

LEGEND

DA X	←	DRAINAGE AREA NUMBER
XX.XX AC	←	DRAINAGE AREA (ACRES)
—	←	STRUCTURE LOCATION
—	←	DRAINAGE AREA BOUNDARY
→	←	DIRECTION OF FLOW

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

© 2022

FM 1378
AT FM 3286
EXTERIOR DRAINAGE AREA
MAP

SCALE: 1" = 400' SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MDN	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	MDN	STATE	DISTRICT	COUNTY
CHECK		TEXAS	DAL	COLLIN
CHECK		CONTROL	SECTION	JOB
		1392	01	044, ETC.

156

DESCRIPTION	DA I.D.	STATION	A (acres)	DISCHARGE CALCULATION (RATIONAL METHOD)				2-YEAR		5-YEAR		10-YEAR		25-YEAR		50-YEAR		100-YEAR			
				AREA				C	T _c (min)	I ₂ (in/hr)	Q ₂ (cfs)	I ₅ (in/hr)	Q ₅ (cfs)	I ₁₀ (in/hr)	Q ₁₀ (cfs)	I ₂₅ (in/hr)	Q ₂₅ (cfs)	I ₅₀ (in/hr)	Q ₅₀ (cfs)	I ₁₀₀ (in/hr)	Q ₁₀₀ (cfs)
				Streets	Unimproved Areas	Residential	Industrial														
PROP 181' & 213' 42"RCP	A	24+16.64	21.85	2.09	13.42	6.34	0.00	0.35	19.0	3.32	25.40	4.25	32.47	4.94	37.76	5.84	44.67	6.51	49.78	7.18	54.89
PROP 136' 6"X4' RCB	B	30+62.05	38.49	3.33	26.90	8.26	0.00	0.35	16.0	3.62	48.72	4.62	62.17	5.36	72.24	6.34	85.35	7.05	95.03	7.77	104.66
PROP 64' 48" RCP	C	101+71.95	33.47	1.25	24.69	7.53	0.00	0.35	20.0	3.24	37.90	4.14	48.46	4.81	56.38	5.70	66.72	6.35	74.37	7.00	82.03

	Area (ac)	Q (cfs)
25 yrs	71.96	152.07
100 yrs	71.96	186.69

NOTE:
AS STATED IN THE TxDOT HYDRAULIC DESIGN MANUAL IN CHAPTER 4, SECTION 12 RATIONAL METHOD UNDER THE SUB-SECTION TITLED "RUNOFF COEFFICIENTS", FOR A RURAL WATERSHED THE RUNOFF COEFFICIENT (C) SHALL BE EQUAL TO THE SUM OF COEFFICIENT COMPONENTS THAT ACCOUNT FOR: WATERSHED RELIEF, SOIL INFILTRATION, VEGETAL COVER, AND SURFACE TYPE. THROUGH THE USE FO TABLE 4-11 "RUNOFF COEFFICIENTS FOR RURAL WATERSHEDS" THE PROJECT AREA WAS DETERMINED TO HAVE A TOTAL C OF 0.35. THIS COEFFICIENT WAS USED INSTEAD OF THE WEIGHTED C USING THE AREA DELINEATION METHOD.

PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/21/2022

© 2022

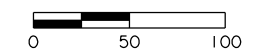
FM 1378
AT FM 3286
EXTERIOR DRAINAGE AREA
MAP

SHEET 2 OF 2

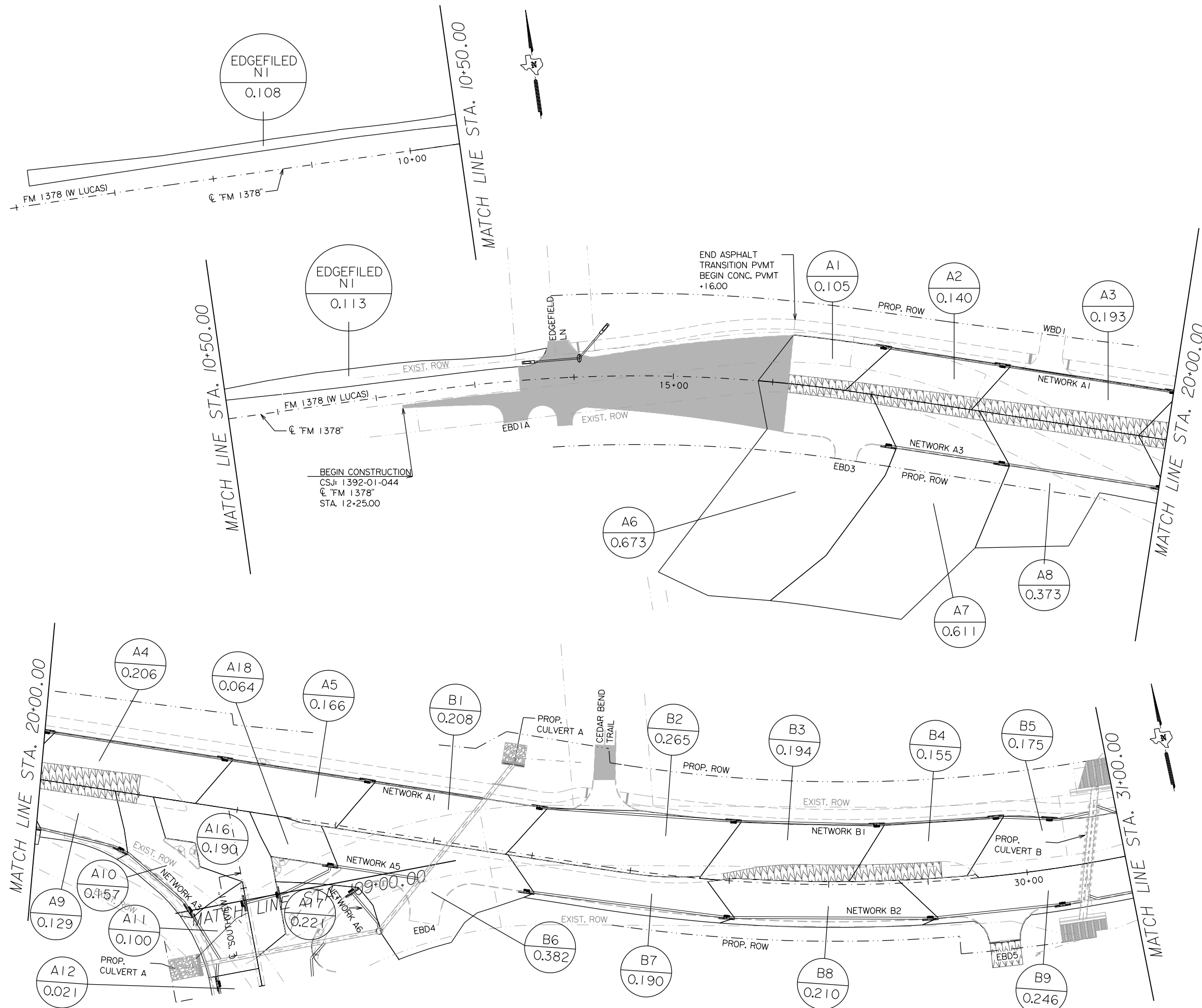
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
MDN	6	SEE TITLE SHEET	FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY
MDN	TEXAS	DAL	COLLIN
CHECK	CONTROL	SECTION	JOB
CHECK	1392	01	044, ETC.

157

DATE: 2/1/2022 TIME: 10:04:42 AM FILE: c:\txdot\pwworking\line\txdot5\ibrahim.e\saad\0476892\Interior Drainage Area Map Sheets.dgn



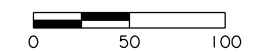
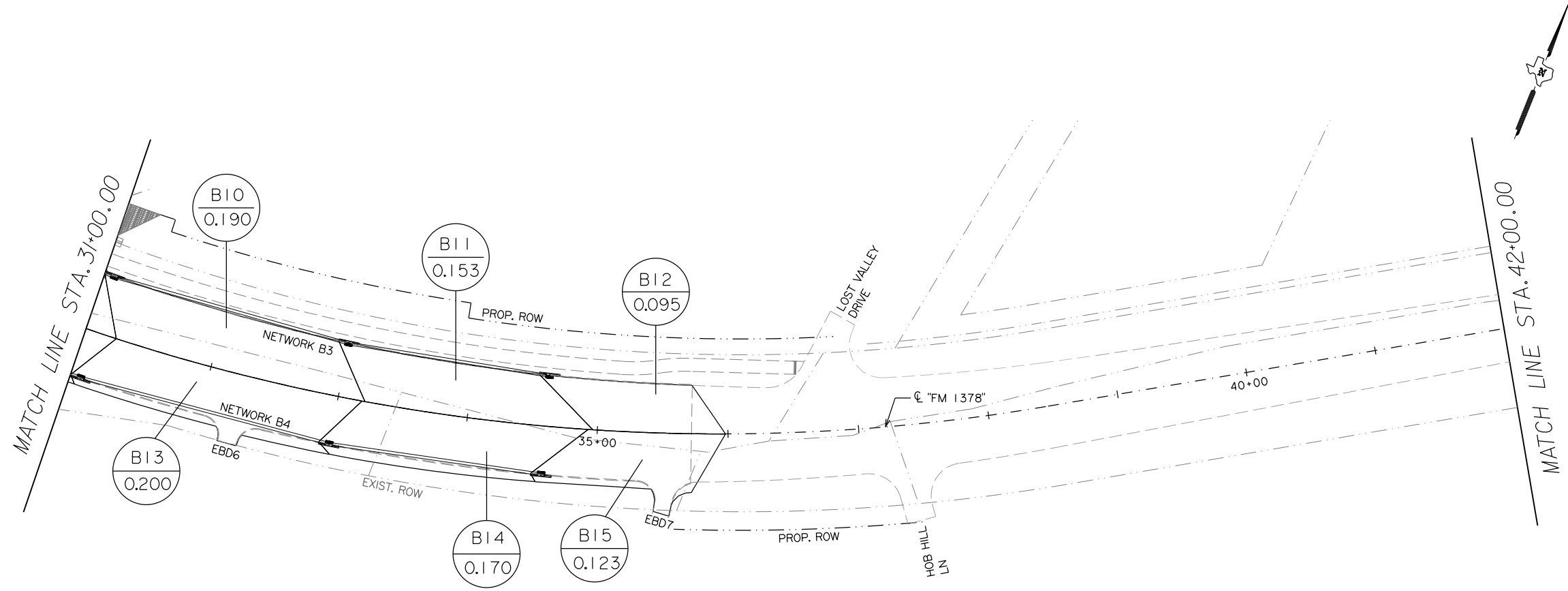
LEGEND
 XXXX DRAINAGE AREA NO.
 XXXX ACRES



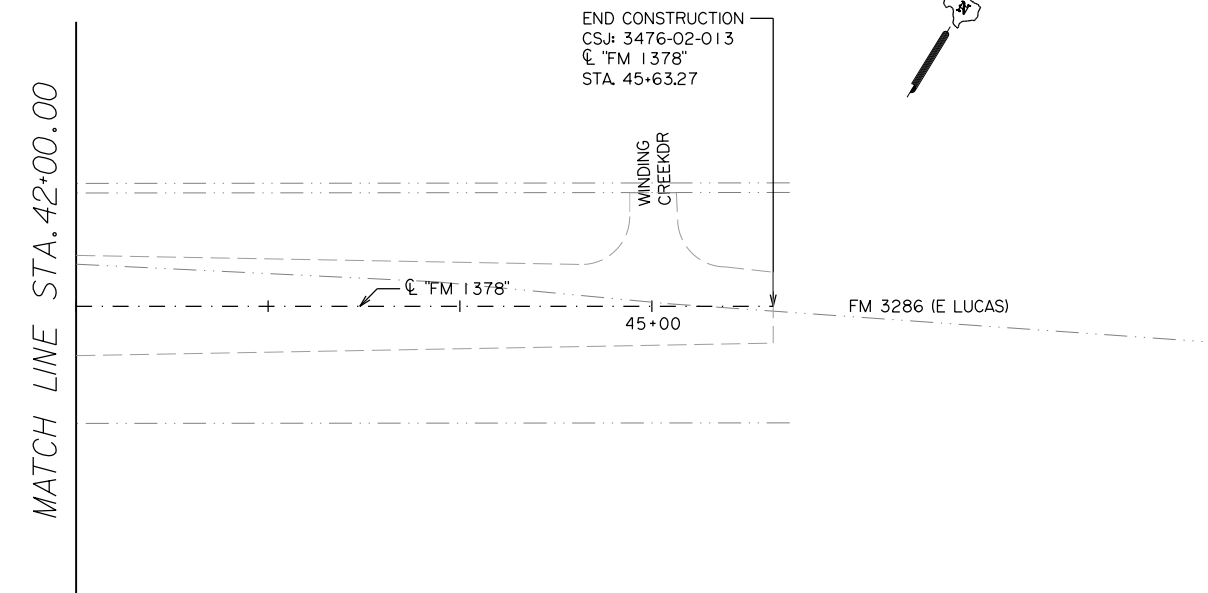
PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 2/1/2022

FM 1378 AT FM 3286 INTERIOR DRAINAGE AREA MAP			
SCALE: 1"=100'		SHEET 1 OF 3	
DESIGN IIE	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. FM 1378, ETC.
GRAPHICS IIE	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN
CHECK SM/MN	CONTROL	SECTION	JOB
CHECK SM/MN	1392	01	044, ETC.

DATE: 1/21/2022 TIME: 8:19:13 AM FILE: c:\txdot\pwworking\line\txdot5\ibrahim.elsaad\d0476892\Interior Drainage Area Map Sheets.dgn



LEGEND
 XXXX DRAINAGE AREA NO.
 XXXX ACRES



PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

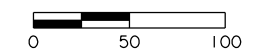
© 2022
 Texas Department of Transportation

**FM 1378
 AT FM 3286
 INTERIOR DRAINAGE AREA
 MAP**

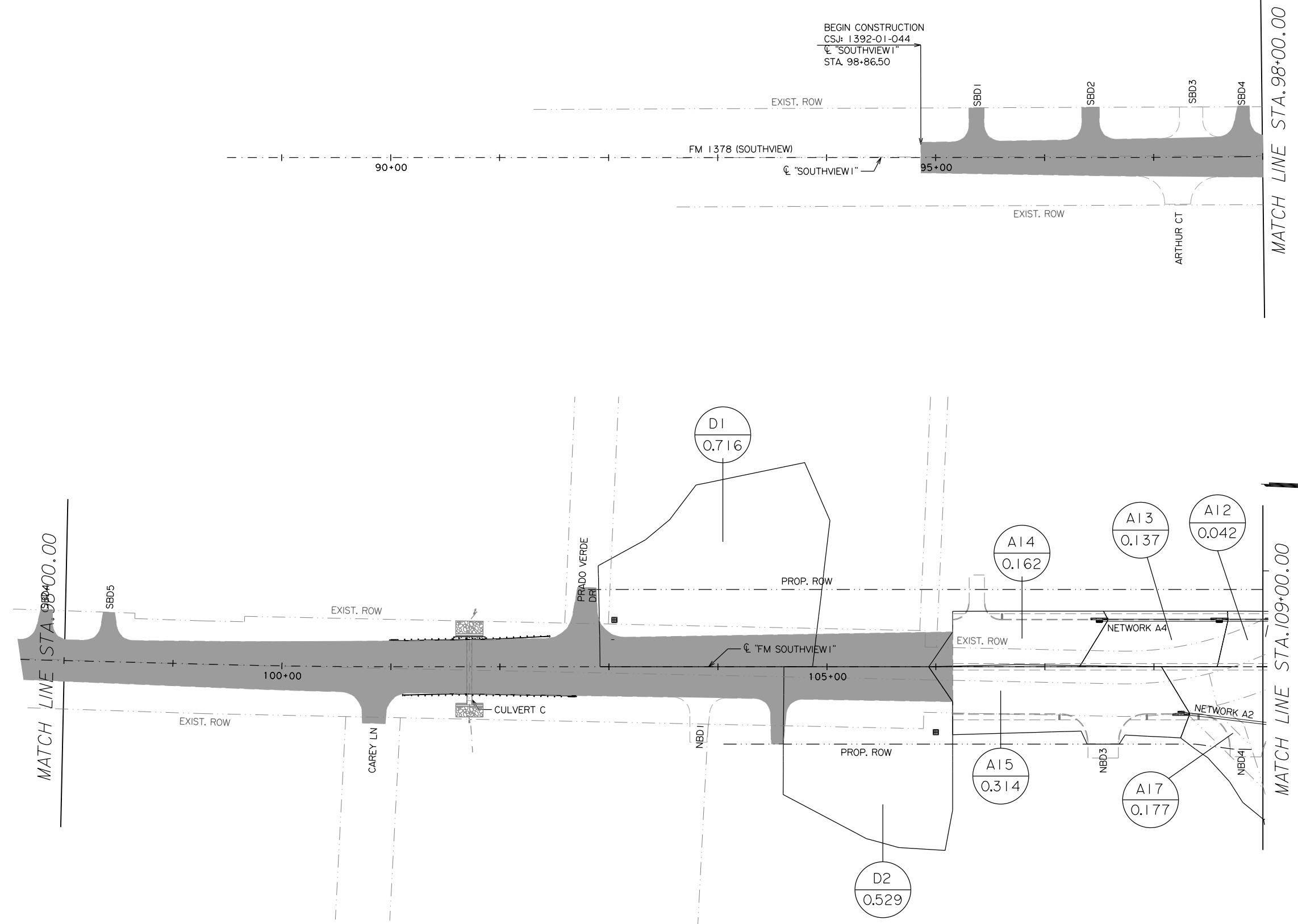
SCALE: 1" = 100' SHEET 2 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IE	TEXAS	DAL	COLLIN	159
CHECK	CONTROL	SECTION	JOB	
SM/MN	1392	01	044, ETC.	

DATE: 1/21/2022 TIME: 8:19:16 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0476892\Interior Drainage Area Map Sheets.dgn



LEGEND
 XXXX DRAINAGE AREA NO.
 XXXX ACRES



PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

© 2022
 Texas Department of Transportation

**FM 1378
 AT FM 3286
 INTERIOR DRAINAGE AREA
 MAP**

SCALE: 1" = 100' SHEET 3 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	IIE	STATE	DISTRICT	COUNTY
CHECK	SM/MN	TEXAS	DAL	COLLIN
CHECK	SM/MN	CONTROL	SECTION	JOB
		1392	01	044, ETC.

160

FILE: c:\txdot\pwworking\ibrahim.e\saad\0476892\Interior Drainage Hydraulic Calculations.dgn
 TIME: 12:38:10 PM
 DATE: 2/1/2022

Area ID	Description	Composite Area (AC)	Composite C Value	Time of Concentration (MIN)	Tc Used (MIN)	Intensity (IN/HR)	Discharge (CFS)
NETWORK A1							
A1	Culvert A	0.105	0.93	1.199	10	5.637	0.552
A2	Culvert A	0.14	0.93	1.199	10	5.637	0.736
A3	Culvert A	0.193	0.93	1.199	10	5.637	1.012
A4	Culvert A	0.206	0.93	1.199	10	5.637	1.081
A5	Culvert A	0.166	0.93	1.199	10	5.637	0.871
EDGEFIELD LATERAL							
Edgefield N1	Proposed Ditch	0.221	0.5	1.31	10	5.637	0.624
NETWORK A2							
A15	Culvert A	0.314	0.857	0.976	10	5.637	1.517
D2	Culvert A	0.529	0.582	1.019	10	5.637	1.738
NETWORK A3							
A6	Culvert A	0.673	0.597	1.125	10	5.637	2.265
A7	Culvert A	0.611	0.59	1.14	10	5.637	2.032
A8	Culvert A	0.373	0.712	1.136	10	5.637	1.497
A9	Culvert A	0.129	0.902	1.125	10	5.637	0.658
A10	Culvert A	0.157	0.925	1.13	10	5.637	0.819
NETWORK A4							
A12	Culvert A	0.063	0.912	1.006	10	5.637	0.326
A13	Culvert A	0.137	0.911	1.019	10	5.637	0.705
A14	Culvert A	0.162	0.91	1.019	10	5.637	0.83
NETWORK A5							
A11	Culvert A	0.1	0.904	1.089	10	5.637	0.507
A16	Culvert A	0.19	0.93	1.124	10	5.637	0.994
A18	CULVERT A	0.064	0.93	1.124	10	5.637	0.338
NETWORK A6							
A17	Culvert A	0.398	0.787	1.017	10	5.637	1.764
NETWORK B1							
B1	Culvert B	0.208	0.93	1.184	10	5.637	1.089
B2	Culvert B	0.265	0.93	1.193	10	5.637	1.391
B3	Culvert B	0.194	0.93	1.183	10	5.637	1.017
B4	Culvert B	0.155	0.93	1.183	10	5.637	0.813
B5	Culvert B	0.175	0.93	1.183	10	5.637	0.917
NETWORK B2							
B6	Culvert B	0.382	0.856	0.948	10	5.637	1.842
B7	Culvert B	0.19	0.93	0.943	10	5.637	0.994
B8	Culvert B	0.21	0.879	0.945	10	5.637	1.042
B9	Culvert B	0.246	0.899	1.089	10	5.637	1.246
NETWORK B3							
B10	Culvert B	0.19	0.93	1.068	10	5.637	0.996
B11	Culvert B	0.153	0.93	1.004	10	5.637	0.802
B12	Culvert B	0.095	0.93	0.984	10	5.637	0.496
NETWORK B4							
B13	Culvert B	0.2	0.879	0.993	10	5.637	0.993
B14	Culvert B	0.17	0.871	1.018	10	5.637	0.832
B15	Culvert B	0.123	0.895	1.129	10	5.637	0.619
NETWORK D1							
D1	Culvert C	0.716	0.578	1.019	10	5.637	2.336

NOTE: DESIGN CRITERIA FOR STORM DRAIN DESIGN/ANALYSIS BASED ON 5 YRS DESIGN.

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 2/1/2022

© 2022

FM 1378
 AT FM 3286
**STORM SEWER
 RUNOFF CALCULATIONS**

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
IIE	STATE	DISTRICT	COUNTY	
CHECK	TEXAS	DAL	COLLIN	
KB	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

161

INLET ID	INLET TYPE	PROFILE TYPE	CHAIN	STATION	OFFSET (FT)	DISCHARGE (CFS)	CAPACITY (CFS)	BY PASS FLOW (CFS)	BY PASS FLOW INTO (CFS)	INLET LENGTH (FT)	MAX PONDED WIDTH (FT)	COMPUTED PONDED WIDTH (FT)	COMPUTED PONDED DEPTH (FT)	RIGHT SPREAD INTERCEPT	LONGITUDINAL SLOPE (%)
NETWORK A1															
A1	Curb and Grate	On Grade	ALIGN1FM1378	17+05.00	-49.000	0.552	0.552	0	0	14	14	5.368	0.107	5.368	1.312
A2	Curb and Grate	On Grade	ALIGN1FM1378	18+26.00	-49.000	0.736	0.736	0	0	14	14	5.576	0.112	5.576	1.901
A3	Curb and Grate	On Grade	ALIGN1FM1378	19+99.00	-49.000	1.012	1.012	0	0	14	14	6.281	0.126	6.281	1.901
A4	Curb and Grate	On Grade	ALIGN1FM1378	21+80.00	-49.000	1.081	1.081	0	0	14	14	6.439	0.129	6.439	1.901
A5	Curb and Grate	On Grade	ALIGN1FM1378	23+25.00	-49.000	0.871	0.871	0	0	14	14	5.94	0.119	5.94	1.901
EDGEFIELD LATERAL															
Edgefield N1	SET	On Grade	ALIGN1FM1378	13+60.92	-17.622	1.766	1.766	0	0	n/a	14	12.725	0.242	12.725	n/a
Edgefield N3	SET	On Grade	ALIGN1FM1378	14+27.67	-43.384	1.766	1.766	0	0	n/a	14	12.725	0.242	12.725	n/a
NETWORK A2															
A15	Curb and Grate	On Grade	SOUTHVIEW1	108+25.00	43.000	1.517	1.515	0.002	0	14	14	7.23	0.144	7.23	2.051
D2	Grate	Sag	SOUTHVIEW1	106+00.00	60.000	1.738	9.095	0	0	n/a	14	15.54	0.166	8.293	n/a
NETWORK A3															
A6	Curb and Grate	On Grade	ALIGN1FM1378	17+25.00	49.000	2.265	2.248	0.016	0	14	14	9.353	0.187	9.353	1.136
A7	Curb and Grate	On Grade	ALIGN1FM1378	18+40.00	49.000	2.049	2.024	0.024	0.016	14	14	8.181	0.164	8.181	1.901
A8	Curb and Grate	On Grade	ALIGN1FM1378	20+00.00	49.000	1.521	1.52	0.001	0.024	14	14	7.318	0.146	7.318	1.901
A9	Curb and Grate	On Grade	ALIGN1FM1378	20+90.00	57.674	0.659	0.659	0	0.001	14	14	5.351	0.107	5.351	1.901
A10	Curb and Grate	Sag	SOUTHVIEW1	109+88.00	-57.720	0.819	17.798	0	0	14	14	0	0.168	0	n/a
NETWORK A4															
A12	Curb and Grate	On Grade	SOUTHVIEW1	109+10.00	-43.000	0.326	0.326	0	0	14	14	9.473	0.061	9.473	0.979
A13	Curb and Grate	On Grade	SOUTHVIEW1	108+60.00	-43.000	0.705	0.705	0	0	14	14	7.578	0.095	7.578	1.61
A14	Curb and Grate	On Grade	SOUTHVIEW1	107+50.00	-43.000	0.83	0.83	0	0	14	14	5.355	0.107	5.355	2.998
NETWORK A5															
A11	Curb and Grate	Sag	SOUTHVIEW1	109+85.00	-3.000	0.507	17.798	0	0	14	14	0	0.122	0	n/a
A16	Curb and Grate	Sag	SOUTHVIEW1	109+87.25	33.000	0.994	17.798	0	0	14	14	10.043	0.191	10.043	n/a
A18	Curb and Grate	On Grade	ALIGN1FM1378	23+01.00	41.000	0.338	0.338	0	0	14	14	4.544	0.079	4.544	1.901
NETWORK A6															
A17	Curb and Grate	On Grade	SOUTHVIEW1	109+75.00	105.518	1.766	1.766	0	0.002	14	14	12.725	0.242	12.725	0.158
NETWORK B1															
B1	Curb and Grate	On Grade	ALIGN1FM1378	25+00.00	-49.000	1.089	1.089	0	0	14	14	6.456	0.129	6.456	1.901
B2	Curb and Grate	On Grade	ALIGN1FM1378	27+00.00	-60.315	1.391	1.391	0	0	14	14	7.076	0.142	7.076	1.901
B3	Curb and Grate	On Grade	ALIGN1FM1378	28+50.00	-59.613	1.017	1.017	0	0	14	14	6.535	0.131	6.535	1.556
B4	Curb and Grate	On Grade	ALIGN1FM1378	29+75.00	-58.853	0.813	0.813	0	0	14	14	7.495	0.15	7.495	0.477
B5	Curb and Grate	Sag	ALIGN1FM1378	30+30.50	-50.272	0.917	17.798	0	0	14	14	9.037	0.181	9.037	n/a
NETWORK B2															
B6	Curb and Grate	On Grade	ALIGN1FM1378	25+00.00	37.000	1.842	1.831	0.012	0	14	14	7.862	0.157	7.862	1.901
B7	Curb and Grate	On Grade	ALIGN1FM1378	27+00.00	37.000	1.005	1.005	0	0.012	14	14	6.267	0.125	6.267	1.901
B8	Curb and Grate	On Grade	ALIGN1FM1378	29+00.00	37.000	1.042	1.042	0	0	14	14	7.008	0.14	7.008	1.124
B9	Curb and Grate	Sag	ALIGN1FM1378	30+30.50	37.000	1.246	17.798	0	0	14	14	11.087	0.222	11.087	n/a
NETWORK B3															
B10	Curb and Grate	On Grade	ALIGN1FM1378	31+08.00	-44.794	0.996	0.996	0	0	14	14	7.591	0.152	7.591	0.67
B11	Curb and Grate	On Grade	ALIGN1FM1378	33+00.00	-41.578	0.802	0.802	0	0	14	14	5.544	0.111	5.544	2.326
B12	Curb and Grate	On Grade	ALIGN1FM1378	34+60.00	-38.898	0.496	0.496	0	0	14	14	4.343	0.087	4.343	3.275
NETWORK B4															
B13	Curb and Grate	On Grade	ALIGN1FM1378	31+08.00	37.000	0.993	0.993	0	0	14	14	7.582	0.152	7.582	0.67
B14	Curb and Grate	On Grade	ALIGN1FM1378	33+00.00	37.000	0.832	0.832	0	0	14	14	5.621	0.112	5.621	2.326
B15	Curb and Grate	On Grade	ALIGN1FM1378	34+60.00	37.000	0.619	0.619	0	0	14	14	4.719	0.094	4.719	3.275
NETWORK D1															
D1	Grate	Sag	SOUTHVIEW1	103+05.00	-43.000	2.336	9.095	0	0	n/a	14	10.1	0.202	10.1	n/a

FILE: c:\txdot\pw\onl\ine\t\tdot5\ibrahim.e\saad\0476892\Interior Drainage Hydraulic Calculations.dgn
 DATE: 2/1/2022 TIME: 12:36:04 PM



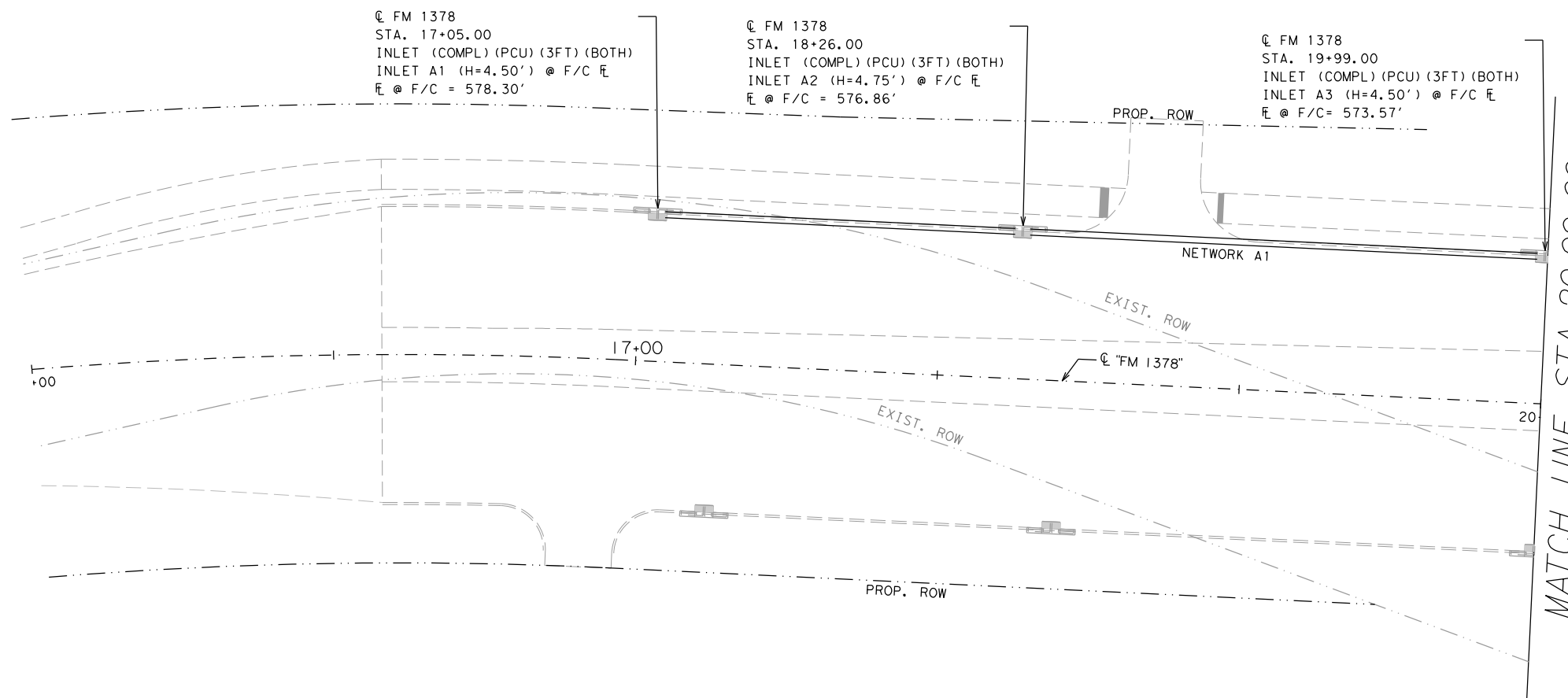
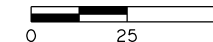
© 2022

FM 1378
AT FM 3286
STORM SEWER
INLET CALCULATIONS

SHEET 1 OF 1

PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 2/1/2022

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
IE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	162
SM/MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	



LEGEND

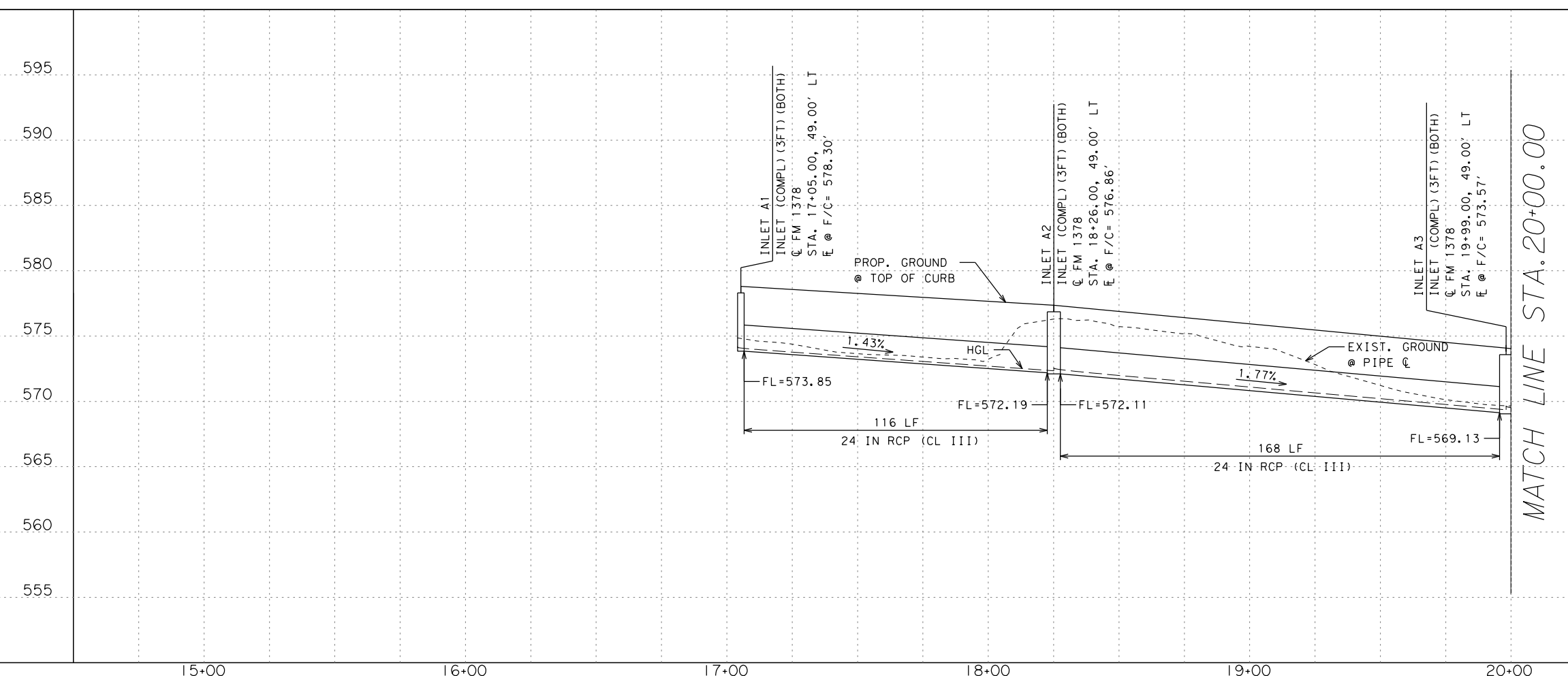
- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTx4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	284
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3

FILE: c:\txdot\pwworking\txdot\5\ibrahim.eisaad\0476892\Network A1 Sheets.dgn
 TIME: 8:19:35 AM
 DATE: 1/21/2022



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

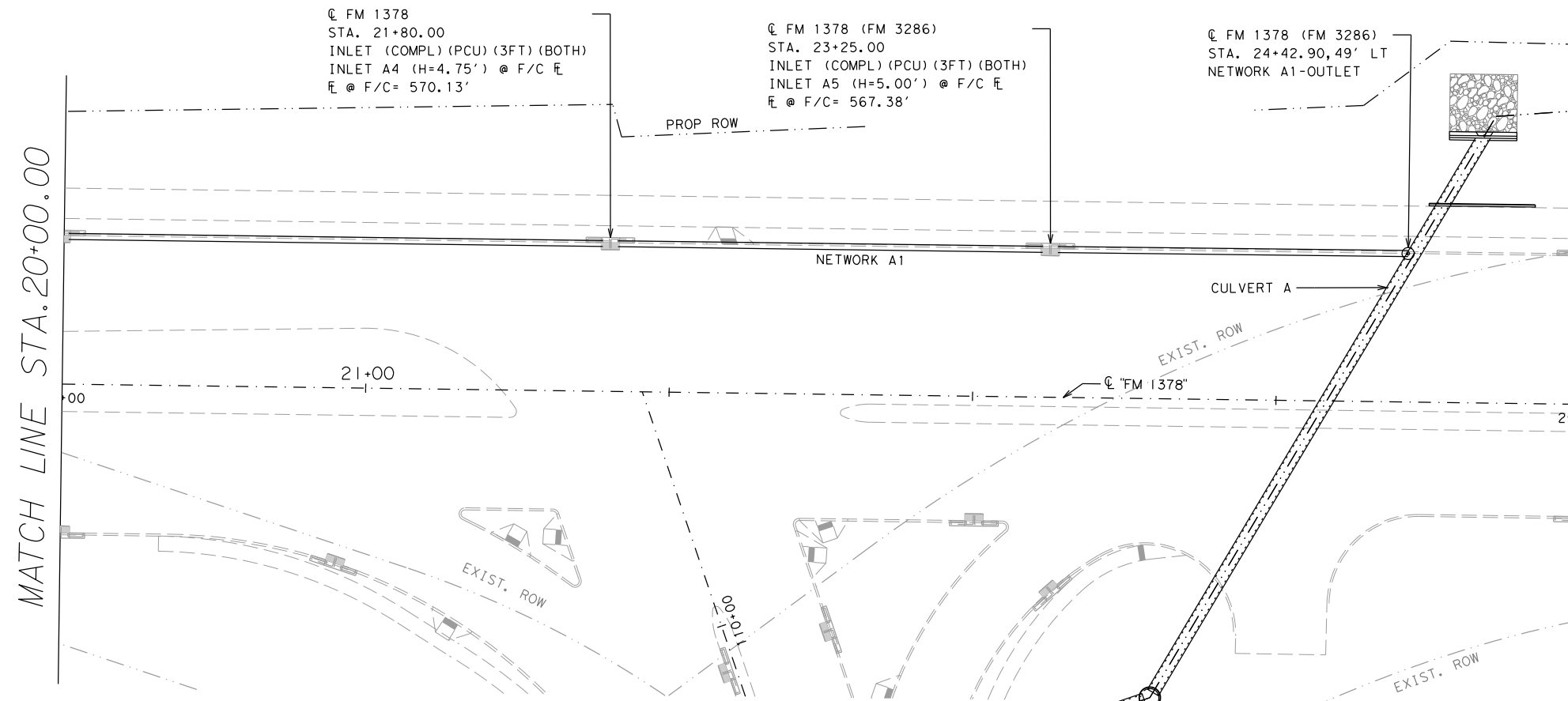
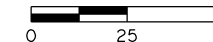
© 2022

FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A1

SCALE: 1"=50'-H
 1"=10'-V

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS				
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	164
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	



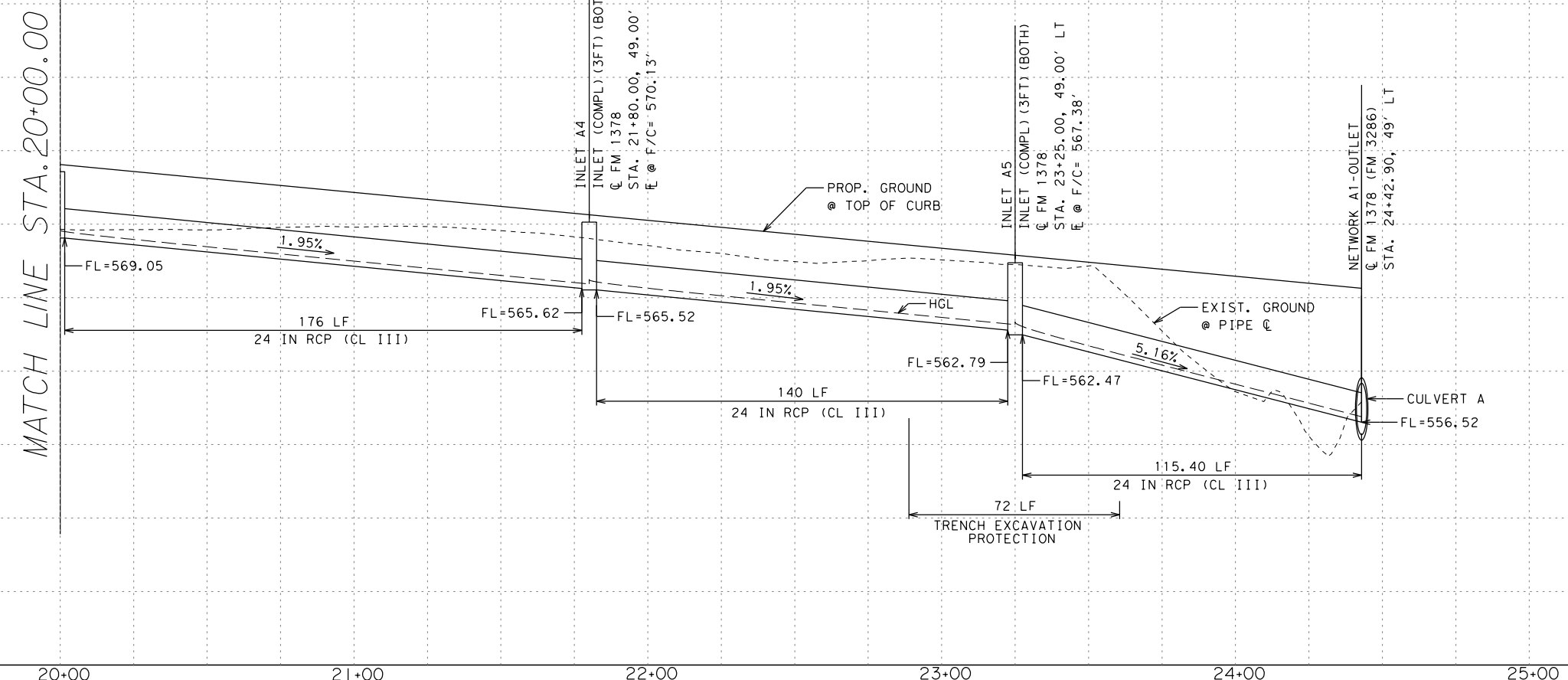
- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTx4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	72
464 6005	RC PIPE (CL III) (24 IN)	LF	432
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	2

DATE: 1/21/2022 TIME: 8:19:37 AM FILE: c:\txdot\pw\online\txdot5\ibrahim.eisaad\0476892\Network A1 Sheets.dgn



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

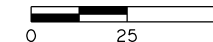


FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A1

SCALE: 1"=50'-H
 1"=10'-V

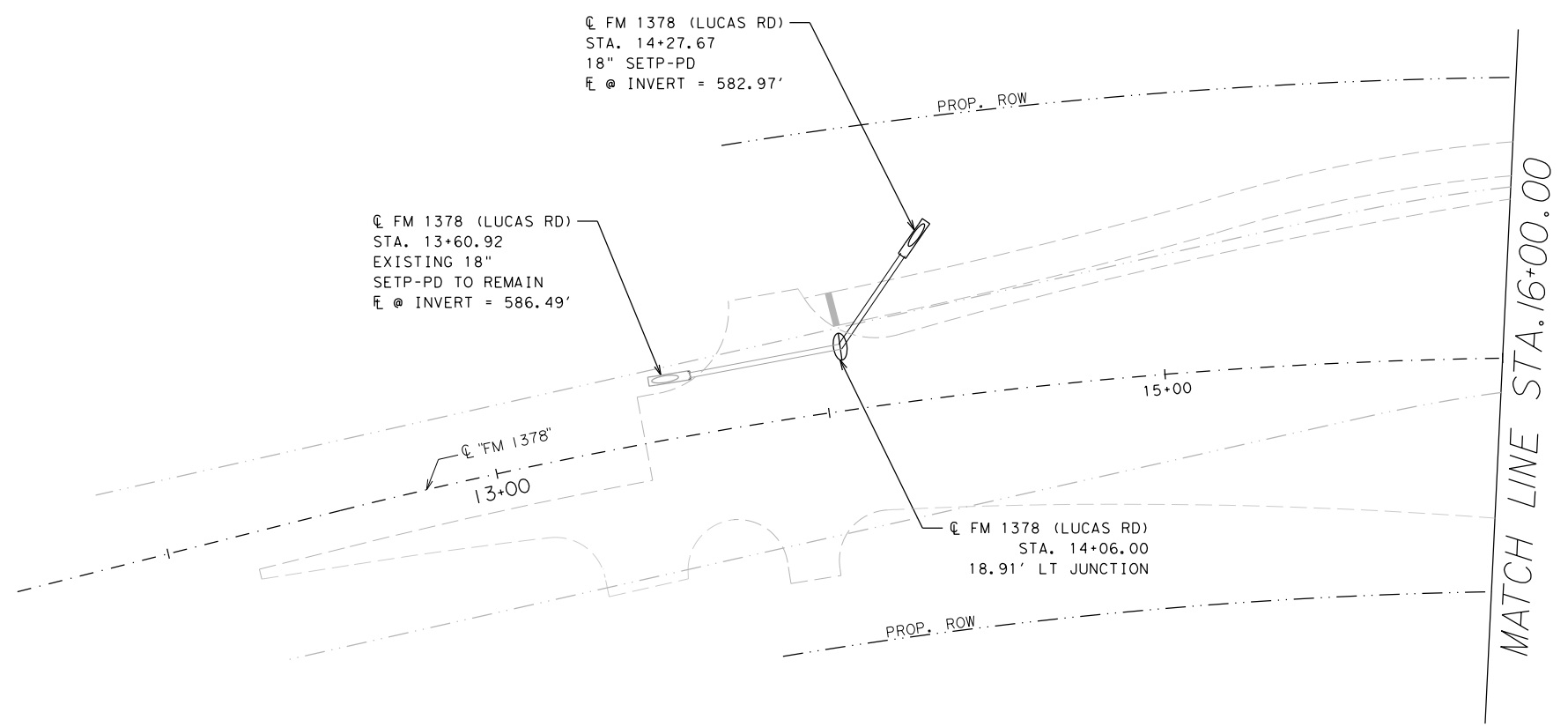
SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS				
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	165
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	



- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTx4FT)

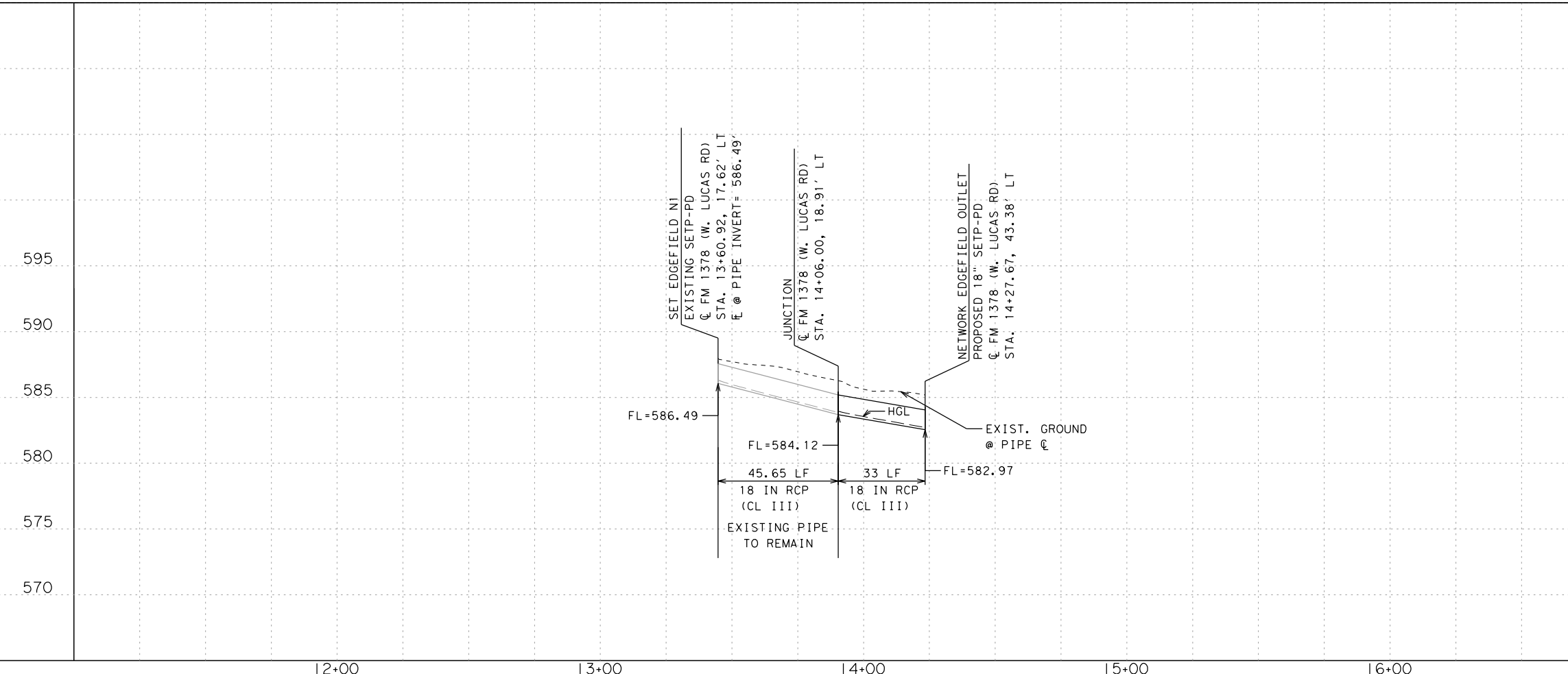
NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.



NOTE: SEE SUMMARY OF DRIVEWAY DRAINAGE

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6003	RC PIPE (CL III) (18 IN)	LF	33
467 6356	SET (TY II) (18 IN) (RCP) (3:1) (P)	EA	1

DATE: 2/1/2022 TIME: 1:26:39 PM FILE: c:\t\dot\pw\on\line\t\dot\5\ibrahim.e\saad\0476892\Network Edgefield Sheets.dgn



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 2/1/2022

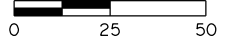


FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
EEDGEFIELD LATERAL

SCALE: 1"=50'-H
 1"=10'-V

SHEET 1 OF 1

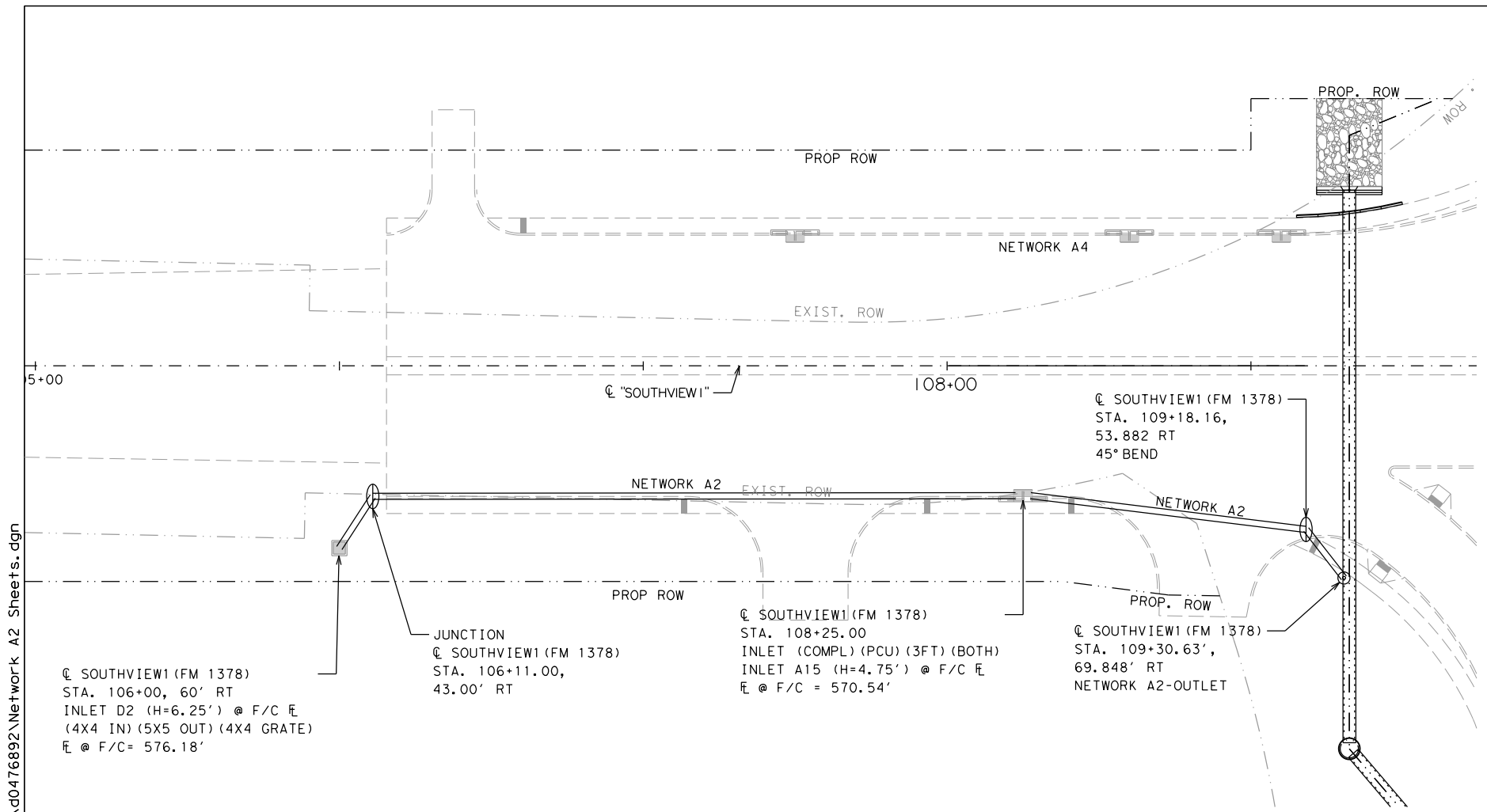
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	165A
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	



LEGEND

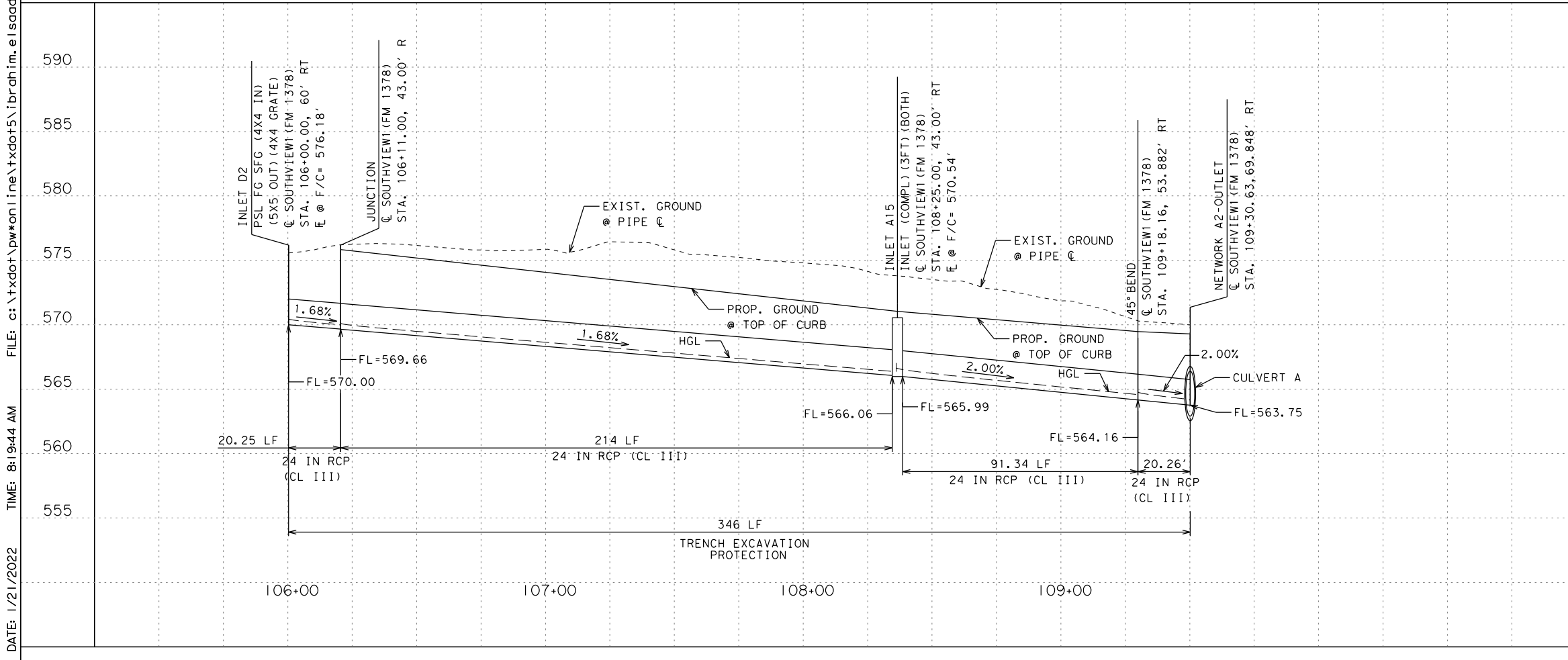
	DITCH FLOW LINE
	STORM SEWER
	INLET (COMPL) (PCU) (3FT) (RIGHT)
	INLET (COMPL) (PCU) (3FT) (LEFT)
	INLET (COMPL) (PCU) (3FT) (BOTH)
	INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.



NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	346
464 6005	RC PIPE (CL III) (24 IN)	LF	346
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	1
465 6135	INLET (COMPL)(PSL)IFG(5FTX5FT-4FTX4FT)	EA	1



PRELIMINARY
 FOR REVIEW ONLY
 Not intended for construction, bidding or permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



FM 1378
 AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A2

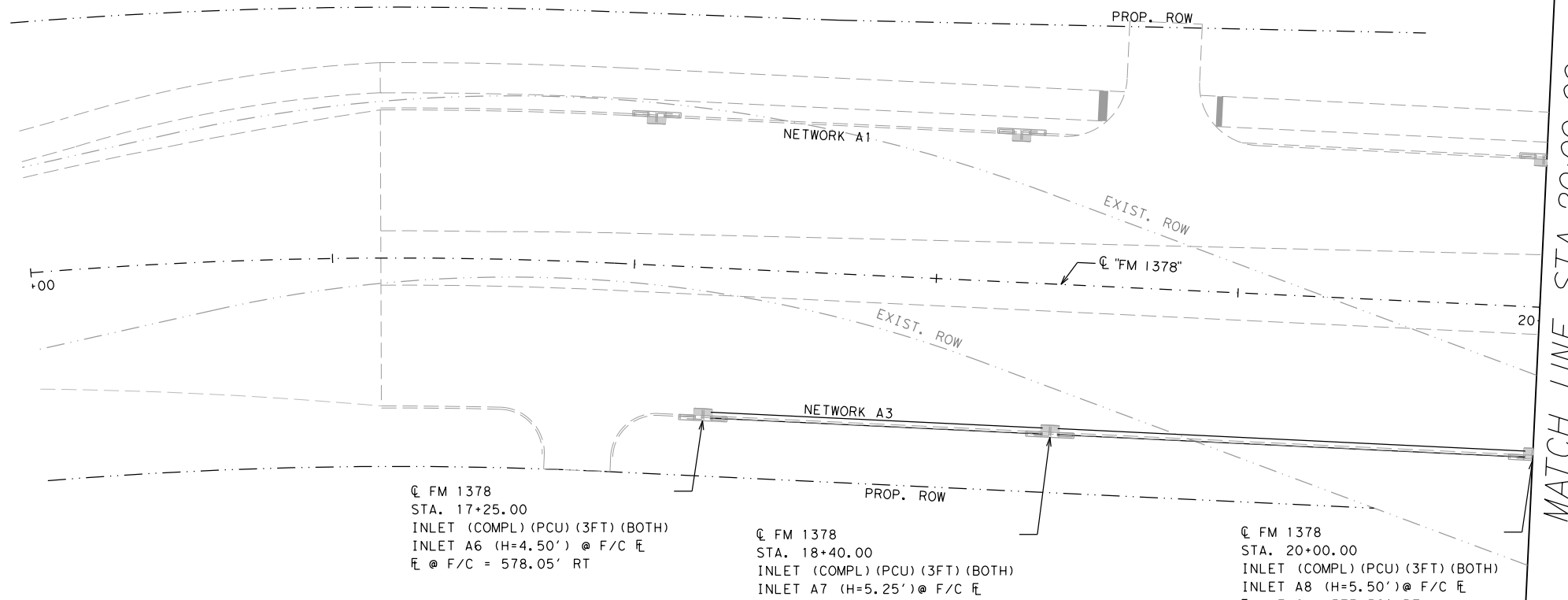
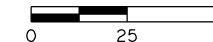
SCALE: 1"=50'-H
 1"=10'-V

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS				
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

166

FILE: c:\txdot\pw\online\txdot5\ibrahim.e\saad\0476892\Network A2 Sheets.dgn
 TIME: 8:19:44 AM
 DATE: 1/21/2022

DATE: 1/21/2022 TIME: 8:19:50 AM FILE: c:\txdot\pwworking\txdot5\ibrahim.elsaad\d0476892\Network A3 Sheets.dgn



- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

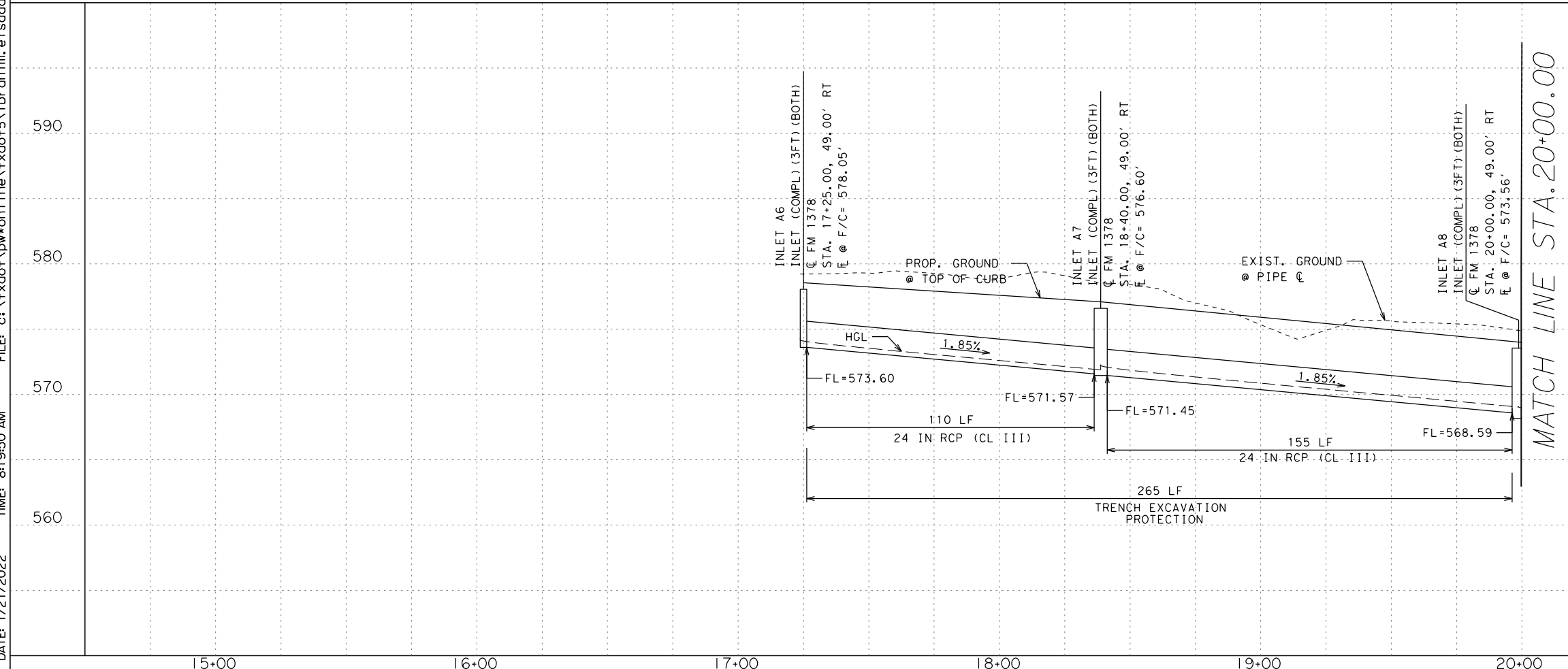
@ FM 1378 STA. 17+25.00
 INLET (COMPL) (PCU) (3FT) (BOTH)
 INLET A6 (H=4.50') @ F/C @
 @ F/C = 578.05' RT

@ FM 1378 STA. 18+40.00
 INLET (COMPL) (PCU) (3FT) (BOTH)
 INLET A7 (H=5.25') @ F/C @
 @ F/C = 576.60' RT

@ FM 1378 STA. 20+00.00
 INLET (COMPL) (PCU) (3FT) (BOTH)
 INLET A8 (H=5.50') @ F/C @
 @ F/C = 573.56' RT

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	265
464 6005	RC PIPE (CL III) (24 IN)	LF	265
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



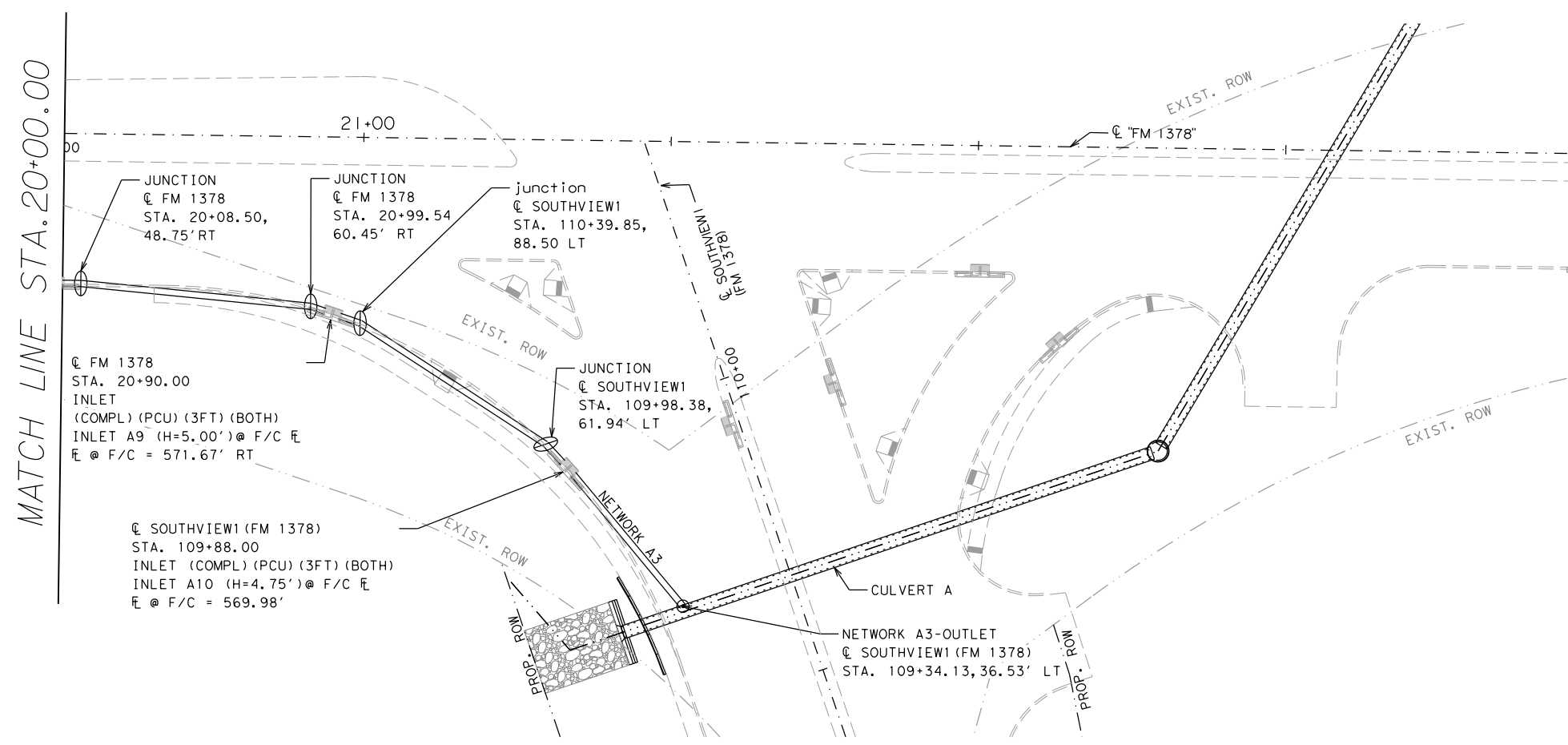
FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A3

SCALE: 1"=50'-H
 1"=10'-V

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	167
CHECK	CONTROL	SECTION	JOB	
MN	1392	01	044, ETC.	

DATE: 1/21/2022 TIME: 8:19:53 AM FILE: c:\txdot\pwworking\line\txdot5\ibrahim.eisaad\0476892\Network A3 Sheets.dgn

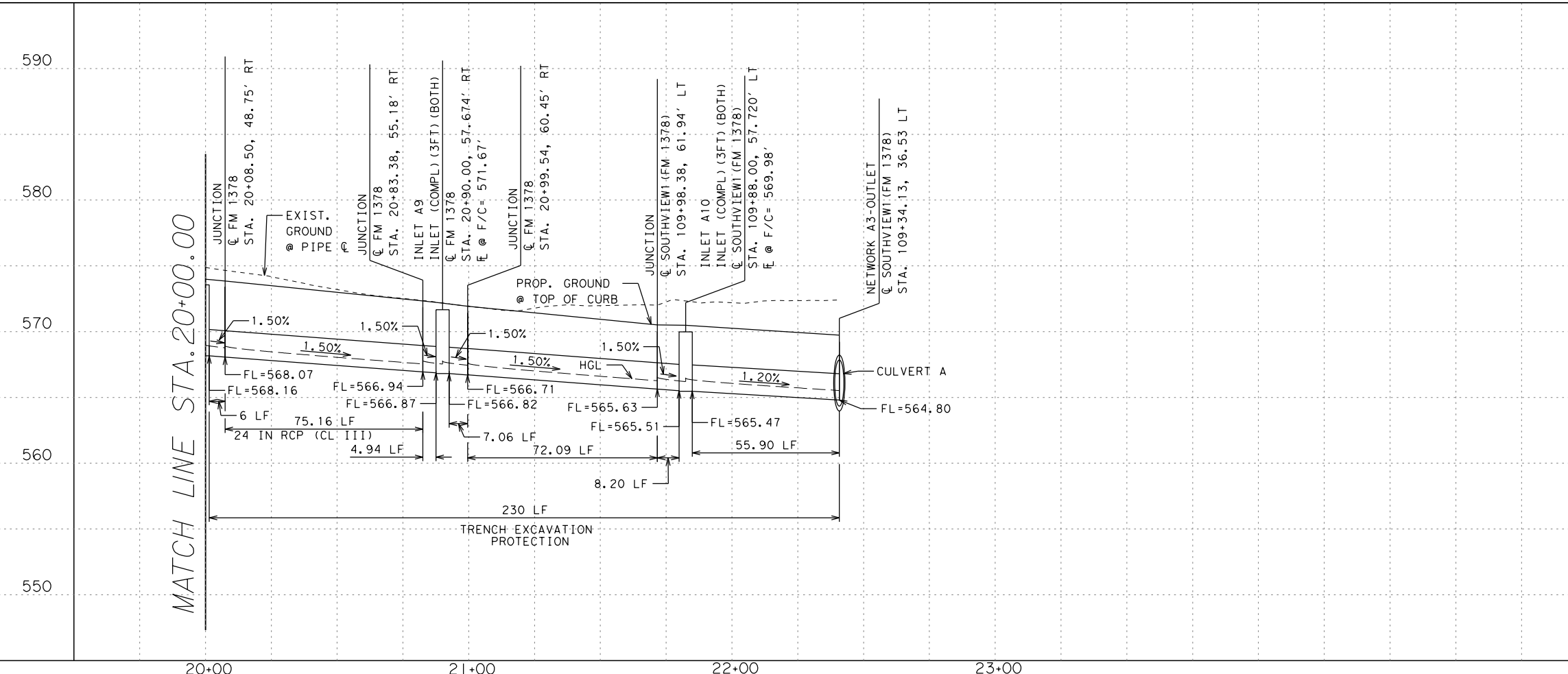


- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CS# 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	230
464 6005	RC PIPE (CL III) (24 IN)	LF	230
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	2



PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



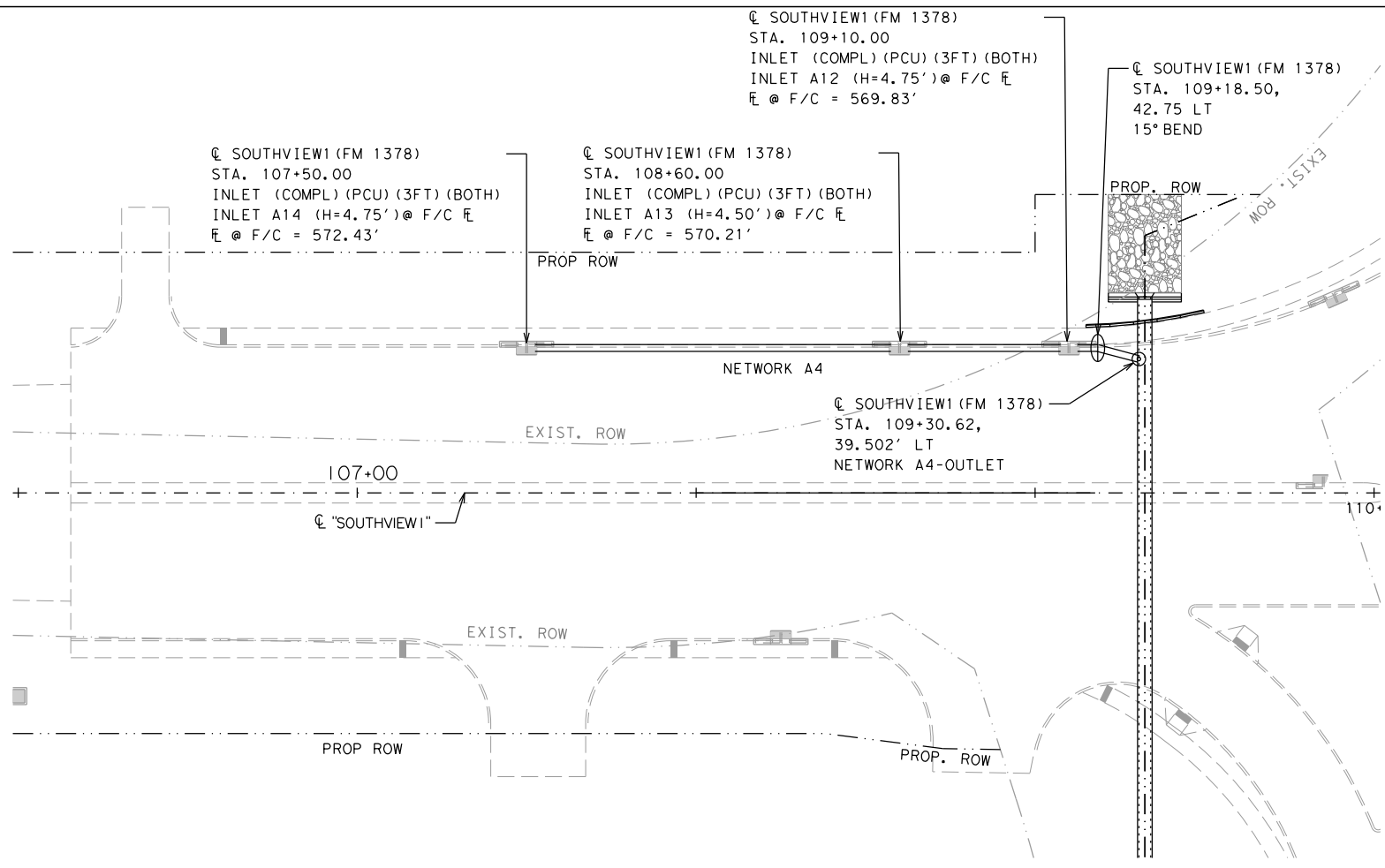
**FM 1378
 AT FM 3286
 STORM SEWER PLAN/PROFILE
 NETWORK A3**

SCALE: 1"=50'-H
 1"=10'-V

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS				
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	168
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

FILE: c:\txdot\pwworking\txdot5\ibrahim.elsaad\d0476892\Network A4 Sheets.dgn
 TIME: 8:19:59 AM
 DATE: 1/21/2022



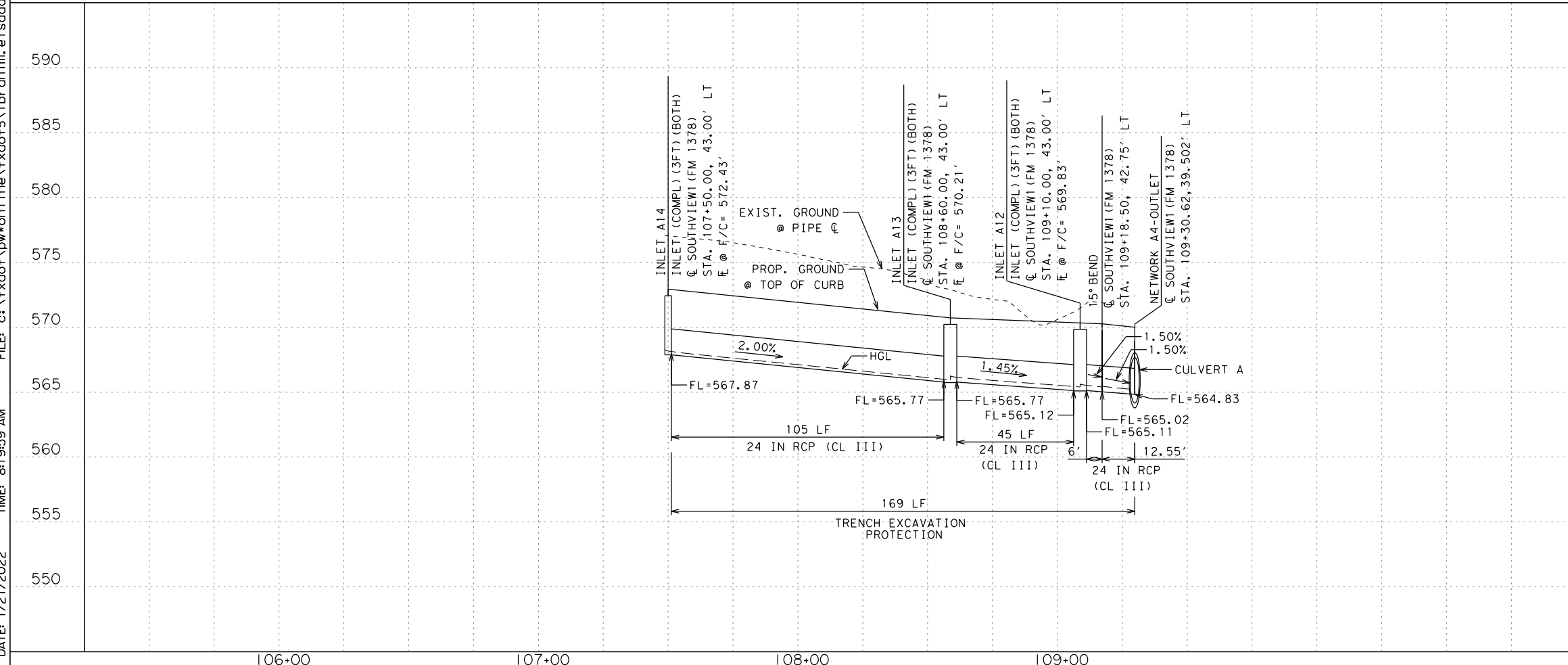
LEGEND

	DITCH FLOW LINE
	STORM SEWER
	INLET (COMPL) (PCU) (3FT) (RIGHT)
	INLET (COMPL) (PCU) (3FT) (LEFT)
	INLET (COMPL) (PCU) (3FT) (BOTH)
	INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	TRENCH EXCAVATION PROTECTION	LF	169
464 6005	RC PIPE (CL III) (24 IN)	LF	169
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



PRELIMINARY
 FOR REVIEW ONLY
 Not intended for construction, bidding or permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



**FM 1378
 AT FM 3286
 STORM SEWER PLAN/PROFILE
 NETWORK A4**

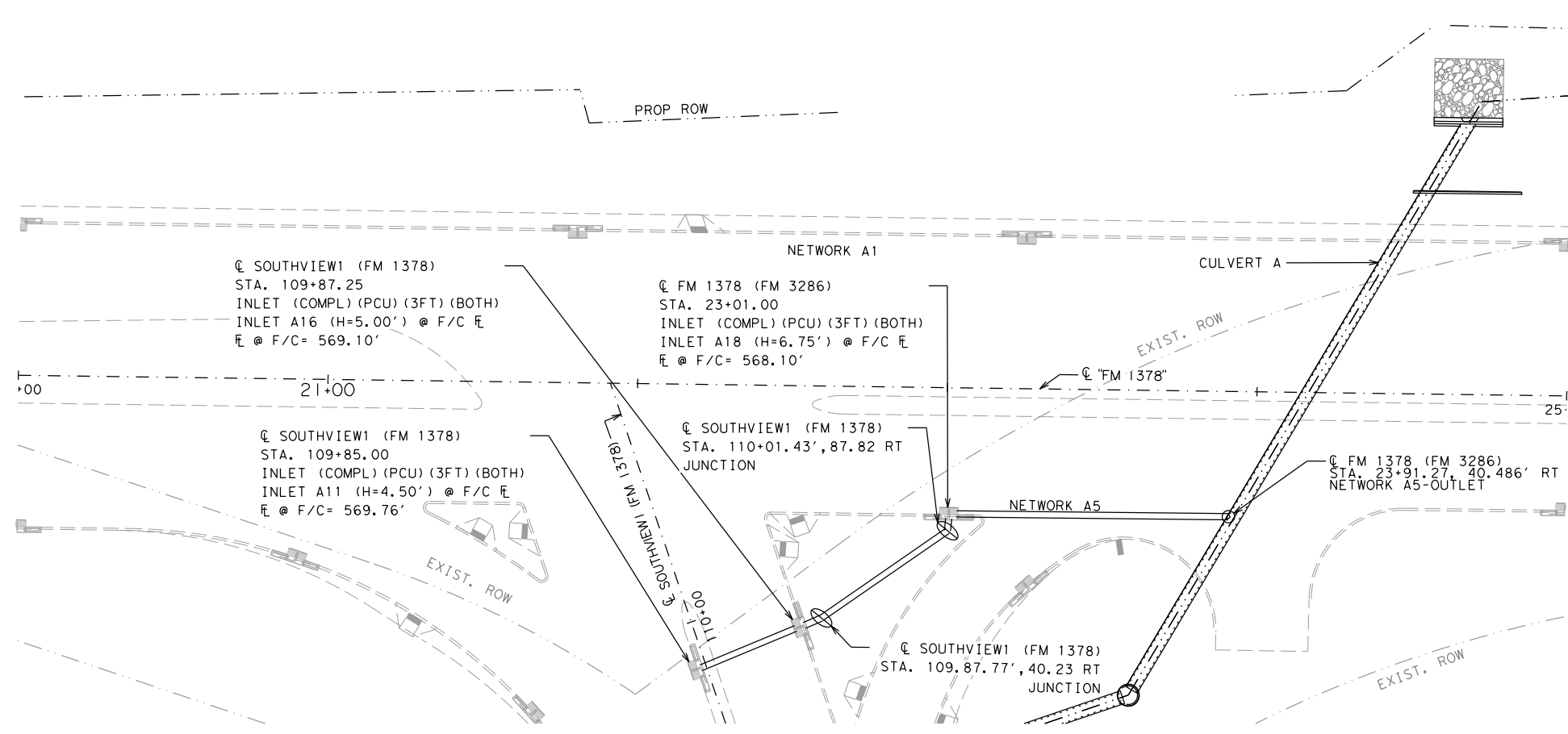
SCALE: 1"=50'-H
 1"=10'-V

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	IIE	STATE	DISTRICT	COUNTY
		TEXAS	DAL	COLLIN
CHECK	MN	CONTROL	SECTION	JOB
		1392	01	044, ETC.

169

SHEET 1 OF 1

DATE: 1/21/2022 TIME: 8:20:07 AM FILE: c:\txdot\pw\onl\ine\txdot\5\ibrahim.elisaad\0476892\Network A5 Sheets.dgn

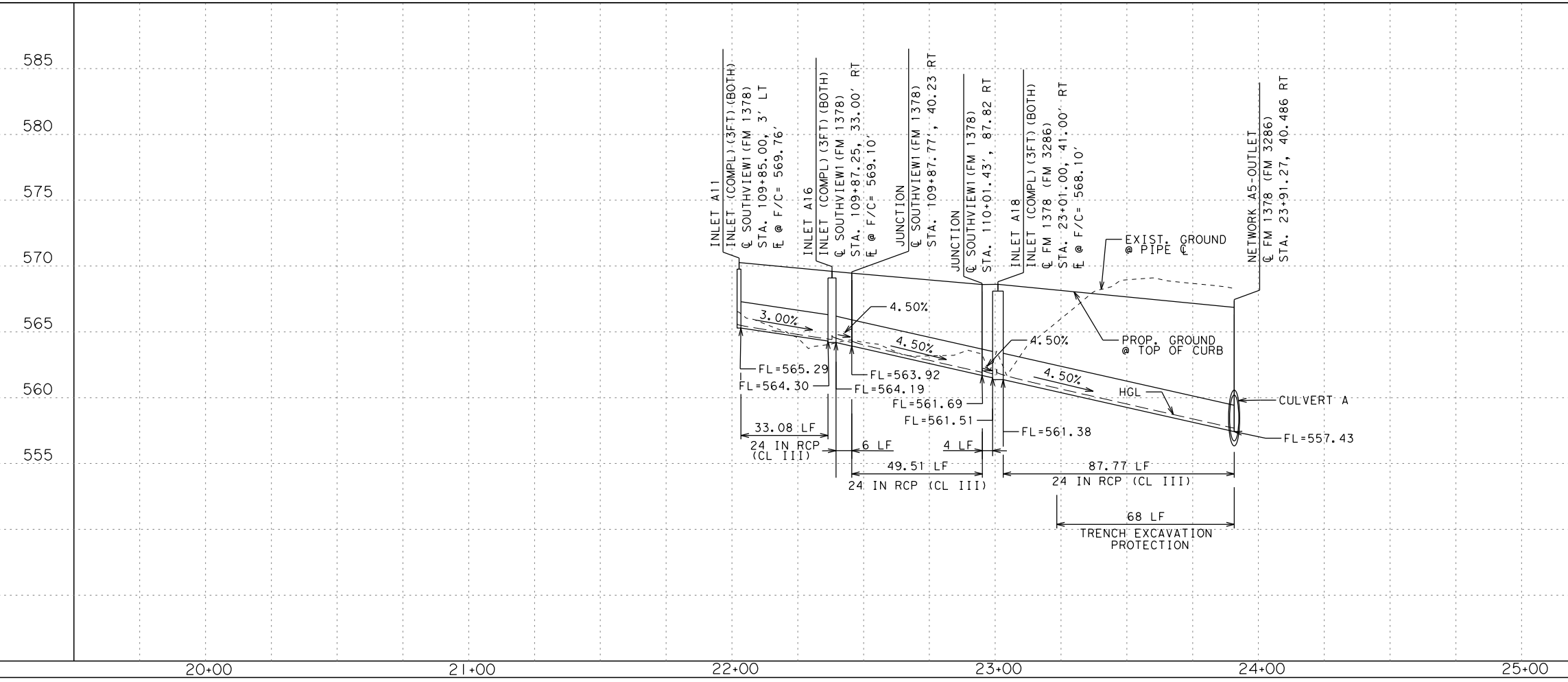


- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTx4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	68
464 6005	RC PIPE (CL III) (24 IN)	LF	181
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



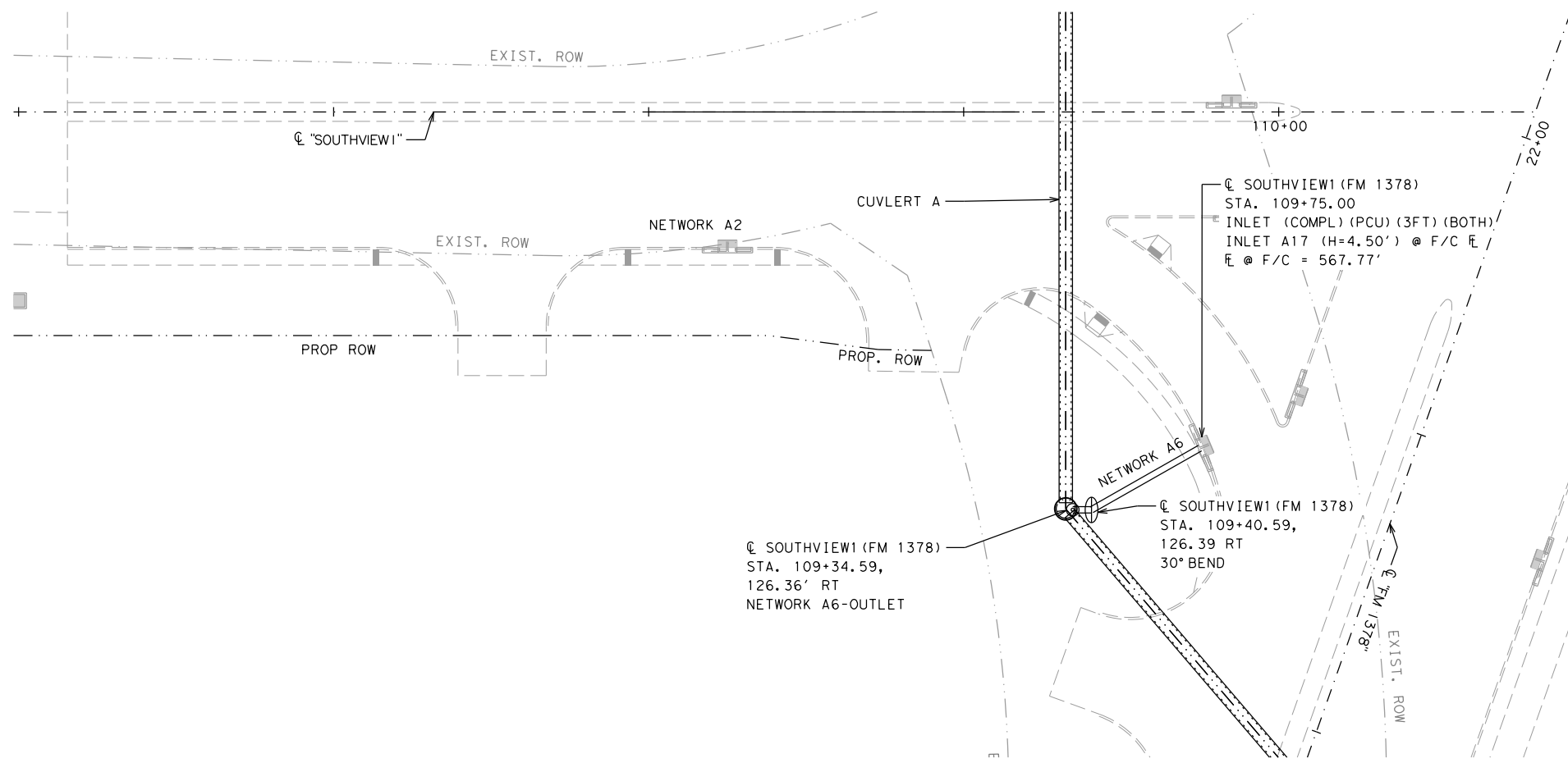
**FM 1378
 AT FM 3286
 STORM SEWER PLAN/PROFILE
 NETWORK A5**

SCALE: 1"=50'-H
 1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
II E	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
II E	TEXAS	DAL	COLLIN	170
CHECK	CONTROL	SECTION	JOB	
MN	1392	01	044, ETC.	

FILE: c:\txdot\pwworking\txdot5\ibrahim.elisaad\0476892\Network A6 Sheets.dgn
 TIME: 8:20:15 AM
 DATE: 1/21/2022

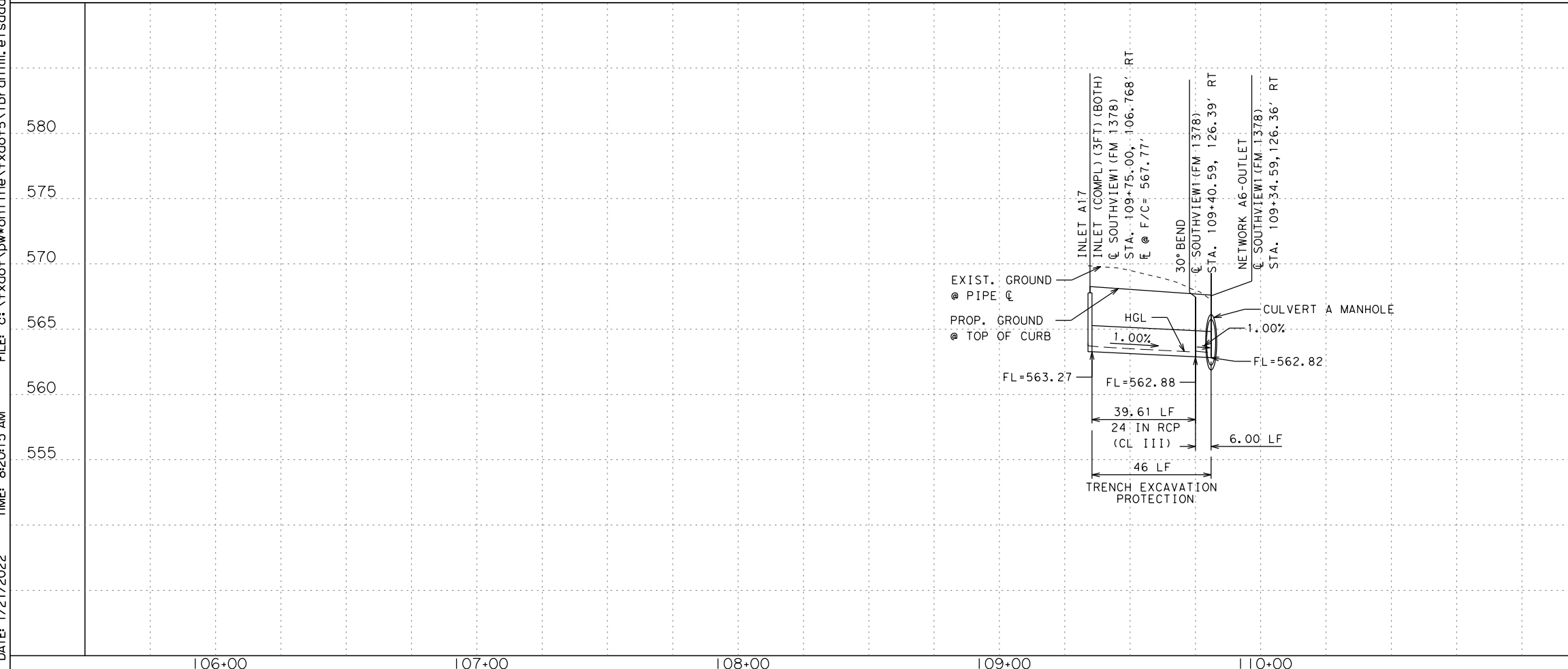


- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	46
464 6005	RC PIPE (CL III) (24 IN)	LF	46
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	1



PRELIMINARY
FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

NETWORK A6



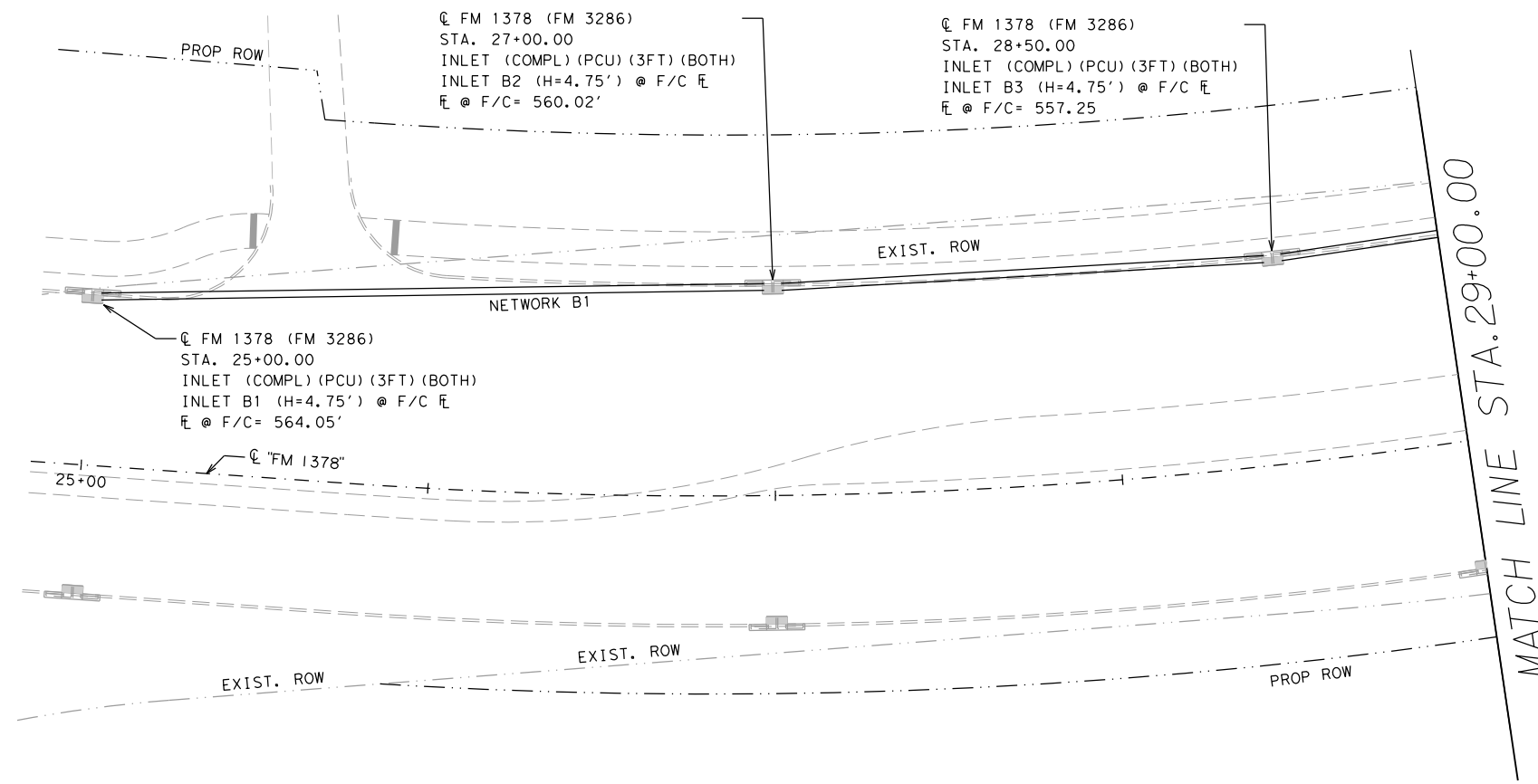
**FM 1378
 AT FM 3286
 STORM SEWER PLAN/PROFILE
 NETWORK A6**

SCALE: 1"=50'-H
 1"=10'-V

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	171
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

SHEET 1 OF 1

DATE: 1/21/2022 TIME: 8:20:21 AM FILE: c:\txdot\pwworking\ibrahim\isaad\0476892\Network B1 Sheets.dgn

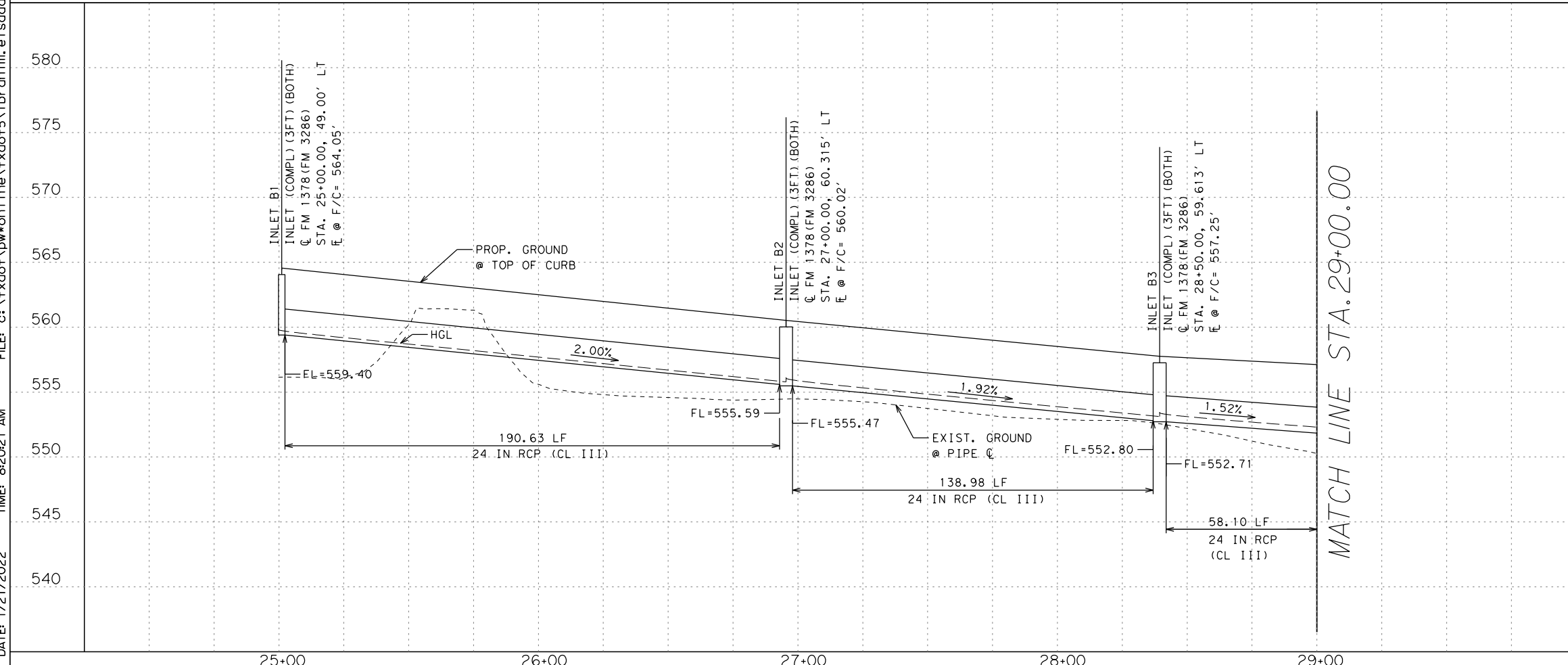


- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTx4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	388
645 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



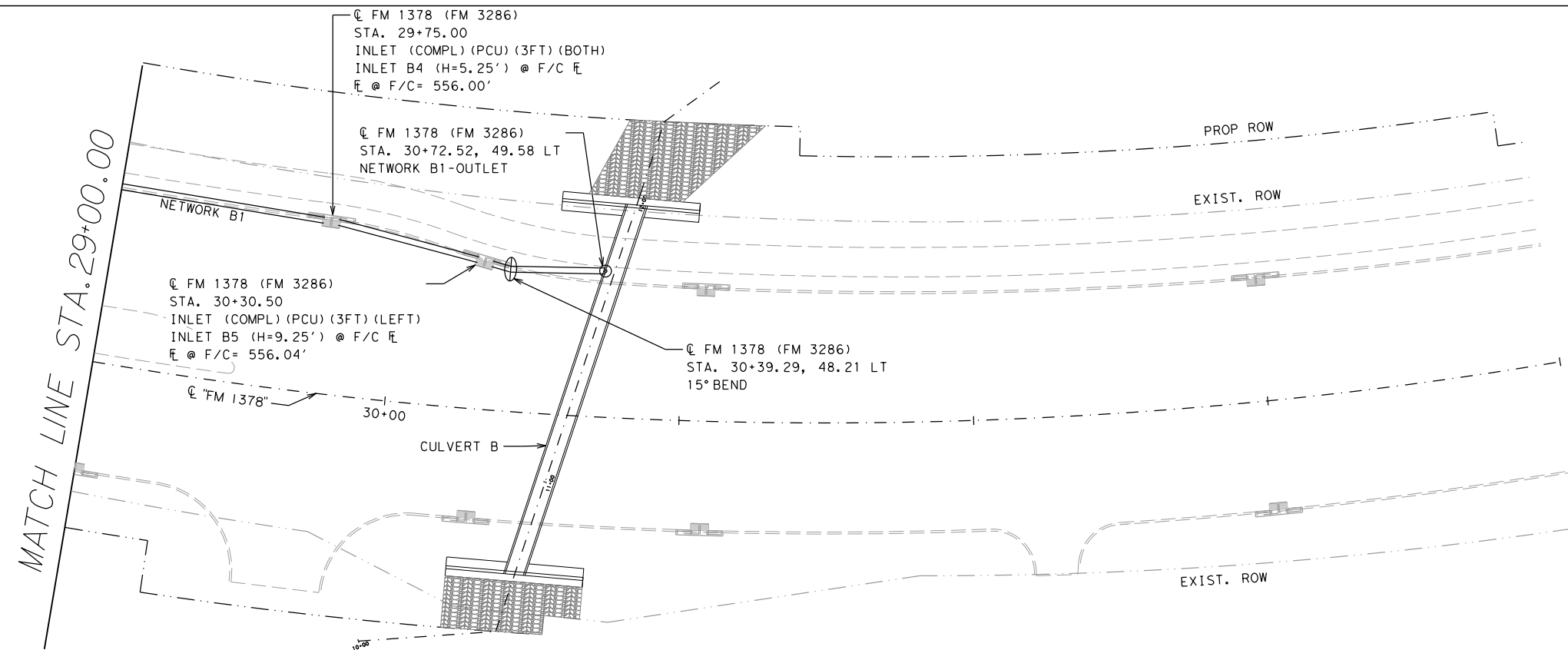
**FM 1378
 AT FM 3286
 STORM SEWER PLAN/PROFILE
 NETWORK B1**

SCALE: 1"=50'-H
 1"=10'-V

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS		STATE	DISTRICT	COUNTY
IIE		TEXAS	DAL	COLLIN
CHECK		CONTROL	SECTION	JOB
MN		1392	01	044, ETC.
CHECK				

172

DATE: 1/21/2022 TIME: 8:20:24 AM FILE: c:\txdot\pwworking\line\txdot5\ibrahim.elsaad\d0476892\Network B1_Sheets.dgn



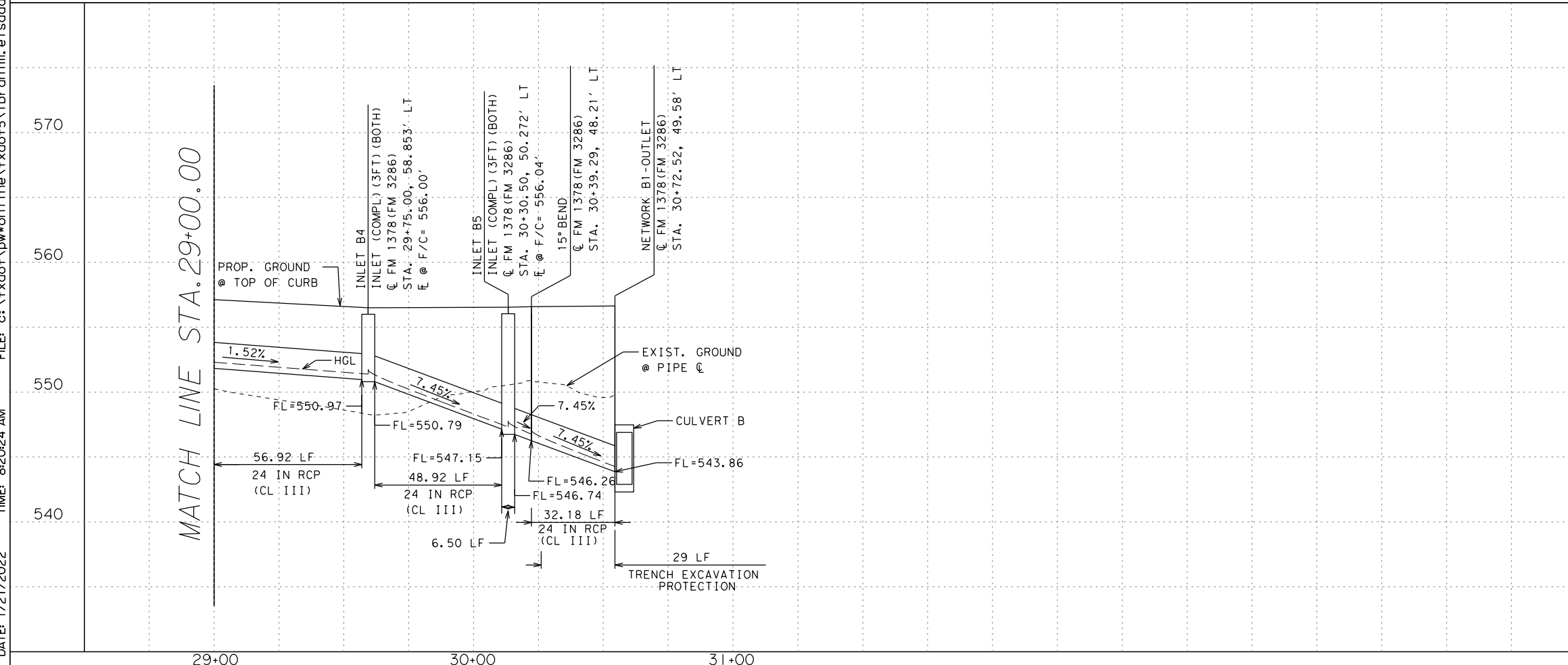
LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	29
464 6005	RC PIPE (CL III) (24 IN)	LF	145
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	2



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



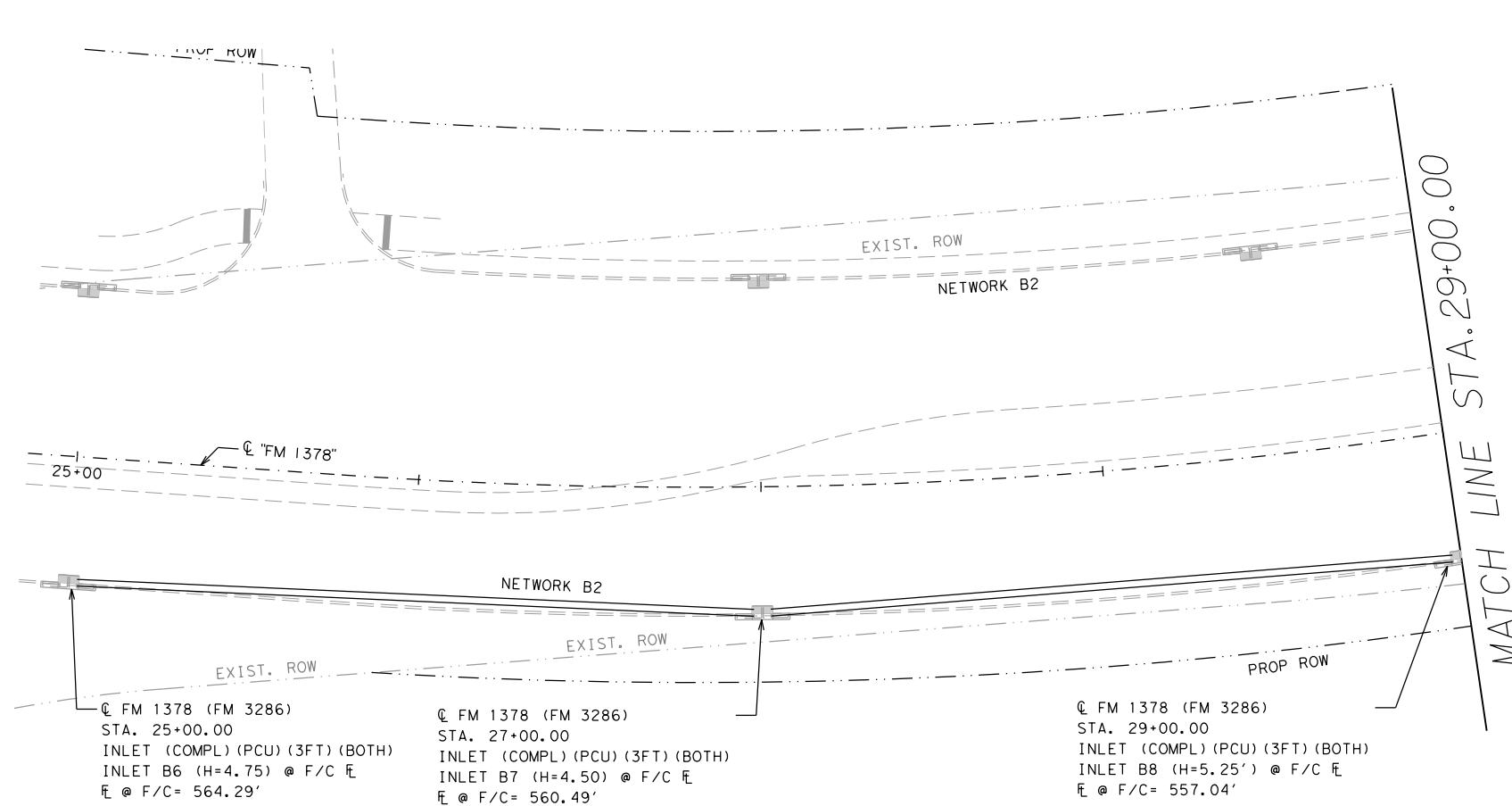
FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B1

SCALE: 1"=50'-H
1"=10'-V

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	SEE TITLE SHEET		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
MN CHECK	TEXAS	DAL	COLLIN	173
	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 1/21/2022 TIME: 8:20:31 AM FILE: c:\txdot\pwworking\ibrahim\5\ibrahim.eisaad\0476892\Network B2 Sheets.dgn



0 25 50

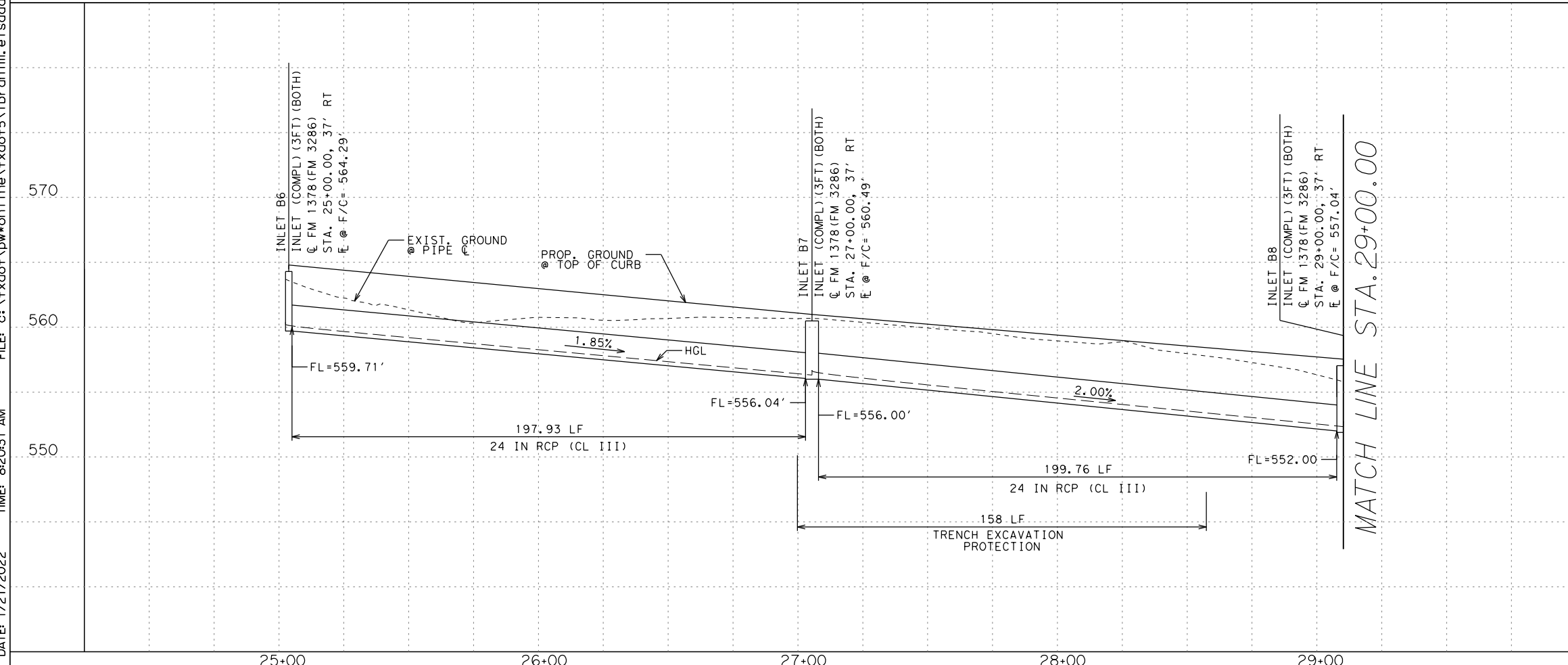
LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
QUANTITIES INCLUDE LATERALS.
ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	158
464 6005	RC PIPE (CL III) (24 IN)	LF	398
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



PRELIMINARY

FOR REVIEW ONLY
Not intended for construction, bidding or permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/21/2022

© 2022

Texas Department of Transportation

FM 1378
AT FM 3286
**STORM SEWER PLAN/PROFILE
NETWORK B2**

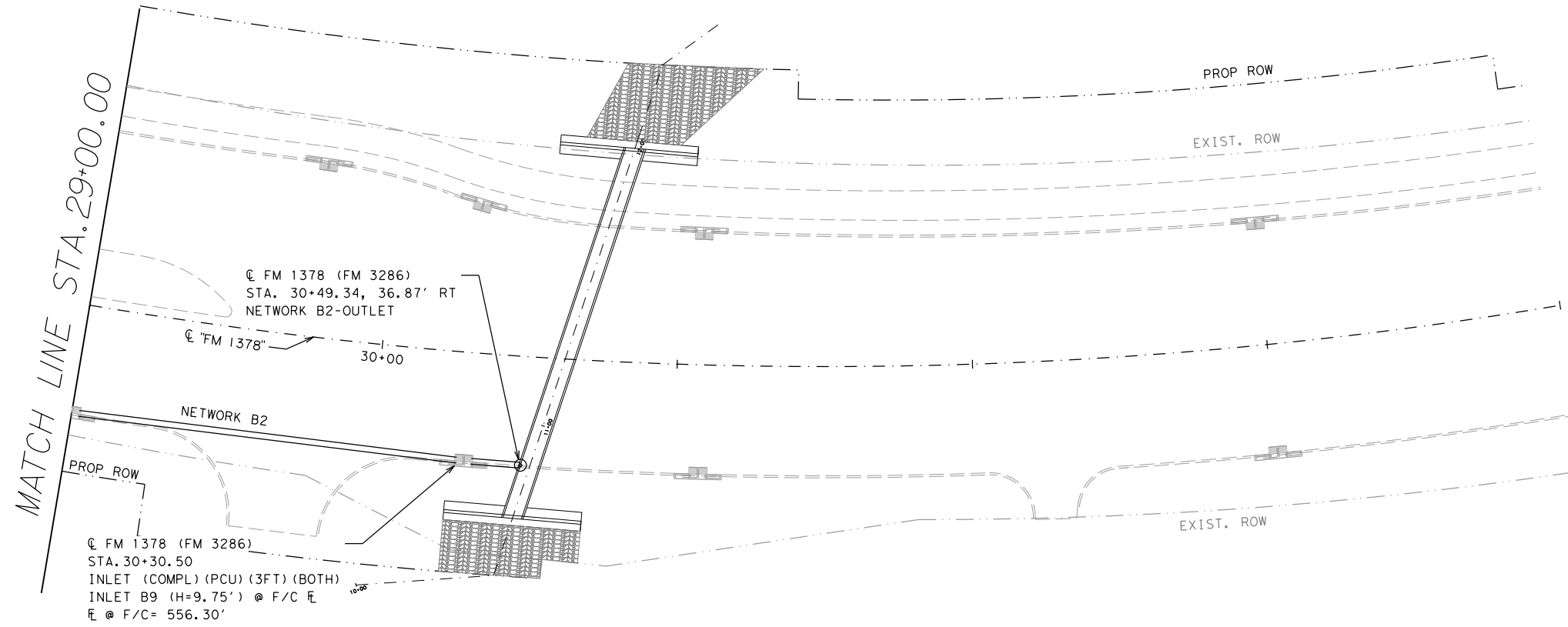
SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS				
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

174

DATE: 1/21/2022 TIME: 8:20:33 AM FILE: c:\txdot\pwworking\line\txdot\5\ibrahim.elsaad\0476892\Network B2_Sheets.dgn

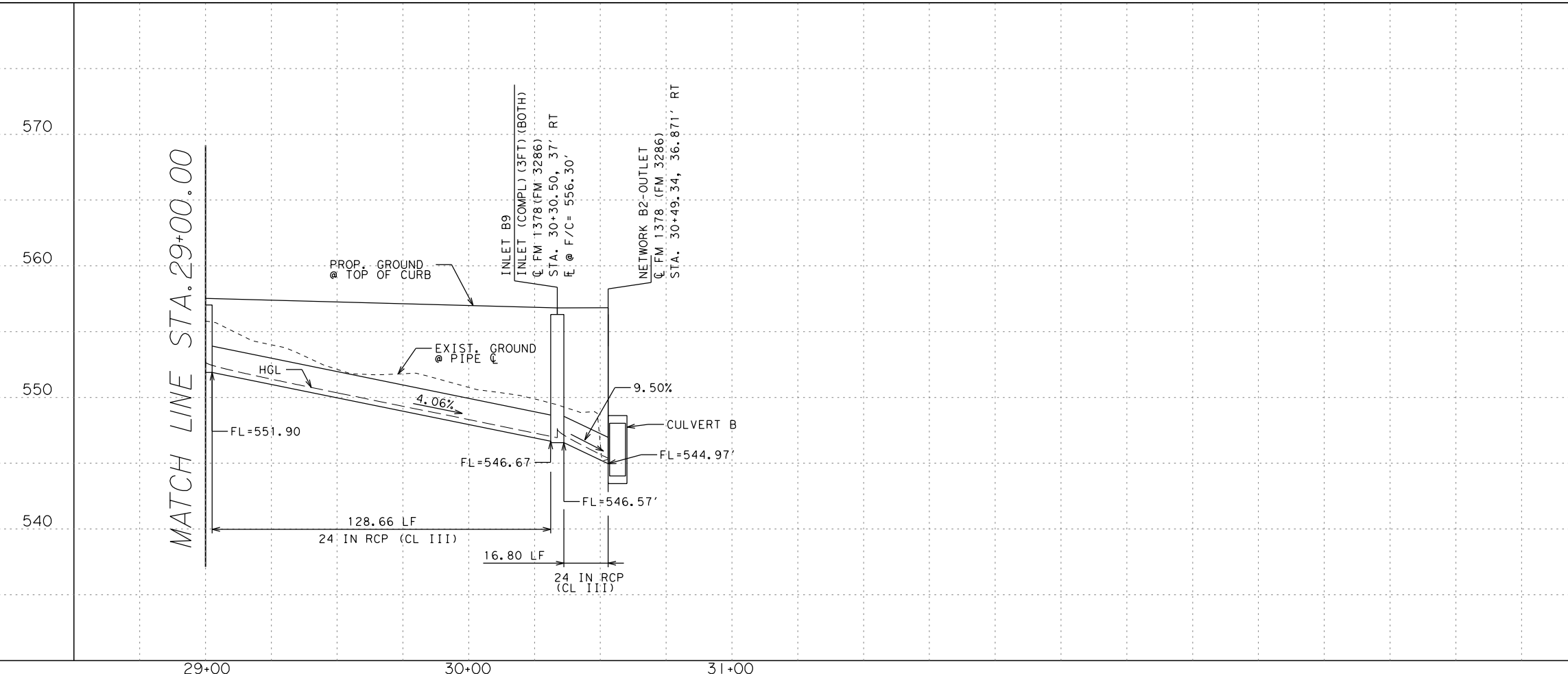


- LEGEND**
- DITCH FLOW LINE
 - STORM SEWER
 - INLET (COMPL) (PCU) (3FT) (RIGHT)
 - INLET (COMPL) (PCU) (3FT) (LEFT)
 - INLET (COMPL) (PCU) (3FT) (BOTH)
 - INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	146
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	1



PRELIMINARY
 FOR REVIEW ONLY
 Not intended for construction, bidding or permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



**FM 1378
 AT FM 3286
 STORM SEWER PLAN/PROFILE
 NETWORK B2**

SCALE: 1"=50'-H
 1"=10'-V

SHEET 2 OF 2

DESIGN IIE	FED. RD. DIV. NO. 6	SEE TITLE SHEET	HIGHWAY NO. FM 1378, ETC.
CHECK MN	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN
CHECK	CONTROL 1392	SECTION 01	JOB 044, ETC.

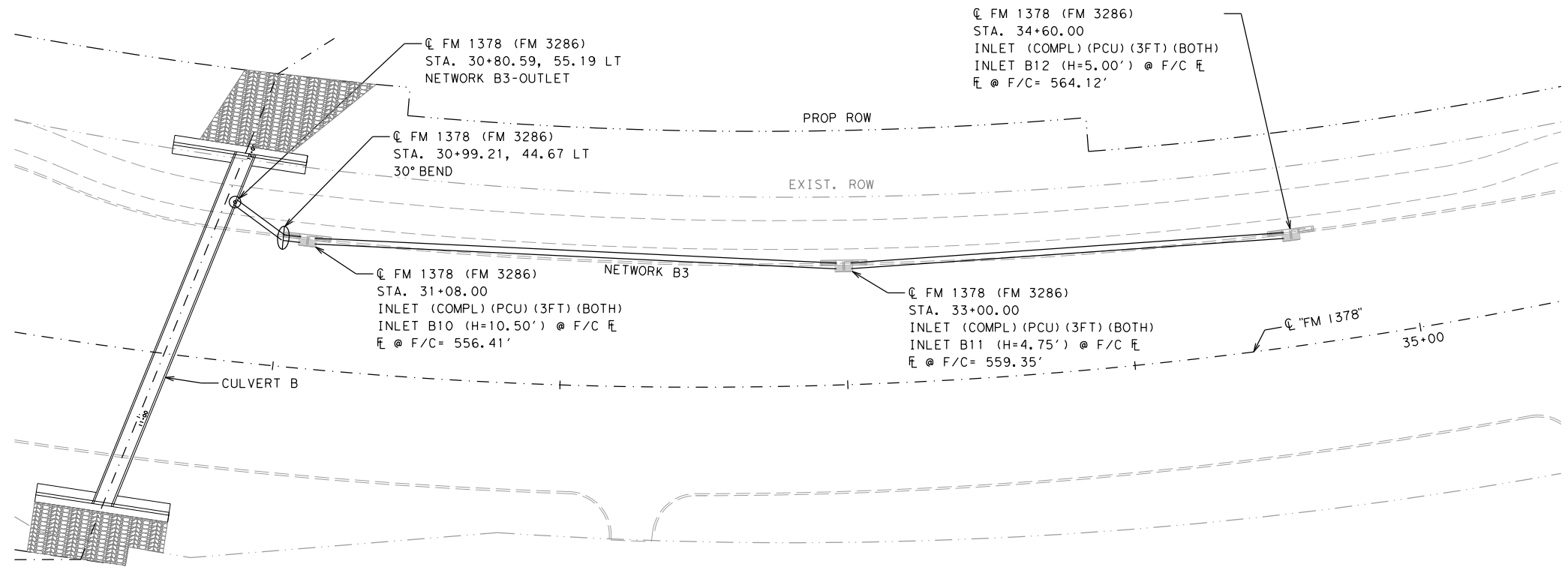
175



LEGEND

	DITCH FLOW LINE
	STORM SEWER
	INLET (COMPL) (PCU) (3FT) (RIGHT)
	INLET (COMPL) (PCU) (3FT) (LEFT)
	INLET (COMPL) (PCU) (3FT) (BOTH)
	INLET (COMPL) (PAZD) (SL) (4FTx4FT)

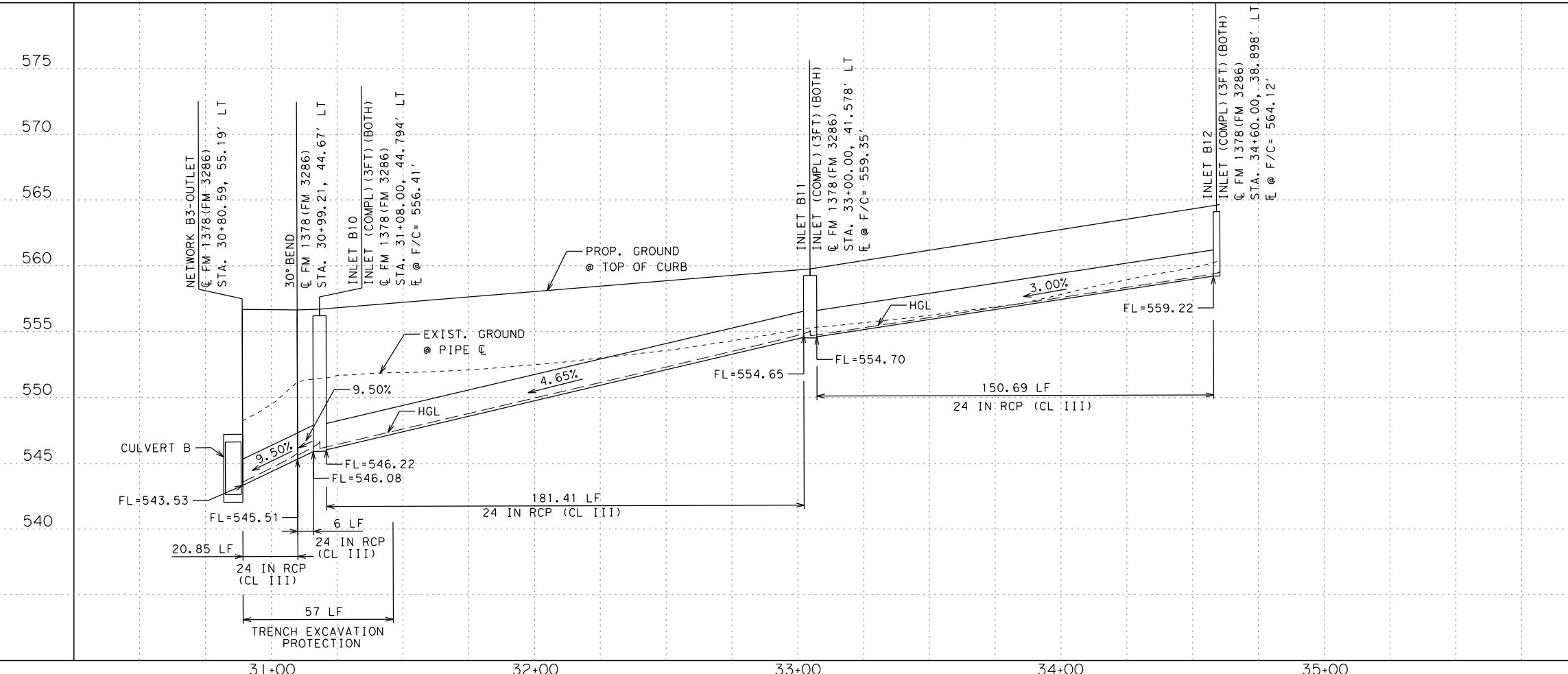
NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.



NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	57
464 6005	RC PIPE (CL III) (24 IN)	LF	359
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3

FILE: c:\txdot\pwworking\ibrahim.elsaad\0476892\Network B3 Sheets.dgn
 TIME: 8:20:40 AM
 DATE: 1/21/2022



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: **IBRAHIM I. EL SAAD**
 P.E. No.: 142049
 Date: 1/21/2022

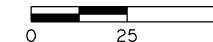


FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B3

SCALE: 1"=50'-H
 1"=10'-V

SHEET 1 OF 1

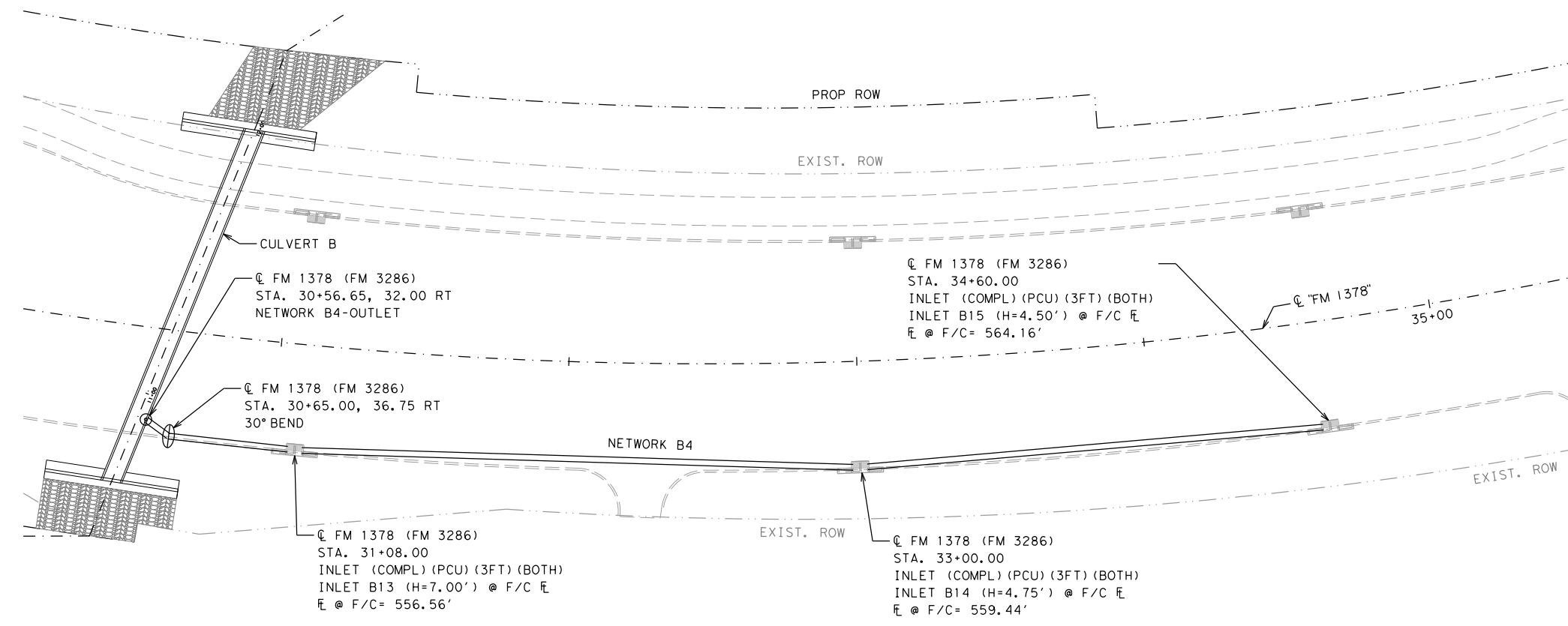
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS				
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	176
MN	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	



LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTx4FT)

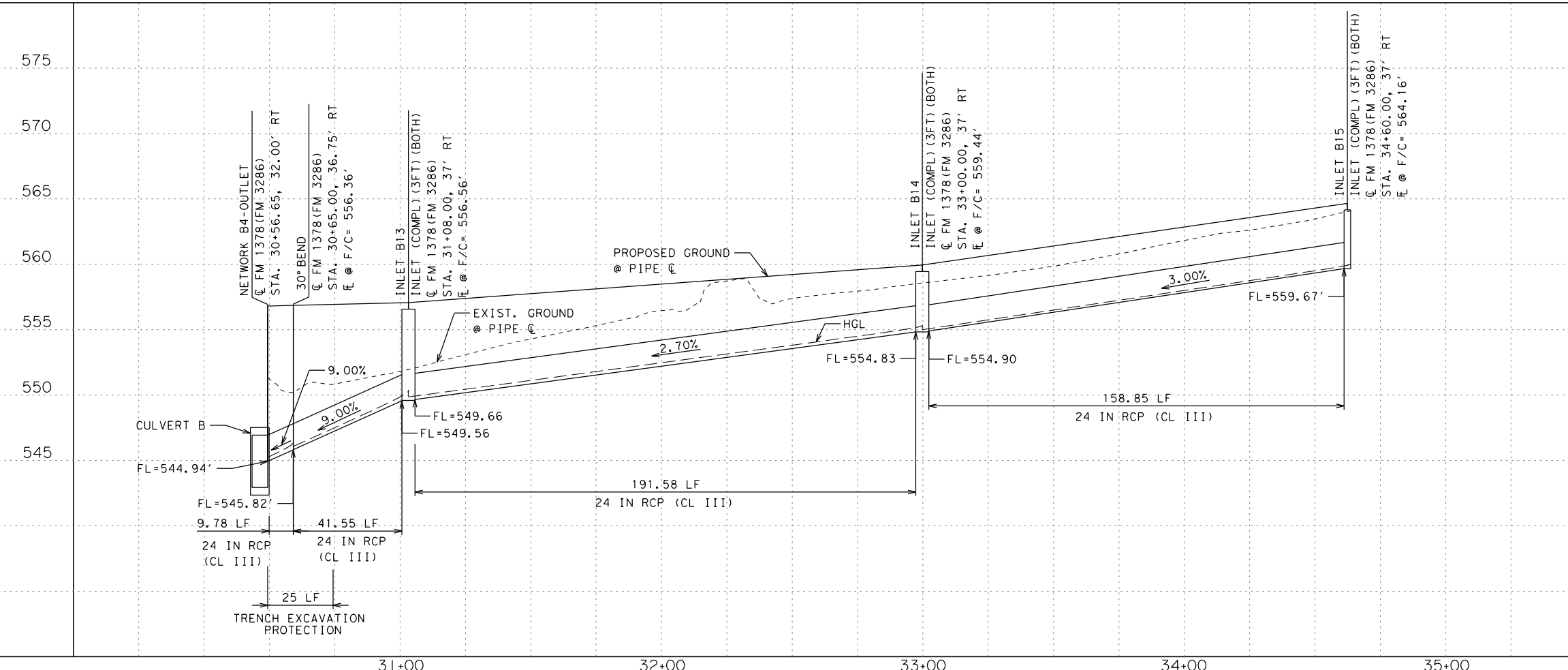
NOTES:
 SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.
 QUANTITIES INCLUDE LATERALS.
 ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.



NOTE: QUANTITIES BASED ON CSJ- 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	25
464 6005	RC PIPE (CL III) (24 IN)	LF	402
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3

FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0476892\Network B4 Sheets.dgn
 DATE: 1/21/2022
 TIME: 8:20:47 AM



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

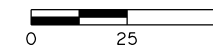


FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B4

SCALE: 1"=50'-H
 1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	177
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	



LEGEND

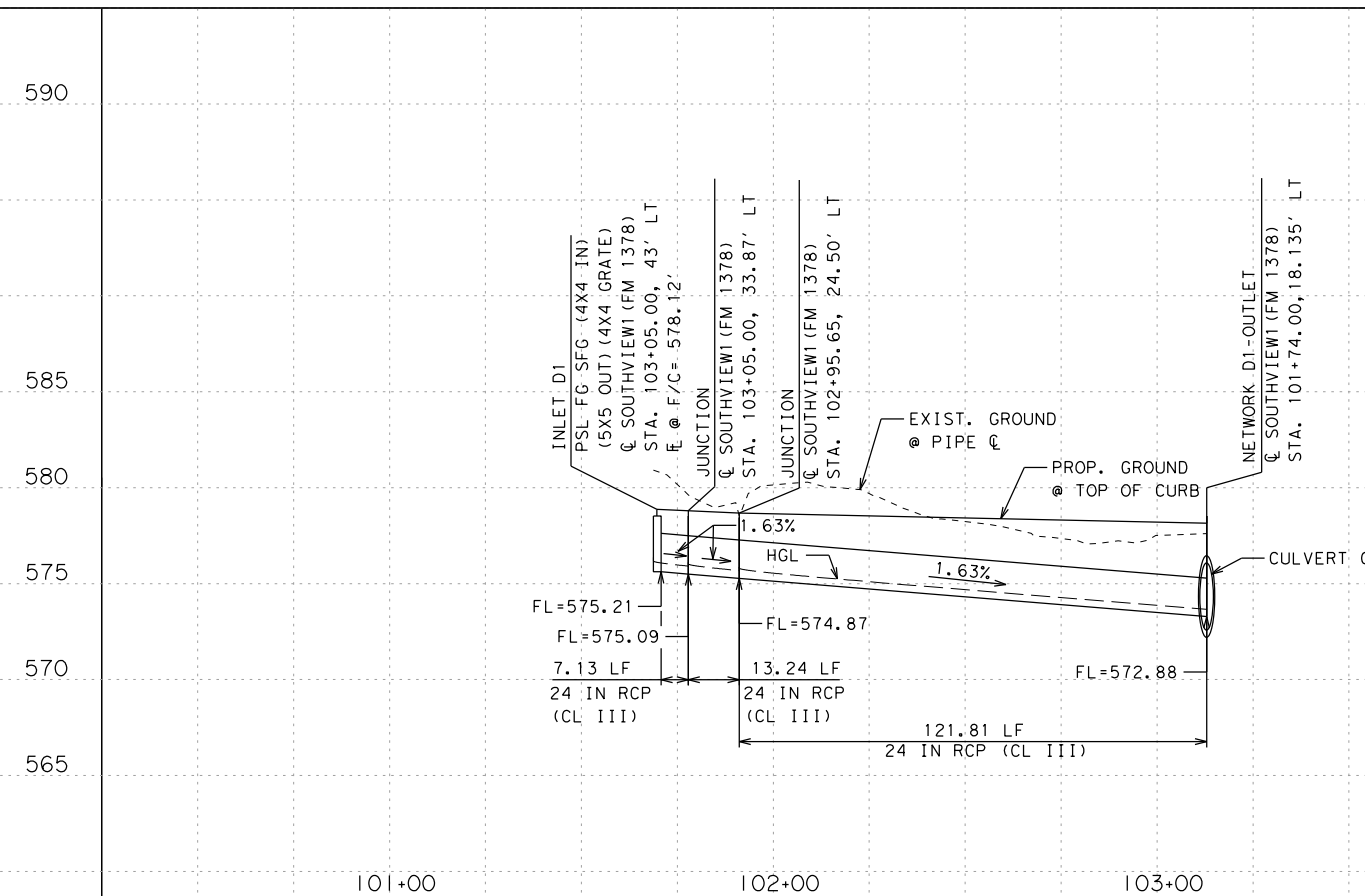
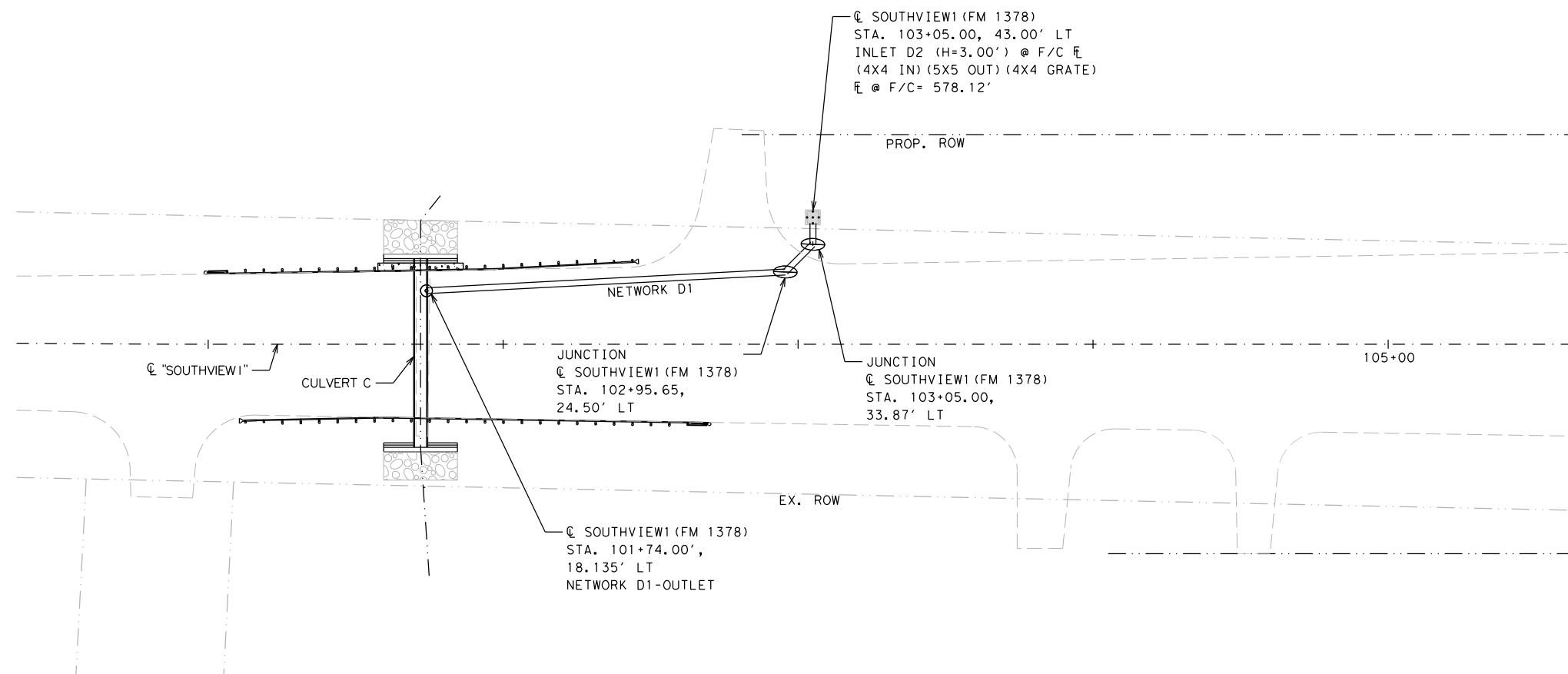
- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT
PLAN AND PROFILE INFORMATION.
QUANTITIES INCLUDE LATERALS.
ALL INLETS CALLED OUT AT THE FLOWLINE
ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	143
465 6135	INLET (COMPL) (PSL) (FG) (5FTX5FT-4FTX4FT)	EA	1

DATE: 2/1/2022 TIME: 10:08:00 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\d0476892\Network D1 Sheets.dgn



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 2/1/2022



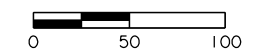
FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK D1

SCALE: 1"=50'-H
1"=10'-V

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
IIE CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	178
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

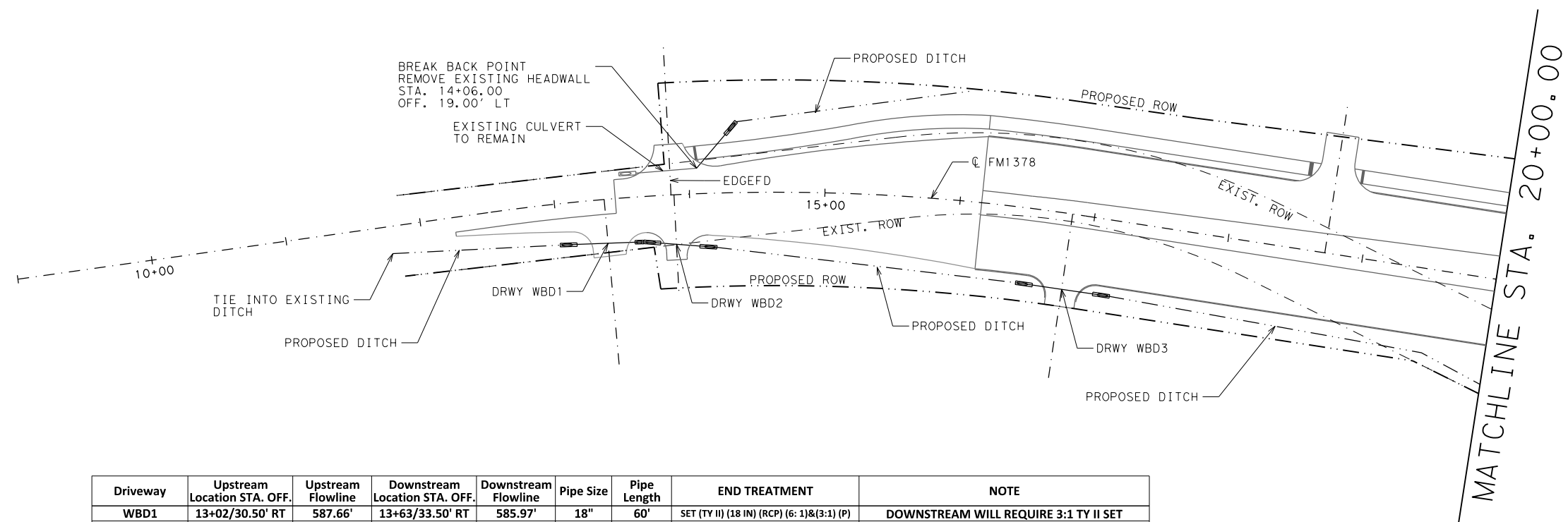
SHEET 1 OF 1

DATE: 1/21/2022 TIME: 8:22:32 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0476892\1itch\DrwyCulvert*Layout*Sheets.dgn



LEGEND

- PROP ROW
- - - EXIST ROW
- ◻ SET TY II
- DITCH FLOWLINE



Driveway	Upstream Location STA. OFF.	Upstream Flowline	Downstream Location STA. OFF.	Downstream Flowline	Pipe Size	Pipe Length	END TREATMENT	NOTE
WBD1	13+02/30.50' RT	587.66'	13+63/33.50' RT	585.97'	18"	60'	SET (TY II) (18 IN) (RCP) (6: 1)&(3:1) (P)	DOWNSREAM WILL REQUIRE 3:1 TY II SET
WBD2	13+65/33.50' RT	585.97'	14+18/40.00' RT	583.77'	18"	52'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	
EDGEFD	14+06/19.00' LT	584.73'	14+35.75/51.63' LT	582.97'	18"	44'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EXISTING DRWY TO STAY IN PLACE AND EXTENDED
WBD3	16+49/56.00' RT	576.54'	17+18.50/56.00' RT	576.30'	18"	68'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



FM 1378
AT FM 3286

DITCH LAYOUT

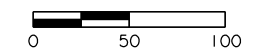
SCALE: 1" = 100' SHEET 1 OF 6

DESIGN KB	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS KB	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN	SHEET NO. 179
CHECK IIE	CONTROL 1392	SECTION 01	JOB 044, ETC.	

QUANTITIES THIS SHEET

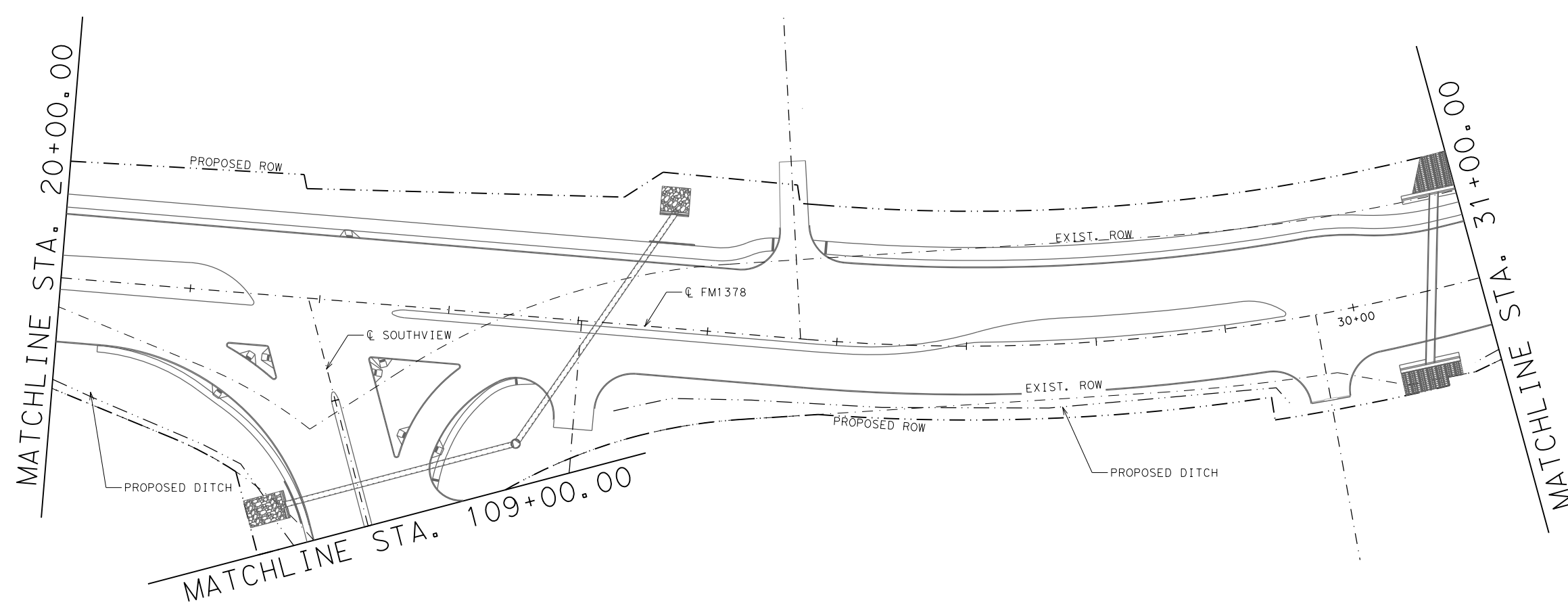
ITEM #	DESCRIPTION	UNIT	TOTAL
464-6003	RC PIPE (CL III) (18 IN)	LF	224
467-6356	SET (TY II) (18") (RCP) (3:1) (P)	EA	1
467-6363	SET (TY II) (18") (RCP) (6:1) (P)	EA	6

DATE: 1/21/2022 TIME: 8:22:34 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0476892\Di\chn*DrwyCul\vert*Layout*Sheets.dgn



LEGEND

	PROP ROW
	EXIST ROW
	SET TY II
	DITCH FLOWLINE



PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/21/2022

© 2022

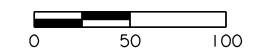
FM 1378
AT FM 3286

DITCH LAYOUT

SCALE: 1"=100' SHEET 2 OF 6

DESIGN KB	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS KB	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN	SHEET NO. 180
CHECK IIE	CONTROL 1392	SECTION 01	JOB 044, ETC.	

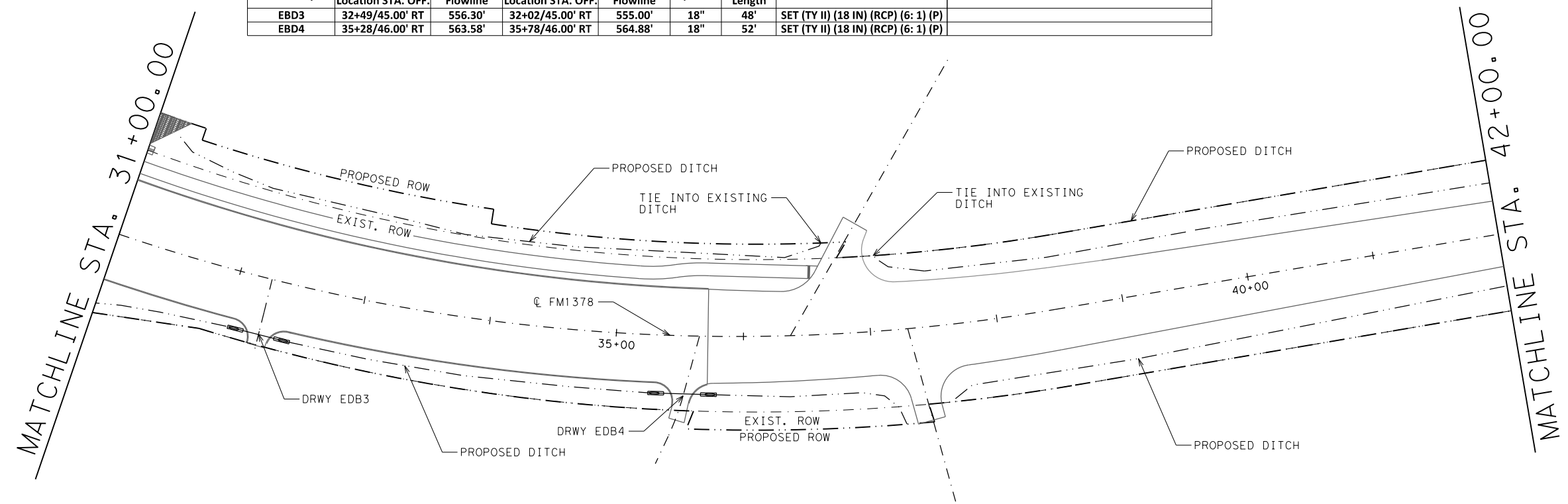
DATE: 1/21/2022 TIME: 8:22:36 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0476892\Di\chn*DrwyCul\vert*Layout*Sheets.dgn



LEGEND

- PROP ROW
- - - EXIST ROW
- ▭ SET TY II
- - - DITCH FLOWLINE

Driveway	Upstream Location STA. OFF.	Upstream Flowline	Downstream Location STA. OFF.	Downstream Flowline	Pipe Size	Pipe Length	END TREATMENT	NOTE
EBD3	32+49/45.00' RT	556.30'	32+02/45.00' RT	555.00'	18"	48'	SET (TY II) (18 IN) (RCP) (6:1) (P)	
EBD4	35+28/46.00' RT	563.58'	35+78/46.00' RT	564.88'	18"	52'	SET (TY II) (18 IN) (RCP) (6:1) (P)	



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: **IBRAHIM I. EL SAAD**
 P.E. No.: 142049
 Date: 1/21/2022

© 2022

FM 1378
 AT FM 3286

DITCH LAYOUT

SCALE: 1"=100' SHEET 3 OF 6

DESIGN KB	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS KB	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	181
	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

QUANTITIES THIS SHEET

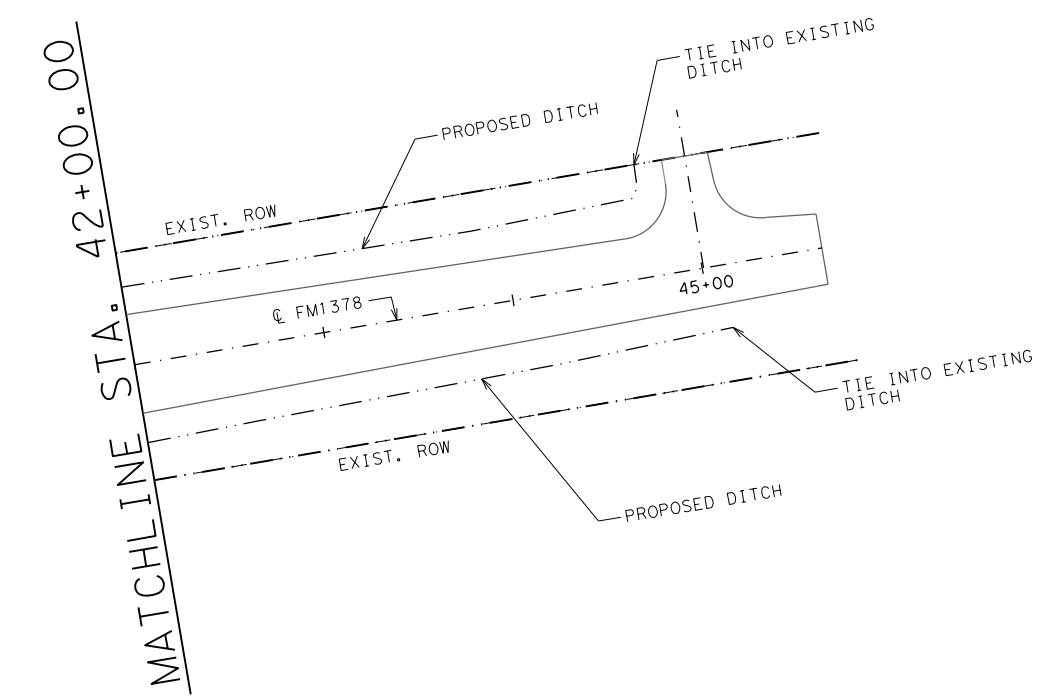
ITEM #	DESCRIPTION	UNIT	TOTAL
464-6003	RC PIPE (CL III) (18 IN)	LF	100
467-6363	SET (TY II) (18") (RCP) (6:1) (P)	EA	4

DATE: 1/21/2022 TIME: 8:22:38 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0476892\DiTch*DrwyCul\vert*Layout*Sheets.dgn





LEGEND

- PROP ROW
- - - EXIST ROW
- ▭ SET TY II
- - - DITCH FLOWLINE




PRELIMINARY


FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

© 2022

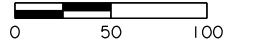


FM 1378
AT FM 3286

DITCH LAYOUT

SCALE: 1"=100' SHEET 4 OF 6

DESIGN KB	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS KB	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN	SHEET NO. 182
CHECK IIE	CONTROL 1392	SECTION 01	JOB 044, ETC.	



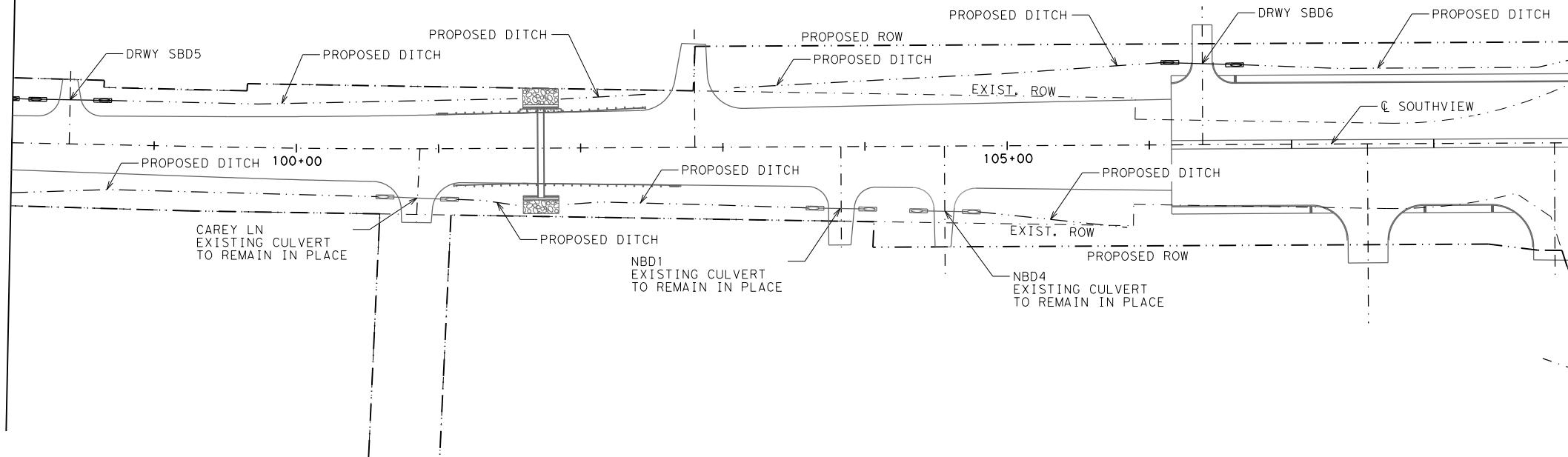
LEGEND

---	PROP ROW
- - -	EXIST ROW
▭	SET TY II
---	DITCH FLOWLINE

Driveway	Upstream Location STA. OFF.	Upstream Flowline	Downstream Location STA. OFF.	Downstream Flowline	Pipe Size	Pipe Length	END TREATMENT	NOTE
SBD6	106+09.50/ 58.00' LT	574.93'	106+65.50/56.00' LT	573.95'	18"	56'	SET (TY II) (18 IN) (RCP) (6:1) (P)	
SBD5	98+12/31.00' LT	577.35'	98+68/31.00' LT	577.05'	18"	56'	SET (TY II) (18 IN) (RCP) (6:1) (P)	
CAREY LN								EXISTING DRWY TO STAY IN PLACE
NBD1								EXISTING DRWY TO STAY IN PLACE
NBD4								EXISTING DRWY TO STAY IN PLACE

MATCHLINE STA. 98+00.00

MATCHLINE STA. 109+00.00



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

© 2022

FM 1378
 AT FM 3286

DITCH LAYOUT

SCALE: 1" = 100' SHEET 5 OF 6

DESIGN KB	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. FM 1378, ETC.
GRAPHICS KB	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN
CHECK IIE	CONTROL 1392	SECTION 01	JOB 044, ETC.

183

QUANTITIES THIS SHEET

ITEM #	DESCRIPTION	UNIT	TOTAL
464-6003	RC PIPE (CL III) (18 IN)	LF	112
467-6363	SET (TY II) (18") (RCP) (6:1) (P)	EA	4

DATE: 1/21/2022 TIME: 8:22:40 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\40476892\Di\chn*Drwy\Culvert*Layout*Sheets.dgn

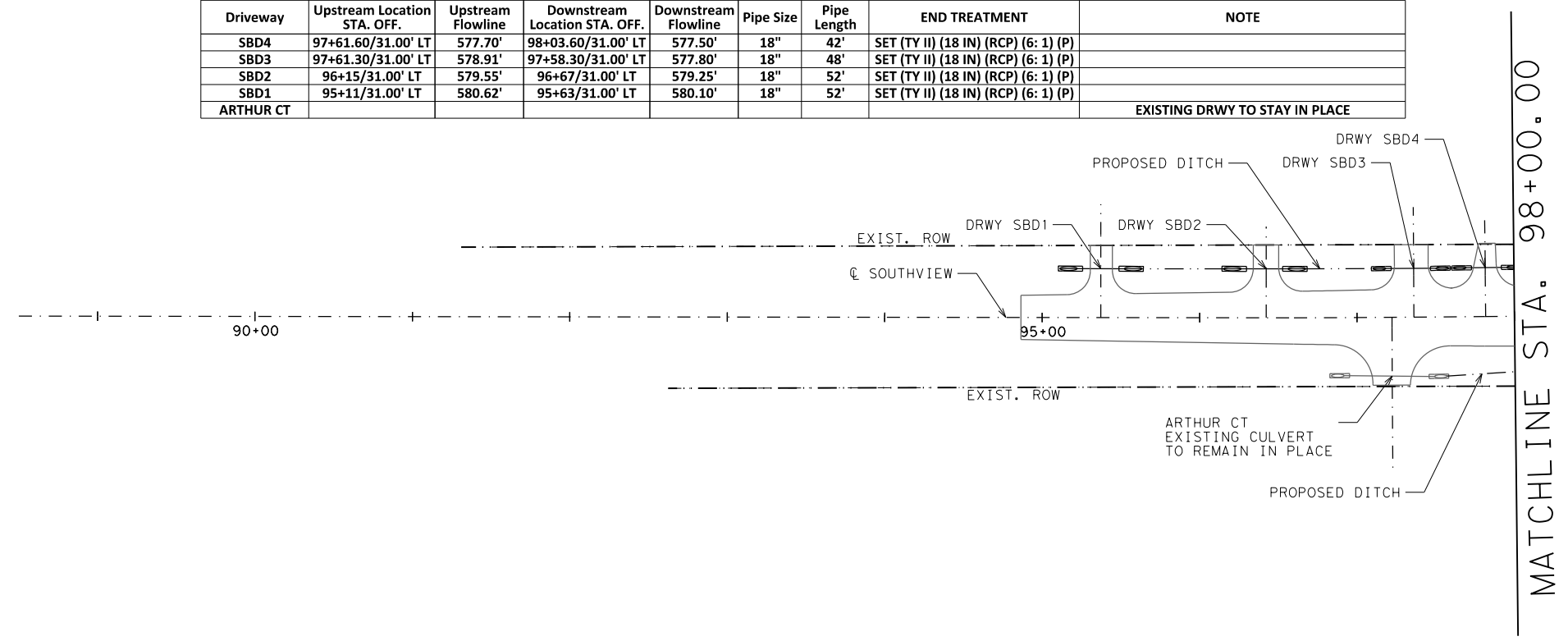
DATE: 1/21/2022 TIME: 8:22:41 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\40476892\1\ch*DrwyCul\vert*Layout*Sheets.dgn



LEGEND

- PROP ROW
- - - EXIST ROW
- ▭ SET TY II
- DITCH FLOWLINE

Driveway	Upstream Location STA. OFF.	Upstream Flowline	Downstream Location STA. OFF.	Downstream Flowline	Pipe Size	Pipe Length	END TREATMENT	NOTE
SBD4	97+61.60/31.00' LT	577.70'	98+03.60/31.00' LT	577.50'	18"	42'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	
SBD3	97+61.30/31.00' LT	578.91'	97+58.30/31.00' LT	577.80'	18"	48'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	
SBD2	96+15/31.00' LT	579.55'	96+67/31.00' LT	579.25'	18"	52'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	
SBD1	95+11/31.00' LT	580.62'	95+63/31.00' LT	580.10'	18"	52'	SET (TY II) (18 IN) (RCP) (6: 1) (P)	
ARTHUR CT								EXISTING DRWY TO STAY IN PLACE



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



FM 1378
 AT FM 3286

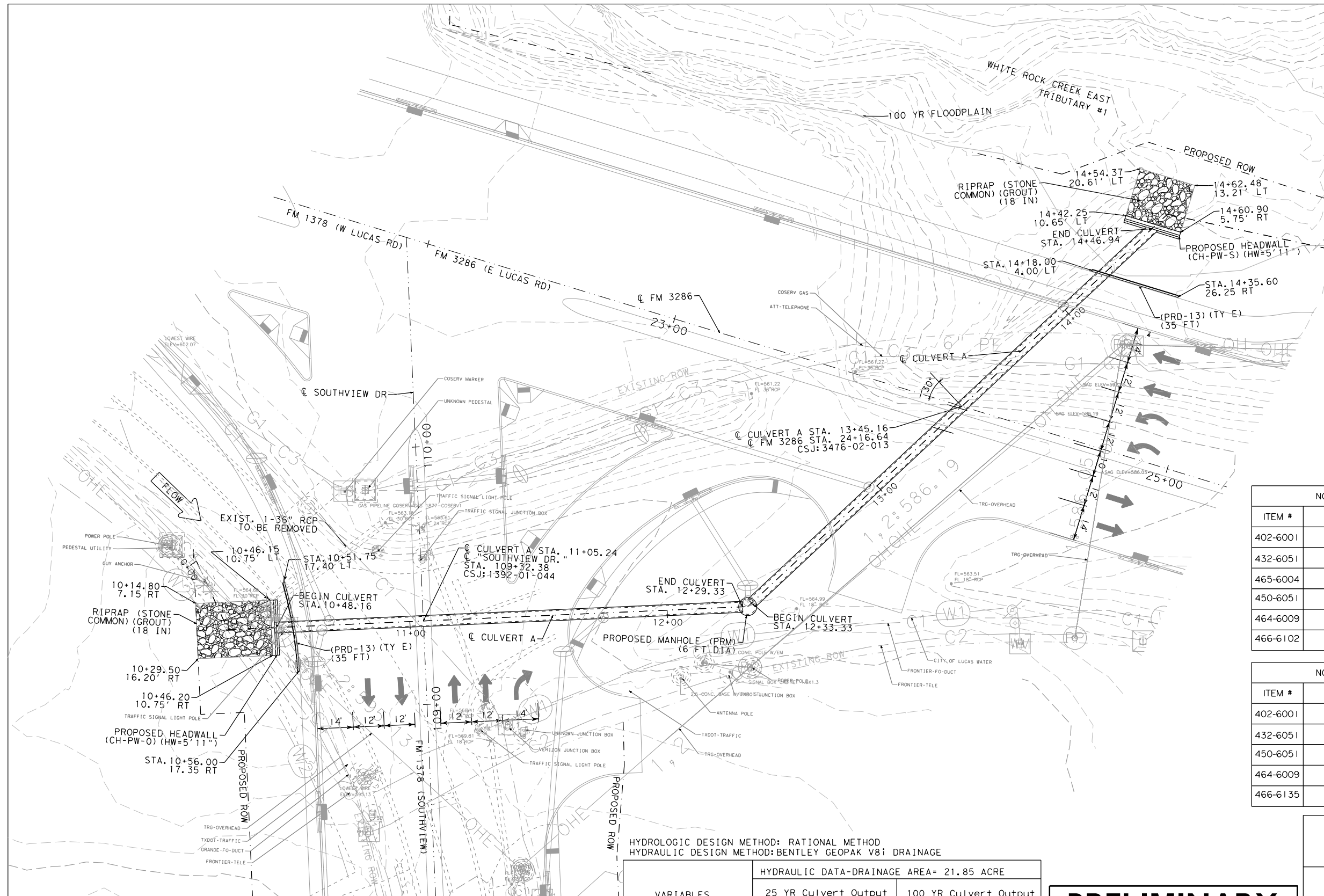
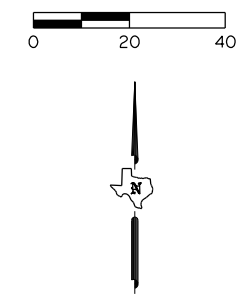
DITCH LAYOUT

SCALE: 1" = 100' SHEET 6 OF 6

DESIGN KB	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS KB	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN	SHEET NO. 184
CHECK IIE	CONTROL 1392	SECTION 01	JOB 044, ETC.	

QUANTITIES THIS SHEET

ITEM #	DESCRIPTION	UNIT	TOTAL
464-6003	RC PIPE (CL III) (18 IN)	LF	194
467-6363	SET (TY II) (18") (RCP) (6:1) (P)	EA	8



NOTE:
CULVERT CONSTRUCTION SHOWN
IN TRAFFIC CONTROL PLAN

REQUIRED STANDARDS:
1. CH-PW-0: PARALLEL WINGS NON SKEWED
2. CH-PW-S: PARALLEL WINGS SKEWED
3. SRR: STONE RIPRAP DETAILS
4. PRM: MANHOLE DETAILS

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402-6001	TRENCH EXCAVATION PROTECTION	LF	181
432-6051	RIPRAP (STONE COMMON)(GROUT)(18 IN)	CY	35
465-6004	MANH (COMPLX)(PRM)(72 IN)	EA	1
450-6051	RAIL (HANDRAIL)(TY E)	LF	35
464-6009	RC PIPE (CL III)(42 IN)	LF	181
466-6102	HEADWALL (CH-PW-0) (DIA=42 IN)	EA	1

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402-6001	TRENCH EXCAVATION PROTECTION	LF	133
432-6051	RIPRAP (STONE COMMON)(GROUT)(18 IN)	CY	24
450-6051	RAIL (HANDRAIL)(TY E)	LF	35
464-6009	RC PIPE (CL III)(42 IN)	LF	213
466-6135	HEADWALL (CH-PW-S) (DIA = 42 IN)	EA	1

HYDROLOGIC DESIGN METHOD: RATIONAL METHOD
HYDRAULIC DESIGN METHOD: BENTLEY GEOPAK V8i DRAINAGE

VARIABLES	HYDRAULIC DATA-DRAINAGE AREA= 21.85 ACRE			
	25 YR Culvert Output		100 YR Culvert Output	
	Existing	Proposed	Existing	Proposed
Q CulvGroup (cfs)	44.67	44.67	54.89	54.89
#Barrels	1 - 36" Ø	1 - 42" Ø	1 - 36" Ø	1 - 42" Ø
Q Barrels (cfs)	44.67	44.67	54.89	54.89
Culv Vel US (ft/s)	N/A	N/A	N/A	N/A
Culv Vel DS (ft/s)	7.06	10.61	11.14	11.16
TW VEL DS (FT/S)	5.08	6.68	5.17	6.74
W.S US. (ft)	567.87	567.44	568.66	567.92
W.S DS. (ft)	556.99	556.85	557.24	557.05

PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: **IBRAHIM I. EL SAAD**
P.E. No.: 142049
Date: 1/21/2022

© 2022

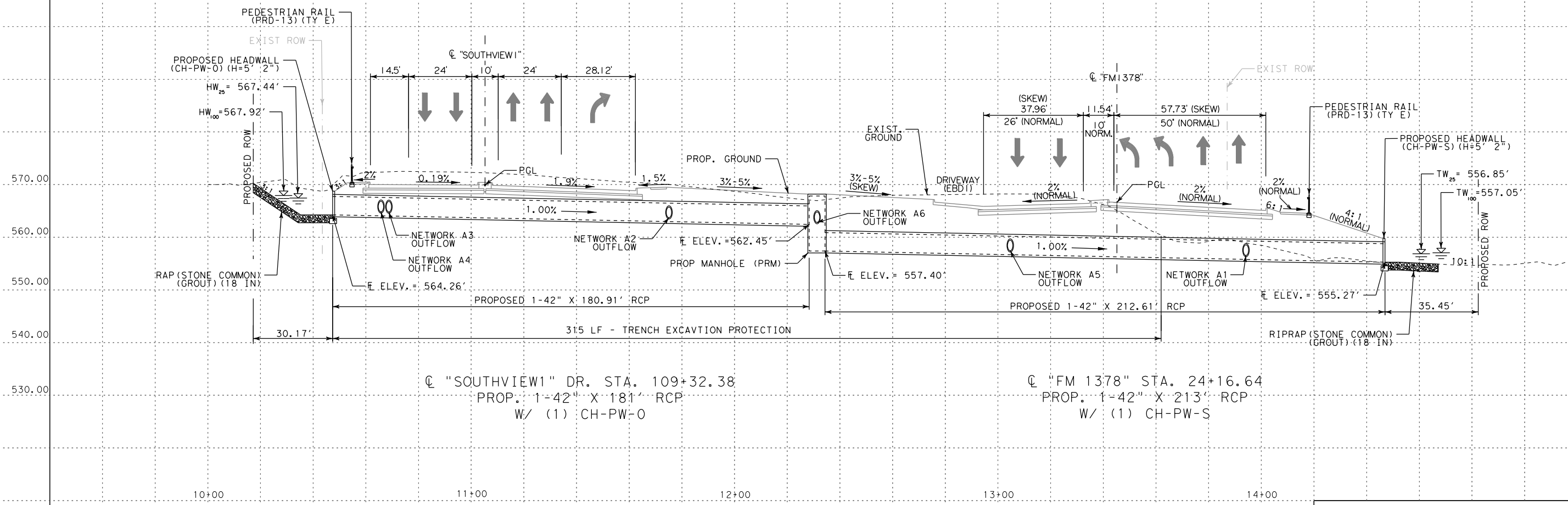
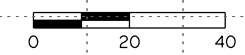
Texas Department of Transportation

**FM 1378
AT FM 3286
CULVERT A LAYOUT**

SCALE: 1" = 40' - H
1" = 20' - V

SHEET 1 OF 2

DESIGN IE	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS IE	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	185
	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	



PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/21/2022

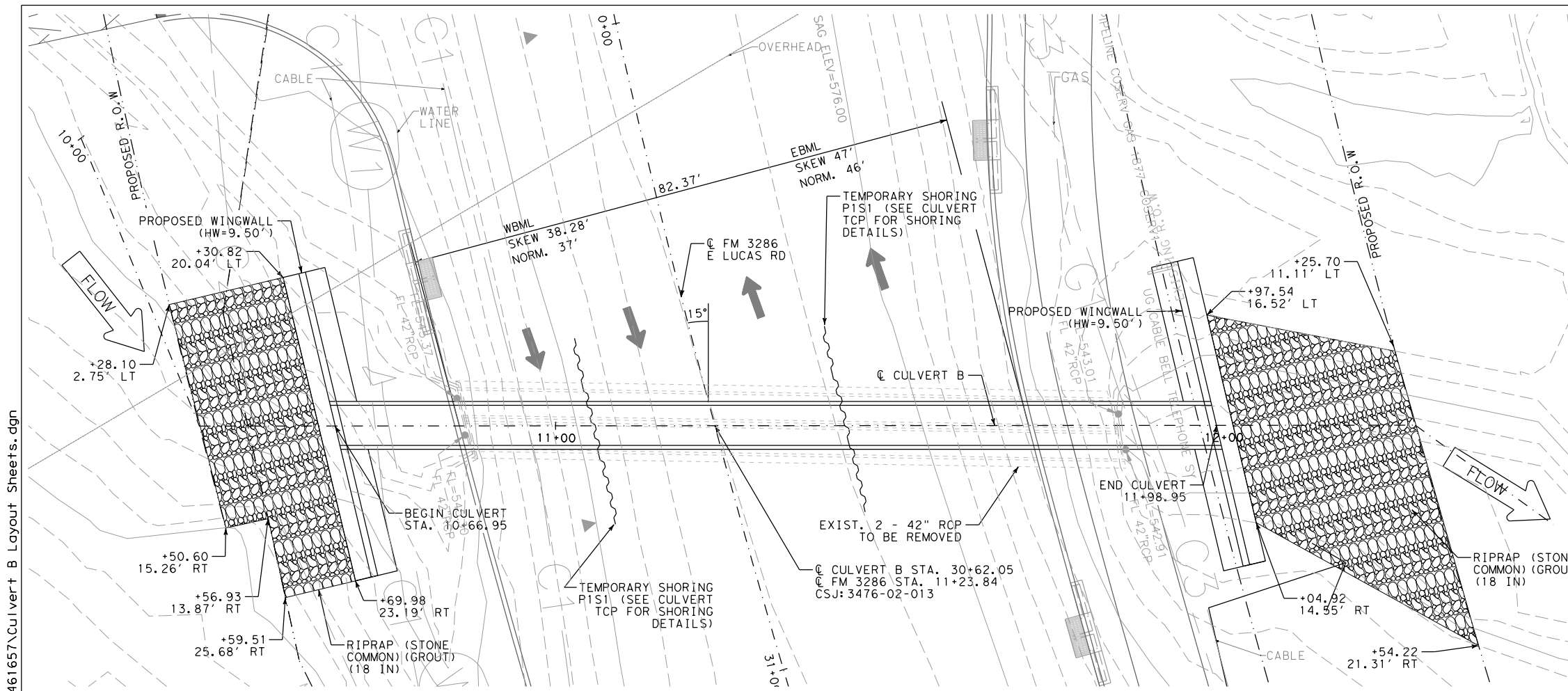


FM 1378
AT FM 3286
CULVERT A LAYOUT

SCALE: 1"=40'-H
1"=20'-V

DESIGN IE	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS IE	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK	TEXAS	DAL	COLLIN	SHEET NO.
CHECK	CONTROL	SECTION	JOB	186
	1392	01	044, ETC.	

SHEET 2 OF 2



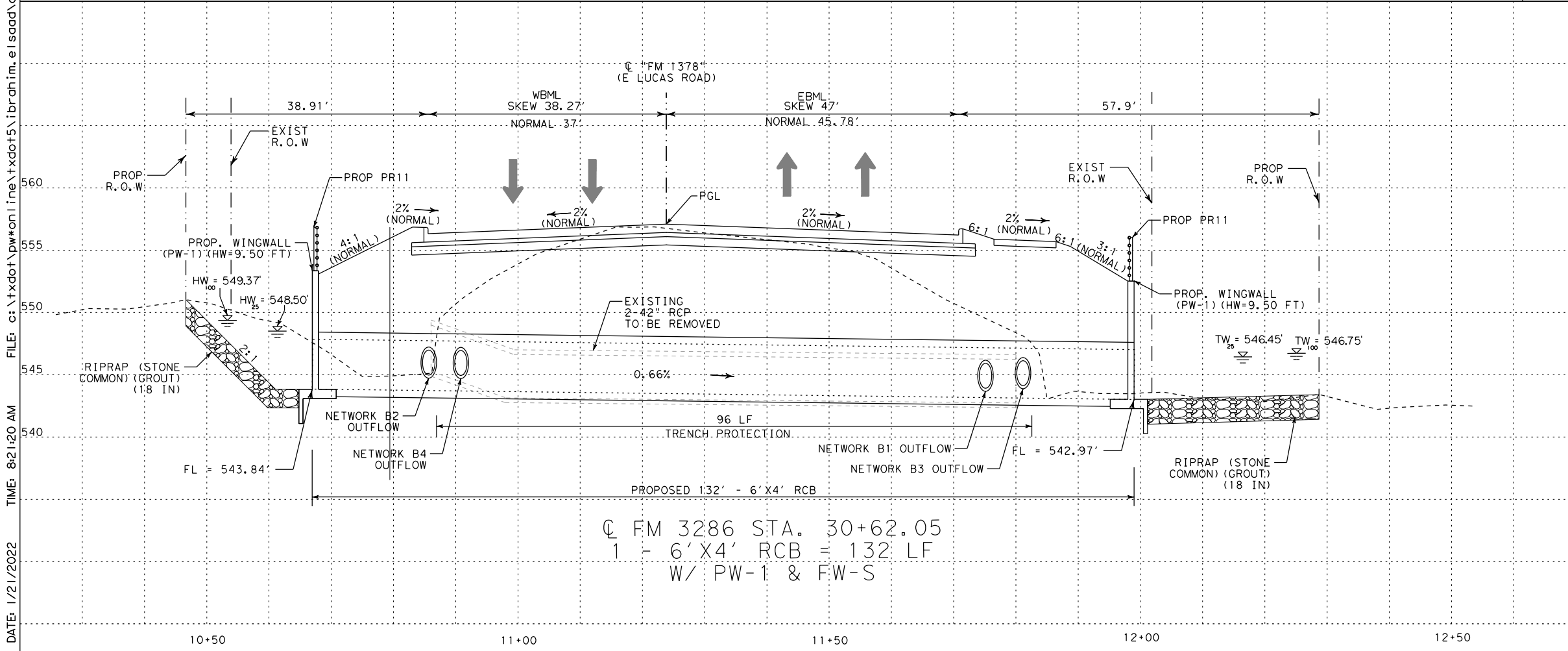
- REQUIRED STANDARDS:
1. PW: PARALLEL WINGS SKEWED/NON SKEWED
 2. SCP-6: RECAST 6' SPAN BOXES
 3. SCP-MD: PRECAST MISCELLANEOUS DETAILS
 4. BCS: SUPPLEMENT WING AND END TREATMENT
 5. ECD: EXT CURB DETAILS FROM 1' TO 5'
 6. SRR: STONE RIPRAP DETAILS
 7. PR11: PEDESTRIAN RAIL

NOTE: CULVERT CONSTRUCTION SHOWN IN TRAFFIC CONTROL PLAN

VARIABLES	HYDRAULIC DATA-DRAINAGE AREA= 71.96 ACRES			
	HYDRAULIC ANALYSIS USING HY-8			
	25 YR Culvert Output		100 YR Culvert Output	
	Existing	Proposed	Existing	Proposed
Q CulvGroup (cfs)	152.07	152.07	186.68	186.68
#Barrels	2-42"	1- 6'X4'	2-42"	1- 6'X4'
Q Barrels (cfs)	152.07	152.07	186.68	186.68
Culv Vel US (ft/s)	N/A	N/A	N/A	N/A
Culv Vel DS (ft/s)	8.31	7.29	9.74	8.28
TW VEL DS (FT/S)	6.20	6.20	6.52	6.52
W.S US. (ft)	548.51	548.50	549.74	549.37
W.S DS. (ft)	546.44	546.45	546.72	546.75

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402-6001	TRENCH EXCAVATION PROTECTION	LF	96
432-6002	RIPRAP (CONC) (5 IN)	CY	2
432-6051	RIPRAP (STONE COMMON) (GROUT) (18 IN)	CY	98
450-6103	RAIL (TY PR11)	LF	58
462-6011	CONC BOX CULV (6 FT X 4 FT)	LF	132
466-6171	WINGWALL (PW-1) (HW=9.50 FT)	EA	2



PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/21/2022



FM 1378
AT FM 3286
CULVERT B LAYOUT
STA 30+62.00

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

SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS		STATE	DISTRICT	COUNTY
IIE		TEXAS	DAL	COLLIN
CHECK		CONTROL	SECTION	JOB
CHECK		1392	01	044, ETC.

187

FILE: c:\pdx\dot\pw\on\line\txdot\5\ibrahim.e\saad\0461657\Culvert B Layout Sheets.dgn
DATE: 1/21/2022
TIME: 8:21:20 AM

DATE: 1/21/2022 TIME: 8:21:35 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0601455\HYDRAULIC_CALCULATIONS_CULV*B.dgn

Table 1 - Summary of Culvert Flows at Crossing: Crossing B (EXISTING)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert B Discharge (cfs)	Roadway Discharge (cfs)	Iterations
546.8	2 yr	86.62	86.62	0	1
547.52	5 yr	110.63	110.63	0	1
547.91	10 yr	128.62	128.62	0	1
548.51	25 yr	152.07	152.07	0	1
549.09	50 yr	169.4	169.4	0	1
549.74	100 yr	186.68	186.68	0	1
557.06	Overtopping	317.89	317.89	0	Overtopping

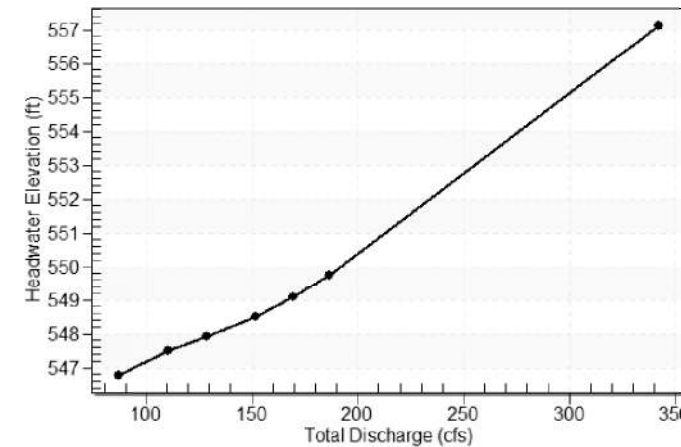
Table 2 - Culvert Summary Table: Culvert B (EXISTING)

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 yr	86.62	86.62	546.8	3.107	2.706	1-JS1t	1.955	2.05	2.497	2.837	5.9	5.383
5 yr	110.63	110.63	547.52	3.671	3.828	1-S1t	2.297	2.328	2.769	3.109	6.776	5.722
10 yr	128.62	128.62	547.91	4.132	4.216	7-M1t	2.576	2.514	2.95	3.29	7.432	5.942
25 yr	152.07	152.07	548.51	4.817	4.77	7-M1t	3.083	2.728	3.163	3.503	8.312	6.196
50 yr	169.4	169.4	549.09	5.398	5.26	3-M2t	3.5	2.867	3.308	3.648	8.997	6.366
100 yr	186.68	186.68	549.74	6.048	5.913	7-M2t	3.5	2.988	3.443	3.783	9.736	6.522

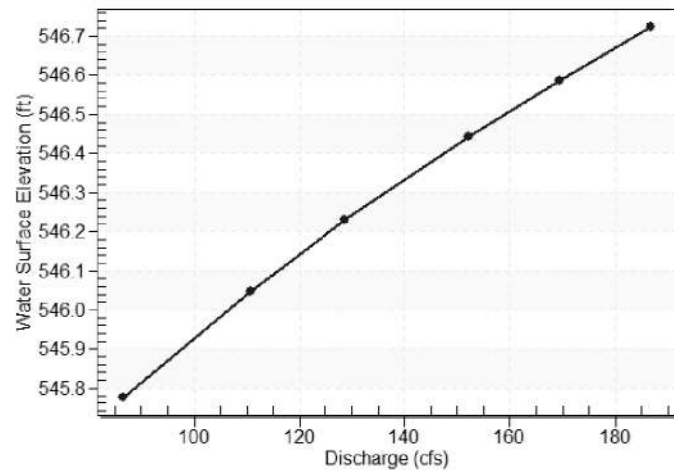
Table 3 - Downstream Channel Rating Curve (Crossing: CULV_B (EXISTING))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
86.62	545.78	2.84	5.38	1.52	0.8
110.63	546.05	3.11	5.72	1.67	0.81
128.62	546.23	3.29	5.94	1.77	0.82
152.07	546.44	3.5	6.2	1.88	0.83
169.4	546.59	3.65	6.37	1.96	0.83
186.68	546.72	3.78	6.52	2.03	0.84

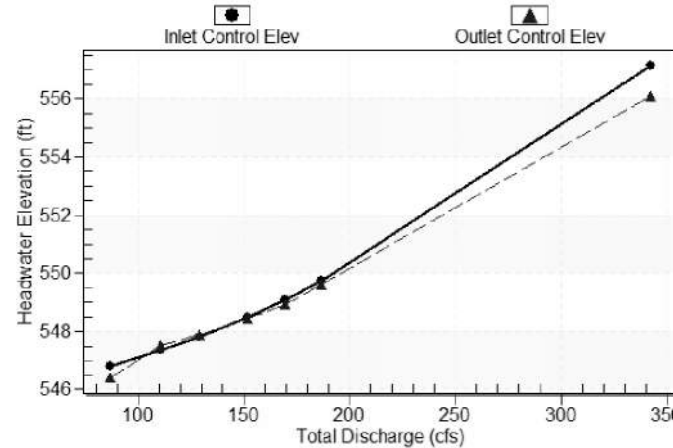
Total Rating Curve
Crossing: Crossing B_3286



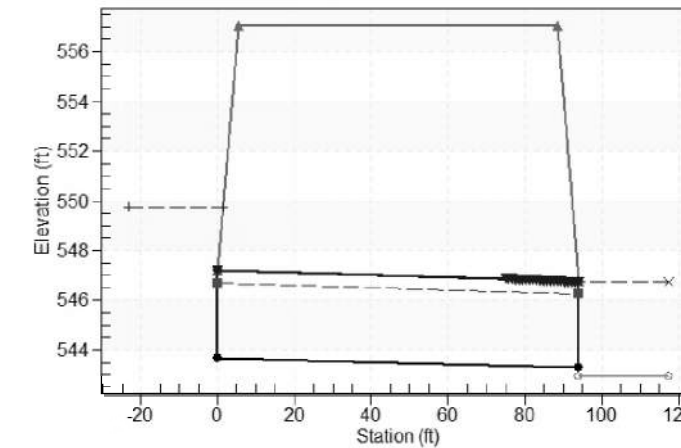
Downstream Channel Rating Curve




Performance Curve
Culvert: Culvert B_3286



Crossing - Crossing B_3286, Design Discharge - 186.7 cfs
Culvert - Culvert B_3286, Culvert Discharge - 186.7 cfs



PRELIMINARY
 **FOR REVIEW ONLY**
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

 © 2022

FM 1378
AT FM 3286
CULVERT B LAYOUT
 (EXISTING HYDRAULIC CALCULATIONS)

SHEET 2 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	188
CHECK	CONTROL	SECTION	JOB	
IIE	1392	01	044, ETC.	

Table 1 - Summary of Culvert Flows at Crossing: Crossing B (Proposed)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert B Discharge (cfs)	Roadway Discharge (cfs)	Iterations
546.98	2 yr	86.62	86.62	0	1
547.54	5 yr	110.63	110.63	0	1
547.95	10 yr	128.62	128.62	0	1
548.5	25 yr	152.07	152.07	0	1
548.92	50 yr	169.4	169.4	0	1
549.37	100 yr	186.68	186.68	0	1
557.09	Overtopping	376.65	376.65	0	Overtopping

HYDROLOGIC COMPUTATION
 HYDROLOGIC METHOD: RATIONAL
 DRAINAGE AREA: ACRES:71.96, DESIGN FREQUENCY: 25 YR

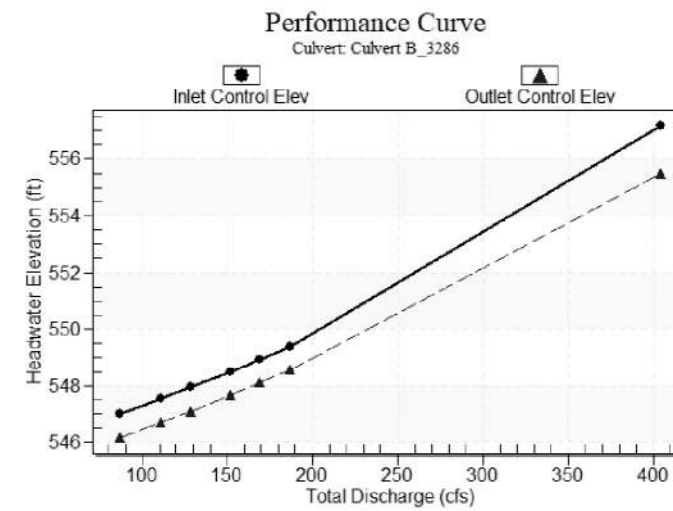
DRAINAGE AREA			WEIGHTED RUNOFF COEFFICIENT	tc ACTUAL (MIN)	Q ₂ (cfs)	Q ₅ (cfs)	Q ₁₀ (cfs)	Q ₂₅ (cfs)	Q ₅₀ (cfs)	Q ₁₀₀ (cfs)	Q _{OT} (cfs)	CULVERT LOCATION "FM 1378" STA.
AREA NO.	ACRES	SQ. MI.										
B	71.96	0.11	0.35	16.00	86.62	110.63	128.62	152.07	169.4	186.68	376.65	30+62.05

Table 2 - Culvert Summary Table: Culvert B (Proposed)

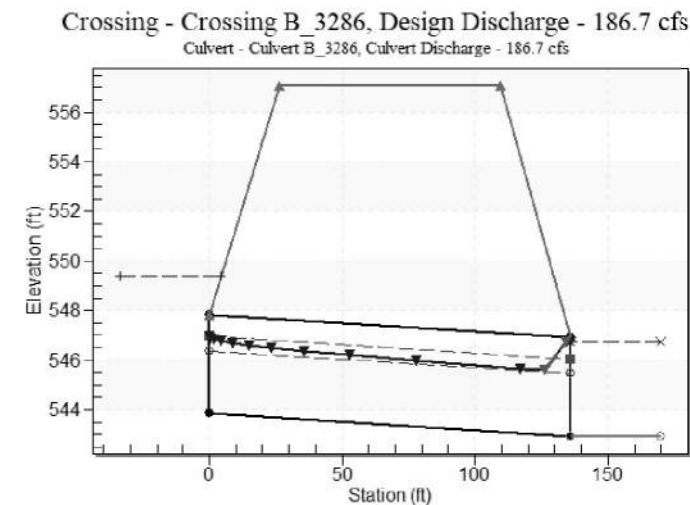
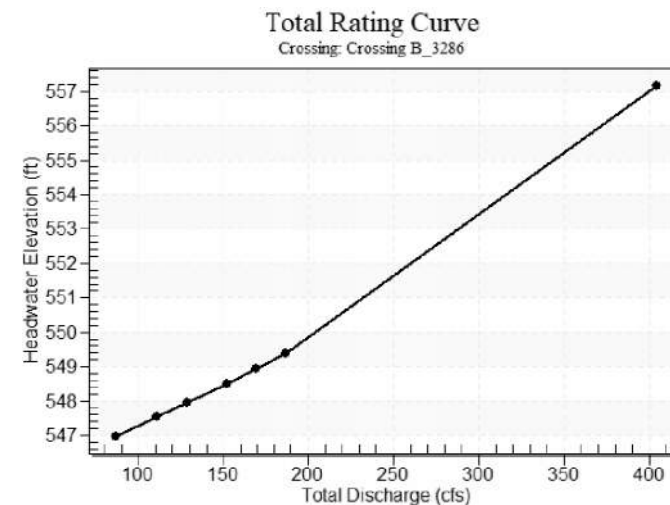
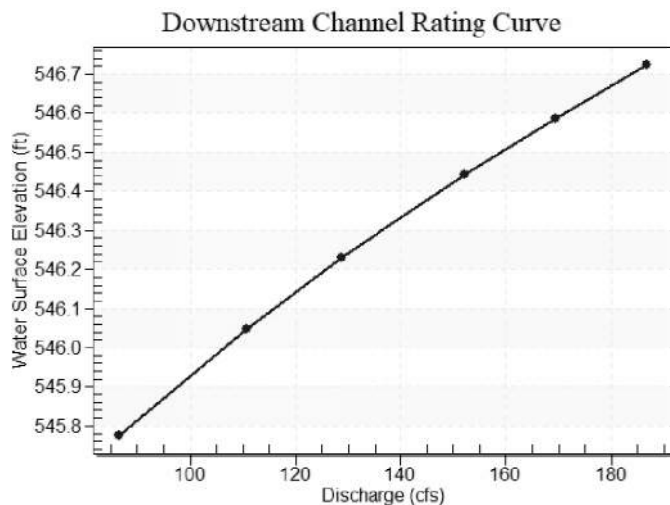
Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 yr	86.62	86.62	546.98	3.143	2.33	1-JS1t	1.451	1.864	2.81	2.837	5.14	5.383
5 yr	110.63	110.63	547.54	3.701	2.851	1-JS1t	1.721	2.194	3.08	3.109	5.98	5.722
10 yr	128.62	128.62	547.95	4.111	3.257	5-JS1t	1.914	2.426	3.26	3.29	6.57	5.942
25 yr	152.07	152.07	548.5	4.658	3.816	5-JS1t	2.158	2.712	3.48	3.503	7.29	6.196
50 yr	169.4	169.4	548.92	5.083	4.240	5-JS1t	2.333	2.914	3.62	3.648	7.80	6.366
100 yr	186.68	186.68	549.37	5.531	4.700	5-JS1t	2.505	3.109	3.76	3.783	8.28	6.522

Table 3 - Downstream Channel Rating Curve (Crossing: CULV-B (Proposed))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
86.62	545.78	2.84	5.38	1.52	0.8
110.63	546.05	3.11	5.72	1.67	0.81
128.62	546.23	3.29	5.94	1.77	0.82
152.07	546.44	3.5	6.2	1.88	0.83
169.4	546.59	3.65	6.37	1.96	0.83
186.68	546.72	3.78	6.52	2.03	0.84



PRELIMINARY
 FOR REVIEW ONLY
 Not intended for construction, bidding or permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



© 2022

Texas Department of Transportation

FM 1378
AT FM 3286

CULVERT B LAYOUT
(PROPOSED HYDRAULIC CALCULATIONS)

SHEET 3 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	189
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

DATE: 1/21/2022 TIME: 8:21:38 AM FILE: c:\t\dot\pw\on\line\t\dot\5\ibrahim.e\saad\0601455\HYDRAULIC CALCULATIONS_CULV*B.dgn

NOTE:
CULVERT CONSTRUCTION SHOWN
IN TRAFFIC CONTROL PLAN

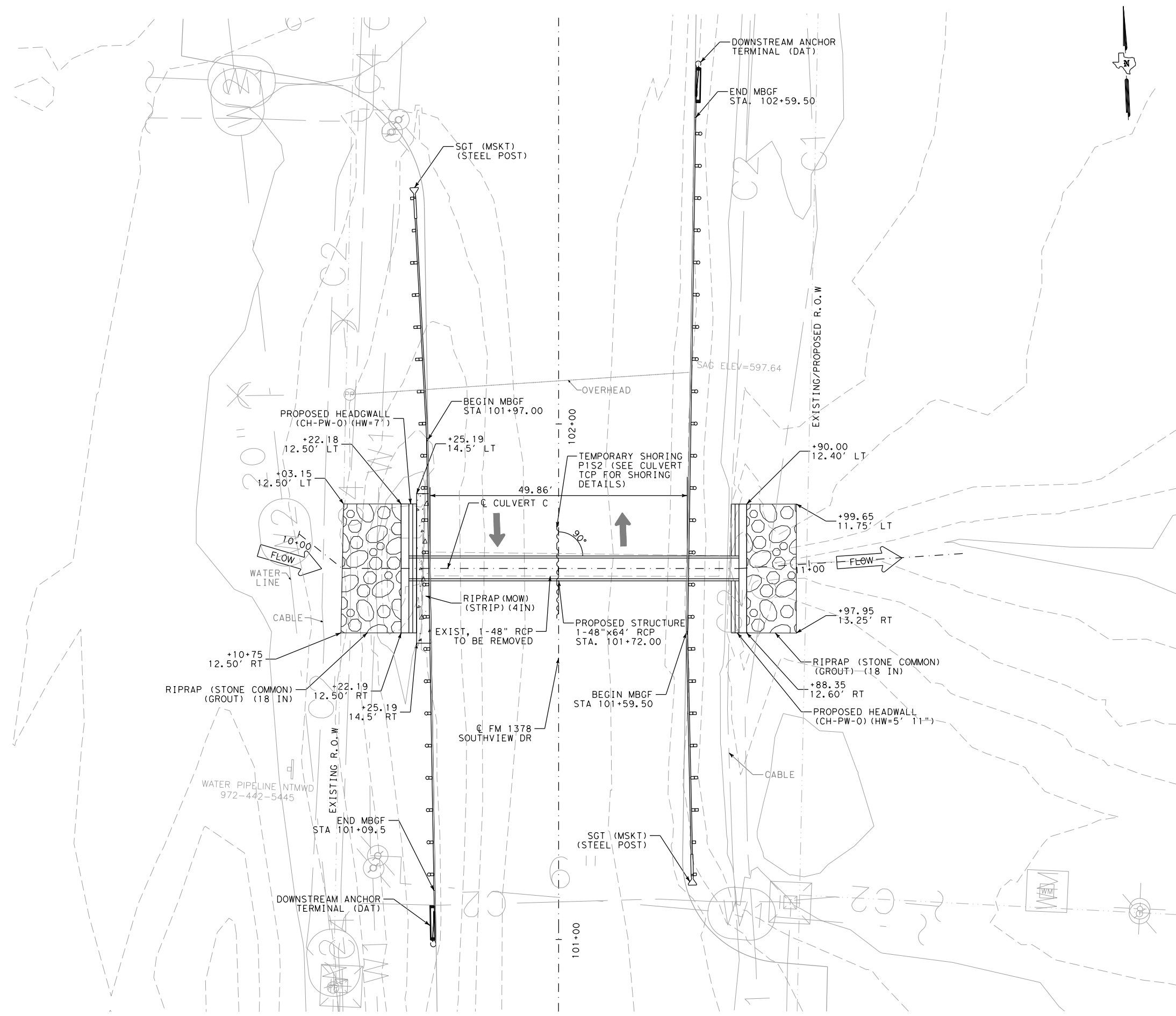
REQUIRED STANDARDS:
1. CH-PW-0: PARALLEL WINGS SKEWED/NON SKEWED
2. SCP-MD: PRECAST MISCELLANEOUS DETAILS
3. SRR: STONE RIPRAP DETAILS

VARIABLES	HYDRAULIC DATA-DRAINAGE AREA= 33.47 ACRES			
	HYDRAULIC ANALYSIS USING HY-8			
	25 YR Culvert Output		100 YR Culvert Output	
	Existing	Proposed	Existing	Proposed
Q CulvGroup (cfs)	66.72	66.72	82.03	82.03
#Barrels	1-48"	1-48"	1-48"	1-48"
Q Barrels (cfs)	66.72	66.72	82.03	82.03
Culv Vel US (ft/s)	N/A	N/A	N/A	N/A
Culv Vel DS (ft/s)	7.11	9.23	8.05	9.75
TW VEL DS (FT/S)	4.26	4.26	4.49	4.49
W.S US. (ft)	575.10	576.59	575.65	577.20
W.S DS. (ft)	573.67	575.26	573.89	575.48

NOTE: QUANTITIES BASED ON CSJ:1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402-6001	TRENCH EXCAVATION PROTECTION	LF	42
432-6051	RIPRAP (STONE COMMON) (GROUT) (18 IN)	CY	30
464-6010	RC PIPE (CLIII) (48 IN)	LF	64
466-6103	HEADWALL (CH-PW-0) (DIA=48IN)	EA	2

FILE: c:\txdot\pw\onl\line\txdot5\ibrahim.e\saad\0461657\Culvert C Layout Sheets.dgn
DATE: 1/21/2022 TIME: 8:21:55 AM



PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/21/2022

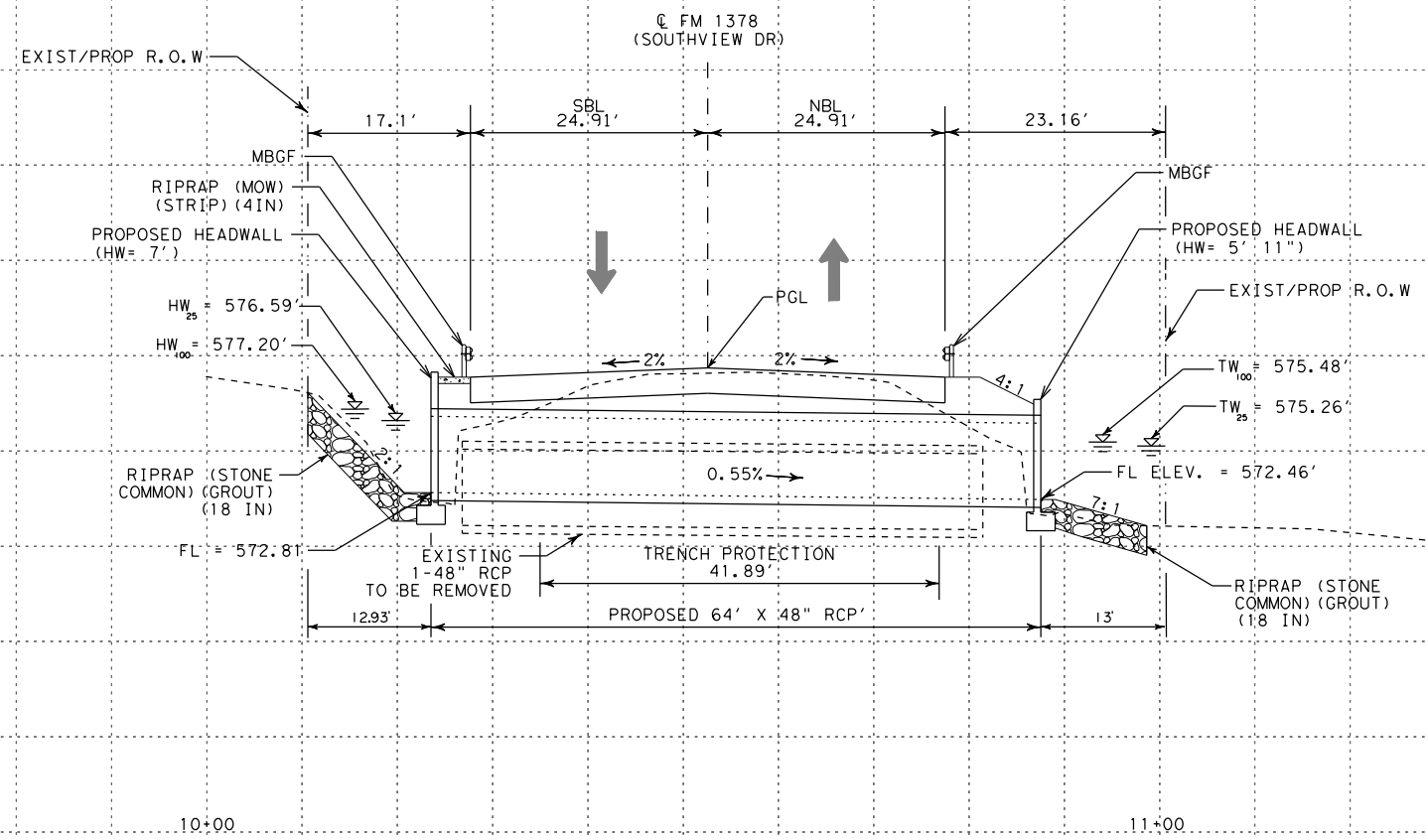
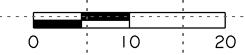


FM 1378
AT FM 3286
CULVERT C LAYOUT
STA 101+72.00

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

SHEET 1 OF 4

DESIGN MN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS MN	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	190
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	



Q FM 1378 STA. 101+72.00
 1 - 48" RCP = 64 LF
 W/ CH-PW-0 BOTH US & DS

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022



FM 1378
 AT FM 3286
CULVERT C LAYOUT
STA 101+72.00

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

DESIGN MN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS MN	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK	TEXAS	DAL	COLLIN	SHEET NO.
CHECK	CONTROL	SECTION	JOB	191
	1392	01	044, ETC.	

SHEET 2 OF 4

FILE: c:\txdot\pw\onl\ine\txdot\5\ibrahim.e\saad\0461657\Culvert C Layout Sheets.dgn

TIME: 8:21:57 AM

DATE: 1/21/2022

Table 1 - Summary of Culvert Flows at Crossing: Crossing C (EXISTING)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert C Discharge (cfs)	Roadway Discharge (cfs)	Iterations
573.95	2 yr	37.90	37.90	0.00	1
574.39	5 yr	48.46	48.46	0.00	1
574.71	10 yr	56.38	56.38	0.00	1
575.10	25 yr	66.72	66.72	0.00	1
575.38	50 yr	74.37	74.37	0.00	1
575.65	100 yr	82.03	82.03	0.00	1
579.66	Overtopping	153.41	153.41	0.00	Overtopping

Table 2 - Culvert Summary Table: Culvert C (EXISTING)

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 yr	37.90	37.90	573.95	2.661	2.851	1-S1t	1.707	1.835	2.262	2.262	5.171	3.702
5 yr	48.46	48.46	574.39	3.094	3.294	1-S1t	1.964	2.087	2.481	2.481	5.919	3.937
10 yr	56.38	56.38	574.71	3.397	3.609	1-S1t	2.150	2.259	2.626	2.626	6.448	4.089
25 yr	66.72	66.72	575.10	3.788	4.001	1-S1t	2.390	2.466	2.797	2.797	7.110	4.265
50 yr	74.37	74.37	575.38	4.083	4.278	1-S1t	2.571	2.609	2.913	2.913	7.586	4.382
100 yr	82.03	82.03	575.65	4.391	4.552	7-M1t	2.759	2.744	3.022	3.022	8.053	4.491

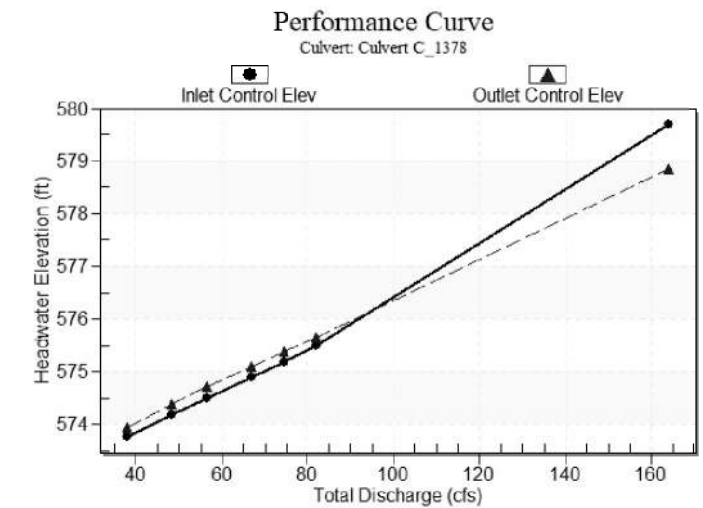
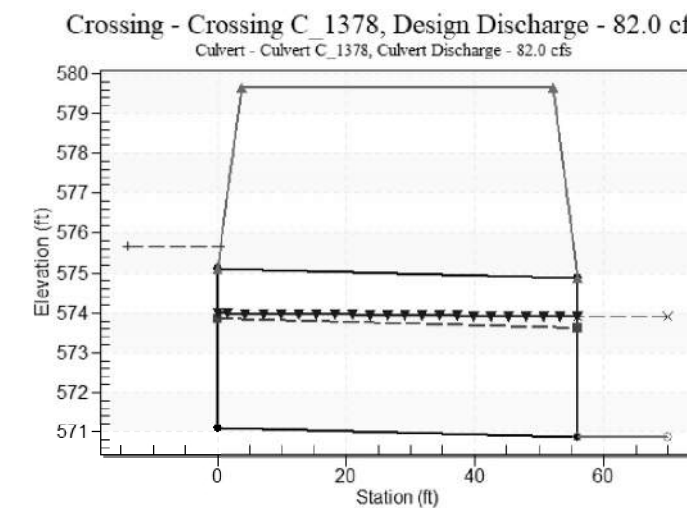
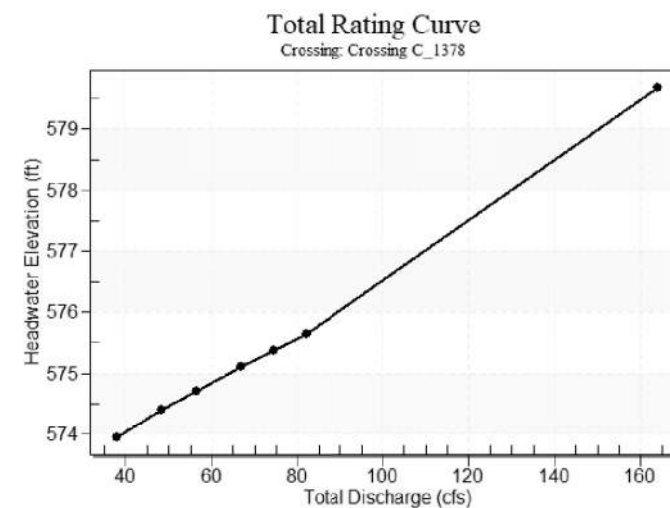
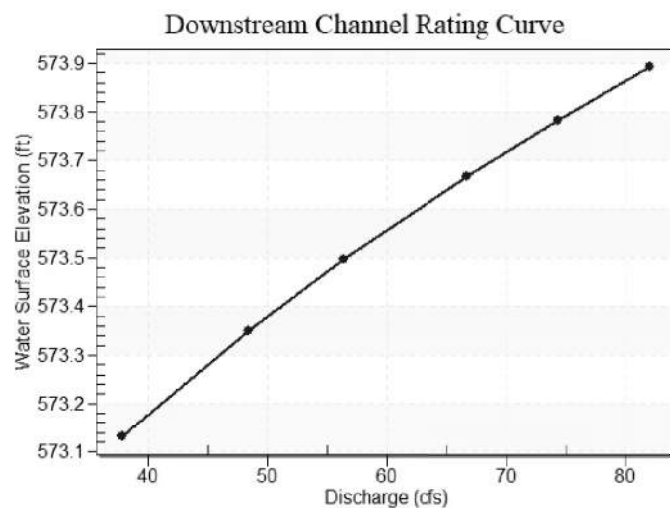


Table 3 - Downstream Channel Rating Curve (Crossing: CULV_C (EXISTING))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
37.90	573.13	2.26	3.70	0.78	0.61
48.46	573.35	2.48	3.94	0.85	0.62
56.38	573.50	2.63	4.09	0.90	0.63
66.72	573.67	2.80	4.26	0.96	0.64
74.37	573.78	2.91	4.38	1.00	0.64
82.03	573.89	3.02	4.49	1.04	0.64



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

© 2022

FM 1378
AT FM 3286
CULVERT C LAYOUT
 (EXISTING HYDRAULIC CALCULATIONS)

SHEET 3 OF 4

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
III	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	
III	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	
III	1392	01	044, ETC.	

192

FILE: c:\t\dot\pw\on\line\t\dot\5\ibrahim.e\isaad\0601455\HYDRAULIC_CALCULATIONS_CULV_C.dgn
 DATE: 1/21/2022 TIME: 8:22:11 AM

Table 1 - Summary of Culvert Flows at Crossing: Crossing C

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert C Discharge (cfs)	Roadway Discharge (cfs)	Iterations
575.47	2 yr	37.90	37.90	0.00	1
575.90	5 yr	48.46	48.46	0.00	1
576.20	10 yr	56.38	56.38	0.00	1
576.59	25 yr	66.72	66.72	0.00	1
576.89	50 yr	74.37	74.37	0.00	1
577.20	100 yr	82.03	82.03	0.00	1
579.66	Overtopping	129.42	129.42	0.00	Overtopping

HYDROLOGIC COMPUTATION
 HYDROLOGIC METHOD: RATIONAL
 DRAINAGE AREA: ACRES:33.47, DESIGN FREQUENCY: 25 YR

AREA NO.	DRAINAGE AREA		WEIGHTED RUNOFF COEFFICIENT	tc ACTUAL (MIN)	Q ₂ (cfs)	Q ₅ (cfs)	Q ₁₀ (cfs)	Q ₂₅ (cfs)	Q ₅₀ (cfs)	Q ₁₀₀ (cfs)	Q _{OT} (cfs)	CULVERT LOCATION "SOUTHVIEW1" STA.
	ACRES	SQ. MI.										
B	33.47	0.11	0.052	20.00	37.90	48.46	56.38	66.72	74.37	82.03	129.42	101+71.95

Table 2 - Culvert Summary Table: Culvert C (Proposed)

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 yr	37.90	37.90	575.47	2.659	2.162	1-JS1t	1.578	1.835	2.262	2.262	5.171	3.702
5 yr	48.46	48.46	575.90	3.091	2.539	1-JS1t	1.809	2.087	2.481	2.481	5.919	3.937
10 yr	56.38	56.38	576.20	3.395	2.828	1-JS1t	1.974	2.259	2.626	2.626	6.448	4.089
25 yr	66.72	66.72	576.59	3.785	3.220	1-S2n	2.184	2.466	2.237	2.797	9.230	4.265
50 yr	74.37	74.37	576.89	4.080	3.524	5-S2n	2.337	2.609	2.389	2.913	9.501	4.382
100 yr	82.03	82.03	577.20	4.389	3.842	5-S2n	2.493	2.744	2.539	3.022	9.752	4.491

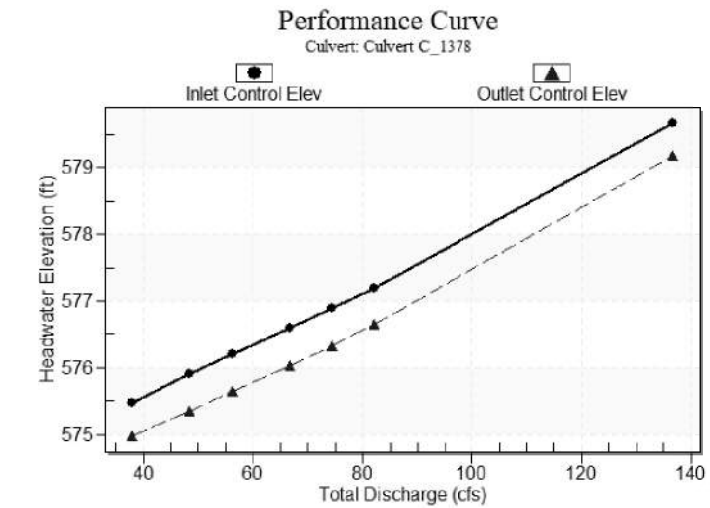
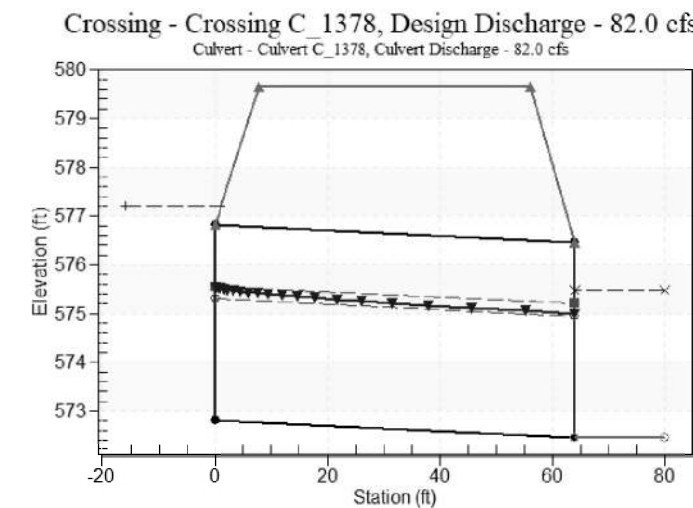
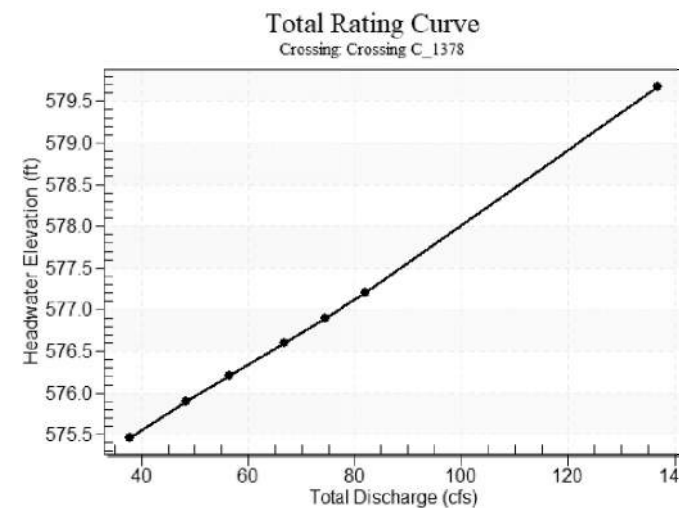
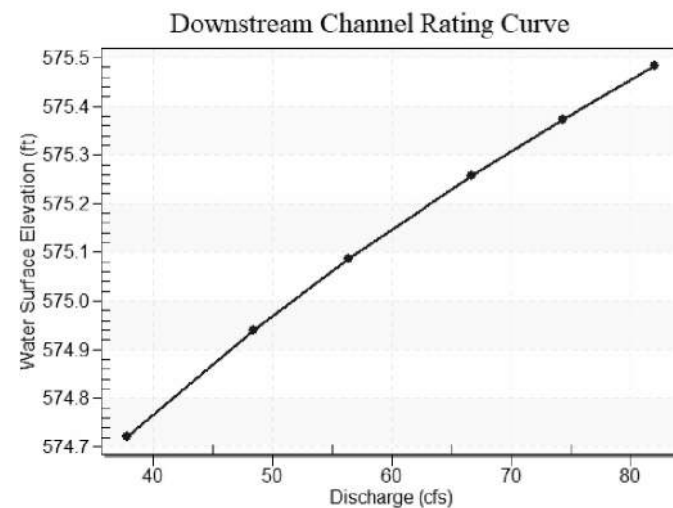


Table 3 - Downstream Channel Rating Curve (Crossing: CULV. C (Proposed))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
37.90	574.72	2.26	3.70	0.78	0.61
48.46	574.94	2.48	3.94	0.85	0.62
56.38	575.09	2.63	4.09	0.90	0.63
66.72	575.26	2.80	4.26	0.96	0.64
74.37	575.37	2.91	4.38	1.00	0.64
82.03	575.48	3.02	4.49	1.04	0.64

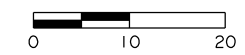


PRELIMINARY
 FOR REVIEW ONLY
 Not intended for construction, bidding or permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/21/2022

© 2022
 Texas Department of Transportation
 FM 1378
 AT FM 3286
CULVERT C LAYOUT
 (PROPOSED HYDRAULIC CALCULATIONS)
 SHEET 4 OF 4

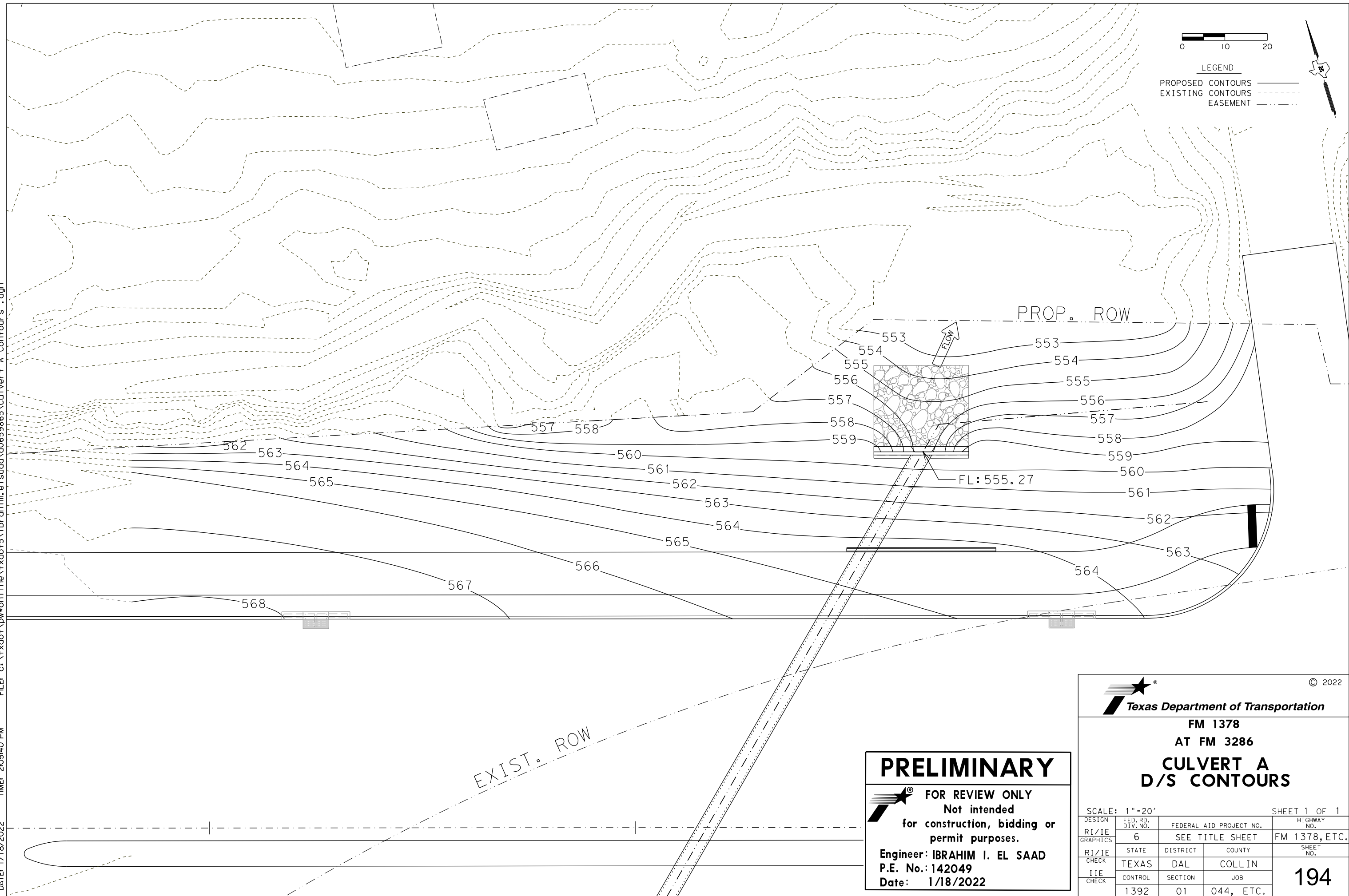
DESIGN IIE	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
CHECK IIE	STATE TEXAS	DISTRICT DAL	COUNTY COLLIN	SHEET NO. 192
CHECK IIE	CONTROL 1392	SECTION 01	JOB 044, ETC.	

FILE: c:\t\dot\pw\onl\me\t\dot\5\ibrahim.e\saad\0601455\HYDRAULIC CALCULATIONS_CULV.C.dgn
 DATE: 1/21/2022 TIME: 8:22:15 AM



LEGEND
 PROPOSED CONTOURS ———
 EXISTING CONTOURS - - - - -
 EASEMENT - · - · - ·

FILE: c:\txdot\pwworking\ibrahim.elsaad\0659865\Culvert A Contours.dgn
 DATE: 1/18/2022
 TIME: 2:09:40 PM



PRELIMINARY
 FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/18/2022

© 2022

Texas Department of Transportation

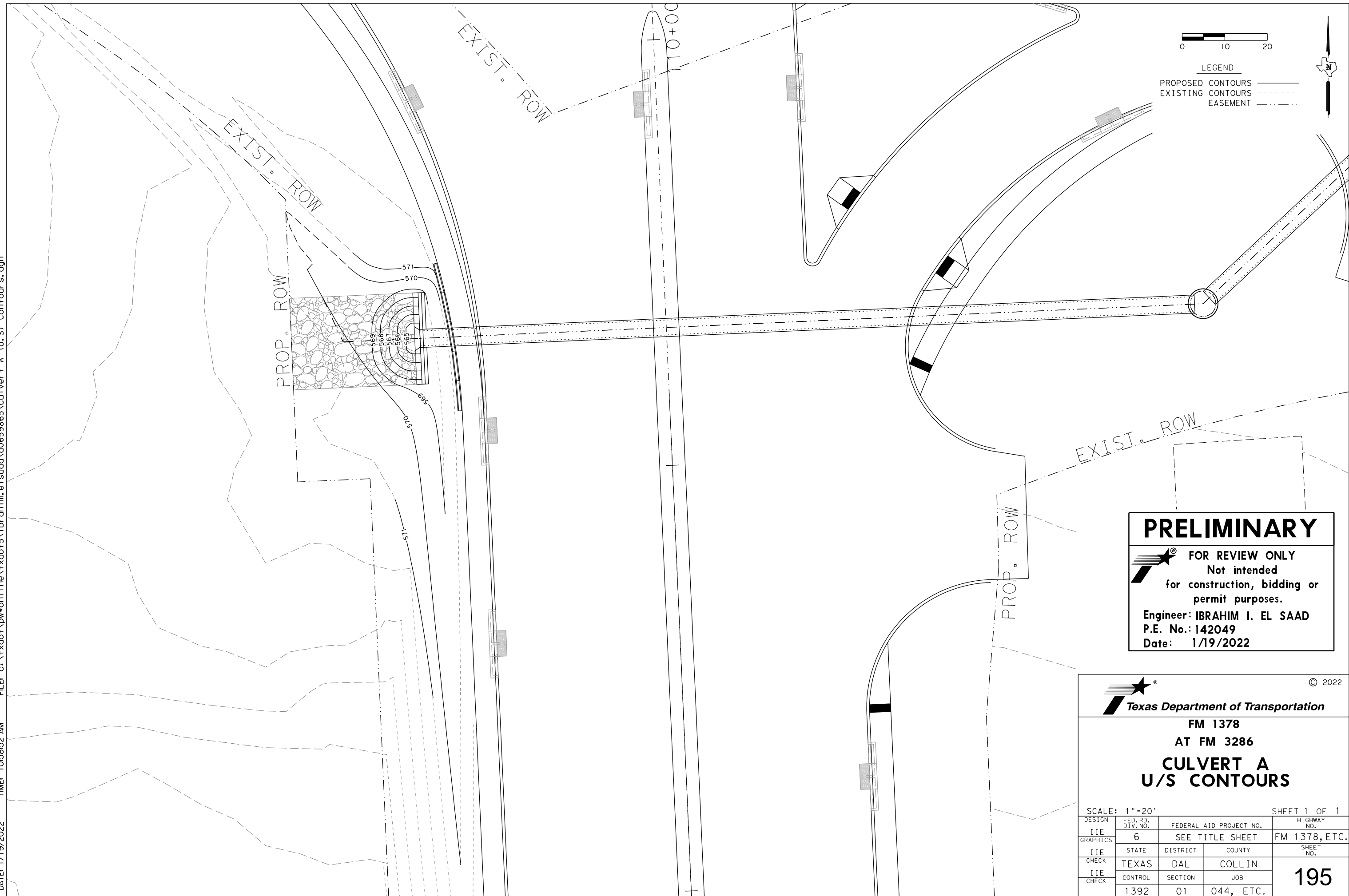
**FM 1378
 AT FM 3286
 CULVERT A
 D/S CONTOURS**


SCALE: 1"=20' SHEET 1 OF 1


DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI/IE GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
RI/IE CHECK	STATE	DISTRICT	COUNTY	
IIE CHECK	TEXAS	DAL	COLLIN	
	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

194

DATE: 1/19/2022 TIME: 10:58:52 AM FILE: c:\txdot\pw\onl\ine\txdot5\ibrahim.e\saad\0659865\Culvert A (U.S) Contours.dgn



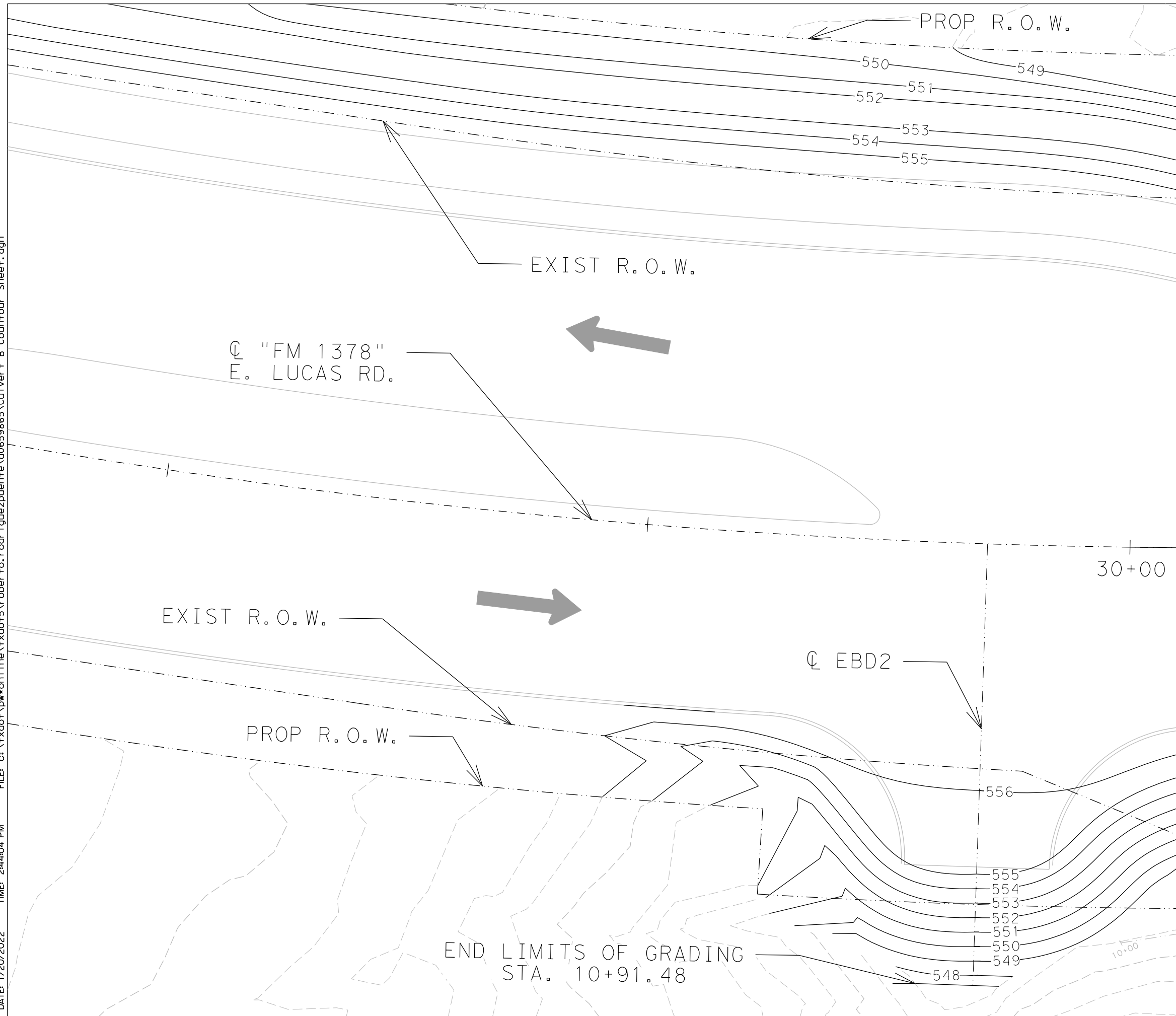
PRELIMINARY
 **FOR REVIEW ONLY**
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/19/2022

 © 2022
FM 1378
AT FM 3286
CULVERT A
U/S CONTOURS

SCALE: 1" = 20' SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE GRAPHICS	6	SEE TITLE SHEET		FM 1378, ETC.
IIE CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
IIE CHECK	TEXAS	DAL	COLLIN	195
	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 1/20/2022 TIME: 2:44:04 PM FILE: c:\txdot\pwworking\line\txdot5\roberto.rodriguezpuente\d0659865\Culvert B Countour Sheet.dgn



0 10 20

LEGEND
 PROPOSED CONTOURS ———
 EXISTING CONTOURS - - - - -
 EASEMENT - · - · - ·

MATCH LINE @ "FM 1378" STA. 30+10.00

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/20/2022



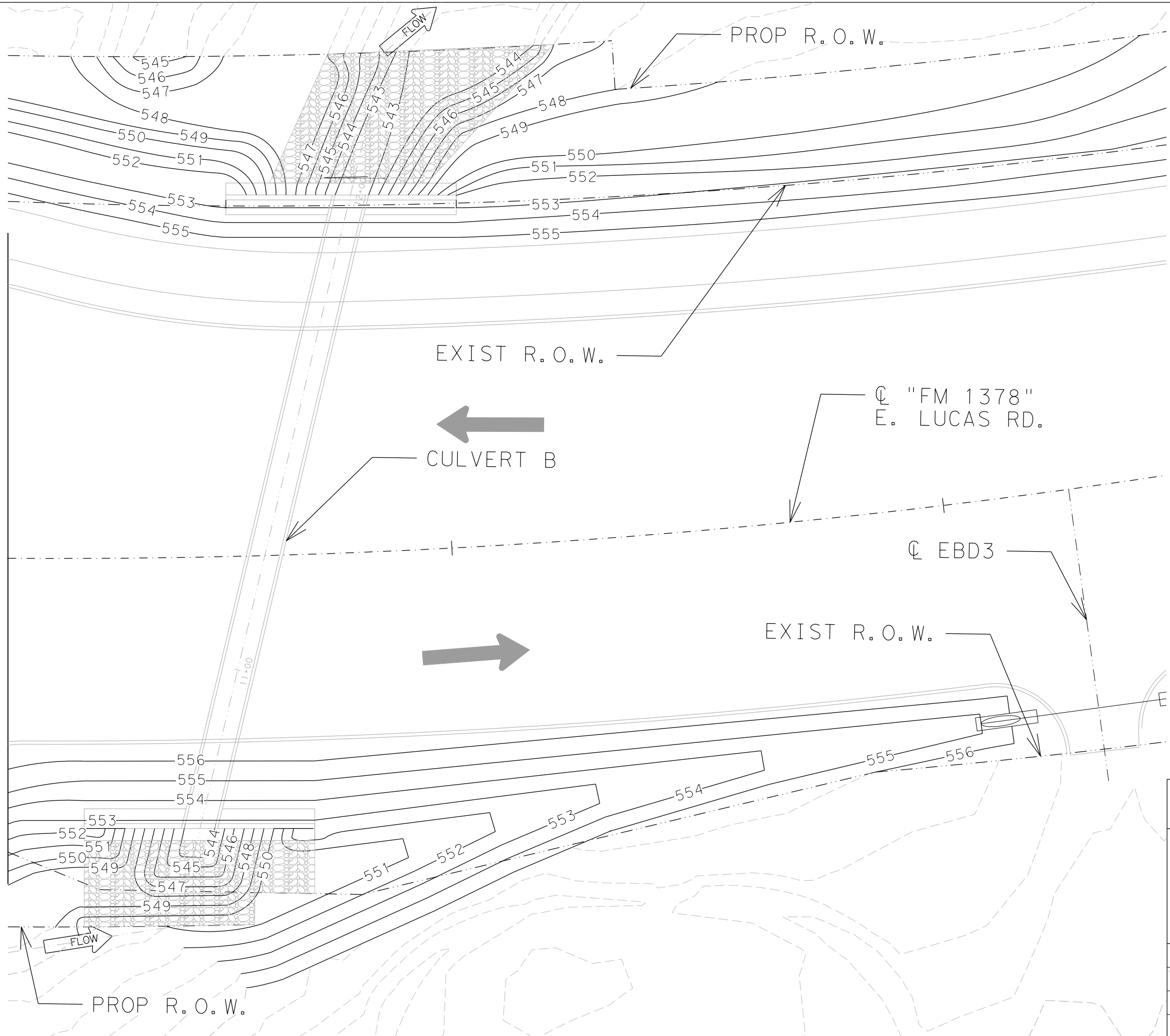
FM 1378
 AT FM 3286
**CULVERT B
 CONTOURS**

SCALE: 1"=20'	SHEET 1 OF 2		
DESIGN RRP	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
GRAPHICS RRP	6	SEE TITLE SHEET	FM 1378, ETC.
CHECK	STATE	DISTRICT	COUNTY
CHECK	TEXAS	DAL	COLLIN
CHECK	CONTROL	SECTION	JOB
	1392	01	044, ETC.

196

DATE: 1/20/2022 TIME: 2:44:05 PM FILE: c:\txdot\pw\onl\ine\txdot5\roberto.rodriguezpuente\d0659865\Culvert B Countour Sheet.dgn

MATCH LINE @ "FM 1378"
STA. 30+10.00



0 10 20

LEGEND
 PROPOSED CONTOURS ———
 EXISTING CONTOURS - - - - -
 EASEMENT - · - · - ·

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/20/2022

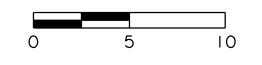


FM 1378
 AT FM 3286
**CULVERT B
 CONTOURS**

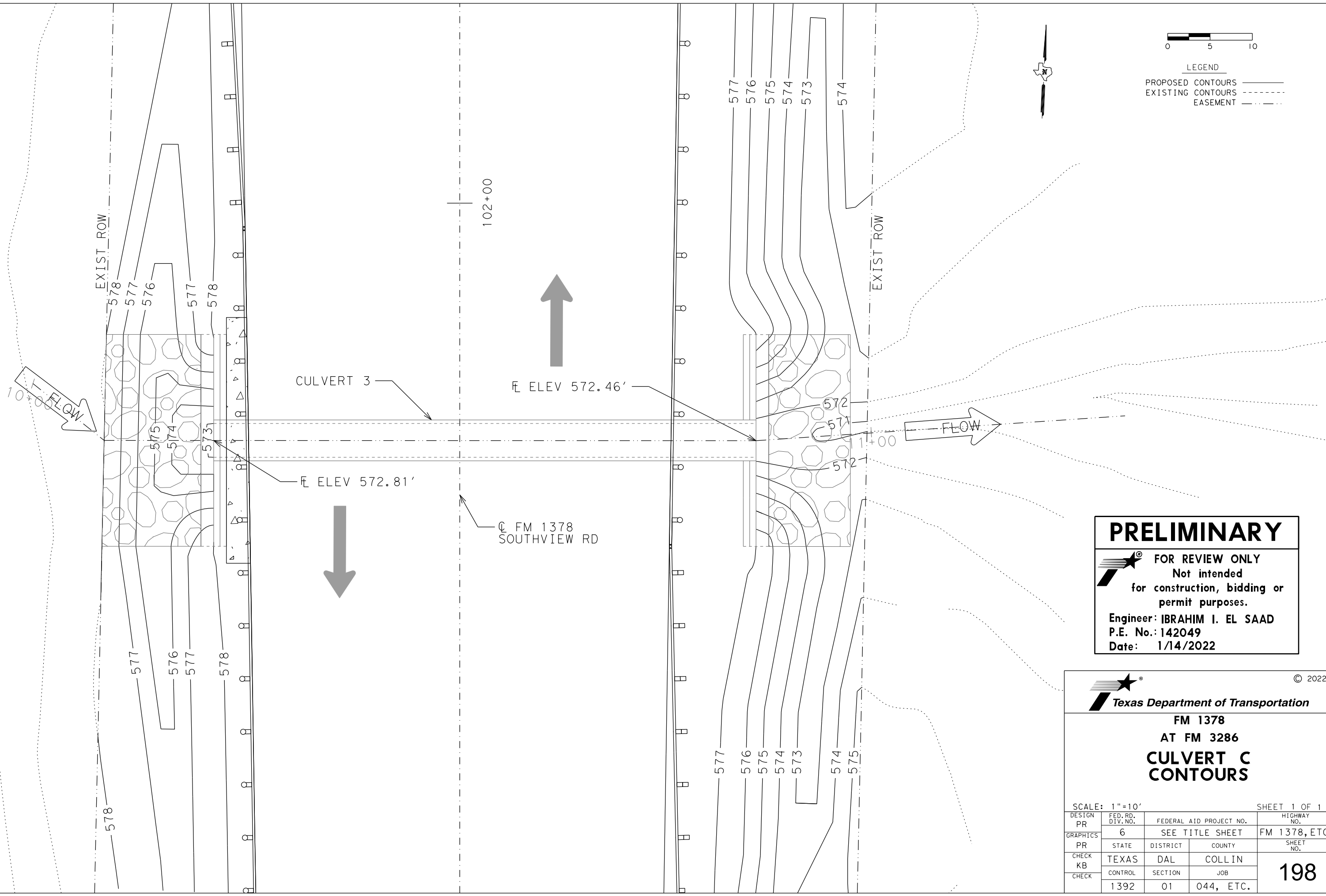
SCALE: 1"=20' SHEET 2 OF 2


DESIGN RRP	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS RRP	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	197
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 1/14/2022 TIME: 10:55:12 AM FILE: c:\txdot\pw\online\txdot5\patric.k.rei\ly\0659865\CULVERT C CONTOURS Sheet.dgn



LEGEND
 PROPOSED CONTOURS ———
 EXISTING CONTOURS - - - - -
 EASEMENT - · - · - ·



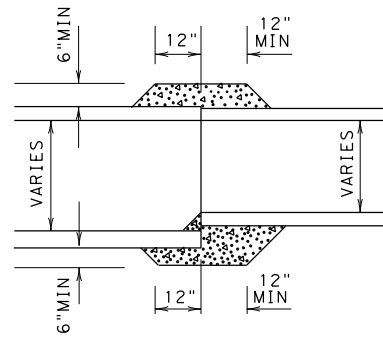
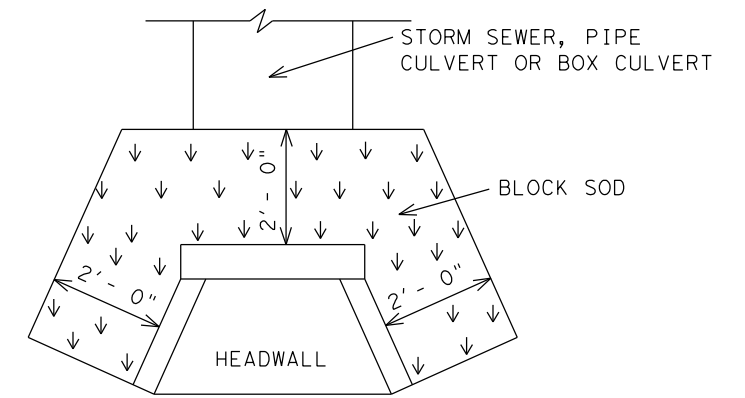
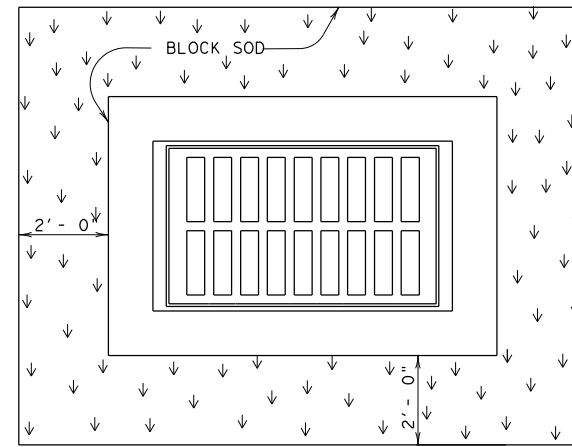
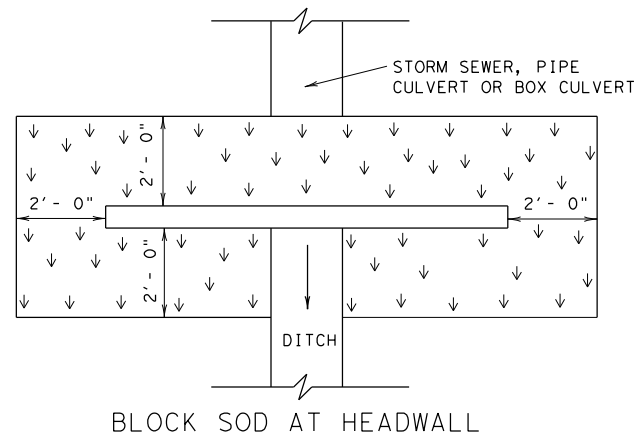
PRELIMINARY
 **FOR REVIEW ONLY**
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/14/2022



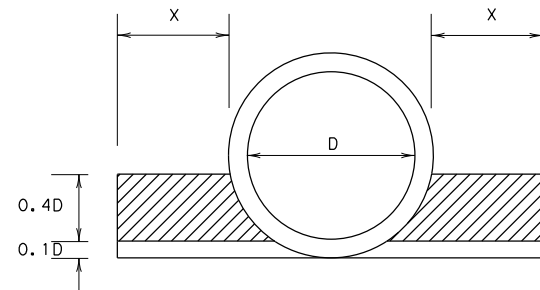
FM 1378
 AT FM 3286
**CULVERT C
 CONTOURS**

SCALE: 1"=10' SHEET 1 OF 1

DESIGN PR	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS PR	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KB	TEXAS	DAL	COLLIN	198
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	



CONCRETE COLLAR FOR PIPE CONNECTION



X = 1'-0" FOR PIPES 42" OR LESS
AND
X = 2'-0" FOR PIPES OVER 42"

CEMENT STABILIZED BACKFILL
FOR STORM SEWERS ON SLOPES GREATER THAN 10%

PRELIMINARY

 FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/13/2022

NOTE: Quantities for Block Sod shown at drainage structures are included in SW3P layout sheets.

 © 2022

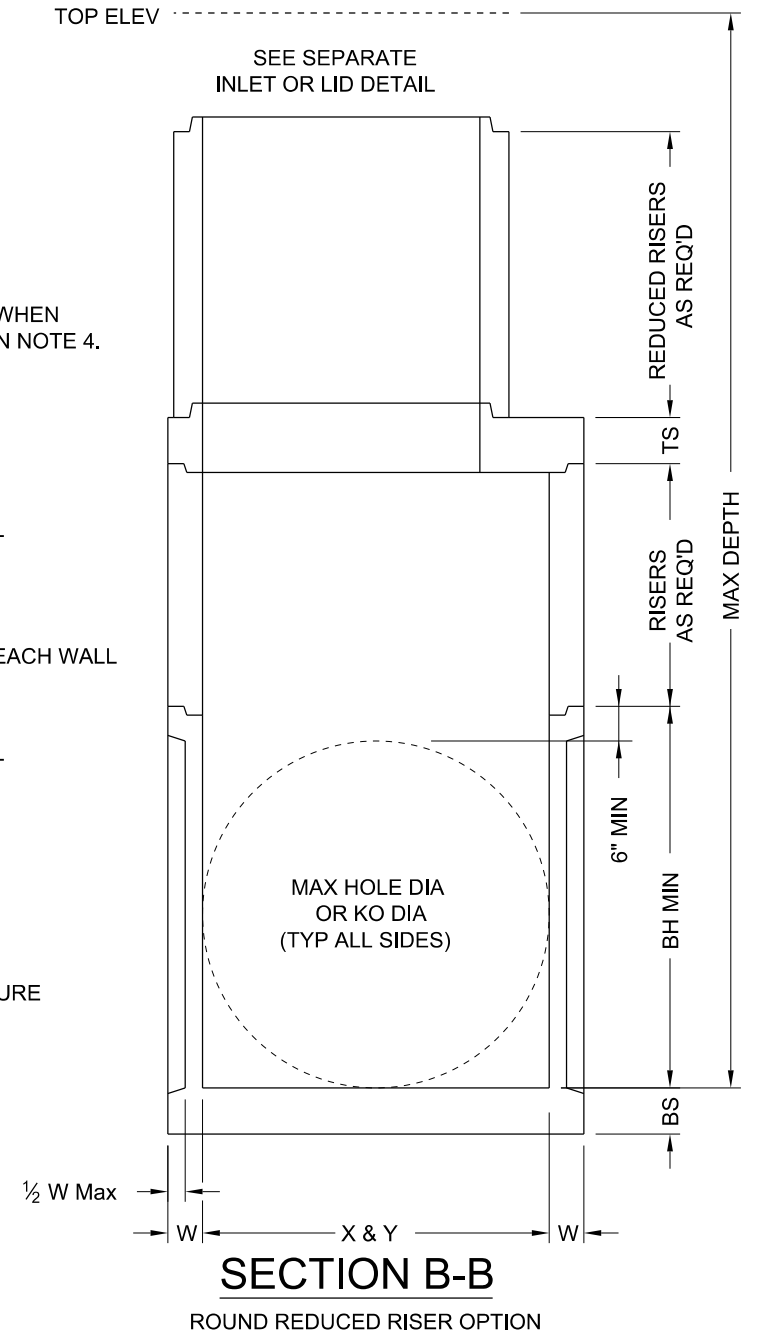
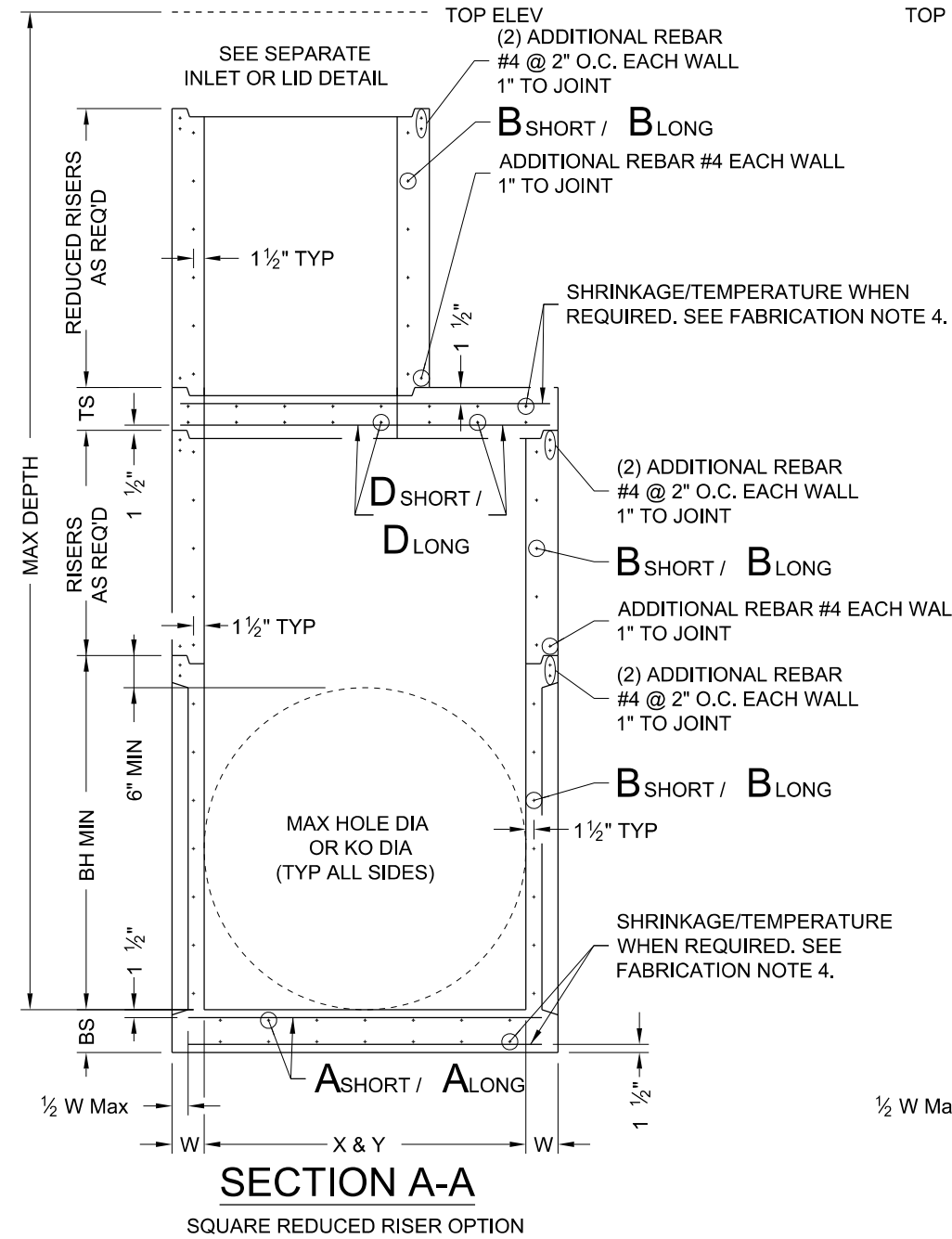
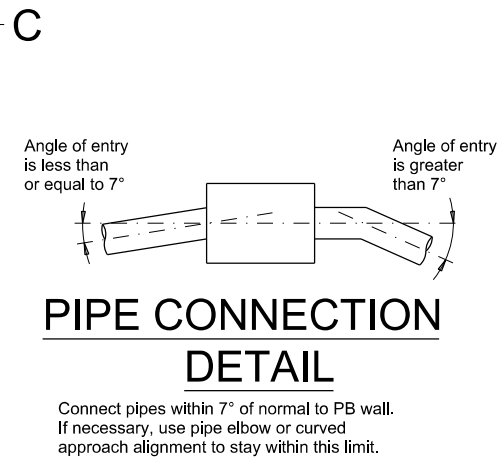
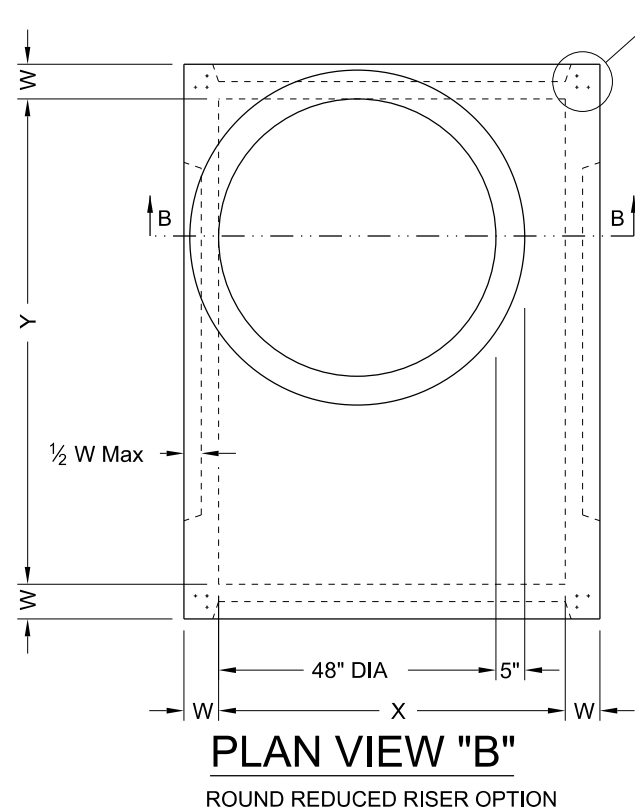
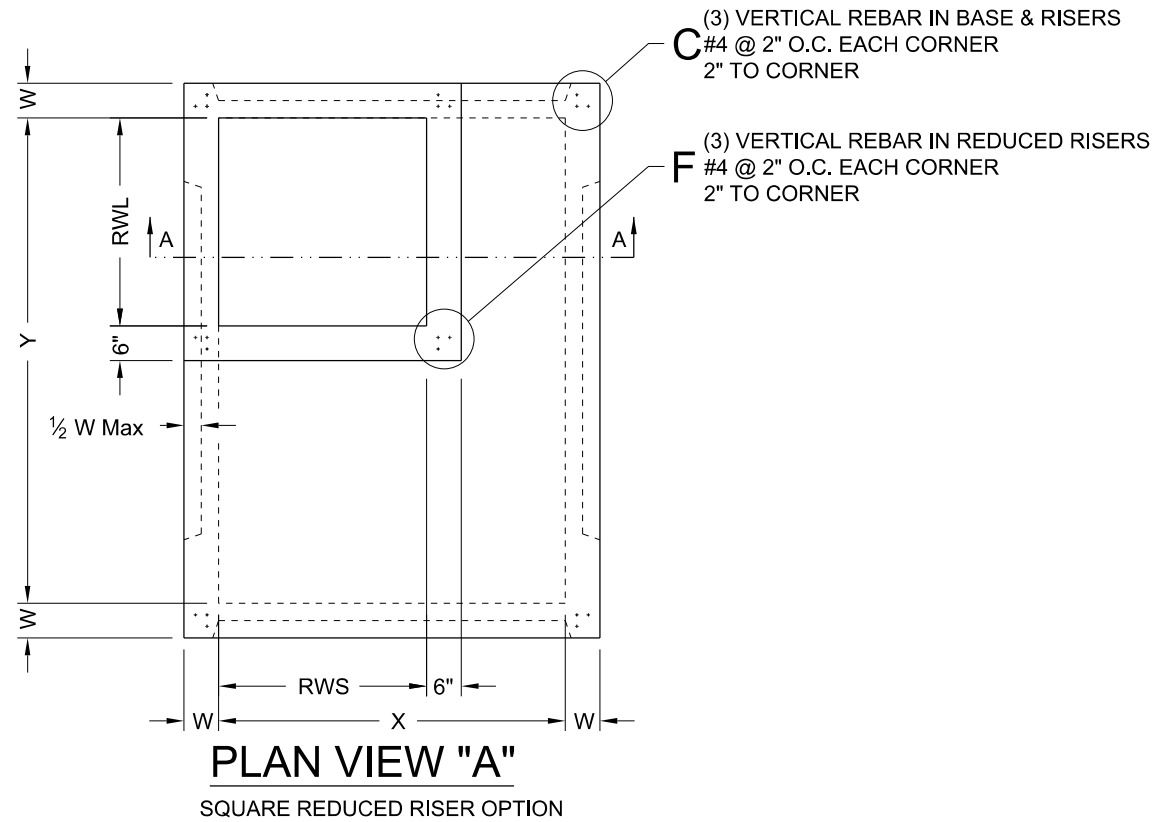
FM 1378
AT FM 3286
**MISCELLANEOUS
DRAINAGE DETAILS**

SCALE: NTS			SHEET 1 OF 1
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
IIE	6	SEE TITLE SHEET	FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY
IIE	TEXAS	DAL	COLLIN
CHECK	CONTROL	SECTION	JOB
CHECK	1392	01	044, ETC.

199

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: 1/21/2022 8:53:03 AM
 FILE: c:\txdot\pw_online\txdot5\branhim.eisaad\0482319\prest01-20.dgn



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 1/2" 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 3/4".
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 1/2 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:

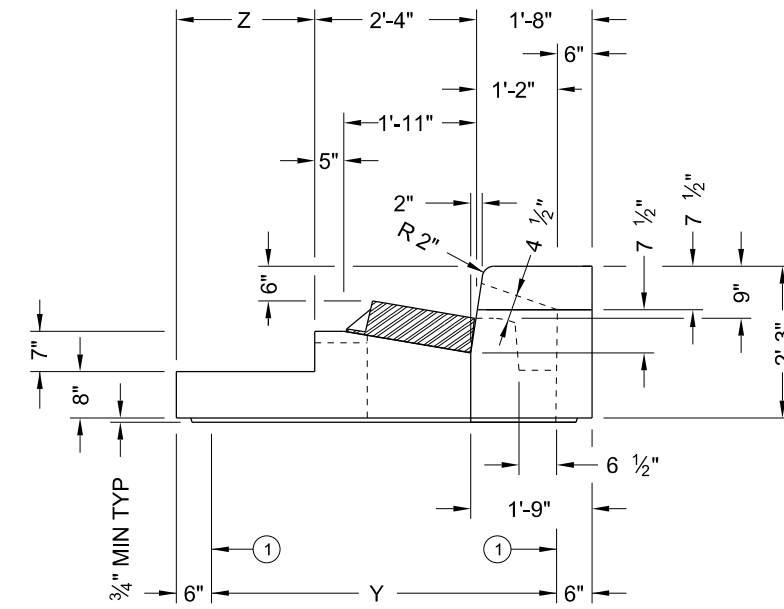
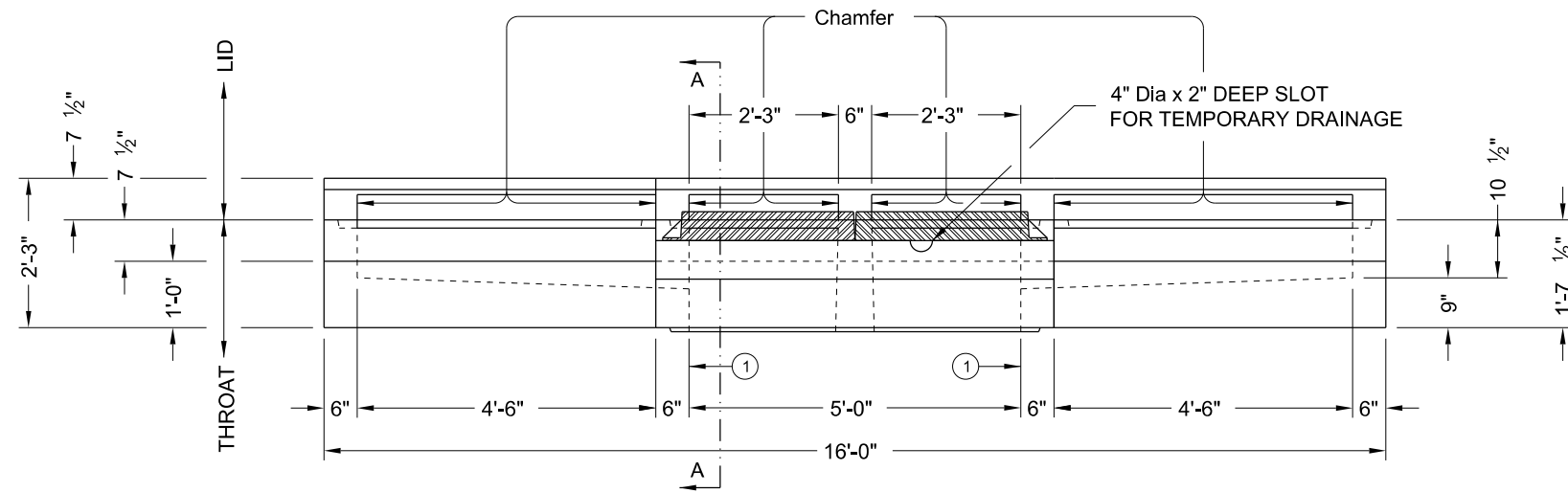
1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

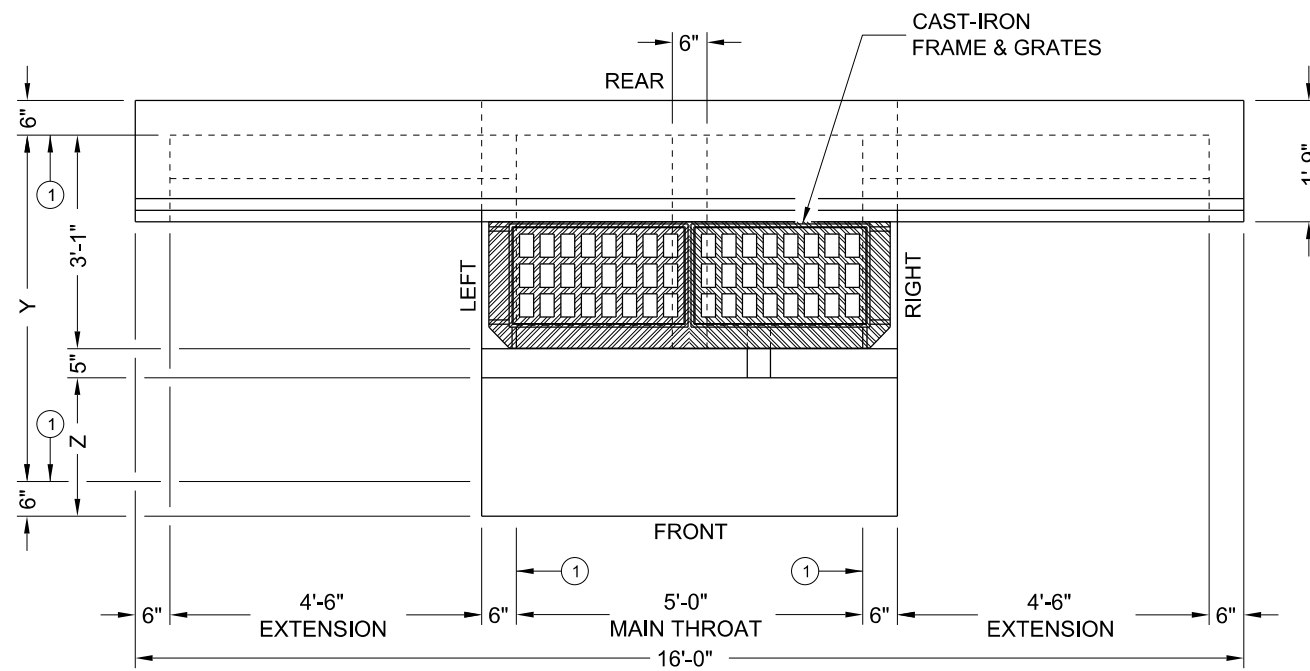
HL93 LOADING				Bridge Division Standard
PRECAST BASE				
PB				
FILE: prest01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020		CONT	SECT	HIGHWAY
REVISIONS		1392	01	044, ETC.FM 1378, ETC.
DIST	COUNTY	SHEET NO.		
DAL	COLLIN	201		

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: 1/21/2022 8:53:15 AM
 FILE: c:\txdot\pw_online\txdot5\ibrahim.eisaad\0482319\prest04-20.dgn



① Matches inside face of wall of precast base or riser below inlet.



HS20 LOADING SHEET 1 OF 2



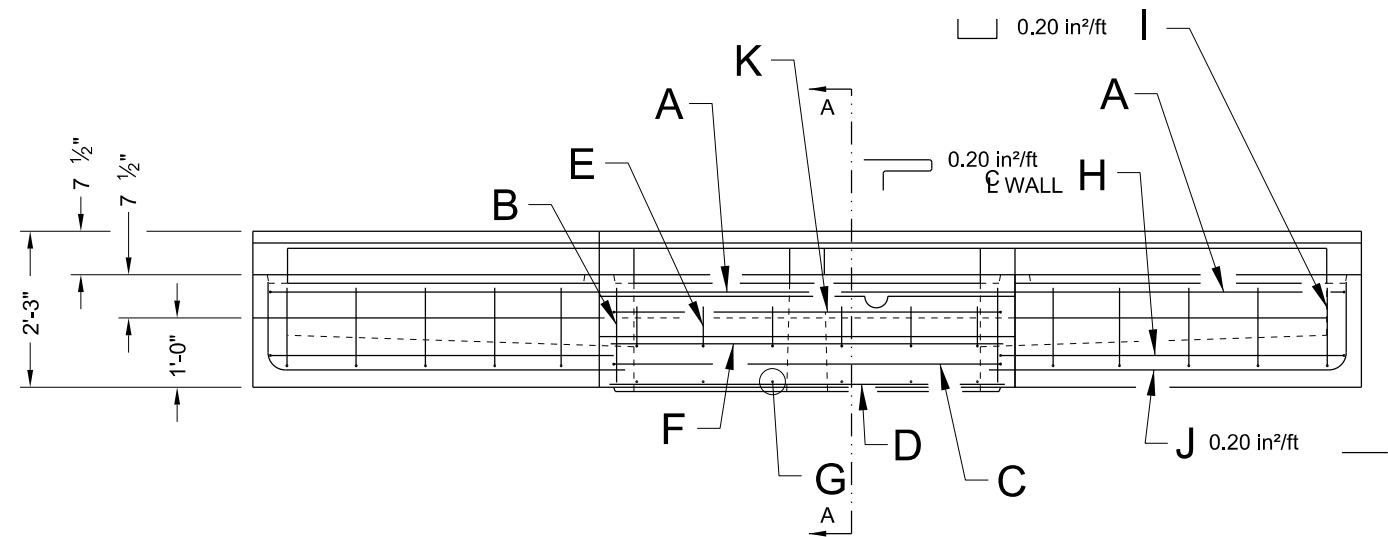
PRECAST CURB INLET
 UNDER ROADWAY

PCU

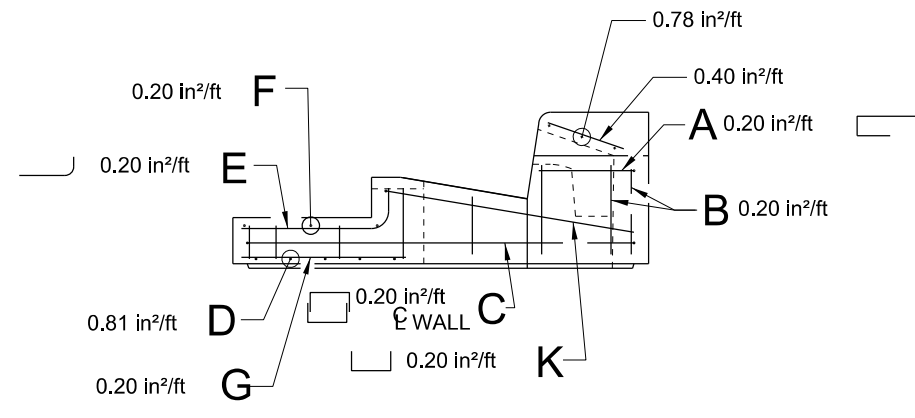
FILE: prest04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC. FM 1378, ETC.	
DIST	COUNTY		SHEET NO.	
DAL	COLLIN		202	

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.

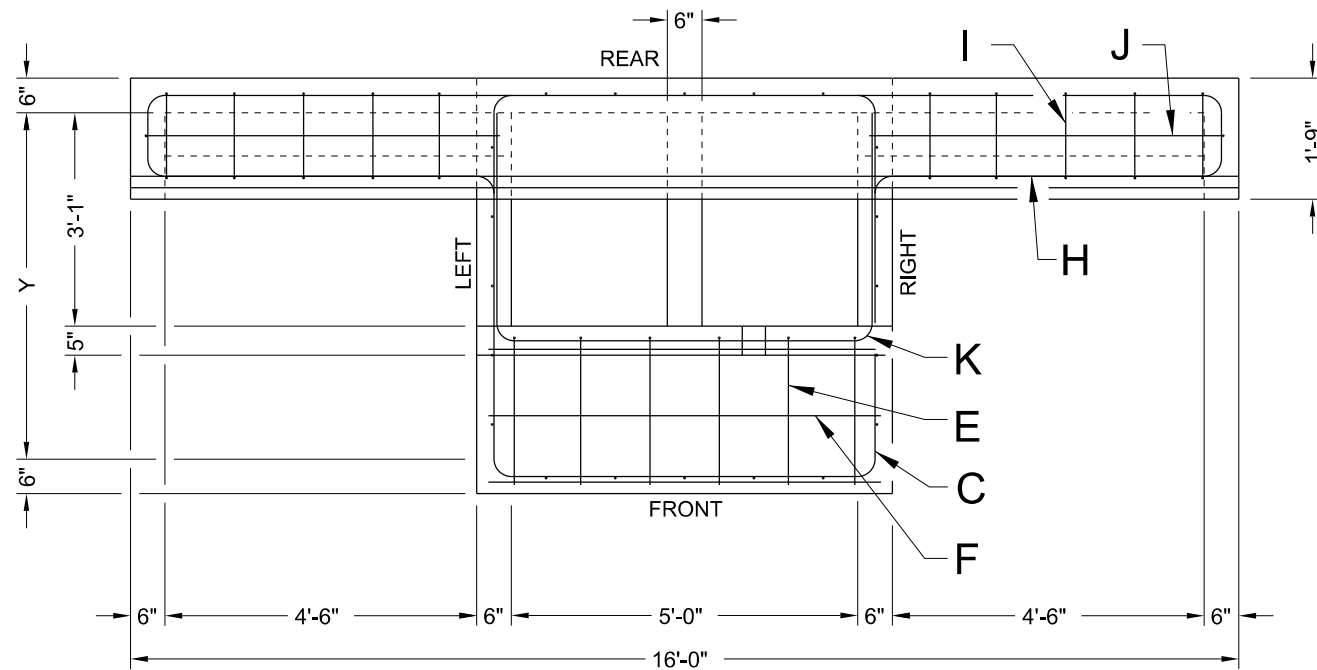
DATE: 1/21/2022 8:53:16 AM
FILE: c:\txdot\pw_online\txdot5\ibrahim.eisaad\0482319\prest04-20.dgn



FRONT VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)



SECTION A-A



PLAN VIEW
(SHOWING LEFT AND RIGHT EXTENSIONS)

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 1/2" to reinforcing steel from surface of concrete or lower outside shoulder.
4. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in plans.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4". Top slab may employ a butt joint with dowels at the Contractor's option.
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Chamfer vertical edges on inlet lid 3/4" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat is placed under roadway and intended for direct traffic. Inlet lid is not for direct traffic. Do not place Inlet lid in roadway.
2. Seal tongue and groove joints and butt 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 1/2 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. Open area of main throat = 324 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes and Inlets" by type, size and extension placement. Extensions are subsidiary to inlet.

SIZE (Y)	Z
3'	0'
4'	1'
5'	2'
6'	3'

HS20 LOADING SHEET 2 OF 2



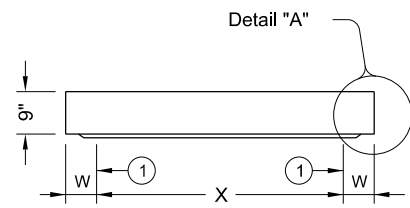
**PRECAST CURB INLET
UNDER ROADWAY**

PCU

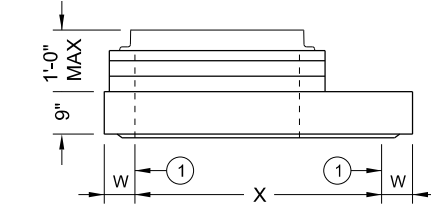
FILE: prest04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM 1378, ETC.	
DIST	COUNTY	SHEET NO.		
DAL	COLLIN	203		

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.

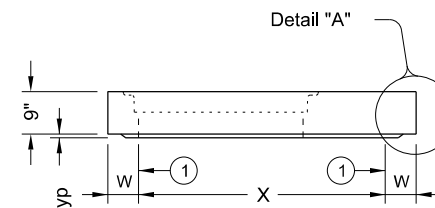
DATE: 1/21/2022 8:53:22 AM
FILE: c:\txdot\pw_online\txdot5\ibrahim.eisaad\0482319\prest05-20.dgn



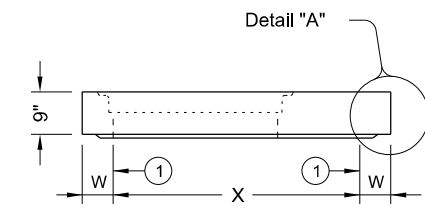
ELEVATION VIEW



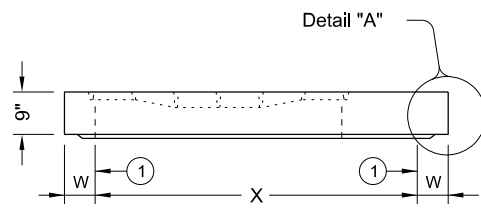
ELEVATION VIEW



ELEVATION VIEW

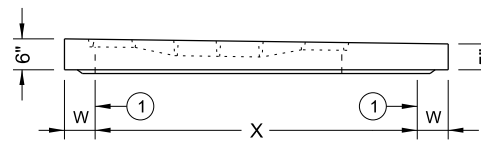


ELEVATION VIEW

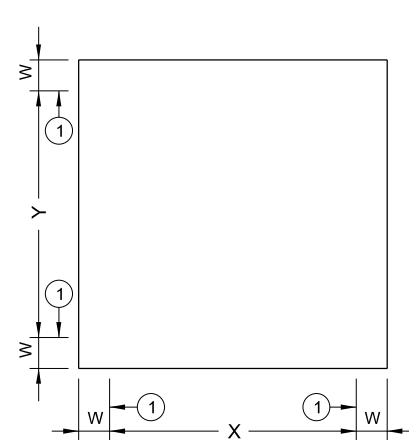


STYLE 'FG'

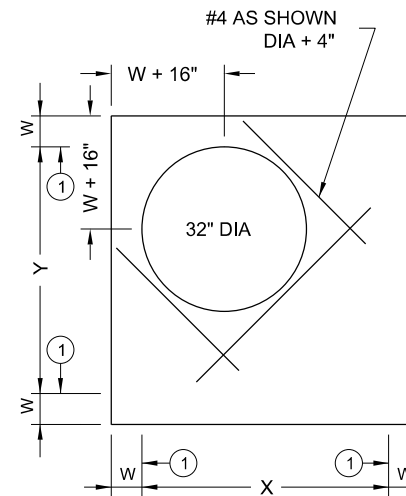
ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.



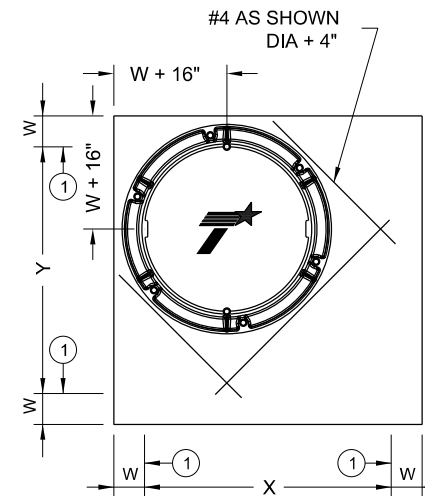
STYLE 'SFG'
ELEVATION VIEW



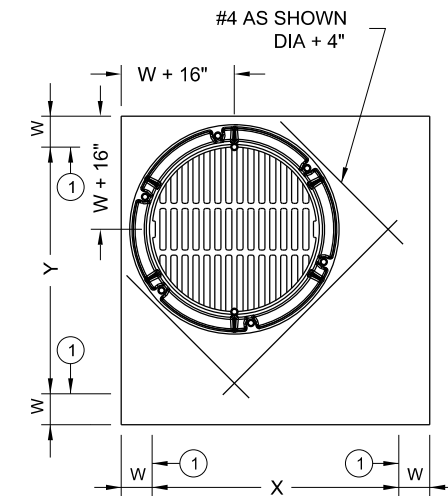
PLAN VIEW
NO OPENINGS
STYLE 'SL'



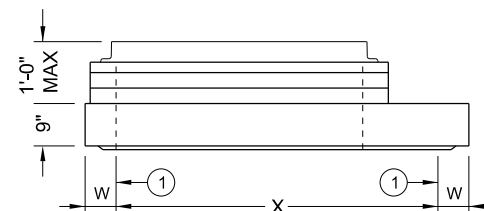
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



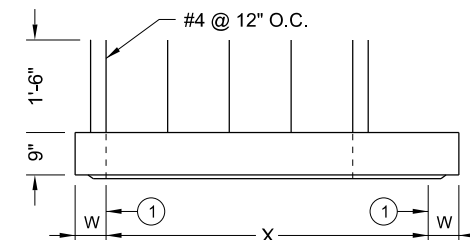
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



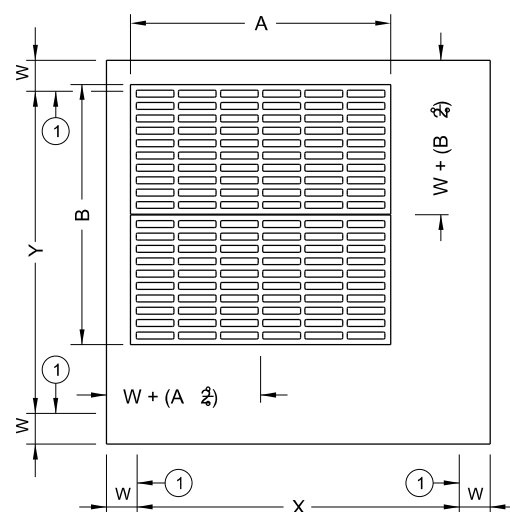
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



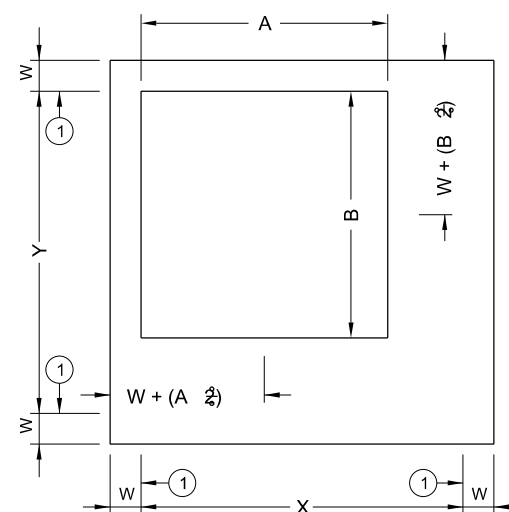
ELEVATION VIEW



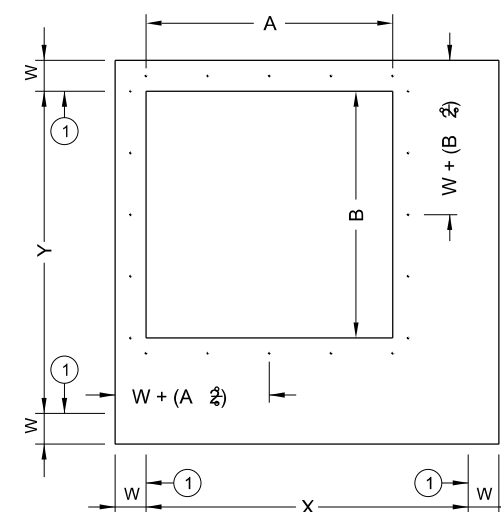
ELEVATION VIEW



PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



PLAN VIEW
EXPOSED REBAR
STYLE 'S1'

① Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2



PRECAST SLAB LID

PSL

FILE: prest05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM 1378, ETC.	
DIST	COUNTY	SHEET NO.		
DAL	COLLIN	204		

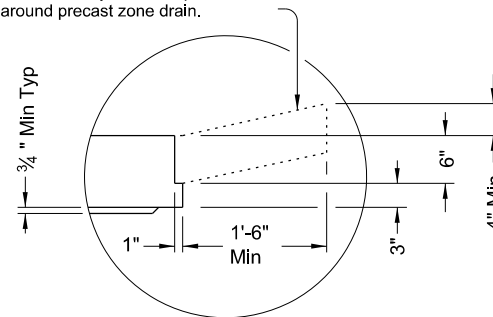
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/21/2022 8:53:24 AM
FILE: c:\txdot\pw_online\txdot5\ibrahim.eisaad\0482319\prestd05-20.dgn

Style	Size (X x Y)	W ⁽²⁾	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in ² /ft	0.37 in ² /ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in ² /ft	0.37 in ² /ft
SFG	3'x3'	6"	3'x3'	0.32 in ² /ft	0.32 in ² /ft
SL	4'x4'	6"	n/a	0.34 in ² /ft	0.34 in ² /ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in ² /ft	0.41 in ² /ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in ² /ft	0.41 in ² /ft
SFG	4'x4'	6"	4'x4'	0.32 in ² /ft	0.32 in ² /ft
SL	3'x5'	6"	n/a	0.39 in ² /ft	0.39 in ² /ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in ² /ft	0.48 in ² /ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in ² /ft	0.48 in ² /ft
SFG	3'x5'	6"	3'x5'	0.32 in ² /ft	0.32 in ² /ft
SL	4'x5'	6"	n/a	0.42 in ² /ft	0.42 in ² /ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in ² /ft	0.42 in ² /ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in ² /ft	0.63 in ² /ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in ² /ft	0.66 in ² /ft
SL	5'x5'	6"	n/a	0.36 in ² /ft	0.36 in ² /ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in ² /ft	0.43 in ² /ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in ² /ft	0.63 in ² /ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in ² /ft	0.63 in ² /ft
SL	5'x6'	6"/8"	n/a	0.48 in ² /ft	0.48 in ² /ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in ² /ft	0.48 in ² /ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in ² /ft	0.60 in ² /ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in ² /ft	0.60 in ² /ft
SL	6'x6'	6"/8"	n/a	0.43 in ² /ft	0.43 in ² /ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in ² /ft	0.56 in ² /ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in ² /ft	0.56 in ² /ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in ² /ft	0.59 in ² /ft
SL	8'x8'	8"/10"	n/a	0.45 in ² /ft	0.45 in ² /ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in ² /ft	0.45 in ² /ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in ² /ft	0.45 in ² /ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in ² /ft	0.45 in ² /ft

⁽²⁾ See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)
When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of 3/4" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in 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 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid 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.

HL93 LOADING SHEET 2 OF 2



PRECAST SLAB LID

PSL

FILE: prest05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM	1378, ETC.
DIST	COUNTY		SHEET NO.	
DAL	COLLIN		205	

DATE: 1/21/2022 8:53:31 AM
 FILE: c:\txdot\pw_online\line\txdot5\bran\im_e\isaad\0482319.pwst\de01-20.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.

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

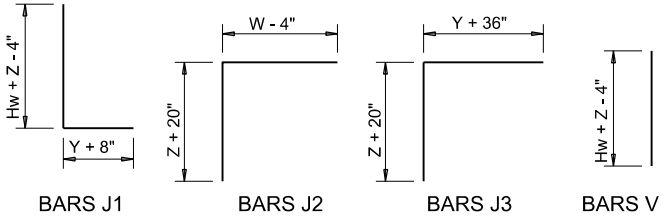
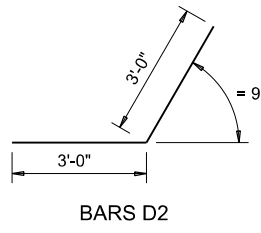
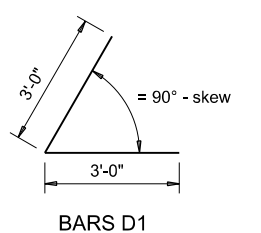
Maximum Wingwall Height Hw	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing (2-wings) ④	Estimated Quantities per ft of Toewall (1-toewall)		
	W	X	Y	Z	Bars J1		Bars J2					
					Size	Spa	Size	Spa				
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	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"



WING DIMENSION FORMULAS:
(All values are in feet.)

$Hw = H + T + C$
 $Lw = (Hw)(SL) \div \cosine(\theta)$ for Type PW-1
 $= (Hw - 1')(SL) \div \cosine(\theta)$ for Type PW-2 and Hw 4'
 $= (Hw - 0.5')(SL) \div \cosine(\theta)$ for Type PW-2 and Hw 4'

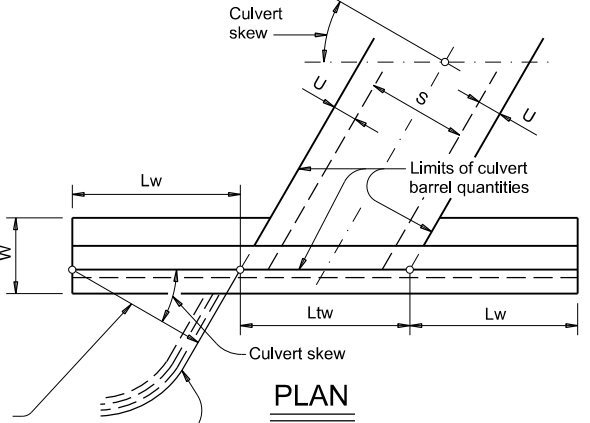
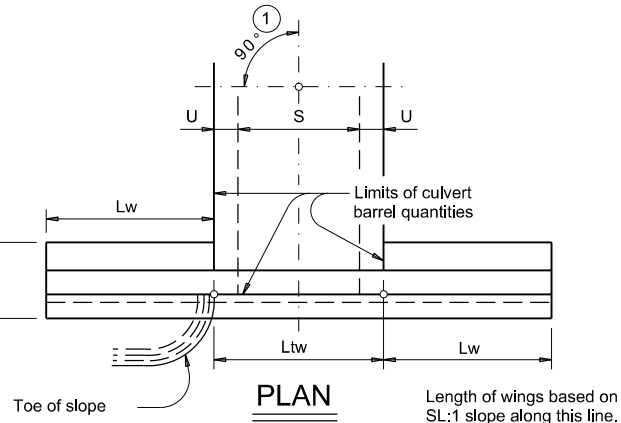
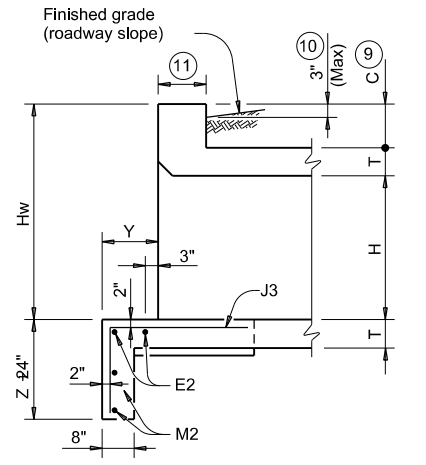
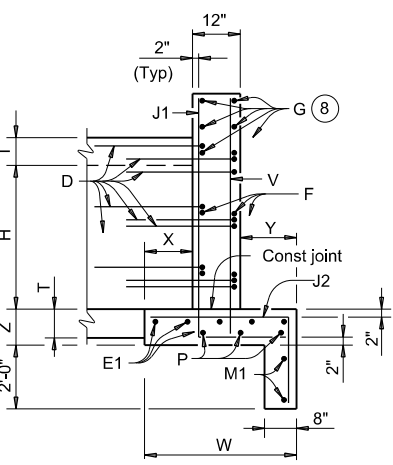
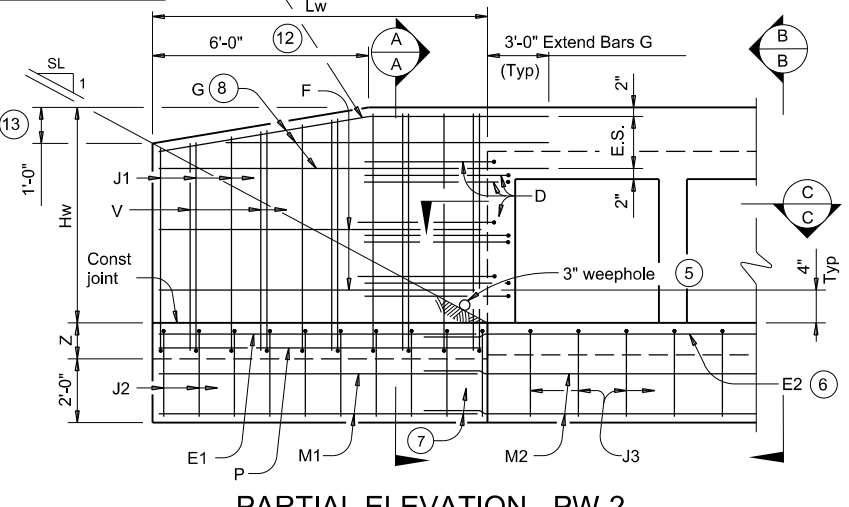
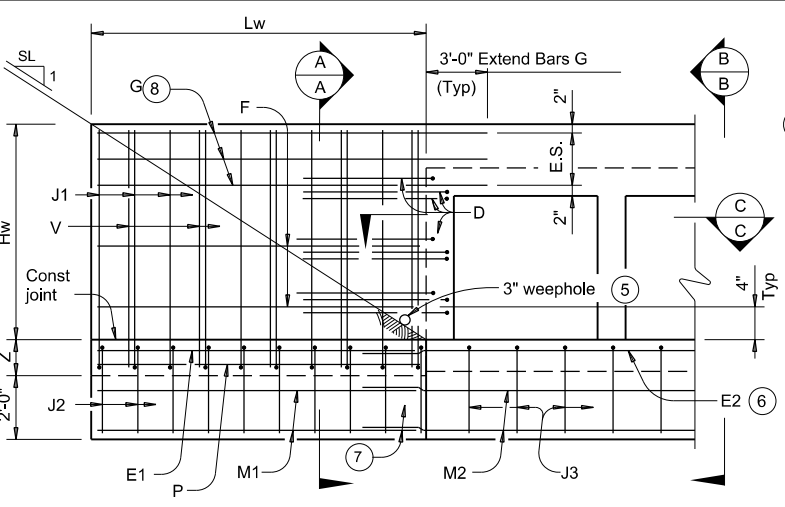
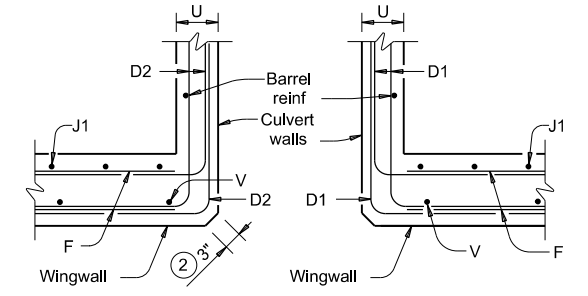
For cast-in-place culverts:
 $Ltw = [(N)(S) + (N + 1)(U)] \div \cosine(\theta)$

For precast culverts:
 $Ltw = [(N)(2U + S) + (N - 1)(0.5')] \div \cosine(\theta)$
 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.

- Skew = 0°
- At discharge end, chamfer may be 3/4" minimum.
- For 15° skew ~ 1"
For 30° skew ~ 2"
For 45° skew ~ 3"
- 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.
- Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
- Extend Bars E2 1'-6" minimum into the wingwall footing.
- Lap Bars M1 1'-6" minimum with Bars M2.
- Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
- 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.
- 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.
- 1'-0" typical, 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
- 3'-0" for Hw < 4'.
- 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.

Bridge Division Standard

CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

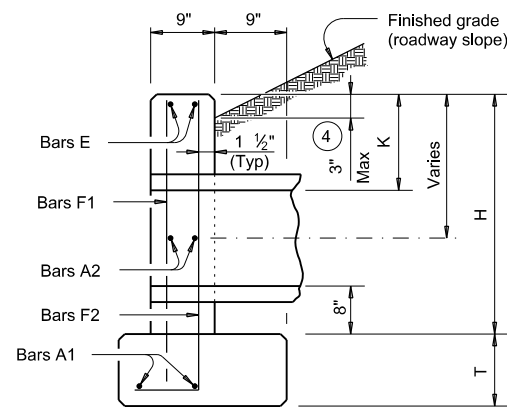
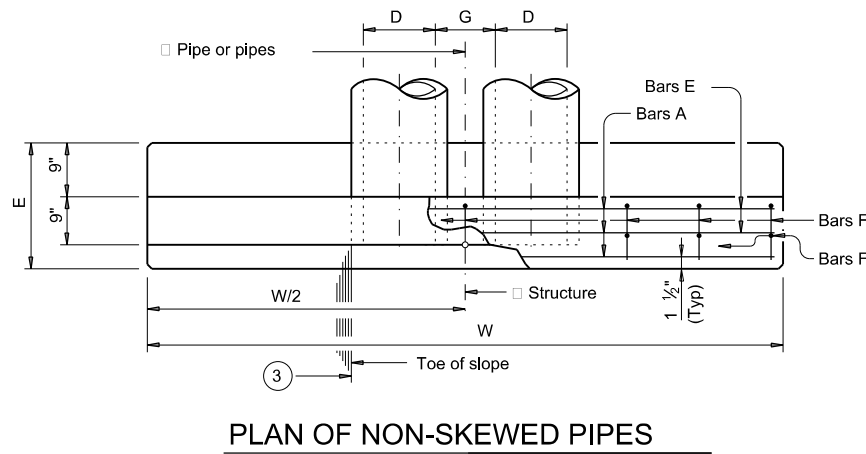
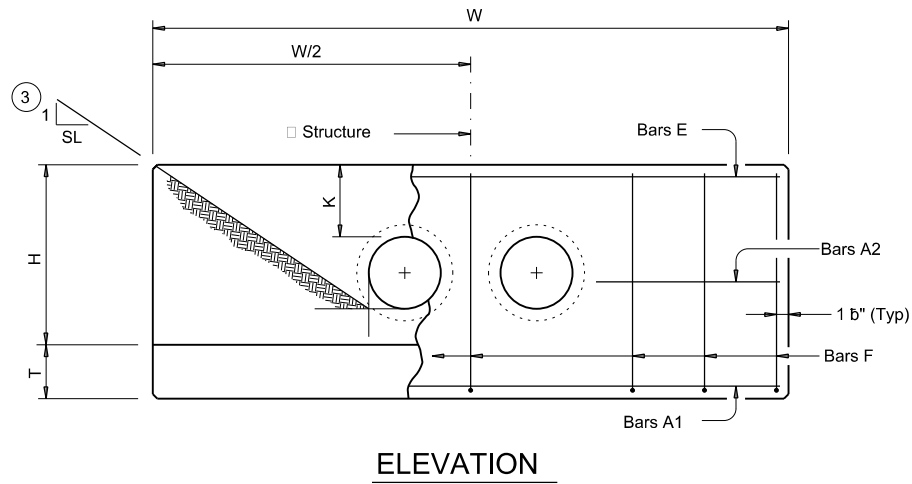
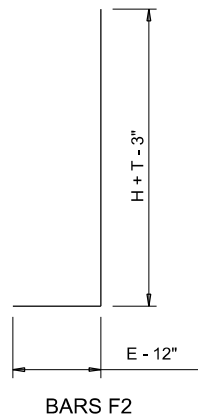
FILE: pwstde01-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM 1378, ETC.	
DIST	COUNTY		SHEET NO.	
DAL	COLLIN		206	

DATE: 1/21/2022 8:53:31 AM

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL

5

Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Add'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' - 0"	122	1.1	1' - 9"	15	0.2
	15"	10' - 3"	136	1.3	2' - 2"	16	0.2
	18"	11' - 6"	163	1.5	2' - 8"	19	0.3
	21"	12' - 9"	200	1.8	3' - 1"	31	0.4
	24"	14' - 0"	217	2.1	3' - 7"	34	0.4
	27"	15' - 3"	254	2.4	3' - 11"	37	0.5
	30"	16' - 6"	272	2.7	4' - 4"	40	0.6
	33"	17' - 9"	314	3.1	4' - 8"	43	0.6
	36"	19' - 0"	371	3.9	5' - 1"	46	0.8
	42"	21' - 6"	442	4.9	5' - 10"	52	1.0
	48"	25' - 0"	569	6.4	6' - 7"	59	1.3
	54"	27' - 6"	701	7.5	7' - 6"	82	1.6
60"	30' - 0"	794	8.8	8' - 3"	90	1.8	
66"	32' - 6"	894	10.2	8' - 9"	96	2.0	
72"	35' - 0"	1,055	11.7	9' - 4"	103	2.3	
3:1	12"	13' - 0"	175	1.6	1' - 9"	14	0.2
	15"	14' - 9"	193	1.9	2' - 2"	17	0.2
	18"	16' - 6"	228	2.2	2' - 8"	19	0.3
	21"	18' - 3"	299	2.6	3' - 1"	31	0.4
	24"	20' - 0"	323	3.0	3' - 7"	33	0.4
	27"	21' - 9"	371	3.5	3' - 11"	37	0.5
	30"	23' - 6"	415	4.0	4' - 4"	40	0.5
	33"	25' - 3"	469	4.6	4' - 8"	43	0.6
	36"	27' - 0"	556	5.7	5' - 1"	46	0.8
	42"	30' - 6"	675	7.1	5' - 10"	52	1.0
	48"	35' - 6"	837	9.2	6' - 7"	59	1.3
	54"	39' - 0"	1,015	11.0	7' - 6"	84	1.6
60"	42' - 6"	1,171	12.9	8' - 3"	91	1.8	
66"	46' - 0"	1,298	14.9	8' - 9"	98	2.0	
72"	49' - 6"	1,561	17.1	9' - 4"	103	2.3	
4:1	12"	17' - 0"	229	2.0	1' - 9"	15	0.2
	15"	19' - 3"	266	2.4	2' - 2"	17	0.2
	18"	21' - 6"	308	2.9	2' - 8"	19	0.3
	21"	23' - 9"	382	3.5	3' - 1"	31	0.3
	24"	26' - 0"	430	3.9	3' - 7"	34	0.4
	27"	28' - 3"	486	4.7	3' - 11"	37	0.5
	30"	30' - 6"	539	5.2	4' - 4"	40	0.6
	33"	32' - 9"	603	6.0	4' - 8"	42	0.6
	36"	35' - 0"	738	7.5	5' - 1"	47	0.8
	42"	39' - 6"	881	9.3	5' - 10"	52	1.0
	48"	46' - 0"	1,102	12.1	6' - 7"	61	1.3
	54"	50' - 6"	1,364	14.4	7' - 6"	84	1.6
60"	55' - 0"	1,547	16.9	8' - 3"	91	1.8	
66"	59' - 6"	1,741	19.5	8' - 9"	98	2.0	
72"	64' - 0"	2,077	22.4	9' - 4"	102	2.3	
6:1	12"	25' - 0"	336	3.0	1' - 9"	14	0.2
	15"	28' - 3"	384	3.6	2' - 2"	17	0.2
	18"	31' - 6"	452	4.2	2' - 8"	19	0.3
	21"	34' - 9"	581	5.1	3' - 1"	31	0.4
	24"	38' - 0"	644	5.8	3' - 7"	34	0.4
	27"	41' - 3"	737	6.9	3' - 11"	37	0.5
	30"	44' - 6"	807	7.7	4' - 4"	39	0.6
	33"	47' - 9"	912	8.9	4' - 8"	44	0.6
	36"	51' - 0"	1,108	11.0	5' - 1"	48	0.8
	42"	57' - 6"	1,318	13.7	5' - 10"	54	1.0
	48"	67' - 0"	1,682	17.9	6' - 7"	59	1.3
	54"	73' - 6"	2,072	21.3	7' - 6"	83	1.6
60"	80' - 0"	2,351	24.9	8' - 3"	89	1.8	
66"	86' - 6"	2,643	28.9	8' - 9"	96	2.0	
72"	93' - 0"	3,121	33.1	9' - 4"	101	2.3	



SECTION AT CENTER OF PIPE

- 1 Total quantities include one 3'-1" lap for bars over 60' in length.
- 2 Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- 3 Indicated slope is perpendicular to centerline pipe or pipes.
- 4 For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- 5 Dimensions shown are usual and maximum.
- 6 Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

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

TABLE OF REINFORCING STEEL

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

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

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

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

Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: chpw0ste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM 1378, ETC.	
DIST	COUNTY		SHEET NO.	
DAL	COLLIN		207	

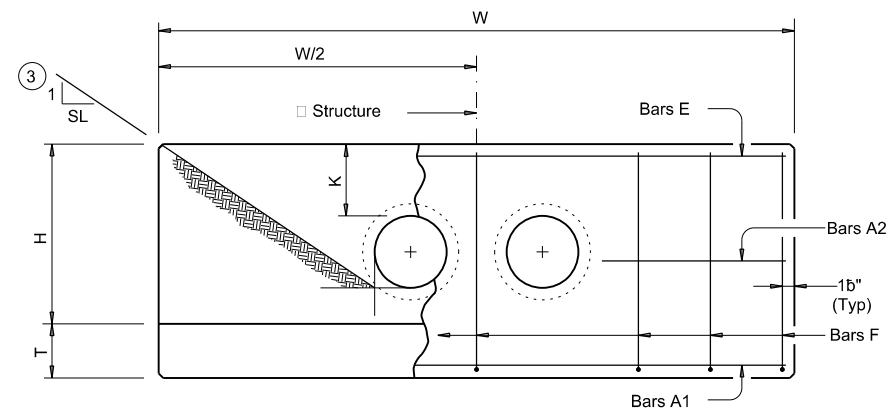
DATE: 1/21/2022 8:53:38 AM
 FILE: c:\t\dot\pw_on\line\t\dot\5\br\an\m\el\soad\0482319\chpw0ste-20.dgn
 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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

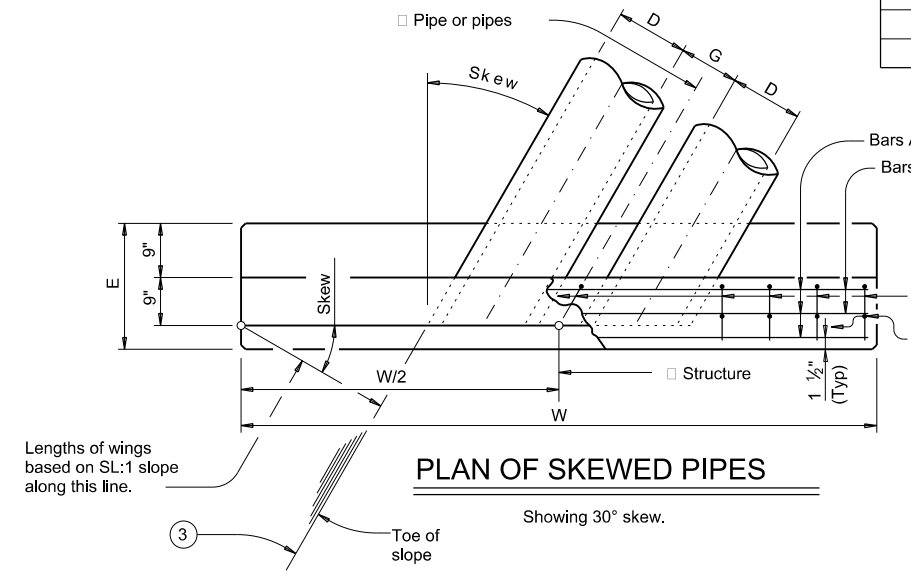
Slope	Dia of Pipe (D)	15° Skew						30° Skew						45° Skew					
		Values for One Pipe			Values To Be Added for Each Addtl Pipe			Values for One Pipe			Values To Be Added for Each Addtl Pipe			Values for One Pipe			Values To Be Added for Each Addtl Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs)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

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: 1/21/2022 8:53:44 AM
 c:\t\dot\p_w_online\t\dot5\br\ah\im_e\soad\0482319\chpwsste-20.dgn

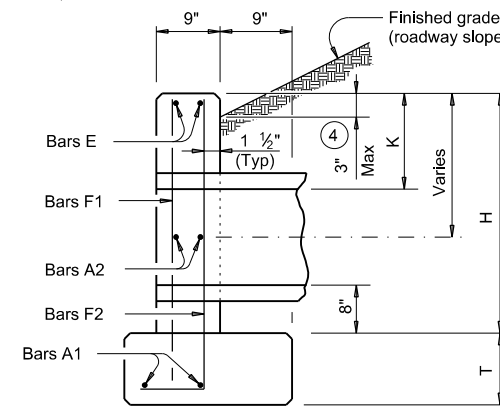


ELEVATION



PLAN OF SKEWED PIPES

Lengths of wings based on SL:1 slope along this line.



SECTION AT CENTER OF PIPE

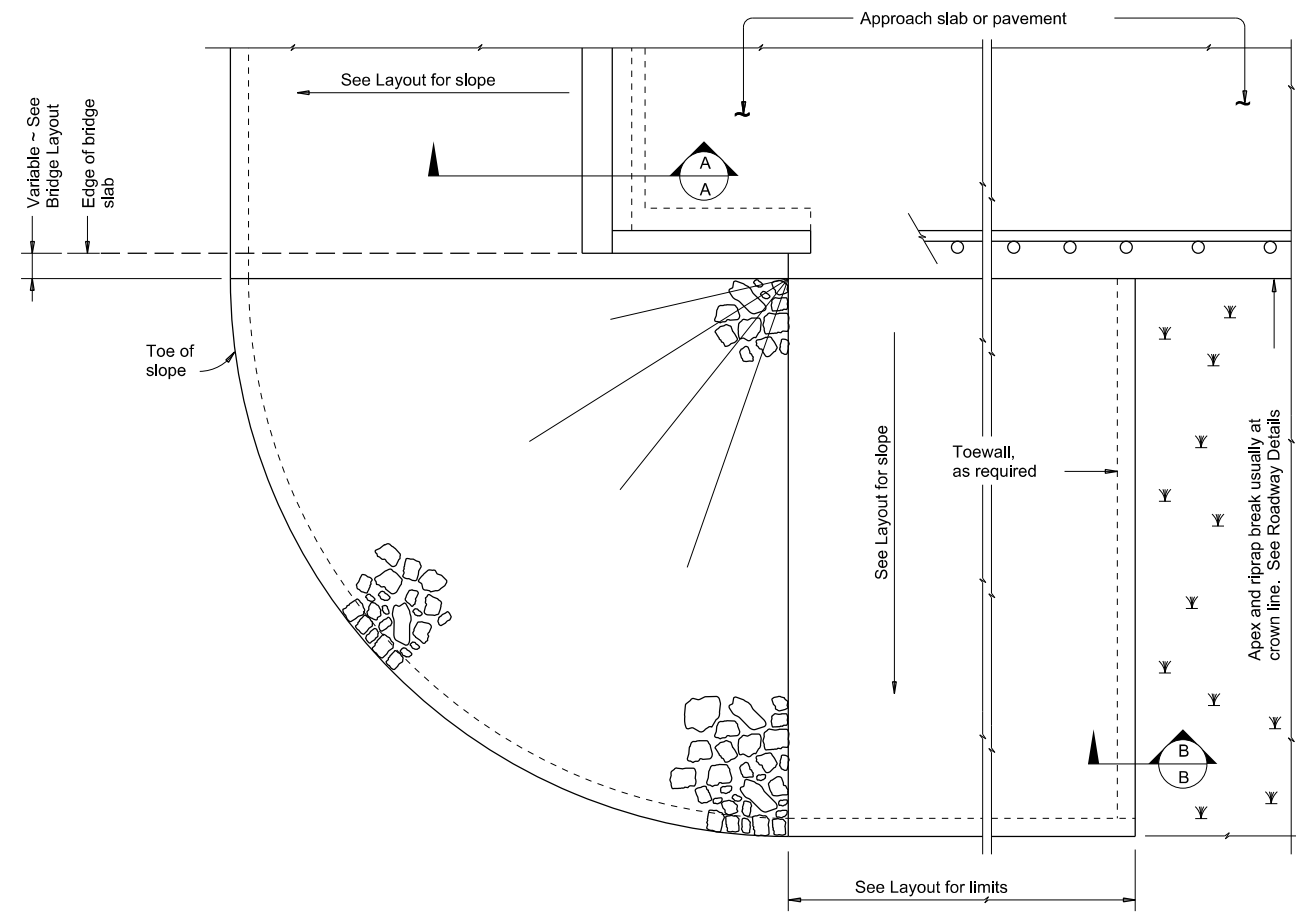
- 1 Total quantities include one 3'-1" lap for bars over 60' in length.
- 2 Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- 3 Indicated slope is perpendicular to centerline pipe or pipes.
- 4 For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- 5 Dimensions shown are usual and maximum.
- 6 Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

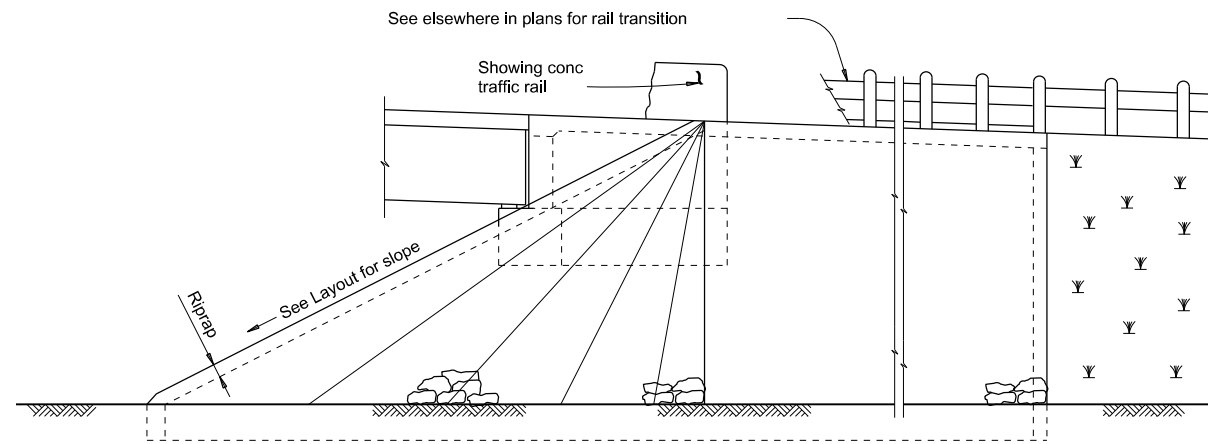
Dia of Pipe (D)	G	K (5)	H	T	E
12"	0' - 9"	1' - 0"	2' - 8"	0' - 9"	1' - 9"

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.

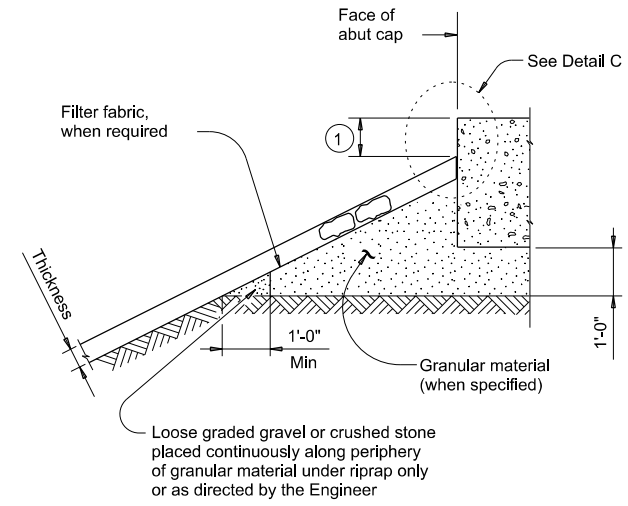
DATE: 1/21/2022 8:53:51 AM
 FILE: c:\txdot\pw_online\txdot5\ibrahim.eisaad\0482319\srrrstd1-19.dgn



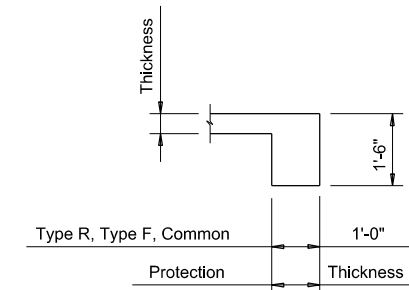
PLAN



ELEVATION

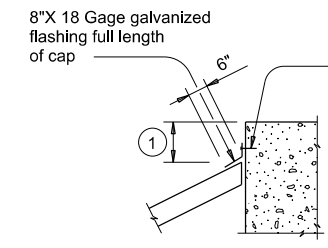


SECTION A-A AT CAP



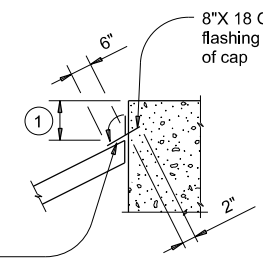
SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".



CAP OPTION A

Nail flashing to cap or wingwall and seal with joint sealer



CAP OPTION B

DETAIL C

Plug ends and seal joint along ends of cap and side of wingwalls with joint sealer

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.

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

		Bridge Division Standard	
<h1>STONE RIPRAP</h1>			
<h2>SRR</h2>			
FILE: srrstd1-19.dgn	DN: AES	CK: JGD	DW: BWH
©TxDOT April 2019	CONTRACT NO. 1392	SECTION 01	JOB NO. 044, ETC. FM 1378, ETC.
DIST: DAL		COUNTY: COLLIN	SHEET NO. 209

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: 1/21/2022 8:53:52 AM
FILE: c:\txdot\pw_online\line\txdot5\ibrahim.eisaad\0482319\srrrstdel-19.dgn

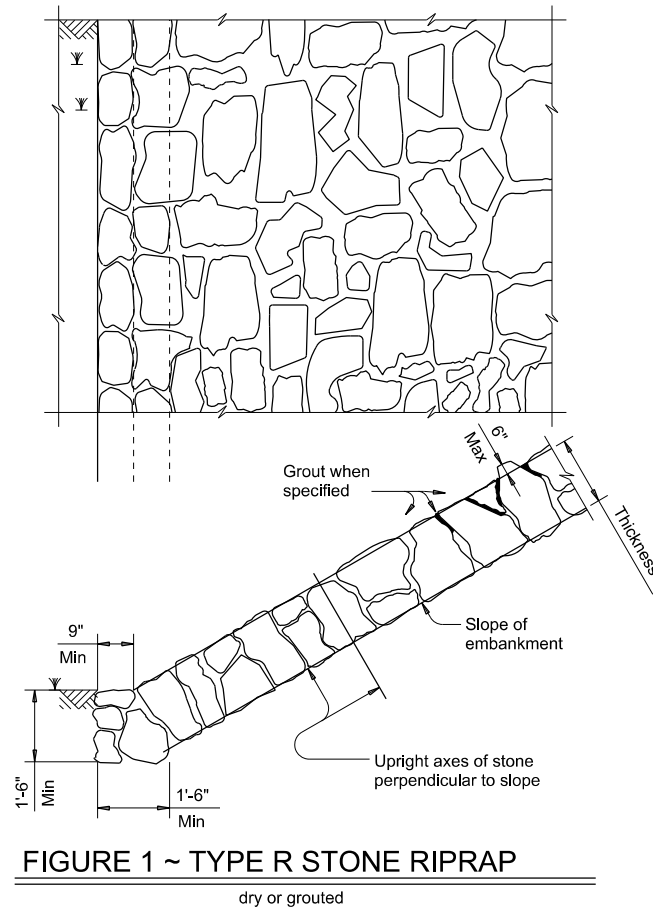


FIGURE 1 ~ TYPE R STONE RIPRAP
dry or grouted

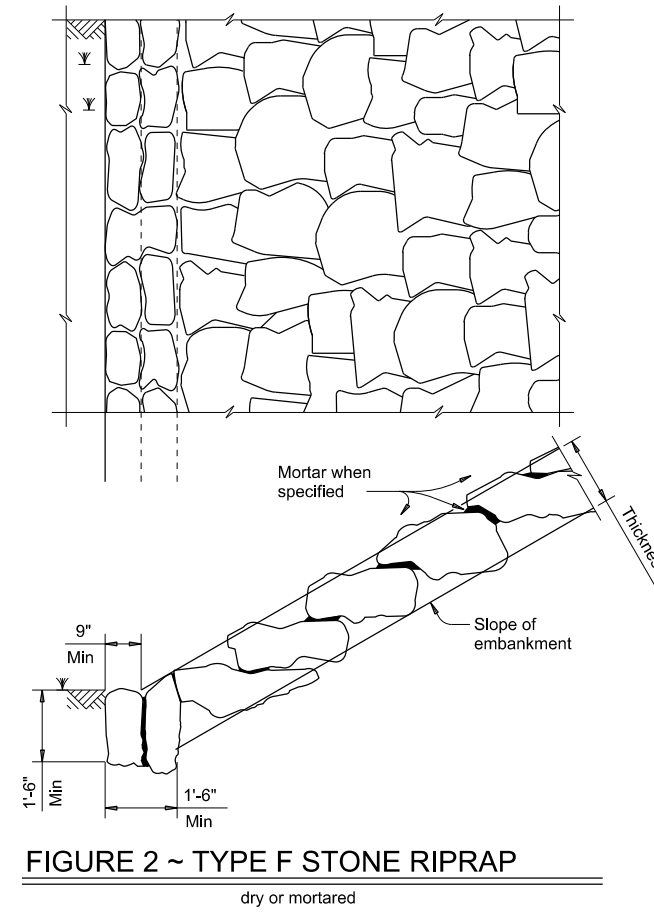


FIGURE 2 ~ TYPE F STONE RIPRAP
dry or mortared

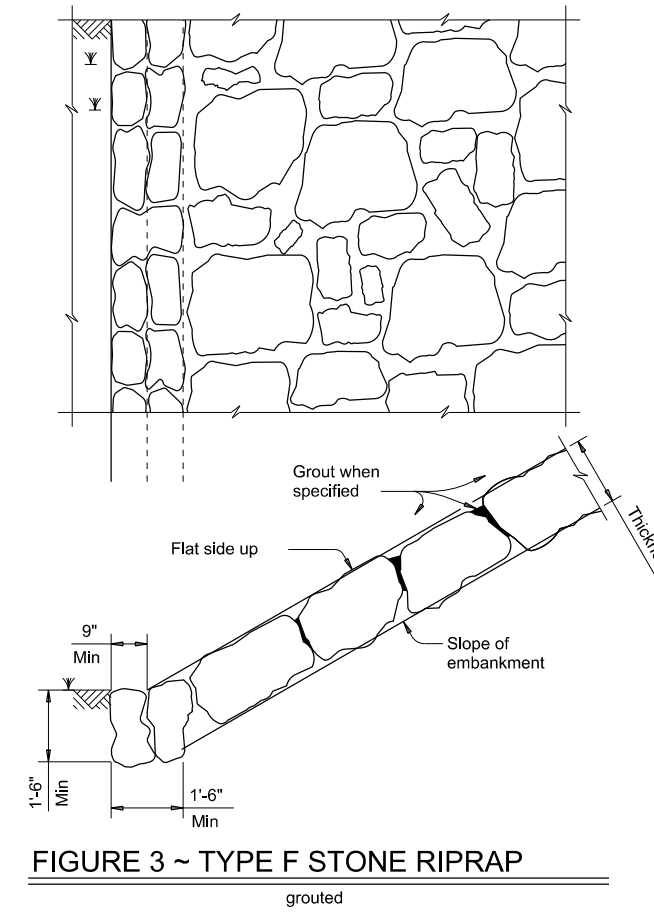


FIGURE 3 ~ TYPE F STONE RIPRAP
grouted

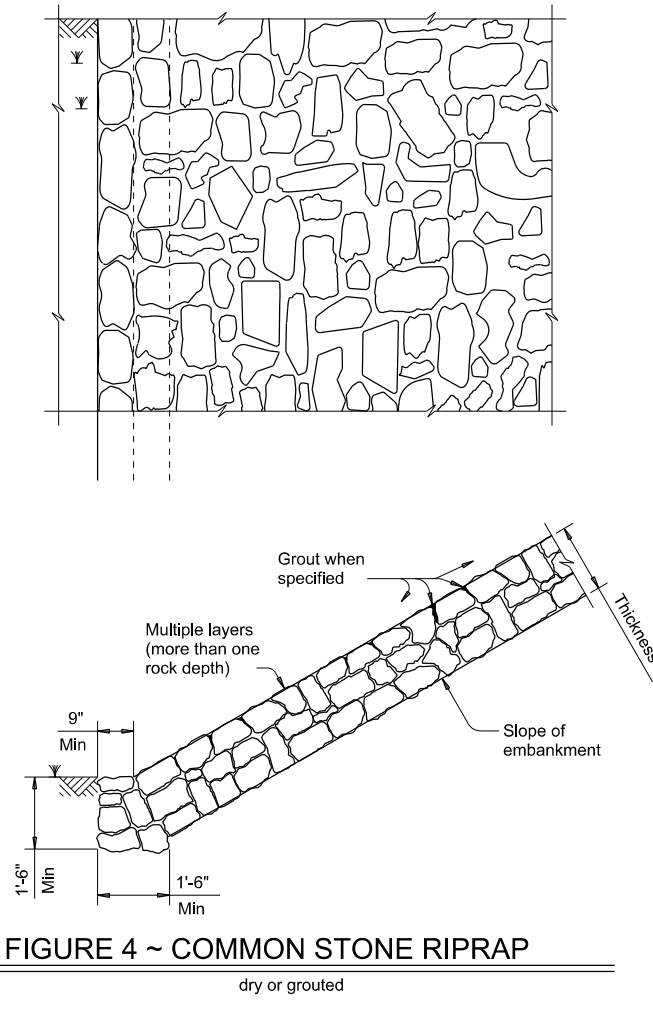


FIGURE 4 ~ COMMON STONE RIPRAP
dry or grouted

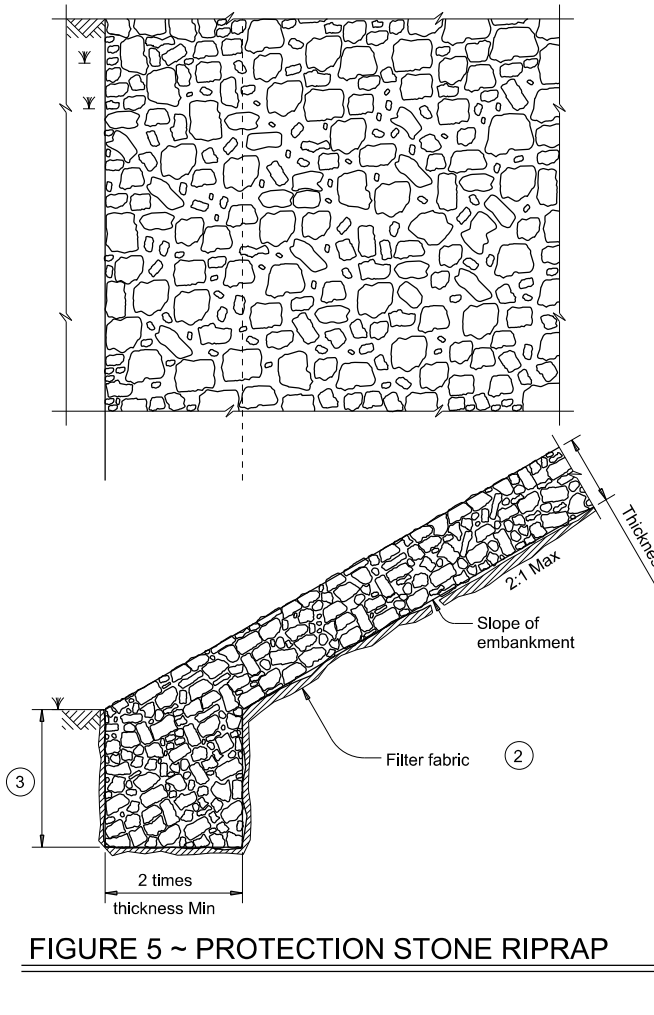
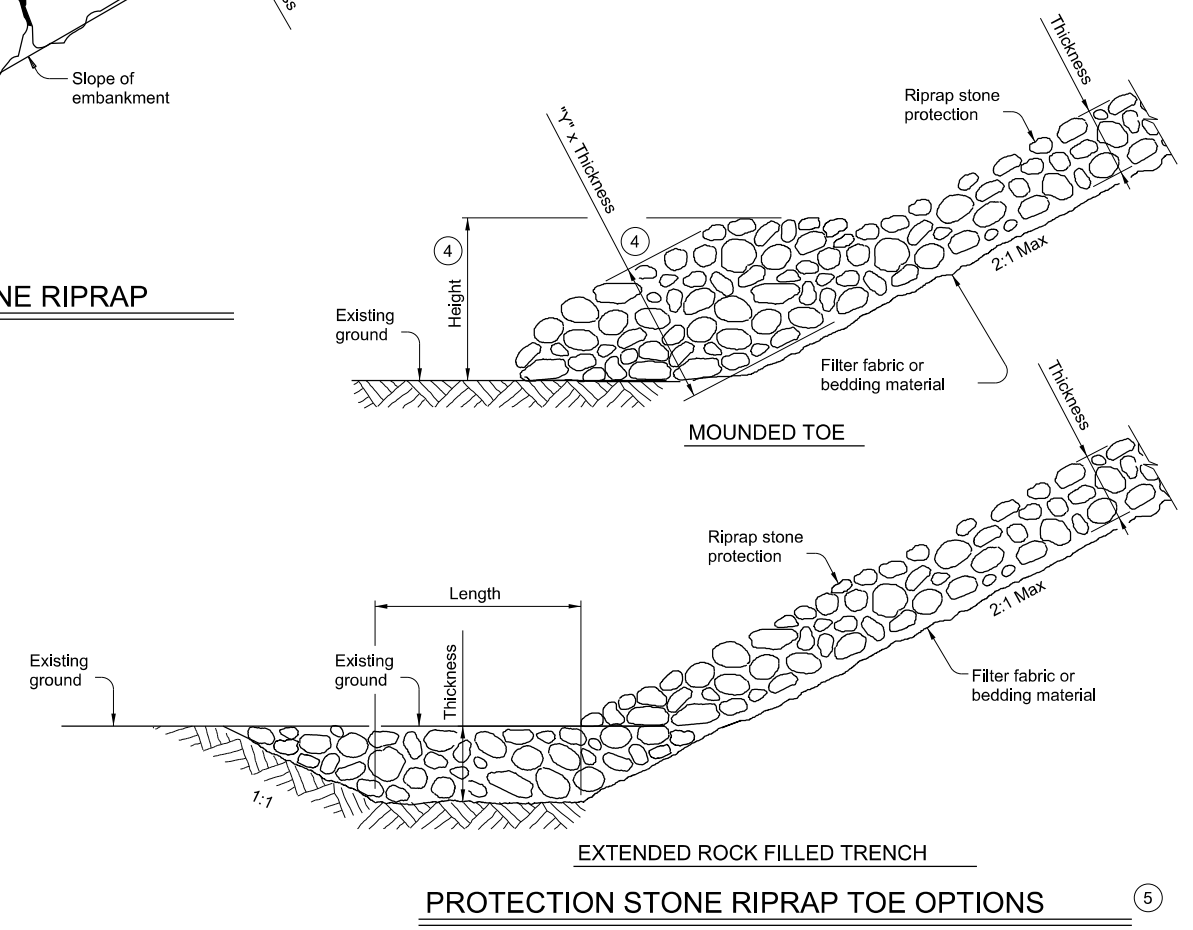


FIGURE 5 ~ PROTECTION STONE RIPRAP

- 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 the larger of the maximum scour depth or 2 times the riprap thickness.
- 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.

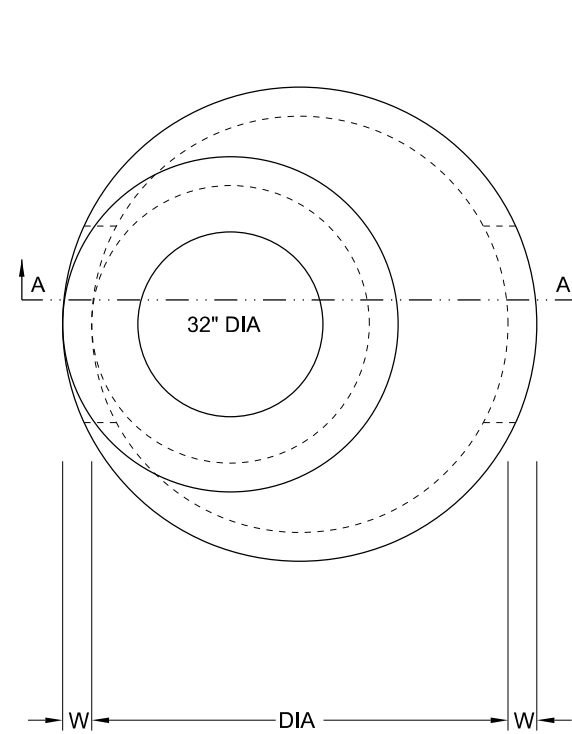


PROTECTION STONE RIPRAP TOE OPTIONS

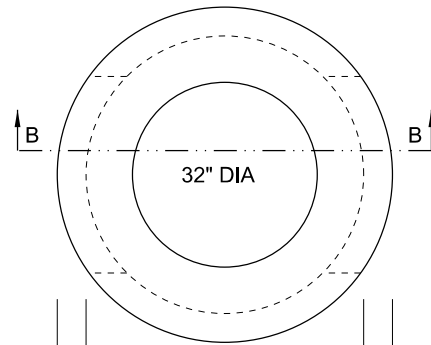
		Bridge Division Standard	
<h2>STONE RIPRAP</h2>			
<h3>SRR</h3>			
FILE: srrstdel-19.dgn	DN: AES	CK: JGD	DW: BWH
©TxDOT	Apr 2019	CONTRACT: 1392	SECT: 01
REVISIONS		JOB: 044, ETC.FM 1378, ETC.	
DIST: DAL	COUNTY: COLLIN	SHEET NO.: 210	

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.

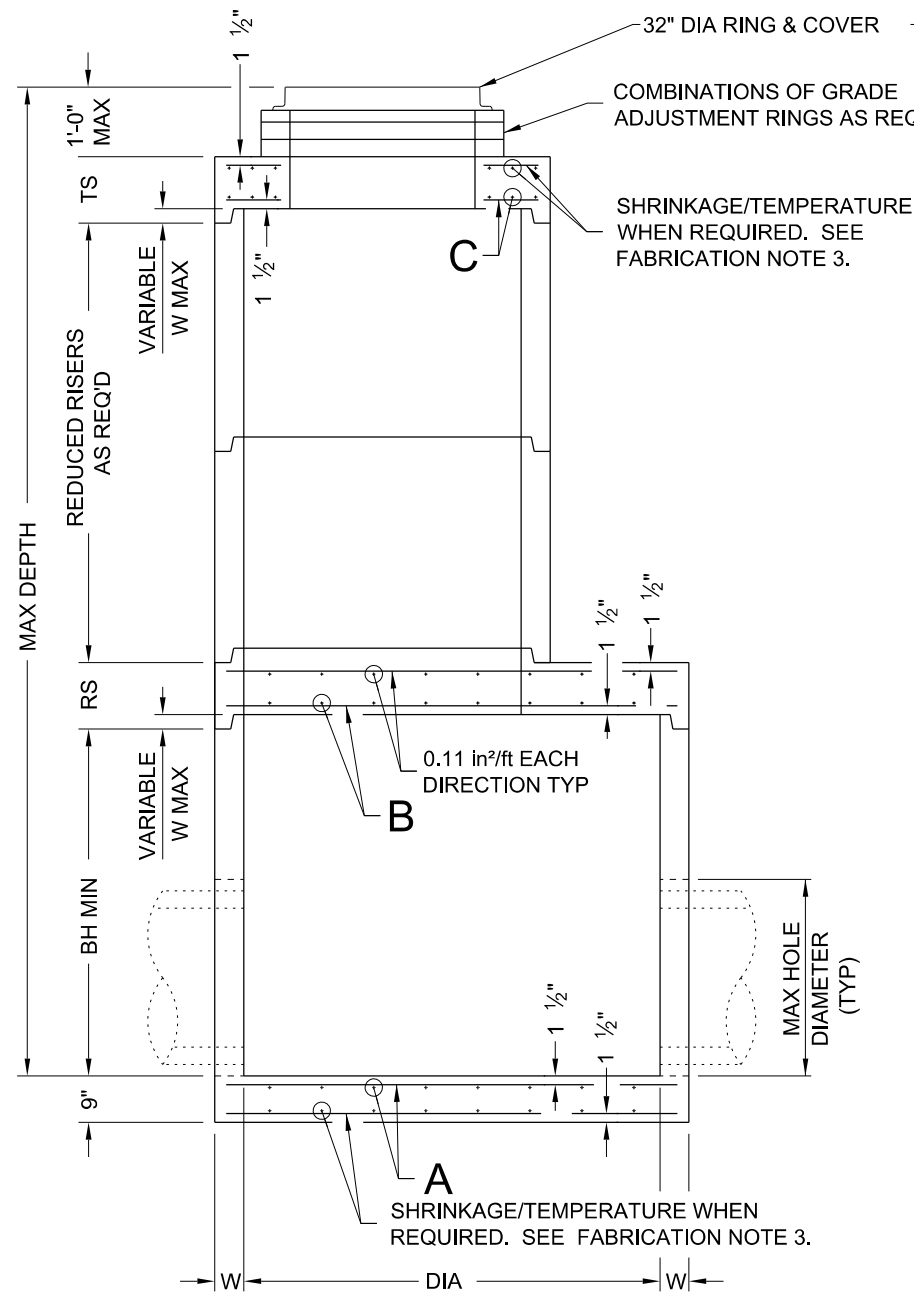
DATE: 1/21/2022 8:53:58 AM
FILE: c:\txdot\pw_online\line\txdot5\ibrahim.eisaad\0482319.prest\02-20.dgn



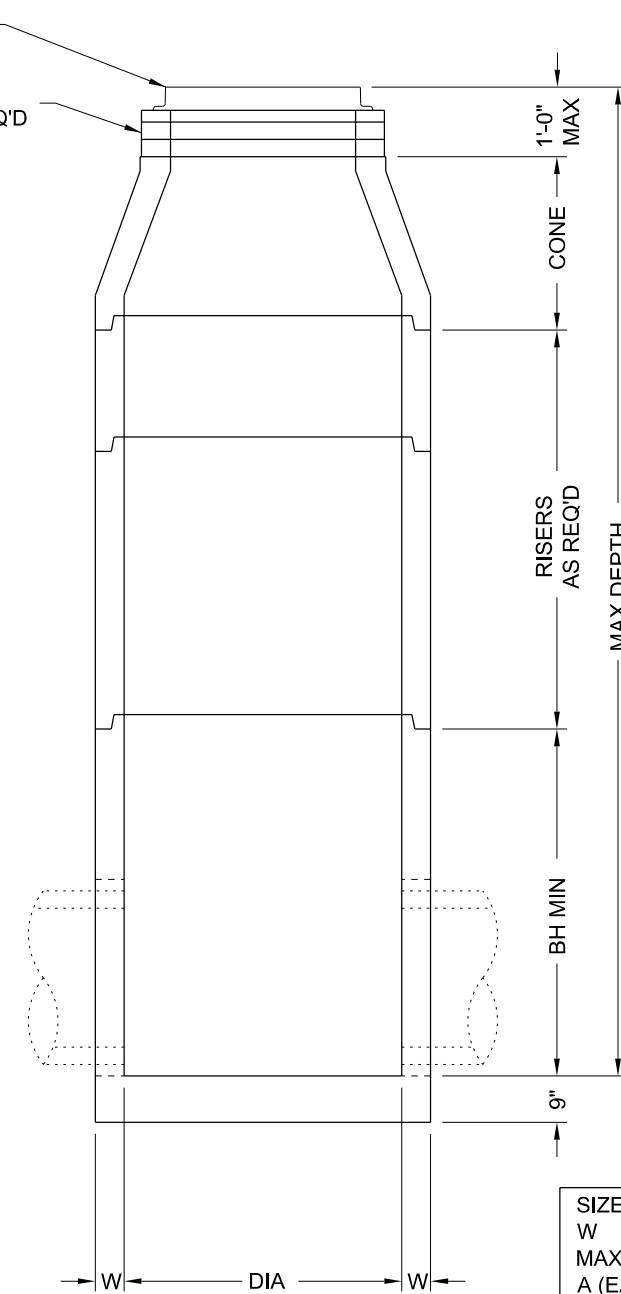
PLAN VIEW "A"



PLAN VIEW "B"



SECTION A-A
ROUND REDUCED RISER OPTION
SHOWING FLAT SLAB TOP



SECTION B-B
ROUND RISER OPTION
SHOWING CONE

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. Provide circumferential reinforcing steel in vertical walls of base, riser and cone in accordance with ASTM C478.
3. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
4. Manufacture base and risers to nearest 3" increment.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 1/2".
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

INSTALLATION NOTES:

1. Cones may be concentric or eccentric. Reduction cones are acceptable. See Manufacturer for cone dimensions.
2. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to this item.
3. 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 1/2 the joint depth, whichever is greater.
4. Do not grout rubber gasket joints without Manufacturer's recommendation.
5. Initial installation of grade adjustment rings is limited to 1'-0" Max as shown.
6. Grade adjustment rings may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments may be made up to the Max depth shown. Structure must be evaluated if Max depth will be exceeded.

GENERAL NOTES:

1. Designed according to ASTM C478.
2. Payment for manhole is per Item 465, "Junction Boxes, Manholes, and Inlets" by type and size.
3. Pipe OD + placement tolerance must be equal or less than Max hole diameter. For rigid pipe, placement tolerance is 4" Max, 2" Min. For flexible pipe, consult boot/seal manufacturer's specification for placement tolerance.

Cover dimensions are clear dimensions, unless noted otherwise.

SIZE (DIA)	48 in	60 in	72 in
W	5 in	6 in	7 in
MAX DEPTH	25 ft	25 ft	25 ft
A (EACH WAY)	0.22 in ² /ft	0.30 in ² /ft	0.45 in ² /ft
B (EACH WAY)	N/A	0.37 in ² /ft	0.62 in ² /ft
C (EACH WAY)	0.24 in ² /ft	0.46 in ² /ft	0.46 in ² /ft
BH MIN	12 in	36 in	36 in
TS	9 in	9 in	9 in
RS	N/A	9 in	12 in
REDUCED RISER DIA	N/A	48 in	48/60 in
MAX HOLE DIA	32 in	40 in	54 in

HL93 LOADING



PRECAST ROUND MANHOLE

PRM

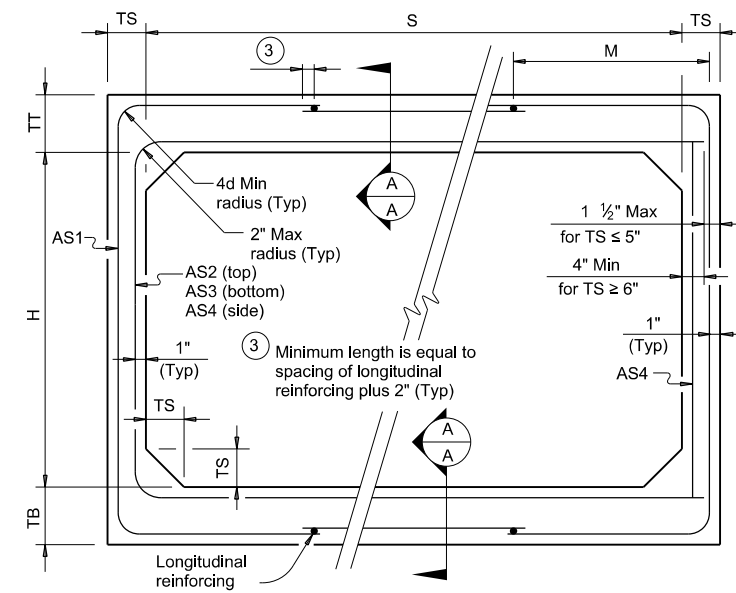
FILE: prest02-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM 1378, ETC.	
DIST	COUNTY	SHEET NO.		
DAL	COLLIN	211		

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: 1/21/2022 8:54:05 AM
 FILE: c:\txdot\pw_online\txdot5\branhim.eisaad\0482319\scp06sts-20.dgn

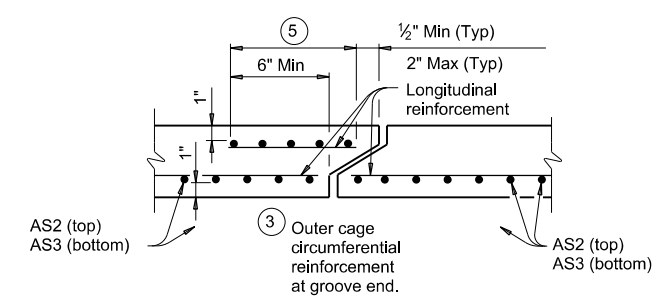
BOX DATA

SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ^②							① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
6	2	8	7	7	< 2	-	0.23	0.27	0.19	0.17	0.19	0.17	7.2	
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	-	-	6.8	
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	-	-	6.8	
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	-	-	6.8	
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	-	-	6.8	
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	-	-	6.8	
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	-	-	6.8	
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	-	-	6.8	
6	3	8	7	7	< 2	-	0.20	0.31	0.22	0.17	0.19	0.19	7.9	
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	-	-	7.5	
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	-	-	7.5	
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	7.5	
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	7.5	
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	7.5	
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	7.5	
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	7.5	
6	4	8	7	7	< 2	-	0.19	0.34	0.25	0.17	0.19	0.19	8.6	
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	-	-	8.2	
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	-	-	8.2	
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	8.2	
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	8.2	
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	8.2	
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	8.2	
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	8.2	
6	5	8	7	7	< 2	-	0.19	0.37	0.28	0.17	0.19	0.19	9.3	
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	-	-	8.9	
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	-	-	8.9	
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	8.9	
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	8.9	
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	8.9	
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	8.9	
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	8.9	
6	6	8	7	7	< 2	-	0.19	0.38	0.30	0.17	0.19	0.19	10	
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	-	-	9.6	
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	-	-	9.6	
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	9.6	
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	9.6	
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	9.6	
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	9.6	
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	9.6	

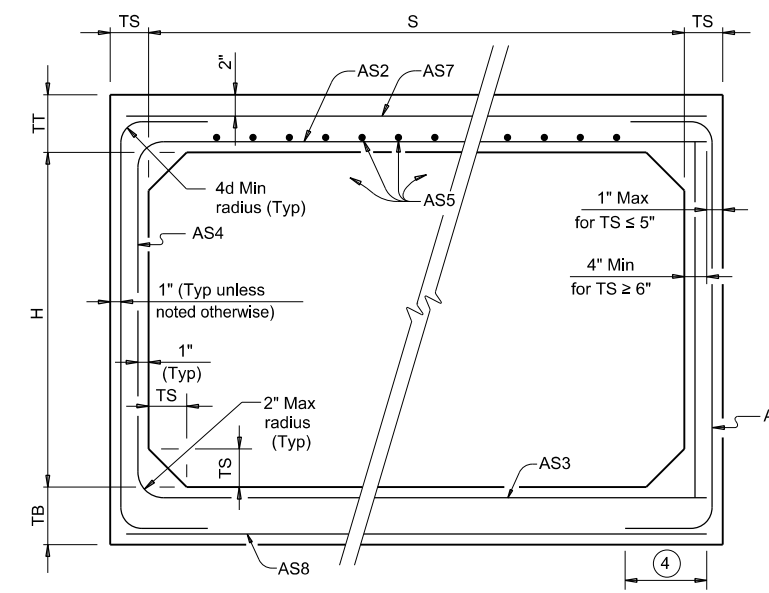


CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



SECTION A-A
(Showing top and bottom slab joint reinforcement.)



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)

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)".

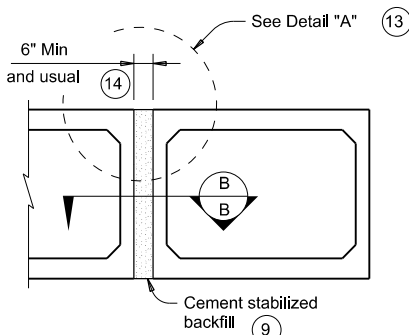
^① For box length = 8'-0"
^② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

HL93 LOADING

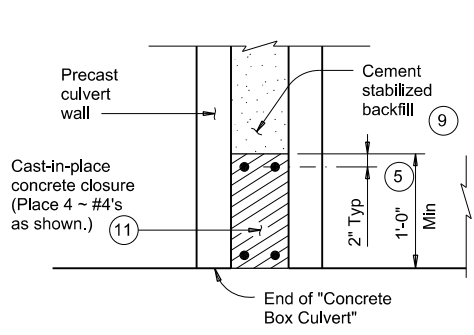
		<i>Bridge Division Standard</i>	
SINGLE BOX CULVERTS PRECAST 6'-0" SPAN			
SCP-6			
FILE: scp06sts-20.dgn	DN: TxDOT	CR: TxDOT	DW: TxDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	1392	01	044, ETC.FM 1378, ETC.
DIST	COUNTY		SHEET NO.
DAL	COLLIN		212

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.

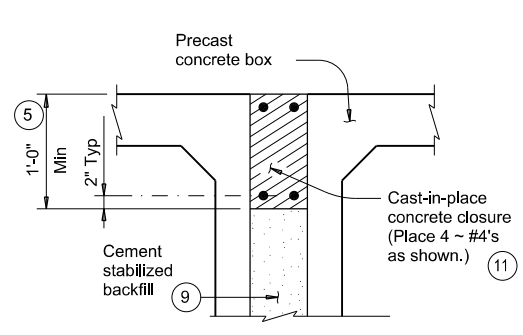
DATE: 1/21/2022 8:54:11 AM
 FILE: c:\txdot\pw_online\txdot5\lbr\ah.im.e\saad\0482319\scpmstds-20.dgn



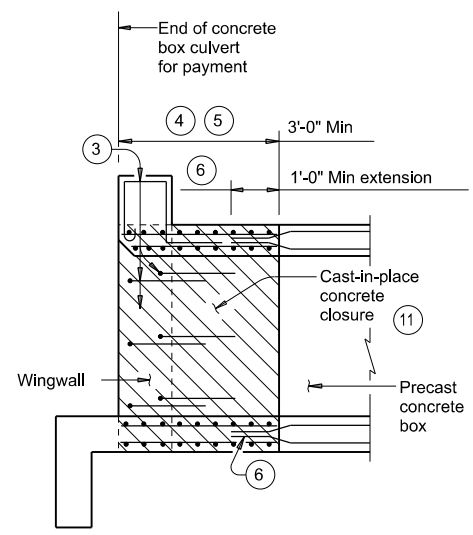
MULTIPLE UNIT PLACEMENT



SECTION B-B

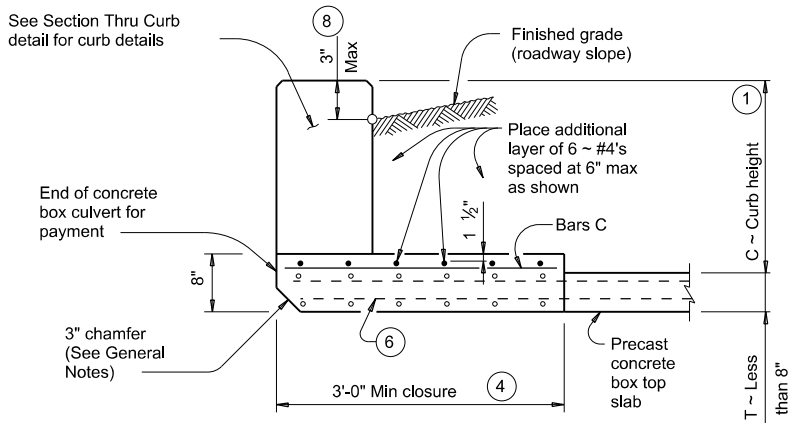


DETAIL "A"

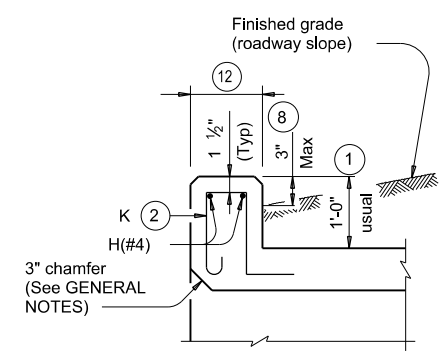


WINGWALL CONNECTION

(Also applies to safety end treatment.)

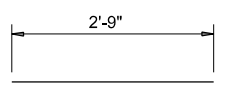


SECTION THRU TOP SLABS LESS THAN 8"

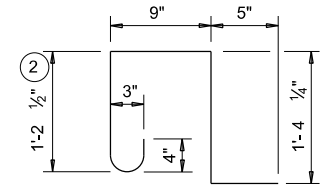


SECTION THRU CURB

QUANTITIES PER FOOT OF CURB	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



BARS C (#4)
(Spa = 1'-0" Max)



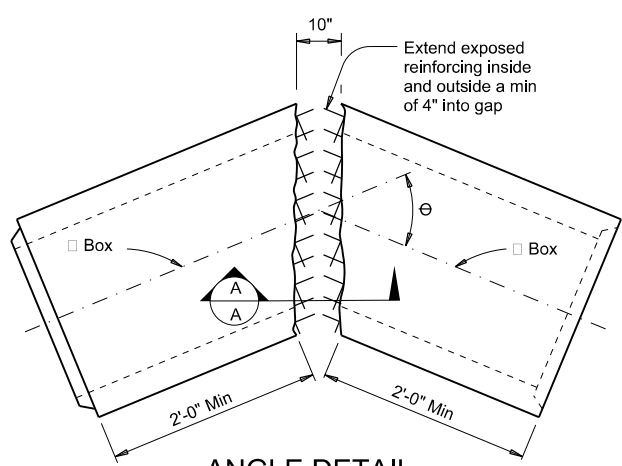
BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

- 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.
- 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.
- 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.
- 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.
- 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.
- Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).
- 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.
- 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.
- Cement stabilized backfill between boxes is considered part of the box culvert for payment.
- All curb concrete and reinforcing is considered part of the box culvert for payment.
- Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
- 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
- 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".
- 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.

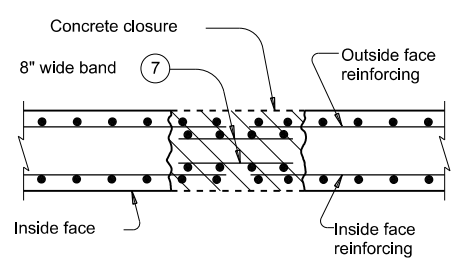
MATERIAL NOTES:
 Provide Grade 60 reinforcing steel.
 Provide ASTM A1064 welded wire reinforcement.
 Provide Class C concrete (f_c = 3,600 psi) for the closures.
 Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
 Any additional concrete 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.

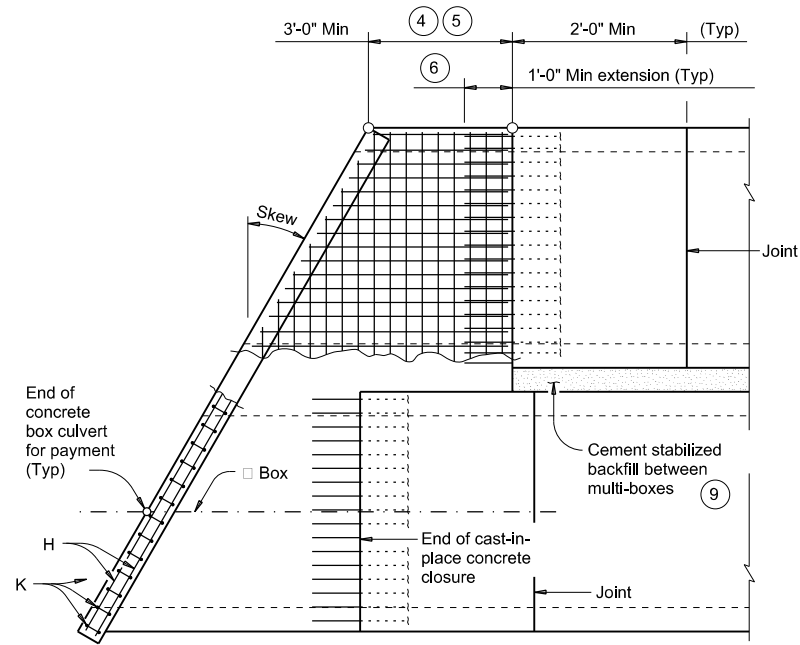
Cover dimensions are clear dimensions, unless noted otherwise.
 Reinforcing bars dimensions are out-to-out of bars.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

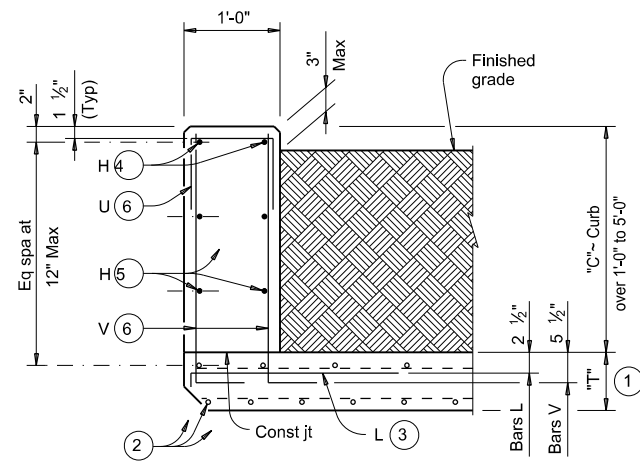
(Showing multi-box placement.)

HL93 LOADING

		Bridge Division Standard	
BOX CULVERTS PRECAST MISCELLANEOUS DETAILS			
SCP-MD			
FILE: scpmstds-20.dgn	DN: GAF	CK: LMW	DW: BWH/TXDOT
©TxDOT February 2020	CONT	SECT	JOB
REVISIONS	1392	01	044, ETC.FM 1378, ETC.
DIST	COUNTY	SHEET NO.	
DAL	COLLIN	213	

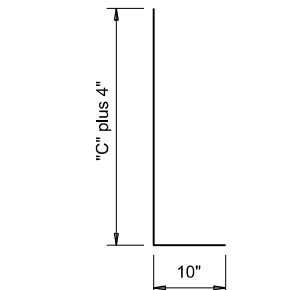
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 1/21/2022 8:54:18 AM
FILE: c:\txdot\pw_online\txdot5\ibrahim_eisaad\0482319\ecds+de1-20.dgn

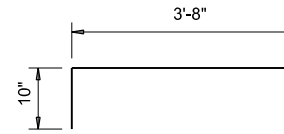


TYPICAL SECTION

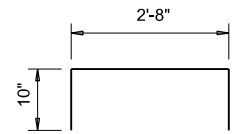
Used for curbs over 1'-0" to 5'-0"



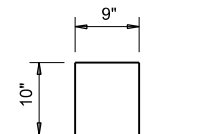
BARS V (#5)
Spaced at 12" Max



BARS L (#5)
Spaced at 12" Max



OPTIONAL BARS L (#5)
Spaced at 12" Max



BARS U (#4)
Spaced at 12" Max

- ① "C" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.
- ② Adjust normal culvert slab bars as necessary to clear obstructions.
- ③ Place bars L as shown. Tilt hook as necessary to maintain cover.
- ④ Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
- ⑤ Additional bars H(#4) as required to maintain 12" Max spacing.
- ⑥ Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
- ⑦ Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
- ⑧ Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES ⑧		
Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1/4" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

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) minimum for curbs.
Provide bar laps, where required, as follows:
· Uncoated or galvanized ~ #4 = 1'-8" Min

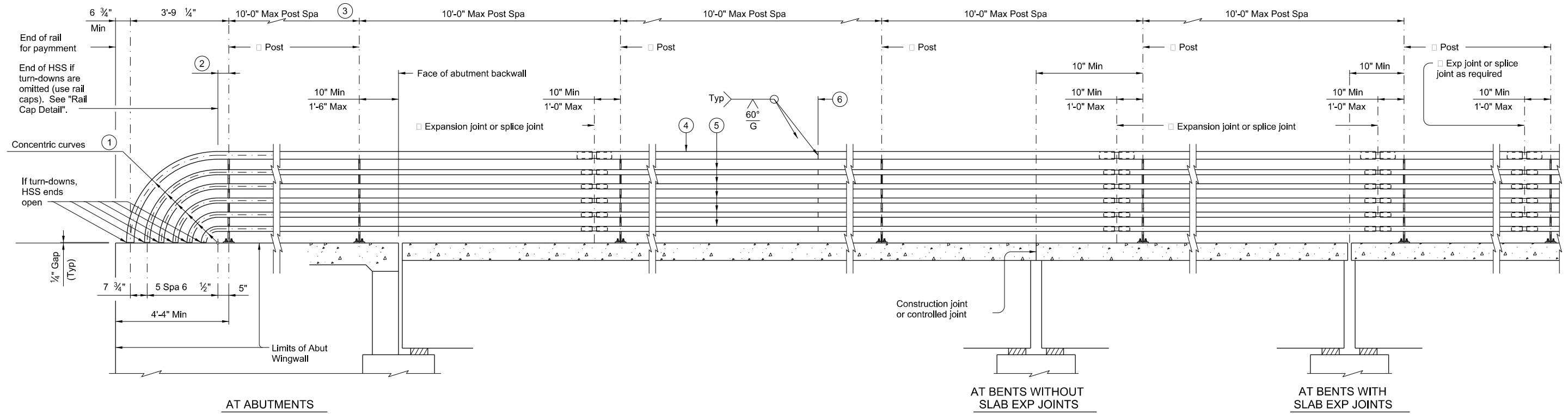
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

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

				Bridge Division Standard	
EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL					
ECD					
FILE:	ecdstd1-20.dgn	DN:	GAF	CK:	TxDOT
	February 2020	DW:	TxDOT	CR:	GAF
REVISIONS		CONT	SECT	JOB	HIGHWAY
		1392	01	044, ETC.	FM 1378, ETC.
		DIST	COUNTY	SHEET NO.	
		DAL	COLLIN	214	

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: 1/21/2022 8:54:24 AM
 FILE: c:\txdot\p_w_online\line\txdot\5\lbr\ahim.e\lsoad\0482319\1std028-19.dgn

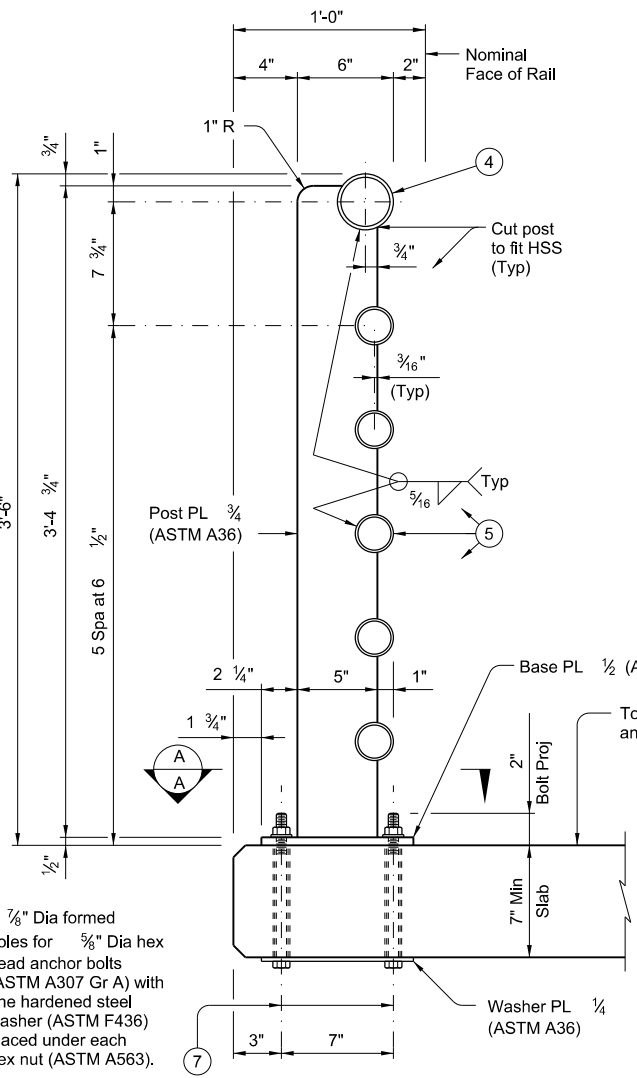


AT ABUTMENTS

AT BENTS WITHOUT SLAB EXP JOINTS

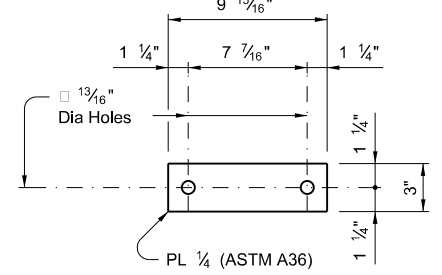
AT BENTS WITH SLAB EXP JOINTS

ROADWAY ELEVATION OF RAIL

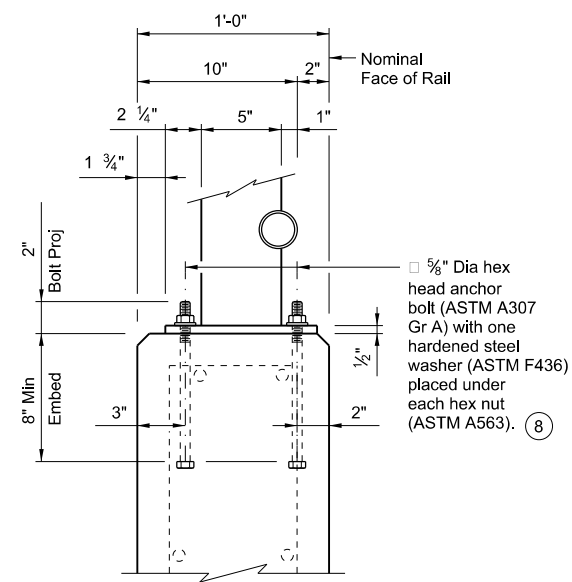


SECTION A-A

Showing base plate detail.



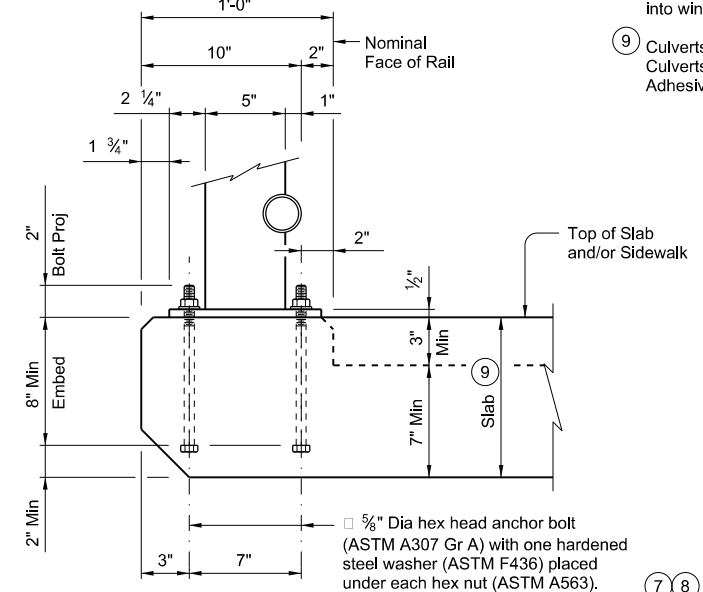
WASHER PLATE DETAIL



ON BRIDGE SLAB

ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

SECTIONS THRU RAIL



ON CULVERTS WITH OR WITHOUT CURBS

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

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

SHEET 1 OF 2



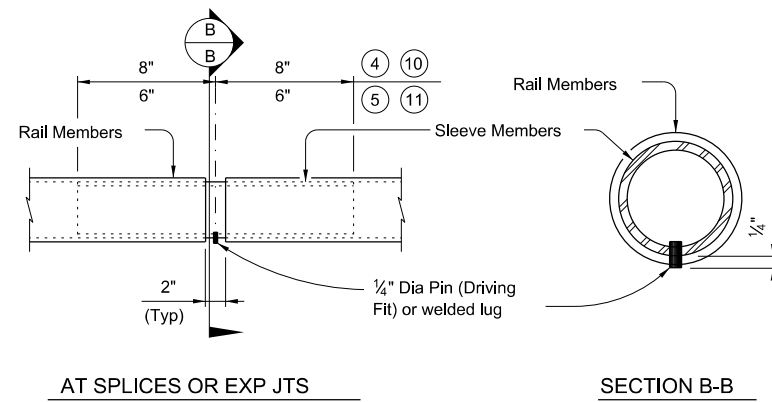
PEDESTRIAN RAIL

TYPE PR11

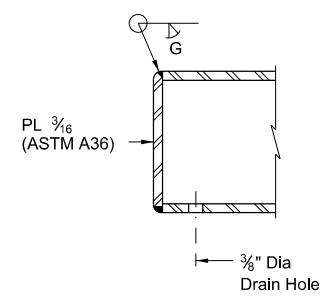
FILE: fstd028-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.FM 1378, ETC.	
DIST	COUNTY		SHEET NO.	
DAL	COLLIN		215	

DISCLAIMER:
 This drawing 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 drawing to other formats or for incorrect results or damages resulting from its use.

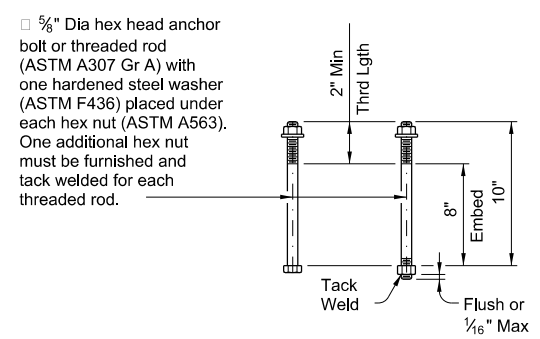
DATE: 1/21/2022 8:54:25 AM
 FILE: c:\txdot\pw_online\txdot5\branhim.eisaad\0482319.rvt\std028-19.dgn



PIPE SPLICE DETAIL



RAIL CAP DETAIL



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

- ④ HSS 3.500 x 0.216 (Rail Member)
- ⑤ HSS 2.375 x 0.154 (Rail Member)
- ⑩ HSS 2.875 x 0.203 (Sleeve Member)
- ⑪ HSS 1.900 x 0.145 (Sleeve Member)

CONSTRUCTION NOTES:

Panel lengths of railing must be attached to a minimum of three posts except at abutment wingwalls.
 At the Contractor's option anchor bolts may be an adhesive anchorage system. See "Material Notes".
 Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.
 Face of rail and posts must be vertical transversely unless otherwise approved. Posts must be perpendicular to adjacent roadway grade. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.
 For curved railing applications, fabricate the HSS rail to the radius when the radius is 600' or less. Submit shop drawings for approval when tubes are required to be fabricated to a radius. Shop drawings must be submitted to the Engineer for approval.
 Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

MATERIAL NOTES:

Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.
 Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel". Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.
 Anchor bolts must be 5/8" Dia ASTM A307 Gr A with one hardened steel washer (ASTM F436) placed under each hex nut or ASTM A307 Gr A threaded rods with one tack welded hex nut each and with one hex nut with one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements.
 Optional adhesive anchorage system must be 5/8" Dia ASTM A307 Gr A fully threaded rods with one hex nut and one hardened steel washer (ASTM F436). Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into slab, wingwalls, or culvert curbs using a Type III, Class C, D, E, or F anchor adhesive. Anchor adhesive chosen must be able to achieve a nominal bond strength in tension, Na, of a single anchor of 10 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.
 Do not use this railing on bridges with expansion joints providing more than 5" movement.
 Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.
 For all rails, submit erection drawings showing section lengths, splice locations, rail post spacing and anchor bolt setting for approval.
 Average weight of railing is 30 plf.

SHEET 2 OF 2

		Bridge Division Standard	
<h1>PEDESTRIAN RAIL</h1>			
<h2>TYPE PR11</h2>			
FILE: rstd028-19.dgn	DN: TAR	CK: TBE	DW: JTR
©TxDOT September 2019	CONT	SECT	JOB
REVISIONS	1392	01	044, ETC.FM 1378, ETC.
DIST	COUNTY		SHEET NO.
DAL	COLLIN		216

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF EXISTING SUBSURFACE UTILITIES
SUBSURFACE UTILITY ENGINEERING (SUE)
QUALITY LEVEL - B

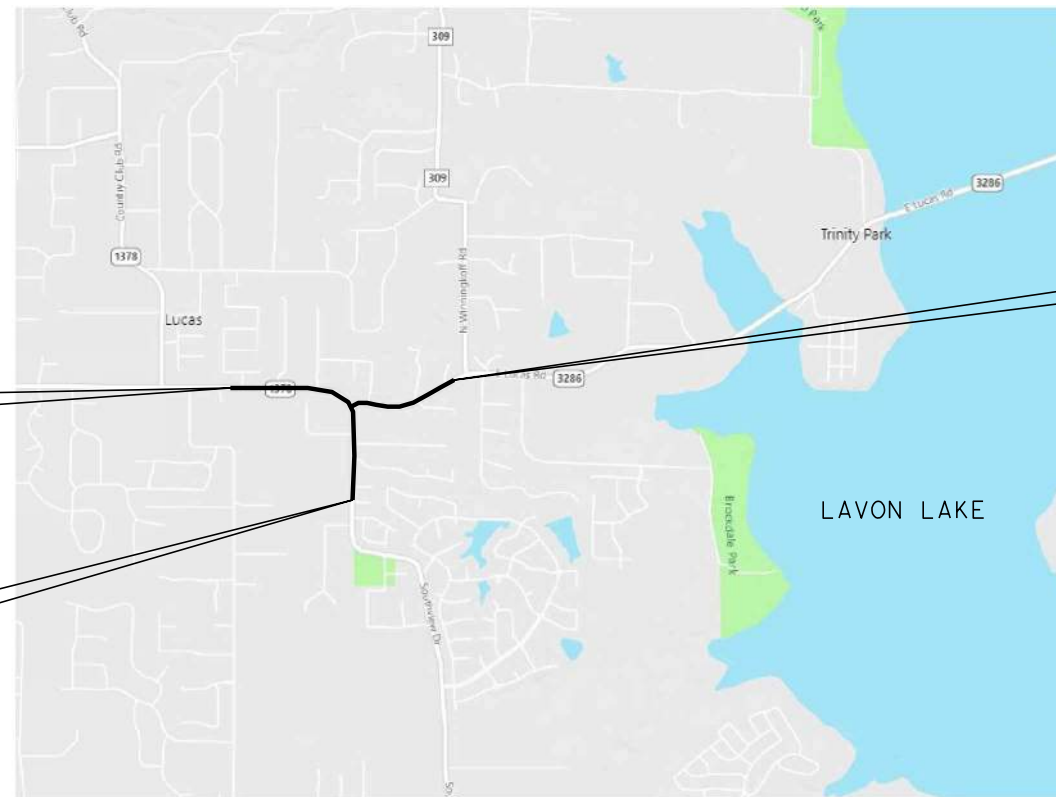
COLLIN COUNTY
HIGHWAY: FM 1378
PROJECT: FM 1378

FM 1378 WEST 300' PAST HOLLY LN, EAST 300' PAST LOST VALLEY, &
SOUTH 500' PAST ARTHUR CT
CSJ: 1392-01-044

BEGIN PROJECT @ FM 1378 STA 2+00
CSJ: 1392-01-044
NORTHING: 7084205.11
EASTING: 2555909.21


END PROJECT @ FM 1378 STA 92+00
CSJ: 1392-01-044
NORTHING: 7082122.20
EASTING: 2557928.64


END PROJECT @ FM 3286 STA 40+00
CSJ: 1392-01-044
NORTHING: 7084125.33
EASTING: 2559596.20



VICINITY MAP
NOT TO SCALE

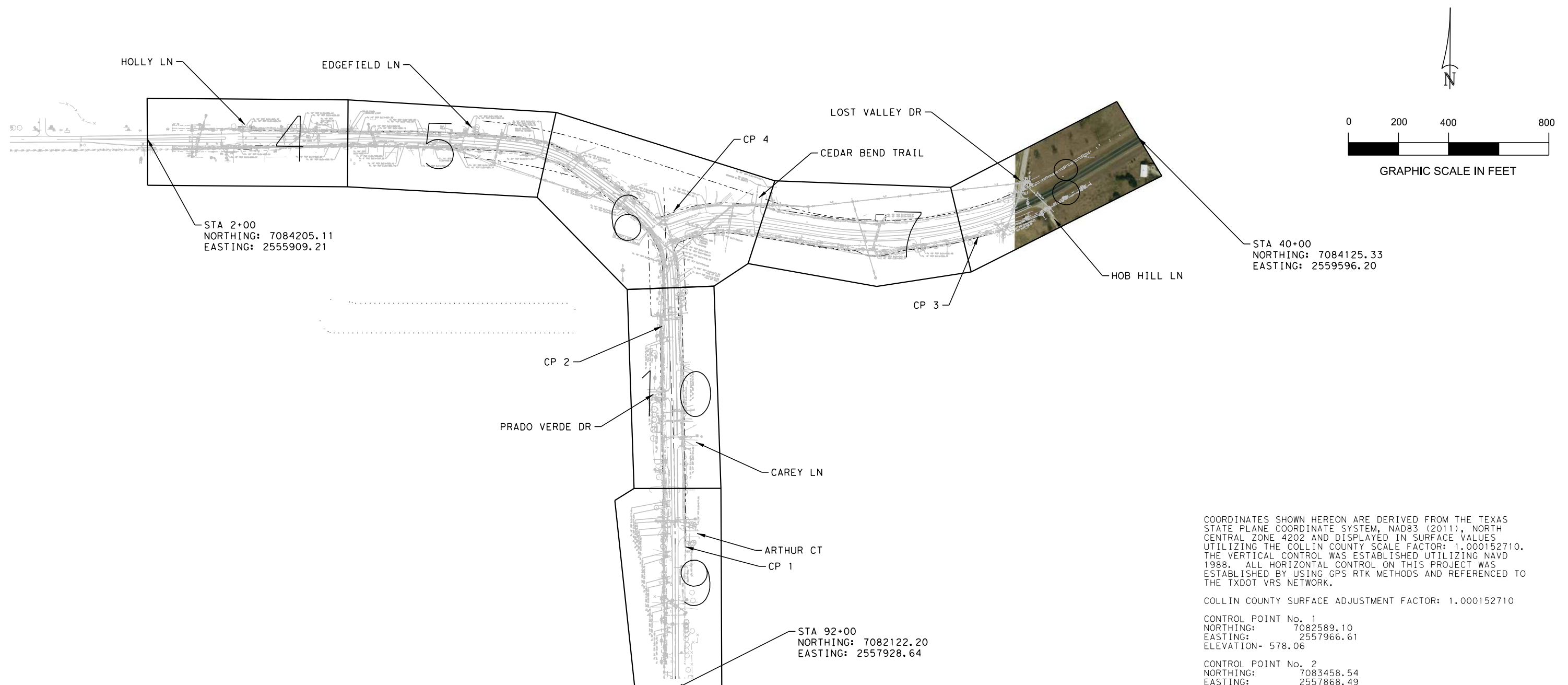
REV	DATE	BY	DESCRIPTION

 © 2019
 TEXAS DEPARTMENT OF TRANSPORTATION


THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

FM 1378
SUE TITLE SHEET

DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER	SUE SHEET NO.	DATE
TXDT1901.01	01 OF 10	06-05-2019
CSJ NUMBERS	PLAN SHEET NO.	
1392-01-044	217	
STATE	DISTRICT	COUNTY
TX	DALLAS	COLLIN



COORDINATES SHOWN HEREON ARE DERIVED FROM THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD83 (2011), NORTH CENTRAL ZONE 4202 AND DISPLAYED IN SURFACE VALUES UTILIZING THE COLLIN COUNTY SCALE FACTOR: 1.000152710. THE VERTICAL CONTROL WAS ESTABLISHED UTILIZING NAVD 1988. ALL HORIZONTAL CONTROL ON THIS PROJECT WAS ESTABLISHED BY USING GPS RTK METHODS AND REFERENCED TO THE TXDOT VRS NETWORK.

COLLIN COUNTY SURFACE ADJUSTMENT FACTOR: 1.000152710

CONTROL POINT No. 1
 NORTHING: 7082589.10
 EASTING: 2557966.61
 ELEVATION= 578.06

CONTROL POINT No. 2
 NORTHING: 7083458.54
 EASTING: 2557868.49
 ELEVATION= 578.94

CONTROL POINT No. 3
 NORTHING: 7083833.21
 EASTING: 2559127.78
 ELEVATION= 566.18

CONTROL POINT No. 4
 NORTHING: 7083927.74
 EASTING: 2557911.55
 ELEVATION= 568.00

REV	DATE	BY	DESCRIPTION

UTILITY CONTACT INFORMATION

UTILITY TYPE	OWNER	CONTACT	PHONE	EMAIL	ADDRESS
COMMUNICATION	AT&T	PETER RUSSELL	469.215.0541	PR7004@ATT.COM	2513 W E ROBERTS ST. GRAND PRAIRIE, TX 75051
COMMUNICATION	FRONTIER	ANDY KING	469.978.2890	ANDY.A.KING@FTR.COM	1132 HWY 407 LEWISVILLE, TX 75077
COMMUNICATION	GRANDE	MIKE BOWDEN	972.410.0592	MICHAEL.BOWDEN@MYGRANDE.COM	500 TITLE DR. SUITE 400 LEWISVILLE, TX 75056
COMMUNICATION	SUDDENLINK	TERRY MACKAY	903.266.4642	THAYER.MACKAY@ALTICEUSA.COM	3015 S SOUTHWEST LOOP SUITE 323 TYLER TX, 75702
ELECTRIC	GCEC	MICHAEL LAUER	903.815.1670	MLAUER@GCEC.NET	PO BOX 548 VAN ALSTYNE, TX 75495
GAS	COSERV	SHAWN MEAD	214.458.7851	SMEAD@COSERVE.COM	771 S. STEMMONS CORINTH, TX 76210
WATER	NTMWD	KEVIN MCNEELY	469.626.4750	KMCNEELY@NTMWD.COM	501 E. BROWN ST. WYLIE, TX 75098
WATER	CITY OF LUCAS	STANTON FORESTER	972.912.1208	STANTON@LUCASTEXAS.US	665 COUNTRY CLUB RD LUCAS, TX 75002

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	EXISTING UTILITY LAYOUT
3	EXISTING UTILITY LEGEND
4-10	EXISTING UTILITY PLANS

QUANTITY TOTALS

QUALITY LEVEL "B"	- 31,549'
QUALITY LEVEL "C"	- 1,204'
OVERHEAD (QL-"C")	- 8,005'
QUALITY LEVEL "D"	- 6,180'

QUALITY LEVEL LEGEND

	QUALITY LEVEL "B"
	QUALITY LEVEL "C"
	QUALITY LEVEL "D"

TYPICAL FOR ALL UTILITIES

© 2019
 TEXAS DEPARTMENT OF TRANSPORTATION
THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

FM 1378
EXISTING UTILITY LAYOUT

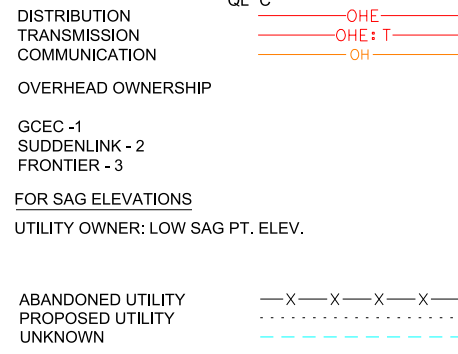
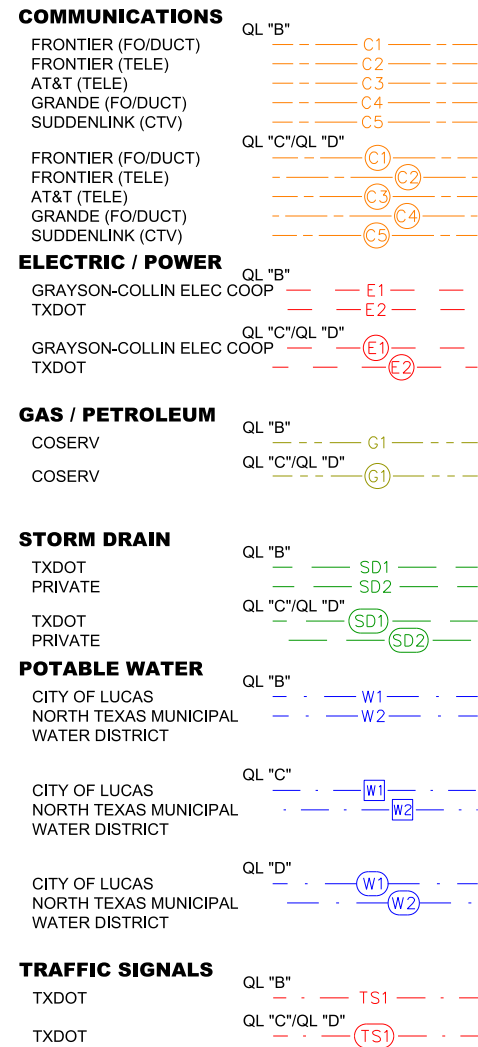
DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER	SUE SHEET NO.	DATE
TXDT1901.01	02 OF 10	06-05-2019
CSJ NUMBERS	PLAN SHEET NO.	
1392-01-044	218	
STATE	DISTRICT	COUNTY
TX	DALLAS	COLLIN

Subsurface Utility Engineering (SUE) Certification

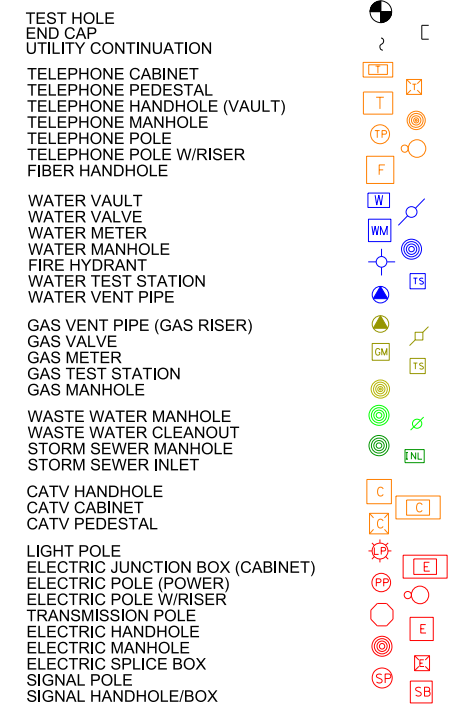
The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.

MICHAEL DOOLIN
 06-05-2019 10:00 AM
 P:\Projects\TXDT1901_01_3e-sue\Drawings\Work In Progress\Plan Set

LEGEND OF UTILITY TYPES



LEGEND OF UTILITY SYMBOLS



QUALITY LEVELS

Quality Level "D" - Information derived from existing records and/or oral collection.

Quality Level "C" - Information obtained by surveying and plotting visible above ground utility features and by using professional judgment in correlating information to Quality Level "D" information.

Quality Level "B" - Designate: Two-dimensional horizontal mapping. This information is obtained through the application and interpretation of appropriate non-destructive surface geophysical methods. Utility indications are referenced to established survey control. Incorporates Quality Levels "C" and "D" information to produce Quality Level "B" information.

Quality Level "A" - Locate: Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of subsurface utilities at a specific point. Diameters shown are verified visually and may not be exact.

QUALITY LEVEL LEGEND



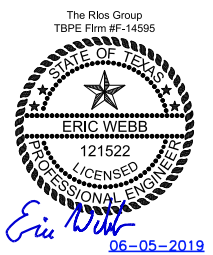
TYPICAL FOR ALL UTILITIES

Subsurface Utility Engineering (SUE) Certification

The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.

SPECIAL NOTES

- ALL PIPE SIZES WERE TAKEN FROM UTILITY RECORDS WHERE POSSIBLE. THE UTILITIES DEPICTED WERE INVESTIGATED BY THE RIOS GROUP, INC.. ALL OTHER PLAN INFORMATION, NOTABLY THE BACKGROUND INFORMATION, WAS PROVIDED BY OTHERS AND THE RIOS GROUP, INC. DISCLAIMS RESPONSIBILITY FOR ITS ACCURACY.
- EXISTING SUBSURFACE UTILITY INVESTIGATIONS WERE COMPLETED ON 04/25/2019. THE RIOS GROUP, INC. EXPRESSLY DISCLAIMS ANY AND ALL RESPONSIBILITY FOR NEW UTILITY INSTALLATIONS, MODIFICATIONS, AND/OR ADJUSTMENTS TO EXISTING UTILITIES AFTER THE COMPLETION DATE.
- UTILITY LOCATIONS ON THESE DRAWINGS ARE INTENDED FOR DESIGN PURPOSES AND NOT CONSTRUCTION. THEY REFLECT SUBSURFACE UTILITIES AT THE TIME OF FIELD INVESTIGATION. CALL TEXAS ONE CALL SYSTEM (800)245-4545 FOR UTILITY LOCATIONS 48 HOURS PRIOR TO ANY WORK.
- WHERE POSSIBLE, WATER, GAS, AND COMMUNICATION SERVICE LINES WERE DESIGNATED. HOWEVER, SOME SERVICE LINES ARE CONSTRUCTED OF NON-CONDUCTIVE MATERIAL AND UTILITY COMPANY DRAWINGS MAY NOT SHOW SERVICE LINE LOCATIONS. THEREFORE ALL SERVICE LINES MAY NOT BE SHOWN.



REV	DATE	BY	DESCRIPTION

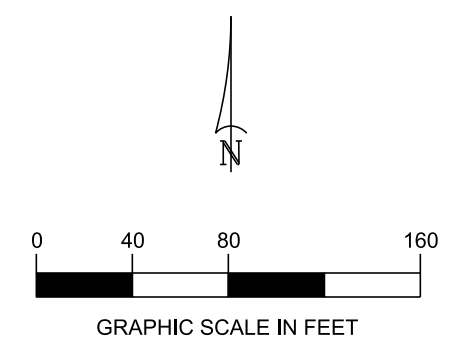
© 2019
 TEXAS DEPARTMENT OF TRANSPORTATION

THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

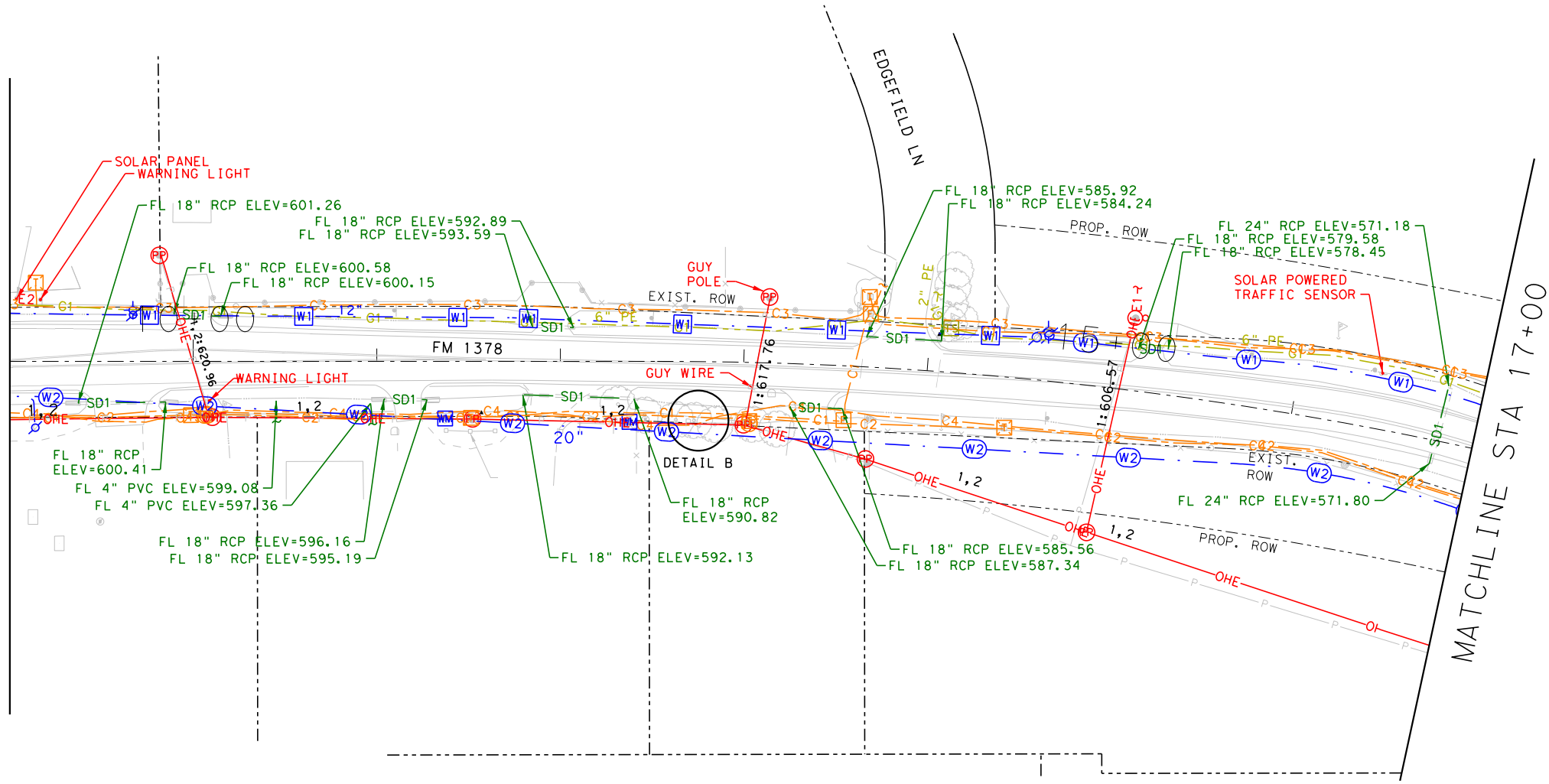
FM 1378 EXISTING UTILITY LEGEND

DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER	SUE SHEET NO.	DATE
TXDT1901.01	03 OF 10	06-05-2019
CSJ NUMBERS	PLAN SHEET NO.	
1392-01-044	219	
STATE	DISTRICT	COUNTY
TX	DALLAS	COLLIN

MICHAEL DOOLIN
 06-05-2019
 P:\Projects\TXDT1901.01 - 3e-SUE Survey Services\Work in Progress\Plan Set

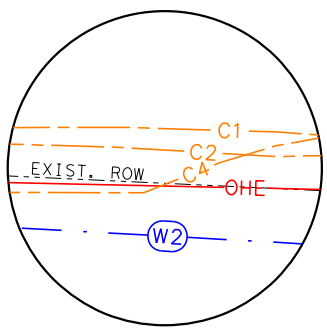


MATCHLINE STA 9+00



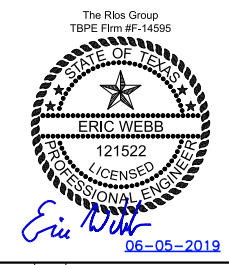
MATCHLINE STA 17+00

DETAIL B



QUANTITY TOTALS
 QUALITY LEVEL "B" - 4,452'
 QUALITY LEVEL "C" - 560'
 OVERHEAD (QL-"C") - 1,068'
 QUALITY LEVEL "D" - 1,017'

QUALITY LEVEL LEGEND
 --- WW1 --- QUALITY LEVEL "B"
 --- WW1 --- QUALITY LEVEL "C"
 --- WW1 --- QUALITY LEVEL "D"
 TYPICAL FOR ALL UTILITIES



REV	DATE	BY	DESCRIPTION

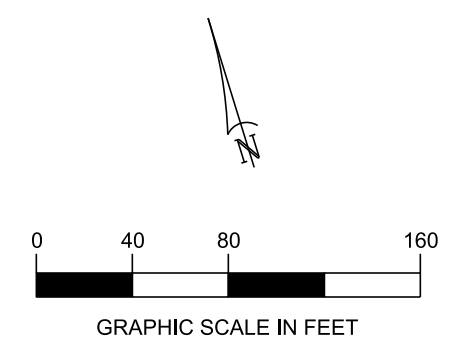
© 2019
 TEXAS DEPARTMENT OF TRANSPORTATION
THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

FM 1378
SUE PLAN SHEET
STA. 9+00 TO STA. 17+00

DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER TXDT1901.01	SUE SHEET NO. 05 OF 10	DATE 06-05-2019
CSJ NUMBERS 1392-01-044	PLAN SHEET NO. 221	
STATE TX	DISTRICT DALLAS	COUNTY COLLIN

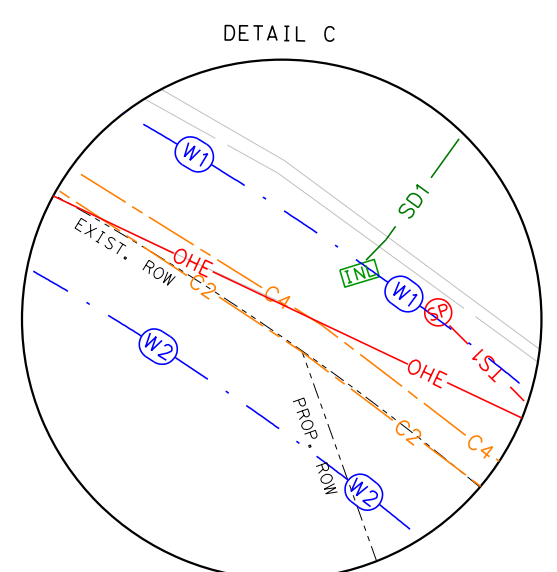
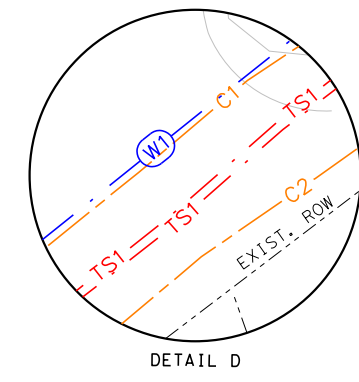
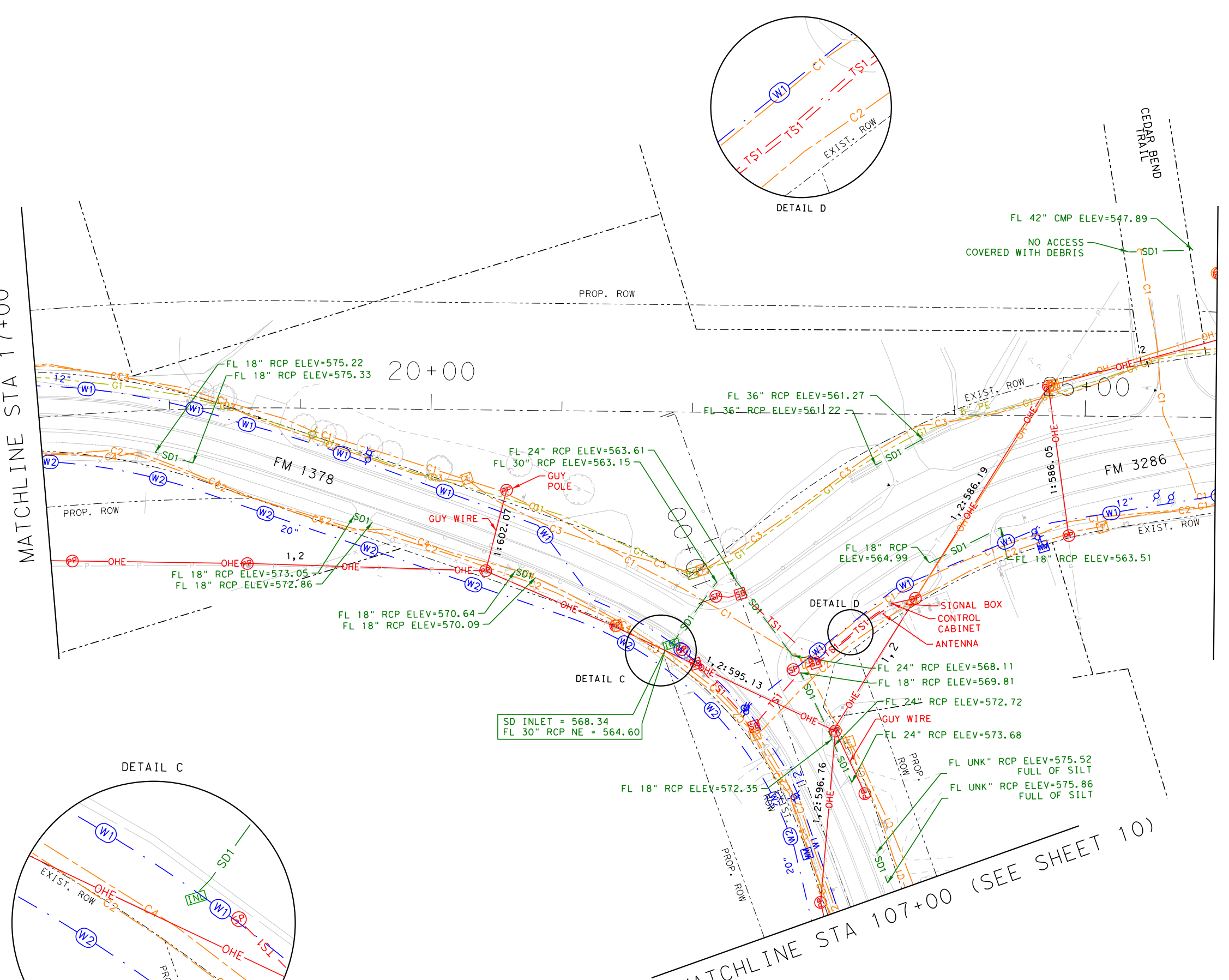
Subsurface Utility Engineering (SUE) Certification
 The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.

MICHAEL DOOLIN
 06-05-2019
 P:\Projects\TXDT1901.01 - 3e-sdp5146_WA01_FM1378_SUE_Survey_Services\Work In Progress\Plan Set



MATCHLINE STA 17+00

MATCHLINE STA 26+00



QUANTITY TOTALS

QUALITY LEVEL "B" - 6,442'

QUALITY LEVEL "C" - 0'

OVERHEAD (QL-"C") - 1,770'

QUALITY LEVEL "D" - 1,768'

QUALITY LEVEL LEGEND

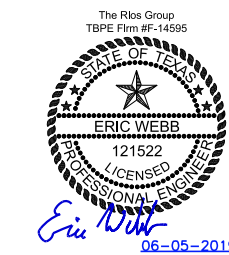
--- WW1 --- QUALITY LEVEL "B"

--- WW1 --- QUALITY LEVEL "C"

--- WW1 --- QUALITY LEVEL "D"

TYPICAL FOR ALL UTILITIES

MATCHLINE STA 107+00 (SEE SHEET 10)



REV	DATE	BY	DESCRIPTION

© 2019
TEXAS DEPARTMENT OF TRANSPORTATION

THE RIOS GROUP
Subsurface Utility Engineering/Utility Coordination
7400 Sand Street Fort Worth, TX 76118
817-345-7500 www.rios-group.com

FM 1378

SUE PLAN SHEET

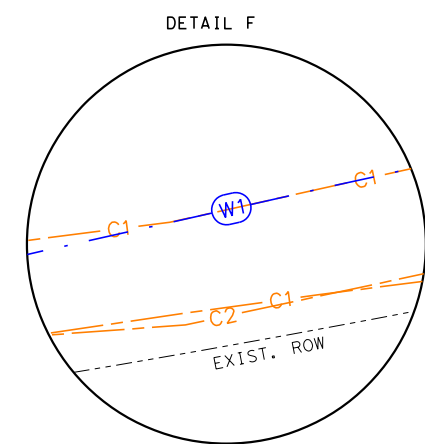
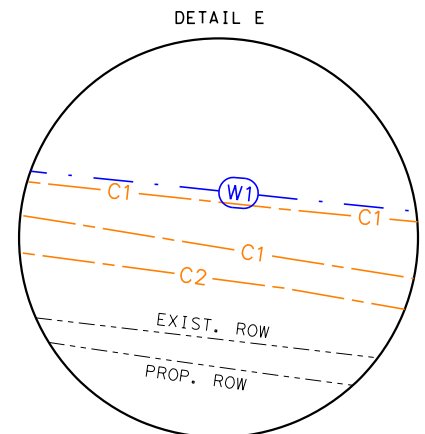
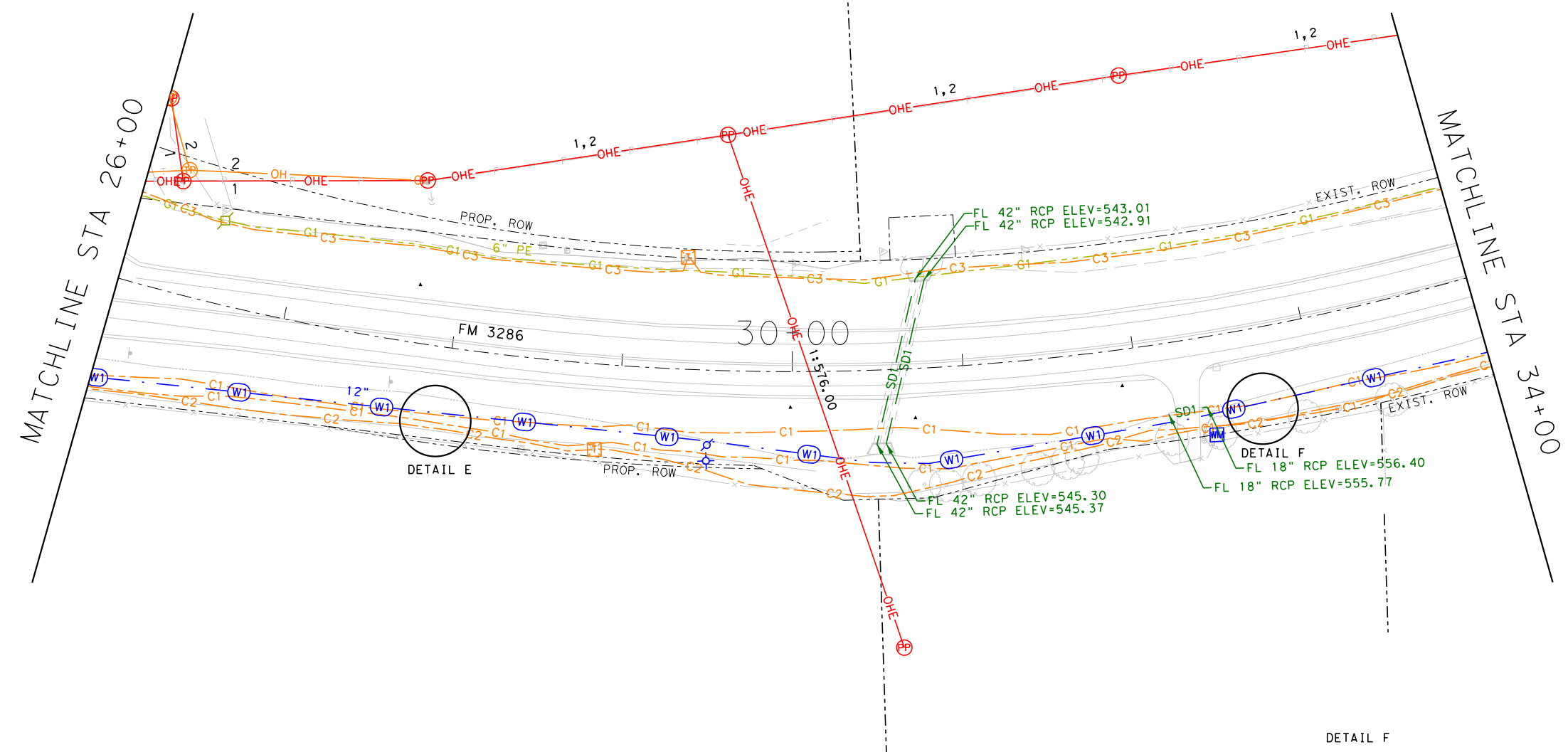
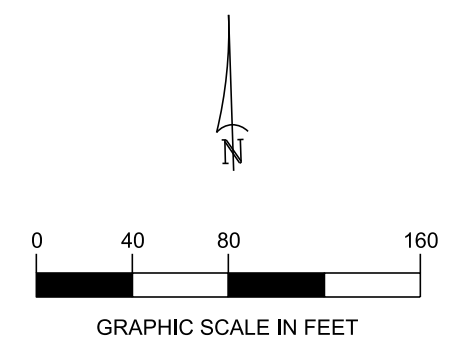
STA. 17+00 TO STA. 26+00

DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER	SUE SHEET NO.	DATE
TXDT1901.01	06 OF 10	06-05-2019
CSJ NUMBERS	PLAN SHEET NO.	
1392-01-044	222	
STATE	DISTRICT	COUNTY
TX	DALLAS	COLLIN

Subsurface Utility Engineering (SUE) Certification

The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.

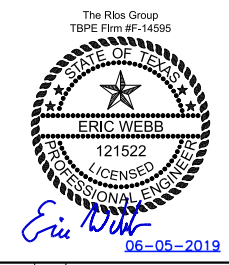
MICHAEL DOOLIN
06-05-2019
C:\ProgramData\TxDOT\1901.01-3e-sdp\1546_WA01_FM1378_SUE_Survey_Services\Work In Progress\Plan Set



QUANTITY TOTALS
 QUALITY LEVEL "B" - 4,235'
 QUALITY LEVEL "C" - 0'
 OVERHEAD (QL-"C") - 1,314'
 QUALITY LEVEL "D" - 828'

QUALITY LEVEL LEGEND
 --- W1 --- QUALITY LEVEL "B"
 --- WW1 --- QUALITY LEVEL "C"
 --- (WW) --- QUALITY LEVEL "D"
 TYPICAL FOR ALL UTILITIES

Subsurface Utility Engineering (SUE) Certification
 The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.



REV	DATE	BY	DESCRIPTION

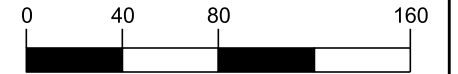
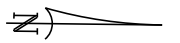
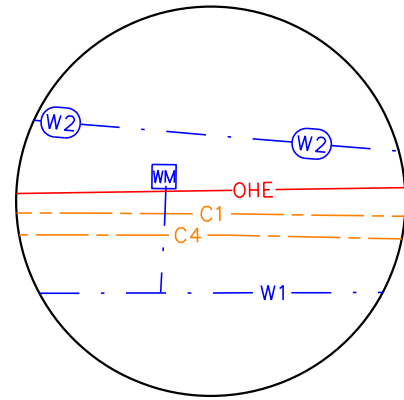
© 2019
 TEXAS DEPARTMENT OF TRANSPORTATION
THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

FM 1378
SUE PLAN SHEET
STA. 26+00 TO STA. 34+00

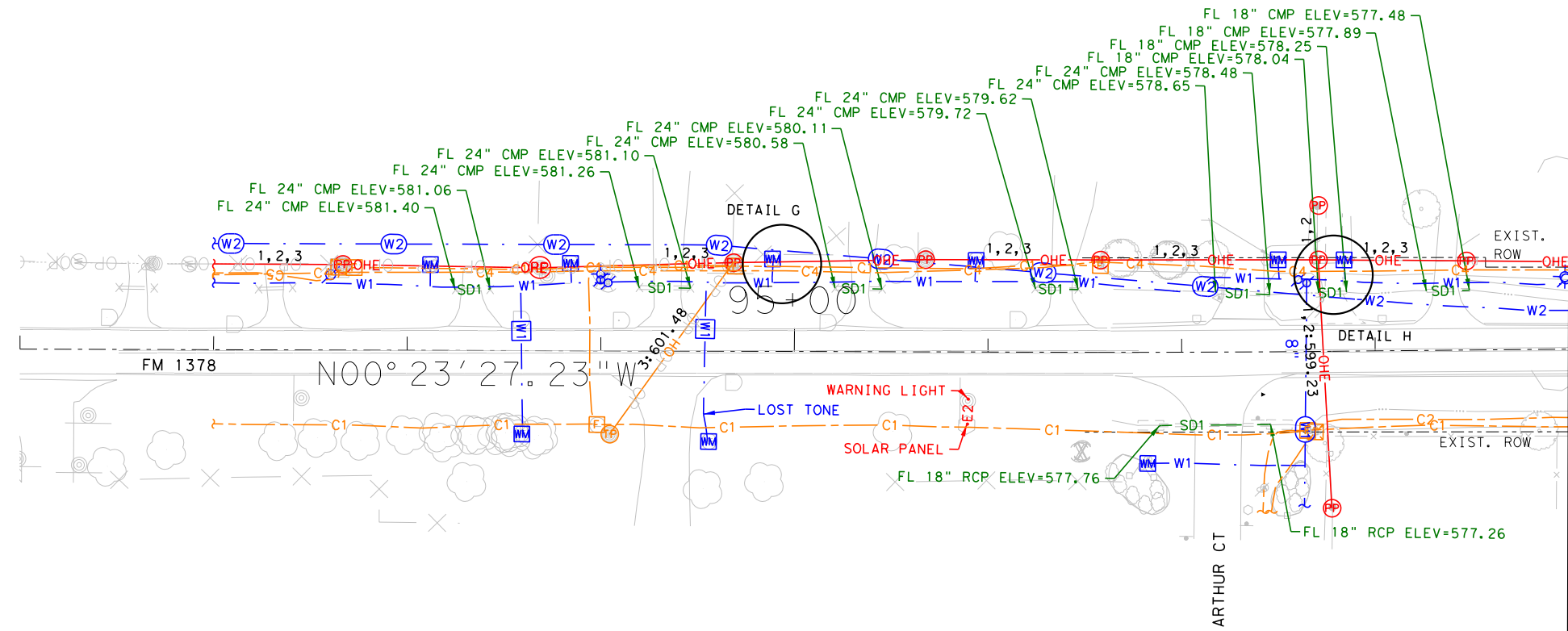
DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER	SUE SHEET NO.	DATE
TXDT1901.01	07 OF 10	06-05-2019
CSJ NUMBERS	PLAN SHEET NO.	
1392-01-044	223	
STATE	DISTRICT	COUNTY
TX	DALLAS	COLLIN

MICHAEL DOOLIN
 06-05-2019
 C:\ProgramData\TXDT\1901.01\3e-sjdp5146_WA01_FM1378_SUE_Survey_Services\Work In Progress\Plan_Sht

DETAIL G

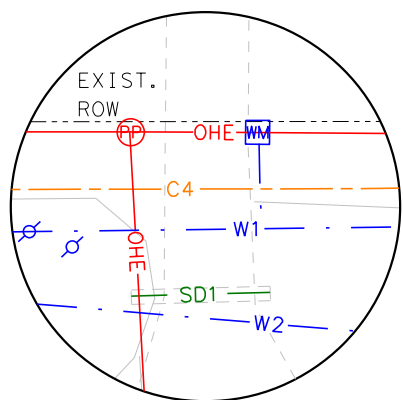


GRAPHIC SCALE IN FEET



MATCHLINE STA 99+00

DETAIL H



QUANTITY TOTALS
 QUALITY LEVEL "B" - 3,386'
 QUALITY LEVEL "C" - 144'
 OVERHEAD (QL-"C") - 950'
 QUALITY LEVEL "D" - 709'

QUALITY LEVEL LEGEND
 --- WW1 --- QUALITY LEVEL "B"
 --- WW1 --- QUALITY LEVEL "C"
 --- WW1 --- QUALITY LEVEL "D"
 TYPICAL FOR ALL UTILITIES



REV	DATE	BY	DESCRIPTION

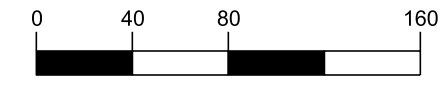
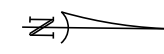
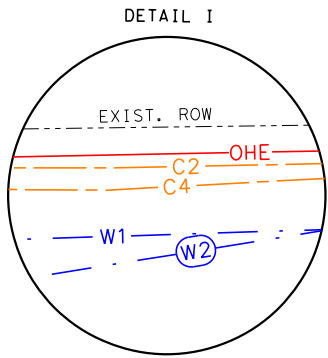
© 2019
 TEXAS DEPARTMENT OF TRANSPORTATION
THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

FM 1378
SUE PLAN SHEET
 END OF PROJECT TO STA. 99+00

DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER TXDT1901.01	SUE SHEET NO. 09 OF 10	DATE 06-05-2019
CSJ NUMBERS 1392-01-044	PLAN SHEET NO. 225	
STATE TX	DISTRICT DALLAS	COUNTY COLLIN

Subsurface Utility Engineering (SUE) Certification

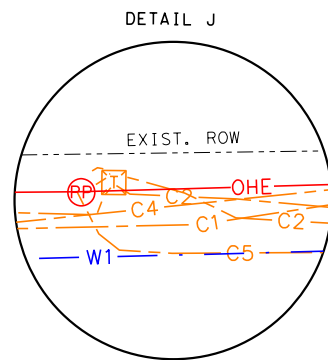
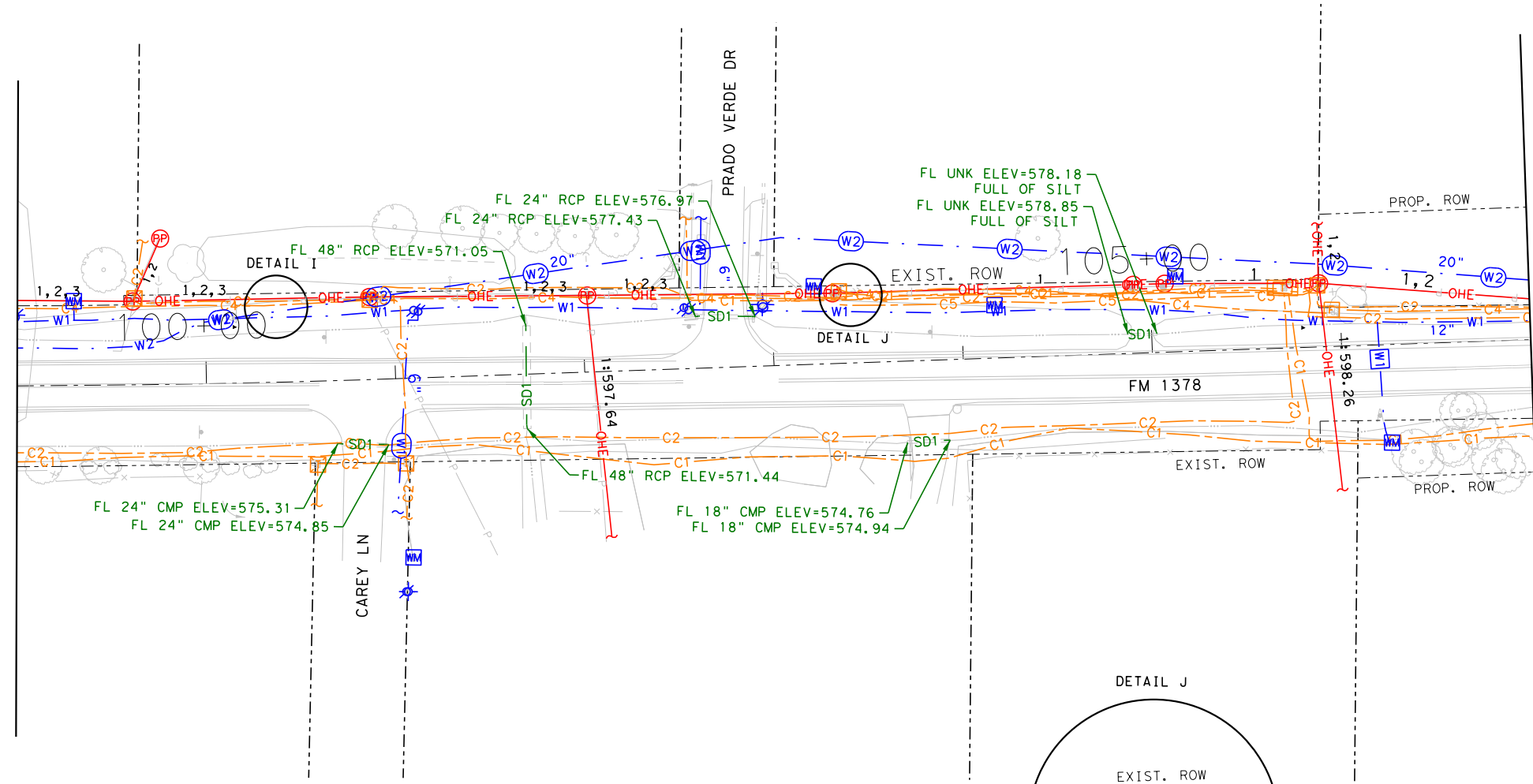
The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.



GRAPHIC SCALE IN FEET

MATCHLINE STA 99+00

MATCHLINE STA 107+00 (SEE SHEET 6)



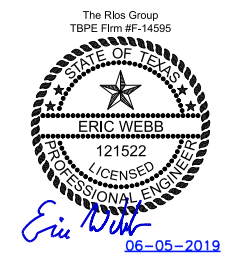
QUANTITY TOTALS

QUALITY LEVEL "B"	- 5,556'
QUALITY LEVEL "C"	- 57'
OVERHEAD (QL-"C")	- 1,107'
QUALITY LEVEL "D"	- 931'

QUALITY LEVEL LEGEND

	QUALITY LEVEL "B"
	QUALITY LEVEL "C"
	QUALITY LEVEL "D"

TYPICAL FOR ALL UTILITIES



REV	DATE	BY	DESCRIPTION

© 2019
 TEXAS DEPARTMENT OF TRANSPORTATION
THE RIOS GROUP
 Subsurface Utility Engineering/Utility Coordination
 7400 Sand Street Fort Worth, TX 76118
 817-345-7500 www.rios-group.com

FM 1378
SUE PLAN SHEET
STA. 99+00 TO STA. 107+00

DESIGNED BY: MD	CHECKED BY: EW	DATE: 06-05-2019
TRG PROJECT NUMBER TXDT1901.01	SUE SHEET NO. 10 OF 10	DATE 06-05-2019
CSJ NUMBERS 1392-01-044	PLAN SHEET NO. 226	
STATE TX	DISTRICT DALLAS	COUNTY COLLIN



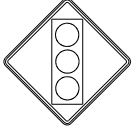
Subsurface Utility Engineering (SUE) Certification

The engineer's seal hereon is to certify that the utilities shown have been investigated in accordance with standard SUE industry practices. Where indicated utility sizes and materials taken from best available records. All other information hereon has been provided by others and is not a part of this certification.

MICHAEL DOOLIN
 06-05-2019
 C:\ProgramData\TxDOT\1901.01\3e-sue\Drawings\Work In Progress\Plan Set

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)		
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		TYPE N	TYPE S
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels		
			FM 1378 AT FM 3286										
	A B D		STREET NAME SIGNS PROVIDED BY THE CITY OF LUCAS						MOUNT ON MAST ARM P1 MOUNT ON MAST ARM P2 MOUNT ON MAST ARM P3				
	*C *F	R10-3eR	 X 2	9" X 15"	X				MOUNT ON PED POLE P4 MOUNT ON PED POLE P5				
	*E *G	R10-3eL	 X 2	9" X 15"	X				MOUNT ON SIGNAL POLE P3 MOUNT ON PED POLE P6				
	H	W3-3		30" X 30"	X				MOUNT ON FLASHER POLE P8				

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD (GEN).

* SUBSIDIARY TO ITEM 680

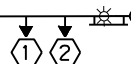

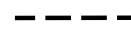

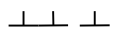







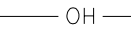
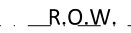






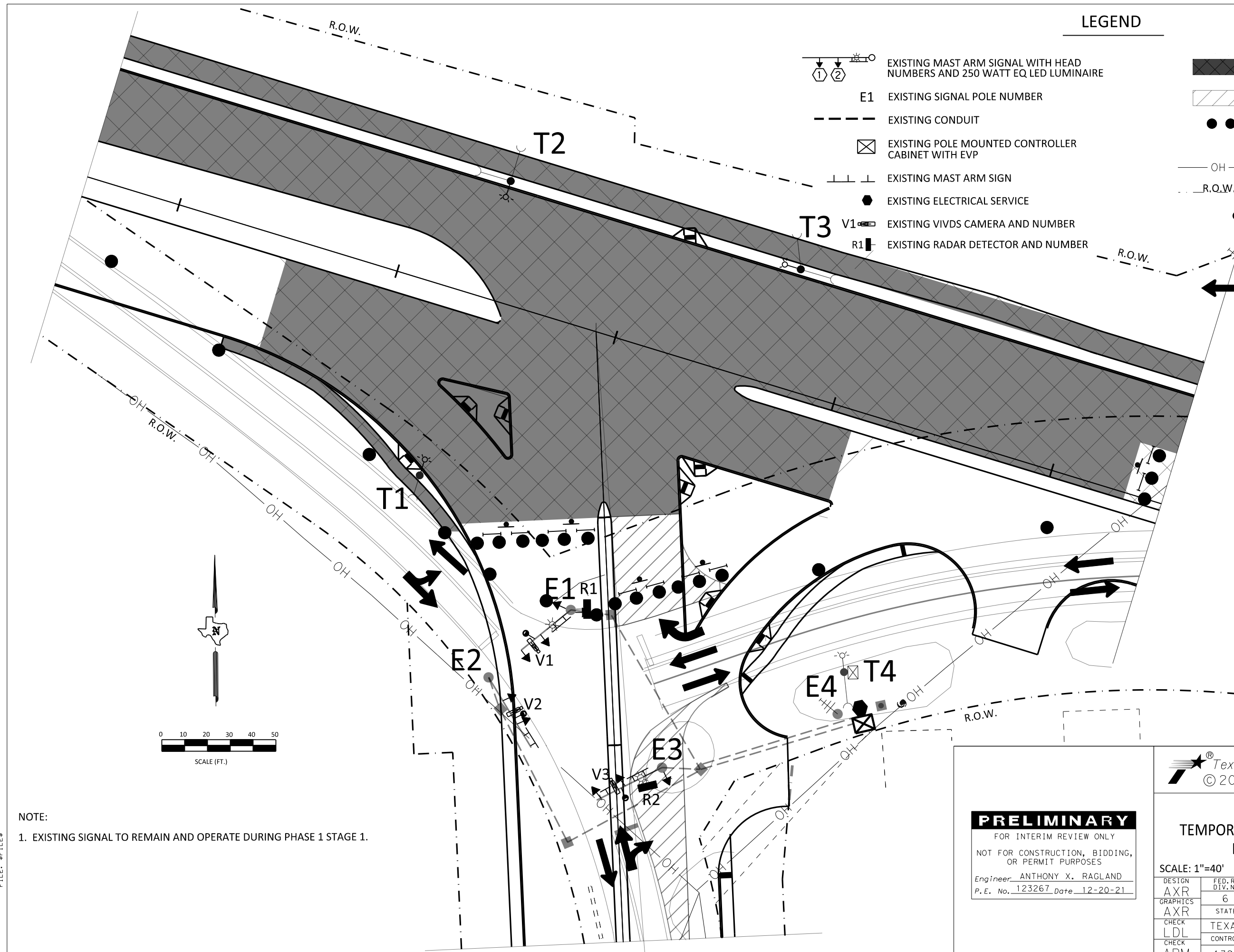
SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392 01		044	FM1392
	DIST	COUNTY	SHEET NO.	
	DAL	COLLIN	227	

LEGEND

-  EXISTING MAST ARM SIGNAL WITH HEAD NUMBERS AND 250 WATT EQ LED LUMINAIRE
-  E1 EXISTING SIGNAL POLE NUMBER
-  EXISTING CONDUIT
-  EXISTING POLE MOUNTED CONTROLLER CABINET WITH EVP
-  EXISTING MAST ARM SIGN
-  EXISTING ELECTRICAL SERVICE
-  V1 EXISTING VIVDS CAMERA AND NUMBER
-  R1 EXISTING RADAR DETECTOR AND NUMBER
-  PHASED WORK ZONE AREA
-  TEMPORARY PAVEMENT
-  WORK ZONE DRUMS
-  EXISTING BBU
-  OH OVERHEAD ELECTRIC LINE
-  R.O.W. RIGHT OF WAY
-  EXISTING OPTICOM
-  EXISTING GROUND BOX
-  EXISTING POLE WITH SSSR ANTENNA
-  TRAFFIC FLOW



NOTE:
1. EXISTING SIGNAL TO REMAIN AND OPERATE DURING PHASE 1 STAGE 1.

PRELIMINARY
FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES
Engineer: ANTHONY X. RAGLAND
P.E. No. 123267, Date 12-20-21

 Texas Department of Transportation
© 2021

**PHASE 1 STAGE 1
TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286**






SCALE: 1"=40' SHEET 1 OF 2

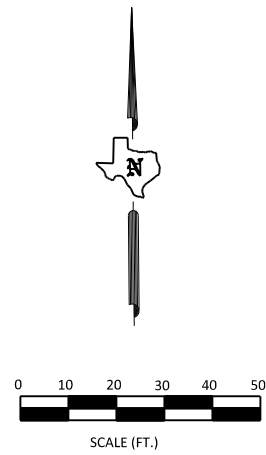
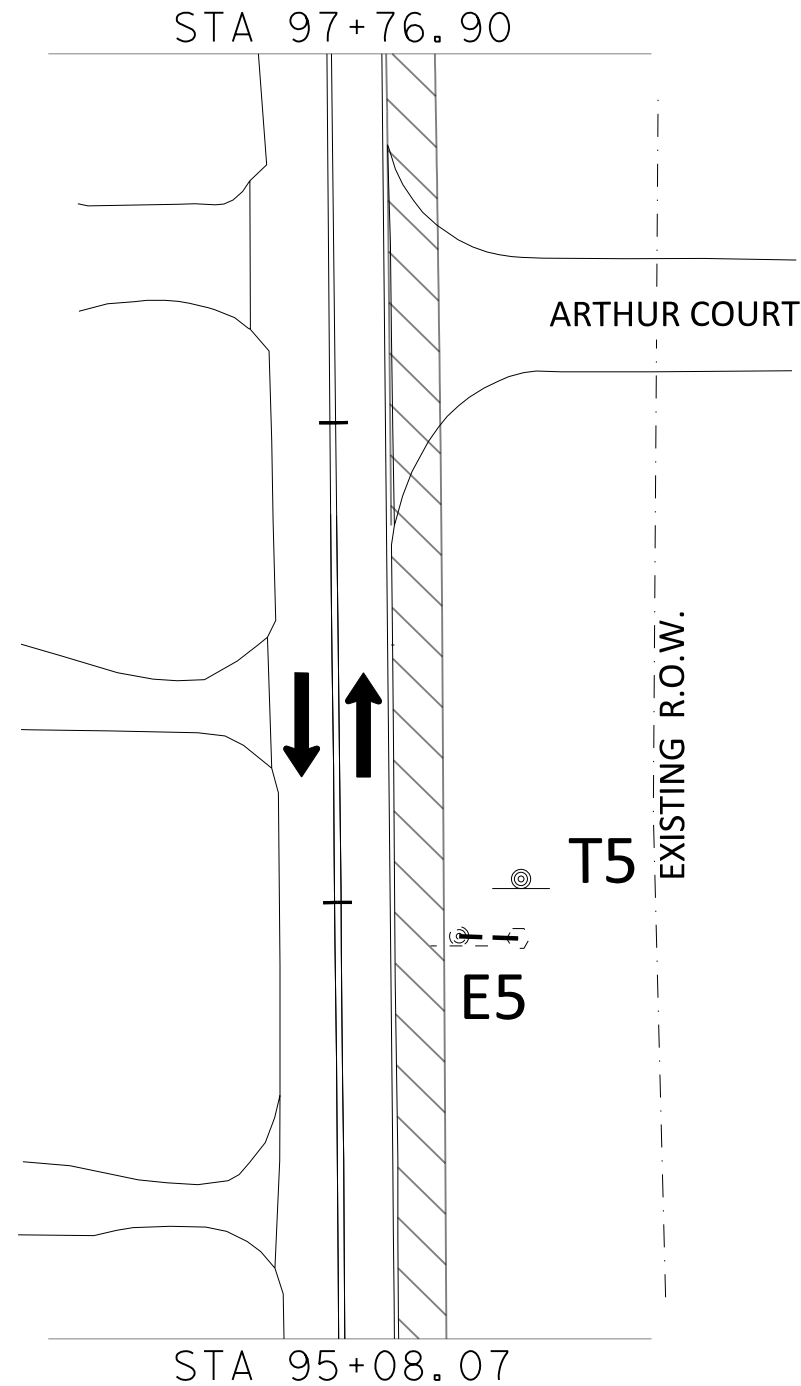
DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	18	COLLIN	228
CHECK	CONTROL	SECTION	JOB	
LDL	1392	01	044	

FILE: BFILES

LEGEND

- E1 EXISTING POLE NUMBER
- T1 TEMPORARY POLE NUMBER
- EXISTING CONDUIT

-  TEMPORARY PAVEMENT
-  R.O.W. RIGHT OF WAY
-  TRAFFIC FLOW
-  EXISTING FLASHER ASSEMBLY
-  PROPOSED SIGN ASSEMBLY



NOTE:

1. EXISTING E5 FLASHER ASSEMBLY TO BE SALVAGED AND RELOCATED TO NEW LOCATION SHOWN ON THE PERMANENT SIGNAL LAYOUT SHEET 2 OF 5.
2. USE THE EXISTING E5 W3-3 SIGN AND INSTALL T5 STATIC SIGN ASSEMBLY WITH FLAGS.

FILE: \$FILES

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES

Engineer: ANTHONY X. RAGLAND

P.E. No. 123267 Date 12-20-21



**PHASE 1 STAGE 1
TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286**

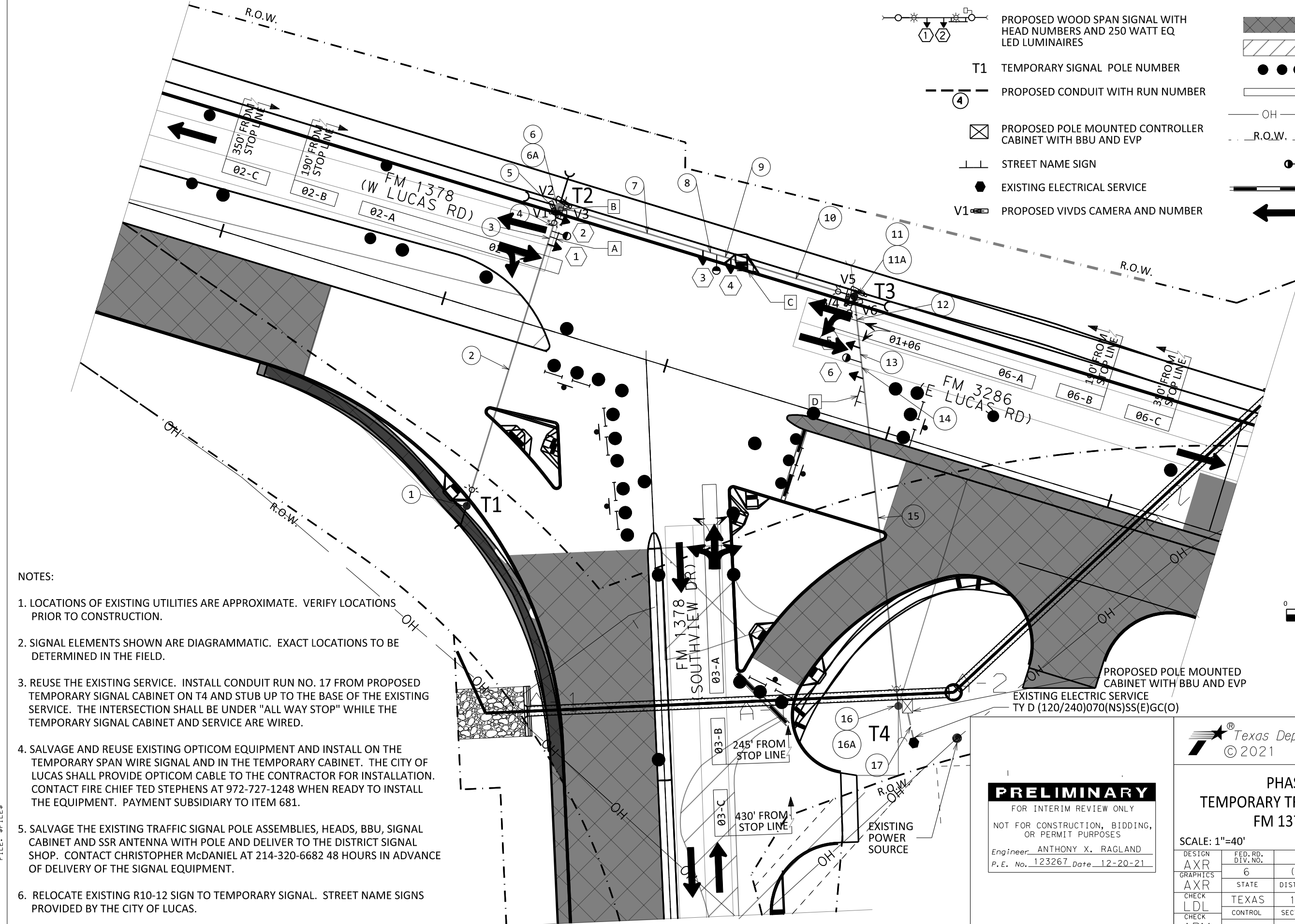
SCALE: 1"=40'

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	18	COLLIN	229
CHECK	CONTROL	SECTION	JOB	
LDL	APM	1392	01 044	

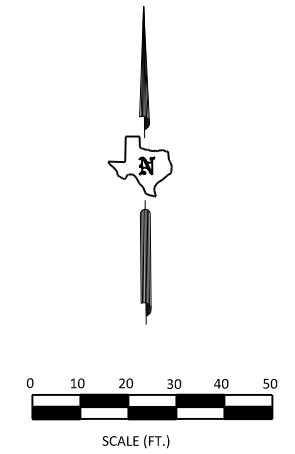
LEGEND

- PROPOSED WOOD SPAN SIGNAL WITH HEAD NUMBERS AND 250 WATT EQ LED LUMINAIRES
- T1 TEMPORARY SIGNAL POLE NUMBER
- PROPOSED CONDUIT WITH RUN NUMBER
- PROPOSED POLE MOUNTED CONTROLLER CABINET WITH BBU AND EVP
- STREET NAME SIGN
- EXISTING ELECTRICAL SERVICE
- V1 PROPOSED VIVDS CAMERA AND NUMBER
- PHASED WORK ZONE AREA
- TEMPORARY PAVEMENT
- WORK ZONE DRUMS
- VIVDS DETECTION ZONE
- OVERHEAD ELECTRIC LINE
- R.O.W. RIGHT OF WAY
- OPTICOM
- CONCRETE BARRIER
- TRAFFIC FLOW



NOTES:

1. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. VERIFY LOCATIONS PRIOR TO CONSTRUCTION.
2. SIGNAL ELEMENTS SHOWN ARE DIAGRAMMATIC. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. REUSE THE EXISTING SERVICE. INSTALL CONDUIT RUN NO. 17 FROM PROPOSED TEMPORARY SIGNAL CABINET ON T4 AND STUB UP TO THE BASE OF THE EXISTING SERVICE. THE INTERSECTION SHALL BE UNDER "ALL WAY STOP" WHILE THE TEMPORARY SIGNAL CABINET AND SERVICE ARE WIRED.
4. SALVAGE AND REUSE EXISTING OPTICOM EQUIPMENT AND INSTALL ON THE TEMPORARY SPAN WIRE SIGNAL AND IN THE TEMPORARY CABINET. THE CITY OF LUCAS SHALL PROVIDE OPTICOM CABLE TO THE CONTRACTOR FOR INSTALLATION. CONTACT FIRE CHIEF TED STEPHENS AT 972-727-1248 WHEN READY TO INSTALL THE EQUIPMENT. PAYMENT SUBSIDIARY TO ITEM 681.
5. SALVAGE THE EXISTING TRAFFIC SIGNAL POLE ASSEMBLIES, HEADS, BBU, SIGNAL CABINET AND SSR ANTENNA WITH POLE AND DELIVER TO THE DISTRICT SIGNAL SHOP. CONTACT CHRISTOPHER McDANIEL AT 214-320-6682 48 HOURS IN ADVANCE OF DELIVERY OF THE SIGNAL EQUIPMENT.
6. RELOCATE EXISTING R10-12 SIGN TO TEMPORARY SIGNAL. STREET NAME SIGNS PROVIDED BY THE CITY OF LUCAS.



PRELIMINARY
 FOR INTERIM REVIEW ONLY
 NOT FOR CONSTRUCTION, BIDDING,
 OR PERMIT PURPOSES
 Engineer: ANTHONY X. RAGLAND
 P.E. No. 123267 Date 12-20-21

Texas Department of Transportation
 © 2021

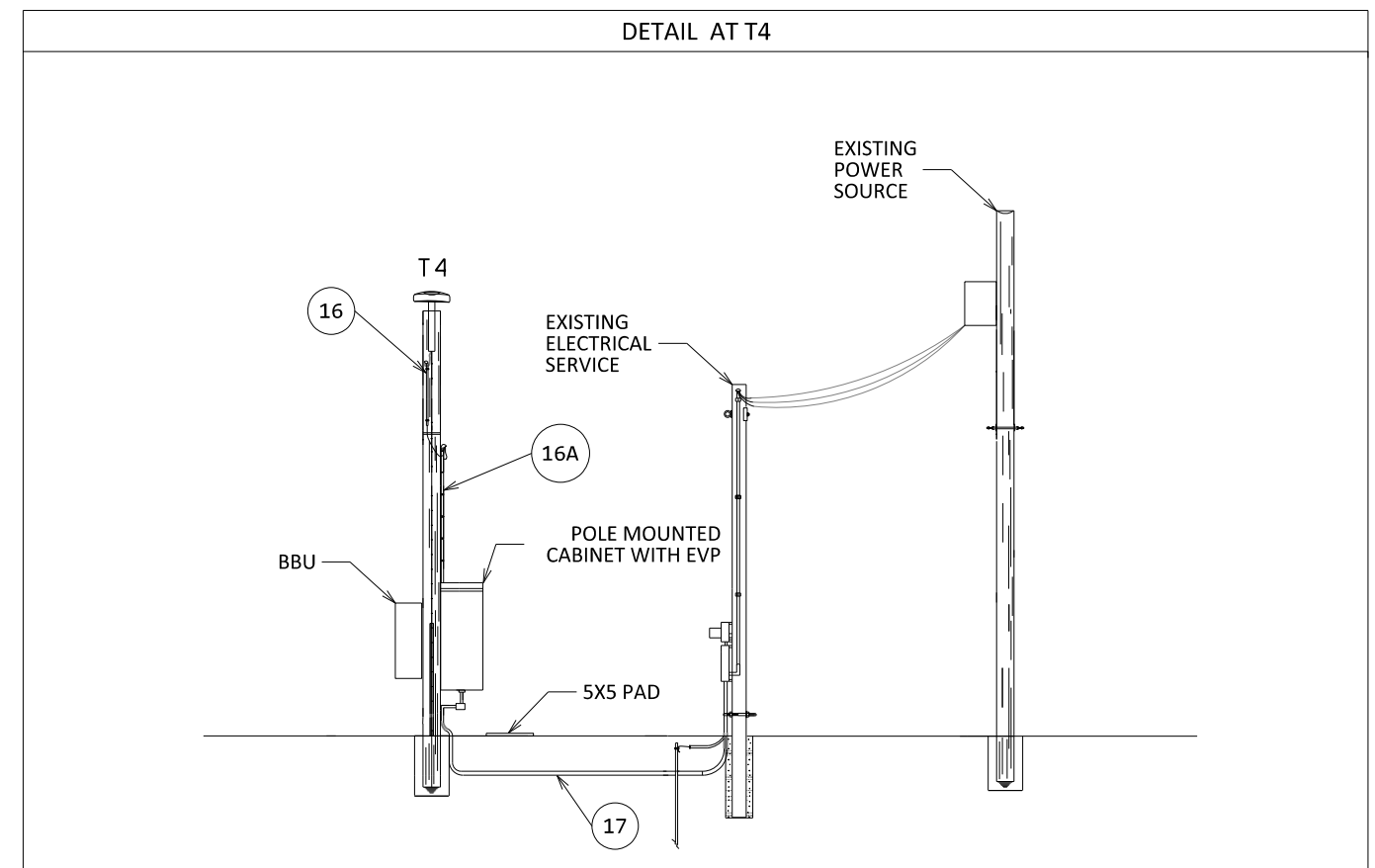
**PHASE 1 STAGE 2
 TEMPORARY TRAFFIC SIGNAL LAYOUT
 FM 1378 AT FM 3286**

SCALE: 1"=40' SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	18	COLLIN	230
CHECK	CONTROL	SECTION	JOB	
LDL	1392	01	044	

FILE: \$FILES\$

CONDUIT RUNS													
RUN NO.	CONDUIT TYPE (LF)				CABLE AND WIRE SIZE TYPE (EA)					DETECTION		LENGTH OF RUN (LF)	RUN NO.
	2" RM	4" RM	2" PVC SCH 80 (TRENCH)	OVERHEAD	NO.6 BARE	NO.6 XHHW	NO.8 XHHW	5 CNDR CABLE 14 AWG TY A	7 CNDR CABLE 14 AWG TY A	VIVDS CABLE	OPTICOM CABLE *		
1	20						2					20	1
2				116			2					116	2
3				6			2		1			6	3
4				6			2		1	1		6	4
5				20			2	1	1		1	3	5
6	20						2					20	6
6A	10									1		10	6A
7				63			2	1	1	3	1	63	7
8				6			2	2	1	3	1	6	8
9				6			2	2	1	3	2	6	9
10				54			2	2	1	3	2	54	10
11	20						2					20	11
11A	10									2		10	11A
12				20			2	2	1	6	2	20	12
13				6			2	3	1	6	2	6	13
14				6			2	3	1	6	3	6	14
15				143			2	3	1	6	3	143	15
16	20						2	3				20	16
16A		20					4	3	1	6	3	20	16A
17	5		14		1	2	4					14	17
TOTAL LENGTH	105	20	14	452	19	38	1260	840	356	1587	774		TOTAL LENGTH



NOTES:

* CABLE PROVIDED BY THE CITY AND INSTALLED BY THE CONTRACTOR. INSTALLATION PAID FOR UNDER ITEM 681.

IN RUNS NO. 1, 6, 11 AND 16 THE LENGTH OF THE NO. 8 INSULATED CABLE IS MEASURED TO THE END OF THE LUMINAIRE ARM.

VIVDS DETECTION ZONES					
VIVDS NUMBER	MOUNTING LOCATION	ZONE LOCATION	MOUNTING HEIGHT (FT)	SETBACK DISTANCE (FT)	ZONE
V1	POLE T2	SETBACKS	30	190	02-B
				350	02-C
V2	POLE T2	STOPBAR	20	N/A	03-A
V3	POLE T2	STOPBAR	20	N/A	06-A
V4	POLE T3	SETBACKS	30	245	03-B
				430	03-C
V5	POLE T3	SETBACKS	30	190	06-B
				350	06-C
V6	POLE T3	STOPBAR	20	N/A	02-A

CABLE TERMINATION CHART				
CNDR COLOR	CABLE 1 & 2 SPAN T1-T2 CONTROLLER		CABLE 3 SPAN T2-T3 CONTROLLER	CABLE 4 SPAN T3-T4 CONTROLLER
	7 CNDR	5 CNDR	5 CNDR	5 CNDR
BLACK	SPARE	SPARE	SPARE	SPARE
WHITE	SIG. COMMON	SIG. COMMON	SIG. COMMON	SIG. COMMON
RED	SH 1 06 R	SH 2 06 R	SH 3,4 03 R	SH 5,6 02 R
GREEN	SH 1 06 G	SH 2 06 G	SH 3,4 03 G	SH 5,6 02 G
ORANGE	SH 1 06 Y	SH 2 06 Y	SH 3,4 03 Y	SH 5,6 02 Y
BLUE	SH 1 01 G			
WHITE/BLACK	SH 1 01 Y			

FILE:

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer ANTHONY X. RAGLAND

P. E. No. 123267 Date 12-20-21

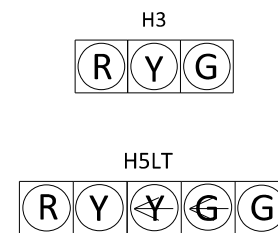


PHASE 1 STAGE 2
TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286

SHEET 2 OF 3

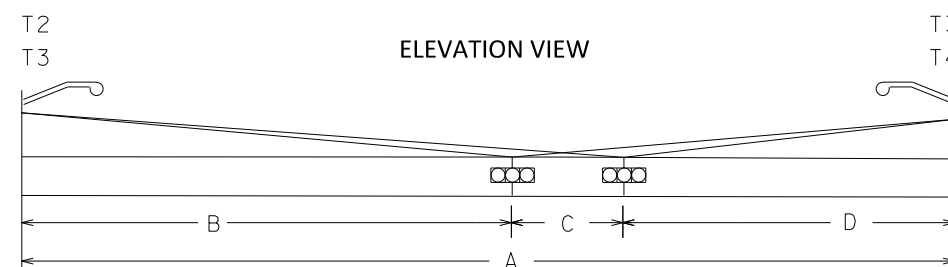
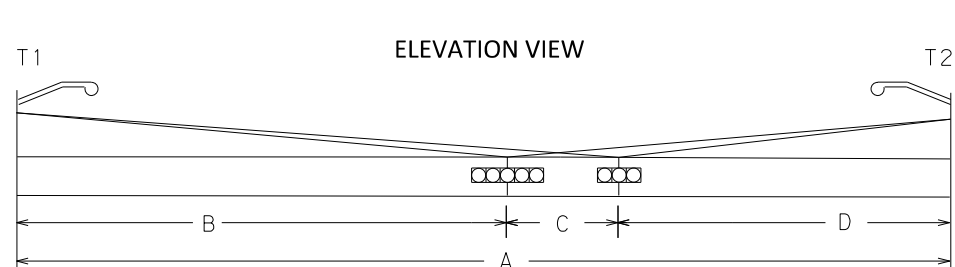
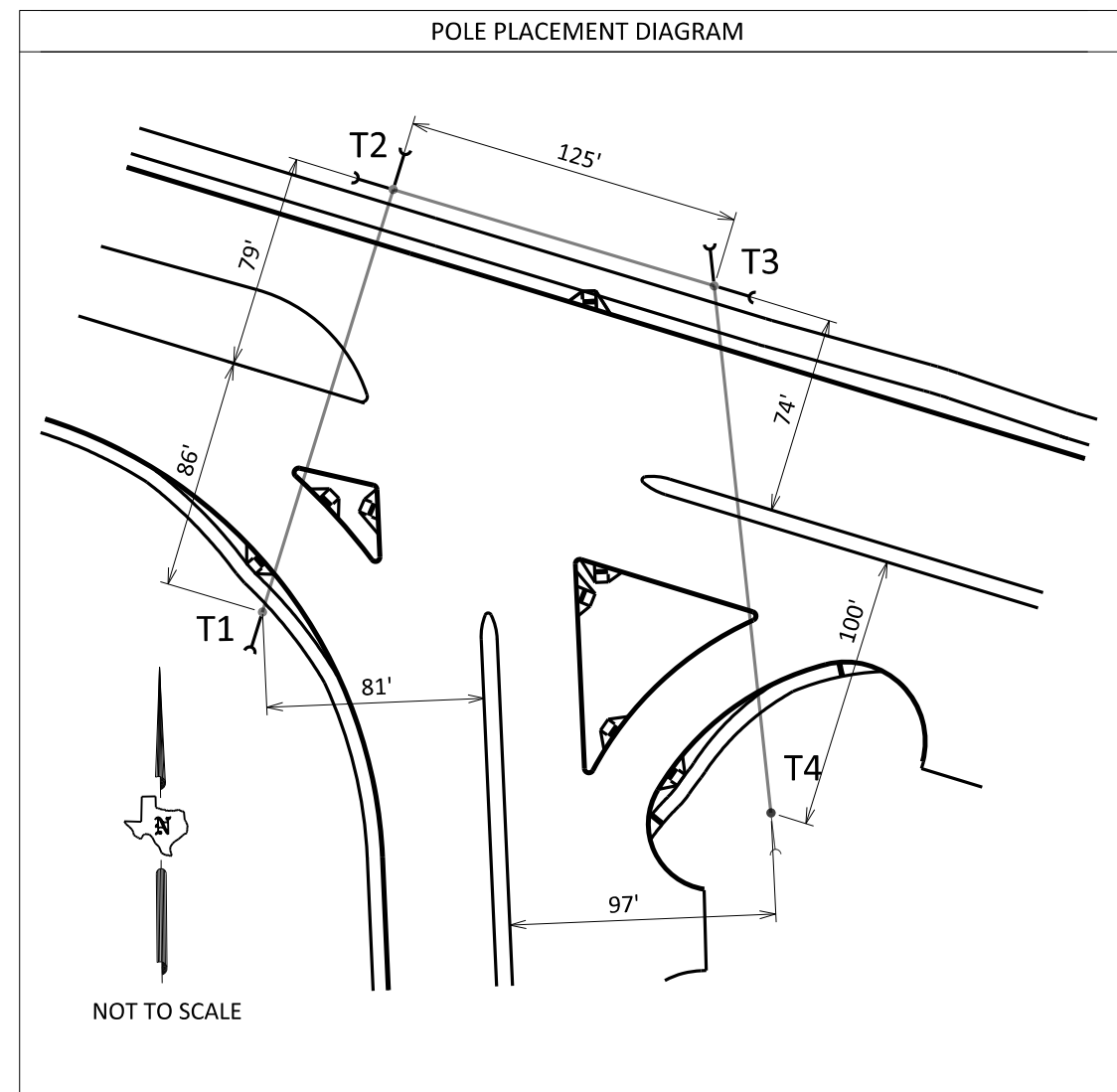
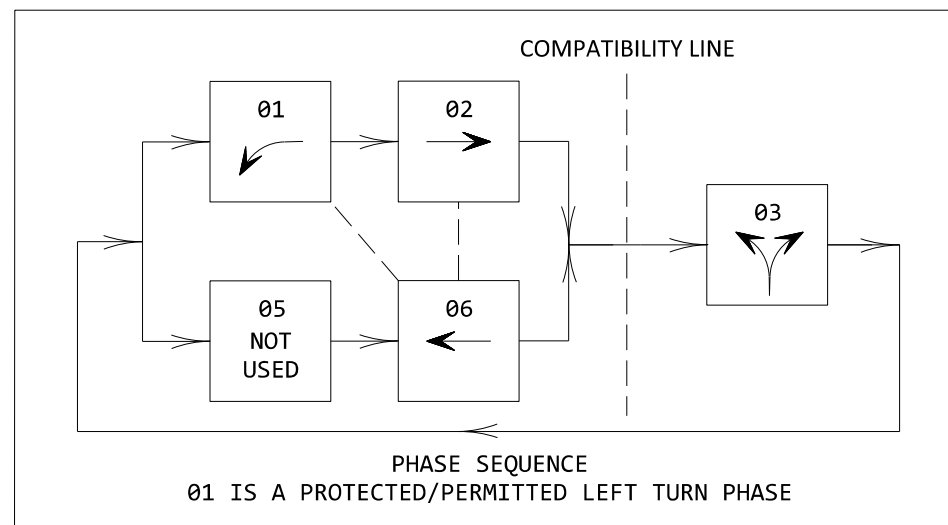
DESIGN AXR	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)		HIGHWAY NO. FM 1378
GRAPHICS AXR	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	01	COLLIN	231
CHECK APM	CONTROL	SECTION	JOB	
	1392	01	044	

SIGNAL HEADS									
SIGNAL HEAD NUMBER	12" SIGNAL INDICATION								
	SIGNAL HEAD TYPE	BACK PLATE		VEH SIGNAL SECT WITH LED LAMP					
		3-SEC (EA)	5-SEC (EA)	←G (EA)	G (EA)	←Y (EA)	Y (EA)	←R (EA)	R (EA)
2,3,4,5,6	H3	5			5	5			5
1	H5LT		1	1	1	1	1		1
TOTAL		5	1	1	6	1	6		6

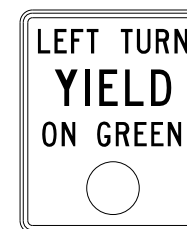


SIGNAL HEAD AND POLE PLACEMENT					
SPAN	A	B	C	D	NO. OF HEADS
T1 TO T2	165	130	12	23	2
T2 TO T3	125	57	12	56	2
T3 TO T4	165	41	12	112	2

STRANDED STEEL CABLE CALCULATION						
POLE #	T1	T2	T3	T4	WIRE SIZE	LENGTH (LF)
SPAN	165	125	165		1/4"	455
TOTAL	482	402	482		3/8"	1366



RELOCATE FROM EXISTING SIGNAL



R10-12

CITY SUPPLIED



STREET NAME SIGNS

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer: ANTHONY X. RAGLAND
P. E. No. 123267 Date 12-20-21



PHASE 1 STAGE 2
TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286

SCALE: 1"=40'

SHEET 3 OF 3

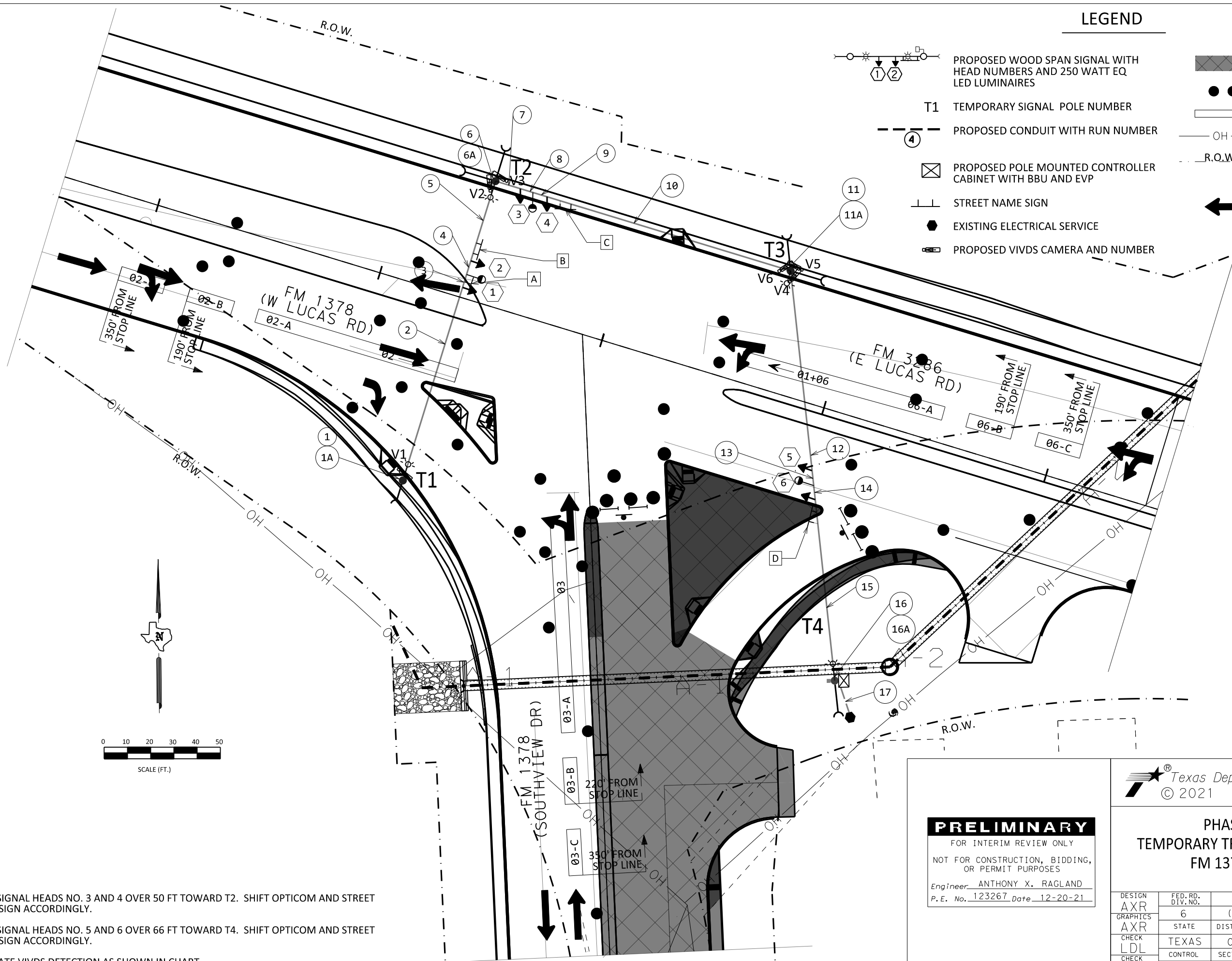
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	01	COLLIN	232
CHECK	CONTROL	SECTION	JOB	
LDL	1392	01	044	

FILE:

EXISTING ELECTRICAL SERVICE DATA									
ELECTRICAL SERVICE	SERVICE CONDUIT SIZE (RM)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	CONTACTOR AMPS	PANELBD./LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
TY D (120/240) 070 (NS) SS (E) GC (O)	1-1/4"	3#4	N/A	2P/70	30	100	TEMP SIGNAL LIGHTING	1P/50 2P/15	<7.1

LEGEND

- PROPOSED WOOD SPAN SIGNAL WITH HEAD NUMBERS AND 250 WATT EQ LED LUMINAIRES
- T1 TEMPORARY SIGNAL POLE NUMBER
- PROPOSED CONDUIT WITH RUN NUMBER
- PROPOSED POLE MOUNTED CONTROLLER CABINET WITH BBU AND EVP
- STREET NAME SIGN
- EXISTING ELECTRICAL SERVICE
- PROPOSED VIVDS CAMERA AND NUMBER
- PHASED WORK ZONE AREA
- WORK ZONE DRUMS
- VIVDS DETECTION ZONE
- OH OVERHEAD ELECTRIC LINE
- R.O.W. RIGHT OF WAY
- OPTICOM
- TRAFFIC FLOW



- FILE:
- NOTES:
1. SHIFT SIGNAL HEADS NO. 3 AND 4 OVER 50 FT TOWARD T2. SHIFT OPTICOM AND STREET NAME SIGN ACCORDINGLY.
 2. SHIFT SIGNAL HEADS NO. 5 AND 6 OVER 66 FT TOWARD T4. SHIFT OPTICOM AND STREET NAME SIGN ACCORDINGLY.
 3. RELOCATE VIVDS DETECTION AS SHOWN IN CHART.

PRELIMINARY
 FOR INTERIM REVIEW ONLY
 NOT FOR CONSTRUCTION, BIDDING,
 OR PERMIT PURPOSES
 Engineer ANTHONY X. RAGLAND
 P. E. No. 123267 Date 12-20-21



**PHASE 2 STAGE 1
 TEMPORARY TRAFFIC SIGNAL LAYOUT
 FM 1378 AT FM 3286**

SHEET 1 OF 2

DESIGN AXR	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)		HIGHWAY NO. FM 1378
GRAPHICS AXR	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	01	COLLIN	233
CHECK	CONTROL	SECTION	JOB	
APM	1392	01	044	

CONDUIT RUNS													
RUN NO.	CONDUIT TYPE (LF)				CABLE AND WIRE SIZE TYPE (EA)					DETECTION	OPTICOM CABLE *	LENGTH OF RUN (LF)	RUN NO.
	2" RM	4" RM	2" PVC SCH 80 (TRENCH)	OVERHEAD	NO.6 BARE	NO.6 XHHW	NO.8 XHHW	5 CNDR CABLE 14 AWG TY A	7 CNDR CABLE 14 AWG TY A	VIVDS CABLE			
1	20						2					20	1
1A	10									1		10	1A
2				85			2					85	2
3				6			2		1			6	3
4				6			2		1	1		6	4
5				34			2	1	1		1	34	5
6	20						2					20	6
6A	10									1		10	6A
7				10			2	1	1	3	1	10	7
8				6			2	2	1	3	1	6	8
9				6			2	2	1	3	2	6	9
10				108			2	2	1	3	2	108	10
11	20						2					20	11
11A	10									1		10	11A
12				85			2	2	1	6	2	85	12
13				6			2	3	1	6	2	6	13
14				6			2	3	1	6	3	6	14
15				78			2	3	1	6	3	78	15
16	20						2					20	16
16A		20					4	3	1	6	3	20	16A
17	5		14		1	2	4					19	17
TOTAL LENGTH	115	20	14	436	19	38	1188	784	371	1515	778		TOTAL LENGTH

VIVDS DETECTION ZONES					
VIVDS NUMBER	MOUNTING LOCATION	ZONE LOCATION	MOUNTING HEIGHT (FT)	SETBACK DISTANCE (FT)	ZONE
V1	POLE T1	SETBACKS	30	190	02-B
				350	02-C
V2	POLE T2	SETBACKS	30	220	03-B
				350	03-C
V3	POLE T2	STOPBAR	20	N/A	06-A
V4	POLE T3	STOPBAR	20	N/A	03-A
V5	POLE T3	SETBACKS	30	190	06-B
				350	06-C
V6	POLE T3	STOPBAR	20	N/A	02-A

NOTES:

* CABLE PROVIDED BY THE CITY AND INSTALLED BY THE CONTRACTOR. INSTALLATION PAID FOR UNDER ITEM 681.

** CABLE SUPPLIED AND INSTALLED BY THE CONTRACTOR. INSTALLATION PAID FOR UNDER ITEM 681.

IN RUNS NO. 1,6, 11 AND 16 THE LENGTH OF THE NO. 8 INSULATED CABLE IS MEASURED TO THE END OF THE LUMINAIRE ARM.

FILE:

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer ANTHONY X. RAGLAND

P. E. No. 123267 Date 12-20-21

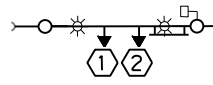

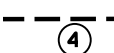



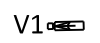



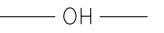
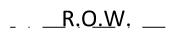




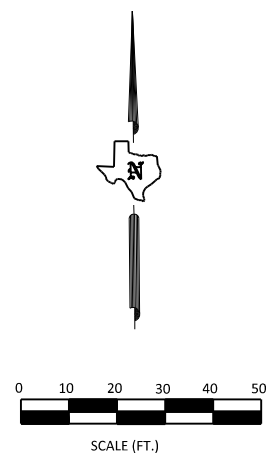
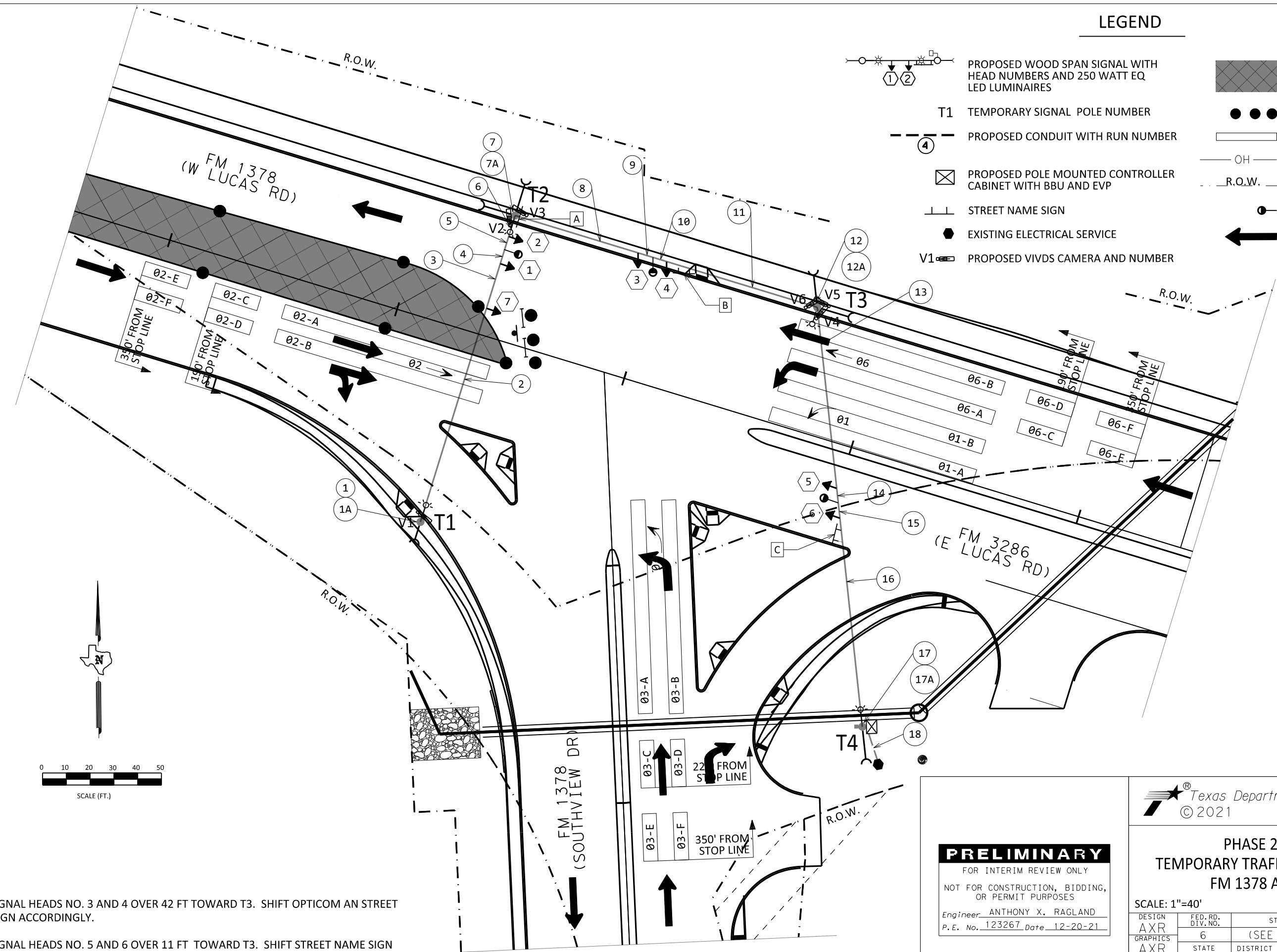
PHASE 2 STAGE 1
TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	01	COLLIN	234
CHECK	CONTROL	SECTION	JOB	
LDL	1392	01	044	
CHECK	APM			

LEGEND

-  PROPOSED WOOD SPAN SIGNAL WITH HEAD NUMBERS AND 250 WATT EQ LED LUMINAIRES
-  T1 TEMPORARY SIGNAL POLE NUMBER
-  PROPOSED CONDUIT WITH RUN NUMBER
-  PROPOSED POLE MOUNTED CONTROLLER CABINET WITH BBU AND EVP
-  STREET NAME SIGN
-  EXISTING ELECTRICAL SERVICE
-  V1 PROPOSED VIVDS CAMERA AND NUMBER
-  PHASED WORK ZONE AREA
-  WORK ZONE DRUMS
-  VIVDS DETECTION ZONE
-  OH OVERHEAD ELECTRIC LINE
-  R.O.W. RIGHT OF WAY
-  OPTICOM
-  TRAFFIC FLOW



- FILE: \$FILES\$
- NOTES:
1. SHIFT SIGNAL HEADS NO. 3 AND 4 OVER 42 FT TOWARD T3. SHIFT OPTICOM AN STREET NAME SIGN ACCORDINGLY.
 2. SHIFT SIGNAL HEADS NO. 5 AND 6 OVER 11 FT TOWARD T3. SHIFT STREET NAME SIGN ACCORDINGLY.
 3. ADD H4PLT SIGNAL HEAD NO. 7. REPLACE H5LT SIGNAL HEAD NO. 1 WITH A H3.

PRELIMINARY
 FOR INTERIM REVIEW ONLY
 NOT FOR CONSTRUCTION, BIDDING,
 OR PERMIT PURPOSES
 Engineer: ANTHONY X. RAGLAND
 P.E. No. 123267 Date 12-20-21



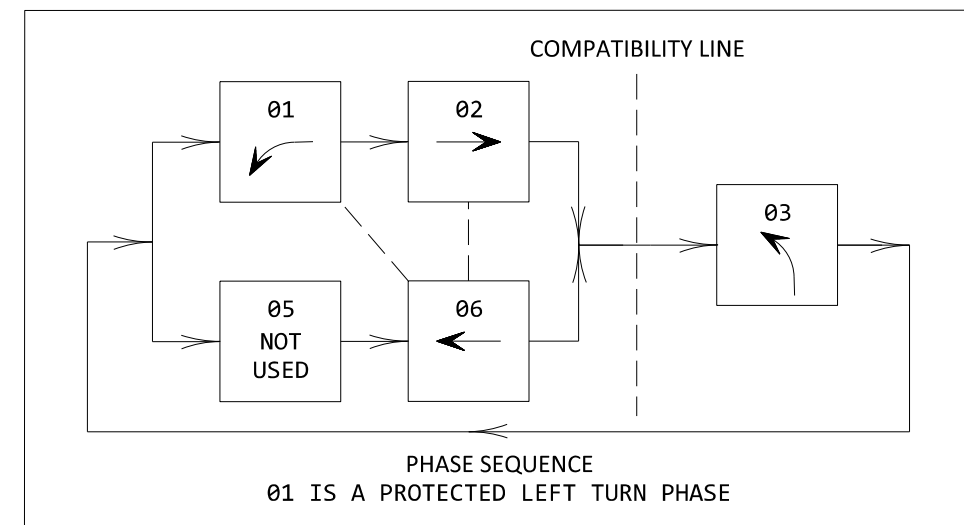
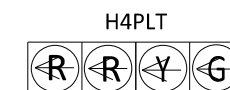
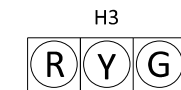
**PHASE 2 STAGE 2
 TEMPORARY TRAFFIC SIGNAL LAYOUT
 FM 1378 AT FM 3286**

SCALE: 1"=40' SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	18	COLLIN	235
CHECK	CONTROL	SECTION	JOB	
LDL	1392	01	044	

CONDUIT RUNS													
RUN NO.	CONDUIT TYPE (LF)				CABLE AND WIRE SIZE TYPE (EA)					DETECTION	OPTICOM CABLE *	LENGTH OF RUN (LF)	RUN NO.
	2" RM	4" RM	2" PVC SCH 80 (TRENCH)	OVERHEAD	NO.6 BARE	NO.6 XHHW	NO.8 XHHW	5 CNDR CABLE 14 AWG TY A	7 CNDR CABLE 14 AWG TY A	VIVDS CABLE			
1	20						2					20	1
1A	10									1		10	1A
2				92			2		1	1		92	2
3				20			2		1	1		20	3
4				6			2	1	1	1		6	4
5				6			2	1	1	1	1	6	5
6				8			2	1	1	1	1	8	6
7	20						2					20	7
7A	10									1		10	7A
8				52			2	1	1	3	1	52	8
9				6			2	2	1	3	1	6	9
10				6			2	2	1	3	2	6	10
11				65			2	2	1	3	2	65	11
12	20						2					20	12
12A	10									1		10	12A
13				75			2	2	1	6	2	75	13
14				6			2	3	1	6	2	6	14
15				6			2	3	1	6	3	6	15
16				87			2	3	1	6	3	87	16
17	20						2					20	17
17A		20					4	3	1	6	3	20	17A
18	5		14		1	2	4					19	18
TOTAL LENGTH	120	20	49	455	110	108	1366	698	376	1344	680		TOTAL LENGTH

SIGNAL HEADS									
SIGNAL HEAD NUMBER	SIGNAL HEAD TYPE	12" SIGNAL INDICATION							
		BACK PLATE		VEH SIGNAL SECT WITH LED LAMP					
		3-SEC (EA)	4-SEC (EA)	←G (EA)	G (EA)	←Y (EA)	Y (EA)	←R (EA)	R (EA)
1,2,3,4,5,6	H3	6			6		6		6
7	H4PLT		1	1		1		2	
TOTAL		6	1	1	6	1	6	2	6



VIVDS DETECTION ZONES					
VIVDS NUMBER	MOUNTING LOCATION	ZONE LOCATION	MOUNTING HEIGHT (FT)	SETBACK DISTANCE (FT)	ZONE
V1	POLE T1	SETBACKS	30	190	02-B
				350	02-C
V2	POLE T2	SETBACKS	30	220	03-B
				350	03-C
V3	POLE T2	STOPBAR	20	N/A	06-A
V4	POLE T3	STOPBAR	20	N/A	03-A
V5	POLE T3	SETBACKS	30	190	06-B
				350	06-C
V6	POLE T3	STOPBAR	20	N/A	02-A

CABLE TERMINATION CHART				
CNDR COLOR	CABLE 1 & 2 SPAN T1-T2 CONTROLLER		CABLE 3 SPAN T2-T3 CONTROLLER	CABLE 4 SPAN T3-T4 CONTROLLER
	7 CNDR	5 CNDR	5 CNDR	5 CNDR
BLACK	SPARE	SPARE	SPARE	SPARE
WHITE	SIG. COMMON	SIG. COMMON	SIG. COMMON	SIG. COMMON
RED	SH 7 01 ←	SH 1,2 06 R	SH 3,4 03 R	SH 5,6 02 R
GREEN	SH 7 01 ←	SH 1,2 06 G	SH 3,4 03 G	SH 5,6 02 G
ORANGE	SH 7 01 ←	SH 1,2 06 Y	SH 3,4 03 Y	SH 5,6 02 Y
BLUE	SPARE			
WHITE/BLACK	SPARE			

FILE:

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer: ANTHONY X. RAGLAND
P. E. No. 123267 Date 12-20-21

© 2021

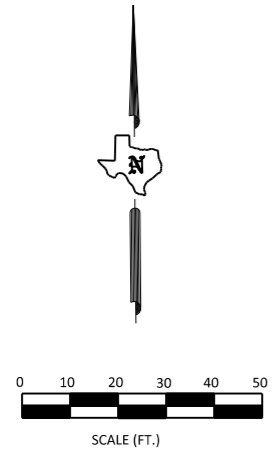
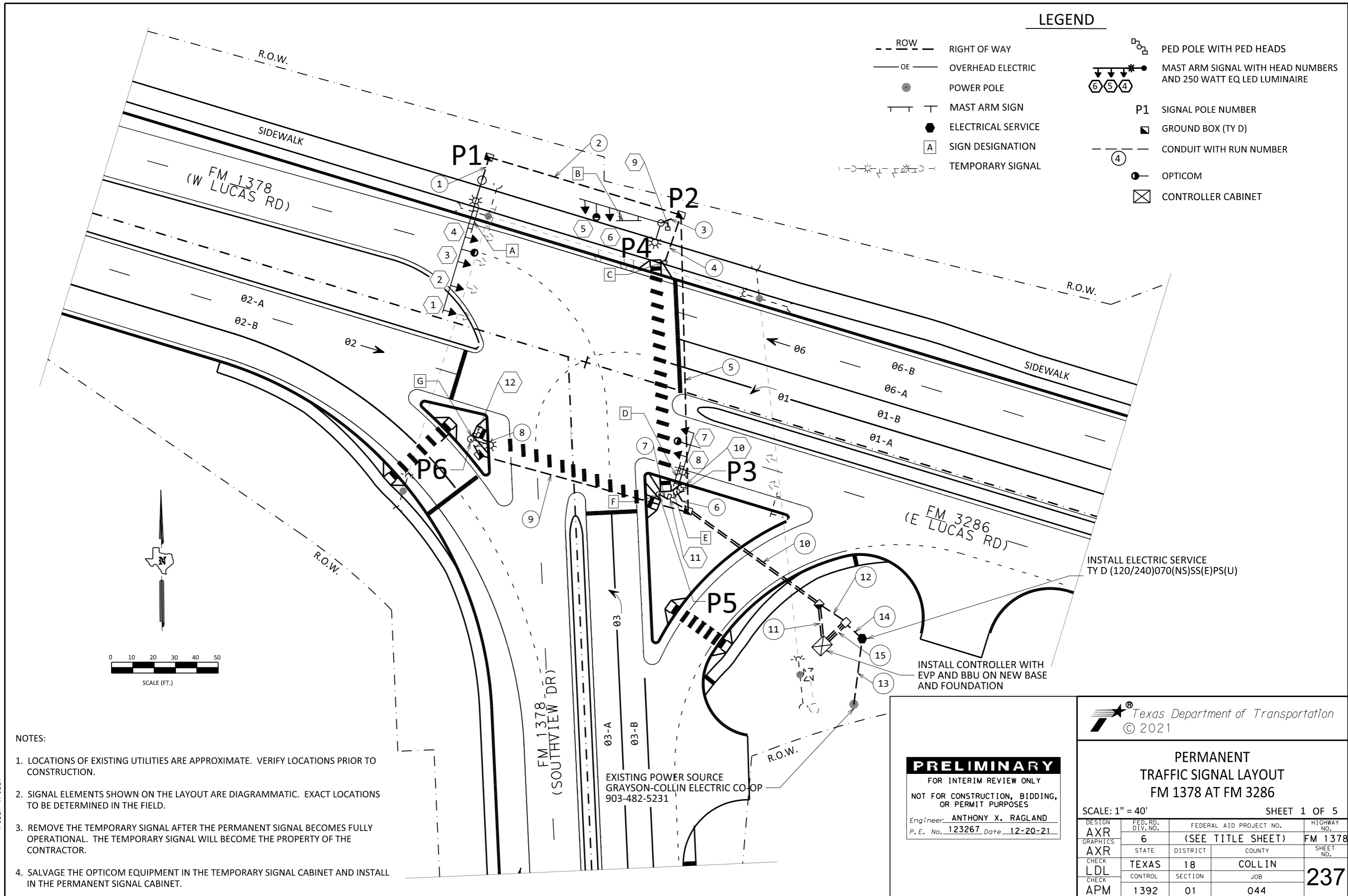
**PHASE 2 STAGE 2
TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286**

SHEET 2 OF 2

DESIGN GRAPHICS	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)		HIGHWAY NO. FM 1378
CHECK LDL	STATE TEXAS	DISTRICT 01	COUNTY COLLIN	SHEET NO. 236
CHECK APM	CONTROL 1392	SECTION 01	JOB 044	

LEGEND

- ROW --- RIGHT OF WAY
- OE — OVERHEAD ELECTRIC
- POWER POLE
- T — T MAST ARM SIGN
- ELECTRICAL SERVICE
- [A] SIGN DESIGNATION
- ⋈ TEMPORARY SIGNAL
- ⊠ PED POLE WITH PED HEADS
- ⊠ MAST ARM SIGNAL WITH HEAD NUMBERS AND 250 WATT EQ LED LUMINAIRE
- P1 SIGNAL POLE NUMBER
- ⊠ GROUND BOX (TY D)
- ④ CONDUIT WITH RUN NUMBER
- OPTICOM
- ⊠ CONTROLLER CABINET



- NOTES:
1. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. VERIFY LOCATIONS PRIOR TO CONSTRUCTION.
 2. SIGNAL ELEMENTS SHOWN ON THE LAYOUT ARE DIAGRAMMATIC. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD.
 3. REMOVE THE TEMPORARY SIGNAL AFTER THE PERMANENT SIGNAL BECOMES FULLY OPERATIONAL. THE TEMPORARY SIGNAL WILL BECOME THE PROPERTY OF THE CONTRACTOR.
 4. SALVAGE THE OPTICOM EQUIPMENT IN THE TEMPORARY SIGNAL CABINET AND INSTALL IN THE PERMANENT SIGNAL CABINET.

EXISTING POWER SOURCE
GRAYSON-COLLIN ELECTRIC CO-OP
903-482-5231

PRELIMINARY
FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES
Engineer: ANTHONY X. RAGLAND
P. E. No. 123267 Date 12-20-21



**PERMANENT
TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286**

SCALE: 1" = 40' SHEET 1 OF 5

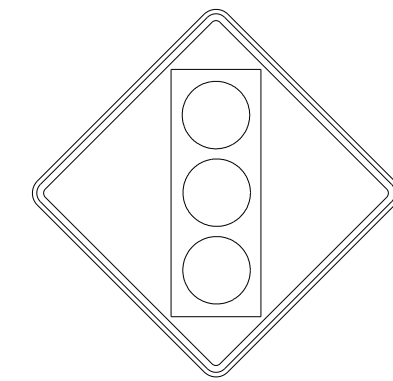
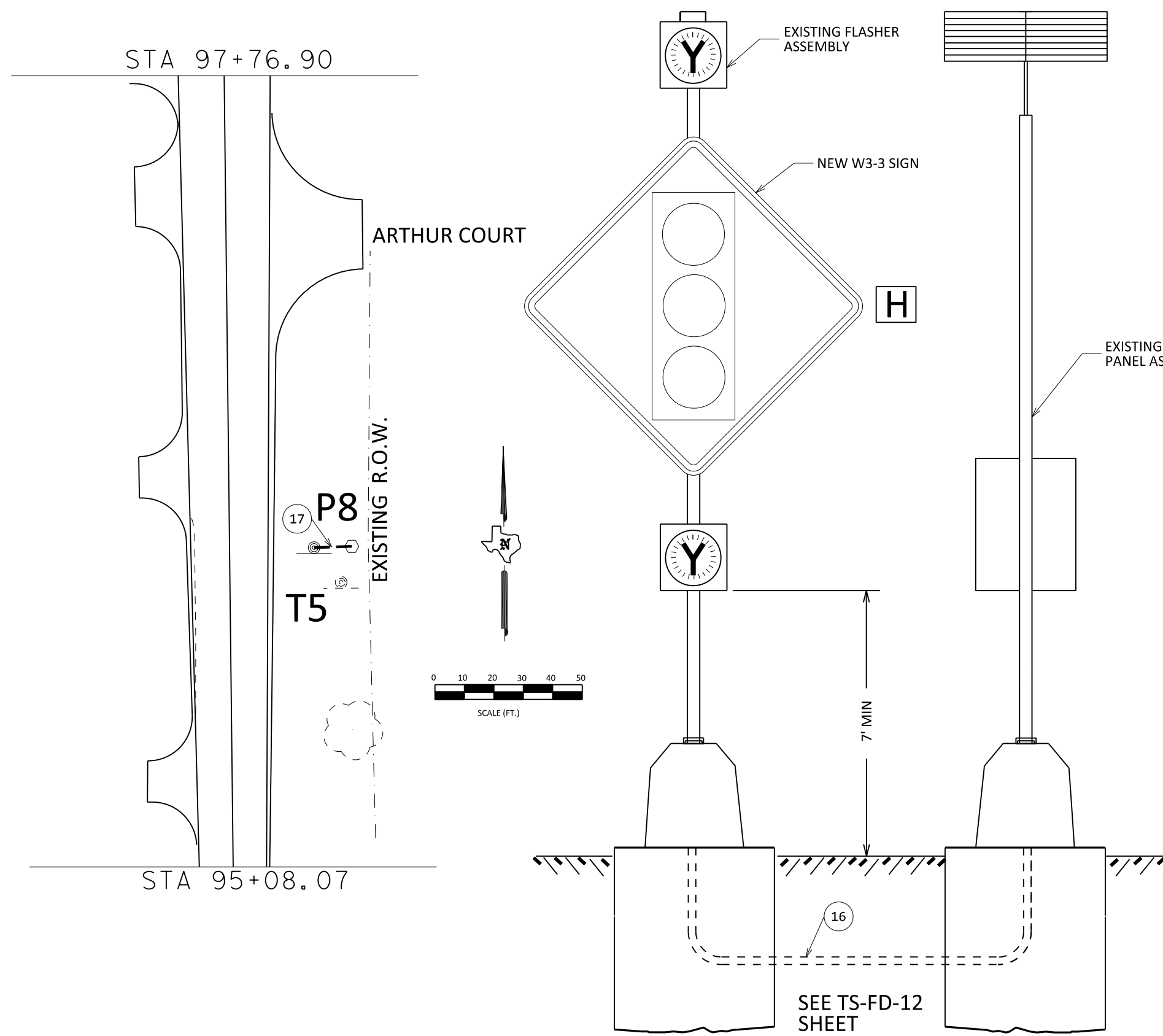
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	18	COLLIN	237
LDL	CONTROL	SECTION	JOB	
APM	1392	01	044	

FILE: \$FILE\$

LEGEND

- T1 TEMPORARY POLE NUMBER
- P1 PROPOSED POLE NUMBER
- ④ CONDUIT RUN WITH NUMBER
- R.O.W.--- RIGHT OF WAY
- ⊙ ⊙ PROPOSED FLASHER ASSEMBLY
- ⊙ ⊙ EXISTING SIGN ASSEMBLY

P7 ROADSIDE FLASHING BEACON AND SOLAR ASSEMBLY NOT TO SCALE



H
SIGN W3-3
30"X30"
1(EA)

PROPOSED FLASHER POLE				
POLE NO.	STATION	OFFSET (FT)	FOUNDATION	
			TYPE	DEPTH (FT)
P7	96+16.53	R 28	24-A	6

OFFSET DISTANCE TO FLASHER MEASURED FROM THE CENTERLINE OF FM 1378.

NOTES:

1. SIGNAL ELEMENTS SHOWN ON THE LAYOUT ARE DIAGRAMMATIC. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD.
2. REMOVE THE TEMPORARY STATIC SIGN ASSEMBLY. THE TEMPORARY SIGN SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
3. INSTALL NEW FLASHER AND SOLAR FOUNDATIONS. INSTALL SALVAGED FLASHER AND SOLAR PANEL ASSEMBLIES WITH NEW W3-3 SIGN.

PRELIMINARY
FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES
Engineer: ANTHONY X. RAGLAND
P.E. No. 123267 Date 12-20-21



**PERMANENT TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286**

SCALE: 1" = 40' SHEET 2 OF 5

DESIGN AXR	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (SEE TITLE SHEET)		HIGHWAY NO. FM 544
GRAPHICS AXR	STATE TEXAS	DISTRICT 18	COUNTY COLLIN	SHEET NO. 238
CHECK LDL	CONTROL 0619	SECTION 03	JOB 061	
CHECK APM				

FILE:

CONDUIT RUNS																	
RUN NO.	CONDUIT TYPE (LF)				CABLE AND WIRE SIZE AND TYPE (EA)								RADAR (EA)		OPTICOM CABLE ***	LENGTH OF RUN (LF)	RUN NO.
	(ITEM 618)				(ITEM 620)				(ITEM 684)			(ITEM 6292)					
	2" PVC SCH 40 (TRENCH)	2" PVC SCH 80 (TRENCH)	3" PVC SCH 40 (TRENCH)	3" PVC SCH 40 (BORE)	XX XXX #	NO.6 BARE	NO.6 INSULATED	NO.8 INSULATED	NO.12 INSULATED	2 CNDR CABLE 12 AWG (APS)	7 CNDR CABLE 14 AWG (PED)	10 CNDR CABLE 14 AWG (SIGNAL)	PRESENCE RADAR CABLE *	ADVANCE RADAR CABLE *			
1			11			1		2				1			1	11	1
2			94			1		2				1			1	94	2
3			10			1		2				1			1	10	3
4	23					1				1	1					23	4
5				139		1		2		1	1	2			2	139	5
6			11			1		2		1		1			1	11	6
7	16					1				1						16	7
8	9					1		2		1	1					9	9
9				102		1		2		1	1					102	10
10				2@76		2		4		4	3	3			3	76	11
11			2@20			2				4	3	3			3	20	12
12	15					1		4								15	13
13		31			3											31	14
14	11					1	2	4								11	15
**15	10		2@10			1	2									10	**16
16	13								4							13	17
TOTAL (LF)	97	31	206	393		655	42	1166	52	684	561	692			692		TOTAL (LF)

NOTES:


* ALL RADAR CABLE IS SUBSIDIARY TO ITEM 6292. COLUMN TO BE FILLED IN AT TIME OF INSTALLATION.

** SPARE CONDUITS AS REQUIRED ON TS-CF-04.

*** CABLE SUPPLIED BY THE CITY AND INSTALLED BY THE CONTRACTOR.

SUPPLIED AND INSTALLED BY GRAYSON-COLLIN ELECTRIC CO-OP.

FILE: \$FILE\$

 Texas Department of Transportation © 2021			
PERMANENT TRAFFIC SIGNAL LAYOUT FM 1378 AT FM 3286			
SHEET 3 OF 5			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)	FM 1378
GRAPHICS	STATE	DISTRICT	COUNTY
AXR	TEXAS	18	COLLIN
CHECK	CONTROL	SECTION	JOB
LDL	1392	01	044
CHECK	APM		

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer: **ANTHONY X. RAGLAND**

P. E. No. **123267** Date **12-20-21**

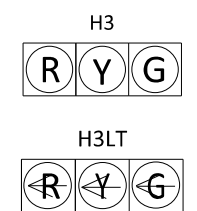
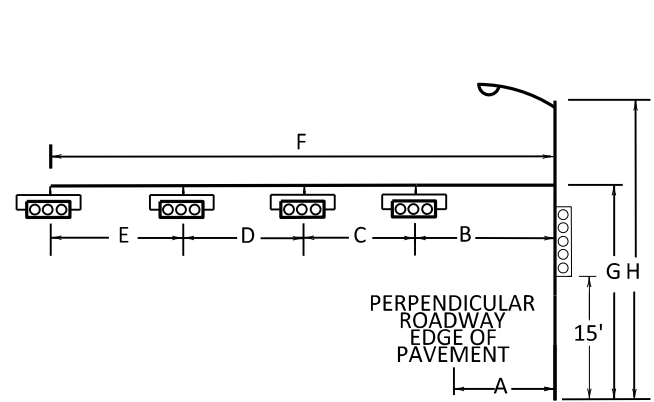
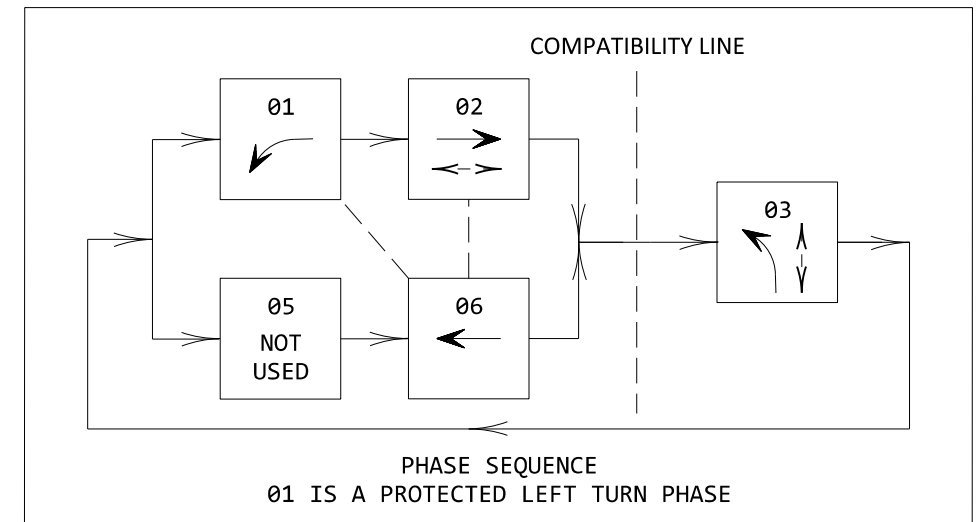
239

SIGNAL HEAD AND POLE PLACEMENT																									
POLE NO.	24" DIA TYPE-A	(ITEM 416) FND SUMMARY (LF)	(ITEM 416) FND SUMMARY WIND ZONE 80 MPH (LF)				WIRE INSIDE POLE (LF)						NO. OF SIGNAL HEADS (EA)	NO. OF PED HEADS (EA)	NO. OF APS (EA)	LUM (EA)	DIMENSIONS (LF)								
			30" DIA RDWY ILLUM	30" DIA TYPE-A	36" DIA TYPE-A	48" DIA TYPE-A	(ITEM 620) LUMINAIRES	(ITEM 684) SIG. CABLE TYPE-A (SIGNAL)	(ITEM 684) SIG. CABLE TYPE-A (PED)	(ITEM 684) SIG. CABLE TYPE-C (APS)	(ITEM 6292) RADAR						OPTICOM CABLE ***	A	B	C	D	E	F	G	H
											NO. 12 INSULATED	5 CNDR 14 AWG													
P1					22	80	260					53	4			1	19	28	12	12	12	65	19	30	
P2				13		80	100					51	2	1		1		25	12			40	19	30	
P3			11			80	84	10			5	42	2	2	1	1	5	17	12			28	19	30	
**P4	4										5														
**P5	4										5														
P6		8														1									
*P7	2@6					20																			
TOTAL	24	8	11	13	22	260	444	10			20		8	5	4	4									

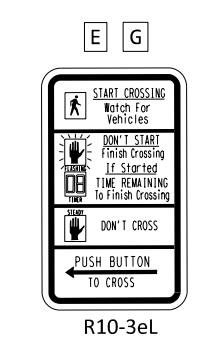
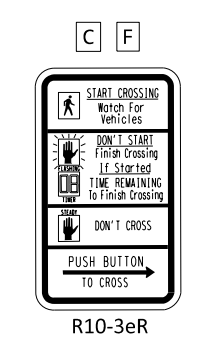
ALL RADAR CABLE SUBSIDIARY TO ITEM 6292. COLUMNS TO BE FILLED IN AT TIME OF INSTALLATION
 * SUBSIDIARY TO ITEM 685
 ** SUBSIDIARY TO ITEM 687
 *** CABLE AND EQUIPMENT PROVIDED BY THE CITY AND INSTALLED BY THE CONTRACTOR. PAYMENT SUBSIDIARY TO ITEM 680
 EX = EXISTING

SIGNAL HEADS									
SIGNAL HEAD NUMBER	SIGNAL HEAD TYPE	(ITEM 682) 12" SIGNAL INDICATION							LED COUNTDOWN PED SIGNAL (EA)
		BACK PLATE	VEHICLE SIG SEC W/LED LAMP						
			3-SEC (EA)	<G (EA)	G (EA)	<Y (EA)	Y (EA)	<R (EA)	
3,4,7,8	H3	4		4		4		4	
1,2,5,6	H3LT	4	4		4		4		
9,10,11,12	152A								4
TOTAL		8	4	4	4	4	4	4	4

GROUND BOX SUMMARY		
DESCRIPTION	UNIT	QTY.
TYPE A (122311) W/ APRON	EA	1
TYPE C (162911) W/ APRON	EA	5



A B D
STREET NAME SIGNS PROVIDED BY CITY OF LUCAS



PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer: ANTHONY X. RAGLAND
 P.E. No. 123267 Date 12-20-21

Texas Department of Transportation
© 2021

PERMANENT TRAFFIC SIGNAL LAYOUT

FM 1378 AT FM 3286

SHEET 4 OF 5

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
AXR	6	(SEE TITLE SHEET)		FM 1382
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
AXR	TEXAS	18	COLLIN	240
CHECK	CONTROL	SECTION	JOB	
LDL	1392	01	044	

FILE: \$FILES\$

EXISTING ELECTRICAL SERVICE DATA									
ELECTRICAL SERVICE SEE ED (5)-14	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	CONTACTOR AMPS	PANELBD./ LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
TY D (120/240)070(NS)SS(E)PS(U)	1-1/4"	3-#4	N/A	2P/70	4P/30	100	T.S. LIGHTING	1P/50 2P/15	<7.1

CABLE TERMINATION CHART				
CNDR COLOR	CABLE 1 FROM P1 TO CONTROLLER 10 CNDR	CABLE 2 FROM P2 TO CONTROLLER 10 CNDR	CABLE 3 FROM P3 TO CONTROLLER 10 CNDR	CABLE 4 FROM P7 TO CONTROLLER 7 CNDR
BLACK	SPARE	SPARE	SPARE	SPARE
WHITE	SIG. COMMON	SIG. COMMON	SIG. COMMON	SIG COMMON
RED	SH 3,4 06 R	SH 5,6 03 R	SH 7,8 02 R	SH 12 02 DW
GREEN	SH 3,4 06 G	SH 5,6 03 G	SH 7,8 02 G	SH 12 02 W
ORANGE	SH 3,4 06 Y	SH 5,6 03 Y	SH 7,8 02 Y	SPARE
BLUE	SH 1,2 01 Y	SPARE	SH 10 03 DW	SPARE
WHITE/BLACK	SH 1,2 01 Y	SPARE	SH 10 03 W	SPARE
RED/BLACK	SH 1,2 01 Y	SPARE	SPARE	
GREEN/BLACK	SPARE	SH 9 03 DW	SH 11 02 DW	
ORANGE/BLACK	SPARE	SH 9 03 W	SH 11 02 W	

DETECTION ZONE DETAILS		
PHASE OF DETECTION	TYPE OF DETECTION	ADVANCE DETECTION ZONE LOCATIONS
01 & 06	PRESENCE AND ADVANCE	360' AND 245' FROM THE STOPBAR
02	PRESENCE AND ADVANCE	360' AND 245' FROM THE STOPBAR
03	PRESENCE AND ADVANCE	445' AND 325' FROM THE STOPBAR

APS MESSAGE CHART			
POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P3	03	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS E. LUCAS RD AT SOUTHVIEW DR.
		LOCATOR TONE	SLOW TICK
		WALK INDICATION*	RAPID TICK.
P4	03	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS E. LUCAS RD.
		LOCATOR TONE	SLOW TICK
		WALK INDICATION*	RAPID TICK.
P5	02	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS SOUTHVIEW DR AT E. LUCAS RD.
		LOCATOR TONE	SLOW TICK
		WALK INDICATION*	RAPID TICK.
P6	02	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS SOUTHVIEW DR AT W. LUCAS RD.
		LOCATOR TONE	SLOW TICK
		WALK INDICATION*	RAPID TICK.

*COUNTDOWN SPEECH MESSAGE * "OFF" FOR ALL UNITS

FILE:

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES

Engineer ANTHONY X. RAGLAND

P.E. No. 123267 Date 12-20-21



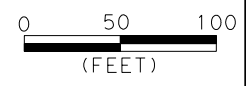
PERMANENT
TRAFFIC SIGNAL LAYOUT
FM 1378 AT FM 3286

SHEET 5 OF 5

DESIGN AXR	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS AXR	6	(SEE TITLE SHEET)		FM 1382
CHECK LDL	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK APM	TEXAS	18	COLL IN	241
	CONTROL	SECTION	JOB	
	1392	01	044	

\$DATE\$

\$FILE\$



- SIGNING LEGEND**
- ① SIGN TO BE INSTALLED
 - * REUSE EXISTING STREET NAME BLADES AND MOUNT ON NEW SIGN ASSEMBLY. (EXISTING SIGN DETAILS MIGHT VARY FROM SIGNS SHOWN ON PLAN)

**FOR 95% REVIEW
PRELIMINARY**

FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES
Engineer: Mark A. Aboso
P. E. No. 112638 Date: \$DATE\$

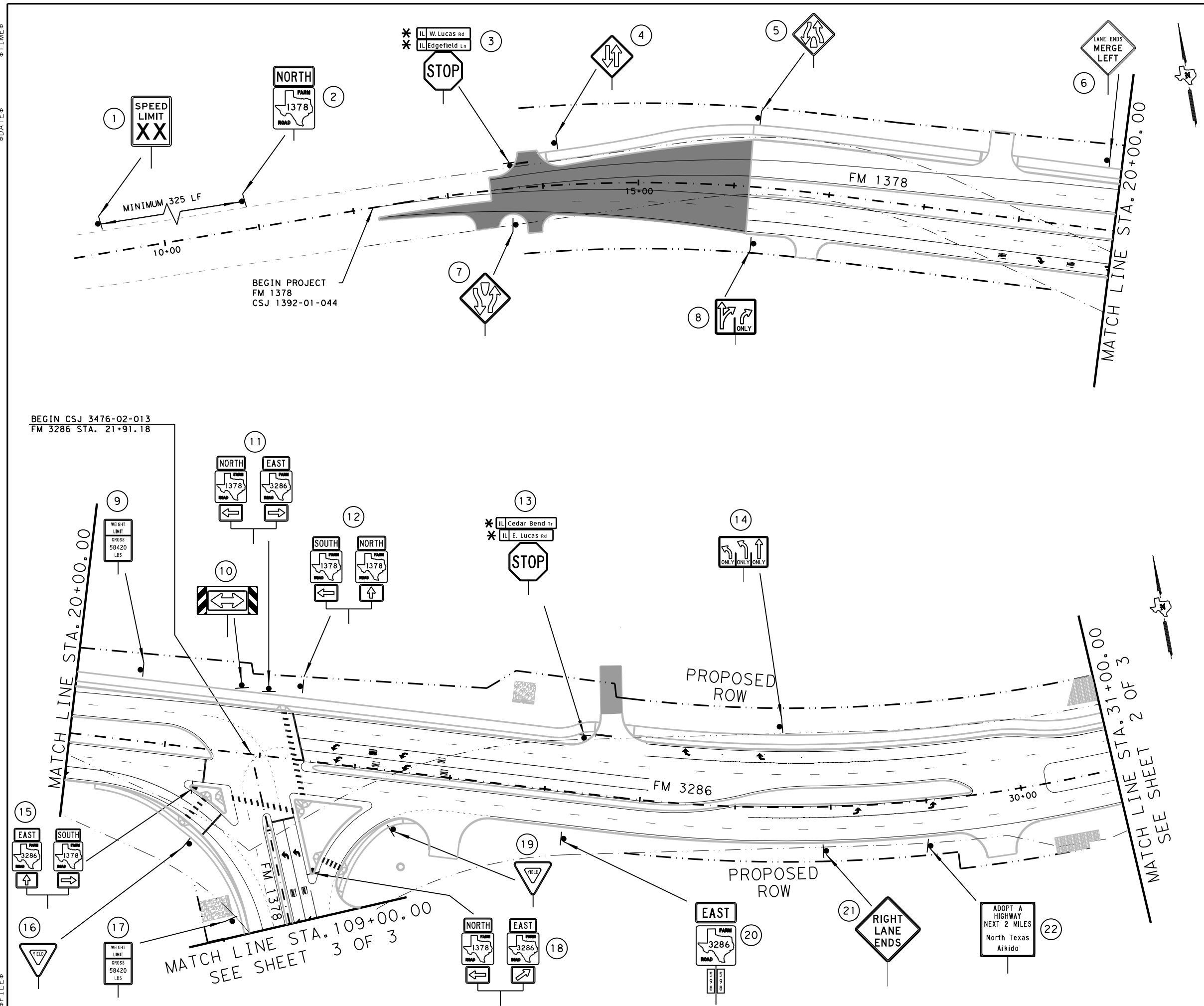


SIGNING LAYOUT

SCALE: 1"=100' SHEET 1 OF 3

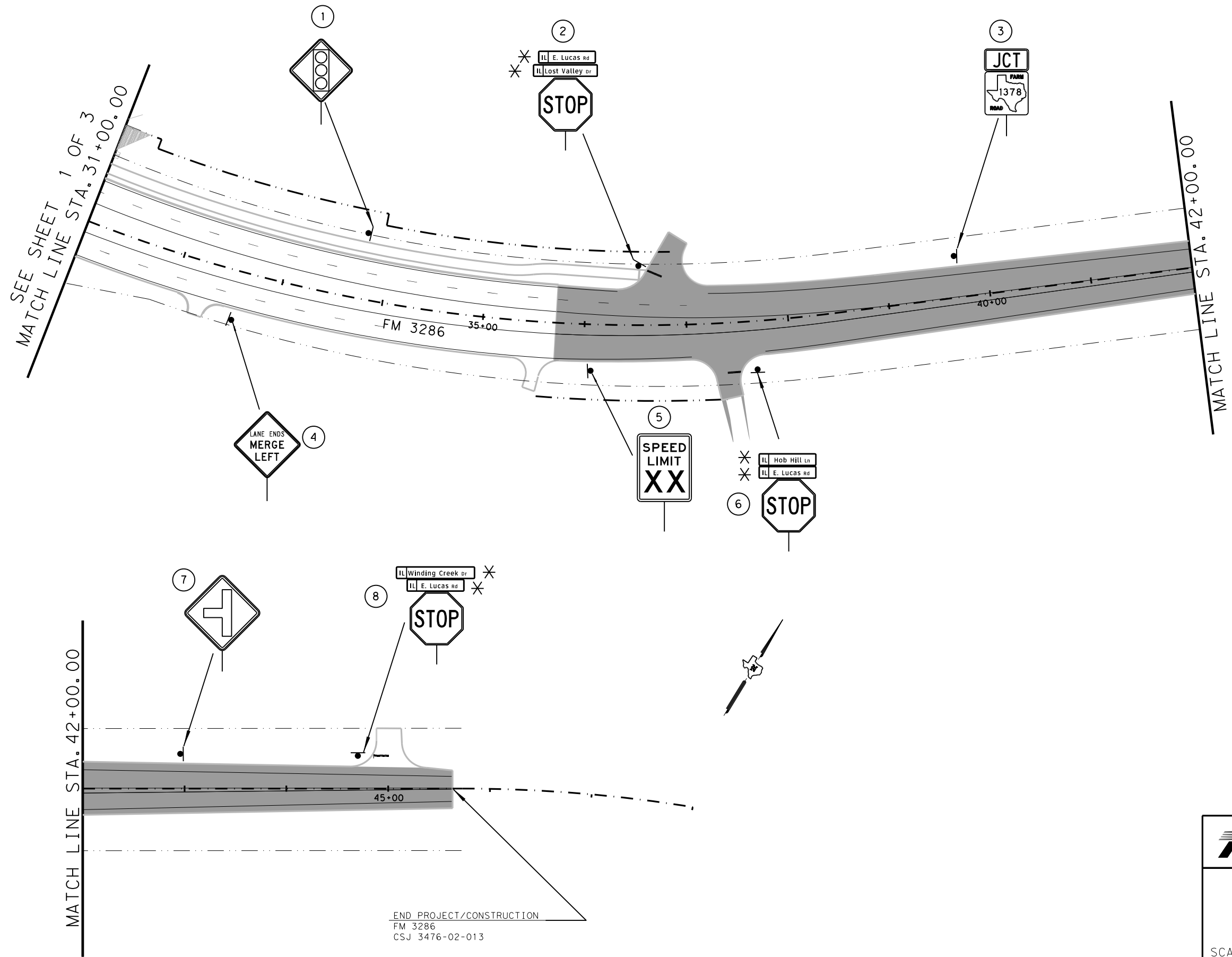
DESIGN/CK	FED. RD. DIV. NO.	FEDERAL-AID PROJECT NUMBER		HIGHWAY NO.
MAA	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK	STATE	DISTRICT	COUNTY	
BLS	TEXAS	DALLAS	COLLIN	
CHECK	CONTROL	SECTION	JOB	
BA	1392	01	044, ETC.	

242



\$DATE\$

\$FILE\$



- SIGNING LEGEND**
- ① SIGN TO BE INSTALLED
 - * REUSE EXISTING STREET NAME BLADES AND MOUNT ON NEW SIGN ASSEMBLY. (EXISTING SIGN DETAILS MIGHT VARY FROM SIGNS SHOWN ON PLAN)

FOR 95% REVIEW
PRELIMINARY
 FOR INTERIM REVIEW ONLY
 NOT FOR CONSTRUCTION, BIDDING,
 OR PERMIT PURPOSES

Engineer: Mark A. Aboso
 P. E. No. 112638 Date: \$DATE\$

END PROJECT/CONSTRUCTION
 FM 3286
 CSJ 3476-02-013



SIGNING LAYOUT

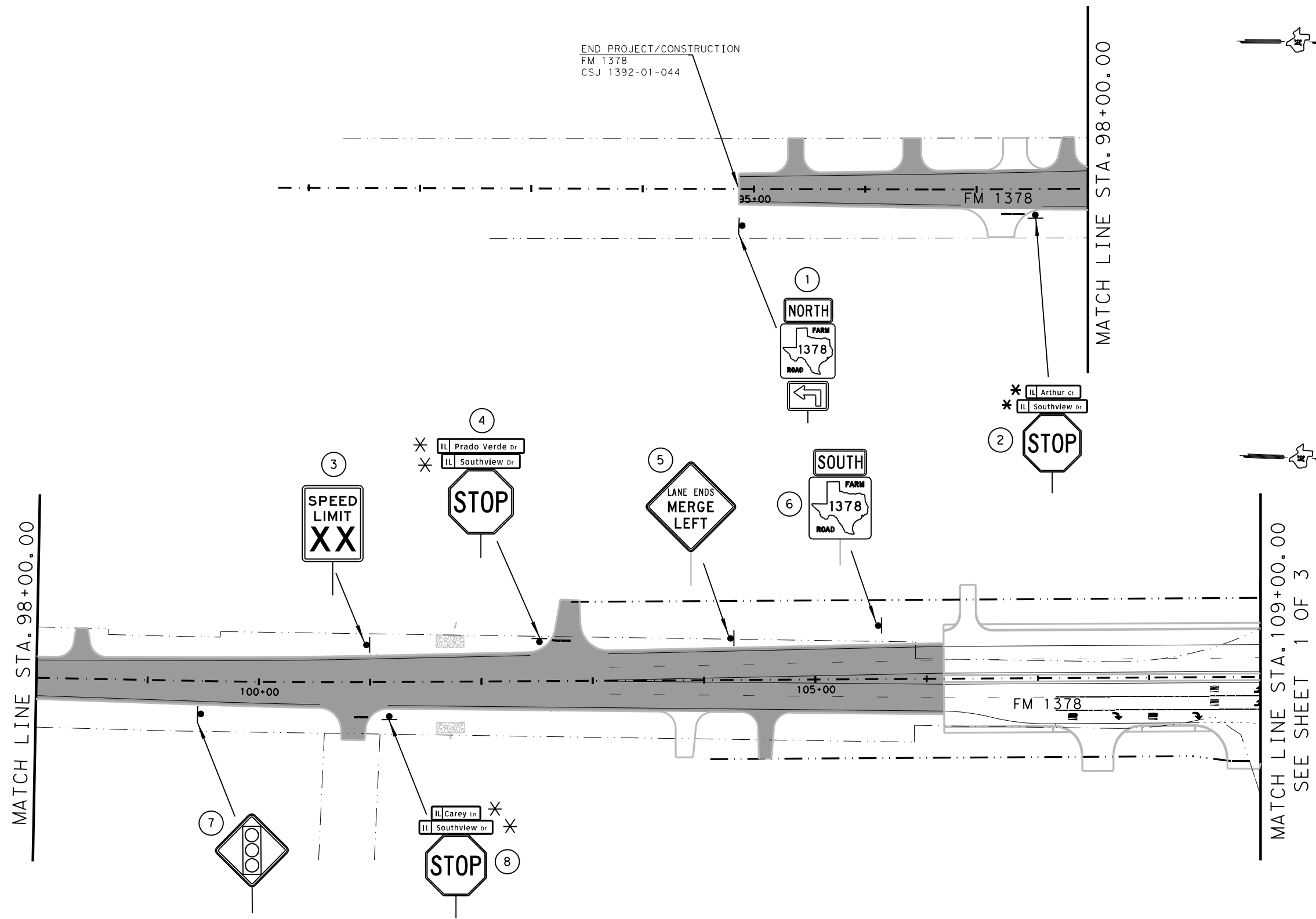
SCALE: 1" = 100' SHEET 2 OF 3

DESIGN/CK	FED. RD. DIV. NO.	FEDERAL-AID PROJECT NUMBER		HIGHWAY NO.
MAA	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK QM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK BLS	TEXAS	DALLAS	COLLIN	243
CHECK BA	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

END PROJECT/CONSTRUCTION
FM 1378
CSJ 1392-01-044



- SIGNING LEGEND**
- ① SIGN TO BE INSTALLED
 - * REUSE EXISTING STREET NAME BLADES AND MOUNT ON NEW SIGN ASSEMBLY. (EXISTING SIGN DETAILS MIGHT VARY FROM SIGNS SHOWN ON PLAN)



**FOR 95% REVIEW
PRELIMINARY**

FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES
Engineer: Mark A. Aboso
P. E. No. 112638 Date: \$DATE\$



SIGNING LAYOUT

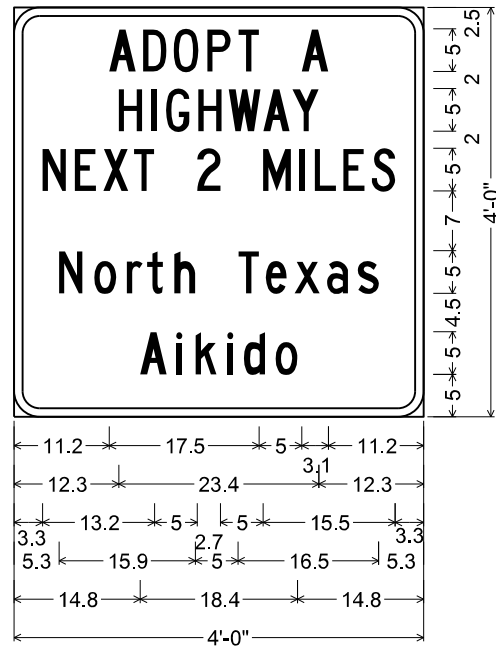
SCALE: 1" = 100' SHEET 3 OF 3

DESIGN/CK	FED. RD. DIV. NO.	FEDERAL-AID PROJECT NUMBER		HIGHWAY NO.
MAA	6	SEE TITLE SHEET		FM 1378, ETC.
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
QM	TEXAS	DALLAS	COLLIN	244
CHECK	CONTROL	SECTION	JOB	
BLS	1392	01	044, ETC.	

\$DATE\$ \$TIME\$ \$FILE\$

\$TIME\$

\$DATE\$



D14-4T;
 3.0" Radius, 1.0" Border, White on, Blue;
 "ADOPT A", C; "HIGHWAY", C;
 "NEXT 2 MILES", C;
 "North Texas", C; "Aikido", C;

SHEET 1 SIGN 20

\$FILE\$

FOR 95% REVIEW

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES

Engineer Mark A. Aboso

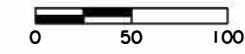
P. E. No. 112638 Date \$DATE\$

 **Texas Department of Transportation**
©2022

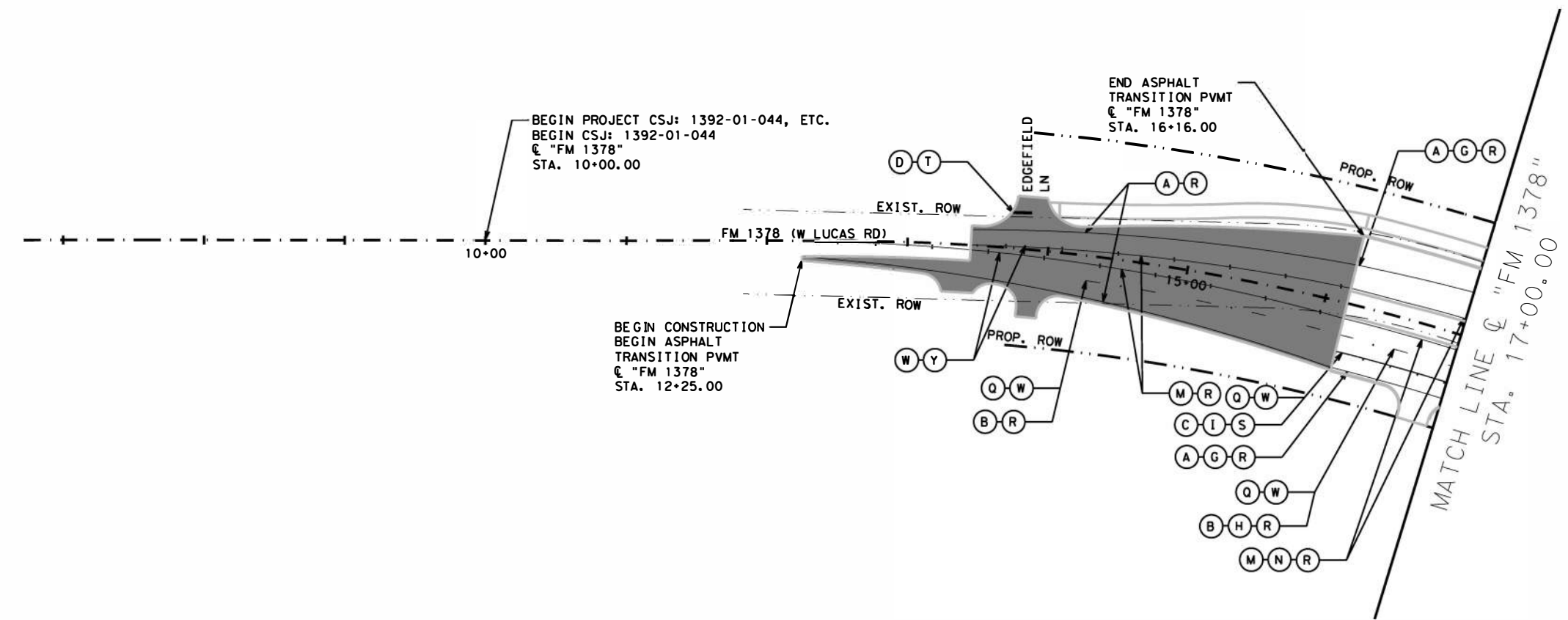
GUIDE SIGN DETAILS

SCALE: NTS SHEET 1 OF 1

DESIGN/CK	FED. RD. DIV. NO.	FEDERAL-AID PROJECT NUMBER		HIGHWAY NO.
MAA	6	SEE TITLE SHEET		FM 1378, ETC
CHECK BLS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK BA	TEXAS	DALLAS	COLLIN	245
CHECK FRC	CONTROL	SECTION	JOB	
	1392	01	044, ETC	



- LEGEND**
- (A) (W) 4" (SLD) TY I
 - (B) (W) 4" (BRK) TY I
 - (C) (W) 8" (SLD) TY I
 - (D) (W) 24" (SLD) TY I
 - (E) (W) (ARROW) TY I
 - (F) (W) (WORD) TY I
 - (G) (W) 4" (SLD) TY II
 - (H) (W) 4" (BRK) TY II
 - (I) (W) 8" (SLD) TY II
 - (J) (W) 24" (SLD) TY II
 - (K) (W) (ARROW) TY II
 - (L) (W) (WORD) TY II
 - (M) (Y) 4" (SLD) TY I
 - (N) (Y) 4" (SLD) TY II
 - (O) (W) 4" (DOT) TY I
 - (P) (W) 4" (DOT) TY II
 - (Q) REFL PAV MRKR TY II-C-R
 - (R) PAV SURF PREP FOR MKR (4')
 - (S) PAV SURF PREP FOR MKR (8')
 - (T) PAV SURF PREP FOR MKR (24')
 - (U) PAV SURF PREP FOR ARROW
 - (V) PAV SURF PREP FOR WORD
 - (W) PAV SURF PREP FOR RPM
 - (X) INSTL OM ASSM (OM-22) (FLX) GND
 - (Y) REFL PAV MRKR TY II A-A



PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/11/2022

LOCATION	666 6036	666 6048	666 6167	666 6170	666 6178	666 6207	666 6300	666 6303	666 6315	672 6010	672 6013	678 6033
FM 1378 CSJ: 1392-01-044	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	REFL PAV MRK TY II (W) 4" (BRK)	REFL PAV MRK TY II (W) 4" (SLD)	REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (Y) 4" (SLD)	RE PM W/RET REQ TY I (W) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REFL PAV MRK TY II-C-R	REFL PAV MRK TY II-A-A	PAV SURF PREP FOR MKR (RPM)
	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA
PROJECT TOTALS	84	13	21	169	84	167	77	827	830	8	34	42

678 6001	678 6004	678 6008
PAV SURF PREP FOR MKR (4")	PAV SURF PREP FOR MKR (8")	PAV SURF PREP FOR MKR (24")
LF	LF	LF
1734	84	13

© 2022

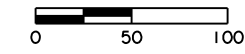
Texas Department of Transportation

**FM 1378
AT FM 3286
PAVEMENT MARKINGS
LAYOUT**

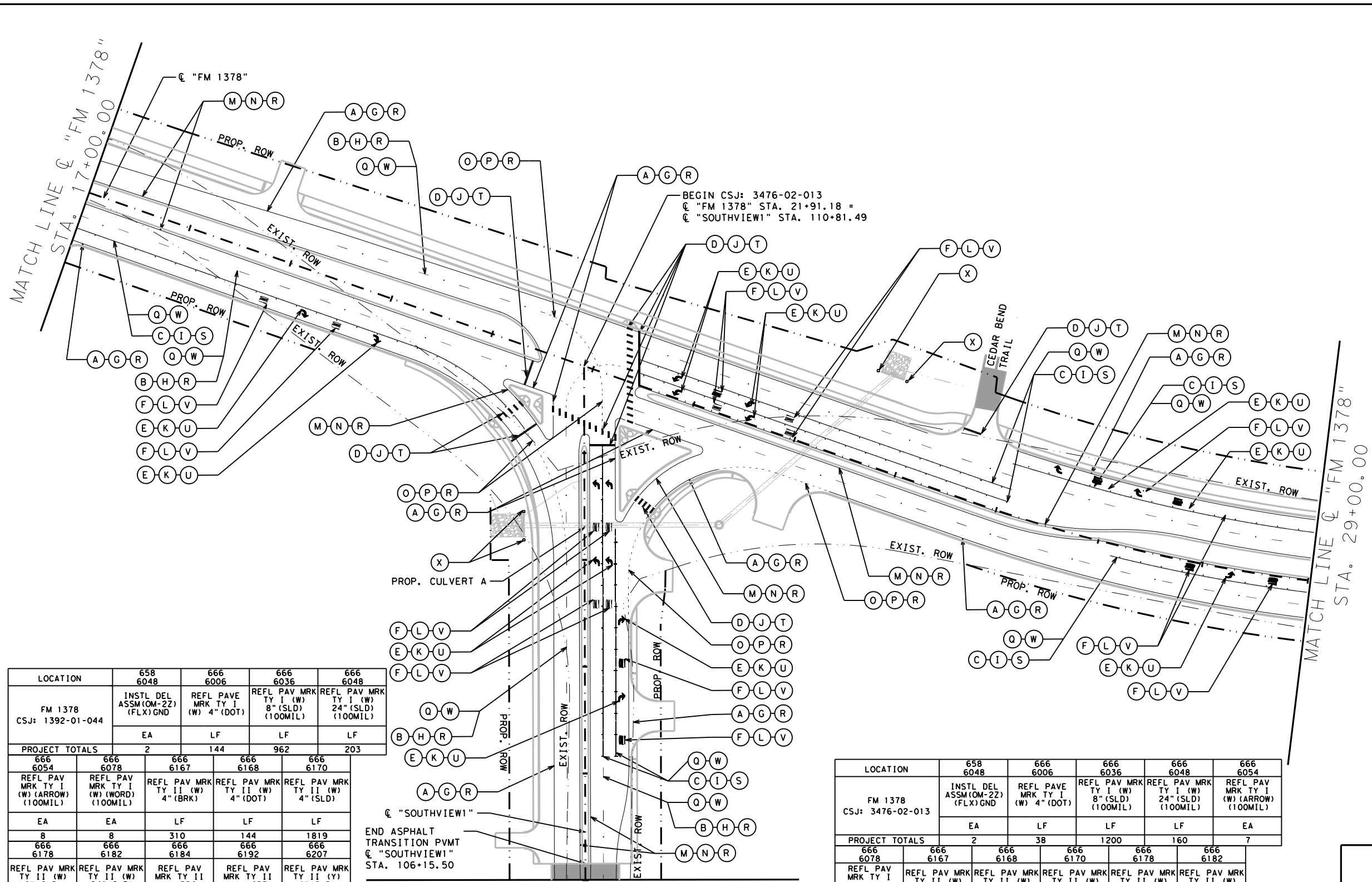
SCALE: 1"=100' SHEET 1 OF 6

DESIGN MN	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO.		HIGHWAY NO. FM 1378, ETC.
GRAPHICS KS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLL IN	246
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

FILE: c:\t\dot\pw\on\ine\t\dot\5\mot\thw.norris\dot\326860\FM 1378 Stripping Layout.dgn
 DATE: 1/11/2022
 TIME: 4:00:35 PM



- LEGEND**
- (A) (W) 4" (SLD) TY I
 - (B) (W) 4" (BRK) TY I
 - (C) (W) 8" (SLD) TY I
 - (D) (W) 24" (SLD) TY I
 - (E) (W) (ARROW) TY I
 - (F) (W) (WORD) TY I
 - (G) (W) 4" (SLD) TY II
 - (H) (W) 4" (BRK) TY II
 - (I) (W) 8" (SLD) TY II
 - (J) (W) 24" (SLD) TY II
 - (K) (W) (ARROW) TY II
 - (L) (W) (WORD) TY II
 - (M) (Y) 4" (SLD) TY I
 - (N) (Y) 4" (SLD) TY II
 - (O) (W) 4" (DOT) TY I
 - (P) (W) 4" (DOT) TY II
 - (Q) REFL PAV MRKR TY II-C-R
 - (R) PAV SURF PREP FOR MKR (4")
 - (S) PAV SURF PREP FOR MKR (8")
 - (T) PAV SURF PREP FOR MKR (24")
 - (U) PAV SURF PREP FOR ARROW
 - (V) PAV SURF PREP FOR WORD
 - (W) PAV SURF PREP FOR RPM
 - (X) INSTL OM ASSM (OM-22) (FLX) GND
 - (Y) REFL PAV MRKR TY II A-A



LOCATION	658 6048	666 6006	666 6036	666 6048
FM 1378 CSJ: 1392-01-044	INSTL DEL ASSM(OM-22) (FLX)GND	REFL PAVE MRK TY I (W) 4" (DOT)	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)
	EA	LF	LF	LF
PROJECT TOTALS	2	144	962	203
666 6054	666 6078	666 6167	666 6168	666 6170
REFL PAV MRK TY I (W) (ARROW) (100MIL)	REFL PAV MRK TY I (W) (WORD) (100MIL)	REFL PAV MRK TY II (W) 4" (BRK)	REFL PAV MRK TY II (W) 4" (DOT)	REFL PAV MRK TY II (W) 4" (SLD)
EA	EA	LF	LF	LF
8	8	310	144	1819
666 6178	666 6182	666 6184	666 6192	666 6207
REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) 24" (SLD)	REFL PAV MRK TY II (W) (ARROW)	REFL PAV MRK TY II (W) (WORD)	REFL PAV MRK TY II (Y) 4" (SLD)
EA	EA	EA	EA	EA
962	203	8	8	1826
666 6300	666 6303	666 6315	672 6010	678 6001
RE PM W/RET REQ TY I (W) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REFL PAV MRK TY II-C-R	PAV SURF PREP FOR MRK (4")
LF	LF	LF	EA	LF
330	1850	1857	76	4030
678 6004	678 6008	678 6009	678 6016	678 6033
PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MRK (WORD)	PAV SURF PREP FOR MRK (RPM)
LF	LF	EA	EA	EA
962	203	8	8	76

LOCATION	658 6048	666 6006	666 6036	666 6048	666 6054
FM 1378 CSJ: 3476-02-013	INSTL DEL ASSM(OM-22) (FLX)GND	REFL PAVE MRK TY I (W) 4" (DOT)	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	REFL PAV MRK TY I (W) (ARROW) (100MIL)
	EA	LF	LF	LF	EA
PROJECT TOTALS	2	38	1200	160	7
666 6078	666 6167	666 6168	666 6170	666 6178	666 6182
REFL PAV MRK TY II (W) (100MIL)	REFL PAV MRK TY II (W) 4" (BRK)	REFL PAV MRK TY II (W) 4" (DOT)	REFL PAV MRK TY II (W) 4" (SLD)	REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) 24" (SLD)
EA	LF	LF	LF	LF	LF
8	332	38	1171	1200	160
666 6184	666 6192	666 6207	666 6300	666 6303	666 6315
REFL PAV MRK TY II (W) (ARROW)	REFL PAV MRK TY II (W) (WORD)	REFL PAV MRK TY II (Y) 4" (SLD)	RE PM W/RET REQ TY I (W) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)
EA	EA	LF	LF	LF	LF
7	8	1367	332	1171	1367
672 6010	678 6001	678 6004	678 6008	678 6009	678 6016
REFL PAV MRK TY II-C-R	PAV SURF PREP FOR MRK (4")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MRK (WORD)
EA	LF	LF	EA	EA	EA
62	2870	1200	160	7	62

PRELIMINARY

FOR REVIEW ONLY
Not intended
for construction, bidding or
permit purposes.

Engineer: IBRAHIM I. EL SAAD
P.E. No.: 142049
Date: 1/11/2022

Texas Department of Transportation

**FM 1378
AT FM 3286
PAVEMENT MARKINGS
LAYOUT**

SCALE: 1"=100' SHEET 2 OF 6

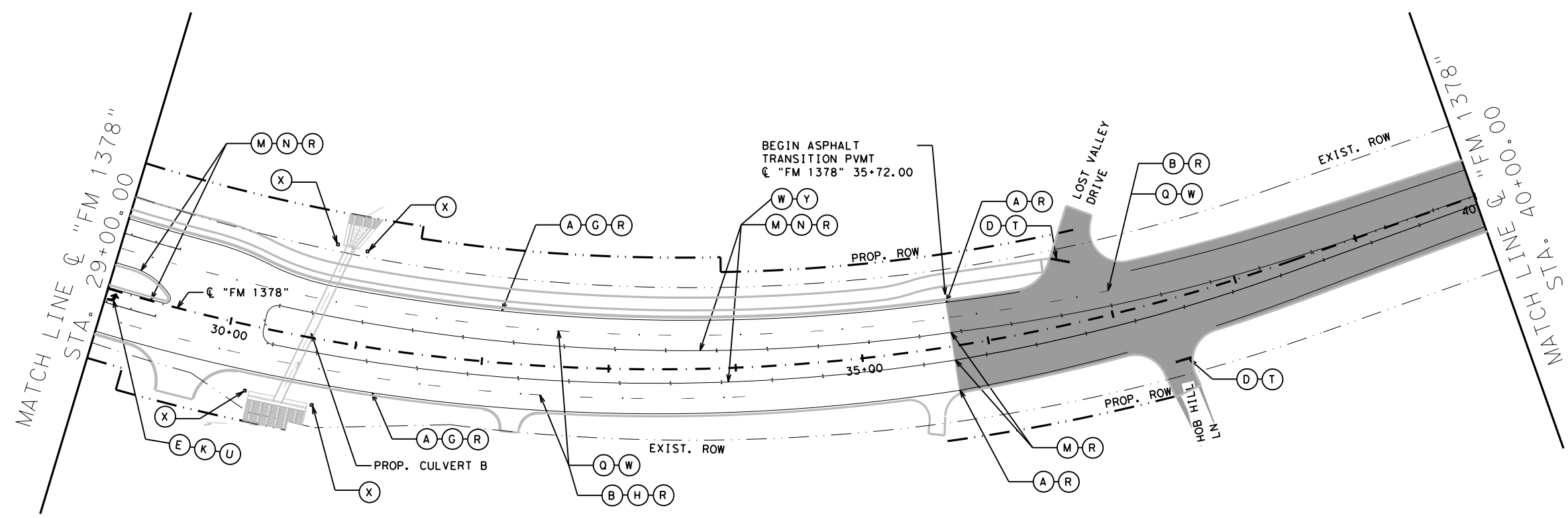
DESIGN MN	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. FM 1378, ETC.
GRAPHICS KS	STATE	DISTRICT DAL	COUNTY COLLIN
CHECK	TEXAS	DISTRICT DAL	COUNTY COLLIN
CHECK	CONTROL	SECTION 01	JOB 044, ETC.

247

DATE: 1/11/2022 TIME: 4:00:37 PM FILE: c:\t\dot\p\w\on\l\ine\t\dot\5\matthew.norris\0326860\FM 1378 Stripping Layout.dgn



- LEGEND**
- (A) (W) 4" (SLD) TY I
 - (B) (W) 4" (BRK) TY I
 - (C) (W) 8" (SLD) TY I
 - (D) (W) 24" (SLD) TY I
 - (E) (W) (ARROW) TY I
 - (F) (W) (WORD) TY I
 - (G) (W) 4" (SLD) TY II
 - (H) (W) 4" (BRK) TY II
 - (I) (W) 8" (SLD) TY II
 - (J) (W) 24" (SLD) TY II
 - (K) (W) (ARROW) TY II
 - (L) (W) (WORD) TY II
 - (M) (Y) 4" (SLD) TY I
 - (N) (Y) 4" (SLD) TY II
 - (O) (W) 4" (DOT) TY I
 - (P) (W) 4" (DOT) TY II
 - (Q) REFL PAV MRKR TY II-C-R
 - (R) PAV SURF PREP FOR MKR (4')
 - (S) PAV SURF PREP FOR MKR (8')
 - (T) PAV SURF PREP FOR MKR (24')
 - (U) PAV SURF PREP FOR ARROW
 - (V) PAV SURF PREP FOR WORD
 - (W) PAV SURF PREP FOR RPM
 - (X) INSTL OM ASSM (OM-22) (FLX) GND
 - (Y) REFL PAV MRKR TY II A-A



FILE: c:\txdot\pw\online\txdot5\matthew.norris\0326860\FM 1378 Stripping Layout.dgn
 TIME: 4:00:42 PM
 DATE: 1/11/2022

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/11/2022

LOCATION	658 6048	666 6036	666 6048	666 6054	666 6167	666 6170	666 6178	666 6184	666 6207	666 6300	666 6303	666 6315	672 6010
FM 1378 CSJ: 3476-02-013	INTSL DEL ASSM (OM-22) (FLX)GND	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	REFL PAV MRK TY I (W) (ARROW) (100MIL)	REFL PAV MRK TY II (W) 4" (BRK)	REFL PAV MRK TY II (W) 4" (SLD)	REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) (ARROW) (100MIL)	REFL PAV MRK TY II (Y) 4" (SLD)	RE PM W/RET REQ TY I (W) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REFL PAV MRK TY II-C-R
	EA	LF	LF	EA	LF	LF	LF	EA	LF	LF	LF	LF	EA
PROJECT TOTALS	4	89	29	1	300	1327	89	1	1219	338	2020	2075	24

672 6013	678 6001	678 6004	678 6008	678 6009	678 6033
REFL PAV MRK TY II-A-A	PAV SURF PREP FOR MKR (4")	PAV SURF PREP FOR MKR (8")	PAV SURF PREP FOR MKR (24")	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MKR (RPM)
EA	LF	LF	LF	EA	EA
102	4395	89	29	1	126

© 2022

Texas Department of Transportation

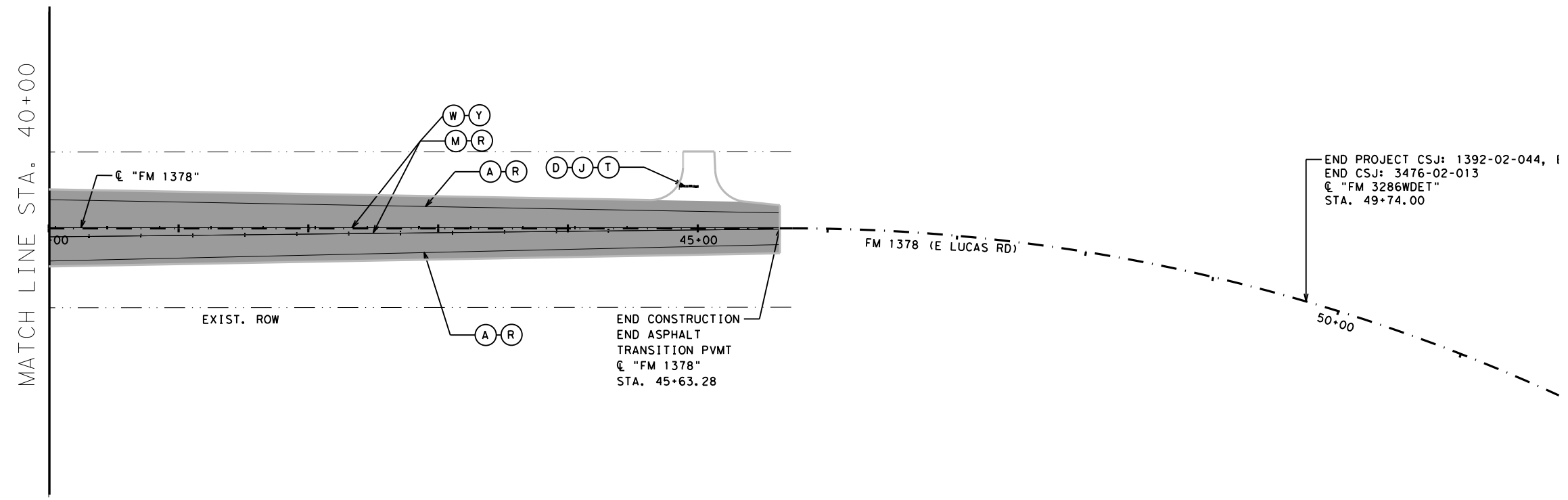
FM 1378
 AT FM 3286
 PAVEMENT MARKINGS
 LAYOUT

SCALE: 1"=100' SHEET 3 OF 6

DESIGN MN	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. FM 1378, ETC.
GRAPHICS KS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	248



- LEGEND**
- (A) (W) 4" (SLD) TY I
 - (B) (W) 4" (BRK) TY I
 - (C) (W) 8" (SLD) TY I
 - (D) (W) 24" (SLD) TY I
 - (E) (W) (ARROW) TY I
 - (F) (W) (WORD) TY I
 - (G) (W) 4" (SLD) TY II
 - (H) (W) 4" (BRK) TY II
 - (I) (W) 8" (SLD) TY II
 - (J) (W) 24" (SLD) TY II
 - (K) (W) (ARROW) TY II
 - (L) (W) (WORD) TY II
 - (M) (Y) 4" (SLD) TY I
 - (N) (Y) 4" (SLD) TY II
 - (O) (W) 4" (DOT) TY I
 - (P) (W) 4" (DOT) TY II
 - (Q) REFL PAV MRKR TY II-C-R
 - (R) PAV SURF PREP FOR MKR (4')
 - (S) PAV SURF PREP FOR MKR (8')
 - (T) PAV SURF PREP FOR MKR (24')
 - (U) PAV SURF PREP FOR ARROW
 - (V) PAV SURF PREP FOR WORD
 - (W) PAV SURF PREP FOR RPM
 - (X) INSTL OM ASSM (OM-22) (FLX) GND
 - (Y) REFL PAV MRKR TY II A-A



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/11/2022



FM 1378
AT FM 3286
PAVEMENT MARKINGS
LAYOUT

SCALE: 1"=100' SHEET 4 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MN	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	KS	STATE	DISTRICT	COUNTY
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

249

LOCATION	666 6048	666 6303	666 6315	672 6013	678 6001	678 6008	678 6033
FM 1378 CSJ: 3476-02-013	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REFL PAV MRK TY II-A-A	PAV SURF PREP FOR MKR (4")	PAV SURF PREP FOR MKR (24")	PAV SURF PREP FOR MKR (RPM)
	LF	LF	LF	EA	LF	LF	EA
PROJECT TOTALS	15	1127	1127	49	2254	15	49

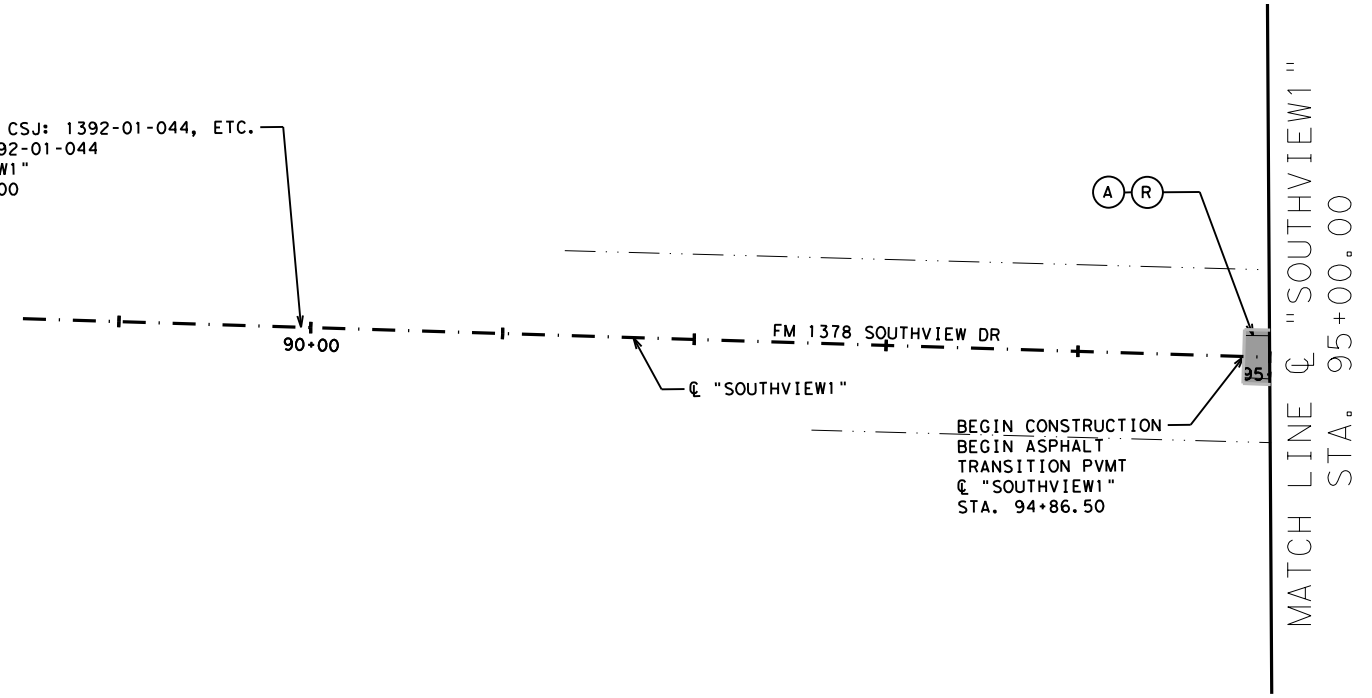
FILE: c:\txdot\pw\online\txdot5\matthew.norris\d0326860\FM 1378 Stripping Layout.dgn
 DATE: 1/11/2022
 TIME: 4:00:44 PM

DATE: 1/11/2022 TIME: 4:00:46 PM FILE: c:\txdot\pw\online\txdot5\matthew.norris\d0326860\FM_1378_Stripping_Layout.dgn



- LEGEND**
- (A) (W) 4" (SLD) TY I
 - (B) (W) 4" (BRK) TY I
 - (C) (W) 8" (SLD) TY I
 - (D) (W) 24" (SLD) TY I
 - (E) (W) (ARROW) TY I
 - (F) (W) (WORD) TY I
 - (G) (W) 4" (SLD) TY II
 - (H) (W) 4" (BRK) TY II
 - (I) (W) 8" (SLD) TY II
 - (J) (W) 24" (SLD) TY II
 - (K) (W) (ARROW) TY II
 - (L) (W) (WORD) TY II
 - (M) (Y) 4" (SLD) TY I
 - (N) (Y) 4" (SLD) TY II
 - (O) (W) 4" (DOT) TY I
 - (P) (W) 4" (DOT) TY II
 - (Q) REFL PAV MRKR TY II-C-R
 - (R) PAV SURF PREP FOR MKR (4')
 - (S) PAV SURF PREP FOR MKR (8')
 - (T) PAV SURF PREP FOR MKR (24')
 - (U) PAV SURF PREP FOR ARROW
 - (V) PAV SURF PREP FOR WORD
 - (W) PAV SURF PREP FOR RPM
 - (X) INSTL OM ASSM (OM-2Z) (FLX) GND
 - (Y) REFL PAV MRKR TY II A-A

END PROJECT CSJ: 1392-01-044, ETC.
 END CSJ: 1392-01-044
 @ "SOUTHVIEW1"
 STA. 89+95.00



BEGIN CONSTRUCTION
 BEGIN ASPHALT
 TRANSITION PVMT
 @ "SOUTHVIEW1"
 STA. 94+86.50

LOCATION	666 6303	678 6001
FM 1378 CSJ: 1392-01-044	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	PAV SURF PREP FOR MRK (4")
	LF	LF
PROJECT TOTALS	28	28

PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.

Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/11/2022

© 2022
**FM 1378
 AT FM 3286
 PAVEMENT MARKINGS
 LAYOUT**

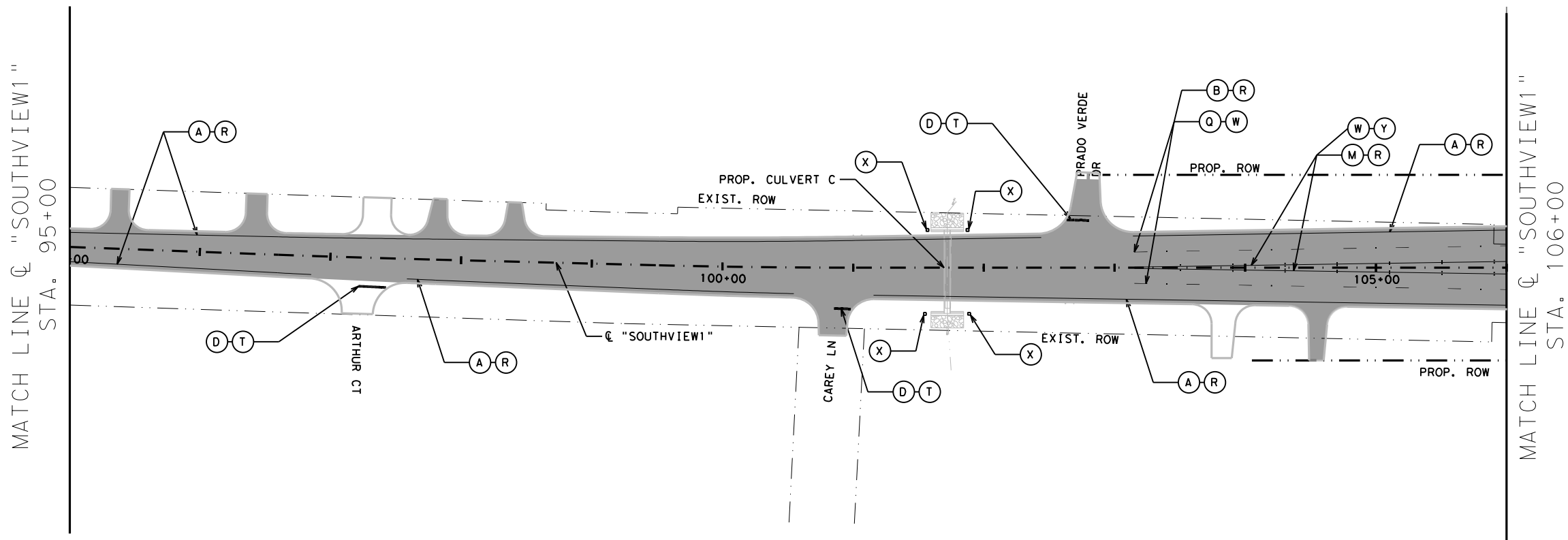
SCALE: 1"=100' SHEET 5 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MN	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	KS	STATE	DISTRICT	COUNTY
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

250



- LEGEND**
- (A) (W) 4" (SLD) TY I
 - (B) (W) 4" (BRK) TY I
 - (C) (W) 8" (SLD) TY I
 - (D) (W) 24" (SLD) TY I
 - (E) (W) (ARROW) TY I
 - (F) (W) (WORD) TY I
 - (G) (W) 4" (SLD) TY II
 - (H) (W) 4" (BRK) TY II
 - (I) (W) 8" (SLD) TY II
 - (J) (W) 24" (SLD) TY II
 - (K) (W) (ARROW) TY II
 - (L) (W) (WORD) TY II
 - (M) (Y) 4" (SLD) TY I
 - (N) (Y) 4" (SLD) TY II
 - (O) (W) 4" (DOT) TY I
 - (P) (W) 4" (DOT) TY II
 - (Q) REFL PAV MRKR TY II-C-R
 - (R) PAV SURF PREP FOR MKR (4')
 - (S) PAV SURF PREP FOR MKR (8')
 - (T) PAV SURF PREP FOR MKR (24')
 - (U) PAV SURF PREP FOR ARROW
 - (V) PAV SURF PREP FOR WORD
 - (W) PAV SURF PREP FOR RPM
 - (X) INSTL OM ASSM (OM-22) (FLX) GND
 - (Y) REFL PAV MRKR TY II A-A



PRELIMINARY

FOR REVIEW ONLY
 Not intended
 for construction, bidding or
 permit purposes.
 Engineer: IBRAHIM I. EL SAAD
 P.E. No.: 142049
 Date: 1/11/2022

© 2022

FM 1378
AT FM 3286
PAVEMENT MARKINGS
LAYOUT

SCALE: 1"=100' SHEET 6 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MN	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	KS	STATE	DISTRICT	COUNTY
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

251

LOCATION	666 6048	666 6300	666 6303	666 6315	672 6010	672 6013	678 6001	678 6008	678 6033	658 6048
FM 1378 CSJ: 1392-01-044	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	RE PM W/RET REQ TY I (W) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REFL PAV MRK TY II-C-R	REFL PAV MRK TY II-A-A	PAV SURF PREP FOR MKR (4")	PAV SURF PREP FOR MKR (24")	PAV SURF PREP FOR MKR (RPM)	INSTL DEL ASSM (OM-22) (FLX) GND
	LF	LF	LF	LF	EA	EA	LF	LF	EA	EA
PROJECT TOTALS	50	153	1992	570	8	34	2715	50	42	4

FILE: c:\txdot\pw\online\txdot5\matthew.norris\0326860\FM 1378 Stripping Layout.dgn
 DATE: 1/11/2022
 TIME: 4:00:48 PM