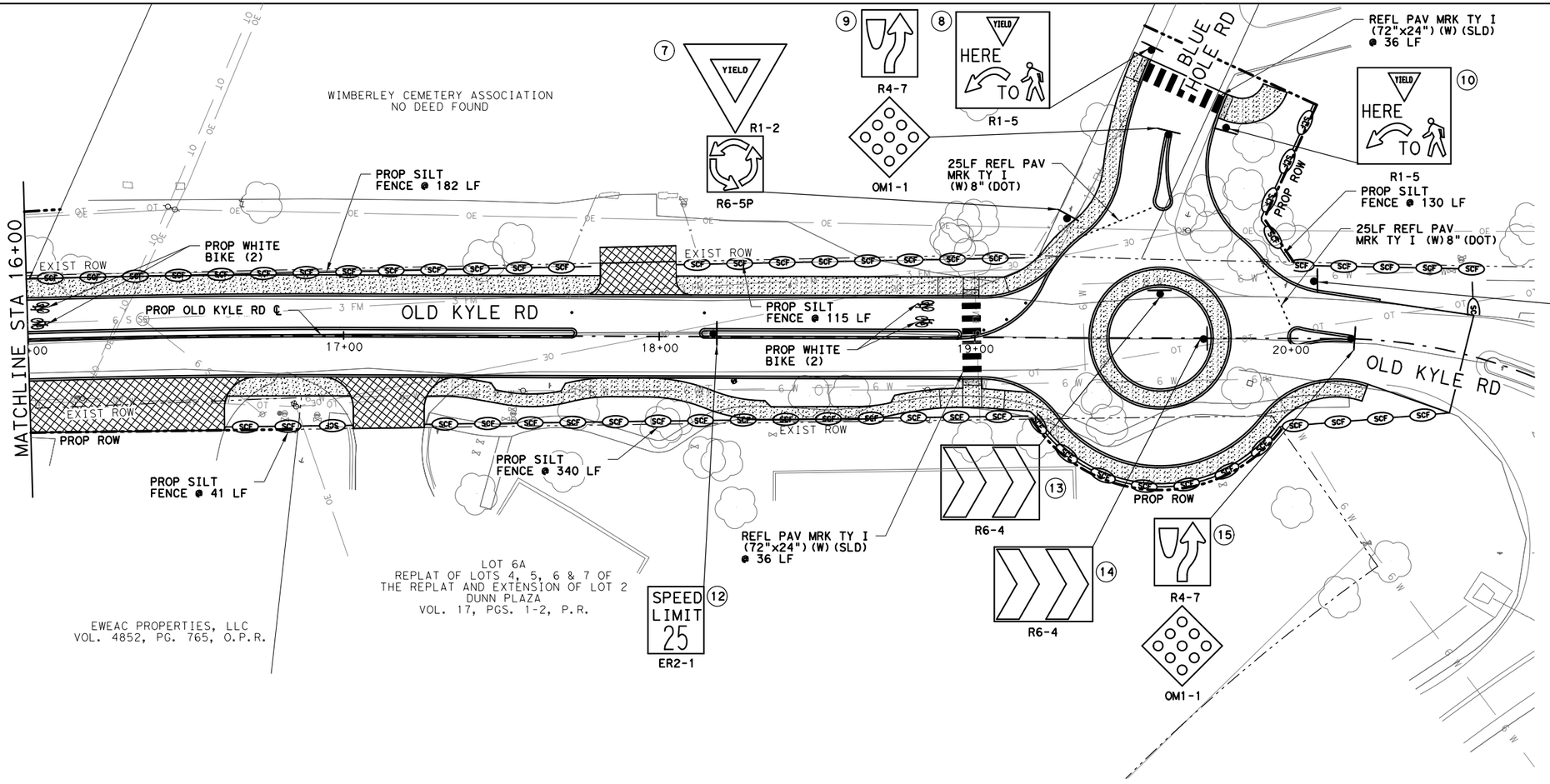
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PAVEMENT MARKING AND SW3P LAYOUT

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	109

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_PWMRK02.dgn



LEGEND

- 8 S — WASTE WATER
- 8 W — WATER
- G — BURIED GAS
- OT — OH TEL
- UGT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- FO — UNDERGROUND FIBER OPTIC
- UE — UNDERGROUND ELEC
- C — UNDERGROUND CABLE
- X — X — EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST SHRUB
- EXIST TREE
- MATCH EXIST PAVEMENT
- (X) DRIVEWAY NO.
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DIRECTION OF FLOW
- SCF — SILT CONTROL FENCE
- EROSION CONTROL LOG
- RFD — ROCK FILTER DAM

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BY: BRYAN J. SPINA, P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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Engineering License #F-10053
Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PAVEMENT MARKING AND SW3P LAYOUT

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	110

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_PWMRK03.dgn

SUMMARY OF SMALL SIGNS					SM RD SGN ASSM TY XXXXX (X) XX (X)			
					POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION
SHT. NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	FRP=FIBERGLASS REINFORCED PLASTIC PIPE TWT=THIN-WALLED TUBING 10BWG=10 BWG TUBING S80=SCHEDULE 80 PIPE	(1 OR 2)	UA=UNIVERSAL CONC UB=UNIVERSAL BOLT SA=SLIP CONC SB=SLIP BOLT WS=WEDGE STEEL WP=WEDGEPLASTIC	P=PREFAB "PLAIN" T=PREFAB "T" U=PREFAB "U"
105	1	R1-1	STOP	36"X36"	TWT	1	WS	T
	2	R3-1	NO RIGHT TURN	36"X36"	TWT	1	WS	P
	3	R5-1	DO NOT ENTER	36"X36"	TWT	1	WS	P
	4	R1-5R	YIELD HERE TO PEDESTRIANS	36"X36"	TWT	1	WS	P
106	5	ER2-1	SPEED LIMIT	24"X30"	TWT	1	WS	P
	6	R1-5R	YIELD HERE TO PEDESTRIANS	36"X36"	TWT	1	WS	P
107	7	R1-2	YIELD	36"X36"	TWT	1	WS	P
		R6-5P	ROUNDABOUT CIRCULATION (PLAQUE)	30"X30"				
	8	R1-5L	YIELD HERE TO PEDESTRIANS	36"X36"	TWT	1	WS	P
	9	R4--7	KEEP RIGHT (SYMBOL)	30"X24"	TWT	1	WS	P
		OM1-1	YELLOW REFLECTOR WARNING SIGN	18"X18"				
	10	R1-5L	YIELD HERE TO PEDESTRIANS	36"X36"	TWT	1	WS	P
	11	R1-2	YIELD	36"X36"	TWT	1	WS	P
		R6-5P	ROUNDABOUT CIRCULATION (PLAQUE)	30"X30"				
	12	ER2-1	SPEED LIMIT	24"X30"	TWT	1	WS	P
	13	R6-4	ROUNDABOUT DIRECTIONAL (SYMBOL) SIGN	24"X30'	TWT	1	WS	P
	14	R6-4	ROUNDABOUT DIRECTIONAL (SYMBOL) SIGN	24"X30'	TWT	1	WS	P
	15	R4-7	KEEP RIGHT (SYMBOL)	30"X24"	TWT	1	WS	P

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

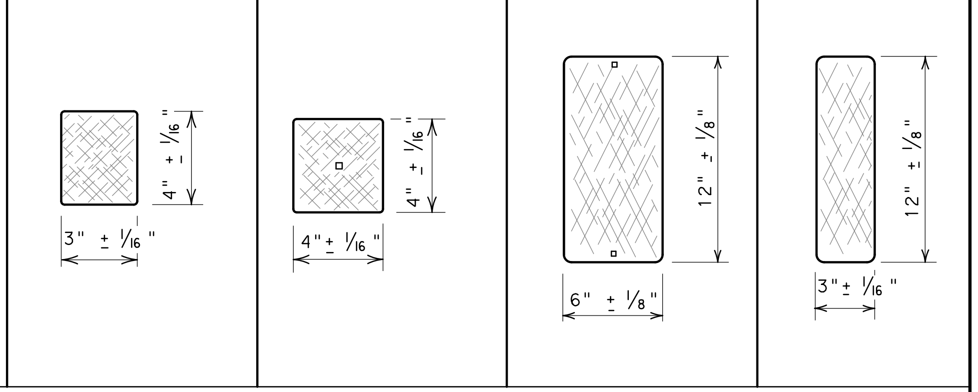
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

SMALL SIGN SUMMARY

SCALE: N.T.S.

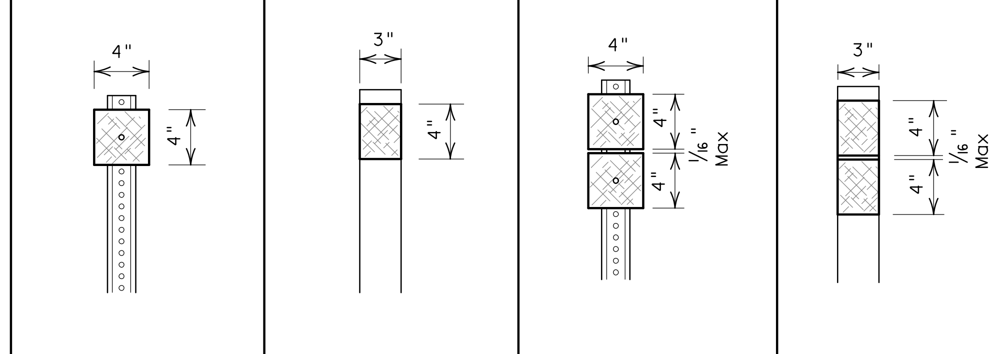
DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	111

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)

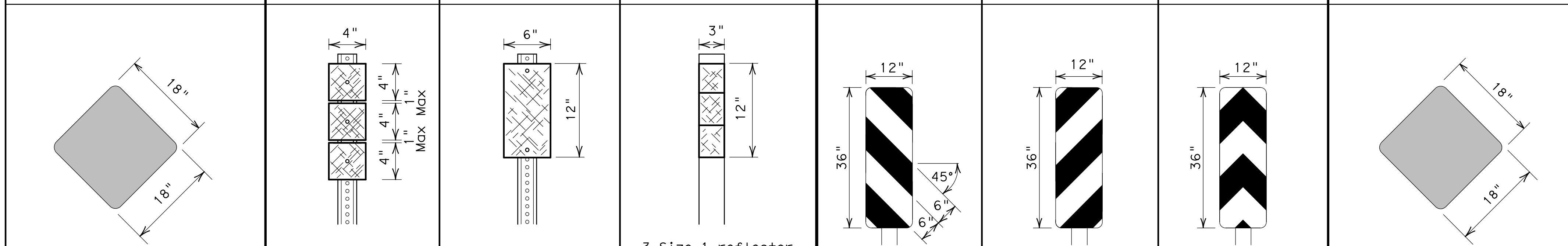
- NUMBER OF REFLECTORS
  - S = Single
  - D = Double
- COLOR OF REFLECTORS
  - W = White
  - Y = Yellow
  - R = Red
- REFLECTOR UNIT SIZE
  - 1 or 2
- TYPE OF POST OR DELINEATOR
  - WC = Wing Channel Post
  - YFLX = Yellow Flexible Post
  - WFLX = White Flexible Post
  - BRF = Barrier Reflector
- TYPE 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

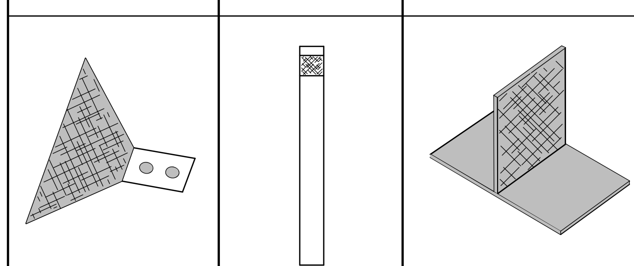
DEPARTMENTAL MATERIAL SPECIFICATIONS	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

OBJECT MARKERS



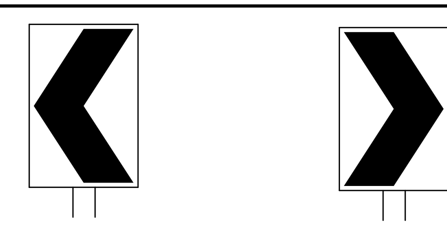
	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating 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

BARRIER REFLECTORS (BRF)



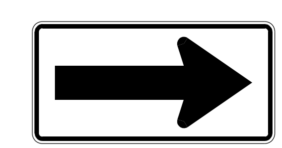
	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS



DEVICE	W1-8			
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	

ONE DIRECTION LARGE ARROW



DEVICE	W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

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).

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
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REVISIONS 10-09 3-15 4-10 7-20	DIST		COUNTY	SHEET NO. 112

20A

5/10/2024
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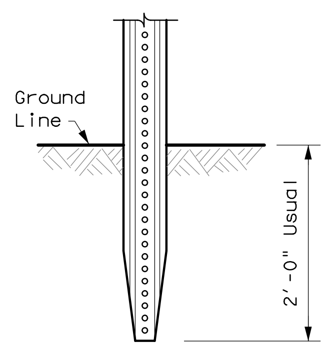
POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

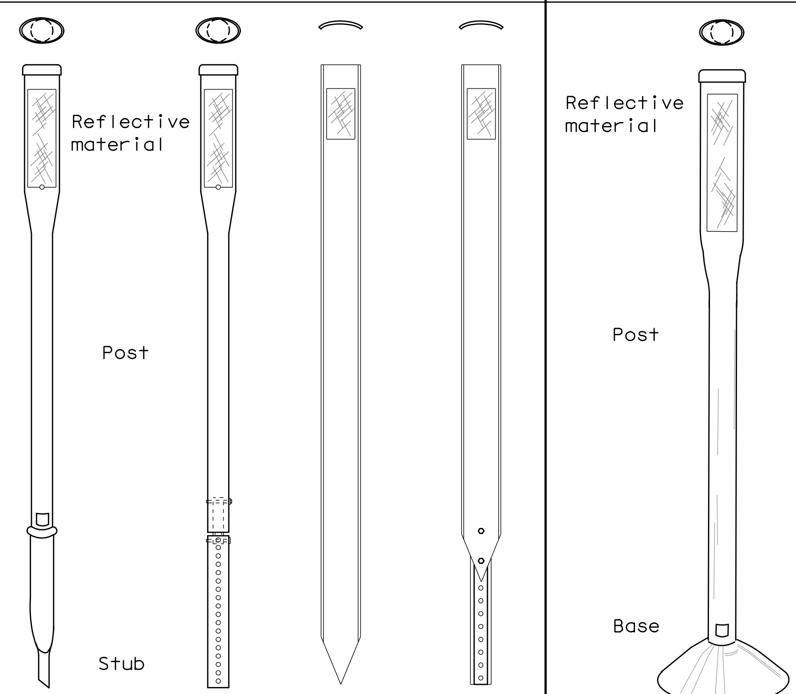


NOTES

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



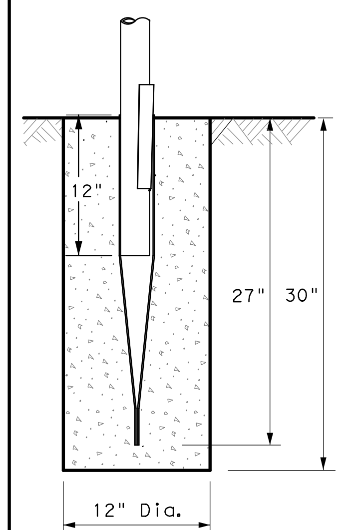
EMBEDDED | SURFACE MOUNT

NOTES

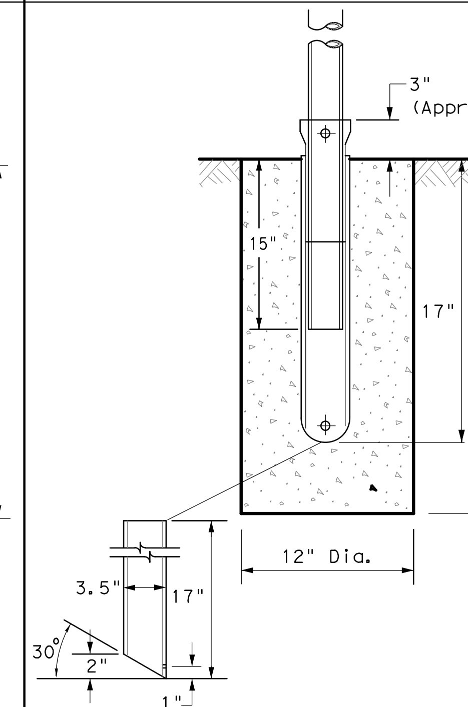
1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

WEDGE ANCHOR SYSTEMS

WAS



WAP



STEEL | PLASTIC

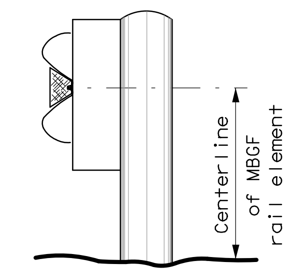
NOTE

1. Install per manufacturer's recommendations.

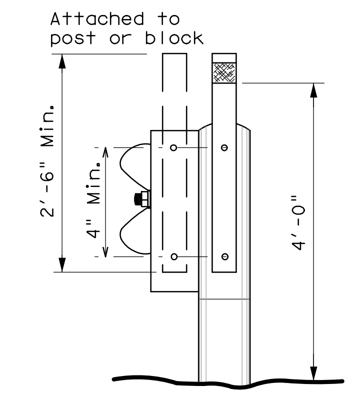
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

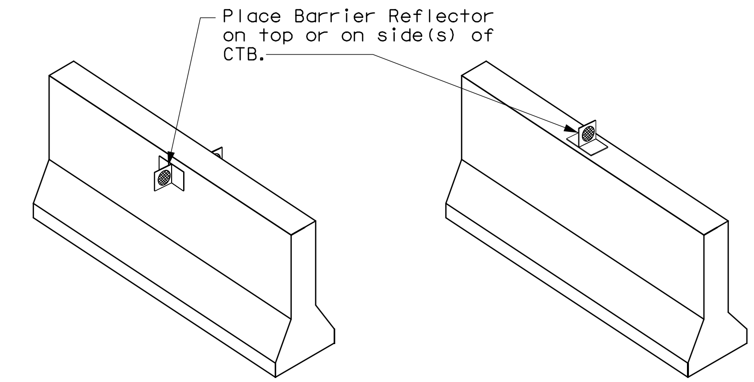
GF1



GF2



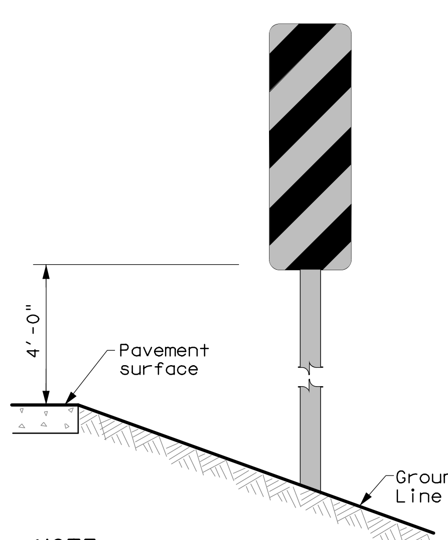
CONCRETE TRAFFIC BARRIER (CTB)



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.

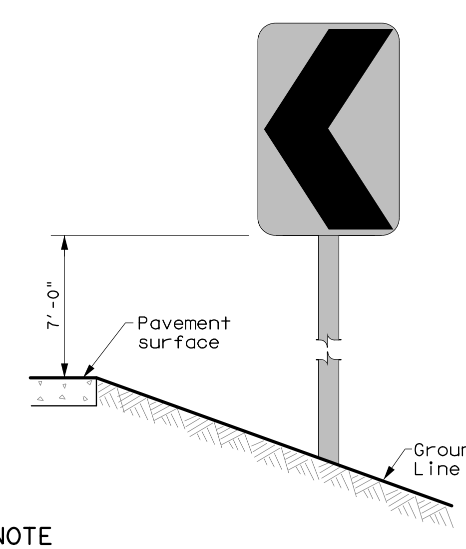
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

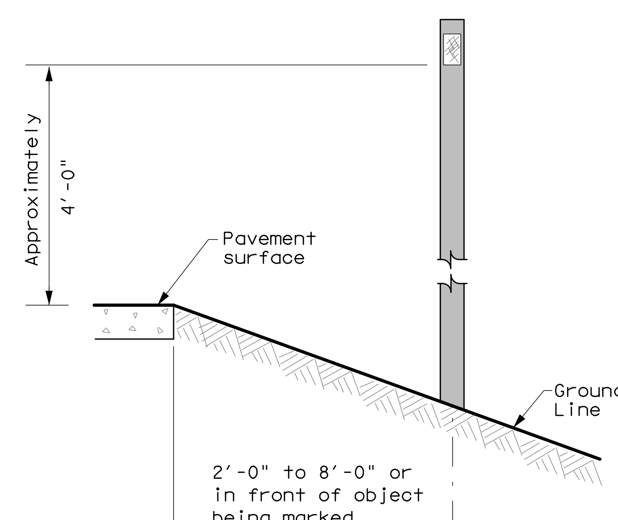
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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
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REVISIONS 10-09 3-15 4-10 7-20	DIST		COUNTY	SHEET NO. 113

20B

5/10/2024
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5/10/2024
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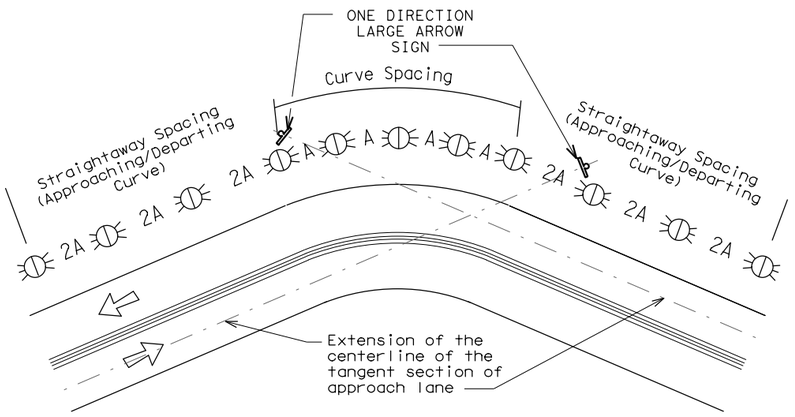
MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

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

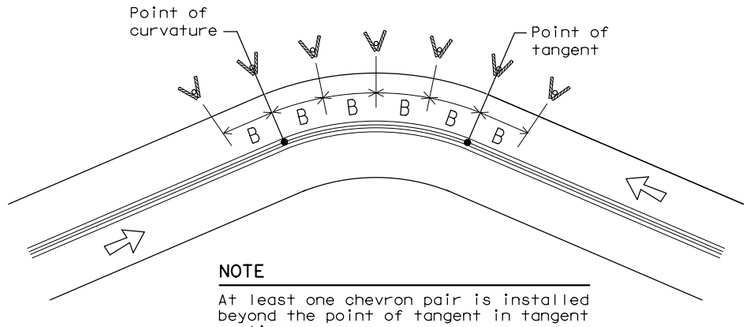
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



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
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REVISIONS				
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20				114

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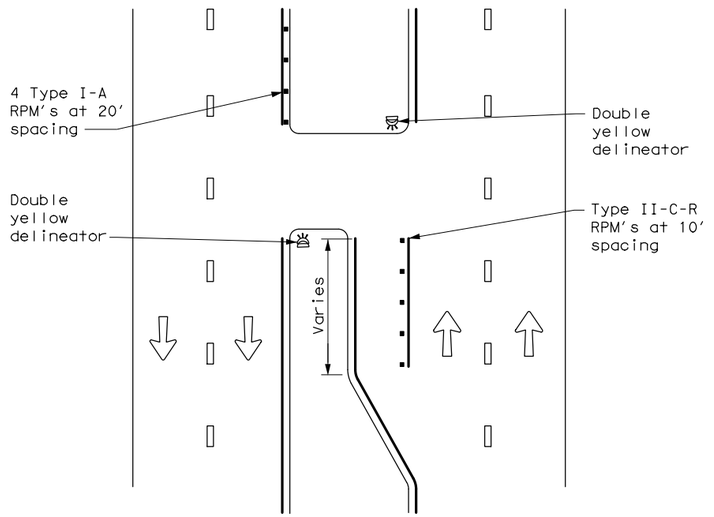
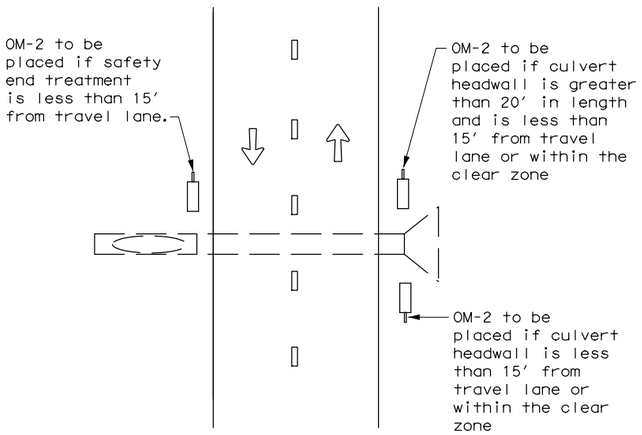
CROSSOVERS



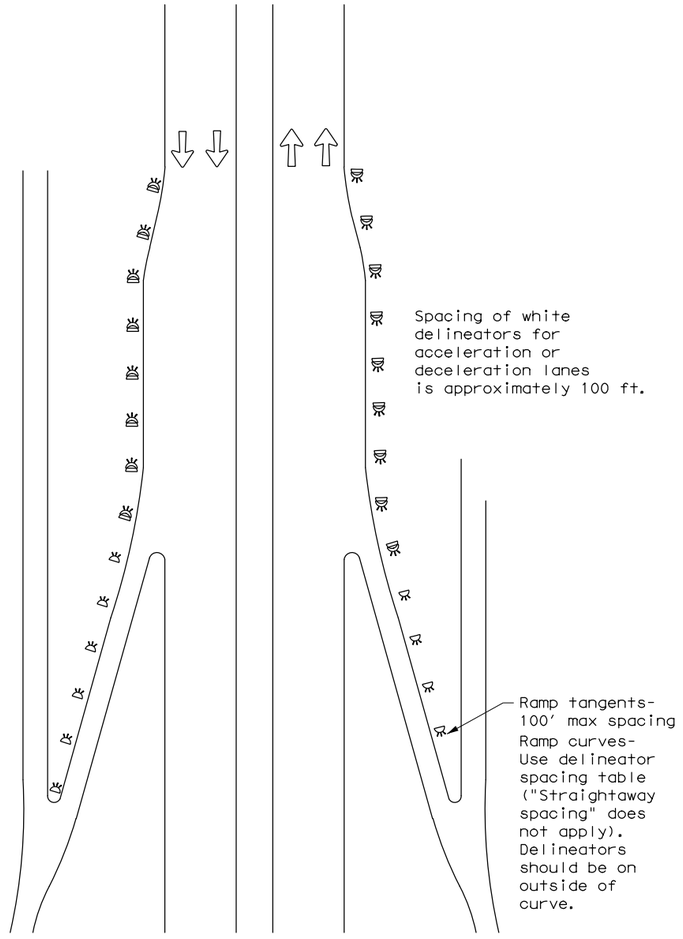
DETAIL 1

FOR CULVERTS WITHOUT MBGF



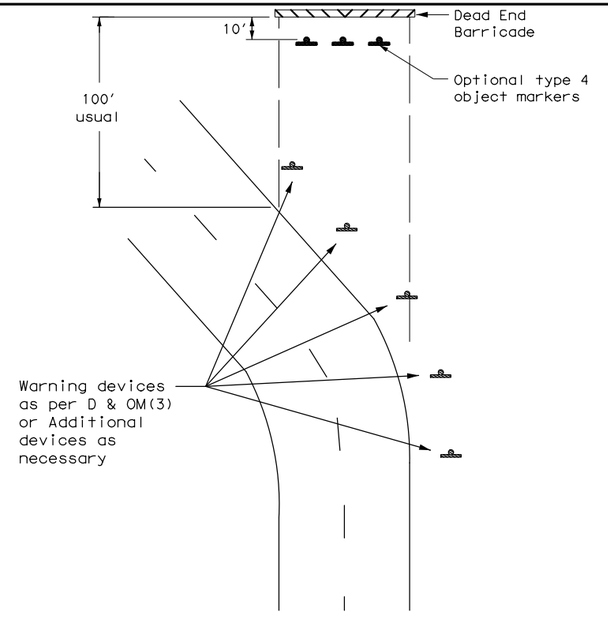
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



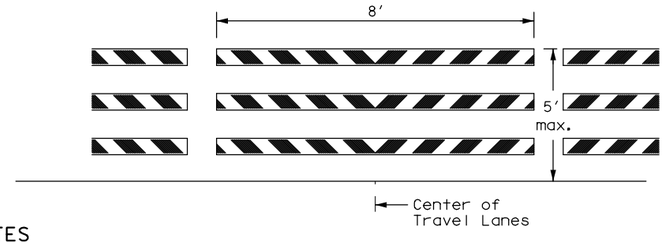
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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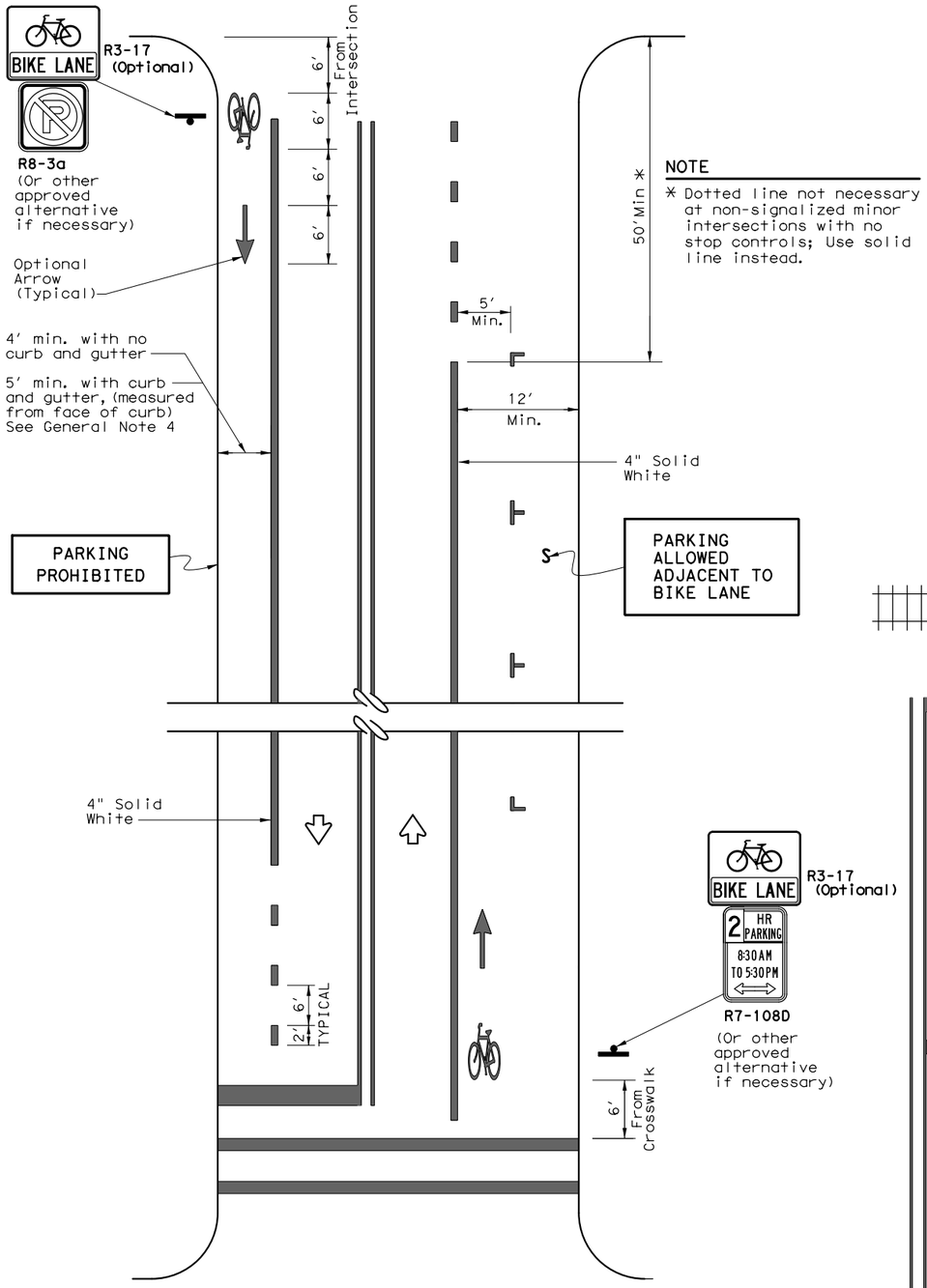
REVISIONS 3-15 7-20				
	DIST	COUNTY		SHEET NO.
				115

20D



NOTE

* Dotted line not necessary at non-signalized minor intersections with no stop controls; Use solid line instead.

NOTES

1. Bicycle lane pavement markings typically repeated after each intersection or signalized driveway.
2. On uninterrupted sections of roadway, bicycle lane pavement markings typically repeated as follows:

   -1200′ for 45 MPH or less roads
   -2500′ for 50 MPH and greater roads.

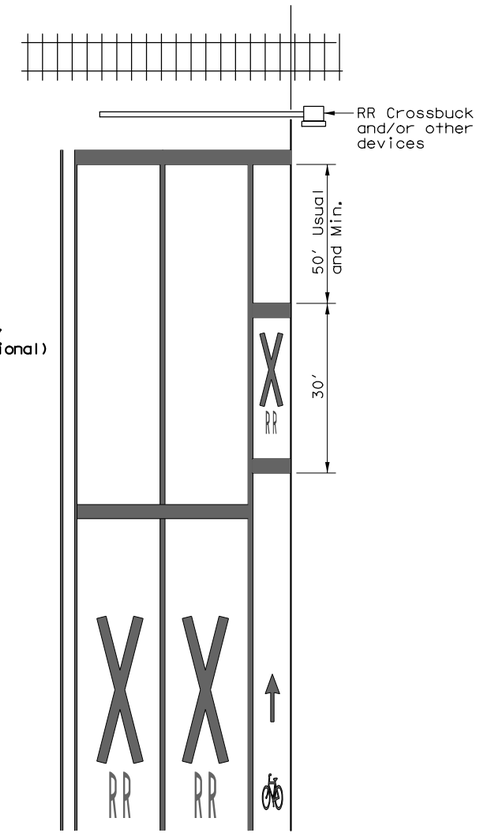
TWO-WAY STREET

GENERAL NOTES

1. All bicycle lane pavement markings shall be white unless otherwise noted.
2. All pavement marking materials shall meet the required Department Material Specifications as specified by the plans.
3. Exact sign placement and details are shown elsewhere in the plans.
4. The current edition of AASHTO'S Guide for the Development of Bicycle Facilities should be referenced for variations in design, other geometric conditions, and lane width options.
5. Other bicycle lane symbol or word markings as shown in the Texas Manual on Uniform Traffic Control Devices may be used. Details for words, arrows and symbols as shown in the Standard Highway Sign Designs for Texas.
6. The "BIKE LANE" (R3-17) sign with the "AHEAD" (R3-17a) sign mounted directly below should be installed in advance of the beginning of a marked bike lane.
7. The "BIKE LANE" (R3-17) sign with the "END" (R3-17b) sign mounted directly below should be installed at the end of marked bicycle lane.

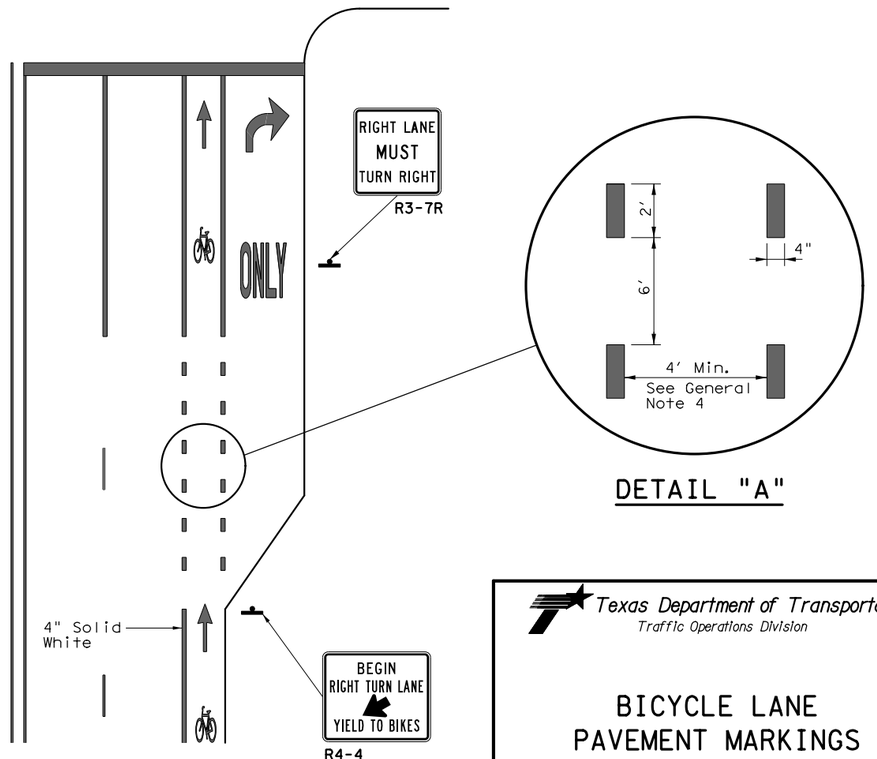
LEGEND	
	Sign
	Traffic Flow

SPECIFICATION REFERENCE TABLE	
Traffic Paint	DMS-8200
Hot Applied Thermoplastic	DMS-8220
Permanent Prefabricated Pavement Markings	DMS-8240
Glass Traffic Beads	DMS-8290



(See RCPM Standard for travel lane details)

RAILROAD CROSSING APPROACH



RIGHT TURN ONLY LANE

DETAIL "A"

Texas Department of Transportation
Traffic Operations Division

BICYCLE LANE PAVEMENT MARKINGS

BLPM-10

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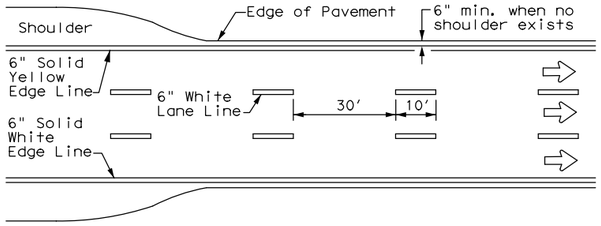
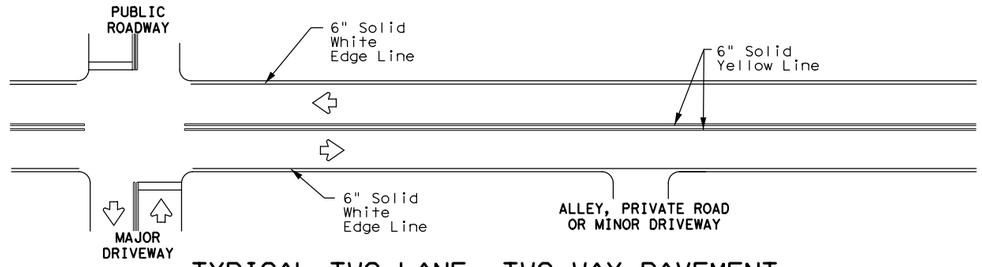
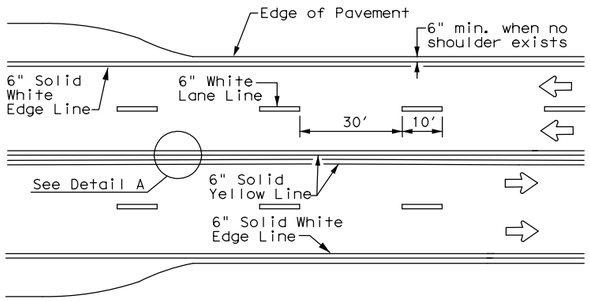
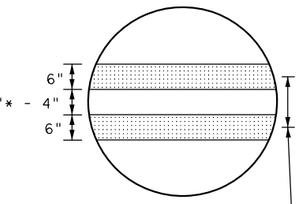


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS





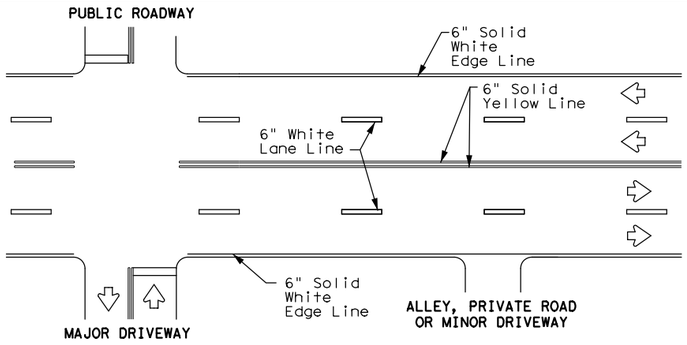
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48′ only)

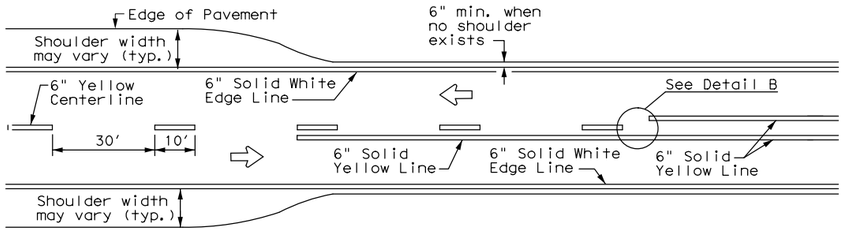
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

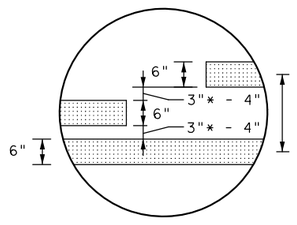
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

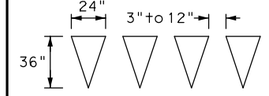


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



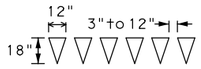
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

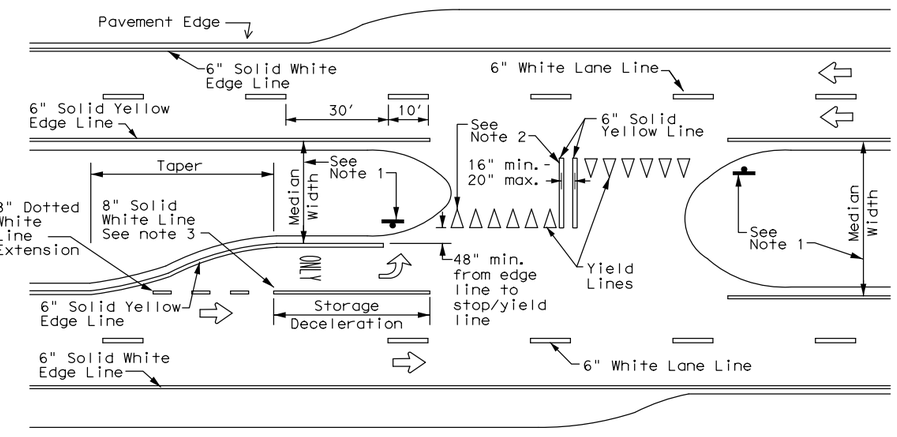


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

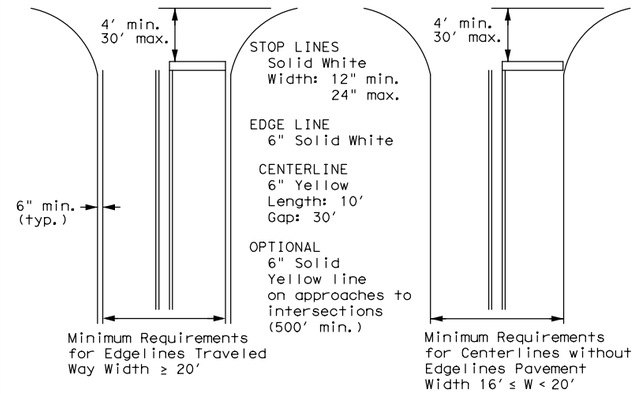
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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:
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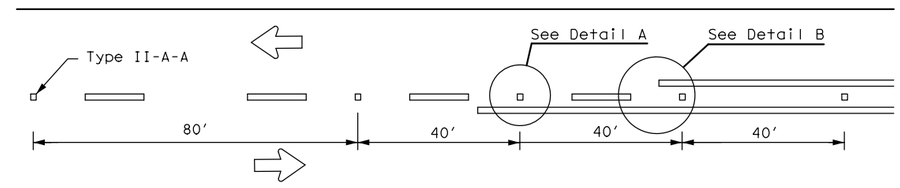
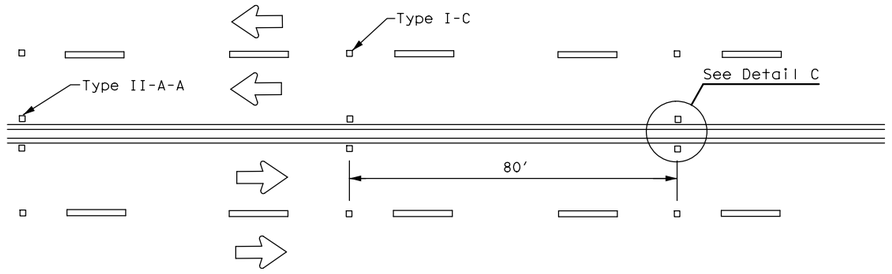
REVISIONS 11-78 8-00 6-20 8-95 3-03 12-22 5-00 2-12	DIST	COUNTY		SHEET NO. 117

22A

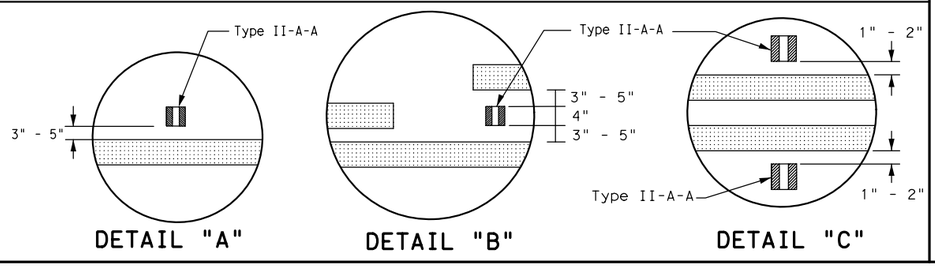
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

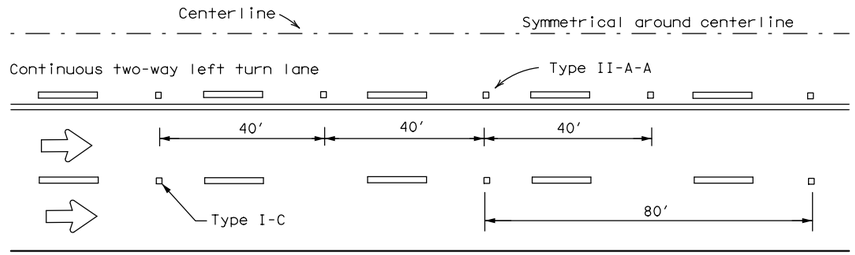


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

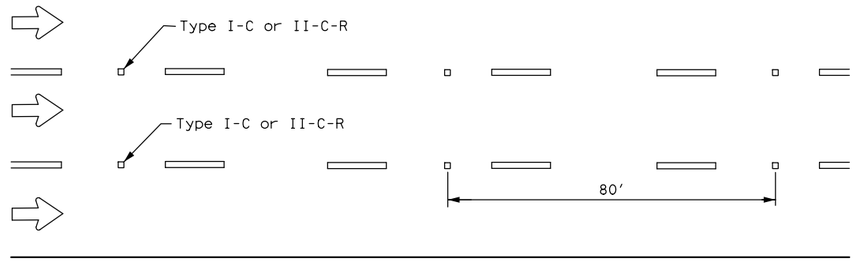


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





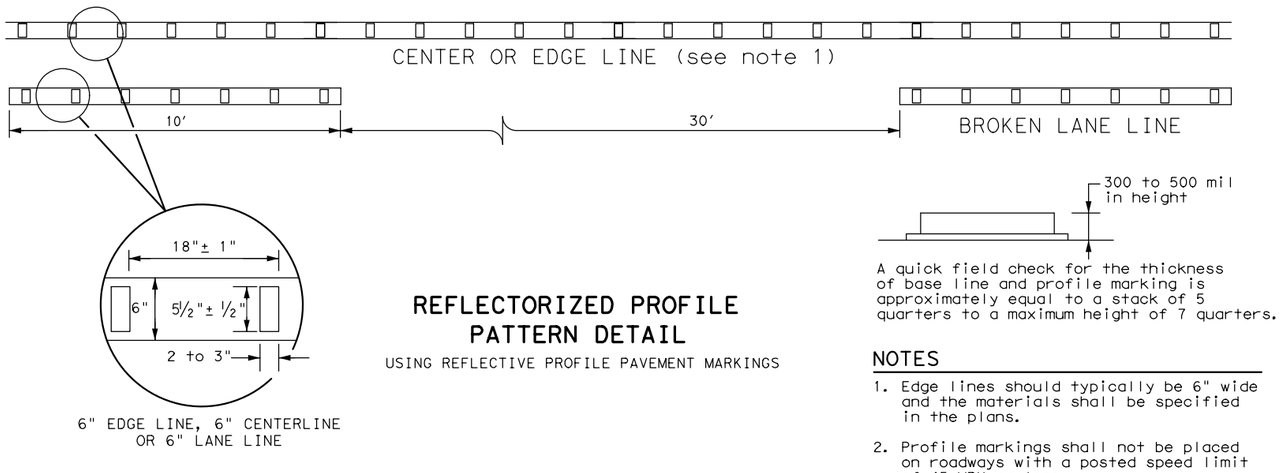
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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.



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

NOTES

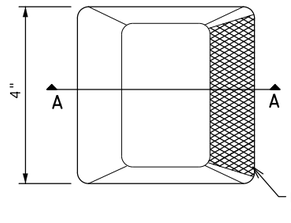
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

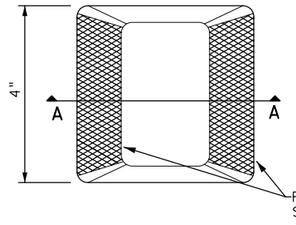
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

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

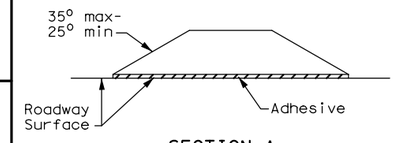
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

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REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	DIST	COUNTY		SHEET NO. 118

22B

5/10/2024
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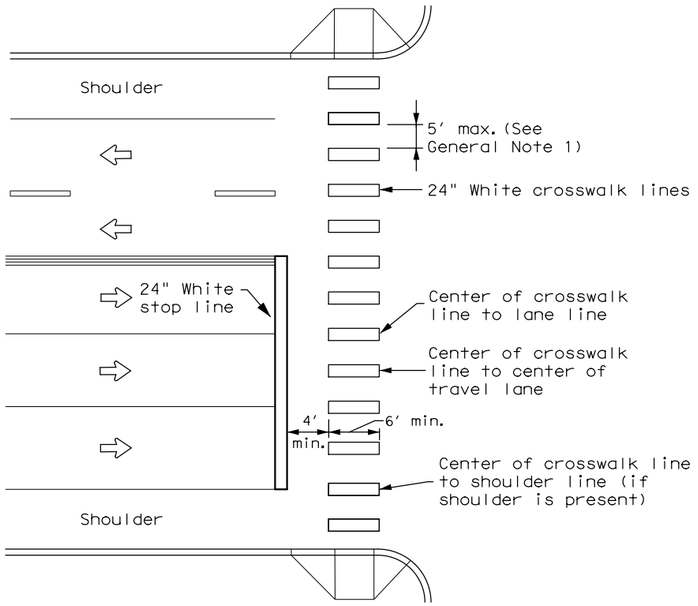


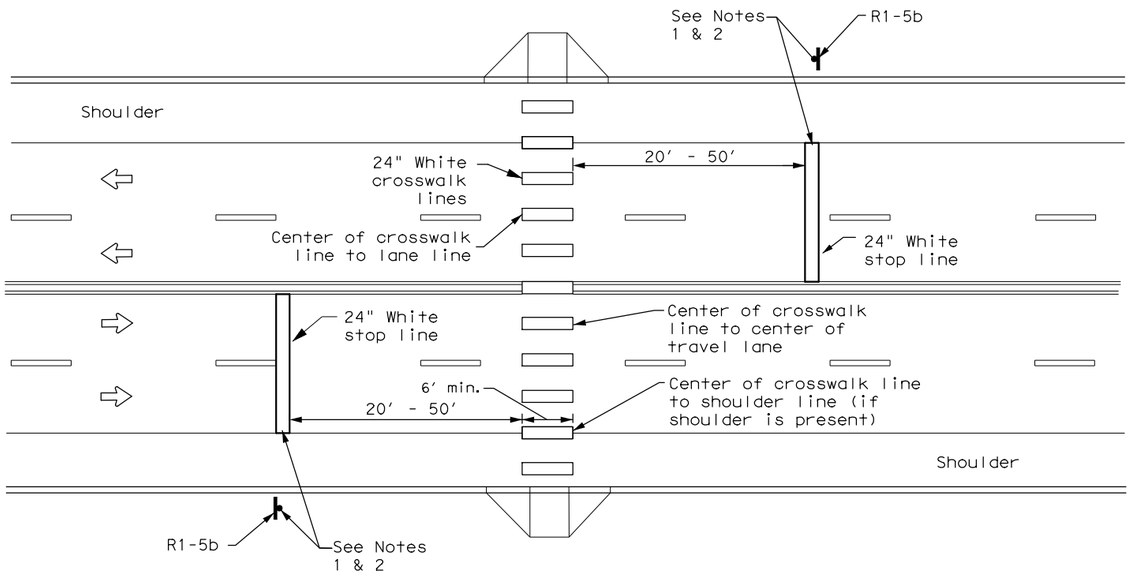
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

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

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6-20	DIST	COUNTY		SHEET NO.
6-22				119
12-22				
22D				

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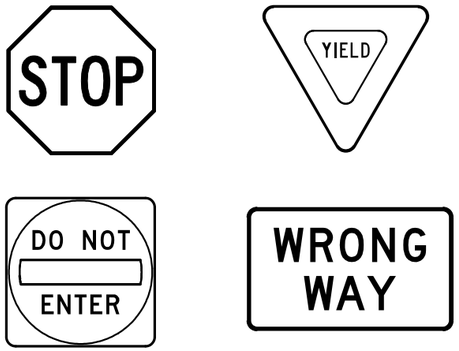
REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(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

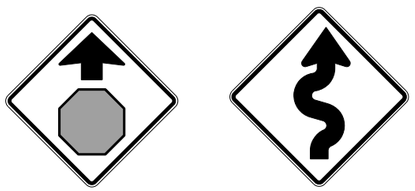
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(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

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

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/

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 12-03 7-13 9-08	DIST	COUNTY		SHEET NO. 120

4

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)

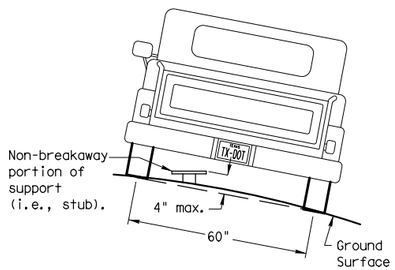
Anchor Type

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))

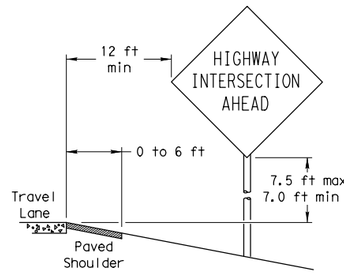
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

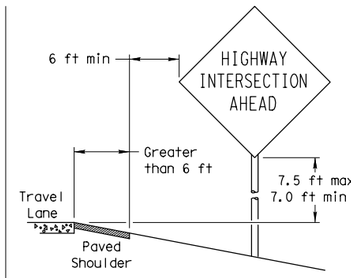
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

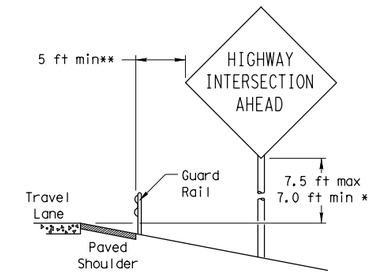
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



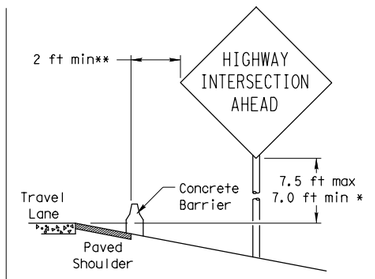
GREATER THAN 6 FT. WIDE

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.

BEHIND BARRIER



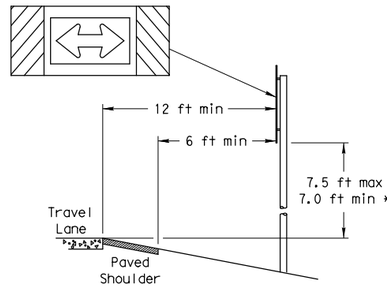
BEHIND GUARDRAIL



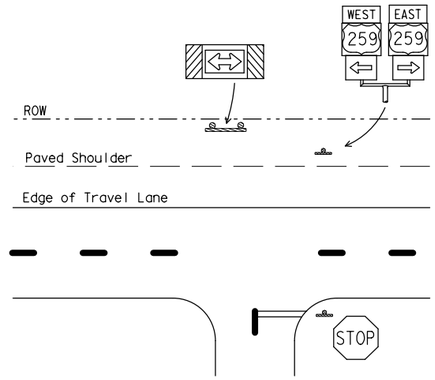
BEHIND CONCRETE BARRIER

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

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.



* 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

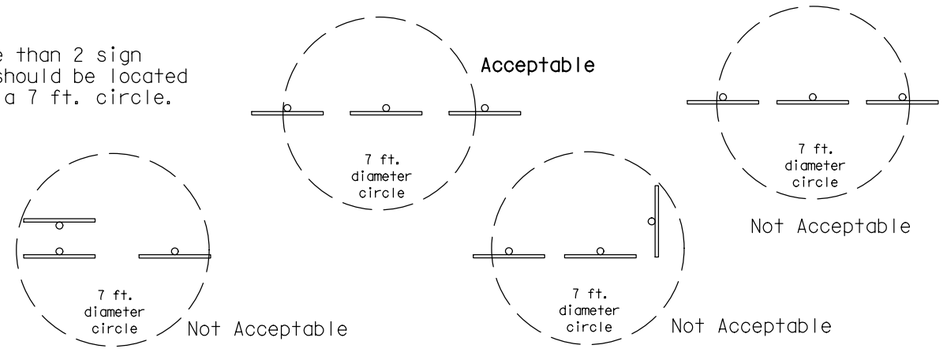
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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.

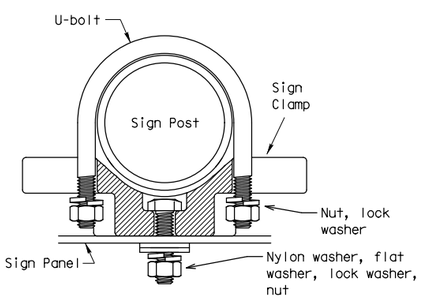
The website address is:
http://www.txdot.gov/publications/traffic.htm

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



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

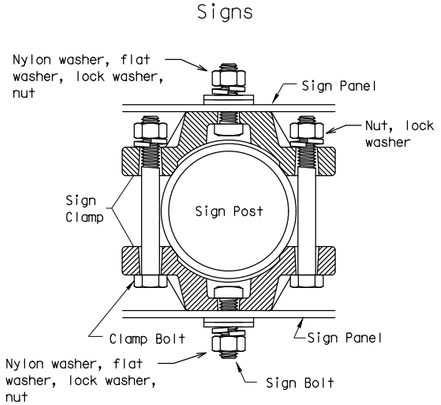


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

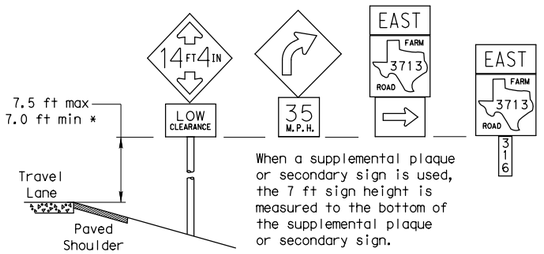
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



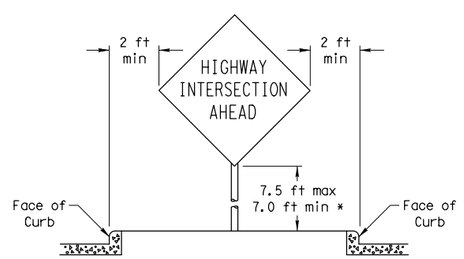
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



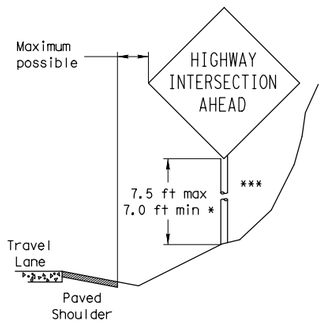
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

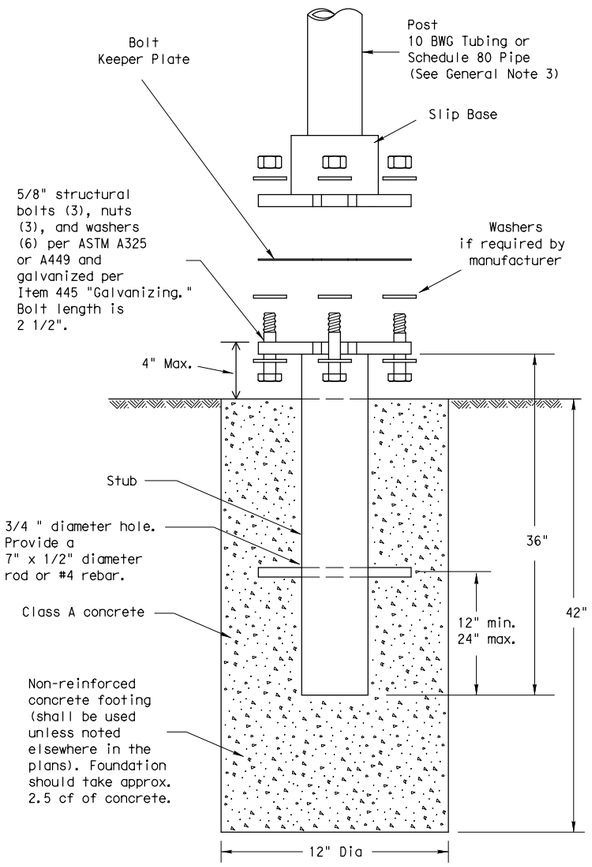
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.
			121

9-08 REVISIONS

26A

5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\smdgen.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:

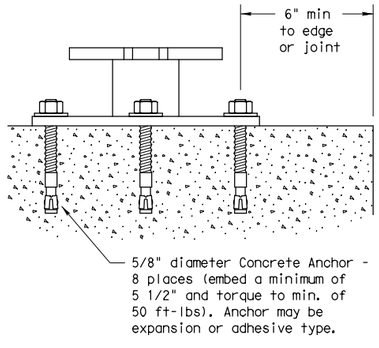
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   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	CONT	SECT	JOB	HIGHWAY
9-08				
	DIST	COUNTY		SHEET NO.
				122

5/10/2024
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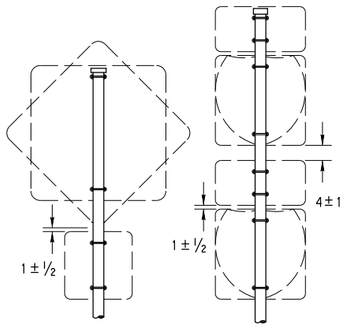
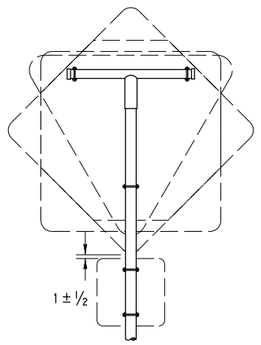


SM RD SGN ASSM TY XXXXX(1)XX(P)



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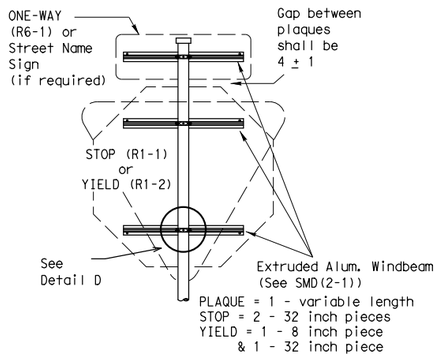

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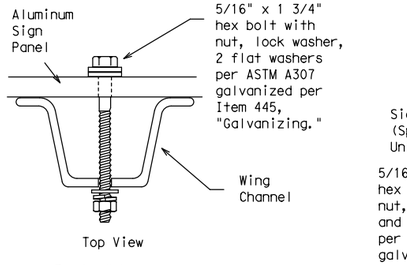
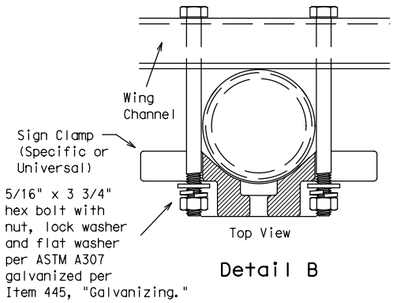
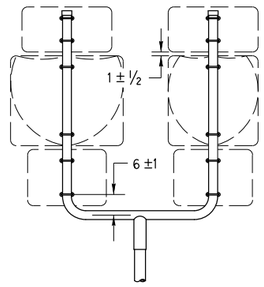


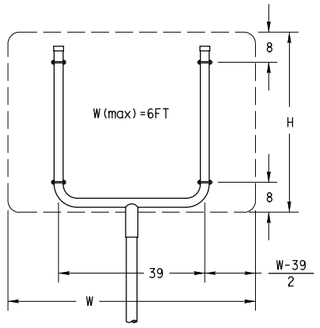
Detail A



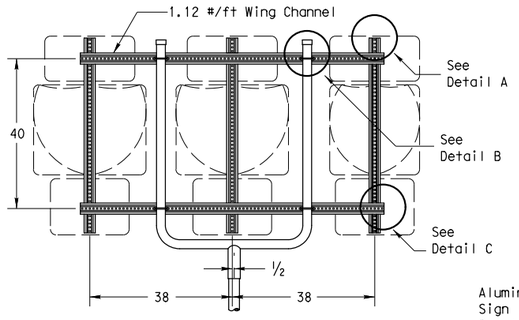
Detail B



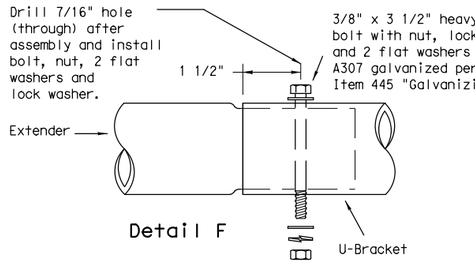
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

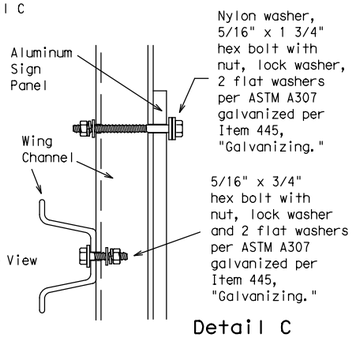


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

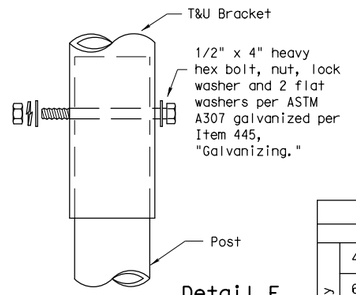


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C

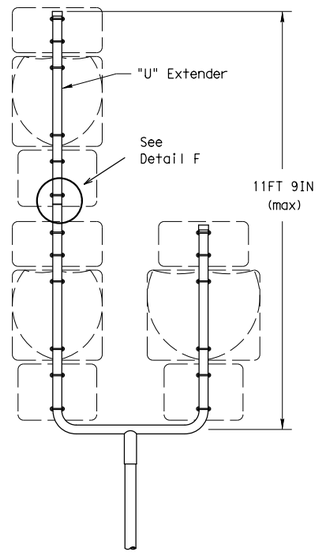


Detail E

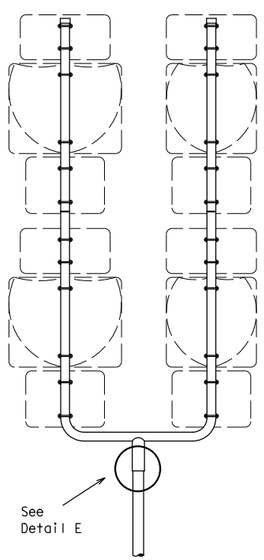
GENERAL NOTES:

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

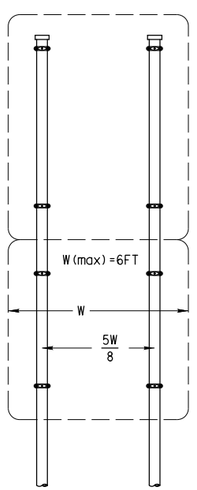
1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material 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. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
10. 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.
11. Post open ends shall be fitted with Friction Caps.
12. Sign blanks shall be the sizes and shapes shown on the plans.



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

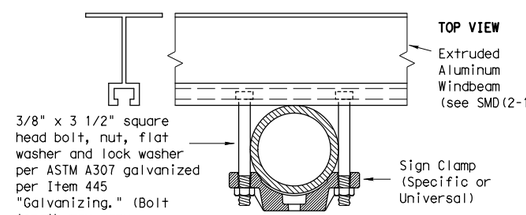


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

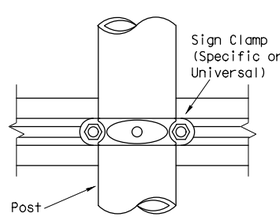


SM RD SGN ASSYM TY XXXXX(2)XX(P)

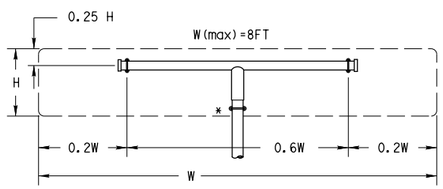
SIDE VIEW



Detail D



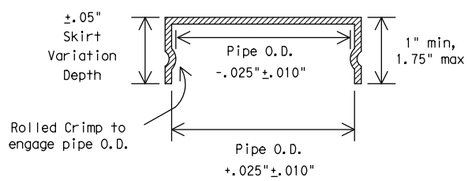
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	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)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

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
DIST	COUNTY		SHEET NO.
			123

9-08 REVISIONS

26C

5/10/2024
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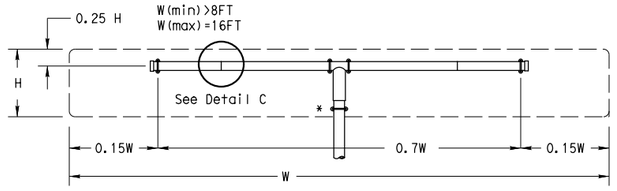
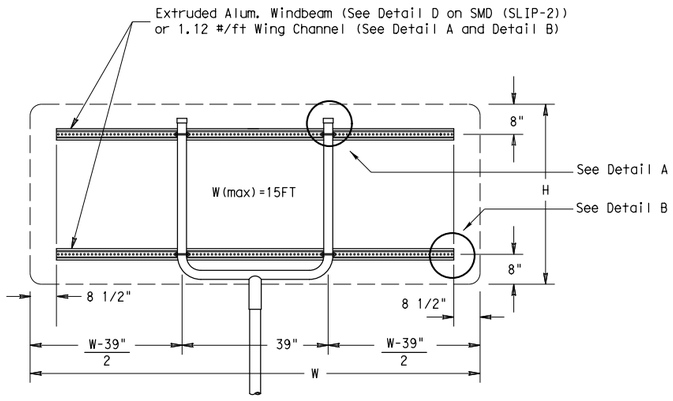
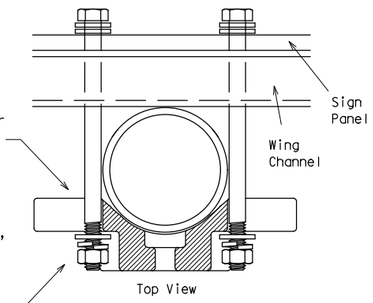


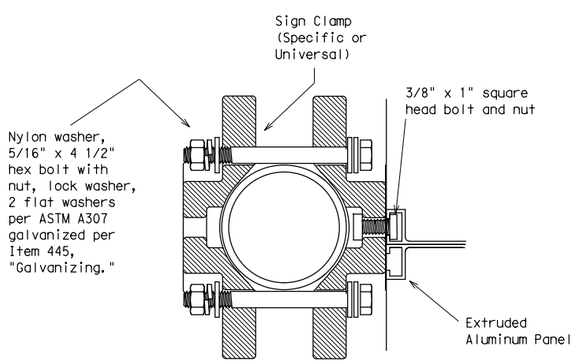
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



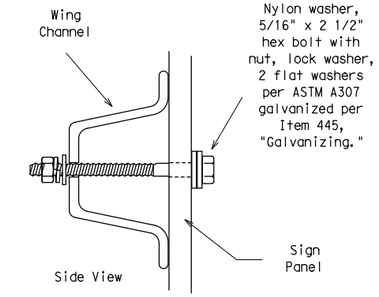
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



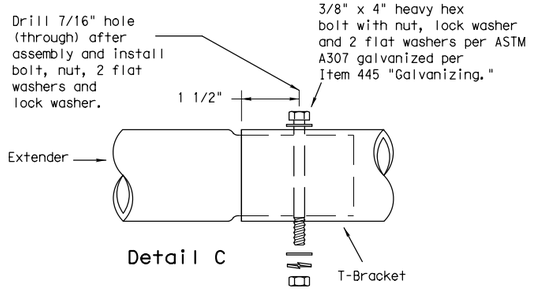
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

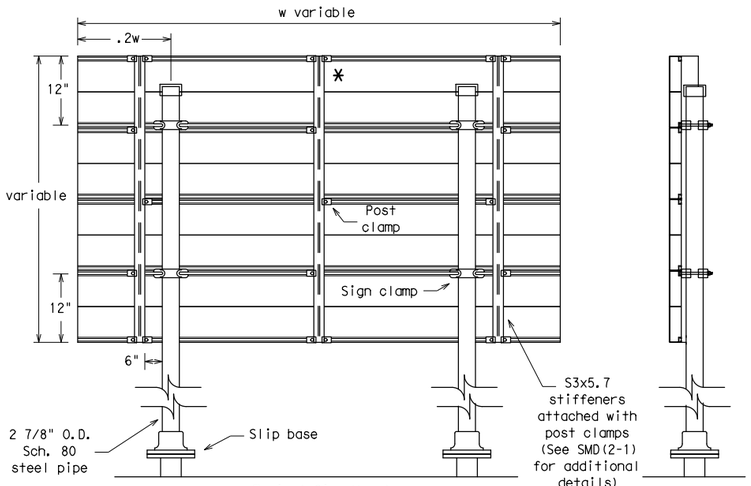


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

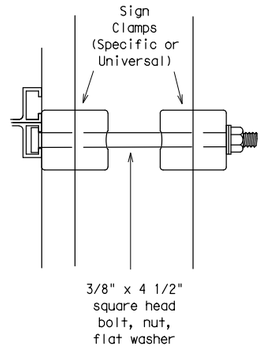


Typical Sign Mount

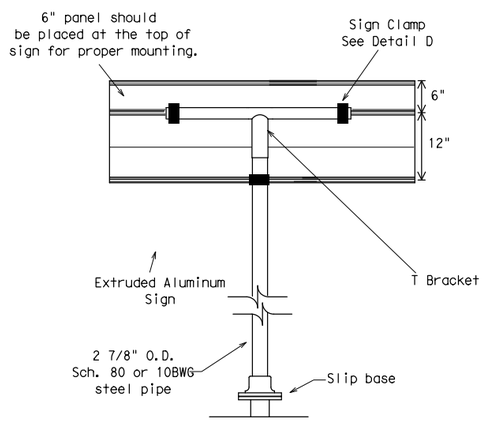
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

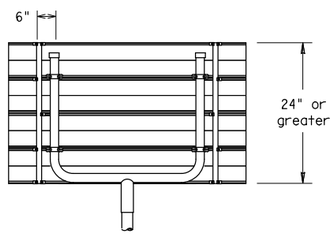
See Detail E
for clamp installation



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

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY

DIST	COUNTY	SHEET NO.
		124

5/10/2024
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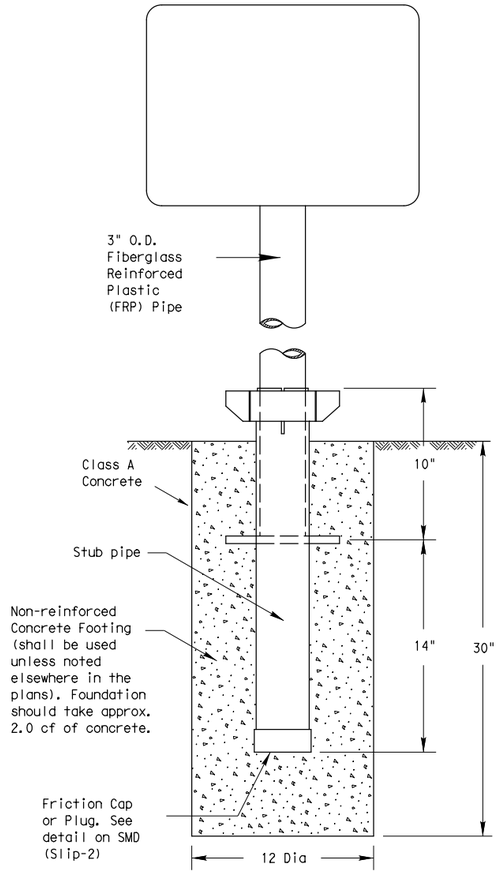
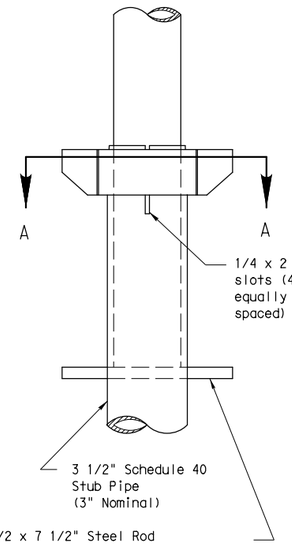
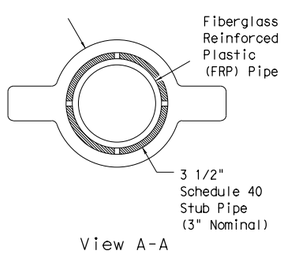
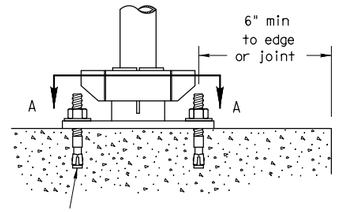
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post





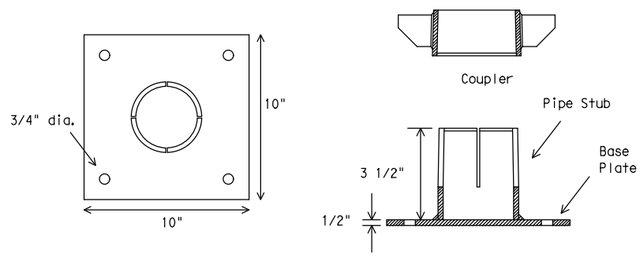


SM RD SGN ASSM TY FRP(X)UA(P)



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

BOLT-DOWN DETAILS



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

GENERAL NOTES:

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

FRP POST REQUIREMENTS

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

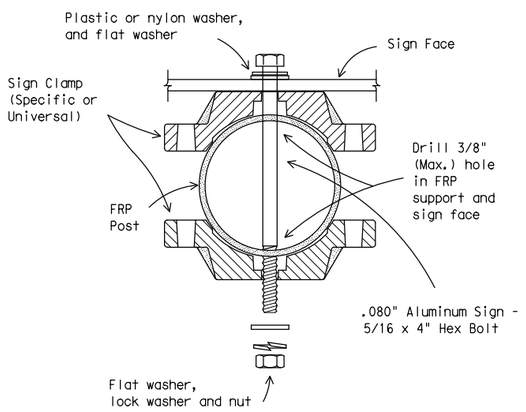
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. 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. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

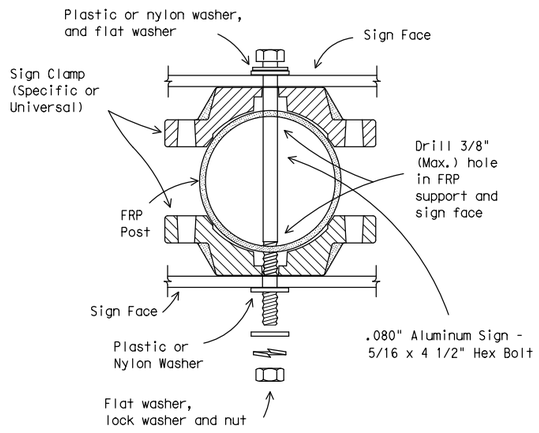
BOLT DOWN SIGN SUPPORT

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

Typical Sign Mounting Detail for FRP Support with Single Sign



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



Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS UNIVERSAL ANCHOR SYSTEM WITH FRP POST

SMD(FRP)-08

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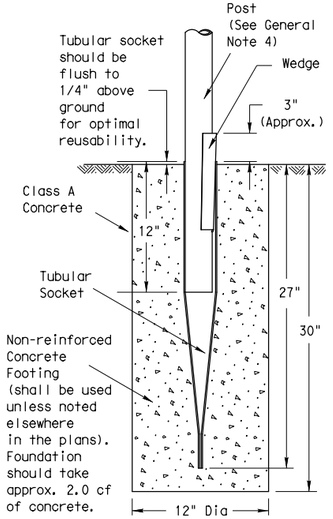
REVISIONS		CONT	SECT	JOB		HIGHWAY	
9-08							
		DIST	COUNTY			SHEET NO.	
						125	

DATE:
FILE:

26F

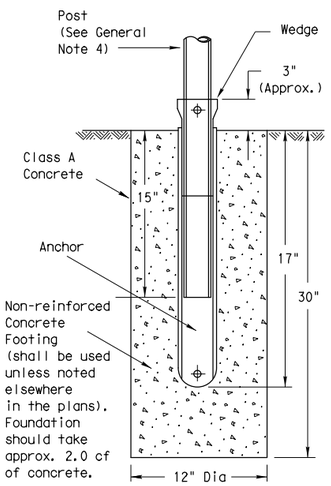
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

Wedge Anchor Steel System



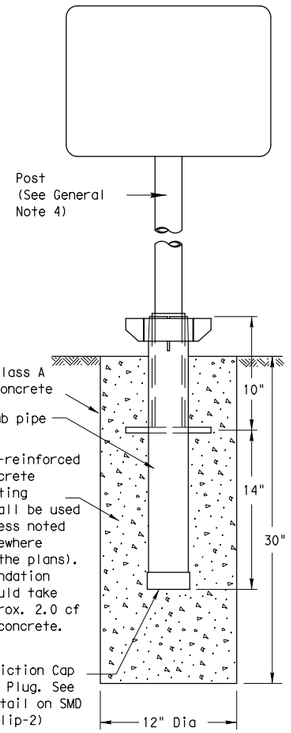
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

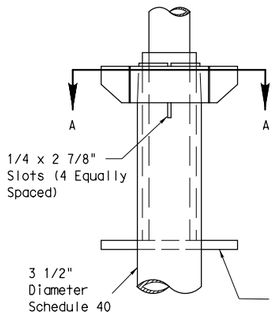


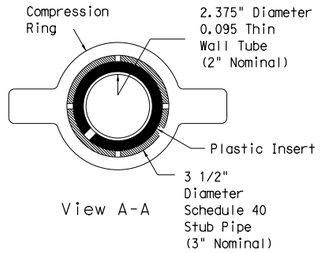
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



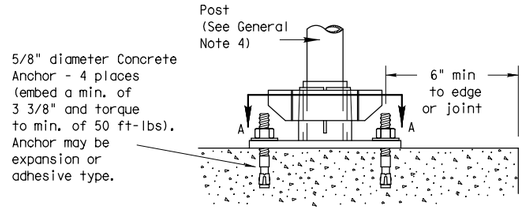
SM RD SGN ASSM TY TWT(X)UA(P)



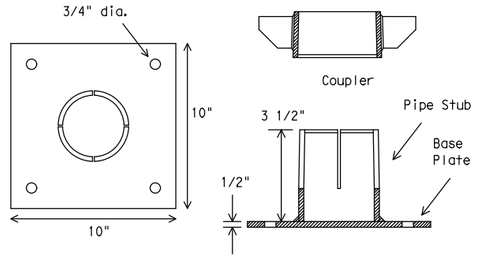


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

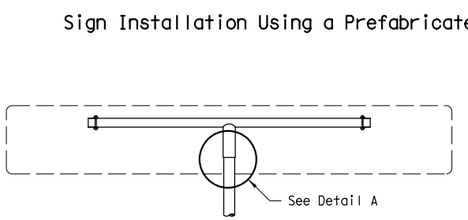


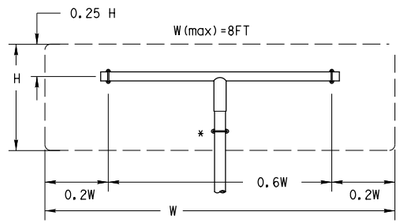
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized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



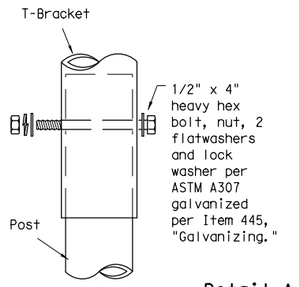
SM RD SGN ASSM TY TWT(X)UB(P)

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





SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

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

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

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

Texas Department of Transportation
Traffic Operations Division

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

SMD(TWT)-08

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9-08 REVISIONS

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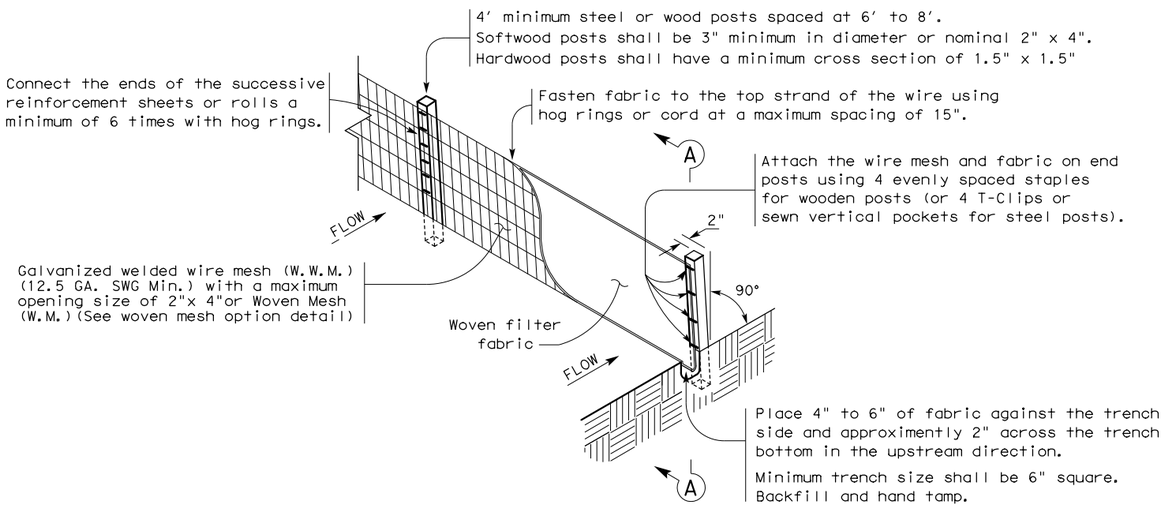
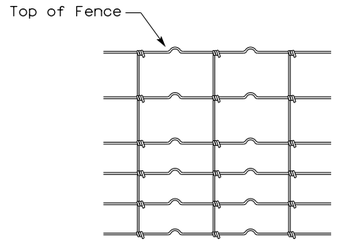
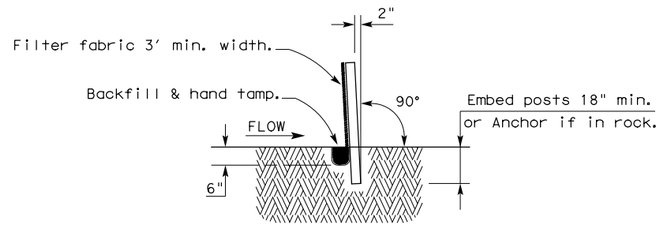


TEMPORARY SEDIMENT CONTROL FENCE

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.

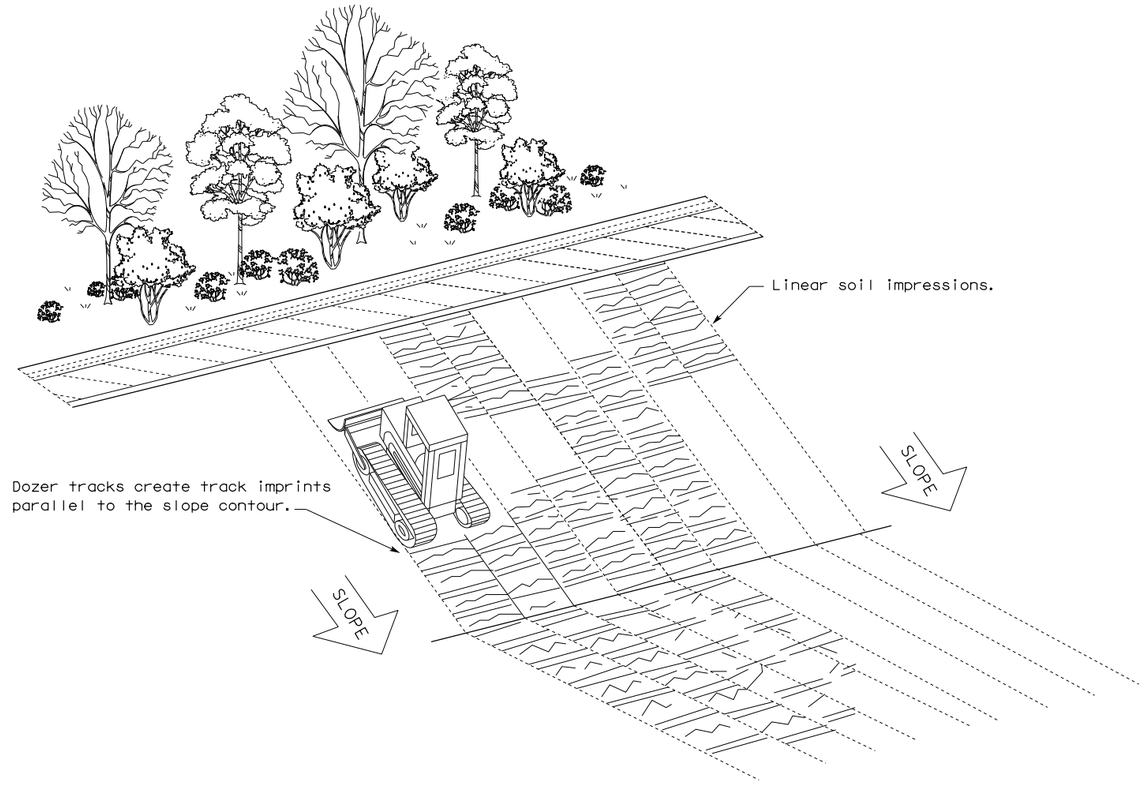
LEGEND

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
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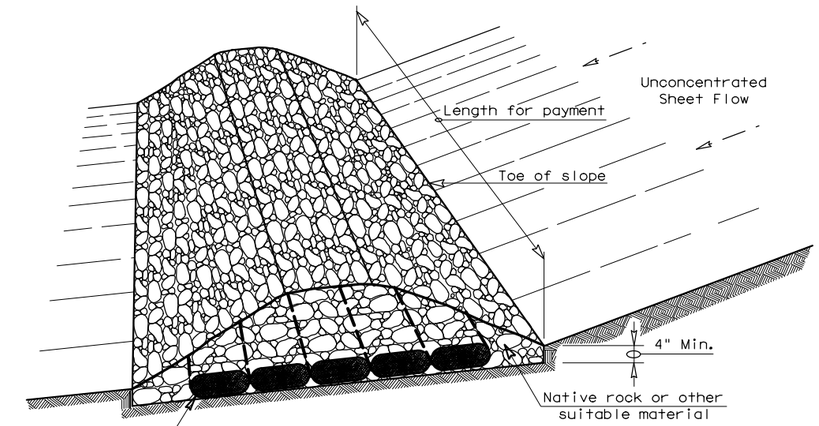
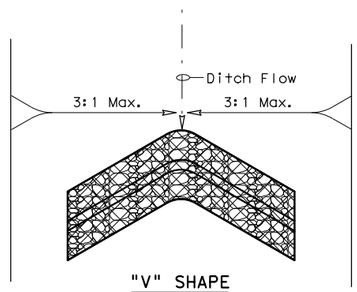
Trail Master Plan WA No 2\020 Wimberley Trail

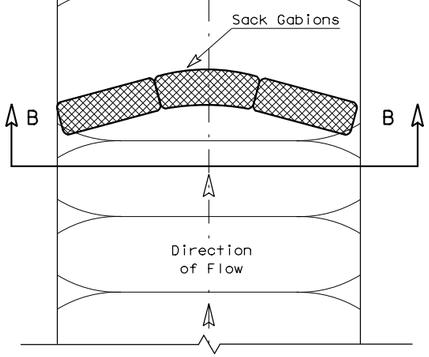


FILTER DAM AT TOE OF SLOPE

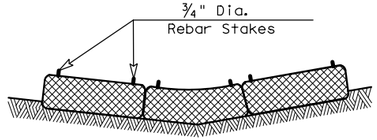
RFD1



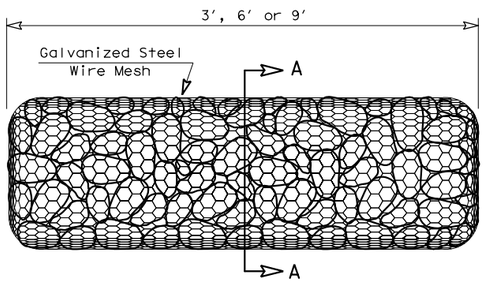
"V" SHAPE
PLAN VIEW



PLAN VIEW

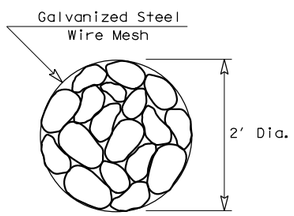


SECTION B-B

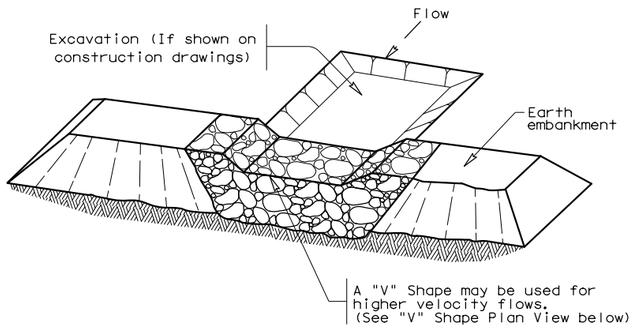


TYPE 4 (SACK GABIONS)

RFD4

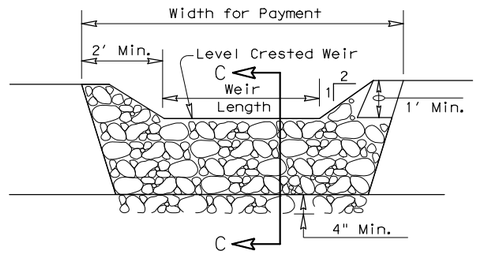


SECTION A-A

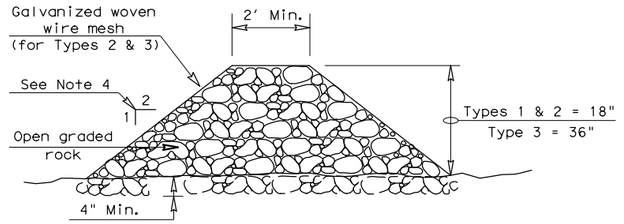


FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



PROFILE



SECTION C-C

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.

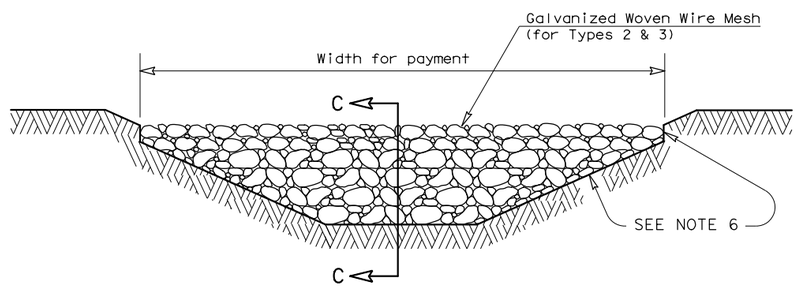
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity 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.



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

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

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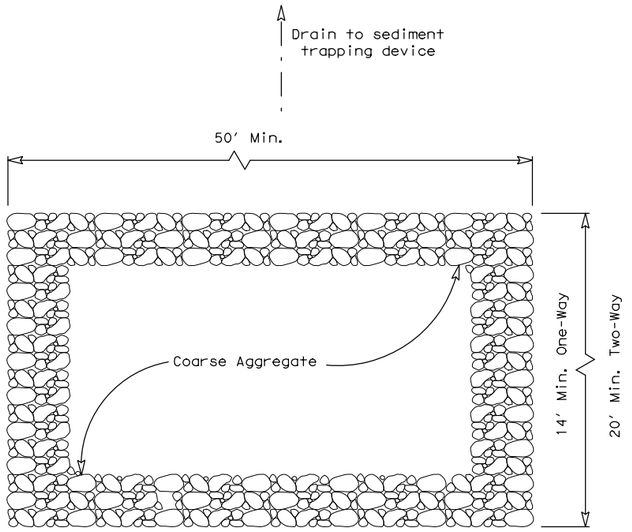
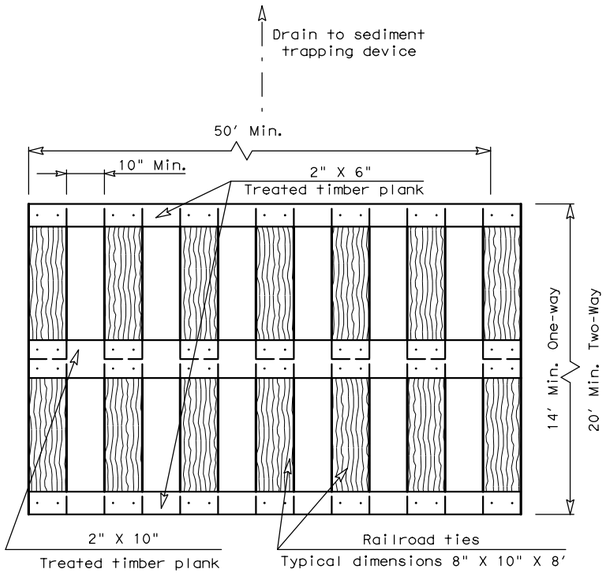


PLAN VIEW



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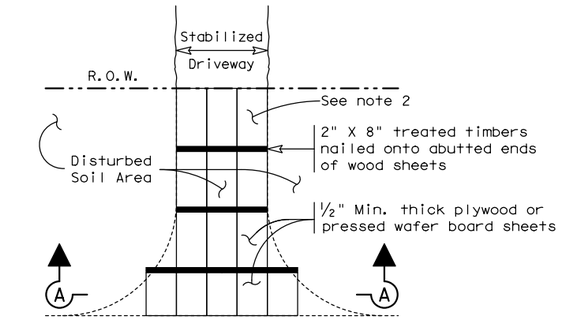

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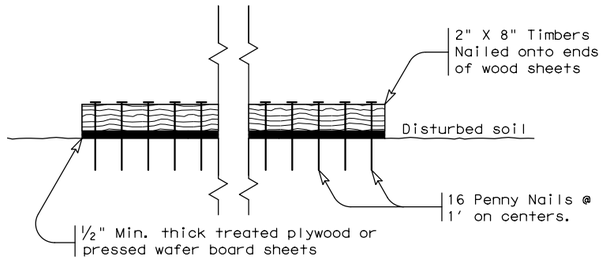
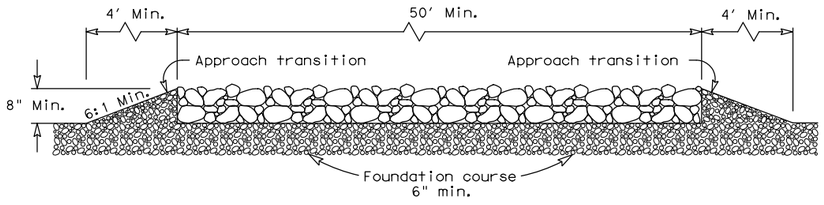


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

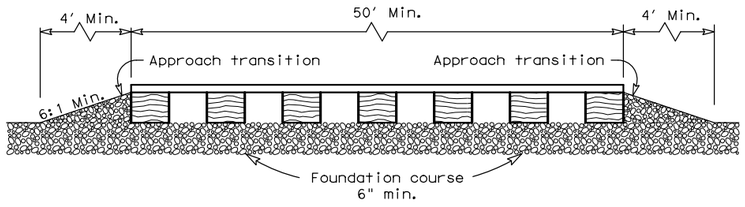
SHORT TERM



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

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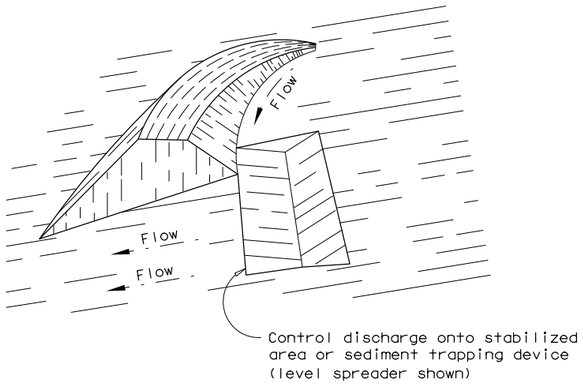
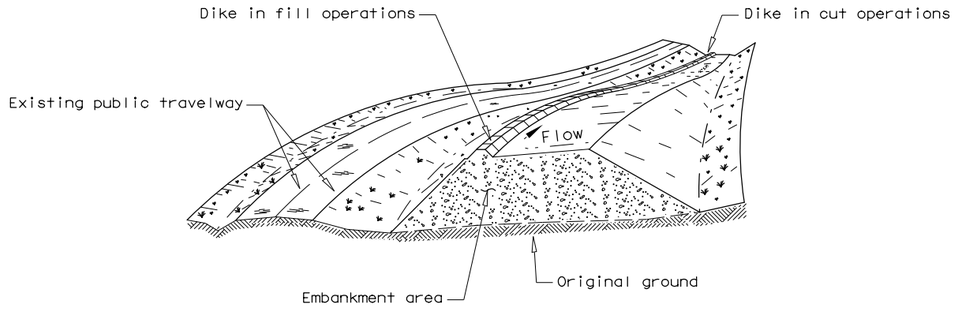


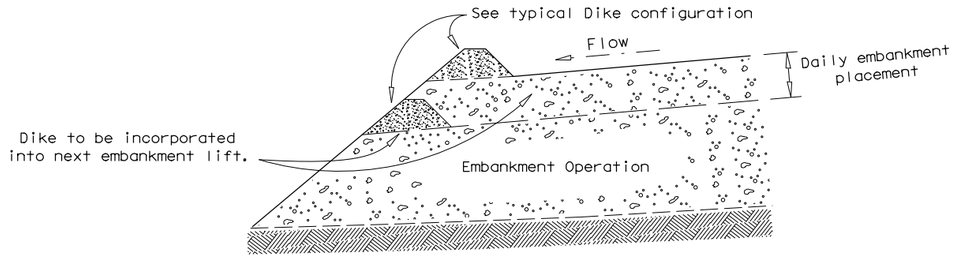
PERIMETER DIKE

(D)



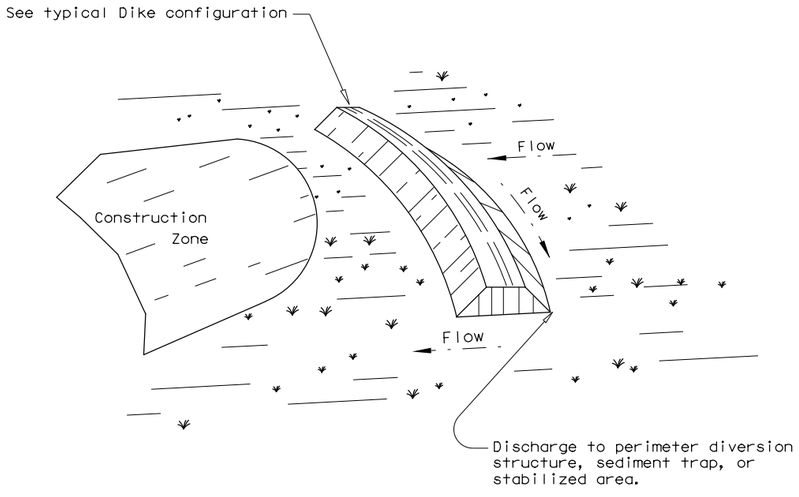
DIVERSION DIKE

(D)



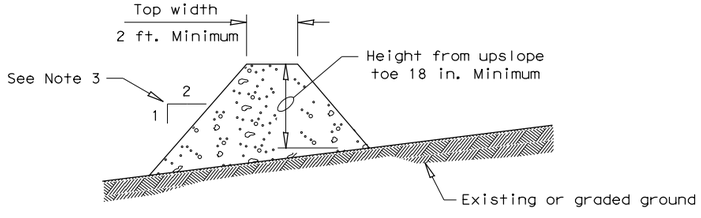
EMBANKMENT SECTION - DIVERSION DIKE

(D)



INTERCEPTOR DIKE

(D)



TYPICAL DIKE CONFIGURATION

(D)

GENERAL NOTE

1. Soil used in dike construction shall be machine compacted.
2. Top width and height of dike may be modified with prior approval of the Engineer.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter.
4. Grading shall be shown elsewhere in the plans or as directed by the Engineer.
5. The Engineer reserves the right to modify the dimensions shown for the dike dependent on runoff volume characteristics.
6. Dikes that are in place for more than 14 calendar days should be stabilized to prevent sediment runoff.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Remove sediment and debris when accumulation affects the performance of the devices, after a rain and when directed by the engineer.

DIKE USAGE GUIDELINES

A Dike may be used to intercept runoff and divert it around unstabilized areas or to divert sediment laden runoff to an erosion control device (sediment basin or trap, rock filter dam, etc.).

The drainage area contributing runoff to a dike should not exceed 5 acres. The spacing of dikes should be as follows:

Slope of disturbed areas above dike	greater than 10%	5 - 10%	less than 5%
Maximum distance between dikes	100′	200′	300′

Intercepted runoff flowing along a dike should outlet to a stabilized area (vegetation, rock, etc.).

PLANS SHEET LEGEND

DIKE (D)

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DIKES (EARTHWORK FOR EROSION CONTROL)

EC(4)-16

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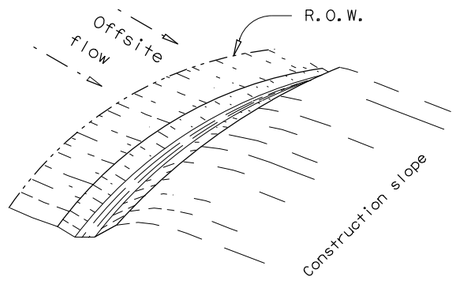
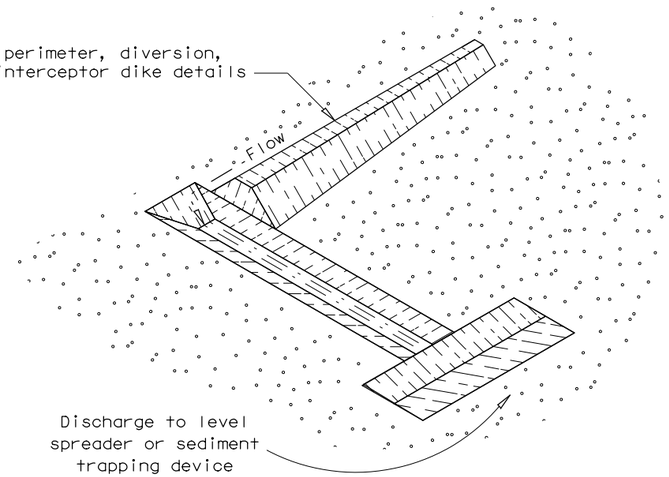


PERIMETER SWALE



DIVERSION SWALE

GENERAL NOTE

1. Dimensions of swale may be modified with prior approval of the Engineer.
2. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter.
3. Grading shall be shown elsewhere on the plans or as directed by the Engineer.
4. The Engineer reserves the right to modify the dimensions shown for the swale dependent on runoff volume characteristics.
5. Swales that are in place for more than 14 calender days should be stabilized through seeding or other measures to control sediment runoff.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Remove sediment and debris when accumulation affects the performance of the devices, after a rain and when directed by the Engineer.

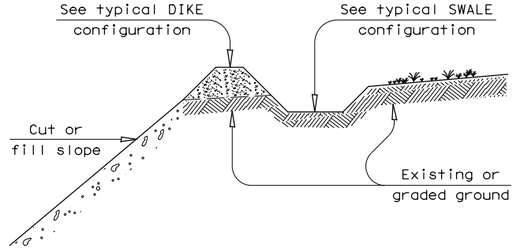
SWALE AND DIKE/SWALE USAGE GUIDELINES

A swale or dike/swale may be used to intercept runoff and divert it around unstabilized areas or to divert sediment laden runoff to an erosion control device (sediment basin or trap, rock filter dam, etc.).

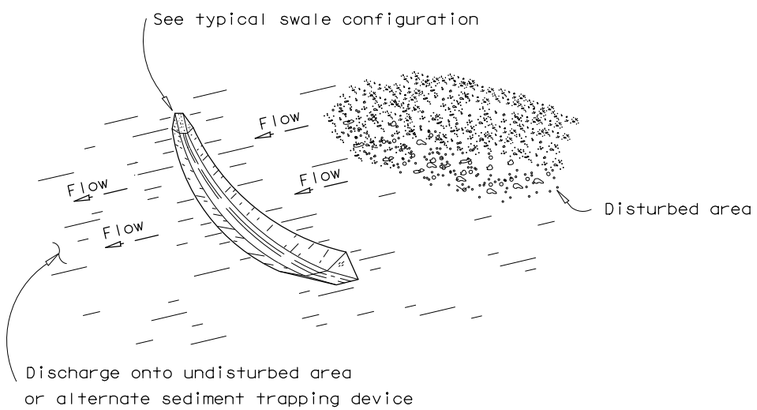
The drainage area contributing runoff to a swale or dike/swale should not exceed 5 acres. The spacing of swales and dike/swales should be as follows:

Slope of disturbed areas above dike	greater than 10%	5 - 10%	less than 5%
Maximum distance between dikes	100′	200′	300′

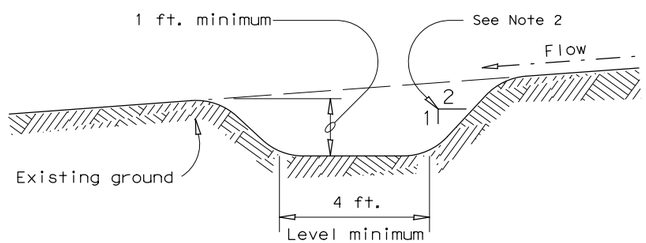
Intercepted runoff flowing in a swale or dike/swale should outlet to a stabilized area (vegetation, rock, etc.).



DIVERSION DIKE WITH SWALE



INTERCEPTOR SWALE



TYPICAL SWALE CONFIGURATION

PLAN SHEET LEGEND

SWALE → (S) →

DIKE → (D) →

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
SWALES
(EARTHWORK FOR EROSION CONTROL)

EC(5)-16

FILE: ec516	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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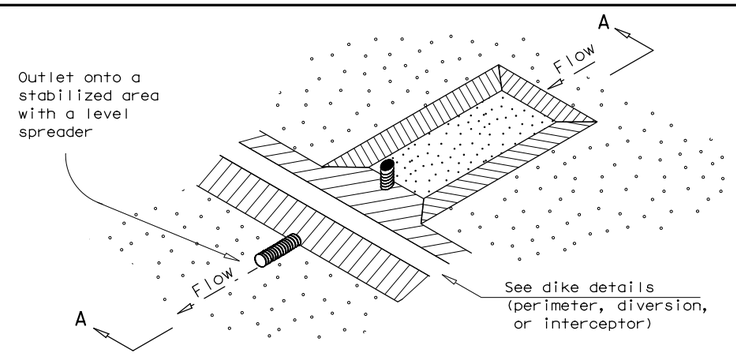
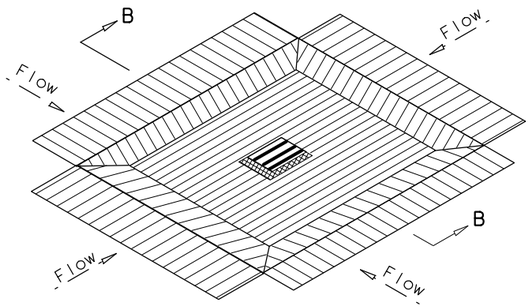


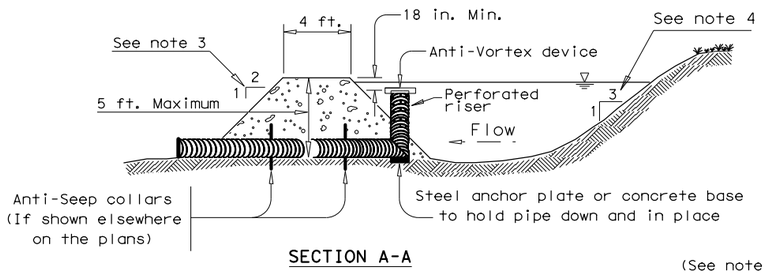
SEDIMENT BASIN AND/OR TRAP WITH PIPE OUTLET

ST/PO

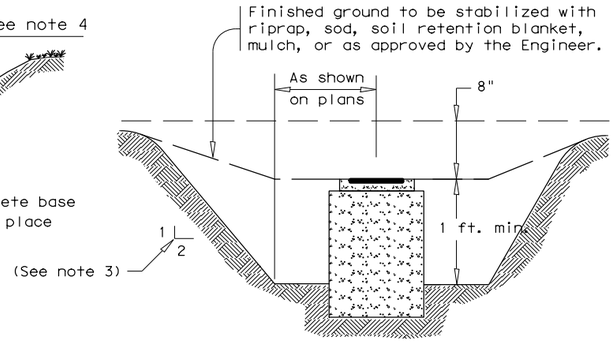


DROP INLET SEDIMENT TRAP

ST-DI



SECTION A-A



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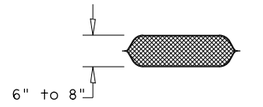

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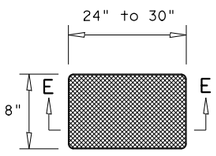
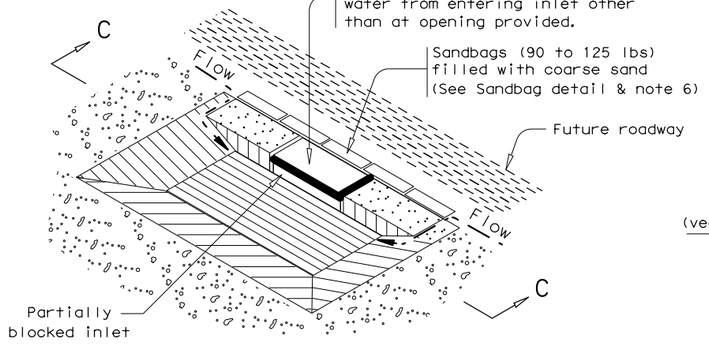
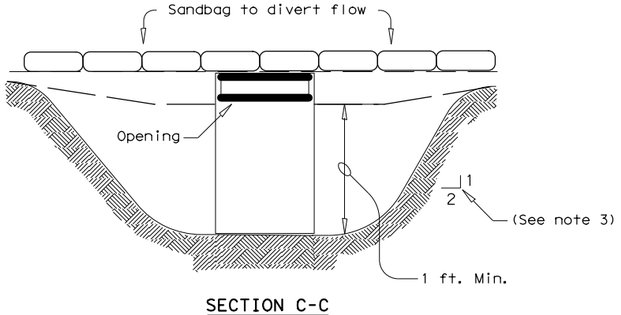


SANDBAG DETAIL

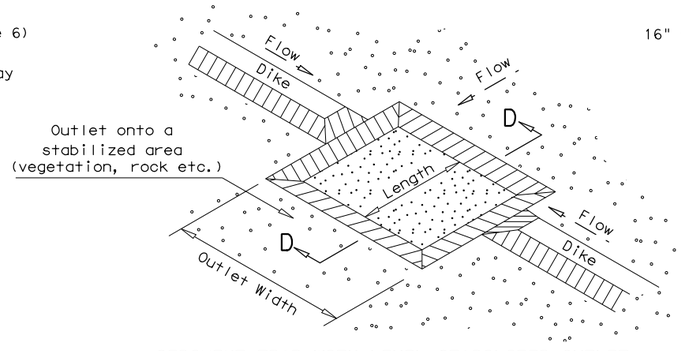


CURB INLET SEDIMENT TRAP

ST-CI

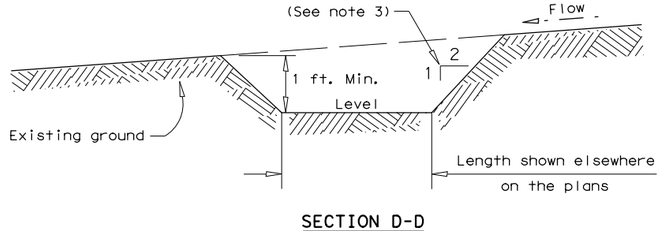


SECTION C-C



SEDIMENT TRAP WITH LEVEL STABILIZED OUTLET

ST



SECTION D-D

GENERAL NOTES

1. Pipe outlet material shall conform to the Item "Pipe Underdrains" or as accepted by the Engineer.
2. All pipe connections shall be watertight.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter. Protect the traveling public from inlet stacks within the clear zone.
4. Sediment basins shall have side slopes of 3:1 or flatter.
5. The dimensions and limits of excavation for sediment basins and traps will be as shown elsewhere on the plans.
6. The sandbag material shall be made of polypropylene, polyethylene or polyamide woven fabric, min. unit weight 4 ounces /SY, Mullen burst strength exeeding 300 psi and ultraviolet stability exeeding 70%.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

A sediment basin and/or trap may be used to precipitate sediment out of runoff draining from an unstabilized area.

Basins: The drainage area for a sediment basin should not exceed 100 acres. The basin capacity shall be at least 1800 CF/Acre of drainage area (0.5" over the drainage area). If the disturbed area draining to the basin is larger than 10 acres, the basin capacity should be 3600 CF/Acre (1.0" over the drainage area).

The basin should have a 40 hour draw-down time with an emergency spillway. The spillway may be designed to pass the peak rate of runoff from a 25 year frequency storm. The 100 year storm should be investigated to consider possible flooding impacts.

The entrance into the basin should be protected from erosion. The basin should be cleaned when the capacity has been reduced by 1/3.

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).

Sediment traps should be placed in the following locations:

1. Within drainage ditches spaced @ 500′± on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

The trap outlet may either be through a perforated riser and pipe assembly designed to achieve a 40 hour draw-down time or over a level stabilized area (vegetation, rock, etc.).

The trap should be cleaned when the capacity has been reduced by ½ or the sediment has accumulated to a depth of 1′, whichever is less.

PLANS SHEET LEGEND

ST/PO — Sediment Basin and / or Trap with Pipe Outlet

ST-DI — Drop Inlet Sediment Trap

ST-CI — Curb Inlet Sediment Trap

ST — Sediment Trap with Level Stabilized Outlet

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

SEDIMENT BASINS AND TRAPS (EARTHWORK FOR EROSION CONTROL)

EC(6)-16

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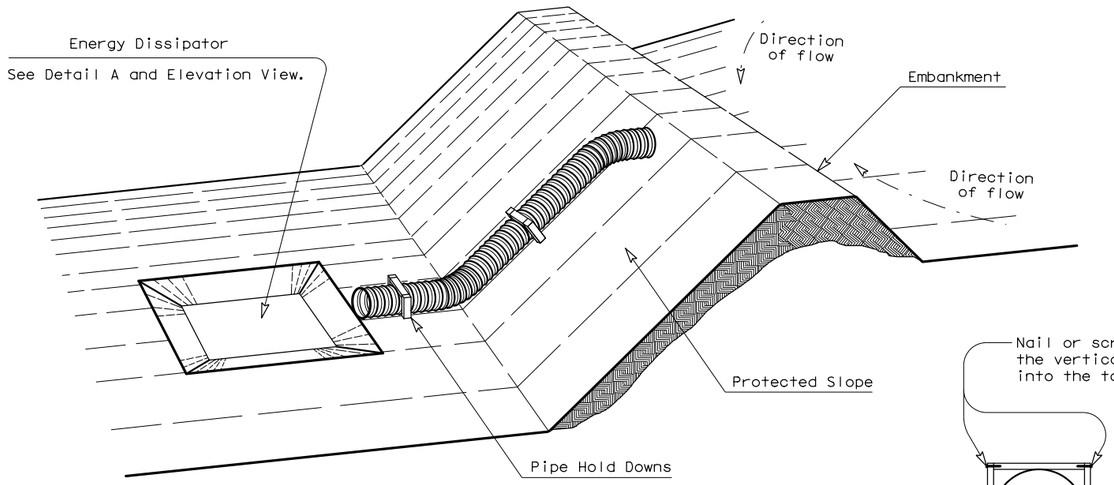
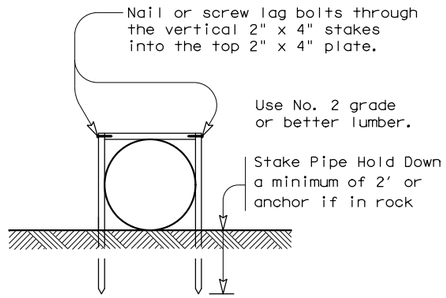
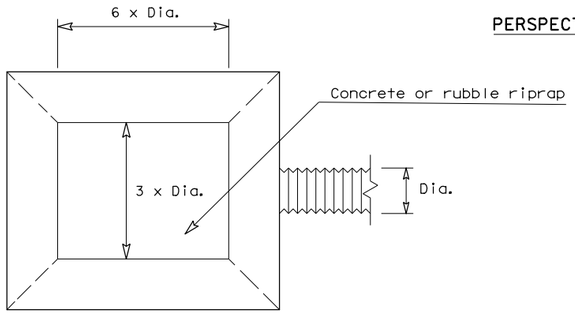


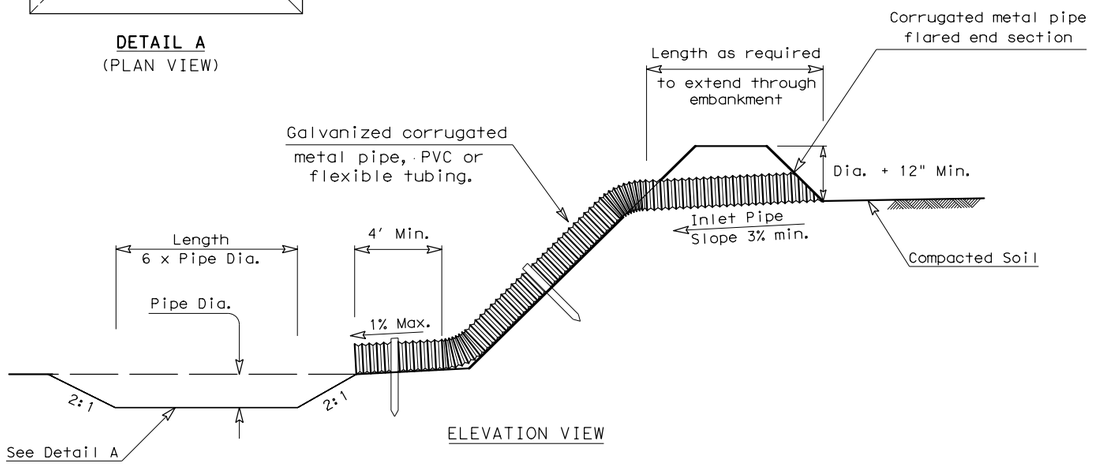
PERSPECTIVE VIEW



DETAIL B
(ELEVATION VIEW)



DETAIL A
(PLAN VIEW)



ELEVATION VIEW

PIPE SLOPE DRAIN WITH ENERGY DISSIPATOR

PSD

GENERAL NOTES

1. The inlet pipe shall have a slope of 3 percent or greater. Pipe diameter shall be as indicated on the construction drawings.
2. The top of embankment shall be at least 12" higher than the top of the inlet pipe at all points.
3. The pipe shall be galvanized corrugated metal pipe, PVC, or flexible tubing with watertight connection bands.
4. Pipe shall be secured with hold-down grommets spaced a maximum of 10' on centers or with pipe hold downs as shown in Detail B.
5. Construct embankment for the drainage system in 8" lifts to the required elevations. Hand tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed by the engineer.
6. The sediment trap shall be constructed to the dimensions as shown and in accordance with Special Specification, "Earthwork for Erosion Control". As otherwise detailed on the plans, the sediment trap may be stabilized using concrete or rubble riprap as per Item, "Riprap".
7. A standard corrugated metal pipe flared end section shall be used at the entrance of the pipe slope drain.
8. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PIPE SLOPE DRAIN
DESIGN CRITERIA

PIPE/TUBING SIZE	DIAMETER	MAXIMUM DRAINAGE AREA
PSD 12	12"	0.5 Acre
PSD 18	18"	1.5 Acres
PSD 21	21"	2.5 Acres
PSD 24	24"	3.5 Acres
PSD 30	30"	5.0 Acres

PIPE SLOPE DRAIN USAGE GUIDELINES

A Pipe Slope Drain (PSD) should be constructed to drain concentrated surface runoff safely down slopes without causing erosion. The drainage area contributing runoff to a PSD should not exceed 5 acres. The PSD should be sized to drain the peak rate of runoff without over-topping at the earth dike entrance. A 25 year storm frequency may be used to calculate the flow rate.

PLAN SHEET LEGEND

Pipe Slope Drain — PSD

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

TEMPORARY PIPE SLOPE DRAINS

EC(7)-16

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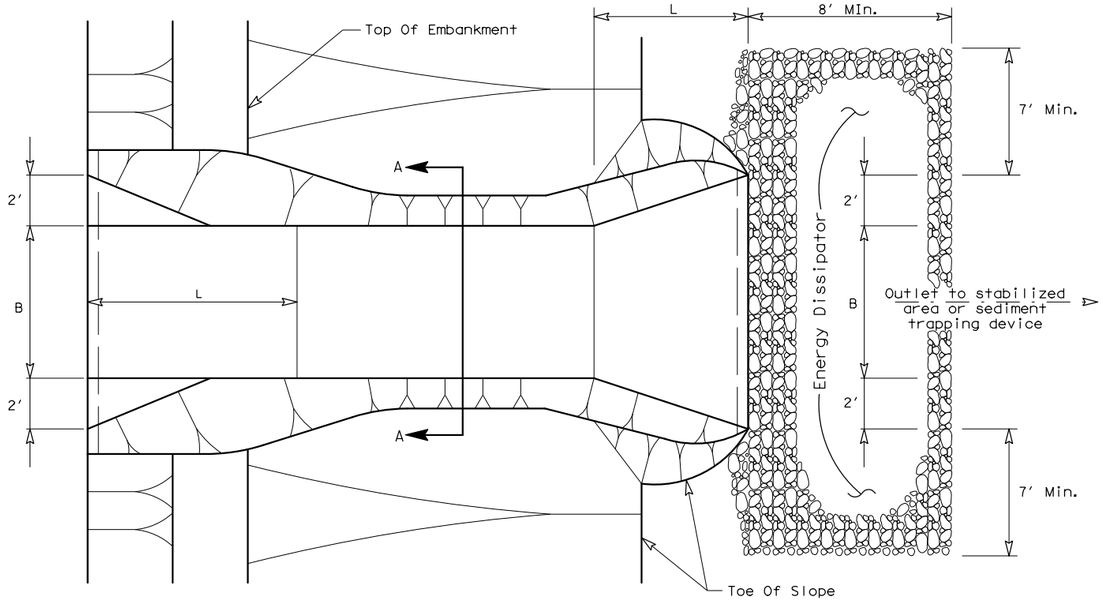
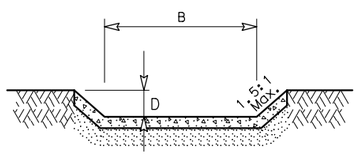
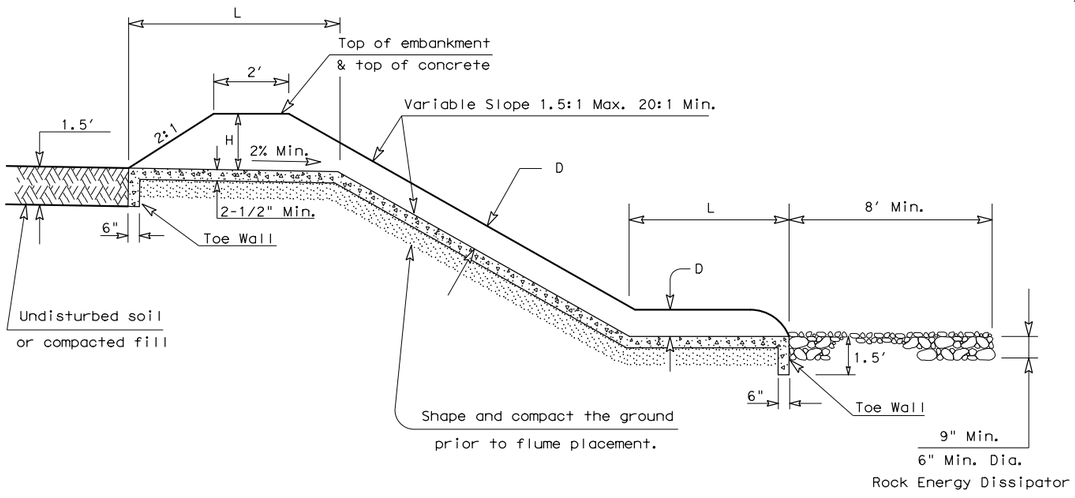


PLAN VIEW



SECTION A-A



ELEVATION VIEW

PAVED FLUME

PF

GENERAL NOTES

1. The group / size is a designator for the dimensions of the paved flume. The group / size is designated by a letter (A or B) and the bottom (B) dimension. The appropriate size shall be indicated on the construction plans.
2. Provide rock or rubble with a minimum diameter of 6" and a maximum volume of 1/2 cubic feet for construction of energy dissipaters.
3. For high velocity flows, the aggregate of the energy dissipator should be secured with 20-gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggegrate should be placed on the mesh to the dimensions specified. The mesh shall be folded at the upstream side over the aggegrate and tightly secured to itself on the downstream side using wire ties or hog rings.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PAVED FLUME USAGE GUIDELINES

A Paved Flume should be constructed to drain concentrated surface runoff safely down slopes without causing erosion. The drainage area contributing runoff to a paved flume should not exceed that given in the Design Criteria above. The paved flume should be sized to drain the peak rate of runoff without overtopping the embankment at the earth dike entrance. A 25 year storm frequency may be used to calculate the flow rate.

DESIGN CRITERIA					
Group/Size	B Bottom Width	H Min.	D Min.	L Min.	Maximum Drainage Area
A-2	2'	1.5'	8"	5'	5 Acres
A-4	4'	1.5'	8"	5'	8 Acres
A-6	6'	1.5'	8"	5'	11 Acres
A-8	8'	1.5'	8"	5'	14 Acres
A-10	10'	1.5'	8"	5'	18 Acres
B-4	4'	2'	10"	6'	14 Acres
B-6	6'	2'	10"	6'	20 Acres
B-8	8'	2'	10"	6'	25 Acres
B-10	10'	2'	10"	6'	31 Acres
B-12	12'	2'	10"	6'	36 Acres

PLANS SHEET LEGEND

Paved Flume — PF

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

TEMPORARY PAVED FLUMES

EC(8)-16

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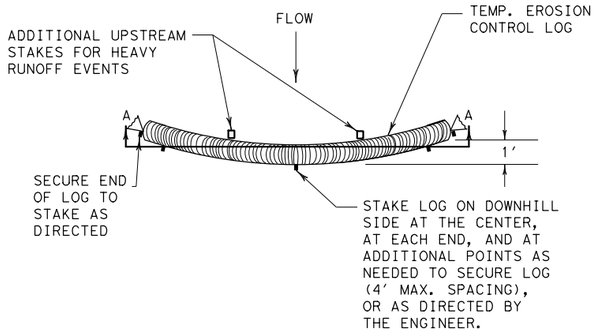
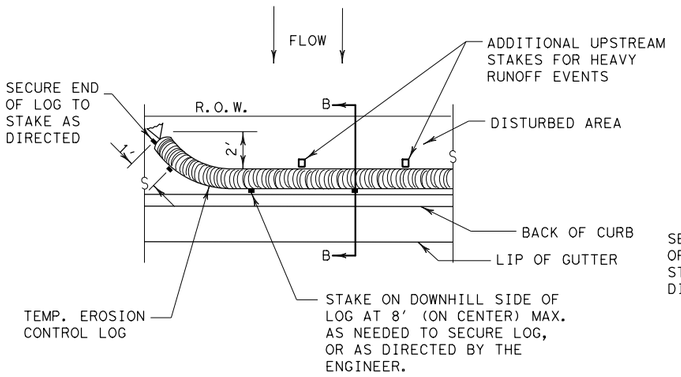
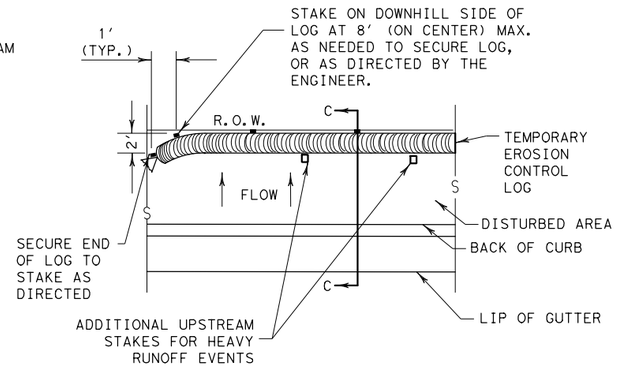


PLAN VIEW



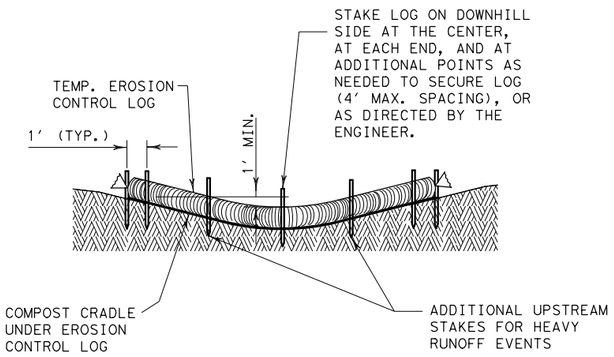
PLAN VIEW



PLAN VIEW

GENERAL NOTES:

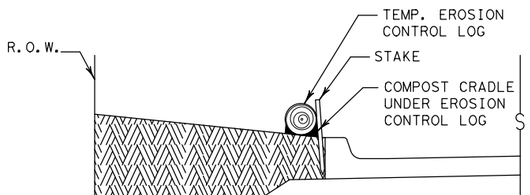
1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE 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.



SECTION A-A

EROSION CONTROL LOG DAM

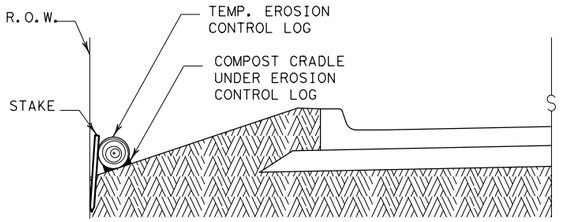
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

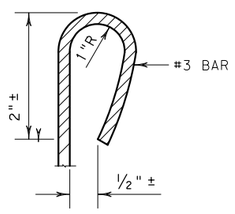
CL-BOC



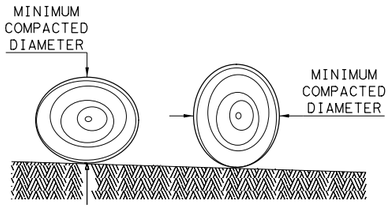
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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

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.

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

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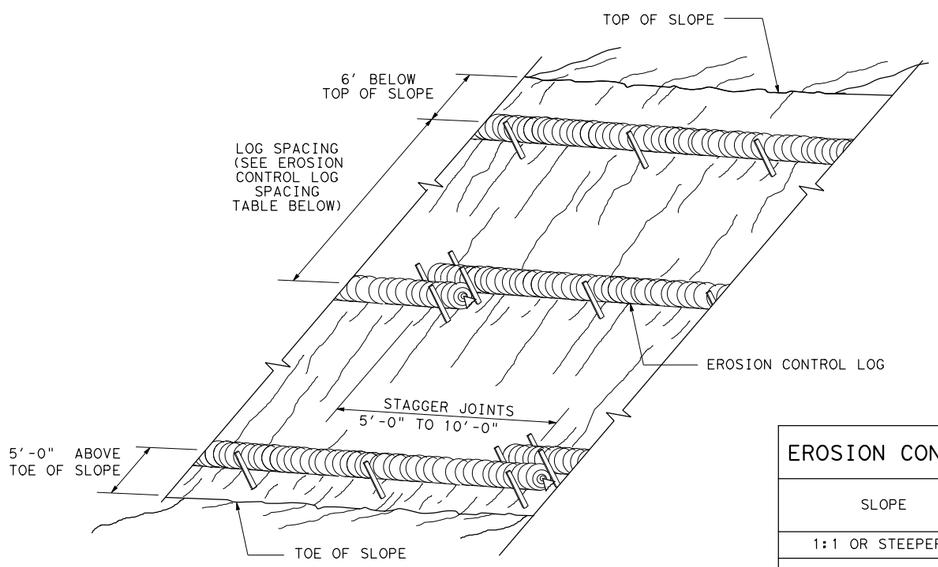
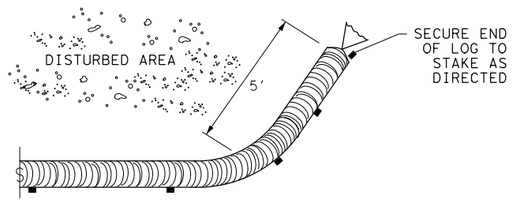


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

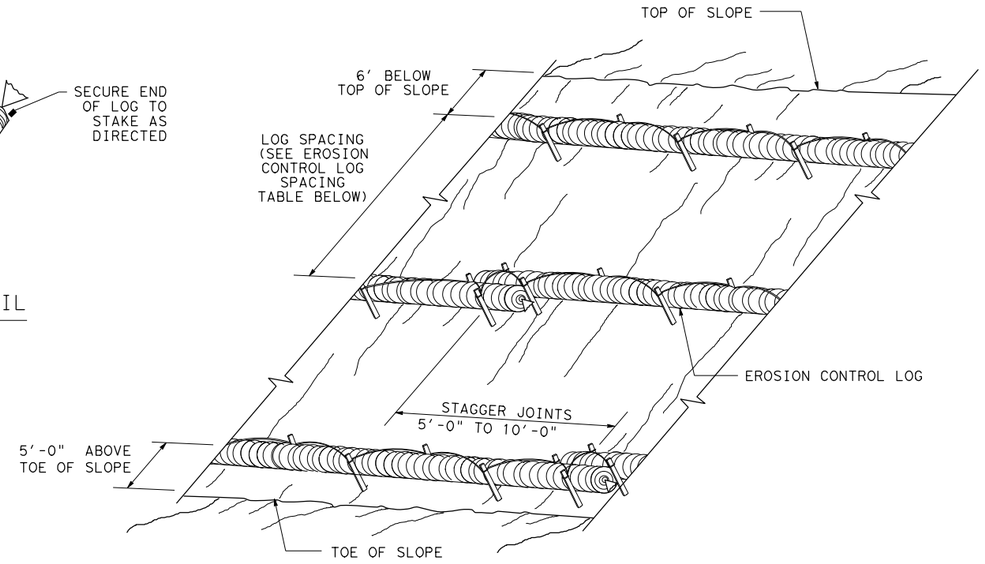
CL-SST



END SECTION RAP DETAIL

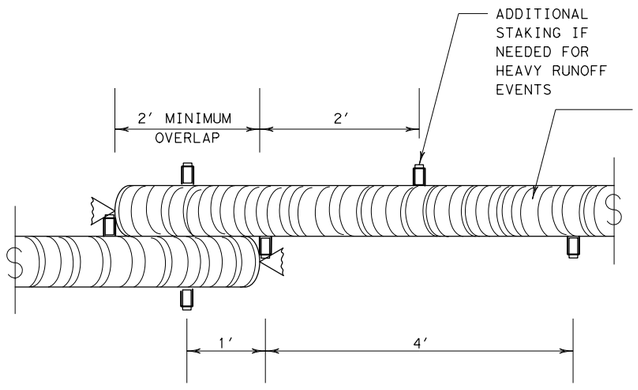
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

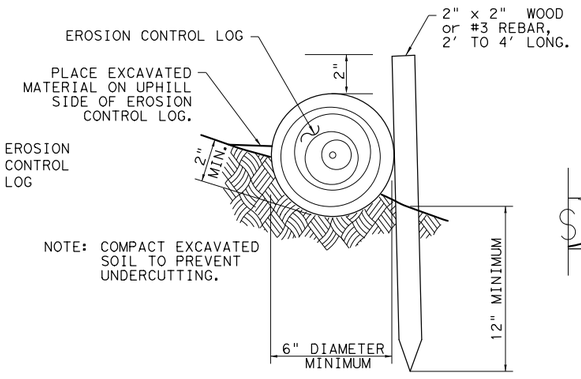
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

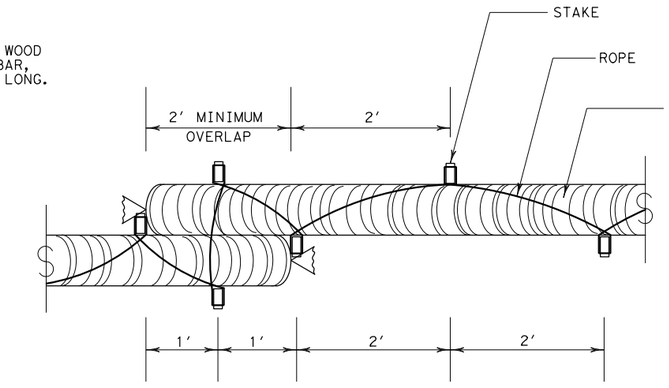


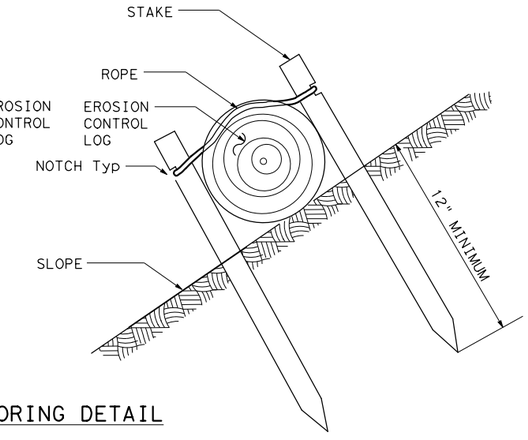


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

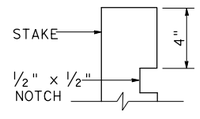
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

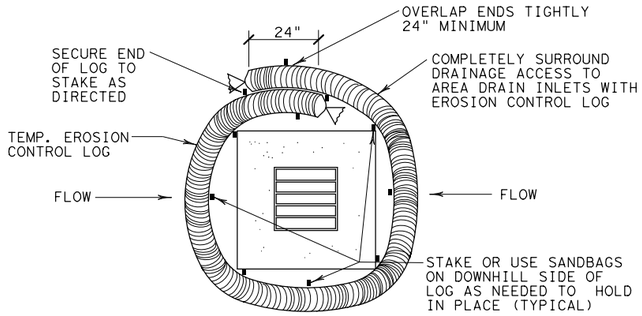
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

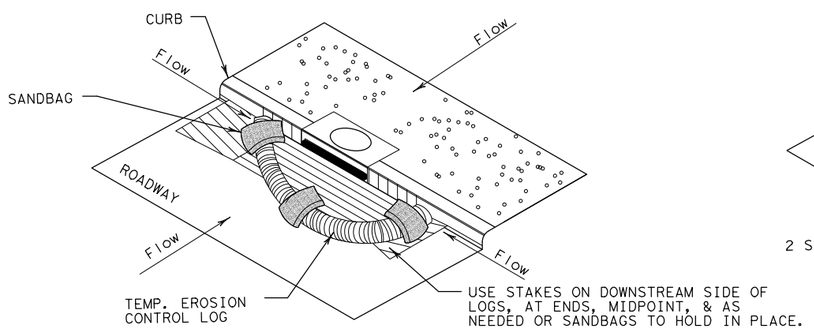
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				136

5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\ec916.dgn



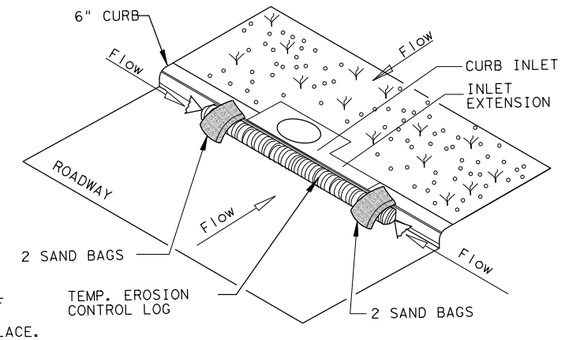
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

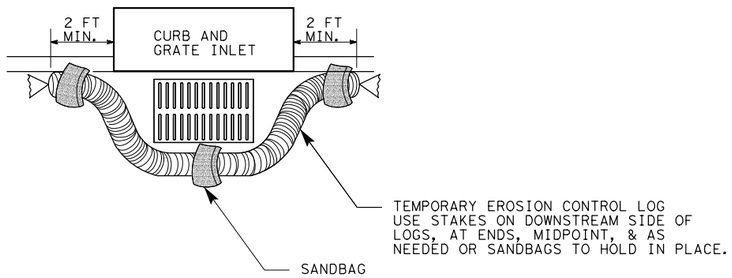
CL-CI



EROSION CONTROL LOG AT CURB INLET

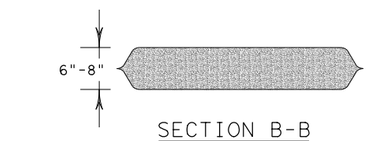
CL-CI

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.

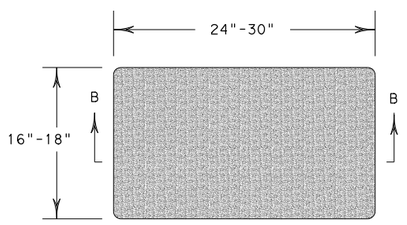


EROSION CONTROL LOG AT CURB & GRADE INLET

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				
	DIST	COUNTY		SHEET NO.
				137

OLD KYLE RD TREE PROTECTION TABLE													
TAG#	LOCATION			SPECIES	SIGNIFICANT TREE 8" - 23.5"		SIGNIFICANT TREE** 10.0" - 23.5"		HERITAGE 1:1		ADDITIONAL INCHES PRESERVED FOR MITIGATION ***	ACTION TO BE TAKEN	SHEET #
	STA	OFF	L/R		REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	PRESERVED		
2822	19+88.33	62.52	LT	LIVE OAK		9						PROTECTED	SHEET 142
2821	19+85.22	47.51	LT	LIVE OAK						28		PROTECTED	SHEET 142
2820	19+40.08	68.02	LT	LIVE OAK		9						PROTECTED	SHEET 142
2830	06+59.83	94.07	LT	CEDAR				15				PROTECTED	SHEET 140
2831	06+71.08	95.98	LT	CEDAR				18				PROTECTED	SHEET 140
2833	07+29.15	82.56	LT	CEDAR				20				PROTECTED	SHEET 140
2832	07+19.56	80.19	LT	CEDAR							6	PROTECTED	SHEET 140
2825	07+21.62	66.53	LT	CEDAR				13				PROTECTED	SHEET 140
2824	07+15.95	67.11	LT	CEDAR				13				PROTECTED	SHEET 140
2823	07+10.32	50.73	LT	CEDAR						41		PROTECTED	SHEET 140
2826	06+91.54	56.72	LT	CEDAR				18				PROTECTED	SHEET 140
2827	06+83.33	64.33	LT	CEDAR				18				PROTECTED	SHEET 140
2828	06+98.08	84.54	LT	CEDAR				12				PROTECTED	SHEET 140
NT1	10+34.84	19.03	RT	ELM								REMOVE	SHEET 141
NT2	10+33.12	24.61	RT	CEDAR				12				PROTECTED	SHEET 141
NT4	10+29.09	26.68	RT	ELM		10						PROTECTED	SHEET 141
NT3	10+26.83	23.94	RT	CEDAR				11				PROTECTED	SHEET 141
253	19+86.72	25.26	LT	OAK		14						PROTECTED	SHEET 142
255	19+74.95	33.79	LT	OAK	8							REMOVE	SHEET 142
254	19+66.93	39.49	LT	OAK								REMOVE	SHEET 142
287	19+73.42	45.39	LT	OAK								REMOVE	SHEET 142
261	18+98.51	24.88	LT	OAK		10						PROTECTED	SHEET 142
263	17+44.46	24.03	LT	OAK						28		PROTECTED	SHEET 142
281	19+85.00	15.58	RT	OAK					29			REMOVE	SHEET 142
278	19+20.19	31.65	RT	OAK		19						PROTECTED	SHEET 142
280	19+40.53	19.61	RT	OAK	18							REMOVE	SHEET 142
279	19+37.04	17.49	RT	OAK	9							REMOVE	SHEET 142
288	19+42.13	27.49	RT	OAK								REMOVE	SHEET 142
273	18+04.18	26.18	RT	OAK		8						PROTECTED	SHEET 142
272	18+00.80	28.66	RT	OAK							6	PROTECTED	SHEET 142
270	17+74.68	23.06	RT	OAK		12						PROTECTED	SHEET 142
275	18+47.77	18.64	RT	ASHE JUNIPER		12						PROTECTED	SHEET 142
276	18+60.55	18.47	RT	ASHE JUNIPER		23						PROTECTED	SHEET 142
624	2+38.26	18.92	LT	OAK		19						PROTECTED	SHEET 142
265	16+15.56	20.18	LT	OAK		20						PROTECTED	SHEET 142
290	16+02.95	26.43	LT	ASHE JUNIPER		16						PROTECTED	SHEET 142
295	15+81.66	24.90	LT	ASHE JUNIPER						31		PROTECTED	SHEET 141
294	15+75.54	20.54	LT	ASHE JUNIPER		10						PROTECTED	SHEET 141
297	15+29.48	37.26	LT	ASHE JUNIPER		19						PROTECTED	SHEET 141
298	15+12.01	34.89	LT	ASHE JUNIPER		23						PROTECTED	SHEET 141
299	15+02.57	32.70	LT	OAK						31		PROTECTED	SHEET 141
300	14+74.57	31.23	LT	ASHE JUNIPER		15						PROTECTED	SHEET 141
401	14+57.62	26.60	LT	ASHE JUNIPER					24			REMOVE	SHEET 141
402	14+37.53	24.59	LT	ASHE JUNIPER	23							REMOVE	SHEET 141
403	14+19.26	22.97	LT	ASHE JUNIPER		12						PROTECTED	SHEET 141
404	14+17.49	24.89	LT	ASHE JUNIPER	16							REMOVE	SHEET 141
405	14+06.26	22.34	LT	ASHE JUNIPER								PROTECTED	SHEET 141
106	14+23.75	40.18	LT	ASHE JUNIPER		14						PROTECTED	SHEET 141
407	13+75.28	20.29	LT	ASHE JUNIPER						24		PROTECTED	SHEET 141
408	13+57.41	29.43	LT	ASHE JUNIPER	13							REMOVE	SHEET 141
412	13+45.77	34.34	LT	ASHE JUNIPER	12							REMOVE	SHEET 141
413	13+29.88	19.79	LT	ASHE JUNIPER						27		PROTECTED	SHEET 141
414	13+10.70	20.13	LT	ASHE JUNIPER		14						PROTECTED	SHEET 141
415	12+49.05	26.59	LT	ASHE JUNIPER	12							REMOVE	SHEET 141
416	12+30.89	34.27	LT	OAK		10						PROTECTED	SHEET 141
417	12+29.34	37.09	LT	OAK							7	PROTECTED	SHEET 141
418	12+31.80	37.57	LT	OAK		15						PROTECTED	SHEET 141
419	11+75.66	40.38	LT	ASHE JUNIPER		20						PROTECTED	SHEET 141
420	11+48.30	59.31	LT	OAK								PROTECTED	SHEET 141
422	10+73.85	38.02	LT	OAK						45		PROTECTED	SHEET 141
425	10+50.61	3.11	LT	OAK					27			REMOVE	SHEET 141
425	10+81.50	1.13	LT	OAK								REMOVE	SHEET 141
427	10+80.57	12.38	RT	OAK	11							REMOVE	SHEET 141
428	10+75.17	16.80	RT	OAK								REMOVE	SHEET 141
429	10+77.68	16.26	RT	OAK	9							REMOVE	SHEET 141

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Ardurra Group, Inc. (dba LNV, LLC)
Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TREE PROTECTION TABLE
SHEET 1 OF 2

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	138

OLD KYLE RD TREE PROTECTION TABLE

TAG#	LOCATION			SPECIES	SIGNIFICANT TREE 8" - 23.5"		SIGNIFICANT TREE** 10.0" - 23.5"		HERITAGE 1:1		ADDITIONAL INCHES PRESERVED FOR MITIGATION ***	ACTION TO BE TAKEN	SHEET #
	STA	OFF	L/R		REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	PRESERVED		
430	14+23.35	20.81	RT	OAK		10						PROTECTED	SHEET 141
432	14+02.03	21.00	RT	OAK		11						PROTECTED	SHEET 141
433	13+99.21	22.85	RT	OAK		8						PROTECTED	SHEET 141
434	13+86.61	26.28	RT	OAK		8						PROTECTED	SHEET 141
438	12+34.24	24.25	RT	ASHE JUNIPER						24		PROTECTED	SHEET 141
439	11+98.84	15.38	RT	OAK		21						PROTECTED	SHEET 141
440	11+93.19	18.68	RT	OAK		22						PROTECTED	SHEET 141
441	11+87.41	19.58	RT	OAK							7	PROTECTED	SHEET 141
482	08+90.40	21.11	LT	OAK		16						PROTECTED	SHEET 141
489	08+82.14	23.28	LT	OAK						24		PROTECTED	SHEET 141
490	09+70.92	4.46	RT	ASHE JUNIPER	21							REMOVE	SHEET 141
491	08+78.55	15.37	RT	OAK	17							REMOVE	SHEET 141
492	08+61.20	14.90	RT	OAK	14							REMOVE	SHEET 141
493	08+31.04	16.87	RT	OAK	19							REMOVE	SHEET 141
494	07+41.79	24.75	RT	ASHE JUNIPER						25		PROTECTED	SHEET 140
495	07+45.87	46.60	RT	ASHE JUNIPER		22						PROTECTED	SHEET 140
496	06+92.74	14.00	RT	ASHE JUNIPER					36			REMOVE	SHEET 140
497	06+34.99	21.60	RT	OAK		23						PROTECTED	SHEET 140
498	05+93.65	20.53	RT	OAK		17						PROTECTED	SHEET 140
499	05+93.32	21.87	RT	ASHE JUNIPER		11						PROTECTED	SHEET 140
500	05+84.93	23.16	RT	OAK		17						PROTECTED	SHEET 140
533	07+67.85	29.28	LT	OAK		13						PROTECTED	SHEET 140
532	07+62.64	28.66	LT	OAK		10						PROTECTED	SHEET 140
531	07+38.44	27.84	LT	OAK						30		PROTECTED	SHEET 140
530	07+29.48	32.87	LT	OAK		11						PROTECTED	SHEET 140
529	06+85.83	28.16	LT	OAK						40		PROTECTED	SHEET 140
528	06+77.61	34.50	RT	OAK		10						PROTECTED	SHEET 140
527	06+70.38	42.76	LT	OAK		15						PROTECTED	SHEET 140
526	06+65.68	29.83	LT	OAK		16						PROTECTED	SHEET 140
511	00+01.00	24.47	RT	OAK						73		PROTECTED	SHEET 140
510	02+39.41	20.09	LT	OAK		19						PROTECTED	SHEET 140
518	00+79.98	44.35	RT	OAK						45		PROTECTED	SHEET 140
519	00+61.16	46.70	RT	OAK						35		PROTECTED	SHEET 140
					202	613	0	150	116	551	26		
						815		150		667			
				Understory Preservation:	Significant Preservation:			79%	Heritage Preservation:		83%		
									OVERALL PRESERVATION:		82%		

No category to fall below 10% preservation;
Preserved- Tree to remain that meets root protection zone requirements described in section 35-523 of the UDC.
Mitigation 1:1 for significant trees below minimum preservation requirements; 3:1 for heritage trees below 100% preservation
** Small species: Condalia, Redbud, Tx. Mountain Laurel, Tx. Persimmon, Hawthorn, Possumhaw - these are mitigated at 1:1 for Heritage Trees*
*** Ashe Juniper, Huisache, Mesquite, Arizona Ash, Hackberry protected at 10" dbh and mitigated at 1:1 for heritage trees*
**** Mitigation Trees: Unprotected-sized trees to be used for mitigation calculations; subtract inches from mitigation owed*

THIS DOCUMENT IS FOR INTERIM REVIEW AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING, PERMIT OR OTHER UNAUTHORIZED PURPOSES. THESE DOCUMENTS/PLANS WERE AUTHORIZED TO BE RELEASED.

BY: BRYAN J. SPINA , P.E.
LICENSE NO.: 103776 DATE: 5/10/2024

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Surveying Firm 10126502

HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

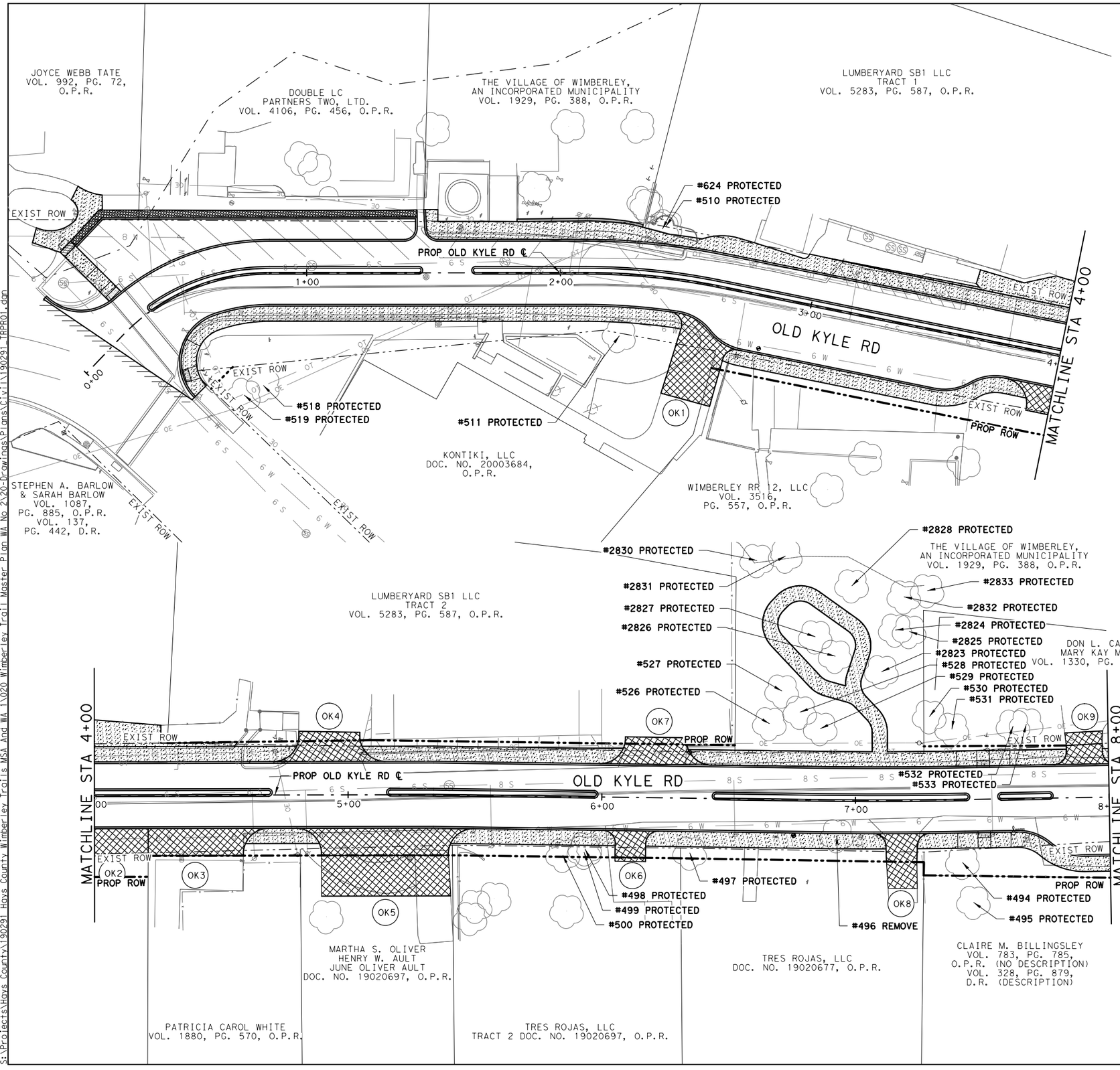
REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TREE PROTECTION TABLE
SHEET 2 OF 2

SCALE: N.T.S.

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	139



LEGEND

- 8 S — WASTE WATER
- 8 W — WATER
- G — BURIED GAS
- OT — OH TEL
- UGT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- FO — UNDERGROUND FIBER OPTIC
- UE — UNDERGROUND ELEC
- C — UNDERGROUND CABLE
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST SHRUB
- EXIST TREE
- MATCH EXIST PAVEMENT
- (X) DRIVEWAY NO.
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DIRECTION OF FLOW

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

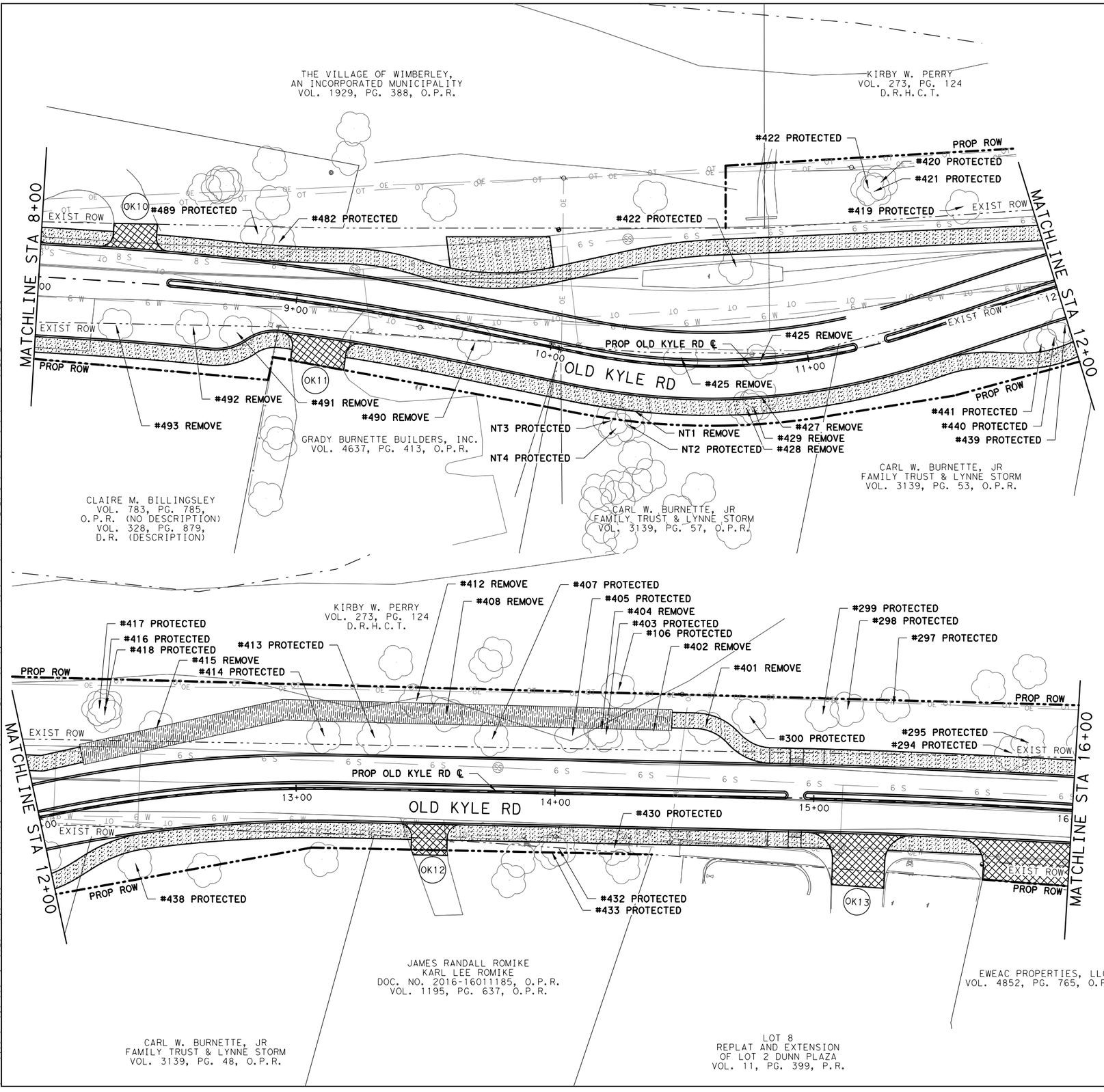
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TREE PROTECTION PLAN
SHEET 1 OF 3

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	140

Plotted by: nhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TRPR01.dgn



LEGEND

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- OT — OH TEL
- UGT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- FO — UNDERGROUND FIBER OPTIC
- UE — UNDERGROUND ELEC
- C — UNDERGROUND CABLE
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
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- (X) DRIVEWAY NO.
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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

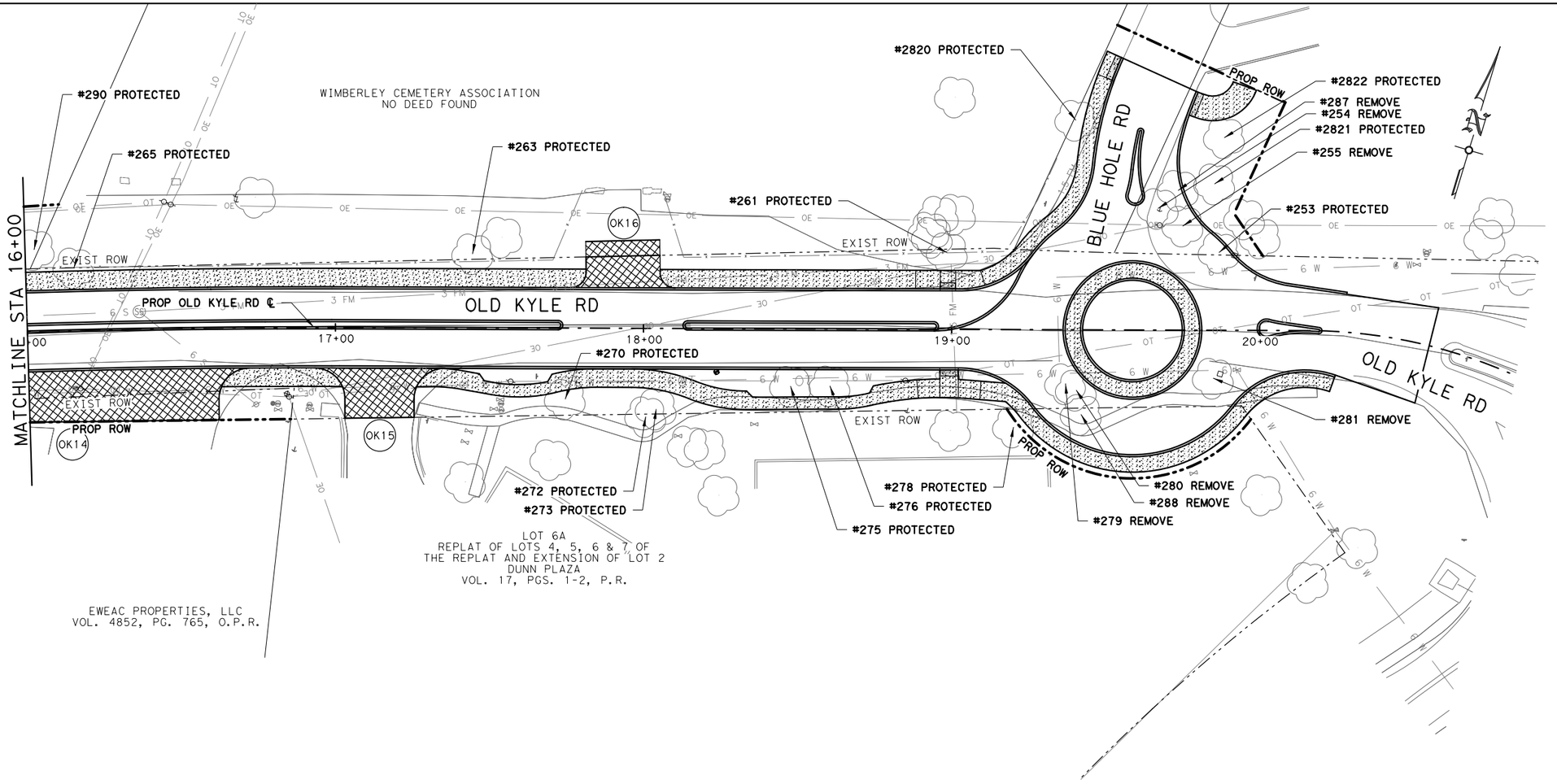
WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TREE PROTECTION PLAN
SHEET 2 OF 3

HORIZ. SCALE: 1"=40'
0 20 40
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	141

Plotted by: nhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TRPR02.dgn



LEGEND

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- 8 W — WATER
- G — BURIED GAS
- OT — OH TEL
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- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST SHRUB
- EXIST TREE
- MATCH EXIST PAVEMENT
- (X) DRIVEWAY NO.
- RES CONC DRIVEWAY
- CONC SIDEWALK
- DIRECTION OF FLOW

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BY: BRYAN J. SPINA, P.E.

LICENSE NO.: 103776 DATE: 5/10/2024

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION
AND MULTI-NODAL PROJECT
(OLD KYLE ROAD)

TREE PROTECTION PLAN
SHEET 3 OF 3

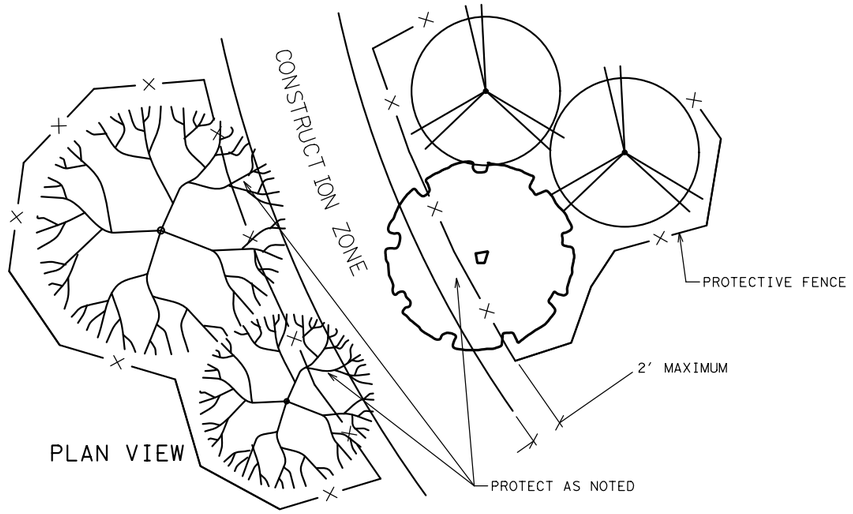
HORIZ. SCALE: 1"=40'

0 20 40

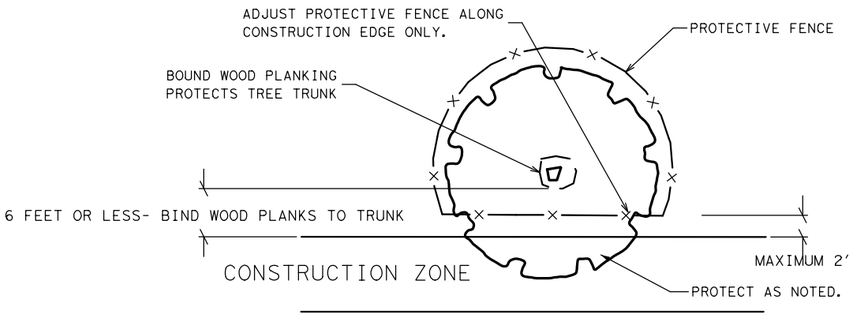
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	142

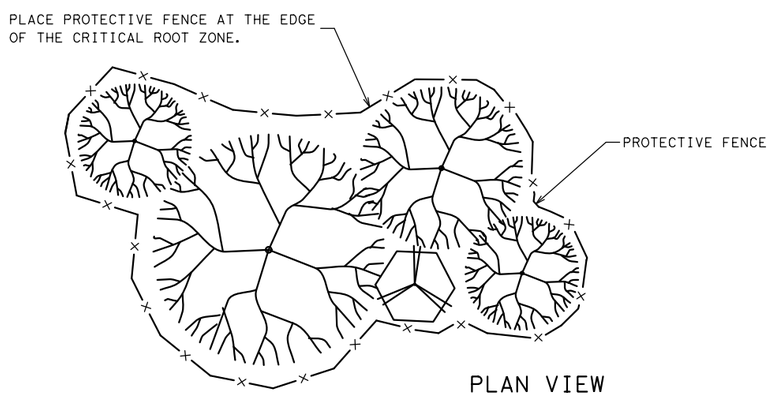
Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_TRPR03.dgn



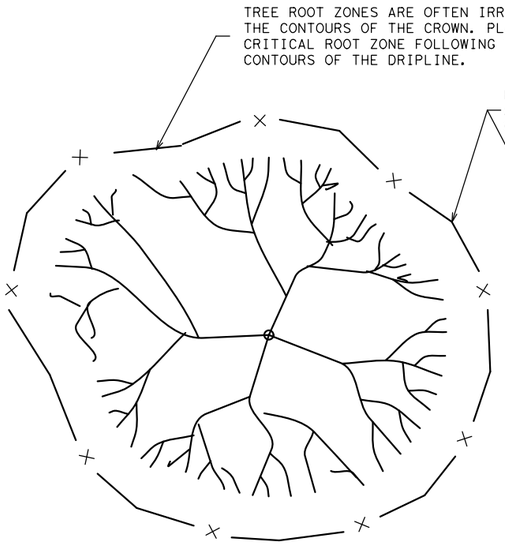
LINEAR CONSTRUCTION THROUGH STAND OF TREES

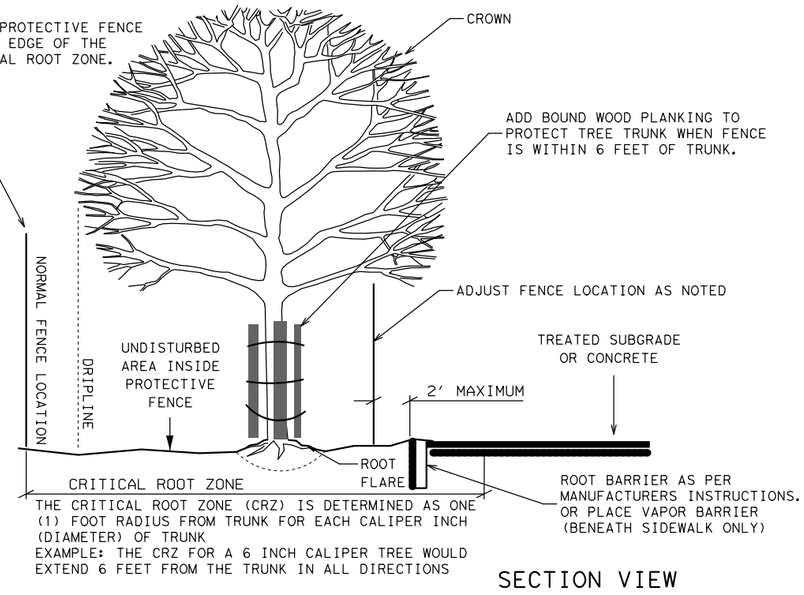


PLAN VIEW
PAVING UNDER TREES



TYPICAL TREE GROUPING PROTECTION





TYPICAL TREE PROTECTION

NOTES:

CRITICAL ROOT ZONE IS 1 FT. AWAY FROM TREE TRUNK FOR EVERY 1 IN. OF TREE DIAMETER MEASURED AT 4 FT. HEIGHT.

WATER TREES EVERY 2 WEEKS WITH A MINIMUM OF 100 GALLONS PER TREE.

SPRAY TREE WITH WATER TO REMOVE CONSTRUCTION DUST WHEN DIRECTED.

CONSTRUCTION FENCE SHALL BE 4 FT. TALL.

DO NOT PERFORM WORK OR STORE EQUIPMENT WITHIN PROTECTED AREA.

COVER THE CRITICAL ROOT ZONE BETWEEN THE PROTECTED AREA AND THE CONSTRUCTION ZONE WITH 4 IN. OF MULCH

PERFORM TREE TRIMMING AND WOUND REPAIR PER STANDARD SPECIFICATIONS.

DAMAGED AND EXPOSED ROOTS SHALL BE TRIMMED AND TREATED PER STANDARD SPECIFICATIONS. BACKFILL EXPOSED ROOTS WITH TOPSOIL WITHIN 24 HOURS OF EXPOSURE.

PLACE PLASTIC UNDER CONCRETE PLACED IN THE CRITICAL ROOT ZONE.

PLACE A ROOT BARRIER IN THE CRITICAL ROOT ZONE AT THE EDGE OF TREATED SUBGRADE TO THE DEPTH OF THE SUBGRADE.

ALL WORK IS SUBSIDIARY TO BID ITEM.

Texas Department of Transportation | Austin District Standard

TREE PROTECTION DETAILS

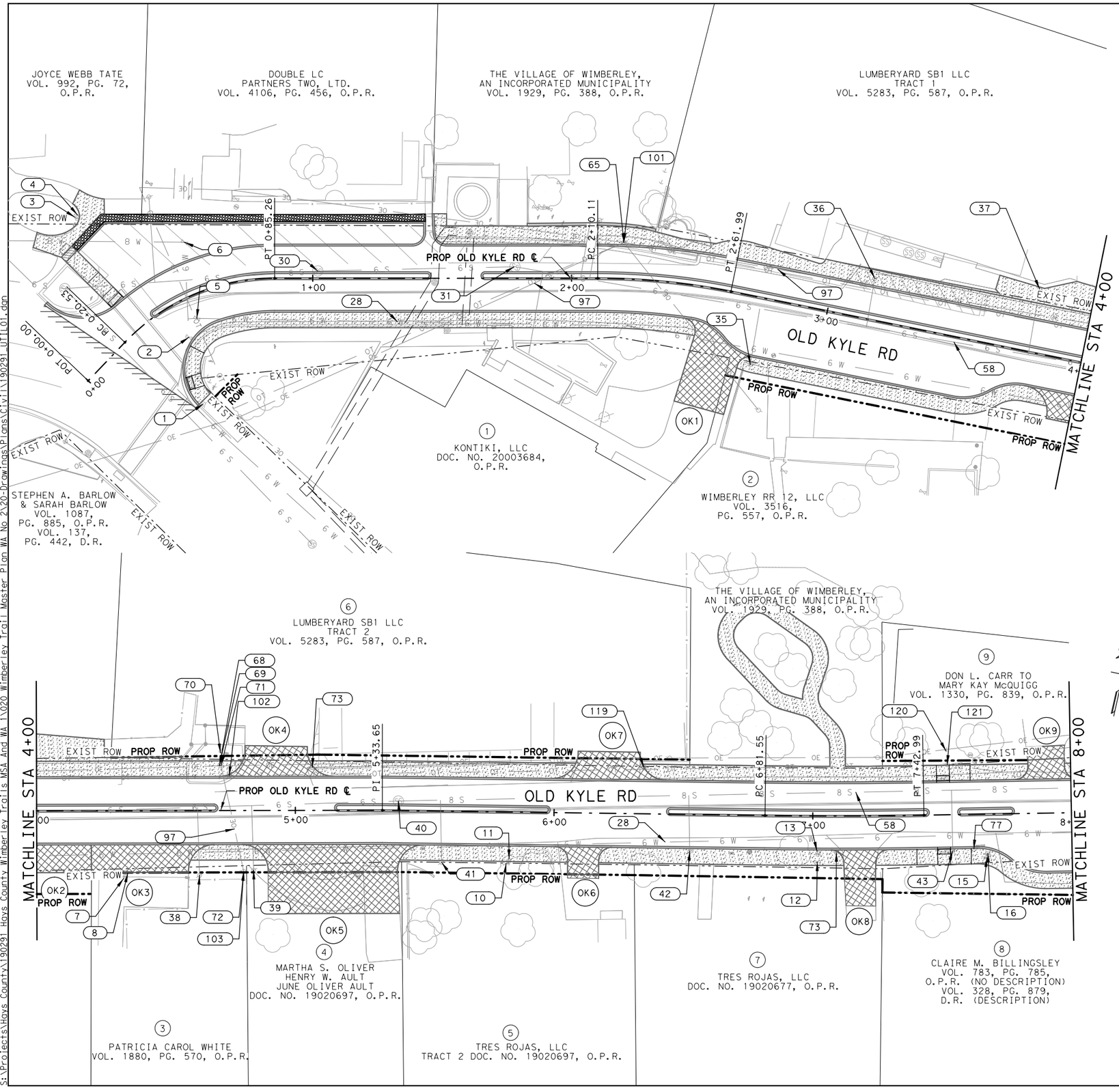
TPD-19(AUS)

CONT	SECT	JOB	HIGHWAY

REVISIONS
06/16: SHEET CREATED
04/19: APPROVED

DIST	COUNTY	SHEET NO.
		143

5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\Standards\tpd-19.dgn



NOTE:

SEE UTILITY CONFLICT MATRIX TABLE FOR DESCRIPTION AND RECOMMENDED ACTION FOR EACH UTILITY CONFLICT

Parcel	Parcel Number	Address - as shown on Hays CAD	Required ROW (SF)
1	R18465	13904 Ranch Road 12	65
2	R18425	13900 Ranch Road 12	1265
3	R18606	151 Old Kyle Road	115
4	R18454	220 Old Kyle Road	200
5	R18388	Old Kyle Road	360
6	R18409	111 Old Kyle Road	484
7	R18565	110 Old Kyle Road	385
8	R18478	282 Old Kyle Road	2476
9	R18402	280 Old Kyle Road	80

LEGEND

- S — WASTE WATER
- W — WATER
- G — BURIED GAS
- OT — OH TEL
- UT — UNDERGROUND TEL
- OE — OH ELEC
- OE/OT — OH ELEC/OH TEL
- UE — UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
- SANITARY SEWER
- STORM DRAINAGE
- CLEAN OUT
- FIRE HYDRANT
- AT&T
- EXIST TREE
- MATCH EXIST PAVEMENT
- WASHOUT CROWN
- (X) DRIVEWAY NO.
- COMM CONC DRIVEWAY
- RES CONC DRIVEWAY
- CONC SIDEWALK
- PROP BOARDWALK
- REMOVE & RELOCATE FENCE
- VEGETATION
- GAS, WATER, ELEC, UGT & STORM DRAIN CROSSING
- (X) CONFLICT

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BY: BRYAN J. SPINA, P.E.

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK
		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

UTILITY LAYOUT AND RIGHT-OF-WAY ACQUISITION PLAN

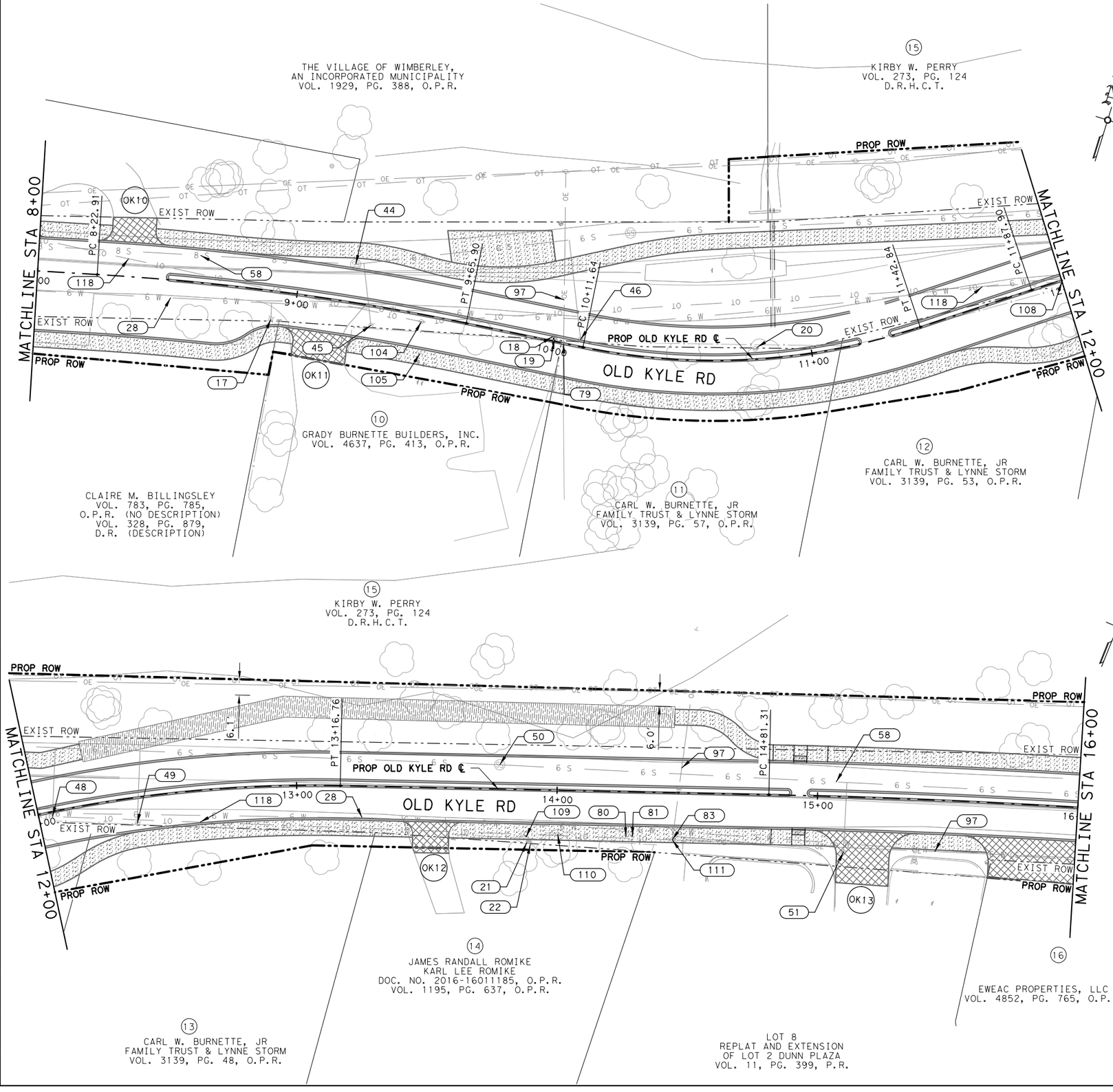
HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	144

Plotted by: hhinostroza
5/10/2024
S:\Projects\Hays County\190291 Hays County Wimberley Trails MSA And WA 1\020 Wimberley Trail Master Plan WA No 2\20-Drawings\Plans\Civil\190291_UTIL01.dgn



NOTE:

SEE UTILITY CONFLICT MATRIX TABLE FOR DESCRIPTION AND RECOMMENDED ACTION FOR EACH UTILITY CONFLICT

Parcel	Parcel Number	Address - as shown on Hays CAD	Required ROW (SF)
10	R18421	284 Old Kyle Road	1942
11	R18557	Old Kyle Road	2886
12	R18556	Old Kyle Road	3100
13	R18571	Old Kyle Road	1440
14	R18420	425 Old Kyle Road	295
15	R15761	Old Kyle Road	11680
16	R87741	453 Old Kyle Road	991

LEGEND

- S WASTE WATER
- W WATER
- G BURIED GAS
- OT OH TEL
- UT UNDERGROUND TEL
- OE OH ELEC
- OE/OT OH ELEC/OH TEL
- UE UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
- LIGHT POLE
- POWER POLE
- GUY WIRE
- SIGN
- MAIL BOX
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- GAS, WATER, ELEC, UGT & STORM DRAIN CROSSING
- (X) CONFLICT

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		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

UTILITY LAYOUT AND RIGHT-OF-WAY ACQUISITION PLAN

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

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CHK DGN:			
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CHK DWG:	TEXAS	HAYS	145

Plotted by: nhinostroza
5/10/2024
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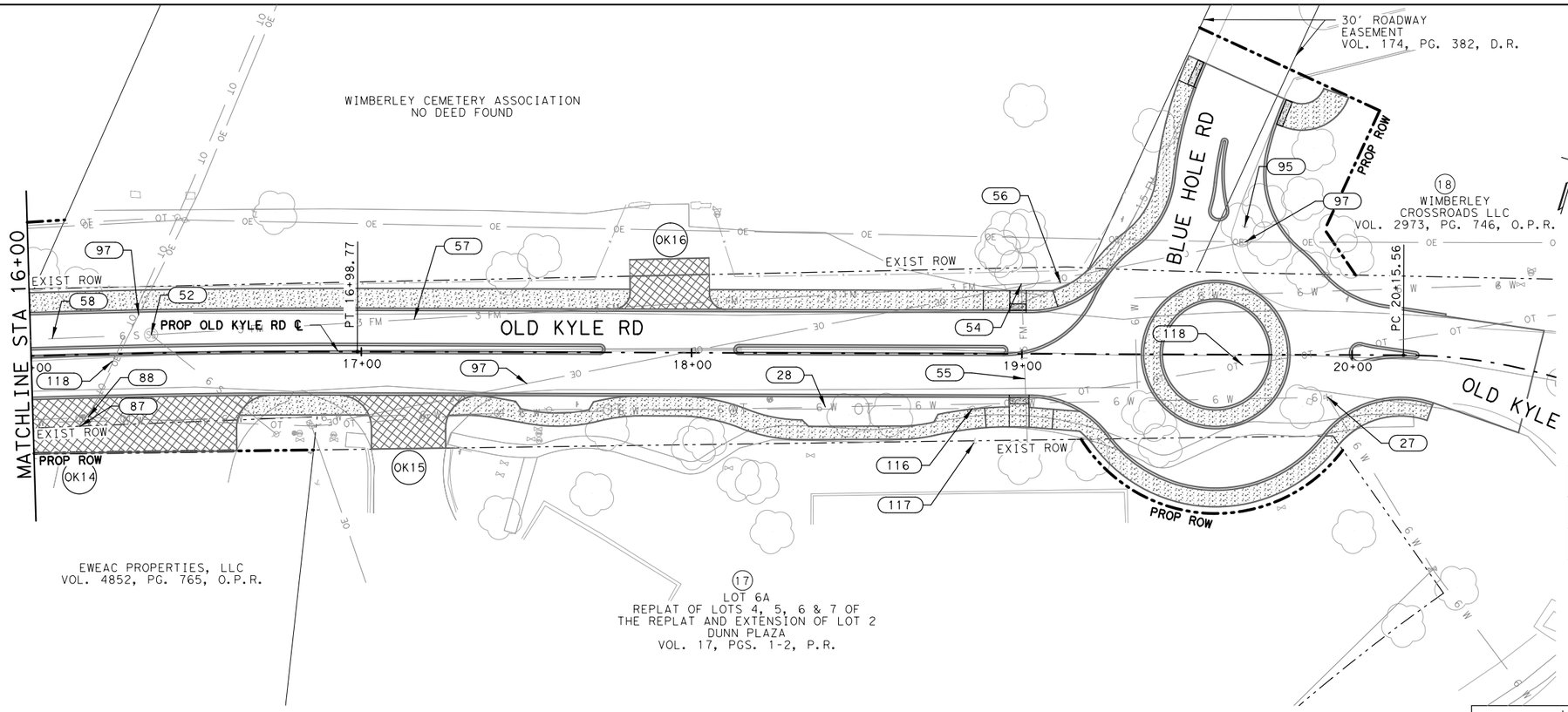

NOTE:

SEE UTILITY CONFLICT MATRIX TABLE FOR DESCRIPTION AND RECOMMENDED ACTION FOR EACH UTILITY CONFLICT

Parcel	Parcel Number	Address - as shown on Hays CAD	Required ROW (SF)
17	R137838	201 Ranch Road 3237	1325
18	R15758	501 Old Kyle Road	4158

LEGEND

- WASTE WATER
- WATER
- BURIED GAS
- OH TEL
- UNDERGROUND TEL
- OH ELEC
- OH ELEC/OH TEL
- UNDERGROUND ELEC
- STORM SEWER
- EXIST FENCE
- WATER METER
- WATER VALVE
- TELE PEDESTAL
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UTILITY LAYOUT AND RIGHT-OF-WAY ACQUISITION PLAN

HORIZ. SCALE: 1"=40'

0 20 40

SCALE IN FEET

DGN:			
CHK DGN:			
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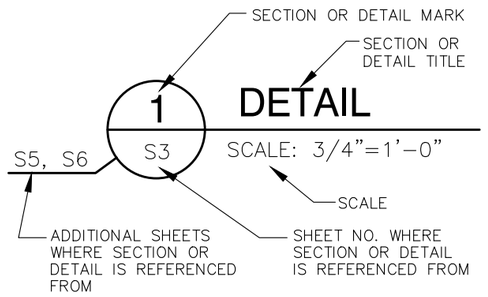
CHK DWG:	TEXAS	HAYS	146

NOTATION

DETAIL IDENTIFICATION SYSTEM



ELEVATION TARGET

REVISIONS

COLUMN GRID

U.N.O.	UNLESS NOTED OTHERWISE
N.T.S.	NOT TO SCALE
T.O.C.	TOP OF CONCRETE
T.O.S.	TOP OF STEEL
B.O.P.	BOTTOM OF PLATE
O.C.E.W.	ON CENTER EACH WAY
F.O.C.	FACE OF CONCRETE

MATERIALS

CONCRETE:

ITEM	28 DAY COMPRESSIVE CYLINDER STRENGTH			REMARKS
	3000 PSI	4000 PSI	5000 PSI	
ALL CONCRETE, U.N.O.		●		1" MAX AGGREGATE SLUMP = 4" ± 1"
PIERS	●			1" MAX AGGREGATE SLUMP = 8" ± 1"

STEEL

ITEM	ASTM DESIGNATION MINIMUM YIELD STRESS				REMARKS
	A992 50 KSI	A36 36 KSI	A572 50 KSI	A53 35 KSI	
BEAMS & COLS.	●				
STEEL PIPE SUPPORT				●	
MISC. PL'S & SHAPES		●			
STRUCT. BOLTS U.N.O.					A325N
ANCHOR RODS					F1554-55 KSI U.N.O.
THREADED ROD		●			A307 GALV.

REINFORCING STEEL:

ASTM-A615, GRADE 60, U.N.O.
ASTM-A185 - WELDED WIRE FABRIC

SHOP DRAWING AND SUBMITTAL

1. A MINIMUM OF TWO SETS OF STEEL FABRICATION AND ERECTION DRAWINGS SHALL BE FURNISHED BY FABRICATOR TO THE STRUCTURAL ENGINEER FOR APPROVAL.
2. SHOP DRAWINGS SHALL USE DRAFTING LINE WORK AND LETTERING THAT IS CLEARLY LEGIBLE. SHOP DRAWINGS SHALL NOT CONTAIN REPRODUCTIONS OF THE CONTRACT DRAWINGS PLANS OR DETAILS.
3. SHOP DRAWINGS SHALL NOT SHOW MATERIALS FOR MORE THAN ONE LEVEL OF THE SAME PLAN.
4. SHOP DRAWINGS SHALL SHOW CLEAR AND COMPLETE INFORMATION FOR THE FABRICATION (DETAIL SHEETS AND/OR MATERIAL LISTS) AND INSTALLATION.
5. ALLOW (2) WKS. FOR THE REVIEW OF SHOP DRAWINGS BY THE STRUCTURAL ENGINEER OF RECORD.
6. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER A PROPOSED CONSTRUCTION JOINT LOCATION PLAN FOR APPROVAL.

DESIGN CODES

INTERNATIONAL BUILDING CODE 2021 W/ LATEST TEXAS REVISIONS (D)

ASCE 7-16, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (D)

ACI 318-19 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (D)

ACI MANUAL OF CONCRETE PRACTICE, 2015 (R)

CRSI DESIGN HANDBOOK, 2008 (D)

(D) USED FOR DESIGN & CONSTRUCTION
(R) USED FOR REFERENCE

GEOTECHNICAL

IN ACCORDANCE WITH A GEOTECHNICAL REPORT BY BALCONES GEOTECHNICAL., ENTITLED "GEOTECHNICAL INVESTIGATION WIMBERYLEY VALLEY TRAILS - OLD KYLE ROAD", WIMBERLEY, TEXAS REPORT NO.: 0120-045, DATED JULY 25, 2022.

DESIGN LOADS

	*DEAD LOAD PSF	LIVE LOAD PSF	TOTAL LOAD
ELEVATED WALKWAYS	10	90**	100

* IN ADDITION TO SELF WEIGHT OF STRUCTURE
** LIVE LOAD INCLUDES 90 PSF AND MAX. 5000# UTILITY VEHICLE LOAD

WIND SPEED: 107 MPH (3-SECOND GUST)
RISK CATEGORY II
EXPOSURE: C

SEISMIC DESIGN CRITERIA

$S_S = 0.051g$ $S_{DS} = 0.054g$
$S_1 = 0.028g$ $S_{D1} = 0.045g$

SEISMIC DESIGN CATEGORY: A
SEISMIC SITE CLASS: D

GENERAL NOTES

1. ALL DETAILS ARE TYPICAL, INCORPORATED INTO PROJECT AT APPROPRIATE LOCATIONS, WHETHER SPECIFICALLY INDICATED OR NOT.
2. ALL CONSTRUCTION, INCLUDING MATERIAL AND WORKMANSHIP, SHALL CONFORM TO THE PROVISIONS OF THE 2015 IBC AND STANDARDS REFERENCED THEREIN.
3. ALL ASTM STANDARDS LISTED HEREIN, SHALL BE AS REFERENCED IN THE LATEST ISSUE OF THE ANNUAL BOOK OF STANDARDS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS.
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE STRUCTURAL ENGINEER SHALL IMMEDIATELY BE NOTIFIED IN WRITING, OF ANY DISCREPANCIES.
5. ALL OMISSIONS AND/OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER. WORK SHOULD NOT PROCEED UNTIL A SOLUTION IS GIVEN BY THE STRUCTURAL ENGINEER.
6. IN CASE OF CONFLICT, NOTES AND DETAILS OF THESE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE "GENERAL NOTES". TYPICAL DETAILS SHALL BE USED WHENEVER APPLICABLE. REFER TO SPECIFICATIONS FOR INFORMATION NOT COVERED BY THESE NOTES OF DRAWING.
7. IF A SPECIFIC DETAIL IS NOT SHOWN FOR ANY PART OF THE WORK, THE CONSTRUCTION SHALL BE THE SAME AS FOR SIMILAR WORK.
8. WORKING DIMENSIONS SHALL NOT BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THESE STRUCTURAL DRAWINGS.
9. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE ERECTION SHORING AND BRACING AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION.
10. PIPES, DUCTS, SLEEVES, OPENINGS, POCKETS, CHASES, BLOCKOUTS, ETC. SHALL NOT BE PLACED IN SLABS, BEAMS, GIRDERS, COLUMNS, WALLS, FOUNDATION, ETC. NOR SHALL ANY STRUCTURAL MEMBER BE CUT FOR SUCH ITEMS, UNLESS SPECIFICALLY DETAILED ON THESE STRUCTURAL DRAWINGS. (IF ANY PIPES, DUCTS, ETC. DO OCCUR, THAT ARE NOT SHOWN ON THESE STRUCTURAL DRAWINGS, THE STRUCTURAL ENGINEER SHALL BE NOTIFIED)
11. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE STRUCTURAL ENGINEER FREE AND HARMLESS FROM ALL CLAIMS, DEMANDS AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE STRUCTURAL ENGINEER.
12. IF ANY SUBSTITUTION IS PROPOSED BY THE CONTRACTOR, NEW CALCULATIONS MAY HAVE TO BE PREPARED, THE DETAILS MAY HAVE TO BE ALTERED, ANY NEW DRAWINGS MAY HAVE TO BE SUBMITTED TO THE ENGINEERING DEPARTMENT. THE CONTRACTOR SHALL PAY THE STRUCTURAL ENGINEERS FEES TO ALTER THE APPROVED PLANS. THE CONTRACTOR SHALL ALSO PROCESS THE REVISED PLANS REFLECTING ALL SUBSTITUTIONS THROUGH THE ENGINEERING DEPARTMENT.
13. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS & CALCULATIONS FOR THE PRE-FABRICATED PEDESTRIAN BRIDGE SIGNED & SEALED BY A TEXAS REGISTERED PROFESSIONAL ENGINEER FOR REVIEW & APPROVAL.

FOUNDATION AND EARTHWORK

1. REMOVE EXISTING SUB-BASE, DEBRIS, VEGETATION, TOPSOIL, AND DELETERIOUS MATERIAL PRIOR TO PLACING BACKFILL.
2. IMPORTED SELECT FILL MATERIAL USED AT THIS SITE SHOULD HAVE A MAXIMUM LIQUID LIMIT OF 40 PERCENT AND A PLASTICITY INDEX (PI) BETWEEN 5 AND 17. THE SELECT FILL SHOULD BE PLACED IN NO GREATER THAN 8 INCH THICK LOOSE LIFTS AND SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR (ASTM D698) AND WITHIN -1 TO +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT. THE GEOTECHNICAL ENGINEER SHALL APPROVE SELECT FILL UTILIZED AT THIS SITE.
3. ALL BACKFILL SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. BACKFILL MATERIAL SHALL BE GRANULAR HAVING A P.I. OF BETWEEN 5 AND 17.
4. DRAINAGE: PROVIDE POSITIVE SLOPES, BOTH DURING AND AFTER CONSTRUCTION, FOR SURFACE & RUNOFF, MINIMUM OF 5'-0" FROM FOUNDATION.

CALL BEFORE YOU DIG!

Texas 811 Know what's below. Call before you dig.

PARTICIPANTS REQUEST 48 HOURS NOTICE BEFORE YOU DIG, DRILL, OR BLAST - STOP AND CALL 811

THE LONE STAR NOTIFICATION COMPANY AT 1-800-669-8344

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BY: **NICLAS S. GREEN**, P.E.

LICENSE NO.: **126232** DATE: **5/9/24**

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WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

GENERAL NOTES & DESIGN CRITERIA I

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	S1

CONCRETE NOTES

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE."
2. ALL CONCRETE U.N.O. SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, U.N.O. – WATER/ CEMENT RATIO OF 0.45 MAX.
3. ENTIRE AREA AROUND FOUNDATION MUST BE THOROUGHLY PROBED FOR UNDERGROUND PIPE, CONDUIT, HIGH PRESSURE LINES, ETC., BEFORE ANY EXCAVATIONS ARE BEGUN.
4. PORTLAND CEMENT SHALL BE SINGLE BRAND CONFORMING TO ASTM C–150, TYPE I/ II UNLESS OTHERWISE APPROVED BY ENGINEER.
5. STEEL REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60.
6. ALL ADDITIVES FOR AIR ENTRAINMENT, WATER REDUCTION, AND SET CONTROL SHALL BE USED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE MANUFACTURER'S DIRECTIONS. THE USE OF CALCIUM CHLORIDE IS PROHIBITED.
7. THE MAXIMUM NOMINAL SIZES OF COARSE AGGREGATE SHALL BE AS FOLLOWS:
   ALL CONCRETE U.N.O. . . . . 1"
   PIERS . . . . . 1"
8. CONCRETE SLUMP SHALL BE AS FOLLOWS:
   ALL CONCRETE U.N.O. . . . . 4" ± 1" (5" MAX.)
   PIERS . . . . . 8"
9. STEEL REINFORCEMENT SHALL BE PLACED AND SECURED IN ACCORDANCE WITH CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS."
10. EACH AREA OF CONCRETE WORK SHALL BE FINISHED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.
11. CONDUIT, GROUND WIRES, DRAIN, ETC., ARE TO BE IN PLACE BEFORE CONCRETE IS PLACED.
12. ALL REINFORCING BARS SHALL BE WIRE–TIED AT EVERY OTHER INTERSECTION. ALL REINFORCING BAR SHALL BE SUPPORTED WITH CHAIRS AT EVERY 4'–0" ON CENTER OR EVERY 4TH BAR INTERSECTION. ALL REINFORCING BARS THAT ARE SUPPORTED AT INTERSECTIONS SHALL BE TIED TOGETHER.
13. PLATES, NUTS AND WASHERS SHALL BE HOT–DIP GALVANIZED AND CONFORM TO ASTM A36, A194, RESPECTIVELY, LATEST EDITION.
14. ANCHOR RODS SHALL BE HOT–DIP GALVANIZED AND CONFORM TO F1554–36 OR AS NOTED ON DRAWINGS.
15. ALL ANCHOR RODS SHALL BE PROVIDED WITH TWO NUTS AND WASHERS EACH. NUTS TO BE AMERICAN STANDARD HEAVY HEX C.P.S.F.
16. THREADS SHALL BE UNC–2.
17. ON SHOP–FABRICATED ANCHOR RODS, BOTTOM NUT SHALL BE TACK–WELDED IN SHOP BEFORE GALVANIZING.

CONCRETE NOTES CONT.

19. CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED AS FOLLOWS:
    1 1/2" MAX. AGGREGATE .....3% TO 6%
    1" MAX. AGGREGATE .....3% TO 6%
    3/4" MAX. AGGREGATE .....3 1/2% TO 6 1/2%
20. MINIMUM COVER UNLESS NOTED:
    a. CONCRETE CAST AGAINST & EXPOSED TO EARTH. . . . 3"
    b. CONCRETE EXPOSED TO EARTH OR WEATHER:
       #6 THRU #18 BARS. . . . . 2"
       #5 BAR AND SMALLER. . . . . .1 1/2"
    c. CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR IN CONTACT WITH GROUND:
       SLABS, WALLS AND JOISTS:
       #11 BAR AND SMALLER . . . . . 3/4"
       BEAMS & COLUMNS: PRIMARY REINFORCEMENT,
       TIES, STIRRUPS AND SPIRALS . . . . . .1 1/2"
21. CONTRACTOR SHALL FURNISH TO THE ENGINEER A CONCRETE MIX DESIGN WITH A COMPLETE LIST OF MATERIALS INCLUDING TYPE; BRAND; SOURCE AND AMOUNT OF CEMENT, FLY ASH, AGGREGATES, AND ADMIXTURES; APPLICABLE REFERENCE SPECIFICATIONS; AND COPIES OF TEST REPORTS SHOWING THAT THE MIX HAS BEEN SUCCESSFULLY TESTED TO PRODUCE CONCRETE WITH THE PROPERTIES SPECIFIED AND WILL BE SUITABLE FOR THE JOB CONDITIONS, TO BE APPROVED PRIOR TO CONCRETE PLACEMENT.
22. NOTIFY ENGINEER A MINIMUM OF 48 HOURS PRIOR TO PLACING CONCRETE.
23. SECURE REINFORCING BARS, ANCHOR RODS AND EMBEDDED ITEMS PRIOR TO PLACING CONCRETE.

DRILLED PIER NOTES

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS.
2. STEEL REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60.
3. STEEL REINFORCEMENT SHALL BE PLACED AND SECURED IN ACCORDANCE WITH CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS."
4. CONTRACTOR SHALL ENSURE PROPER CENTERING OF STEEL REINFORCING INSTALLED IN THE PIER.
5. PIER TOLERANCE:
   A. MAXIMUM PERMISSIBLE VARIATION OF LOCATION: NOT MORE THAN 3"
   B. SHAFTS OUT OF PLUMB: NOT MORE THAN 1% OR 2".
   C. CONCRETE CUTOFF ELEVATION: PLUS 1" TO MINUS 2".
6. RECORDS:
   A. RECORDS SHALL BE KEPT FOR EACH PIER INSTALLED.
   B. AS A MINIMUM, RECORDS SHALL INCLUDE PROJECT NAME. PROJECT NUMBER, PIER CONTRACTOR, PIER LOCATION, DESIGN PIER CAPACITY, PIER DIAMETER, TIP ELEVATION, DRILLING GROUND SURFACE ELEVATION, TOTAL AND INCREMENTAL VOLUME OF CONCRETE PLACED, AMOUNT OF WATER ADDED (IF ANY) TO THE READY MIX CONCRETE TRUCK AT THE JOB SITE, PIER REINFORCING STEEL, AND ANY UNUSUAL OCCURRENCES DURING THE PIER INSTALLATION.
   C. AFTER A PIER IS PLACED, SUBMIT COPIES OF THE INSTALLATION RECORD OF EACH PIER NO LATER THAN THE MORNING OF THE NEXT WORKING DAY. "PROBLEM PIERS" SHOULD BE REPORTED AS SOON AS THE PROBLEM (WHATEVER IT IS) IS DETECTED SO THAT THE SITUATION CAN BE IMMEDIATELY RECTIFIED AND REDRILLING/REGROUTING OR REPLACEMENT PIERS CAN BE ADDRESSED.
7. THE CONCRETE MIX SHALL BE SAMPLED AND TESTED BY MAKING A SET OF SIX 2–INCH CUBES FOR EACH 50 CUBIC YARDS OF CONCRETE PLACED, OR AT LEAST ONE SET FOR EACH DAY DURING WHICH PIERS ARE PLACED.
   A. A SET OF SAMPLES SHALL BE TAKEN/TESTED FROM EACH TRUCK OF CONCRETE DELIVERED DURING INDICATOR PIER INSTALLATION.
   B. TWO CUBES SHALL BE TESTED AT 7 DAYS, TWO CUBES SHALL BE TESTED 28 DAYS, AND TWO CUBES SHALL BE HELD IN RESERVE.
   C. CUBES SHALL BE CURED AND TESTED IN ACCORDANCE WITH ASTM C942.
8. STRAIGHT–SIDED DRILLED SHAFT FOUNDATIONS SHOULD BE AT LEAST 5 FT. IN LENGTH AND SIZED USING ALLOWABLE END BEARING OF 5,000 PSF.
9. AN ALLOWABLE SKIN FRICTION OF 500 PSF MAY BE USED FOR PORTION OF THE SHAFT BELOW THE UPPER 5 FT. OF PENETRATION.

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LICENSE NO.: 126232 DATE: 5/9/24

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HAYS COUNTY

NO	DATE	DESCRIPTION	DWG	CHK

REVISIONS

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

GENERAL NOTES & DESIGN CRITERIA II

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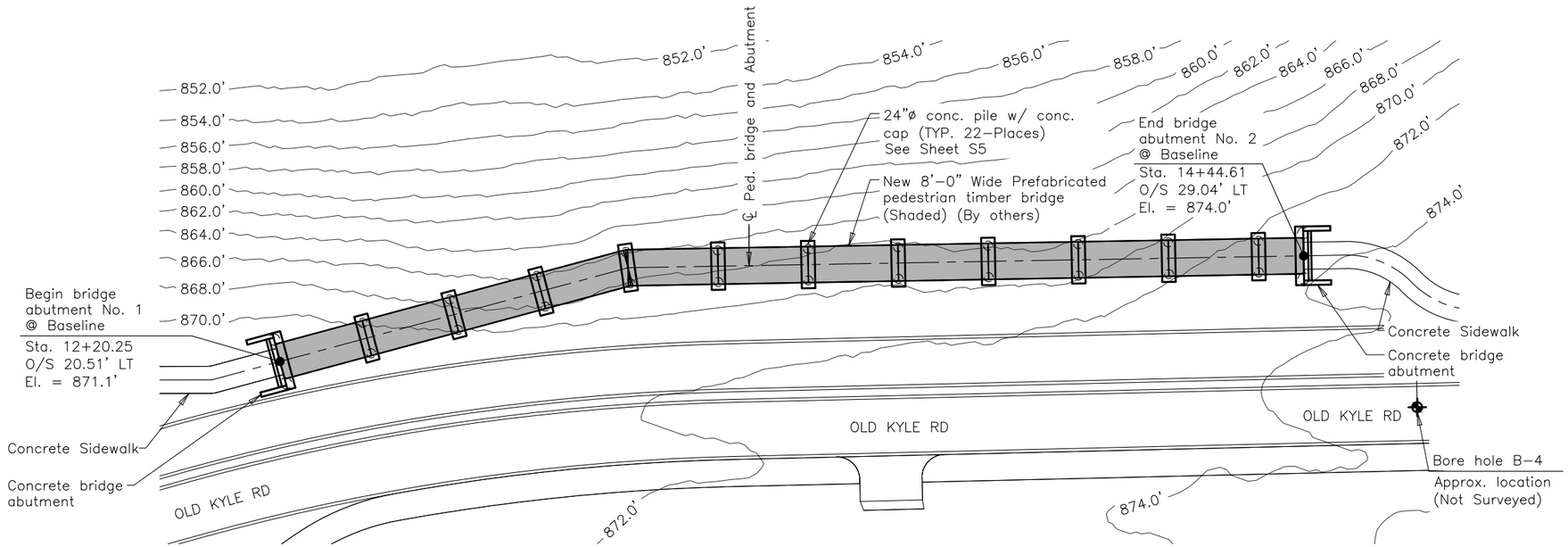
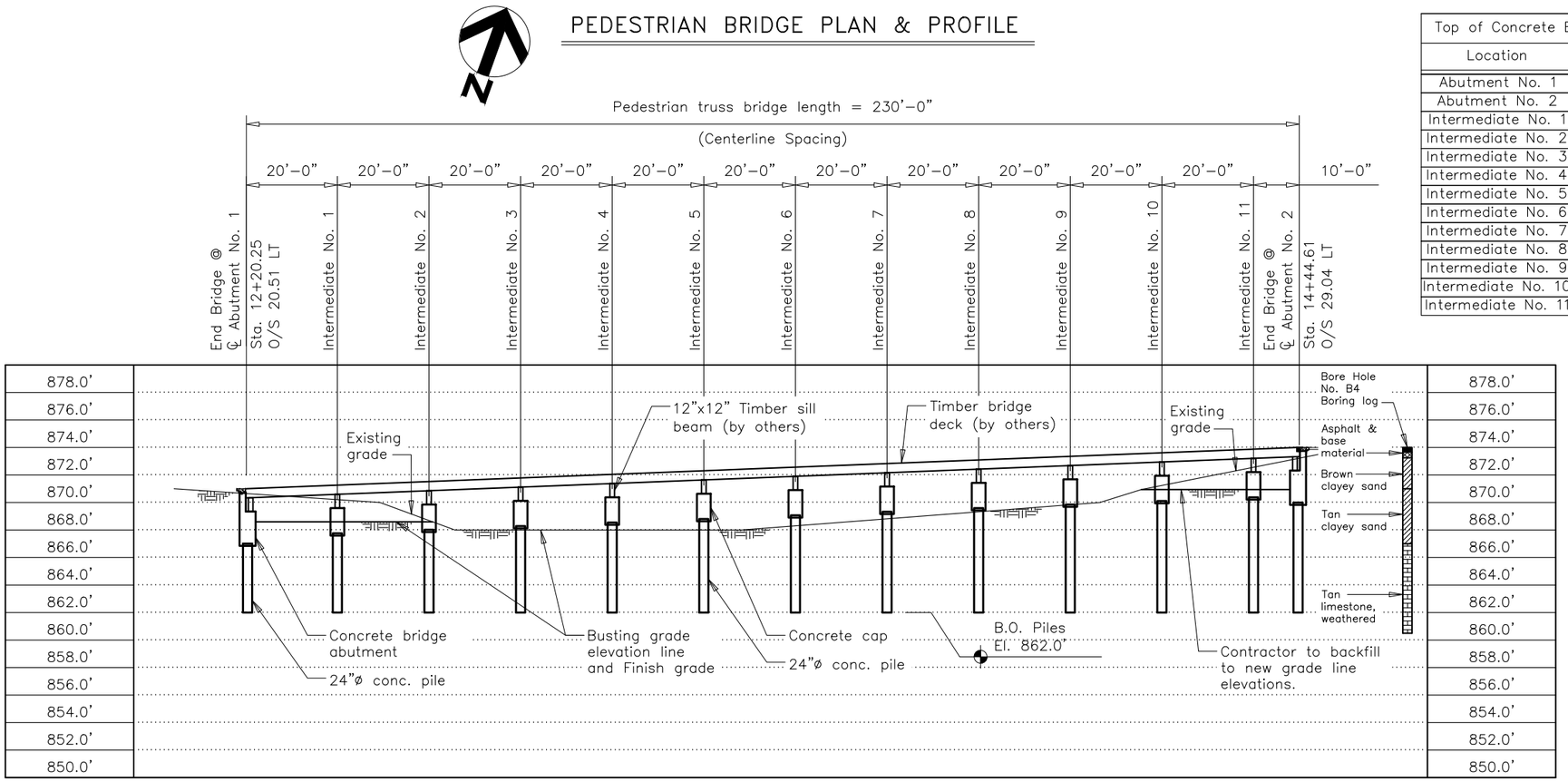
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	S2



DESIGN NOTES:

1. Contractor shall not begin construction of abutments until final prefabricated pedestrian bridge shop drawings have been reviewed and approved.
2. Abutment dimensions, anchor locations and backwall height shall be verified w/ final prefabricated pedestrian bridge shop drawings prior to placing concrete.
3. Prefabricated Pedestrian Bridge shall be designed in accordance w/ LRFD Guide Specifications for the Design of Pedestrian Bridges (2009 w/ latest revisions) See Special Specification 4000 – Prefabricated Pedestrian Steel Bridge Span.
4. Prefabricated Pedestrian Bridge shall be ADA compliant.
5. Prefabricated Pedestrian Bridge shall be an H section type bridge by Wheeler Lumber, LLC or equal. The depth from top of deck to low steel shall be minimized as much as practical.
6. Contractor is responsible for contacting the Texas One–Call system for utility locates prior to any excavation.
7. Found drilled shafts at the elevations shown to obtain penetration into limestone.

PEDESTRIAN BRIDGE PLAN & PROFILE



Top of Concrete Elevations	
Location	T.O.C.
Abutment No. 1	869.35'
Abutment No. 2	872.33'
Intermediate No. 1	869.59'
Intermediate No. 2	869.86'
Intermediate No. 3	870.12'
Intermediate No. 4	870.38'
Intermediate No. 5	870.64'
Intermediate No. 6	870.90'
Intermediate No. 7	871.16'
Intermediate No. 8	871.42'
Intermediate No. 9	871.69'
Intermediate No. 10	871.95'
Intermediate No. 11	872.21'

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HAYS COUNTY

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		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

PLAN & PROFILE

HORIZ. SCALE: 1"=30' (0 15 30) SCALE IN FEET

VERT. SCALE: 1"=5' (0 2.5 5) SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	149

5/9/2024 5:00 PM
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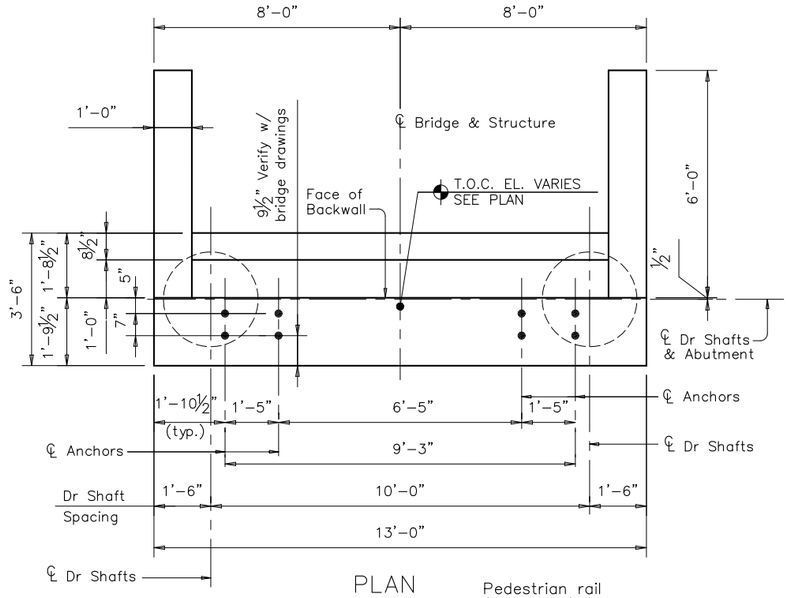
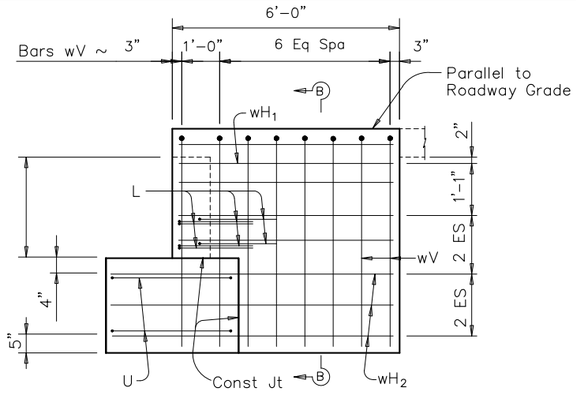
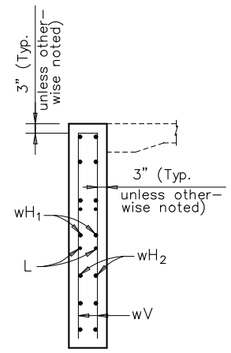


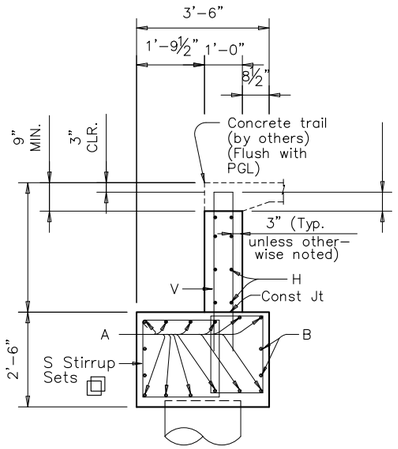
PLAN



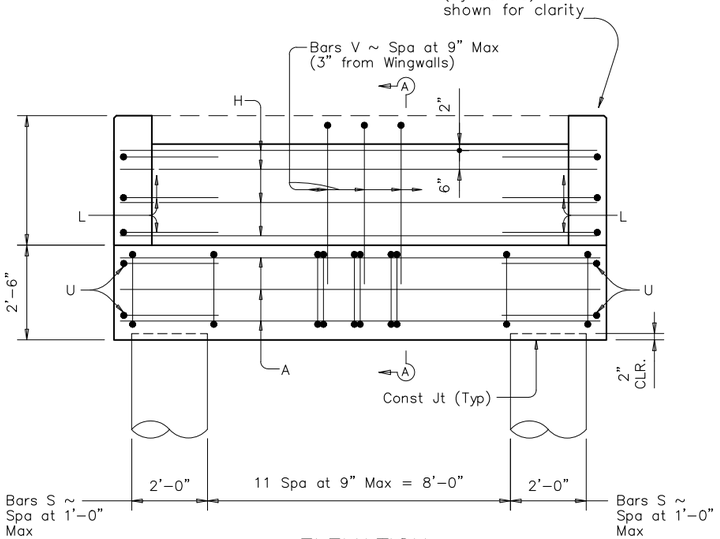
WINGWALL ELEVATION



SECTION B-B



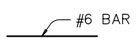
SECTION A-A
(With Approach Slab)



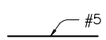
ELEVATION

NOTES:

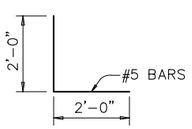
1. Verify backwall/wingwall height with final pre-fabricated pedestrian bridge shop drawings. Heights are based on an assumed height of 3'-5" from PGL to T.O.C. bearing as provided in sample pre-fabricated pedestrian bridge details for similar bridge span provided by Wheeler Lumber LLC, – for reference only.
2. Bars V and wV shown projected are to accommodate the reinforced concrete sidewalk designed by others. Finished elevation of sidewalk shall accommodate 9" min. thickness at backwall. The wingwalls shall extend to match the finished elevation of the reinforced concrete sidewalk designed by others.
3. Verify with final pre-fabricated pedestrian bridge drawings.
4. Verify height & location w/ final pre-fabricated pedestrian bridge shop drawings.



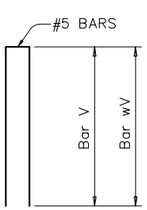
BARS A



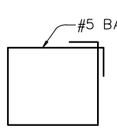
BARS B



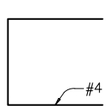
BARS L



BARS V & wV

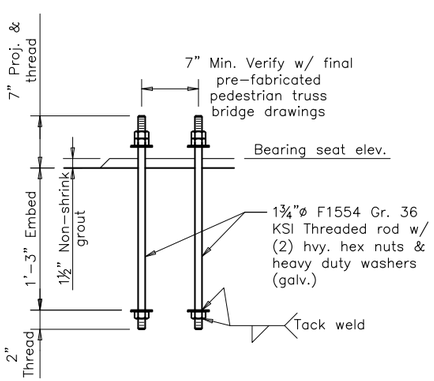


BARS S

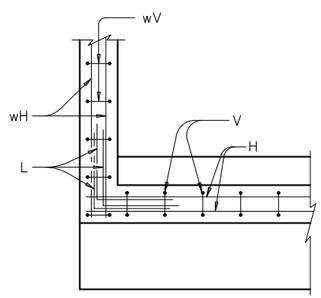


BARS U

BARS WH, WH1 & WH2



TYPICAL ANCHOR ROD DETAIL



CORNER DETAIL

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BY: NICLAS S. GREEN, P.E.

LICENSE NO.: 126232 DATE: 5/9/24

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HAYS COUNTY

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		REVISIONS		

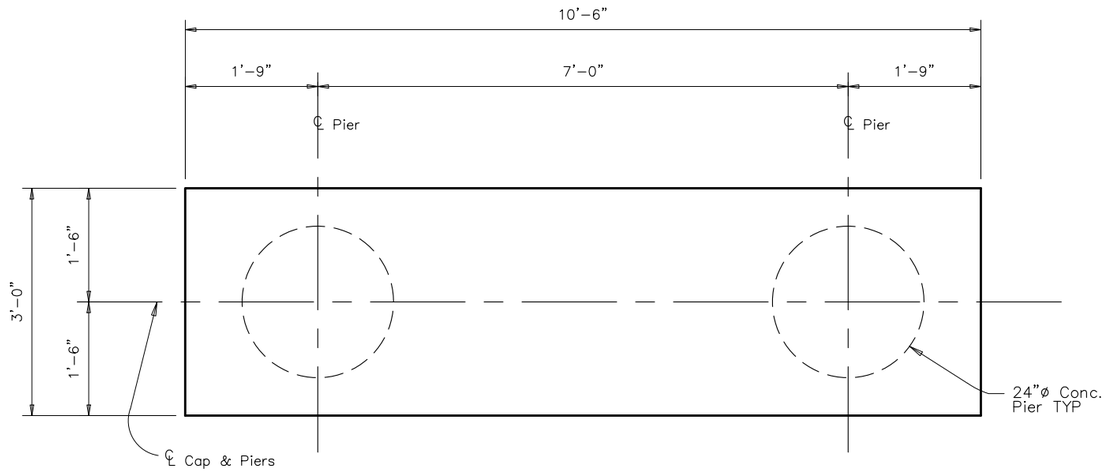
WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

ABUTMENT DETAILS

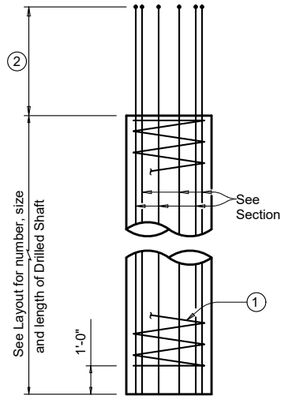
SCALE: 1/4"=1-0'
0 1/2 1
SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	150

5/9/2024 5:00 PM
U:\HAYS COUNTY\190291 HAYS COUNTY WIMBERLEY TRAILS MSA AND WA 1\020 WIMBERLEY TRAIL MASTER PLAN WA NO 2\20-DRAWINGS\PLANS\STRUCT\S4 ABUTMENT DETAILS.DWG



CONCRETE CAP PLAN

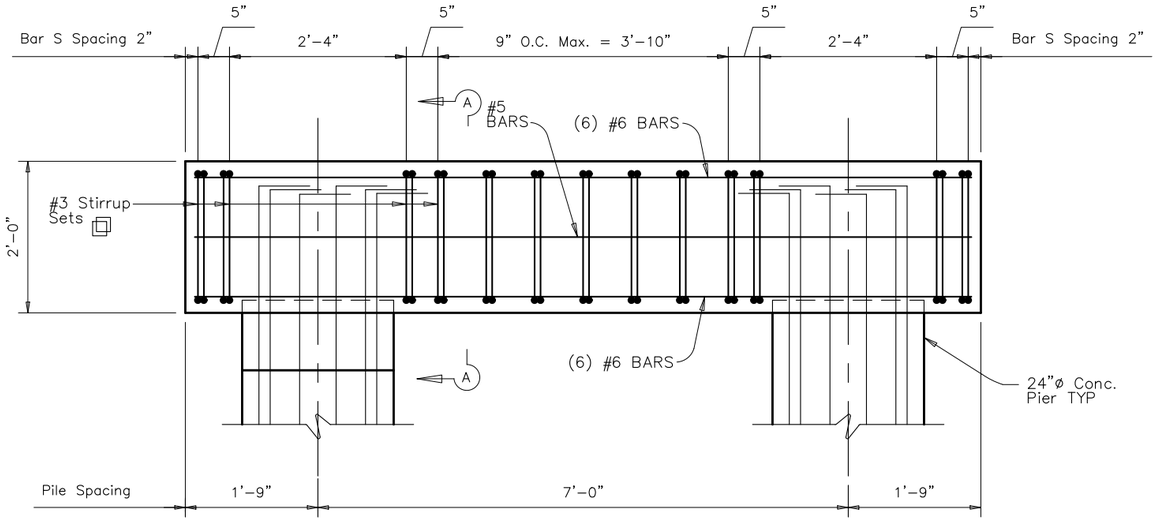


ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS

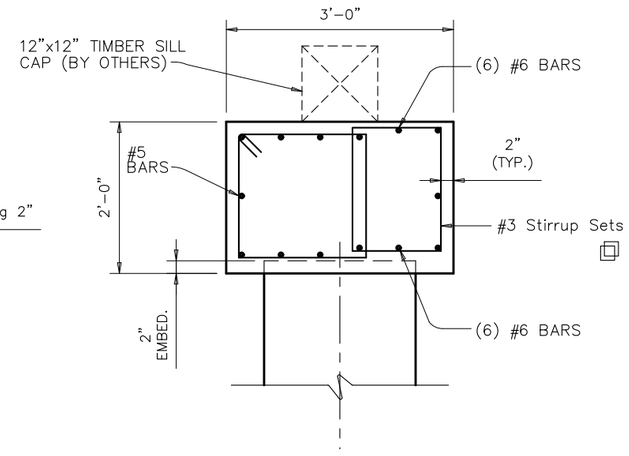
DRILLED SHAFT SECTION

DRILLED SHAFT NOTES:

1. #3 Spiral at 6" pitch (One and a half flat turns top & bottom).
2. Min extension into supported element:
   #6 Bars = 1'-6"
   #7 Bars = 1'-8"
   #10 Bars = 4'-8" w/ ACI Std. 90° hook
3. Min lap with Column reinf:
   #7 Bars = 2'-9"
   #9 Bars = 4'-6"
4. Min extension into supported element:
   #6 Bars = 1'-6"
   #7 Bars = 1'-8"
   #9 Bars = 2'-8"
5. Drilled Shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the Drilled Shaft diameter equals the Column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.
6. 1'-0" Min
7. Or as shown on plans.



CONCRETE CAP ELEVATION



SECTION A–A

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS.
2. CONCRETE STRENGTH F'C = 4,000 PSI.
3. ALL CAP REINFORCING MUST BE GRADE 60.

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		REVISIONS		

WIMBERLEY VALLEY TRAIL EXTENSION AND MULTI-NODAL PROJECT (OLD KYLE ROAD)

CONCRETE CAP PLAN & DETAILS

SCALE: 1/2"=1-0'

0 1 2

SCALE IN FEET

DGN:			
CHK DGN:			
DWG:	STATE	COUNTY	SHEET NO.
CHK DWG:	TEXAS	HAYS	151