CITY OF LUCAS
STATE OF TEXAS

CONSTRUCTION PLANS FOR PROPOSED
SUBURBAN MINOR ARTERIAL

DESIGN SPEED = 55 MPH
AADT (2040) = 26,689
POSTED SPEED = 50 MPH

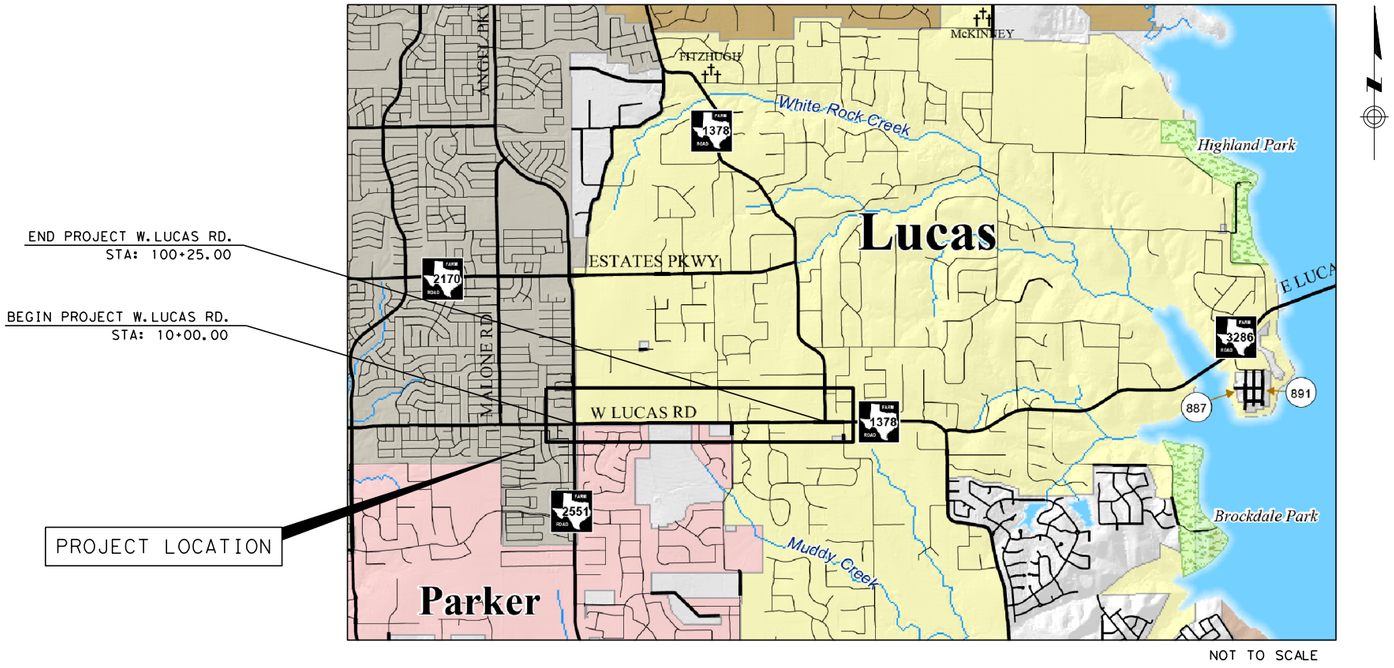
WEST LUCAS ROAD RECONSTRUCTION AND WIDENING
COLLIN COUNTY

NET LENGTH OF ROADWAY= 9,025.00 FT.= 1.7MI.

NET LENGTH OF PROJECT= 9,025.00 FT.= 1.7MI.

LIMITS: FROM ANGEL PARKWAY (F.M. 2551)TO COUNTRY CLUB ROAD (FM 1378)

FOR THE CONSTRUCTION AND ROADWAY IMPROVEMENTS OF WEST LUCAS ROAD CONSISTING OF:
PAVING, SIDEWALK, DRAINAGE, TRAFFIC CONTROL, UTILITIES, SIGNING AND PAVEMENT MARKINGS,
& REPLACEMENT OF EXISTING CULVERTS



FINAL PLANS

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024,
AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN
ON THIS PROJECT:
CITY OF LUCAS DRAINAGE DESIGN CRITERIA MANUAL (DECEMBER 16, 2021)
TXDOT ROADWAY DESIGN MANUAL (DECEMBER 2022)
TXDOT HYDRAULIC DESIGN MANUAL (SEPTEMBER 2019)
TXDOT ENVIRONMENTAL HANDBOOK (SEPTEMBER 2024)
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS
THE GREEN BOOK (2018), 7TH EDITION WITH LATEST INTERIM REVISIONS
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (OCTOBER 2014)
NCTCOG PUBLIC WORKS CONSTRUCTION STANDARDS, AMENDED FIFTH EDITION (AUGUST 2023)
COLLIN COUNTY ROADWAY STANDARDS (SEPTEMBER 28, 2020)
COLLIN COUNTY DRAINAGE DESIGN STANDARDS (SEPTEMBER 28, 2020)

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-28-2026

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR : _____

MAYOR
DUSTY KUYKENDALL

CITY COUNCIL

DEBBIE FISHER	NIEL PETERSON
TIM JOHNSON	PHILIP LAWRENCE
BRIAN STUBBLEFIELD	CHRIS BIERMAN

CITY MANAGER
JOHN WHITSELL

CAPITAL IMPROVEMENTS PROJECTS MANAGER
PATRICK HUBBARD

PUBLIC WORKS DIRECTOR
JEREMY BOGLE

KEY SHEET REVISIONS	
DATE	DESCRIPTION
4/24/2026	⚠ SUMMARY OF PAY ITEMS UPDATED

COLLIN COUNTY
collincountytx.gov

OWNER
COLLIN COUNTY
4690 COMMUNITY AVE.
MCKINNEY, TX 75071

OWNER
CITY OF LUCAS
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

ENGINEER OF RECORD
CHRISTOPHER P. MESZLER, P.E.
LIC. NO. 112052
1903 CENTRAL DRIVE, SUITE #100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

Texas811 Know what's below. Call! before you dig.

DATE: 4/27/2026 10:58:48 AM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\1. General\WLucas_TITLE REV1.DGN

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS/SIGNATURE SHEET
3	INDEX OF STANDARDS
4	SURVEY CONTROL INDEX SHEET
5	SUMMARY OF QUANTITIES
6-10	TYPICAL SECTIONS
11-13	GENERAL NOTES
	TEMPORARY TRAFFIC CONTROL PLAN
14	TEMPORARY TRAFFIC CONTROL PLAN GENERAL NOTES
15	TTC ADVANCED WARNING SIGNS
16-19	TEMPORARY TRAFFIC CONTROL PLAN TYPICAL SECTIONS
20	TEMPORARY TRAFFIC CONTROL PLAN SEQUENCE OF WORK
21	TEMPORARY TRAFFIC CONTROL PLAN SD1 & SD2 DETAILS
22-26	TEMPORARY TRAFFIC CONTROL PLAN PHASE 1
27-31	TEMPORARY TRAFFIC CONTROL PLAN PHASE 2
32-41	TEMPORARY TRAFFIC CONTROL PLAN PHASE 3
42-51	TEMPORARY TRAFFIC CONTROL PLAN PHASE 4
52-55	TEMPORARY TRAFFIC CONTROL PLAN PHASE 5
56-59	TEMPORARY TRAFFIC CONTROL PLAN PHASE 6
60-63	TEMPORARY TRAFFIC CONTROL PLAN PHASE 7
64-65	TTC INTERSECTION DETAILS
66	TTC "NO LEFT" DETAILS
	ROADWAY PLAN
67-76	EXISTING CONDITIONS
77-80	VERTICAL & HORIZONTAL DATA
81-100	ROADWAY PLAN & PROFILE
101	ROADWAY DETAILS
102	PIPE RAIL MBGF PEDESTRIAN PROTECTION
103	INTERSECTION DETAILS RATHBONE DR.
104	INTERSECTION DETAILS MIDDLETON DR.
105	INTERSECTION DETAILS INGRAM LN.
106	INTERSECTION DETAILS LEWIS LN. & RISING SUN RD.
107	INTERSECTION DETAILS RED STAR RD. & BEE CAVES RD.
108	INTERSECTION DETAILS ROCKLAND TR.
109	INTERSECTION DETAILS COUNTRY CLUB RD.
110-167	CROSS SECTIONS
	STRUCTURES/DRAINAGE PLAN
168	DRAINAGE AREA CALCULATIONS
169	OVERALL DRAINAGE AREA MAP
170	MUDDY CREEK DRAINAGE AREA MAP
171-178	IN-SITE DRAINAGE AREA MAP
179	DRAINAGE DETAILS
180-181	CLOSED FLUME INLET DETAILS
182-211	DRIVEWAY & CULVERT LAYOUT
212	BRIDGE CLASS CULVERT LAYOUT
213	CROSSING CULVERT LAYOUT
	FORCE MAIN PLAN
214	FORCE MAIN HORIZONTAL ALIGNMENT DATA
215-226	FORCE MAIN PLAN & PROFILE
227-229	FORCE MAIN DETAILS
	UTILITY PLAN
230	EXISTING UTILITY LEGEND & SYMBOLS
231-240	UTILITY ADJUSTMENTS
	SIGNING & PAVEMENT MARKINGS PLAN
241	SIGNING & PAVEMENT MARKINGS (BY OTHERS)
242-251	SIGNING & PAVEMENT MARKINGS
	ENVIRONMENTAL PLAN
255	STORM POLLUTION PREVENTION PLAN
256-265	EROSION CONTROL PLAN
266-272	TREE PRESERVATION PLAN
273-275	TREE PRESERVATION & REPLACEMENT PLAN

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INDEX OF SHEETS

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

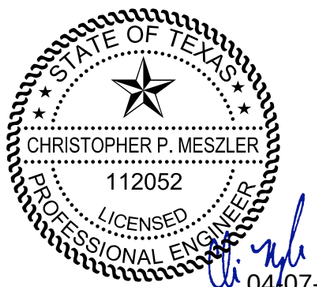
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	2
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/7/2026 12:23:42 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\04 - Design\Plan Set\1. General\WLucas_INDEX_01.dgn



BCC, A PARSONS COMPANY

1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
TBPE REG. F-20986
CHRISTOPHER P. MESZLER, P.E.
LIC. NO. 112052

THE FOLLOWING STANDARD SHEETS BELOW HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

TRAFFIC DETAIL STANDARDS

BARRICADE AND CONSTRUCTION STANDARDS

BC(1)-21
BC(2)-21
BC(3)-21
BC(4)-21
BC(5)-21
BC(6)-21
BC(7)-21
BC(8)-21
BC(9)-21
BC(10)-21
BC(11)-21
BC(12)-21

TRAFFIC CONTROL PLAN STANDARDS

TCP(1-2)-18
TCP(1-3)-18
TCP(2-1)-18
TCP(2-3)-23
TCP(2-4)-18
TCP(2-5)-18

WORK ZONE STANDARDS

WZ(TD)-17
WZ(STPM)-23
WZ(UL)-13

ROADWAY DETAIL STANDARDS

PAVEMENT DETAILS

CRCP(1)-24
CRCP(2)-24
JS-14
CDD (FTW)
CSWD (FTW)

BARRIER FLEXIBLE

GF(31)-19
GF(31)DAT-19
GF(31)LS-19
GF(31)MS-19

GUARDRAIL END TREATMENTS

SGT(15)31-20

MISCELLANEOUS DETAILS

CCCG-22
PED-18
WF(1)-10
WF(2)-10
MB(1)-21
MB(2)-21
MB(3)-21
MB(4)-21

PAVEMENT MARKING DETAIL STANDARDS

DELINEATOR AND PAVEMENT MARKING STANDARDS

D&OM(1)-20
D&OM(2)-20
D&OM(3)-20
D&OM(4)-20
D&OM(5)-20
D&OM(6)-20
D&OM(VIA)-20
PM(1)-22
PM(2)-22
PM(3)-22
PM(4)-22A

SIGN MOUNTING STANDARDS

SMD(GEN)-08
SMD(TWT)-08

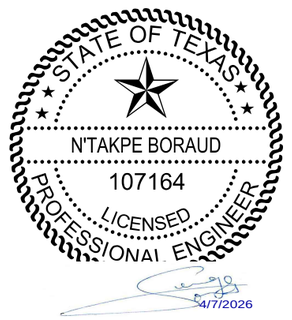
ENVIRONMENTAL DETAIL STANDARDS

TEMPORARY EROSION DETAILS

EC(1)-16
EC(2)-16
EC(3)-16

TREE PROTECTION DETAILS

TPD-19 (AUS)
TRB-24(1)
TRB-15(2)



PARSONS

3400 WATERVIEW PKWY
RICHARDSON, TX 75080
TBPE REG. F-20986
N'TAKPE BORAUD, P.E.
LIC. NO. 107164

THE FOLLOWING STANDARD SHEETS BELOW HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

DRAINAGE DETAIL STANDARDS

CULVERT AND DRAINAGE
SINGLE BOX CULVERTS

SCP-MD
SCP-4
SCP-5
SCP-10
SRR

WINGS FOR SINGLE & MULTI-BOX CULVERT

PW

SAFETY END TREATMENT FOR BOX CULVERTS

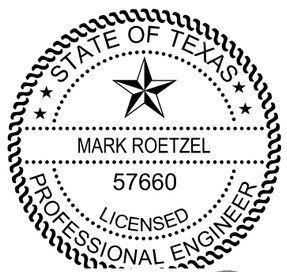
SETB-PD
SETB-CD
SETB-FW-S

SAFETY END TREATMENT FOR PIPE CULVERTS

PSET-SP

PRECAST INLET AND MANHOLES

PAZD-CZ
PB
PJB



PARSONS

3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
TBPE REG. F-20986
MARK ROETZEL, P.E.
LIC. NO. 57660

THE FOLLOWING STANDARD SHEETS BELOW HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

UTILITY DETAIL STANDARDS

NCTCOG

STANDARD DRAWINGS #

4010B
4010C
4020
4030
4040

W. LUCAS RD. ROADWAY IMPROVEMENTS

INDEX OF STANDARDS

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

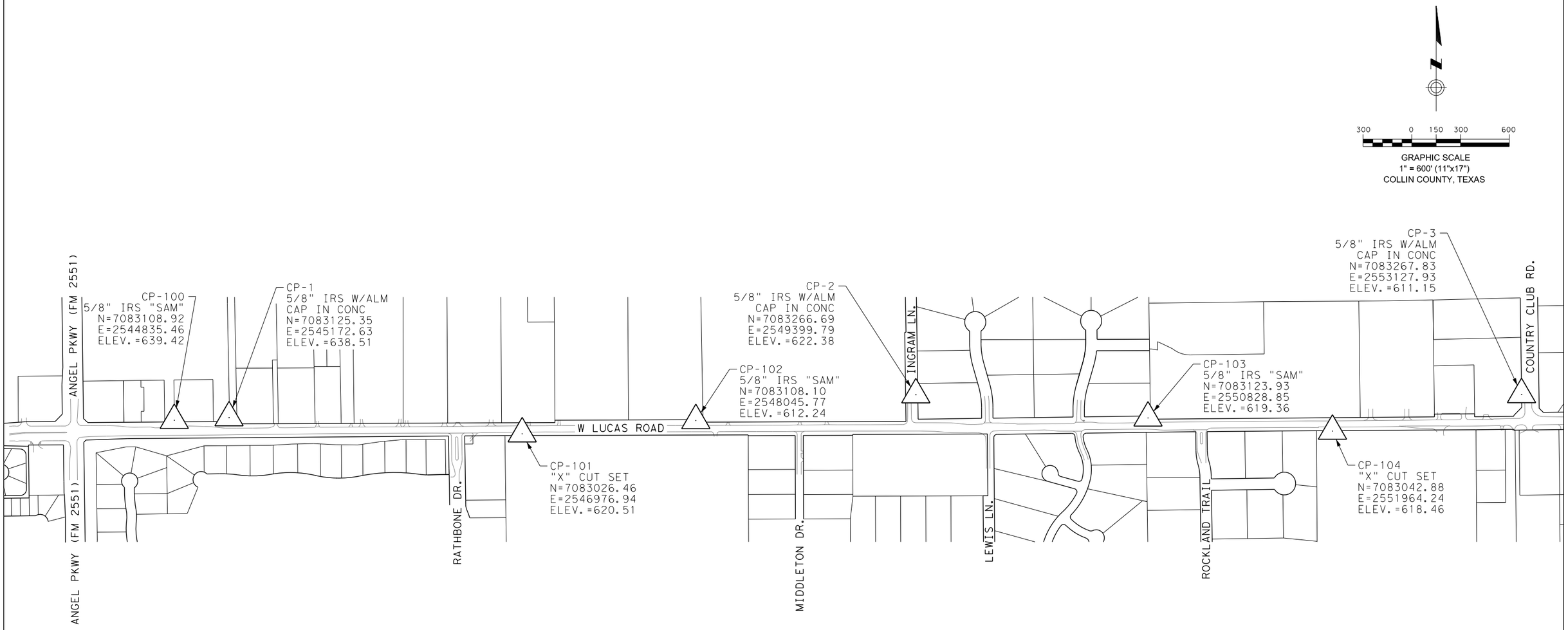
bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	3
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/7/2026 12:23:42 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\1. General\WLucas_INDEX_02.dgn



NOTES:

1. THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E" WHICH IS SIGNED, SEALED AND DATED BY A TEXAS PROFESSIONAL ENGINEER.

2. ALL COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE (4202), NORTH AMERICAN DATUM OF 1983 (2011 ADJ: EPOCH 2010.00)

3. THE VERTICAL DATUM FOR THIS PROJECT IS THE NAVD 1988 (CORS 2011), U.S. SURVEY FEET.

4. ALL COORDINATE VALUES ARE BASED UPON AN AVERAGE OF FOUR 180 EPOCH OBSERVATIONS UTILIZING THE WDS NETWORK.

5. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET. DISPLAYED IN GRID VALUES

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY ON FEBRUARY 05, 2020 UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM RTK NETWORK AND IS CORRECTLY SHOWN HEREON.

STATE OF TEXAS
REGISTERED
MICHAEL A. MEDINA
6692
PROFESSIONAL
LAND SURVEYOR

3/28/2022
Michael A. Medina Date
RPLS No. 6692

CONTROL POINT LEGEND

△ DENOTES PRIMARY CONTROL POINT AS NOTED
5/8" IRON ROD SET (IRS)

SAM
Surveying and Mapping, LLC. (SAM)
1341 W. Mockingbird Lane, Suite 400W
Dallas, Tx 75247 • (214) 631-7888
FIRM REGISTRATION NO. F-1937
TBPLS REGISTRATION NO. 10064301

WEST LUCAS ROAD

SURVEY CONTROL INDEX SHEET

COLLIN COUNTY, TEXAS

SHEET 1 OF 1

DESIGNED BY	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
		SEE TITLE SHEET		W. LUCAS RD.
DRAWN BY	STATE	DISTRICT	COUNTY	SHEET NO.
GK	TEXAS	DAL	COLLIN	4
CHECKED BY	CONTROL	SECTION	JOB	
MM				
VERIFIED BY				
EAK				

ITEM CODE			DESCRIPTION	UNIT	TOTAL	
ITEM NO	DESC CODE	SP NO			ESTIMATE	FINAL
0100	7001		PREPARING ROW	AC	25.6	
0104	7011		REMOV CONC (DRIVEWAYS)	SY	3,993	
0105	7012		RMV (12"-16") TRT/UNTRT BASE & ASPH PA	SY	42,036	
0110	7001		EXCAV (ROADWAY)	CY	90,825	
0110	7002		EXCAV (CHANNEL)	CY	387	
0132	7002		EMBANK (FNL)(DC)(TYA)	CY	19,890	
0134	7006		BACKFILL (TY A)	LF	1,591	
0160	7002		FURN & PLACE TOPSOIL (4")	SY	36,880	
0162	7002		BLOCK SODDING	SY	4,136	
0162	7004		MULCH SODDING	SY	28,906	
0168	7001		VEGETATIVE WATERING	TGL	3	
0169	7001		SOIL RET BLKT(SL_MOD_CLAY_SHORT)	SY	6,278	
0170	7001		IRRIGATION SYSTEM	LS	1	
0193	7001		LANDSCAPE ESTABLISHMENT	MO	1	
0216	7001		PROOF ROLLING	HR	25	
0260	7005		LIME (COM OR QK)(SLURRY) OR QK (DRY)	TON	39	
0260	7020		LIME TREATMENT (SUBGRADE)(8")	SY	63,743	
0341	7003		D-GR HMA TY-B PG64-22 (EXEMPT)	TON	7	
0341	7015		D-GR HMA TY-C PG64-22	TON	637	
0341	7064		D-GR HMA TY-D PG 64-22 (EXEMPT)	TON	18	
0354	7033		PLANE ASPH CONC PAV (0"-3")	SY	143	
0360	7004		CONC PVMT (CRCP) (10")	SY	57,261	
0401	7001		FLOWABLE BACKFILL	CY	120	
0402	7001		TRENCH EXCAVATION PROTECTION	LF	8,732	
0403	7001		TEMPORARY SPL SHORING	SF	4,064	
0432	7001		RIPRAP (CONC) (4 IN)	CY	767	
0432	7012		RIPRAP (CONC) (FLUME)	CY	60	
0432	7013		RIPRAP (MOW STRIP) (4 IN)	CY	79	
0432	7031		RIPRAP (STONE COMMON)(DRY)(12 IN)	CY	141	
0432	7032		RIPRAP (STONE COMMON)(DRY)(15 IN)	CY	140	
0432	7038		RIPRAP (STONE COMMON)(GROUT)(12 IN)	CY	939	
0462	7003		CONC BOX CULV (4 FT X 2 FT)	LF	594	
0462	7004		CONC BOX CULV (4 FT X 3 FT)	LF	52	
0462	7006		CONC BOX CULV (5 FT X 2 FT)	LF	553	
0462	7010		CONC BOX CULV (6 FT X 2 FT)	LF	252	
0462	7033		CONC BOX CULV (10 FT X 5 FT)	LF	540	
0464	7001		RC PIPE (CL III)(12 IN)	LF	12	
0464	7003		RC PIPE (CL III)(18 IN)	LF	94	
0464	7005		RC PIPE (CL III)(24 IN)	LF	129	
0464	7009		RC PIPE (CL III)(36 IN)	LF	665	
0464	7011		RC PIPE (CL III)(48 IN)	LF	2772	
0464	7019		RC PIPE (CL IV)(18 IN)	LF	176	
0464	7021		RC PIPE (CL IV)(24 IN)	LF	727	
0465	7002		MANHOLE (COMPL)(PRM)(48 IN)	EA	8	
0466	7159		WINGWALL (FW-S) (HW = 3 FT)	EA	2	
0466	7189		HEADWALL (P/W - 2)(HW=5 FT)	EA	2	
0467	7066		SET (TY I) (S= 4FT)(HW = 2FT)(6:1)(P)	EA	16	
0467	7070		SET (TY I) (S= 4FT)(HW = 3FT)(6:1)(P)	EA	2	
0467	7094		SET (TY I) (S= 5FT)(HW = 2FT)(6:1)(P)	EA	6	
0467	7123		SET (TY I) (S= 6FT)(HW = 2FT)(6:1)(P)	EA	10	
0467	7308		SET (TY II) (18 IN) (RCP) (6:1) (P)	EA	8	
0467	7328		SET (TY II) (24 IN) (RCP) (6:1) (P)	EA	30	
0467	7368		SET (TY II) (36 IN) (RCP) (6:1) (P)	EA	15	
0479	7001		ADJUSTING MANHOLES	EA	2	
0500	7001		MOBILIZATION	LS	1	
0502	7001		BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	30	
0503	7002		PORTABLE CHANGEABLE MESSAGE SIGN	EA	2	
0506	7002		ROCK FILTER DAMS (INSTALL) (TY 2)	LF	1,350	
0506	7003		ROCK FILTER DAMS (INSTALL) (TY 3)	LF	455	
0506	7011		ROCK FILTER DAMS (REMOVE)	LF	1,805	
0506	7020		CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	778	
0506	7024		CONSTRUCTION EXITS (REMOVE)	SY	778	
0506	7042		BIODEG EROSN CONT LOGS (INSTL) (6")	LF	126	
0506	7039		TEMP SEDMT CONT FENCE (INSTALL)	LF	5,787	
0506	7041		TEMP SEDMT CONT FENCE (REMOVE)	LF	5,787	
0512	7005		PORT CTB (FUR & INST)(F-SHAPE)(TY 1)	LF	200	
0512	7029		PORT CTB (MOVE)(F-SHAPE)(TY 1)	LF	200	
0512	7053		PORT CTB (REMOVE)(F-SHAPE)(TY 1)	LF	200	
0527	7002		COLORED TEXTURED CONCRETE (5")	SY	906	
0527	7007		COLORED TEXTURED CONCRETE (10")	SY	815	
0529	7007		CONC CURB (MONO) (TY II)	LF	961	
0530	7006		DRIVEWAYS (CONC)	SY	4,251	
0540	7002		MTL W-BEAM GD FEN (STEEL POST)	LF	1,524	
0540	7015		DOWNSTREAM ANCHOR TERMINAL SECTION	EA	4	
0540	7027		MTL BM GD FEN (LONG SPAN SYSTEM)	LF	150	
0544	7001		GUARDRAIL END TREATMENT (INSTALL)	EA	4	
0545	7002		CRASH CUSH ATTEN (MOVE & RESET)	EA	1	
0545	7004		CRASH CUSH ATTEN (REMOVE)	EA	1	
0545	7010		CRASH CUSH ATTEN (INSTL)(R)(N)(TL3)	EA	1	
0550	7017		REMOVE & INSTALL EXISTING GATE	EA	11	
0552	7001		INSTALL FENCE (WF)(TY A)	LF	472	
0552	7002		INSTALL FENCE (WF)(TY B)	LF	829	
0552	7003		INSTALL FENCE (WF)(TY C)	LF	826	
0552	7004		INSTALL FENCE (WF)(TY D)	LF	1,291	
0552	7005		WIRE FENCE (SPECIAL)	LF	830	
0552	7011		WIRE FENCE (REMOVE)	LF	5,277	
0552	7016		INSTALL FENCE (PIPE RAIL)	LF	1,685	
0552	7017		INSTALL FENCE (VINYL RAIL)	LF	1,114	
0560	7000		TEMP MAILBOX	EA	12	
0560	7012		RELOCATE EXISTING MAILBOX	EA	12	

ITEM CODE			DESCRIPTION	UNIT	TOTAL	
ITEM NO	DESC CODE	SP NO			ESTIMATE	FINAL
0610	7100		RELOCATE DECORATIVE ILLUMINARY ASSEMBLY	EA	2	
0618	7015		CONDT (HDPE)(4")	LF	142	
0618	7040		CONDT (PVC)(SCH 40)(4")	LF	649	
0644	7057		IN SM RD SN SUP & AM TY TWT(1)WS(P)	EA	12	
0644	7058		IN SM RD SN SUP & AM TY TWT(1)WS(T)	EA	1	
0644	7068		RELOCATE SM RD SN SUP & AM TY TWT	EA	13	
0644	7111		RELOCATE a "PAINTING PLACE"	EA	1	
0644	7112		RELOCATE a "TRINITY TABERNACLE"	EA	1	
0644	7113		RELOCATE a "CORNERSTONE CHURCH"	EA	1	
0644	7114		RLCT "STUDENT DROP-OFF/PICK-UP STAFF/FACULTY PARKING" S/GN	EA	2	
0658	7011		INSTL DEL ASSM (D-SW)SZ-2(WC)GND (BR)	EA	46	
0658	7017		INSTL DEL ASSM (D-SW)SZ-1(BRF)GF1 (BR)	EA	26	
0658	7072		INSTL OM ASSM (OM-4)(TWT)(WAS)	EA	4	
0662	7051		WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	257	
0662	7064		WK ZN PAV MRK REMOV (W) 4"(SLD)	LF	5,287	
0662	7095		WK ZN PAV MRK REMOV (Y) 4"(BRK)	LF	606	
0662	7097		WK ZN PAV MRK REMOV (Y) 4"(SLD)	LF	3,298	
0666	7023		REFL PAV MRK TY I (W) 8"(SLD)(090MIL)	LF	3,344	
0666	7029		REFL PAV MRK TY I (W) 12"(SLD)(090MIL)	LF	300	
0666	7035		REFL PAV MRK TY I (W) 24"(SLD)(090MIL)	LF	112	
0666	7041		REFL PAV MRK TY I (W)(ARROW)(090MIL)	EA	37	
0666	7065		REFL PAV MRK TY I (W)(WORD)(090MIL)	EA	21	
0666	7131		REFL PAV MRK TY I (Y) (MED NOSE)(090MIL)	EA	29	
0666	7168		REFL PAV MRK TY II (W) 4" (BRK)	LF	1,887	
0666	7171		REFL PAV MRK TY II (W) 4" (SLD)	LF	15,641	
0666	7184		REFL PAV MRK TY II (W) 24" (SLD)	LF	20	
0666	7208		REFL PAV MRK TY II (Y) 4" (BRK)	LF	7,782	
0666	7210		REFL PAV MRK TY II (Y) 4" (SLD)	LF	1,819	
0666	7220		REFL PAV MRK TY II (Y) (MED NOSE)	LF	30	
0666	7347		PAVEMENT SLER 6"	LF	33,381	
0666	7348		PAVEMENT SLER 8"	LF	3,344	
0666	7350		PAVEMENT SLER 12"	LF	300	
0666	7352		PAVEMENT SLER 24"	LF	112	
0666	7353		PAVEMENT SLER (ARROW)	EA	37	
0666	7354		PAVEMENT SLER (WORD)	EA	21	
0666	7355		PAVEMENT SLER (MED NOSE)	EA	30	
0666	7407		REFL PAV MRK TY I (W)6"(BRK)(090MIL)	LF	15,081	
0666	7410		REFL PAV MRK TY I (W)6"(SLD)(090MIL)	LF	15,462	
0666	7422		REFL PAV MRK TY I (Y)6"(SLD)(090MIL)	LF	2,504	
0666	7008		REFL PAV MRK TY I (W) 6" (DOT)	LF	334	
0672	7002		REFL PAV MRKR TY I-C	EA	357	
0672	7004		REFL PAV MRKR TY II-A-A	EA	124	
0672	7006		REFL PAV MRKR TY II-C-R	EA	754	
0672	7022		REFL PAV MRKR TY II-B-B	EA	20	
0677	7001		ELIM EXT PM & MRKS (4")	LF	250	
0678	7002		PAV SURF PREP FOR MRK (6")	LF	33,381	
0678	7004		PAV SURF PREP FOR MRK (8")	LF	3,344	
0678	7008		PAV SURF PREP FOR MRK (24")	LF	112	
0678	7009		PAV SURF PREP FOR MRK (ARROW)	EA	37	
0678	7016		PAV SURF PREP FOR MRK (WORD)	EA	21	
0678	7024		PAV SURF PREP FOR MRK (MED NOSE)	EA	30	
0678	7033		PAV SURF PREP FOR MRK (RPM)	EA	501	
0685	7005		RELOCT RDSD FLSH BCN AM (SOLAR PWRD)	EA	3	
1002	7013		REMOVE AND RELOCATE EXIST. LANDSCAPE	LS	1	
1002	7029		REMOVE AND RESET ROCK/BOULDER	EA	50	
1004	1004		TREE PROTECTION	EA	1	
5044	7001		HEADWALL (STONE MASONRY)	EA	2	
7014	7001		CURB INLET SEDIMENT PROTECTION	LF	15	
7004	7025		CUT AND PLUG WATER MAIN (6 IN)	EA	18	
7004	7032		GATE VALVE (6 IN)	EA	18	
7004	7063		UTILITY ADJUSTMENTS	LS	1	
7004	7055		REMOVE AND RELOCATE METERS AND BOXES	EA	8	
7019	7001		SUBSURFACE UTIL LOCATE (OUTSIDE RDBED)	EA	5	
7019	7002		SUBSURFACE UTIL LOCATE (INSIDE RDBED)	EA	2	
7033	7001		ADJUSTING WATER VALVE BOX TO GRADE	EA	17	
7049	7064		ADJUST EXIST WATER METER	EA	4	
7049	7102		ADJUST HYDRANT	EA	2	
7049	7103		RELOCATE EXIST. WATER METER AND RELAY EXIST. SERVICE	EA	8	
7049	7015		REMOVE AND REPLACE FIRE HYDRANT	EA	18	
7006	7001		ABAND/FILL EXIST SAN SWR PIPE (8 IN)	LF	5,850	
7006	7076		JAC BOR TUN SAN SWR FM (HDPE)(DR 13.5) (8 IN)	LF	440	
7006	7077		SANITARY SEWER FM (HDPE)(DR 13.5) (8 IN)	LF	5,417	
7040	7033		AIR RELEASE VALVE (COMPLETE)(2 IN)	EA	2	

ITEM CODE			DESCRIPTION	UNIT	TOTAL	
ITEM NO	DESC CODE	SP NO			ESTIMATE	FINAL
0450	7062		RAIL (HANDRAIL)(TY E)	LF	314	
0450	7064		RAIL (HANDRAIL)(TY W)	LF	378	
0462	7007		CONC BOX CULV (5 FT X 3 FT)	LF	48	
0531	7001		CONC SIDEWALK (4")	LF	6,515	
0531	7005		CURB RAMPS (TY I)	LF	14	

⚠ SUMMARY OF PAY ITEMS UPDATED

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04-28-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SUMMARY OF QUANTITIES

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

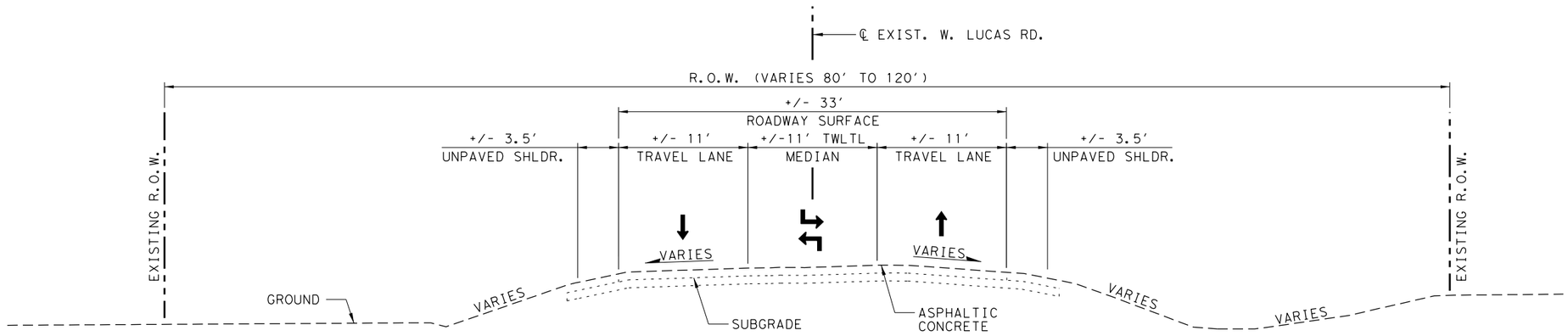
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	5
	COUNTY	
	COLLIN	

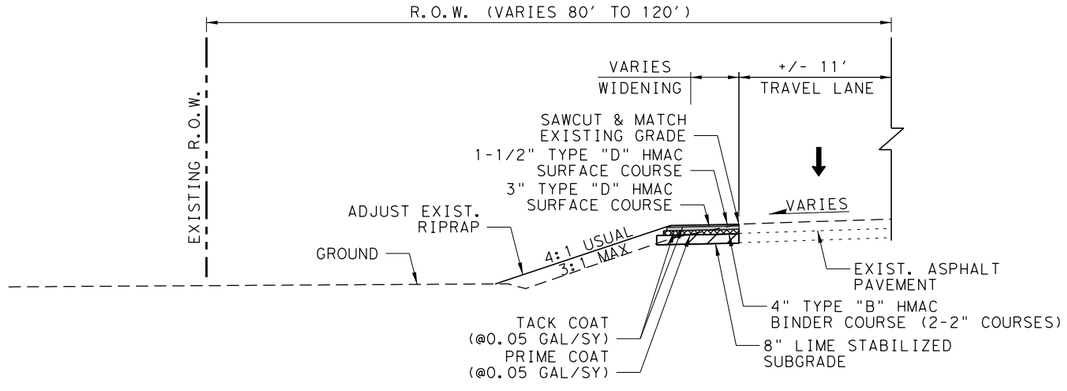
CALL BEFORE YOU DIG
TEXAS ONE-CALL SYSTEM, INC.
811 or 1-800-245-4545
TEXAS811.org
Know what's below. Call before you dig.

DATE: 4/27/2026 10:56:49 AM
FILE: T:\102\793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\1. General\WLucas_SUM_EST_01 REV1.dgn

DESIGN SPEED = 55 MPH
POSTED SPEED = 50 MPH
AADT (2040) = 26,689



EXISTING TYPICAL SECTION
STA. 12+08.14 TO STA. 98+91.80



PROPOSED PARTIAL TYPICAL SECTION
FULL DEPTH ASPHALT WIDENING
STA. 98+91.80 TO 99+36.84

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TYPICAL SECTIONS

SCALE: 1"=10' SHEET 1 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

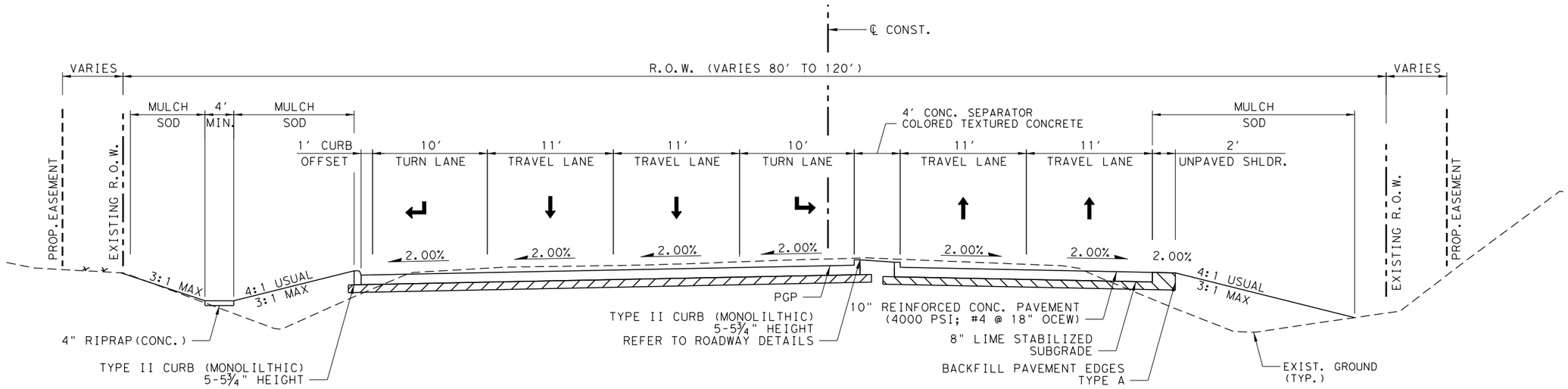
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	6
COUNTY		
COLLIN		

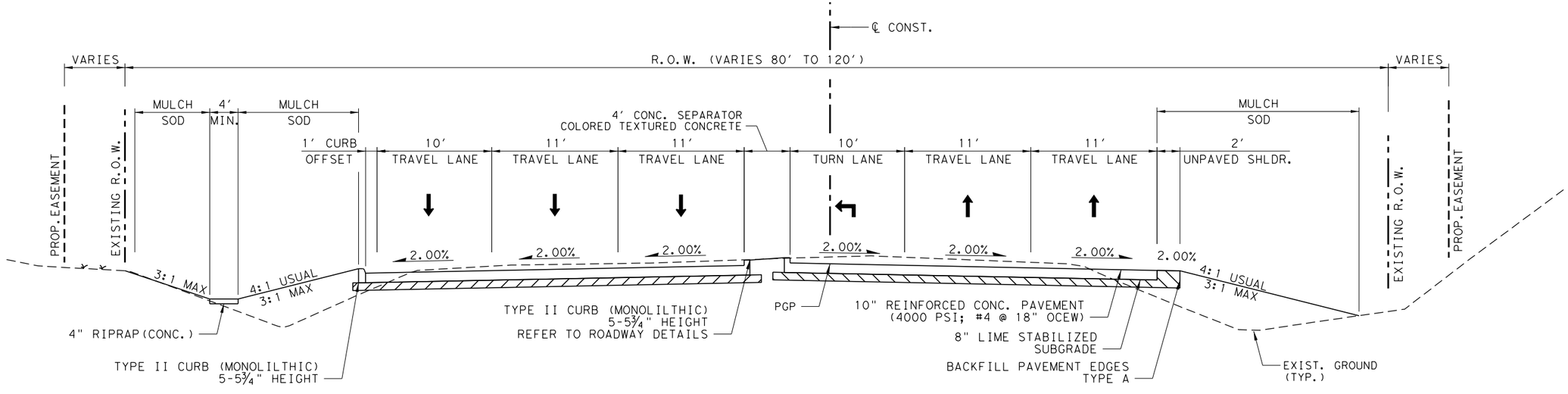
Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:55:59 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_TYP_01.dgn

DESIGN SPEED = 55 MPH
POSTED SPEED = 50 MPH
AADT (2040) = 26,689



PROPOSED TYPICAL SECTION
STA. 12+08.14 TO STA. 13+00.00



PROPOSED TYPICAL SECTION
STA. 13+00.00 TO STA. 15+51.07

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:00 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_TYP_02.dgn

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TYPICAL SECTIONS

SCALE: 1"=10' SHEET 2 OF 5

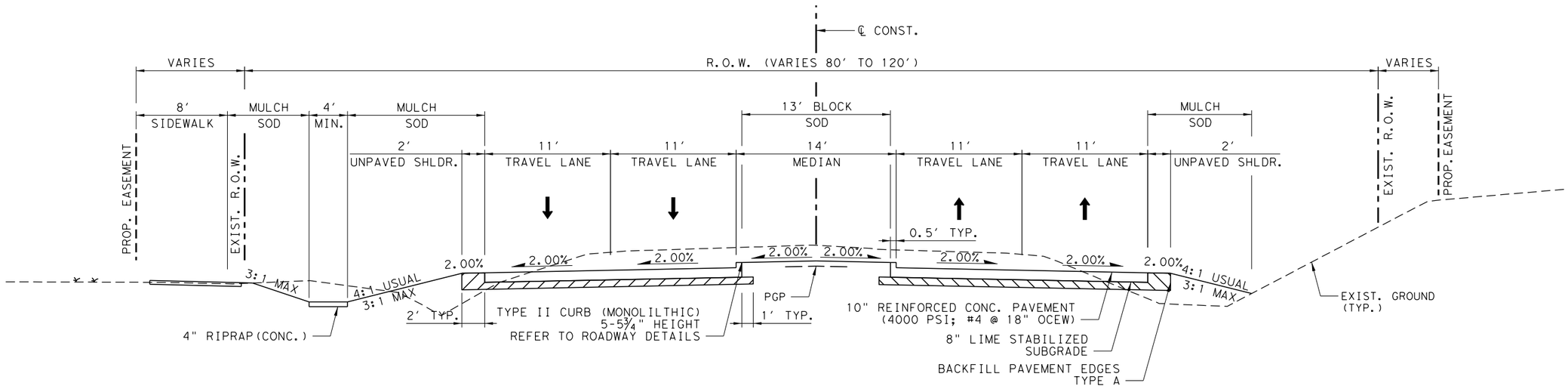
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

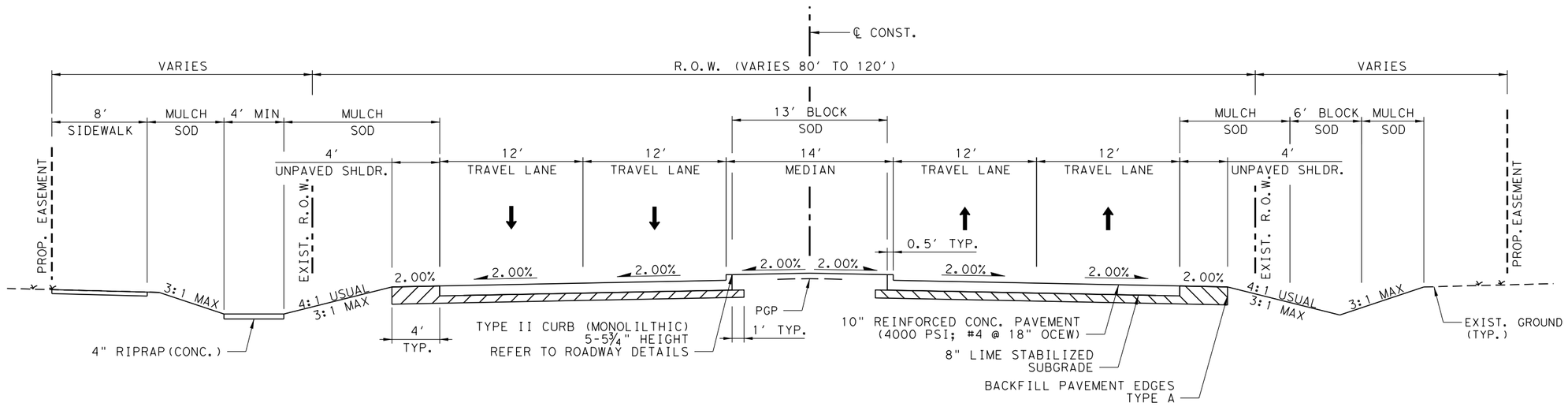
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	7
COUNTY		
COLLIN		

DESIGN SPEED = 55 MPH
POSTED SPEED = 50 MPH
AADT (2040) = 26,689



PROPOSED TYPICAL SECTION

STA. 16+38.06 TO STA. 33+02.49



PROPOSED TYPICAL SECTION

STA. 38+81.12 TO STA. 54+40.00
STA. 75+75.00 TO STA. 78+92.00
STA. 83+50.00 TO STA. 86+62.16
STA. 89+03.08 TO STA. 90+15.13

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:00 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_TYP_03.dgn

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TYPICAL SECTIONS

SCALE: 1"=10' SHEET 3 OF 5

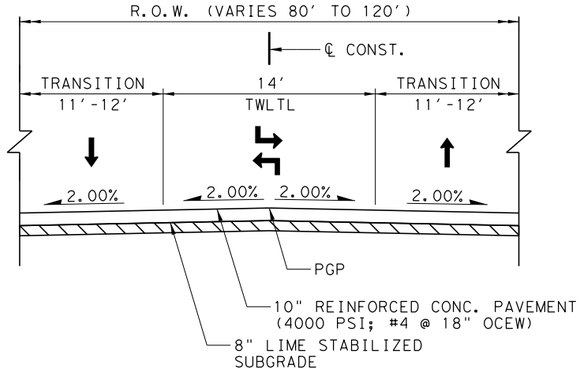
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

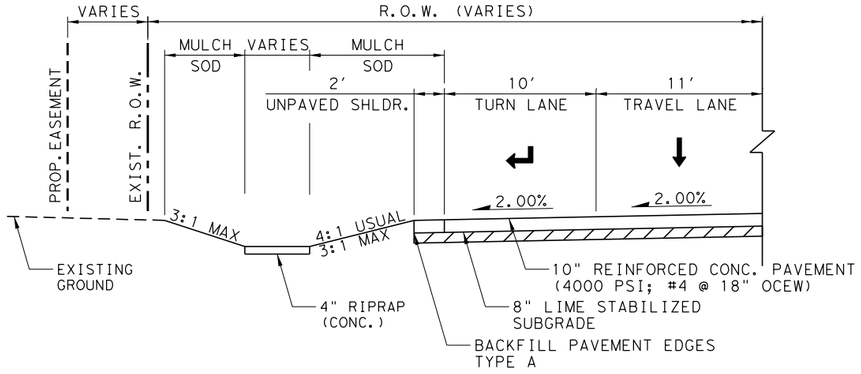
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	8
COUNTY		
COLLIN		

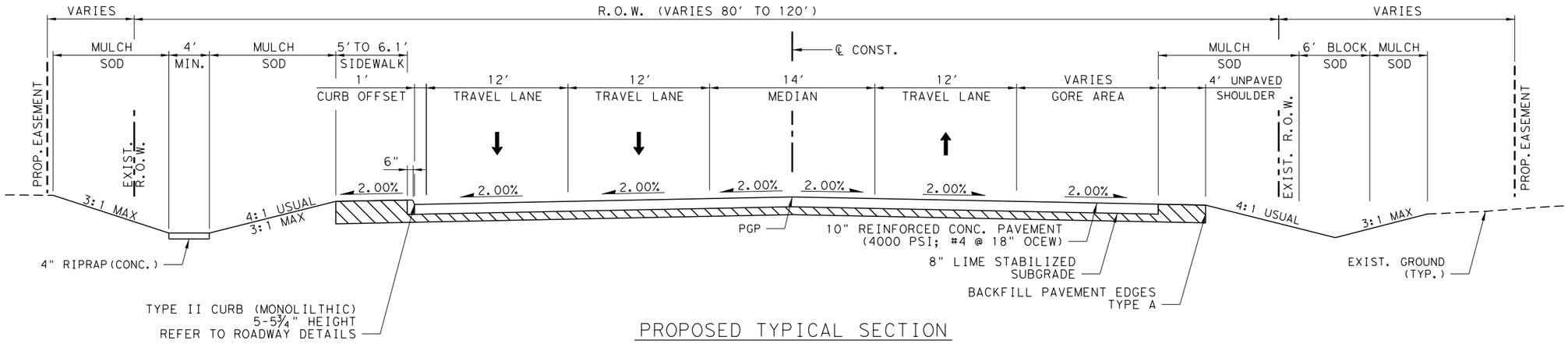
DESIGN SPEED = 55 MPH
POSTED SPEED = 50 MPH
AADT (2040) = 26,689



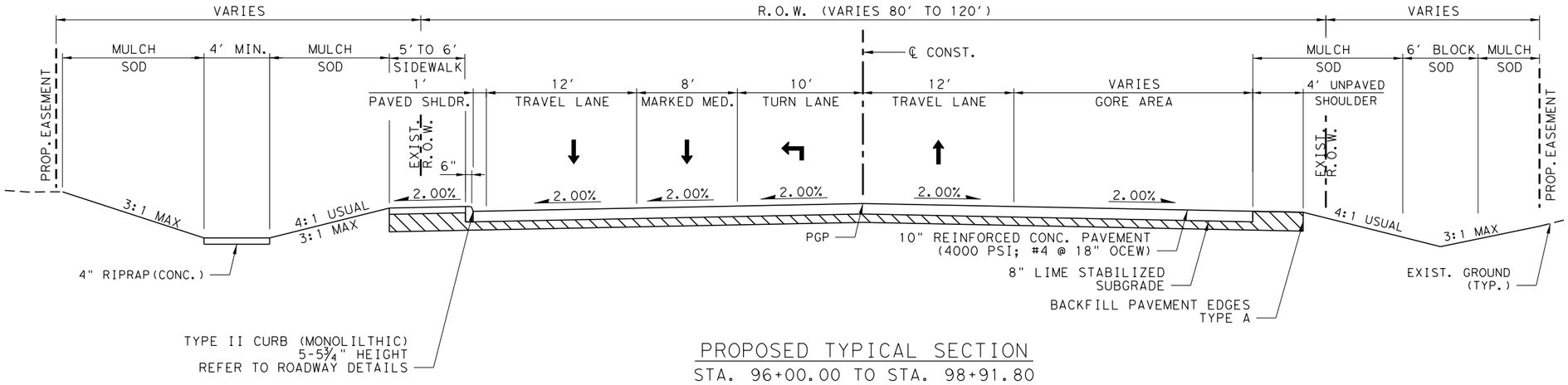
PROPOSED PARTIAL TYPICAL SECTION
STA. 33+02.49 TO STA. 38+81.12



PROPOSED PARTIAL TYPICAL SECTION (WB SHOWN)
STA. 16+38.06 TO STA. 20+44.68 (WB)



PROPOSED TYPICAL SECTION
STA. 92+00.95 TO STA. 95+85.73



PROPOSED TYPICAL SECTION
STA. 96+00.00 TO STA. 98+91.80

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TYPICAL SECTIONS

SCALE: 1"=10' SHEET 4 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

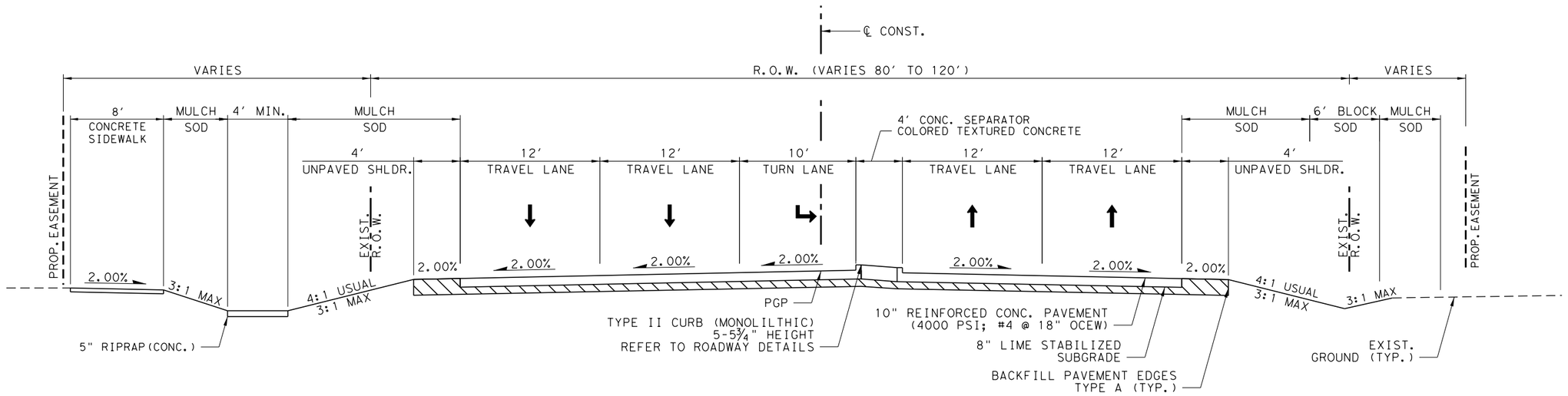
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	9
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

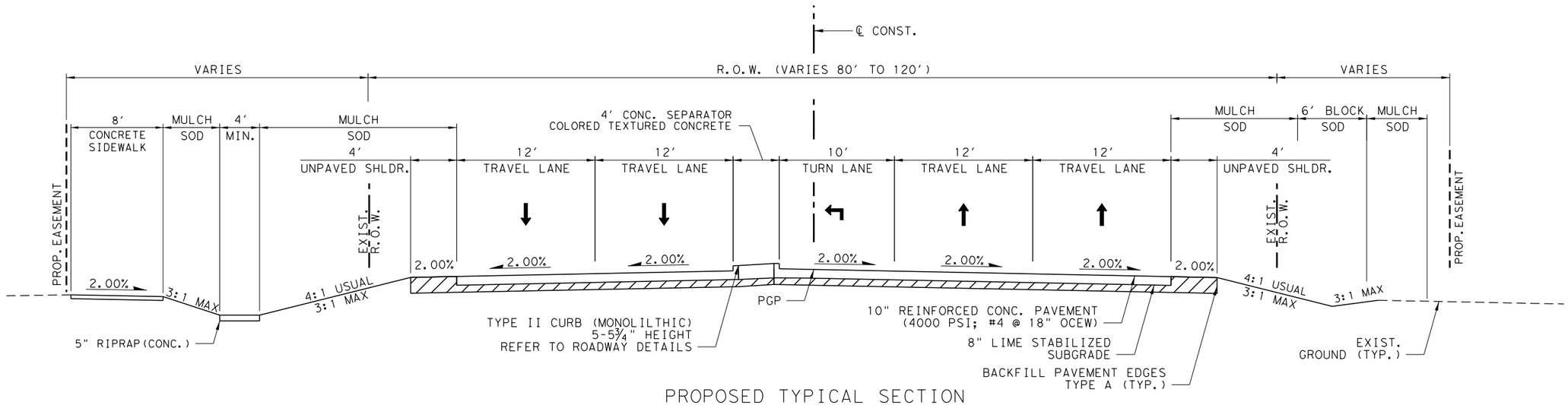
DATE: 4/6/2026 1:56:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_TYP_04.dgn

DESIGN SPEED = 55 MPH
POSTED SPEED = 50 MPH
AADT (2040) = 26,689



PROPOSED TYPICAL SECTION

STA. 54+96.00 TO STA. 57+50.00
STA. 62+00.00 TO STA. 63+88.66
STA. 66+85.00 TO STA. 69+25.69
STA. 72+28.00 TO STA. 75+75.00
STA. 79+97.00 TO STA. 83+50.00
STA. 87+78.16 TO STA. 89+03.08



PROPOSED TYPICAL SECTION

STA. 57+50.00 TO STA. 61+07.00
STA. 63+88.66 TO STA. 65+90.00
STA. 69+25.69 TO STA. 71+53.00

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_TYP_05.dgn

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TYPICAL SECTIONS

SCALE: 1"=10' SHEET 5 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	10
COUNTY		
COLLIN		

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES, SEPTEMBER 2024 EDITION REFERRED TO AS "THE STANDARD SPECIFICATIONS". TXDOT SPECIAL SPECIFICATION 2024 SHALL BE USED FOR THE LANDSCAPE GRATE INLETS.

2. IN THE EVENT AN ITEM IS NOT COVERED WITHIN THESE PLANS AND SPECIFICATIONS, THE 2024 TXDOT STANDARD SPECIFICATIONS SHALL APPLY.

3. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS BEFORE ANY WORK MAY BEGIN. ALL PERMIT FEES SHALL BE CONSIDERED INCIDENTAL TO PAY ITEMS PROVIDED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY DISCREPANCIES BE FOUND IN THE CONSTRUCTION PLANS AND/OR THE SPECIAL PROVISIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL NOT BE COMPENSATED FOR ANY WORK NOT AUTHORIZED BY THE ENGINEER.

4. THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE UPDATE TO THE ENGINEER AND THE CONSTRUCTION INSPECTOR WITH THE MONTHLY PAY ESTIMATE.

5. THE CONTRACTOR WILL BE PAID ONLY FOR THE WORK WHICH IS COMPLETED IN STRICT CONFORMANCE TO THE PLANS AND CONSTRUCTION SPECIFICATIONS.

6. FINAL PAYMENT TO CONTRACTOR SHALL BE RELEASED AFTER THE ACCEPTANCE OF THE FINAL INSPECTION BY AUTHORIZED PERSONNEL OF THE PUBLIC WORKS DEPARTMENT.

7. PLACE CONSTRUCTION STAKES/STATION MARKINGS AT INTERVALS OF NO MORE THAN 100 FEET OR AS DIRECTED BY THE ENGINEER. PLACE STAKES AND MARKINGS SO AS NOT TO INTERFERE WITH NORMAL CONSTRUCTION OPERATIONS. SUBMIT ALL SHOP DRAWINGS, WORKING DRAWINGS, OR OTHER DOCUMENTS WHICH REQUIRE REVIEW SUFFICIENTLY IN ADVANCE OF SCHEDULED CONSTRUCTION TO ALLOW NO LESS THAN THIRTY (30) CALENDAR DAYS FOR REVIEW AND RESPONSE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY CONSTRUCTION STAKING BY A TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR. WORK IS NOT PERMITTED OUTSIDE OF THE RIGHT OF WAY OR EASEMENTS WITHOUT PRIOR PERMISSION AND COORDINATION WITH THE CITY.

8. CONSTRUCTION OBSERVATION AND ADDITIONAL MATERIALS TESTING MAY BE PERFORMED BY REPRESENTATIVES OF THE OWNER, ENGINEER, REVIEW AUTHORITIES, AND AGENCIES. UNRESTRICTED ACCESS SHALL BE PROVIDED TO THESE REPRESENTATIVES AT ALL TIMES.

9. THE CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING THE REQUIRED INSPECTIONS AND ALLOWING FOR THEM IN THEIR SCHEDULE OF OPERATIONS, CONTRACTOR WILL NOT BE ALLOWED ANY ADDITIONAL CONTRACT DAYS OR COMPENSATION AS A RESULT OF THEIR FAILURE TO ADEQUATELY PROVIDE FOR AUTHORIZED INSPECTIONS.

10. THE CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT AND THE ENGINEER TWO WORKING DAYS BEFORE STARTING WORK.

11. THE CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT AND THE ENGINEER TWO WORKING DAYS IN ADVANCE OF ANY CONCRETE OR ASPHALT PLACEMENT.

12. THE CONTRACTOR MUST FURNISH AT LEAST TWO PHONE NUMBERS WHERE RESPONSIBLE PERSONNEL CAN BE REACHED IN CASE OF EMERGENCY DURING WORKING AND NONWORKING HOURS. IF THERE ARE ANY CHANGES, THE INFORMATION MUST BE UPDATED IMMEDIATELY FOR THE DURATION OF THE PROJECT.

13. IF CULTURAL RESOURCES (ARCHAEOLOGICAL FINDINGS UNEARTHED) ARE LOCATED DURING CONSTRUCTION, WORK SHALL STOP IMMEDIATELY IN THAT AREA. IMMEDIATELY NOTIFY THE ENGINEER.

14. THE ENGINEER/INSPECTOR WILL NOT: SUPERVISE, DIRECT OR HAVE CONTROL OVER THE CONTRACTOR'S WORK; HAVE AUTHORITY OVER OR BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION; BE RESPONSIBLE FOR THE SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL TO THE WORK OF CONTRACTOR OR FOR ANY FAILURE OF CONTRACTOR TO COMPLY WITH LAWS, RULES, REGULATIONS, ORDINANCES, CODES OR ORDERS APPLICABLE TO CONTRACTOR FURNISHING AND PERFORMING THE WORK.

15. THE CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR RESETTING OR ESTABLISHING NEW BENCHMARKS AFFECTED BY THE CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO PAY ITEMS (SUBSIDIARY TO ALL LINE ITEMS).

16. TESTS AND TESTING FREQUENCIES WILL BE GOVERNED BY THE TXDOT GUIDE SCHEDULE OF SAMPLING AND TESTING.

17. ALL SAMPLING AND TESTING LABORATORIES MUST BE APPROVED BY THE CITY PRIOR TO PERFORMING ANY WORK, SUBMIT INSPECTION AND TESTING QUALIFICATIONS A MINIMUM OF TWO WEEKS PRIOR TO BEGINNING RELATED WORK. THE COST OF SAMPLING/TESTING SHALL BE CONSIDERED INCIDENTAL TO THE RELATED PAY ITEM.

18. MANHOLE OR OTHER UTILITY STRUCTURES SHALL BE TESTED SPIRALLY IN EACH SEQUENTIAL QUADRANT FOR EVERY TWO FEET OF BACKFILL. MOISTURE/DENSITY TESTS IN VICINITY OF MANHOLES OR OTHER UTILITY STRUCTURES (FOR EXAMPLE CLEANOUTS, HYDRANTS, JUNCTION BOXES OR VAULTS) SHALL BE PERFORMED A MAXIMUM OF ONE FOOT FROM MANHOLE OR OTHER UTILITY STRUCTURE.

19. DRIVEWAY APPROACHES DAMAGED BY THE CONTRACTOR SHALL BE REMOVED AND REPLACED TO MATCH THE EXISTING CONDITIONS AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE CITY OF LUCAS. DRAINAGE PIPE UNDER DRIVEWAY APPROACHES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED OR REPAIRED TO EQUAL OR BETTER THAN EXISTING CONDITION, AT THE CONTRACTOR'S EXPENSE.

20. THE CONTRACTOR SHALL PROTECT ALL EXISTING FENCES (TO REMAIN). ANY DAMAGES DUE TO CONTRACTOR'S ACTION SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE CITY.

21. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY THE CONSTRUCTION TO THE ORIGINAL CONDITION OR BETTER. RESTORED AREAS INCLUDE BUT NOT LIMITED TO TRENCH BACKFILL, SIDE SLOPES, FENCES, IRRIGATION SYSTEMS, DRIVEWAYS, PRIVATE YARDS, LANDSCAPING, SIGNS AND ROADWAYS.

22. THE CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT A WRITTEN AGREEMENT WITH THE PROPERTY OWNER AND APPROVAL BY CITY. A COPY OF THIS AGREEMENT SHALL BE PROVIDED TO THE CITY. LETTERS OF FINAL APPROVAL AND RELEASE FROM THE AFFECTED PROPERTY OWNER(S) MUST BE SUBMITTED TO THE CITY BEFORE FINAL PAYMENT WILL BE AUTHORIZED ON THIS PROJECT.

23. ALL IRRIGATION SYSTEMS IN CONFLICT WITH CONSTRUCTION SHALL BE CUT AND CAPPED AT THE RIGHT-OF-WAY OR DESIGNATED EASEMENT.

GENERAL NOTES CONTINUED

24. NO TIME EXTENSIONS, ADDITIONAL PAYMENT, OR DELAYS WILL BE GRANTED AS A RESULT OF CONTRACTOR TAKING DIRECTION FROM PROPERTY OWNERS.

25. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS, DRIVEWAYS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION AT ALL TIMES AND SHALL BE CONSIDERED INCIDENTAL TO THE RELATED PAY ITEMS.

26. MAIL BOXES WILL BE MOVED AND RESET AS DIRECTED IN THE PLANS OR BY THE ENGINEER. ALL MAIL BOXES TO BE REMOVED SHALL BE TEMPORARILY LOCATED AS TO NOT INTERRUPT MAIL SERVICE AND RESET AS SOON AS ALLOWED BY CONSTRUCTION ACTIVITIES. ALL MAIL BOXES DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED WITH MAILBOXES OF EQUAL OR BETTER QUALITY, AND OF AN IDENTICAL STYLE TO THOSE BEING REPLACED AT CONTRACTORS EXPENSE AND SHALL BE CONSIDERED INCIDENTAL TO PAY ITEMS.

27. ADJUSTMENT OF UNPAVED DRIVEWAYS BEHIND PROPERTY LINE AND RESTORATION OF THE SURFACE TO EQUAL OR BETTER THAN THE ORIGINAL IS INCIDENTAL WORK ON THIS PROJECT. CONTRACTOR MUST COORDINATE WITH THE ENGINEER AND PROPERTY OWNER PRIOR TO ACCESSING OR WORKING ON PRIVATE PROPERTY. HARMONIZATION IS INCIDENTAL TO THE RELATED WORK AND SHALL BE CONSIDERED INCIDENTAL TO PAY ITEMS.

28. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF EXISTING FENCES AND GATES WITH THE ENGINEER AND THE PROPERTY OWNER PRIOR TO THE START OF THE WORK.

29. CONTRACTOR SHALL USE CLASS B BEDDING WITH COMPACTED GRANULAR MATERIAL AT A DEPTH OF HALF THE PIPE DIAMETER IN COMPLIANCE WITH TXDOT ITEM 464 FOR ALL ROUND PIPE CULVERTS.

30. CONTRACTOR SHALL USE COMPACTED CLASS C BEDDING ON COMPACTED SUBGRADE TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698, WITHIN 0 TO +4% OF OPTIMUM MOISTURE CONTENT FOR ALL BOX CULVERTS.

CONCRETE PAVEMENT

1. ALL CONCRETE SHALL BE IN COMPLIANCE WITH THE SPECIFIED CLASSES OF CONCRETE PER TXDOT SPECIFICATIONS.

2. CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS OF TXDOT ITEM 360, CONCRETE PAVEMENT.

3. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE COMPLETE CONCRETE MIX (BATCH) DESIGN AT THE PRE-CONSTRUCTION CONFERENCE AND/OR AT LEAST TEN WORKING DAYS PRIOR TO THE START OF ANY CONCRETE PLACING OPERATIONS. VOLUMETRIC CONCRETE IS NOT APPROVED FOR CONCRETE PAVEMENT ON THIS PROJECT.

4. CONTRACTOR SHALL SUBMIT PAVING CONSTRUCTION PLAN AS DESCRIBED IN TXDOT ITEM 360, CONCRETE PAVEMENT.

5. CONTRACTOR SHALL EMPLOY A CERTIFIED TESTING LABORATORY TO PERFORM DENSITY TESTING IN ACCORDANCE WITH TXDOT PROCEDURE TEX-115-E/ASTM D6938 AND SHALL BE CONSIDERED INCIDENTAL TO PAY ITEMS.

6. CONTRACTOR SHALL EMPLOY A CERTIFIED TESTING LABORATORY FOR CONCRETE SAMPLING AND TESTING IN ACCORDANCE WITH ALL CURRENT ASTM STANDARDS. COST OF CONCRETE TESTING SHALL BE INCLUDED IN CONCRETE POUR OPERATIONS AT NO ADDITIONAL COST. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER. TEST LOCATIONS SHALL BE MARKED IN THE PLANS AND SUBMITTED WITH THE RESULTS. CONCRETE SHALL BE SAMPLED AT POINT OF DISCHARGE AND ANY DEVIATIONS INDICATED AS SUCH ON REPORT. CONCRETE SHALL HAVE AIR ENTRAINMENT OF 3-6%.

7. WHEN AIR TEMPERATURE IS BETWEEN 85 DEG. F (30 DEG. C) AND 90 DEG F (32 DEG. C), REDUCE MIXING AND DELIVERY TIME FROM 1 1/2 HOURS TO 75 MINUTES, AND WHEN AIR TEMPERATURE IS ABOVE 90 DEG. F (32 DEG. C), REDUCE MIXING AND DELIVERY TIME TO 60 MINUTES. NO ADMIXTURE SHALL BE PERMITTED IN THE CONCRETE MIX WITHOUT WRITTEN APPROVAL BY THE ENGINEER. WATER WITHELD DURING THE BATCHING MAY BE ADDED AT THE JOB SITE UNDER THE SUPERVISION OF THE ENGINEER. WHEN THIS WATER IS ADDED, IT CANNOT EXCEED THE APPROVED MIX DESIGN WATER-TO-CEMENTITIOUS MATERIAL RATIO.

8. ALL REINFORCING STEEL AND DOWEL BARS IN PAVEMENT SHALL BE SUPPORTED AND MAINTAINED AT THE CORRECT CLEARANCES BY THE USE OF BAR CHAIRS OR OTHER APPROVED SUPPORT.

9. THE USE OF WOOD FORMS FOR PAVEMENT CONSTRUCTION WILL BE PERMITTED ONLY FOR LEAVE-OUTS, SIDEWALKS, DRIVEWAYS, BARRIER FREE RAMPS AND INTERSECTIONS. WOOD FORMS MAY BE PERMITTED FOR OTHER USES, BUT ONLY ON A CASE-BY-CASE BASIS, AND MUST BE EXPLICITLY AUTHORIZED BY THE ENGINEER.

10. THE CONTRACTOR SHALL NOT COMMENCE WORK ON THE ROADWAY BEFORE 7:00 AM AND SHALL ARRANGE HIS WORK SO THAT NO MACHINERY OR EQUIPMENT SHALL BE CLOSER THAN 20 FEET TO THE TRAVELED ROADWAY AFTER SUNSET EXCEPT WHEN APPROVED BY THE ENGINEER. UNLESS OTHERWISE APPROVED BY THE CITY, WORKING HOURS SHALL BE 7AM-6PM MON.-SAT. NO WORK SHALL BE DONE ON CITY HOLIDAYS OR SUNDAYS WITHOUT SPECIAL WRITTEN PERMISSION FROM THE CITY. OVERTIME INSPECTION SHALL BE PAID BY THE CONTRACTOR AT THE ESTABLISHED RATE WITH THE CITY. OVERTIME INSPECTION INCLUDES BUT IS NOT LIMITED TO EMERGENCY INSPECTIONS, APPROVED HOLIDAY WORK, AND WEEKEND WORK.

11. PROVIDE A MINIMUM OF 9% HYDRATED LIME BY DRY SOIL WEIGHT TO THE SPECIFIED DEPTH IN ACCORDANCE WITH TXDOT 128E "LIME TREATMENT". ACTUAL AMOUNT OF LIME TO BE DETERMINED BY LIME SERIES.

12. USE OF MULTIPLE PIECE TIEBARS WILL BE REQUIRED. PROVIDE CHAIRS FOR MULTIPLE PIECE TIEBARS, THREADED CONNECTORS OR OTHER ADEQUATE DEVICES, USED IN CONCRETE PAVING, OR TIE THEM TO THE PAVEMENT REINFORCING STEEL. IF APPROVED BY THE ENGINEER FOR SPECIFIC AREAS, IN LIEU OF MULTIPLE PIECE TIEBARS, DRILL HOLES INTO THE PAVEMENT AND GROUT STRAIGHT TIEBARS IN PLACE WITH EPOXY. USE A NON-IMPACT, ROTARY CORE DRILL TO PREVENT DAMAGE TO THE PAVEMENT UNLESS OTHERWISE DIRECTED. CLEAN THE DRILL HOLES AND THEN COMPLETELY FILL WITH EPOXY BEFORE INSERTING THE TIEBAR. DO NOT BEND THE TIEBARS OR INSERT THEM INTO PLASTIC CONCRETE WITHOUT THE APPROVAL OF THE ENGINEER.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

GENERAL NOTES

SHEET 1 OF 3

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		11
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:02 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\1. General\W.Lucas_GEN_NOTES_01.dgn

CONCRETE PAVEMENT CONTINUED

13. AFTER THE EXISTING PAVEMENT IS REMOVED AND PRIOR TO PLACING FILL, THE EXPOSED SUBGRADE IN AREAS TO RECEIVE FILL SHALL BE STRIPPED AND PROOFROLLED. ALL CUT AREAS AFTER CUT TO FINAL GRADE SHALL ALSO BE PROOFROLLED. PROOFROLLING CAN BE ACCOMPLISHED USING A HEAVY (25 TON OR GREATER TOTAL WEIGHT) PNEUMATIC TIRED ROLLER MAKING SEVERAL PASSES OVER THE AREAS. THE PROOFROLLING OPERATIONS SHALL BE PERFORMED UNDER THE DIRECTION OF GEOTECHNICAL ENGINEER. WHERE SOFT OR COMPRESSIBLE ZONES ARE ENCOUNTERED, THESE AREAS SHALL BE REMOVED TO A FIRM SUBGRADE AS DETERMINED BY THE GEOTECHNICAL ENGINEER. ANY RESULTING HEAVING, PUMPING, OR RUTTING AREAS SHALL BE BACKFILLED AT 98%, 0 TO +3 D698 TO FINISHED SUBGRADE IN 8 INCH LOOSE LIFTS. FG = 98% -1 TO +2%

14. TEST PITS AND DENSITY TESTING OF THE EXISTING FILL SOILS SHALL BE PERFORMED TO VERIFY A COMPACTION LEVEL OF AT LEAST 95% OF STANDARD PROCTOR DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698. IF COMPACTION LEVELS ARE LESS THAN 95% OF STANDARD PROCTOR DENSITY , OVER-EXCAVATION OF THE EXISTING FILL SOILS WILL NEED TO BE PERFORMED TO A MINIMUM DEPTH OF 4 FEET BELOW THE BOTTOM OF PAVEMENT, AND THEN REPLACED IN 8 INCHES LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698, WITHIN 0 TO +4% OF OPTIMUM MOISTURE CONTENT.

15. FILL MATERIALS SHALL BE PLACED IN 8 INCHES LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698, WITHIN 0 TO +4% OF OPTIMUM MOISTURE CONTENT.

16. LIME TREATED SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 98% OF STANDARD PROCTOR DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698, WITHIN -2 TO +4% OF OPTIMUM CONTENT AND COMPLY WITH TXDOT ITEM 247, TYPE D, GRADE 1.

17. CONSTRUCTION JOINTS SHALL BE PROVIDED PER TXDOT STANDARDS (CRCP(1)-20 AND JS-14) AS REQUIRED FOR CONSTRUCTION PHASING. JOINT LOCATION SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

18. PLACE A TRANSVERSE CONSTRUCTION JOINT AT THE END OF EACH DAYS POUR OR AS DIRECTED BY THE ENGINEER AND AT ALL CONNECTIONS TO EXISTING CONCRETE PAVEMENT.

19. THE COLORED/TEXTURED CONCRETE SECTIONS SHALL BE STAINED WITH SIKA-SCOFIELD LITHOCHROME CHEMSTAIN CS-14 DARK WALNUT OR EQUIVALENT AS APPROVED BY THE CITY. ALL CONCRETE SURFACE PREPARATION SHALL BE SUBSIDIARY TO THE LINE ITEM.

UTILITIES

1. CONTRACTOR SHALL EMPLOY A CERTIFIED TESTING SUBCONSULTANT TO PERFORM PRESSURE TESTING REQUIRED ON ALL WATERWORKS AND SHALL BE CONSIDERED INCIDENTAL TO PAY ITEMS. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER.

2. EXISTING UTILITIES ARE SHOWN AT APPROXIMATE LOCATIONS AND DEPTHS BASED ON BEST AVAILABLE RECORDS AND LIMITED FIELD DATA. NOT ALL UTILITIES MAY BE SHOWN. THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGES TO UTILITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

3. CONTRACTOR SHALL CONTACT GAS LINE PROVIDERS AND NORTH TEXAS MUNICIPAL WATER DISTRICT (NTMWD) 48 HOURS PRIOR TO WORKING WITHIN THEIR EASEMENTS OR IN THE VICINITY OF THEIR FACILITIES.

4. CALL 1-800-DIG-TESS (1-800-344-8377) AT LEAST TWO WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, SO THAT THE LOCATION OF UTILITIES CAN BE MARKED. IF NECESSARY, TEST DITCHES SHALL BE DUG TO VERIFY/DETERMINE ACTUAL FIELD LOCATIONS AND CONDITIONS. LOCATION OF CITY UTILITIES TO BE PROVIDED BY THE CITY OF LUCAS.

5. THE CONTRACTOR SHALL PROVIDE A TRENCH SAFETY PLAN. THIS DOCUMENT SHALL BE SUBMITTED TO THE CITY OF LUCAS AT THE PRE-CONSTRUCTION CONFERENCE OR PRIOR TO THE START OF CONSTRUCTION.

6. PROVIDE THRUST BLOCK FOR ANCHOR TEES, BENDS AND PLUGGED, VALVED OR CAPPED ENDS OF LINES OF WATERMAINS AS PER NCTCOG STANDARD DRAWINGS.

SIGNING & PAVEMENT MARKINGS

1. ALL PAVEMENT MARKINGS, SIGN MATERIALS, PCMS, AND CONSTRUCTION SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) UNLESS NOTED OTHERWISE.

2. SIGN LOCATIONS SHOWN ON THE PLANS ARE DIAGRAMMATIC. SIGNS SHALL BE PLACED IN CONFORMANCE WITH THE LATEST EDITION OF TMUTCD.

3. PAYMENT FOR EACH SIGN SHALL INCLUDE ALL MOUNTING HARDWARE,THE SIGN POLE AND WEDGE BASE SYSTEM. (TXDOT SMD (TWT)-08)(INCLUDING CONCRETE).

4. REFLECTORIZED PAVEMENT MARKINGS SHALL BE THERMOPLASTIC, PER TXDOT STANDARD SPECIFICATIONS, ITEM 666. RAISED PAVEMENT MARKERS SHALL COMPLY WITH TXDOT STANDARD SPECIFICATIONS, ITEM 672.

5. ALL EXISTING SIGNS TEMPORARILY REMOVED BY THE CONTRACTOR SHALL BE PROTECTED FOR REINSTALLATION BY THE CONTRACTOR. ALL EXISTING SIGNS PERMANENTLY REMOVED SHALL BE SALVAGED AND PROVIDED TO THE CITY. ANY DAMAGE CAUSED DURING CONSTRUCTION OR STORAGE TO THESE SIGNS SHALL BE REPLACED AT THE CONTRACTOR'S SOLE EXPENSE.

6. COORDINATE WITH CITY OF LUCAS PUBLIC WORKS DEPARTMENT PRIOR TO PLACEMENT OF BLUE RPM's.

EROSION CONTROL

1. INSTALL SW3P ELEMENTS AS NEEDED BEFORE STARTING CONSTRUCTION IN EACH PHASE AND MAINTAIN AS SHOWN IN PLANS. ADDITIONAL SW3P ELEMENTS MAY BE NEEDED DEPENDING ON CONTRACTORS MEANS AND METHODS AT NO ADDITIONAL COST TO THE CITY.

2. CONTRACTOR TO MAINTAIN AN UP TO DATE EROSION CONTROL PLAN. THE EROSION CONTROL PLAN SHALL BE ON-SITE AND MADE AVAILABLE TO THE ENGINEER, INSPECTOR, CITY REPRESENTATIVE, AND GOVERNMENT AGENTS AT ALL TIMES.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

GENERAL NOTES

SHEET 2 OF 3

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	12
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:03 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\1. General\WLucas_GEN_NOTES_02.dgn

BID ITEM NOTES:

1. ITEM CODE 0672-XXX - BLUE FIRE HYDRANT RPM'S WILL BE PAID FOR UNDER REFL PAV MRKR TY II-B-B.

2. ITEM CODE 07526005 - TREE REMOVAL (6"-12" DIA) HAS BEEN REVISED TO REFLECT THE RANGE OF TREE SIZE TO BE REMOVED, PAVEMENT WILL START AT 6 IN AND NOT 4 IN.

3. ITEM CODE 01007001 - ALL TREES UNDER 6 IN DIAMETER REMOVED WILL BE PAID UNDER PREP ROW.

4. ITEM CODE 04326045 - RIPRAP (MOW STRIP)(4") SHALL BE ASPHALTIC PAVEMENT (HMA TY C).

5. ITEM CODE 01607003 - FURNISHING AND PLACING TOPSOIL (4") SHALL BE PLACED UNDER ITEM 01627002 BLOCK SODDING.

6. ITEM CODE 01667001 - FERTILIZER SHALL BE USED FOR ITEM 01627002 BLOCK SODDING.

7. ITEM CODE 04277002 - THE SIKA-SCOFIELD LITHOCHROME CHEMSTAIN CS-14 DARK WALNUT OR EQUIVALENT, AS APPROVED BY THE OWNER WILL BE PAID FOR UNDER CONCRETE PAINT FINISH (STAIN).

8. ITEM CODE 05277002 - TRAFFIC SEPARATOR TEXTURED CONCRETE WILL BE PAID FOR UNDER COLORED TEXTURED CONCRETE (5").

9. ITEM CODE 03606010 - TEXTURED CONCRETE PAVING WILL BE PAID FOR UNDER COLORED TEXTURED CONCRETE (10").

10. ITEM CODE 01007001 - ANY REMOVALS NOT SPECIFICALLY LISTED WILL BE PAID FOR UNDER PREP ROW.

11. ITEM CODE 05307017 - HES CONCRETE SHALL BE USED ONLY AS DIRECTED BY THE ENGINEER.

12. 464-7026: USE OF ALTERNATIVE MATERIALS:

    A. THE CONTRACTOR MAY PROPOSE THE USE OF ALTERNATIVE PIPE MATERIALS IN LIEU OF REINFORCED CONCRETE PIPE (RCP), SUBJECT TO THE FOLLOWING CONDITIONS:

    B. ALTERNATIVE PIPE MATERIALS MAY INCLUDE, BUT ARE NOT LIMITED TO: CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE), POLYPROPYLENE (PP).

    C. ALL ALTERNATIVE MATERIALS MUST MEET OR EXCEED THE HYDRAULIC, STRUCTURAL, AND DURABILITY PERFORMANCE REQUIREMENTS OF THE SPECIFIED RCP, AS DEMONSTRATED THROUGH SUBMITTALS AND DESIGN CALCULATIONS.

    D. PROPOSED MATERIALS MUST BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO PROCUREMENT AND INSTALLATION.

    E. ALTERNATIVE MATERIALS SHALL COMPLY WITH APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS, TXDOT STANDARD SPECIFICATIONS (OR RELEVANT GOVERNING AGENCY), AND ANY SPECIAL PROVISIONS REFERENCED IN THIS CONTRACT.

    F. THE USE OF ALTERNATIVE MATERIALS SHALL NOT RESULT IN ADDITIONAL COST TO THE OWNER, NOR SHALL IT CONSTITUTE A BASIS FOR CLAIM FOR TIME OR COMPENSATION.

    G. INSTALLATION METHODS AND BEDDING REQUIREMENTS FOR ALTERNATIVE MATERIALS SHALL BE AS PER THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED BY THE ENGINEER.

    H. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY PROPOSED ALTERNATIVE MATERIAL THAT, IN THEIR OPINION, DOES NOT PROVIDE EQUIVALENT PERFORMANCE, LONGEVITY, OR COMPATIBILITY WITH THE PROJECT DESIGN INTENT.

13. 531-7001: UNLESS OTHERWISE SHOWN ON THE PLANS OR SPECIFICALLY APPROVED IN WRITING:

    A. THE CROSS SLOPE OF SIDEWALK SHALL NOT EXCEED 2.0%.

    B. RUNNING SLOPE: THE RUNNING SLOPE OF SIDEWALKS SHALL NOT EXCEED 5.0% (1:20) UNLESS THE SIDEWALK IS CONSTRUCTED AS A COMPLIANT RAMP WITH PROPER LANDINGS AND HANDRAILS AS REQUIRED.

    C. CONTRACTION JOINT SPACING SHALL BE PROVIDED AT AN INTERVAL EQUAL TO THE SIDEWALK WIDTH. EXPANSION JOINTS SHALL BE PROVIDED AT 40FT SPACING.

    D. CONTRACTOR SHALL VERIFY ALL SLOPES IN THE FIELD DURING AND AFTER CONSTRUCTION TO ENSURE COMPLIANCE. THE ENGINEER RESERVES THE RIGHT TO REJECT OR REQUIRE CORRECTIVE ACTION FOR ANY NONCOMPLIANT WORK.

14. 531-7004: DETECTABLE WARNING SURFACES AS REQUIRED FOR CURB RAMPS WILL BE SUBSIDIARY TO THIS BID ITEM. CONTRACTOR TO SOURCE DETECTABLE WARNING SURFACES FROM AN APPROVED SOURCE FOUND ON THE TXDOT MATERIAL PRODUCER'S LIST.

15. 360-7074: PROVIDE CURBS MONOLITHICALLY CONSTRUCTED WITH THE CONCRETE PAVEMENT. IF CONTINUOUS MONOLITHIC CURB HAS TO BE TEMPORARILY OMITTED FOR ANY REASON, PROVIDE DOWELLED CURBS IN THE PROPOSED AREAS, AS DETAILED IN THE PLANS, AND APPLY AN APPROVED EPOXY RESIN TO THE PAVEMENT TO RECEIVE THE CURB AS DIRECTED. THIS WORK AND MATERIALS WILL NOT BE PAID FOR DIRECTLY, BUT IS CONSIDERED SUBSIDIARY TO THIS ITEM.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

GENERAL NOTES

SHEET 3 OF 3

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	13
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:03 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\1. General\WLucas_GEN_NOTES_03.dgn

TEMPORARY TRAFFIC CONTROL PLAN GENERAL NOTES

1. ONE LANE IN EACH DIRECTION SHALL REMAIN OPEN AT ALL TIMES UNLESS SPECIFIED IN THE PLANS OR DIRECTED BY THE ENGINEER.
2. THE ADVISORY SPEED LIMIT ESTABLISHED WITHIN WORK ZONE TRAVEL WAYS IS 40 M.P.H. REDUCED SPEED AND SIGNS SHALL BE INSTALLED ON SEPARATE POSTS IN ACCORDANCE WITH THE TXDOT STANDARDS.
3. A PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) SHALL BE USED UNDER THE FOLLOWING CONDITIONS:

   CONDITION 1: TWO WEEKS PRIOR TO CONSTRUCTION, INSTALL TWO PCMS IN ADVANCE OF THE PROJECT, ONE ON EACH END. PRECISE LOCATIONS OF PCMS SHALL BE DIRECTED BY THE ENGINEER.

   CONDITION 2: DURING CONSTRUCTION, REFER TO TRAFFIC CONTROL PLAN SEQUENCE OF WORK.
4. ANY DROP-OFF CONDITION REMAINING IN THE WORK ZONE GREATER THAN 6 IN AND WITHIN 10 FT FROM THE TRAVEL LANE, ANY TIME ACTIVE CONSTRUCTION CEASES, SHALL BE BACK FILLED AT A 3:1 SLOPE OR FLATTER, OR COVERED AND SECURED BY STEEL PLATE.
5. ANY CHANGES TO TRAFFIC CONTROL PLANS REQUIRE PRIOR APPROVAL FROM THE ENGINEER.
6. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED.
7. IF CONSTRUCTION ACTIVITIES OR WORK ZONES WILL INTERRUPT USPS MAIL SERVICE ACCESS, CONTRACTOR SHALL PROVIDE TEMPORARY MAIL DELIVERY LOCATIONS OUTSIDE OF THE WORK ZONE. TEMPORARY MAIL BOXES AND LOCATIONS SHALL BE APPROVED BY THE LOCAL POST MASTER AND COORDINATED WITH PROPERTY OWNERS PRIOR TO THE DELIVERY ACCESS INTERRUPTION.
8. THE CONTRACTOR SHALL MAINTAIN TRASH COLLECTION SERVICE ACCESSIBILITY OTHERWISE CONTRACTOR WILL HAVE TO COLLECT AND REMOVE TRASH ON NORMALLY SCHEDULED DAYS.
9. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES ALONG WEST LUCAS ROAD AT ALL TIMES. UNLESS APPROVED BY THE ENGINEER.
10. ALL TEMPORARY PAVEMENT MARKINGS REQUIRED DURING CONSTRUCTION THAT MAY CONFLICT WITH A FUTURE PHASE OR FINAL MARKING SHALL BE OF THE REMOVABLE TYPE.
11. EXISTING PAVEMENT MARKINGS IN CONFLICT WITH THE TRAFFIC CONTROL PLAN OR TEMPORARY MARKINGS SHALL BE REMOVED. CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS WITH METHOD APPROVED BY THE ENGINEER.
12. THE CONTRACTOR SHALL MAINTAIN ADEQUATE WIDTH AND ROADWAY STRUCTURE FOR EMERGENCY VEHICLE USE WITHIN THE LIMITS OF THE PROJECT.
13. DEPENDING ON CONTRACTORS MEANS & METHODS, THE CONTRACTOR MAY BE REQUIRED TO FURNISH ADDITIONAL BARRICADES, SIGNS, AND WARNING DEVICES TO MAINTAIN TRAFFIC AND PROMOTE MOTORIST SAFETY AT NO ADDITIONAL COST TO THE CITY.
14. CONTRACTOR TO MAINTAIN AN UP TO DATE TRAFFIC CONTROL PLAN. THE TRAFFIC CONTROL PLAN SHALL BE ON-SITE AND MADE AVAILABLE TO THE ENGINEER, INSPECTOR, CITY REPRESENTATIVE, AND GOVERNMENT AGENTS AT ALL TIMES. FAILURE TO MAINTAIN AN UP-TO-DATE TCP WILL RESULT IN A WORK STOPPAGE.
15. REFER TO THE BARRICADE & CONSTRUCTION STANDARDS, WORK ZONE STANDARDS, TCP STANDARDS, AND THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR DETAILS REGARDING TRAFFIC CONTROL DEVICES USED IN CONSTRUCTION.
16. THE PROPOSED STAGING AND PHASING OF CONSTRUCTION IS PROVIDED AS GUIDANCE. THE CONTRACTOR MAY DEVELOP AN ALTERNATIVE APPROACH AND LIMITS OF PHASING AS DEEMED NECESSARY AND MORE CONDUCIVE TO THE OPERATION. ANY MODIFICATION OR CHANGE SHALL REQUIRE APPROVAL OF THE ENGINEER PRIOR TO IMPLEMENTATION AND INSTALLATION, AND BE SIGNED & SEALED BY A PROFESSIONAL ENGINEER AT NO ADDITIONAL COST TO CITY. CONTRACTOR SHOULD ADHERE TO TXDOT STANDARDS BC(1)-21 THROUGH BC(12)-21 FOR SIGN DETAILS DIMENSIONS AND PLACEMENT AT ALL TIMES.
17. STAGE ALL TRAFFIC CONTROL DEVICES AND SAFETY BARRIERS PRIOR TO SHIFTING TRAFFIC AND BEGINNING PHASED CONSTRUCTION.
18. TRAFFIC SHIFTS AND PHASE CHANGES SHALL NOT COMMMENCE UNTIL THE ENGINEER OR DESIGNATED REPRESENTATIVE IS PRESENT AND HAS VERIFIED AND APPROVED ALL NECESSARY DEVICES ARE PRESENT AND STAGED PROPERLY.
19. INSTALL ALL TEMPORARY BARRICADES AND CHANNELIZING DEVICES FOR EACH PHASE PRIOR TO STARTING WORK FOR THAT PHASE.
20. COVER OR REMOVE SIGNS THAT ARE IN CONFLICT WITH THE CURRENT STAGE OF CONSTRUCTION.
21. MAINTAIN STREET NAME SIGNS IN PLACE FOR THE DURATION OF CONSTRUCTION OR UNTIL THE SIGNS ARE REPLACED OR RELOCATED.
22. LIMIT TRAFFIC DISRUPTIONS DURING CONSTRUCTION OF INTERSECTIONS. KEEP INTERSECTIONS OPEN AS LONG AS PRACTICAL AND RE-OPEN THEM AS SOON AS PRACTICAL.
23. CONSTRUCT DRIVEWAYS AND INTERSECTIONS AS SHOWN IN THE PLANS OR AS APPROVED BY THE ENGINEER.
24. PROVIDE AND MAINTAIN ALL-WEATHER ACCESS TO ALL PROPERTY AT ALL TIMES. MATERIALS, MAINTENANCE AND LABOR FOR TEMPORARY ACCESS IS SUBSIDIARY.
25. CONTRACTOR SHALL REPLACE/REPAIR ALL DAMAGED PAVEMENT MARKINGS WITH TEMPORARY MARKING OR RAISED PAVEMENT MARKERS AT THE END OF EACH WORKING DAY.
26. SIGNS SHALL NOT BE MOUNTED ON BARRICADES OR DRUMS BUT SHALL BE MOUNTED ON SEPARATE SUPPORTS.
27. FIELD CONDITION MAY DICTATE ADJUSTMENT OF SIGN LOCATION. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO RELOCATION OF ANY SIGN.
28. WHEN CONSTRUCTION WORK IS COMPLETED AND THE FACILITY IS READY TO BE OPENED TO TRAFFIC, CONTRACTOR SHALL REQUEST APPROVAL FROM THE ENGINEER PRIOR TO ERECTING PERMANENT SPEED LIMIT SIGNS.
29. AT THE END OF THE PROJECT CONSTRUCTION WORK, REMOVE ANY REMAINING TCP DEVICES AND TEMPORARY SIGNS AND INSTALL PERMANENT SIGNING.
30. PERMANENT PAVEMENT MARKINGS SHOULD BE PLACED IN PHASES AS DIRECTED BY ENGINEER. REFER TO SEQUENCE OF WORK SHEET FOR PERMANENT MARKING PHASING.
31. ALL CONSTRUCTION TRAFFIC ENTERING/EXITING THE JOB SITE MUST DO SO IN DEDICATED CONSTRUCTION ENTRANCES/EXITS.
32. ANY CONSTRUCTION ENTRANCE AND EXIT LOCATIONS ADDED DUE TO CONTRACTORS MEANS AND METHODS SHALL BE AT NO ADDITIONAL COST TO THE CITY WITH PRIOR APPROVAL.
33. COORDINATE WITH CITY OF LUCAS PUBLIC WORKS DEPARTMENT PRIOR TO PLACEMENT OF BLUE RPM's.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN GENERAL NOTES

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

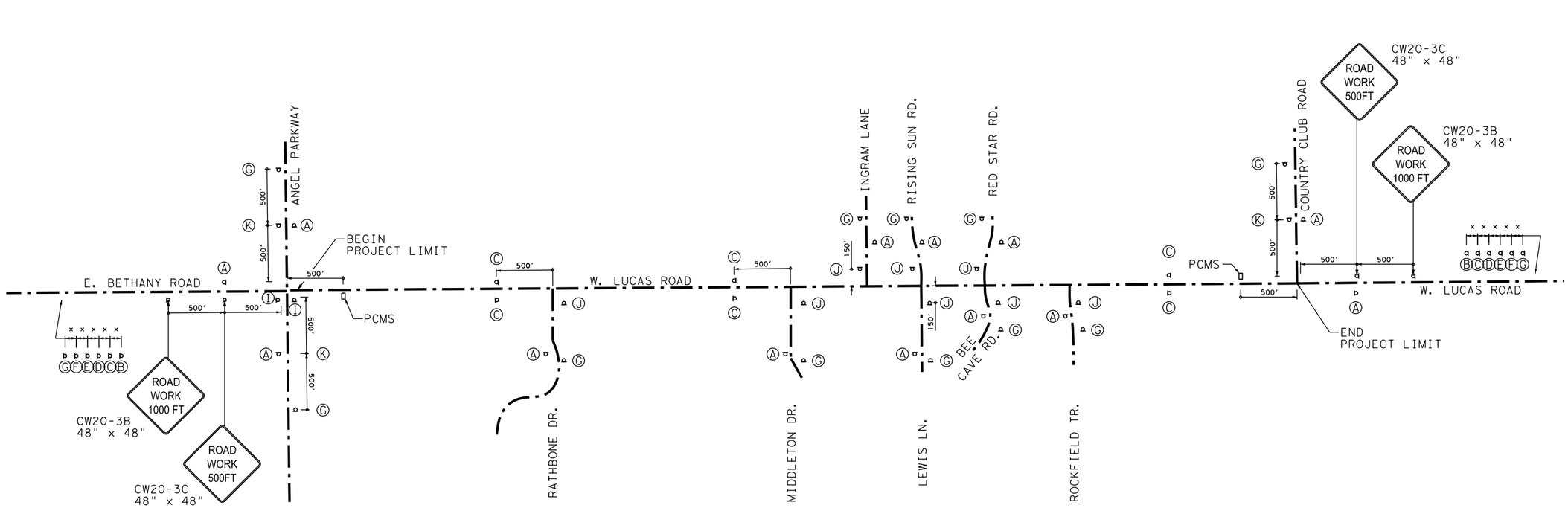
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	14
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:04 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_GEN01.dgn



Ⓐ END ROAD WORK — G20-2, 36" X 18"

Ⓑ BEGIN ROAD WORK NEXT X MILES — G20-5T, 48" X 24"

Ⓒ WORK ZONE / SPEED LIMIT 40 — G20-5aP, 24" X 18"; R2-1, 24" X 30"

Ⓓ WORK ZONE / TRAFFIC FINES DOUBLE / WHEN WORKERS ARE PRESENT — G20-5aP, 24" X 18"; R20-5T, 24" X 30"; R20-5aTP, 24" X 12"

Ⓔ STAY ALERT / TALK OR TEXT LATER — G20-10T, 60" X 48"

Ⓕ OBEY WARNING SIGNS STATE LAW — R20-3T, 48" X 42"

Ⓖ ROAD WORK AHEAD — CW20-1, 36" x 36"

Ⓗ END WORK ZONE — G20-2bT, 36" X 18"

Ⓘ WALMART NO ACCESS VIA W. LUCAS — CUSTOM SIGN W/ BLUE BACKGROUND & WHITE TEXT, 36" X 18"

(TO BE USED ONLY DURING PHASE 4)

Ⓚ ROAD WORK NEXT X MILES — G20-1T, 48" X 18"

Ⓙ ROAD WORK ← NEXT X MILES / NEXT X MILES → — G20-1aT, 72" X 36"

NOTES

1. THE SIGNS SHOWN ON THIS SHEET ARE TO REMAIN THROUGHOUT THE ENTIRE DURATION OF THE PROJECT.
2. FIELD CONDITION MAY DICTATE ADJUSTMENT OF SIGN LOCATION. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION OF ANY SIGN.
3. REFER TO PHASING LAYOUT SHEETS FOR OTHER REGULATORY AND WARNING SIGNS.
4. CONTRACTOR SHALL ADHERE AT ALL TIMES TO THE TEXAS MUTCD AND TXDOT STANDARDS BC(1)-21 THROUGH BC(12)-21 FOR SIGN DETAILS, DIMENSIONS AND PLACEMENT.
5. REFER TO BC(2)-21, TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING FOR THE SIGN SPACING SHOWN AS "X" ON THIS SHEET.
6. REFER TO BC(3)-21 FOR ADDITIONAL INFORMATION ON SIGNING REQUIREMENTS FOR "WORK ZONE LIMIT" AREAS.
7. CONSTRUCTION SPEED LIMITS REDUCED FOR W. LUCAS ROAD.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TTC ADVANCED WARNING SIGNS

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

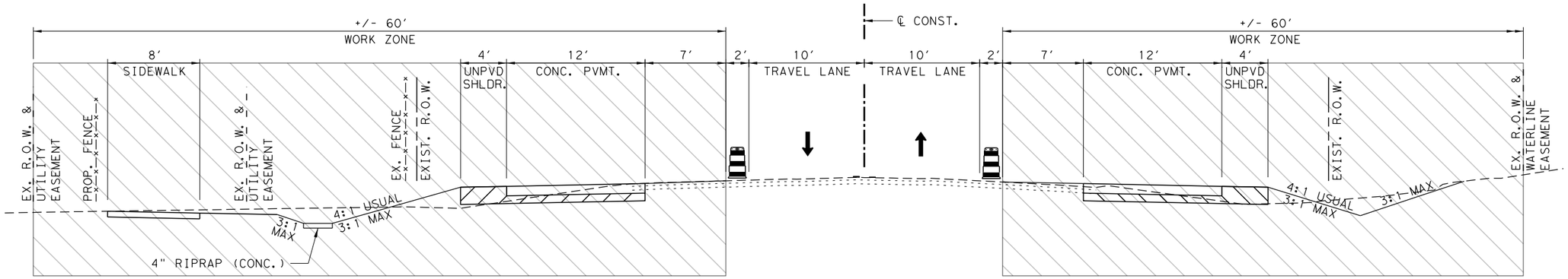
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	15
	COUNTY	
	COLLIN	

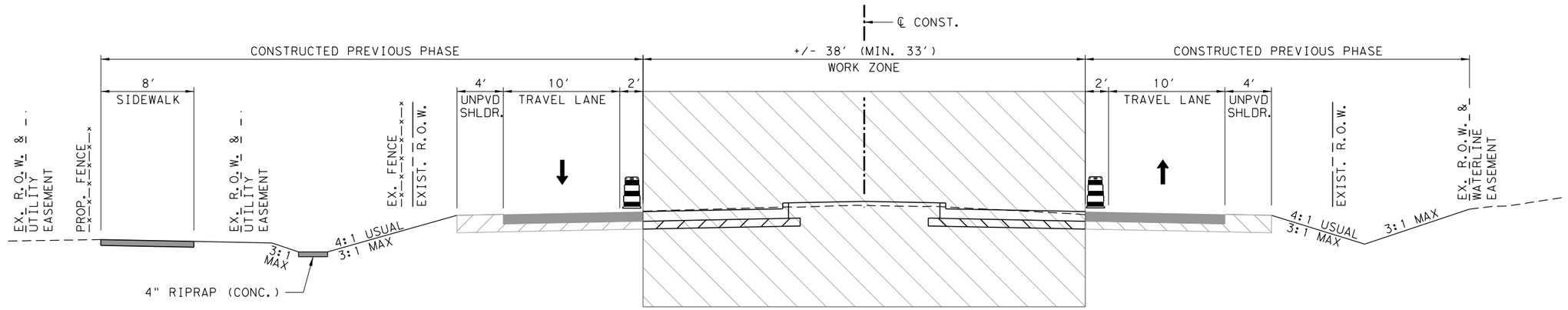
Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:04 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_DET_01.dgn



PHASE 1

STA. 80+70.00 TO 98+91.80



PHASE 2

STA. 80+70.00 TO 98+91.80

LEGEND:

- WORK ZONE
- CONC. PAVEMENT PLACED-IN-PREVIOUS PHASE
- CHANNELIZING DEVICE
- DIRECTION OF TRAFFIC

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN TYPICAL SECTIONS

SCALE: 1"=10' SHEET 1 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

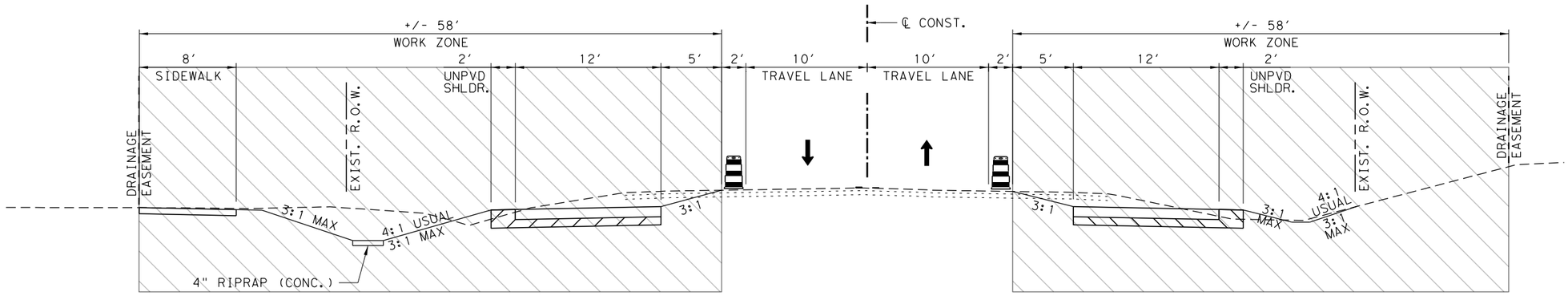
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	16
COUNTY		
COLLIN		

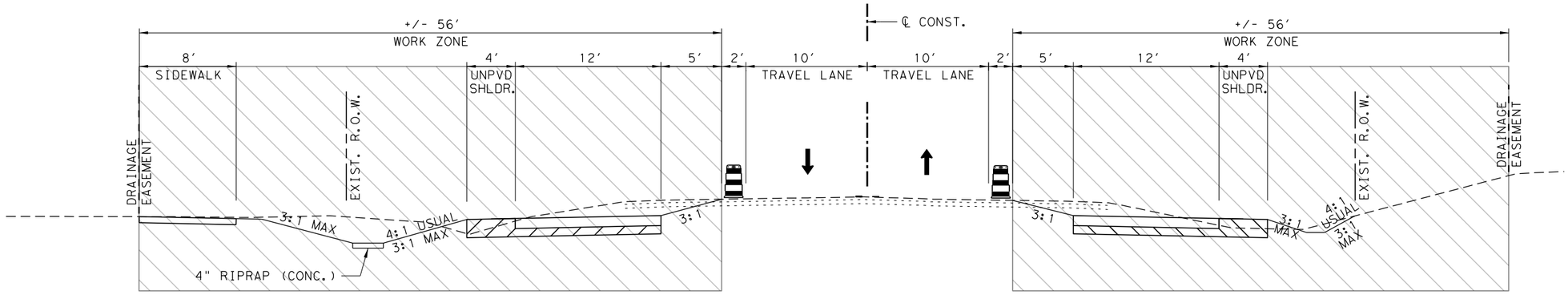
DATE: 4/6/2026 1:51:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TTC_TYP_01.dgn

Texas811 Know what's below. Call before you dig.



PHASE 3

STA. 10+74.00 TO 36+28.92



PHASE 3

STA. 36+28.92 TO 80+70.00

LEGEND:

- WORK ZONE
- CONC. PAVEMENT PLACED-IN-PREVIOUS PHASE
- CHANNELIZING DEVICE
- DIRECTION OF TRAFFIC

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN TYPICAL SECTIONS

SCALE: 1"=10' SHEET 2 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

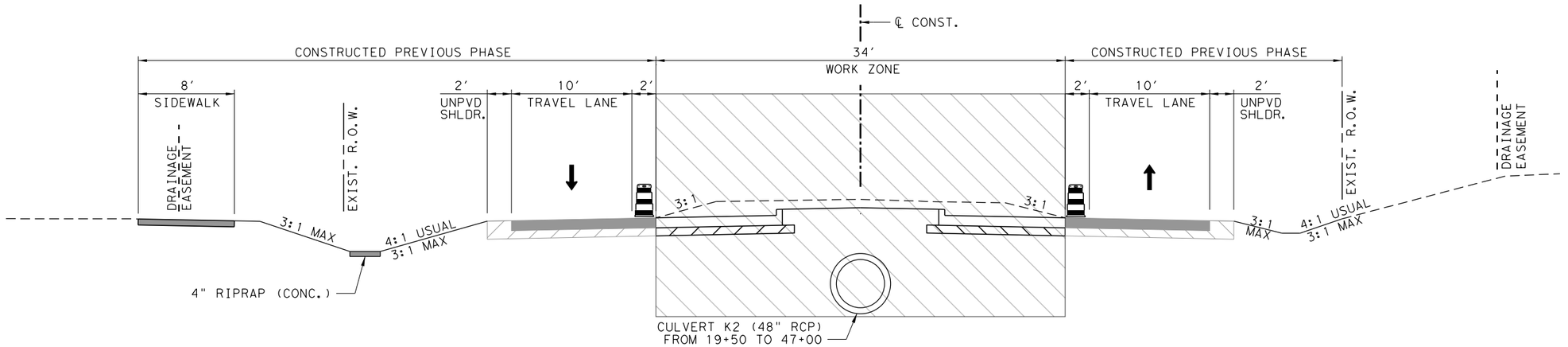
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		17
COLLIN		

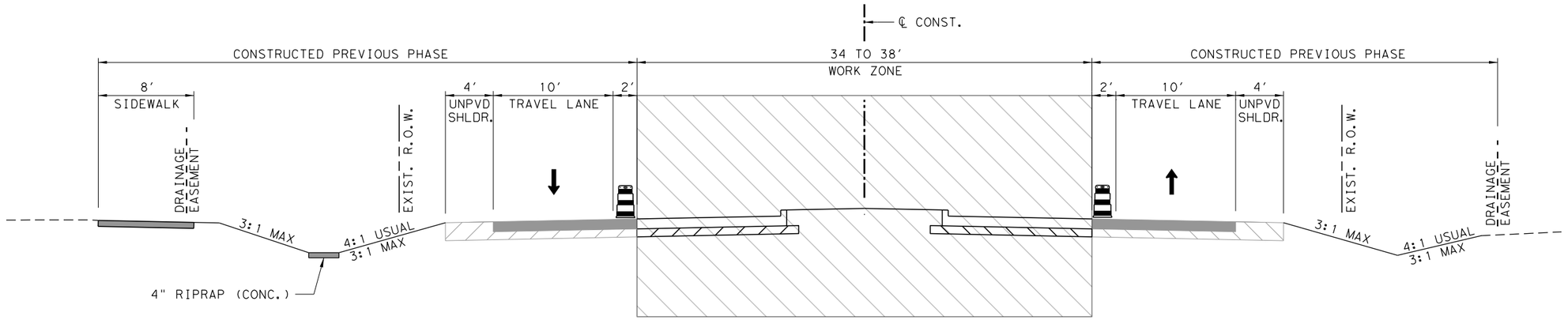
Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:07 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TTC_TYP_02.dgn



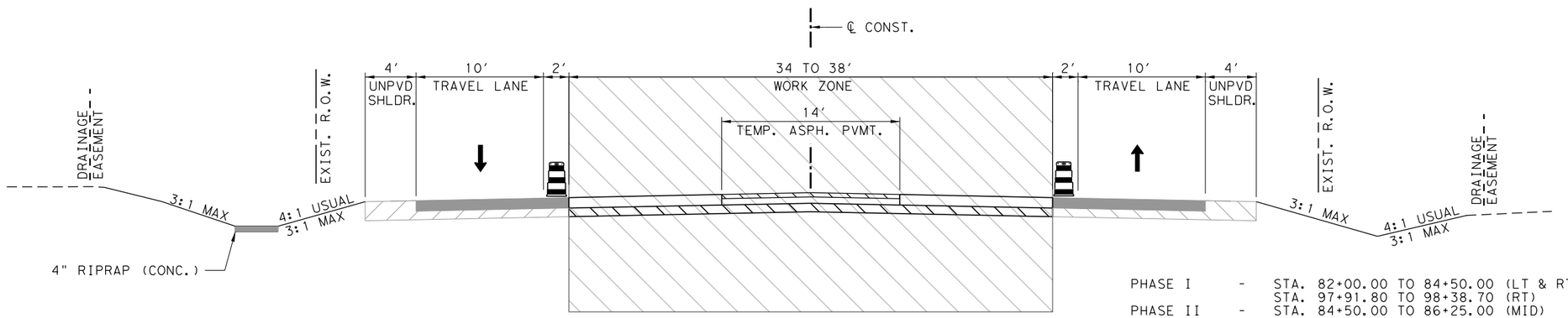
PHASE 4

STA. 10+74.00 TO 36+28.92



PHASE 4

STA. 36+28.92 TO 89+00.00



TEMPORARY ASPHALT PAVEMENT LOCATIONS

LEGEND:

- WORK ZONE
- CONC. PAVEMENT PLACED-IN-PREVIOUS PHASE
- CHANNELIZING DEVICE
- DIRECTION OF TRAFFIC

NOTE:

1. TEMPORARY ASPHALT SHALL NOT BE USED ACROSS MUDDY CREEK CULVERT AREA.

PHASE I	-	STA. 82+00.00 TO 84+50.00 (LT & RT) STA. 97+91.80 TO 98+38.70 (RT)
PHASE II	-	STA. 84+50.00 TO 86+25.00 (MID)
PHASE III	-	STA. 11+12.00 TO 12+08.14 (RT) STA. 44+47.50 TO 46+03.73 (LT & RT) STA. 47+86.25 TO 49+50.00 (LT & RT)
PHASE VI	-	STA. 40+66.42 TO 44+47.50 (LT & RT)

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN TYPICAL SECTIONS

SCALE: 1"=10' SHEET 3 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

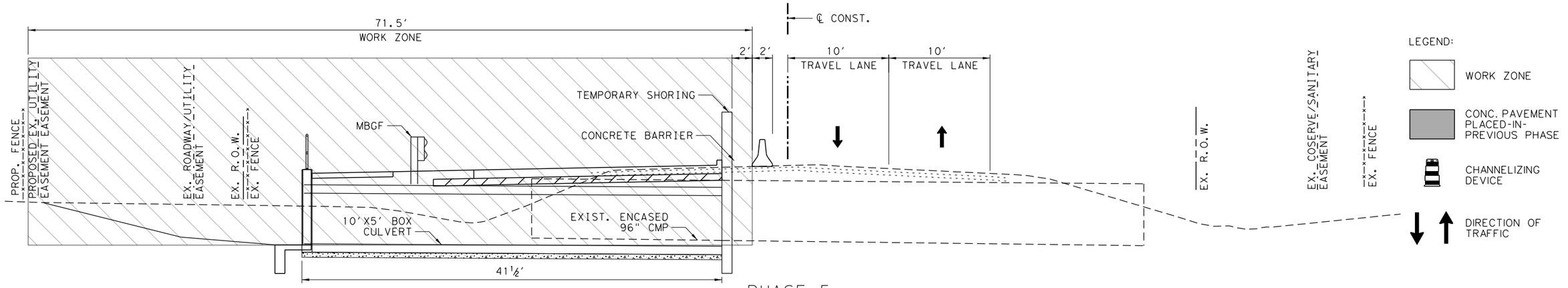
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	18
COUNTY		
COLLIN		

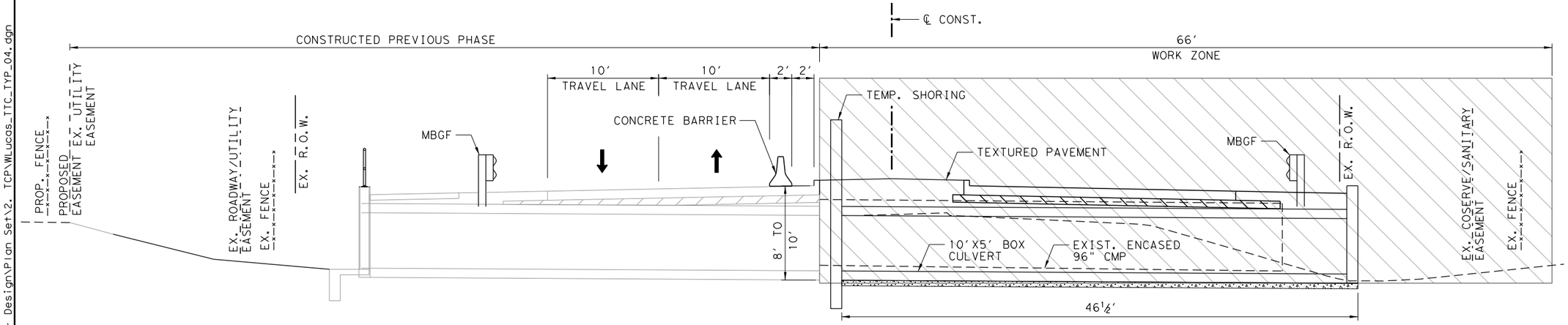
Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:07 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TTC_TYP_03.dgn



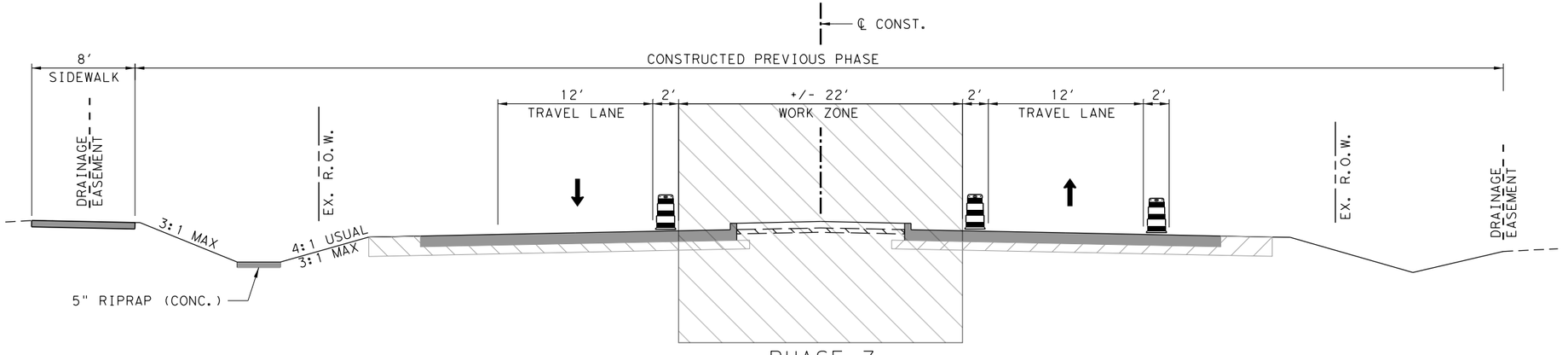
PHASE 5

STA. 44+47.50 TO 49+50.00



PHASE 6

STA. 44+47.50 TO 49+50.00



PHASE 7

STA. 40+66.40 TO 51+14.00

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TTC_TYP_04.dgn

CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN TYPICAL SECTIONS

SCALE: 1"=10' SHEET 4 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		19
COLLIN		

TRAFFIC CONTROL PLAN SEQUENCE OF WORK

FOR ALL PHASES

1. PRIOR TO CONSTRUCTION CONTRACTOR MUST COORDINATE ALL WORK RELATED TO UTILITIES WITH UTILITY OWNERS. TWO WEEKS PRIOR TO CONSTRUCTION INSTALL PCMS, DISPLAYING MESSAGE GROUP A. AFTER CONSTRUCTION BEGINS, USE MESSAGE GROUP B. WHEN CHANGING PHASES, USE MESSAGE GROUP C. REFER TO TXDOT STANDARD BC(6)-14 FOR PCMS VERBIAGE WHICH MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION.
2. PLACE ALL ADVANCED WARNING SIGNS, TRAFFIC CONTROL DEVICES. WORK ZONE PAVEMENT MARKINGS IN ACCORDANCE WITH CURRENT TRAFFIC CONTROL STANDARDS, TMUTCD AND GENERAL NOTES. REFER TO TRAFFIC CONTROL PLANS FOR ADDITIONAL SIGNAGE.

PHASE 1

1. RECONSTRUCTION AND WIDENING OF WEST LUCAS RD. FROM STA. 84+50.00 TO STA. 99+40.00.
2. CONSTRUCT PAVEMENT, DITCHES, DRIVEWAY, CULVERTS, SIDE SLOPES, UTILITY ADJUSTMENTS, ETC. WITHIN THE WORK ZONE. CONSTRUCT TEMPORARY ASPHALT PAVEMENT AS SHOWN IN THE PLANS TO FACILITATE LANE SHIFT TAPERS FOR FUTURE PHASE.
3. PLACE TEMPORARY ASPHALT PAVEMENT TO PROVIDE VERTICAL TRANSITION FROM STA. 82+00.00 TO STA. 84+50.00 AND STA. 98+90.00 TO STA. 99+40.00.
4. MAINTAIN ACCESS TO ALL PROPERTIES WITH AT LEAST ONE DRIVEWAY EACH.
5. AT CHURCH AND PAINTING PLACE ONE DRIVEWAY TO BE CONSTRUCTED AT A TIME. COORDINATE DRIVEWAY CONSTRUCTION WITH PROPERTY OWNER AND ENGINEER.
6. AT SCHOOL, AT LEAST ONE DRIVEWAY OPEN TO TRAFFIC AT ALL TIMES.
7. ANY COMMERCIAL DRIVEWAYS CLOSED DURING CONSTRUCTION SHOULD HAVE TYPE-III BARRIERS TO BLOCK ACCESS TO TRAFFIC.
8. CONSTRUCT CULVERT SD-1 & SD-3 DURING PHASE-1. REFER TO TRAFFIC CONTROL PLAN CULVERT DETAILS SHEET FOR MORE DETAILS ON TEMPORARY TRAFFIC CONTROL REQUIREMENTS FOR CULVERTS SD-1 & SD-2.

PHASE 2

1. RECONSTRUCTION AND WIDENING OF WEST LUCAS RD. FROM STA. 84+50.00 TO STA. 99+40.00.
2. CONSTRUCT PAVEMENT, MEDIAN, TRAFFIC SEPARATORS, UTILITY ADJUSTMENTS, ETC. WITHIN THE WORK ZONE. CONSTRUCT TEMPORARY ASPHALT PAVEMENT FROM STA. 84+50.00 TO STA. 86+25.00 AT PROPOSED GRADE LINE ELEVATION TO FACILITATE FUTURE PHASE LANE SHIFT TAPERS.
3. PLACE PERMANENT PAVEMENT MARKING FROM STA. 89+00.00 TO END OF THE PROJECT.

PHASE 3

1. RECONSTRUCTION AND WIDENING OF WEST LUCAS RD. FROM STA. 12+08.14 TO STA. 44+47.50 AND FROM STA. 49+50.00 TO STA. 84+50.00.
2. REMOVE TEMPORARY ASPHALT PAVEMENT CONSTRUCTED IN PREVIOUS STAGE.
3. CONSTRUCT PAVEMENT, DITCHES, DRIVEWAY, CULVERTS, SIDE SLOPES, UTILITY ADJUSTMENTS, ETC. WITHIN THE WORK ZONE. CONSTRUCT TEMPORARY ASPHALT PAVEMENT AS SHOWN IN THE PLANS TO FACILITATE FUTURE PHASE LANE SHIFT TAPERS.
4. FOR INGRAM LN. AND LEWIS LN. USE INTERSECTION SUB-PHASING DETAIL. MAINTAIN 2-LN-2-WAY TRAFFIC AT ALL TIMES DURING CONSTRUCTION.
5. FOR RISING SUN RD. AND RED STAR RD. USE INTERSECTION SUB-PHASING DETAIL. MAINTAIN 1-LN-2-WAY TRAFFIC AT ALL TIMES DURING CONSTRUCTION
6. COMPLETE CONSTRUCTION OF SD-1. PLACE SD-1 IN SERVICE ONLY AFTER THE DOWNSTREAM DITCHES ARE CONSTRUCTED.
7. PLACE TEMPORARY ASPHALT PAVEMENT FOR FUTURE PHASE TRANSITIONS AT STA. 44+47.40 TO STA. 49+50.00.
8. INSTALL METAL BEAM GUARD FENCE FROM STA. 40+25.00 TO STA. 44+47.50.

PHASE 4

1. RECONSTRUCTION AND WIDENING OF WEST LUCAS RD. FROM STA. 12+08.14 TO STA. 44+47.50 AND FROM STA. 49+50.00 TO STA. 84+50.00.
2. REMOVE TEMPORARY ASPHALT PAVEMENT CONSTRUCTED IN PREVIOUS PHASE. FROM STA. 84+50.00 TO STA. 96+25.00. CONSTRUCT PAVEMENT, MEDIAN, TRAFFIC SEPERATORS, ETC. WITHIN THE WORK ZONE.
3. BUILD TEMPORARY ASPHALT PAVEMENT FROM STA. 40+66.42 TO STA. 44+47.50 AND STA. 50+06.63 TO STA. 54+40.00, AT PROPOSED GRADE LINE ELEVATION TO FACILITATE FUTURE PHASE LANE SHIFT TAPERS.
4. PLACE PERMANENT PAVEMENT MARKINGS FROM STA. 12+08.00 TO STA. 38+00.00 AND STA. 58+00.00 TO STA. 89+00.00.

PHASE 5 & 6

1. PRIOR TO CONSTRUCTION, SUBMIT TEMPORARY SPECIAL SHORING DESIGN FOR APPROVAL.

PHASE 5

1. REMOVE EXISTING PAVEMENT TO LIMITS SHOWN ON PLANS.
2. REMOVE EXISTING CULVERT, INSTALL TEMPORARY SHORING.
3. PERFORM CULVERT CONSTRUCTION AS SHOWN ON PLANS.
4. RECONSTRUCT PAVING FROM STA. 44+47.50 TO STA. 49+50.00.
5. INSTALL METAL BEAM GUARD FENCES.

PHASE 6

1. REMOVE EXISTING PAVEMENTS TO LIMITS SHOWN ON PLANS.
2. REMOVE EXISTING CULVERT, INSTALL TEMPORARY SHORING.
3. PERFORM CULVERT CONSTUCTION AS SHOWN ON PLANS.
4. RECONSTRUCT PAVING AND INSTALL MEDIAN FROM STA. 44+47.50 TO STA. 49+50.00.
5. INSTALL METAL BEAM GUARD FENCE STA.44+47.50 TO STA. 48+22.40.

PHASE 7

1. RECONSTRUCTION AND WIDENING OF WEST LUCAS RD. FROM STA. 40+00.00 TO STA. 54+50.00.
2. REMOVE TEMPORARY ASPHALT PAVEMENT AS SHOWN ON TRAFFIC CONTROL PLANS. CONSTRUCT PAVEMENT, MEDIAN, TRAFFIC SEPERATORS, ETC. WITHIN THE WORK ZONE.
3. PLACE PERMANENT PAVEMENT MARKINGS FOR THE REMAINDER OF THE PROJECT, STA. 38+00.00 TO STA. 58+00.00.
4. PLACE PERMANENT SIGNS THROUGHOUT THE PROJECT.

PHASE 8

1. CONSTRUCT SIDEWALK.

PLACE A PORTABLE CHANGEABLE MESSAGE SIGN AT EACH END OF THE PROJECT LIMITS AT LEAST ONE WEEK IN ADVANCE OF ALL MAJOR TRAFFIC SHIFTS. SIGN LOCATION AND MESSAGE WILL VARY DEPENDING ON THE CONSTRUCTION PHASE FOR WHICH IT IS USED. SIGN LOCATION AND MESSAGE PER PHASE WILL BE AS DIRECTED BY THE ENGINEER.

MESSAGE GROUP A	
MESSAGE 1	MESSAGE 2
ROADWORK 2 MILES	BEGINS XX/XX/XX

MESSAGE GROUP B	
MESSAGE 1	MESSAGE 2
ROADWORK 2 MILES	PREPARE TO STOP

MESSAGE GROUP C	
MESSAGE 1	MESSAGE 2
LANES SHIFT	STAY IN LANE

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN SEQUENCE OF WORK

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

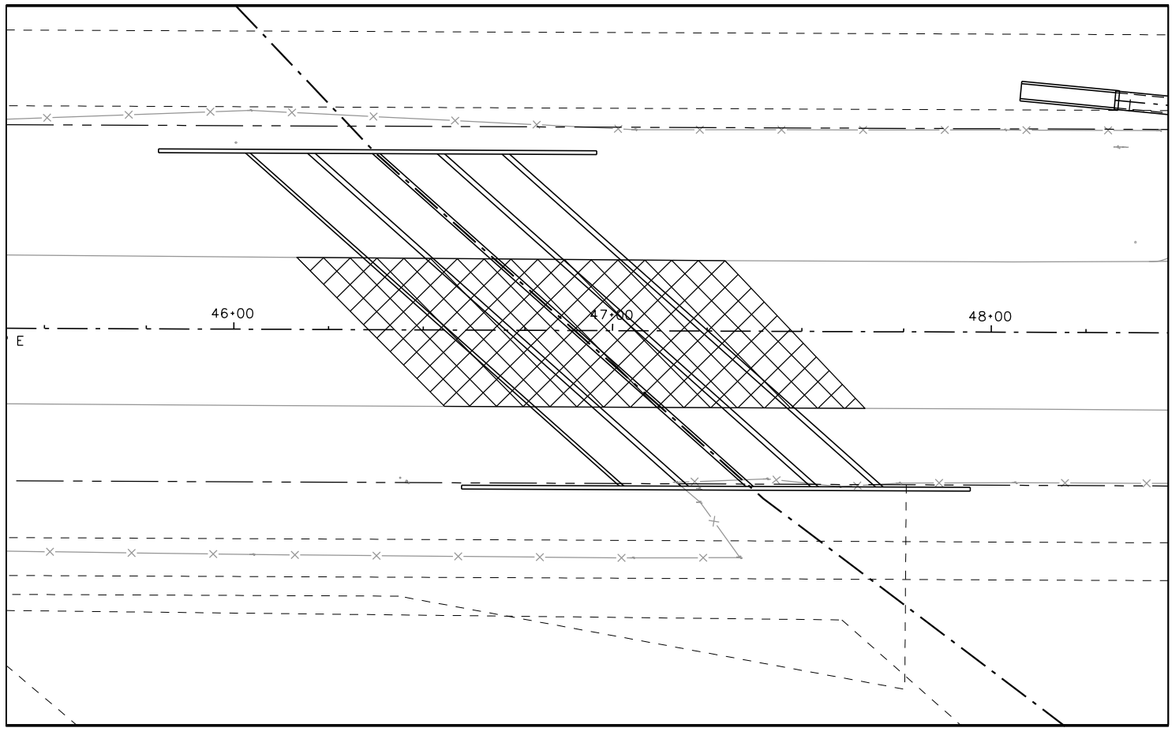
bc engineering
a PARSONS Company

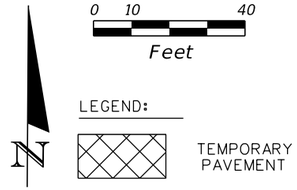
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	20
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

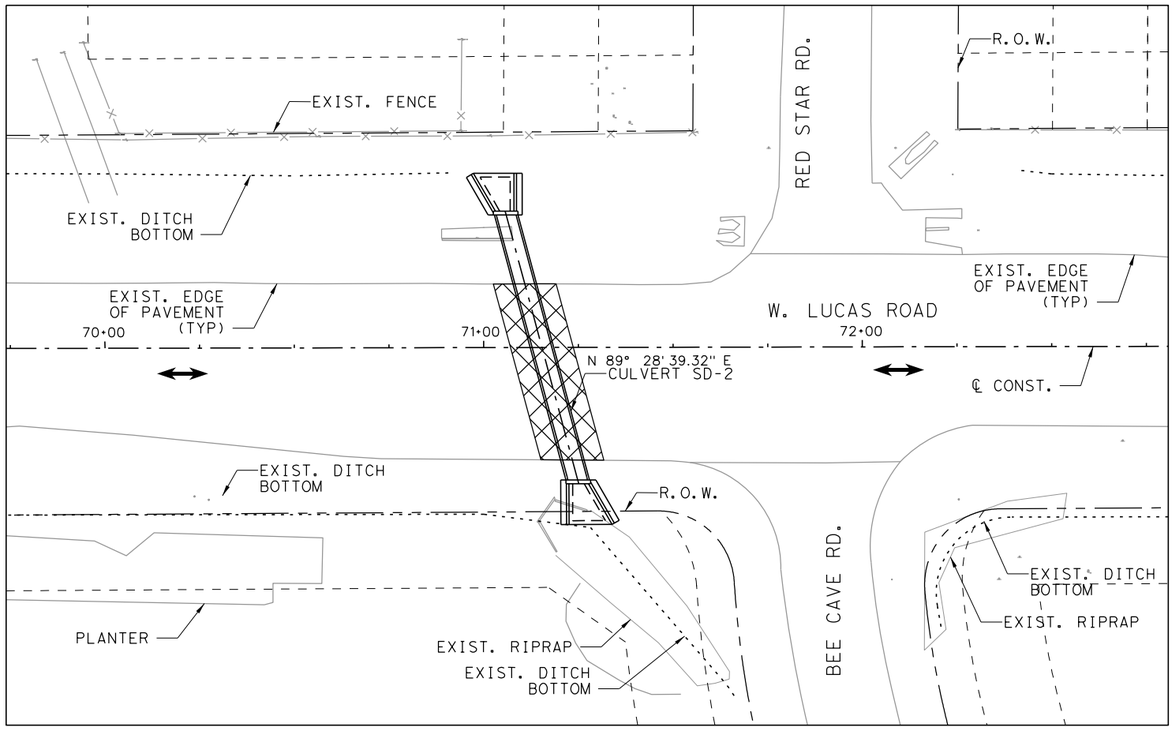
DATE: 4/6/2026 1:51:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_SEQ_01.dgn





PHASE 3 & 4 (CULVERT SD-1)

1. FOR TEMPORARY TRAFFIC CONTROL USE STANDARD TCP(1-2)-18 ONE LANE TWO WAY TRAFFIC CONTROL WITH FLAGGERS (TCP (1-2B)).
2. DURING CONSTRUCTION PCMS SHOULD DISPLAY MESSAGE GROUP B. REFER TO TRAFFIC CONTROL SEQUENCE OF WORK SHEET.
3. THE OPEN TRENCH SHOULD BE COVERED WITH STEEL PLATES OR BACKFILLED TO EXISTING GRADE WITH COMPACTED EARTH FOR TRAFFIC MOVEMENT. ONCE THE CONSTRUCTION OF CULVERT IS COMPLETE, PROVIDE TEMPORARY ASPHALT PAVEMENT, AT EXISTING GRADE, OVER THE TRENCH.
4. CONSTRUCT TO THE LIMITS SHOWN. PLACE TEMPORARY PLUG ON BOTH ENDS, BACKFILL AND RESTORE TO EXISTING CONDITIONS.
5. THE REMAINDER OF CULVERT SD-1 IS CONSTRUCTED DURING PHASE 3. REMOVE THE TEMPORARY PLUG BEFORE MAKING THE CONNECTION.
6. CULVERT SD-1 SHALL ONLY BE MADE OPERATIONAL AFTER THE CONSTRUCTION OF DOWNSTREAM DITCHES IS COMPLETE.
7. THE TIME FOR CONSTRUCTION WILL BE 9:00 AM TO 3:00 PM. ALL THE PREPARATION SHOULD BE DONE WITHIN THE ALLOTTED TIME FRAME.



SUB PHASE 3.1 (CULVERT SD-2)

1. FOR TEMPORARY TRAFFIC CONTROL USE STANDARD TCP(1-2)-18 ONE LANE TWO WAY TRAFFIC CONTROL WITH FLAGGERS (TCP (1-2B)).
2. DURING CONSTRUCTION PCMS SHOULD DISPLAY MESSAGE GROUP B. REFER TO TRAFFIC CONTROL SEQUENCE OF WORK SHEET.
3. THE OPEN TRENCH SHOULD BE COVERED WITH METAL PLATES OR BACKFILLED TO EXISTING GRADE WITH COMPACTED EARTH FOR TRAFFIC MOVEMENT. ONCE THE CONSTRUCTION OF CULVERT IS COMPLETE, PROVIDE TEMPORARY ASPHALT PAVEMENT, AT EXISTING GRADE, OVER THE TRENCH.
4. CONSTRUCT TO THE LIMITS SHOWN. PLACE TEMPORARY PLUG ON BOTH ENDS, BACKFILL AND RESTORE TO EXISTING CONDITIONS.



W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN SD1 & SD2 DETAILS

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		21
COLLIN		

DATE: 4/6/2026 1:51:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_SD_DETAILS.dgn

Texas811 Know what's below. Call before you dig.

WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	A	B	BR
(W) (24") (SLD)	C	D	
(W) (6") (BROKEN)	E		
(Y) (6") (SLD)	G	H	HR
(Y) (6") (BROKEN)	K	J	JR
(Y) (6") (SLD) (DOUBLE)	I		
R.P.M TYPE II-A-A @ 40' C-C		L	

LEGEND:

- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE

0 10 40
Feet

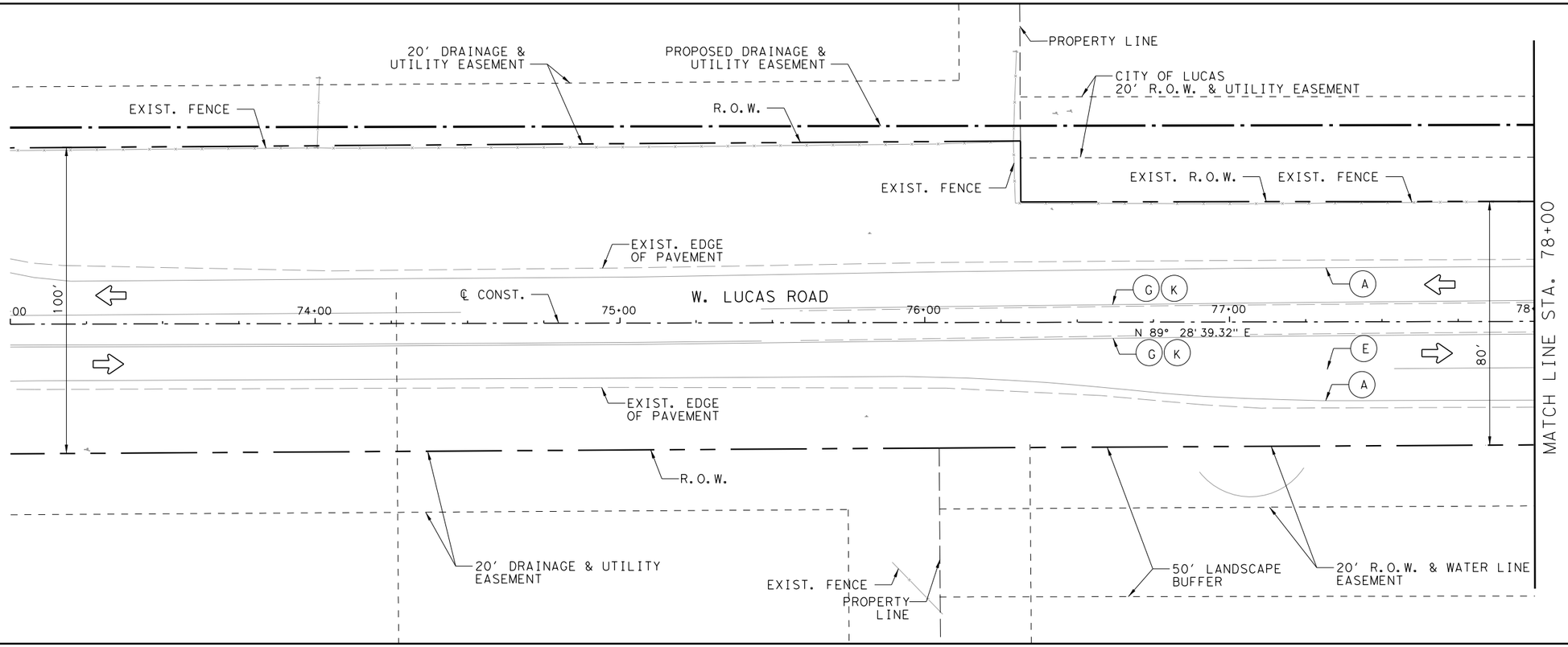
LEGEND:

- DIRECTION OF TRAFFIC
- PAVEMENT MARKINGS
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES

GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING;

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 1

SHEET 1 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

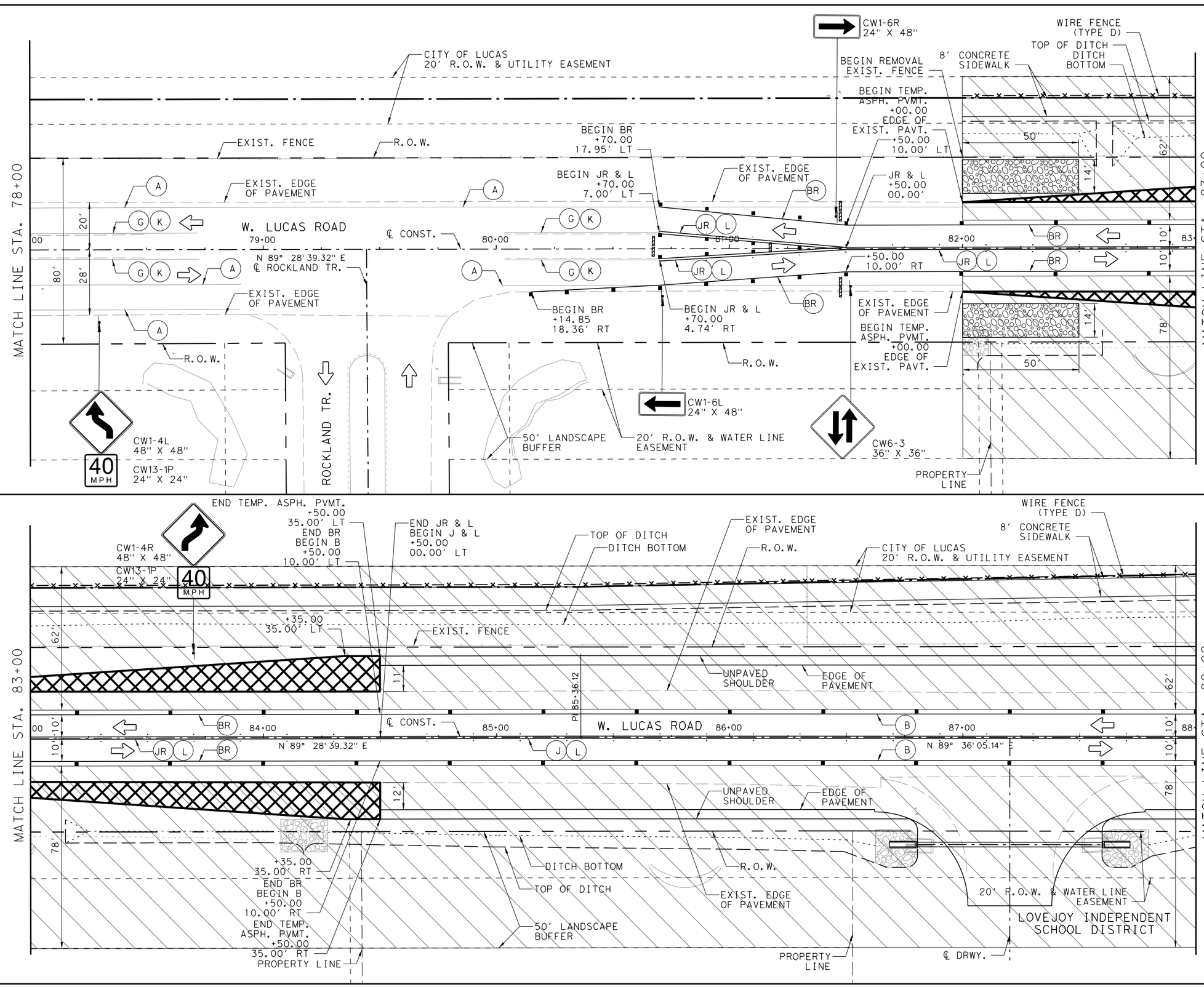
bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	22
COUNTY		
COLLIN		

DATE: 4/6/2026 1:51:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH1_01.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. ONE DRIVEWAY MUST REMAIN OPEN AT ALL TIMES WHEN CONSTRUCTING LOVEJOY INDEPENDENT SCHOOL DISTRICT ENTRANCE/EXIT DRIVEWAYS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 1

SHEET 2 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	23
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:14 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH1_02.dgn

0 10 40
Feet



TRINITY TABERNACLE ASSEMBLY OF GOD

1130

RELOCATED CUSTOM SIGN W/ BLUE BACKGROUND & WHITE TEXT (SIGN BOTH DIRECTIONS) 36" X 18"

WIRE FENCE (TYPE D)
PROPERTY LINE
8' CONCRETE SIDEWALK
TOP OF DITCH
DITCH BOTTOM
END REMOVAL EXIST. FENCE
℄ DRWY.
CITY OF LUCAS 20' R.O.W. & UTILITY EASEMENT
EXIST. FENCE
R.O.W.
UNPAVED SHOULDER
EDGE OF PAVEMENT
EXIST. EDGE OF PAVEMENT
W. LUCAS ROAD
℄ CONST.
POT 1+00.00
N 89° 36' 05.14" E
PC 1+47.10
2.00
3.00
4.00
3+03.40
DITCH BOTTOM
TOP OF DITCH
20' R.O.W. & WATER LINE EASEMENT
LOVEJOY INDEPENDENT SCHOOL DISTRICT
WILLOW SPRINGS MIDDLE SCHOOL



RELOCATED CUSTOM SIGN W/ MASON WORK & ENGRAVED TEXT (SIGN BOTH DIRECTIONS) 36" X 18" (RELOCATE AS NECESSARY TO ACCOMODATE DRIVEWAY CONSTRUCTION)

MATCH LINE STA. 88+00
MATCH LINE STA. 93+00
MATCH LINE STA. 4+47.41
89+00
90+00
91+00
92+00
93+00
62'
63'
78'
183'
10'
10'

NOTES:

1. ONE DRIVEWAY MUST REMAIN OPEN AT ALL TIMES WHEN CONSTRUCTING LOVEJOY INDEPENDENT SCHOOL DISTRICT ENTRANCE/EXIT DRIVEWAYS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 1

SHEET 3 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

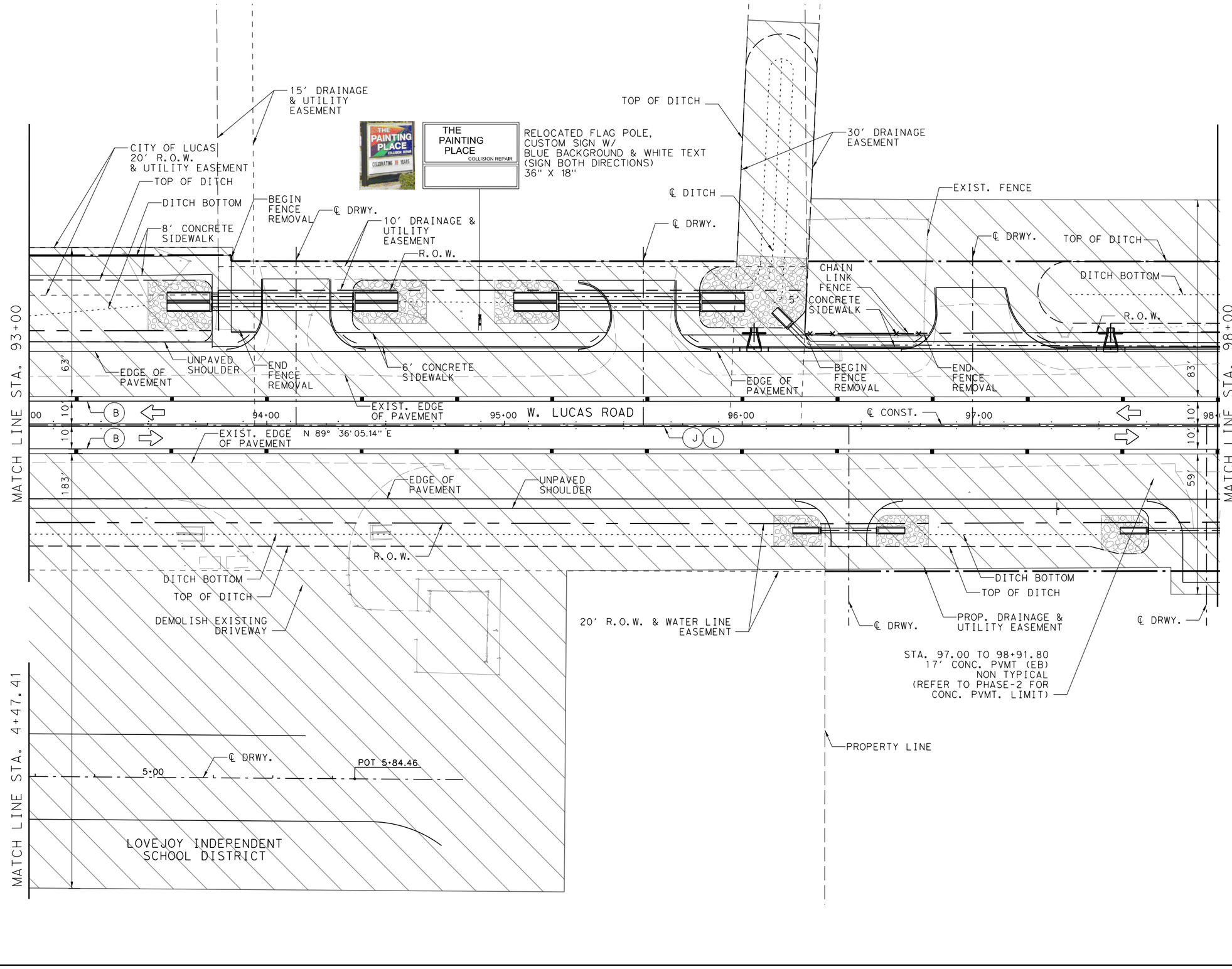
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	24
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:16 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH1_03.dgn



NOTES:

1. ONE DRIVEWAY MUST REMAIN OPEN AT ALL TIMES WHEN CONSTRUCTING LOVEJOY INDEPENDENT SCHOOL DISTRICT ENTRANCE/EXIT DRIVEWAYS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 1

SHEET 4 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

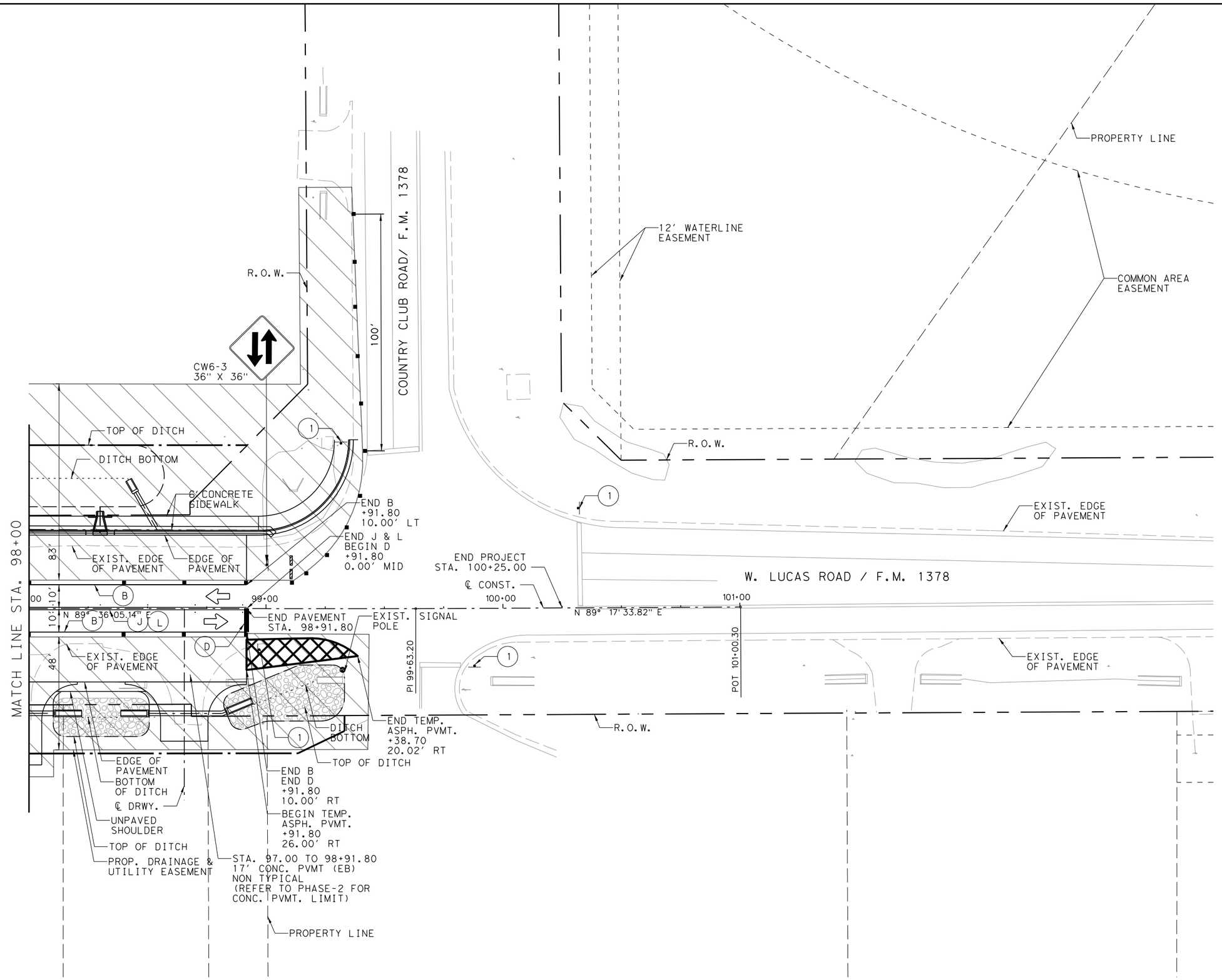
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		25
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH1_04.dgn



NOTES:

1. FOR SIGNAL PHASING, COORDINATE WITH TXDOT.
2. ANY CONFLICTING SIGN MUST BE REMOVED OR COVERED.

(1) STOP R1-1 30" X 30"

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 1

SHEET 5 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	26
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:18 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH1_05.dgn

WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	(A)	(B)	(BR)
(W) (24") (SLD)	(C)	(D)	
(W) (6") (BROKEN)	(E)		
(Y) (6") (SLD)	(G)	(H)	(HR)
(Y) (6") (BROKEN)	(K)	(J)	(JR)
(Y) (6") (SLD) (DOUBLE)	(I)		
R.P.M TYPE II-A-A @ 40' C-C		(L)	

LEGEND:

- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE

0 10 40
Feet

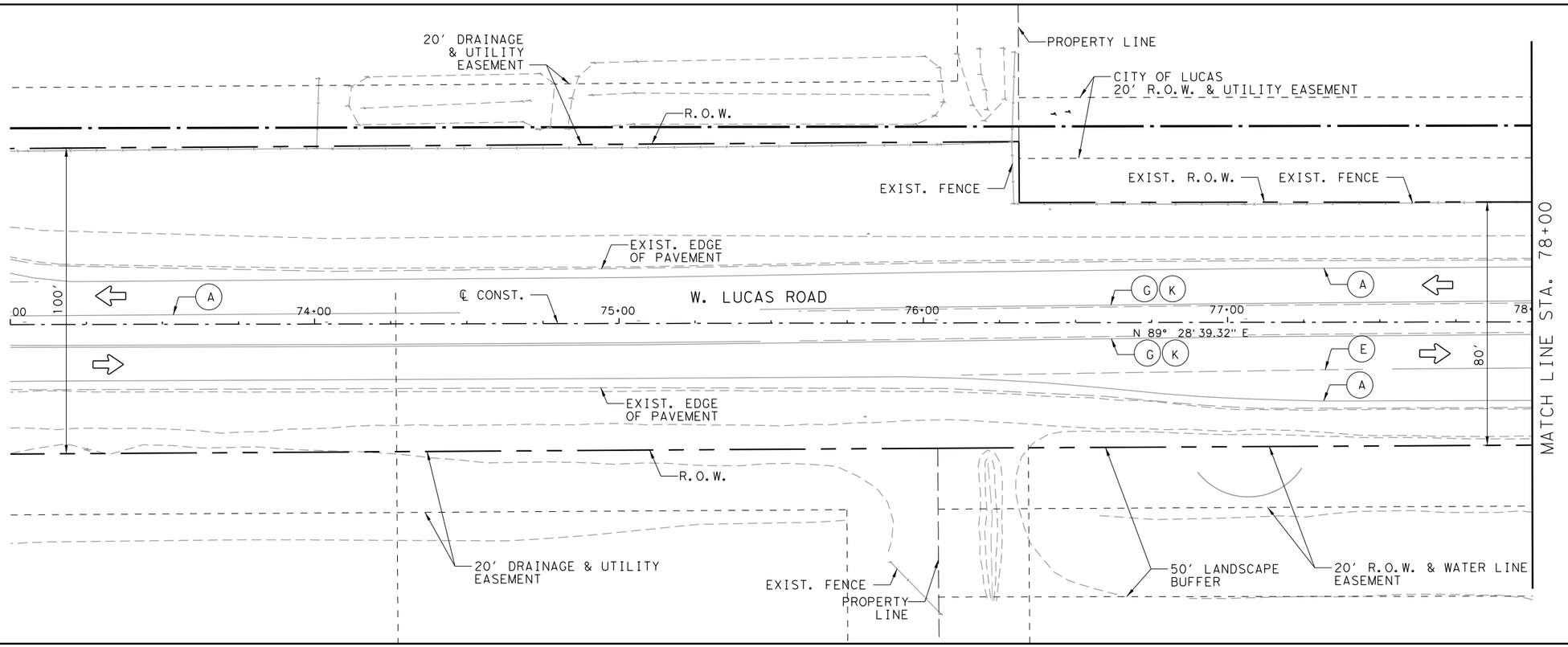
LEGEND:

- DIRECTION OF TRAFFIC
- PAVEMENT MARKINGS
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES

GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING;

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 2

SHEET 1 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

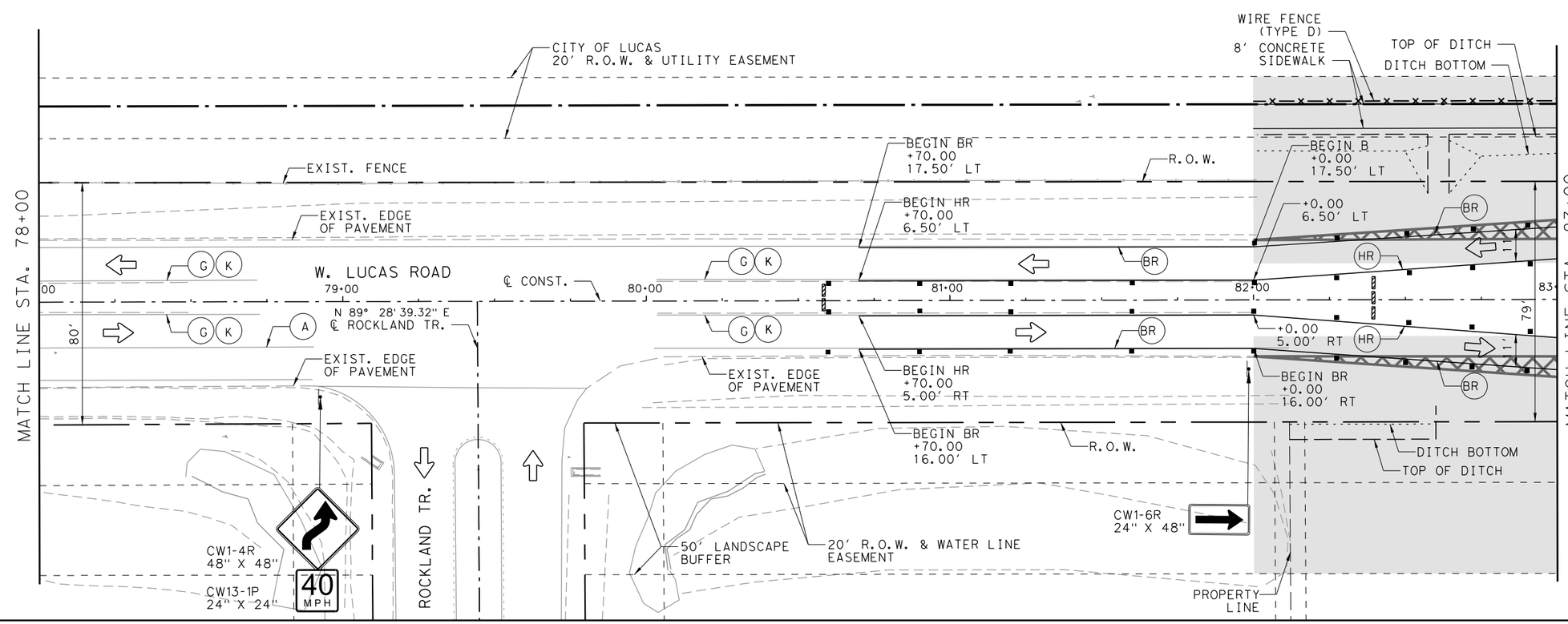
bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	27
COUNTY		
COLLIN		

DATE: 4/6/2026 1:51:20 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH2_01.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
2. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKINGS DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 2

SHEET 2 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

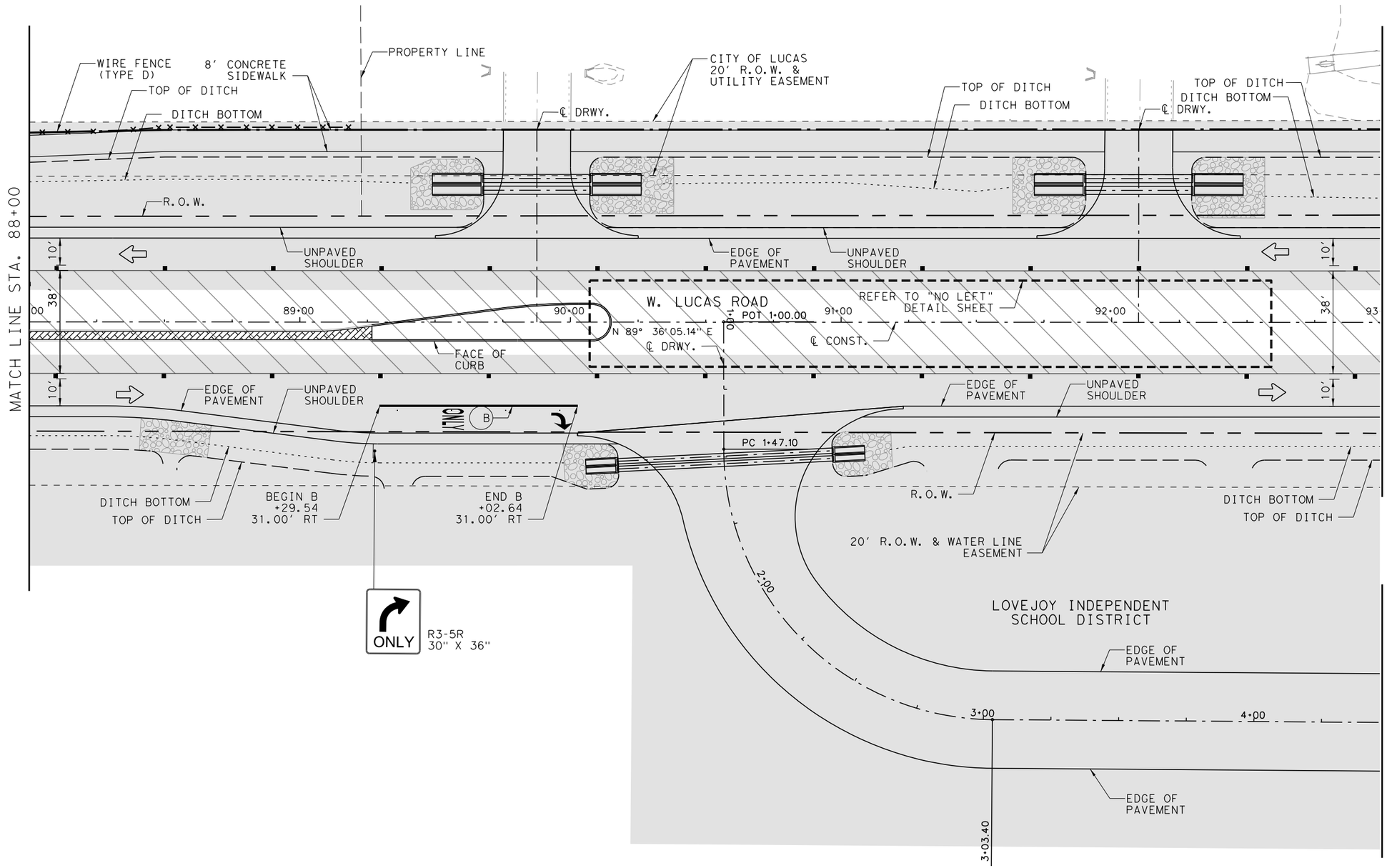
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		28
COLLIN		

DATE: 4/6/2026 1:51:21 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH2_02.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
2. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKINGS DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 2

SHEET 3 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	29
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:22 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH2_03.dgn

0 10 40
Feet

N

TOP OF DITCH
15′ DRAINAGE & UTILITY EASEMENT
30′ DRAINAGE EASEMENT
CITY OF LUCAS 20′ R.O.W. & UTILITY EASEMENT
DITCH BOTTOM
℄ DRWY.
10′ DRAINAGE & UTILITY EASEMENT
EXIST. FENCE
TOP OF DITCH
DITCH BOTTOM
R.O.W.
5′ CONCRETE SIDEWALK
FENCE GATE
UNPAVED SHOULDER
6′ CONCRETE SIDEWALK
EDGE OF PAVEMENT
MATCH LINE STA. 93+00
MATCH LINE STA. 98+00
W. LUCAS ROAD
REFER TO "NO LEFT" DETAIL SHEET
N 89° 36′ 05.14" E
℄ CONST.
94+00
95+00
96+00
97+00
10′
38′
34′
B
DITCH BOTTOM
TOP OF DITCH
20′ R.O.W. & WATER LINE EASEMENT
BEGIN B
+0.00
31.00′ RT
CW1-6L
24" X 48"
PROP. DRAINAGE & UTILITY EASEMENT
+0.00
26.00′ RT
LOVEJOY INDEPENDENT SCHOOL DISTRICT
CW1-4L
48" X 48"
PROPERTY LINE
MATCH LINE STA. 4+47.41
5:00
POT 5+84.46

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 2

SHEET 4 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

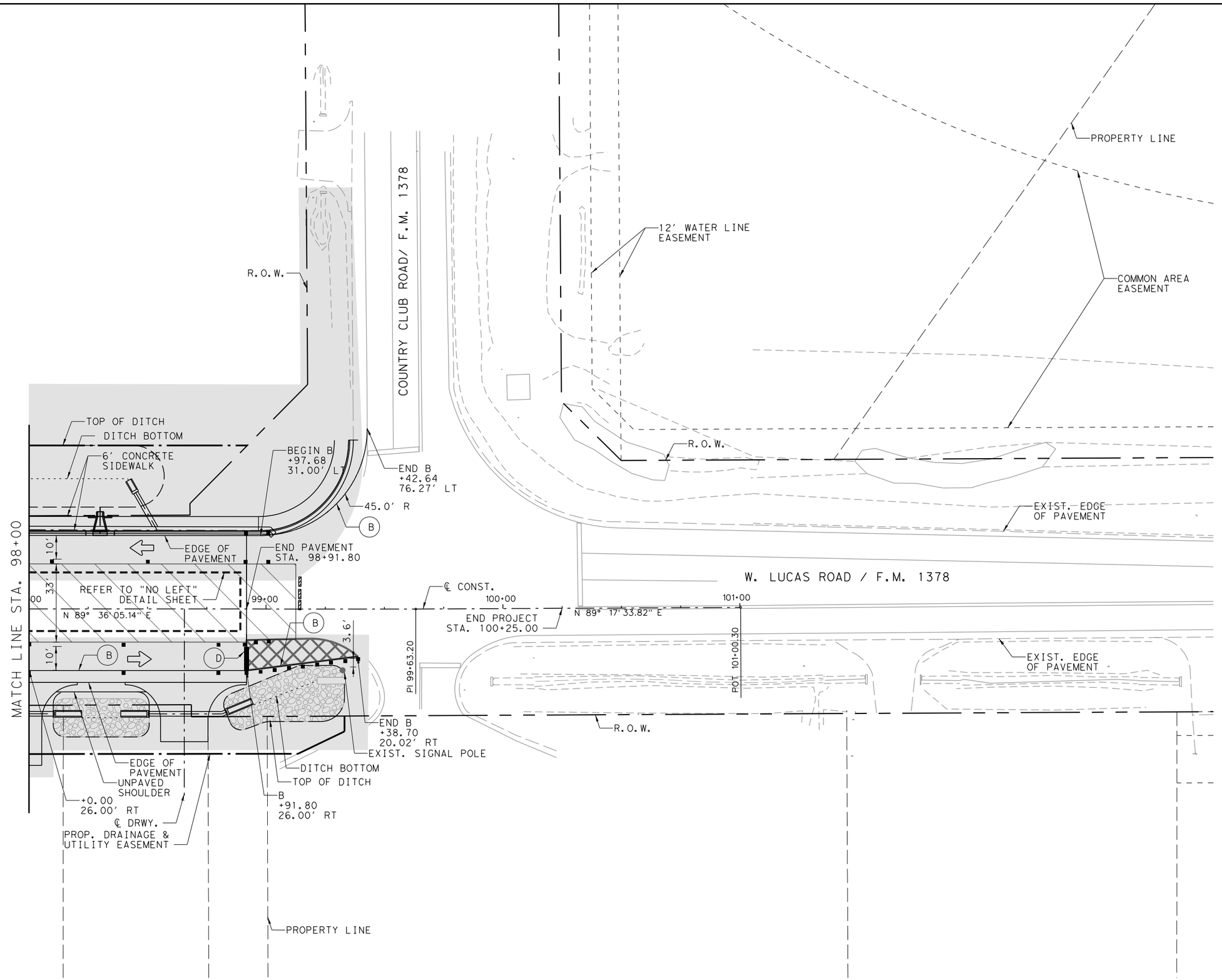
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		30
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:23 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WL_TCP_PH2_04.dgn



CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 2

SHEET 5 OF 5

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	31
	COUNTY	
	COLLIN	

DATE: 4/6/2026 1:51:24 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH2_05.dgn

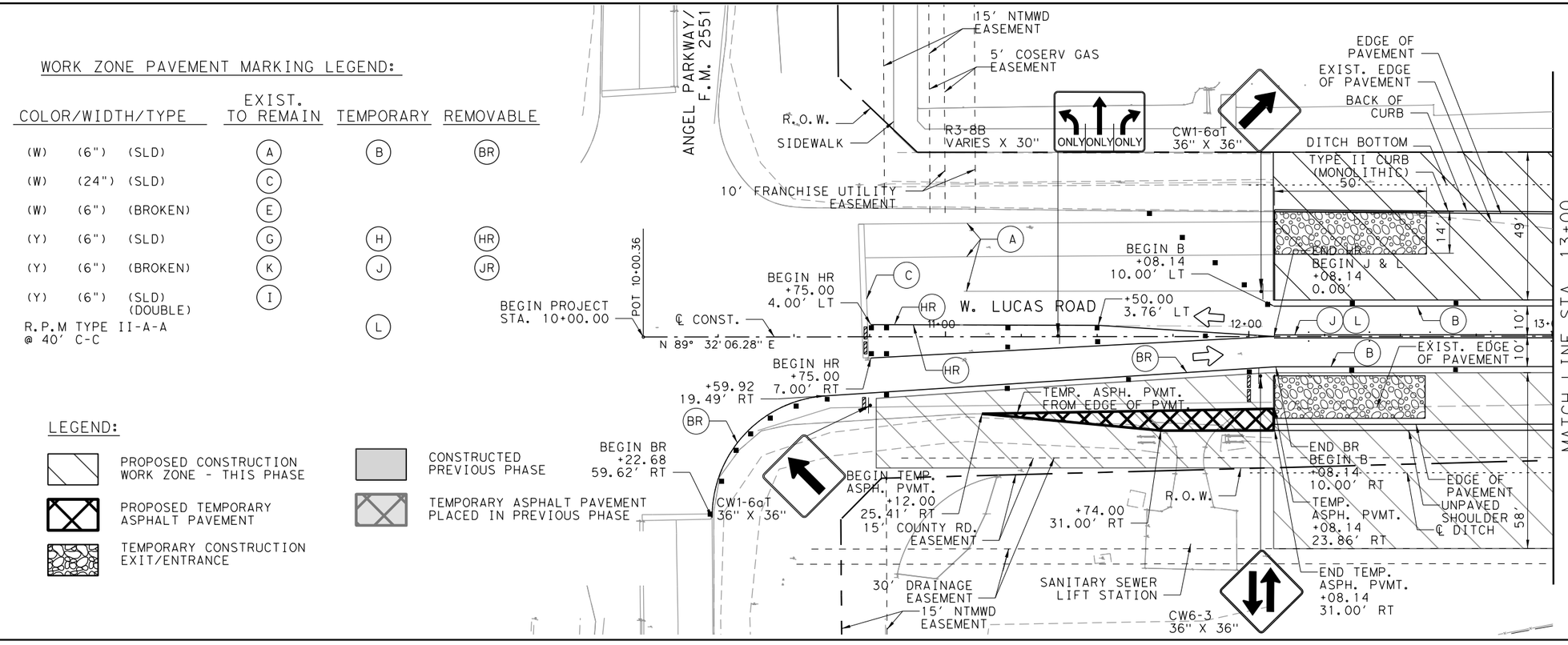
Texas 811 Know what's below. Call before you dig.

WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	A	B	BR
(W) (24") (SLD)	C		
(W) (6") (BROKEN)	E		
(Y) (6") (SLD)	G	H	HR
(Y) (6") (BROKEN)	K	J	JR
(Y) (6") (SLD) (DOUBLE)	I		
R.P.M TYPE II-A-A @ 40' C-C		L	

LEGEND:

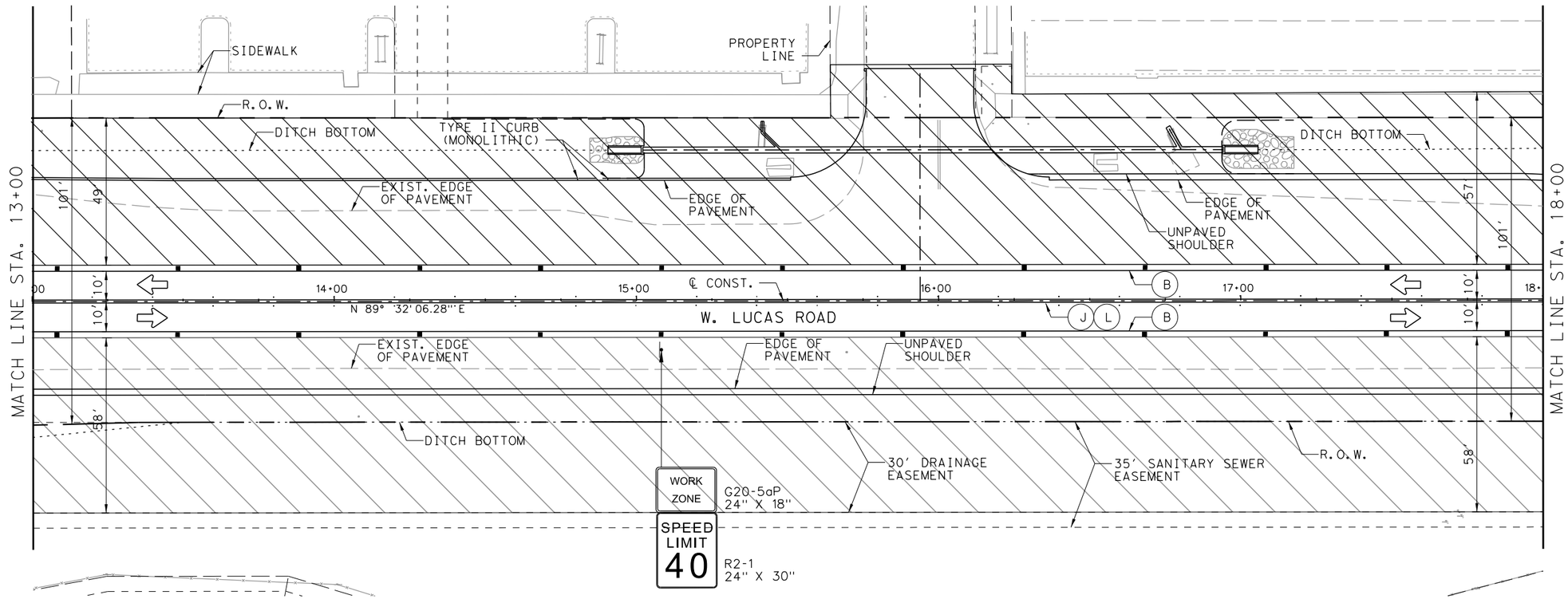
- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE



GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING;

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

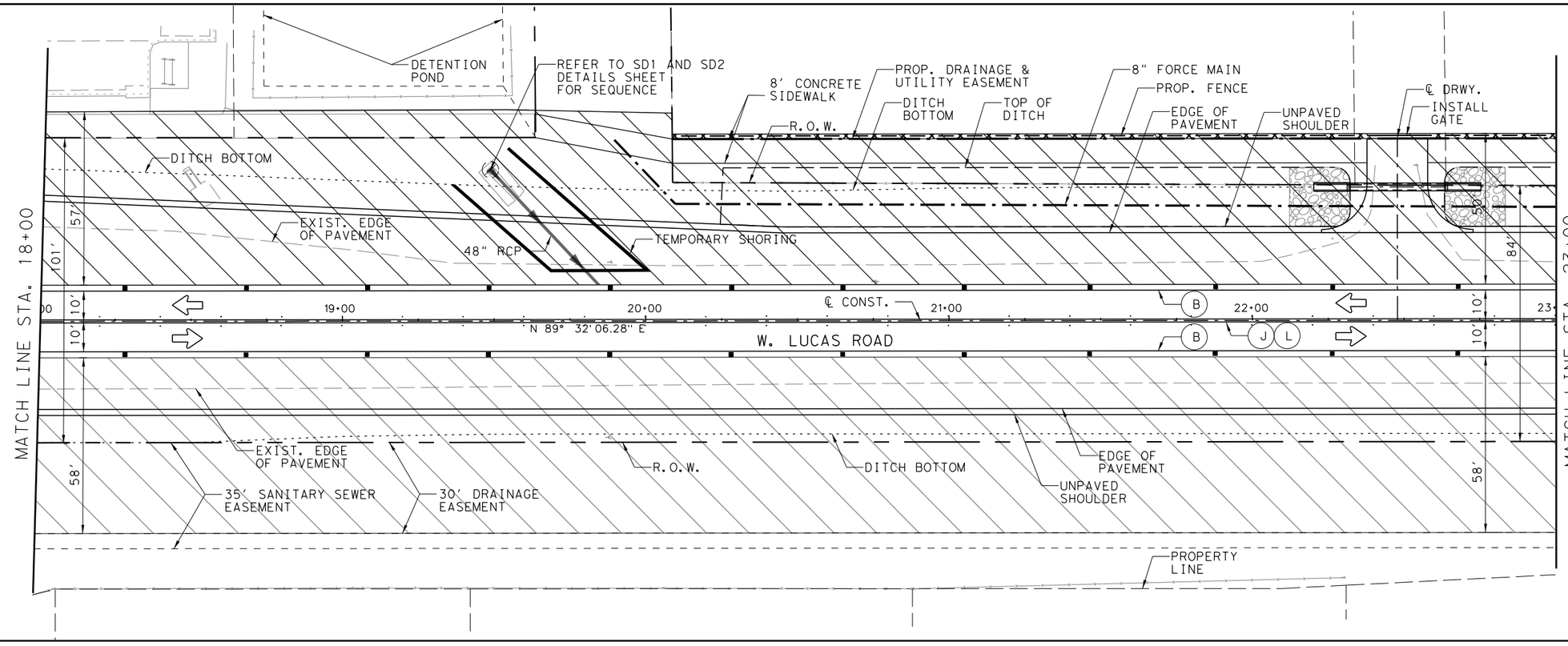
bgc engineering
a PARSONS Company

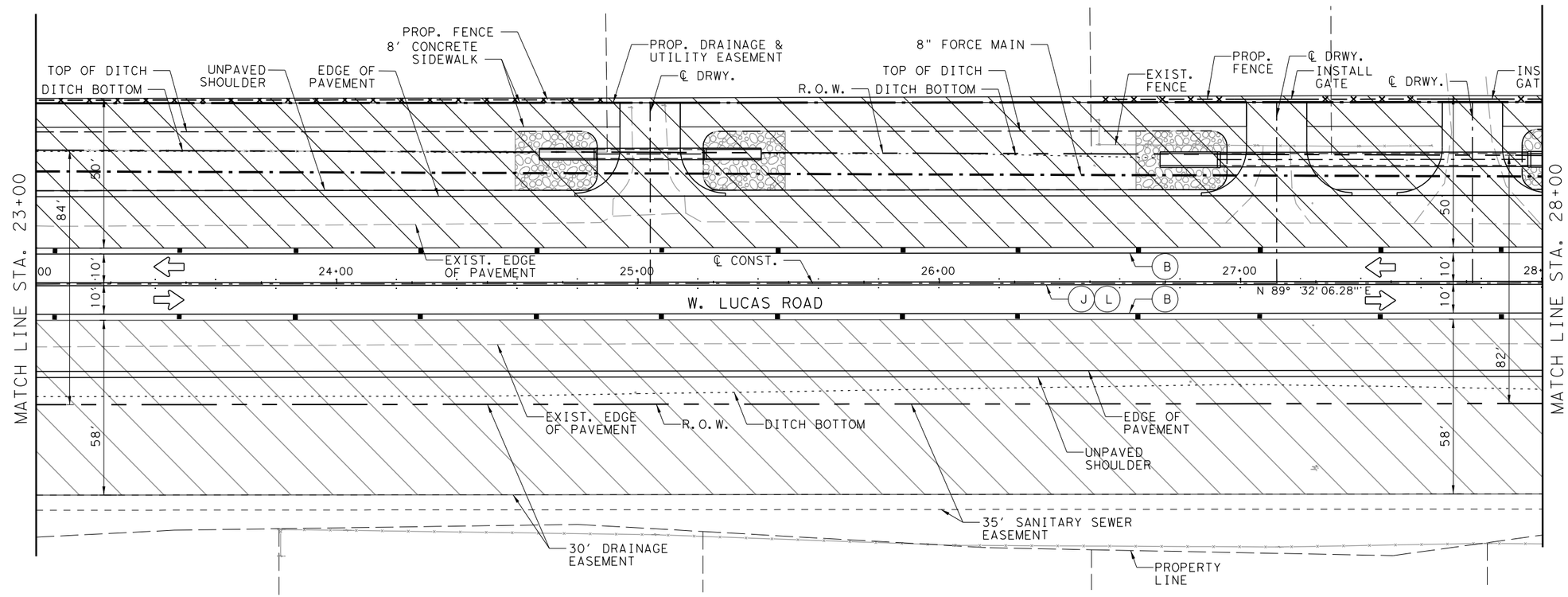
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		32
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:27 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_01.dgn





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	33
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:29 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_02.dgn

0 10 40
Feet

N

MATCH LINE STA. 28+00

PROP. FENCE
8" FORCE MAIN
TOP OF DITCH
DITCH BOTTOM
EXIST. FENCE
R.O.W.
8' CONCRETE SIDEWALK
℄ DRWY. INSTALL GATE
℄ DRWY. INSTALL GATE
PROP. DRAINAGE & UTILITY EASEMENT
TOP OF DITCH
DITCH BOTTOM
EDGE OF PAVEMENT
UNPAVED SHOULDER
℄ DRWY. INSTALL GATE

82'
50'
59'
10'
10'
58'
80'

EXIST. EDGE OF PAVEMENT
29+00
30+00
℄ CONST.
31+00
32+00
33+00
N 89° 32' 06.28" E
W. LUCAS ROAD

EXIST. EDGE OF PAVEMENT
R.O.W.
UNPAVED SHOULDER
EDGE OF PAVEMENT
DITCH BOTTOM

30' DRAINAGE EASEMENT
35' SANITARY SEWER EASEMENT
EXIST. FENCE
PROPERTY LINE

MATCH LINE STA. 33+00

PROP. DRAINAGE & UTILITY EASEMENT
EDGE OF PAVEMENT
UNPAVED SHOULDER
8" FORCE MAIN
TOP OF DITCH
DITCH BOTTOM
8' CONCRETE SIDEWALK
℄ DRWY.
PROPERTY LINE
TOP OF DITCH
40' NTMWD WATER EASEMENT
DITCH BOTTOM
R.O.W.

+9.64
10.00' LT
PI 33+09.64
EXIST. EDGE OF PAVEMENT
PI 36+28.92
63'
10'
10'
58'
79'
34+00
35+00
℄ CONST.
36+00
37+00
38+00
N 89° 32' 06.27" E
W. LUCAS ROAD
N 89° 48' 39.64" E

+9.64
0.00'
+9.64
10.00' RT
℄ RATHBONE DR.
EXIST. EDGE OF PAVEMENT
EDGE OF PAVEMENT
UNPAVED SHOULDER
SANITARY SEWER LIFT STATION
R.O.W.
RATHBONE DR.
EASEMENT DEDICATED TO CITY OF PARKER
DITCH BOTTOM
TOP OF DITCH
PROPERTY LINE
30' DRAINAGE EASEMENT
20' SANITARY SEWER EASEMENT
35' SANITARY SEWER EASEMENT
30' DRAINAGE EASEMENT

ROAD CLOSED
R11-2
48" X 30"
(WHEN INTERSECTION IS CLOSED)

MATCH LINE STA. 38+00

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

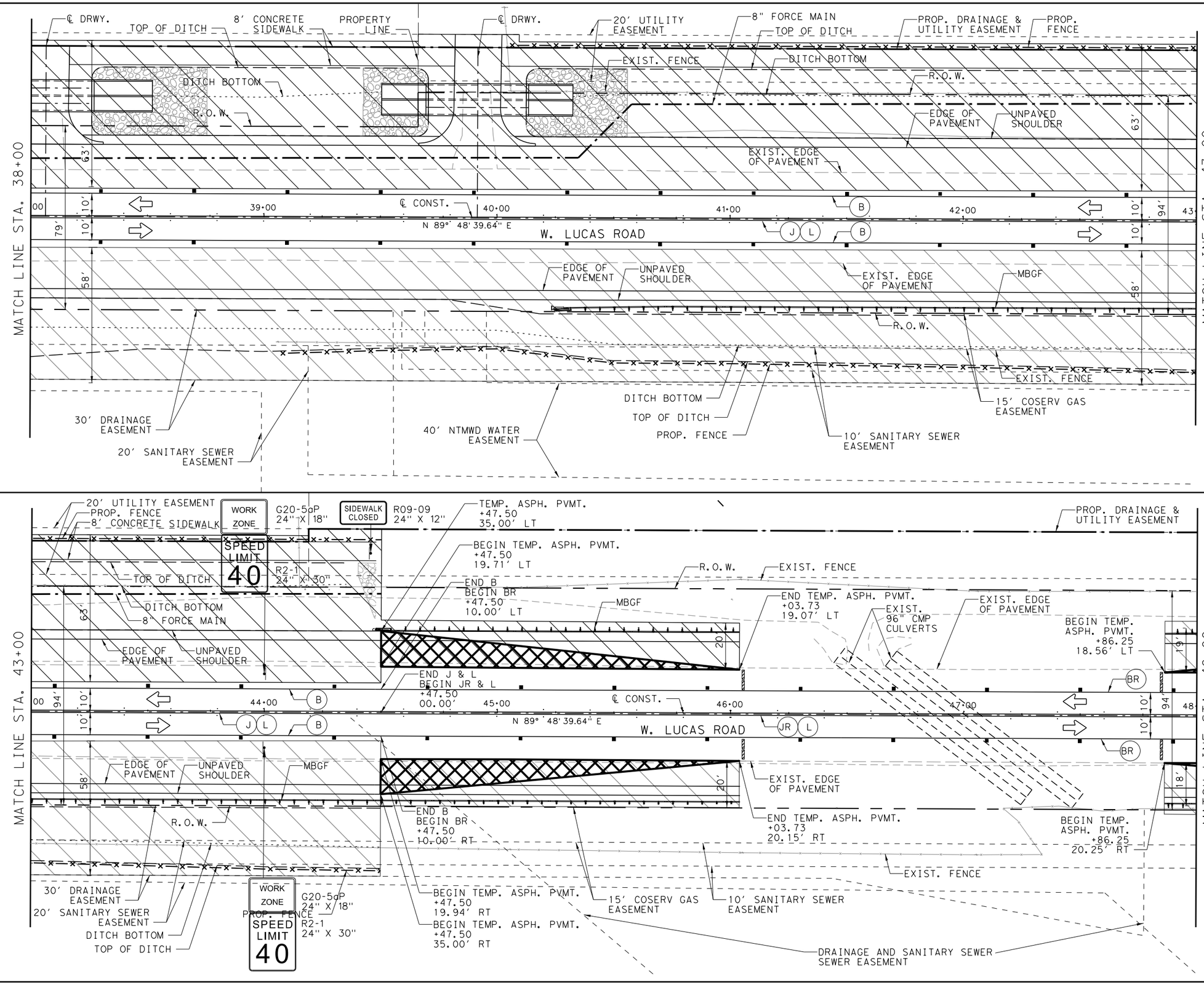
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		34
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_03.dgn



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 4 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

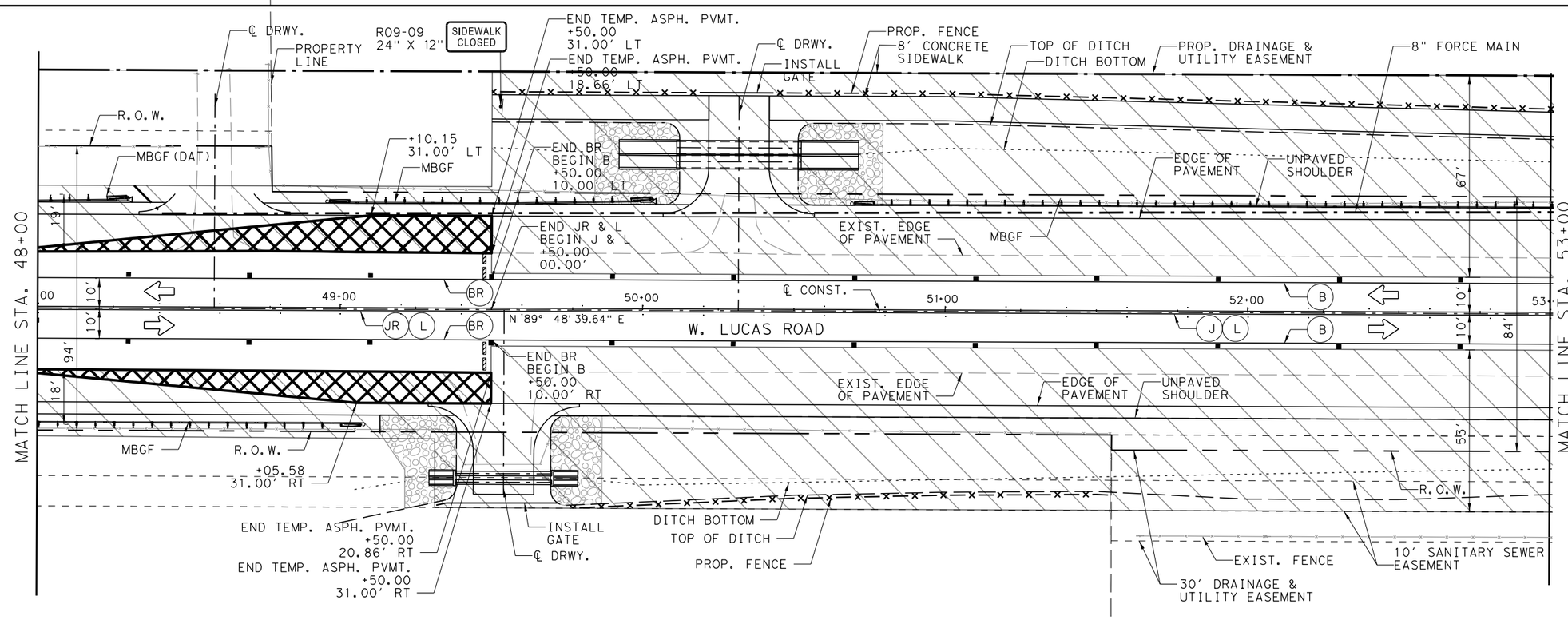
bc engineering
a PARSONS Company

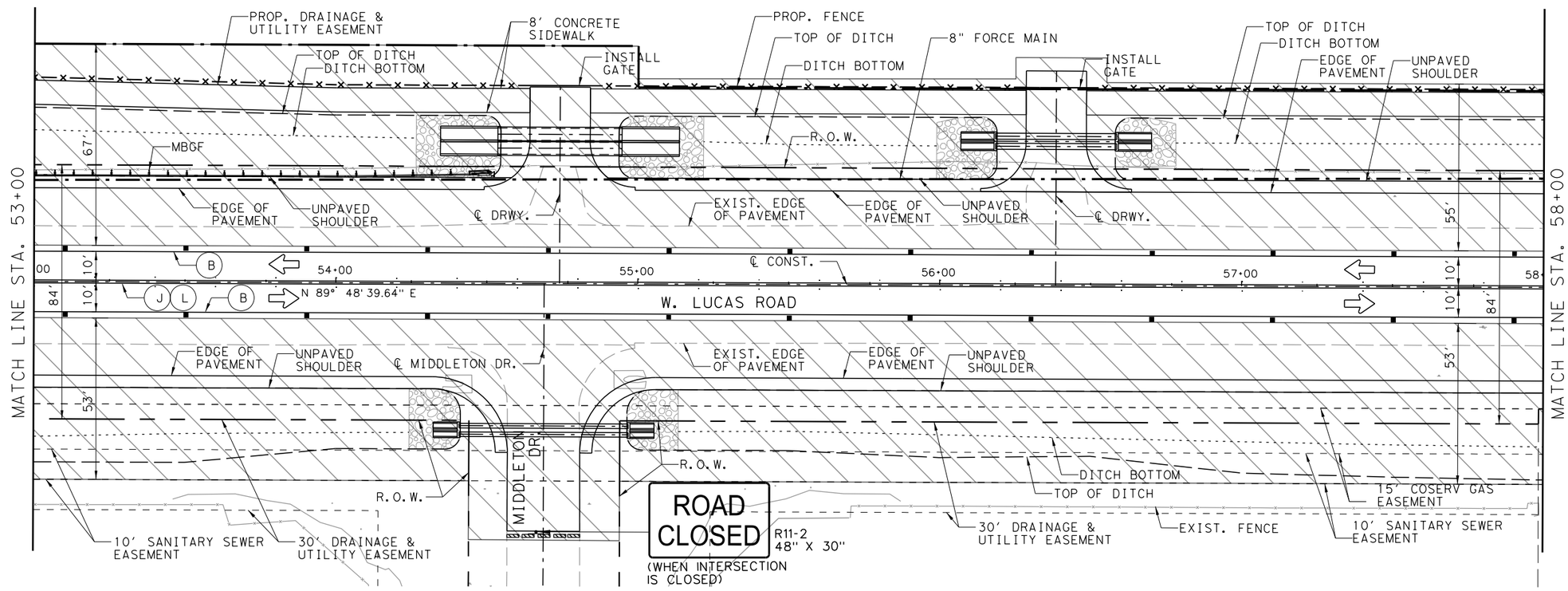
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	35
	COUNTY	
	COLLIN	

DATE: 4/6/2026 1:51:34 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_04.dgn

Texas811 Know what's below. Call before you dig.





DATE: 4/6/2026 1:51:36 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_05.dgn

Texas811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

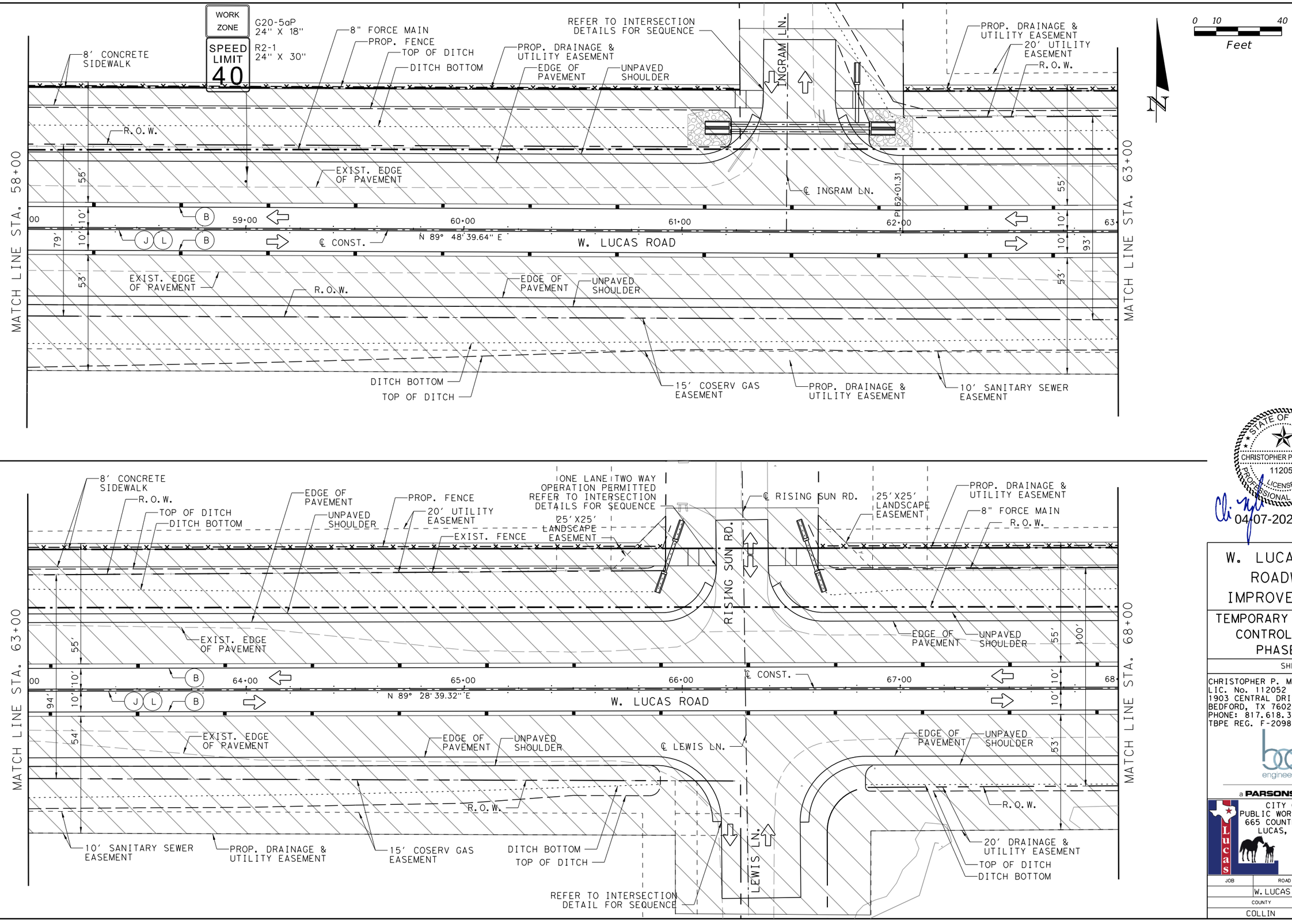
SHEET 5 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	36
	COUNTY	
	COLLIN	



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

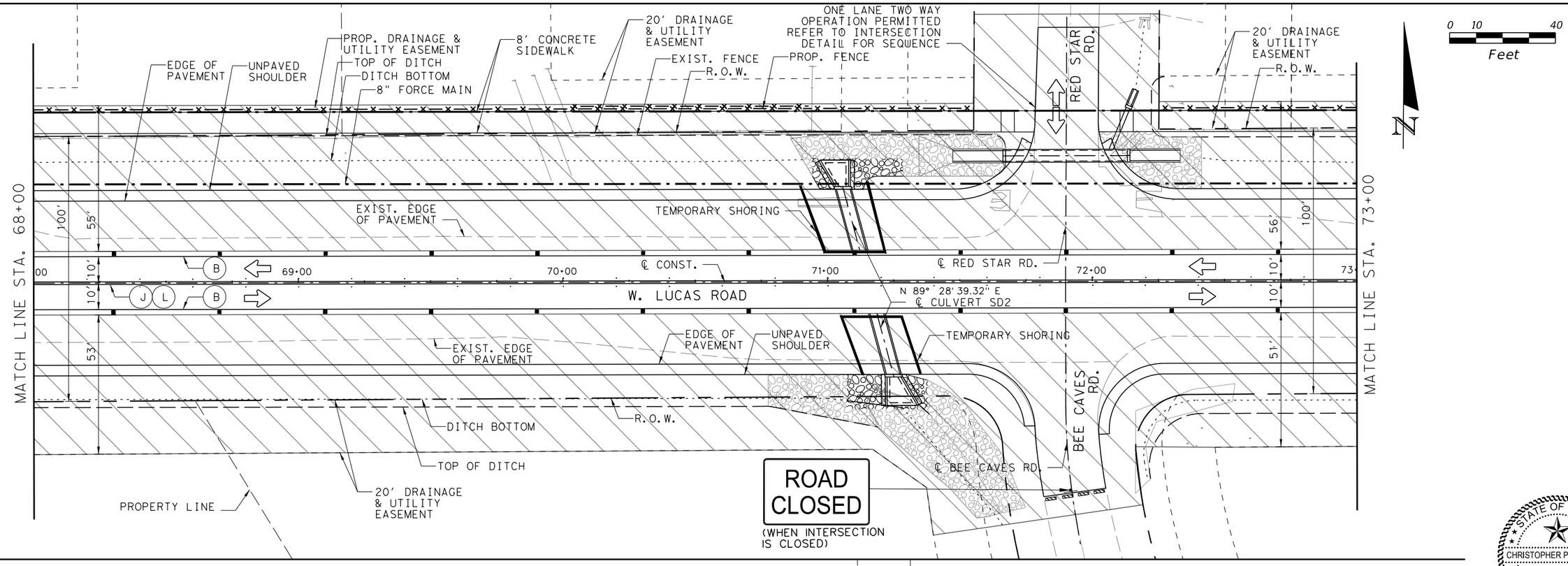
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	37
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:39 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_06.dgn



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

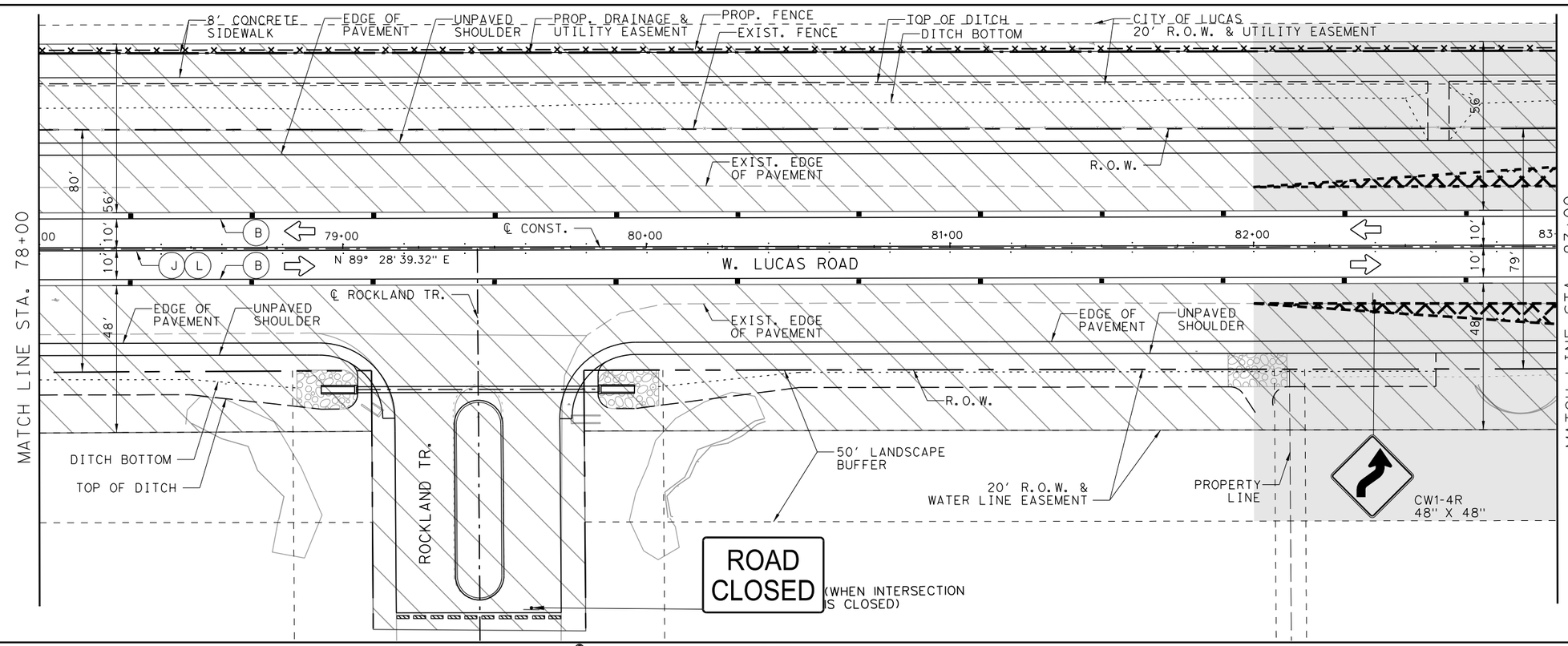
bc engineering
a PARSONS Company

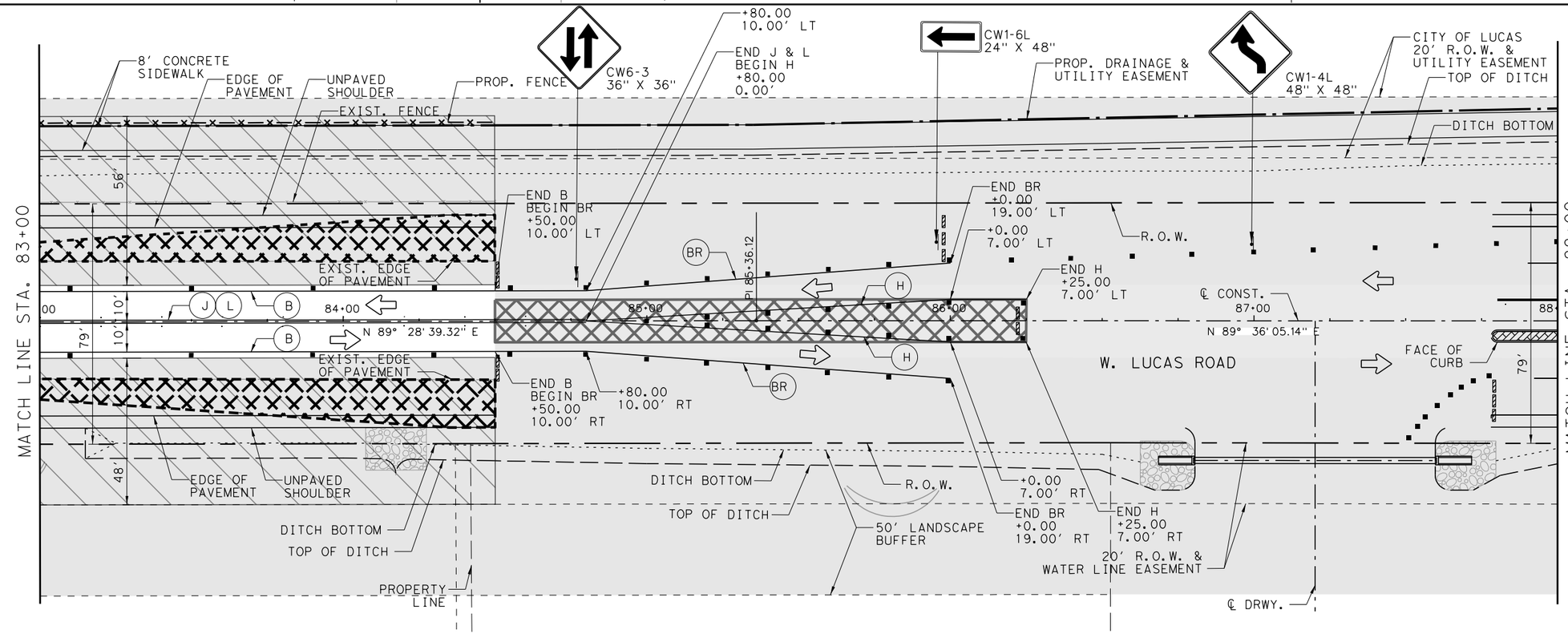
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		38
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:41 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_07.dgn





DATE: 4/6/2026 1:51:43 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_08.dgn

Texas 811 Know what's below. Call before you dig.

CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

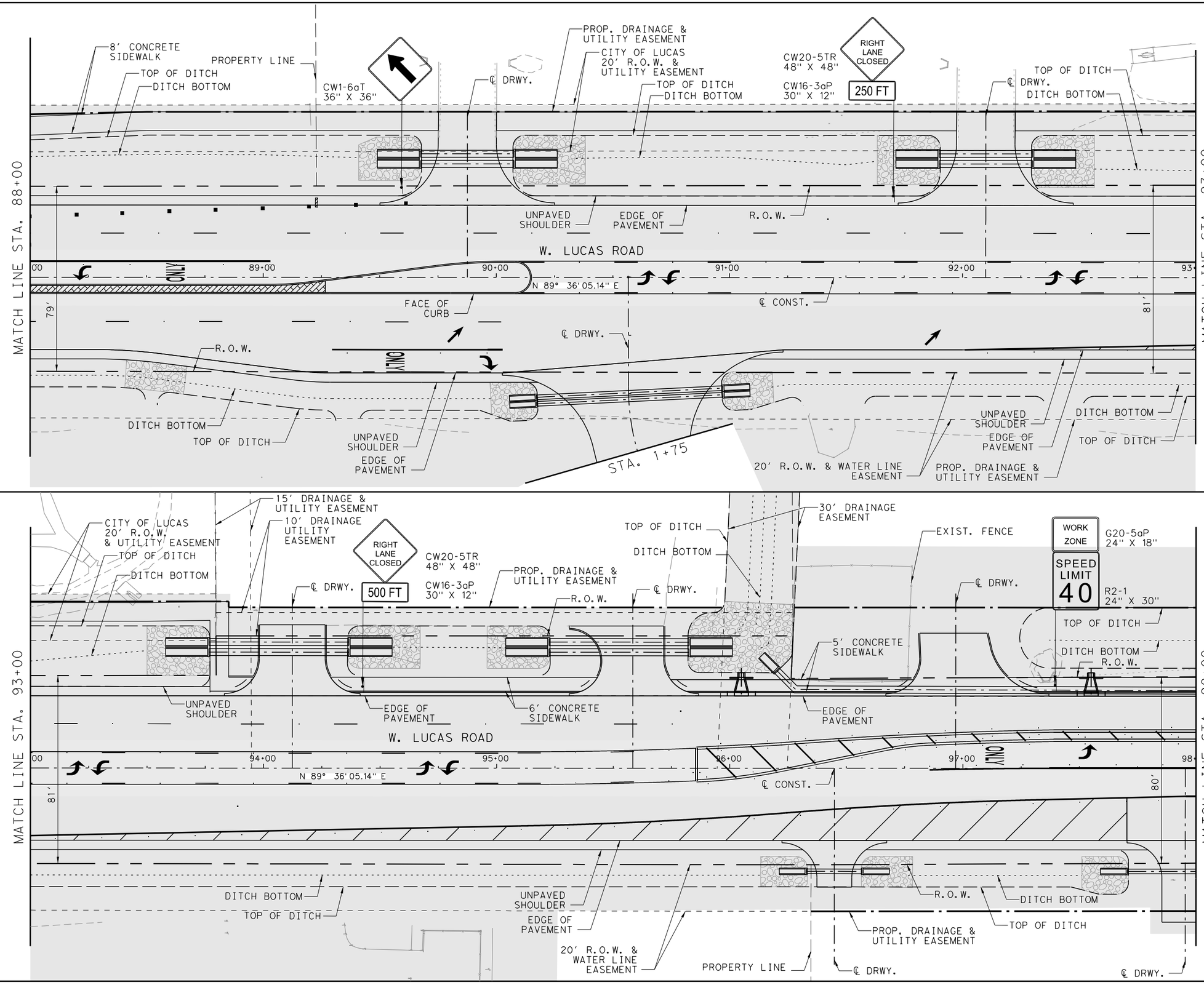
SHEET 8 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		39
COLLIN		



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

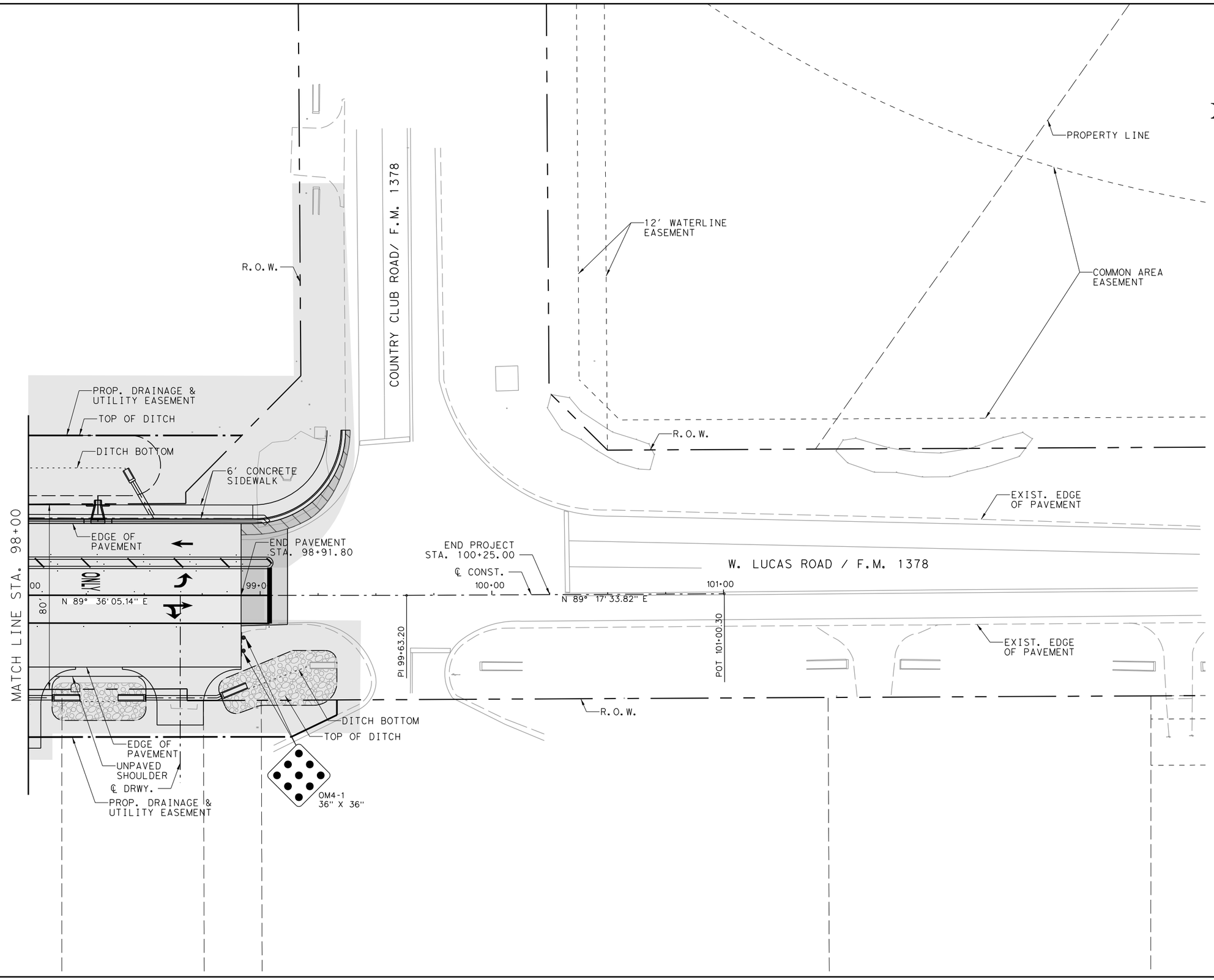
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		40
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:45 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_09.dgn



NOTES:

1. FOR SIGNAL PHASING, COORDINATE WITH TXDOT.
2. ANY CONFLICTING SIGN MUST BE REMOVED OR COVERED.
3. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
4. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKINGS DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 3

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	41
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

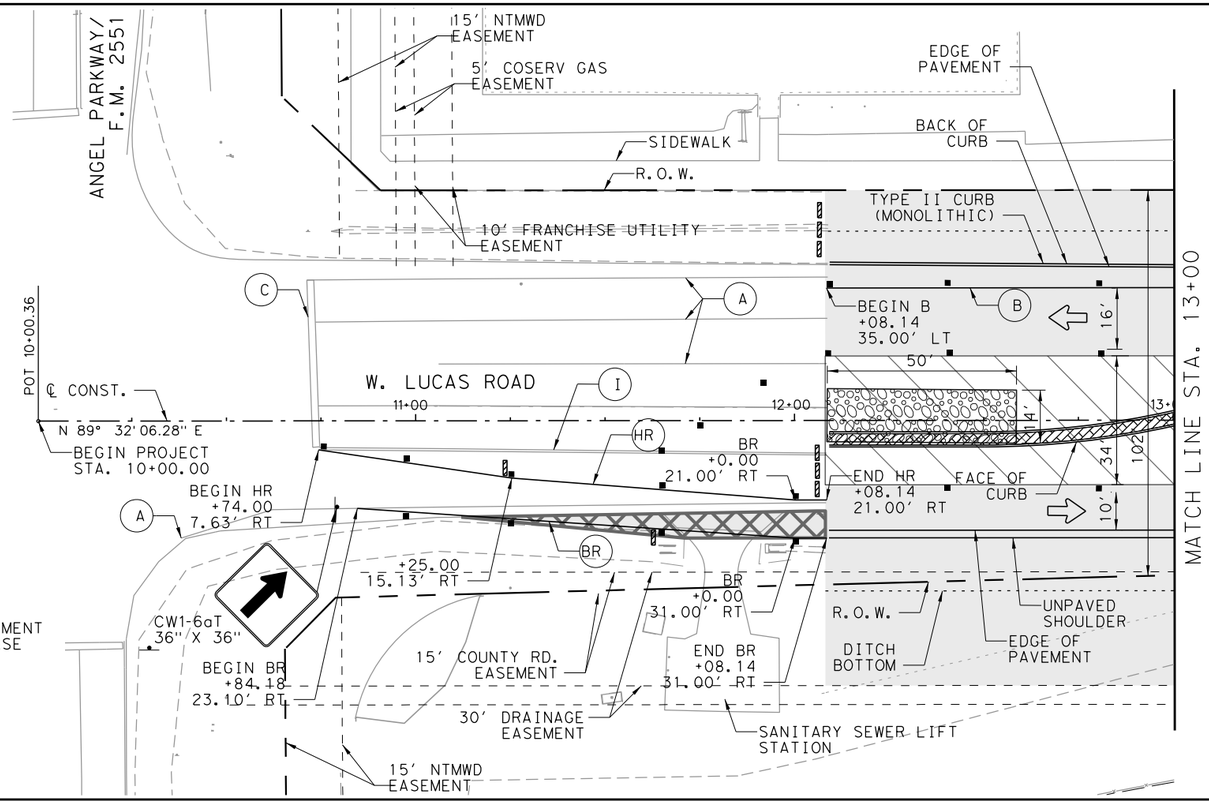
DATE: 4/6/2026 1:51:47 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH3_10.dgn

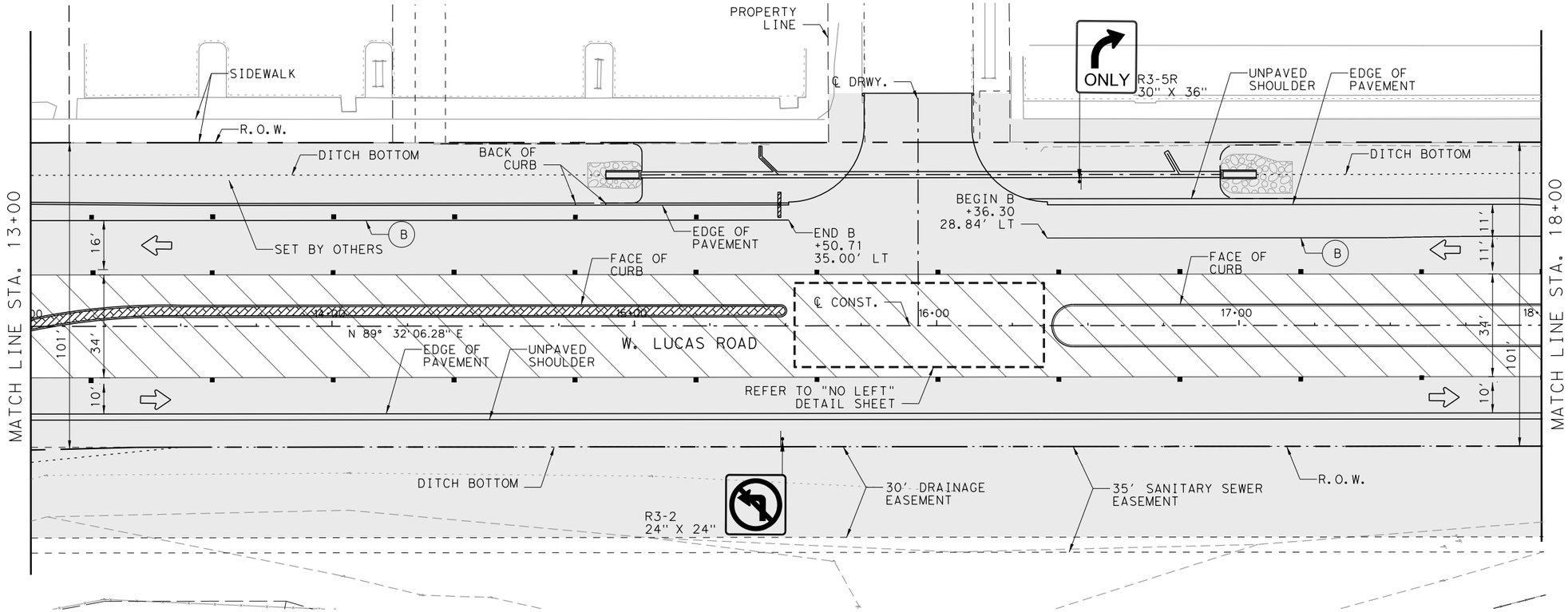
WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	A	B	BR
(W) (24") (SLD)	C		
(W) (6") (BROKEN)	E		
(Y) (6") (SLD)	G	H	HR
(Y) (6") (SLD)	K	J	JR
(Y) (6") (SLD) (DOUBLE)	I		
R.P.M TYPE II-A-A @ 40' C-C		L	

LEGEND:

- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT REMOVAL





0 10 40
Feet

LEGEND:

- DIRECTION OF TRAFFIC
- PAVEMENT MARKINGS
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES

GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING:

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

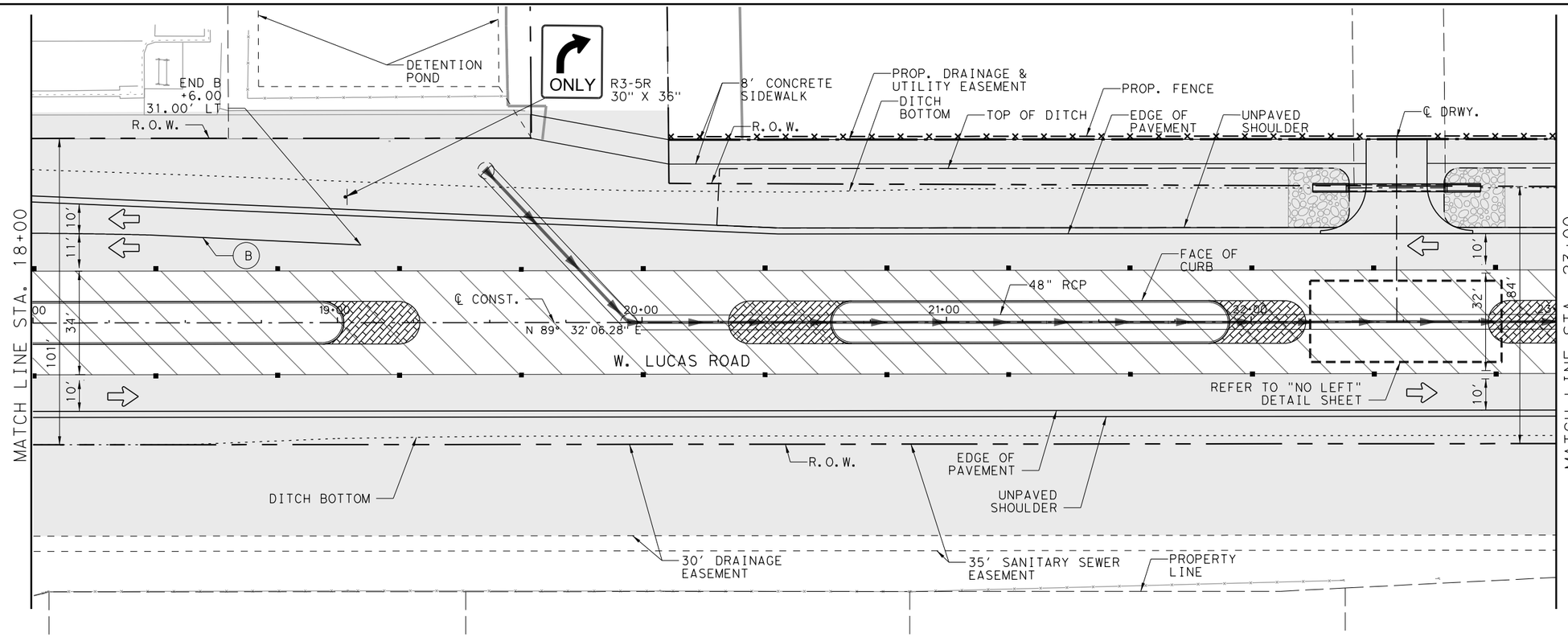
bc engineering
a PARSONS Company

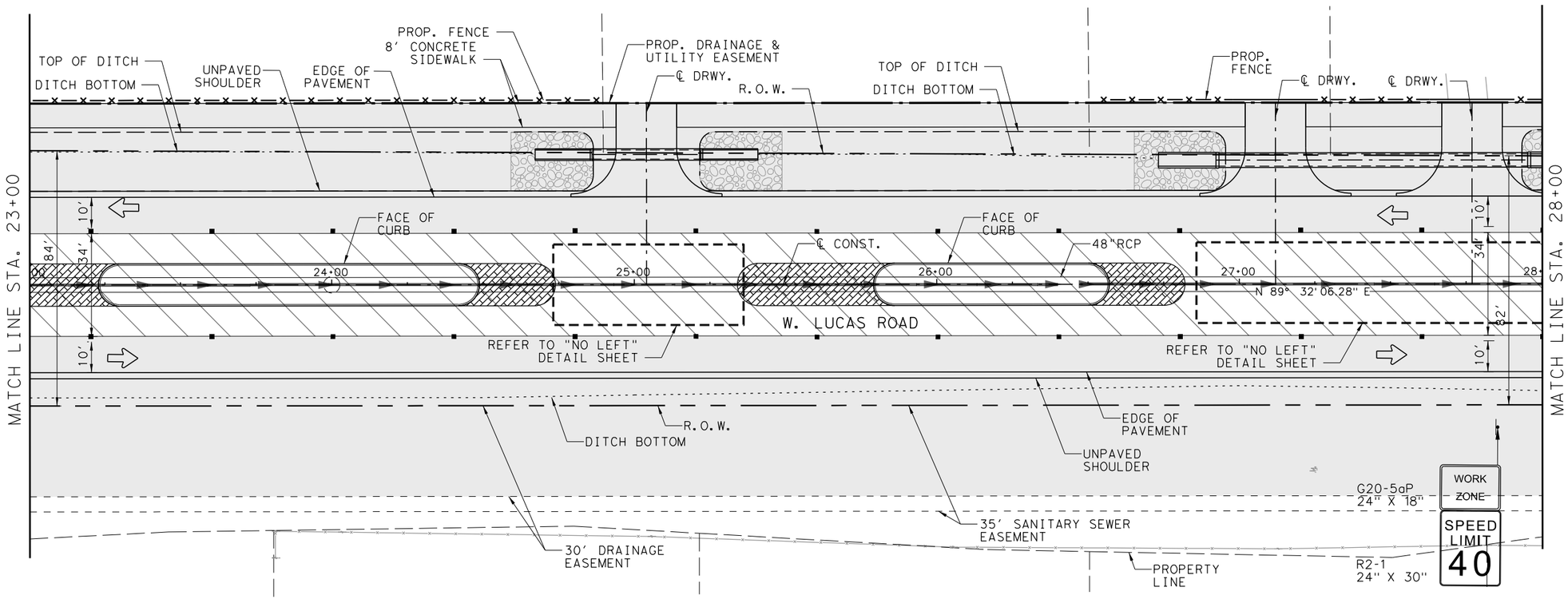
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	42
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:49 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_01.dgn





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

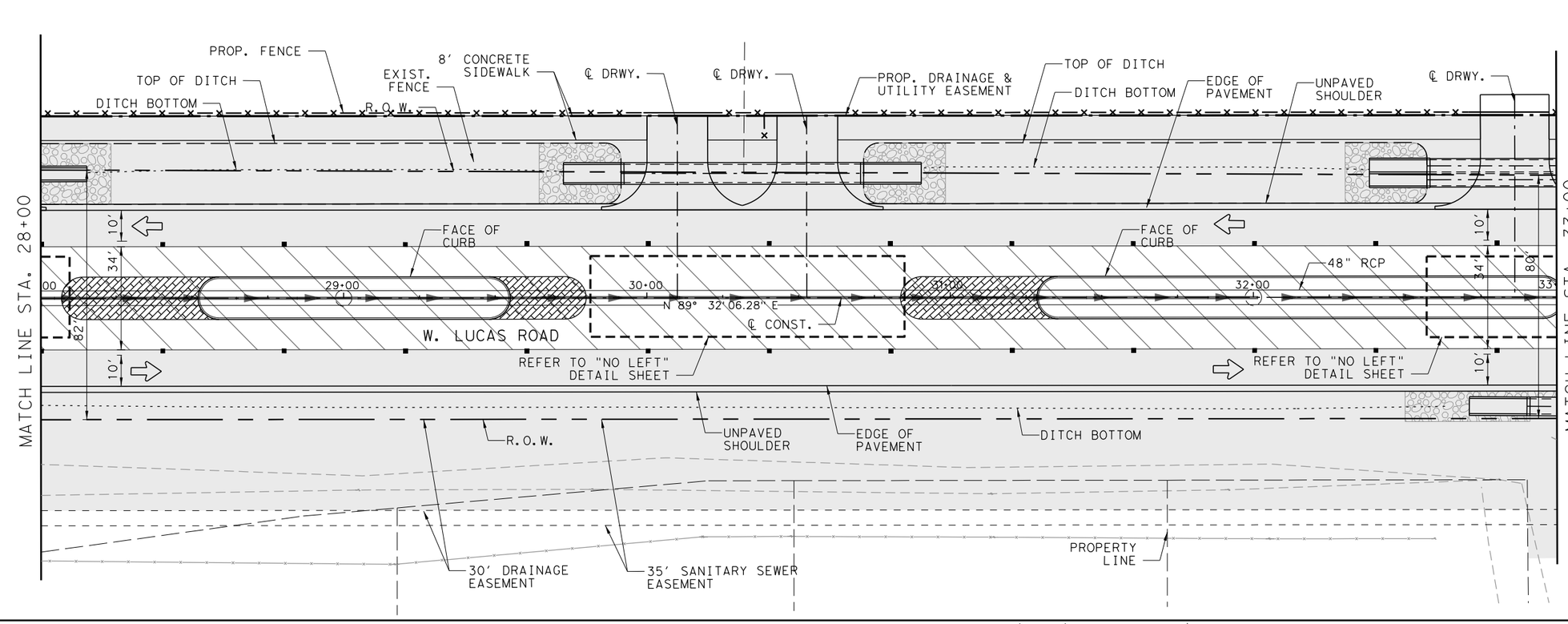
bc engineering
a PARSONS Company

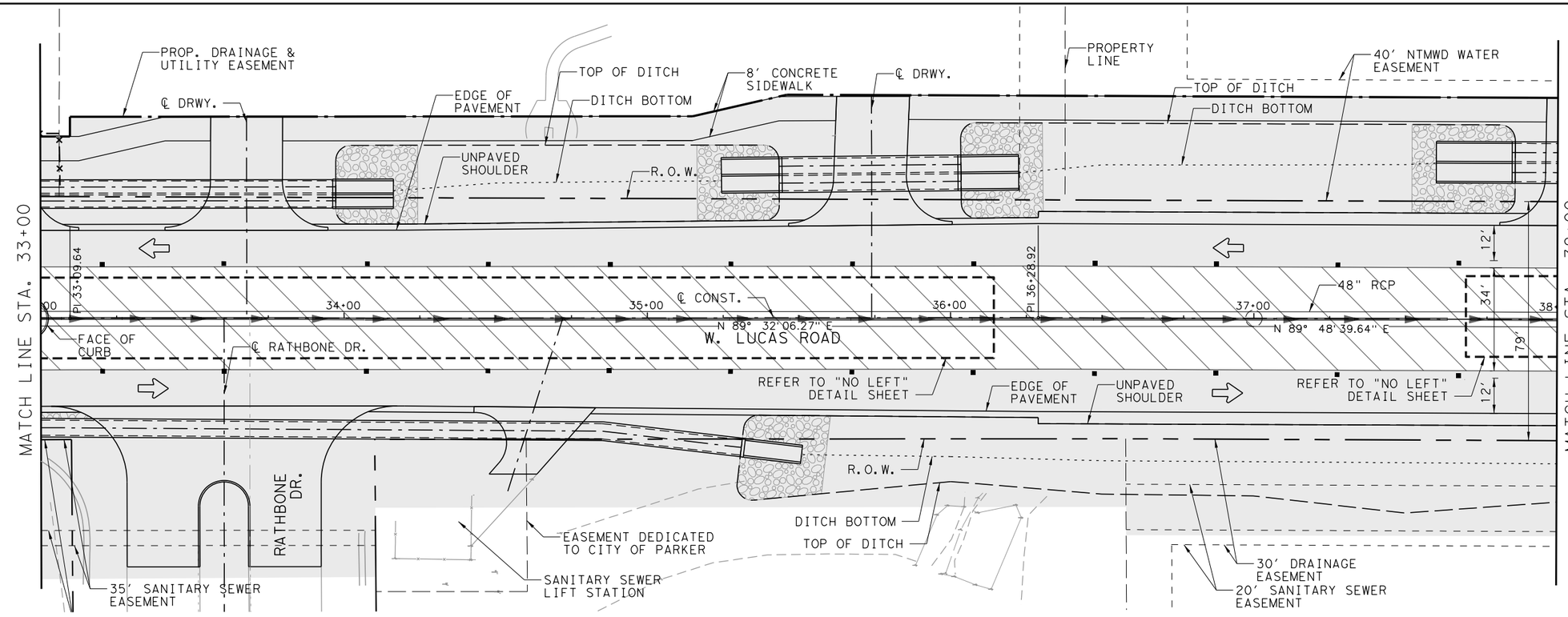
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	43
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:51 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_02.dgn





0 10 40
Feet

N

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

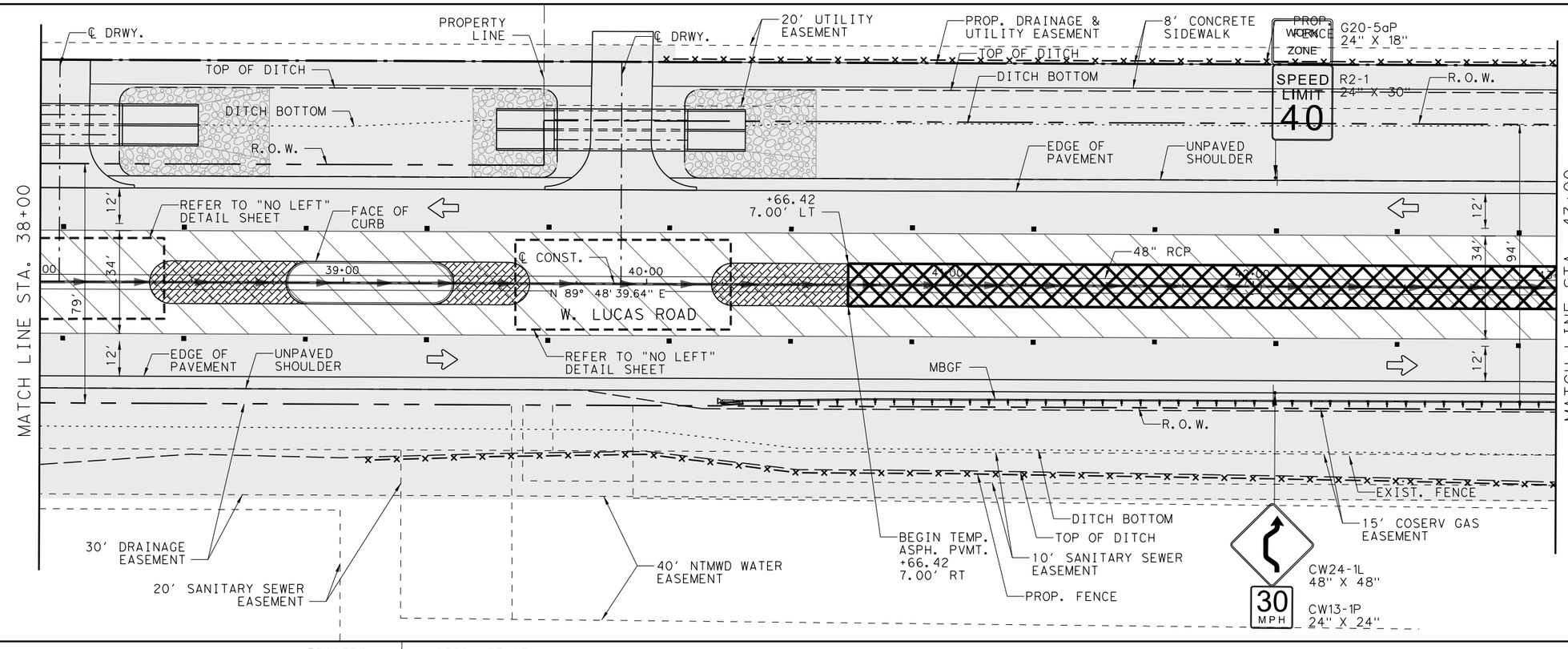
bc engineering
a PARSONS Company

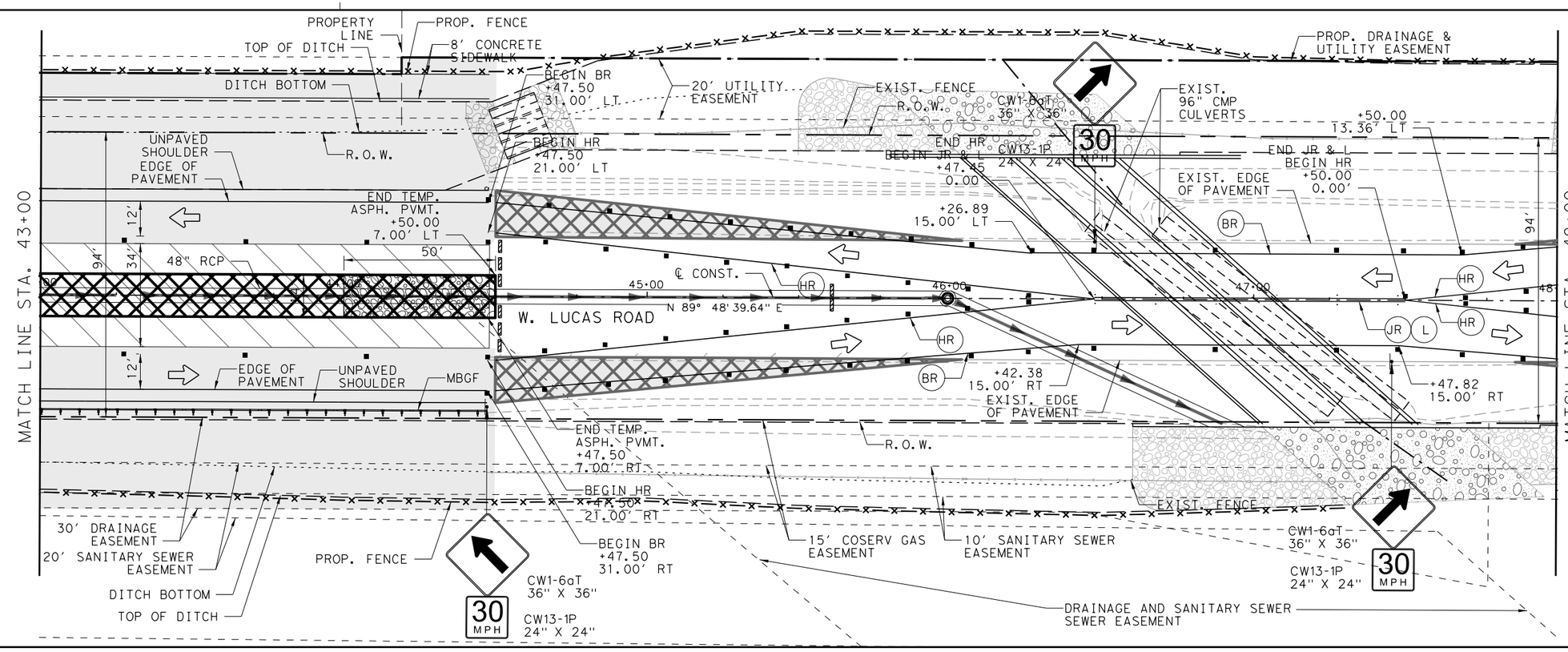
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		44
COLLIN		

DATE: 4/6/2026 1:51:52 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_03.dgn

Texas 811 Know what's below. Call before you dig.





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 4 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

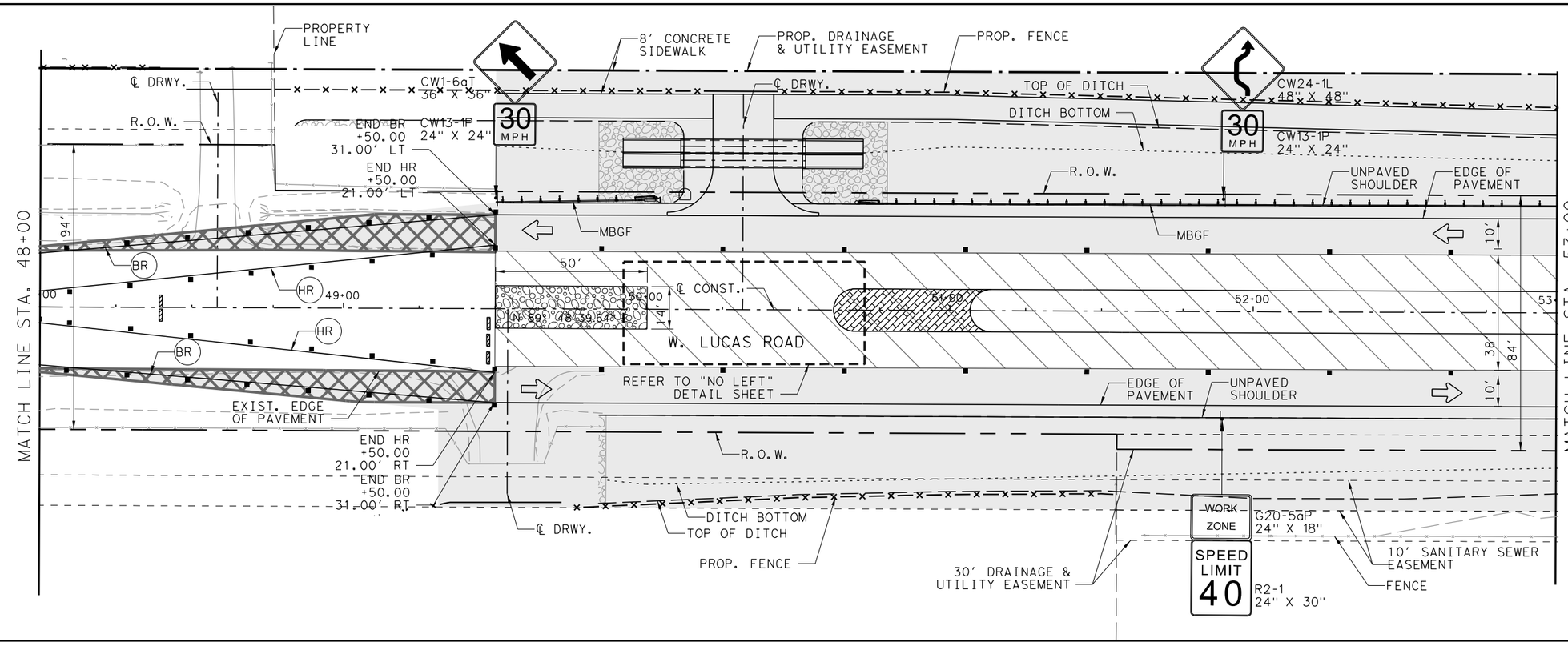
bec engineering
a PARSONS Company

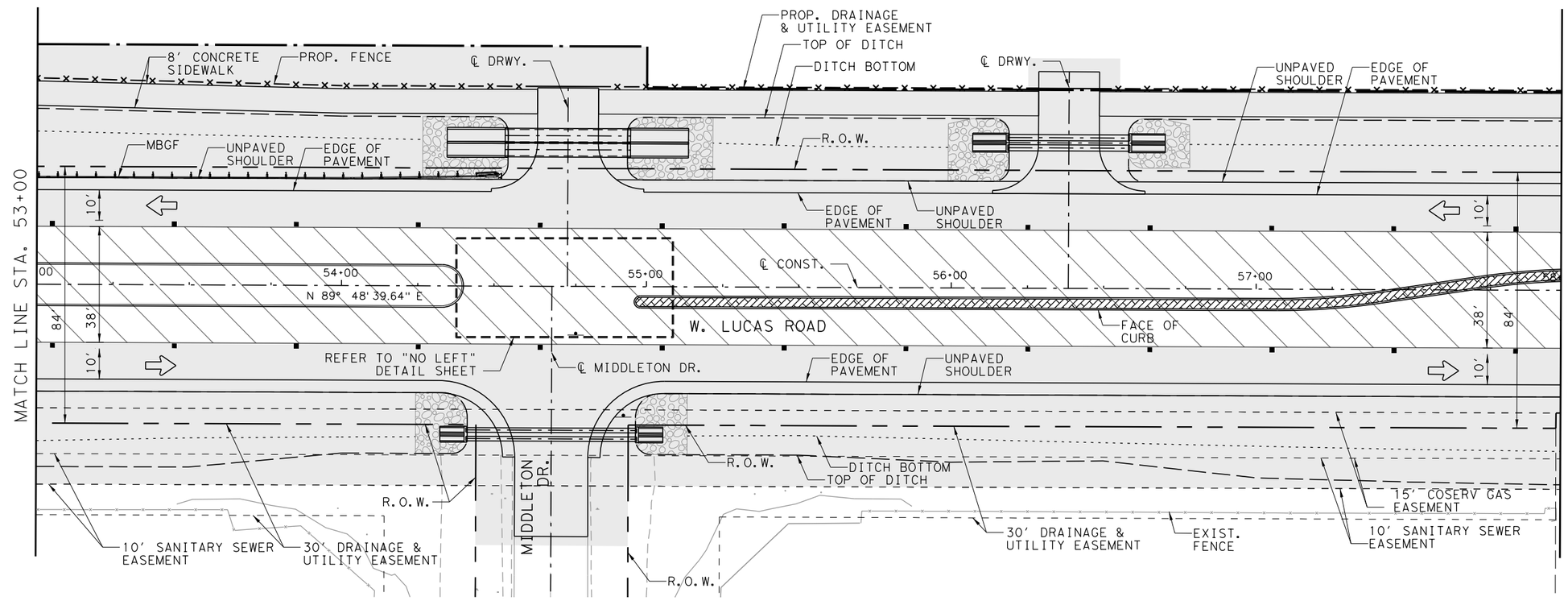
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		45
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:54 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_04.dgn





DATE: 4/6/2026 1:51:56 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_05.dgn

Texas811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

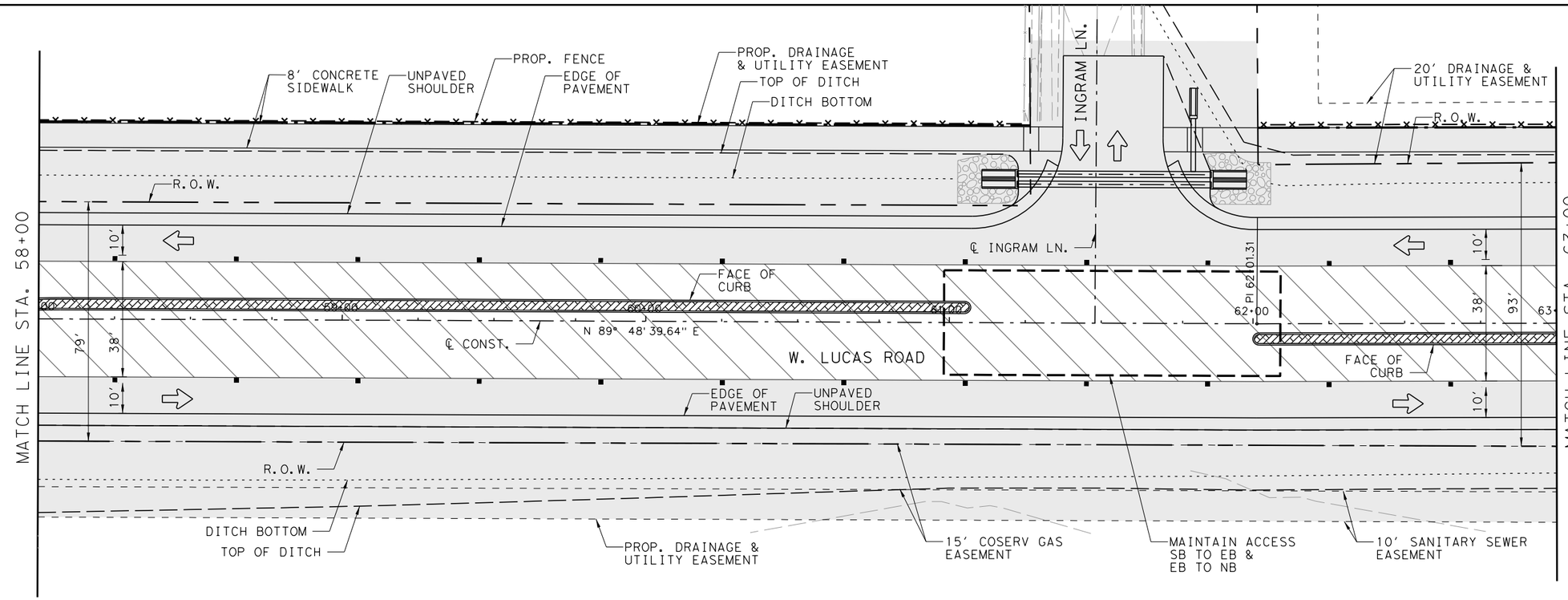
SHEET 5 OF 10

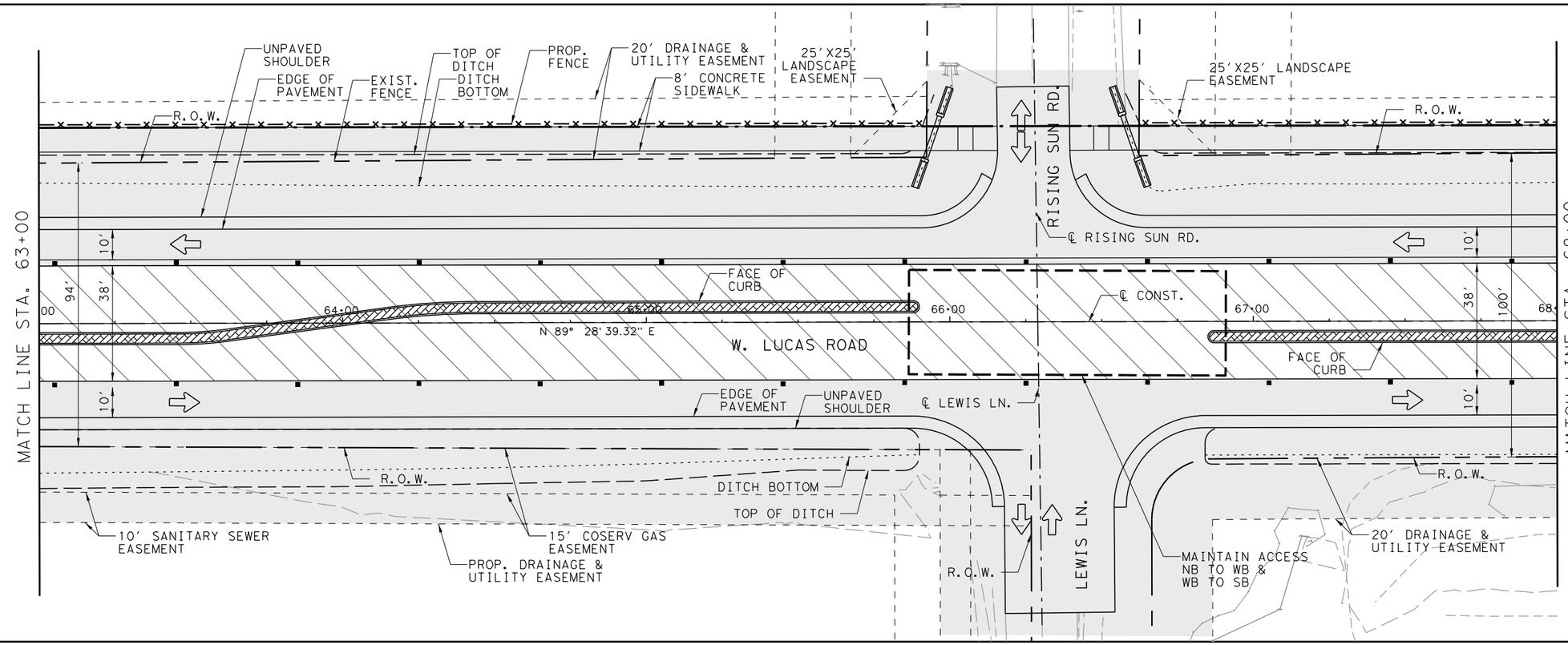
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	46
COUNTY		
COLLIN		





CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

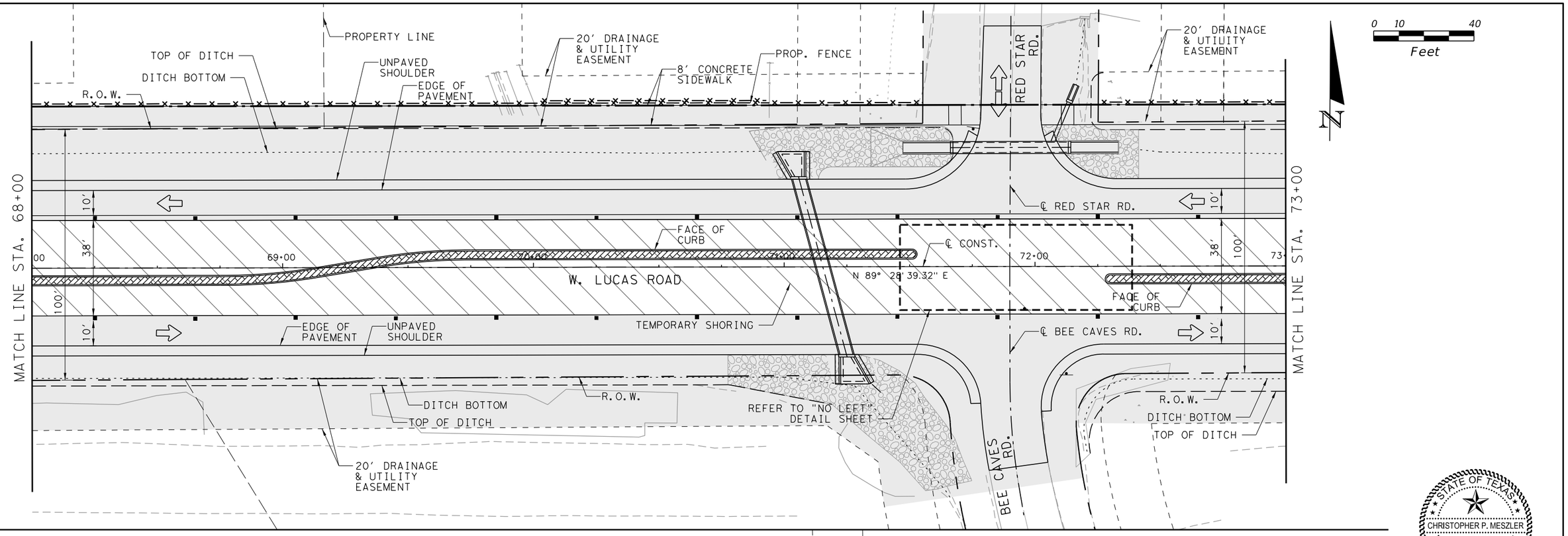
bgc engineering
a PARSONS Company

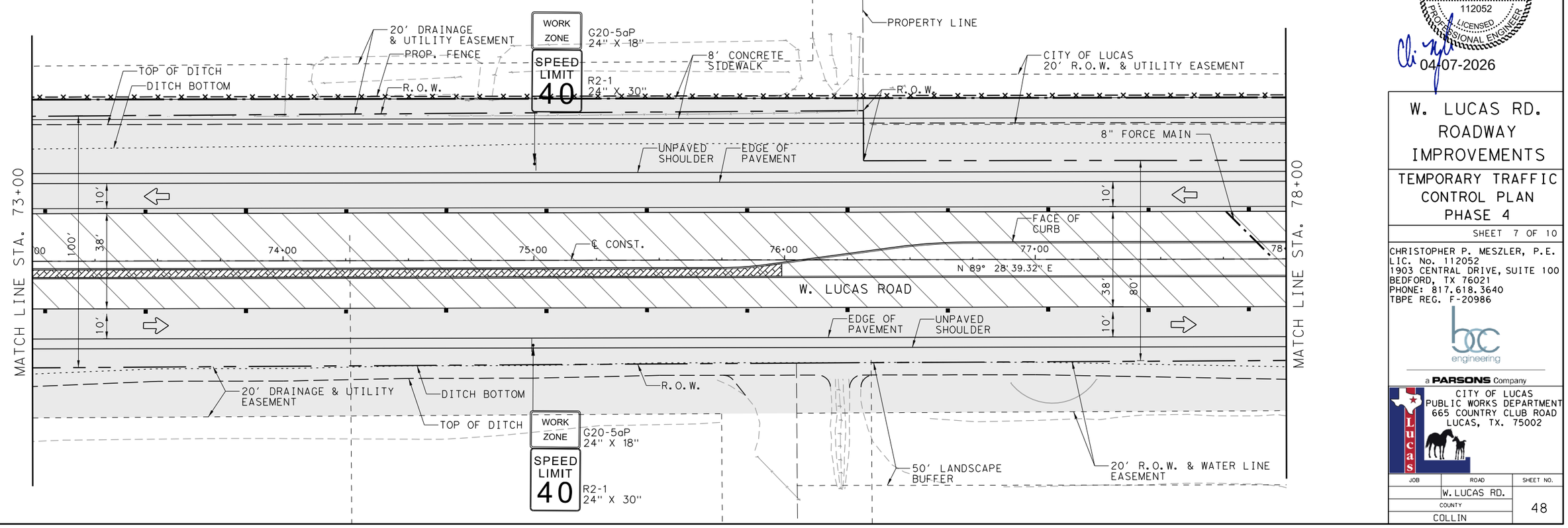
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	47
COUNTY		
COLLIN		

DATE: 4/6/2026 1:51:58 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_06.dgn

Texas811 Know what's below. Call before you dig.





CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

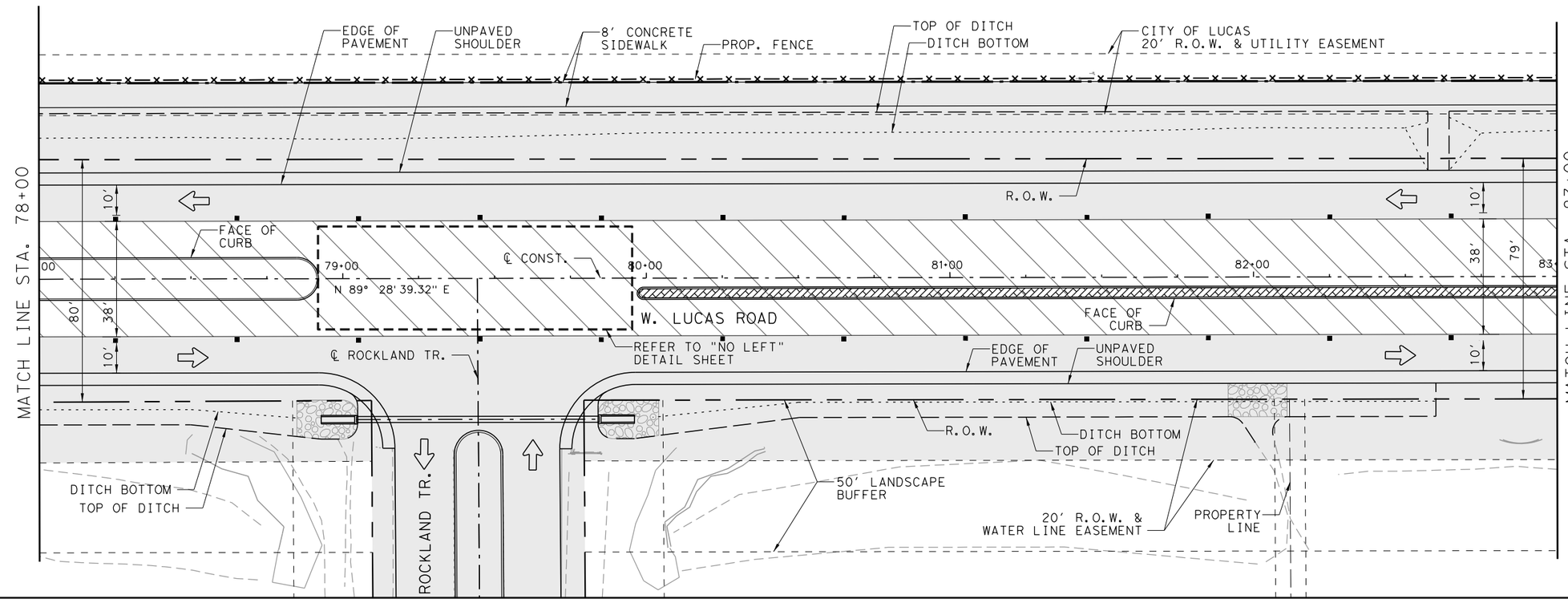
bc engineering
a PARSONS Company

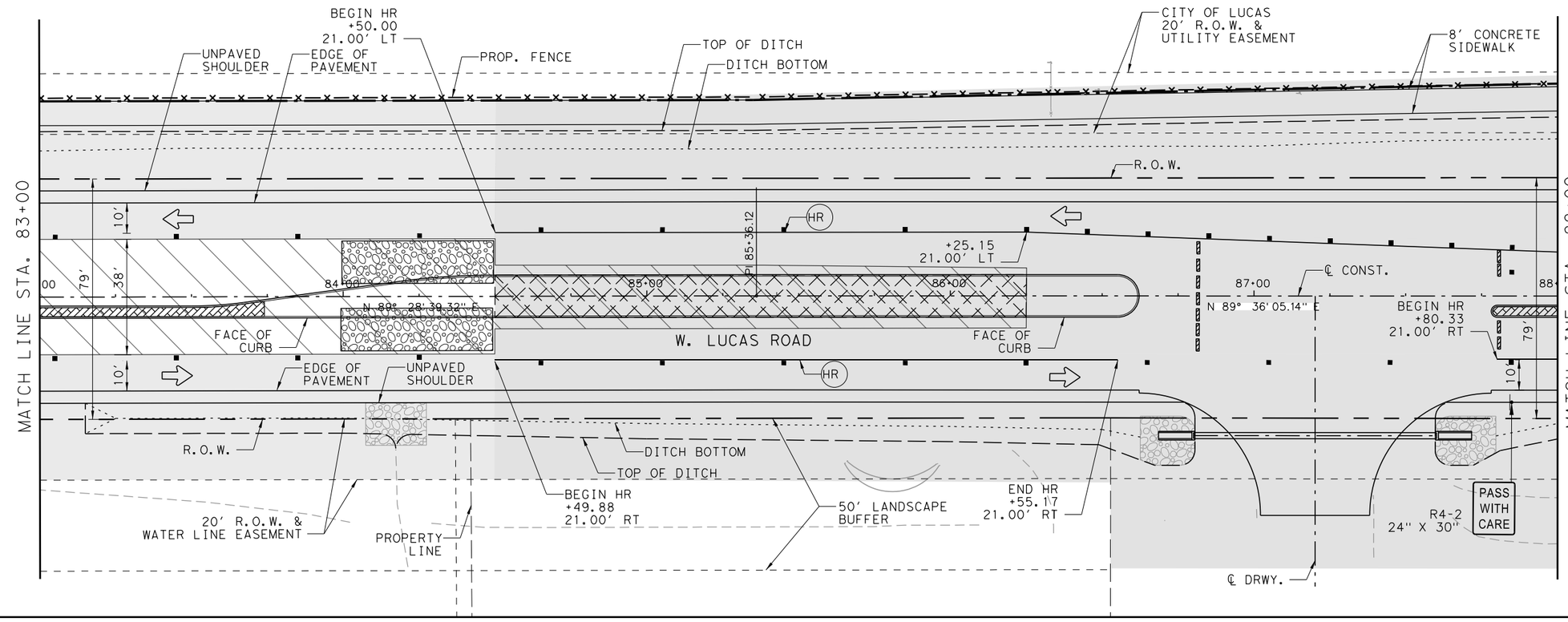
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	48
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:51:59 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_07.dgn





0 10 40
Feet

N

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 8 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

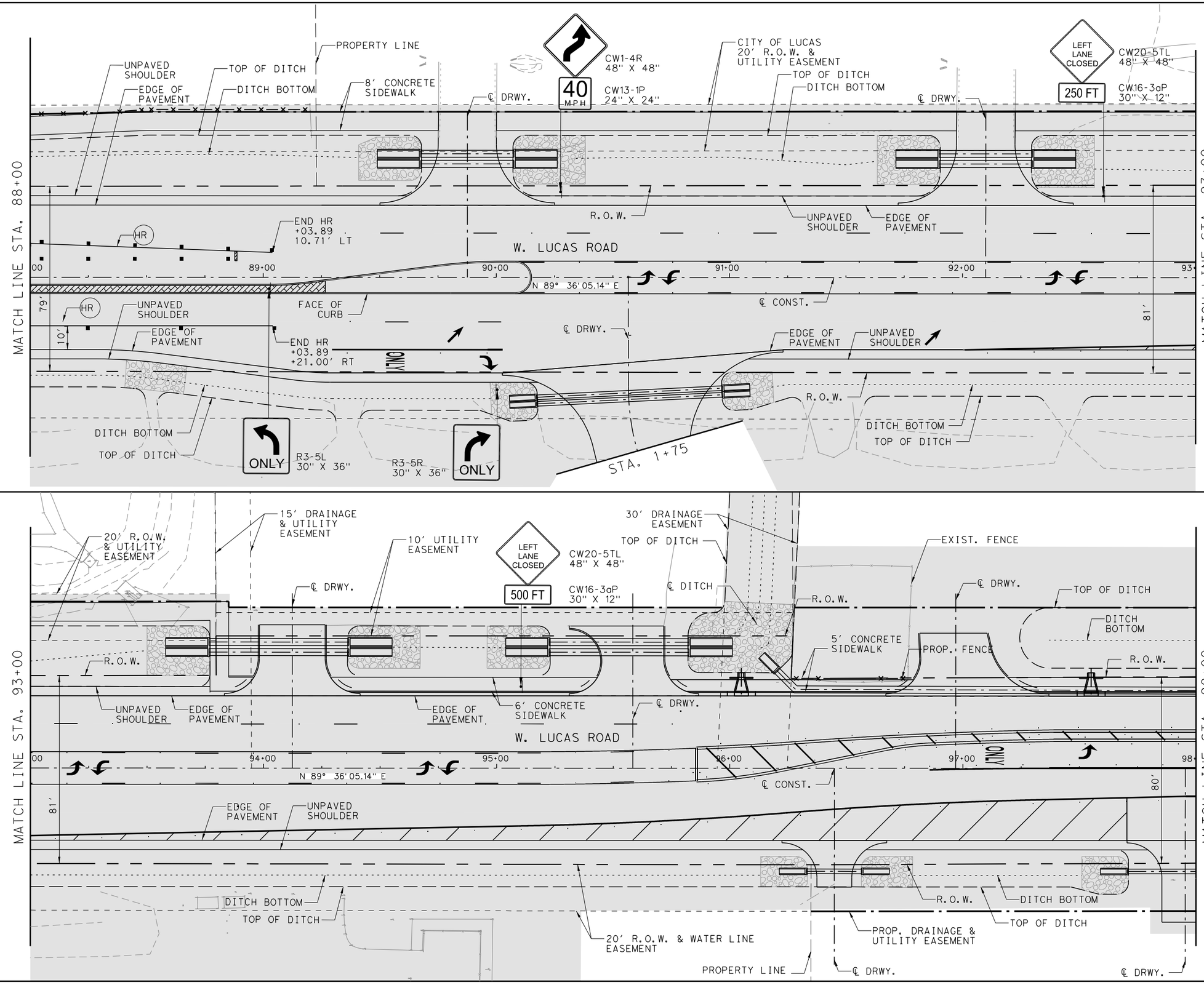
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	49
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_08.dgn



0 10 40
Feet

NOTES:

1. END TEMPORARY REMOVABLE PAVEMENT MARKINGS AT STA. 89+00.
2. BEGIN PERMANENT PAVEMENT MARKINGS FROM STA. 89+00 TO END OF THE PROJECT.
3. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

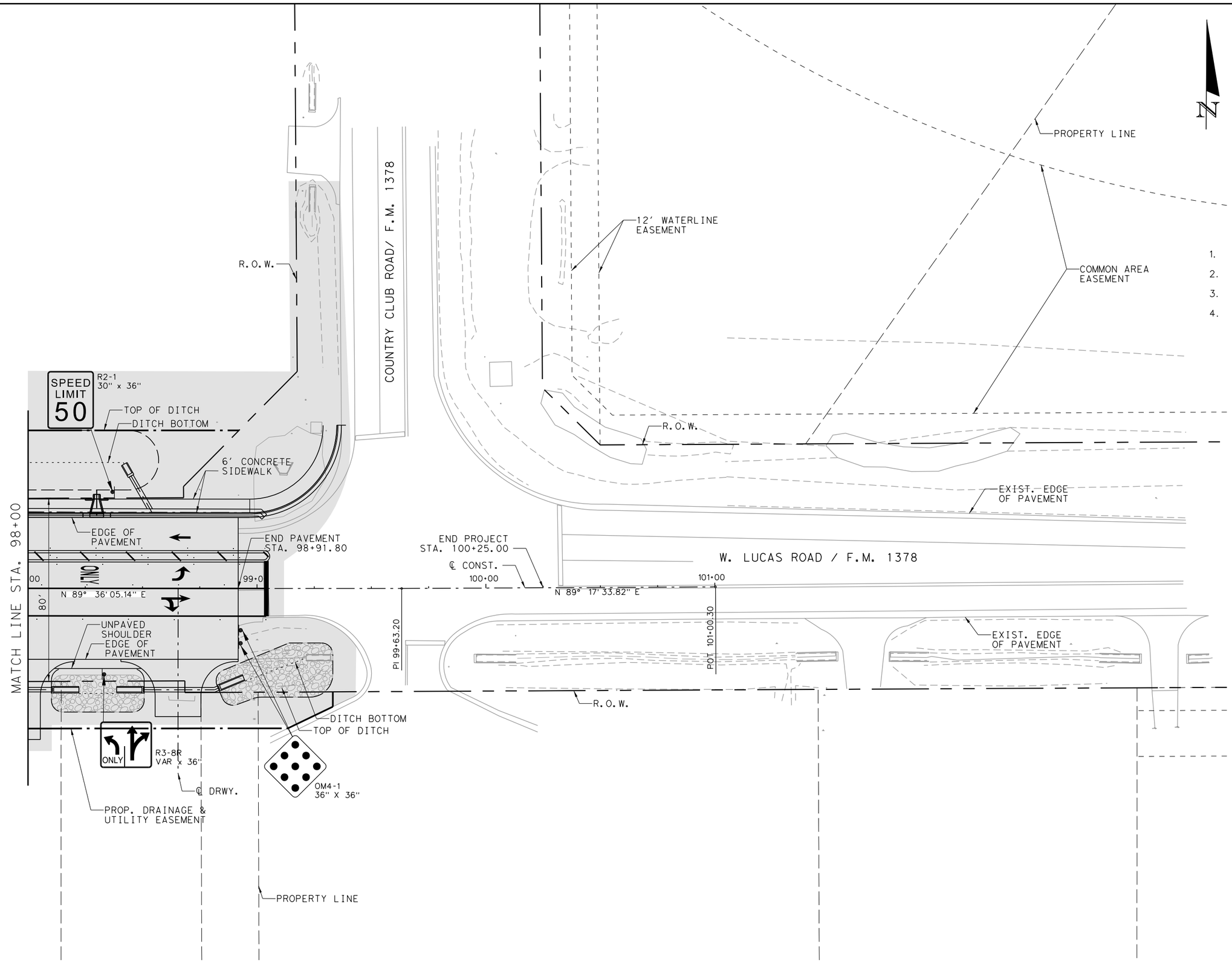
bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	50
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:03 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_09.dgn



NOTES:

1. FOR SIGNAL PHASING, COORDINATE WITH TXDOT.
2. ANY CONFLICTING SIGN MUST BE REMOVED OR COVERED.
3. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
4. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKINGS DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 4

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	51
COUNTY		
COLLIN		

DATE: 4/6/2026 1:52:04 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH4_10.dgn

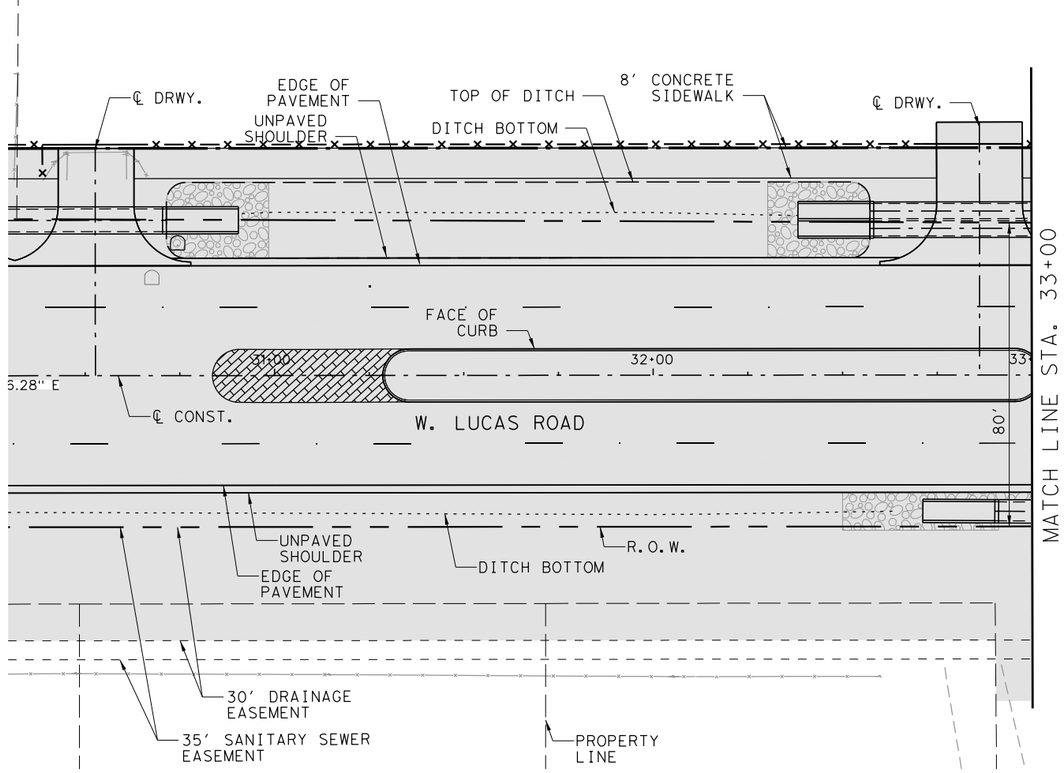
Texas 811 Know what's below. Call before you dig.

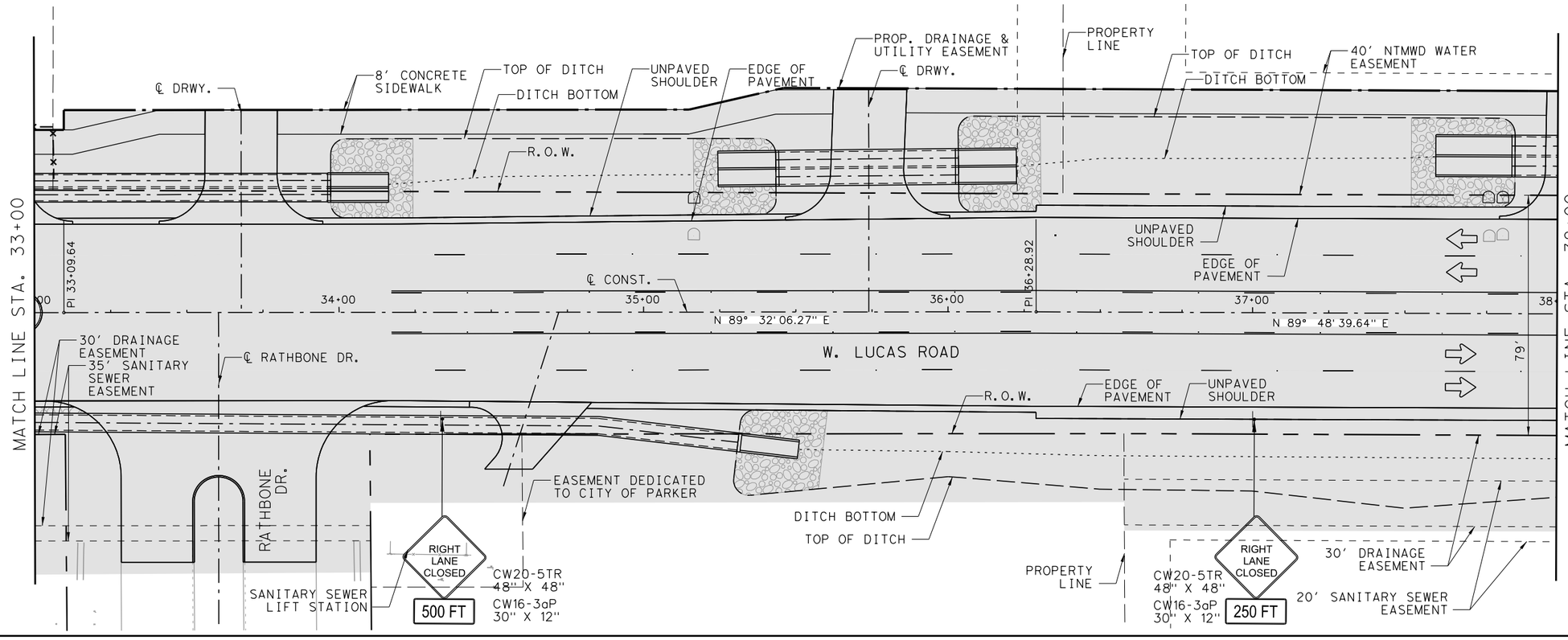
WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	(A)	(B)	(BR)
(W) (24") (SLD)	(C)		
(W) (6") (BROKEN)	(E)		
(Y) (6") (SLD)	(G)	(H)	(HR)
(Y) (6") (BROKEN)	(K)	(J)	(JR)
(Y) (6") (SLD) (DOUBLE)	(I)		
R.P.M TYPE II-A-A @ 40' C-C		(L)	

LEGEND:

- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT REMOVAL





0 10 40
Feet

N

LEGEND:

- DIRECTION OF TRAFFIC
- PAVEMENT MARKINGS
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES
- CONCRETE SAFETY BARRIERS (F-SHAPED)

GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING:

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 5

SHEET 1 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

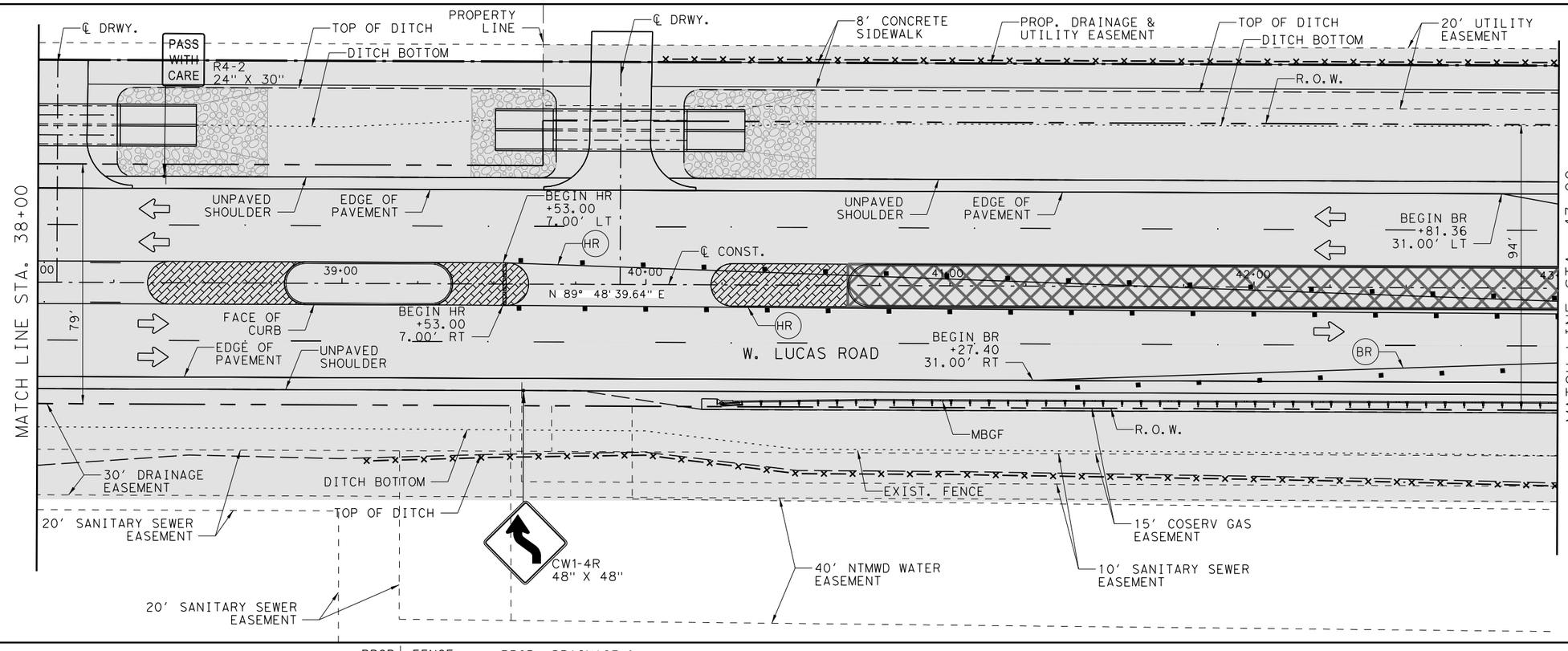
bc engineering
a PARSONS Company

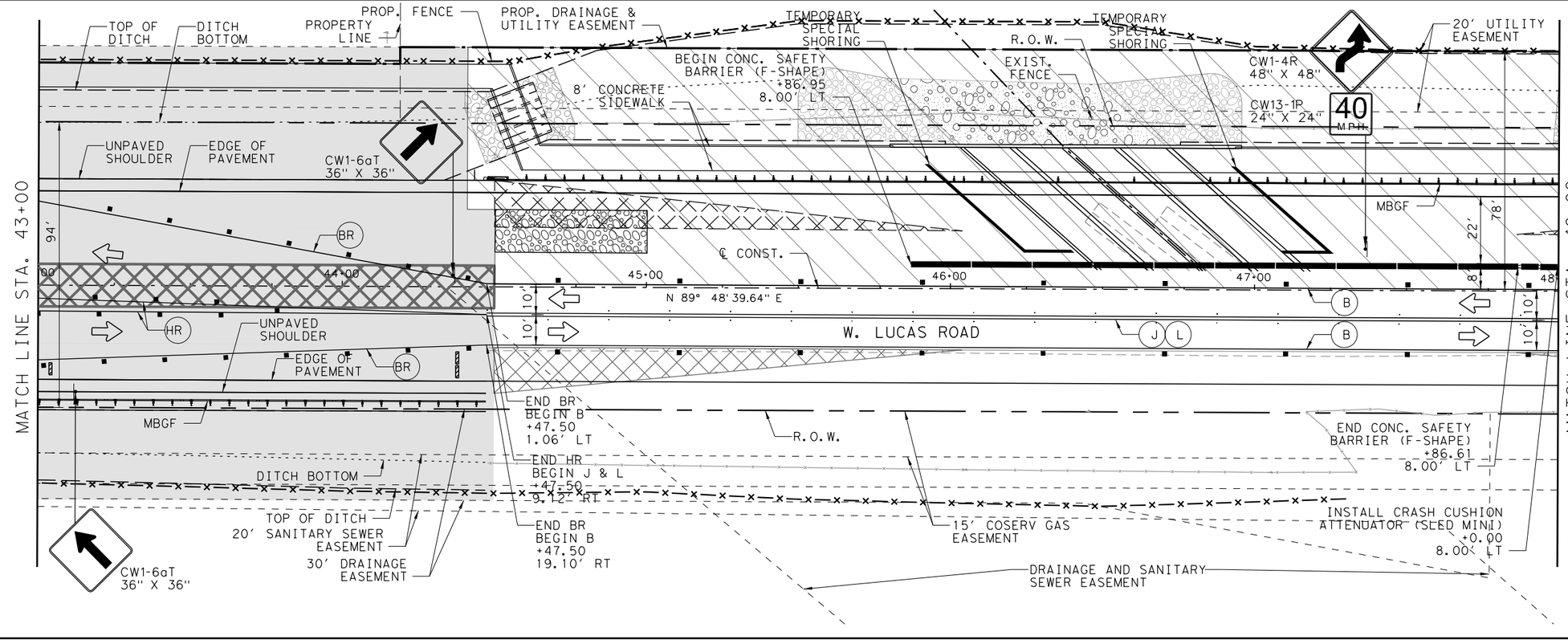
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	52
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH5_03.dgn





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 5

SHEET 2 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

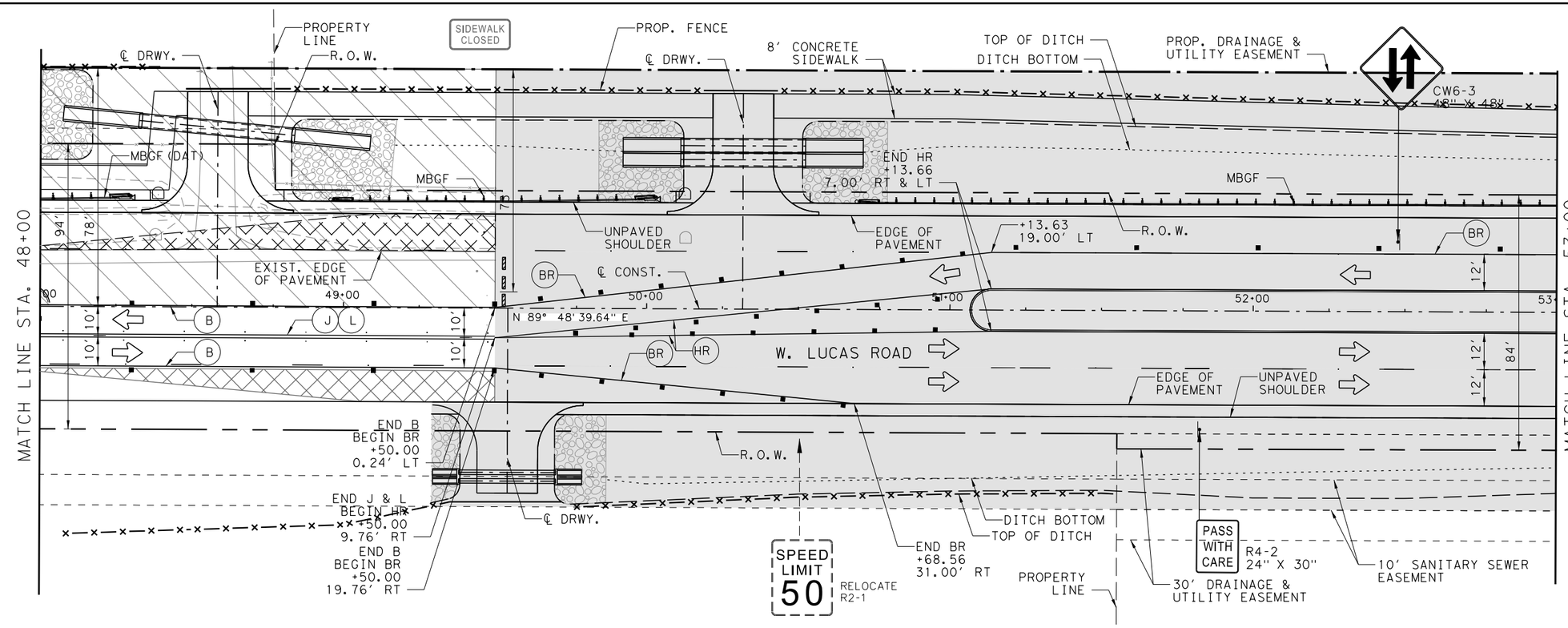
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	53
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH5_04.dgn



CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 5

SHEET 3 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

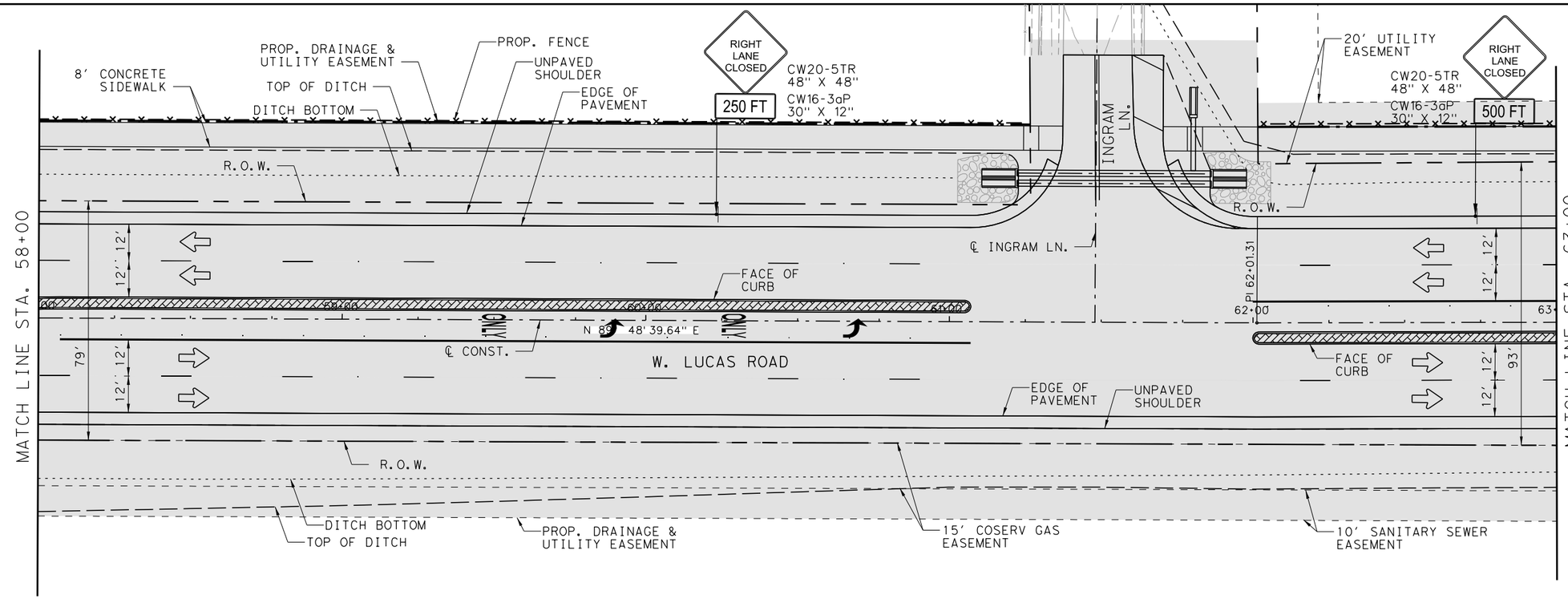
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	54
COUNTY		
COLLIN		

DATE: 4/6/2026 1:52:10 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH5_05.dgn

Texas811 Know what's below. Call before you dig.



NOTES:

1. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
2. REFER TO SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 5

SHEET 4 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	55
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

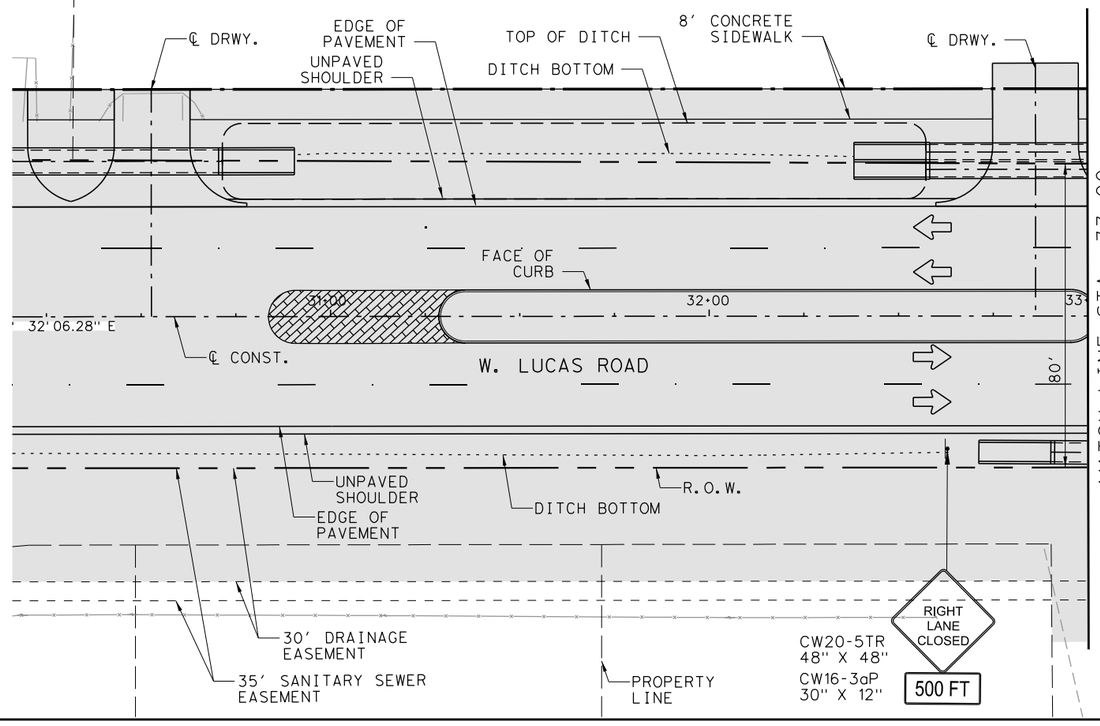
DATE: 4/6/2026 1:52:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH5_06.dgn

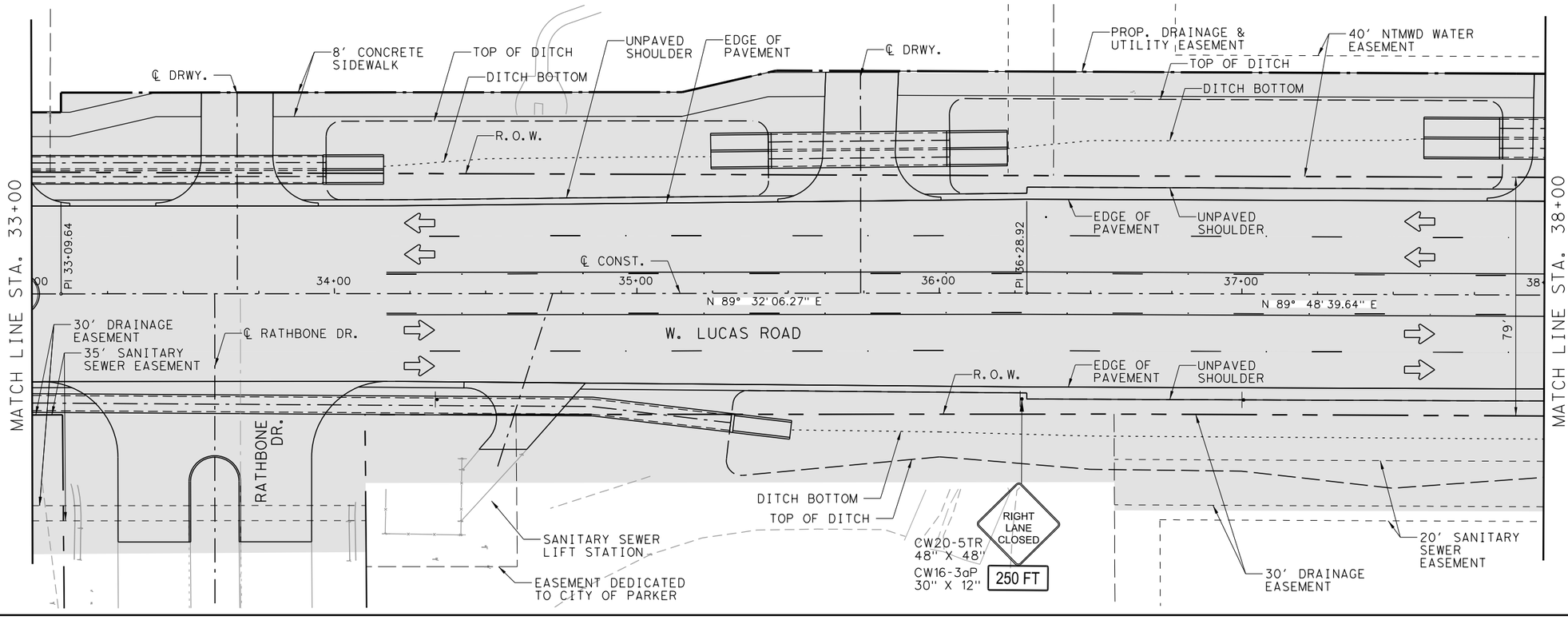
WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	(A)	(B)	(BR)
(W) (24") (SLD)	(C)		
(W) (6") (BROKEN)	(E)		
(Y) (6") (SLD)	(G)	(H)	(HR)
(Y) (6") (BROKEN)	(K)	(J)	(JR)
(Y) (6") (SLD) (DOUBLE)	(I)		
R.P.M TYPE II-A-A @ 40' C-C		(L)	

LEGEND:

- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT REMOVAL





0 10 40
Feet

LEGEND:

- DIRECTION OF TRAFFIC
- PAVEMENT MARKINGS
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES
- CONCRETE SAFETY BARRIERS (F-SHAPED)

GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING:

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 6

SHEET 1 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

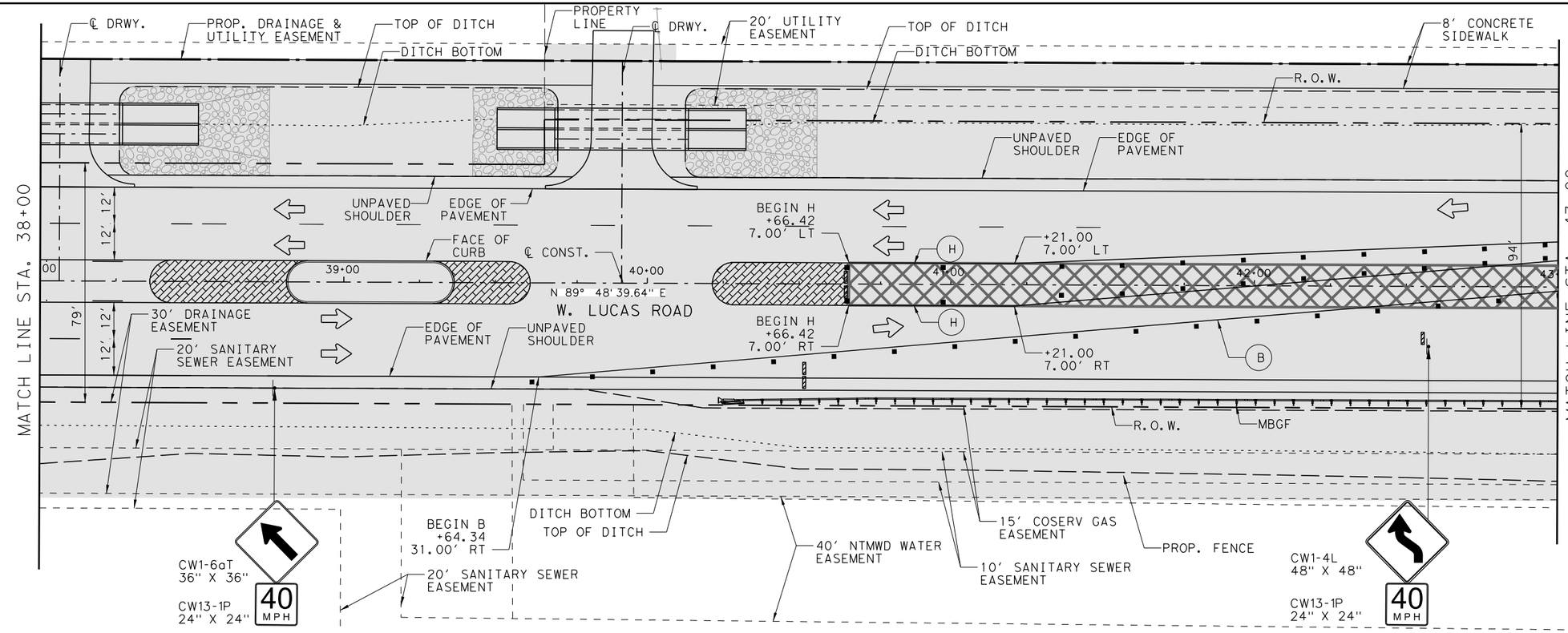
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		56
COLLIN		

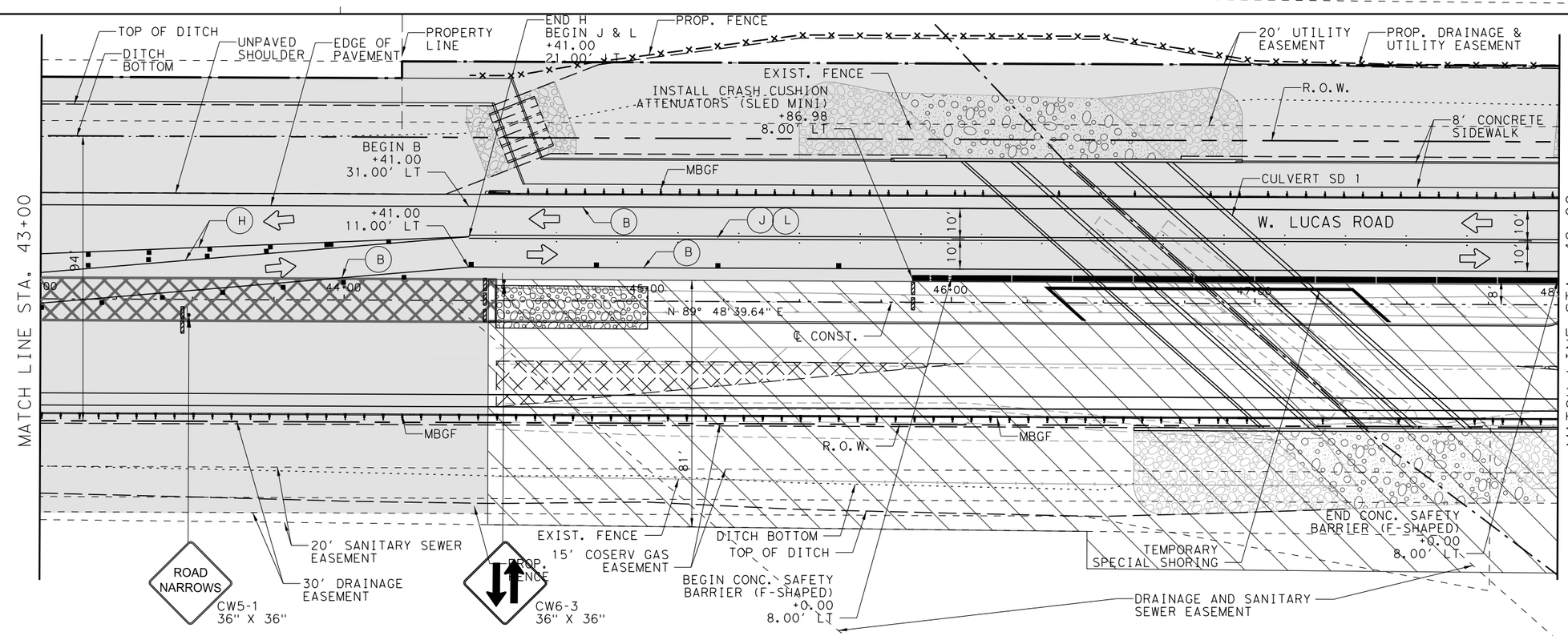
DATE: 4/6/2026 1:52:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH6_03.dgn

Texas811 Know what's below. Call before you dig.



NOTES:

1. END PAVEMENT MARKINGS AND BEGIN TEMPORARY REMOVABLE PAVEMENTMARKINGS AT STA. 39+50.
2. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 6

SHEET 2 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

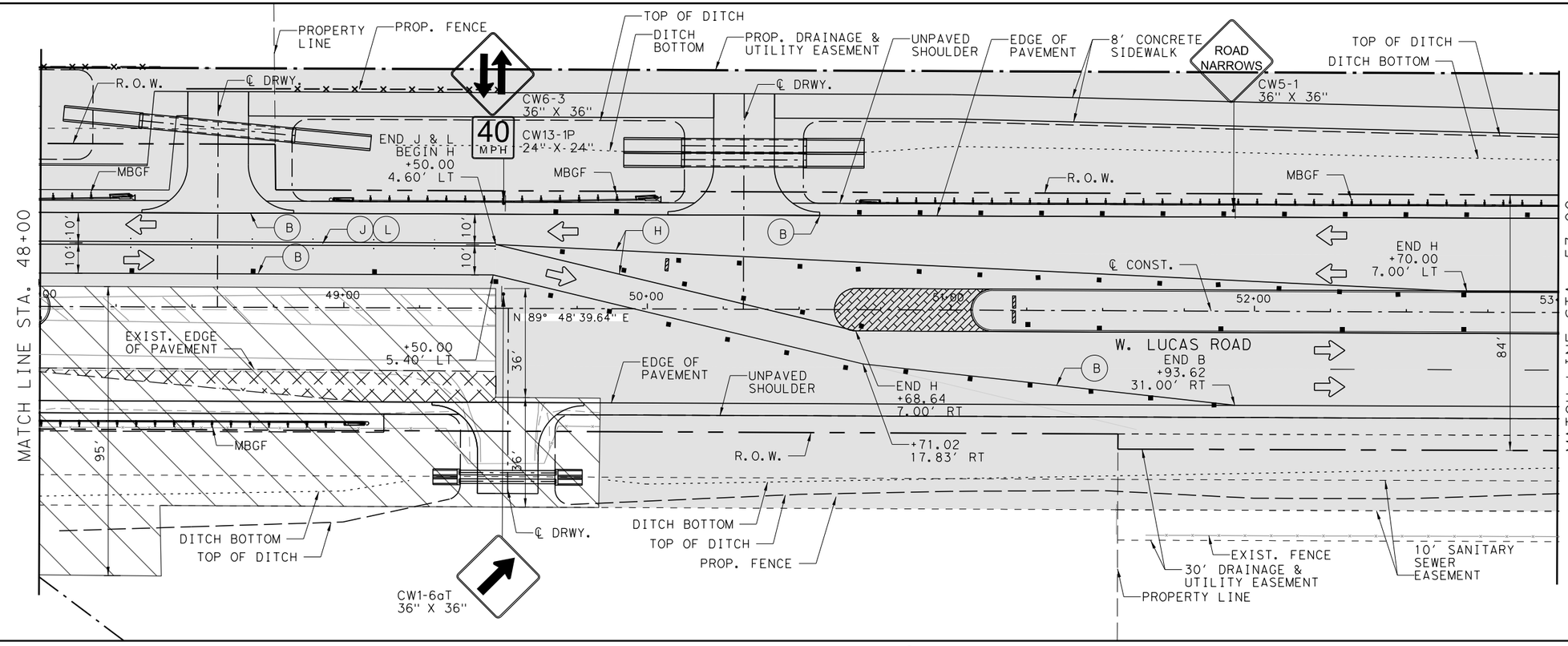
bcc engineering
a PARSONS Company

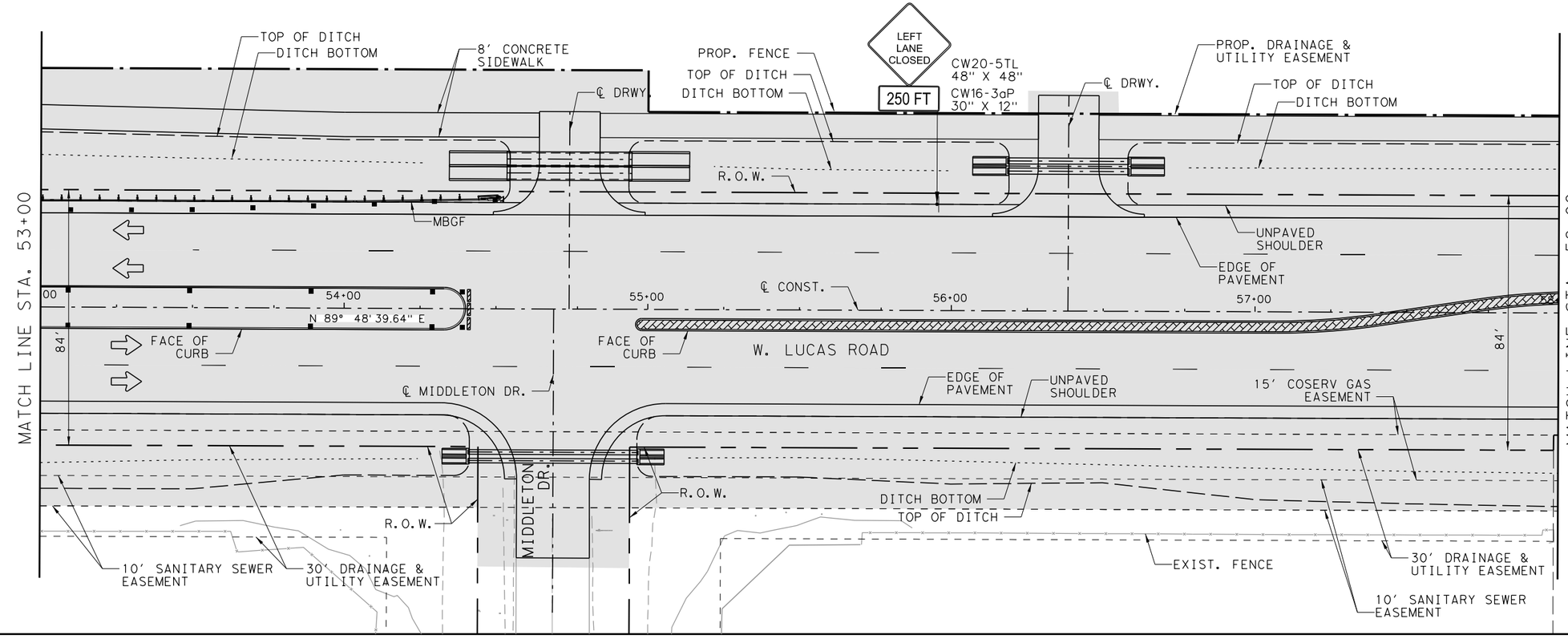
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	57
COUNTY	COLLIN	

DATE: 4/6/2026 1:52:15 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH6_04.dgn

Texas 811 Know what's below. Call before you dig.





NOTES:

1. END TEMPORARY REMOVABLE PAVEMENT MARKINGS AND BEGIN PERMANENT PAVEMENT MARKINGS AT STA. 52+00.
2. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.

CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 6

SHEET 3 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

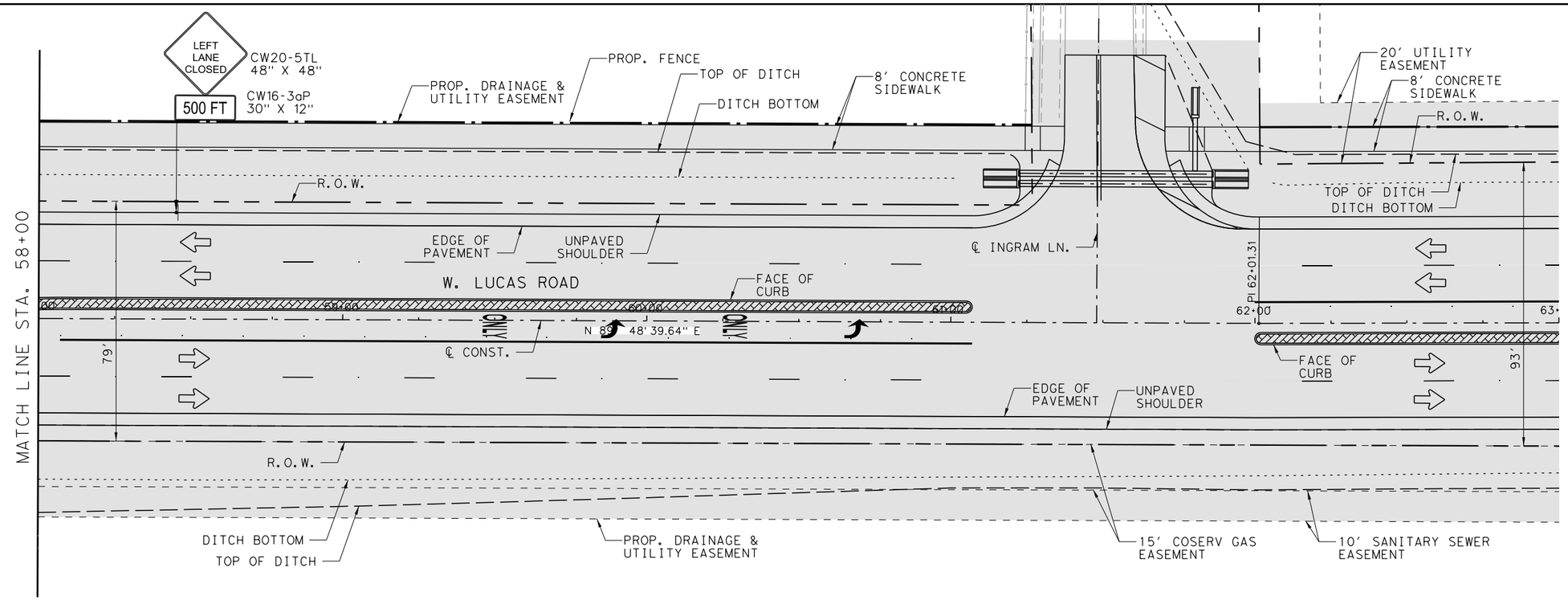
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		58
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:16 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH6_05.dgn



NOTES:

1. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
2. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 6

SHEET 4 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	59
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

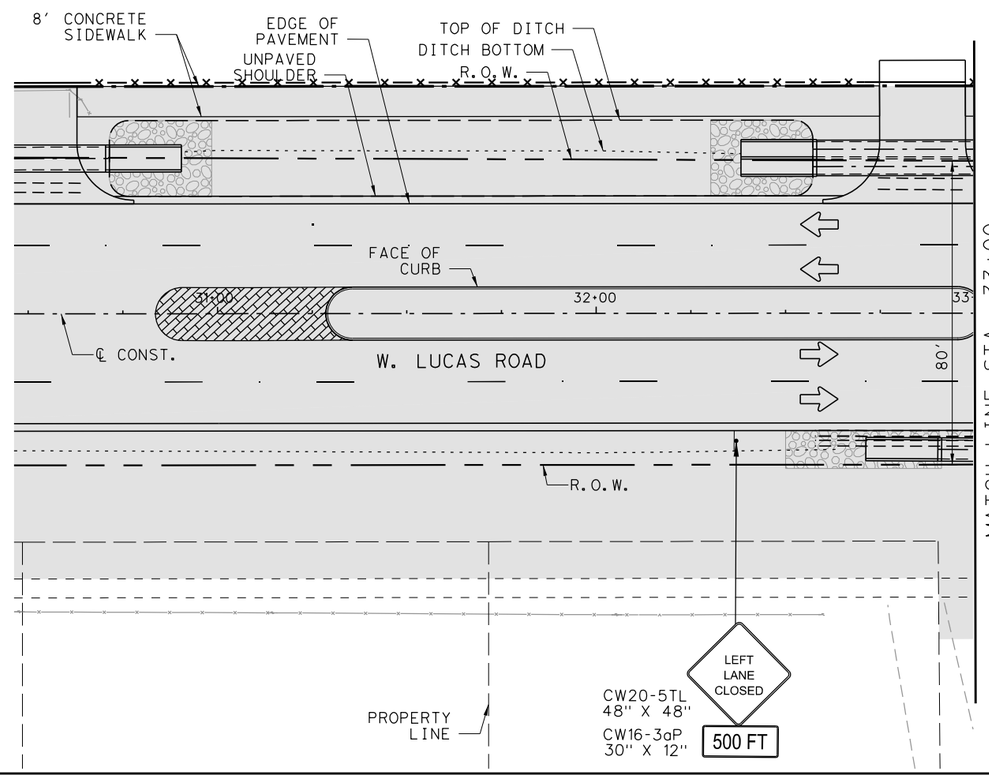
DATE: 4/6/2026 1:52:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH6_06.dgn

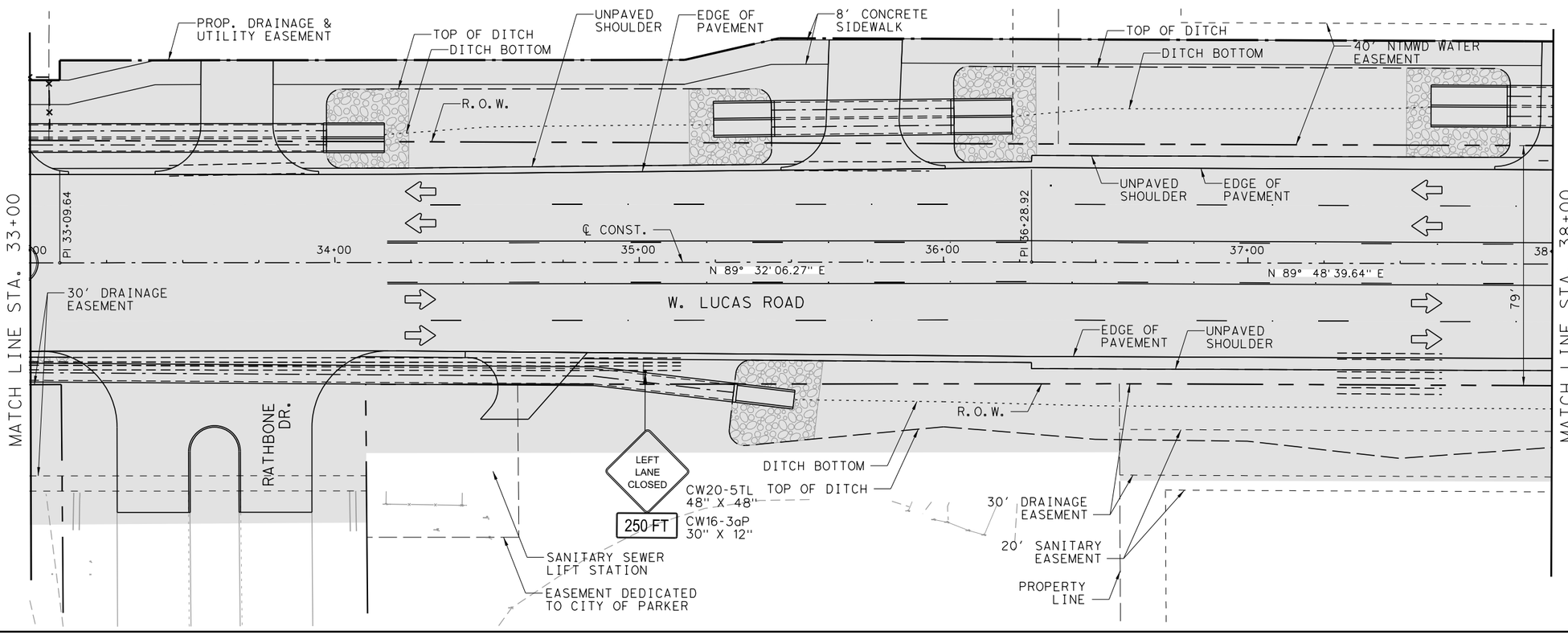
WORK ZONE PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE	EXIST. TO REMAIN	TEMPORARY	REMOVABLE
(W) (6") (SLD)	(A)	(B)	(BR)
(W) (24") (SLD)	(C)		
(W) (6") (BROKEN)	(E)		
(Y) (6") (SLD)	(G)	(H)	(HR)
(Y) (6") (BROKEN)	(K)	(J)	(JR)
(Y) (6") (SLD) (DOUBLE)	(I)		
R.P.M TYPE II-A-A @ 40' C-C		(L)	

LEGEND:

- PROPOSED CONSTRUCTION WORK ZONE - THIS PHASE
- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY CONSTRUCTION EXIT/ENTRANCE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT REMOVAL





0 10 40
Feet

LEGEND:

- DIRECTION OF TRAFFIC
- PAVEMENT MARKINGS
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES

GENERAL NOTES:

1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. APPLY LEGEND AND SYMBOLS FROM THIS SHEET TO ALL SHEETS IN THIS PHASE.
3. CHANNELIZING DEVICE SPACING;

   STRAIGHT LINE - 40'
   TAPERED LINE - 20'
   CURVED LINE - 10'

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 7

SHEET 1 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

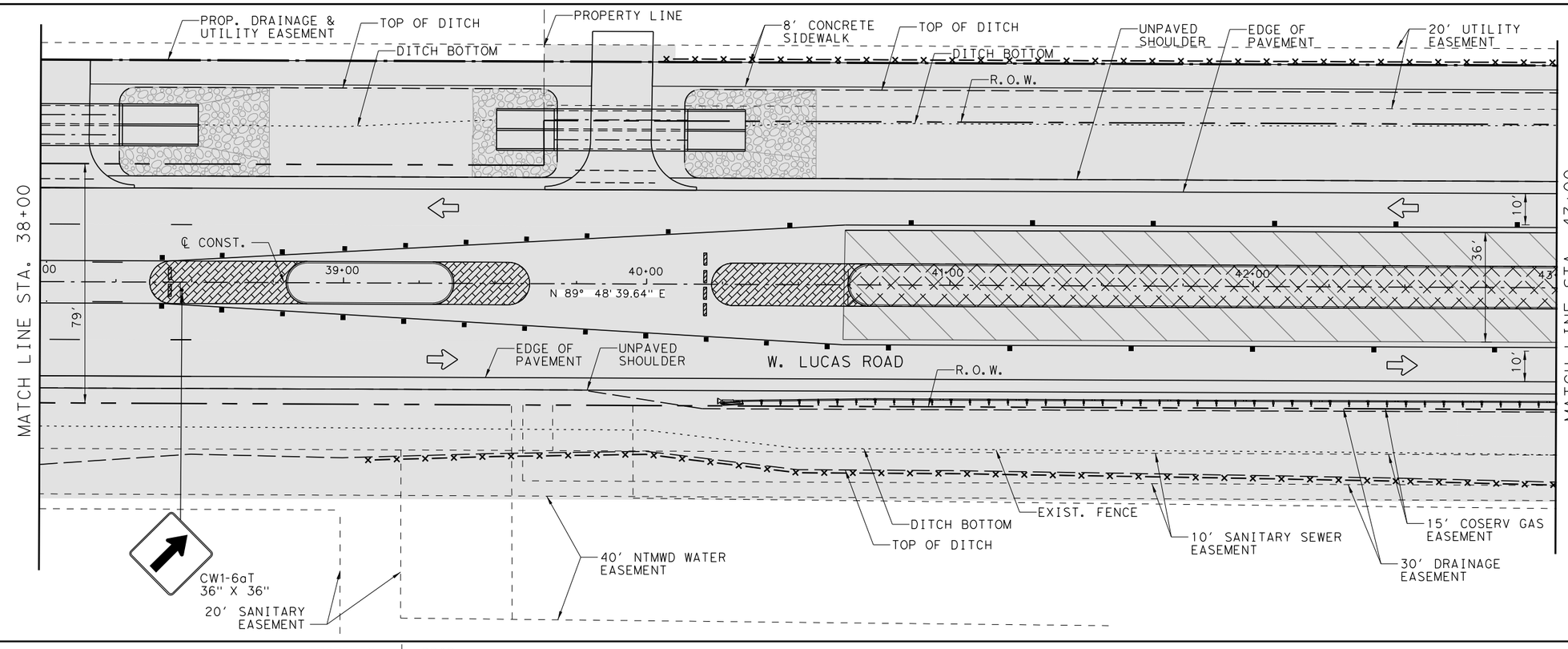
bc engineering
a PARSONS Company

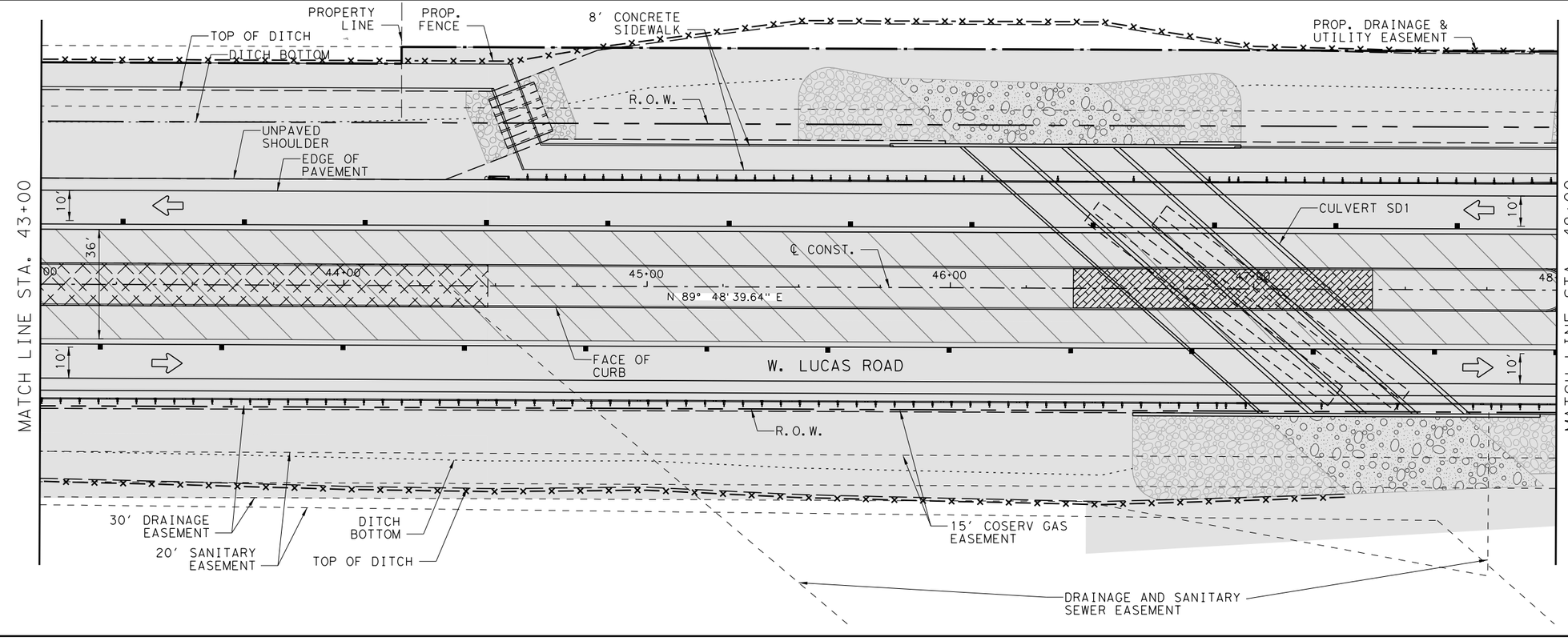
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	60
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:19 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH7_03.dgn





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 7

SHEET 2 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

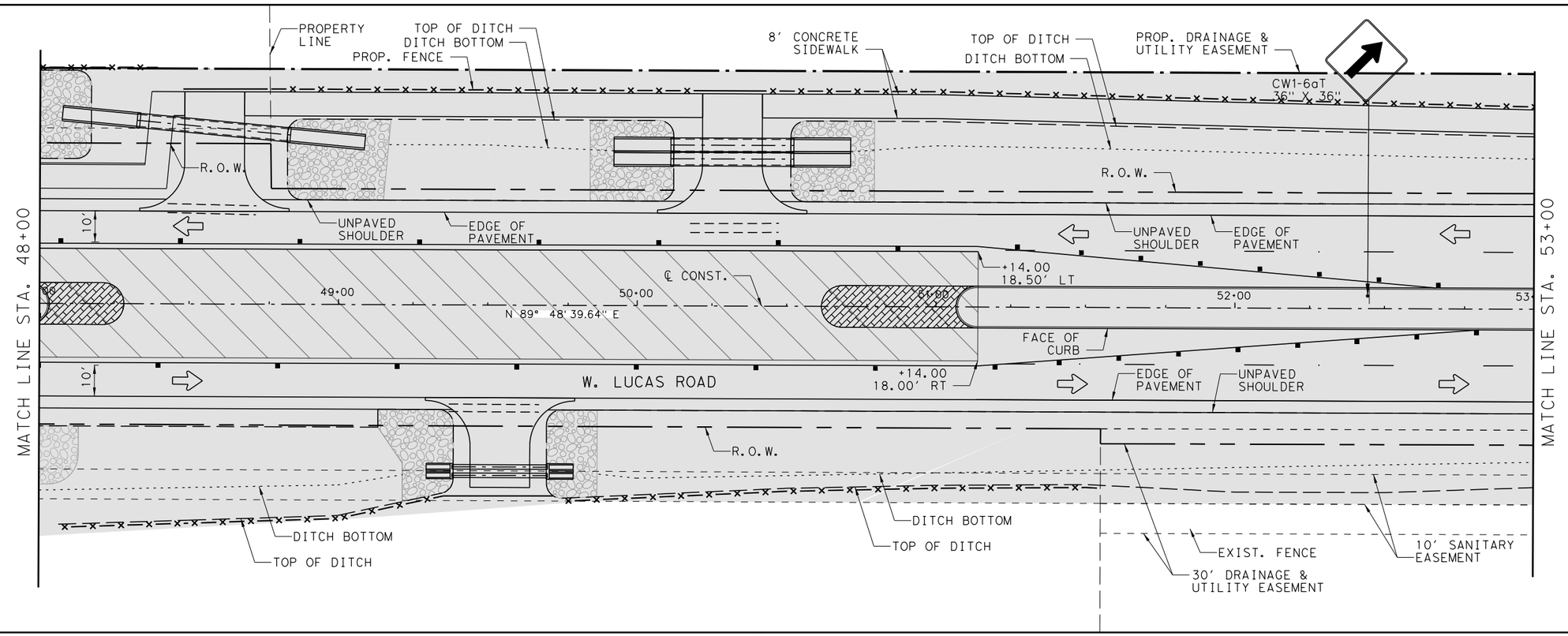
bc engineering
a PARSONS Company

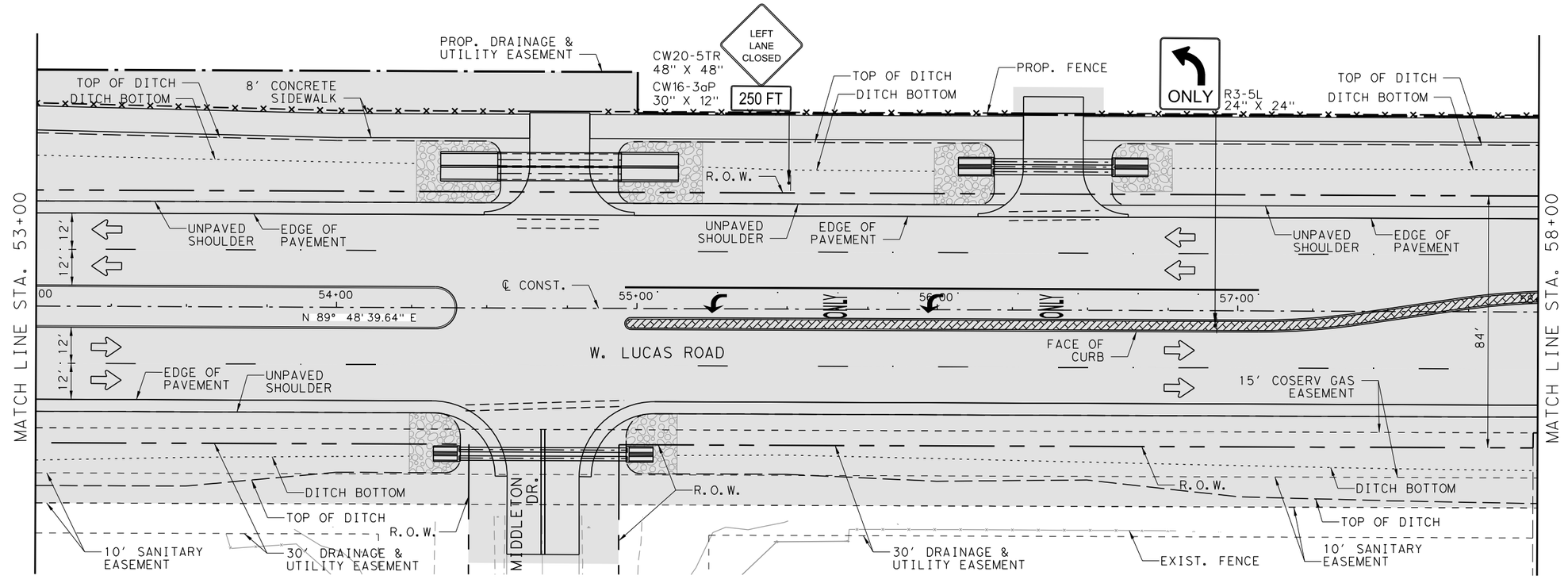
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	61
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:21 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH7_04.dgn





0 10 40
Feet

NOTES:

1. END TEMPORARY REMOVABLE PAVEMENT MARKINGS AND BEGIN PERMANENT PAVEMENT MARKINGS AT STA. 52+75
2. SEE PAVEMENT MARKING AND SIGNING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 7

SHEET 3 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

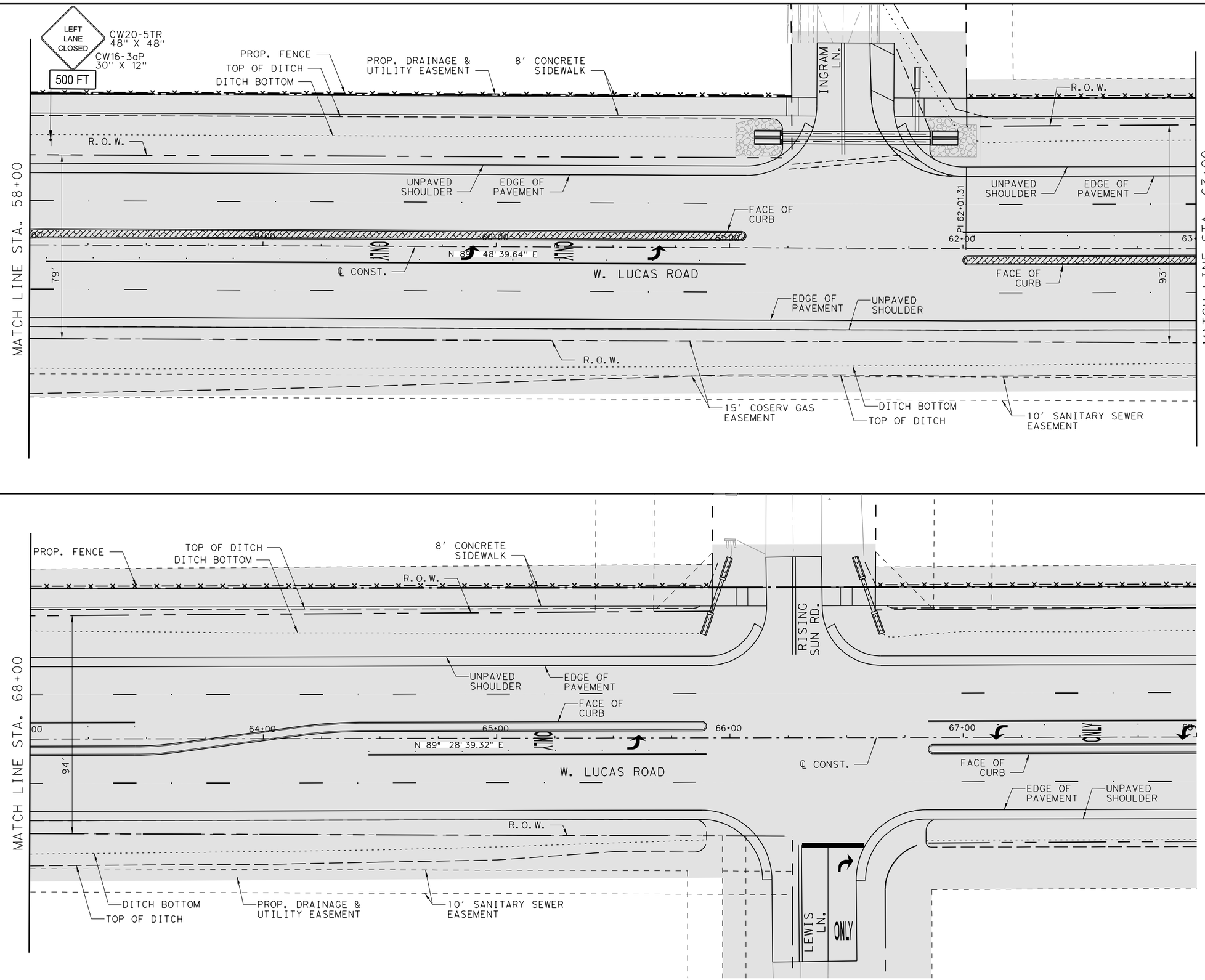
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		62
COLLIN		

DATE: 4/6/2026 1:52:22 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH7_05.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. PAVEMENT MARKINGS SHOWN ARE PERMANENT PAVEMENT MARKINGS.
2. SEE SIGNING & PAVEMENT MARKING SHEETS FOR PERMANENT PAVEMENT MARKING DETAILS.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TEMPORARY TRAFFIC CONTROL PLAN PHASE 7

SHEET 4 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	63
COUNTY		
COLLIN		

DATE: 4/6/2026 1:52:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_PH7_06.dgn

Texas 811 Know what's below. Call before you dig.

LEGEND:

- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT REMOVAL
- PROPOSED CONSTRUCTION THIS PHASE
- CONSTRUCTED PREVIOUS PHASE
- DIRECTION OF TRAFFIC
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES
- FLAG
- CONCRETE SAFETY BARRIERS (F-SHAPED)

(SA) STOP — R1-1, 30" X 30"

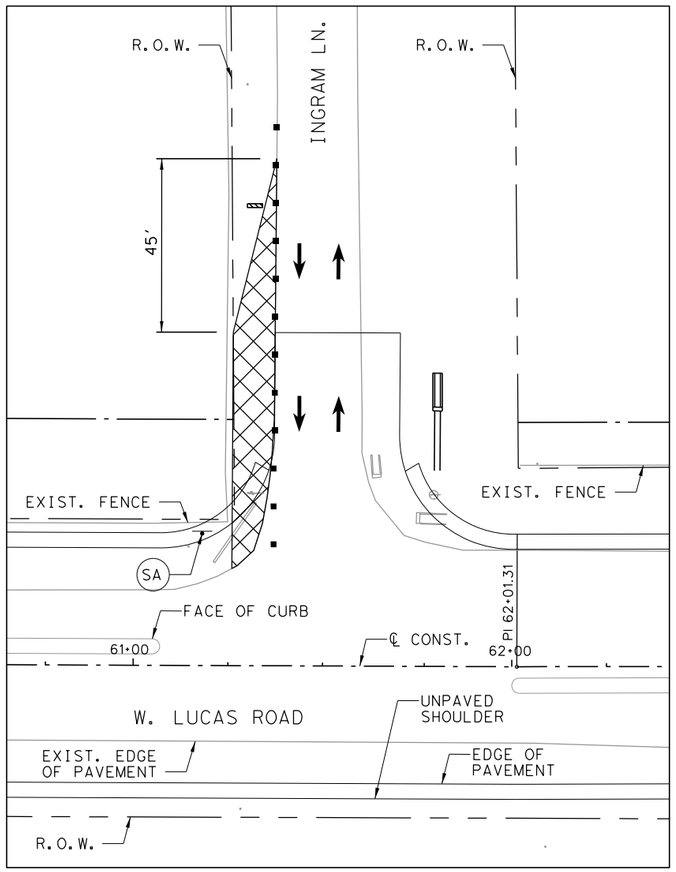
(SC) CW1-3 (L OR R), 36" X 36"; 20 MPH — CW13-1P, 24" X 24"

0 10 40 Feet

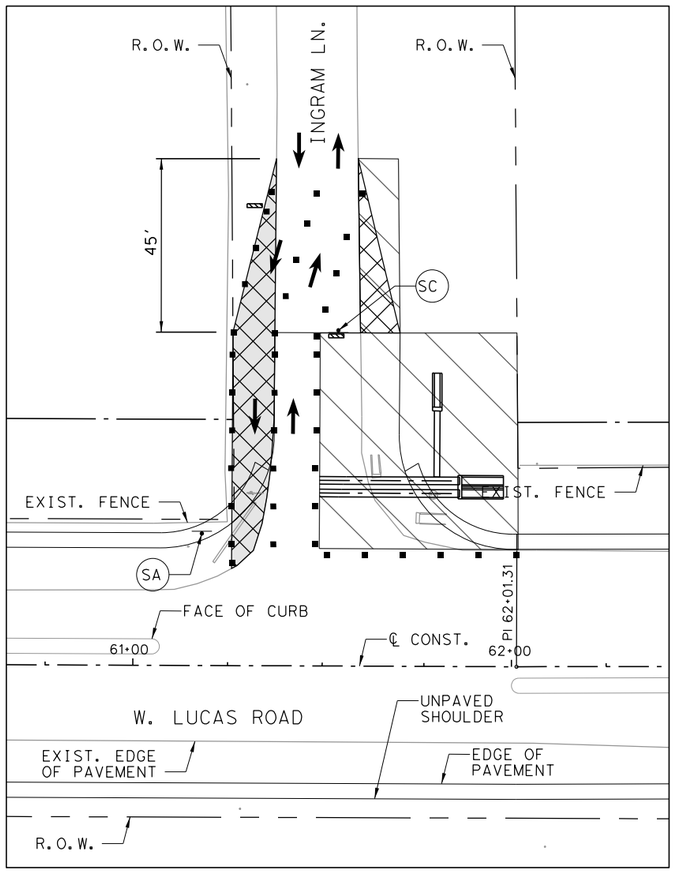
N

NOTES:

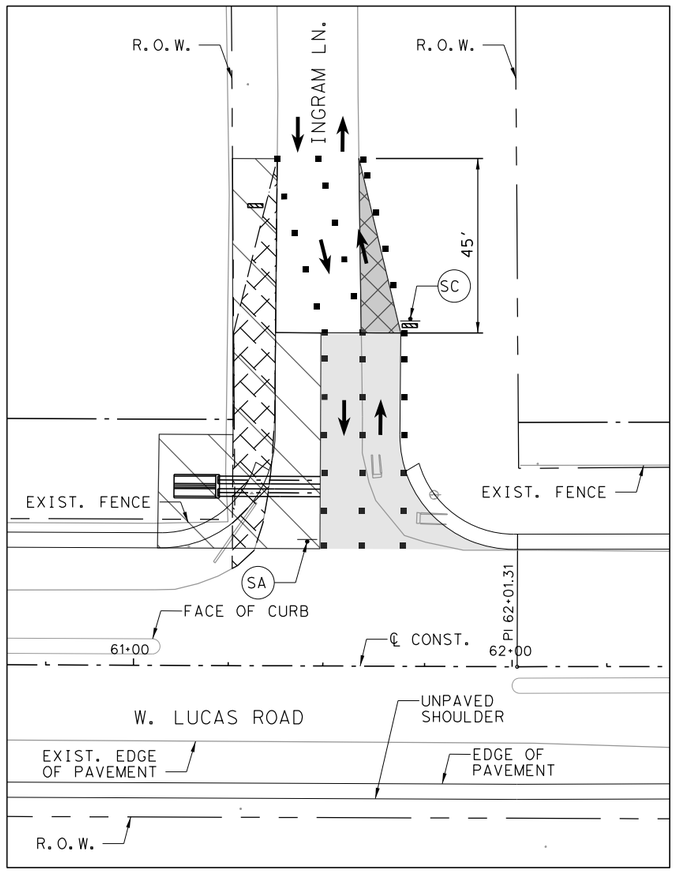
1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. CHANNELIZING DEVICE SPACING IS 10'.
3. DETAIL SHOWN FOR INGRAM LN. SIMILAR DETAIL APPLICABLE TO LEWIS LN.
4. USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) IN THE CENTER.



STAGE-1



STAGE-2



STAGE-3

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TTC INTERSECTION DETAILS

SHEET 1 OF 2

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	64
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:33 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_SUBPH_2.1_DETAILS.dgn

LEGEND:

- PROPOSED TEMPORARY ASPHALT PAVEMENT
- TEMPORARY ASPHALT PAVEMENT PLACED IN PREVIOUS PHASE
- TEMPORARY ASPHALT PAVEMENT REMOVAL
- PROPOSED CONSTRUCTION THIS PHASE
- CONSTRUCTED PREVIOUS PHASE
- DIRECTION OF TRAFFIC
- GROUND MOUNTED SIGN
- BARRICADES (TYPE III)
- CHANNELIZING DEVICES
- FLAG
- CONCRETE SAFETY BARRIERS (F-SHAPED)

(SA) STOP — R1-1, 30" X 30"

(SB) YIELD / TO ONCOMING TRAFFIC — R1-2, 42" X 42" X 42"; R1-2aP, 48" X 36"

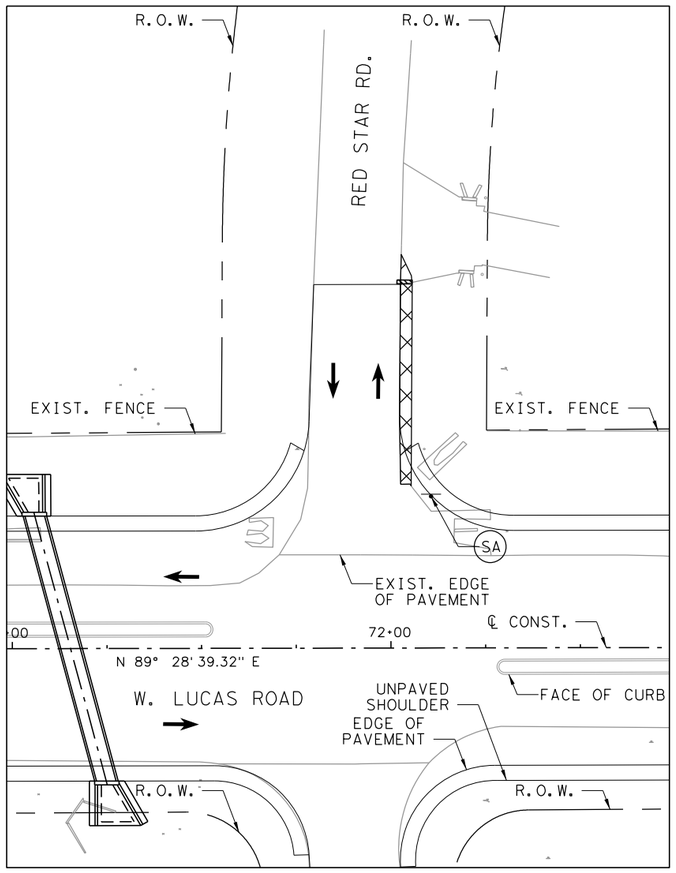
(SC) ONE LANE ROAD AHEAD — CW20-4D, 48" X 48"

N

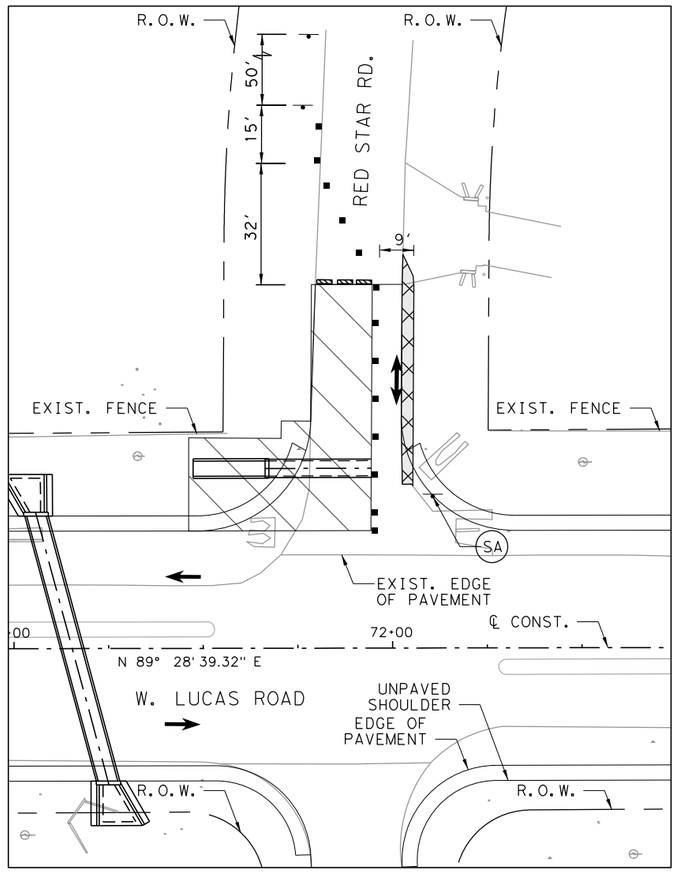
0 10 40
Feet

NOTES:

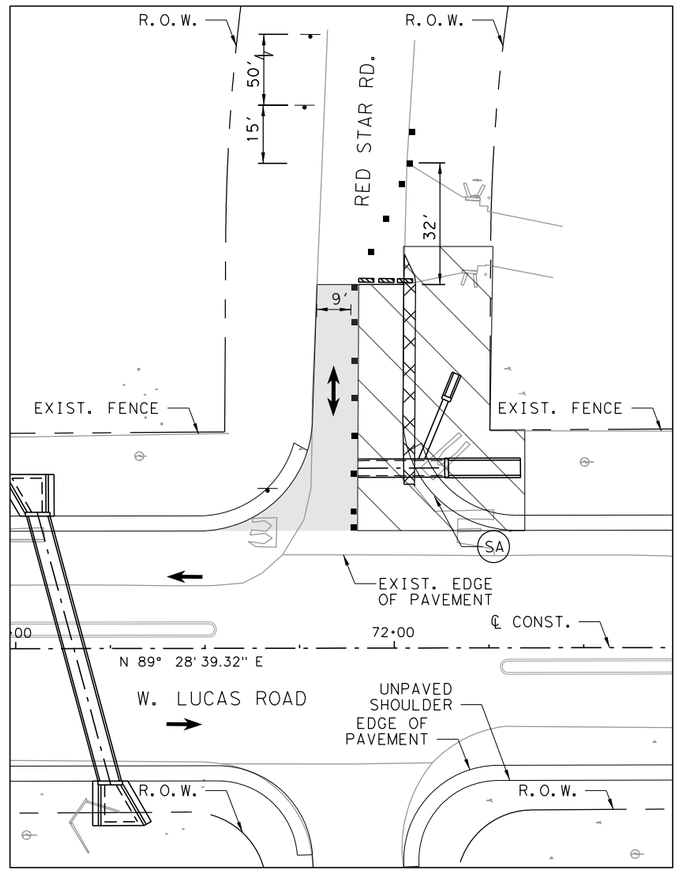
1. EXISTING UTILITIES NOT SHOWN FOR CLARITY.
2. CHANNELIZING DEVICE SPACING IS 10'.
3. DETAIL SHOWN FOR RED STAR RD. SIMILAR DETAIL ALSO APPLICABLE TO RISING SUN RD.
4. USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) IN THE CENTER.



STAGE-1



STAGE-2



STAGE-3

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TTC INTERSECTION DETAILS

SHEET 2 OF 2

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	65
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:52:35 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_SUBPH_2.2_DETAILS.dgn

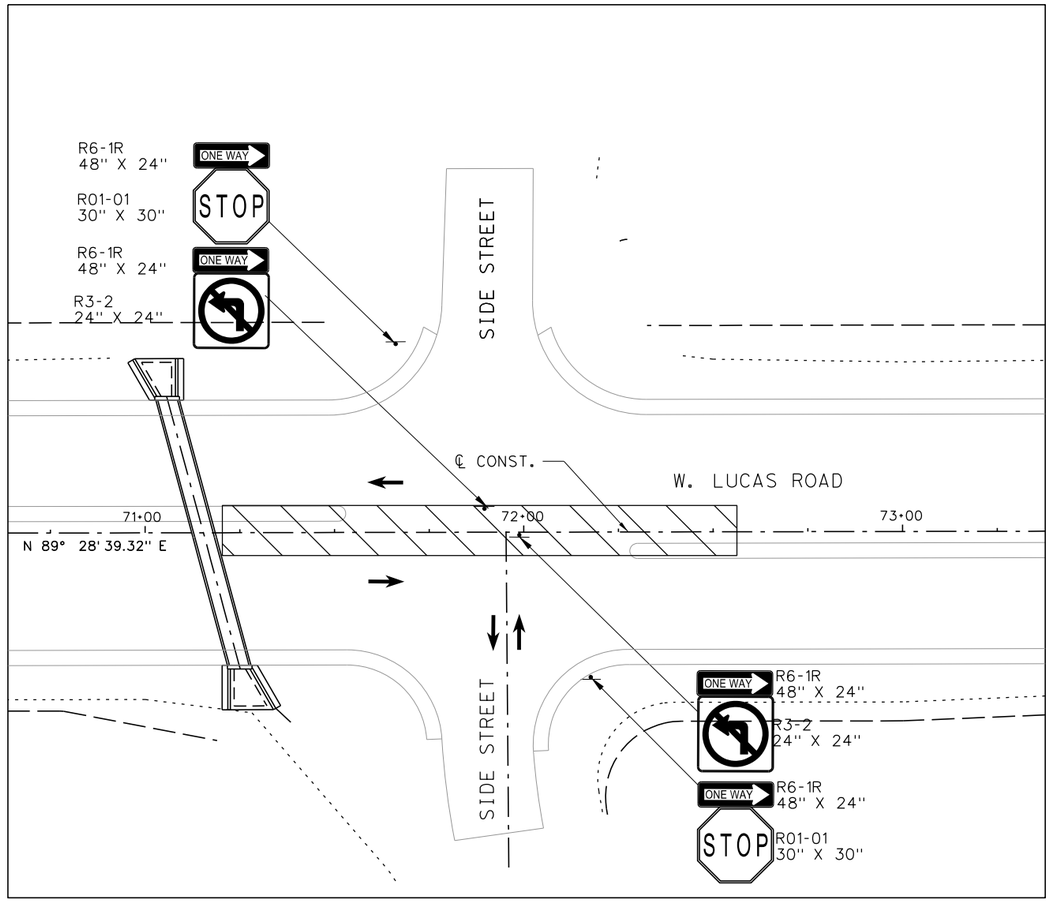
LEGEND:

WORK ZONE AREA

DIRECTION OF TRAFFIC

NOTES:

1. "NO TURN" DETAIL APPLICABLE TO ALL PHASES WHEN REQUIRED.
2. MUST MAINTAIN TRAFFIC FLOW AT BEE CAVES AND AT ALL TIMES.



0 10 40
Feet

N

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TTC
"NO LEFT"
DETAILS

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bec engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	66
	COUNTY	
	COLLIN	

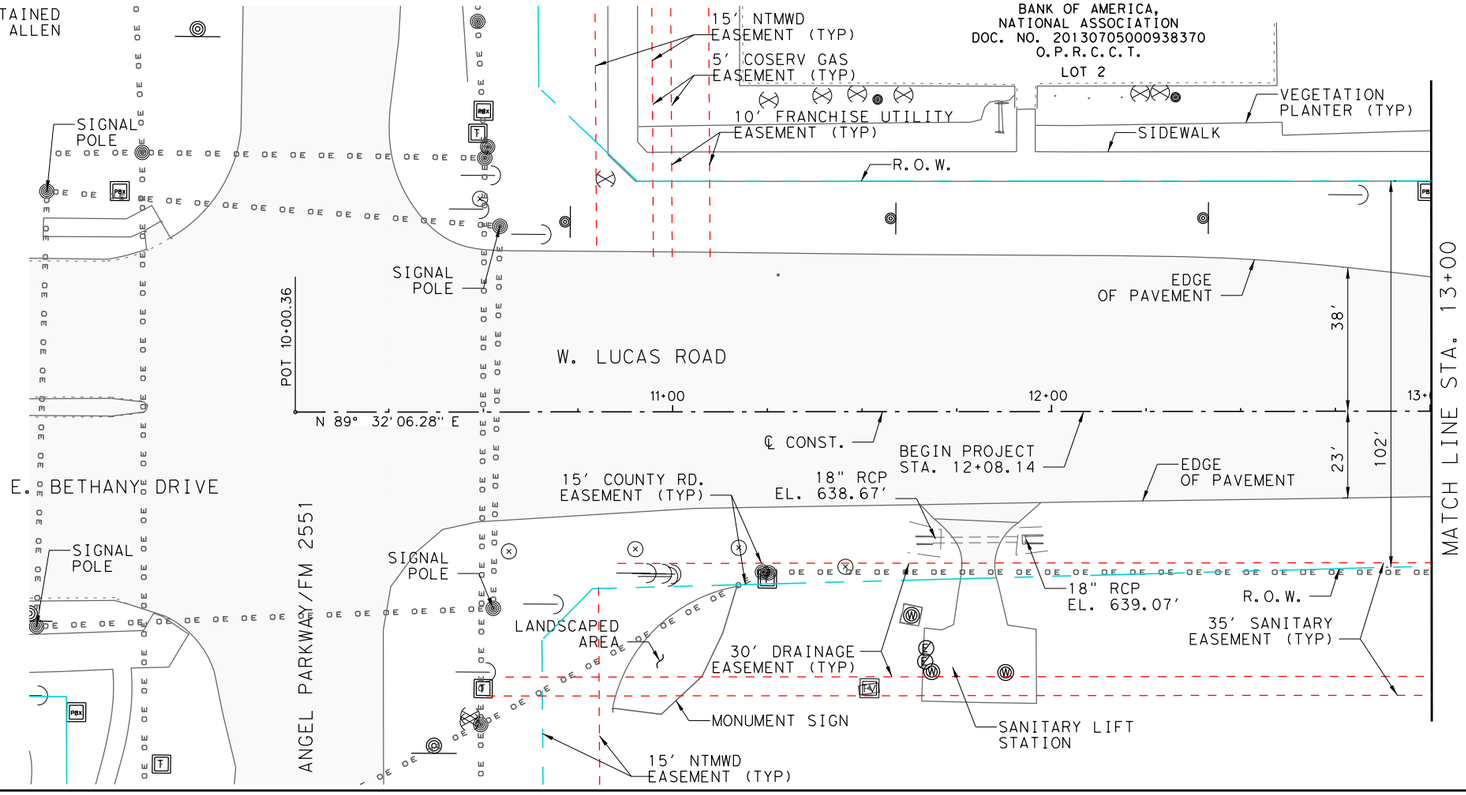
DATE: 4/6/2026 1:52:35 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\2. TCP\WLucas_TCP_SUBPH_2.3_DETAILS.dgn

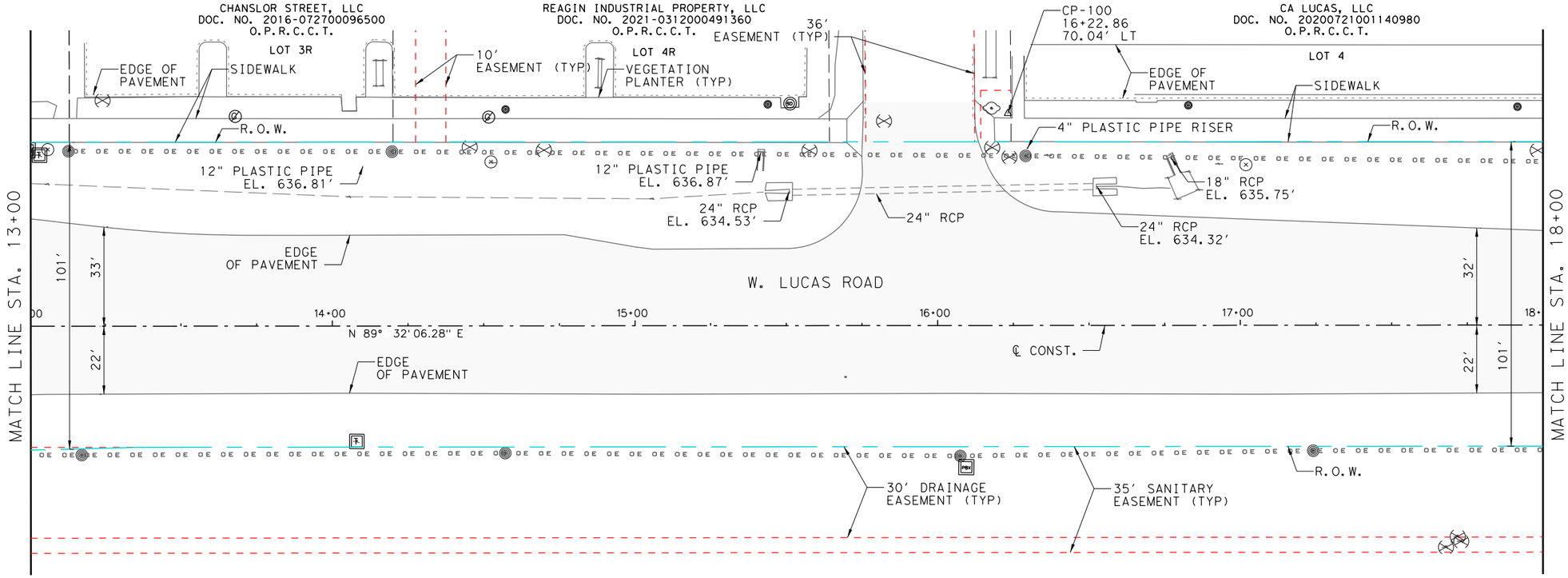
Texas811 Know what's below. Call before you dig.

LEGEND:

- SIGN & POST
- MAIL BOX
- POWER POLE
- LIGHT POLE
- TRAFFIC SIGNAL LIGHT
- FIRE HYDRANT
- WATER VALVE
- INT. CONTROL VALVE
- MARKER POST
- PLASTIC PIPE RISER
- ELECTRIC TRANSFORMER BOX
- TRAFFIC SIGNAL POWER BOX
- JUNCTION BOX
- ELEC. POWER BOX
- PULL BOX
- CABLE TV BOX
- TELEPHONE PEDESTAL
- ELEC. POWER PEDESTAL
- CABLE TV PEDESTAL
- TELEPHONE HANDHOLE
- FIBER OPTIC HANDHOLE
- STORM SEWER MANHOLE
- WASTE WATER MANHOLE
- TELEPHONE MANHOLE
- ELEC. MANHOLE
- FIBER OPTIC MANHOLE
- FIBER OPTIC VAULT
- GAS VENT
- GAS METER
- ELECTRIC METER
- WATER METER
- WATER VAULT
- TEST HOLE LOCATION
- DOWN GUY & ANCHOR
- PROPERTY LINE
- EXISTING PAVEMENT

**TRAFFIC SIGNAL MAINTAINED BY CITY OF ALLEN





0 10 40
Feet

NOTES:

1. EXISTING UNDERGROUND UTILITY LINES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

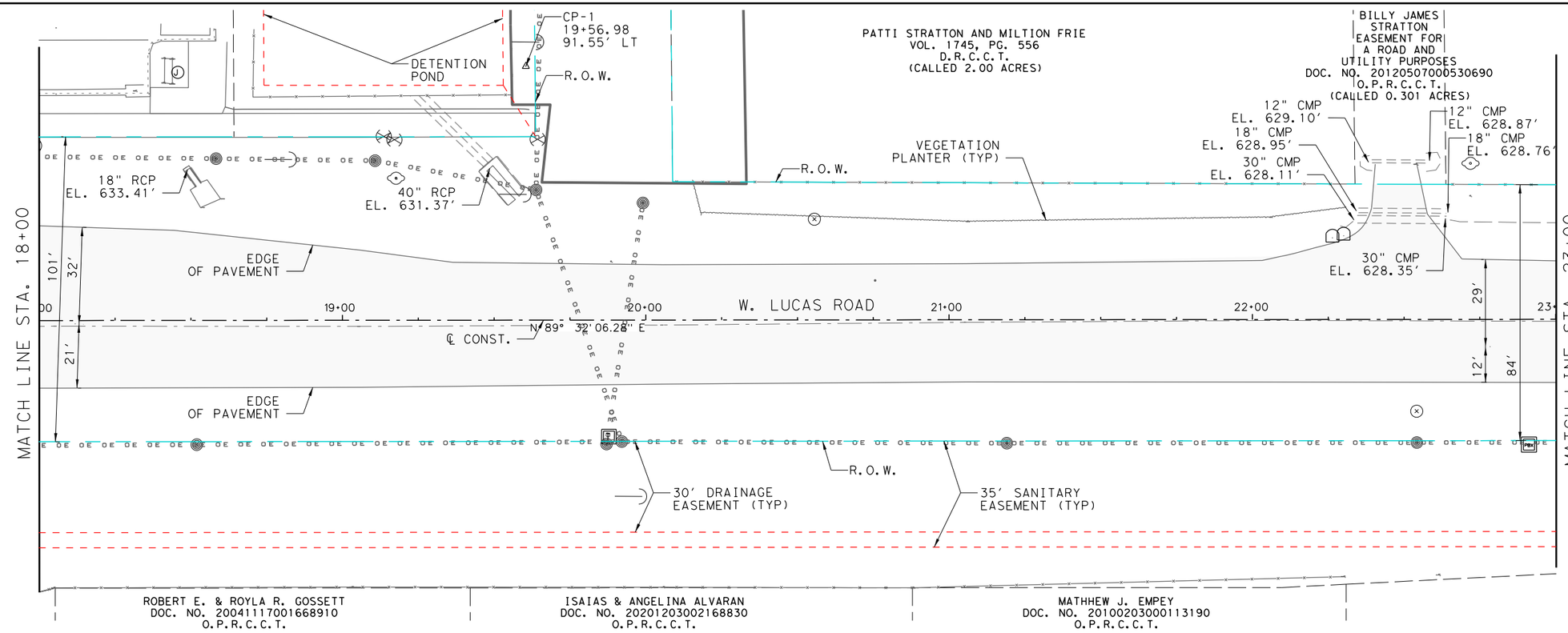
bc engineering
a PARSONS Company

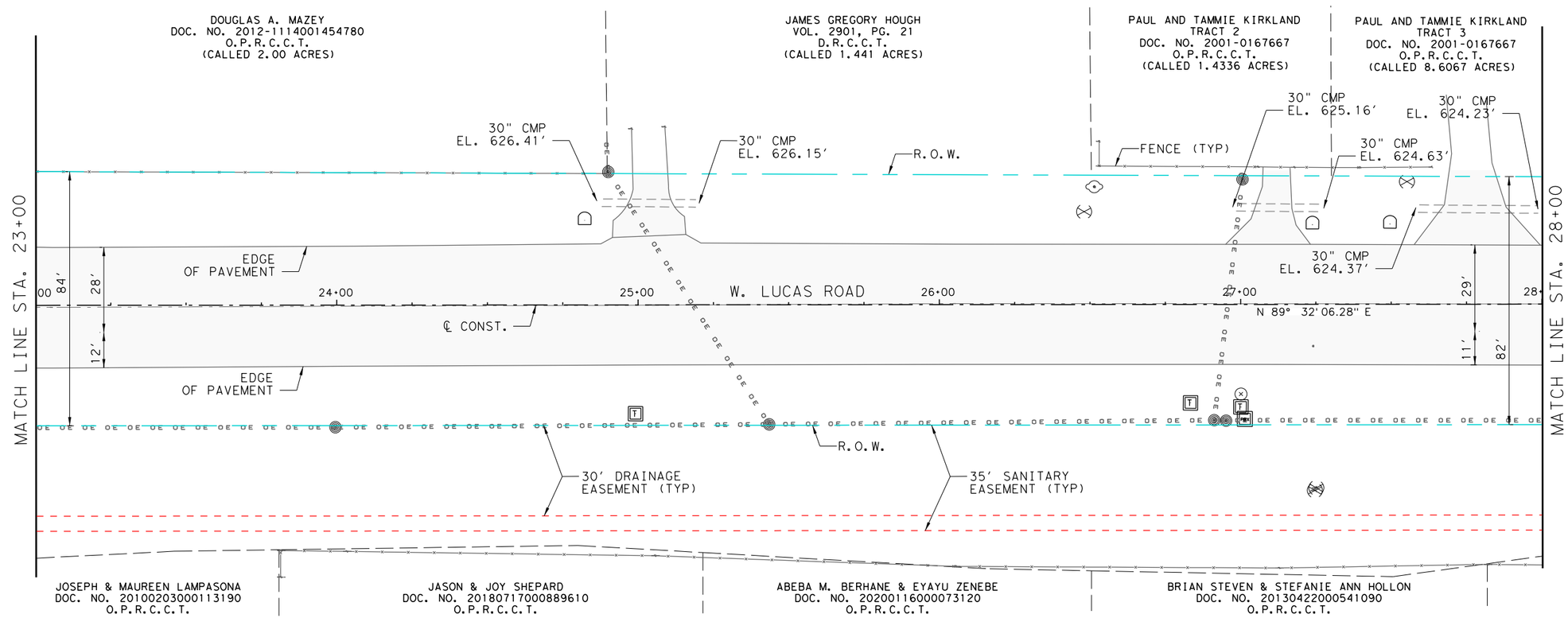
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	67
	COUNTY	
	COLLIN	

DATE: 4/6/2026 1:56:07 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX01.dgn

Texas811 Know what's below. Call before you dig.





NOTES:

1. EXISTING UNDERGROUND UTILITY LINES NOT SHOWN FOR CLARITY.
2. FOR LEGEND SEE EXISTING CONDITIONS SHEET 1 OF 10.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

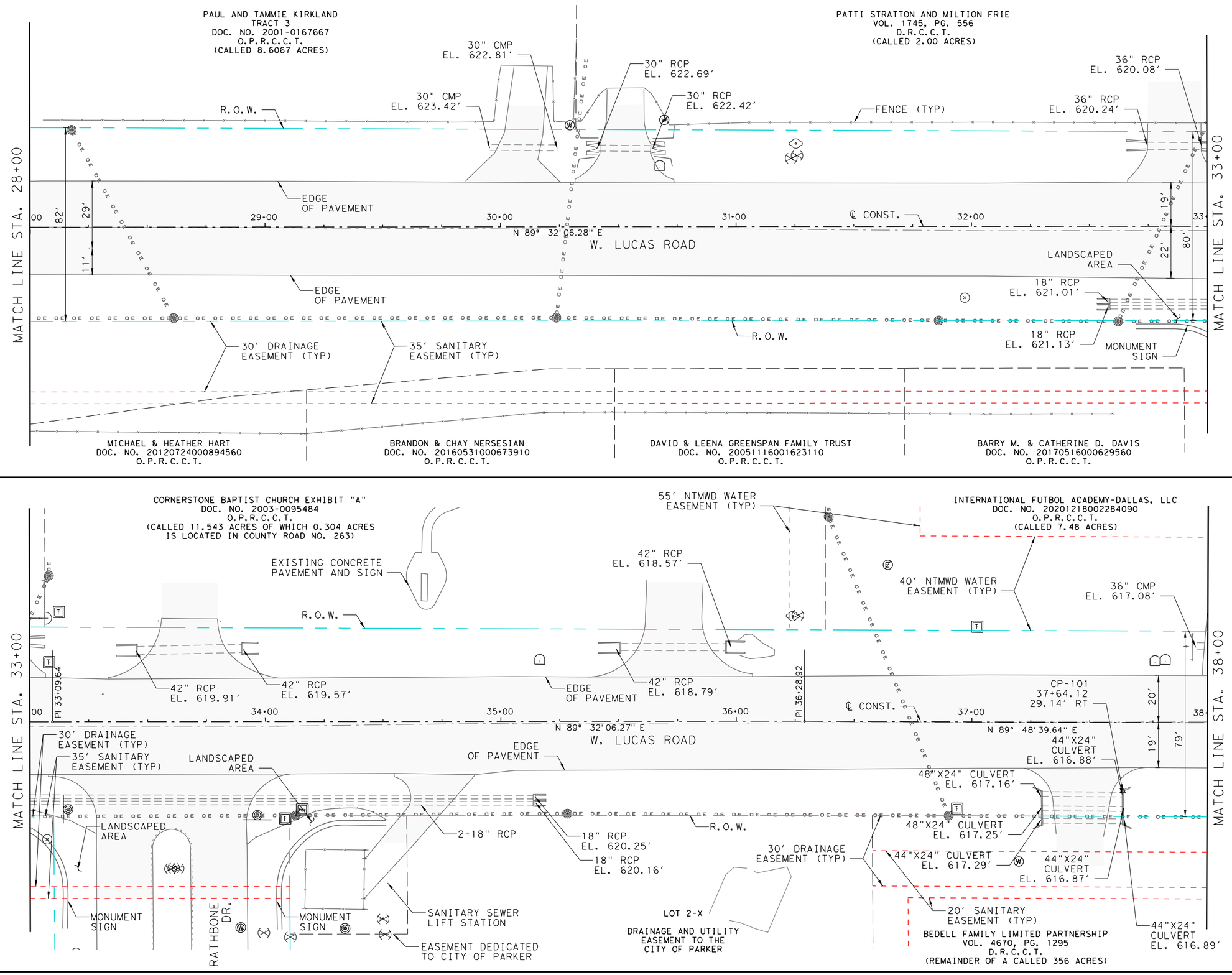
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	68
	COUNTY	
	COLLIN	

DATE: 4/6/2026 1:56:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX02.dgn

Texas811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

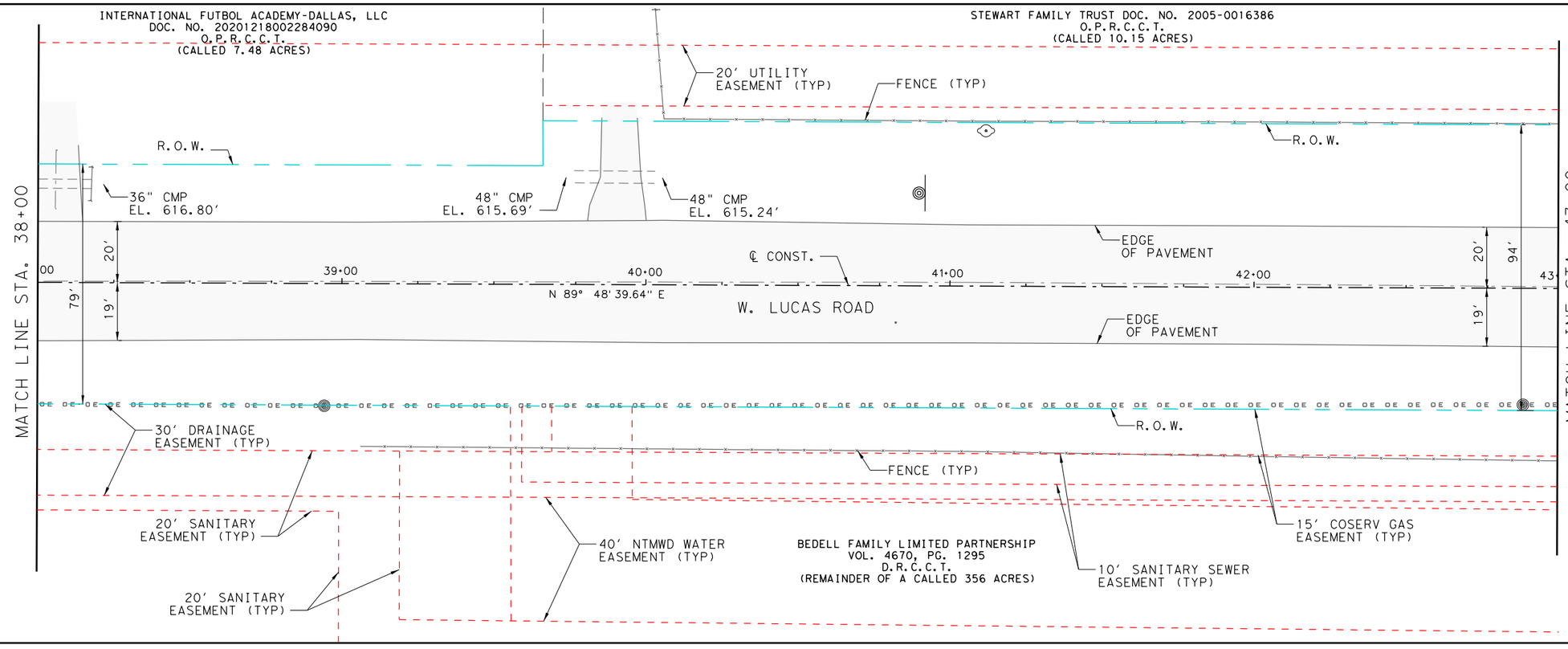
bc engineering
a PARSONS Company

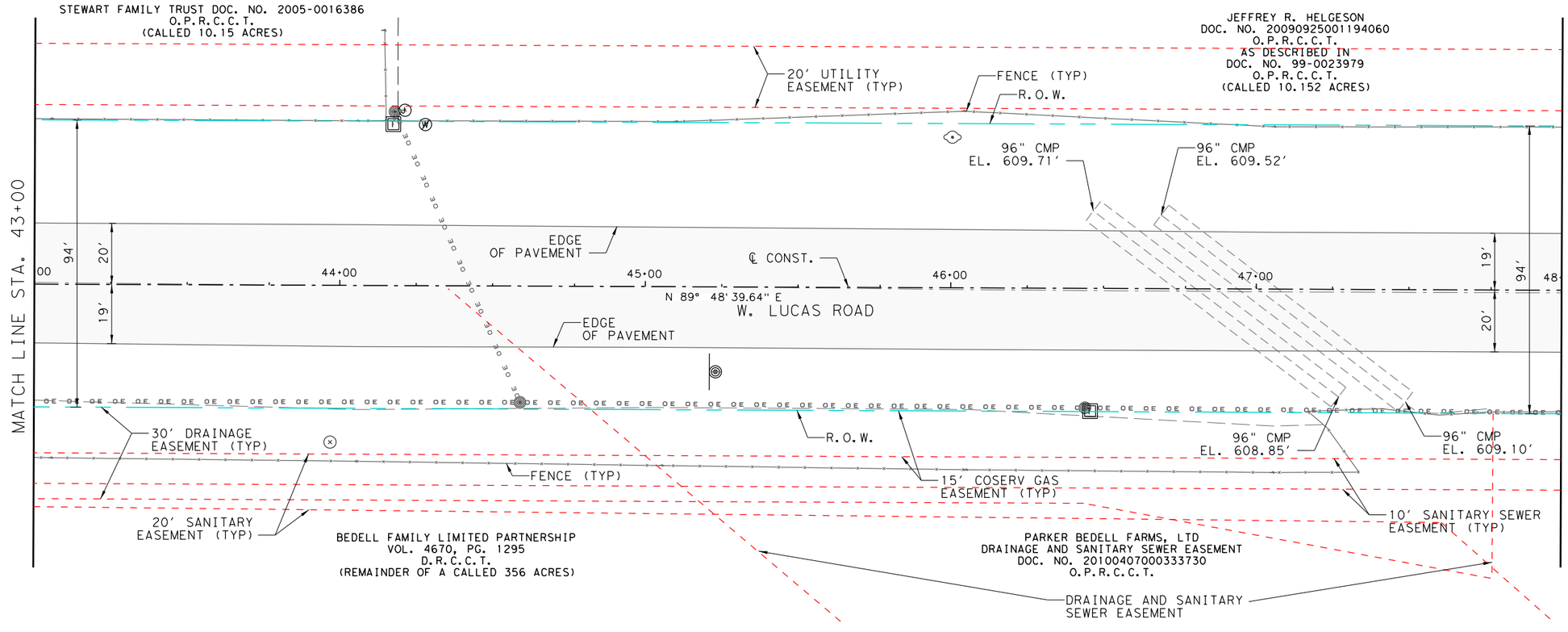
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	69
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:10 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX03.dgn





NOTES:

1. EXISTING UNDERGROUND UTILITY LINES NOT SHOWN FOR CLARITY.
2. FOR LEGEND SEE EXISTING CONDITIONS SHEET 1 OF 10.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 4 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

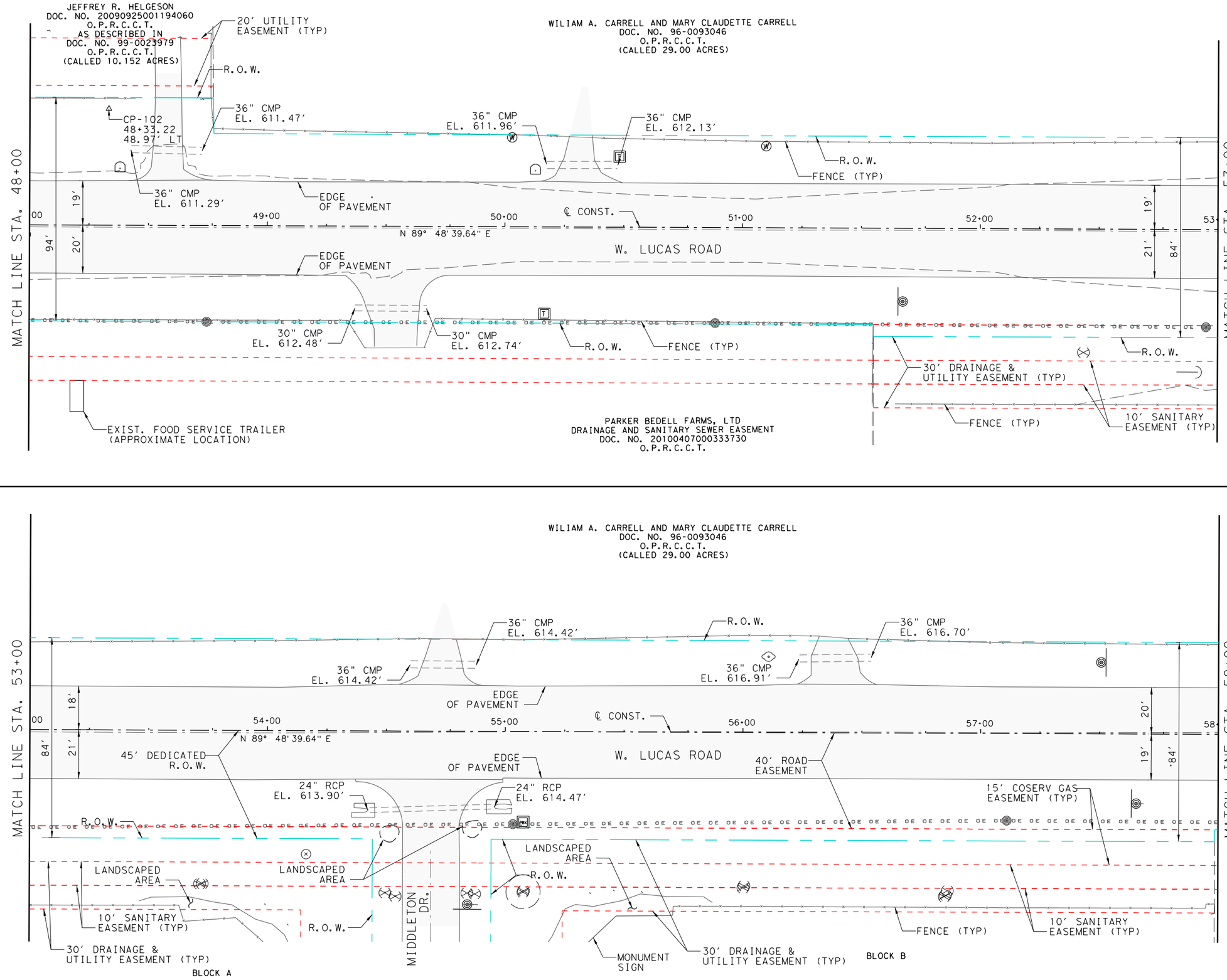
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	70
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX04.dgn



DATE: 4/6/2026 1:56:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX05.dgn

Texas 811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

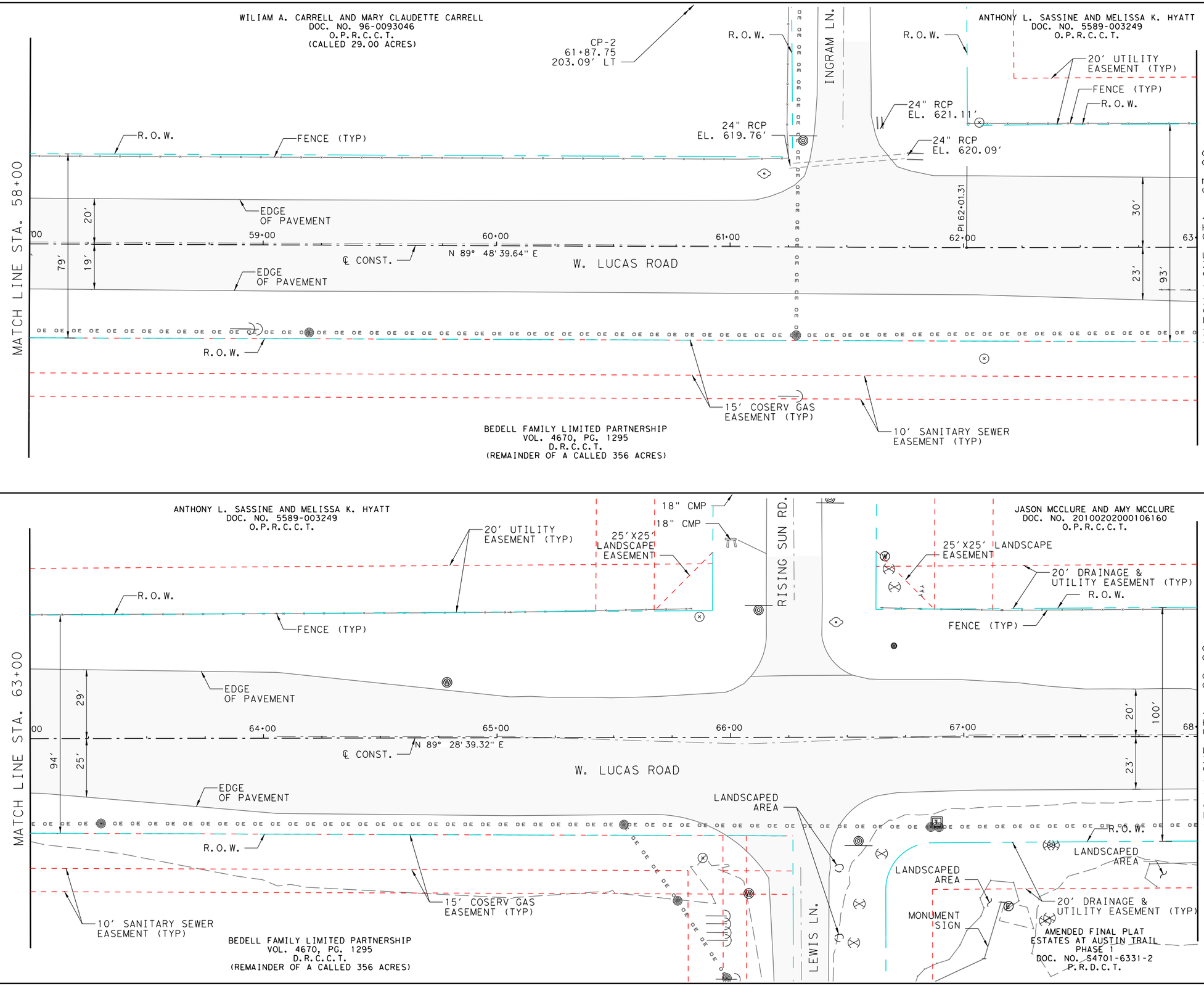
SHEET 5 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	71
	COUNTY	
	COLLIN	



DATE: 4/6/2026 1:56:14 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX06.dgn

Know what's below. Call before you dig. Texas 811

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

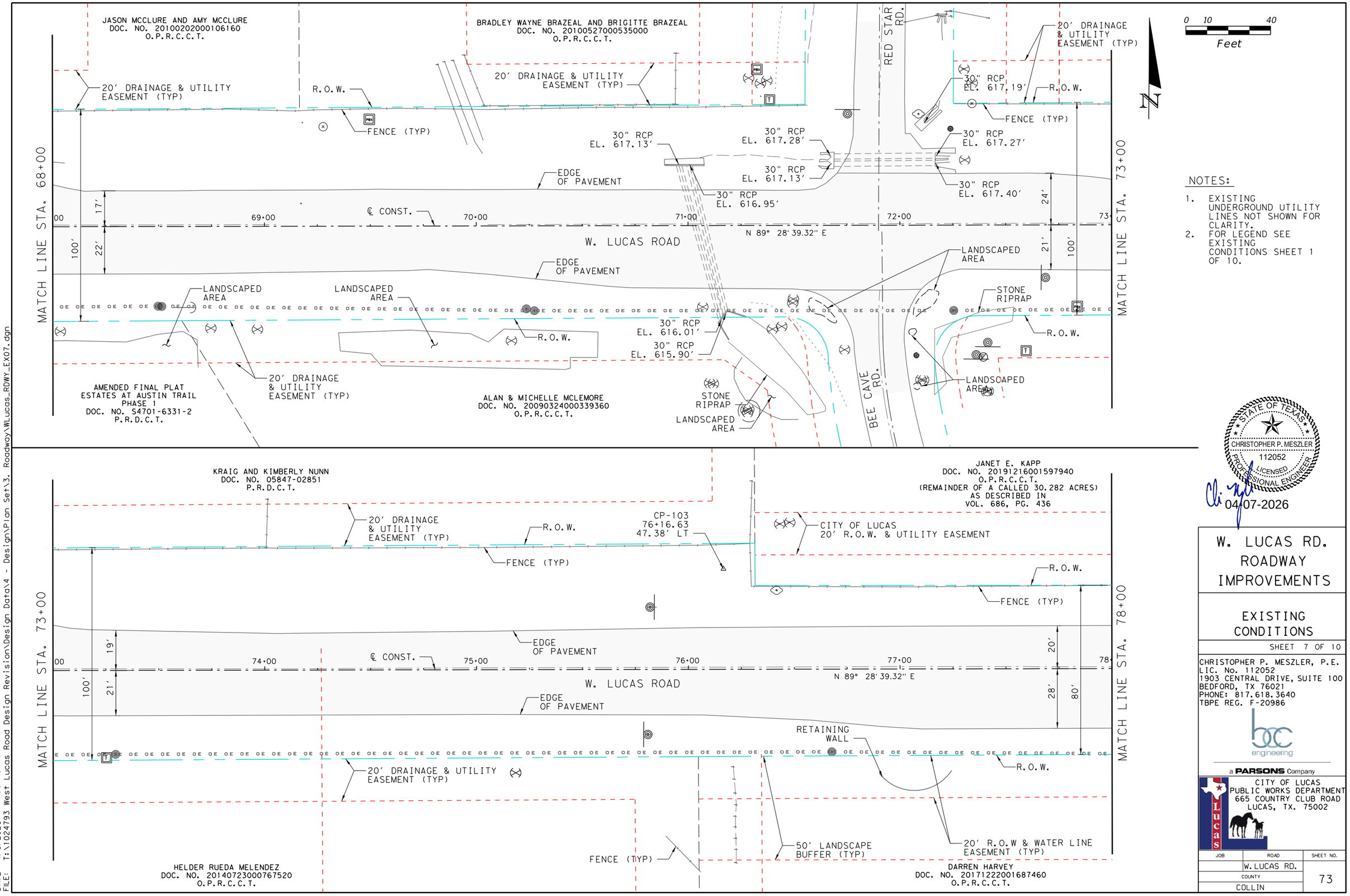
SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	72
	COUNTY	
	COLLIN	



NOTES:

1. EXISTING UNDERGROUND UTILITY LINES NOT SHOWN FOR CLARITY.
2. FOR LEGEND SEE EXISTING CONDITIONS SHEET 1 OF 10.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

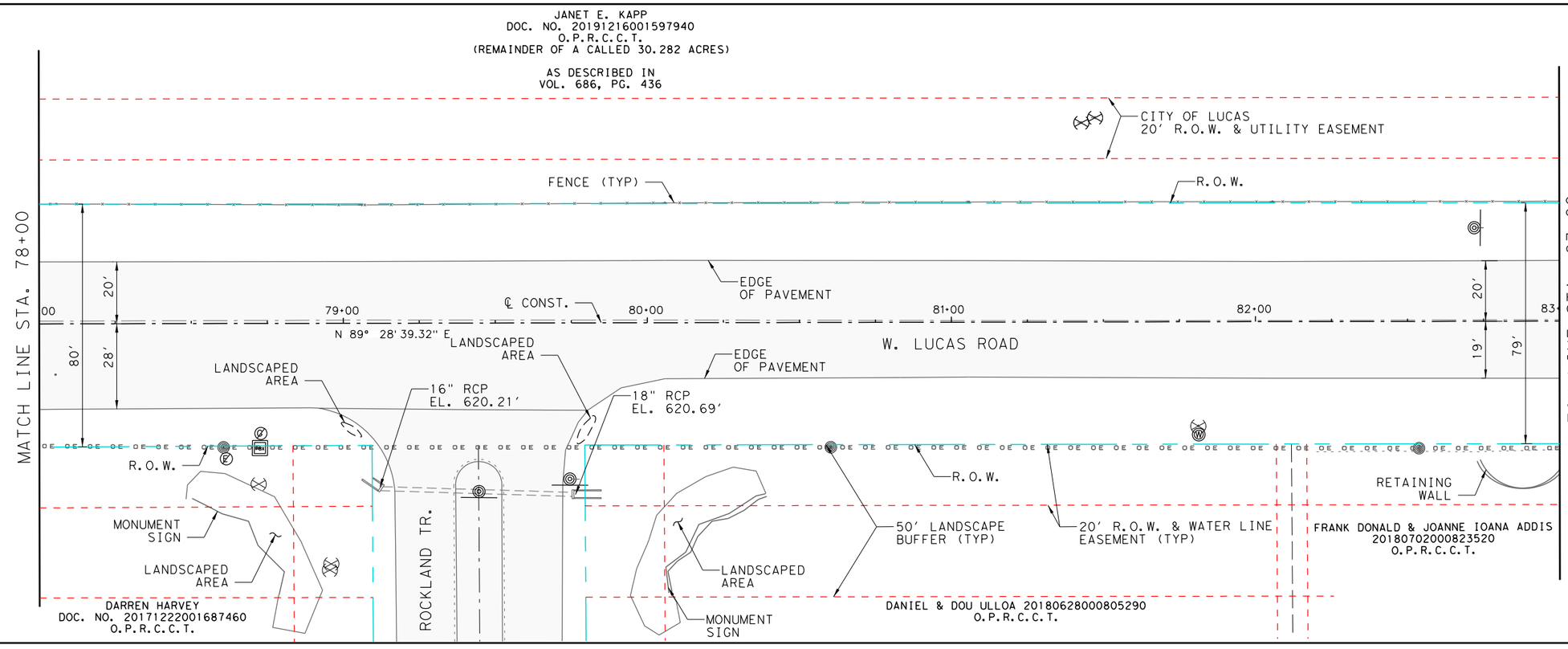
bc engineering
a PARSONS Company

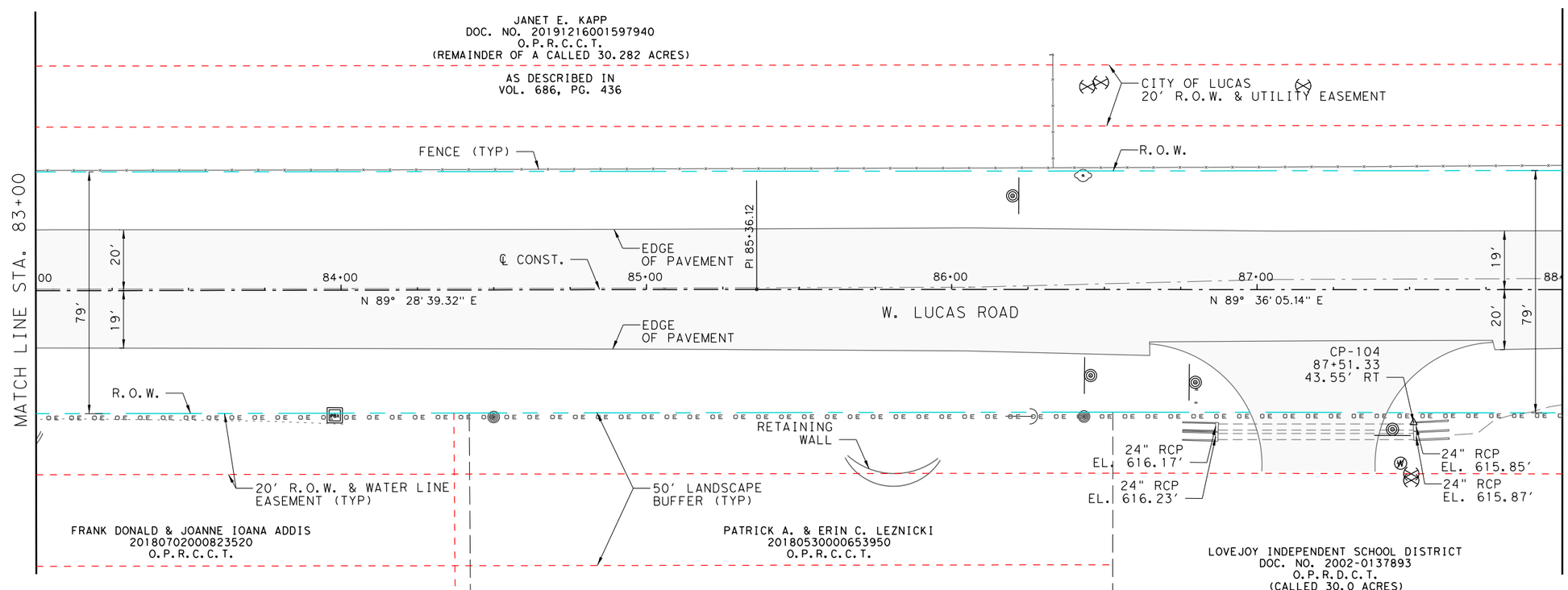
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	73
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:16 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_Ex07.dgn





0 10 40
Feet

N

NOTES:

1. EXISTING UNDERGROUND UTILITY LINES NOT SHOWN FOR CLARITY.
2. FOR LEGEND SEE EXISTING CONDITIONS SHEET 1 OF 10.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 8 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

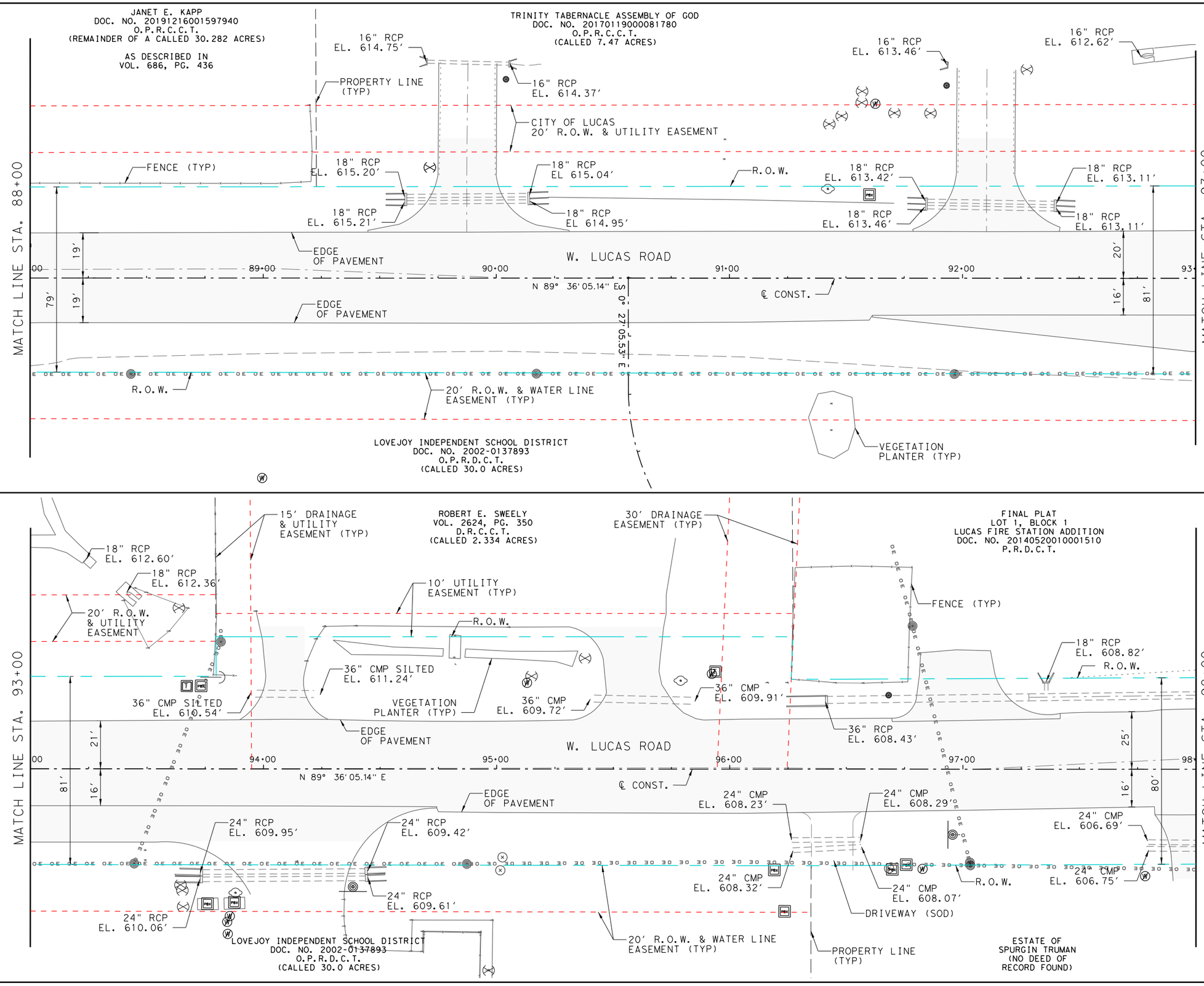
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	74
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX08.dgn



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	75
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:19 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX09.dgn

**TRAFFIC SIGNAL MAINTAINED BY TXDOT

24" RCP
EL. 609.35'

CP-3
99+16.56
173.30' LT

24" RCP
EL. 608.99'

FINAL PLAT
LOT 1, BLOCK 1
LUCAS FIRE STATION ADDITION
DOC. NO. 20140520010001510
P.R.D.C.T.

COUNTRY CLUB ROAD

12' WATERLINE EASEMENT (TYP)

MARTIN & VARANJUTA THOMAS
DOC. NO. 20120724000892310
O.P.R.C.C.T.

PROPERTY LINE (TYP)

REPLAT
CIMARRON PHASE II
LOTS 24R-26R, BLOCK A
DOC. NO. 20121011010002500
P.R.D.C.T.

COMMON AREA EASEMENT

SIGNAL POLE

24" RCP
EL. 606.20'

R.O.W.

SIGNAL POLE

R.O.W.

EDGE OF PAVEMENT

MATCH LINE STA. 98+00

27'

80'

41'

END RECONSTRUCTION
STA. 98+91.80

℄ CONST.

END PROJECT
STA. 100+25.00

99+00

100+00

101+00

N 89° 36' 05.14" E

N 89° 17' 33.82" E

W. LUCAS ROAD

24" RCP
EL. 605.51'

PI 99+63.20

POT 101+00.30

SIGNAL POLE

36" RCP
EL. 603.95'

SIGNAL POLE

24" RCP
EL. 604.94'

R.O.W.

36" RCP
EL. 602.25'

EDGE OF PAVEMENT

36" RCP
EL. 601.73'

36" RCP
EL. 600.99'

36" RCP
EL. 600.91'

24" CMP
EL. 608.64'

24" CMP
EL. 606.30'

24" RCP
EL. 605.83'

ALAN RAY SPURGIN
VOL. 1328 PG. 851
D.R.C.C.T.
(CALLED 2.92 ACRES)

FINAL PLAT
LOT 1, BLOCK A
GRAIGS CAR CARE
DOC. NO.
20060210010000490
P.R.C.C.T.

MAHMOUD PROPERTIES LLC
DOC. NO. 20191009001265330
O.P.R.C.C.T.
(CALLED 2.25 ACRES)

HB ENTERPRISES, LLC
DOC. NO. 20170331000413910
O.P.R.C.C.T.
(CALLED 1.281 ACRES)

0 10 40
Feet

N

NOTES:

1. EXISTING UNDERGROUND UTILITY LINES NOT SHOWN FOR CLARITY.
2. FOR LEGEND SEE EXISTING CONDITIONS SHEET 1 OF 10.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING CONDITIONS

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		76
COLLIN		

DATE: 4/6/2026 1:56:20 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_EX10.dgn

Texas 811 Know what's below. Call before you dig.

CL CONSTRUCTION ALONG WEST LUCAS ROAD

<* 1 DESCRIBE CHAIN CL_WLR_02

Chain CL_WLR_02 contains:
200 201 202 203 204 205 206

Beginning chain CL_WLR_02 description

Point 200 N 7,083,033.8292 E 2,544,213.1719 Sta 10+00.36

Course from 200 to 201 N 89° 32' 06" E Dist 2,309.2772

Point 201 N 7,083,052.5675 E 2,546,522.3731 Sta 33+09.64

Course from 201 to 202 N 89° 32' 06" E Dist 319.2754

Point 202 N 7,083,055.1582 E 2,546,841.6380 Sta 36+28.92

Course from 202 to 203 N 89° 48' 40" E Dist 2,572.3956

Point 203 N 7,083,063.6432 E 2,549,414.0196 Sta 62+01.31

Course from 203 to 204 N 89° 28' 39" E Dist 2,334.8052

Point 204 N 7,083,084.9311 E 2,551,748.7277 Sta 85+36.12

Course from 204 to 205 N 89° 36' 05" E Dist 1,427.0834

Point 205 N 7,083,094.8584 E 2,553,175.7766 Sta 99+63.20

Course from 205 to 206 N 89° 17' 34" E Dist 137.0980

Point 206 N 7,083,096.5507 E 2,553,312.8642 Sta 101+00.30

Ending chain CL_WLR_02 description

CL CONSTRUCTION ALONG RATHBONE DRIVE

Chain CL_RATH contains:
234 235

Beginning chain CL_RATH description
Description: 230 231

Point 234 N 7,083,052.9796 E 2,546,573.1611 Sta 1+00.00

Course from 234 to 235 S 0° 27' 54" E Dist 150.0000

Point 235 N 7,082,902.9845 E 2,546,574.3782 Sta 2+50.00

Ending chain CL_RATH description

CL CONSTRUCTION ALONG MIDDLETON DRIVE

Chain CL_MIDLTN contains:
1010 1011

Beginning chain CL_MIDLTN description

Point 1010 N 7,083,061.2275 E 2,548,681.6919 Sta 1+00.00

Course from 1010 to 1011 S 0° 11' 20.36" E Dist 100.0000

Point 1011 N 7,082,961.2280 E 2,548,682.0218 Sta 2+00.00

Ending chain CL_MIDLTN description

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

VERTICAL & HORIZONTAL DATA

SHEET 1 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		77
COLLIN		

DATE: 4/6/2026 1:56:20 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_VERT_HORZ_01.dgn

Texas811 Know what's below. Call before you dig.

CL CONSTRUCTION ALONG INGRAM LANE

Chain CL_INGRAM contains:
1020 1021

Beginning chain CL_INGRAM description

Point 1020 N 7,083,163.4671 E 2,549,360.6536 Sta 0+00.00

Course from 1020 to 1021 S 0° 00' 18.53" W Dist 100.0000

Point 1021 N 7,083,063.4671 E 2,549,360.6446 Sta 1+00.00

Ending chain CL_INGRAM description

CL CONSTRUCTION ALONG RISING SUN ROAD

Chain CL_RISESUN contains:
1040 1041

Beginning chain CL_RISESUN description

Point 1040 N 7,083,167.5246 E 2,549,839.4894 Sta 0+00.00

Course from 1040 to 1041 S 1° 14' 32.79" E Dist 100.0057

Equation: Sta 1+00.01 (BK) = Sta 1+00.00 (AH) ---------- End Region 1 / Begin Region 2

Point 1041 N 7,083,067.5424 E 2,549,841.6578 Sta 1+00.00

Ending chain CL_RISESUN description

CL CONSTRUCTION ALONG LEWIS LANE ROAD

Chain CL_LEWIS contains:
1030 1031

Beginning chain CL_LEWIS description

Point 1030 N 7,083,067.5424 E 2,549,841.6578 Sta 1+00.00

Course from 1030 to 1031 S 1° 14' 32.79" E Dist 100.0064

Equation: Sta 2+00.01 (BK) = Sta 2+00.00 (AH) ---------- End Region 1 / Begin Region 2

Point 1031 N 7,082,967.5595 E 2,549,843.8263 Sta 2+00.00

Ending chain CL_LEWIS description

CL CONSTRUCTION ALONG RED STAR ROAD

Chain CL_REDSTAR contains:
1050 1051

Beginning chain CL_REDSTAR description

Point 1050 N 7,083,172.6569 E 2,550,402.3546 Sta 0+00.00

Course from 1050 to 1051 S 0° 08' 57.16" E Dist 100.0000

Point 1051 N 7,083,072.6572 E 2,550,402.6150 Sta 1+00.00

Ending chain CL_REDSTAR description

CL CONSTRUCTION ALONG ROCKLAND TRAIL

Chain CL_ROCKTR contains:
1070 1071

Beginning chain CL_ROCKTR description

Point 1070 N 7,083,079.5340 E 2,551,156.9528 Sta 1+00.00

Course from 1070 to 1071 S 0° 49' 12.32" E Dist 133.9903

Point 1071 N 7,082,945.5574 E 2,551,158.8705 Sta 2+33.99

Ending chain CL_ROCKTR description

CL CONSTRUCTION ALONG BEE CAVES ROAD

Chain CL_BCAVE contains:
1060 CUR CL_BCAVE1 1061

Beginning chain CL_BCAVE description

Point 1060 N 7,083,072.6572 E 2,550,402.6150 Sta 1+00.00

Course from 1060 to PC CL_BCAVE1 S 0° 31' 20.68" E Dist 46.1646

Curve Data

Curve CL_BCAVE1			
P.I. Station		1+67.27	N 7,083,005.3924 E 2,550,403.2283
Delta	=	9° 44' 11.19" (LT)	
Degree	=	23° 07' 28.09"	
Tangent	=	21.1031	
Length	=	42.1045	
Radius	=	247.7712	
External	=	0.8971	
Long Chord	=	42.0539	
Mid. Ord.	=	0.8938	
P.C. Station		1+46.16	N 7,083,026.4945 E 2,550,403.0359
P.T. Station		1+88.27	N 7,082,984.6267 E 2,550,406.9867
C.C.			N 7,083,028.7536 E 2,550,650.7968
Back	=	S 0° 31' 20.68" E	
Ahead	=	S 10° 15' 31.87" E	
Chord Bear	=	S 5° 23' 26.27" E	

Course from PT CL_BCAVE1 to 1061 S 9° 55' 47.86" E Dist 11.7309

Point 1061 N 7,082,973.0715 E 2,550,409.0096 Sta 2+00.00

Ending chain CL_BCAVE description

CL CONSTRUCTION ALONG LOVEJOY SCHOOL DRIVEWAY

Chain CL_LOVEJOY contains:
150 CUR LOVEJOY1 151 152

Beginning chain CL_LOVEJOY description

Point 150 N 7,083,088.7185 E 2,552,269.2367 Sta 1+00.00

Course from 150 to PC LOVEJOY1 S 0° 27' 05.53" E Dist 47.1047

Curve Data

Curve LOVEJOY1			
P.I. Station		2+46.32	N 7,082,942.4036 E 2,552,270.3898
Delta	=	89° 32' 54.47" (LT)	
Degree	=	57° 17' 45.22"	
Tangent	=	99.2148	
Length	=	156.2912	
Radius	=	99.9998	
External	=	40.8673	
Long Chord	=	140.8627	
Mid. Ord.	=	29.0112	
P.C. Station		1+47.10	N 7,083,041.6153 E 2,552,269.6079
P.T. Station		3+03.40	N 7,082,942.4036 E 2,552,369.6046
C.C.			N 7,083,042.4034 E 2,552,369.6046
Back	=	S 0° 27' 05.53" E	
Ahead	=	Due East	
Chord Bear	=	S 45° 13' 32.76" E	

Course from PT LOVEJOY1 to 151 Due East Dist 281.0602

Point 151 N 7,082,942.4036 E 2,552,650.6648 Sta 5+84.46

Course from 151 to 152 Due East Dist 45.5439

Point 152 N 7,082,942.4036 E 2,552,696.2087 Sta 6+30.00

Ending chain CL_LOVEJOY description

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

VERTICAL & HORIZONTAL DATA

SHEET 2 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	78
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:21 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_VERT_HORZ_02.dgn

CL PROFILE ALONG WEST LUCAS ROAD

<x 2 PRINT PROFILE CL_WLR_PR03

Beginning profile CL_WLR_PR03 description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	12+07.78	642.7871				
VPI 2	16+68.64	636.7000	-1.3208			
VPI 3	20+09.64	632.9900	-1.0880			
VPI 4	27+99.64	626.5000	-0.8215			
VPI 5	32+55.64	623.3400	-0.6930			
VPC	42+00.41	617.9387	-0.5717	K = 301.9		
VPI 6	42+82.50	617.4694		164.1791	82.0895	82.0895
VPT	43+64.59	617.4466	-0.0278			
VPC	53+37.73	617.1760	-0.0278	K = 130.0		
Low Point	53+41.35	617.1755				
VPI 7	54+04.00	617.1575		132.5390	66.2695	66.2695
VPT	54+70.27	617.8147	0.9917			
VPC	57+11.56	620.2076	0.9917	K = 263.9	SSD = 1064.3	
VPI 8	58+01.56	621.1002		180.0061	90.0030	90.0030
VPT	58+91.56	621.3789	0.3097			
VPC	63+92.14	622.9292	0.3097	K = 222.5	SSD = 932.4	
High Point	64+61.05	623.0359				
VPI 9	64+79.64	623.2002		175.0004	87.5002	87.5002
VPT	65+67.14	622.7830	-0.4768			
VPC	69+79.66	620.8162	-0.4768	K = 416.0		
VPI 10	71+04.66	620.2202		250.0012	125.0006	125.0006
Low Point	71+77.98	620.3434				
VPT	72+29.66	620.3755	0.1242			
VPC	75+11.75	620.7260	0.1242	K = 320.3		
VPI 11	76+11.75	620.8502		199.9983	99.9991	99.9991
VPT	77+11.75	621.5988	0.7486			
VPC	81+34.64	624.7645	0.7486	K = 122.7	SSD = 451.0	
High Point	82+26.47	625.1082				
VPI 12	82+59.64	625.7002		249.9995	124.9997	124.9997
VPT	83+84.64	624.0883	-1.2895			
VPI 13	87+44.31	619.4502	-1.2895			
VPI 14	91+12.27	616.1347	-0.9010			
VPI 15	94+49.41	613.6802	-0.7280			
VPI 16	97+11.27	611.4767	-0.8415			
VPI 17	98+43.17	610.5068	-0.7353			
VPI 18	98+91.44	610.0355	-0.9765			
VPI 19	99+11.43	609.7489	-1.4338			

Ending profile CL_WLR_PR03 description

CL PROFILE ALONG RATHBONE DRIVE

Beginning profile PR_RATH_NEW description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	623.1600				
VPI 2	1+31.00	622.5400	-2.0000			
VPI 3	1+34.00	622.6000	2.0000			
VPC	1+34.00	622.6000	1.8000	K = 10.0		
VPI 4	1+44.00	622.7800		20.0000	10.0000	10.0000
VPT	1+54.00	623.1600	3.8000			
VPI 5	1+54.00	623.1600				
VPC	1+57.88	623.3053	3.7500	K = 5.0	SSD = 13290.1	
VPI 6	1+58.00	623.3100		0.2500	0.1250	0.1250
VPT	1+58.12	623.3146	3.7000			
VPC	1+58.50	623.3285	3.7000	K = 5.0	SSD = 184.4	
VPI 7	1+68.00	623.6800		19.0000	9.5000	9.5000
High Point	1+77.00	623.6707				
VPT	1+77.50	623.6705	-0.1000			
VPI 8	1+78.00	623.6700	-0.1000			
VPI 9	2+00.00	623.6500	-0.0909			

Ending profile PR_RATH_NEW description

CL PROFILE ALONG RATHBONE DRIVE (LT/RT)

Beginning profile PR_RATH_LT_NEW description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	623.1100				
VPI 2	1+31.00	622.4900	-2.0000			
VPI 3	1+51.00	622.8900	2.0000			
VPC	1+51.00	622.8900	1.5882	K = 21.4	SSD = 435.4	
VPI 4	1+68.00	623.1600		34.0000	17.0000	17.0000
VPT	1+85.00	623.1600	0.0000			

Ending profile PR_RATH_LT_NEW description

Beginning profile PR_RATH_RT_NEW description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	623.2200				
VPI 2	1+31.00	622.6000	-2.0000			
VPI 3	1+51.00	623.0000	2.0000			
VPC	1+51.00	623.0000	1.4706	K = 22.2	SSD = 451.5	
VPI 4	1+68.00	623.2500		34.0000	17.0000	17.0000
High Point	1+83.69	623.2404				
VPT	1+85.00	623.2400	-0.0588			

Ending profile PR_RATH_RT_NEW description

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

VERTICAL & HORIZONTAL DATA

SHEET 3 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		79
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:21 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_VERT_HORZ_03.dgn

CL PROFILE ALONG MIDDLETON DRIVE

Beginning profile PR_MIDLTON_NEW description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	617.8000				
VPI 2	1+31.00	617.1800	-2.0000			
VPC	1+31.00	617.1800	1.0000	K = 7.3	SSD = 186.3	
High Point	1+38.26	617.2163				
VPI 3	1+45.00	617.3200		28.0000	14.0000	14.0000
VPT	1+59.00	616.9200	-2.8571			
VPI 4	1+59.00	616.9200				
VPI 5	1+62.00	616.8300	-3.0000			
VPC	1+62.00	616.8300	-2.8000	K = 18.2		
VPI 6	1+72.00	616.5500		20.0000	10.0000	10.0000
VPT	1+82.00	616.3800	-1.7000			

Ending profile PR_MIDLTON_NEW description

CL PROFILE ALONG INGRAM LANE

Beginning profile PR_INGRAM description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	0+03.73	623.1295				
VPI 2	0+12.00	623.0590	-0.8515			
VPC	0+15.00	623.0209	-1.2725	K = 12.3	SSD = 286.8	
VPI 3	0+30.00	622.8300		30.0000	15.0000	15.0000
VPT	0+45.00	622.2724	-3.7172			
VPC	0+49.00	622.1237	-3.7172	K = 11.6		
VPI 4	0+59.00	621.7520		20.0000	10.0000	10.0000
VPT	0+69.00	621.5520	-2.0000			
VPI 5	0+69.00	621.5520				
VPI 6	1+00.00	622.1720	2.0000			

Ending profile PR_INGRAM description

CL PROFILE ALONG RISING SUN ROAD

Beginning profile PR_RISINGSUN description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	0+22.45	623.4270				
VPC	0+22.45	623.4270	-1.0267	K = 3.8	SSD = 177.9	
VPI 2	0+29.95	623.3500		15.0000	7.5000	7.5000
VPT	0+37.45	622.9805	-4.9272			
VPC	0+39.00	622.9041	-4.9272	K = 10.2		
VPI 3	0+54.00	622.1650		30.0000	15.0000	15.0000
VPT	0+69.00	621.8688	-1.9747			
VPI 4	0+69.00	621.8688				
VPI 5	1+00.01	622.4890	2.0000			

Ending profile PR_RISINGSUN description

CL PROFILE ALONG LEWIS LANE

Beginning profile PR_LEWIS description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	622.4863				
VPI 2	1+31.00	621.8660	-2.0010			
VPI 3	1+66.00	21.2944	-1.6331			
VPI 4	1+96.00	620.9850	-1.0315			

Ending profile PR_LEWIS description

CL PROFILE ALONG RED STAR ROAD

Beginning profile PR_REDSTAR description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	0+04.00	622.0770				
VPC	0+04.00	622.0770	-0.9750	K = 4.4	SSD = 156.4	
VPI 2	0+14.00	621.9795		20.0000	10.0000	10.0000
VPT	0+24.00	621.4280	-5.5152			
VPC	0+29.00	621.1522	-5.5152	K = 10.3		
VPI 3	0+49.00	620.0492		40.0000	20.0000	20.0000
VPT	0+69.00	619.7250	-1.6210			
VPI 4	0+69.00	619.7250				
VPI 5	1+00.00	620.3450	2.0000			

Ending profile PR_REDSTAR description

CL PROFILE ALONG BEE CAVES ROAD

Beginning profile PR_BCAVE description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	620.3500				
VPI 2	1+31.00	619.7280	-2.0065			
VPI 3	1+80.00	618.4077	-2.6945			

Ending profile PR_BCAVE description

CL PROFILE ALONG ROCKLAND TRAIL

Beginning profile PR_ROCKTR_NEW description:

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1+00.00	623.3400				
VPI 2	1+31.00	622.7200	-2.0000			
VPI 3	1+40.00	622.9000	2.0000			
VPI 4	1+55.00	623.2000	2.0000			
VPI 5	1+70.00	623.8800	4.5333			
VPI 6	1+72.50	623.9900	4.4000			
VPI 7	1+85.00	624.5600	4.5600			
VPI 8	1+97.50	624.7400	1.4400			
VPI 9	2+15.76	625.0000	1.4239			

Equation: Sta 2+33.99 (BK) = Sta 0+00.00 (AH)

Ending profile PR_ROCKTR_NEW description

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

VERTICAL & HORIZONTAL DATA

SHEET 4 OF 4

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

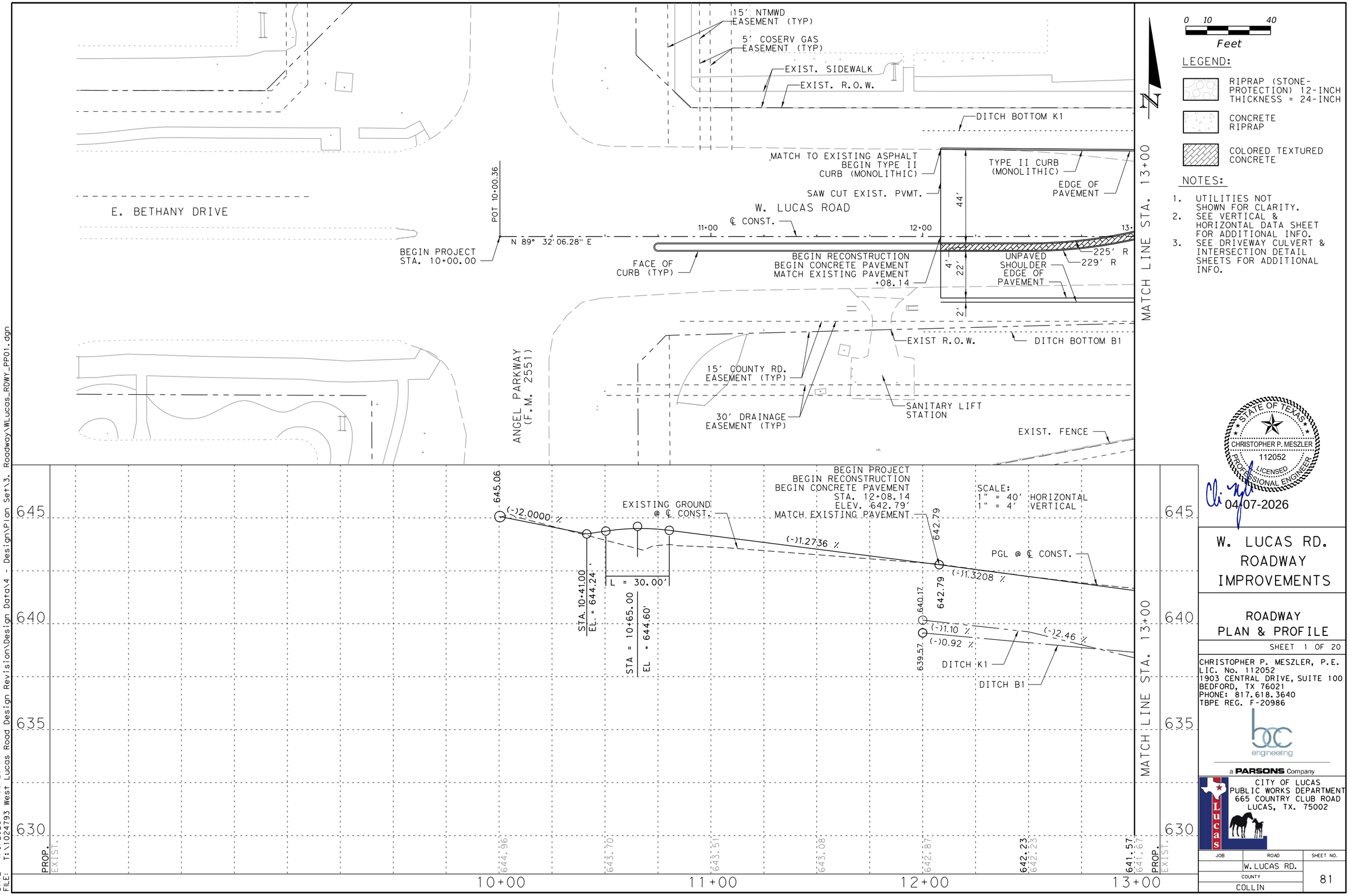
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	80
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:22 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_VERT_HORZ_04.dgn



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 1 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

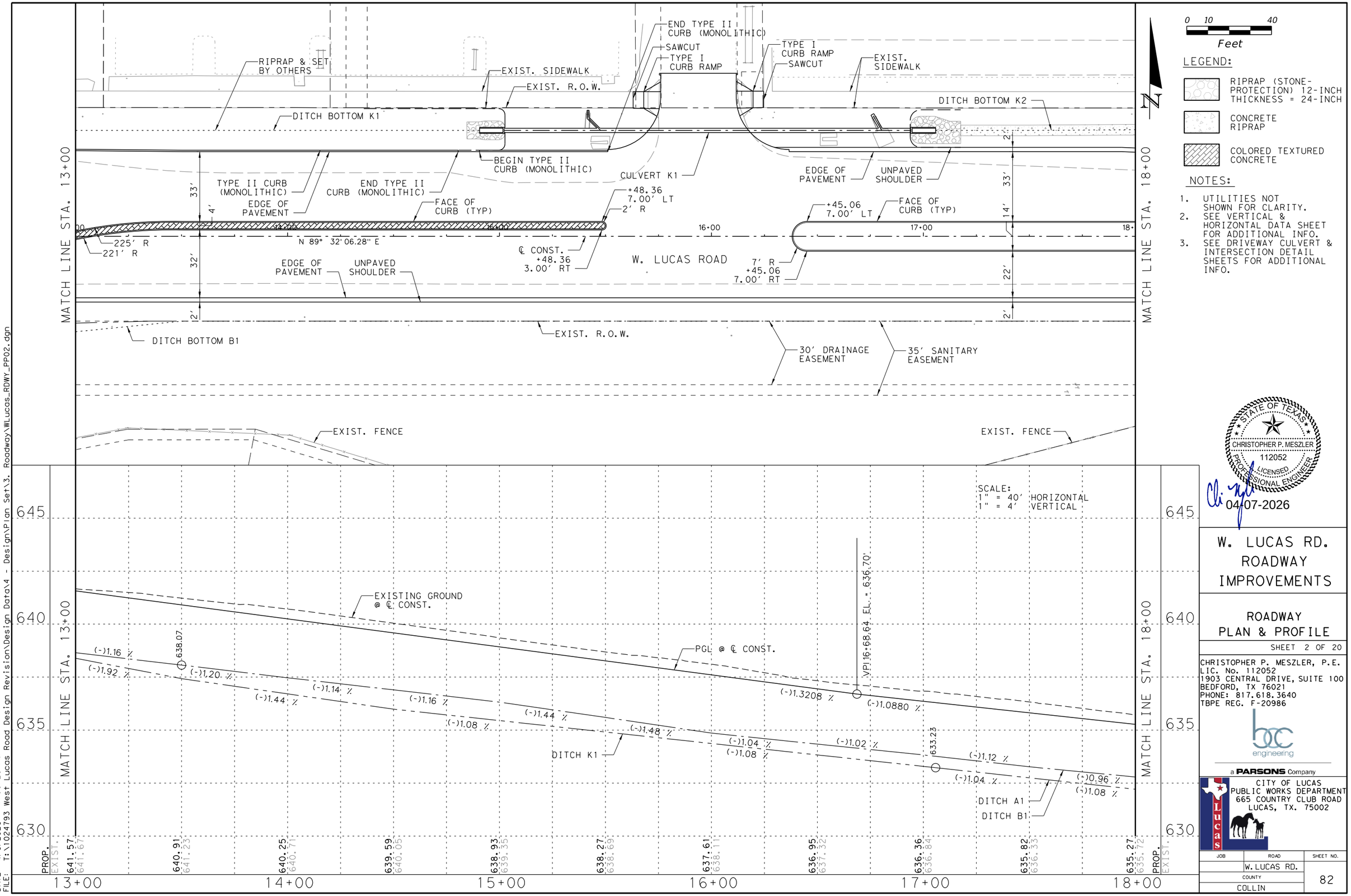
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	81
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:25 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP01.dgn

Texas 811 Know what's below. Call before you dig.



0 10 40
Feet

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 2 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

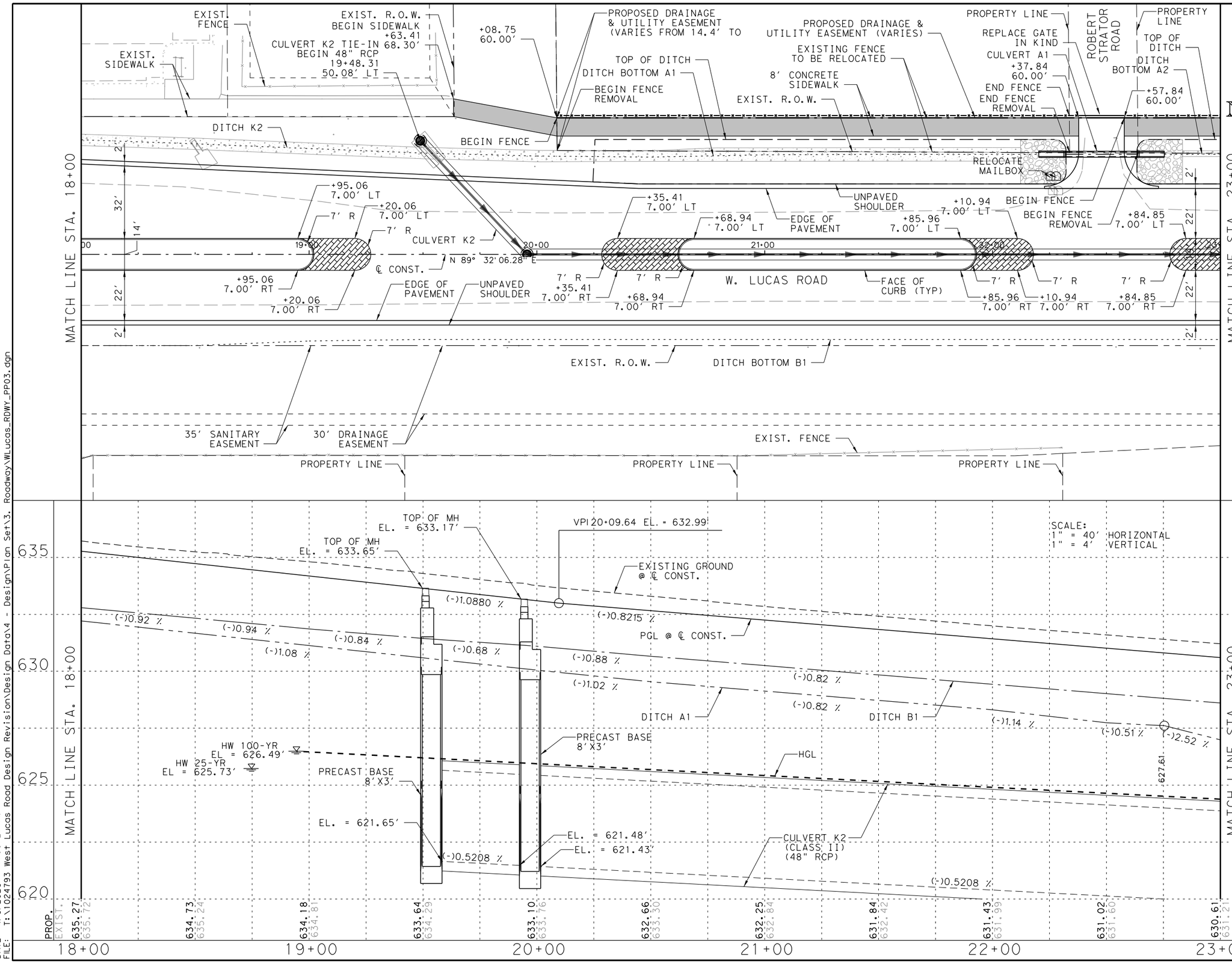
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	82
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:26 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP02.dgn

Texas811 Know what's below. Call before you dig.



0 10 40
Feet

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.
4. CULVERT K2 RECEIVED RUNOFF FROM WALMART DETENTION BASIN. HW AND TW WERE CALCULATED USING HY-8 VERSION 7.80.
   Q 25YR = 80.05
   Q 100YR = 97.28
   HW 25YR = 625.73
   HW100YR = 626.49
   TW 25YR = 614.99
   TW100YR = 615.53

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

SCALE:
1" = 40' HORIZONTAL
1" = 4' VERTICAL

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 3 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

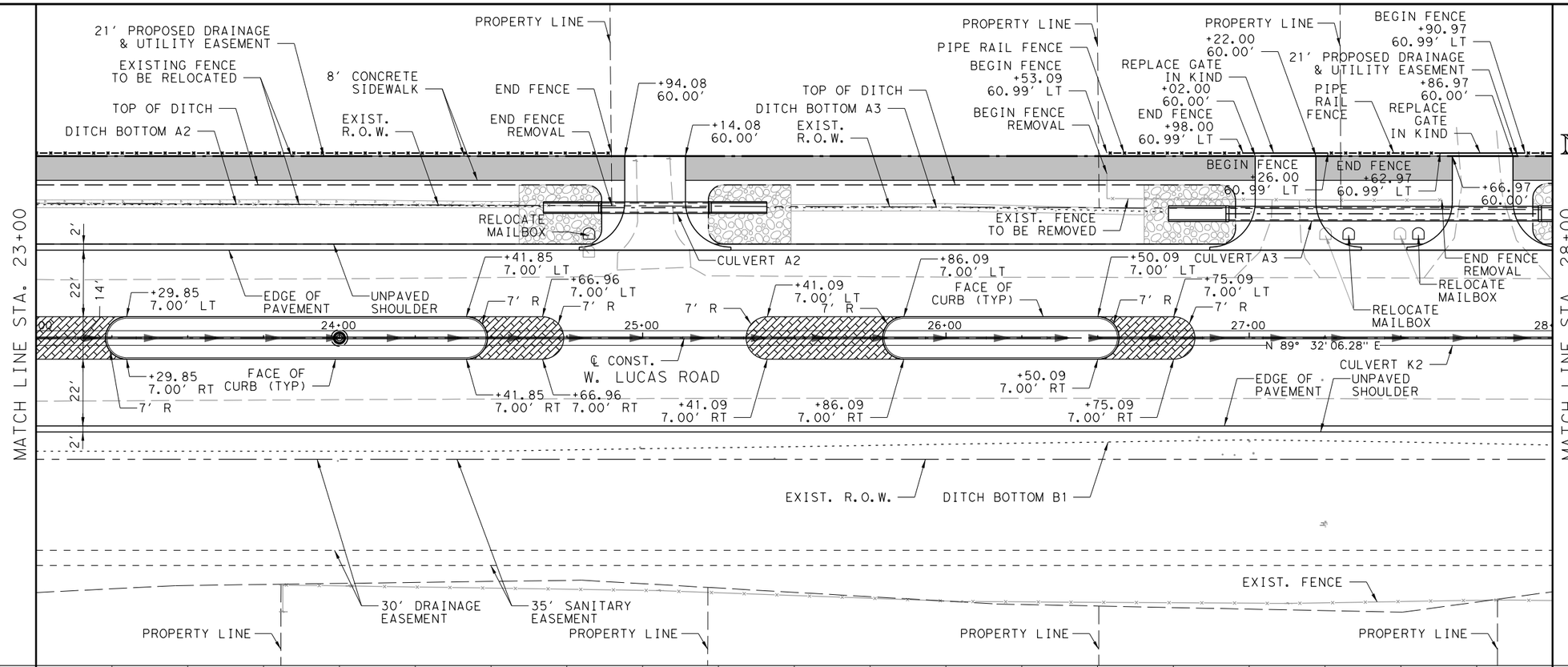
bc engineering
a PARSONS Company

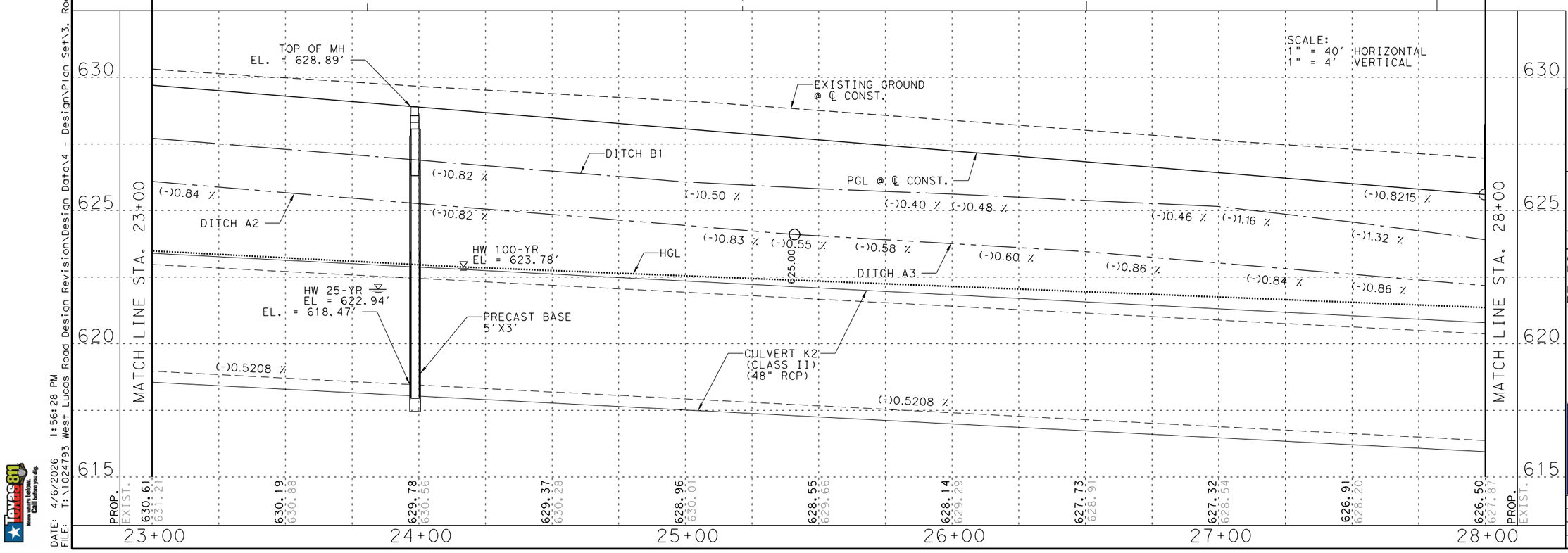
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		83
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:27 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP03.dgn





CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 4 OF 20

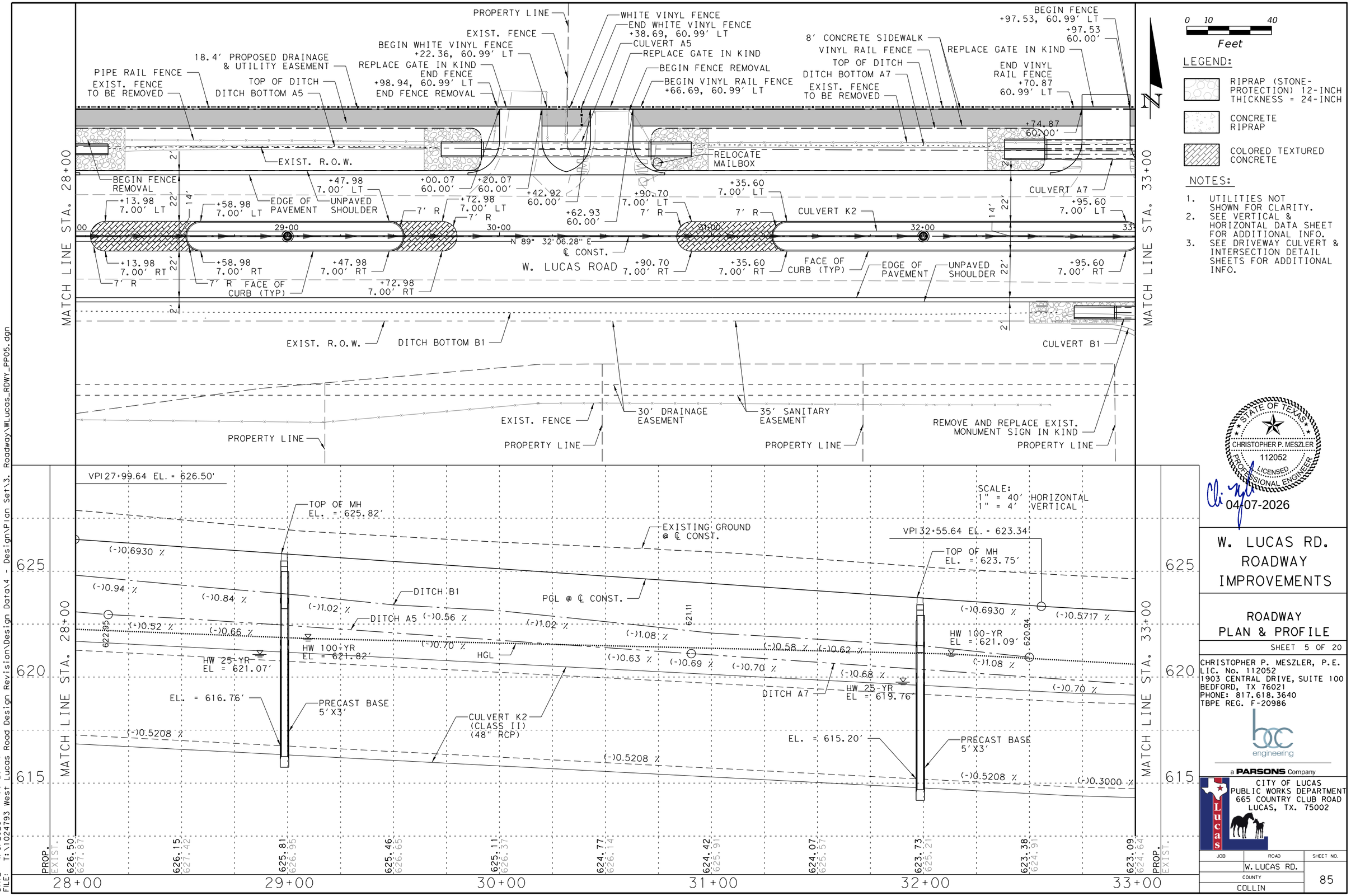
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	84
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:28 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_PP04.dgn

Texas811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

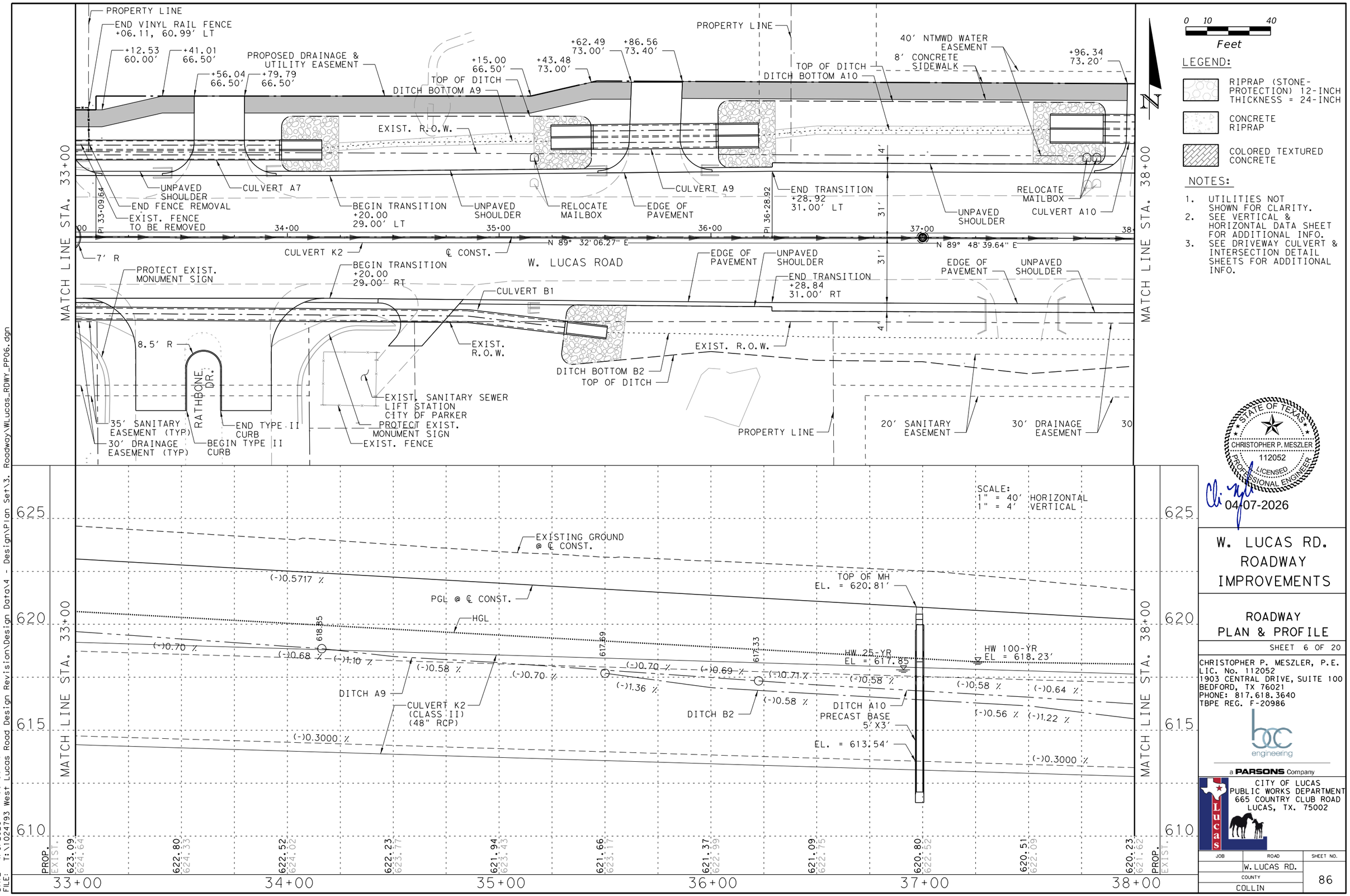
SHEET 5 OF 20

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	85
	COUNTY	
	COLLIN	

DATE: 4/6/2026 1:56:29 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP05.dgn

Texas811 Know what's below. Call before you dig.



DATE: 4/6/2026 1:56:30 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_PP06.dgn

Texas 811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

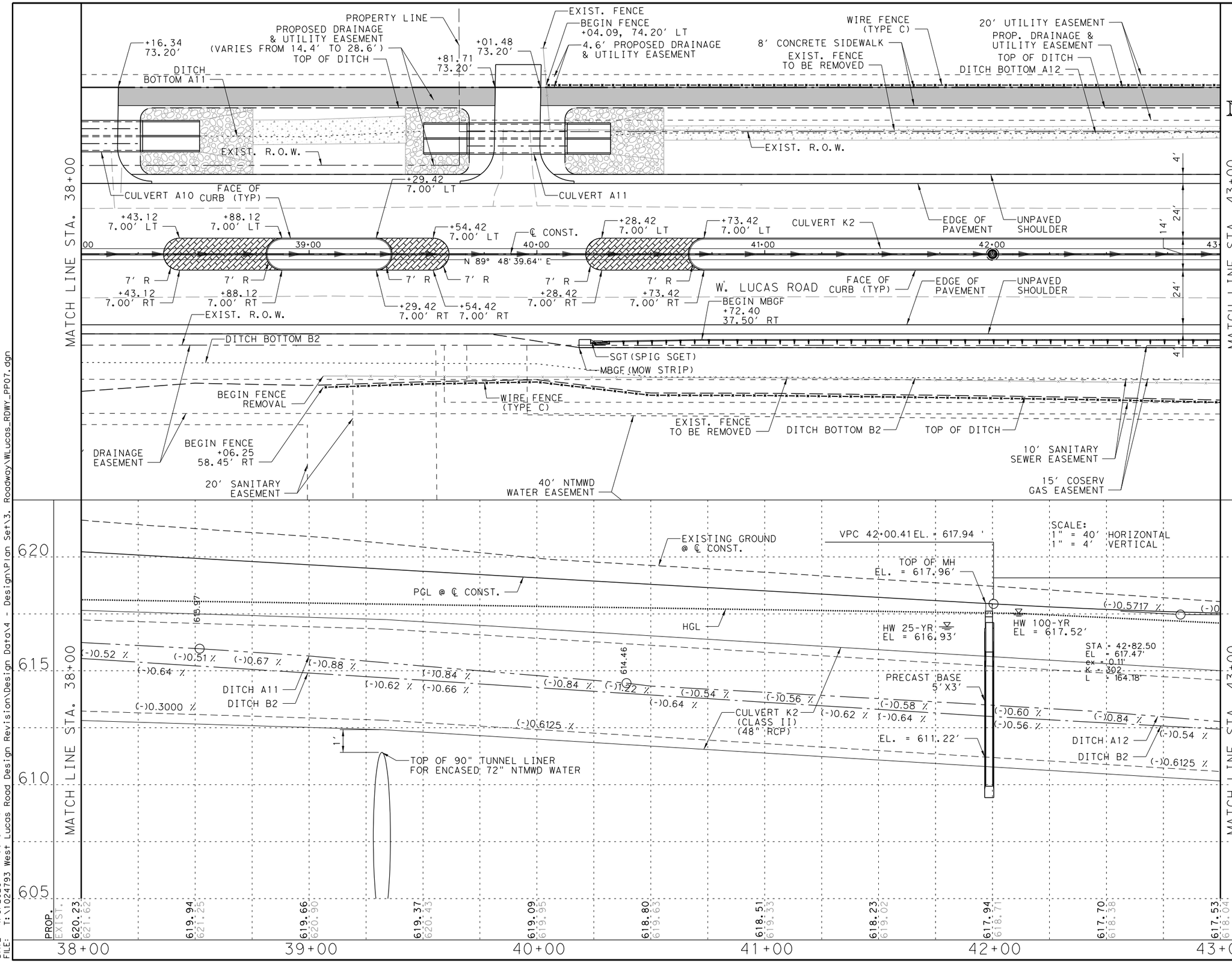
SHEET 6 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		86
COLLIN		



0 10 40
Feet

N

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.
4. CONTACT NTMWD 48 HOURS PRIOR TO WORKING NEAR NTMWD FACILITIES.

SCALE:
1" = 40' HORIZONTAL
1" = 4' VERTICAL

CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 7 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

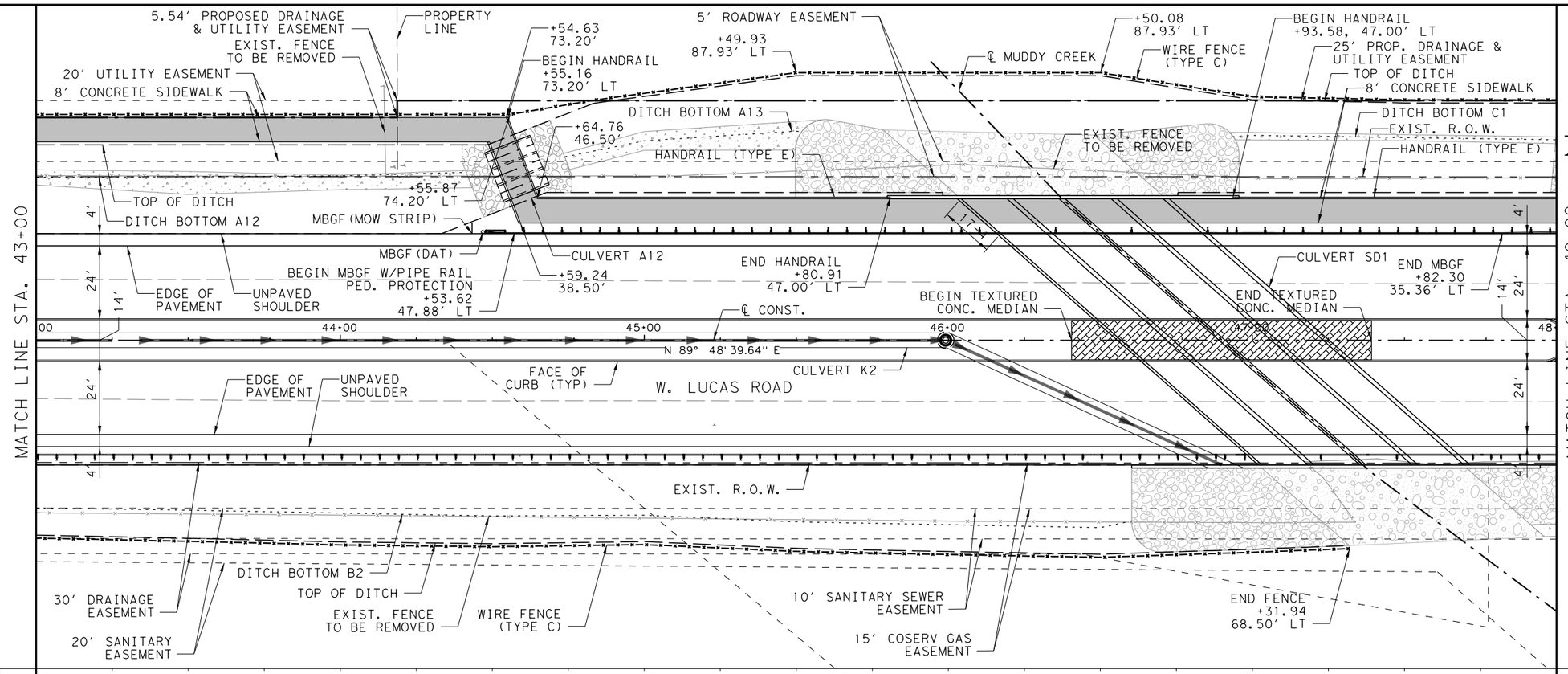
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	87
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:31 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_PP07.dgn

Texas811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04/07/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 8 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

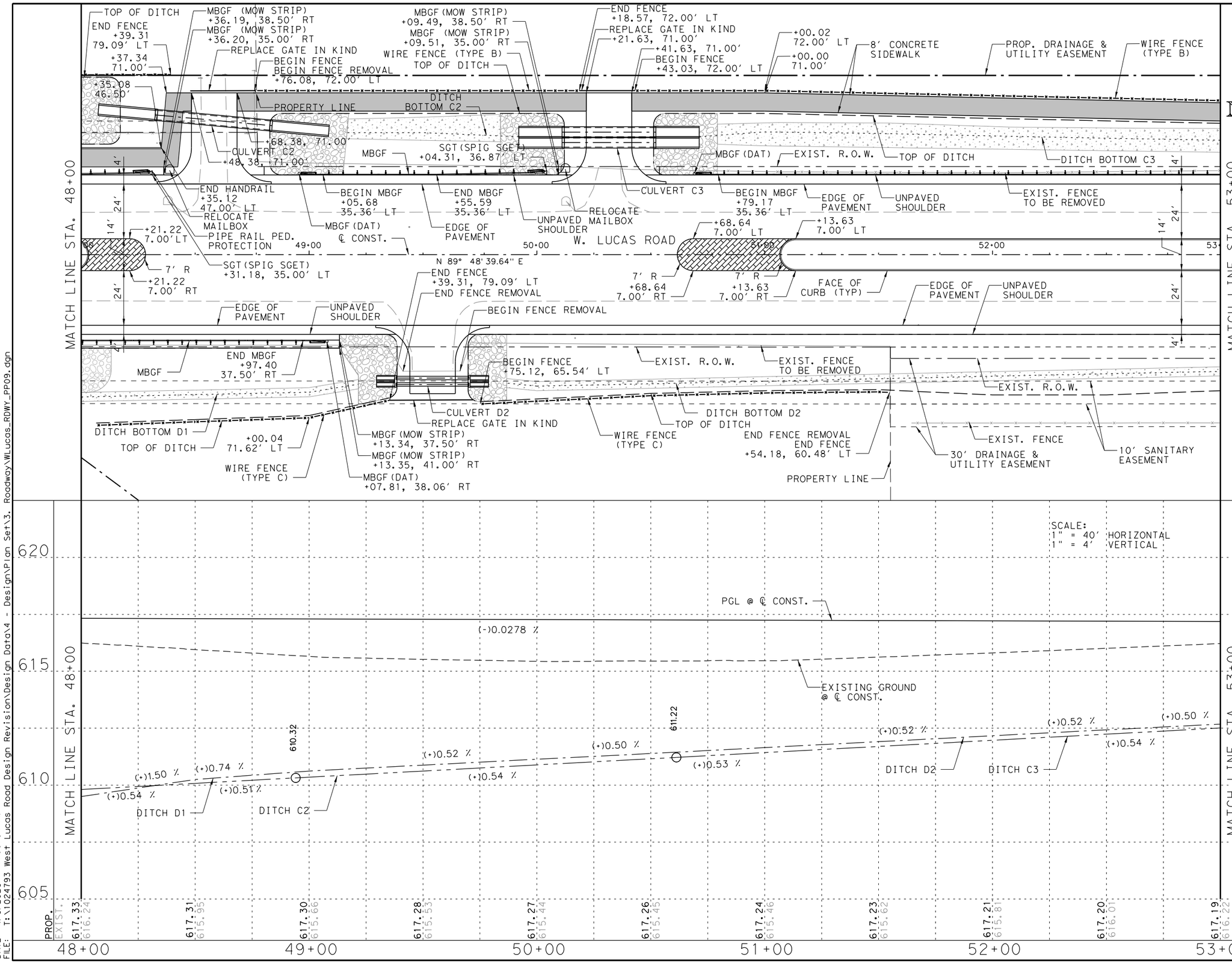
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	88
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP08.dgn

Texas 811 Know what's below. Call before you dig.



0 10 40
Feet

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 9 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

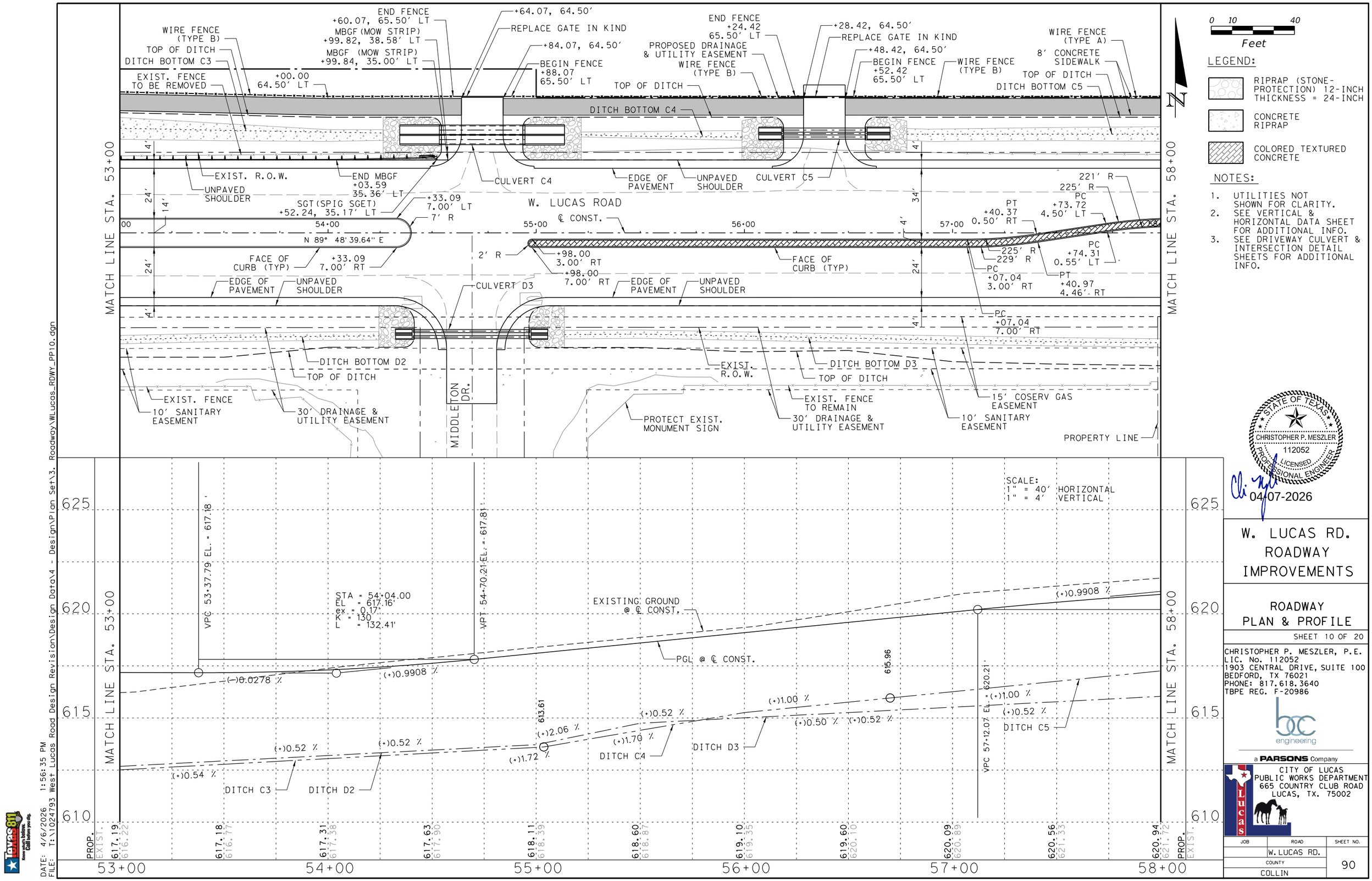
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	89
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:34 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_PP09.dgn

Texas 811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 10 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

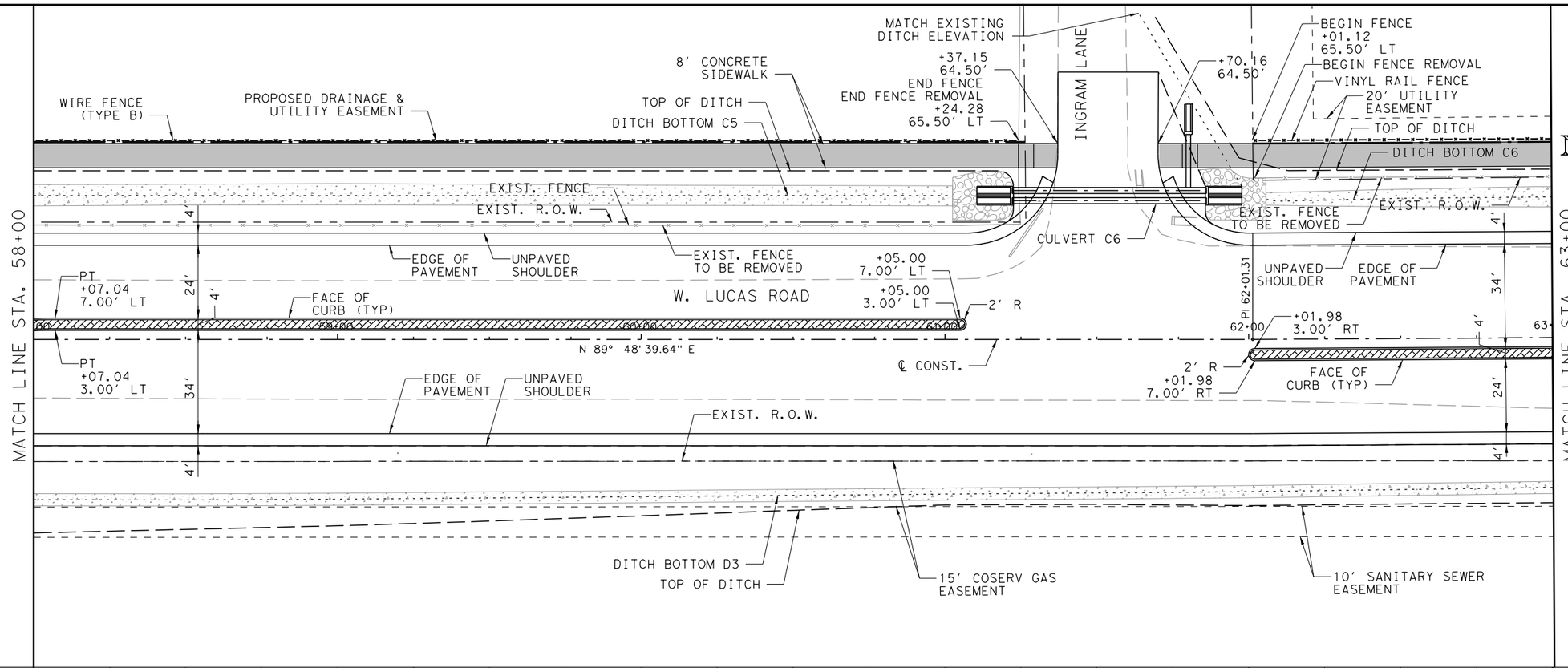
bc engineering
a PARSONS Company

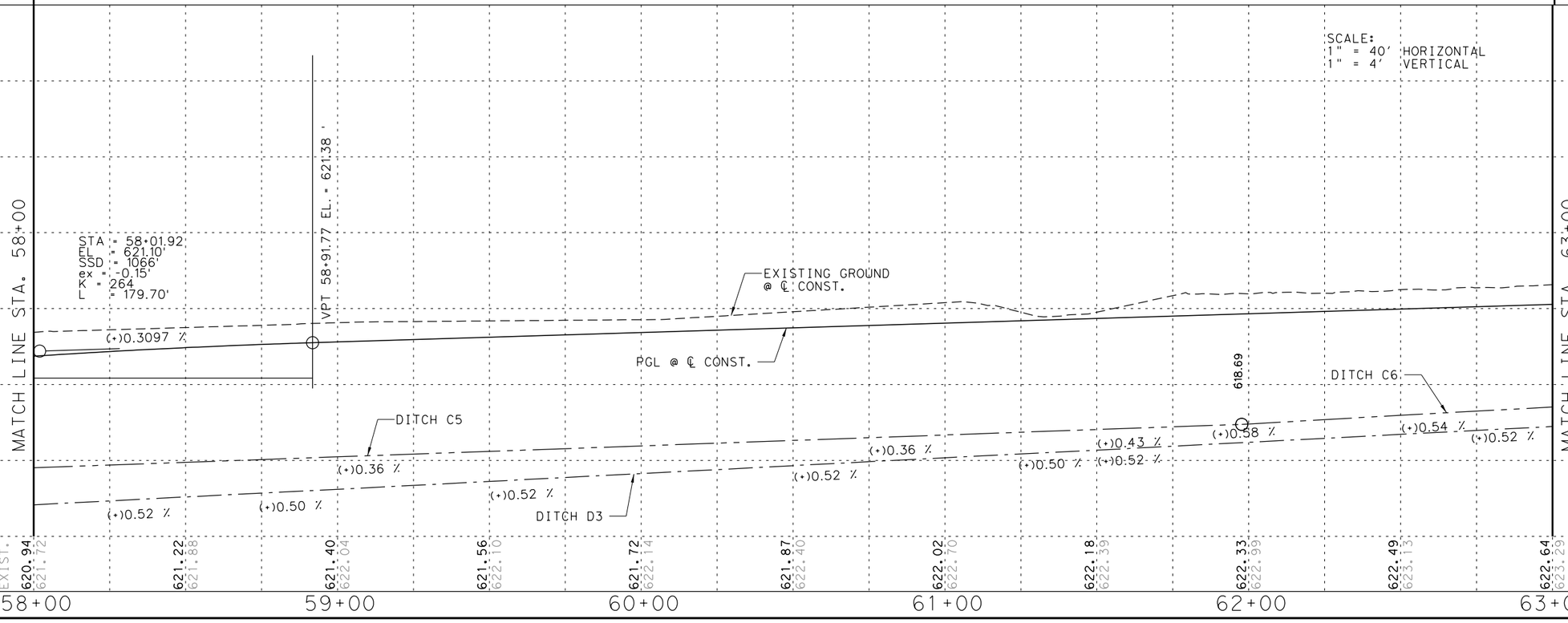
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	90
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:35 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W_Lucas_RDWY_PP10.dgn

Texas 811 Know what's below. Call before you dig.





0 10 40
Feet

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 11 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

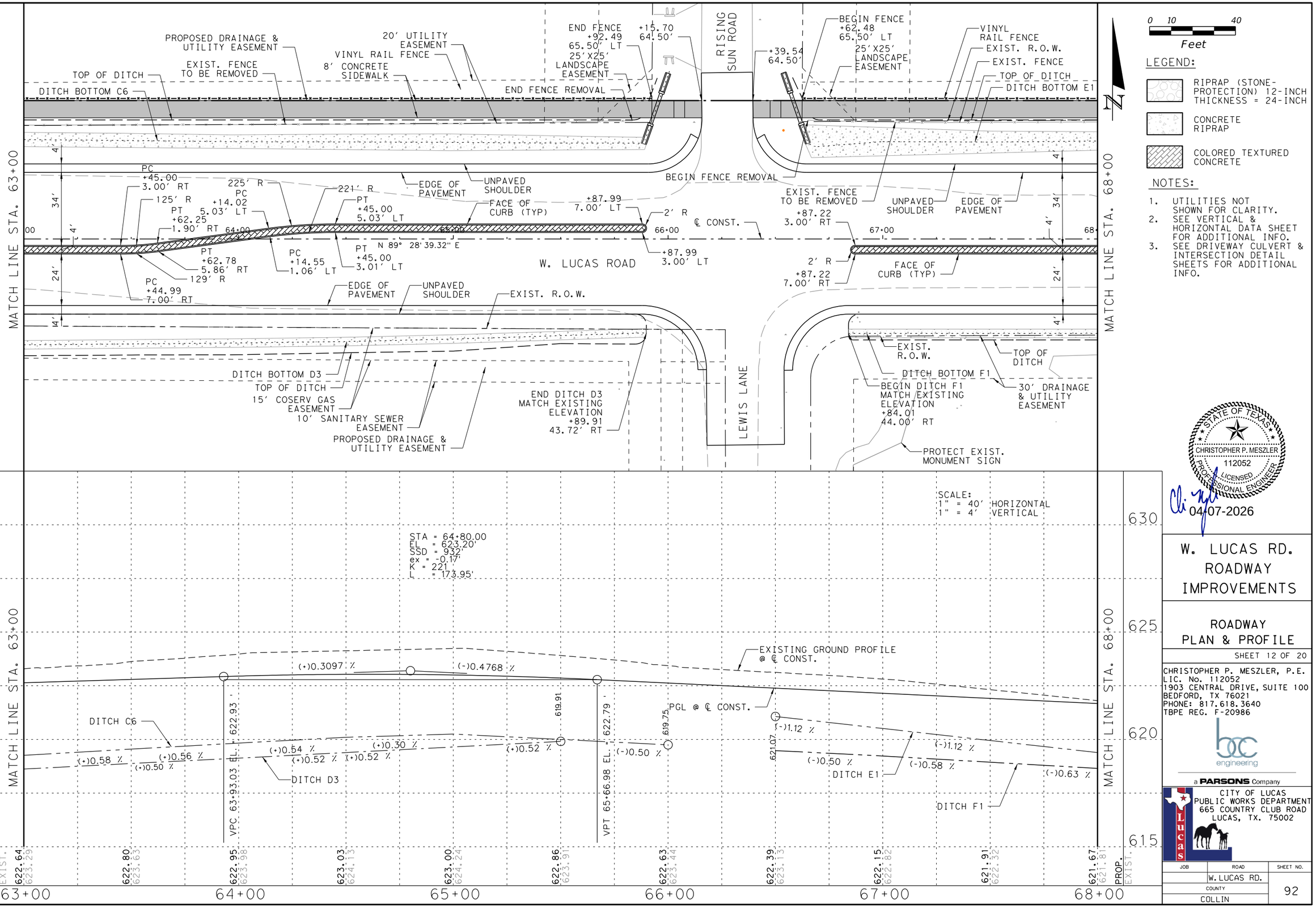
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		91
COLLIN		

DATE: 4/6/2026 1:56:36 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W_Lucas_RDWY_PP11.dgn

Texas 811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 12 OF 20

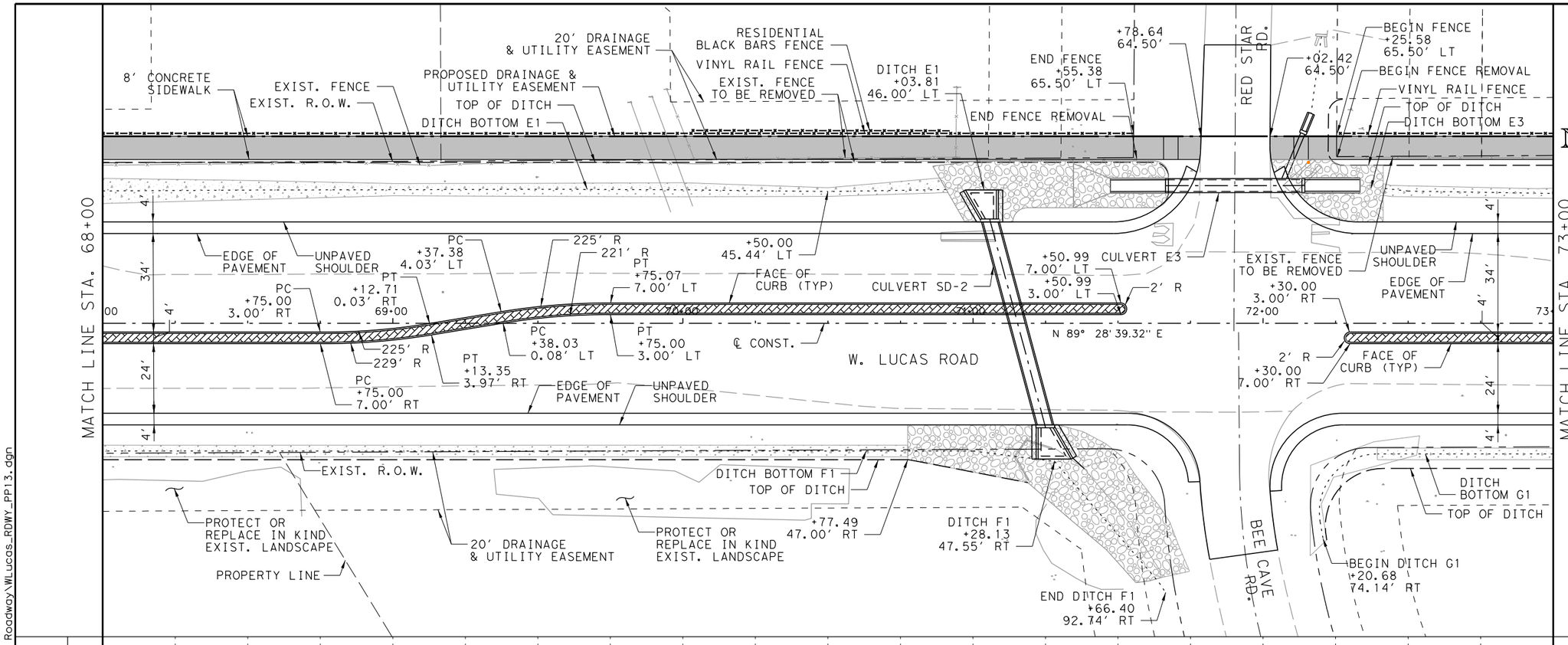
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986
bc engineering
a PARSONS Company

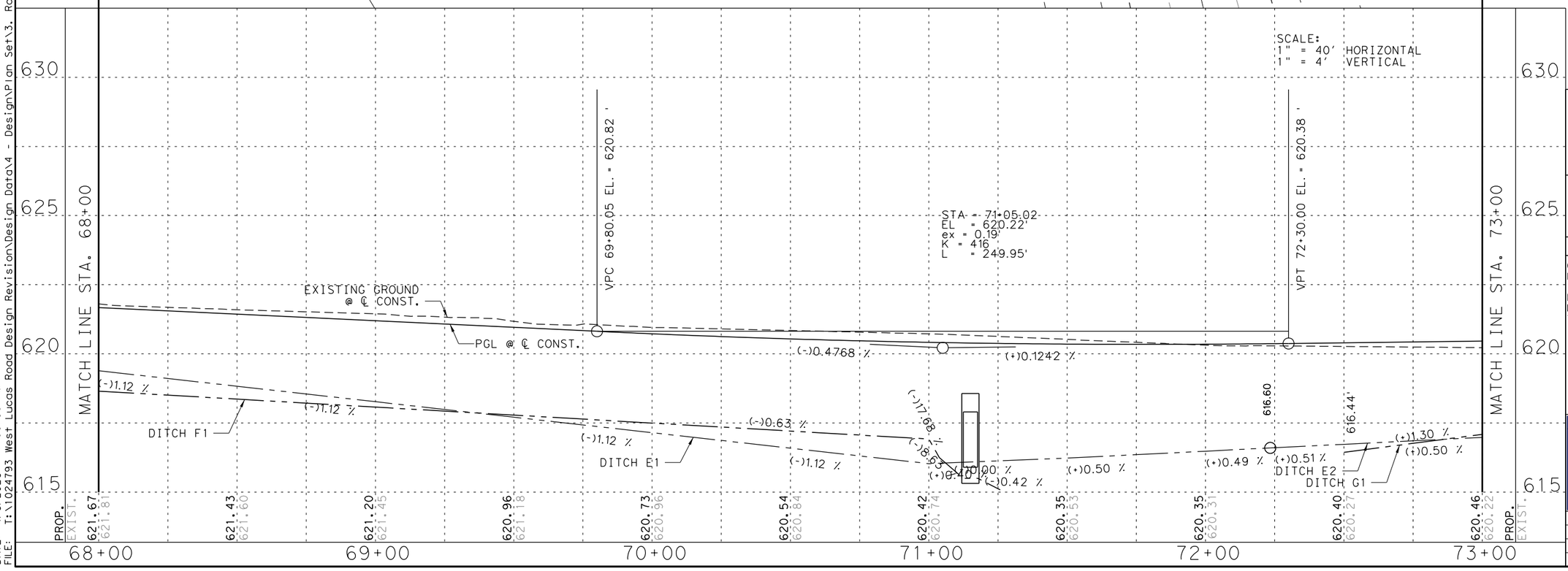
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	92
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:37 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WL_RDWY_PP12.dgn

Texas811 Know what's below. Call before you dig.





DATE: 4/6/2026 1:56:38 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP13.dgn

Texas 811 Know what's below. Call before you dig.

CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

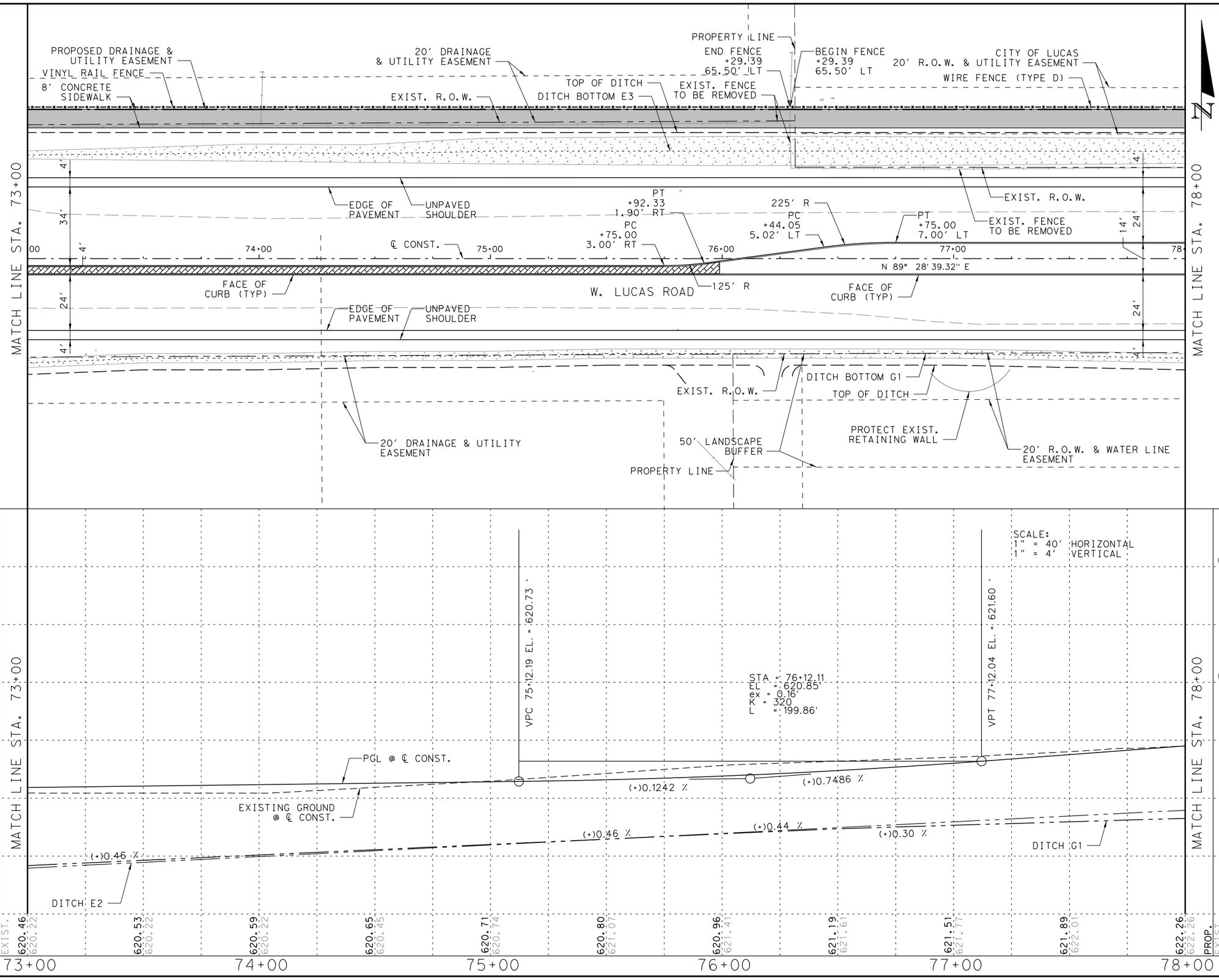
SHEET 13 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	93
COUNTY		
COLLIN		



0 10 40
Feet

N

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 14 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

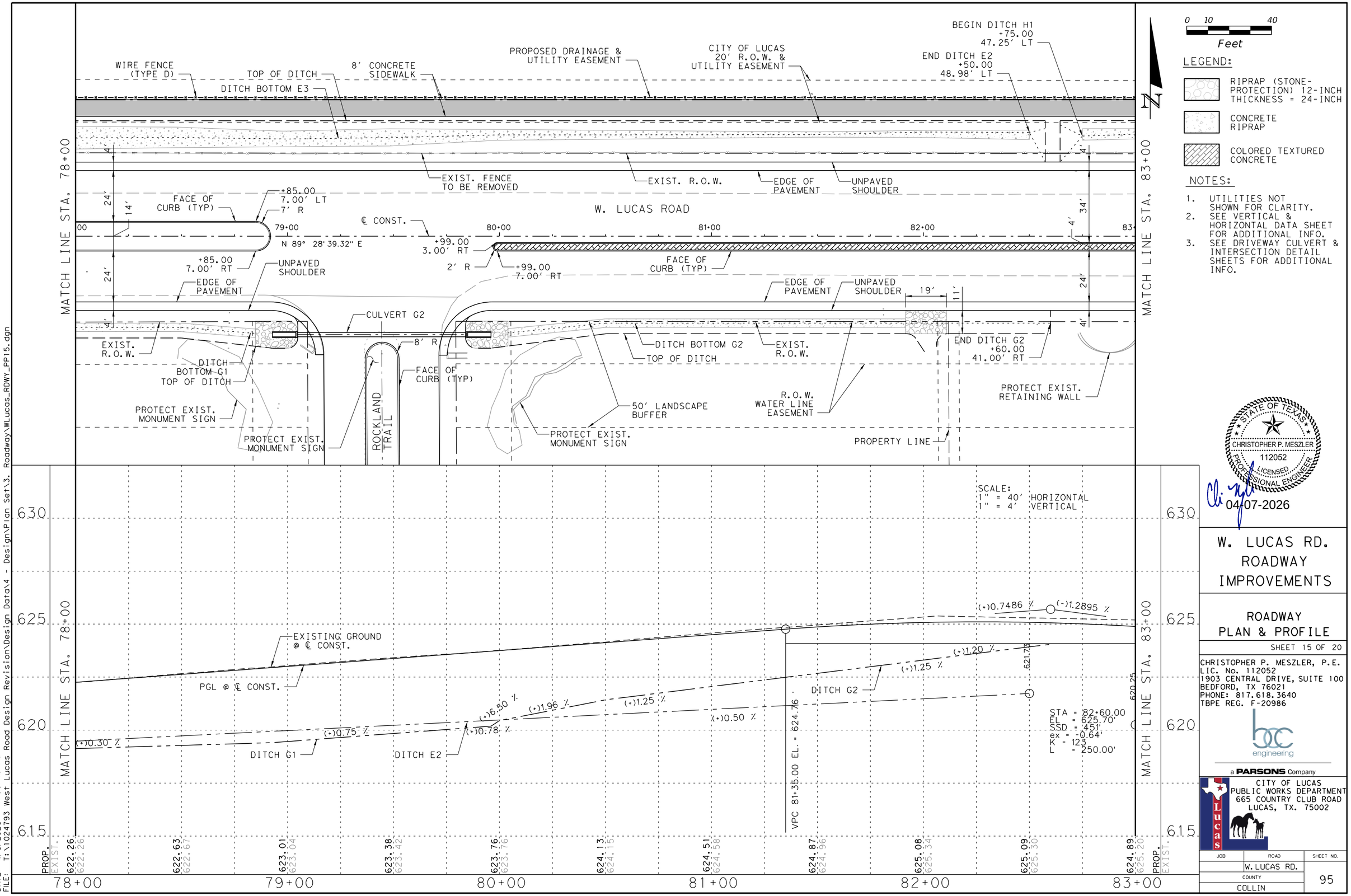
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	94
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:39 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP14.dgn

Texas 811 Know what's below. Call before you dig.



DATE: 4/6/2026 1:56:40 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP15.dgn

CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS
04/07/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

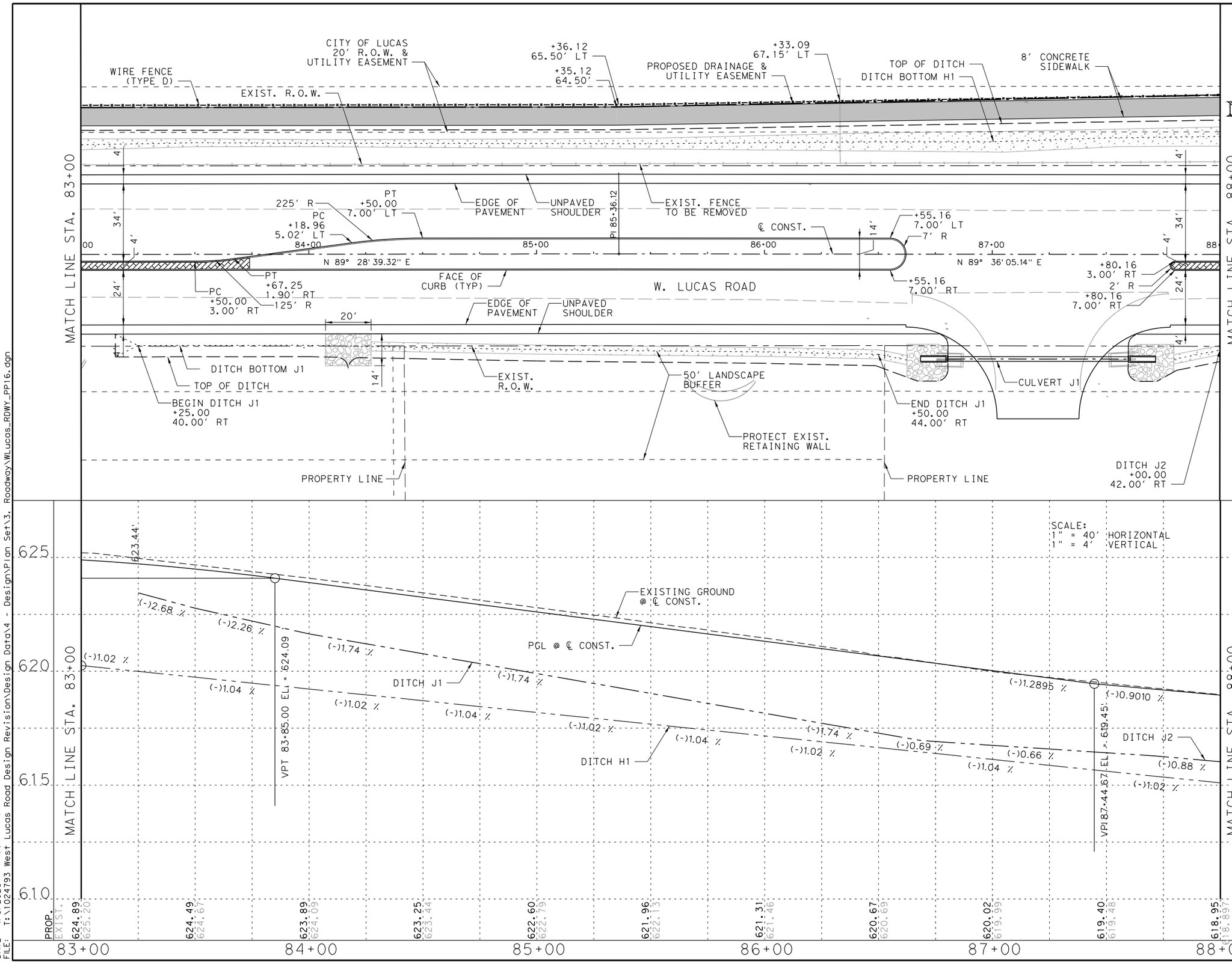
SHEET 15 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	95
	COUNTY	
	COLLIN	



0 10 40
Feet

N

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 16 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

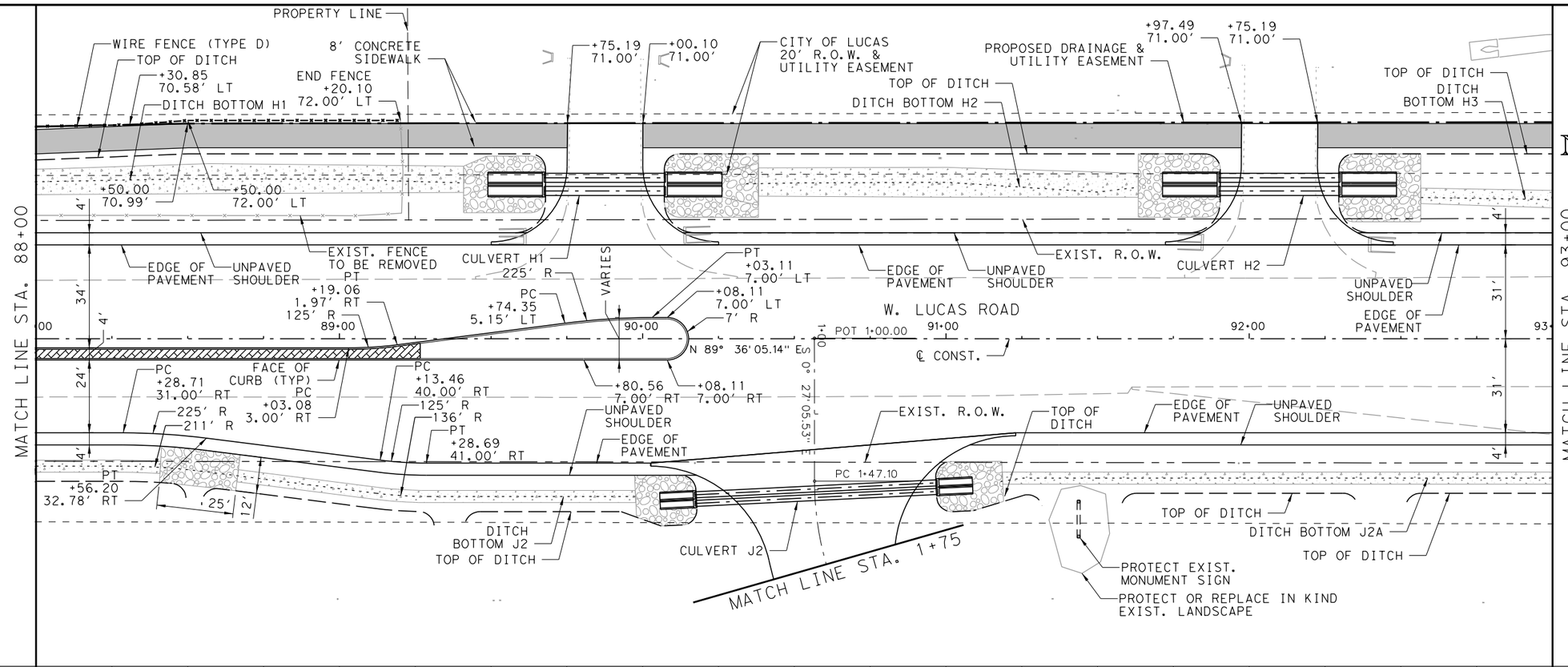
bc engineering
a PARSONS Company

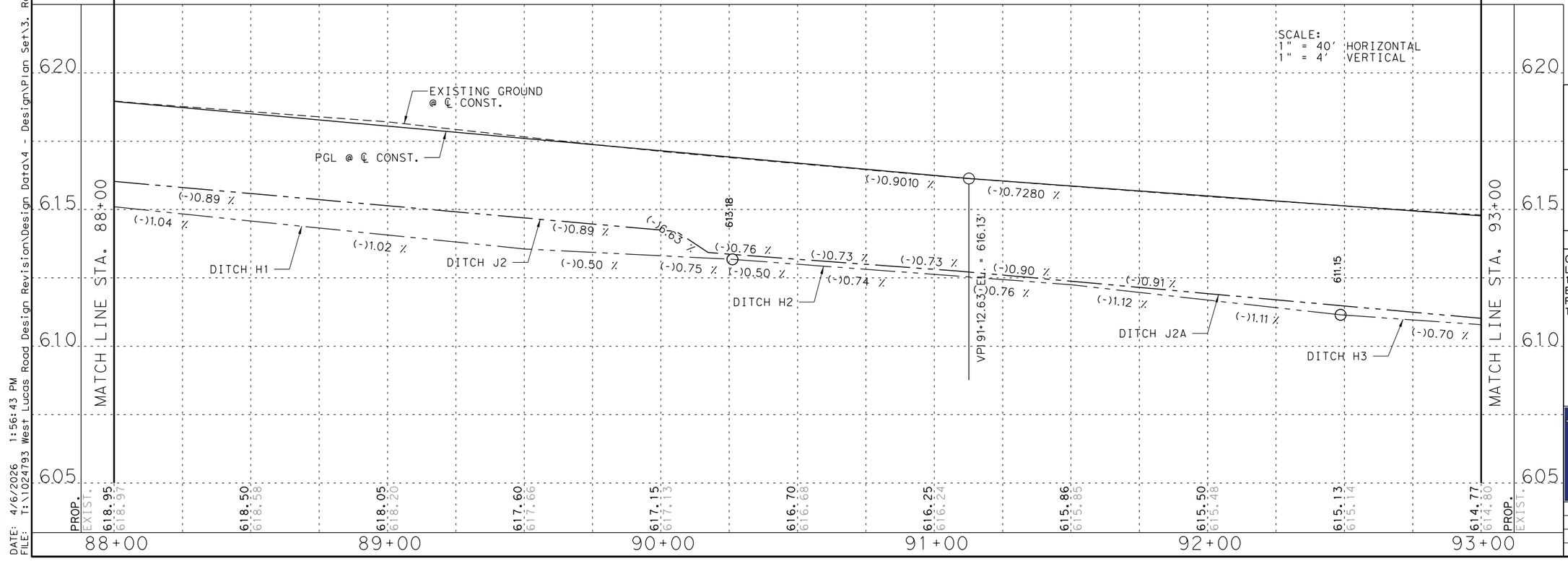
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	96
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:41 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_PP16.dgn

Texas811 Know what's below. Call before you dig.





0 10 40
Feet

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 17 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

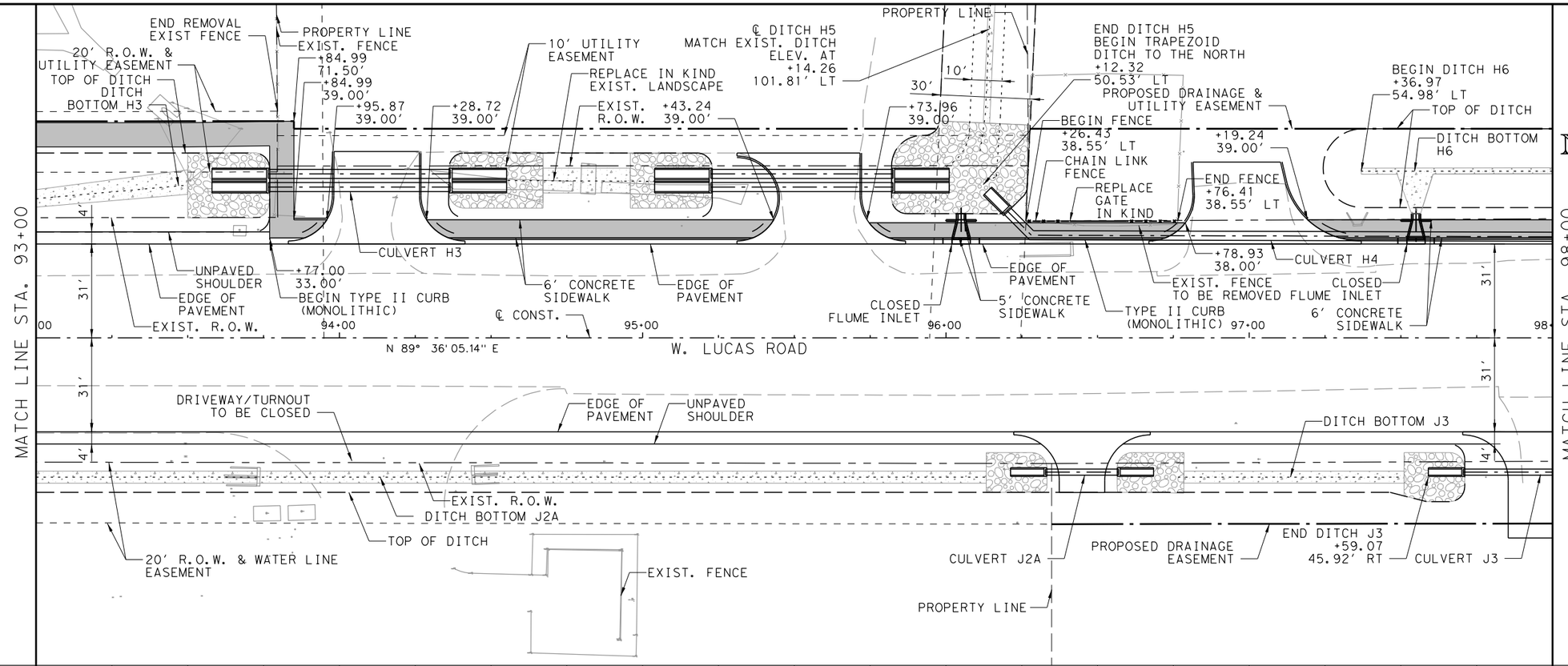
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		97
COLLIN		

DATE: 4/6/2026 1:56:43 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP17.dgn

Texas 811 Know what's below. Call before you dig.



0 10 40
Feet

LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- COLORED TEXTURED CONCRETE

NOTES:

1. UTILITIES NOT SHOWN FOR CLARITY.
2. SEE VERTICAL & HORIZONTAL DATA SHEET FOR ADDITIONAL INFO.
3. SEE DRIVEWAY CULVERT & INTERSECTION DETAIL SHEETS FOR ADDITIONAL INFO.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 18 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

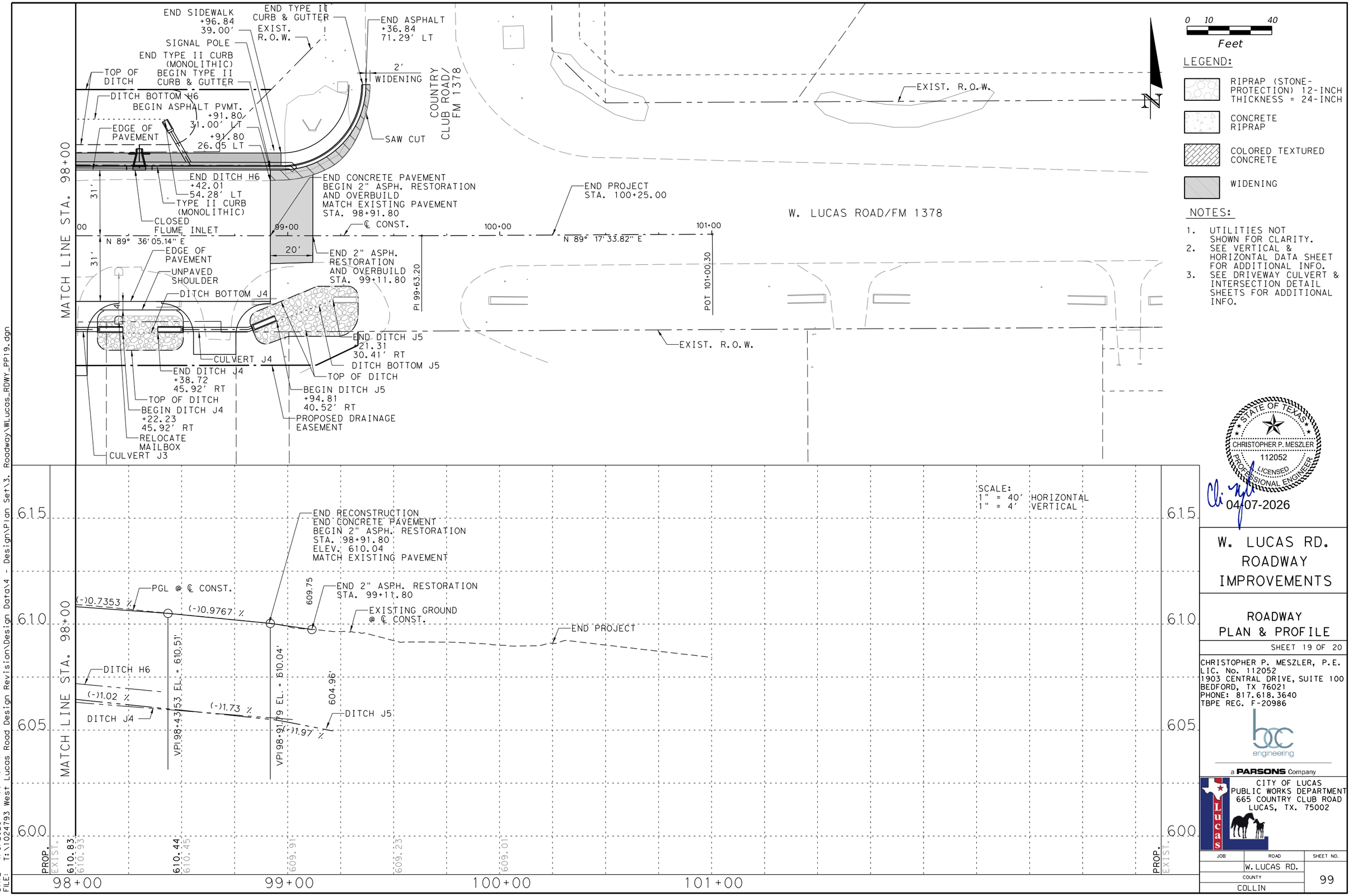
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	98
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:44 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP18.dgn

Texas811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

SHEET 19 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

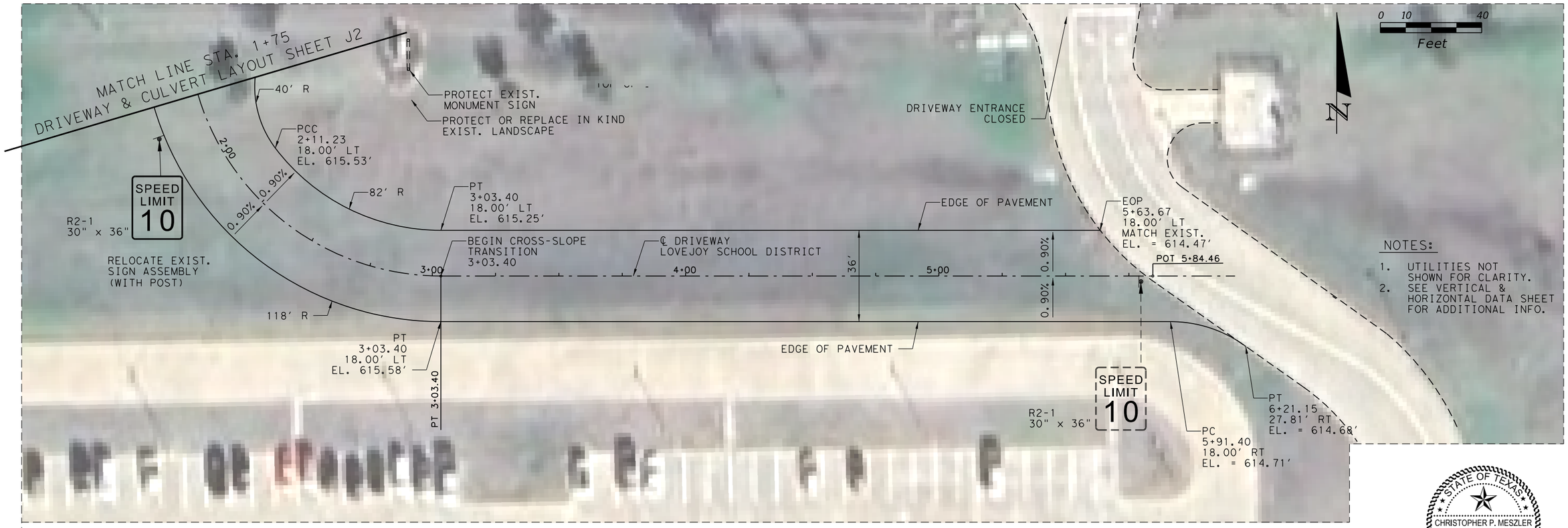
bc engineering
a PARSONS Company

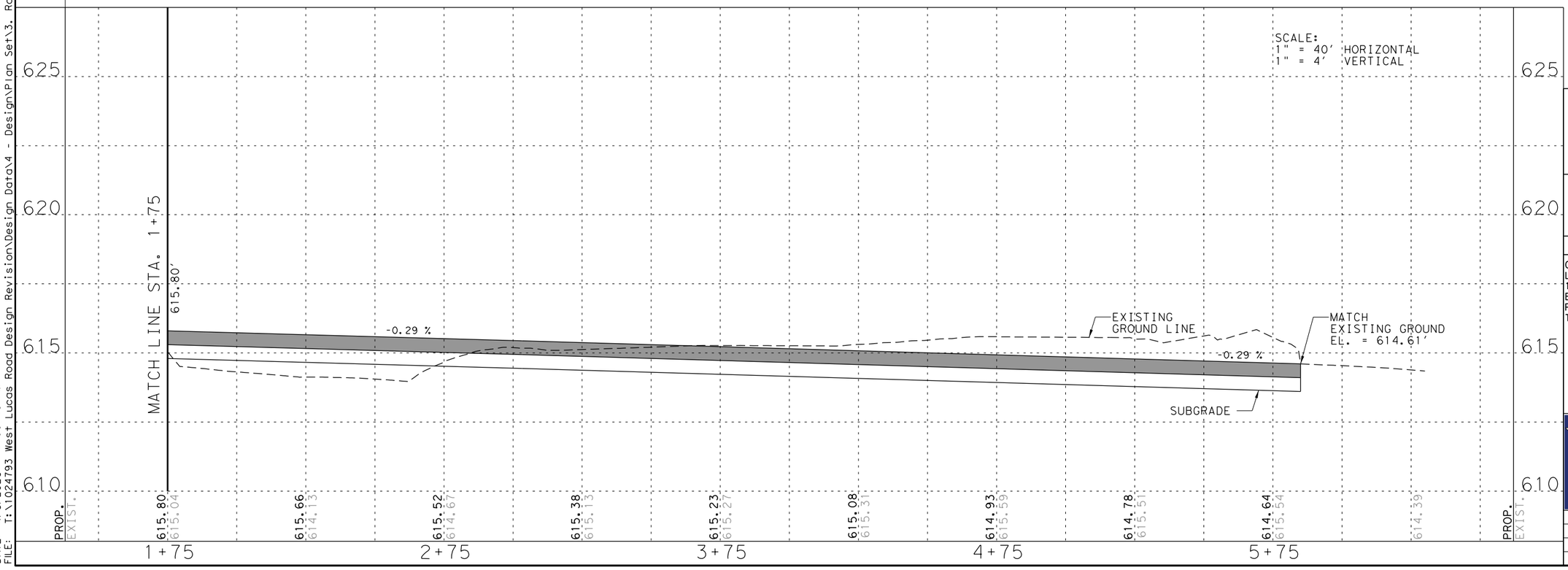
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	99
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:45 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_PP19.dgn

Texas811 Know what's below. Call before you dig.





DATE: 4/6/2026 1:56:46 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_RDWY_PP20.dgn

Texas 811 Know what's below. Call before you dig.

CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY PLAN & PROFILE

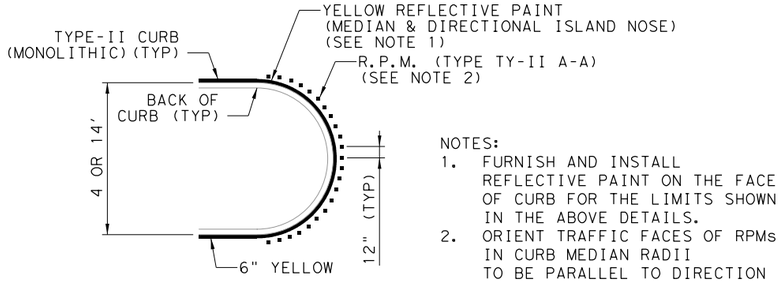
SHEET 20 OF 20

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bcc engineering
a PARSONS Company

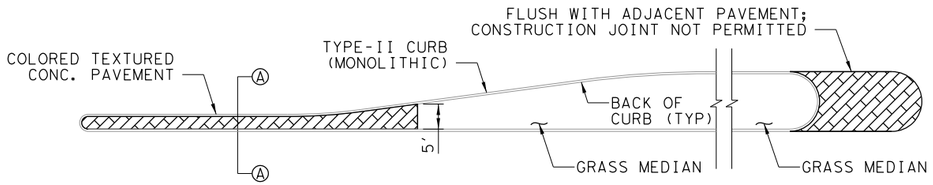
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		100
COLLIN		



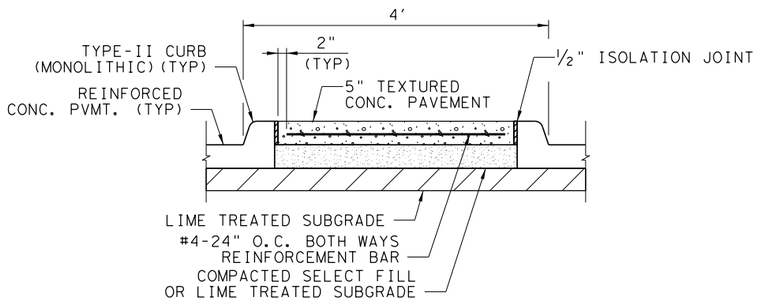
NOTES:
1. FURNISH AND INSTALL REFLECTIVE PAINT ON THE FACE OF CURB FOR THE LIMITS SHOWN IN THE ABOVE DETAILS.
2. ORIENT TRAFFIC FACES OF RPMs IN CURB MEDIAN RADII TO BE PARALLEL TO DIRECTION OF TRAVEL LANES.

R.P.M. PLACEMENT DETAIL
(MEDIAN AND SEPARATOR NOSE)

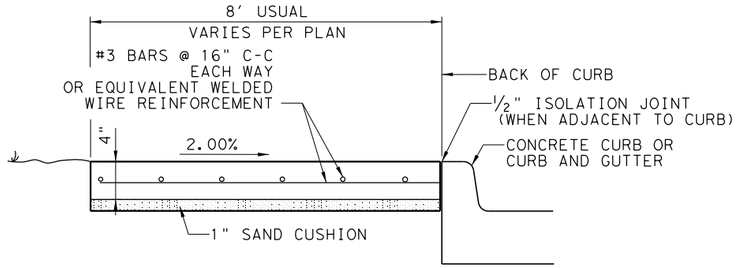


NOTES:
1. PAVEMENT TEXTURE: STAMP CONCRETE WITH BRICK PAVER PATTERN AND APPLY LIGHT BROOM FINISH.
2. PAVEMENT COLOR: SIKA-SCOFIELD CS-14 DARK WALNUT STAIN OR APPROVEDEQUAL.
3. SUBMIT PRODUCT FOR APPROVAL.
4. INSTALL PER MANUFACTURER RECOMMENDATIONS.
5. APPLY STAIN AFTER CONCRETE CURES.
6. DO NOT USE CURING COMPOUND ON PAVEMENT TO BE STAINED AND SEALED.

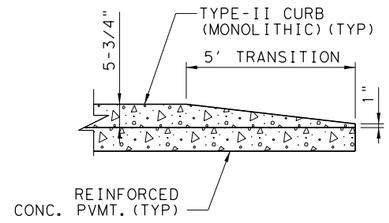
TEXTURED PAVEMENT DETAIL
(LEFT TURN LANE SHOWN)



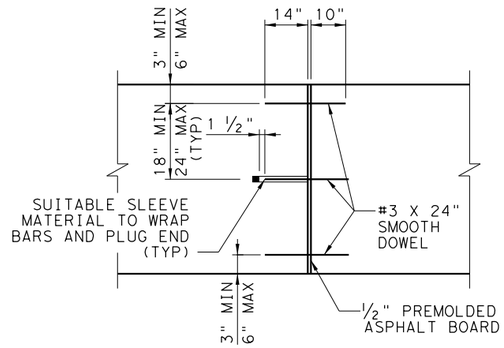
SECTION A-A
TRAFFIC SEPARATOR TYPICAL
(LEFT TURN LANE SHOWN)



CONCRETE SIDEWALK DETAIL



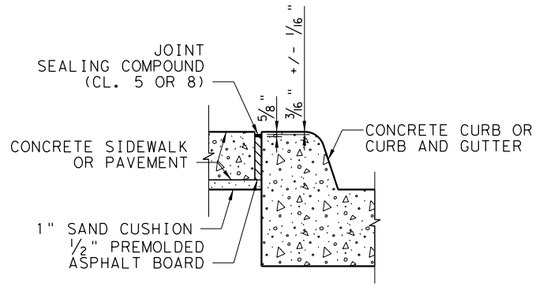
CURB TRANSITION DETAIL



TRANSVERSE EXPANSION JOINT

NOTES:
1. CONCRETE FOR SPECIAL CONCRETE SIDEWALK W/ INTEGRATED RETAINING WALL SHALL BE CLASS "C". ALL OTHER CONCRETE SIDEWALK SHALL BE CLASS "A".
2. ALL REINFORCING STEEL SHALL BE GRADE 60, # 4 BARS UNLESS OTHERWISE INDICATED.
3. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND RETAINING WALLS.
4. LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.
5. IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' X 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.
6. RETAINING WALL WILL BE SUBSIDIARY TO THE ITEM, "CONC SIDEWALKS (SPECIAL) (TYPE A)" OR "CONC SIDEWALKS (SPECIAL)(TYPE B)", WITH LIMITS OF PAY AS SHOWN.
7. SURFACE TREATMENT OF RETAINING WALL FACE DETAILED ELSEWHERE IN THE PLANS.
8. SEE PED STANDARDS FOR TREATMENT AT INTERSECTIONS AND CROSSWALKS.

DRAWING
NOT TO SCALE



1/2" ISOLATION JOINT DETAIL
(SIDEWALK ADJACENT TO CURB)

REFER TO DETAIL CDD (FTW)
MODIFY DETAIL:
1. PAY AREA IS MEASURED FROM EDGE OF ROADWAY PAVEMENT TO END OF DRIVEWAY.
2. REPLACE 1" SAND CUSHION WITH 6" COMPACTED SUBGRADE (95% STD PROCTOR COMPACTION)
3. DO NOT PROVIDE 1" RISE AT GUTTER
4. MAX GRADES: RESIDENTIAL 12%; COMMERCIAL 10%
5. 4000 PSI CONCRETE (MATCH ROADWAY PAVEMENT SPECIFICATION)

DRIVEWAY DETAIL

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

ROADWAY DETAILS

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

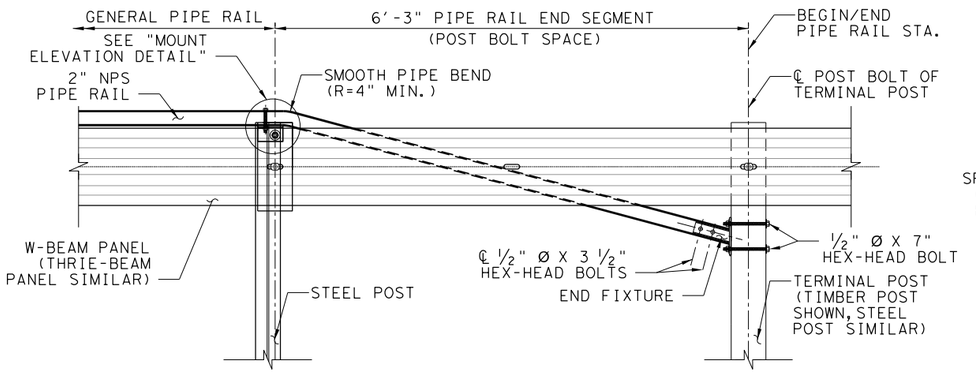
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

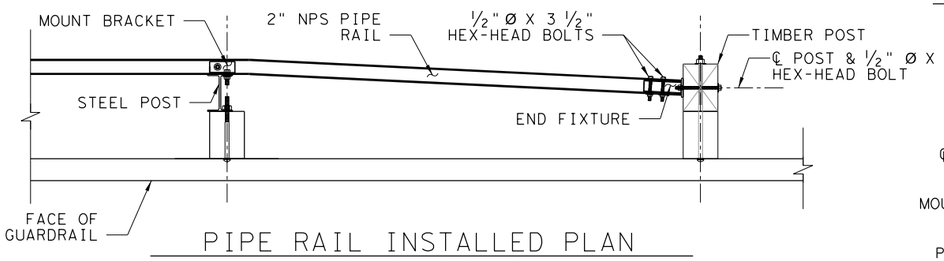
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	101
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

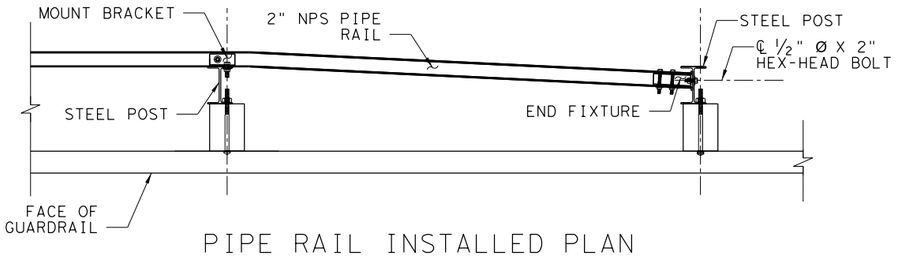
DATE: 4/6/2026 1:56:48 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_RDWY_MISC_Details_01.dgn



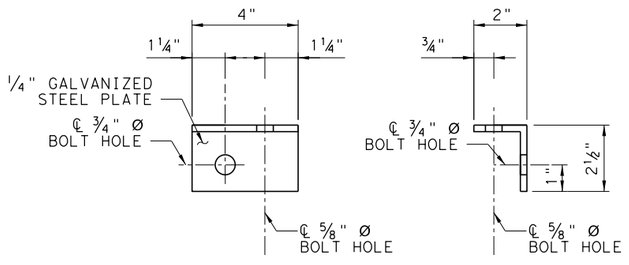
PIPE RAIL INSTALLED ELEVATION
(END SEGMENT SHOWN)



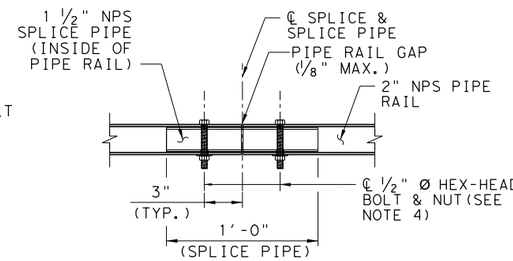
PIPE RAIL INSTALLED PLAN
(END AT TIMBER POST OPTION)



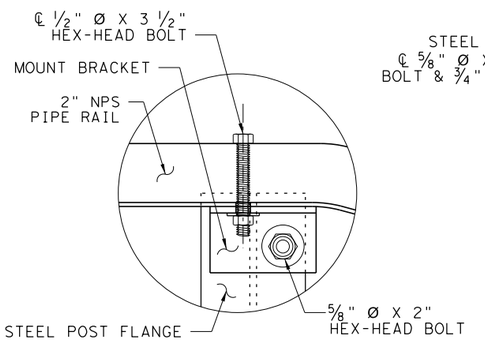
PIPE RAIL INSTALLED PLAN
(END AT STEEL POST OPTION)



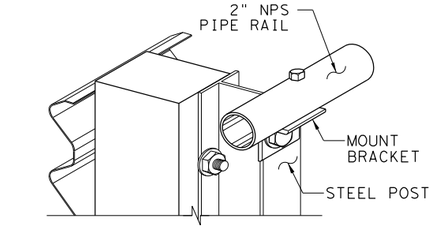
MOUNT BRACKET DETAIL



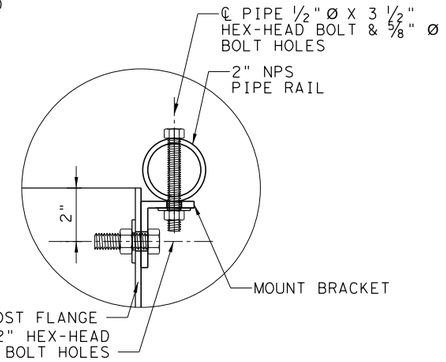
RAIL SPLICE DETAIL



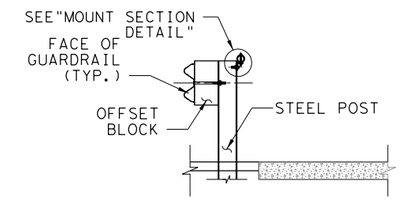
MOUNT ELEVATION DETAIL
(BACK VIEW - MIRRORED)



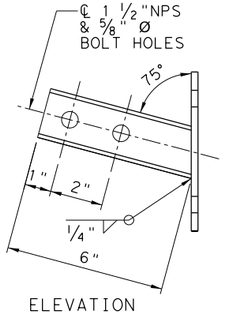
MOUNT ISOMETRIC CUT-AWAY

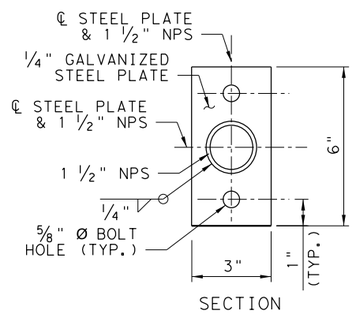


MOUNT SECTION DETAIL

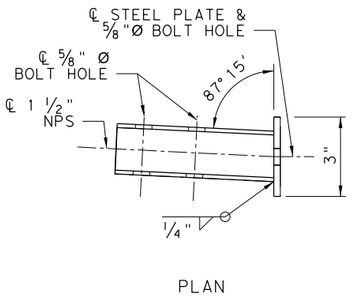


GENERAL PIPE RAIL SECTION
(SHOWN W/SIDEWALK)





END FIXTURE DETAIL



NOTES:

1. GENERAL: INSTALL GENERAL PIPE RAIL WHERE INDICATED IN THE PLANS OR WHEN EXISTING SIDEWALKS OR SHARED USE PATHS ARE LOCATED LESS THAN 4'-0" FROM THE BACK OF STEEL POSTS AS.
2. PIPE RAIL END SEGMENTS: PLACE END SEGMENTS ON BOTH ENDS OF GENERAL PIPE RAIL RUNS, WITH END FIXTURES MOUNTED TO TERMINAL POSTS LOCATED OUTSIDE OF APPROACH TERMINAL ASSEMBLY ('LE'), TRAILING ANCHORAGE ASSEMBLY ('LT'), AND APPROACH TRANSITION ('LA') SEGMENTS.
3. MATERIALS: USE STEEL BRACKETS, FIXTURES, AND PIPES.
4. RAIL SPLICES: INSTALL RAIL SPLICES TO JOIN PIECES OF 2" NPS PIPE RAIL INTO A CONTINUOUS SYSTEM. PLACE SPLICES AS NEEDED, AT A SPACING OF 18'-0" OR GREATER. ORIENT THE HEAD OF BOLT ON THE TOP OF THE PIPE.

DRAWING
NOT TO SCALE

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

PIPE RAIL MBGF PEDESTRIAN PROTECTION

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		102
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:49 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WL_Roadway_MISC_Details_02.dgn

DITCH BOTTOM
TOP OF DITCH
EDGE OF PAVEMENT
UNPAVED SHOULDER
EXIST. R.O.W.
2.0%
34+17.43
29.00' RT
EL.= 621.84'
PT
25'R
STA 34+17.43
EL= 622.42'
34+00
STA 33+92.43
EL= 621.98'
STA 33+68.93
EL= 622.69'
STA 33+68.93
EL= 622.11'
POT 1+00.00
90°00'00"
CULVERT A7
STA. EQ = W. LUCAS RD. STA. = 33+60.43
℄ RATHBONE DR. STA. = 1+00.00
1+00
8.5'
8' SIDEWALK
STA 33+51.93
EL= 622.21'
STA 33+51.93
EL= 622.79'
℄ CONST.
W. LUCAS ROAD
STA 33+28.43
EL= 622.34'
STA 33+03.43
EL= 623.07'
PC
33+03.43
29.00' RT
EL.= 622.49'
PROPERTY LINE
EXIST. FENCE
PI 33+09.64
33+00
UNPAVED SHOULDER
EDGE OF PAVEMENT
FACE OF CURB
C
STA 1+36.19
39.46' LT
EL= 622.16'
PC
1+54.00
32.00' LT
EL.= 622.48'
1+82.00
32.00' LT
MATCH EXIST.
EL.= ±622.68'
PROTECT EXIST. LANDSCAPE OR REPLACE IN KIND
EXIST. MONUMENT SIGN
EXIST. R.O.W.
EXIST. EDGE OF PAVEMENT
SAWCUT
1+82.00
8.00' LT
MATCH EXIST.
EL.= ±623.25'
END CONC. PVMT.
CULVERT B1
1+59.00
32.00' LT
EL =622.58'
1+59.00
EL =622.72'
1+62.00
8.50' LT
PGL LT
EXIST. CURB
POT 2+50.00
2.00
8'R
EL= 622.62'
℄ RATHBONE DR.
EL= 622.71'
S 0° 27'53.73" E
CURB TYPE-II (MONOLITHIC)
RATHBONE DR.
PGL RT
1+62.00
8.50' RT
1+59.00
8.00' RT
EL= 622.81'
1+59.00
32.00' RT
EL= 622.85'
1+82.00
8.00' RT
MATCH EXIST.
EL.= ±623.31'
END CONC. PVMT.
PT
1+54.00
32.00' RT
EL.= 622.84'
1+82.00
32.00' RT
MATCH EXIST.
EL.= ±622.89'
C
STA 1+36.37
39.28' RT
EL= 622.67'
PROTECT EXIST. LANDSCAPE OR REPLACE IN KIND
EXIST. DRAINAGE EASEMENT
EXIST. SANITARY EASEMENT

0 5 20
Feet

NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. REMOVE AND REPLACE MONUMENT SIGNS IN KIND.

PGL LEFT

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

630 / 625 / 620

VPT 1+29.00
EL. = 622.40 '
EOP WLR
VPT 1+59.00
EL. = 622.71'
622.69
623.25
BEGIN PROFILE
STA. 1+00.00
EL. 622.69'
(-)1.00%
(+)1.03%
(+)2.36 %
PGL LT @ RATHBONE DR.
CULVERT B1
END PROFILE
STA. 1+82.00
EL. 623.25'
MATCH EXIST.
EXIST. GROUND

PGL RIGHT

625 / 620 / 615

VPT 1+29.00
EL. = 622.50 '
EOP WLR
VPT 1+59.00
EL. = 622.81'
622.79
623.31
BEGIN PROFILE
STA. 1+00.00
EL. 622.79'
(-)1.00%
(+)1.03%
(+)2.17%
PGL RT @ RATHBONE DR.
CULVERT B1
END PROFILE
STA. 1+82.00
EL. 623.31'
MATCH EXIST.
EXIST. GROUND

1+00 2+00

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS RATHBONE DR.

SHEET 1 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

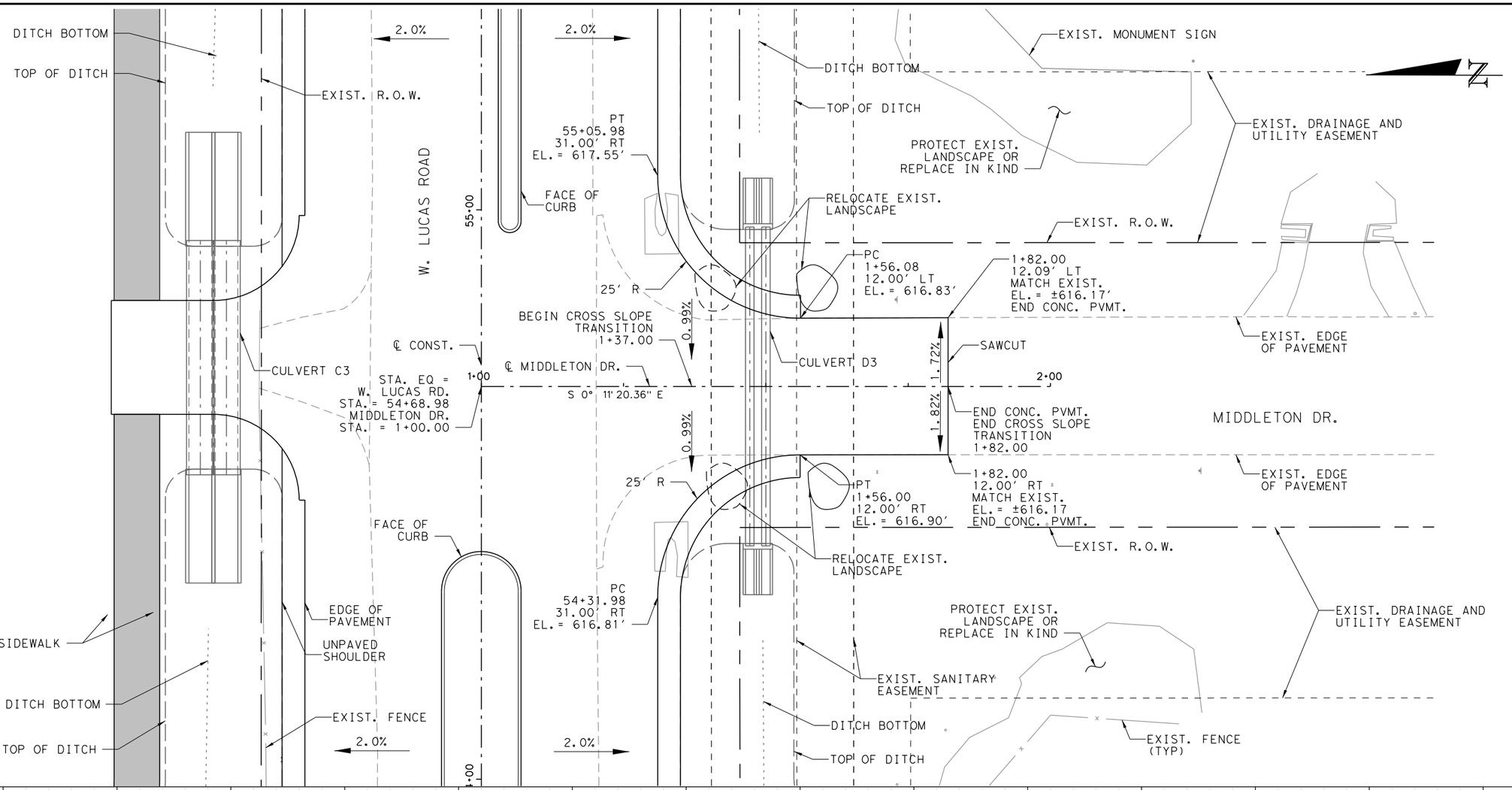
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		103
COLLIN		

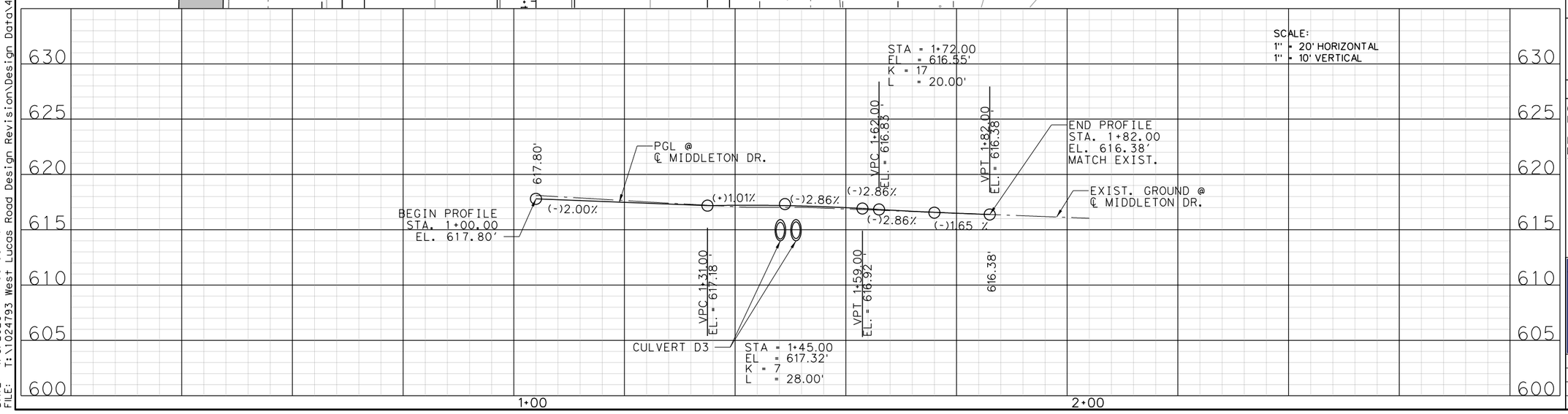
DATE: 4/6/2026 1:56:52 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_INT_01_Rathbone_LTRT.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS MIDDLETON DR.

SHEET 2 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

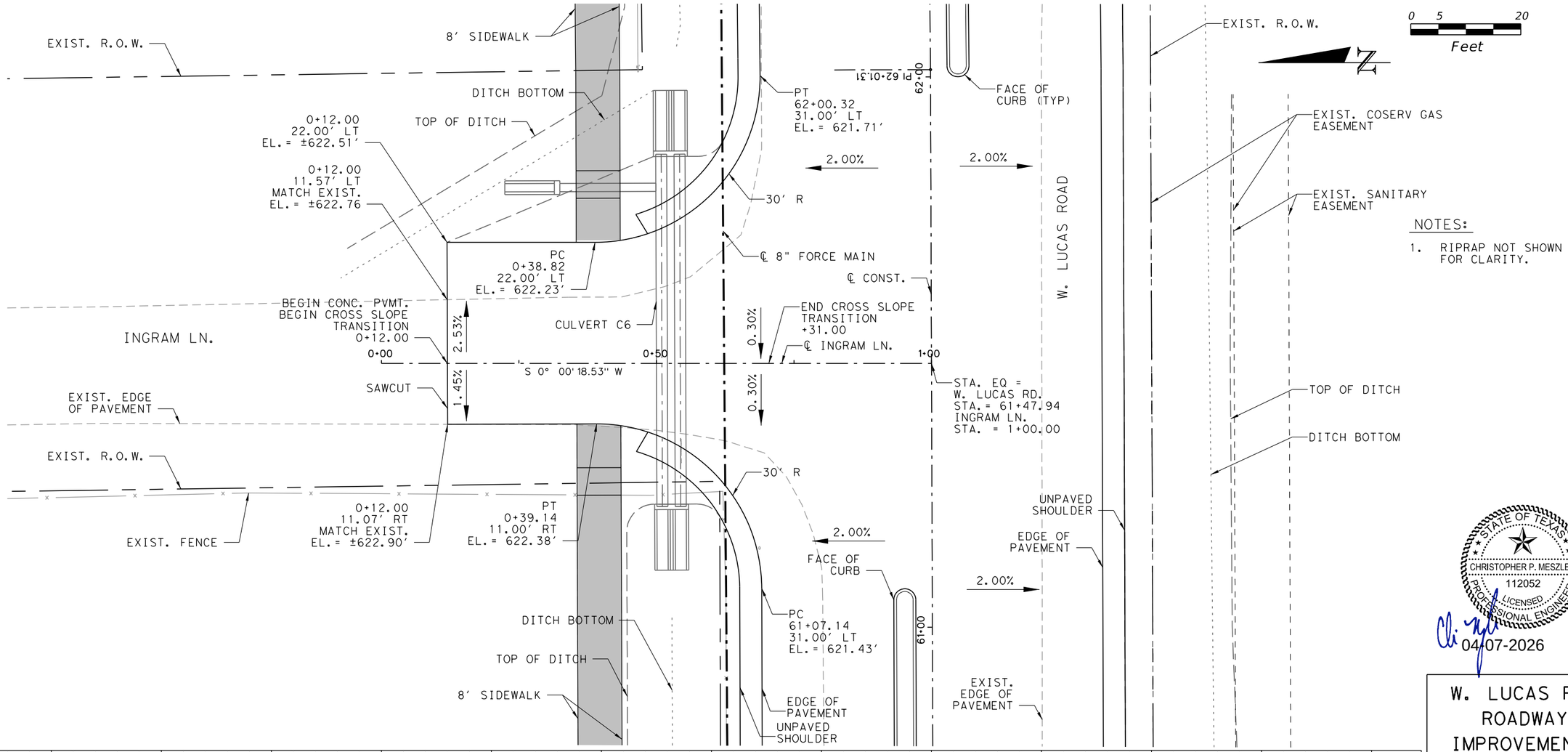
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	104
COUNTY		
COLLIN		

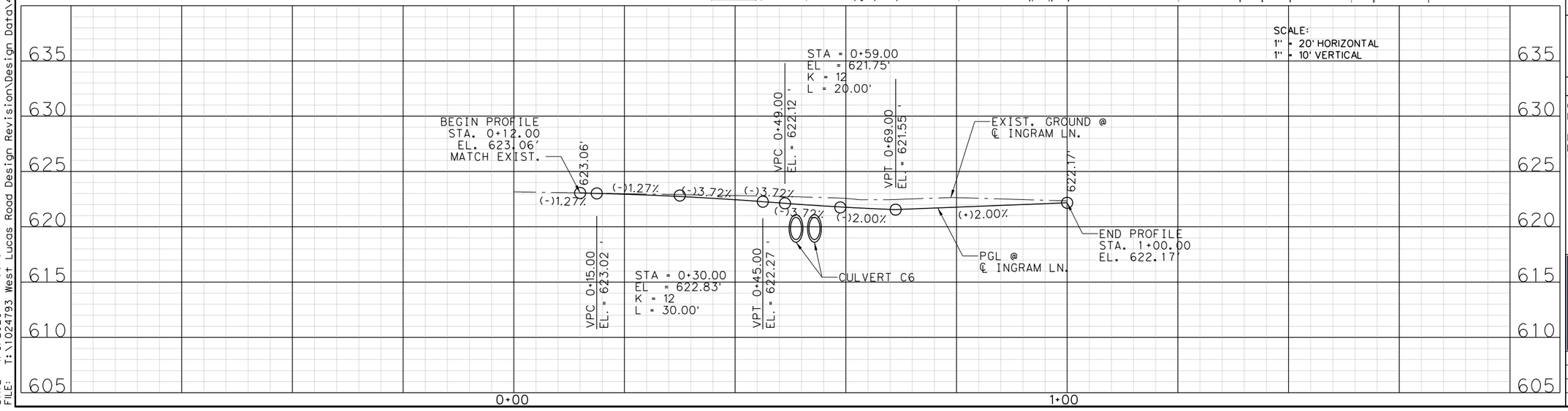
DATE: 4/6/2026 1:56:53 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_INT_02_Middleton.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS INGRAM LN.

SHEET 3 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

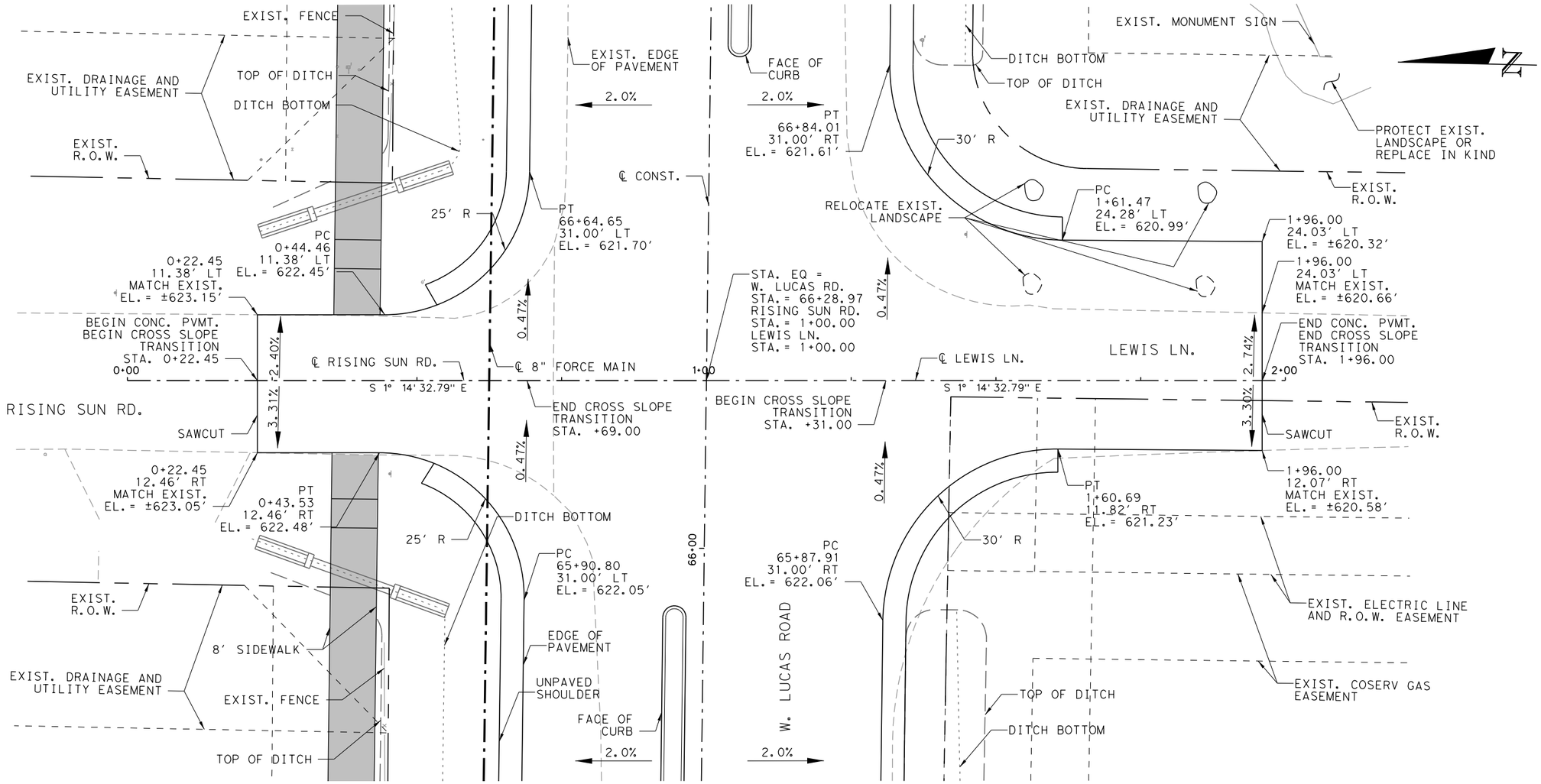
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	105
COUNTY		
COLLIN		

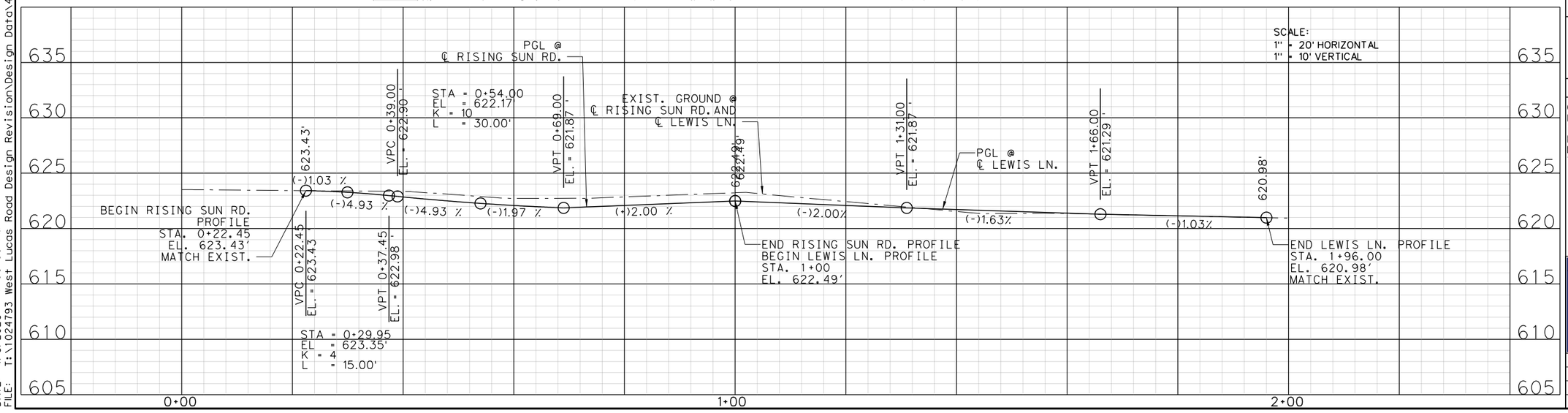
Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:56:54 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_INT_03_Ingram.dgn



NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.



CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS-LEWIS LN. & RISING SUN RD.

SHEET 4 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

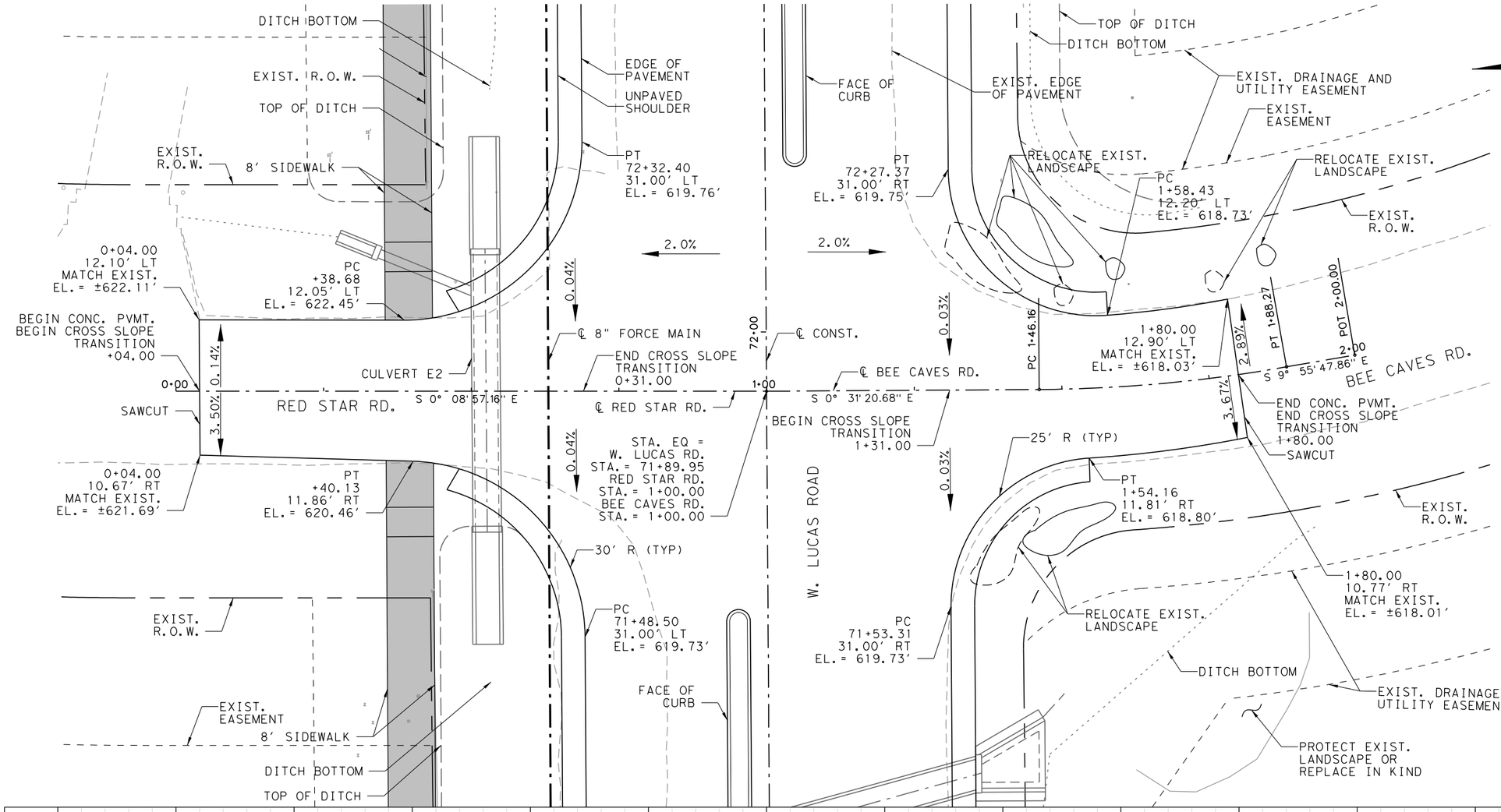
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	106
COUNTY		
COLLIN		

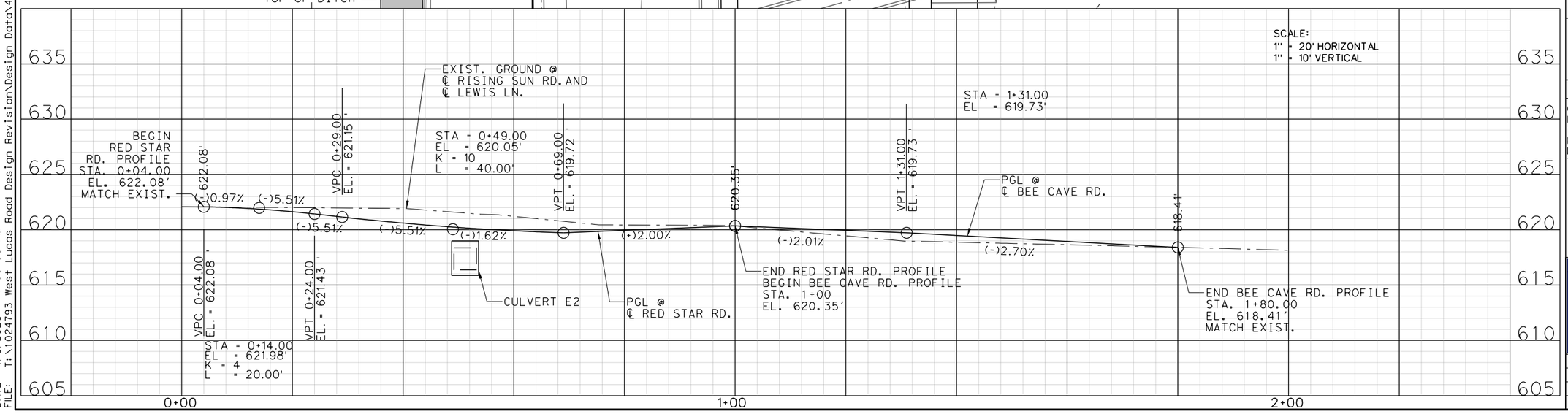
DATE: 4/6/2026 1:56:55 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_INT_04_LewisRisingSun.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.



CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS-RED STAR RD & BEE CAVES RD.

SHEET 5 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

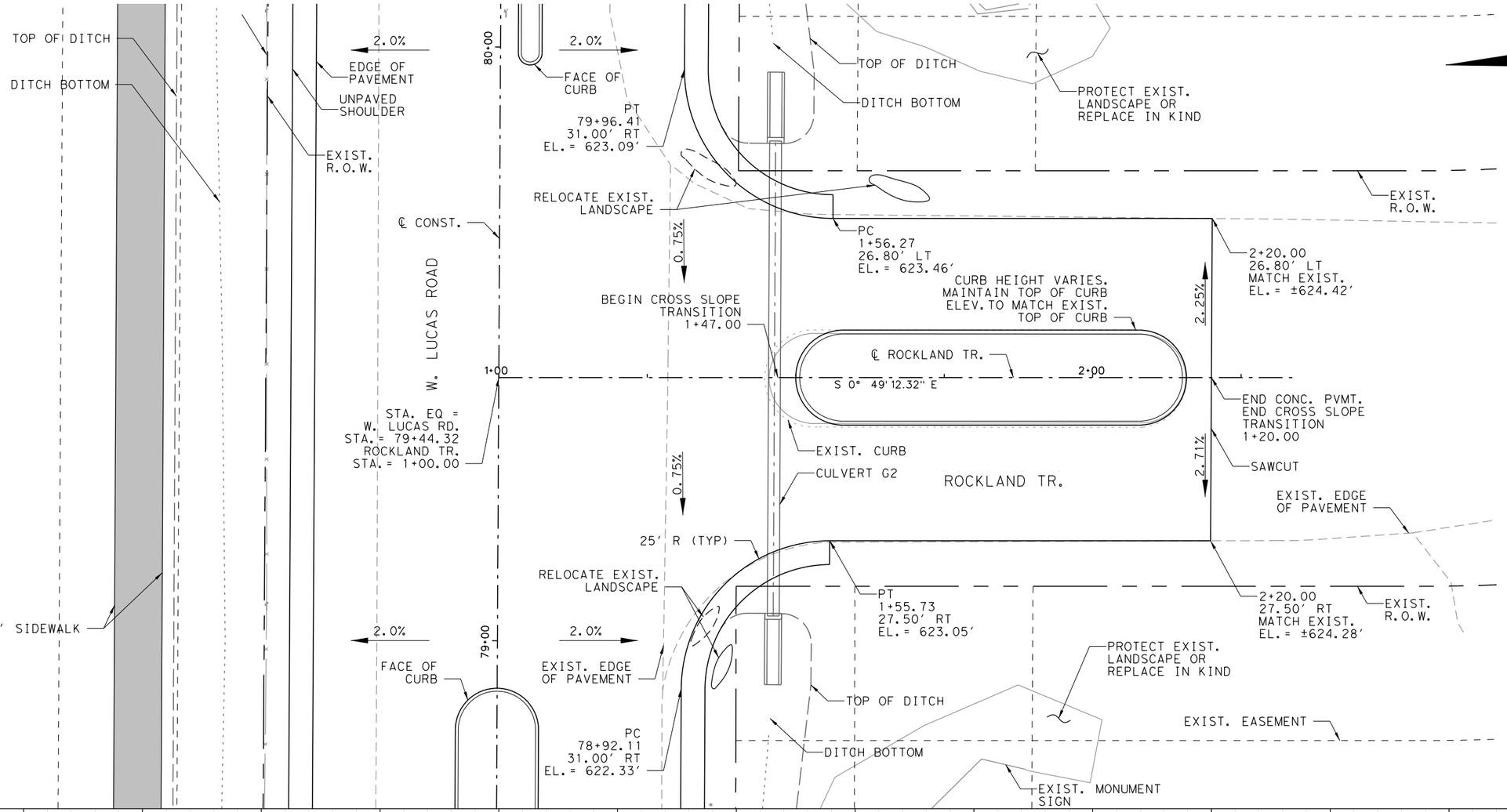
bc engineering
a PARSONS Company

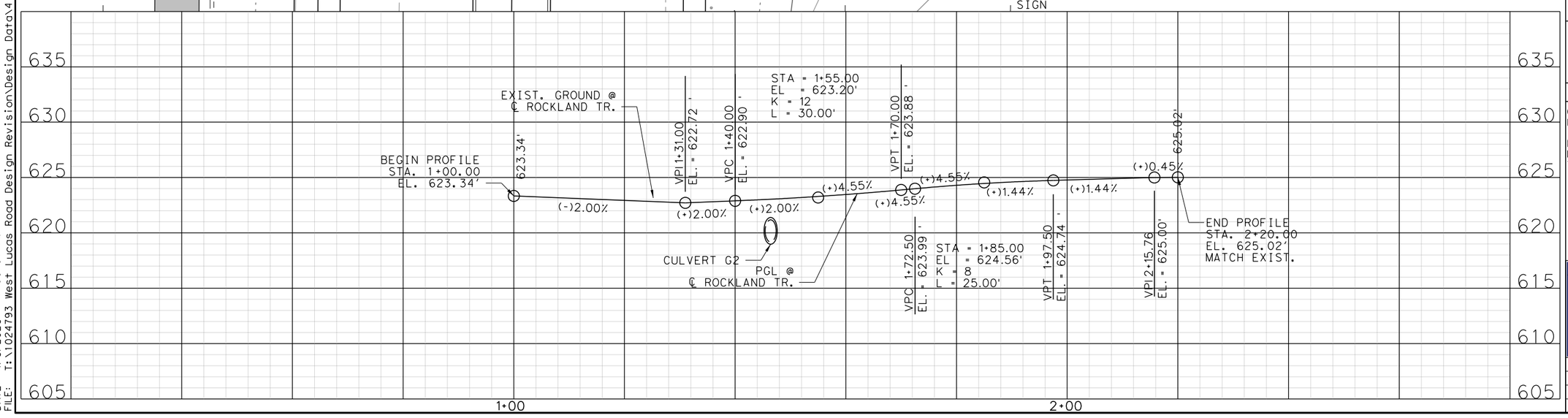
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	107
COUNTY	COLLIN	

DATE: 4/6/2026 1:56:56 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\W.Lucas_INT_05_BeeCave_RedStar.dgn

Texas 811 Know what's below. Call before you dig.





NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. REFER TO ROADWAY DETAIL SHEET FOR CURB DETAIL.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS ROCKLAND TR.

SHEET 6 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

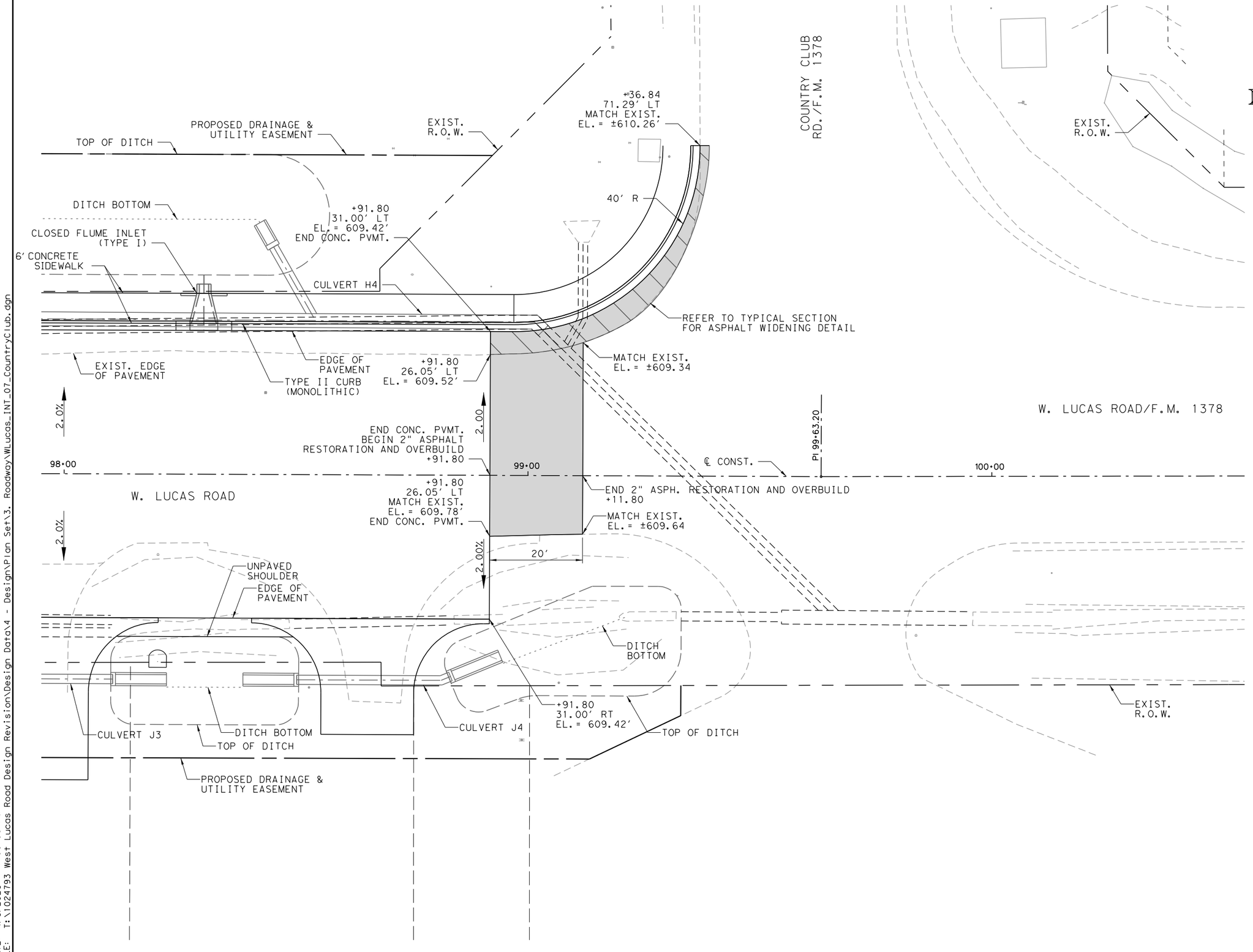
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	108
COUNTY		
COLLIN		

DATE: 4/6/2026 1:56:57 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_INT_06_Rockland.dgn

Texas 811 Know what's below. Call before you dig.



NOTES:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. REFER TO ROADWAY DETAIL SHEET FOR CURB DETAIL.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

INTERSECTION DETAILS COUNTRY CLUB RD.

SHEET 7 OF 7

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

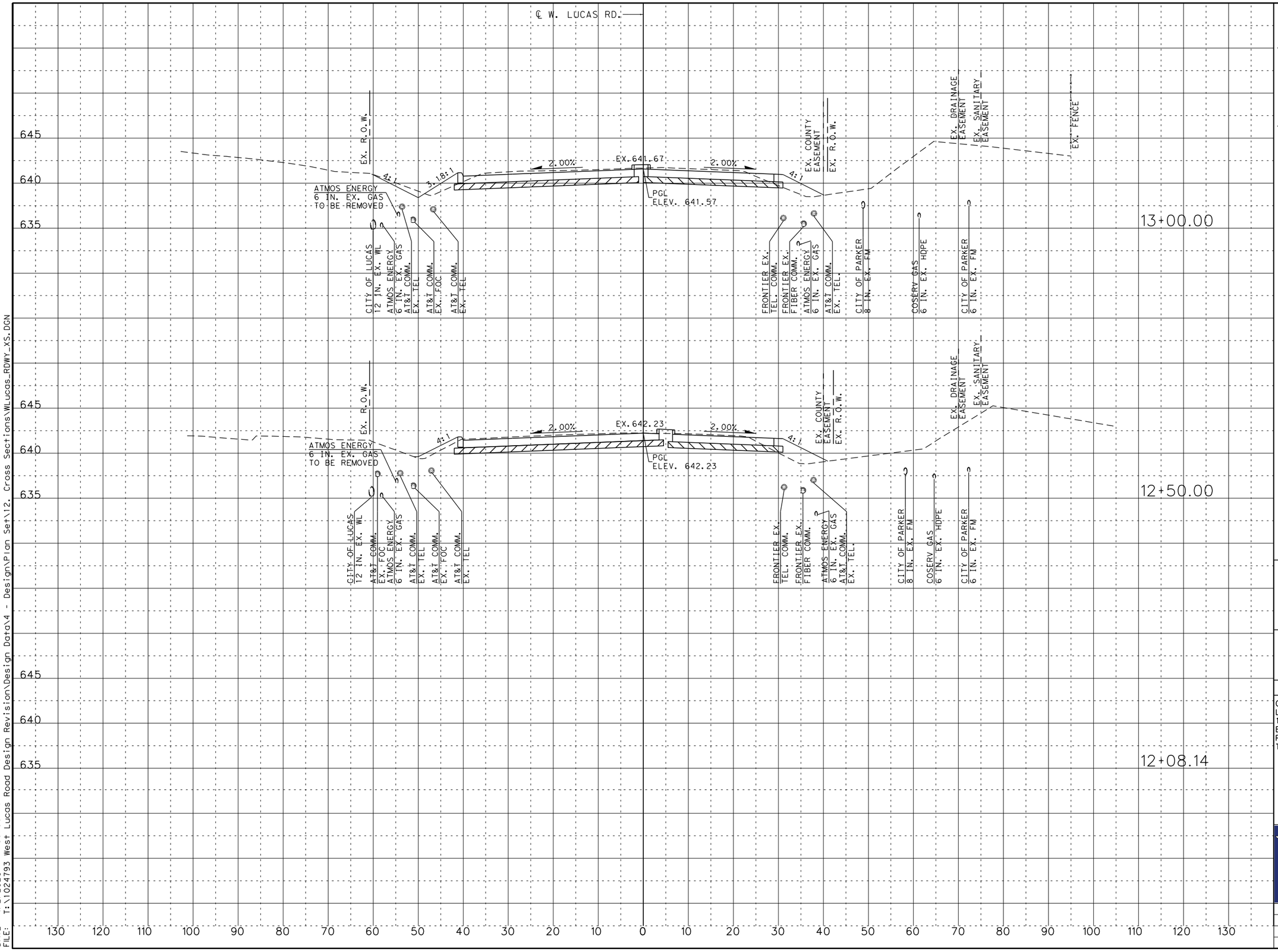
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		109
COLLIN		

DATE: 4/6/2026 1:56:58 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\3. Roadway\WLucas_INT_07_CountryClub.dgn

Texas 811 Know what's below. Call before you dig.



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 1 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

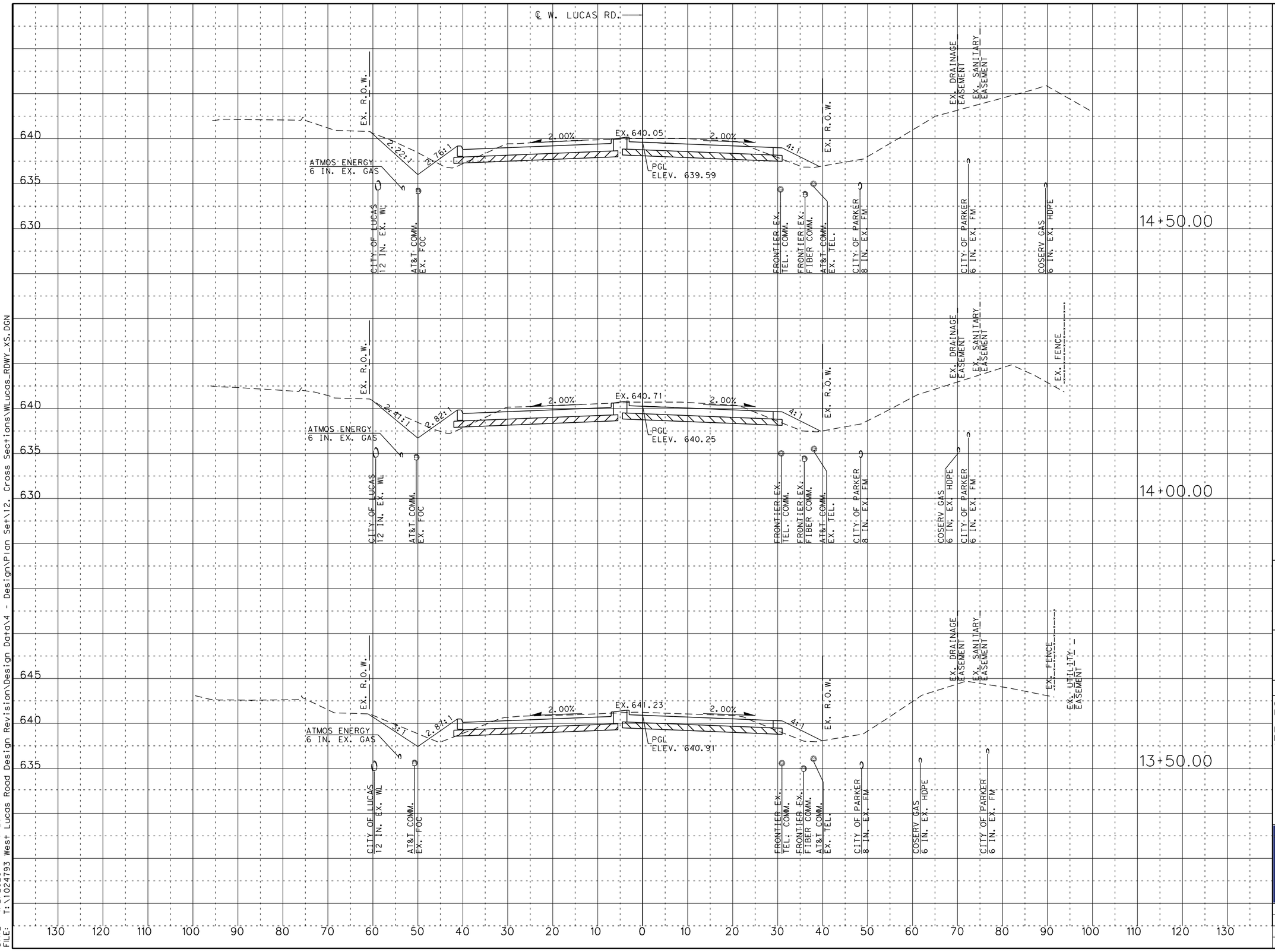
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	110
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW (TEXAS ONE-CALL SYSTEM, INC.)
811 OR 1-800-DIG-TESS (1-800-344-8377)
WWW.DIGTESS.COM
Texas811 Know what's below. Call before you dig.

DATE: 4/2/2026 1:39:58 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 2 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

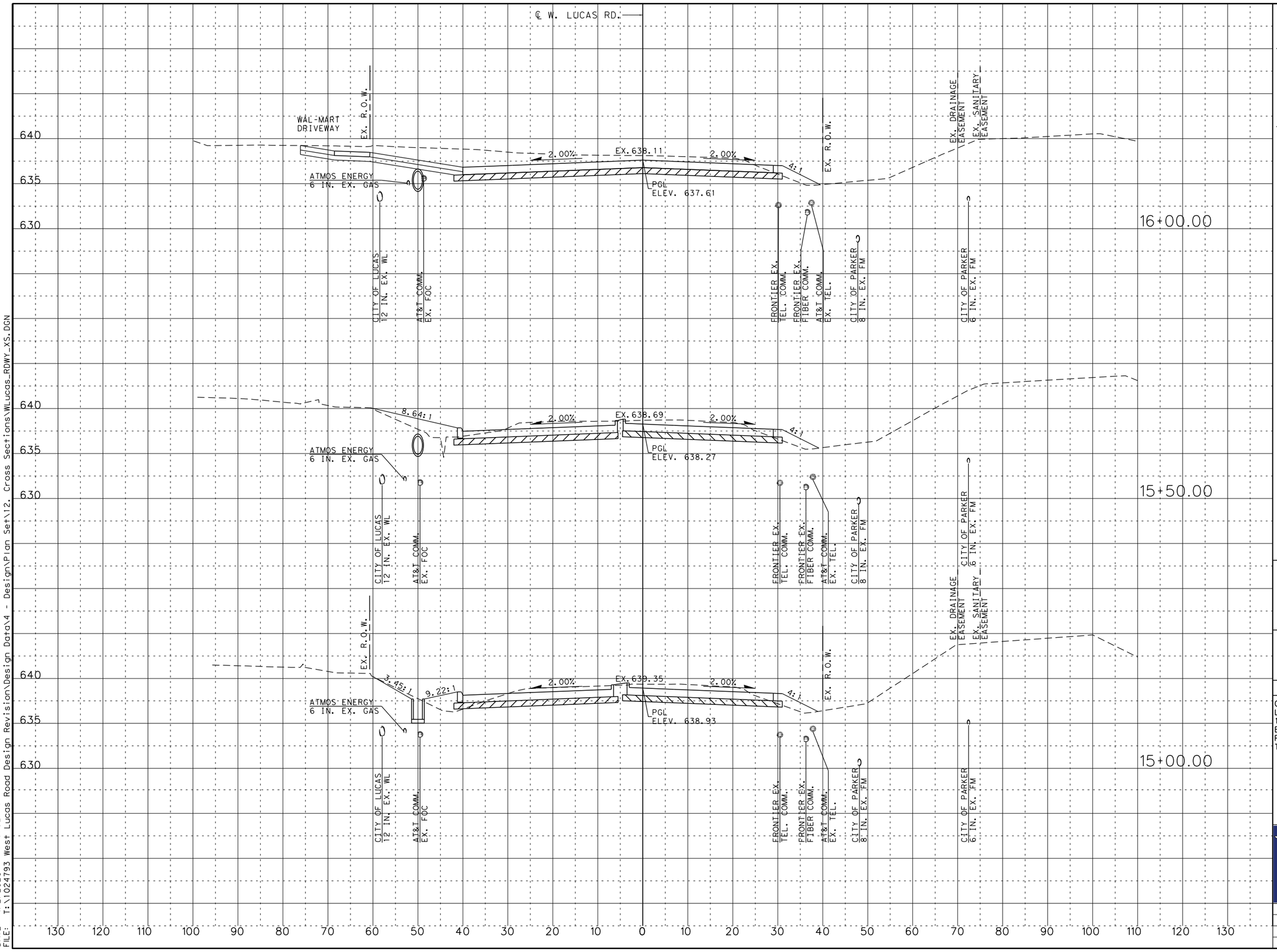
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	111
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:40:25 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\W.Lucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

- EXISTING R.O.W.
- UTILITY EASEMENT
- EXIST. FENCE
- CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 3 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

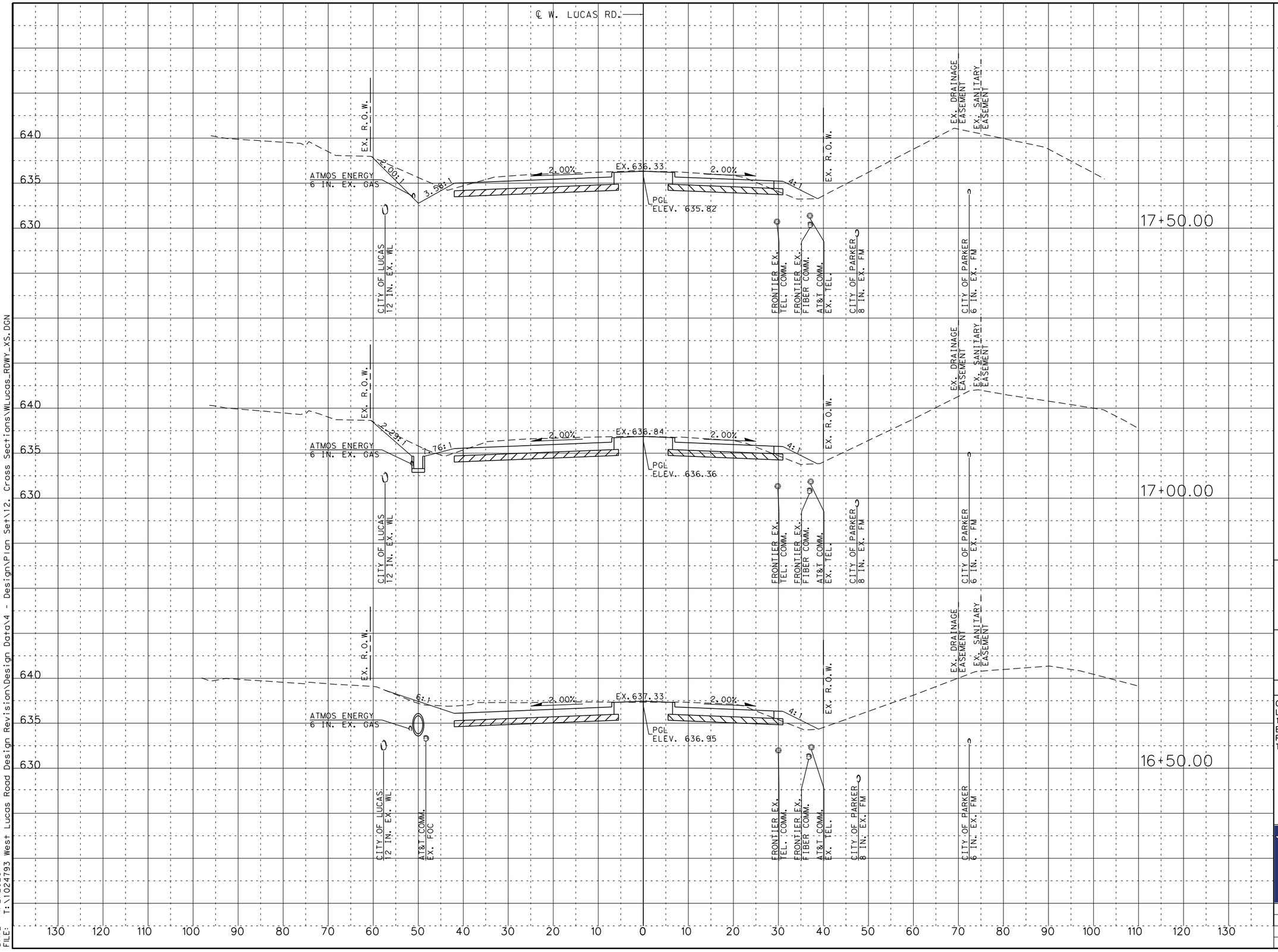
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	112
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:40:52 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 4 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

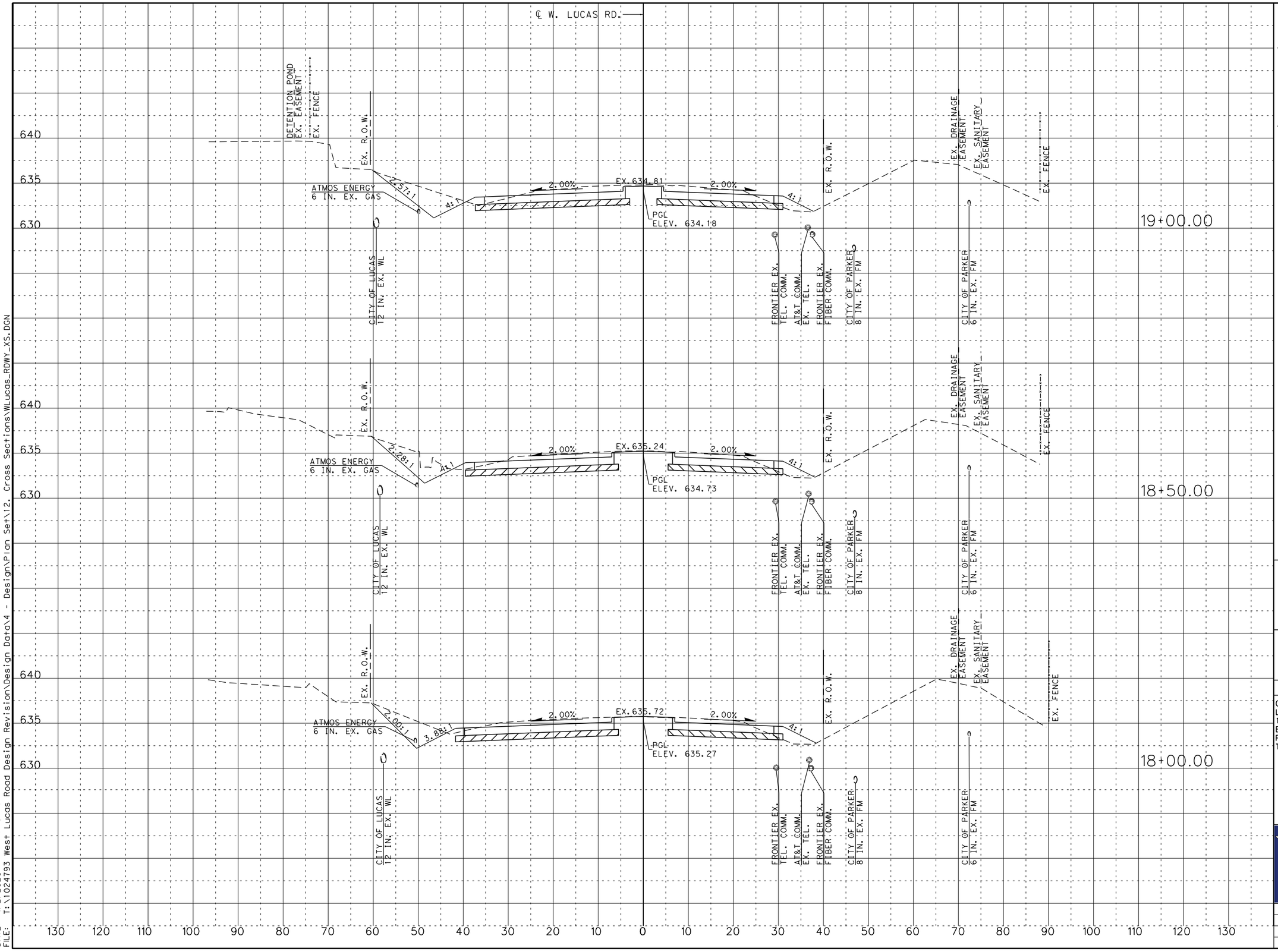
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		113
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (811 TEXAS ONE-CALL SYSTEM)
811 TEXAS ONE-CALL SYSTEM
1-800-245-4545
Know what's below. Call before you dig.

DATE: 4/2/2026 1:41:18 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 5 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

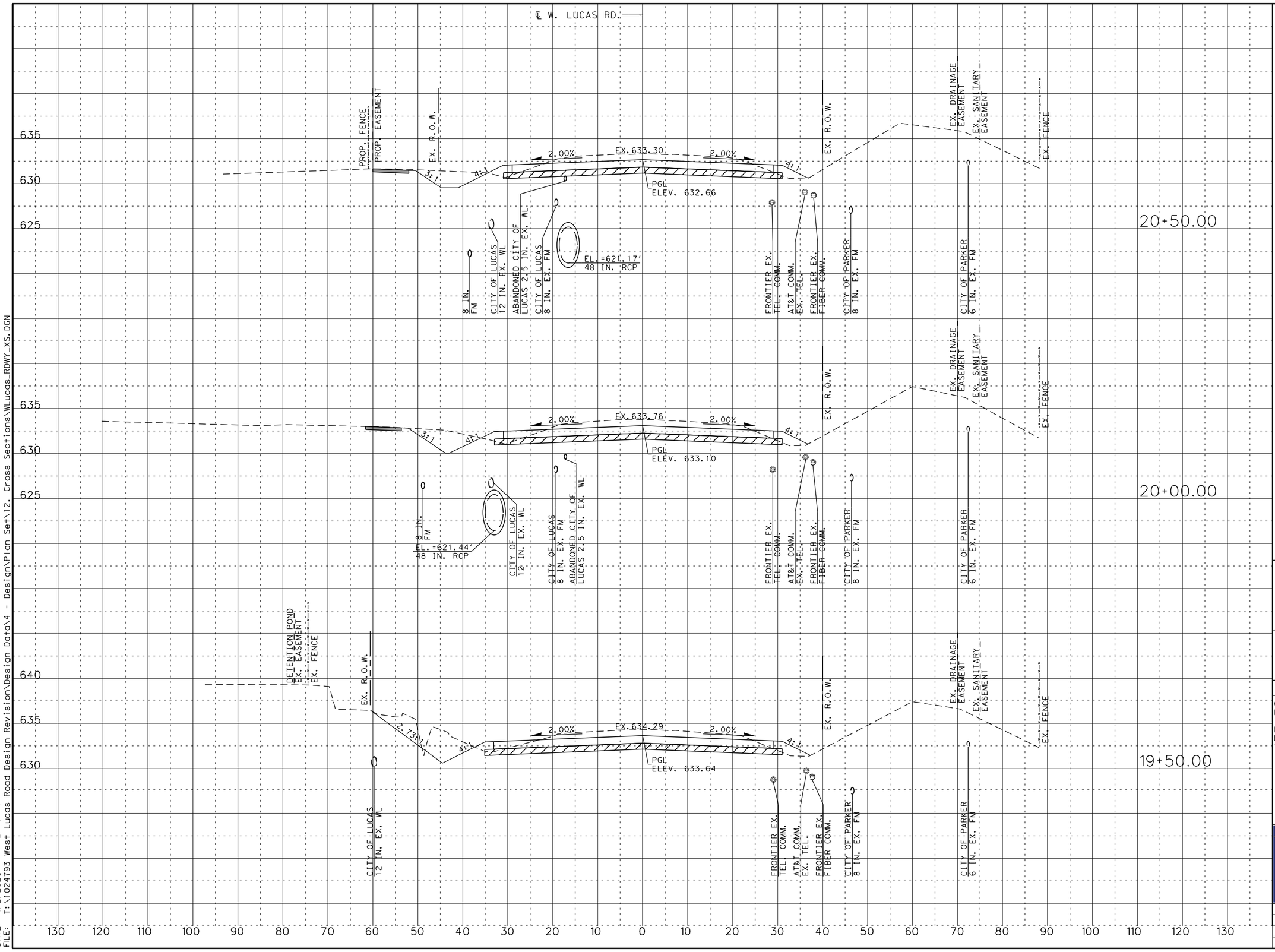
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		114
COLLIN		

CALL BEFORE YOU DIG
811 Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:41:46 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_ROWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 6 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

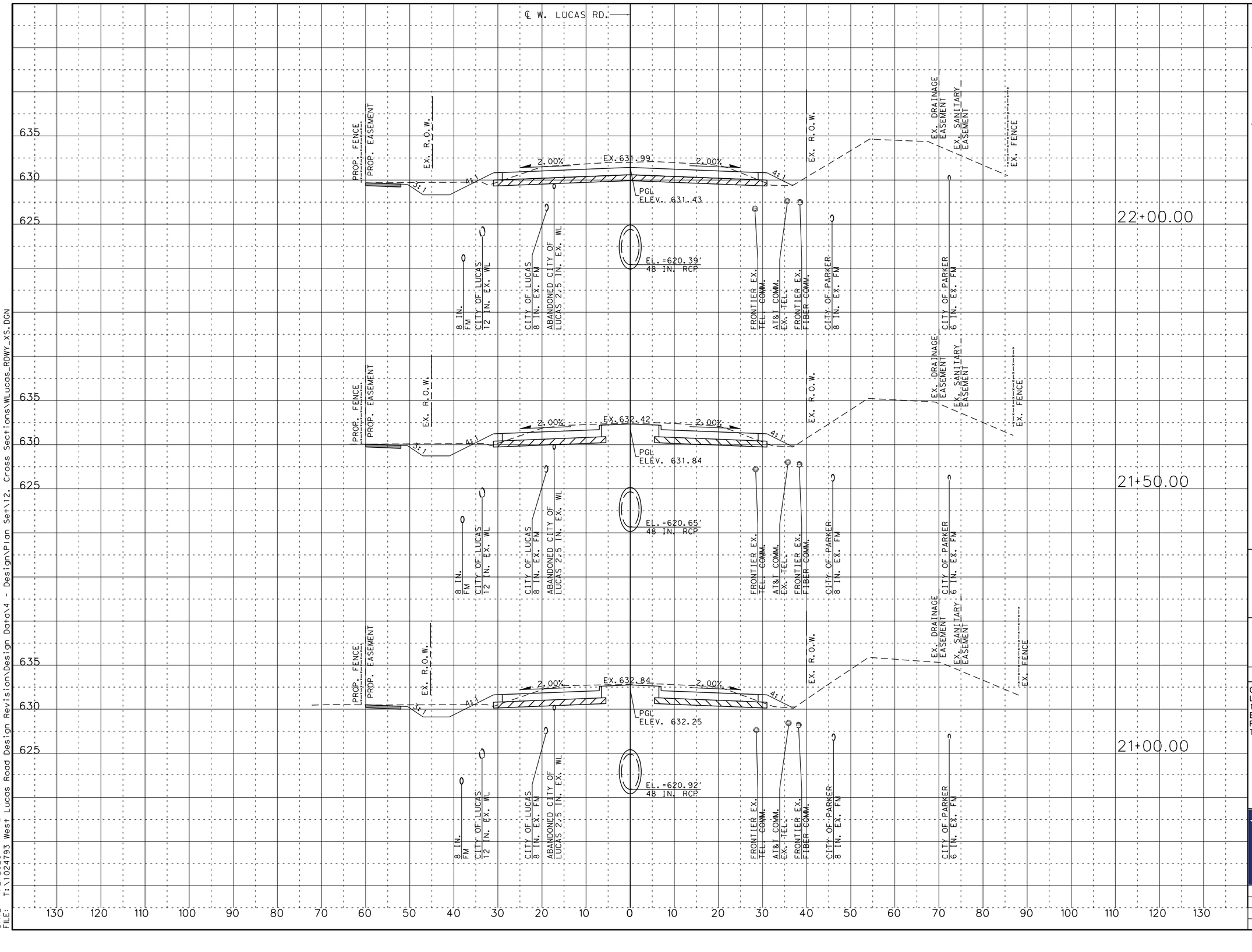
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	115
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS811.COM)
811 OR 1-800-DIG-TESS
Know what's below. Call before you dig.
TEXAS ONE-CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:42:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 7 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

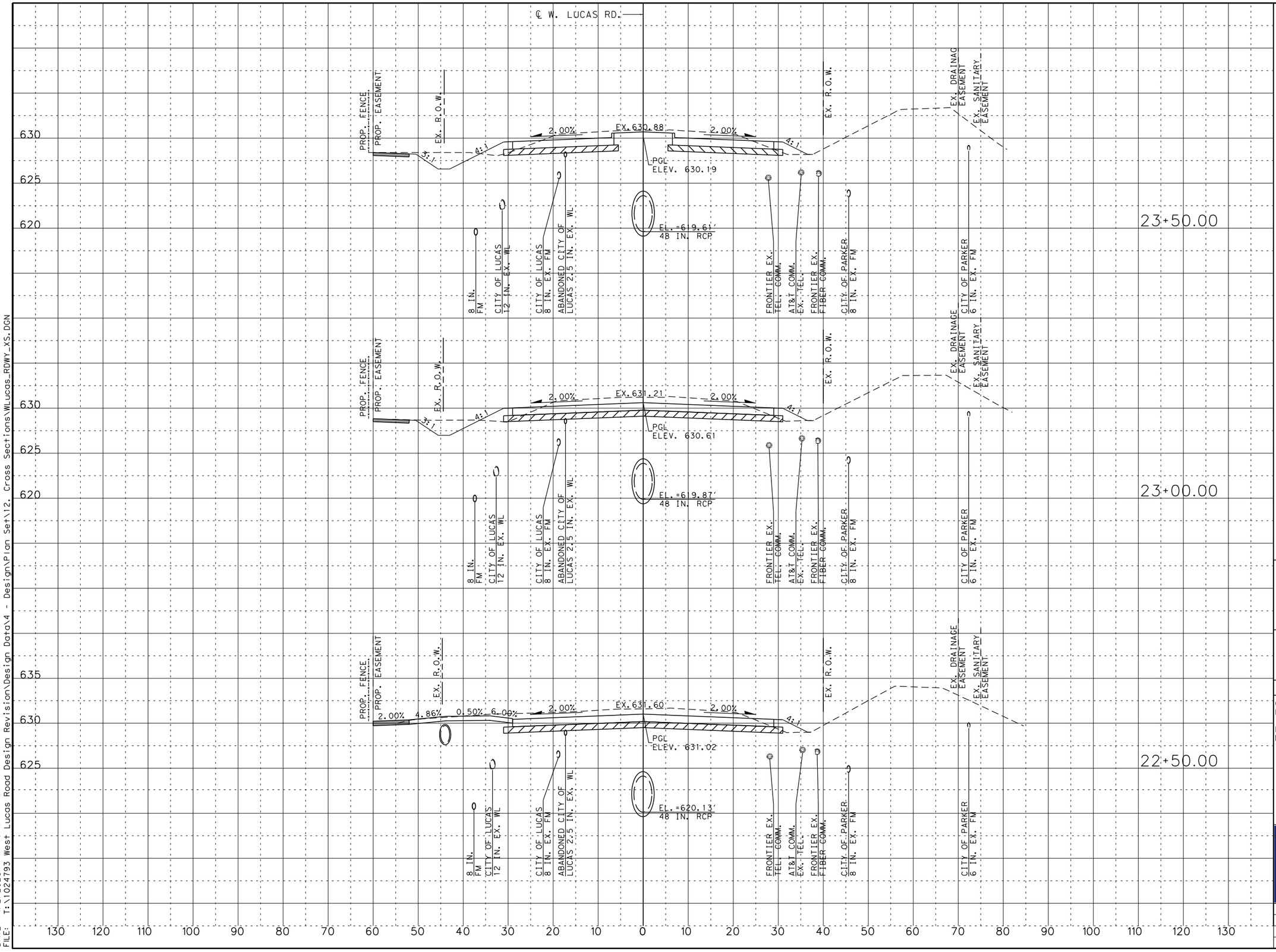
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		116
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM
1-800-DIG-TESS

DATE: 4/2/2026 1:42:40 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 8 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

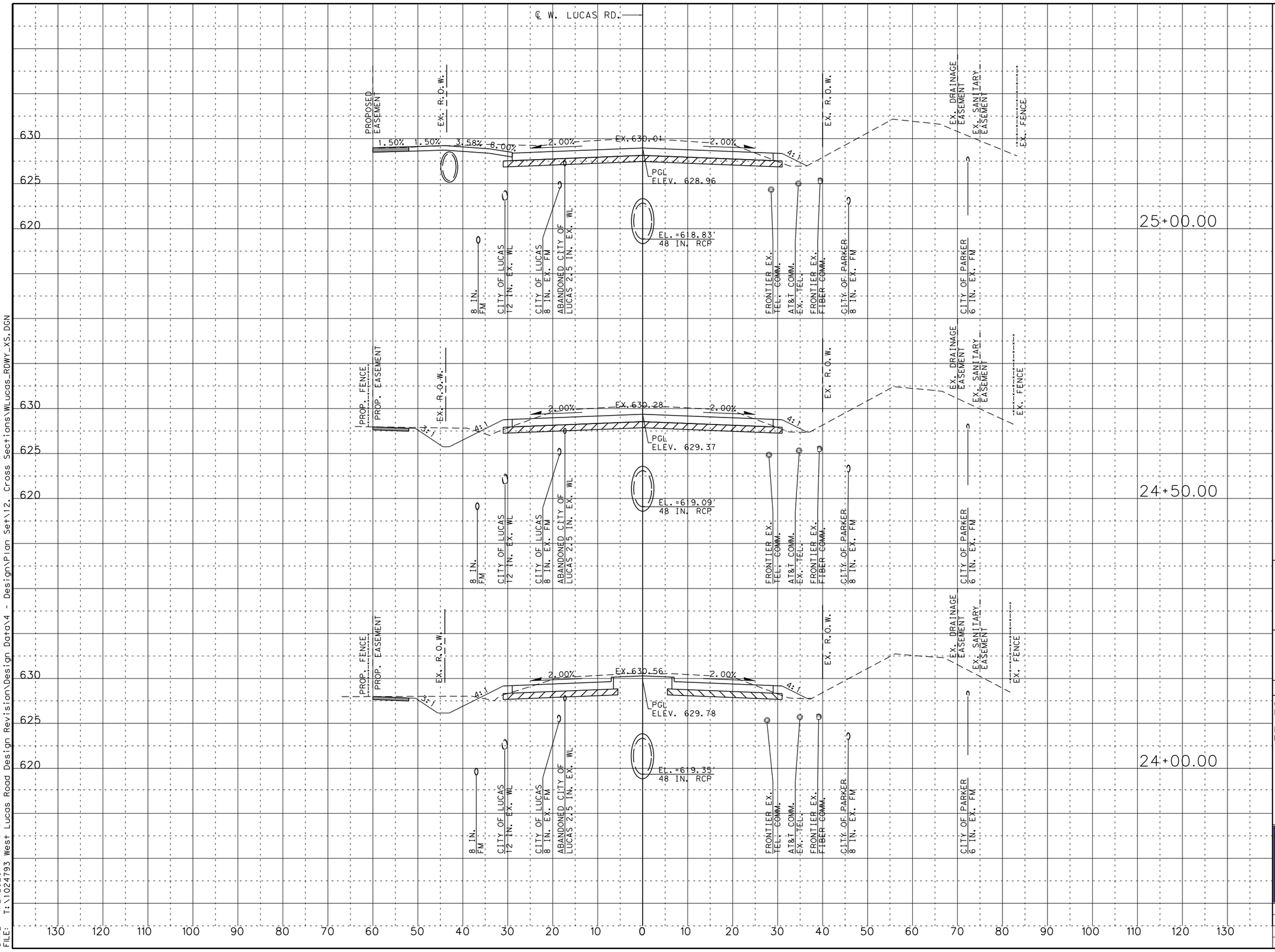
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		117
COLLIN		

CALL BEFORE YOU DIG
Texas811
Know what's Below. Call before you dig.

DATE: 4/2/2026 1:43:07 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 9 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

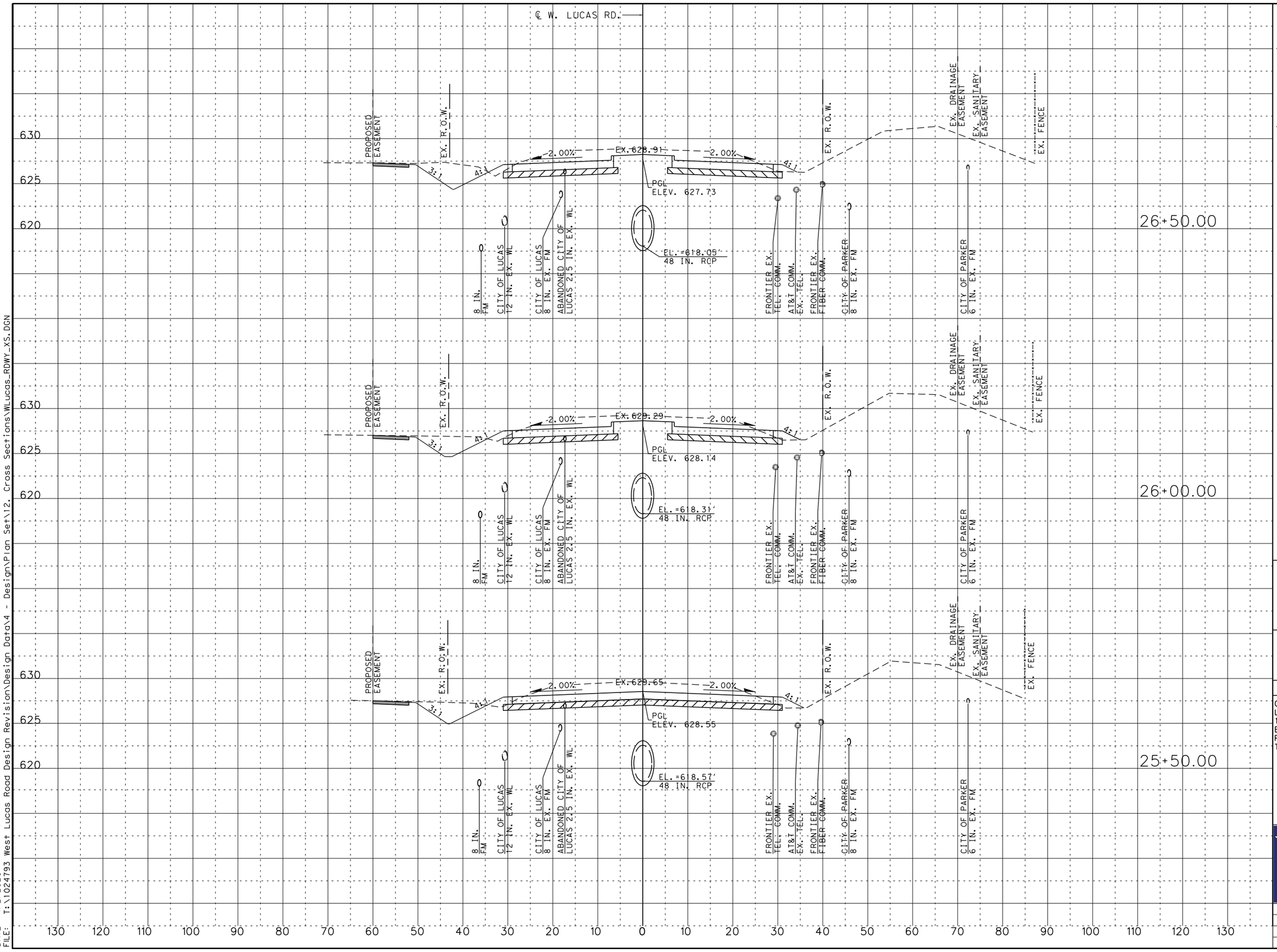
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	118
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:43:34 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 10 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

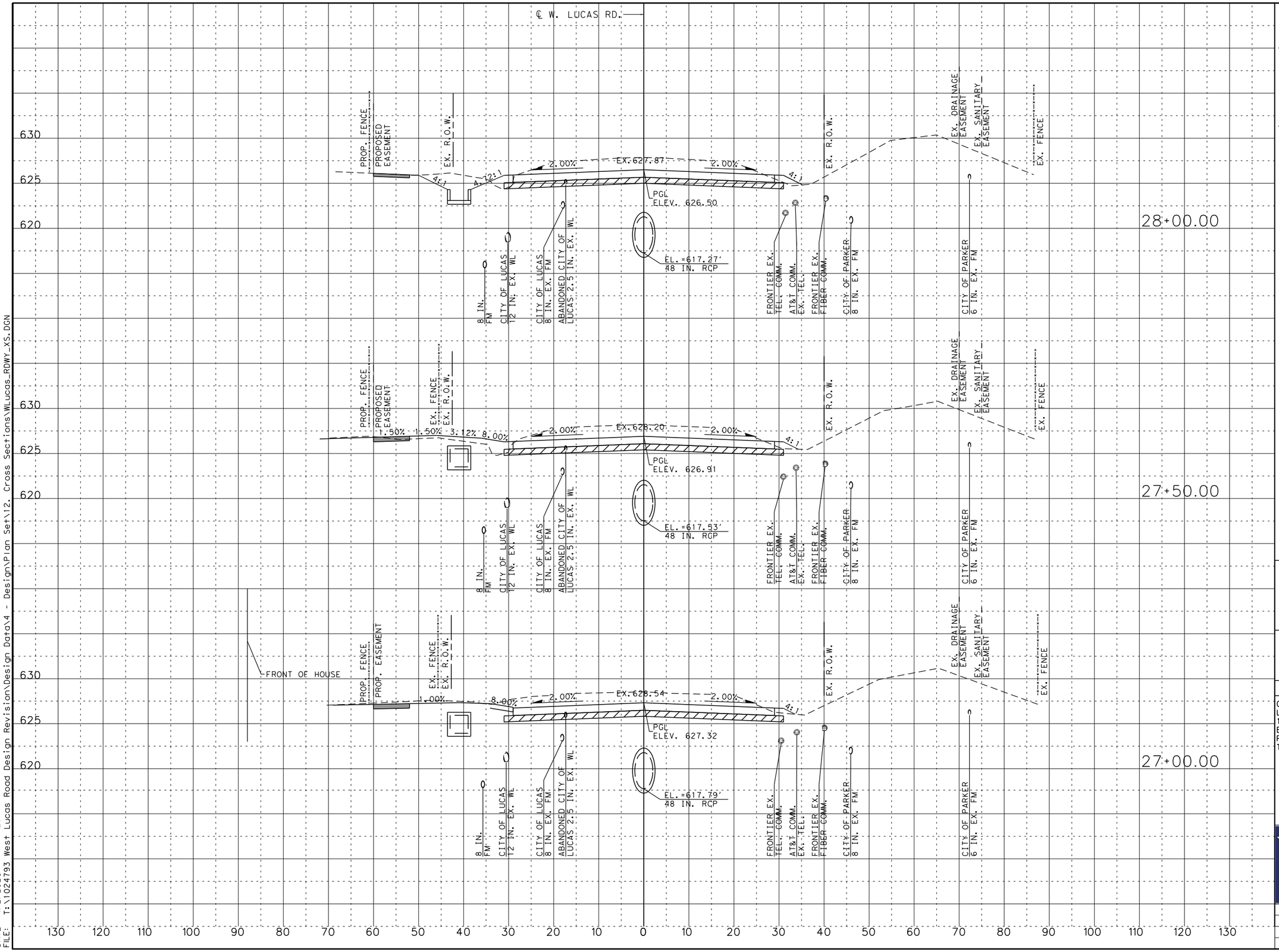
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		119
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS811.COM)
IF YOU DIG, BUT DON'T CALL 811, YOU COULD BE LIABLE FOR DAMAGES CAUSED BY YOUR EXCAVATION.
TEXAS ONE CALL SYSTEM
1-800-DIG-TESS
Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:44:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 11 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

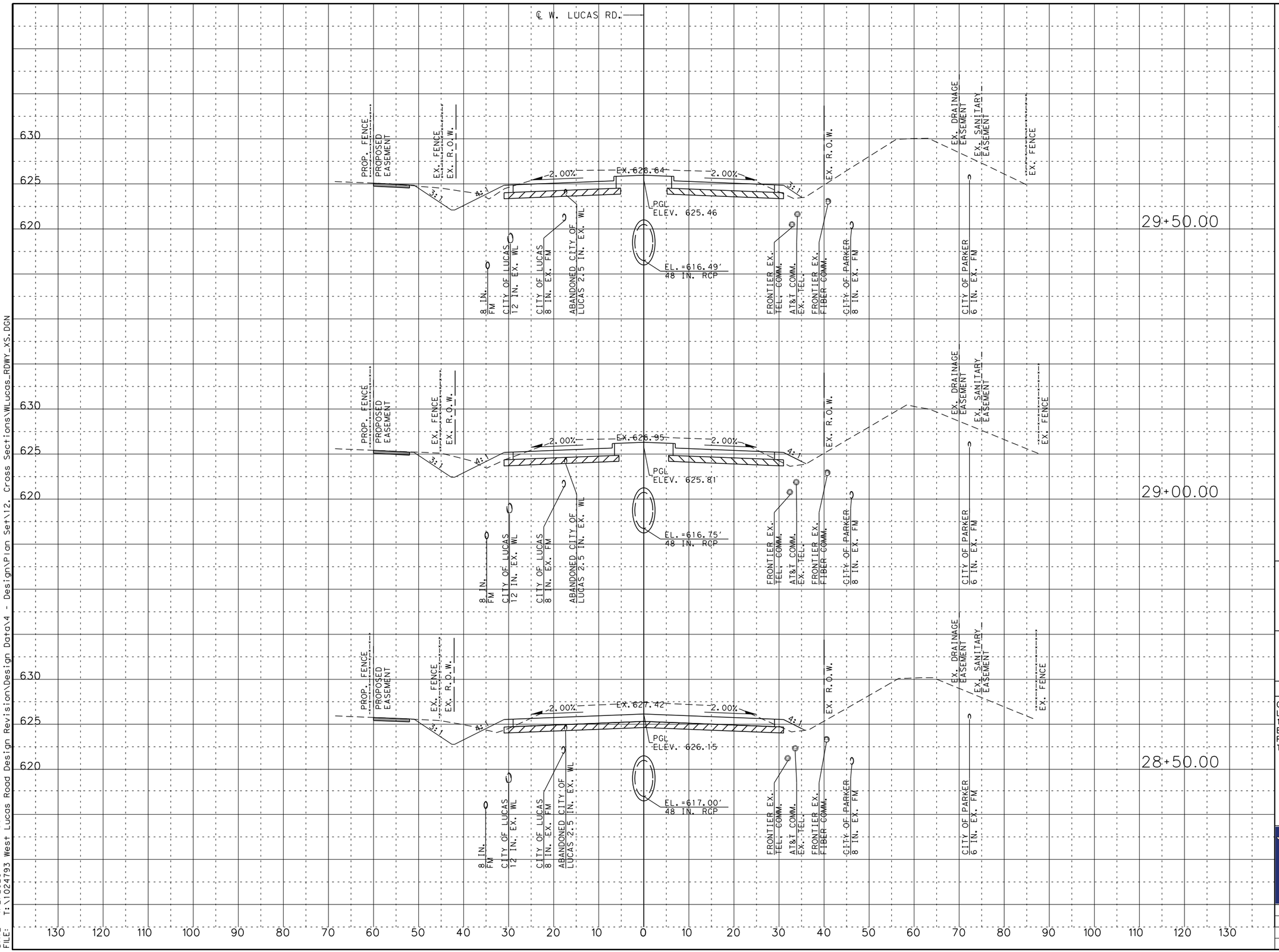
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	120
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:44:28 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 12 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

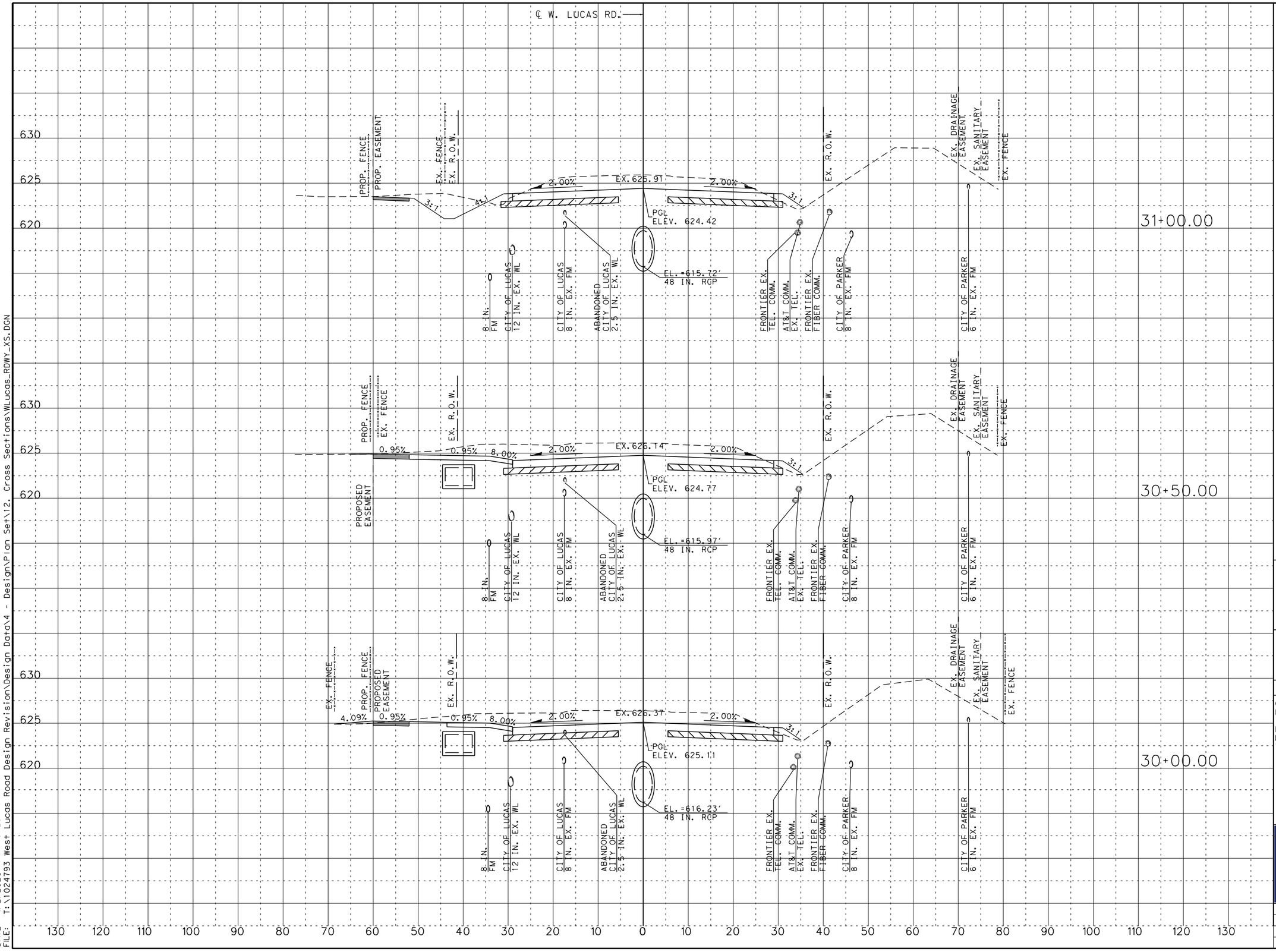
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		121
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
TEXAS ONE CALL SYSTEM
1-800-DIG-TESS

DATE: 4/2/2026 1:44:55 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 13 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

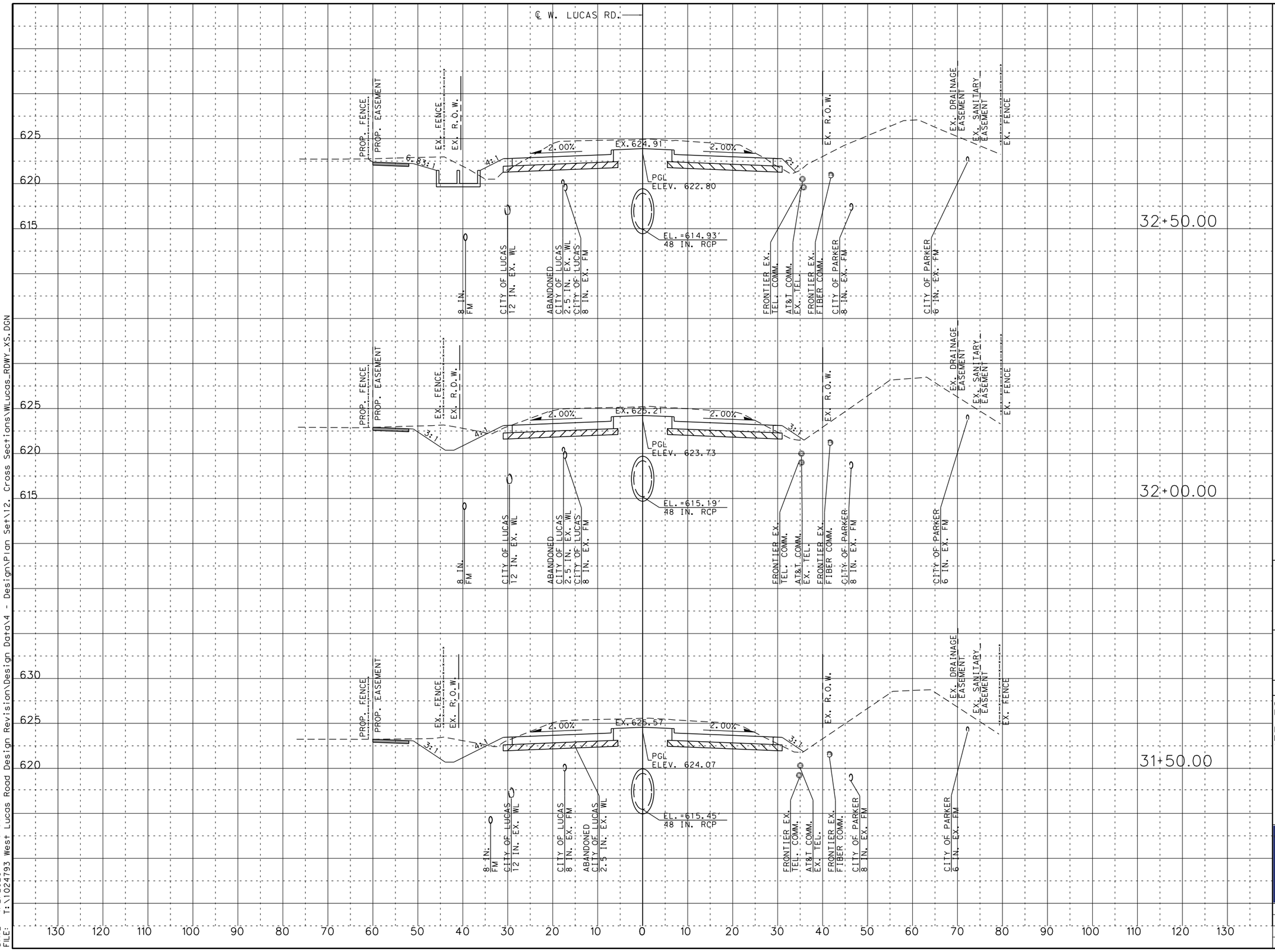
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	122
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW! (APPLIES TO BOTH PRIVATE PROPERTY & PUBLIC EASEMENTS)
48 HOURS NOTICE BEFORE YOU DIG, DRILL, BORE OR BLAST.
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811 Know what's below. Call before you dig.

DATE: 4/2/2026 1:45:23 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 14 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

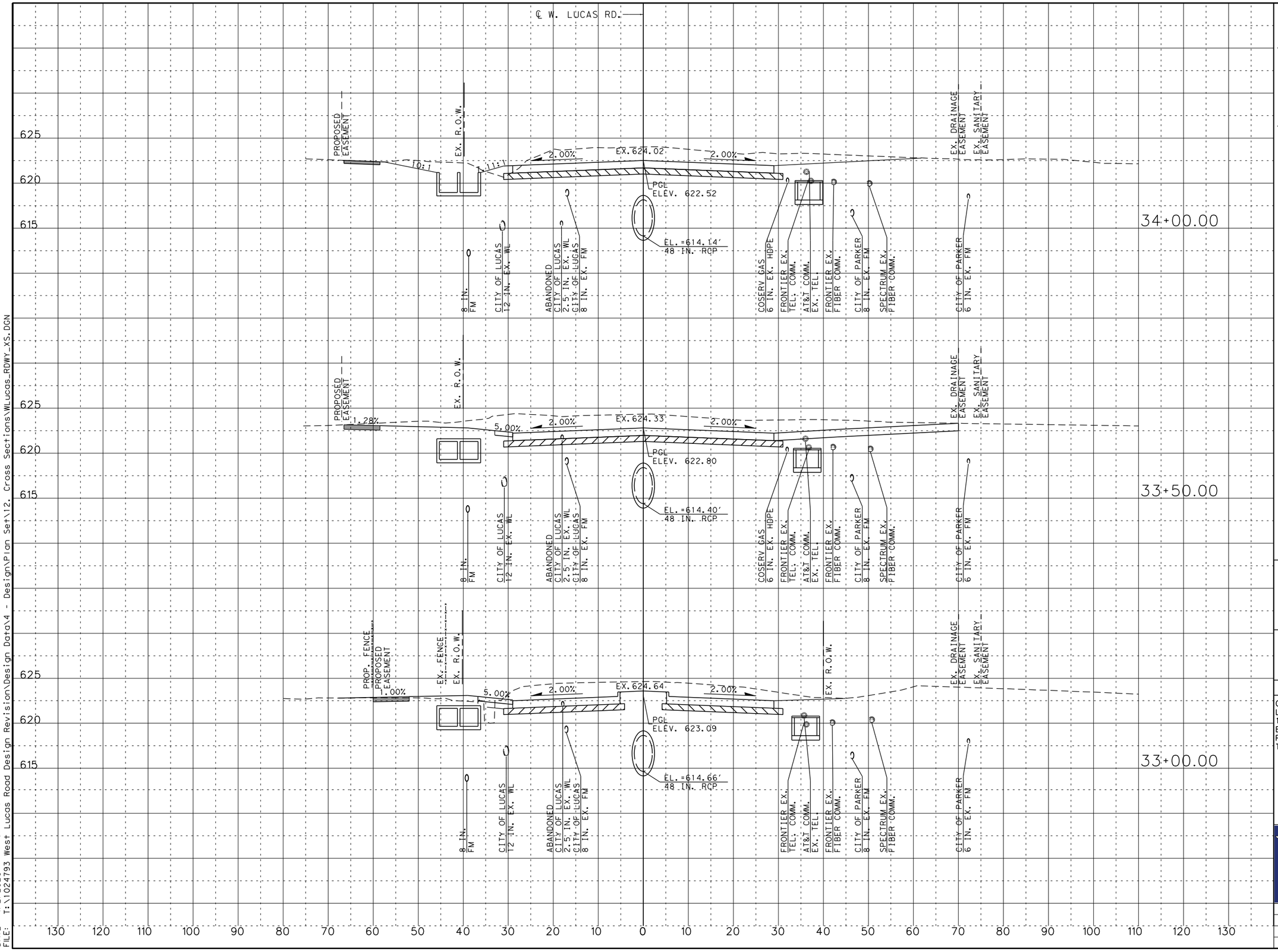
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		123
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (FOR YOUR PROTECTION AND SAFETY)
48 HOURS, NOT INCLUDING WEEKENDS AND HOLIDAYS, BEFORE YOU DIG, DRILL, BLAST OR EXCAVATE
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:45:50 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 15 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

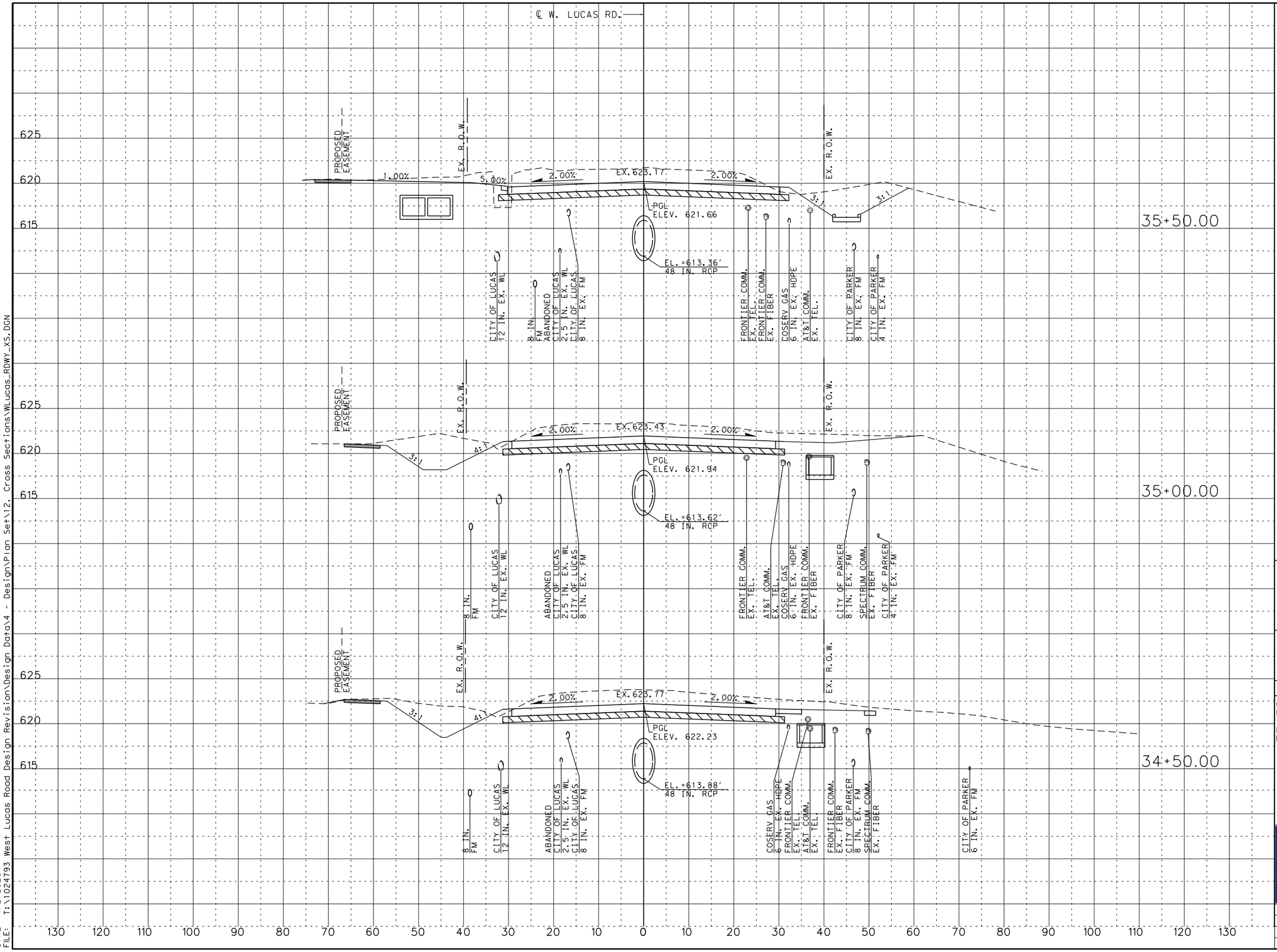
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		124
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:46:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 16 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

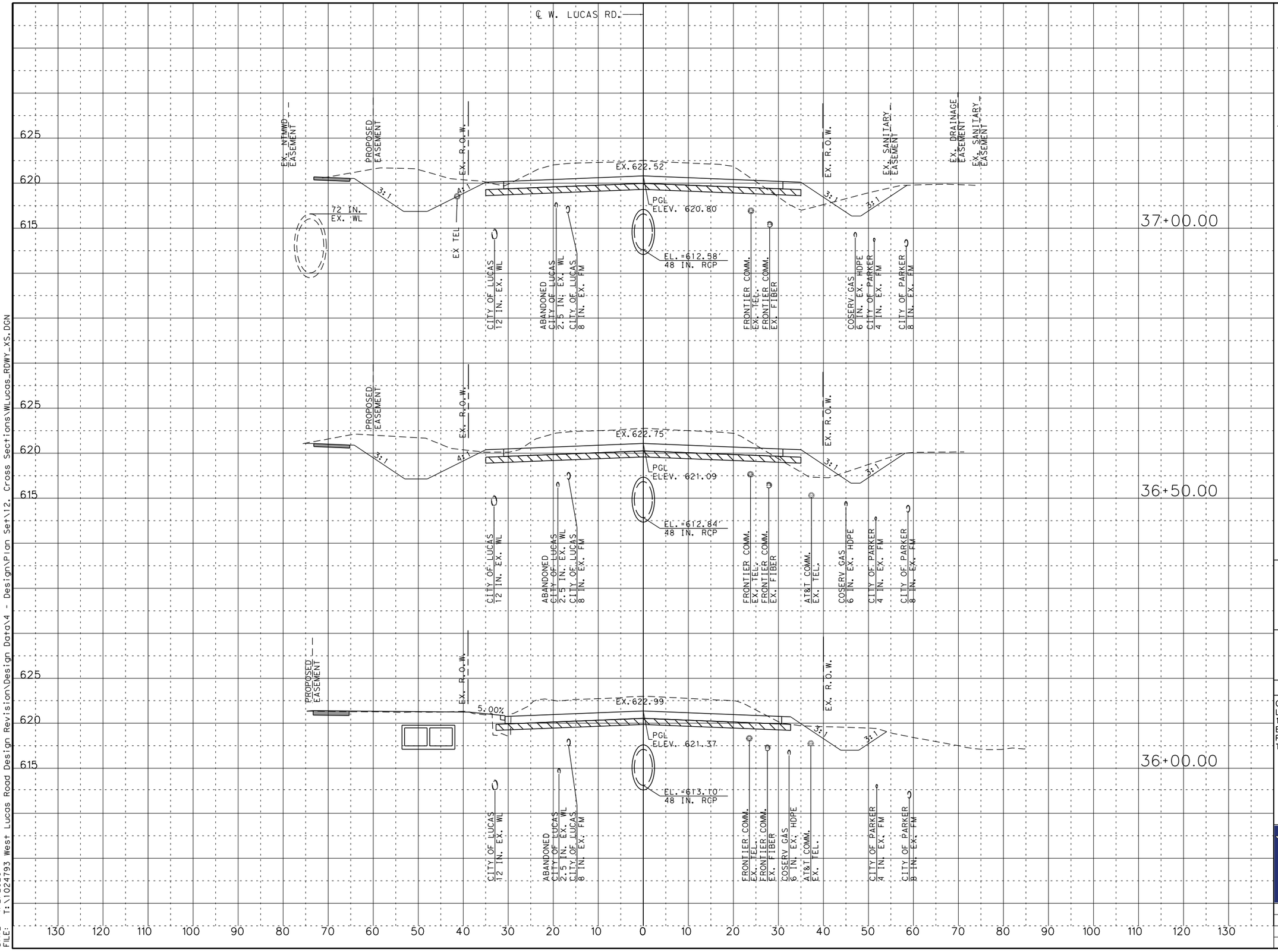
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	125
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW (TEXAS HEALTH & SAFETY CODE, CHAPTER 756)
IT'S FREE
IT'S AVAILABLE 24 HOURS A DAY, 365 DAYS A YEAR
WWW.DIGTESS.COM
1-800-245-4545
Texas811
Know what's below.
Call before you dig.

DATE: 4/2/2026 1:46:44 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 17 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

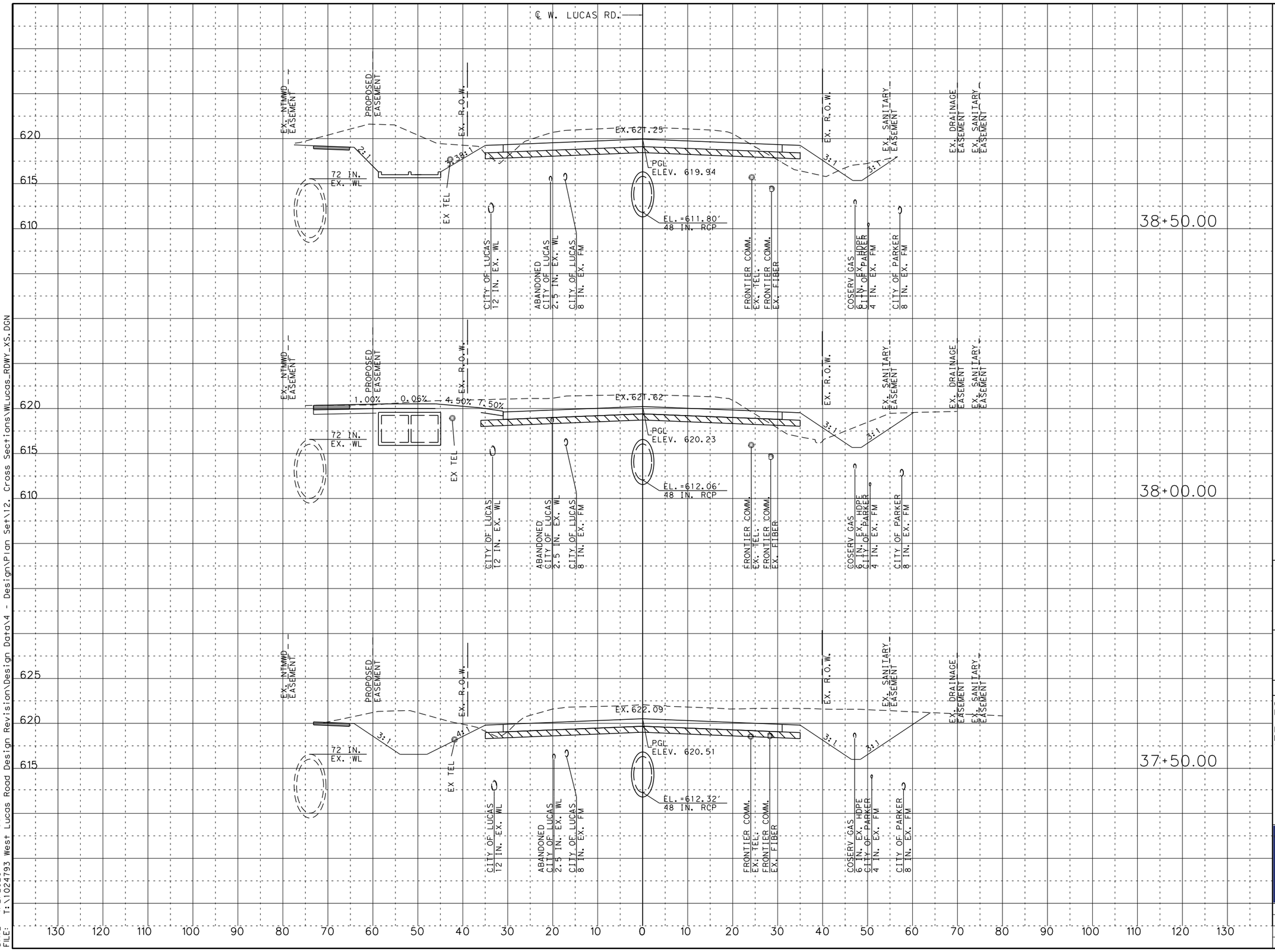
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		126
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:47:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 18 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

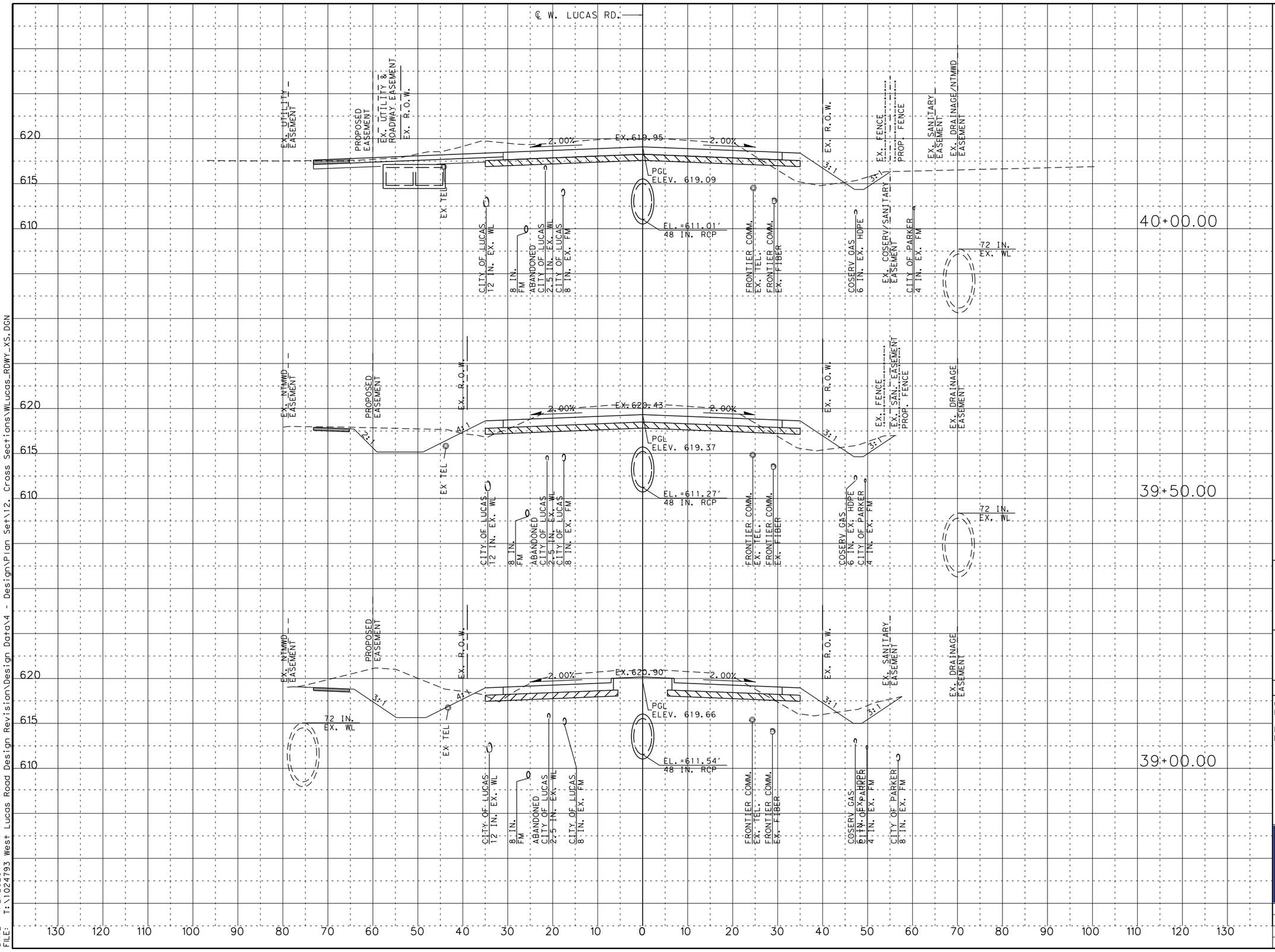
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		127
COLLIN		

CALL BEFORE YOU DIG
TEXAS811.org
811
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM 1-800-245-4545

DATE: 4/2/2026 1:47:38 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 19 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

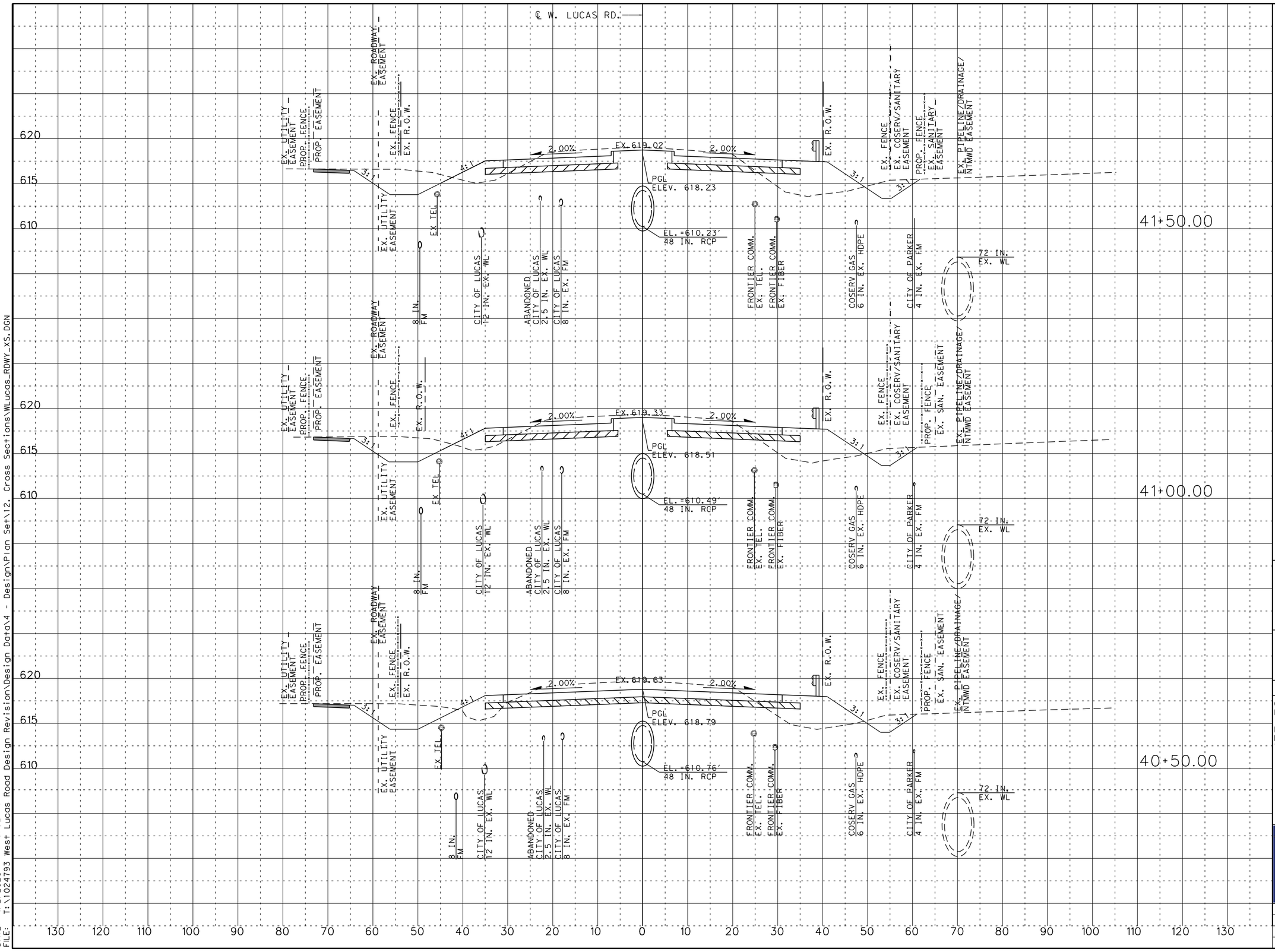
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		128
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:48:05 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 20 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

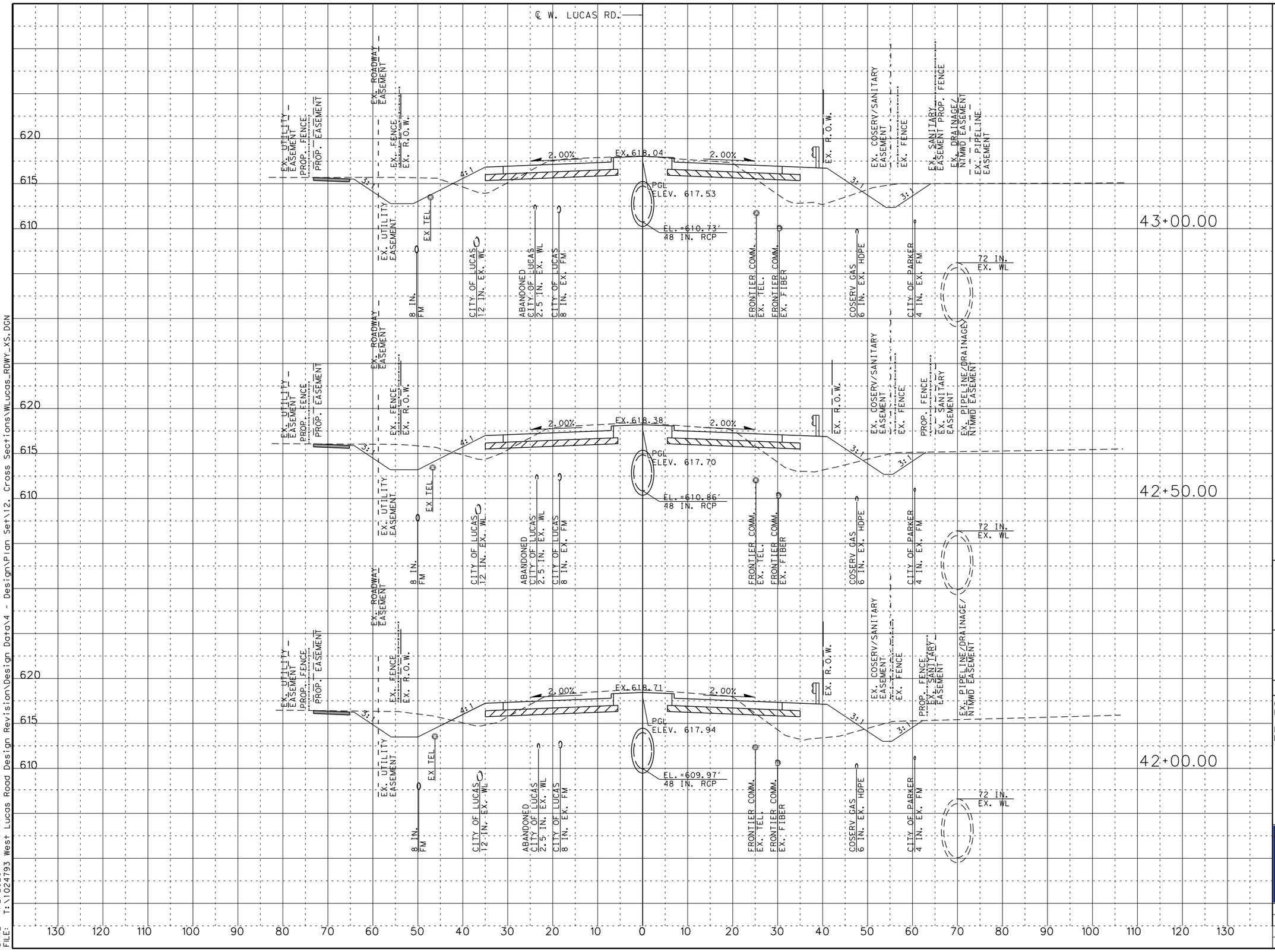
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	129
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS ONE-CALL SYSTEM, INC.
811 or 1-800-245-4545
WWW.TXONECALL.COM
1-800-310-1334
Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:48:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\W.Lucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 21 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

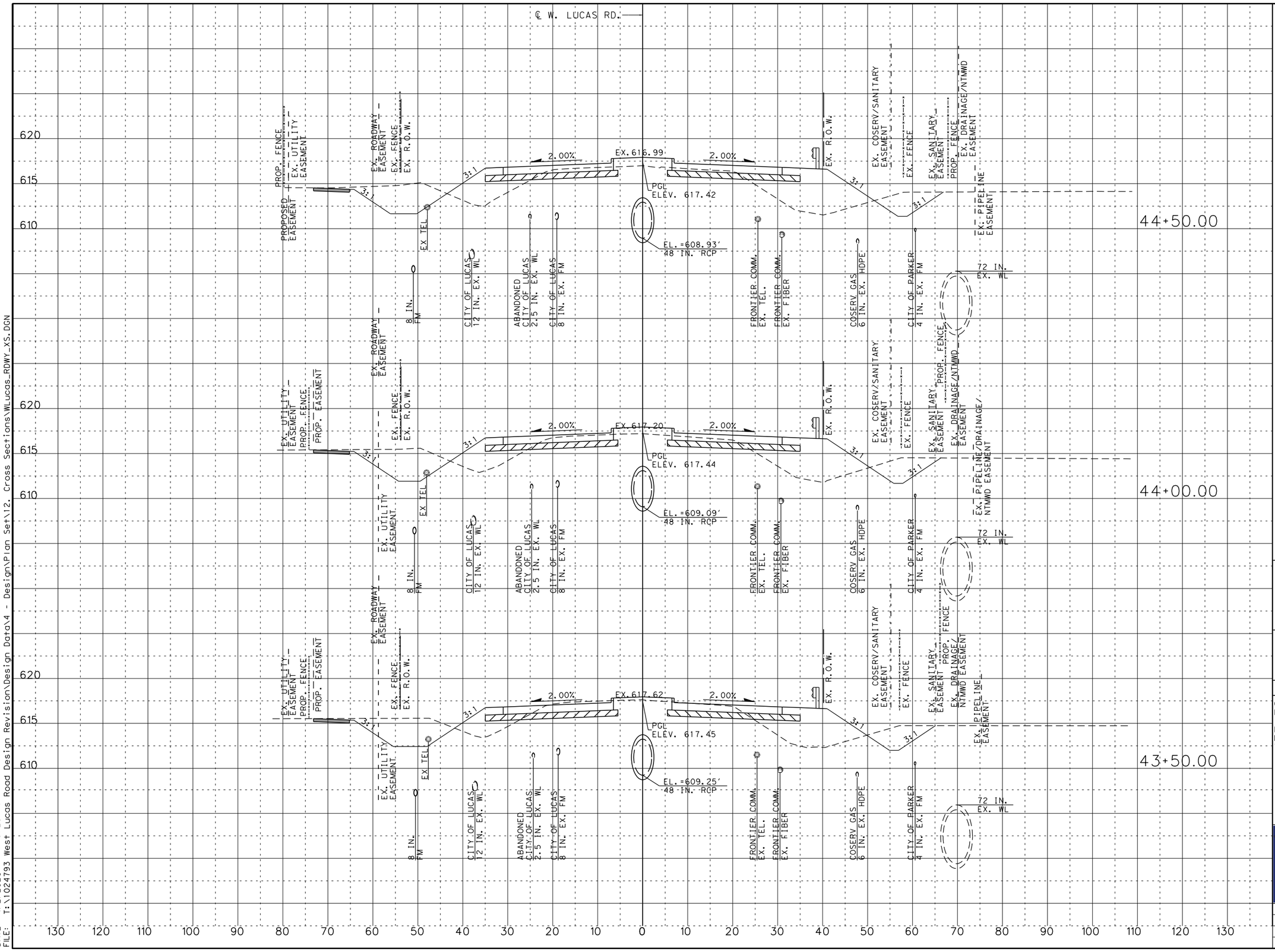
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		130
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
TEXAS ONE CALL SYSTEM
1-800-545-6005

DATE: 4/2/2026 1:48:58 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 22 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

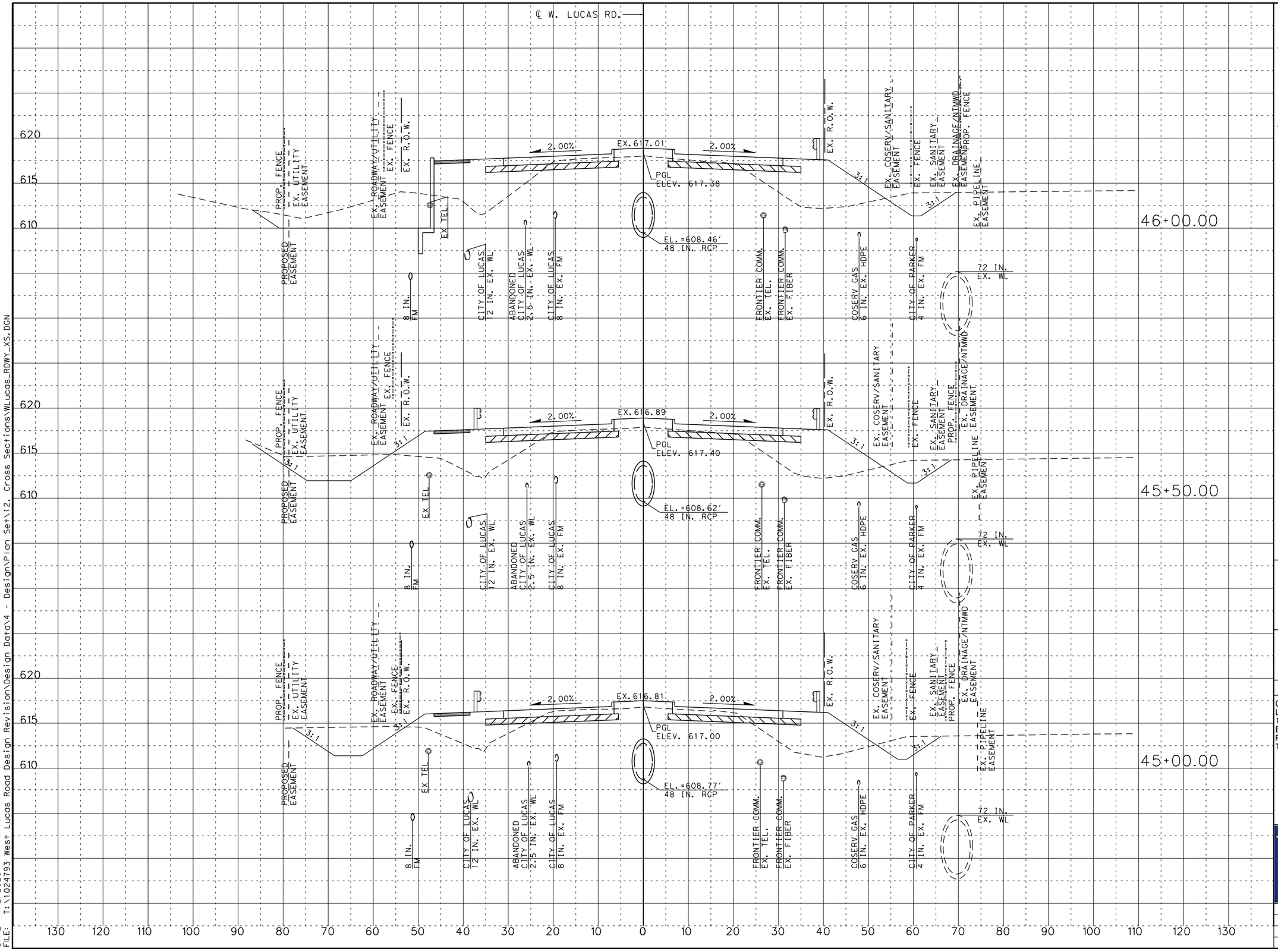
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		131
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:49:26 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\W_Lucas_ROWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 23 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

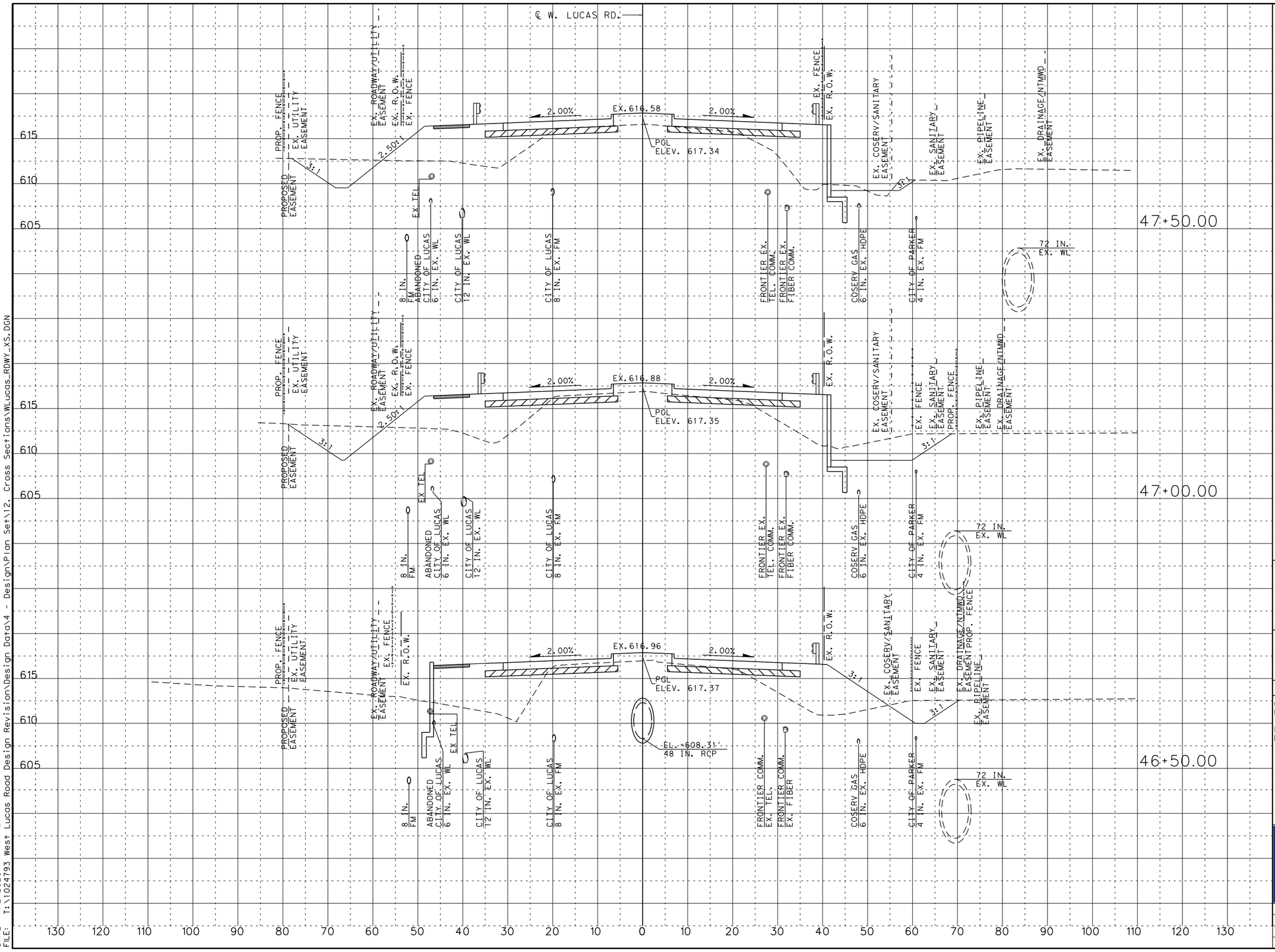
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		132
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:49:53 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 24 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

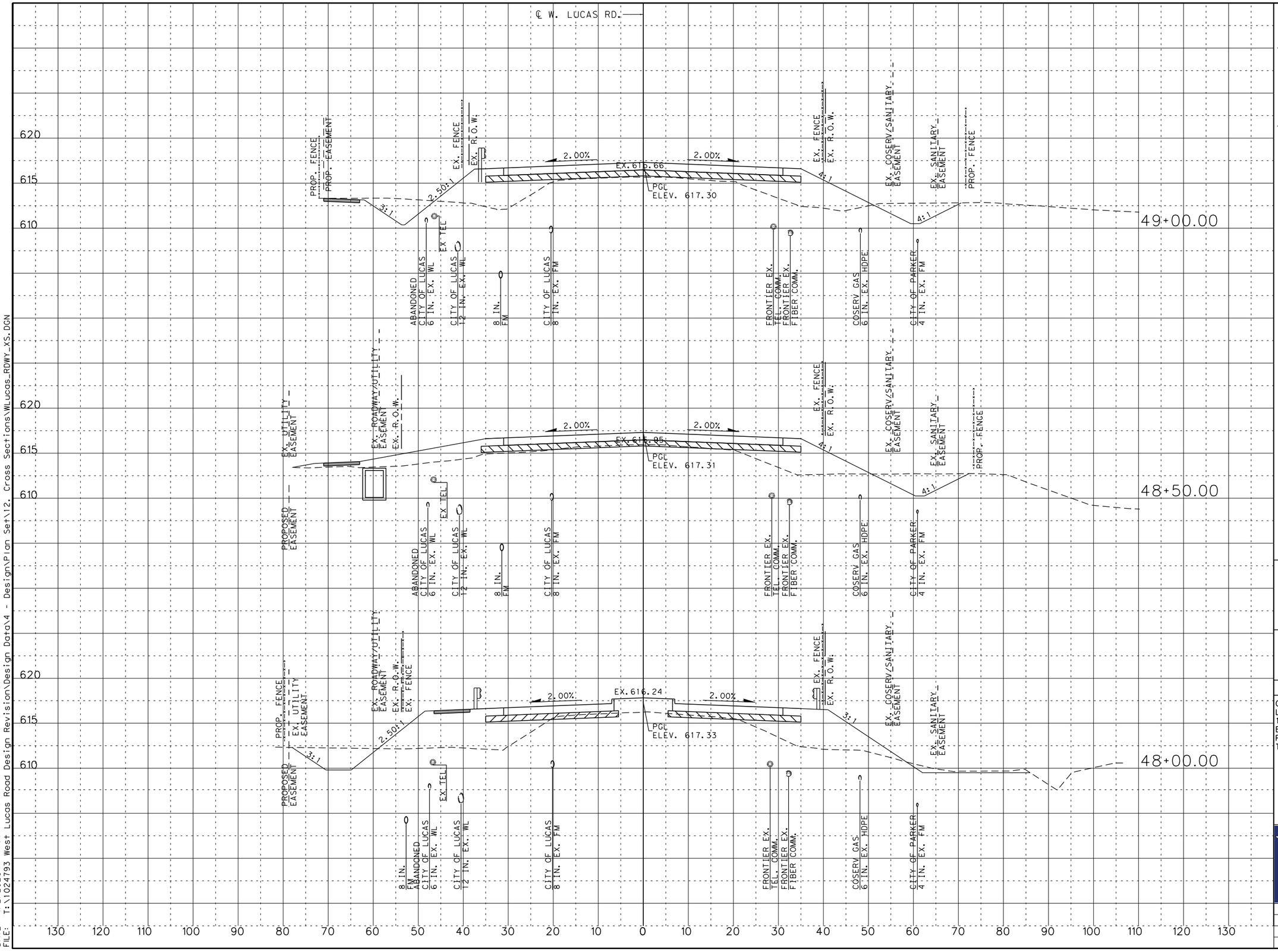
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		133
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:50:20 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 25 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

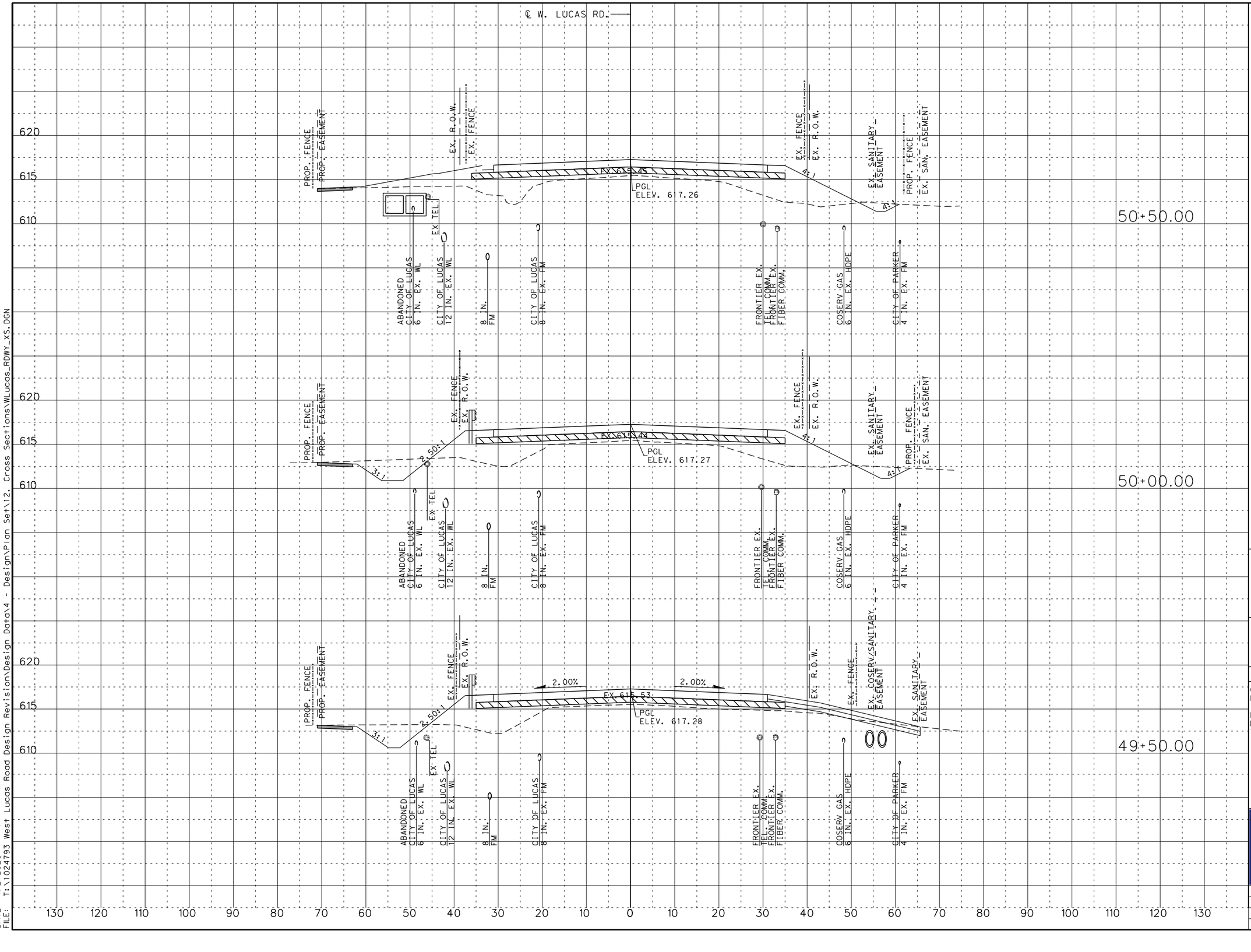
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		134
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW!
811 or 1-800-DIG-TESS
Texas811.org
Know what's below. Call before you dig.

DATE: 4/2/2026 1:50:47 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 26 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

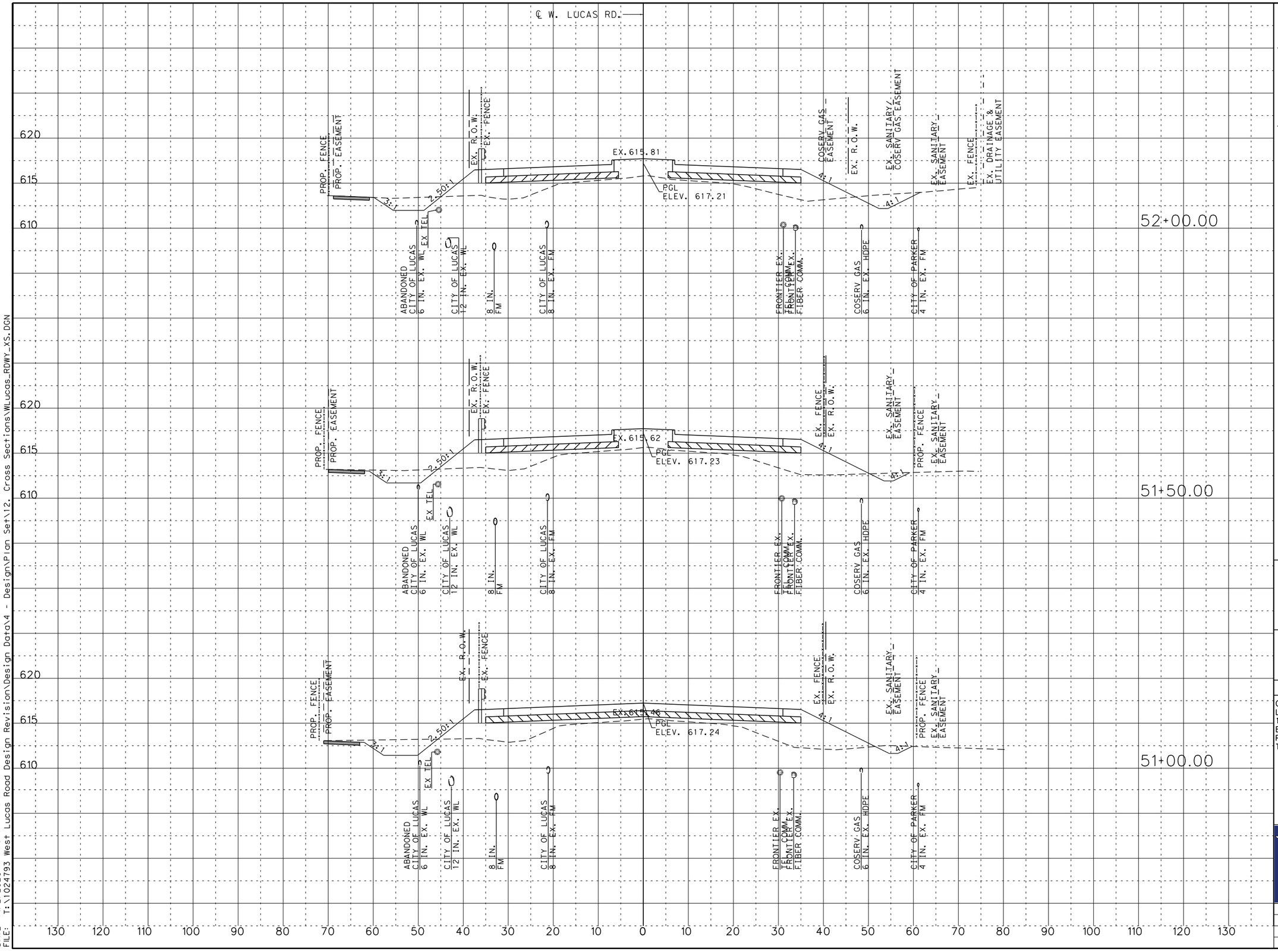
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	135
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW (SUBSECTION 251.003, HEALTH & SAFETY CODE)
811 or 1-800-DIG-TESS
Texas811
Know what's below. Call before you dig.
WWW.DIGTESS.COM

DATE: 4/2/2026 1:51:14 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 27 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

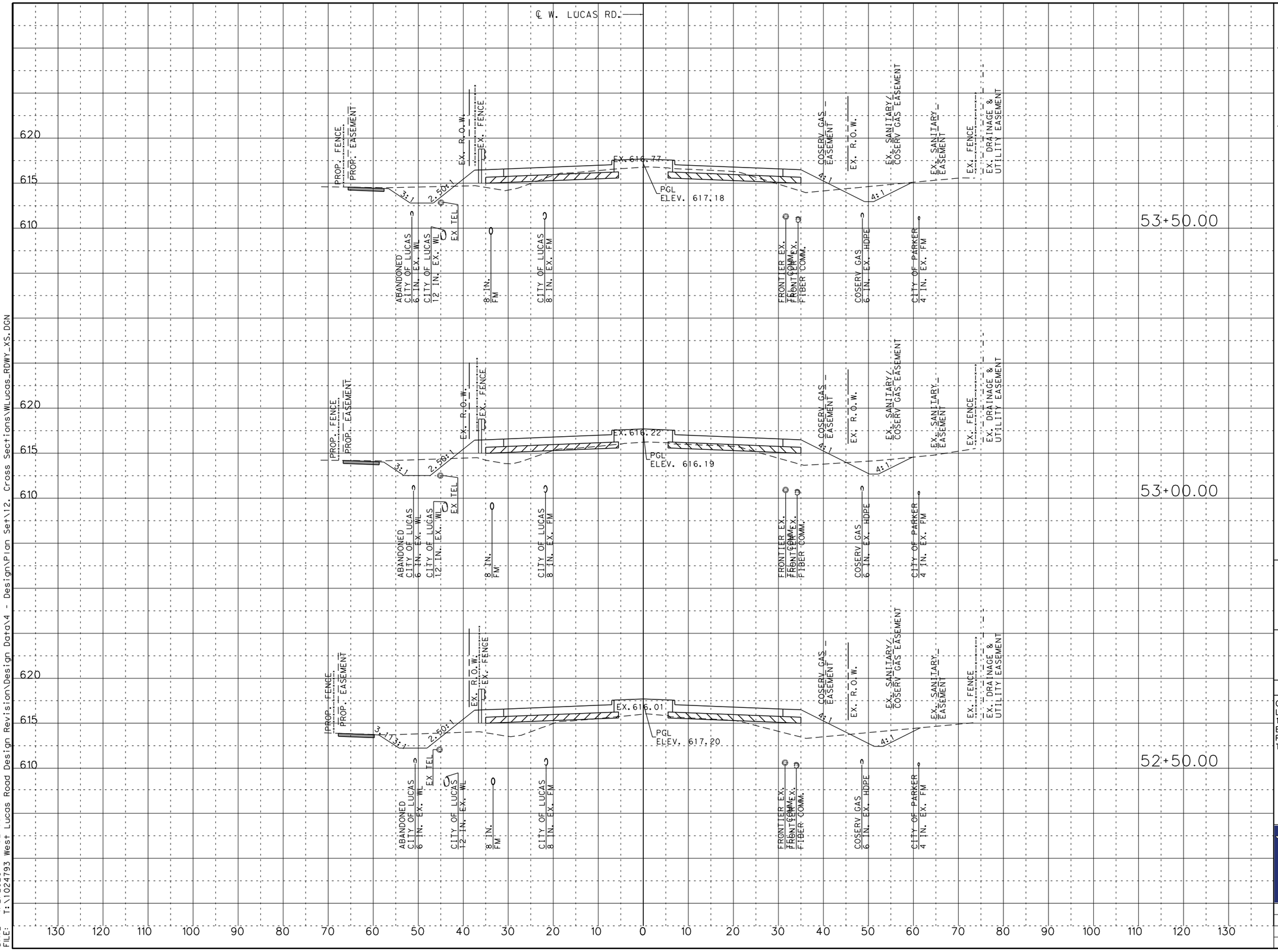
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	136
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS811.ORG)
Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:51:41 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 28 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

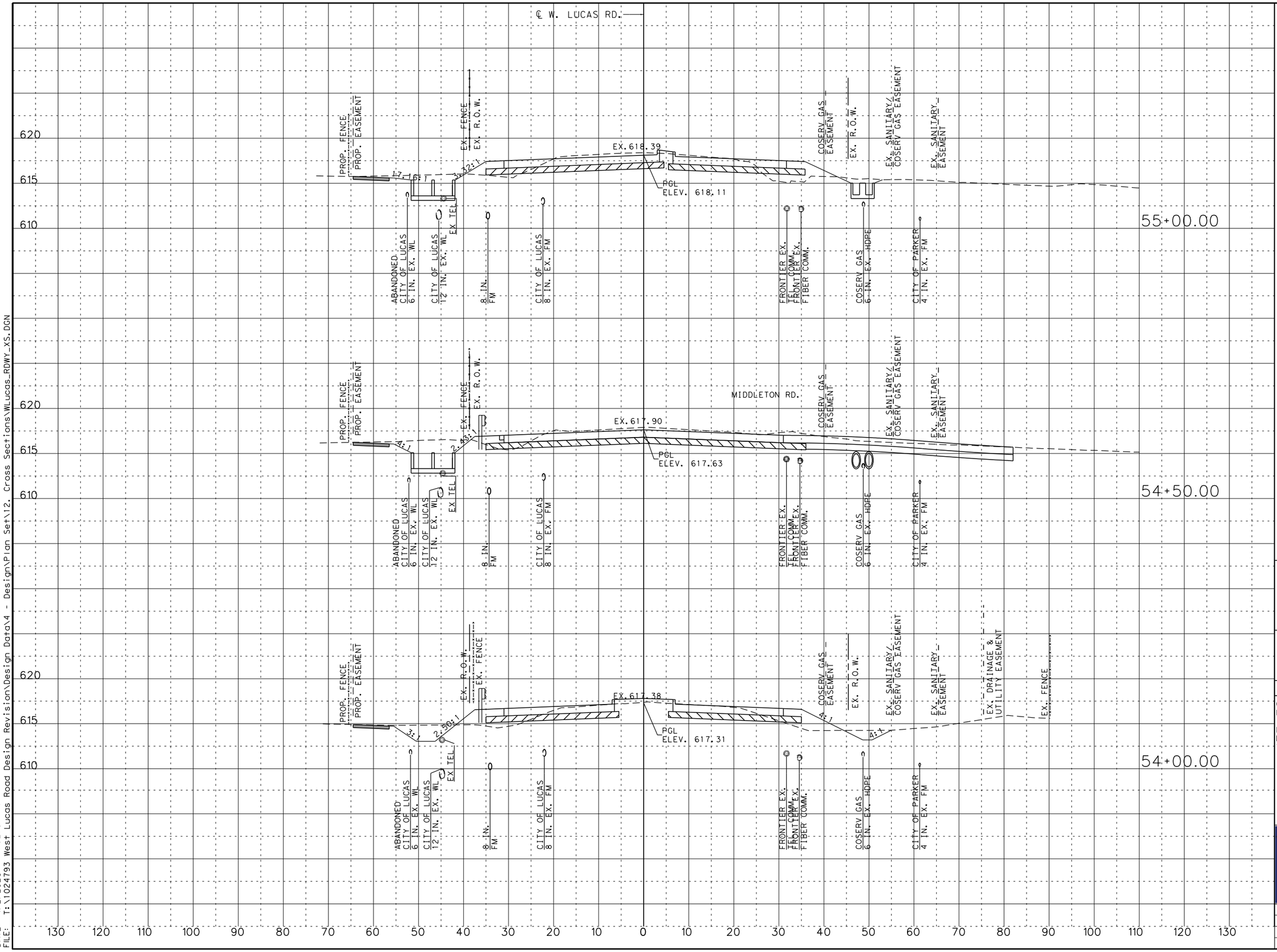
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		137
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (811 TEXAS ONE-CALL SYSTEM)
811 Texas811 Know what's below. Call before you dig.
TEXAS ONE-CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:52:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 29 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

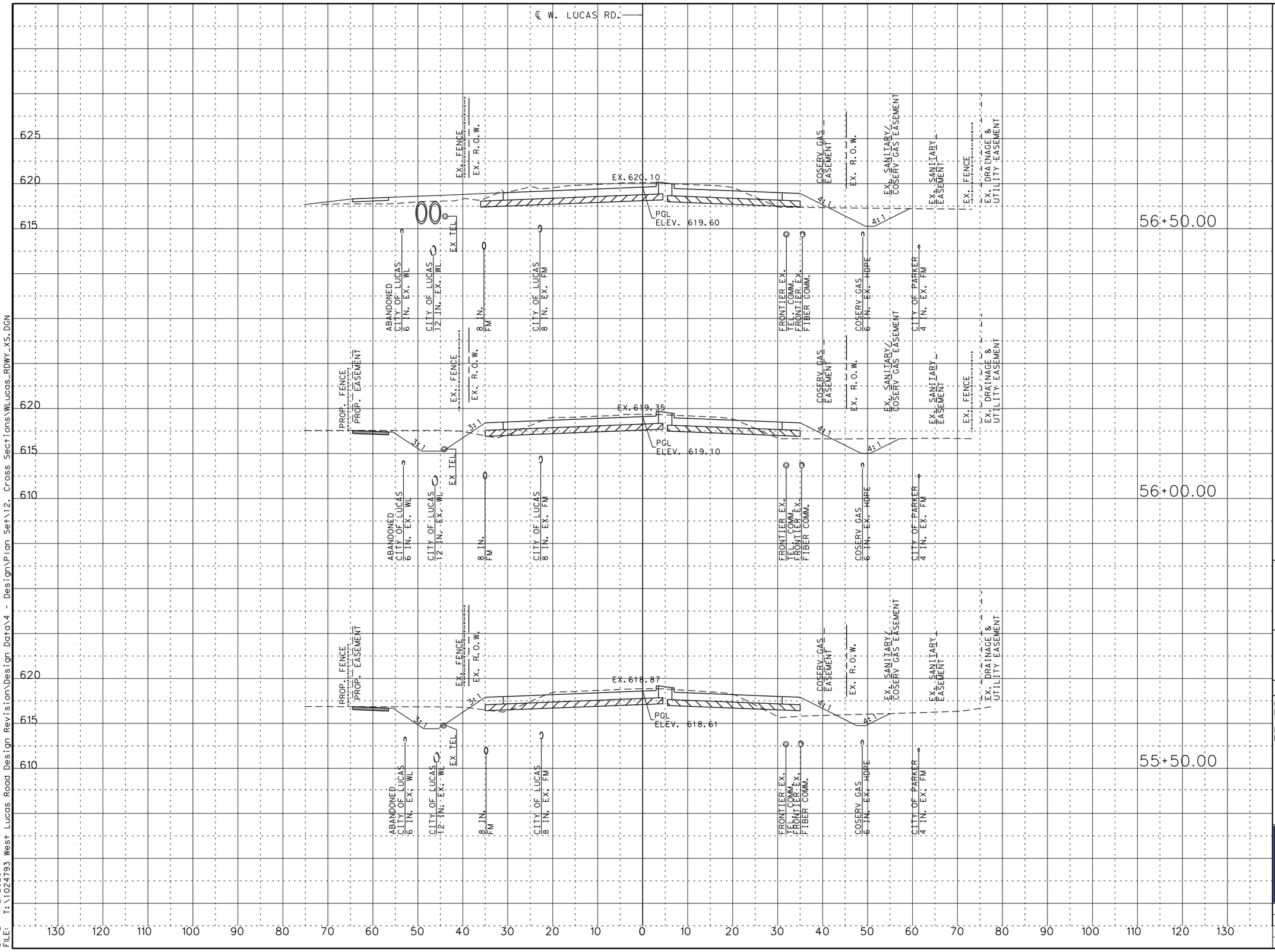
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		138
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:52:34 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 30 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

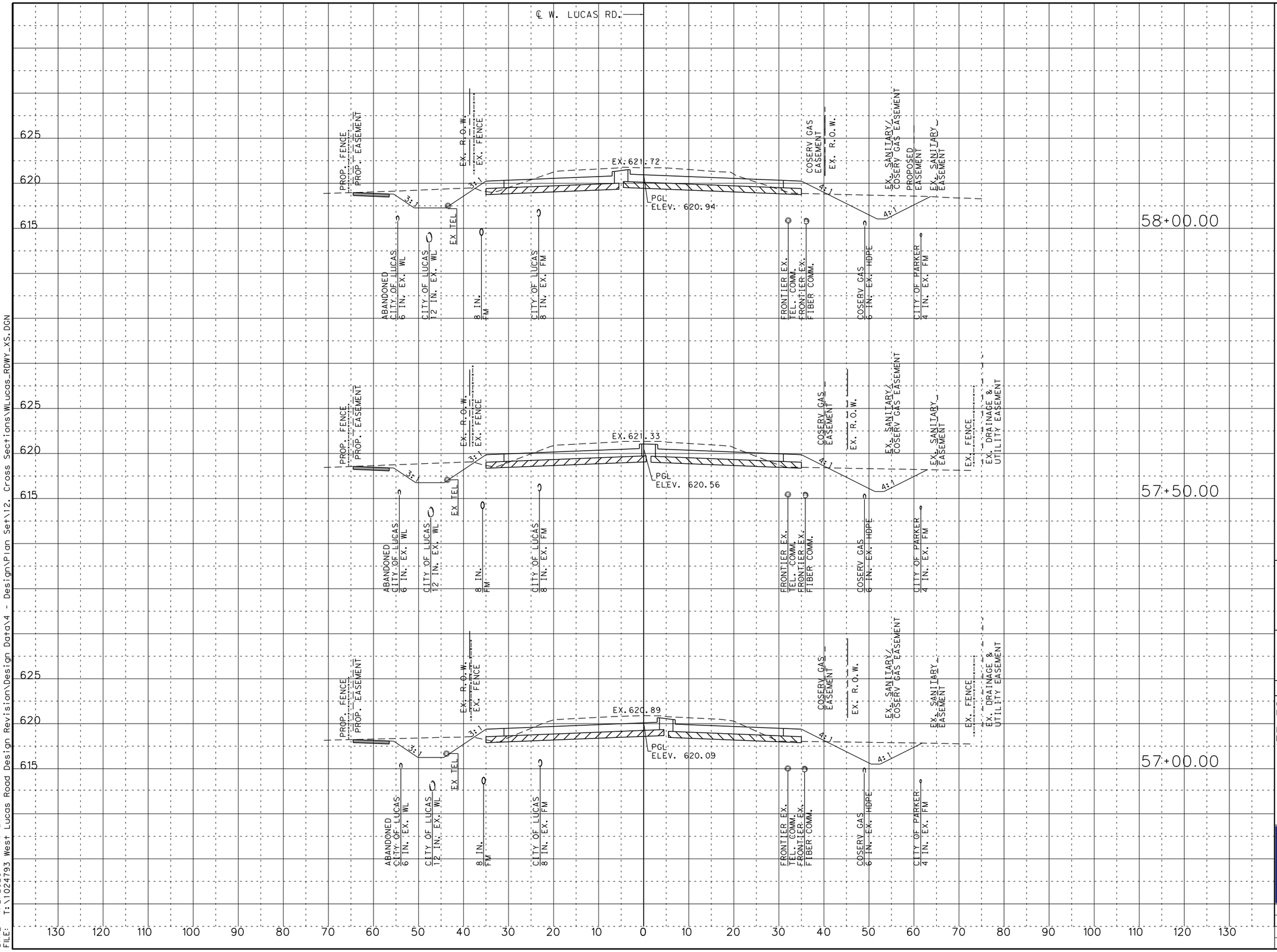
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		139
COLLIN		

CALL BEFORE YOU DIG
TEXAS811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:53:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 31 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

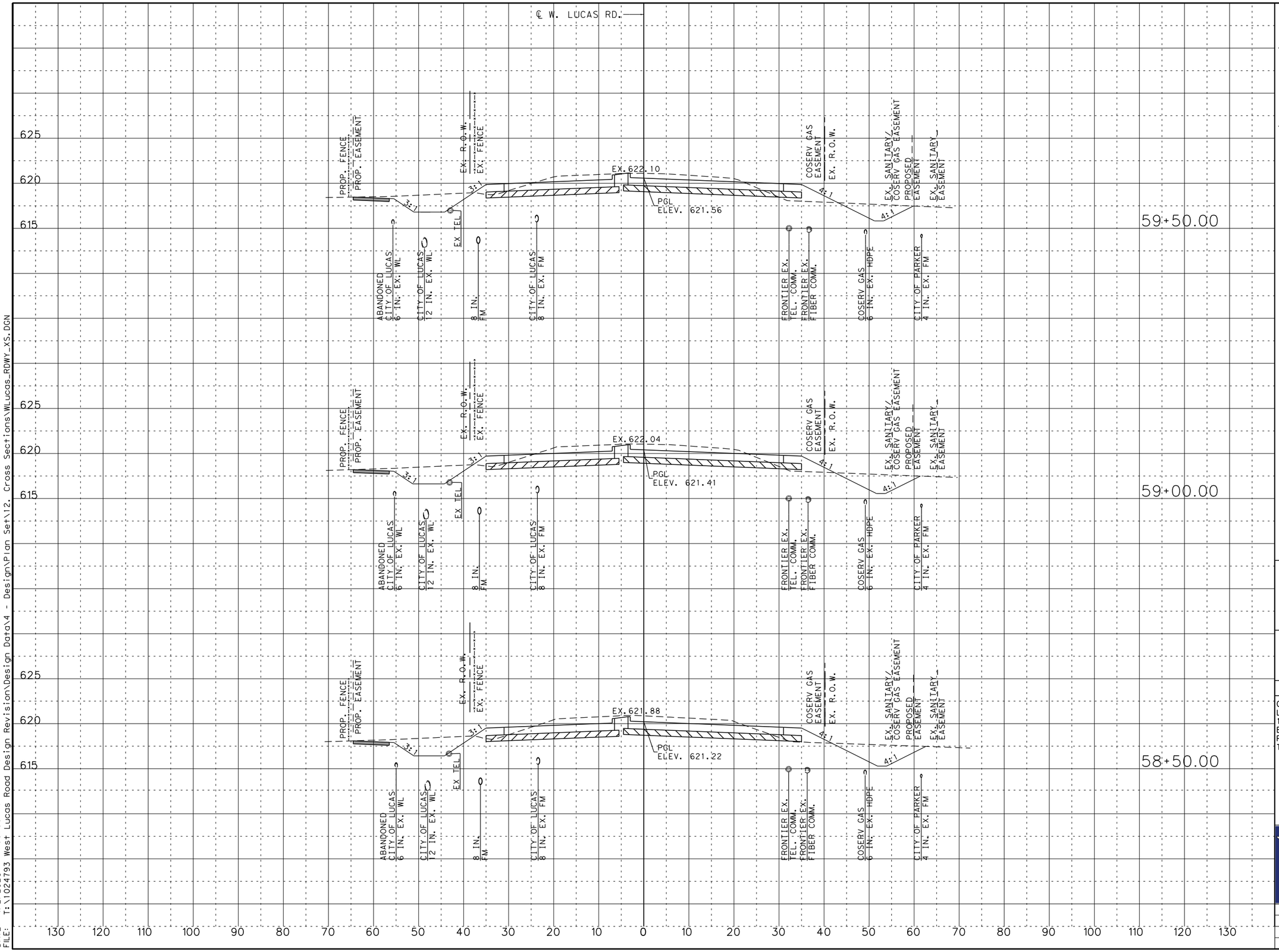
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	140
COUNTY	COLLIN	

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:53:28 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 32 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

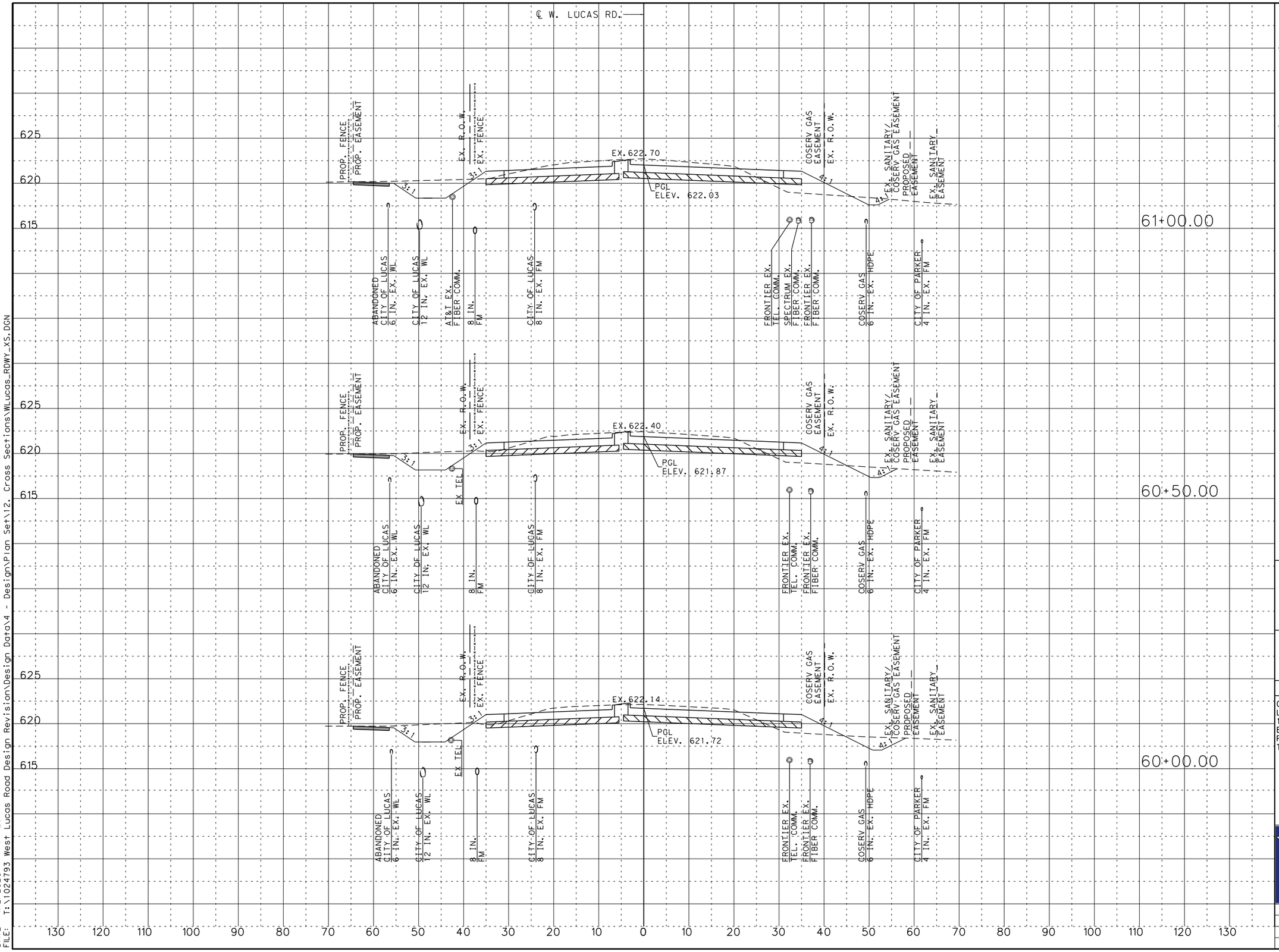
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		141
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS LAW REQUIRES YOU TO NOTIFY THE NON-MEMBER OPERATORS OF YOUR PROPOSED EXCAVATION MORE THAN 48 HOURS, BUT NOT MORE THAN 14 DAYS, BEFORE YOU BEGIN EXCAVATION.)
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811
Know what's below.
Call before you dig.

DATE: 4/2/2026 1:53:55 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 33 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

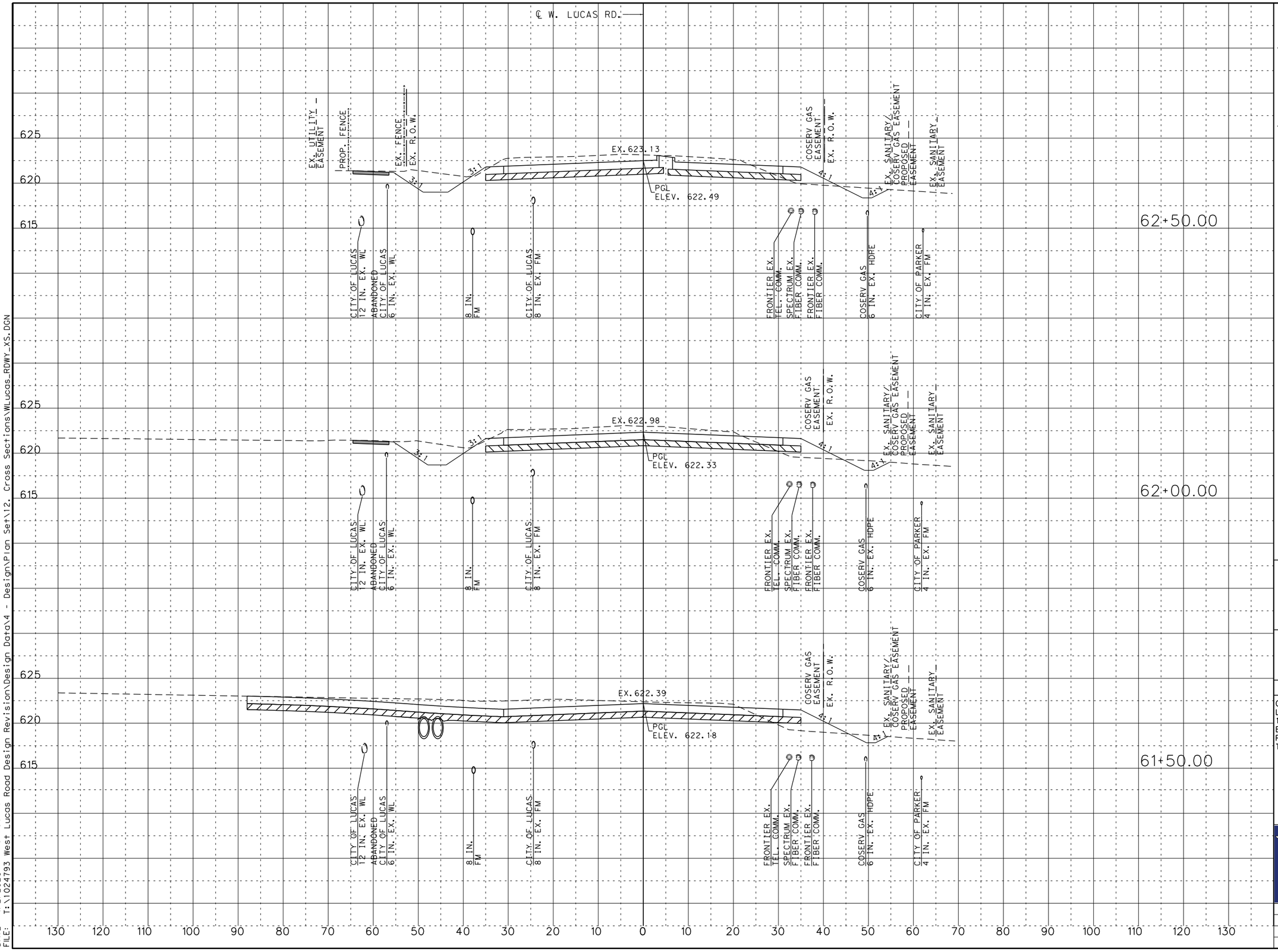
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		142
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:54:23 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 34 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

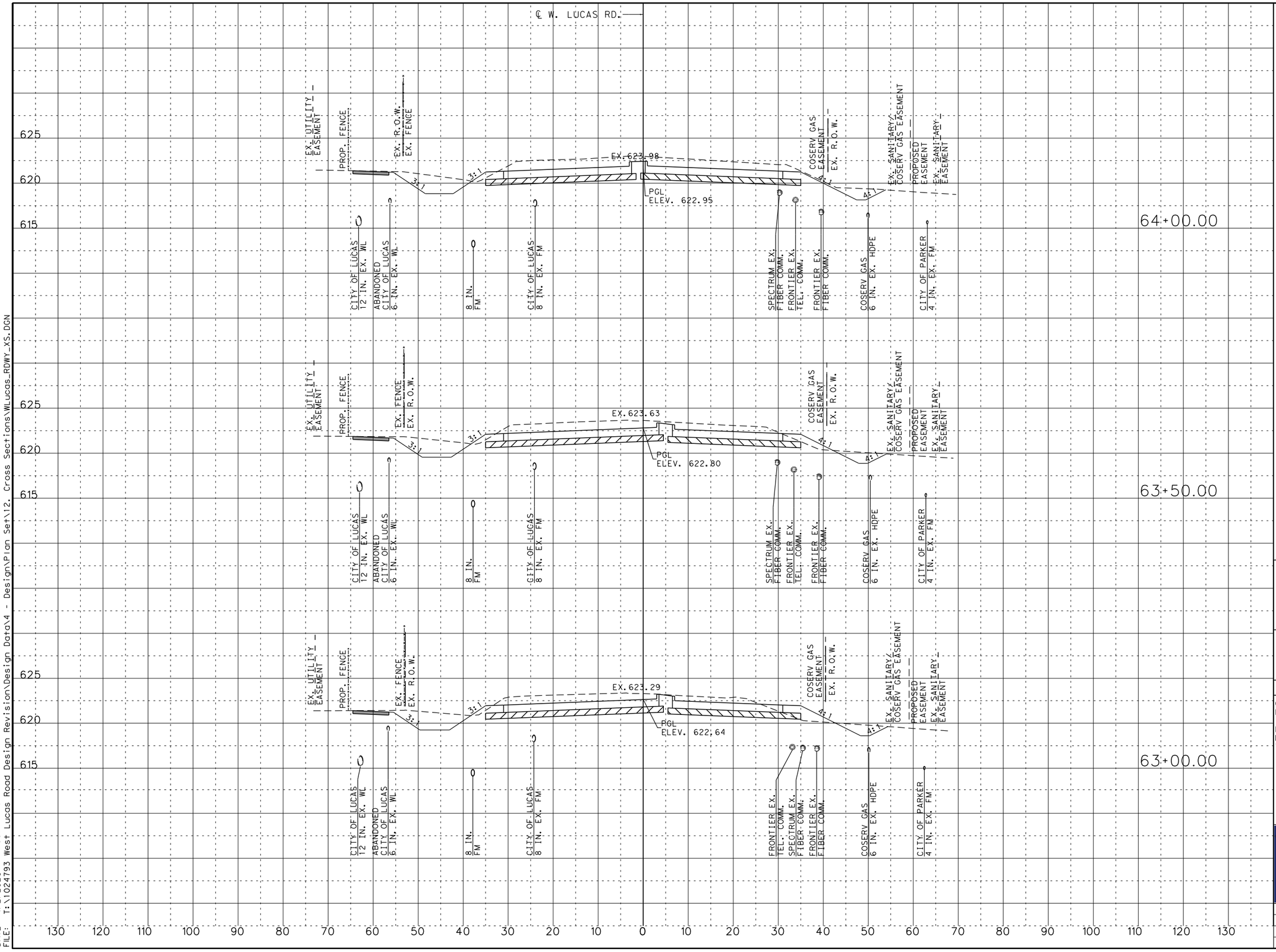
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		143
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:54:50 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 35 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

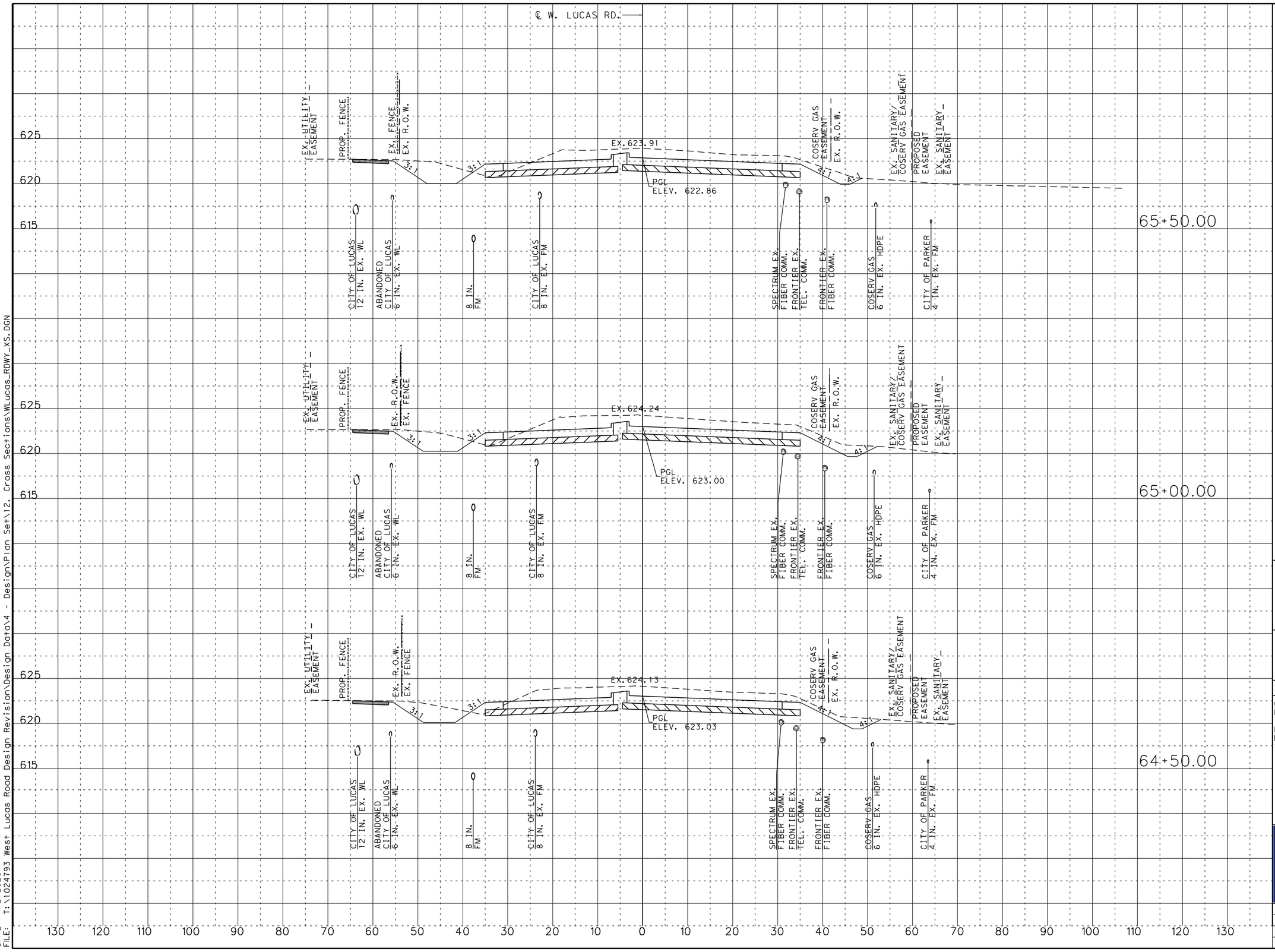
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	144
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW (TEXAS811.ORG)
811 OR 1-800-DIG-TESS
Know what's below. Call before you dig.

DATE: 4/2/2026 1:55:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 36 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

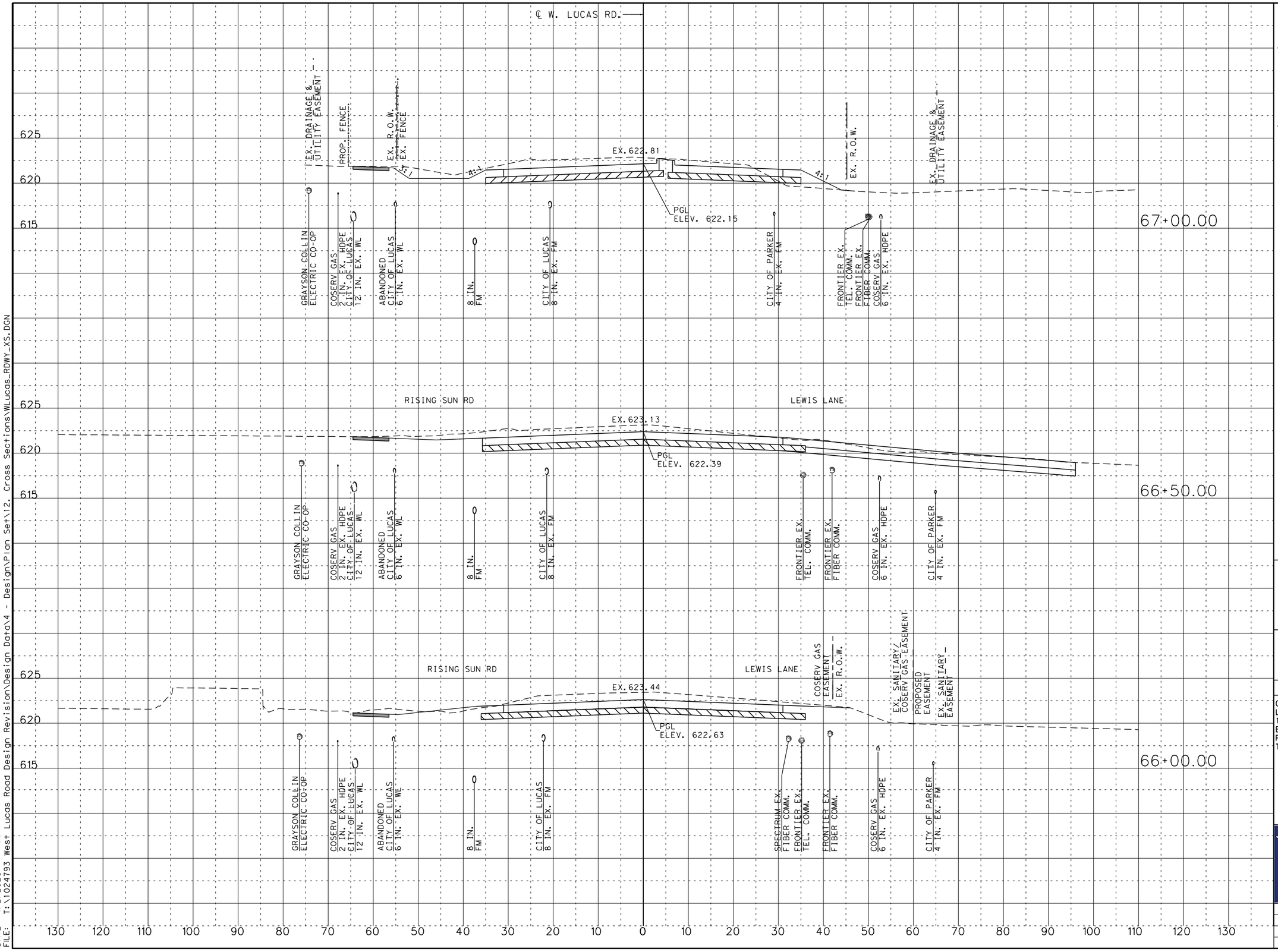
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		145
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:55:44 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 37 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

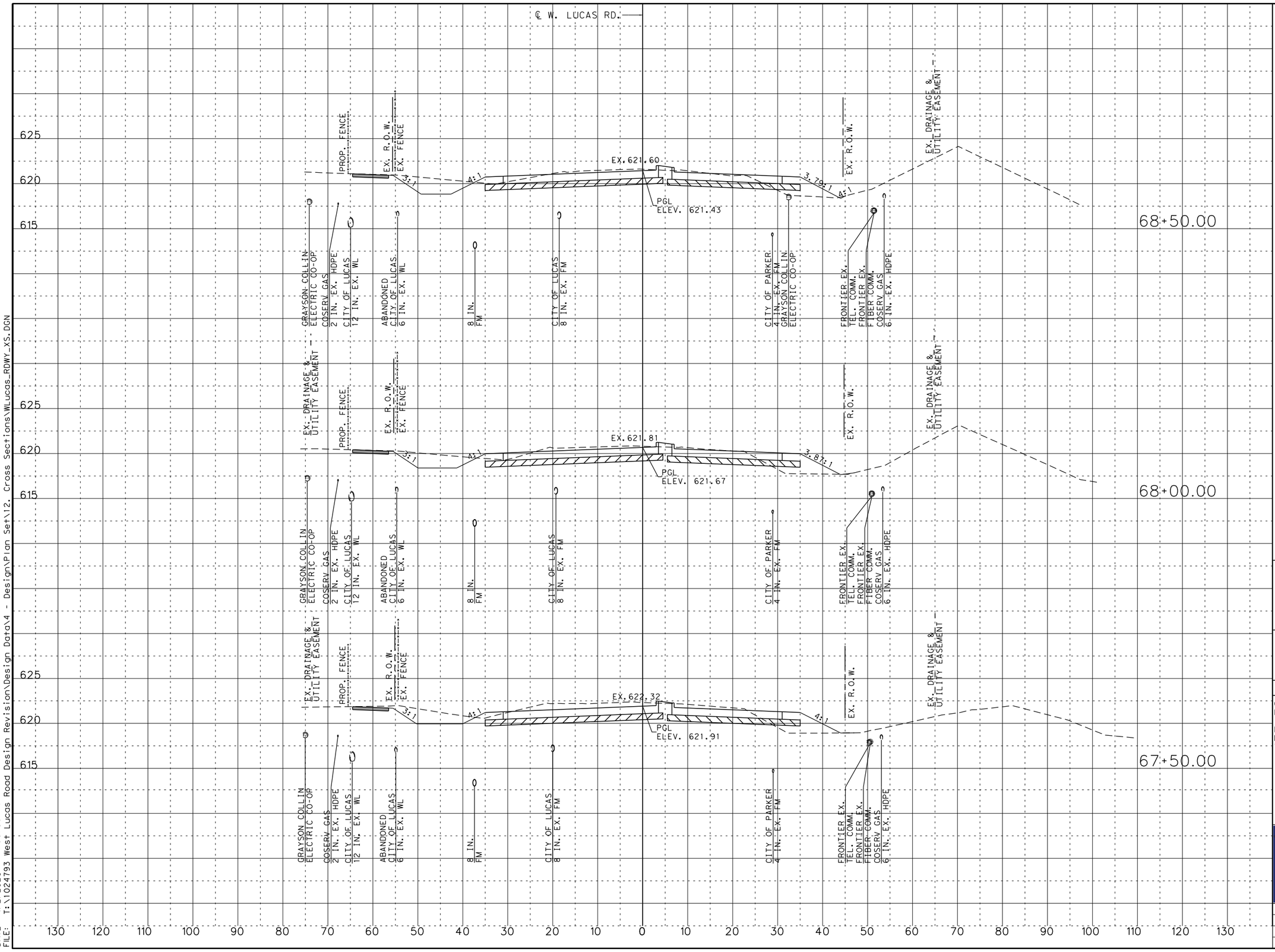
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		146
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW (APPLIES TO PRIVATE PROPERTY, TOO!)
811 or 1-800-DIG-TESS
Texas811
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:56:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 38 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

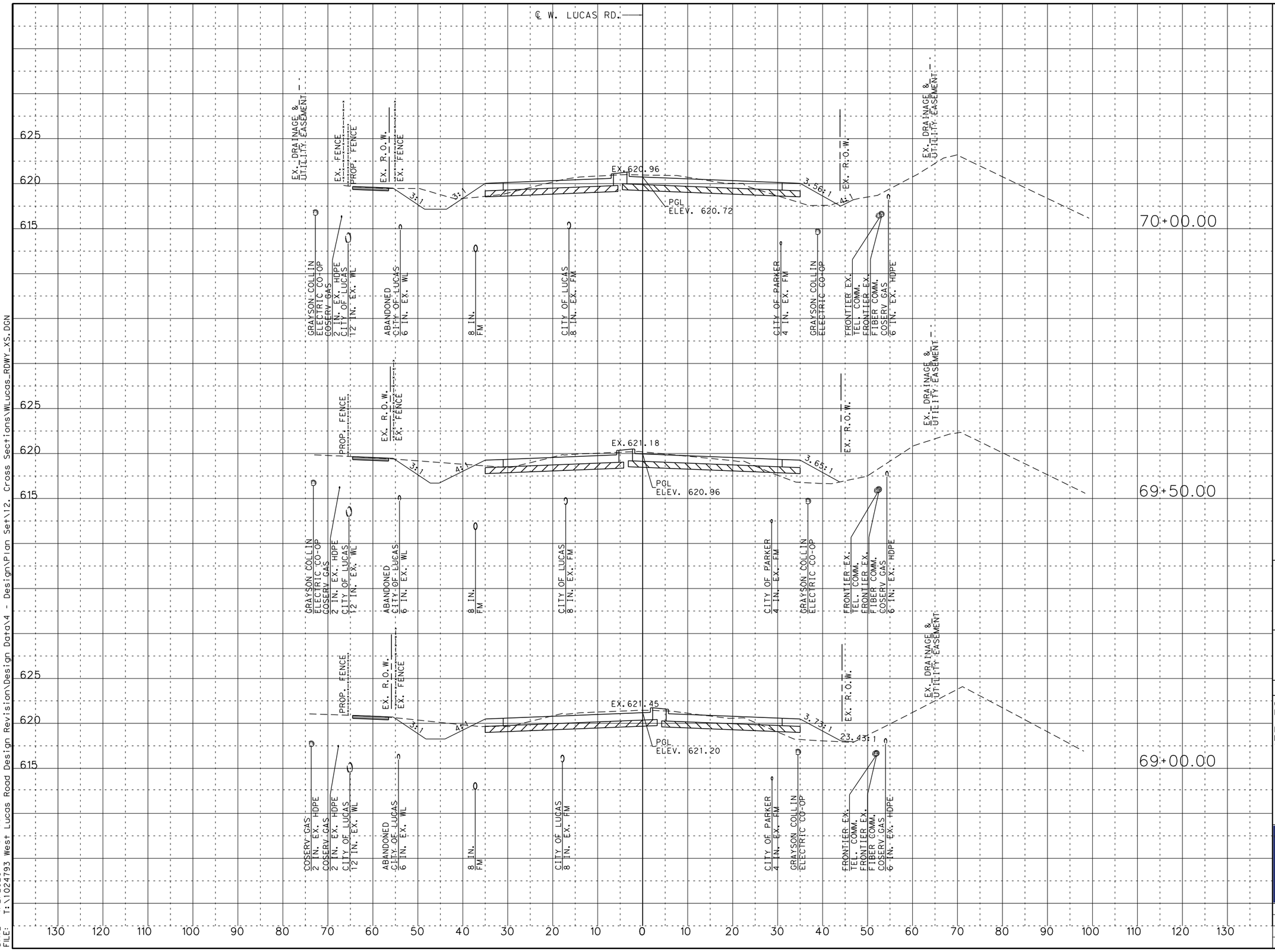
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		147
COLLIN		

CALL BEFORE YOU DIG
TEXAS811.org
811
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:56:38 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 39 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

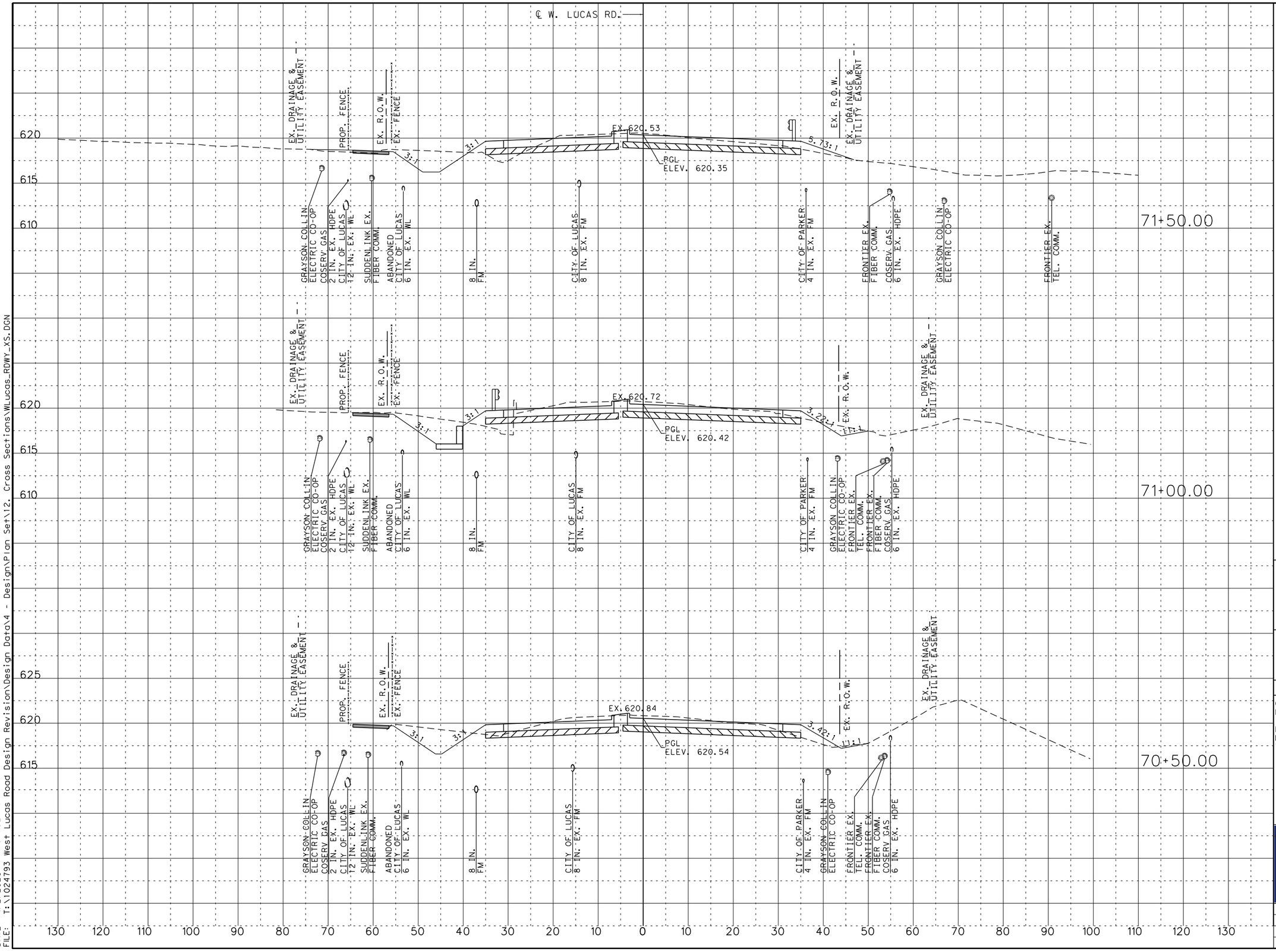
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		148
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
TEXAS ONE CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 1:57:05 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 40 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

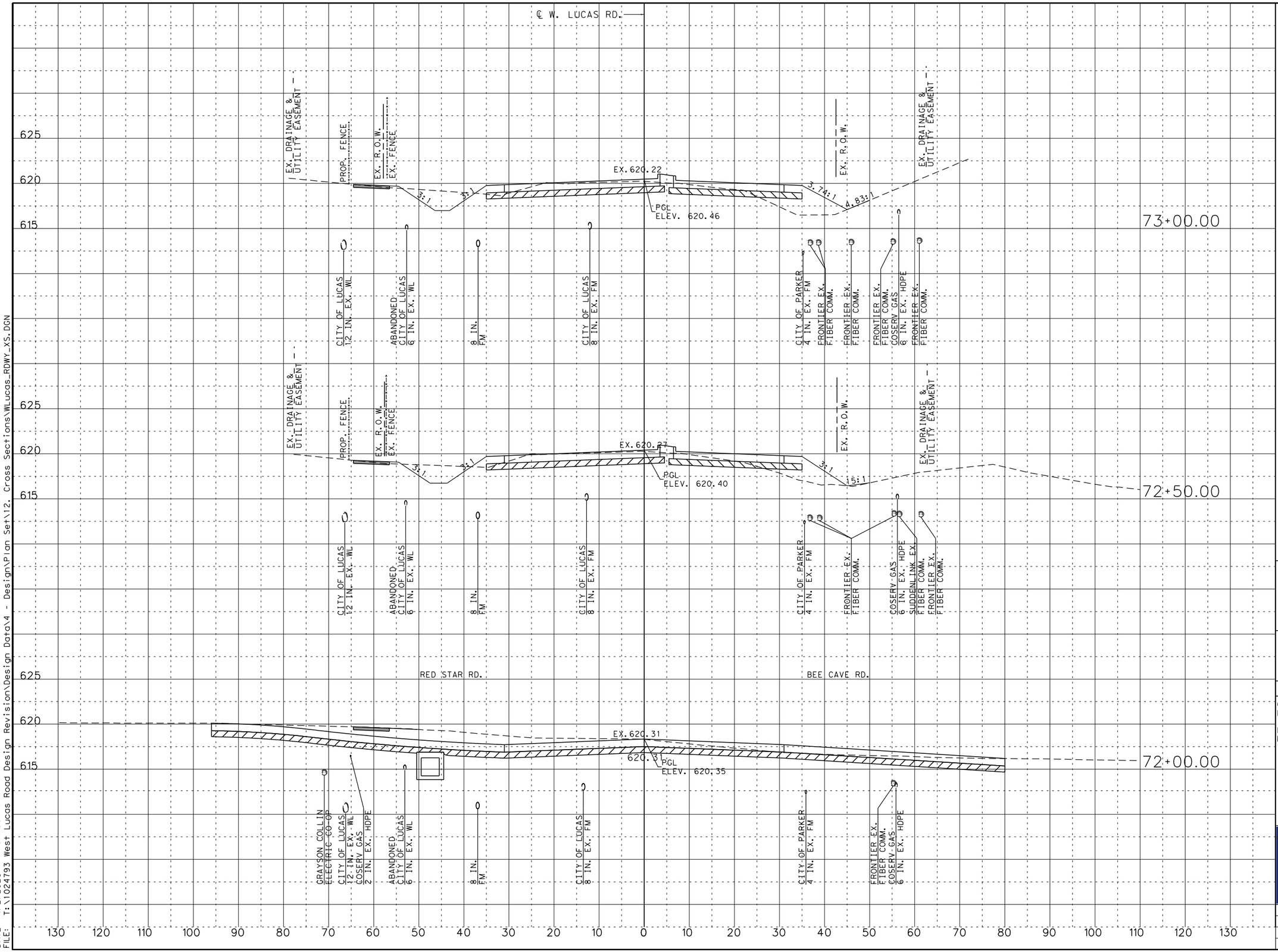
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		149
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's Below. Call before you dig.

DATE: 4/2/2026 1:57:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\W_Lucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 41 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

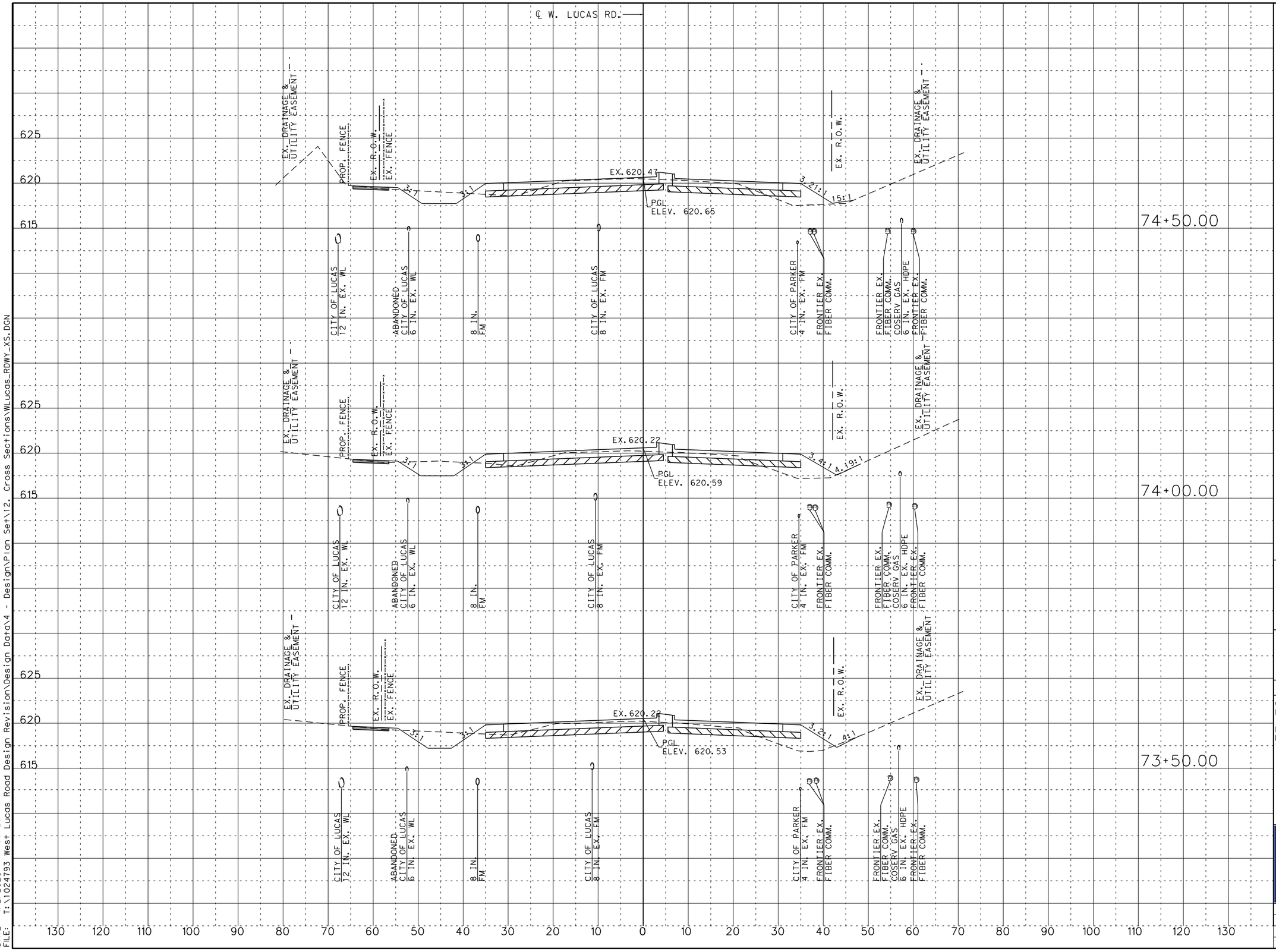
bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		150
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW!
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811.org
Know what's below. Call before you dig.

DATE: 4/2/2026 1:57:59 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 42 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

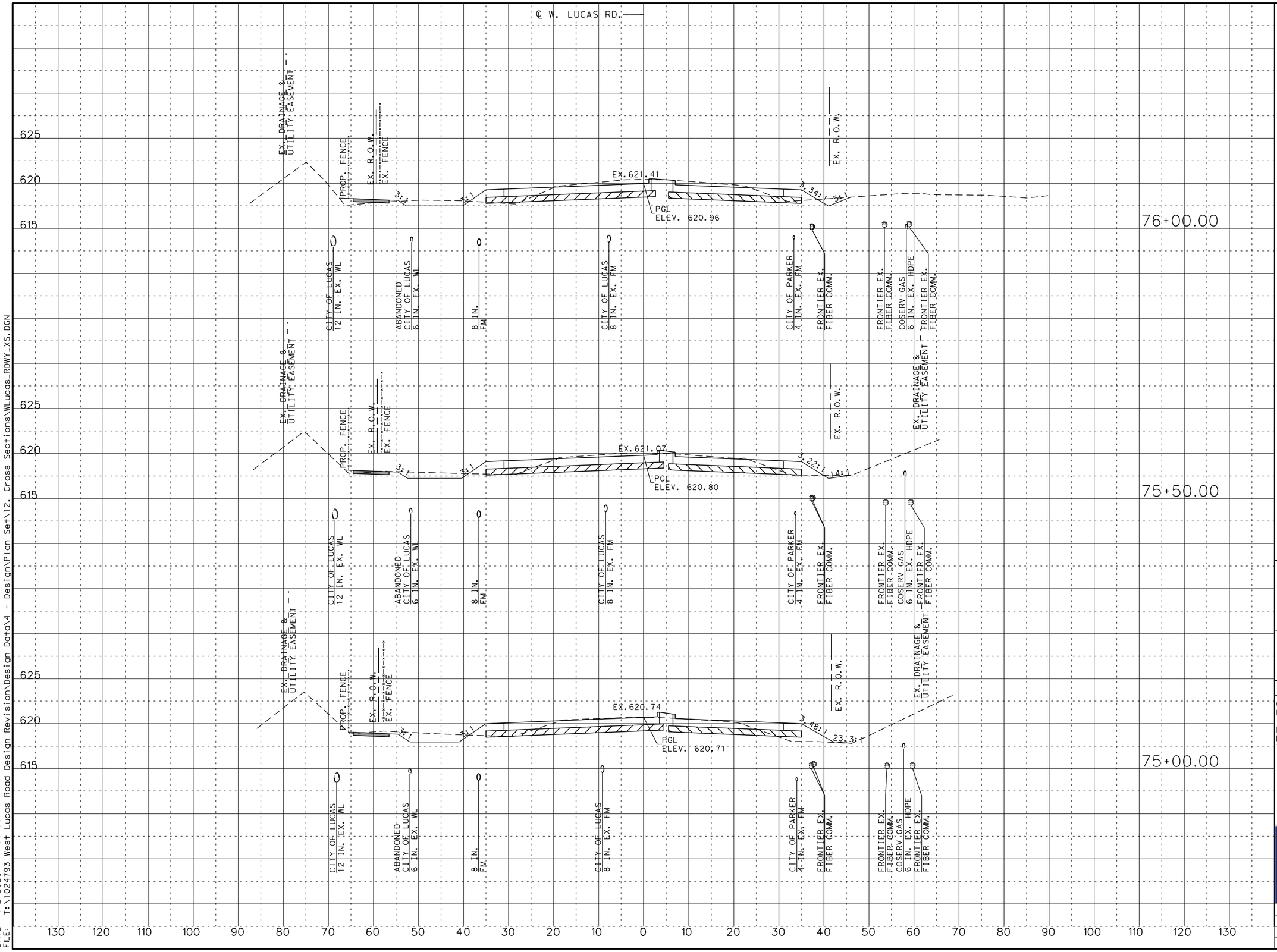
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		151
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:58:26 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 43 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

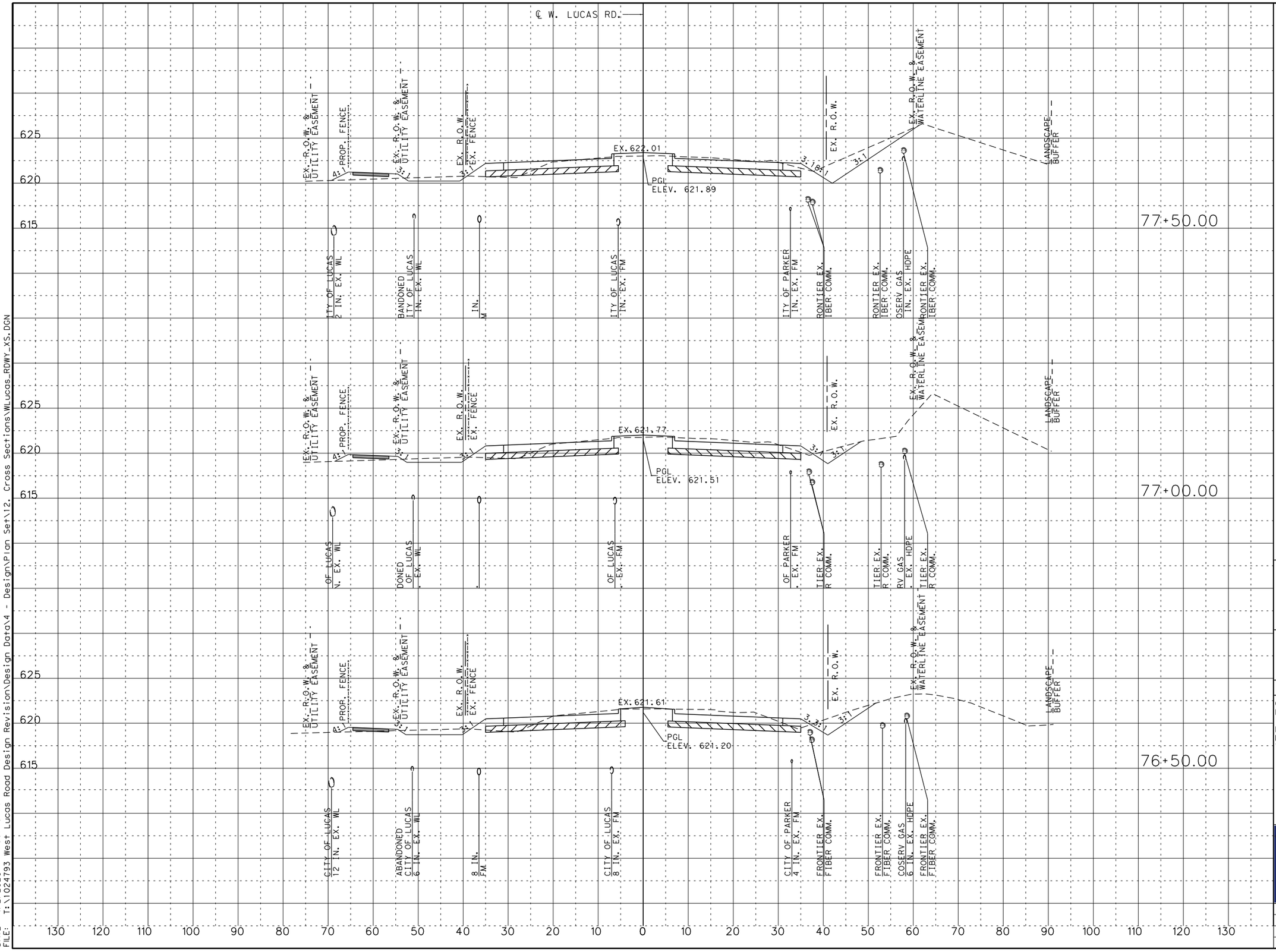
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		152
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS LAW REQUIRES YOU TO CALL AT LEAST 48 HOURS, BUT NOT MORE THAN 14 DAYS, BEFORE YOU BEGIN EXCAVATION.)
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811
Know what's below.
Call before you dig.

DATE: 4/2/2026 1:58:53 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 44 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

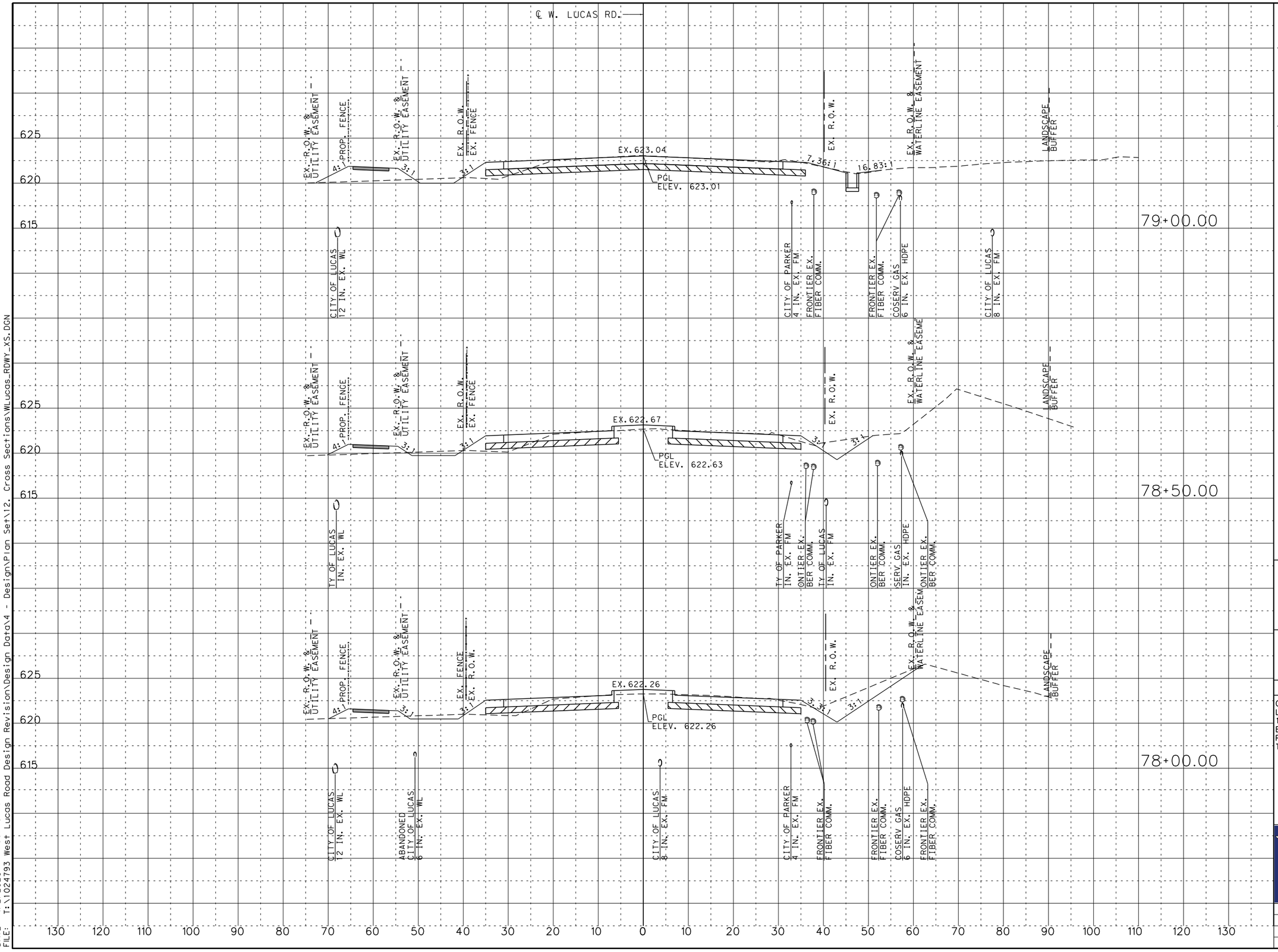
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	153
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW (TEXAS LAW, CHAPTER 251, HEALTH & SAFETY CODE)
48 HOURS NOTICE BEFORE YOU DIG, EXCEPT SUNDAYS, HOLIDAYS, AND WEEKENDS
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 1:59:19 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 45 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

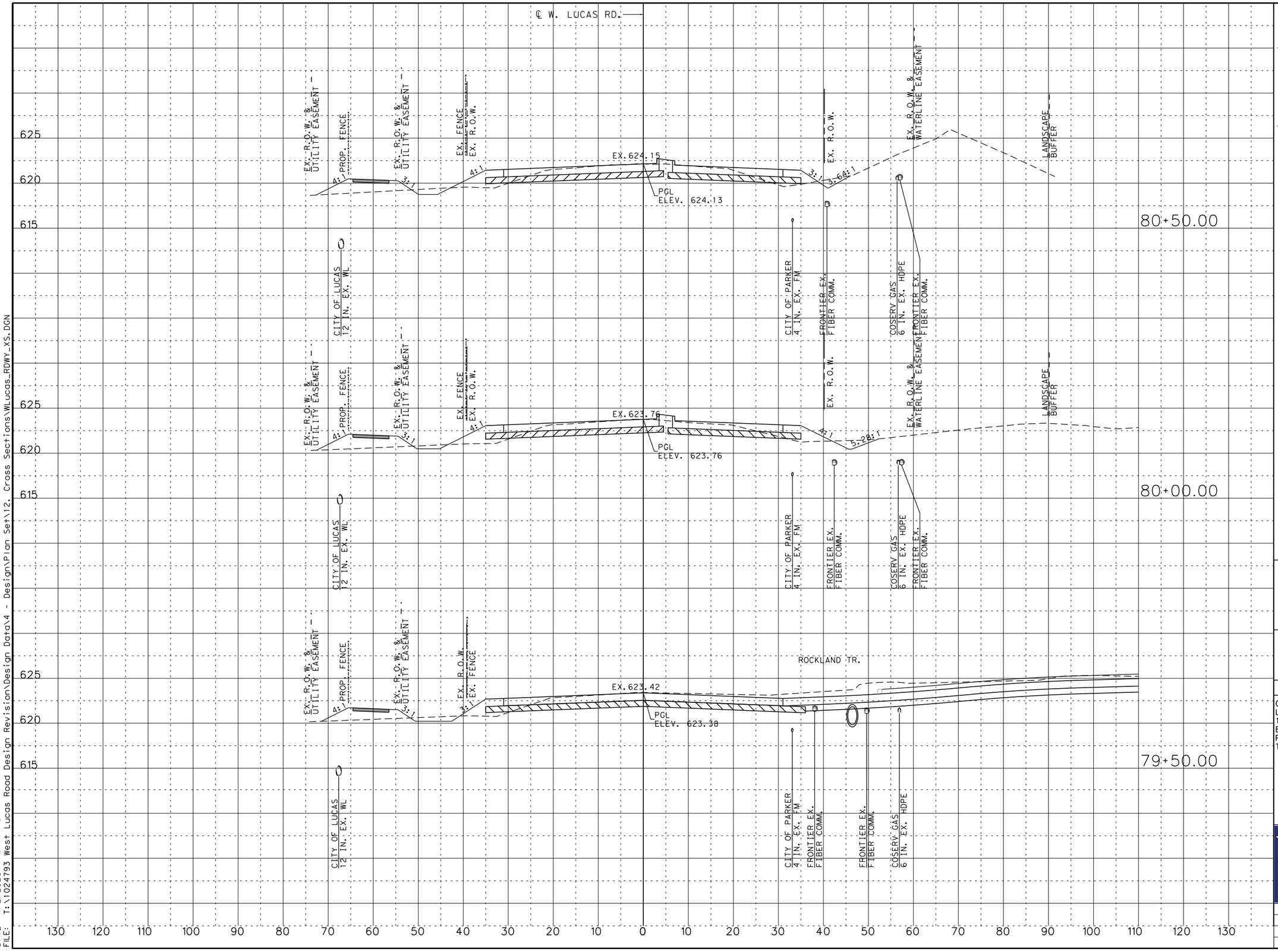
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		154
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS811.COM)
811 Know what's below. Call before you dig.

DATE: 4/2/2026 1:59:46 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 46 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

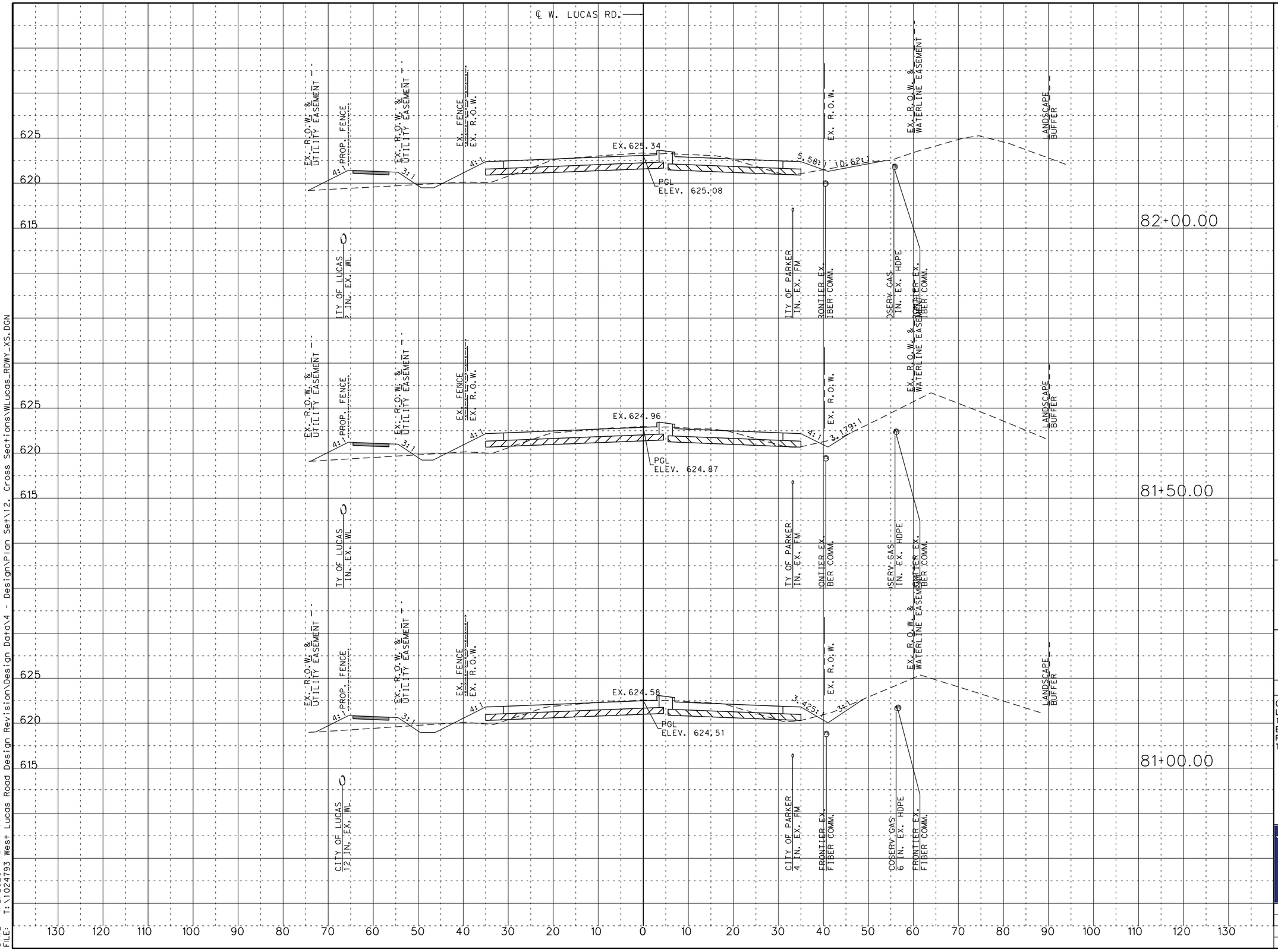
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	155
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:00:12 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 47 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

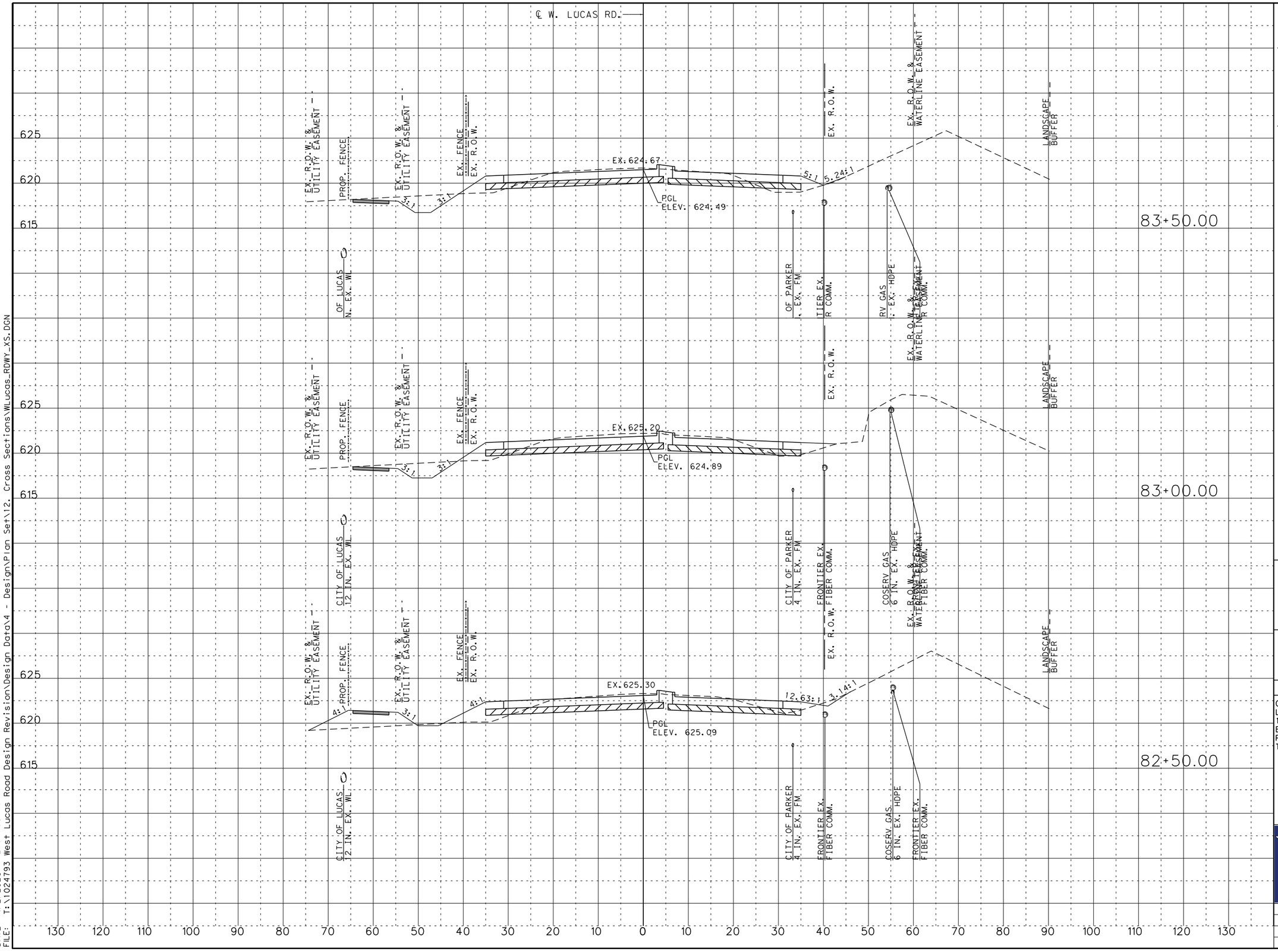
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		156
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:00:39 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 48 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

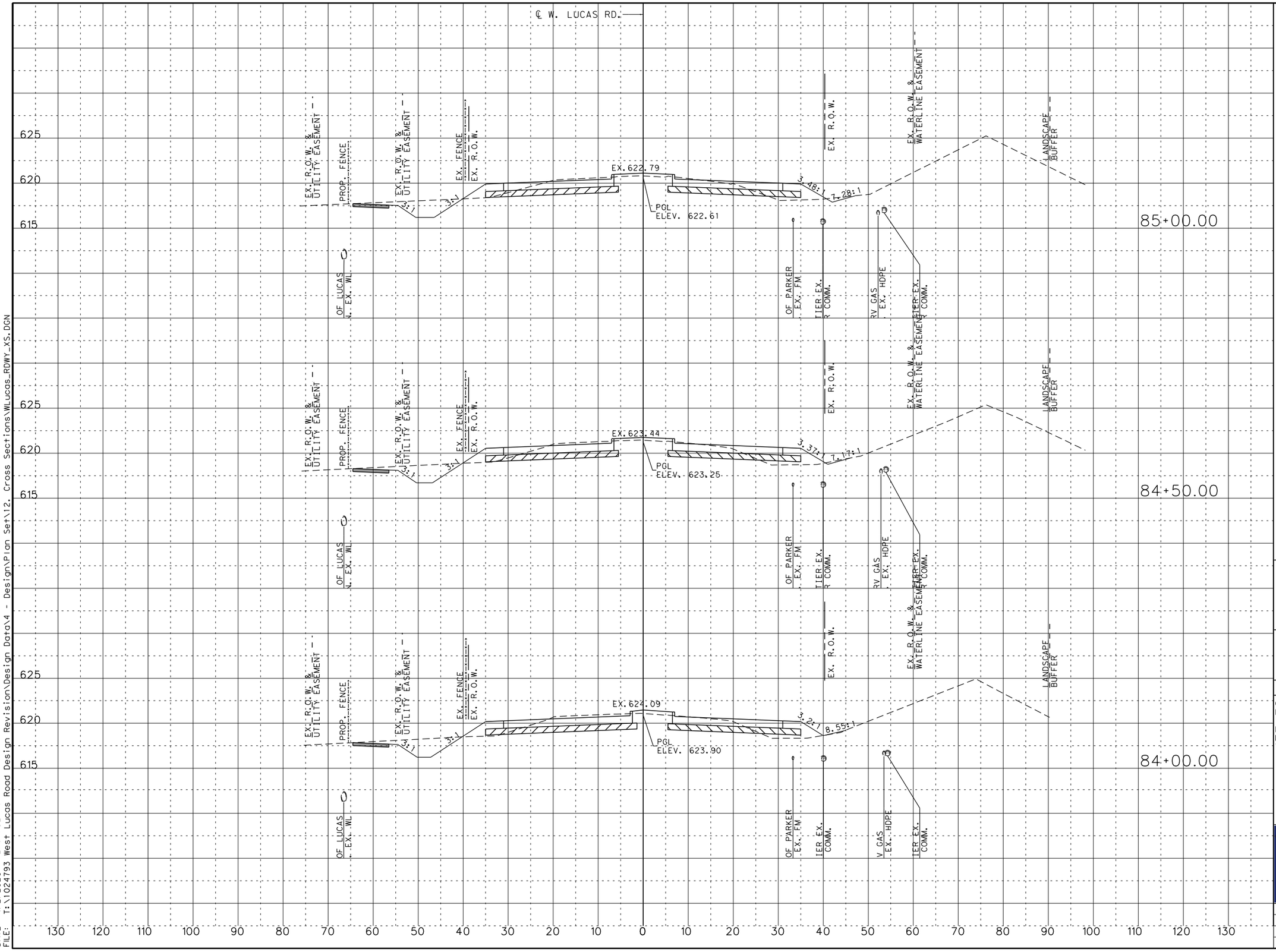
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		157
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:01:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 49 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

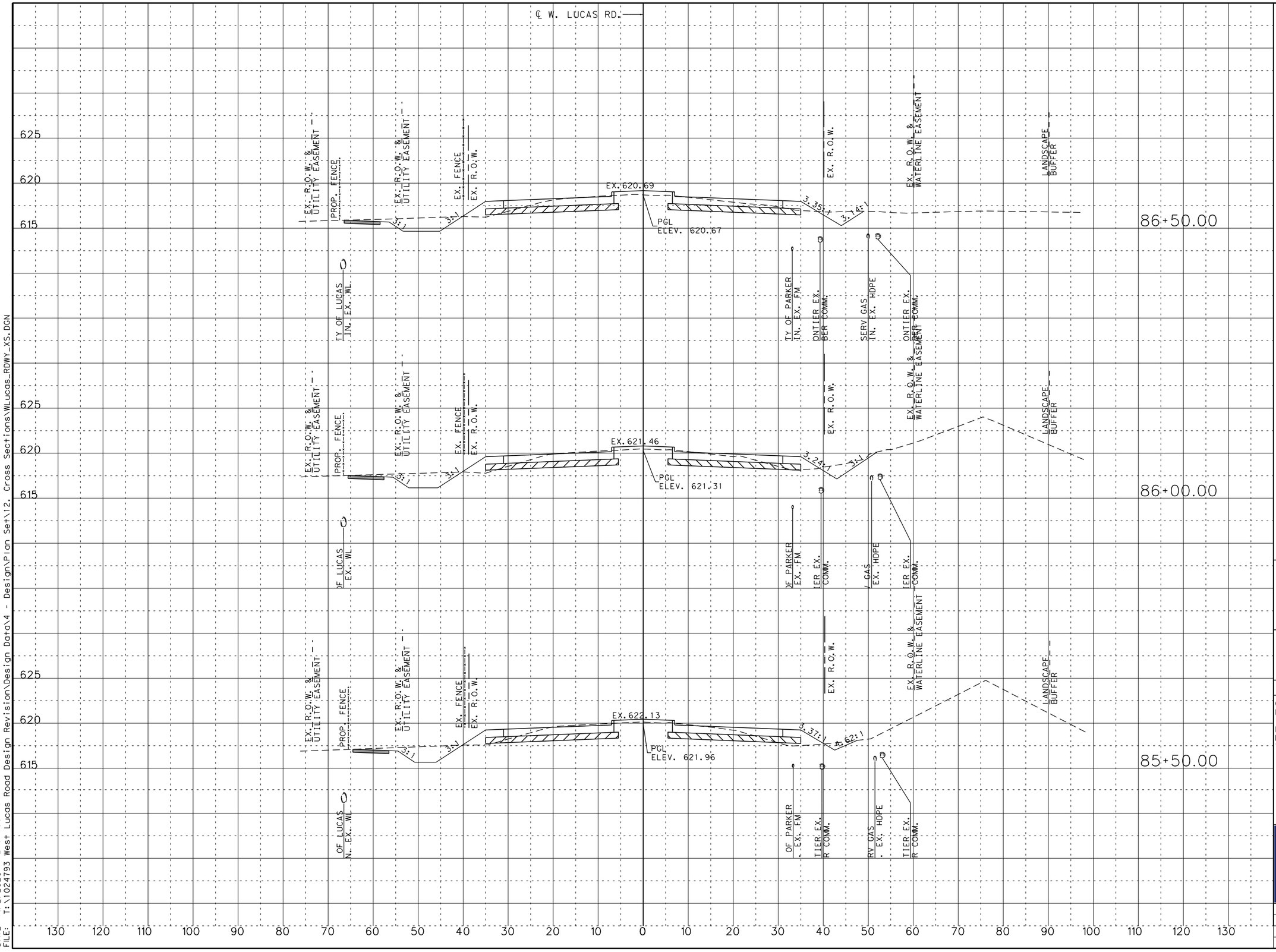
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		158
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:01:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—×— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 50 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

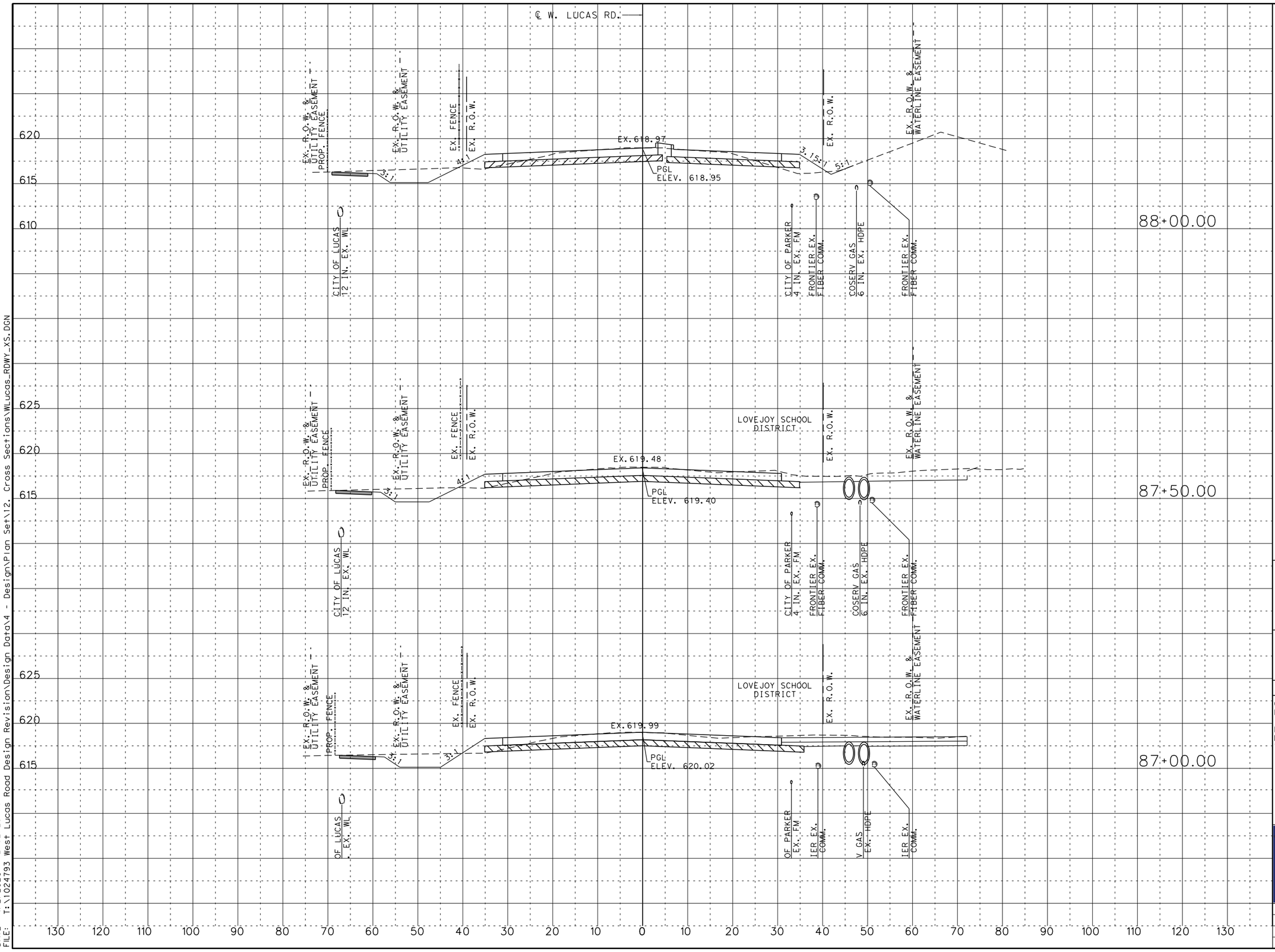
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	159
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW (TEXAS HEALTH & SAFETY CODE, CHAPTER 756)
IT'S FREE
IT'S AVAILABLE 24 HOURS A DAY, 365 DAYS A YEAR
IT'S EASY
WE'RE ONE CALL SYSTEM
1-800-DIG-TESS
Texas811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:01:59 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 51 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

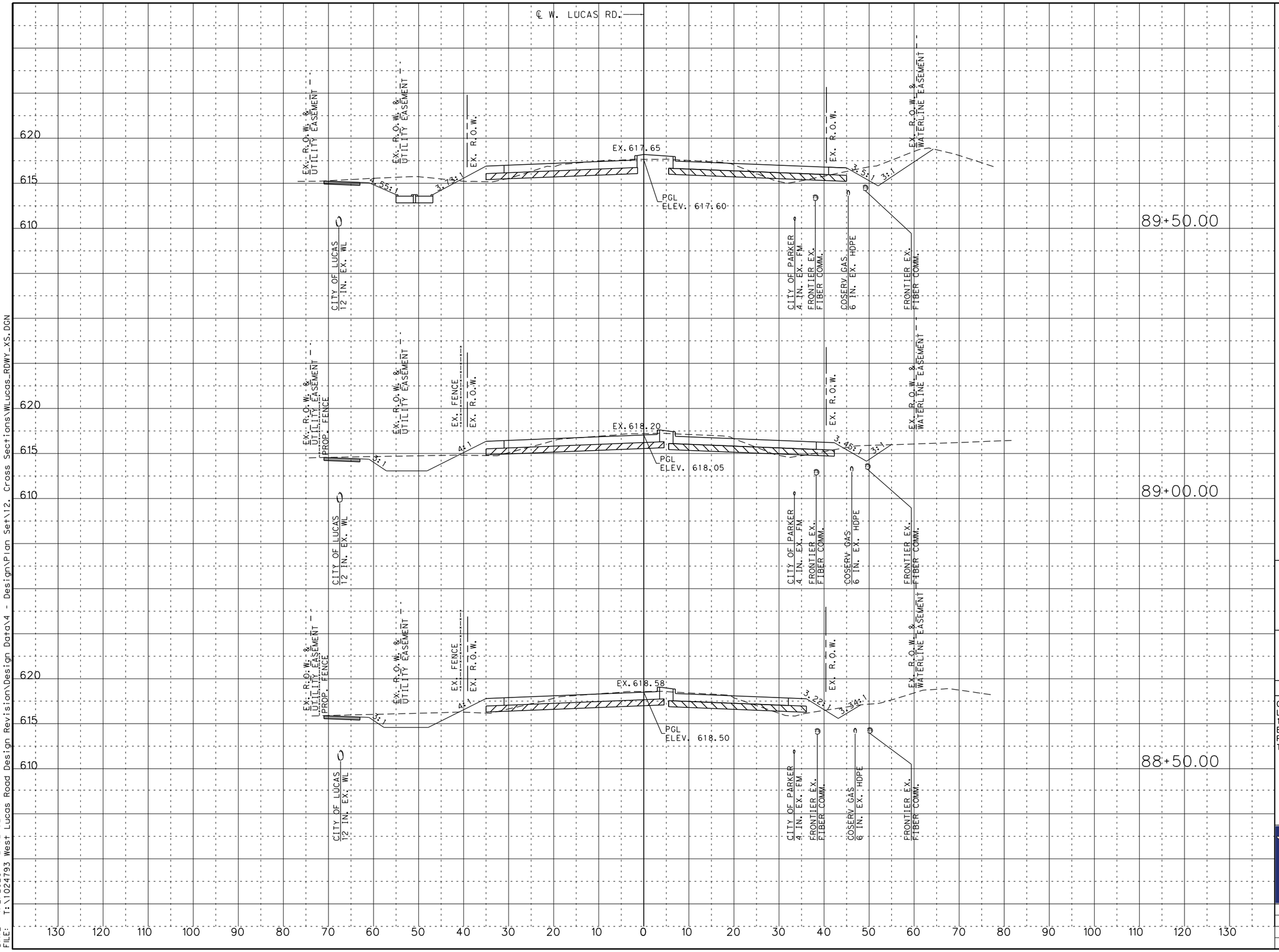
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	160
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:02:25 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 52 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

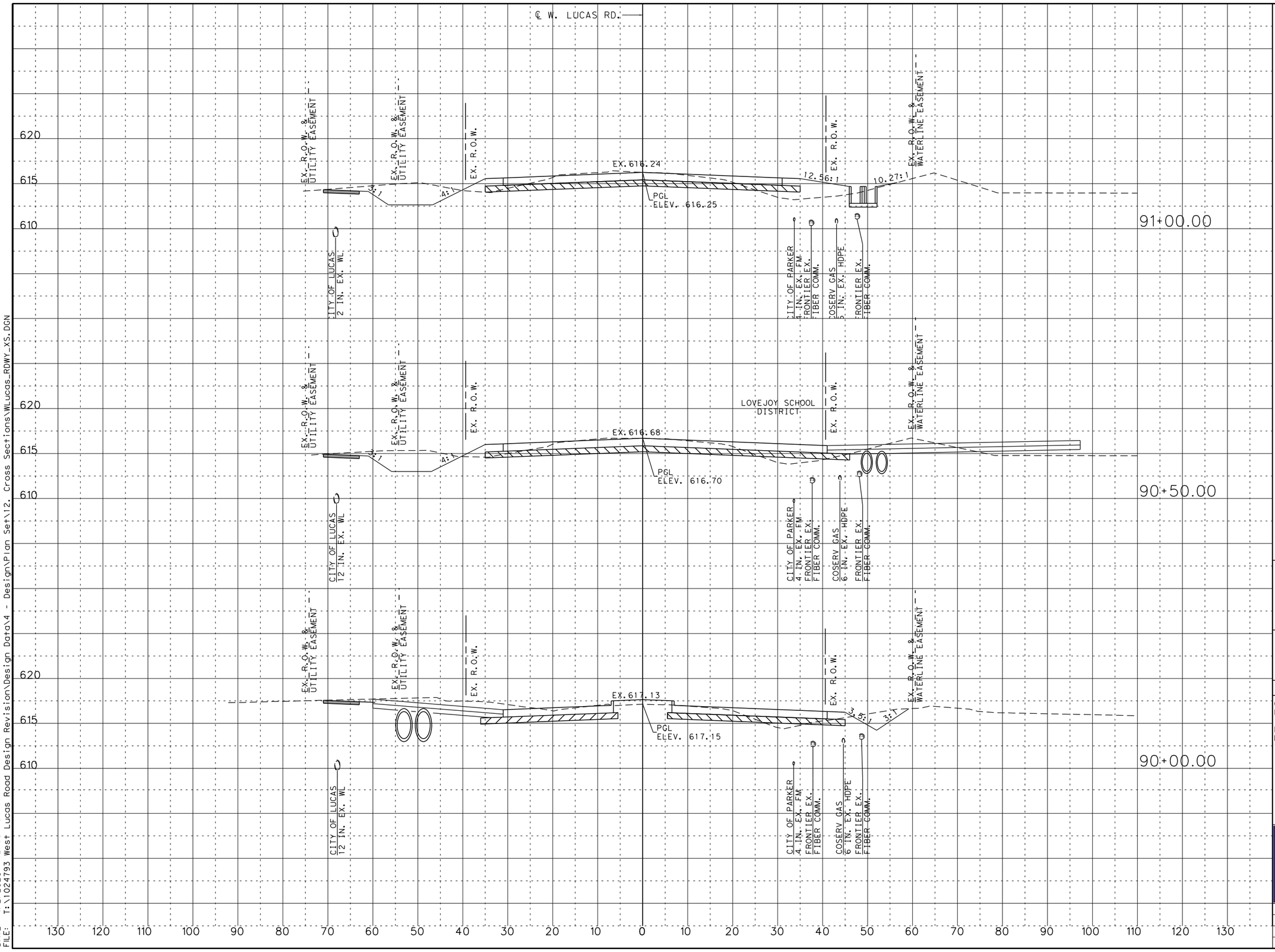
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		161
COLLIN		

CALL BEFORE YOU DIG
IT'S THE LAW! (811 TEXAS ONE-CALL SYSTEM)
811 OR 1-800-DIG-TESS
TEXAS ONE-CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 2:02:52 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 53 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

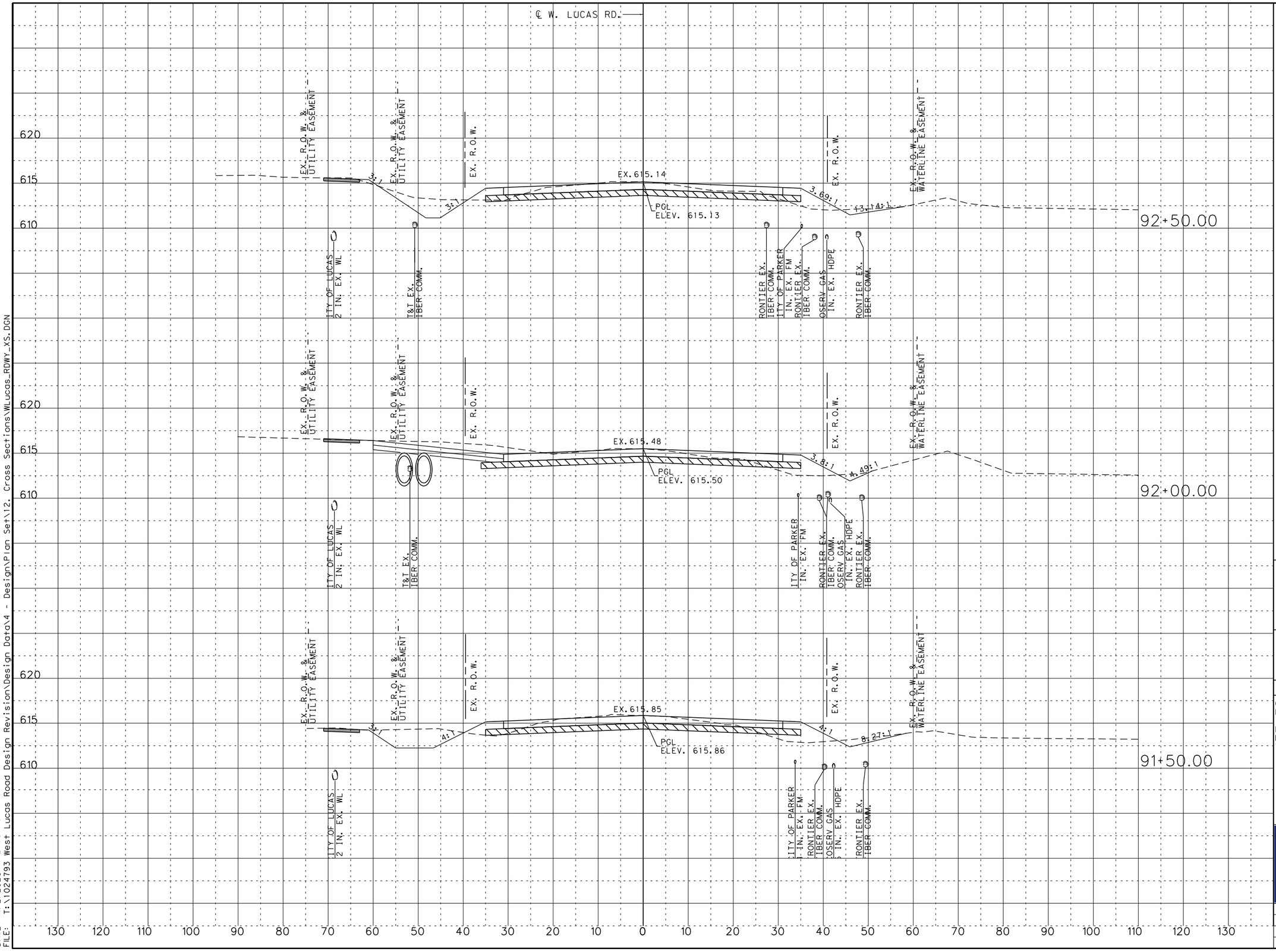
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		162
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
TEXAS ONE CALL SYSTEM
1-800-545-6005

DATE: 4/2/2026 2:03:18 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 54 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

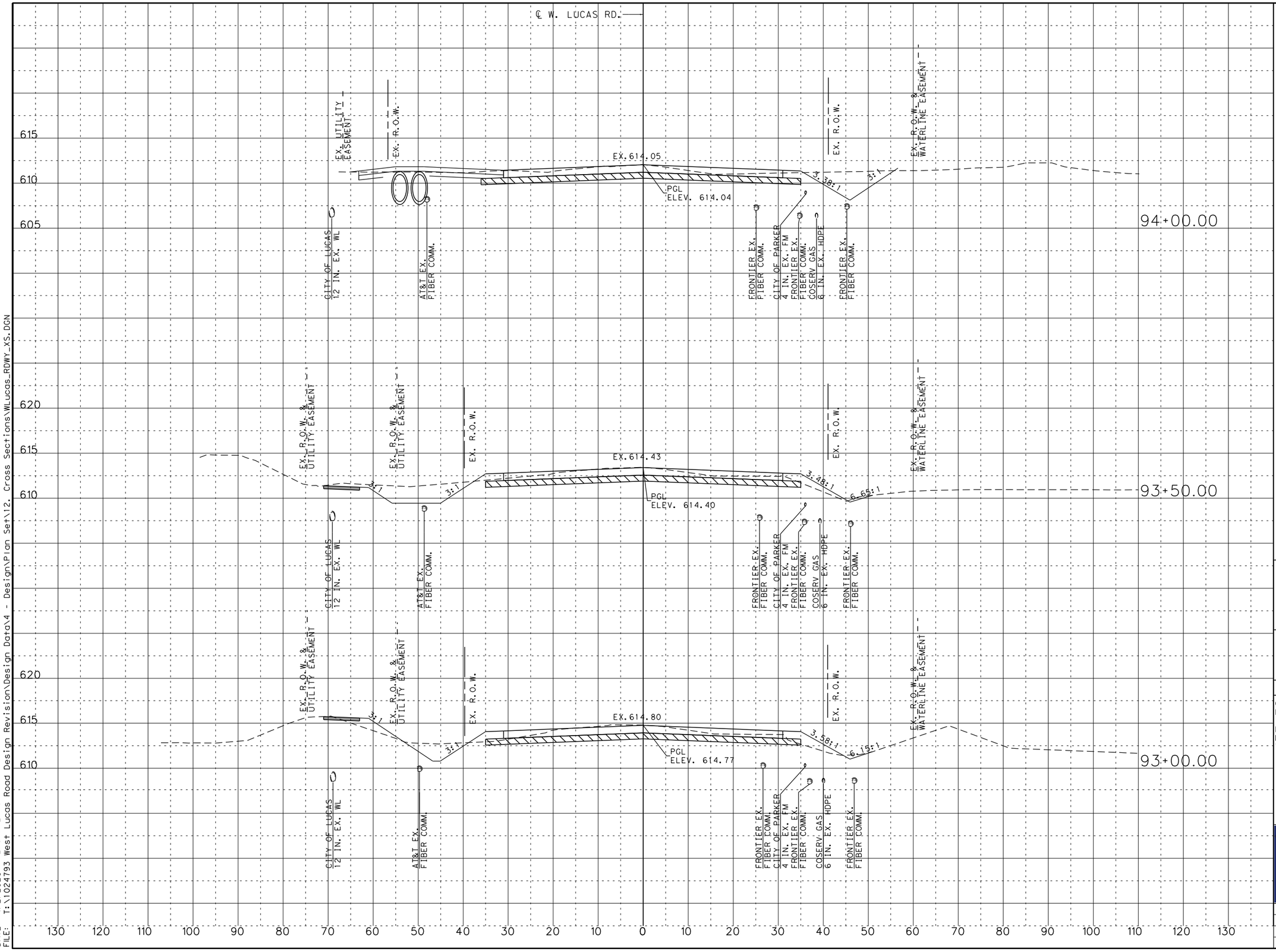
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		163
COLLIN		

CALL BEFORE YOU DIG
TEXAS811.org
Know what's below. Call before you dig.
TEXAS ONE CALL SYSTEM
1-800-245-4545

DATE: 4/2/2026 2:03:45 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 55 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

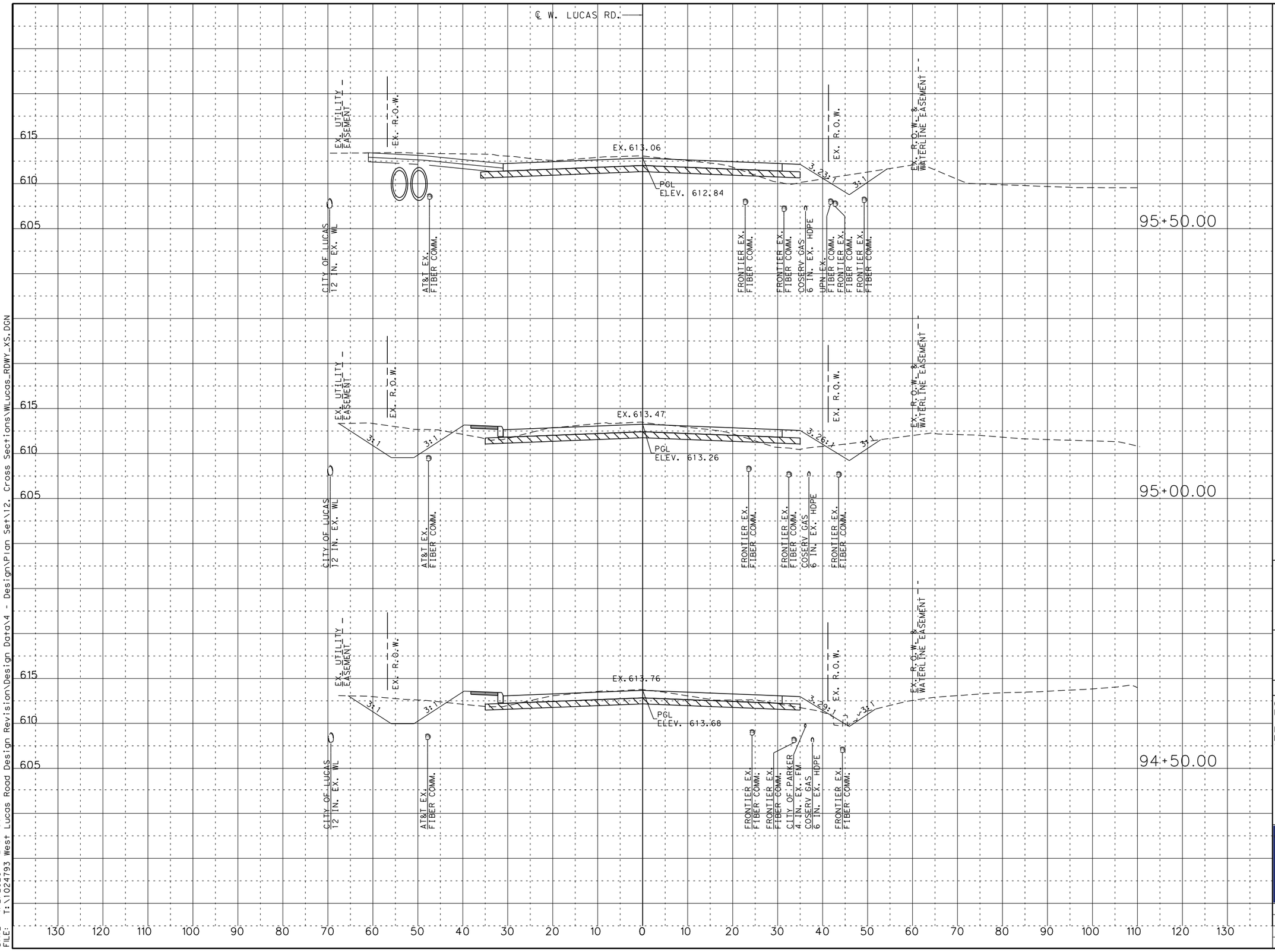
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	164
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:04:12 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 56 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

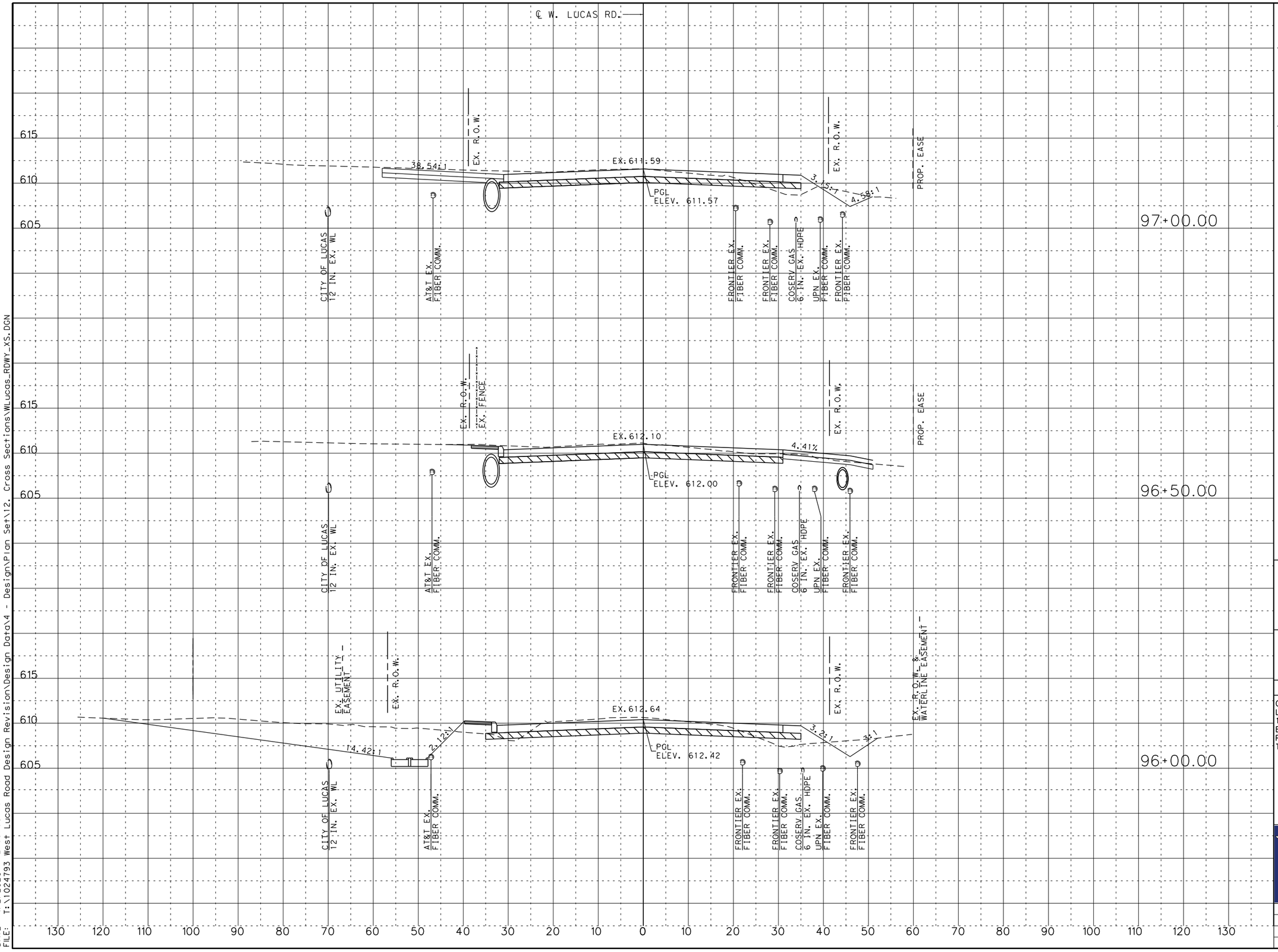
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	165
COUNTY		
COLLIN		

CALL BEFORE YOU DIG
TEXAS 811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:04:39 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

—·—·— EXISTING R.O.W.
- - - - UTILITY EASEMENT
—x— EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 57 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

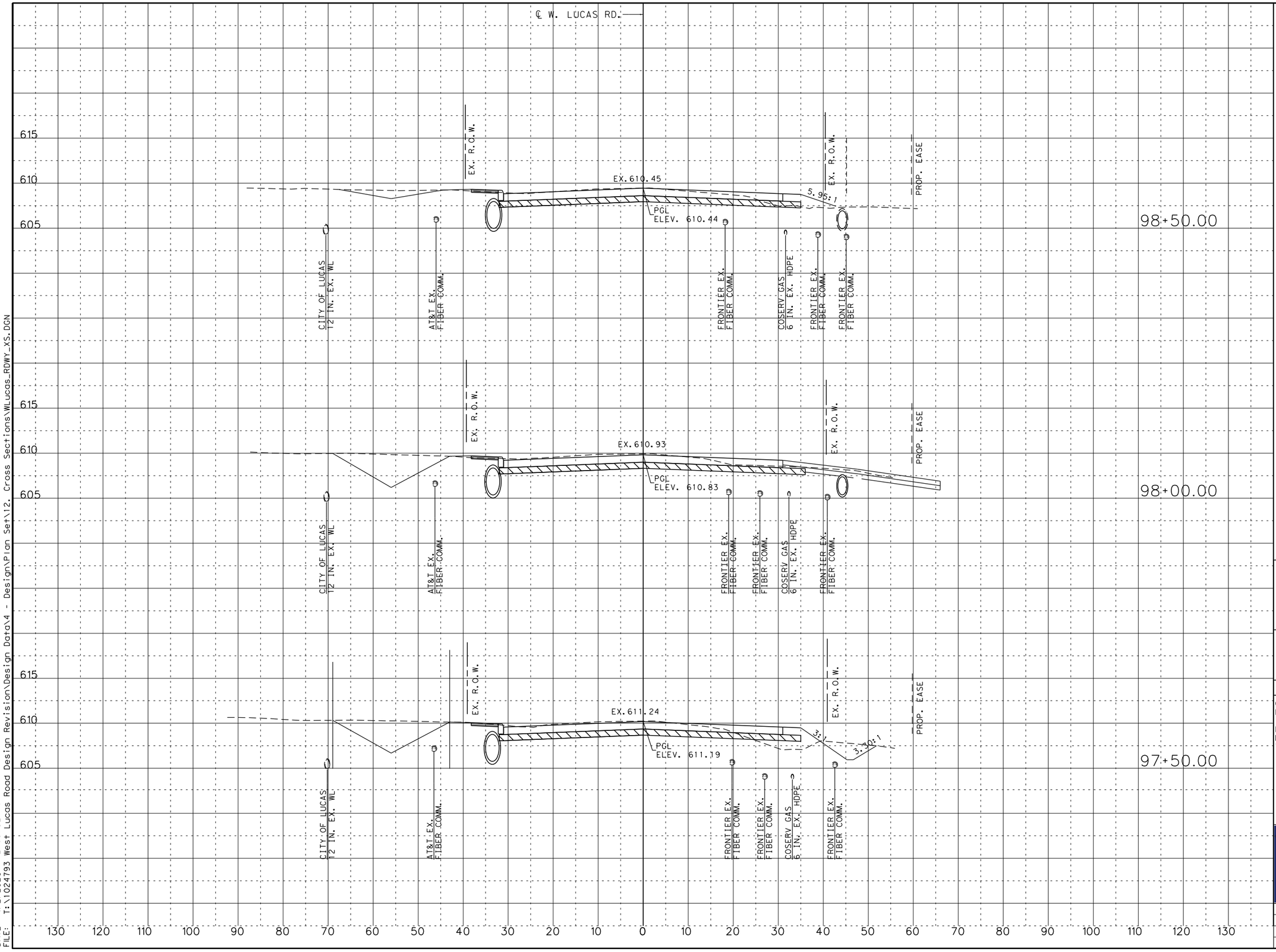
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	166
COUNTY	COLLIN	

CALL BEFORE YOU DIG
IT'S THE LAW! (TEXAS HB 2554)
48 HOURS (NOT INCLUDING WEEKENDS AND HOLIDAYS) BEFORE YOU DIG, CALL
TEXAS ONE CALL SYSTEM
1-800-245-4545
Texas811 Know what's below. Call before you dig.

DATE: 4/2/2026 2:05:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN



SCALE:

1" = 20' HORIZONTAL
1" = 10' VERTICAL

LEGEND:

EXISTING R.O.W.
UTILITY EASEMENT
EXIST. FENCE
CONC. SIDEWALK

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSS SECTIONS

SHEET 58 OF 58

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		167
COLLIN		

CALL BEFORE YOU DIG
TEXAS811
Know what's below. Call before you dig.

DATE: 4/2/2026 2:05:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\12. Cross Sections\WLucas_RDWY_XS.DGN

DRAINAGE AREA CALCULATIONS

AREA NAME	TOTAL ACRES	C FACTOR	TC (min.)	Q_{25} (CFS)	Q_{100} (CFS)	DESCRIPTION
PROPOSED CONDITION						
SYSTEM K						
K1	3.48	-	-	9.23	19.31	BASED ON WALMART AS-BUILT, SHEET C-15 - Area E-1 and E-2
K2	2.41	-	-	4.26	12.65	
OS1	24.62	-	-	80.05	97.28	WALMART AS-BUILT, SHEET C-15, DETENTION POND
SYSTEM A						
A1	4.14	0.47	20.9	10.85	16.68	
A2	2.25	0.48	21.4	5.92	9.09	
A3	5.37	0.47	27.3	12.23	18.86	
A4	1.52	0.48	27.1	3.52	5.43	
A5	4.30	0.47	26.8	9.95	15.34	
A6	1.30	0.47	25.8	3.08	4.75	
A7	2.97	0.47	25.9	7.00	10.79	
A8	4.59	0.47	30.6	9.82	15.17	
A9	4.84	0.48	53.2	7.52	11.68	
A10	5.84	0.48	35.2	11.65	18.04	
A11	0.98	0.48	19.6	2.70	4.15	
A12	4.23	0.48	22.9	10.74	16.52	
SYSTEM B						
B1	3.85	0.63	16.1	15.26	23.39	
B2	0.78	0.59	15.0	2.99	4.59	
B3	1.75	0.55	16.3	6.05	9.28	
OS2	-	-	-		164.30	PARKER LAKE ESTATES-PH2, SHEET 18, DETENTION POND A
SYSTEM C						
C1	1.20	0.51	21.0	3.41	5.24	
C2	8.99	0.46	30.0	18.85	29.11	
C3	10.18	0.47	25.0	24.07	37.07	
C4	12.57	0.47	24.0	30.60	47.10	
C5	13.58	0.46	27.0	30.44	46.96	BASED ON TRAIL SIDE AS-BUILT, SHEET 7
SYSTEM D						
D1	0.30	0.71	15.0	1.18	2.14	
D2	0.86	0.64	20.0	3.12	4.79	
D3	1.63	0.65	23.0	5.59	8.60	
SYSTEM E						
E1	7.79	0.40	22	16.92	26.02	BASED ON TRAIL SIDE AS-BUILT, SHEET 7
E2	6.79	0.44	20	16.87	25.90	
E3	6.35	0.40	21	14.07	21.63	
E4	14.62	0.43	45	22.80	35.31	
SYSTEM F						
F1	0.93	0.65	15	3.95	6.04	
SYSTEM G						
G1	3.39	0.50	15	11.10	17.00	
G2	2.50	0.46	22	6.18	9.50	
SYSTEM H						
H1	13.83	0.37	32	22.45	34.69	
H2	1.49	0.76	17	6.95	10.65	
H3	7.74	0.42	22	17.39	26.73	
H4	0.52	0.58	18	1.80	2.77	
H5	4.42	0.36	18	9.50	14.58	
H6	0.68	0.42	17	1.77	2.70	
OS3	4.03	0.37	24	7.76	11.94	
SYSTEM J						
J1	5.02	0.48	19	14.12	21.70	
J2	2.95	0.85	19	14.65	22.51	
J3	0.72	0.63	28	2.18	3.36	

SYSTEM K DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-K1	9.23	0.82	2.30	4.25
DITCH-K2	13.49	0.74	2.50	7.03

SYSTEM A DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-A1	10.85	0.76	1.06	2.81
DITCH-A2	16.77	1.09	1.73	3.51
DITCH-A3	29.00	1.37	2.47	4.03
DITCH-A5	42.47	1.84	2.39	3.46
DITCH-A7	52.55	1.87	2.00	3.92
DITCH-A9	69.90	1.63	1.69	4.79
DITCH-A10	81.55	1.27	1.40	8.15
DITCH-A11	84.25	1.14	2.00	9.81
DITCH-A12	94.98	1.78	2.70	5.67

SYSTEM B DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-B1	15.26	1.06	1.40	2.96
DITCH-B2	18.25	0.90	3.33	4.33
DITCH-B3	24.31	1.46	2.50	4.33

SYSTEM C DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-C1	107.37	2.47	3.08	5.23
DITCH-C2	103.97	1.57	2.58	6.35
DITCH-C3	85.11	0.88	1.41	6.64
DITCH-C4&C5	61.05	1.52	2.25	6.43
DITCH-C6	30.44	0.80	2.91	5.82

SYSTEM D DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-D1	9.89	0.63	1.08	6.15
DITCH-D2	8.71	0.81	1.25	3.80
DITCH-D3	5.59	0.56	1.00	4.07

SYSTEM E DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-E1&E2	33.79	0.78	1.83	7.14
DITCH-E3	36.86	1.21	2.41	5.85

SYSTEM F&G DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-F1	3.95	0.53	2.16	3.65
DITCH-G1	17.28	1.08	1.83	4.72
DITCH-G2	6.18	0.40	1.20	4.69

SYSTEM H DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-H1	22.45	0.95	3.75	7.61
DITCH-H2	29.40	1.18	2.75	5.55
DITCH-H3	46.78	1.13	2.50	8.44
DITCH-H4	48.58	1.38	3.64	8.52
DITCH-H5	58.10	0.40	1.25	8.09
DITCH-H6	67.63	1.98	3.41	4.81

SYSTEM J DITCH SUMMARY

NAME	Q_{25yr}(cfs)	Depth(ft)	Allow_Depth(ft)	V_{25yr}(ft/s)
DITCH-J1	14.12	0.64	1.00	6.70
DITCH-J2	28.76	1.10	1.83	7.28
DITCH-J2A	28.76	0.87	2.66	6.29
DITCH-J3	30.94	1.09	3.25	6.73
DITCH-J4	30.94	1.04	3.25	7.92
DITCH-J5	30.94	0.59	2.51	7.62

PIPE CULVERT SUMMARY

CULVERT NAME	PIPE SIZE "B" (IN)	NO. OF PIPES	OUTLET PROTECTION LENGTH AT OUTFALL "L" (FT)
K1	24	1	8
K2	48	1	N/A
A1	24	1	8
A2	36	1	8
C5	24	2	8
C6	24	2	8
D2	18	2	8
D3	18	2	8
G2	24	1	8
H1	36	2	12
H2	36	2	8
H3	36	2	12
H4	36	2	11
H5	36	1	8
J1	24	1	8
J2	24	2	10
J2A	24	1	10
J3	24	1	8
J4	24	1	10

BOX CULVERT SUMMARY

CULVERT NAME	BOX SPAN "B" (FT)	NO. OF BOXES	OUTLET PROTECTION LENGTH AT OUTFALL "L" (FT)
A3	4 X 2	1	8
A5	6 X 2	1	8
A7	4 X 2	2	8
A9	5 X 2	2	8
A10	6 X 2	2	24
A11	6 X 2	2	24
A12	5 X 3	3	8
B1	5 X 2	1	8
C2	4 X 3	1	8
C3	4 X 2	2	8
C4	4 X 2	2	8
E3	4 X 2	1	8

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRAINAGE AREA CALCULATIONS

SHEET 1 OF 1

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

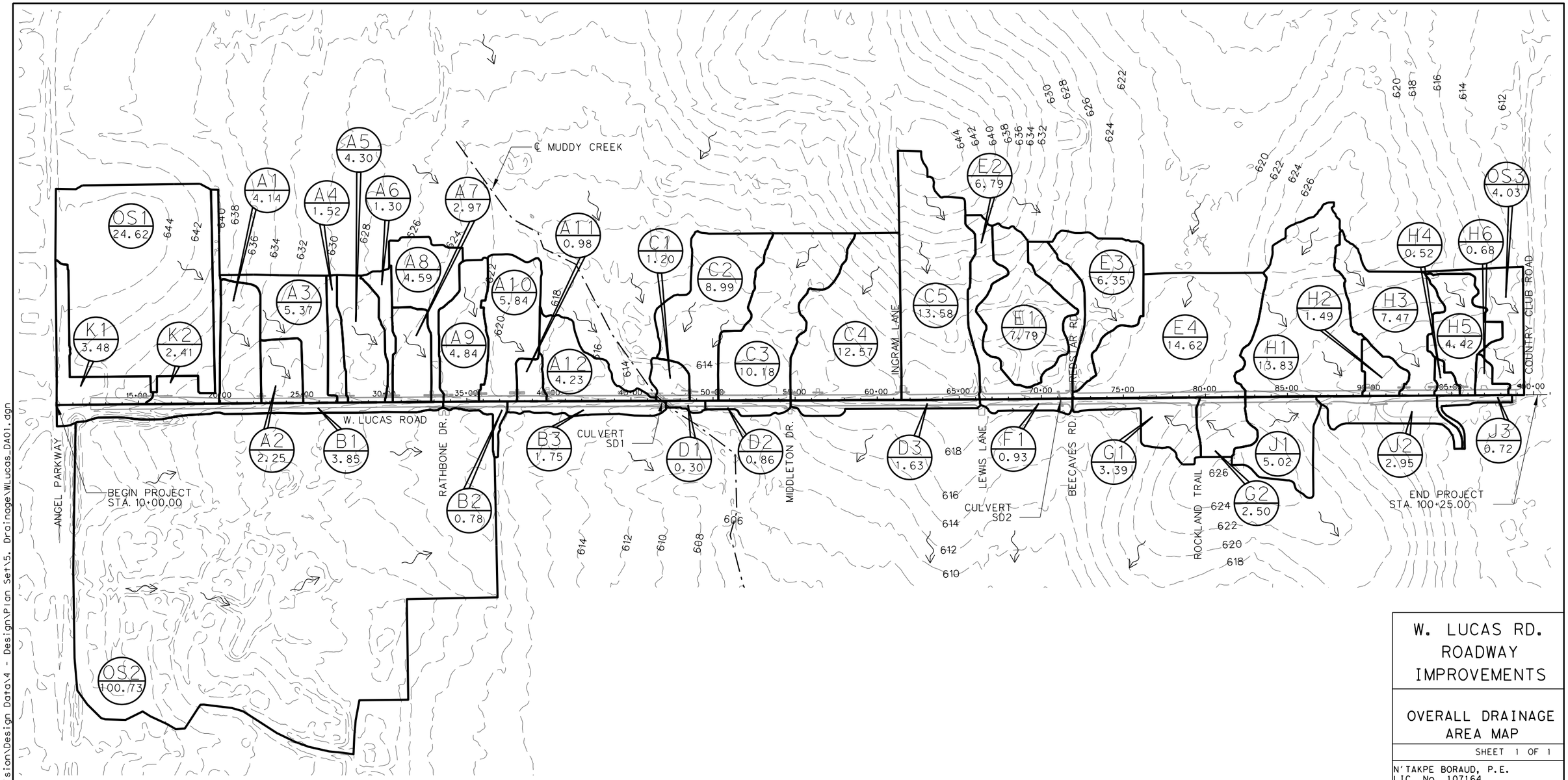
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	168
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:02 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DA_Calculations.dgn



LEGEND

X # — DRAINAGE AREA

XX.XX — AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

N

0 150 600

SCALE IN FEET

W. LUCAS RD. ROADWAY IMPROVEMENTS

OVERALL DRAINAGE AREA MAP

SHEET 1 OF 1

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

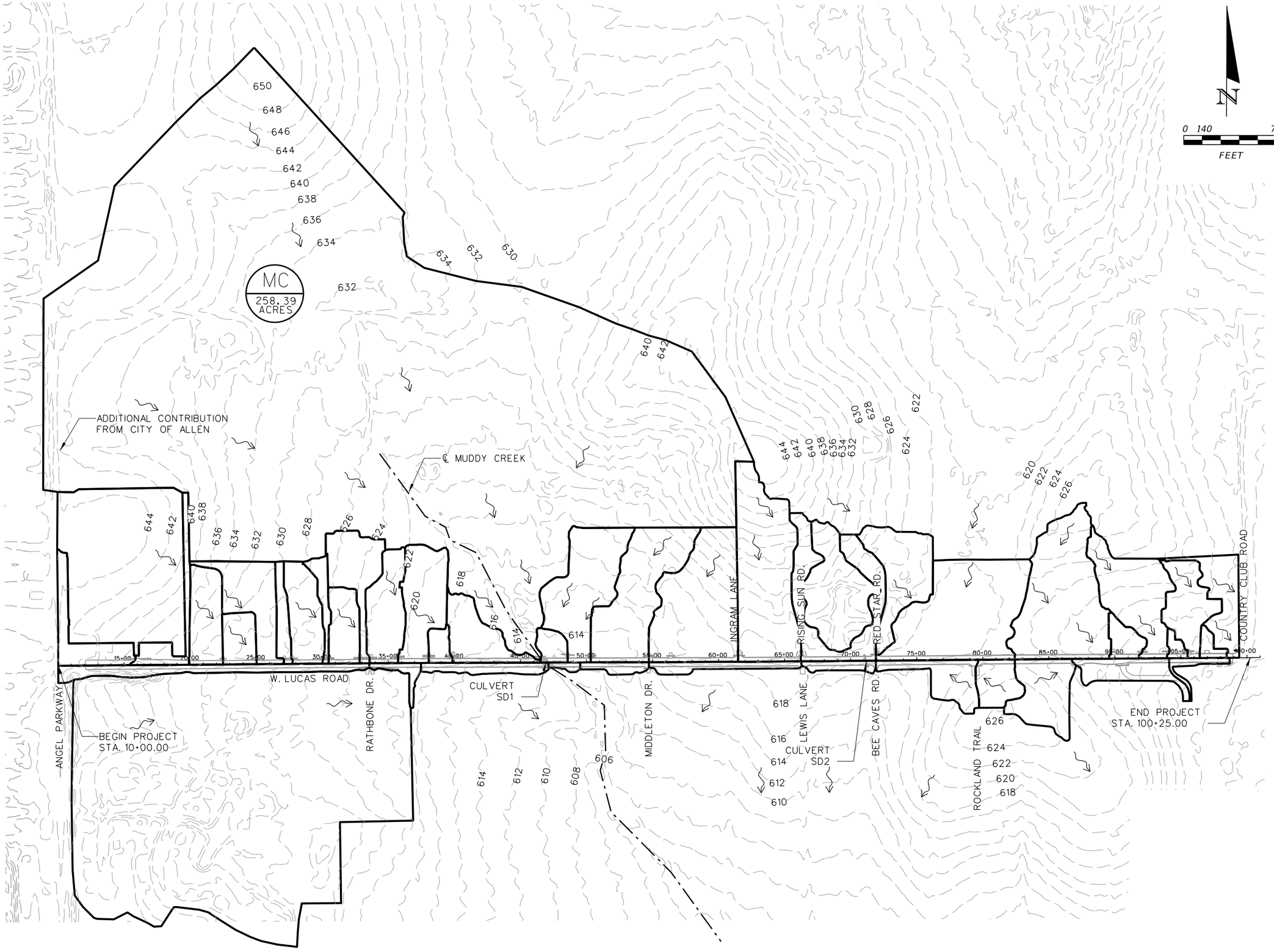
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		169
COLLIN		

DATE: 4/6/2026 4:02:07 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DA01.dgn

Texas 811 Know what's below. Call before you dig.



0 140 700
FEET

LEGEND

X # — DRAINAGE AREA
XX.XX ACRES — AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

NOTE:

1. "MC" BASIN AREA TAKEN FROM AS-BUILTS

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

MUDDY CREEK DRAINAGE AREA MAP

SHEET 1 OF 1

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

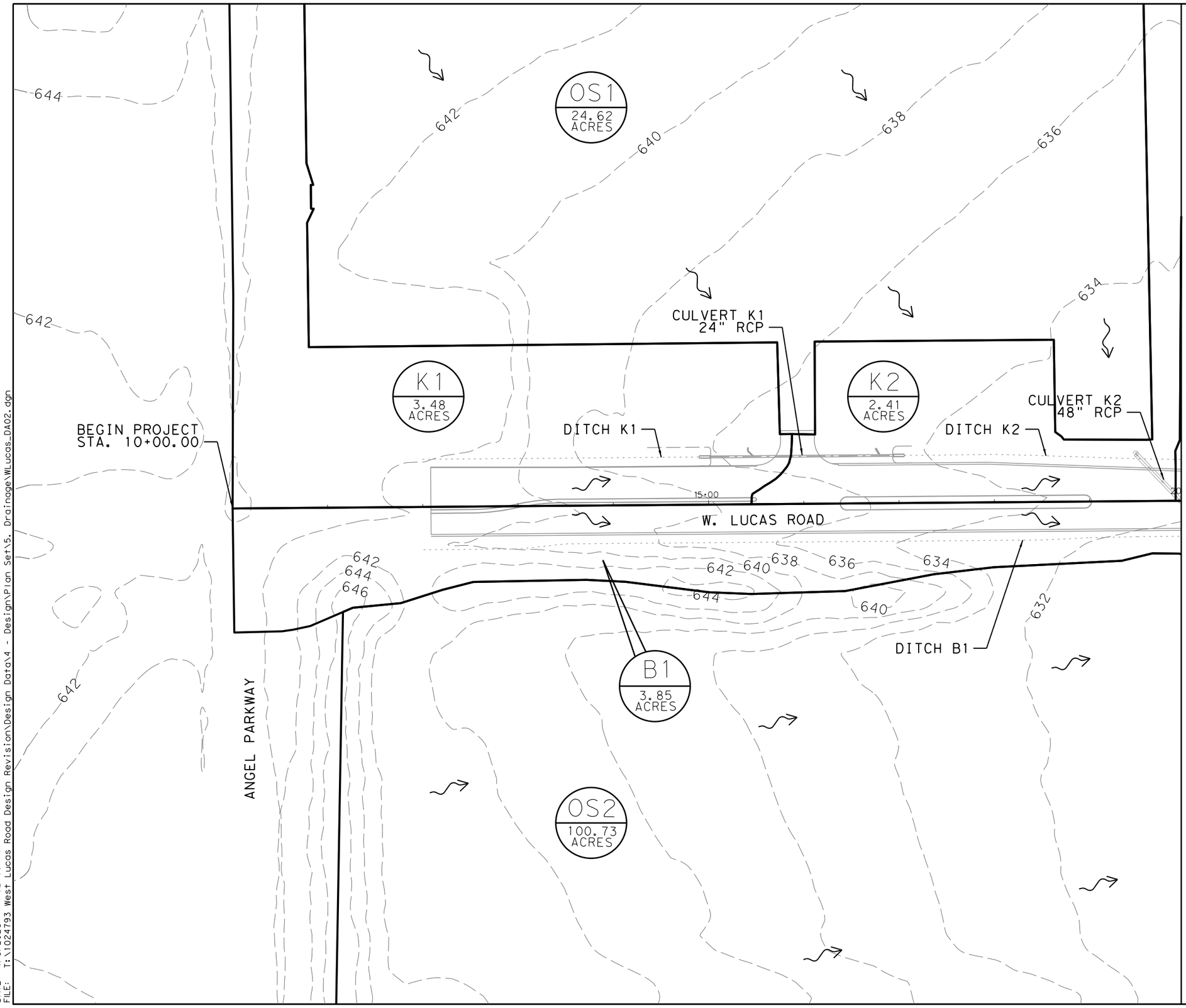
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	170
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DAMC01.dgn



DATE: 4/6/2026 4:02:09 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_DA02.dgn

Texas811 Know what's below. Call before you dig.

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

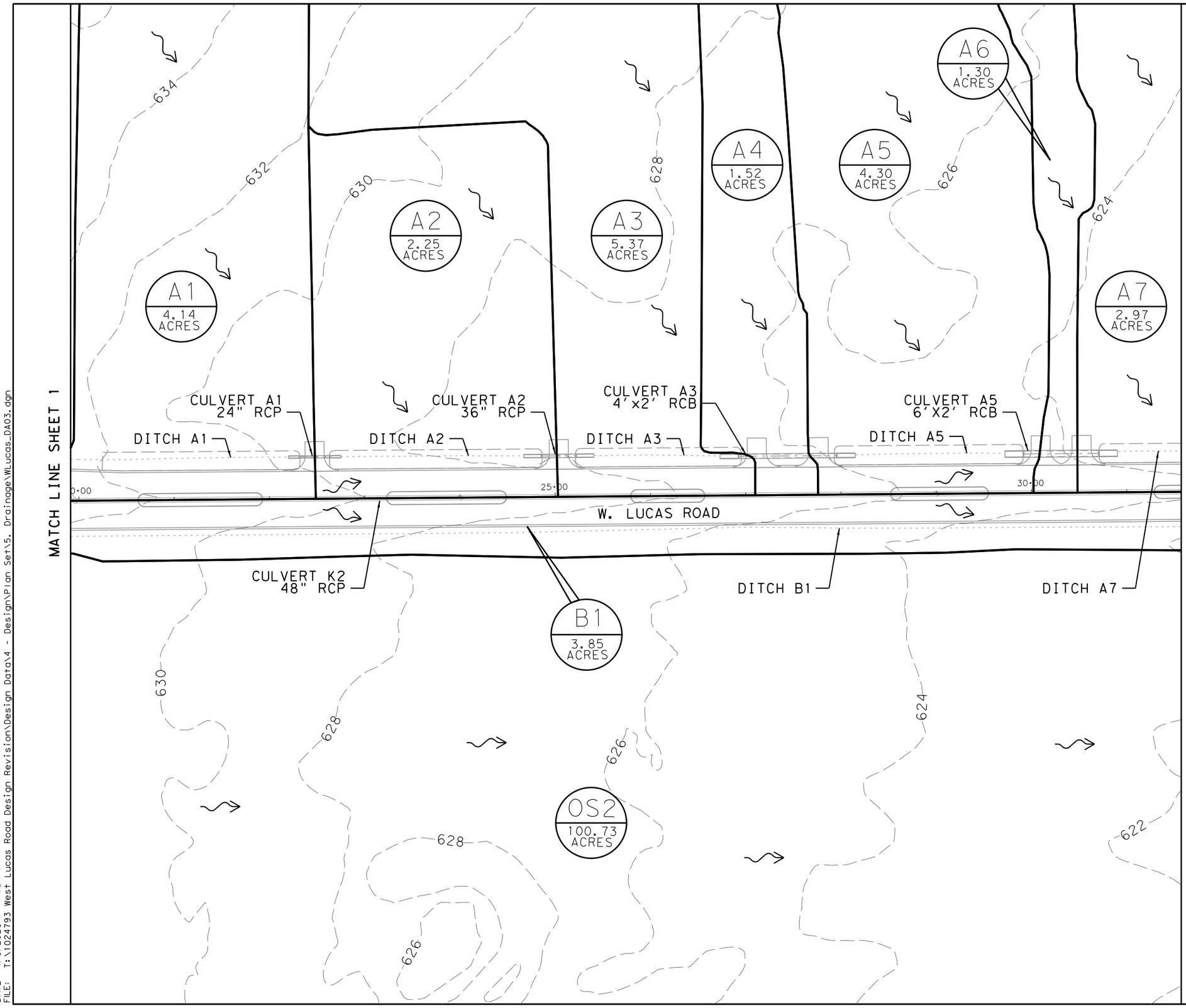
SHEET 1 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		171
COLLIN		



N

0 20 100
FEET

LEGEND

X#
XX.XX ACRES
DRAINAGE AREA
AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 2 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

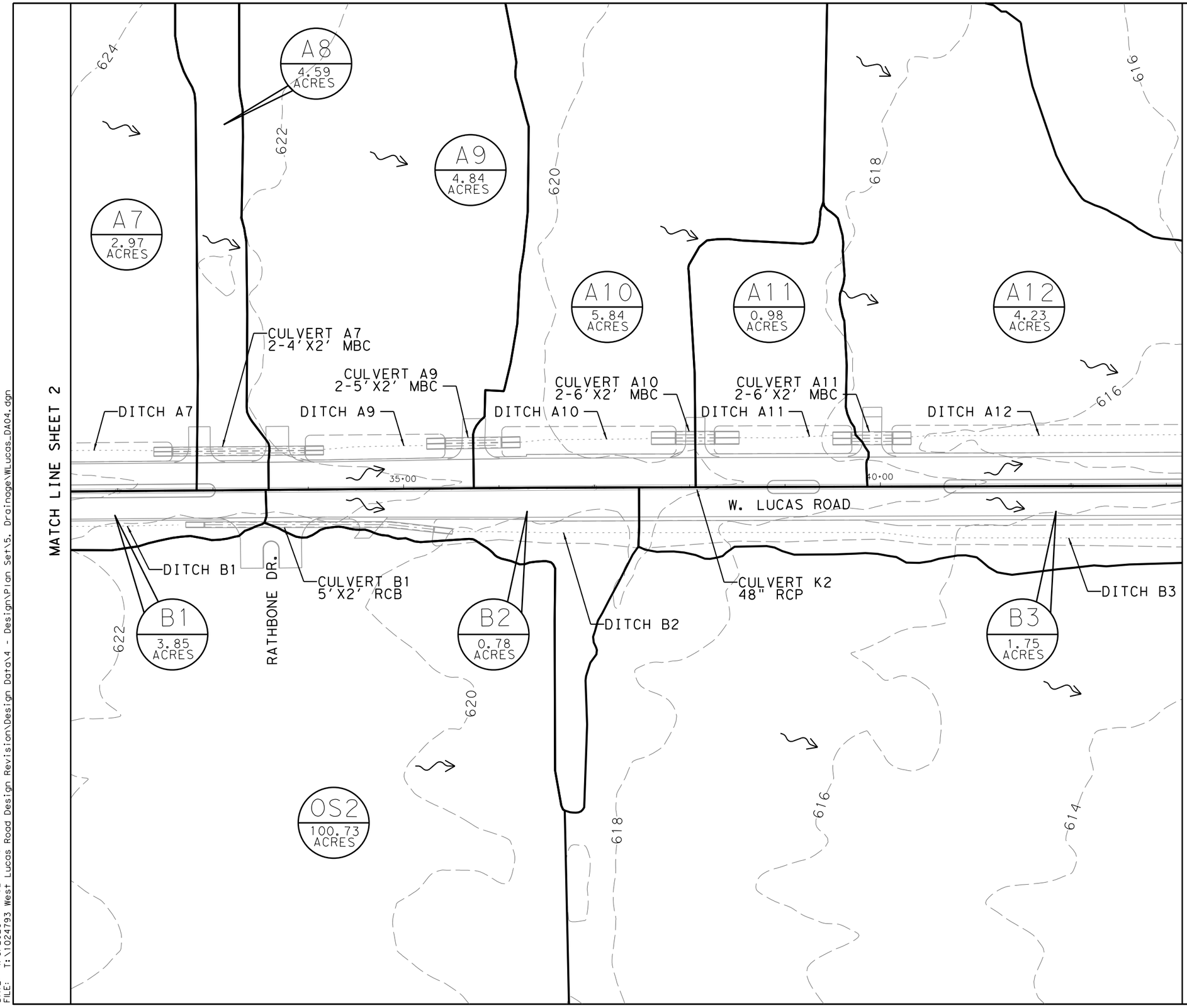
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	172
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:10 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DA03.dgn

Texas811 Know what's below. Call before you dig.



N

0 20 100
FEET

LEGEND

X#
XX.XX ACRES
DRAINAGE AREA
AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 3 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

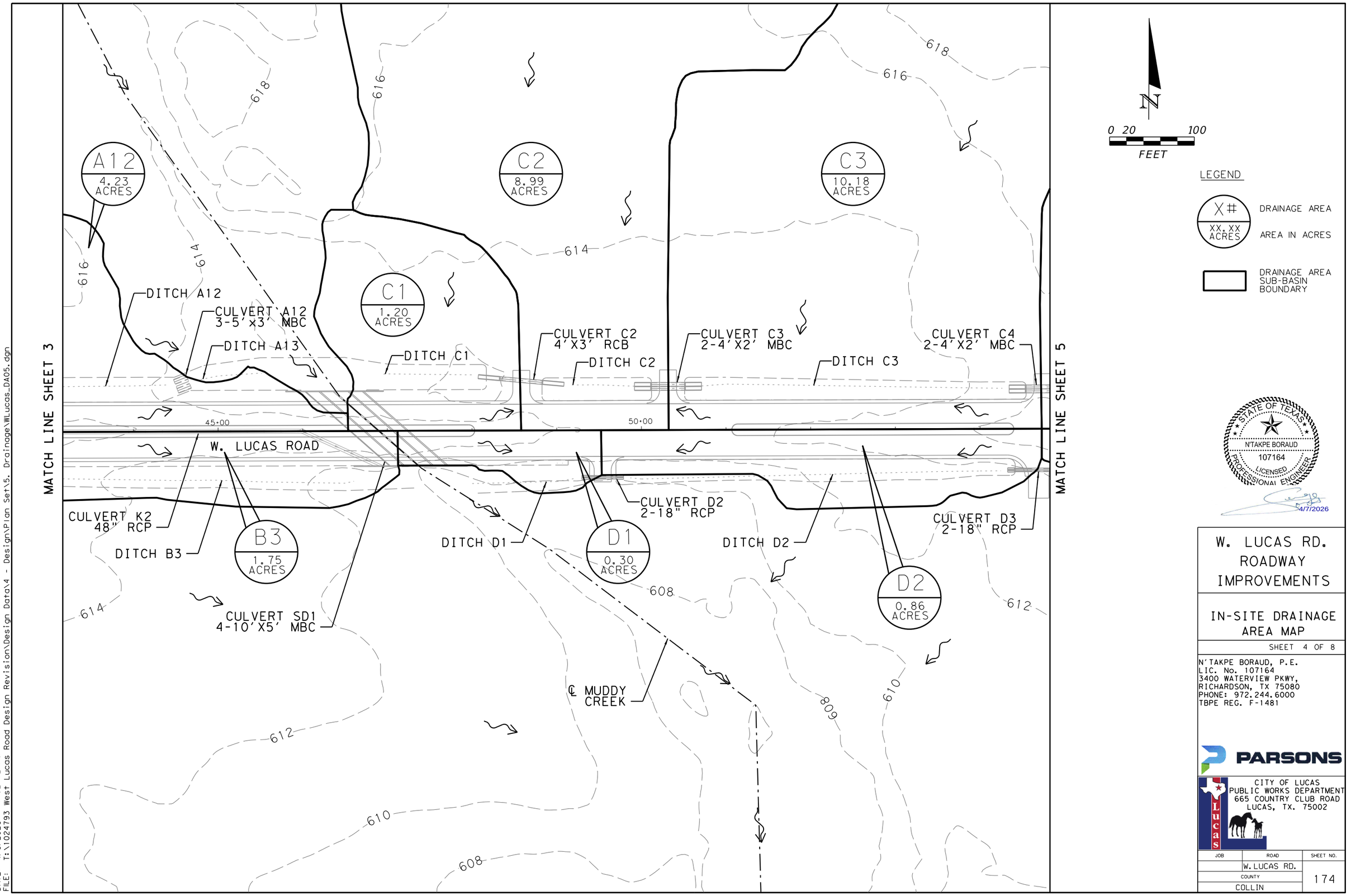
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		173
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_DA04.dgn



STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 4 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

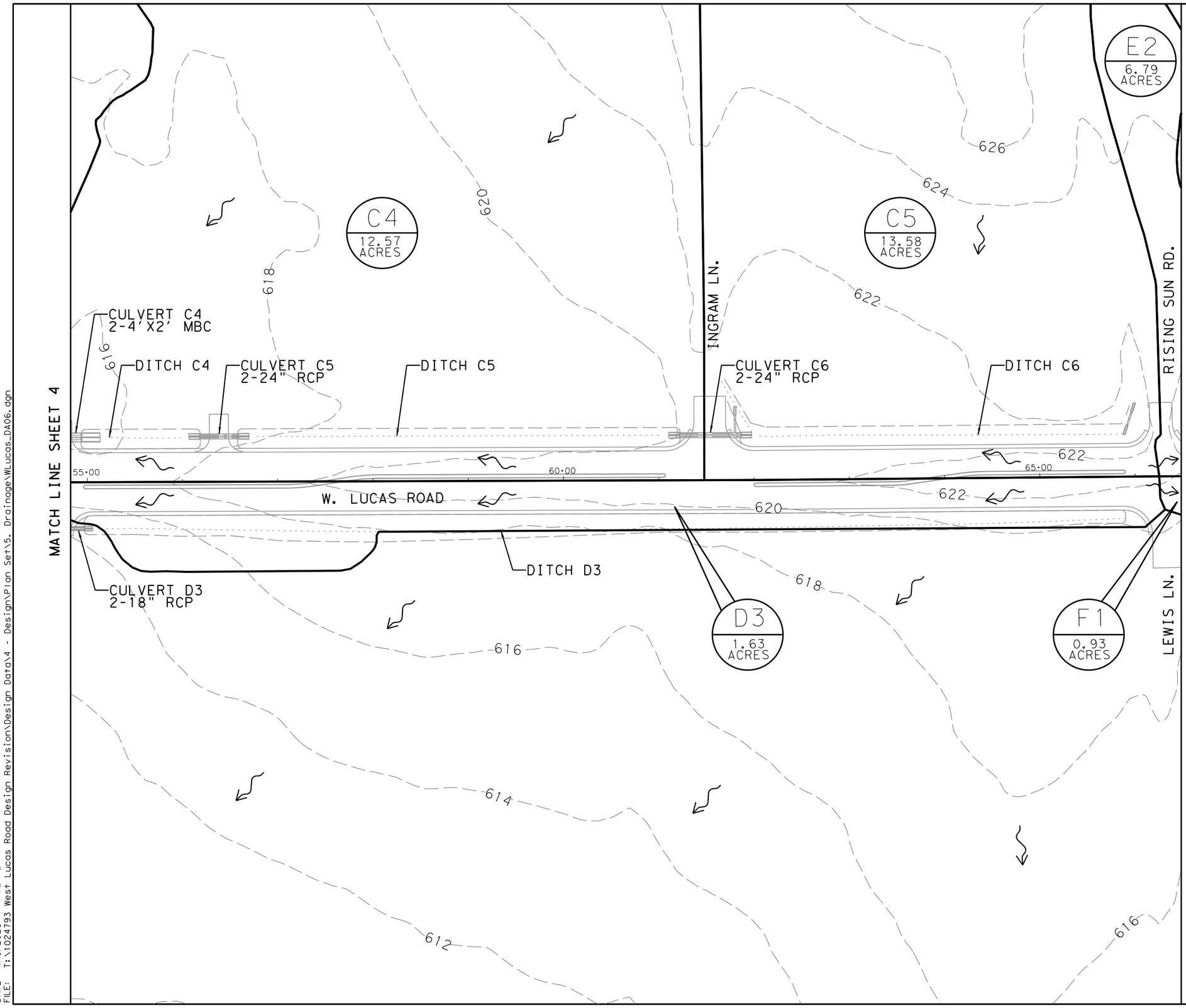
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	174
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:12 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_DA05.dgn



LEGEND

X # / XX.XX ACRES — DRAINAGE AREA / AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 5 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

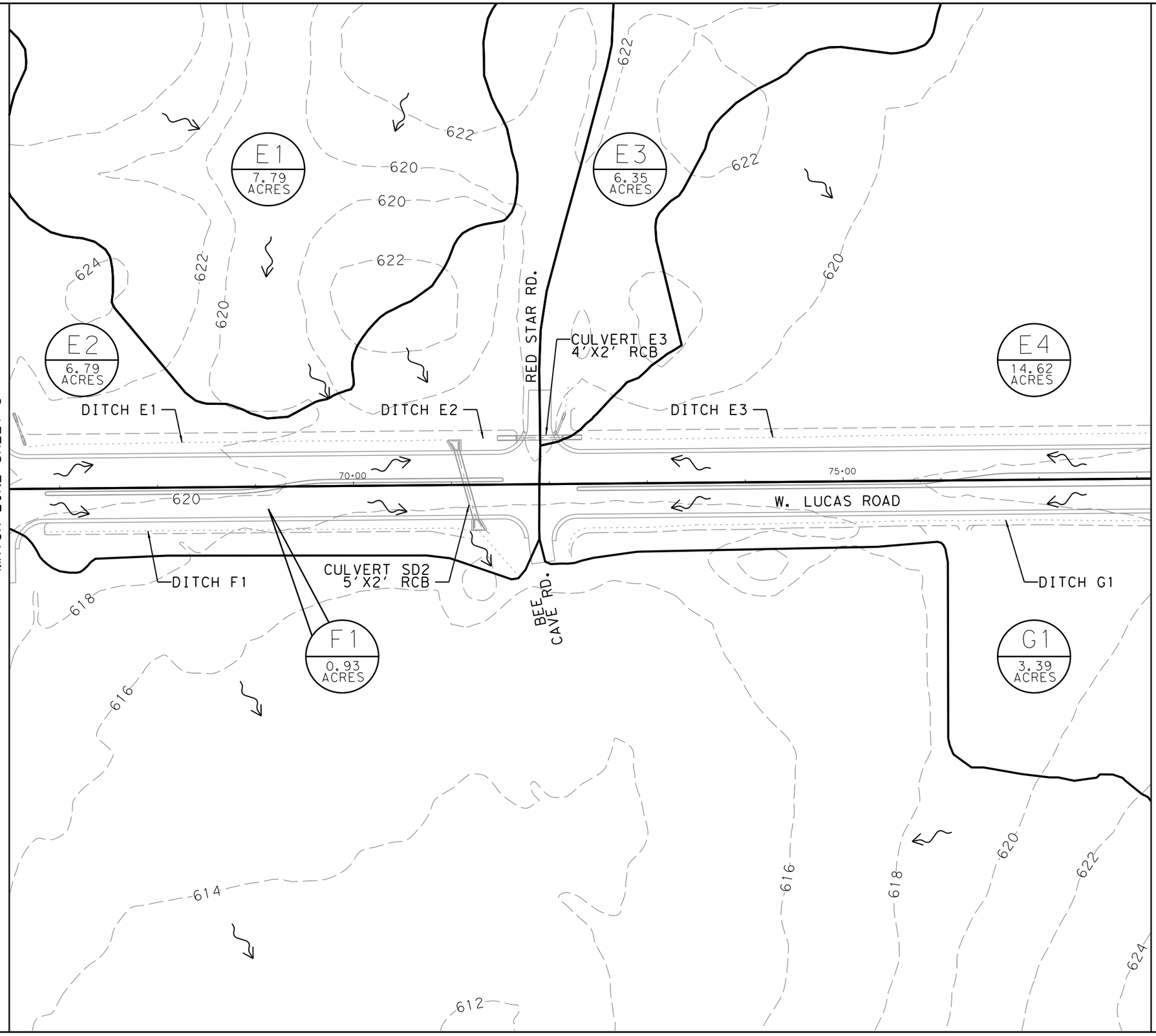
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	175
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:12 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DA06.dgn



N

0 20 100
FEET

LEGEND

X#
XX.XX ACRES
DRAINAGE AREA
AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 6 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

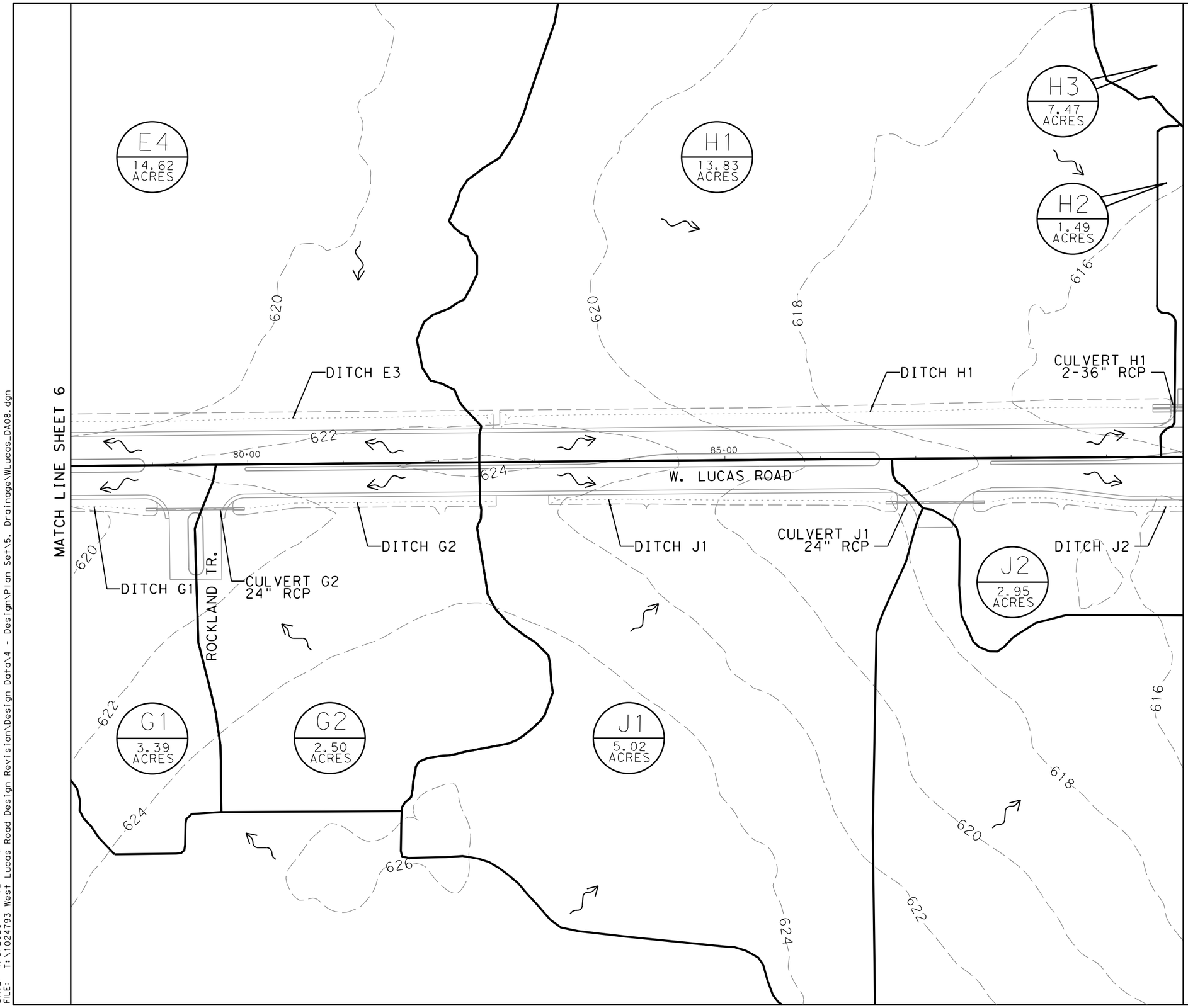
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	176
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_DA07.dgn



N

0 20 100

FEET

LEGEND

X#
XX.XX ACRES
DRAINAGE AREA
AREA IN ACRES

DRAINAGE AREA SUB-BASIN BOUNDARY

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 7 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

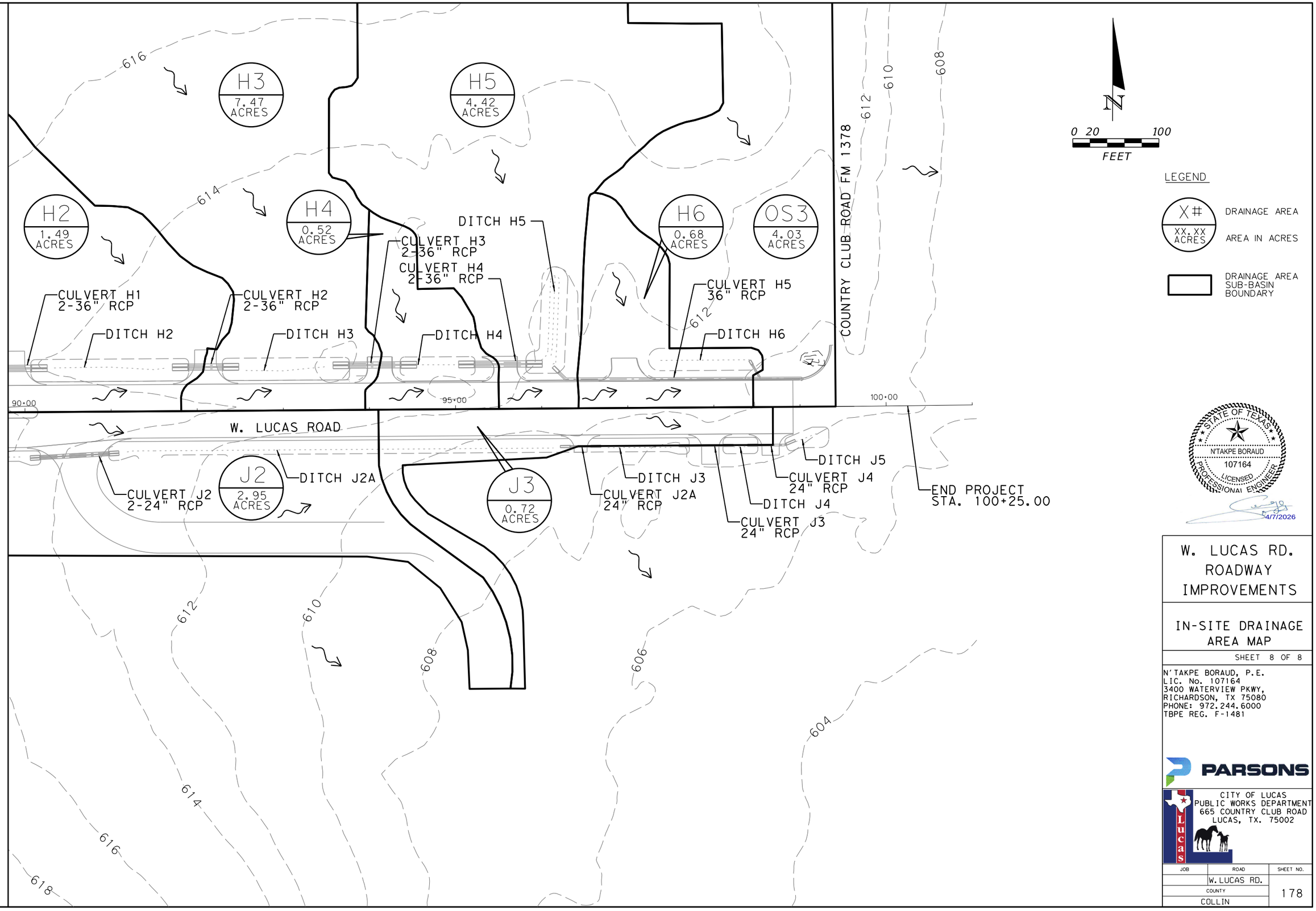
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		177
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:14 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DA08.dgn



STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

IN-SITE DRAINAGE AREA MAP

SHEET 8 OF 8

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

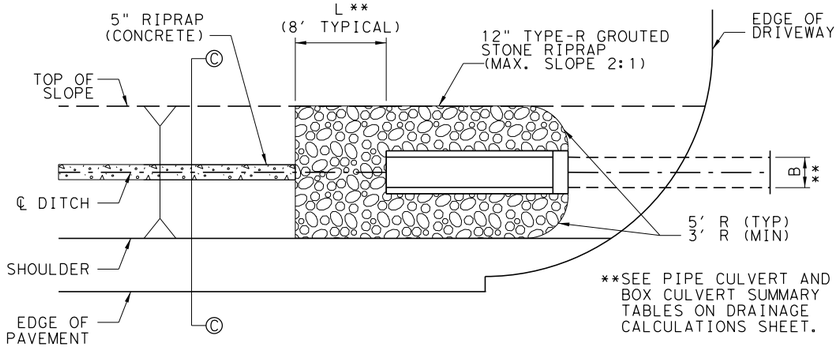
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		178
COLLIN		

Texas 811 Know what's below. Call before you dig.

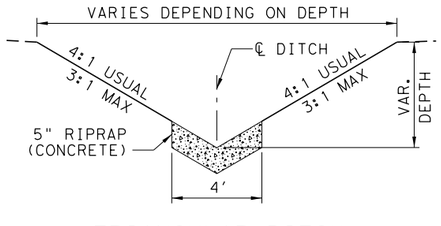
DATE: 4/6/2026 4:02:15 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DA09.dgn

NOTE:

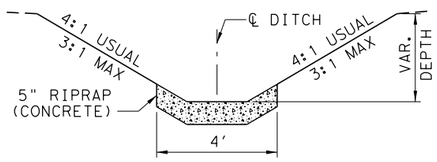
DITCH DEPTH VARIES. REFER TO ROADWAY PLAN & PROFILE SHEETS FOR DITCH ROFILES.



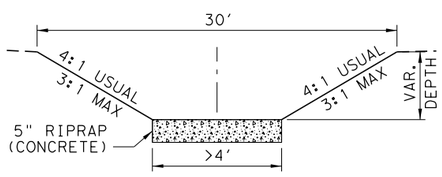
PLAN VIEW



TRIANGULAR DITCH
(SECTION C-C)

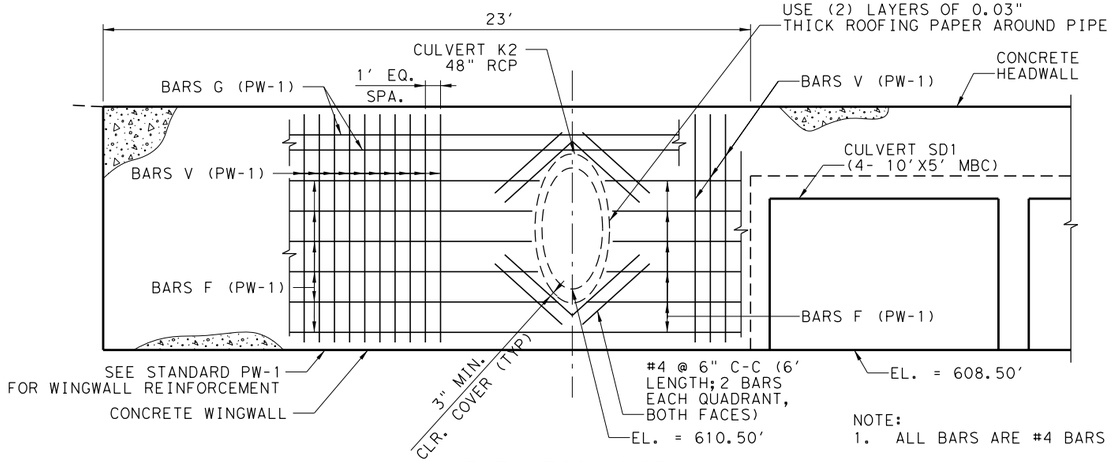


TRAPEZOIDAL DITCH
(< 4' BOTTOM)
(SECTION C-C)



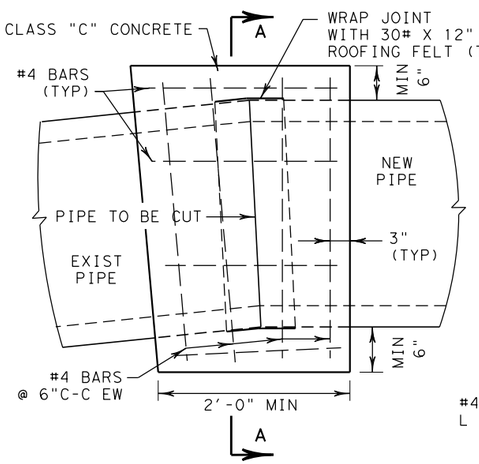
TRAPEZOIDAL DITCH
(≥ 4' BOTTOM)
(SECTION C-C)

CONCRETE RIPRAP DETAIL

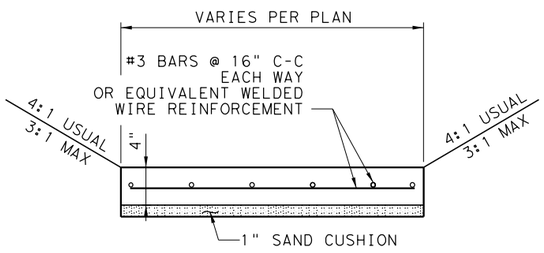


ELEVATION VIEW

48 IN RCP & WINGWALL CONNECTION DETAIL



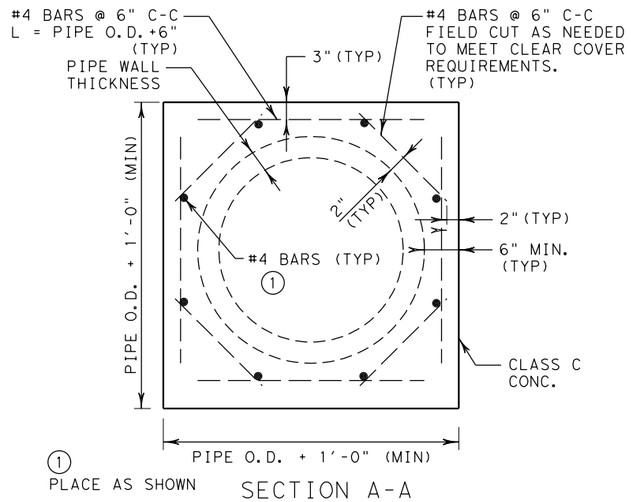
PLAN VIEW



4" RIPRAP (CONC.)

PIPE COLLAR GENERAL NOTES

1. THE CONTRACTOR SHALL TAKE STEPS TO ENSURE A SMOOTH JOINT ALONG THE INSIDE WALL OF PIPE.
2. ANY SPILLAGE OF CONCRETE THROUGH THE JOINT SHALL BE REMOVED AND THE INSIDE PIPE SURFACES SMOOTHED AS DIRECTED BY THE ENGINEER.
3. PIPE COLLARS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 464.



PIPE COLLAR DETAIL

FOR HORIZONTAL OR VERTICAL PLACEMENT

DRAWING NOT TO SCALE



W. LUCAS RD. ROADWAY IMPROVEMENTS

DRAINAGE DETAILS

SHEET 1 OF 1

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

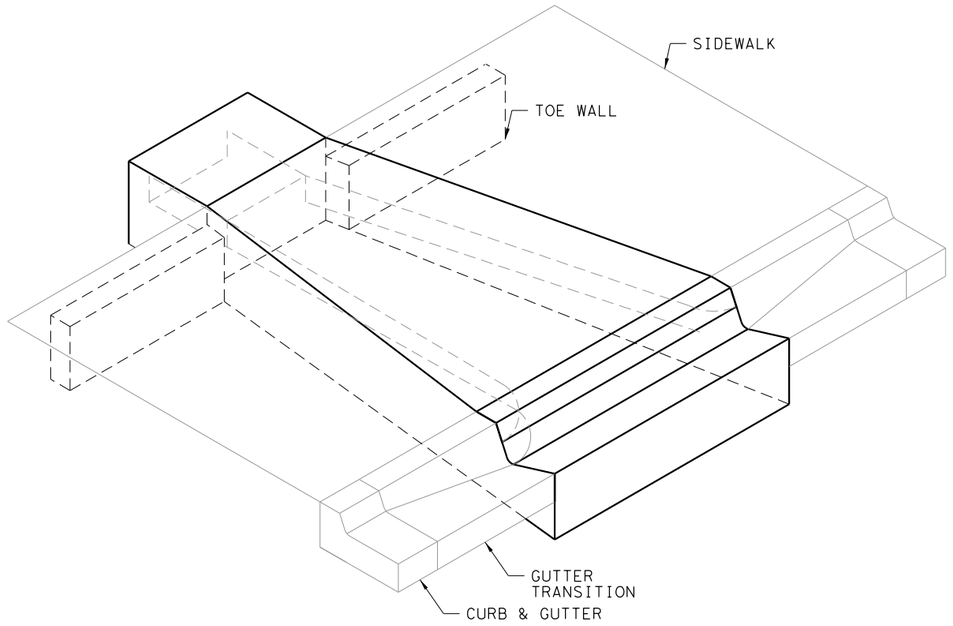
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		179
COLLIN		

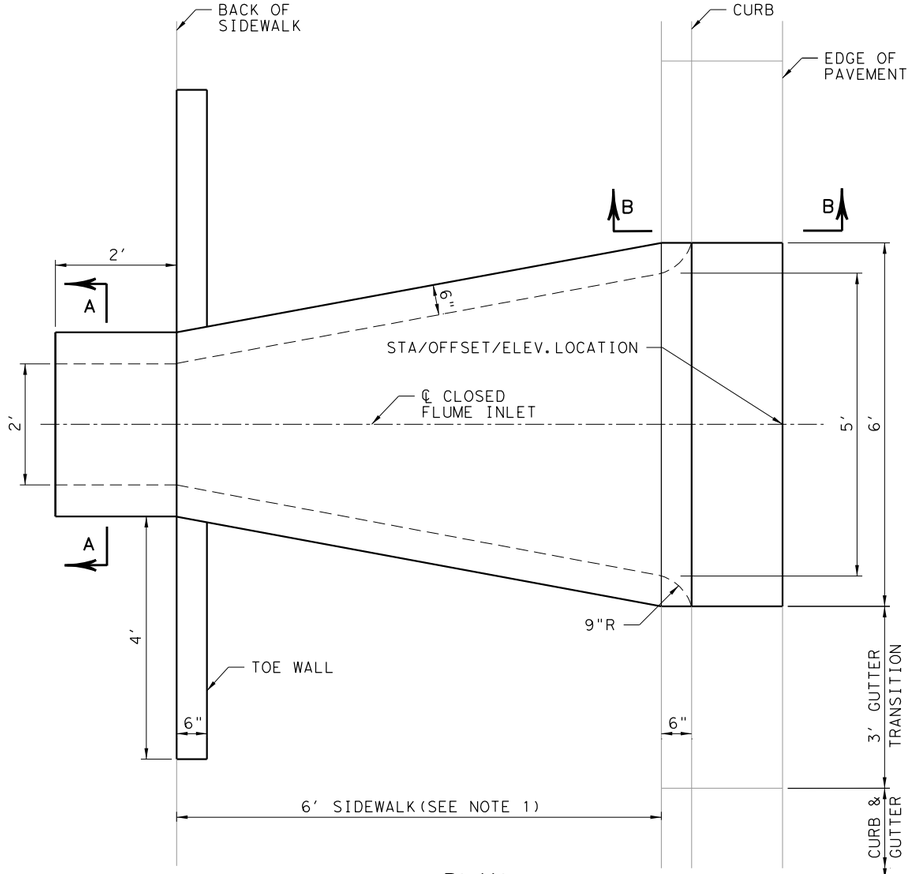
Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:16 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_DR_MISC_Details_01.dgn

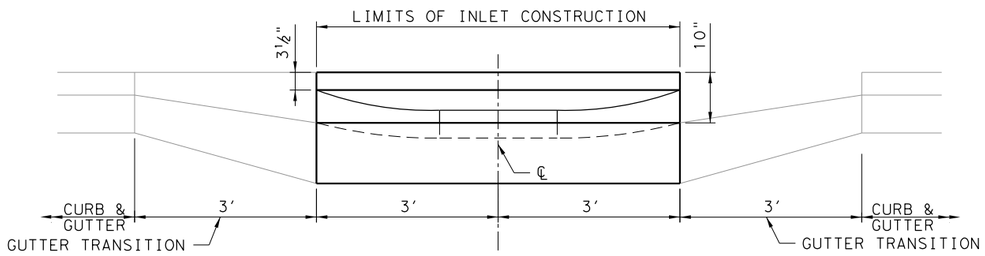


TYPE I CLOSED FLUME INLET WITH SIDEWALK

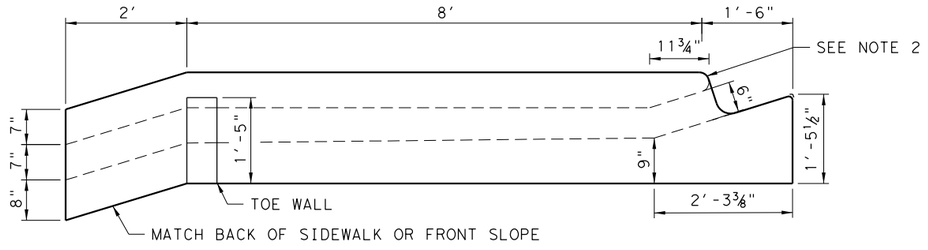
SINGLE BARREL FLUME SHOWN



PLAN



FRONT ELEVATION



SIDE ELEVATION

NOTES:

1. USE SLOPED SECTION WITH SIDEWALK APPLICATION ONLY.
2. SLOPE TO MATCH ADJACENT CURB WITH 2" TOP RADIUS AND 1¼" BOTTOM RADIUS.
3. THE FINISHED GRADE AND SLOPE OF THE INLET TOP ARE TO CONFORM WITH THE FINISHED CROSS SLOPE AND GRADE OF THE PROPOSED SIDEWALK AND/OR BORDER.
4. WHEN INLETS ARE TO BE CONSTRUCTED ON A CURVE, REFER TO THE PLANS TO DETERMINE THE RADIUS. BEND STEEL WHEN NECESSARY.
5. INLETS CAN BE EITHER CAST-IN PLACE OR PRECAST CONCRETE. CHAMFER ALL EXPOSED EDGES ¾".
6. ALL REINFORCEMENT IS ASTM A615/A615M GRADE 60 STEEL, EITHER SMOOTH OR DEFORMED WITH A 2" MINIMUM COVER, UNLESS OTHERWISE SHOWN. EQUIVALENT AREA GRADE 40 STEEL OR 65 KSI WELDED WIRE FABRIC MAY BE SUBSTITUTED.



W. LUCAS RD. ROADWAY IMPROVEMENTS

CLOSED FLUME INLET DETAILS

SHEET 1 OF 2

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

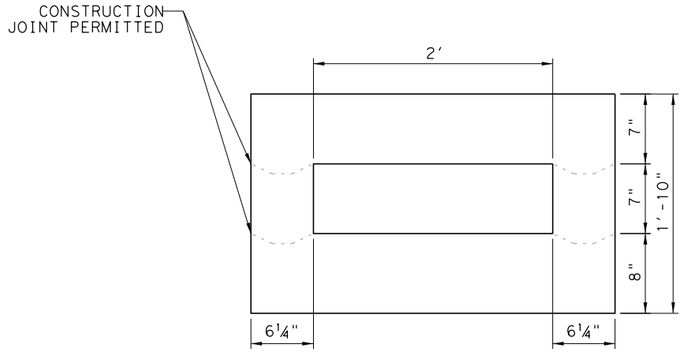
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	180
COUNTY		
COLLIN		

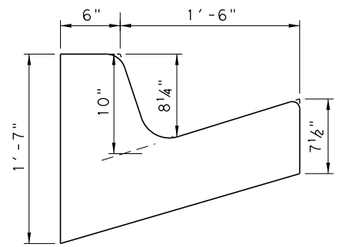
TYPE I DIMENSION DETAILS

Texas811 Know what's below. Call before you dig.

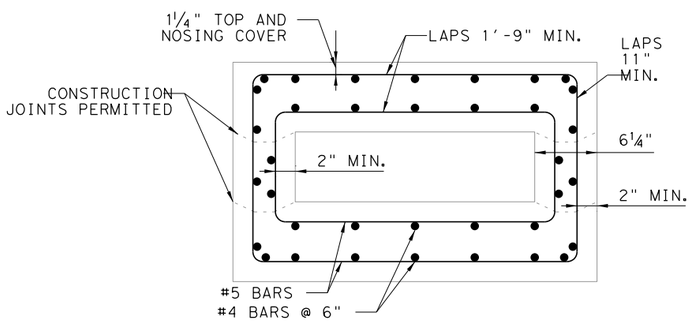
DATE: 4/6/2026 4:02:16 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DR_CFI_DETAILS_01.dgn



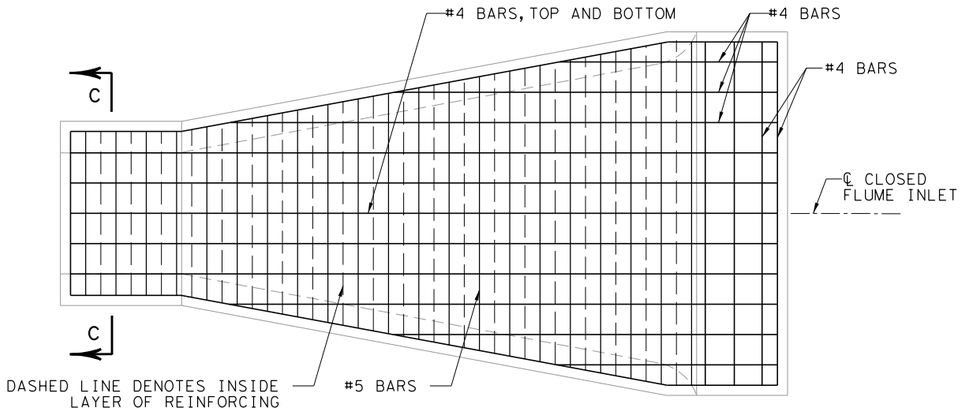
SECTION A-A



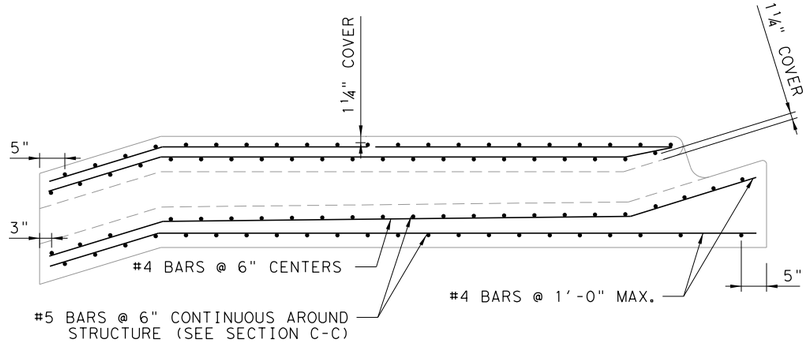
SECTION B-B



SECTION C-C



PLAN



SIDE ELEVATION

REINFORCING DETAILS

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CLOSED FLUME INLET DETAILS

SHEET 2 OF 2

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

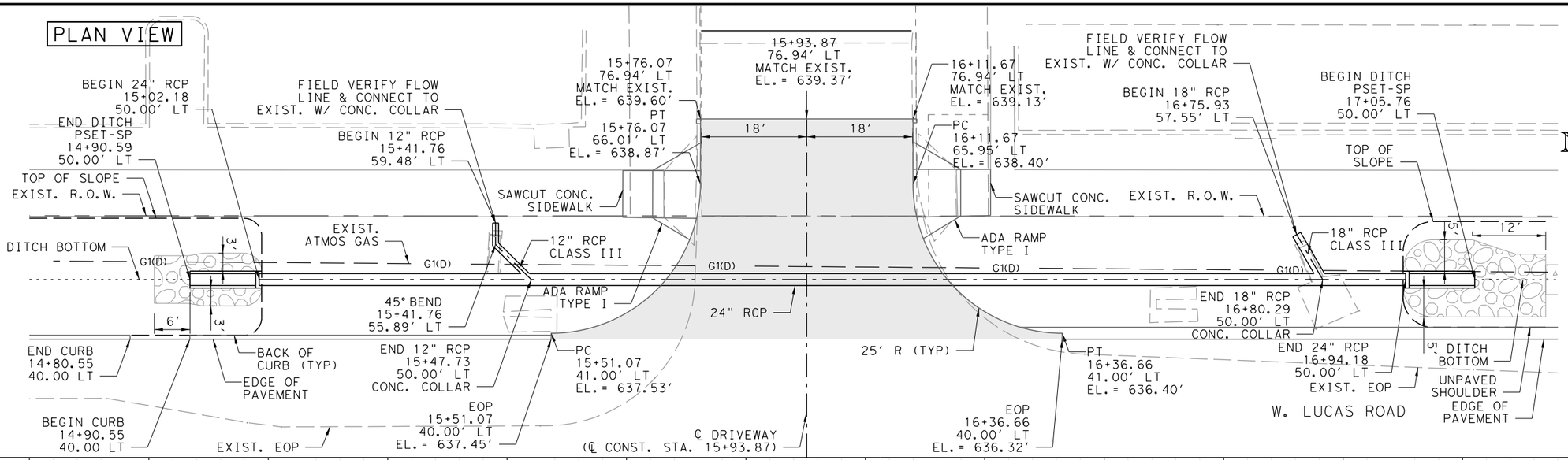
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	181
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_DR_CFI_DETAILS_02.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

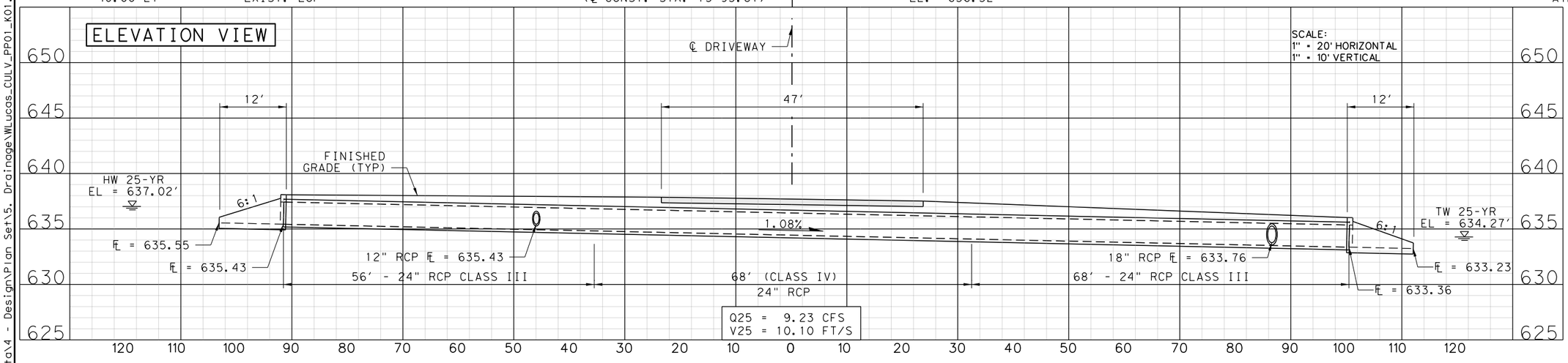
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

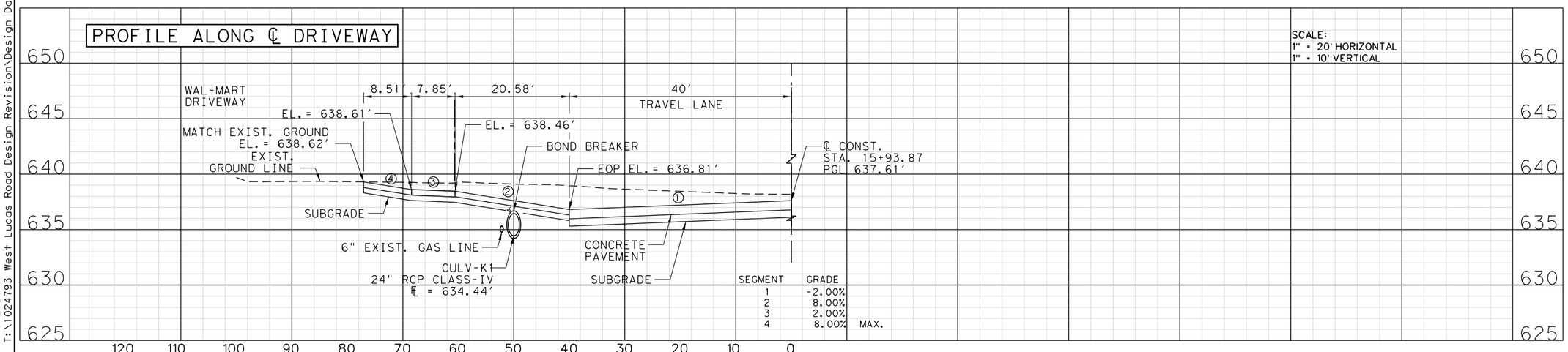
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.
5. CONTACT ATMOS 48 HOURS PRIOR TO WORKING NEAR ATMOS FACILITITES.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

SEGMENT	GRADE
1	-2.00%
2	8.00%
3	2.00%
4	8.00% MAX.

CULVERT K1

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 1 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

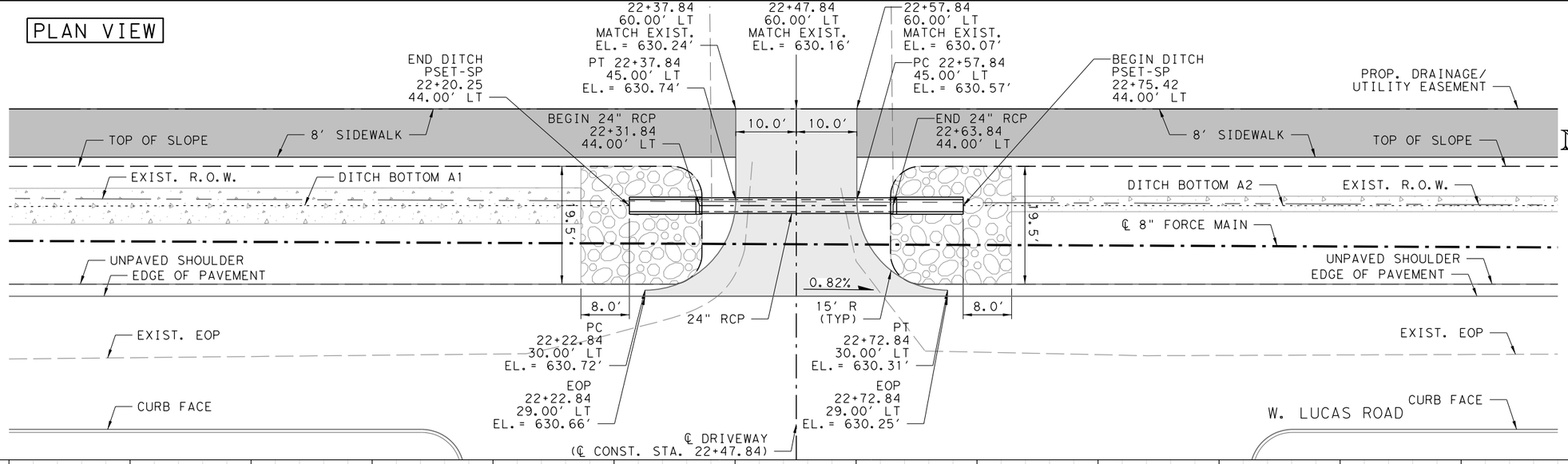
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	182
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:19 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP01_K01.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

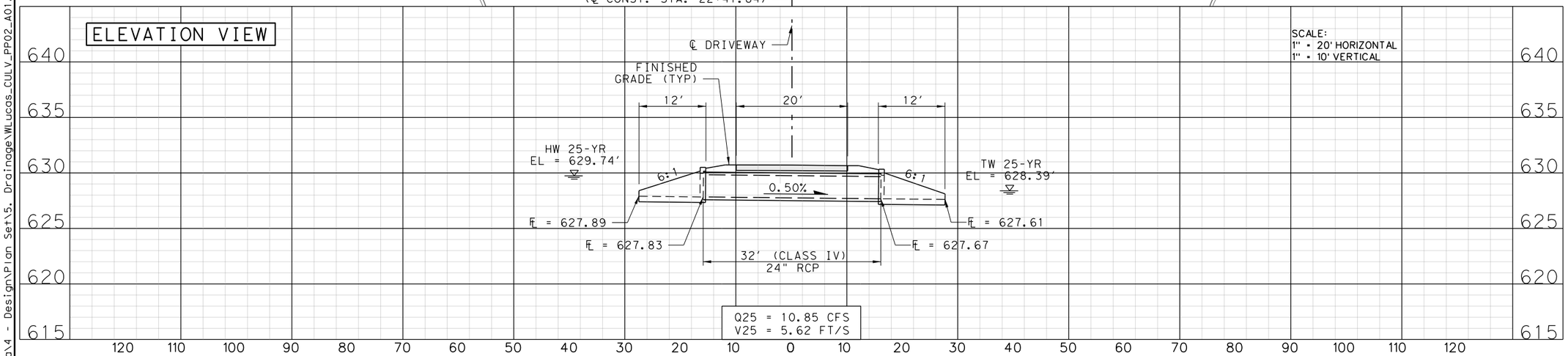
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

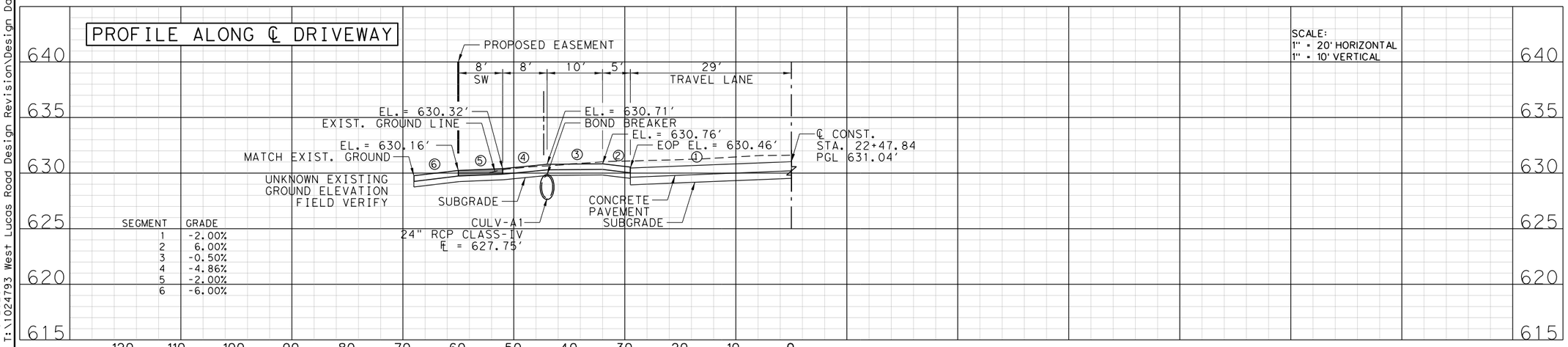
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SEGMENT	GRADE
1	-2.00%
2	6.00%
3	-0.50%
4	-4.86%
5	-2.00%
6	-6.00%

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT A1

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 2 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

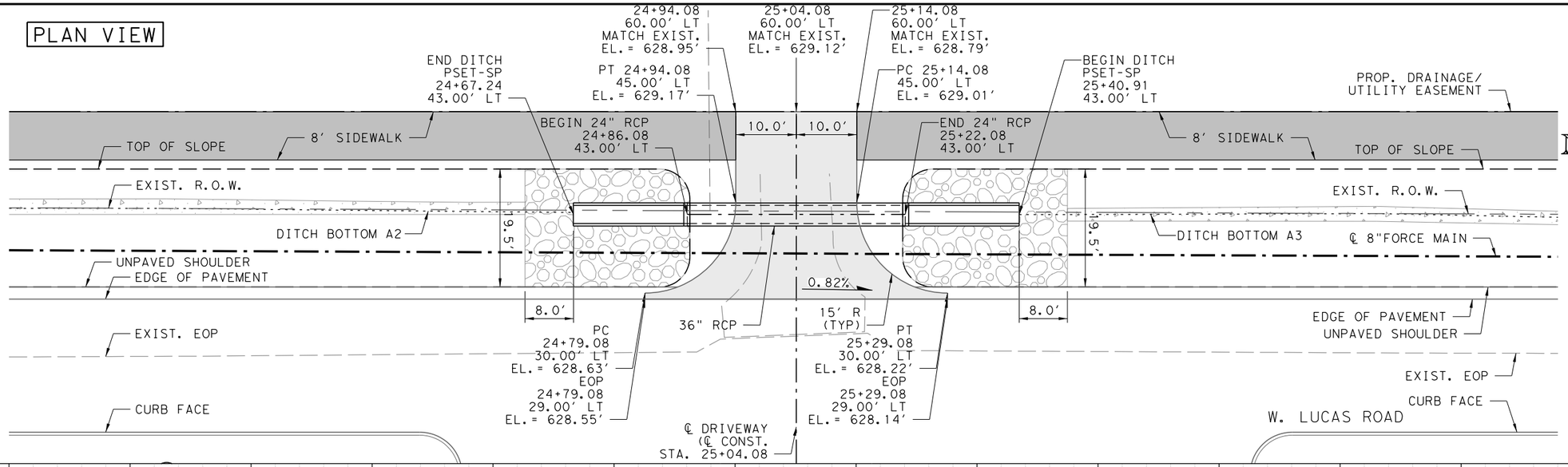
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	183
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:20 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP02_A01.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

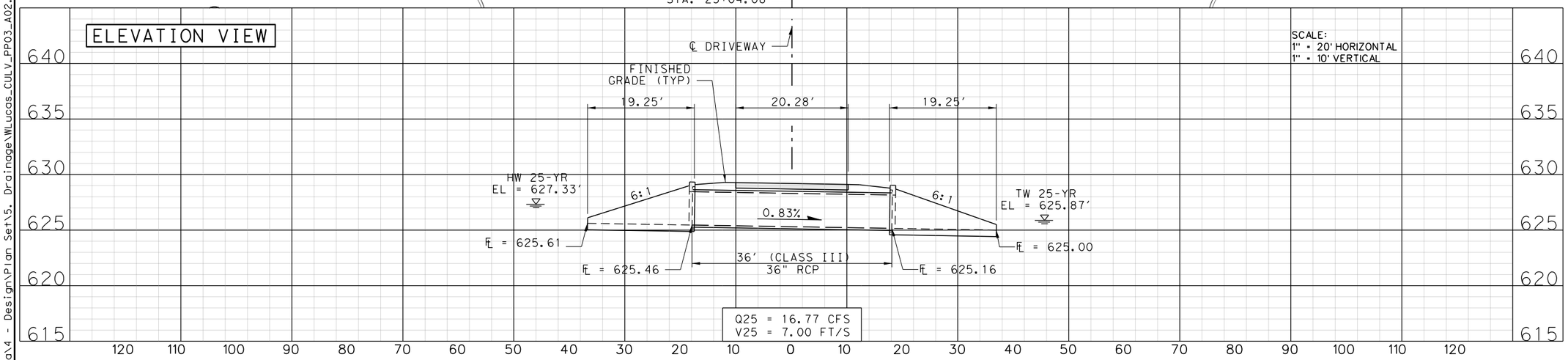
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

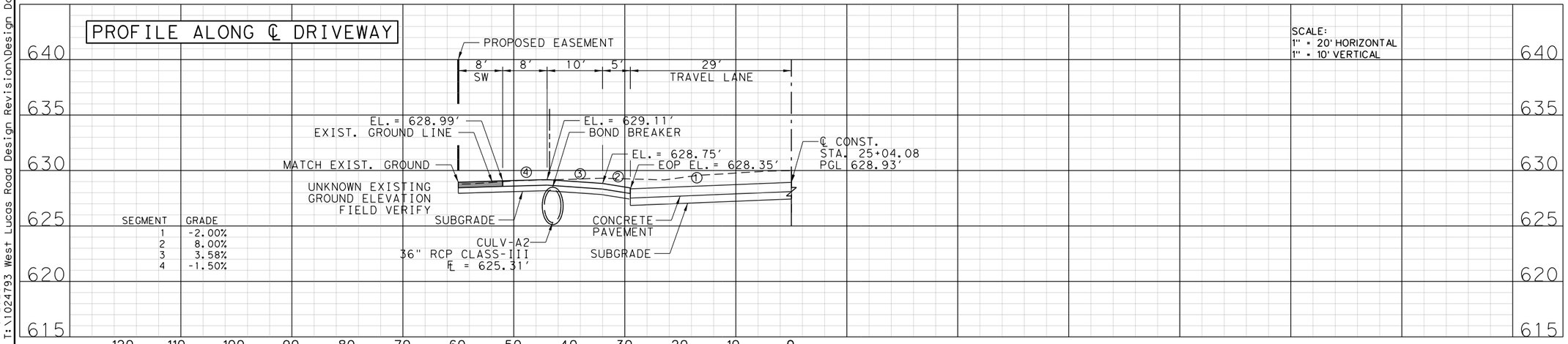
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT A2

NTAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 3 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

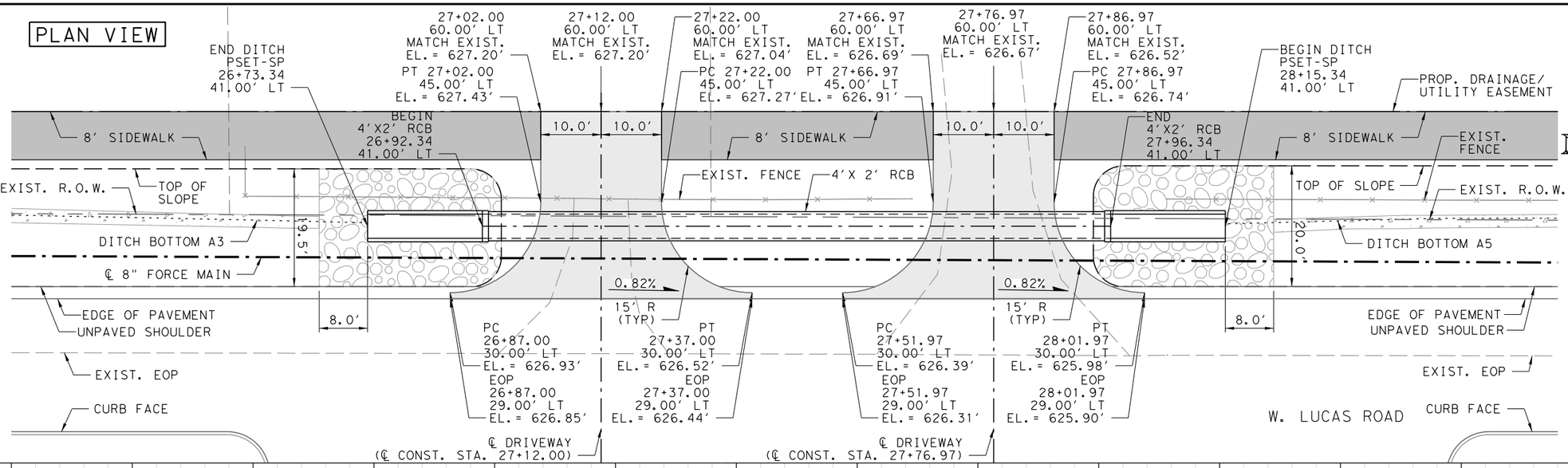
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	184
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:21 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_CULV_PP03_A02.dgn

Texas 811 Know what's below. Call before you dig.

PLAN VIEW



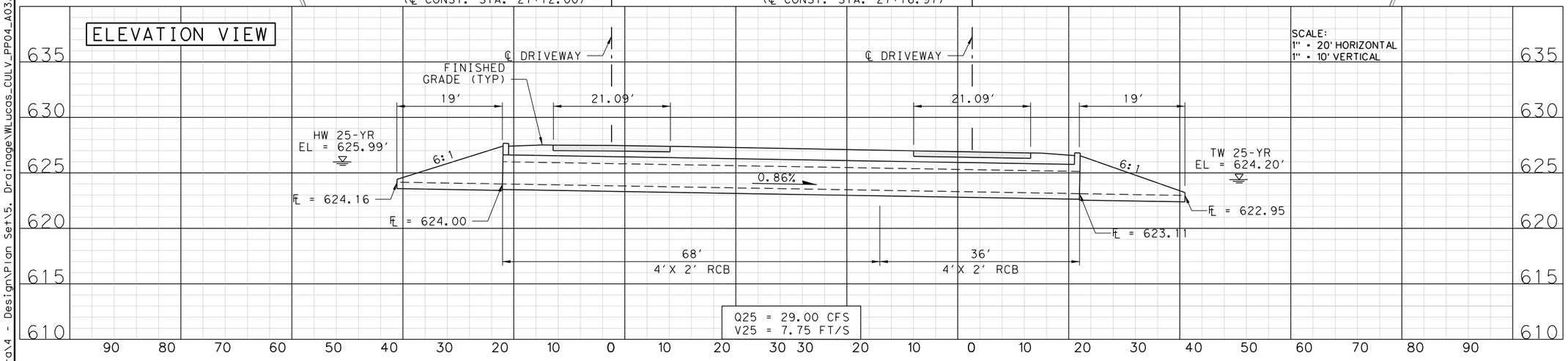
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

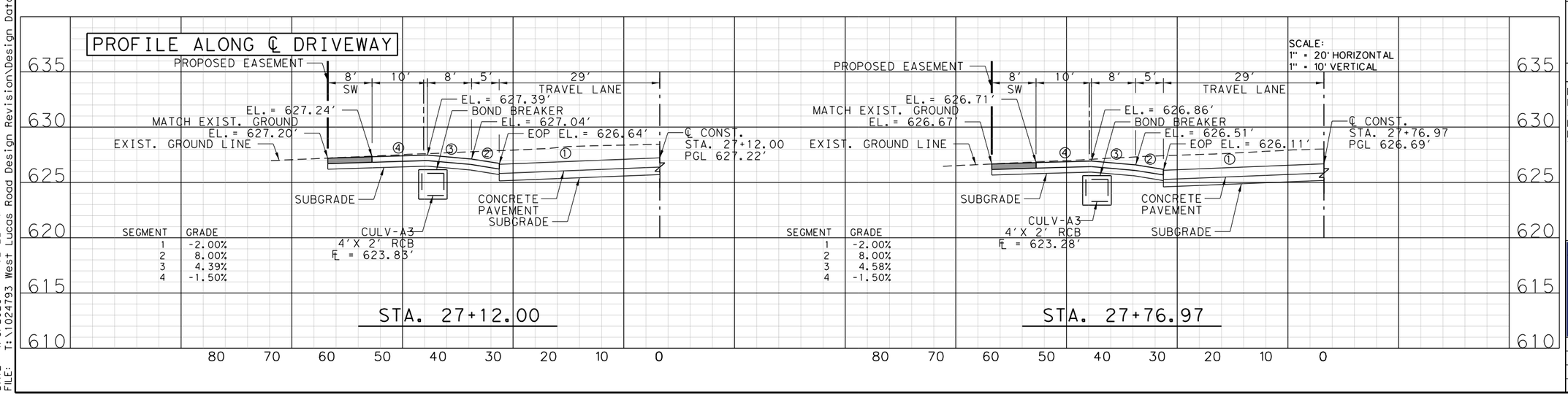
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT A3

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 4 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

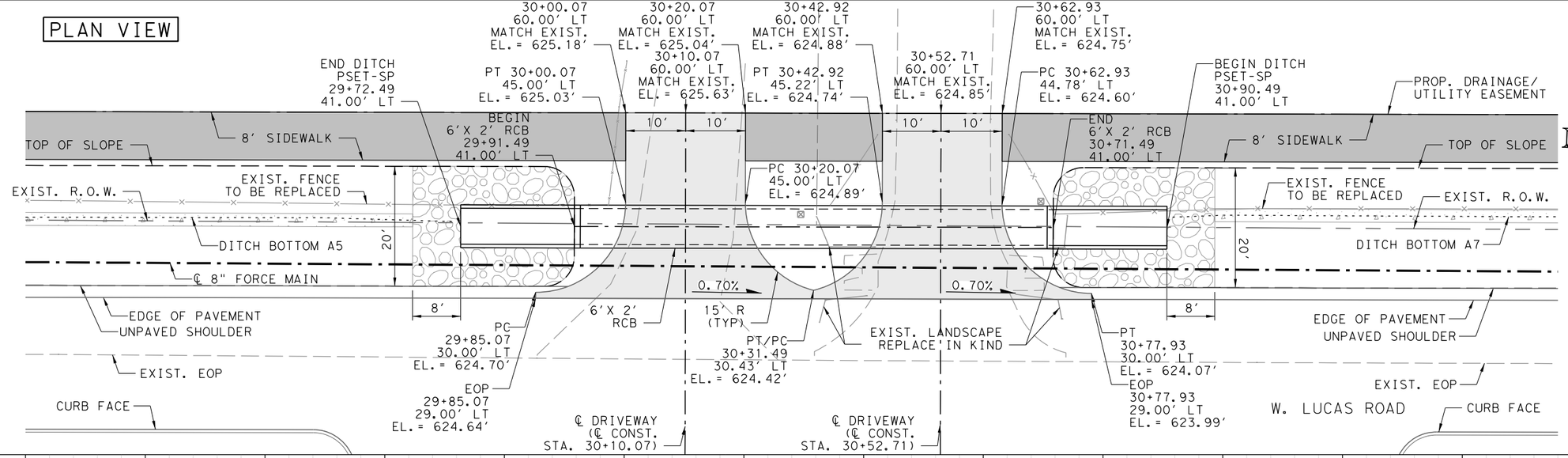
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	185
	COUNTY	
	COLLIN	

DATE: 4/6/2026 4:02:22 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP04_A03.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

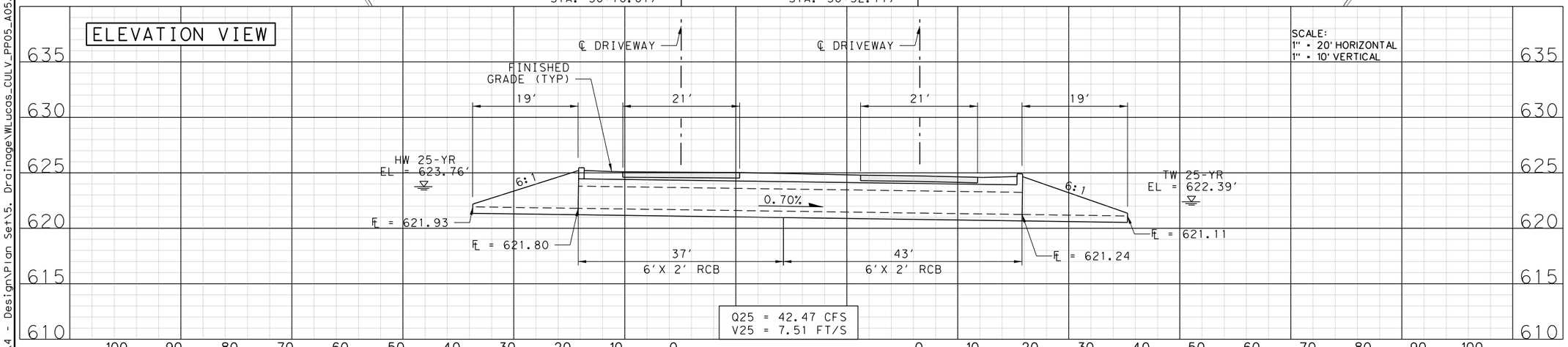
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

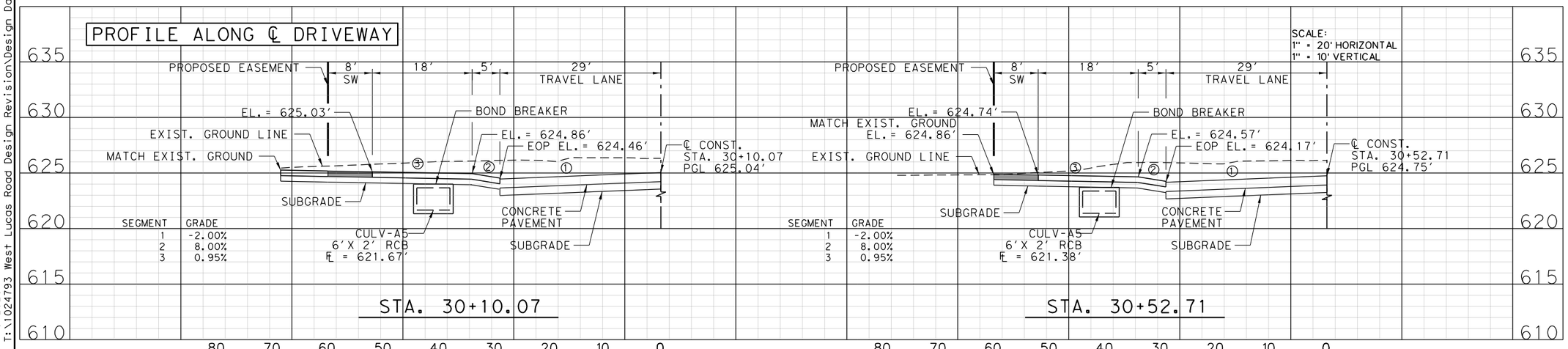
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

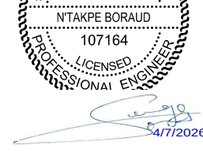
ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT A5



W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 5 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

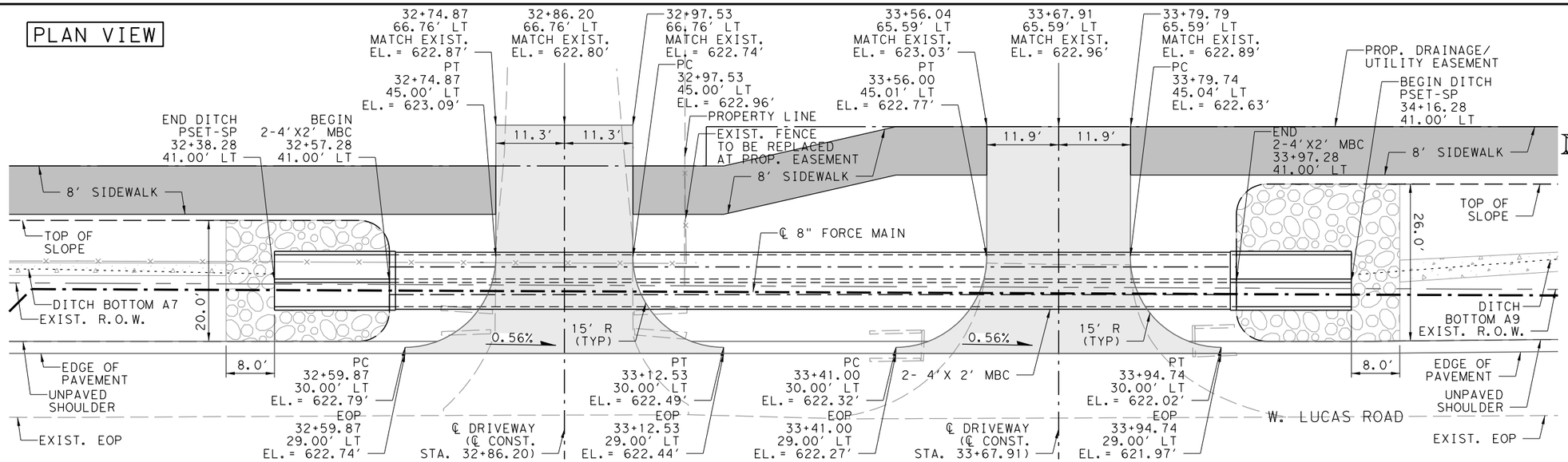
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	186
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:23 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP05_A05.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

LEGEND:

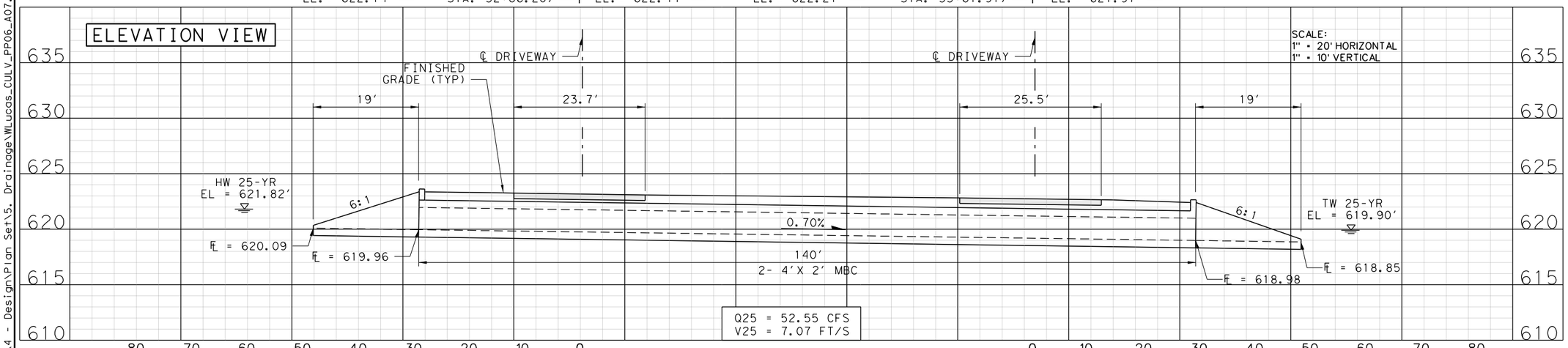
- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

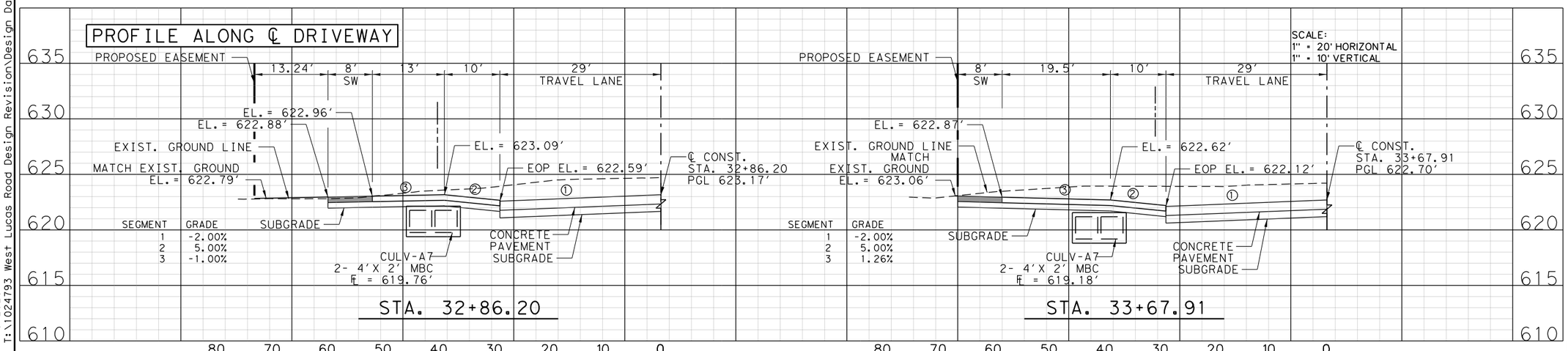
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL



PROFILE ALONG ℄ DRIVEWAY



CULVERT A7

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 6 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

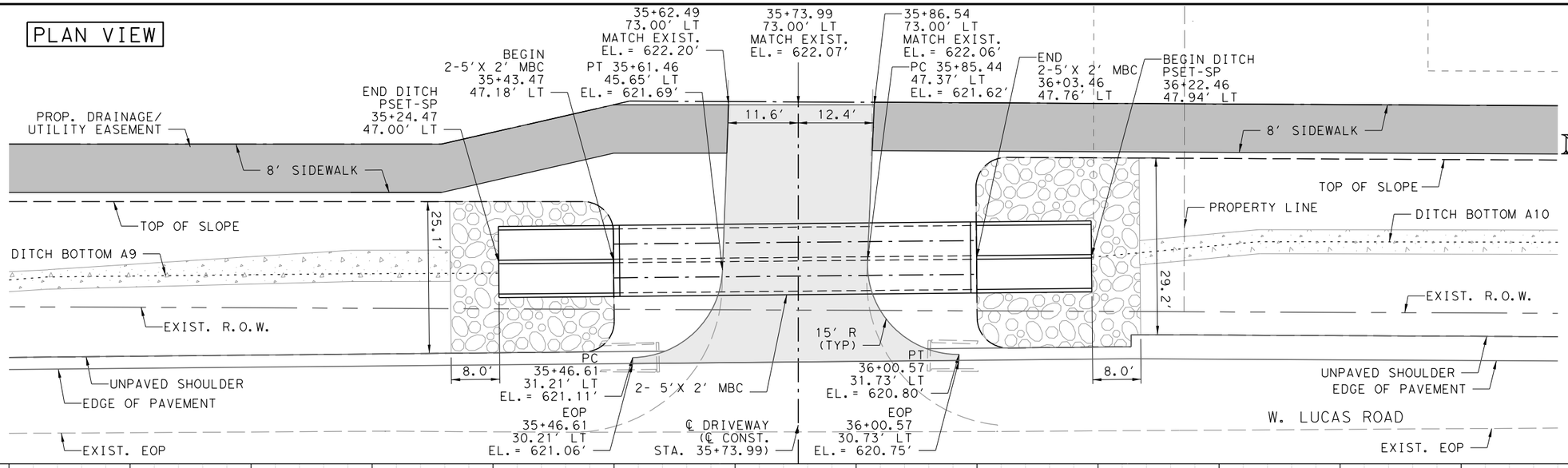
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		187
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:24 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_CULV_PP06_A07.dgn

PLAN VIEW



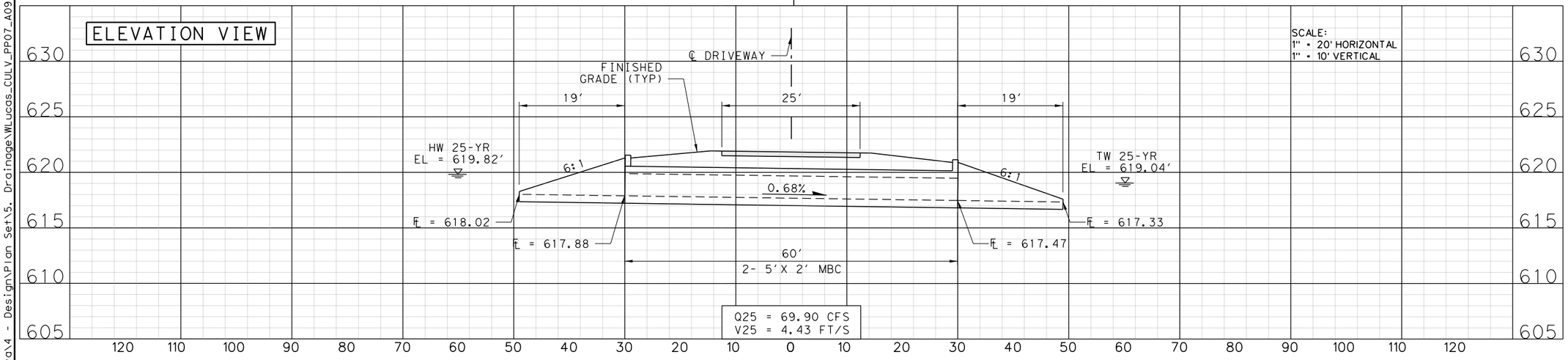
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

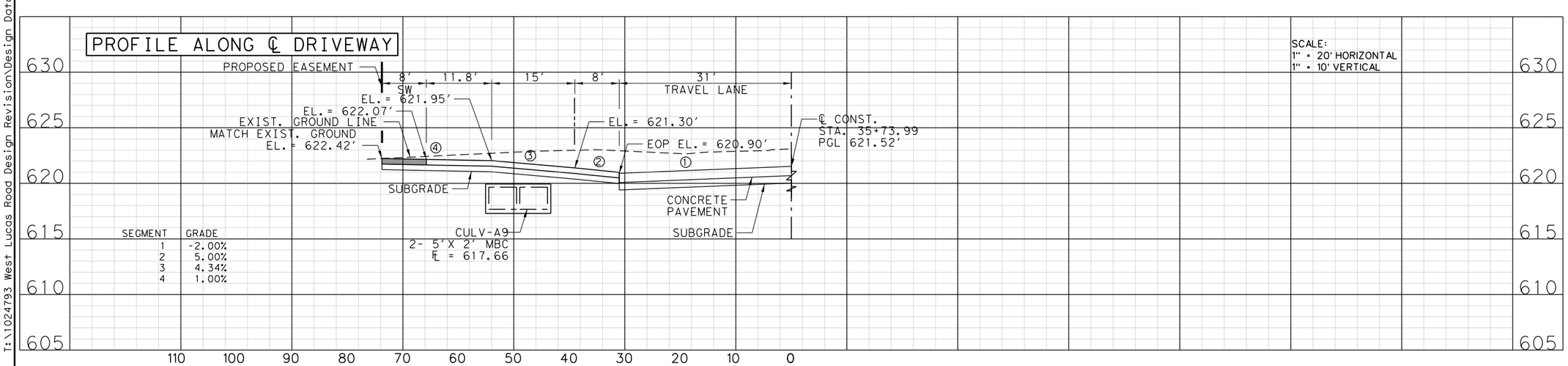
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



SEGMENT	GRADE
1	-2.00%
2	5.00%
3	4.34%
4	1.00%

CULVERT A9

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD.
ROADWAY
IMPROVEMENTS

DRIVEWAY &
CULVERT LAYOUT

SHEET 7 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

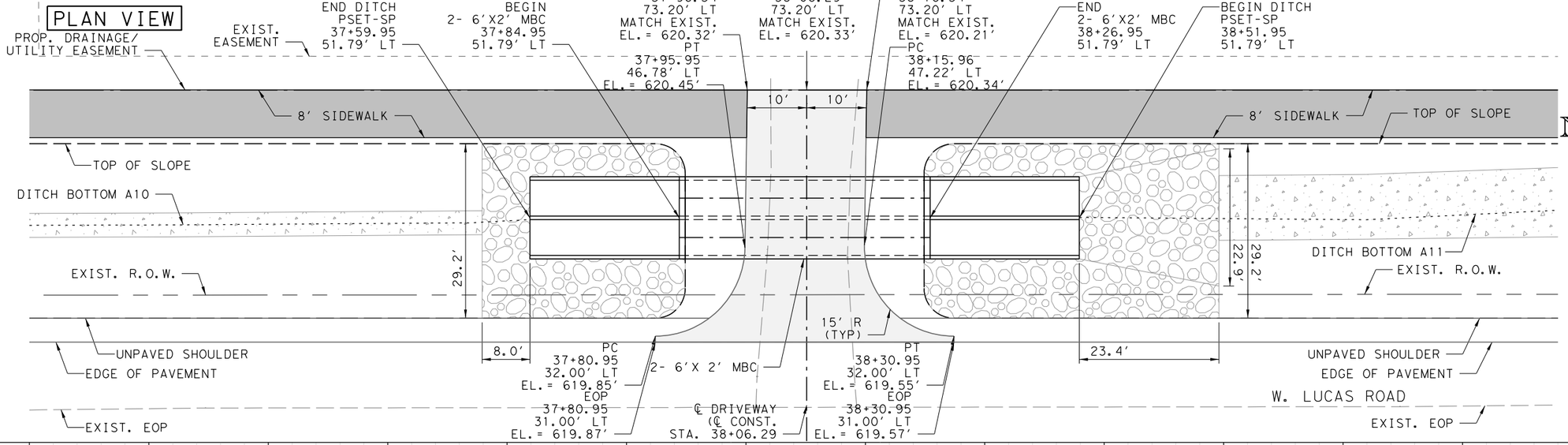
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		188
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:25 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP07_A09.dgn

PLAN VIEW



0 5 20
Feet

N

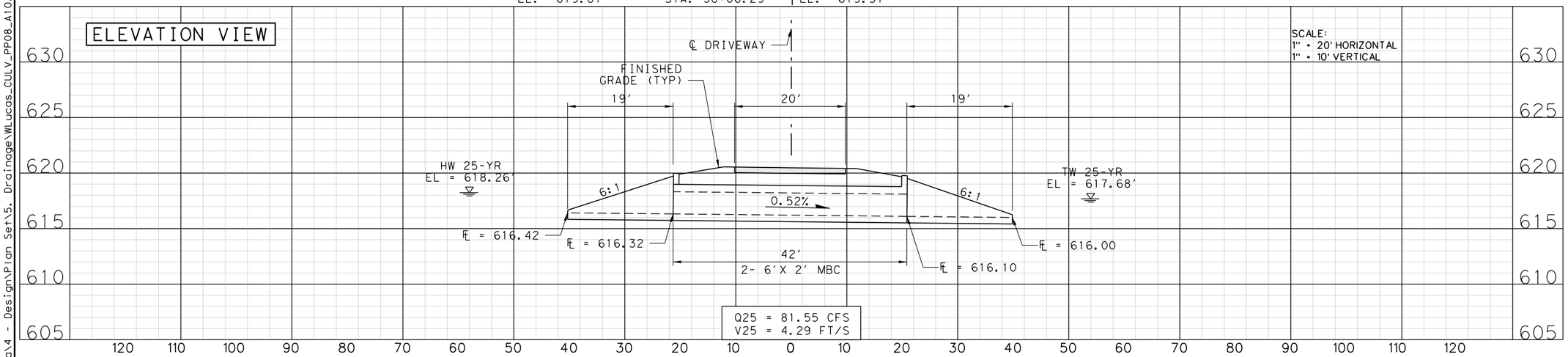
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

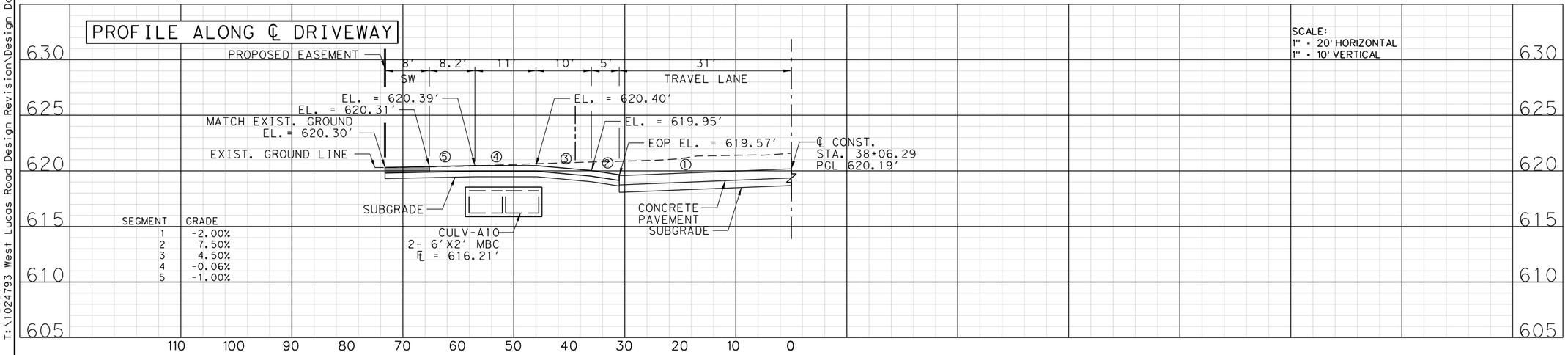
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SEGMENT	GRADE
1	-2.00%
2	7.50%
3	4.50%
4	-0.06%
5	-1.00%

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT A10

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 8 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

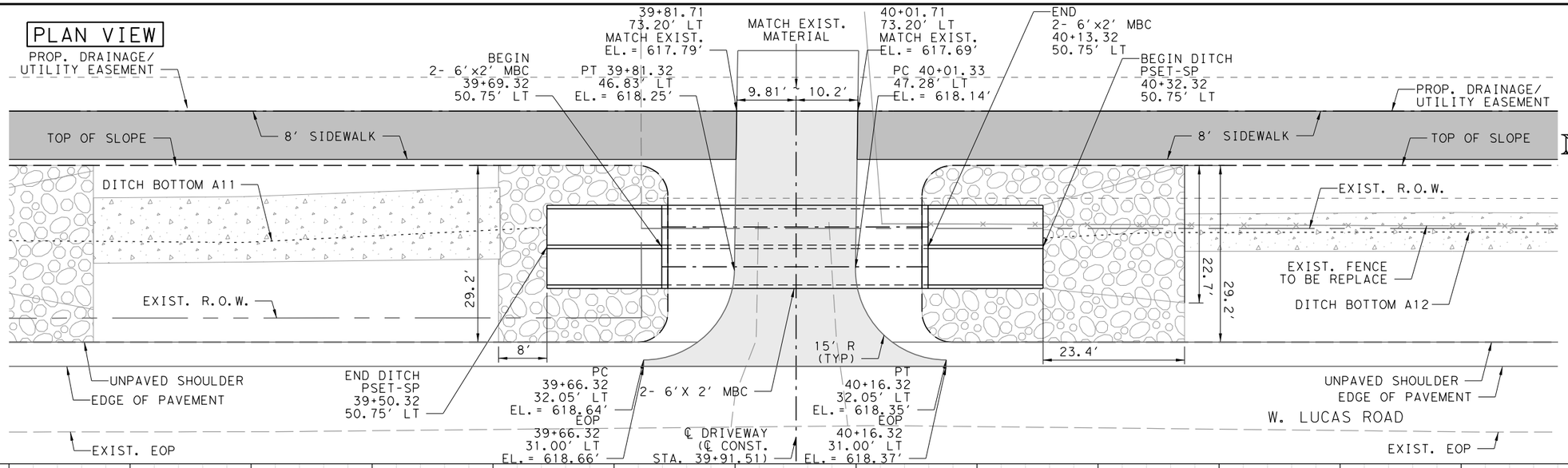
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		189
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:26 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_CULV_PP08_A10.dgn

PLAN VIEW



0 5 20
Feet

N

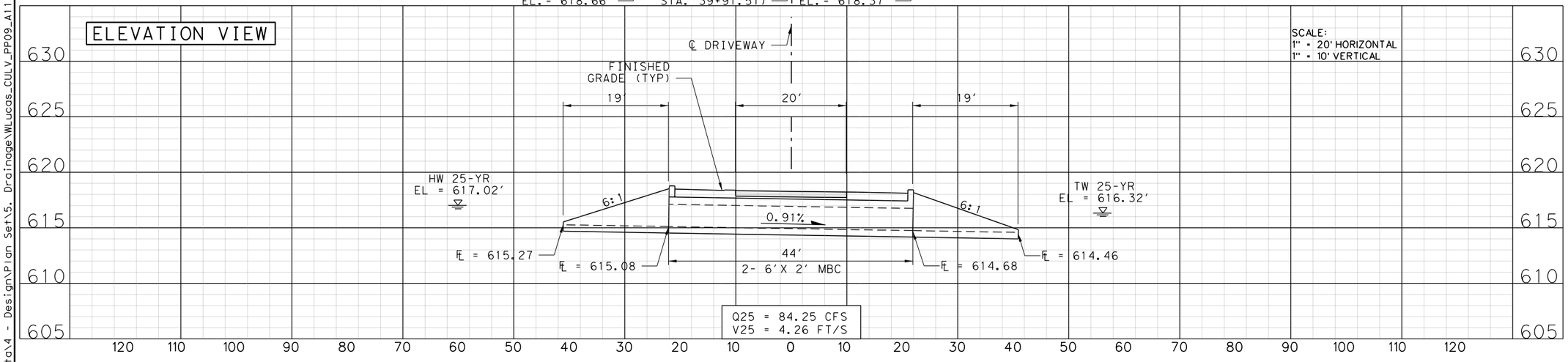
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

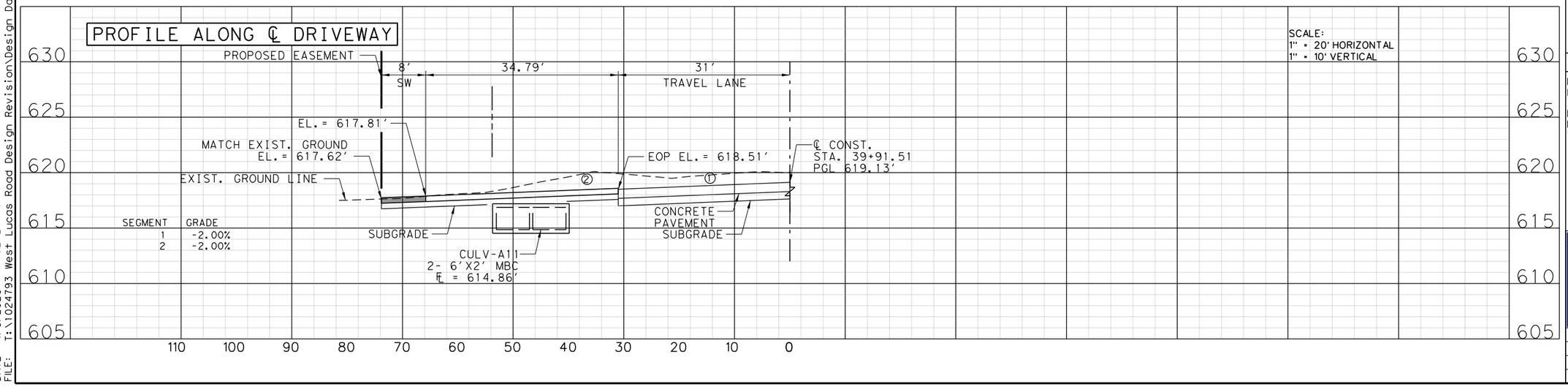
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT A11

N'TAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 9 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

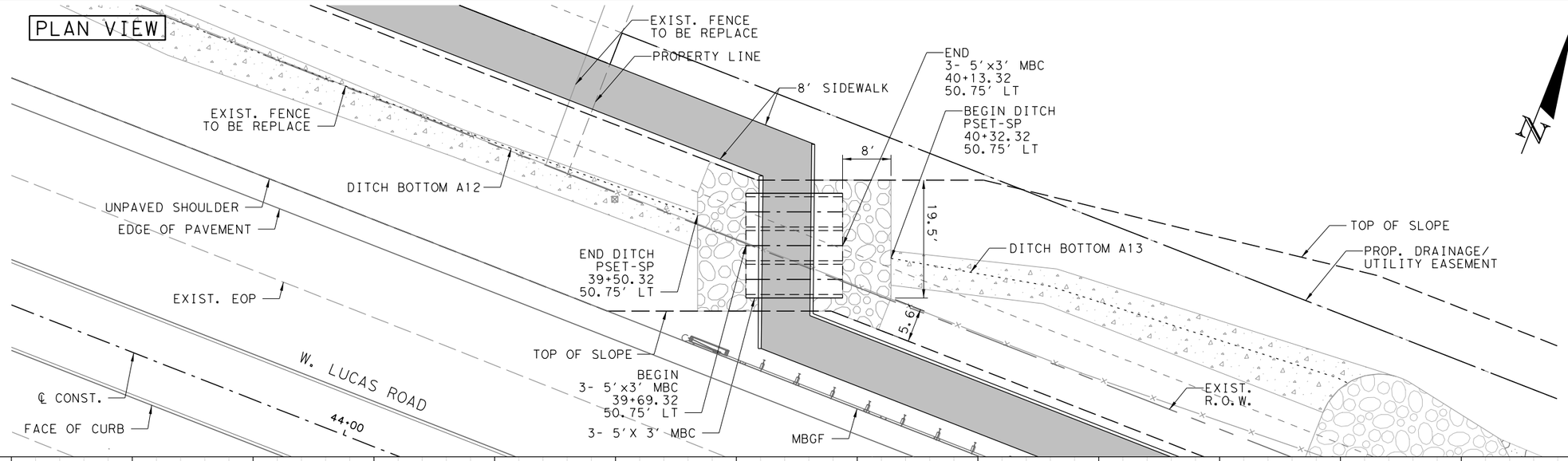
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	190
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:27 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP09_A11.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

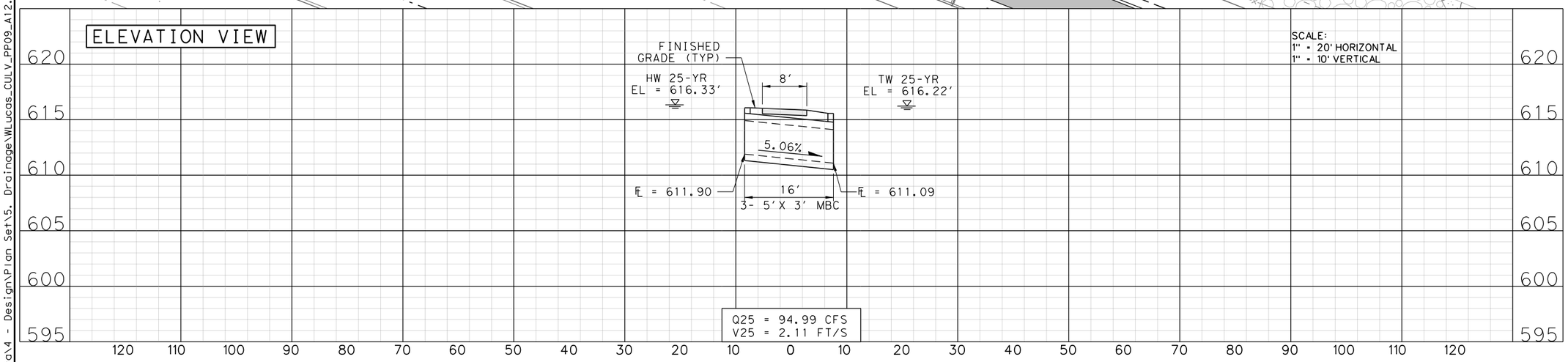
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



Q25 = 94.99 CFS
V25 = 2.11 FT/S

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY

CULVERT A12

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 9 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

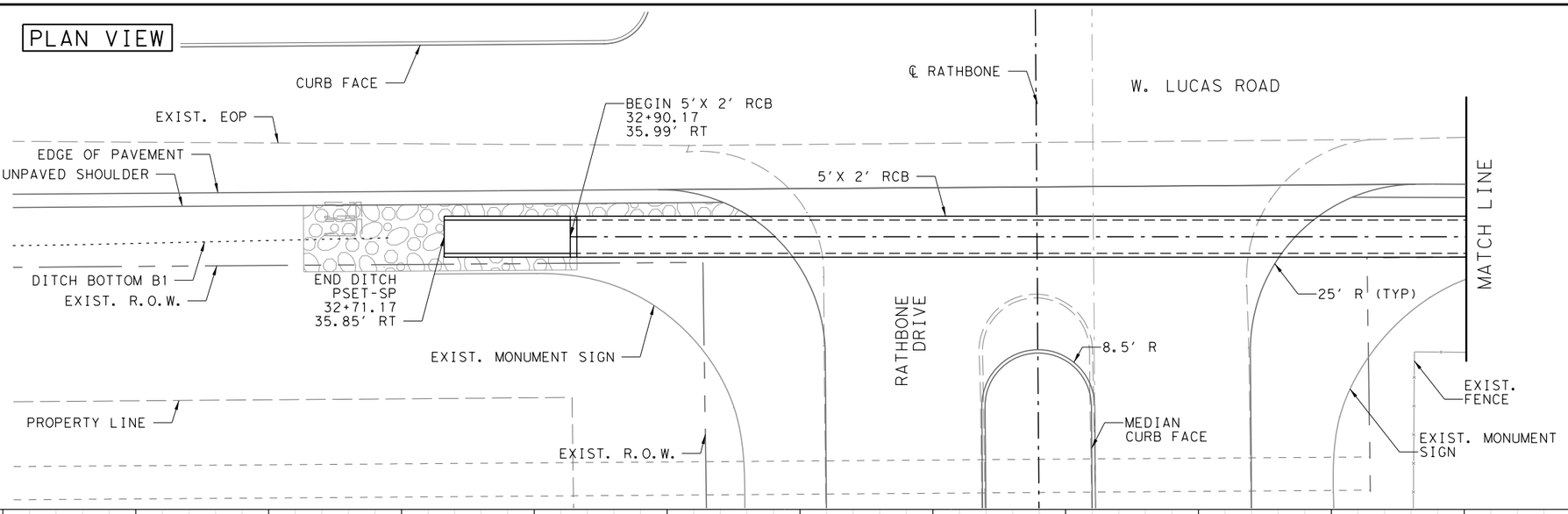
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	191
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:28 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP09_A12.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

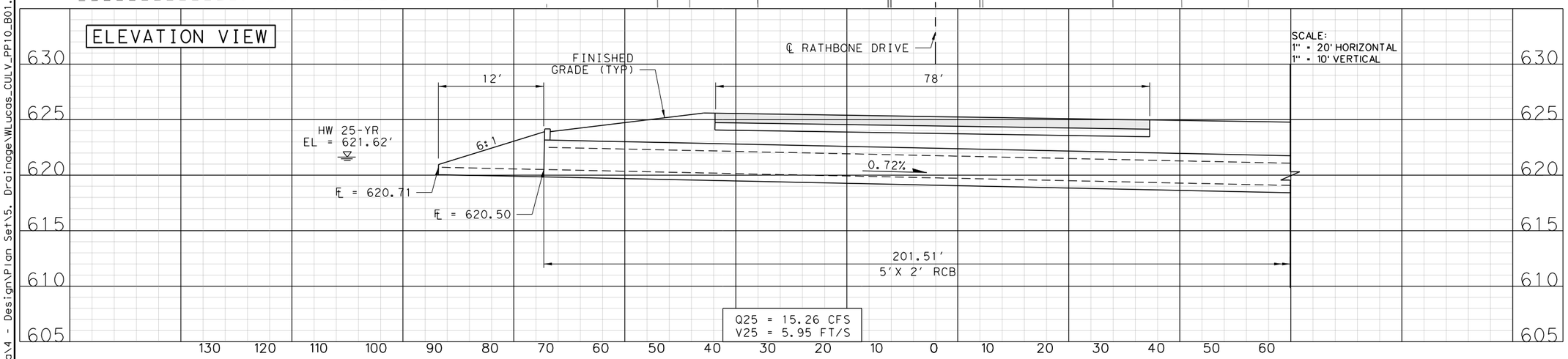
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

FOR PAVEMENT PROFILE
REFER TO
INTERSECTION DETAILS RATHBONE DR.

CULVERT B1

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD.
ROADWAY
IMPROVEMENTS

DRIVEWAY &
CULVERT LAYOUT

SHEET 10 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

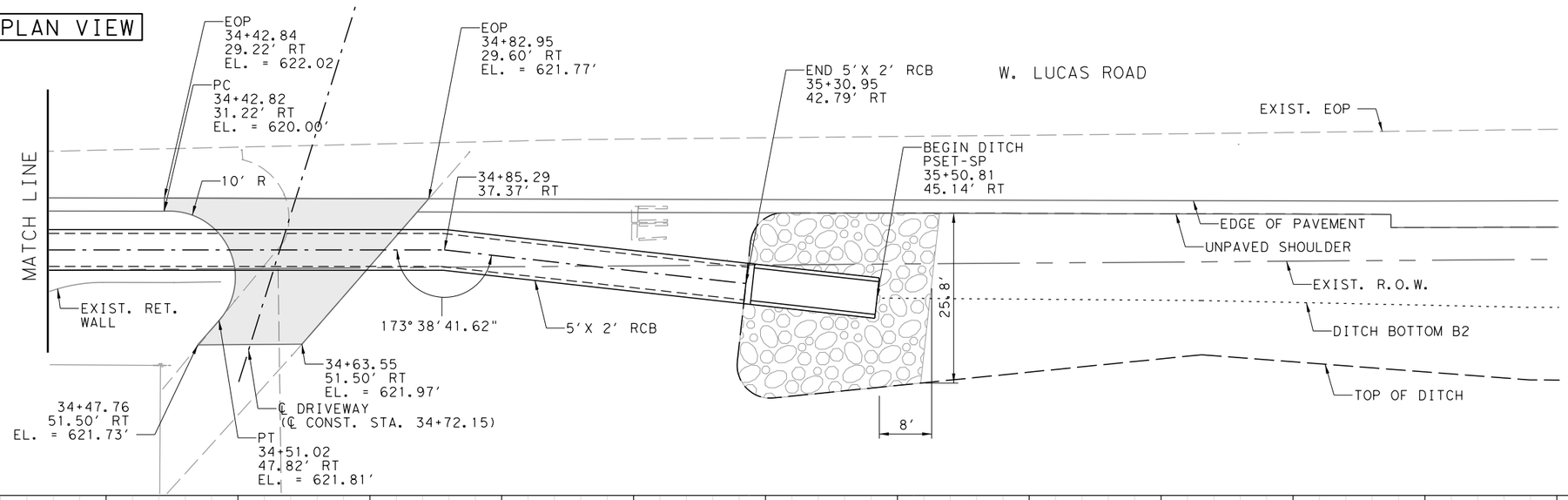
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	192
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:29 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP10_B01.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

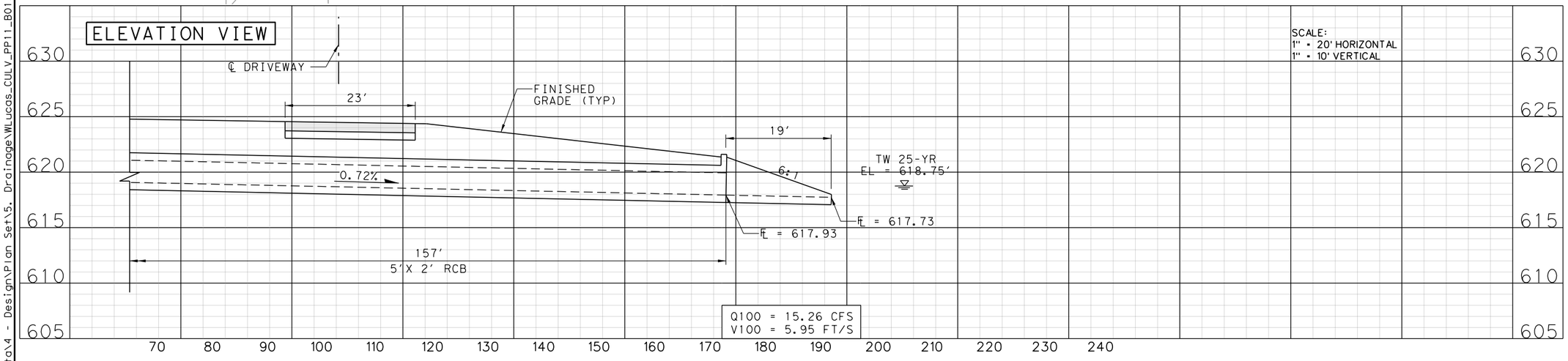
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

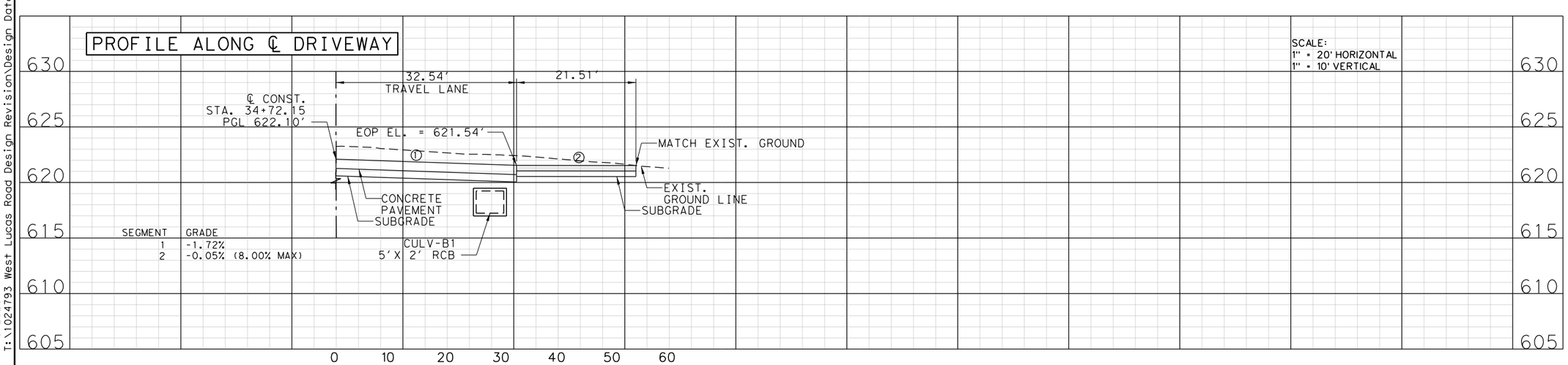
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT B1 CONTINUED

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 11 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

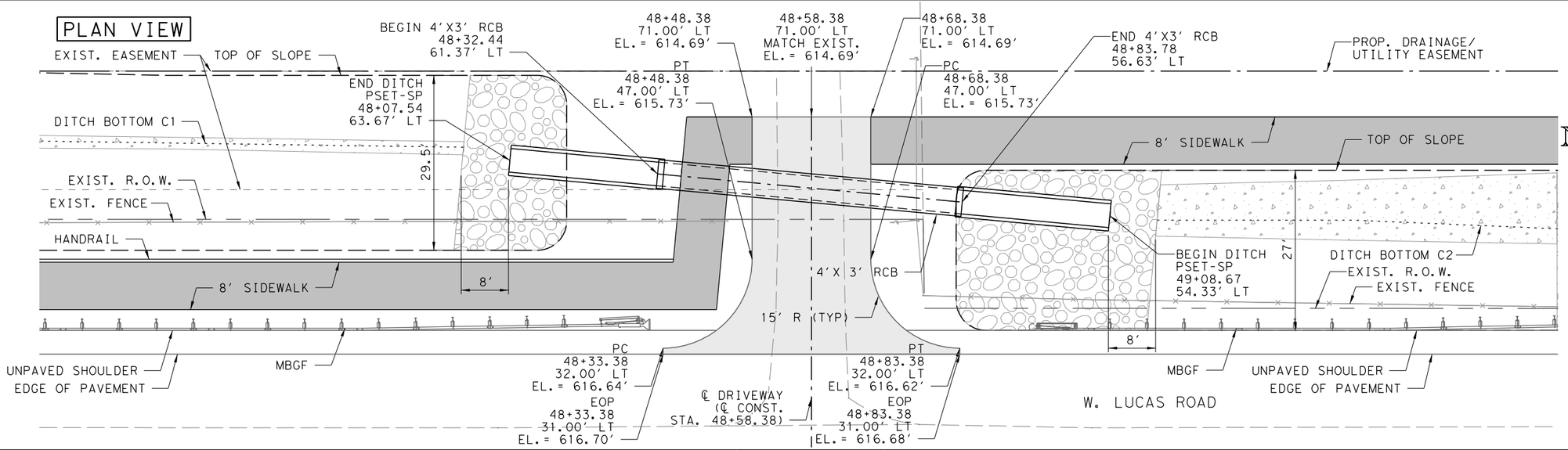
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	193
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:30 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP11_B01.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

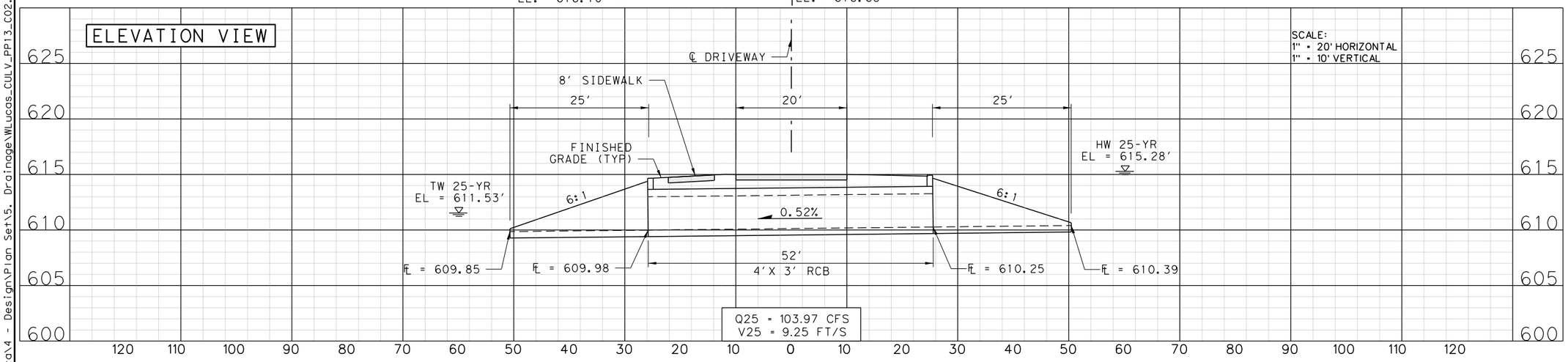
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

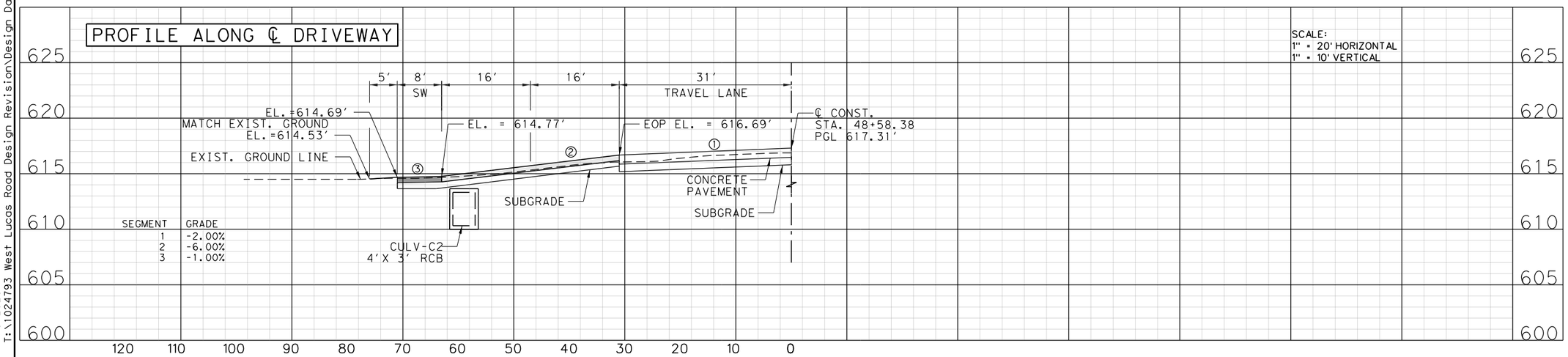
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT C2

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 13 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

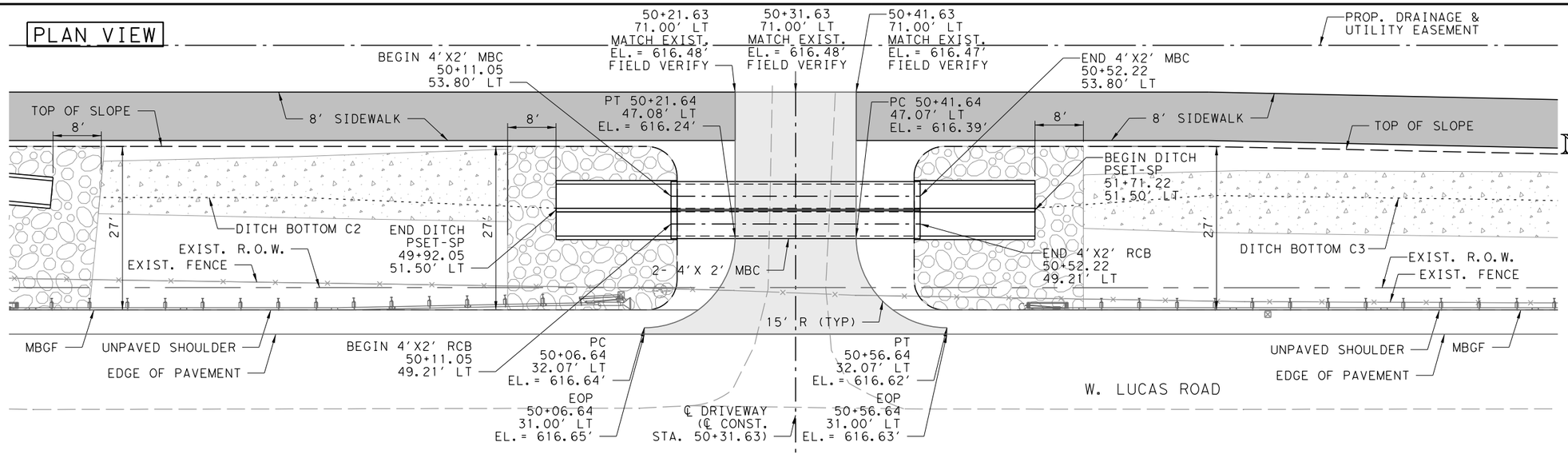
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	194
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:31 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\W

Texas811 Know what's below. Call before you dig.

PLAN VIEW



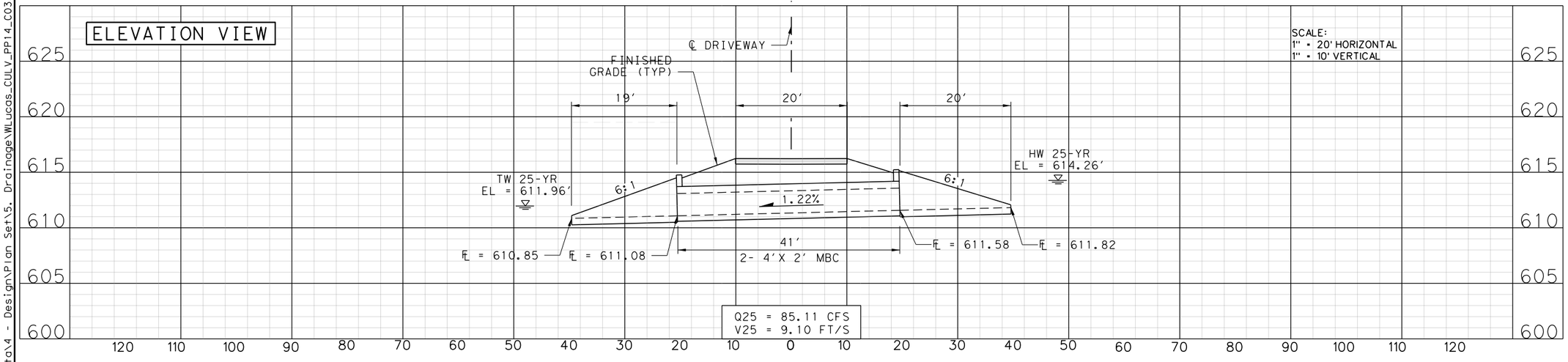
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

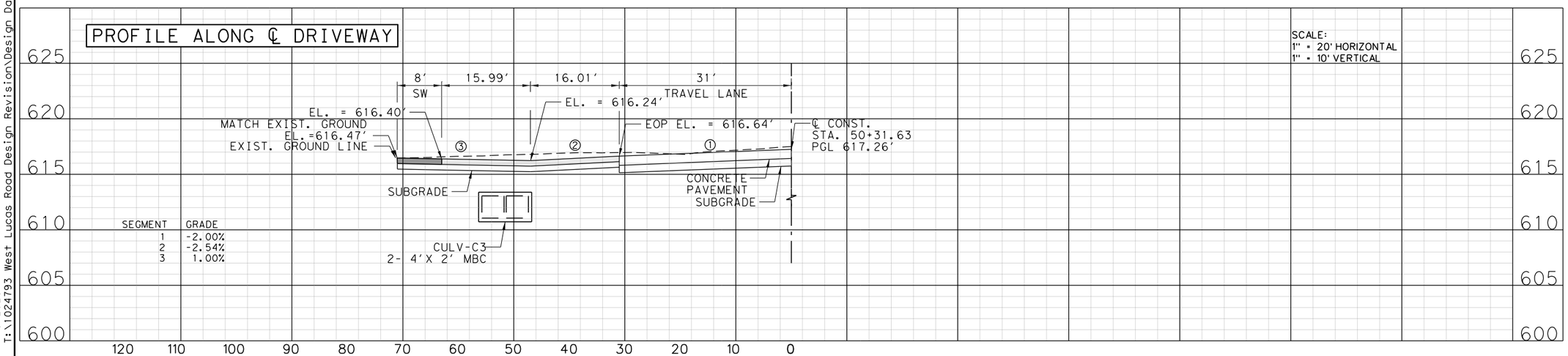
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SEGMENT	GRADE
1	-2.00%
2	-2.54%
3	1.00%

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT C3

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 14 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

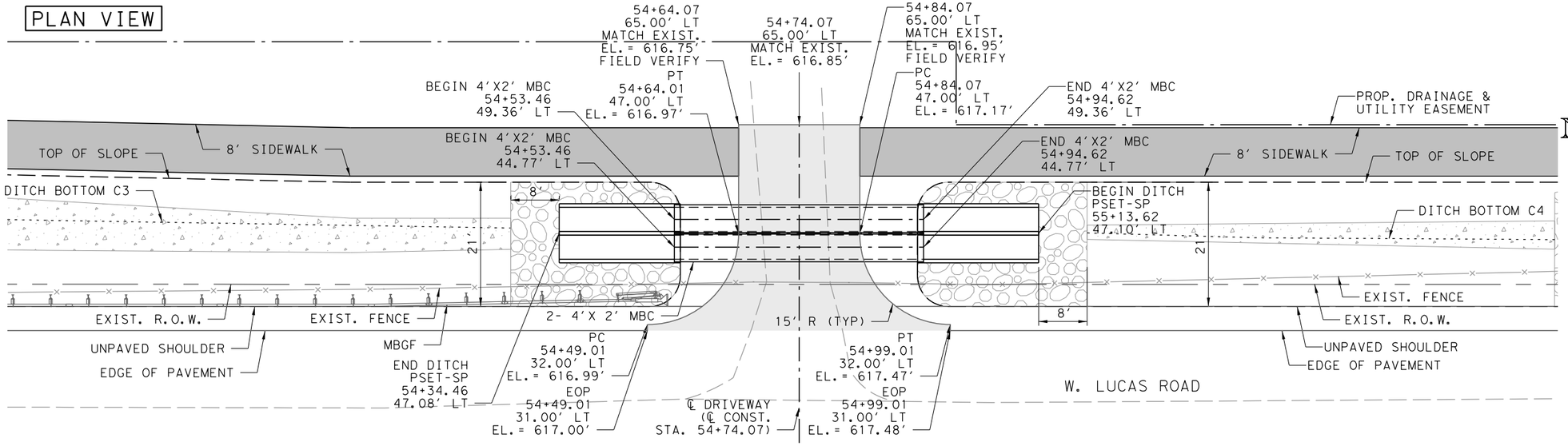
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	195
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:32 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\W_Lucas_CULV_PP14_C03.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

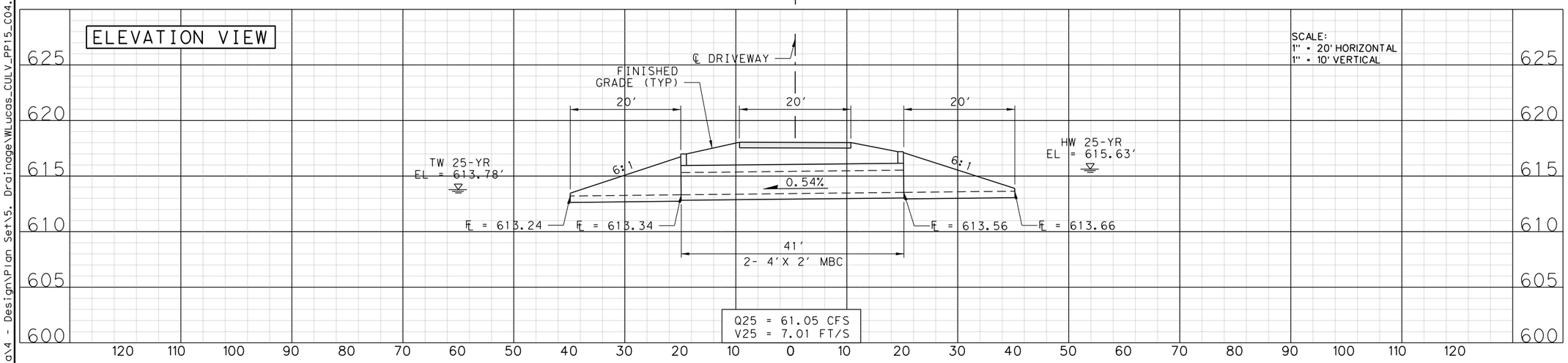
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

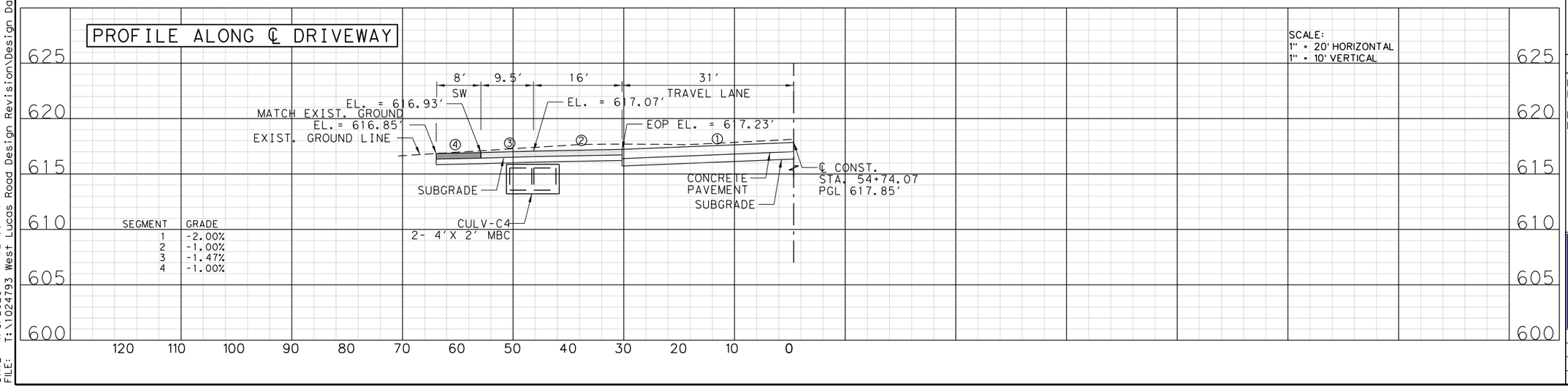
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT C4

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 15 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

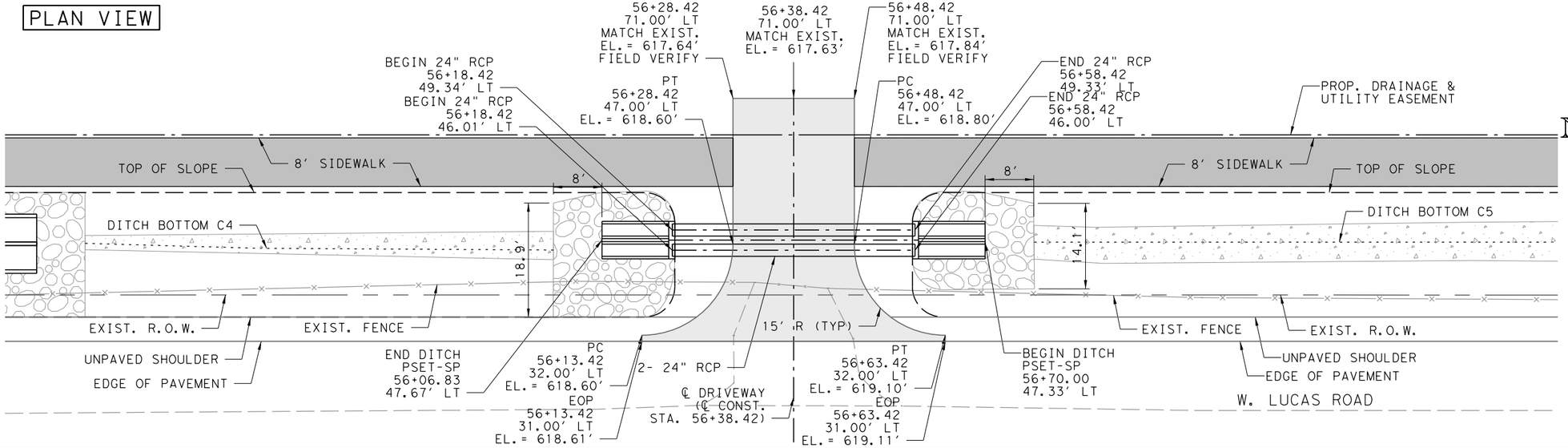
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	196
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:33 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP15_C04.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

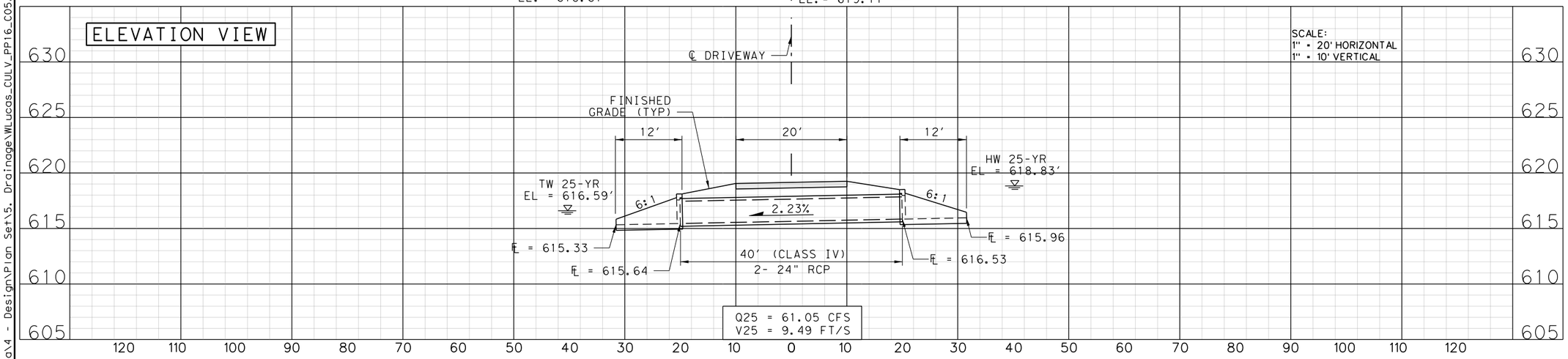
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

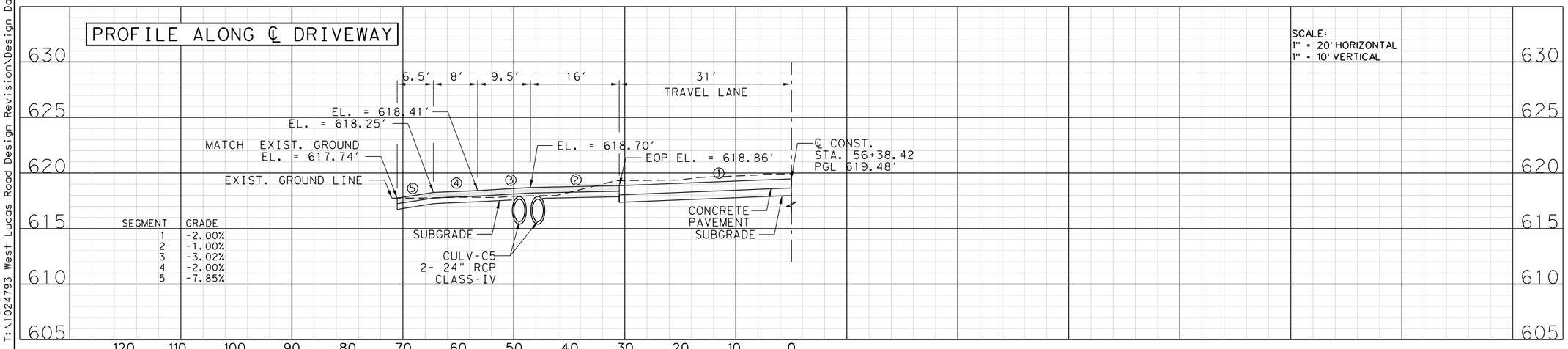
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



SEGMENT	GRADE
1	-2.00%
2	-1.00%
3	-3.02%
4	-2.00%
5	-7.85%

CULVERT C5

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 16 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

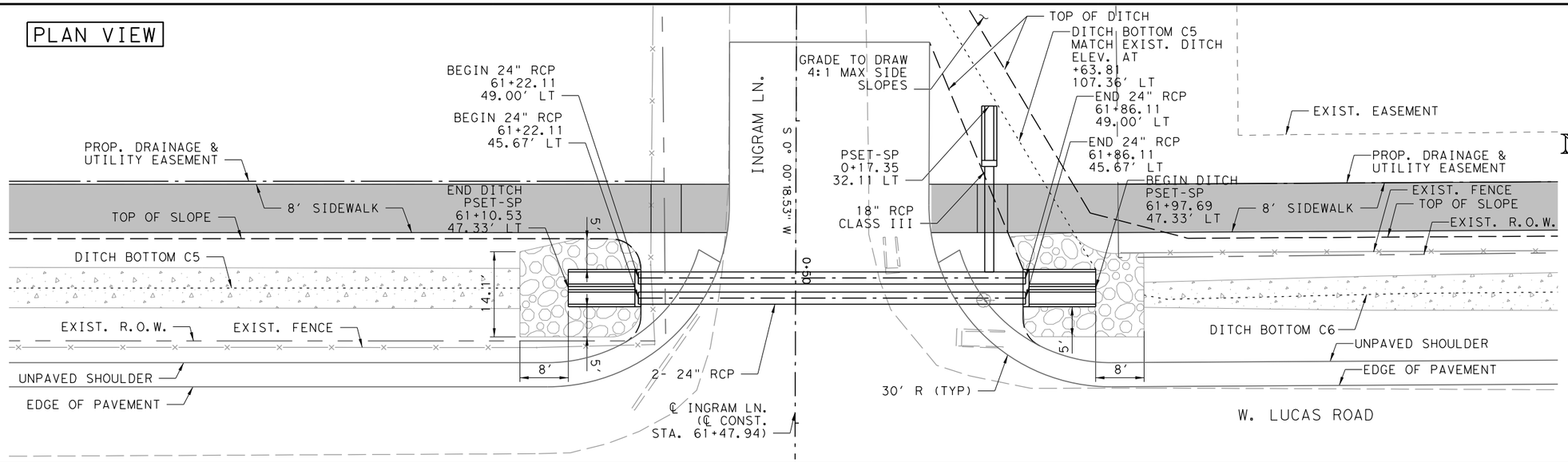
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	197
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:34 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\W Lucas_CULV_PP16_C05.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

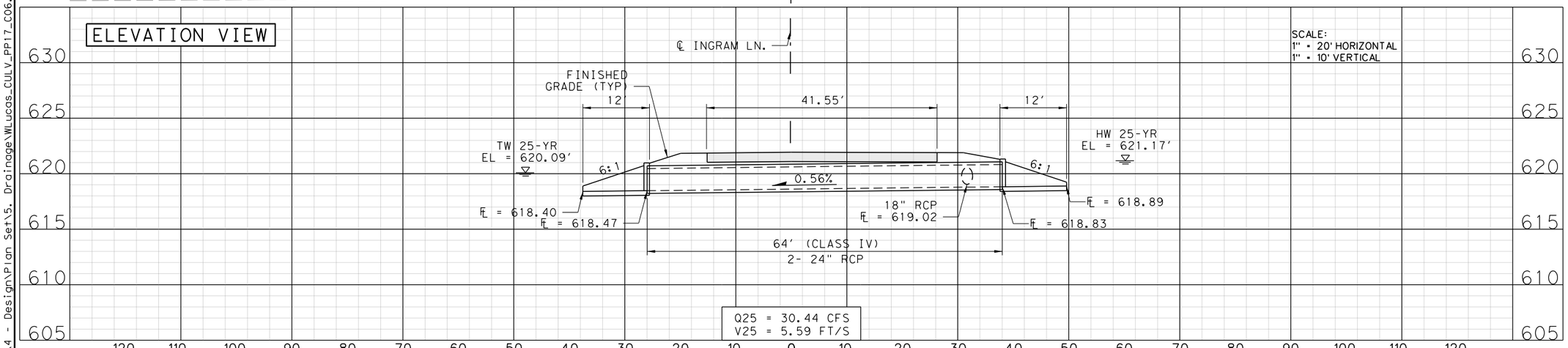
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

FOR PAVEMENT PROFILE
REFER TO
INTERSECTION DETAILS INGRAM LN.

CULVERT C6



W. LUCAS RD.
ROADWAY
IMPROVEMENTS

DRIVEWAY &
CULVERT LAYOUT

SHEET 17 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

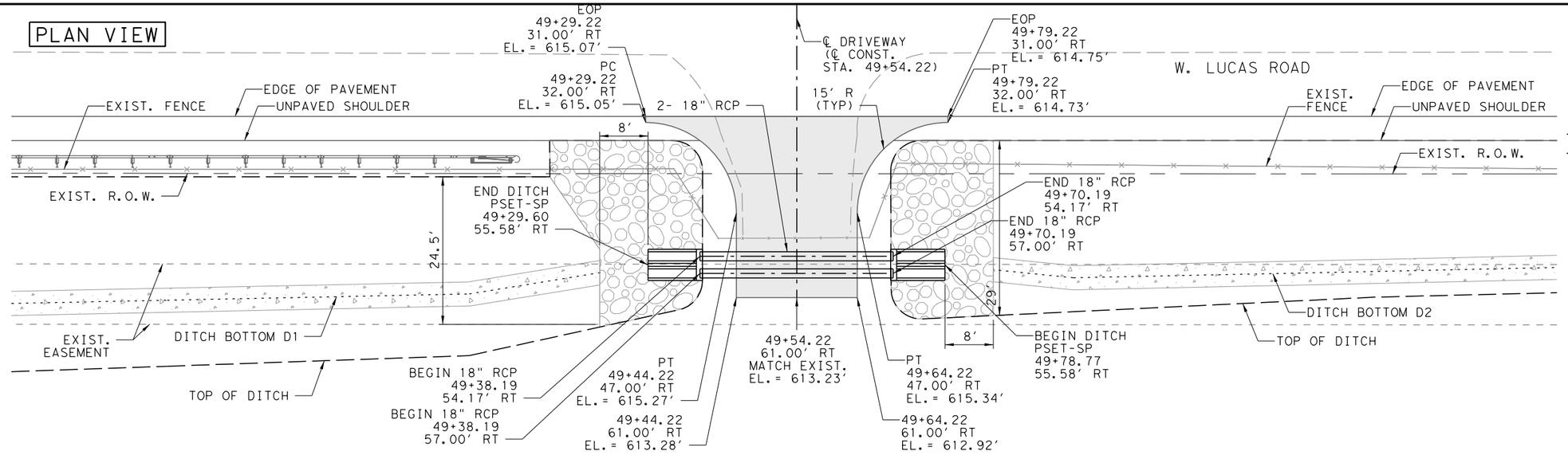
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		198
COLLIN		

DATE: 4/6/2026 4:02:35 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP17_C06.dgn

Texas811 Know what's below. Call before you dig.

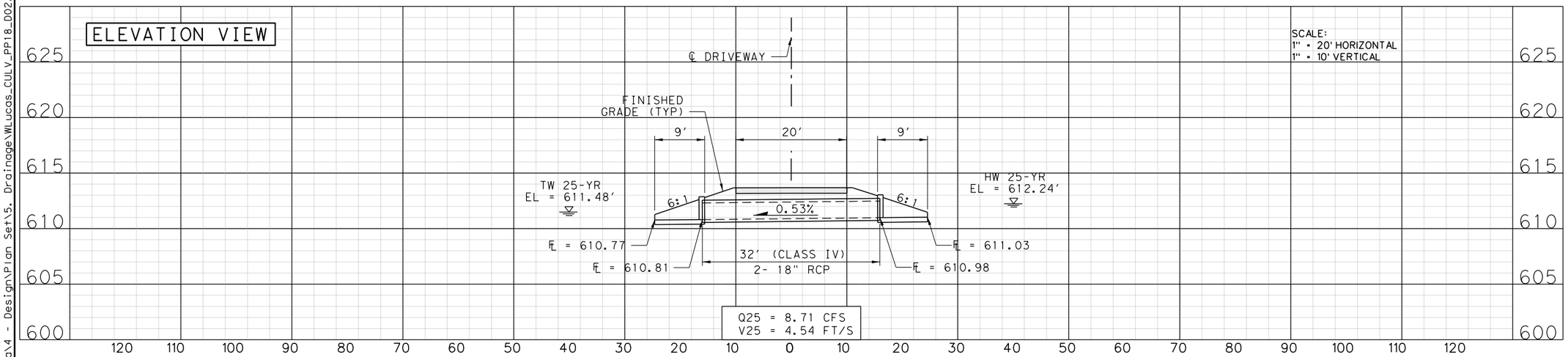
PLAN VIEW



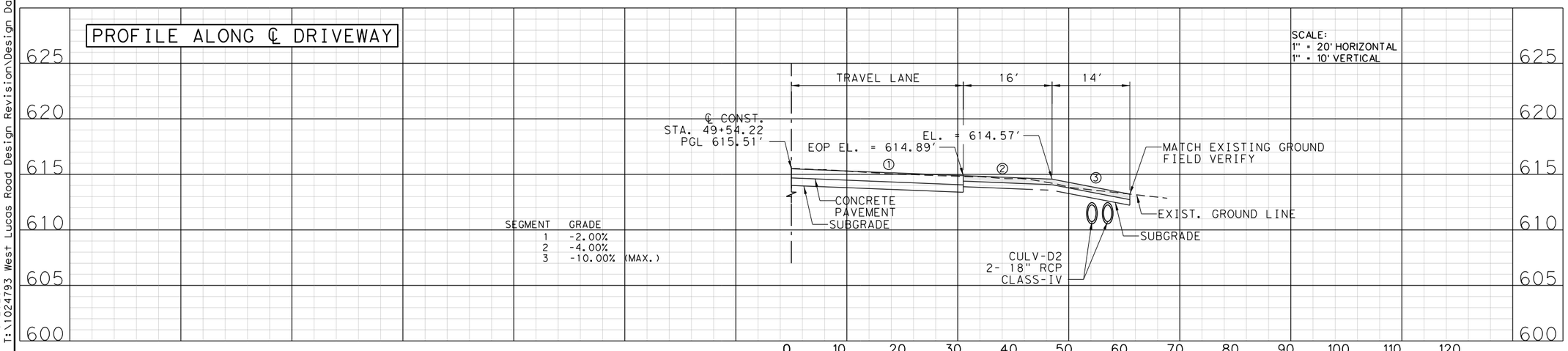
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT D2

NTAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 18 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

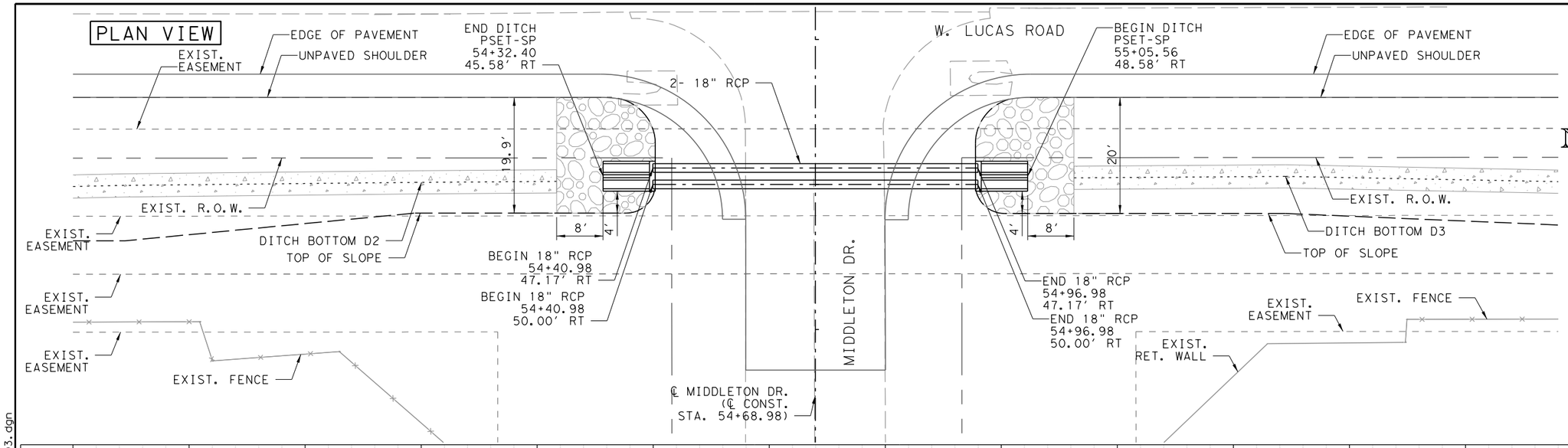
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	199
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:36 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_CULV_PP18_D02.dgn

PLAN VIEW



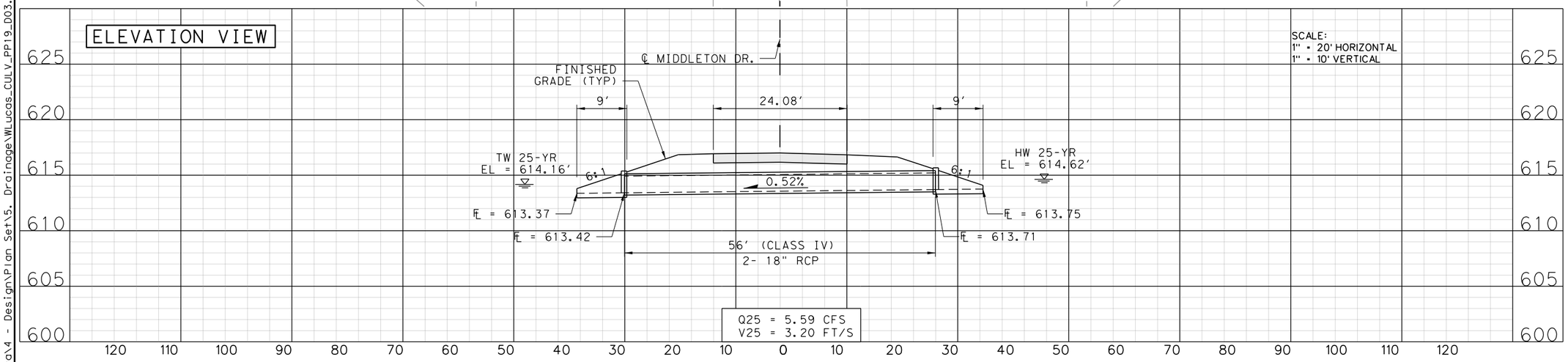
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

FOR PAVEMENT PROFILE
REFER TO
INTERSECTION DETAILS MIDDLETON DR.

CULVERT D3

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD.
ROADWAY
IMPROVEMENTS

DRIVEWAY &
CULVERT LAYOUT

SHEET 19 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

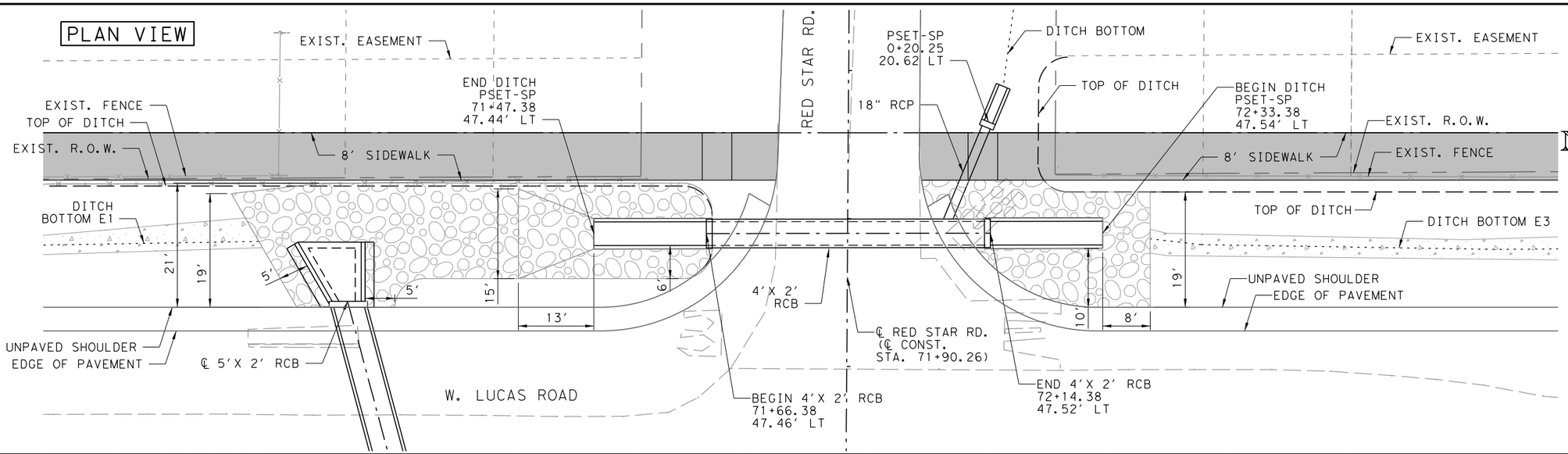
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	200
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:36 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP19_D03.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

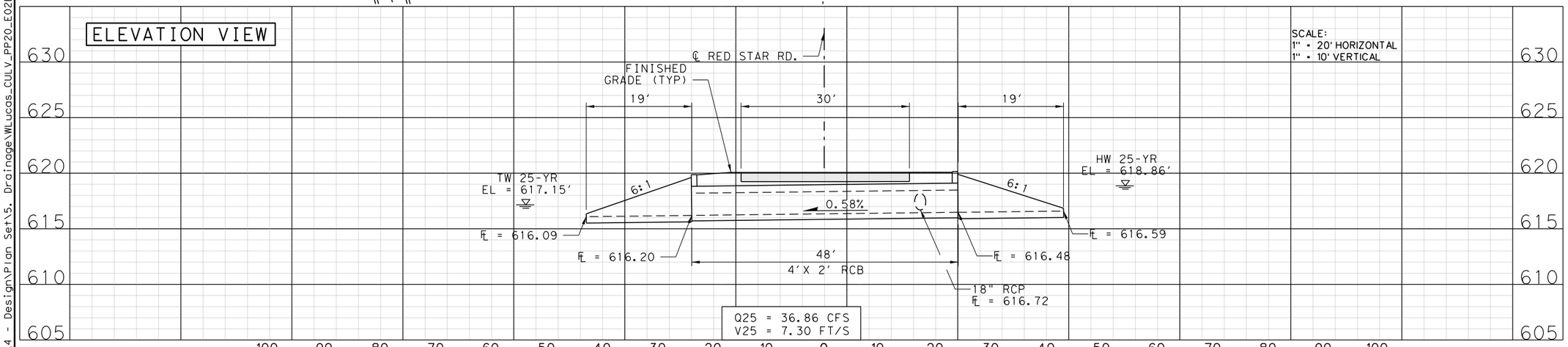
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD SETB-CD.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

FOR PAVEMENT PROFILE
REFER TO
INTERSECTION DETAILS RED STAR RD.

CULVERT E3

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD.
ROADWAY
IMPROVEMENTS

DRIVEWAY &
CULVERT LAYOUT

SHEET 20 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

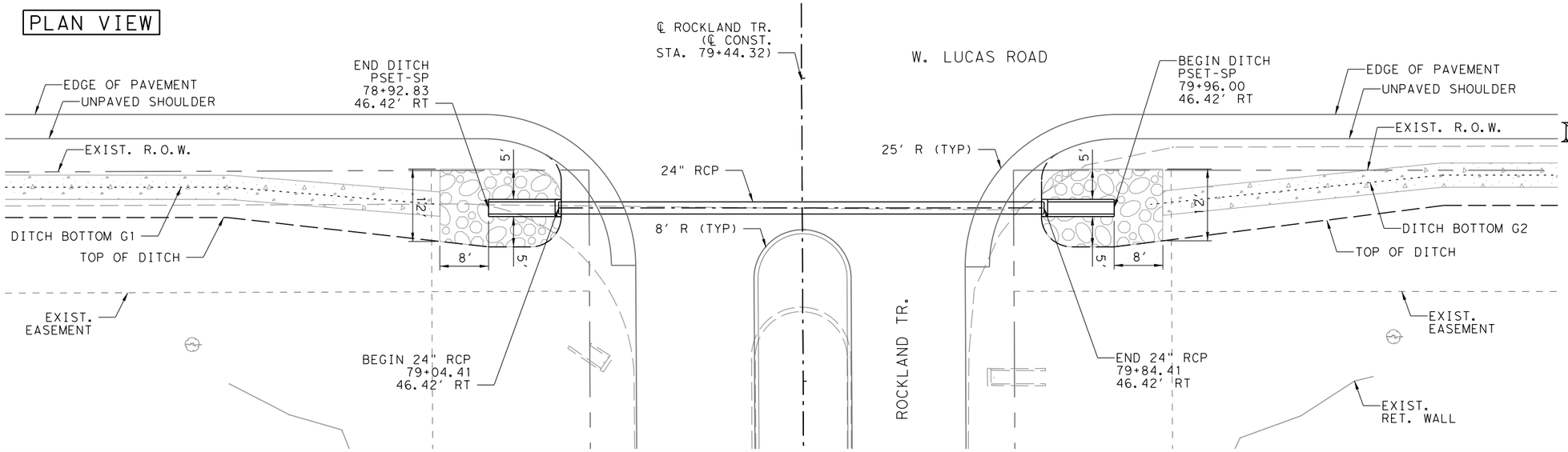
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	201
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:37 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\W Lucas_CULV_PP20_E02E03.dgn

PLAN VIEW



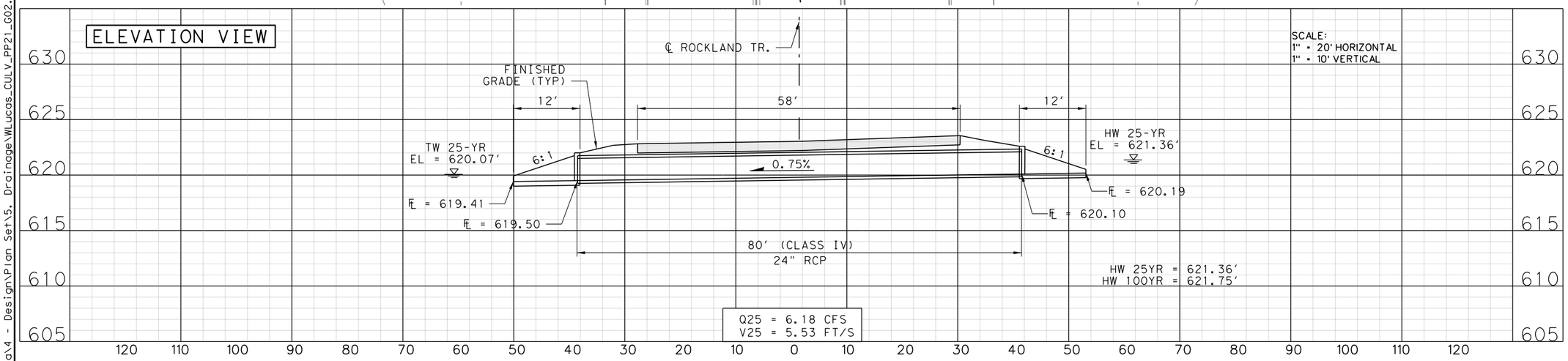
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

FOR PAVEMENT PROFILE
REFER TO
INTERSECTION DETAILS ROCKLAND TR.

CULVERT G2

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 21 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

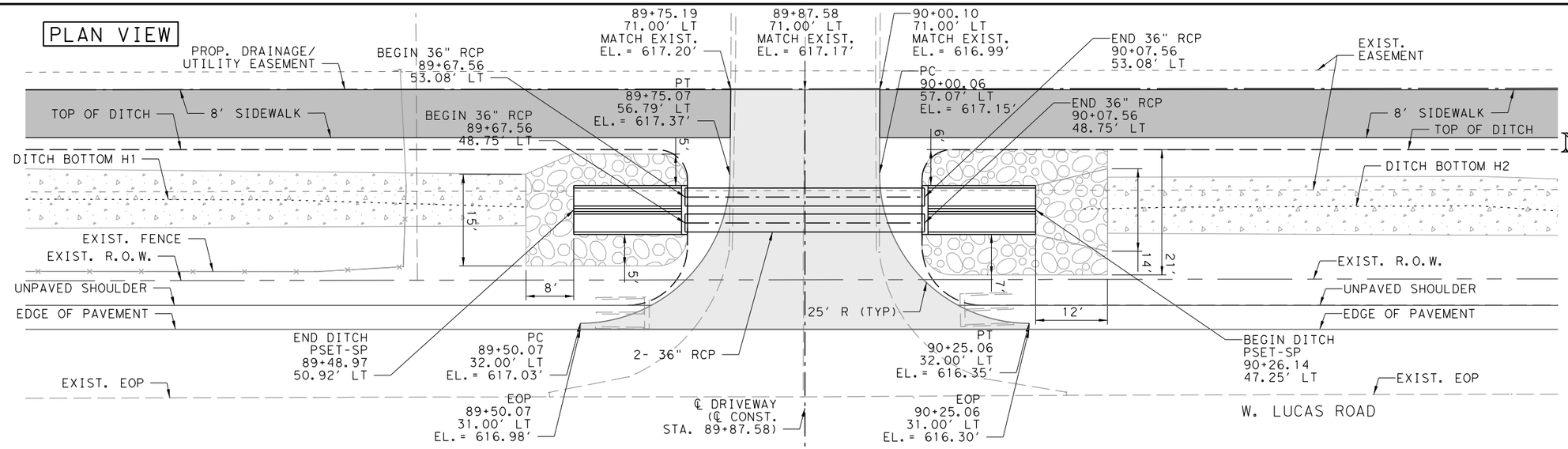
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	202
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:38 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP21_G02.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

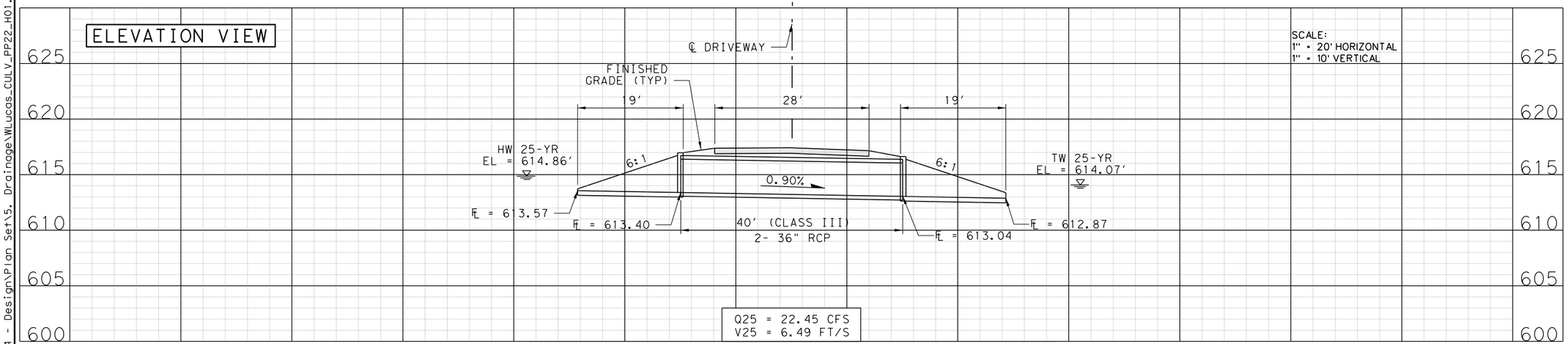
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

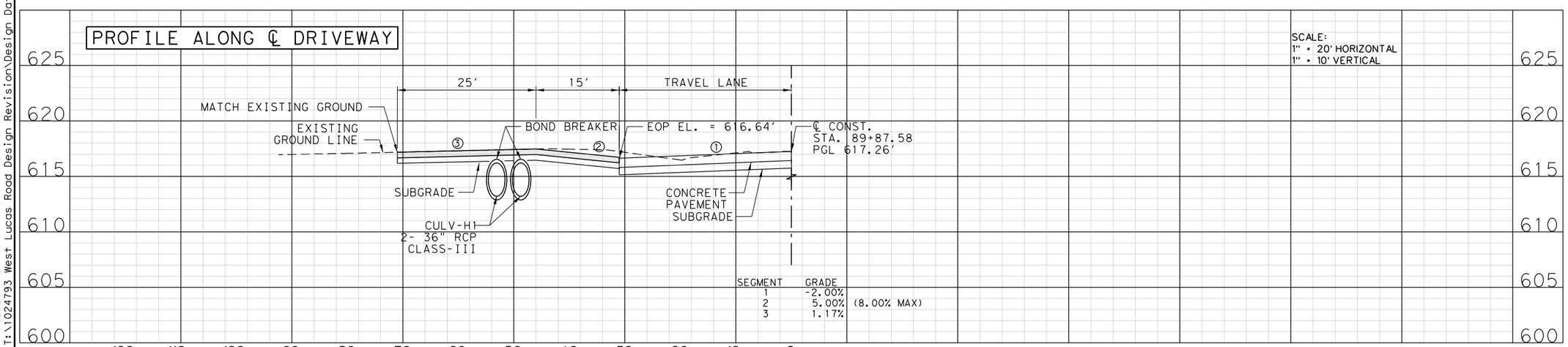
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT H1

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 22 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

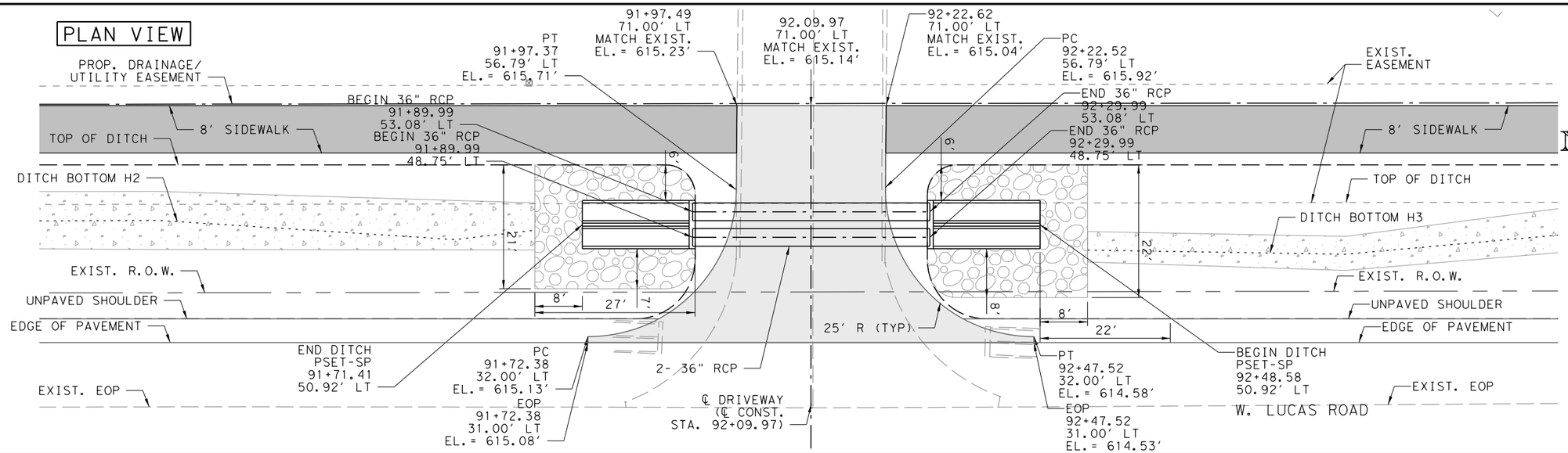
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		203
COLLIN		

DATE: 4/6/2026 4:02:39 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP22_H01.dgn

Texas 811 Know what's below. Call before you dig.

PLAN VIEW



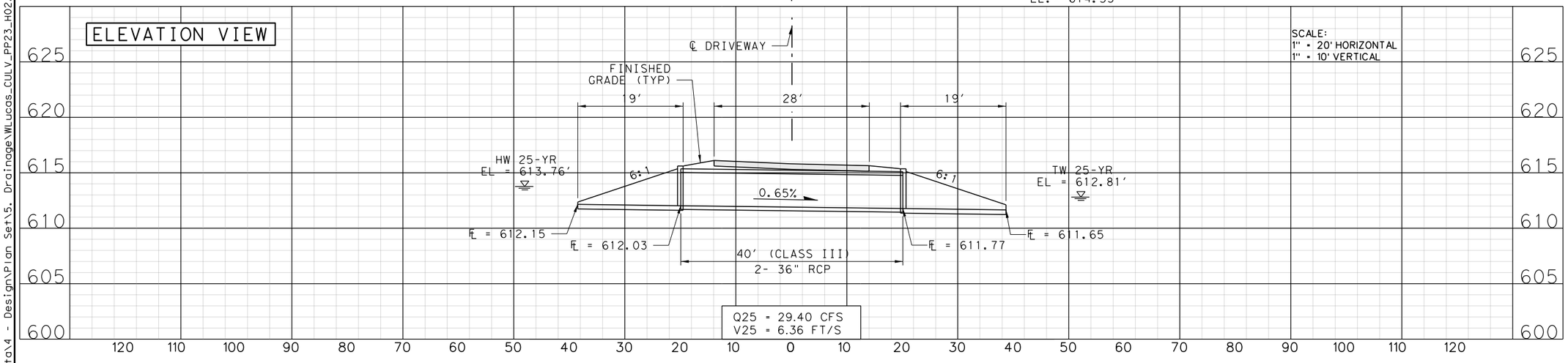
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

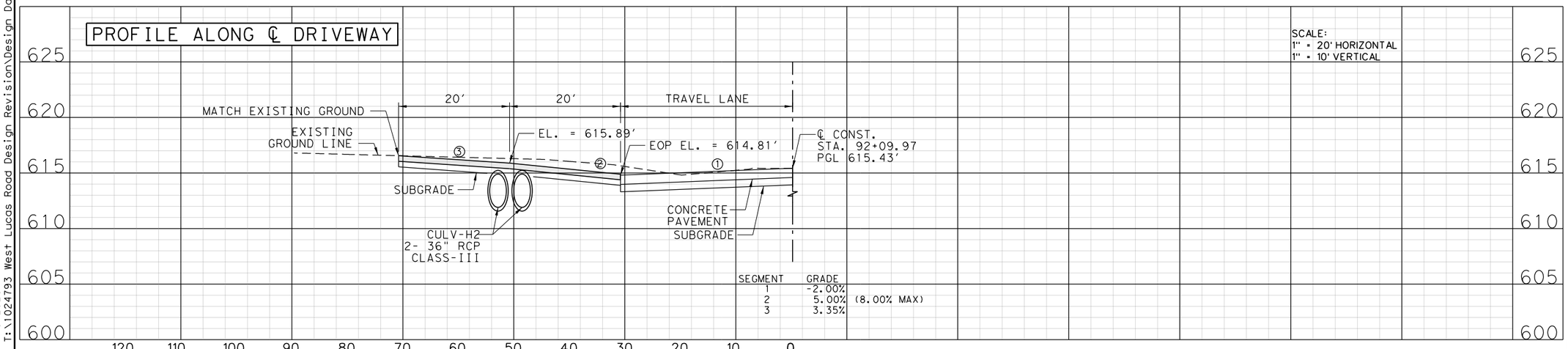
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SEGMENT	GRADE
1	-2.00%
2	5.00% (8.00% MAX)
3	3.35%

SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT H2

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 23 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

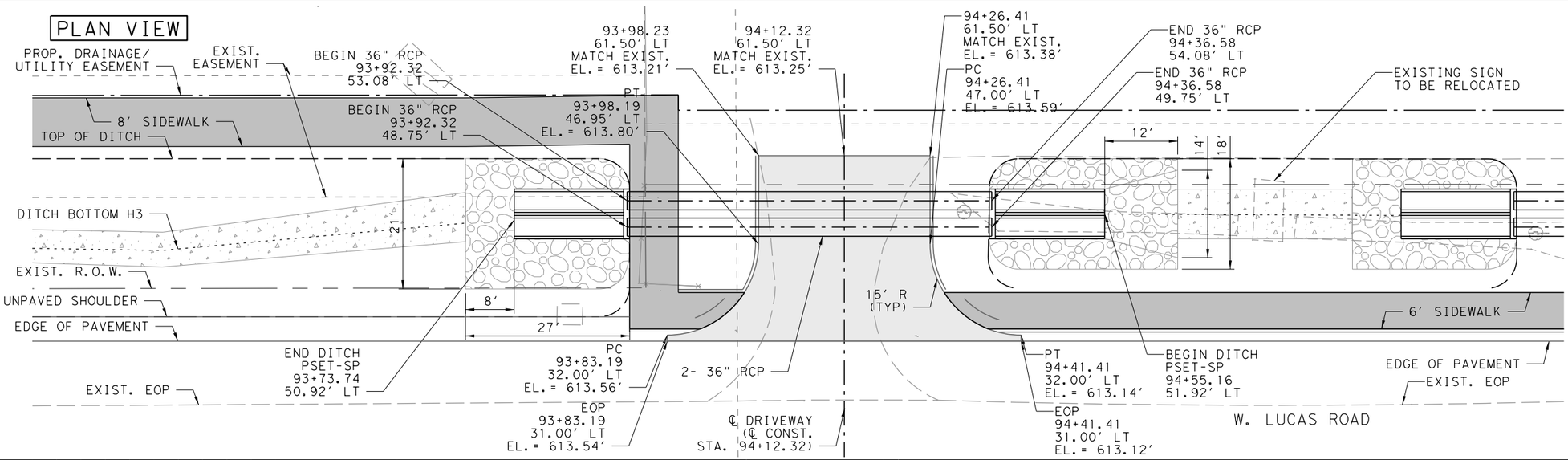
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	204
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:02:40 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\Drainage\WLucas_CULV_PP23_H02.dgn

PLAN VIEW



0 5 20
Feet

N

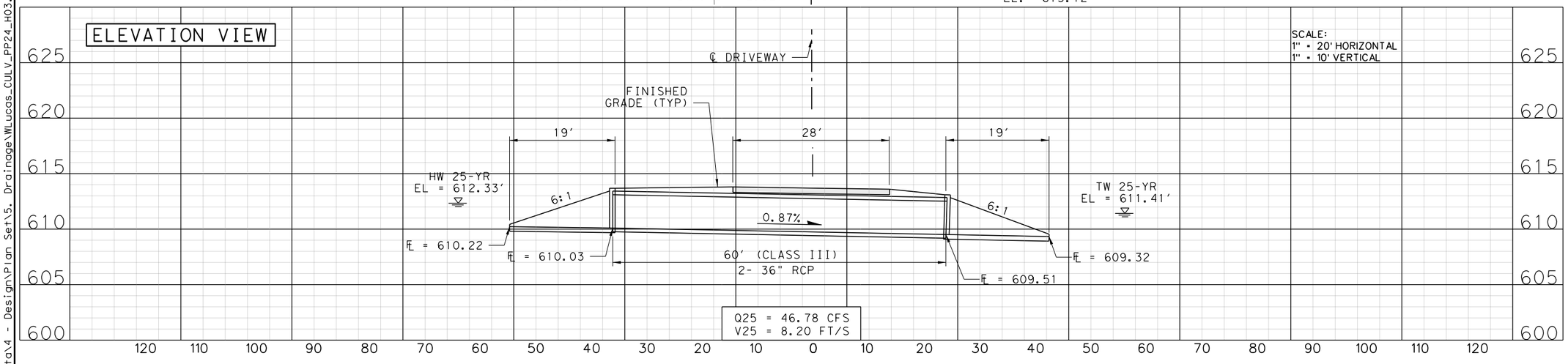
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

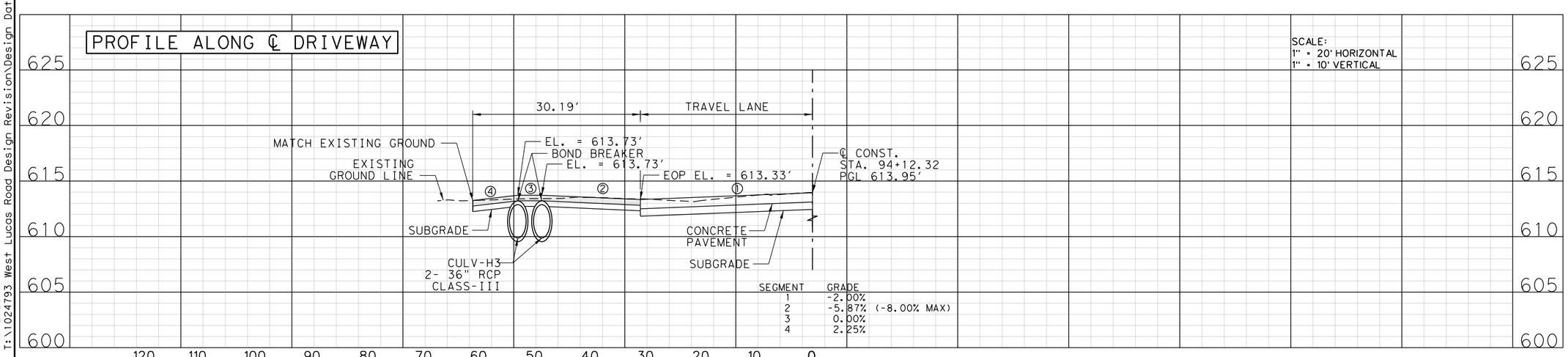
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT H3

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 24 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

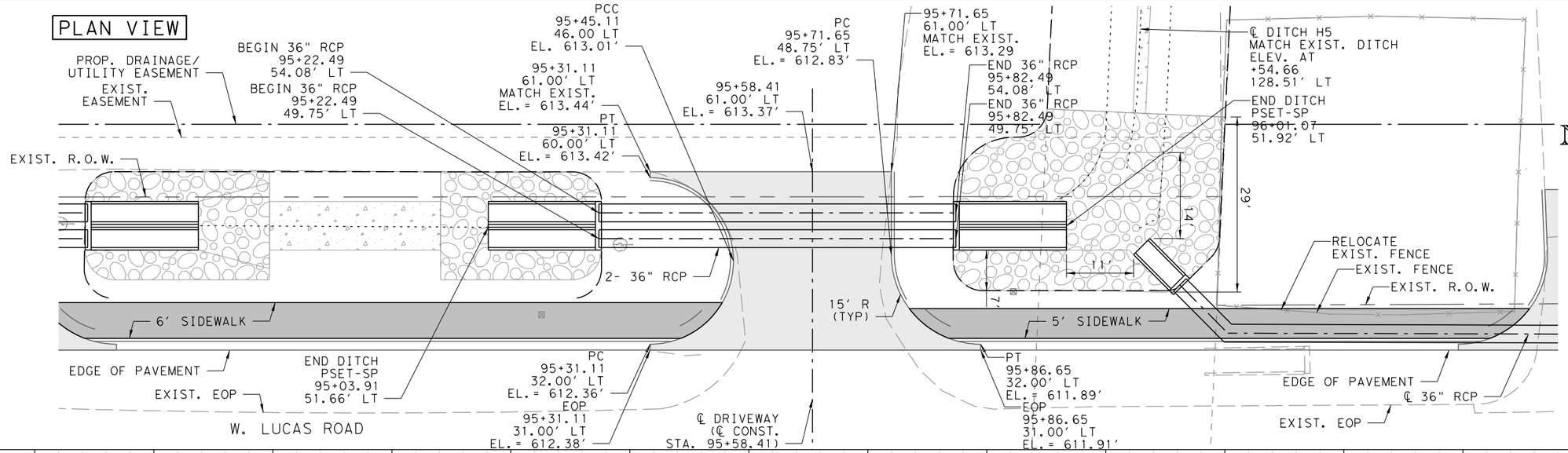
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	205
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:41 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\W Lucas_CULV_PP24_H03.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



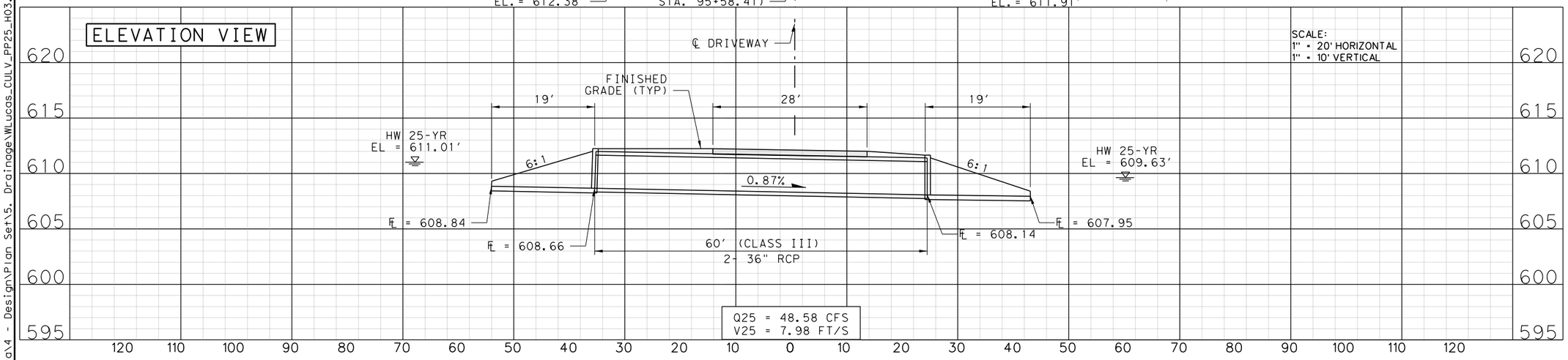
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

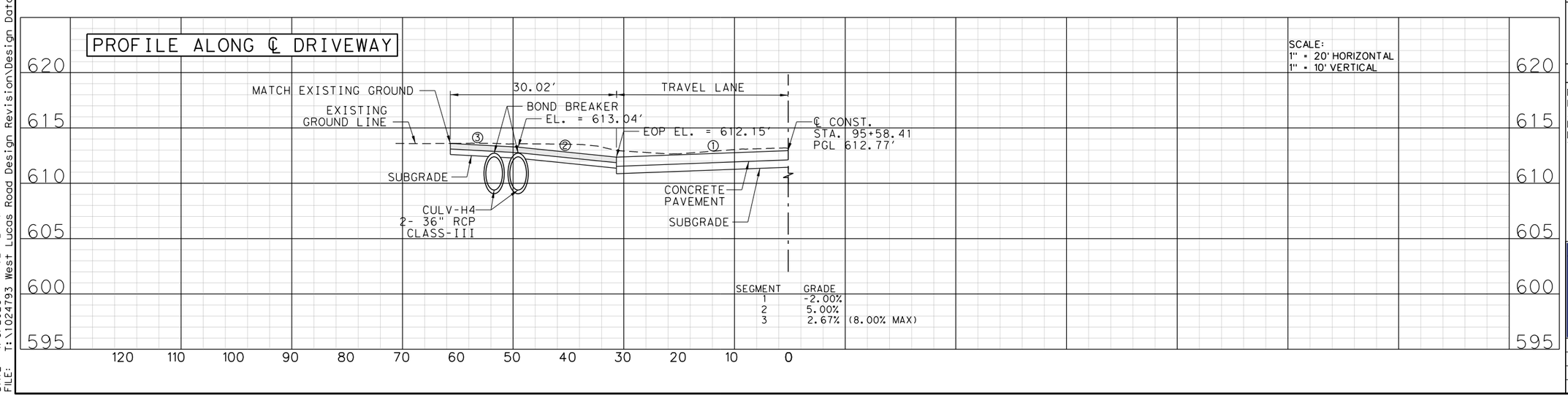
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

SEGMENT	GRADE
1	-2.00%
2	5.00%
3	2.67% (8.00% MAX)

CULVERT H4

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 25 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

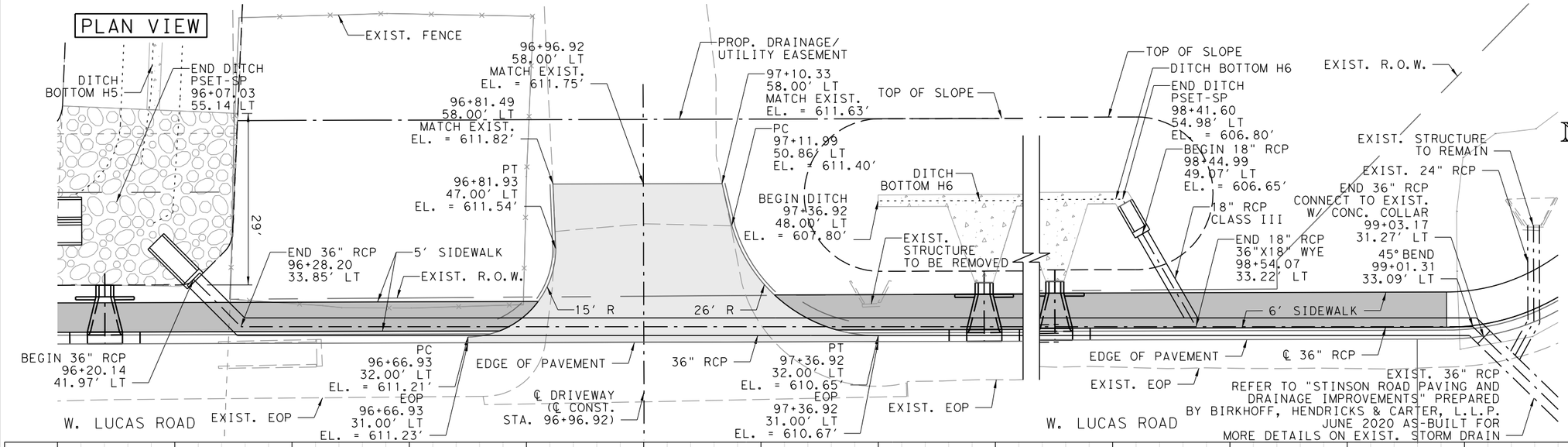
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	206
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:42 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP25_H03.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

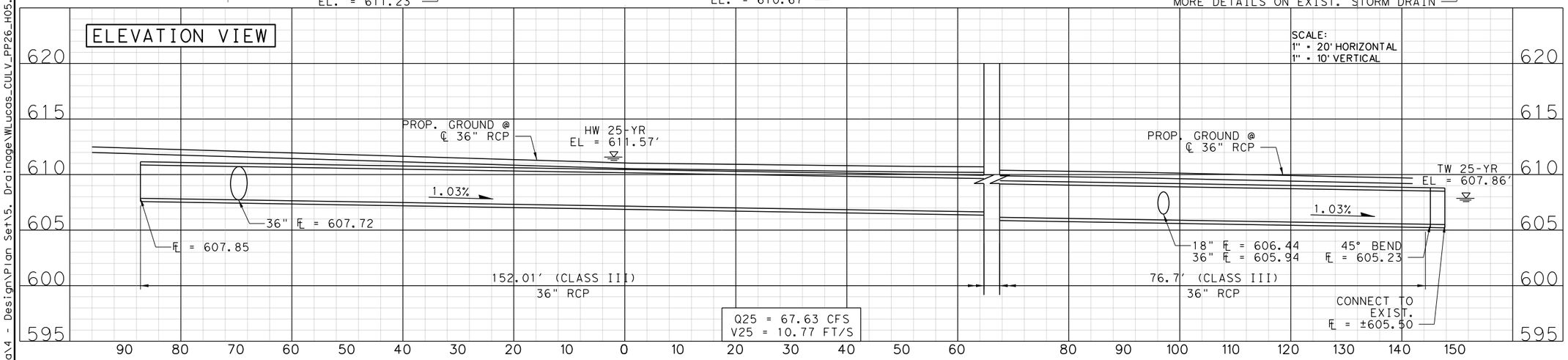
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

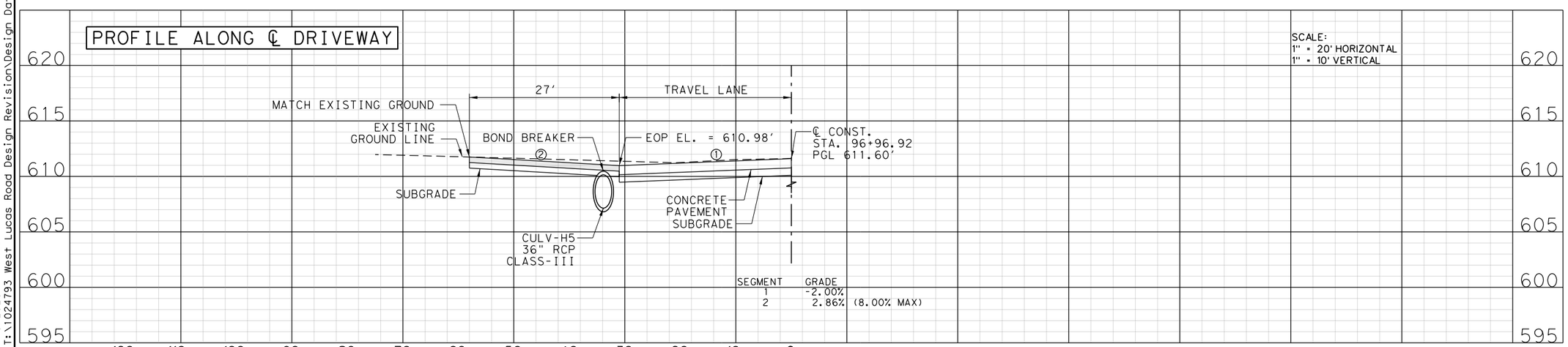
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT H5

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 26 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

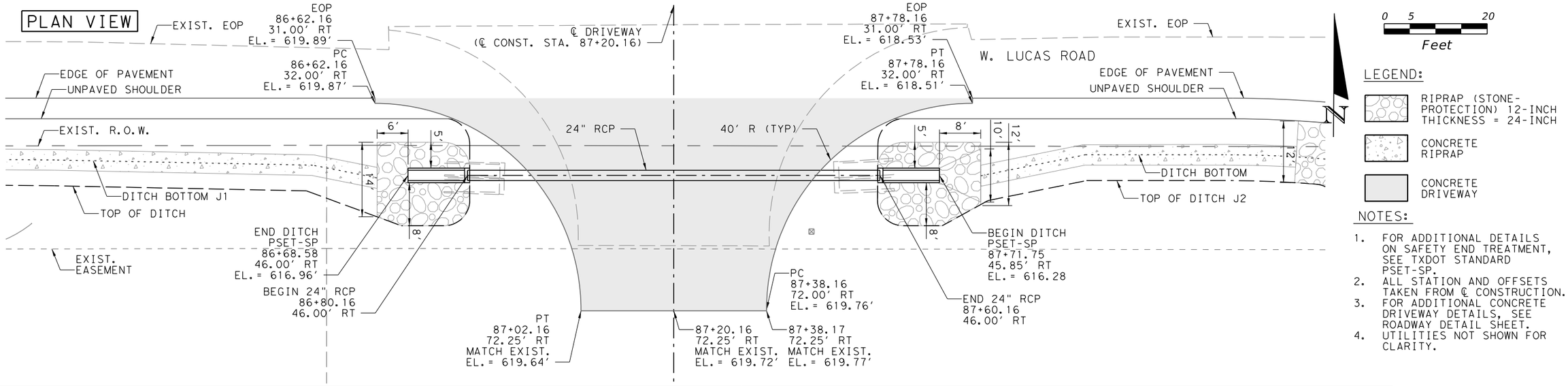
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		207
COLLIN		

DATE: 4/6/2026 4:02:43 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP26_H05.dgn

Texas 811 Know what's below. Call before you dig.

PLAN VIEW



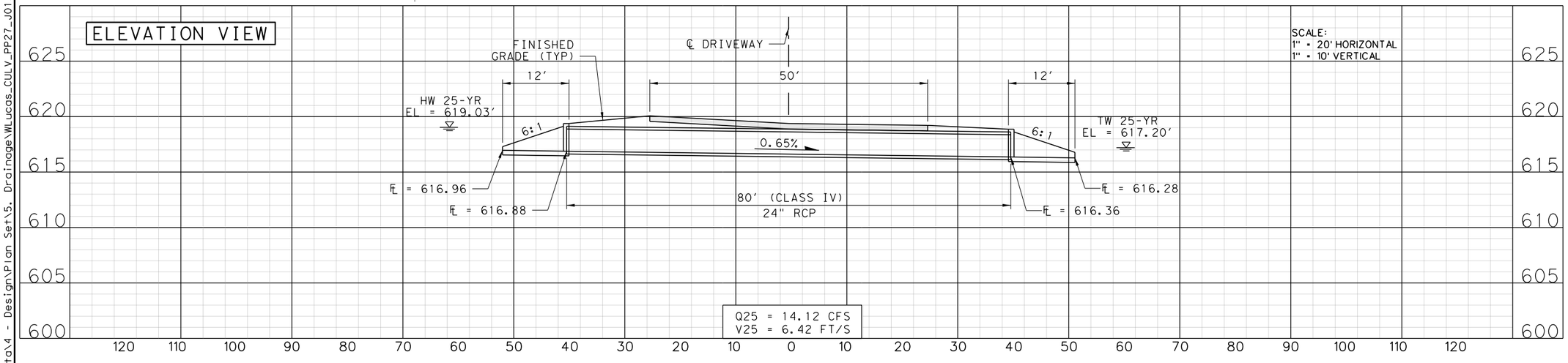
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

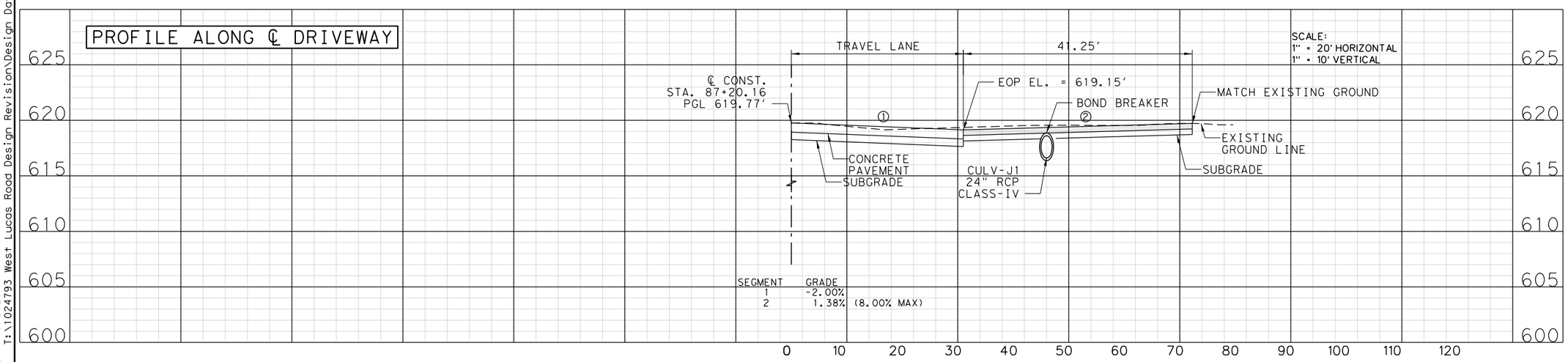
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT J1

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 27 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

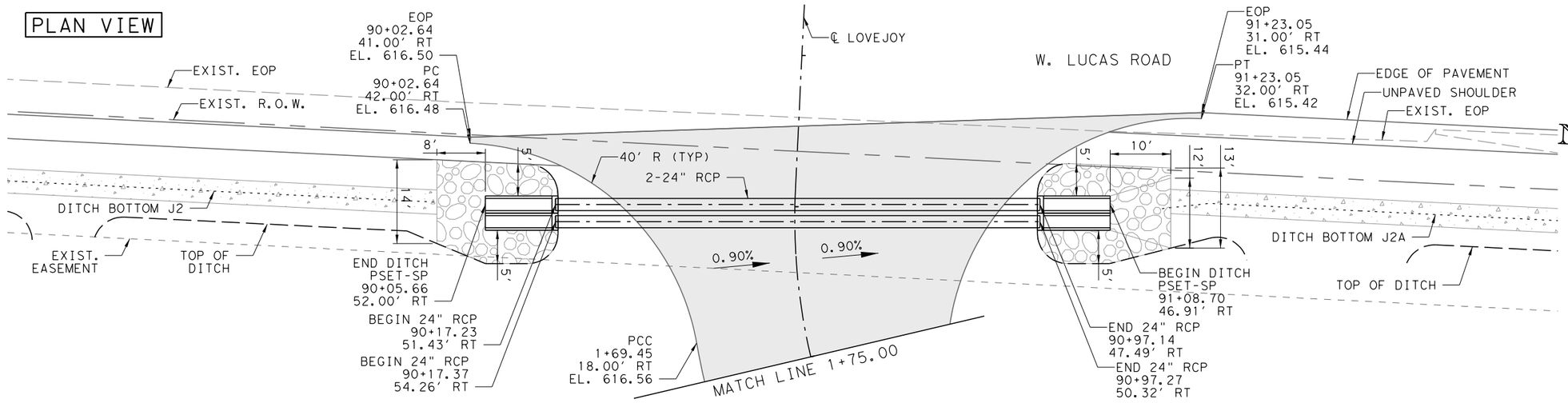
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	208
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:44 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP27_J01.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



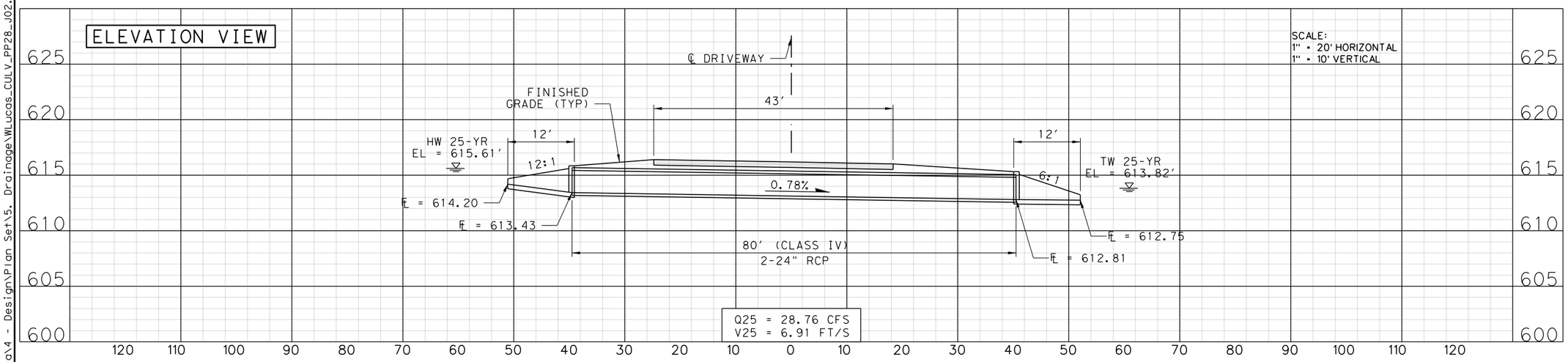
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

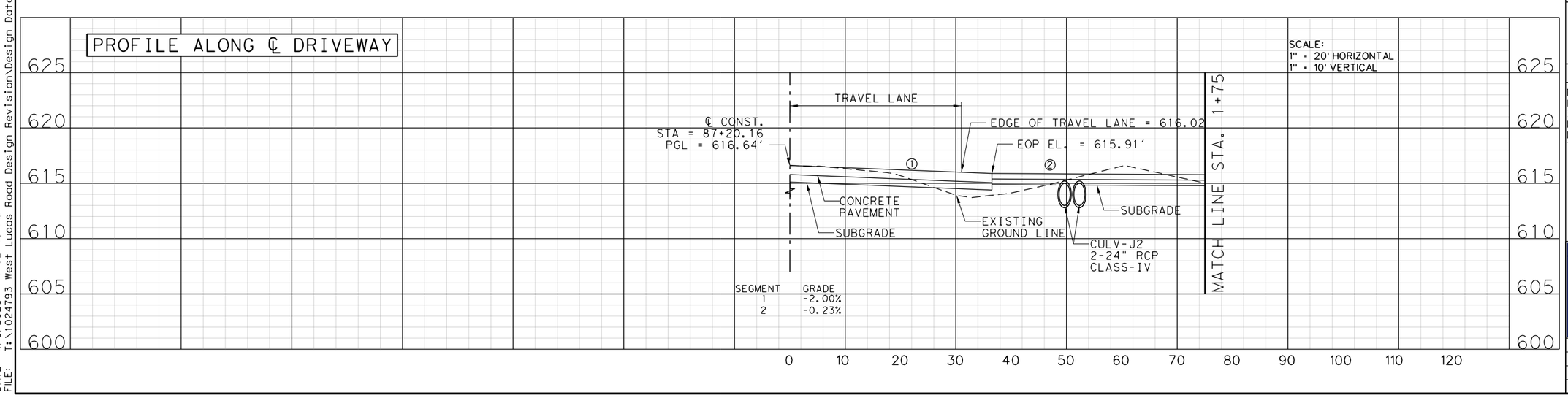
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT J2

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 28 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

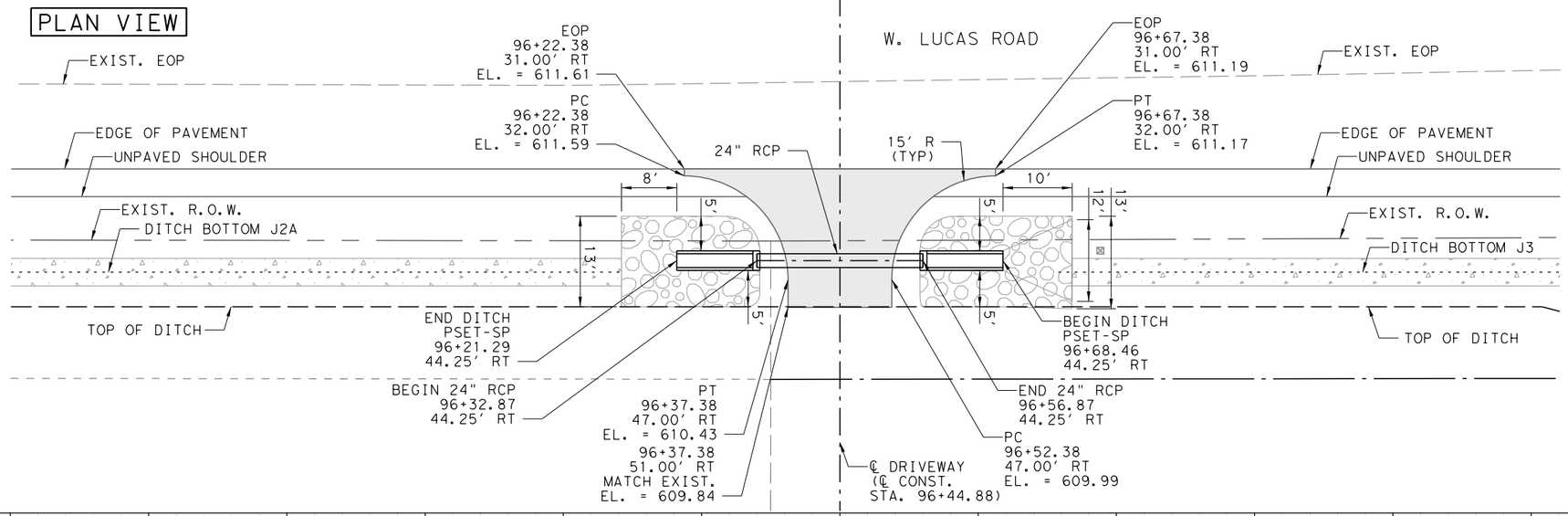
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	209
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:45 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP28_J02.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

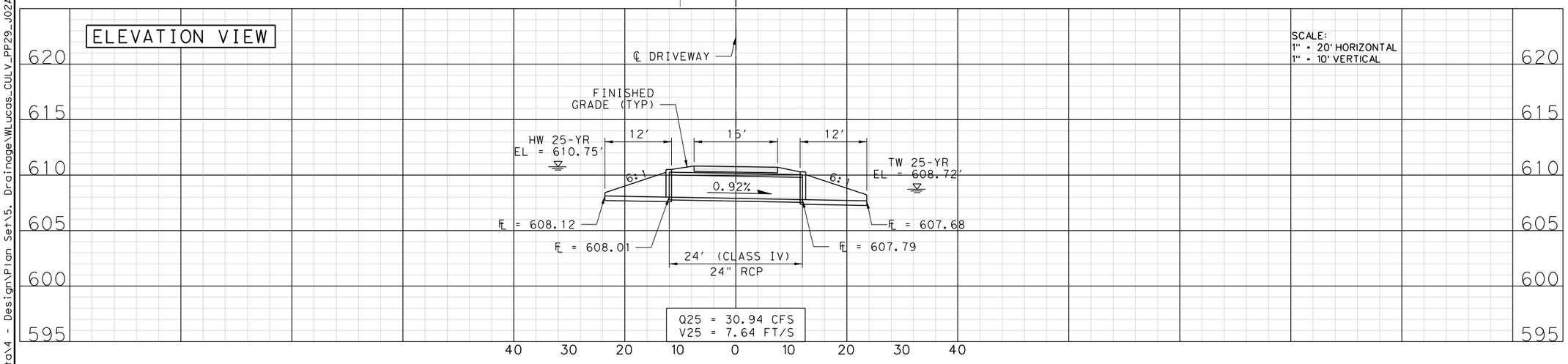
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

NOTES:

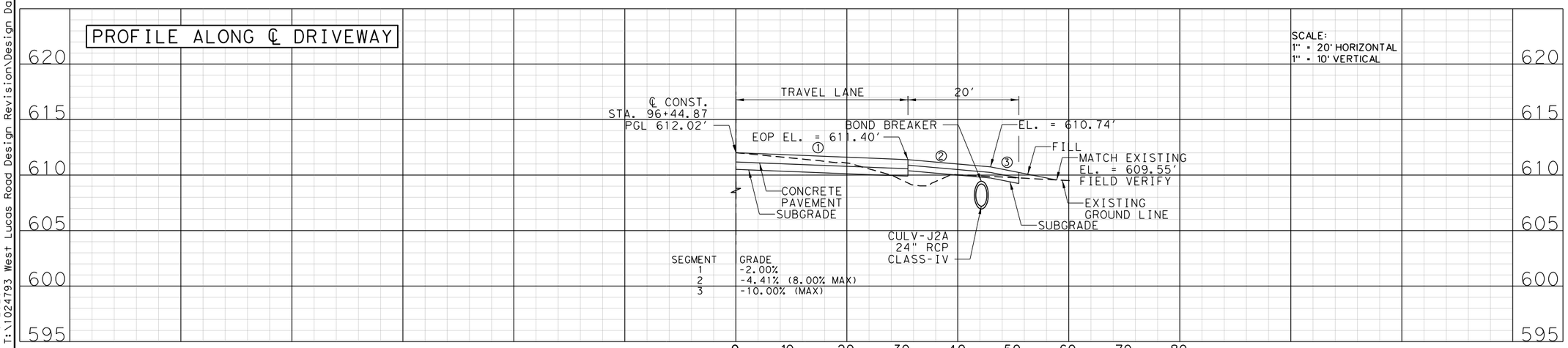
1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

PROFILE ALONG ℄ DRIVEWAY



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

CULVERT J2A

STATE OF TEXAS
NTAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 29 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

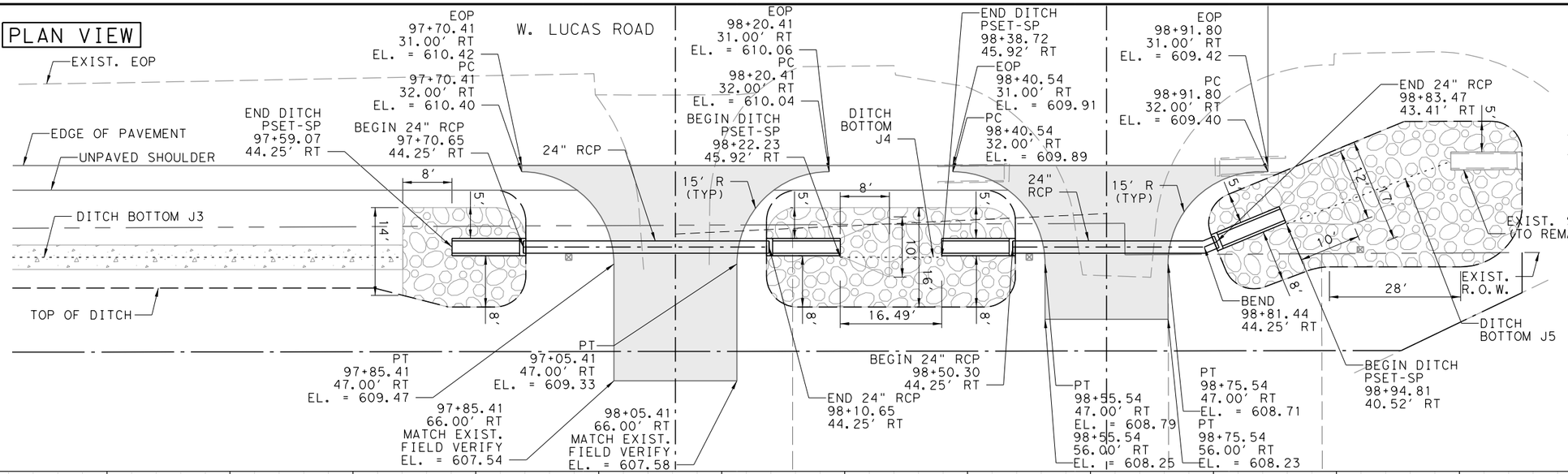
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	210
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:46 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP29_J02A.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW



0 5 20
Feet

N

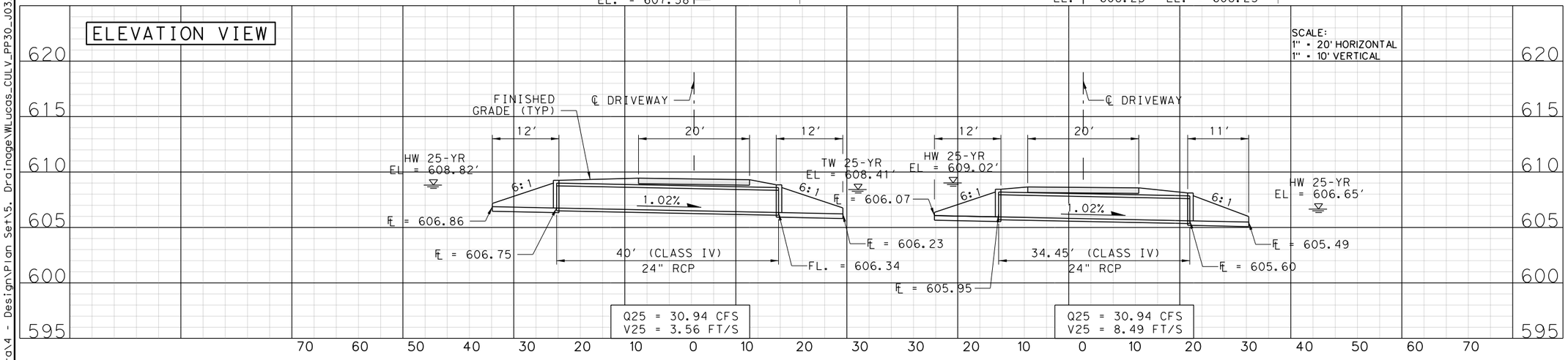
LEGEND:

- RIPRAP (STONE-PROTECTION) 12-INCH THICKNESS = 24-INCH
- CONCRETE RIPRAP
- CONCRETE DRIVEWAY

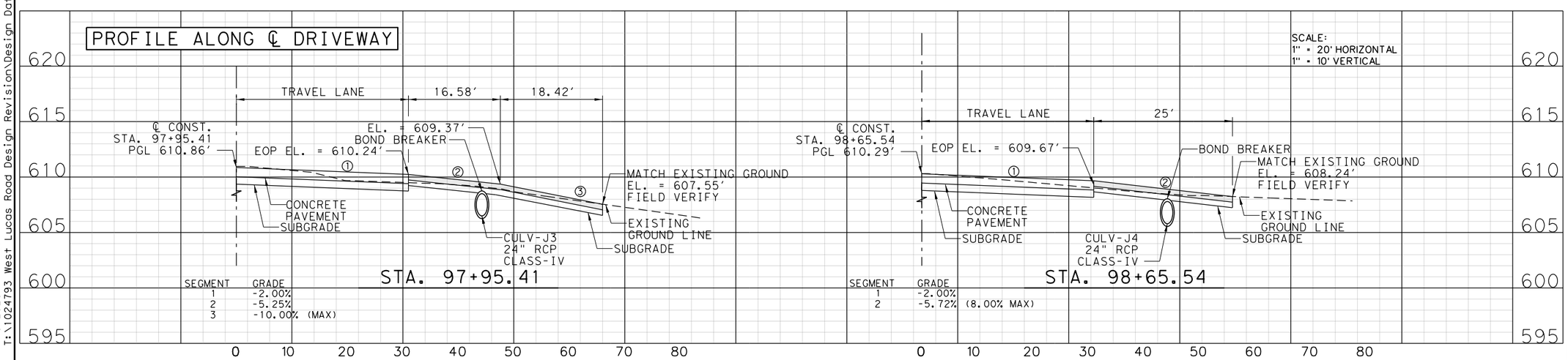
NOTES:

1. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD PSET-SP.
2. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
3. FOR ADDITIONAL CONCRETE DRIVEWAY DETAILS, SEE ROADWAY DETAIL SHEET.
4. UTILITIES NOT SHOWN FOR CLARITY.

ELEVATION VIEW



PROFILE ALONG ℄ DRIVEWAY



CULVERT J3
CULVERT J4

N'TAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

DRIVEWAY & CULVERT LAYOUT

SHEET 30 OF 30

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	211
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:47 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP30_J03_J04.dgn

Texas811 Know what's below. Call before you dig.

PLAN VIEW

NOTES:

1. FOR ADDITIONAL DETAILS ON RCB, SEE TXDOT STANDARD SCP-10 & SCP-MD.
2. FOR ADDITIONAL DETAILS ON HEADWALL, SEE TXDOT STANDARD PW-1.
3. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION WEST LUCAS ROAD.
4. UTILITIES NOT SHOWN FOR CLARITY.
5. CONTACT COSERV 48 HOURS PRIOR TO WORKING NEAR COSERV FACILITIES.
6. WHERE TIMBER POSTS ARE USED WITHIN 4FT OF THE PEDESTRIAN PATH, GRIND BOLTS FLUSH AFTER INSTALLATION OF NUT. WHERE STEEL POSTS ARE USED, PROVIDE STEEL PIPE RAIL ACCORDING TO DETAILS ON THIS SHEET.
7. CULVERT SD1 WAS ANALYZED USING THE U.S. ARMY CORPS OF ENGINEERS HEC-RAS (VERSION 4.10). RUNOFF USED IN THE HYDRAULIC ANALYSIS WAS DEVELOPED USING HEC-HMS (VERSION 4.12). FOR ADDITIONAL DETAILS, REFER TO THE DRAINAGE REPORT, WHICH DOCUMENTS THE HYDROLOGIC AND HYDRAULIC ANALYSES USED TO DERIVE THE DESIGN FLOW (Q) AND THE ASSOCIATED HEADWATER AND TAILWATER ELEVATIONS.

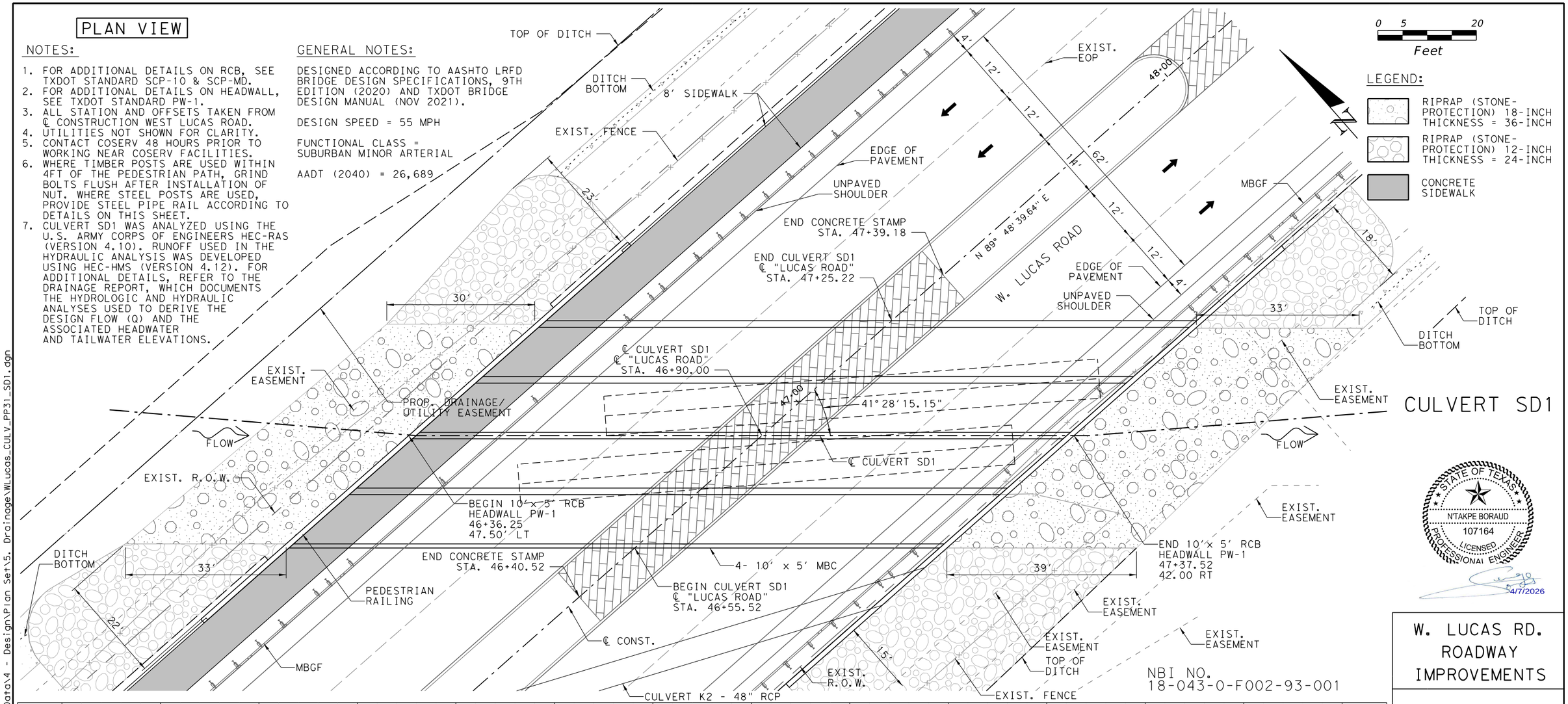
GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION (2020) AND TXDOT BRIDGE DESIGN MANUAL (NOV 2021).

DESIGN SPEED = 55 MPH

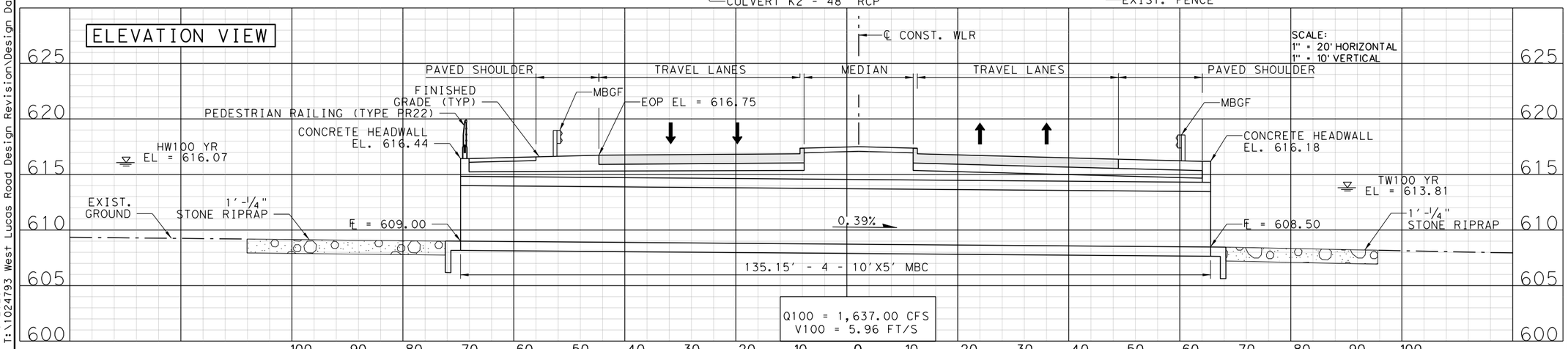
FUNCTIONAL CLASS = SUBURBAN MINOR ARTERIAL

AADT (2040) = 26,689



CULVERT SD1

ELEVATION VIEW



NBI NO.
18-043-0-F002-93-001

STATE OF TEXAS
N'TAKPE BORAUD
107164
LICENSED
PROFESSIONAL ENGINEER
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

BRIDGE CLASS CULVERT LAYOUT

SHEET 1 OF 1

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	212
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:48 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP31_SD1.dgn

Texas 811 Know what's below. Call before you dig.

PLAN VIEW

NOTES:

1. FOR ADDITIONAL DETAILS ON RCB, SEE TXDOT STANDARD SCP-5 & SCP-MD.
2. FOR ADDITIONAL DETAILS ON SAFETY END TREATMENT, SEE TXDOT STANDARD SETB-FW-S.
3. ALL STATION AND OFFSETS TAKEN FROM ℄ CONSTRUCTION.
4. UTILITIES NOT SHOWN FOR CLARITY.
5. THE LOW POINT AT STA. 71+95.02 IS DESIGNED TO TAKE DISCHARGE FROM DRAINAGE BASINS E, F & G (IN EXISTING CONDITION) TO THE SWALE ALONG BEE CAVE ROAD. OUTFLOW LIMITED TO EXISTING RATE.

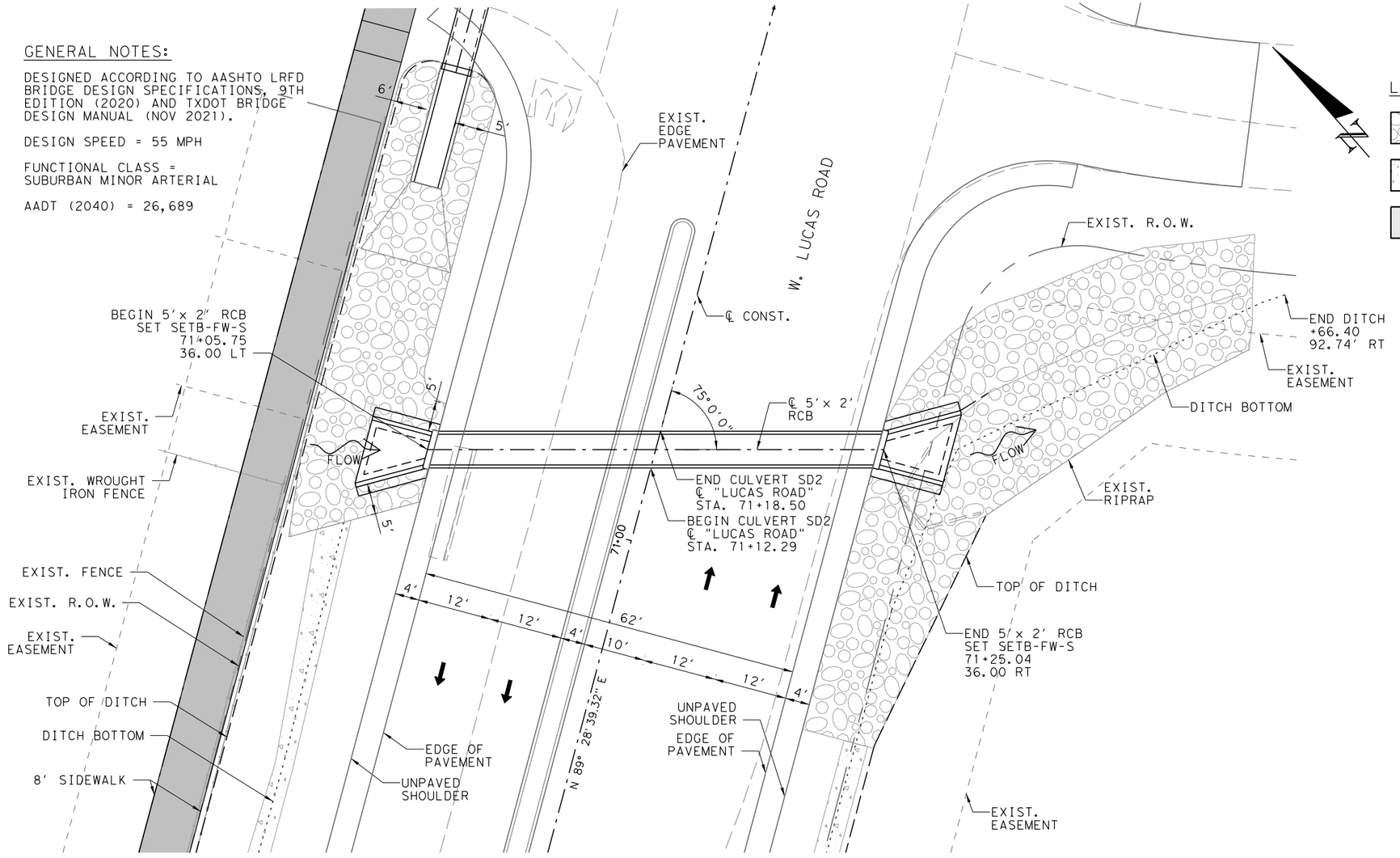
GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION (2020) AND TXDOT BRIDGE DESIGN MANUAL (NOV 2021).

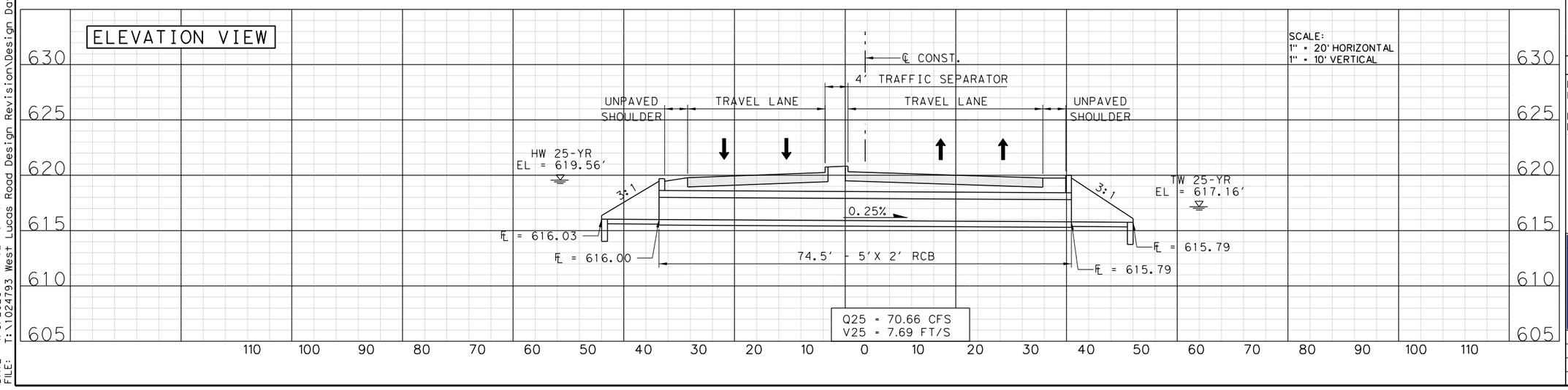
DESIGN SPEED = 55 MPH

FUNCTIONAL CLASS = SUBURBAN MINOR ARTERIAL

AADT (2040) = 26,689



ELEVATION VIEW



SCALE:
1" = 20' HORIZONTAL
1" = 10' VERTICAL

Q25 = 70.66 CFS
V25 = 7.69 FT/S

CULVERT SD2

NTAKPE BORAUD
107164
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
4/7/2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

CROSSING CULVERT LAYOUT

SHEET 1 OF 1

N'TAKPE BORAUD, P.E.
LIC. No. 107164
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	213
COUNTY		
COLLIN		

DATE: 4/6/2026 4:02:49 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\5. Drainage\WLucas_CULV_PP32_SD2.dgn

Texas811 Know what's below. Call before you dig.

Copyright: (c) 2013 Bentley Systems, Incorporated. All rights reserved.
Project: WLR revision
Subject:
Job No. 001 Operator: JK
Date: Wednesday July 16, 2025 9:19 am

SYSTEM FIX 4 ASEC 2 BEAR PRI 0 NOR NE STA 2 FILE: 'FM_HALN_1'

* 1 Describe Chain FM_HALN_1

Chain FM_HALN_1 contains:
FM1 FM2 FM3 FM4 FM5 FM6 FM7 FM8 FM9 FM10 FM11 FM12

Beginning chain FM_HALN_1 description

Point FM1	N	7,083,101.6101	E 2,545,201.9264	Sta 100+00.00
Course from FM1 to FM2 S 44 01′ 58.69" E Dist 29.1716				
Point FM2	N	7,083,080.6375	E 2,545,222.2027	Sta 100+29.17
Course from FM2 to FM3 N 89 46′ 33.77" E Dist 1,182.4417				
Point FM3	N	7,083,085.2593	E 2,546,404.6353	Sta 112+11.61
Course from FM3 to FM4 N 44 32′ 06.28" E Dist 8.4688				
Point FM4	N	7,083,091.2960	E 2,546,410.5749	Sta 112+20.08
Course from FM4 to FM5 N 89 46′ 33.77" E Dist 318.9223				
Point FM5	N	7,083,092.5426	E 2,546,729.4948	Sta 115+39.00
Course from FM5 to FM6 S 45 27′ 53.72" E Dist 20.0473				
Point FM6	N	7,083,078.4825	E 2,546,743.7849	Sta 115+59.05
Course from FM6 to FM7 N 89 32′ 06.28" E Dist 503.5975				
Point FM7	N	7,083,082.5689	E 2,547,247.3658	Sta 120+62.65
Course from FM7 to FM8 N 44 32′ 06.28" E Dist 32.4092				
Point FM8	N	7,083,105.6709	E 2,547,270.0959	Sta 120+95.06
Course from FM8 to FM9 N 89 32′ 06.28" E Dist 761.8833				
Point FM9	N	7,083,111.8531	E 2,548,031.9541	Sta 128+56.94
Course from FM9 to FM10 S 45 27′ 53.72" E Dist 30.3786				
Point FM10	N	7,083,090.5472	E 2,548,053.6087	Sta 128+87.32
Course from FM10 to FM11 N 89 32′ 06.28" E Dist 2,917.4891				
Point FM11	N	7,083,114.2207	E 2,550,971.0017	Sta 158+04.81
Course from FM11 to FM12 S 45 27′ 53.72" E Dist 51.3967				
Point FM12	N	7,083,078.1739	E 2,551,007.6383	Sta 158+56.21

Ending chain FM_HALN_1 description



W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 1

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

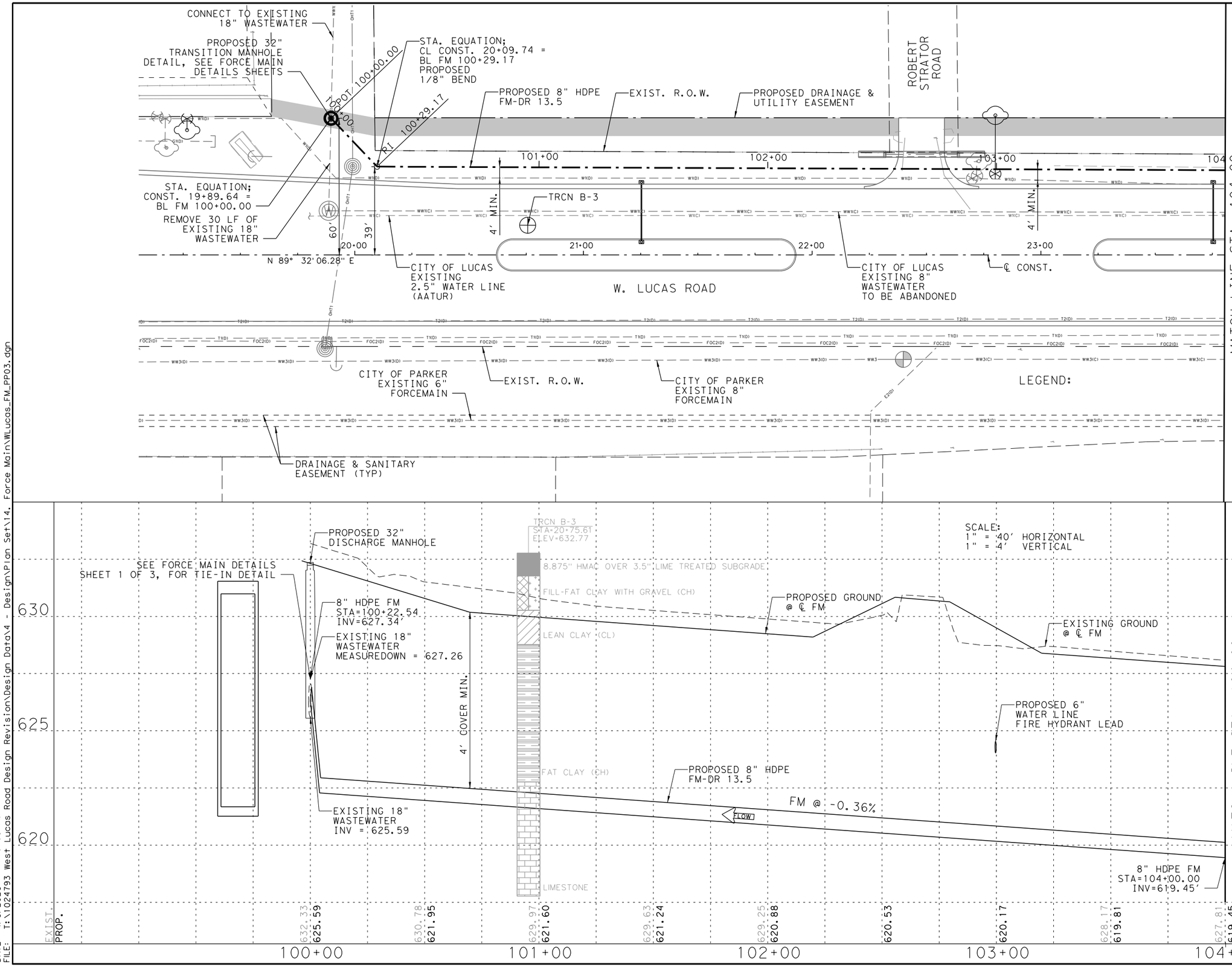
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	214
COUNTY		
COLLIN		

DATE: 4/6/2026 4:10:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_HAD01.dgn

Texas811 Know what's below. Call before you dig.



STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 1 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

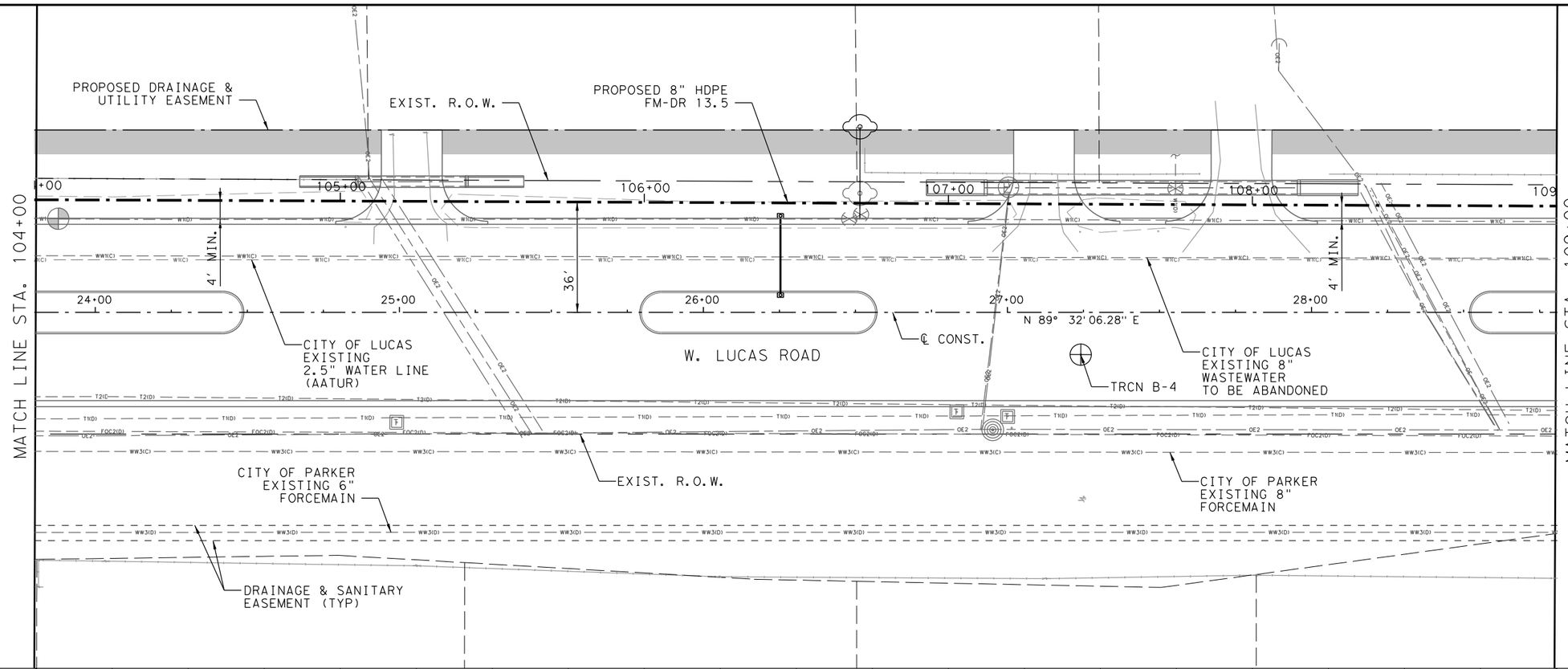
PARSONS

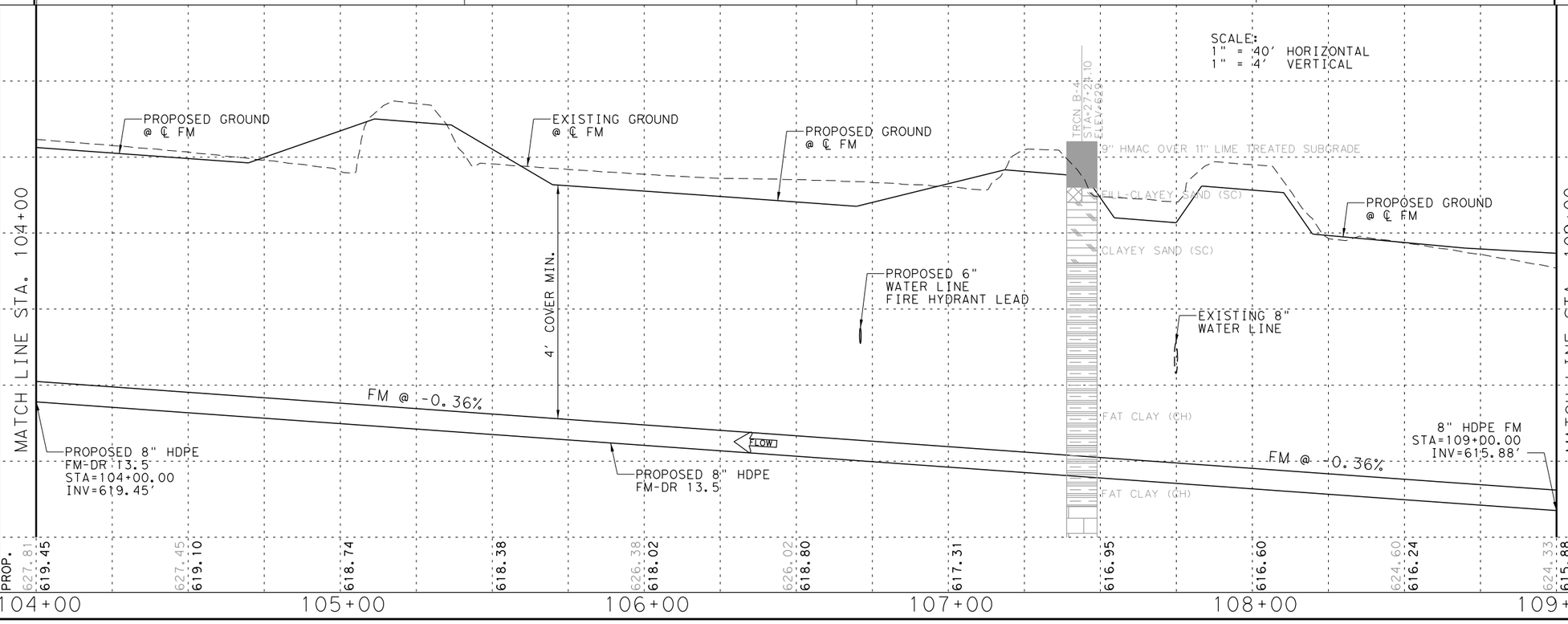
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	215
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:10:05 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP03.dgn





0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 2 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		216
COLLIN		

DATE: 4/6/2026 4:10:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP04.dgn

Texas 811 Know what's below. Call before you dig.

PROPOSED DRAINAGE & UTILITY EASEMENT
PROPOSED 8" HDPE FM-DR 13.5
EXIST. R.O.W.
STA. EQUATION; CL CONST. 31+92.17 = BL FM 112+11.61 PROPOSED 1/8" BEND
STA. EQUATION; CL CONST. 31+98.16 = BL FM 112+20.08 PROPOSED 1/8" BEND
112+11.61 PI
112+20.08 PI
4' MIN.
MATCH LINE STA. 109+00
MATCH LINE STA. 114+00
110+00
111+00
112+00
113+00
29+00
30+00
31+00
32+00
33+00
N 89° 32' 06.28" E
℄ CONST.
W. LUCAS ROAD
TRCN B-5
PI 33+09.64
CITY OF LUCAS EXISTING 2.5" WATER LINE (AATUR)
CITY OF LUCAS EXISTING 8" WASTEWATER TO BE ABANDONED
EXIST. R.O.W.
CITY OF PARKER EXISTING 8" FORCEMAIN
CITY OF PARKER EXISTING 6" FORCEMAIN
DRAINAGE & SANITARY EASEMENT (TYP)
CRATON BONE DR.

0 10 40
Feet

NOTES:
1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

SCALE:
1" = 40' HORIZONTAL
1" = 4' VERTICAL

PROPOSED GROUND @ ℄ FM
EXISTING GROUND @ ℄ FM
PROPOSED GROUND @ ℄ FM
7" HMAC OVER 7" LIME TREATED SUBGRADE
FILL-FAT CLAY (CH)
FAT CLAY (CH)
LIMESTONE
LIMESTONE
TRCN B-5 STA=33+09.64 ELE=624.15
EXISTING 12" WATER LINE
EXISTING 12" WATER LINE
PROPOSED 6" WATER LINE FIRE HYDRANT LEAD
4' COVER MIN.
FM @ -0.36%
FM @ -0.36%
FLOW
8" HDPE FM STA=109+00.00 INV=615.88'
PROPOSED 8" HDPE FM-DR 13.5
8" HDPE FM STA=114+00.00 INV=612.31'

625
620
615
610

EXIST. PROP. 624.33 615.88
624.04 615.52
624.04 615.17
614.81
614.45
622.86 614.09
621.66 613.74
620.38 613.38
613.02
612.66
EXIST. PROP. 612.31

109+00 110+00 111+00 112+00 113+00 114+00

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 3 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

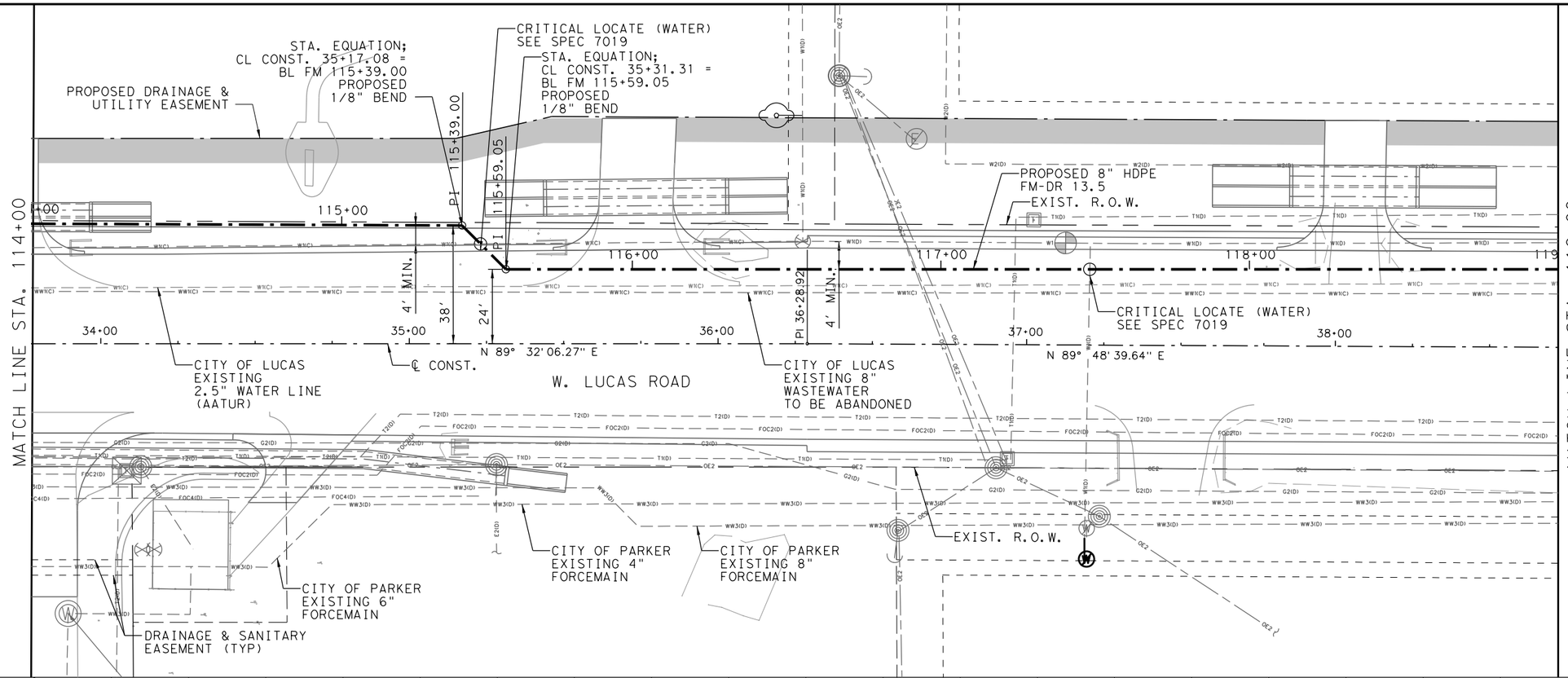
PARSONS

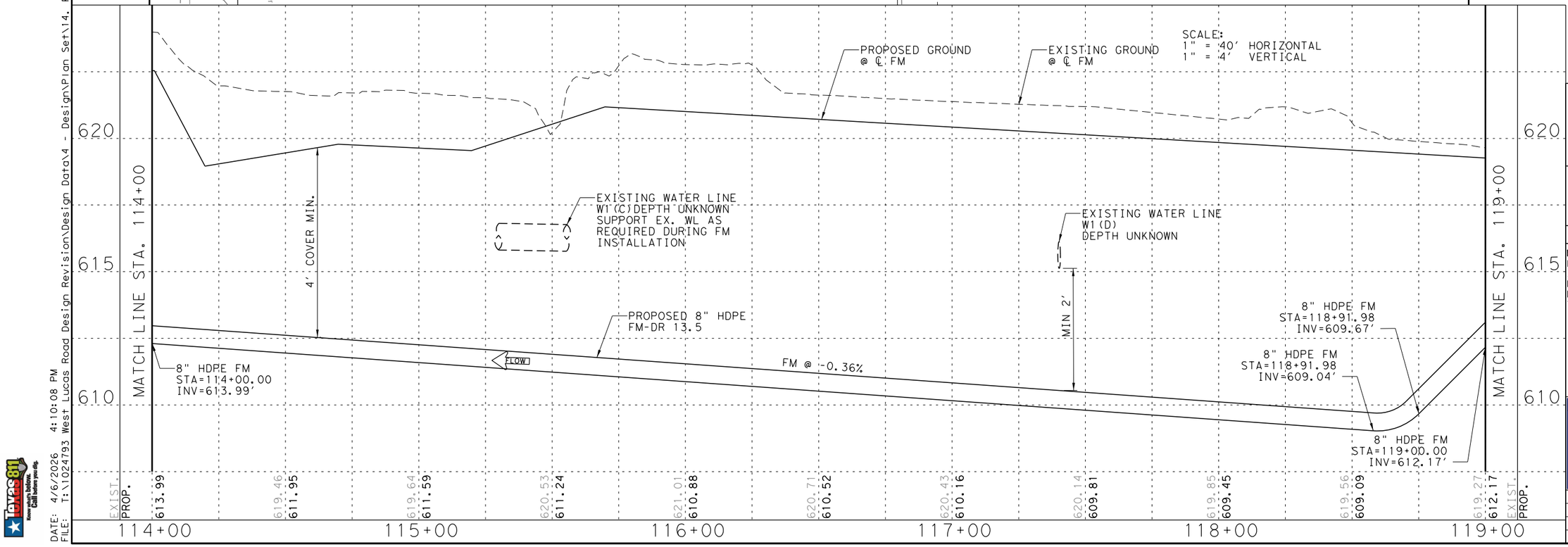
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		217
COLLIN		

DATE: 4/6/2026 4:10:07 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14_Force Main\WLucas_FM_PP05.dgn

Texas 811 Know what's below. Call before you dig.





0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED
PROFESSIONAL ENGINEER
4/4/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 4 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

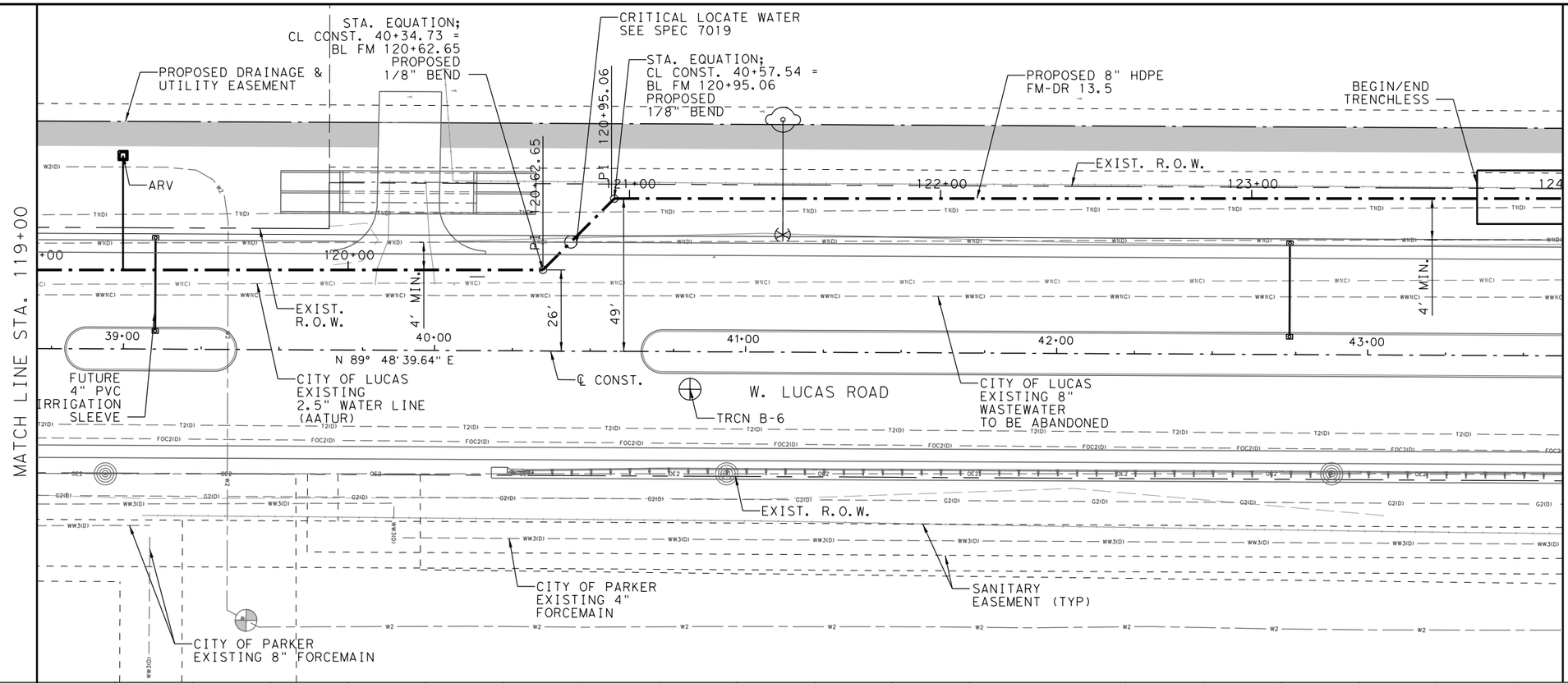
PARSONS

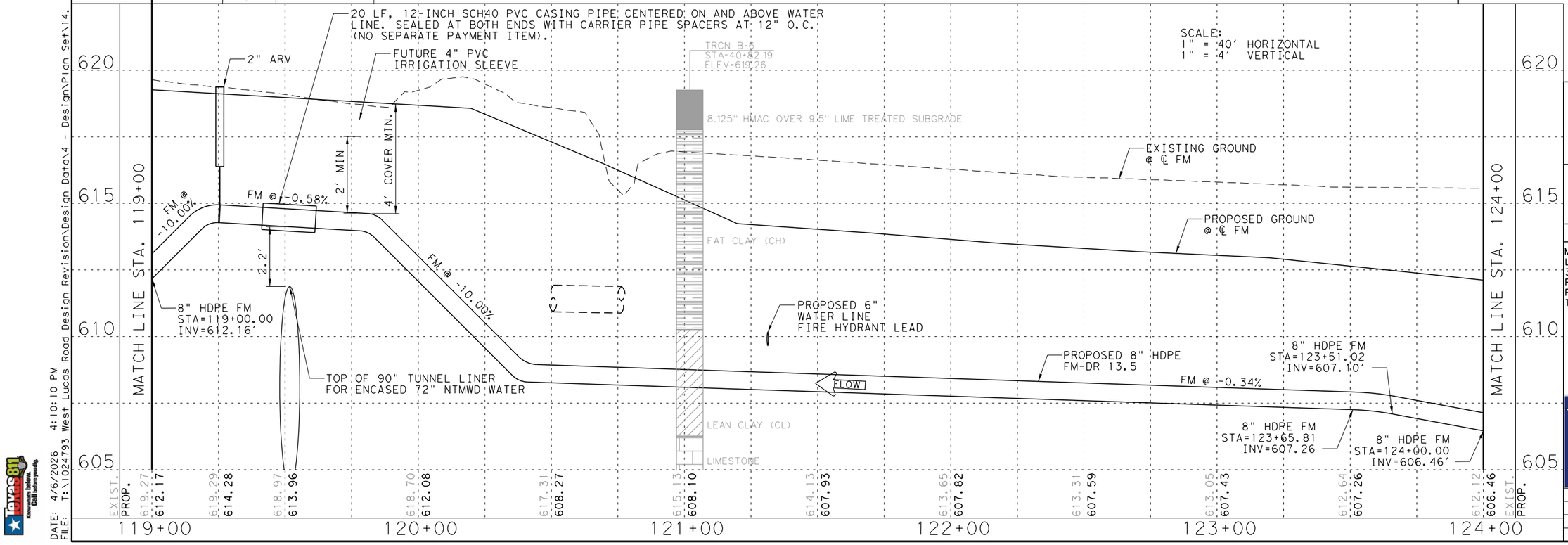
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	218
COUNTY		
COLLIN		

Texas811
Know what's below.
Call before you dig.

DATE: 4/6/2026 4:10:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP06.dgn





0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED
PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 5 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

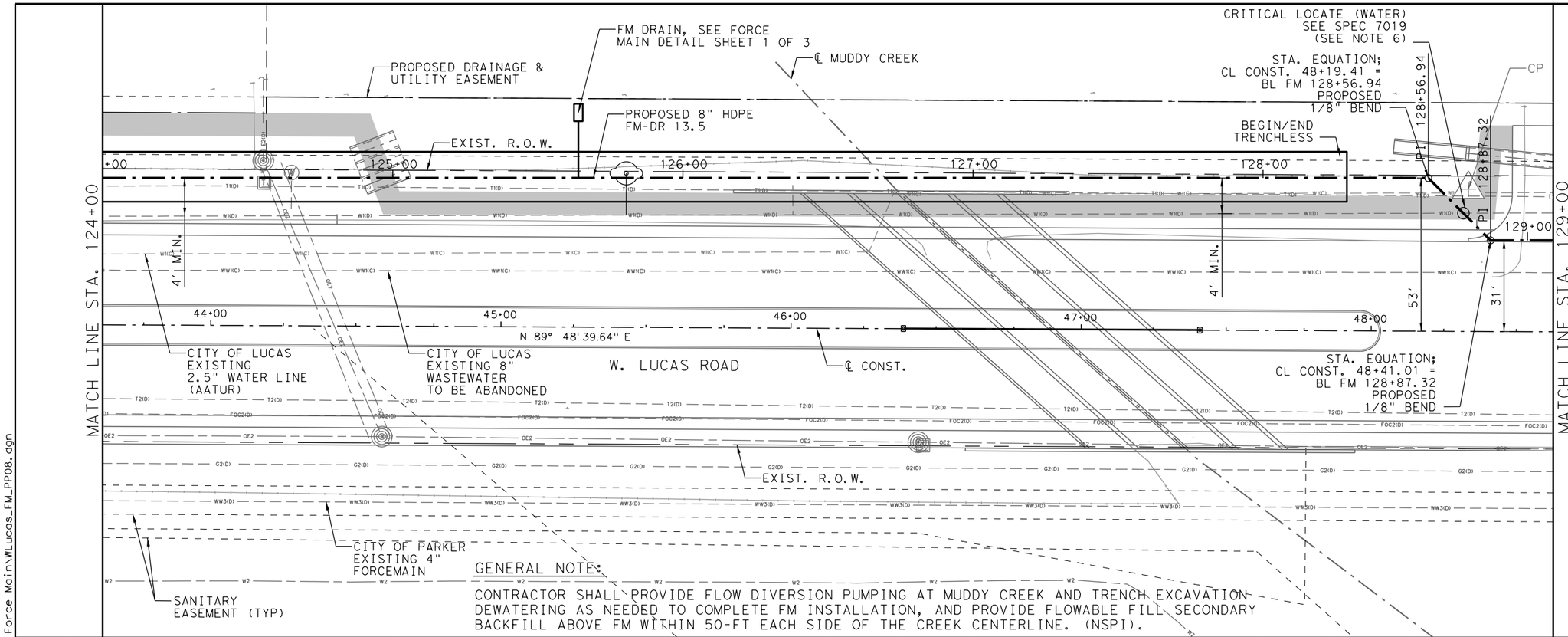
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	219
COUNTY		
COLLIN		

Texas811
Know what's below.
Call before you dig.

DATE: 4/6/2026 4:10:10 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP07.dgn



0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED
PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 6 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

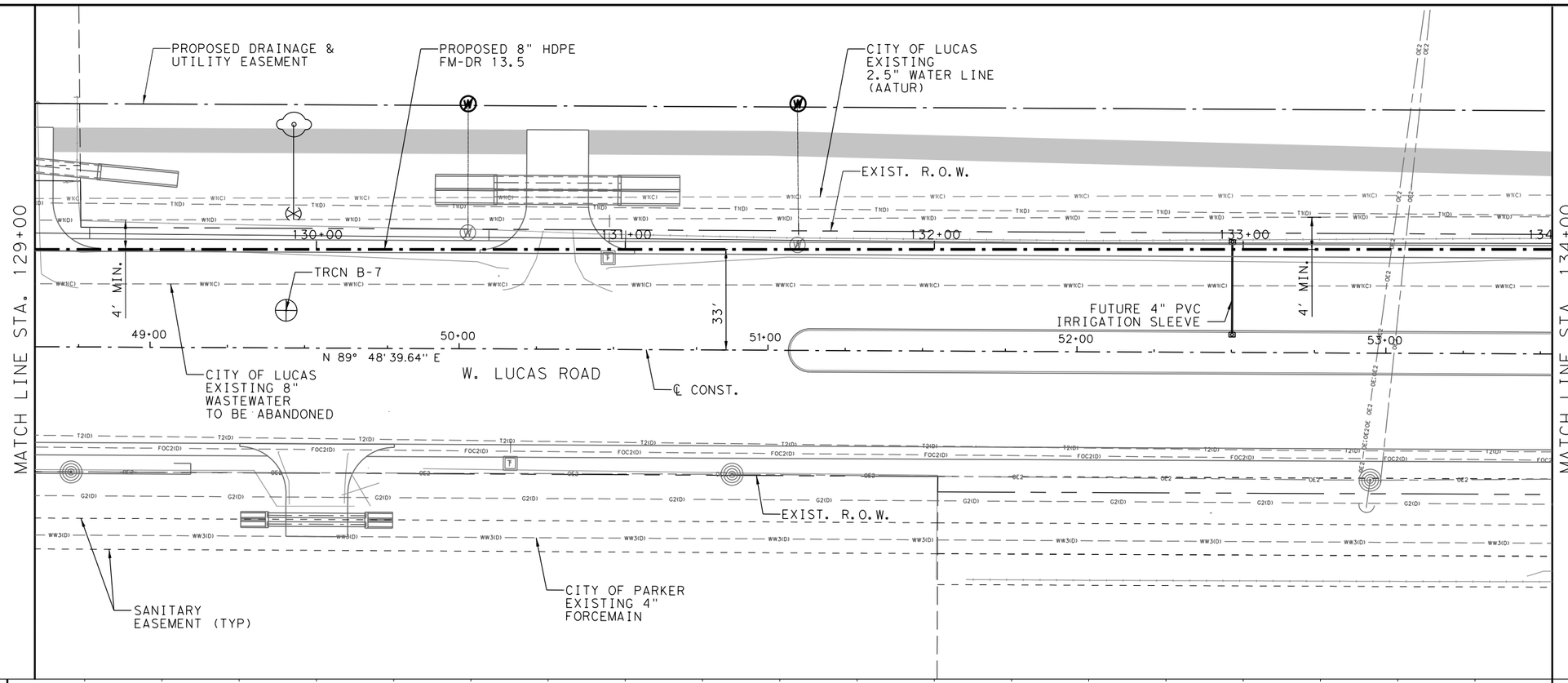
PARSONS

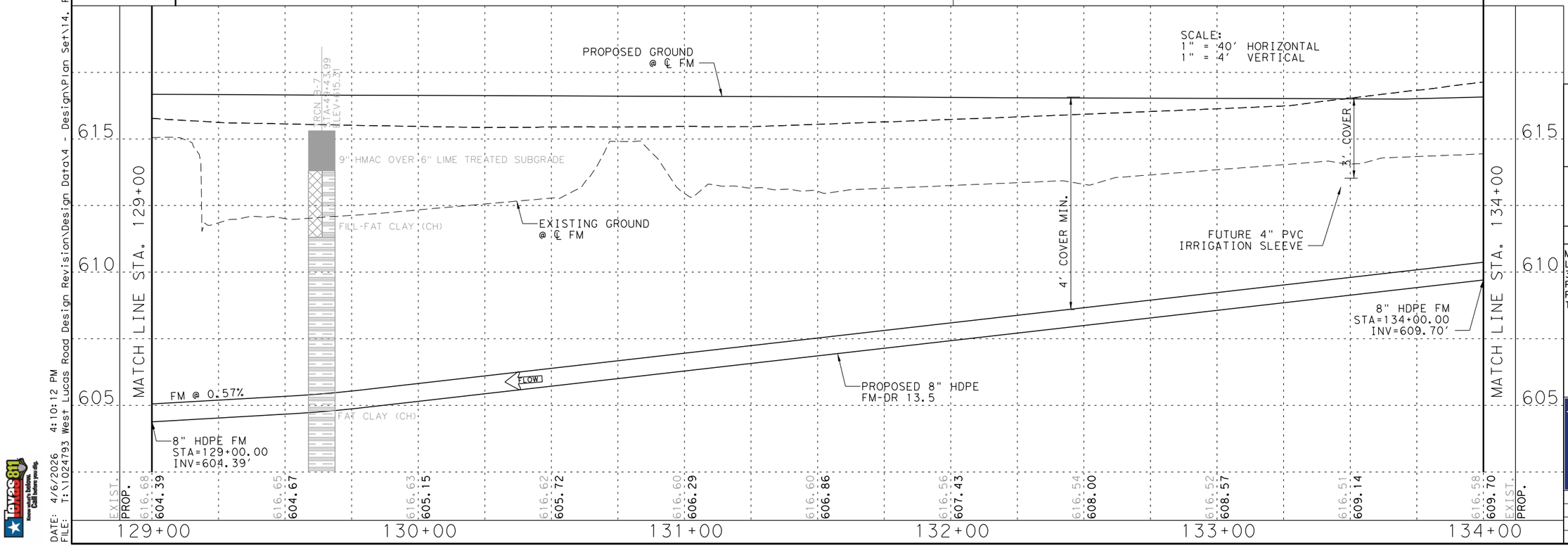
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	220
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:10:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP08.dgn





0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 7 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

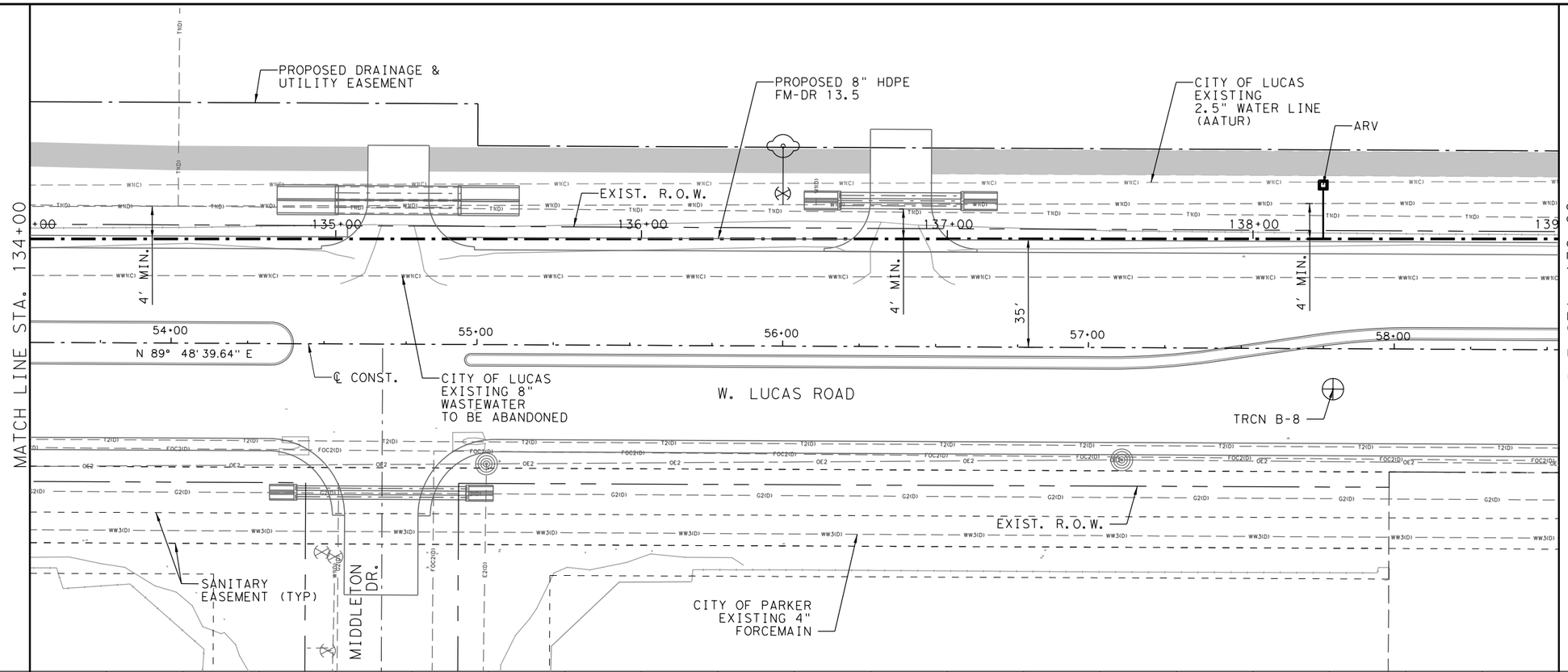
PARSONS

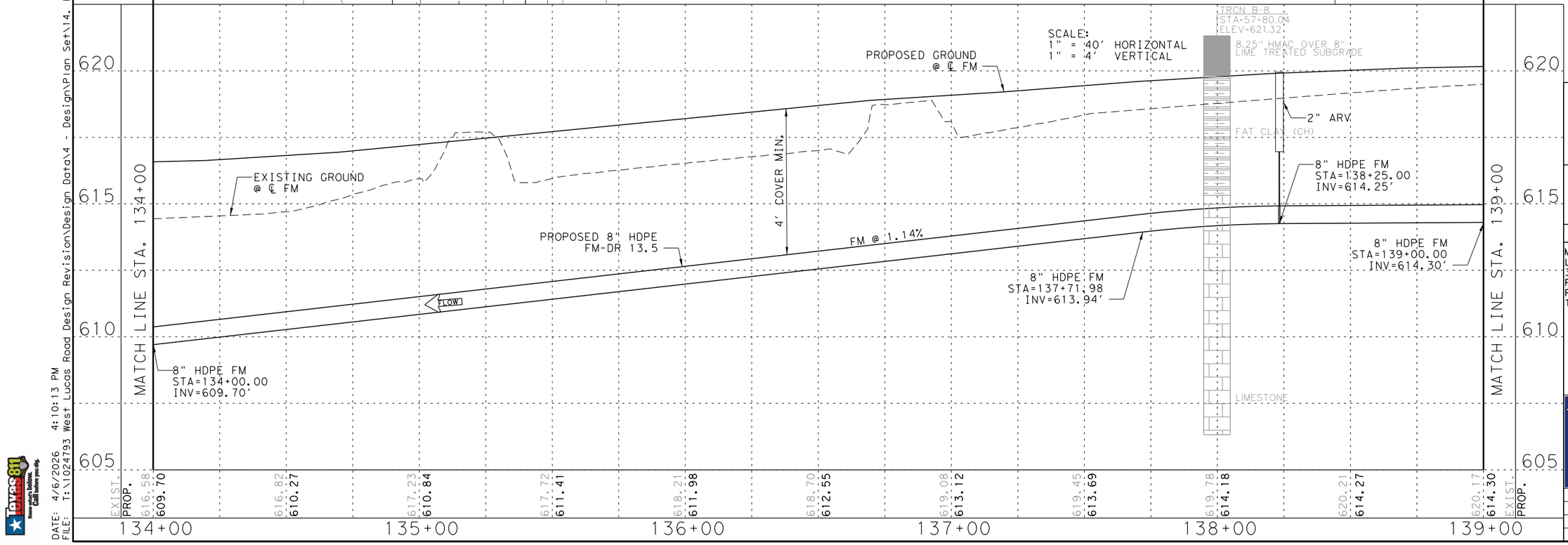
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		221
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:10:12 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP09.dgn





0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 8 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

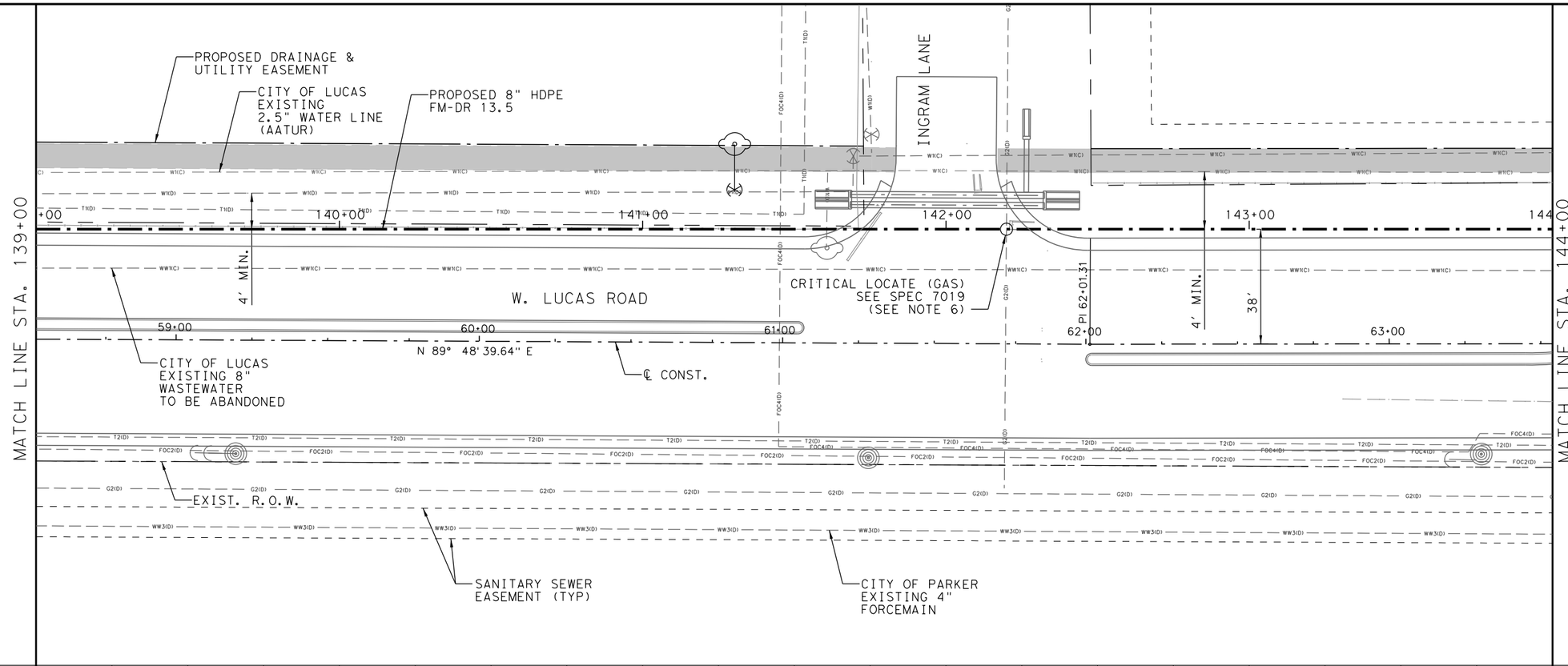
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		222
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:10:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP10.dgn



STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 9 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

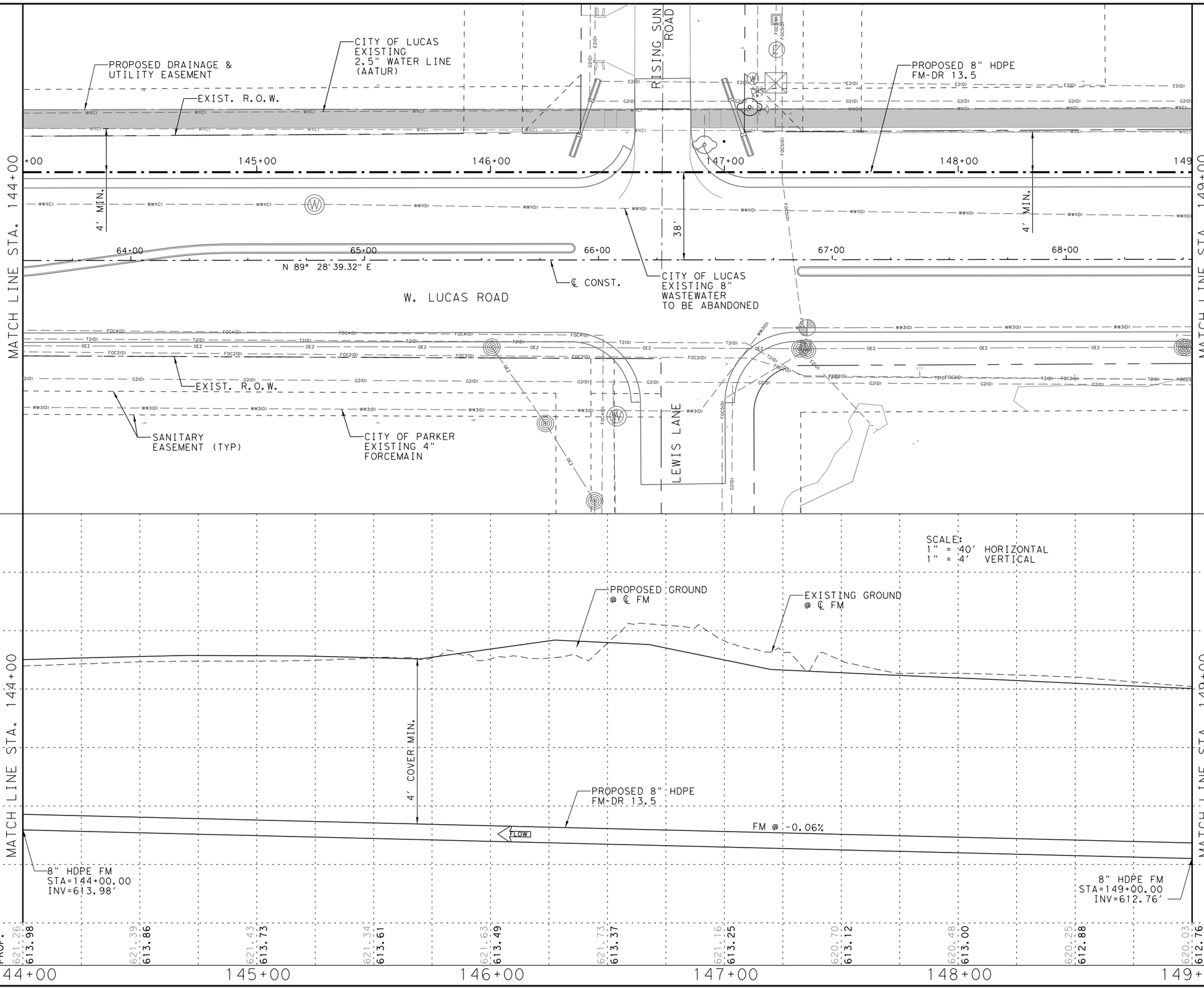
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		223
COLLIN		

DATE: 4/6/2026 4:10:15 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP11.dgn

Texas 811 Know what's below. Call before you dig.



0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 10 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

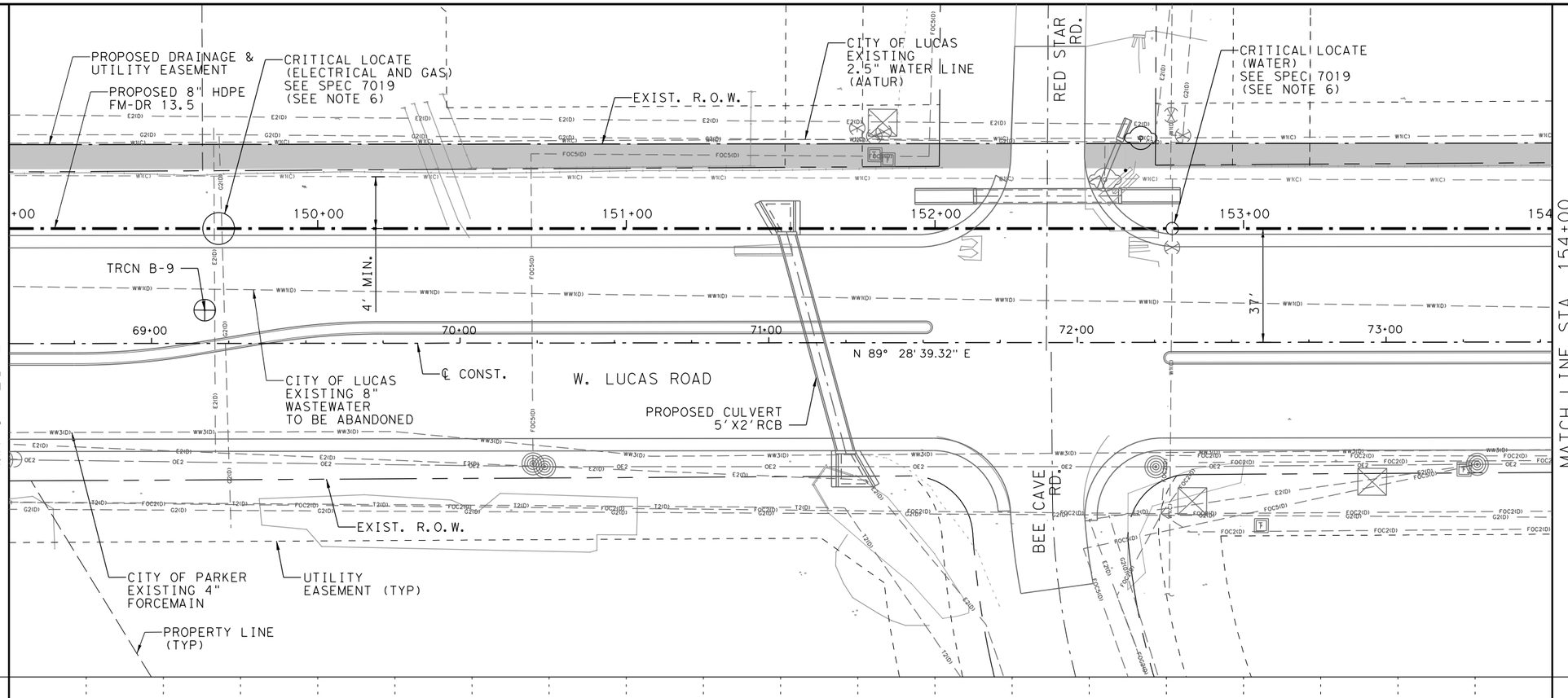
PARSONS

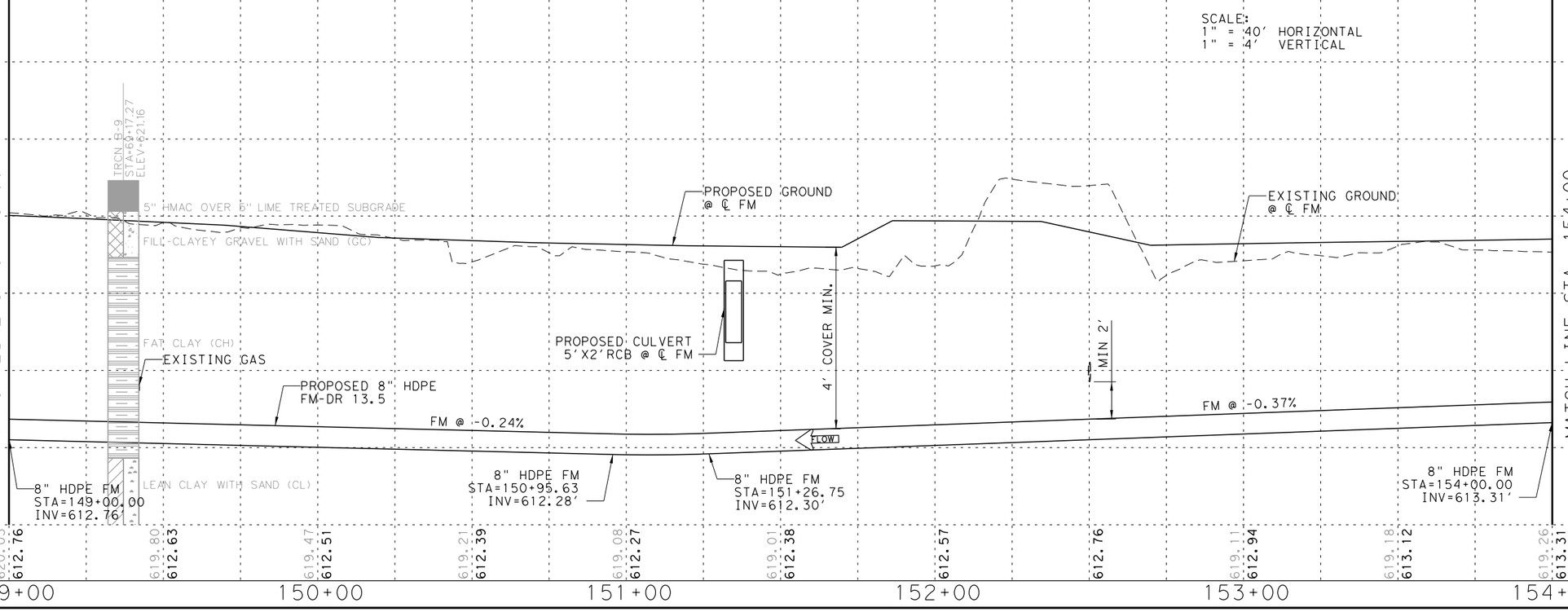
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		224
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:10:16 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP12.dgn





0 10 40
Feet

NOTES:

1. HDPE PIPE TO BE HEAT FUSED CONFORMING TO ASTM D 2657.
2. CONTRACTOR SHALL PROTECT AND SUPPORT ALL EXISTING UTILITIES AT CROSSINGS WITH THE FORCE MAIN.
3. CULVERT K2 NOT SHOWN FOR CLARITY.
4. OVERHEAD ELECTRIC AND POLES NOT SHOWN FOR CLARITY.
5. THE CONTRACTOR SHALL PERFORM CRITICAL LOCATES TO DETERMINE THE DEPTH AND LOCATION OF UTILITIES PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITIES.
6. UNLESS OTHERWISE NOTED DEPTH OF ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE.

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 11 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

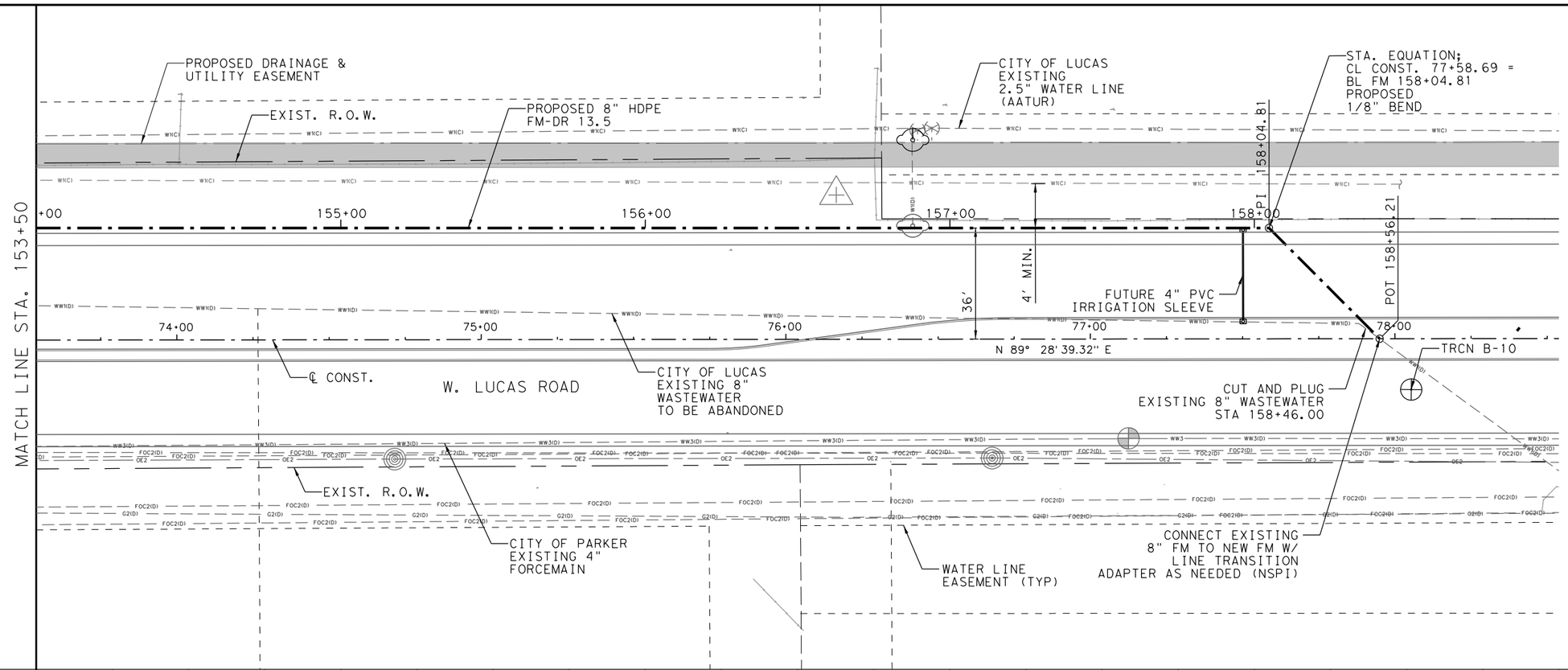
PARSONS

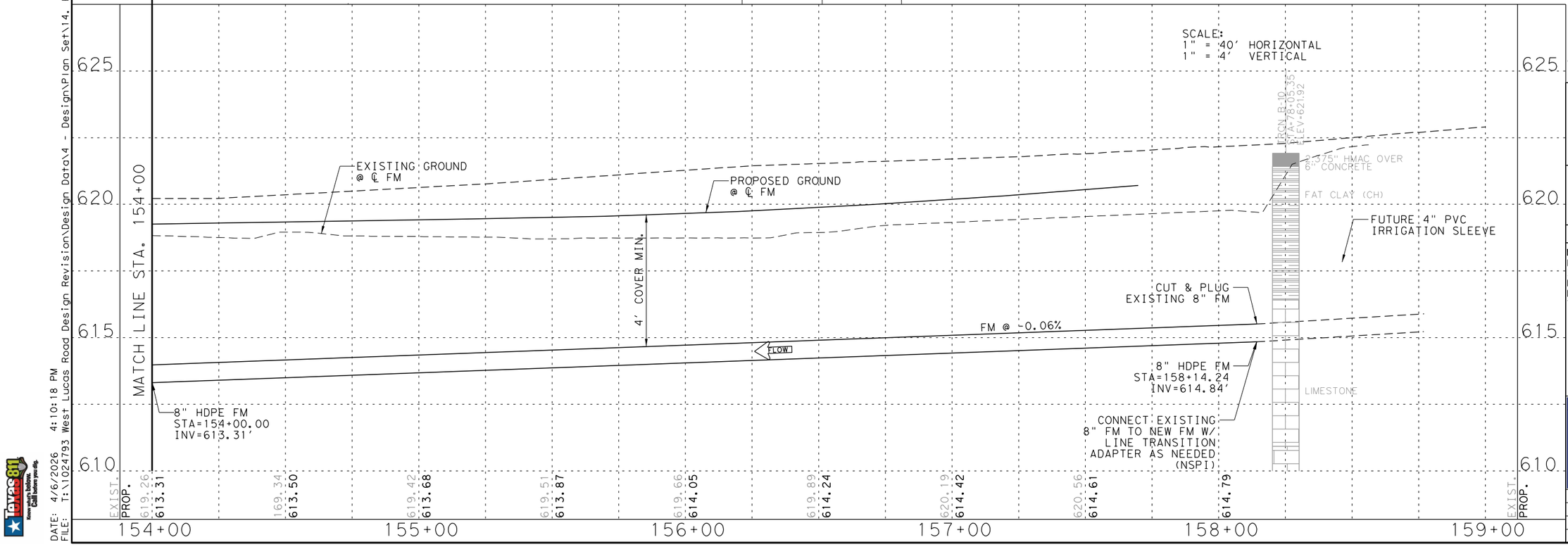
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		225
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 4:10:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14_Force Main\WLucas_FM_PP13.dgn





MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN PLAN & PROFILE

SHEET 12 OF 12

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

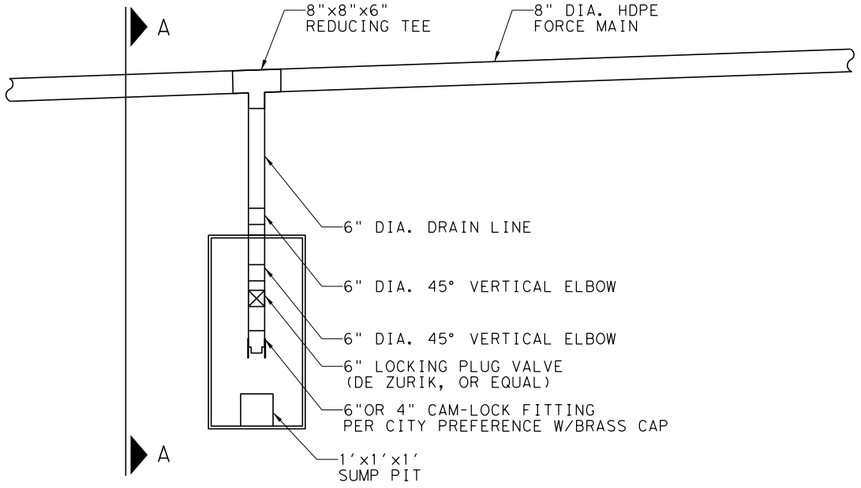
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

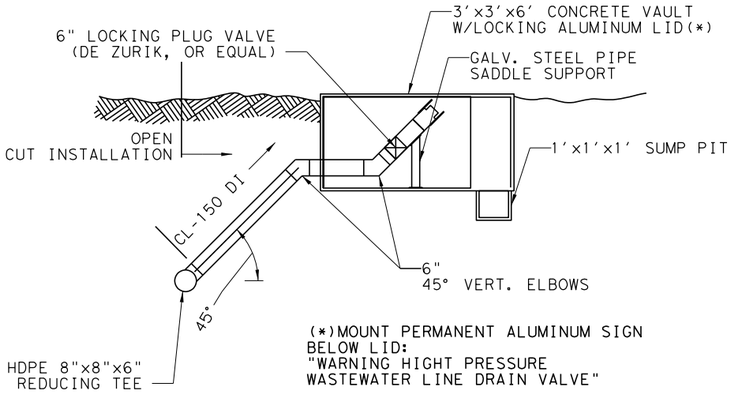
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		226
COLLIN		

DATE: 4/6/2026 4:10:18 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_PP14.dgn

Texas 811 Know what's below. Call before you dig.



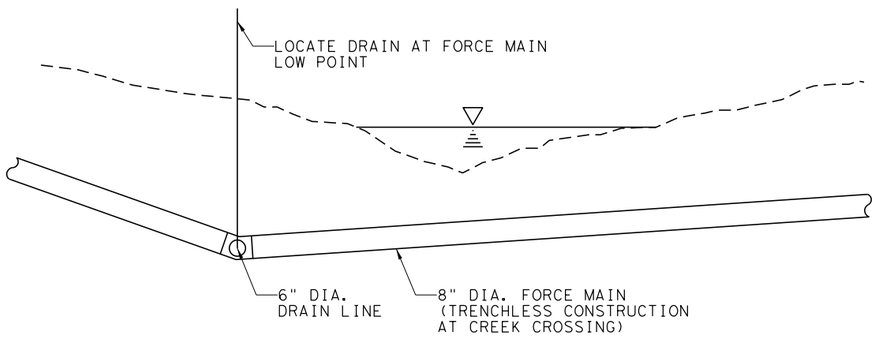
PLAN



NOTE:
FORCE MAIN DRAIN LINE ASSEMBLY WILL BE CONSIDERED INCIDENTAL TO THE ASSOCIATED WORK (NSPI).

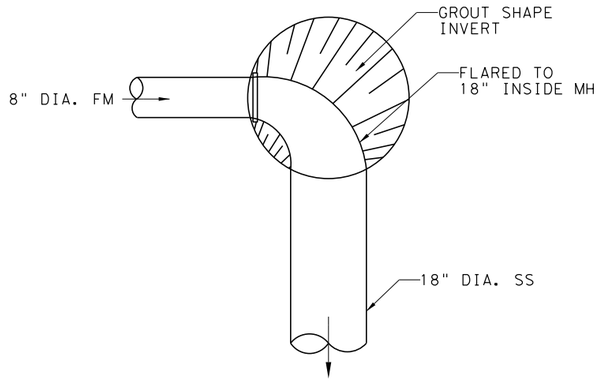
(*)MOUNT PERMANENT ALUMINUM SIGN BELOW LID:
"WARNING HIGHT PRESSURE WASTEWATER LINE DRAIN VALVE"

SECTION A-A

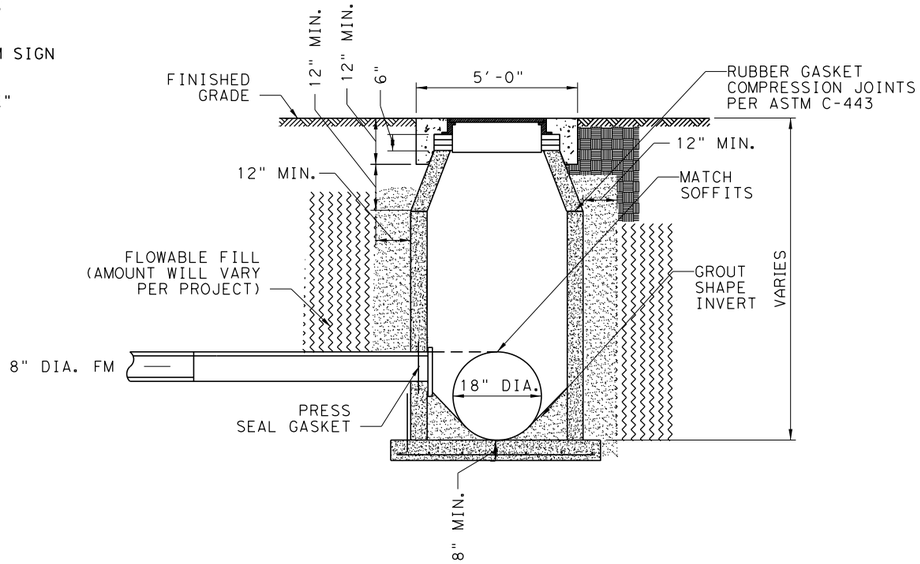


PROFILE

FORCE MAIN DRAIN DETAILS 1
NOT TO SCALE



PLAN VIEW



SECTION

TRANSITION MANHOLE DETAIL 2
NOT TO SCALE

MARK ROETZEL
57660
LICENSED
PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN DETAILS

SHEET 1 OF 3

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

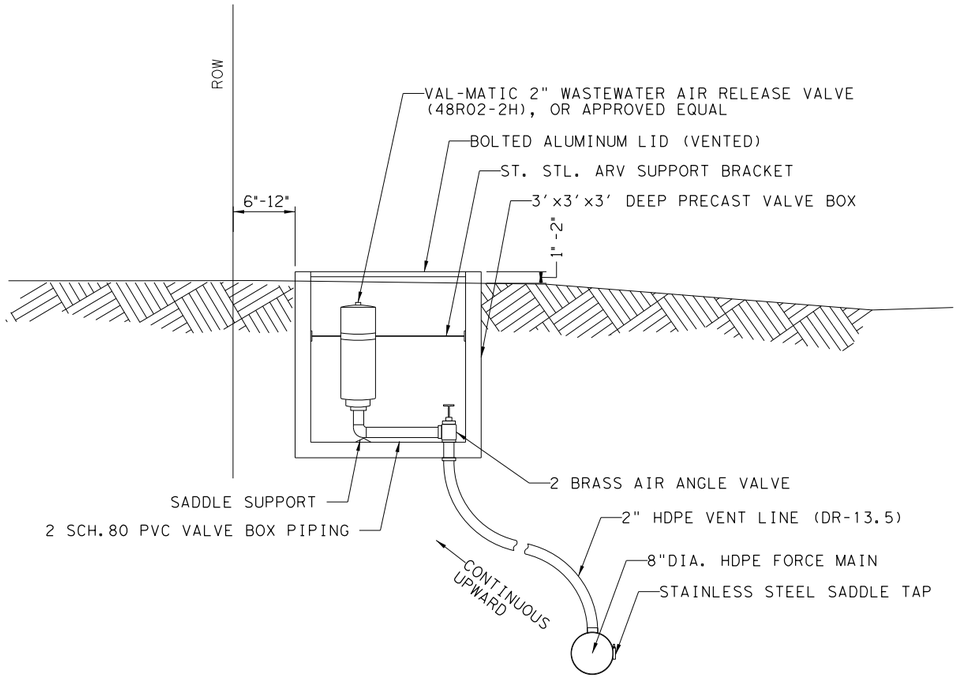
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

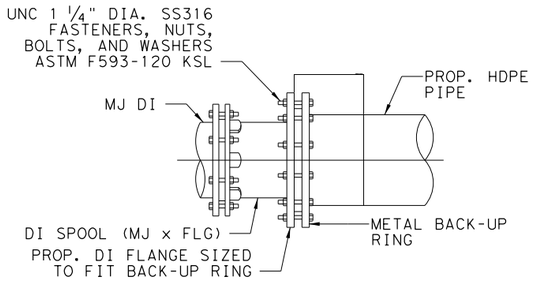
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	227
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

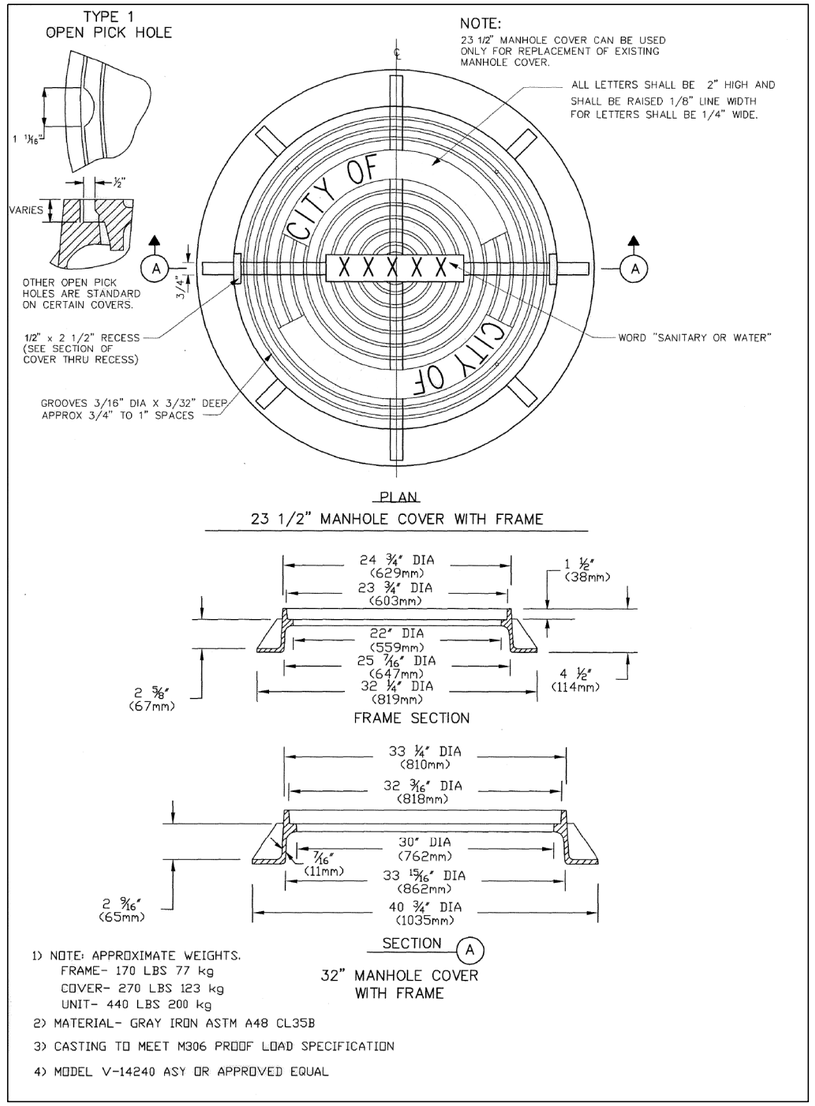
DATE: 4/6/2026 4:10:19 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_Manhole_details_01.dgn



AIR RELEASE VALVE DETAIL — 3
NOT TO SCALE



DUCTILE IRON TO HDPE DETAIL — 4
NOT TO SCALE



SANITARY SEWER AND WATER MANHOLE FRAME AND COVER — 5
NOT TO SCALE

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED
PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN DETAILS

SHEET 2 OF 3

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

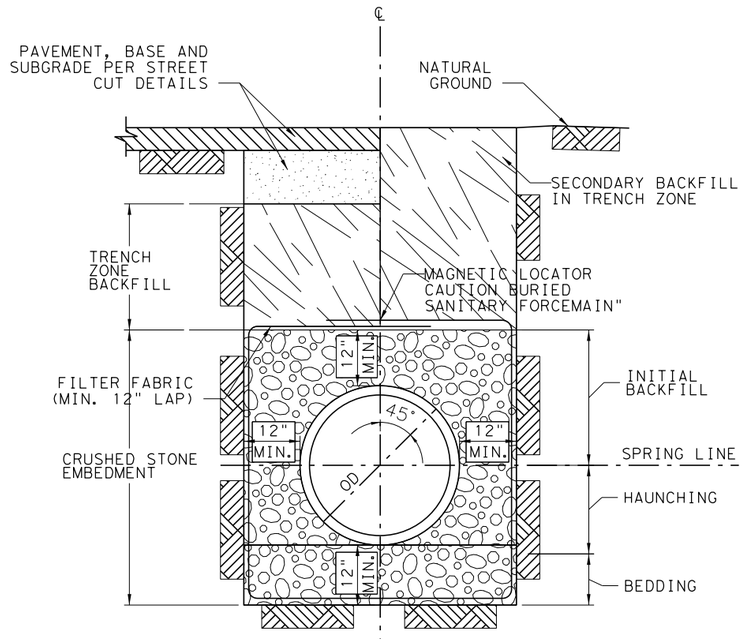
PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	228
COUNTY		
COLLIN		

Texas811
Know what's below.
Call before you dig.

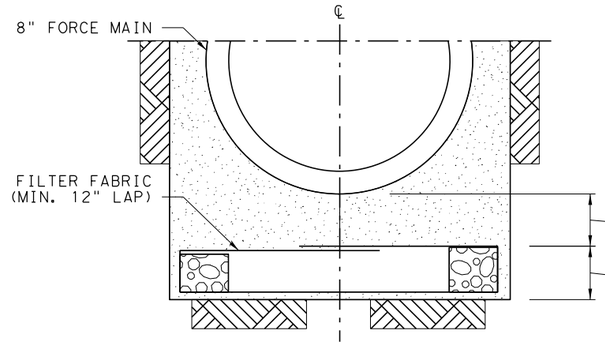
DATE: 4/6/2026 4:10:20 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_Manhole_details_02.dgn



TYPICAL CROSS-SECTION

NOTES:

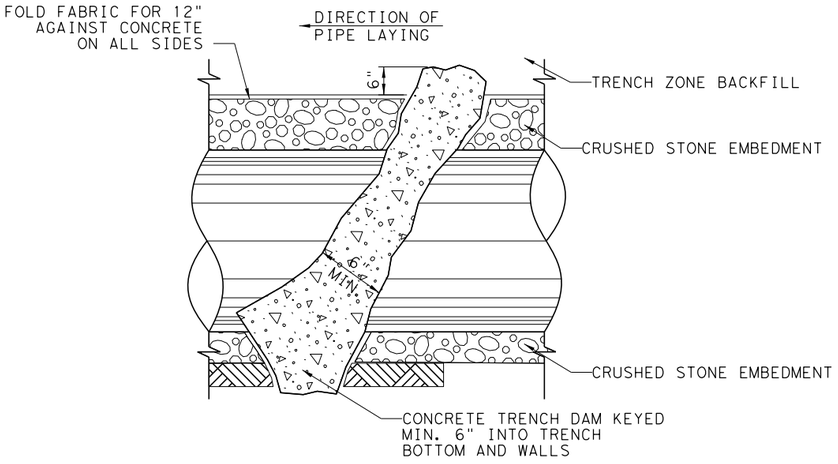
1. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE.
2. MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
3. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION LMAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MIN. THICKNESS AND KEY DEPTH REQUIREMENTS.
4. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT AWAY FROM ANY PIPELINE STRUCTURE. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
5. PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.
6. CRUSHED STONE FOR EMBEDMENT.



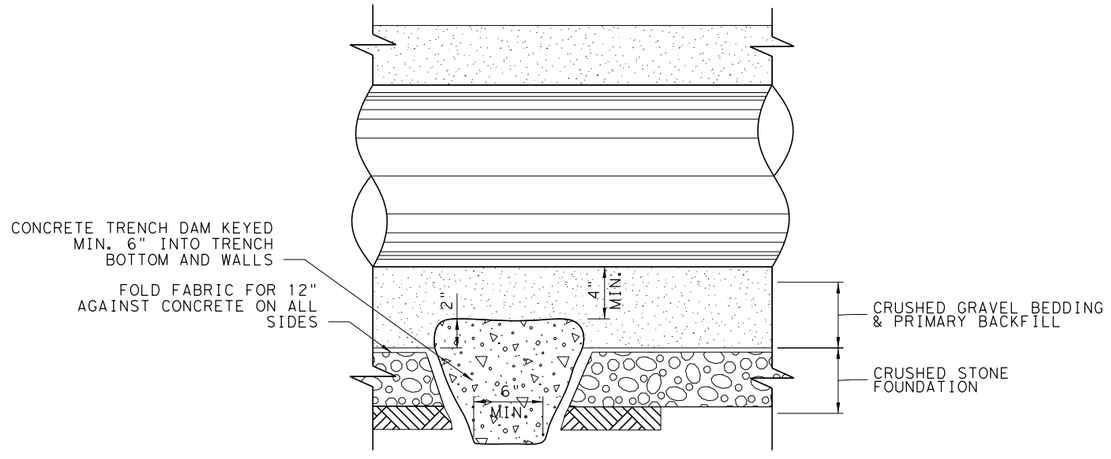
CROSS-SECTION OF CRUSHED STONE FOUNDATION

NOTES:

1. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
2. THIS DETAIL SHALL BE USED WITH CLASS II EMBEDMENT, IN WET STABLE TRENCH CONDITIONS.
3. PLACE TRENCH DAMS IN CLASS I EMEBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.



LONGITUDINAL SECTION ALONG PIPE ℄ AT EMBEDMENT TRENCH DAM



LONGITUDINAL SECTION ALONG PIPE ℄ AT FOUNDATION TRENCH DAM

STATE OF TEXAS
MARK ROETZEL
57660
LICENSED PROFESSIONAL ENGINEER
4/6/26

W. LUCAS RD. ROADWAY IMPROVEMENTS

FORCE MAIN DETAILS

SHEET 3 OF 3

MARK ROETZEL, P.E.
LIC. No. 57660
3400 WATERVIEW PKWY,
RICHARDSON, TX 75080
PHONE: 972.244.6000
TBPE REG. F-1481

PARSONS

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		229
COLLIN		

DATE: 4/6/2026 4:10:23 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\14. Force Main\WLucas_FM_Manhole_details_03.dgn

Texas811 Know what's below. Call before you dig.

SUE QUALITY

— ———— W1 ———— — QUALITY LEVEL "B"

– —— —— W1(C) —— —— – QUALITY LEVEL "C"

– —— —— W1(D) —— —— – QUALITY LEVEL "D"

TYPICAL FOR ALL UTILITIES

QUALITY LEVEL "D": INFORMATION DERIVED FROM EXISTING RECORDS AND/OR ORAL RECOLLECTIONS.

QUALITY LEVEL "C": INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

QUALITY LEVEL "B": INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES.

QUALITY LEVEL "A": PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT.

OVERHEAD UTILITY LEGEND

NO	UTILITY	OWNER
1	ELECTRIC	ONCOR ELECTRIC
2	ELECTRIC	GRAYSON COLLIN ELECTRIC COOPERATIVE
3	FIBER	SPECTRUM
4	FIBER/COAXIAL CABLE	SUDDENLINK
6	FIBER/TELEPHONE	FRONTIER COMMUNICATIONS
7	FIBER	GRANDE COMMUNICATIONS
8	FIBER	AT&T COMMUNICATIONS
9	FIBER	UNITE PRIVATE NETWORKS
10	TELEPHONE	COSERV

LEGEND

UTILITY TYPE		UTILITY OWNER
TRAFFIC SIGNAL	- —— —— TS1(D) —— —— -	CITY OF PARKER
ELECTRIC	- —— —— E2(D) —— —— -	GRAYSON COLLIN ELECTRIC COOPERATIVE
OVERHEAD ELECTRIC	— ———— OE1 ———— —	ONCOR ELECTRIC
OVERHEAD ELECTRIC	— ———— OE2 ———— —	GRAYSON COLLIN ELECTRIC COOPERATIVE
OVERHEAD TELEPHONE	– ———— OHT1 ———— –	AT&T COMMUNICATIONS
OVERHEAD TELEPHONE	– ———— OHT2 ———— –	FRONTIER COMMUNICATIONS
FIBER	—— —— FOC1(D) —— —— -	AT&T COMMUNICATIONS
FIBER	—— —— FOC2(D) —— —— -	FRONTIER COMMUNICATIONS
FIBER	—— —— FOC3(D) —— —— ·	GRANDE COMMUNICATIONS
FIBER	—— —— FOC4(D) —— —— ·	SPECTRUM
FIBER	—— —— FOC5(D) —— —— -	SUDDENLINK
FIBER	—— —— FOC6(D) —— —— -	UNITE PRIVATE NETWORKS
TELEPHONE	– —— —— T1(D) —— —— —	AT&T COMMUNICATIONS
TELEPHONE	– —— —— T2(D) —— —— —	FRONTIER COMMUNICATIONS
TELEPHONE	– —— —— T3(D) —— —— —	COSERV
GAS	· —— —— G1(D) —— —— –	ATMOS ENERGY
GAS	· —— —— G2(D) —— —— –	COSERV
WATER	- —— —— W1(D) —— —— –	CITY OF LUCAS
WASTEWATER	- —— —— WW1(D) —— —— –	CITY OF LUCAS
WATER	– —— —— W2(D) —— —— –	NORTH TEXAS MUNICIPAL WATER DISTRICT (NTMWD)
WATER	– —— —— W3(D) —— —— -	CITY OF PARKER
WASTEWATER	– —— —— WW3(D) —— —— -	CITY OF PARKER

NOTE:
UTILITY LINE SIZES ARE FROM BEST AVAILABLE RECORDS.
AATUR - ABANDONED ACCORDING TO UTILITY RECORDS.

SYMBOLS

- ELECTRIC TRANSFORMER BOX
- E ELECTRIC POWER BOX
- E ELECTRIC MANHOLE
- E ELECTRIC METER
- TRAFFIC SIGNAL POWER BOX
- POWER POLE
- LIGHT POLE
- TRAFFIC SIGNAL LIGHT
- DOWN GUY AND ANCHOR
- T TELEPHONE MANHOLE
- T TELEPHONE PEDESTAL
- HH TELEPHONE HANDHOLE
- FIBER OPTIC VAULT
- F FIBER OPTIC MANHOLE
- FH FIBER OPTIC HANDHOLE
- EXISTING WATER FIRE HYDRANT
- PROPOSED WATER FIRE HYDRANT
- W WATER MANHOLE
- WATER VALVE
- W WATER METER
- WV WATER VAULT
- GV GAS VENT
- G GAS METER
- UTILITY CONTINUITY
- END OF UTILITY LINE
- SURVEY CONTROL POINT
- TEST HOLE LOCATION

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

W. LUCAS RD. ROADWAY IMPROVEMENTS

EXISTING UTILITY LEGEND & SYMBOLS

SHEET 1 OF 1

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	230
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

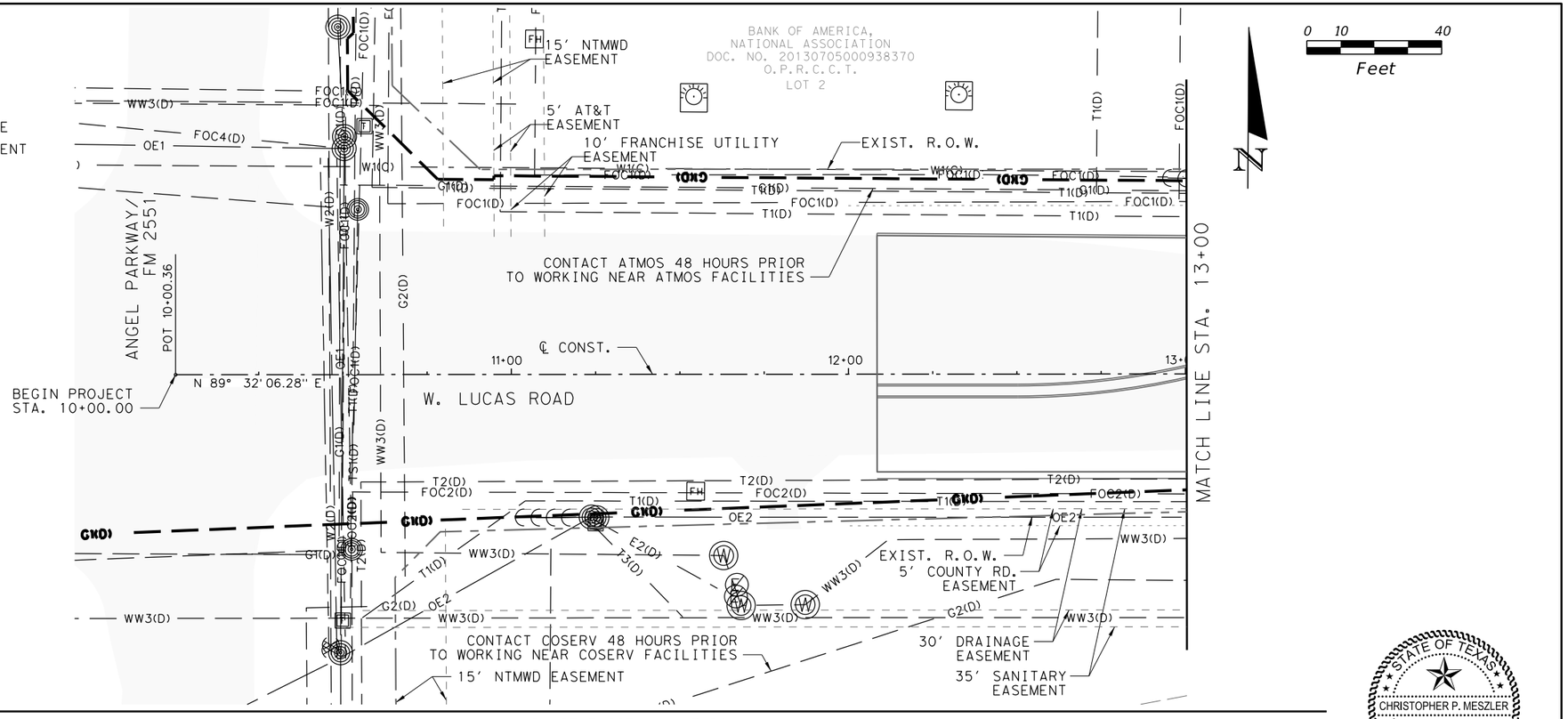
DATE: 4/6/2026 1:56:59 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_01.dgn

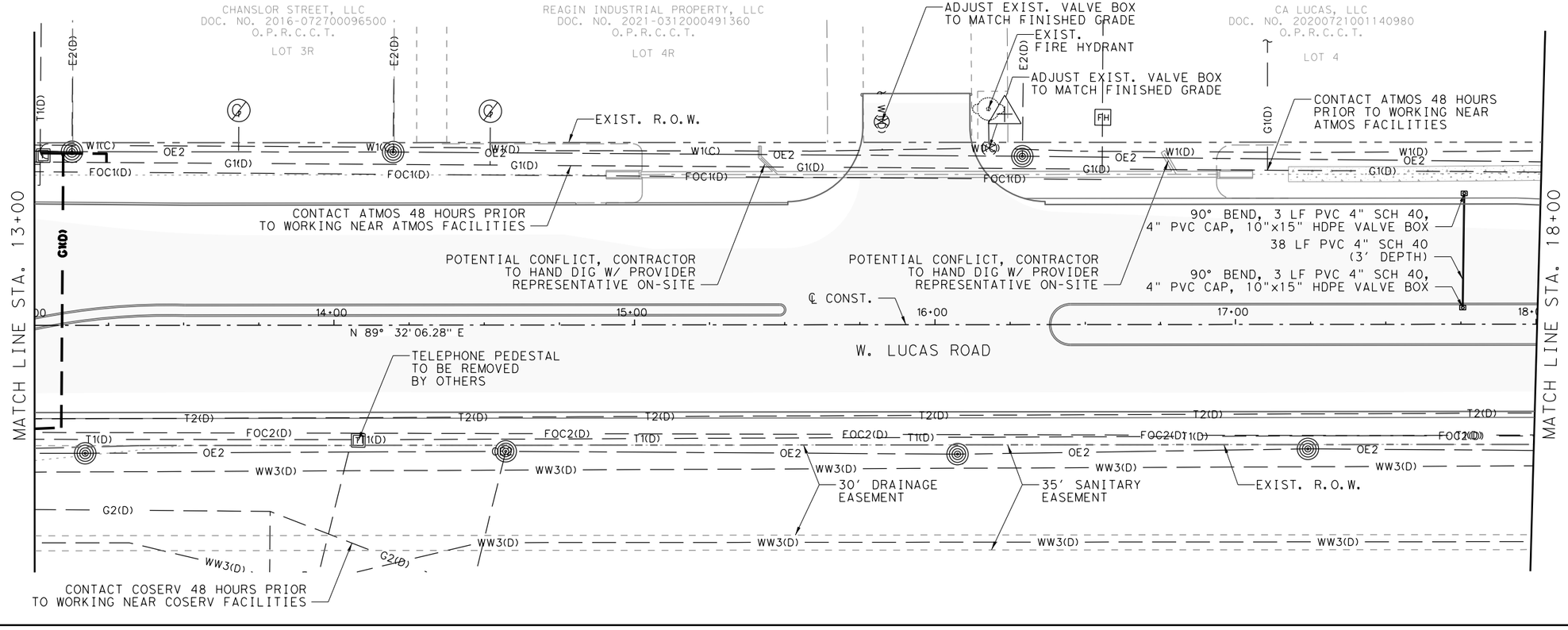
GENERAL NOTES:

1. GCEC UTILITY POLES TO BE RELOCATED BY OTHERS.
2. THERE ARE AREAS IN THE PLANS THAT MAY BE IN CONFLICT WITH UTILITIES REQUIRED TO BE RELOCATED BY OTHERS. COORDINATE W/ UTILITY IN CONFLICT PRIOR TO COMMENCING WORK TO PREVENT DELAYS TO THE PROJECT.
3. SPECIAL EXCEPTIONS MAY BE MADE FOR OUT OF SEQUENCE WORK FOR COORDINATION OF UTILITY RELOCATION IN ADVANCE OF THE WORK.
4. UTILITY LINES THAT ARE LOCATED WITHIN FOOTING OR BEDDING ELEMENTS MAY BE ENCASED IN CONCRETE AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL SLEEVE ANY ENCASED LINES BY APPROVED METHODS TO PREVENT CONTACT WITH CEMENTITIOUS MATERIALS.
5. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO FIELD-ADJUST CULVERTS TO AVOID CONFLICTS, IF NECESSARY
6. FOR LEGEND AND SYMBOLS SEE EXISTING UTILITY LEGEND & SYMBOLS SHEET.

LEGEND:

- SIGN & POST
- MAIL BOX
- FORCE MAIN LINE
- EXISTING PAVEMENT





CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

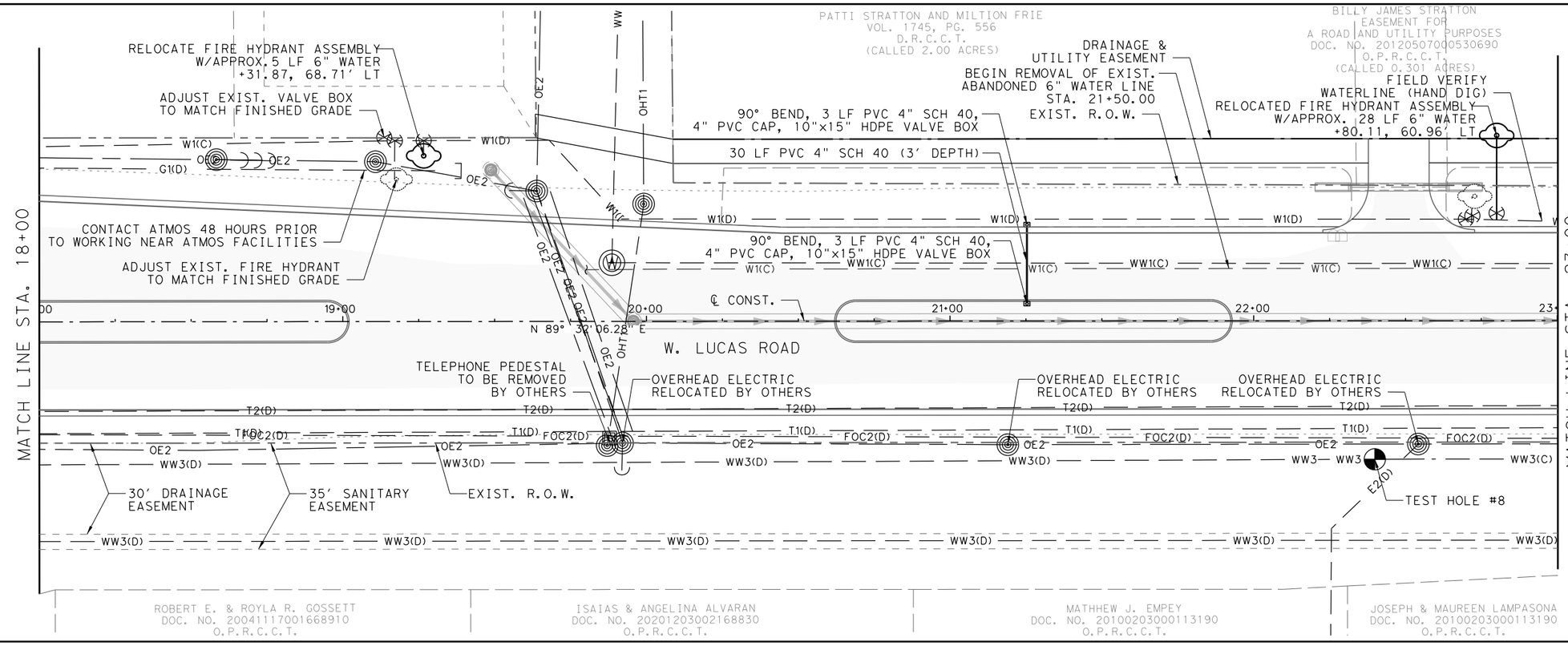
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		231
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:01 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_02.dgn



DATE: 4/6/2026 1:57:03 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_03.dgn

Texas 811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		232
COLLIN		

PAUL AND TAMMIE KIRKLAND
TRACT 3
DOC. NO. 2001-0167667
O.P.R.C.C.T.
(CALLED 8.6067 ACRES)

PATTI STRATTON AND MILTION FRIE
VOL. 1745, PG. 556
D.R.C.C.T.
(CALLED 2.00 ACRES)

0 10 40
Feet

N

STA. 30+29.22 ± 54.10' LT
APPROX. 2 LF ±
RELOCATE EXIST. WATER METER
AND RELAY EXIST. WATER SERVICE

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

ADJUST EXIST.
WATER METER
TO MATCH
FINISHED GRADE

RELOCATE FIRE HYDRANT ASSEMBLY
W/APPROX. 32 LF 6" WATER
+25.32
60.95' LT

90° BEND,
3 LF PVC 4" SCH 40,
4" PVC CAP,
10"x15" HDPE VALVE BOX

30 LF PVC 4" SCH 40
(3' DEPTH)

DRAINAGE &
UTILITY EASEMENT

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

90° BEND, 3 LF PVC 4" SCH 40,
4" PVC CAP, 10"x15" HDPE VALVE BOX

EXIST. R.O.W.

30' PVC 4" SCH 40
(3' DEPTH)

ADJUST EXIST. VALVE BOX
TO MATCH FINISHED GRADE

90° BEND, 3 LF PVC 4" SCH 40,
4" PVC CAP, 10"x15" HDPE VALVE BOX

MATCH LINE STA. 28+00

MATCH LINE STA. 33+00

29+00 30+00 31+00 32+00

℄ CONST.

N 89° 32' 06.28" E

W. LUCAS ROAD

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

EXIST. R.O.W.

30' DRAINAGE
EASEMENT

35' SANITARY
EASEMENT

MICHAEL & HEATHER HART
DOC. NO. 20120724000894560
O.P.R.C.C.T.

BRANDON & CHAY NERSESIAN
DOC. NO. 20160531000673910
O.P.R.C.C.T.

DAVID & LEENA GREENSPAN FAMILY TRUST
DOC. NO. 20051116001623110
O.P.R.C.C.T.

BARRY M. & CATHERINE D. DAVIS
DOC. NO.
20170516000629560
O.P.R.C.C.T.

CORNERSTONE BAPTIST CHURCH EXHIBIT "A"
DOC. NO. 2003-0095484
O.P.R.C.C.T.
(CALLED 11.543 ACRES OF WHICH 0.304 ACRES
IS LOCATED IN COUNTY ROAD NO. 263)

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

TELEPHONE PEDESTAL
TO BE REMOVED
BY OTHERS

DRAINAGE &
UTILITY EASEMENT

RELOCATE FIRE HYDRANT ASSEMBLY
W/APPROX. 9 LF 6" WATER
+18.93
73.96' LT

ADJUST EXIST. VALVE BOX
TO MATCH FINISHED GRADE

40' NTMWD WATER
EASEMENT

TELEPHONE PEDESTAL
TO BE REMOVED
BY OTHERS

INTERNATIONAL FUTBOL ACADEMY-DALLAS, LLC
DOC. NO. 20201218002284090
O.P.R.C.C.T.
(CALLED 7.48 ACRES)

EXIST. R.O.W.

TEST HOLE #7

ELECTRIC METER
RELOCATED BY OTHERS

MATCH LINE STA. 33+00

MATCH LINE STA. 38+00

PI 33+09.64

PI 36+28.92

34+00 35+00 36+00 37+00

℄ CONST.

N 89° 32' 06.27" E

N 89° 48' 39.64" E

W. LUCAS ROAD

30' DRAINAGE
EASEMENT

35' SANITARY
EASEMENT

TELEPHONE PEDESTAL
TO BE REMOVED
BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

TELEPHONE PEDESTAL
TO BE REMOVED
BY OTHERS

RATHBONE DR.

TEST HOLE #5

TEST HOLE #4

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

EASEMENT DEDICATED
TO CITY OF PARKER

EXIST. R.O.W.

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

LOT 2-X

DRAINAGE AND UTILITY
EASEMENT TO THE
CITY OF PARKER

30' DRAINAGE
EASEMENT

20' SANITARY
EASEMENT

STA. 37+19.73 ± 69.34' RT
APPROX. 10 LF ±

RELOCATE EXIST. WATER
METER AND RELAY EXIST.
WATER SERVICE

BEDELL FAMILY LIMITED PARTNERSHIP
VOL. 4670, PG. 1295
D.R.C.C.T.
(REMAINDER OF A CALLED 356 ACRES)

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

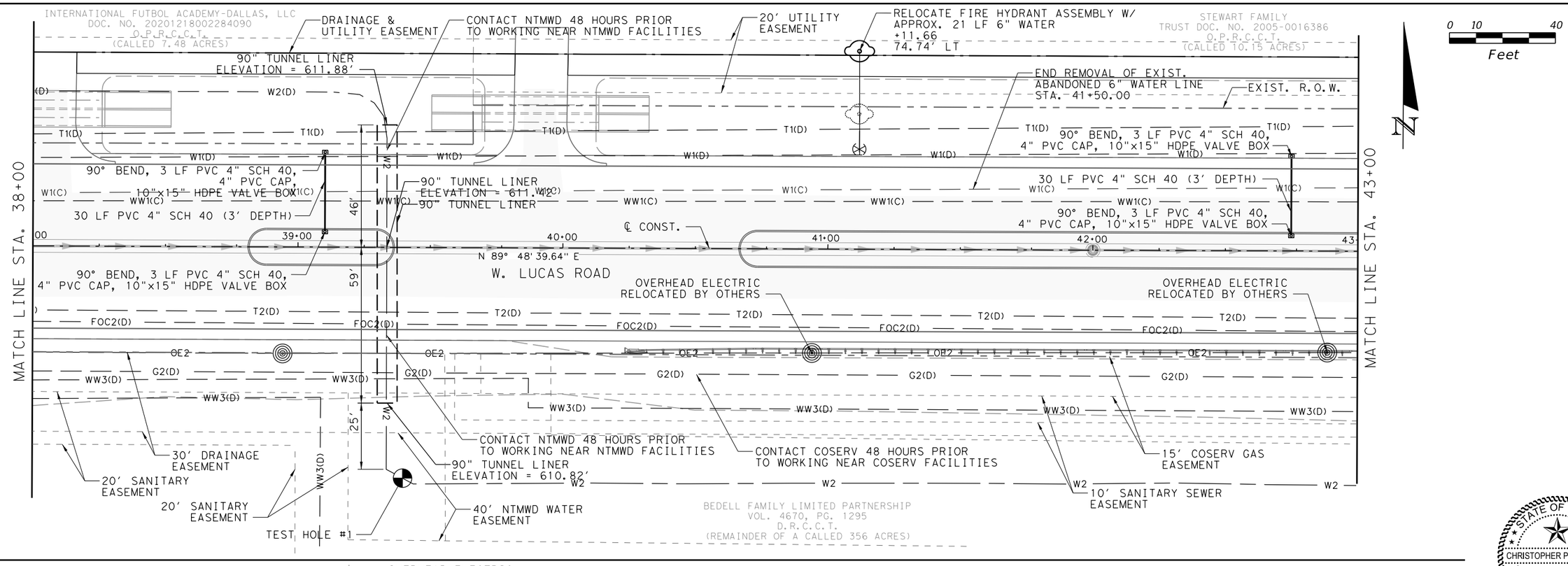
bc engineering
a PARSONS Company

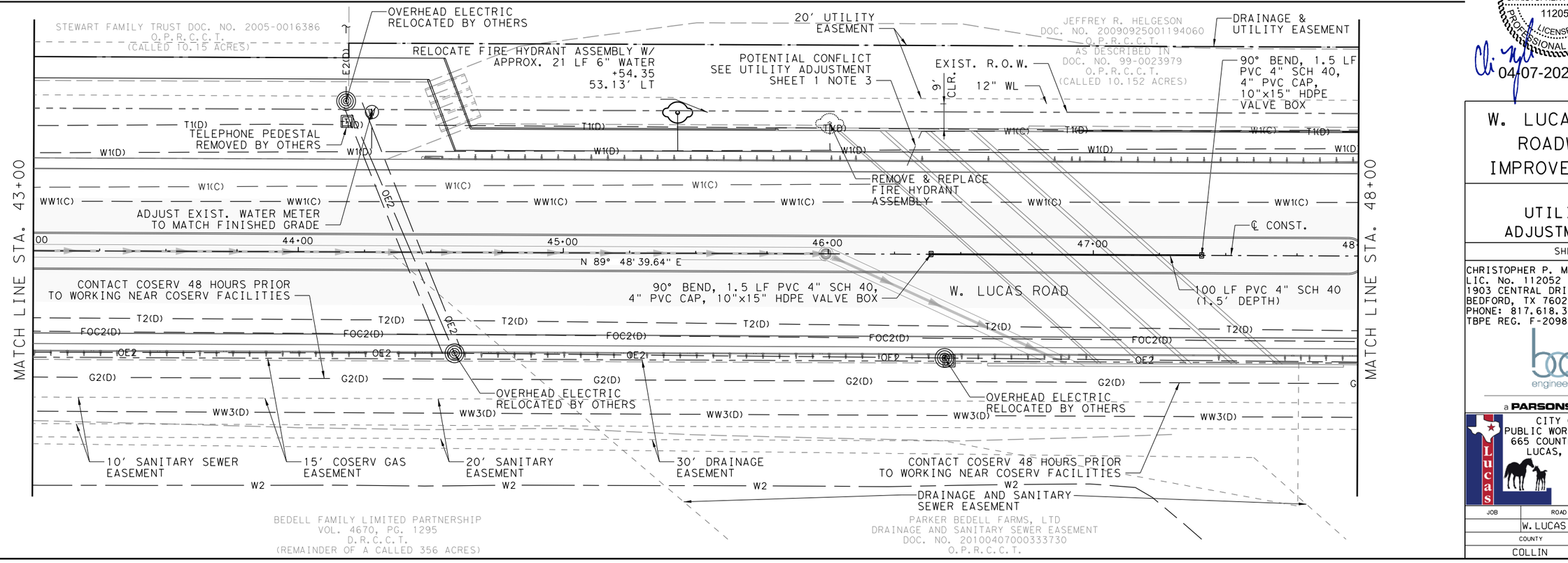
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		233
COLLIN		

DATE: 4/6/2026 1:57:04 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_04.dgn

Texas811 Know what's below. Call before you dig.





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 4 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

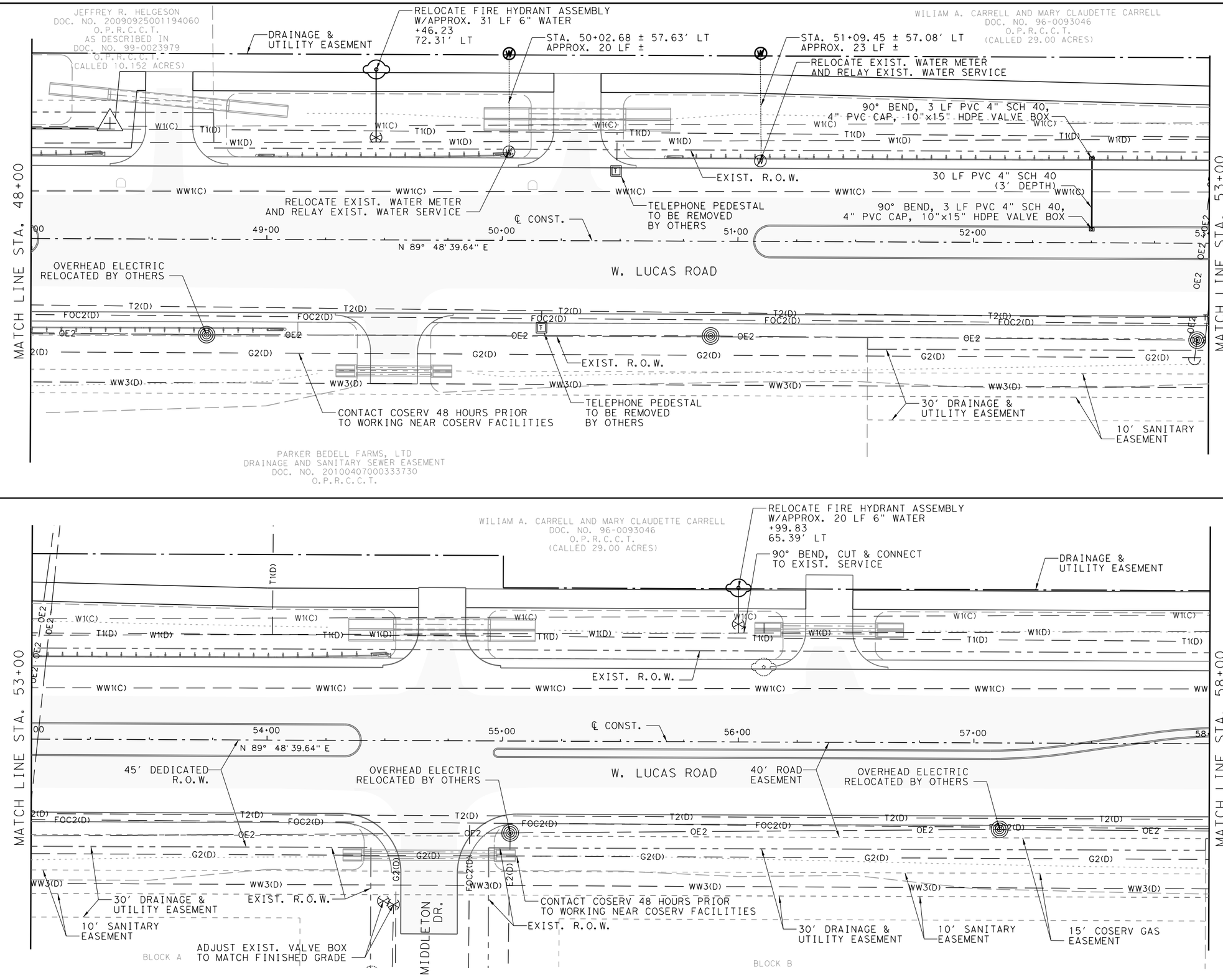
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		234
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_05.dgn



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 5 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		235
COLLIN		

DATE: 4/6/2026 1:57:07 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_06.dgn

Texas 811 Know what's below. Call before you dig.

WILIAM A. CARRELL AND MARY CLAUDETTE CARRELL
DOC. NO. 96-0093046
O.P.R.C.C.T.
(CALLED 29.00 ACRES)

ADJUST EXIST. VALVE BOX
TO MATCH FINISHED GRADE

RELOCATE EXIST.
FIRE HYDRANT ASSEMBLY

RELOCATED FIRE HYDRANT ASSEMBLY
W/APPROX. 16 LF 6" WATER
+83.88
65.47' LT

INGRAM LN.

ANTHONY L. SASSINE AND MELISSA K. HYATT
DOC. NO. 5589-003249
O.P.R.C.C.T.

20' UTILITY
EASEMENT

EXIST. R.O.W.

DRAINAGE &
UTILITY EASEMENT

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

MATCH LINE STA. 58+00

MATCH LINE STA. 63+00

59+00 60+00 61+00 62+00

PI 62+01.31

℄ CONST.

N 89° 48' 39.64" E

W. LUCAS ROAD

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

10' SANITARY SEWER
EASEMENT

15' COSERV GAS
EASEMENT

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

BEDELL FAMILY LIMITED PARTNERSHIP
VOL. 4670, PG. 1295
D.R.C.C.T.
(REMAINDER OF A CALLED 356 ACRES)

0 10 40
Feet

N

ANTHONY L. SASSINE AND MELISSA K. HYATT
DOC. NO. 5589-003249
O.P.R.C.C.T.

20' UTILITY
EASEMENT

EXIST. R.O.W.

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

RELOCATED FIRE HYDRANT ASSEMBLY
W/APPROX. 2 LF 6" WATER
+64.71
65.36' LT

25'X 25' LANDSCAPE
EASEMENT

RISING
SUN RD.

ADJUST EXIST. WATER
METER
TO MATCH FINISHED
GRADE

JASON MCCLURE AND AMY MCCLURE
DOC. NO. 20100202000106160
O.P.R.C.C.T.

25'X 25' LANDSCAPE
EASEMENT

EXIST. R.O.W.

ADJUST EXIST. VALVE BOX
TO MATCH FINISHED GRADE

RELOCATE EXIST. LIGHT POLE
ASSEMBLY 20' PROP. BURIED ELECTRIC
MATCH EXIST. CONDUIT & CONDUCTOR SIZES

VERIFY EXIST. DECORATIVE LIGHT POLE
ELECTRIC JUNCTION BOX
WITH CONDUITS & CONDUCTORS

MATCH LINE STA. 63+00

MATCH LINE STA. 68+00

64+00 65+00 66+00 67+00

℄ CONST.

N 89° 28' 39.32" E

W. LUCAS ROAD

TEST HOLE #2

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

TELEPHONE PEDESTAL
REMOVED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

EXIST. R.O.W.

10' SANITARY SEWER
EASEMENT

15' COSERV GAS
EASEMENT

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

LEWIS LN.

30' DRAINAGE &
UTILITY EASEMENT

AMENDED FINAL PLAT
ESTATES AT AUSTIN TRAIL
PHASE 1
DOC. NO. S4701-6331-2
P.R.D.C.T.

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

BEDELL FAMILY LIMITED PARTNERSHIP
VOL. 4670, PG. 1295
D.R.C.C.T.
(REMAINDER OF A CALLED 356 ACRES)

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		236
COLLIN		

DATE: 4/6/2026 1:57:08 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_07.dgn

Texas811 Know what's below. Call before you dig.

JASON MCCLURE AND AMY MCCLURE
DOC. NO. 20100202000106160
O.P.R.C.C.T.

BRADLEY WAYNE BRAZEAL
AND BRIGITTE BRAZEAL
DOC. NO. 20100527000535000
O.P.R.C.C.T.

20' DRAINAGE
& UTILITY EASEMENT

VERIFY EXIST. DECORATIVE LIGHT POLE
ELECTRIC JUNCTION BOX
WITH CONDUITS & CONDUCTORS
RELOCATE EXIST. LIGHT POLE
ASSEMBLY 13' PROP. BURIED ELECTRIC
MATCH EXIST. CONDUIT & CONDUCTOR SIZES

CONTACT COSERV
48 HOURS PRIOR
TO WORKING NEAR
COSERV FACILITIES

ADJUST EXIST.
VALVE BOX TO MATCH
FINISHED GRADE

EXIST. R.O.W.

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

RELOCATE TELEPHONE
PEDESTAL BY OTHERS

RELOCATE FIRE HYDRANT ASSEMBLY
W/APPROX. 2 LF 6" WATER
+20.58
66.29' LT

20' DRAINAGE
& UTILITY
EASEMENT

MATCH LINE STA. 68+00

MATCH LINE STA. 73+00

RED STAR RD.

69+00 70+00 71+00 72+00

℄ CONST.

N 89° 28' 39.32" E

W. LUCAS ROAD

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

EXIST. R.O.W.

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

20' DRAINAGE & UTILITY
EASEMENT

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

BEE CAVE RD.

AMENDED FINAL PLAT
ESTATES AT AUSTIN TRAIL
PHASE 1
DOC. NO. S4701-6331-2
P.R.D.C.T.

ALAN & MICHELLE MCLEMORE
DOC. NO. 20090324000339360
O.P.R.C.C.T.

PROPERTY LINE

ADJUST EXIST. VALVE BOX TO
MATCH FINISHED GRADE

RELOCATE FIRE HYDRANT ASSEMBLY
W/APPROX. 4 LF 6" WATER
+41.72
65.38' LT

JANET E. KAPP
DOC. NO. 20191216001597940
O.P.R.C.C.T.
(REMAINDER OF A CALLED 30.282 ACRES)

AS DESCRIBED IN
VOL. 686, PG. 436

CITY OF LUCAS
20'R.O.W. &
UTILITY EASEMENT

20' DRAINAGE & UTILITY
EASEMENT

EXIST. R.O.W.

KRAIG AND KIMBERLY NUNN
DOC. NO. 05847-02851
P.R.D.C.T.

90° BEND, 3 LF PVC 4" SCH 40,
4" PVC CAP, 10"x15" HDPE VALVE BOX

REMOVE 25'
6" WATER

30 LF PVC 4" SCH 40
(3' DEPTH)

90° BEND, 3 LF PVC 4" SCH 40,
4" PVC CAP, 10"x15" HDPE VALVE BOX

MATCH LINE STA. 73+00

MATCH LINE STA. 78+00

74+00 75+00 76+00 77+00

℄ CONST.

N 89° 28' 39.32" E

W. LUCAS ROAD

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

OVERHEAD ELECTRIC
RELOCATED BY OTHERS

TEST HOLE #3

20' DRAINAGE & UTILITY
EASEMENT

CONTACT COSERV 48 HOURS PRIOR
TO WORKING NEAR COSERV FACILITIES

50' LANDSCAPE
BUFFER

EXIST. R.O.W.

20' R.O.W & WATERLINE
EASEMENT

HELDER RUEDA MELENDEZ
DOC. NO. 20140723000767520
O.P.R.C.C.T.

DARREN HARVEY
DOC. NO. 20171222001687460
O.P.R.C.C.T.

0 10 40
Feet

N

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

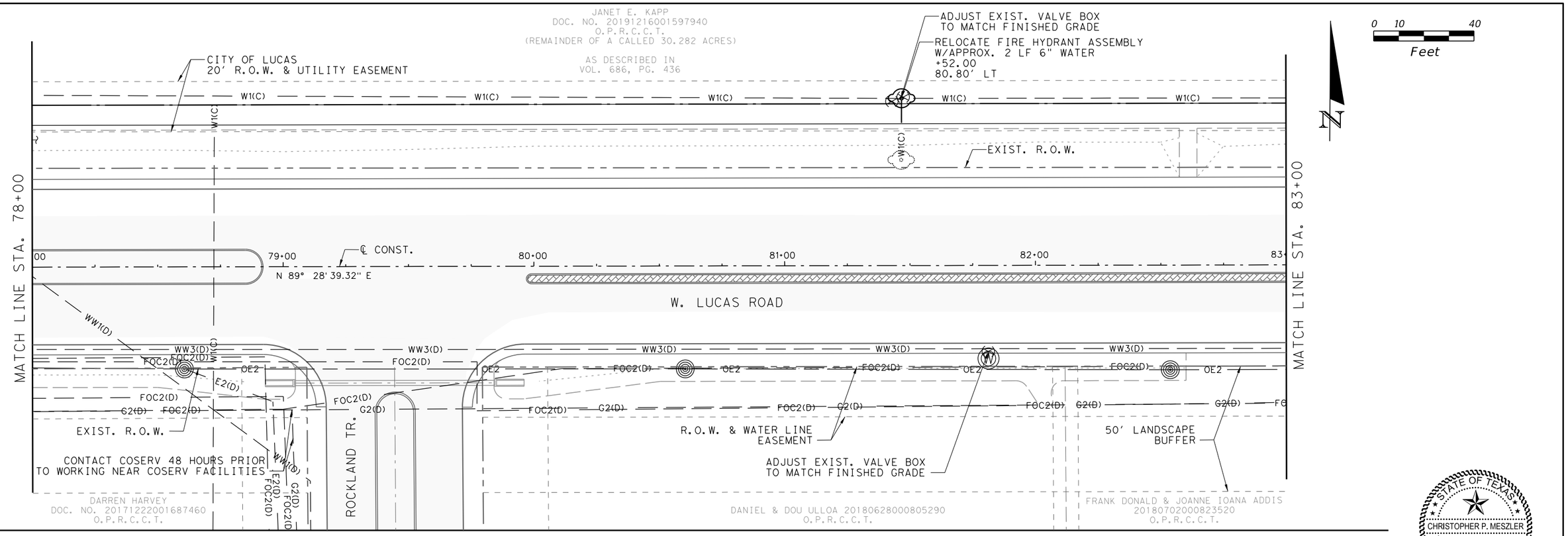
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		237
COLLIN		

DATE: 4/6/2026 1:57:10 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_08.dgn

Texas811 Know what's below. Call before you dig.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 8 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

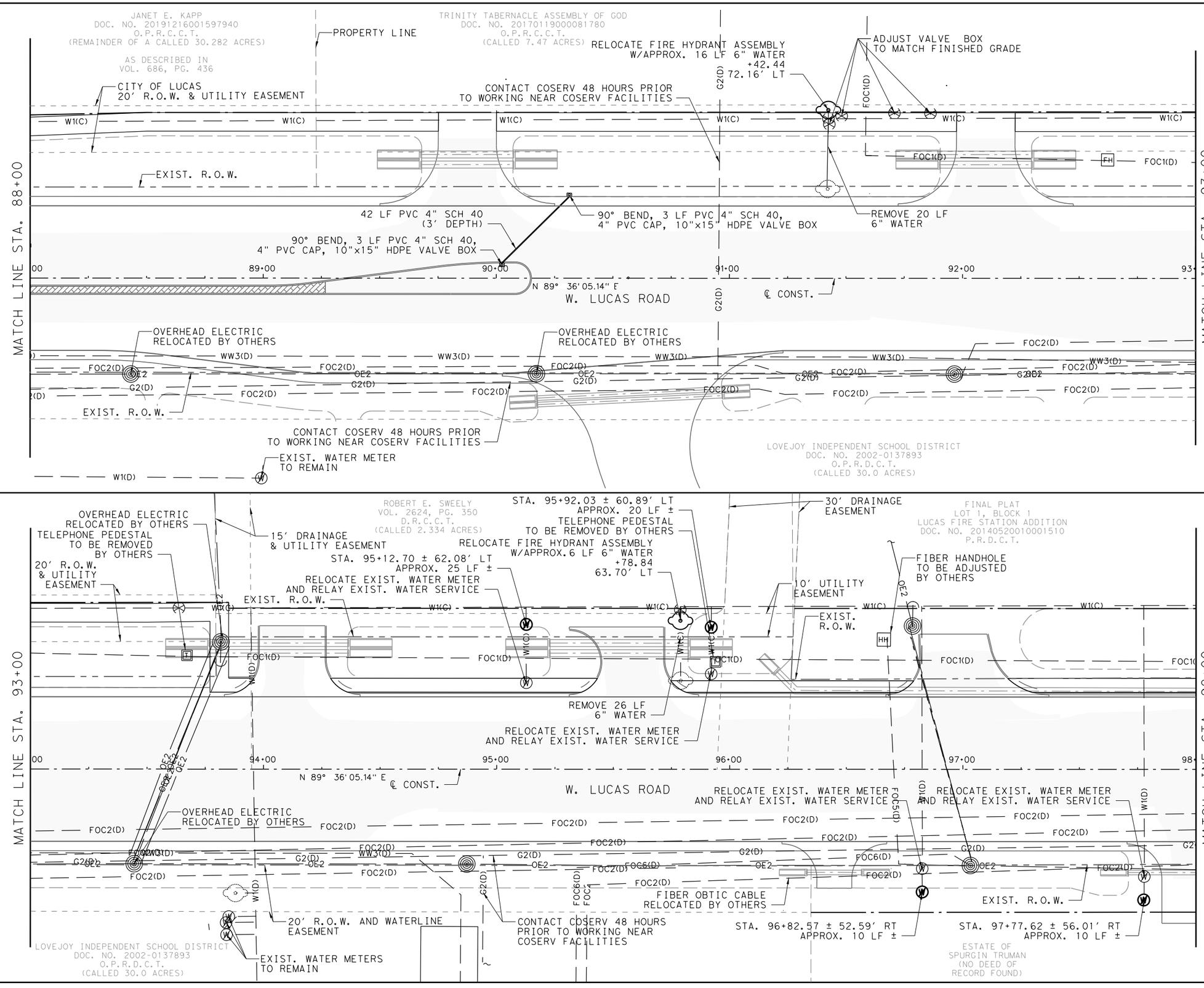
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		238
COLLIN		

DATE: 4/6/2026 1:57:11 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_09.dgn

Texas 811 Know what's below. Call before you dig.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		239
COLLIN		

DATE: 4/6/2026 1:57:13 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_10.dgn

Texas811 Know what's below. Call before you dig.

0 10 40
Feet

N

COUNTRY CLUB ROAD

W. LUCAS ROAD/FM 1378

MATCH LINE STA. 98+00

FINAL PLAT
LOT 1, BLOCK 1
LUCAS FIRE STATION ADDITION
DOC. NO. 20140520010001510
P.R.D.C.T.

MARTIN & VARANJUTA THOMAS
DOC. NO. 20120724000892310
O.P.R.C.C.T.

REPLAT
CIMARRON PHASE II
LOTS 24R-26R, BLOCK A
DOC. NO. 20121011010002500
P.R.D.C.T.

ALAN RAY SPURGIN
VOL. 1328 PG. 851
D.R.C.C.T.
(CALLED 2.92 ACRES)

FINAL PLAT
LOT 1, BLOCK A
GRAIGS CAR CARE
DOC. NO.
20060210010000490
P.R.D.C.T.

MAHMOUD PROPERTIES LLC
DOC. NO. 20191009001265330
O.P.R.C.C.T.
(CALLED 2.25 ACRES)

HB ENTERPRISES, LLC
DOC. NO. 20170331000413910
O.P.R.C.C.T.
(CALLED 1.281 ACRES)

12' WATERLINE EASEMENT (TYP)

COMMON AREA EASEMENT

EXIST. WATER METER TO REMAIN

ADJUST EXIST. FIRE HYDRANT TO MATCH FINISHED GRADE

EXIST. R.O.W.

EXIST. R.O.W.

N 89° 36' 05.14" E

99+00

℄ CONST.

100+00

101+00

N 89° 17' 33.82" E
END PROJECT
STA. 100+25.00

PI 99+63.20

POT 101+00.30

ADJUST EXIST. WATER METER TO MATCH FINISHED GRADE

CONTACT COSERV 48 HOURS PRIOR TO WORKING NEAR COSERV FACILITIES

EXIST. R.O.W.

EXIST. WATER METER TO REMAIN

EXIST. WATER METER TO REMAIN

RELOCATE EXIST. WATER METER AND RELAY EXIST. WATER SERVICE
STA. 98+53.08 ± 55.54' RT
APPROX. 10 LF ±

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

UTILITY ADJUSTMENTS

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

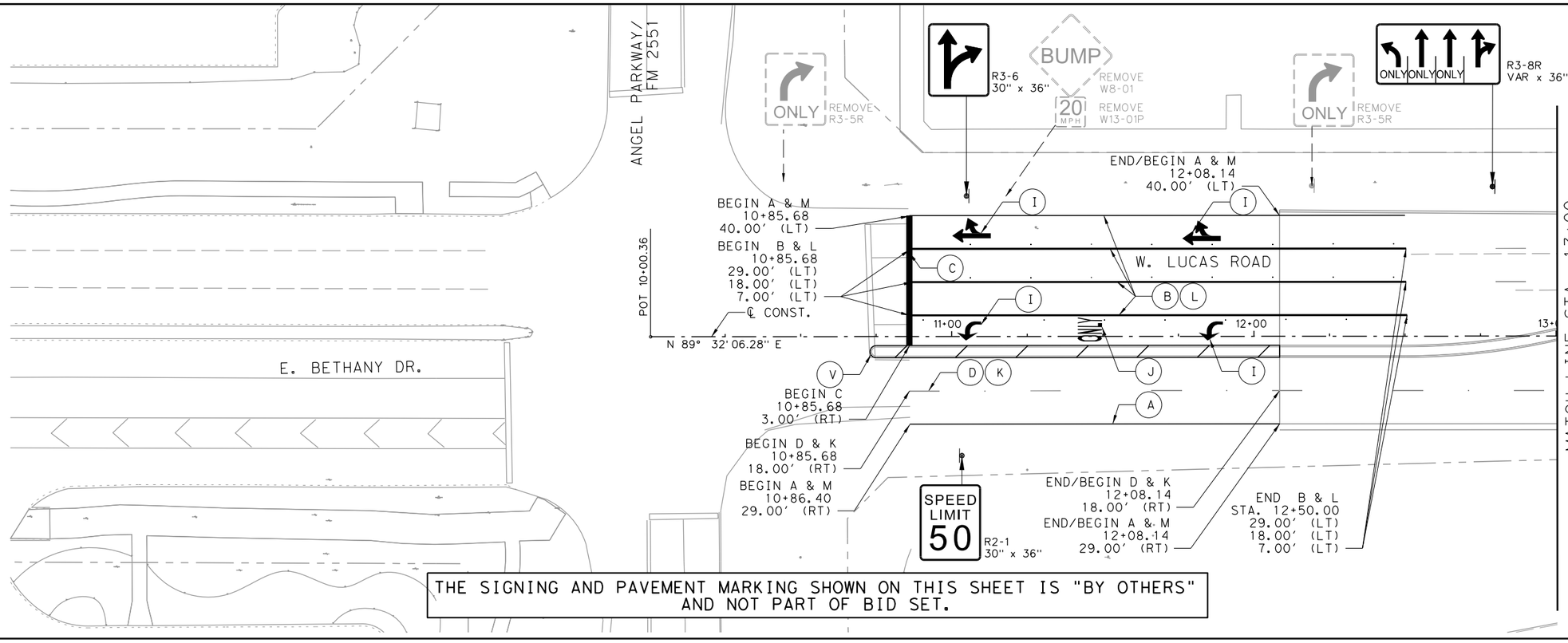
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		240
COLLIN		

Texas 811 Know what's below. Call before you dig.

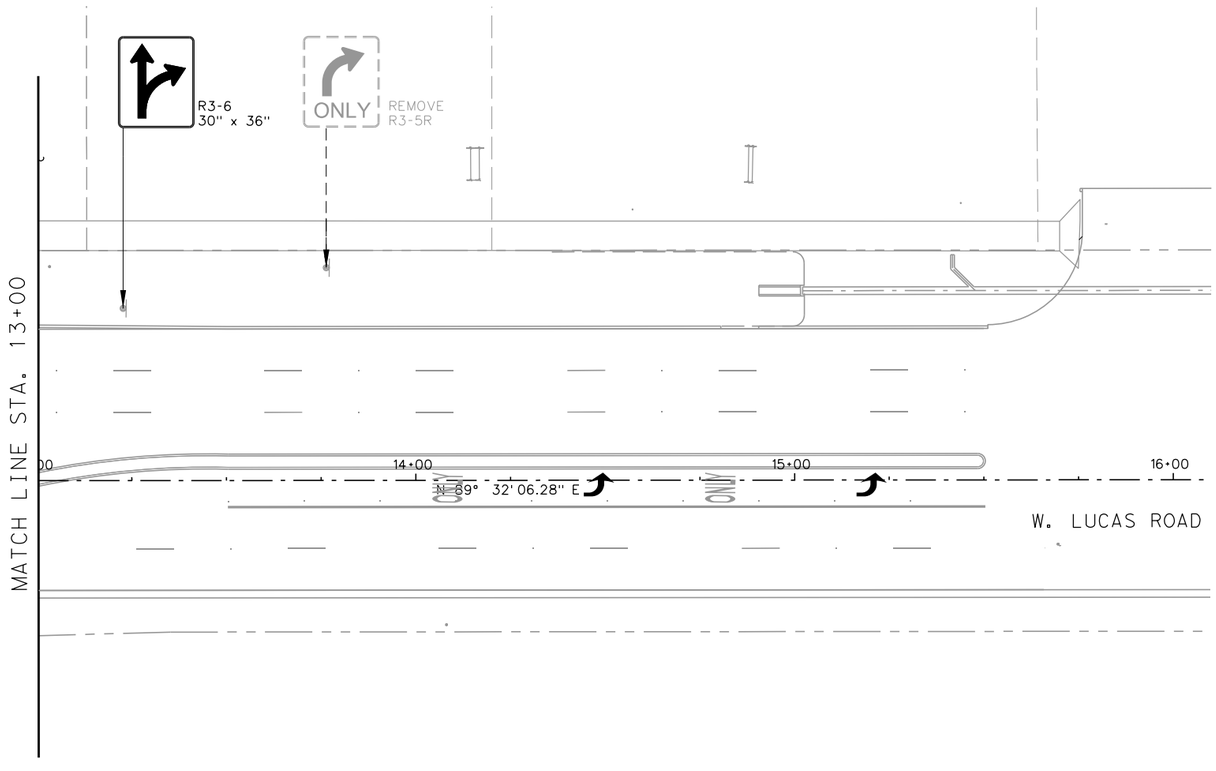
DATE: 4/6/2026 1:57:14 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\6. Utilities\WLucas_UTILS_ADJ_11.dgn



NOTE:

1. REMOVE EXIST. TEMPORARY PAINTED MARKINGS FROM STA. 12+08.14 TO STA. 13+50.00

THE SIGNING AND PAVEMENT MARKING SHOWN ON THIS SHEET IS "BY OTHERS" AND NOT PART OF BID SET.



SIGNING & PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE			PERMANENT MARKINGS	TEMPORARY PAINT
(W)	(4")	(SLD)	(A)	(P)
(W)	(8")	(SLD)	(B)	(Q)
(W)	(24")	(SLD)	(C)	(R)
(W)	(4")	(BROKEN)	(D)	(S)
(Y)	(4")	(DOT)	(E)	
(Y)	(4")	(SLD)	(F)	(T)
(Y)	(4")	(SLD) (DOUBLE)	(G)	
(Y)	(4")	(BROKEN)	(H)	
(W)		(ARROWS)	(I)	(U)
(W)		(WORDS)	(J)	
(TY I-C) (R.P.M.) (@ 80' SPACING)			(K)	
(TY I-C) (R.P.M.) (@ 20' SPACING)			(L)	
(TY II-C-R) (R.P.M.) (@ 20' SPACING)			(M)	
(TY II-A-A) (R.P.M.) (@ 80' SPACING)			(N)	
(TY II-A-A) (R.P.M.) (@ 20' SPACING)			(O)	
BLUE RPM FOR FIRE HYDRANT			(W)	
ISLAND NOSE (SEE DETAIL)			(V)	

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKING (BY OTHERS)

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

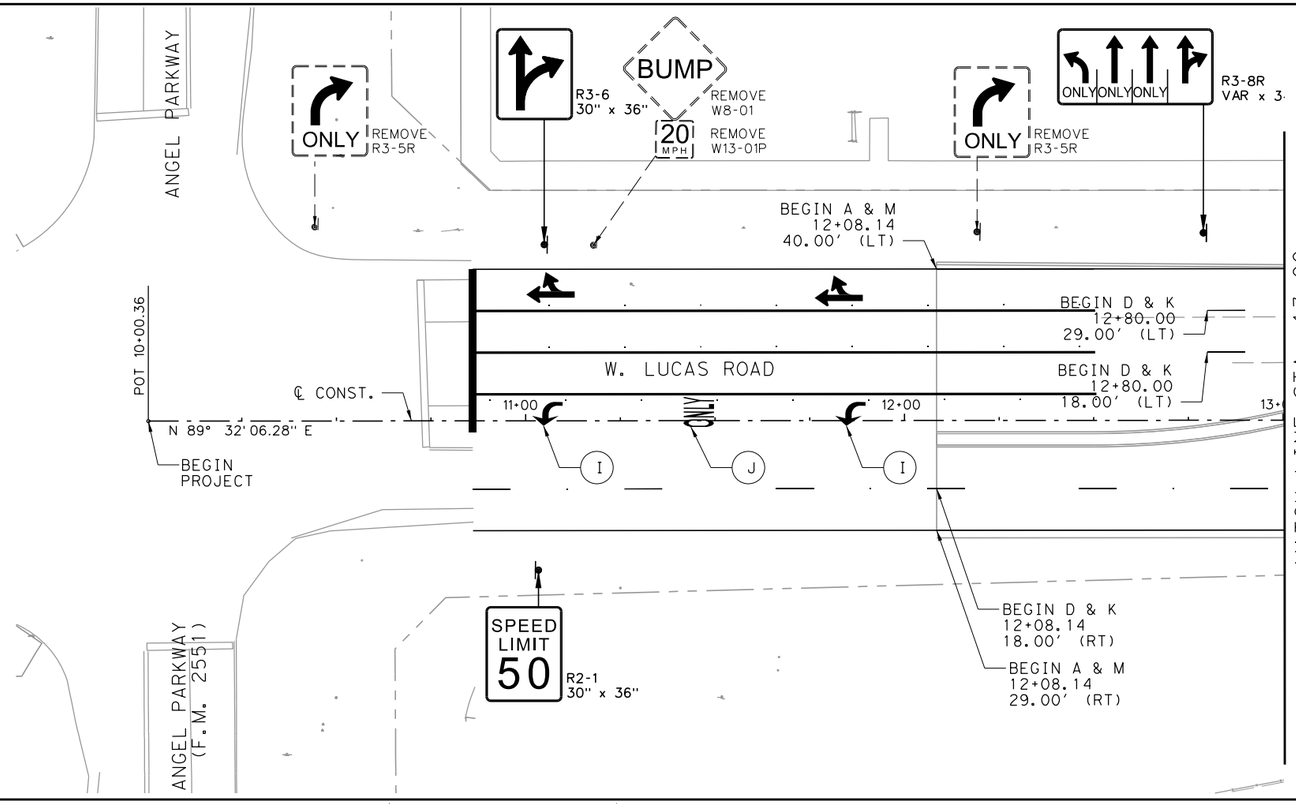
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		241
COLLIN		

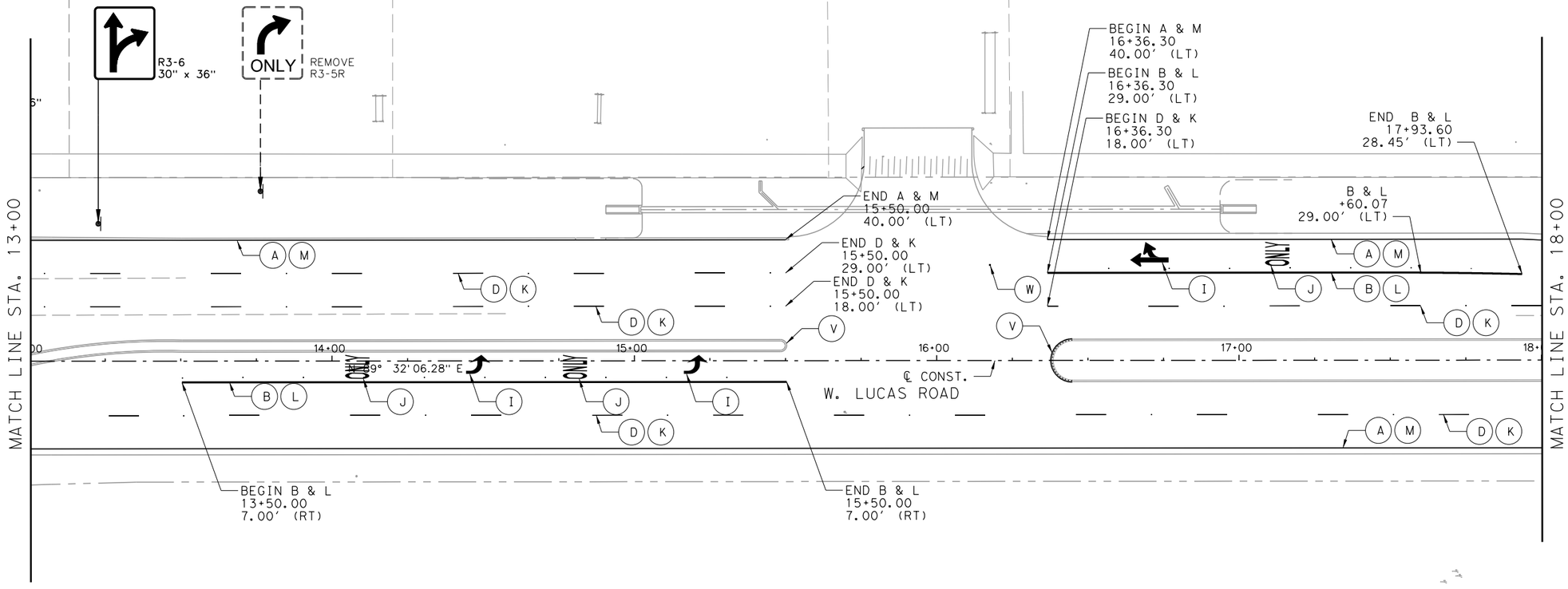
Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:15 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P01_BY_OTHERS.dgn

SIGNING & PAVEMENT MARKING LEGEND:

COLOR/WIDTH/TYPE			PERMANENT MARKINGS
(W)	(6")	(SLD) (EDGE LINE)	A
(W)	(8")	(SLD)	B
(W)	(24")	(SLD)	C
(W)	(6")	(BRK) (LANE LINE)	D
(W)	(6")	(DOT)	E
(Y)	(6")	(SLD)	F
(Y)	(6")	(BRK)	H
(Y)	(6")	(SLD) (DOUBLE)	G
(W)		(ARROWS)	I
(W)		(WORDS)	J
(TY I-C) (R.P.M.) (@ 80' SPACING)			K
(TY I-C) (R.P.M.) (@ 20' SPACING)			L
(TY II-C-R) (R.P.M.) (@ 20' SPACING)			M
(TY II-A-A) (R.P.M.) (@ 80' SPACING)			N
(TY II-A-A) (R.P.M.) (@ 20' SPACING)			O
BLUE RPM FOR FIRE HYDRANT			W
ISLAND NOSE (SEE DETAIL)			V





0 10 40
Feet

N

NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

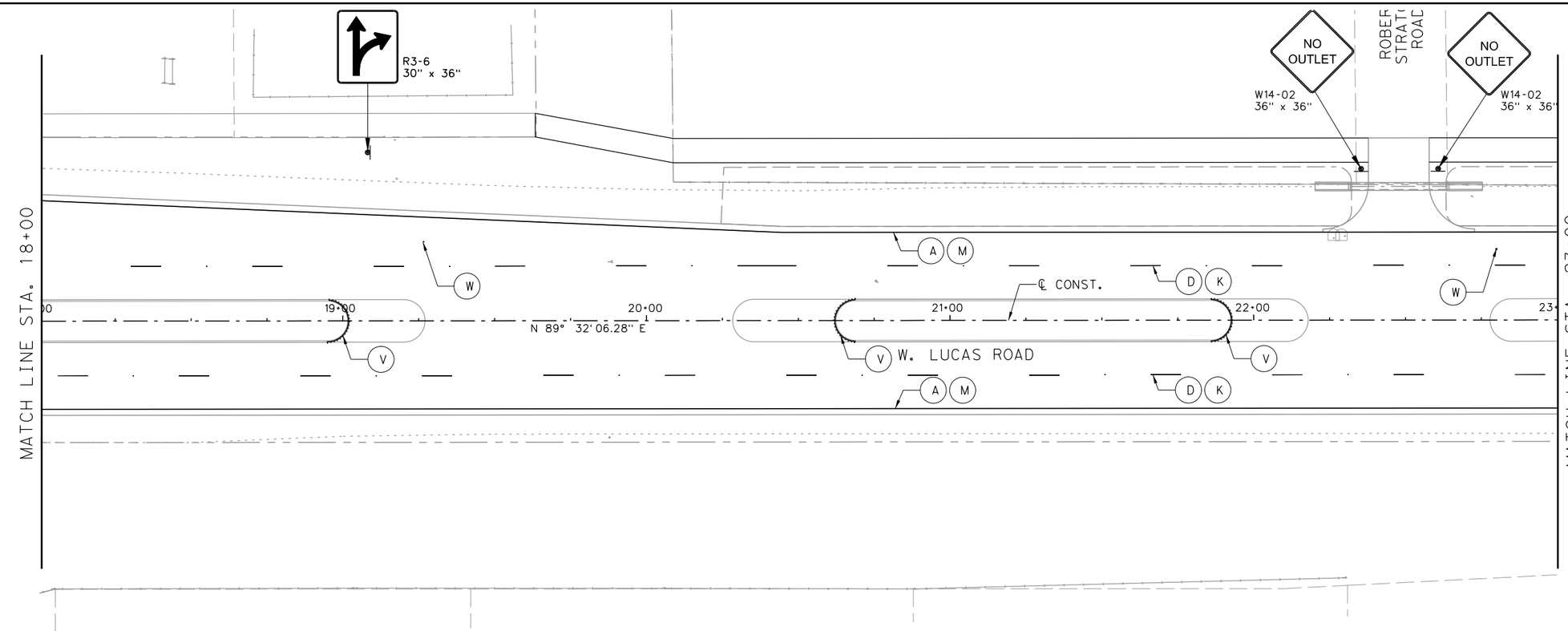
bc engineering
a PARSONS Company

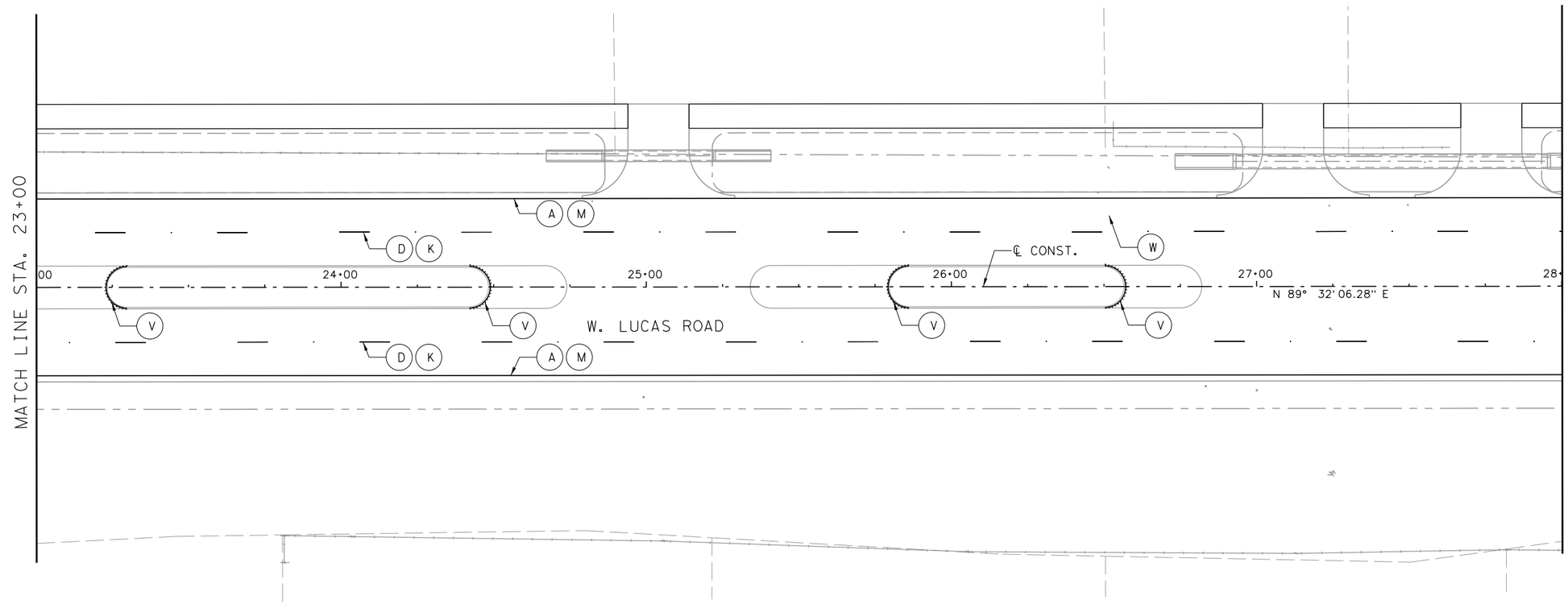
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		242
COLLIN		

DATE: 4/6/2026 1:57:17 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P01.dgn

Texas811 Know what's below. Call before you dig.





0 10 40
Feet

NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

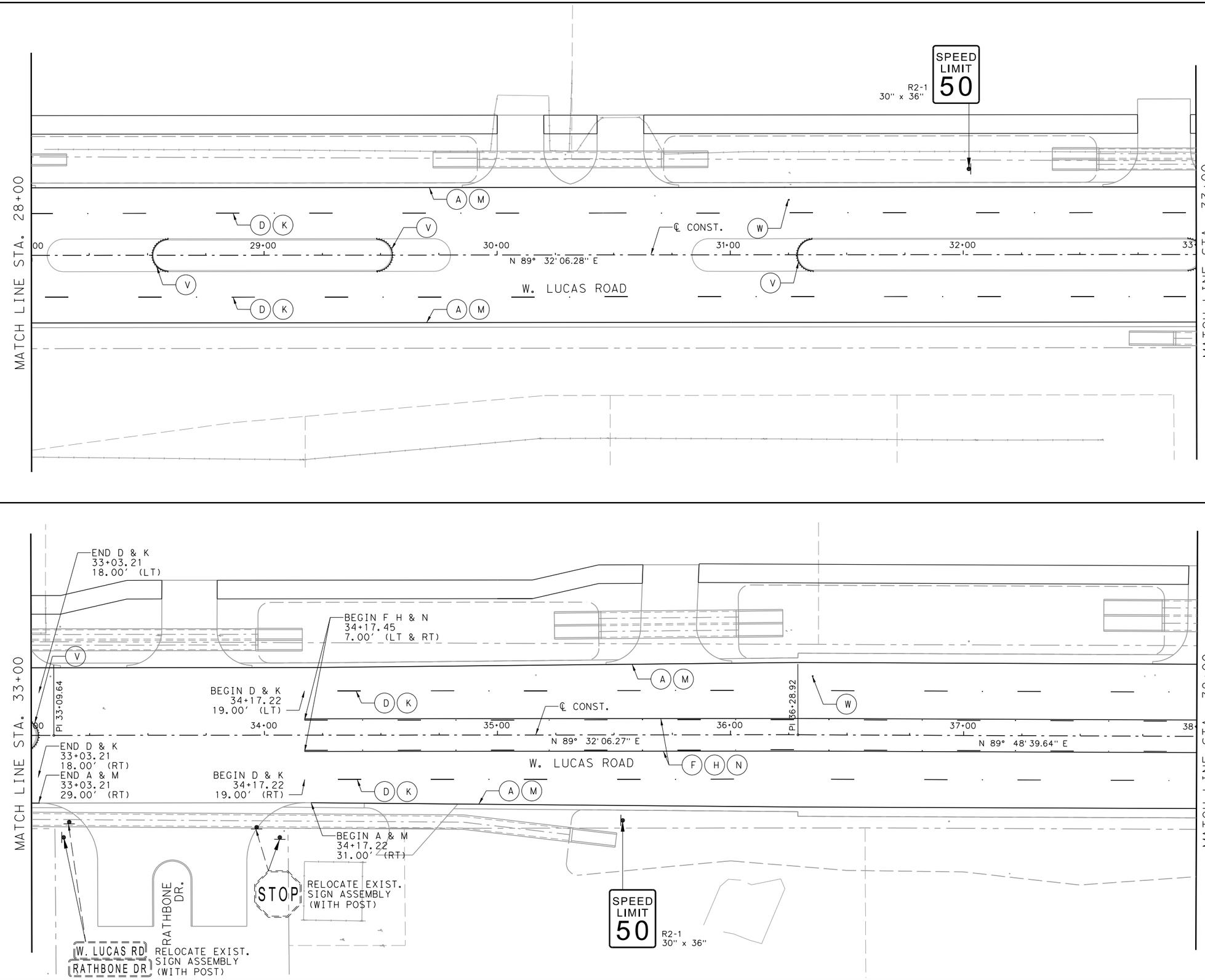
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		243
COLLIN		

DATE: 4/6/2026 1:57:18 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P02.dgn

Texas811 Know what's below. Call before you dig.



NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER

04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

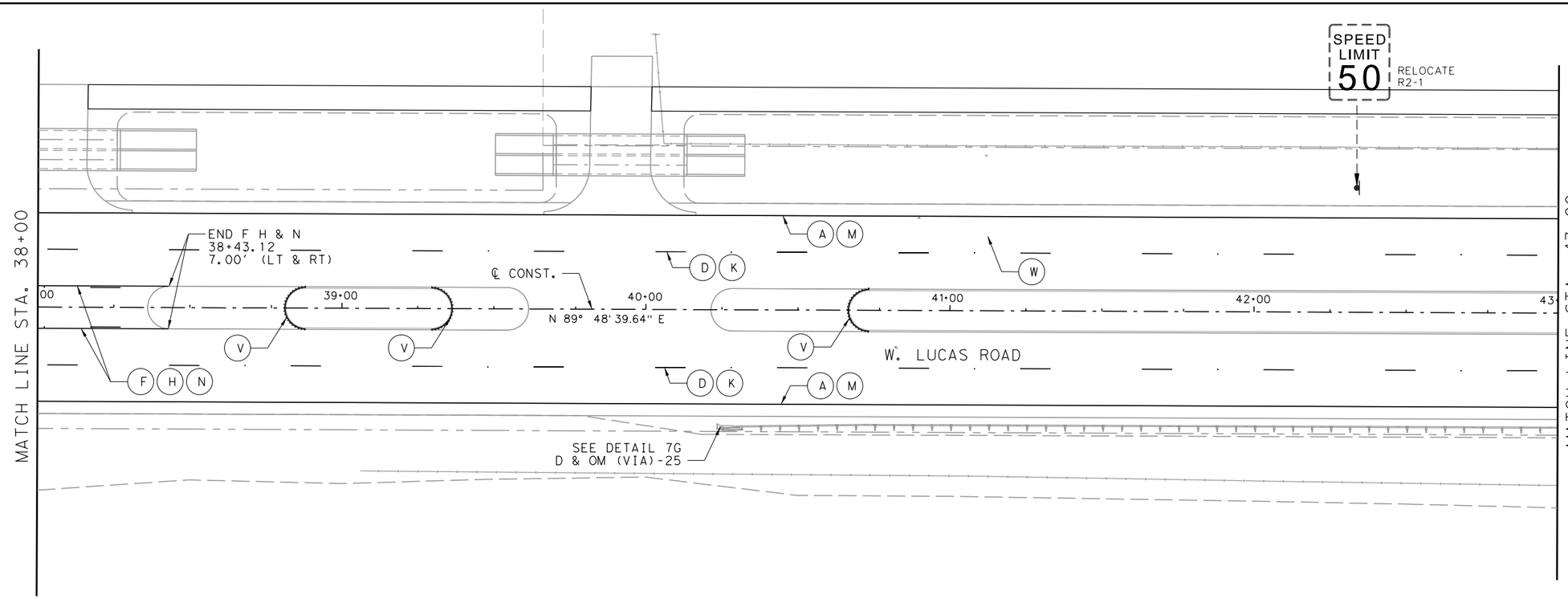
bc engineering
a PARSONS Company

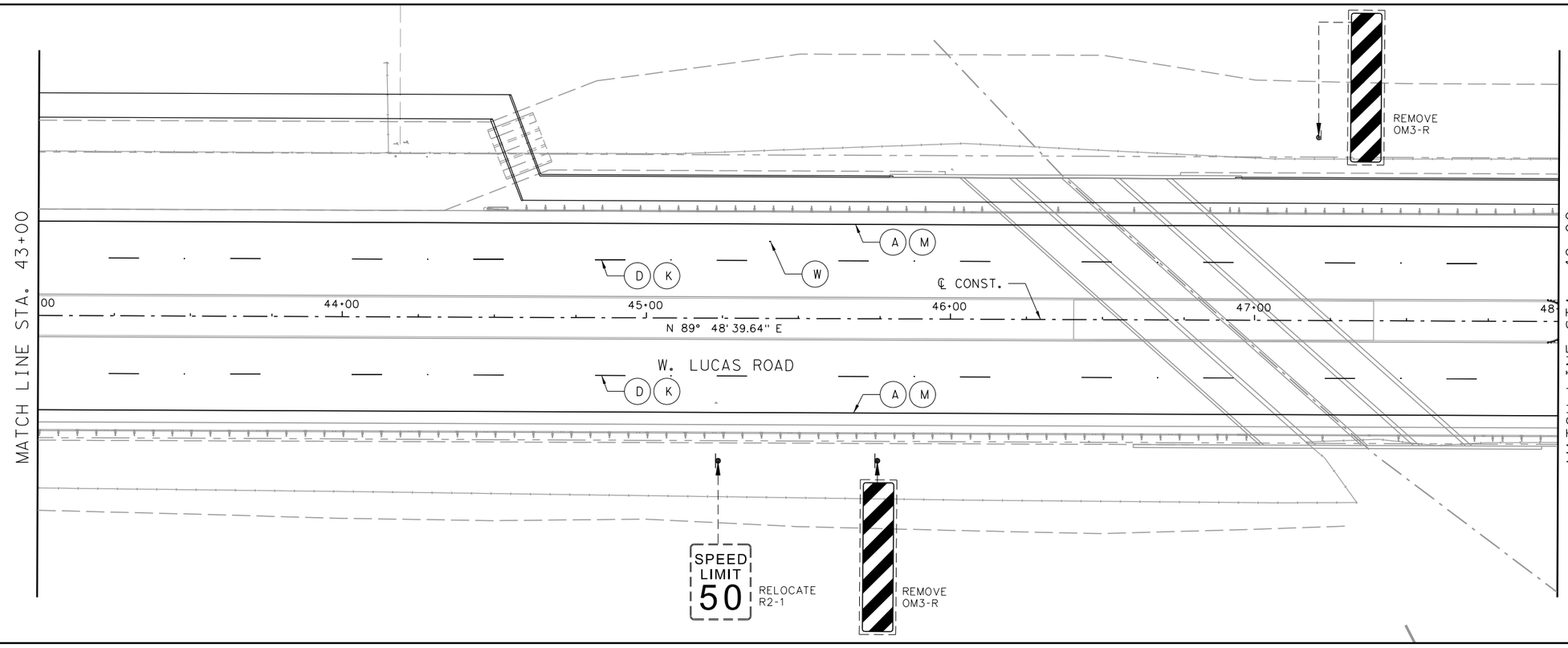
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		244
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:20 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P03.dgn





0 10 40
Feet

N

NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 4 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

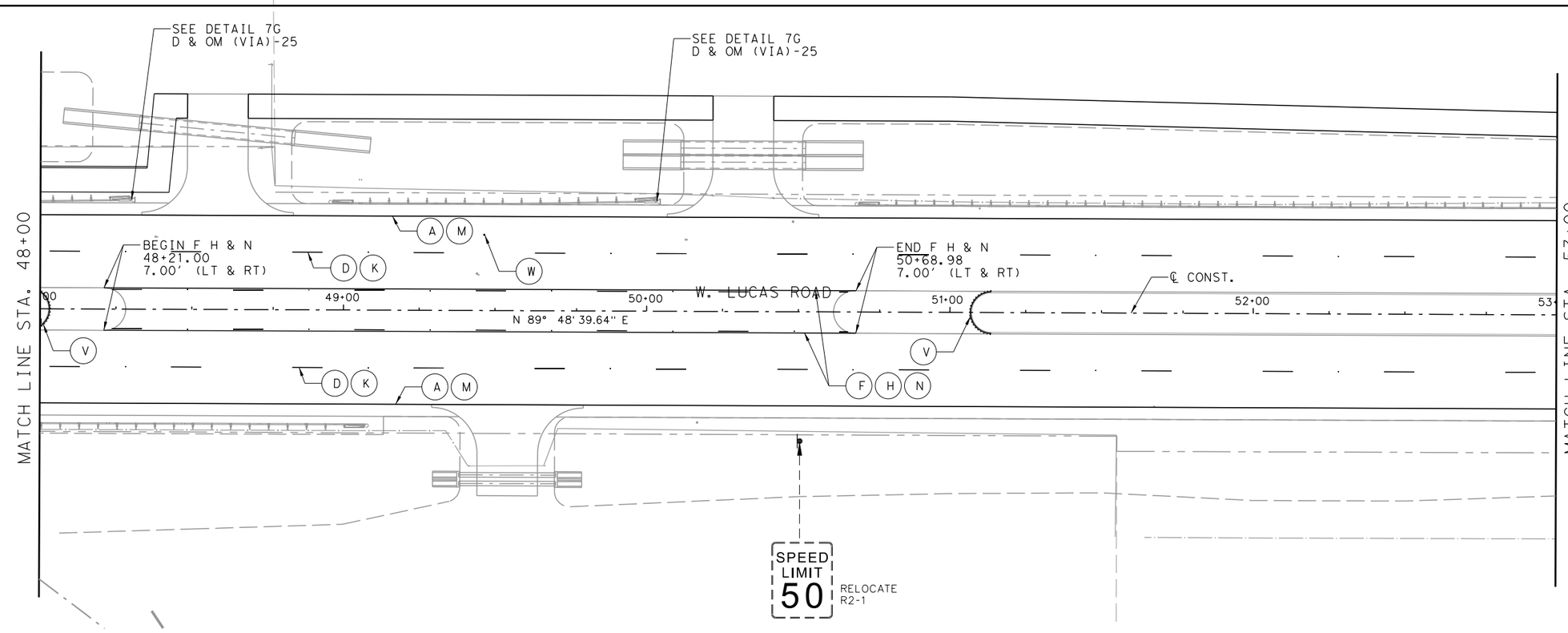
bc engineering
a PARSONS Company

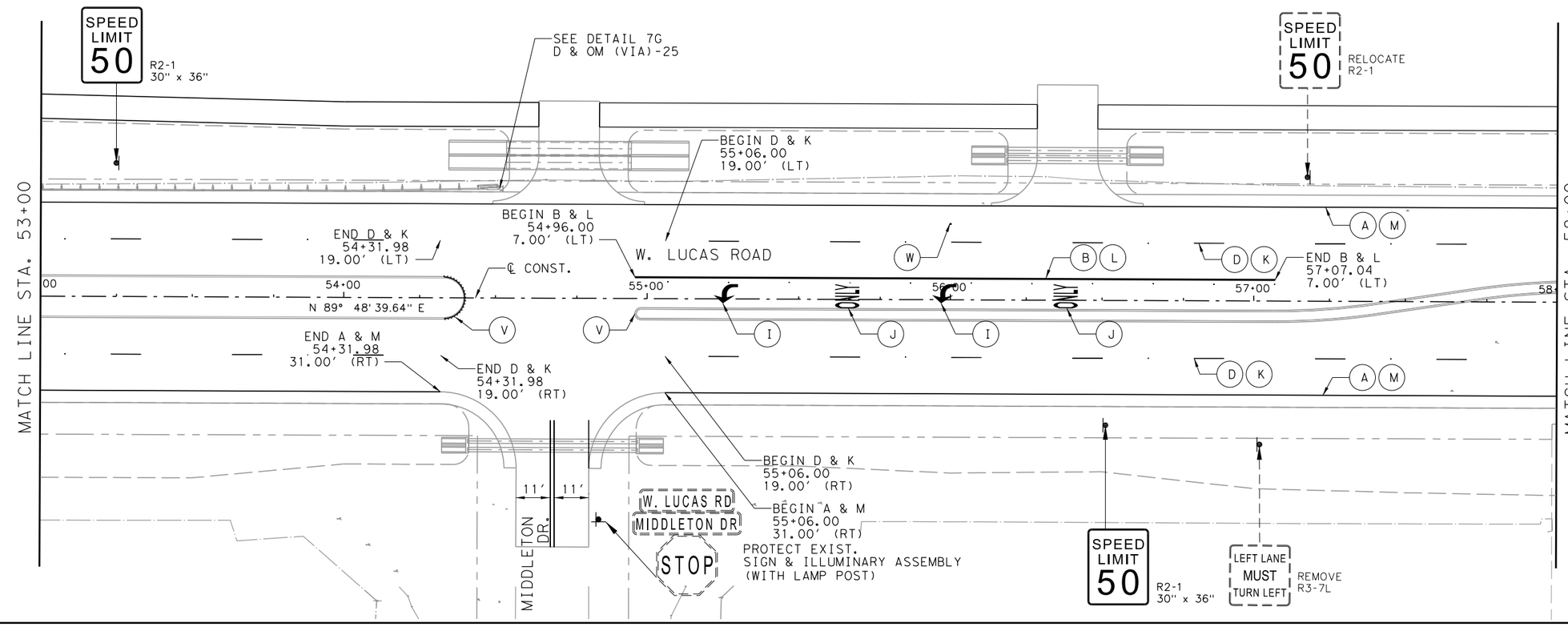
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		245
COLLIN		

DATE: 4/6/2026 1:57:21 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P04.dgn

Texas 811 Know what's below. Call before you dig.





DATE: 4/6/2026 1:57:22 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P05.dgn

Texas 811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

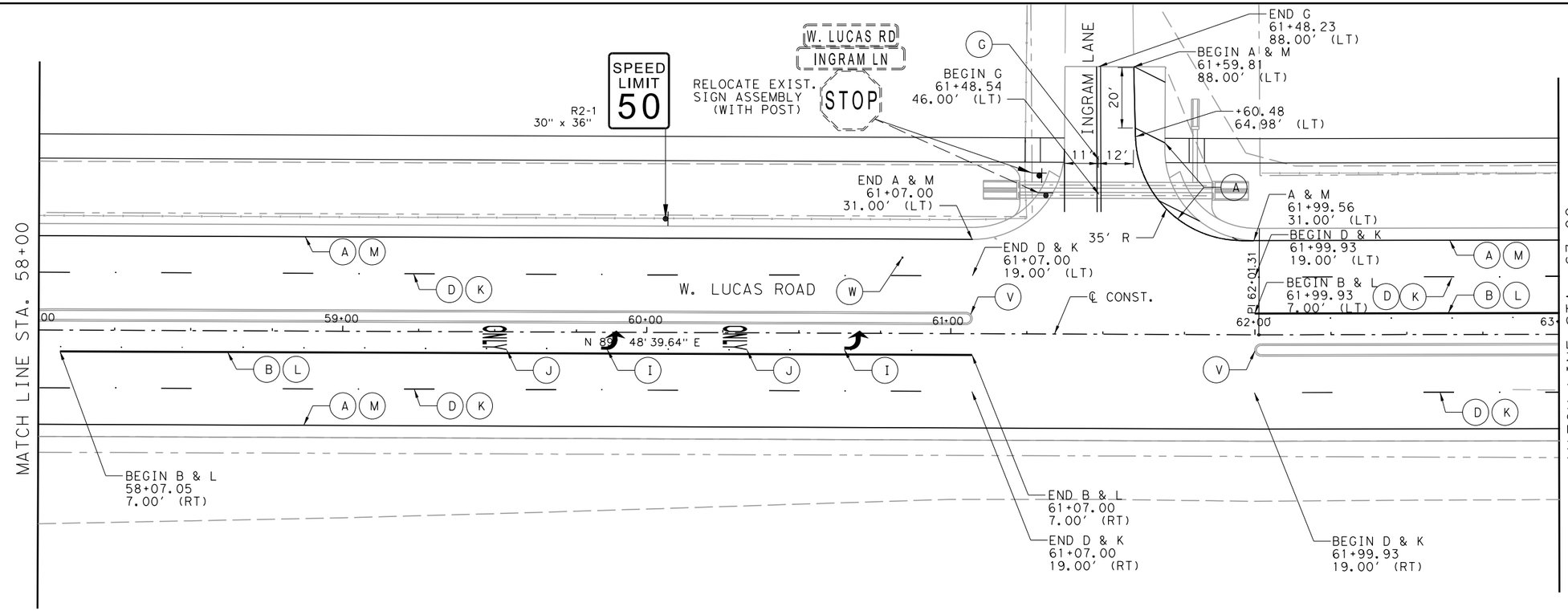
SHEET 5 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

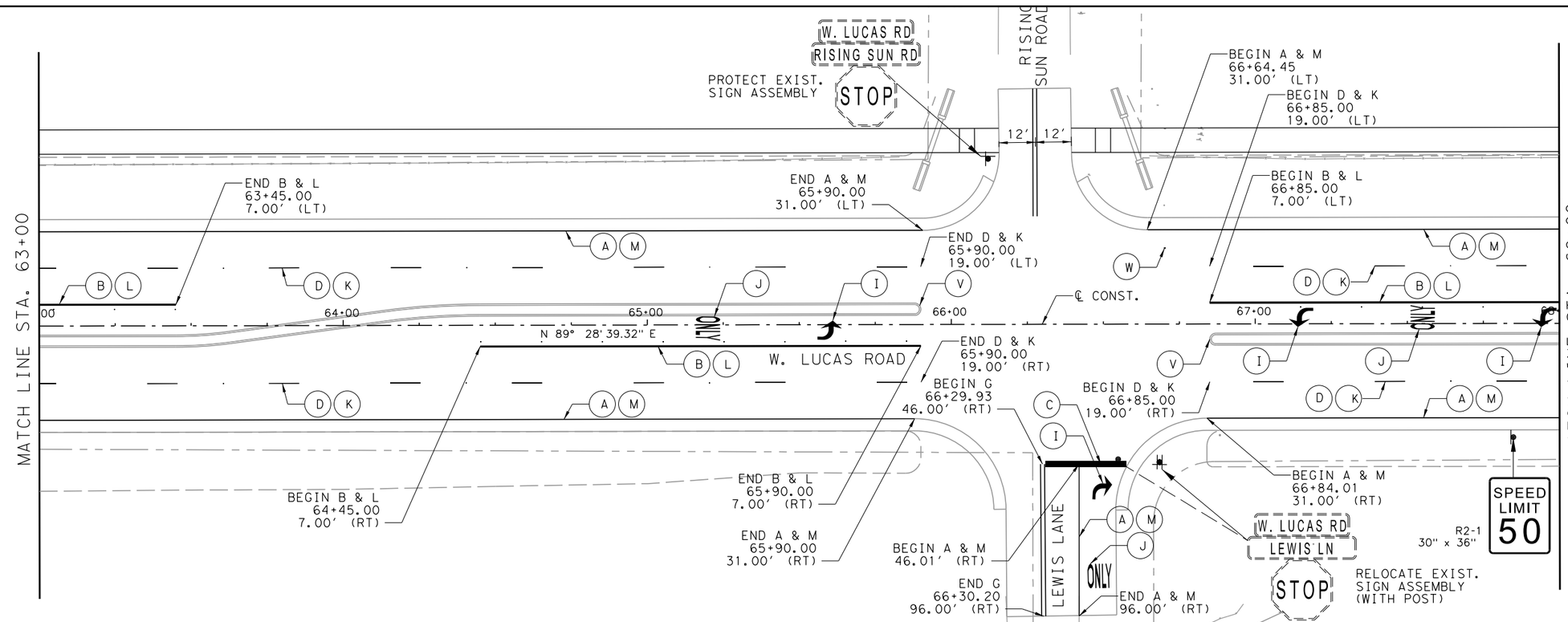
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		246
COLLIN		



NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

0 10 40
Feet



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

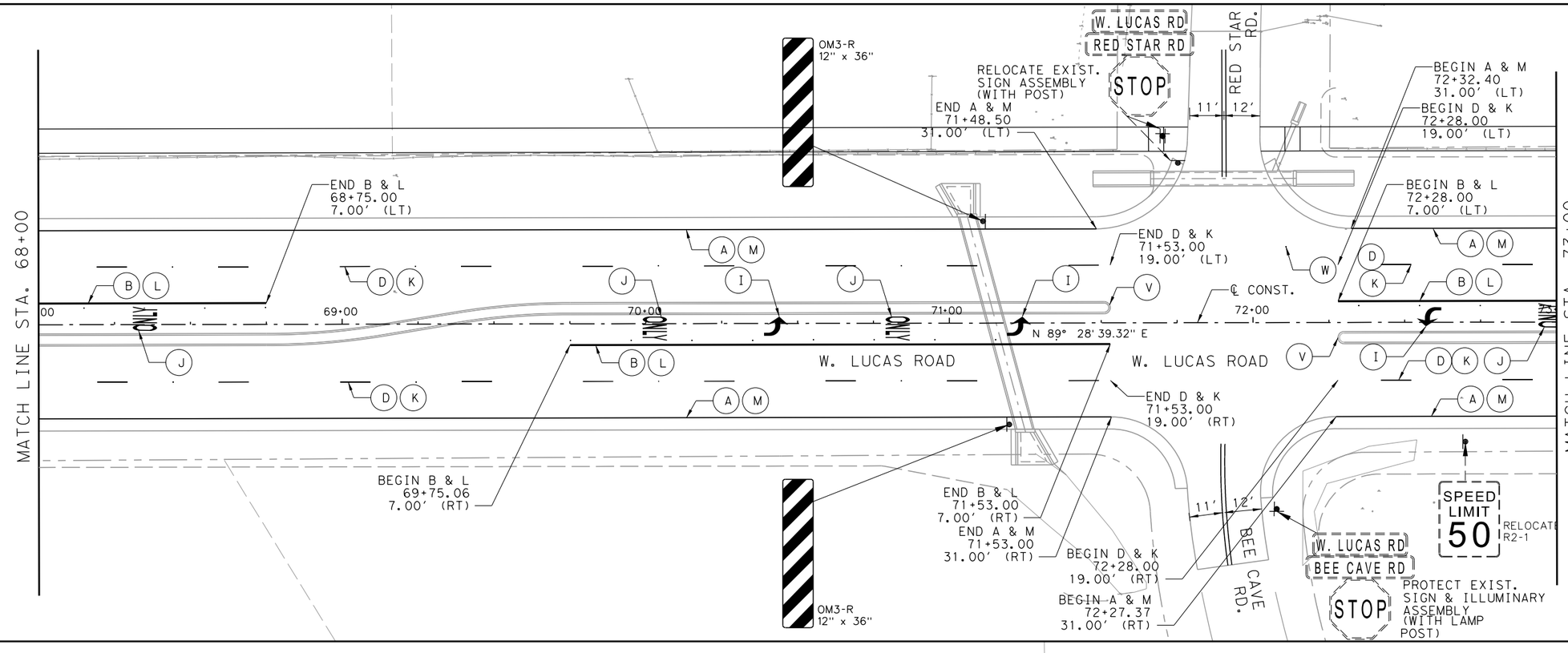
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		247
COLLIN		

DATE: 4/6/2026 1:57:24 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P06.dgn

Texas 811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

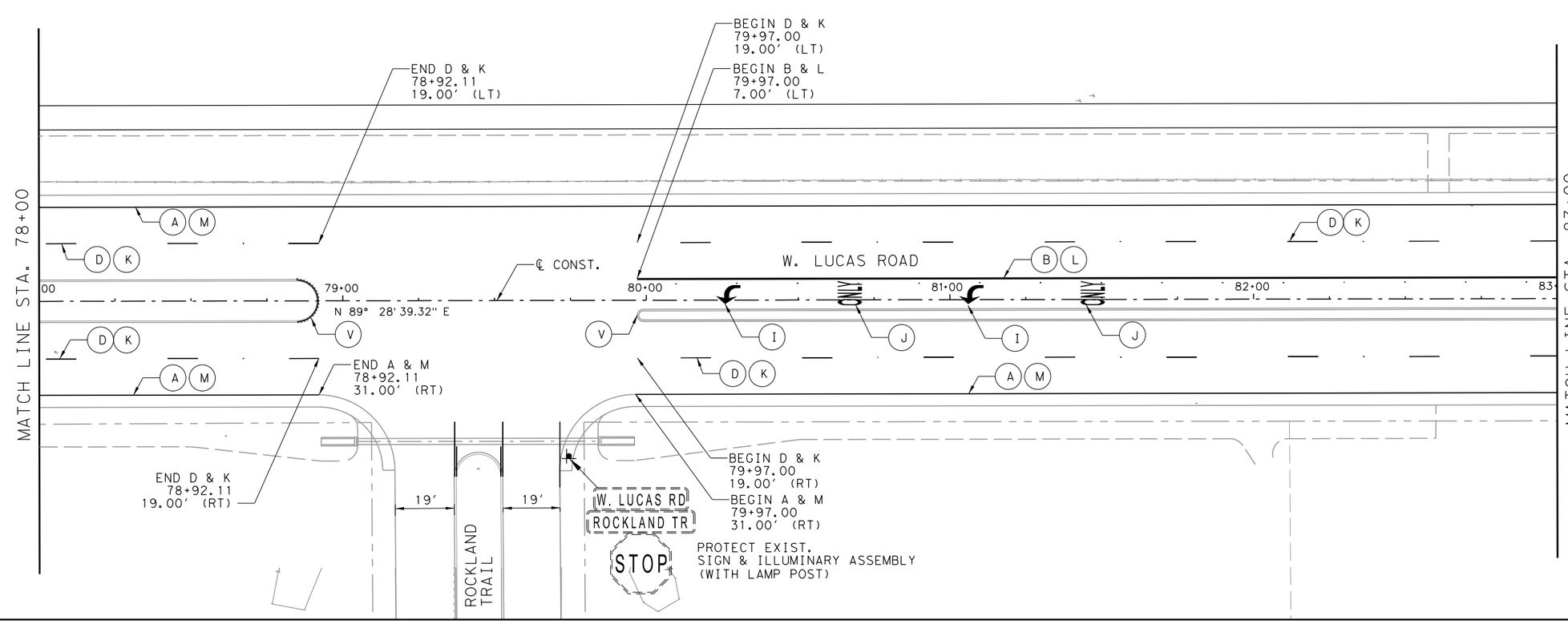
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		248
COLLIN		

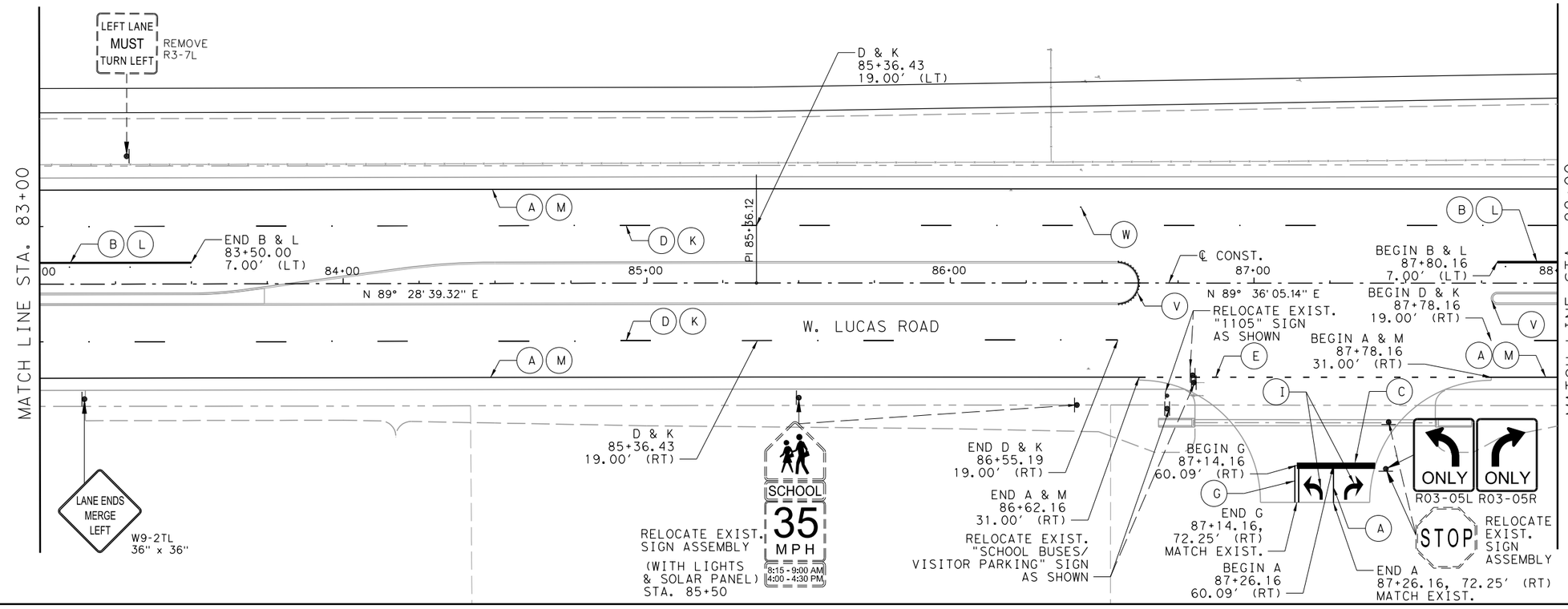
Texas811 Know what's below. Call! before you dig.

DATE: 4/6/2026 1:57:25 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P07.dgn



NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 8 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

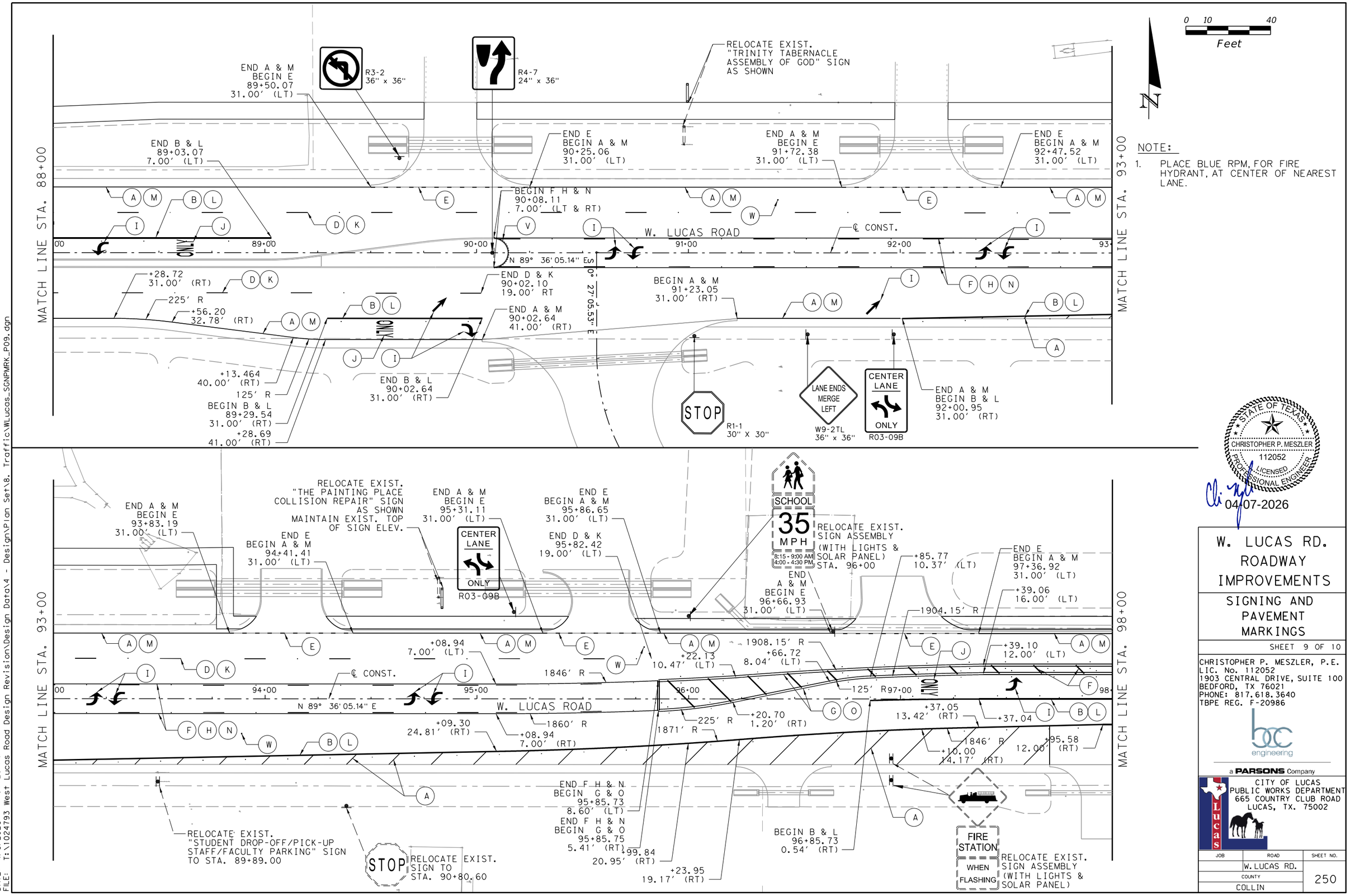
bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		249
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:26 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P08.dgn



NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

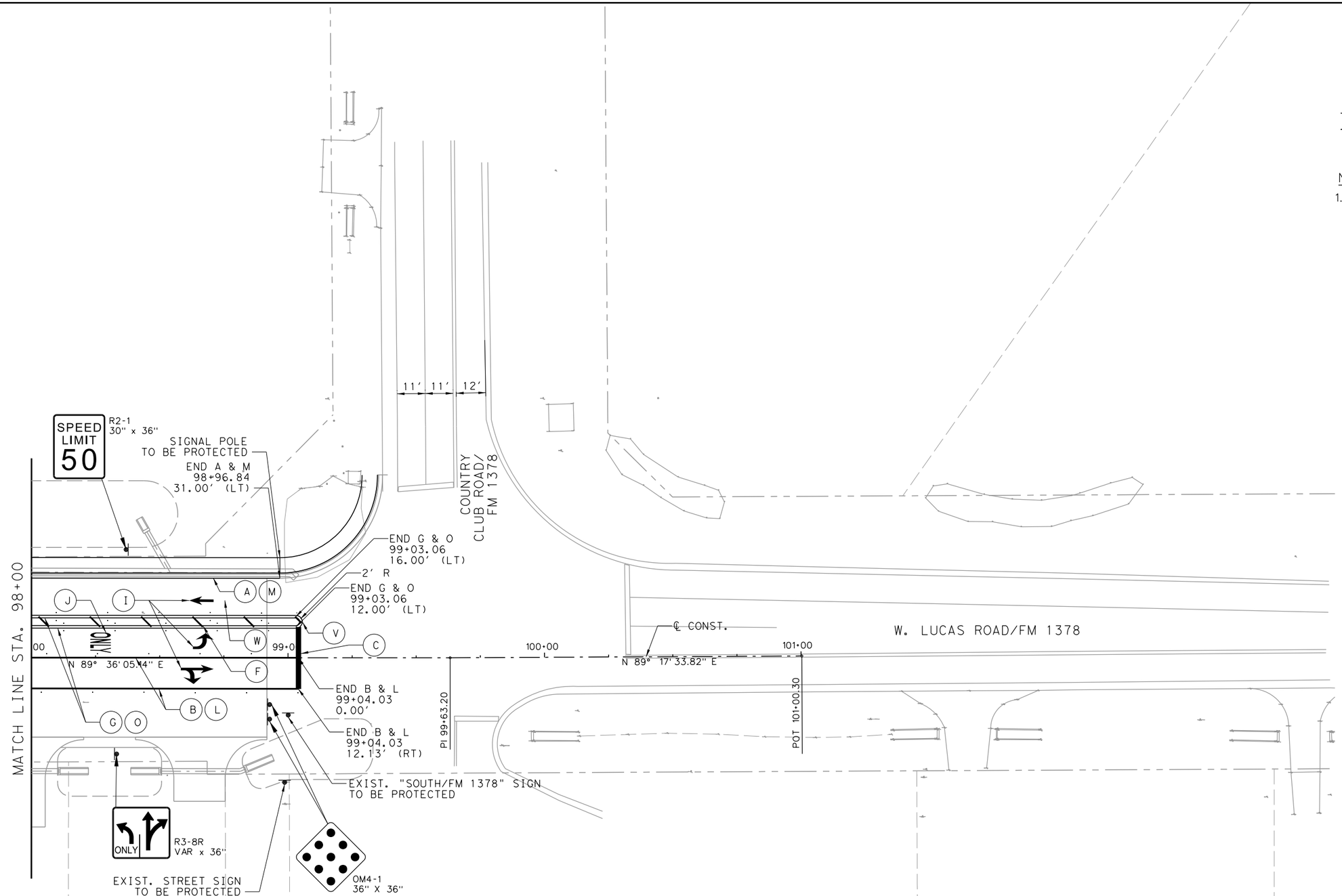
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		250
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:28 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P09.dgn



NOTE:

1. PLACE BLUE RPM, FOR FIRE HYDRANT, AT CENTER OF NEAREST LANE.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bgc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		251
COLLIN		

DATE: 4/6/2026 1:57:29 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\8. Traffic\WLucas_SGNPMRK_P10.dgn

Texas811 Know what's below. Call before you dig.

PART III, SEC. A: SHARED SWPPP DEVELOPMENT

1. **CONTRACTOR** (Operator in charge of SWPPP day-to-day implementation)
   Name:_____
   Address:_____
   Contact:_____
   Phone:_____
   Date Notice of Intent (NOI) Submitted to TCEQ: N/A

OWNER
Name: CITY OF LUCAS, PUBLIC WORKS DEPARTMENT
Address: 665 Country Club Road; Lucas, TX, 75002
Contact: Director of Public Works, Jeremy Bogle
Phone: Office:(972) 912-1208 Main: (972) 727-8999

TCEQ does not require NOI for Small Construction Project < 5 acres.

2. **OPERATOR'S RESPONSIBILITIES:**

CONTRACTOR

- Update this SWPPP sheet to match contractor's means and methods by providing the following information on this page:
  - *o* Contractor's name and contact information
  - *o* Dates SWPPP was prepared
  - *o* Update the Description/Phasing of Land Disturbing Activity as needed
  - *o* Complete the Construction Support Activities information
  - *o* Complete inspectors' information and qualifications
  - *o* Select and note the inspection day
- Construction Site Notice
- Install structural BMPs and implement SWPPP.
- Update SWPPP site maps to reflect contractor's daily operations including revisions, installation dates, grading operation dates, BMP maintenance performed, changes to devices, locations of concrete washout areas, etc.
- Perform SWPPP inspections in accordance with the TPDES General Permit and keep copies of inspection reports with SWPPP. List of qualifications for the inspectors are to be kept with the inspection reports. Provide a copy of weekly inspection reports to the owner.
- Maintain structural BMPs as necessary and provide additional BMPs if required to control erosion and sedimentation.
- Establish permanent ground cover on all disturbed areas related to the construction.
- Maintain contractor's SWPPP records for three years in accordance with the TPDES General Permit.

OWNER

- Submit a copy of Owner's SWPPP to all receiving MS4 Operators.
- Perform SWPPP inspections in accordance with the TPDES General Permit and keep copies of inspection reports with SWPPP. List of qualifications for the inspectors are to be kept with the inspection reports.
- Authorize changes to the SWPPP as necessary to control storm water pollutants.
- Maintain owner's SWPPP records for three years in accordance with TPDES General Permit.

PART III, SEC. F.1.a: PROJECT DESCRIPTION:

The City of Lucas is located in Collin County, Texas northeast of the Dallas-Fort Worth Metroplex, 30 miles north of downtown Dallas. The West Lucas Reconstruction and Widening project is to be completed without the use of any state or federal funds. Project activities will include the rehabilitation of the existing West Lucas Road through removing and replacing the existing paved surface.
Changes to the road, width and paving materials is expected. At this time, it is anticipated that all construction activities will be conducted within the existing and proposed West Lucas Road Easements.

PART III, SEC. F.1.b: POTENTIAL POLLUTANTS & SOURCES:

(X) Concrete Saw Water. Pavement removals and new paving joints.
(X) Sediment. Exposed ground areas without BMP coverage.
(X) Debris & Trash Management
( ) Fuels & Lubricants. Vehicle operations, refueling and maintenance.
(X) Floatable Debris. Improper disposal of construction materials, food & beverage containers, etc.
( ) Raw Sewage. Improper collection & disposal of human waste.
( ) Pesticides. Improper application or spills when used on seeded or sodded areas.
(X) Fertilizer. Improper application or spills when used on seeded or sodded areas.
( ) Hyperchlorinated Water. Improper discharge from new water lines.
(X) Hydrated Lime. Pavement sub-grade stabilization operations.
(X) Waste Concrete. Mixer or transport washouts.
(X) Concrete Curing Compound. Pavement finishing operations.
( ) Portland Cement. Stored on site for concrete batch plant operations.
( ) Fly Ash. Stored on site for concrete batch plant operations.
( ) Paints & Solvents. Exterior painting operations.
( ) Boring Mud. Waste from horizontal or vertical drilling operations.
( ) Sand Blasting Grit. Improper collection of waste from sand blasting
( ) Others.

PART III, SEC. F.1.c: DESCRIPTION/ PHASING OF LAND DISTURBING ACTIVITY

Phase I	Install Erosion Control	Start Date:_____	End Date:_____
Phase 2	Clearing and Grubbing	Start Date:_____	End Date:_____
Phase 3	U.G. Utility Installation	Start Date:_____	End Date:_____
Phase 4	Paving Operations	Start Date:_____	End Date:_____
Phase 5	Building Construction	Start Date:_____	End Date:_____
Phase 6	Landscaping & Cleanup	Start Date:_____	End Date:_____

PART III, SEC. F.1.d:

Disturbed area (Acres):	24.63 Acres
Disturbed Area to Date (Acres):	0.0 Acres
Total Site Area (Acres):	24.63 Acres

PART III, SEC. F.1.e : SOIL TYPES ON SITE

- Fat Clay
- Lean Clay/Clayey Sand

PART III, SEC. F.1.f: GENERAL LOCATION MAP

- See cover sheet of construction plan set.

PART III, SEC. F.1.g: DETAILED SITE MAPS

- See Erosion Control Plan sheets of the construction plan set for detailed erosion control plan requirements.

PART III, SEC. F.1.h: CONSTRUCTION SUPPORT ACTIVITIES

- Discharges of storm water runoff from the following indicated construction support activities are included under this general permit provided that the following conditions are met:
  (a) the activity is located within one mile of the construction site;
  (b) the SWPPP includes provisions for controlling erosion and the discharge of pollutants from the support activity site(s); and
  (c) the support activities do not operate beyond the completion date of the construction activity.

( ) Rock Crushers Location:
( ) Equipment Staging Area Location:
( ) Material Storage Yard Location:
( ) Material Borrow Areas Location:
( ) Material Spoil Areas Location:
(X) None Applicable

PART III, SEC. F.1.i: RECEIVING WATERS

- The following indicated streams receive storm water runoff from the construction site:

(X) Muddy Creek

PART III, SEC. F.1.j: TPDES GENERAL PERMIT

- A current copy of the TPDES General Permit is bound in the Contract Bid Manual, and/or is included herewith.

PART III, SEC. F.1.k: NOTICE OF INTENT

- A copy of the SWPPP shall be kept with the site inspection reports for the project. Copies shall be posted and maintained at the construction site. A copy of the acknowledgement certificate when received by each owner shall be kept with the inspection report records.

PART III, SEC. F.2&4: BEST MANGEMENT PRACTICES (BMPs)

The BMPs indicated below are to be used on this project where shown on the Detailed Site Maps referenced above.

Erosion Prevention

( ) Interceptor Swale	( ) Diversion Dike
( ) Pipe Slope Drain	(X) Mulching
( ) Erosion Control Blankets	(X) Channel Protection

Sedimentation Control

(X) Silt Fence	( ) Organic Filter Berm
( ) Triangular Sediment Filter Dike	(X) Inlet Protection
( ) Stone Outlet Sediment Trap	( ) Organic Filter Tube (Synthetic Bales or Erosion Control Log)
(X) Check Dams	( ) Temporary Sediment Tank
( ) Depressed Grade Sediment Trap	( ) Pipe Inlet Protection

*Sediment Basin
*Note: Temporary sediment basins are required to be used for treatment of disturbed land area runoff from areas that are 10 acres or larger. See Part III, Sec. F.2(c)(i)(A) below.

Stabilization Practices

( ) Permanent Seeding	(X) Permanent Sodding
( ) Vegetative Buffer Strips	(X) Protection of Existing Trees
(X) Temporary Vegetation	

Off-Site Tracking & Dust Control

(X) Stabilized Construction Entrance	( ) Wheel Wash
( ) Dust Control	

Velocity Control

( ) Pipe Outlet Velocity Control	(X) Permanent Sodding

Other Required Controls

( ) Perm. Pipe Outlet Velocity Controls	(X) Debris & Trash Management
(X) Concrete Waste Management	(X) Lime Stabilization Management
(X) Conc. Sawcutting Management	(X) Sanitary Facilities
( ) Sandblasting Waste Management	( ) Chemical Management

PART III, SEC. F.2(c)(i)(A): SEDIMENT BASINS

- A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time.

(X) A sediment basin is not required on this project.
( ) A sediment basin(s) is used on this project with location(s), design calculations and capacity calculations provided on the detailed site maps of this SWPPP.
  ( ) A sediment basin(s) is not feasible for this project for the following reasons:
  ( ) Highly Pervious Soils: Soils do not exist on the site that are adequate for dam construction.
  ( ) Excessively Flat Site: Topography will not allow a basin to drain properly.
  ( ) Trees to Remain: Tree removal for basin construction would violate the City's Tree Protection Ordinance.
  ( ) High Groundwater Elevation The normal groundwater elevation is above the bottom elevation of a basin.
  ( ) Shallow Depth to Bedrock Bedrock would have to be removed to install a basin.

For each item selected, the design engineer shall provide written documentation indicating why a sediment basin cannot be installed on the site. A copy of this documentation shall be included with the inspection report records for the project. Supporting documentation may include soils reports, topographic maps and approved site plans indicating protected tree areas.

PART III, SEC. F.3: PERMANENT STORMWATER CONTROL $_____

PART III, SEC. F.2(c)(i)(A): SEDIMENT BASINS

- Sodding and seeding gabion walls.

PART III, SEC. F.5: APPROVED STATE & LOCAL PLANS

- This SWPPP has been prepared in accordance with the City of Lucas's requirements. Any updates or revisions to the SWPPP must remain in compliance with federal, state or local approved plans applicable to protecting surface water resources.

PART III, SEC. F.6 : MAINTENANCE REQUIREMENTS

- All erosion and sediment control measures and other protective measures identified in this SWPPP must be maintained in effective operating condition. If through inspections the Operator responsible for implementation of the devices determines that the BMPs are not operating effectively or is directed by a representative of the operator of the MS4 to perform maintenance, the maintenance must be performed before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

PART III, SEC. F.7: INSPECTION OF CONTROLS

PERSONNEL:
Each Operator shall provide inspection personnel that are knowledgeable of the TPDES General Permit, familiar with the construction site, and knowledgeable with the SWPPP for the site. Responsible parties shall be as listed below:

CONTRACTOR:		
INSPECTOR(S):		
COMPANY:		
PHONE:		

QUALIFICATIONS:

- A document listing the qualifications of each named inspector shall be kept with the inspection reports for the project which are a part of this SWPPP.
- Inspections Interval: Each Operator shall have an inspector conduct an inspection of the construction site once every seven (7) calendar days on the following designated day:

CONTRACTOR:

Monday	Tuesday	Wednesday	Thursday	Friday

- Inspections: Inspectors shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation, discharge locations, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion control measures identified in the SWPPP shall be inspected to ensure that they are properly installed, operating correctly and have not been damaged or destroyed. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.
- Inspection Reports: A report summarizing the scope of the inspection, the date of the inspection, and major observations relating to the implementation of the SWPPP must be made and retained as part of the SWPPP. Major observations should include: The locations of discharges of sediment or other pollutants from the site; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.

Actions taken as a result of inspections must be described within, and retained as a part of, the SWPPP. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the site is in compliance with SWPPP and the TPDES General Permit.

The certification on the inspection reports that are in full compliance shall be as follows:

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

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign this document and can provide documentation in proof of such authorization upon request.

SIGNATURE:_____ DATE:_____

Certifications on inspection reports may be signed by an authorized inspector when the site is in full compliance with the TPDES General Permit.

RESULTS OF INSPECTIONS:
The SWPPP must be modified based on the results of inspections, as necessary to better control pollutants in runoff. Revisions to the SWPPP must be completed within seven (7) calendar days following the inspection or sooner if directed by the City. If existing BMPs are modified or if additional BMPs are necessary, these changes shall be Implemented wherever possible, before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable.

PART IV: CONCRETE BATCH PLANTS

- Discharges of storm water runoff from concrete batch plants are not covered under this general permit. If used on this project, the Contractor must have discharges authorized under an alternative general permit or an individual permit for his concrete batch plant operations.

PART V: CONCRETE TRUCK WASHOUTS

- Discharges of storm water runoff from concrete batch plants are not covered under this general permit. If used on this project, the Contractor must have discharges authorized under an alternative general permit or an individual permit for his concrete batch plant operations.

WATER USE RESTRICTIONS

- Local water use restrictions in response to drought conditions can affect the ability of permittees to establish permanent ground cover which is required prior to their permit termination. The TPDES General Permit allows modifications to the BMPs used and the inspections interval under these circumstances.

( ) The City of Lucas has not implemented water use restrictions prior to the start of construction on this project.
( ) The City of Lucas implemented water use restrictions during the construction of this project.
  ( ) Date Restrictions Implemented:
  ( ) Inspections interval modified per General Permit.
  ( ) BMPs modified on Site Map.
  ( ) Date Restrictions were lifted:
( ) The City of Lucas implemented water use restrictions prior to the start of construction on this project.
  ( ) Date Restrictions Implemented:
  ( ) Inspections interval modified per General Permit.
  ( ) BMPs modified on Site Map.
  ( ) Date Restrictions were lifted:

PART II, SEC 3(e): MS4 OPERATOR NOTIFICATION:

- The following MS4 Operators indicated have received or will receive a copy of all Notices of Intent, Notices of Termination and any Notices of Change for this project:

( ) City of Lucas
Public Works Department
Lucas, TX 5002
ATTN: Director of Public Works

04/07-2026

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER

W. LUCAS RD. ROADWAY IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN

SHEET 1 OF 1

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		252
COLLIN		

Texas811 Know what's below. Call before you dig.

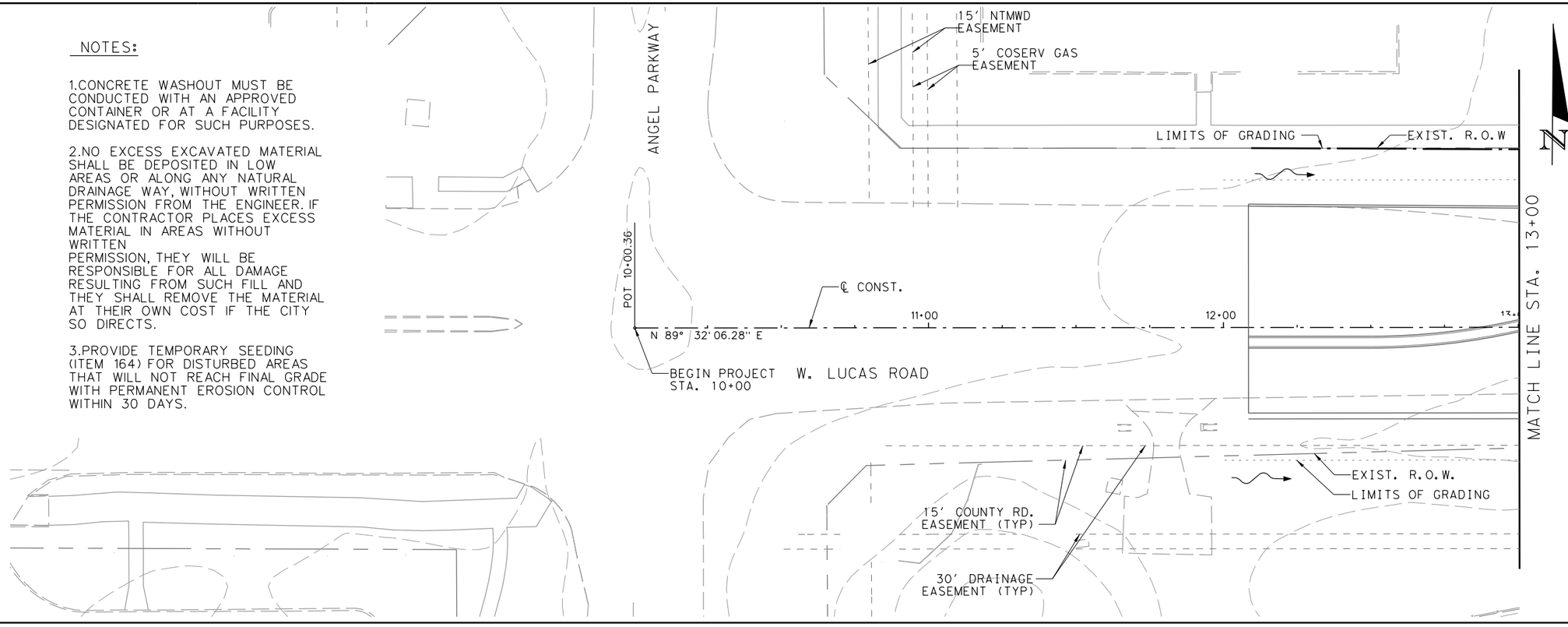
DATE: 4/6/2026 1:57:29 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\SW3P_2013.dgn

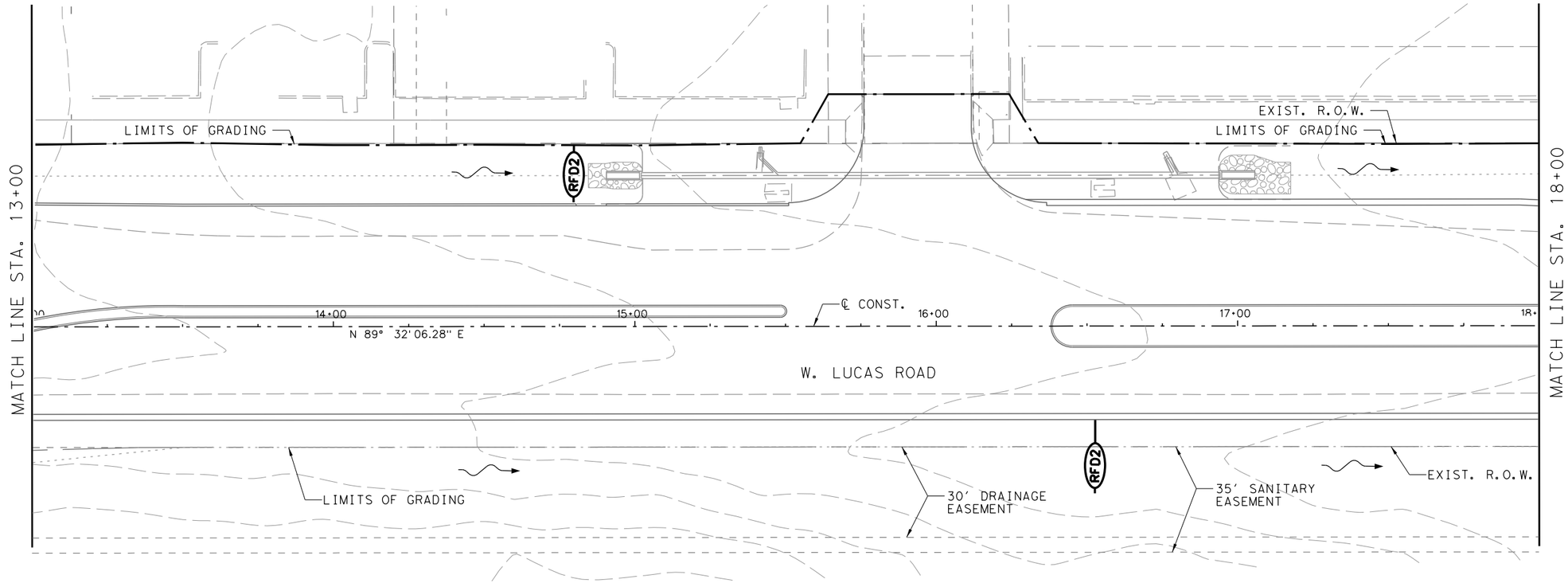
NOTES:

1.CONCRETE WASHOUT MUST BE CONDUCTED WITH AN APPROVED CONTAINER OR AT A FACILITY DESIGNATED FOR SUCH PURPOSES.

2.NO EXCESS EXCAVATED MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG ANY NATURAL DRAINAGE WAY, WITHOUT WRITTEN PERMISSION FROM THE ENGINEER. IF THE CONTRACTOR PLACES EXCESS MATERIAL IN AREAS WITHOUT WRITTEN PERMISSION, THEY WILL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM SUCH FILL AND THEY SHALL REMOVE THE MATERIAL AT THEIR OWN COST IF THE CITY SO DIRECTS.

3.PROVIDE TEMPORARY SEEDING (ITEM 164) FOR DISTURBED AREAS THAT WILL NOT REACH FINAL GRADE WITH PERMANENT EROSION CONTROL WITHIN 30 DAYS.





STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

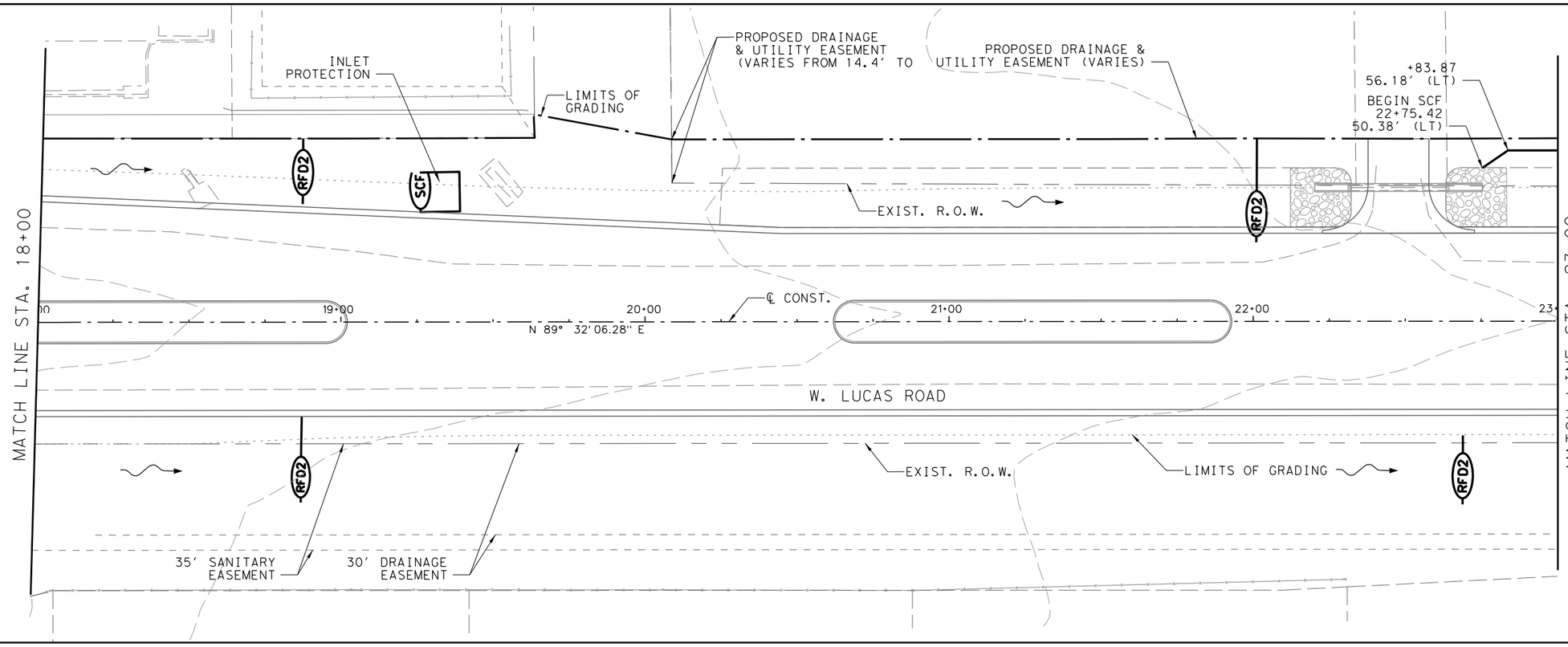
bc engineering
a PARSONS Company

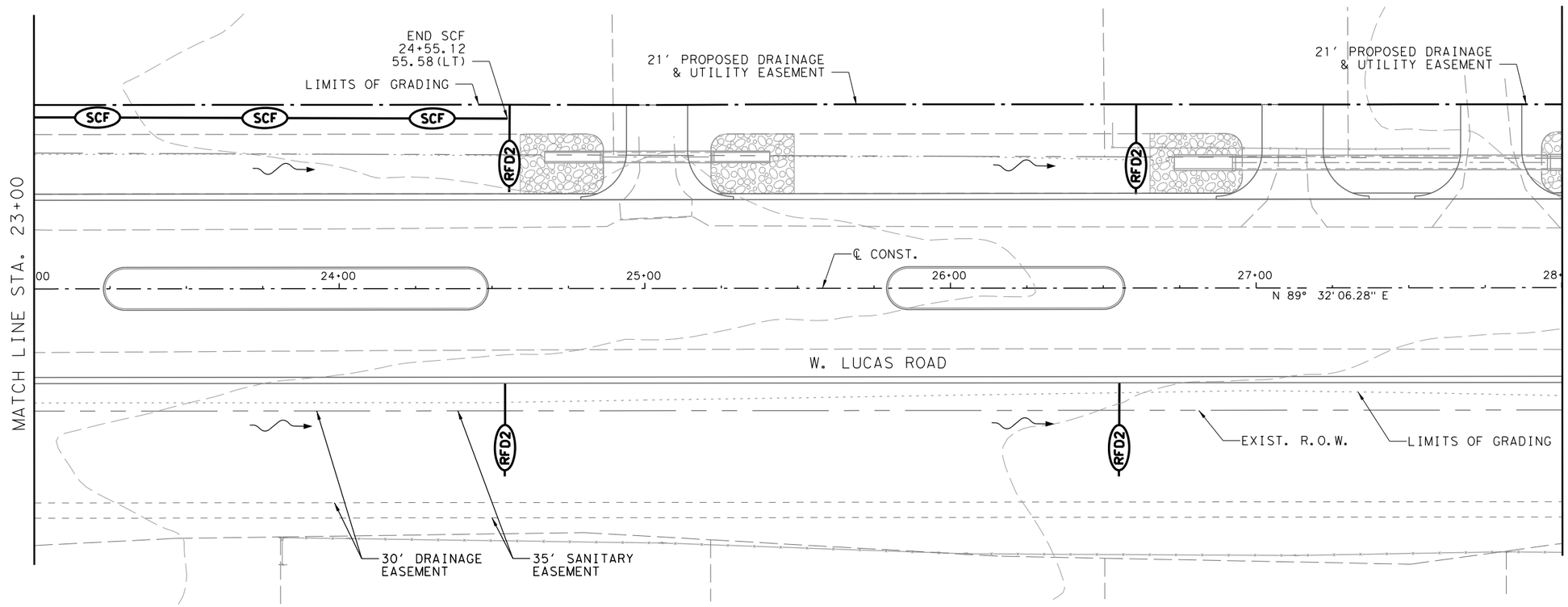
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		253
COLLIN		

DATE: 4/6/2026 1:57:35 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P01.dgn

Texas 811 Know what's below. Call before you dig.





0 10 40
Feet

LEGEND:

- DIRECTION OF FLOW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM TYPE-2
- RFD3 — ROCK FILTER DAM TYPE-3

CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

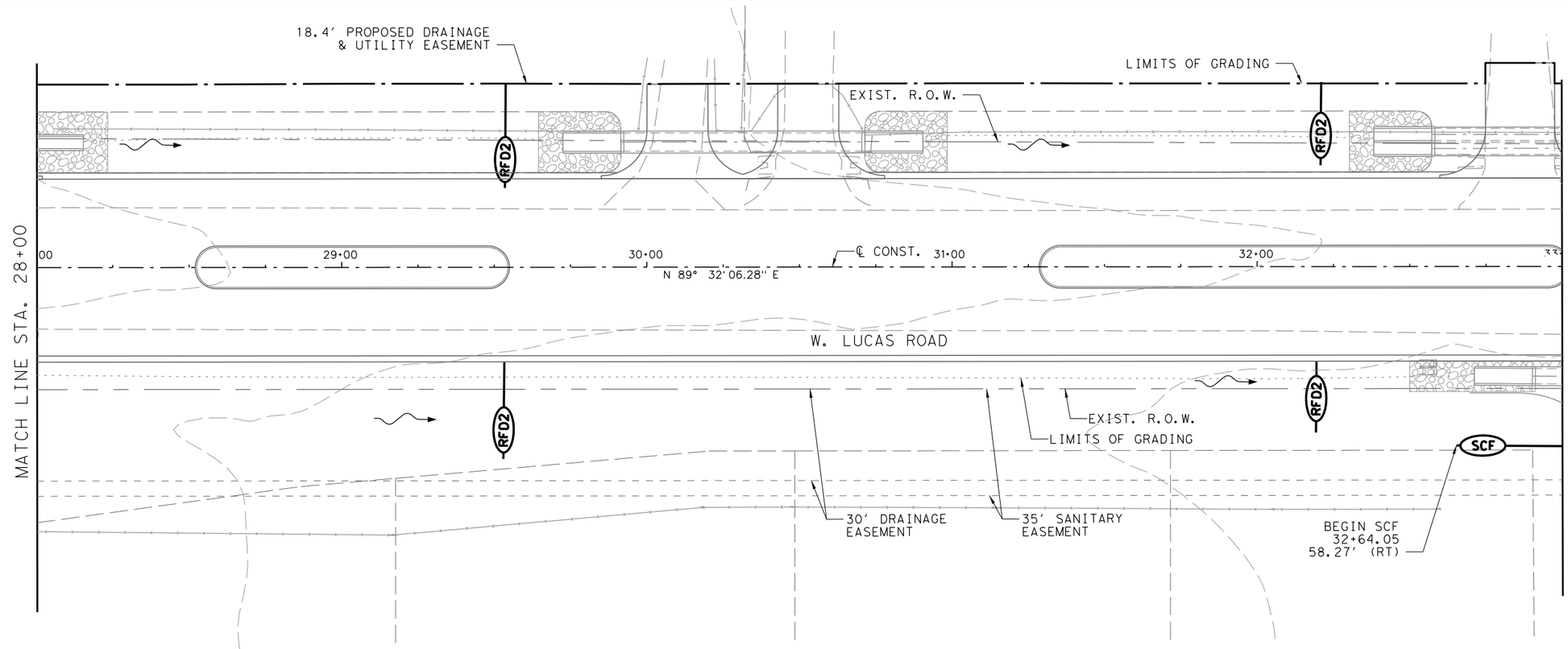
bc engineering
a PARSONS Company

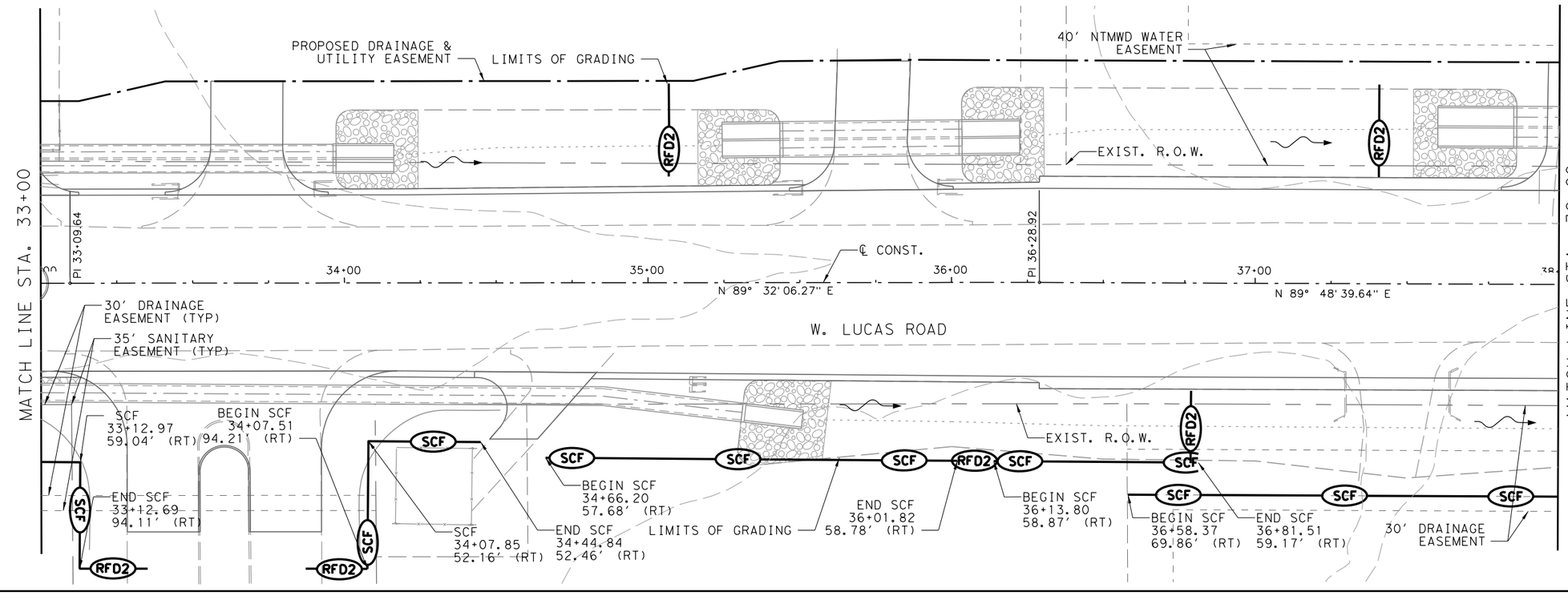
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		254
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:36 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P02.dgn





0 10 40
Feet

LEGEND:

- DIRECTION OF FLOW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM TYPE-2
- RFD3 — ROCK FILTER DAM TYPE-3

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

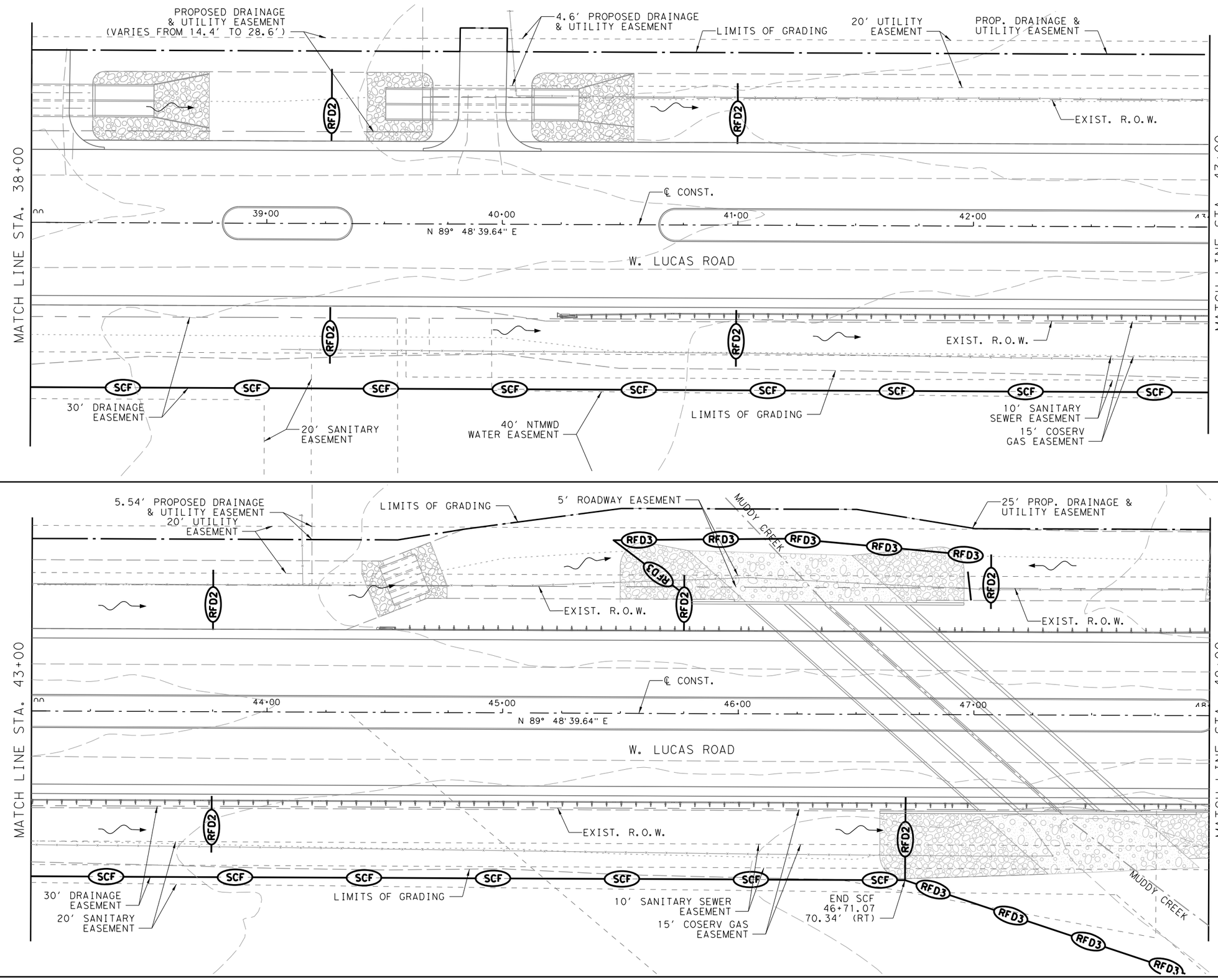
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		255
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:37 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P03.dgn



DATE: 4/6/2026 1:57:38 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P04.dgn

CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 4 OF 10

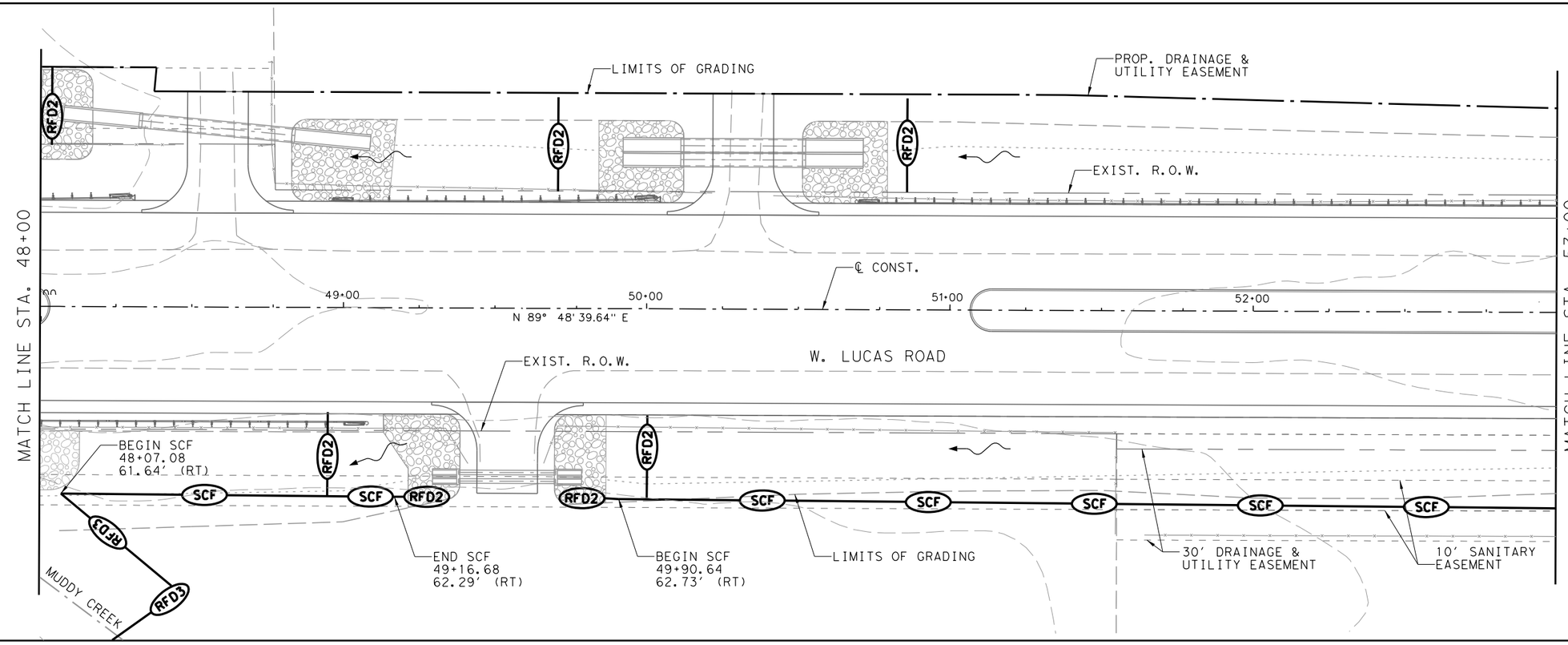
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

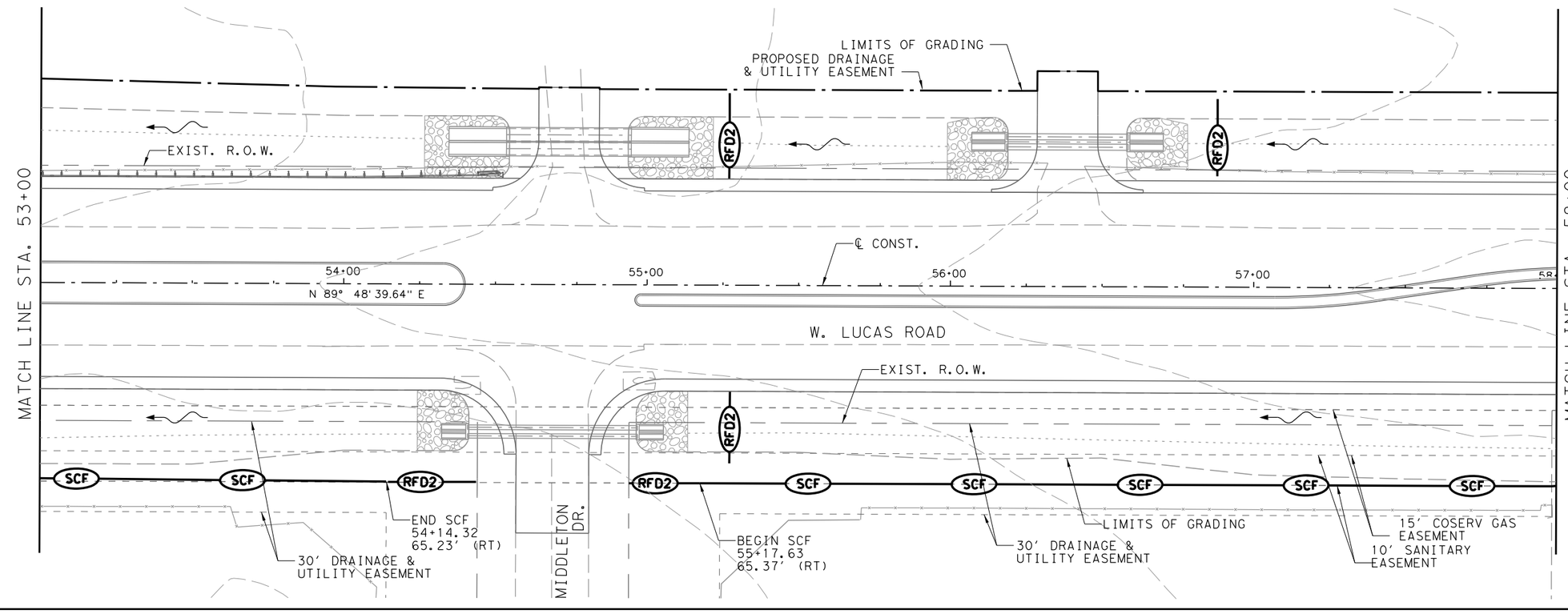
bcc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		256
COLLIN		

Texas 811 Know what's below. Call before you dig.





0 10 40
Feet

LEGEND:

- DIRECTION OF FLOW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM TYPE-2
- RFD3 — ROCK FILTER DAM TYPE-3

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 5 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

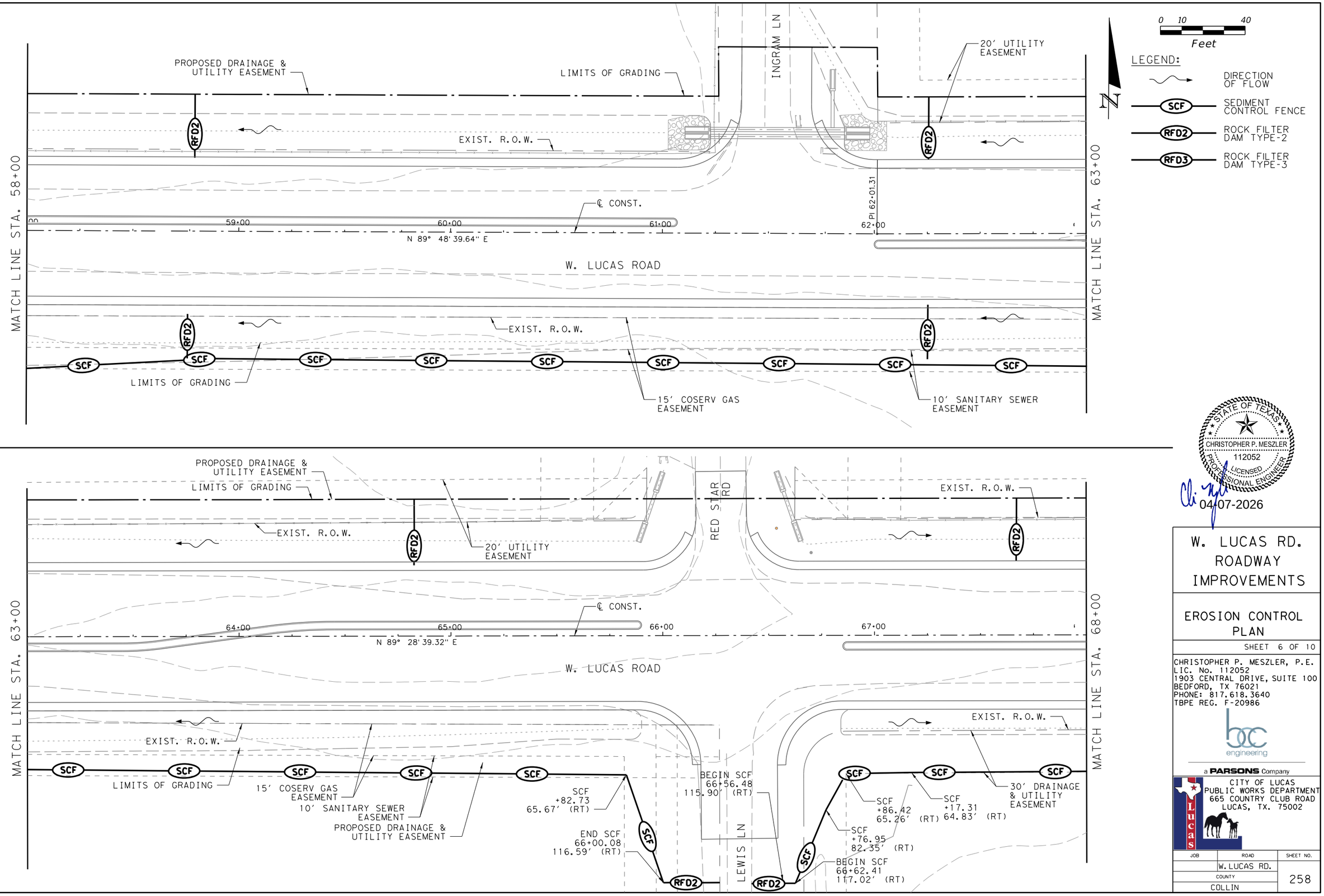
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		257
COLLIN		

DATE: 4/6/2026 1:57:39 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P05.dgn

Texas 811 Know what's below. Call before you dig.



CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
STATE OF TEXAS

04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

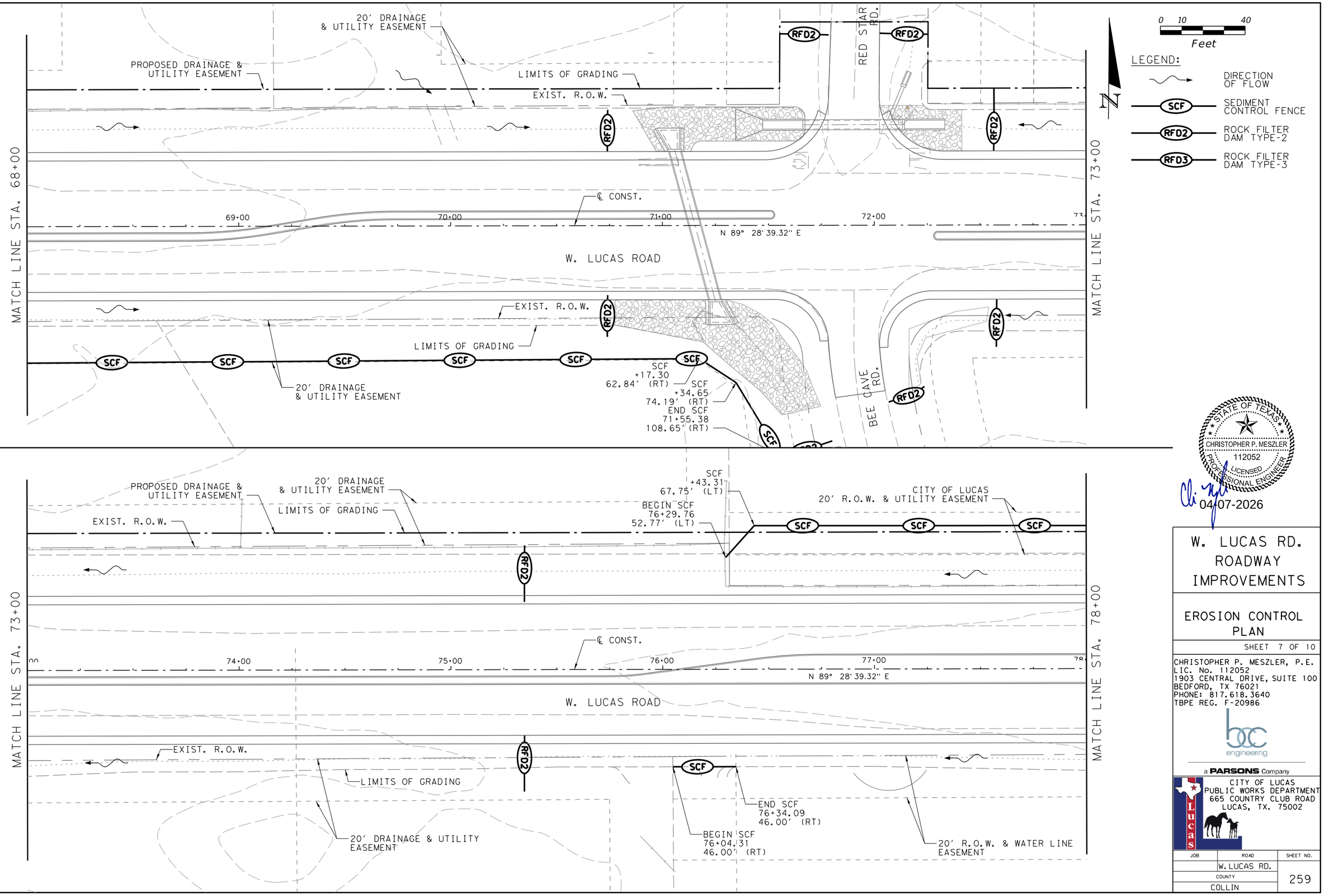
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		258
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:40 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P06.dgn



DATE: 4/6/2026 1:57:41 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P07.dgn

Texas811 Know what's below. Call before you dig.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

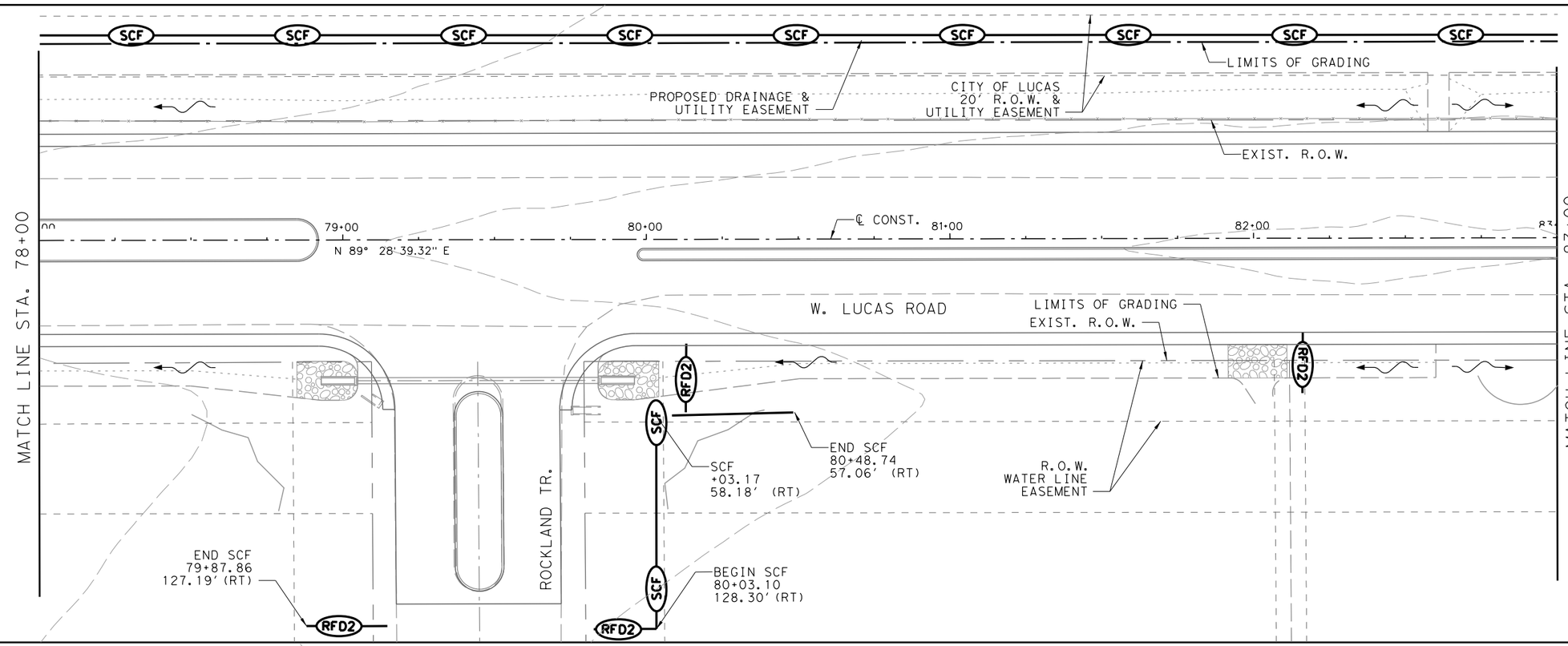
SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		259
COLLIN		



DATE: 4/6/2026 1:57:42 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P08.dgn

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL LICENSED ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 8 OF 10

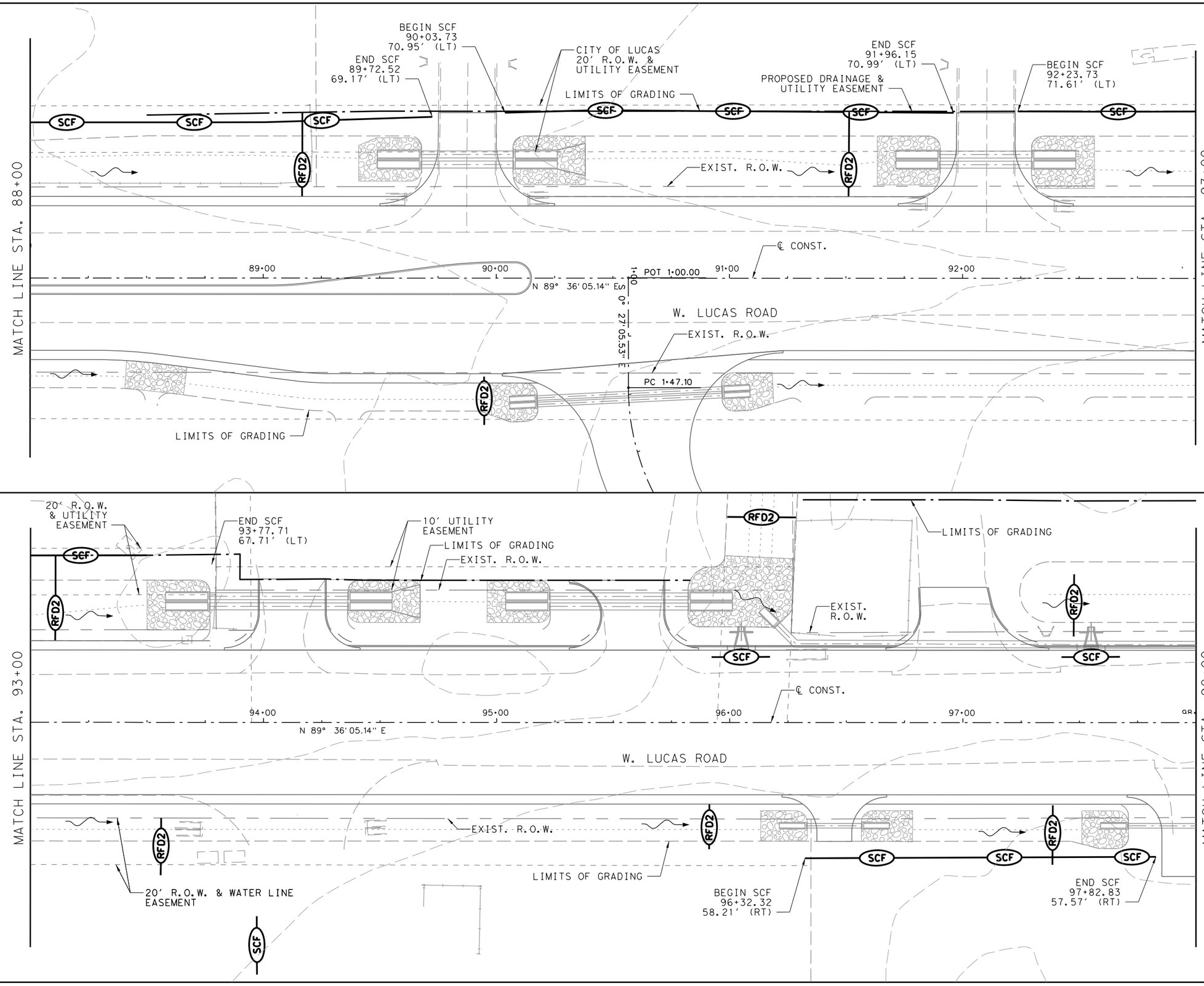
CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		260
COLLIN		

Texas811 Know what's below. Call before you dig.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

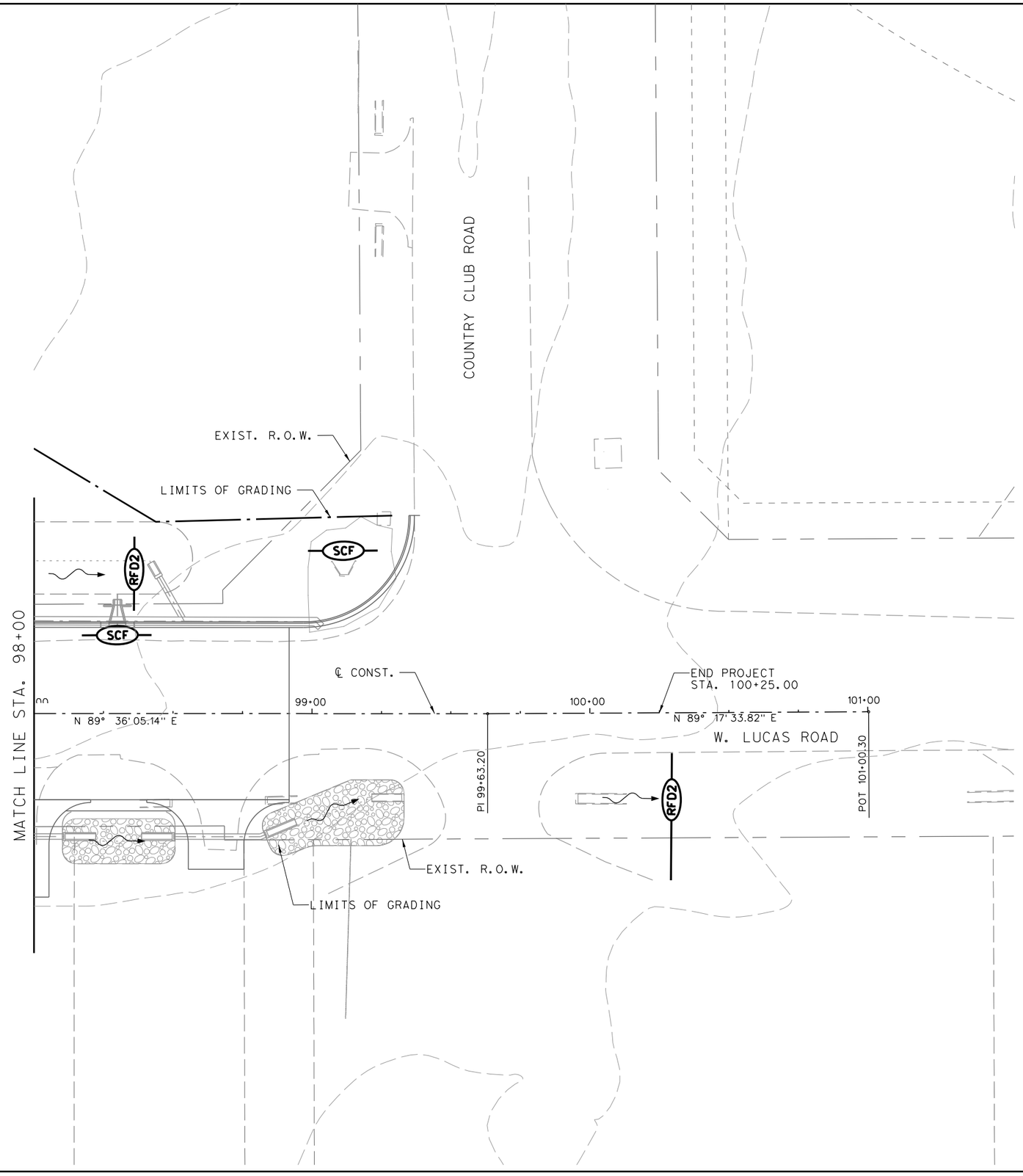
bec engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		261
COLLIN		

DATE: 4/6/2026 1:57:43 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P09.dgn

Texas811 Know what's below. Call before you dig.



STA	LT/RT	INSTALL DATE	MAINTAINED DATE	REMOVE DATE
14+79.79	LT			
16+52.63	RT			
18+87.56	LT			
18+86.75	RT			
22+01.13	LT			
22+68.88	RT			
24+55.75	LT			
24+54.23	RT			
26+60.78	LT			
26+55.15	RT			
29+53.59	LT			
29+53.02	RT			
32+20.89	LT			
32+19.33	RT			
35+06.95	LT			
36+07.51	RT			
36+79.00	RT			
37+40.63	LT			
39+27.39	LT			
39+27.08	RT			
40+99.73	LT			
40+99.42	RT			
43+76.91	LT			
43+76.60	RT			
45+76.84	LT			
46+71.13	RT			
47+07.06	LT			
48+03.70	LT			
48+94.96	RT			
49+96.10	LT			
50+00.34	RT			
50+68.26	LT			
55+27.00	LT			
55+27.38	RT			
56+80.39	LT			
58+75.93	RT			
58+79.14	LT			
62+25.70	LT			
62+25.08	RT			
64+82.70	LT			
67+66.98	LT			
70+73.97	RT			
71+01.57	LT			
71+66.85	LT			
72+15.67	LT			
72+56.54	LT			
72+57.62	RT			
80+12.98	RT			
82+16.12	RT			
84+32.04	RT			
86+42.18	RT			
89+16.74	LT			
89+94.83	RT			
91+51.17	LT			
93+40.30	LT			
93+56.22	RT			
96+11.74	LT			
96+10.85	RT			
97+38.53	RT			
98+29.84	LT			
100+29.24	RT			

0 10 40
Feet

N

LEGEND:

- DIRECTION OF FLOW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM TYPE-2
- RFD3 — ROCK FILTER DAM TYPE-3

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

EROSION CONTROL PLAN

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

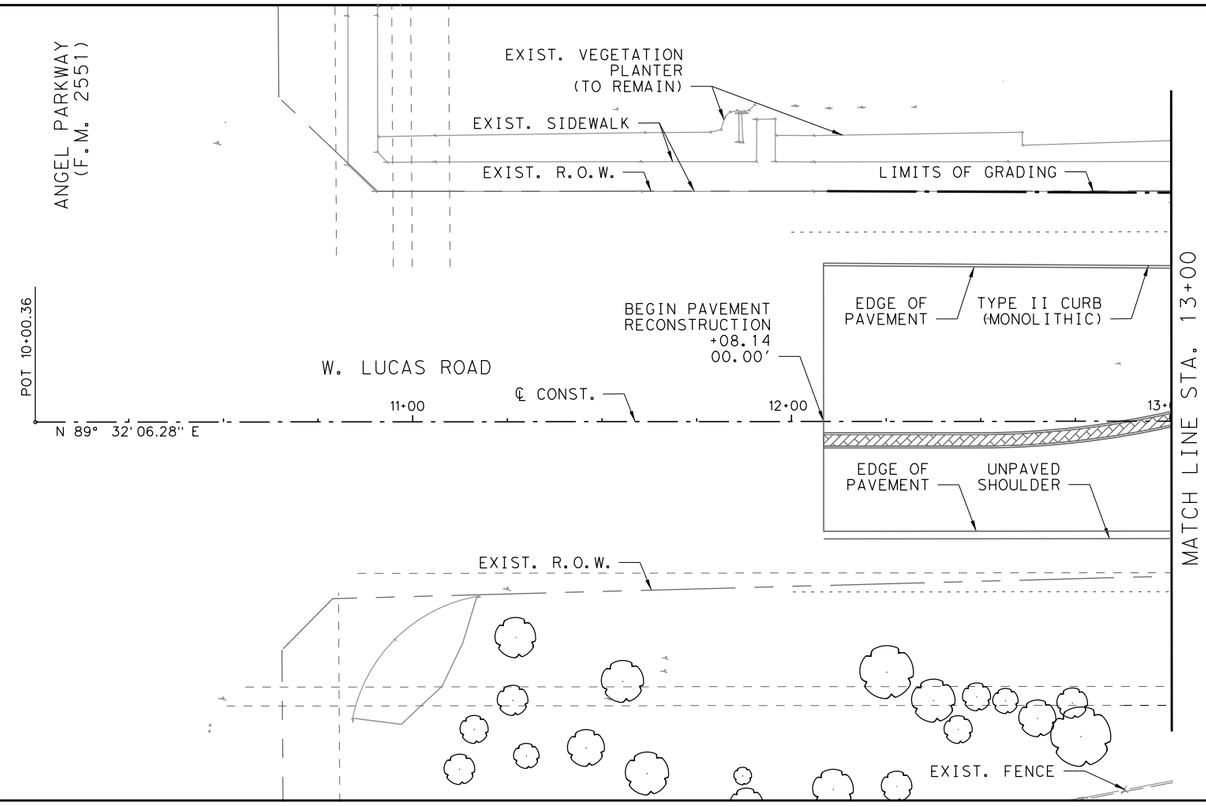
JOB	ROAD	SHEET NO.
	W. LUCAS RD.	262
	COUNTY	
	COLLIN	

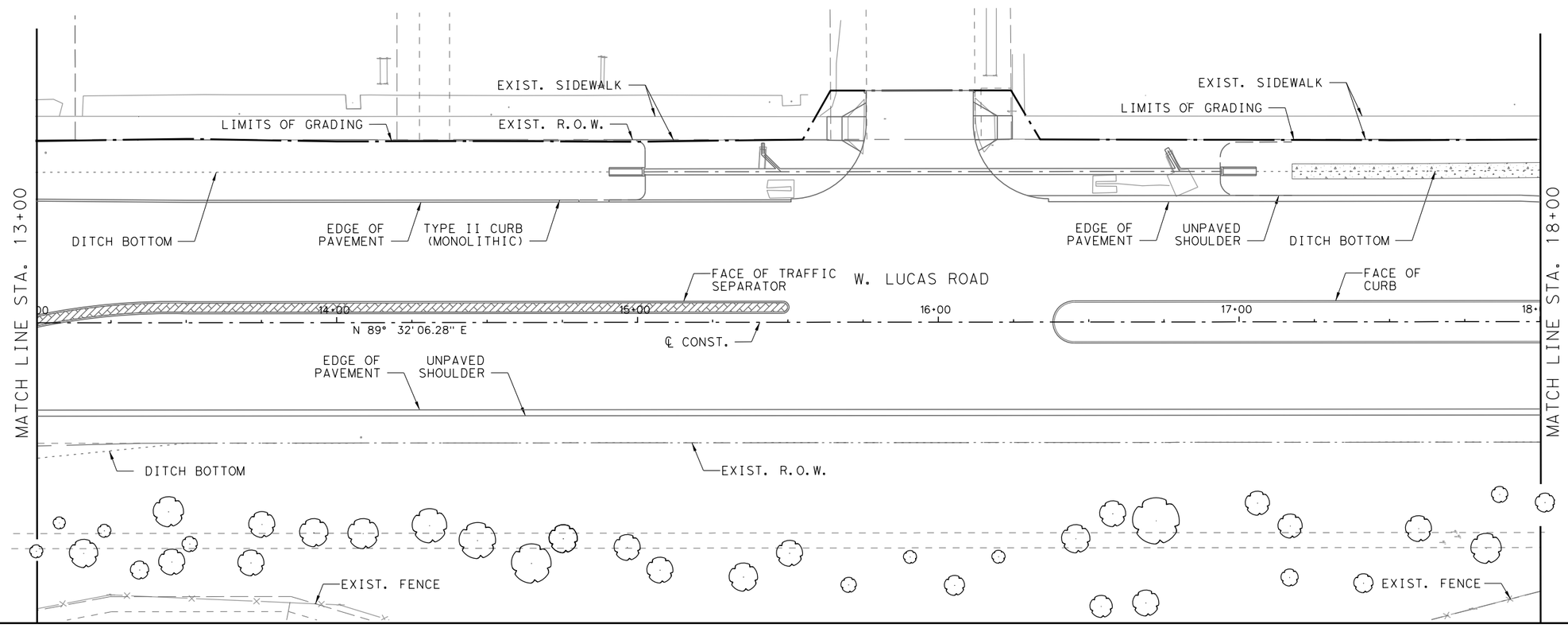
Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:44 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_ERSCTRL_P10.dgn

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL TREE DATA PROVIDED ON PLANS AS NECESSARY PRIOR TO THE START OF CONSTRUCTION ACTIVITY.
2. TREE PRESERVATION MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
3. TREES WITH A TRUNK DIAMETER LESS THAN 6" WERE NOT IDENTIFIED AND SHOWN ON PLANS. CONTRACTOR SHALL REMOVE TREES WITH A DIAMETER OF LESS THAN 6" THAT WILL BE IN CONFLICT AS PART OF PREP R.O.W. ITEM. NO SEPARATE PAYMENT.
4. SEE TXDOT STANDARD TRB-15 (1 & 2) FOR ADDITIONAL INFORMATION ON TREE AND BRUSH REMOVAL.
5. SEE TXDOT STANDARD TPD-19(AUS) FOR ADDITIONAL INFORMATION ON TREE PROTECTION.
6. NO ADDITIONAL TREES SHALL BE CUT EXCEPT ON SPECIFIC AUTHORITY OF THE CITY.





0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 1 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

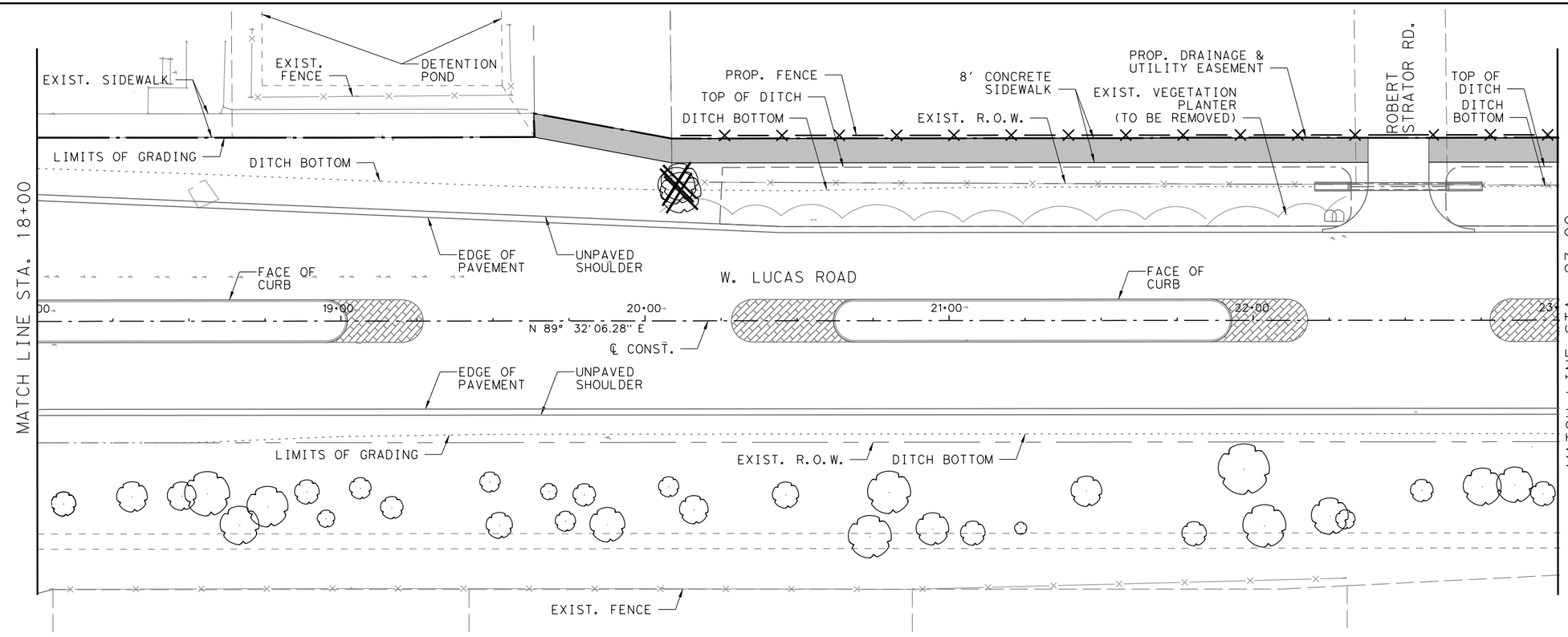
bc engineering
a PARSONS Company

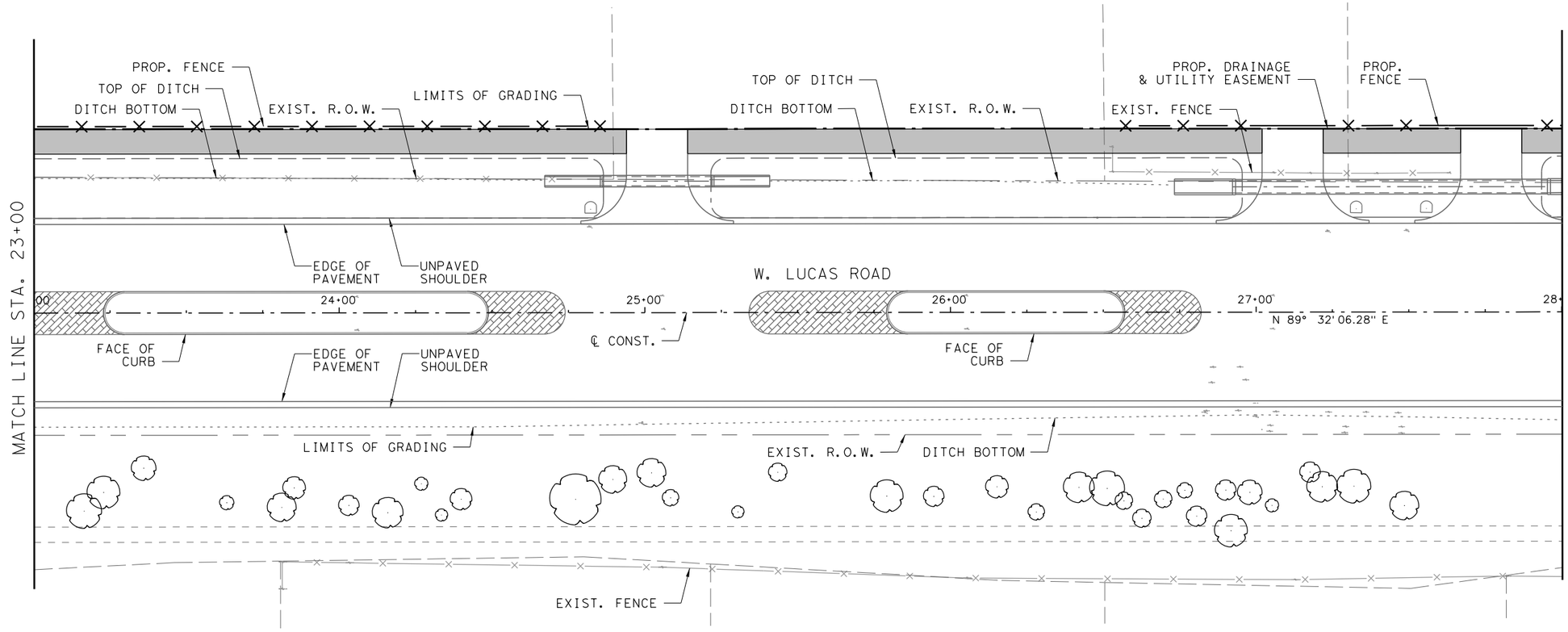
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		263
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:47 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P01.dgn





0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 2 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

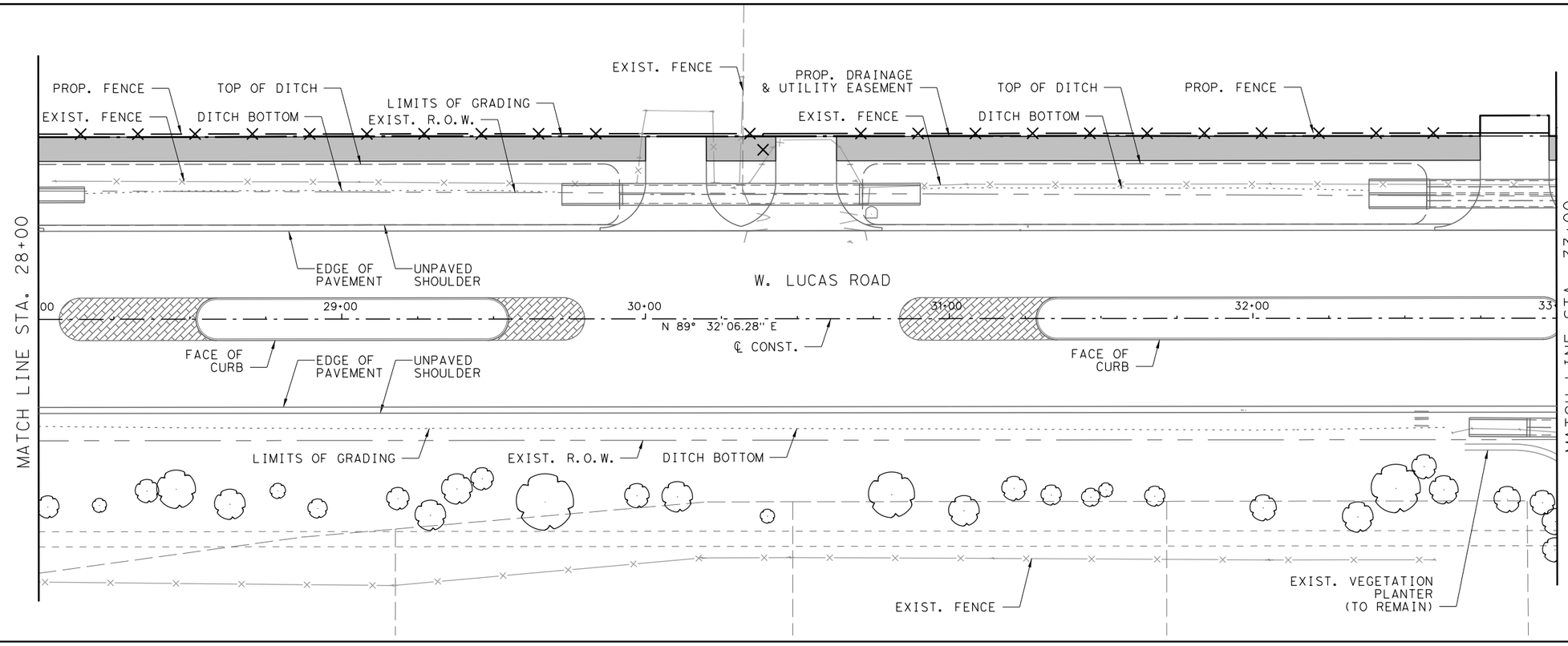
bc engineering
a PARSONS Company

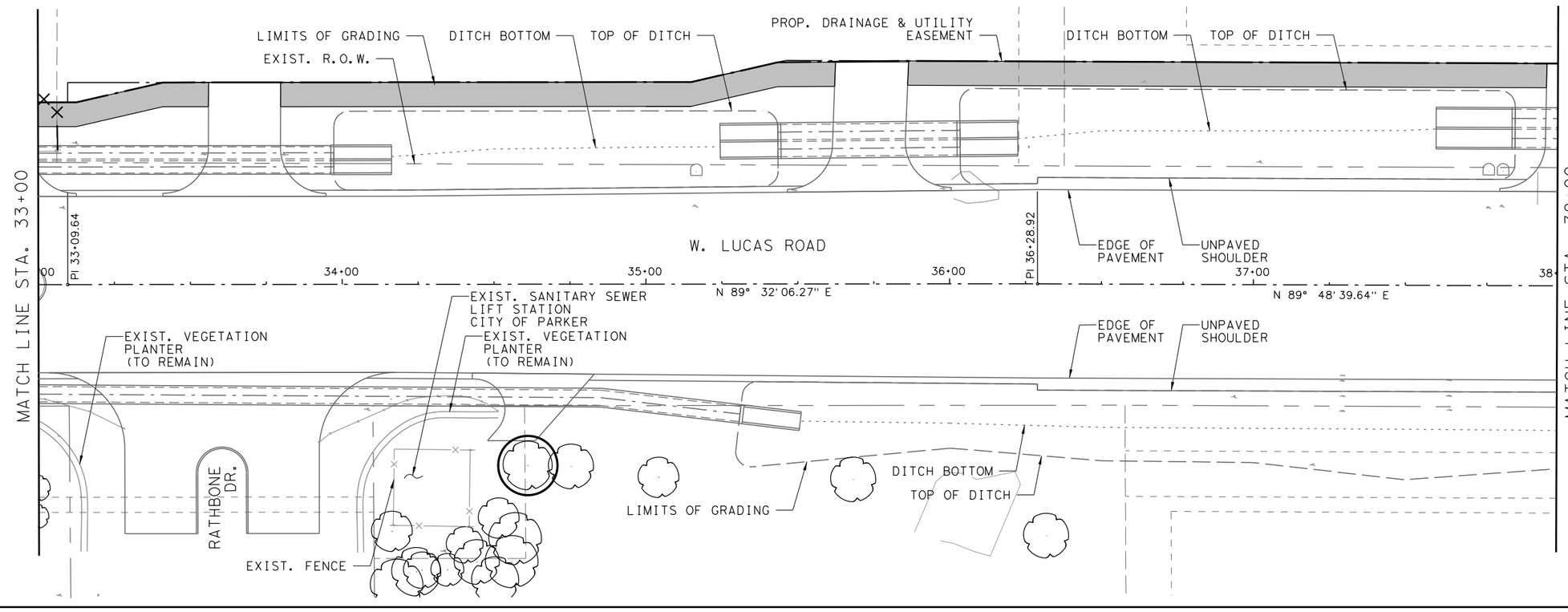
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		264
COLLIN		

DATE: 4/6/2026 1:57:49 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P02.dgn

Texas 811 Know what's below. Call before you dig.





0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 3 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

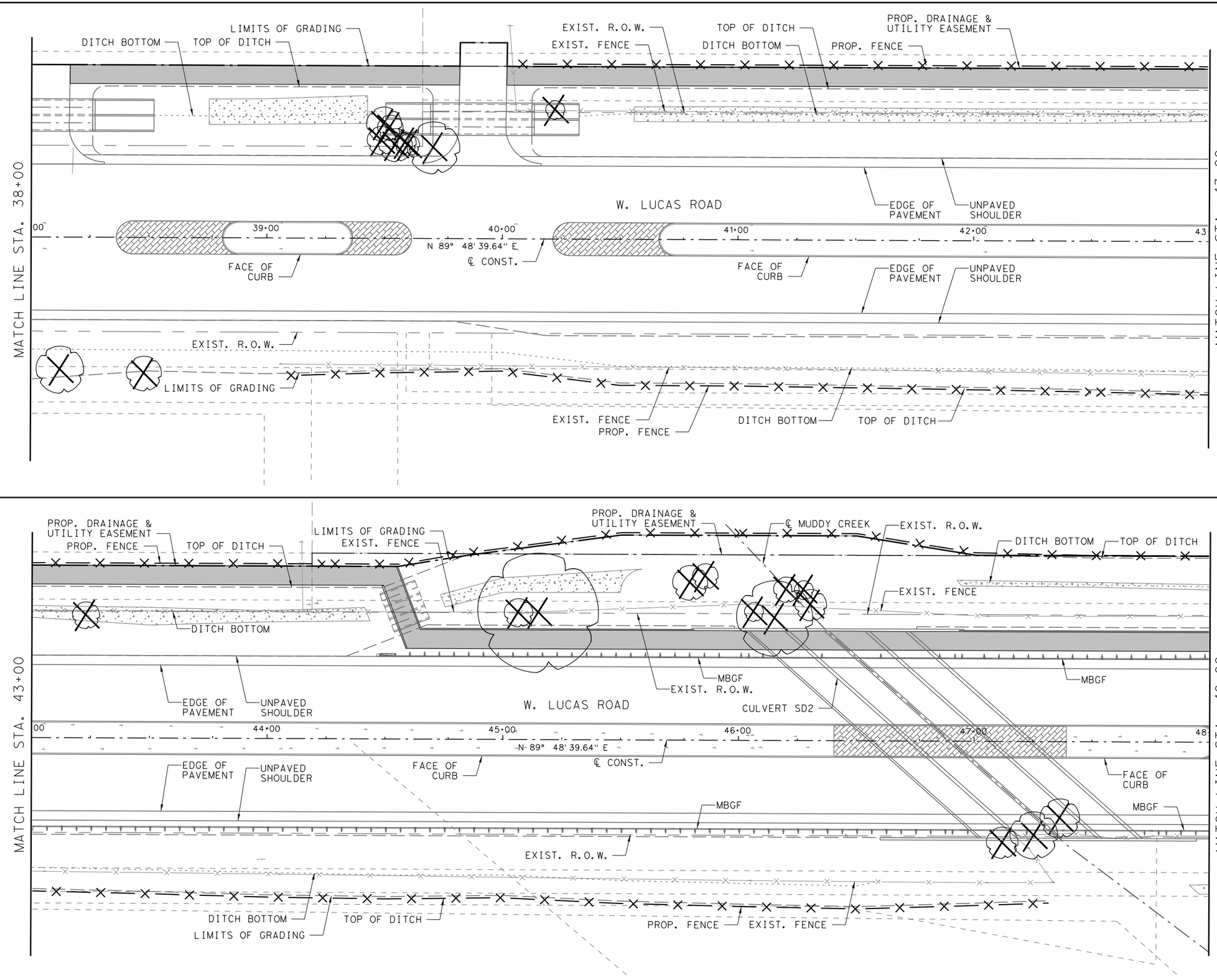
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	265
	COUNTY	
	COLLIN	

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:50 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P03.dgn



0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 4 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

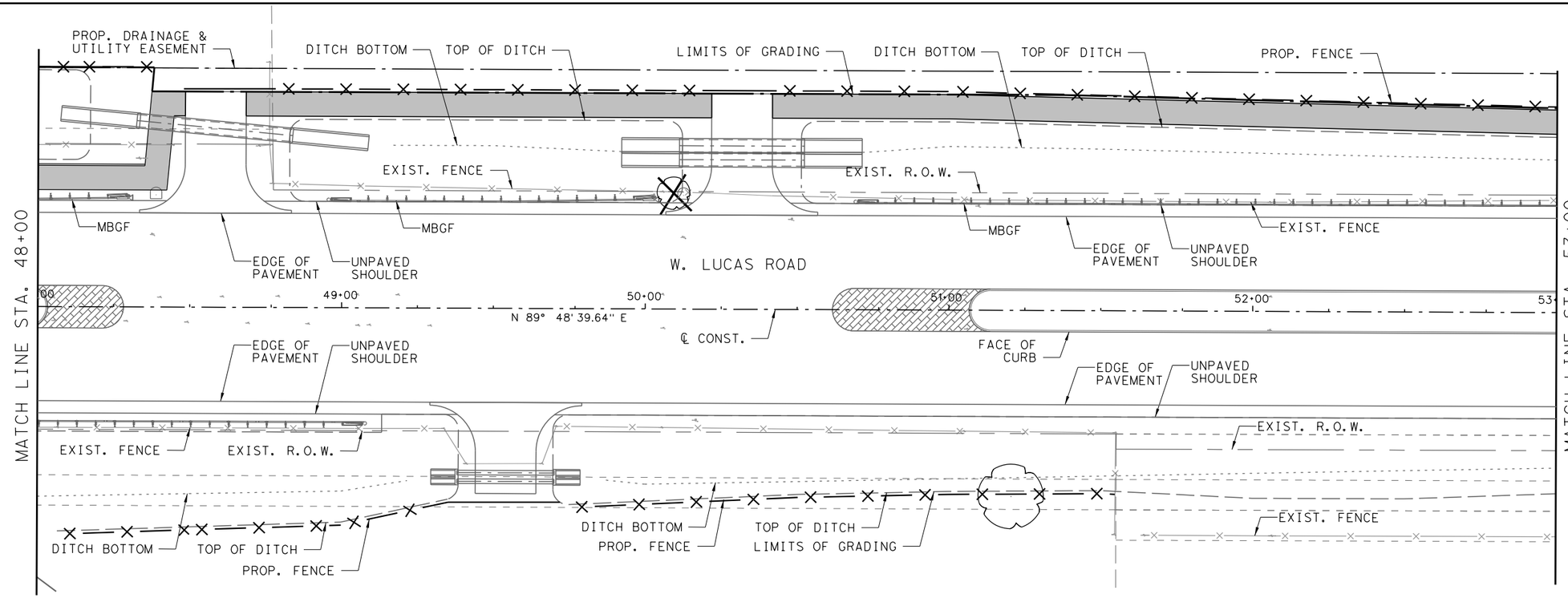
bc engineering
a PARSONS Company

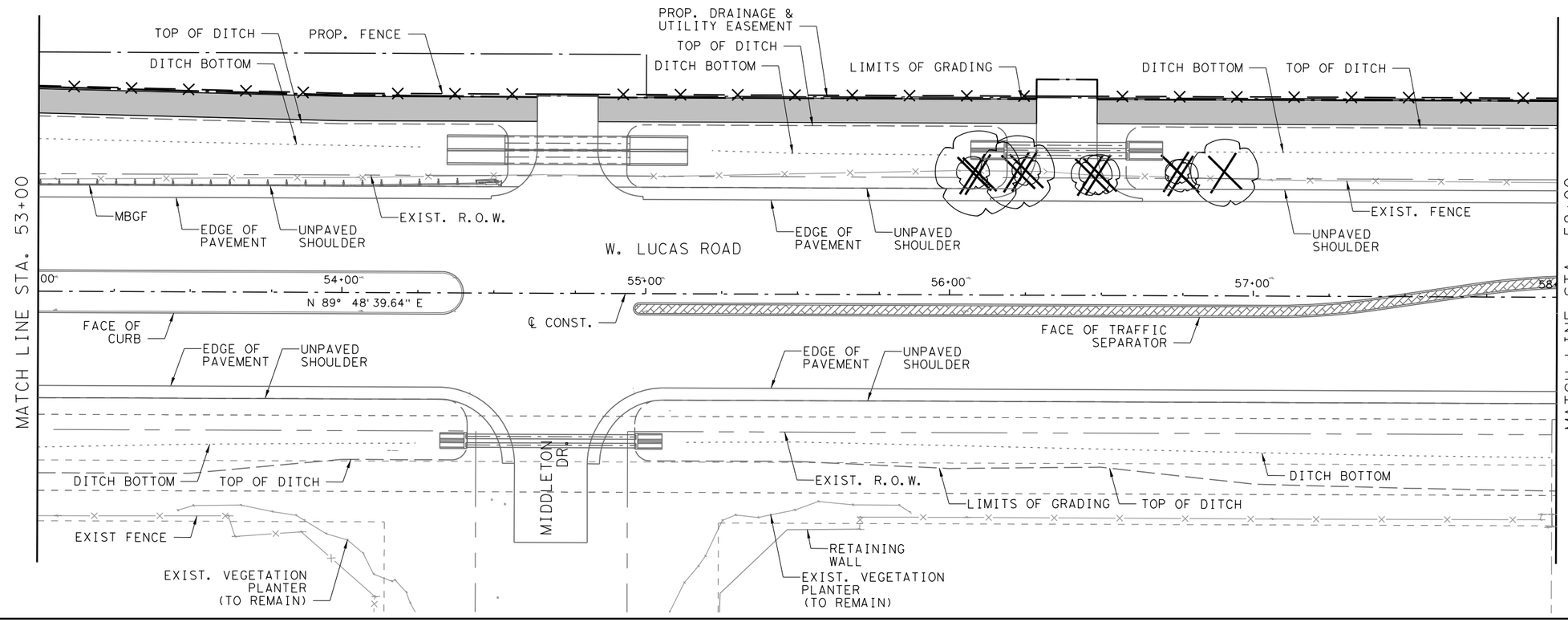
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	266
COUNTY		
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:52 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P04.dgn





0 10 40
Feet

N

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 5 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

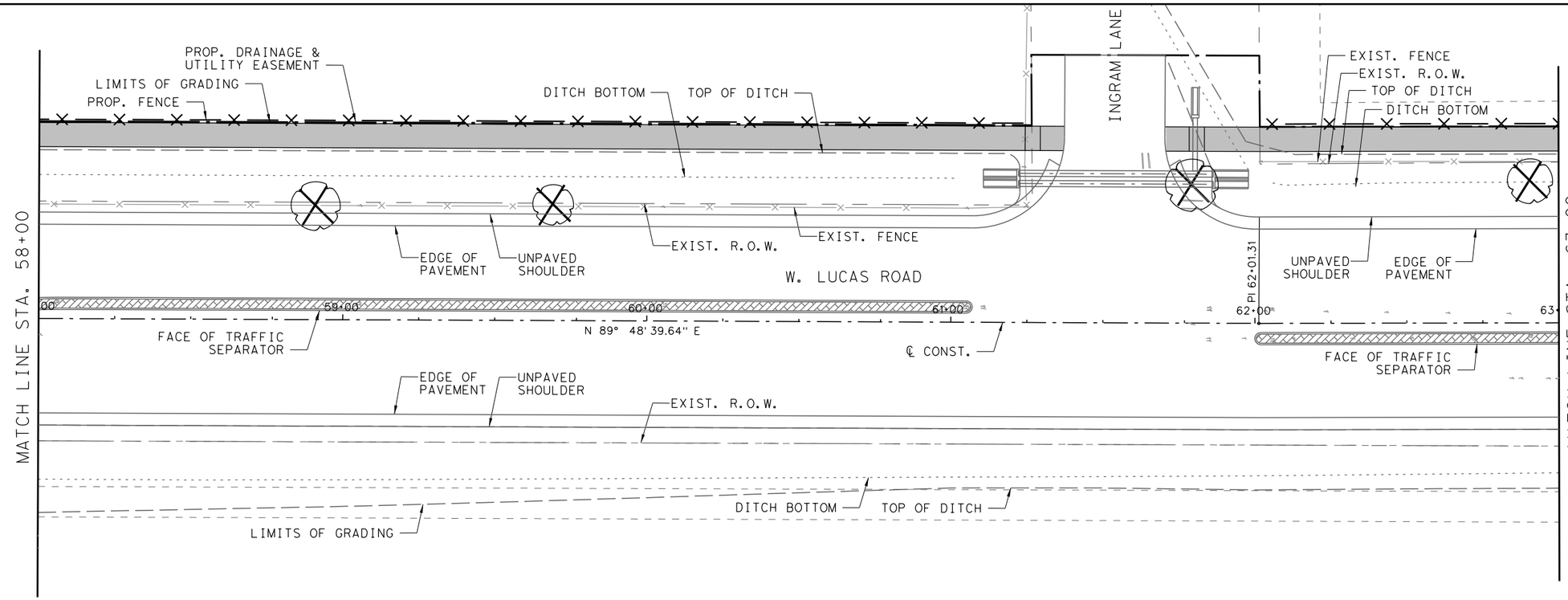
bec engineering
a PARSONS Company

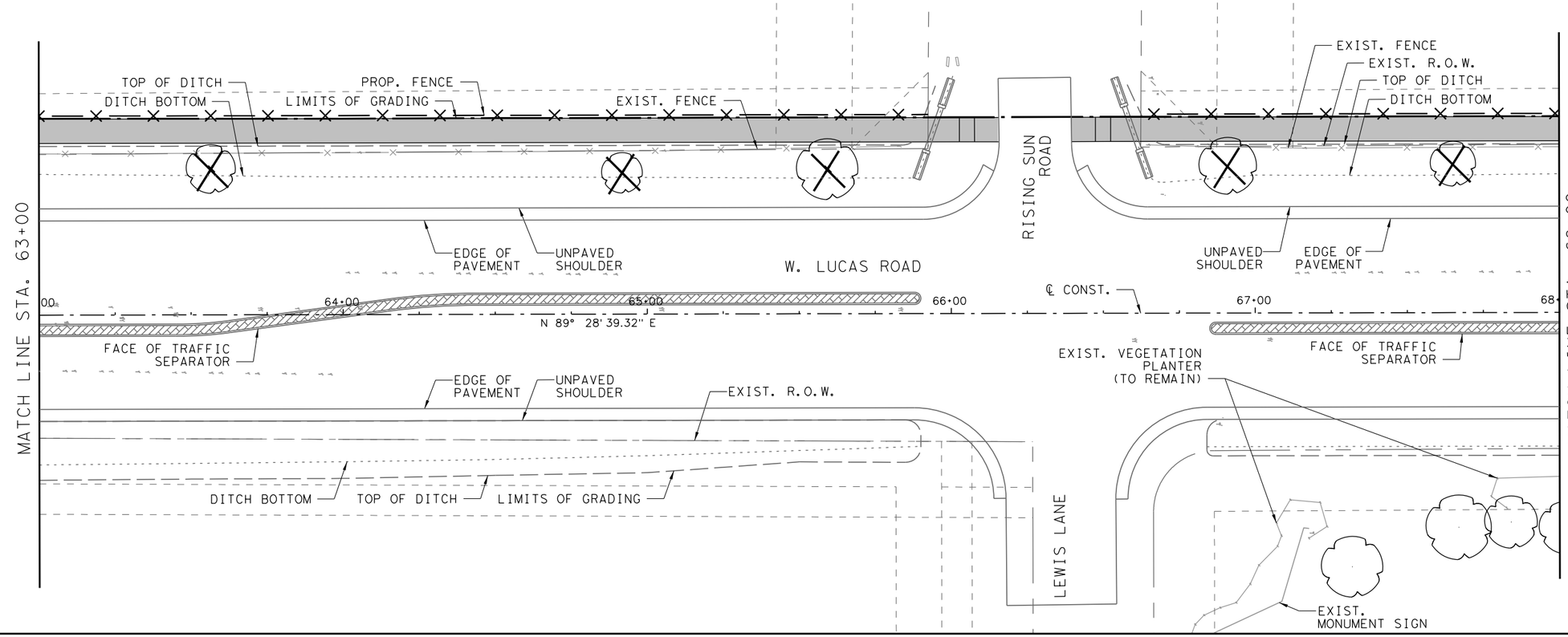
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		267
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:53 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P05.dgn





0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 6 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

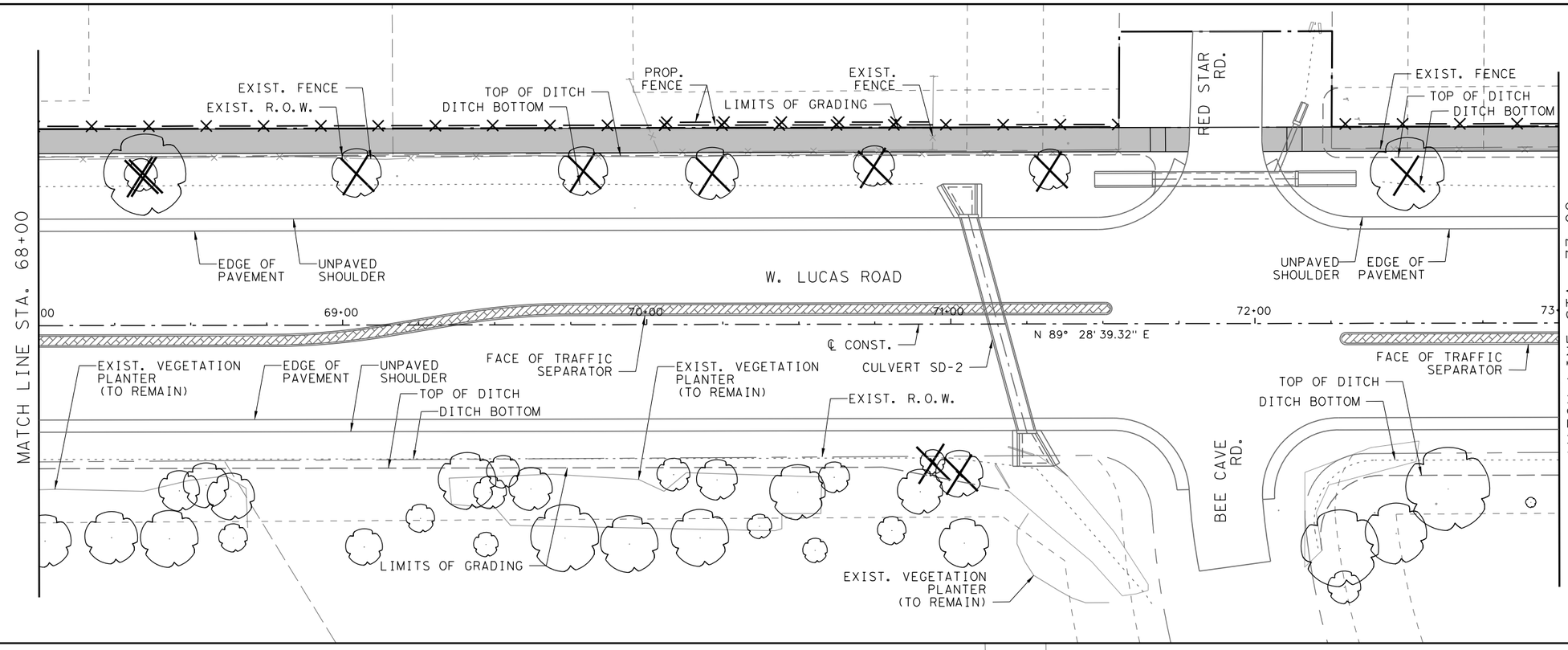
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		268
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:55 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P06.dgn



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 7 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

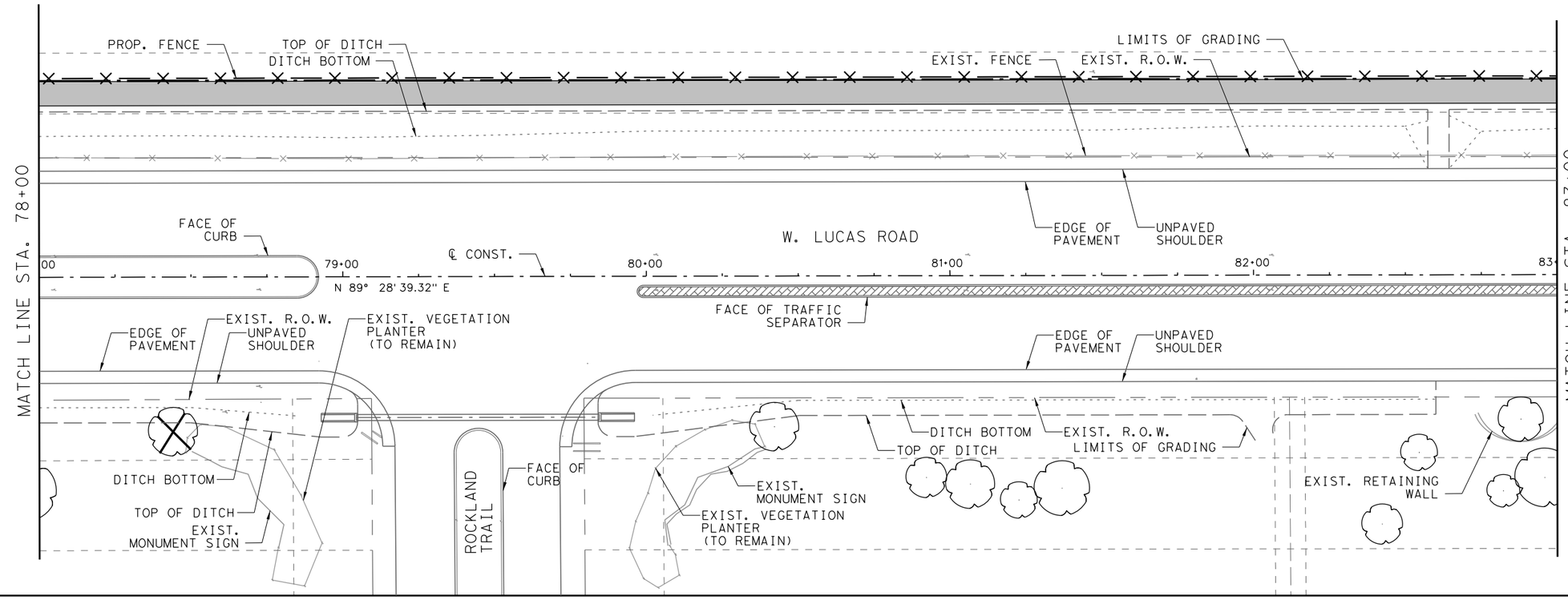
bc engineering
a PARSONS Company

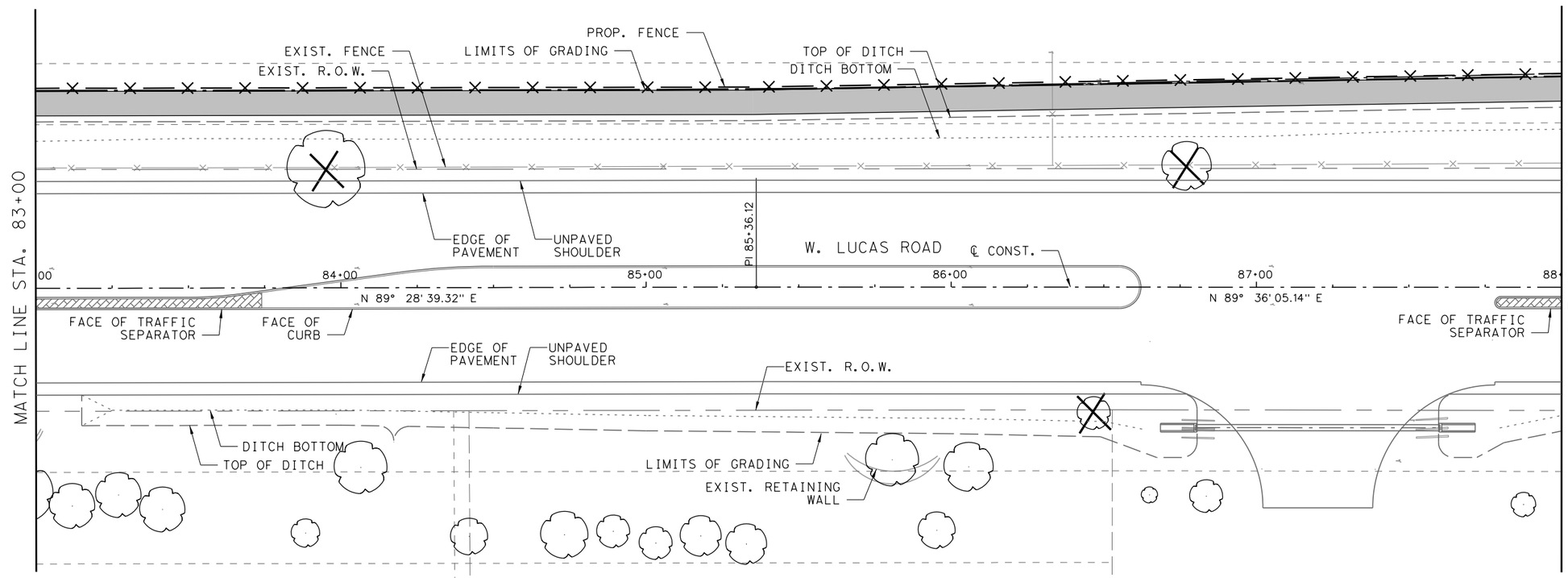
CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		269
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:57:56 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P07.dgn





0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 8 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

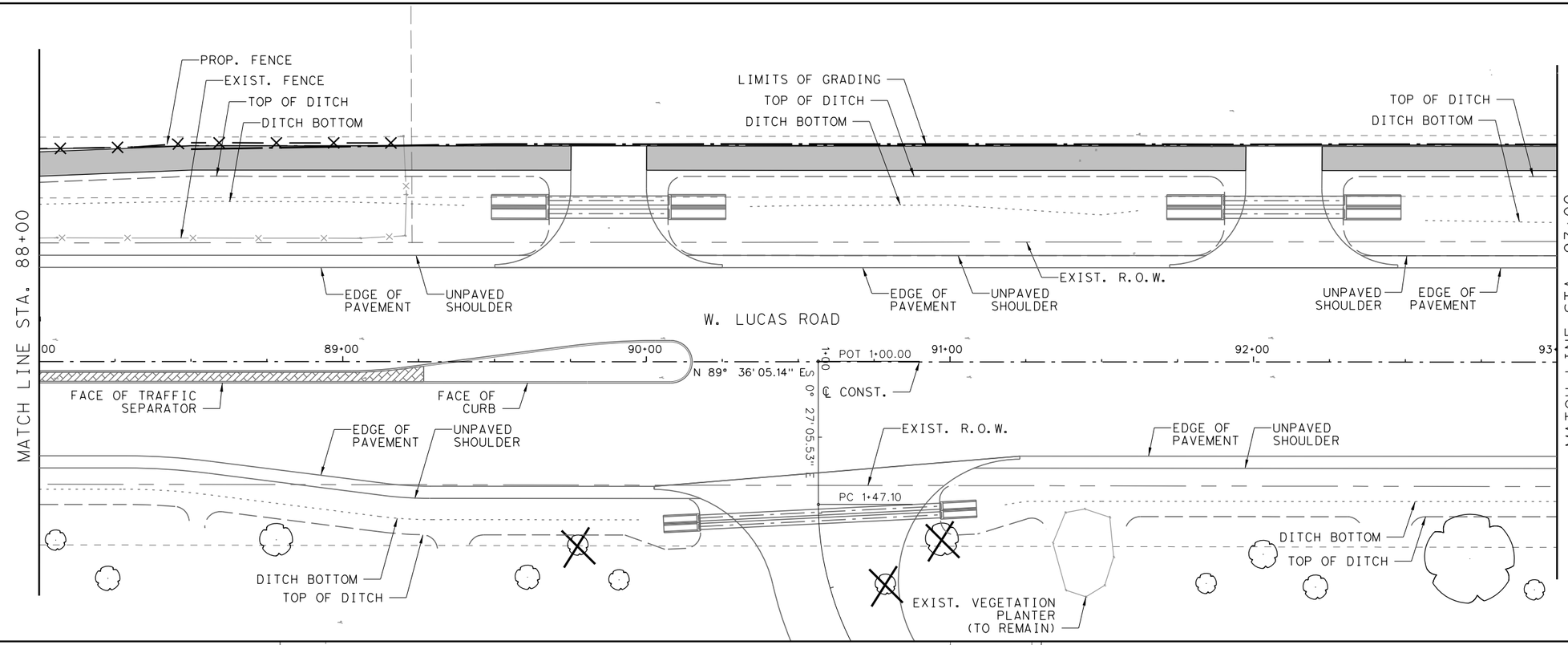
bec engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	270
COUNTY		
COLLIN		

Texas 811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:58:06 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P08.dgn



0 10 40
Feet

LEGEND:

- REMOVE
- PROTECT
- REMAIN

NOTE:

1. RIPRAP NOT SHOWN FOR CLARITY.
2. UTILITIES NOT SHOWN FOR CLARITY.

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED PROFESSIONAL ENGINEER
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 9 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

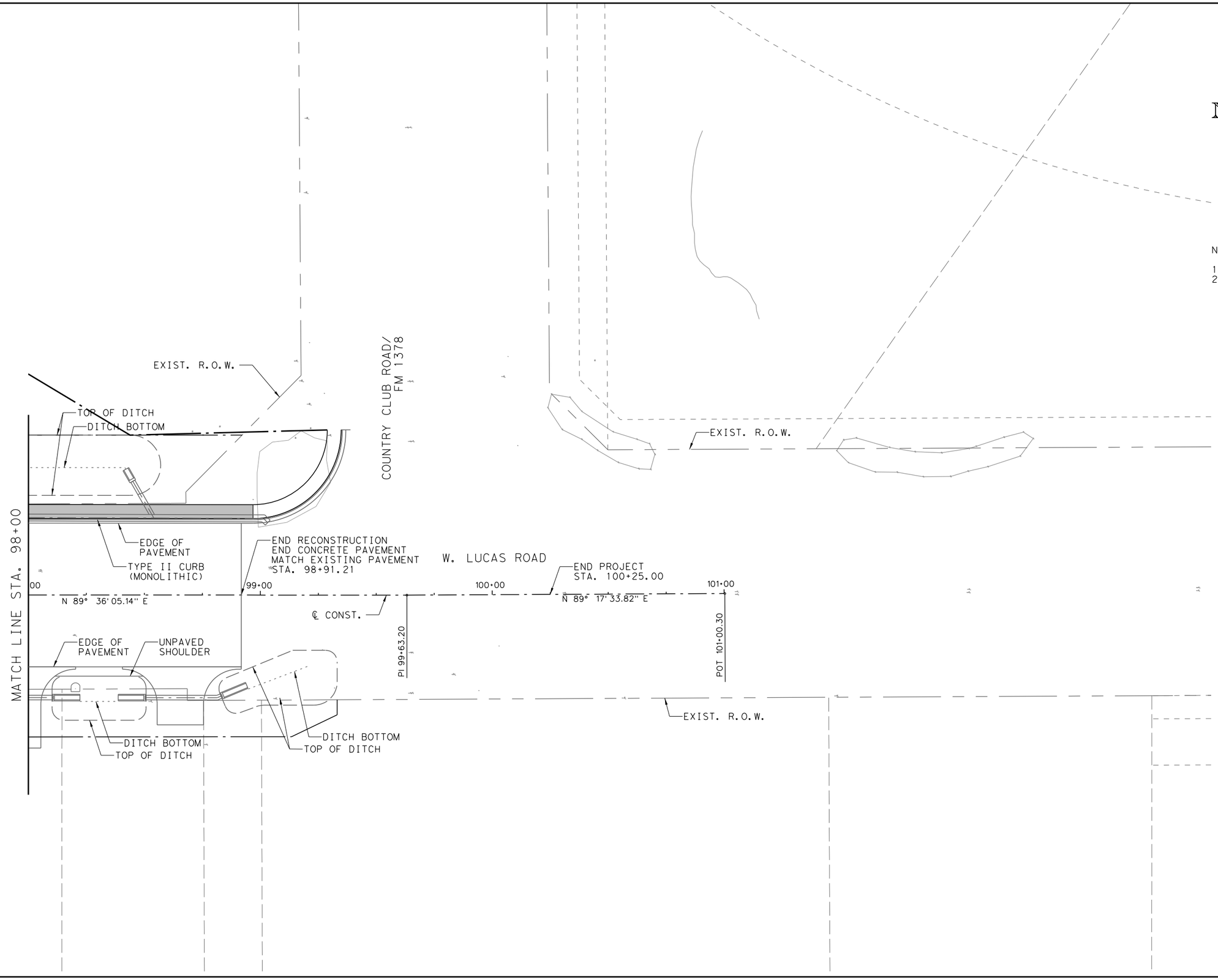
bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	271
COUNTY		
COLLIN		

DATE: 4/6/2026 1:58:08 PM
FILE: I:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P09.dgn

Texas 811 Know what's below. Call before you dig.



STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION PLAN

SHEET 10 OF 10

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	
COUNTY		272
COLLIN		

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:58:09 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P10.dgn

ID	COMMON NAME	SCIENTIFIC NAME	DIAMETER (IN)	MULTI TRUNK	CONDITION	NORTHING	EASTING	CL STA.	OFFSET	DISPOSITION
1	Sugar Hackberry	*Celtis laevigata*	10		Good	7083084.2310	2545224.2300	20+11.80	-42.20	REMOVE
2	Sugar Hackberry	*Celtis laevigata*	9		Good	7083086.5120	2545222.8310	20+10.42	-44.49	REMOVE
3	Bald Cypress	*Taxodium distichum*	17		Good	7083140.5708	2552738.3253	95+26.08	-48.75	REMOVE
4	Sugar Hackberry	*Celtis laevigata*	9		Good	7083087.7850	2545223.8750	20+11.47	-45.75	REMOVE
5	Burr Oak	*Quercus macrocarpa*	16.5		Good	7083000.5610	2550186.3050	69+72.99	70.12	REMAIN
6	Eastern Red Cedar	*Juniperus virginiana*	12	X	Good	7083125.6420	2551889.5270	86+77.20	-39.73	REMOVE
7	Bald Cypress	*Taxodium distichum*	16.5		Good	7083143.3910	2552644.2430	94+32.02	-52.23	REMOVE
9	Crepe Myrtle	*Lagerstroemia indica*	10.5	X	Good	7083016.6190	2550174.9620	69+61.79	53.96	REMAIN
10	Cedar Elm	*Ulmus crassifolia*	12		Good	7082999.8830	2550317.6300	71+04.30	72.00	REMAIN
11	Live Oak	*Quercus virginiana*	7		Good	7083006.7140	2550138.7150	69+25.46	63.53	REMAIN
12	Burr Oak	*Quercus macrocarpa*	14		Good	7083000.9600	2550230.7240	70+17.41	70.13	REMAIN
13	Crepe Myrtle	*Lagerstroemia indica*	8	X	Good	7083022.1960	2550165.8080	69+52.69	48.30	REMAIN
14	Burr Oak	*Quercus macrocarpa*	14		Good	7082998.7540	2550207.5350	69+94.20	72.12	REMAIN
15	Crepe Myrtle	*Lagerstroemia indica*	8	X	Good	7083015.4070	2550161.5620	69+48.38	55.05	REMAIN
16	Crepe Myrtle	*Lagerstroemia indica*	6	X	Good	7083026.5270	2550307.0500	70+93.97	45.26	REMOVE
17	Crepe Myrtle	*Lagerstroemia indica*	11	X	Good	7083016.6700	2550303.0370	70+89.86	55.08	REMAIN
18	Live Oak	*Quercus virginiana*	10		Good	7083020.0700	2550236.1810	70+23.04	51.07	REMAIN
19	Live Oak	*Quercus virginiana*	6		Good	7083004.8780	2550250.2370	70+36.96	66.39	REMAIN
20	Eastern Red Cedar	*Juniperus virginiana*	19	X	Good	7083122.5410	2551607.5690	83+95.31	-38.90	REMOVE
21	Live Oak	*Quercus virginiana*	8		Good	7083021.7000	2550221.8580	70+08.73	49.31	REMAIN
22	Live Oak	*Quercus virginiana*	13.5		Very Poor	7083016.2190	2550262.7480	70+49.57	55.16	REMAIN
23	Live Oak	*Quercus virginiana*	7		Good	7083003.8070	2550293.7710	70+80.48	67.86	REMAIN
24	Crepe Myrtle	*Lagerstroemia indica*	14	X	Good	7083019.1150	2550154.0590	69+40.91	51.27	REMAIN
25	Live Oak	*Quercus virginiana*	6		Good	7082998.2610	2550160.3090	69+46.97	72.18	REMAIN
26	Live Oak	*Quercus virginiana*	6		Good	7082997.1040	2550268.5860	70+55.24	74.33	REMAIN
27	Live Oak	*Quercus virginiana*	7.5		Good	7083021.1970	2550274.7080	70+61.58	50.29	REMAIN
28	Eastern Red Cedar	*Juniperus virginiana*	8		Good	7082986.2460	2550442.7530	72+29.30	86.77	REMAIN
29	Live Oak	*Quercus virginiana*	2.5		Good	7083014.6230	2550503.8510	72+90.65	58.95	REMAIN
30	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7082962.0820	2544469.8950	12+56.50	73.83	REMAIN
31	Unknown Cedar	*Juniperus sp.*	19	X	Good	7083011.2880	2550639.3710	74+26.14	63.53	REMAIN
32	Crepe Myrtle	*Lagerstroemia indica*	8	X	Good	7083024.2560	2550529.3660	73+16.25	49.55	REMAIN
33	Shumard Oak	*Quercus shumardii*	8		Good	7083028.6890	2552091.1440	88+78.13	58.62	REMAIN
34	Burr Oak	*Quercus macrocarpa*	19.5		Good	7083003.7840	2550545.2310	73+31.93	70.17	REMAIN
35	Live Oak	*Quercus virginiana*	6		Good	7083015.5984	2552035.7971	88+22.66	71.35	REMAIN
36	Crepe Myrtle	*Lagerstroemia indica*	11.5	X	Good	7083022.6550	2550315.9060	71+02.79	49.21	REMOVE
37	Live Oak	*Quercus virginiana*	19	X	Good	7082999.0700	2550441.2800	72+27.94	73.94	REMAIN
38	Unknown Cedar	*Juniperus sp.*	6	X	Fair	7082986.6470	2550776.0850	75+62.62	89.41	REMAIN
39	Chinese Elm	*Ulmus parvifolia*	8		Good	7083017.5240	2551896.7090	86+83.63	68.43	REMAIN
40	Chinqapin Oak	*Quercus muehlenbergii*	6		Good	7083016.9590	2552173.9870	89+60.89	70.93	REMAIN
42	Unknown Cedar	*Juniperus sp.*	11	X	Good	7083005.7110	2550730.8290	75+17.54	69.94	REMAIN
43	Chinqapin Oak	*Quercus muehlenbergii*	4		Good	7083025.5610	2552522.8810	93+09.84	64.75	REMAIN
44	Chinese Elm	*Ulmus parvifolia*	22		Good	7082982.9530	2550743.0240	75+29.53	92.80	REMAIN
45	Shumard Oak	*Quercus shumardii*	11		Good	7082987.9480	2550703.7480	74+90.30	87.45	REMAIN
46	Unknown Cedar	*Juniperus sp.*	12	X	Good	7083024.6110	2550769.3740	75+56.25	51.39	REMAIN
47	Cedar Elm	*Ulmus crassifolia*	12		Good	7083026.5710	2551818.7910	86+05.77	58.85	REMAIN
48	Burr Oak	*Quercus macrocarpa*	16.5		Good	7083001.9960	2550565.6190	73+52.30	72.14	REMAIN
49	Live Oak	*Quercus virginiana*	5		Good	7083028.0440	2552018.4880	88+05.48	58.76	REMAIN
50	Chinqapin Oak	*Quercus muehlenbergii*	5		Good	7083016.3180	2552204.1550	89+91.06	71.78	REMAIN
51	Live Oak	*Quercus virginiana*	5		Good	7083015.5110	2552291.9090	90+78.80	73.20	REMOVE
52	Unknown Cedar	*Juniperus sp.*	11	X	Good	7083009.9810	2550649.9910	74+36.74	64.93	REMAIN
53	Unknown Cedar	*Juniperus sp.*	7	X	Good	7083016.9800	2550782.0700	75+68.88	59.13	REMAIN
54	Unknown Cedar	*Juniperus sp.*	13	X	Good	7083012.2070	2550716.9410	75+03.71	63.31	REMAIN
55	Shumard Oak	*Quercus shumardii*	12		Good	7082984.6050	2550623.0280	74+09.55	90.06	REMAIN
56	Chinqapin Oak	*Quercus muehlenbergii*	5		Good	7083015.2340	2552505.7050	92+92.59	74.96	REMAIN
57	Cedar Elm	*Ulmus crassifolia*	13		Good	7083028.6740	2551793.7310	85+80.73	56.57	REMAIN
58	Eastern Red Cedar	*Pinus echinata*	13		Good	7082957.0380	2544584.9150	13+71.47	79.81	REMAIN
59	Chinese Elm	*Ulmus parvifolia*	8		Good	7083030.4330	2552310.4450	90+97.44	58.40	REMOVE
60	Unknown Cedar	*Juniperus sp.*	9	X	Good	7083013.2190	2550726.3570	75+13.14	62.39	REMAIN
61	Shumard Oak	*Quercus shumardii*	11		Good	7082986.1060	2550662.7660	74+49.30	88.92	REMAIN
62	Live Oak	*Quercus virginiana*	6		Good	7083015.5990	2552433.5660	92+20.46	74.09	REMAIN
63	Live Oak	*Quercus virginiana*	7		Good	7083026.2540	2552416.2410	92+03.21	63.32	REMAIN
64	Sugar Hackberry	*Celtis laevigata*	8		Good	7083044.4710	2551859.6540	86+46.76	41.23	REMOVE
65	Chinqapin Oak	*Quercus muehlenbergii*	5		Good	7083027.6360	2552190.5310	89+77.51	60.37	REMOVE
66	Live Oak	*Quercus virginiana*	15	X	Good	7083004.0650	2550459.6810	72+46.39	69.11	REMAIN
67	Short Leaf Pine	*Pinus echinata*	15		Very Poor	7082973.8400	2544557.3600	13+44.05	62.78	REMAIN
68	Live Oak	*Quercus virginiana*	20.5	X	Good	7083018.8310	2550476.6620	72+63.50	54.50	REMAIN
69	Crepe Myrtle	*Lagerstroemia indica*	6.5	X	Good	7083021.9380	2550520.1000	73+06.97	51.79	REMAIN
70	Crepe Myrtle	*Lagerstroemia indica*	8	X	Good	7083023.5440	2550540.6250	73+27.51	50.37	REMAIN

ID	COMMON NAME	SCIENTIFIC NAME	DIAMETER (IN)	MULTI TRUNK	CONDITION	NORTHING	EASTING	CL STA.	OFFSET	DISPOSITION
71	Live Oak	*Quercus virginiana*	5		Good	7083037.8130	2552786.0910	95+73.13	54.33	REMAIN
72	Live Oak	*Quercus virginiana*	4		Good	7083017.7840	2551878.0740	86+64.99	68.05	REMAIN
73	Live Oak	*Quercus virginiana*	5		Good	7083016.5340	2552397.5640	91+84.46	72.91	REMAIN
74	Live Oak	*Quercus virginiana*	6		Good	7083027.5490	2552767.3120	95+54.28	64.47	REMAIN
75	Live Oak	*Quercus virginiana*	6		Good	7083015.5120	2552000.6800	87+87.58	71.17	REMAIN
76	Eastern Red Cedar	*Juniperus virginiana*	16	X	Good	7082977.8750	2544340.3770	11+27.11	56.98	REMAIN
77	Cedar Elm	*Ulmus crassifolia*	13		Good	7082955.6460	2544720.8860	15+07.43	82.30	REMAIN
78	Possumhaw	*Ilex decidua*	7.5		Good	7082951.2120	2544783.6280	15+70.13	87.24	REMAIN
79	Possumhaw	*Ilex decidua*	10	X	Good	7082951.2790	2544818.8310	16+05.33	87.46	REMAIN
80	Possumhaw	*Ilex decidua*	7	X	Good	7082941.7710	2544400.6440	11+87.08	93.58	REMAIN
81	Eastern Red Cedar	*Pinus echinata*	15	X	Good	7082967.0550	2544622.1250	14+08.76	70.09	REMAIN
82	Eastern Red Cedar	*Pinus echinata*	14		Good	7082965.8260	2544688.6700	14+75.29	71.86	REMAIN
83	Eastern Red Cedar	*Juniperus virginiana*	15	X	Good	7082964.8900	2544995.4640	17+82.07	75.28	REMAIN
84	Eastern Red Cedar	*Juniperus virginiana*	10	X	Good	7082946.6550	2544343.4810	11+29.60	88.23	REMAIN
85	Eastern Red Cedar	*Juniperus virginiana*	23	X	Good	7082973.2000	2544885.6920	16+72.37	66.08	REMAIN
86	Cedar Elm	*Ulmus crassifolia*	12	X	Good	7082980.2450	2545022.0010	18+08.73	60.15	REMAIN
87	Eastern Red Cedar	*Juniperus virginiana*	13		Good	7082975.4650	2544871.2590	16+57.96	63.70	REMAIN
88	Possumhaw	*Ilex decidua*	9.5		Good	7082980.2280	2545014.9180	18+01.65	60.11	REMAIN
89	Cedar Elm	*Ulmus crassifolia*	12	X	Good	7082971.8250	2544930.2560	17+16.92	67.82	REMAIN
90	Cedar Elm	*Juniperus virginiana*	12		Good	7082979.3290	2541919.3300	17+06.06	60.23	REMAIN
91	Eastern Red Cedar	*Pinus echinata*	13	X	Good	7082969.8410	2544588.4390	13+75.10	67.03	REMAIN
92	Possumhaw	*Ilex decidua*	6.5		Good	7082960.3820	2544513.5040	13+00.09	75.88	REMAIN
93	Eastern Red Cedar	*Juniperus virginiana*	13	X	Good	7082934.2960	2544401.7160	11+88.09	101.06	REMAIN
94	Eastern Red Cedar	*Pinus echinata*	17		Good	7082969.8300	2544644.1870	14+30.85	67.49	REMAIN
95	Eastern Red Cedar	*Pinus echinata*	14	X	Good	7082967.2520	2544605.7380	13+92.38	69.76	REMAIN
96	Cedar Elm	*Ulmus crassifolia*	13		Good	7082971.2840	2544972.9520	17+59.61	68.71	REMAIN
98	Shortleaf Pine	*Pinus echinata*	23.5		Good	7082952.8093	2544489.8896	12+76.41	83.26	REMAIN
99	Eastern Red Cedar	*Juniperus virginiana*	14	X	Good	7082953.5350	2544748.6480	15+35.17	84.64	REMAIN
100	Eastern Red Cedar	*Juniperus virginiana*	14		Good	7082959.7810	2544529.2780	13+15.86	76.61	REMAIN
101	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082982.7830	2545044.5160	18+31.27	57.79	REMAIN
102	Eastern Red Cedar	*Juniperus virginiana*	11	X	Good	7082954.4455	2544457.4408	12+43.98	81.36	REMAIN
103	Shortleaf Pine	*Pinus echinata*	16.5		Good	7082966.5000	2544368.7640	11+55.40	68.59	REMAIN
104	Possumhaw	*Ilex decidua*	8	X	Good	7082982.7970	2544999.8140	17+86.57	57.41	REMAIN
105	Cedar Elm	*Ulmus crassifolia*	12	X	Good	7082942.9860	2544325.8480	11+12.30	91.75	REMAIN
106	Eastern Red Cedar	*Juniperus virginiana*	14.5		Good	7082948.8600	2544359.2320	11+45.73	86.15	REMAIN
107	Cedar Elm	*Ulmus crassifolia*	12	X	Good	7082961.2770	2544339.7560	11+26.36	73.58	REMAIN
108	Eastern Red Cedar	*Juniperus virginiana*	16		Good	7082938.3790	2544424.5490	12+10.96	97.16	REMAIN
109	Shortleaf Pine	*Pinus echinata*	21	X	Good	7082969.4570	2544438.5050	12+25.17	66.20	REMAIN
110	Eastern Red Cedar	*Juniperus virginiana*	12	X	Good	7082939.3220	2544441.3160	12+27.73	96.36	REMAIN
111	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7082963.1140	2544462.2560	12+48.87	72.73	REMAIN
112	Cedar Elm	*Ulmus crassifolia*	11	X	Good	7082953.5400	2544329.6550	11+16.19	81.23	REMAIN
113	Eastern Red Cedar	*Juniperus virginiana*	17		Good	7082942.2460	2544375.4080	11+61.85	92.90	REMAIN
114	Eastern Red Cedar	*Juniperus virginiana*	14.5	X	Good	7082957.5630	2544478.3580	12+64.92	78.42	REMAIN
115	Possumhaw	*Ilex decidua*	6.5	X	Good	7082967.3520	2544536.0840	13+22.73	69.10	REMAIN
116	Possumhaw	*Ilex decidua*	9	X	Good	7082954.4080	2544547.8860	13+34.42	82.13	REMAIN
117	Eastern Red Cedar	*Juniperus virginiana*	13	X	Good	7082957.1590	2544558.5800	13+45.14	79.47	REMAIN
118	Eastern Red Cedar	*Pinus echinata*	18		Good	7082965.0260	2544660.1540	14+46.77	72.43	REMAIN
119	Eastern Red Cedar	*Juniperus virginiana*	13		Good	7082961.5600	2544763.9210	15+50.51	76.74	REMAIN
120	Possumhaw	*Ilex decidua*	7.5		Good	7082963.1400	2544564.4990	13+51.11	73.54	REMAIN
121	Shortleaf Pine	*Pinus echinata*	17	X	Good	7082962.0330	2544450.8560	12+37.46	73.72	REMAIN
122	Eastern Red Cedar	*Pinus echinata*	19.5		Good	7082957.5440	2544678.1360	14+64.69	80.06	REMAIN
123	Possumhaw	*Ilex decidua*	6	X	Good	7082969.8720	2544521.0860	13+07.75	66.45	REMAIN
124	Eastern Red Cedar	*Juniperus virginiana*	12	X	Good	7082961.6530	2544487.5330	12+74.13	74.40	REMAIN
125	Possumhaw	*Ilex decidua*	8.5		Good	7082954.7170	2544930.2030	17+16.73	84.93	REMAIN
127	Eastern Red Cedar	*Pinus echinata*	14	X	Good	7082967.0760	2544859.0490	16+45.68	71.99	REMAIN
128	Cedar Elm	*Ulmus crassifolia*	13		Good	7082963.0990	2544709.9450	14+96.55	74.76	REMAIN
129	Possumhaw	*Ilex decidua*	6.5	X	Good	7082960.9140	2544833.3790	16+19.96	77.95	REMAIN
131	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7082944.6650	2544867.6210	16+54.07	94.47	REMAIN
132	Possumhaw	*Ilex decidua*	6.5	X	Good	7082944.6650	2544867.6210	15+90.55	78.00	REMAIN
133	Possumhaw	*Ilex decidua*	6	X	Good	7082960.6190	2544803.9730	24+33.45	66.15	REMAIN
134	Cedar Elm	*Ulmus crassifolia*	13		Good	7082974.2920	2545165.3680	19+52.05	67.26	REMAIN
135	Eastern Red Cedar	*Juniperus virginiana*	16	X	Good	7082974.2920	2545165.3680	20+94.53	68.55	REMAIN
136	Cedar Elm	*Ulmus crassifolia*	12		Good	7082991.7770	2546210.3800	29+97.16	58.26	REMAIN
137	Eastern Red Cedar	*Juniperus virginiana*	10	X	Good	7082975.8040	2545187.1000	19+73.79	65.93	REMAIN
138	Possom Haw	*Ilex decidua*	10.5	X	Good	7082986.1630	2545119.5630	19+06.34	55.02	REMAIN
139	Cedar Elm	*Ulmus crassifolia*	15		Good	7082986.9220	2545358.3840	21+45.16	56.20	REMAIN
140	Cedar Elm	*Ulmus crassifolia*	12		Good	7082993.8980	2545549.1930	23+36.02	50.77	REMAIN
141	Cedar Elm	*Ulmus crassifolia*	12		Good	7082987.1850	2545508.5470	22+95.32	57.15	REMAIN

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04-07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION & REPLACEMENT PLAN

SHEET 1 OF 3

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	273
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.
DATE: 4/6/2026 1:58:09 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P11.dgn

ID	COMMON NAME	SCIENTIFIC NAME	DIAMETER (IN)	MULTI TRUNK	CONDITION	NORTHING	EASTING	CL STA.	OFFSET	DISPOSITION
142	Cedar Elm	*Ulmus crassifolia*	11		Good	7082986.6620	2546016.4480	28+03.20	61.80	REMAIN
144	Eastern Red Cedar	*Juniperus virginiana*	12		Good	7082994.1280	2546674.2930	34+61.08	59.67	PROTECT
145	Eastern Red Cedar	*Juniperus virginiana*	16.5	X	Good	7082990.9140	2545945.2040	27+31.99	56.97	REMAIN
146	Cedar Elm	*Ulmus crassifolia*	10		Good	7082982.2230	2545616.4170	24+03.14	62.99	REMAIN
147	Eastern Red Cedar	*Juniperus virginiana*	17	X	Good	7082989.6190	2545864.4920	26+51.27	57.61	REMAIN
148	Eastern Red Cedar	*Juniperus virginiana*	13	X	Good	7082985.4620	2546512.8210	32+99.54	67.03	REMAIN
149	Cedar Elm	*Ulmus crassifolia*	8		Good	7082985.5050	2545721.6520	25+08.40	60.56	REMAIN
150	Eastern Red Cedar	*Juniperus virginiana*	10	X	Good	7082988.5280	2545162.1960	19+48.99	53.00	REMAIN
151	Possumhaw	*Ilex decidua*	6.5	X	Good	7082989.4910	2545640.0630	24+26.85	55.92	REMAIN
152	Possumhaw	*Ilex decidua*	6.5	X	Good	7082984.4310	2545918.4680	27+05.20	63.23	REMAIN
153	Eastern Red Cedar	*Juniperus virginiana*	24	X	Good	7082995.9740	2546460.2400	32+47.05	56.09	REMAIN
154	Shumard Oak	*Quercus shumardii*	12		Good	7082991.6840	2546508.5470	32+95.32	60.77	REMAIN
155	Eastern Red Cedar	*Juniperus virginiana*	21	X	Good	7082975.9440	2545417.0230	22+03.71	67.65	REMAIN
156	Eastern Red Cedar	*Juniperus virginiana*	18.5	X	Good	7082989.3540	2545488.5650	22+75.35	54.82	REMAIN
157	Cedar Elm	*Ulmus crassifolia*	14		Good	7082979.9000	2545229.3150	20+16.04	62.17	REMAIN
158	Eastern Red Cedar	*Juniperus virginiana*	22	X	Good	7082983.9780	2545069.2440	18+56.00	56.80	REMAIN
159	Possumhaw	*Ilex decidua*	9.5	X	Good	7082978.2810	2545443.6050	22+30.31	65.53	REMAIN
160	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082991.5150	2546223.6900	30+10.47	58.63	REMAIN
161	Eastern Red Cedar	*Juniperus virginiana*	17	X	Good	7082979.7290	2545529.8120	23+16.52	64.78	REMAIN
162	Eastern Red Cedar	*Juniperus virginiana*	15	X	Good	7082979.9540	2545629.1600	24+15.87	65.36	REMAIN
163	Eastern Red Cedar	*Juniperus virginiana*	16	X	Good	7082976.0650	2545905.0980	26+91.77	71.49	REMAIN
164	Eastern Red Cedar	*Juniperus virginiana*	28	X	Good	7082989.4650	2546180.1710	29+66.94	60.32	REMAIN
165	Eastern Red Cedar	*Juniperus virginiana*	19	X	Good	7082992.7960	2546058.6990	28+45.50	56.01	REMAIN
166	Eastern Red Cedar	*Juniperus virginiana*	11.5	X	Good	7082992.1240	2546049.0740	28+35.87	56.60	REMAIN
167	Eastern Red Cedar	*Juniperus virginiana*	15	X	Good	7082990.6440	2545934.8500	27+21.63	57.15	REMAIN
168	Shumard Oak	*Quercus shumardii*	12		Good	7082976.1540	2546512.7160	32+99.36	76.33	REMAIN
169	Possumhaw	*Ilex decidua*	7.5	X	Good	7082989.1510	2545889.8960	26+76.67	58.28	REMAIN
170	Possumhaw	*Ilex decidua*	9.5	X	Good	7082986.8010	2546105.2810	28+92.03	62.38	REMAIN
171	Possumhaw	*Ilex decidua*	8.5	X	Good	7082976.0630	2545108.3590	18+95.05	65.03	REMAIN
172	Possumhaw	*Ilex decidua*	8	X	Good	7082985.5220	2545181.5560	19+68.32	56.16	REMAIN
173	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7082980.7310	2545893.8160	26+80.52	66.73	REMAIN
174	Shumard Oak	*Quercus shumardii*	13		Good	7082992.6290	2546496.9150	32+83.70	59.73	REMAIN
175	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082987.9550	2546076.4030	28+63.16	60.99	REMAIN
176	Possumhaw	*Ilex decidua*	8	X	Good	7082981.7350	2545841.3530	26+28.07	65.30	REMAIN
177	Eastern Red Cedar	*Juniperus virginiana*	21	X	Good	7082986.0720	2545293.5080	20+80.28	56.52	REMAIN
178	Cedar Elm	*Ulmus crassifolia*	11		Good	7082996.9550	2546159.3900	29+46.22	52.67	REMAIN
179	Possumhaw	*Ilex decidua*	7	X	Good	7082982.8290	2545576.4390	23+63.17	62.06	REMAIN
180	Cedar Elm	*Ulmus crassifolia*	10		Good	7082993.0030	2546346.7610	31+33.55	58.14	REMAIN
181	Eastern Red Cedar	*Juniperus virginiana*	11	X	Good	7082987.8110	2545598.4600	23+85.23	57.26	REMAIN
182	Eastern Red Cedar	*Juniperus virginiana*	12		Good	7082988.6520	2545911.1610	26+97.93	58.95	REMAIN
183	Cedar Elm	*Ulmus crassifolia*	10		Good	7082989.3370	2545903.2950	26+90.07	58.21	REMAIN
184	Possumhaw	*Ilex decidua*	13	X	Good	7082984.9450	2545259.4460	20+46.21	57.37	REMAIN
186	Cedar Elm	*Ulmus crassifolia*	10		Good	7082995.4030	2545930.8250	27+17.65	52.36	REMAIN
187	Eastern Red Cedar	*Juniperus virginiana*	13.5	X	Good	7082991.3460	2545702.7280	24+89.53	54.57	REMAIN
188	Possumhaw	*Ilex decidua*	9	X	Good	7082992.3400	2546359.7850	31+46.57	58.91	REMAIN
189	Cedar Elm	*Ulmus crassifolia*	13		Good	7082989.2900	2546416.6000	32+03.36	62.42	REMAIN
190	Possumhaw	*Ilex decidua*	12	X	Good	7082984.7940	2545102.0170	18+88.78	56.25	REMAIN
191	Possumhaw	*Ilex decidua*	6	X	Good	7082981.0570	2545743.7160	25+30.43	65.19	REMAIN
192	Cedar Elm	*Ulmus crassifolia*	11		Good	7082979.8550	2545129.9730	19+16.70	61.41	REMAIN
193	Eastern Red Cedar	*Juniperus virginiana*	17.5	X	Good	7082990.0880	2545499.2020	22+86.00	54.18	REMAIN
194	Eastern Red Cedar	*Juniperus virginiana*	20	X	Good	7082979.8930	2545089.1110	18+75.84	61.04	REMAIN
195	Eastern Red Cedar	*Juniperus virginiana*	18	X	Good	7082979.3350	2545438.5110	22+25.22	64.44	REMAIN
196	Cedar Elm	*Ulmus crassifolia*	12		Good	7082973.2130	2545393.9120	21+80.57	70.20	REMAIN
197	Possumhaw	*Ilex decidua*	8.5	X	Good	7082985.5890	2545869.9730	26+56.72	61.68	REMAIN
198	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082993.5540	2546151.1160	29+37.92	56.00	REMAIN
199	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082986.4820	2546447.7580	32+34.49	65.48	REMAIN
200	Cedar Elm	*Ulmus crassifolia*	10		Good	7082992.8510	2546380.8740	31+67.66	58.57	REMAIN
201	Eastern Red Cedar	*Juniperus virginiana*	17	X	Good	7082974.7680	2545200.9360	19+87.62	67.07	REMAIN
202	Cedar Elm	*Ulmus crassifolia*	11		Good	7082990.2500	2546131.6930	29+18.47	59.15	REMAIN
203	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7082987.3700	2545220.9680	20+07.75	54.64	REMAIN
204	Eastern Red Cedar	*Juniperus virginiana*	25	X	Good	7082994.5650	2545410.1530	21+96.99	48.98	REMAIN
205	Eastern Red Cedar	*Juniperus virginiana*	14		Good	7082995.6580	2546476.0160	32+62.82	56.53	REMAIN
206	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082984.8100	2546142.4390	29+29.17	64.67	REMAIN
207	Cedar Elm	*Ulmus crassifolia*	14		Good	7082983.1520	2545060.8450	18+47.60	57.55	REMAIN
208	Possumhaw	*Ilex decidua*	8.5	X	Good	7082986.2560	2545882.8500	26+69.60	61.12	REMAIN
209	Eastern Red Cedar	*Juniperus virginiana*	19	X	Good	7082973.6610	2545079.9730	18+66.65	67.20	REMAIN
210	Possumhaw	*Ilex decidua*	7	X	Good	7082994.8050	2546364.7470	31+51.55	56.48	REMAIN
211	Eastern Red Cedar	*Juniperus virginiana*	25	X	Good	7082984.7400	2545690.5800	24+77.32	61.08	REMAIN

ID	COMMON NAME	SCIENTIFIC NAME	DIAMETER (IN)	MULTI TRUNK	CONDITION	NORTHING	EASTING	CL STA.	OFFSET	DISPOSITION
212	Eastern Red Cedar	*Juniperus virginiana*	15		Good	7082987.5900	2546318.0880	31+04.84	63.32	REMAIN
213	Eastern Red Cedar	*Juniperus virginiana*	12		Good	7082995.0830	2546334.5370	31+21.34	55.96	REMAIN
214	Eastern Red Cedar	*Juniperus virginiana*	16	X	Good	7082985.8670	2545536.1260	23+22.89	58.70	REMAIN
215	Cedar Elm	*Ulmus crassifolia*	11		Good	7082984.5230	2545193.2360	19+80.00	57.26	REMAIN
216	Possumhaw	*Ilex decidua*	7	X	Good	7082987.2810	2546033.4510	28+20.21	61.32	REMAIN
217	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7082986.5660	2545807.7730	25+94.53	60.20	REMAIN
218	Eastern Red Cedar	*Juniperus virginiana*	14		Good	7082993.5990	2545715.3720	25+02.19	52.42	REMAIN
219	Eastern Red Cedar	*Juniperus virginiana*	22.5	X	Good	7082992.7000	2546294.2550	30+81.04	58.01	REMAIN
220	Cedar Elm	*Ulmus crassifolia*	14		Good	7082984.7010	2545961.7910	27+48.53	63.32	REMAIN
221	Eastern Red Cedar	*Juniperus virginiana*	12		Good	7083003.2170	2546469.4560	32+56.33	48.92	REMAIN
222	Possumhaw	*Ilex decidua*	6	X	Good	7082974.5960	2545336.8460	21+23.52	68.35	REMAIN
223	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7082989.8630	2545828.4250	26+15.21	57.07	REMAIN
224	Cedar Elm	*Ulmus crassifolia*	9		Good	7082994.1030	2545756.6680	25+43.49	52.25	REMAIN
225	Possumhaw	*Ilex decidua*	7	X	Good	7082985.3420	2546253.3980	30+40.13	65.04	REMAIN
226	Possumhaw	*Ilex decidua*	10.5	X	Good	7082984.5290	2545653.1160	24+39.86	60.98	REMAIN
227	Eastern Red Cedar	*Juniperus virginiana*	15	X	Good	7082989.8760	2545855.2370	26+42.02	57.28	REMAIN
229	Possumhaw	*Ilex decidua*	7.5	X	Good	7082992.4830	2546092.1460	28+78.94	56.59	REMAIN
230	Cedar Elm	*Ulmus crassifolia*	12		Good	7082972.8480	2545321.1220	21+07.78	69.97	REMAIN
231	Eastern Red Cedar	*Juniperus virginiana*	21	X	Good	7082971.4310	2545287.2910	20+73.94	71.11	REMAIN
232	Cedar Elm	*Ulmus crassifolia*	16		Good	7082986.5580	2545792.3970	25+79.15	60.08	REMAIN
233	Eastern Red Cedar	*Juniperus virginiana*	13	X	Good	7082969.9910	2546670.3810	34+56.97	83.77	REMAIN
234	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7082976.7460	2546664.8860	34+51.53	76.98	REMAIN
235	Eastern Red Cedar	*Juniperus virginiana*	13	X	Good	7082962.4250	2546669.2970	34+55.83	91.33	REMAIN
236	Eastern Red Cedar	*Juniperus virginiana*	11.5	X	Good	7082956.3470	2546663.8940	34+50.38	97.37	REMAIN
237	Black Willow	*Salix nigra*	7		Good	7083095.9810	2547172.5910	39+60.00	-39.73	REMOVE
238	Cedar Elm	*Ulmus crassifolia*	11		Good	7082972.2610	2546845.1570	36+32.16	82.91	REMAIN
239	Black Willow	*Salix nigra*	16.5	X	Good	7083094.7550	2547183.3070	39+70.71	-38.47	REMOVE
240	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7082962.2270	2546657.7600	34+44.29	91.44	REMAIN
241	Black Willow	*Salix nigra*	9		Good	7083097.7070	2547161.1420	39+48.56	-41.49	REMOVE
242	Eastern Red Cedar	*Juniperus virginiana*	13	X	Good	7082954.3660	2546631.4780	34+17.95	99.08	REMAIN
243	Cedar Elm	*Ulmus crassifolia*	11		Good	7082993.9080	2546688.5540	34+75.34	60.01	REMAIN
244	Cedar Elm	*Ulmus crassifolia*	11	X	Good	7082990.3060	2546781.4980	35+68.25	64.36	REMAIN
245	Black Willow	*Salix nigra*	11		Good	7083104.5780	2547162.2240	39+49.66	-48.36	REMOVE
246	Black Willow	*Salix nigra*	10.5	X	Good	7083095.8070	2547167.1260	39+54.54	-39.58	REMOVE
247	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7082972.1240	2546629.7610	34+16.37	81.31	REMAIN
248	Black Willow	*Salix nigra*	8		Good	7083103.1450	2547164.8720	39+52.31	-46.92	REMOVE
249	Black Willow	*Salix nigra*	7		Good	7083096.7710	2547171.2170	39+58.63	-40.53	REMOVE
250	Eastern Red Cedar	*Juniperus virginiana*	9		Good	7082959.4000	2546639.7190	34+26.23	94.12	REMAIN
251	Eastern Red Cedar	*Juniperus virginiana*	12		Good	7082958.8770	2546637.8840	34+24.39	94.62	REMAIN
252	Cedar Elm	*Ulmus crassifolia*	10		Good	7082990.5240	2546717.3980	35+04.16	63.62	REMAIN
253	Shumard Oak	*Quercus shumardii*	8		Good	7082959.5830	2546648.1080	34+34.62	94.00	REMAIN
254	Eastern Red Cedar	*Juniperus virginiana*	9		Good	7082967.8460	2546653.7620	34+40.34	85.78	REMAIN
255	Black Willow	*Salix nigra*	10		Good	7083015.7130	2547925.0700	47+12.21	43.02	REMOVE
256	Sugar Hackberry	*Sapindus saponaria*	9		Good	7083111.7880	2547719.0800	45+06.54	-53.74	REMOVE
257	American elm	*Ulmus americana*	24	X	Good	7083110.1640	2547827.9000	46+15.35	-51.75	REMOVE
258	Hackberry	*Celtis laevigata*	10		Good	7083115.9410	2547843.0690	46+30.54	-57.48	REMOVE
259	Bois d' Arc	*Maclura pomifera*	38	X	Good	7083111.8270	2547727.6230	45+15.08	-53.75	REMOVE
260	American Elm	*Ulmus americana*	15		Good	7083018.9120	2547938.4740	47+25.63	39.86	REMOVE
261	American Elm	*Ulmus americana*	11		Good	7083125.0280	2547791.8420	45+79.35	-66.74	REMOVE
262	Sugar Hackberry	*Celtis laevigata*	10		Good	7083101.5490	2548861.8400	56+49.26	-39.73	REMOVE
263	Cedar Elm	*Ulmus crassifolia*	12		Good	7083113.0680	2549568.8690	63+56.61	-48.01	REMOVE
264	Cedar Elm	*Ulmus crassifolia*	10		Good	7083112.7870	2549704.1070	64+91.84	-46.50	REMOVE
265	Eastern Red Cedar	*Juniperus virginiana*	9		Good	7083007.1890	2551335.9410	81+22.64	73.98	REMAIN
266	Crepe Myrtle	*Lagerstroemia indica*	11.5	X	Good	7083013.4210	2550076.3730	68+63.18	56.26	REMAIN
267	Sugar Hackberry	*Celtis laevigata*	16.5	X	Good	7083102.4570	2548903.1220	56+90.55	-40.50	REMOVE
268	Bradford Pear	*Pyrus calleryana*	15		Good	7082999.4770	2547025.4160	38+12.51	56.29	REMOVE
269	American Elm	*Ulmus americana*	6		Good	7083111.1670	2547234.8200	40+22.28	-54.71	REMOVE
270	Live Oak	*Quercus virginiana*	10		Good	7083000.1240	2551455.6750	82+42.30	82.13	REMAIN
272	Cedar Elm	*Ulmus crassifolia*	10		Good	7083123.6020	2550287.1070	70+74.91	-52.00	REMOVE
273	Sugar Hackberry	*Celtis laevigata*	12		Good	7083099.9360	2549103.6370	58+91.05	-37.32	REMOVE
274	Bois d'Arc	*Maclura pomifera*	21	X	Good	7083101.6538	2548822.0472	56+09.47	-39.96	REMOVE
275	Bradford Pear	*Pyrus calleryana*	11		Good	7082998.1340	2547061.0730	38+48.16	57.75	REMAIN
276	Cedar Elm	*Ulmus crassifolia*	11		Good	7083111.0180	2549502.9350	62+90.66	-46.56	REMOVE
277	Common Persimmon	*Diospyros virginiana*	16		Good	7082998.7730	2548333.5690	51+20.65	61.31	REMAIN
278	Sugar Hackberry	*Celtis laevigata*	6		Good	7083102.6980	2548887.5800	56+75.00	-40.79	REMOVE
279	Bois d'Arc	*Maclura pomifera*	8.5	X	Good	7083109.4200	2547535.5230	43+22.98	-51.97	REMOVE
280	Sugar Hackberry	*Celtis laevigata*	10		Good	7083101.3440	2548859.2980	56+46.72	-39.53	REMOVE
281	Cedar Elm	*Ulmus crassifolia*	12		Good	7083120.0590	2550116.9550	69+04.73	-50.00	REMOVE

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
PROFESSIONAL ENGINEER
LICENSED
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION & REPLACEMENT PLAN

SHEET 2 OF 3

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	274
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call! before you dig.
DATE: 4/6/2026 1:58:12 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P12.dgn

ID	COMMON NAME	SCIENTIFIC NAME	DIAMETER (IN)	MULTI TRUNK	CONDITION	NORTHING	EASTING	CL STA.	OFFSET	DISPOSITION
282	Sugar Hackberry	*Celtis laevigata*	8		Good	7083127.8290	2547798.2550	45+85.77	-69.52	REMOVE
283	Soap Berry	*Sapindus saponaria*	8		Good	7083097.8560	2548221.8320	50+09.24	-38.15	REMOVE
284	Cedar Elm	*Ulmus crassifolia*	8		Good	7083118.8560	2550045.9820	68+33.75	-49.45	REMOVE
285	American Elm	*Ulmus americana*	12.5	X	Good	7083026.1910	2547949.4510	47+36.63	32.62	REMOVE
286	Sugar Hackberry	*Celtis laevigata*	8		Good	7083101.8542	2548820.2170	56+07.64	-40.17	REMOVE
287	Sugar Hackberry	*Celtis laevigata*	7		Good	7083102.5120	2548837.7440	56+25.17	-40.77	REMOVE
288	Bois d' Arc	*Maclura pomifera*	6		Good	7083122.2940	2547840.0860	46+27.58	-63.84	REMOVE
289	Sugar Hackberry	*Celtis laevigata*	6		Good	7083112.8540	2547818.9790	46+06.44	-54.47	REMOVE
290	Pecan	*Carya illinoinensis*	18	X	Good	7083102.1780	2548834.9730	56+22.40	-40.44	REMOVE
291	Cedar Elm	*Ulmus crassifolia*	11		Good	7083117.8030	2549977.3650	67+65.13	-49.02	REMOVE
292	Cedar Elm	*Ulmus crassifolia*	13		Good	7083108.8760	2549391.7470	61+79.19	-45.31	REMOVE
293	Eatsern Red Cedar	*Juniperus virginiana*	10		Good	7083100.9120	2549181.7310	59+69.15	-38.03	REMOVE
294	Sugar Hackberry	*Celtis laevigata*	8	X	Good	7083101.4770	2548888.9810	56+76.40	-39.57	REMOVE
295	American Elm	*Ulmus americana*	20		Good	7083119.0006	2550047.3957	68+35.17	-49.58	REMOVE
296	Cedar Elm	*Ulmus crassifolia*	12		Good	7083121.1870	2550191.4110	69+79.20	-50.45	REMOVE
297	Cedar Elm	*Ulmus crassifolia*	14		Good	7083116.5440	2549903.3300	66+91.08	-48.44	REMOVE
298	Cedar Elm	*Ulmus crassifolia*	10		Good	7083122.9190	2550344.9410	71+32.74	-50.79	REMOVE
299	Cedar Elm	*Ulmus crassifolia*	15	X	Good	7083114.4900	2549771.6340	65+59.38	-47.58	REMOVE
300	Cedar Elm	*Ulmus crassifolia*	13		Good	7083120.7450	2550233.8070	70+21.59	-49.62	REMOVE
301	Crepe Myrtle	*Lagerstroemia indica*	11	X	Good	7083017.0610	2550068.1520	68+54.99	52.54	REMAIN
302	Crepe Myrtle	*Lagerstroemia indica*	10	X	Good	7083015.1740	2550059.3440	68+46.17	54.35	REMAIN
303	Eastern Red Cedar	*Juniperus virginiana*	15	X	Good	7083007.8720	2551008.8090	77+95.53	70.31	REMAIN
304	Cedar Elm	*Ulmus crassifolia*	14		Good	7082999.3480	2550056.2370	68+42.92	70.15	REMAIN
305	Cedar Elm	*Ulmus crassifolia*	13		Good	7082999.6130	2550037.1670	68+23.85	69.71	REMAIN
306	Unknown Cedar	*Juniperus sp.*	13	X	Good	7083000.0000	2549997.3590	67+84.05	68.96	REMAIN
307	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7083011.8220	2550978.7320	77+65.49	66.09	REMAIN
308	Live Oak	*Quercus virginiana*	9		Good	7082997.1610	2550120.2900	69+06.95	72.92	REMAIN
309	Cedar Elm	*Ulmus crassifolia*	7		Good	7082999.8170	2550077.1610	68+63.84	69.87	REMAIN
310	Cedar Elm	*Ulmus crassifolia*	13		Good	7082998.3240	2550015.3070	68+01.98	70.80	REMAIN
311	Unknown Cedar	*Juniperus sp.*	16	X	Good	7082998.1390	2549980.1930	67+66.86	70.66	REMAIN
312	Cedar Elm	*Ulmus crassifolia*	15		Good	7082984.9080	2549945.2300	67+31.78	83.58	REMAIN
313	Cedar Elm	*Ulmus crassifolia*	13.5	X	Good	7083027.0550	2550920.4360	77+07.33	50.32	REMOVE
314	Live Oak	*Quercus virginiana*	10		Good	7083016.8250	2550882.4550	76+69.26	60.20	REMAIN
315	Live Oak	*Quercus virginiana*	12		Good	7083030.7720	2551255.1950	80+42.11	49.66	REMAIN
316	Live Oak	*Quercus virginiana*	12		Good	7083017.7550	2550903.0050	76+89.82	59.46	REMAIN
317	Cedar Elm	*Ulmus crassifolia*	10		Good	7083020.5530	2550857.8680	76+44.71	56.25	REMAIN
318	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7083013.4130	2550966.3160	77+53.09	64.38	REMAIN
319	Cedar Elm	*Ulmus crassifolia*	10		Good	7082996.8390	2550901.8690	76+88.49	80.37	REMAIN
320	Eastern Red Cedar	*Ulmus crassifolia*	15	X	Good	7083005.0360	2550948.2790	77+34.97	72.59	REMAIN
321	Cedar Elm	*Ulmus crassifolia*	11		Good	7083122.4660	2550533.3440	73+21.13	-48.61	REMOVE
322	Eastern Red Cedar	*Juniperus virginiana*	12	X	Good	7083012.3100	2551319.8850	81+06.63	68.71	REMAIN
323	Eastern Red Cedar	*Juniperus virginiana*	14	X	Good	7083009.1000	2550994.0620	77+80.79	68.95	REMAIN
324	Eastern Red Cedar	*Juniperus virginiana*	13.5	X	Good	7083011.1860	2551350.1100	81+36.84	70.11	REMAIN
325	American Elm	*Ulmus americana*	10		Good	7083014.3970	2551305.4200	80+92.18	66.49	REMAIN
326	Bradford Pear	*Pyrus calleryana*	18		Good	7083122.2350	2550462.5560	72+50.34	-49.03	REMOVE
327	Live Oak	*Quercus virginiana*	12		Good	7083027.6700	2551057.1600	78+44.06	50.95	REMOVE
328	Cedar Elm	*Ulmus crassifolia*	10		Good	7083127.5640	2550740.7350	75+28.56	-51.82	REMOVE
329	Cedar Elm	*Ulmus crassifolia*	13	X	Good	7083123.4520	2550604.3560	73+92.14	-48.95	REMOVE
330	Possumhaw	*Ilex decidua*	9.5			7082953.0013	2544954.7676	17+41.28	86.84	REMAIN
331	Live Oak	*Quercus virginiana*	9		Good	7083023.8210	2551467.6530	82+54.50	58.54	REMAIN
332	Eastern Red Cedar	*Juniperus virginiana*	8		Good	7083011.3970	2551495.4980	82+82.23	71.22	REMAIN
333	Eastern Red Cedar	*Juniperus virginiana*	14.5	X	Good	7083015.8900	2551509.0890	82+95.86	66.85	REMAIN
334	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7083011.5710	2551525.1100	83+11.84	71.32	REMAIN
335	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7083015.2780	2551540.2430	83+27.01	67.75	REMAIN
336	Eastern Red Cedar	*Juniperus virginiana*	11		Good	7083010.6510	2551554.6740	83+41.39	72.51	REMAIN
337	Live Oak	*Quercus virginiana*	7		Good	7083003.2780	2551601.6250	83+88.28	80.31	REMAIN
338	Shumard Oak	*Quercus shumardii*	13		Good	7083024.8970	2551619.5690	84+06.42	58.85	REMAIN
339	Live Oak	*Quercus virginiana*	9		Good	7083002.5500	2551655.2590	84+41.90	81.53	REMAIN
340	Eastern Red Cedar	*Juniperus virginiana*	11.5	X	Good	7083003.3290	2551686.4710	84+73.12	81.03	REMAIN
341	Eastern Red Cedar	*Juniperus virginiana*	8	X	Good	7083004.5680	2551702.4600	84+89.12	79.94	REMAIN
342	Eastern Red Cedar	*Juniperus virginiana*	8		Good	7083000.8400	2551716.4200	85+03.04	83.79	REMAIN
343	Eastern Red Cedar	*Juniperus virginiana*	10		Good	7083003.2790	2551731.1620	85+17.81	81.49	REMAIN
344	Eastern Red Cedar	*Juniperus virginiana*	10	X	Good	7083000.7300	2551746.1100	85+32.73	84.17	REMAIN
345	Cedar Elm	Ulmus crassifolia	9		Good	7083005.7150	2551808.4720	85+95.31	79.63	REMAIN
346	Cedar Elm	Ulmus crassifolia	11		Good	7083035.0430	2551501.0800	82+88.02	47.63	REMAIN
347	Chinese Elm	*Ulmus parvifolia*	22	X	Good	7083025.2900	2552484.3790	92+71.34	64.76	REMAIN
348	Cedar Elm	*Ulmus crassifolia*	13		Good	7082945.9061	2544882.4640	16+68.92	93.35	REMAIN
349	Cedar Elm	*Ulmus crassifolia*	9		Good	7082974.1620	2545307.8620	26+62.62	67.40	REMAIN
350	Cedar Elm	*Ulmus crassifolia*	14		Good	7082985.4620	2546512.8210	23+81.19	63.60	REMAIN
351	Bois d' Arc	*Maclura pomifera*	8			7083122.4380	2547832.6560	46+20.15	-64.01	REMOVE
352	Cedar Elm	*Ulmus crassifolia*	11		Good	7082987.9580	2545468.6610	22+55.44	56.06	REMAIN

SPECIES	TOTAL
Eastern Red Cedar	101
Cedar Elm	67
Possomhaw	37
Live Oak	32
Sugar Hackberry	15
Crepe Myrtle	13
Shumard Oak	9
Unknown Cedar	9
Black Willow	8
American Elm	7
Chinqapin Oak	5
Shortleaf Pine	14
Bois d'Arc	5
Burr Oak	5
Chinese Elm	4
Bradford Pear	3
Bald Cypress	2
Soapberry	2
Common Persimmon	1
Pecan	1
Chinese Elm	1

STATE OF TEXAS
CHRISTOPHER P. MESZLER
112052
LICENSED
PROFESSIONAL ENGINEER
04/07-2026

W. LUCAS RD. ROADWAY IMPROVEMENTS

TREE PRESERVATION & REPLACEMENT PLAN

SHEET 3 OF 3

CHRISTOPHER P. MESZLER, P.E.
LIC. No. 112052
1903 CENTRAL DRIVE, SUITE 100
BEDFORD, TX 76021
PHONE: 817.618.3640
TBPE REG. F-20986

bc engineering
a PARSONS Company

CITY OF LUCAS
PUBLIC WORKS DEPARTMENT
665 COUNTRY CLUB ROAD
LUCAS, TX. 75002

JOB	ROAD	SHEET NO.
	W. LUCAS RD.	275
	COUNTY	
	COLLIN	

Texas811 Know what's below. Call before you dig.

DATE: 4/6/2026 1:58:14 PM
FILE: T:\1024793 West Lucas Road Design Revision\Design Data\4 - Design\Plan Set\9. Environmental\WLucas_TREE_P13.dgn

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

DATE:
FILE:

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

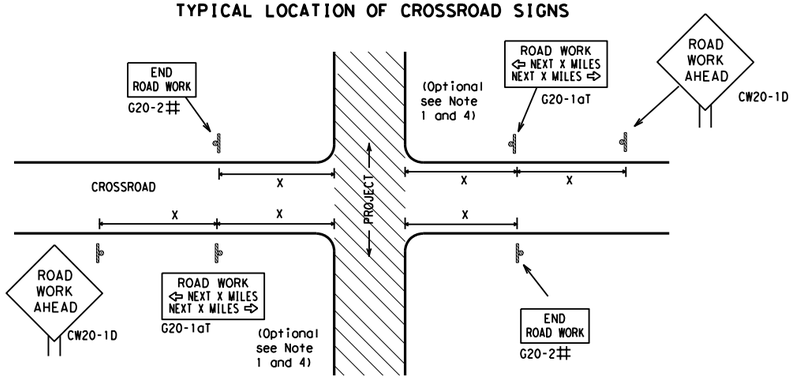
BC(1)-21

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 5-10 5-21	DIST	COUNTY		SHEET NO.

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

DATE:
FILE:

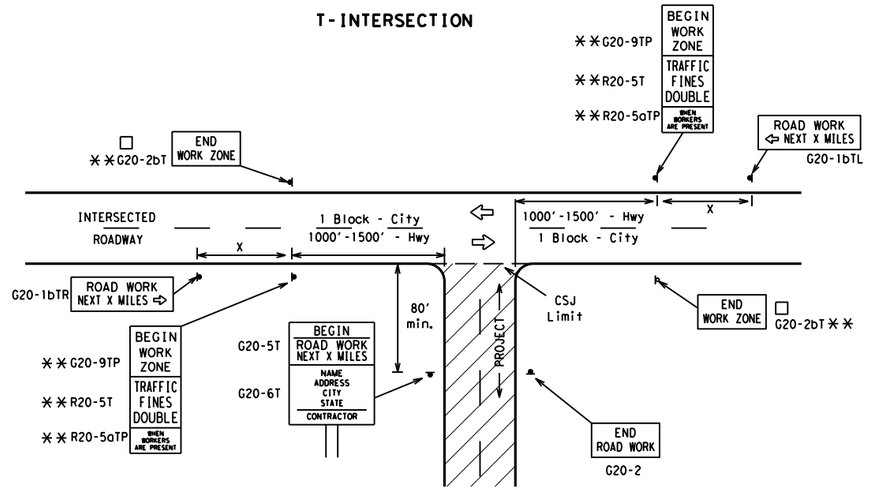
TYPICAL LOCATION OF CROSSROAD SIGNS



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

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

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

SIZE

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

SPACING

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

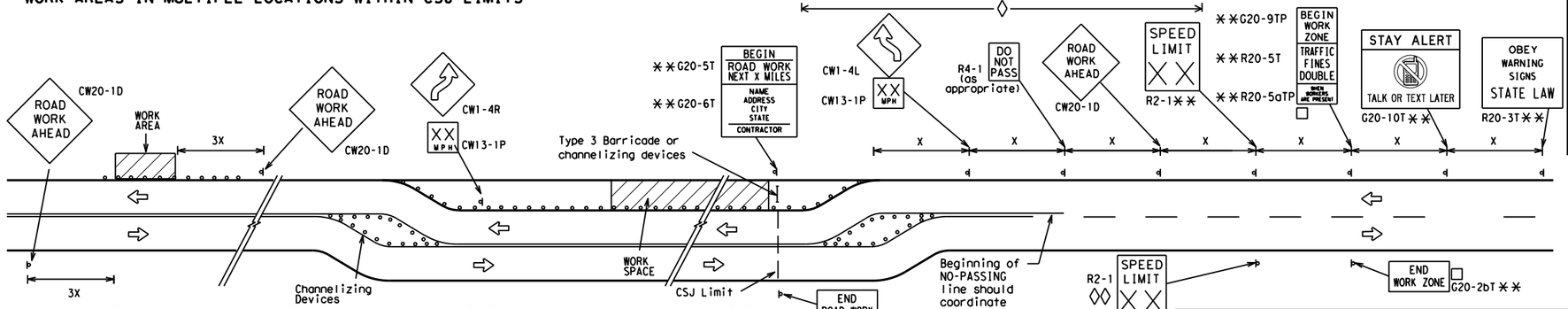
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

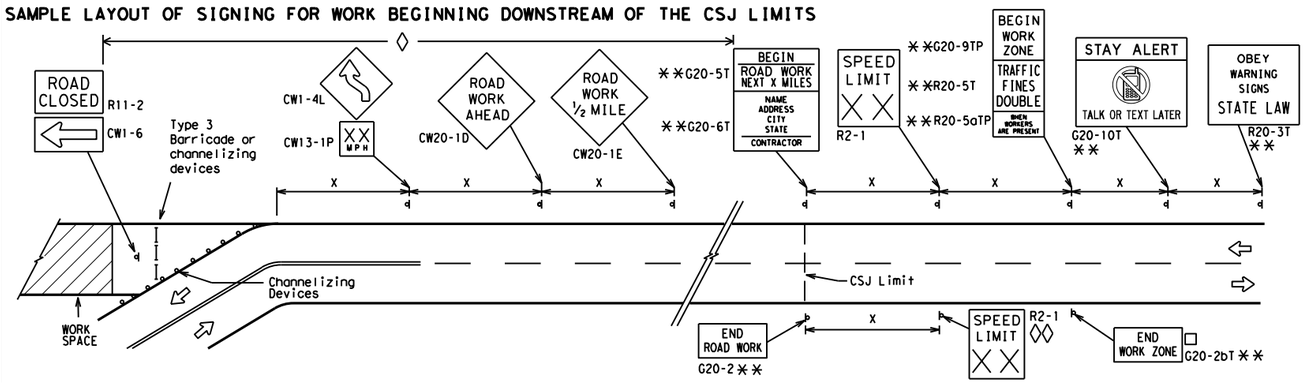
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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

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

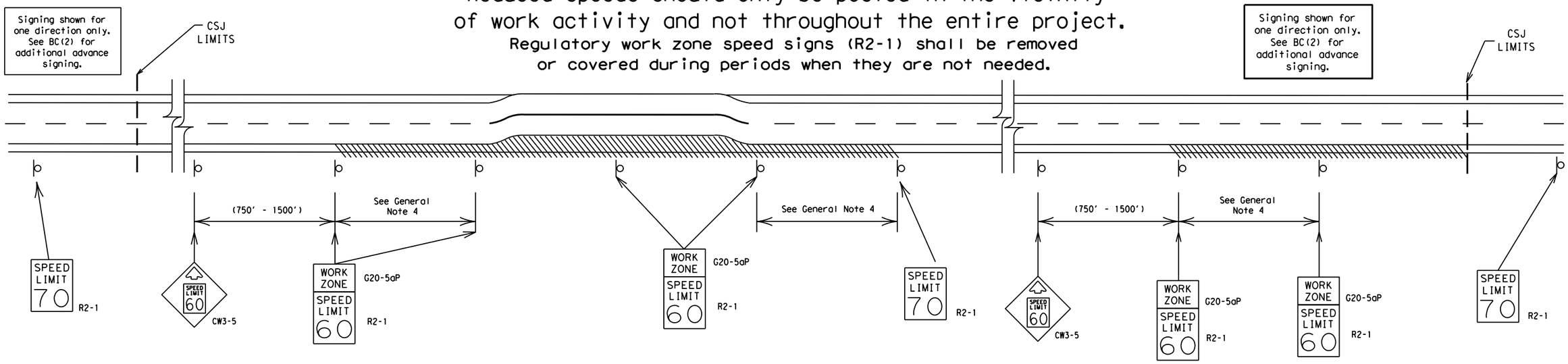
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

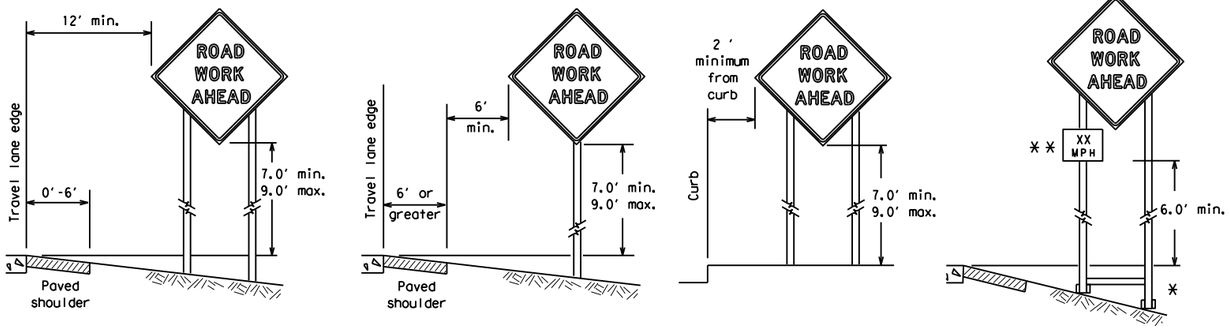
BC(3)-21

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

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

DATE:
FILE:

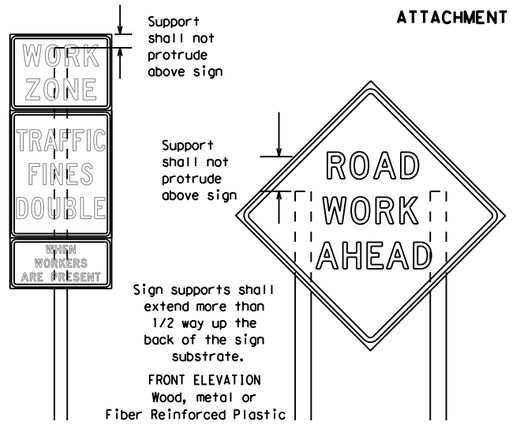
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

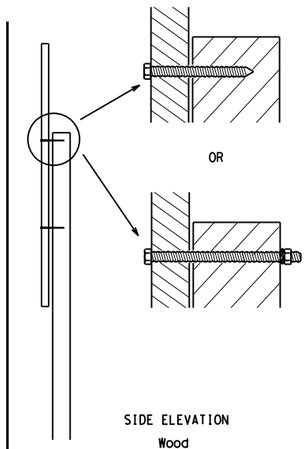


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





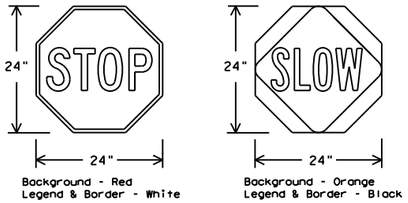
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation | Traffic Safety Division Standard

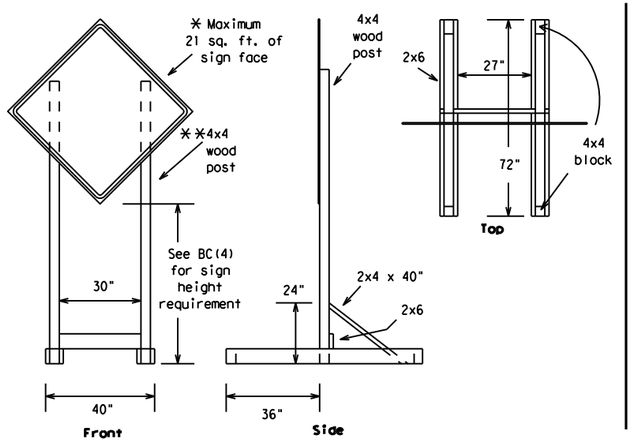
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

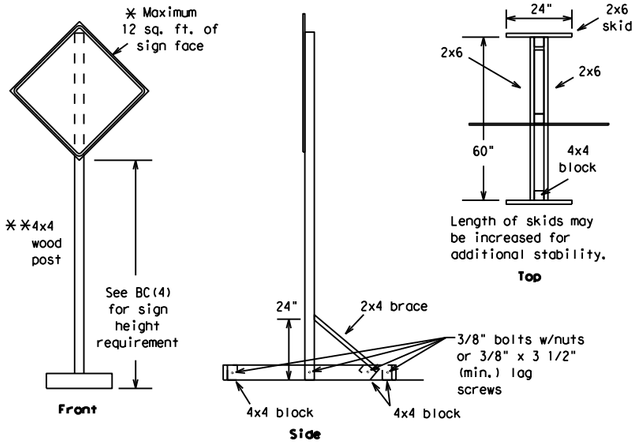
BC(4)-21

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

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

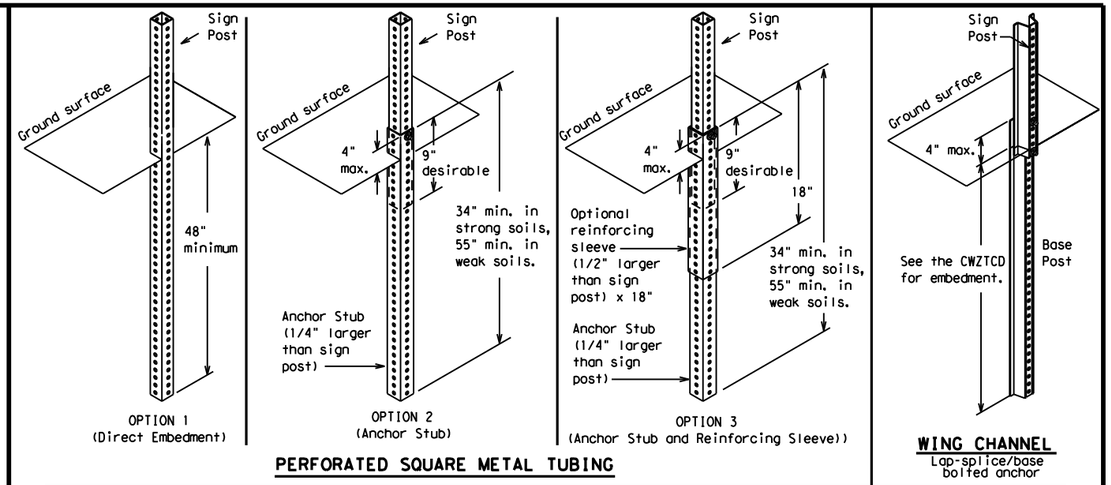
DATE:
FILE:





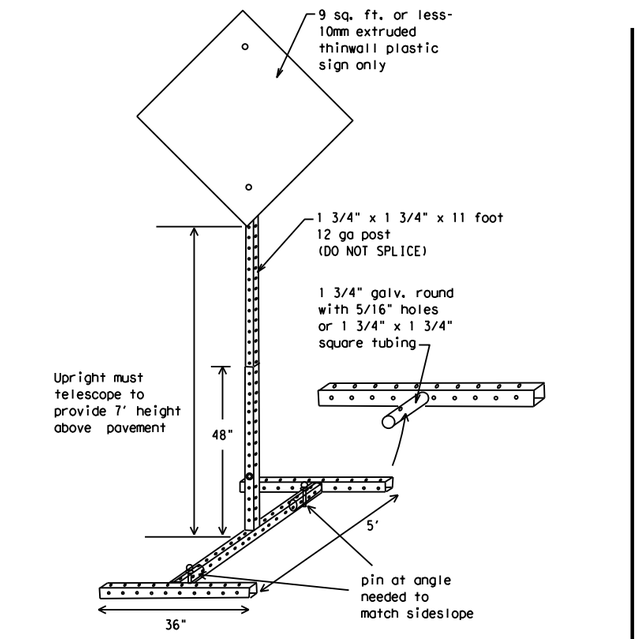
SKID MOUNTED WOOD SIGN SUPPORTS

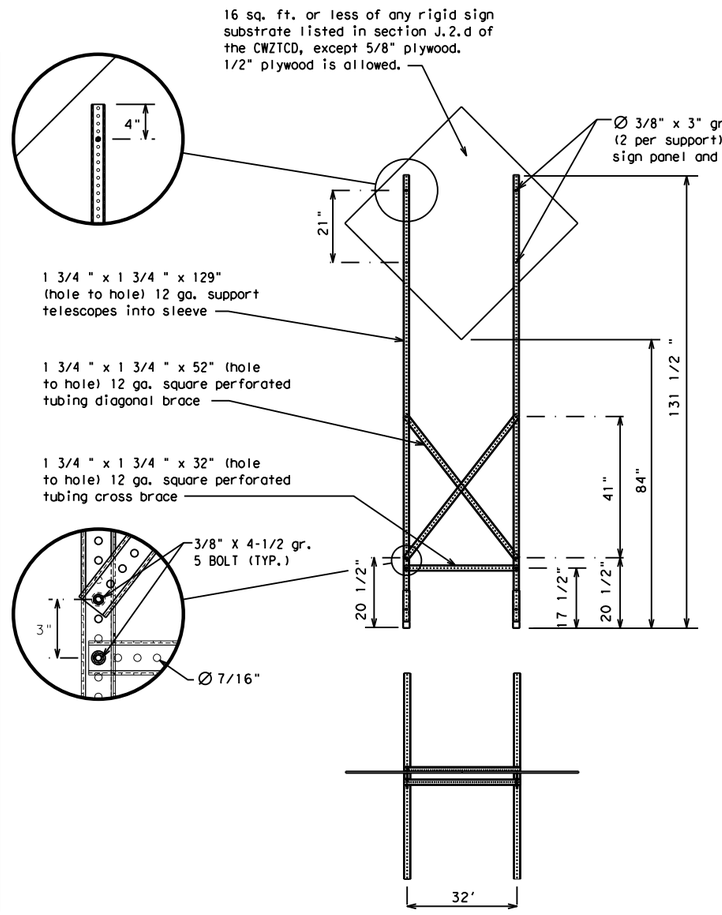
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

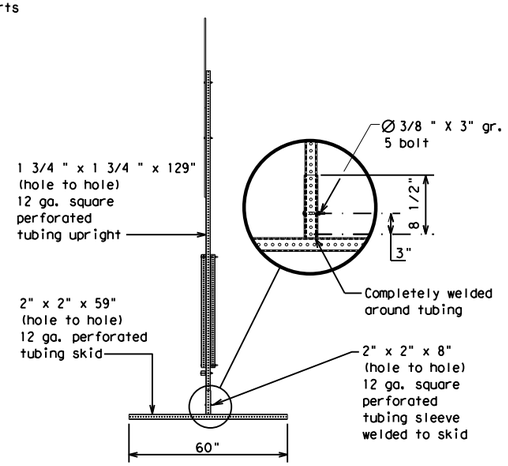


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

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

DATE:
FILE:

WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** 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

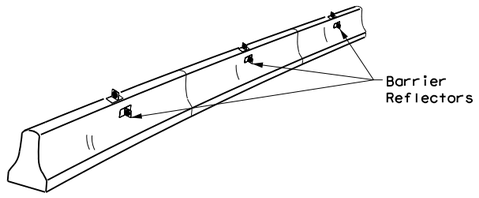
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				

100

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

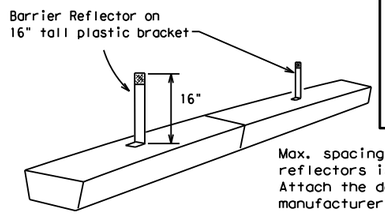
DATE:
FILE:

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



CONCRETE TRAFFIC BARRIER (CTB)

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

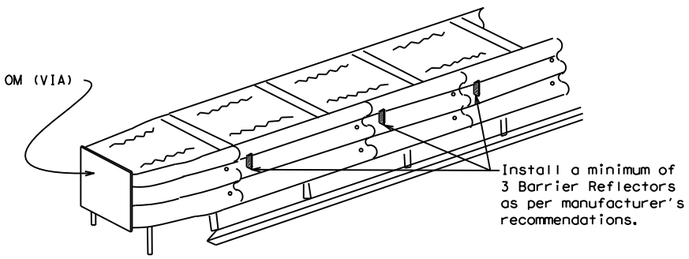


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

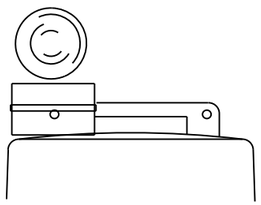


DELINEATION OF END TREATMENTS

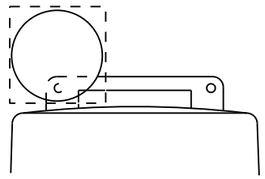
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

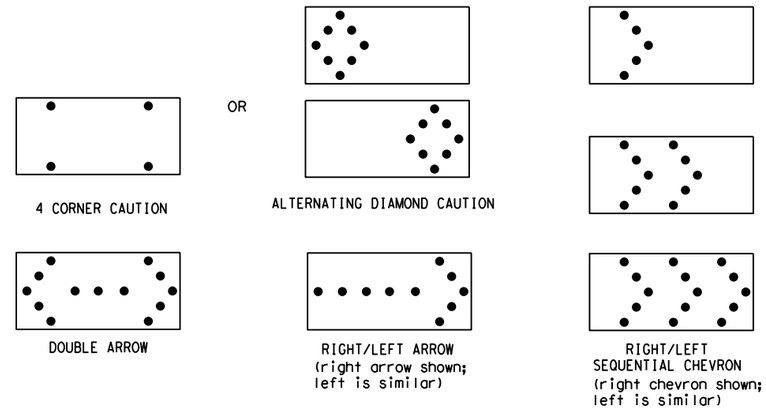
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

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

101

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

DATE:
FILE:

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:

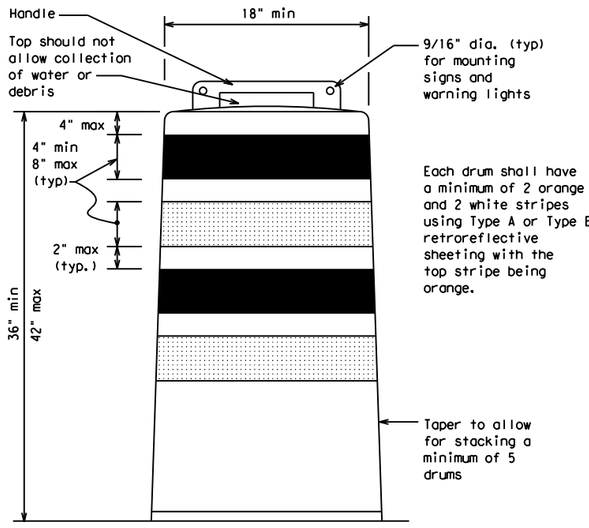
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

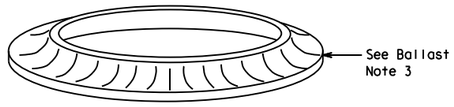
RETROREFLECTIVE SHEETING

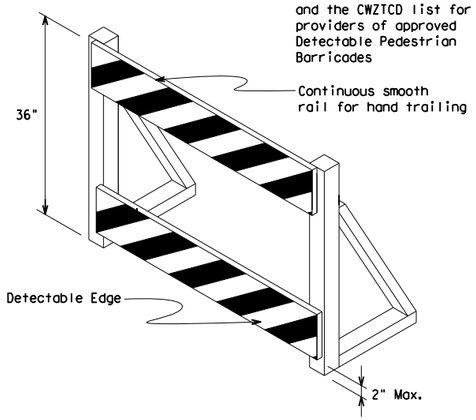
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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



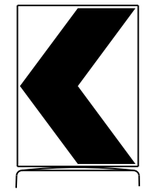




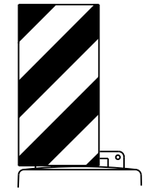
This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

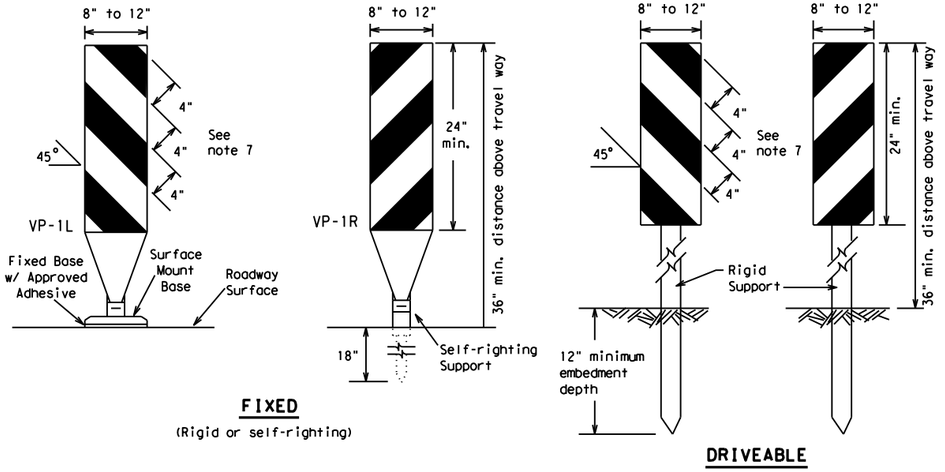
BC(8)-21

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

102

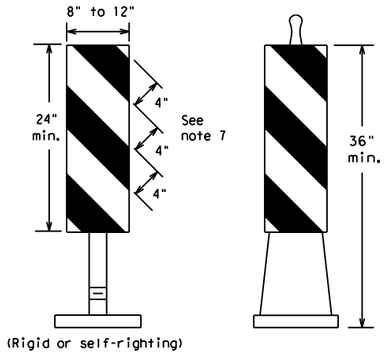
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



FIXED
(Rigid or self-righting)

DRIVEABLE

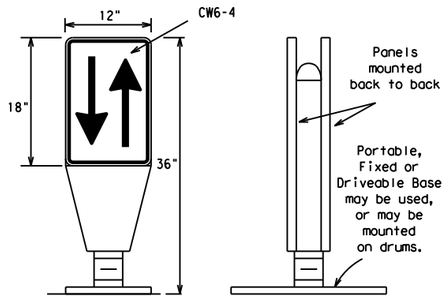


(Rigid or self-righting)

PORTABLE

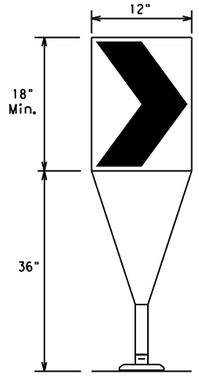
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



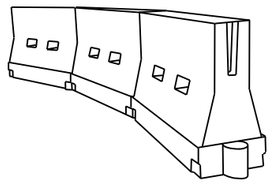
Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

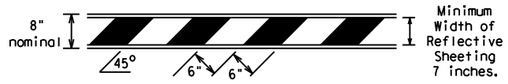
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				

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

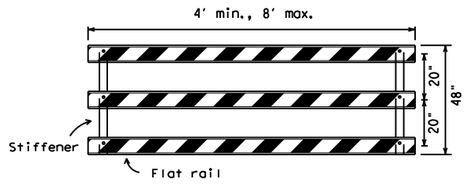
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



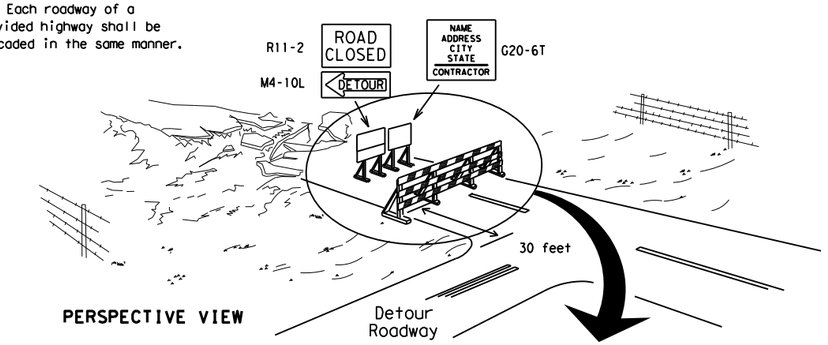
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

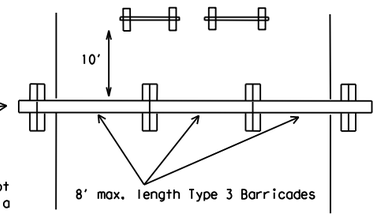
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

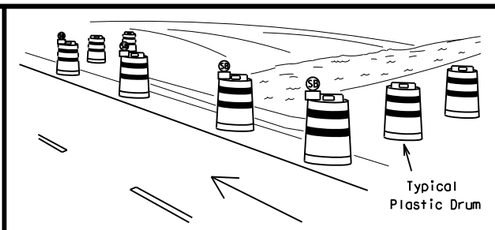
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

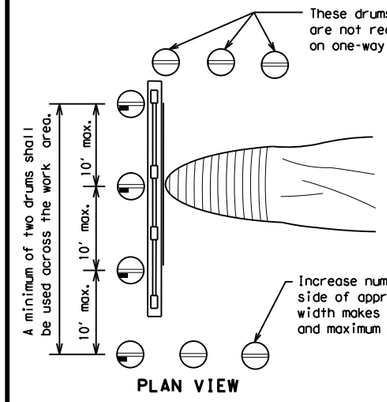
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

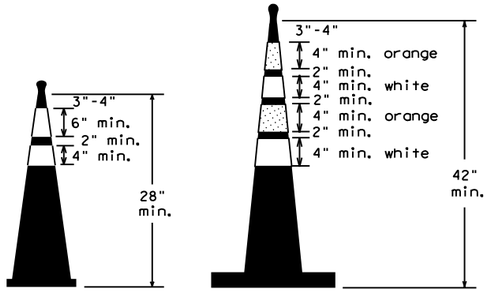
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



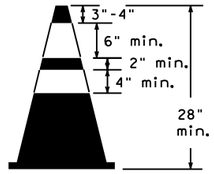
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

PLAN VIEW

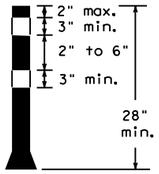
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

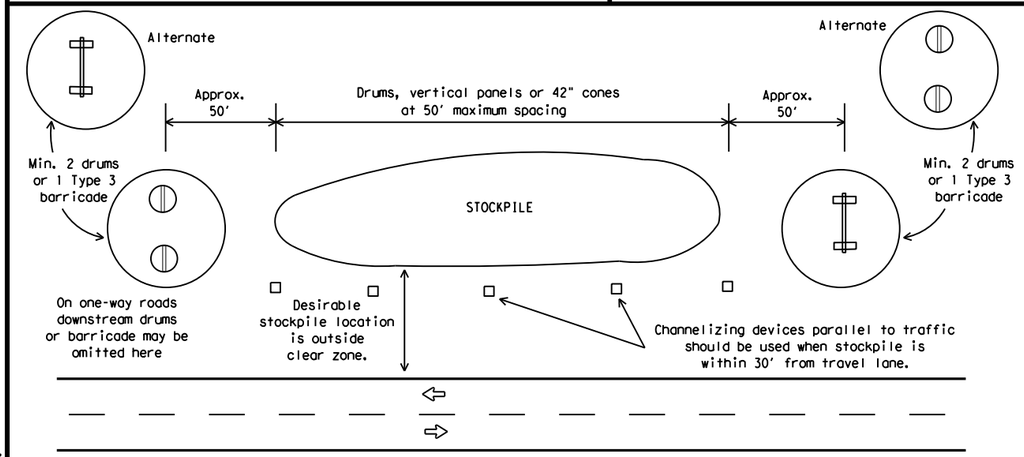


Tubular Marker

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

DATE:
FILE:

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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

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

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

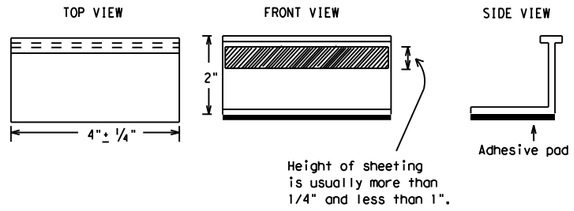
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21 1-02 7-13 11-02 8-14	DIST	COUNTY		SHEET NO.
105				

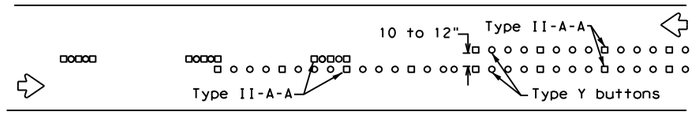
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

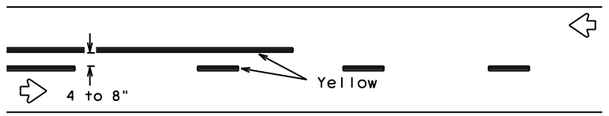
PAVEMENT MARKING PATTERNS



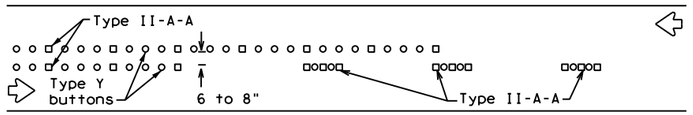
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



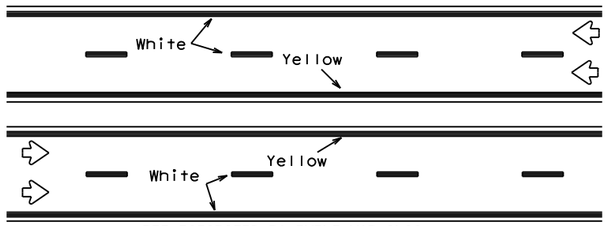
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



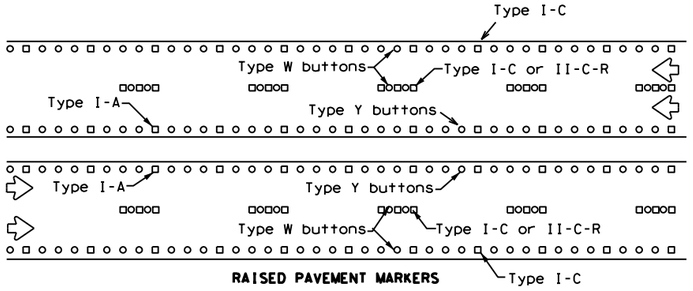
RAISED PAVEMENT MARKERS - PATTERN B

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



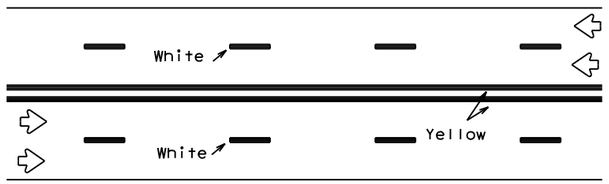
REFLECTORIZED PAVEMENT MARKINGS



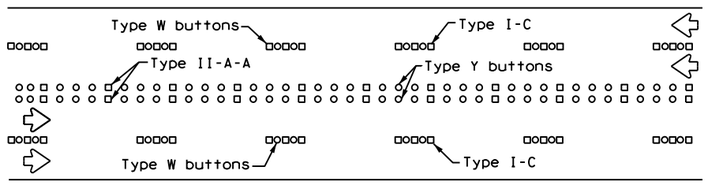
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



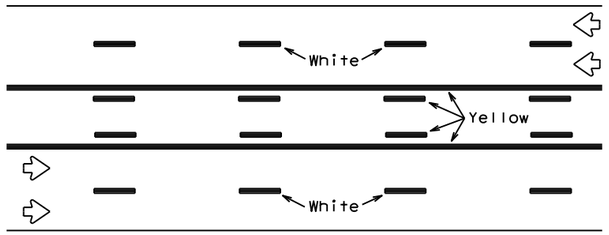
REFLECTORIZED PAVEMENT MARKINGS



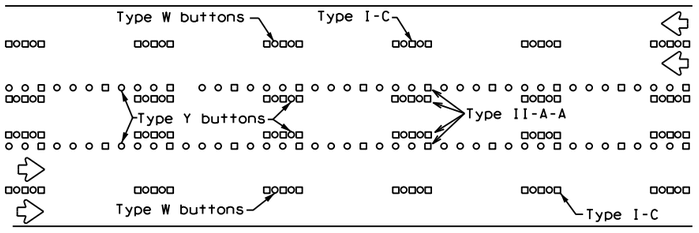
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

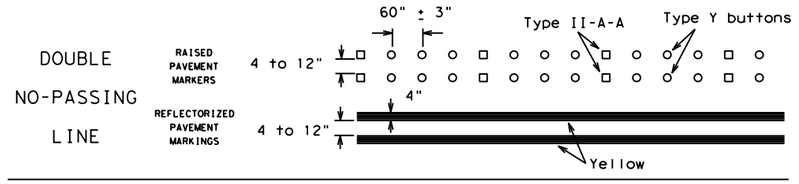
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

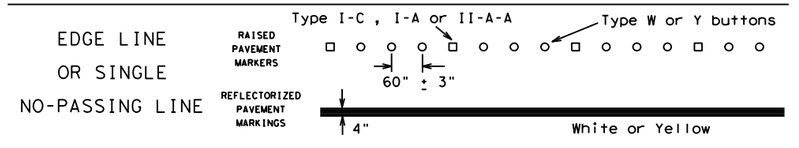
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

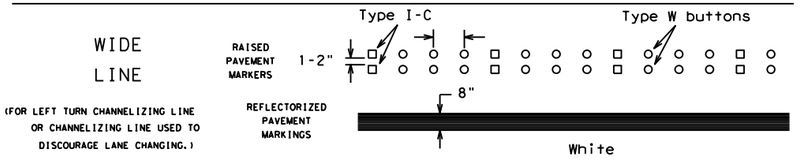


EDGE LINE OR SINGLE NO-PASSING LINE



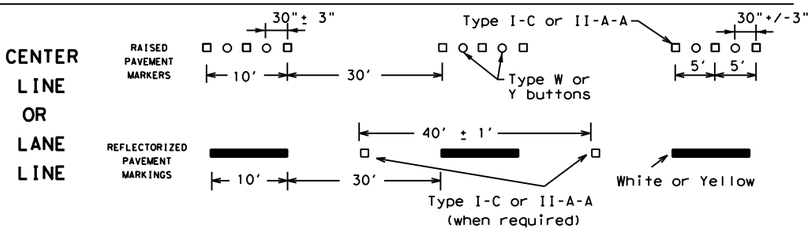
WIDE LINE

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

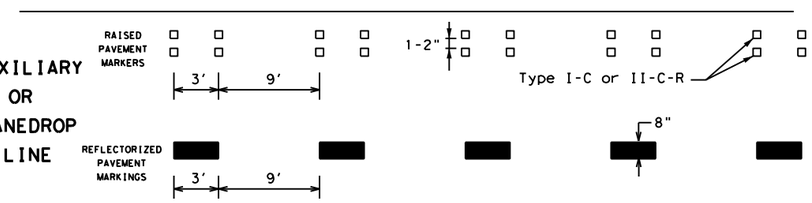


BROKEN LINES

CENTER LINE OR LANE LINE

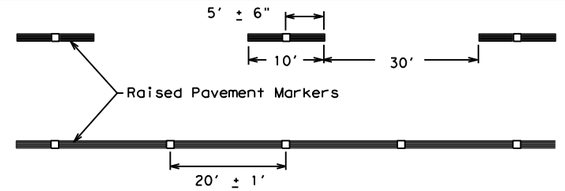


AUXILIARY OR LANEDROP LINE



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

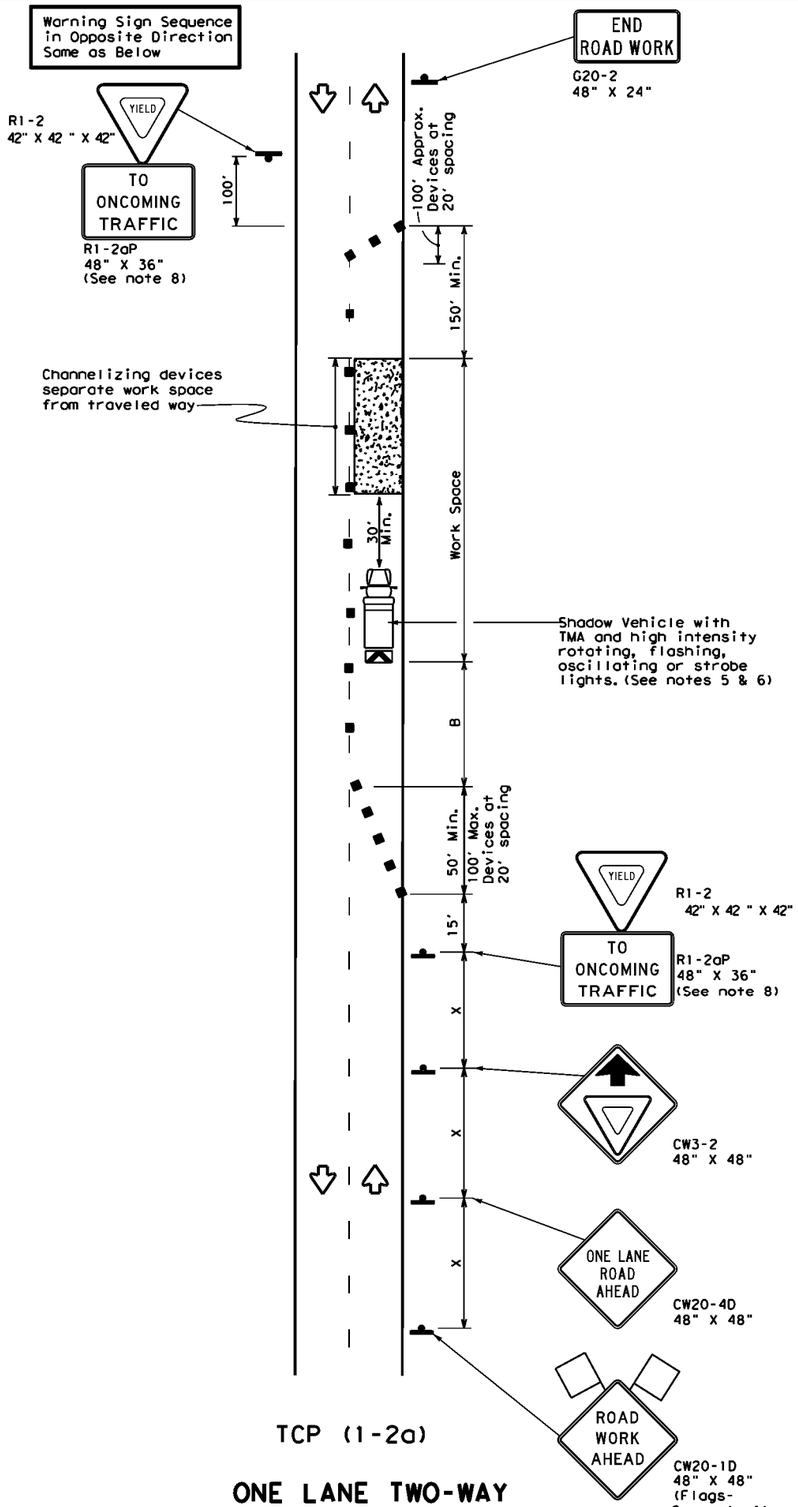
BC(12)-21

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.

106

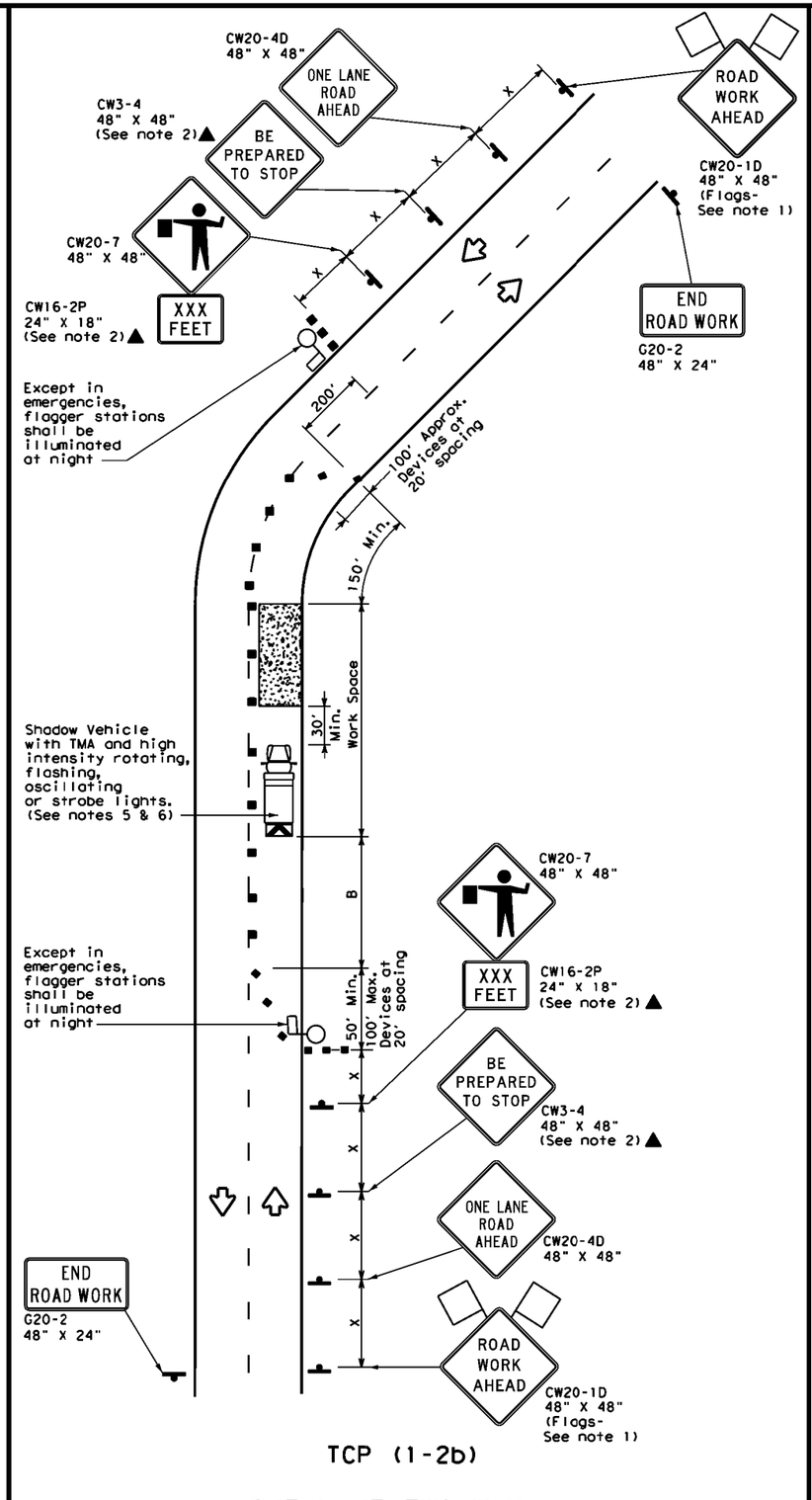
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TCP (1-2a)

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

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 CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. 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.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation

Traffic Operations Division Standard

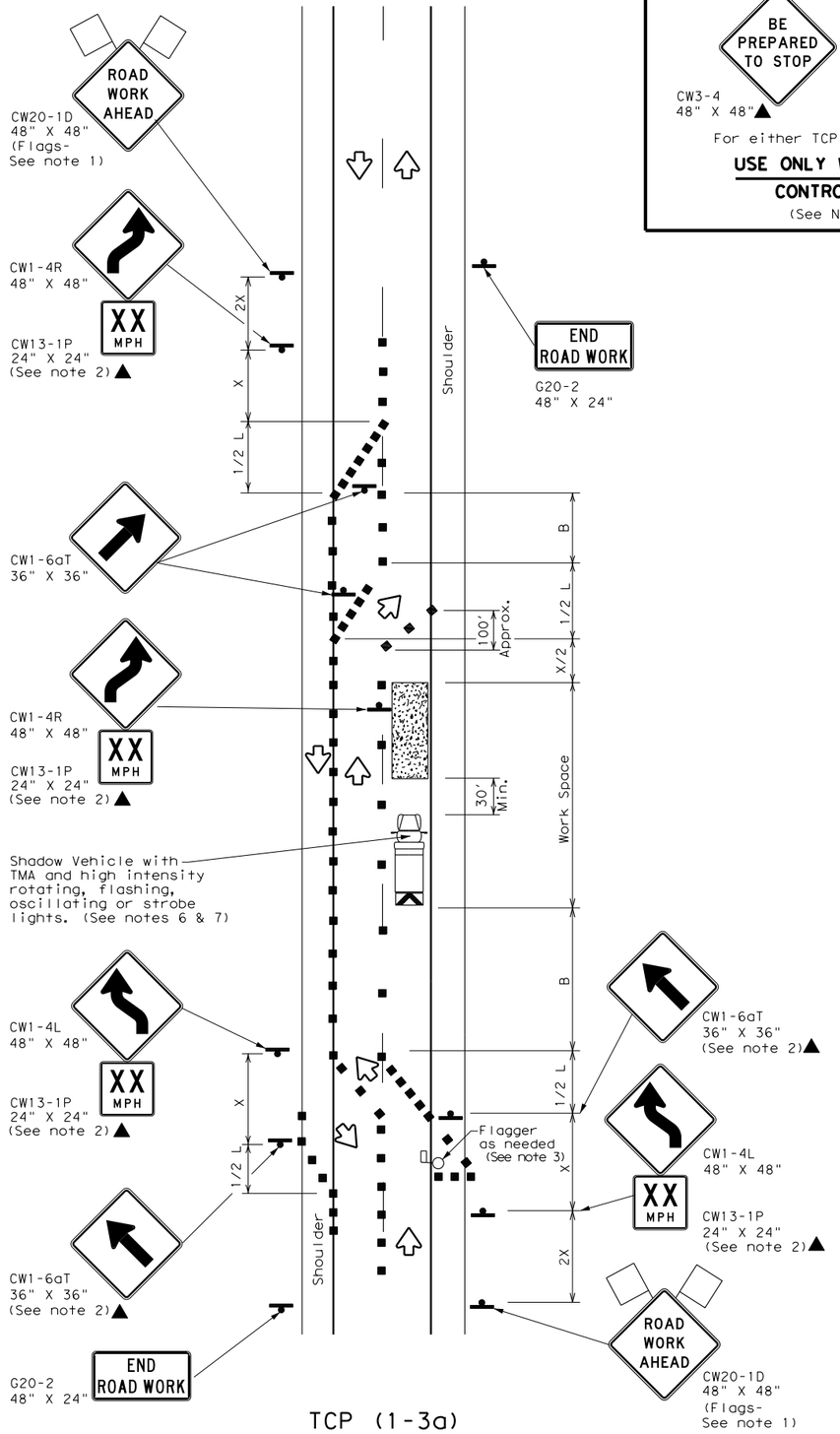
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	DIST	COUNTY		SHEET NO.

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

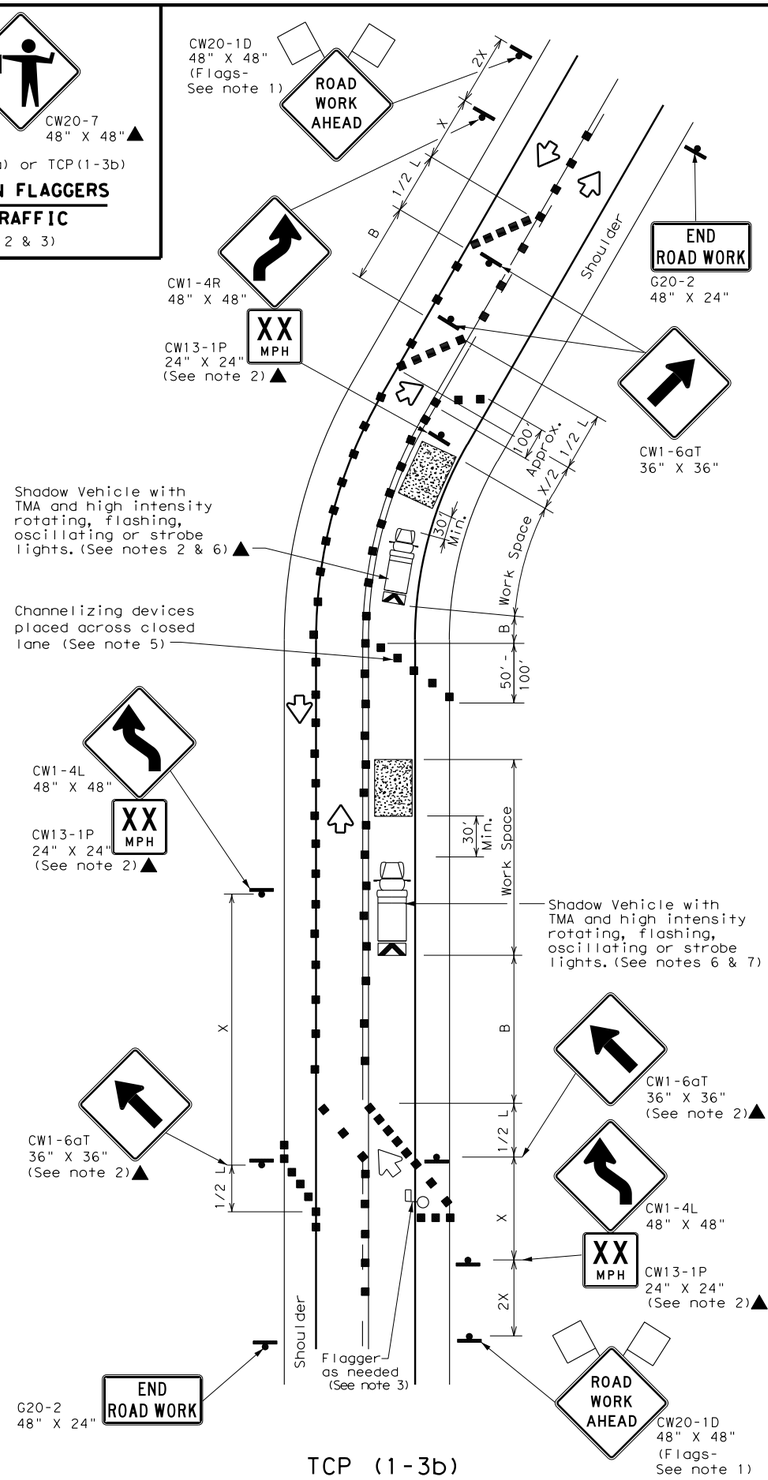
DATE:
FILE:



TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW





TCP (1-3b)
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	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
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 wider work spaces.
8. 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 speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

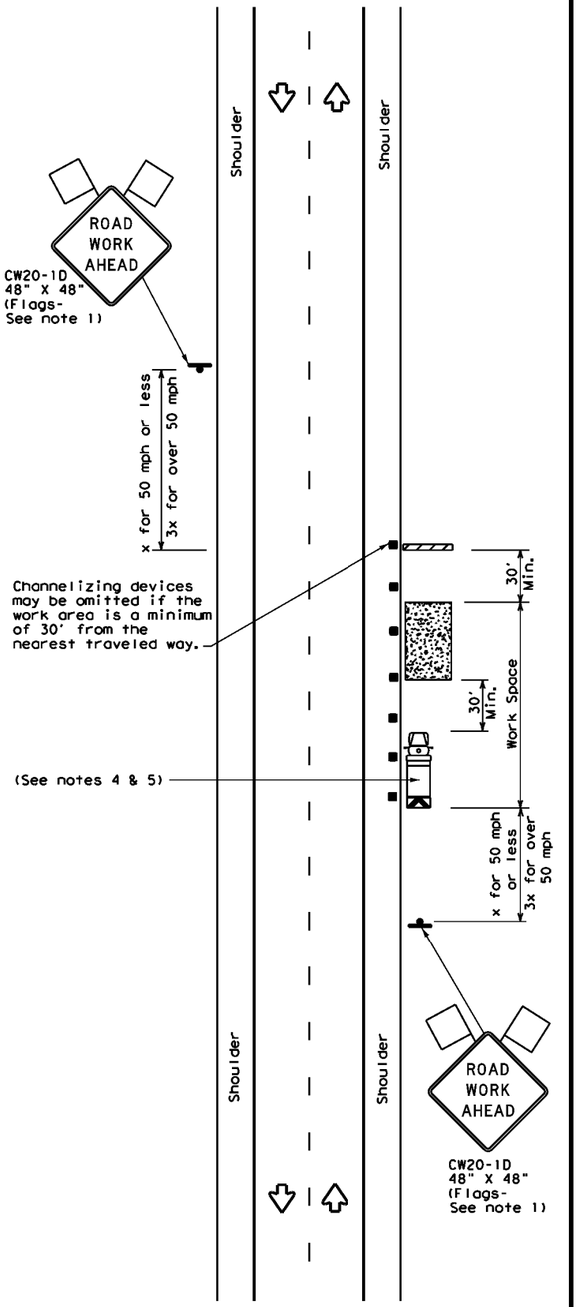
TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	DIST	COUNTY		SHEET NO.

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

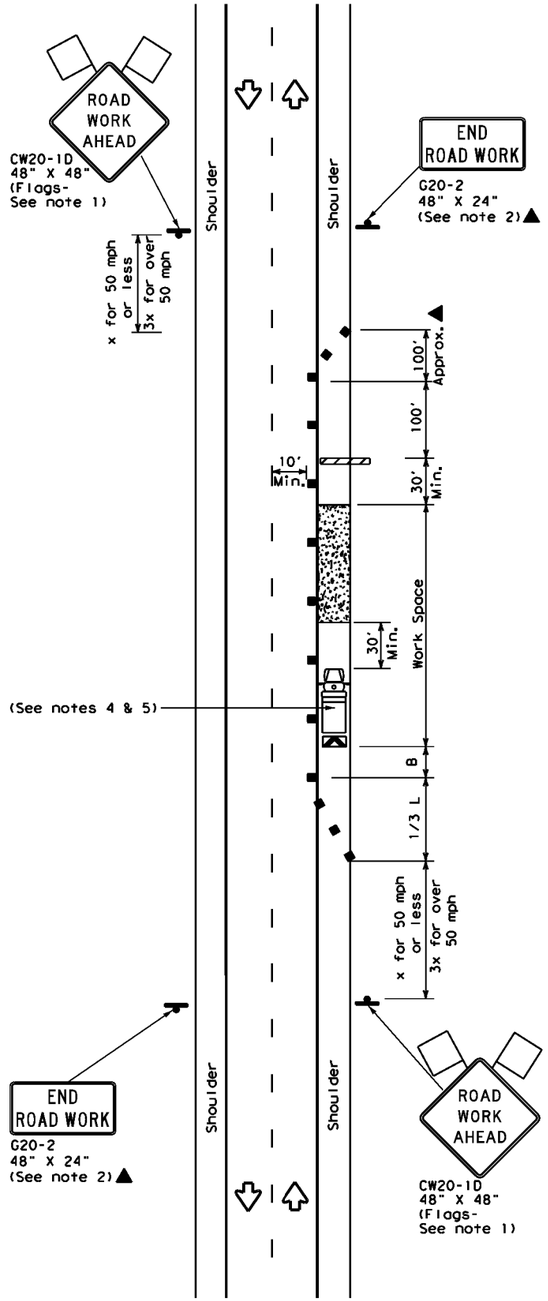
DATE:
FILE:



TCP (2-1a)

WORK SPACE NEAR SHOULDER

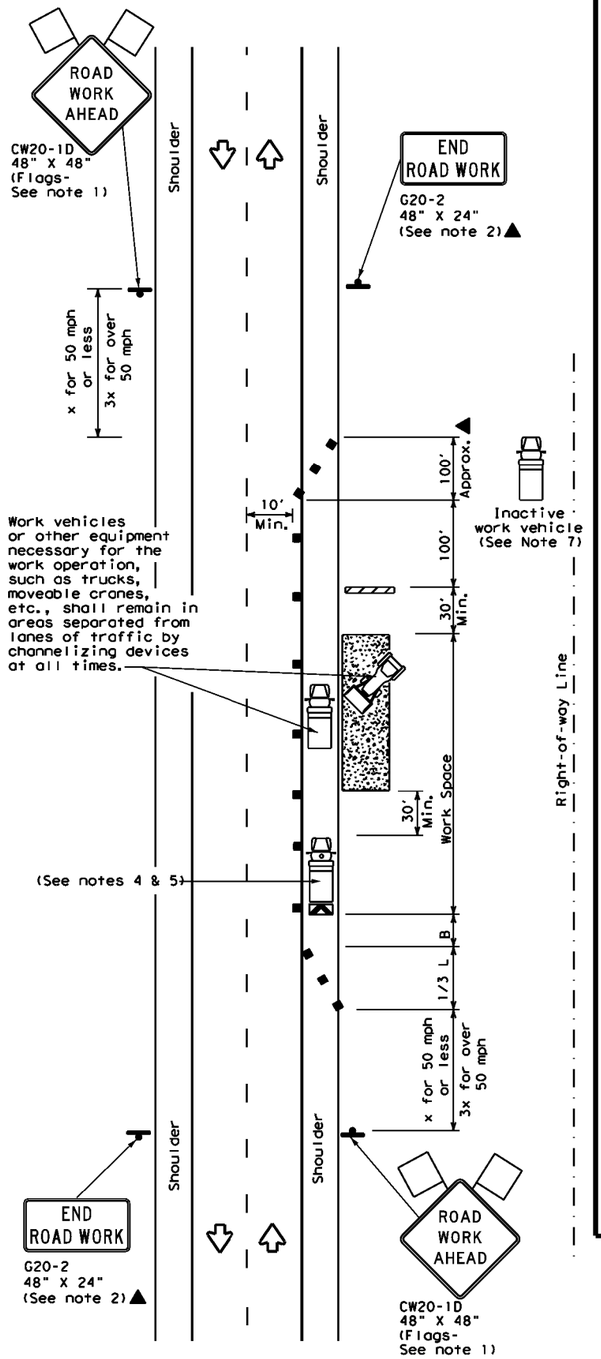
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

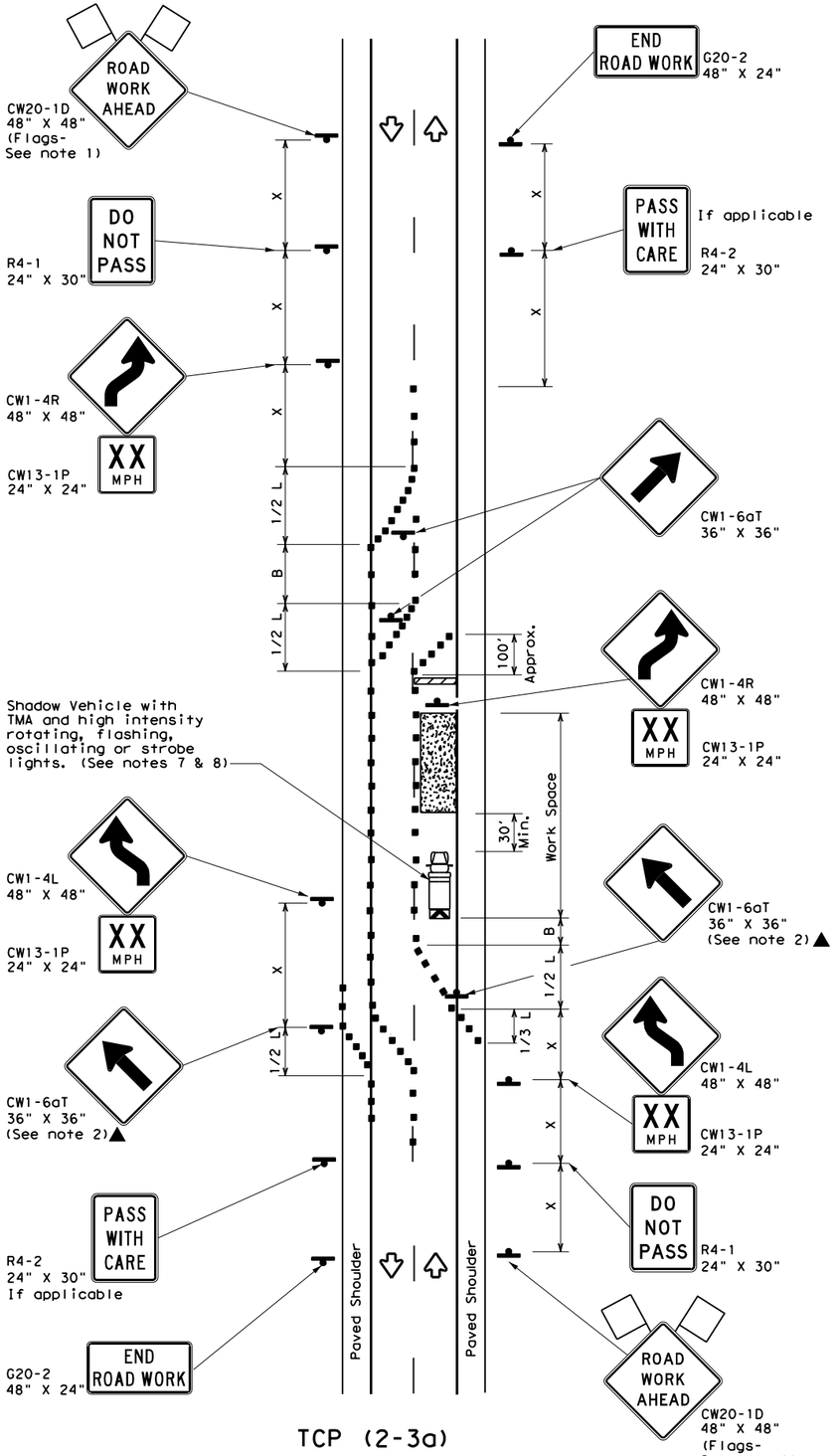
TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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

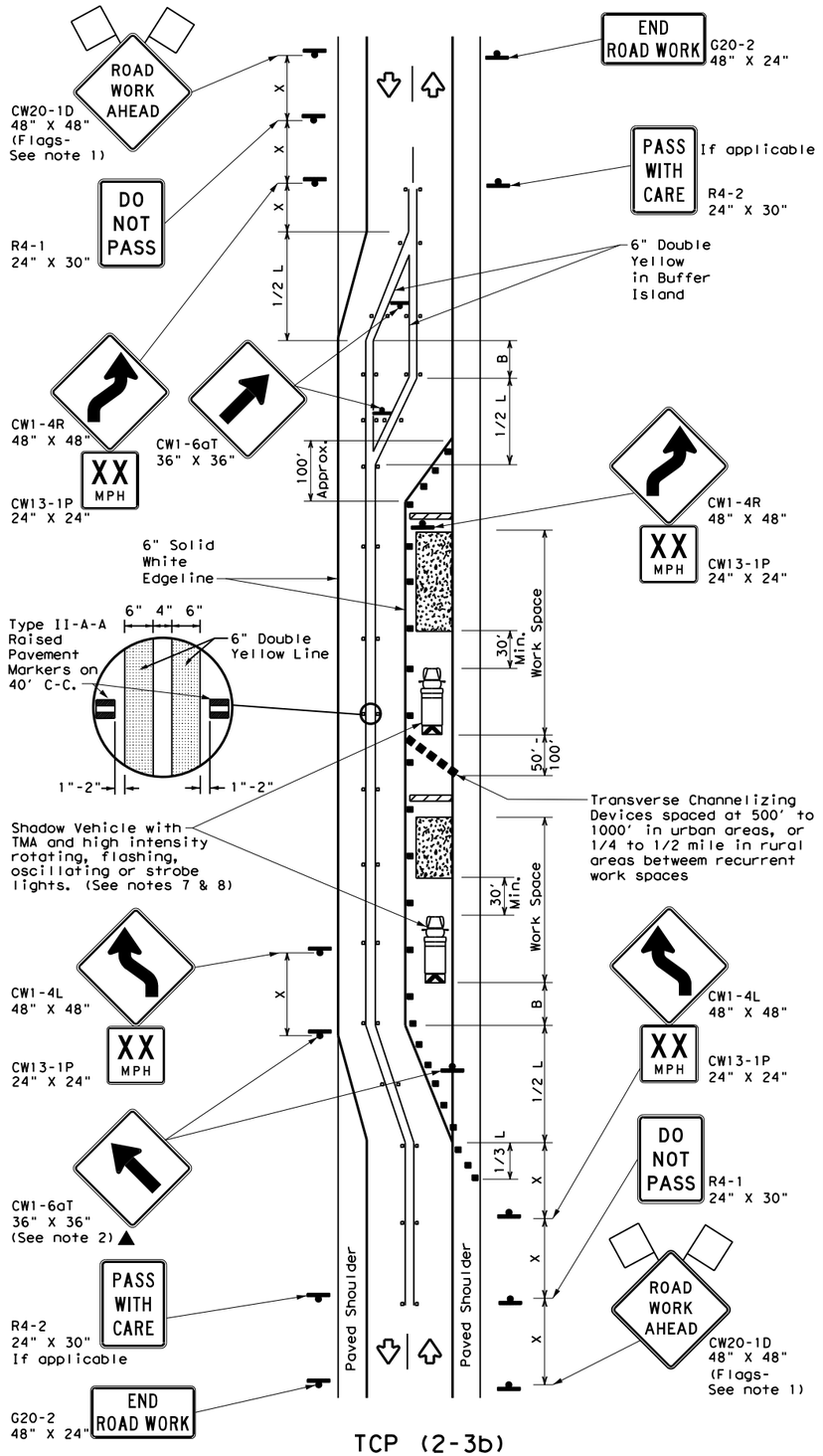
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



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*

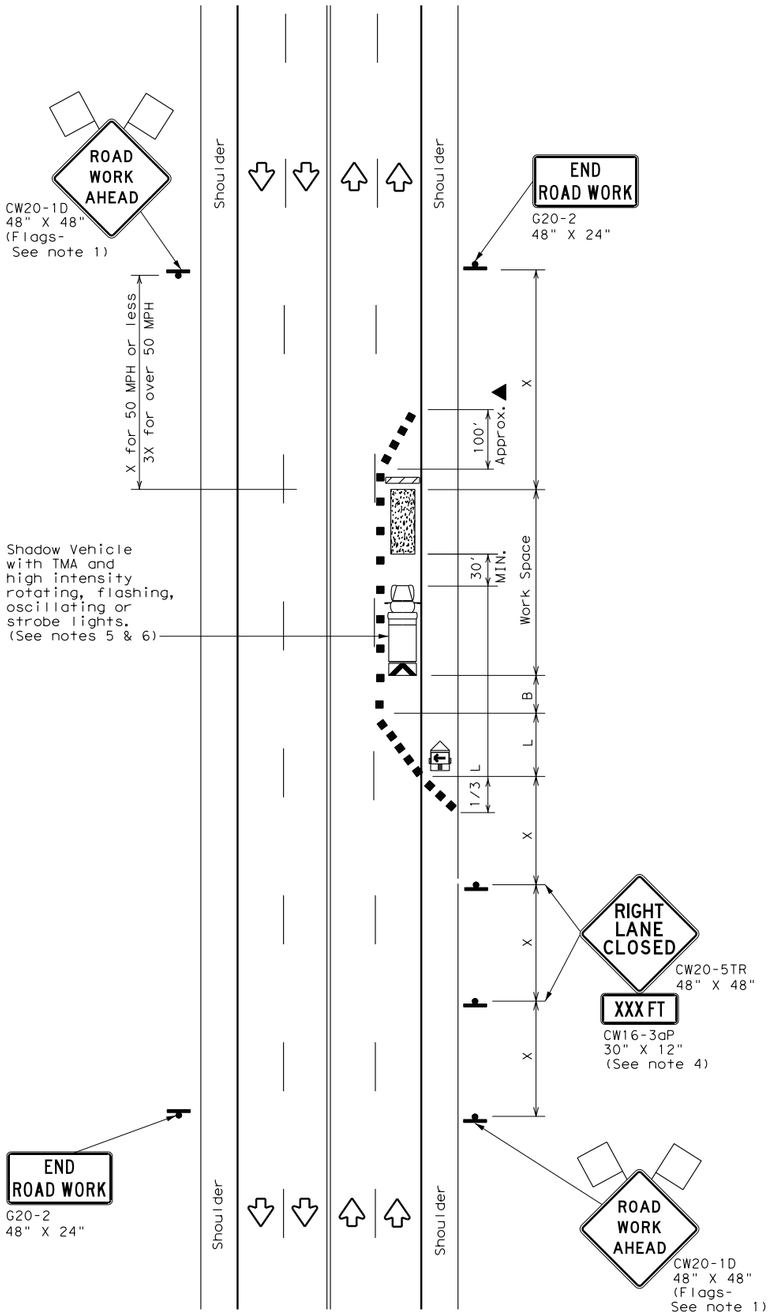
TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

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.

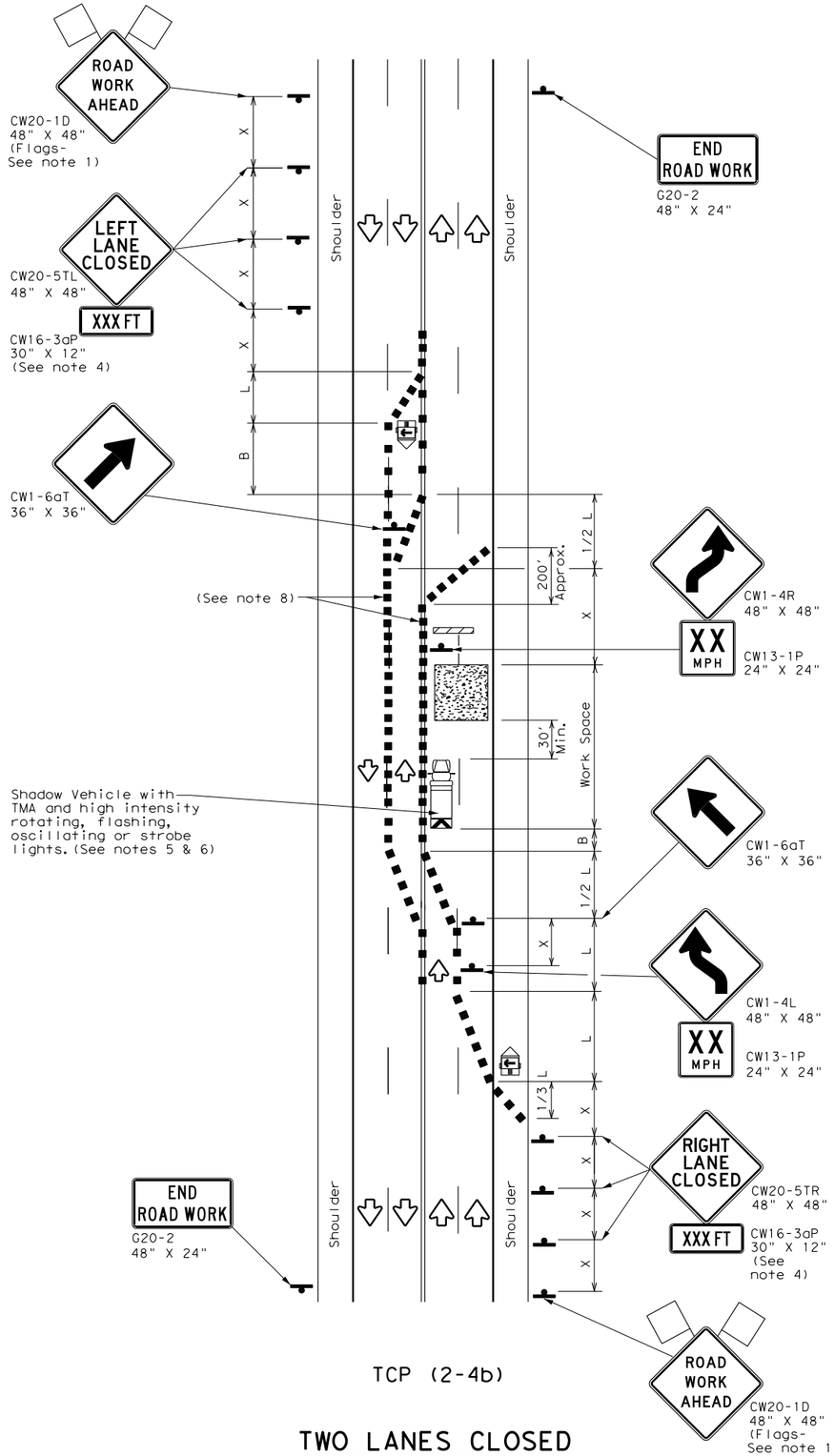
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. 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.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

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

TCP (2-4b)

8. 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 devices spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

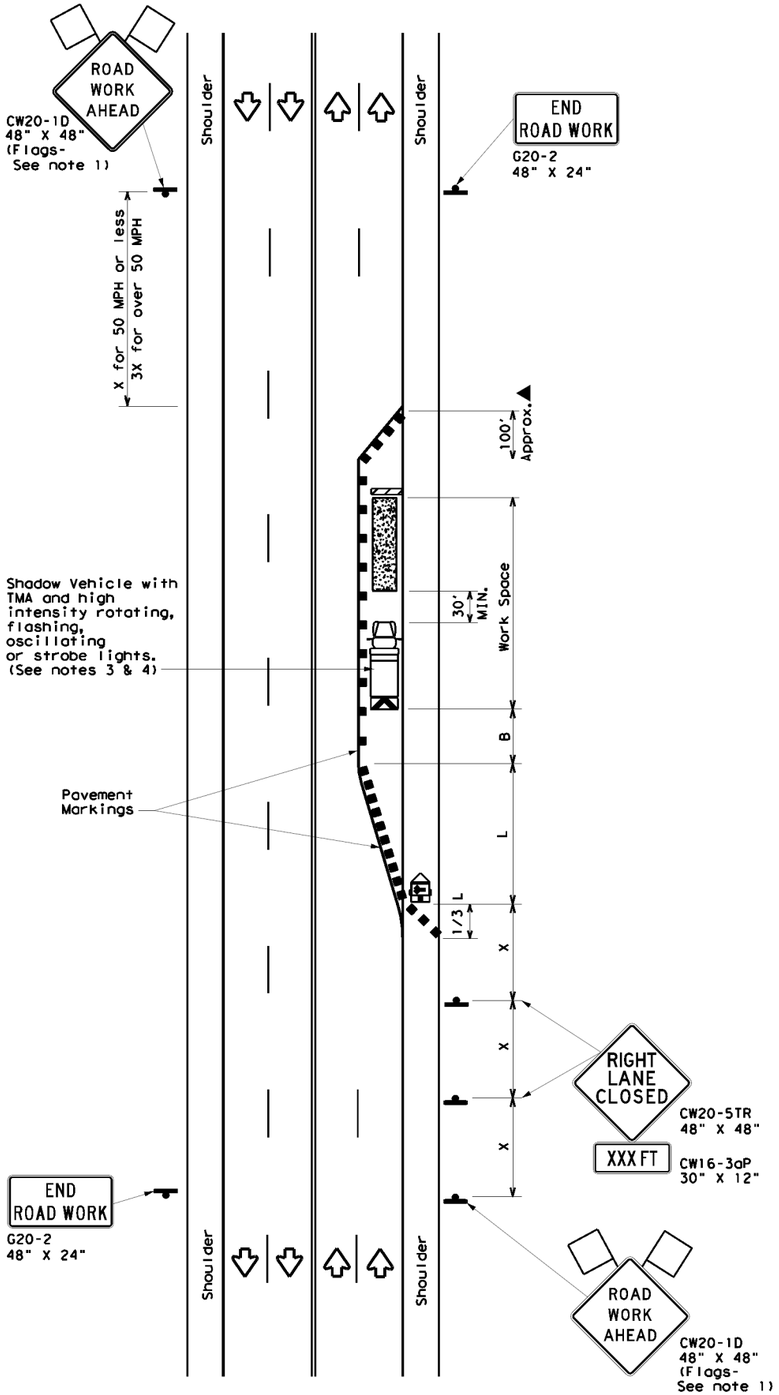
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

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

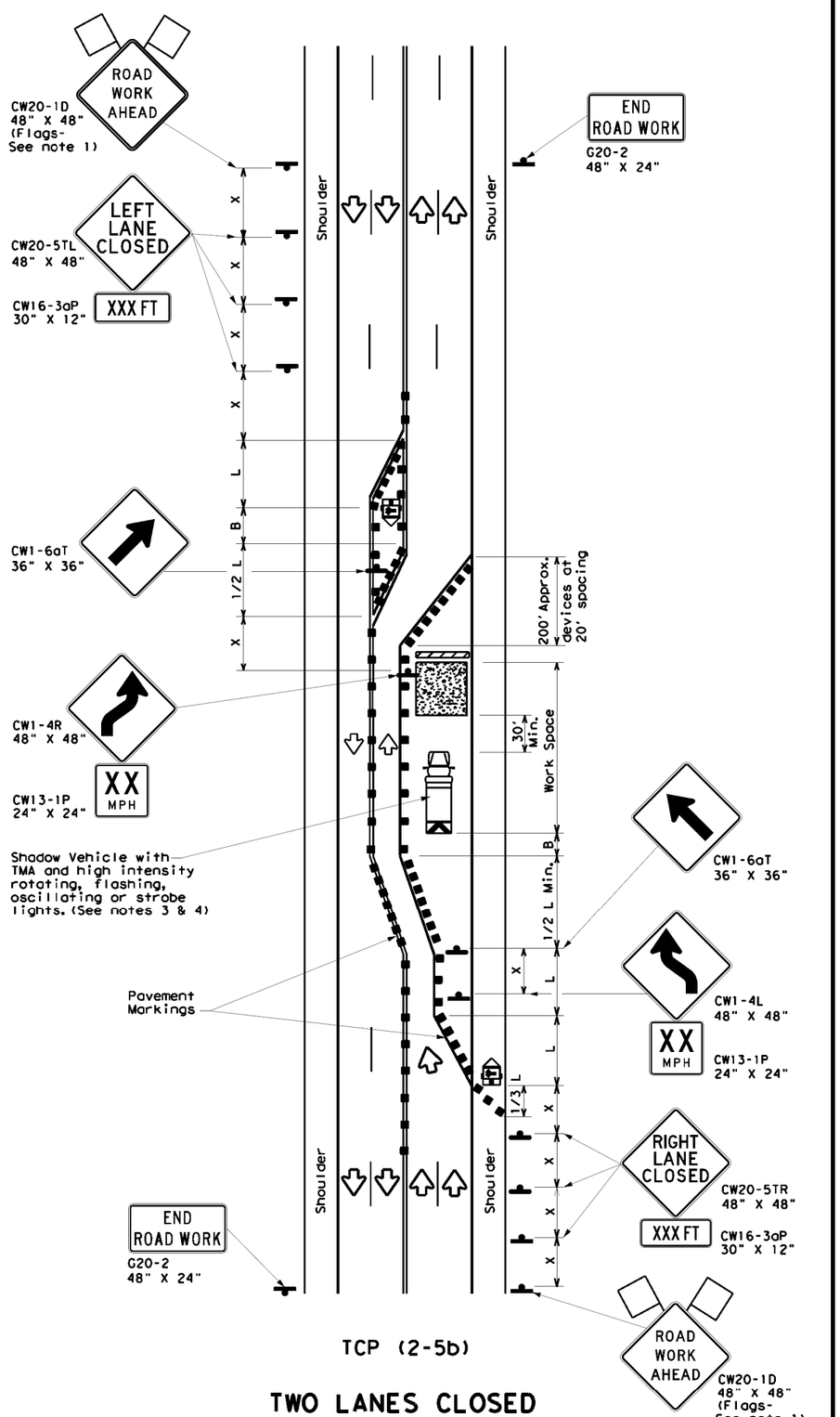
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-5a)

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

TCP (2-5b)

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

Texas Department of Transportation

Traffic Operations Division Standard

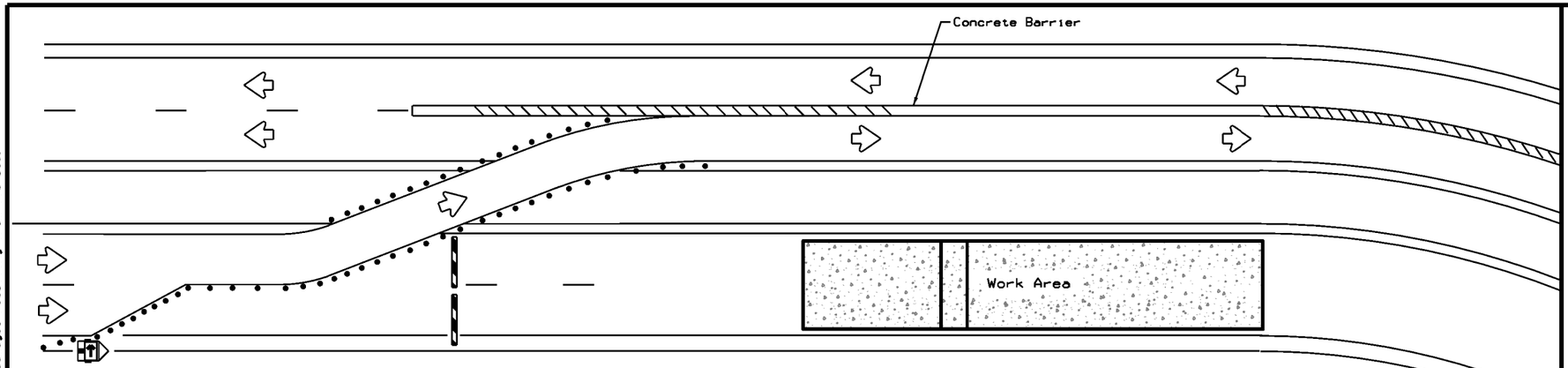
TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

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

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

DATE:
FILE:



NOTES:

1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

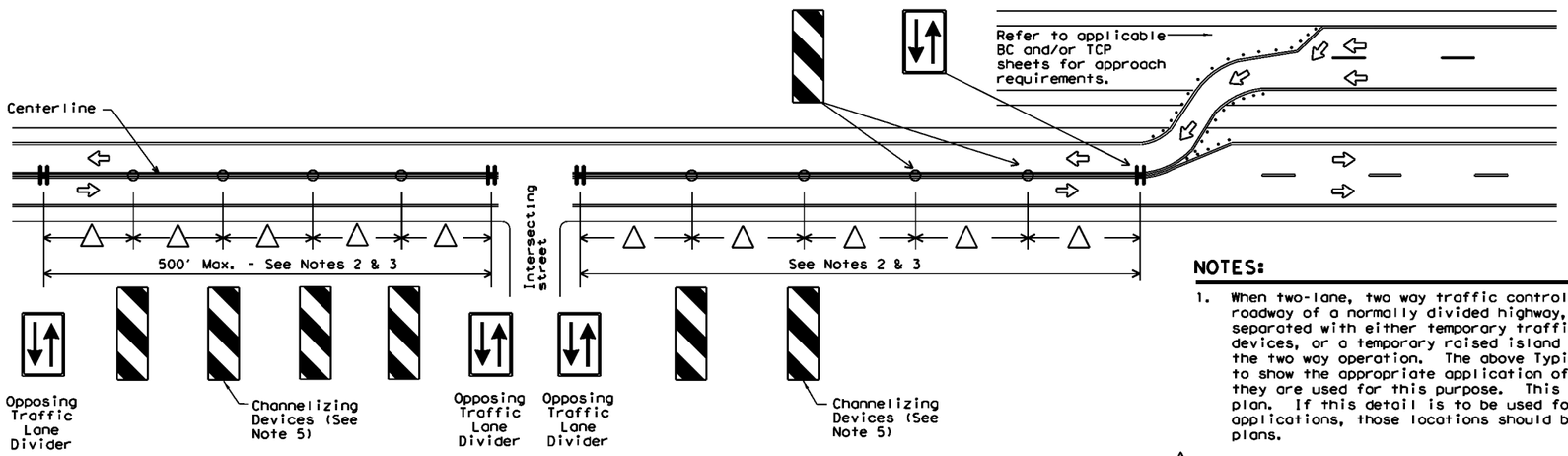
BARRIER DELINEATION WITH MODULAR GLARE SCREENS

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List" CWZTCD)describes pre-qualified products and their sources and may be found at the following web address:

http://www.txdot.gov/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.

△2. Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation

Traffic Operations Division Standard

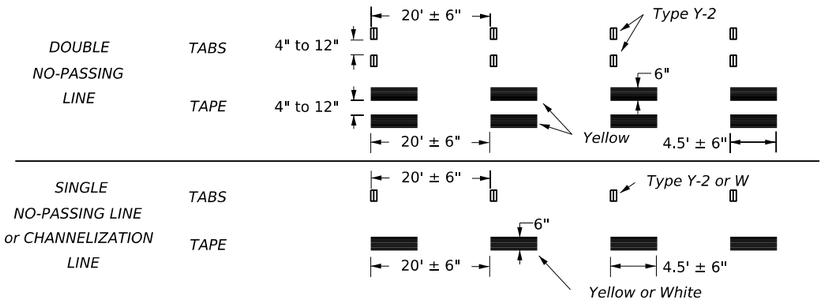
TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

FILE: wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 2-17 3-03 7-13	DIST	COUNTY		SHEET NO.

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.

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



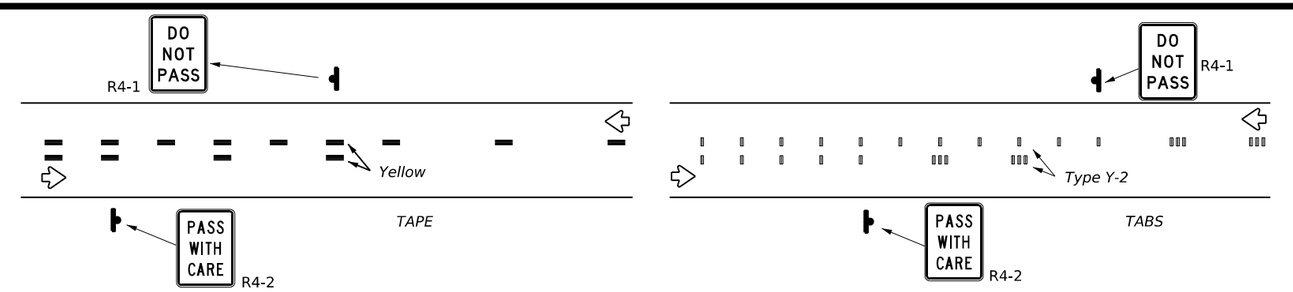
NOTES:

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

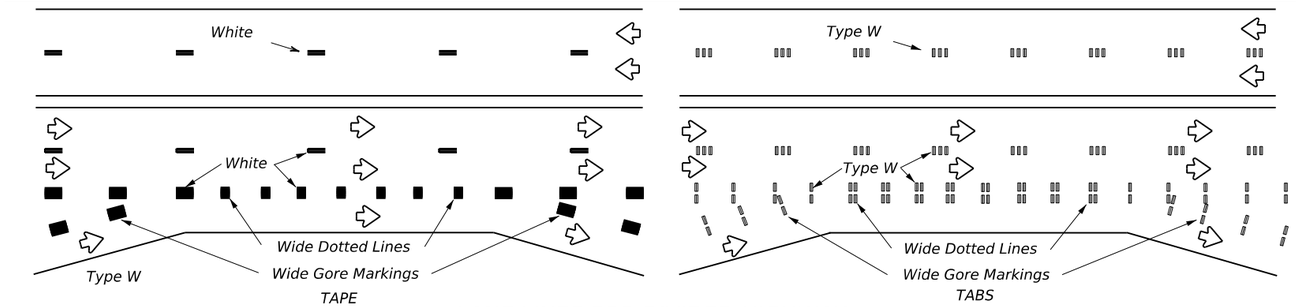
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

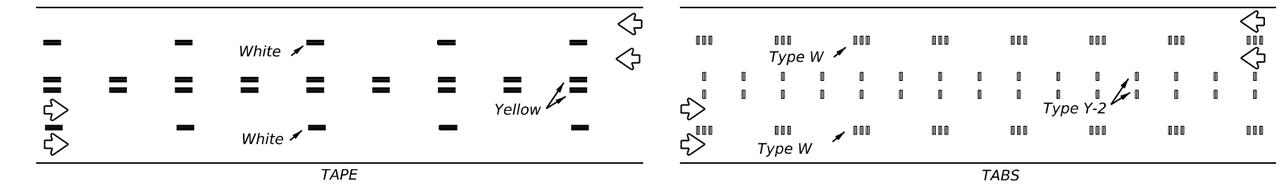
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



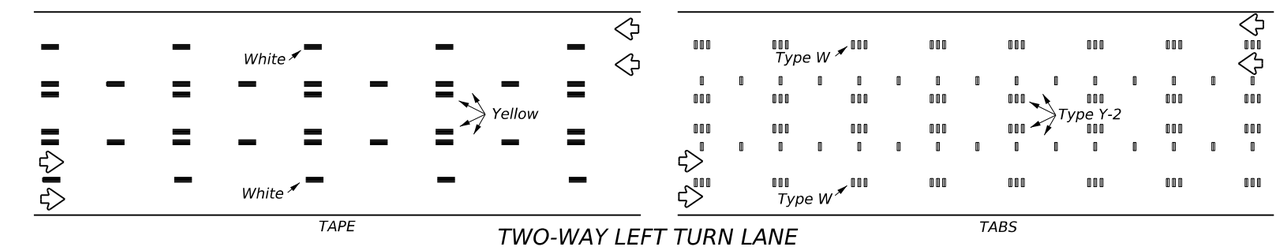
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



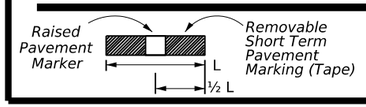
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

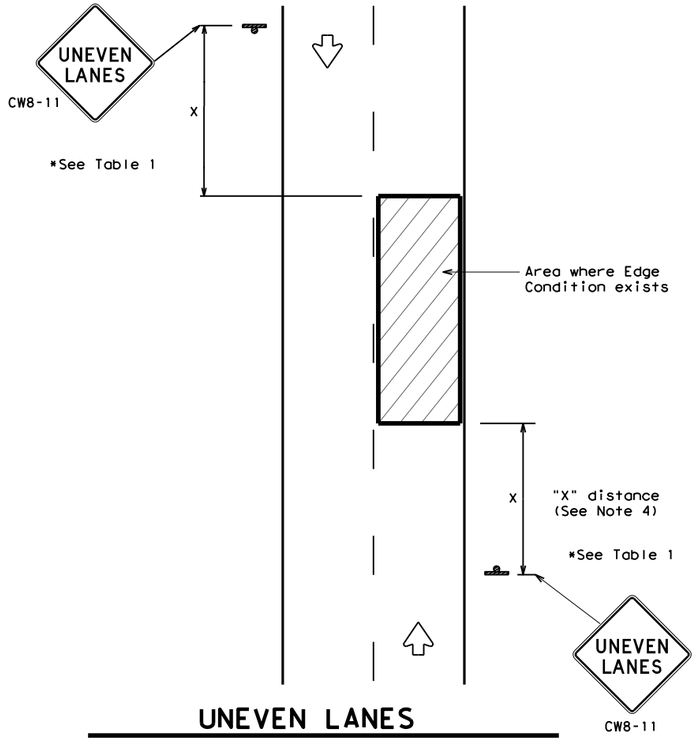
WZ(STPM)-23

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

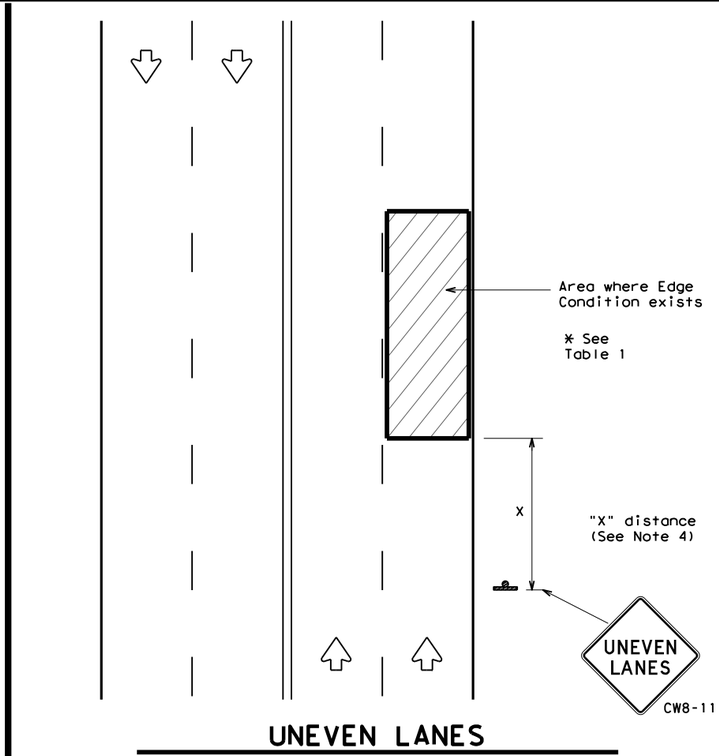
DATE:
FILE:

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

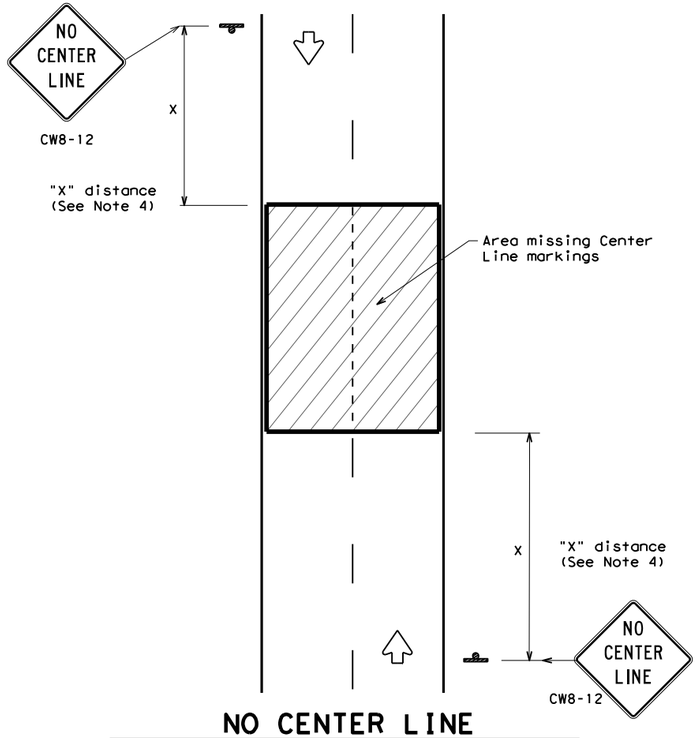
DATE:
FILE:



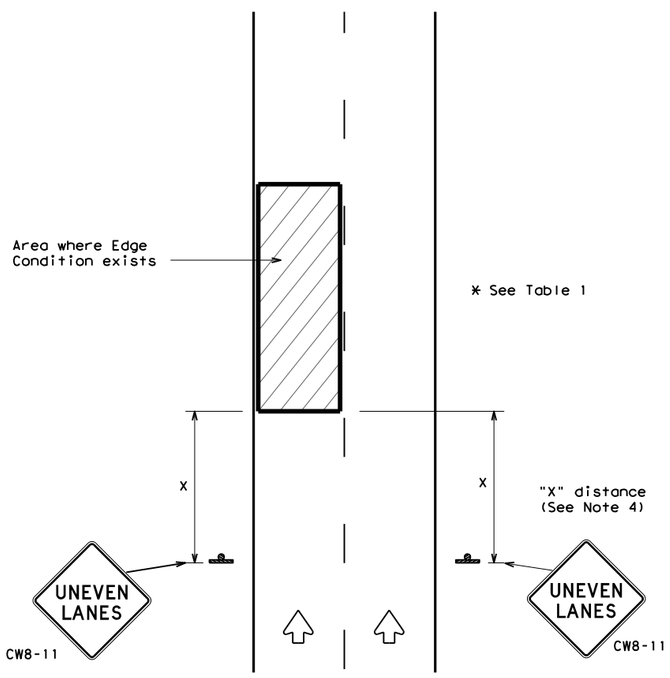
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

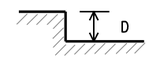
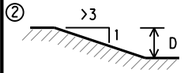
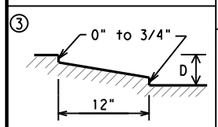
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

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

TABLE 1

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

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

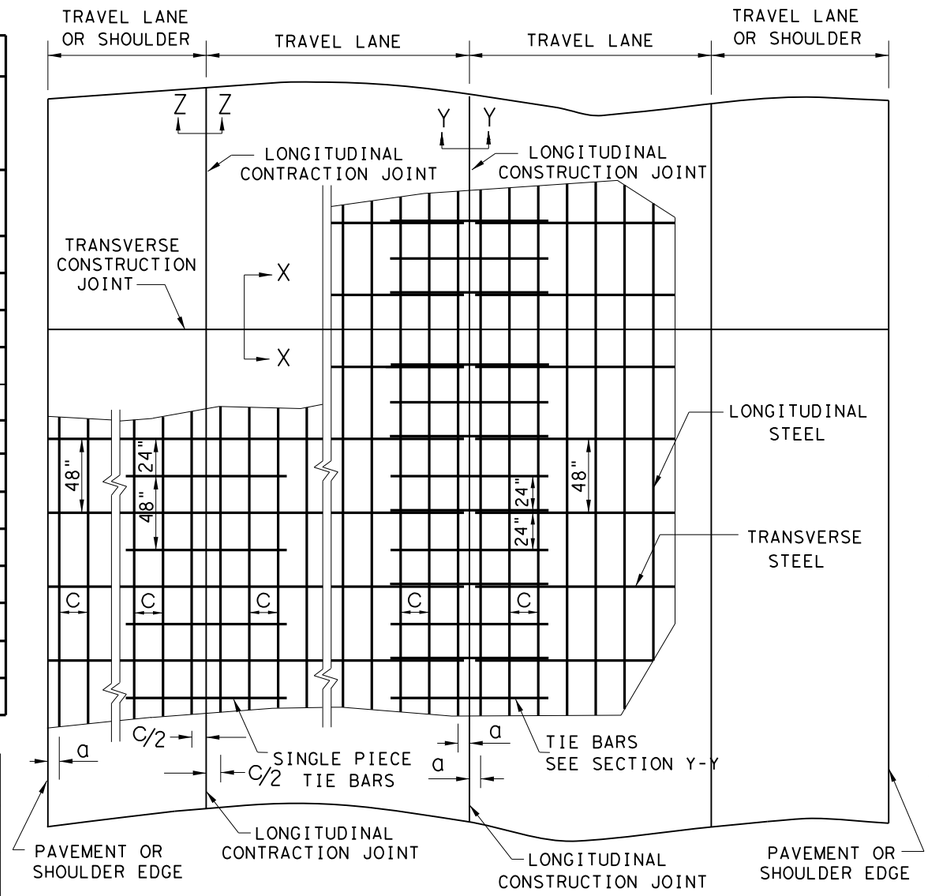
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

TABLE NO. 1 LONGITUDINAL STEEL				
SLAB THICKNESS AND BAR SIZE		LONGITUDINAL STEEL BARS	FIRST SPACING AT EDGE OR JOINT	LONG. STEEL VERTICAL POSITION FROM BOTTOM OF PAVEMENT
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	T1 (IN.)
7.0	#5	6.5	3 TO 4	3.5
7.5	#5	6.0	3 TO 4	3.75
8.0	#6	9.0	3 TO 4	4.0
8.5	#6	8.5	3 TO 4	4.25
9.0	#6	8.0	3 TO 4	4.5
9.5	#6	7.5	3 TO 4	4.75
10.0	#6	7.0	3 TO 4	5.0
10.5	#6	6.75	3 TO 4	5.5
11.0	#6	6.5	3 TO 4	6.0
11.5	#6	6.25	3 TO 4	6.5
12.0	#6	6.0	3 TO 4	7.0
12.5	#6	5.75	3 TO 4	7.5
13.0	#6	5.5	3 TO 4	8.0

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS						
SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5*	48	#5*	48	#5*	24
8.0 - 13.0	#5*	48	#6	48	#6	24

*CONTRACTOR MAY USE #6 REINFORCING STEEL INSTEAD OF #5 REINFORCING STEEL OR COMBINATION OF EACH SIZE

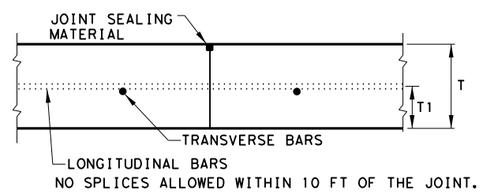


TYPICAL PAVEMENT LAYOUT

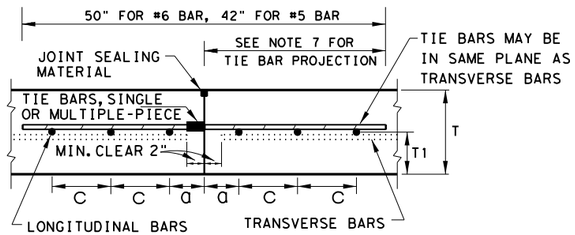
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

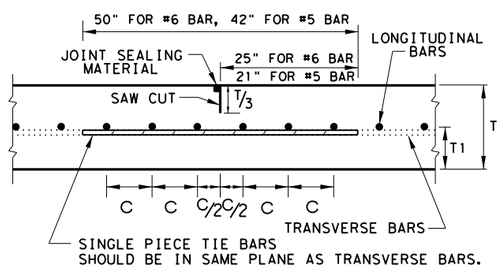
1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAIL MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1.
5. ADJUST REINFORCING STEEL VERTICALLY USING SHIMS OR OTHER METHODS, AS APPROVED, TO MEET VERTICAL TOLERANCES PRIOR TO CONCRETE PLACEMENT.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. for #6 BARS AND 18.5 IN. FOR #5 BARS.
8. SEE STANDARD SHEET "CONCRETE CURB AND CURB AND GUTTER," FOR DETAILS WHEN TYING CONCRETE CURB OR CURB GUTTER AT A LONGITUDINAL JOINT.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN.10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
12. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25-IN.



TRANSVERSE CONSTRUCTION JOINT
SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT
SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

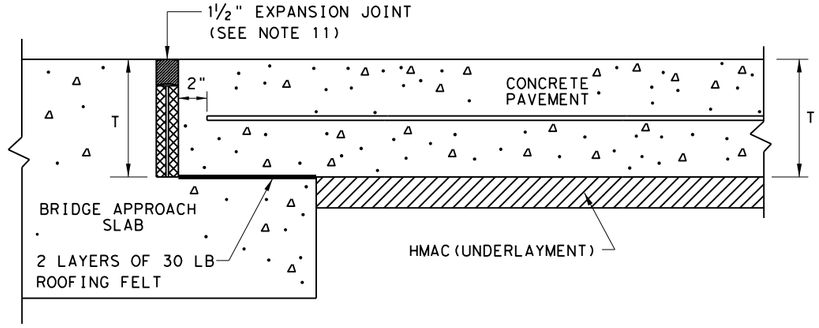
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-24

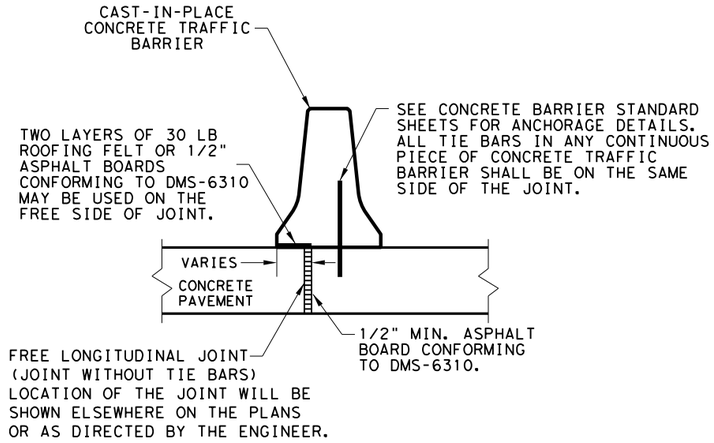
FILE: crcp124.dgn	DN: CES	CK: KM	DW: CES	CK: AN
© TxDOT: Sept 2024 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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

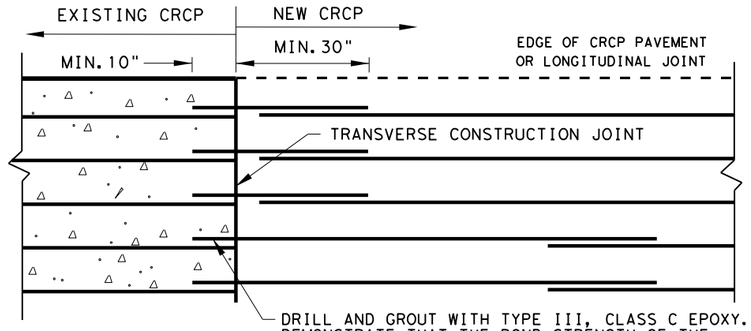
DATE:
FILE:



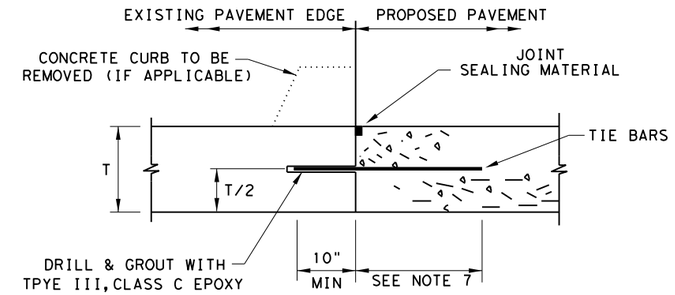
TRANSVERSE EXPANSION JOINT DETAIL AT BRIDGE APPROACH



CENTERLINE FREE LONGITUDINAL JOINT DETAIL

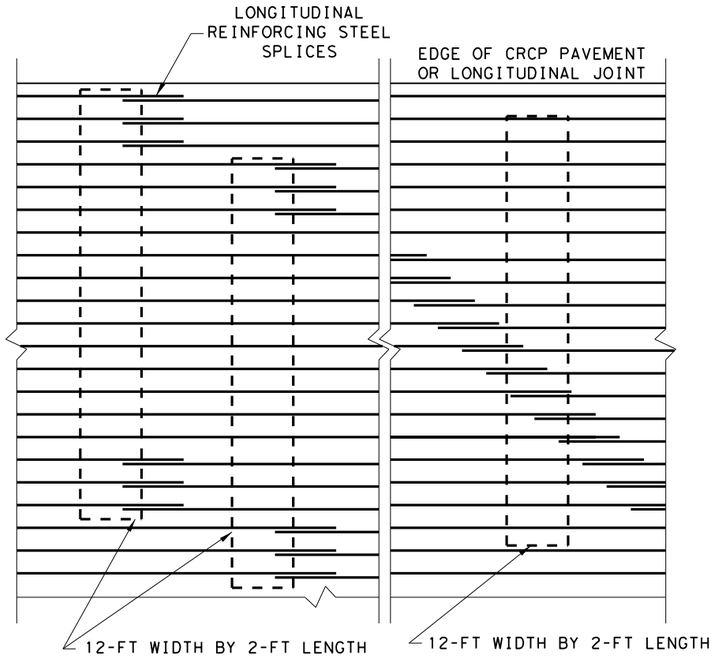


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



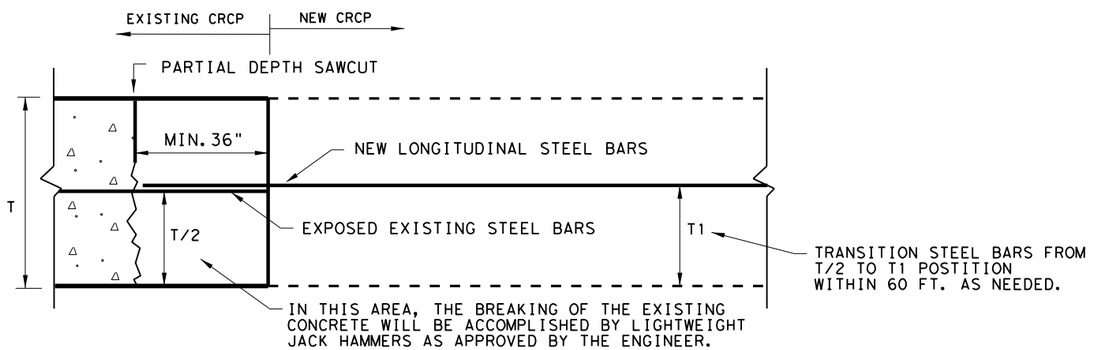
1. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER PAVEMENTS, USE #5 TIE BARS FOR LESS THAN 8" THICK PAVEMENTS.

LONGITUDINAL WIDENING JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
NEW CRCP TO EXISTING CRCP

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-24

FILE: crcp124.dgn	DN: TxDOT	CK: KM	DW: CES	CK: AN
©TxDOT: Sept 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

DATE:
FILE:

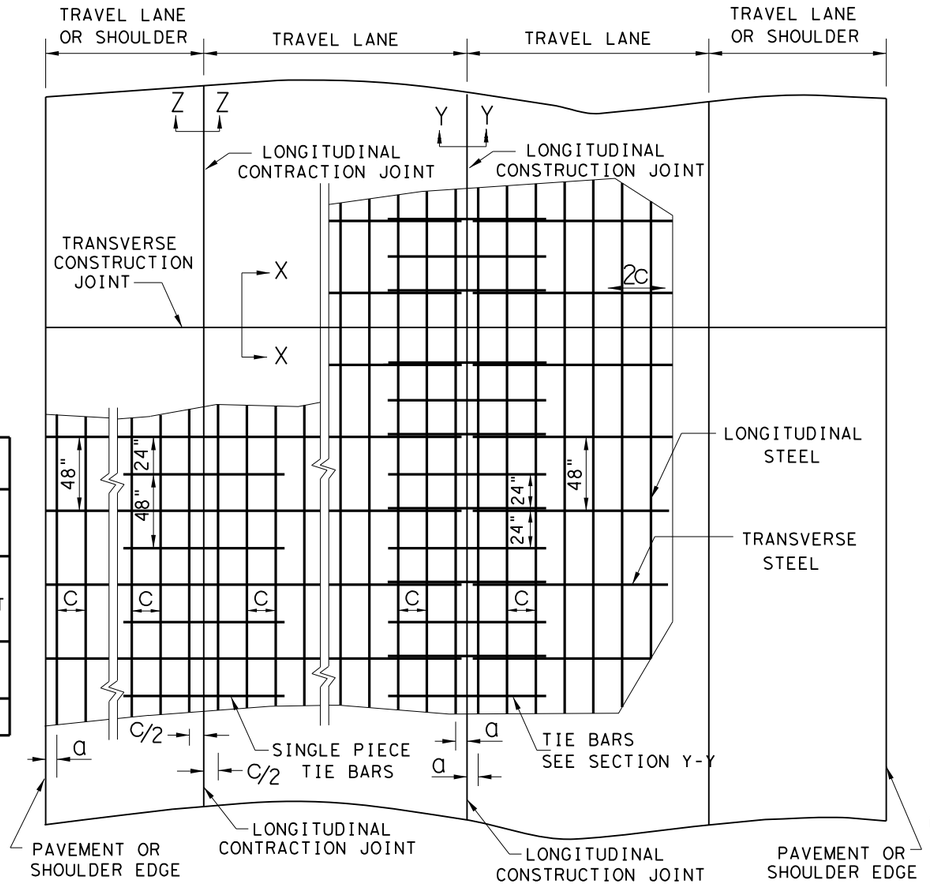
TABLE NO. 1 LONGITUDINAL STEEL

SLAB THICKNESS AND BAR SIZE		FOR BOTH STEEL MATS		LOWER STEEL MAT HEIGHT	TOP STEEL MAT HEIGHT
		LONGITUDINAL STEEL BARS	FIRST SPACING AT EDGE OR JOINT		
T (IN.)	BAR SIZE	SPACING c (IN.)	SPACING a (IN.)	T1 (IN.)	T2 (IN.)
14	#6	9.5	3 TO 4	4.5	8.0
15	#6	8.5	3 TO 4	5.0	8.5

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS

SLAB THICKNESS T (IN.)	FOR BOTH STEEL MATS		FOR LOWER STEEL MAT ONLY		FOR BOTH STEEL MATS	
	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE*	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
14 - 15	#5	48	#6	48	#6	24

*CONTRACTOR MAY USE #6 REINFORCING STEEL INSTEAD OF #5 REINFORCING STEEL OR COMBINATION OF EACH SIZE

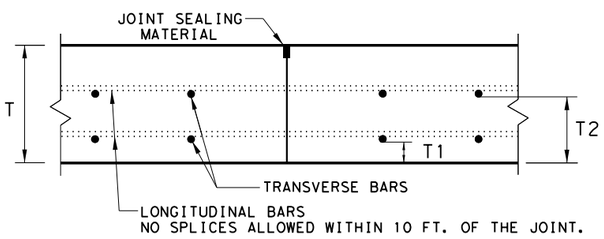


TYPICAL PAVEMENT LAYOUT

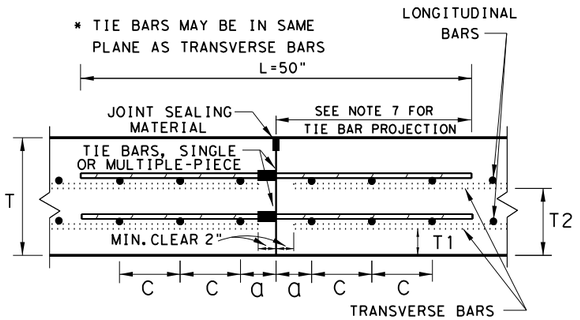
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

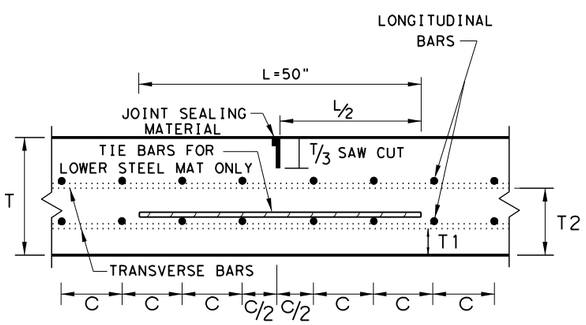
1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAIL MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO. 1 AND TABLE NO. 2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS IN A SINGLE LAYER) SHALL CONFORM TO TABLE NO. 1.
5. ADJUST REINFORCING STEEL VERTICALLY USING SHIMS OR OTHER METHODS, AS APPROVED, TO MEET VERTICAL TOLERANCES PRIOR TO CONCRETE PLACEMENT.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. for #6 BARS AND 18.5 IN. FOR #5 BARS.
8. SEE STANDARD SHEET "CONCRETE CURB AND CURB AND GUTTER," FOR DETAILS WHEN TYING CONCRETE CURB OR CURB GUTTER AT A LONGITUDINAL JOINT.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
12. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25-IN.



TRANSVERSE CONSTRUCTION JOINT
SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT
SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

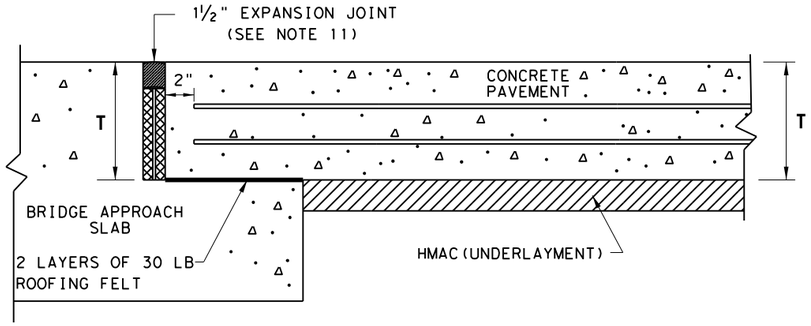
TWO LAYER STEEL BAR PLACEMENT T - 14 & 15 INCHES

CRCP(2)-24

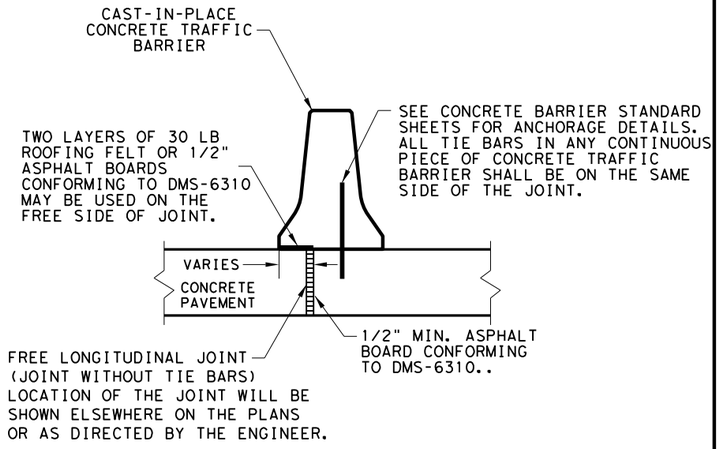
FILE: crcp224.dgn	DN: CES	CK: KM	DW: CES	CK: AN
© TxDOT: Sept 2024 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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

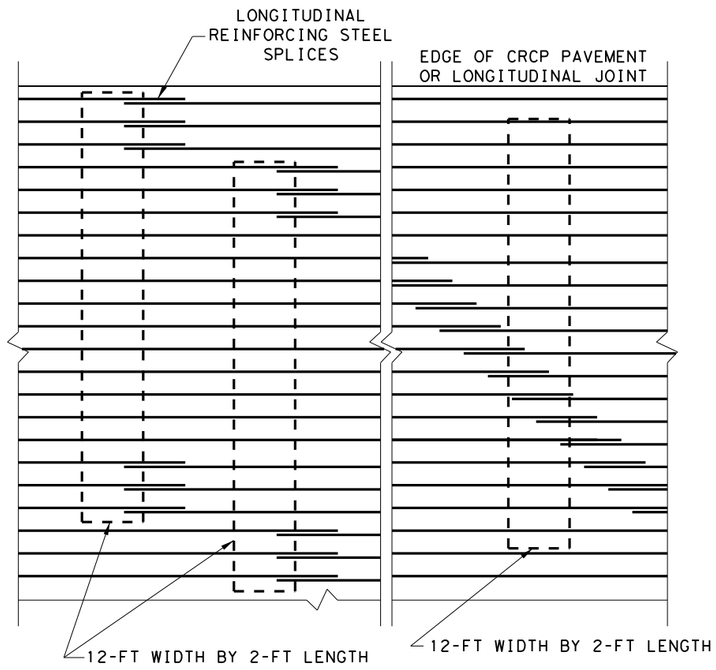
DATE:
FILE:



TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH

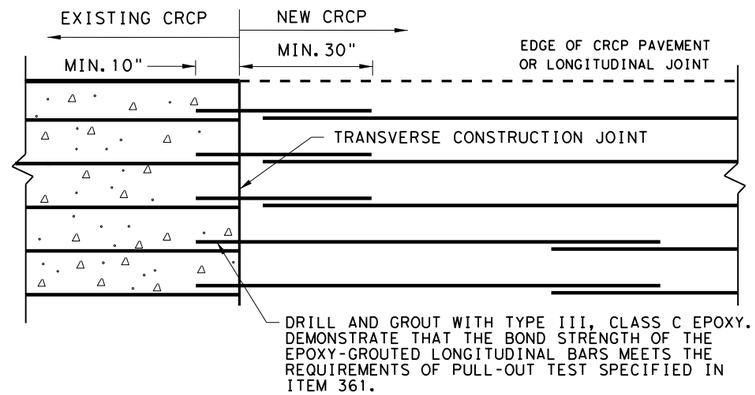


CENTERLINE FREE LONGITUDINAL JOINT DETAIL

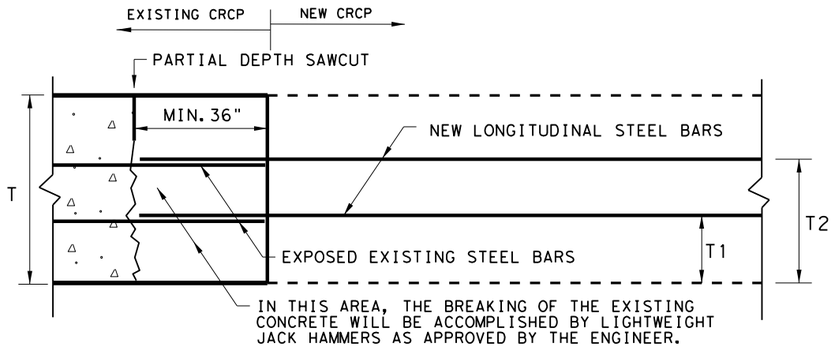


STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)

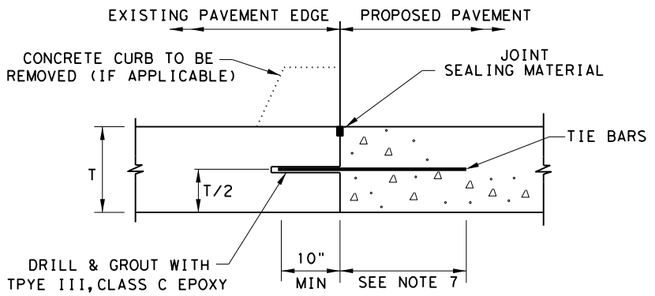


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
NEW CRCP TO EXISTING CRCP



1. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
2. SPACE TIE BARS AT 24" SPACING.

LONGITUDINAL WIDENING JOINT DETAIL

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

TWO LAYER STEEL BAR PLACEMENT
T - 14 & 15 INCHES

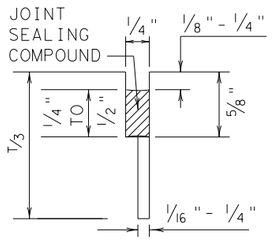
CRCP(2)-24

FILE: crcp224.dgn	DN: CES	CK: KM	DW: CES	CK: AN
© TxDOT: Sept 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

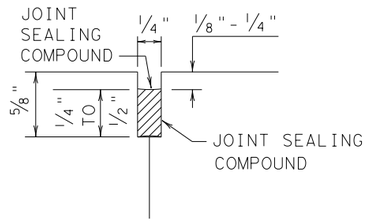
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

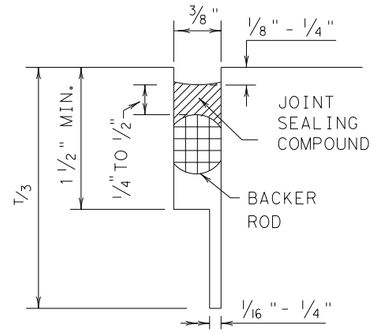
METHOD B: JOINT SEALING COMPOUND



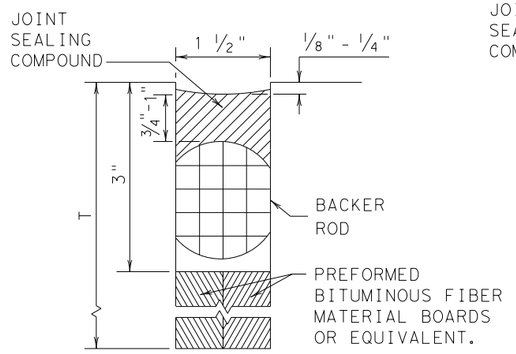
LONGITUDINAL SAWED CONTRACTION JOINT



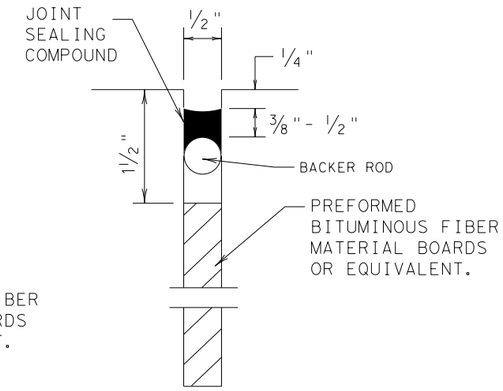
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

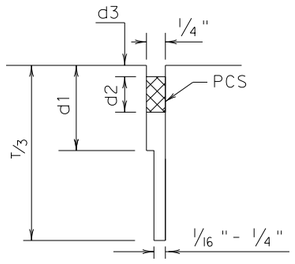


TRANSVERSE FORMED EXPANSION JOINT

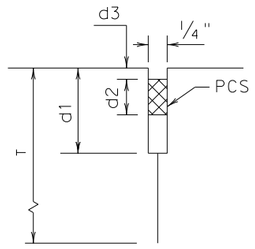


FORMED ISOLATION JOINT

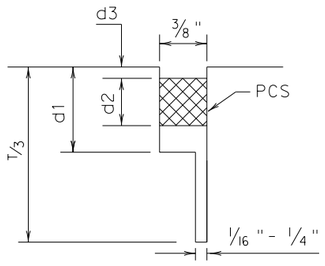
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



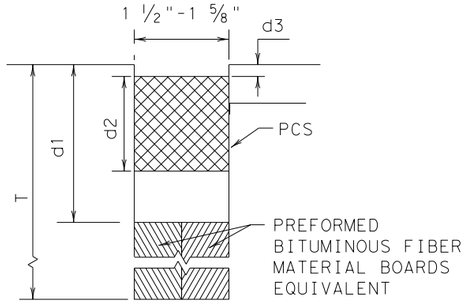
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
4. DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
7. FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
8. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
9. ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

Texas Department of Transportation

Design Division Standard

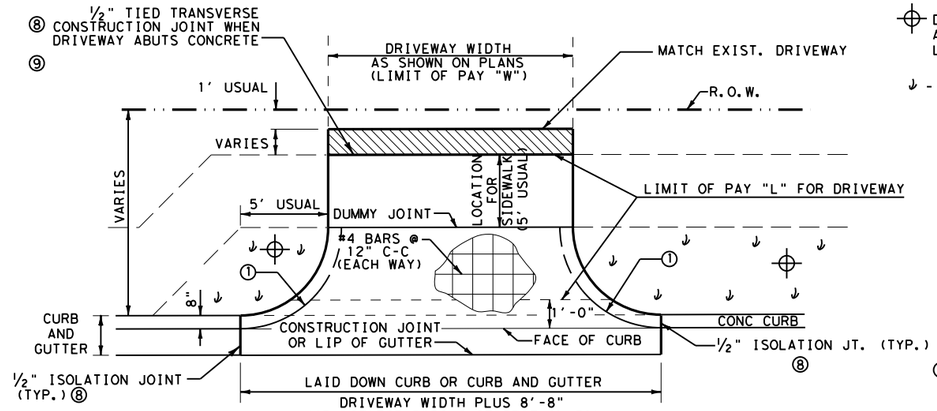
CONCRETE PAVING DETAILS

JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
© TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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.



SHOWING SIDEWALK ADJACENT TO CURB

SHOWING SIDEWALK REMOTE FROM CURB

PLAN VIEW

DO NOT PAVE AREA BETWEEN SIDEWALK AND DRIVEWAY CURB. SEED, SOD, OR LANDSCAPE AS DIRECTED.

↓ - SEEDING OR OTHER SURFACE NOT SUITABLE AS PEDESTRIAN WALKWAY.

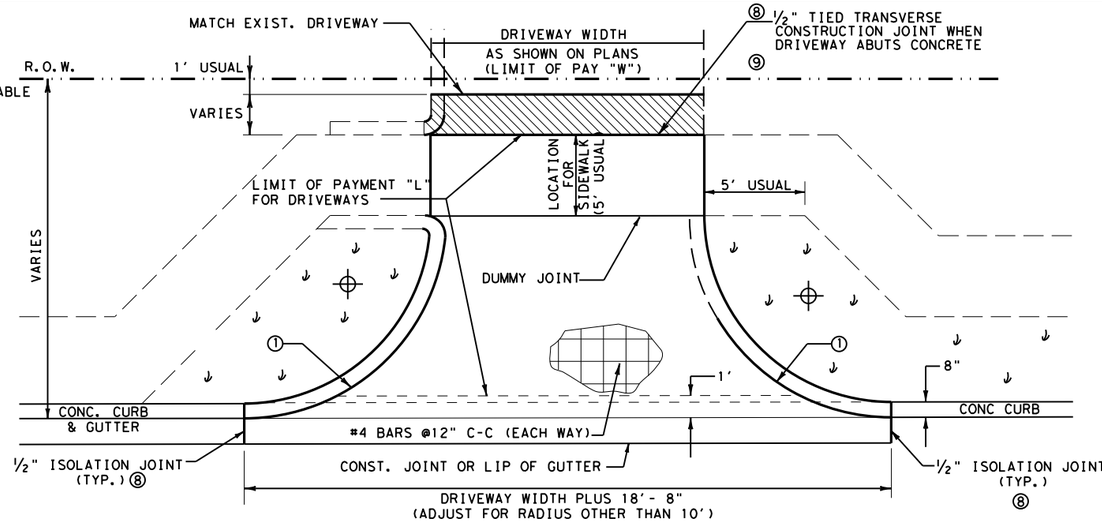
PAY AREA FOR DRIVEWAY SHALL BE THE PRODUCT OF "L" x "W"

S.Y. NON-PAY CONCRETE IN DRIVEWAY RADIUS	
2-90° RADII (FT)	NON-PAY CONC. (S.Y.)
5	0.42
10	3.04
15	10.73
20	15.36
25	29.81
30	37.19

① RADII AS SHOWN ON PLANS

SEE ROADWAY DESIGN MANUAL, APPENDIX C FOR RECOMMENDED RADII.

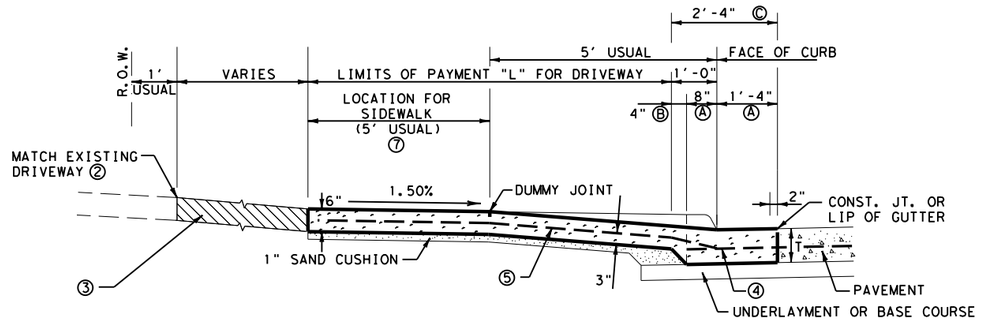
② FULL DEPTH SAW CUT IF CONCRETE

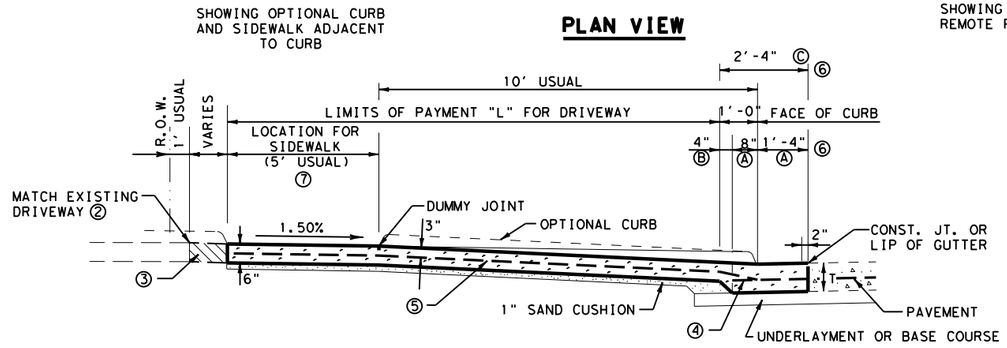


SHOWING OPTIONAL CURB AND SIDEWALK ADJACENT TO CURB

SHOWING SIDEWALK REMOTE FROM CURB

PLAN VIEW





SECTION VIEW
CONCRETE RESIDENTIAL DRIVEWAY

SECTION VIEW
CONCRETE COMMERCIAL DRIVEWAY

③ REPLACE EXISTING DRIVEWAY WITH EQUAL OR BETTER MATERIAL:

IF CONCRETE, PAY FOR AS CONCRETE DRIVEWAY.

IF HOT MIX OR OTHER MATERIAL, PAY FOR IN ACCORDANCE WITH APPROPRIATE BID ITEMS.

④ WHERE DRIVEWAY IS ADJACENT TO CONCRETE PAVEMENT, 36" - #4 TIE BAR, 12" EMBEDMENT INTO PAVEMENT (CAST-IN-PLACE OR DRILLED AND GROUTED). SPACING TO MATCH TRANSVERSE STEEL IN CONCRETE PAVEMENT.

MULTIPLE-PIECE TIE BARS OR 24" EXTENSION OF TRANSVERSE PAVING STEEL MAY BE USED IN LIEU OF TIE BARS.

LONGITUDINAL STEEL IN GUTTER PORTION TO MATCH CONCRETE PAVEMENT OR CONCRETE CURB AND GUTTER DETAILS.

⑤ #4 BARS @ 12" C-C EACH WAY (EXTEND TO FACE OF CURB) BEND AS REQ'D TO TIE TO PAVING STEEL OR TIE BARS.

⑥ IF ADJACENT TO CONCRETE PAVEMENT:
Ⓐ PAID FOR AS CONCRETE PAVEMENT,
Ⓑ PAID FOR AS CONCRETE CURB.

IF ADJACENT TO HOT MIX OR FLEXIBLE PAVEMENT:
Ⓒ PAID FOR AS CONCRETE CURB AND GUTTER.

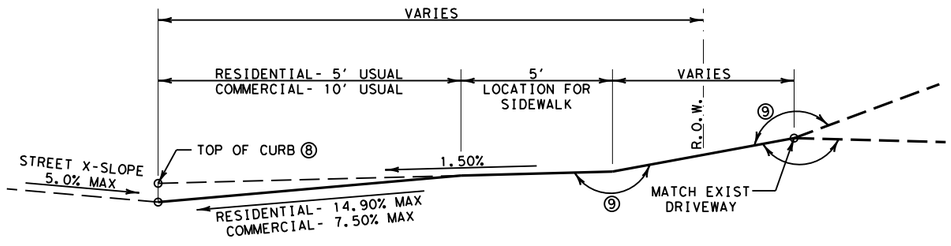
T = THICKNESS OF CONCRETE PAVEMENT OR CONCRETE CURB AND GUTTER

⑦ LOCATION FOR SIDEWALK TO BE PROVIDED ON ALL DRIVEWAYS

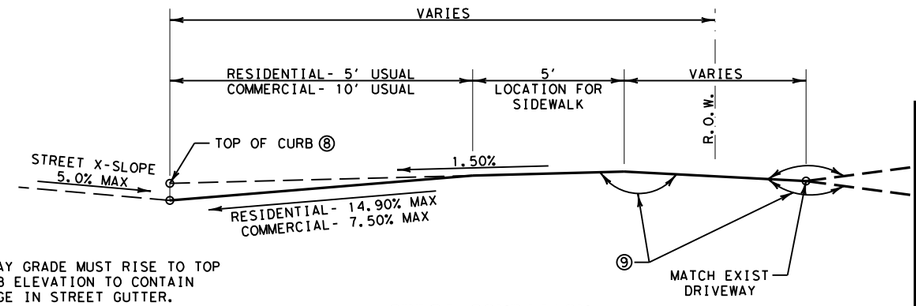
FOR SIDEWALK DETAILS, SEE STANDARD CSWD(FTW)

⑧ SEE STANDARD JS (FTW) FOR JOINT DETAILS.

⑨ IF, IN THE OPINION OF THE ENGINEER, ADJACENT CONCRETE IS NOT SOUND, 1/2" ISOLATION JOINT MAY BE USED IN LIEU OF TIED JOINT.



SAG CONDITION



CREST CONDITION

⑧ DRIVEWAY GRADE MUST RISE TO TOP OF CURB ELEVATION TO CONTAIN DRAINAGE IN STREET GUTTER.

⑨ 8% MAX CHANGE IN GRADE (VERTICAL CURVE REQ'D IF 4% OR GREATER).

ALLOWABLE DRIVEWAY GRADES

©2024 by Texas Department of Transportation; All Rights Reserved

Texas Department of Transportation

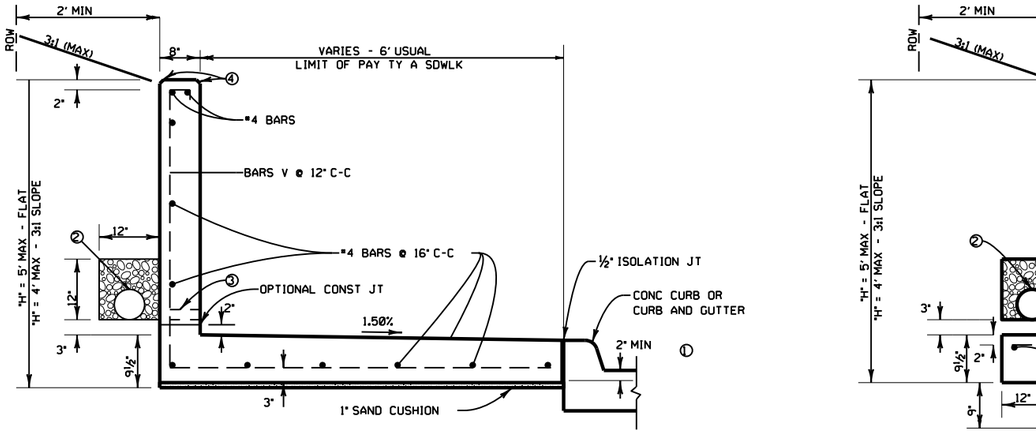
Fort Worth District Standard

CONCRETE DRIVEWAY DETAILS CDD (FTW)

ORIGINAL DRAWING: 05/2019	cdd-ftw.dgn	PROJECT NO.			SHEET NO.
DATE	REVISIONS				
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
11/2020	REVISED JOINT NOMENCLATURE REVISED NOTE 4 ADD NOTE 9	TEXAS	FTW		
07/2022 08/2024	ELIMINATE 1" RISE AT GUTTER LINE REVISED NOTE 9	CONT.	SECT.	JOB	HIGHWAY NO.

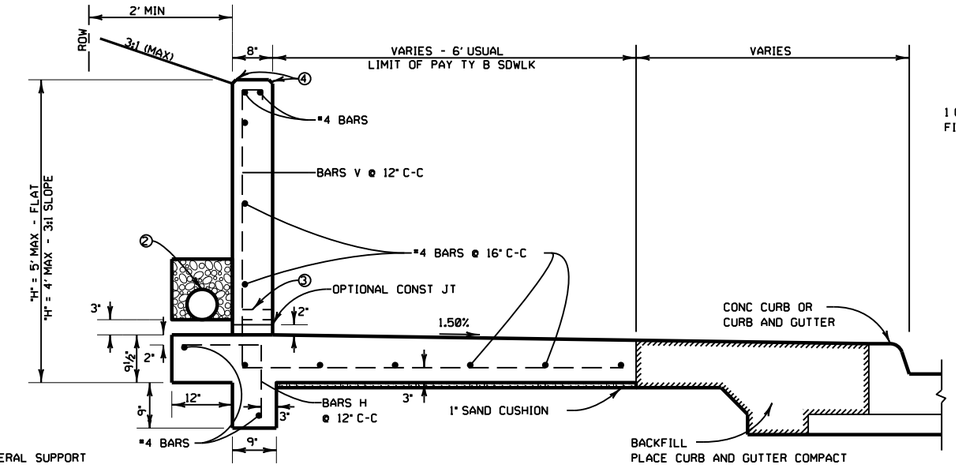
http://www.dot.state.tx.us/ftw/specinfo/standard.htm
$DATE$
$TIME$
$PATH$
$FILE$

DISCLAIMER :
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



① 2" MINIMUM REQUIRED FOR LATERAL SUPPORT
② INSTALL 6" PIPE UNDERDRAIN (TY. 5, 6, 7, OR 8) ENTIRE LENGTH OF WALL. USE TY. "E" FILTER MATERIAL. SLOPE TO DRAIN AND CONNECT TO STORM DRAIN.
③ IF, IN THE OPINION OF THE ENGINEER, USE OF UNDERDRAIN IS IMPRACTICAL, INSTALL WEEP HOLES AS SHOWN.
④ ¾" CHAMFER

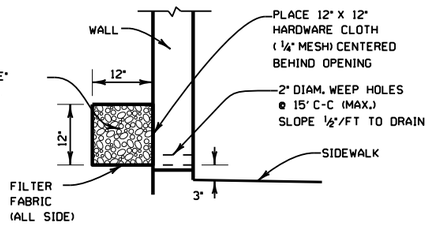
TYPE A SIDEWALK-ADJACENT TO CURB



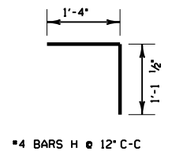
TYPE B SIDEWALK-REMOTE FROM CURB

SPECIAL CONCRETE SIDEWALK w/ INTEGRATED RETAINING WALL

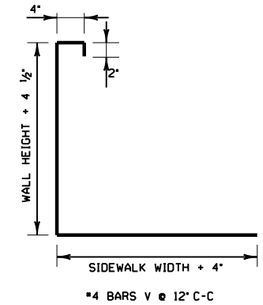
N.T.S.



WEEP HOLE DETAIL

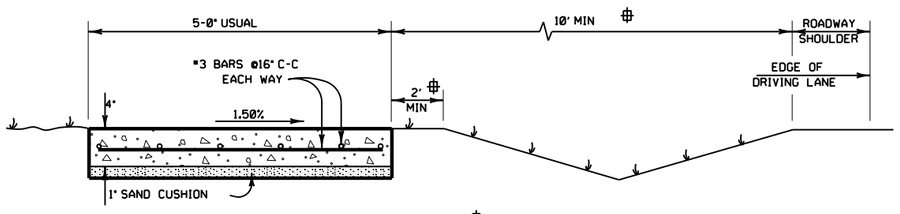


#4 BARS H @ 12" C-C



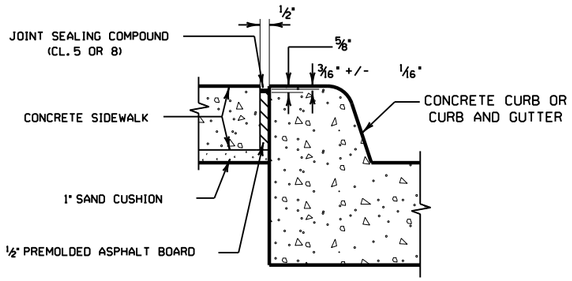
#4 BARS V @ 12" C-C

REINFORCING STEEL DETAILS



#SIDEWALK TO BE 10' MIN. FROM EDGE OF SHOULDER OR 2' MIN. FROM TOP OF DITCH BACK SLOPE, WHICHEVER IS GREATER (10' MIN. FROM EDGE OF SHOULDER IF NO DITCH.)

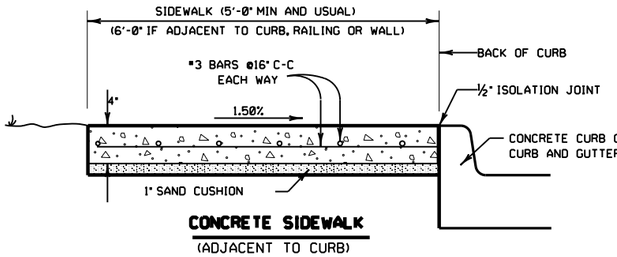
CONCRETE SIDEWALK
(ROADWAY W/O CURB)



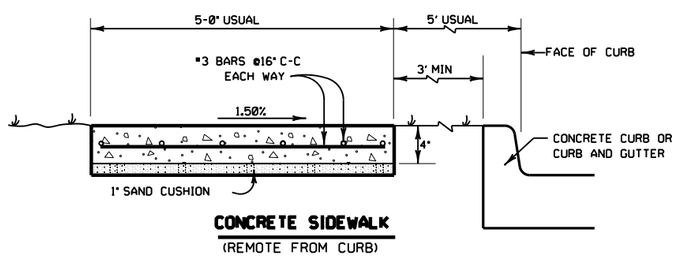
1/2" ISOLATION JOINT
(SIDEWALK ADJACENT TO CURB)

GENERAL NOTES:

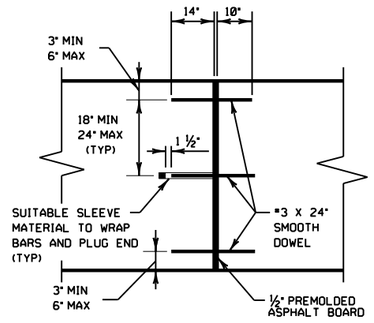
1. CONCRETE FOR SPECIAL CONCRETE SIDEWALK W/ INTEGRATED RETAINING WALL SHALL BE CLASS "C". ALL OTHER CONCRETE SIDEWALK SHALL BE CLASS "A".
2. ALL REINFORCING STEEL SHALL BE GRADE 60, # 4 BARS UNLESS OTHERWISE INDICATED.
3. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND RETAINING WALLS.
4. LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.
5. IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' X 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.
6. RETAINING WALL WILL BE SUBSIDIARY TO THE ITEM, "CONC SIDEWALKS (SPECIAL) (TYPE A)" OR "CONC SIDEWALKS (SPECIAL)(TYPE B)", WITH LIMITS OF PAY AS SHOWN.
7. SURFACE TREATMENT OF RETAINING WALL FACE DETAILED ELSEWHERE IN THE PLANS.
8. SEE PED STANDARDS FOR TREATMENT AT INTERSECTIONS AND CROSSWALKS.



CONCRETE SIDEWALK
(ADJACENT TO CURB)



CONCRETE SIDEWALK
(REMOTE FROM CURB)



TRANSVERSE EXPANSION JOINT

CONCRETE SIDEWALK DETAILS

N.T.S.

©2020 by Texas Department of Transportation;
All Rights Reserved

Texas Department of Transportation

Fort Worth District Standard

CONCRETE SIDEWALK DETAILS
CSWD (FTW)

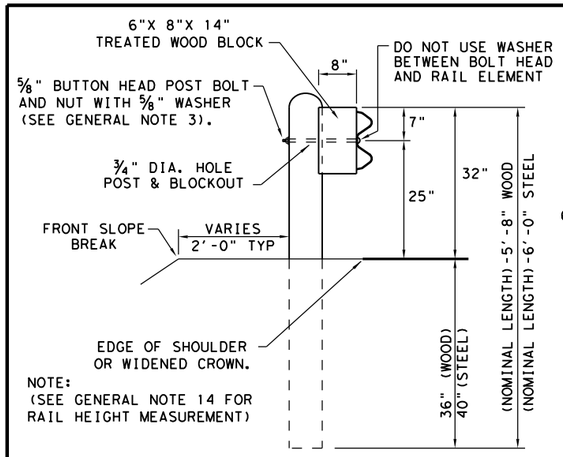
ORIGINAL DRAWING: 05/2019	cswd-ftw.dgn	PROJECT NO.		SHEET NO.
DATE	REVISIONS			
05/2019	NEW STANDARD			
11/2020	REVISE JOINT NOMENCLATURE, REVISE ALLOWABLE SEALANT TYPES			
10/2024	REVISE NOTE 1 FOR CONCRETE CLASS			

STATE	STATE DIST.NO.	COUNTY	
TEXAS	FTW		
CONT.	SECT.	JOB	HIGHWAY NO.

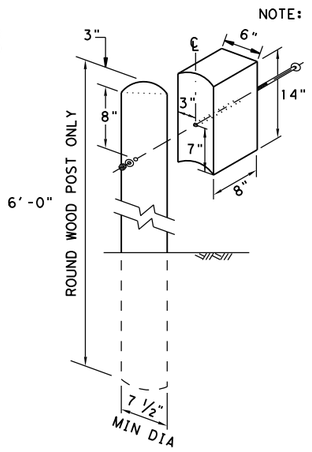
http://www.dot.state.tx.us/ftw/specinfo/standard.htm
$DATE$
$TIME$
$PATH$
$FILE$

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

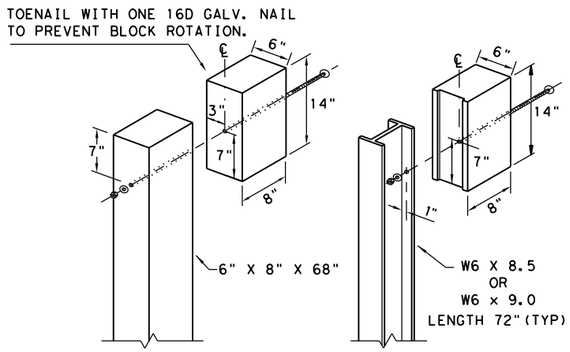
DATE:
FILE:



TYPICAL POST PLACEMENT



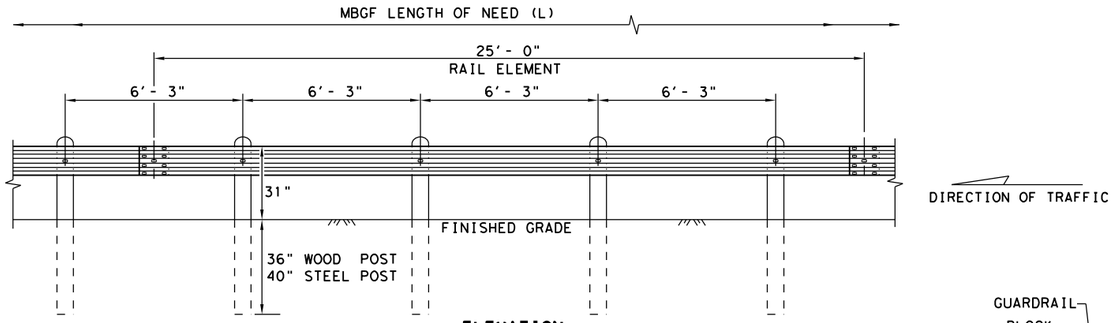
WOOD BLOCK TO ROUND WOOD POST



WOOD BLOCK TO RECTANGULAR WOOD POST

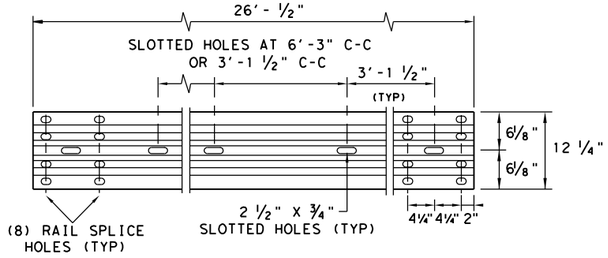
ROUTED WOOD BLOCK TO I-BEAM STEEL POST

NOTE: ** "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



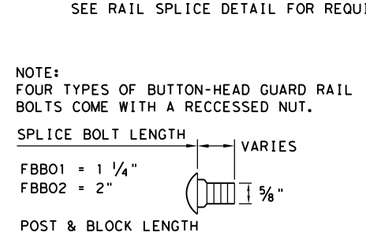
ELEVATION
MID-SPAN RAIL SPLICE

SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



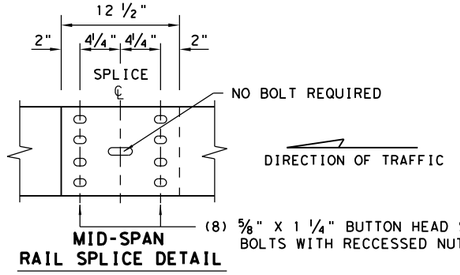
ELEVATION 25'- 0" (NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES.
SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



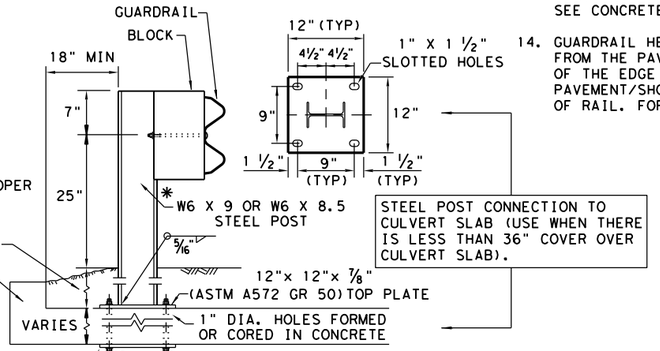
BUTTON HEAD BOLT

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.



LOW FILL CULVERT POST

NOTE: TWO INSTALLATION OPTIONS.

1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation

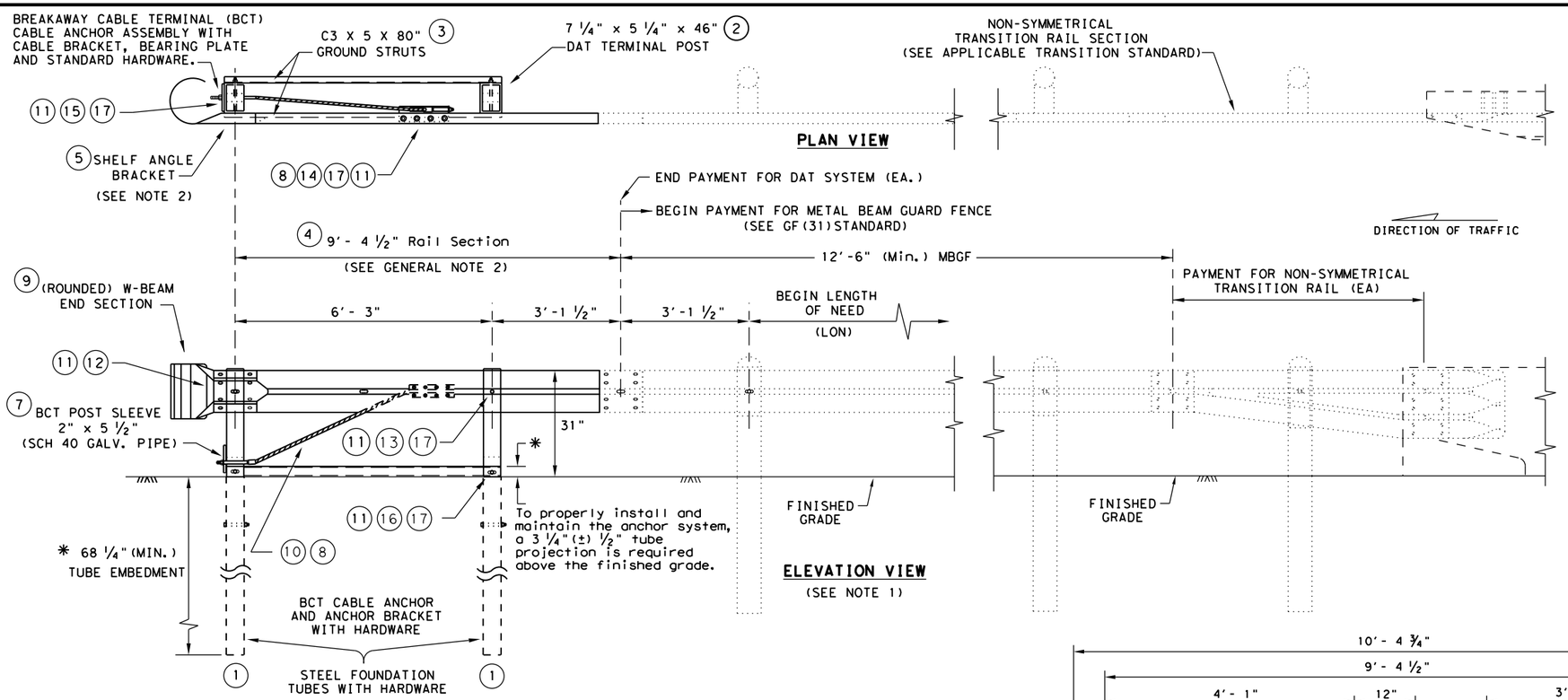
Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:



DOWNSTREAM ANCHOR TERMINAL (DAT)

NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.

GENERAL NOTES

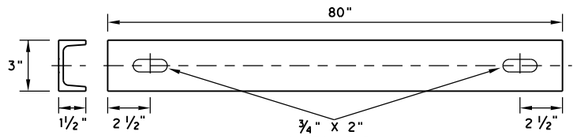
1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN 3 3/4" ABOVE THE FINISHED GRADE.
4. ALL HARDWARE FOR DAT SHALL BE ASTM A307 UNLESS OTHERWISE SHOWN.
5. REFER TO GF(31) SHEET FOR TERMINAL CONNECTION DETAILS.

MOW STRIP INSTALLATION

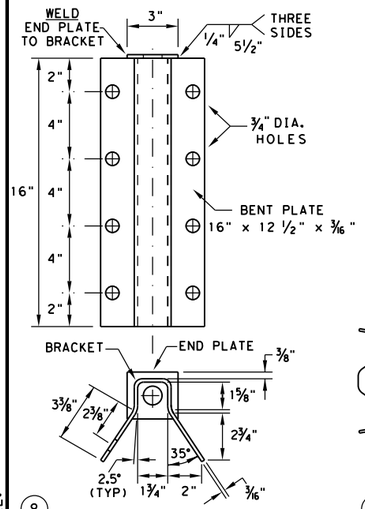
IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

#	(DAT) PARTS LIST	QTY
(1)	STEEL FOUNDATION TUBE	2
(2)	DAT TERMINAL POST	2
(3)	CHANNEL STRUT	2
(4)	TERMINAL RAIL ELEMENT	1
(5)	SHELF ANGLE BRACKET	1
(6)	BCT BEARING PLATE	1
(7)	BCT POST SLEEVE	1
(8)	GUARDRAIL ANCHOR BRACKET	1
(9)	(ROUNDED) W-BEAM END SECTION	1
(10)	BCT CABLE ANCHOR	1
(11)	RECESSED NUT, GUARDRAIL	20
(12)	1 1/4" BUTTON HEAD BOLT	4
(13)	10" BUTTON HEAD BOLT	2
(14)	5/8" X 2" HEX HEAD BOLT	8
(15)	5/8" X 8" HEX HEAD BOLT	4
(16)	5/8" X 10" HEX HEAD BOLT	2
(17)	5/8" FLAT WASHER	18

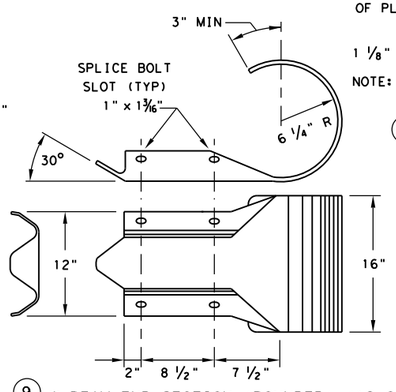
(4) TERMINAL RAIL ELEMENT FOR DAT



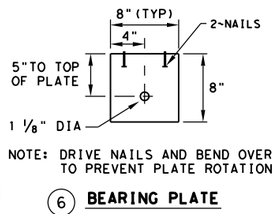
(3) CHANNEL STRUT
C3 X 5 X 80", GRADE A36



(8) GUARDRAIL ANCHOR BRACKET

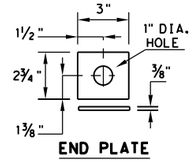


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

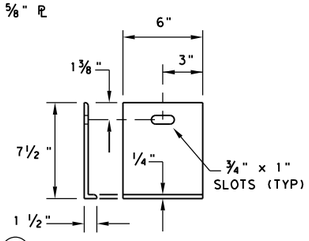


NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

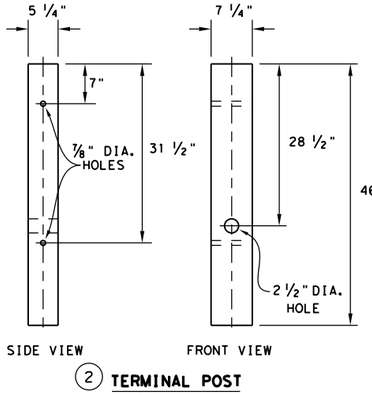
(6) BEARING PLATE
8"x 8"x 5/8" PL



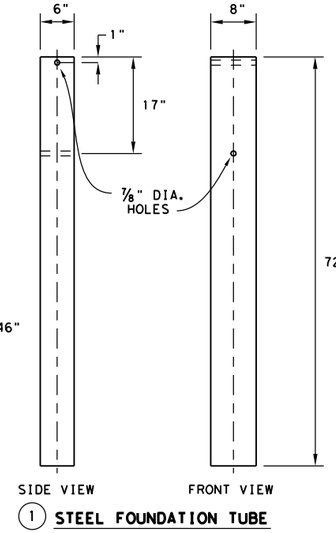
END PLATE



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" WOOD POST



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" STEEL TUBE

Texas Department of Transportation

Design Division Standard

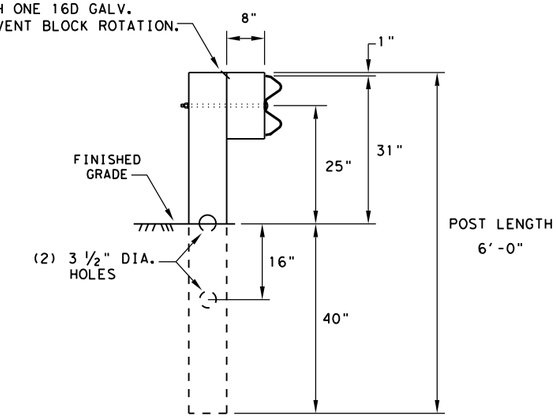
METAL BEAM GUARD FENCE
(DOWNSTREAM ANCHOR TERMINAL)
TL-3 MASH COMPLIANT

GF(31)DAT-19

FILE: gf31dat19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG	
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	

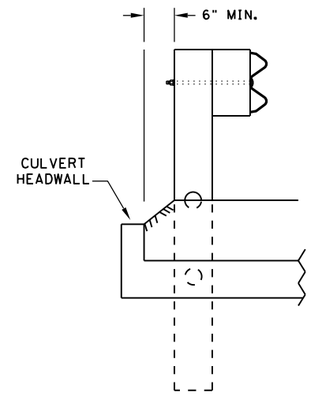
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:



RECTANGULAR CRT POST (6"X 8" X 6' LONG)

(6) CRT REQUIRED
SEE ELEVATION DETAIL FOR LOCATIONS



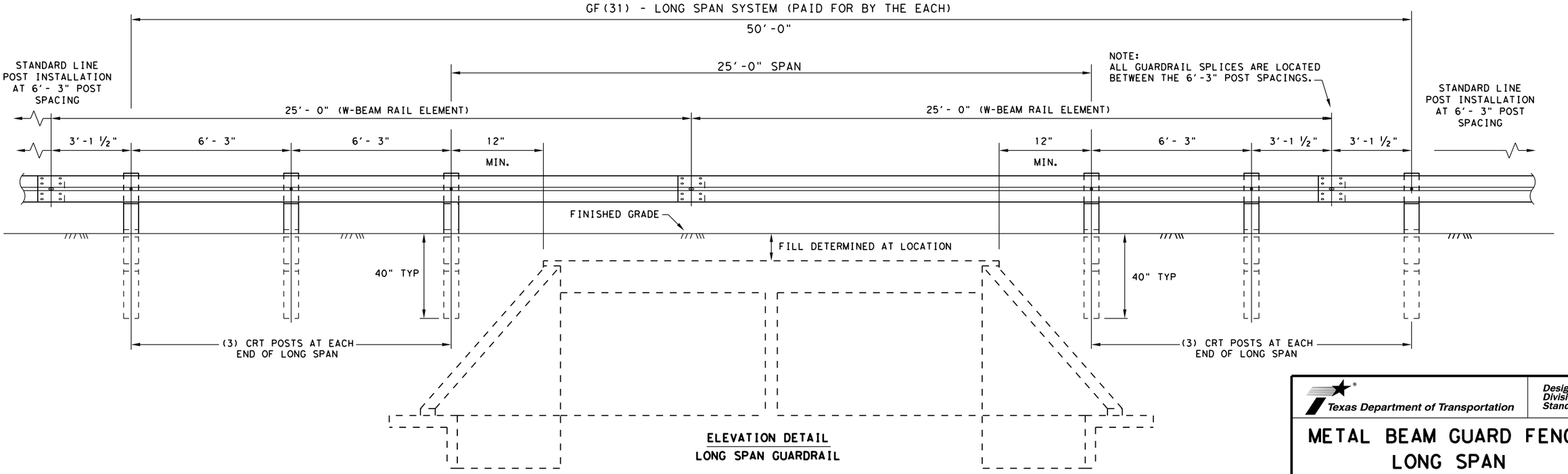
LATERAL OFFSET BETWEEN THE GUARDRAIL AND THE CULVERT HEADWALL

GENERAL NOTES

1. THE TYPE OF LINE POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF THE TRANSITIONS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENT SHALL MEET ALL REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 12'- 6" OR 25'- 0" NOMINAL LENGTHS.
3. RAIL POST HOLES ARE OFFSET 3'- 1 ½" FROM STANDARD GUARDRAIL TO ACCOMMODATE THE MIDSPAN SPLICING.
4. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NO MORE THAN 1" BEYOND IT.
5. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
7. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
8. REFER TO GF(31) STANDARD SHEET FOR ADDITIONAL DETAILS.
9. FLAME CUTTING OF HOLES IN GUARDRAIL SHALL NOT BE PERMITTED. IF YOU ENCOUNTER MIS-ALIGNED BOLT HOLES IN GUARDRAIL CONTACT THE DESIGN DIVISION FOR ADDITIONAL INFORMATION & OPTIONS.

NOTE: SEE GF(31) STANDARD FOR STANDARD LINE POSTS.

DIRECTION OF TRAFFIC



ELEVATION DETAIL
LONG SPAN GUARDRAIL

Texas Department of Transportation

Design Division Standard

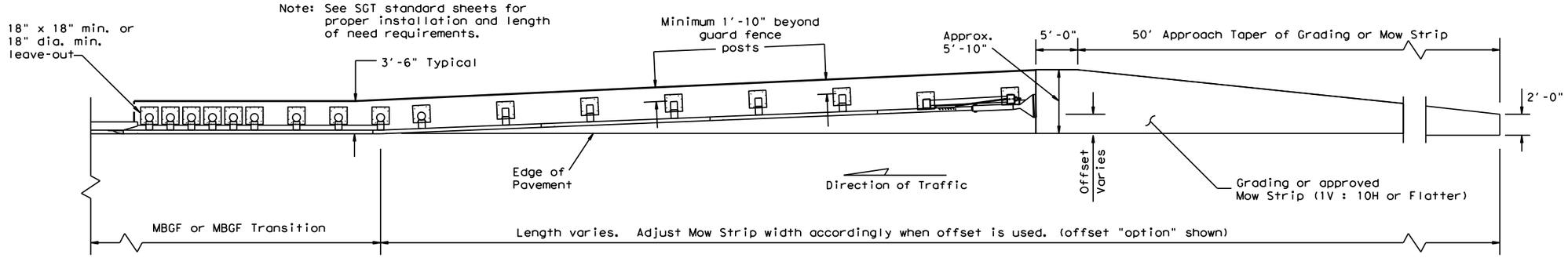
METAL BEAM GUARD FENCE LONG SPAN TL-3 MASH COMPLIANT

GF(31)LS-19

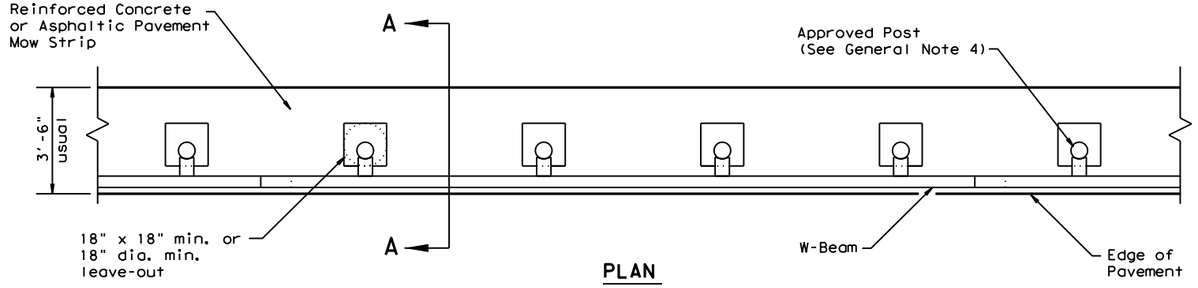
FILE: gf31ls19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG	
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:

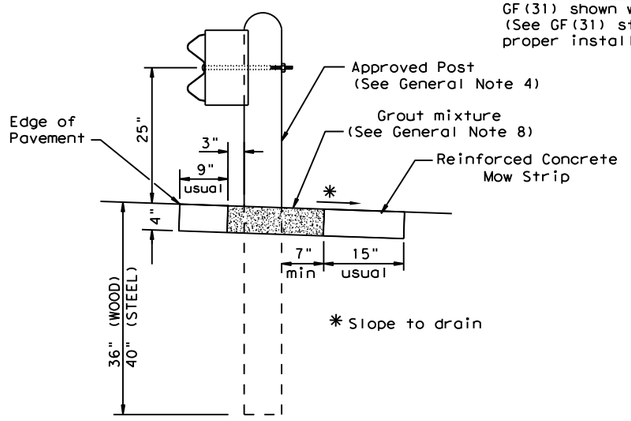


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



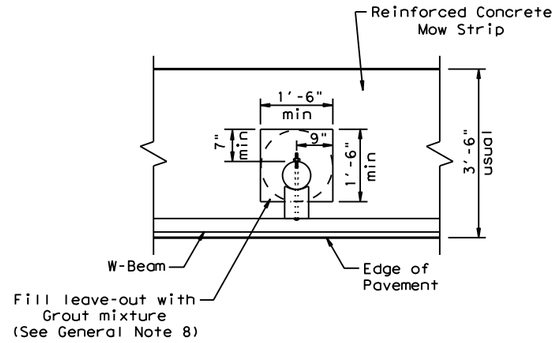
PLAN

GF(31) shown with Mow Strip
(See GF(31) standard sheet for proper installation)



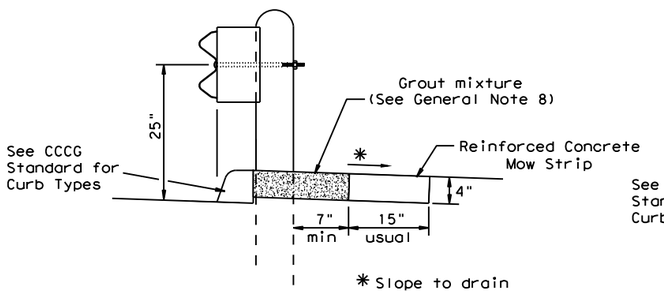
SECTION A-A

Typical



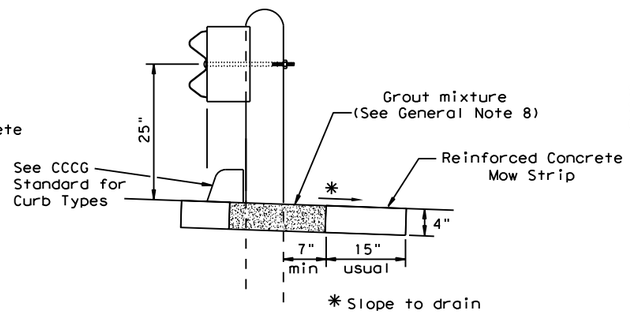
MOW STRIP DETAIL

Reinforced Concrete Mow Strip
with 18" x 18" Square or
18" Dia. minimum leave-out.



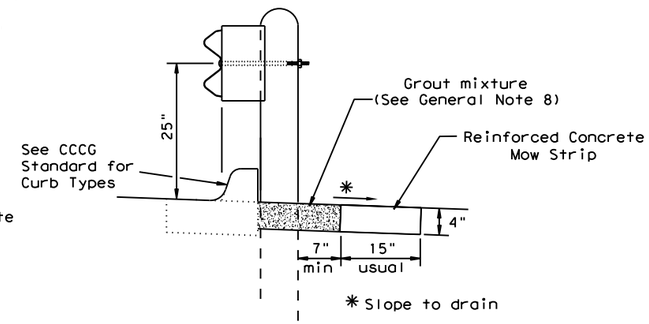
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.

Texas Department of Transportation

Design Division Standard

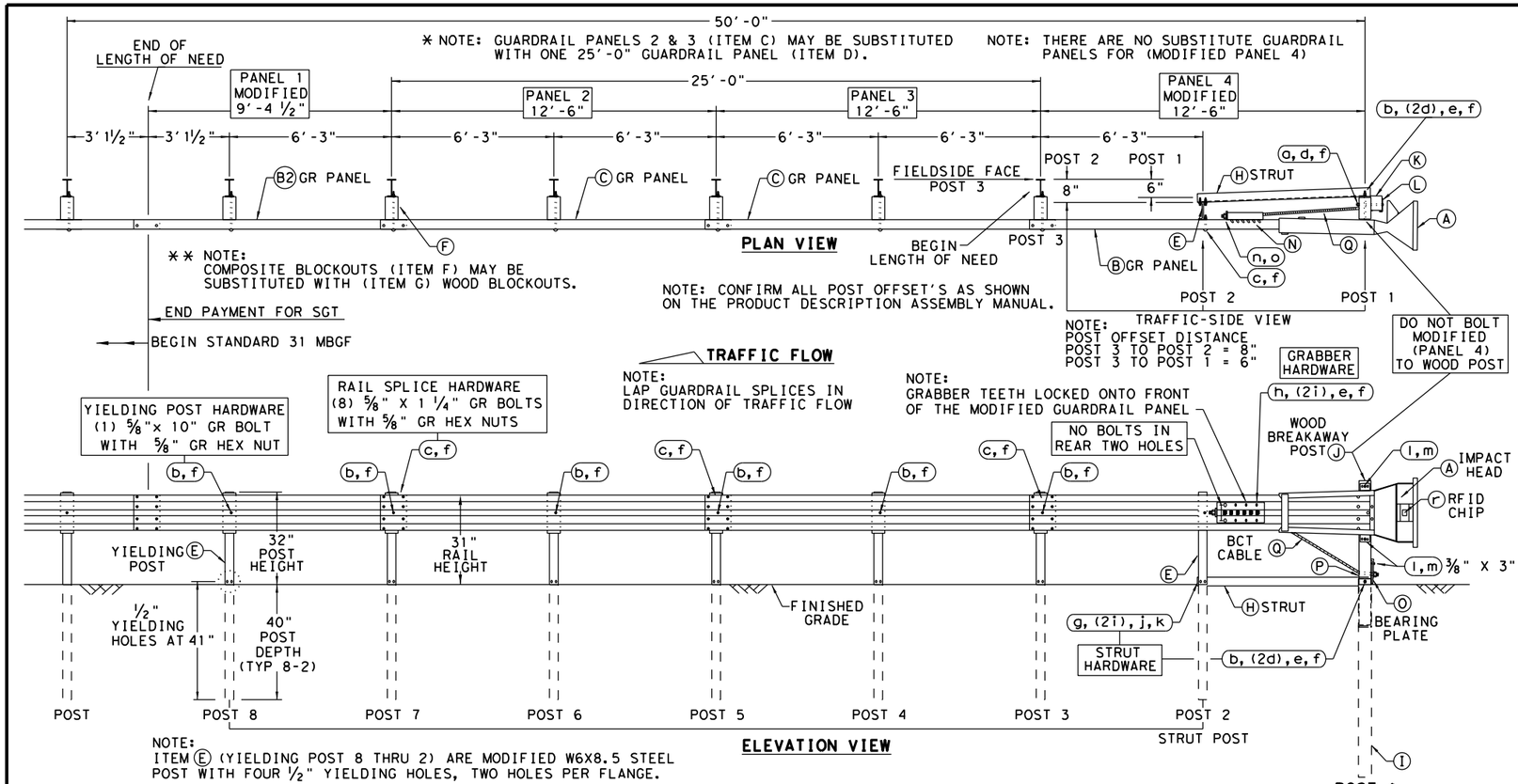
METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:

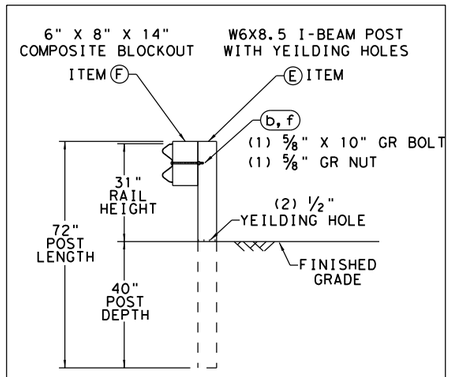


GENERAL NOTES

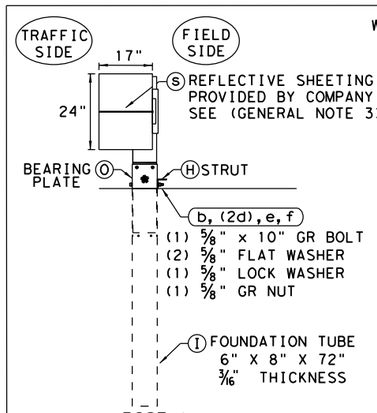
1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
3. MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
5. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
6. (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
9. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
10. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
11. THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D *	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G **	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" x 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" x 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" x 7 1/2" x 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
		SMALL HARDWARE	
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563DH HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

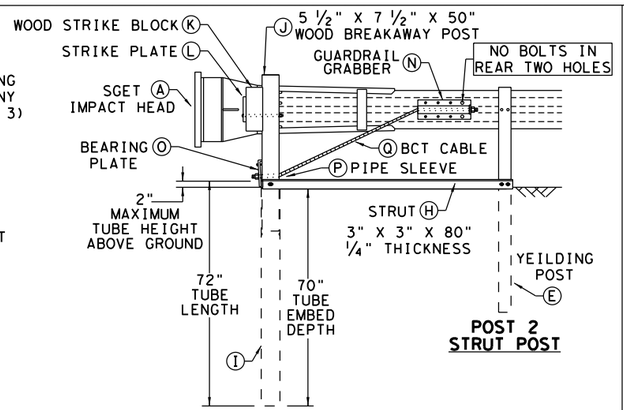
* ALTERNATIVE ITEMS
** NOTE: SEE PLAN VIEW



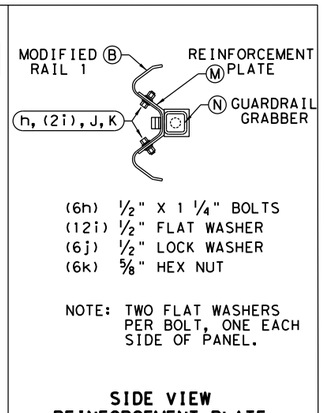
SIDE VIEW
POST 8 - POST 3 (TYP)



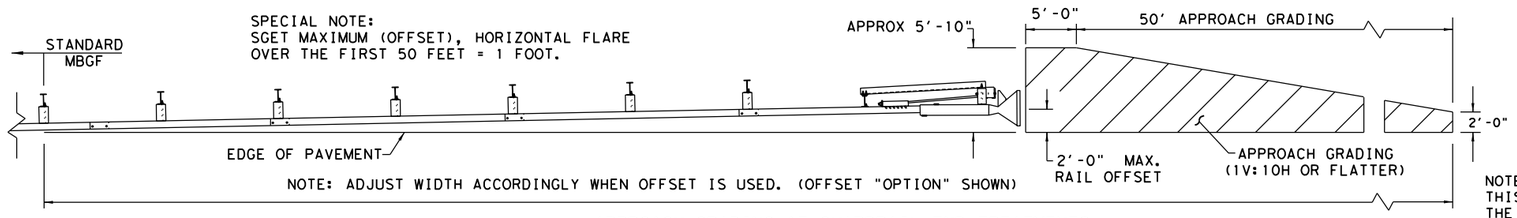
POST 1
FRONT END VIEW



POST 1
FIELD SIDE VIEW
POST 2
STRUT POST



SIDE VIEW
REINFORCEMENT PLATE
WITH GUARDRAIL GRABBER



APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SGET TERMINAL SYSTEM AND IS NOT INTENDED TO REPLACE THE MANUFACTURER'S ASSEMBLY MANUAL.

Texas Department of Transportation

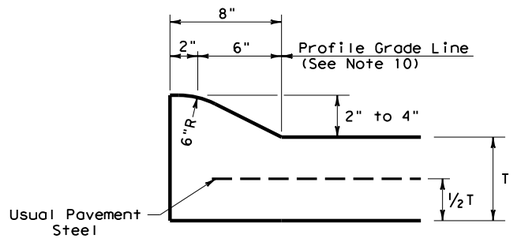
Design Division Standard

SPIG INDUSTRY, LLC
SINGLE GUARDRAIL TERMINAL
SGET - TL-3 - MASH
SGT(15)31-20

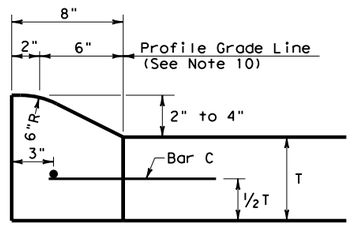
FILE: sgt153120.dgn	DN: TxDOT	CK: KM	DW: VP	CK: VP		
© TxDOT: APRIL 2020	CONT	SECT	JOB		HIGHWAY	
REVISIONS						
	DIST	COUNTY			SHEET NO.	

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

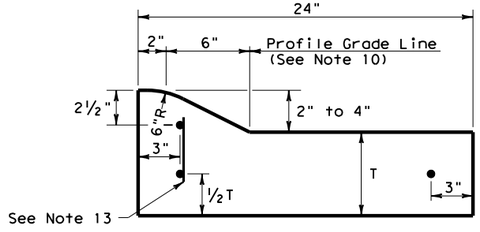
DATE:
FILE:



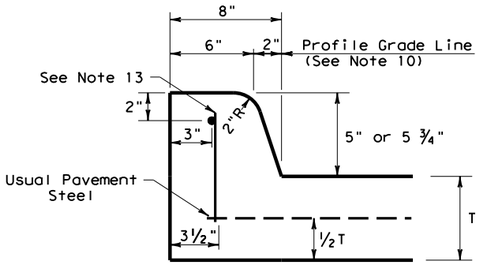
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



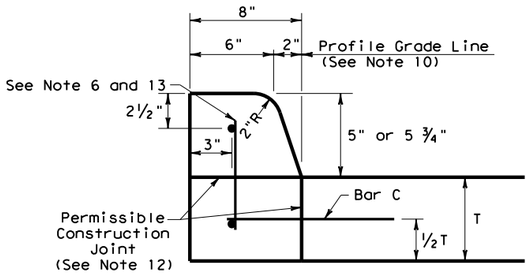
TYPE I CURB
2" - 4" HEIGHT



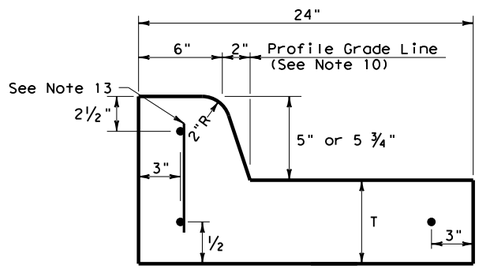
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



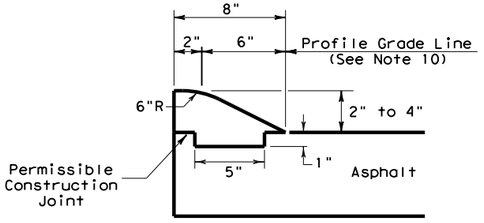
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



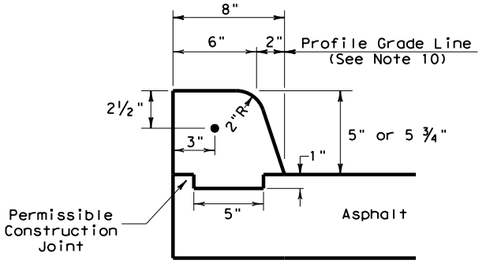
TYPE II CURB
5" - 5 ¾" HEIGHT



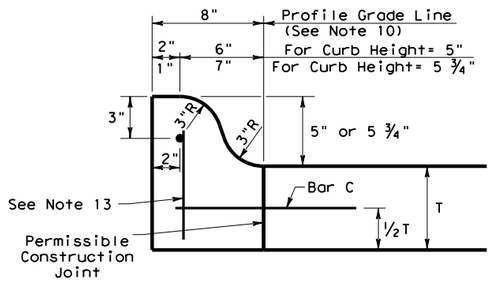
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



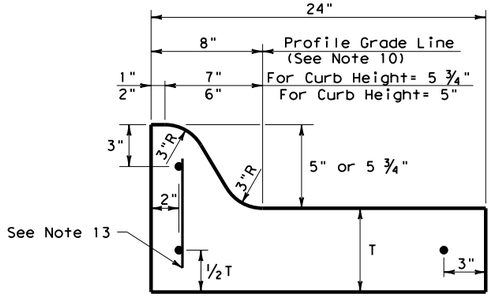
TYPE III CURB (KEYED)
2" - 4" HEIGHT



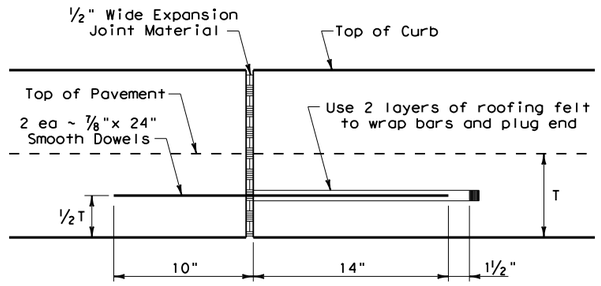
TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



TYPE IIa CURB
5" - 5 ¾" HEIGHT

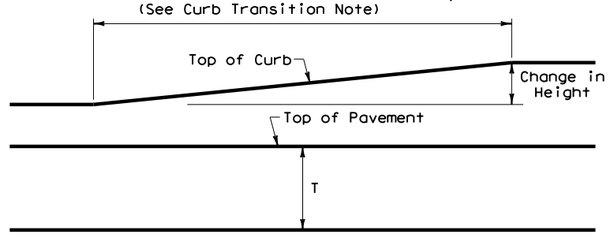


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

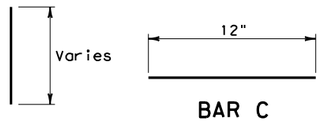
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

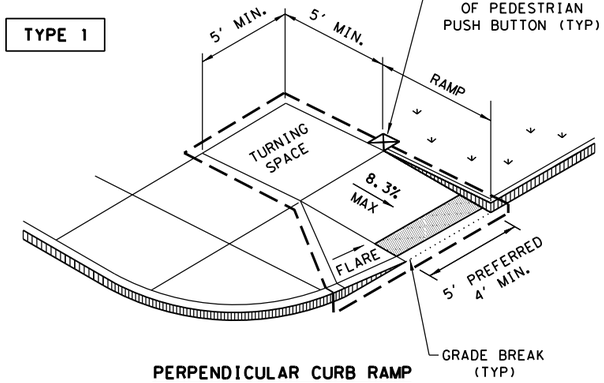
CCCG-22

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

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

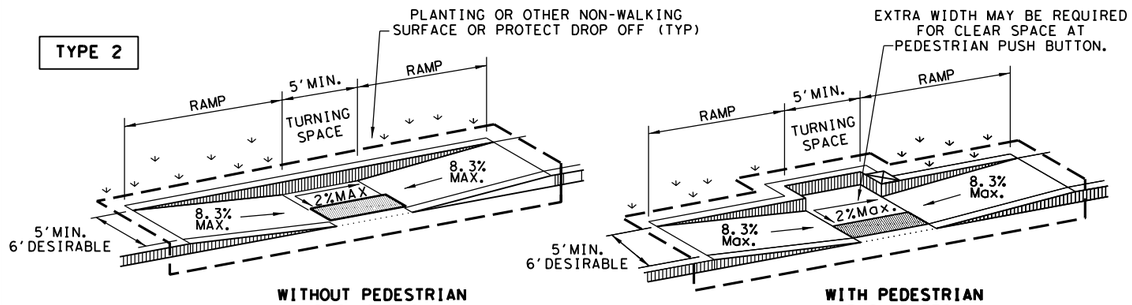
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

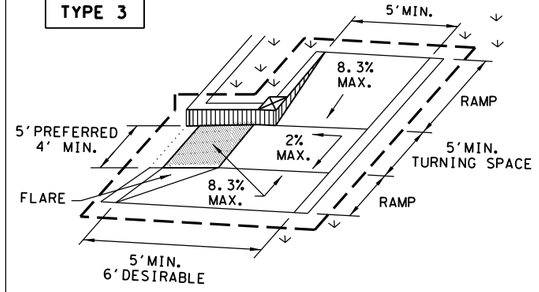


WITHOUT PEDESTRIAN PUSH BUTTON

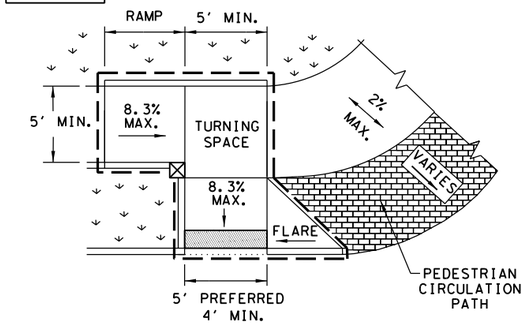
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

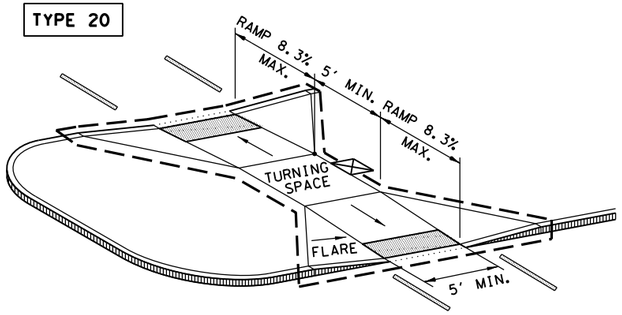


TYPE 6



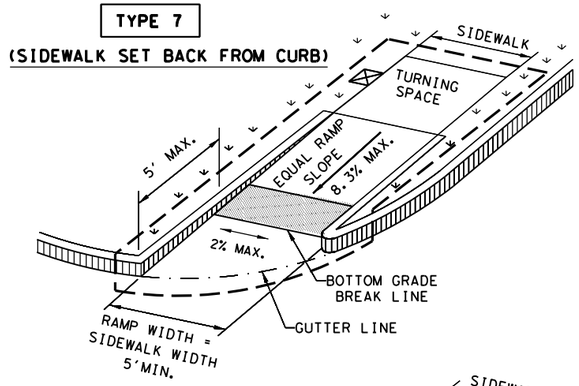
COMBINATION CURB RAMPS

TYPE 20

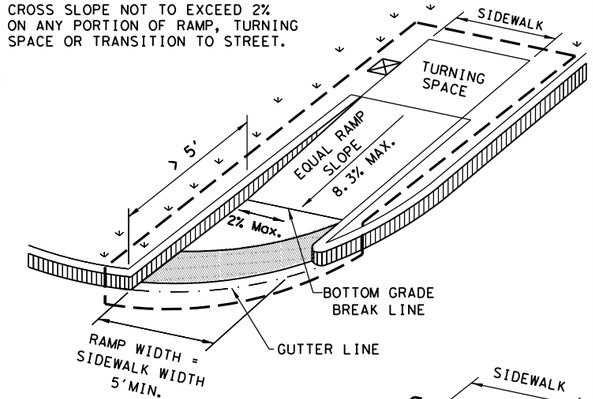


CURB RAMPS AT MEDIAN ISLANDS

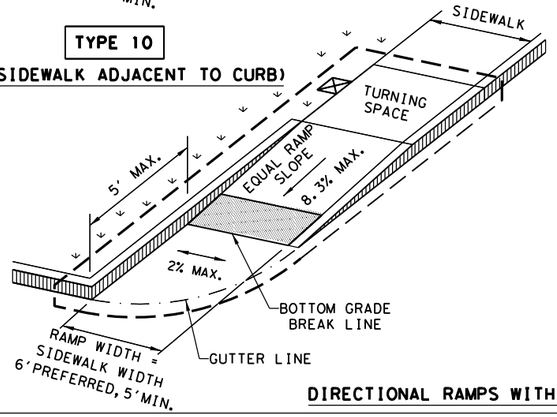
TYPE 7
(SIDEWALK SET BACK FROM CURB)



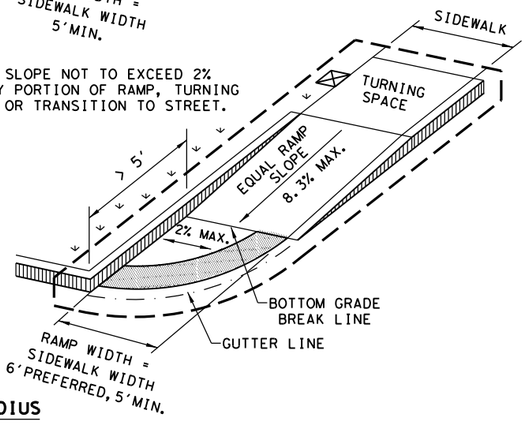
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

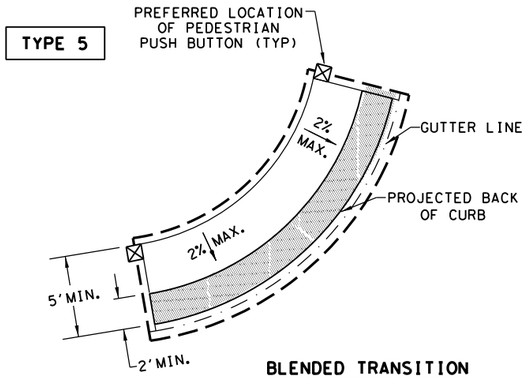


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

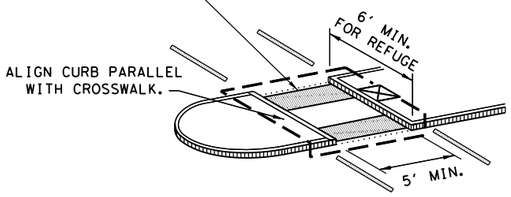
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

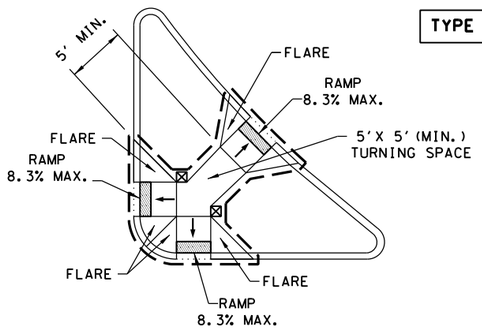
TYPE 21

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.



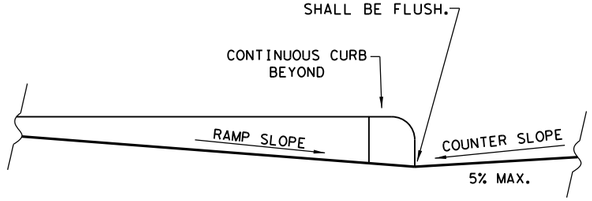
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.

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

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

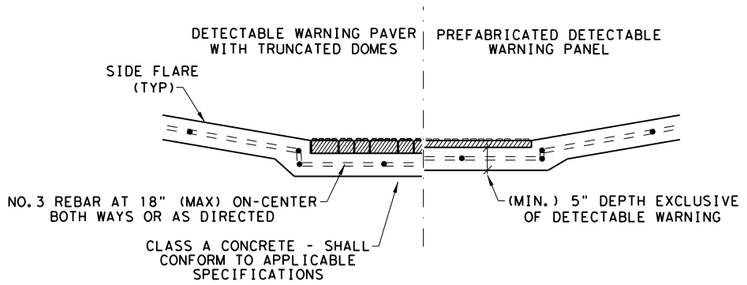
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

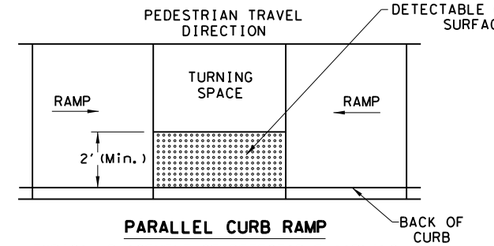
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

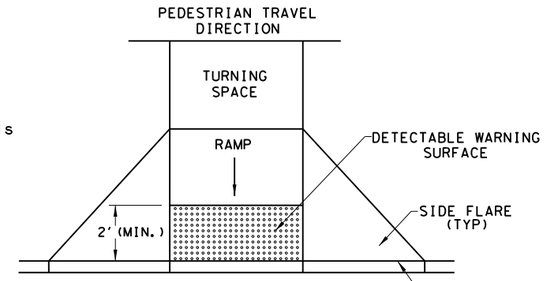


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

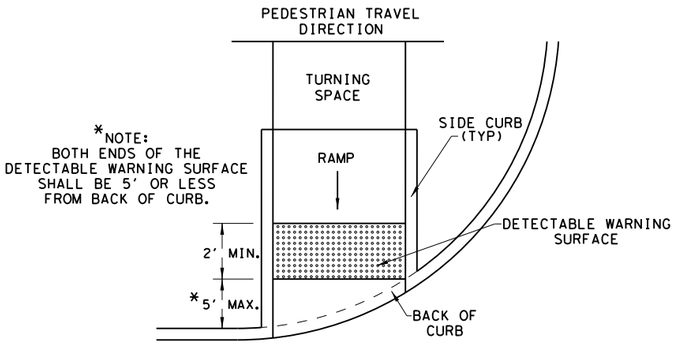
DETECTABLE WARNING SURFACE DETAILS



PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

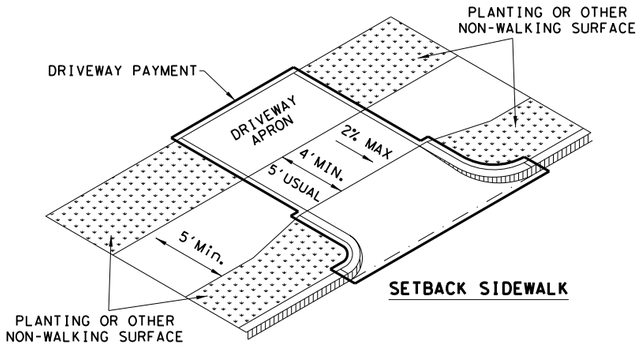
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
REVISED 08,2005	DIST	COUNTY			SHEET NO.
REVISED 06,2012					
REVISED 01,2018					

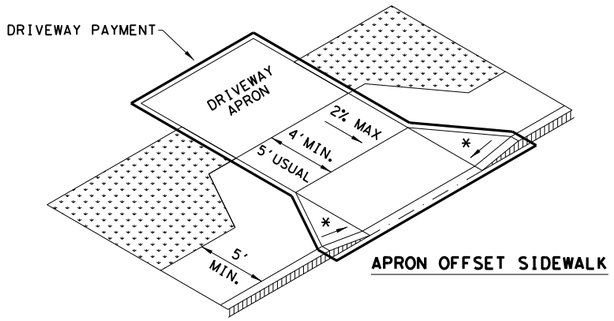
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

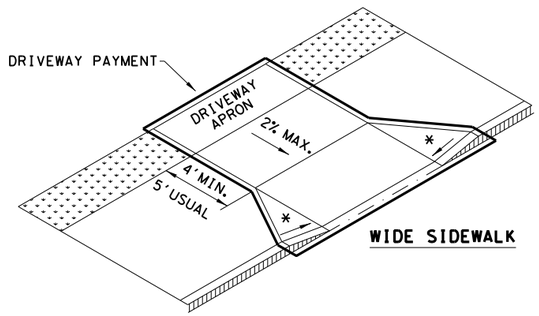
SIDEWALK TREATMENT AT DRIVEWAYS



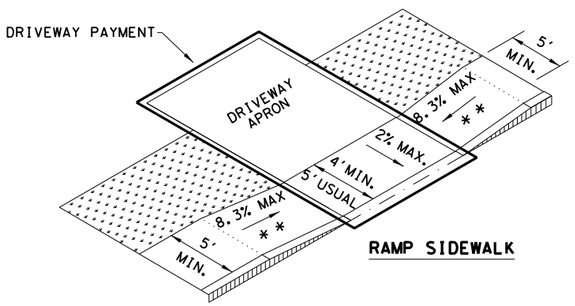
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

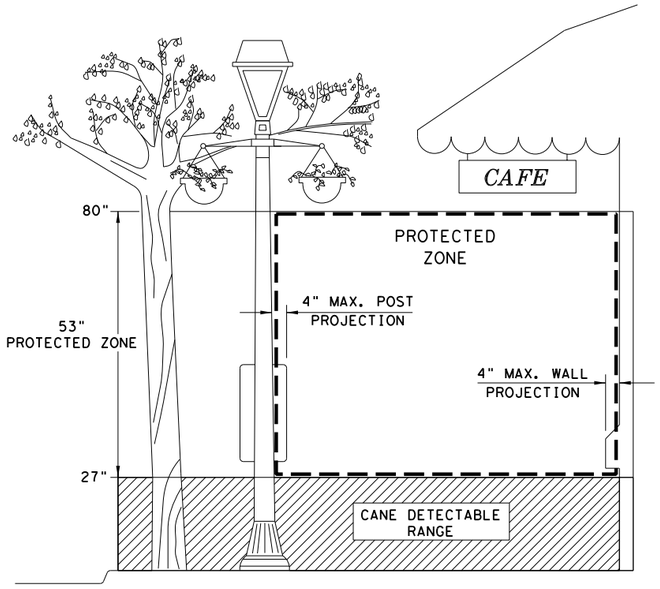


RAMP SIDEWALK

NOTES:

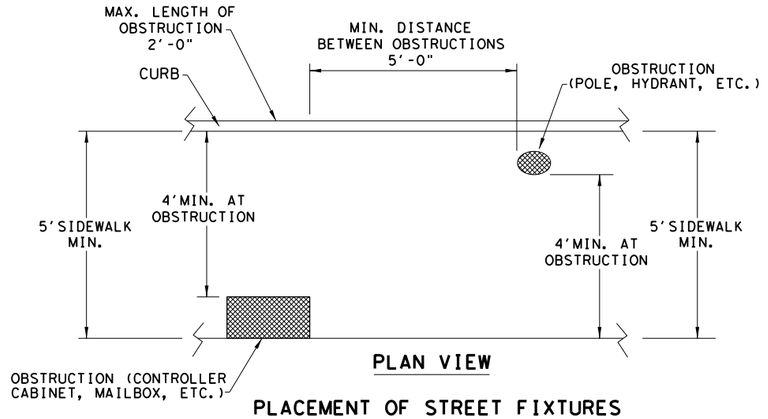
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * 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

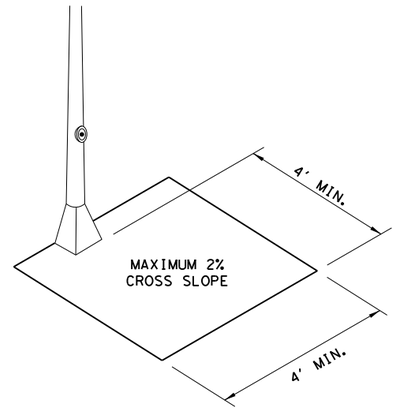
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



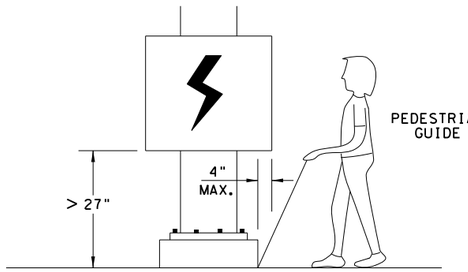
PLAN VIEW

PLACEMENT OF STREET FIXTURES

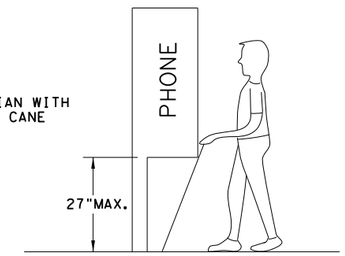
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

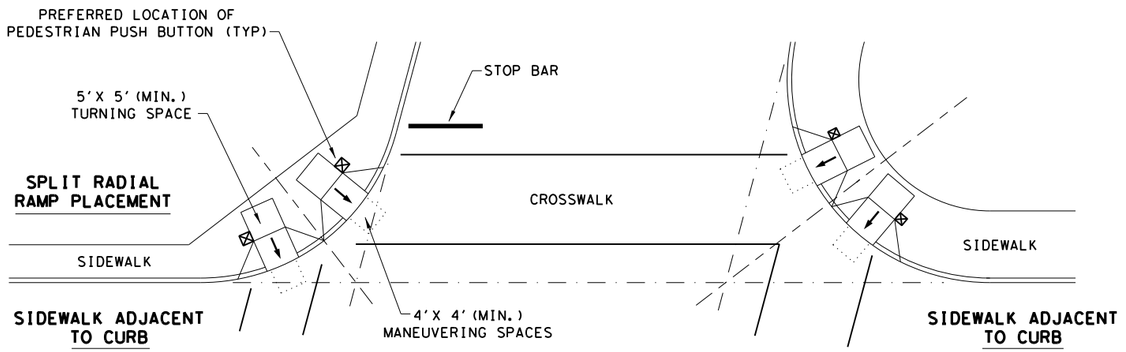
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				
REVISED 01,2018				

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

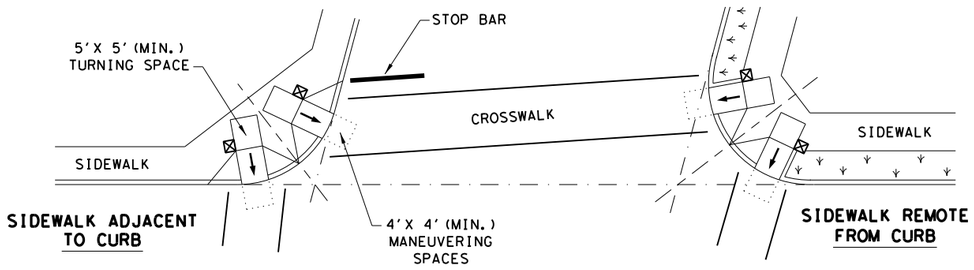
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

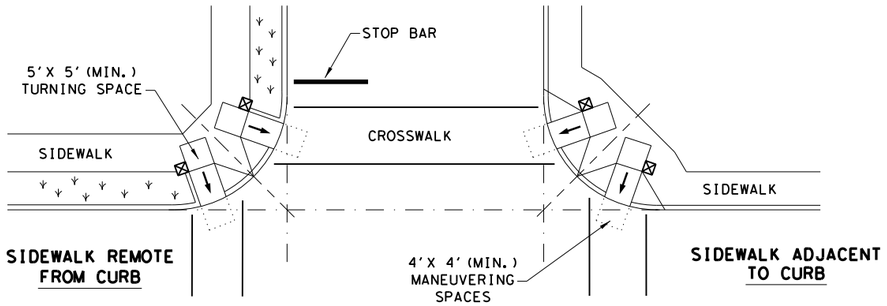
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



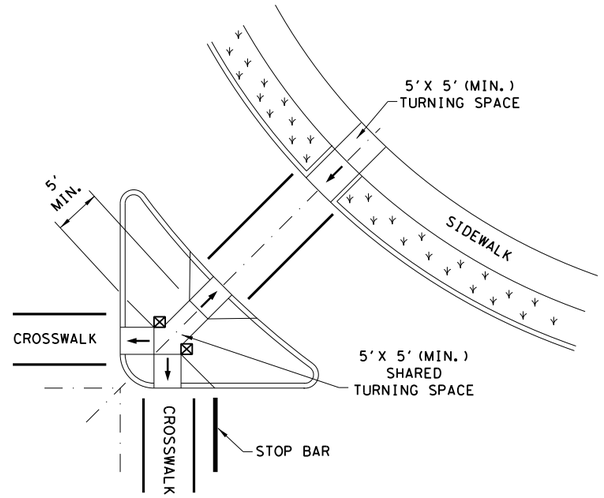
SKEWED INTERSECTION WITH "LARGE" RADIUS



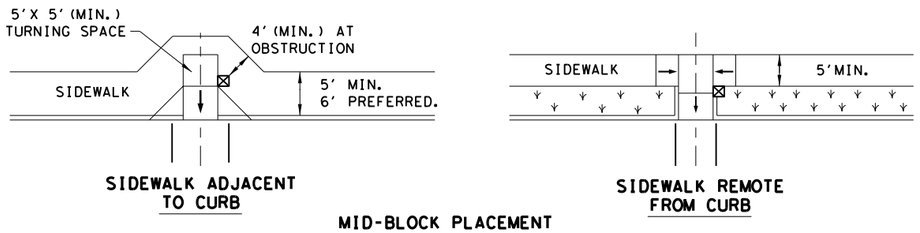
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

Texas Department of Transportation

Design Division Standard

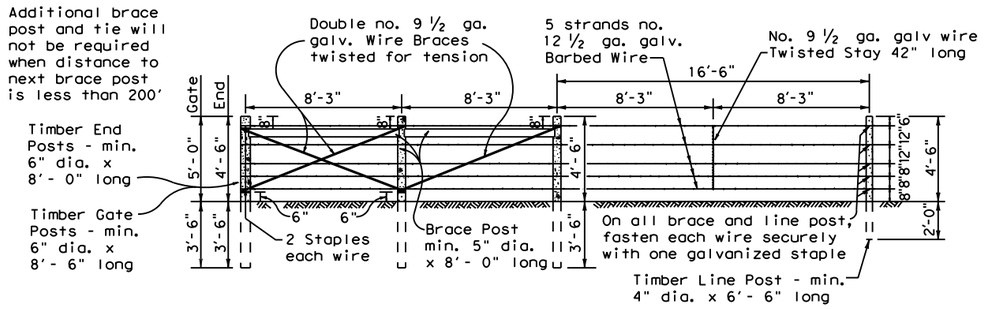
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

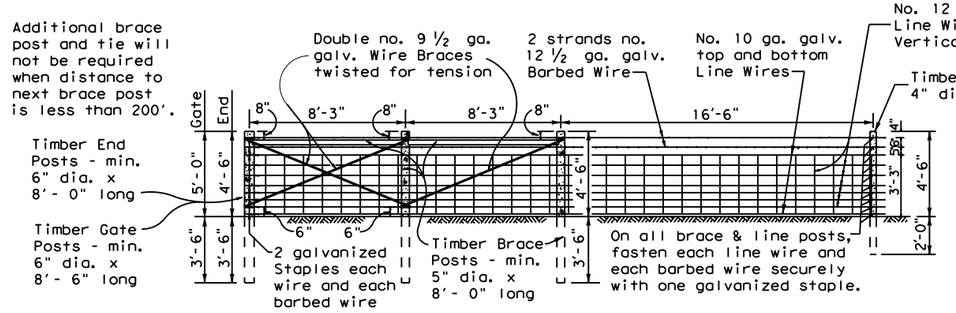
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.

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

DATE:
FILE:



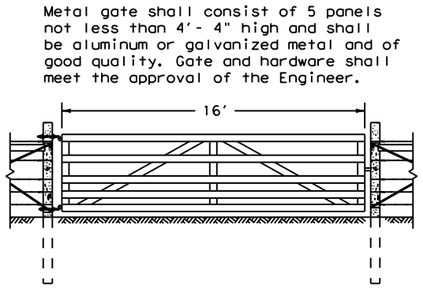
SECTION GALVANIZED BARBED WIRE FENCE WITH WOOD POSTS
Bracing Detail Used at Ends and Gates
TYPE "A" FENCE
(See General Note 6)



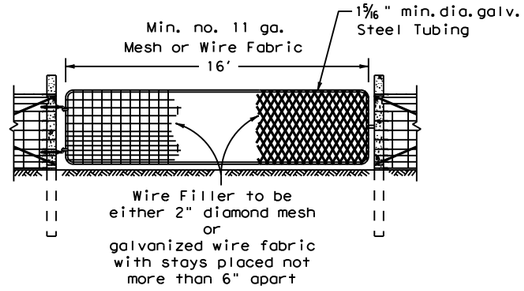
SECTION GALVANIZED WOVEN WIRE FENCE WITH WOOD POSTS
Bracing Detail Used at Ends and Gates
TYPE "B" FENCE
(See General Note 6)

TABLE OF EQUIVALENT SIZES FOR OPTIONAL SHAPE

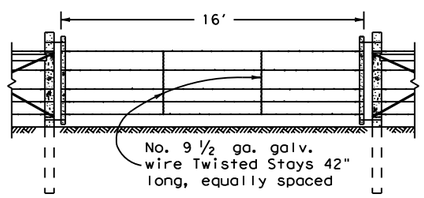
Minimum Diameter of Round Post (Inches)	Minimum Equivalent Dimension for Each Side of Square Post (Inches)
4	3 ½
5	4 ½
6	5 ¼



DETAIL TYPE 1 GATE



DETAIL TYPE 2 GATE

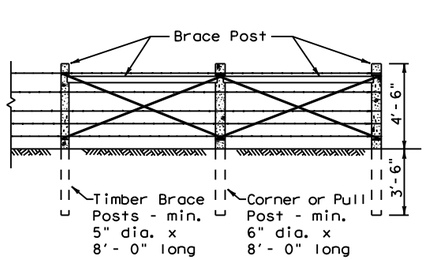


DETAIL TYPE 3 GATE

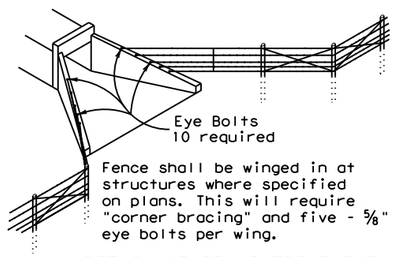
GENERAL NOTES

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.

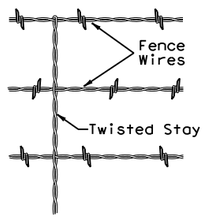
   Woven Wire Fence (Type B) shall be in accordance with ASTM A 116 (Class 1) No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
7. The location of gates and corner posts will be as indicated elsewhere on these plans.
8. Square wood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



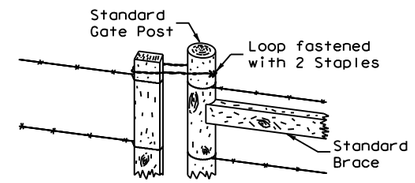
CORNER OR PULL POST ASSEMBLY



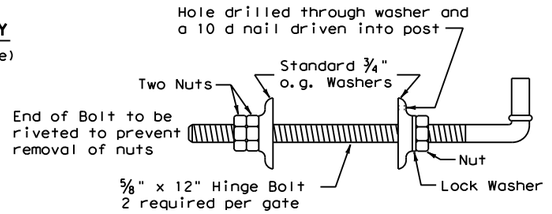
DETAIL OF FENCE TREATMENT AT STRUCTURES



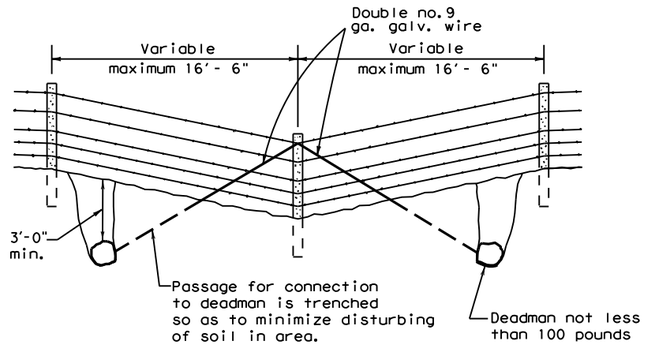
DETAIL OF STAY
(Barbed wire fence)



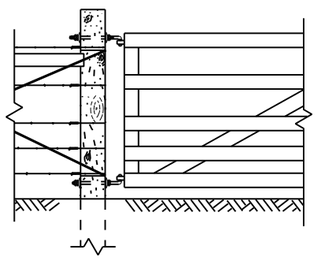
DETAIL FASTENER TYPE 3 GATE



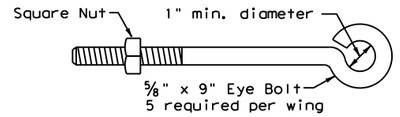
DETAIL OF GATE HINGE BOLT ASSEMBLY



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

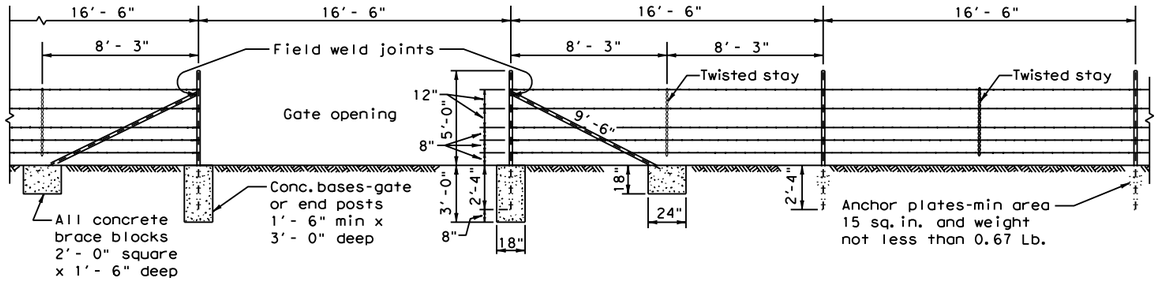
Design Division Standard

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.

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

DATE:
FILE:



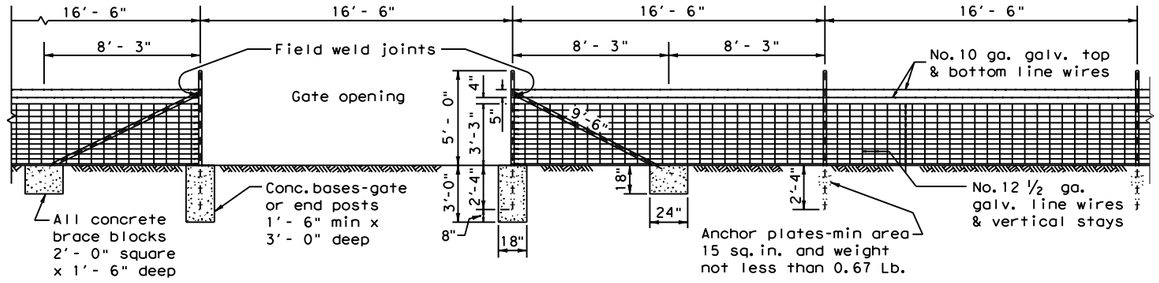
SECTION GALVANIZED BARBED WIRE FENCE WITH METAL POSTS

BRACING DETAIL USED AT ENDS AND GATES

TYPE "C" FENCE

(See General Note 8)

Note:
For Steel pipe and T-Post requirements. (See General Notes 6 & 7)

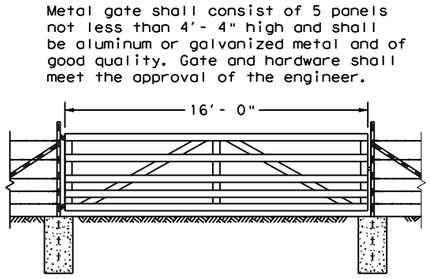


SECTION GALVANIZED WOVEN WIRE FENCE WITH METAL POSTS

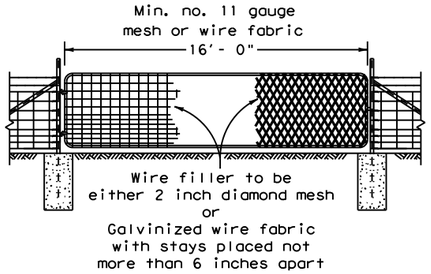
BRACING DETAIL USED AT ENDS AND GATES

TYPE "D" FENCE

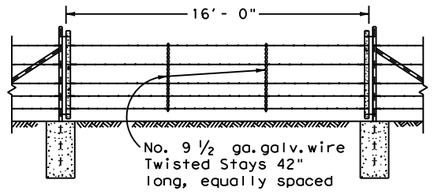
(See General Note 8)



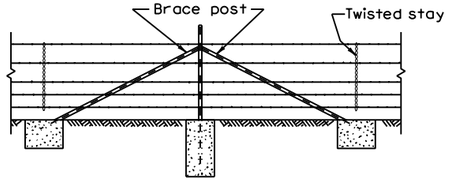
DETAIL TYPE 1 GATE



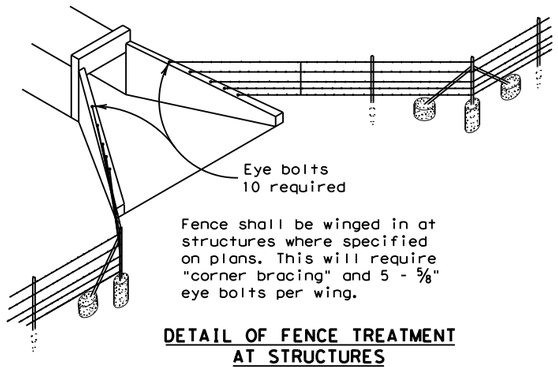
DETAIL TYPE 2 GATE



DETAIL TYPE 3 GATE

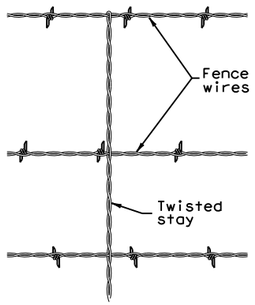


CORNER OR PULL POST ASSEMBLY

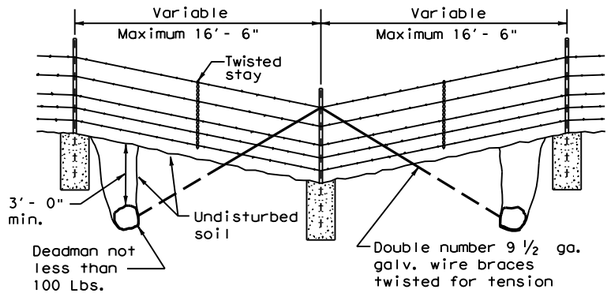


Fence shall be winged in at structures where specified on plans. This will require "corner bracing" and 5 - ⅝" eye bolts per wing.

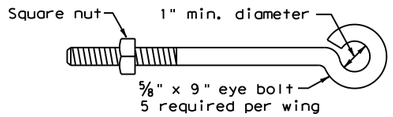
DETAIL OF FENCE TREATMENT AT STRUCTURES



DETAIL OF STAY
(Barbed Wire Fence)



DETAIL OF FENCE SAG



DETAIL OF EYE BOLT

GENERAL NOTES

1. Any high point which interferes with the placing of wire mesh shall be excavated to provide a 2 inch clearance.
2. Latches for Type 1 and Type 2 gates shall be good commercial quality and design latch of the spring, fork or chain type. All latches shall be suitable to the gate and shall be approved by the Engineer.
3. Hinges for Type 2 gates shall be a 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. Steel anchor plates shall be of a design and thickness sufficient to prevent turning of the post in firm soil.
6. Steel pipe end posts, corner and pull posts shall be a minimum of 2" Std. pipe (2.375" O.D., 0.154" wall thickness) with a 1¼" Std. pipe brace (1.660" O.D., 0.140" wall thickness), with a 2"x2"x1/4" angle, or other as approved by the Engineer. Fasteners for securing barbed wire or woven wire fence to metal posts shall be a minimum of 11 gauge galvanized steel wire. Tubular posts shall be fitted with water malleable iron caps.
7. If Steel pipe is used for posts and braces, use standard pipe in accordance with ASTM A 53, Class B or A 501. For T-Posts use steel that meets ASTM A 702. Metal line posts shall be not less than 6'-6" in length and shall weigh not less than (1.33 lbs./lin.ft.). These Items shall be in accordance with Item 552, "Wire Fence."
8. 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 D) 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.
9. The location of gates and corner posts will be as indicated elsewhere in these plans.

Texas Department of Transportation

Design Division Standard

BARBED WIRE AND WOVEN WIRE FENCE (STEEL POSTS)

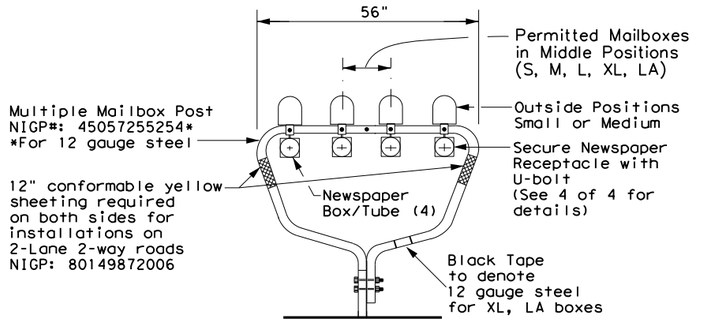
WF(2)-10

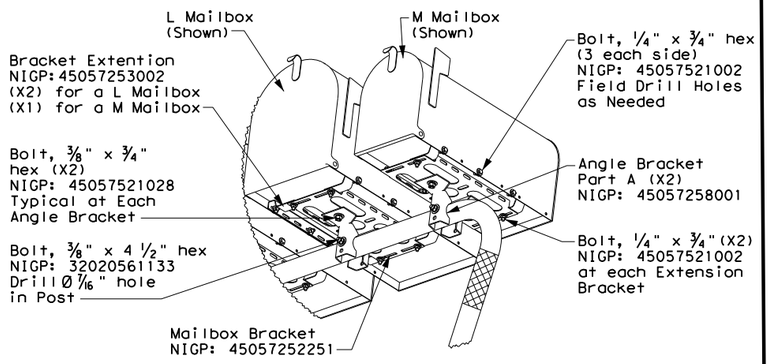
FILE: wf210.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT 1996	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

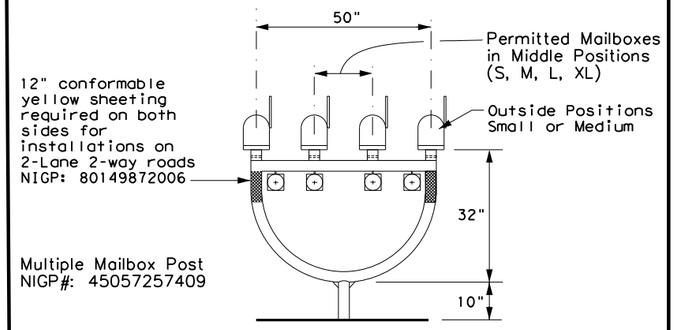
DATE:
FILE:

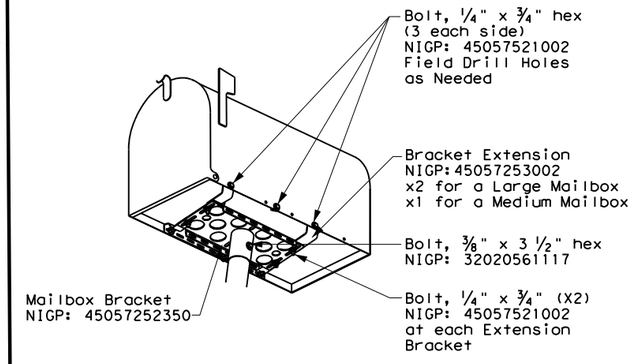
TYPE 1 - MULTIPLE





TYPE 4 - MULTIPLE





MAILBOX SIZES

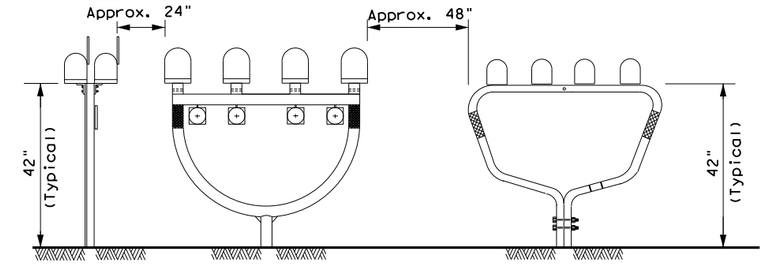
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

GENERAL NOTES:

1. Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
2. Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

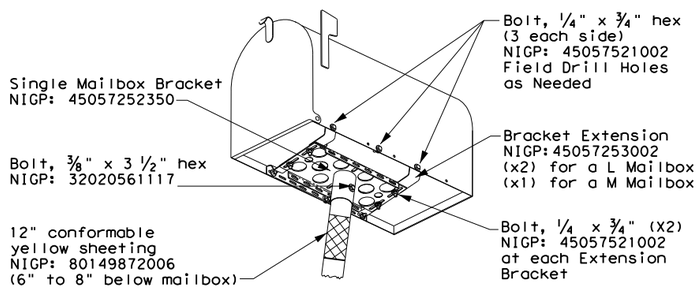
TYPICAL INSTALLATION MEASUREMENTS

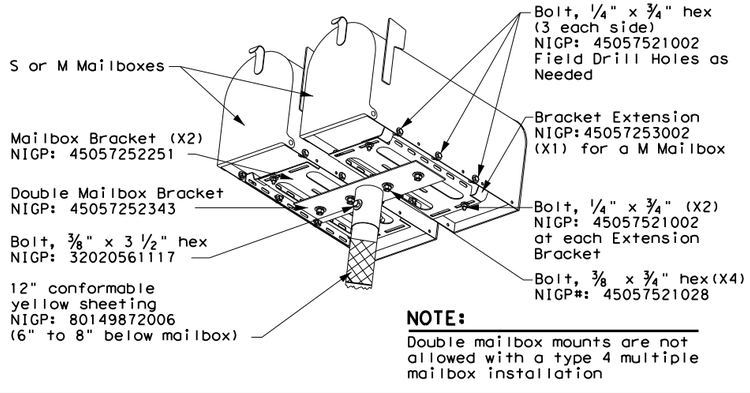


NOTE:

Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

TYPE 2 and 4 - SINGLE/DOUBLE

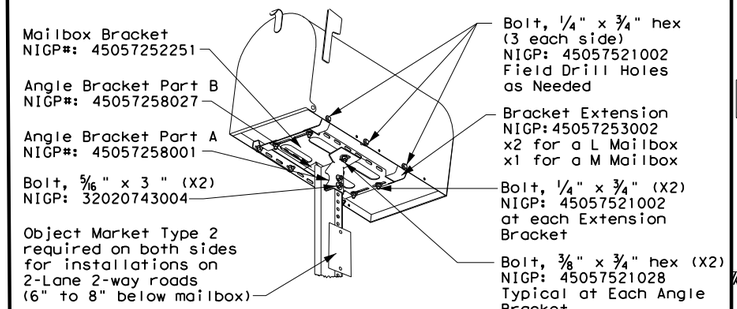


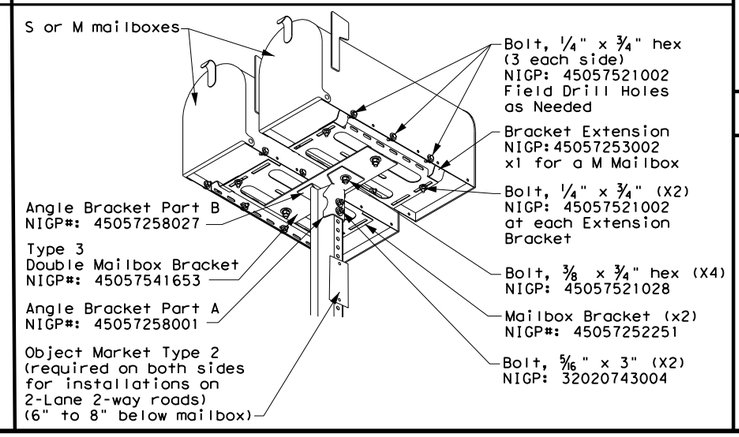


NOTE:

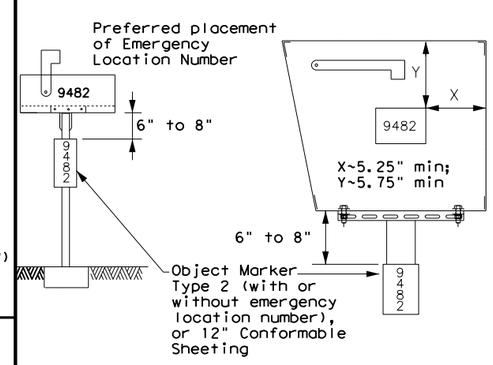
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

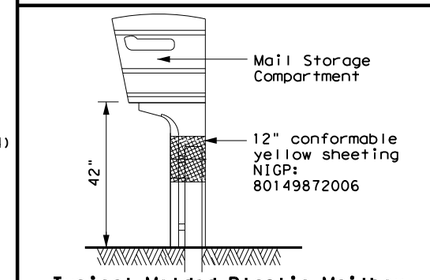


NOTES:

1. Location numbers are provided by homeowner. Minimum size 1" height.
2. Location number is typically placed on the mailbox in a contrasting color.
3. Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
4. Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
5. See 3 of 4 for Foundation details.
6. See 4 of 4 for Hardware details.

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation

Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

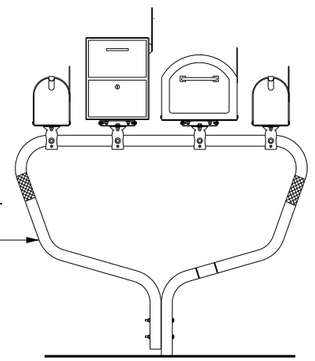
MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	DIST	COUNTY		SHEET NO.

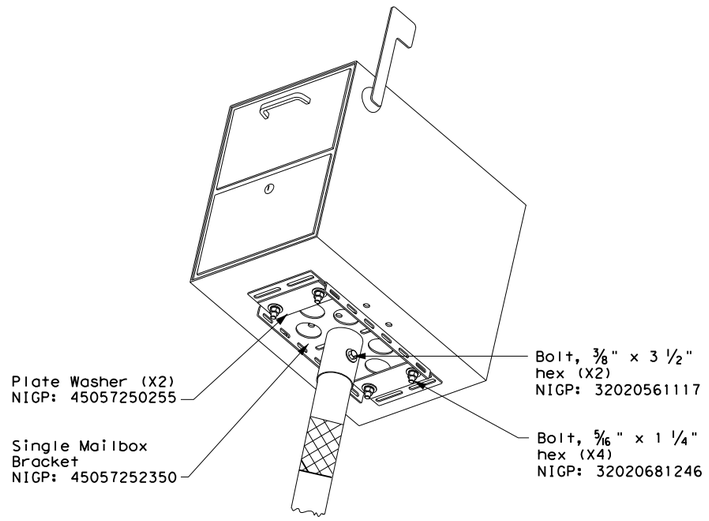
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

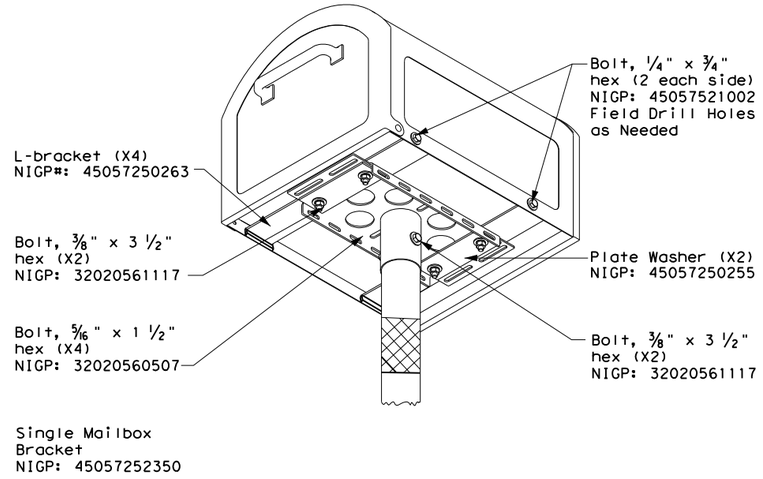
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

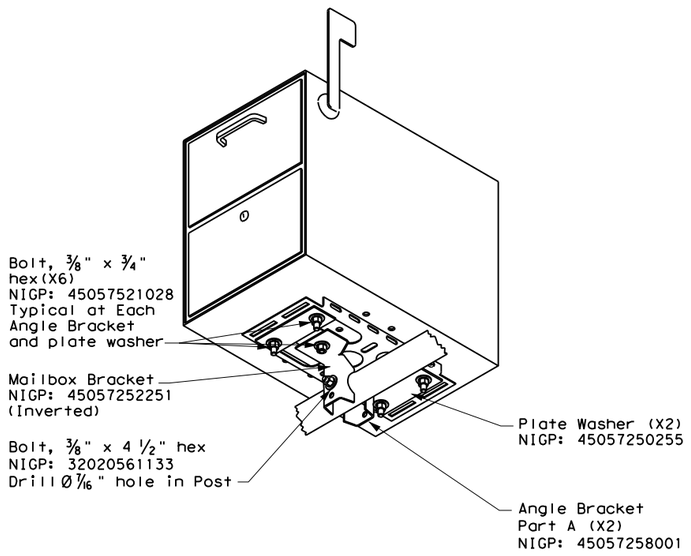


TYPE 2/4 - SINGLE XL MAILBOX

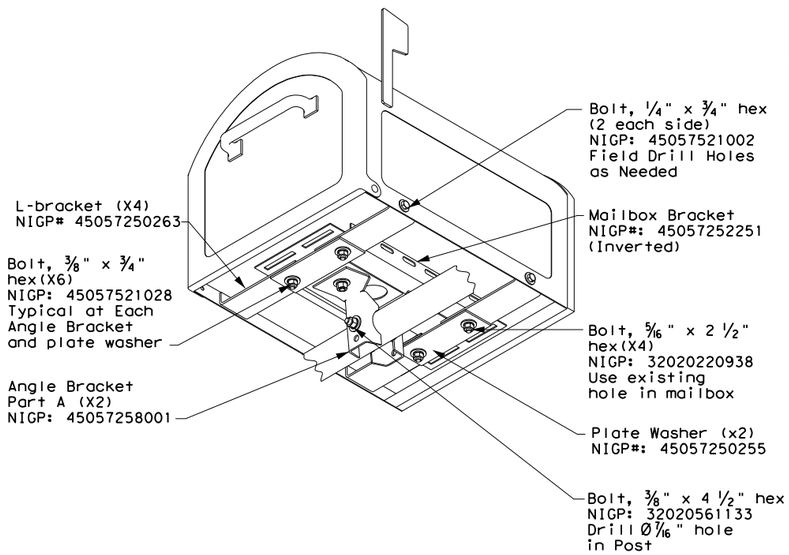


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

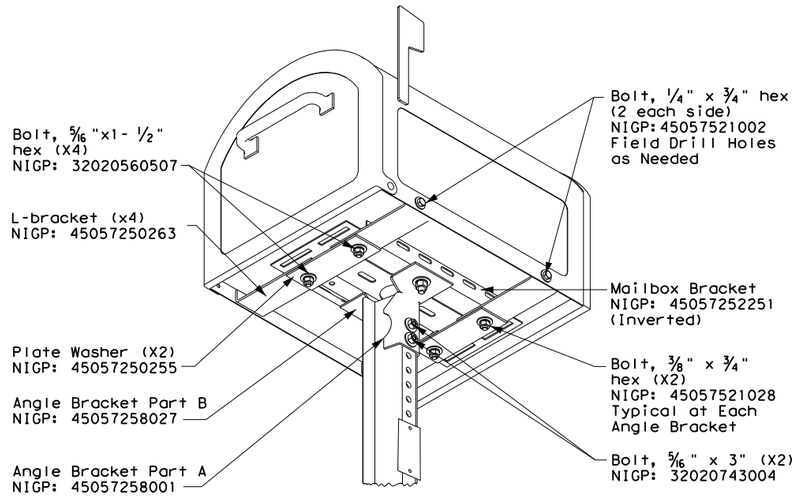
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation

Maintenance Division Standard

XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

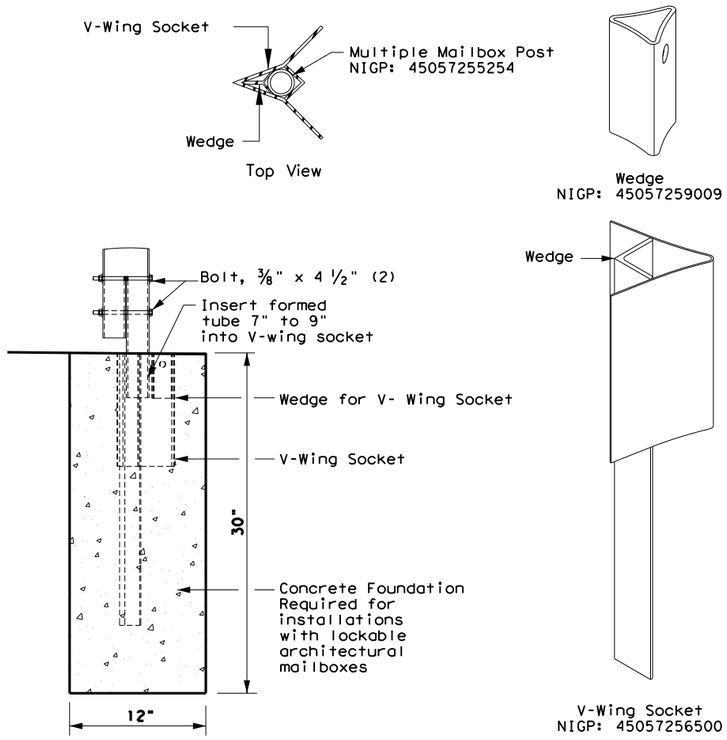
FILE: MB-21.dgn		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
© TxDOT March 2004		CONT	SECT	JOB		HIGHWAY	
REVISIONS							
2/2005	11/2009 4/2015	DIST	COUNTY			SHEET NO.	
6/2005	1/2011						
11/2006	7/2014						

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

DATE:
FILE:

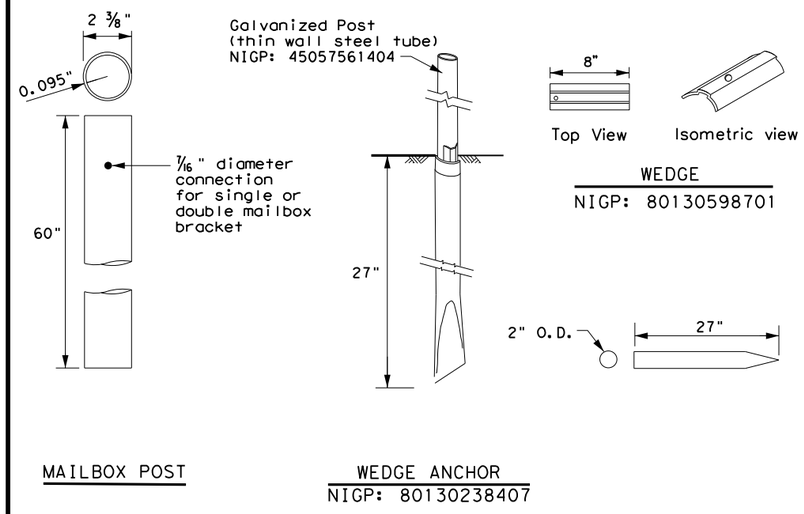
TYPE 1 - SUPPORT/FOUNDATION

Thin Wall Tube w/ V-LOC Anchorage



TYPE 2 - SUPPORT/FOUNDATION

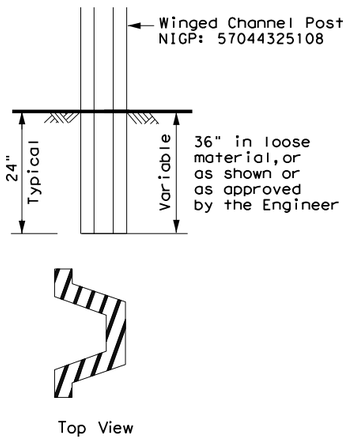
Thin Wall Steel Tube w/Wedge Anchor System



MAILBOX POST

WEDGE ANCHOR
NIGP: 80130238407

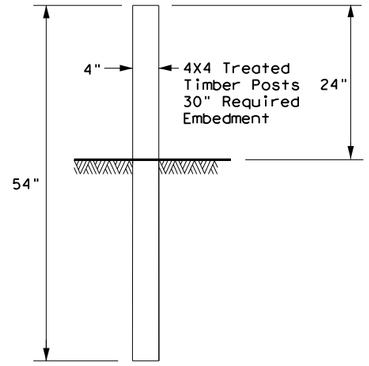
TYPE 3 - SUPPORT/FOUNDATION



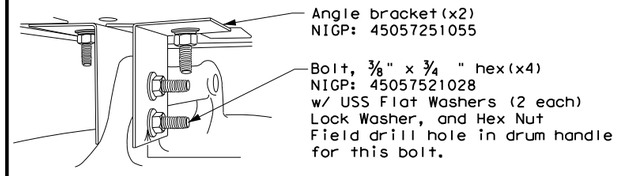
NOTES:

1. Attach Object Marker(OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT



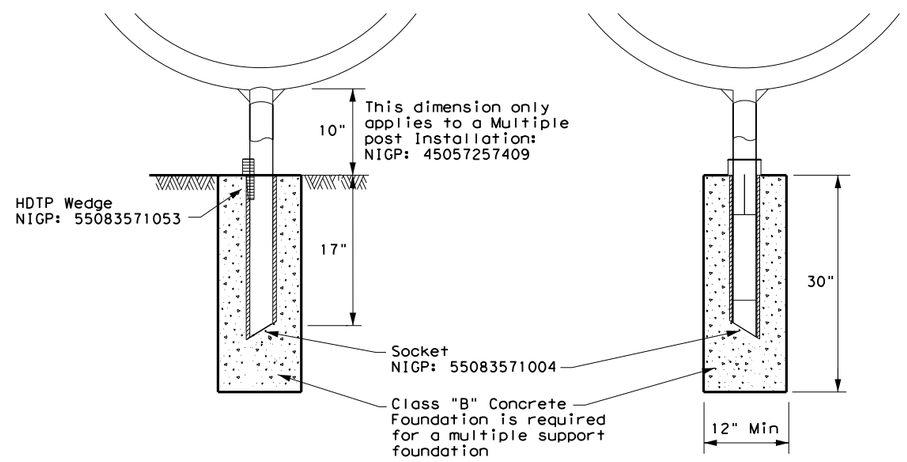
Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

NOTES:

1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

TYPE 4 - SUPPORT/FOUNDATION

Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



GENERAL NOTES:

1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition, only on Type 1, Type 2, and Type 4

SHEET 3 OF 4

Texas Department of Transportation

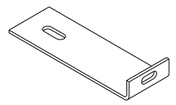
Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

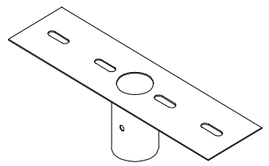
MB(3)-21

FILE: MB-21.dgn	DN:	CK:	DW:	CK:
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	DIST	COUNTY		SHEET NO.

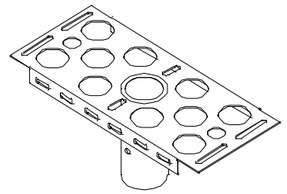
TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL	Molded Plastic	S, or M
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)	4x4 Timber	Construction Barrel
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket forXL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252343 (Double Mount Bracket) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	None	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete	None	None



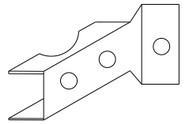
NIGP: 45057250263
L-Bracket x4 for
XL sized mailboxes



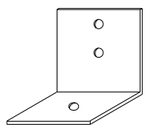
NIGP: 45057252343
Double Mailbox Bracket
For Type 2 and Type 4
double mount



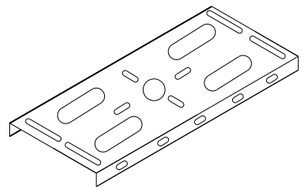
NIGP: 45057252350
Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



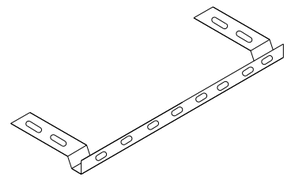
NIGP: 45057258001
Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



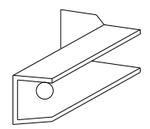
NIGP: 45057251055
Type 6 Angle Bracket
(2 per mailbox)



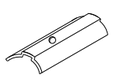
NIGP: 45057252251
Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



NIGP: 45057253002
Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



NIGP: 45057258027
Part "B" Angle Bracket
For Type 3 single
and double



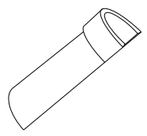
NIGP: 80130598701
Wedge for Type 2



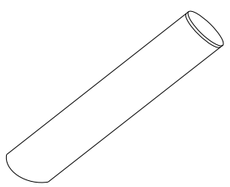
NIGP: 45057250255
Plate Washer for Architecural
and XL Mailboxes



NIGP: 45057541653
Type 3 double mailbox bracket



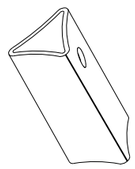
NIGP: 55083571053
Type 4 Mailbox Wedge



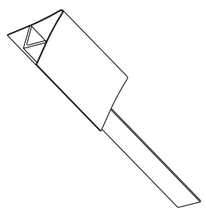
NIGP: 55083571004
Type 4 Mailbox Socket



NIGP: 80130238407
Type 2 Wedge Anchor



NIGP: 45057259009
Wedge for Type 1 V-wing Socket



NIGP: 45057256500
V-wing Socket for
Type 1 Foundation

NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

1. Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
2. A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS

MB-(X) ASSM TY (XXX) (X)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- MP = Molded Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

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

DATE:
FILE:

SHEET 4 OF 4

Texas Department of Transportation

Maintenance Division Standard

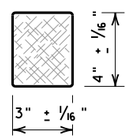
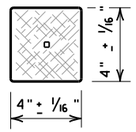
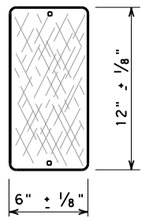
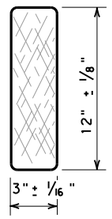
NIGP PARTS LIST AND COMPATIBILITY

MB(4)-21

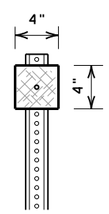
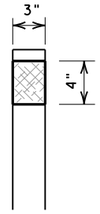
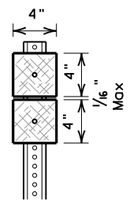
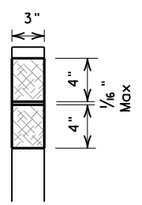
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	DIST	COUNTY		SHEET NO.

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.

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

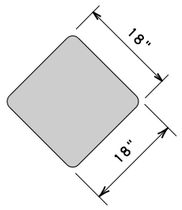
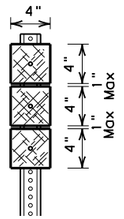
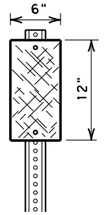
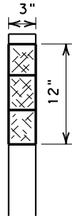
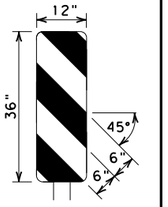
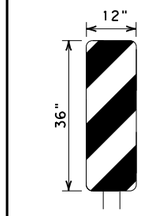
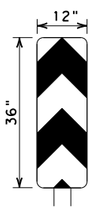
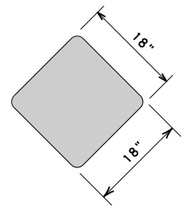
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

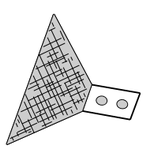
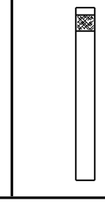
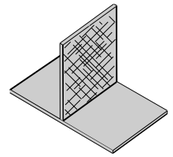
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

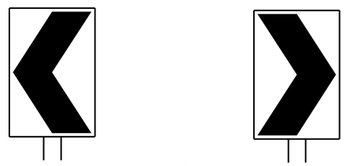
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

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

CHEVRONS

DEVICE

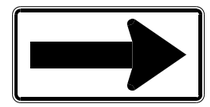


SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



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

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20				

20A

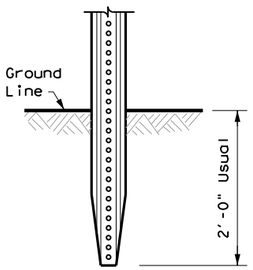
DATE:
FILE:

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

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

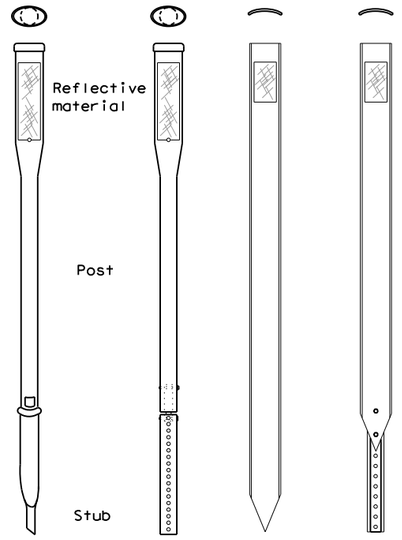


NOTES

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.

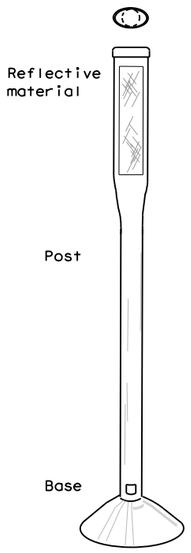
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



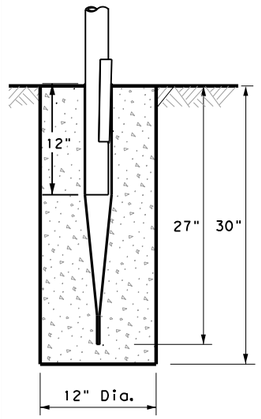
SURFACE MOUNT

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.

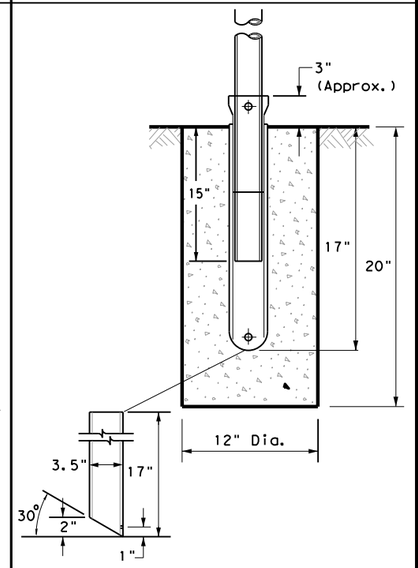
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

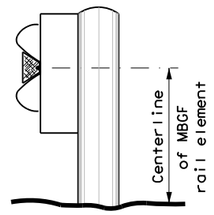
NOTE

1. Install per manufacturer's recommendations.

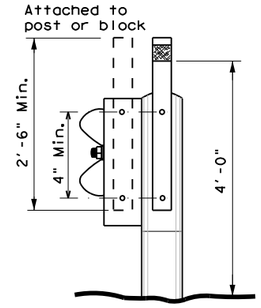
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

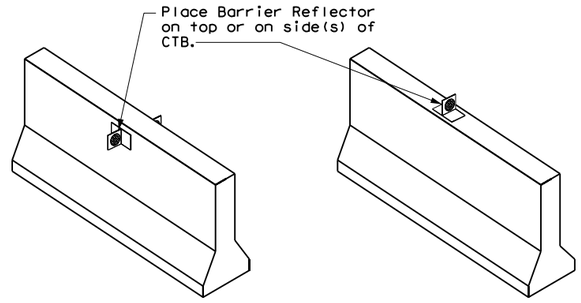
GF1



GF2



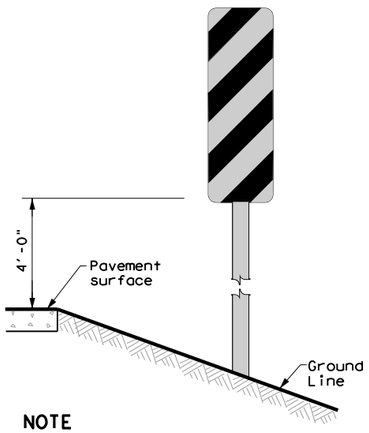
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

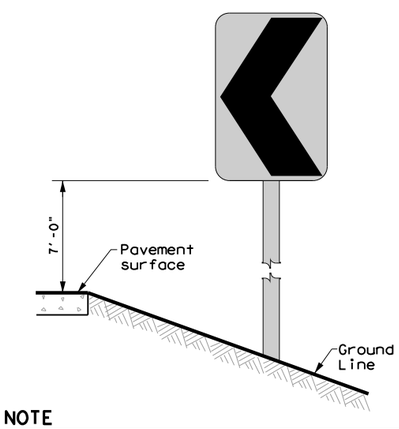
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

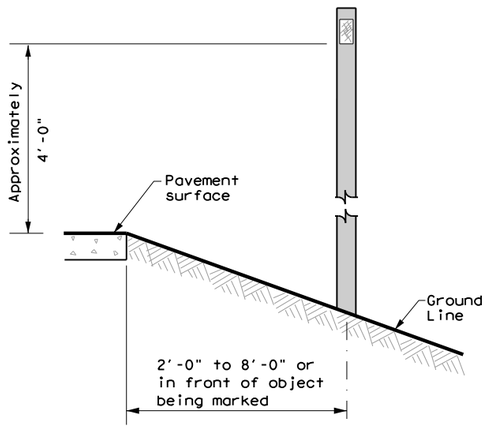
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20				

20B

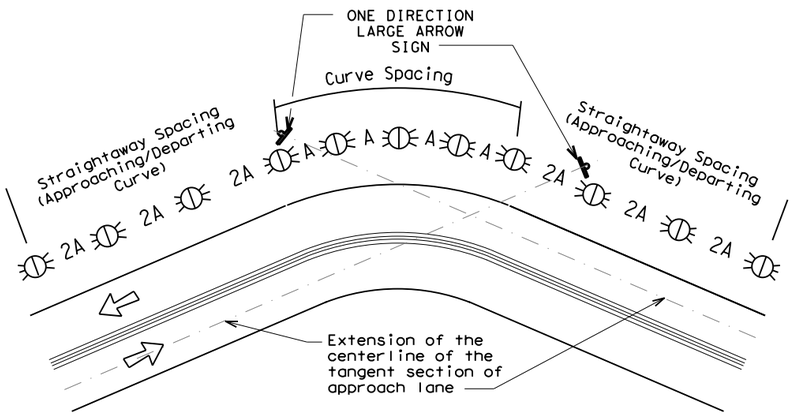
DATE:
FILE:

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

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

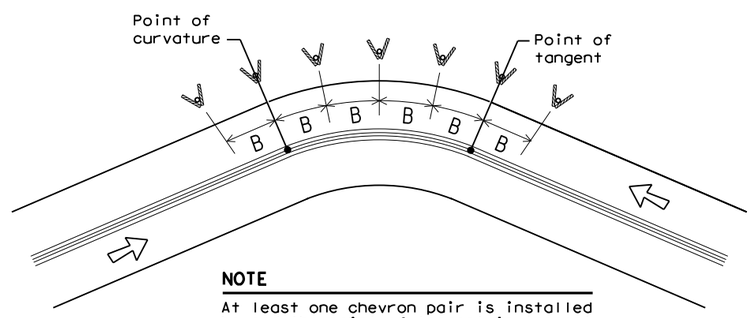
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

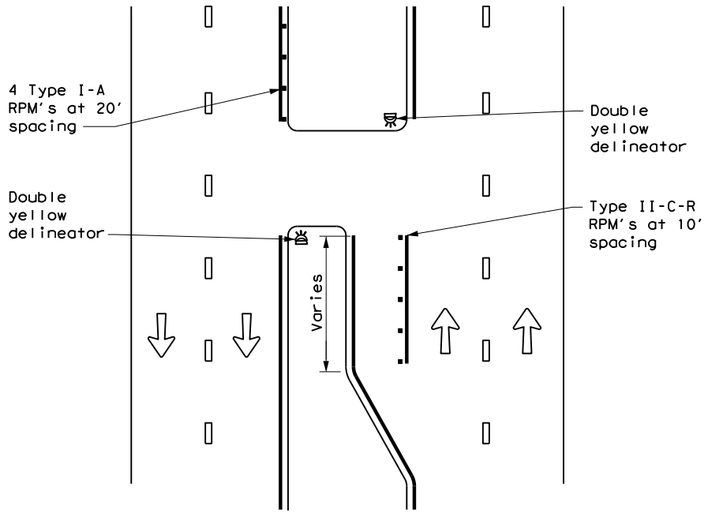
FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20				

20C

DATE:
FILE:

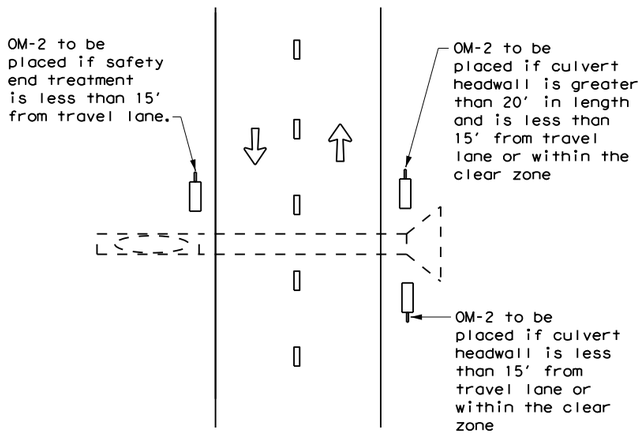
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

CROSSOVERS



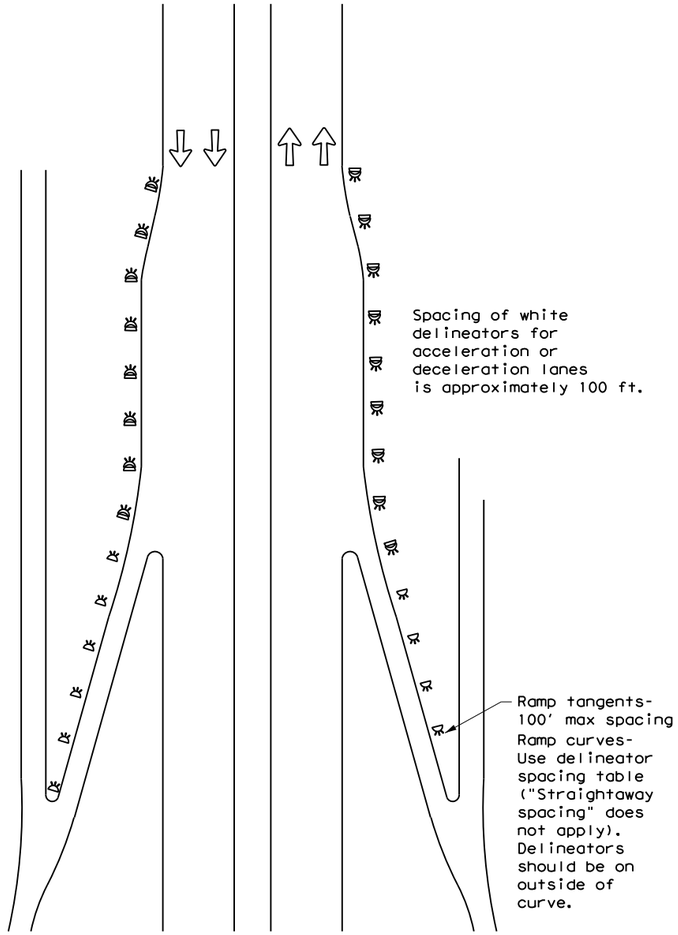
DETAIL 1

FOR CULVERTS WITHOUT MBGF



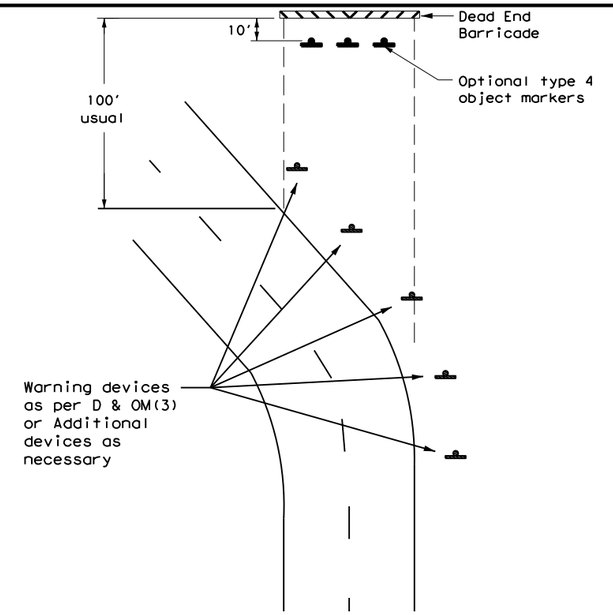
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



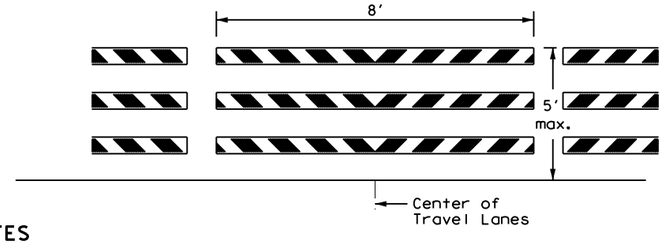
DETAIL 3

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

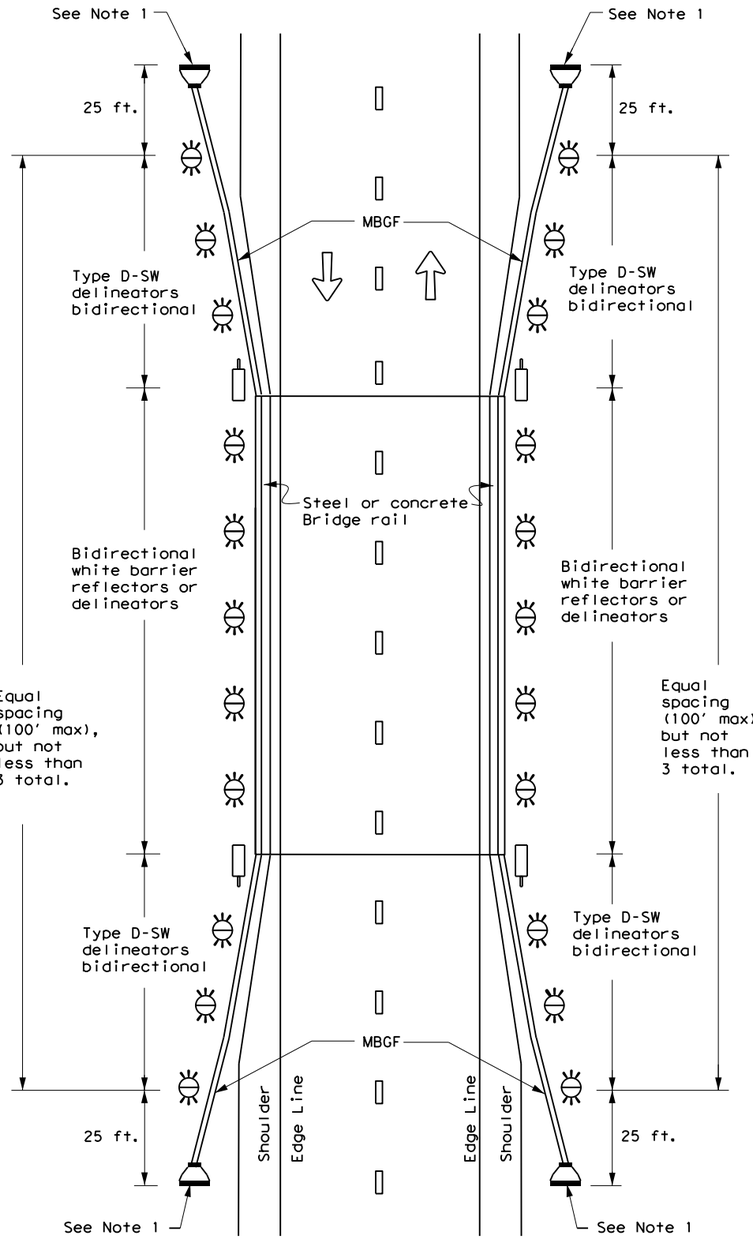
D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
3-15	DIST	COUNTY		SHEET NO.
7-20				

DATE:
FILE:

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

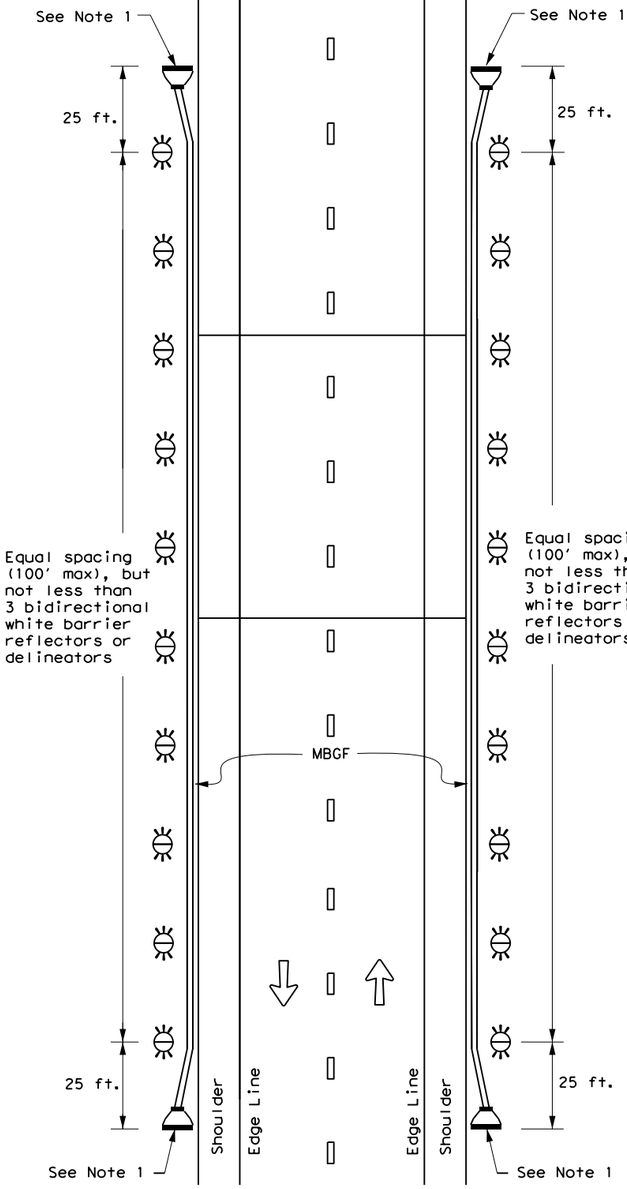
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

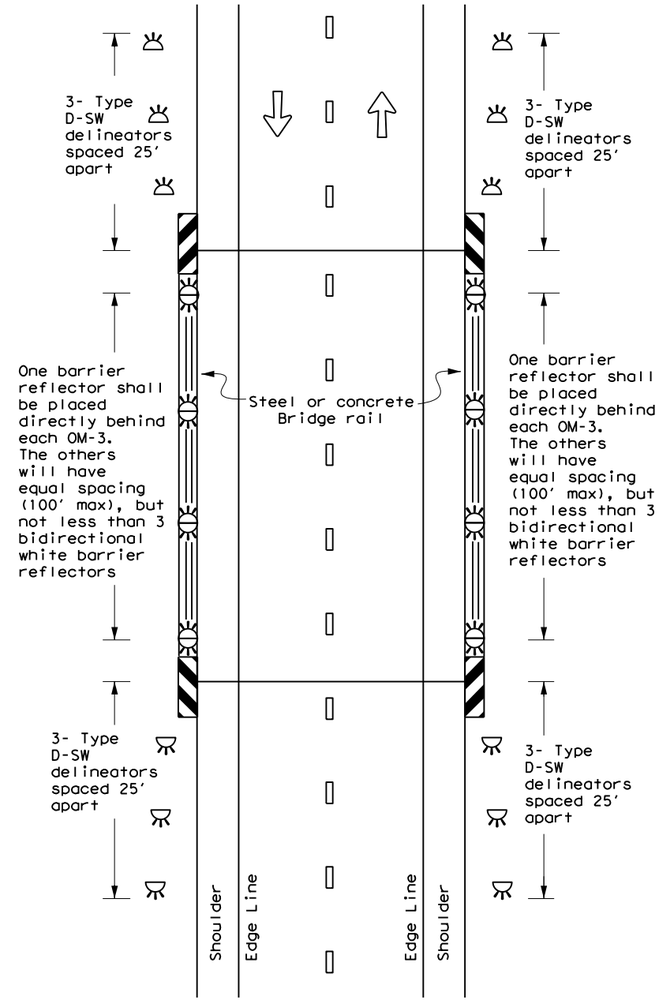
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 7-20	DIST	COUNTY		SHEET NO.

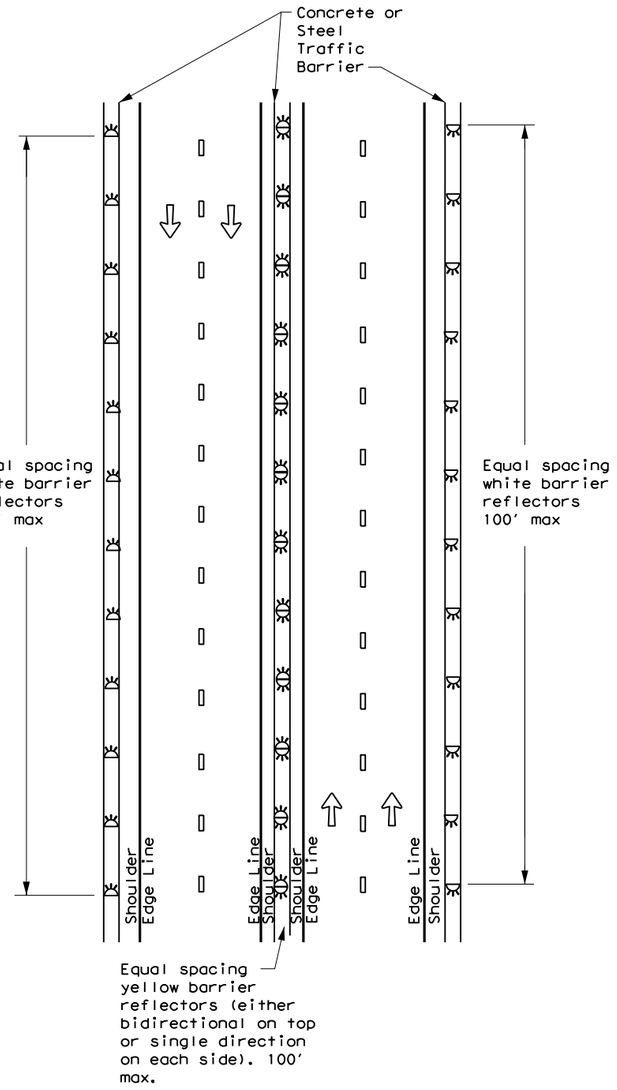
20E

DATE:
FILE:

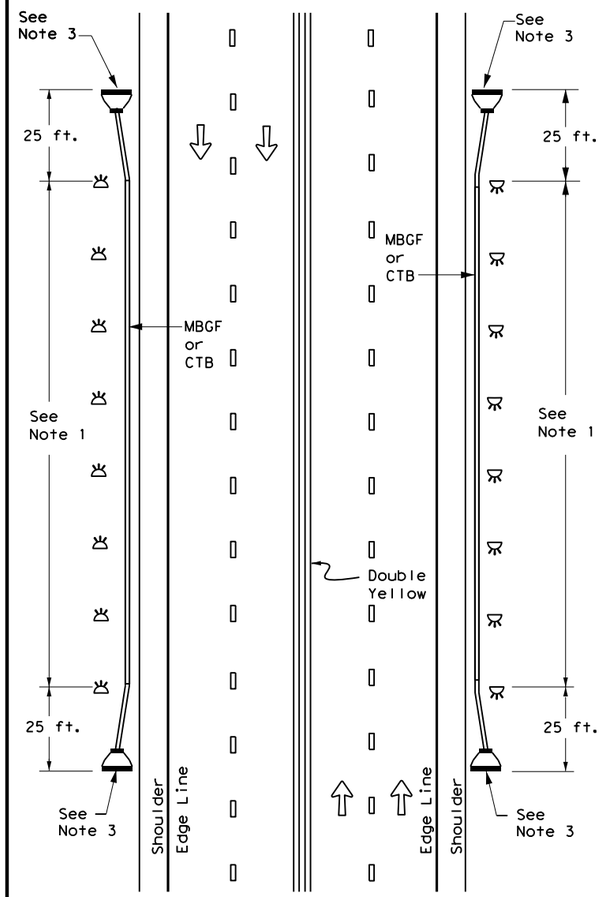
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

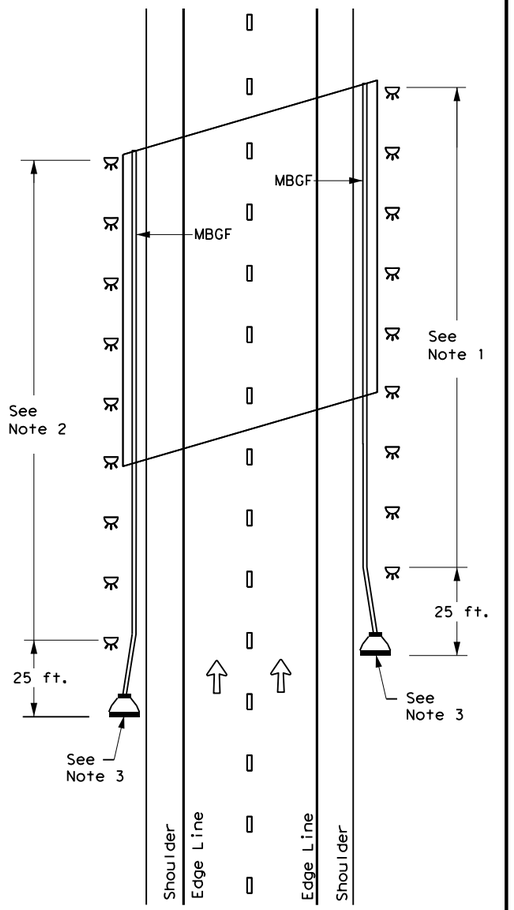
CONTINUOUS CONCRETE OR STEEL BARRIER



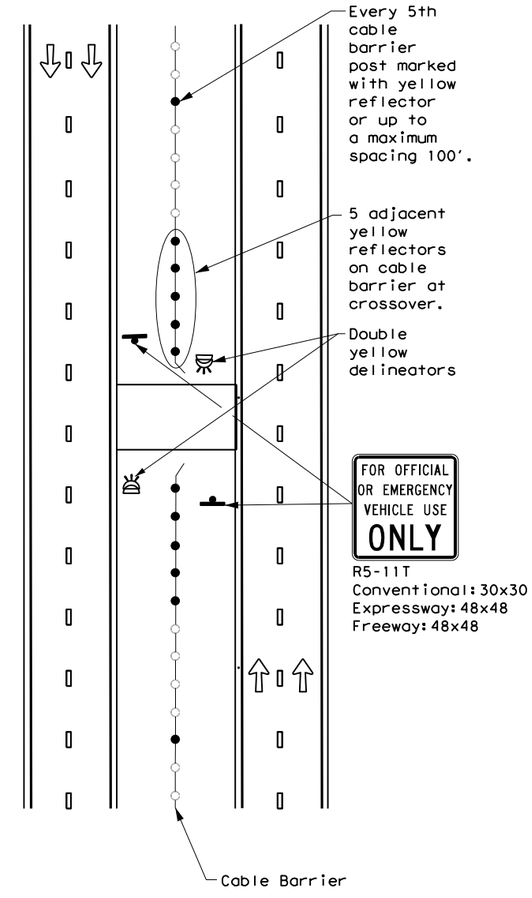
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100′ max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100′ max.)
2. Equal spacing (100′ max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3)in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

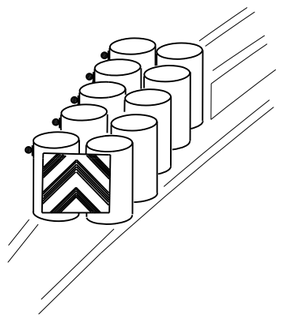
Traffic Safety Division Standard

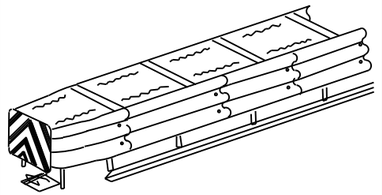
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

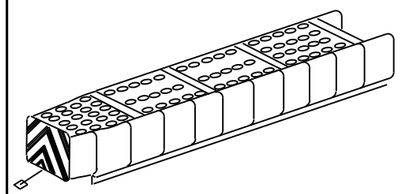
D & OM(6)-20

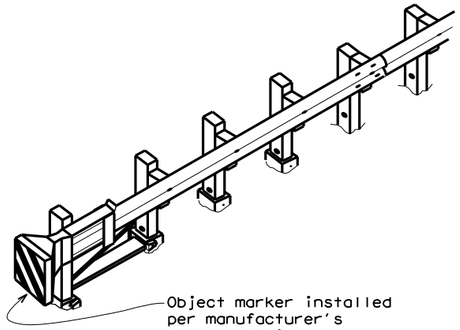
FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 7-20	DIST	COUNTY		SHEET NO.

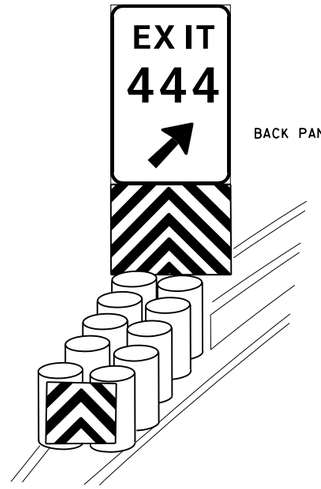
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

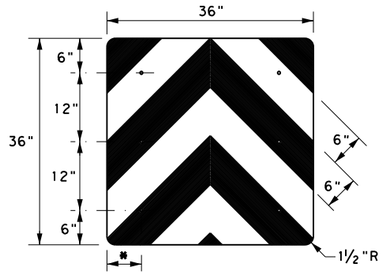


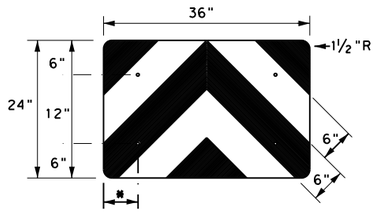




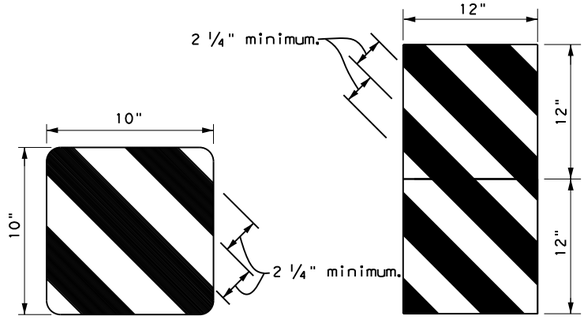




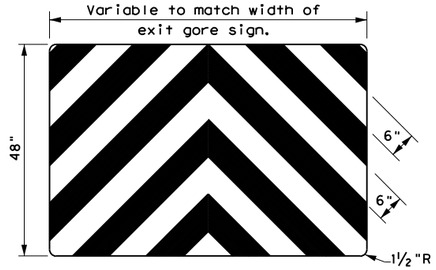


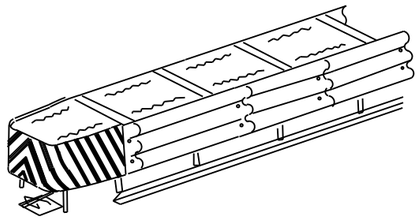


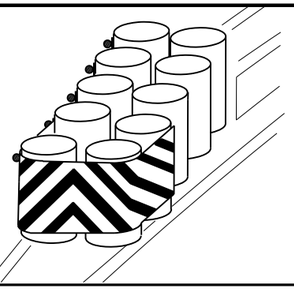
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

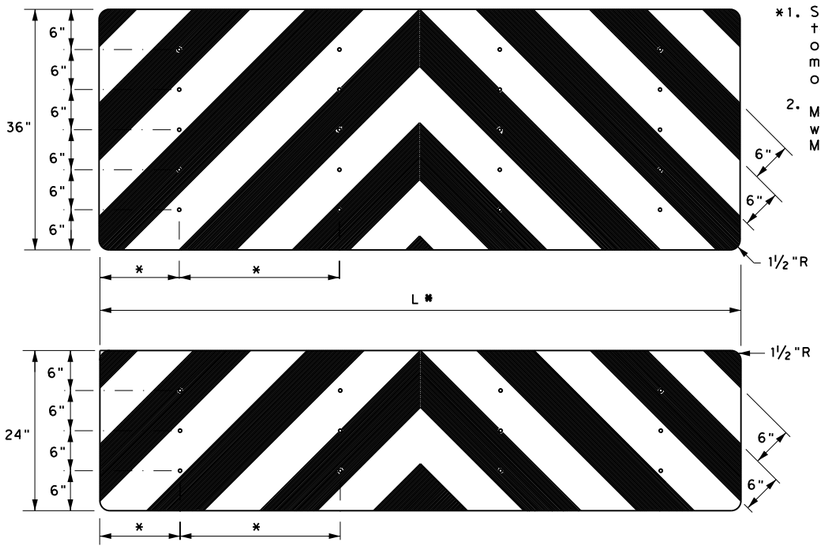


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

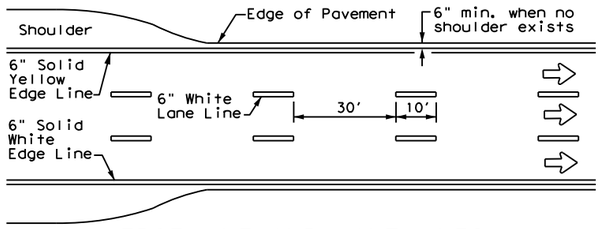
D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS				
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15				
4-98 7-20				

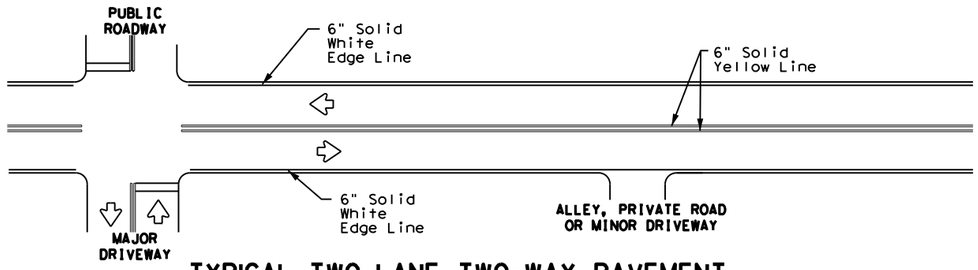
20G

DATE:
FILE:

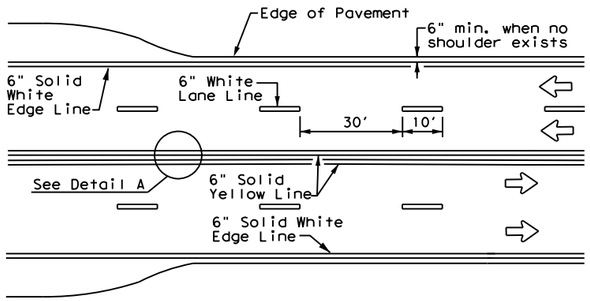
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

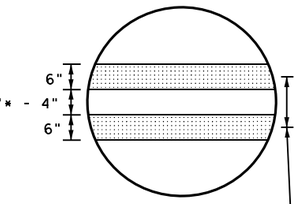


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





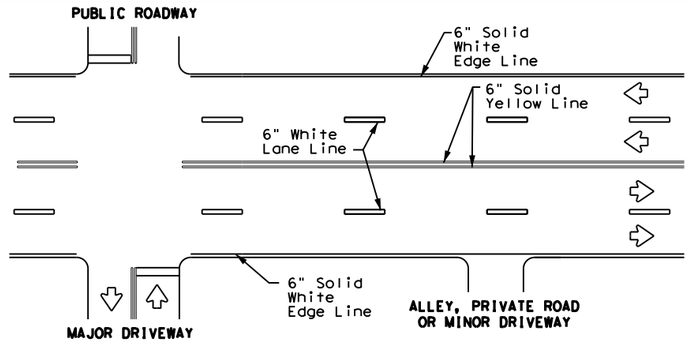
DETAIL "A"

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

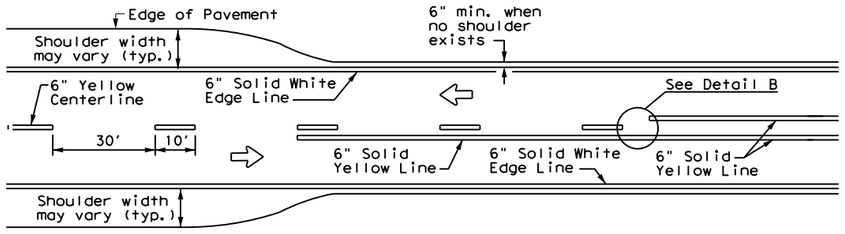
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

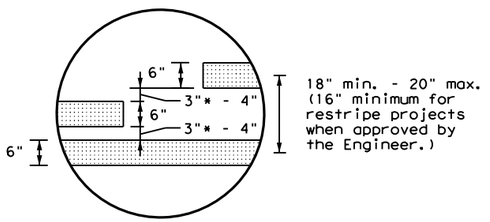
** 8" minimum for restripe projects when approved by the Engineer.



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

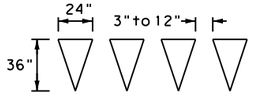


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



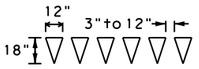
DETAIL "B"

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

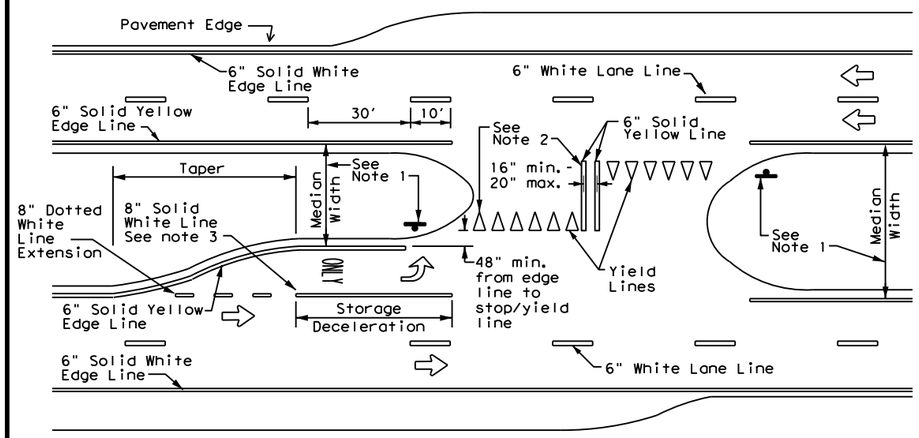


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

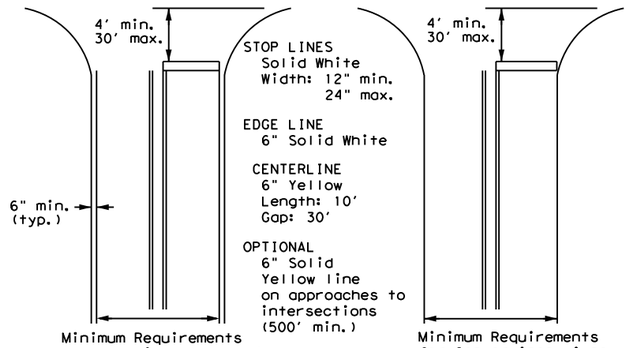
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

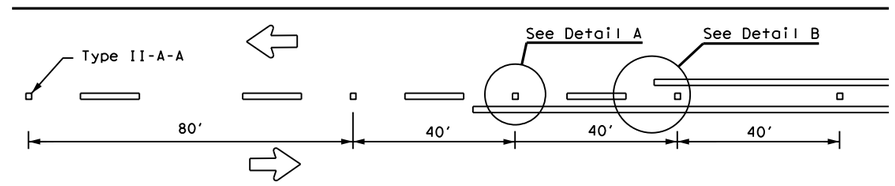
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 / 8-95 3-03 12-22 / 5-00 2-12	DIST	COUNTY		SHEET NO.

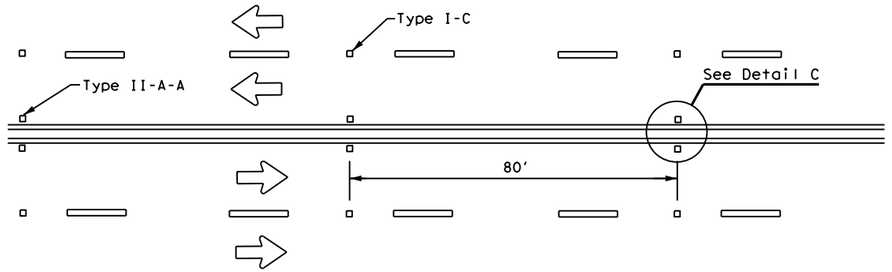
22A

DATE:
FILE:

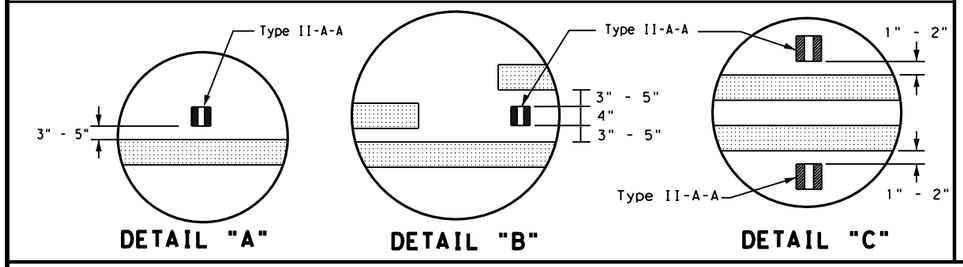
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

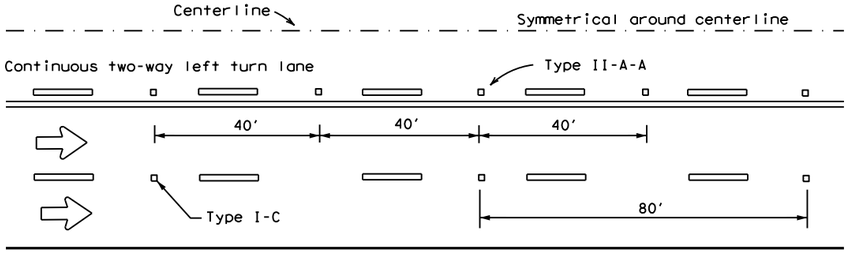


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

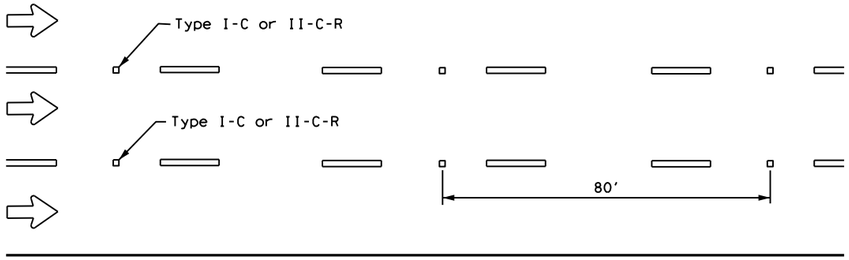


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





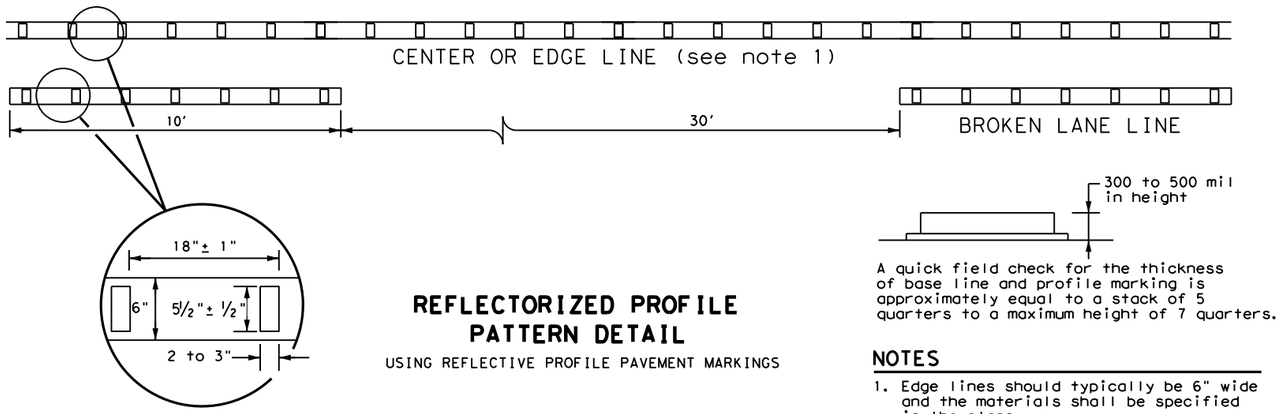
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

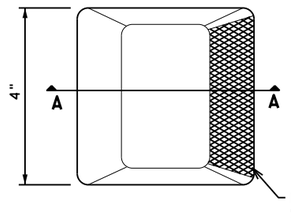
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

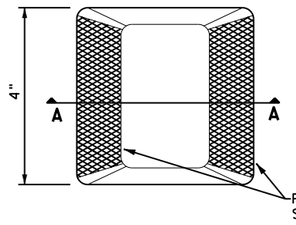
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements, the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians,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

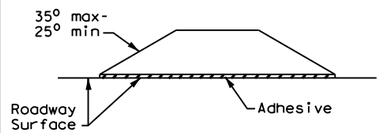
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



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 REFLECTORIZED PROFILE MARKINGS PM(2)-22

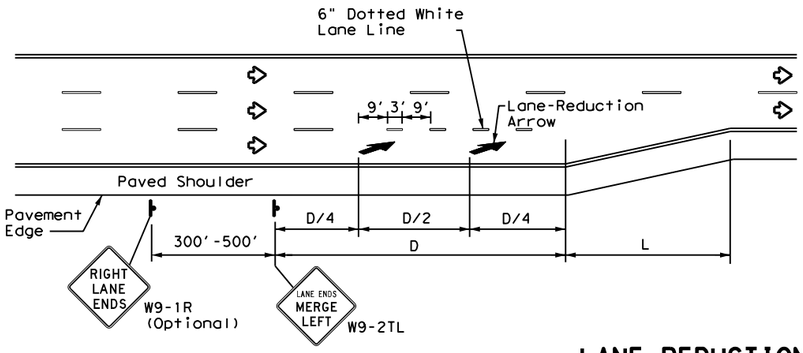
FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	DIST	COUNTY		SHEET NO.

22B

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

DATE:
FILE:

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

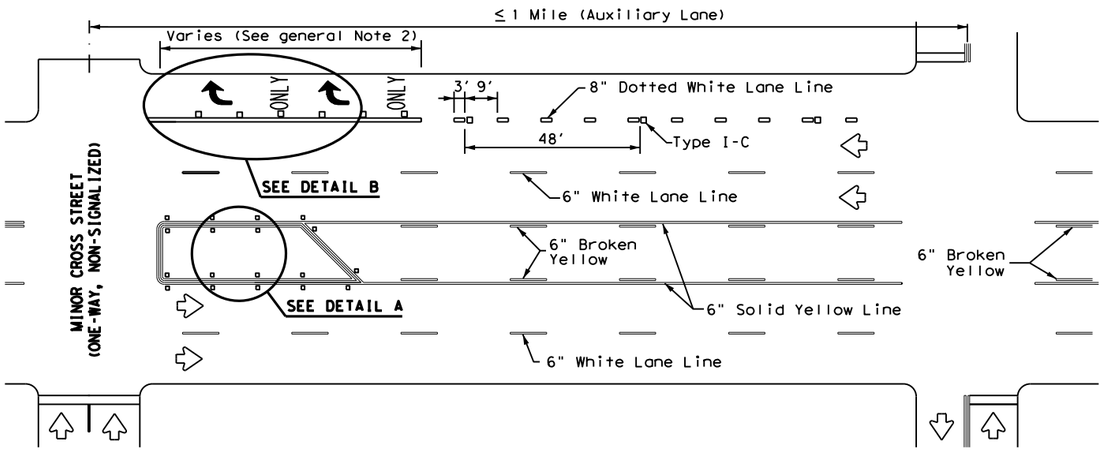


LANE REDUCTION

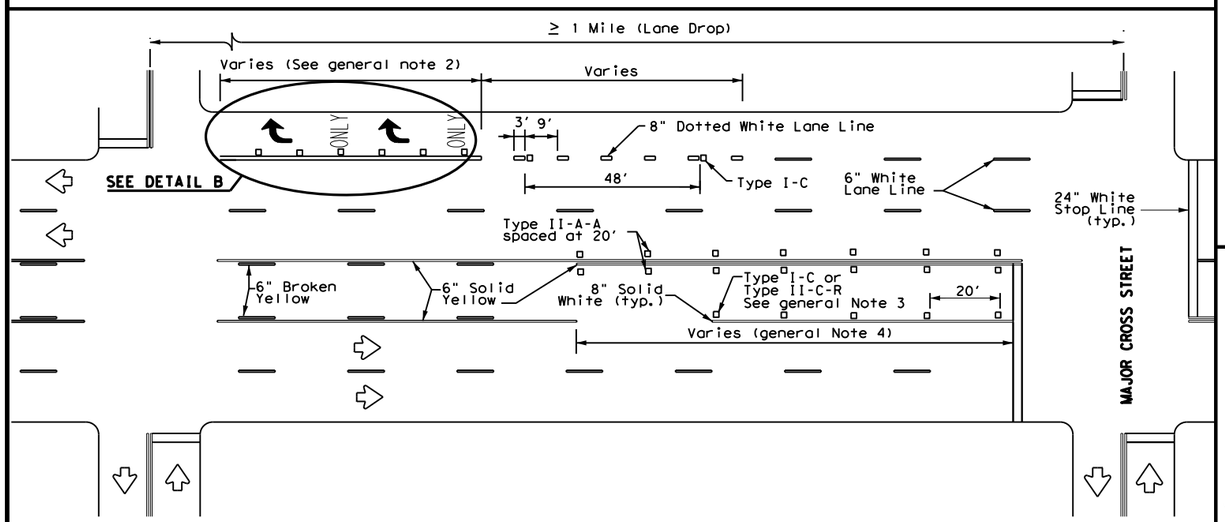
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

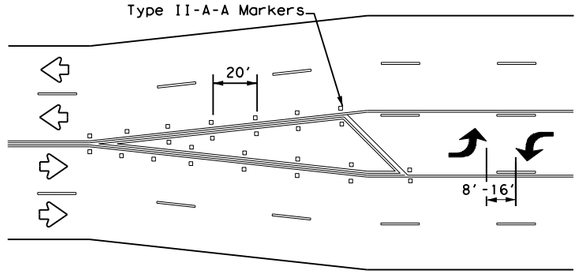
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE

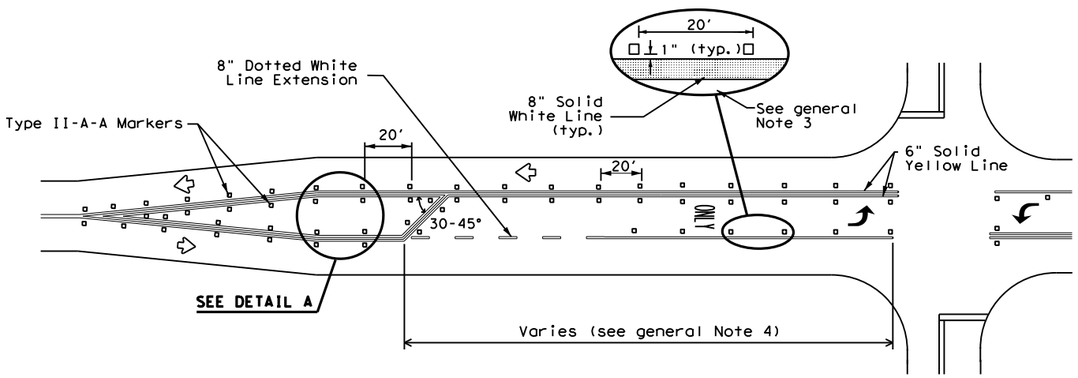


TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP

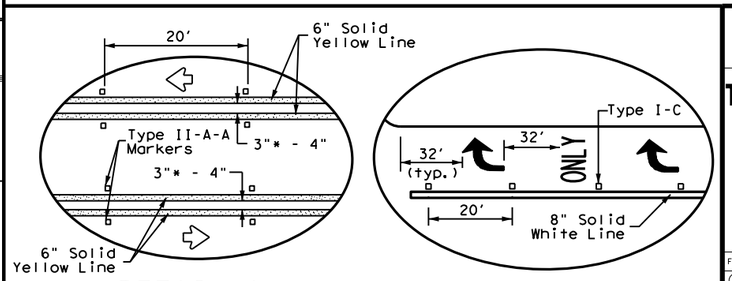


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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

GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

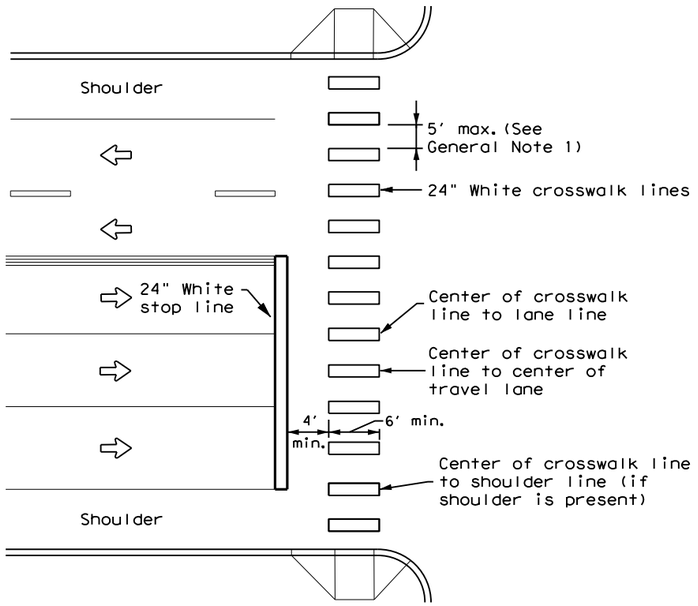
FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	DIST	COUNTY		SHEET NO.

22C

DATE:
FILE:

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

DATE:
FILE:



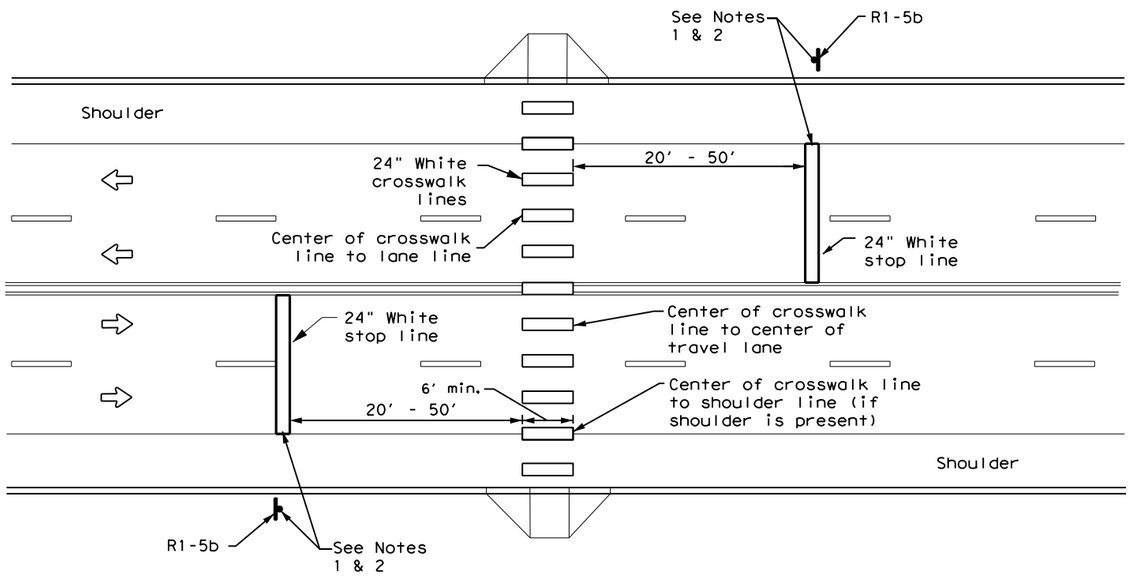
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
6-20	DIST	COUNTY		SHEET NO.
6-22				
12-22				

22D

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.

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)

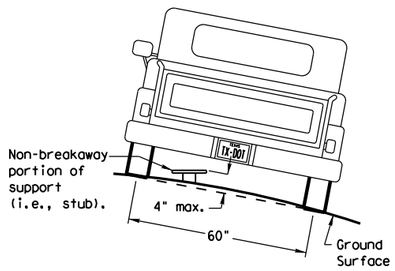
Anchor Type

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

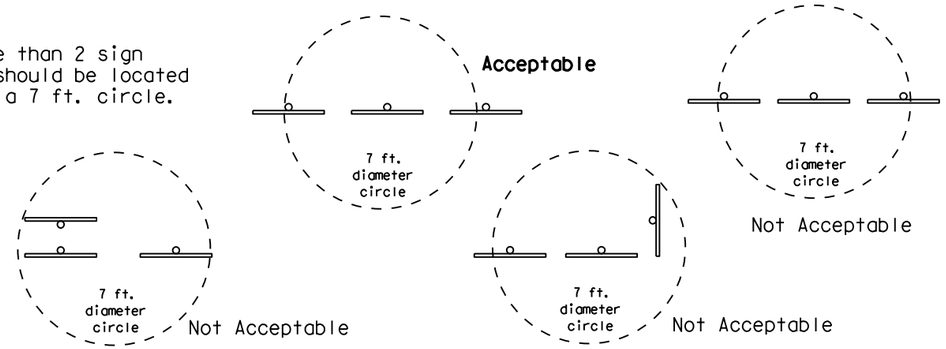
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
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



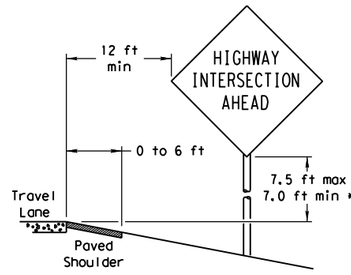
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



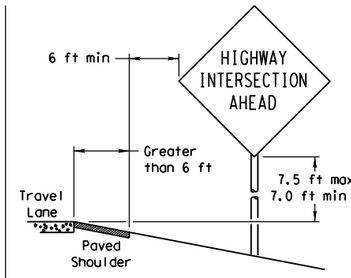
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

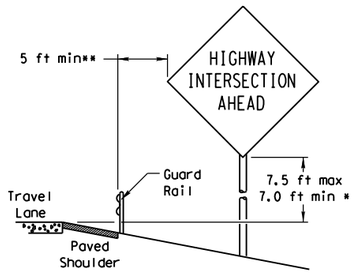
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



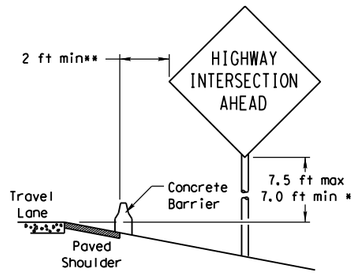
GREATER THAN 6 FT. WIDE

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



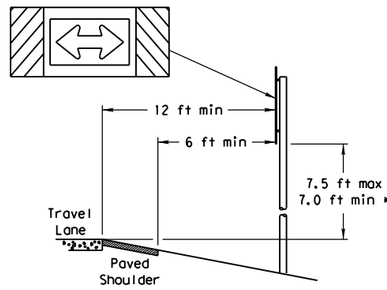
BEHIND GUARDRAIL



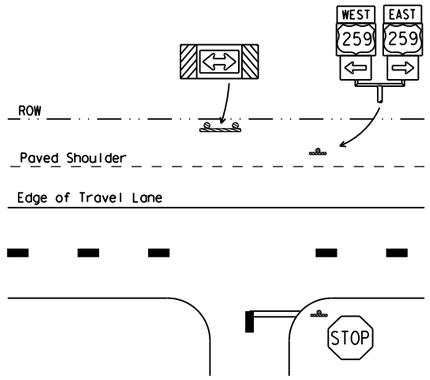
BEHIND CONCRETE BARRIER

**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.

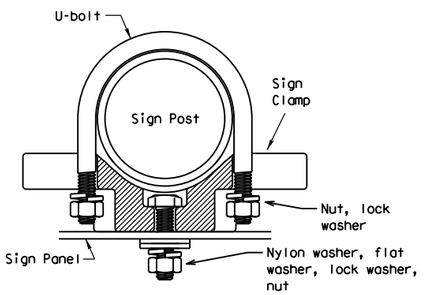
The maximum values may be increased when directed by the Engineer.

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

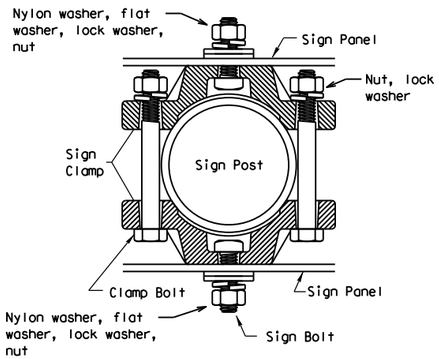
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



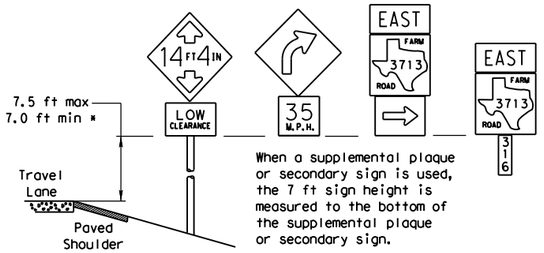
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

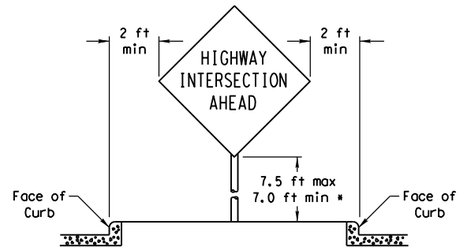
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



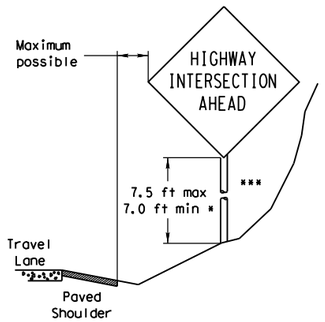
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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

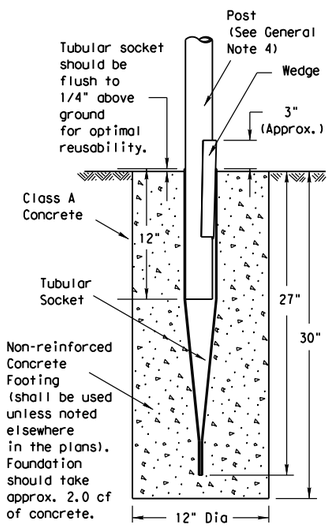
SMD(GEN)-08

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

DATE:
FILE:

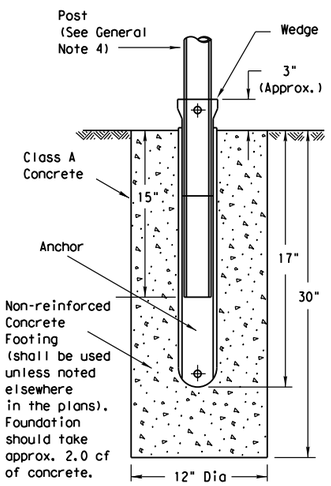
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

Wedge Anchor Steel System



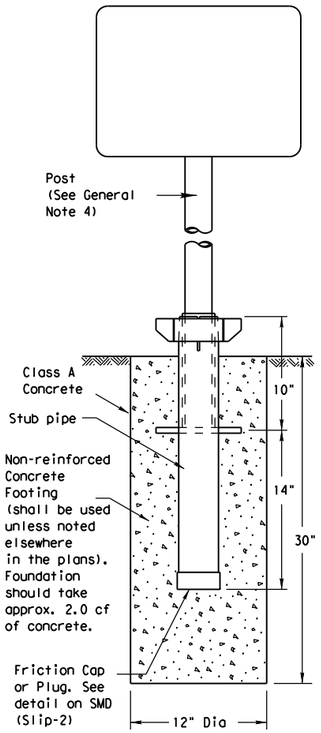
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

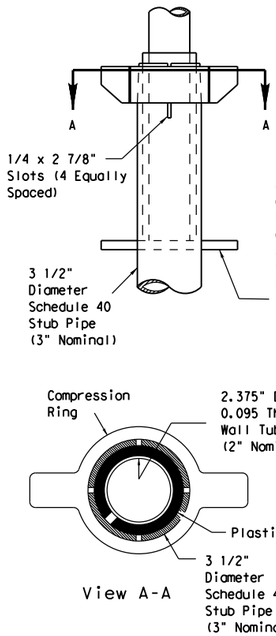


SMD RD SGN ASSM TY TWT(X)WP(X)

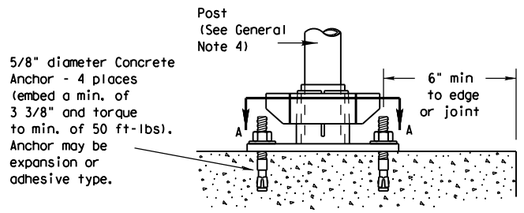
Universal Anchor System with Thin-Walled Tubing Post



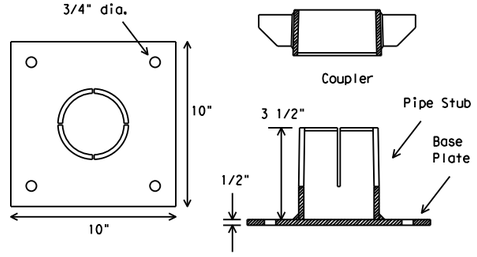
SM RD SGN ASSM TY TWT(X)UA(P)



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.

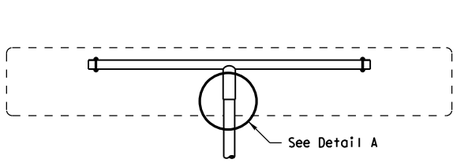


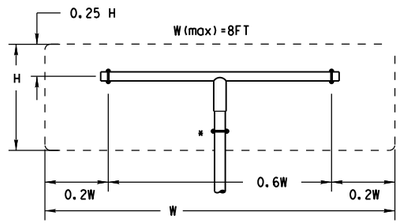
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized 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.



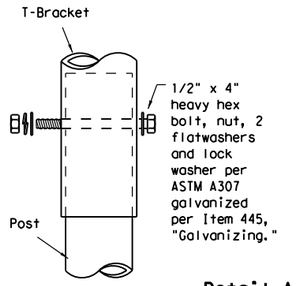
SM RD SGN ASSM TY TWT(X)UB(P)

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

©TxDOT July 2002

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY

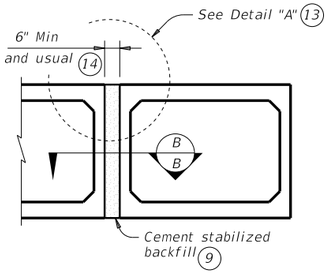
DIST	COUNTY	SHEET NO.

9-08 REVISIONS

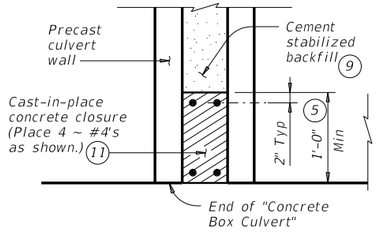
DATE:
FILE:

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

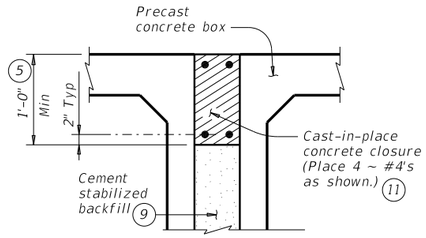
DATE:
FILE:



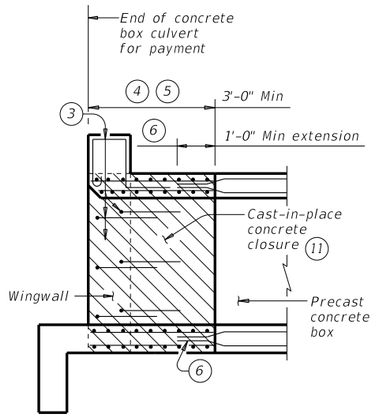
MULTIPLE UNIT PLACEMENT



SECTION B-B

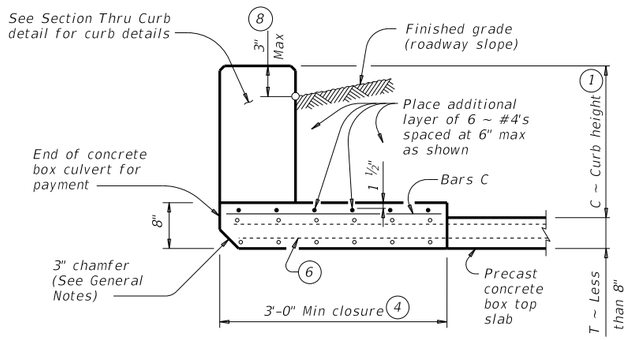


DETAIL "A" (13)

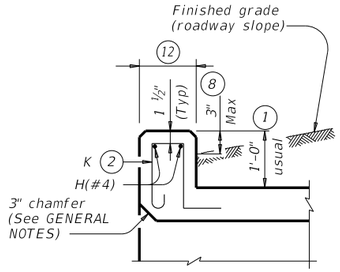


WINGWALL CONNECTION

(Also applies to safety end treatment.)

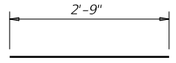


SECTION THRU TOP SLABS LESS THAN 8"

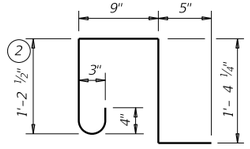


SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



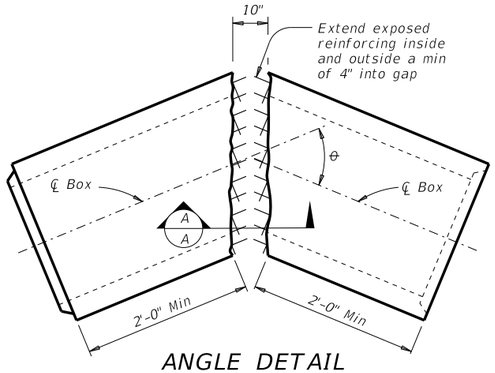
BARS C (#4)
(Spa = 1'–0" Max)



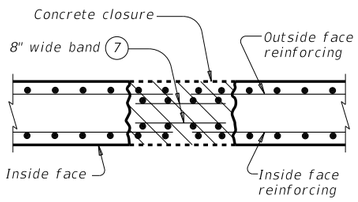
BARS K (#4)
(Spa = 1'–0" Max)
(Length = 4'–2")

1. 0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'–0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631–CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'–0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'–0" Min cast–in–place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast–in–place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'–0" Min cast–in–place closure in the top slab, bottom slab, and exterior wall. See Section B–B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'–0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

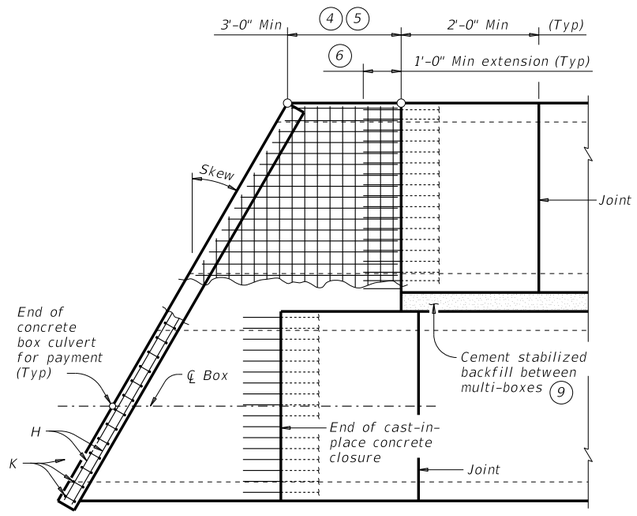
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'–0" typical. 2'–3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box." No payment will be made for any additional material in the gap between adjacent boxes.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi–box placement.)

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

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

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

FILE: CD-SCP-MD-20.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

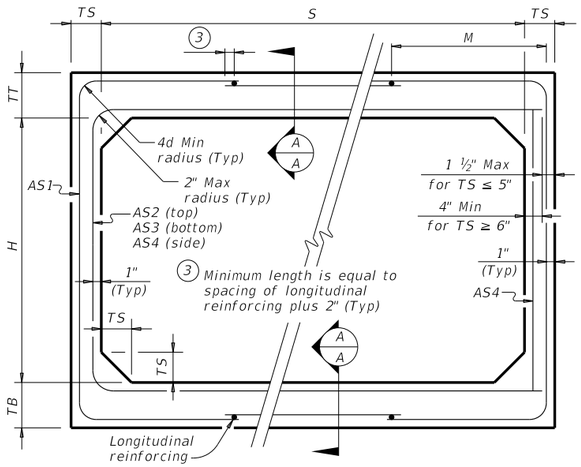
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
4	2	7.5	6	5	< 2	–	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	–	–	–	3.6
4	2	5	5	5	3 – 5	38	0.13	0.13	0.13	0.12	–	–	–	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	–	–	–	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	–	–	–	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	–	–	–	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	–	–	–	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	–	–	–	3.6
4	3	7.5	6	5	< 2	–	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	–	–	–	4.1
4	3	5	5	5	3 – 5	38	0.12	0.16	0.16	0.12	–	–	–	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	–	–	–	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	–	–	–	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	–	–	–	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	–	–	–	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	–	–	–	4.1
4	4	7.5	6	5	< 2	–	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	–	–	–	4.6
4	4	5	5	5	3 – 5	38	0.12	0.18	0.18	0.12	–	–	–	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	–	–	–	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	–	–	–	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	–	–	–	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	–	–	–	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	–	–	–	4.6

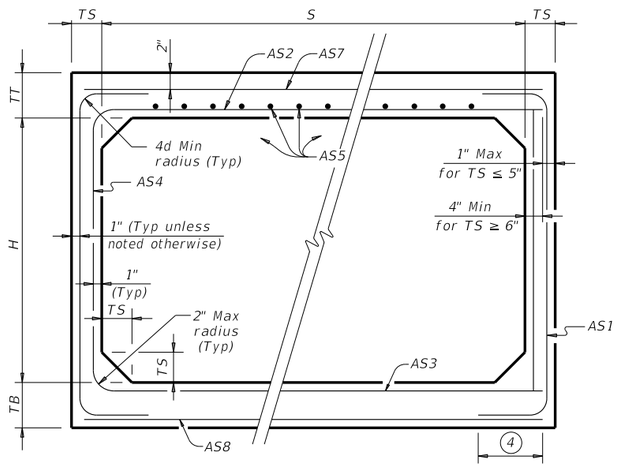
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

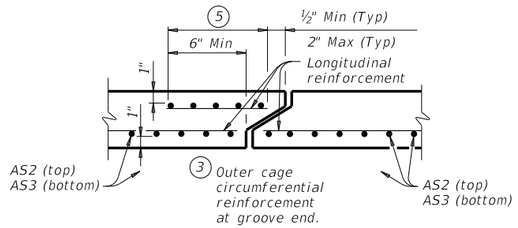
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

4'-0" SPAN

SCP-4

FILE: CD-SCP04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

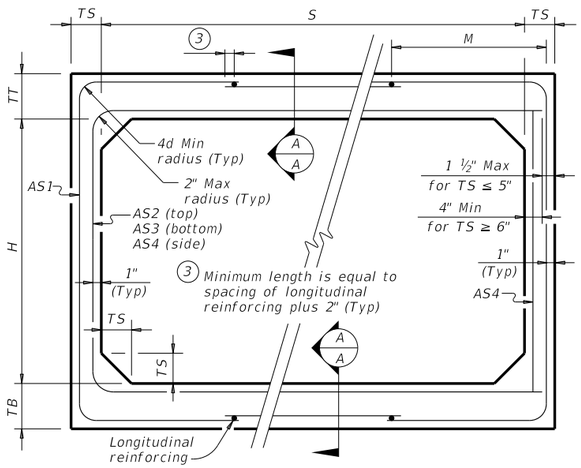
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
5	2	8	7	6	< 2	–	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	–	–	–	5.1
5	2	6	6	6	3 – 5	44	0.16	0.14	0.14	0.14	–	–	–	5.1
5	2	6	6	6	10	36	0.15	0.14	0.14	0.14	–	–	–	5.1
5	2	6	6	6	15	36	0.20	0.18	0.18	0.14	–	–	–	5.1
5	2	6	6	6	20	36	0.26	0.23	0.24	0.14	–	–	–	5.1
5	2	6	6	6	25	36	0.33	0.29	0.29	0.14	–	–	–	5.1
5	2	6	6	6	30	36	0.39	0.34	0.35	0.14	–	–	–	5.1
5	3	8	7	6	< 2	–	0.19	0.31	0.21	0.14	0.19	0.19	0.17	6.6
5	3	6	6	6	2 < 3	45	0.18	0.24	0.19	0.14	–	–	–	5.7
5	3	6	6	6	3 – 5	36	0.14	0.17	0.16	0.14	–	–	–	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	–	–	–	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	–	–	–	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	–	–	–	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	–	–	–	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	–	–	–	5.7
5	4	8	7	6	< 2	–	0.19	0.33	0.24	0.14	0.19	0.19	0.17	7.2
5	4	6	6	6	2 < 3	45	0.16	0.27	0.22	0.14	–	–	–	6.3
5	4	6	6	6	3 – 5	45	0.14	0.19	0.18	0.14	–	–	–	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	–	–	–	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	–	–	–	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	–	–	–	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	–	–	–	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	–	–	–	6.3
5	5	8	7	6	< 2	–	0.19	0.35	0.26	0.14	0.19	0.19	0.17	7.8
5	5	6	6	6	2 < 3	45	0.14	0.29	0.24	0.14	–	–	–	6.9
5	5	6	6	6	3 – 5	45	0.14	0.21	0.20	0.14	–	–	–	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	–	–	–	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	–	–	–	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	–	–	–	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	–	–	–	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	–	–	–	6.9

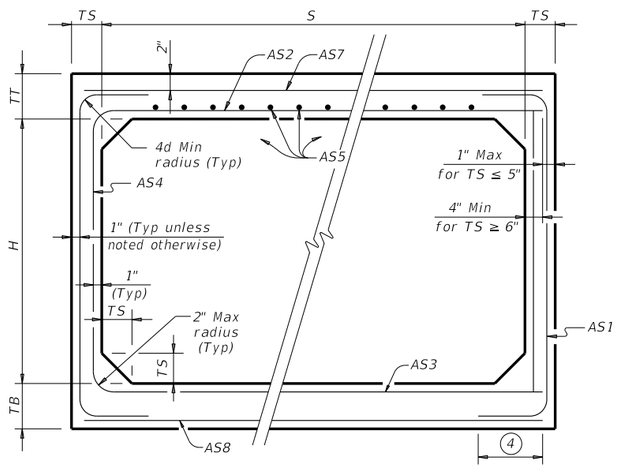
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

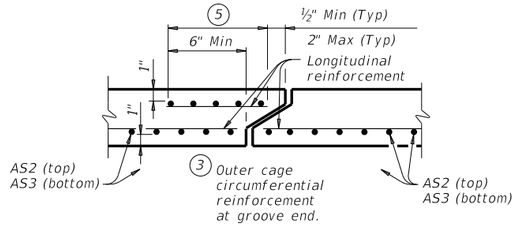
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

5'-0" SPAN

SCP-5

FILE: CD-SCP05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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

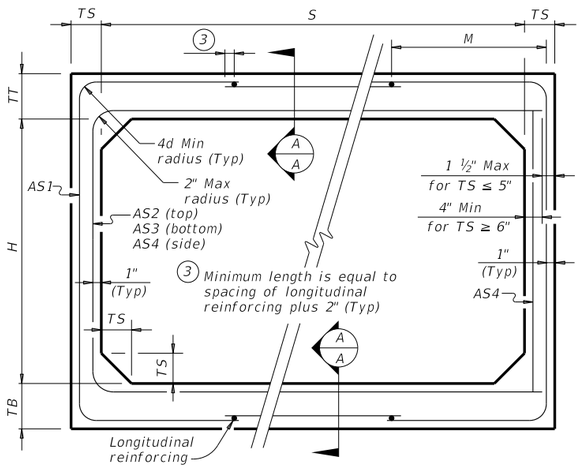
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
10	4	10	10	10	< 2	–	0.33	0.34	0.27	0.24	0.24	0.24	0.24	16.5
10	4	10	10	10	2 < 3	58	0.38	0.35	0.30	0.24	–	–	–	16.5
10	4	10	10	10	3 – 5	53	0.31	0.28	0.27	0.24	–	–	–	16.5
10	4	10	10	10	10	52	0.36	0.32	0.33	0.24	–	–	–	16.5
10	4	10	10	10	15	52	0.47	0.42	0.43	0.24	–	–	–	16.5
10	4	10	10	10	20	52	0.61	0.54	0.55	0.24	–	–	–	16.5
10	4	10	10	10	25	52	0.75	0.67	0.68	0.24	–	–	–	16.5
10	5	10	10	10	< 2	–	0.30	0.36	0.30	0.24	0.24	0.24	0.24	17.5
10	5	10	10	10	2 < 3	58	0.35	0.39	0.34	0.24	–	–	–	17.5
10	5	10	10	10	3 – 5	52	0.28	0.31	0.30	0.24	–	–	–	17.5
10	5	10	10	10	10	52	0.33	0.35	0.36	0.24	–	–	–	17.5
10	5	10	10	10	15	47	0.42	0.46	0.47	0.24	–	–	–	17.5
10	5	10	10	10	20	47	0.55	0.59	0.61	0.24	–	–	–	17.5
10	5	10	10	10	25	47	0.68	0.73	0.75	0.24	–	–	–	17.5
10	6	10	10	10	< 2	–	0.28	0.38	0.33	0.24	0.24	0.24	0.24	18.5
10	6	10	10	10	2 < 3	58	0.32	0.42	0.37	0.24	–	–	–	18.5
10	6	10	10	10	3 – 5	53	0.26	0.34	0.33	0.24	–	–	–	18.5
10	6	10	10	10	10	52	0.30	0.38	0.39	0.24	–	–	–	18.5
10	6	10	10	10	15	47	0.39	0.49	0.51	0.24	–	–	–	18.5
10	6	10	10	10	20	47	0.50	0.63	0.65	0.24	–	–	–	18.5
10	6	10	10	10	25	47	0.61	0.78	0.80	0.24	–	–	–	18.5
10	7	10	10	10	< 2	–	0.25	0.40	0.36	0.24	0.24	0.24	0.24	19.5
10	7	10	10	10	2 < 3	58	0.30	0.45	0.40	0.24	–	–	–	19.5
10	7	10	10	10	3 – 5	58	0.24	0.36	0.35	0.24	–	–	–	19.5
10	7	10	10	10	10	52	0.28	0.40	0.42	0.24	–	–	–	19.5
10	7	10	10	10	15	47	0.36	0.52	0.54	0.24	–	–	–	19.5
10	7	10	10	10	20	47	0.46	0.67	0.69	0.24	–	–	–	19.5
10	7	10	10	10	25	47	0.56	0.82	0.85	0.24	–	–	–	19.5
10	8	10	10	10	< 2	–	0.24	0.41	0.38	0.24	0.24	0.24	0.24	20.5
10	8	10	10	10	2 < 3	64	0.27	0.47	0.43	0.24	–	–	–	20.5
10	8	10	10	10	3 – 5	58	0.24	0.38	0.38	0.24	–	–	–	20.5
10	8	10	10	10	10	52	0.26	0.42	0.44	0.24	–	–	–	20.5
10	8	10	10	10	15	47	0.34	0.54	0.57	0.24	–	–	–	20.5
10	8	10	10	10	20	47	0.43	0.69	0.72	0.24	–	–	–	20.5
10	9	10	10	10	< 2	–	0.24	0.42	0.41	0.24	0.24	0.24	0.24	21.5
10	9	10	10	10	2 < 3	70	0.26	0.50	0.46	0.24	–	–	–	21.5
10	9	10	10	10	3 – 5	64	0.24	0.40	0.40	0.24	–	–	–	21.5
10	9	10	10	10	10	58	0.25	0.43	0.46	0.24	–	–	–	21.5
10	9	10	10	10	15	52	0.32	0.56	0.59	0.24	–	–	–	21.5
10	9	10	10	10	20	47	0.40	0.71	0.75	0.24	–	–	–	21.5
10	10	10	10	10	< 2	–	0.24	0.44	0.44	0.24	0.24	0.24	0.24	22.5
10	10	10	10	10	2 < 3	79	0.25	0.52	0.48	0.24	–	–	–	22.5
10	10	10	10	10	3 – 5	70	0.24	0.42	0.43	0.24	–	–	–	22.5
10	10	10	10	10	10	64	0.24	0.44	0.48	0.24	–	–	–	22.5
10	10	10	10	10	15	52	0.30	0.57	0.61	0.24	–	–	–	22.5
10	10	10	10	10	20	52	0.38	0.73	0.77	0.24	–	–	–	22.5

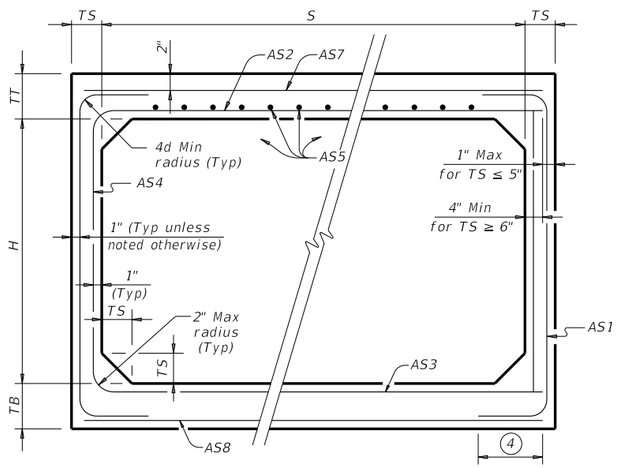
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

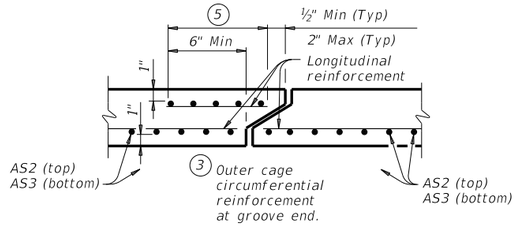
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

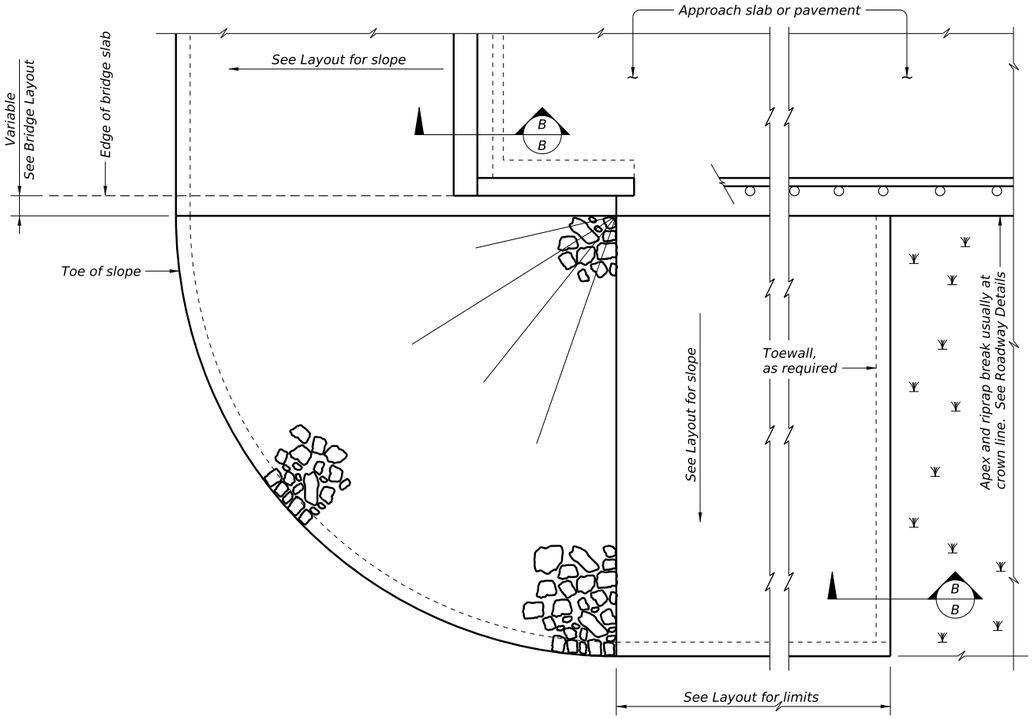
10'-0" SPAN

SCP-10

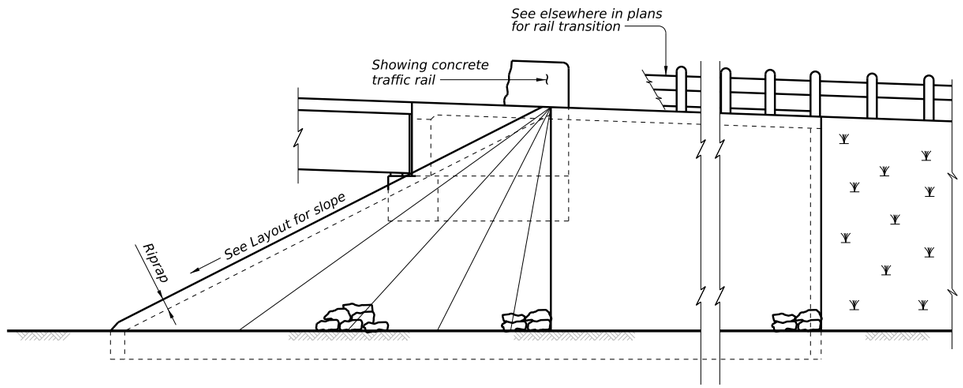
FILE: CD-SCP10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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

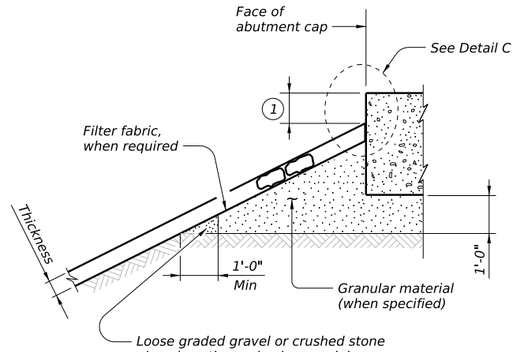
DATE:
FILE:



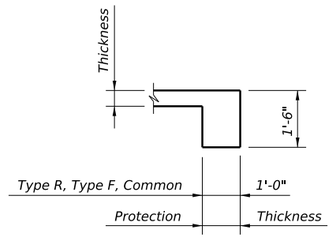
PLAN



ELEVATION



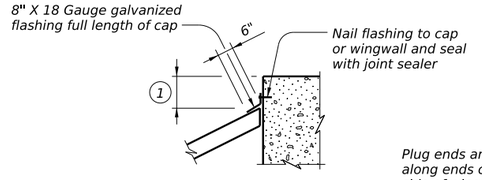
SECTION A-A AT CAP



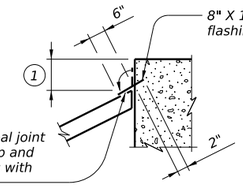
SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.



CAP OPTION A



CAP OPTION B

DETAIL C

GENERAL NOTES:

Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.

See elsewhere in plans for locations and details of shoulder drains.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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

DATE:
FILE:

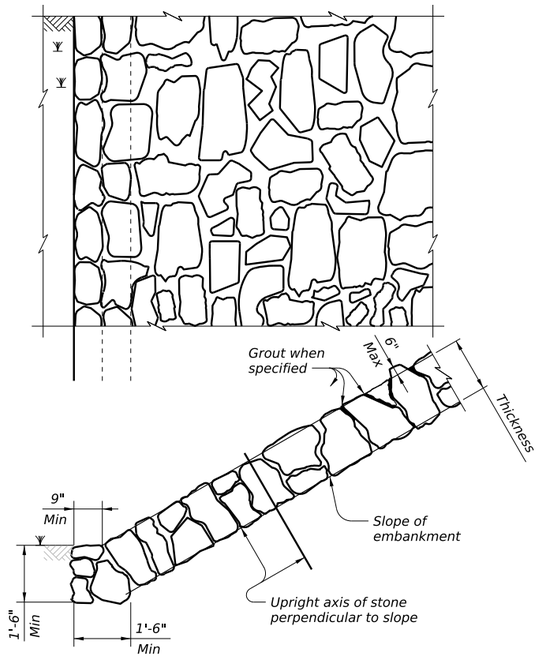


FIGURE 1 ~ TYPE R STONE RIPRAP

Dry or grouted

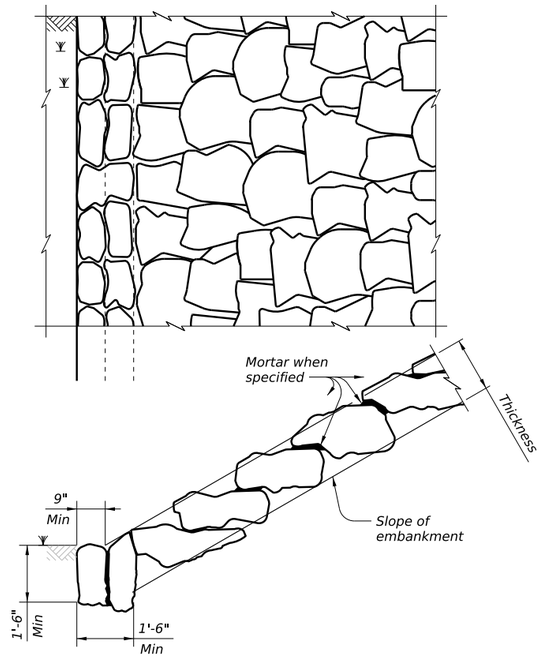


FIGURE 2 ~ TYPE F STONE RIPRAP

Dry or mortared

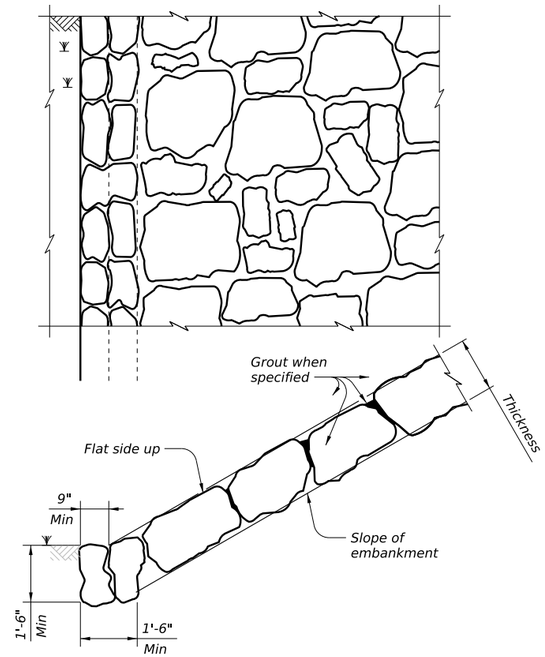


FIGURE 3 ~ TYPE F STONE RIPRAP

Grouted

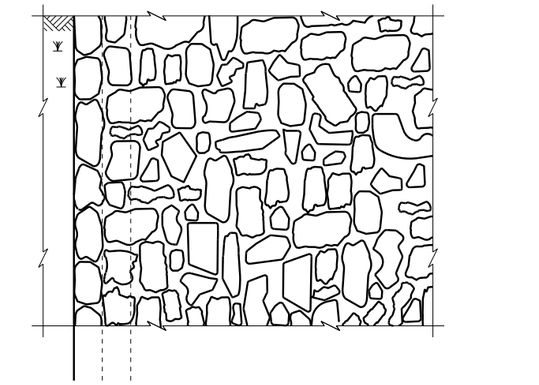


FIGURE 4 ~ COMMON STONE RIPRAP

Dry or grouted

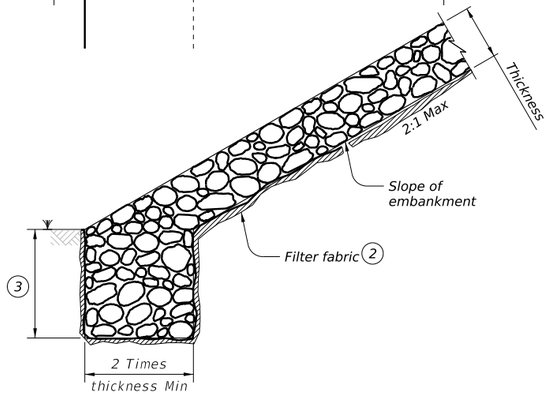


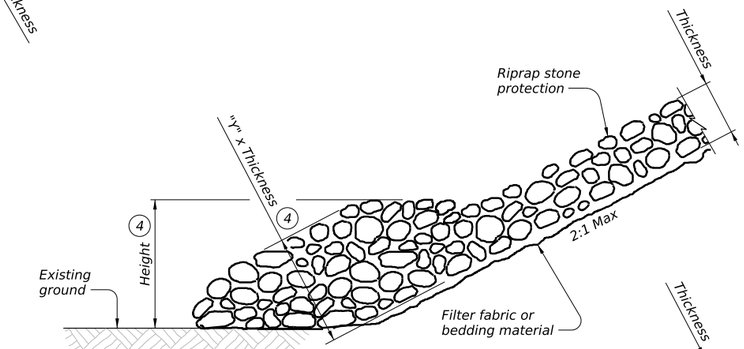
FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

(2) *Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.*

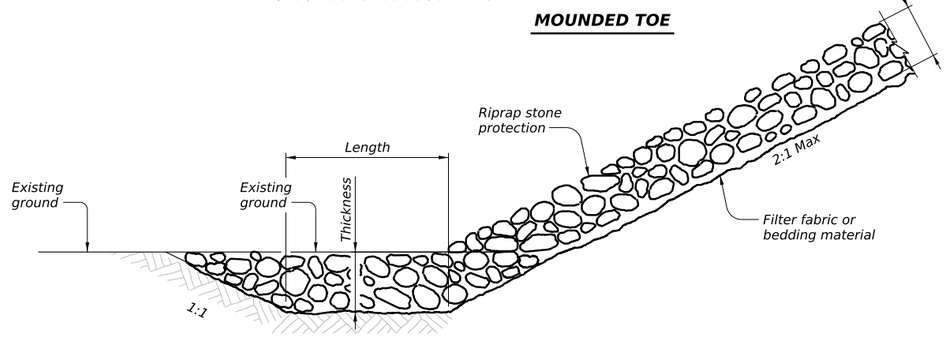
(3) *Minimum toe depth is 2 times the riprap thickness (typical) or as shown elsewhere in the plans.*

(4) *"Y" and Height need to be defined. See layout or detail sheet for values if this option is used.*

(5) *List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.*
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

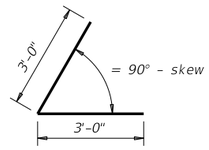
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2~wings) (4)		Estimated Quantities per ft of Toewall (1~toewall)	
					Bars J1		Bars J2					
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

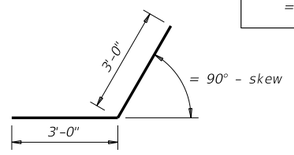
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

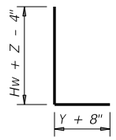
Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



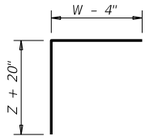
BARS D1



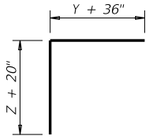
BARS D2



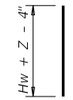
BARS J1



BARS J2



BARS J3



BARS V

WING DIMENSION FORMULAS:
(All values are in feet.)

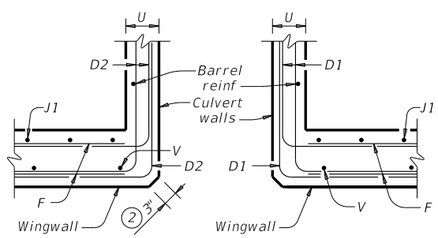
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

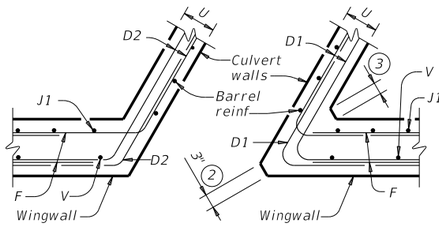
For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

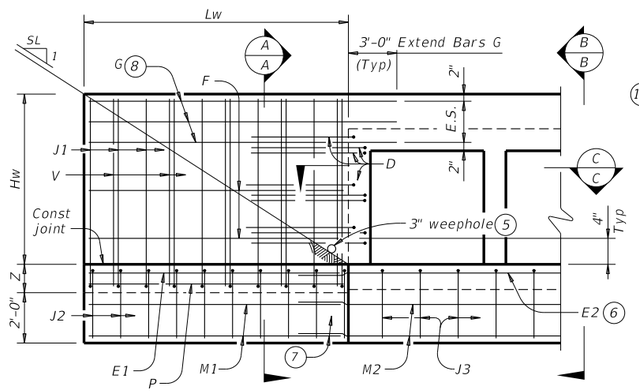
See applicable box culvert standard sheet for S, H, T, and U values.



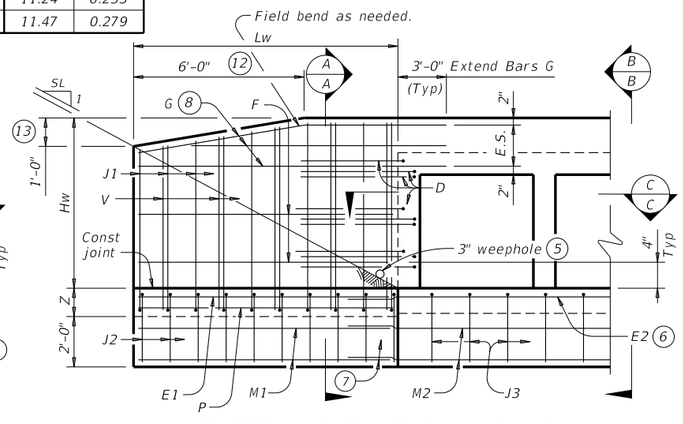
SECTION C-C - PW-1



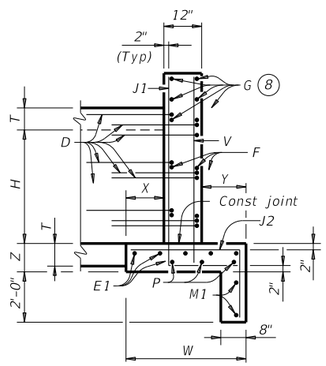
SECTION C-C - PW-2



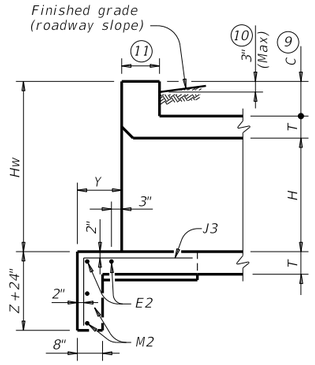
PARTIAL ELEVATION - PW-1



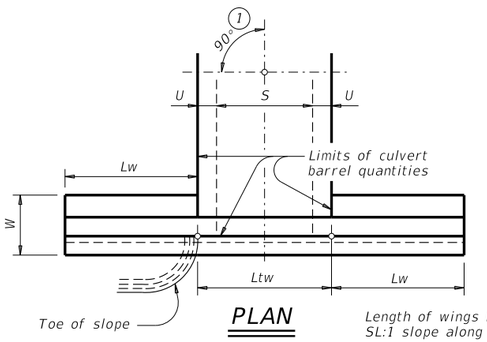
PARTIAL ELEVATION - PW-2



SECTION A-A
(Showing wing reinforcement.)

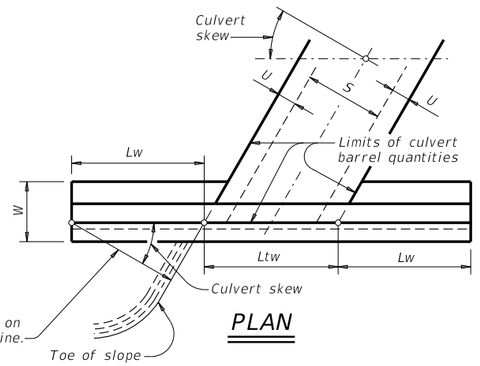


SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation
Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS
TYPES PW-1 AND PW-2

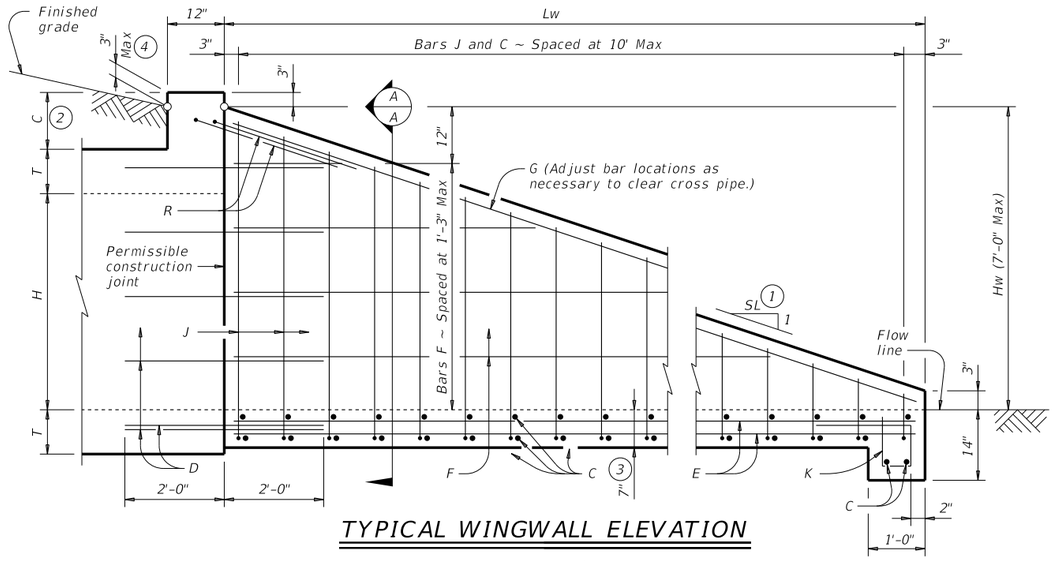
PW

FILE: CD-PW-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

DATE:
FILE:

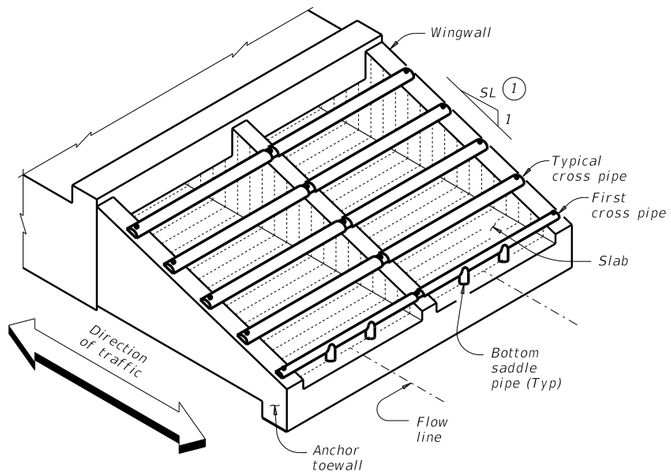
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TYPICAL WINGWALL ELEVATION

(Cross pipes not shown for clarity.)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing bolted anchor option.)

WING DIMENSION CALCULATIONS:

$Hw = H + T + C - 0.250'$

$Lw = (Hw - 0.250')\ (SL)$

For cast-in-place culverts:

$Atw = (N)\ (S) + (N + 1)\ (U)$

For precast culverts:

$Atw = (N)\ (2U + S) + (N - 1)\ (0.500')$

Total Wingwall Area (SF)
$= (0.5)\ (Hw + 0.250')\ (Lw)\ (N - 1)$

Total Concrete Volume (CY)
$= [(\text{Wingwall Area})\ (0.583') +$
$(Lw)\ (Atw)\ (0.583') +$
$(Atw)\ (1.000')\ (1.167' - 0.583')] \div (27)$

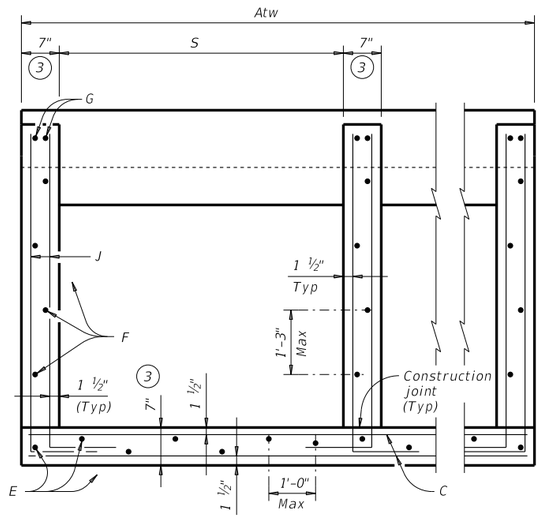
Total Reinforcing (Lb)
$= (1.55)\ (Lw)\ (Atw) +$
$(4.43)\ (Atw) +$
$(K)\ (Hw)\ (N + 1)\ (\sqrt{Lw})$

C = Height of curb above top of top slab (feet)
Hw = Height of wingwall (feet)
K = Constant value for use in formulas

Slope SL:1	K
6:1 ~	10.41

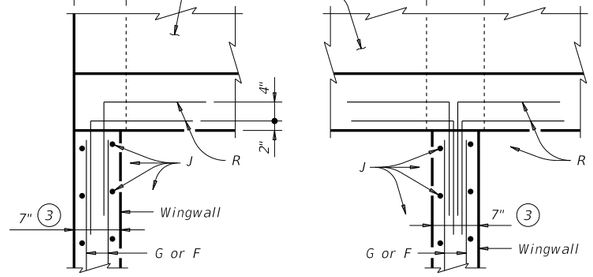
Atw = Anchor toewall length (feet)
Lw = Length of wingwall (feet)
N = Number of culvert barrels
SL:1 = Side slope ratio (horizontal : 1 vertical)

See applicable box culvert standard for H, S, T, and U values.



SECTION A-A

(Showing typical wingwall and wing slab reinforcing. Pipe runners not shown for clarity.)

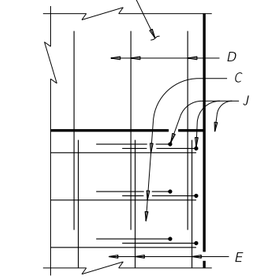


AT TOP OF EXTERIOR WINGWALL

(Cast-in-place culvert)

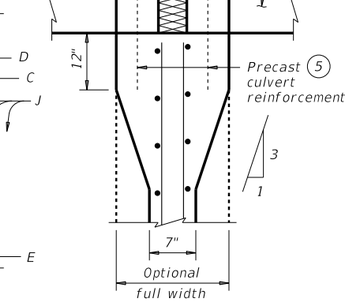
AT TOP OF INTERIOR WINGWALL

(Cast-in-place culvert)



AT OUTSIDE OF BOTTOM SLAB

(Cast-in-place culvert)



AT INTERIOR WINGWALL

(Precast culvert)

PLAN VIEWS OF CORNER DETAILS

TABLE OF REINFORCING BAR SIZES AND SPACING		
Bar	Size	Spacing
C	#4	10" Max
D	#4	Match F and E
E	#4	1'- 0" Max
F	#4	1'- 3" Max
G	#6	As shown
J	#4	10" Max
K	#4	1'- 0" Max
R	#4	As shown

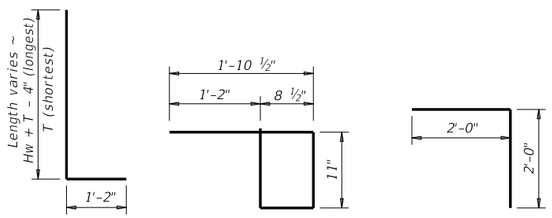
(1) Provide 6:1 or flatter slope.

(2) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to Extended Curb Details the Extended Curb Details (ECD) standard sheet.

(3) Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" Minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.

(4) For vehicle safety, reduce height, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) For culverts with C = 0", the precast culvert reinforcing may extend 1'-0" minimum into wingwall. Wingwall bars D and R may be omitted. Otherwise, refer to the Wingwall Connection detail on the Box Culvert Precast Miscellaneous Details (SCP-MD) standard sheet.



BARS J BARS K BARS R

(Length = 4'-3")

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Adjust reinforcing as necessary to provide a minimum clear cover of 1½".
Provide Class "C" concrete (f`c = 3,600 psi).
Provide pipe runners, cross pipes, and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
Provide ASTM A307 bolts.
Galvanize all steel components, except the concrete reinforcing, unless required elsewhere in the plans, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with Item 445, "Galvanizing."

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.
Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.
The quantities for concrete, reinforcing steel, and cross pipes resulting from the formulas given herein are for Contractor's information only.
See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the safety end treatments.

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

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

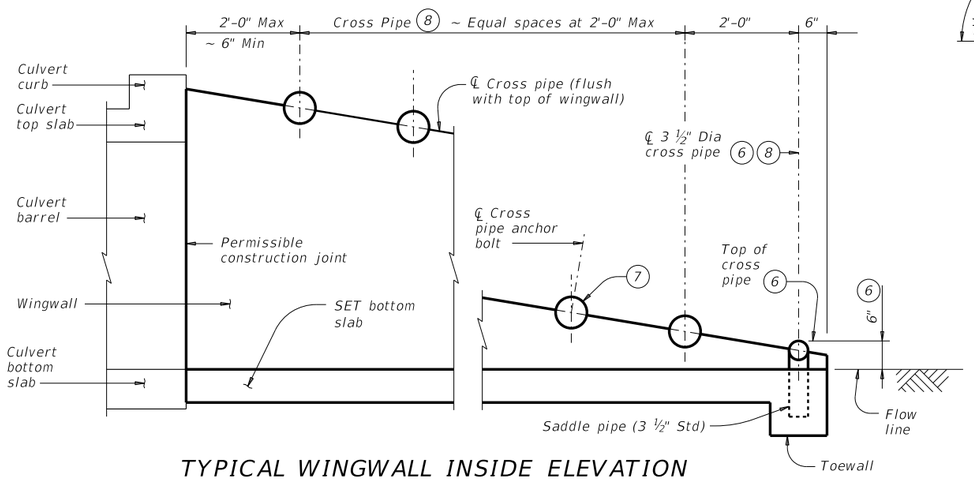
SAFETY END TREATMENT
FOR BOX CULVERTS (MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE: CD-SETBPD-22.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 06-2022 ~ Wing dimensions				
	DIST	COUNTY		SHEET NO.

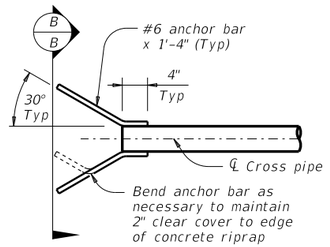
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

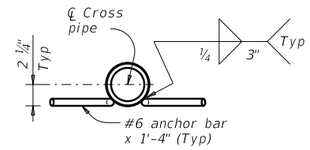


TYPICAL WINGWALL INSIDE ELEVATION

(Showing installation of cross pipes.)

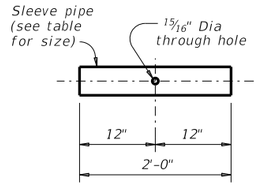


PART PLAN



SECTION B-B

OPTIONAL ANCHOR BAR DETAILS



SLEEVE PIPE DETAILS (9)

REQUIRED PIPE SIZES (8)		
Culvert Span Sizes	Cross Pipe Size	Sleeve Pipe Size (9)
First Pipe	3 ½" STD	2 ½" STD
30" to 42"	4" STD	3" STD
48" to 72"	5" STD	4" STD
78" to 120"	6" STD	5" STD

STANDARD PIPE SIZES		
Pipe Size	Pipe O.D.	Pipe I.D.
2 ½" STD	2.875"	2.469"
3" STD	3.500"	3.068"
3 ½" STD	4.000"	3.548"
4" STD	4.500"	4.026"
5" STD	5.563"	5.047"
6" STD	6.625"	6.065"

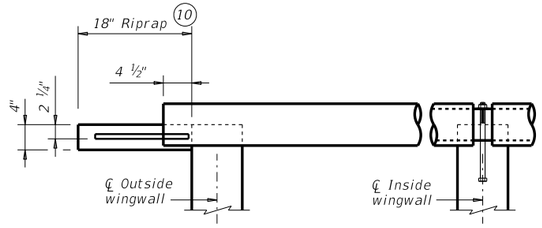
(6) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe at no more than 6" above the flow line.

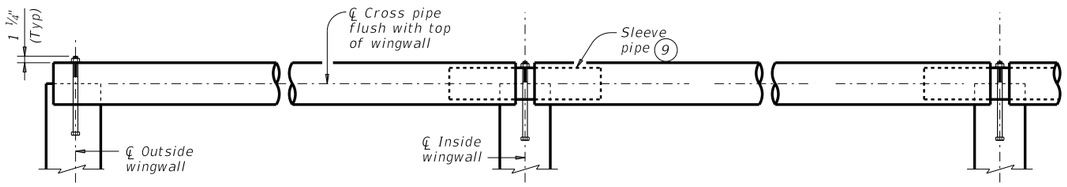
(7) Always install the third cross pipe from the bottom of the culvert using a bolted connection. Take care to ensure that concrete does not flow into this cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(8) Provide cross pipes and sleeve pipes (if required) as shown in the Required Pipe Sizes table. Provide 3 1#2" saddle pipes for the 3 1#2" first cross pipe.

(9) At Contractor's option, make the cross pipe continuous across the inside wingwalls. If this option is selected, omit the sleeve pipe and make a 15#16" diameter throughhole in the cross pipe to accept the anchor bolt at the centerline of each interior wingwall.

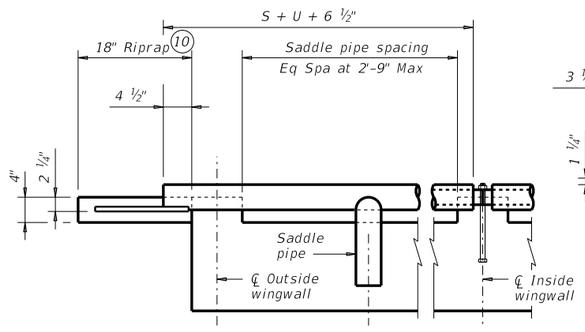
(10) Provide riprap when using the Optional Anchor Bar details. Riprap is included in the bid price for Safety End Treatment. Provide riprap in accordance with Item 432, "Riprap."

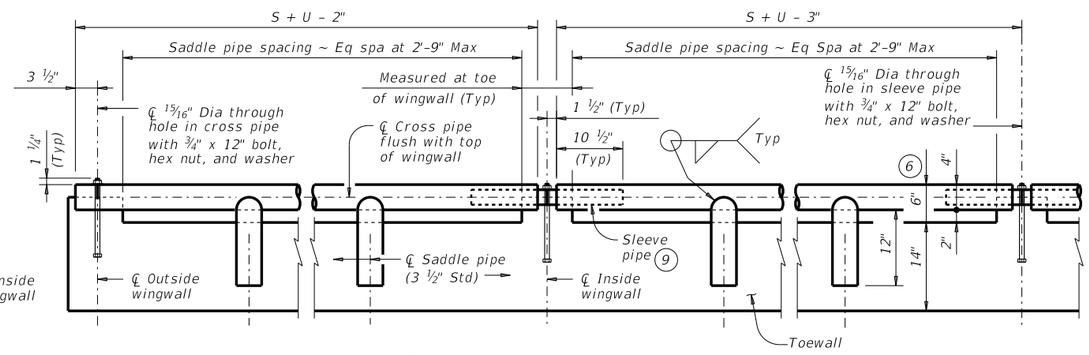




SECTION THROUGH INSTALLATION OF TYPICAL FULL CROSS PIPE

(Anchor details and dimensions are similar to those shown below in Section Through Installation of 3 ½" First Cross Pipe detail.)





SECTION THROUGH INSTALLATION OF 3 ½" FIRST CROSS PIPE

OUTSIDE CULVERT BARREL WITH OPTIONAL ANCHOR BARS & RIPRAP

OUTSIDE CULVERT BARREL WITH BOLTED ANCHOR

INSIDE CULVERT BARREL

CROSS PIPE INSTALLATION DETAILS

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

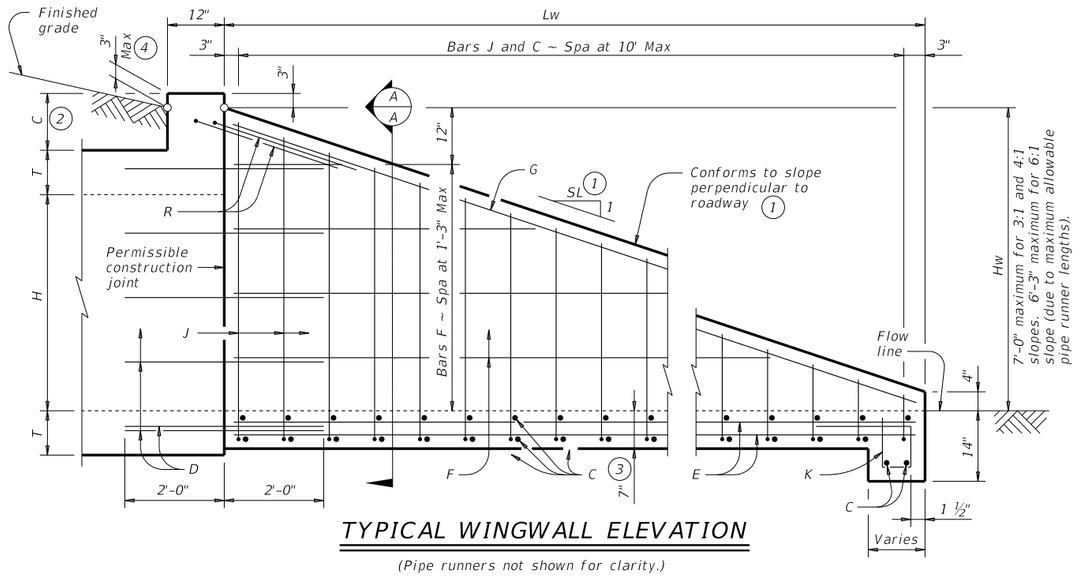
SAFETY END TREATMENT
FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE: CD-SETBPD-22.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 06-2022 – Wing dimensions				
	DIST	COUNTY		SHEET NO.

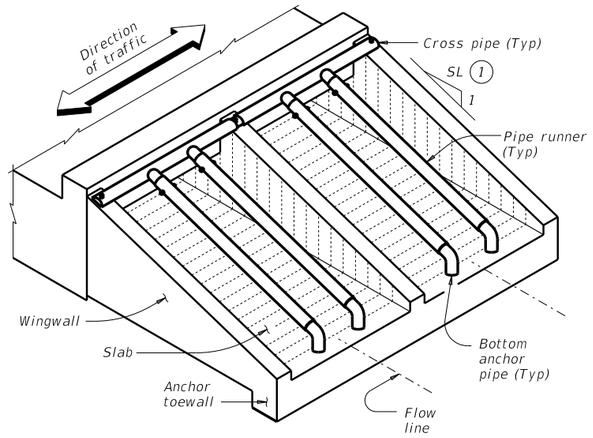
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TYPICAL WINGWALL ELEVATION

(Pipe runners not shown for clarity.)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

WING DIMENSION CALCULATIONS:

Hw = H + T + C – 0.250'
Lw = (Hw – 0.333') (SL)

For cast–in–place culverts:
Atw = (N) (S) + (N + 1) (U)
For precast culverts:
Atw = (N) (2U + S) + (N – 1) (0.500')

Total Wingwall Area (SF)
= (0.5) (Hw + 0.333') (Lw) (N + 1)
Total Concrete Volume (CY)
= [(Wingwall Area) (0.583') +
(Lw) (Atw) (0.583') +
(Atw) (1.167') (1.167' – 0.583')] ÷ (27)

PIPE RUNNER DIMENSION CALCULATIONS:

Pipe Runner Length
= (Lw) (K1) – (1.917')
Total Reinforcing (Lb)
= (1.55) (Lw) (Atw) +
(4.43) (Atw) +
(K2) (Hw) (N + 1) ($\sqrt{Lw}$)

C = Height of curb above top of top slab (feet)
Hw = Height of wingwall (feet)
K = Constant value for use in formulas

Slope SL:1	K1	K2
3:1	~ 1.054 ~	7.45
4:1	~ 1.031 ~	8.49
6:1	~ 1.014 ~	10.30

Atw = Anchor toewall length (feet)
Lw = Length of wingwall (feet)
N = Number of culvert barrels
SL:1 = Side slope ratio (horizontal : 1 vertical)

See applicable box culvert standard for H, S, T, and U values.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Adjust reinforcing as necessary to provide a minimum clear cover of 1 ½".
Provide Class "C" concrete (f`c = 3,600 psi).
Provide pipe runners, cross pipes, and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
Provide ASTM A307 bolts.
Galvanize all steel components, except the concrete reinforcing, unless required elsewhere in the plans, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing."

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280–1, "Safety Treatment of Roadside Cross–Drainage Structures", Texas Transportation Institute, March 1981.
The quantities for pipe runners, reinforcing steel, and concrete resulting from the formulas given herein are for Contractor's information only.
See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the safety end treatments.

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

SECTION A-A

(Showing typical wingwall and wing slab reinforcing. Pipe runners not shown for clarity.)

AT TOP OF EXTERIOR WINGWALL
(Cast–in–place culvert)

AT TOP OF INTERIOR WINGWALL
(Cast–in–place culvert)

AT OUTSIDE OF BOTTOM SLAB
(Cast–in–place culvert)

AT INTERIOR WINGWALL
(Precast culvert)

PLAN VIEWS OF CORNER DETAILS

(1) *Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.*

(2) *0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'–0", refer to the Extended Curb Details (ECD) standard sheet.*

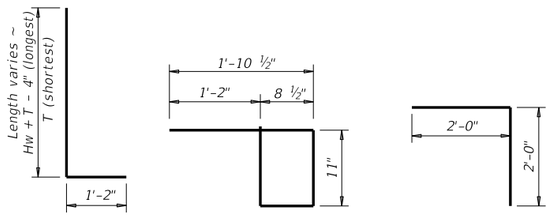
(3) *Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.*

(4) *For vehicle safety, reduce curb height, if necessary, to provide a maximum 3" projection. No changes will be made in quantities and no additional compensation will be allowed for this work.*

(5) *For culverts with C = 0", the precast culvert reinforcing may extend 1'–0" minimum into wingwall. Wingwall Bars D and R may be omitted. Otherwise, refer to the Wingwall Connection detail on the Box Culvert Precast Miscellaneous Details (SCP–MD) standard sheet.*

TABLE OF REINFORCING BAR SIZES AND SPACING

Bar	Size	Spacing
C	#4	10" Max
D	#4	Match F and E
E	#4	1'–0" Max
F	#4	1'–3" Max
G	#6	As shown
J	#4	10" Max
K	#4	1'–0" Max
R	#4	As shown



BARS J

BARS K
(Length = 4'–3")

BARS R

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

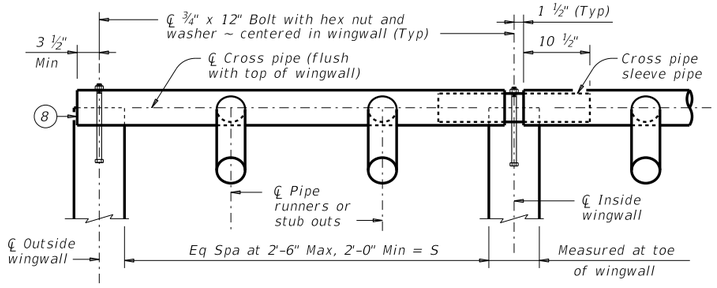
SAFETY END TREATMENT
FOR 0° SKEW BOX CULVERTS (MAXIMUM Hw = 7'-0")
TYPE I ~ CROSS DRAINAGE

SETB-CD

FILE: CD-SETBCD-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

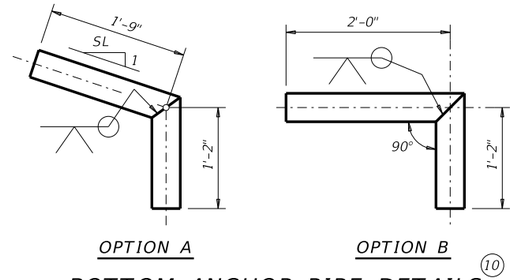
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



NOTE: At Contractor's option, make the cross pipe continuous across the inside wingwalls. If option is selected, omit the sleeve pipe and make a 15⁄16" diameter through hole in the cross pipe to accept the anchor bolt at the centerline of each inside wingwall.

CROSS PIPE INSTALLATION DETAILS



OPTION A OPTION B

BOTTOM ANCHOR PIPE DETAILS (10)

(6) Cross pipe is the same size as the pipe runner. Cross pipe stub out is the same size as the anchor pipe.

(7) Note that actual slope of safety pipe runner may vary slightly from side slope.

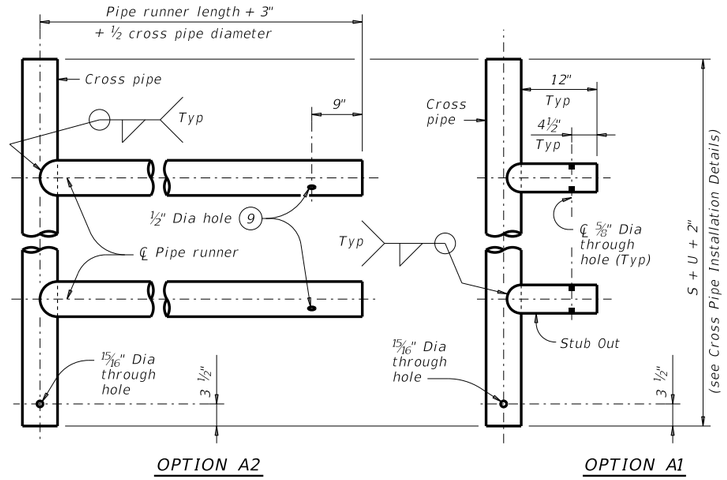
(8) Take care to ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, inspect the 1#2" hole to ensure that the lap of the safety pipe runner with the bottom anchor pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

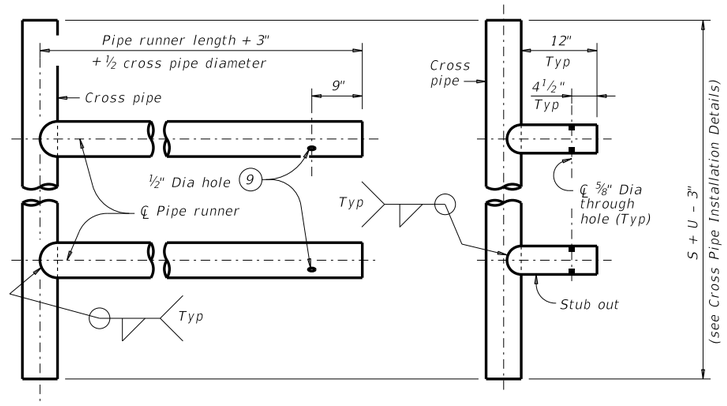
MAXIMUM PIPE RUNNER LENGTHS AND (6) REQUIRED PIPE RUNNER AND ANCHOR PIPE SIZES

Maximum Pipe Runner Length	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
10'- 0"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'- 8"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
34'- 2"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"



OPTION A2 OPTION A1

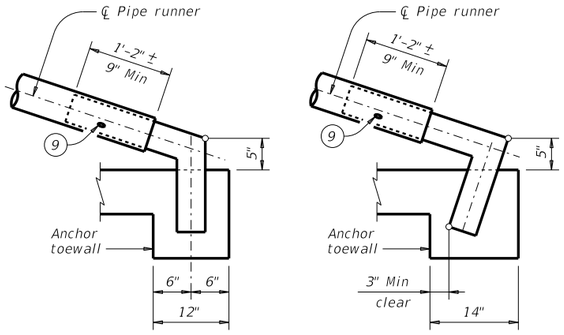
FOR USE IN OUTSIDE CULVERT BAY



OPTION A2 OPTION A1

FOR USE IN INSIDE CULVERT BAY

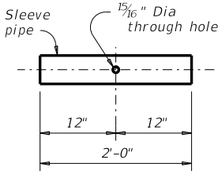
CROSS PIPE AND CONNECTIONS DETAILS



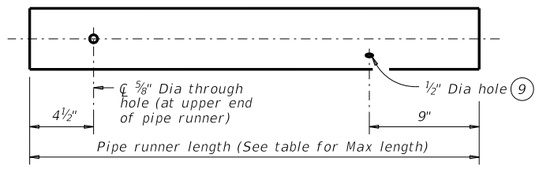
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Wingwall not shown for clarity.)

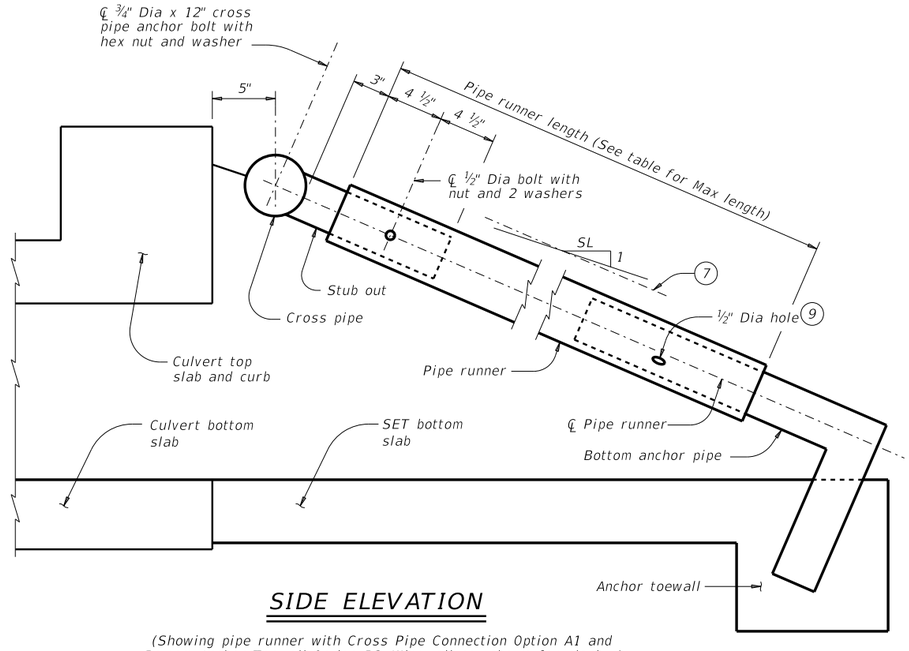


CROSS PIPE SLEEVE PIPE DETAILS



NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS



SIDE ELEVATION

(Showing pipe runner with Cross Pipe Connection Option A1 and Bottom Anchor Toewall Option B2. Wingwall not shown for clarity.)

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT
FOR 0° SKEW BOX CULVERTS (MAXIMUM Hw = 7'-0") TYPE I ~ CROSS DRAINAGE

SETB-CD

FILE: CD-SETBCD-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for One Structure End)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (Two~Wings) (3)	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw (10)	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'- 8"	1'- 9"	1'- 3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'- 2"	2'- 0"	1'- 6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'- 8"	2'- 3"	1'- 9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'- 2"	2'- 6"	2'- 0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'- 8"	2'- 9"	2'- 3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'- 2"	3'- 0"	2'- 6"	9"	#7	6"	#5	6"	162.29	0.721

TABLE OF WINGWALL REINFORCING (Two~Wings)

Bar	Size	No.	Spa
DL & DS	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
RL	#5	3	~
RS	#5	3	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

TABLE OF ESTIMATED ANCHOR TOEWALL QUANTITIES

Bar	Size	No.	Spa
K	#4	~	1'-0"
N	#5	6	~
OL	#4	3	~
OS	#4	3	~
Reinf (Lb/Ft)			9.82
Conc (CY/Ft)			0.074

(1) Extend Bars P 3'-0" Min into bottom slab of box culvert.

(2) Adjust to fit as necessary to maintain 1½" clear cover and 4" Min between bars.

(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by 0.5 (A+Lw).

(4) Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.

(5) When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, extend construction joints or grooved joints, oriented in the direction of flow, across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B is not required.

(6) At Contractor's option, end the culvert toewall flush with wingwall toewall. Adjust reinforcing as needed.

(7) 3" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet.

(8) For vehicle safety, reduce curb heights, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

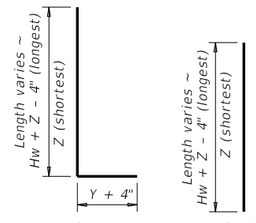
(9) Culvert skew (limit to 15° or 30°)

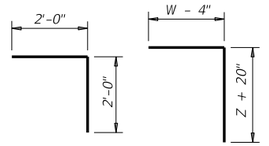
(10) See Table of Maximum Wing Heights for various slopes. Height is limited based on a 33'-6" maximum safety pipe runner length.

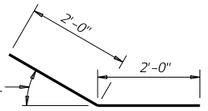
(11) Typical wingwall angle for all skews.

TABLE OF MAXIMUM WING HEIGHTS (10)

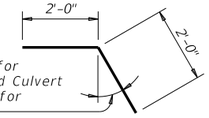
Side Slope	Hw Max
3:1	11'- 5"
4:1	8'-10"
6:1	6'- 1"







Angle = Culvert Skew for Bars DS and 15° for Bars DL



Angle = 0° for Bars RS and Culvert Skew + 15° for Bars RL

WING DIMENSION CALCULATIONS:

Formulas:

Hw = H + T + C - 0.250' (10)
A = (Hw - 0.333') (SL)
B = (A) [tan (θ + 15°)]
Lw = (A) ÷ [cos (θ + 15°)]

For cast-in-place culverts:

Ltw = [(N) (S) + (N + 1) (U)] ÷ (cos θ)

For precast culverts:

Ltw = [(N) (2U + S) + (N - 1) (0.500')] ÷ (cos θ)

Lc = (Ltw) - (2U) ÷ (cos θ)
Atw = (Lc) + (B)
Total Wingwall Area (two wings ~ S.F.) = (0.5) (Hw + 0.333') (Lw + A)

Hw = Height of wingwall (feet)
SL:1 = Side slope ratio (horizontal : 1 vertical)
Lw = Length of wingwall (feet)
Ltw = Culvert toewall length (feet)
Lc = Culvert curb between wings (feet)
Atw = Anchor toewall length (feet)
N = Number of culvert spans
θ = Culvert skew

See applicable box culvert standard for H, S, T, and U values.
See Table of Maximum Wall Heights for limits on Hw.

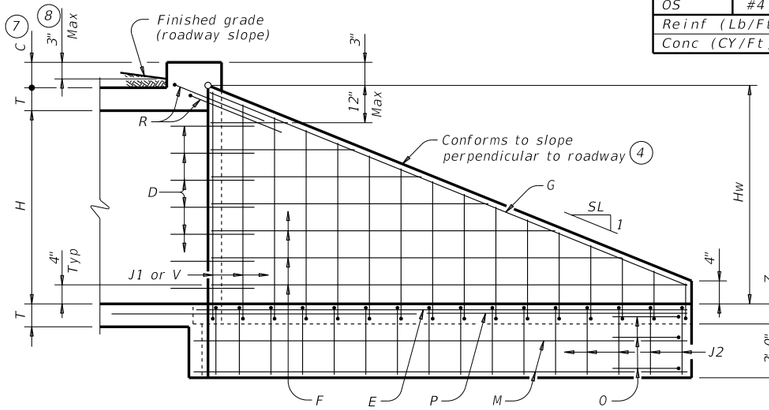
MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Provide Class "C" concrete (f`c = 3,600 psi).
Adjust reinforcing as necessary to provide a minimum clear cover of 1 ½".
Provide pipe runners and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
Provide ASTM A307 bolts and nuts.
Provide ASTM A36 steel plates.
Galvanize all steel components, except reinforcing unless required elsewhere in the plans, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing."
For optional adhesive anchors, install adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing adhesive, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Provide anchorage rods that are clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

GENERAL NOTES:

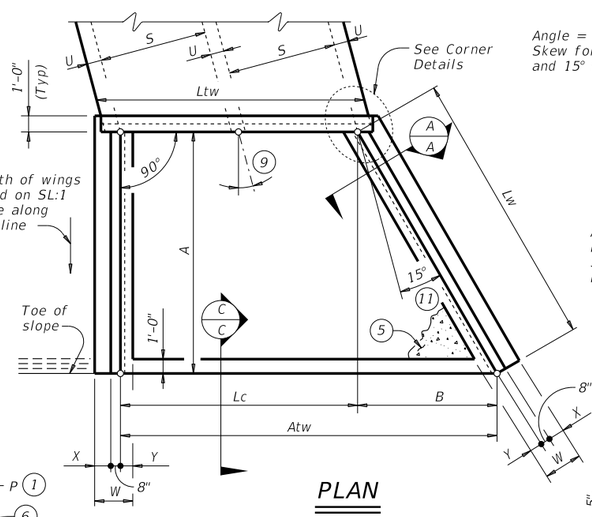
Designed according to AASHTO LRFD Bridge Design Specifications.
The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
All bolts, nuts, washers, brackets, angles, and pipe runners are considered parts of the safety end treatment for payment
The quantities for pipe runners, reinforcing steel, and concrete, resulting from the formulas given herein are for Contractor's information only.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

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



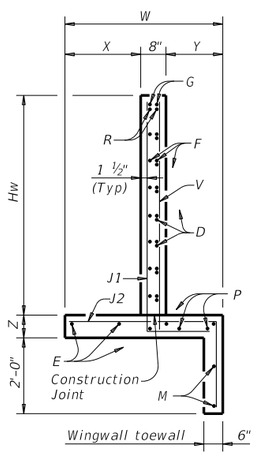
INSIDE ELEVATION OF WINGWALL

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

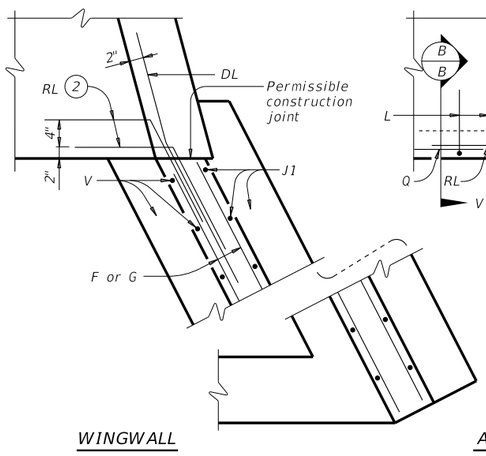


PLAN

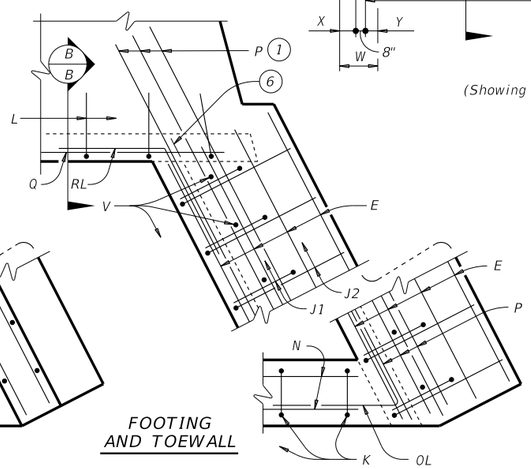
(Showing dimensions and 15° skew.)



SECTION A-A



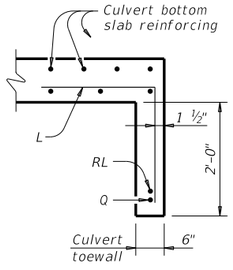
WINGWALL



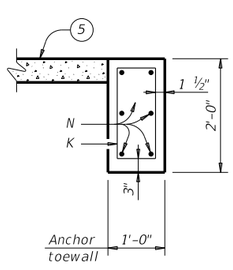
FOOTING AND TOEWALL

CORNER DETAILS

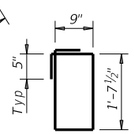
(Culvert and culvert toewall reinforcing not shown for clarity.)



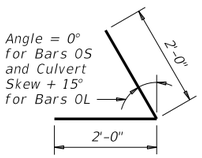
SECTION B-B (5)



SECTION C-C



BARS K
(Length = 5'-5")



BARS OS and OL
(OS ~ Short wing
and OL ~ Long wing)

SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS

FOR 15° & 30° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE

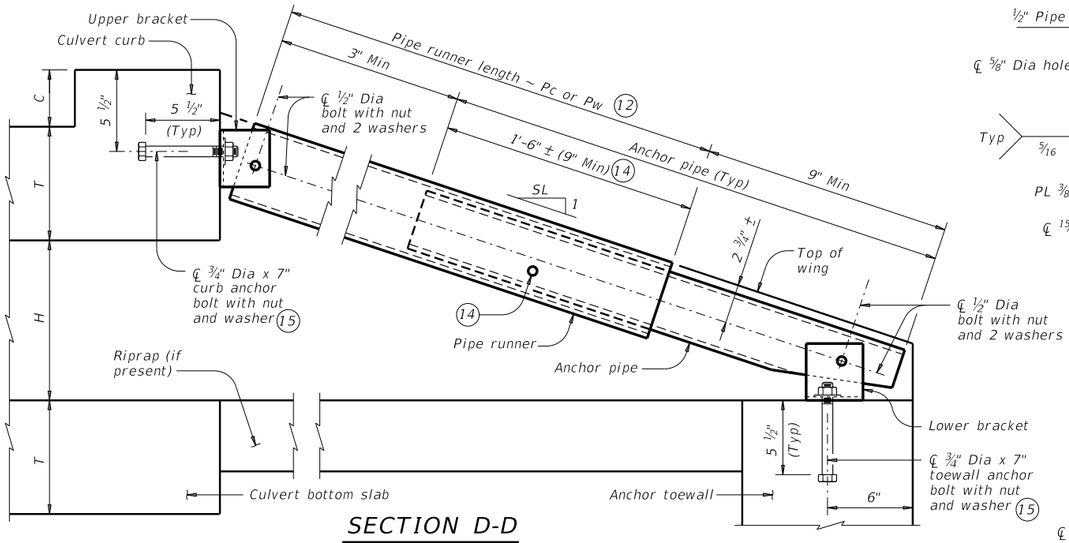
SETB-FW-S

FILE: CD-SETB-FWS-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

DATE:
FILE:

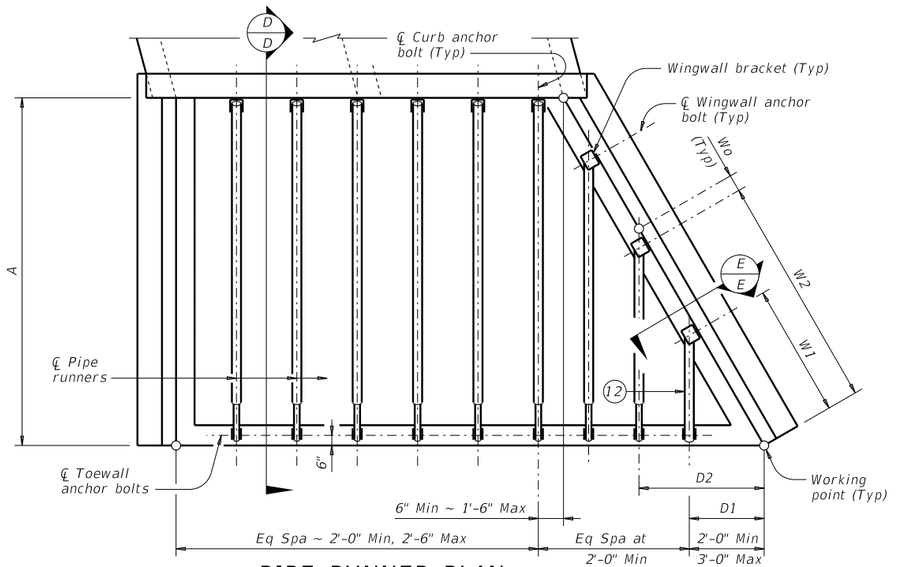
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

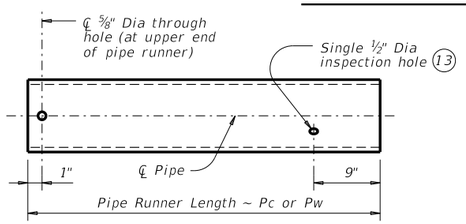


SECTION D-D

(Showing curb pipe runner. Except for upper bracket, wingwall pipe runners are similar.)

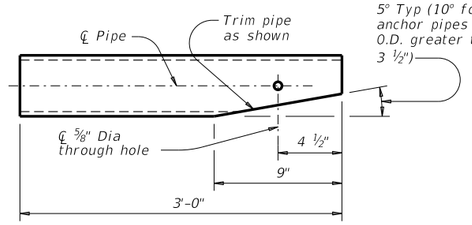


PIPE RUNNER PLAN

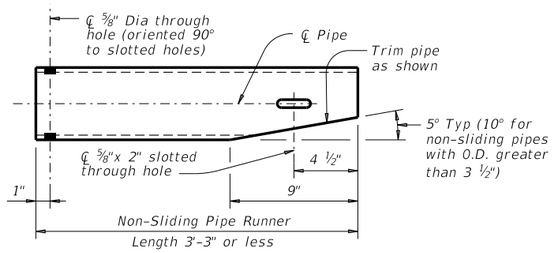


Note: Use pipe diameter required for curb pipe runner for wingwall pipe runner.

PIPE RUNNER DETAILS

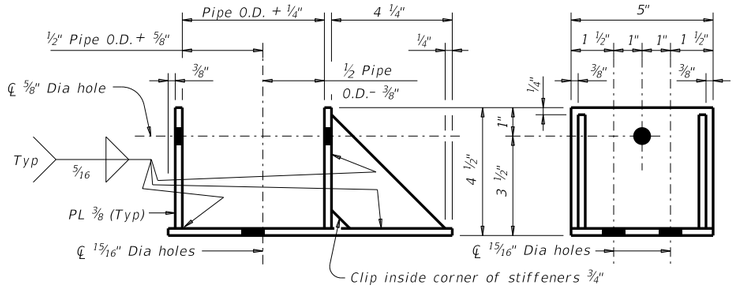


ANCHOR PIPE DETAILS



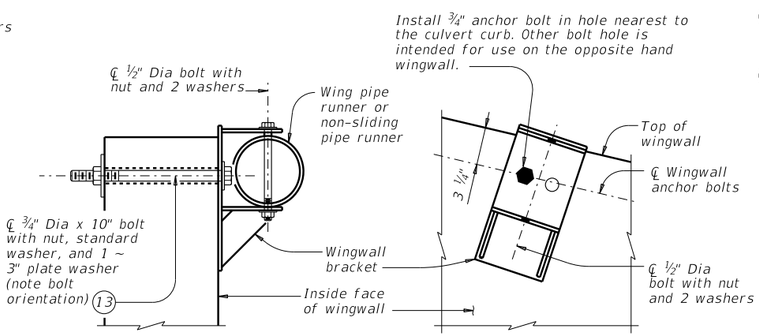
Note: Pipe size is the same as required for curb pipe runner. Adjust the corresponding lower bracket accordingly.

NON-SLIDING PIPE RUNNER DETAILS



ELEVATION

SIDE VIEW



SECTION E-E

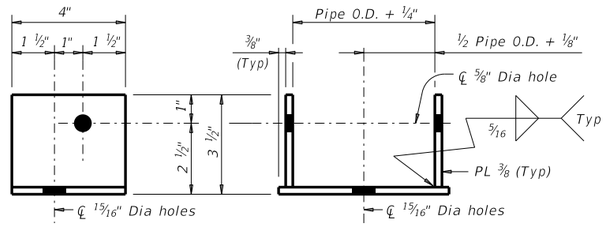
(Showing installed bracket.)

ELEVATION

(Showing installed bracket normal to wall. Pipe not shown for clarity.)

Note: Match wingwall bracket to the upper curb bracket size.

WINGWALL BRACKET DETAILS



SIDE VIEW

ELEVATION

Note: Match upper and lower brackets, except for the brackets used with non-sliding pipe runners, to the required pipe diameters as shown in the table.

UPPER AND LOWER BRACKET DETAILS

MAXIMUM PIPE RUNNER LENGTHS AND REQUIRED PIPE RUNNER AND ANCHOR PIPE SIZES

Maximum Pipe Runner Length (Pc or Pw)	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
9'-4"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-0"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
33'-6"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"

(12) If pipe runner length (Pw) is 1'-9" or less, replace the normal pipe runner and anchor pipe with a single non-sliding pipe runner. See Non-Sliding Pipe Runner Details for additional information.

(13) At Contractor's option, ⅞" diameter hole may be formed or cored drilled. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes.

(14) After installation of pipe runner, use the ½" inspection hole to ensure that the lap of the anchor pipe with the pipe runner is adequate.

(15) At Contractor's option, an adhesive anchor may be used. Provide ¾" Dia adhesive anchors that meet the requirements of ASTM A307, Gr A fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 5 ½". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. 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.

PIPE RUNNER DIMENSION CALCULATIONS:

Wn = (K3) (Dn) – (Wo)
Pwn = (Dn) (K2) – (2.063')
Pw1 Non-Sliding Pipe Runner (If required) = (D1) (K2) – (0.563')
Pc = (A) (K1) – (1.688')

Wn = Distance from working point to centerline anchor bolt measured along bottom inside face of wing (feet)
Dn = Distance from working point to centerline pipe runner measured along outside face of anchor toewall (feet)
Pw = Wingwall pipe runner length (feet)
Pc = Curb pipe runner length (feet)
K = Constant values for use in formulas

Slope SL:1	K1	K2~15° Skew	K2~30° Skew
3:1	~ 1.054	~ 1.826	~ 1.054
4:1	~ 1.031	~ 1.785	~ 1.031
6:1	~ 1.014	~ 1.756	~ 1.014

K3 = 15° Skew ~ 2.000
30° Skew ~ 1.414
n = Wing pipe runner number
Wo = 15° Skew ~ 5"
30° Skew ~ 2 ½"

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS

FOR 15° & 30° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE

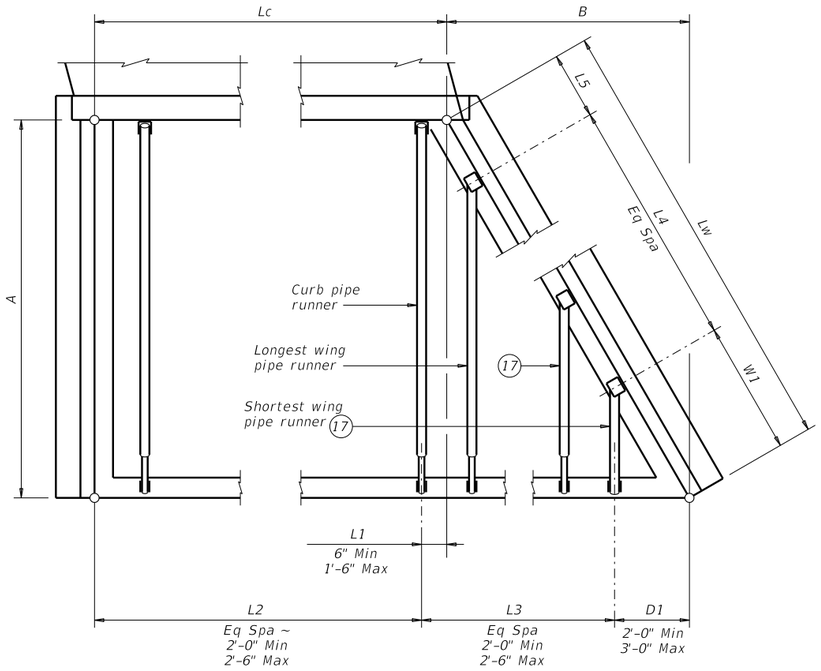
SETB-FW-S

FILE: CD-SETB-FWS-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

DATE:
FILE:

Culvert Station and/or Creek name followed by applicable end (Lt, Rt or Both) (16)	Lc (Ft)	L1 (Ft)	L2 No. Spa	L2 Spa at (Ft)	L2 Overall Length (Ft)	D1 (Ft)	L3 No. Spa	L3 Spa at (Ft)	L3 Overall Length (Ft)	W1 (Ft)	L4 No. Spa	L4 Spa at (Ft)	L4 Overall Length (Ft)	L5 (Ft)	Curb Pipe Runner (Pc) No.	Curb Pipe Runner (Pc) Length (Ft)	Longest Wing Pipe Runner (Pw) (Ft)	Shortest Wing Pipe Runner (Pw) (Ft)	Non-Sliding Wing Pipe Runner (if applicable) (Ft)	Curb, Wing, and/or Non-Sliding Pipe Runners Size (3",4" or 5")	Curb, Wing, and/or Non-Sliding Pipe Runners Total Length (16) (Ft)	3'-0" Anchor Pipe Size (2",3" or 4")	3'-0" Anchor Pipe Total Length (16) (Ft)



PIPE RUNNER LAYOUT

Note: Right forward culvert skew shown, actual culvert skew may be opposite hand.

(16) Quantities shown are for one structure end if Lt or Rt. Quantities shown are for two structure ends if Both.

(17) If the outermost wing pipe runner is a non-sliding pipe runner, consider the next outermost wing pipe runner as the shortest.

SPECIAL NOTE:

This tabular sheet is to be filled out by the culvert specifier and provides information for the construction details and quantities of pipe runners.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

Note that the tabular quantities are given for estimating purposes only. It is likely that these quantities will change due to field conditions. Therefore, all dimensions must be verified by the Contractor in the field prior to fabrication of the safety end treatment components.

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS

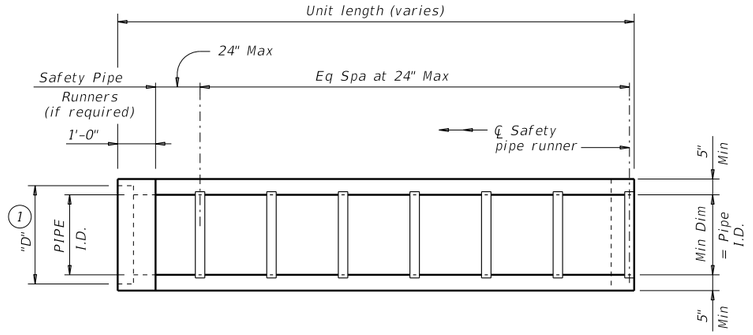
FOR 15° & 30° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE

SETB-FW-S

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

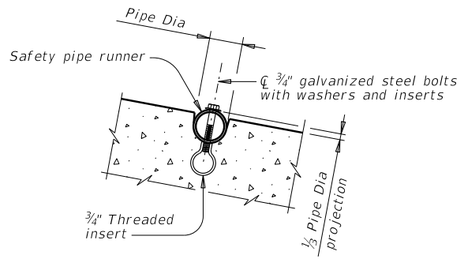
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



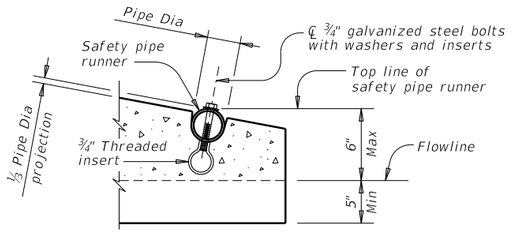
PLAN

(Showing bell end connection.)

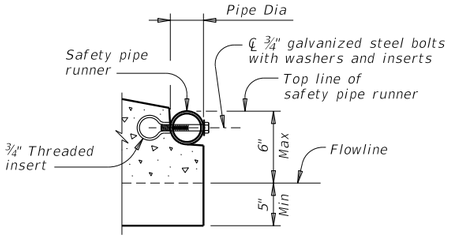


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



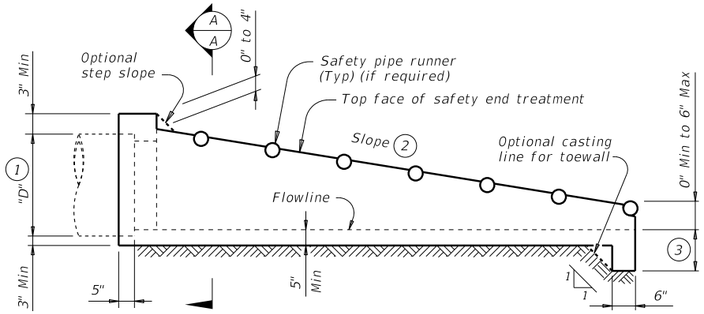
OPTION A



OPTION B

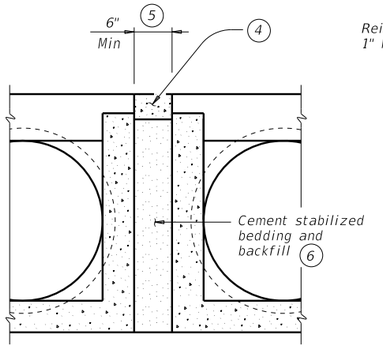
END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

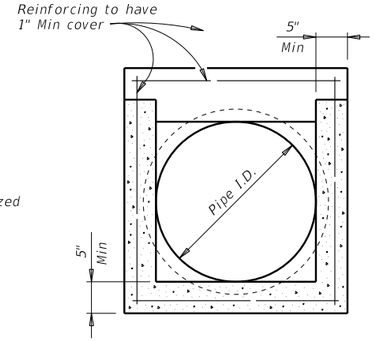


LONGITUDINAL ELEVATION

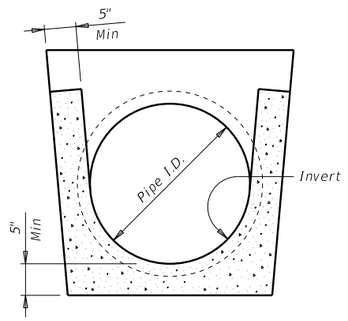
(Showing bell end connection.)



MULTIPLE PIPE INSTALLATION

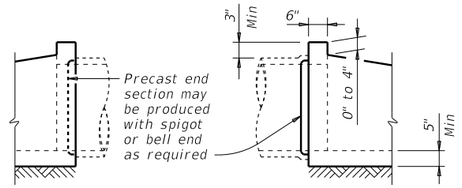


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' – 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	1.30"	20.50"	6:1	6' – 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8' – 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' – 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14' – 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' – 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	2.7"	52.50"	6:1	21' – 2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C–76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" – D12 x D12 or 5"x5" – D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280–2F, "Safety Treatment of Roadside Parallel–Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

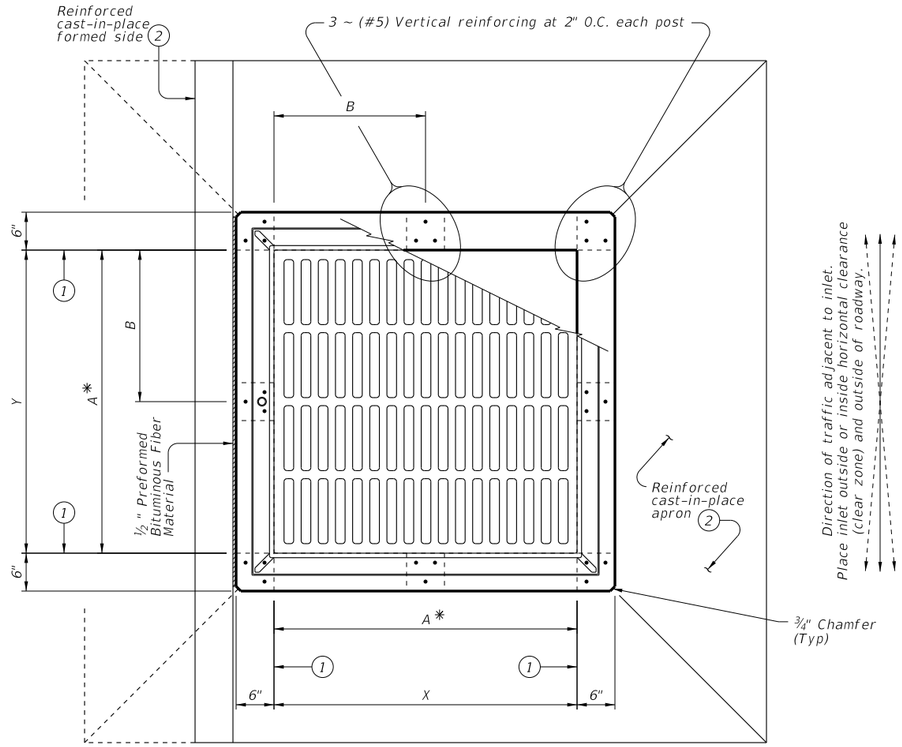
TYPE II ~ PARALLEL DRAINAGE

PSET-SP

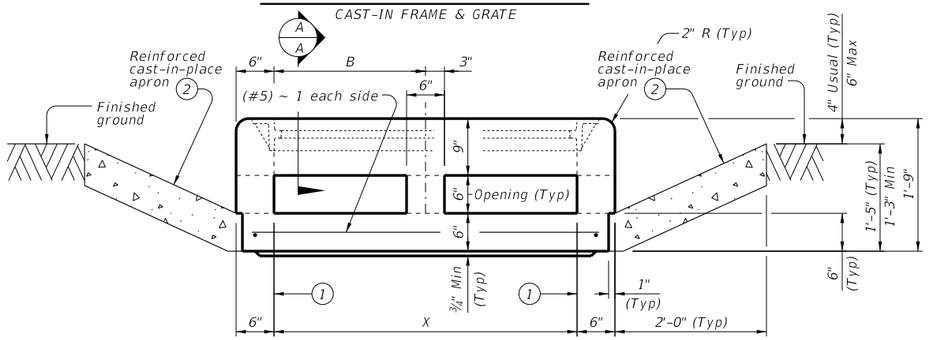
FILE: CD-PSET-SP-21.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	DIST	COUNTY		SHEET NO.

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

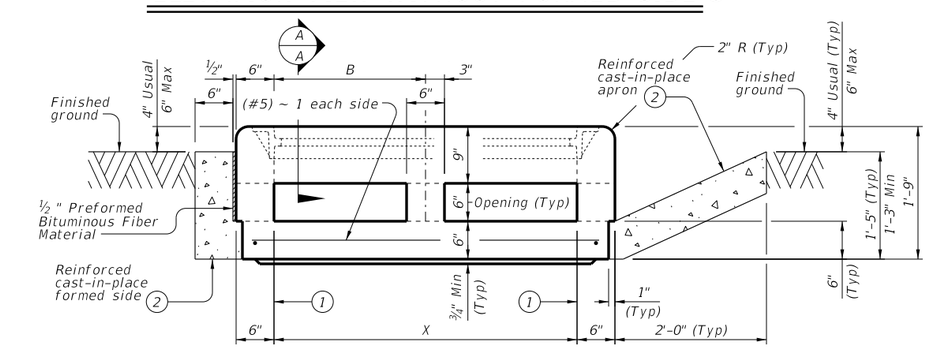
DATE:
FILE:



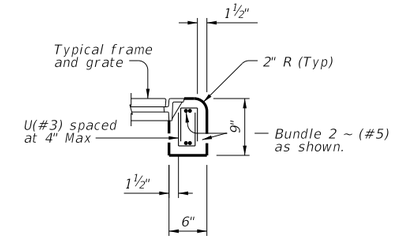
PLAN VIEW ~ STYLE 'FG' (3)



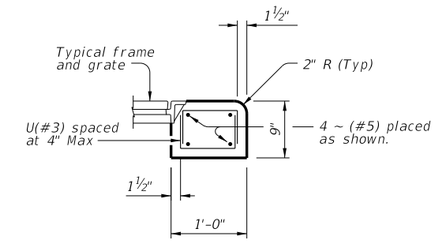
ELEVATION VIEW WITHOUT FORMED SIDE (4)



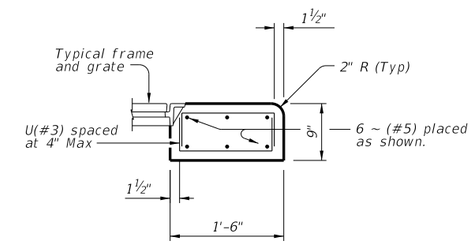
ELEVATION VIEW WITH FORMED SIDE (4)



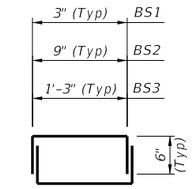
SECTION A-A ~ BS1



SECTION A-A ~ BS2



SECTION A-A ~ BS3

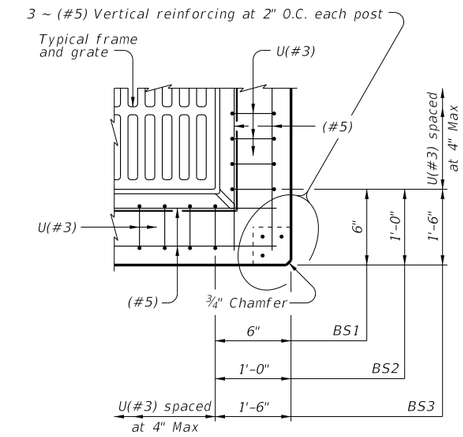


BARS U (#3)

Showing one complete bar.

Style	Size (X x Y)	A x A *	B x B	Beam Section
FG	3'x3'	3'x3'	1.5'x1.5'	BS1
FG	4'x4'	3'x3'	2'x2'	BS2
FG	4'x4'	4'x4'	2'x2'	BS1
FG	5'x5'	3'x3'	2.5'x2.5'	BS3
FG	5'x5'	4'x4'	2.5'x2.5'	BS2

* Nominal frame/grate size.



TYPICAL CORNER REINFORCING PLAN DETAIL

Showing BS2 other beam sections similar.

(1) Matches inside face of wall of precast base or riser below inlet.

(2) Construct cast-in-place reinforced concrete with or without formed side. Place formed side/sides as directed elsewhere in the plans. Formed sides may only be used on sides parallel to traffic. Use Class "C" concrete. Apron and formed side reinforcing not shown for clarity. Apron and formed side are subsidiary to PAZD-CZ. Apron is 2'-0" width around precast zone drain, unless an optional formed side is used. For apron and formed side, provide (#4) reinforcing at 12" O.C.

(3) Top slab reinforcing not shown for clarity.

(4) Top slab reinforcing and post reinforcing not shown for clarity.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of ¾" to reinforcing from bottom of slab and 2" to reinforcing from top of slab for structural reinforcement.
4. Provide 1 ½" end cover on (#5) reinforcing.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast Area Zone Drain within Clear Zone (PAZD-CZ) is for use in ditches and medians outside and inside of the horizontal clearance (clear zone). PAZD-CZ is never placed in the roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

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

HL93 LOADING

Texas Department of Transportation

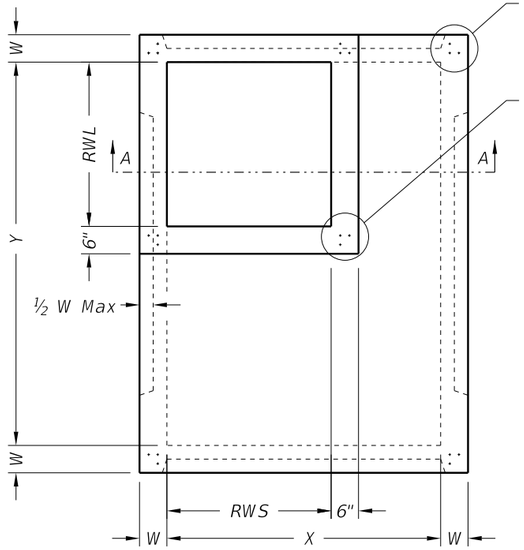
Bridge Division Standard

PRECAST AREA ZONE DRAIN WITHIN CLEAR ZONE

PAZD-CZ

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

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.

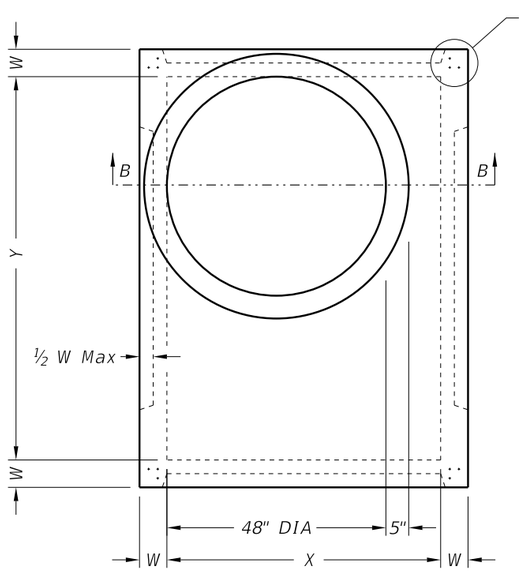


C (3) VERTICAL REBAR IN BASE & RISERS
#4 @ 2" O.C. EACH CORNER
2" TO CORNER

F (3) VERTICAL REBAR IN REDUCED RISERS
#4 @ 2" O.C. EACH CORNER
2" TO CORNER

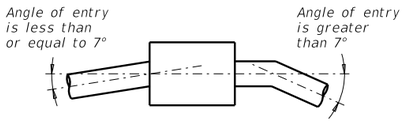
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



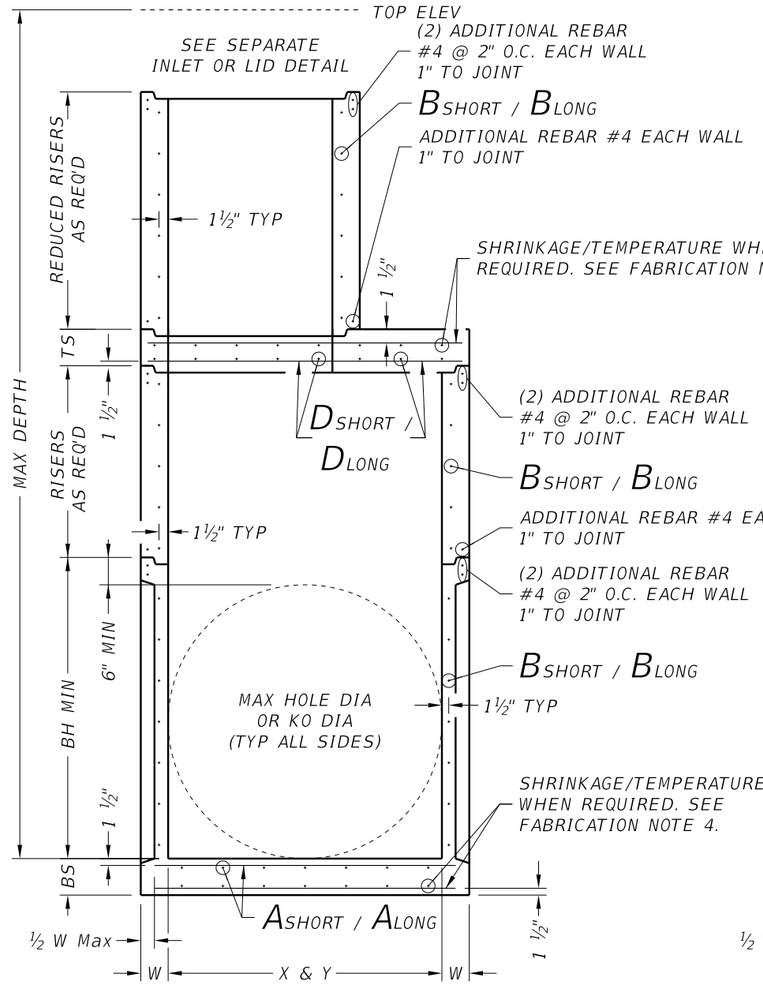
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



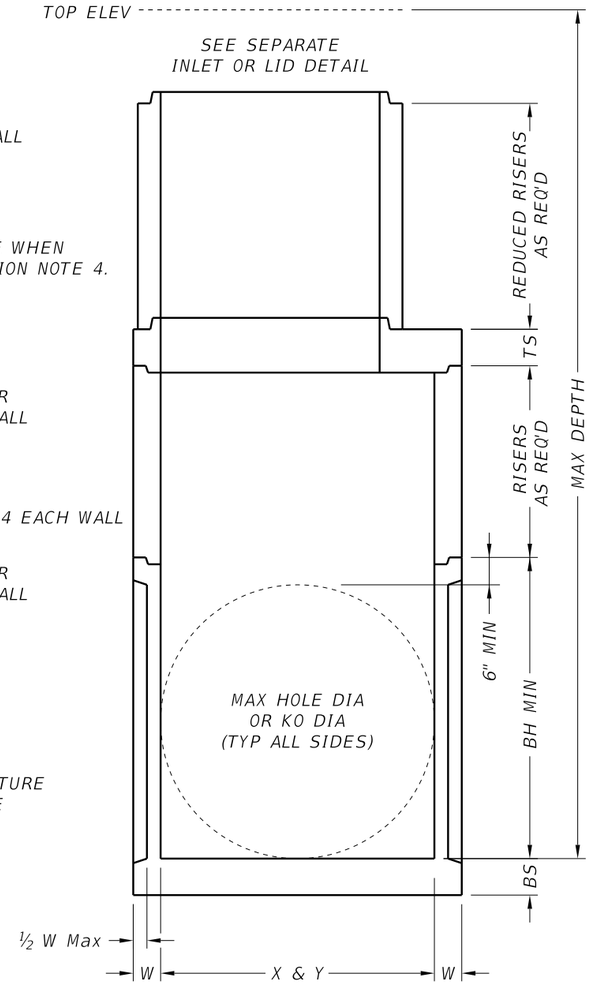
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

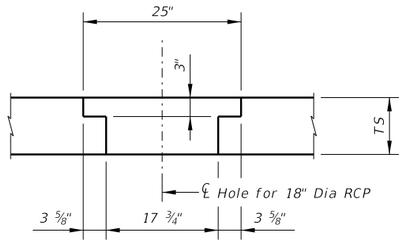
PB

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

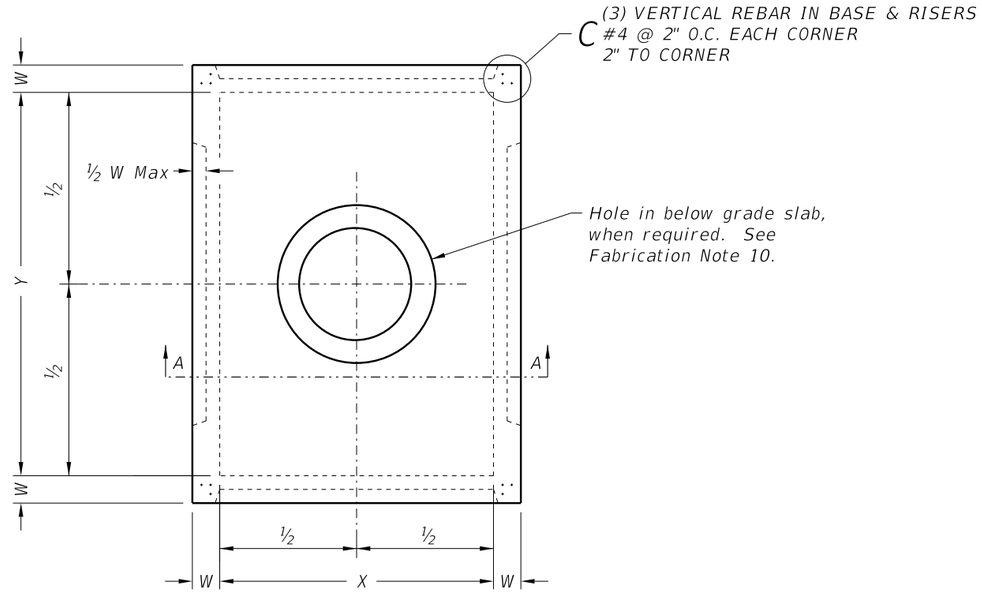
DATE:
FILE:

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

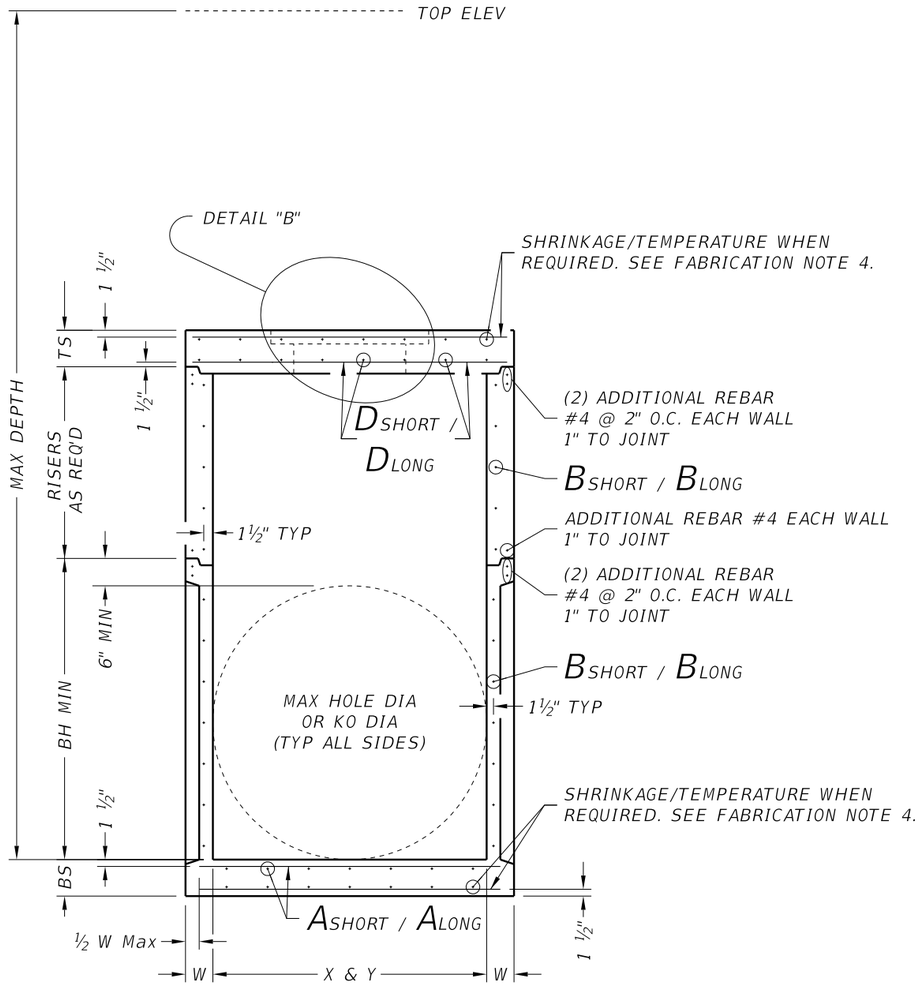
DATE:
FILE:



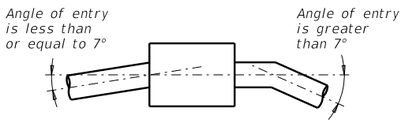
DETAIL "B"



PLAN VIEW



SECTION A-A



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in^2/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST JUNCTION BOX

PJB

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

I.D. (IN.)	T (IN.)	Δ = 11.25° C (FT.)	Δ ≥ 22.50° C (FT.)	E (FT.)
4,6,8	0.4	1.5	1.5	0.9
10,12	0.5	1.5	1.5	1.2
16,18	0.6	1.5	1.5	1.6
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.8	2.6	3.8
48	5.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.5	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.5	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

	Δ = 11.25°								Δ = 22.50°							
			EARTH			ROCK					EARTH			ROCK		
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16,18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8
36	1.7	15.0	3.5	4.5	0.9	2.0	4.0	0.5	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3
42	1.9	20.4	4.5	5.0	1.5	2.5	5.0	0.8	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

DATE
OCT. '04

STANDARD DRAWING NO.
4010B

I.D. (IN.)	Δ = 30° G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7
30	3.6	27.5	6.5	5.0	1.9	3.5	4.0	0.9
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7
54	6.5	89.0	10.0	9.0	10.3	7.0	6.5	5.3
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9

I.D. (IN.)	Δ = 45° G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1
10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3
16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6
20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7
24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1
30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6
36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6
42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2
48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3
54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9
60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0
66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2
72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7
78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9
84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6
90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6
96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5

I.D. (IN.)	Δ = 67.50° G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4
16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2
36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.8
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9
60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2
96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0

I.D. (IN.)	Δ = 90° G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2
10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5
16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0
20	6.6	44.4	10.0	4.5	3.1	6.0	4.0	1.5
24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1
30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3
36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3
42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7
48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4
54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1
60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0
66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5
72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0
78	25.7	506.7	39.0	13.0	108.2	26.0	10.0	53.2
84	27.7	587.7	42.0	14.0	134.4	28.0	10.5	64.8
90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2
96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1

TABLES OF DIMENSIONS AND QUANTITIES

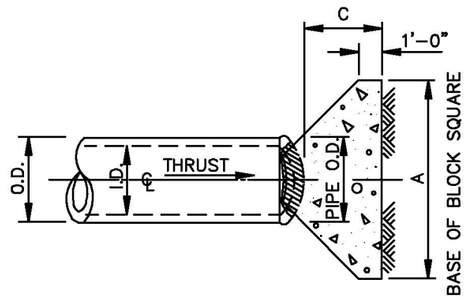
HORIZONTAL THRUST BLOCK AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

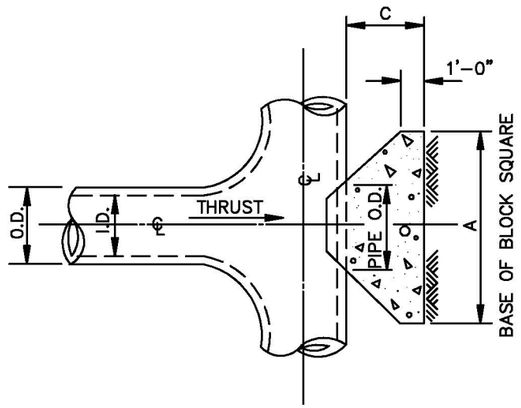
DATE
OCT. '04

STANDARD DRAWING NO.
4010C



PLAN OF PLUG THRUST BLOCK

N.T.S.



REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

PLAN OF TEE THRUST BLOCK

N.T.S.

			EARTH		ROCK	
I.D. (IN.)	THRUST (TONS)	C (FT.)	A (FT.)	VOL. (C.Y.)	A (FT.)	VOL. (C.Y.)
4,6,8	5.1	1.5	2.5	0.3	2.0	0.2
10,12	11.3	1.5	3.5	0.6	2.5	0.3
16,18	25.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	4.5	10.5	11.0	7.5	6.2
48	136.0	5.0	12.0	15.6	8.5	8.7
54	172.0	5.5	13.5	21.4	9.5	11.9
60	212.0	6.0	15.0	28.4	10.5	15.7
66	257.0	6.5	16.5	36.8	11.5	20.5
72	305.0	7.5	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	33.7
84	416.0	8.5	20.5	72.3	14.5	41.2
90	477.0	9.0	22.0	87.7	15.5	49.7
96	543.0	9.5	23.5	104.8	16.5	61.0

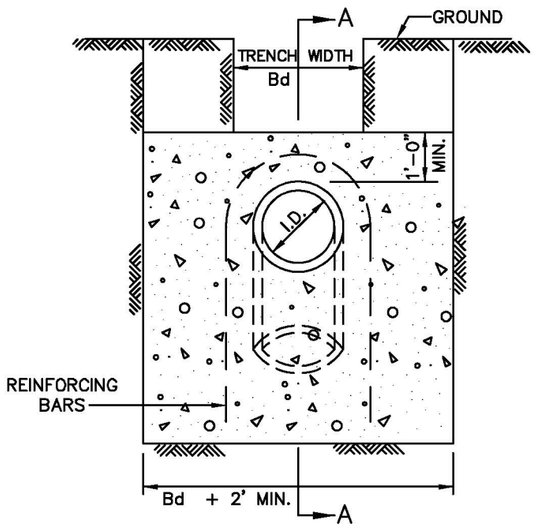
HORIZONTAL THRUST BLOCK AT TEES AND PLUGS

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

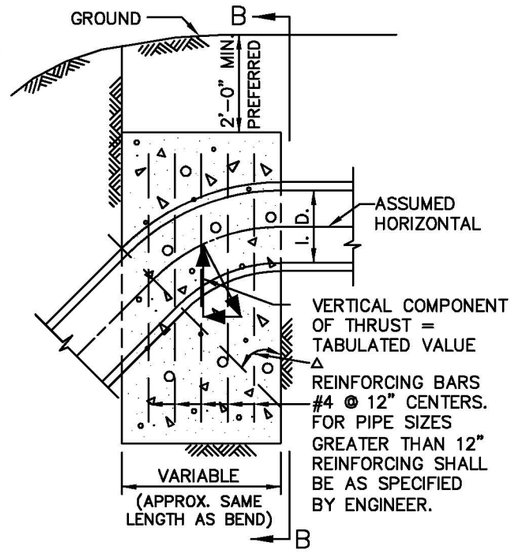
DATE
OCT. '04

STANDARD DRAWING NO.
4020



ELEVATION "B–B"

N.T.S.



SECTION "A–A"

N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

Δ →	11.25°		22.50°		30°		45°		67.50°		90°		← Δ
I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

VERTICAL THRUST BLOCK

AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

DATE
OCT. '04

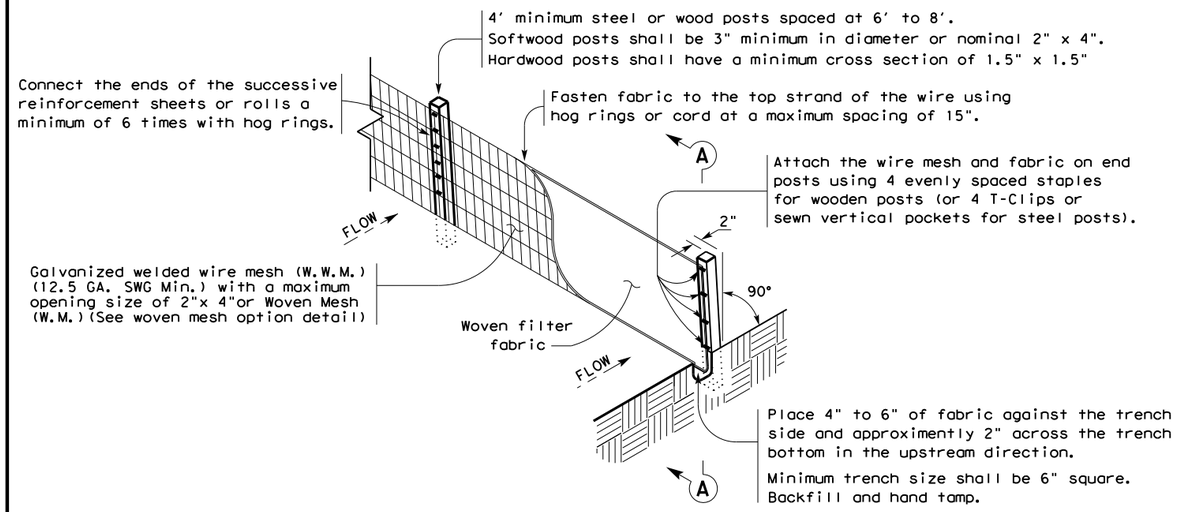
STANDARD DRAWING NO.
4030

GENERAL NOTES FOR ALL THRUST BLOCKS:

1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THE THRUST ON THE VERTICAL BEND.
4. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
5. POUR CONCRETE FOR BLOCK AGAINST UNDISTURBED EARTH.
6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.
8. USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.
9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.

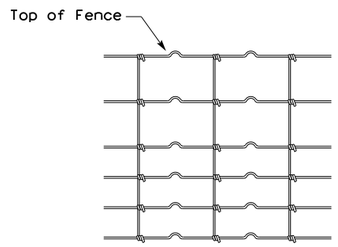
THRUST BLOCK	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE	
GENERAL NOTES		502.4	
		DATE	STANDARD DRAWING NO.
		OCT. '04	4040

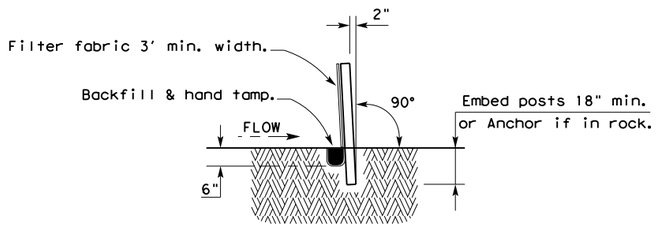
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

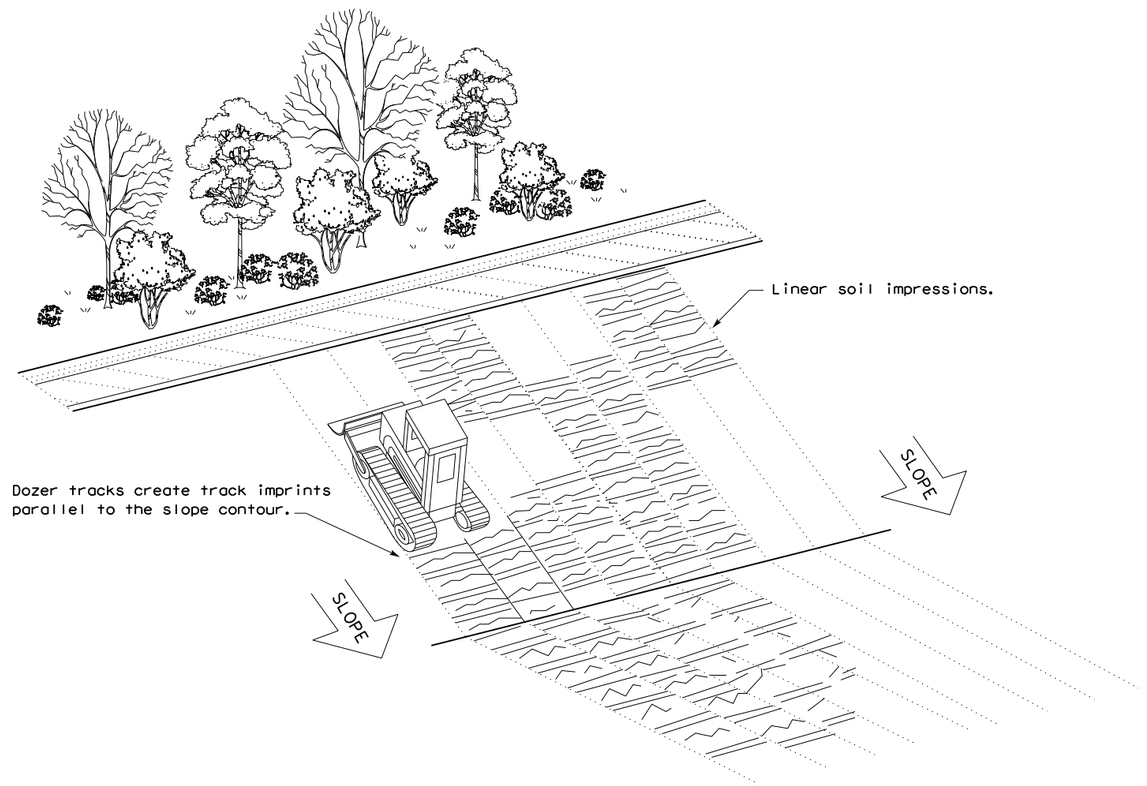
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

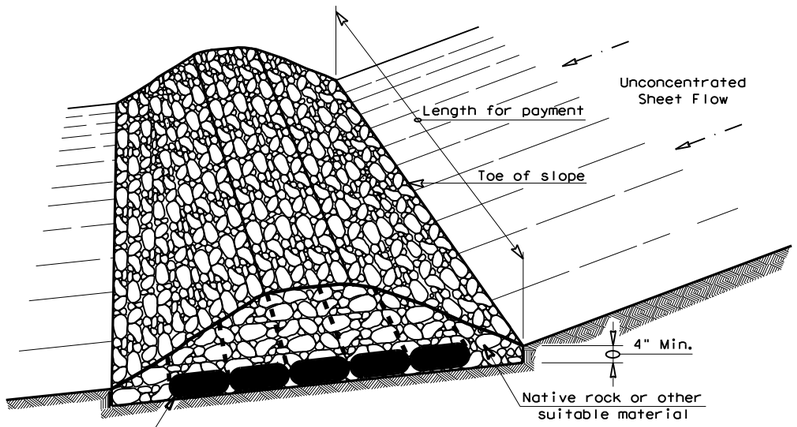
EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	

DATE
FILE

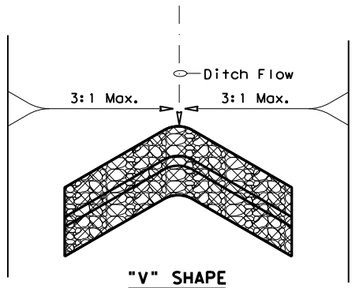
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

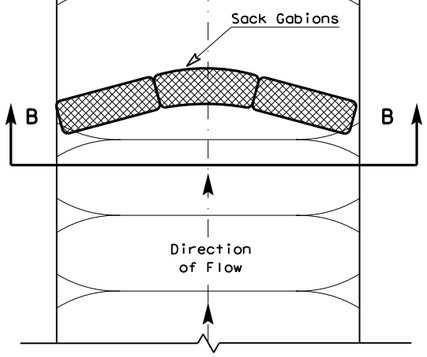


FILTER DAM AT TOE OF SLOPE

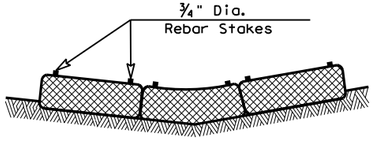
RFD1



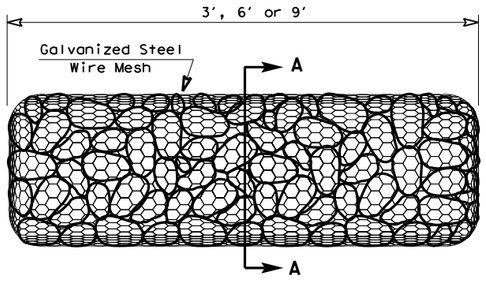
"V" SHAPE PLAN VIEW



PLAN VIEW

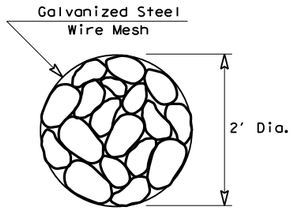


SECTION B-B

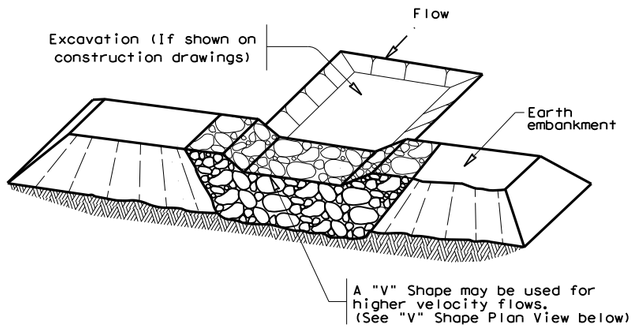


TYPE 4 (SACK GABIONS)

RFD4

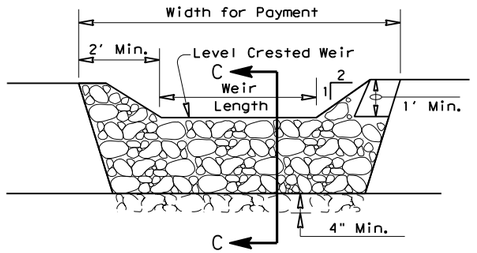


SECTION A-A

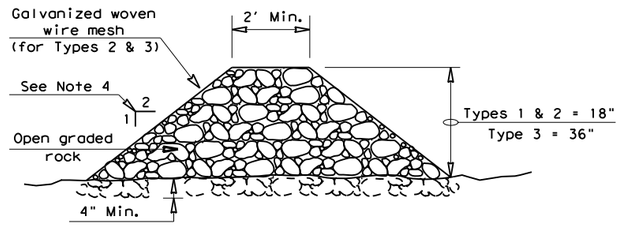


FILTER DAM AT SEDIMENT TRAP

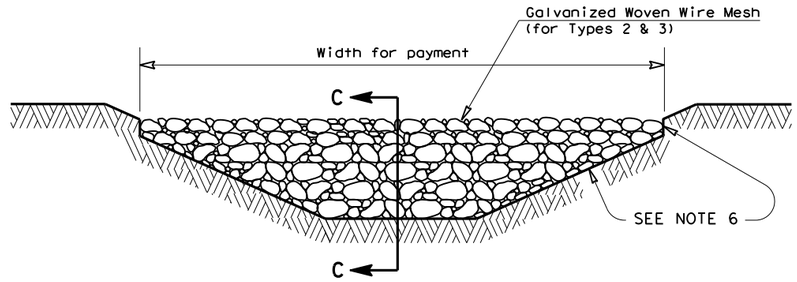
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

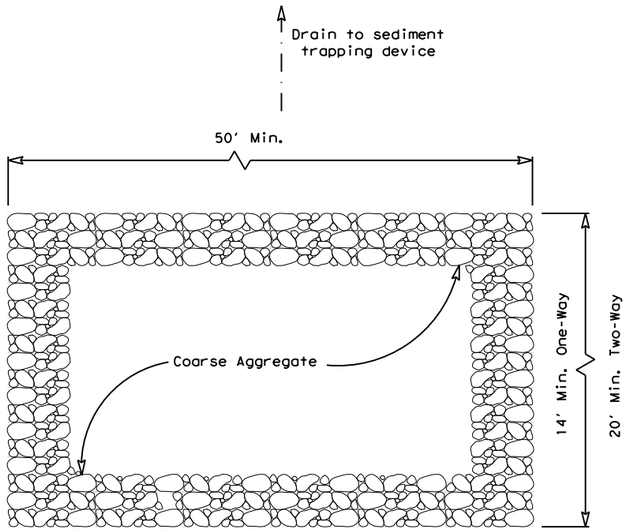
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

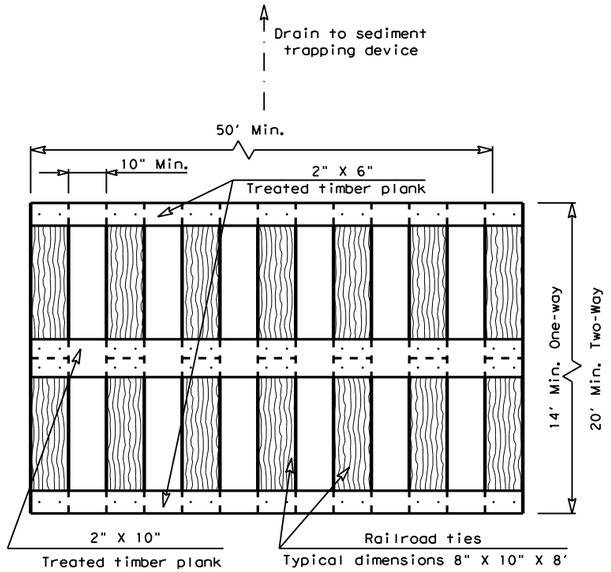
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

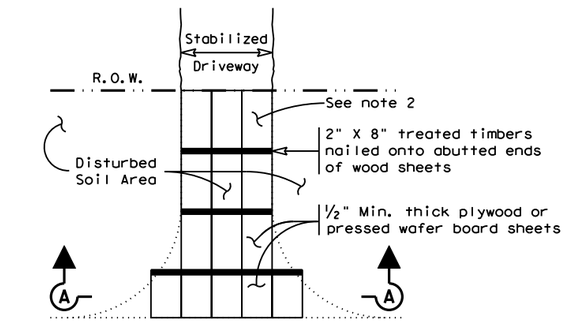
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



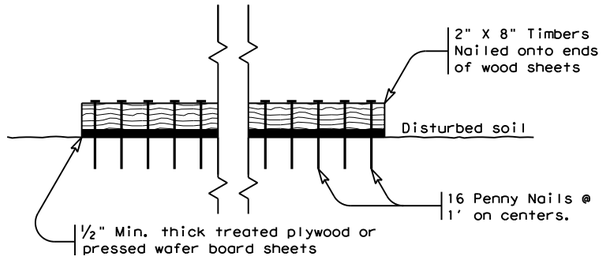
PLAN VIEW



PLAN VIEW



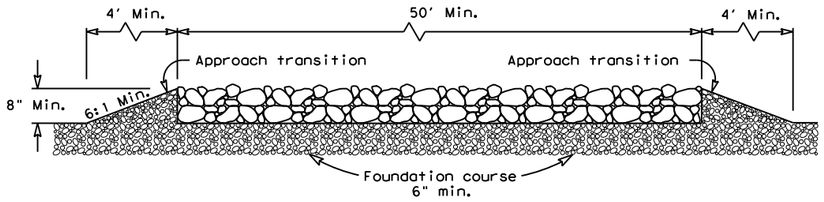
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

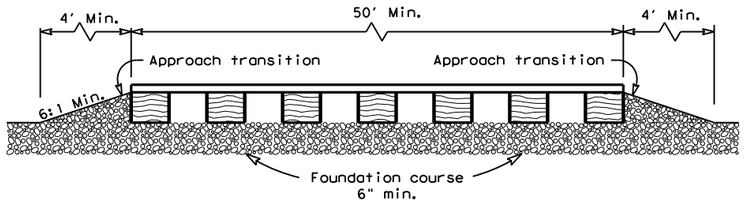
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

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

Texas Department of Transportation

Design Division Standard

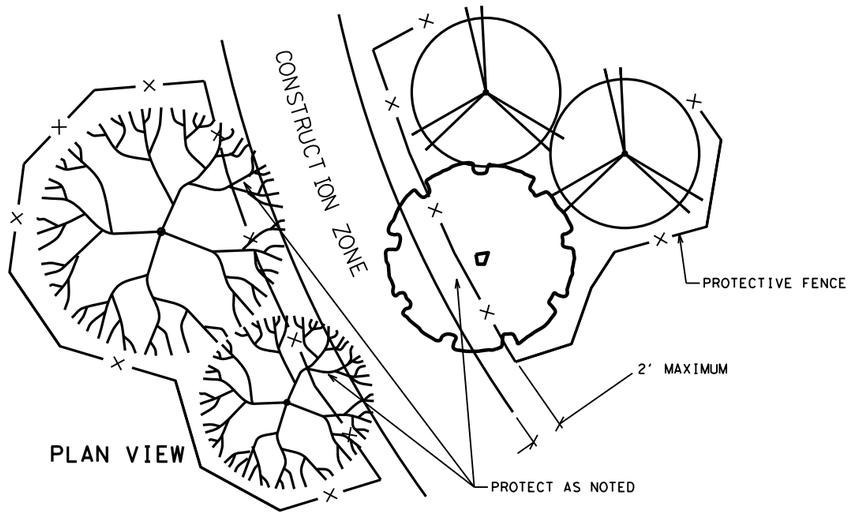
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

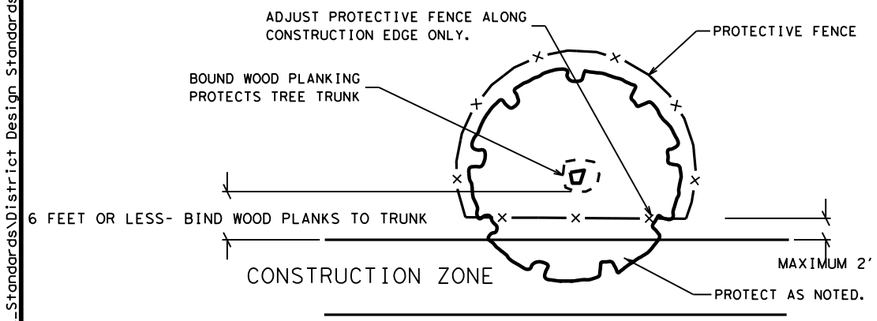
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	C	S	J	HWY
	DIST	COUNTY		SHEET NO.
	DST	CTY		$EC(3)-16$

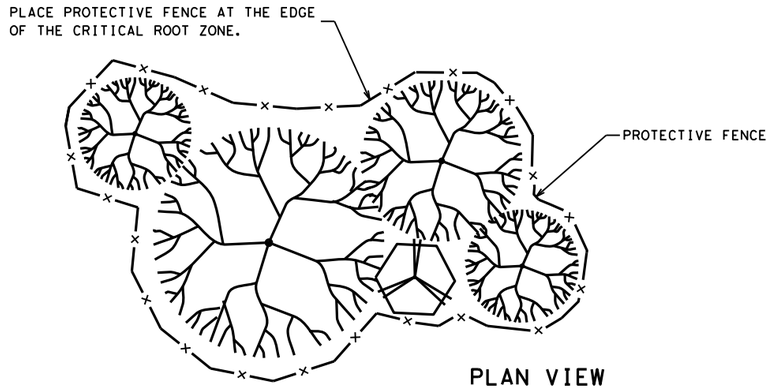
DATE: $DATE$
FILE: $FILE$



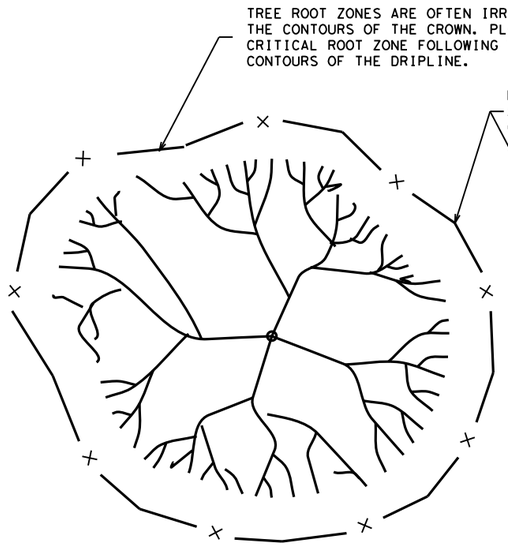
LINEAR CONSTRUCTION THROUGH STAND OF TREES

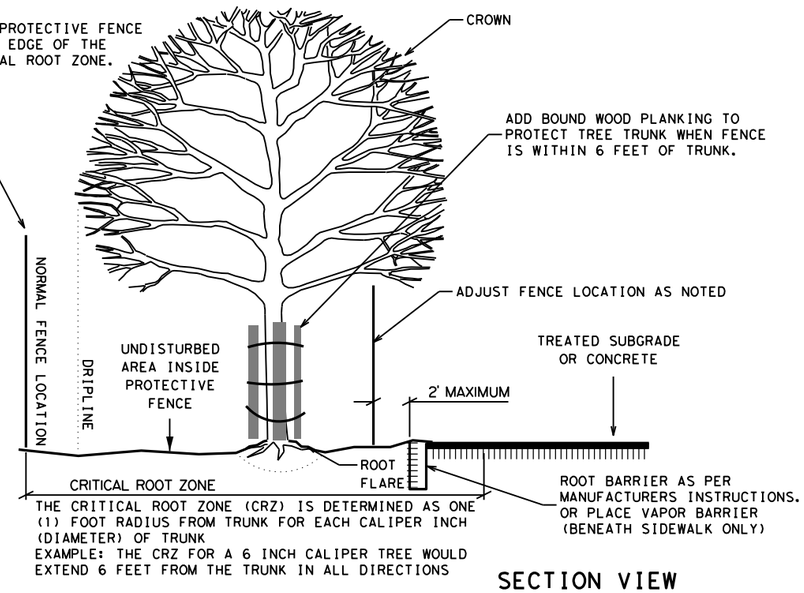


PLAN VIEW
PAVING UNDER TREES



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)

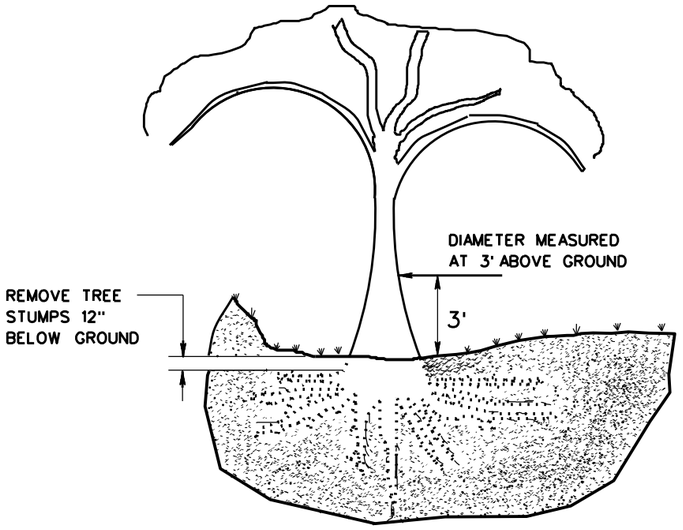
©TxDOT 2020

REVISIONS
06/16: SHEET CREATED
04/19: APPROVED

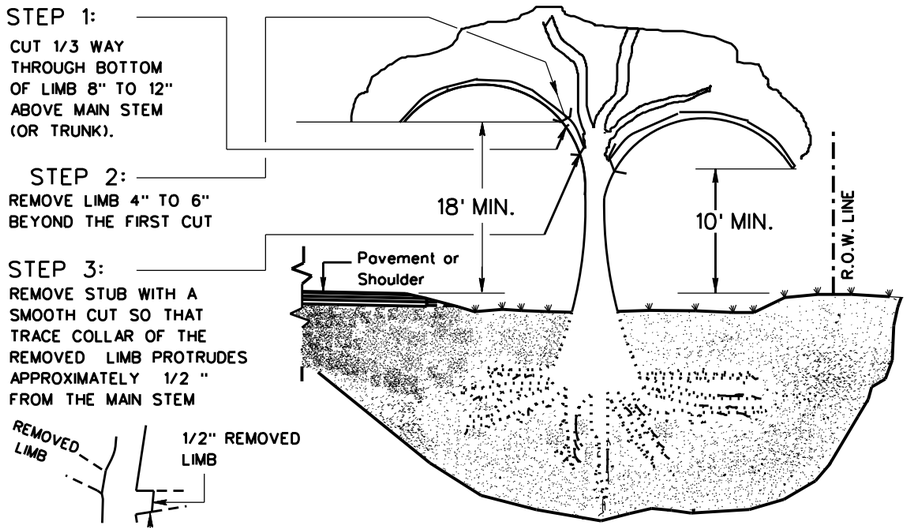
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

DATE: 9/21/2020 12:55:21 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT4\Documents\14 - AUS_Standards\District Design Standards\Approved\TPD-19(AUS).dgn

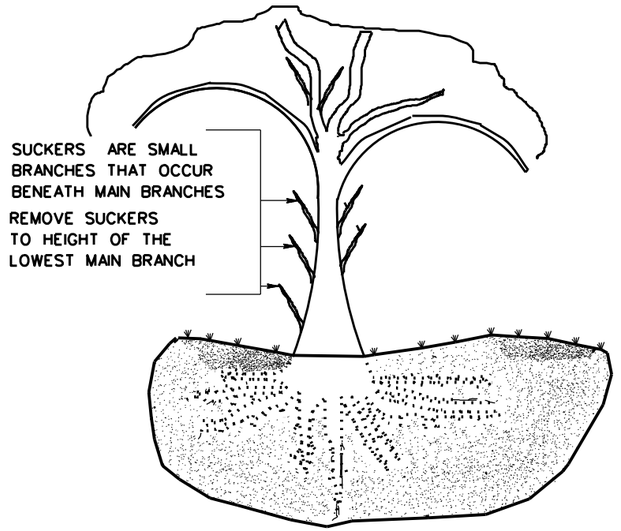
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



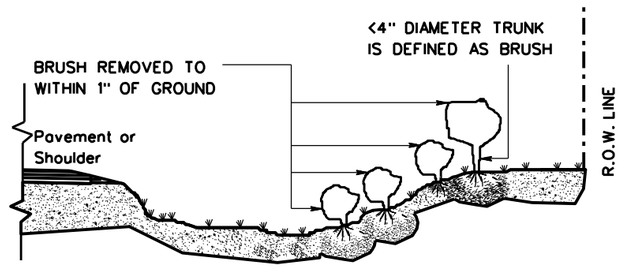
TREE REMOVAL



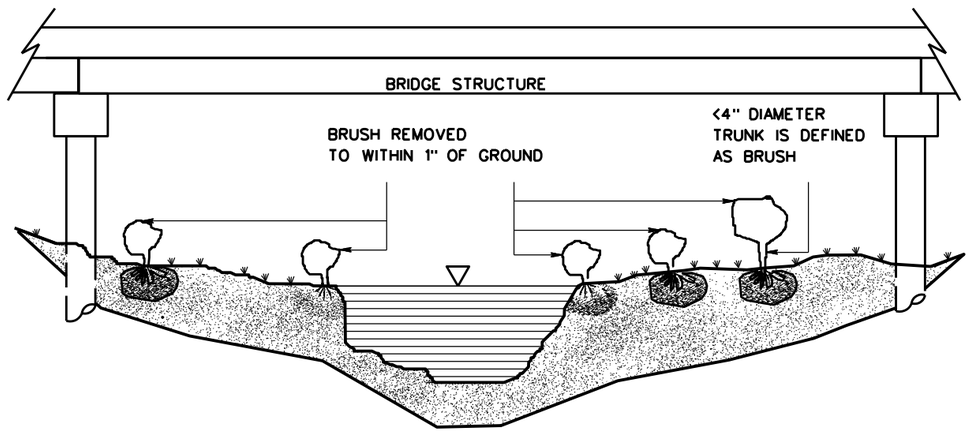
TREE TRIMMING



STEPS 1,2 AND 3 APPLY WHEN REMOVING LIMBS 2" IN DIAMETER OR LARGER.



BRUSH REMOVAL



BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

GENERAL NOTES:

TREE TRIMMING

1. TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

2. TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

TREE REMOVAL

3. FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.

4. MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.

TABLE 1
TREE TRUNK SIZE FOR TREE REMOVAL PAYMENT

PAY ITEM	RANGE FOR PAY ITEMS			
	TRUNK DIAMETER *		TRUNK CIRCUMFERENCE	
	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO
752 7005	4	12	12 1/2	37 1/2
752 7006	12	18	37 1/2	56 1/2
752 7007	18	24	56 1/2	75 1/2
752 7008	24	30	75 1/2	94
752 7009	30	36	94	113
752 7010	36	42	113	132
752 7011	42	48	132	151
752 7012	48	60	151	188 1/2
752 7013	60	72	188 1/2	226

*SEE GENERAL NOTE *3.

Texas Department of Transportation

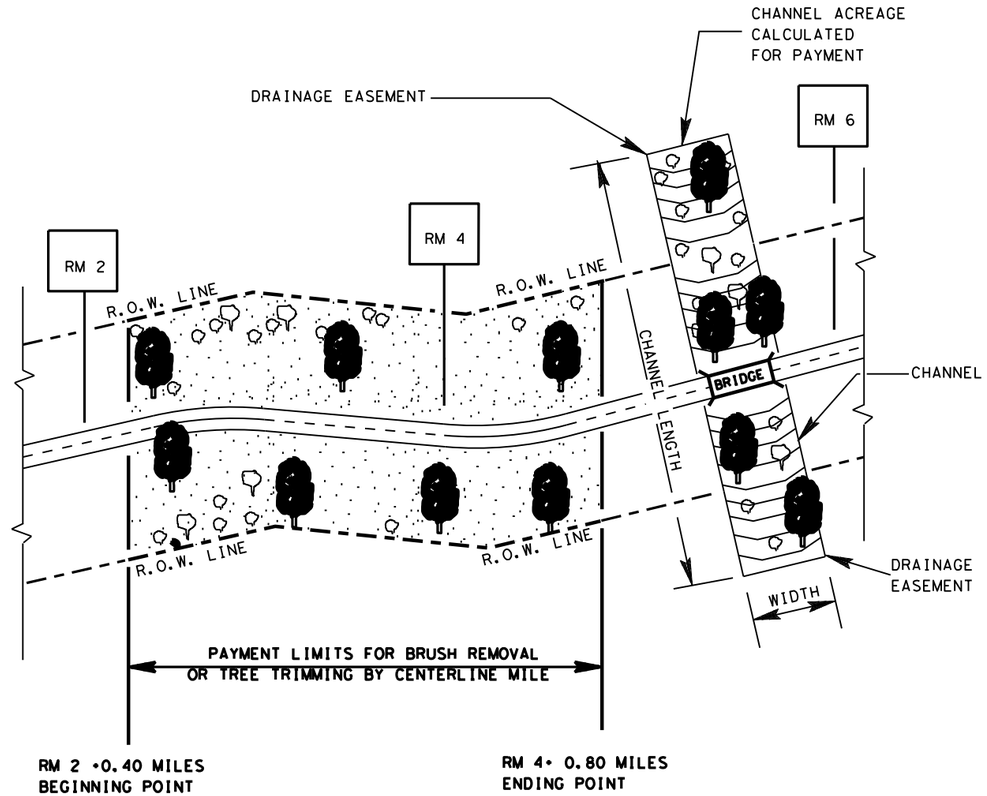
Maintenance Division Standard

TREE AND BRUSH REMOVAL

TRB-24 (1)

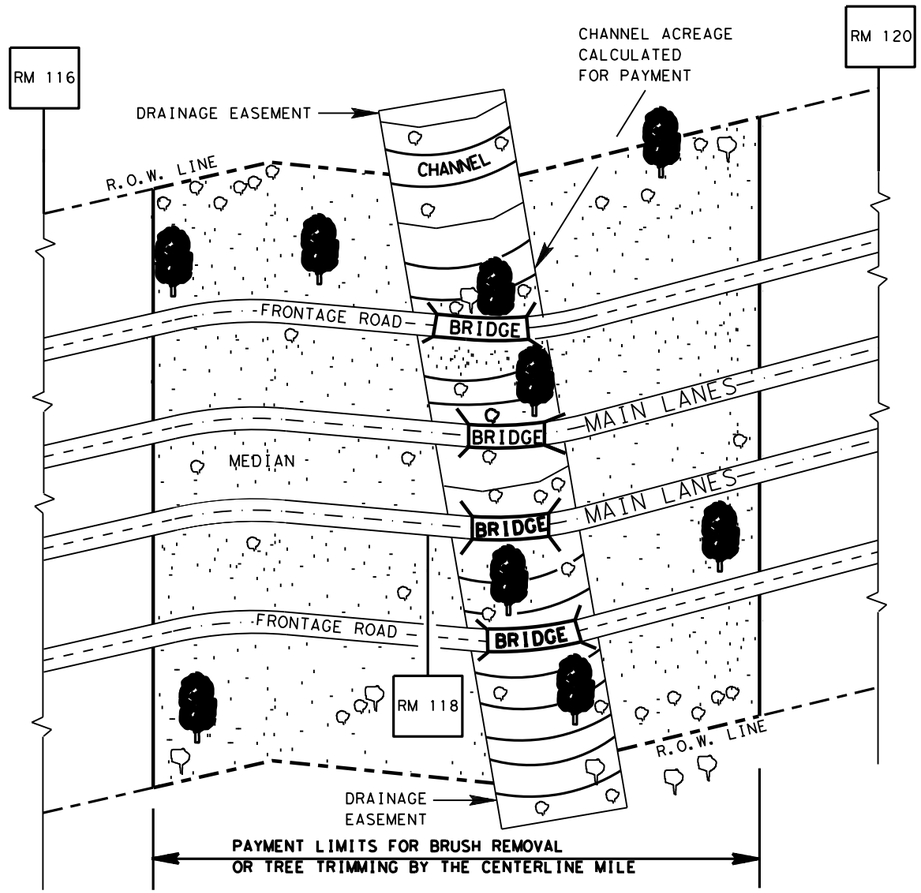
FILE:	DN:JEO	CK:LJB	DW:HD	CK:MJJ
© TxDOT SEPTEMBER 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2015	DIST	COUNTY		SHEET NO.

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.



BRUSH REMOVED TO
WITHIN 1" OF GROUND
<4" DIAMETER TRUNK
IS DEFINED AS BRUSH
UNLESS OTHERWISE DIRECTED

EXAMPLE: UNDIVIDED HIGHWAY



BRUSH REMOVED TO
WITHIN 1" OF GROUND
<4" DIAMETER TRUNK
IS DEFINED AS BRUSH
UNLESS OTHERWISE DIRECTED

EXAMPLE: DIVIDED HIGHWAY WITH FRONTAGE ROADS

LEVELS DISPLAYED
1

GENERAL NOTES:

TREE TRIMMING AND BRUSH REMOVAL

1. PAYMENT BY THE CENTERLINE MILE IS MADE TO THE NEAREST 1/100 (0.01) MILE.
2. LIMITS OF WORK ARE SHOWN AS DISTANCES FROM REFERENCE MARKERS (RM).
3. PAY ITEMS BY THE CENTERLINE MILE INCLUDE ALL TREE TRIMMING OR BRUSH REMOVAL IN THE RIGHT OF WAY ON BOTH SIDES OF THE HIGHWAY. FOR DIVIDED HIGHWAYS, THE MEDIAN IS INCLUDED. FOR HIGHWAYS WITH FRONTAGE ROADS, THE AREAS BETWEEN THE FRONTAGE ROADS AND MAIN LANES, AND THE AREAS OUTSIDE OF THE FRONTAGE ROADS ARE INCLUDED.
4. BRUSH REMOVAL AND TREE TRIMMING UNDER BRIDGES, IN AND ALONG CHANNELS AND EASEMENTS ARE PAID FOR BY THE ACRE FOR AREAS DESIGNATED ON THE PLANS.

Texas Department of Transportation
Maintenance Division
Standard Plans

TREE AND BRUSH REMOVAL

TRB-15(2)

NOT TO SCALE — SHEET 2 OF 2

FILE: TRB-15(2).DGN	DRAWN: JEO	CHECKED: DM; LJB	DW: -	CK: -	NEG NO.:			
© TxDOT APRIL 2015	MODIFIED:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #				SHEET
REVISED: 5/13/2004	LJB							
REVISED: 9/24/2004	LJB	COUNTY			CONTROL	SECTION	JOB	HIGHWAY
REVISED: APRIL 2015	JEO							