SUBJECT: PLANS AND PROPOSAL ADDENDUMS
PROJECT: F 2B24(283) CONTROL: 0287-03-036
COUNTY: GONZALES
LETTING: 07/10/2024
REFERENCE NO: 0617

PROPOSAL ADDENDUMS

X PROPOSAL COVER
X BID INSERTS (SH. NO.: 6)
_ GENERAL NOTES (SH. NO.:)
_ SPEC LIST (SH. NO.:)
_ SPECIAL PROVISIONS:
ADDED:

DELETED:

_ SPECIAL SPECIFICATIONS:
ADDED:

DELETED:

X OTHER: PLAN SHEET AND OTHER CHANGES

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

*****BID INSERTS*****

REVISED QUANTITIES FOR THE FOLLOWING BID ITEMS:
502-6001

*****PLAN SHEETS*****

SHEET 1(TITLE SHEET): REVISED PROJECT NUMBER

SHEET 2(INDEX OF SHEETS): ADDED SHEETS 221A, 221B, 221C, 221D, 221E

SHEET 11A(ESTIMATE & QUANTITY SHEET): REVISED QUANTITY

SHEET 196, 198, 199, 200, 201, 202, 203, 204(CULVERT LAYOUT): DETAIL NOTES WERE REVISED

SHEET 206(BCS): REVISED INFORMATION

SHEET 217(SETB-FW-0): REVISED INFORMATION

DESCRIPTION OF ABOVE CHANGES (CONTINUED)
(INCLUDING PLANS SHEET CHANGES)

SHEET 221A AND 221B(SCC-3&4): ADDED

SHEET 221C AND 221D(SCC-5&6): ADDED

SHEET 221E(SCC-MD): ADDED

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	F 2B24(283)		1
STATE	STATE DIST.	COUNTY	
TEXAS	YKM	GONZALES	
CONT.	SECT.	JOB	HIGHWAY NO.
0287	03	036	SH 80

1

SEE SHEET 2 FOR "INDEX OF SHEETS"

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FOR THE CONSTRUCTION OF SUPER 2 LANES

CSJ: 0287-03-036

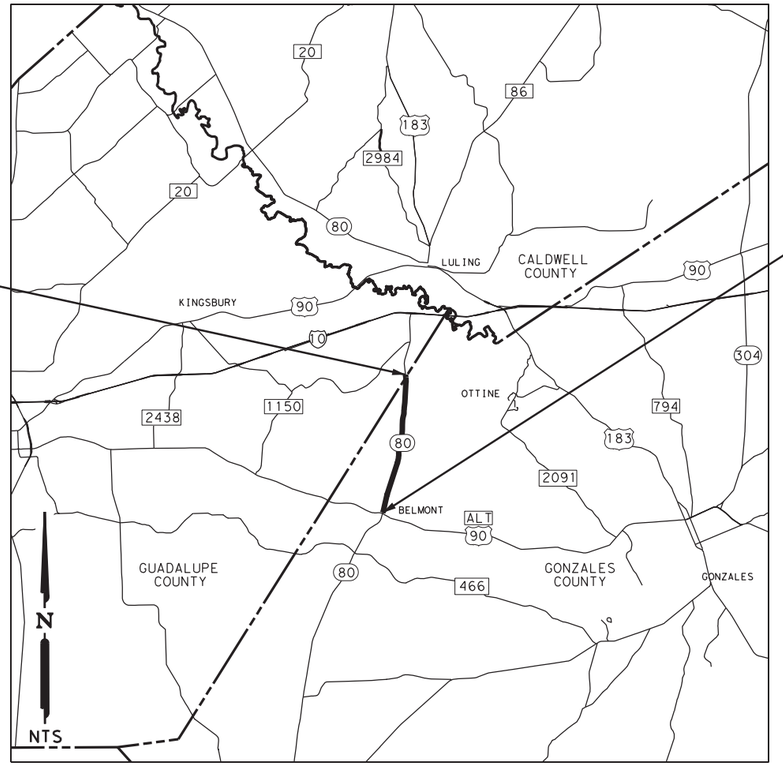
GONZALES COUNTY = SH 80
LIMITS: FROM GUADALUPE CO LINE TO US 90A
PROJECT NO. = F 2B24(283) 1

HWY FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR
CSJ 0287-03-036:
DESIGN SPEED = 45 MPH
ADT: 2903 (2024)
3053 (2044)

PROJECT LENGTH	
CSJ 0287-03-036	
ROADWAY	= 30,585 FT = 5.793 MI
BRIDGE	= 71 FT = 0.013 MI
TOTAL	= 30,656 FT = 5.806 MI

CONTRACTOR: _____
DATE OF LETTING: _____
DATE WORK BEGAN: _____
DATE WORK COMPLETED: _____
DATE WORK ACCEPTED: _____
FINAL CONTRACT COST: $ _____

LIST OF APPROVED FIELD CHANGES



END CSJ: 0287-03-036
STA 1303+06
REF MARKER 494+0.240

BEGIN CSJ: 0287-03-036
BEGIN PROJECT STA 996+50
REF MARKER NO. 500+1.808

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROADS: NONE

1 UPDATED PROJECT NUMBER
06/17/2024

APPROVAL

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED
PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

THIS IS TO CERTIFY THAT THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS, CONTRACT AND LISTED FIELD CHANGES.

_____ , PE _____
AREA ENGINEER — DATE

RECOMMENDED FOR LETTING: 6/17/2024
DocuSigned by: Jeffery Vinklarek, P.E.
C5D9721712F24F0...
DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

SUBMITTED FOR LETTING: 06/17/2024
PROJECT MANAGER

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL AID CONSTRUCTION PROJECTS (FORM FHWA 1273, OCTOBER 2023).

GONZALES COUNTY
YOAKUM DISTRICT

APPROVED FOR LETTING: 6/17/2024
DocuSigned by: Martin C. Horatz PE
894AD332139E48D...
DISTRICT ENGINEER

TEXAS DEPARTMENT OF TRANSPORTATION

Plotted on: 3/20/2024

Design Filename: Q:\116\35\05\Design\Civil\General\116350ind01.dgn

SHEET NO		DESCRIPTION
		GENERAL
1		TITLE SHEET
2		INDEX OF SHEETS
3		PROJECT LAYOUT MAP
4		EXISTING TYPICAL SECTIONS
5-8		PROPOSED TYPICAL SECTIONS
9		ROADWAY OVERVIEW
10,10A-10G		GENERAL NOTES
11,11A-11C		ESTIMATE & QUANTITY
12-14		SUMMARY OF QUANTITIES - TRAFFIC CONTROL
15-16		SUMMARY OF QUANTITIES - ROADWAY
17		SUMMARY OF QUANTITIES - INTERSECTION
18-19		SUMMARY OF QUANTITIES - DRIVEWAYS
20		SUMMARY OF QUANTITIES - DRWY/INTERSECTION CULVERT
21		SUMMARY OF QUANTITIES - MISCELLANEOUS ROADWAY
22		SUMMARY OF QUANTITIES - METAL BEAM GUARD FENCE AND MAILBOXES
23-24		SUMMARY OF QUANTITIES - LEVEL-UP
25-26		SUMMARY OF QUANTITIES - EARTHWORK
27-28		SUMMARY OF QUANTITIES - CENTERLINE DRAINAGE STRUCTURE
29		SUMMARY OF QUANTITIES - PAVEMENT MARKINGS
30		SUMMARY OF QUANTITIES - SIGNING
31-32		SUMMARY OF SMALL SIGNS
		TRAFFIC CONTROL PLAN
33		TCP SEQUENCE OF CONSTRUCTION
34-40		TCP TYPICAL SECTION
41-52	***	BC (1) - 21 THRU BC (12) - 21
53	***	WZ(STPM)-23
54	***	WZ(UL)-13
55	***	WZ(TD)-17
56	***	WZ(RS)-22
57	***	WZ(BTS-1)-13
58	***	WZ(BTS-2)-13
59	***	TCP(2-1)-18
60	***	TCP(2-2)-18
60A	***	TCP(2-6)-18
61	***	TCP(3-1)-13
62	***	TCP(3-3)-14
63	***	TCP(7-1)-13
63A	***	TCP LEFT TURN LANE CLOSED (YKM DIST)
64-71	***	TCP(SC-1)-22 THRU TCP(SC-8)-22
72-73	***	SSCB(2)-10
74	***	SLED-19
75	***	ABSORB(M)-19
		ROADWAY
76-88		HORIZONTAL AND VERTICAL CONTROL SHEET
89-91		HORIZONTAL ALIGNMENT DATA
92		VERTICAL CURVE DATA TABLE
93		SUPER ELEVATION DATA
94-109		PLAN SHEET
110-111		PLAN AND PROFILE
112		DRIVEWAY AND INTERSECTION DETAILS
113		BRIDGE CLASS CULVERT RETROFIT RAIL DETAILS
114	*	TRF
115-116	**	C-RAIL-R (MOD)
117-118	**	TYPE SSTR
119	*	GF(31)-19
120	*	GF(31)DAT-19
121	*	GF(31)MS-19
122-123	*	GF(31)TR TL3-20
124	*	SGT(12S)31-18
125	*	SGT(15)31-20
126-127	*	RAC-R (MOD)
128	*	MB(1)-21 MAILBOX MOUNTING AND ASSEMBLY
129	*	MB(2)-21 XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY
130	*	MB(3)-21 MAILBOX SUPPORT AND FOUNDATION
131	*	MB(4)-21 NIGP PARTS LIST AND COMPATIBILITY
		PAVEMENT MARKING, SIGNING, AND DELINEATION
132-148		SIGNING AND PAVEMENT MARKINGS
149		SIGN DETAILS
150	***	TSR(3)-13
151	***	TSR(4)-13
152	***	TSR(5)-13
153	***	SMD(GEN)-08
154	***	SMD(SLIP-1)-08
155	***	SMD(SLIP-2)-08
156	***	SMD(SLIP-3)-08
157	***	SMD(FRP)-08
158	***	SMD(TWT)-08
159	***	D & OM(1)-20
160	***	D & OM(2)-20
161	***	D & OM(3)-20
162	***	D & OM(4)-20
163	***	D & OM(5)-20
164	***	D & OM(6)-20
165	***	D& OM(VIA)-20
166	***	PM(1)-22
167	***	PM(2)-22
168	***	PM(3)-22

SHEET NO		DESCRIPTION
		DRAINAGE
169-172		LARGE DRAINAGE AREA MAP
173-174		HYDROLOGIC DATA SHEET
175-194		HYDRAULIC DATA SHEETS
195-204		CULVERT LAYOUT
205		DRAINAGE DETAILS
206	*	BCS
207	*	SCP-MD
208	*	SCP-3
209	*	SCP-4
210	*	SCP-5
211	*	SCP-8
212	*	MC-MD
213-214	*	MC-6-16
215-217	*	SETB-FW-0
218-219	*	SETP-CD
220	*	SETP-PD
221	*	SP
221A-221B	*	SCC-3 & 4
221C-221D	*	SCC-5 & 6
221E	*	SCC-MD
		ENVIRONMENTAL
222		SWP3 SUMMARY
223-225		SWP3 LAYOUT
226-227	*	STORMWATER POLLUTION PREVENTION PLAN (SWP3)
228	*	EPIC
229-230	*	EC(1)-16 THRU EC(2)-16

1

THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (*), HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS · JAMES A. LUTZ · 84722 · LICENSED · PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 3/20/2024 DATE

THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (**), HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS · JOHNNY E. MARTINEZ · 99225 · LICENSED · PROFESSIONAL ENGINEER

JOHNNY E. MARTINEZ JR., P.E. — 3/20/2024 DATE

THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (***), HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS · TREVOR L. CASTILLA · 85405 · LICENSED · PROFESSIONAL ENGINEER

TREVOR L. CASTILLA, P.E. — 3/20/2024 DATE

REV. NO.	DATE	DESCRIPTION	BY
01	6/17/2024	UPDATED STANDARDS	JG

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

INDEX OF SHEETS

SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	2

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0287-03-036 **DISTRICT** Yoakum **COUNTY** Gonzales
HIGHWAY SH 80

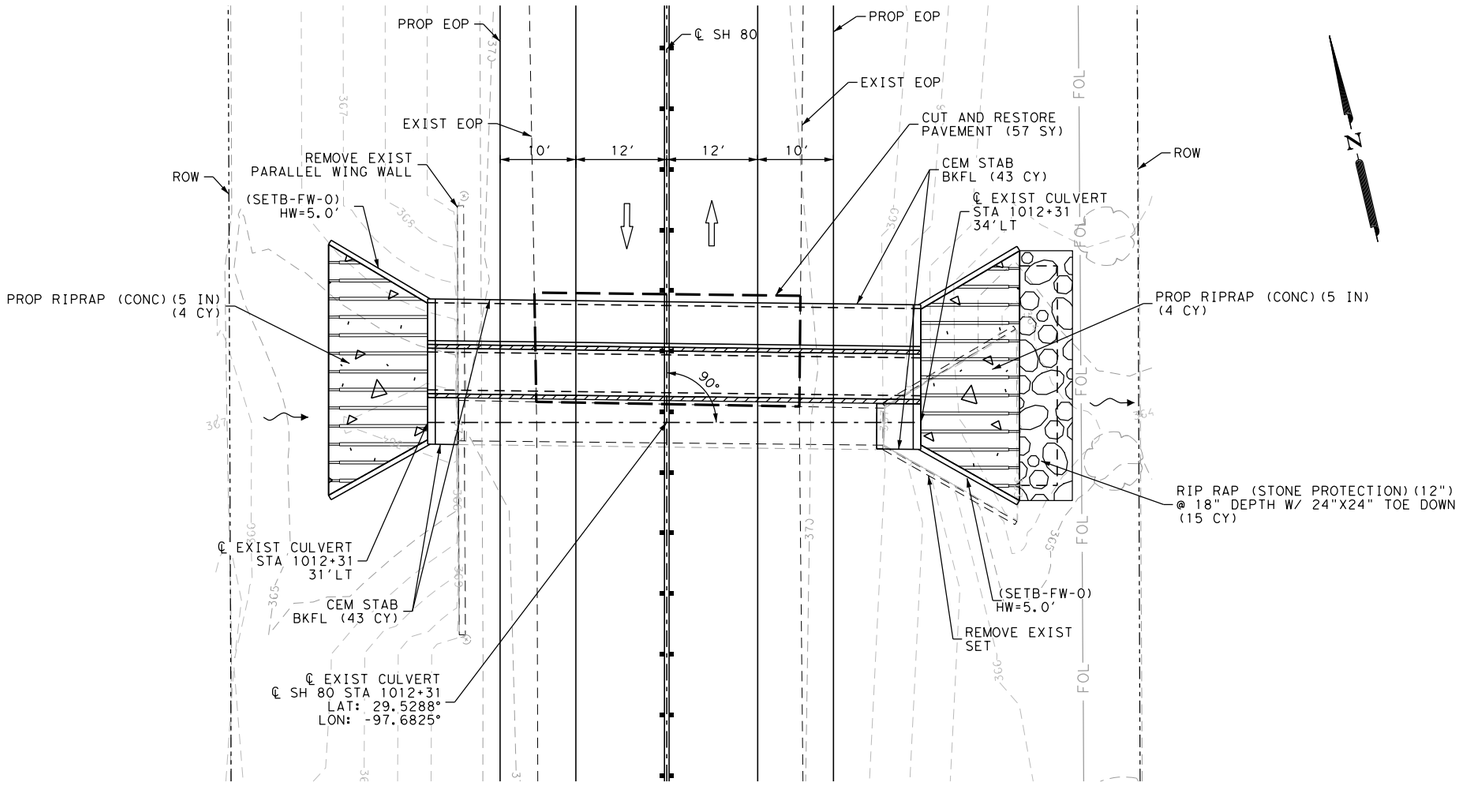
			CONTROL SECTION JOB		**0287-03-036**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00127383**		
			COUNTY		**Gonzales**		
			HIGHWAY		**SH 80**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	450-6023	RAIL (TY SSTR)	LF	143.000		143.000	
	451-6024	RETROFIT RAIL (TY SSTR)	LF	73.000		73.000	
	462-6002	CONC BOX CULV (3 FT X 3 FT)	LF	78.000		78.000	
	462-6008	CONC BOX CULV (5 FT X 4 FT)	LF	130.000		130.000	
	462-6046	CONC BOX CULV (3 FT X 3 FT)(EXTEND)	LF	73.000		73.000	
	462-6047	CONC BOX CULV (4 FT X 2 FT)(EXTEND)	LF	51.000		51.000	
	462-6049	CONC BOX CULV (4 FT X 4 FT)(EXTEND)	LF	58.000		58.000	
	462-6052	CONC BOX CULV (5 FT X 4 FT)(EXTEND)	LF	9.000		9.000	
	462-6133	CONC BOX CULV (5 FT X 6.5 FT)(EXTEND)	LF	34.000		34.000	
	464-6003	RC PIPE (CL III)(18 IN)	LF	862.000		862.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	28.000		28.000	
	464-6008	RC PIPE (CL III)(36 IN)	LF	81.000		81.000	
	467-6111	SET (TY I)(S=3 FT)(HW= 4 FT)(3:1)(C)	EA	4.000		4.000	
	467-6117	SET (TY I)(S=3 FT)(HW= 5 FT)(3:1)(C)	EA	2.000		2.000	
	467-6139	SET (TY I)(S= 4 FT)(HW= 3 FT)(4:1) (C)	EA	4.000		4.000	
	467-6148	SET (TY I)(S= 4 FT)(HW= 5 FT)(3:1) (C)	EA	4.000		4.000	
	467-6181	SET (TY I)(S= 5 FT)(HW= 5 FT)(3:1) (C)	EA	6.000		6.000	
	467-6193	SET (TY I)(S= 5 FT)(HW= 8 FT)(3:1) (C)	EA	2.000		2.000	
	467-6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	58.000		58.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA	2.000		2.000	
	467-6448	SET (TY II) (36 IN) (RCP) (3: 1) (C)	EA	4.000		4.000	
	496-6042	REMOV STR (SMALL)	EA	9.000		9.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
1	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	16.000	1	16.000	1
	506-6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	452.000		452.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	452.000		452.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1,925.000		1,925.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1,925.000		1,925.000	
	512-6001	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	LF	360.000		360.000	
	512-6025	PORT CTB (MOVE)(SGL SLP)(TY 1)	LF	720.000		720.000	
	512-6049	PORT CTB (REMOVE)(SGL SLP)(TY 1)	LF	360.000		360.000	
	530-6002	INTERSECTIONS (ACP)	SY	954.000		954.000	
	530-6004	DRIVEWAYS (CONC)	SY	226.000		226.000	
	530-6006	DRIVEWAYS (SURF TREAT)	SY	2,587.000		2,587.000	
	533-6001	RUMBLE STRIPS (SHOULDER)	LF	64,045.000		64,045.000	
	533-6002	RUMBLE STRIPS (CENTERLINE)	LF	32,265.000		32,265.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	200.000		200.000	

1 REVISION 06/17/2024

Plotted on: 6/17/2024

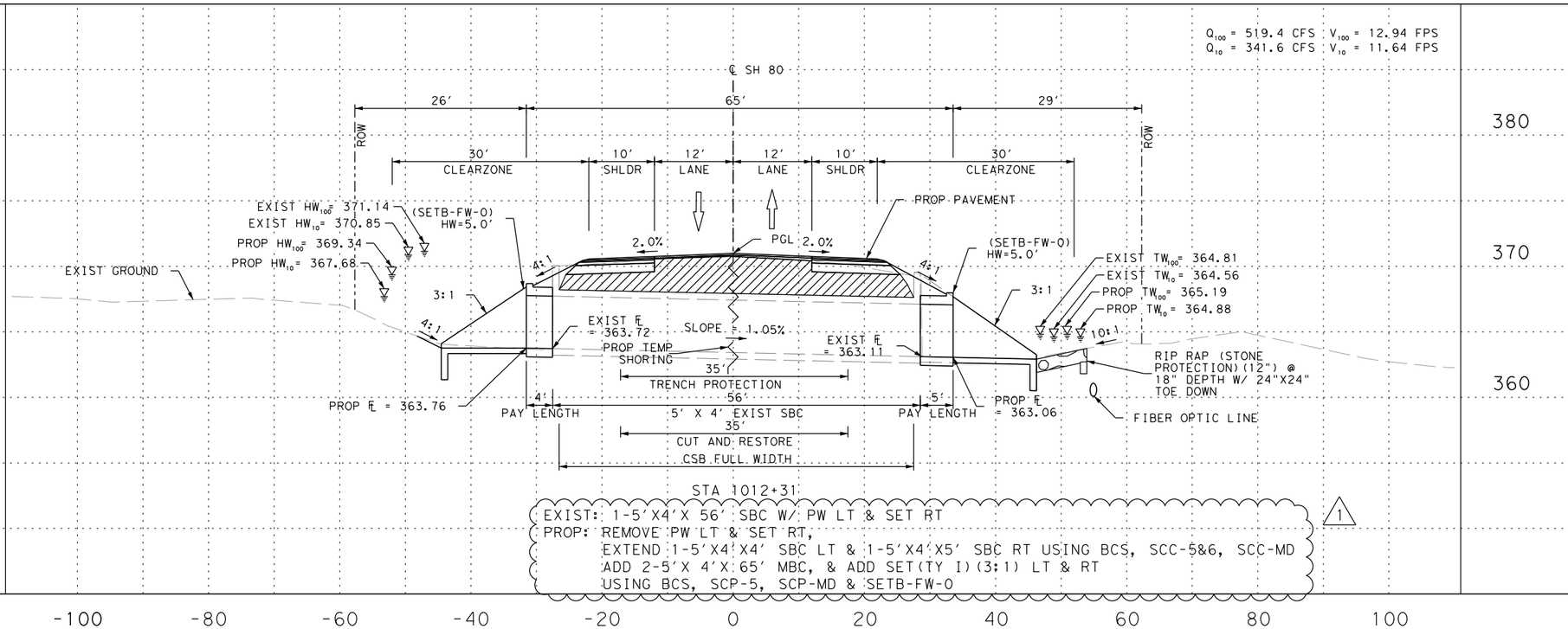
Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1012+31_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	86
0400-6006	CUT & RESTORING PAV	SY	57
0402-6001	TRENCH EXCAVATION PROTECTION	LF	35
0403-6001	TEMPORARY SPL SHORING	SF	522
0432-6002	RIPRAP (CONC)(5 IN)	CY	8
0432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	15
0462-6008	CONC BOX CULV (5 FT X 4 FT)	LF	130
0462-6052	CONC BOX CULV (5 FT X 4 FT)(EXTEND)	LF	9
0467-6181	SET (TY I)(S= 5 FT)(HW= 5 FT)(3:1) (C)	EA	6



PLAN

H: 1"=20'
V: 1"=10'



STA 1012+31

EXIST: 1-5'X4'X 56' SBC W/ PW LT & SET RT
PROP: REMOVE PW LT & SET RT,
EXTEND 1-5'X4'X4' SBC LT & 1-5'X4'X5' SBC RT USING BCS, SCC-5&6, SCC-MD
ADD 2-5'X 4'X 65' MBC, & ADD SET(TY I)(3:1) LT & RT
USING BCS, SCP-5, SCP-MD & SETB-FW-0

1

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1' INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
6. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN BASED ON LEVEL C/D SUE AND DRAWN WITH THE BEST RECORDS AVAILABLE DURING DESIGN.
7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN

1 UPDATED CULVERT DESCRIPTION 06/17/2024

STATE OF TEXAS
JULIAN GARCIA
127271
LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. 6/17/2024
DATE

APPROVAL

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. 6/17/2024
DATE

0 10 20 30
SCALE: 1"= 20'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

STA 1012+31

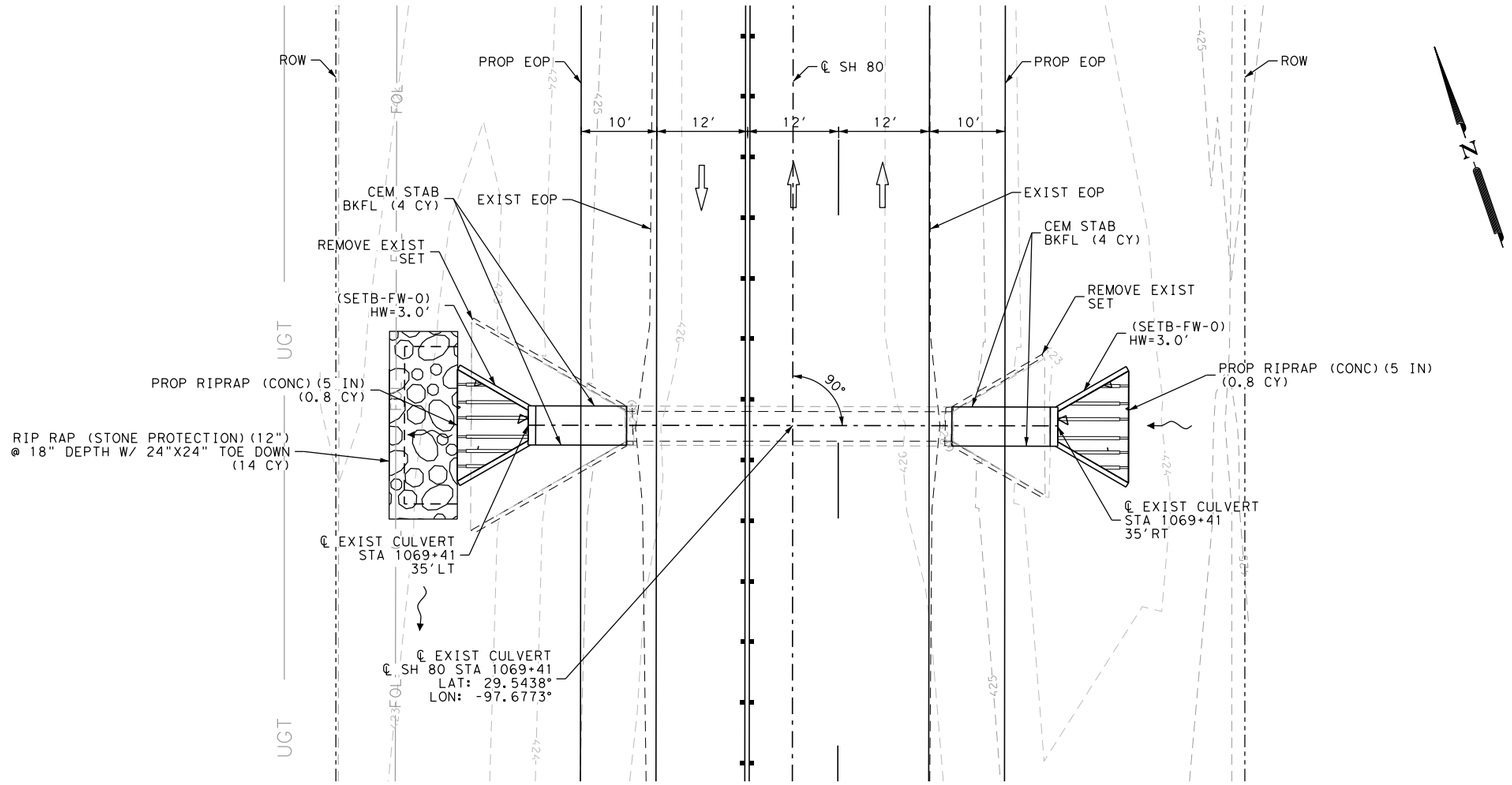
SHEET 2 OF 10

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	196

Plotted on: 6/17/2024

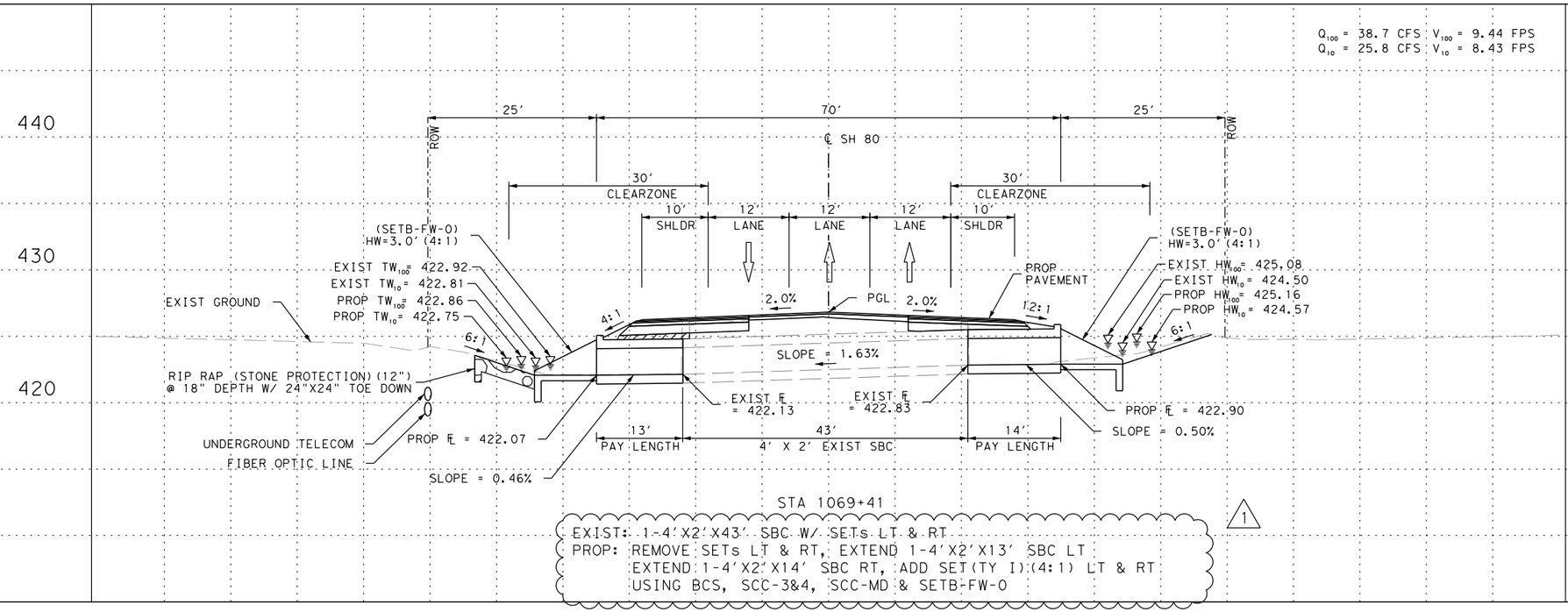
Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1069+41_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	8
0432-6002	RIPRAP (CONC)(5 IN)	CY	2
0432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	14
0462-6047	CONC BOX CULV (4 FT X 2 FT)(EXTEND)	LF	27
0467-6139	SET (TY I)(S= 4 FT)(HW= 3 FT)(4:1) (C)	EA	2



PLAN

H: 1"=20'
V: 1"=10'



STA 1069+41

EXIST: 1-4'X2'X43' SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT, EXTEND 1-4'X2'X13' SBC LT
EXTEND 1-4'X2'X14' SBC RT, ADD SET(TY I)(4:1) LT & RT
USING BCS, SCC-3&4, SCC-MD & SETB-FW-0

1

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1' INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
6. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN BASED ON LEVEL C/D SUE AND DRAWN WITH THE BEST RECORDS AVAILABLE DURING DESIGN.
7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN 1 UPDATED CULVERT DESCRIPTION 6/17/2024

STATE OF TEXAS
JULIAN GARCIA
127271
LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. 6/17/2024 DATE

APPROVAL

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. 6/17/2024 DATE

0 10 20 30
SCALE: 1"= 20'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

STA 1069+41

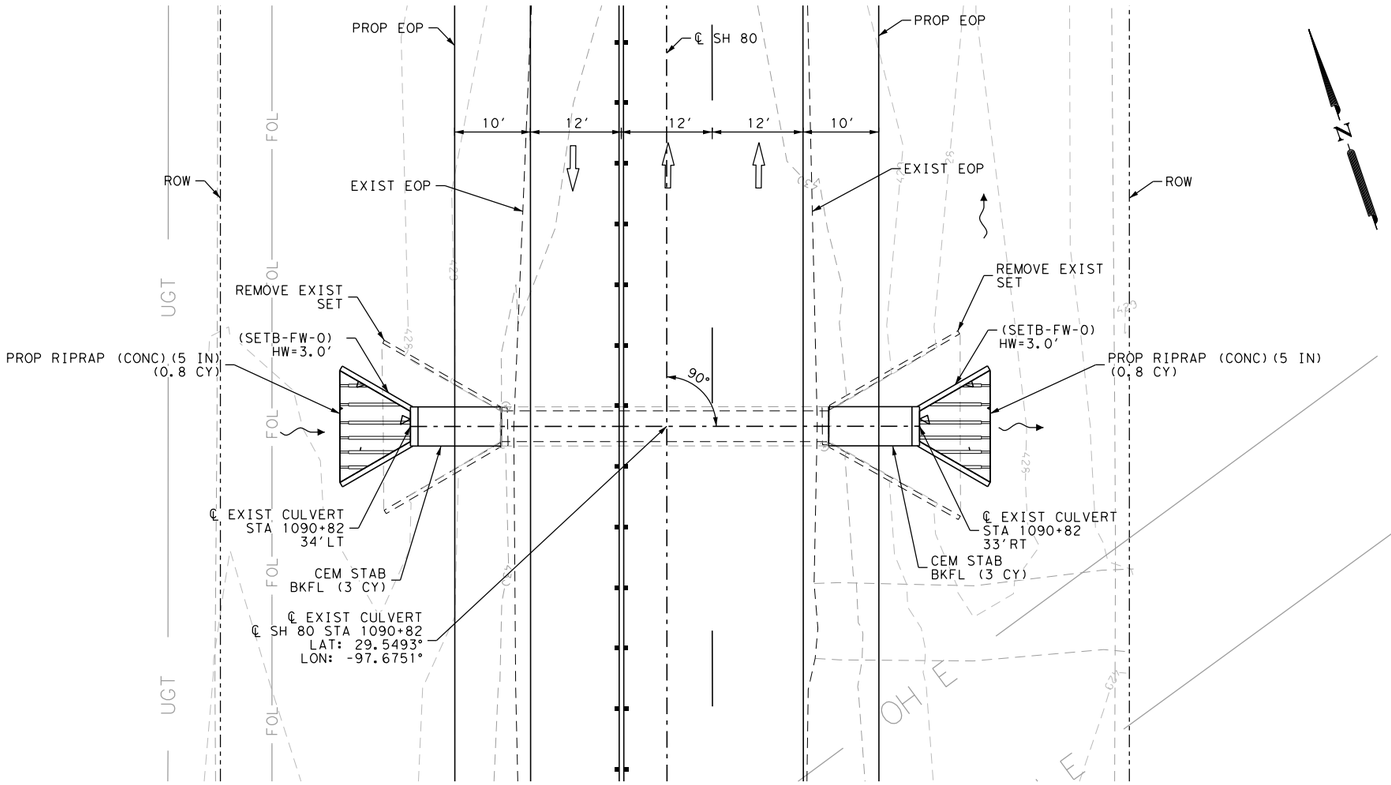
SHEET 4 OF 10

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	198

Plotted on: 6/17/2024

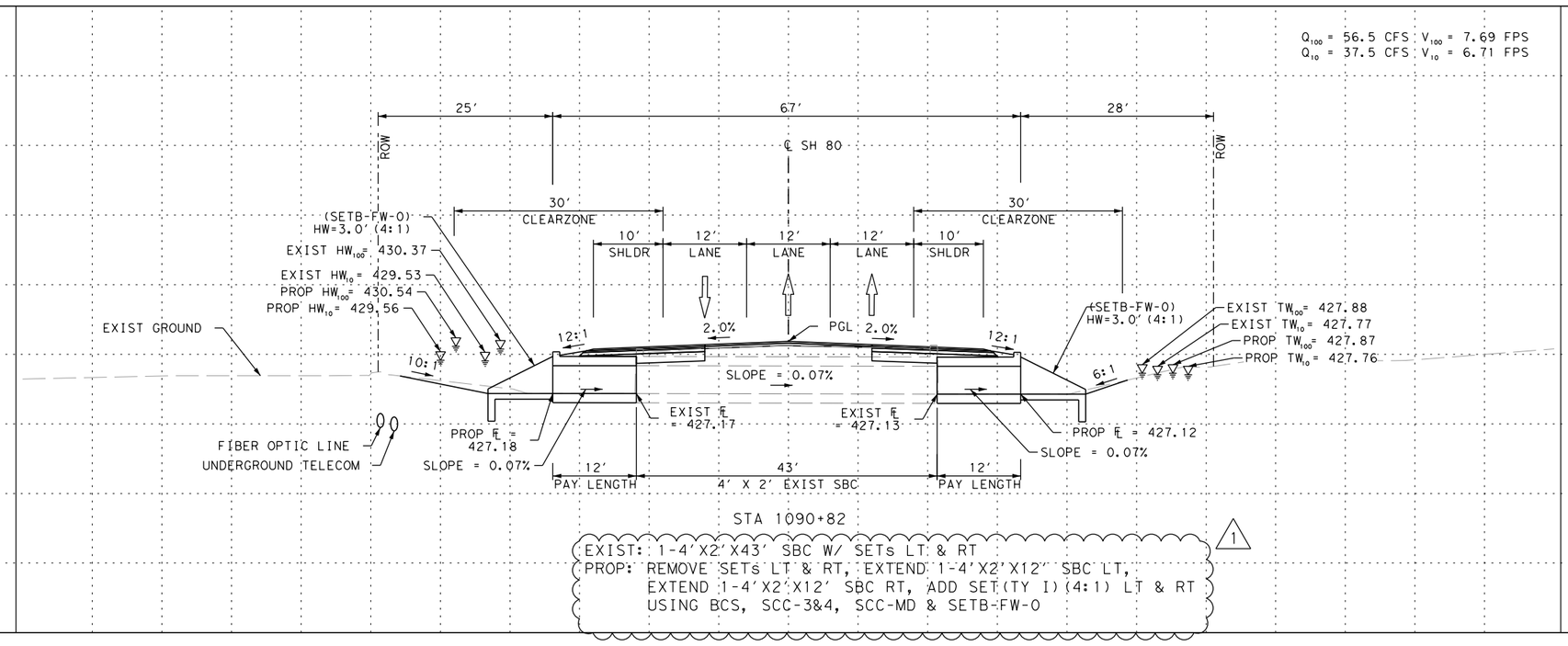
Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1090+82_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	6
0432-6002	RIPRAP (CONC)(5 IN)	CY	2
0462-6047	CONC BOX CULV (4 FT X 2 FT)(EXTEND)	LF	24
0467-6139	SET (TY I)(S= 4 FT)(HW= 3 FT)(4:1) (C)	EA	2



PLAN

H: 1"=20′
V: 1"=10′



STA 1090+82

EXIST: 1-4′X2′X43′ SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT, EXTEND 1-4′X2′X12′ SBC LT, EXTEND 1-4′X2′X12′ SBC RT, ADD SET(TY I)(4:1) LT & RT USING BCS, SCC-3&4, SCC-MD & SETB-FW-O

1

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1′ INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
6. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN BASED ON LEVEL C/D SUE AND DRAWN WITH THE BEST RECORDS AVAILABLE DURING DESIGN.
7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN

1 UPDATED CULVERT DESCRIPTION 6/17/2024

STATE OF TEXAS
JULIAN GARCIA
127271
LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

0 10 20 30
SCALE: 1"= 20′

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

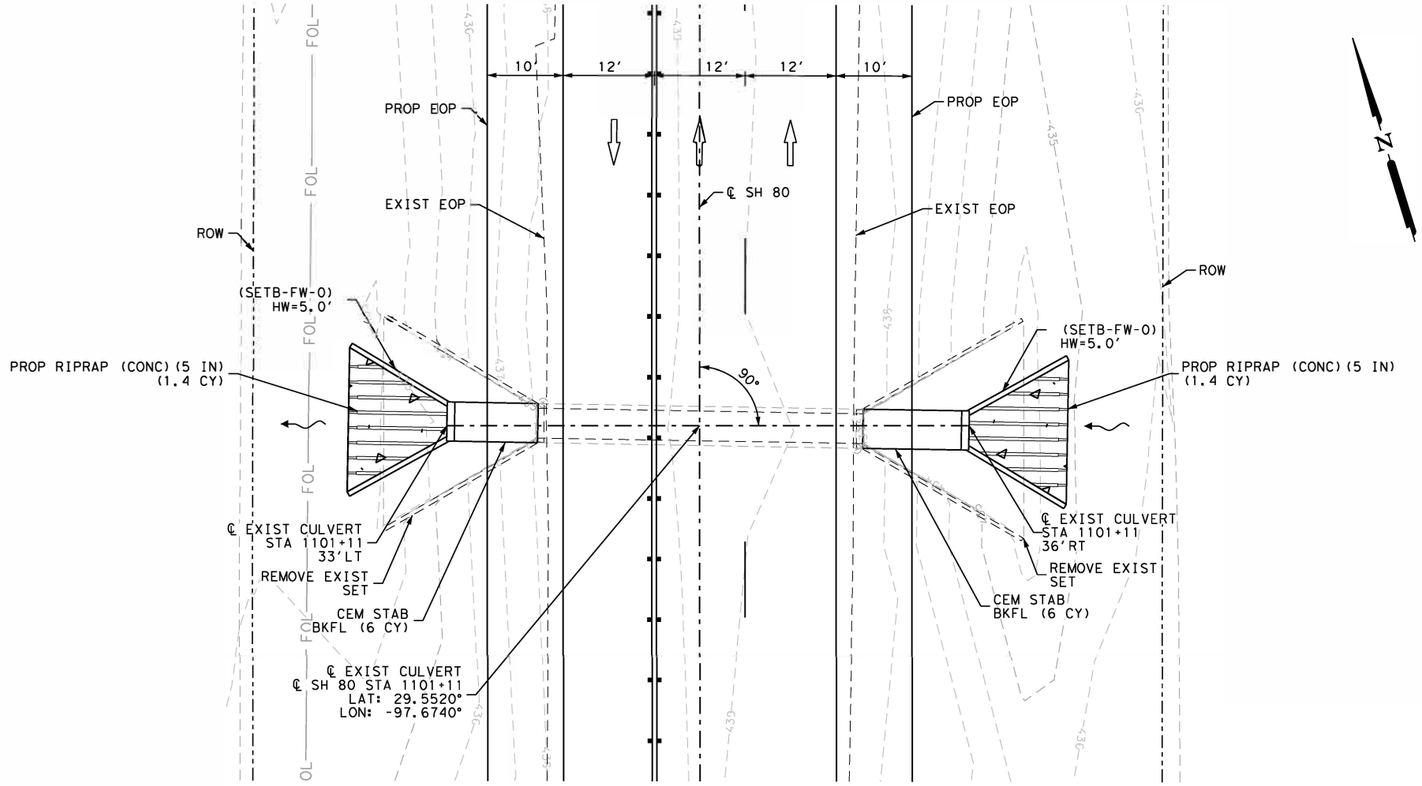
STA 1090+82

SHEET 5 OF 10

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	199

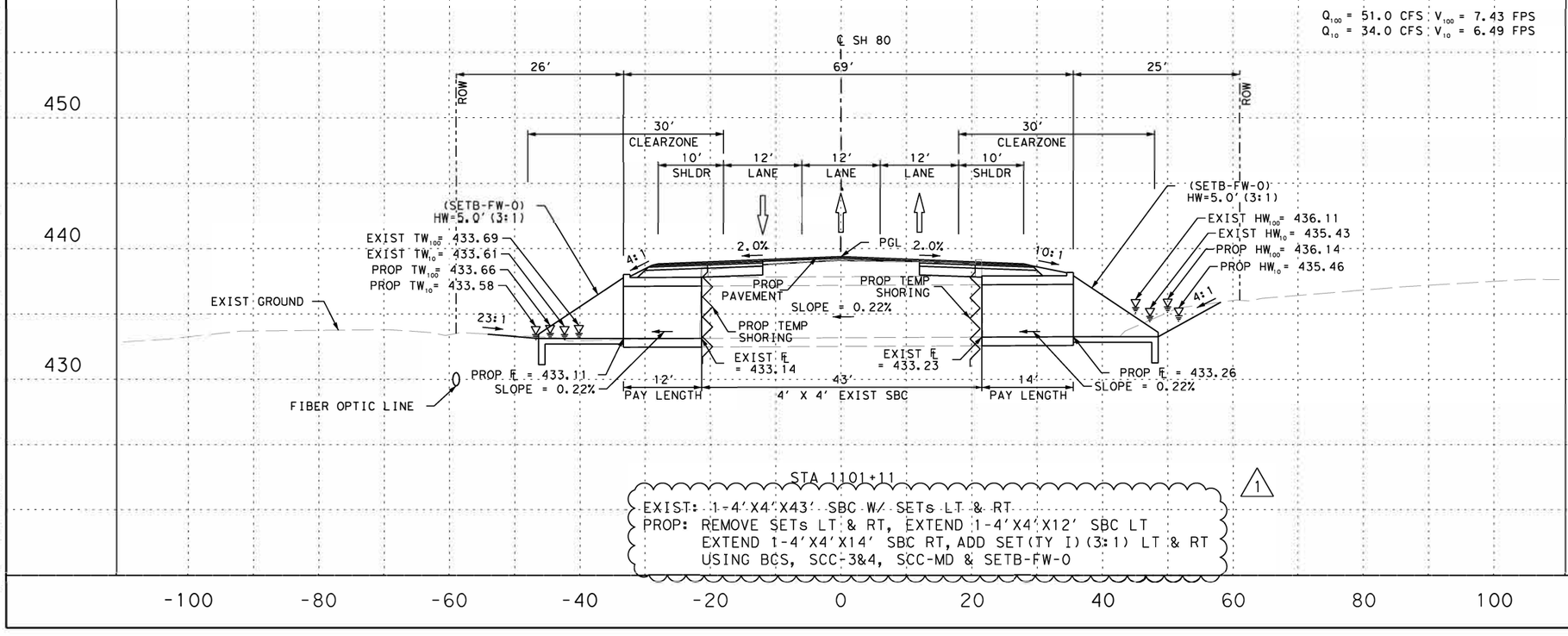
Plotted on: 6/17/2024

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	12
0403-6001	TEMPORARY SPL SHORING	SF	295
0432-6002	RIPRAP (CONC)(5 IN)	CY	3
0462-6049	CONC BOX CULV (4 FT X 4 FT)(EXTEND)	LF	26
0467-6148	SET (TY I)(S- 4 FT)(HW- 5 FT)(3:1) (C)	EA	2



PLAN

H: 1"=20'
V: 1"=10'



STA 1101+11

EXIST: 1-4'X4'X43' SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT, EXTEND 1-4'X4'X12' SBC LT
EXTEND 1-4'X4'X14' SBC RT, ADD SET(TY I)(3:1) LT & RT
USING BCS, SCC-3&4, SCC-MD & SETB-FW-0

1

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1' INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
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DESIGN 1 UPDATED CULVERT DESCRIPTION 06/17/2024

STATE OF TEXAS · JULIAN GARCIA · 127271 · LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS · JAMES A. LUTZ · 84722 · LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

0 10 20 30
SCALE: 1"= 20'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

STA 1101+11

SHEET 6 OF 10

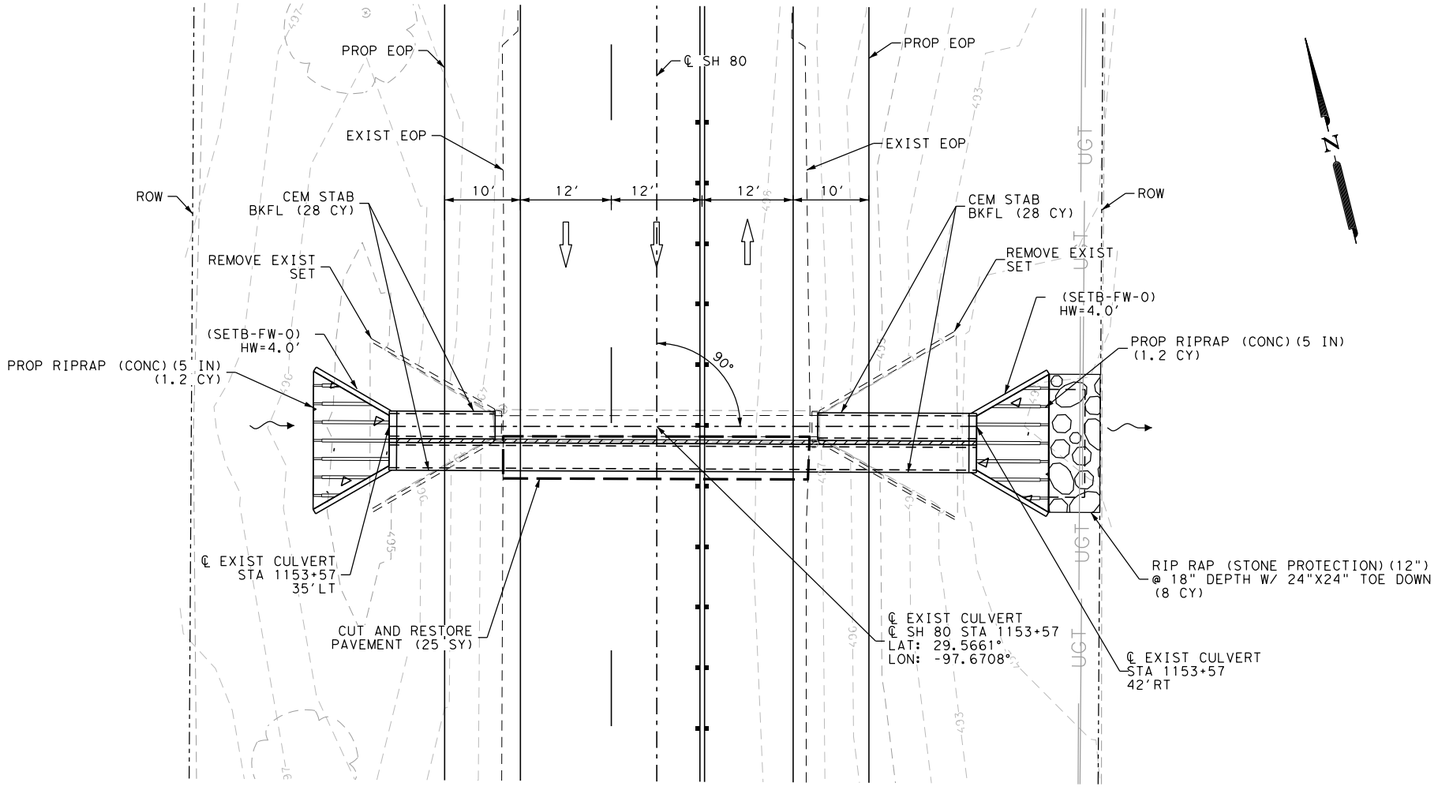
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	200

Design Filename: q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1101+11_REV01.dgn

Plotted on: 6/17/2024

Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1153+57_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	56
0400-6006	CUT & RESTORING PAV	SY	25
0402-6001	TRENCH EXCAVATION PROTECTION	LF	40
0403-6001	TEMPORARY SPL SHORING	SF	660
0432-6002	RIPRAP (CONC)(5 IN)	CY	3
0432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	8
0462-6002	CONC BOX CULV (3 FT X 3 FT)	LF	78
0462-6046	CONC BOX CULV (3 FT X 3 FT)(EXTEND)	LF	35
0467-6111	SET (TY I)(S=3 FT)(HW= 4 FT)(3:1)(C)	EA	4



PLAN

H: 1"=20′
V: 1"=10′

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1′ INTERVALS.
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7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN 1 UPDATED CULVERT DESCRIPTION 06/17/2024

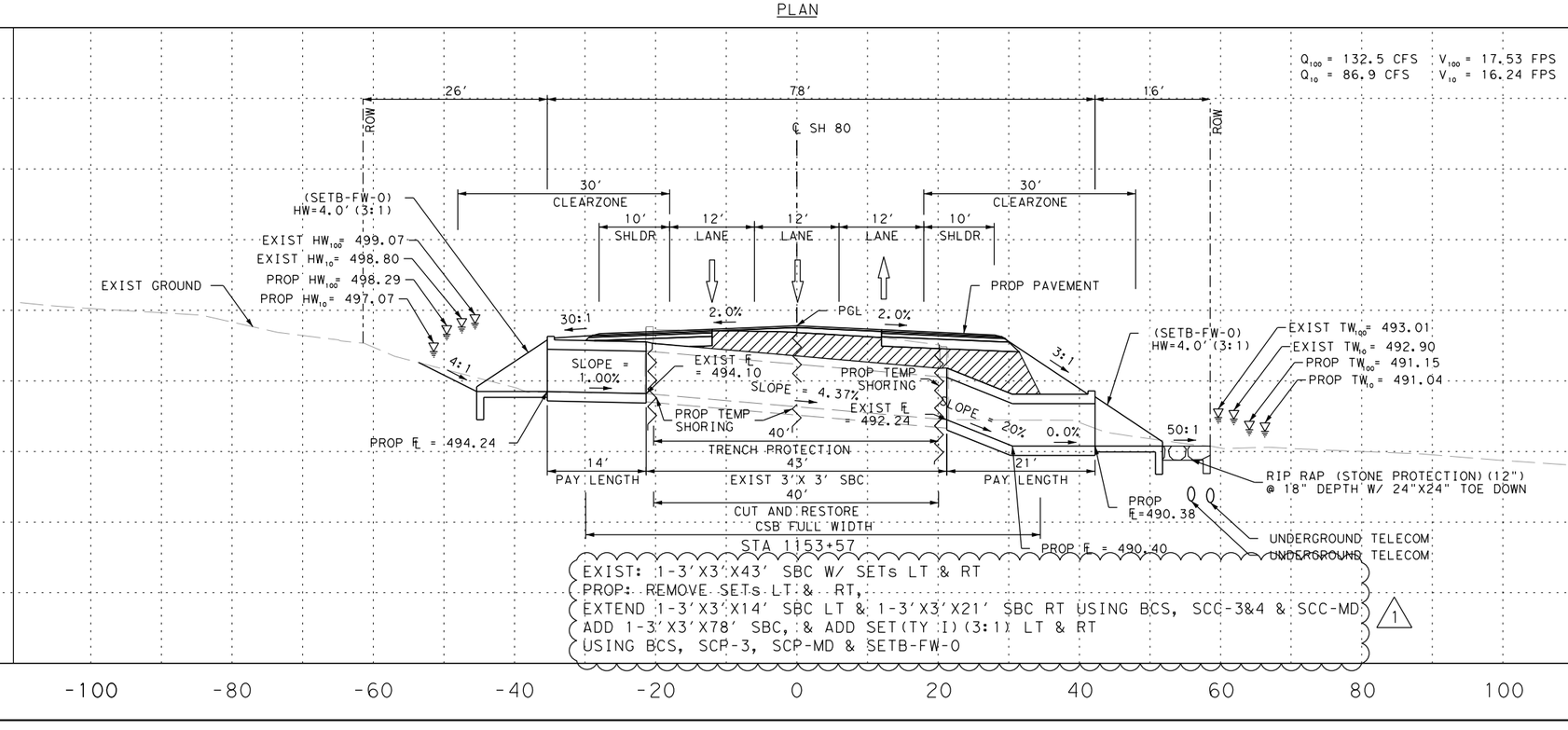
STATE OF TEXAS · JULIAN GARCIA · 127271 · LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS · JAMES A. LUTZ · 84722 · LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE



EXIST: 1-3′X3′X43′ SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT,
EXTEND 1-3′X3′X14′ SBC LT & 1-3′X3′X21′ SBC RT USING BCS, SCC-3&4 & SCC-MD
ADD 1-3′X3′X78′ SBC, & ADD SET(TY I)(3:1) LT & RT
USING BCS, SCP-3, SCP-MD & SETB-FW-O

1

0 10 20 30
SCALE: 1"= 20′

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

STA 1153+57

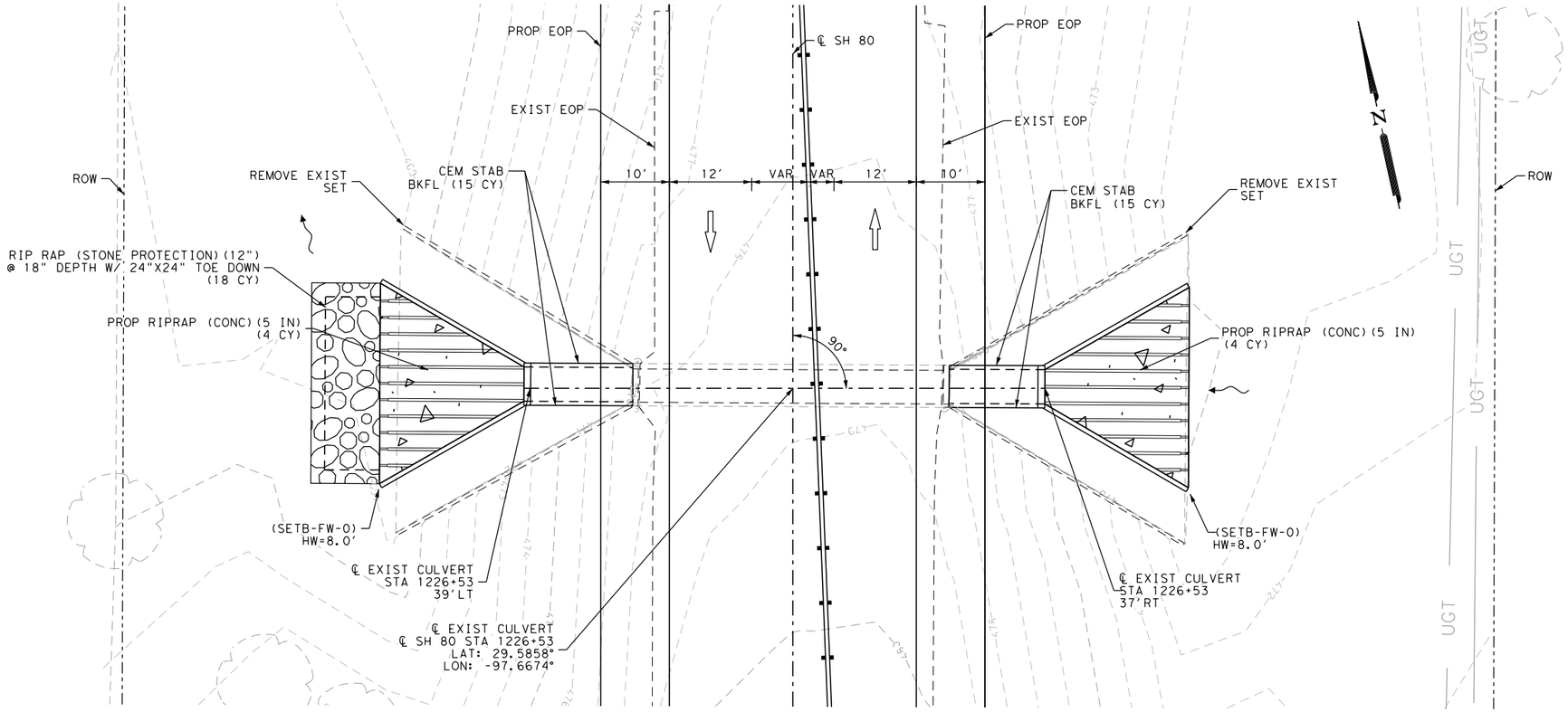
SHEET 7 OF 10

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	201

Plotted on: 6/17/2024

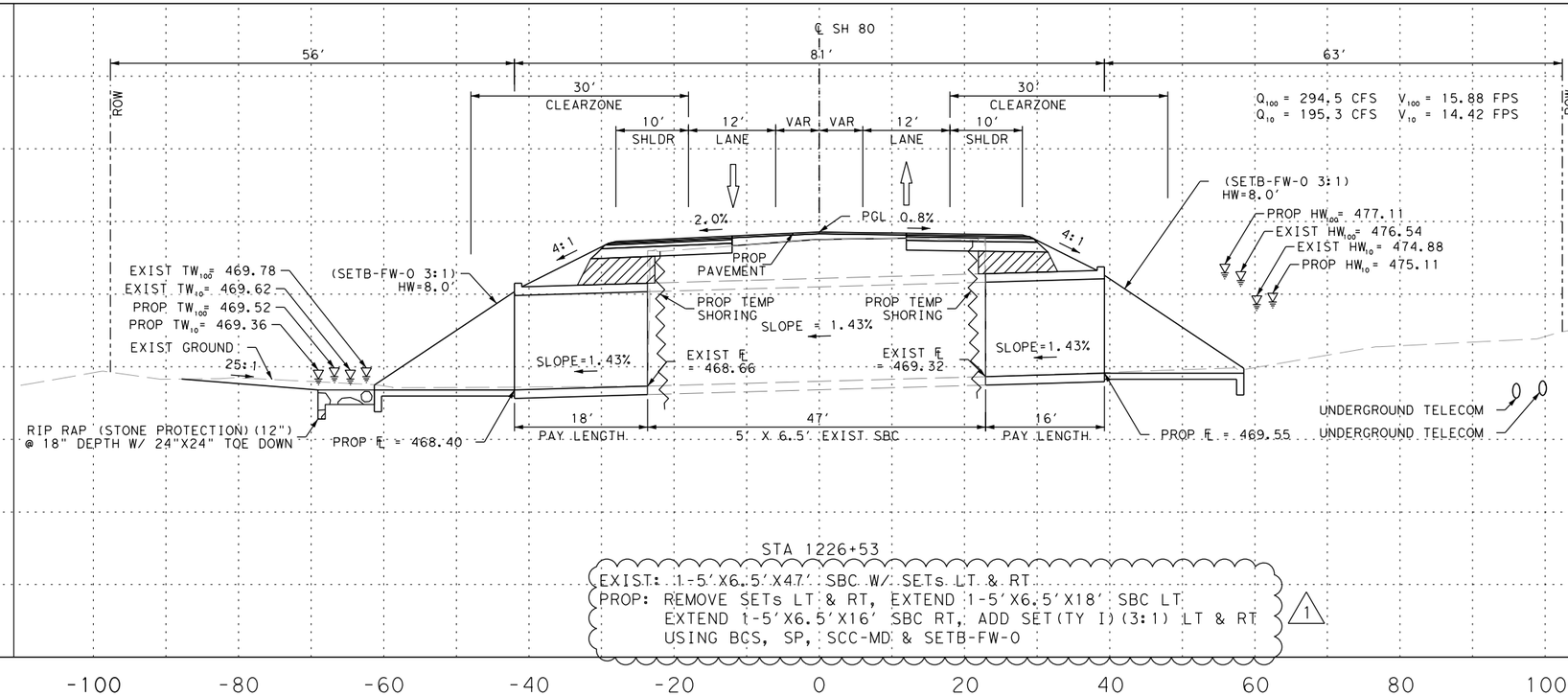
Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1226+53_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	30
0403-6001	TEMPORARY SPL SHORING	SF	981
0432-6002	RIPRAP (CONC)(5 IN)	CY	8
0432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	18
0462-6133	CONC BOX CULV (5 FT X 6.5 FT)(EXTEND)	LF	34
0467-6193	SET (TY I)(S= 5 FT)(HW= 8 FT)(3:1) (C)	EA	2



PLAN

H: 1"=20′
V: 1"=10′



STA 1226+53

EXIST: 1-5′X6.5′X47′ SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT, EXTEND 1-5′X6.5′X18′ SBC LT
EXTEND 1-5′X6.5′X16′ SBC RT, ADD SET(TY I)(3:1) LT & RT
USING BCS, SP, SCC-MD & SETB-FW-0

1

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1′ INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
6. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN BASED ON LEVEL C/D SUE AND DRAWN WITH THE BEST RECORDS AVAILABLE DURING DESIGN.
7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN 1 UPDATED CULVERT DESCRIPTION 06/17/2024

STATE OF TEXAS · JULIAN GARCIA · 127271 · LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS · JAMES A. LUTZ · 84722 · LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

0 10 20 30
SCALE: 1"= 20′

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

STA 1226+53

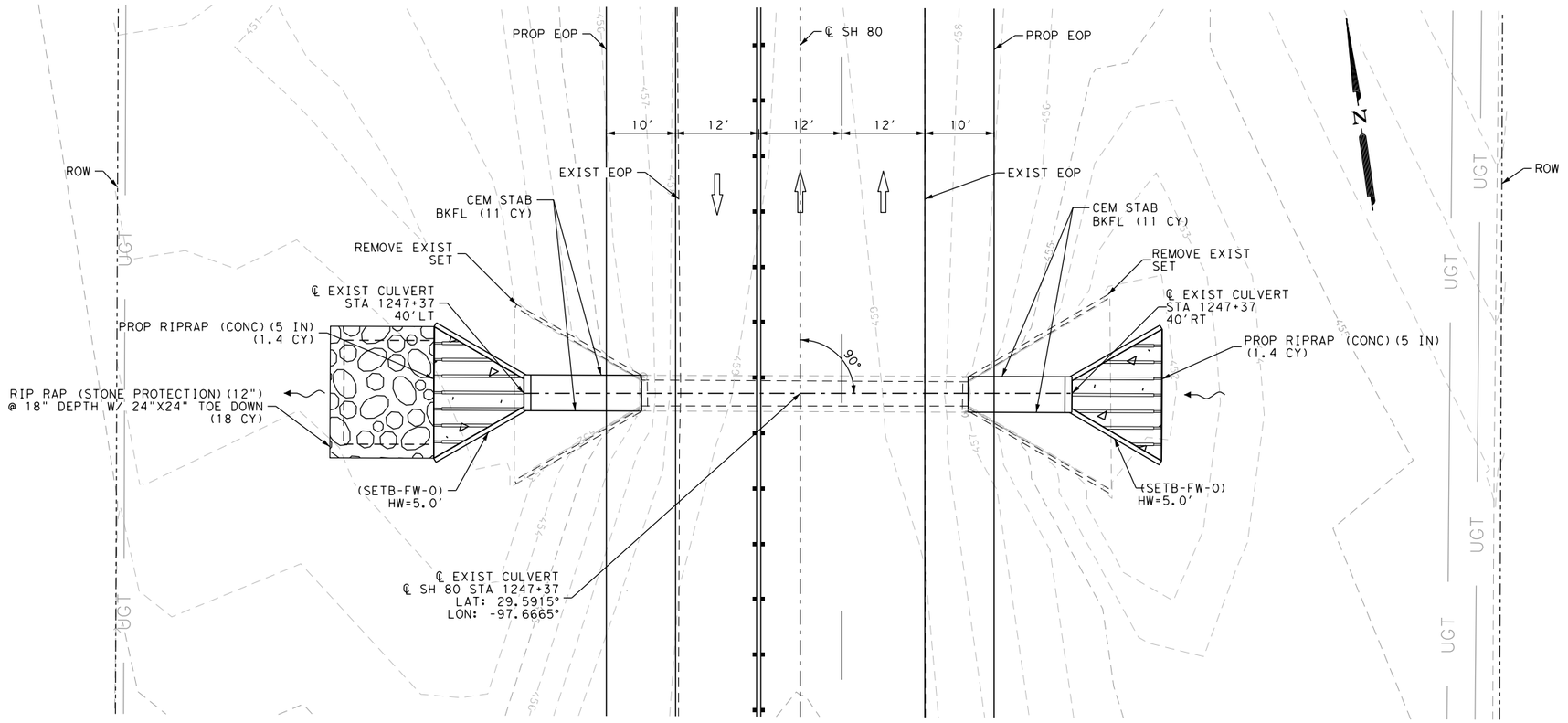
SHEET 8 OF 10

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	202

Plotted on: 6/17/2024

Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1247+37_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	22
0403-6001	TEMPORARY SPL SHORING	SF	406
0432-6002	RIPRAP (CONC)(5 IN)	CY	3
0432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	18
0462-6049	CONC BOX CULV (4 FT X 4 FT)(EXTEND)	LF	32
0467-6148	SET (TY I)(S= 4 FT)(HW= 5 FT)(3:1) (C)	EA	2



PLAN

H: 1"=20′
V: 1"=10′

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1′ INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
6. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN BASED ON LEVEL C/D SUE AND DRAWN WITH THE BEST RECORDS AVAILABLE DURING DESIGN.
7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN 1 UPDATED CULVERT DESCRIPTION 06/17/2024

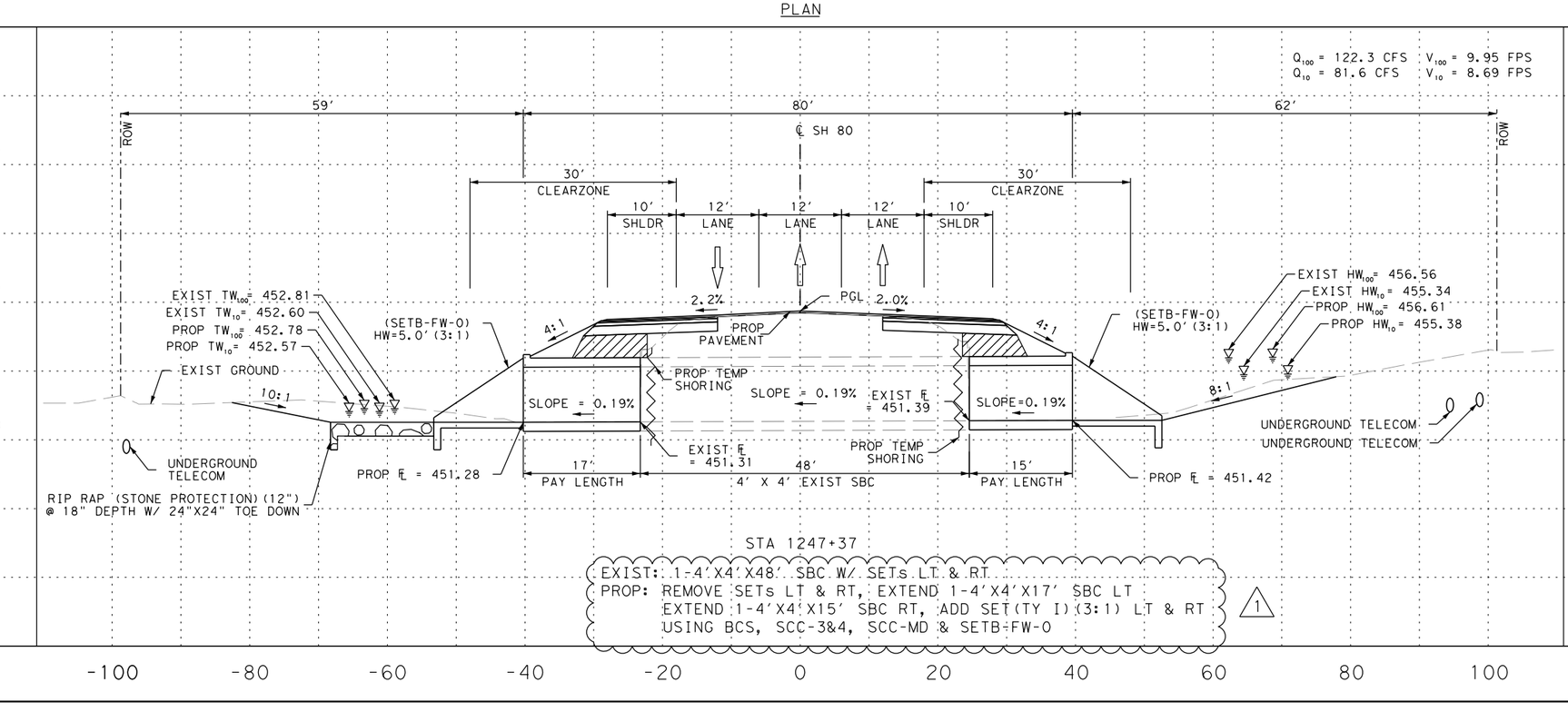
STATE OF TEXAS · JULIAN GARCIA · 127271 · LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS · JAMES A. LUTZ · 84722 · LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE



STA 1247+37

EXIST: 1-4′X4′X48′ SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT, EXTEND 1-4′X4′X17′ SBC LT
EXTEND 1-4′X4′X15′ SBC RT, ADD SET(TY I)(3:1) LT & RT
USING BCS, SCC-3&4, SCC-MD & SETB-FW-0

1

0 10 20 30
SCALE: 1"= 20′

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

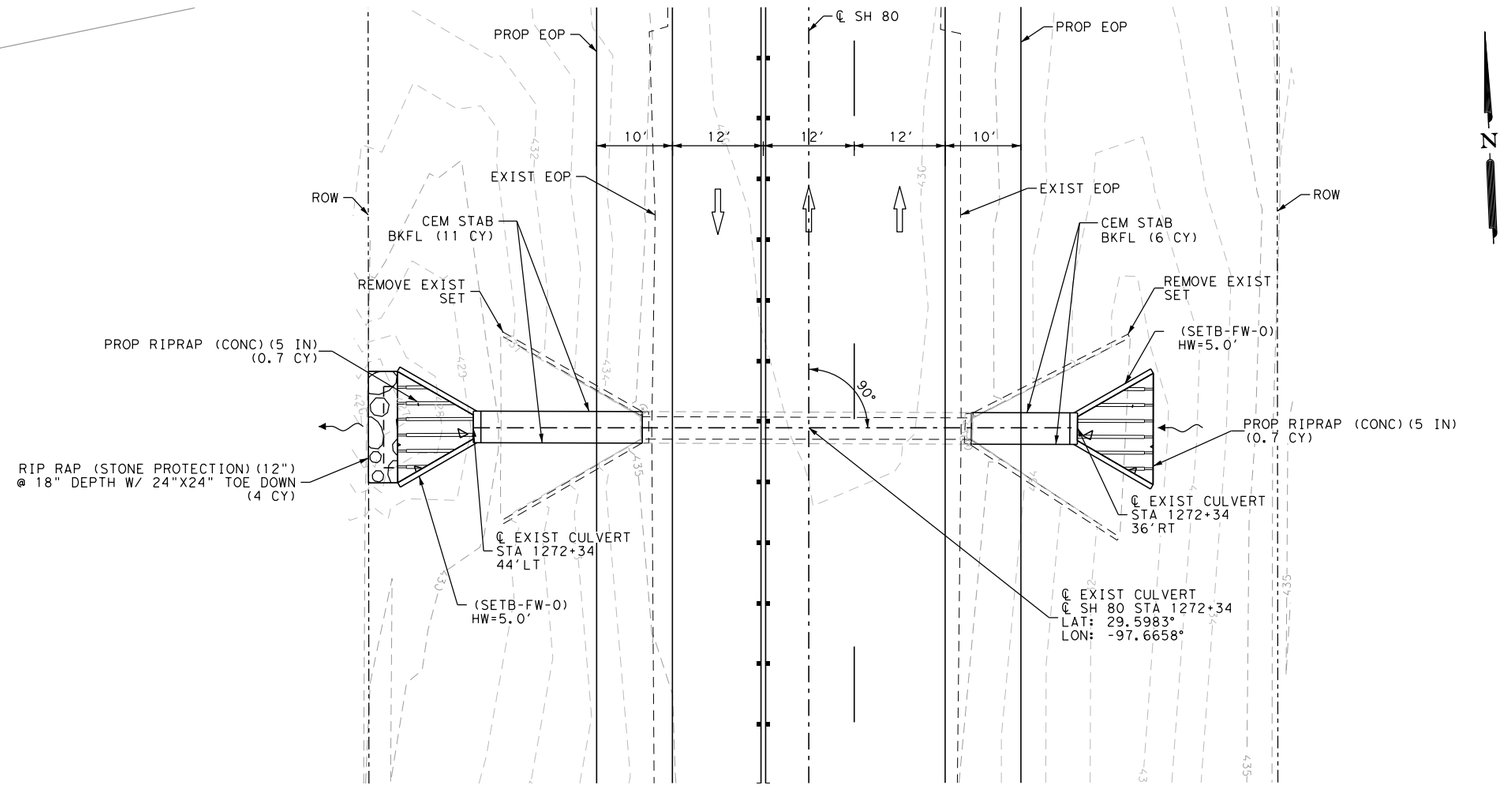
STA 1247+37

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	203

Plotted on: 6/17/2024

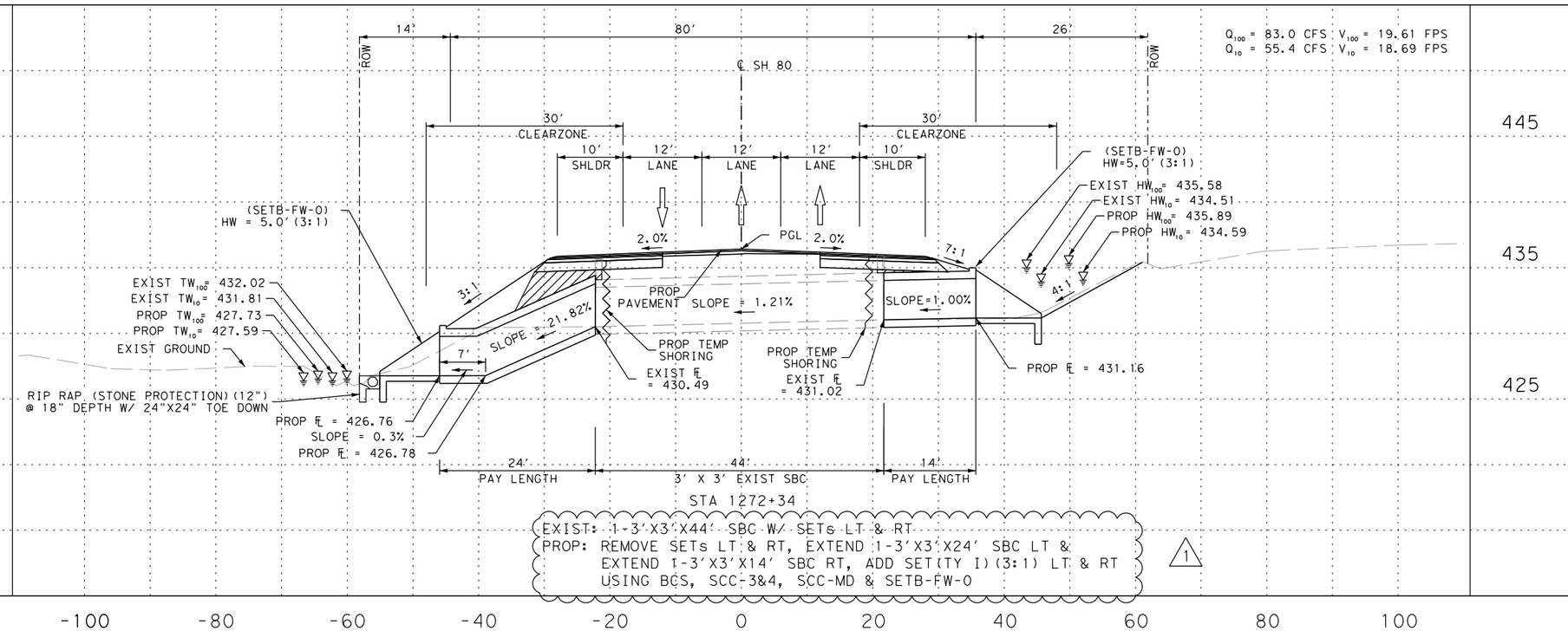
Design Filename: Q:\116\35\05\Design\Civil\Drainage\1163505_CULV_1272+34_REV01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0400-6005	CEM STABIL BKFL	CY	17
0403-6001	TEMPORARY SPL SHORING	SF	315
0432-6002	RIPRAP (CONC)(5 IN)	CY	2
0432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	4
0462-6046	CONC BOX CULV (3 FT X 3 FT)(EXTEND)	LF	38
0467-6117	SET (TY I)(S=3 FT)(HW= 5 FT)(3:1)(C)	EA	2



PLAN

H: 1"=20'
V: 1"=10'



STA 1272+34

EXIST: 1-3'X3'X44' SBC W/ SETs LT & RT
PROP: REMOVE SETs LT & RT, EXTEND 1-3'X3'X24' SBC LT & EXTEND 1-3'X3'X14' SBC RT, ADD SET(TY I)(3:1) LT & RT USING BCS, SCC-3&4, SCC-MD & SETB-FW-0

1

LEGEND

FLOW ARROW

NOTES:

1. EXISTING CONTOURS WERE DEVELOPED USING TNRIS 2010 & 2011 LIDAR DATA.
2. SEE HYDROLOGIC DATA SHEET FOR RUNOFF COEFFICIENT, CURVE NUMBERS, AND HYDROLOGIC SUMMARY.
3. CONTOURS ARE PROVIDED AT 1' INTERVALS.
4. USE CEMENT STABILIZED BACK FILL WHEN EMBANKMENT IS REQUIRED ON TOP OF PROPOSED EXTENSIONS. SEE DRAINAGE DETAILS SHEET FOR MORE INFORMATION.
5. CEMENT STABILIZED BACKFILL WITHIN CUT AND RESTORE LIMITS WILL BE SUBSIDIARY TO THE CUT AND RESTORE BID ITEM.
6. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN BASED ON LEVEL C/D SUE AND DRAWN WITH THE BEST RECORDS AVAILABLE DURING DESIGN.
7. ALL EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED.

DESIGN

1 UPDATED CULVERT DESCRIPTION 06/17/2024

STATE OF TEXAS
JULIAN GARCIA
127271
LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

0 10 20 30
SCALE: 1"= 20'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH 80

CULVERT LAYOUT

STA 1272+34

SHEET 10 OF 10

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 80
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	YKM	GONZALES	0287	03	036	204

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw Height of Wingwall (1) (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
STA 1012+31.00 (Both)	3 ~ 5'x 4'	3'	MC-5-20	SETB-FW-0	0°	3:1	8"	7"	0.250'	4.667'	13.000'	7.506'	15.011'	N/A	31.178'	7.6	0.4	14.6	N/A
STA 1069+41.00 (Both)	1 ~ 4'x 2'	2'	SCC-3&4	SETB-FW-0	0°	4:1	8"	7"	0.333'	2.750'	9.667'	5.581'	11.162'	N/A	15.162'	2.0	0.2	7.8	N/A
STA 1090+82.00 (Both)	1 ~ 4'x 2'	2'	SCC-3&4	SETB-FW-0	0°	4:1	8"	7"	0.333'	2.750'	9.667'	5.581'	11.162'	N/A	15.162'	2.0	0.2	7.8	N/A
STA 1101+11.00 (Both)	1 ~ 4'x 4'	2'	SCC-3&4	SETB-FW-0	0°	3:1	8"	7"	0.250'	4.667'	13.000'	7.506'	15.011'	N/A	19.011'	3.2	0.0	12.8	N/A
STA 1153+57.00 (Both)	2 ~ 3'x 3'	4'	MC-3-23	SETB-FW-0	0°	3:1	8"	7"	0.250'	3.667'	10.000'	5.774'	11.547'	N/A	18.130'	2.8	0.2	9.0	N/A
STA 1226+53.00 (Both)	1 ~ 5'x 6.5	3'	SP	SETB-FW-0	0°	3:1	8"	7"	0.250'	7.333'	21.000'	12.124'	24.249'	N/A	29.249'	8.0	0.2	27.4	N/A
STA 1247+37.00 (Both)	1 ~ 4'x 4'	3'	SCC-3&4	SETB-FW-0	0°	3:1	8"	7"	0.250'	4.667'	13.000'	7.506'	15.011'	N/A	19.011'	3.2	0.0	12.8	N/A
STA 1272+34.00 (Both)	1 ~ 3'x 3'	6'	SCC-3&4	SETB-FW-0	0°	3:1	8"	7"	0.250'	3.667'	10.000'	5.774'	11.547'	N/A	14.547'	1.8	0.0	8.4	N/A

△1

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NOTES:
Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets;
30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical
- Side slope at culvert for flared or straight wingwalls.
- Channel slope for parallel wingwalls.
- Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)
Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt.
Area for four wingwalls (two structure ends) if Both.

(1) Round the wall heights shown to the nearest foot for bidding purposes.

(2) Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

(3) Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

(4) Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

DESIGN

△1 UPDATED BCS STANDARD 06/17/2024

STATE OF TEXAS
JULIAN GARCIA
127271
LICENSED
PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS
JAMES A. LUTZ
84722
LICENSED
PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

Texas Department of Transportation

Bridge Division Standard

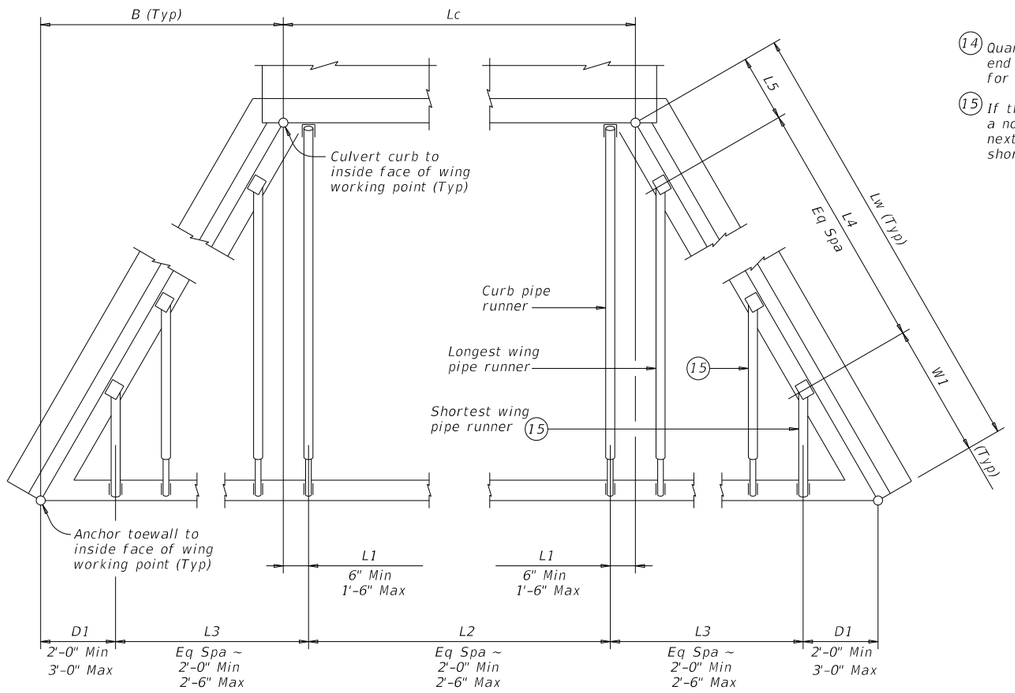
BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

BCS

FILE: bcsstde1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0287	03	036	SH 80
	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		206

Culvert Station and/or Creek name followed by applicable end (Lt, Rt or Both) (14)	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 (14) (Ft)	3'-0" Anchor Pipe Size (2",3" or 4")	3'-0" Anchor Pipe Total Length (14) (Ft)
STA 1012+31.00 (Both)	16.167'	0.500'	7	2.167'	15.167'	2.000'	3	2.002'	6.006'	3.583'	2	4.004'	8.007'	3.420'	8	12.021'	8.896'	5.250'	3.083'	4"	261.250'	3"	72.000'
STA 1069+41.00 (Both)	4.000'	1.000'	1	2.000'	2.000'	2.000'	2	2.291'	4.581'	3.583'	1	4.581'	4.581'	2.998'	2	8.271'	5.604'	N/A	3.000'	3"	67.500'	2"	24.000'
STA 1090+82.00 (Both)	4.000'	1.000'	1	2.000'	2.000'	2.000'	2	2.291'	4.581'	3.583'	1	4.581'	4.581'	2.998'	2	8.271'	5.604'	N/A	3.000'	3"	67.500'	2"	24.000'
STA 1101+11.00 (Both)	4.000'	1.000'	1	2.000'	2.000'	2.000'	3	2.169'	6.506'	3.583'	2	4.337'	8.674'	2.754'	2	12.021'	9.500'	5.542'	3.083'	4"	120.583'	3"	36.000'
STA 1153+57.00 (Both)	6.583'	1.000'	2	2.292'	4.583'	2.000'	2	2.387'	4.774'	3.583'	1	4.774'	4.774'	3.190'	3	8.854'	5.938'	N/A	3.083'	3"	89.208'	2"	30.000'
STA 1226+53.00 (Both)	5.000'	0.500'	2	2.000'	4.000'	3.000'	4	2.406'	9.624'	5.583'	3	4.812'	14.437'	4.229'	3	20.438'	16.604'	3.417'	N/A	5"	282.792'	4"	66.000'
STA 1247+37.00 (Both)	4.000'	1.000'	1	2.000'	2.000'	2.000'	3	2.169'	6.506'	3.583'	2	4.337'	8.674'	2.754'	2	12.021'	9.500'	5.542'	3.083'	4"	120.583'	3"	36.000'
STA 1272+34.00 (Both)	3.000'	1.500'	0	0.000'	0.000'	3.000'	2	2.137'	4.274'	5.583'	1	4.274'	4.274'	1.690'	1	8.854'	7.313'	3.417'	N/A	3"	60.625'	2"	30.000'

1



PIPE RUNNER LAYOUT

(14) Quantities shown are for one structure end if Lt or Rt. Quantities shown are for two structure ends if Both.

(15) If the outermost wing pipe runner is a non-sliding pipe runner, consider the next outermost wing pipe runner as the shortest.

DESIGN

1 UPDATED PIPE RUNNER STANDARD 06/17/2024

STATE OF TEXAS · JULIAN GARCIA · 127271 · LICENSED PROFESSIONAL ENGINEER

JULIAN GARCIA, P.E. — 6/17/2024 DATE

APPROVAL

STATE OF TEXAS · JAMES A. LUTZ · 84722 · LICENSED PROFESSIONAL ENGINEER

JAMES A. LUTZ, P.E. — 6/17/2024 DATE

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS

FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE

SETB-FW-0

FILE: setbf0se-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		217

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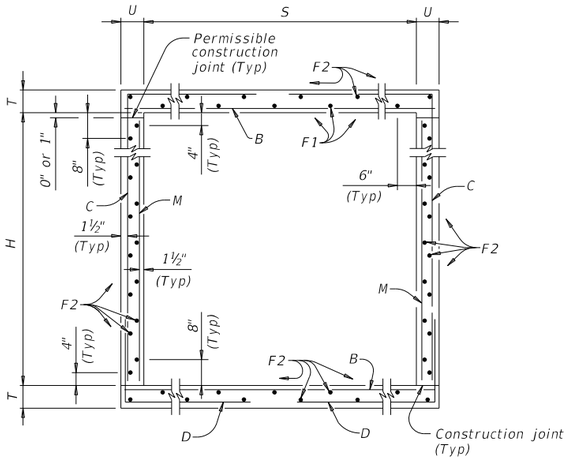

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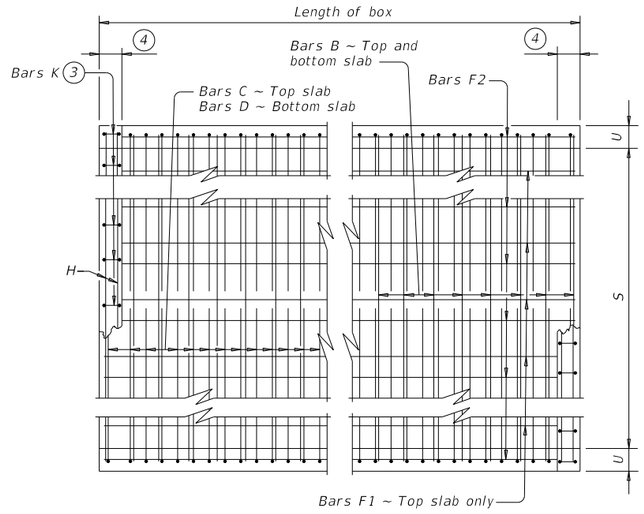
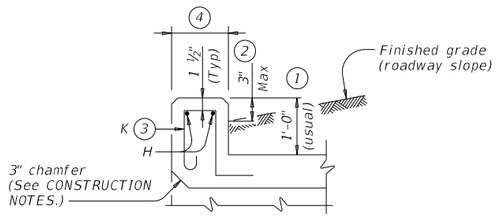


PLAN OF REINF STEEL



SECTION THRU CURB

1. 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 Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

2. 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.

3. 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.

4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.

Chamfer the bottom edge of the top slab 3" at the entrance.

Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel if required elsewhere in the plans.

Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

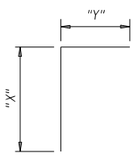
Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min
- Uncoated or galvanized ~ #5 = 2'-1" Min

GENERAL NOTES:

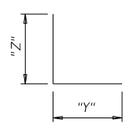
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.

See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

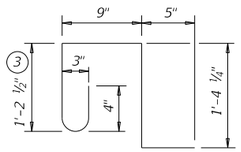
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

1 ADDED STANDARD 06/17/2024

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-3 & 4

FILE:	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0287	03	036	SH 80
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		221A

SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																										QUANTITIES					
					Bars B					Bars C							Bars D							Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
3' – 0"	2' – 0"	8"	7"	30'	108	#5	9"	3' – 11"	441	108	#4	9"	5' – 4"	385	2' – 6"	2' – 10"	108	#4	9"	5' – 1"	367	2' – 10"	2' – 3"	108	9"	2' – 0"	144	3	39' – 9"	80	19	39' – 9"	505	3' – 11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3' – 0"	3' – 0"	8"	7"	30'	108	#5	9"	3' – 11"	441	108	#4	9"	6' – 4"	457	3' – 6"	2' – 10"	108	#4	9"	5' – 1"	367	2' – 10"	2' – 3"	108	9"	3' – 0"	216	3	39' – 9"	80	23	39' – 9"	611	3' – 11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4' – 0"	2' – 0"	8"	7"	30'	108	#5	9"	4' – 11"	554	162	#4	6"	5' – 8"	613	2' – 6"	3' – 2"	162	#4	6"	5' – 5"	586	3' – 2"	2' – 3"	108	9"	2' – 0"	144	3	39' – 9"	80	21	39' – 9"	558	4' – 11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4' – 0"	3' – 0"	8"	7"	30'	108	#5	9"	4' – 11"	554	162	#4	6"	6' – 8"	721	3' – 6"	3' – 2"	162	#4	6"	5' – 5"	586	3' – 2"	2' – 3"	108	9"	3' – 0"	216	3	39' – 9"	80	25	39' – 9"	664	4' – 11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4' – 0"	4' – 0"	8"	7"	30'	108	#5	9"	4' – 11"	554	162	#4	6"	7' – 8"	830	4' – 6"	3' – 2"	162	#4	6"	5' – 5"	586	3' – 2"	2' – 3"	108	9"	4' – 0"	289	3	39' – 9"	80	25	39' – 9"	664	4' – 11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

(5) For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

1 ADDED STANDARD 06/17/2024

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-3 & 4

FILE:	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0287	03	036	SH 80
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		221B

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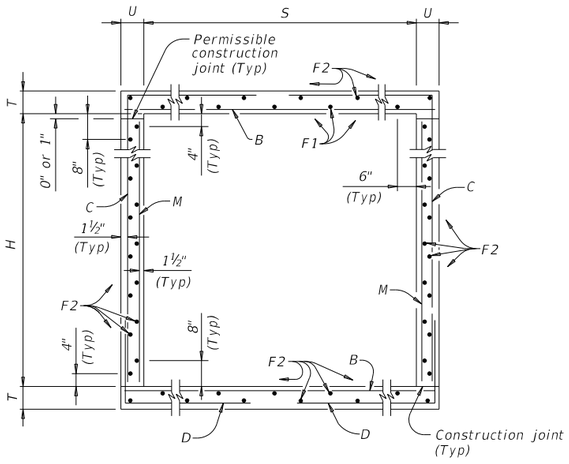
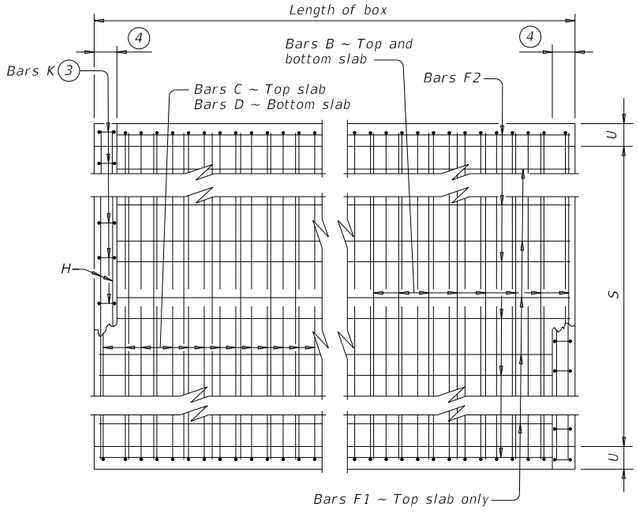
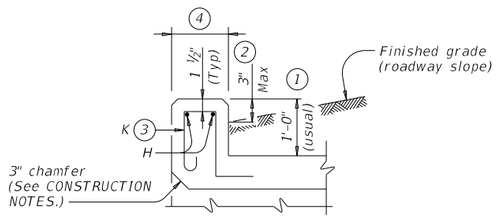


TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

(1) 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 Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(2) 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.

(3) 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.

(4) 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86"
Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:

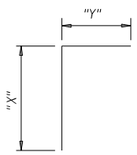
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min
- Uncoated or galvanized ~ #5 = 2'-1" Min
- Uncoated or galvanized ~ #6 = 2'-6" Min

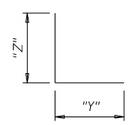
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

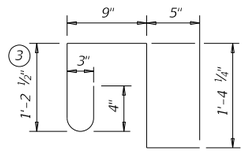
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

1 ADDED STANDARD 06/17/2024

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-5 & 6

FILE:	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0287	03	036	SH 80
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		221C

SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																																				QUANTITIES					
					Bars B					Bars C							Bars D							Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5' - 0"	2' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	6' - 3"	704	2' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	2' - 0"	144	4	39' - 9"	106	22	39' - 9"	584	5' - 11"	16	14	39	0.391	80.5	0.5	55	16.1	3,276
5' - 0"	2' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	6' - 4"	713	2' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	2' - 0"	144	4	39' - 9"	106	22	39' - 9"	584	5' - 11"	16	14	39	0.429	81.0	0.5	55	17.6	3,294
5' - 0"	3' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	7' - 3"	817	3' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	3' - 0"	216	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.434	87.8	0.5	55	17.8	3,567
5' - 0"	3' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	7' - 4"	826	3' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	3' - 0"	216	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.472	88.3	0.5	55	19.3	3,585
5' - 0"	4' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	8' - 3"	929	4' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	4' - 0"	289	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.477	92.4	0.5	55	19.5	3,752
5' - 0"	4' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	8' - 4"	939	4' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	4' - 0"	289	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.515	92.9	0.5	55	21.1	3,771
5' - 0"	5' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	9' - 3"	1,042	5' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	5' - 0"	361	4	39' - 9"	106	30	39' - 9"	797	5' - 11"	16	14	39	0.521	99.7	0.5	55	21.3	4,044
5' - 0"	5' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	9' - 4"	1,051	5' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	5' - 0"	361	4	39' - 9"	106	30	39' - 9"	797	5' - 11"	16	14	39	0.559	100.2	0.5	55	22.8	4,062
6' - 0"	2' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	6' - 7"	742	2' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	2' - 0"	144	5	39' - 9"	133	25	39' - 9"	664	6' - 11"	18	16	45	0.440	89.1	0.5	63	18.1	3,628
6' - 0"	2' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	6' - 8"	1,126	2' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	2' - 0"	144	5	39' - 9"	133	25	39' - 9"	664	6' - 11"	18	16	45	0.485	108.6	0.5	63	19.9	4,407
6' - 0"	2' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	6' - 10"	1,155	2' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	2' - 0"	110	5	39' - 9"	133	25	39' - 9"	664	7' - 1"	19	18	50	0.551	109.9	0.5	69	22.6	4,463
6' - 0"	3' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	7' - 7"	854	3' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	3' - 0"	216	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.484	96.4	0.5	63	19.9	3,918
6' - 0"	3' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	7' - 8"	1,295	3' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	3' - 0"	216	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.528	117.3	0.5	63	21.6	4,754
6' - 0"	3' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	7' - 10"	1,324	3' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	3' - 0"	164	5	39' - 9"	133	29	39' - 9"	770	7' - 1"	19	18	50	0.601	118.1	0.5	69	24.6	4,792
6' - 0"	4' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	8' - 7"	967	4' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	4' - 0"	289	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.527	101.0	0.5	63	21.6	4,104
6' - 0"	4' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	8' - 8"	1,464	4' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	4' - 0"	289	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.571	123.3	0.5	63	23.4	4,996
6' - 0"	4' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	8' - 10"	1,493	4' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	4' - 0"	219	5	39' - 9"	133	29	39' - 9"	770	7' - 1"	19	18	50	0.650	123.7	0.5	69	26.5	5,016
6' - 0"	5' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	9' - 7"	1,080	5' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	5' - 0"	361	5	39' - 9"	133	33	39' - 9"	876	6' - 11"	18	16	45	0.570	108.3	0.5	63	23.3	4,395
6' - 0"	5' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	9' - 8"	1,633	5' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	5' - 0"	361	5	39' - 9"	133	33	39' - 9"	876	6' - 11"	18	16	45	0.614	132.0	0.5	63	25.1	5,343
6' - 0"	5' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	9' - 10"	1,661	5' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	5' - 0"	274	5	39' - 9"	133	33	39' - 9"	876	7' - 1"	19	18	50	0.700	131.9	0.5	69	28.5	5,345
6' - 0"	6' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	10' - 7"	1,192	6' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	6' - 0"	433	5	39' - 9"	133	37	39' - 9"	982	6' - 11"	18	16	45	0.613	115.6	0.5	63	25.0	4,685
6' - 0"	6' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	10' - 8"	1,802	6' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	6' - 0"	433	5	39' - 9"	133	37	39' - 9"	982	6' - 11"	18	16	45	0.657	140.7	0.5	63	26.8	5,690
6' - 0"	6' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	10' - 10"	1,830	6' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	6' - 0"	329	5	39' - 9"	133	37	39' - 9"	982	7' - 1"	19	18	50	0.749	140.2	0.5	69	30.5	5,675

(5) For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

(1) ADDED STANDARD 06/17/2024

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-5 & 6

FILE:	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 04/2021 Updated X values.	0287	03	036	SH 80
	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		221D

DATE: 6/17/2024 8:23:50 AM
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DATE: 6/17/2024 8:23:52 AM
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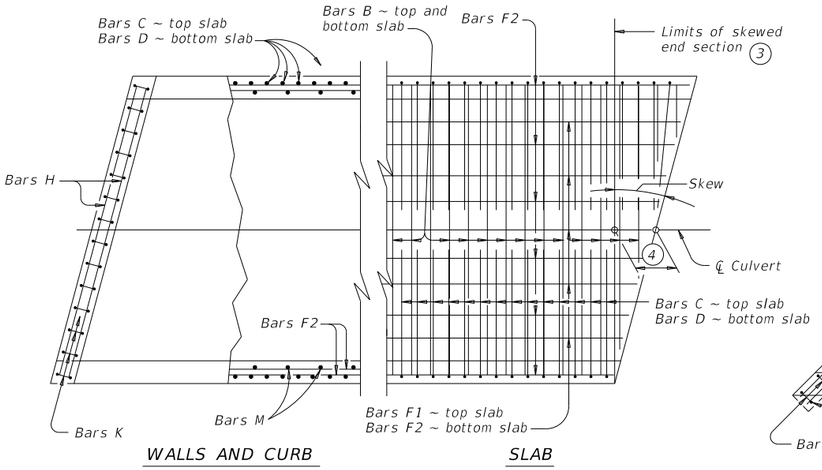
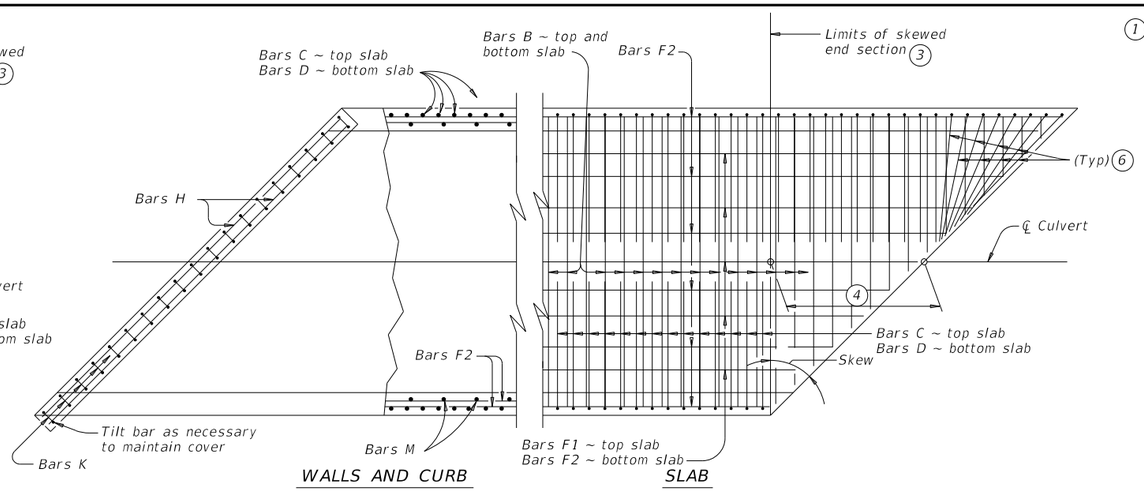
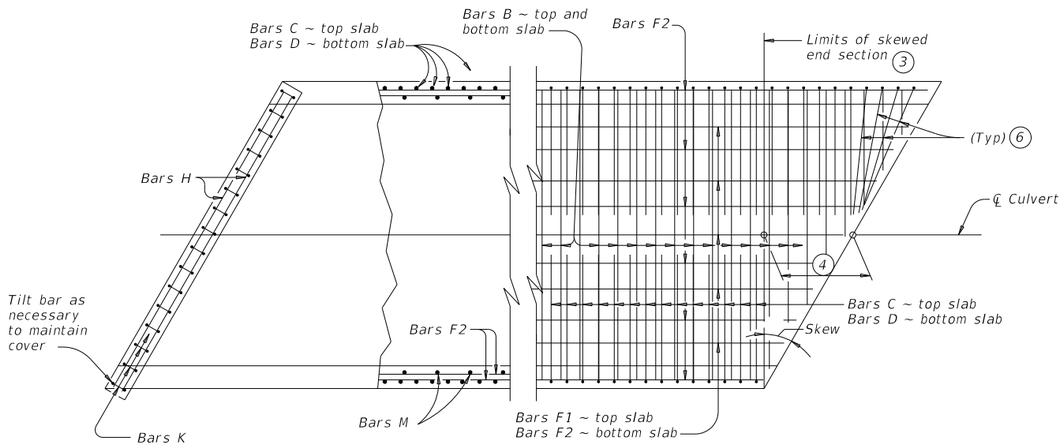


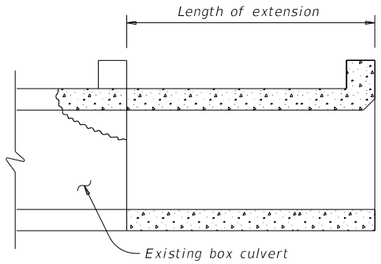
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



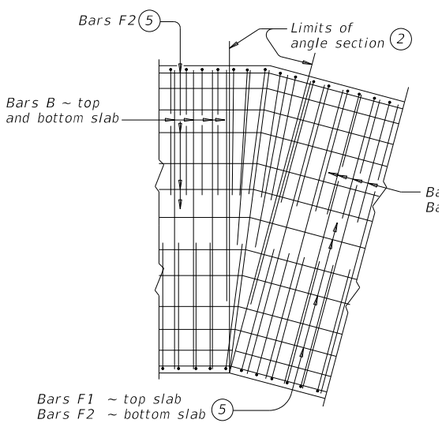
PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



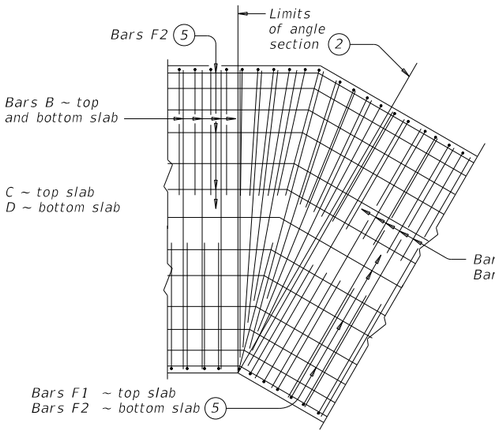
PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



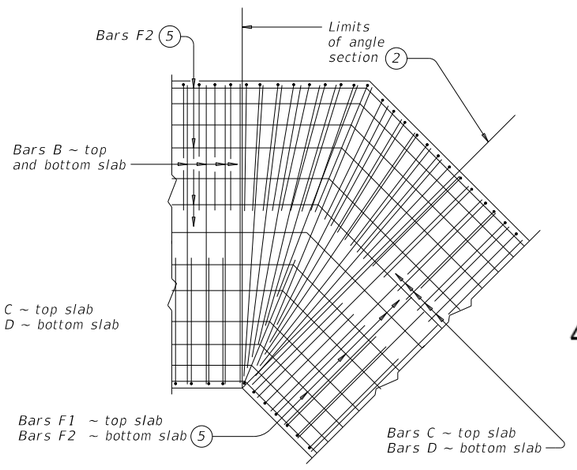
LENGTHENING DETAIL (1)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

(1) For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars in the extension.

For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, C, D , E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 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. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

(2) When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.

(3) The length of Bars B vary in the skewed end sections.

(4) [One half of overall width] x [tangent of the skew angle]

(5) Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

(6) When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

(7) At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast-In-Place (SCC) standards sheets to accommodate the skew.

CONSTRUCTION NOTES:

Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) with these exceptions:
provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast-In-Place (SCC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

1 ADDED STANDARD 06/17/2024

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

SCC-MD

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0287	03	036	SH 80
	DIST	COUNTY		SHEET NO.
	YKM	GONZALES		221E