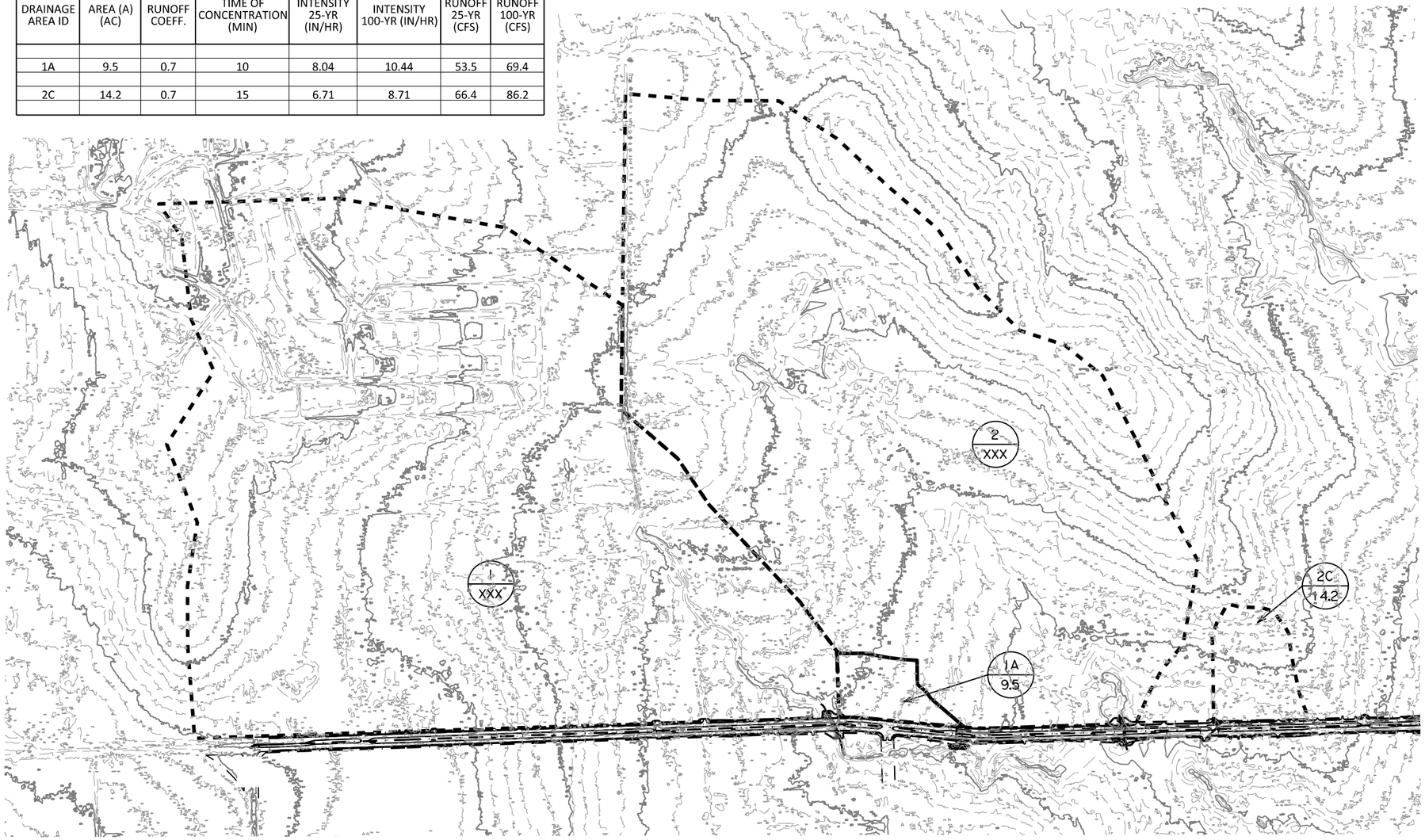
CULVERT HYDRAULICS																	
STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER	25-YEAR (DESIGN)						100-YEAR (CHECK)					
					RUNOFF (CFS)	HW ELEV (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VELOCITY (FPS)	TW VELOCITY (FPS)	RUNOFF (CFS)	HW ELEV (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VELOCITY (FPS)	TW VELOCITY (FPS)
423+60	FM 2514	1-36" RCP	1A	570.23	53.5	567.77	564.69	1.69	8.92	3.79	69.4	569.37	564.93	1.93	10.51	4.07
445+35	FM 2514	1-5X2	2C	562.25	66.4	561.83	558.22	0.72	8.25	8.07	86.2	563.05	558.34	0.837	8.62	8.82

RATIONAL METHOD CALCULATIONS							
DRAINAGE AREA ID	AREA (A) (AC)	RUNOFF COEFF.	TIME OF CONCENTRATION (MIN)	INTENSITY 25-YR (IN/HR)	INTENSITY 100-YR (IN/HR)	RUNOFF 25-YR (CFS)	RUNOFF 100-YR (CFS)
1A	9.5	0.7	10	8.04	10.44	53.5	69.4
2C	14.2	0.7	15	6.71	8.71	66.4	86.2



N

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

NOTE: THIS SHEET SUBJECT TO CHANGE; CONSULTANT PERFORMING HYDRAULIC STUDY FOR STRUCTURES NO. 1 AND NO. 2.

PRELIMINARY

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ON: 3/16/2017

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FM 2514 OFF-SITE DRAINAGE AREA MAP

SCALE: 1"=1000'

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	195
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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CULVERT HYDRAULIC DATA																		
STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER (FT)	25 YEAR (DESIGN)							100 YEAR (CHECK)							COMMENTS
					FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL	TW VEL (FT/S)	FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL	TW VEL (FT/S)	
423+60	FM 2514	(EX.) 1-36" X 63.5' RCP	1A		47.71	568.15	3.85	564.92	0.82	8.4	7.86	62	569.34	5.04	564.04	0.94	9.73	8.5	
		(PR.) 1-36" X 134' RCP		570.23	53.5	567.77	3.02	564.69	1.69	8.92	3.79	69.4	569.37	4.62	564.93	1.93	10.51	4.07	
445+35	FM 2514	(EX.) 2-24" X 45' RCP	2C		55.68	564.14	4.44	560.39	0.89	9.26	8.22	71.88	566.27	6.57	560.51	1.01	12.03	8.84	
		(PR.) 1-5' X 2' X SBC		562.25	66.4	561.83	1.81	558.22	0.72	8.25	8.07	86.2	563.05	3.03	558.34	0.84	8.62	8.82	

FM 2514

CULVERT HYDRAULIC DATA SHEET

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	196
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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STRUCTURE 1 HYDRAULIC DATA SHEETS TO BE INCLUDED AFTER CONSULTANT SUBMISSION

FM 2514
STRUCTURE 1
CULVERT DATA SHEETS

SHEET 1 OF 5

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	197
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

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STRUCTURE 2 HYDRAULIC DATA SHEETS TO BE INCLUDED AFTER CONSULTANT SUBMISSION

FM 2514
STRUCTURE 2
CULVERT DATA SHEETS

SHEET 1 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	202
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

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DESIGN SPEED = 45 MPH
2014 ADT = 14,400
2034 ADT = 20,800
FUNC CLASS = URBAN PRINCIPAL ARTERIAL

DRIVEWAY
17W
PROPOSED ROW
PROPOSED STONE RIPRAP
ESTIMATED AT 139 SY
① SETB-FW-S(30°)
STA 413+00.92
OFFSET=67.68' LT
TIE TO EXISTING
CHANNEL AT ROW
②
SS LINE A
FM 2514 C/L
413+00
STA 413+47.5
OFFSET=12.99' RT
END BRIDGE
CLASS CULVERT
STA 413+50.30
BEGIN BRIDGE
CLASS CULVERT
STA 413+29.70
EXISTING 2 - 7' X 5' MBC
TO BE REMOVED
91.0' - PAY LENGTH
95.3' - PAY LENGTH
61.0' - PAY LENGTH
57.1' - PAY LENGTH
15°
30°
① SETB-FW-S(15°)
STA 413+62.78
OFFSET=70.01' RT
TIE TO EXISTING
CHANNEL AT ROW
PROPOSED STONE RIPRAP
ESTIMATED AT 122 SY
SS LINE B
PROPOSED ROW

ITEM	DESCRIPTION	QUANTITY
ITEM 402	TRENCH EXCAV PROTECTION	107 LF
ITEM 432	RIPRAP (STONE PROTECTION)(12 IN)	131 CY
ITEM 462	CONC BOX CULV (8 FT X 5 FT)	304.4 LF
ITEM 467	SET (TY I)(S=8 FT)(HW=7 FT)(3:1)(C)	2 EA

FM 2514 C/L

47.3' (NORMAL) | 78.2' (ALONG SKEW) | 15' (ALONG SKEW) | 59' (ALONG SKEW) | 45' (NORMAL)
26.1' (NORMAL) | 23.7' (NORMAL)
R.O.W. | R.O.W.
③ PED RAIL (TY B) | ③ PED RAIL (TY B)
1' HDWL | 1' HDWL
SETB-FW-S(30°)
2' CURB HEIGHT
SETB-FW-S(15°)
2' CURB HEIGHT
3:1
US FL 568.30'
FL 569.00'
0.53%
2 - 8' X 5' MBC
DS FL 567.50'
PROPOSED STONE RIPRAP (18" THICK)
OUT-A 4X3 SBC FL 569.50
EXIST US FL 570.10
EXISTING 2 - 7' X 5' MBC TO BE REMOVED
EXIST DS FL 570.00
OUT-B 36" RCP FL 569.00
PROPOSED STONE RIPRAP (18" THICK)
④ 62' TRENCH EXCAV PROTECTION
④ 45' TRENCH EXCAV PROTECTION

590 585 580 575 570 565 560 555 550

125 100 75 50 25 0 25 50 75 100 125

STRUCTURE NO. 1
BRIDGE CLASS CULVERT
STA 413+40.00

-EXISTING-
STA 413+21
2 - 7' X 5' X 41.9' MBC
TO BE REMOVED

-PROPOSED-
2 - 8' X 5' X 152.2' MBC
WITH SETB-FW-S(30°) LT & SETB-FW-S(15°) RT
ADD RIPRAP LT & RT

NOTES:

① PLACE HEADWALL PARALLEL TO EDGE OF PAVEMENT.

② LOCATION OF EXISTING GROUND PROFILE.

③ SEE ROADWAY PLAN-PROFILE SHEETS FOR MORE INFO.

④ SEE TCP SHEETS FOR STRUCTURE PHASING.

SEE ALSO STRUCTURE NO. 1 GRADING PLAN FOR MORE INFO.

STANDARDS:
SCP-MD & SCP-8
SETB-FW-S
ECD, SRR, PRD-13

Texas Department of Transportation

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P.E. 87752

ON: 3/16/2017

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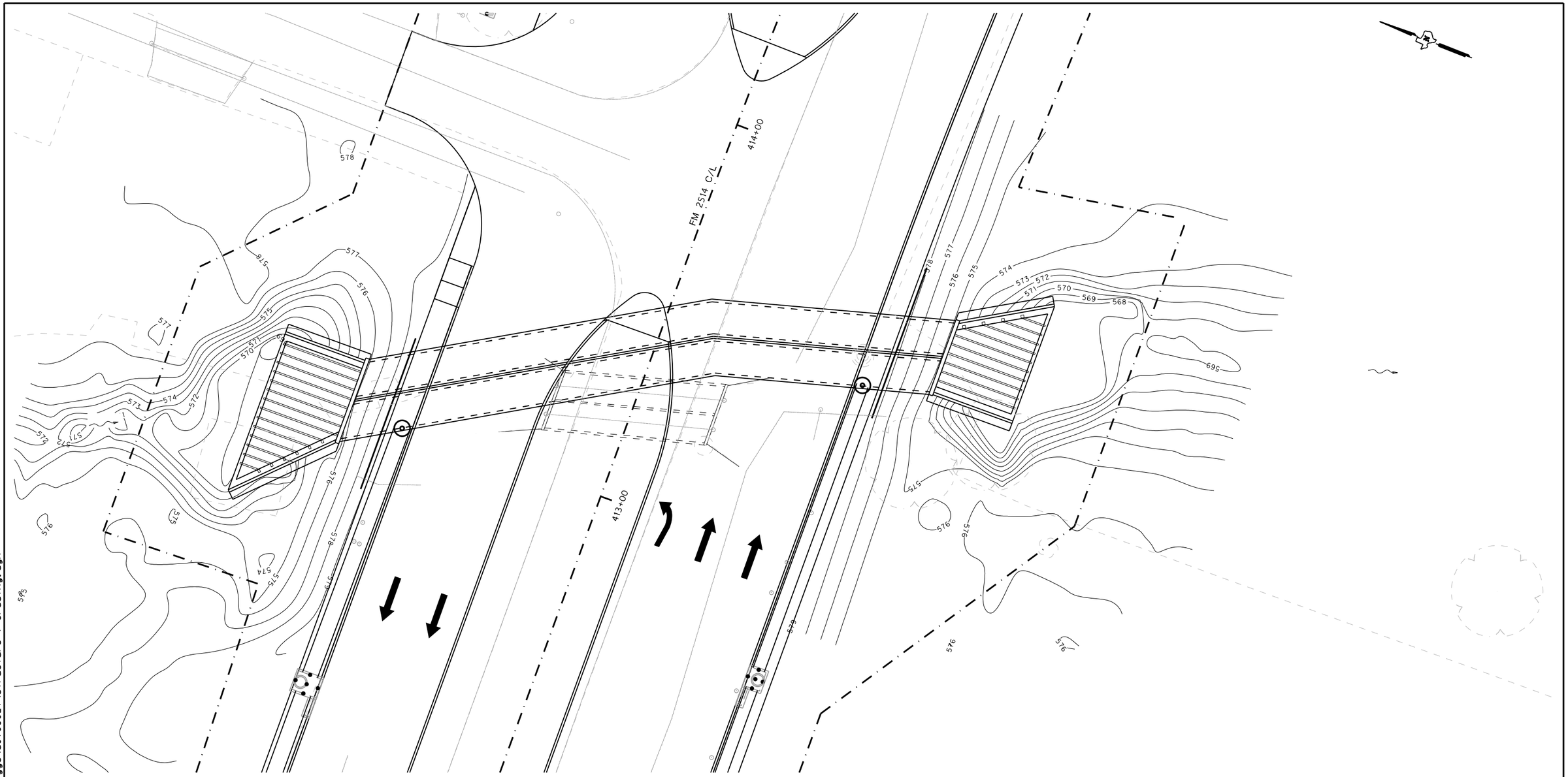
EXIST NBI NUMBER: NA
PROP NBI NUMBER:

FM 2514
STRUCTURE NO. 1
BRIDGE CLASS CULVERT
PLAN-PROFILE

HORIZ SCALE: 1"=25'
VERT SCALE: 1"=10'

SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	209
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	



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FM 2514
STRUCTURE NO. 1
BRIDGE CLASS CULVERT
GRADING PLAN

SCALE: 1"=25'

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	210
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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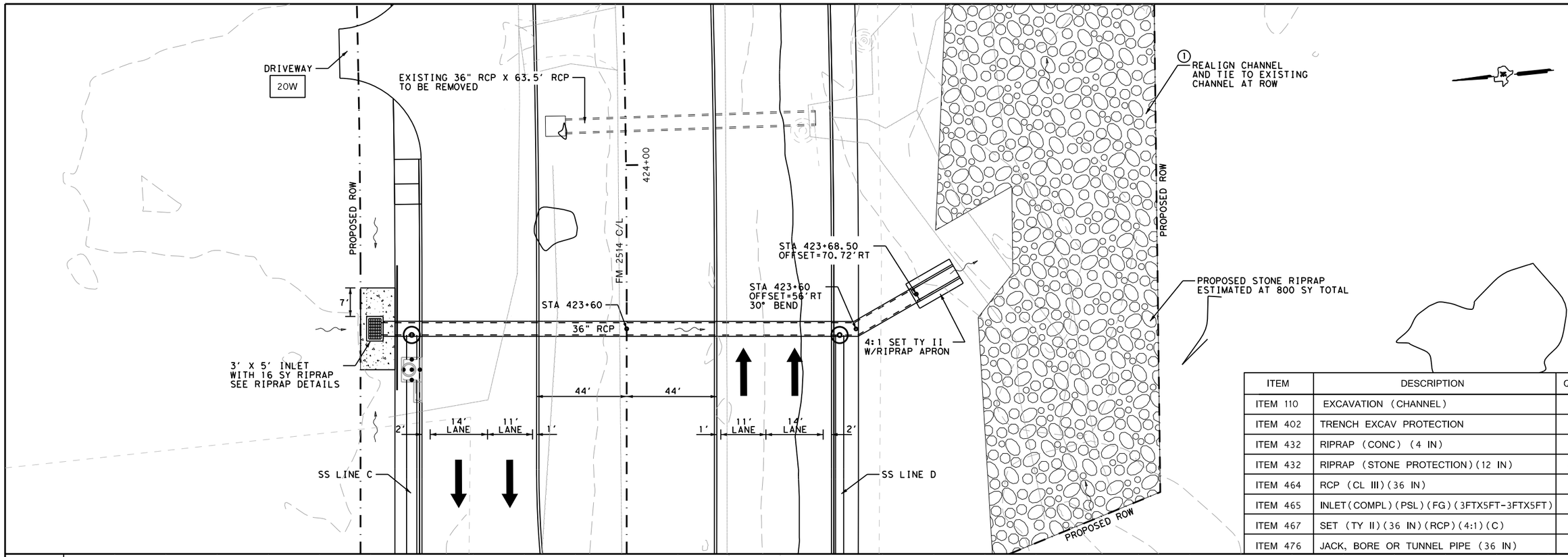
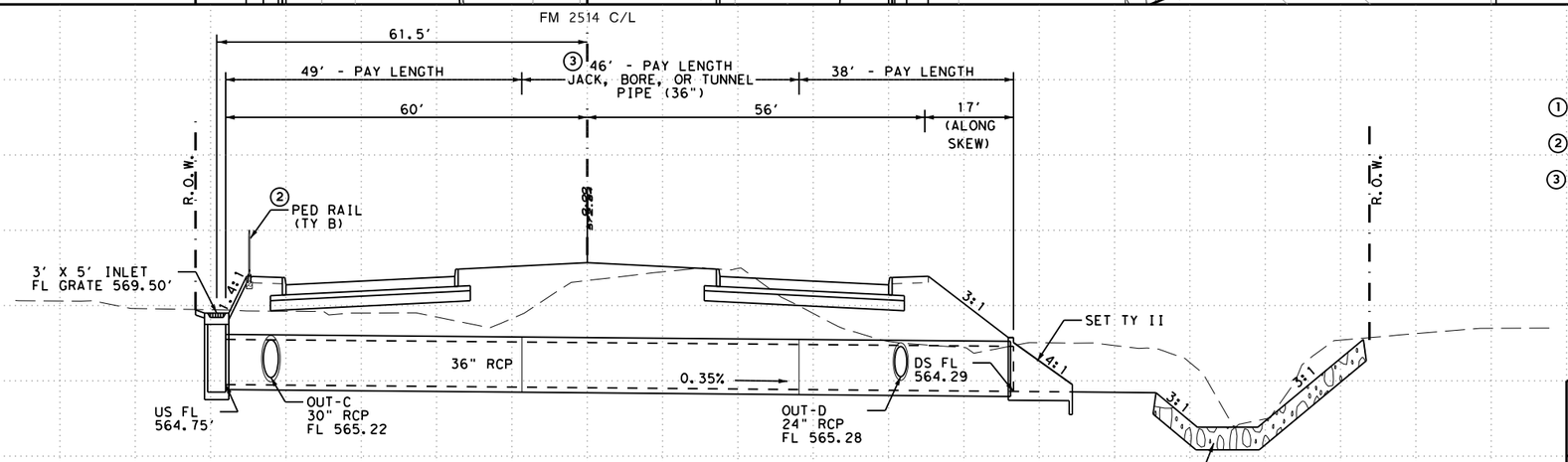


ITEM	DESCRIPTION	QUANTITY
ITEM 110	EXCAVATION (CHANNEL)	100 CY
ITEM 402	TRENCH EXCAV PROTECTION	40 LF
ITEM 432	RIPRAP (CONC) (4 IN)	2 CY
ITEM 432	RIPRAP (STONE PROTECTION)(12 IN)	400 CY
ITEM 464	RCP (CL III)(36 IN)	87 LF
ITEM 465	INLET(COMPL)(PSL)(FG)(3FTX5FT-3FTX5FT)	1 EA
ITEM 467	SET (TY II)(36 IN)(RCP)(4:1)(C)	1 EA
ITEM 476	JACK, BORE OR TUNNEL PIPE (36 IN)	46 LF



STRUCTURE NO. 1A
STA 423+60

-EXISTING-
36" RCP X 63.5' WITH DROP INLET LT
TO BE REMOVED

-PROPOSED-
36" RCP X 133'
WITH DROP INLET LT & SET TY II RT
ADD RIPRAP LT & RT

NOTES:

1. SEE STRUCTURE NO. 1A GRADING PLAN FOR MORE INFO.
2. SEE ROADWAY PLAN-PROFILE SHEETS FOR MORE INFO.
3. SEE TCP SHEETS FOR STRUCTURE PHASING.

STANDARDS:
SETP-CD, PSET-SC OR PSET-RC
PSET-RR
PB, PSL (STYLE FG), PDD
SRR, PRD-13

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FM 2514
STRUCTURE NO. 1A
PLAN-PROFILE

HORIZ SCALE: 1"=25'
VERT SCALE: 1"=10'

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	211
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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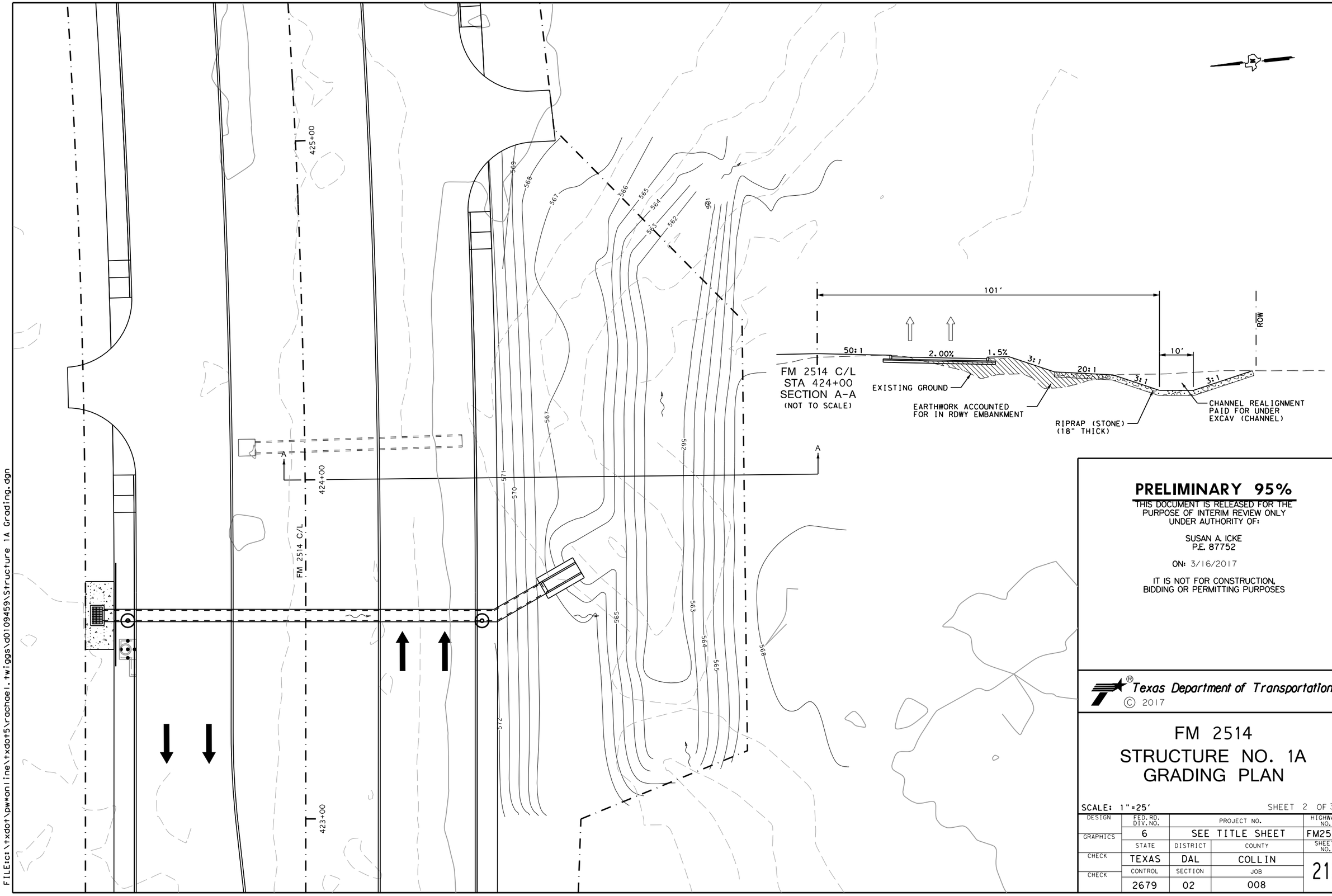

FM 2514 C/L
STA 424+00
SECTION A-A
(NOT TO SCALE)

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FM 2514
STRUCTURE NO. 1A
GRADING PLAN

SCALE: 1"=25'

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	212
CHECK	CONTROL	SECTION	JOB	
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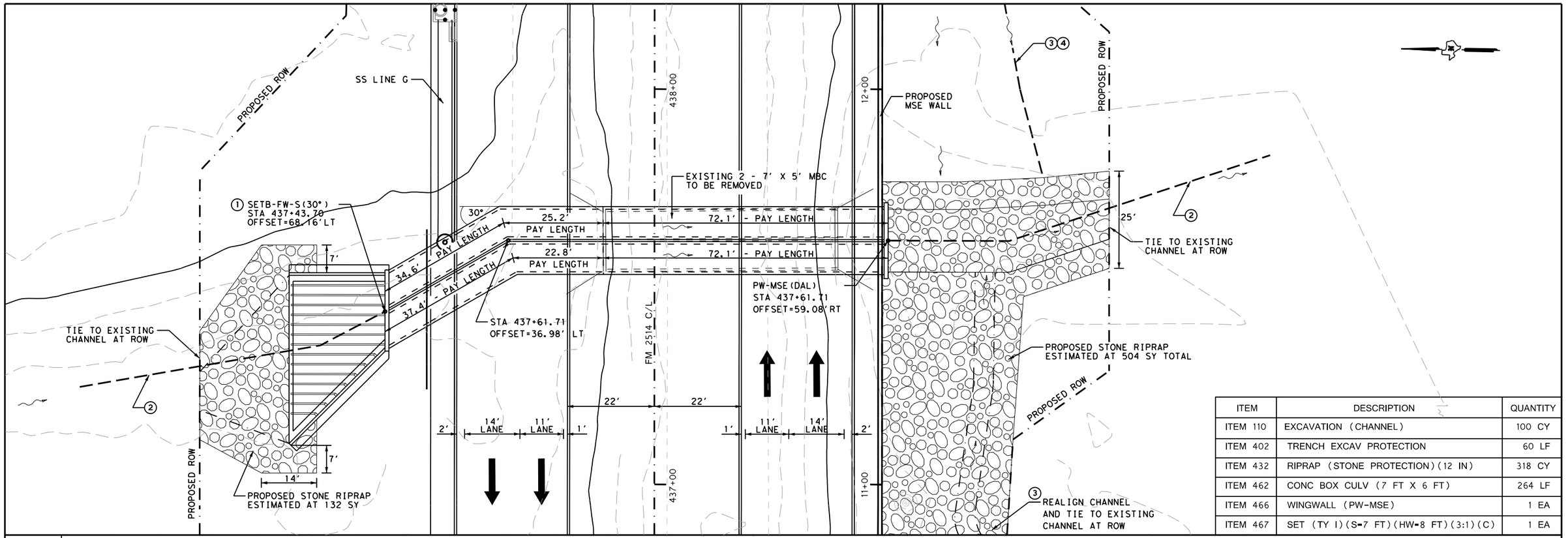
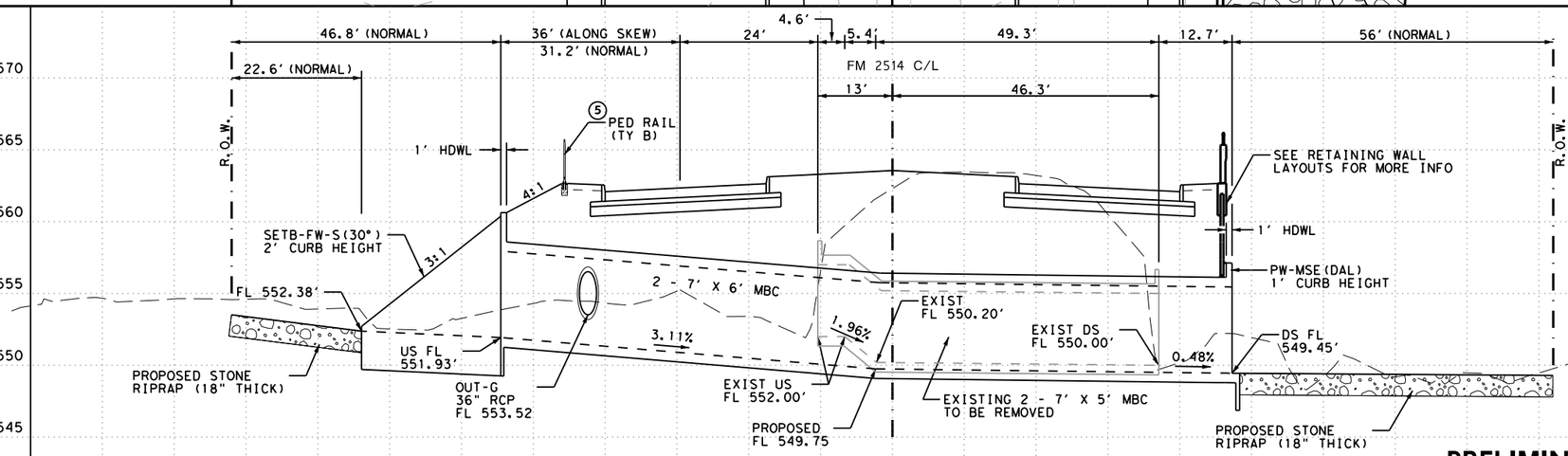


ITEM	DESCRIPTION	QUANTITY
ITEM 110	EXCAVATION (CHANNEL)	100 CY
ITEM 402	TRENCH EXCAV PROTECTION	60 LF
ITEM 432	RIPRAP (STONE PROTECTION)(12 IN)	318 CY
ITEM 462	CONC BOX CULV (7 FT X 6 FT)	264 LF
ITEM 466	WINGWALL (PW-MSE)	1 EA
ITEM 467	SET (TY I)(S=7 FT)(HW=8 FT)(3:1)(C)	1 EA



NOTES:

1. PLACE HEADWALL PARALLEL TO EDGE OF PAVEMENT.
2. LOCATION OF EXISTING GROUND PROFILE.
3. SEE STRUCTURE NO. 2 GRADING PLAN FOR MORE INFO.
4. GRADE FROM SET - OUT-H TO ~STA 437+87.
5. SEE ROADWAY PLAN-PROFILE SHEETS FOR MORE INFO.
6. SEE TCP SHEETS FOR STRUCTURE PHASING.

STANDARDS:
SCP-MD & SCP-7, MC-MD & MC-7-10
SETB-FW-S & PW-MSE(DAL)
ECD, SRR, PRD-13

STRUCTURE NO. 2
STA 437+61.71

-EXISTING-
STA 437+61.65
2 - 7' X 5' X 59.3' MBC
TO BE REMOVED

-PROPOSED-
2 - 7' X 6' X 132' MBC
WITH SETB-FW-S(30°) LT & PW-MSE(DAL) RT
ADD RIPRAP RT

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FM 2514
STRUCTURE NO. 2
PLAN-PROFILE

HORIZ SCALE: 1"=25'
VERT SCALE: 1"=10'

SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	213
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:52:00 PM
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FM 2514 C/L

438+00

437+00

12+00

11+00

556.11

555.60

555.50

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FM 2514
STRUCTURE NO. 2
GRADING PLAN

SCALE: 1"=25'

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	214
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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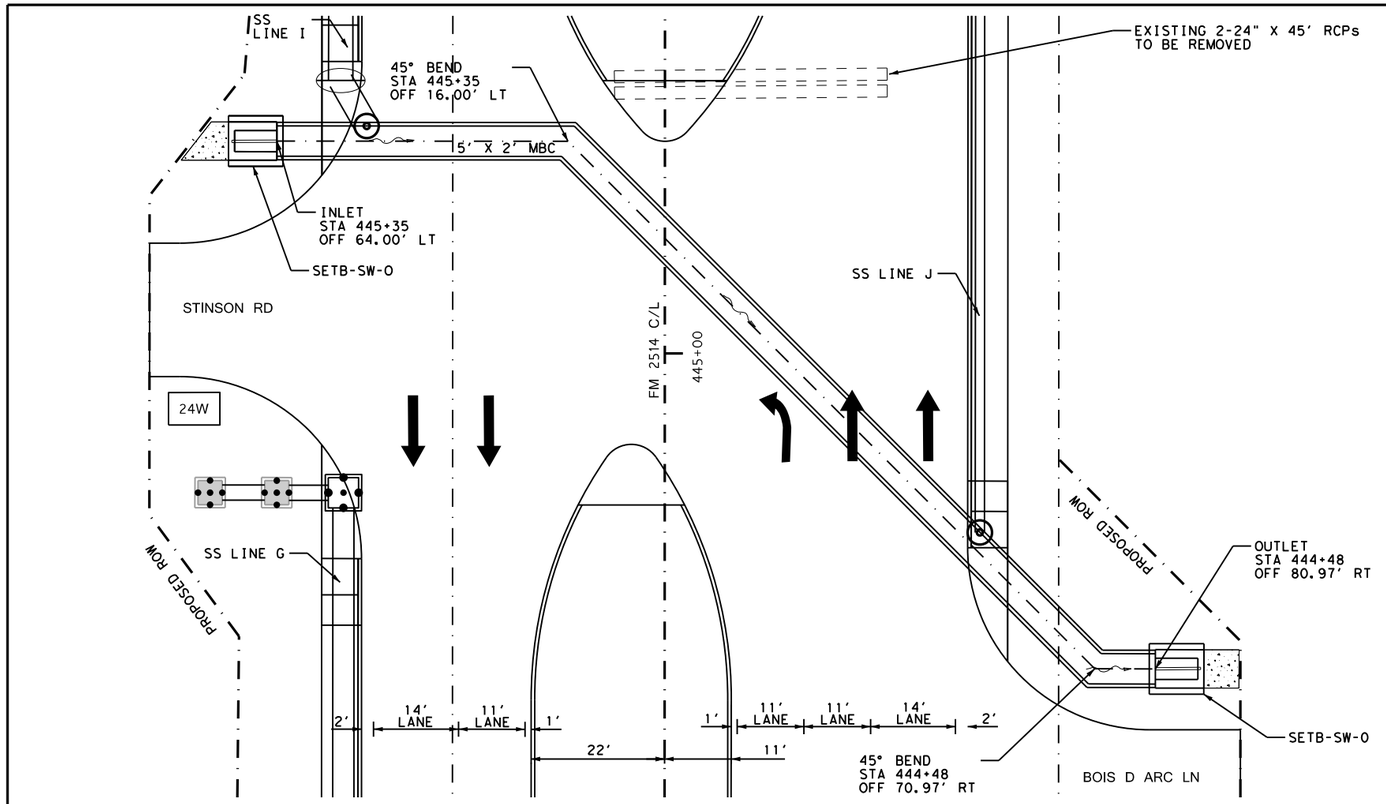

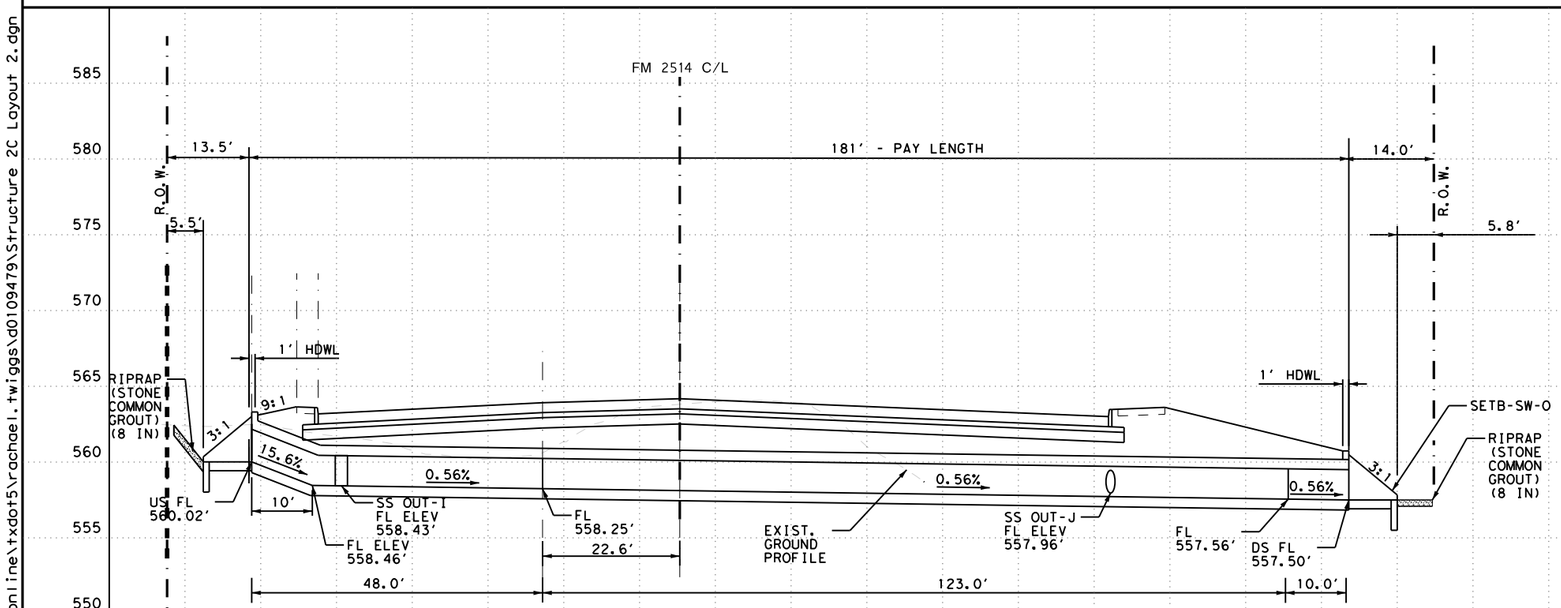

STRUCTURE NO. 2C
STA 445+19

-PROPOSED-

5' X 2' SCP-5

NOTES:

PROPOSED RIPRAP MAY NEED ADJUSTMENT IN THE FIELD AS DIRECTED BY THE ENGINEER.

STANDARDS:
SCP-MD & SCP-5
SETB-SW-0

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FM 2514
STRUCTURE NO. 2C
PLAN-PROFILE

HORIZ SCALE: 1"=25'
VERT SCALE: 1"=10'

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	215
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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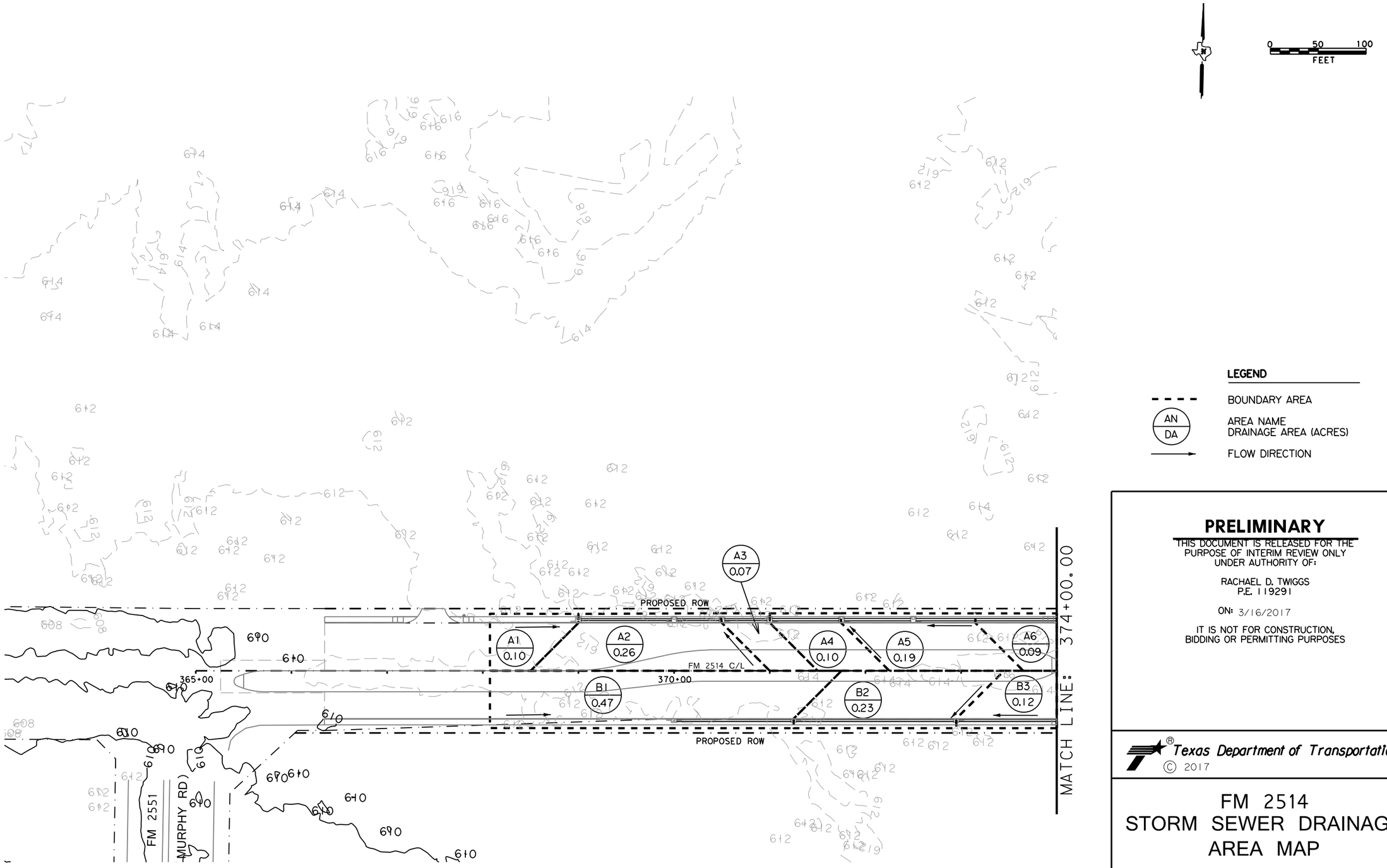

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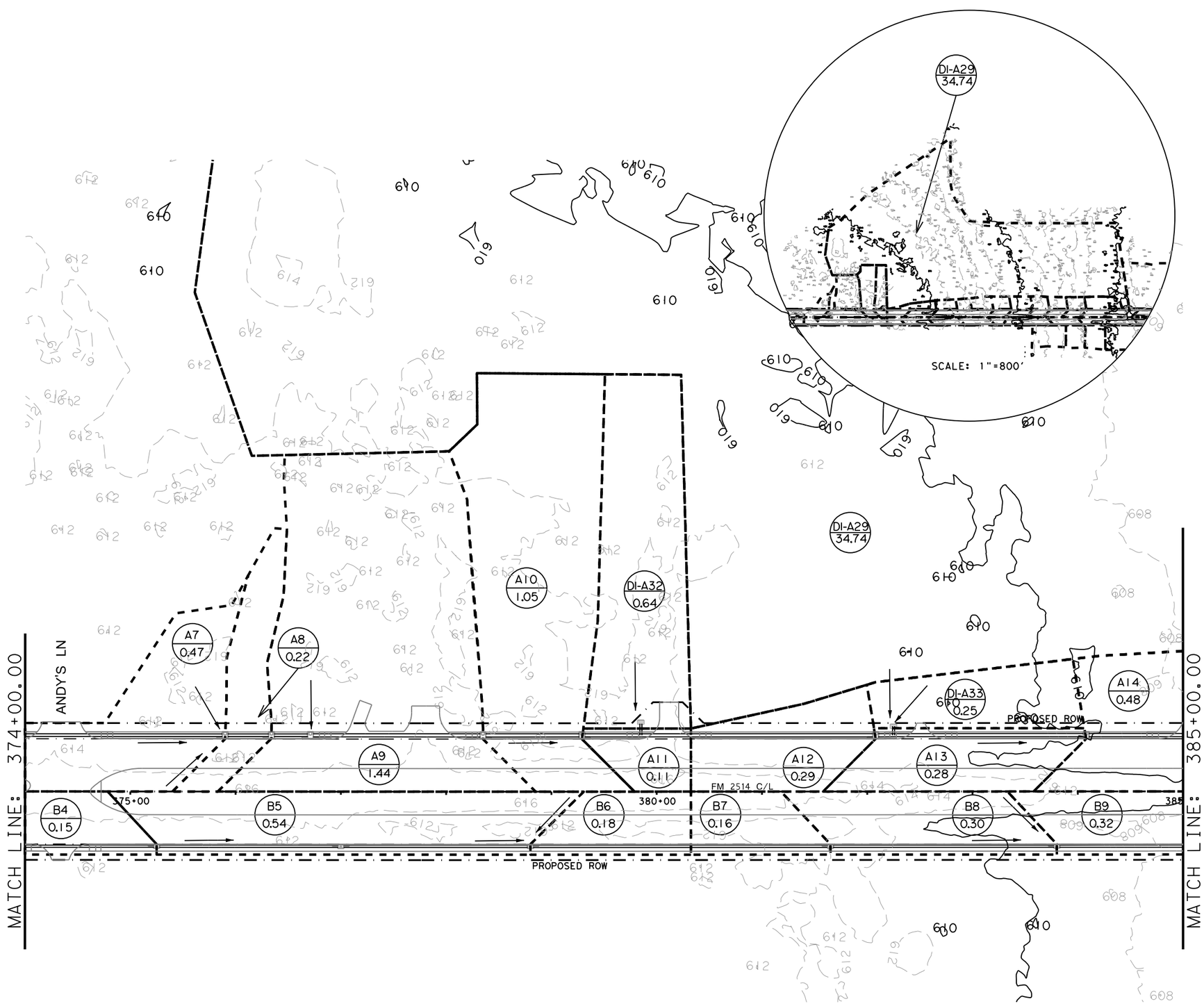
FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100' SHEET 1 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	216
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	



0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

PRELIMINARY

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Texas Department of Transportation

FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 2 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	217
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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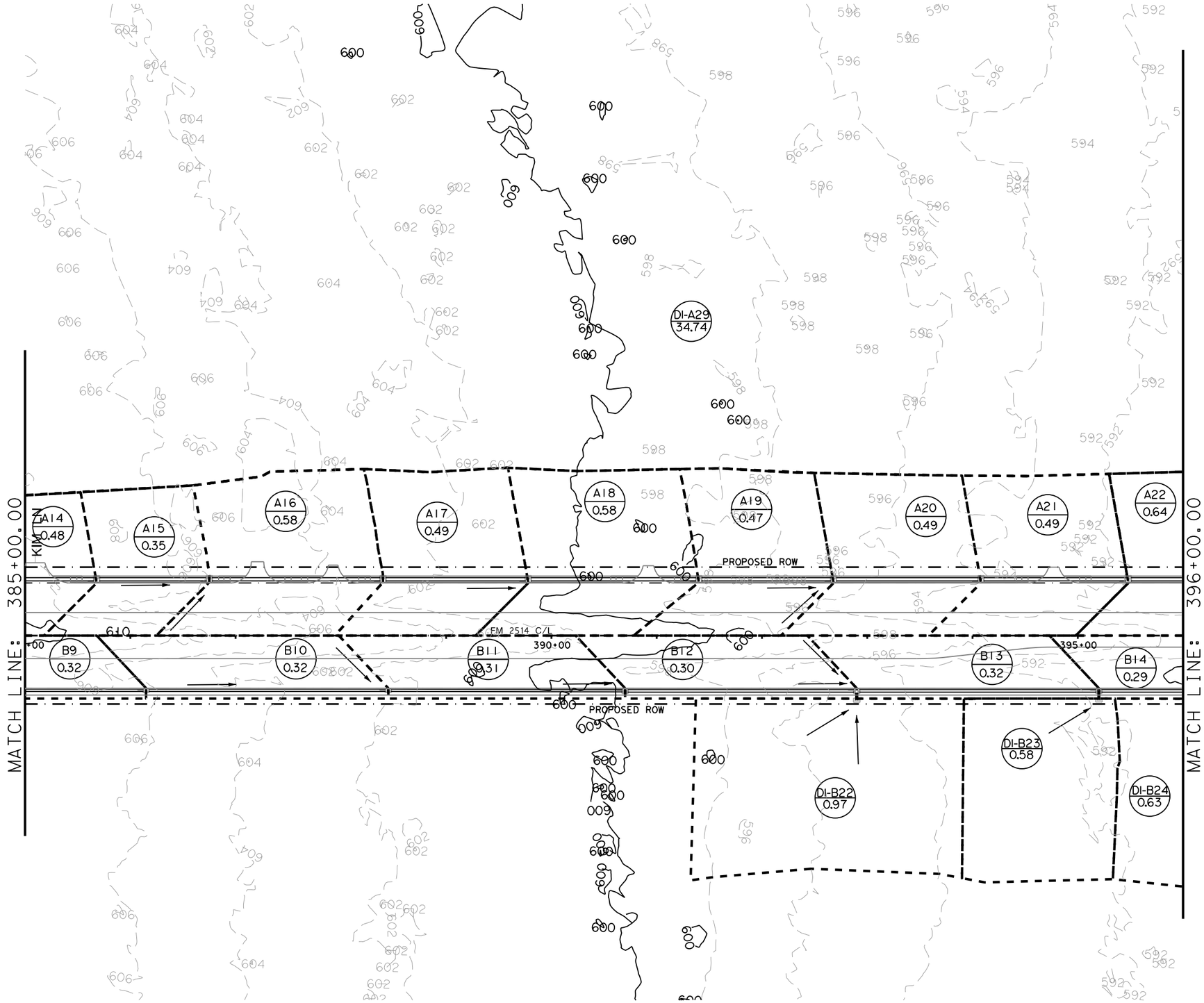

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME / DRAINAGE AREA (ACRES)
- FLOW DIRECTION

PRELIMINARY

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RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

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Texas Department of Transportation

FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	218
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

DATE:3/16/2017 TIME:2:54:25 PM
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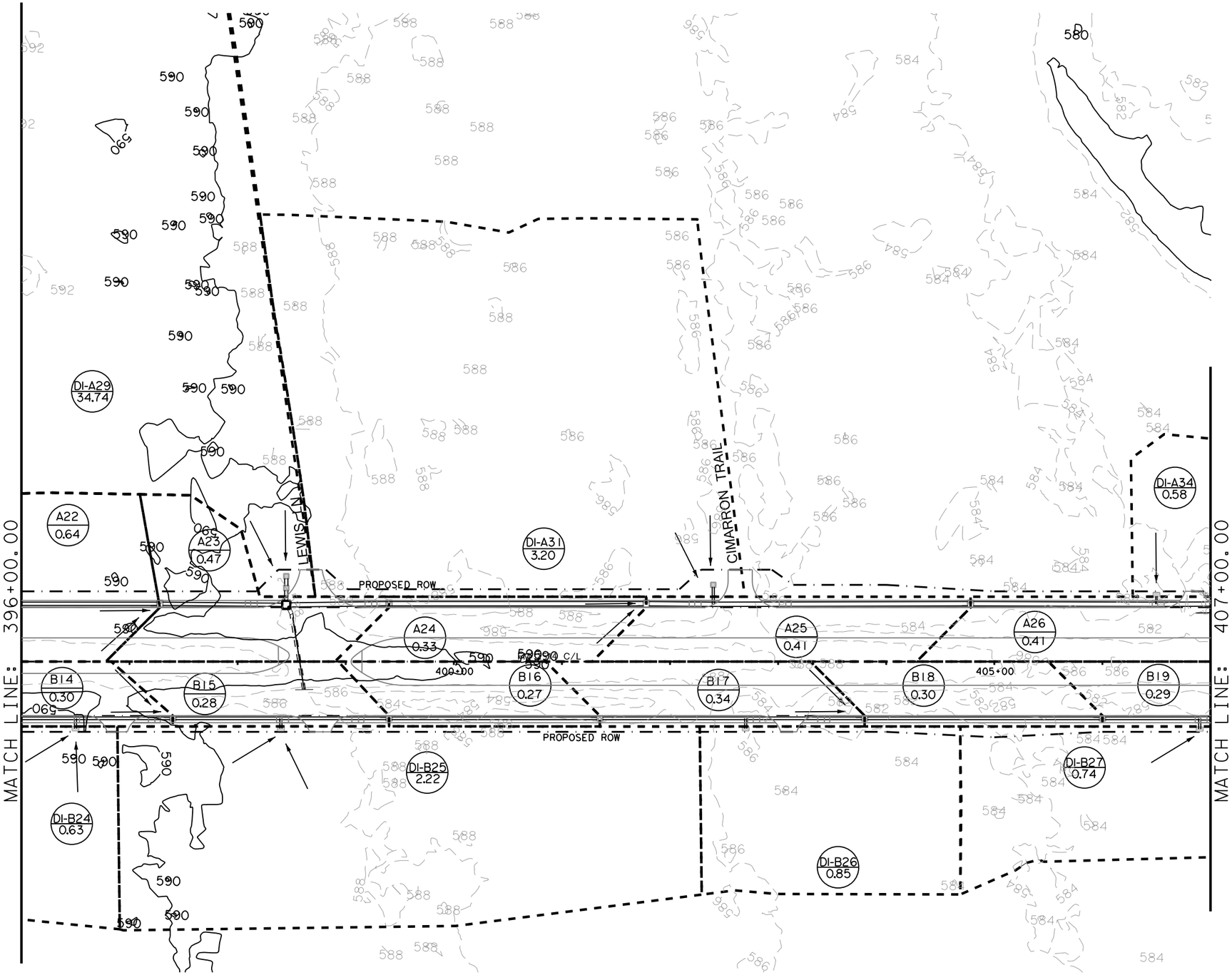

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

PRELIMINARY

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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	219
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:54:38 PM
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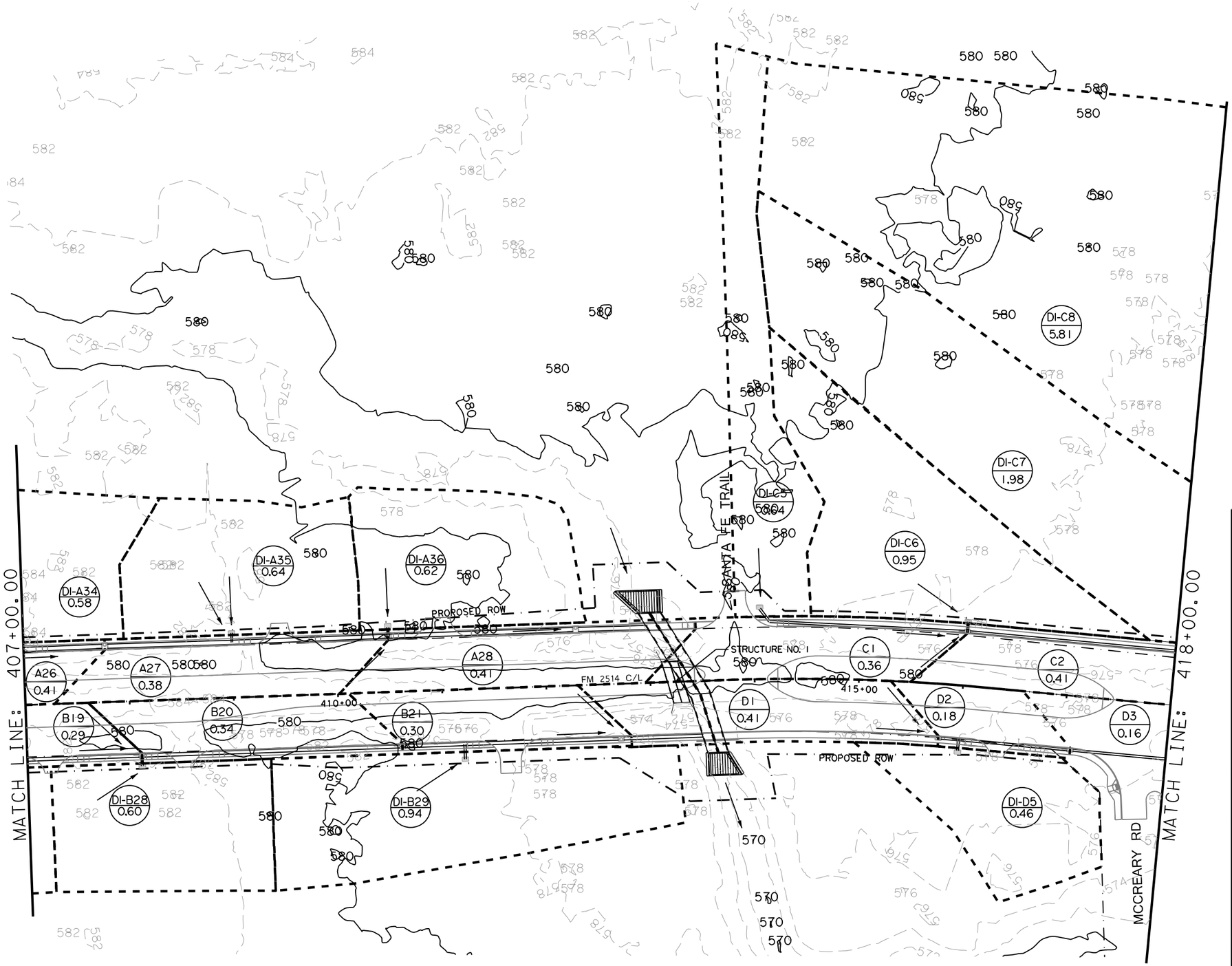

0 50 100 FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100' SHEET 5 OF 12

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	220
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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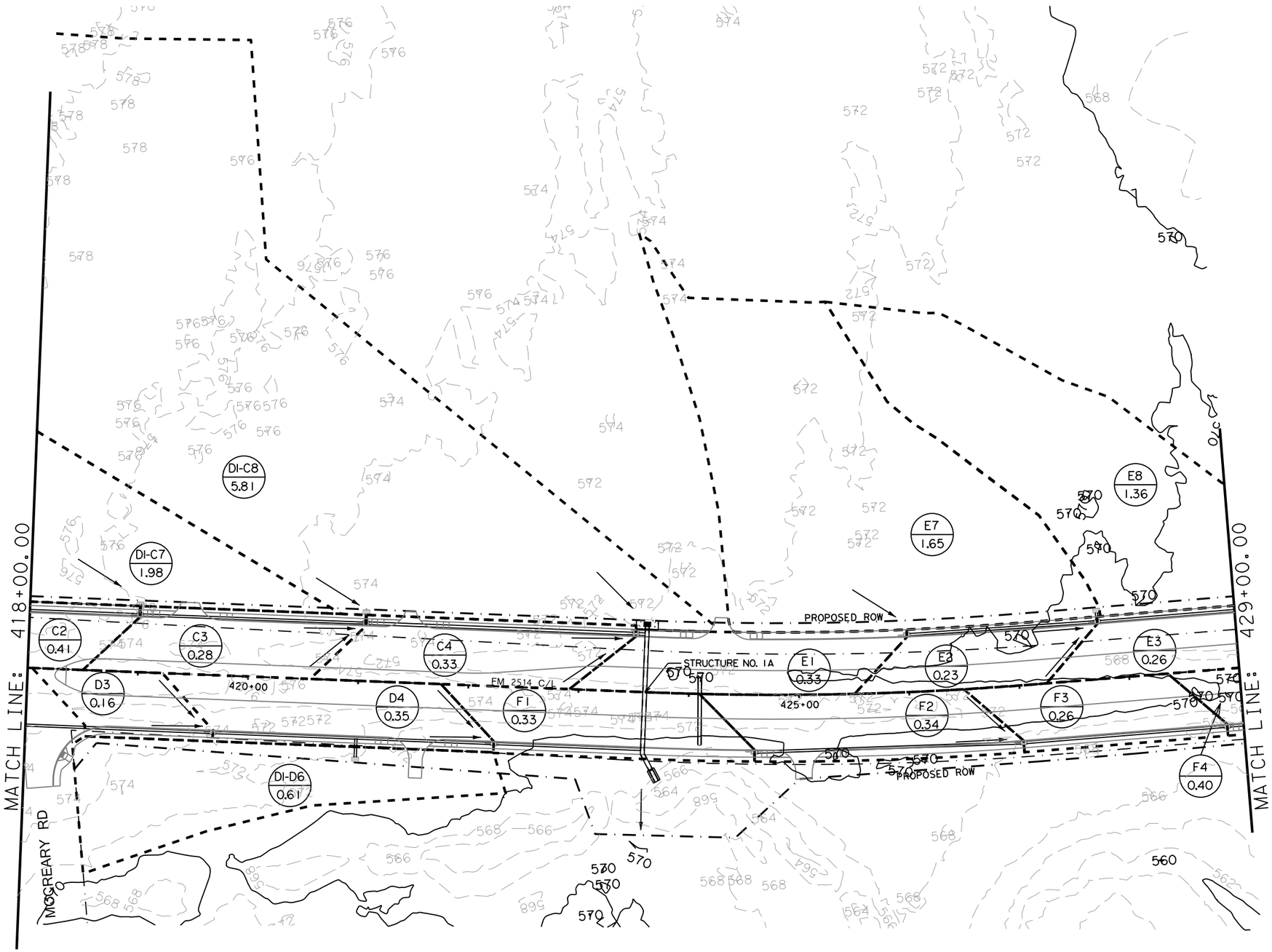

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	221
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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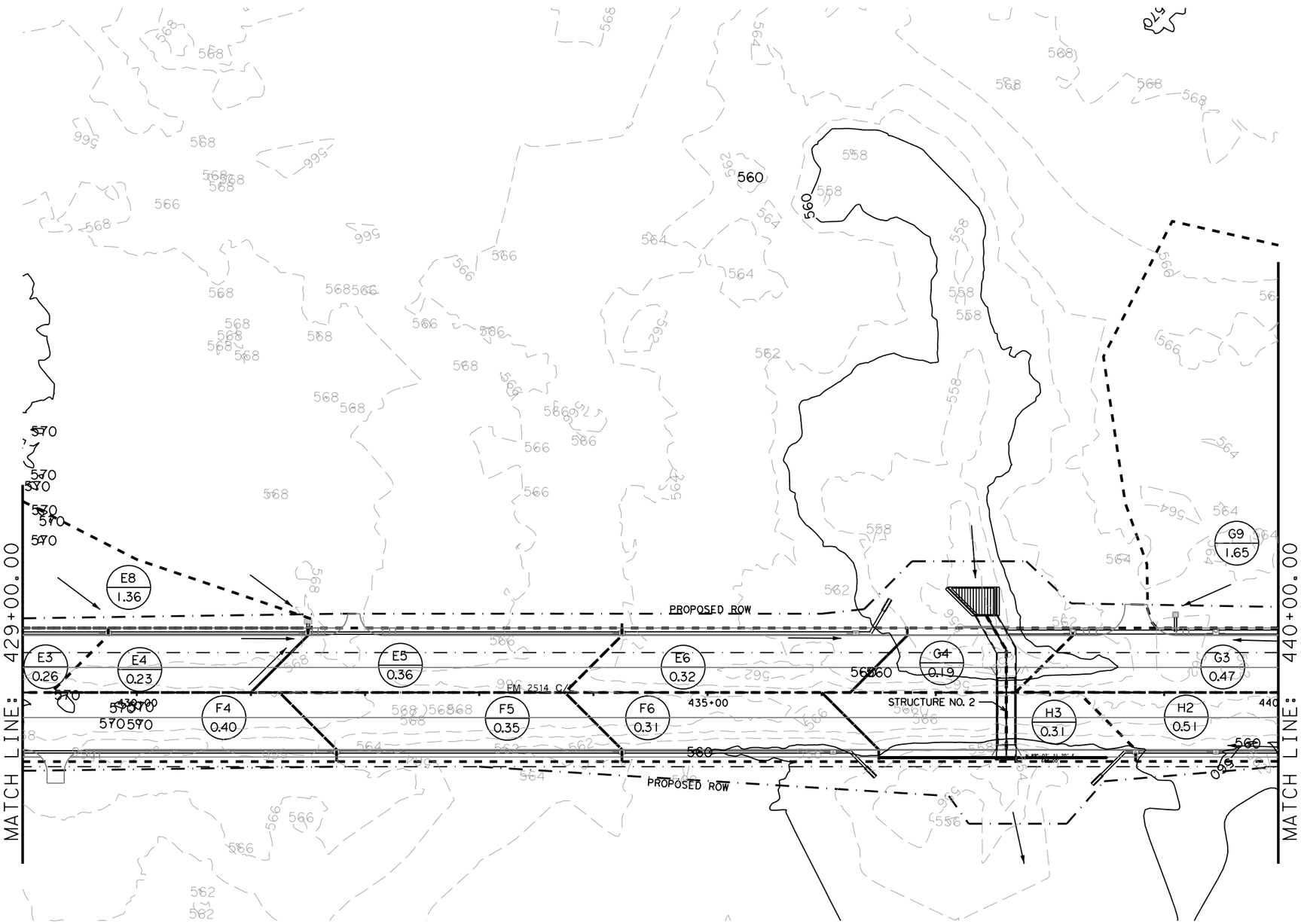

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME / DRAINAGE AREA (ACRES)
- FLOW DIRECTION

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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 7 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	222
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:55:13 PM
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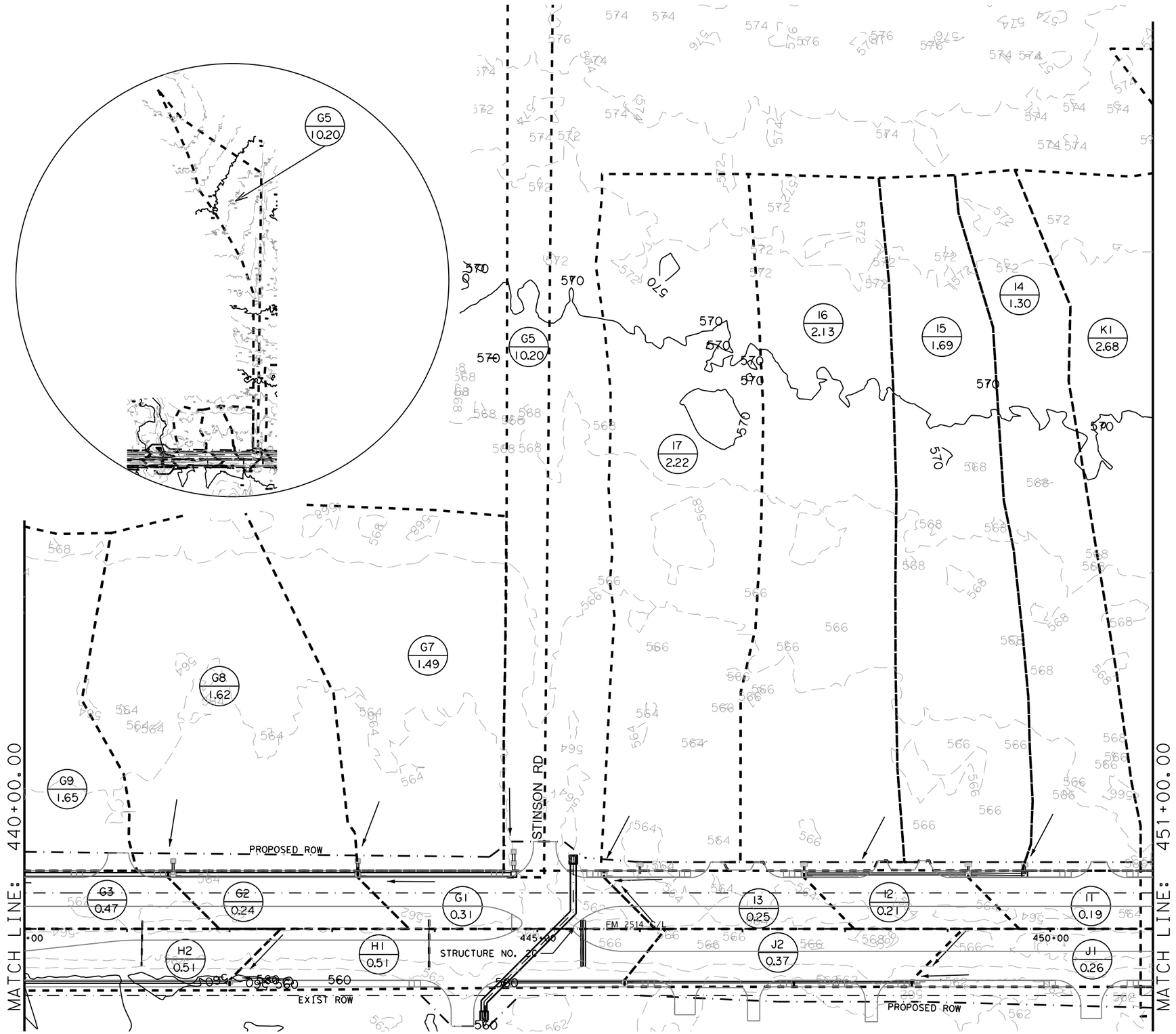

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

PRELIMINARY

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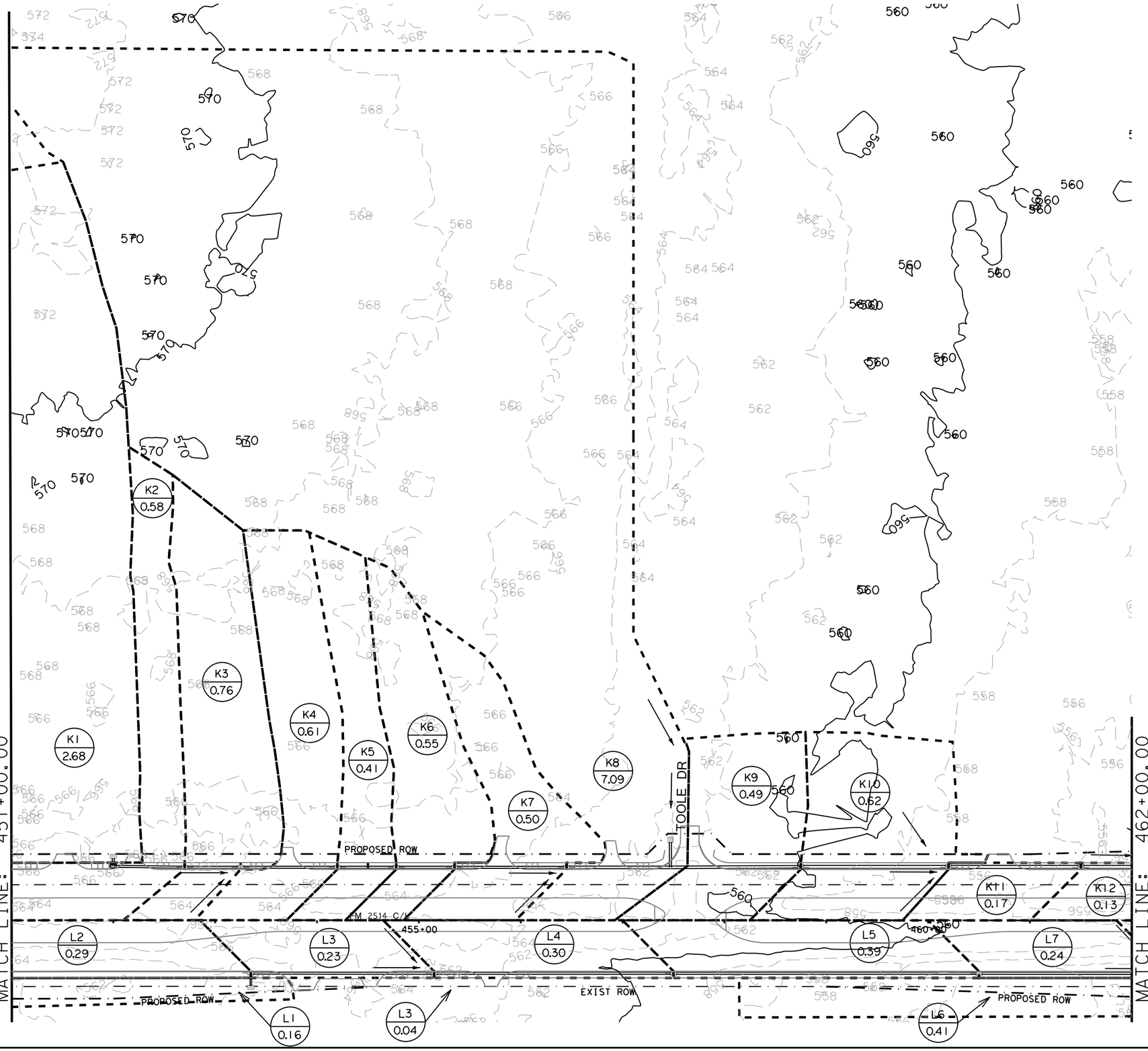
FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100' SHEET 8 OF 12

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	223
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:55:25 PM
FILE:c:\txdot\pw\online\txdot5\rachael.twiggs\dms84387\DRAINAGE AREA MAPS8.dgn



0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
- FLOW DIRECTION

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Texas Department of Transportation

FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	224
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:55:38 PM
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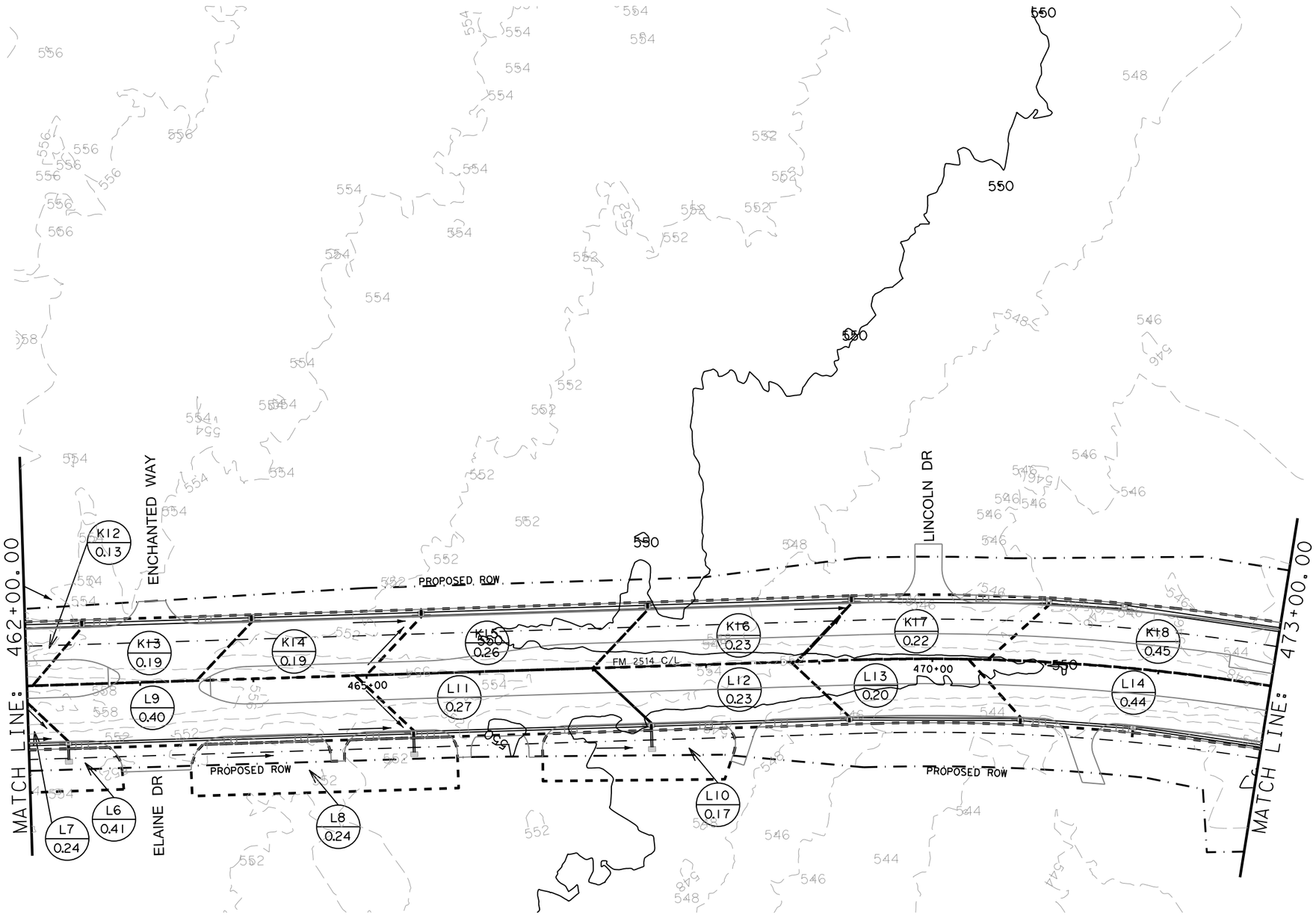

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME / DRAINAGE AREA (ACRES)
- FLOW DIRECTION

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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 10 OF 12

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	225
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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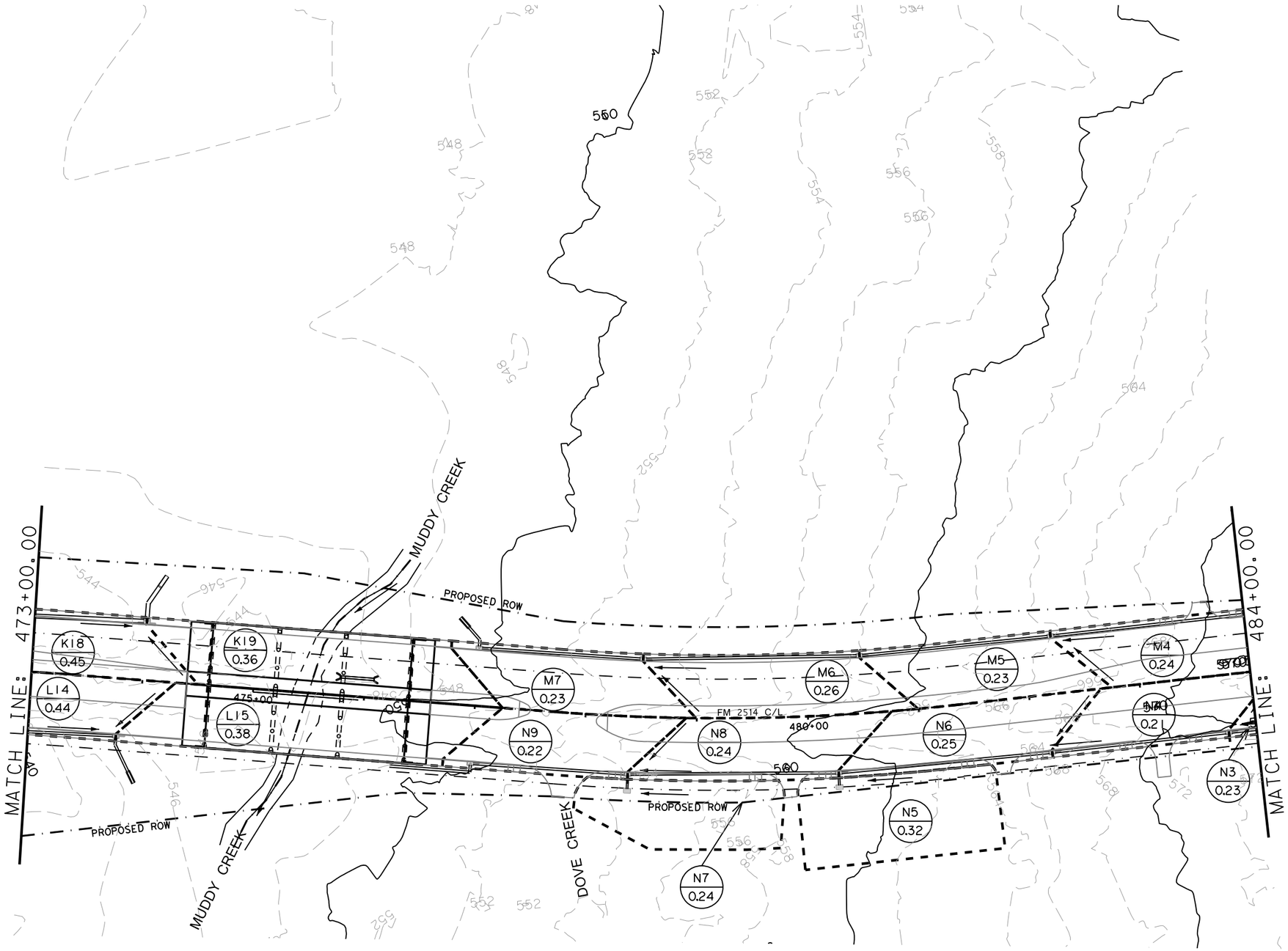

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME / DRAINAGE AREA (ACRES)
- FLOW DIRECTION

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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 11 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	226
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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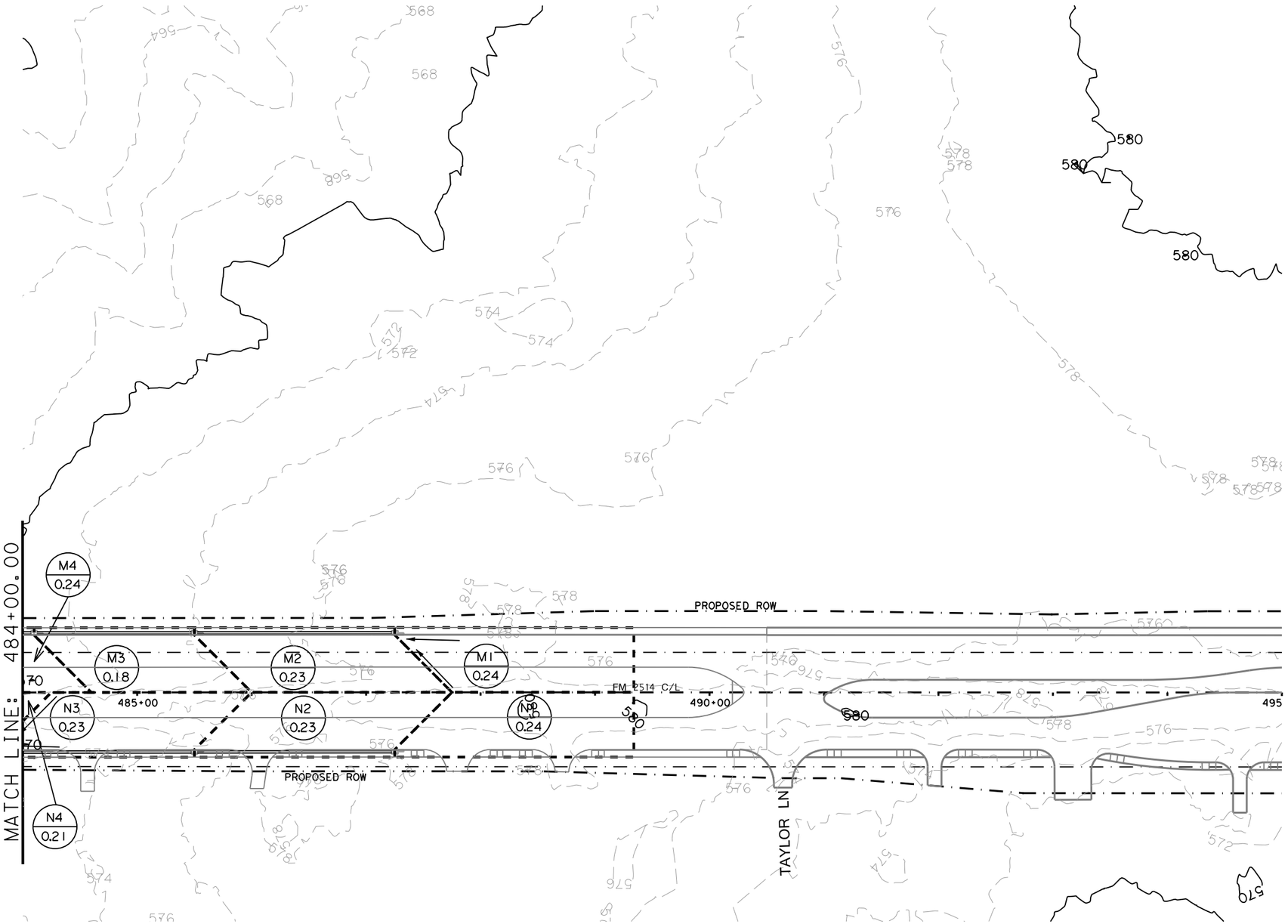

0 50 100
FEET

LEGEND

- BOUNDARY AREA
- AN / DA — AREA NAME, DRAINAGE AREA (ACRES)
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FM 2514
STORM SEWER DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 12 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	227
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:56:13 PM
FILE:c:\txdot\pw*online\txdot5\rachael.twiggs\dms84387\DRAINAGE AREA MAPS12.dgn

RUNOFF COMPUTATIONS

		Acres-Drained					Time of Conc				
NW ID	Area ID	Total Area (acre)	Pav C = 0.90 (acre)	Grass C = 0.60 (acre)	C-Value (Comp.)	Total CA (Comp.)	Actual (min)	Design (min)	Freq. (yr)	I (in/hr)	Q (cfs)
LINE A	A1	0.10	0.10	0.00	0.90	0.09	10.00	10.00	10	8.06	0.71
	A2	0.26	0.26	0.00	0.90	0.23	10.00	10.00	10	8.06	1.91
	A3	0.07	0.07	0.00	0.90	0.06	10.00	10.00	10	8.06	0.50
	A4	0.10	0.10	0.00	0.90	0.09	10.00	10.00	10	8.06	0.75
	A5	0.19	0.19	0.00	0.90	0.17	10.00	10.00	10	8.06	1.40
	A6	0.09	0.09	0.00	0.90	0.08	10.00	10.00	10	8.06	0.64
	A7	0.47	0.19	0.28	0.71	0.33	10.00	10.00	10	8.06	2.71
	A8	0.22	0.05	0.17	0.67	0.15	10.00	10.00	10	8.06	1.16
	A9	1.44	0.34	1.10	0.67	0.96	16.66	16.66	10	6.37	6.14
	A10	1.05	0.06	0.99	0.62	0.65	17.46	17.46	10	6.22	4.04
	A11	0.11	0.11	0.00	0.90	0.10	10.00	10.00	10	8.06	0.83
	A12	0.29	0.17	0.12	0.79	0.23	10.00	10.00	10	8.06	1.82
	A13	0.28	0.28	0.00	0.90	0.25	10.00	10.00	10	8.06	1.58
	A14	0.48	0.22	0.26	0.71	0.34	10.00	10.00	10	8.06	2.87
	A15	0.35	0.14	0.21	0.72	0.25	10.00	10.00	10	8.06	2.00
	A16	0.58	0.21	0.3i	0.71	0.41	10.00	10.00	10	8.06	3.31
	A17	0.49	0.15	0.34	0.69	0.34	10.00	10.00	10	8.06	2.74
	A18	0.58	0.19	0.39	0.70	0.41	10.00	10.00	10	8.06	3.28
	A19	0.47	0.14	0.33	0.69	0.32	10.00	10.00	10	8.06	2.60
	A20	0.49	0.16	0.33	0.66	0.32	10.00	10.00	10	8.06	2.77
	A21	0.49	0.16	0.33	0.71	0.35	10.00	10.00	10	8.06	2.75
	A22	0.64	0.21	0.43	0.65	0.42	10.00	10.00	10	8.06	3.61
	A23	0.47	0.24	0.23	0.75	0.35	10.00	10.00	10	8.06	2.86
	A24	0.33	0.33	0.00	0.90	0.30	10.00	10.00	10	8.06	2.38
	A25	0.41	0.41	0.00	0.90	0.37	10.00	10.00	10	8.06	3.00
	A26	0.41	0.41	0.00	0.90	0.37	10.00	10.00	10	8.06	3.00
	A27	0.38	0.38	0.00	0.90	0.34	10.00	10.00	10	8.06	2.72
	A28	0.41	0.41	0.00	0.90	0.37	10.00	10.00	10	8.06	2.94
	A29	34.74	0.00	34.74	0.60	20.84	55.66	55.66	10	3.09	64.41
	A31	3.20	0.00	3.20	0.60	1.92	13.90	13.90	10	6.96	13.35
	A32	0.64	0.00	0.64	0.60	0.38	10.00	10.00	10	8.06	3.12
	A33	0.25	0.00	0.25	0.60	0.15	10.00	10.00	10	8.06	1.20
	A34	0.58	0.00	0.58	0.60	0.35	10.00	10.00	10	8.06	2.82
	A35	0.64	0.00	0.64	0.60	0.38	10.00	10.00	10	8.06	3.08
	A36	0.62	0.00	0.62	0.60	0.37	10.00	10.00	10	8.06	3.01
LINE B	B1	0.47	0.47	0.00	0.90	0.42	10.00	10.00	10	8.06	3.38
	B2	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.70
	B3	0.12	0.12	0.00	0.90	0.11	10.00	10.00	10	8.06	0.84
	B4	0.15	0.15	0.00	0.90	0.14	10.00	10.00	10	8.06	1.05
	B5	0.54	0.54	0.00	0.90	0.49	10.00	10.00	10	8.06	3.95
	B6	0.18	0.18	0.00	0.90	0.16	10.00	10.00	10	8.06	1.31
	B7	0.16	0.16	0.00	0.90	0.14	10.00	10.00	10	8.06	1.13
	B8	0.30	0.30	0.00	0.90	0.27	10.00	10.00	10	8.06	2.15
	B9	0.32	0.32	0.00	0.90	0.29	10.00	10.00	10	8.06	2.35
	B10	0.32	0.32	0.00	0.90	0.29	10.00	10.00	10	8.06	2.30
	B11	0.31	0.31	0.00	0.90	0.28	10.00	10.00	10	8.06	2.25
	B12	0.30	0.30	0.00	0.90	0.27	10.00	10.00	10	8.06	2.20
	B13	0.32	0.32	0.00	0.90	0.29	10.00	10.00	10	8.06	2.30
	B14	0.30	0.30	0.00	0.90	0.27	10.00	10.00	10	8.06	2.16
	B15	0.28	0.28	0.00	0.90	0.25	10.00	10.00	10	8.06	2.04
	B16	0.27	0.27	0.00	0.90	0.24	10.00	10.00	10	8.06	1.94
	B17	0.34	0.34	0.00	0.90	0.31	10.00	10.00	10	8.06	2.45
	B18	0.30	0.30	0.00	0.90	0.27	10.00	10.00	10	8.06	2.20
	B19	0.29	0.29	0.00	0.90	0.26	10.00	10.00	10	8.06	2.10
	B20	0.34	0.34	0.00	0.90	0.31	10.00	10.00	10	8.06	2.50
	B21	0.30	0.30	0.00	0.90	0.27	10.00	10.00	10	8.06	2.20
	B22	0.97	0.00	0.97	0.60	0.58	19.95	19.95	10	5.79	3.95
	B23	0.58	0.00	0.58	0.60	0.35	10.00	10.00	10	8.06	3.26
	B24	0.63	0.00	0.63	0.60	0.38	10.00	10.00	10	8.06	3.57
	B25	2.22	0.00	2.22	0.60	1.33	10.00	10.00	10	8.06	12.53
	B26	0.85	0.00	0.85	0.60	0.51	14.23	14.23	10	6.88	4.11
	B27	0.74	0.00	0.74	0.60	0.44	13.40	13.40	10	7.08	3.68
	B28	0.60	0.00	0.60	0.60	0.36	10.00	10.00	10	8.06	3.37
	B29	0.94	0.00	0.94	0.60	0.56	12.04	12.04	10	7.44	4.91
LINE C	C1	0.36	0.36	0.00	0.90	0.32	10.00	10.00	10	8.06	2.58
	C2	0.41	0.41	0.00	0.90	0.37	10.00	10.00	10	8.06	3.00
	C3	0.28	0.28	0.00	0.90	0.25	10.00	10.00	10	8.06	2.05
	C4	0.33	0.33	0.00	0.90	0.30	10.00	10.00	10	8.06	2.41
	C5	0.64	0.00	0.64	0.60	0.38	18.14	18.14	10	6.09	2.33
	C6	0.95	0.00	0.95	0.60	0.57	13.57	13.57	10	7.04	4.66
	C7	1.98	0.00	1.98	0.60	1.19	18.93	18.93	10	5.96	8.26
	C8	5.81	0.00	4.20	0.60	3.49	31.24	31.24	10	4.48	15.60

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

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FM 2514
RUNOFF COMPUTATIONS

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	228
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:56:57 PM
FILE:c:\txdot\pw\online\txdot5\rachael.twiggs\d0113237\Runoff Computations.dgn

RUNOFF COMPUTATIONS

		Acres-Drained					Time of Conc				
NW ID	Area ID	Total Area (acre)	Pav C = 0.90 (acre)	Grass C = 0.60 (acre)	C-Value (Comp.)	Total CA (Comp.)	Actual (min)	Design (min)	Freq. (yr)	I (in/hr)	Q (cfs)
LINE D	D1	0.41	0.41	0.00	0.90	0.37	10.00	10.00	10	8.06	2.98
	D2	0.18	0.18	0.00	0.90	0.16	10.00	10.00	10	8.06	1.27
	D3	0.16	0.16	0.00	0.90	0.14	10.00	10.00	10	8.06	1.17
	D4	0.35	0.35	0.00	0.90	0.32	10.00	10.00	10	8.06	2.54
	D5	0.46	0.00	0.46	0.60	0.28	10.00	10.00	10	8.06	2.62
	D6	0.61	0.00	0.61	0.60	0.37	10.00	10.00	10	8.06	2.94
LINE E	E1	0.33	0.33	0.00	0.90	0.30	10.00	10.00	10	8.06	2.37
	E2	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.64
	E3	0.26	0.26	0.00	0.90	0.23	10.00	10.00	10	8.06	1.88
	E4	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.65
	E5	0.36	0.36	0.00	0.90	0.32	10.00	10.00	10	8.06	2.59
	E6	0.32	0.32	0.00	0.90	0.29	10.00	10.00	10	8.06	2.36
	E7	1.65	0.00	1.65	0.60	0.99	10.00	10.00	10	8.06	8.00
	E8	1.36	0.00	1.36	0.60	0.82	10.00	10.00	10	8.06	6.59
LINE F	F1	0.33	0.33	0.00	0.90	0.30	10.00	10.00	10	8.06	2.38
	F2	0.34	0.34	0.00	0.90	0.31	10.00	10.00	10	8.06	2.45
	F3	0.26	0.26	0.00	0.90	0.23	10.00	10.00	10	8.06	1.87
	F4	0.40	0.40	0.00	0.90	0.36	10.00	10.00	10	8.06	2.93
	F5	0.35	0.35	0.00	0.90	0.32	10.00	10.00	10	8.06	2.52
	F6	0.31	0.31	0.00	0.90	0.28	10.00	10.00	10	8.06	2.27
LINE G	G1	0.31	0.31	0.00	0.90	0.28	10.00	10.00	10	8.06	2.26
	G2	0.24	0.24	0.00	0.90	0.22	10.00	10.00	10	8.06	1.74
	G3	0.47	0.47	0.00	0.90	0.42	10.00	10.00	10	8.06	3.43
	G4	0.19	0.19	0.00	0.90	0.17	10.00	10.00	10	8.06	1.37
	G5	10.20	0.48	9.72	0.61	6.22	44.38	44.38	10	3.59	22.48
	G7	1.49	0.00	1.49	0.60	0.89	10.00	10.00	10	8.06	7.23
	G8	1.62	0.00	1.62	0.60	0.97	10.00	10.00	10	8.06	7.84
	G9	1.65	0.00	1.65	0.60	0.99	10.00	10.00	10	8.06	7.96
LINE H	H1	0.51	0.51	0.00	0.90	0.46	10.00	10.00	10	8.06	3.69
	H2	0.51	0.51	0.00	0.90	0.46	10.00	10.00	10	8.06	3.67
	H3	0.31	0.31	0.00	0.90	0.28	10.00	10.00	10	8.06	2.27
LINE I	I1	0.19	0.19	0.00	0.90	0.17	10.00	10.00	10	8.06	1.38
	I2	0.21	0.21	0.00	0.90	0.19	10.00	10.00	10	8.06	1.52
	I3	0.25	0.25	0.00	0.90	0.23	10.00	10.00	10	8.06	1.83
	I4	1.31	0.00	1.30	0.60	0.79	14.36	14.36	10	6.85	5.37
	I5	1.69	0.00	1.69	0.60	1.01	14.36	14.36	10	6.85	6.95
	I6	2.13	0.00	2.13	0.60	1.28	14.36	14.36	10	6.85	8.74
	I7	2.22	0.00	2.22	0.60	1.33	14.36	14.36	10	6.85	9.12
LINE J	J1	0.26	0.26	0.00	0.90	0.23	10.00	10.00	10	8.06	1.89
	J2	0.37	0.37	0.00	0.90	0.33	10.00	10.00	10	8.06	2.68
LINE K	K1	2.68	0.00	2.68	0.60	1.61	14.36	14.36	10	6.85	11.00
	K2	0.58	0.20	0.38	0.70	0.41	10.91	10.91	10	7.77	3.18
	K3	0.76	0.08	0.68	0.63	0.48	10.91	10.91	10	7.77	3.74
	K4	0.61	0.12	0.49	0.66	0.40	10.91	10.91	10	7.77	3.12
	K5	0.41	0.08	0.33	0.66	0.27	10.91	10.91	10	7.77	2.08
	K6	0.55	0.07	0.47	0.64	0.35	10.91	10.91	10	7.77	2.72
	K7	0.50	0.15	0.35	0.69	0.35	10.00	10.00	10	8.06	2.79
	K8	7.09	0.17	6.92	0.61	4.32	29.57	29.57	10	4.63	19.93
	K9	0.49	0.20	0.29	0.72	0.35	10.00	10.00	10	8.06	2.87
	K10	0.62	0.19	0.43	0.69	0.43	10.00	10.00	10	8.06	3.45
	K11	0.17	0.17	0.00	0.90	0.15	10.00	10.00	10	8.06	1.20
	K12	0.13	0.13	0.00	0.90	0.12	10.00	10.00	10	8.06	0.96
	K13	0.19	0.19	0.00	0.90	0.17	10.00	10.00	10	8.06	1.39
	K14	0.19	0.19	0.00	0.90	0.17	10.00	10.00	10	8.06	1.41
	K15	0.26	0.26	0.00	0.90	0.23	10.00	10.00	10	8.06	1.88
	K16	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.70
	K17	0.22	0.22	0.00	0.90	0.20	14.28	14.28	10	6.87	1.38
	K18	0.45	0.45	0.00	0.90	0.41	14.28	14.28	10	6.87	2.79
	K19	0.36	0.36	0.00	0.90	0.32	14.28	14.28	10	6.87	2.21

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

Texas Department of Transportation

FM 2514
RUNOFF COMPUTATIONS

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	229
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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RUNOFF COMPUTATIONS

		Acres-Drained					Time of Conc				
NW ID	Area ID	Total Area (acre)	Pav C = 0.90 (acre)	Grass C = 0.60 (acre)	C-Value (Comp.)	Total CA (Comp.)	Actual (min)	Design (min)	Freq. (yr)	I (in/hr)	Q (cfs)
LINE L	L1	0.16	0.04	0.13	0.67	0.11	10.00	10.00	10	8.06	0.88
	L2	0.29	0.13	0.16	0.73	0.21	10.00	10.00	10	8.06	1.72
	L3	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.70
	L4	0.31	0.31	0.00	0.90	0.28	10.00	10.00	10	8.06	2.21
	L5	0.39	0.39	0.00	0.90	0.35	10.00	10.00	10	8.06	2.83
	L6	0.41	0.00	0.41	0.60	0.25	10.00	10.00	10	8.06	1.97
	L7	0.24	0.24	0.00	0.90	0.22	10.00	10.00	10	8.06	1.74
	L8	0.24	0.00	0.24	0.60	0.14	10.00	10.00	10	8.06	1.15
	L9	0.40	0.40	0.00	0.90	0.36	10.00	10.00	10	8.06	2.87
	L10	0.17	0.00	0.17	0.60	0.10	10.00	10.00	10	8.06	0.80
	L11	0.27	0.27	0.00	0.90	0.24	10.00	10.00	10	8.06	1.98
	L12	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.65
	L13	0.20	0.20	0.00	0.90	0.18	10.00	10.00	10	8.06	1.44
	L14	0.44	0.44	0.00	0.90	0.40	10.00	10.00	10	8.06	3.19
	L15	0.38	0.38	0.00	0.90	0.34	10.00	10.00	10	8.06	2.78
LINE M	M1	0.24	0.24	0.00	0.90	0.22	10.00	10.00	10	8.06	1.76
	M2	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.65
	M3	0.18	0.18	0.00	0.90	0.16	10.00	10.00	10	8.06	1.32
	M4	0.24	0.24	0.00	0.90	0.22	10.00	10.00	10	8.06	1.74
	M5	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.64
	M6	0.26	0.26	0.00	0.90	0.23	10.00	10.00	10	8.06	1.86
	M7	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.64
LINE N	N1	0.24	0.24	0.00	0.90	0.22	10.00	10.00	10	8.06	1.76
	N2	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.65
	N3	0.23	0.23	0.00	0.90	0.21	10.00	10.00	10	8.06	1.65
	N4	0.21	0.21	0.00	0.90	0.19	10.00	10.00	10	8.06	1.51
	N5	0.32	0.00	0.32	0.60	0.19	10.00	10.00	10	8.06	1.56
	N6	0.25	0.25	0.00	0.90	0.23	10.00	10.00	10	8.06	1.80
	N7	0.24	0.00	0.24	0.60	0.14	10.00	10.00	10	8.06	1.16
	N8	0.24	0.24	0.00	0.90	0.22	10.00	10.00	10	8.06	1.77
	N9	0.22	0.22	0.00	0.90	0.20	10.00	10.00	10	8.06	1.57

PRELIMINARY

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RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

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Texas Department of Transportation

FM 2514
RUNOFF COMPUTATIONS

SHEET 3 OF 3

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	230
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

INLET COMPUTATIONS

NW ID	Inlet ID	Inlet Station	Reference Chain	Inlet Offset		Inlet Type	Profile Type	Total Discharge (cfs)	Capacity (cfs)	By Pass Flow (cfs)	By Pass Into Node	Inlet Length Actual	Allow Pond Width (ft)	n	CURB INLET ON GRADE				CURB INLET IN SAG				DROP INLET						
															Longitudinal Slope on Grade (%)	Inlet Length Required (ft)	Comp Ponded Width (ft)	Comp Ponded Depth (ft)	Ponded Width Left (ft)	Ponded Width Right (ft)	Long. Slope Left (%)	Long. Slope Right (%)	Grate Type	Grate Length (ft)	Grate Width (ft)	Grate Area (ft2)	Grate Perimeter (ft)	Allow Head (ft)	Comp. Head (ft)
LINE A	A1	369+00.00	PRCL	50.00	L	Curb	On Grade	0.71	0.71	0.00	0.00	9.5	16.00	0.015	0.50	5.28	7.06	0.14											
	A2	370+00.00	PRCL	50.00	L	Curb	Sag	1.91	6.95	0.00	0.00	14.0	16.00	0.015		9.48	7.95	0.14	7.95	7.83									
	A3	370+50.00	PRCL	50.00	L	Curb	On Grade	0.5	0.5	0.00	0.00	9.5	16.00	0.015	0.50	4.35	6.20	0.12											
	A4	371+00.00	PRCL	50.00	L	Curb	On Grade	0.75	0.75	0.00	0.00	9.5	16.00	0.015	0.50	5.45	7.20	0.14											
	A5	371+75.00	PRCL	50.00	L	Curb	On Grade	1.4	1.4	0	0	9.5	16.00	0.015	0.50	7.78	9.12	0.18											
	A6	372+50.00	PRCL	50.00	L	Curb	On Grade	0.64	0.64	0.00	0	9.5	16.00	0.015	0.50	5.00	6.80	0.14											
	A7	375+90.00	PRCL	50.00	L	Curb	On Grade	2.71	2.61	0.1	0.00	9.5	16.00	0.015	0.50	11.28	11.66	0.23											
	A8	376+34.00	PRCL	50.00	L	Curb	On Grade	1.26	1.26	0.00	0.1	9.5	16.00	0.015	0.50	7.32	8.76	0.18											
	A9	376+71.00	PRCL	50.00	L	Curb	Sag	6.13	6.95	0.00	0.00	14.0	16.00	0.015		10.25	14.72	0.29	11.24	13.08									
	A10	378+35.0	PRCL	50.00	L	Curb	On Grade	4.04	3.5	0.54	0.00	9.5	16.00	0.015	0.50	14.12	13.55	0.27											
	A11	379+29.0	PRCL	50.00	L	Curb	On Grade	1.58	1.58	0.00	0.76	9.5	16.00	0.015	0.50	8.32	9.53	0.19											
	A12	382+08.0	PRCL	50.00	L	Curb	On Grade	1.82	1.76	0.05	0.00	9.5	16.00	0.015	1.24	11.07	8.47	0.17											
	A13	384+08.0	PRCL	50.00	L	Curb	On Grade	1.63	1.6	0.03	0.05	9.5	16.00	0.015	1.43	10.76	7.92	0.16											
	A14	385+68.0	PRCL	50.00	L	Curb	On Grade	2.9	2.43	0.47	0.03	9.5	16.00	0.015	1.43	14.91	9.82	0.20											
	A15	386+75.0	PRCL	50.00	L	Curb	On Grade	2.47	2.18	0.29	0.47	9.5	16.00	0.015	1.43	13.60	9.25	0.18											
	A16	388+40.0	PRCL	50.00	L	Curb	On Grade	3.59	2.79	0.8	0.29	9.5	16.00	0.015	1.43	16.82	10.64	0.21											
	A17	389+78.0	PRCL	50.00	L	Curb	On Grade	3.61	2.8	0.81	0.57	9.5	16.00	0.015	1.43	16.86	10.66	0.21											
	A18	391+40.0	PRCL	50.00	L	Curb	On Grade	4.05	3	1.05	0.78	9.5	16.00	0.015	1.43	18.00	11.13	0.22											
	A19	392+68.0	PRCL	50.00	L	Curb	On Grade	3.77	2.88	0.9	0.94	9.5	16.00	0.015	1.43	17.29	10.84	0.22											
	A20	394+08.0	PRCL	50.00	L	Curb	On Grade	3.67	2.83	0.84	0.9	9.5	16.00	0.015	1.43	17.02	10.73	0.21											
	A21	395+48.0	PRCL	50.00	L	Curb	On Grade	3.6	2.79	0.81	0.84	9.5	16.00	0.015	1.43	16.83	10.65	0.21											
	A22	397+28.0	PRCL	50.00	L	Curb	On Grade	4.41	3.57	0.85	0.81	9.5	16.00	0.015	0.66	15.83	13.28	0.27											
	A23	399+40.0	PRCL	50.00	L	Curb	On Grade	3.7	3.18	0.52	0.84	9.5	16.00	0.015	0.66	14.33	12.43	0.25											
	A24	401+78.0	PRCL	50.00	L	Curb	On Grade	2.98	2.73	0.25	0.48	9.5	16.00	0.015	0.66	12.70	11.47	0.23											
	A25	404+78.0	PRCL	50.00	L	Curb	On Grade	3.25	2.9	0.34	0.25	9.5	16.00	0.015	0.66	13.32	11.84	0.24											
	A26	407+78.0	PRCL	50.00	L	Curb	On Grade	3.34	2.96	0.38	0.34	9.5	16.00	0.015	0.66	13.54	11.97	0.24											
	A27	410+50.0	PRCL	50.00	L	Curb	On Grade	3.1	2.81	0.29	0.37	9.5	16.00	0.015	0.66	12.97	11.63	0.23											
	A28	412+30.0	PRCL	50.00	L	Curb	On Grade	3.17	2.86	0.32	0.32	9.5	16.00	0.015	0.66	13.15	11.74	0.23											
	A29	398+45.0	PRCL	68.00	L	Grate	Sag	32.2	22.02	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	2.14
	A30	398+45.0	PRCL	79.00	L	Grate	Sag	32.2	22.02	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	2.14
	A31	402+40.0	PRCL	71.00	L	Grate	Sag	13.35	22.02	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	0.65
	A32	379+85.0	PRCL	66.00	L	Grate	Sag	3.12	20.69	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.25
	A33	382+25.0	PRCL	62.00	L	Grate	Sag	1.2	20.69	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.13
	A34	406+50.0	PRCL	62.00	L	Grate	Sag	2.82	20.69	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.23
	A35	409+00.00	PRCL	62.00	L	Grate	Sag	3.08	20.69	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.24
	A36	410+50.00	PRCL	63.50	L	Grate	Sag	3.01	20.69	0.00	0.00		50.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.24
LINE B	B1	370+00.00	PRCL	50.00	R	Curb	Sag	3.38	6.95	0.00	0.00	14.0	16.00	0.015		10.63	10.85	0.20	10.85	8.46									
	B2	371+25.00	PRCL	50.00	R	Curb	On Grade	1.70	1.70	0.00	0.00	9.5	16.00	0.015	0.50	8.67	9.79	0.20											
	B3	372+95.00	PRCL	50.00	R	Curb	On Grade	0.84	0.84	0.00	0.00	9.5	16.00	0.015	0.50	5.82	7.53	0.15											
	B4	375+25.00	PRCL	50.00	R	Curb	On Grade	1.05	1.05	0.00	0.00	9.5	16.00	0.015	0.50	6.61	8.19	0.16											
	B5	377+00.00	PRCL	50.00	R	Curb	Sag	3.95	6.95	0.00	0.00	14.0	16.00	0.015		10.63	11.50	0.22	11.5	8.97									
	B6	378+80.00	PRCL	50.00	R	Curb	On Grade	1.31	1.31	0.00	0.00	9.5	16.00	0.015	0.50	7.48	8.88	0.18											
	B7	381+65.00	PRCL	50.00	R	Curb	On Grade	1.13	1.13	0.00	0.00	9.5	16.00	0.015	0.93	7.92	7.47	0.15											
	B8	383+80.00	PRCL	50.00	R	Curb	On Grade	2.15	1.98	0.17	0.00	9.5	16.00	0.015	1.43	12.57	8.78	0.18											
	B9	386+15.00	PRCL	50.00	R	Curb	On Grade	2.52	2.21	0.30	0.17	9.5	16.00	0.015	1.43	13.75	9.31	0.19											
	B10	388+45.00	PRCL	50.00	R	Curb	On Grade	2.60	2.26	0.34	0.30	9.5	16.00	0.015	1.43	14.01	9.43	0.19											
	B11	390+70.00	PRCL	50.00	R	Curb	On Grade	2.59	2.25	0.33	0.34	9.5	16.00	0.015	1.43	13.96	9.41	0.19											
	B12	392+90.00	PRCL	50.00	R	Curb	On Grade	2.53	2.22	0.31	0.33	9.5	16.00	0.015	1.43	13.79	9.33	0.19											
	B13	395+20.00	PRCL	50.00	R	Curb	On Grade	2.61	2.27	0.34	0.31	9.5	16.00	0.015	1.43	14.03	9.44	0.19											
	B14	397+40.00	PRCL	50.00	R	Curb	On Grade	2.50	2.39	0.11	0.34	9.5	16.00	0.015	0.66	11.49	10.73	0.21											
	B15	399+40.00	PRCL	50.00	R	Curb	On Grade	2.19	2.15	0.04	0.09	9.5	16.00	0.015	0.66	10.66	10.22	0.20											
	B16	401+35.00	PRCL	50.00	R	Curb	On Grade	1.98	1.96	0.01	0.04	9.5	16.00	0.015	0.66	10.06	9.83	0.20											
	B17	403+80.00	PRCL	50.00	R	Curb	On Grade	2.46	2.36	0.10	0.01	9.5	16.00	0.015	0.66	11.39	10.67	0.21											
	B18	406+00.00	PRCL	50.00	R	Curb	On Grade	2.29	2.23	0.06	0.10	9.5	16.00	0.015	0.66	10.95	10.40	0.21											
	B19	408+10.00	PRCL	50.00	R	Curb	On Grade	2.16	2.12	0.04	0.06	9.5	16.00	0.015	0.66	10.58	10.16	0.20											
	B20	410+60.00	PRCL	50.00	R	Curb	On Grade	2.53	2.42	0.12	0.04	9.5	16.00	0.015	0.66	11.58	10.79	0.22											

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

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Texas Department of Transportation

FM 2514
INLET COMPUTATIONS

SHEET 1 OF 4

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	231
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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INLET COMPUTATIONS

NW ID	Inlet ID	Inlet Station	Reference Chain	Inlet Offset		Inlet Type	Profile Type	Total Discharge (cfs)	Capacity (cfs)	By Pass Flow (cfs)	By Pass Into Node	Inlet Length Actual	Allow Pond Width (ft)	n	CURB INLET ON GRADE				CURB INLET IN SAG				DROP INLET						
															Longitudinal Slope on Grade (%)	Inlet Length Required (ft)	Comp Ponded Width (ft)	Comp Ponded Depth (ft)	Ponded Width Left (ft)	Ponded Width Right (ft)	Long. Slope Left (%)	Long. Slope Right (%)	Grate Type	Grate Length (ft)	Grate Width (ft)	Grate Area (ft2)	Grate Perimeter (ft)	Allow Head (ft)	Comp. Head (ft)
LINE-B	B21	412+70.00	PRCL	50.00	R	Curb	On Grade	2.31	2.25	0.06	0.12	9.5	16.00	0.015	0.66	11.00	10.43	0.21											
	B22	392+90.00	PRCL	61.50	R	Grate	Sag	3.38	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.26
	B23	395+20.00	PRCL	61.25	R	Grate	Sag	2.80	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.23
	B24	396+50.00	PRCL	62.00	R	Grate	Sag	3.06	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.24
	B25	398+40.00	PRCL	62.00	R	Grate	Sag	10.74	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.56
	B26	402+70.00	PRCL	62.00	R	Grate	Sag	3.52	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.27
	B27	406+90.00	PRCL	62.50	R	Grate	Sag	3.16	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.25
	B28	408+10.00	PRCL	62.50	R	Grate	Sag	2.89	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.23
	B29	411+20.00	PRCL	67.00	R	Grate	Sag	4.20	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.30
LINE C	C1	416+00.00	PRCL	50.00	L	Curb	On Grade	2.90	2.68	0.22	0.32	9.5	16.00	0.015	0.66	12.49	11.34	0.23											
	C2	419+00.00	PRCL	50.00	L	Curb	On Grade	3.22	2.89	0.33	0.22	9.5	16.00	0.015	0.66	13.26	11.81	0.24											
	C3	421+05.00	PRCL	50.00	L	Curb	On Grade	2.39	2.31	0.08	0.34	9.5	16.00	0.015	0.66	11.21	10.56	0.21											
	C4	423+50.00	PRCL	50.00	L	Curb	On Grade	2.46	2.36	0.10	0.09	9.5	16.00	0.015	0.66	11.38	10.66	0.21											
	C5	414+06.00	PRCL	69.00	L	Grate	Sag	2.33	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.20
	C6	416+00.00	PRCL	61.50	L	Grate	Sag	3.99	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.29
	C7	419+00.00	PRCL	61.50	L	Grate	Sag	7.08	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.42
	C8	421+05.00	PRCL	62.50	L	Grate	Sag	15.60	20.69	0.00	0.00		90.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.72
	D1	415+80.00	PRCL	50.00	R	Curb	On Grade	3.05	2.78	0.27	0.06	9.5	16.00	0.015	0.66	12.85	11.56	0.23											
LINE D	D2	417+08.00	PRCL	50.00	R	Curb	On Grade	1.54	1.54	0.00	0.27	9.5	16.00	0.015	0.66	8.75	8.96	0.18											
	D3	419+70.00	PRCL	50.00	R	Curb	On Grade	1.17	1.17	0.00	0.00	9.5	16.00	0.015	0.66	7.48	8.08	0.16											
	D4	422+25.00	PRCL	50.00	R	Curb	On Grade	2.54	2.42	0.12	0.00	9.5	16.00	0.015	0.66	11.59	10.8	0.22											
	D5	416+00.00	PRCL	64.00	R	Grate	Sag	2.24	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.20
	D6	421+00.00	PRCL	71.00	R	Grate	Sag	2.94	20.69	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.24
LINE E	E1	426+00.00	PRCL	50.00	L	Curb	On Grade	2.37	2.29	0.08	0.00	9.5	16.00	0.015	0.66	11.15	10.52	0.21											
	E2	427+75.00	PRCL	50.00	L	Curb	On Grade	1.71	1.71	0.00	0.08	9.5	16.00	0.015	0.66	9.29	9.32	0.19											
	E3	429+75.00	PRCL	50.00	L	Curb	On Grade	1.89	1.88	0.00	0.00	9.5	16.00	0.015	0.66	9.80	9.66	0.19											
	E4	431+50.00	PRCL	50.00	L	Curb	On Grade	1.65	1.65	0.00	0.00	9.5	16.00	0.015	0.66	9.10	9.20	0.18											
	E5	434+25.00	PRCL	50.00	L	Curb	On Grade	2.59	2.46	0.13	0.00	9.5	16.00	0.015	0.66	11.73	10.88	0.22											
	E6	436+30.00	PRCL	50.00	L	Curb	On Grade	2.49	2.38	0.10	0.13	9.5	16.00	0.015	0.66	11.46	10.71	0.21											
	E7	427+75.00	PRCL	62.00	L	Grate	Sag	8.00	20.70	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.46
	E8	431+50.00	PRCL	62.00	L	Grate	Sag	6.59	9.10	0.00	0.00		16.00	0.030									3' X 5' PS	5.17	3.17	7.7	16.67	1	0.40
LINE F	F1	424+60.00	PRCL	50.00	R	Curb	On Grade	2.38	2.30	0.08	0.00	9.5	16.00	0.015	0.66	11.179	10.54	0.211											
	F2	427+00.00	PRCL	50.00	R	Curb	On Grade	2.53	2.41	0.11	0.08	9.5	16.00	0.015	0.66	11.561	10.777	0.216											
	F3	428+85.00	PRCL	50.00	R	Curb	On Grade	1.98	1.97	0.01	0.11	9.5	16.00	0.015	0.66	10.084	9.844	0.197											
	F4	431+75.00	PRCL	50.00	R	Curb	On Grade	2.94	2.70	0.23	0.01	9.5	16.00	0.015	0.66	12.59	11.405	0.228											
	F5	434+25.00	PRCL	50.00	R	Curb	On Grade	2.76	2.58	0.18	0.23	9.5	16.00	0.015	0.66	12.147	11.137	0.223											
	F6	436+10.00	PRCL	50.00	R	Curb	On Grade	2.45	2.45	0.00	0.18	14.0	16.00	0.015	0.66	11.358	10.651	0.213											
LINE G	G1	443+25.00	PRCL	50.00	L	Curb	On Grade	2.26	2.26	0.00	0.00	9.5	16.00	0.015	0.36	9.445	11.6	0.232											
	G2	441+45.00	PRCL	50.00	L	Curb	On Grade	1.74	1.74	0.00	0.00	9.5	16.00	0.015	0.36	8.155	10.522	0.21											
	G3	439+45.29	PRCL	50.00	L	Curb	Sag	3.43	6.95	0.00	0.00	14.0	16.00	0.015					5.94	12.76	0.66	0.36								
	G4	438+20.00	PRCL	50.00	L	Curb	On Grade	1.47	1.47	0.00	0.10	9.5	16.00	0.015	0.66	8.513	8.8	0.176											
	G5	444+77.00	PRCL	75.00	L	Grate	Sag	13.00	22.02	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	0.63
	G6	444+77.00	PRCL	64.00	L	Grate	Sag	13.00	22.02	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	0.63
	G7	443+25.00	PRCL	66.00	L	Grate	Sag	7.23	9.10	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	0.43
	G8	441+45.00	PRCL	66.00	L	Grate	Sag	7.84	9.10	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	0.45
	G9	439+10.00	PRCL	68.00	L	Grate	Sag	7.96	9.10	0.00	0.00		16.00	0.030									4' X4' PSI	4.17	4.17	8.19	16.67	1	0.46

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

PRELIMINARY

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RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

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Texas Department of Transportation

FM 2514
INLET COMPUTATIONS

SHEET 2 OF 4

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	232
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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INLET COMPUTATIONS

NW ID	Inlet ID	Inlet Station	Reference Chain	Inlet Offset		Inlet Type	Profile Type	Total Discharge (cfs)	Capacity (cfs)	By Pass Flow (cfs)	By Pass Into Node	Inlet Length Actual	Allow Pond Width (ft)	n	CURB INLET ON GRADE				CURB INLET IN SAG				DROP INLET						
															Longitudinal Slope on Grade (%)	Inlet Length Required (ft)	Comp Ponded Width (ft)	Comp Ponded Depth (ft)	Ponded Width Left (ft)	Ponded Width Right (ft)	Long. Slope Left (%)	Long. Slope Right (%)	Grate Type	Grate Length (ft)	Grate Width (ft)	Grate Area (ft2)	Grate Perimeter (ft)	Allow Head (ft)	Comp. Head (ft)
LINE H	H1	442+00.00	PRCL	50.00	R	Curb	On Grade	3.69	3.42	0.28	0.00	9.5	16.00	0.015	0.36	12.44	13.94	0.28											
	H2	439+45.29	PRCL	50.00	R	Curb	Sag	3.95	6.95	0.00	0.28	14	16.00	0.015					8.45	12.75	0.36	0.36								
	H3	438+75.00	PRCL	50.00	R	Curb	On Grade	2.27	2.26	0.01	0.00	9.5	16.00	0.015	0.42	9.81	11.26	0.23											
LINE I	I1	449+20.00	PRCL	50.00	L	Curb	On Grade	1.38	1.38	0.00	0.00	9.5	16.00	0.015	0.36	7.14	9.63	0.19											
	I2	447+60.00	PRCL	50.00	L	Curb	On Grade	1.52	1.52	0.00	0.00	9.5	16.00	0.015	0.36	7.55	10.00	0.20											
	I3	445+65.00	PRCL	50.00	L	Curb	On Grade	1.83	1.83	0.00	0.00	9.5	16.00	0.015	0.36	8.39	10.72	0.21											
	I4	449+75.00	PRCL	62.50	L	Grate	Sag	5.37	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.35
	I5	449+20.00	PRCL	62.50	L	Grate	Sag	6.95	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.42
	I6	447+60.00	PRCL	62.50	L	Grate	Sag	8.75	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.49
	I7	446+00.00	PRCL	62.50	L	Grate	Sag	9.12	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.50
LINE J	J1	448+70.00	PRCL	50.00	R	Curb	On Grade	1.89	1.89	0.00	0.00	9.5	16.00	0.015	0.36	8.55	10.85	0.22											
	J2	445+85.00	PRCL	50.00	R	Curb	On Grade	2.68	2.65	0.03	0.00	9.5	16.00	0.015	0.36	10.39	12.36	0.25											
LINE K	K1	452+00.00	PRCL	62.50	L	Grate	Sag	11.01	9.10	0.00	0.00		16.00	0.015									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.57
	K2	452+70.00	PRCL	50.00	L	Curb	On Grade	3.18	3.16	0.02	0.00	14	16.00	0.015	1.12	14.84	10.64	0.21											
	K3	453+25.00	PRCL	50.00	L	Curb	On Grade	3.76	3.62	0.14	0.02	14	16.00	0.015	1.25	16.72	11.11	0.22											
	K4	454+20.00	PRCL	50.00	L	Curb	On Grade	3.26	3.22	0.05	0.14	14	16.00	0.015	1.25	15.42	10.53	0.21											
	K5	454+77.75	PRCL	50.00	L	Curb	On Grade	2.12	2.12	0.00	0.05	14	16.00	0.015	1.25	12.10	8.97	0.18											
	K6	455+35.00	PRCL	50.00	L	Curb	On Grade	2.72	2.72	0.00	0.00	14	16.00	0.015	1.25	13.91	9.84	0.20											
	K7	456+45.00	PRCL	50.00	L	Curb	On Grade	2.79	2.79	0.00	0.00	14	16.00	0.015	1.25	14.11	9.93	0.20											
	K8	457+47.00	PRCL	79.00	L	Grate	Sag	19.93	22.02	0.00	0.00		16.00	0.030									3' X 5' PSI	4.17	4.17	8.19	16.67	1	0.84
	K9	458+75.00	PRCL	50.00	L	Curb	On Grade	2.87	2.86	0.00	0.00	14	16.00	0.015	1.25	14.34	10.04	0.20											
	K10	460+20.00	PRCL	50.00	L	Curb	On Grade	3.45	3.45	0.00	0.00	14	16.00	0.015	0.50	12.93	12.77	0.26											
	K11	461+50.00	PRCL	50.00	L	Curb	On Grade	1.20	1.20	0.00	0.00	14	16.00	0.015	0.50	7.13	8.61	0.17											
	K12	462+50.00	PRCL	50.00	L	Curb	On Grade	0.96	0.96	0.00	0.00	14	16.00	0.015	0.50	6.29	7.92	0.16											
	K13	464+00.00	PRCL	50.00	L	Curb	On Grade	1.39	1.39	0.00	0.00	14	16.00	0.015	0.50	7.75	9.09	0.18											
	K14	465+50.00	PRCL	50.00	L	Curb	On Grade	1.41	1.41	0.00	0.00	14	16.00	0.015	0.50	7.81	9.14	0.18											
	K15	467+50.00	PRCL	50.00	L	Curb	On Grade	1.89	1.89	0.00	0.00	14	16.00	0.015	0.50	9.19	10.18	0.20											
	K16	469+30.00	PRCL	50.00	L	Curb	On Grade	1.70	1.70	0.00	0.00	14	16.00	0.015	0.50	8.66	9.79	0.20											
	K17	471+00.00	PRCL	50.00	L	Curb	On Grade	1.38	1.38	0.00	0.00	14	16.00	0.015	0.50	7.71	9.06	0.18											
	K18	471+65.00	PRCL	50.00	L	Curb	Sag	2.79	6.95	0.00	0.00	14	16.00	0.015					7.52	10.32	0.50	0.50								
	K19	474+00.00	PRCL	50.00	L	Curb	On Grade	2.21	2.21	0.00	0.00	14	16.00	0.015	0.71	10.90	10.12	0.20											

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FM 2514
INLET COMPUTATIONS

SHEET 3 OF 4

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	233
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

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INLET COMPUTATIONS

NW ID	Inlet ID	Inlet Station	Reference Chain	Inlet Offset		Inlet Type	Profile Type	Total Discharge (cfs)	Capacity (cfs)	By Pass Flow (cfs)	By Pass Into Node	Inlet Length Actual	Allow Pond Width (ft)	n	CURB INLET ON GRADE				CURB INLET IN SAG				DROP INLET						
															Longitudinal Slope on Grade (%)	Inlet Length Required (ft)	Comp Ponded Width (ft)	Comp Ponded Depth (ft)	Ponded Width Left (ft)	Ponded Width Right (ft)	Long. Slope Left (%)	Long. Slope Right (%)	Grate Type	Grate Length (ft)	Grate Width (ft)	Grate Area (ft2)	Grate Perimeter (ft)	Allow Head (ft)	Comp. Head (ft)
LINE L	L1	453+35.00	PRCL	66.00	R	Grate	Sag	0.88	9.10	0.00	0.00	n/a	16.00	0.030	n/a	n/a	11.365	0.11					3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.11
	L2	453+35.00	PRCL	50.00	R	Curb	On Grade	1.72	1.69	0.04	0.00	9.5	16.00	0.015	1.248	10.75	8.295	0.17											
	L3	455+15.00	PRCL	50.00	R	Curb	On Grade	1.73	1.69	0.04	0.04	9.5	16.00	0.015	1.248	10.79	8.312	0.17											
	L4	457+50.00	PRCL	50.00	R	Curb	On Grade	2.25	2.08	0.17	0.04	9.5	16.00	0.015	1.248	12.51	9.171	0.18											
	L5	460+50.00	PRCL	50.00	R	Curb	On Grade	3.00	2.83	0.17	0.17	9.5	16.00	0.015	0.5	11.95	12.119	0.24											
	L6	462+35.00	PRCL	68.00	R	Grate	Sag	1.97	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.18
	L7	462+35.00	PRCL	50.00	R	Curb	On Grade	1.92	1.92	0.00	0.17	9.5	16.00	0.015	0.5	9.276	10.245	0.21											
	L8	465+40.00	PRCL	71.00	R	Grate	Sag	1.15	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.13
	L9	465+40.00	PRCL	50.00	R	Curb	On Grade	2.87	2.74	0.14	0.00	9.5	16.00	0.015	0.5	11.66	11.925	0.24											
	L10	467+50.00	PRCL	73.00	R	Grate	Sag	0.80	9.10	0.00	0.00		16.00	0.030									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.10
	L11	467+50.00	PRCL	50.00	R	Curb	On Grade	2.12	2.11	0.00	0.14	9.5	16.00	0.015	0.5	9.814	10.635	0.21											
	L12	469+25.00	PRCL	50.00	R	Curb	On Grade	1.65	1.65	0.00	0.00	9.5	16.00	0.015	0.5	8.533	9.694	0.19											
	L13	470+80.00	PRCL	50.00	R	Curb	On Grade	1.44	1.44	0.00	0.00	9.5	16.00	0.015	0.5	7.904	9.214	0.18											
	L14	471+82.52	PRCL	50.00	R	Curb	Sag	3.40	6.95	0.00	0.20	14.0	16.00	0.015					8.089	11.11	0.50	0.50							
	L15	473+80.00	PRCL	50.00	R	Curb	On Grade	2.78	2.58	0.20	0.00	9.5	16.00	0.015	0.712	12.41	11.022	0.22											
LINE M	M1	487+25.00	PRCL	50.00	L	Curb	On Grade	1.76	1.69	0.08	0.00	9.5	16.00	0.015	1.581	11.48	8.001	0.16											
	M2	485+50.00	PRCL	50.00	L	Curb	On Grade	1.72	1.58	0.14	0.08	9.5	16.00	0.015	2.526	12.63	7.272	0.15											
	M3	484+10.00	PRCL	50.00	L	Curb	On Grade	1.49	1.42	0.07	0.17	9.5	16.00	0.015	2.526	11.63	6.886	0.14											
	M4	482+25.00	PRCL	50.00	L	Curb	On Grade	1.81	1.64	0.17	0.07	9.5	16.00	0.015	2.526	12.99	7.41	0.15											
	M5	480+50.00	PRCL	50.00	L	Curb	On Grade	1.81	1.64	0.17	0.17	9.5	16.00	0.015	2.526	12.98	7.404	0.15											
	M6	478+50.00	PRCL	50.00	L	Curb	On Grade	2.03	1.87	0.16	0.17	9.5	16.00	0.015	1.619	12.5	8.395	0.17											
	M7	477+00.00	PRCL	50.00	L	Curb	On Grade	1.79	1.79	0.00	0.16	9.5	16.00	0.015	0.712	9.679	9.351	0.19											
LINE N	N1	487+25.00	PRCL	50.00	R	Curb	On Grade	1.76	1.69	0.08	0.00	9.5	16.00	0.015	1.581	11.48	8.001	0.16											
	N2	485+50.00	PRCL	50.00	R	Curb	On Grade	1.72	1.58	0.14	0.08	9.5	16.00	0.015	2.526	12.62	7.27	0.145											
	N3	483+75.00	PRCL	50.00	R	Curb	On Grade	1.79	1.63	0.16	0.14	9.5	16.00	0.015	2.526	12.89	7.372	0.147											
	N4	482+15.00	PRCL	50.00	R	Curb	On Grade	1.67	1.55	0.12	0.16	9.5	16.00	0.015	2.526	12.4	7.183	0.144											
	N5	480+25.00	PRCL	65.00	R	Grate	Sag	1.56	9.10	0.00	0.00		16.00	0.03									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.15
	N6	480+25.00	PRCL	50.00	R	Curb	On Grade	1.92	1.71	0.21	0.12	9.5	16.00	0.015	2.526	13.43	7.576	0.152											
	N7	478+40.00	PRCL	67.00	R	Grate	Sag	1.16	9.10	0.00	0.00		16.00	0.03									3' X 5' PSI	5.17	3.17	7.7	16.67	1	0.13
	N8	478+40.00	PRCL	50.00	R	Curb	On Grade	1.98	1.85	0.13	0.21	9.5	16.00	0.015	1.559	12.24	8.382	0.168											
	N9	477+00.00	PRCL	50.00	R	Curb	On Grade	1.70	1.70	0.00	0.13	9.5	16.00	0.015	0.712	9.393	9.166	0.183											

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

Texas Department of Transportation

FM 2514
INLET COMPUTATIONS

SHEET 4 OF 4

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	234
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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STORM SEWER COMPUTATIONS

NW ID	Line ID	Up Stream Node	Down Stream Node	Size	Actual Length (ft)	Manning's n value	Slope (%)	Invert Up Stream (ft)	Invert Down Stream (ft)	Discharge (cfs)	Capacity (cfs)	Uniform Depth (ft)	Uniform Velocity (ft/s)	Critical Depth (ft)	Critical Velocity (ft/s)	Actual Velocity Up Stream (ft/s)	Actual Velocity Down Stream (ft/s)	Actual Depth Up Stream (ft)	Actual Depth Down Stream (ft)	HGL Up Stream (ft)	HGL Down Stream (ft)	EGL Up Stream (ft)	EGL Down Stream (ft)	Downstream Cummulative Tc (min)
LINE A	LINE-A1	A1	A2	24" RCP	95.0	0.010	0.70	604.60	603.94	0.7	22.1	0.3	3.0	0.3	2.55	2.16	3.04	0.32	0.25	604.92	604.19	605.02	604.33	10.00
	LINE-A2	A2	A3	24" RCP	45.0	0.010	0.50	603.94	603.71	2.0	18.6	0.5	3.7	0.5	3.35	3.13	3.68	0.52	0.46	604.46	604.18	604.63	604.39	17.39
	LINE-A3	A3	A4	24" RCP	45.0	0.010	0.50	603.71	603.49	2.3	18.6	0.5	3.8	0.5	3.49	3.27	3.83	0.55	0.50	604.26	603.98	604.45	604.21	18.69
	LINE-A4	A4	A5	30" RCP	70.0	0.010	0.50	602.99	602.64	2.8	33.8	0.5	3.9	0.6	3.52	3.30	3.94	0.57	0.50	603.56	603.14	603.75	603.39	19.82
	LINE-A5	A5	A6	30" RCP	70.0	0.010	0.50	602.64	602.29	3.6	33.8	0.6	4.3	0.6	3.76	3.56	4.25	0.65	0.57	603.29	602.86	603.51	603.14	22.02
	LINE-A6	A6	A7	30" RCP	335.0	0.010	0.50	602.29	600.62	3.9	33.8	0.6	4.4	0.7	3.84	3.64	4.35	0.67	0.59	602.96	601.21	603.19	601.50	23.73
	LINE-A7	A7	A8	30" RCP	45.0	0.010	0.50	600.62	600.39	4.8	33.8	0.7	4.7	0.7	4.09	3.90	4.62	0.75	0.66	601.37	601.06	601.63	601.39	30.93
	LINE-A8	A8	A9	30" RCP	35.0	0.010	0.50	600.39	600.22	5.4	33.8	0.7	4.8	0.8	4.23	4.05	4.76	0.79	0.71	601.18	600.92	601.46	601.27	31.78
	LINE-A9	A9	A10	36" RCP	145.9	0.010	0.50	599.72	598.99	9.2	55.0	0.9	5.5	1.0	4.73	4.56	5.47	0.98	0.86	600.70	599.85	601.05	600.32	32.39
	LINE-A10	A10	A11	36" RCP	93.0	0.010	0.50	598.99	598.53	12.0	55.0	1.0	5.9	1.1	5.11	4.95	5.87	1.12	0.99	600.11	599.52	600.52	600.05	34.32
	LINE-A11	A11	JT-A1	36" RCP	53.5	0.010	0.50	598.53	598.26	12.2	55.0	1.0	5.9	1.1	5.13	5.06	5.89	1.12	1.00	599.65	599.26	600.06	599.80	35.29
	LINE-A12	A12	JT-A2	36" RCP	14.5	0.010	0.50	597.16	597.09	14.1	55.0	1.1	6.2	1.2	5.37	5.29	5.94	1.21	1.11	598.37	598.20	598.82	598.75	37.76
	LINE-A13	A13	A14	36" RCP	155.0	0.010	0.50	596.19	595.41	15.1	55.0	1.1	6.3	1.2	5.48	5.33	6.25	1.26	1.12	597.45	596.54	597.92	597.14	39.37
	LINE-A14	A14	A15	36" RCP	115.0	0.010	0.50	595.41	594.83	16.1	55.0	1.2	6.4	1.3	5.59	5.45	6.40	1.31	1.16	596.72	595.99	597.20	596.63	40.62
	LINE-A15	A15	A16	36" RCP	135.0	0.010	0.50	594.83	594.16	16.9	55.0	1.2	6.5	1.3	5.68	5.54	6.49	1.34	1.19	596.17	595.34	596.67	596.00	41.49
	LINE-A16	A16	A17	36" RCP	145.0	0.012	0.70	594.16	593.14	18.0	65.0	1.1	7.4	1.4	5.78	5.59	7.42	1.39	1.12	595.55	594.27	596.07	595.13	42.47
	LINE-A17	A17	A18	36" RCP	145.0	0.012	1.39	593.14	591.13	19.1	91.5	1.0	9.7	1.4	5.89	5.54	9.55	1.47	0.98	594.61	592.11	595.15	593.53	43.45
	LINE-A18	A18	A19	36" RCP	135.0	0.012	1.50	591.13	589.11	20.2	95.1	1.0	10.1	1.4	6.00	5.63	9.91	1.52	0.99	592.65	590.10	593.21	591.63	44.38
	LINE-A19	A19	A20	36" RCP	135.0	0.012	1.50	589.11	587.08	21.2	95.3	1.0	10.3	1.5	6.10	5.73	10.04	1.55	1.02	590.66	588.10	591.24	589.66	45.20
	LINE-A20	A20	A21	36" RCP	135.0	0.012	1.50	587.08	585.06	22.1	95.1	1.0	10.4	1.5	6.19	5.83	10.14	1.59	1.04	588.67	586.10	589.26	587.70	45.98
	LINE-A21	A21	A22	36" RCP	175.0	0.012	1.11	585.06	583.12	23.1	81.8	1.1	9.4	1.6	6.28	6.01	9.34	1.60	1.14	586.66	584.26	587.28	585.62	46.72
	LINE-A22	A22	JB-A1	36" RCP	111.0	0.012	1.19	583.12	581.80	24.3	84.8	1.1	9.8	1.6	6.39	6.05	9.51	1.66	1.17	584.78	582.97	585.42	584.38	47.64
	LINE-A23	A23	A24	36" RCP	250.0	0.012	0.90	581.11	578.86	89.6	157.2	1.9	11.6	2.5	8.97	8.81	11.53	2.54	1.94	583.65	580.80	584.90	582.87	48.40
	LINE-A24	A24	JT-A3	36" RCP	59.5	0.012	0.60	578.86	578.50	90.5	128.3	2.3	10.0	2.5	9.00	8.94	9.84	2.53	2.30	581.39	580.80	582.65	582.31	48.97
	LINE-A25	A25	JT-A4	36" RCP	169.5	0.012	0.75	576.73	575.46	97.9	143.5	2.2	11.1	2.7	9.23	9.17	10.97	2.67	2.23	579.40	577.69	580.72	579.56	49.59
	LINE-A26	A26	JT-A5	36" RCP	119.5	0.012	0.90	574.33	573.25	100.0	157.2	2.1	12.0	2.7	9.30	9.22	11.55	2.71	2.16	577.04	575.42	578.39	577.49	50.20
	LINE-A27	A27	A28	36" RCP	170.0	0.012	0.90	571.83	570.30	103.4	157.2	2.2	12.0	2.8	9.40	9.25	11.81	2.79	2.19	574.62	572.49	576.00	574.66	50.76
	LINE-A28	A28	OUT-A	36" RCP	66.5	0.012	1.20	570.30	569.50	104.4	181.7	1.9	13.5	2.8	9.43	8.70	8.70	3.00	3.00	573.64	573.22	574.81	574.40	51.10
	LAT-A29	DI-A29	JB-A1	36" RCP	10.0	0.012	1.70	581.97	581.80	64.4	101.3	1.8	14.4	2.6	9.97	9.69	11.36	2.67	2.24	584.64	584.04	586.18	586.05	0.04
	LAT-A30	DI-A30	DI-A29	36" RCP	7.0	0.012	1.00	582.04	581.97	32.2	77.7	1.4	9.9	1.8	7.08	4.66	4.85	2.83	2.67	584.87	584.64	585.02	586.18	0.00
	LAT-A31	DI-A31	JT-A3	24" RCP	16.0	0.012	5.00	580.30	579.50	13.4	59.0	0.7	14.4	1.3	6.09	5.62	10.39	1.42	0.86	581.72	580.36	582.29	582.04	13.90
	LAT-A32	DI-A32	JT-A1	24" RCP	11.0	0.012	6.00	599.92	599.26	3.1	64.6	0.3	10.1	0.6	3.78	3.14	7.95	0.71	0.37	600.63	599.63	600.85	600.61	10.00
	LAT-A33	DI-A33	JT-A2	24" RCP	8.5	0.012	6.00	598.60	598.09	1.2	64.6	0.2	7.6	0.4	2.93	2.93	6.24	0.38	0.22	598.98	598.31	599.11	598.93	10.00
	LAT-A34	DI-A34	JT-A4	18" RCP	7.5	0.012	5.00	577.34	576.96	2.8	27.4	0.3	9.5	0.6	3.94	3.41	7.07	0.71	0.42	578.05	577.38	578.29	578.16	10.00
	LAT-A35	DI-A35	JT-A5	18" RCP	9.0	0.012	5.00	575.20	574.75	3.1	27.4	0.4	9.7	0.7	4.05	4.05	7.20	0.67	0.44	575.87	575.19	576.12	576.00	10.00
	LAT-A36	DI-A36	A27	24" RCP	11.5	0.012	7.00	573.63	572.83	3.0	69.8	0.3	10.5	0.6	3.75	2.13	8.74	0.92	0.33	574.56	573.16	574.77	574.36	10.00
	LINE-JB-A1	JB-A1	A23	36" RCP	77.0	0.012	0.90	581.80	581.11	88.6	157.2	1.9	11.6	2.5	8.93	8.74	11.00	2.53	2.01	584.33	583.12	585.57	585.00	48.21
	LINE-JT-A1	JT-A1	A12	36" RCP	220.5	0.012	0.50	598.26	597.16	13.7	55.0	1.1	6.1	1.2	5.31	5.24	6.13	1.19	1.06	599.45	598.22	599.89	598.80	35.83
	LINE-JT-A2	JT-A2	A13	36" RCP	180.5	0.012	0.50	597.09	596.19	14.7	55.0	1.1	6.2	1.2	5.43	5.36	6.24	1.23	1.10	598.32	597.29	598.78	597.89	37.90
	LINE-JT-A3	JT-A3	A25	36" RCP	235.5	0.012	0.75	578.50	576.73	96.9	143.5	2.2	11.1	2.6	9.20	9.14	11.00	2.65	2.20	581.15	578.93	582.47	580.82	49.10
	LINE-JT-A4	JT-A4	A26	36" RCP	125.5	0.012	0.90	575.46	574.33	98.9	157.2	2.1	11.9	2.7	9.27	9.19	11.55	2.69	2.14	578.15	576.47	579.49	578.55	49.95
	LINE-JT-A5	JT-A5	A27	36" RCP	157.5	0.012	0.90	573.25	571.83	101.2	157.2	2.1	12.0	2.7	9.34	9.26	11.71	2.73	2.16	575.98	573.99	577.34	576.13	50.45
LINE B	LINE-B1	B1	B2	24" RCP	120.0	0.012	0.50	604.25	603.65	3.4	18.6	0.6	4.3	0.6	3.87	3.68	4.25	0.67	0.60	604.92	604.25	605.15	604.53	10.00
	LINE-B2	B2	B3	24" RCP	165.0	0.012	0.50	603.65	602.83	4.7	18.6	0.7	4.7	0.8	4.27	4.09	4.70	0.79	0.71	604.44	603.54	604.72	603.88	11.94
	LINE-B3	B3	B4	24" RCP	225.0	0.012	0.50	602.83	601.70	5.1	18.6	0.8	4.8	0.8	4.38	4.21	4.78	0.82	0.75	603.65	602.45	603.95	602.81	13.83
	LINE-B4	B4	B5	24" RCP	170.0	0.012	0.50	601.70	600.85	5.6	18.6	0.8	5.0	0.8	4.50	4.33	4.91	0.86	0.78	602.56	601.63	602.87	602.01	16.18
	LINE-B5	B5	B6	24" RCP	175.1	0.012	0.50	600.85	599.97	8.3	18.6	1.0	5.4	1.0	5.12	4.97	5.42	1.05	0.98	601.90	600.96	602.31	601.41	17.82
	LINE-B6	B6	B7	24" RCP	280.0	0.012	0.50	599.97	598.57	9.0	18.6	1.0	5.6	1.1	5.26	5.11	5.56	1.10	1.03	601.07	599.60	601.50	600.08	18.95
	LINE-B7	B7	B8	24" RCP	210.0	0.012	0.50	598.57	597.52	9.4	18.6	1.1	5.6	1.1	5.34	5.20	5.61	1.12	1.06	599.69	598.58	600.14	599.06	20.60
	LINE-B8	B8	B9	24" RCP	230.0	0.012	0.50	597.52	596.37	10.6	18.6	1.1	5.8	1.2	5.57	5.43	5.80	1.19	1.13	598.71	597.50	599.20	598.02	21.79
	LINE-B9	B9	B10	24" RCP	225.0	0.012	0.50	596.37	595.25	11.9	18.6	1.2	5.9	1.2	5.82	5.68	5.93	1.26	1.22	597.63	596.46	598.16	597.01	22.95
	LINE-B10	B10	B11	24" RCP	220.0	0.012	1.25	595.25	592.50	13.1	29.5	1.0	8.6	1.3	6.04	5.73	8.60	1.36	0.98	596.61	593.48	597.18	594.62	23.97
	LINE-B11	B11	B12	30" RCP	215.0	0.012	1.55	592.00	588.66	14.2	59.6	0.9	9.5	1.3	5.68	5.27	9.42	1.35	0.87	593.35	589.53	593.85	590.91	24.87
	LINE-B12	B12	B13	30" RCP	225.0	0.012	1.40	588.66	585.51	18.1	56.6	1.0	9.7	1.4	6.18	5.83	9.68	1.51	1.01	590.17	586.52	590.76	587.98	26.13
	LINE-B13	B13	JT-B1	30" RCP	127.5	0.012	1.26	585.51	583.90	20.8	53.7	1.1	9.7	1.6	6.50	6.35	9.50	1.58	1.14	587.09	585.04	587.75	586.45	27.17
	LINE-B14	B14	JT-B2	30" RCP	107.5	0.012	0.64	582.92	582.23	23.5	38.4	1.5	7.7	1.7	6.83	6.76	7.72	1.67	1.49	584.59	583.71	585.31	584.64	27.98

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

PRELIMINARY

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RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

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Texas Department of Transportation

FM 2514
STORM SEWER COMPUTATIONS

SHEET 1 OF 4

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	235
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:57:25 PM
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STORM SEWER COMPUTATIONS

NW ID	Line ID	Up Stream Node	Down Stream Node	Size	Actual Length (ft)	Manning's n value	Slope (%)	Invert Up Stream (ft)	Invert Down Stream (ft)	Discharge (cfs)	Capacity (cfs)	Uniform Depth (ft)	Uniform Velocity (ft/s)	Critical Depth (ft)	Critical Velocity (ft/s)	Actual Velocity Up Stream (ft)	Actual Velocity Down Stream (ft)	Actual Depth Up Stream (ft)	Actual Depth Down Stream (ft)	HGL Up Stream (ft)	HGL Down Stream (ft)	EGL Up Stream (ft)	EGL Down Stream (ft)	Downstream Cummulative Tc (min)
LINE B	LINE-B15	B15	B16	30" RCP	190.0	0.012	0.70	581.60	580.27	30.7	40.0	1.7	8.5	1.9	7.71	7.57	8.45	1.92	1.73	583.52	582.00	584.45	583.11	28.64
	LINE-B16	B16	JT-B3	30" RCP	132.5	0.012	0.69	580.27	579.35	31.5	39.8	1.8	8.4	1.9	7.81	7.74	8.42	1.93	1.78	582.20	581.13	583.15	582.23	29.16
	LINE-B17	B17	B18	30" RCP	215.0	0.012	0.61	578.61	577.29	34.8	37.5	2.1	8.1	2.0	8.25	7.96	8.01	2.08	2.07	580.69	579.36	581.71	580.42	29.78
	LINE-B18	B18	JT-B4	30" RCP	87.5	0.012	0.65	577.29	576.72	35.7	38.5	2.1	8.3	2.0	8.37	8.22	8.37	2.07	2.03	579.36	578.75	580.42	579.11	30.29
	LINE-B19	B19	B20	36" RCP	245.0	0.012	0.91	575.46	573.22	40.1	74.3	1.6	10.2	2.1	7.74	7.56	10.09	2.11	1.65	577.57	574.87	578.50	576.45	30.88
	LINE-B20	B20	JT-B5	36" RCP	57.5	0.012	1.51	573.22	572.35	40.9	95.6	1.4	12.3	2.1	7.81	7.66	10.87	2.12	1.58	575.34	573.93	576.29	575.76	31.61
	LINE-B21	B21	OUT-B	36" RCP	76.5	0.012	1.46	570.12	569.00	44.1	94.1	1.5	12.4	2.2	8.08	6.67	6.24	2.65	3.00	572.77	572.59	573.48	573.20	32.19
	LAT-B22	DI-B22	B12	24" RCP	7.0	0.012	10.00	589.86	589.16	3.4	83.4	0.3	12.4	0.6	3.88	2.69	8.82	0.84	0.36	590.70	589.52	590.94	590.74	19.95
	LAT-B23	DI-B23	B13	24" RCP	11.3	0.012	8.89	587.01	586.01	2.8	78.6	0.3	11.2	0.6	3.67	2.36	9.11	0.81	0.31	587.82	586.32	588.02	587.62	10.00
	LAT-B24	DI-B24	JT-B1	24" RCP	9.5	0.012	10.00	585.35	584.40	3.1	83.4	0.3	12.0	0.6	3.77	3.77	8.81	0.61	0.34	585.96	584.74	586.18	585.95	10.00
	LAT-B25	DI-B25	JT-B2	24" RCP	9.5	0.012	5.47	583.25	582.73	10.7	61.7	0.6	14.0	1.2	5.60	5.60	9.01	1.17	0.81	584.42	583.54	584.91	584.80	10.00
	LAT-B26	DI-B26	JT-B3	24" RCP	9.5	0.012	9.79	580.78	579.85	3.5	82.5	0.3	12.4	0.7	3.92	3.92	8.92	0.66	0.37	581.44	580.22	581.68	581.46	14.23
	LAT-B27	DI-B27	JT-B4	24" RCP	10.0	0.012	3.30	577.55	577.22	3.2	47.9	0.4	8.2	0.6	3.80	3.80	6.37	0.62	0.43	578.17	577.65	578.39	578.28	13.40
	LAT-B28	DI-B28	B19	24" RCP	8.0	0.012	9.25	577.20	576.46	2.9	80.2	0.3	11.5	0.6	3.71	2.56	8.60	0.78	0.33	577.98	576.79	578.19	577.95	10.00
	LAT-B29	DI-B29	JT-B5	24" RCP	14.5	0.012	4.00	573.93	573.35	4.2	52.7	0.4	9.5	0.7	4.13	4.13	7.58	0.72	0.47	574.65	573.82	574.91	574.71	12.04
	LINE-JT-B1	JT-B1	B14	30" RCP	87.5	0.012	1.12	583.90	582.92	22.4	50.6	1.2	9.5	1.6	6.70	6.57	9.11	1.64	1.25	585.54	584.17	586.23	585.46	27.68
	LINE-JT-B2	JT-B2	B15	30" RCP	97.5	0.012	0.64	582.23	581.60	29.6	38.4	1.7	8.1	1.9	7.58	7.51	8.11	1.87	1.74	584.10	583.34	584.99	584.36	28.36
	LINE-JT-B3	JT-B3	B17	30" RCP	107.5	0.012	0.69	579.35	578.61	33.6	39.7	1.9	8.5	2.0	8.09	8.02	8.52	1.99	1.87	581.34	580.48	582.36	581.61	29.51
	LINE-JT-B4	JT-B4	B19	36" RCP	117.5	0.012	0.65	576.22	575.46	37.6	62.6	1.8	8.7	2.0	7.53	7.46	8.68	2.01	1.77	578.23	577.23	579.11	578.40	30.50
	LINE-JT-B5	JT-B5	B21	36" RCP	147.5	0.012	1.51	572.35	570.12	43.3	95.6	1.5	12.5	2.1	8.01	7.86	11.99	2.18	1.52	574.53	571.64	575.53	573.88	31.78
LINE C	LINE-C1	C1	C2	24" RCP	295.52	0.012	0.5	570.81	569.33	6.84	18.64	0.87	5.19	0.93	4.79	4.63	5.19	0.95	0.87	571.76	570.21	572.1	570.62	22.79
	LINE-C2	C2	C3	24" RCP	200.0	0.012	0.99	569.33	567.35	14.4	26.2	1.1	8.1	1.4	6.30	6.06	8.07	1.42	1.11	570.75	568.46	571.36	569.47	25.10
	LINE-C3	C3	C4	30" RCP	240.0	0.012	0.49	566.85	565.67	29.4	33.5	1.9	7.2	1.9	7.55	7.09	6.77	1.97	2.07	568.82	567.74	569.62	568.66	31.28
	LINE-C4	C4	OUT-C	30" RCP	6.0	0.012	7.58	565.67	565.22	30.3	131.6	0.9	20.7	1.9	7.67	6.99	11.36	2.07	1.34	567.74	566.56	568.66	568.56	31.95
	LAT-C5	DI-C5	JT-C1	24" RCP	15.6	0.012	6.36	572.75	571.76	2.3	66.5	0.3	9.4	0.5	3.50	2.78	8.19	0.63	0.29	573.38	572.05	573.57	573.10	18.14
	LAT-C6	DI-C6	C1	24" RCP	11.5	0.012	3.83	571.25	570.81	4.0	51.6	0.4	9.3	0.7	4.07	3.54	7.32	0.78	0.46	572.03	571.27	572.28	572.11	13.56
	LAT-C7	DI-C7	C2	24" RCP	11.5	0.012	7.98	570.25	569.33	7.1	74.5	0.4	14.2	0.9	4.85	3.98	10.07	1.10	0.55	571.35	569.88	571.72	571.47	18.93
	LAT-C8	DI-C8	C3	24" RCP	10.5	0.012	4.76	567.85	567.35	15.6	57.5	0.7	14.8	1.4	6.52	5.82	10.12	1.59	0.98	569.44	568.33	570.10	569.93	31.24
	LINE-JT-C1	JT-C1	C1	24" RCP	187.6	0.012	0.51	571.76	570.81	2.3	18.8	0.5	3.9	0.5	3.50	3.38	3.85	0.54	0.50	572.30	571.31	572.49	571.54	18.53
LINE D	LINE-D1	D1	JT-D1	24" RCP	17.0	0.012	1.00	571.79	571.62	3.0	26.4	0.5	5.3	0.6	3.74	3.54	4.97	0.63	0.49	572.42	572.11	572.64	572.50	10.00
	LINE-D2	D2	D3	24" RCP	257.0	0.012	0.85	570.89	568.70	6.1	24.3	0.7	6.1	0.9	4.63	4.35	6.12	0.92	0.71	571.81	569.41	572.14	570.00	11.43
	LINE-D3	D3	JT-D2	24" RCP	127.5	0.012	0.85	568.70	567.62	6.7	24.3	0.7	6.3	0.9	4.76	4.62	6.25	0.94	0.75	569.64	568.36	569.99	568.97	13.67
	LINE-D4	D4	OUT-D	24" RCP	131.0	0.012	1.00	566.59	565.28	10.8	26.4	0.9	7.6	1.2	5.61	5.47	7.51	1.20	0.93	567.79	566.21	568.28	567.09	15.43
	LAT-D5	DI-D5	JT-D1	24" RCP	10.5	0.012	3.62	572.00	571.62	2.2	50.2	0.3	7.7	0.5	3.45	3.00	6.33	0.58	0.34	572.58	571.96	572.76	572.59	10.00
	LAT-D6	DI-D6	JT-D2	24" RCP	17.5	0.012	2.17	568	567.62	2.94	38.85	0.39	6.91	0.6	3.73	3.46	6.15	0.63	0.42	568.63	568.04	568.9	568.63	10.00
	LINE-JT-D1	JT-D1	D2	24" RCP	105.0	0.012	0.70	571.62	570.89	5.2	22.06	0.68	5.5	0.8	4.39	4.26	5.42	0.82	0.68	572.44	571.57	572.7	572.03	10.34
	LINE-JT-D2	JT-D2	D4	24" RCP	122.5	0.012	0.85	567.62	566.58	8.9	24.31	0.87	6.77	1.07	5.24	5.11	6.75	1.09	0.87	568.71	567.45	569.1	568.16	14.69
LINE E	LINE-E1	E1	E2	24" RCP	168.0	0.012	0.70	565.11	563.94	2.4	22.1	0.5	4.4	0.5	3.50	3.21	4.36	0.57	0.46	565.68	564.39	565.87	564.69	10.00
	LINE-E2	E2	E3	24" RCP	195.0	0.012	0.90	563.93	562.18	10.4	25.0	0.9	7.2	1.2	5.53	5.28	7.18	1.20	0.94	565.14	563.12	565.61	563.92	13.82
	LINE-E3	E3	E4	24" RCP	170.0	0.012	0.65	562.18	561.07	11.6	21.3	1.1	6.6	1.2	5.77	5.59	6.54	1.26	1.10	563.44	562.18	563.95	562.84	14.83
	LINE-E4	E4	E5	24" RCP	270.0	0.012	0.65	561.08	559.32	18.1	21.3	1.5	7.2	1.5	7.00	6.85	7.16	1.56	1.50	562.64	560.82	563.40	561.61	15.62
	LINE-E5	E5	E6	30" RCP	200.0	0.012	1.50	558.82	555.82	19.7	58.5	1.0	10.2	1.5	6.37	6.02	10.12	1.58	1.05	560.40	556.87	561.03	558.46	16.41
	LINE-E6	E6	JT-E1	30" RCP	10.2	0.012	0.47	555.82	555.77	21.0	32.8	1.5	6.7	1.6	6.53	5.13	5.04	1.94	1.98	557.76	557.75	558.18	558.41	17.27
	LINE-E7	E7	E2	24" RCP	7.0	0.012	2.00	564.07	563.93	8.0	37.3	0.7	9.0	1.0	5.05	4.69	6.85	1.07	0.80	565.14	564.73	565.54	565.46	10.00
	LINE-E8	E8	E4	24" RCP	7.0	0.012	1.50	561.18	561.08	6.6	32.3	0.6	7.7	0.9	4.74	2.72	2.50	1.44	1.56	562.62	562.64	562.74	563.40	10.00
	JT-E1	JT-E1	OUT-E	30" RCP	34.4	0.012	0.50	555.77	555.60	21.0	33.8	1.5	6.8	1.6	6.53	5.04	6.81	1.98	1.50	557.75	557.10	558.41	557.82	17.32
LINE F	LINE-F1	F1	F2	24" RCP	239.3	0.012	0.70	566.04	564.36	2.4	22.1	0.5	4.4	0.5	3.51	3.21	4.36	0.57	0.46	566.61	564.82	566.80	565.12	10.00
	LINE-F2	F2	F3	24" RCP	180.2	0.012	0.70	564.36	563.10	4.0	22.1	0.6	5.0	0.7	4.06	3.80	5.03	0.73	0.60	565.10	563.70	565.35	564.09	15.38
	LINE-F3	F3	F4	24" RCP	285.0	0.012	0.70	563.10	561.11	5.1	22.1	0.7	5.4	0.8	4.38	4.13	5.40	0.83	0.68	563.93	561.79	564.23	562.24	17.82

NOTES:
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FM 2514
STORM SEWER COMPUTATIONS

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	236
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

STORM SEWER COMPUTATIONS

NW ID	Line ID	Up Stream Node	Down Stream Node	Size	Actual Length (ft)	Manning's n value	Slope (%)	Invert Up Stream (ft)	Invert Down Stream (ft)	Discharge (cfs)	Capacity (cfs)	Uniform Depth (ft)	Uniform Velocity (ft/s)	Critical Depth (ft)	Critical Velocity (ft/s)	Actual Velocity Up Stream (ft)	Actual Velocity Down Stream (ft)	Actual Depth Up Stream (ft)	Actual Depth Down Stream (ft)	HGL Up Stream (ft)	HGL Down Stream (ft)	EGL Up Stream (ft)	EGL Down Stream (ft)	Downstream Cummulative Tc (min)
LINE F	LINE-F4	F4	F5	24" RCP	245.0	0.012	0.70	561.11	559.39	6.8	22.1	0.8	5.8	0.9	4.78	4.55	5.84	0.96	0.79	562.07	560.19	562.42	560.72	20.79
	LINE-F5	F5	F6	24" RCP	180.0	0.012	2.09	559.39	555.63	8.1	38.1	0.7	9.2	1.0	5.07	4.49	9.12	1.12	0.65	560.51	556.28	560.91	557.58	22.73
	LINE-F6	F6	JT-F1	24" RCP	12.7	0.012	0.30	555.63	555.59	9.4	14.4	1.2	4.6	1.1	5.33	4.69	4.78	1.21	1.20	556.85	556.79	557.19	557.14	23.92
	LINE-JT-F1	JT-F1	OUT-F	24" RCP	31.0	0.012	0.30	555.59	555.50	9.4	14.4	1.2	4.6	1.1	5.33	4.78	5.33	1.20	1.09	556.79	556.59	557.14	557.03	24.01
LINE G	LINE-JB-G1	JB-G1	G1	42" RCP	147.0	0.012	0.35	555.94	555.43	26.0	69.4	1.5	6.4	1.6	6.22	2.72	2.70	3.41	3.50	559.35	559.27	559.47	559.48	0.10
	LINE-G1	G1	G2	42" RCP	175.0	0.012	0.35	555.43	554.82	35.5	69.4	1.9	6.9	1.9	6.89	3.68	3.68	3.50	3.50	559.27	558.86	559.48	559.19	10.09
	LINE-G2	G2	G3	42" RCP	194.7	0.012	0.35	554.82	554.13	44.4	69.5	2.1	7.2	2.1	7.46	4.61	4.61	3.50	3.50	558.86	558.26	559.19	558.63	10.91
	LINE-G3	G3	JT-G2	42" RCP	32.8	0.012	0.35	554.13	554.02	47.1	69.4	2.2	7.4	2.1	7.63	4.89	4.89	3.50	3.50	558.26	558.19	558.63	558.69	11.63
	LINE-JT-G2	JT-G2	G4	42" RCP	87.5	0.012	0.35	554.02	553.71	54.4	69.4	2.5	7.5	2.3	8.08	5.66	5.66	3.50	3.50	558.19	557.97	558.69	558.48	11.75
	LINE-G4	G4	OUT-G	42" RCP	56.3	0.012	0.35	553.71	553.52	55.4	69.4	2.5	7.5	2.3	8.14	5.76	5.76	3.50	3.50	557.97	557.81	558.48	558.33	12.02
	LAT-G5	G5	G6	30" RCP	7.0	0.012	5.00	557.79	557.44	13.0	106.0	0.6	13.9	1.2	5.51	3.20	2.84	1.93	2.21	559.72	559.65	559.98	560.44	0.00
	LAT-G6	G6	JB-G1	30" RCP	6.5	0.012	7.65	557.44	556.94	26.0	132.2	0.8	19.9	1.7	7.14	5.67	11.53	2.21	1.17	559.65	558.11	560.44	560.18	0.07
	LAT-G7	G7	G1	24" RCP	8.5	0.012	2.50	557.14	556.93	7.2	41.7	0.6	9.5	1.0	4.88	2.30	2.30	2.00	2.00	559.36	559.27	559.44	559.48	10.00
	LAT-G8	G8	G2	24" RCP	8.5	0.012	0.50	556.36	556.32	7.8	18.6	0.9	5.4	1.0	5.02	2.50	2.50	2.00	2.00	558.97	558.86	559.06	559.19	10.00
	LAT-G9	G9	JT-G2	24" RCP	13.0	0.012	4.00	556.04	555.52	8.0	52.7	0.6	11.5	1.0	5.04	2.53	2.53	2.00	2.00	558.31	558.19	558.41	558.69	10.00
LINE H	LINE-H1	H1	H2	24" RCP	249.7	0.012	0.35	557.37	556.48	3.7	15.7	0.7	3.9	0.7	3.97	2.61	2.21	0.92	1.05	558.29	557.53	558.52	557.80	10.00
	LINE-H2	H2	H3	24" RCP	65.3	0.012	0.35	556.48	556.25	6.4	15.6	0.9	4.4	0.9	4.70	3.84	3.39	1.05	1.16	557.53	557.42	557.80	557.74	13.61
	LINE-H3	H3	JT-H1	24" RCP	7.0	0.012	0.30	556.25	556.23	8.2	14.4	1.1	4.4	1.0	5.10	4.34	4.57	1.16	1.12	557.42	557.35	557.74	557.67	14.18
	LINE-JT-H1	JT-H1	OUT-H	24" RCP	40.3	0.012	0.30	556.23	556.11	8.2	14.4	1.1	4.4	1.0	5.10	4.57	5.10	1.12	1.02	557.35	557.13	557.67	557.54	14.24
LINE I	LAT-I4	I4	JB-I1	18" RCP	8.0	0.012	0.35	560.32	560.29	5.4	7.3	1.0	4.2	0.9	4.90	3.04	3.04	1.50	1.50	562.35	562.18	562.49	562.22	14.36
	LINE-JB-I1	JB-I1	I1	4'X2' RCB	52.5	0.012	0.44	559.79	559.56	5.4	17.6	0.8	4.6	0.8	4.45	1.71	1.71	2.00	2.00	562.18	562.09	562.22	562.37	14.41
	LAT-I5	I5	I1	18" RCP	4.5	0.012	1.00	560.11	560.06	7.0	12.2	0.9	6.8	1.0	5.43	3.93	3.93	1.50	1.50	562.36	562.09	562.60	562.37	14.36
	LINE-I1	I1	I2	4'X2' RCB	155.0	0.012	0.30	559.56	559.10	13.2	14.4	1.6	4.8	1.3	6.07	4.21	4.22	2.00	1.97	562.09	561.07	562.37	561.23	14.94
	LAT-I6	I6	I2	18" RCP	4.5	0.012	1.00	559.64	559.60	8.7	12.2	1.0	7.1	1.1	6.04	4.95	4.97	1.50	1.47	561.49	561.07	561.89	561.23	14.36
	LAT-I7	I7	JT-I1	18" RCP	7.5	0.012	1.00	559.20	559.12	9.1	12.2	1.0	7.2	1.2	6.18	5.16	5.16	1.50	1.50	561.26	560.79	561.67	561.06	14.36
	LINE-I2	I2	JT-I1	4'X2' RCB	157.5	0.012	0.30	559.10	558.62	22.6	53.5	1.1	5.4	1.0	5.67	2.86	2.83	1.97	2.00	561.07	560.79	561.23	561.06	15.58
	LINE-JT-I1	JT-I1	I3	4'X2' RCB	32.5	0.012	0.30	558.62	558.52	30.5	53.5	1.3	5.9	1.2	6.26	3.81	3.97	2.00	1.92	560.79	560.44	561.06	560.71	16.52
	LINE-I3	I3	JT-I2	4'X2' RCB	17.5	0.012	0.37	558.52	558.46	31.8	59.1	1.3	6.3	1.3	6.35	4.14	4.03	1.92	1.97	560.44	560.43	560.71	560.68	16.67
	LINE-JT-I2	JT-I2	OUT-I	4'X2' RCB	8.7	0.012	0.37	558.46	558.43	31.8	59.5	1.3	6.3	1.3	6.35	4.03	3.97	1.97	2.00	560.43	560.43	560.68	560.67	16.76
LINE J	LINE-J1	J1	J2	24" RCP	280.0	0.012	0.60	560.25	558.57	4.57	9.5	0.8	5.1	0.8	4.62	3.13	5.05	1.15	0.76	561.41	559.33	561.74	559.73	10.00
	LINE-J2	J2	OUT-J	24" RCP	112.0	0.012	0.70	558.57	557.78	9.23	10.2	1.2	6.2	1.2	6.22	5.22	5.22	1.50	1.50	560.53	559.72	560.95	560.14	11.84
LINE K	LAT-K1	K1	JB-K1	24" RCP	8.0	0.012	4.00	560.26	559.94	11.0	52.7	0.6	12.6	1.2	5.65	3.88	8.43	1.69	0.87	561.95	560.81	562.45	561.92	14.36
	LINE-JB-K1	JB-K1	K2	24" RCP	67.5	0.012	1.29	559.94	559.07	11.0	29.9	0.9	8.4	1.2	5.65	3.66	8.05	1.83	0.90	561.77	559.97	562.26	560.98	14.40
	LINE-K2	K2	K3	24" RCP	50.0	0.012	1.29	559.07	558.43	13.6	29.9	1.0	8.8	1.3	6.15	5.48	8.34	1.48	1.03	560.55	559.46	561.14	560.54	14.73
	LINE-K3	K3	K4	24" RCP	90.0	0.012	1.29	558.43	557.26	16.8	29.9	1.1	9.3	1.5	6.75	6.20	9.05	1.61	1.14	560.03	558.41	560.74	559.68	14.95
	LINE-K4	K4	K5	24" RCP	52.8	0.012	1.35	557.26	556.55	19.3	30.6	1.2	9.7	1.6	7.25	6.77	9.23	1.70	1.26	558.97	557.82	559.78	559.14	15.24
	LINE-K5	K5	K6	24" RCP	52.3	0.012	1.35	556.55	555.85	21.0	30.7	1.3	9.9	1.6	7.60	7.20	9.42	1.75	1.33	558.30	557.18	559.20	558.56	15.40
	LINE-K6	K6	K7	24" RCP	105.0	0.012	1.35	555.85	554.43	23.2	30.6	1.4	10.1	1.7	8.09	7.37	7.37	2.00	2.00	557.85	556.89	558.71	557.30	15.54
	LINE-K7	K7	JT-K1	30" RCP	99.5	0.012	1.35	553.93	552.58	25.3	55.6	1.2	10.5	1.7	7.05	5.14	5.14	2.50	2.50	556.89	556.53	557.30	557.70	15.79
	LAT-K8	K8	JT-K1	24" RCP	25.0	0.012	1.00	553.33	553.08	19.9	26.4	1.4	8.7	1.6	7.38	6.34	6.34	2.00	2.00	557.34	556.53	557.96	557.70	29.57
	LINE-JT-K1	JT-K1	K9	30" RCP	125.5	0.012	1.35	552.58	550.89	37.7	55.5	1.6	11.5	2.1	8.65	7.69	11.16	2.50	1.63	556.53	552.51	557.70	554.45	29.64
	LINE-K9	K9	K10	36" RCP	140.0	0.012	0.90	550.39	549.13	39.2	73.7	1.6	10.0	2.0	7.66	7.20	9.84	2.16	1.65	552.55	550.78	553.46	552.28	29.92
	LINE-K10	K10	K11	36" RCP	125.0	0.012	0.50	549.13	548.51	40.8	55.0	2.0	8.0	2.1	7.80	7.61	8.02	2.13	2.03	551.26	550.53	552.20	551.53	30.35
	LINE-K11	K11	K12	36" RCP	95.0	0.012	0.74	548.51	547.80	41.1	67.0	1.8	9.4	2.1	7.83	7.66	9.24	2.13	1.81	550.64	549.61	551.59	550.94	30.73

NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i(SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

FM 2514
STORM SEWER COMPUTATIONS

SHEET 3 OF 4

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	237
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:2:57:29 PM
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STORM SEWER COMPUTATIONS

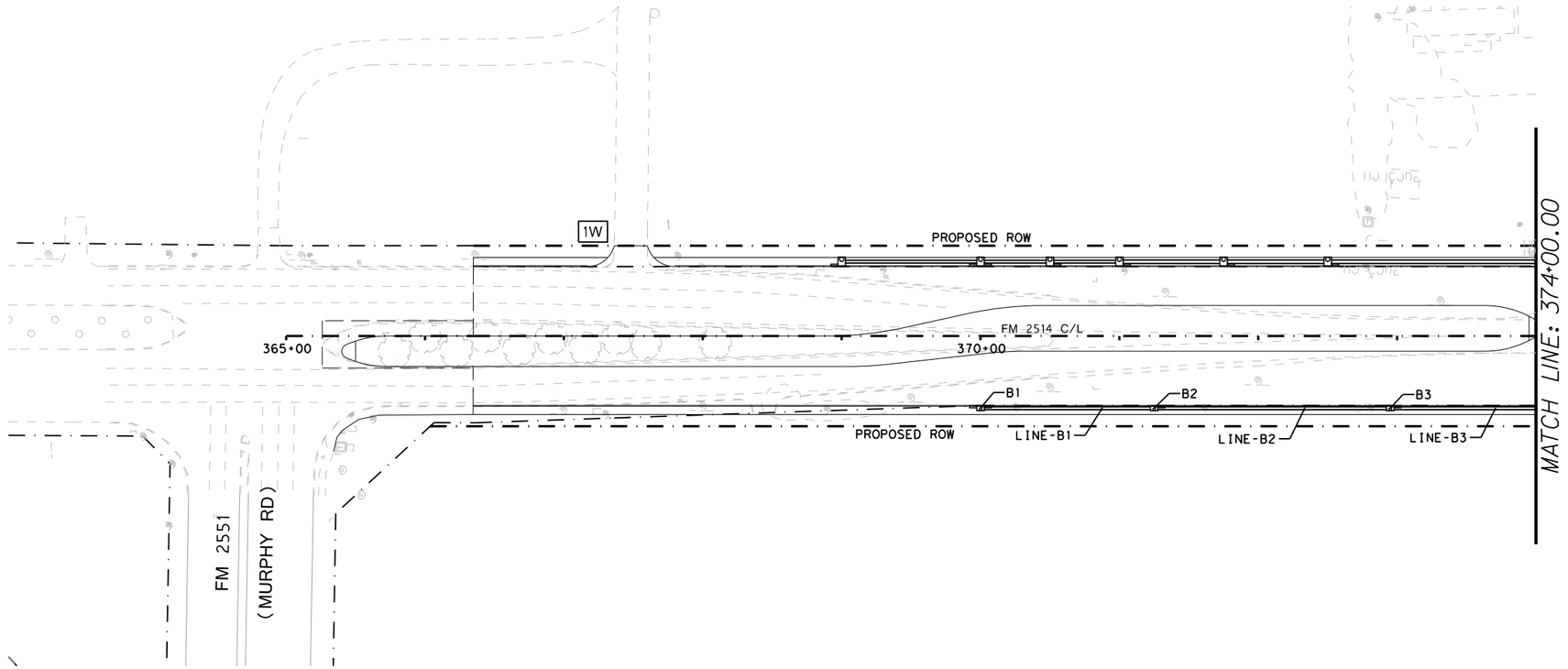
NW ID	Line ID	Up Stream Node	Down Stream Node	Size	Actual Length (ft)	Manning's n value	Slope (%)	Invert Up Stream (ft)	Invert Down Stream (ft)	Discharge (cfs)	Capacity (cfs)	Uniform Depth (ft)	Uniform Velocity (ft/s)	Critical Depth (ft)	Critical Velocity (ft/s)	Actual Velocity Up Stream (ft)	Actual Velocity Down Stream (ft)	Actual Depth Up Stream (ft)	Actual Depth Down Stream (ft)	HGL Up Stream (ft)	HGL Down Stream (ft)	EGL Up Stream (ft)	EGL Down Stream (ft)	Downstream Cummulative Tc (min)
LINE K	LINE-K12	K12	K13	36" RCP	145.0	0.012	0.51	547.80	547.06	41.5	55.7	2.0	8.2	2.1	7.85	7.73	8.14	2.13	2.03	549.93	549.09	550.89	550.12	31.02
	LINE-K13	K13	K14	36" RCP	145.0	0.012	0.51	547.06	546.31	41.9	55.7	2.1	8.2	2.1	7.89	7.76	8.15	2.14	2.05	549.20	548.36	550.16	549.39	31.44
	LINE-K14	K14	K15	36" RCP	195.0	0.012	0.51	546.31	545.32	42.3	55.5	2.1	8.1	2.1	7.93	7.80	8.14	2.15	2.07	548.46	547.38	549.44	548.41	31.86
	LINE-K15	K15	K16	24" RCP	175.0	0.012	0.51	545.32	544.42	42.9	55.6	2.1	8.2	2.1	7.98	7.85	8.16	2.17	2.09	547.48	546.51	548.47	547.55	32.42
	LINE-K16	K16	K17	36" RCP	169.5	0.012	0.51	544.42	543.55	43.4	55.6	2.1	8.2	2.2	8.02	7.69	8.16	2.23	2.11	546.66	545.67	547.65	546.70	32.92
	LINE-K17	K17	K18	36" RCP	61.8	0.012	1.44	543.55	542.66	43.9	93.3	1.5	12.3	2.2	8.06	7.57	11.05	2.29	1.65	545.85	544.31	546.86	546.21	33.39
	LINE-K18	K18	K19	42" RCP	234.4	0.012	1.40	542.16	538.88	45.5	138.7	1.4	12.2	2.1	7.53	6.99	12.04	2.24	1.45	544.40	540.33	545.29	542.59	33.57
	LINE-K19	K19	JT-K2	42" RCP	14.0	0.012	0.30	538.88	538.84	46.2	64.2	2.3	6.9	2.1	7.57	4.94	6.53	3.26	2.41	542.14	541.25	542.81	542.03	34.41
	LINE-JT-K2	JT-K2	OUT-K	42" RCP	29.6	0.012	0.30	538.84	538.75	46.2	64.2	2.3	6.9	2.1	7.57	6.53	7.57	2.41	2.12	541.25	540.87	542.03	541.76	34.47
LINE L	LAT-L1	L1	L2	18" RCP	11.0	0.012	5.00	559.02	558.48	0.9	27.4	0.2	6.7	0.4	2.82	1.52	6.20	0.54	0.20	559.57	558.68	559.69	559.28	10.00
	LINE-L2	L2	L3	24" RCP	175.0	0.012	1.21	558.48	556.35	2.6	29.0	0.4	5.4	0.6	3.58	2.00	5.40	0.85	0.42	559.33	556.77	559.53	557.22	10.47
	LINE-L3	L3	L4	24" RCP	230.0	0.012	1.30	556.35	553.36	3.7	30.1	0.5	6.2	0.7	3.97	3.32	6.18	0.77	0.49	557.12	553.85	557.36	554.44	14.16
	LINE-L4	L4	L5	24" RCP	295.0	0.012	1.30	553.36	549.53	5.0	30.1	0.6	6.7	0.8	4.36	3.73	6.74	0.89	0.57	554.25	550.10	554.54	550.81	17.50
	LINE-L5	L5	L7	24" RCP	180.0	0.012	0.60	549.53	548.45	6.6	20.4	0.8	5.5	0.9	4.74	4.30	5.49	0.98	0.81	550.51	549.26	550.86	549.73	20.63
	LAT-L6	L6	L7	18" RCP	13.0	0.012	2.18	549.23	548.95	2.0	18.1	0.4	6.4	0.5	3.53	2.28	5.70	0.74	0.37	549.97	549.32	550.16	549.83	10.00
	LINE-L7	L7	L9	24" RCP	300.0	0.012	0.80	548.45	546.05	8.9	23.6	0.9	6.6	1.1	5.23	3.77	6.59	1.40	0.89	549.85	546.93	550.27	547.61	22.10
	LAT-L8	L8	L9	18" RCP	16.0	0.012	3.02	547.03	546.55	1.2	21.3	0.3	6.1	0.4	3.02	1.85	5.74	0.57	0.26	547.60	546.80	547.74	547.32	10.00
	LINE-L9	L9	L11	24" RCP	205.0	0.012	0.80	546.05	544.41	11.1	23.6	1.0	7.0	1.2	5.67	4.23	6.99	1.56	1.01	547.60	545.42	548.10	546.18	23.90
	LAT-L10	L10	L11	18" RCP	18.0	0.012	2.91	545.43	544.91	0.8	20.9	0.2	5.4	0.3	2.76	1.64	5.24	0.48	0.21	545.91	545.12	546.03	545.55	10.00
	LINE-L11	L11	L12	24" RCP	170.0	0.012	0.80	544.41	543.05	12.6	23.6	1.1	7.2	1.3	5.95	4.85	7.21	1.54	1.09	545.95	544.14	546.50	544.95	24.89
	LINE-L12	L12	L13	24" RCP	146.1	0.012	0.80	543.05	541.88	13.4	23.6	1.1	7.4	1.3	6.11	5.68	7.32	1.41	1.13	544.46	543.01	545.04	543.84	25.61
	LINE-L13	L13	L14	24" RCP	94.7	0.012	0.80	541.88	541.12	14.2	23.6	1.2	7.4	1.4	6.24	5.82	7.38	1.45	1.17	543.32	542.30	543.93	543.14	26.20
	LINE-L14	L14	L15	24" RCP	188.5	0.012	0.89	541.12	539.45	16.0	24.8	1.2	7.9	1.4	6.59	6.06	7.92	1.57	1.23	542.69	540.68	543.36	541.65	26.57
	LINE-L15	L15	JT-L1	24" RCP	6.5	0.012	0.50	539.45	539.42	17.4	18.6	1.6	6.3	1.5	6.88	5.55	5.88	2.00	1.79	541.98	541.21	542.52	541.82	27.21
	LINE-JT-L1	JT-L1	OUT-L	24" RCP	38.1	0.012	0.44	539.42	539.25	17.4	17.5	1.9	5.7	1.5	6.88	5.88	6.88	1.79	1.51	541.21	540.76	541.82	541.49	27.23
LINE M	LINE-M1	M1	M2	24" RCP	170.1	0.012	2.50	570.84	566.59	1.8	41.7	0.3	6.2	0.5	3.24	1.92	6.24	0.67	0.29	571.51	566.88	571.67	567.49	10.00
	LINE-M2	M2	M3	24" RCP	135.0	0.012	2.50	566.59	563.22	2.8	41.7	0.4	7.2	0.6	3.68	2.70	7.16	0.73	0.37	567.33	563.58	567.54	564.39	15.21
	LINE-M3	M3	M4	24" RCP	180.0	0.012	2.50	563.22	558.72	3.6	41.7	0.4	7.7	0.7	3.95	3.04	7.71	0.81	0.41	564.03	559.13	564.27	560.06	17.81
	LINE-M4	M4	M5	24" RCP	167.7	0.012	2.60	558.72	554.36	4.6	42.5	0.5	8.4	0.8	4.24	3.28	8.39	0.91	0.46	559.63	554.82	559.91	555.91	20.49
	LINE-M5	M5	M6	24" RCP	189.5	0.012	2.60	554.36	549.43	5.5	42.5	0.5	8.8	0.8	4.47	3.54	8.82	0.99	0.50	555.34	549.93	555.65	551.15	22.46
	LINE-M6	M6	M7	24" RCP	142.9	0.012	1.28	549.43	547.60	6.4	29.9	0.7	7.2	0.9	4.70	4.07	7.17	1.00	0.65	550.43	548.25	550.78	549.05	24.33
	LINE-M7	M7	JT-M1	24" RCP	6.0	0.012	0.30	547.60	547.58	7.3	14.5	1.0	4.4	1.0	4.89	2.66	3.01	1.62	1.44	549.22	549.02	549.36	549.32	25.54
	LINE-JT-M1	JT-M1	OUT-M	24" RCP	26.4	0.012	0.30	547.58	547.50	7.3	14.4	1.1	4.3	1.0	4.89	3.01	4.89	1.44	0.96	549.02	548.46	549.32	548.83	25.59
LINE N	LINE-N1	N1	N2	24" RCP	170.0	0.010	2.50	570.84	566.60	1.8	41.7	0.3	6.2	0.5	3.24	1.92	6.24	0.67	0.29	571.51	566.89	571.67	567.50	10.00
	LINE-N2	N2	N3	24" RCP	170.0	0.010	2.50	566.60	562.34	2.8	41.7	0.4	7.2	0.6	3.68	2.70	7.19	0.73	0.36	567.33	562.71	567.54	563.52	15.20
	LINE-N3	N3	N4	24" RCP	155.0	0.010	2.50	562.35	558.47	3.8	41.7	0.4	7.8	0.7	4.01	3.08	7.82	0.83	0.42	563.17	558.89	563.42	559.85	18.45
	LINE-N4	N4	N6	24" RCP	187.9	0.010	2.68	558.47	553.43	4.6	43.2	0.5	8.5	0.8	4.25	3.29	8.51	0.92	0.46	559.39	553.89	559.67	555.02	20.67
	LAT-N5	N5	N6	18" RCP	10.0	0.010	3.04	554.23	553.93	1.6	21.3	0.3	6.7	0.5	3.30	2.06	5.83	0.66	0.31	554.89	554.24	555.06	554.77	10.00
	LINE-N6	N6	N8	24" RCP	185.0	0.010	2.90	553.43	548.06	6.6	44.9	0.5	9.7	0.9	4.75	2.66	9.70	1.47	0.54	554.90	548.60	555.25	550.07	22.85
	LAT-N7	N7	N8	18" RCP	12.0	0.010	1.00	549.63	549.51	1.2	12.2	0.3	4.1	0.4	3.04	1.97	3.99	0.55	0.33	550.18	549.84	550.32	550.09	10.00
	LINE-N8	N8	N9	24" RCP	136.8	0.010	1.10	548.06	546.56	8.3	27.7	0.8	7.3	1.0	5.10	2.64	7.26	1.96	0.78	550.02	547.34	550.43	548.16	24.35
	LINE-N9	N9	JT-N1	24" RCP	6.5	0.010	1.65	546.56	546.45	9.1	33.8	0.7	8.6	1.1	5.27	3.07	3.28	1.78	1.65	548.34	548.10	548.54	548.53	25.25
	LINE-JT-N1	JT-N1	OUT-N	24" RCP	72.5	0.010	0.50	546.45	546.09	9.1	18.6	1.0	5.6	1.1	5.27	3.28	5.58	1.65	1.03	548.10	547.12	548.53	547.60	25.30

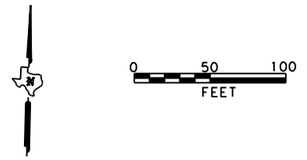
NOTES:
1. COMPUTATIONS WERE ANALYZED USING GEOPAK DRAINAGE V8i (SS3).
2. TXDOT HDM (JULY 2016) WAS UTILIZED FOR DESIGN PURPOSES.

FM 2514
STORM SEWER
COMPUTATIONS

SHEET 4 OF 4

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	238
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	





NOTES:

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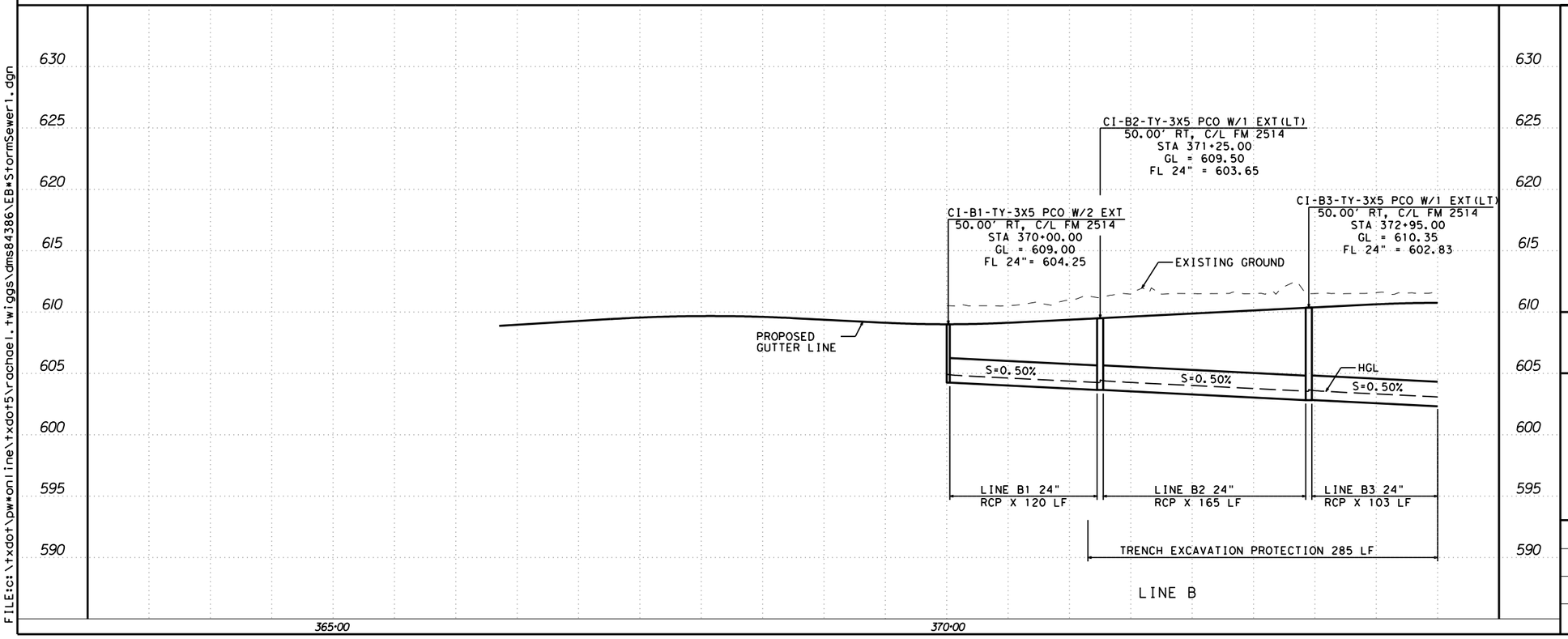
2. INLET OFFSETS FOR DROP INLETS ARE MEASURED FROM THE CENTER OF THE GRATE TO THE RESPECTIVE C/L OF THE ROADWAY.



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EB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100'

SHEET 1 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	239
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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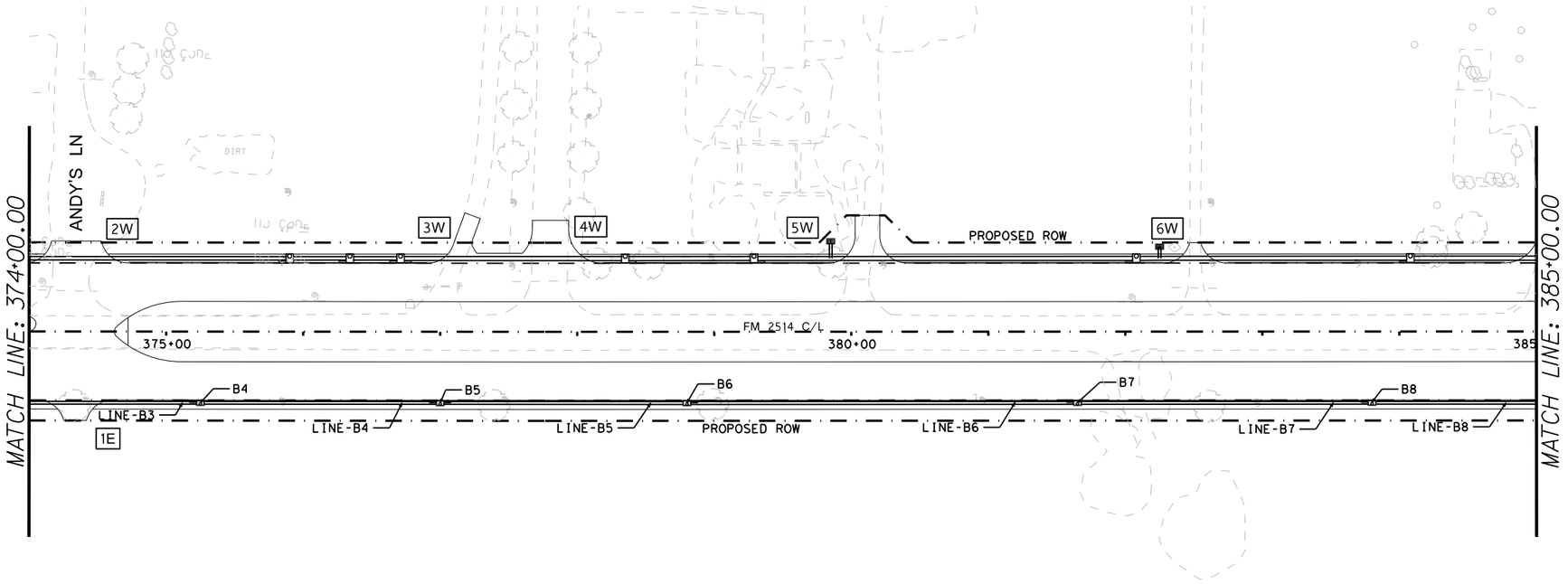

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FEET

NOTES:

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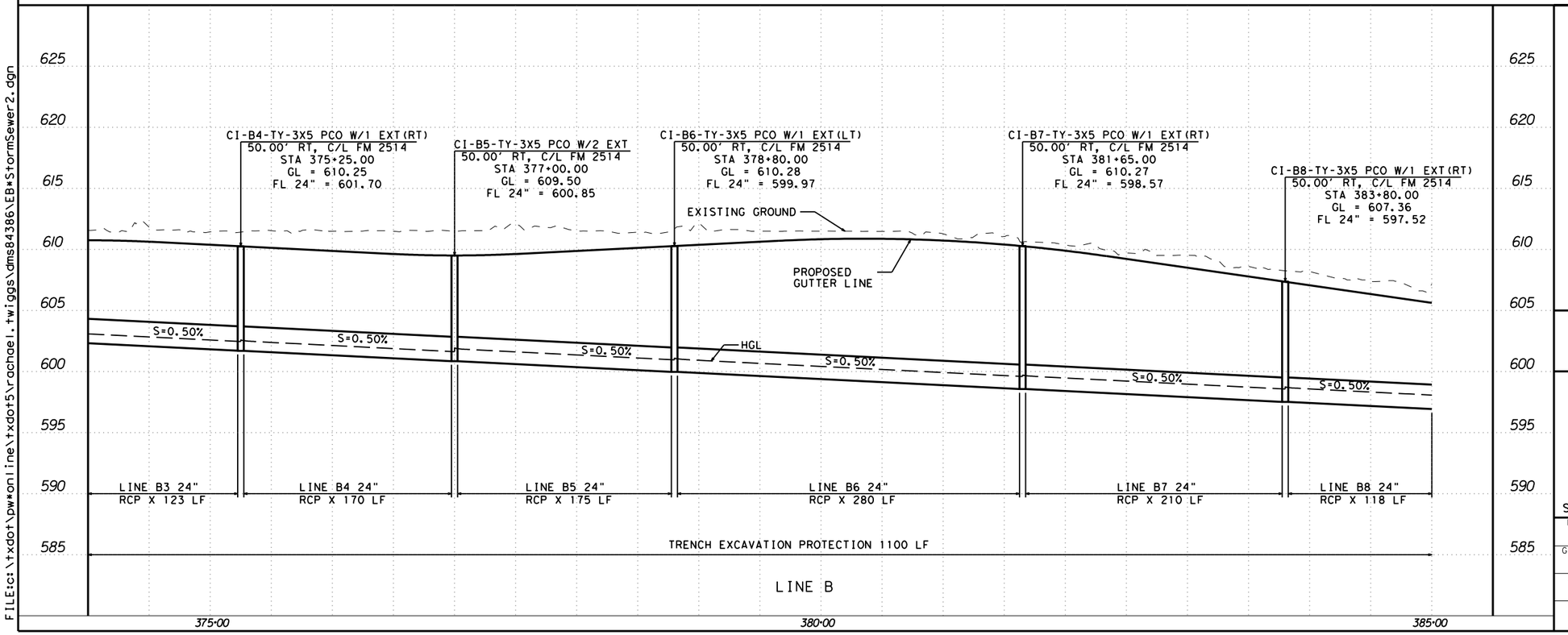

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SCALE: 1"=100' SHEET 2 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	240
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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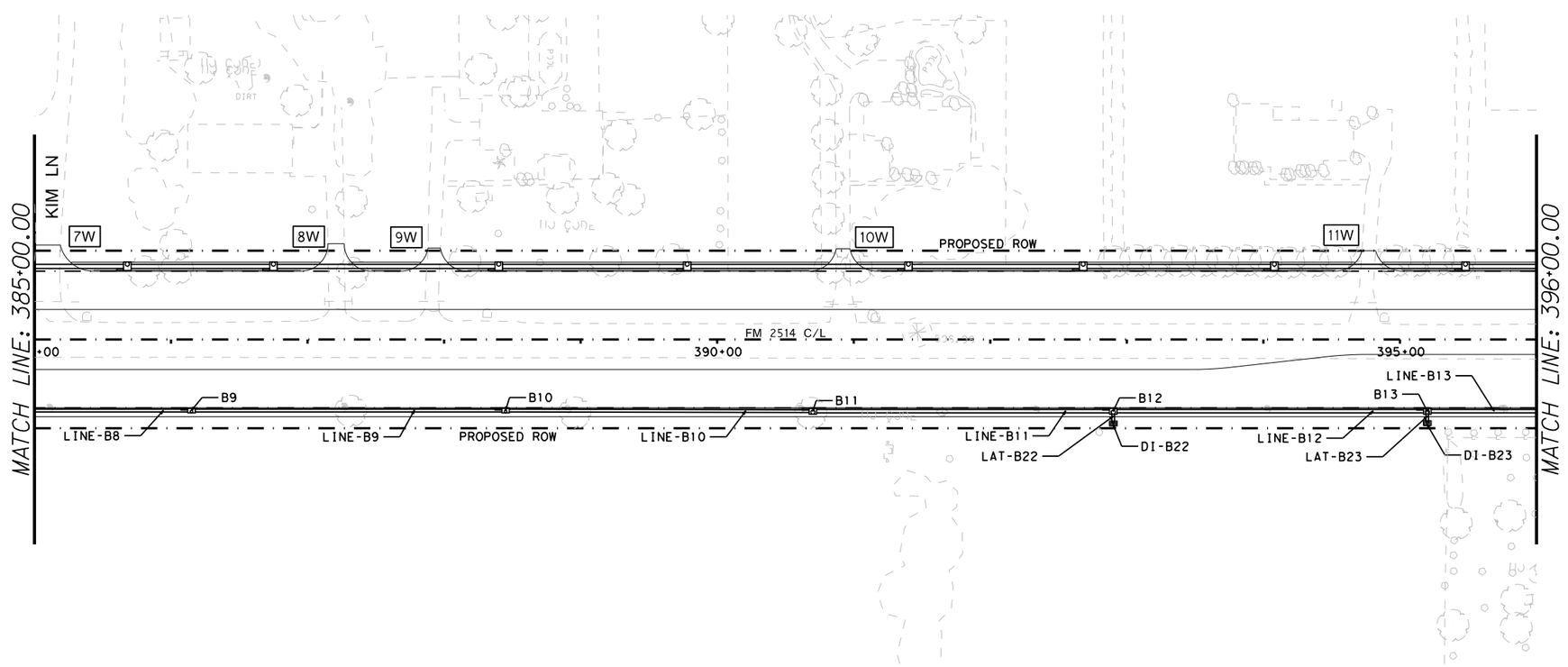

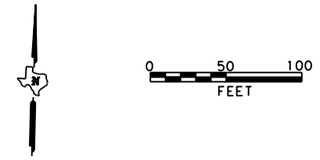

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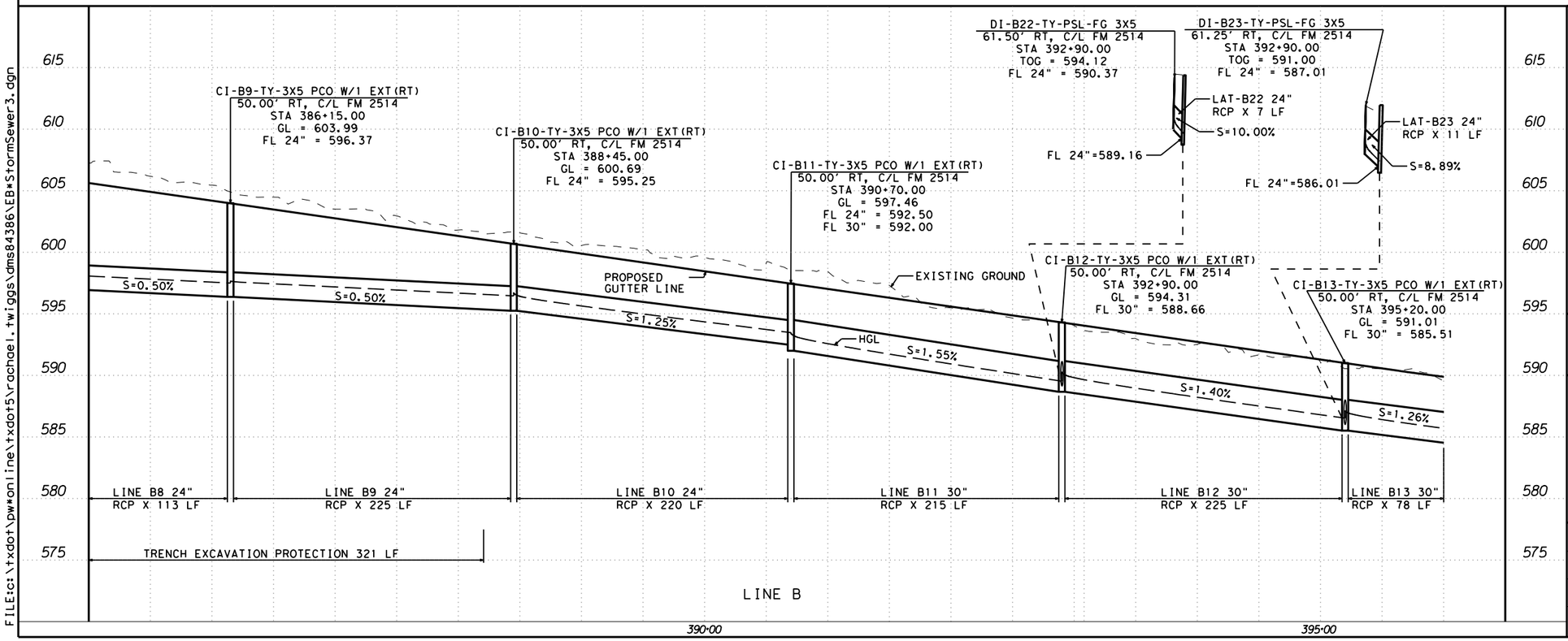

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PLAN & PROFILE

SCALE: 1"=100' SHEET 3 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	241
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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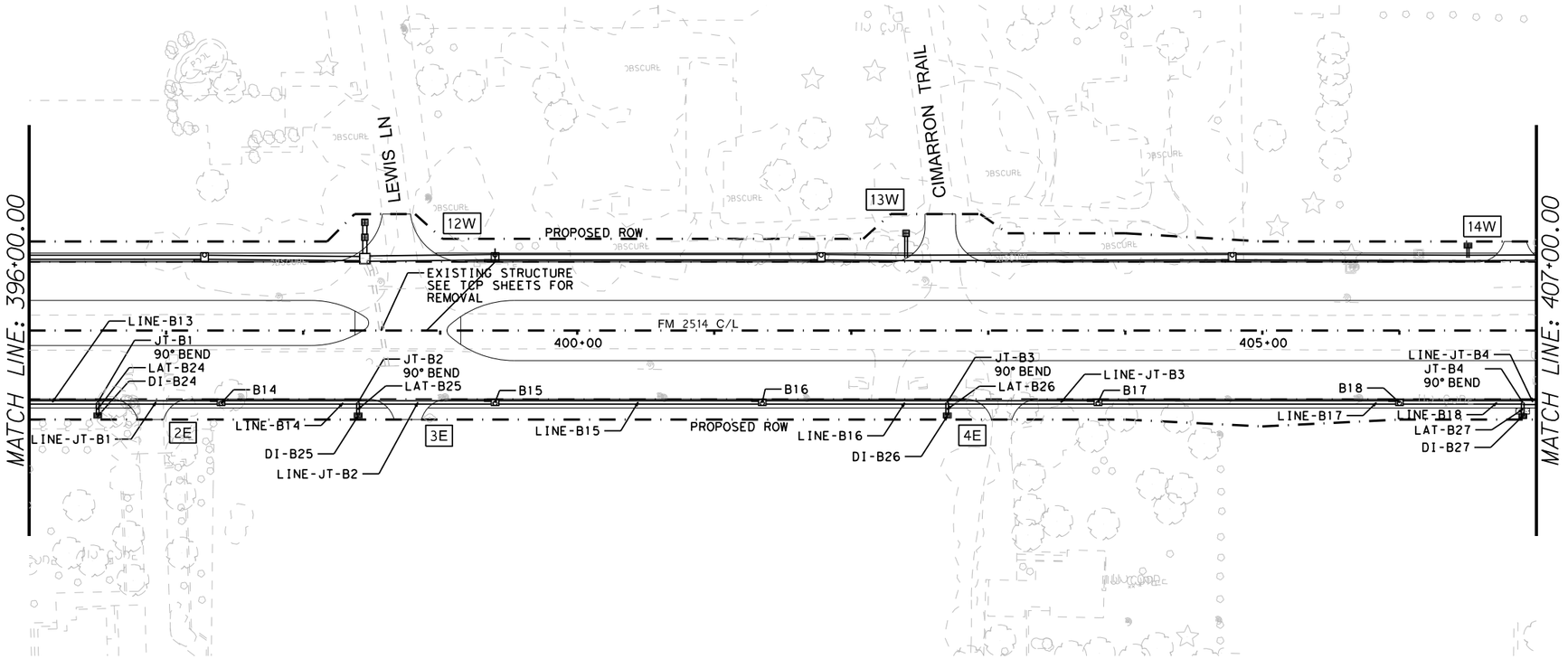

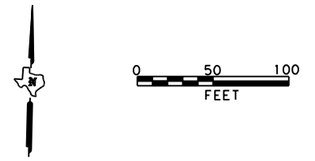

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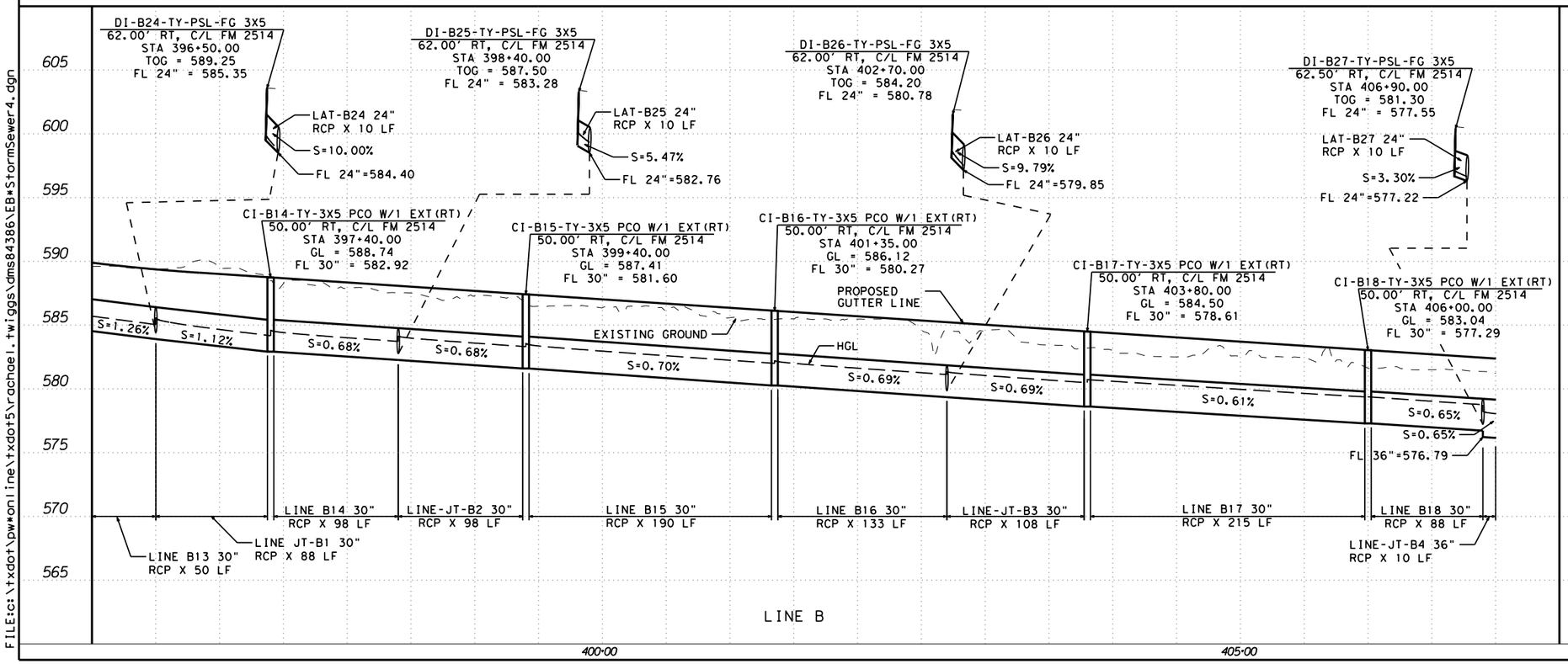

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PLAN & PROFILE

SCALE: 1"=100'

SHEET 4 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	242
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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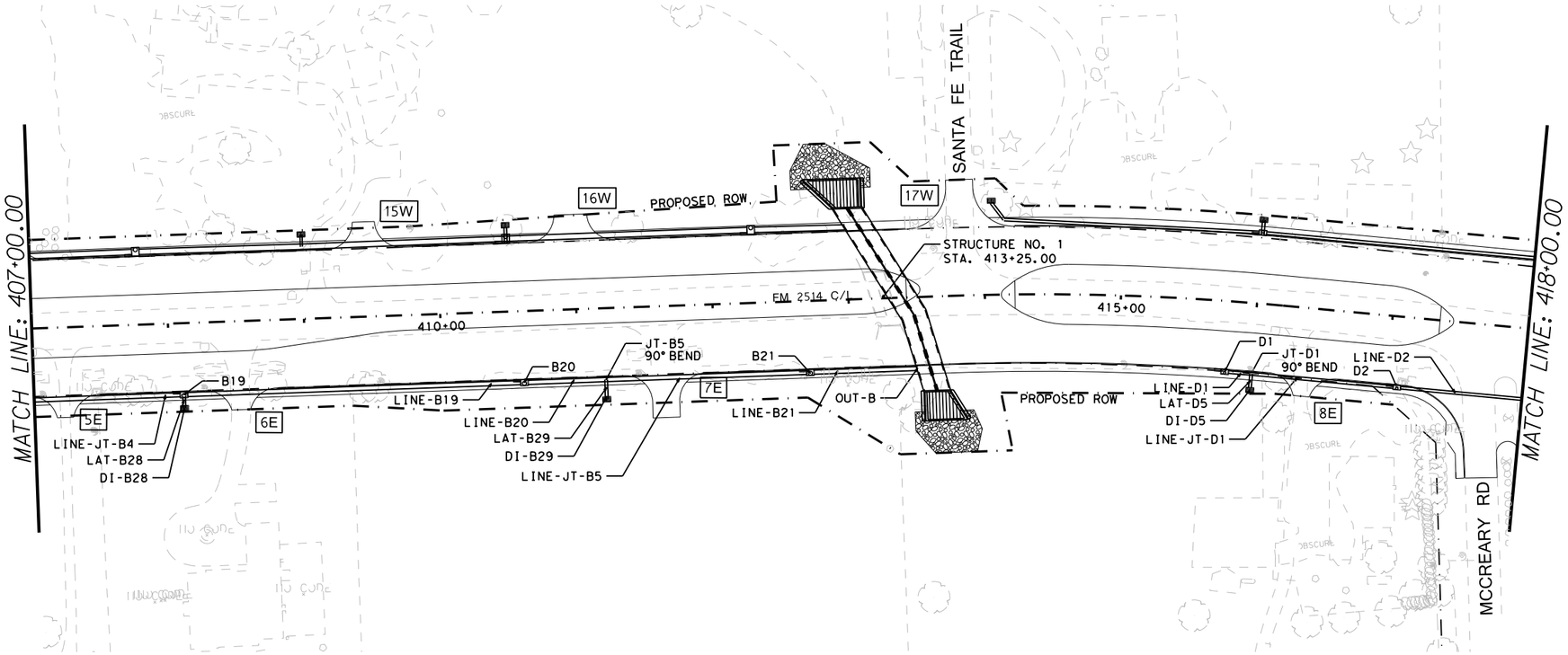

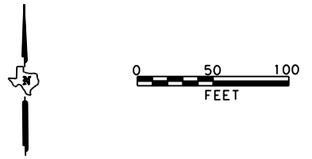

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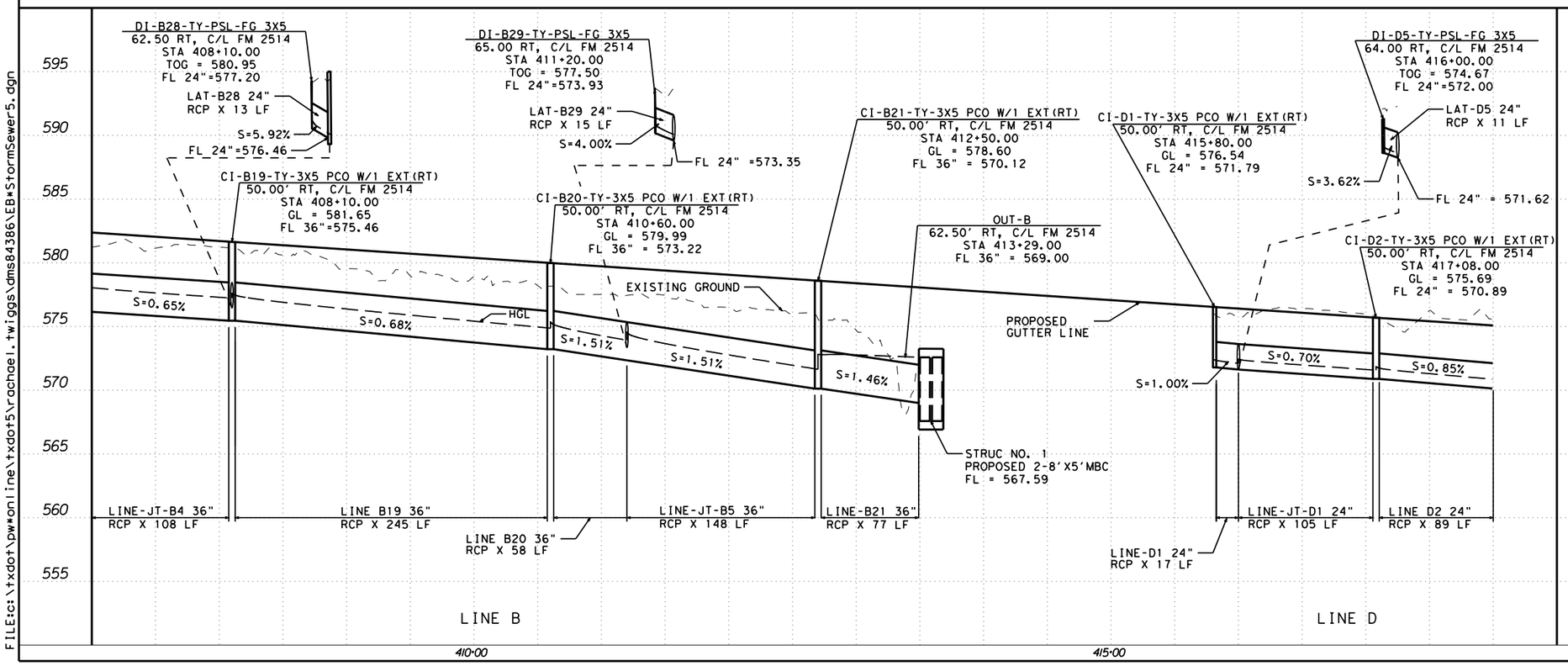

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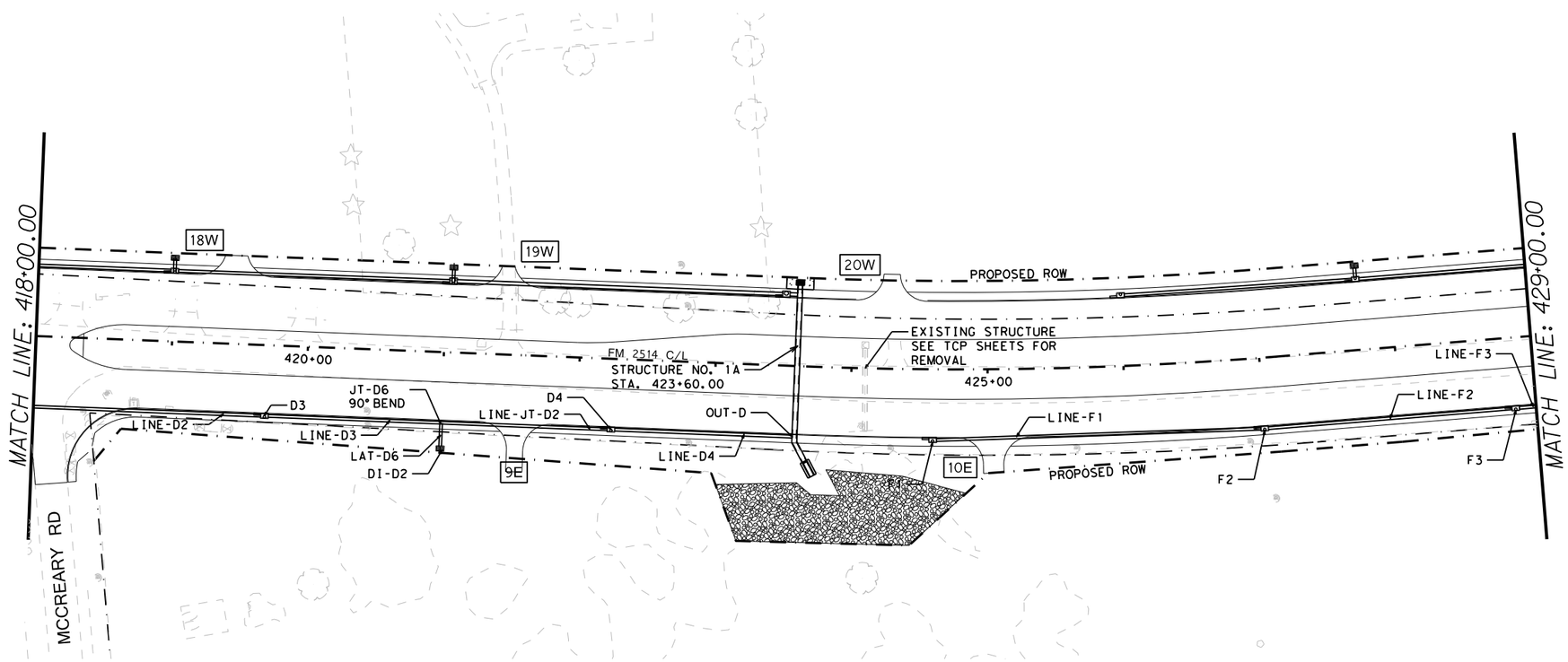
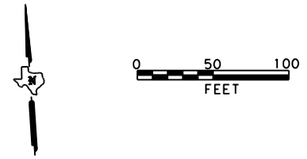
PLAN & PROFILE

SCALE: 1"=100'

SHEET 5 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	243
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	





NOTES:

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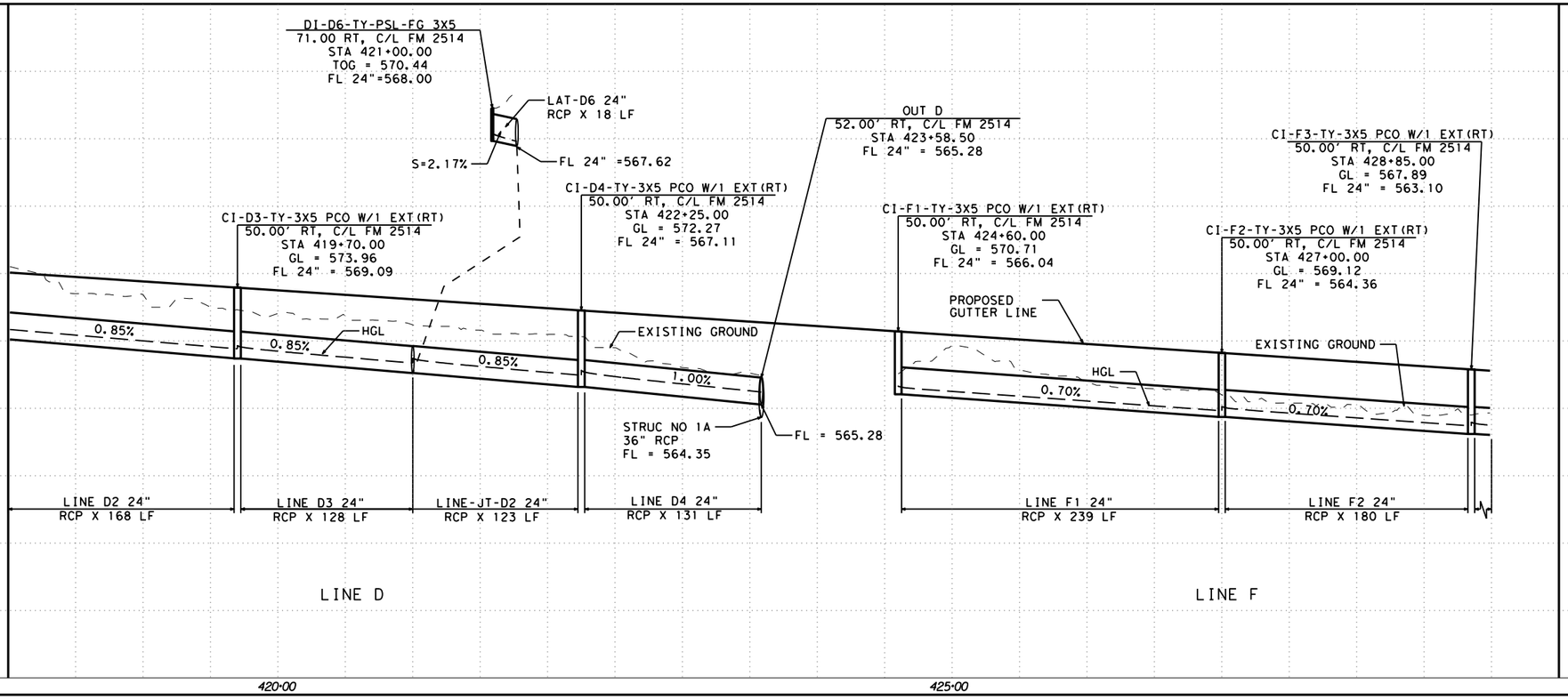

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PLAN & PROFILE

SCALE: 1"=100' SHEET 6 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	244
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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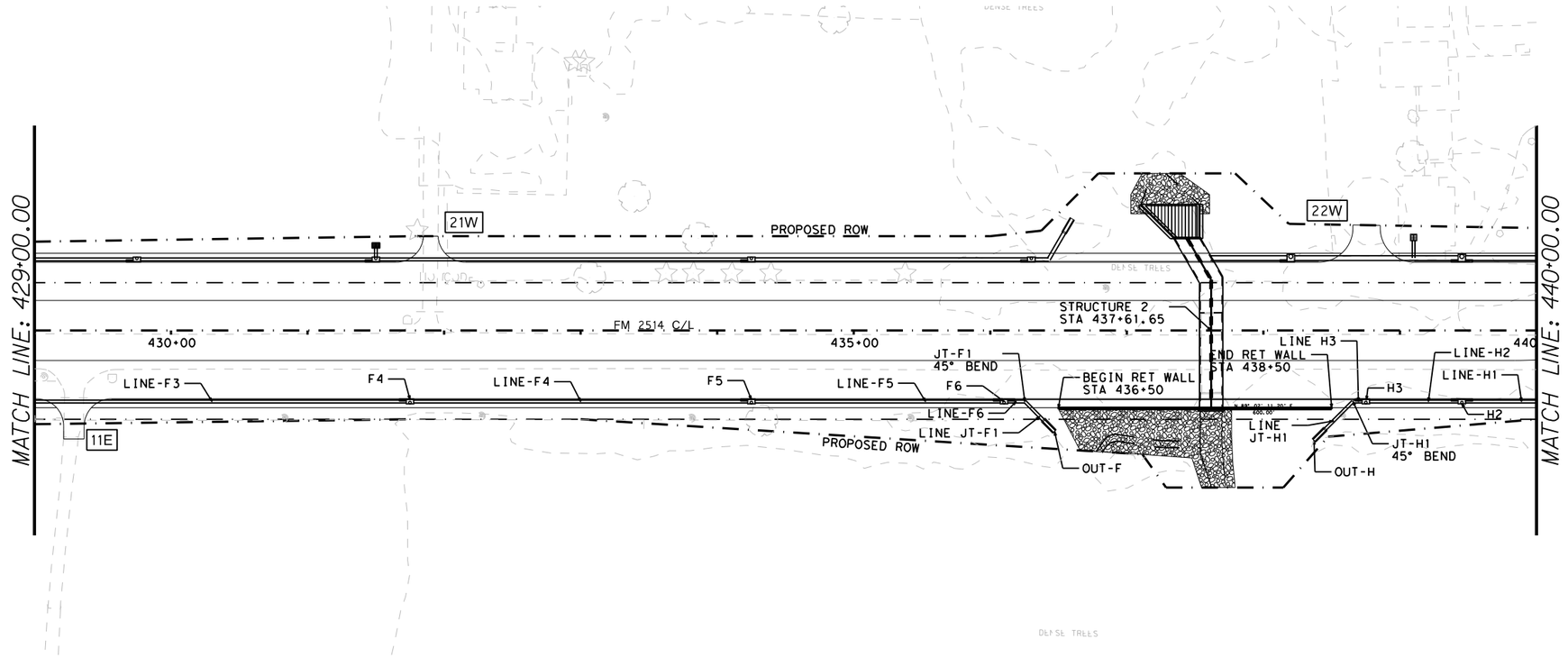

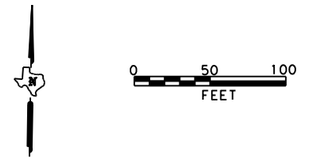

NOTES:

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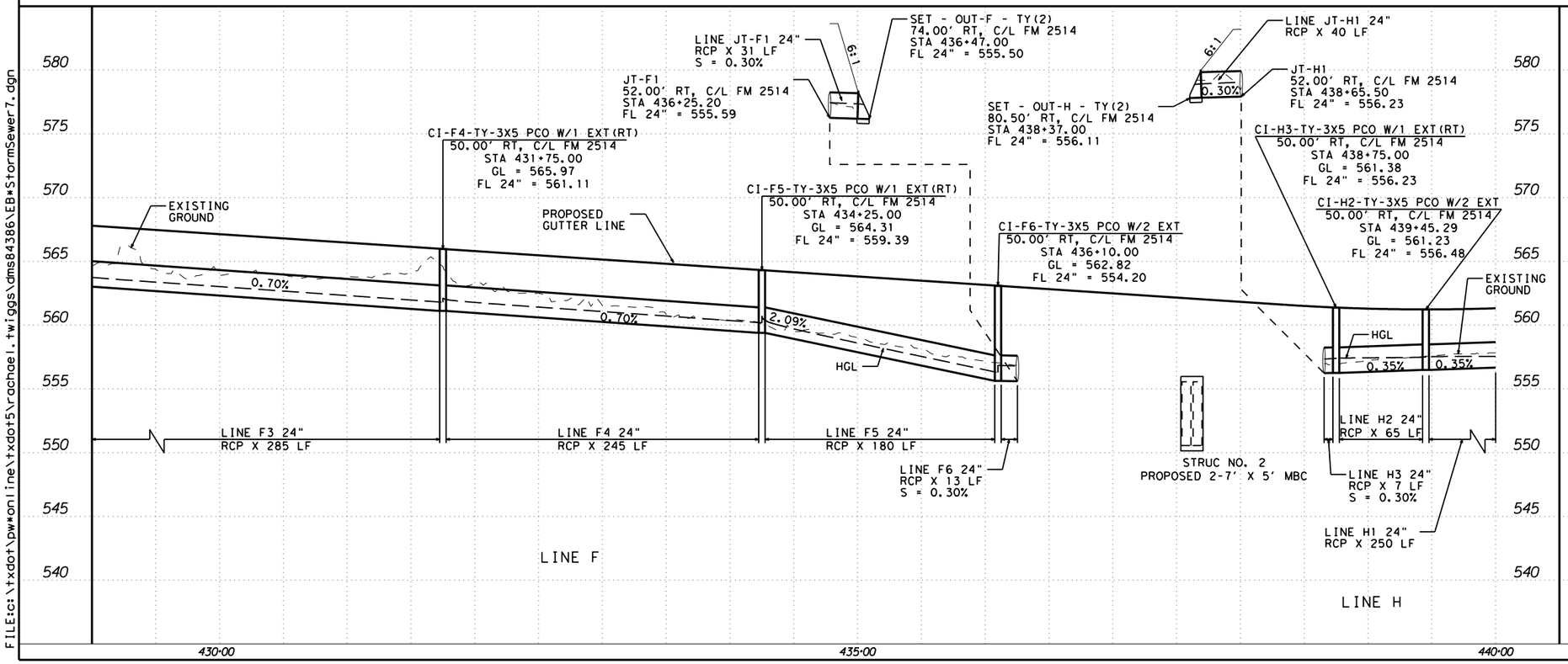

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PLAN & PROFILE

SCALE: 1"=100'

SHEET 7 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	245
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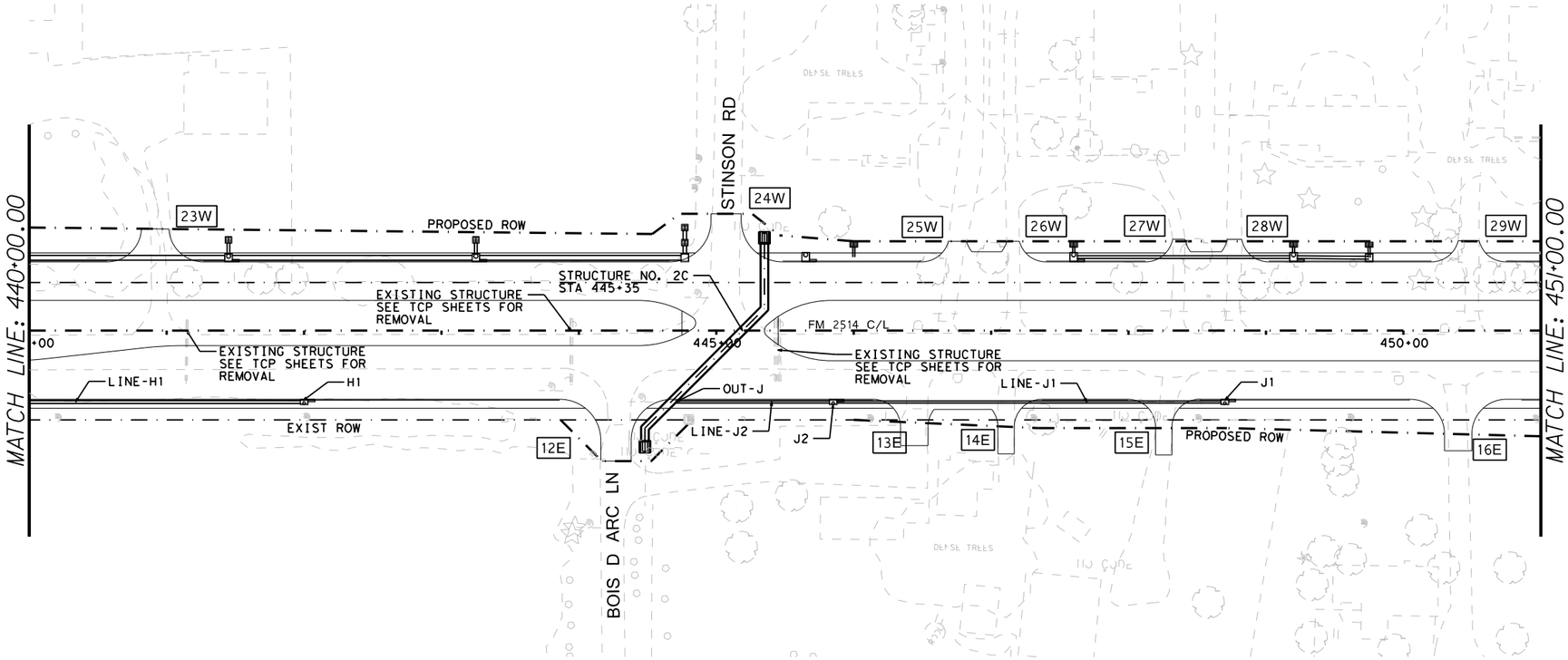

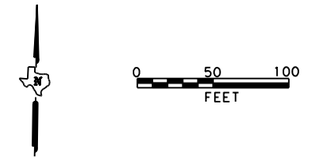

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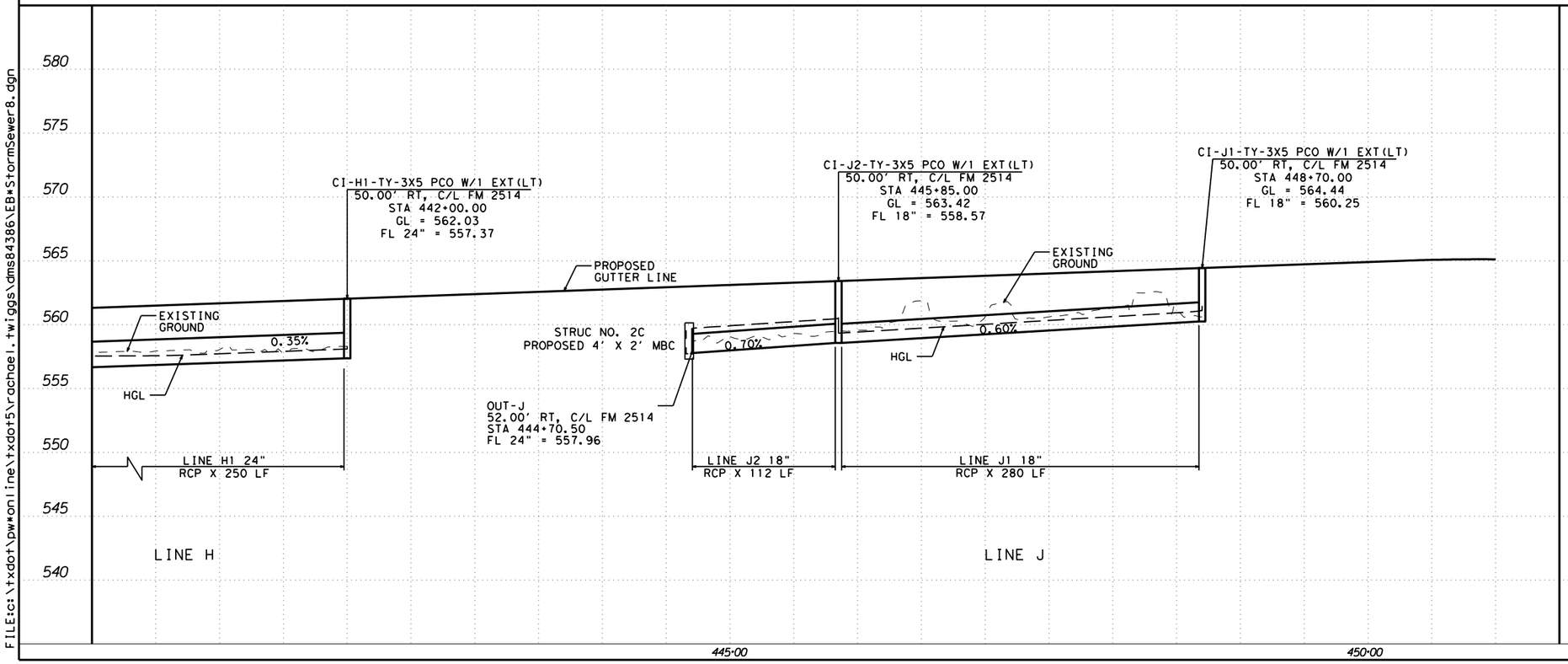

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PLAN & PROFILE

SCALE: 1"=100'

SHEET 8 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	246
CHECK	CONTROL	SECTION	JOB	
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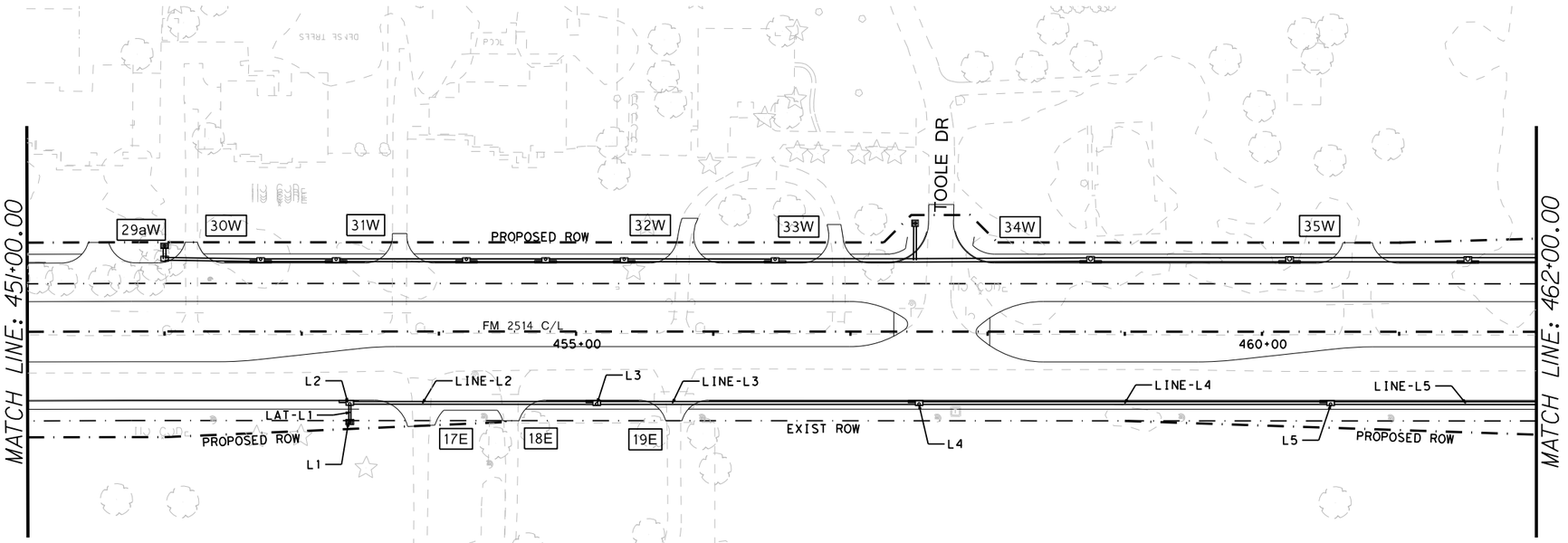

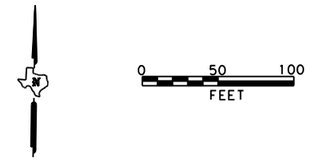

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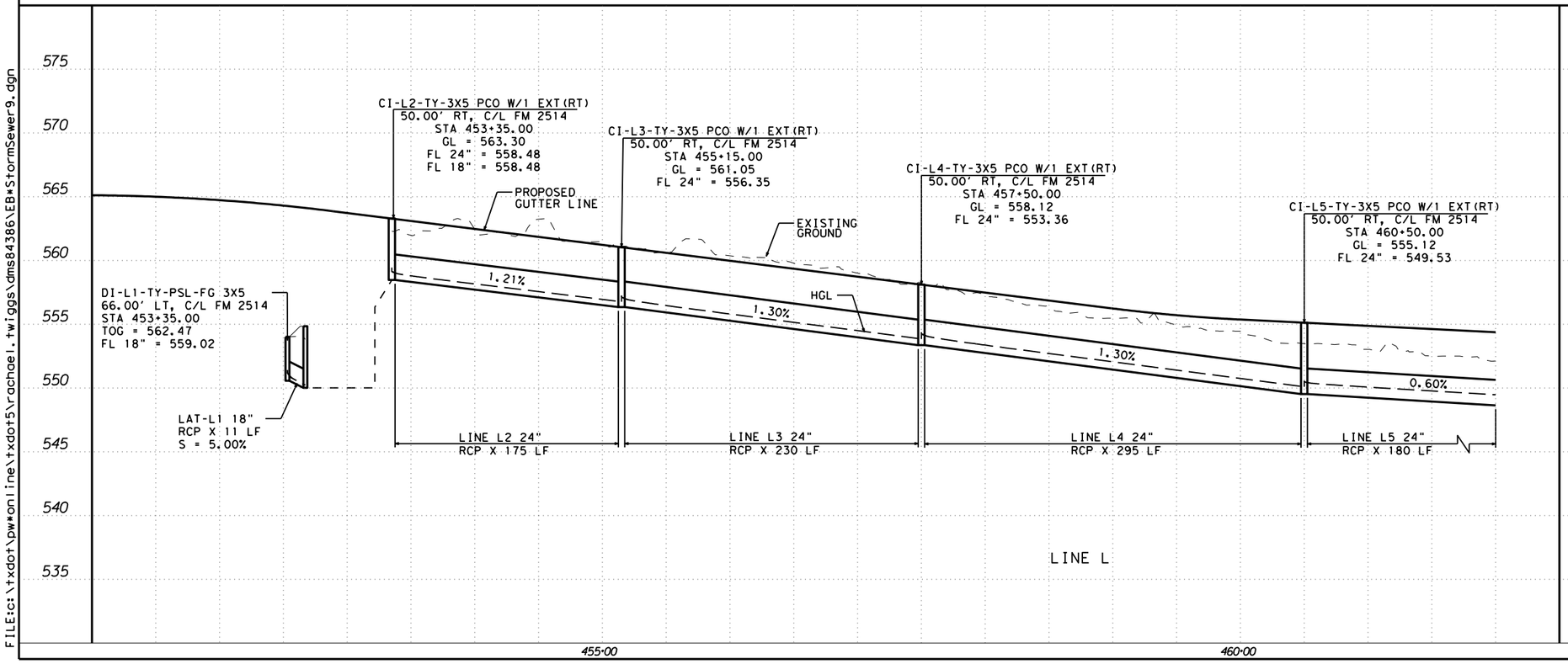

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SCALE: 1"=100' SHEET 9 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
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CHECK	TEXAS	DAL	COLLIN	247
CHECK	CONTROL	SECTION	JOB	
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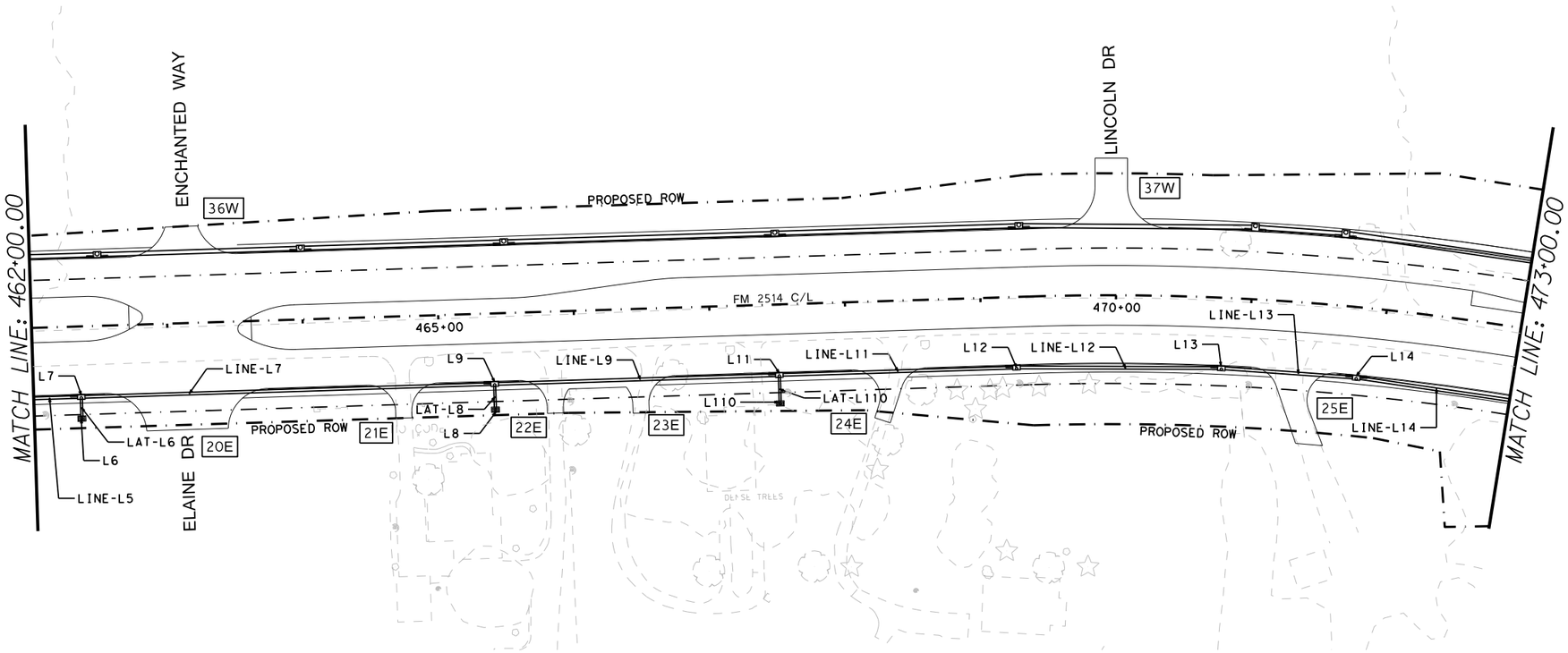

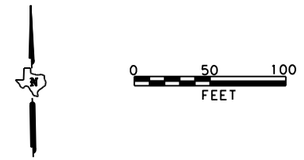

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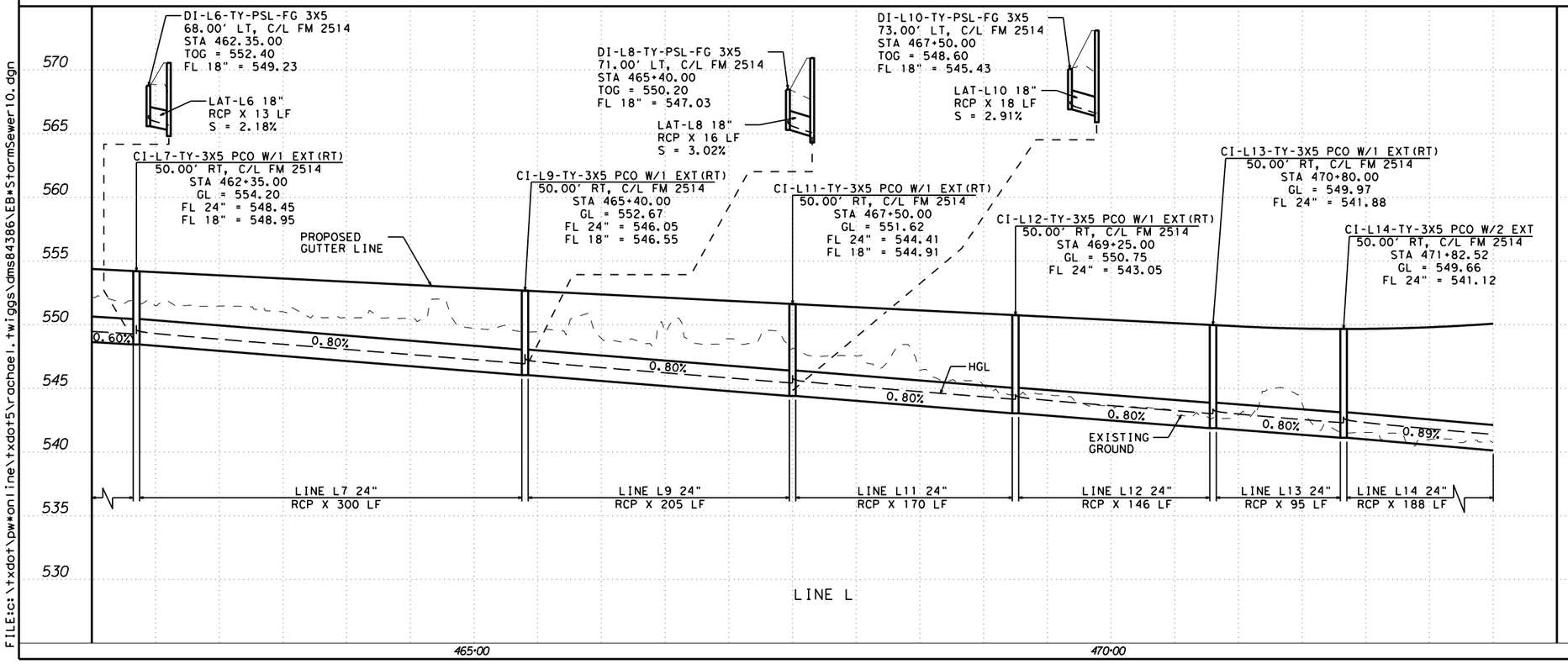

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SCALE: 1"=100'

SHEET 10 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	248
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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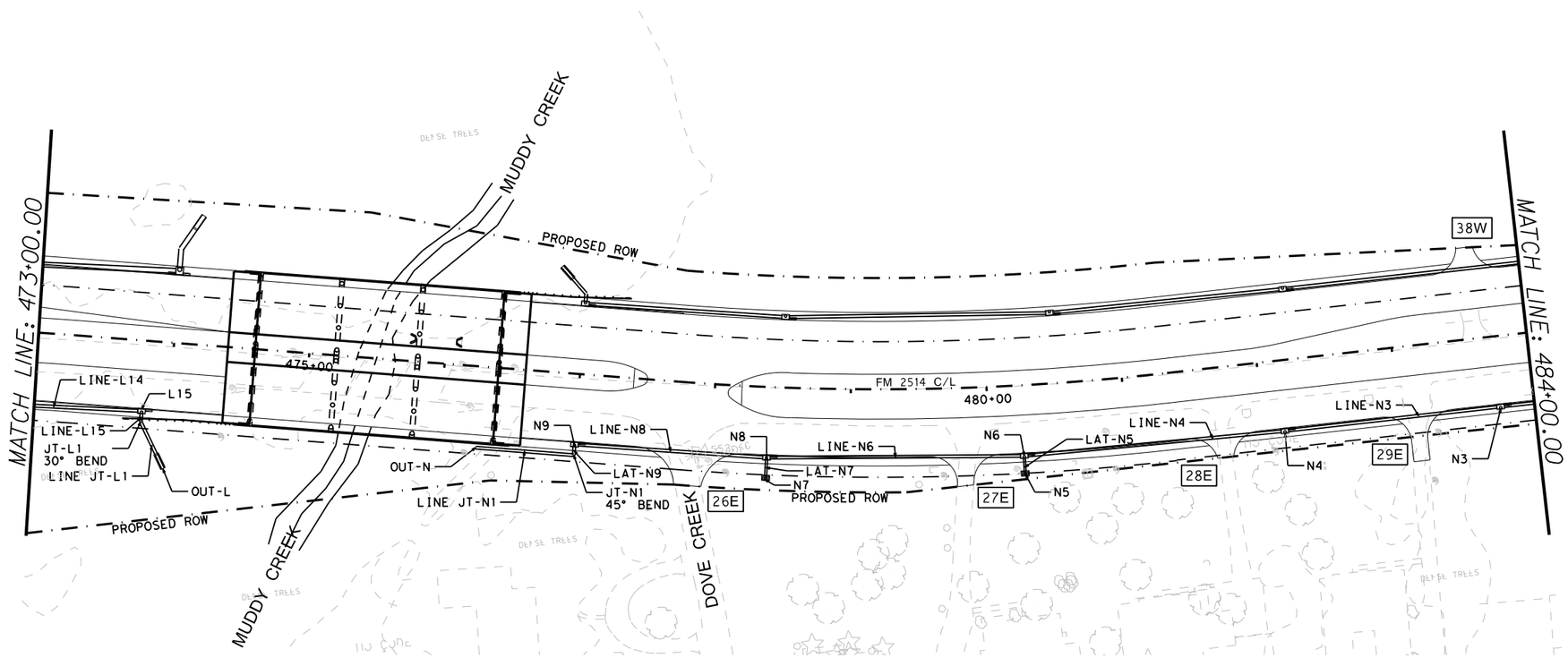

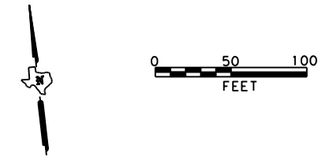

NOTES:

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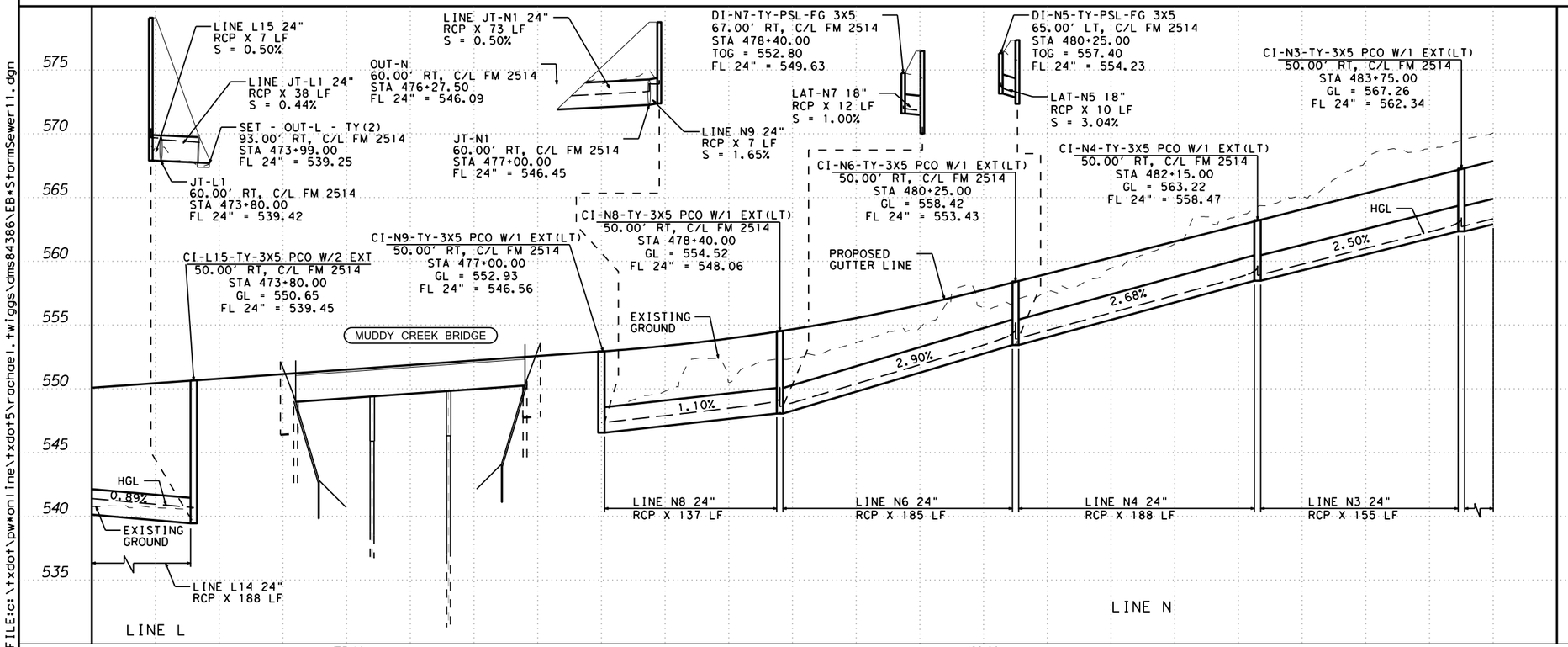

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FM 2514
EB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100'

SHEET 11 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	249
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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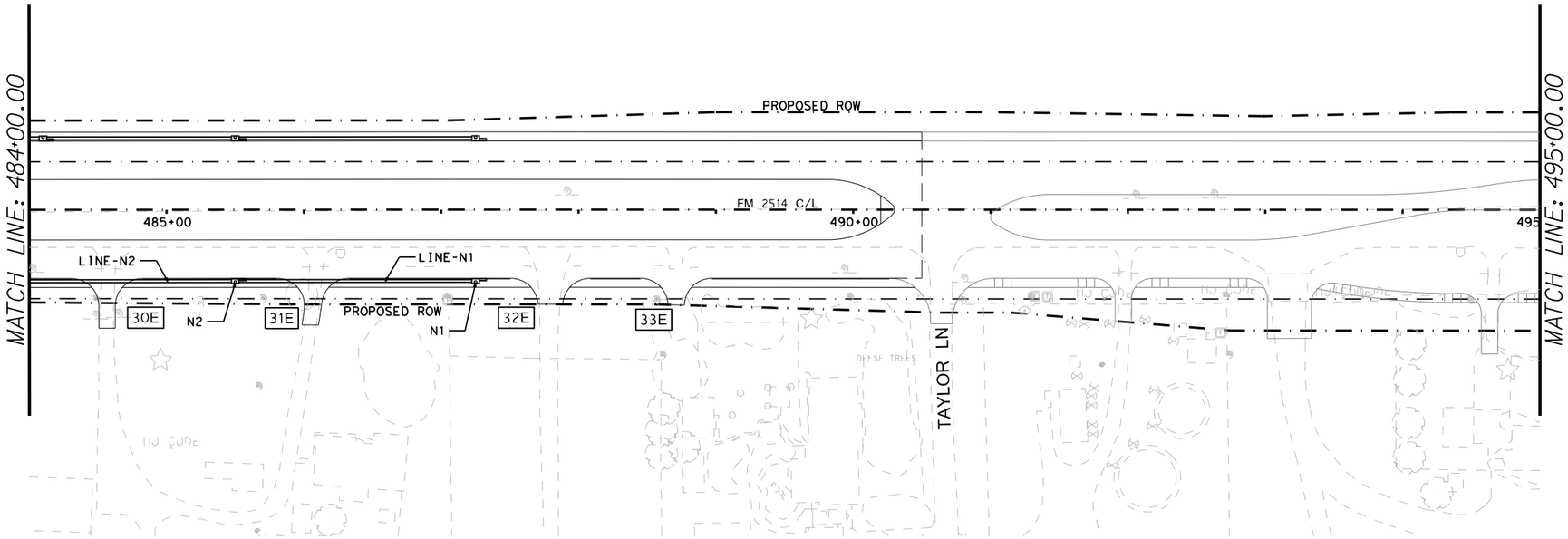

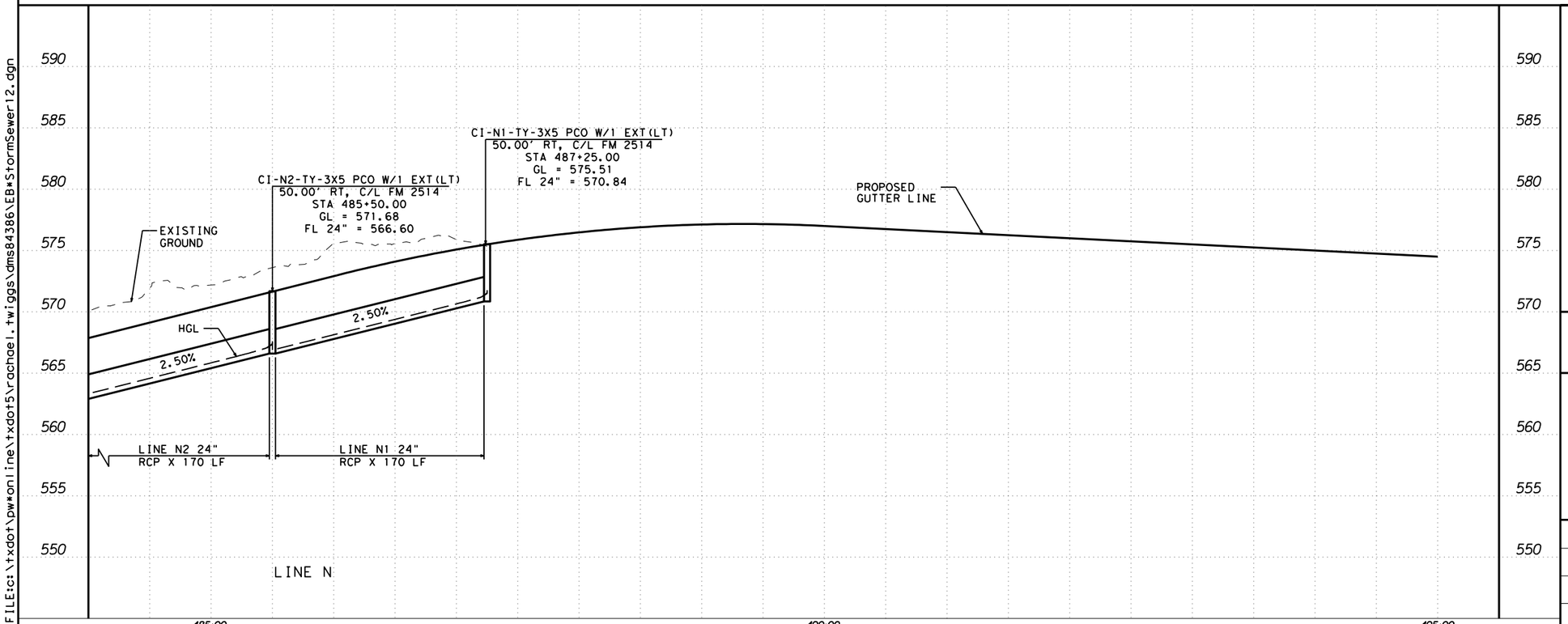

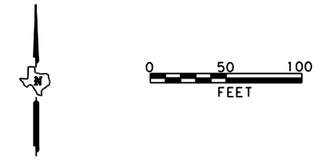

NOTES:

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2. INLET OFFSETS FOR DROP INLETS ARE MEASURED FROM THE CENTER OF THE GRATE TO THE RESPECTIVE C/L OF THE ROADWAY.

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P.E. 119291

ON: 3/17/2017

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FM 2514
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PLAN & PROFILE

SCALE: 1"=100'

SHEET 12 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	250
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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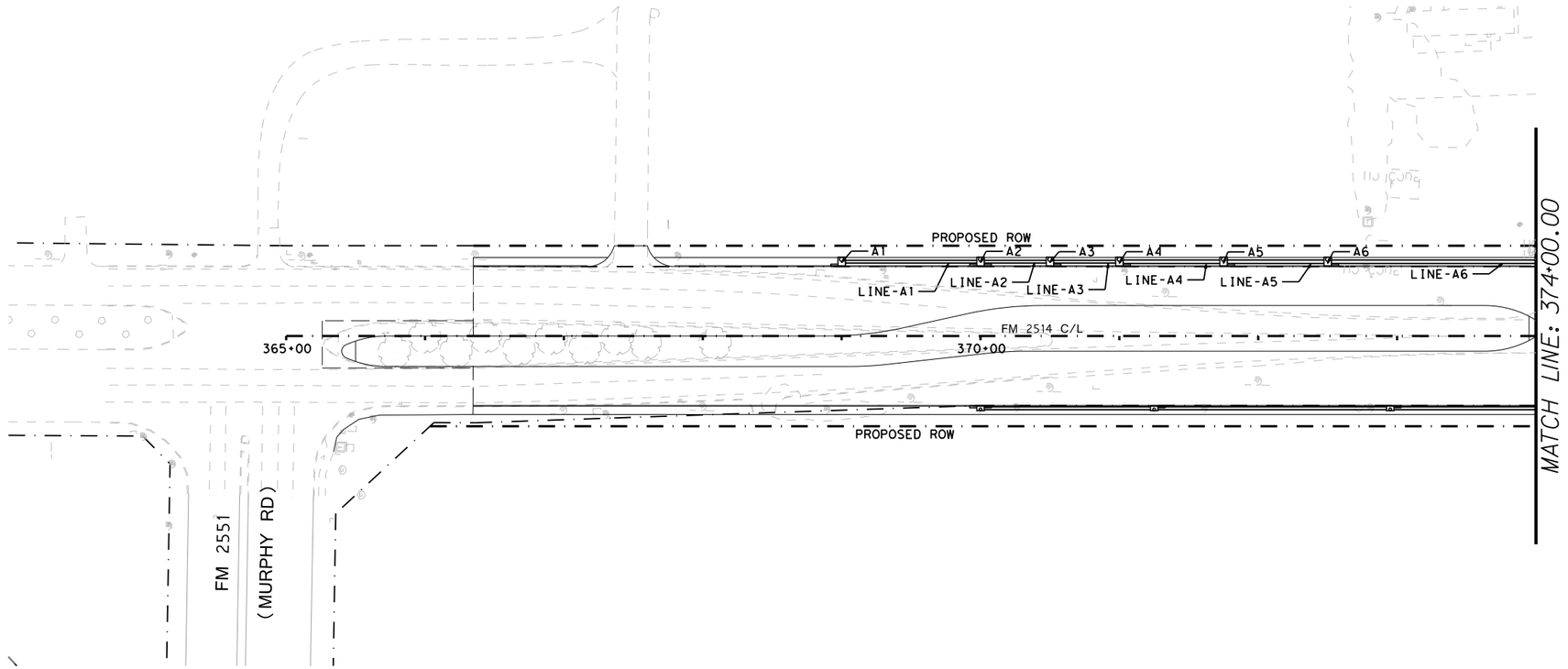

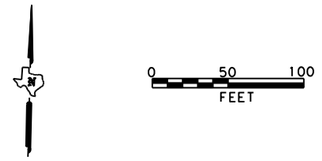

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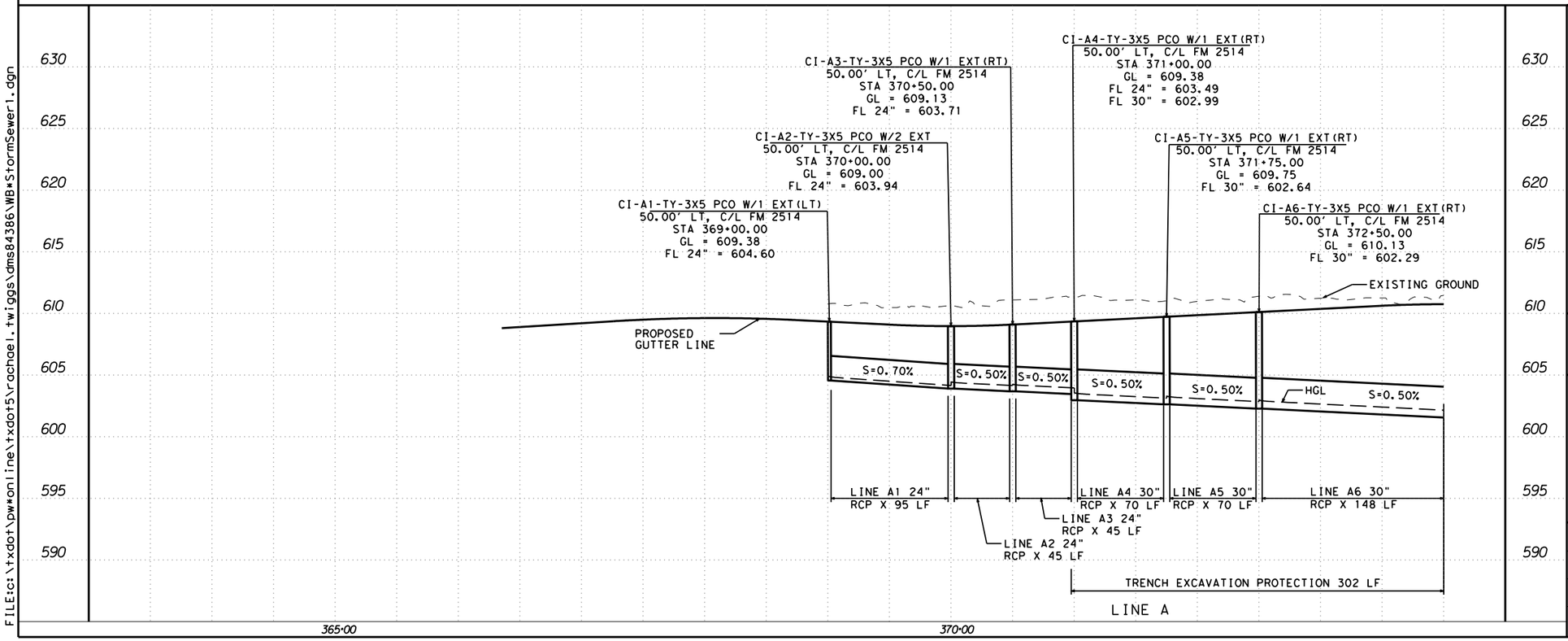

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SCALE: 1"=100' SHEET 1 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	251
CHECK	CONTROL	SECTION	JOB	
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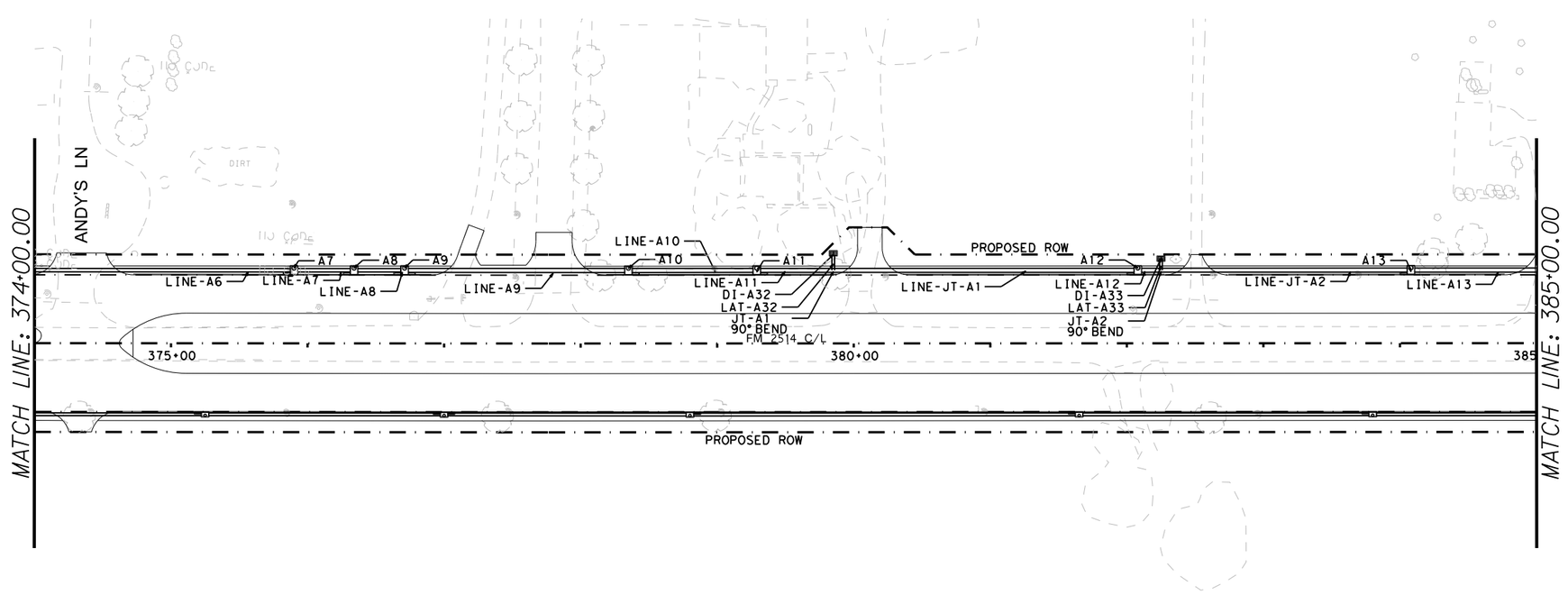

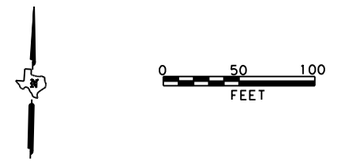

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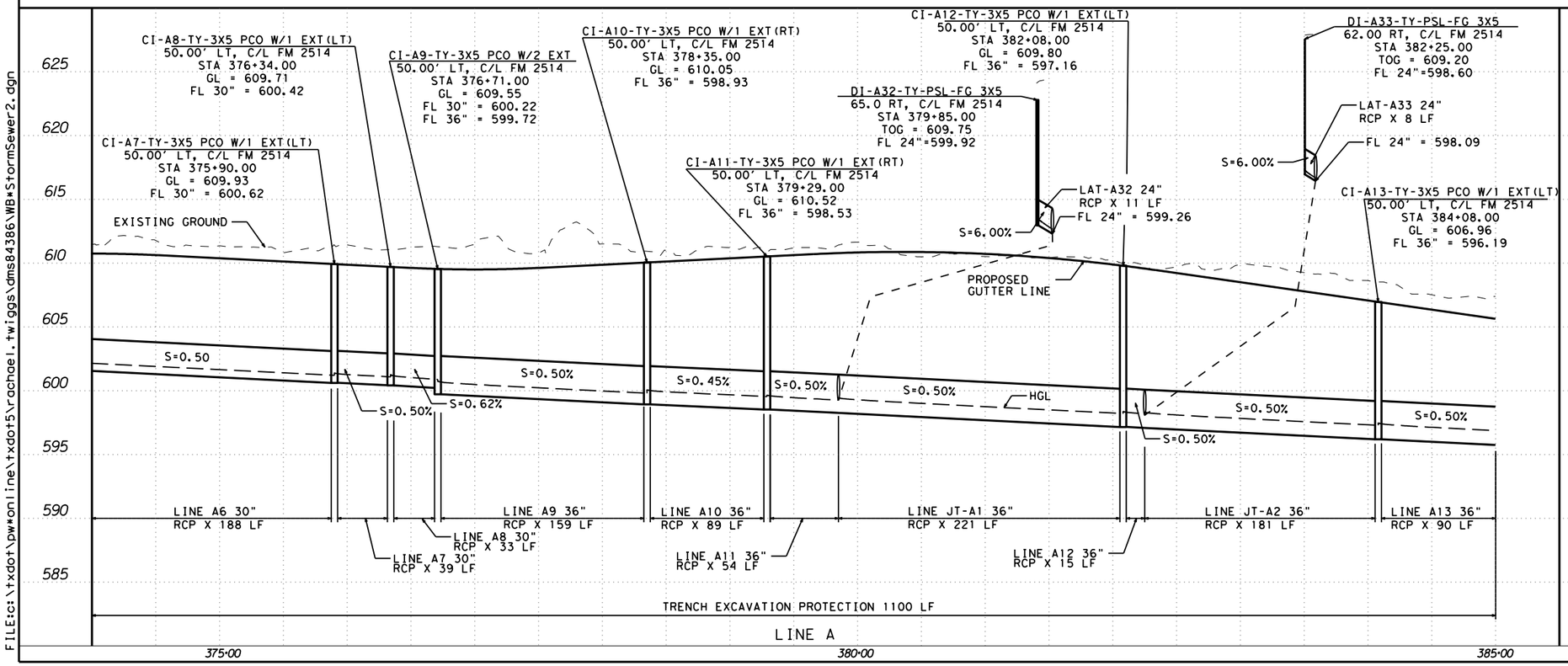

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WB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100'

SHEET 2 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	252
	2679	02	008	

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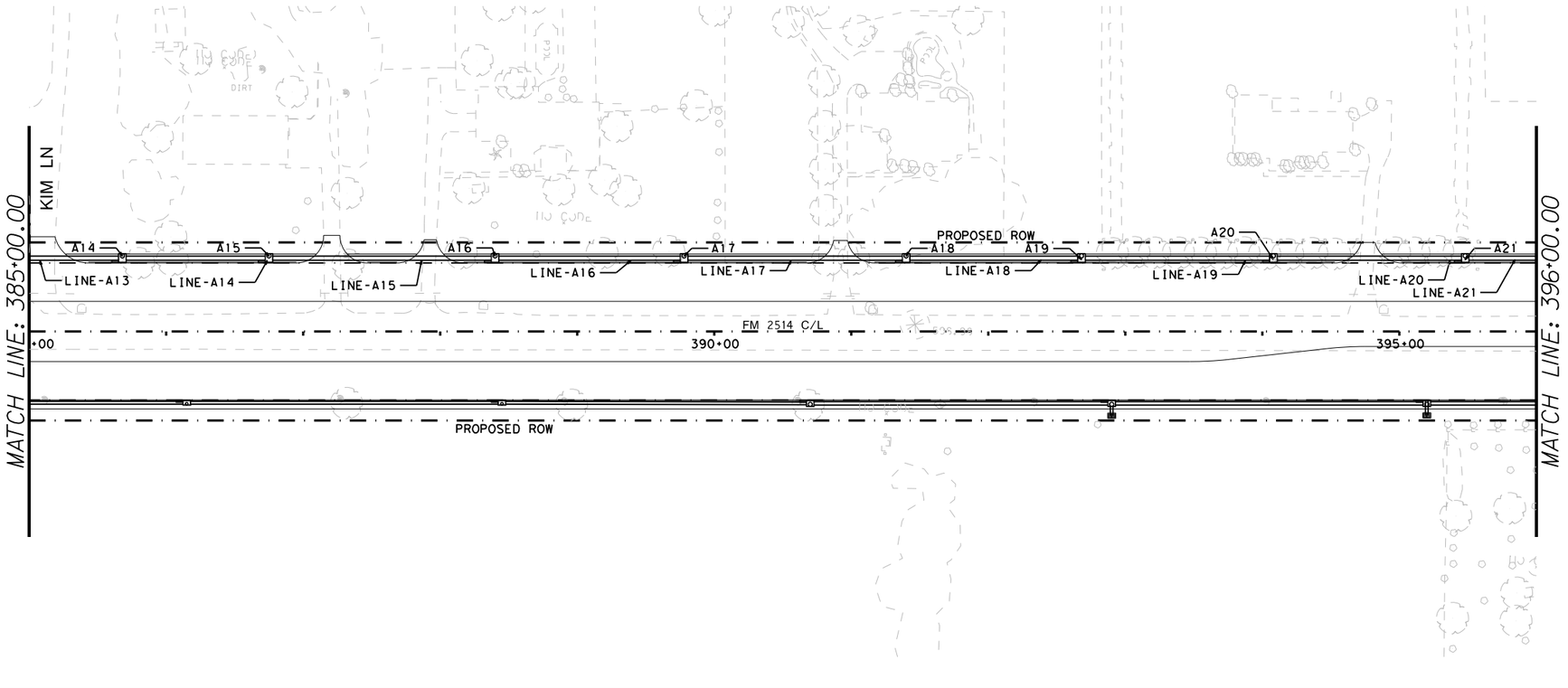

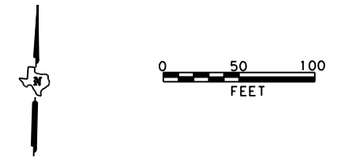

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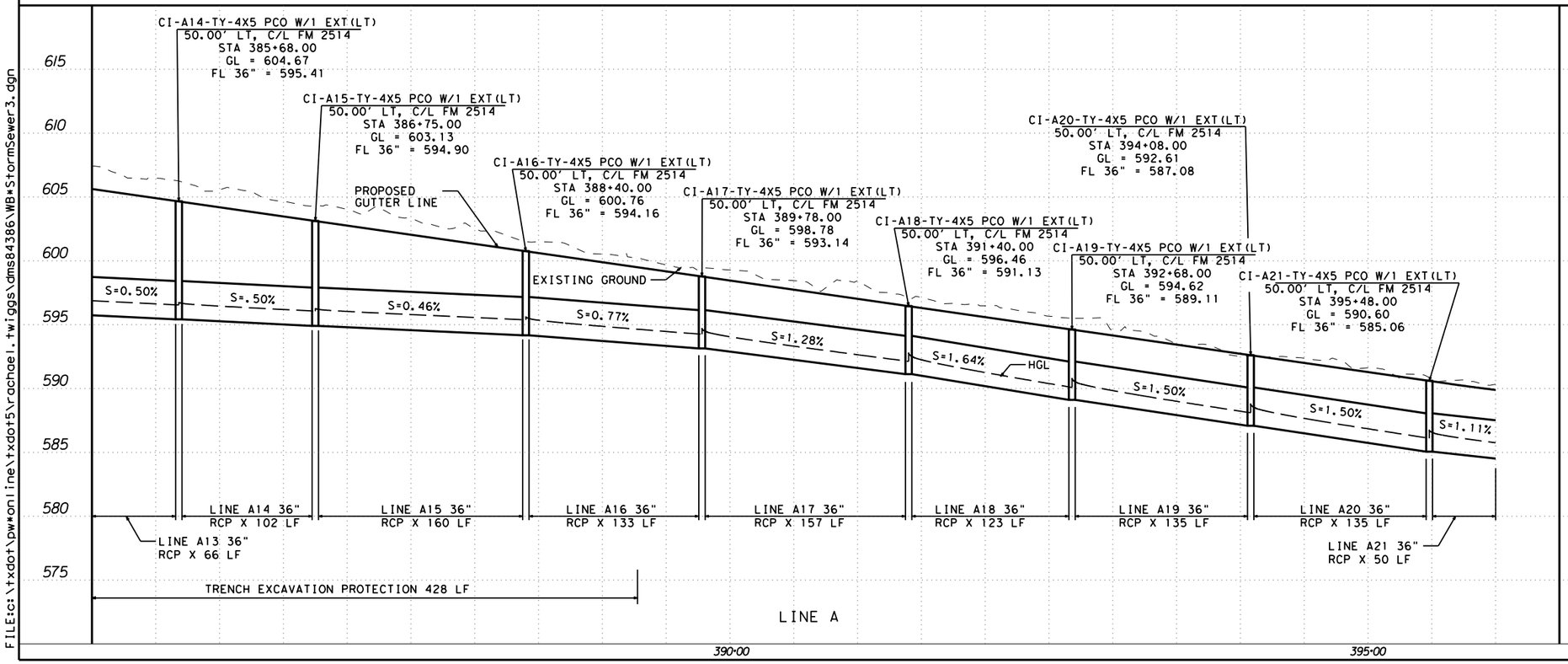

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PLAN & PROFILE

SCALE: 1"=100' SHEET 3 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	253
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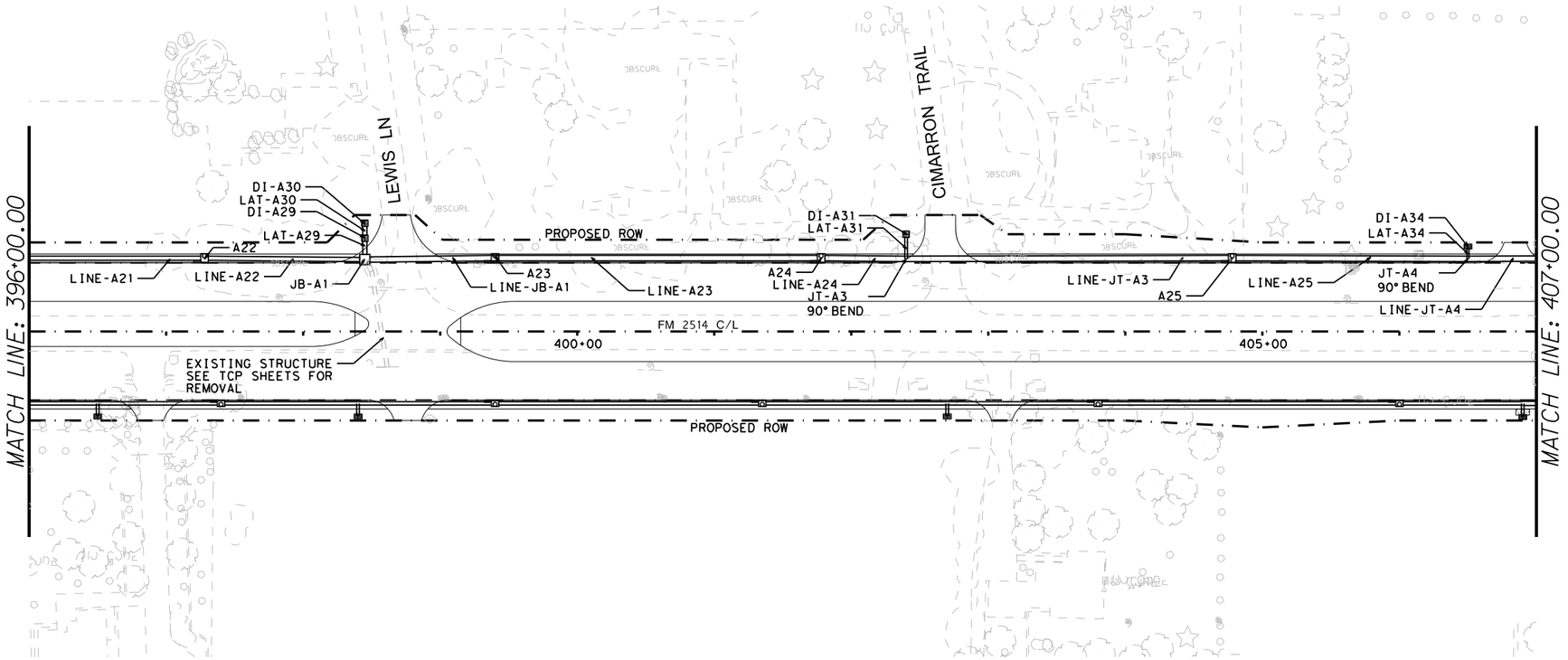

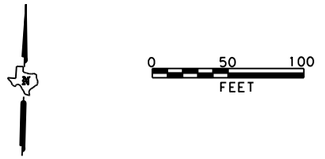

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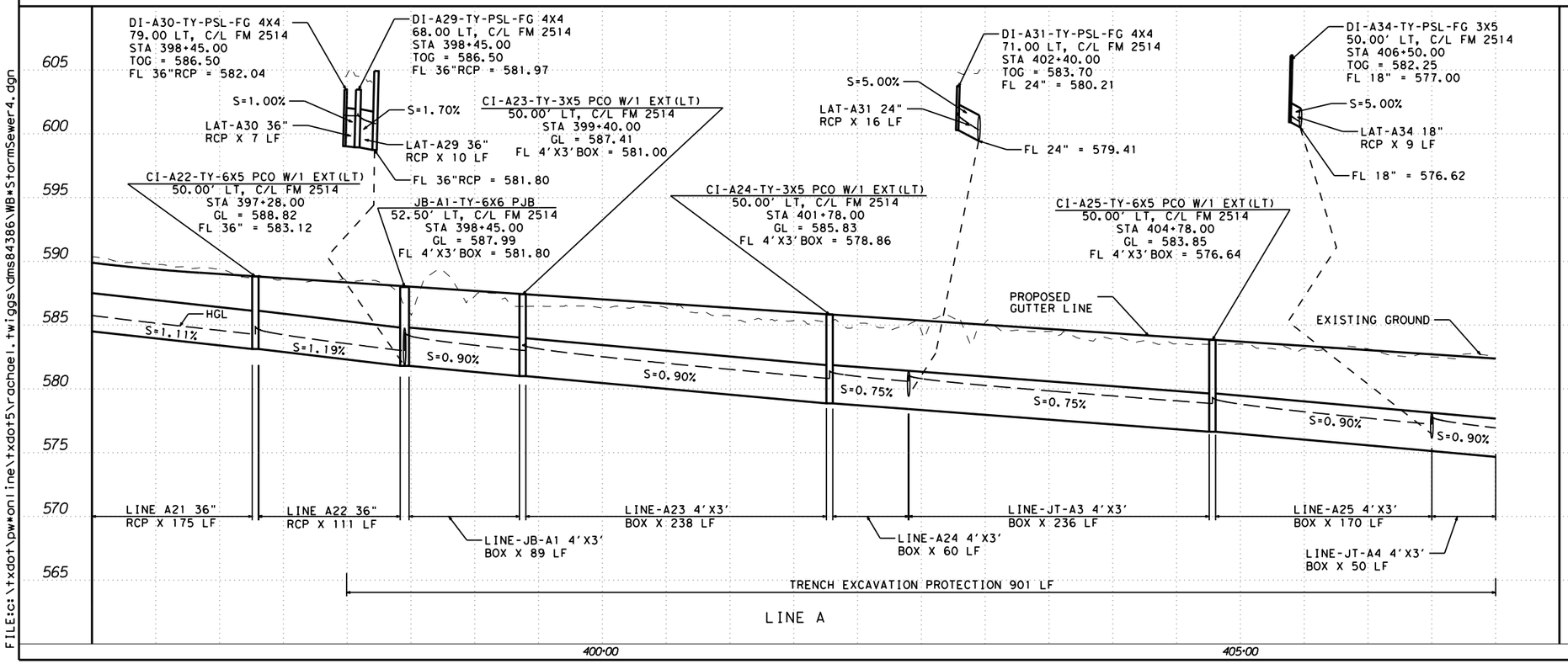

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PLAN & PROFILE

SCALE: 1"=100'

SHEET 4 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	254
CHECK	CONTROL	SECTION	JOB	
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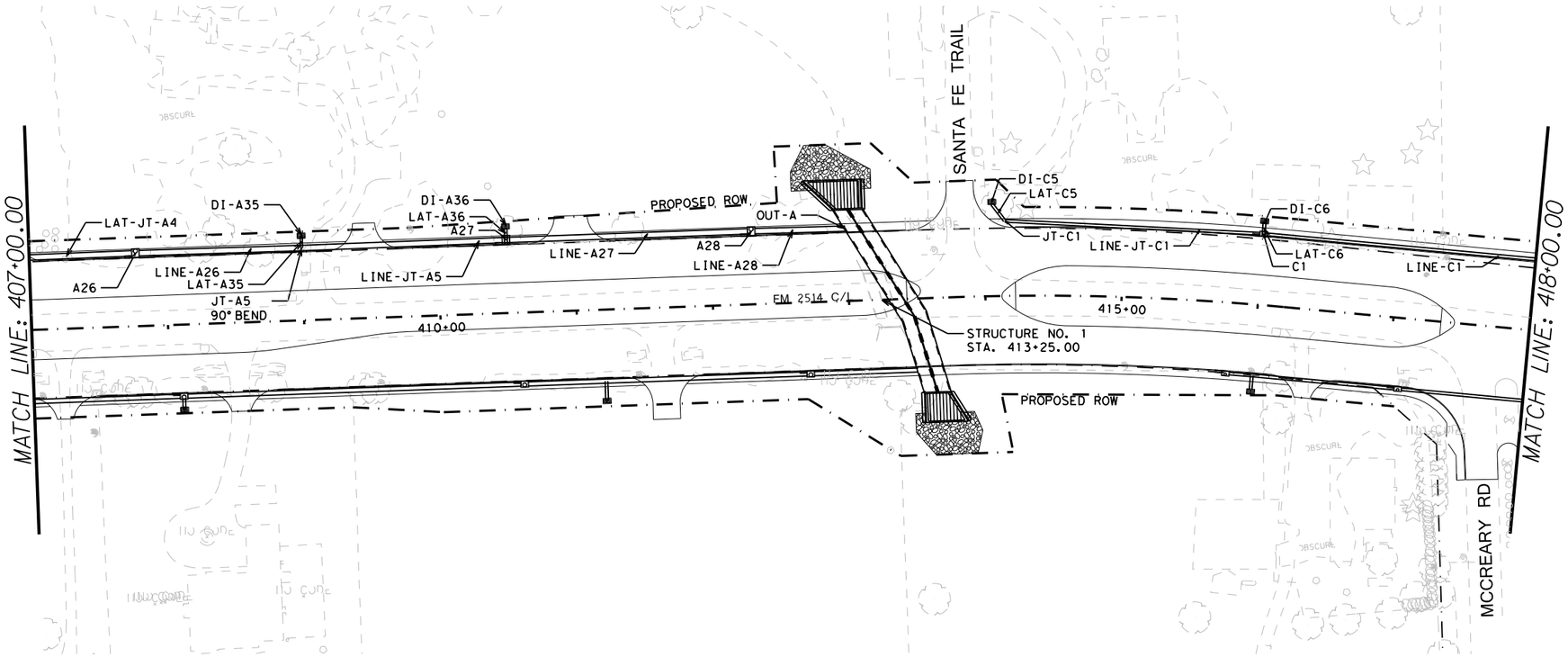

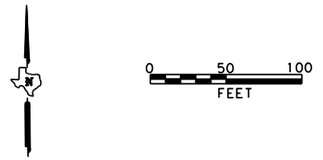

NOTES:

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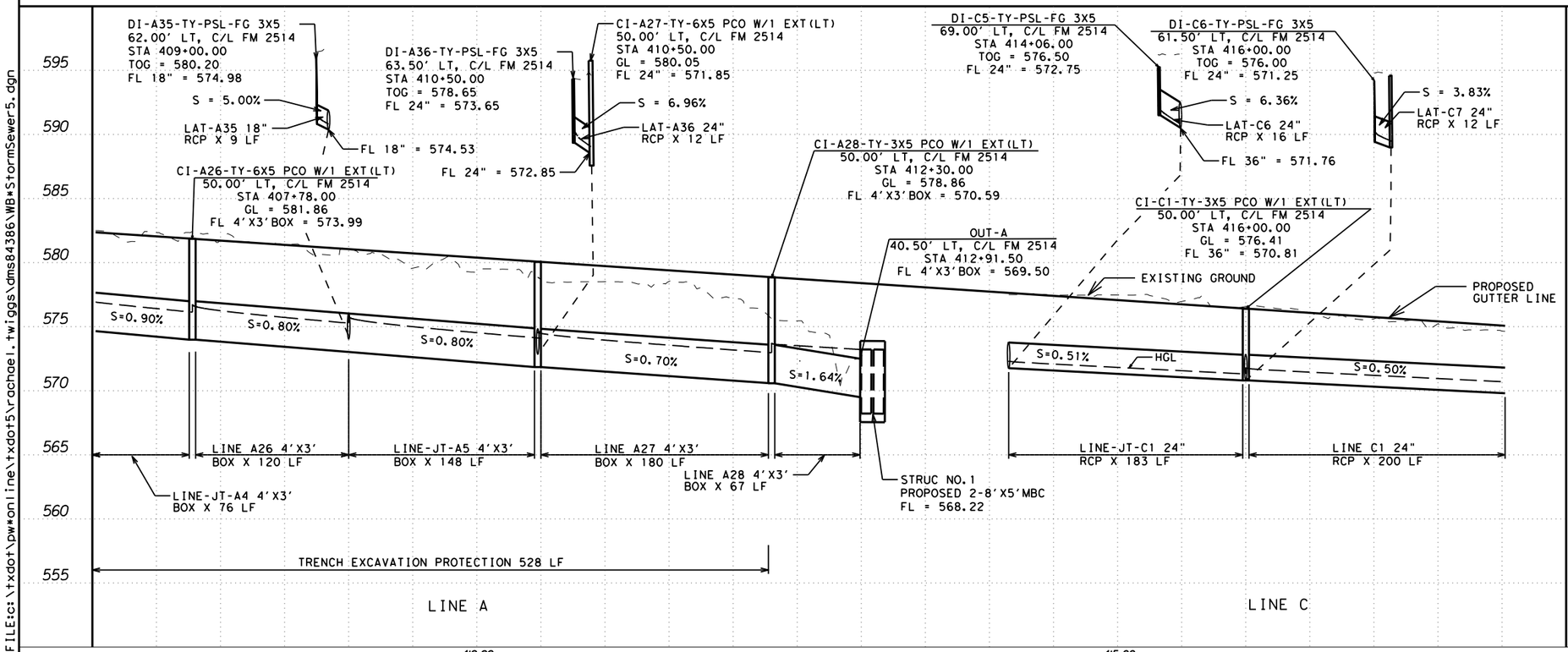

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FM 2514
WB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100' SHEET 5 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	255
CHECK	CONTROL	SECTION	JOB	
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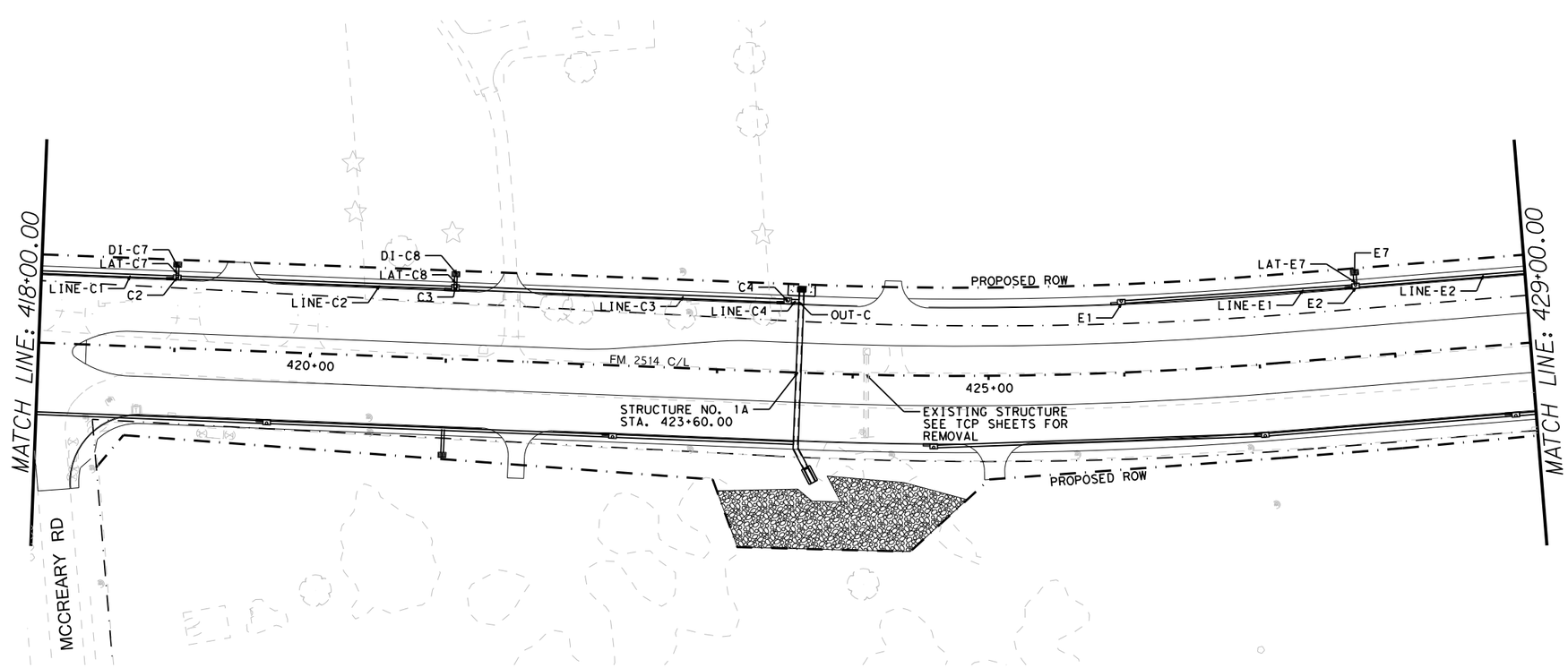

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FEET

NOTES:

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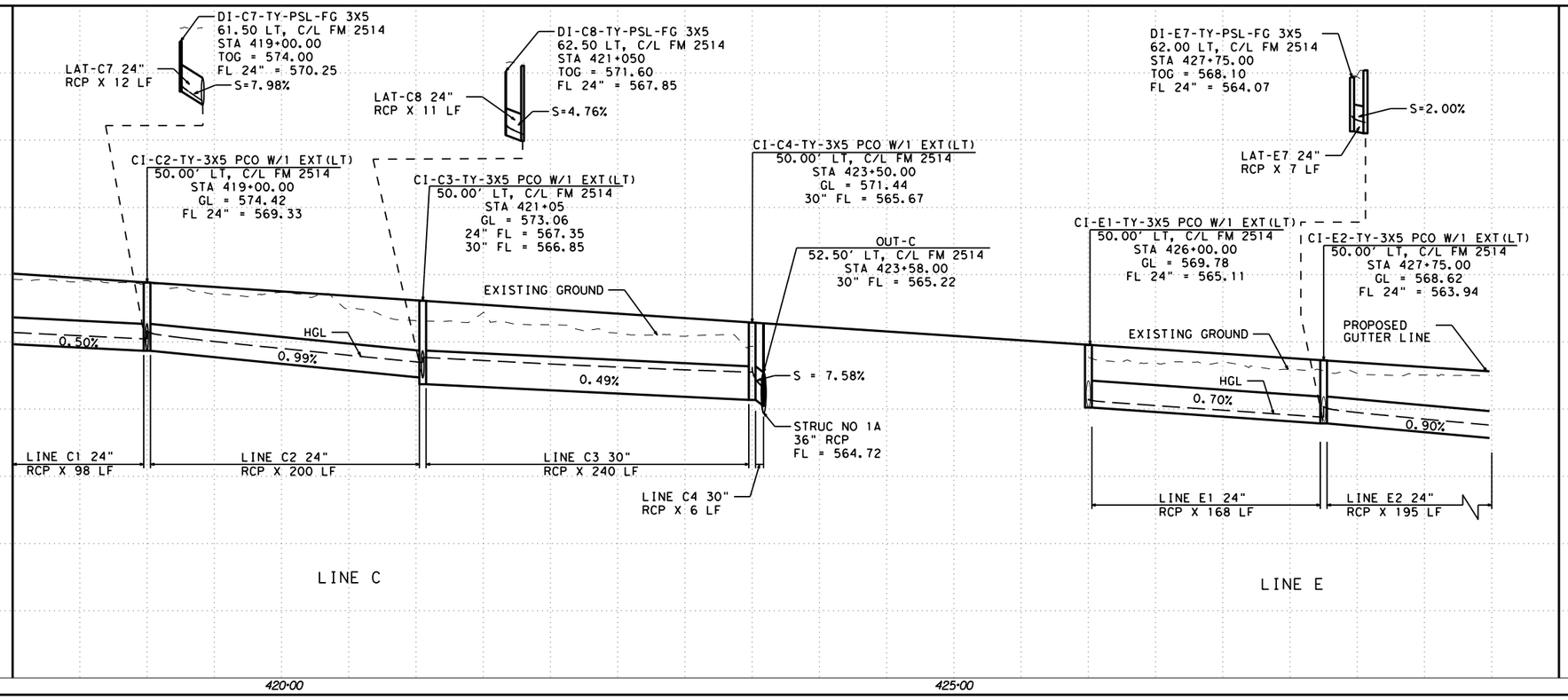

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PLAN & PROFILE

SCALE: 1"=100' SHEET 6 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	256
CHECK	CONTROL	SECTION	JOB	
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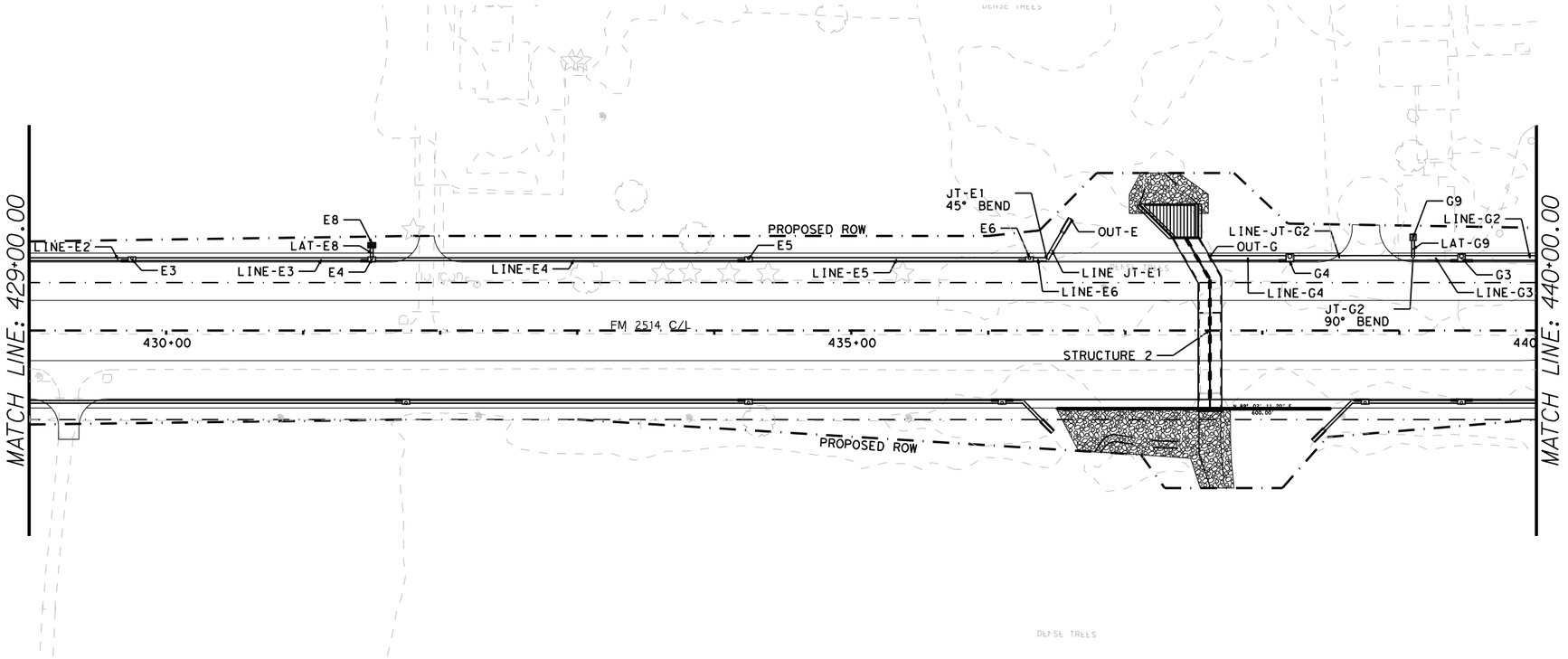

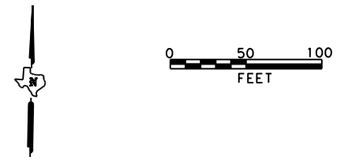

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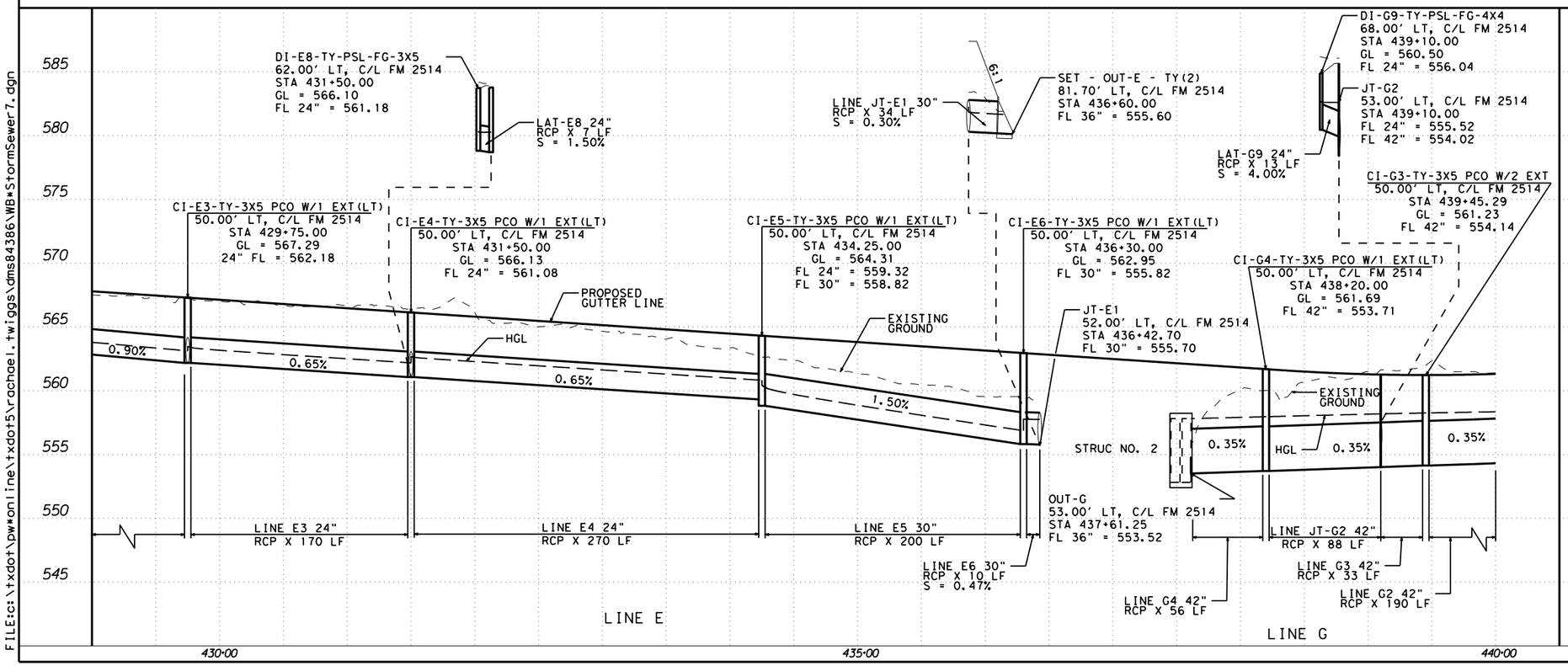

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FM 2514
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PLAN & PROFILE

SCALE: 1"=100'

SHEET 7 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	257
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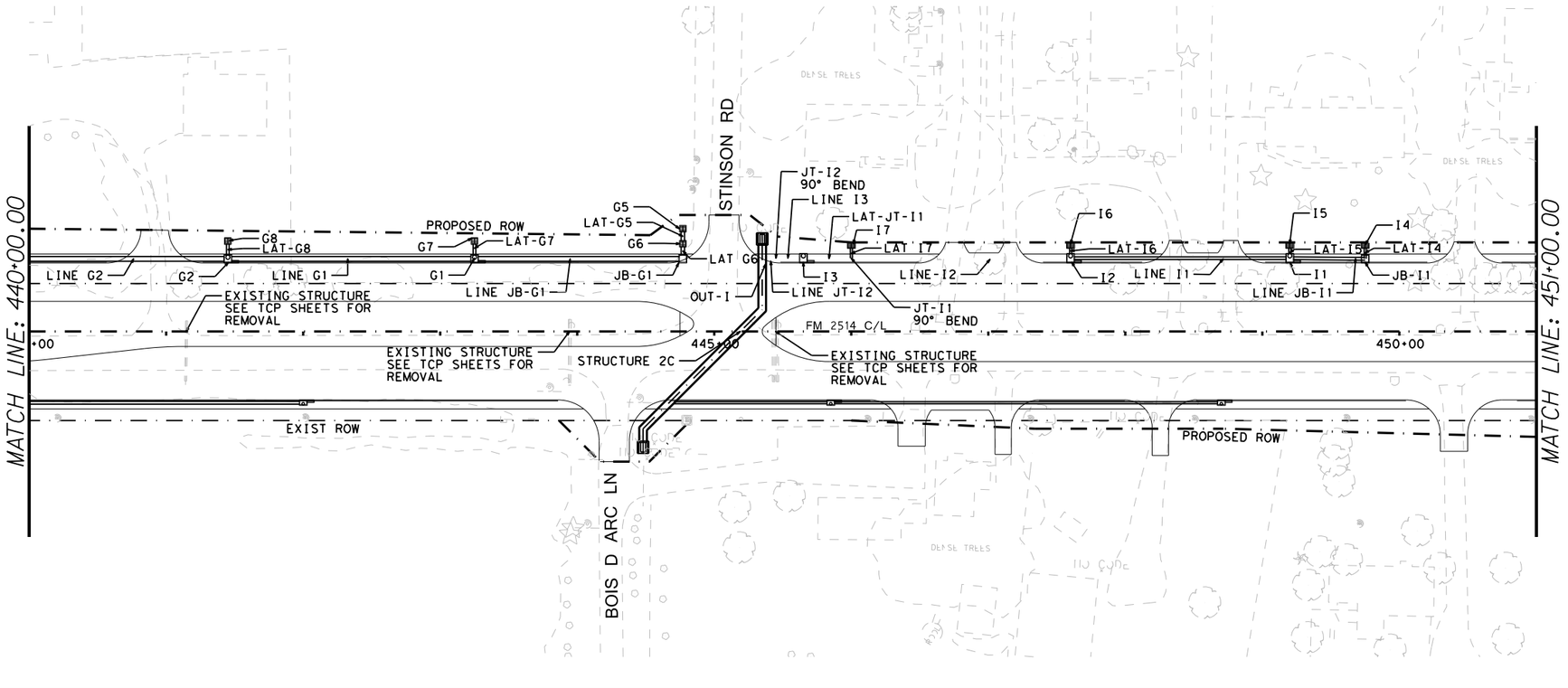

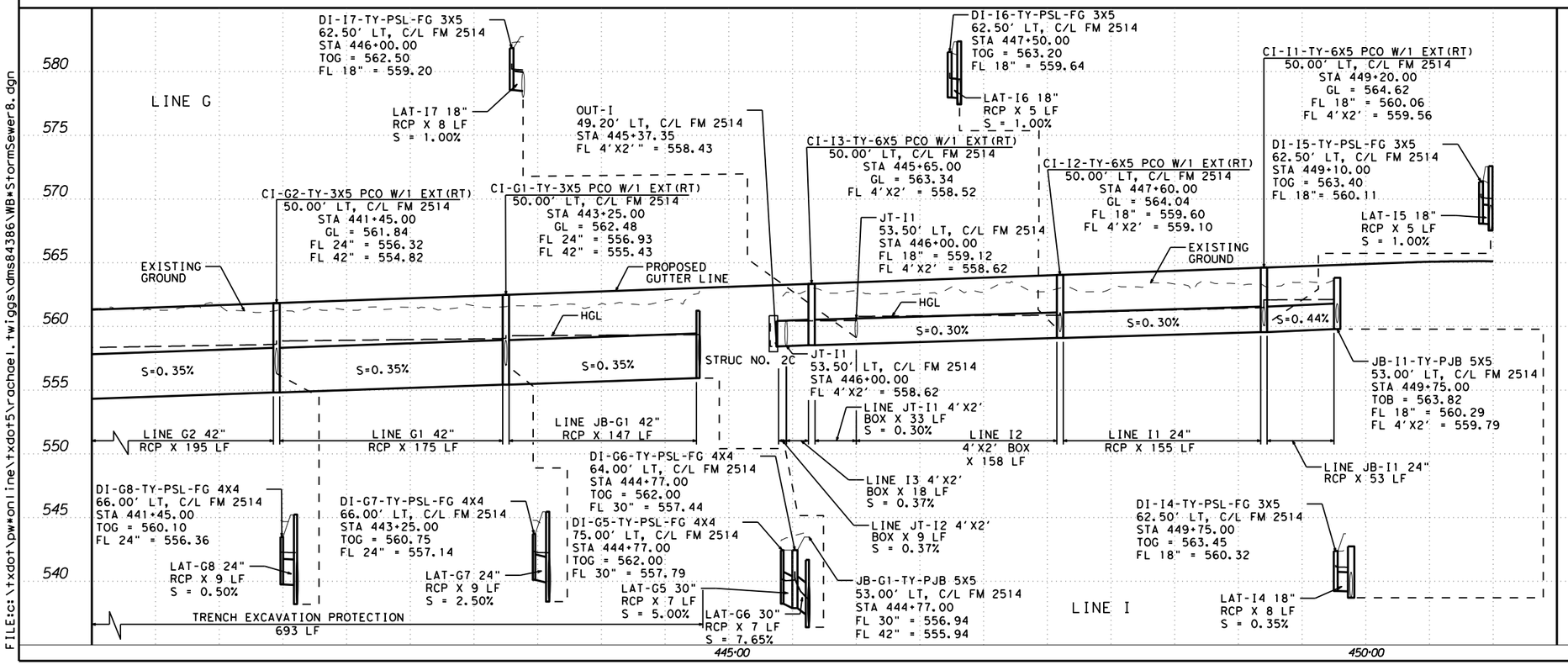

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PLAN & PROFILE

SCALE: 1"=100'

SHEET 8 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	258
CHECK	CONTROL	SECTION	JOB	
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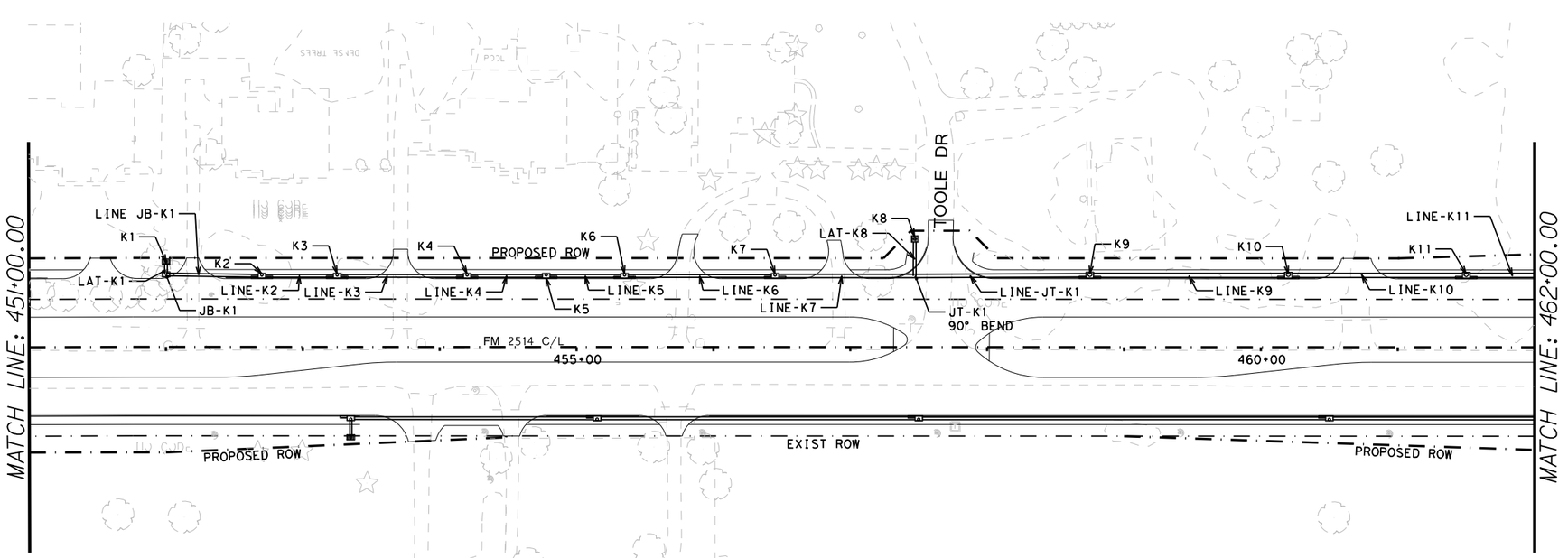

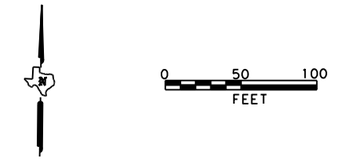

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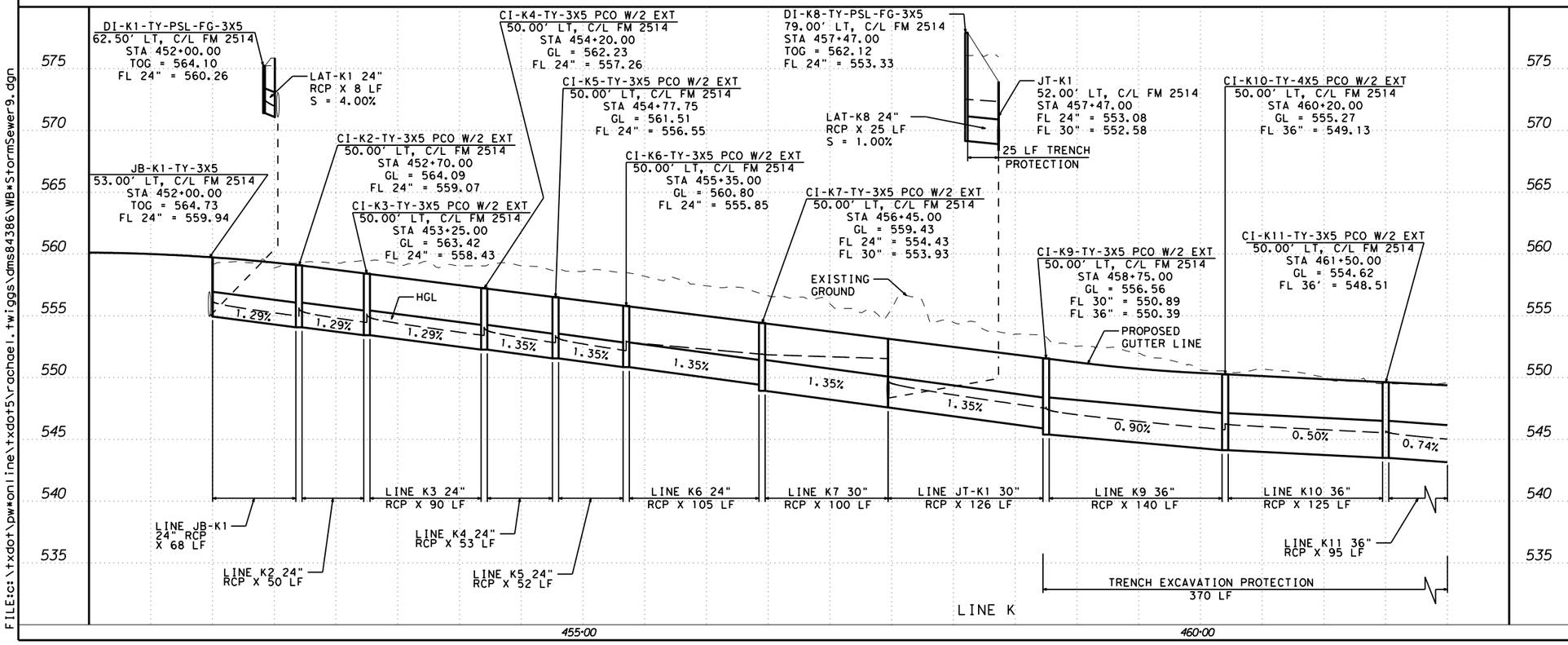

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FM 2514
WB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100' SHEET 9 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
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CHECK	TEXAS	DAL	COLLIN	259
CHECK	CONTROL	SECTION	JOB	
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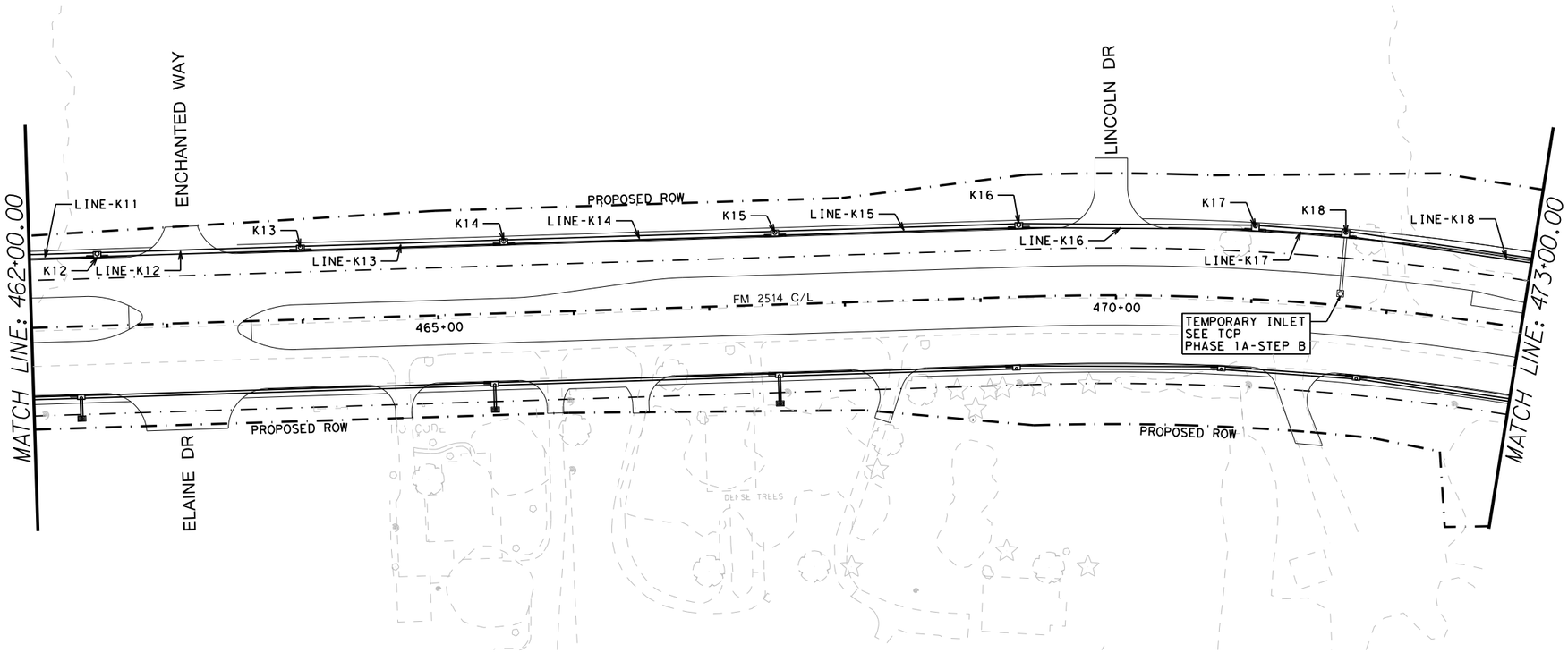

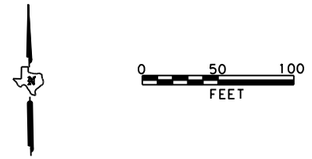

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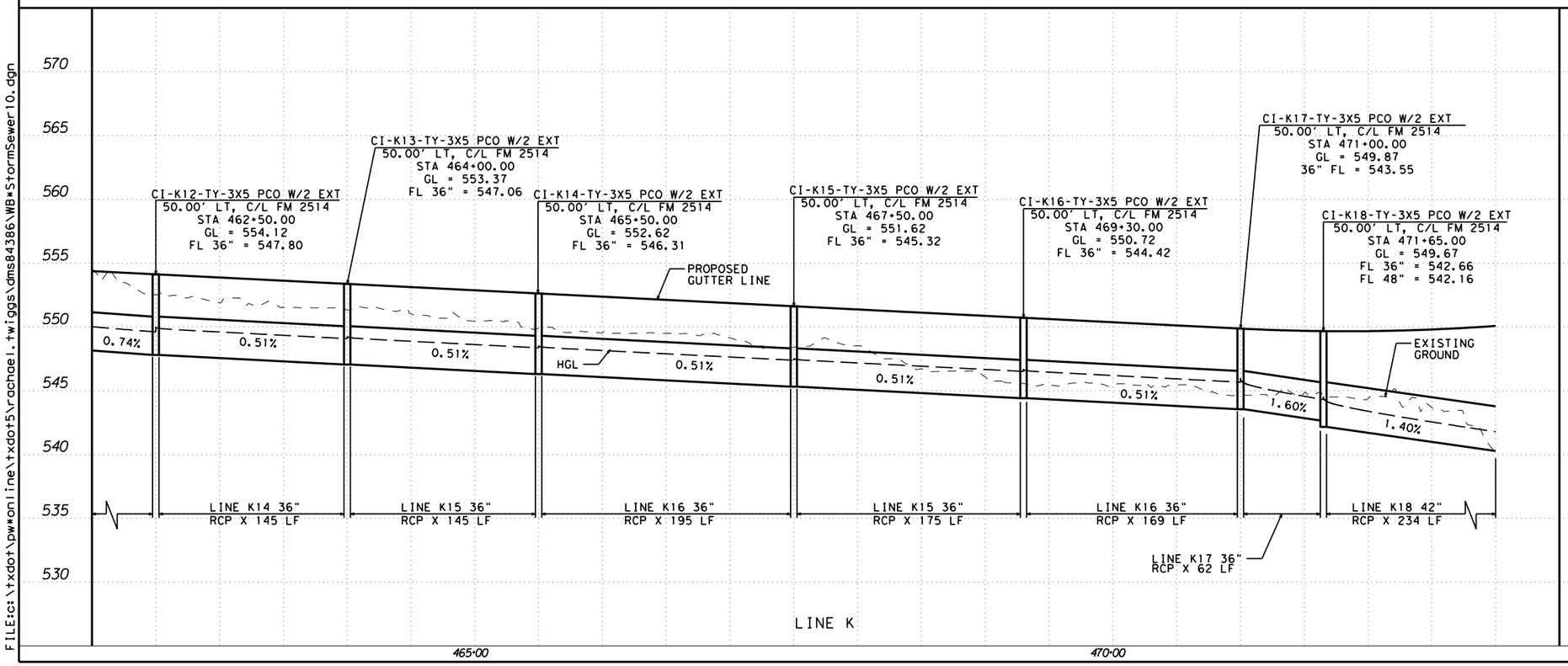
2. INLET OFFSETS FOR DROP INLETS ARE MEASURED FROM THE CENTER OF THE GRATE TO THE RESPECTIVE C/L OF THE ROADWAY.



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RACHAEL D. TWIGGS
P.E. 119291

ON: 3/17/2017

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Texas Department of Transportation

FM 2514
WB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100'

SHEET 10 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	260
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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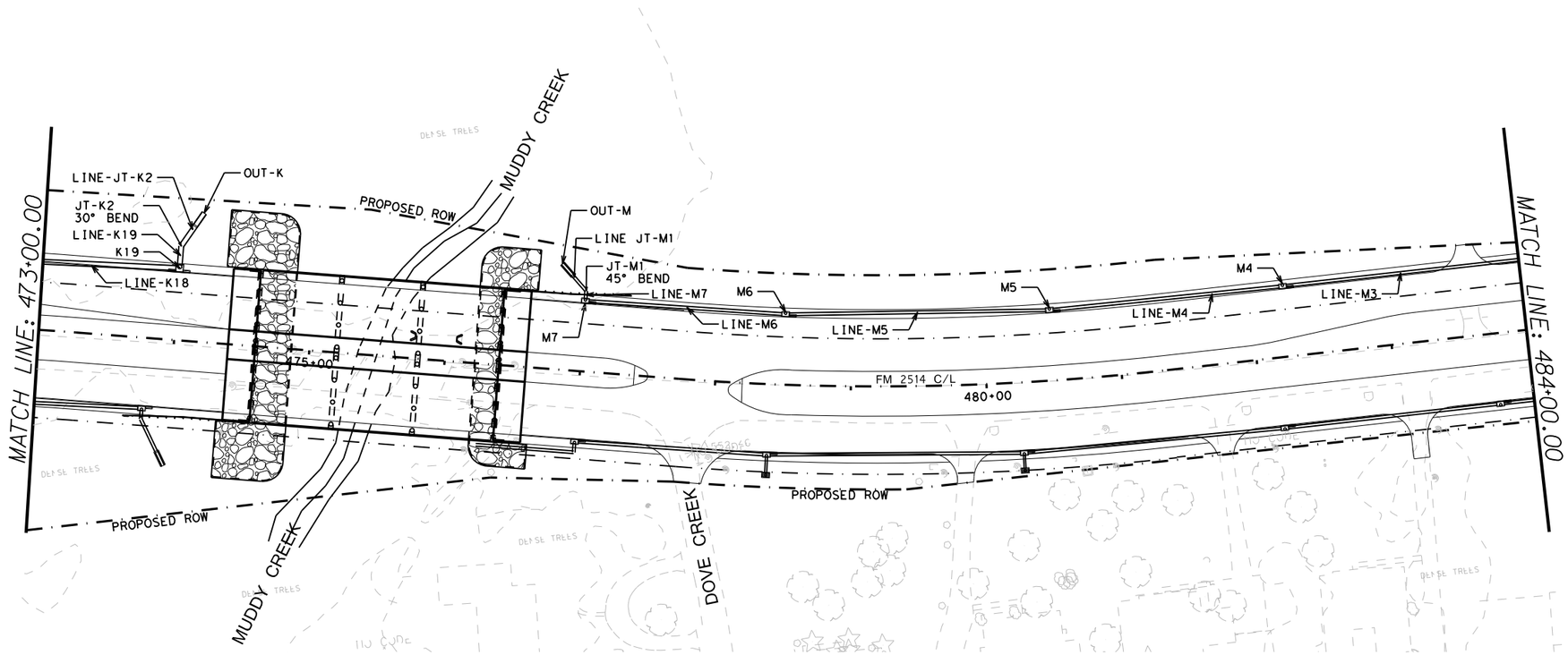

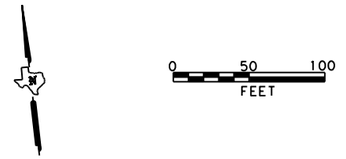

NOTES:

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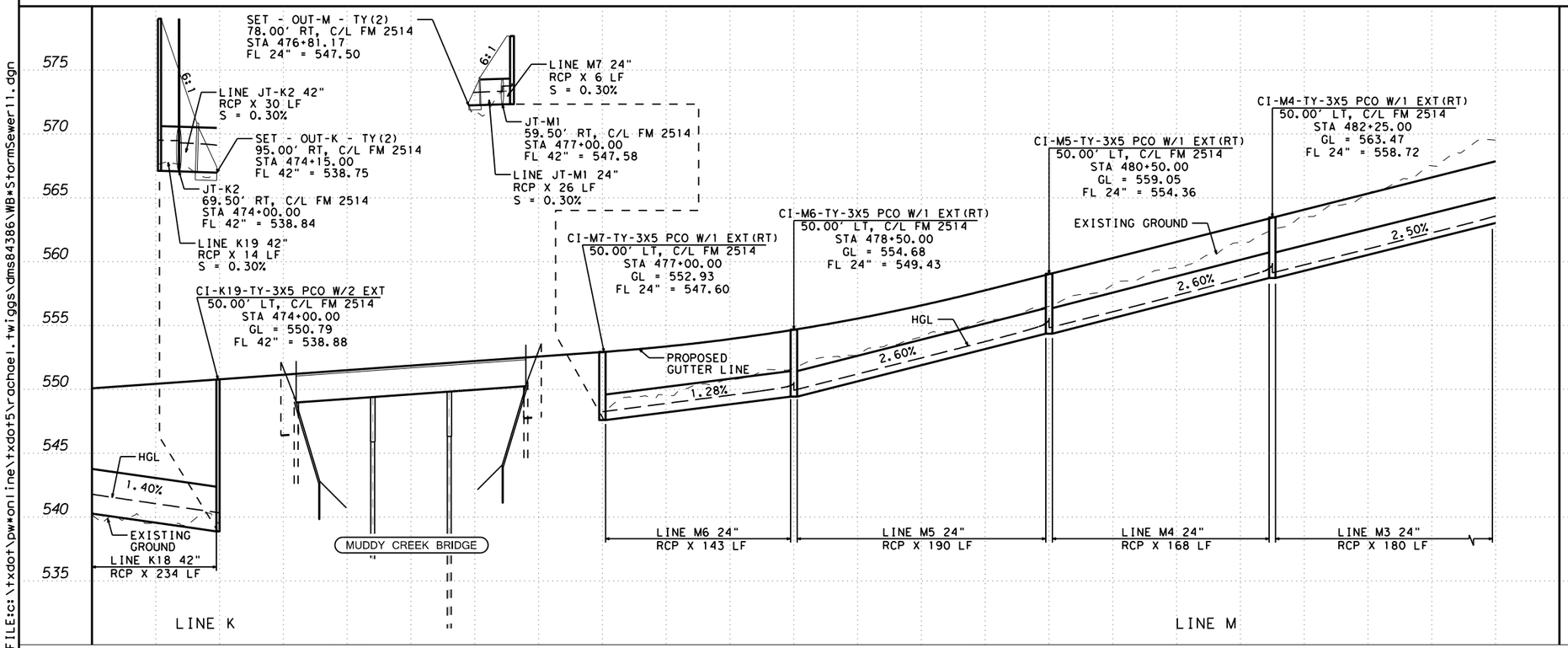

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FM 2514
WB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100'

SHEET 11 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	261
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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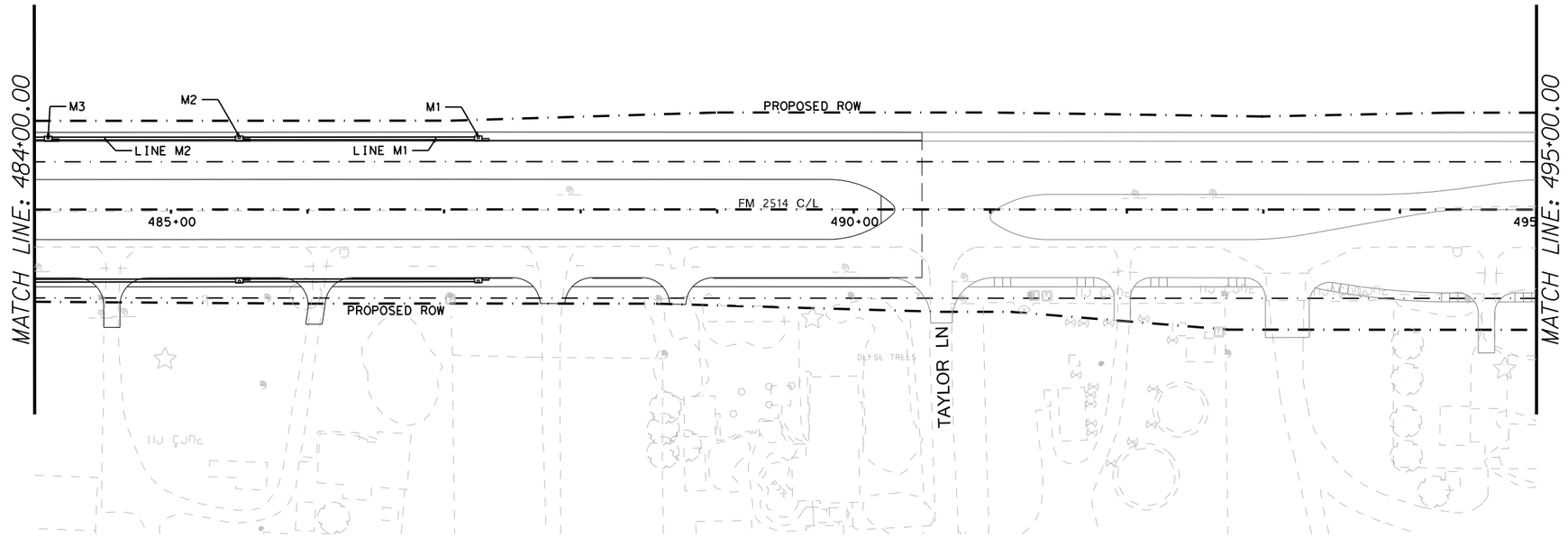

0 50 100
FEET

NOTES:

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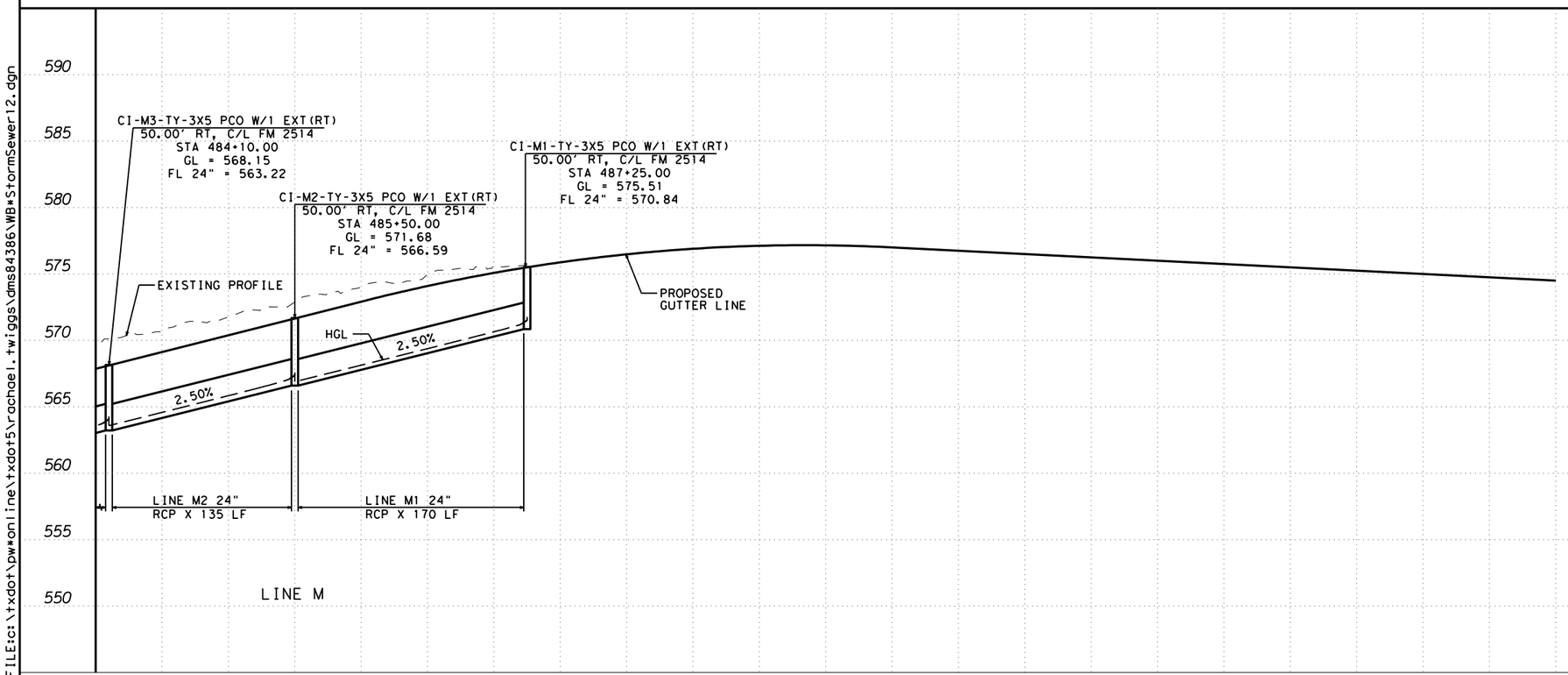

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FM 2514
WB DRAINAGE
PLAN & PROFILE

SCALE: 1"=100'

SHEET 12 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	262
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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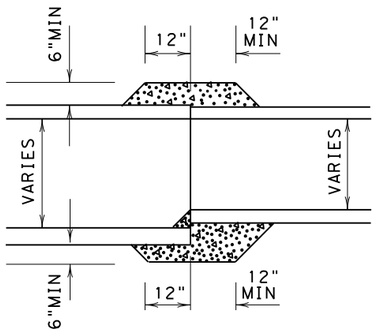

CONCRETE COLLAR
FOR PIPE CONNECTION

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FM 2514

MISCELLANEOUS DRAINAGE DETAILS

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	263
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

DATE:3/16/2017 TIME:3:03:42 PM
FILE:c:\txdot\pw*online\txdot5\rachael.twiggs\d0112207\2514 DRAINAGE DETAILS.dgn

Culvert Station and/or Creek name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°, 15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw (1) Height of Wingwall (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (C.Y.)	Class "C" Conc (Curb) (2) (C.Y.)	Class "C" Conc (Wingwall) (3) (C.Y.)	Total Wingwall Area (S.F.)
Structure No. 1 (Lt)	2 ~ 8'x 5'	8'	SCP-8	SETB-FW-S	30°	3:1	8"	8"	2.000'	7.417'	21.250'	21.250'	30.052'	N/A	41.842'	8.5	1.6	15.3	N/A
Structure No. 1 (Rt)	2 ~ 8'x 5'	8'	SCP-8	SETB-FW-S	15°	3:1	8"	8"	2.000'	7.417'	21.250'	12.269'	24.537'	N/A	30.731'	6.6	1.5	13.2	N/A
Structure No. 2 (Lt)	2 ~ 7'x 6'	8'	SCP-7	SETB-FW-S	30°	3:1	8"	8"	2.000'	8.417'	24.250'	24.250'	34.295'	N/A	42.533'	9.2	1.5	18.5	N/A
Structure No. 2 (Rt)	2 ~ 7'x 6'	8'	SCP-7	None	0°	2:1	8"	8"	1.000'	N/A'	N/A	N/A	N/A	N/A	N/A	0.0	0.6	N/A	N/A
Structure No. 2C (Lt)	1 ~ 5'x 2'	4'	SCP-5	SETB-SW-0	0°	3:1	6"	6"	1.000'	3.250'	N/A	N/A	8.750'	N/A	5.000'	0.4	0.2	2.6	N/A
Structure No. 2C (Rt)	1 ~ 5'x 2'	4'	SCP-5	SETB-SW-0	0°	3:1	6"	6"	1.000'	3.250'	N/A	N/A	8.750'	N/A	5.000'	0.4	0.2	2.6	N/A

DATE:
FILE:

NOTES:
Skew Angle = 0° for SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standards.
30° Maximum for Safety End Treatment

SL:1 = Horizontal:1 Vertical
Side Slope at culvert for Flared or Straight Wingwalls. Channel Slope for Parallel Wingwalls.
Slope shall be 3:1 or flatter for Safety End Treatments.

T = Box Culvert Top Slab Thickness. Dimension can be found on the applicable Box Culvert Standard.

U = Box Culvert Wall Thickness. Dimension can be found on the applicable Box Culvert Standard.

C = Curb Height.

See applicable wing or end treatment standards for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.
Hw = Height of Wingwall.
A = Distance from Face of Curb to End of Wingwall (Not applicable to Parallel or Straight Wingwalls).
B = Offset of End of Wingwall (Not applicable to Parallel or Straight Wingwalls).
Lw = Length of Longest Wingwall.
Ltw = Length of Culvert Toewall (Not applicable when using Riprap Apron).
Atw = Length of Anchor Toewall (Applicable to Safety End Treatment only).
Total Wingwall Area = Wingwall area in S.F. for two wingwalls (one structure end) if Lt or Rt.
Area for four wingwalls (two structure ends) if Both.

(1) The wall heights shown will be rounded to the nearest Foot for bidding purposes.

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

(3) Concrete volume shown is total of wing, footing, culvert toewall (if any), anchor toewall (if any) and wingwall toewall. Riprap apron, culvert and curb quantities are not included.

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

Texas Department of Transportation

Bridge Division Standard

BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

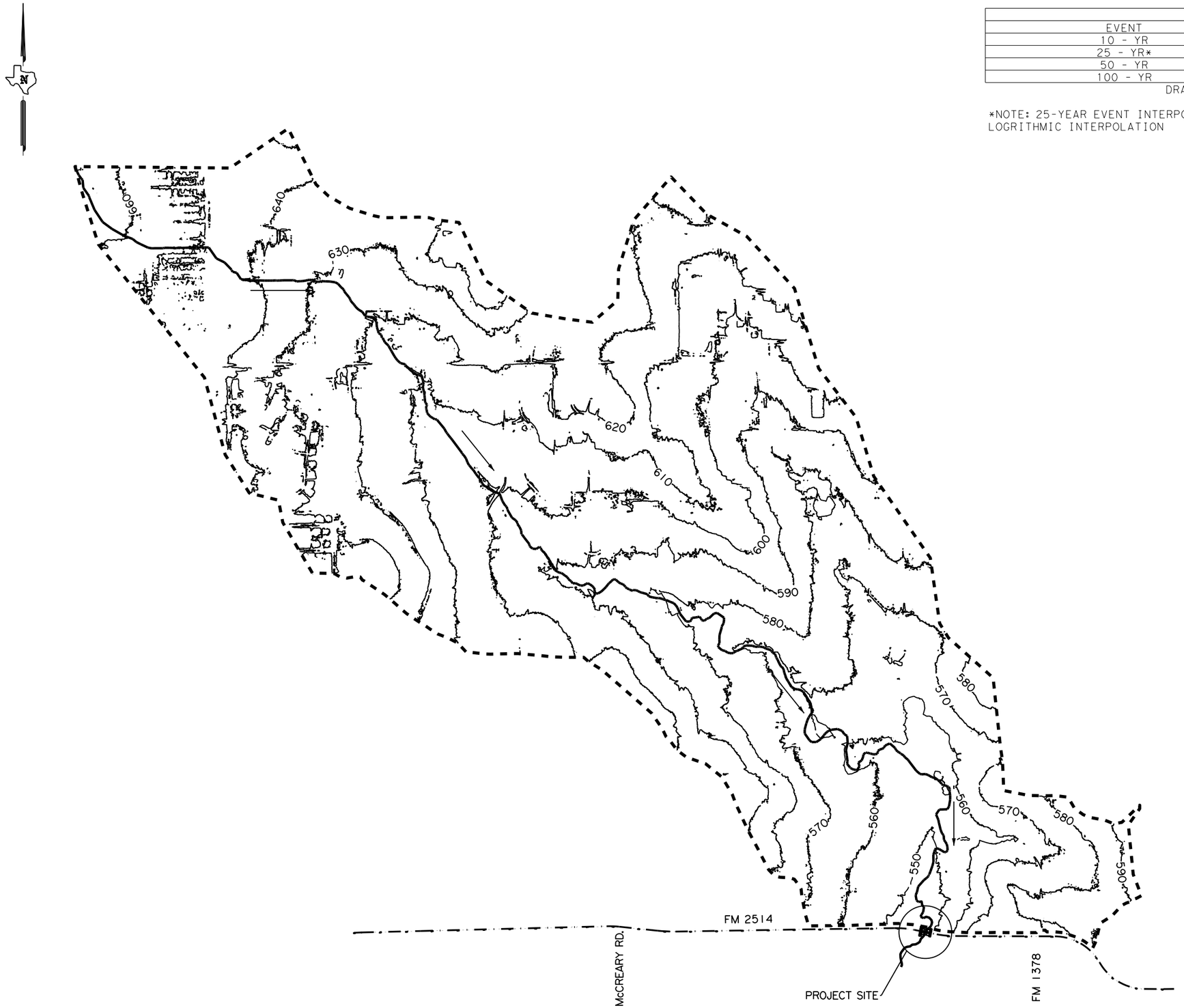
BCS

FILE: FM2514BCSSheet.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM 2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		264

FEMA PEAK FLOWS	
EVENT	PEAK DISCHARGE (CFS)
10 - YR	2514
25 - YR*	3199*
50 - YR	3673
100 - YR	4341

DRAINAGE AREA = 4.90 SQ. MI.

*NOTE: 25-YEAR EVENT INTERPOLATED USING A LOGRITHMIC INTERPOLATION



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permit purposes.
Engineer: James T. Campbell
P.E. No.: 117279
Date: 1/25/17

Texas Department of Transportation

FM 2514
MUDDY CREEK
HYDRAULIC DATA SHEET
DRAINAGE AREA MAP

SCALE: 1" = 2000'

SHEET 1 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
JC	6	SEE TITLESHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JC	TEXAS	18	COLLIN	303
CHECK	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

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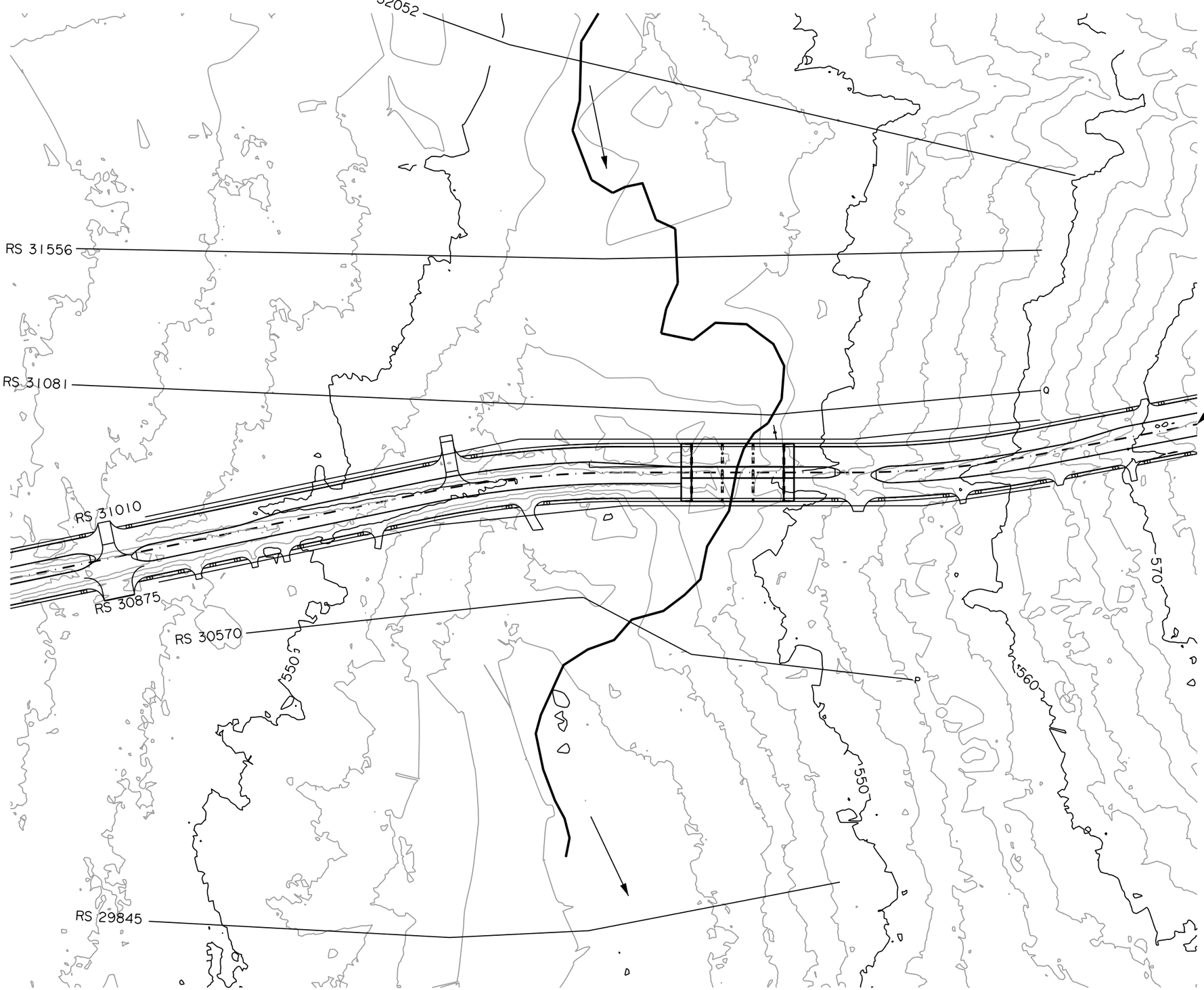

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Engineer: James T. Campbell
P.E. No.: 117279
Date: 1/25/17

Texas Department of Transportation

FM 2514
MUDDY CREEK
HYDRAULIC DATA SHEET
CROSS-SECTION MAP

SCALE: 1" = 200' SHEET 2 OF 6

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
JC	6	SEE TITLESHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JC	TEXAS	18	COLLIN	
CHECK	CONTROL	SECTION	JOB	304
CHECK	2679	02	008	

DATE: 3/16/2017 TIME: 4:35:09 PM FILE: c:\txdot\pw*online\txdot5\rachael.twiggs\d0113262\Hydraulic Data Sheets.dgn

Profile Output Table - Muddy Creek - Standard Table 1
HEC-RAS River: Muddy Creek Reach: Main

# Rivers =	1.00
# Hydraulic Reaches =	1.00
# River Stations =	11.00
# Plans =	2.00
# Profiles =	2.00

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Main	33279 R	25-Year	Corrective	2826	535.78	549.45	545.38	549.51	0.000807	2.97	2402.51	570.59	0.18
Main	33279 R	25-Year	Proposed	2826	535.78	549.24	545.38	549.31	0.000935	3.15	2283.07	565.8	0.19
Main	33279 R	100-Year	Corrective	3911	535.78	550.28	546	550.35	0.000919	3.37	2894.61	618.42	0.19
Main	33279 R	100-Year	Proposed	3911	535.78	550.12	546	550.2	0.00102	3.51	2794.64	614.93	0.2
Main	32434	25-Year	Corrective	2826	533.87	548.8	543.74	548.9	0.000839	3.4	2068.47	641.51	0.19
Main	32434	25-Year	Proposed	2826	533.87	548.08	543.74	548.33	0.001868	4.84	1284.91	589.93	0.27
Main	32434	100-Year	Corrective	3911	533.87	549.52	544.88	549.64	0.00102	3.92	2586.83	757.17	0.21
Main	32434	100-Year	Proposed	3911	533.87	549.18	544.88	549.34	0.001315	4.36	2335.35	744.95	0.23
Main	32052	25-Year	Corrective	2826	532.92	548.13		548.46	0.001768	5.07	1259.23	882.16	0.27
Main	32052	25-Year	Proposed	2826	532.92	546.79	542.18	547.39	0.003481	6.51	583.87	601.04	0.37
Main	32052	100-Year	Corrective	3911	532.92	548.94		549.19	0.001604	5.06	1980.1	917.05	0.26
Main	32052	100-Year	Proposed	3911	532.92	547.73	543.93	548.51	0.004224	7.64	948.86	791.44	0.42
Main	31556	25-Year	Corrective	2826	531.72	547.89	540.91	547.96	0.00053	2.95	2562.02	681.94	0.15
Main	31556	25-Year	Proposed	2826	531.72	545.18	540.93	545.69	0.003307	6.21	888.15	415.43	0.36
Main	31556	100-Year	Corrective	3911	531.72	548.59	542.84	548.68	0.000661	3.43	3130.42	839.11	0.17
Main	31556	100-Year	Proposed	3911	531.72	546.24	542.73	546.69	0.003033	6.39	1520.88	572.59	0.35
Main	31081 Q	25-Year	Corrective	2826	531.22	547.83	539.92	547.85	0.00014	1.61	4857.46	948.6	0.08
Main	31081 Q	25-Year	Proposed	3199	531.22	544.15	540.62	544.41	0.002216	5.12	1357.48	650.41	0.3
Main	31081 Q	100-Year	Corrective	3911	531.22	548.52	541.42	548.54	0.000187	1.93	5544.91	1028.41	0.09
Main	31081 Q	100-Year	Proposed	4341	531.22	545.13	541.7	545.45	0.002538	5.86	1648.11	731.48	0.32
Main	31010	25-Year	Proposed	3199	531.1	544.07	540.39	544.27	0.001308	4.34	1117.76	436.75	0.24
Main	31010	100-Year	Proposed	4341	531.1	545.03	541.1	545.28	0.001577	5.06	1289.4	622.19	0.27
Main	30980	25-Year	Corrective	3199	531.2	547.8	540.29	547.83	0.000198	1.95	4196.96	918.01	0.09
Main	30980	100-Year	Corrective	4341	531.2	548.48	542.61	548.51	0.000261	2.32	4890.68	1084.14	0.11
Main	30959	25-Year	Corrective	3199	531.56	547.66	539.82	547.78	0.005298	2.98	1264.82	439.24	0.17
Main	30959	100-Year	Corrective	4341	531.56	548.33	540.93	548.46	0.005905	3.3	1619.3	572.72	0.19
Main	30938			Bridge									
Main	30918	25-Year	Corrective	3199	531.26	543.7	540.36	544.34	0.038594	6.39	500.63	80.23	0.44
Main	30918	100-Year	Corrective	4341	531.26	544.41	541.53	545.35	0.055843	7.77	558.67	90.86	0.54
Main	30883	25-Year	Corrective	3199	530.9	543.54	540.22	543.96	0.003254	6.13	1140.95	407.12	0.36
Main	30883	100-Year	Corrective	4341	530.9	544.37	542.56	544.8	0.003387	6.62	1532.16	561.1	0.37
Main	30875	25-Year	Proposed	3199	530.85	543.53	540.27	543.73	0.001685	4.32	1039.51	535.92	0.26
Main	30875	100-Year	Proposed	4341	530.85	544.32	540.88	544.6	0.002094	5.12	1182.41	699.54	0.3
Main	30570 P	25-Year	Corrective	3199	529.46	542.54	539.25	542.97	0.003492	6.2	1092.01	418.92	0.37
Main	30570 P	25-Year	Proposed	3199	529.46	542.54	539.48	542.97	0.003492	6.2	1092.01	418.92	0.37
Main	30570 P	100-Year	Corrective	4341	529.46	543.17	540.86	543.69	0.004195	7.12	1377	513.24	0.41
Main	30570 P	100-Year	Proposed	4341	529.46	543.17	541.87	543.69	0.004195	7.12	1377	513.24	0.41
Main	29845	25-Year	Corrective	3199	527.66	541.02	537.58	541.21	0.001824	4.59	1312.75	562.16	0.27
Main	29845	25-Year	Proposed	3199	527.66	541.02	537.58	541.21	0.001824	4.59	1312.75	562.16	0.27
Main	29845	100-Year	Corrective	4341	527.66	541.87	540.32	542.02	0.001456	4.35	1797.35	579.67	0.24
Main	29845	100-Year	Proposed	4341	527.66	541.87	540.32	542.02	0.001456	4.35	1797.35	579.67	0.24
Main	29287 O	25-Year	Corrective	3199	526.4	539.95	537.93	540.19	0.002101	4.97	1438.76	464.42	0.29
Main	29287 O	25-Year	Proposed	3199	526.4	539.95	537.93	540.19	0.002101	4.97	1438.76	464.42	0.29
Main	29287 O	100-Year	Corrective	4341	526.4	540.95	538.72	541.16	0.001909	5.07	1981.13	561.38	0.28
Main	29287 O	100-Year	Proposed	4341	526.4	540.95	538.74	541.16	0.001909	5.07	1981.13	561.38	0.28

Plan: Proposed
Muddy Creek Main RS: 30946 Profile: 25-year storm

		Element	Inside BR US	Inside BR DS
E.G. US. (ft)	544.27	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	544.07	E.G. Elev (ft)	544.22	543.81
Q Total (cfs)	3199	W.S. Elev (ft)	543.95	543.51
Q Bridge (cfs)	3199	Crit W.S. (ft)	540.59	540.49
Q Weir (cfs)		Max Chl Dpth (ft)	12.85	12.66
Weir Sta Lft (ft)		Vel Total (ft/s)	3.65	3.94
Weir Sta Rgt (ft)		Flow Area (sq ft)	876.44	812.48
Weir Submerg		Froude # Chl	0.28	0.32
Weir Max Depth (ft)		Specif Force (cu ft)	3550.17	3170.1
Min El Weir Flow (ft)	550.69	Hydr Depth (ft)	5.65	5.33
Min El Prs (ft)	549.27	W.P. Total (ft)	192.96	189.69
Delta EG (ft)	0.53	Conv. Total (cfs)	56375.4	51571.7
Delta WS (ft)	0.54	Top Width (ft)	155.2	152.56
BR Open Area (sq ft)	1646.83	Frctn Loss (ft)	0.4	0.03
BR Open Vel (ft/s)	3.94	C & E Loss (ft)	0.01	0.05
Coef of Q		Shear Total (lb/sq ft)	0.91	1.03
Br Sel Method	Energy only	Power Total (lb/ft s)	0	0

Plan: Proposed
Muddy Creek Main RS: 30946 Profile: 100-year storm

		Element	Inside BR US	Inside BR DS
E.G. US. (ft)	545.28	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	545.03	E.G. Elev (ft)	545.22	544.71
Q Total (cfs)	4341	W.S. Elev (ft)	544.87	544.29
Q Bridge (cfs)	4341	Crit W.S. (ft)	541.42	541.26
Q Weir (cfs)		Max Chl Dpth (ft)	13.77	13.44
Weir Sta Lft (ft)		Vel Total (ft/s)	4.25	4.65
Weir Sta Rgt (ft)		Flow Area (sq ft)	1021.77	933.76
Weir Submerg		Froude # Chl	0.31	0.36
Weir Max Depth (ft)		Specif Force (cu ft)	4646.59	4105.45
Min El Weir Flow (ft)	550.69	Hydr Depth (ft)	6.36	5.94
Min El Prs (ft)	549.27	W.P. Total (ft)	202.45	197.77
Delta EG (ft)	0.68	Conv. Total (cfs)	68810.1	62219.7
Delta WS (ft)	0.7	Top Width (ft)	160.72	157.26
BR Open Area (sq ft)	1646.83	Frctn Loss (ft)	0.5	0.03
BR Open Vel (ft/s)	4.65	C & E Loss (ft)	0.02	0.07
Coef of Q		Shear Total (lb/sq ft)	1.25	1.43
Br Sel Method	Energy only	Power Total (lb/ft s)	0	0

NOTES:

BRIDGE IS LOCATED AT RS 30946

HEC-RAS VERSION 4.1 USED FOR ANALYSIS

ALL ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM

THE STARTING WATER SURFACE ELEVATIONS WERE KNOWN WATER SURFACE ELEVATION OBTAINED FROM FEMA AND NORMAL DEPTH

H&H FILES WERE SENT TO THE CITY OF WYLIE FLOODPLAIN ADMINISTRATOR, TIM PORTER, AND THE CITY OF LUCAS FLOODPLAIN ADMINISTRATOR, JOSEPH HILBOURN ON 2/1/2017.

PRELIMINARY

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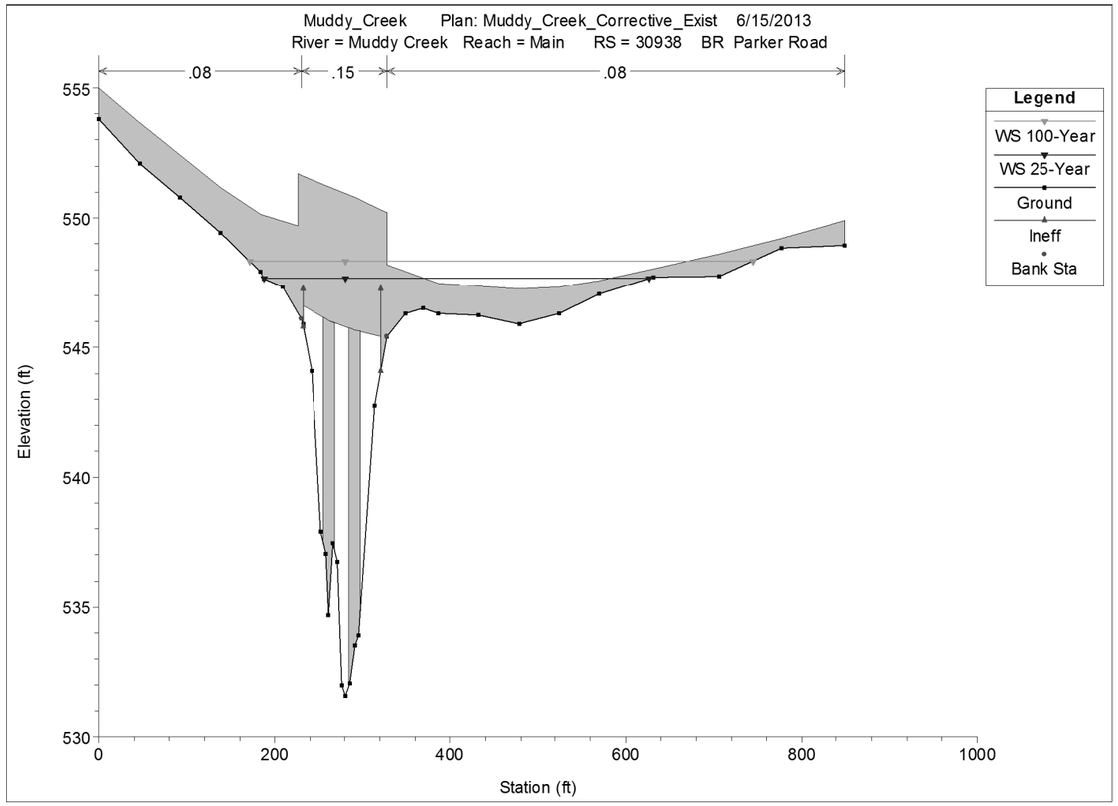
permit purposes.
Engineer: JAMES T. CAMPBELL
P.E. No.: 117279
Date: 1/25/17

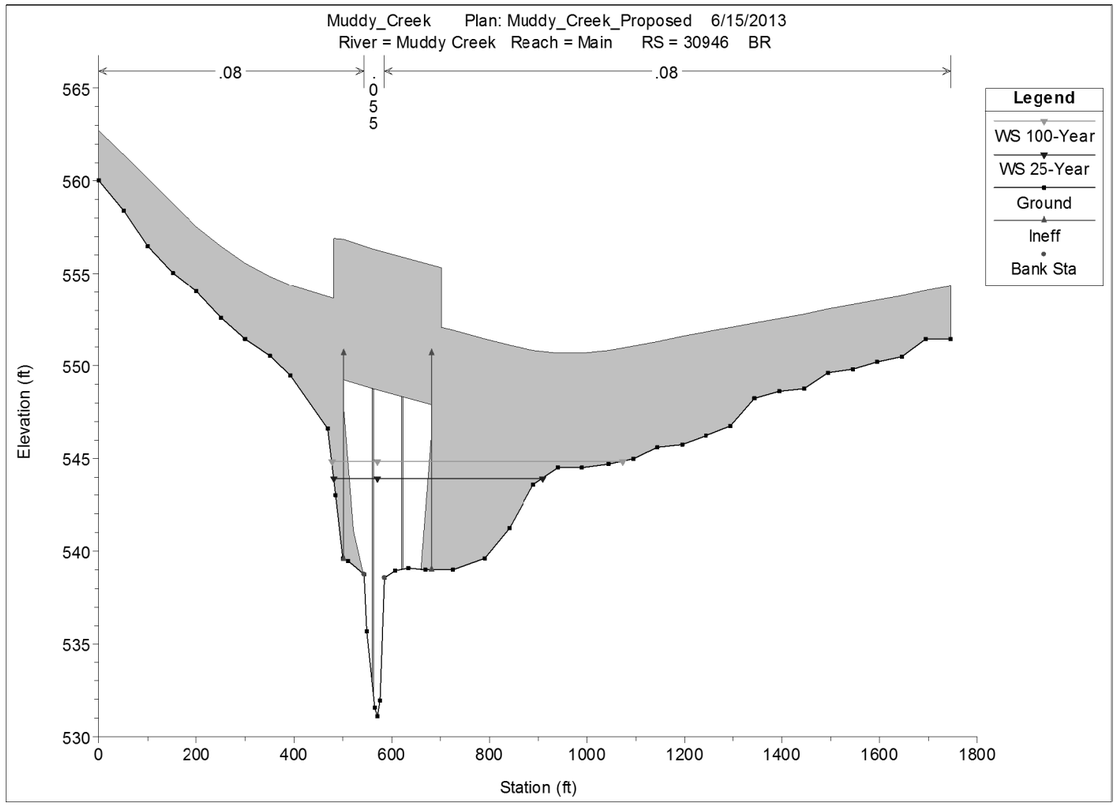
Texas Department of Transportation

FM 2514
MUDDY CREEK
HYDRAULIC DATA SHEET

SHEET 3 OF 6

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
JC	6	SEE TITLESHEET		FM2514
GRAPHICS: JC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	18	COLLIN	305
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	





NOTES:

BRIDGE IS LOCATED AT RS 30946

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permit purposes.

Engineer: James T. Campbell
P.E. No.: 117279
Date: 1/25/17

Texas Department of Transportation

FM 2514
MUDDY CREEK
HYDRAULIC DATA SHEET

SHEET 4 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
JC	6	SEE TITLESHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JC	TEXAS	18	COLLIN	306
CHECK	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

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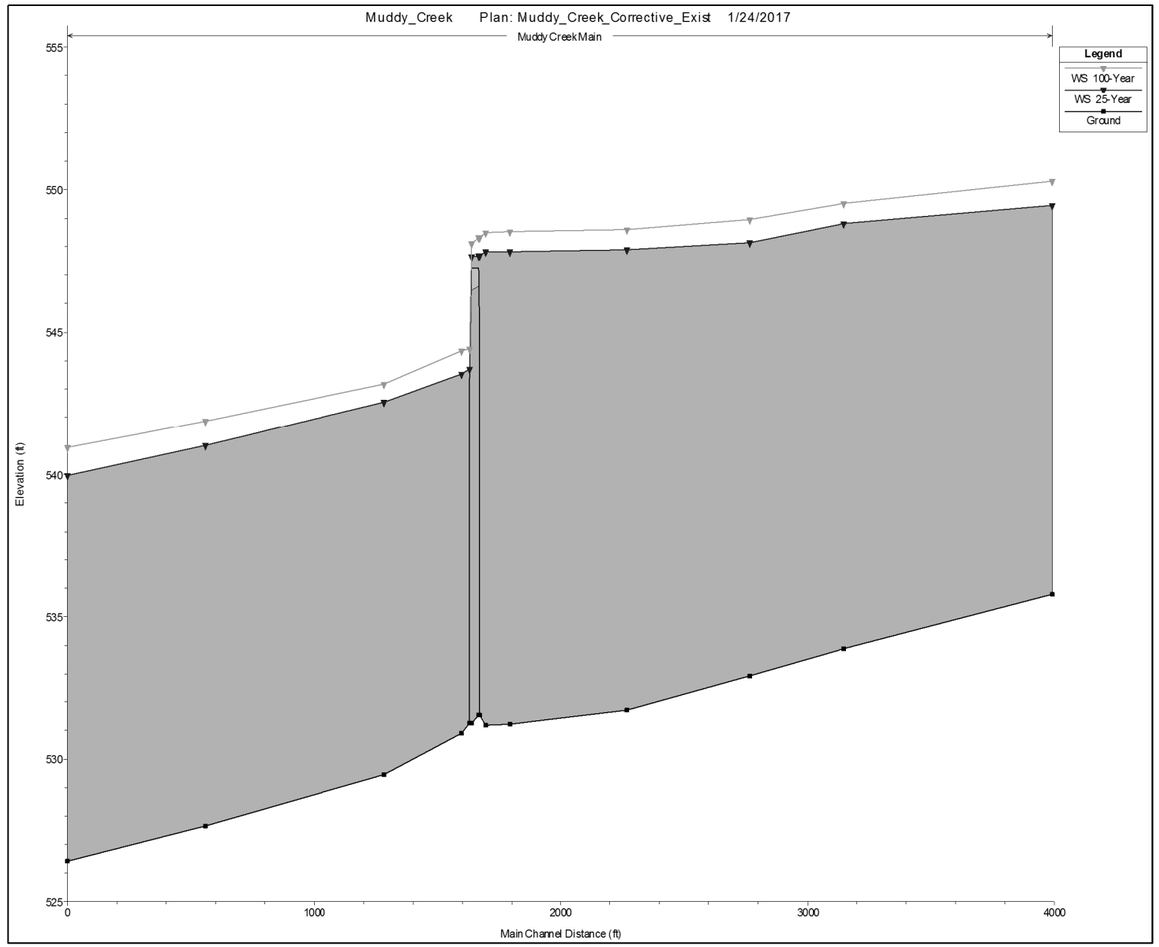

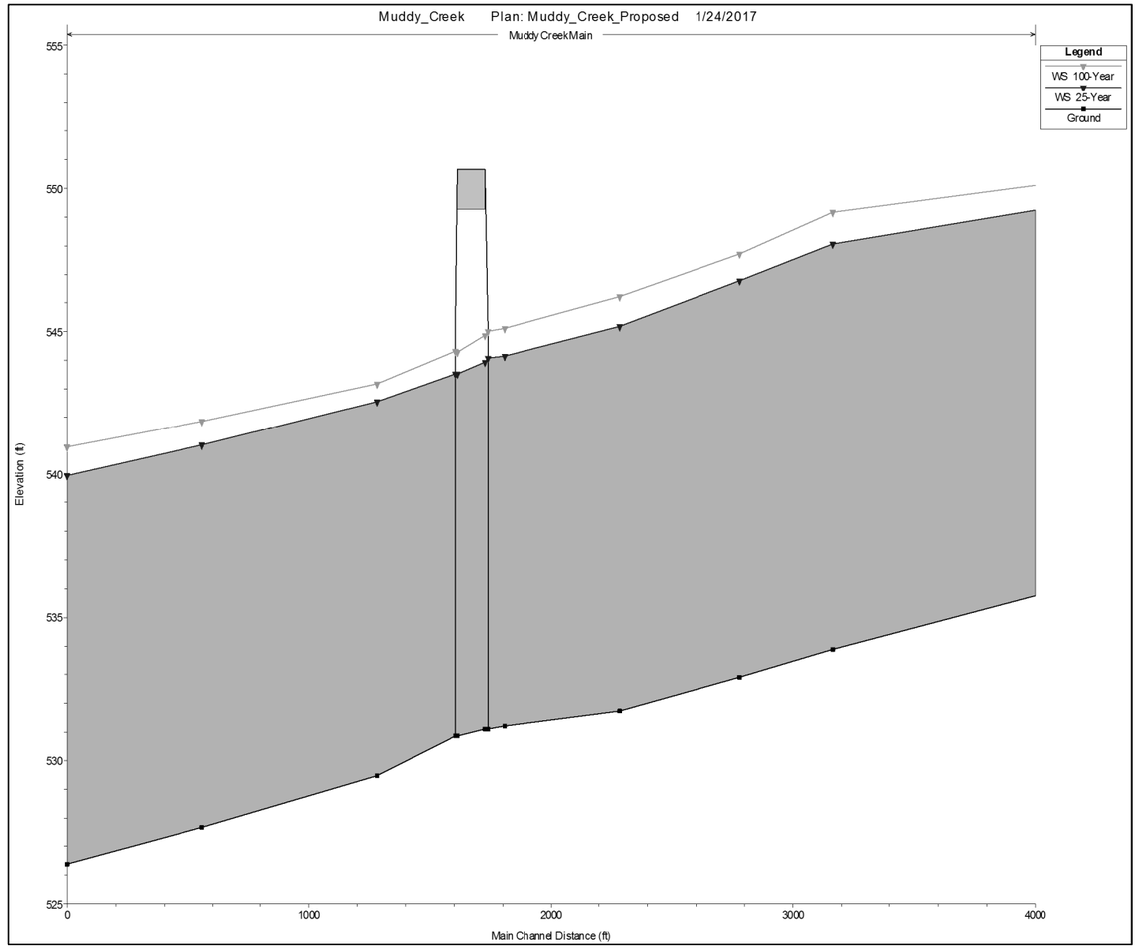

NOTES:

BRIDGE IS LOCATED AT RS 30946

HEC-RAS VERSION 4.1 USED FOR ANALYSIS

ALL ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM

THE STARTING WATER SURFACE ELEVATIONS WERE KNOWN WATER SURFACE ELEVATION OBTAINED FROM FEMA AND NORMAL DEPTH

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Engineer: James T. Campbell
P.E. No.: 117279
Date: 1/25/17

Texas Department of Transportation

FM 2514
MUDDY CREEK
HYDRAULIC DATA SHEET

SHEET 5 OF 6

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
JC	6	SEE TITLESHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JC	TEXAS	18	COLLIN	307
CHECK	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

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LIVE BED CONTRACTION SCOUR ANALYSIS

	FREQ (YRS)	SECTION	Q_1 (CFS)	Q_2 (CFS)	W_1 (FT)	W_2 (FT)	y_1 (FT)	y_2 (FT)	y_s (FT)
DESIGN	50	CHANNEL	2914.12	2114.36	42.01	38.05	9.58	7.79	0.00
		RT BANK	1404.53	1270.18	183.39	87.97	5.26	8.01	3.12
CHECK	100	CHANNEL	2495.45	2401.29	42.01	38.05	10.14	7.79	0.00
		RT BANK	1719.82	1566.89	183.39	89.56	5.82	8.81	3.49

USING HEC-18 EQ. 6.2

$y_2 / y_1 = (Q_2 / Q_1)^{6/7} \bullet (W_1 / W_2)^{k1}$ AND $y_s = y_2 - y_1$

WHERE:

y_2 = CONTRACTION SCOUR DEPTH (FT)

y_1 = AVERAGE DEPTH IN MAIN CHANNEL UPSTREAM OF CONTRACTED SECTION

y_2 = AVERAGE DEPTH in CONTRACTED SECTION

Q_1 = FLOW IN UPSTREAM CHANNEL TRANSPORTING SEDIMENT

Q_2 = FLOW IN CONCENTRATED CHANNEL

W_1 = BOTTOM WIDTH OF MAIN CHANNEL UPSTREAM OF CONTRACTED SECTION

W_2 = BOTTOM WIDTH OF CONTRACTED SECTION LESS THE CUMULATIVE WIDTH OF PIERS

CLEAR WATER CONTRACTION SCOUR ANALYSIS

	FREQ (YRS)	SECTION	Q (CFS)	W (FT)	y_0 (FT)	y_2 (FT)	y_s (FT)
DESIGN	50	LT BANK	288.46	31.53	3.58	7.66	4.08
CHECK	100	LT BANK	372.82	33.11	3.92	9.15	5.23

USING HEC-18 EQ 6.4

$y_2 = (Q_2^2 / (120\ D_m^{1/3}\ W_2)^{k1}$ AND $y_s = y_2 - y_1$

WHERE:

y_2 = AVERAGE CONTRACTION SCOUR DEPTH

y_1 = AVERAGE DEPTH IN MAIN CHANNEL UPSTREAM OF CONTRACTED SECTION

y_2 = AVERAGE DEPTH IN CONTRACTED SECTION

Q = FLOW IN CONTRACTED CHANNEL

W = BOTTOM WIDTH OF CONTRACTED SECTION LESS THE CUMULATIVE WIDTH OF PIERS

PIER SCOUR ANALYSIS

	FREQ (YRS)	K_1	K_2	K_3	y_1 (FT)	a (FT)	Fr_1	V (FPS)	y_s (FT)
DESIGN	50	1.0	1.0	1.1	10.63	3.00	0.25	4.66	2.84
CHECK	100	1.0	1.0	1.1	11.18	3.00	0.27	5.06	2.96

USING HEC-18 EQ 7.1

$y_2 = 2.0 \bullet K_1 \bullet K_2 \bullet K_3 \bullet y_1 \bullet (a / y_1)^{0.65} \bullet Fr_1^{0.43}$

WHERE:

y_2 = PIER SCOUR DEPTH (FT)

K_1 = CORRECTION FACTOR PIER NOSE SHAPE (FOR A GROUP OF CYLINDERS, K_1 = 1.0)

K_2 = CORRECTION FACTOR FOR ANGLE OF ATTACK (ANGLE OF ATTACK = 0 DEG, K_2 = 1.0)

K_3 = CORRECTION FACTOR BED CONDITION (DUNE HEIGHT < 10 9/32 , K_3 = 1.1)

y_1 = FLOW DEPTH DIRECTLY UPSTREAM OF THE PIER (FT)

a = PIER WIDTH (FT)

Fr_1 = $V / (g \bullet y_1)^{0.5}$ = FROUDE NUMBER UPSTREAM OF PIER, WHERE V = VELOCITY AT PIER (FT/SEC), AND g = 32.2 FT / SEC^2 (GRAVITATIONAL CONSTANT)

NOTES:

SCOUR ANALYSIS IS BASED ON TXDOT GEOTECHNICAL MANUAL (GM) AND FHWA H. E. C. -18, "EVALUATING SCOUR AT BRIDGES." ABUTMENT SCOUR EQUATIONS IN H. E. C.-18 TEND TO OVERESTIMATE ABUTMENT SCOUR DEPTHS. BRIDGE ABUTMENTS WILL BE ARMORED WITH STONE PROTECTION RIPRAP. NO APPRECIABLE ABUTMENT SCOUR IS ANTICIPATED.

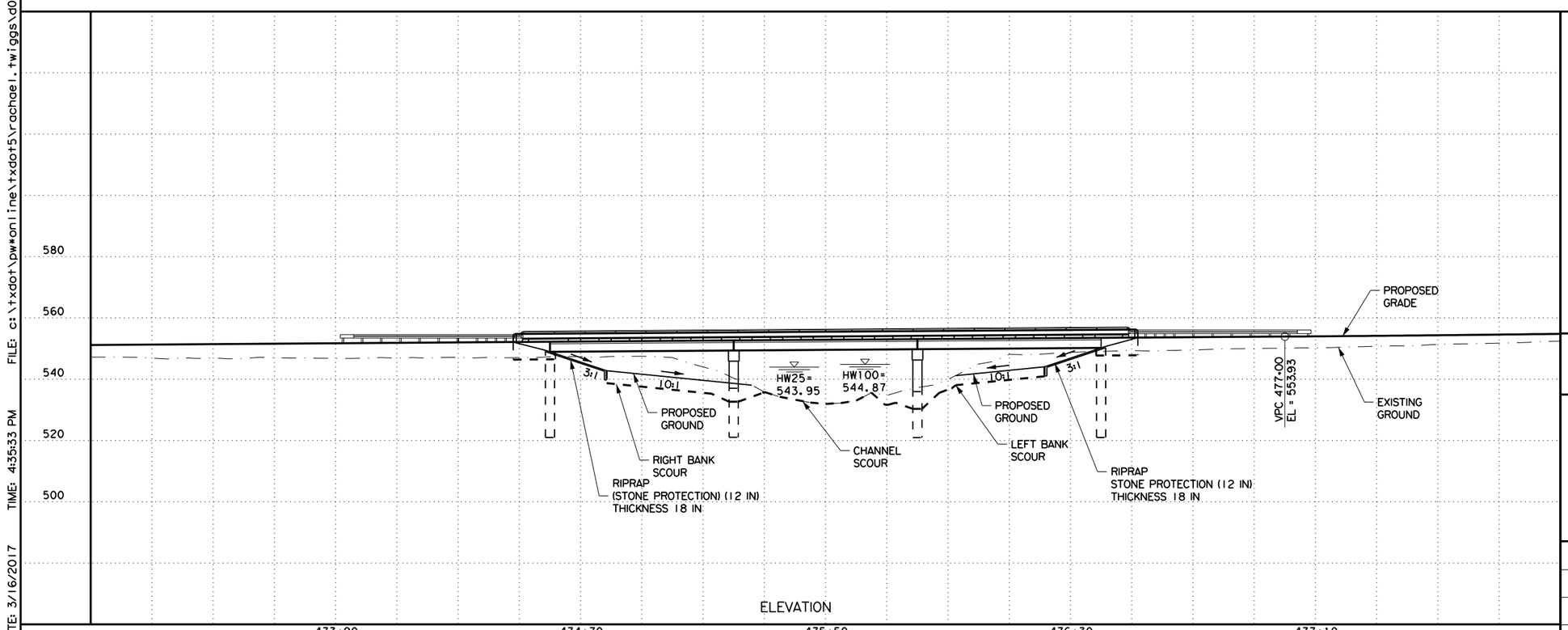
THE D_m SOIL PARTICLE SIZE FOR THIS PROJECT IS THE MINIMUM SIZE ALLOWED BY THE GM. THE SOILS REPORT FOR THE FM 2514 BRIDGE SITE DESCRIBES THE SOIL AS CALCAREOUS FAT CLAY TO AN ELEVATION OF 533.00' ALONGSIDE THE LEFT OVERBANK AND CALCAREOUS FAT CLAY TO AN ELEVATION OF 527.90' ALONG THE RIGHT OVERBANK.

THE DESIGN CRITERIA FOR A 25-YEAR HYDRAULIC DESIGN CALLS FOR A 50-YEAR SCOUR DESIGN AND A 100-YEAR CHECK SCOUR ANALYSIS FOR THE BRIDGE FOUNDATION.

SCOUR DEPTHS WILL BE LIMITED TO BEDROCK. CONSIDERING THIS, BRIDGE FOUNDATIONS ARE DESIGNED TO ACCOUNT FOR POTENTIAL SCOUR BY PENETRATING INTO BEDROCK A MINIMUM OF ONE DRILLED SHAFT DIAMETER.

CONTRACTION SCOUR WAS DETERMINED TO BE CLEAR WATER SCOUR FOR THE LEFT OVERBANK AND LIVE BED SCOUR FOR CHANNEL AND RIGHT OVERBANK.
MAXIMUM SCOUR DEPTHS INCLUDING CONTRACTION SCOUR AND PIER FOR THE 50-YEAR ANALYSIS ARE 6.92' FOR THE LEFT OVERBANK, 2.84' FOR THE CHANNEL, AND 5.96' FOR THE RIGHT OVERBANK. MAXIMUM SCOUR DEPTHS INCLUDING PIER PLUS CONTRACTION SCOUR FOR THE 100-YEAR ANALYSIS ARE:
8.19' FOR THE LEFT OVERBANK, 2.96' FOR THE CHANNEL, AND 6.45' FOR THE RIGHT OVERBANK.

SEE "FM 2514 AT MUDDY CREEK HYDRAULIC REPORT" FOR MORE INFORMATION.



ELEVATION

PRELIMINARY

FOR REVIEW ONLY
Not intended for construction, bidding or permit purposes.
Engineer: Jerod Stanley
P.E. No.: 114568
Date: 1/25/17

Texas Department of Transportation

FM 2514
MUDDY CREEK
HYDRAULIC DATA SHEET

SHEET 6 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
JS	6	SEE TITLESHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JS	TEXAS	18	COLLIN	308
CHECK	CONTROL	SECTION	JOB	
CHECK	2679	02	008	

SUMMARY OF BRIDGE ESTIMATED QUANTITIES

	Item No.	416	420	420	420	422	422	422	425	432	442	450	454
	Description Code	6004	6014	6030	6038	6002	6012	6014	6035	6031	6007	6031	6001
BRIDGE LOCATION NBI NUMBER	STRUCTURE	DRILL SHAFT (36 IN) [1]	CL C CONC (ABUT) (HPC)	CL C CONC (CAP) (HPC)	CL C CONC (COLUMN) (HPC)	REINF CONC SLAB (CLS) (HPC)	CL S CONC (BRIDGE MEDIAN) (HPC) [3]	CL S CONC (BRIDGE SDWLK) (HPC) [3]	PRESTR CONC GIRDER (TX28)	RIPRAP (STONE PROT) (12 IN)	STR STEEL (MISC NON-BRIDGE) [2]	RAIL (TY C221) (HPC)	SEALED EXP JOINT (4 IN) (SEJ-A)
		LF	CY	CY	CY	SF	SF	SF	LF	CY	LB	LF	LF
FM 2514 MUDDY CREEK 18-043-0-2679-XX-XXX	2 - Abutments	624	110.2							810.0			
	2- Bents	248		102.6	39.8								
	1- PC Girder Ty Tx 28 Unit					20,520	3960	2520	3213.11		313	408.0	203
	Total	872	110.2	102.6	39.8	20,520	3,960	2,520	3213.11	810.0	313	408.0	203

[1] - Provide Sulphate Resistant Concrete.

[2] - Quantities are for BS-EJCP Sidewalk cover Plate

[3] - Sidewalk and Median beyond Bridge not included.

Sheet 1 of 49 Sheets

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Dallas District Bridge

FM 2514
Muddy Creek

SUMMARY OF EST. QUANTITY

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		309

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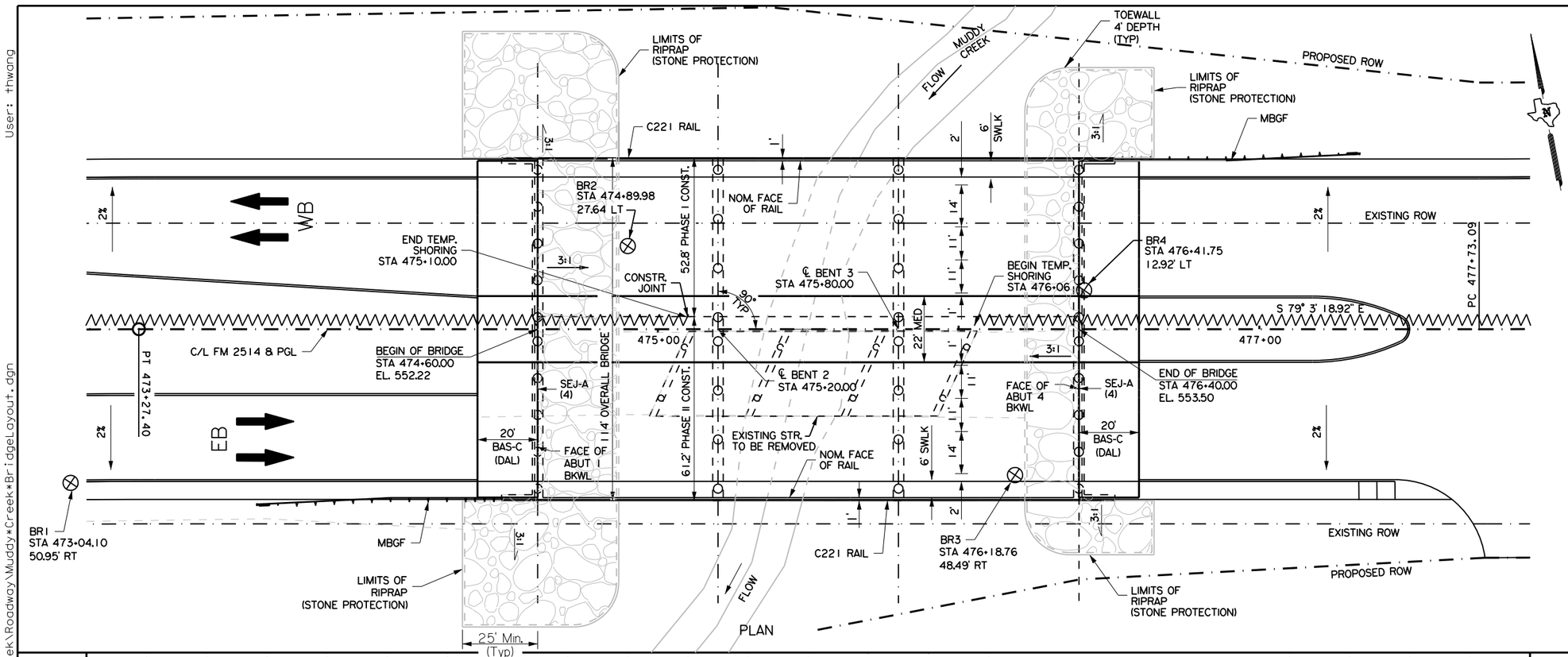


GENERAL NOTES:

BRIDGE DESIGNED FOR HL 93 LOADING UNDER 2014 AASHTO LRFD SPECICIFICATIONS

DESIGN SPEED = 45 MPH
2014 ADT = 14,400
2034 ADT = 20,800
FUNC. CLASS = URBAN MINOR ARTERIAL

ALL BENTS AND ABUTMENTS ARE ALONG N 10° 56' 41.08" E AND ARE NORMAL TO THE FM 2514 CONTROL LINE.

THE "H" VALUES SHOWN ARE ESTIMATED COLUMN HEIGHTS. CONTRACTOR IS RESPONSIBLE FOR CALCUALTING ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS.

SEE CORE BORING LOG SHEETS FOR CORE INFO.

SEE ROADWAY PLAN FOR SHORING DETAILS SHEET FOR SHORING LIMITS AND QUANTITIES.

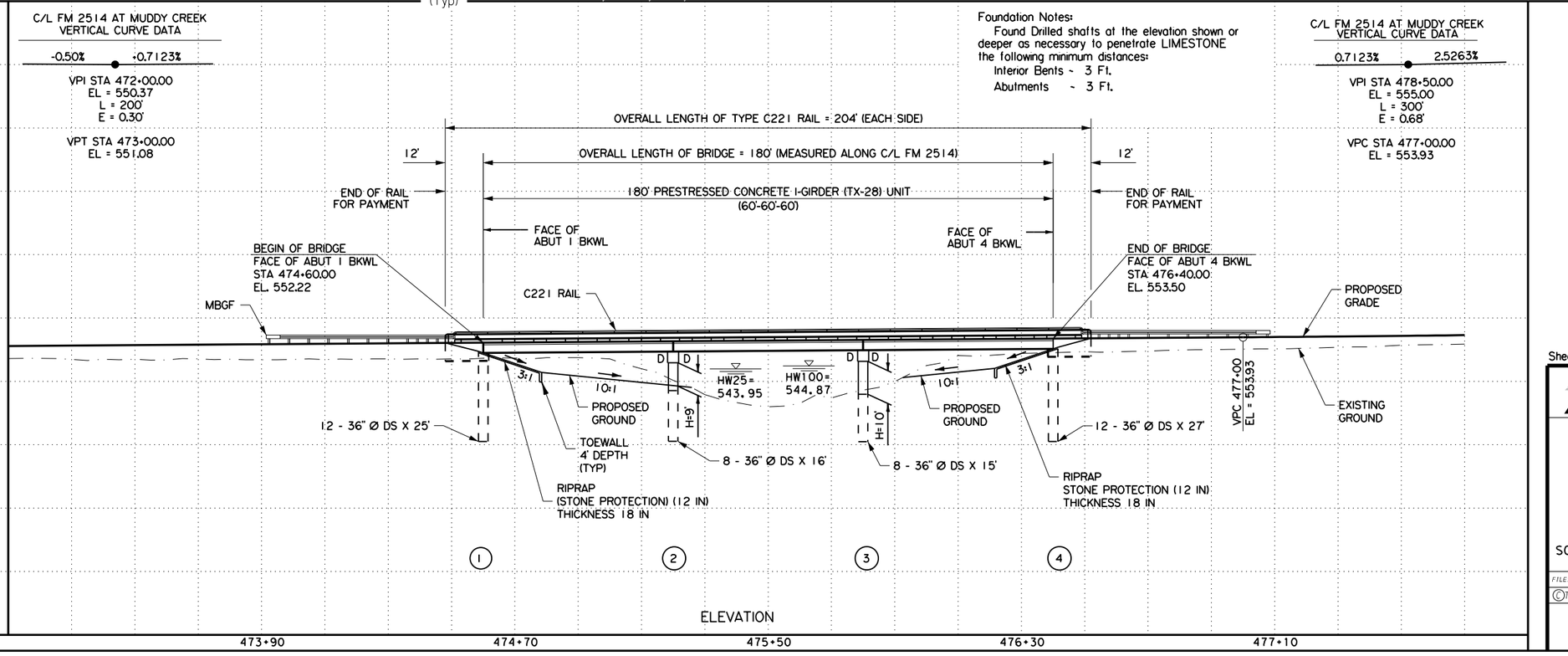
SAW-CUT GROOVING OF THE BRIDGE DECK AND APPROACH SLAB IS NOT REQUIRED.

HYDRAULIC DATA:

25-YEAR FLOOD
Q=3199 CFS
V=3.65 FPS
HW=543.95 FT

100-YEAR FLOOD
Q=4341 CFS
V=4.25 FPS
HW=544.87 FT

Exist. NBI: 18-043-0-2679-02-007
New NBI: 18-043-0-2679-XX-XXX



PRELIMINARY

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Engineer: Don Vo
P.E. No.: 95640
Date: 8/10/16

Sheet 2 of 49 Sheets

Texas Department of Transportation

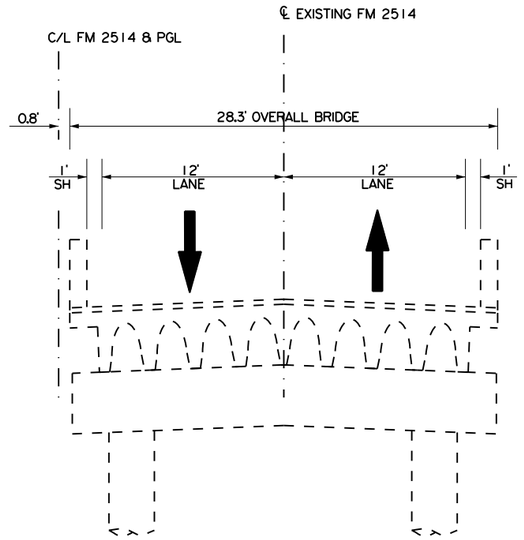
Dallas District Bridge

FM 2514
Muddy Creek

BRIDGE LAYOUT

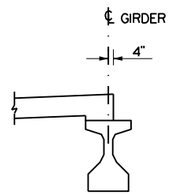
SCALE: 1"=40'-H
1"=40'-V

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		310



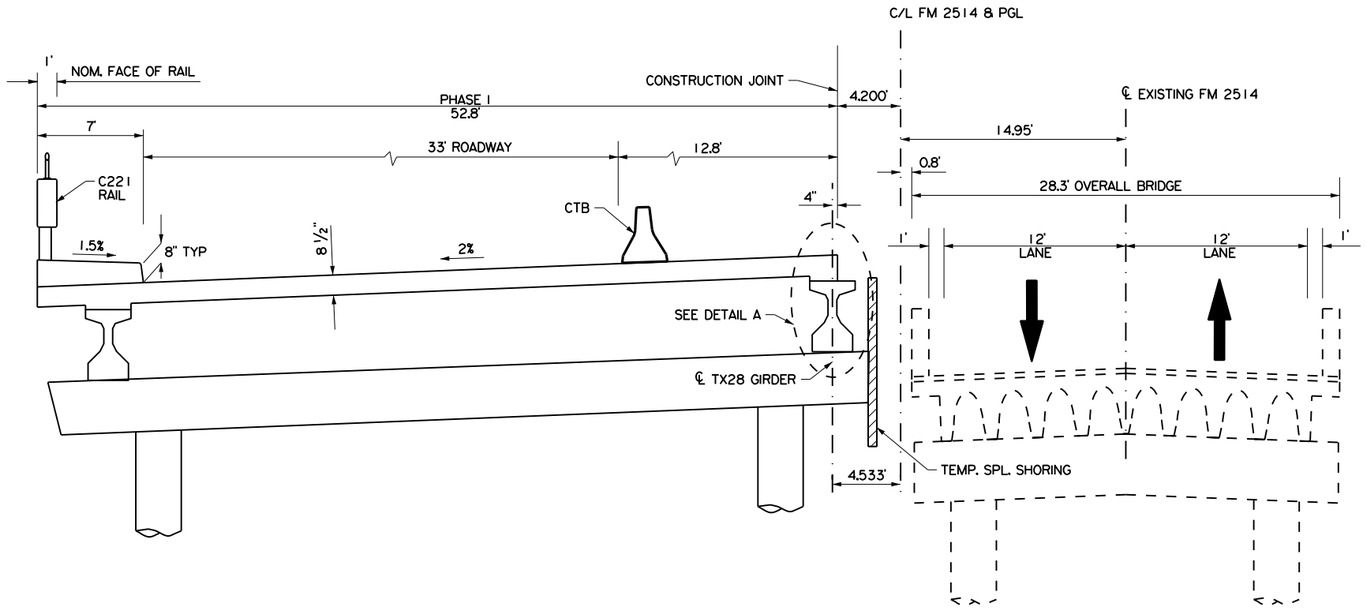
EXISTING TYPICAL SECTION

NTS



DETAIL A

NTS



TYPICAL SECTION - PHASE I CONSTRUCTION

NTS

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Engineer: Don Vo
P.E. No.: 95640
Date: 8/10/16

Sheet 3 of 49 Sheets

Texas Department of Transportation

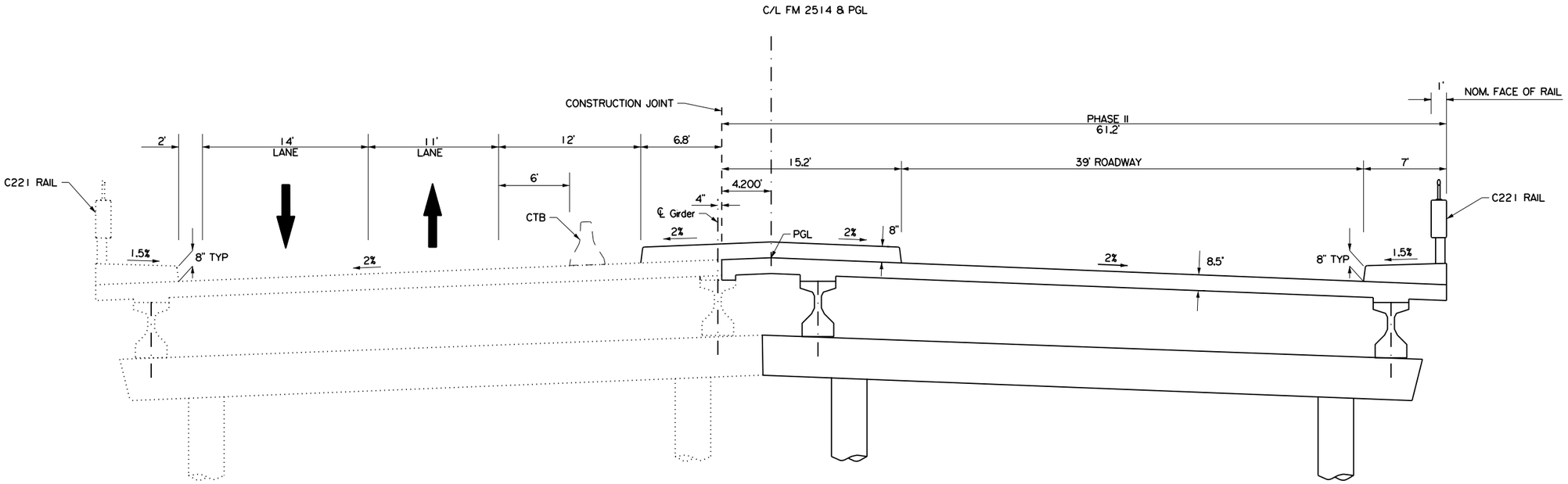
Dallas District Bridge

FM 2514
Muddy Creek

Typical Section

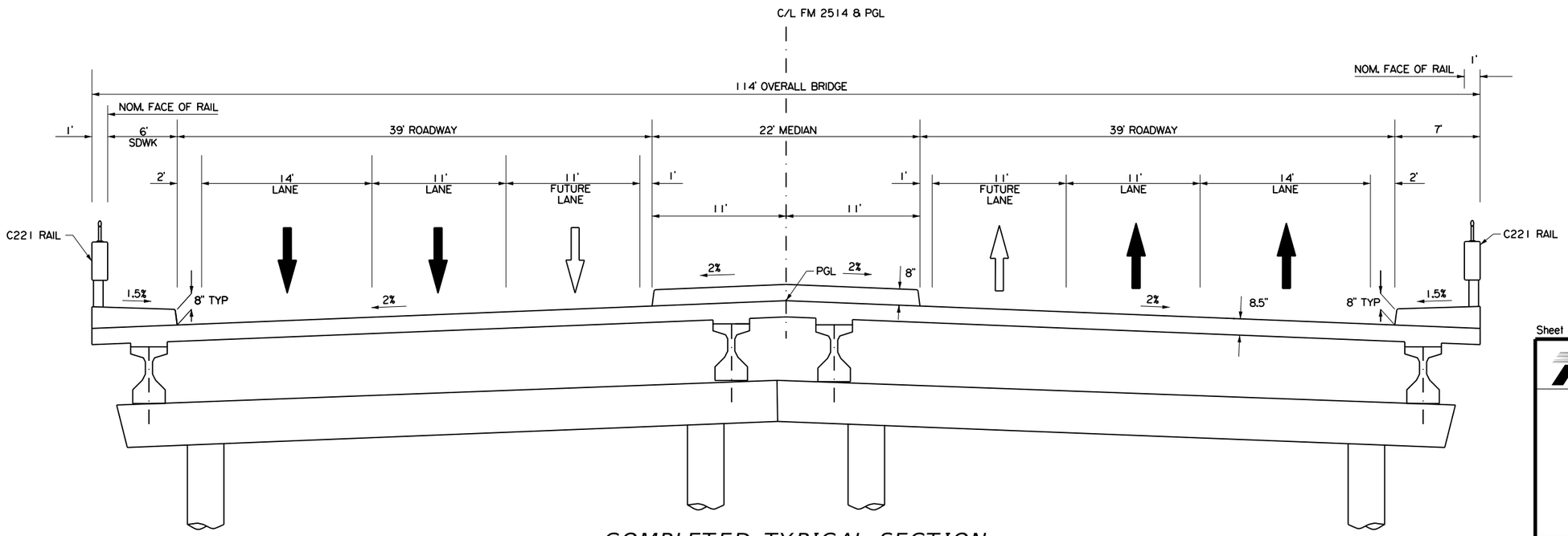
FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		311

DATE: 2/28/2017 TIME: 8:56:43 AM FILE: t:\dal\brdg\2679-02-008 fm2514 muddy creek\Roadway\Muddy Creek Bridge Typicals.dgn User: thwang



TYPICAL SECTION - PHASE II CONSTRUCTION

NTS



COMPLETED TYPICAL SECTION

NTS

PRELIMINARY

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permit purposes.
Engineer: Don Vo
P.E. No.: 95640
Date: 8/10/16

Sheet 4 of 49 Sheets

Texas Department of Transportation

Dallas District Bridge

FM 2514
Muddy Creek

Typical Section

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		312

DATE: 2/28/2017 TIME: 8:56:43 AM FILE: t:\dal\brdg\2679-02-008 fm2514 muddy creek\Roadway\Muddy+Creek+Bridge+Typicals.dgn User: thwang

Test Hole No. BR-1
STA 473+04.10
50.95' RT

Test Hole No. BR-1
El 540.41

8(6) 10(6)
6(6) 7(6)
50(.5) 50(.25)
50(.5) 50(.25)
50(.75) 50(.75)
50(.25) 50(.25)
50(.25) 50(.25)

CLAY, dark brown, very stiff, moist, with calcareous deposits (CH)
LIMESTONE, light brown, soft, weathered with clay layers
LIMESTONE, gray, hard

B/H = 505.4

Test Hole No. BR-2
STA 474+89.98
27.64' LT

Test Hole No. BR-2
El 541.01

44(6) 34(6)
50(.75) 50(5.25)
50(.5) 50(.25)
50(.125) 50(.125)
50(.125) 50(.125)
50(.125) 50(.125)
50(.25) 50(.25)

CLAY, dark brown, very stiff, moist, with calcareous nodules and fe stains (CH)
CLAY, with sand, brown, very stiff, moist, calcareous deposits and limestone seams (CL)
LIMESTONE, tan, soft, weathered
LIMESTONE, gray and tan, hard to very hard

B/H = 506.0

Test Hole No. BR-3
STA 476+18.76
48.49' RT

Test Hole No. BR-3
El 545.10

8(6) 11(6)
50(.5) 50(.25)
50(.125) 50(.25)
50(.25) 50(.125)
50(.25) 50(.125)
50(.25) 50(.25)
50(.5) 50(.75)

CLAY, dark brown, very stiff, moist, few calcareous nodules (CH)
CLAY, yellowish brown, very stiff, moist, with limestone seams (CL)
LIMESTONE, gray and tan, hard to very hard, weathered to 12 feet

B/H = 509.6

Test Hole No. BR-4
STA 476+41.75
12.92' LT

Test Hole No. BR-4
El 545.55

12(6) 12(6)
50(2.75) 50(1)
50(.125) 50(.125)
50(.125) 50(.125)
50(.125) 50(.125)
50(.125) 50(.125)

CLAY, dark brown and gray, stiff to very stiff, moist, with calcareous nodules and fe stains (CH)
CLAY, brown and tan, very stiff, moist, with limestone deposits (CL)
LIMESTONE, tan, soft, weathered
LIMESTONE, gray, hard to very hard

B/H = 510.1

Sheet 5 of 49 Sheets

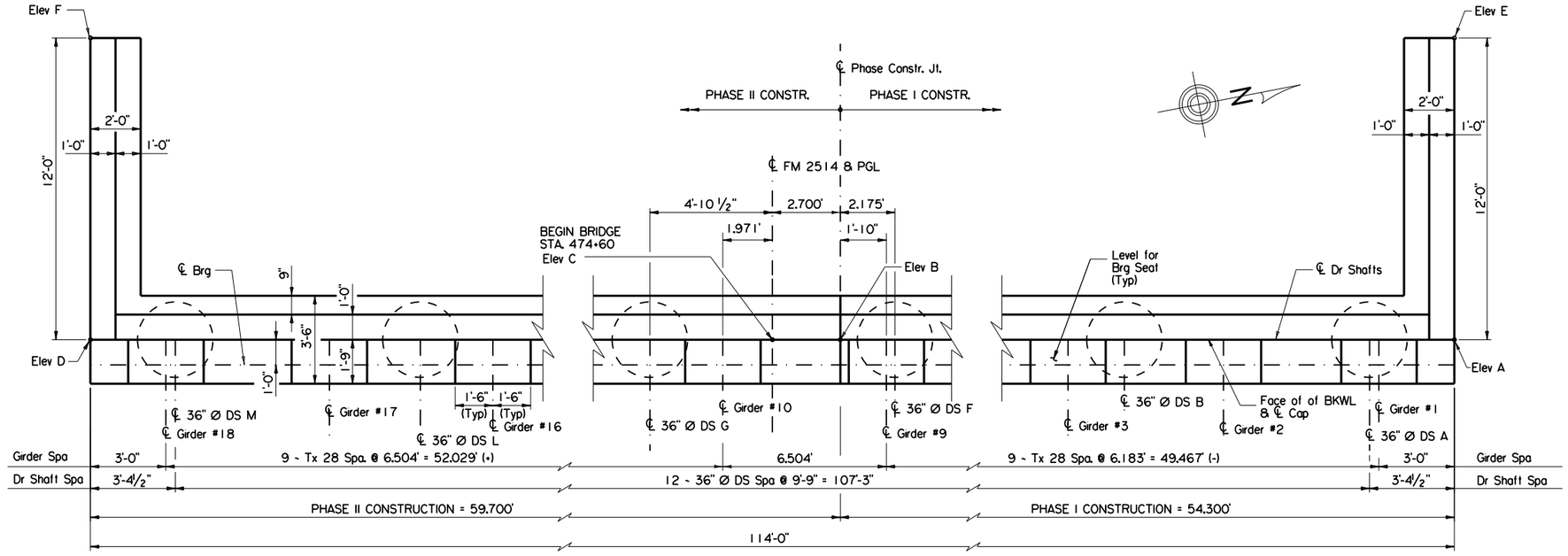
Texas Department of Transportation

Dallas District Bridge

FM 2514
Muddy Creek

CORE BORING DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		313



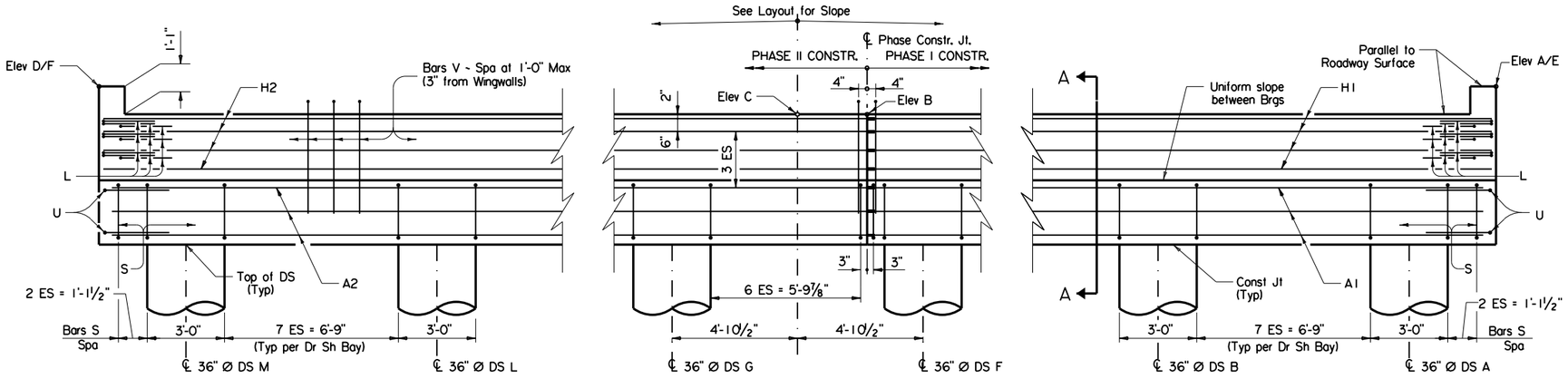
PLAN

Scale: 3/16" = 1'-0"

General Notes:

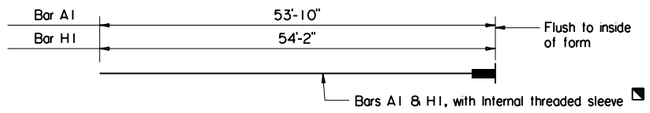
Provide spiral steel with one extra turn at the top, bottom, and at splices.
Include the reinforcing extending from the shaft into the cap in the price bid per foot of DRILL SHAFT.
Provide Class C High Performance Concrete (HPC), f'c = 3.6 ksi
Finish Bearing Seats with a wood float.
Provide Grade 60 reinforcement.
For framing details not shown, see Framing Plan.
Calculated Drilled Shaft Foundation Load = 77 Tons/Drilled Shaft.
See Standard FD sheets for foundation details.
See Abutment Misc. Detail Sheet for Bar Schedules, corner details, sections, elevations and other details not shown.

◥ - Provide sleeve-threaded type Mechanical Couplers per Item 440.

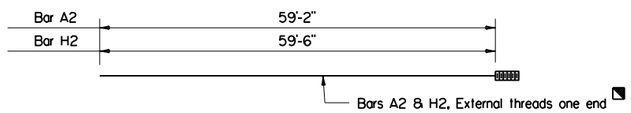


ELEVATION

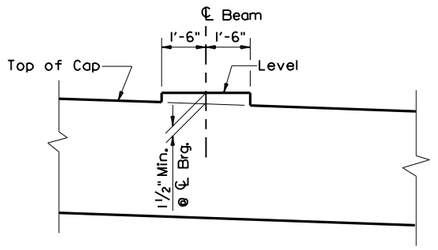
Scale: 3/16" = 1'-0"



Bars A1 & H1 (Stage I Phase)



Bars A2 & H2 (Stage II Phase)



BEARING SEAT DETAILS

(Bearing surface shall be clean and free of all loose materials before setting bearing pad.)

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Sheet 6 of 49 Sheets

Texas Department of Transportation

Dallas District Bridge

FM 2514
Muddy Creek

ABUTMENT 1 DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		314

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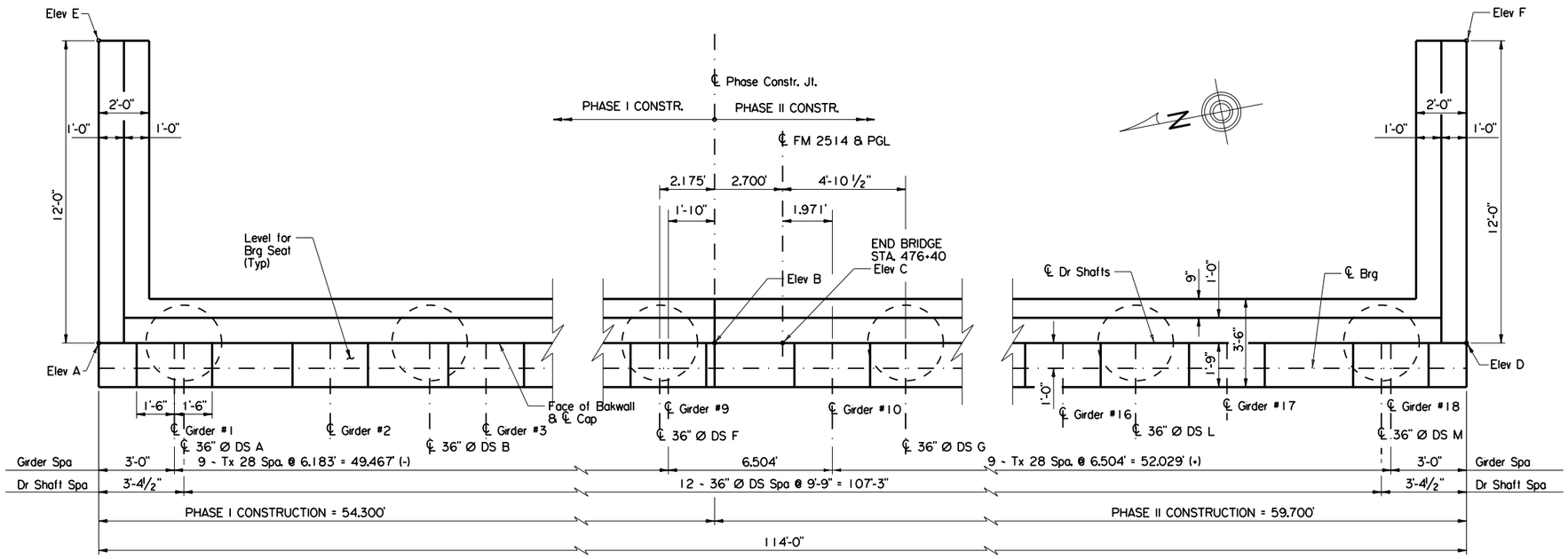
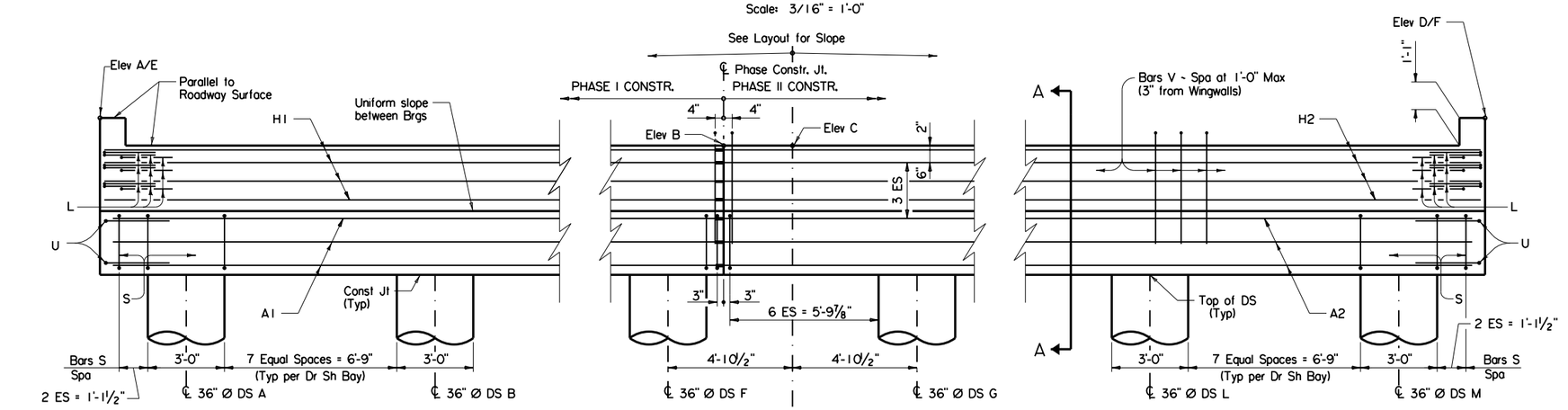
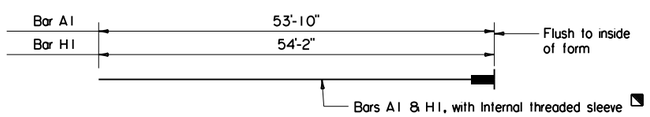


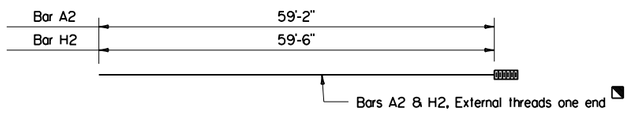
PLAN
Scale: 3/16" = 1'-0"



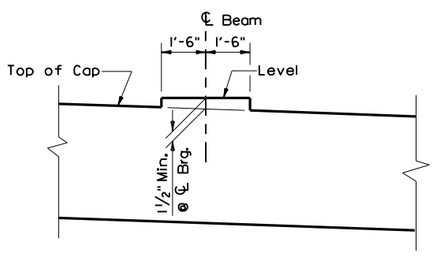
ELEVATION
Scale: 3/16" = 1'-0"



Bars A1 & H1 (Stage I Phase)



Bars A2 & H2 (Stage II Phase)



BEARING SEAT DETAILS
(Bearing surface shall be clean and free of all loose materials before setting bearing pad.)

General Notes:

Provide spiral steel with one extra turn at the top, bottom, and at splices.
Include the reinforcing extending from the shaft into the cap in the price bid per foot of DRILL SHAFT.
Provide Class C High Performance Concrete (HPC), f'c = 3.6 ksi
Finish Bearing Seats with a wood float.
Provide Grade 60 reinforcement.
For framing details not shown, see Framing Plan.
Calculated Drilled Shaft Foundation Load = 77 Tons/Drilled Shaft.
See Standard FD sheets for foundation details.
See Abutment Misc. Detail Sheet for Bar Schedules, corner details, sections, elevations and other details not shown.

◪ - Provide sleeve-threaded type Mechanical Couplers per Item 440.

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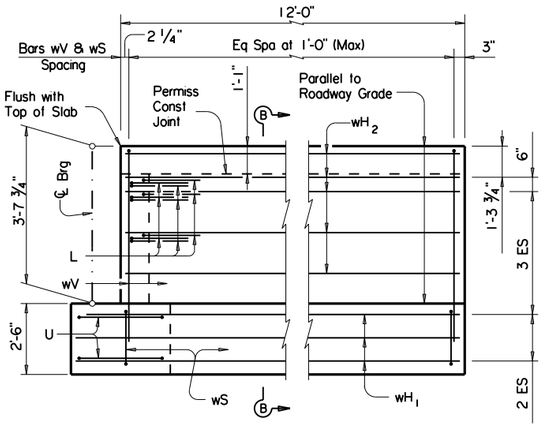
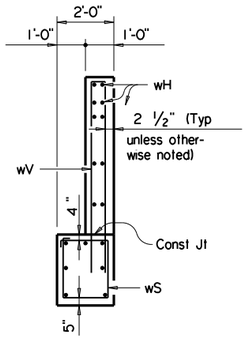
ABUTMENT 4 DETAILS

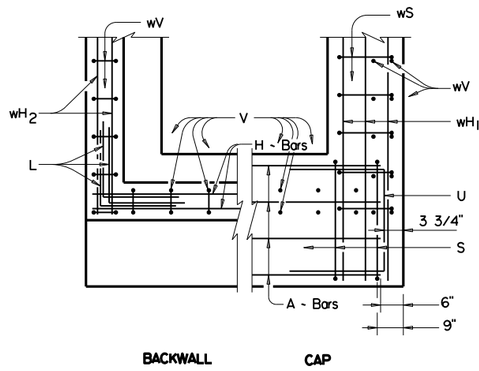
FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		315



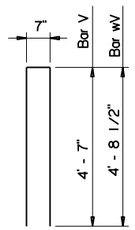
WINGWALL ELEVATION



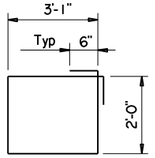
SECTION B-B



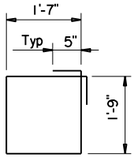
CORNER DETAILS



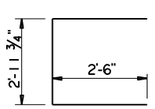
BARS V & wV



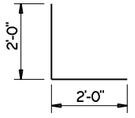
BARS S



BARS wS

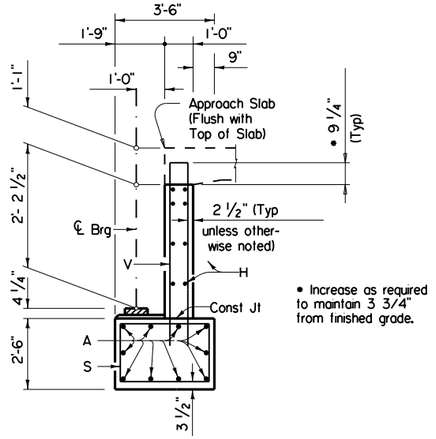


BARS U



BARS L

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



SECTION A-A
(With Approach Slab)

• Increase as required to maintain 3 3/4" from finished grade.

BAR SCHEDULE - ABUT. 1 - PHASE I

Bar	Type	No.	Size	Length	Weight
A1	ST	10	#11	53'-10"	2,860
H1	ST	8	#6	54'- 2"	651
L	BT	9	#6	4'- 0"	54
S	BT	45	#5	11'- 2"	505
U	BT	2	#6	8'- 0"	24
V	BT	54	#5	9'- 9"	549
wH1	ST	7	#6	13'- 5"	141
wH2	ST	10	#6	11'- 8"	175
wS	BT	13	#4	7'- 6"	64
wV	BT	13	#5	10'- 0"	136
Total Reinforcing Steel				LB	5,179
Cl C Conc (Bent) (HPC)				CY	26.4

BAR SCHEDULE - ABUT 1 - PHASE II

Bar	Type	No.	Size	Length	Weight
A2	ST	10	#11	59'- 2"	3,144
H2	ST	8	#6	59'- 6"	715
L	BT	9	#6	4'- 0"	54
S	BT	50	#5	11'- 2"	562
U	BT	2	#6	8'- 0"	24
V	BT	60	#5	9'- 9"	610
wH1	ST	7	#6	13'- 5"	141
wH2	ST	10	#6	11'- 8"	175
wS	BT	13	#4	7'- 6"	64
wV	BT	13	#5	10'- 0"	136
Total Reinforcing Steel				LB	5,646
Cl C Conc (Bent) (HPC)				CY	28.7

BAR SCHEDULE - ABUT. 4 - PHASE I

Bar	Type	No.	Size	Length	Weight
A1	ST	10	#11	53'-10"	2,860
H1	ST	8	#6	54'- 2"	651
L	BT	9	#6	4'- 0"	54
S	BT	45	#5	11'- 2"	505
U	BT	2	#6	8'- 0"	24
V	BT	54	#5	9'- 9"	549
wH1	ST	7	#6	13'- 5"	141
wH2	ST	10	#6	11'- 8"	175
wS	BT	13	#4	7'- 6"	64
wV	BT	13	#5	10'- 0"	136
Total Reinforcing Steel				LB	5,179
Cl C Conc (Bent) (HPC)				CY	26.4

BAR SCHEDULE - ABUT 4 - PHASE II

Bar	Type	No.	Size	Length	Weight
A2	ST	10	#11	59'- 2"	3,144
H2	ST	8	#6	59'- 6"	715
L	BT	9	#6	4'- 0"	54
S	BT	50	#5	11'- 2"	562
U	BT	2	#6	8'- 0"	24
V	BT	60	#5	9'- 9"	610
wH1	ST	7	#6	13'- 5"	141
wH2	ST	10	#6	11'- 8"	175
wS	BT	13	#4	7'- 6"	64
wV	BT	13	#5	10'- 0"	136
Total Reinforcing Steel				LB	5,646
Cl C Conc (Bent) (HPC)				CY	28.7

■ - For Contractor's information only.
▨ - Provide sleeve-threaded type Mechanical Couplers per Item 440.

CONTROL ELEVATIONS - ABUTMENT 1

	Elev A	Elev B	Elev C	Elev D	Elev E	Elev F
ABUT 1	551.08	551.08	551.14	551.08	551.00	551.00

TOP OF DS ELEVATIONS - ABUTMENT 1

	DS A	DS B	DS C	DS D	DS E	DS F	DS G	DS H	DS J	DS K	DS L	DS M
ABUT 1	545.00	545.20	545.39	545.59	545.78	545.98	545.98	545.78	545.59	545.39	545.20	545.00

BEARING SEAT ELEVATIONS - ABUTMENT 1

	Girder #1	Girder #2	Girder #3	Girder #4	Girder #5	Girder #6	Girder #7	Girder #8	Girder #9	Girder #10	Girder #11	Girder #12	Girder #13	Girder #14	Girder #15	Girder #16	Girder #17	Girder #18
ABUT 1	547.63	547.75	547.88	548.00	548.12	548.25	548.37	548.49	548.62	548.67	548.54	548.41	548.28	548.15	548.02	547.89	547.76	547.63

CONTROL ELEVATIONS - ABUTMENT 4

	Elev A	Elev B	Elev C	Elev D	Elev E	Elev F
ABUT 4	552.36	552.37	552.42	552.36	552.45	552.45

TOP OF DS ELEVATIONS - ABUTMENT 4

	DS A	DS B	DS C	DS D	DS E	DS F	DS G	DS H	DS J	DS K	DS L	DS M
ABUT 4	546.29	546.48	546.68	546.87	547.07	547.26	547.26	547.07	546.87	546.68	546.48	546.29

BEARING SEAT ELEVATIONS - ABUTMENT 4

	Girder #1	Girder #2	Girder #3	Girder #4	Girder #5	Girder #6	Girder #7	Girder #8	Girder #9	Girder #10	Girder #11	Girder #12	Girder #13	Girder #14	Girder #15	Girder #16	Girder #17	Girder #18
ABUT 4	548.90	549.02	549.14	549.27	549.39	549.52	549.64	549.76	549.89	549.94	549.81	549.68	549.55	549.42	549.29	549.16	549.03	548.90

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Sheet 8 of 49 Sheets

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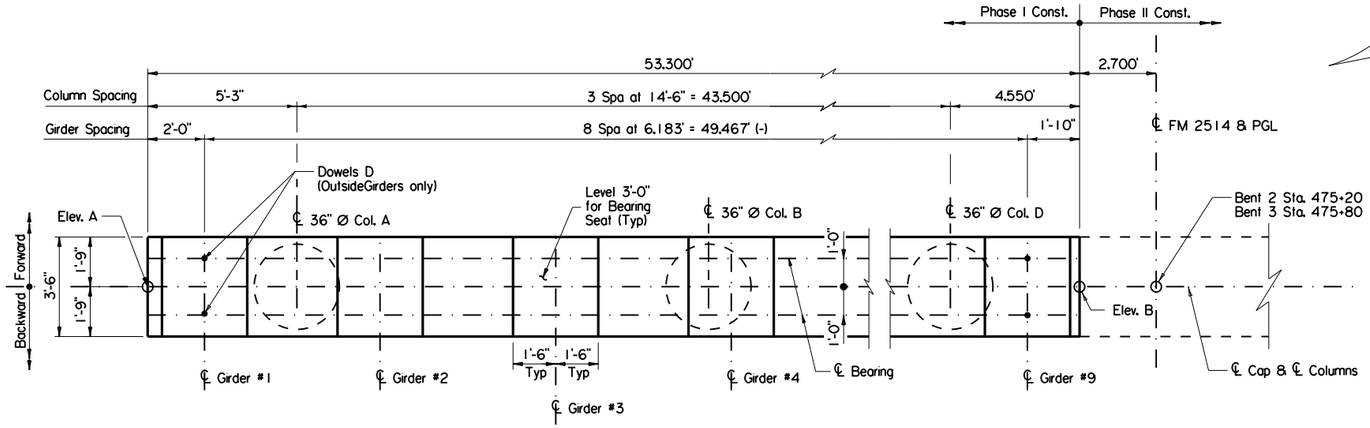
Dallas District Bridge

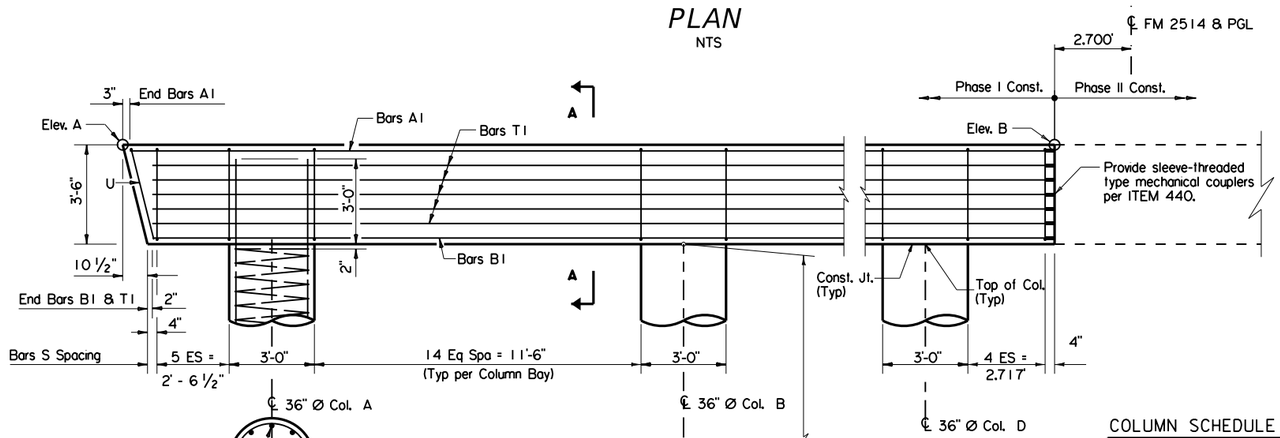
FM 2514
Muddy Creek

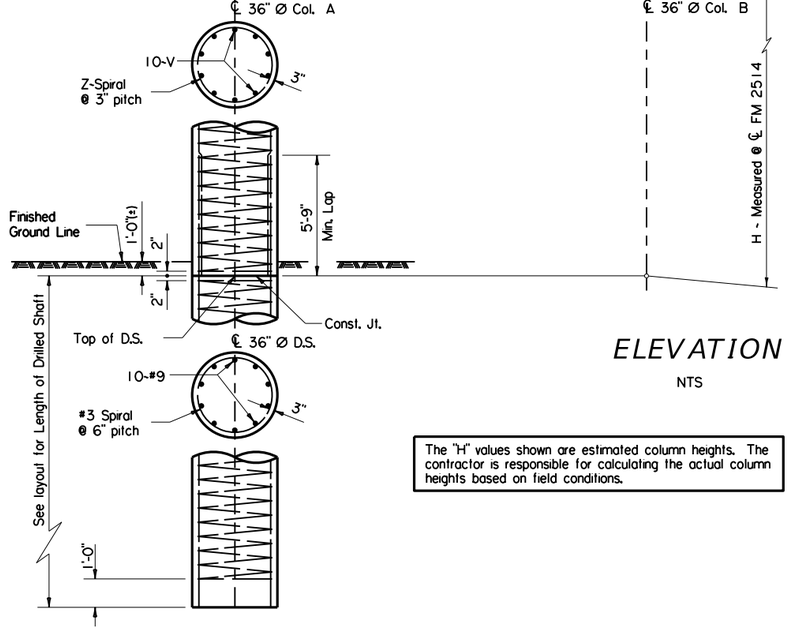
ABUTMENT MISC. DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		316



PLAN
NTS





ELEVATION
NTS

The "H" values shown are estimated column heights. The contractor is responsible for calculating the actual column heights based on field conditions.

BAR SCHEDULE - BENT PHASE I

Bar	Type	No.	Size	Length	Weight
A1	St	7	#11	53'-1"	1,974
B1	St	7	#11	52'-3"	1,943
D	St	4	1 1/4 D	1'-8"	28
S	Bt	55	#5	13'-4"	765
T1	St	10	#5	52'-3"	545
U	Bt	1	#5	9'-7"	10
☐ Total Reinforcing Steel				LB	5,265
Cl C Conc (Cap) (HPC)				CY	24.4

☐ - For contractor's information only.

ESTIMATED QUANTITIES - PHASE ONE BENT

ITEM	UNIT	QUANTITIES BENT 2	QUANTITIES BENT 3
DRILL SHAFT (36 IN) (HPC)	LF	64	60
CL C CONC (Cap) (HPC)	CY	33.8	34.9
CL C CONC (Column) (HPC)	CY	9.4	10.5
☐ REINF STL	LB	7,125	7,285

☐ - For contractor's information only.

COLUMN SCHEDULE - ONE COLUMN

"H"	Bars V-10-#9		Bars Z-#3 Spiral		Est. Quant.-4 Col. Reinf. Steel	Est. Quant.-4 Col. Class C Conc (HPC)
FT	Length	Weight	Length	Weight	LBS	CY
8	11'-0"	374	136	51	1,700	8.4
9	12'-0"	408	152	57	1,860	9.4
10	13'-0"	442	168	63	2,020	10.5
11	14'-0"	476	184	69	2,180	11.5
12	15'-0"	510	199	75	2,340	12.6

Adjust spiral Z length by 7.9 Ft. and bars V length by 0.5 Ft. for each 0.5 Ft. variation in "H" value.

Adjust Estimated Quantity of Concrete for each column by 0.13 CY for each 0.5 Ft. variation in "H" value.

Adjust Estimated Quantity of Reinforcing Steel for each column by 20.0 Lb for each 0.5 Ft. variation in "H" value.

General Notes:

Include the reinforcing extending from the shaft into the column in the price bid per foot of DRILL SHAFT.
Provide spiral steel with one extra turn at the top, bottom, and at splices.
Provide Class C High Performance Concrete (HPC), f'c = 3.6 ksi
For framing details not shown, see Framing Plan.
Provide Grade 60 reinforcement.
Leave cap form supports in place until entire cap is ready for form removal.
Finish Bearing Seats with a wood float.
Calculated Drilled Shaft Foundation Load = 207 Tons/Drilled Shaft.
See Bents 2 & 3 Misc. Detail Sheet for Section A-A, elevations & other details not shown.

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Muddy Creek

BENT 2 & 3
PHASE I DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
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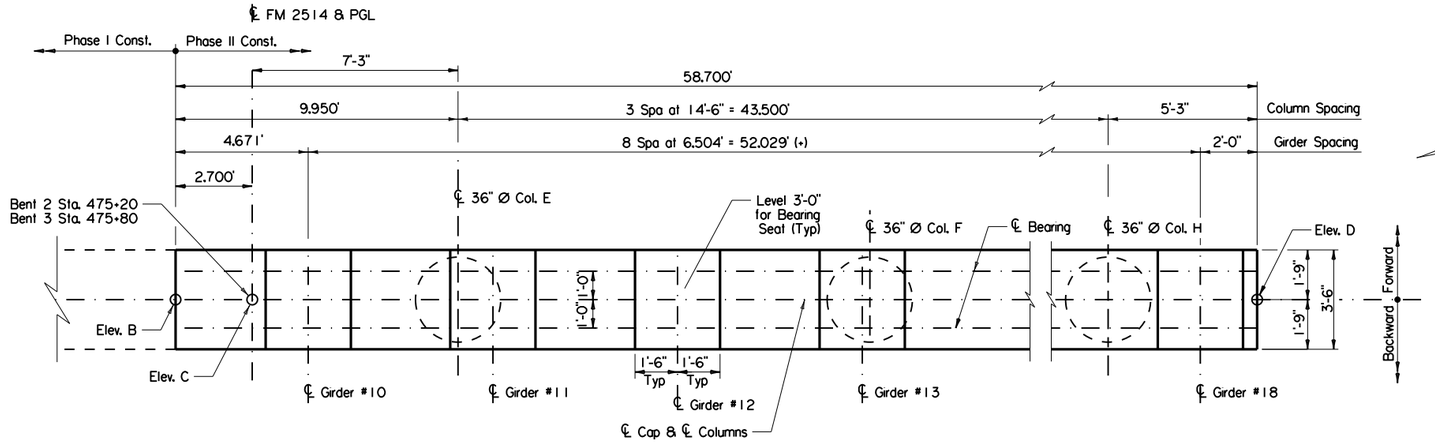
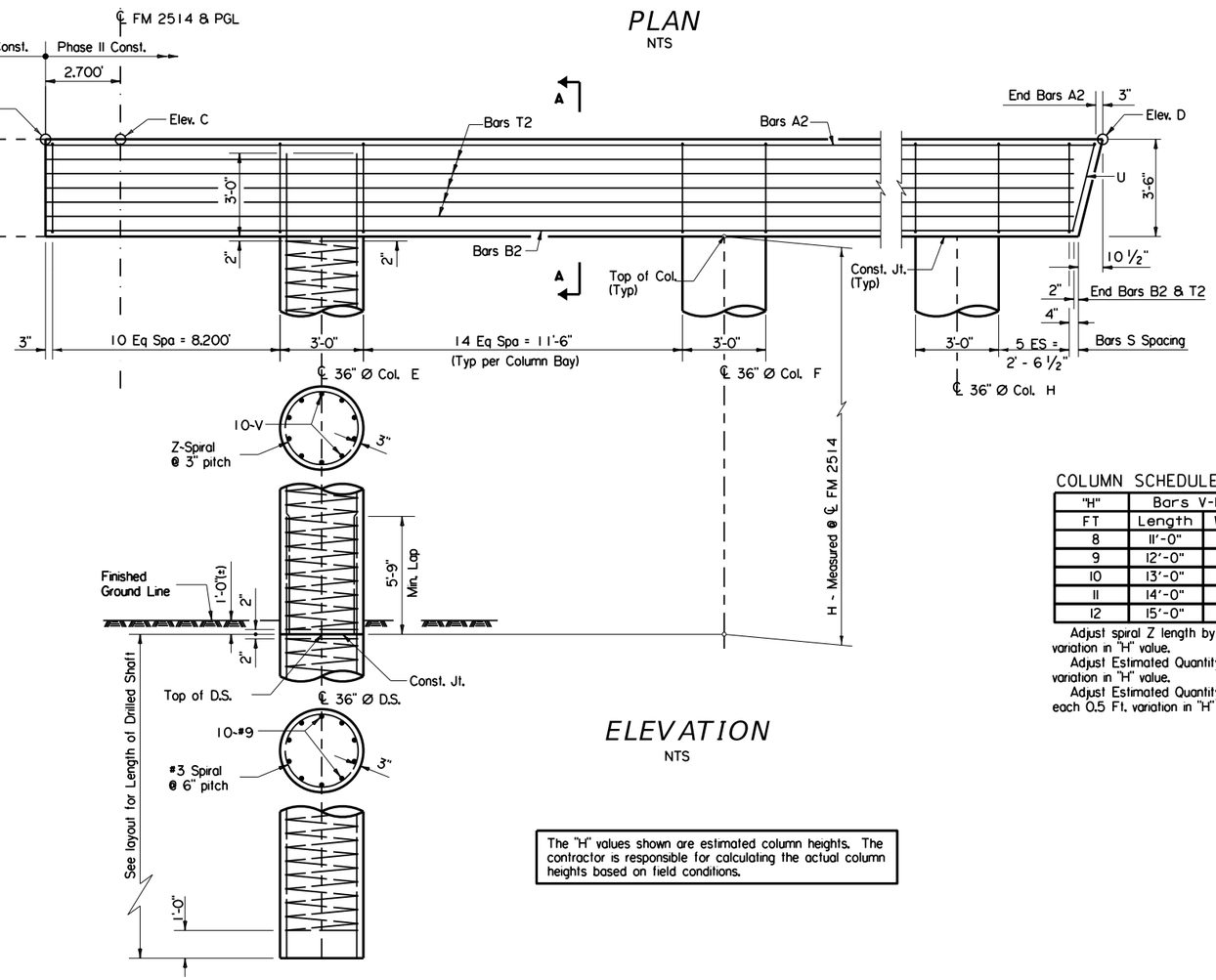
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		317



PLAN
NTS



ELEVATION
NTS

The "H" values shown are estimated column heights. The contractor is responsible for calculating the actual column heights based on field conditions.

BAR SCHEDULE - BENT PHASE II

Bar	Type	No.	Size	Length	Weight
A2	St	7	#11	58'-6"	2,176
B2	St	7	#11	57'-8"	2,145
S	Bt	62	#5	13'-4"	862
T2	St	10	#5	57'-8"	601
U	Bt	1	#5	9'-7"	10
☒ Total Reinforcing Steel				LB	5,794
Cl C Conc (Bent) (HPC)				CY	26.9

☒ - For contractor's information only.

ESTIMATED QUANTITIES - PHASE II BENT

ITEM	UNIT	QUANTITIES BENT 2	QUANTITIES BENT 3
DRILL SHAFT (36 IN) (HPC)	LF	64	60
CL C CONC (CAP) (HPC)	CY	26.9	26.9
CL C CONC (COLUMN) (HPC)	CY	9.4	10.5
☐ REINF STL	LB	7,654	7,814

☐ - For contractor's information only.

General Notes:
Include the reinforcing extending from the shaft into the column in the price bid per foot of DRILL SHAFT.
Provide spiral steel with one extra turn at the top, bottom, and at splices.
Provide Class C High Performance Concrete (HPC), f'c = 3.6 ksi
For framing details not shown, see Framing Plan.
Provide Grade 60 reinforcement.
Leave cap form supports in place until entire cap is ready for form removal.
Finish Bearing Seats with a wood float.
Calculated Drilled Shaft Foundation Load = 207 Tons/Drilled Shaft.
See Bents 2 & 3 Misc. Detail Sheet for Section A-A, elevations & other details not shown.

COLUMN SCHEDULE ~ ONE COLUMN

"H"	Bars V-10-#9		Bars Z-#3 Spiral		Est. Quant.-4 Col. Reinf. Steel	Est. Quant.-4 Col. Class C Conc (HPC)
FT	Length	Weight	Length	Weight	LBS	CY
8	11'-0"	374	136	51	1,700	8.4
9	12'-0"	408	152	57	1,860	9.4
10	13'-0"	442	168	63	2,020	10.5
11	14'-0"	476	184	69	2,180	11.5
12	15'-0"	510	199	75	2,340	12.6

Adjust spiral Z length by 7.9 Ft. and bars V length by 0.5 Ft. for each 0.5 Ft. variation in "H" value.
Adjust Estimated Quantity of Concrete for each column by 0.13 CY for each 0.5 Ft. variation in "H" value.
Adjust Estimated Quantity of Reinforcing Steel for each column by 20.0 Lb for each 0.5 Ft. variation in "H" value.

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Muddy Creek

BENT 2 & 3
PHASE II DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
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REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		318

CONTROL ELEVATIONS - Bent 2 Phase I

	Elev A	Elev B
Bent 2	547.88	548.94

TOP OF COL ELEVATIONS - Bent 2 Phase I

	COL A	COL B	COL C	COL D
Bent 2	544.48	544.77	545.06	545.35

BEARING SEAT ELEVATIONS - Bent 2 Phase I

		Girder #1	Girder #2	Girder #3	Girder #4	Girder #5	Girder #6	Girder #7	Girder #8	Girder #9
Bent 2	Bkwd	548.04	548.17	548.29	548.41	548.54	548.66	548.78	548.91	549.03
	Fwd	548.06	548.18	548.30	548.43	548.55	548.67	548.80	548.92	549.05

CONTROL ELEVATIONS - Bent 3 Phase I

	Elev A	Elev B
Bent 3	548.30	549.37

TOP OF COL ELEVATIONS - Bent 3 Phase I

	COL A	COL B	COL C	COL D
Bent 3	544.91	545.20	545.49	545.78

BEARING SEAT ELEVATIONS - Bent 3 Phase I

		Girder #1	Girder #2	Girder #3	Girder #4	Girder #5	Girder #6	Girder #7	Girder #8	Girder #9
Bent 3	Bkwd	548.47	548.59	548.72	548.84	548.96	549.09	549.21	549.33	549.46
	Fwd	548.48	548.61	548.73	548.85	548.98	549.10	549.23	549.35	549.47

CONTROL ELEVATIONS - Bent 2 Phase II

	Elev B	Elev C	Elev D
Bent 2	548.94	549.00	547.88

TOP OF COL ELEVATIONS - Bent 2 Phase II

	COL E	COL F	COL G	COL H
Bent 2	545.35	545.06	544.77	544.48

BEARING SEAT ELEVATIONS - Bent 2 Phase II

		Girder #10	Girder #11	Girder #12	Girder #13	Girder #14	Girder #15	Girder #16	Girder #17	Girder #18
Bent 2	Bkwd	549.08	548.95	548.82	548.69	548.56	548.43	548.30	548.17	549.04
	Fwd	549.10	548.97	548.84	548.71	548.58	548.45	548.32	548.19	548.06

CONTROL ELEVATIONS - Bent 3 Phase II

	Elev B	Elev C	Elev D
Bent 3	549.37	549.42	548.30

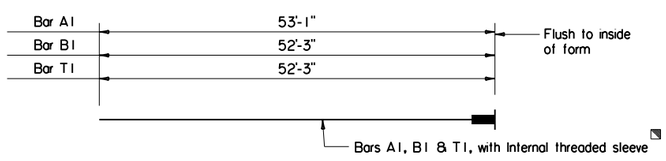
TOP OF COL ELEVATIONS - Bent 3 Phase II

	COL E	COL F	COL G	COL H
Bent 3	545.78	545.49	545.20	544.91

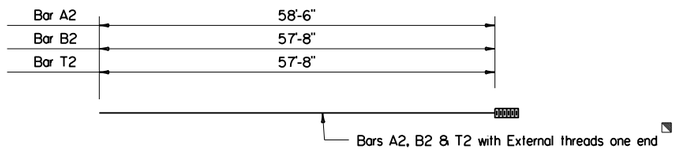
BEARING SEAT ELEVATIONS - Bent 3 Phase II

		Girder #10	Girder #11	Girder #12	Girder #13	Girder #14	Girder #15	Girder #16	Girder #17	Girder #18
Bent 3	Bkwd	549.51	549.38	549.25	549.12	548.99	548.86	548.73	548.60	548.47
	Fwd	549.52	549.39	549.26	549.13	549.00	548.87	548.74	548.61	548.48

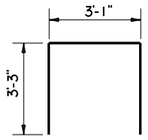
◪ - Provide sleeve-threaded type Mechanical Couplers per Item 440.



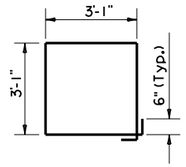
Bars A1, B1, T1 (Phase I)



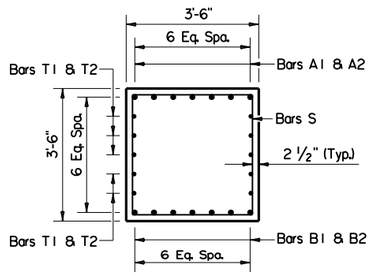
Bars A2, B2, T2 (Phase II)



BARS U

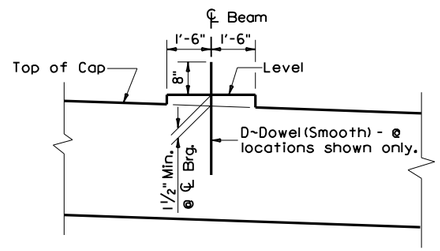


BARS S



SECTION A-A

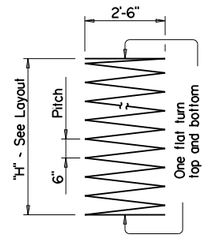
NTS



BEARING SEAT DETAILS

(Bearing surface shall be clean and free of all loose materials before setting bearing pad.)

NTS



BARS Z

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

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FM 2514
Muddy Creek

BENT 2 & 3
MISC DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		319

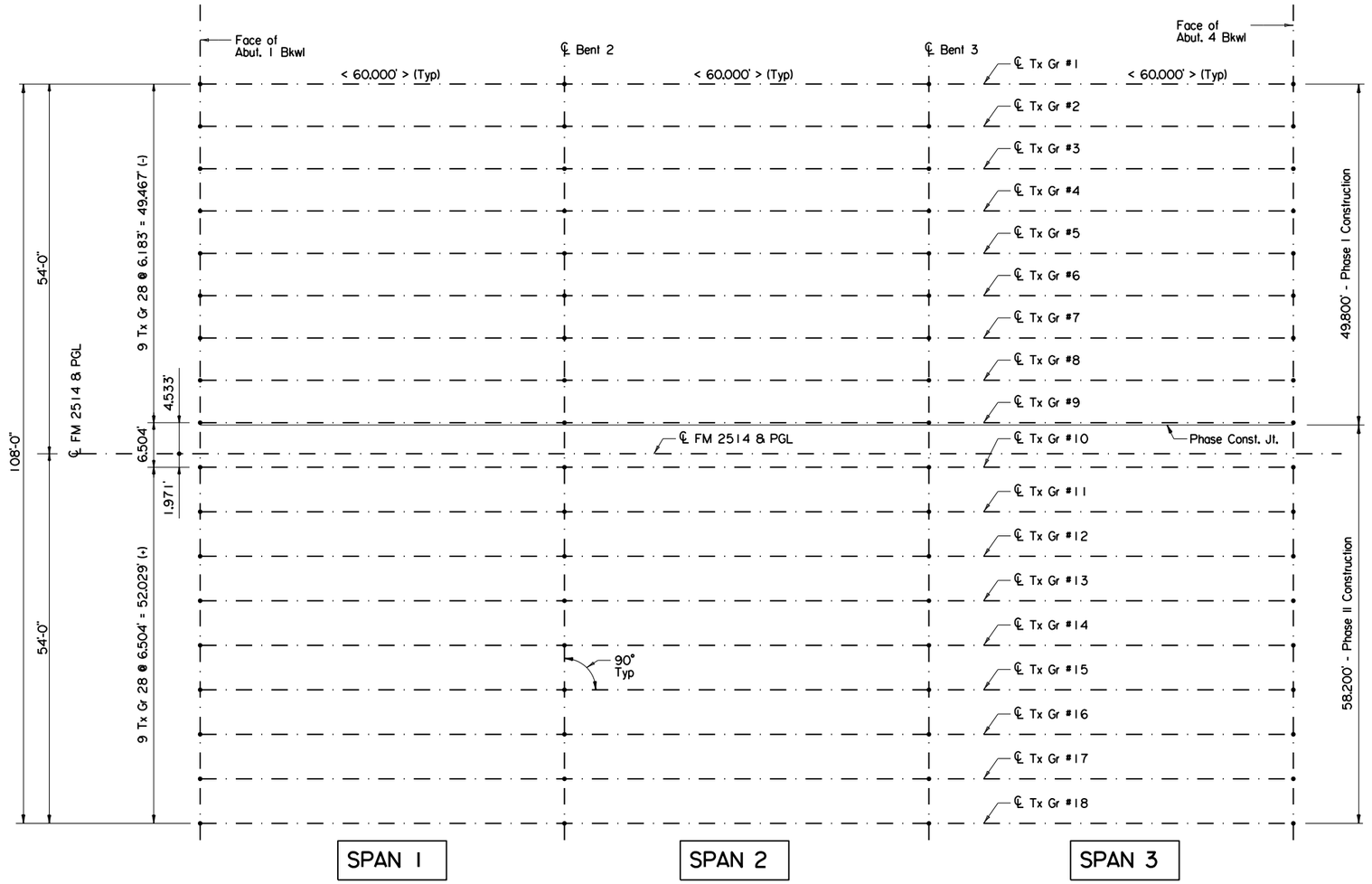
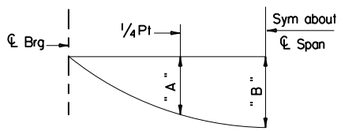


TABLE OF BEAM LENGTHS & DEAD LOAD DEFLECTIONS

Span	Beam	"A" Ft.	"B" Ft.	Length Ft.
1	1-8	0.038	0.053	59.502
1	9	0.021	0.029	59.502
1	10-17	0.040	0.056	59.502
1	18	0.038	0.053	59.502
2	1-8	0.038	0.053	59.502
2	9	0.021	0.029	59.502
2	10-17	0.040	0.056	59.502
2	18	0.038	0.053	59.502
3	1-8	0.038	0.053	59.502
3	9	0.021	0.029	59.502
3	10-17	0.040	0.056	59.502
3	18	0.038	0.053	59.502

All beam lengths are horizontal length end to end of beam.



Note: Deflections shown are calculated values due to concrete slab only. Field deflections may be less than the calculated values shown. Calculations are based on an Ec of 5,000 ksi.

General Notes:

Dimensions shown thus <XXX.XXX> represent horizontal beam length Face of Abut. Bkwl. to centerline of Bent or centerline to centerline of Bents.

FRAMING PLAN - UNIT 1

NTS

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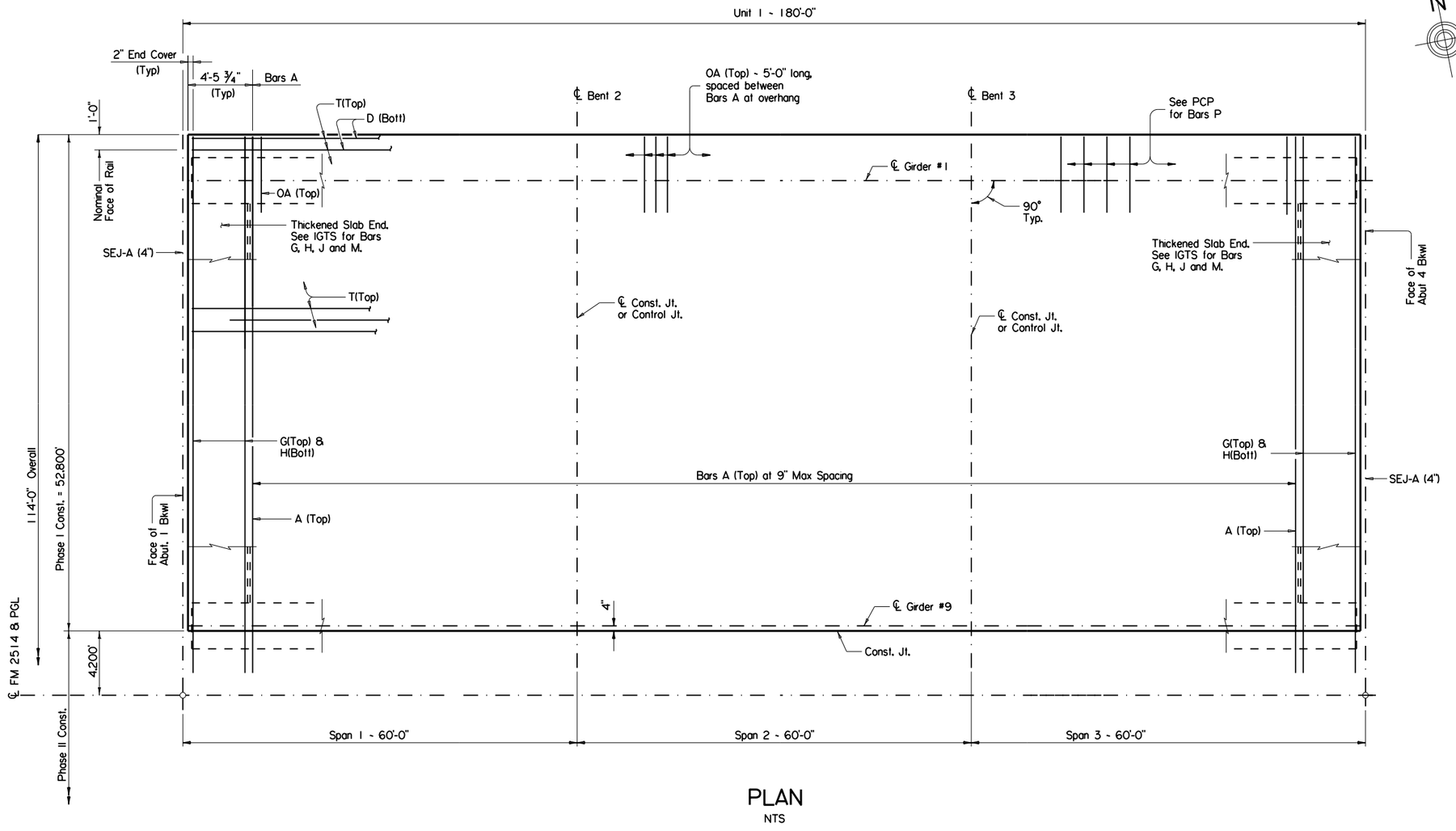
Muddy Creek

FRAMING PLAN

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		320

DATE: 2/28/2017 TIME: 8:56:49 AM FILE: t:\dalbrdg\2679-02-008 fm2514 muddy creek\bridge drawings\FM2514FramingPlan.dgn User: thwang



PLAN
NTS

General Notes:

See Slab Phase I Section's Sheet for typical sections, general notes, bar table and estimate of quantities.

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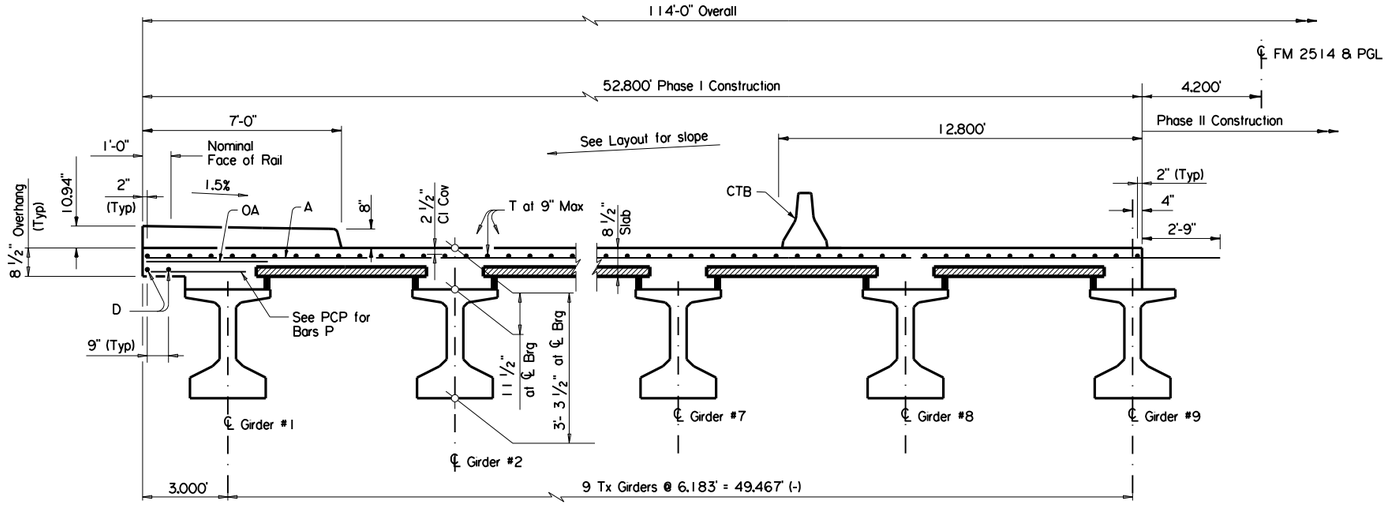
Muddy Creek

SLAB PH. 1 DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		321

DATE: 2/28/2017 TIME: 8:56:49 AM FILE: t:\dalbrdg\2679-02-008 fm2514 muddy creek\bridge drawings\FM2514SlabPhaseI.dgn User: thwang



TYPICAL TRANSVERSE SECTION

NTS

BAR TABLE

BAR	SIZE
A	#4
D	#4
G	#4
H	#4
J	#4
M	#4
OA	#5
P	#4
T	#4

General Notes:

Provide Class S High Performance Concrete, f'c = 4 ksi.

For beam, bearing pad, misc. slab and thickened slab end details not shown, see IGD, IGEB, IGMS, IGTS and IGND.

For Sealed Expansion Joint details not shown, see SEJ-A.

For Sealed Expansion Joint Quantities not shown, see Summary of Estimated Quantities.

Place and finish not less than 30 feet of Bridge Deck concrete per hour.

For rail details not shown, see Traffic Rail Type C221.

For framing details not shown, see Framing Plan.

Provide epoxy coated, Grade 60 reinforcing.

Where required, provide bar laps as follows:

#4 = 2'-1"

#5 = 2'-7"

See PMDF Standard for details and quantity adjustments if this option is used.

Provide a construction joint or control joint at the center line of interior bent 2 & 3.

See layout for surface texture requirements.

See Bridge Typical Section for Median location & geometry.

See BRSM Standard for Reinforcement Deatils and other Median Details.

See IGFRP Standard if Glass Fiber Reinforced Polymer (GFRP) reinforcement option is used.

ITEM	UNIT	QTY
REINF CONC SLAB	SF	9504
BRIDGE MEDIAN (HPC)	SF	0
BRIDGE SIDEWALK (HPC)	SF	1260
PRESTR CONC BEAM (Tx28)	LF	1606.55
ⓒⒶ REINF STEEL	LB	23837

Ⓐ For Contractor's information only, includes median and sidewalk quantities.

ⓒ Reinforcing steel weight is calculated using an approximate factor of 2.3 Lbs/SF for slab, plus a WRR weight of 157 Lbs/100 SF, which includes 3% for laps, for Median & Sidewalk.

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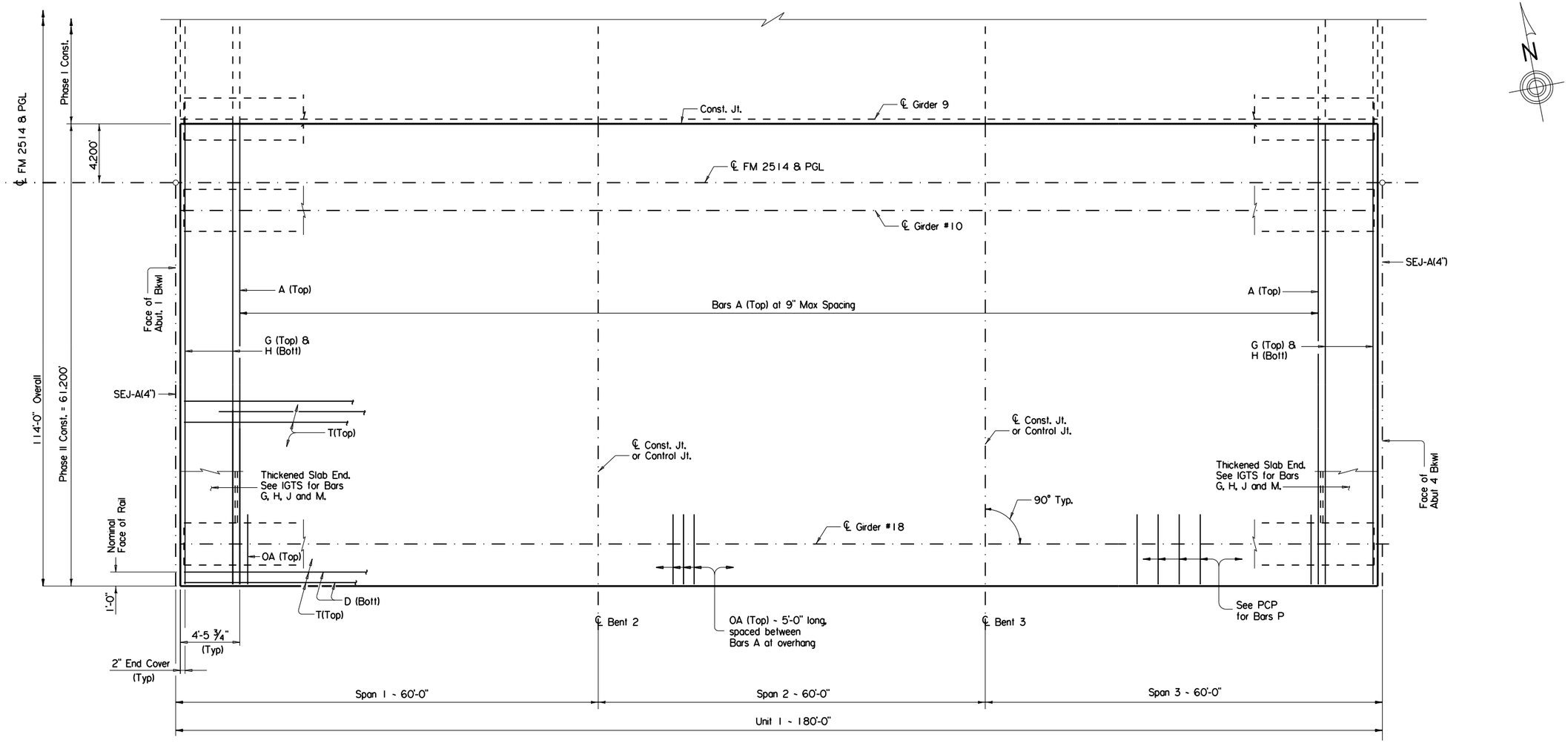
Dallas District Bridge

FM 2514
Muddy Creek

SLAB PH. 1 SECTIONS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		322



PLAN
NTS

General Notes:

See Slab Phase II Section's Sheet for typical sections, general notes, bar table and estimate of quantities.

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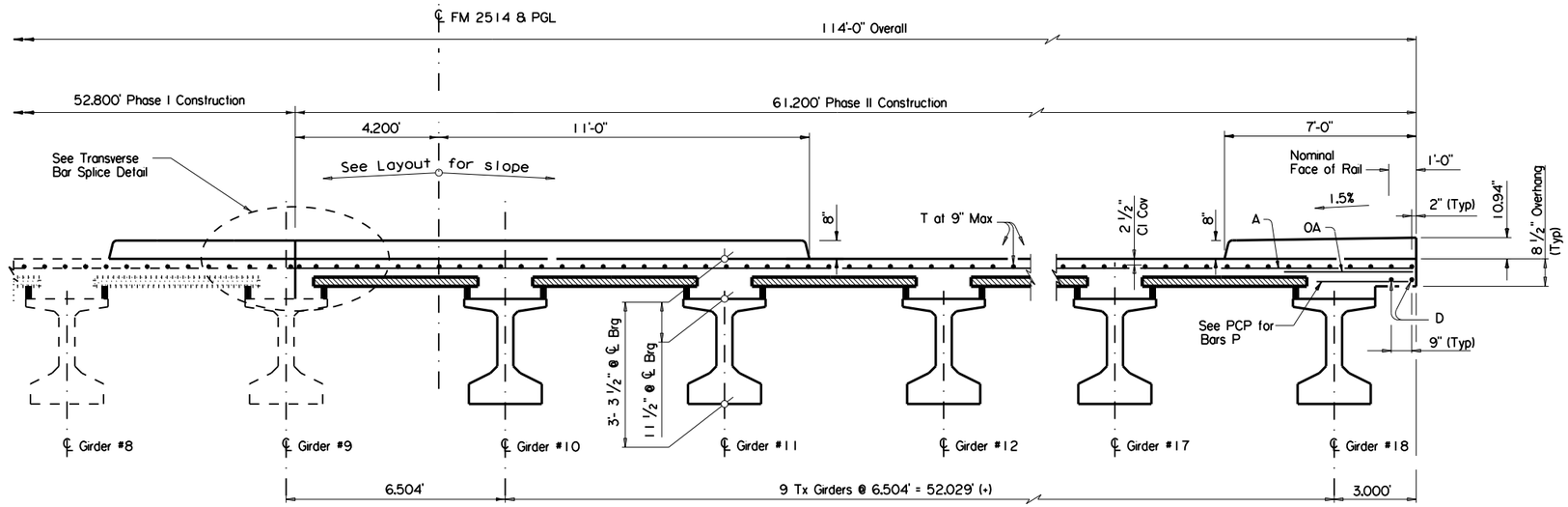
FM 2514
Muddy Creek

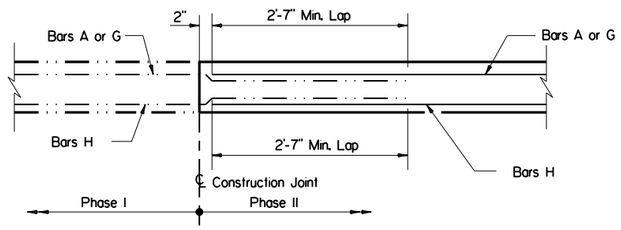
SLAB PH. II DETAILS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		323



TYPICAL TRANSVERSE SECTION

NTS



TRANSVERSE BAR SPLICE DETAIL
(Beams and Bars D & T omitted for clarity)
NTS

TABLE OF ESTIMATE QUANTITIES

	ITEM	UNIT	QTY
	REINF CONC SLAB	SF	11016
	BRIDGE MEDIAN (HPC)	SF	3960
	BRIDGE SIDEWALK (HPC)	SF	1260
	PRESTR CONC BEAM (Tx28)	LF	1606.55
ⓒⒶ	REINF STEEL	LB	33532

Ⓐ For Contractor's information only, includes median and sidewalk quantities.

Ⓒ Reinforcing steel weight is calculated using an approximate factor of 2.3 Lbs/SF for slab, plus a WRR weight of 157 Lbs/100 SF, which includes 3% for laps, for Median & Sidewalk.

BAR TABLE

BAR	SIZE
A	#4
D	#4
G	#4
H	#4
J	#4
M	#4
0A	#5
P	#4
T	#4

General Notes:

Provide Class S High Performance Concrete, f'c = 4 ksi.

For beam, bearing pad, misc. slab and thickened slab end details not shown, see IGD, IGEB, IGMS, IGTS and IGND.

For Sealed Expansion Joint details not shown, see SEJ-A.

For Sealed Expansion Joint Quantities not shown, see Summary of Estimated Quantities.

Place and finish not less than 30 feet of Bridge Deck concrete per hour.

For rail details not shown, see Traffic Rail Type C221.

For framing details not shown, see Framing Plan.

Provide epoxy coated, Grade 60 reinforcing.

Where required, provide bar laps as follows:

#4 = 2'-1"

#5 = 2'-7"

See PMDF Standard for details and quantity adjustments if this option is used.

Provide a construction joint or control joint at the center line of interior bent 2 & 3.

See layout for surface texture requirements.

See Bridge Typical Section for Median location & geometry.

See BRSM Standard for Reinforcement Deatils and other Median Details.

See IGFRP Standard if Glass Fiber Reinforced Polymer (GFRP) reinforcement option is used.

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Dallas District Bridge

FM 2514
Muddy Creek

SLAB PH. II SECTIONS

FILE: SEE PATH	DN: HH	CK: MPB	DW: HH	CK: MPB
©TxDOT 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		324

STRUCTURE	DESIGNED GIRDERS									STRAIGHT STRAND PATTERN									DEPRESSED STRAND PATTERN (1)			CONCRETE		OPTIONAL DESIGN					
	SPAN NO.	GIRDER NO.	GIRDER TYPE	PRESTRESSING STRANDS						TOT NO. DEB	DEBONDED STRANDS PER ROW								NO.	TO END (in)	TO ℄ (in)	RELEASE STRGTH (2) f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	DESIGN LOAD COMP STRESS (TOP ℄) (SERVICE I) fct(ksi)	DESIGN LOAD TENSILE STRESS (BOTT ℄) (SERVICE III) fcb(ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)	LIVE LOAD DISTRIBUTION FACTOR (3)	
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)		DIST FROM BOTTOM (in)	NO. OF STRANDS TOTAL	NO. OF STRANDS DE-BONDED	NUMBER OF STRANDS DEBONDED TO (ft from end) 3	6	9	12	15									Moment	Shear
FM 2514 AT MUDDY CREEK	ALL	ALL	Tx28	A	20	0.6	270	7.88	7.88										2	24.5	24.5	4.5	6.5	2.273	-2.906	2194	0.566	0.707

NON-STANDARD STRAND PATTERNS

PATTERN	STRAND ARRANGEMENT AT ℄ OF GIRDER
A	2.5(ABCDEFG), 4.5(CG), 24.5(A)

(1) When T0 END (in) equals T0 ℄ (in), place these straight strands at the defined T0 values. Fill the lower rows with the remainder of the total number of strands in accordance with the Debonded Strand Designs notes.

(2) Based on the following allowable stresses (ksi):

Compression = 0.65 f'ci

Tension = $0.24\sqrt{f'ci}$

Optional designs must likewise conform.

(3) Portion of full HL93.

DESIGN NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Optional designs for girders 120 feet or longer must have a calculated residual camber equal to or greater than that of the designed girder.

Prestress losses for the designed girders have been calculated for a relative humidity of 65 percent. Optional designs must likewise conform.

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

Use low relaxation strands, each pretensioned to 75 percent of fpu.

Strand debonding must comply with Item 424.4.2.2.2.4. Full-length debonded strands are only permitted in positions marked Δ. Double wrap full-length debonded strands in outer most position of each row.

When shown on this sheet, the Fabricator has the option of furnishing either the designed girder or an approved optional design. All optional design submittals must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.

DEBONDED STRAND DESIGNS:

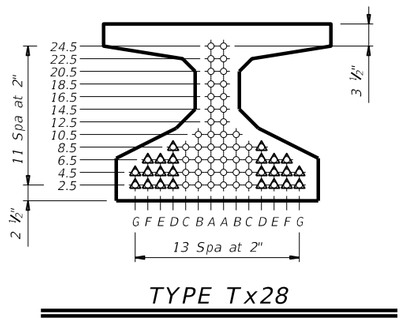
Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc. Place strands within a row as follows:

1) Locate a strand in each "A" and "G" positions.
2) Place strand symmetrically about vertical centerline of girder.
3) Space strands as equally as possible across the entire width.

Do not debond strands in position "G". Distribute debonded strands symmetrically about the vertical centerline. Increase debonded lengths working outward, with debonding staggered in each row.

DEPRESSED STRAND DESIGNS:

Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc., beginning each row in the "A" position and working outward until the required number of strands is reached. All strands in the "A" position must be depressed, maintaining the 2" spacing so that, at the girder ends, the upper two strands are in the position shown in the table.



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HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DESIGNS (NON-STANDARD SPANS)

IGND

FILE: igndsts1.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TAR
©TxDOT October 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	2679	02	008	FM2514
01-16: Notes. 05-16: Addition of debonded straight strand designs.	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		325

DISCLAIMER:
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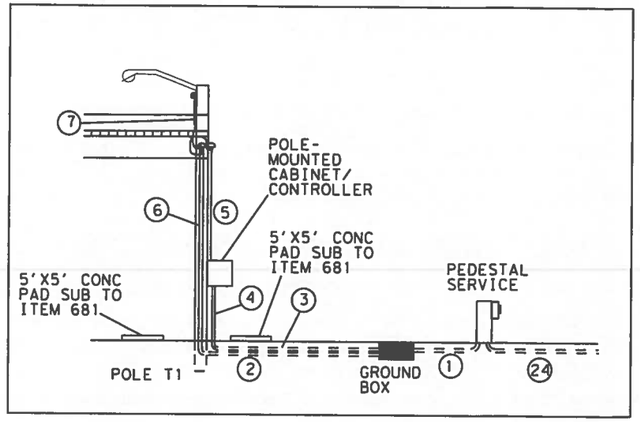
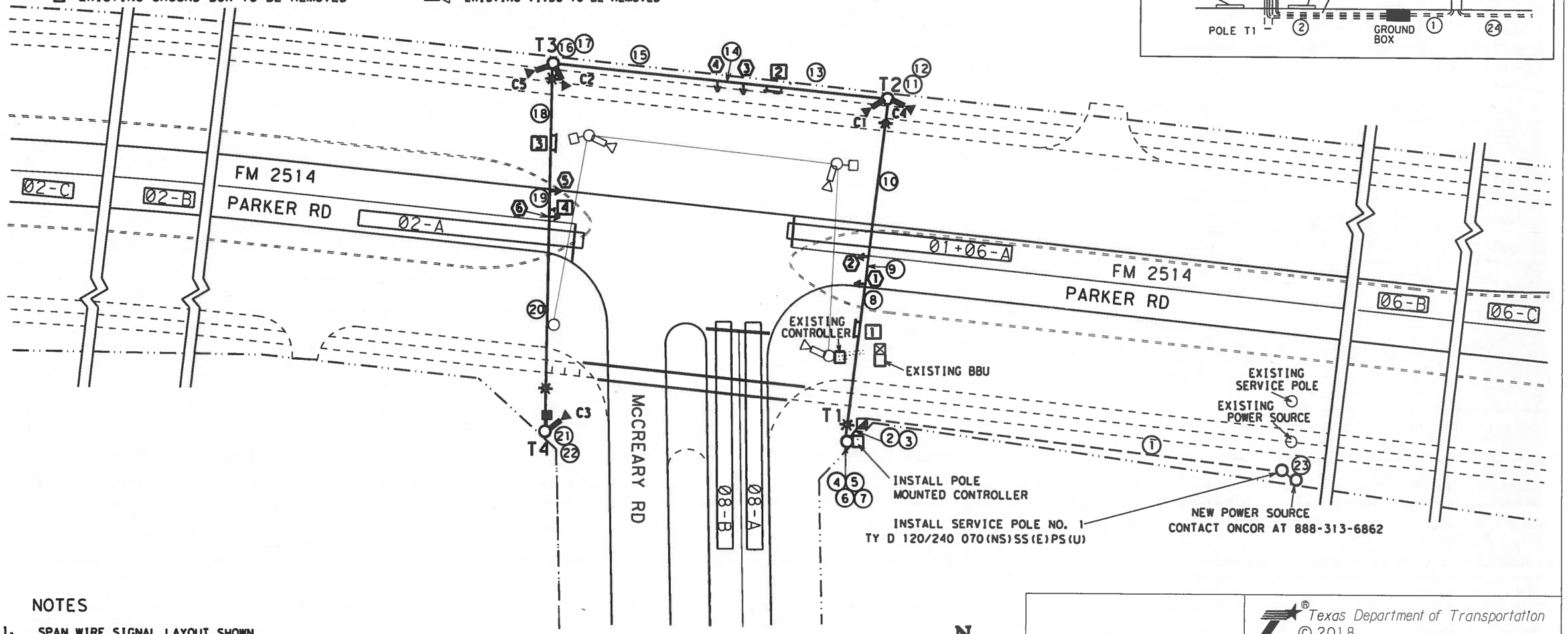
DATE:
FILE:

LEGEND

- PROPOSED CONDUIT WITH RUN NUMBER (4)
- PROPOSED RIGHT OF WAY
- FUTURE ROADWAY CONSTRUCTION
- EXISTING ROADWAY EDGES
- EXISTING STRAIN POLE SIGNAL TO BE REMOVED
- EXISTING SSR ANTENNA TO BE REMOVED
- EXISTING GROUND BOX TO BE REMOVED
- PROPOSED TYPE C GROUND BOX
- Ø8-B PROPOSED VIVDS DETECTION ZONE ID
- PROPOSED VIVDS DETECTION ZONES
- T1 T2 PROPOSED SPAN WIRE SIGNAL WITH POLE NUMBER, HEAD NUMBERS, SIGN NUMBER, 250 WATT HPS EQ LED LUMINAIRE, AND ST. SIGN
- C1 PROPOSED VIVDS AND NUMBER
- EXISTING RADAR TO BE REMOVED
- EXISTING VIVDS TO BE REMOVED

0 20 40 60 80 100
SCALE IN FEET





NOTES

1. SPAN WIRE SIGNAL LAYOUT SHOWN IS FOR INITIAL SETUP BEFORE CONSTRUCTION.

2. SALVAGE THE CONTROLLER CABINET W/ COMPONENTS, SIGNAL HEADS W/ HARDWARE, SSR EQUIPMENT, RADIO EQUIPMENT, RADAR EQUIPMENT, VIVDS EQUIPMENT, STRAIN POLES W/ HARDWARE, BBU, SERVICE POLE, AND ANY OTHER EQUIPMENT AS DIRECTED. THIS EQUIPMENT REMAINS THE PROPERTY OF TXDOT. RETURN EQUIPMENT TO DISTRICT SIGNAL SHOP.

FILE: $FILE$

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Engineer CORRINE M. CHANDLER
P.E. No. 109775 Date 12/12/2016

TEMPORARY TRAFFIC SIGNAL LAYOUT
FM 2514 AND McCREARY RD

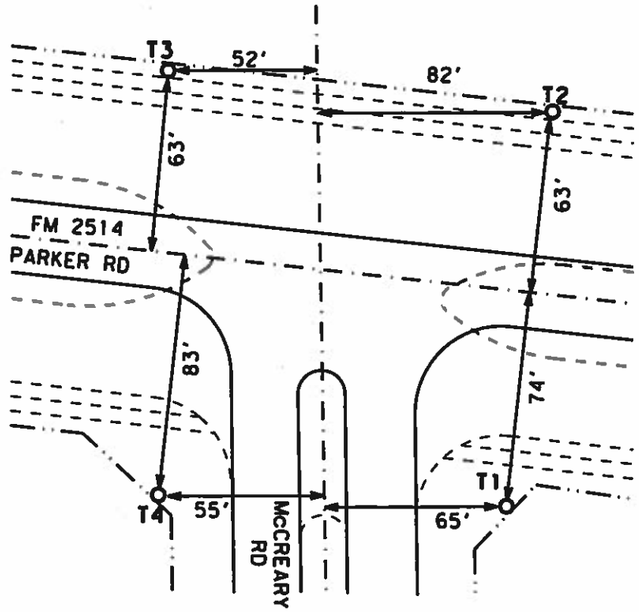
SCALE: 1" = 40' SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CMC	TEXAS	18	COLLIN	358
CHECK	CONTROL	SECTION	JOB	
LDL	2679	02	008	
CHECK				
APM				

CONDUIT RUNS

RUN NO.	CONDUIT TYPE (LF) OVER HEAD	2" RM	2" PVC	3" RM	4" RM	4" PVC	WIRE SIZE AND TYPE (EA.) CONDUCTORS NO. 6 XHHW	NO. 6 BARE	NO. 8 XHHW	SIG. CABLE TY-A 9 CNDR CABLE 14 AWG	VIVDS CABLE	LENGTH OF RUN (LF)	RUN NO.
1			170				2	1	2			170	1
2			10					1	2			10	2
3			10				2	1				10	3
4		6					2	1				6	4
5					12			1		3	5	12	5
6		19						1	2			19	6
7		10						1	4			10	7
8	63								2	3	5	63	8
9	11								2	3	5	11	9
10	63								2	2	5	63	10
11		10						1	4			10	11
12		7						1			2	7	12
13	57								2	2	3	57	13
14	11								2	2	3	11	14
15	66								2	1	3	66	15
16		10						1	4			10	16
17		7						1			2	7	17
18	50								2	1	1	50	18
19	11								2	1	1	11	19
20	85								2		1	85	20
21		10						1	2			10	21
22		7						1			1	7	22
23			17				TO BE INSTALLED BY ONCOR					17	23
TOTALS		86	207		12		372	288	1372	*690	1328		

* INCLUDES 33 FEET FOR SIGNAL HEAD RELOCATION ON SPAN T1-T2 - COIL EXCESS ON POLE T1
INCLUDES 10 FEET FOR SIGNAL HEAD RELOCATION ON SPAN T2-T3 - COIL EXCESS ON POLE T2



POLE PLACEMENT DIAGRAM

GROUND BOX SUMMARY

TYPE	DESCRIPTION	UNIT	QTY.
A	NO. 122311 W/ APRON	EA	-
C	NO. 162922 W/ APRON	EA	1

N

N. T. S.

POLE DATA

TIMBER POLE NUMBER	TIMBER POLE HEIGHT
T1	50'
T2	50'
T3	50'
T4	50'

SIGNAL HEADS

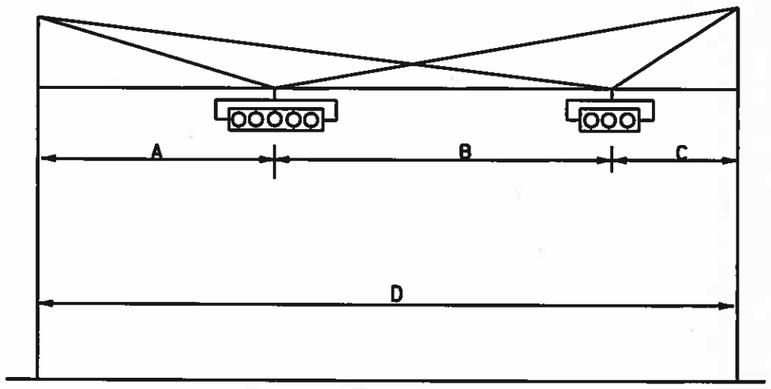
12" SIGNAL INDICATION

SIGNAL HEAD NUMBER	SIGNAL HEAD TYPE	BACK PLATE 3 SEC EA.	4 SEC EA.	5 SEC EA.	VEH SIG SECT WITH LED LAMP ← EA.	G EA.	← EA.	Y EA.	← EA.	R EA.
1	H3	1				1		1		1
2	H3	1				1		1		1
3	H3	1				1		1		1
4	H4LT		1		1	1		1		1
5	H3	1				1		1		1
6	H5LT			1	1	1	1	1		1
TOTALS		4	1	1	2	6	1	6		6

R Y G
H3

R Y ← G G
H5LT

R Y ← G G
H4LT



SIGNAL HEAD & POLE PLACEMENT (LF)

SPAN	BEFORE CONSTRUCTION A	B	C	D	PHASE 1 A	B	C	PHASE 2 STAGE 1 A	B	C	PHASE 2 STAGE 2 A	B	C	PHASE 3 A	B	C
T1-T2	63	11	63	137	63	11	63	96	11	30	96	11	30	90	11	36
T2-T3	66	11	57	134	66	11	57	62	11	61	72	11	51	66	11	57
T3-T4	85	11	50	146	85	11	50	122	11	13	122	11	13	108	12	26

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NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES
Engineer: CORRINE M. CHANDLER
P.E. No. 109775 Date 3/17/2017

TEMPORARY TRAFFIC SIGNAL LAYOUT FM 2514 AND McCREARY RD

SHEET 2 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)	FM 2514
GRAPHICS CMC	STATE	DISTRICT / COUNTY	SHEET NO.
CHECK LDL	TEXAS	18 / COLLIN	359
CHECK APM	CONTROL 2679	SECTION 02 / JOB 008	

FILE: $FILE$

ELECTRICAL SERVICE DATA (ITEM 628)

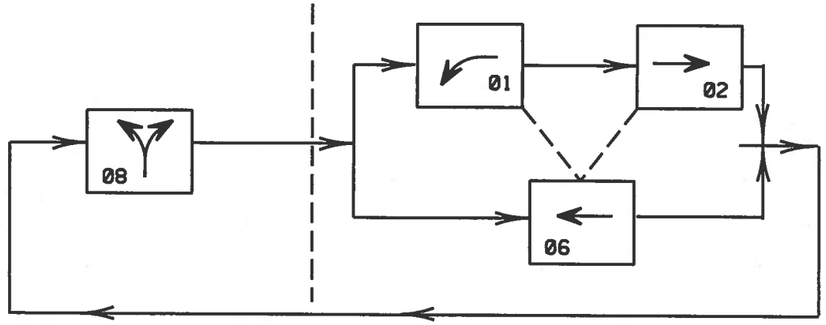
ELECTRICAL SERVICE DESCRIPTION (SEE ED(5))	SERVICE CONDUIT SIZE (PVC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD./ LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
ELECTRICAL SERVICE NO. 1 TY D (120/240)070(NS)SS(E)PS(U)	2"	3/#4	N/A	2P/70	30	100	PERMANENT T.S. TEMPORARY T.S. LIGHTING #1 SPARE LIGHTING	1P/50 1P/50 2P/20 2P/20	<7.1

RELOCATE EXISTING
STREET NAME SIGNS
[1] [2] [3]

CABLE TERMINATION CHART

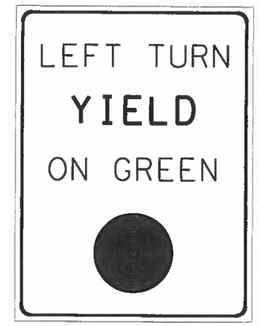
CNDR. COLOR	CABLE 1 FROM T1-T2 TO CNTRL. 9 CNDR.	CABLE 2 FROM T2-T3 TO CNTRL. 9 CNDR.	CABLE 3 FROM T3-T4 TO CNTRL. 9 CNDR.
BLACK	SPARE	SPARE	SPARE
WHITE	S. COMMON	S. COMMON	S. COMMON
RED	SH 1,2 R	SH 3,4 R	SH 5,6 R
GREEN	SH 1,2 G	SH 3,4 ⇐G	SH 5,6 G
ORANGE	SH 1,2 Y	SH 3,4 Y	SH 5,6 Y
BLUE	SPARE	SPARE	SH 6 ⇐G
WHITE/ BLACK	SPARE	SPARE	SH 6 ⇐Y
RED/ BLACK	SPARE	SPARE	SPARE
GRN/ BLACK	SPARE	SPARE	SPARE

PHASE SEQUENCE
PHASE 1



Ø1 IS A PROTECTED/PERMISSIVE LEFT TURN PHASE

SEE TRAFFIC CONTROL PLAN
FOR OPEN LANES DURING
EACH PHASE



RELOCATE
R10-12
30"X36"
[4]

VIVDS DETECTION ZONE DETAILS

CAMERA	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATION	ZONE	SETBACK DISTANCE	CHANNEL
C1	POLE T2	24'	STOPBAR	02-A	N/A	1
C2	POLE T3	24'	STOPBAR	08-A	N/A	1
				08-B		
C3	POLE T4	24'	STOPBAR	01•06-A	N/A	1
C4	POLE T2	24'	SETBACK	06-B	245' FROM STOPBAR	N/A
				06-C	430' FROM STOPBAR	
C5	POLE T3	24'	SETBACK	02-B	245' FROM STOPBAR	N/A
				02-C	430' FROM STOPBAR	

NOTE: THE CONTRACTOR IS RESPONSIBLE FOR REALIGNING DETECTION ZONES FOR EACH CONSTRUCTION PHASE

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Engineer CORRINE M. CHANDLER
P.E. No. 109775 Date 11/28/2016

Texas Department of Transportation

TEMPORARY TRAFFIC SIGNAL LAYOUT FM 2514 AND McCREARY RD

SHEET 3 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS CMC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	18	COLLIN	360
CHECK APM	CONTROL 2679	SECTION 02	JOB 008	

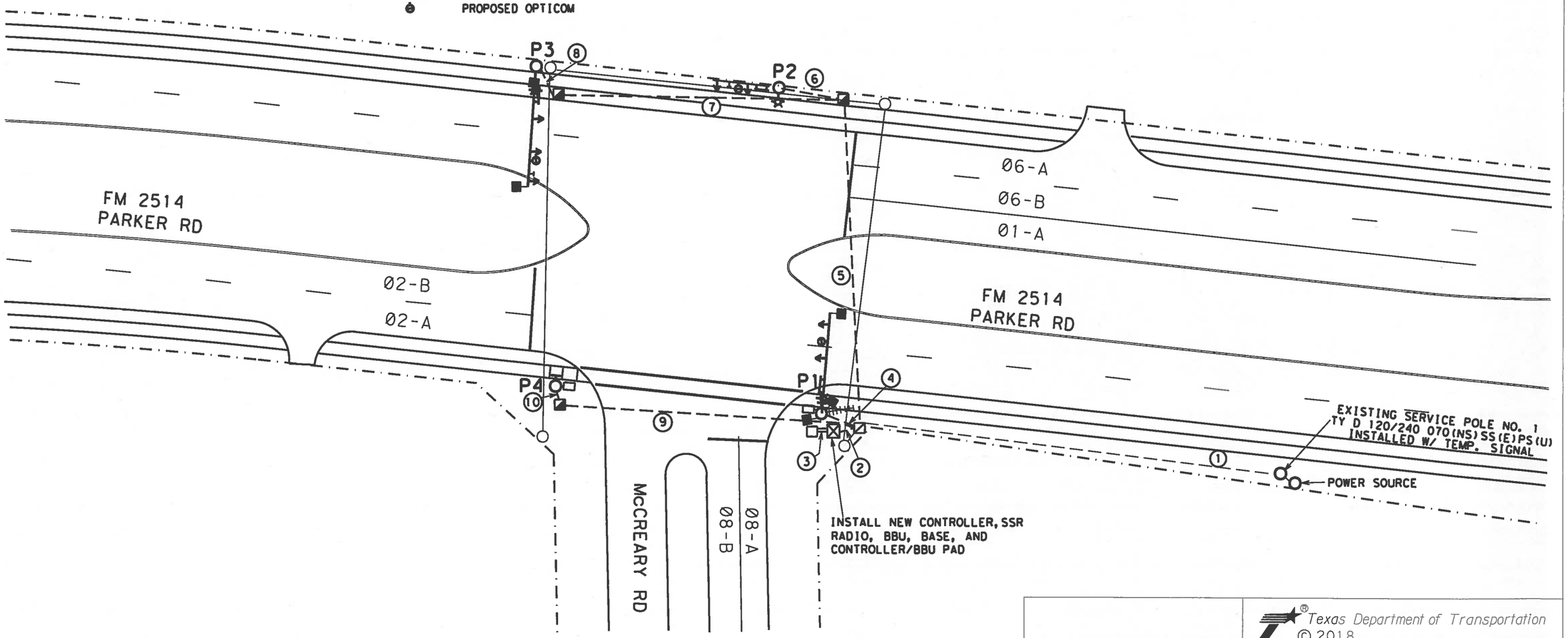
FILE: $FILE$

LEGEND

- PROPOSED CONDUIT WITH RUN NUMBER (④)
- PROPOSED RIGHT OF WAY
- EXISTING SPAN WIRE SIGNAL TO BE REMOVED
- EXISTING ROADWAY EDGES
- PROPOSED SSR ANTENNA
- PROPOSED TYPE C GROUND BOX
- PROPOSED TYPE A GROUND BOX
- EXISTING GROUND BOX TO REMAIN
- P1 PROPOSED MAST ARM WITH POLE NUMBER, 250 WATT HPS EQ LED LUMINAIRE, AND ST. SIGN
- Ø8-A PROPOSED RADAR DETECTION ZONE ID
- R1 PROPOSED RADAR DETECTOR AND NUMBER
- PROPOSED OPTICOM

N

0 20 40 60 80 100
SCALE IN FEET



PRELIMINARY

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Engineer CORRINE M. CHANDLER

P.E. No. 109775 Date 12/12/2016

Texas Department of Transportation

PERMANENT TRAFFIC SIGNAL LAYOUT CONDUIT RUNS FM 2514 AND McCREARY RD

SCALE: 1" = 40' SHEET 1 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS CMC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	18	COLLIN	361
CHECK APM	CONTROL	SECTION	JOB	
	2679	02	008	

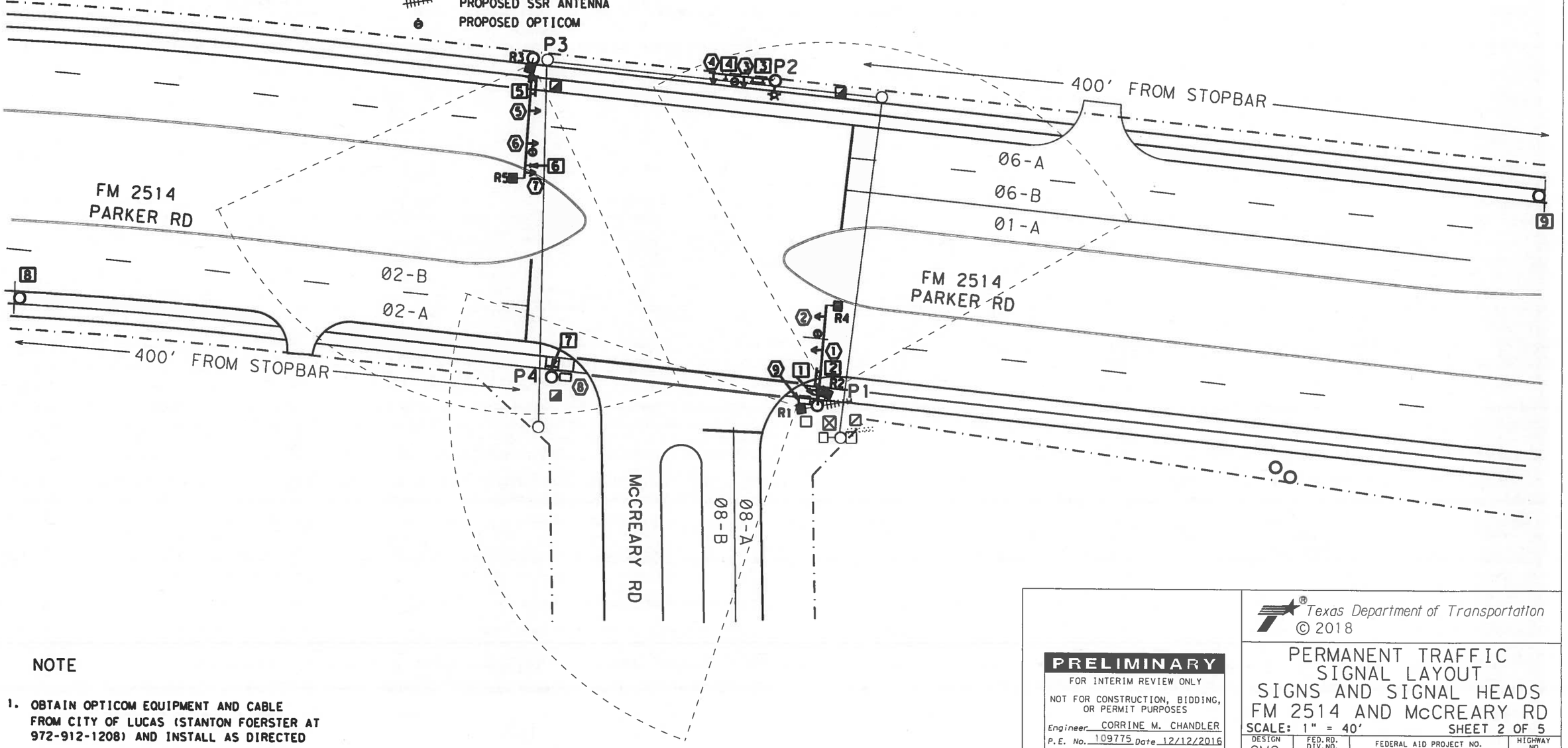
FILE: $FILE$

LEGEND

- PROPOSED CONDUIT WITH RUN NUMBER (④)
- PROPOSED RIGHT OF WAY
- EXISTING SPAN WIRE SIGNAL TO BE REMOVED
- PROPOSED ROADWAY EDGES
- EXISTING SSR ANTENNA TO BE REMOVED
- EXISTING RADAR TO BE REMOVED
- EXISTING GROUND BOX TO REMAIN
- PROPOSED TYPE C GROUND BOX
- PROPOSED TYPE A GROUND BOX
- PROPOSED RADAR DETECTION ZONES
- P1 PROPOSED MAST ARM WITH POLE NUMBER, HEAD NUMBERS, SIGN NUMBER, 250 WATT HPS EQ LED LUMINAIRE, AND ST. SIGN (④ ⑤ 7)
- 08-A PROPOSED RADAR DETECTION ZONE ID
- R1 PROPOSED RADAR DETECTOR AND NUMBER
- PROPOSED SSR ANTENNA
- PROPOSED OPTICOM

N

0 20 40 60 80 100
SCALE IN FEET



NOTE

1. OBTAIN OPTICOM EQUIPMENT AND CABLE FROM CITY OF LUCAS (STANTON FOERSTER AT 972-912-1208) AND INSTALL AS DIRECTED
2. MASTER LOCATION FOR SSR IS MCGARRITY LANE WATERTOWER, LUCAS, TEXAS - N 26° W

FILE: $FILE$

PRELIMINARY
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Engineer CORRINE M. CHANDLER
P.E. No. 109775 Date 12/12/2016

PERMANENT TRAFFIC SIGNAL LAYOUT SIGNS AND SIGNAL HEADS FM 2514 AND McCREARY RD

SCALE: 1" = 40' SHEET 2 OF 5

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CMC	TEXAS	18	COLLIN	362
CHECK	CONTROL	SECTION	JOB	
LDL	2679	02	008	
CHECK				
APM				

CONDUIT RUNS

RUN NO.	CONDUIT TYPE (ITEM 618) (LF) SCHD 80 2" PVC	SCHD 40 2" PVC	SCHD 40 2" PVC BORED	SCHD 40 3" PVC	SCHD 40 3" PVC BORED	SCHD 40 4" PVC	SCHD 40 4" PVC BORED	WIRE SIZE AND TYPE (EA.) CONDUCTORS (ITEM 620) NO. 4 XHHW	NO. 6 BARE	NO. 6 XHHW	NO. 8 XHHW	SIG. CABLE (ITEM 684) TY A 7 CNDR CABLE 14 AWG	TY A 12 CNDR CABLE 14 AWG	TY C 2 CNDR CABLE 12 AWG	RADAR PRESENCE DETECTOR CABLE	SSR COAX CABLE	RADD CABLE *	OPTICOM CABLE **	LENGTH OF RUN (LF)	RUN NO.
●1		●170							1	2	4								170	●1
2				10					1	2						1	2	3	10	2
				10					1			1	3	2	3				10	
***3				8															8	***3
				8															8	
4				17					1		2		1	1	2	1	1	1	17	4
5					130				1		2		2		1		1	2	130	5
6				28					1		2		1					1	28	6
7				114					1		2		1		1		1	1	114	7
8				15					1		2		1		1		1	1	15	8
9					120				1			1		1					120	9
10				8					1			1		1					8	10
TOTALS		●170		218	250				622	360	1288	138	464	165	323	27	296	464		

● EXISTING CONDUIT TO BE REUSED

* PROVIDED BY DISTRICT SIGNAL SHOP. INSTALLED BY CONTRACTOR. PAID FOR UNDER ITEM 6155

** PROVIDED BY CITY OF LUCAS

*** SPARE CONDUIT AS REQUIRED ON TS-CF-04

LED COUNTDOWN PEDESTRIAN HEAD

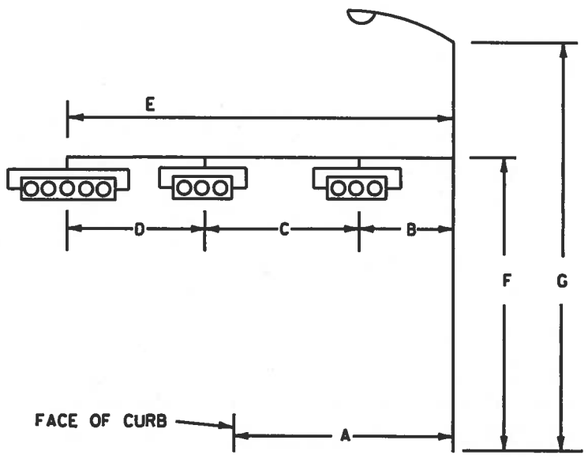
H3

H4LT

H5FLT

SIGNAL HEADS (ITEM 682)

SIGNAL HEAD NUMBER	SIGNAL HEAD TYPE	12" SIGNAL INDICATION BACK PLATE 3 SEC EA.	4 SEC EA.	5 SEC EA.	VEH SIG SECT WITH LED LAMP ⇦G EA.	G EA.	⇦Y EA.	Y EA.	⇦R EA.	R EA.	PED SIG SEC WITH COUNTDOWN LED LAMP
1	H3	1				1		1		1	
2	H3	1				1		1		1	
3	H3	1				1		1		1	
4	H4LT		1		1	1		1		1	
5	H3	1				1		1		1	
6	H3	1				1		1		1	
7	H5FLT			1	1		2		2		
8	152A										1
9	152A										1
TOTALS		5	1	1	2	6	2	6	2	6	2



GROUND BOX SUMMARY (ITEM 624)

TYPE	DESCRIPTION	UNIT	QTY.
A	NO. 122311 W/ APRON	EA	1
C	NO. 162911 W/ APRON	EA	3

RADAR DETECTION ZONE DETAILS

RADAR	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATION	ZONE	SETBACK DISTANCE
R1	SIGNAL POLE P1	18'	STOPBAR	08-A 08-B	N/A
R2	SIGNAL POLE P1	18'	STOPBAR	01-A 06-A 06-B	N/A
R3	SIGNAL POLE P3	18'	STOPBAR	02-A 02-B	N/A
R4	MAST ARM POLE P1	19'	SETBACK	06	100' - 500' FROM STOPBAR
R5	MAST ARM POLE P3	19'	SETBACK	02	100' - 500' FROM STOPBAR

SIGNAL HEAD & POLE PLACEMENT

POLE NUMBER	FND. TYPE WIND ZONE 80 MPH	DRILLED SHAFT LENGTH 24" DIA TYPE A SUB TO ITEM 687 LF	30" DIA TYPE A ITEM 416 LF	36" DIA TYPE A ITEM 416 LF	WIRE INSIDE POLE (LF) SIG. CABLE (ITEM 684) SIGNAL HEADS TY A 5 CNDR CABLE 14 AWG	7 CNDR CABLE 14 AWG	APS TY C 2 CNDR CABLE 12 AWG	(ITEM 620) LUMINAIRE NO. 12 XHHW	(ITEM 6054) SSR COAX CABLE	RADD CABLE*	(ITEM 6025) PRESENCE DETECTOR CABLE	PROVIDED BY LUCAS OPTICOM CABLE **	NO. OF HEADS **** EA	LUM EA	APS EA	DIMENSION (LF) A	B	C	D	E	F	G
P1	36-A			13.0	108.0		5.0	80.0	30.0	59.0	36.0	48.0	2	1	1	12	23	14		40	19	30
P2	30-A		11.0		76.0			80.0				36.0	2	1		14	13	12		28	19	30
P3	36-A			13.0	92.0	64.0		80.0		68.0	18.0	57.0	3	1		14	21	12	12	48	19	30
P4	24-A	6.0			10.0		5.0								1	12					10	
TOTAL		6.0	11.0	26.0	286.0	64.0	10.0	240.0	30.0	127.0	54.0	141.0										

* PROVIDED BY DISTRICT SIGNAL SHOP. INSTALLED BY CONTRACTOR. PAID FOR UNDER ITEM 6155

** PROVIDED BY CITY OF LUCAS

**** DOES NOT INCLUDE PED HEADS OR VERTICAL HEADS

PRELIMINARY

FOR INTERIM REVIEW ONLY

NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

Engineer CORRINE M. CHANDLER

P.E. No. 109775 Date 12/12/2016

PERMANENT TRAFFIC SIGNAL LAYOUT
FM 2514 AT McCREARY RD

SHEET 3 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS CMC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	18	COLLIN	363
CHECK APM	CONTROL	SECTION	JOB	
	2679	02	008	

FILE: $FILE$

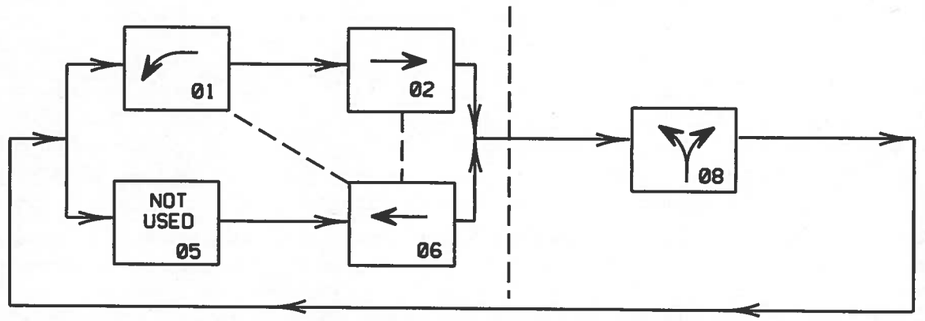
EXISTING ELECTRICAL SERVICE DATA (INSTALLED WITH TEMP. SIGNAL)

ELECTRICAL SERVICE DESCRIPTION (SEE ED(5))	SERVICE CONDUIT SIZE (PVC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD./ LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
ELECTRICAL SERVICE NO. 1 TY D (120/240)070(NS)SS(E)PS(U)	2"	3/#4	N/A	2P/70	30	100	PERMANENT T.S. SPARE LIGHTING #1 LIGHTING #2	1P/50 1P/50 2P/20 2P/20	<7.1

CABLE TERMINATION CHART

CNDR. COLOR	CABLE 1 FROM P1 TO CNTRL. 12 CNDR.	CABLE 2 FROM P2 TO CNTRL. 12 CNDR.	CABLE 3 FROM P3 TO CNTRL. 12 CNDR.	CABLE 4 FROM P4 TO CNTRL. 7 CNDR.	CABLE 5 FROM P4 TO CNTRL. 2 CNDR.	CABLE 6 FROM P1 TO CNTRL. 2 CNDR.
BLACK	SPARE	SPARE	SPARE	SPARE	02 CALL	02 CALL
WHITE	S. COMMON	S. COMMON	S. COMMON	S. COMMON	APS COMMON	APS COMMON
RED	SH 1,2 02 R	SH 3,4 08 R	SH 5,6 06 R	SH 8 W		
GREEN	SH 1,2 02 G	SH 3,4 08 G	SH 5,6 06 G	SH 8 DW		
ORANGE	SH 1,2 02 Y	SH 3,4 08 Y	SH 5,6 06 Y	SPARE		
BLUE	SPARE	SPARE	SH 7 R OL A	SPARE		
WHITE/ BLACK	SPARE	SPARE	SH 7 OL A	SPARE		
RED/ BLACK	SPARE	SPARE	SH 7 FY OL A			
GRN/ BLACK	SH 9 W	SPARE	SH 7 G 01			
ORANGE/ BLACK	SH 9 DW	SPARE	SPARE			
BLUE/ BLACK	SPARE	SPARE	SPARE			
BLACK/ WHITE	SPARE	SPARE	SPARE			

PHASE SEQUENCE



01 IS PROTECTED/PERMISSIVE LEFT TURN PHASE

OL A = 01 (RA, YA, FYA)

APS MESSAGE CHART

POLE MOVEMENT	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P1	PHASE 2	BUTTON PUSH ON DW	WAIT
		EXTENDED BUTTON PUSH	WAIT TO CROSS MCCREARY RD AT PARKER RD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION*	RAPID TICK
P4	PHASE 2	BUTTON PUSH ON DW	WAIT
		EXTENDED BUTTON PUSH	WAIT TO CROSS MCCREARY RD AT PARKER RD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION*	RAPID TICK

* COUNTDOWN SPEECH MESSAGE * "OFF" FOR ALL UNITS

PRELIMINARY

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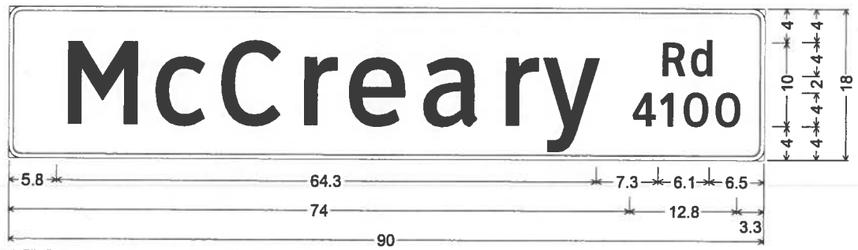
Engineer CORRINE M. CHANDLER

P.E. No. 109775 Date 12/12/2016

PERMANENT TRAFFIC SIGNAL LAYOUT
FM 2514 AT McCREARY RD

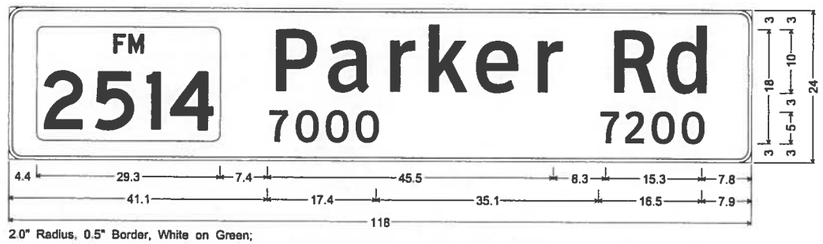
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS CMC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	18	COLLIN	364
CHECK APM	CONTROL 2679	SECTION 02	JOB 008	

FILE: $FILE$



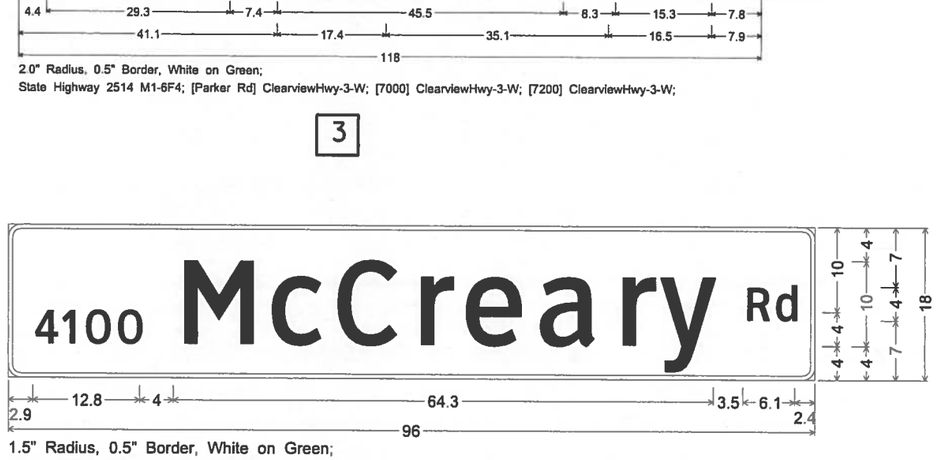
1.5" Radius, 0.5" Border, White on Green;
[McCreary] ClearviewHwy-3-W;
[Rd] ClearviewHwy-3-W; [4100] ClearviewHwy-3-W;

2



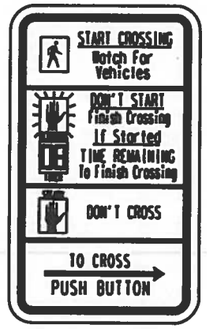
2.0" Radius, 0.5" Border, White on Green;
State Highway 2514 M1-6F4; [Parker Rd] ClearviewHwy-3-W; [7000] ClearviewHwy-3-W; [7200] ClearviewHwy-3-W;

3



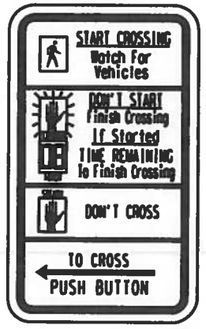
1.5" Radius, 0.5" Border, White on Green;
[4100] ClearviewHwy-3-W; [McCreary] ClearviewHwy-3-W;
[Rd] ClearviewHwy-3-W;

5



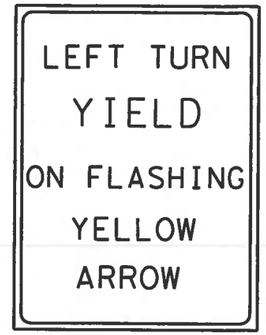
R10-3eR
9" X 15"

1



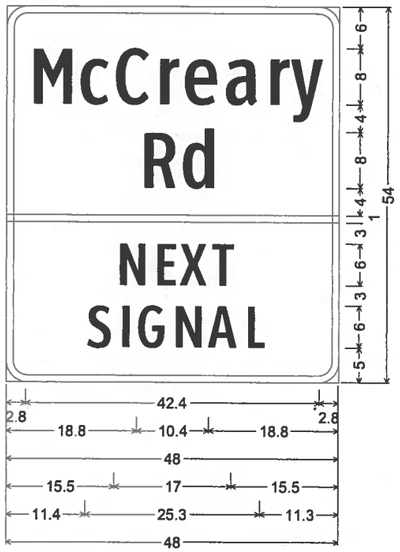
R10-3eL
9" X 15"

7



R10-17T
36"X 42"

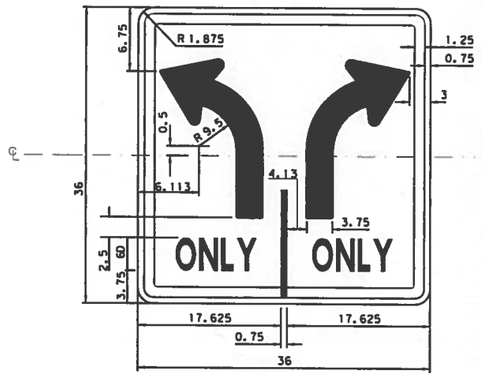
6



3.0" Radius, 1.0" Border, White on Green;
[McCreary] ClearviewHwy-2-W 75% spacing;
[Rd] ClearviewHwy-2-W 75% spacing;
[NEXT] ClearviewHwy-2-W;
[SIGNAL] ClearviewHwy-2-W;

54" X 48"

8 9



NOTE: ALL DIMENSIONS ARE IN INCHES.

36" X 36"

4

PRELIMINARY

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Engineer CORRINE M. CHANDLER
P.E. No. 109775 Date 12/12/2016

Texas Department of Transportation

PERMANENT TRAFFIC SIGNAL LAYOUT
FM 2514 AT McCREARY RD

SHEET 5 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CMC	6	(SEE TITLE SHEET)		FM 2514
GRAPHICS CMC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK LDL	TEXAS	18	COLLIN	365
CHECK APM	CONTROL	SECTION	JOB	
	2679	02	008	

FILE: $FILE$

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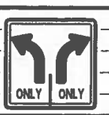
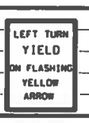
DATE:
FILE:

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

- Post Type: FRP = Fiberglass; TWT = Thin-Wall; 10BWG = 10 BWG; S80 = Sch 80
- Posts (1 or 2)
- Anchor Type: UA=Univer-Conc; UB=Univer-Bolt; SA=Slip-Conc; SB=Slip-Bolt; WS=Wedge Steel; WP=Wedge Plastic
- Mounting Designation: P = Prefab. "Plain"; T = Prefab. "T"; U = Prefab. "U"
- 1EXT or 2EXT = # of Ext.; BM = Extruded Wind Beam; WC = 1.12 #/ft Wing Chan.; EXAL= Extruded Aluminum

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	ALUMINUM TYPE A	ALUMINUM TYPE G	
			TEMPORARY TRAFFIC SIGNAL FM 2514 AT McCREARY RD				
			ALL SIGNS RELOCATED FROM EXISTING TRAFFIC SIGNAL				
			PERMANENT TRAFFIC SIGNAL FM 2514 AT McCREARY RD				
	1	***R10-3eR		9" X 15"	X		MOUNT ON POLE P1
	2	*		90" X 18"	X		MOUNT ON P1 MAST ARM
	3	*		118" X 24"	X		MOUNT ON P2 MAST ARM
	4	*		36" X 36"	X		MOUNT ON P2 MAST ARM
	5	*		96" X 18"	X		MOUNT ON P3 MAST ARM
	6	*R10-17T		36" X 42"	X		MOUNT ON P3 MAST ARM
	7	***R10-3eL		9" X 15"	X		MOUNT ON POLE P4
	8			54" X 48"	X		S80 / 1 / SA / T
	9			54" X 48"	X		S80 / 1 / SA / T

ALUMINUM SIGN BLANKS (TYPE A)

Square Ft.	Min. Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

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.

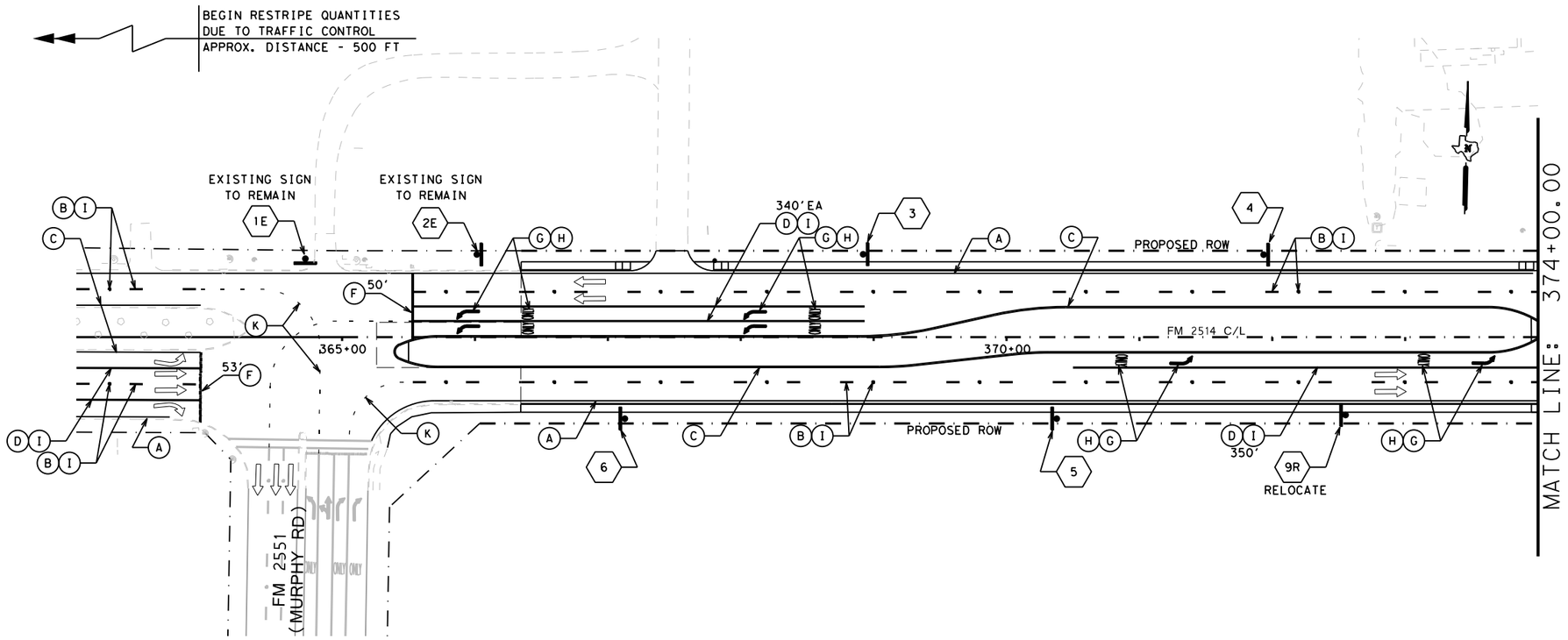
* SUBSIDIARY TO ITEM 650
*** SUBSIDIARY TO ITEM 688

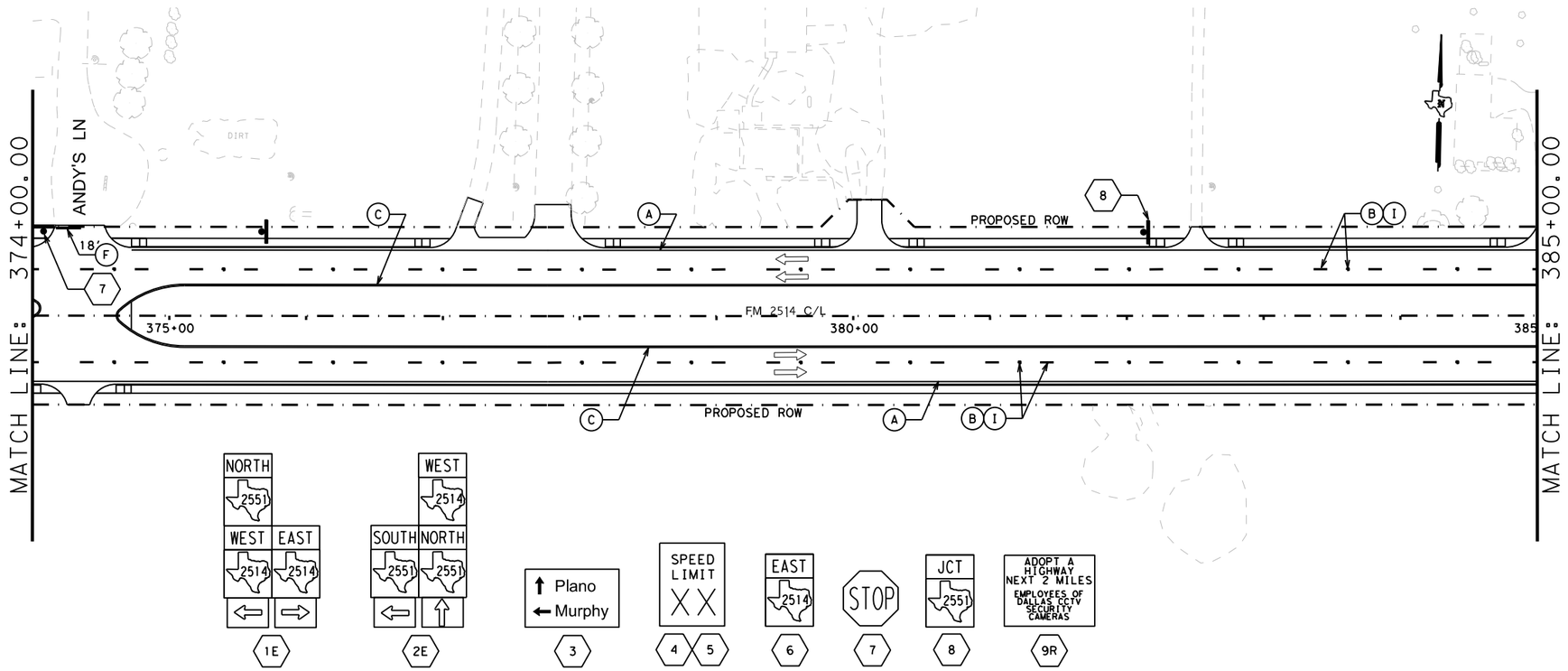
SUMMARY OF SMALL SIGNS FOR TRAFFIC SIGNALS
SOSS

DN: TxDOT	REVISION
CK: TxDOT	11-93
DW: TxDOT	7-97
CK: TxDOT	8-95
	2-07
	1-02
	9-08

DIST	COUNTY	HIGHWAY
18	COLLIN	FM 2514

CONT	SECT	JOB	SHEET NO.
2679	02	008	366





0 50 100
FEET

PAVEMENT MARKING LEGEND *

- (A) REFL PAV MRK (W) 4" (SLD)
- (B) REFL PAV MRK (W) 4" (BRK)
- (C) REFL PAV MRK (Y) 4" (SLD)
- (D) REFL PAV MRK (W) 8" (SLD)
- (E) REFL PAV MRK (Y) 24" (SLD)
- (F) REFL PAV MRK (W) 24" (SLD)
- (G) REFL PAV MRK (W) (ARROW)
- (H) REFL PAV MRK (W) (WORD)
- (I) REFL PAV MRKR TY II-C-R
- (J) REFL PAV MRKR (W) 12" (SLD)
- (K) REFL PAV MRK (W) 4" (DOT)

* SEE PM STANDARDS FOR SPACING

SIGNING LEGEND

(#) PROPOSED SIGN NUMBER

PROPOSED SIGN

PRELIMINARY 95%

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SUSAN A. ICKE
P.E. 87752

ON: 3/16/2017

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Texas Department of Transportation

FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100'

SHEET 1 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
	6	SEE TITLE SHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	390
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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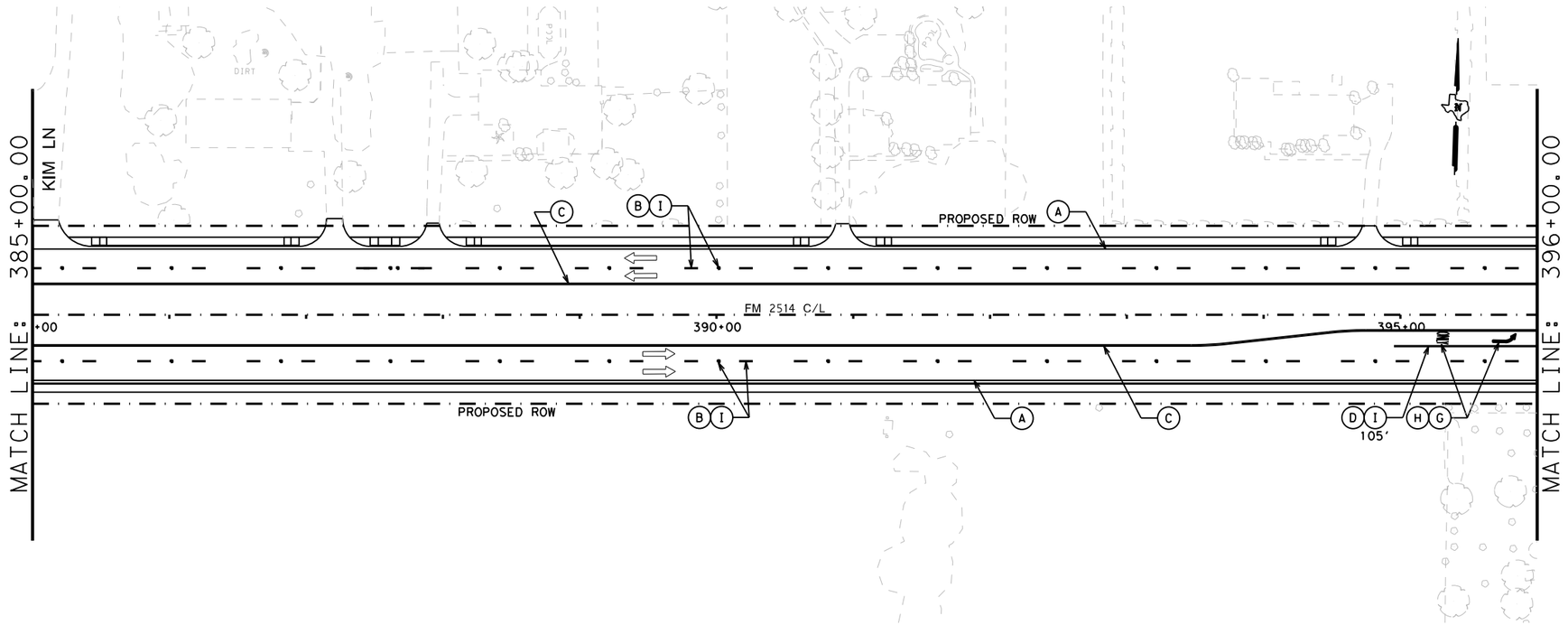

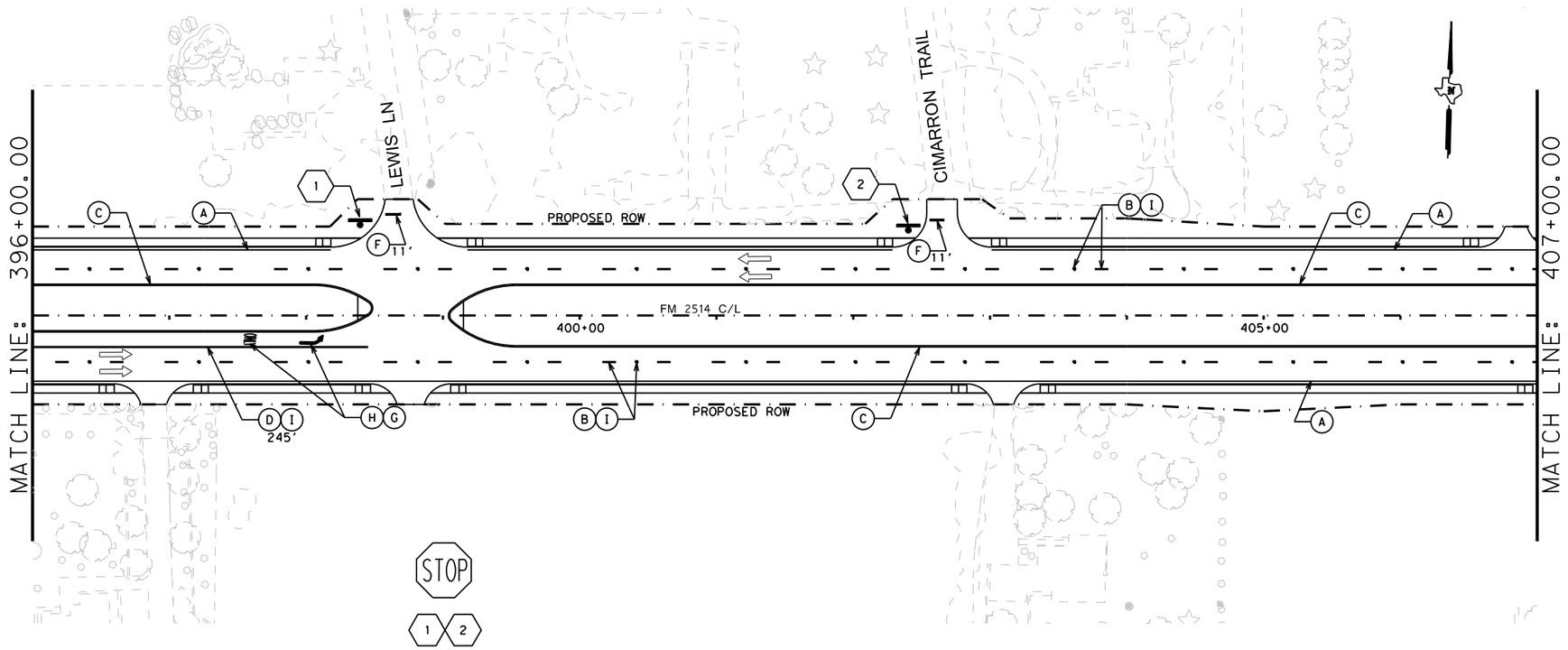

0 50 100
FEET

PAVEMENT MARKING LEGEND *

- (A) REFL PAV MRK (W) 4" (SLD)
- (B) REFL PAV MRK (W) 4" (BRK)
- (C) REFL PAV MRK (Y) 4" (SLD)
- (D) REFL PAV MRK (W) 8" (SLD)
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FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100'

SHEET 2 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	391
	2679	02	008	

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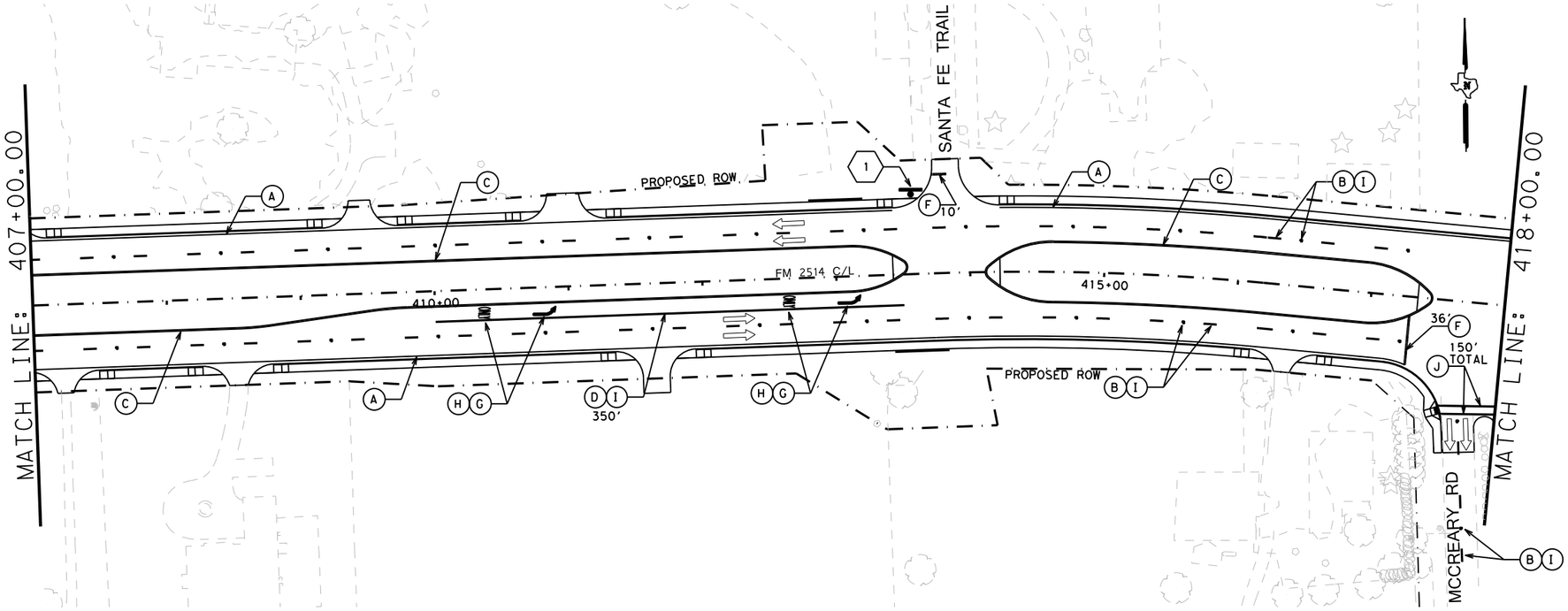

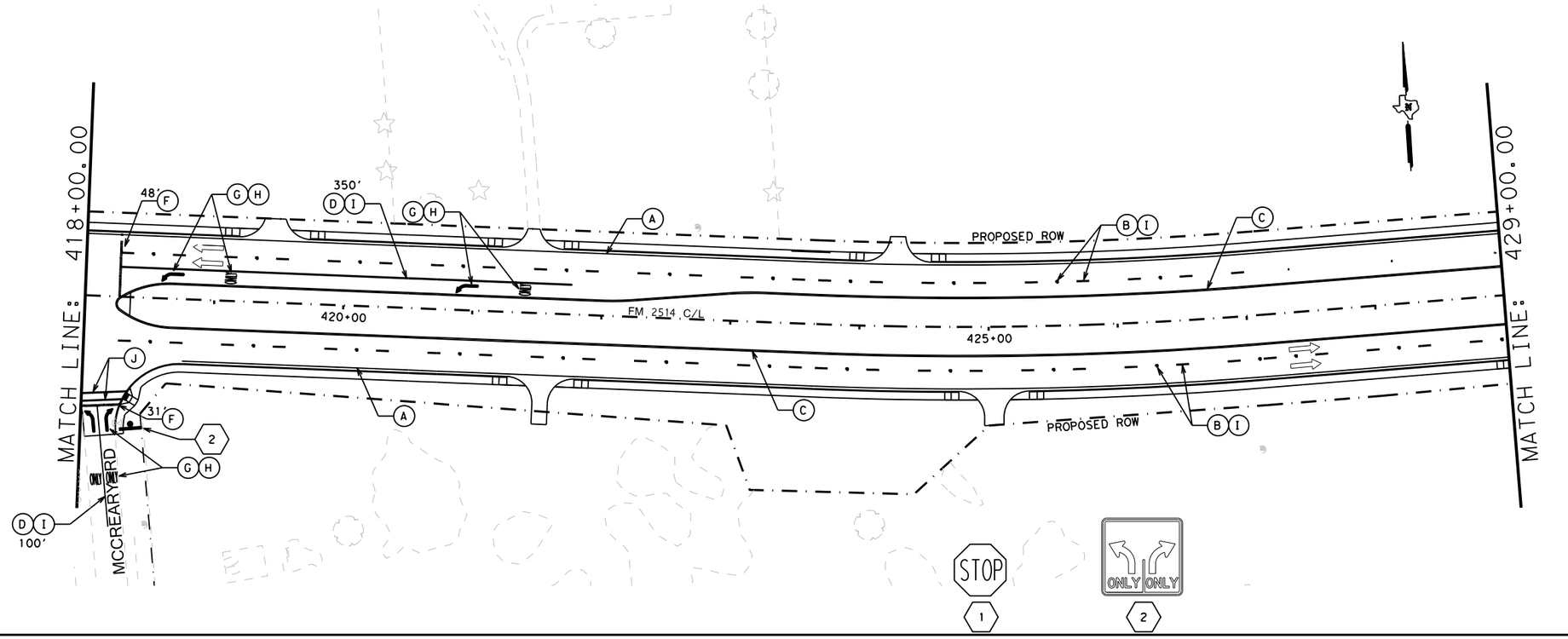

0 50 100
FEET

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- (B) REFL PAV MRK (W) 4" (BRK)
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FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100'

SHEET 3 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
	6	SEE TITLE SHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	392
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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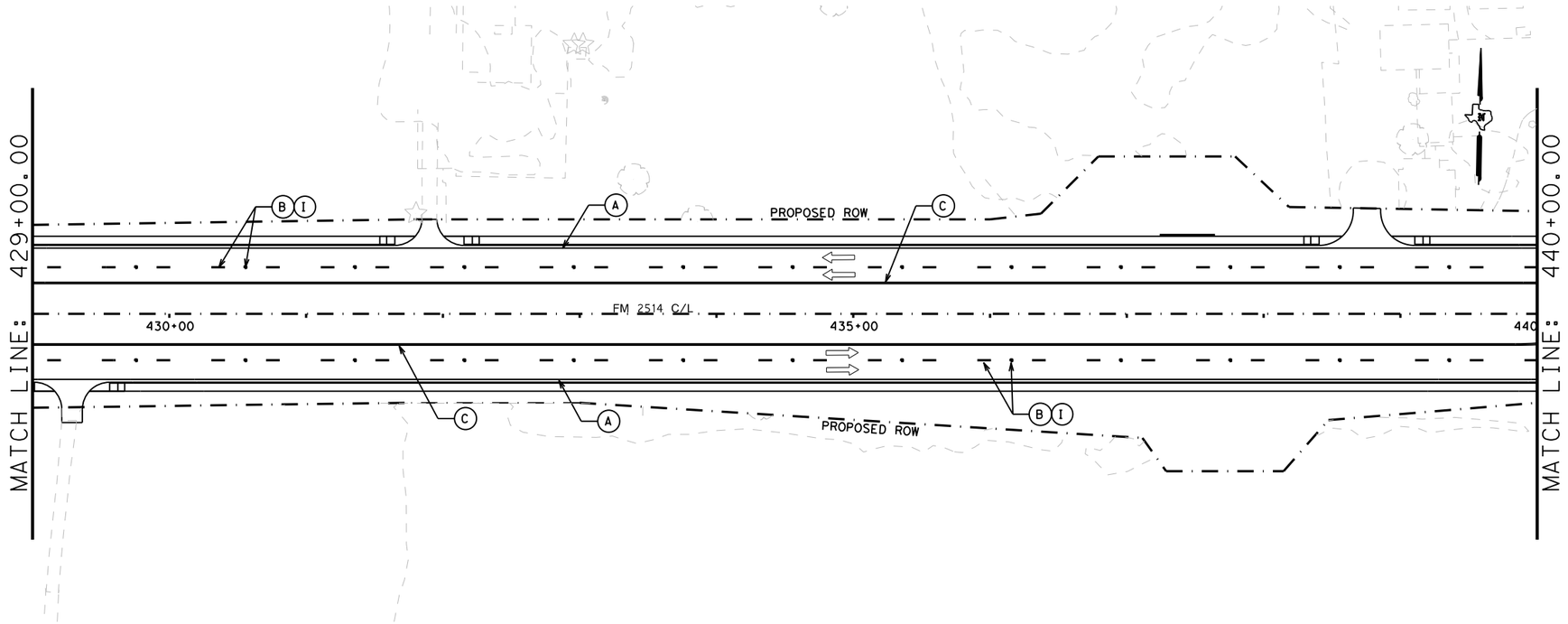

0 50 100
FEET

PAVEMENT MARKING LEGEND *

- (A) REFL PAV MRK (W) 4" (SLD)
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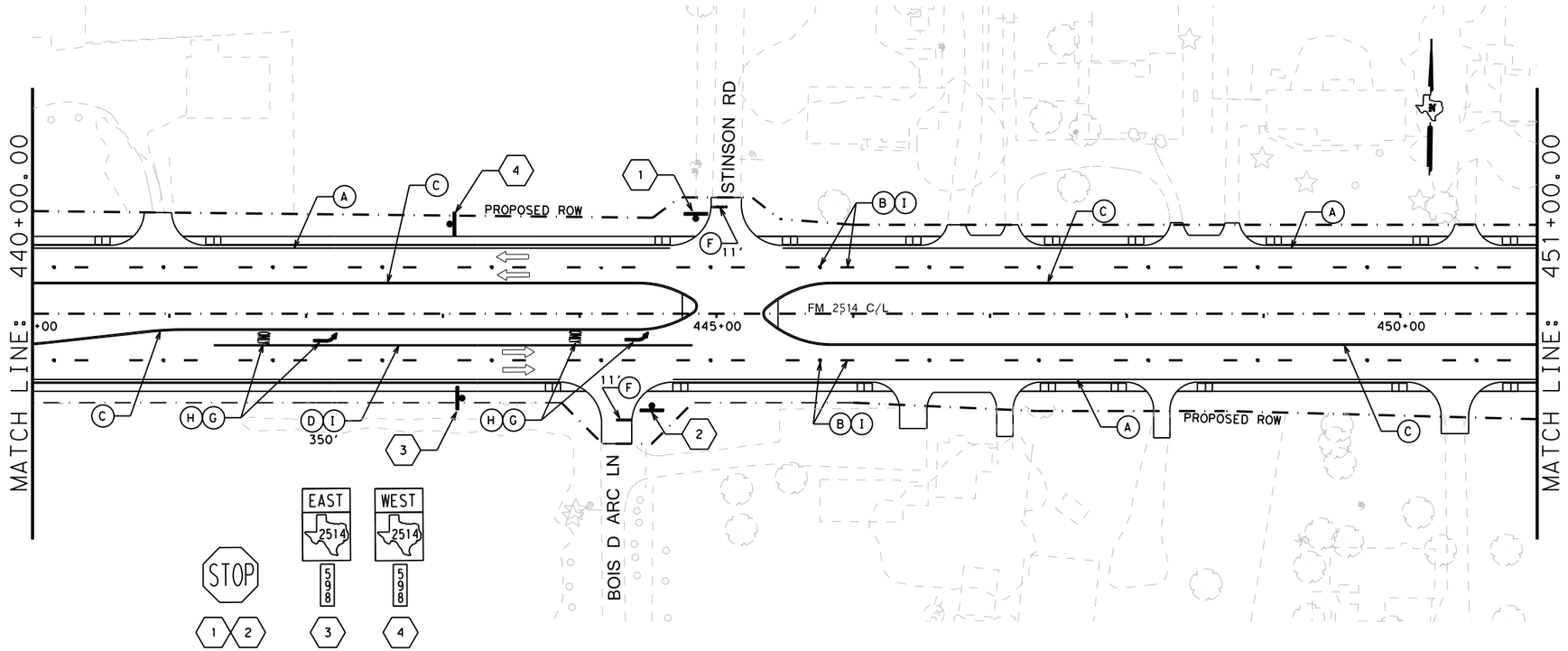

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FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100'

SHEET 4 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
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CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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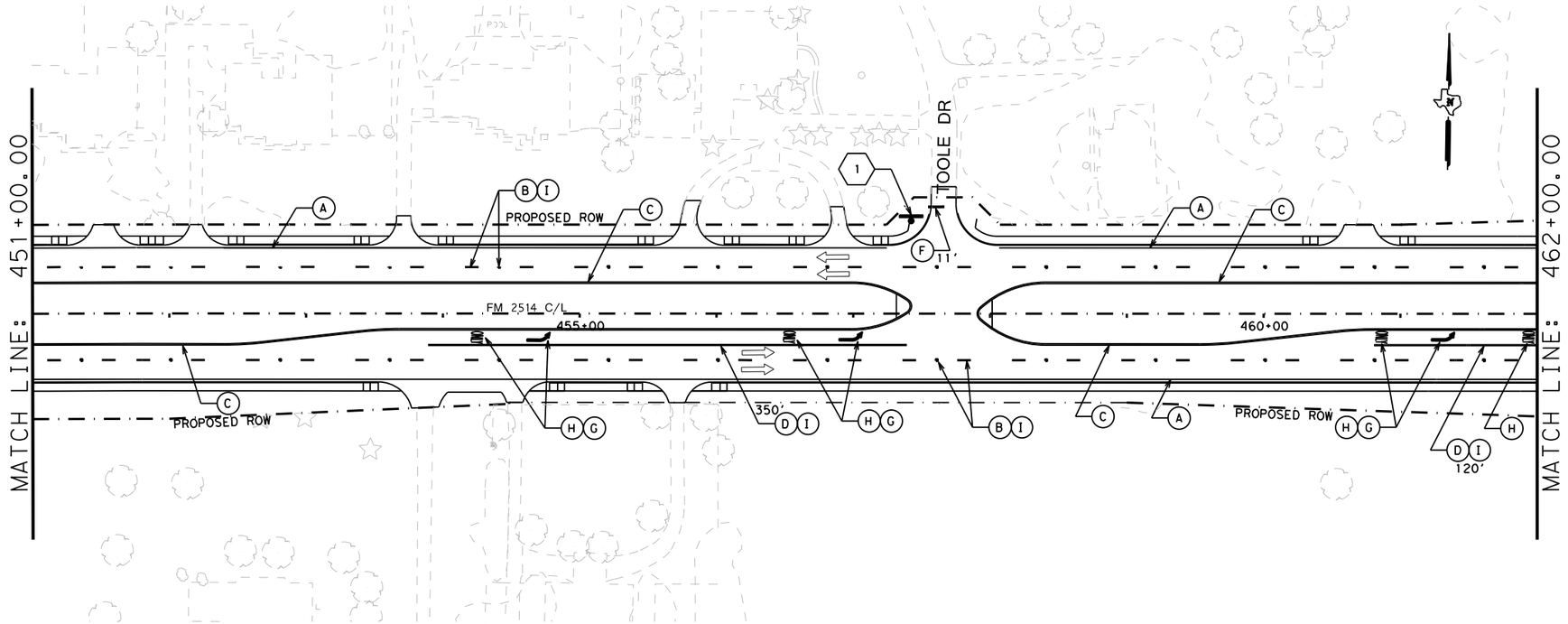

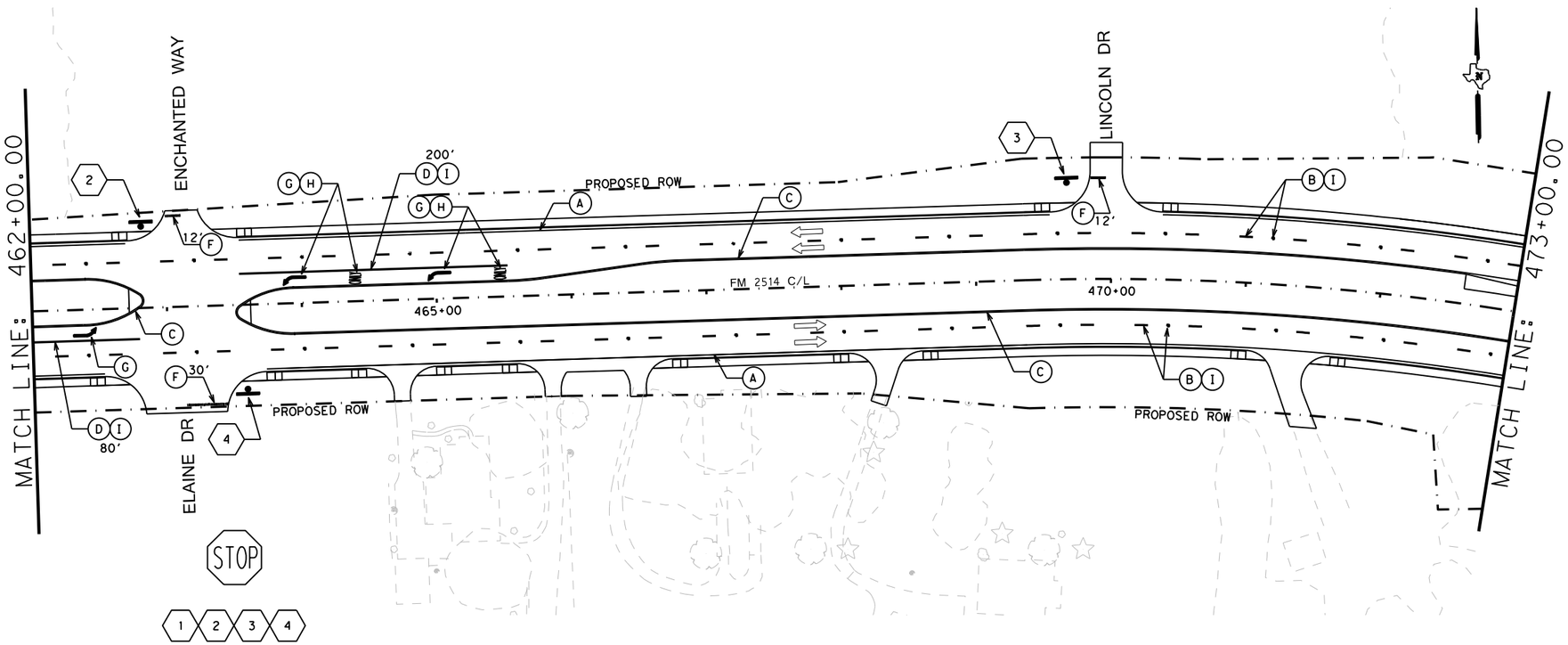

0 50 100
FEET

PAVEMENT MARKING LEGEND *

- (A) REFL PAV MRK (W) 4" (SLD)
- (B) REFL PAV MRK (W) 4" (BRK)
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- (D) REFL PAV MRK (W) 8" (SLD)
- (E) REFL PAV MRK (Y) 24" (SLD)
- (F) REFL PAV MRK (W) 24" (SLD)
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- (H) REFL PAV MRK (W) (WORD)
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- (J) REFL PAV MRKR (W) 12" (SLD)
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FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100'

SHEET 5 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	394
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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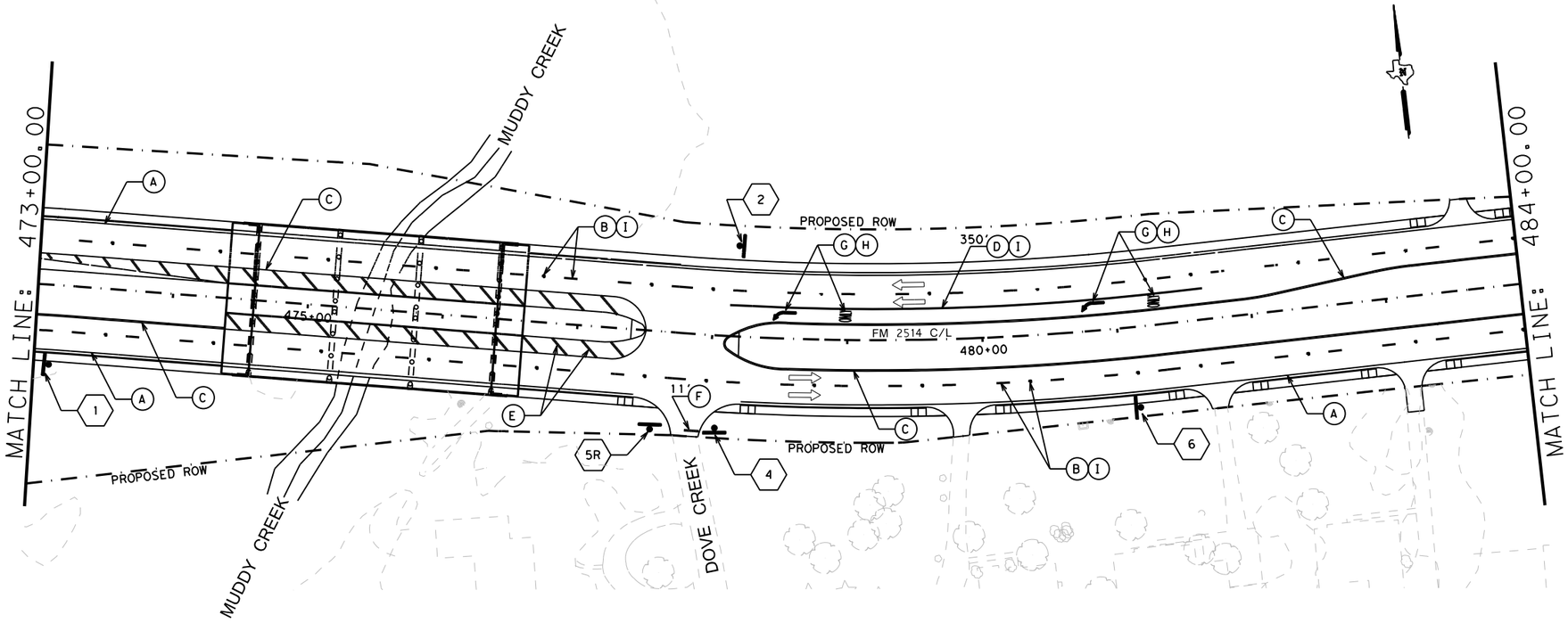

0 50 100
FEET

PAVEMENT MARKING LEGEND *

- (A) REFL PAV MRK (W) 4" (SLD)
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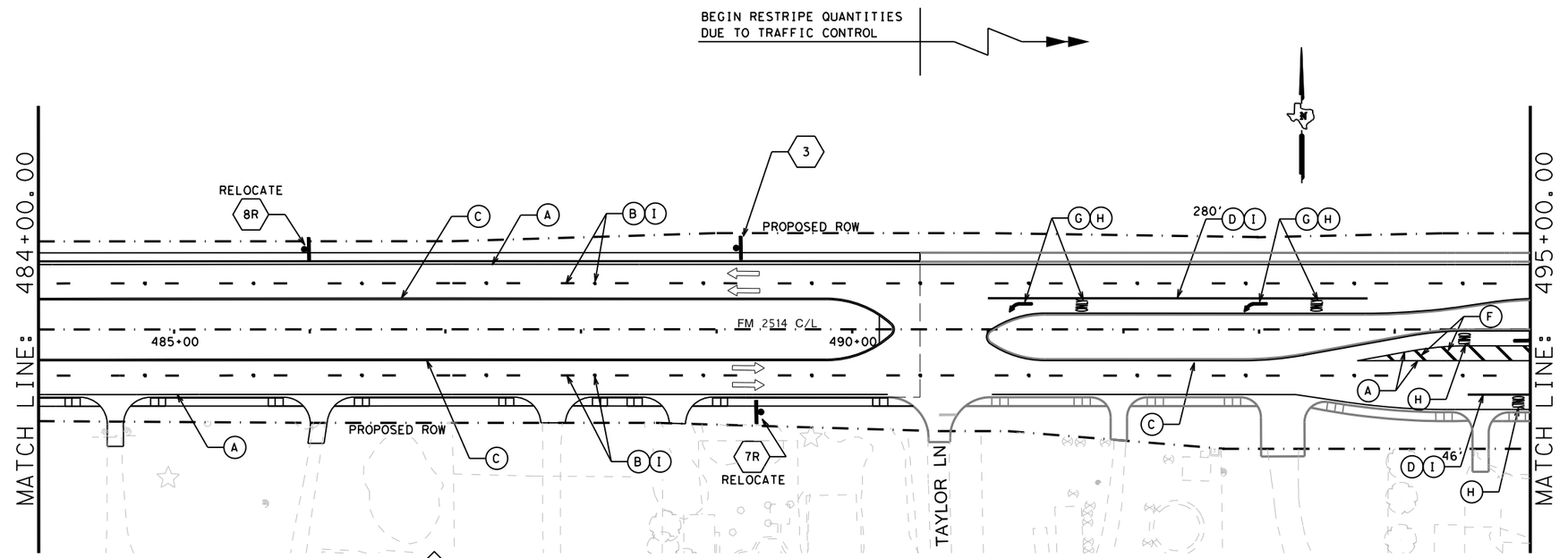
SIGNING LEGEND

(#) PROPOSED SIGN NUMBER

PROPOSED SIGN



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Texas Department of Transportation

FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100' SHEET 6 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
	6	SEE TITLE SHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	395
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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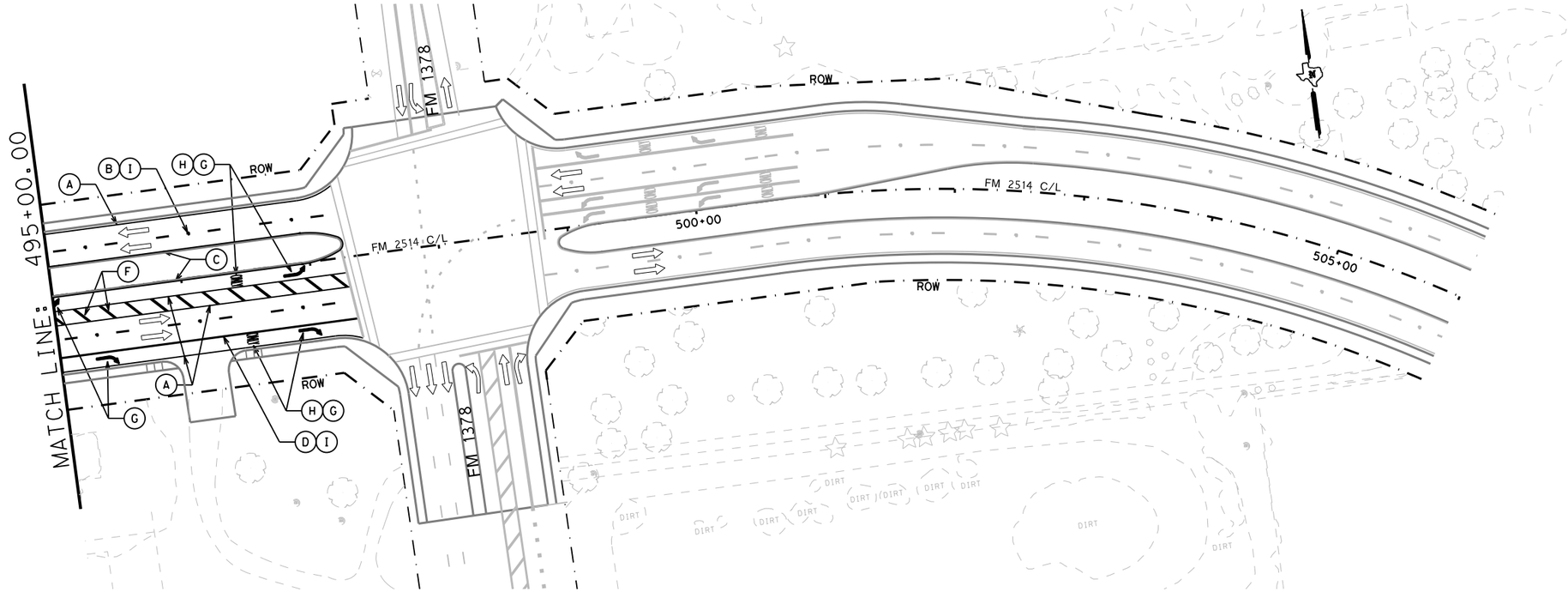

0 50 100
FEET

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- (B) REFL PAV MRK (W) 4" (BRK)
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SIGNING LEGEND

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FM 2514 SIGNING & PAVEMENT MARKINGS

SCALE: 1"=100' SHEET 7 OF 7

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	396
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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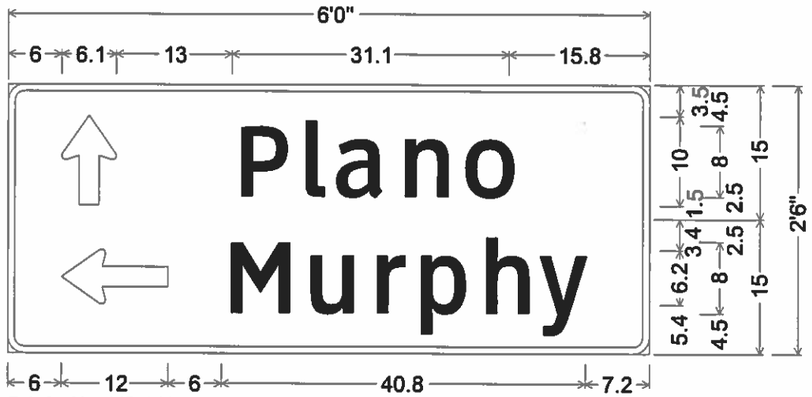
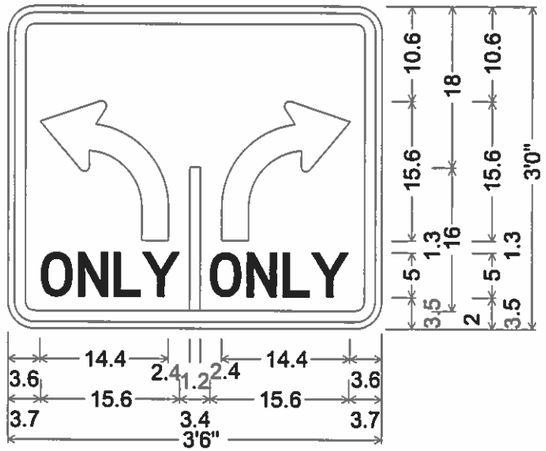


D1-2 8in UP-LT;
1.9" Radius, 0.8" Border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 90°;
[Plano] ClearviewHwy-3-W;
1.9" Radius, 0.8" Border, White on Green;
Standard Arrow Custom 12.0" X 6.1" 180°;
[Murphy] ClearviewHwy-3-W;

SHEET 1 SIGN 3



3.0" Radius, 1.3" Border, 0.8" Indent, Black on White;
R3-8b left turn arrow ir=7.825, s=3;
[ONLY] D specified length;
R3-8b right turn arrow ir=7.825, s=3;
[ONLY] D specified length;

SHEET 3 SIGN 2

GUIDE SIGN DETAILS

SHEET OF 1

DESIGN/CK	FED.RD. DIV. NO.	ROUTINE MAINTENANCE NO.		HIGHWAY NO.
TGD	6	(SEE TITLE SHEET)		FM2514
CHECK TGD	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK FRC	TEXAS	DALLAS	VARIOUS	397
CHECK BA	CONTROL	SECTION	JOB	
	2679	02	008	

A. GENERAL SITE DATA

1. PROJECT LIMITS: *(Same as stated on the Title Sheet)*

Begin Project Coordinates : Latitude (N): 33.05° *Longitude (W): -96.61°*

2. PROJECT SITE MAPS:

- *Project Location Map: The Title Sheet*
- *Drainage Patterns: Drainage Area Maps (Sheets 195, 216-227)*
- *Slopes Anticipated After Major Gradings or Areas of Soil Disturbance: Typical Sections (Sheets 4-6)*
- *Location of Erosion and Sediment Controls: SW3P Site Maps (Sheets 413-436)*
- *Surface Waters and Discharge Locations: Drainage and Culvert Layouts (Sheets 209-215, 239-262)*
- *Project Specific Location(s) (PSL): To be determined by the project Construction Personnel. Location(s) shown on SW3P Site Map (if PSL location(s) is within one mile of project) and information located in project SW3P Binder (Reference Item #10 below).*

3. PROJECT DESCRIPTION:

Construct 4 lane divided highway (ultimate 6 lanes)

4. MAJOR SOIL DISTURBING ACTIVITIES:

Prepare ROW as shown in the plans. Excavate for sructures and storm sewer. Excavate and place embankment to construct roadway subgrade. Shift topsoil to edge of pavement or back of curb. Place final seeding and block sod.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:

The existing soil type consists dark brown and gray clay with trace of calcareous nodules and limestone. Vegetation is in good condition with coverage estimated at 90% of unpaved right of way.

6. TOTAL PROJECT AREA: *41.4* Acres

7. TOTAL AREA TO BE DISTURBED: *39.9* Acres (96 %)

8. WEIGHTED RUNOFF COEFFICIENT

BEFORE CONSTRUCTION: *0.75*
AFTER CONSTRUCTION: *0.86*

9. NAME OF RECEIVING WATERS:

Lake Lavon
Segment 0821

10. PROJECT SW3P Binder:

A. For projects disturbing one to five acres, TxDOT will maintain a SW3P Binder at the project field office (if there is not a project field office, should be kept at the Area Office) which contains the following: Index Sheet, TCEQ Signature Authority, TCEQ Small Construction Site Notice, Contractor Certification of Compliance, SW3P Inspector Qualification Statements, Inspection and Maintenance Reports (Form 2118), EPIC Sheet, SW3P Sheet, Site Location Maps, Stored Material Lists specifying associated control measures and the Appendix which contains the TPDES Construction General Permit, MS4 Operator Notification(s) and the Construction PSL Permits per all applicable requirements.

B. For projects disturbing 5 acres or more, TxDOT will follow the actions listed in (10.A.) above with the addition of the following: Notice Of Intent (N.O.I.) and Fee Payment Form, TCEQ Large Construction Site Notice (to be used instead of Small Site Notice), and TPDES Permit Coverage Notice.

C. For projects disturbing less than one acre, actions described in (10.A.) and (10.B.) above are not required. Acreage is calculated by adding Total Area To Be Disturbed Acres on project (See #7 above) and the PSL(s) acreage located within one mile of project.

FILE NAME
DATE
DESIGNER

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T TEMPORARY SEEDING
- ___ MULCHING (Hay or Straw)
- ___ BUFFER ZONES
- ___ PLANTING
- ___ SEEDING
- P SODDING
- ___ PRESERVATION OF NATURAL RESOURCES
- ___ FLEXIBLE CHANNEL LINER
- P RIGID CHANNEL LINER
- ___ SOIL RETENTION BLANKET
- P COMPOST MANUFACTURED TOPSOIL
- T VERTICAL TRACKING
- ___ OTHER: *(Specify Practice)*

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T SILT FENCES
- T EROSION CONTROL LOGS
- ___ EROSION CONTROL COMPOST BERMS (Low Velocity)
- T ROCK FILTER DAMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- T ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- P CURBS AND GUTTERS
- P STORM SEWERS
- P VELOCITY CONTROL DEVICES
- ___ OTHER: *(Specify Practice)*

NOTE: TOP OF BMP'S SHOULD NOT BE HIGHER THAN ROADWAY ELEVATION AS NOT TO FLOOD ROADWAY UNLESS PRIOR APPROVAL FROM ENGINEER IS OBTAINED.

3. STORM WATER MANAGEMENT: *(Example Below - May be used as applicable, or revised)*

A. Storm water drainage will be provided by ditches, inlets, and storm water systems which carry drainage within the R.O.W. to the lows within the roadway and project site which drains to natural facilities.

B. Other permanent erosion controls include hydraulic design to limit structure outlet velocities and grading design generally consisting of 4 :1 or flatter slopes with permanent vegetative cover.

4. STORM WATER MANAGEMENT ACTIVITIES: (Sequence of Construction)

1. *Install initial SW3P devices as shown in the plans and as directed.*
2. *Begin phase construction as shown in the plans.*
3. *Update and maintain SW3P devices as shown in the plans and as directed during phase construction.*
4. *Complete phase construction and sod disturbed areas ready for final stabilization.*
5. *Install, update, and maintain SW3P devices during all subsequent phases of construction.*
6. *Permanent stabilize all disturbed areas as shown in the plans. Remove all remaining SW3P devices on vegetation has reached an acceptable growth.*
7. *TxDOT ROW for this project is too narrow to incorporate sedimentation basins. Other erosion control measures will be installed to meet storm water management requirements. Devices will be removed once vegetation has reached an acceptable growth.*

5. NON-STORM WATER DISCHARGES:

Filter non-storm water discharges, or hold in retention basins, before being allowed to mix with storm water. These discharges consist of, but not limited to, non-polluted ground water, spring water, foundation or footing drain water, water used for dust control or pavement washing and vehicle washwater containing no detergents.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

Maintain all erosion and sediment controls in good working order. Perform any necessary cleaning/repairs/replacements at the earliest possible date prior to next rain event, but no later than 7 calendar days. Ensure the surrounding ground has dried sufficiently to prevent damage from equipment. "Too Wet" is the only reason for not adhering to timeframes described. When construction activities permanently or temporarily cease and are not expected to resume for 14 or more days on a disturbed portion of the site, stabilization measures must be initiated immediately.

2. INSPECTION:

A TxDOT Inspector will perform a regularly scheduled SW3P inspection every 7 calendar days. An Inspection and Maintenance Report, signed by the TxDOT Inspector and the Contractor, will be filed for each Inspection. Revise/clean/repair/replace each BMP control device in accordance with the current Field Inspection and Maintenance Report (Form 2118) and Item 1 (Maintenance) above.

3. WASTE MATERIALS:

On a daily basis, or as may be directed, collect all waste materials, trash and debris from the construction site and deposit into a metal dumpster having a secure cover and which meets all state and local city solid waste management requirements. Empty the dumpster as required by regulation, or as may be directed, at a local approved landfill site. Do not bury construction waste on the construction project site.

4. HAZARDOUS WASTE & SPILL REPORTING:

As a minimum, any products in the following categories are considered to be hazardous: Paints, Acids, Solvents, Fuels, Asphalt Products, Chemical Additives for Soil Stabilization, and Concrete Curing Compounds or Additives. When storing hazardous material on the project site, or at a Project Specific Location, take all practicable precaution to prevent and/or contain any spillage of these materials. In the event of a spill, contact the spill coordinator immediately.

5. SANITARY WASTE:

Use a licensed sanitary waste management contractor to collect all sanitary waste from portable units as may be required by local regulation, or as directed.

6. CONSTRUCTION VEHICLE TRACKING:

On a regular basis, or as may be directed, dampen haul roads for dust control and stabilize construction entrances/exits. Provide for a motorized broom or vacuum type sweeper to be available on a daily basis, or as may be directed, to remove sediment from paved roadways abutting or traversing the project site.

7. MANAGEMENT PRACTICES:

A. Construct disposal areas, stockpiles, haul roads and PSL's in a manner that will minimize and control the amount of sediment that may enter receiving waters. Do not locate disposal areas in any wetland, waterbody or streambed.

B. Locate construction staging areas, vehicle maintenance and PSL's areas in a manner to minimize the runoff of pollutants.

C. When working in or near a wetland, install and maintain operating soil erosion and sediment controls at all times during construction and isolate the work from the wetland.

D. Clear all waterways as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.

E. Procedures and/or practices should be taken to control dust.

F. Sediment to be removed from roadways daily or when work begins after weather events if construction activities have ceased due to weather event.

, P.E.
Signature of Registrant & Date

DALLAS DISTRICT ENVIRONMENTAL

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

TEMPLATE REVISION DATE: 01/07/2015

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM 2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	COLLIN	411
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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 damge resulting from its use.

Notes To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from its relative position.
3. All areas should be addressed thoroughly and verify the necessary pay items are set up to support actions needed.

Filled Out By: KMK/KMK
Prepared by: Name/Section

I. STORMWATER POLLUTION PREVENTION PLAN-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.
List adjacent MS 4 Operator(s) that receive discharges from this project. They need to be notified prior to construction activities.
(Note: Leave blank only if no adjacent MS 4 Operator(s) are affected.)

1. Collin County-East Fork/Phase II-Tracy Homfeld, 825 N. McDonald, Suite 160, McKinney TX 75069
2. Lucas-East fork/Phase II-Stanton Foerster, 151 Country Club Rd, Lucas, TX 75002
3. Parker-East Fork/Phase II-Jeff Flanigan, 5700 East Parker road, Parker TX 75002
4. Town of St Paul/East/Phase II-Merle Finley, 2505 Butscher's Block, Saint Paul, TX 75098
5. Wylie-East Paul/Phase II-Mike Sferra, 2000 Hwy 78 North, Wylie, TX 75098

☐ No Action Required ☒ Required Action

Action Number:

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas. No equipment is allowed in any sream channel below the ordinary High Water Mark except on approved temporary stream crossings or drill pads.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☐ No Permit Required
☒ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# 3(a)

Required Actions: List Waters of the US Permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

Crossing 1/Turner Branch - west of Santa Fe Trail
Crossing 2/Turner Branch - east of McCreay Rd.
Crossing 3/Tributary to Turner Branch - west of Bois D'Arc Ln
Crossing 4/Trubutary to Muddy Creek - east of Toole Dr (along north side of roadway
Crossing 5/Muddy Creek - west of Dove Crk

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices for applicable 401 General Conditions:
(Note: If CORP Permit not required, do not check boxes.)

Erosion	Sedimentation	Post-Construction TSS
☐ BMP's not required	☐ BMP's not required	☐ BMP's not required
☒ Temporary Vegetation	☒ Silt Fence	☒ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751 & 752 in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal commitments.

☐ No Action Required ☒ Required Action

Action Number:

1. Tree trimming maintance of overhanging branches could be necessary during construction. Avoidance measures would be used to avoid impacts to mature trees where possible.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS TREATY ACT.

☐ No Action Required ☒ Required Action

Action Number:

A. Contractors will be advised of the potential occurrence in the project area, and to avoid harming the following:
   1. Timber/Canebrake Rattlesnake
   2. Texas Garter Snake
   3. Plains Spotted Skunk

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the Engineer immediately.

Special Note: The Migratory Bird Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport any migratory bird, nest, young, feather or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. The contractor would remove all old migratory bird nests from any structure where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 to October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Enviromental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corp of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):
Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropiate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:
- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation(s) or replacement(s) (bridge class structures not including box culverts)?
☒ Yes ☐ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?
☐ Yes ☒ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notifiy DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☐ No Action Required ☒ Required Action

Action Number:

1. Test results for ACM and LBP for FM 551 Muddy Creek bridge are as follow: Laboratory analysis determined the suspect materials contain no asbestos. In addition, lead result indicate no suspect paint coating were observed to be associated with the structure.
2. The project includes the demolition and/or relocation of building sturctures. ACM issues should be addressed during the ROW process prior to construction.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

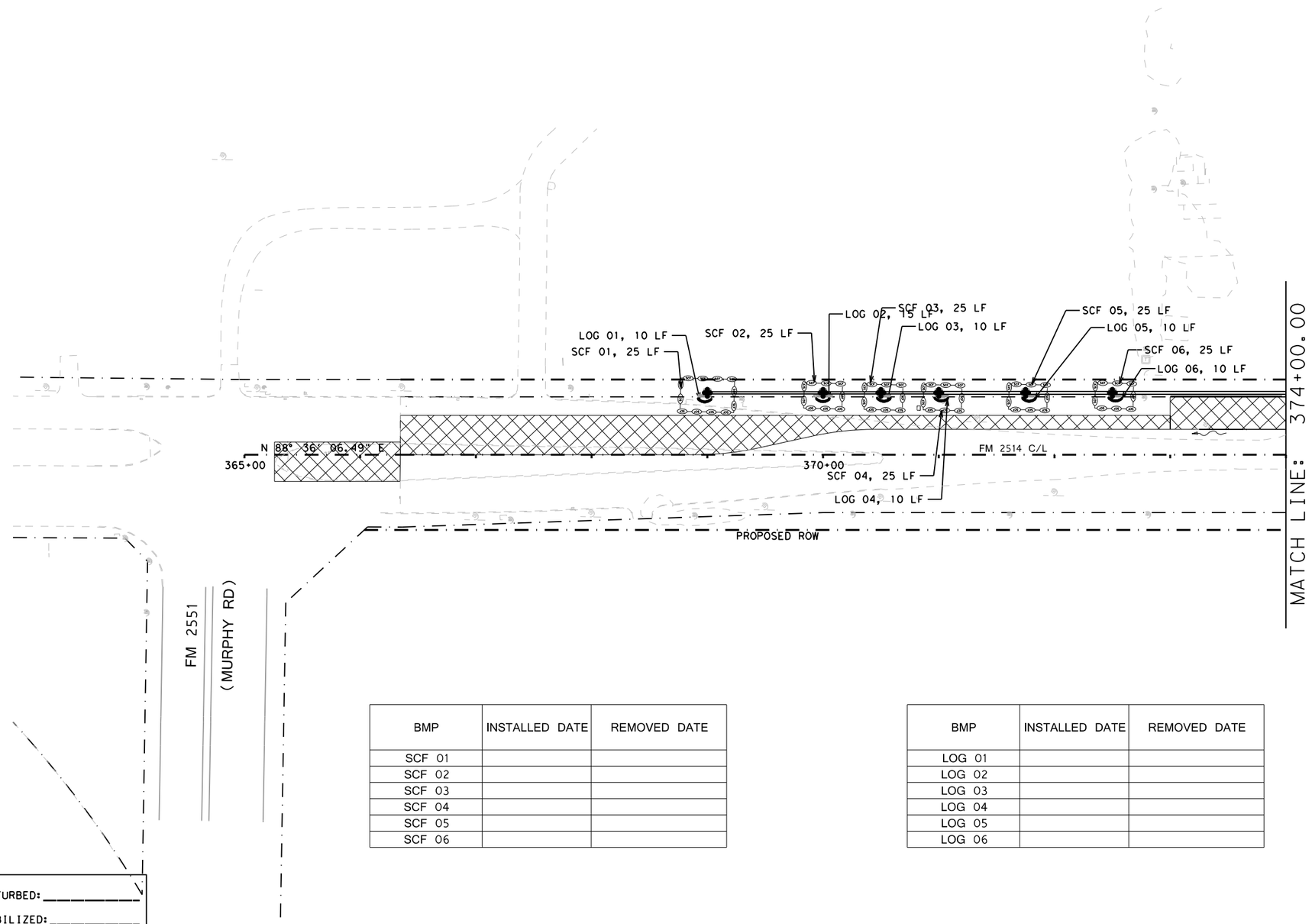
GENERAL NOTE:
Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.

LAST REVISION: 1/15/15

 Texas Department of Transportation
Dallas District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		FM 2514
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	Collin	
CONTROL	SECTION	JOB	SHEET NO.
2679	02	008	412



BMP	INSTALLED DATE	REMOVED DATE
SCF 01		
SCF 02		
SCF 03		
SCF 04		
SCF 05		
SCF 06		

BMP	INSTALLED DATE	REMOVED DATE
LOG 01		
LOG 02		
LOG 03		
LOG 04		
LOG 05		
LOG 06		

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

SEDIMENT CONTROL FENCE AROUND INLETS ARE FOR INTERMEDIATE USE ONLY. UPON COMPLETION OF CURB INLETS, COMPOST LOGS SHALL BE PLACED AROUND INLETS FOR PROTECTION. COMPOST LOGS SHALL BE REMOVED PRIOR TO OPENING TRAFFIC.

ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

FM 2514
SW3P PHASE 1

SCALE: 1"=100'

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	413
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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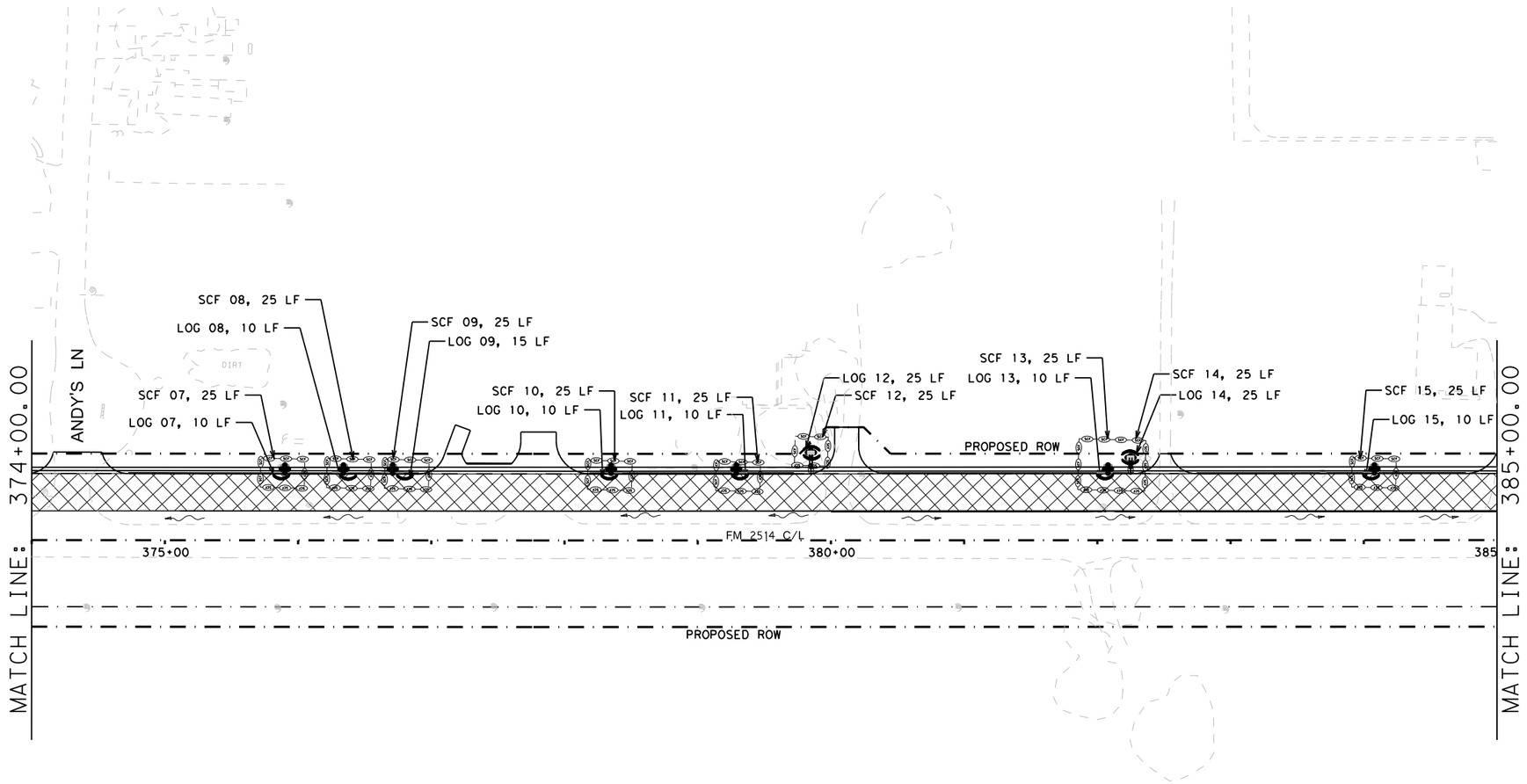

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SCF 08		
SCF 09		
SCF 10		
SCF 11		
SCF 12		
SCF 13		
SCF 14		
SCF 15		

BMP	INSTALLED DATE	REMOVED DATE
LOG 07		
LOG 08		
LOG 09		
LOG 10		
LOG 11		
LOG 12		
LOG 13		
LOG 14		
LOG 15		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
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	PAVEMENT PREVIOUSLY CONSTRUCTED

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PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

DAWIT ABRAHAM
P.E. 116804

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

Texas Department of Transportation

FM 2514
SW3P PHASE 1

SCALE: 1"=100'

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	414
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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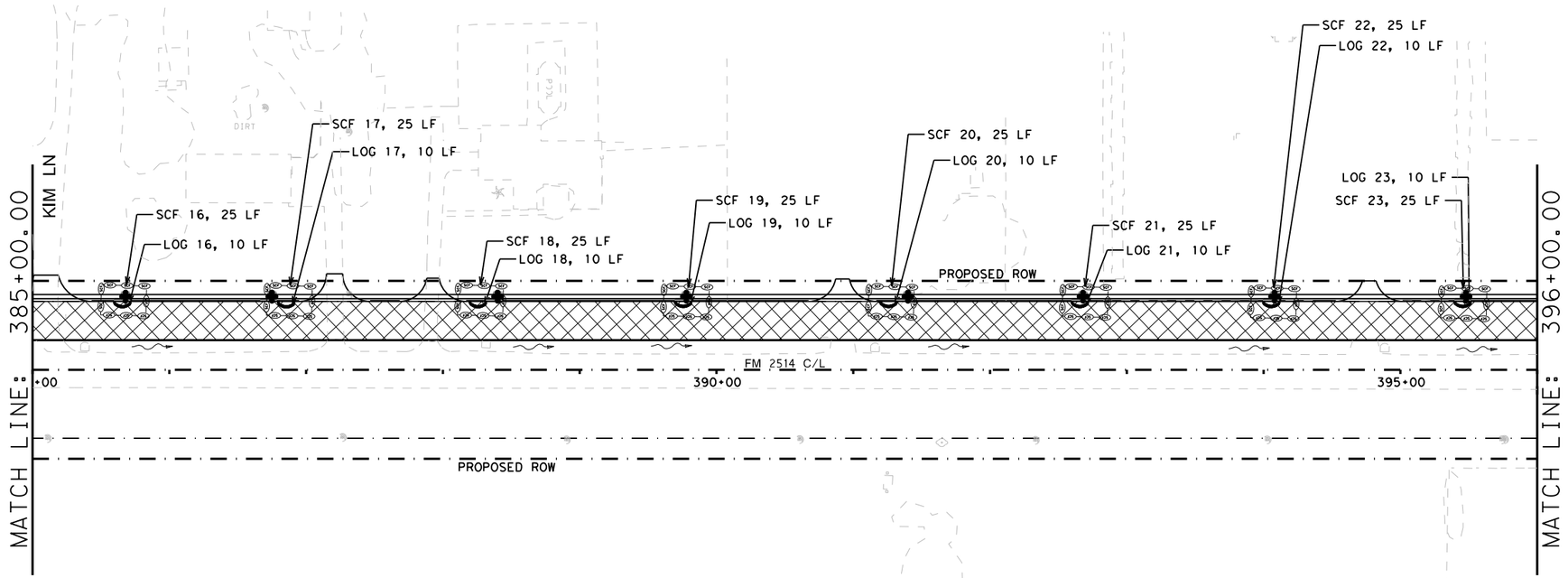

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

SEDIMENT CONTROL FENCE AROUND INLETS ARE FOR INTERMEDIATE USE ONLY. UPON COMPLETION OF CURB INLETS, COMPOST LOGS SHALL BE PLACED AROUND INLETS FOR PROTECTION. COMPOST LOGS SHALL BE REMOVED PRIOR TO OPENING TRAFFIC.

ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

BMP	INSTALLED DATE	REMOVED DATE
SCF 16		
SCF 17		
SCF 18		
SCF 19		
SCF 20		
SCF 21		
SCF 22		
SCF 23		

BMP	INSTALLED DATE	REMOVED DATE
LOG 16		
LOG 17		
LOG 18		
LOG 19		
LOG 20		
LOG 21		
LOG 22		
LOG 23		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

DAWIT ABRAHAM
P.E. 116804

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

Texas Department of Transportation

FM 2514
SW3P PHASE 1

SCALE: 1"=100'

SHEET 3 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
	6	SEE TITLE SHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	415
CHECK	2679	02	008	

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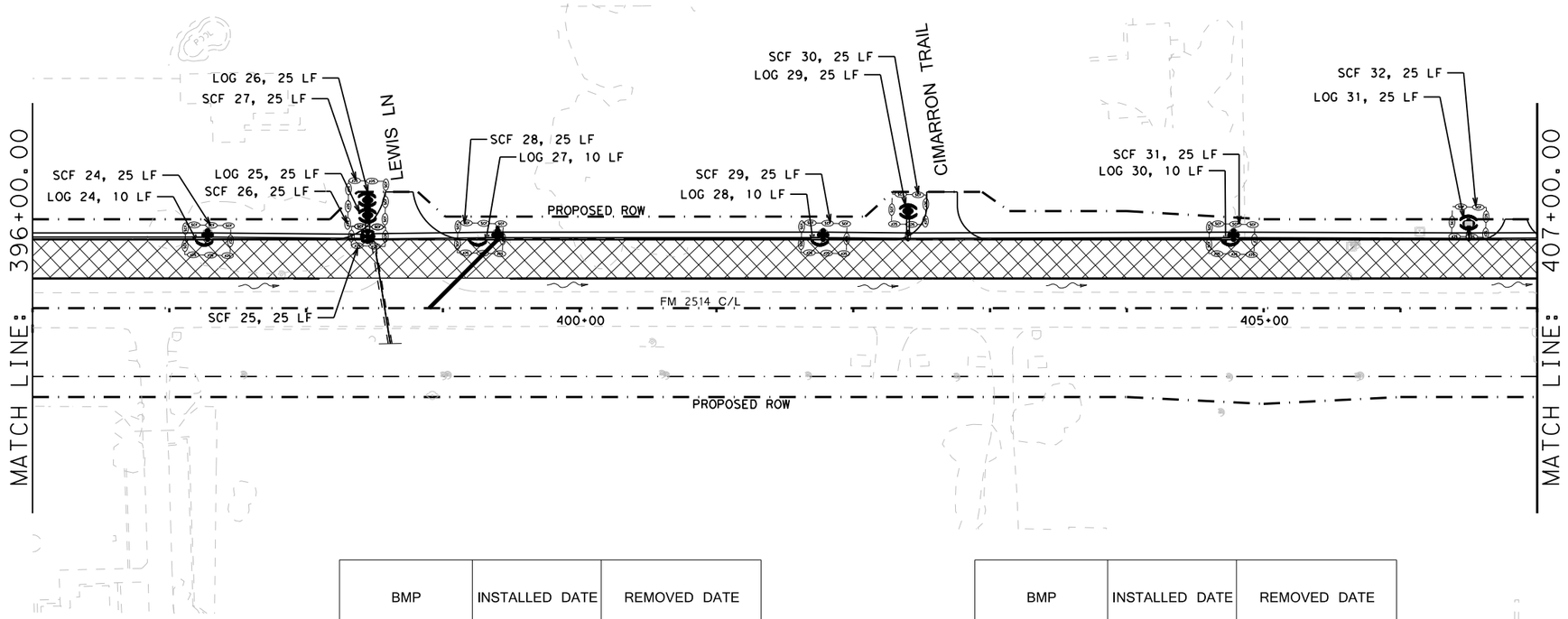

BMP	INSTALLED DATE	REMOVED DATE
SCF 24		
SCF 25		
SCF 26		
SCF 27		
SCF 28		
SCF 29		
SCF 30		
SCF 31		
SCF 32		

BMP	INSTALLED DATE	REMOVED DATE
LOG 24		
LOG 25		
LOG 26		
LOG 27		
LOG 28		
LOG 29		
LOG 30		
LOG 31		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

SEDIMENT CONTROL FENCE AROUND INLETS ARE FOR INTERMEDIATE USE ONLY. UPON COMPLETION OF CURB INLETS, COMPOST LOGS SHALL BE PLACED AROUND INLETS FOR PROTECTION. COMPOST LOGS SHALL BE REMOVED PRIOR TO OPENING TRAFFIC.

ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

DAWIT ABRAHAM
P.E. 116804

ON: 3/16/2017

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Texas Department of Transportation

FM 2514
SW3P PHASE 1

SCALE: 1"=100'

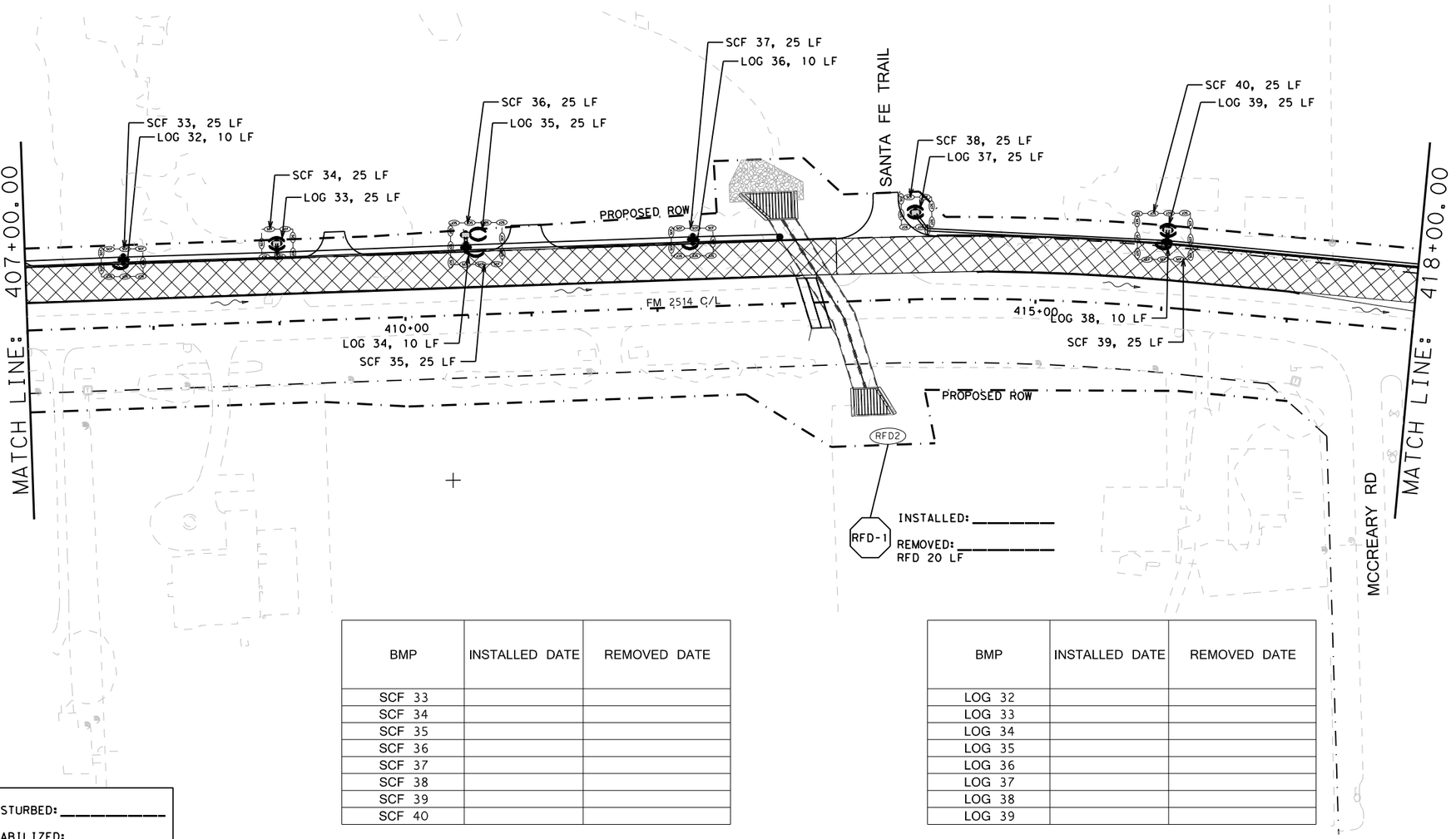
SHEET 4 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	416
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:53:01 PM
FILE:c:\txdot\pw*online\txdot5\rachael.twiggs\d0120009\SW3P PH 1A LAYOUT 4.dgn

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED



NOTES:

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SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

BMP	INSTALLED DATE	REMOVED DATE
SCF 33		
SCF 34		
SCF 35		
SCF 36		
SCF 37		
SCF 38		
SCF 39		
SCF 40		

BMP	INSTALLED DATE	REMOVED DATE
LOG 32		
LOG 33		
LOG 34		
LOG 35		
LOG 36		
LOG 37		
LOG 38		
LOG 39		

DATE DISTURBED:_____

DATE STABILIZED:_____

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FM 2514
SW3P PHASE 1

SCALE: 1"=100'

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	417
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:53:13 PM
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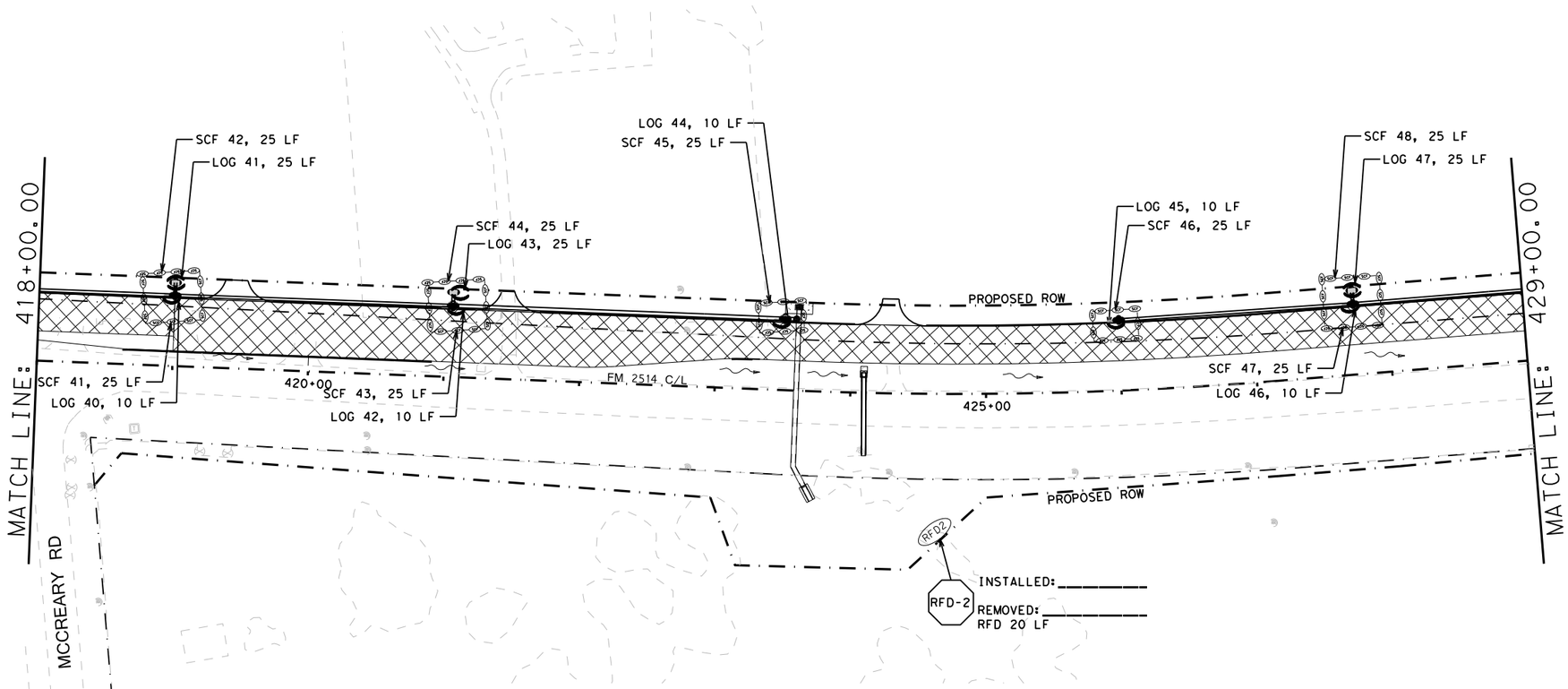

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

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BMP	INSTALLED DATE	REMOVED DATE
SCF 41		
SCF 42		
SCF 43		
SCF 44		
SCF 45		
SCF 46		
SCF 47		
SCF 48		

BMP	INSTALLED DATE	REMOVED DATE
LOG 40		
LOG 41		
LOG 42		
LOG 43		
LOG 44		
LOG 45		
LOG 46		
LOG 47		

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FM 2514
SW3P PHASE 1

SCALE: 1"=100' SHEET 6 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	418
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:53:25 PM
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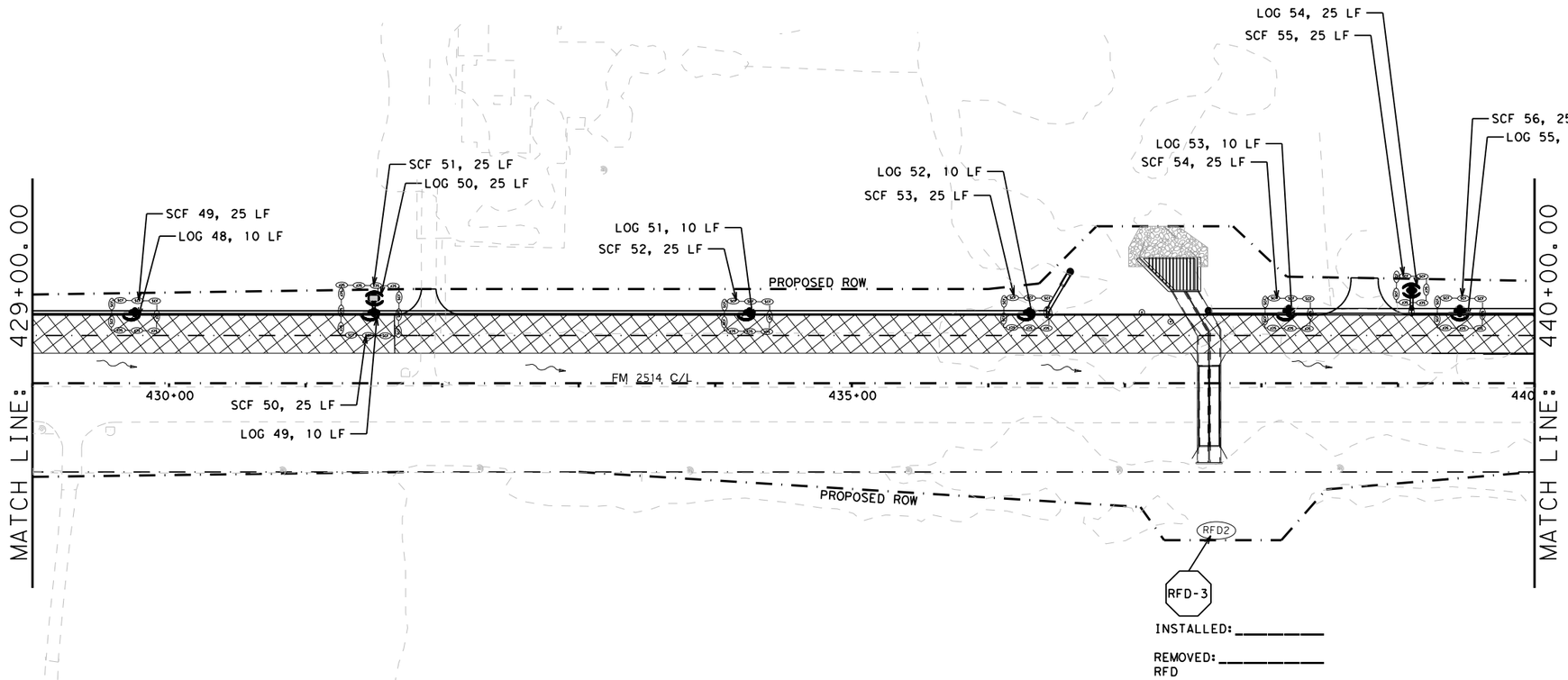

SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND

- PAVEMENT THIS PHASE
- PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 49		
SCF 50		
SCF 51		
SCF 52		
SCF 53		
SCF 54		
SCF 55		
SCF 56		

BMP	INSTALLED DATE	REMOVED DATE
LOG 48		
LOG 49		
LOG 50		
LOG 51		
LOG 52		
LOG 53		
LOG 54		
LOG 55		

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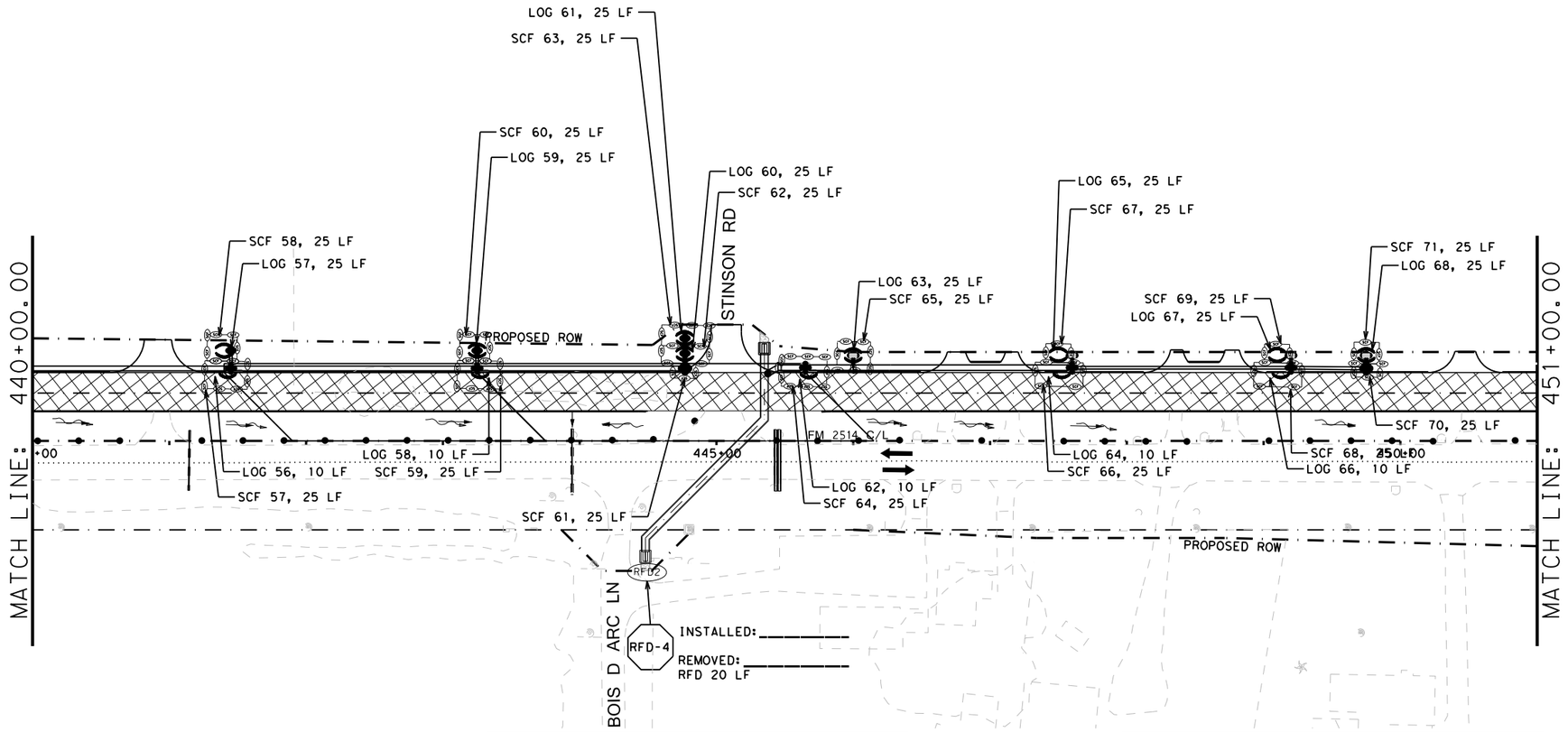
FM 2514
SW3P PHASE 1

SCALE: 1"=100'

SHEET 7 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	419
	CONTROL	SECTION	JOB	
CHECK	2679	02	008	



SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 57		
SCF 58		
SCF 59		
SCF 60		
SCF 61		
SCF 62		
SCF 63		
SCF 64		
SCF 65		
SCF 66		
SCF 67		
SCF 68		
SCF 69		
SCF 70		
SCF 71		

BMP	INSTALLED DATE	REMOVED DATE
LOG 56		
LOG 57		
LOG 58		
LOG 59		
LOG 60		
LOG 61		
LOG 62		
LOG 63		
LOG 64		
LOG 65		
LOG 66		
LOG 67		
LOG 68		

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FM 2514
SW3P PHASE 1

SCALE: 1"=100'

SHEET 8 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	420
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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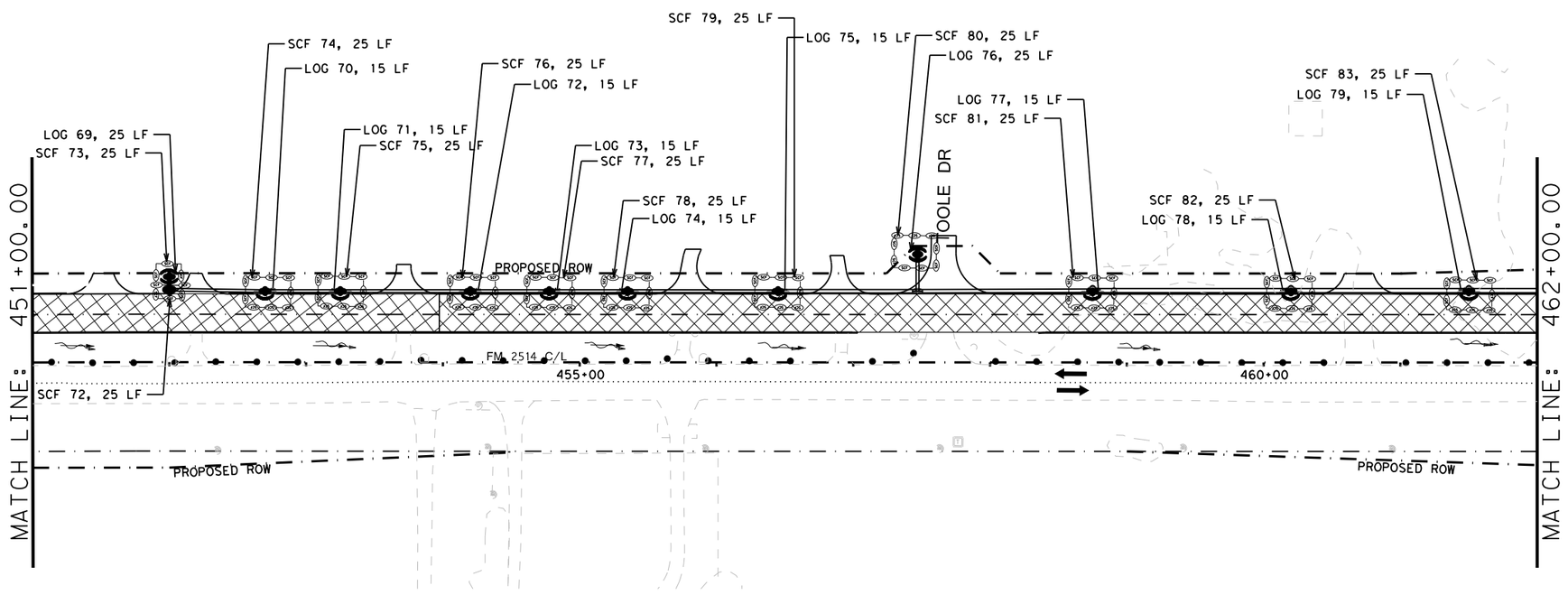

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 72		
SCF 73		
SCF 74		
SCF 75		
SCF 76		
SCF 77		
SCF 78		
SCF 79		
SCF 80		
SCF 81		
SCF 82		
SCF 83		

BMP	INSTALLED DATE	REMOVED DATE
LOG 69		
LOG 70		
LOG 71		
LOG 72		
LOG 73		
LOG 74		
LOG 75		
LOG 76		
LOG 77		
LOG 78		
LOG 79		

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FM 2514
SW3P PHASE 1

SCALE: 1"=100'

SHEET 9 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	421
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:53:53 PM
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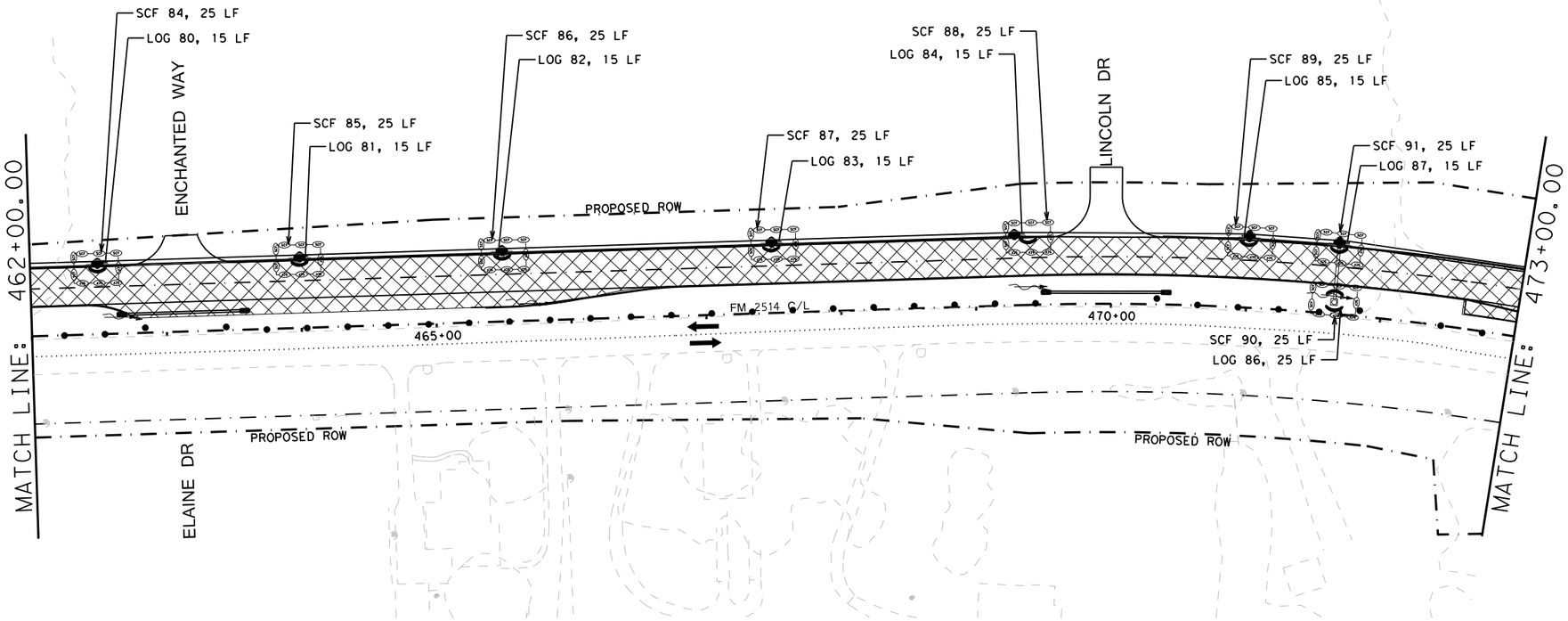

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

BMP	INSTALLED DATE	REMOVED DATE
SCF 84		
SCF 85		
SCF 86		
SCF 87		
SCF 88		
SCF 89		
SCF 90		
SCF 91		

BMP	INSTALLED DATE	REMOVED DATE
LOG 80		
LOG 81		
LOG 82		
LOG 83		
LOG 84		
LOG 85		
LOG 86		
LOG 87		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

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Texas Department of Transportation

FM 2514
SW3P PHASE 1

SCALE: 1"=100' SHEET 10 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	422
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:54:01 PM
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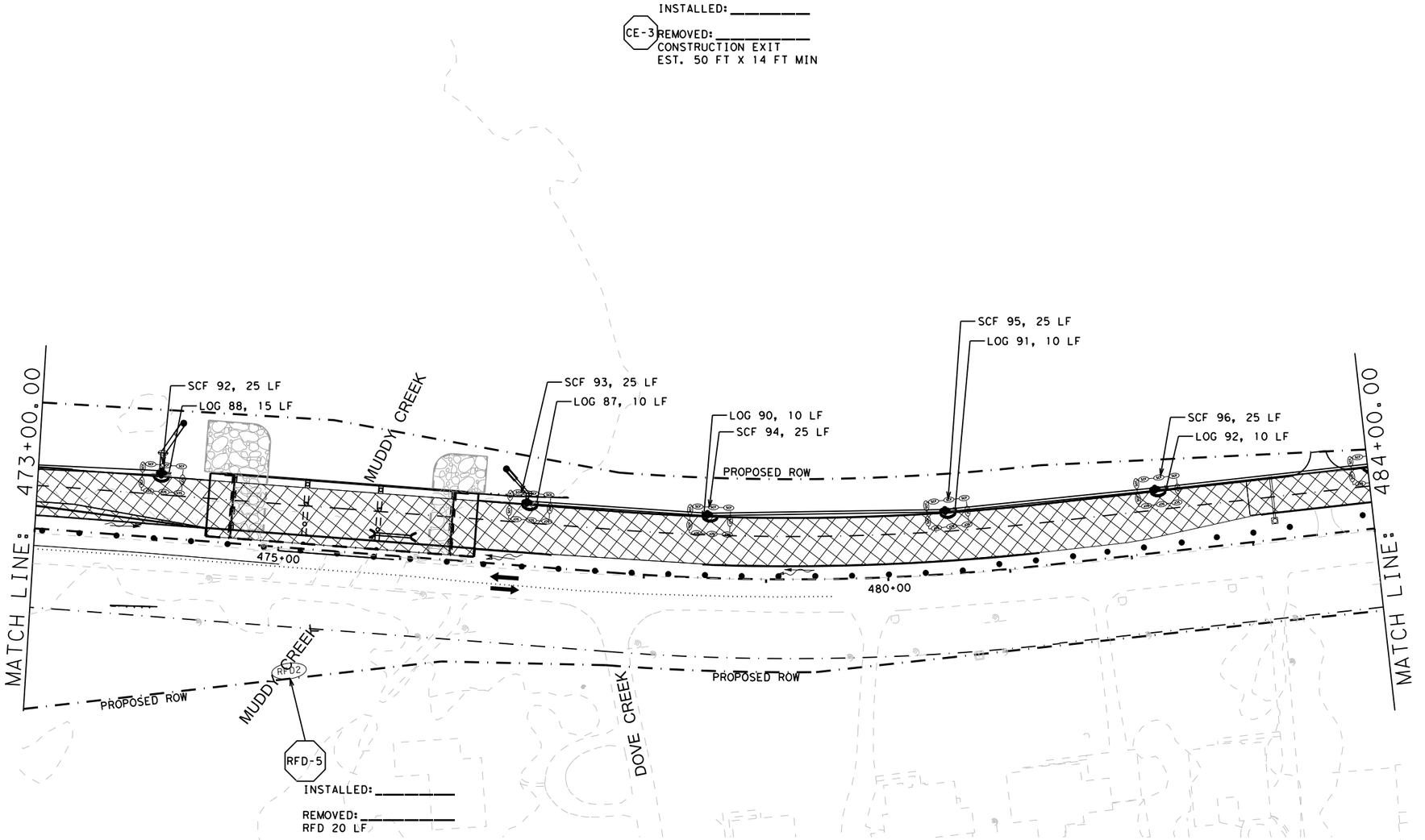

BMP	INSTALLED DATE	REMOVED DATE
SCF 92		
SCF 93		
SCF 94		
SCF 95		
SCF 96		

BMP	INSTALLED DATE	REMOVED DATE
LOG 88		
LOG 89		
LOG 90		
LOG 91		
LOG 92		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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FM 2514
SW3P PHASE 1

SCALE: 1"=100'

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	423
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:54:09 PM
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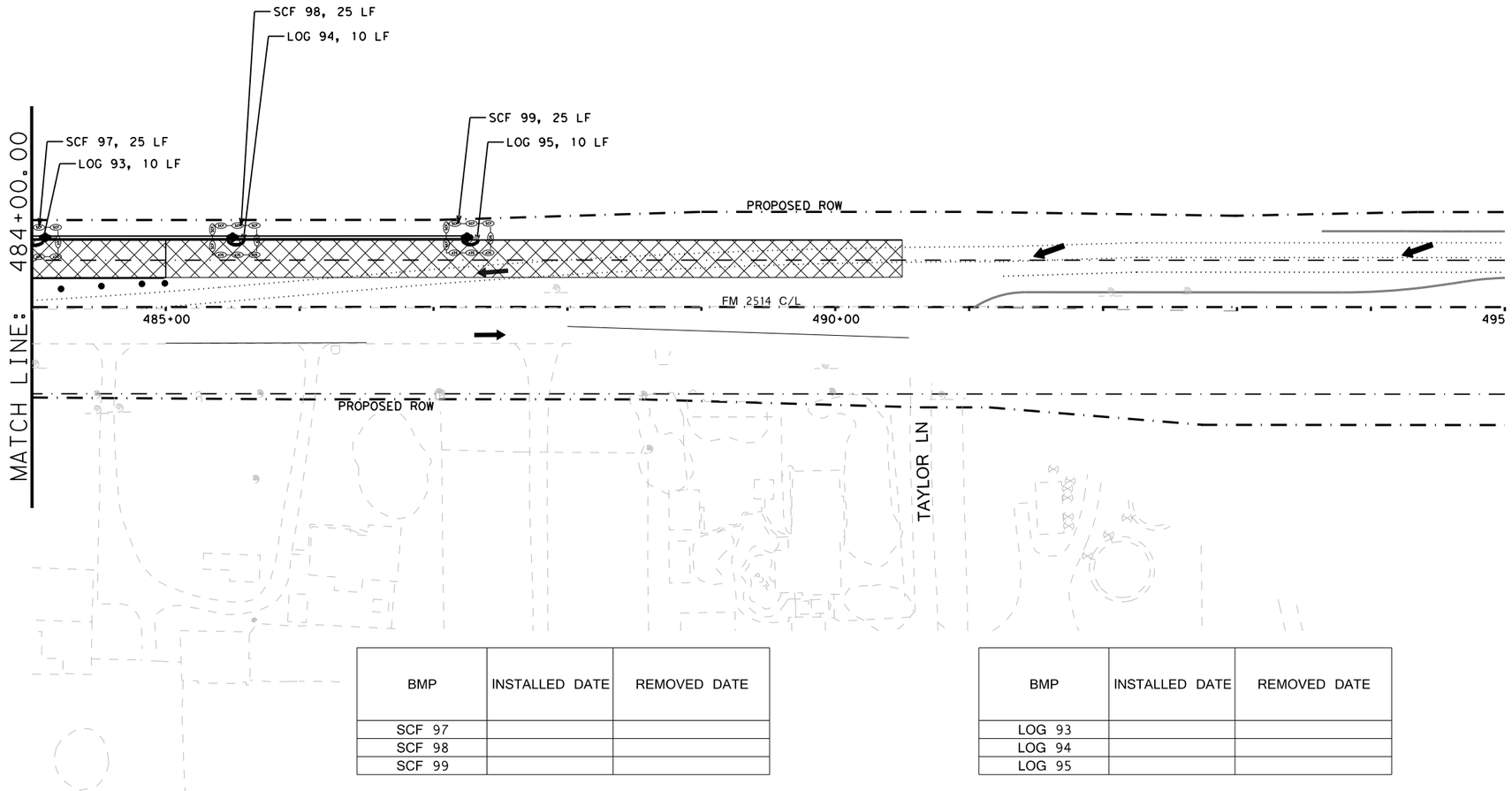

BMP	INSTALLED DATE	REMOVED DATE
SCF 97		
SCF 98		
SCF 99		

BMP	INSTALLED DATE	REMOVED DATE
LOG 93		
LOG 94		
LOG 95		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

SW3P LEGEND

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND

	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

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FM 2514
SW3P PHASE 1

SCALE: 1"=100'

SHEET 12 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	424
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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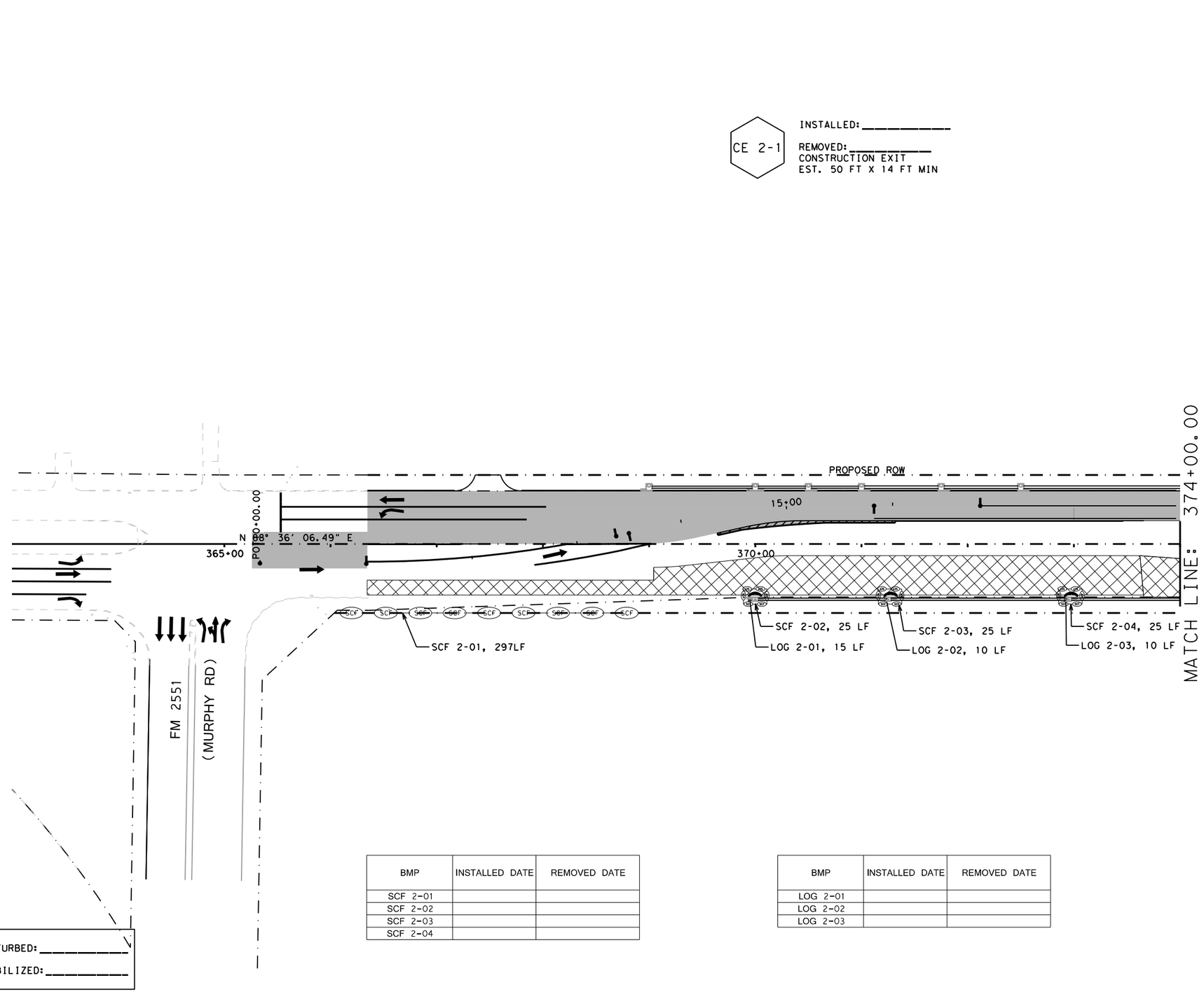

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-01		
SCF 2-02		
SCF 2-03		
SCF 2-04		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-01		
LOG 2-02		
LOG 2-03		

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SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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FM 2514
SW3P PHASE 2

SCALE: 1"=100' SHEET 1 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	425
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:00 PM
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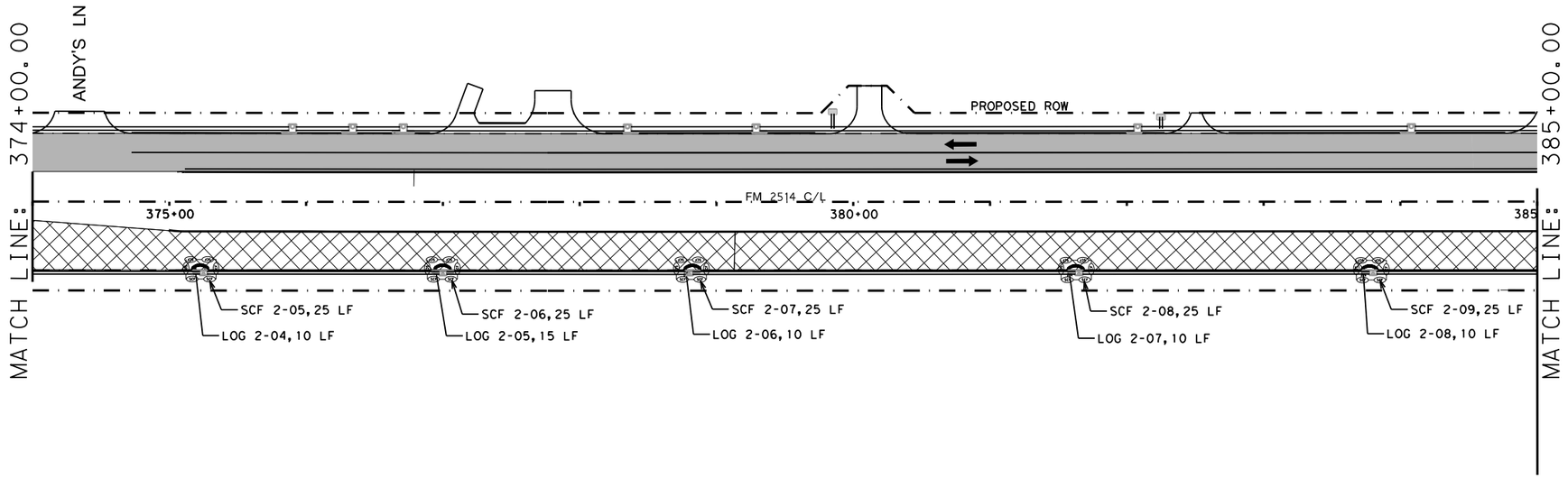

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

SEDIMENT CONTROL FENCE AROUND INLETS ARE FOR INTERMEDIATE USE ONLY. UPON COMPLETION OF CURB INLETS, COMPOST LOGS SHALL BE PLACED AROUND INLETS FOR PROTECTION. COMPOST LOGS SHALL BE REMOVED PRIOR TO OPENING TRAFFIC.

ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-05		
SCF 2-06		
SCF 2-07		
SCF 2-08		
SCF 2-09		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-04		
LOG 2-05		
LOG 2-06		
LOG 2-07		
LOG 2-08		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY UNDER AUTHORITY OF:

RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

IT IS NOT FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

Texas Department of Transportation

FM 2514
SW3P PHASE 2

SCALE: 1"=100' SHEET 2 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	426
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:08 PM
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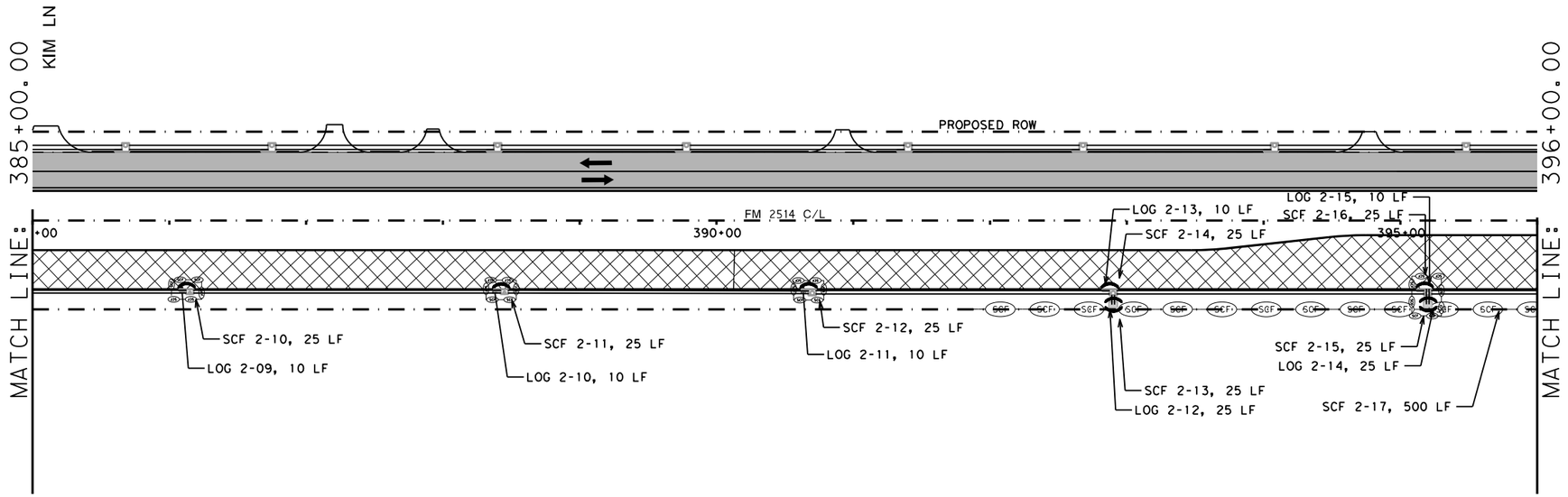

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-10		
SCF 2-11		
SCF 2-12		
SCF 2-13		
SCF 2-14		
SCF 2-15		
SCF 2-16		
SCF 2-17		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-09		
LOG 2-10		
LOG 2-11		
LOG 2-12		
LOG 2-13		
LOG 2-14		
LOG 2-15		

DATE DISTURBED:_____

DATE STABILIZED:_____

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	427
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:16 PM
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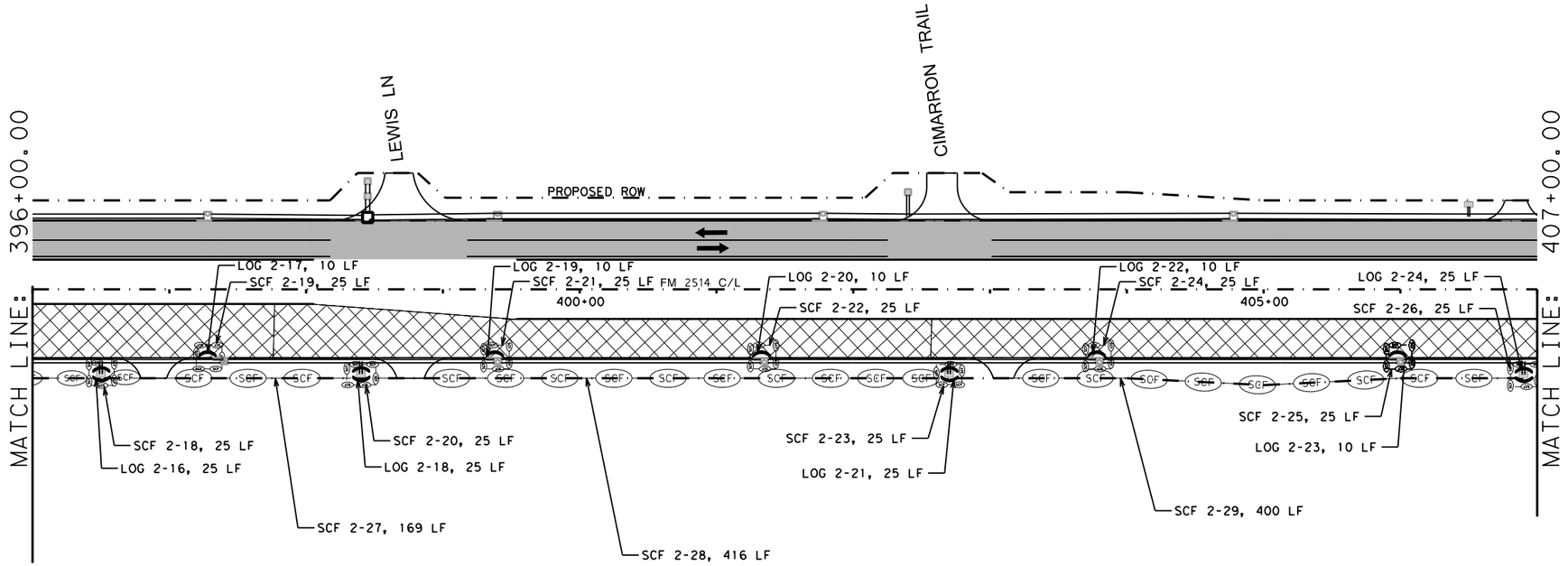

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-18		
SCF 2-19		
SCF 2-20		
SCF 2-21		
SCF 2-22		
SCF 2-23		
SCF 2-24		
SCF 2-25		
SCF 2-26		
SCF 2-27		
SCF 2-28		
SCF 2-29		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-16		
LOG 2-17		
LOG 2-18		
LOG 2-19		
LOG 2-20		
LOG 2-21		
LOG 2-22		
LOG 2-23		
LOG 2-24		

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 4 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	428
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:24 PM
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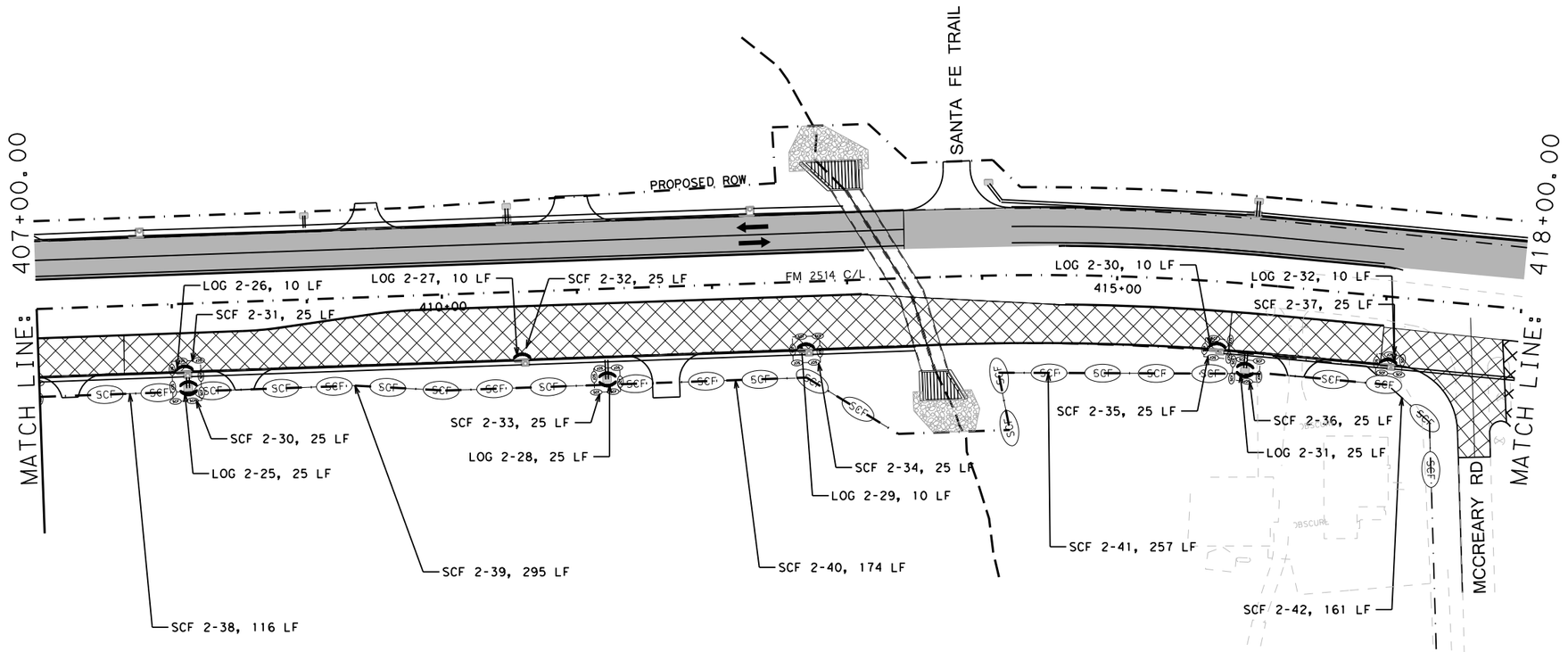
SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED



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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-30		
SCF 2-31		
SCF 2-32		
SCF 2-33		
SCF 2-34		
SCF 2-35		
SCF 2-36		
SCF 2-37		
SCF 2-38		
SCF 2-39		
SCF 2-40		
SCF 2-41		
SCF 2-42		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-25		
LOG 2-26		
LOG 2-27		
LOG 2-28		
LOG 2-29		
LOG 2-30		
LOG 2-31		
LOG 2-32		

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 5 OF 12

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	429
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:32 PM
FILE:c:\txdot\pw*online\txdot5\rachael.twiggs\d0120022\SW3P PH 2A LAYOUT 5.dgn

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

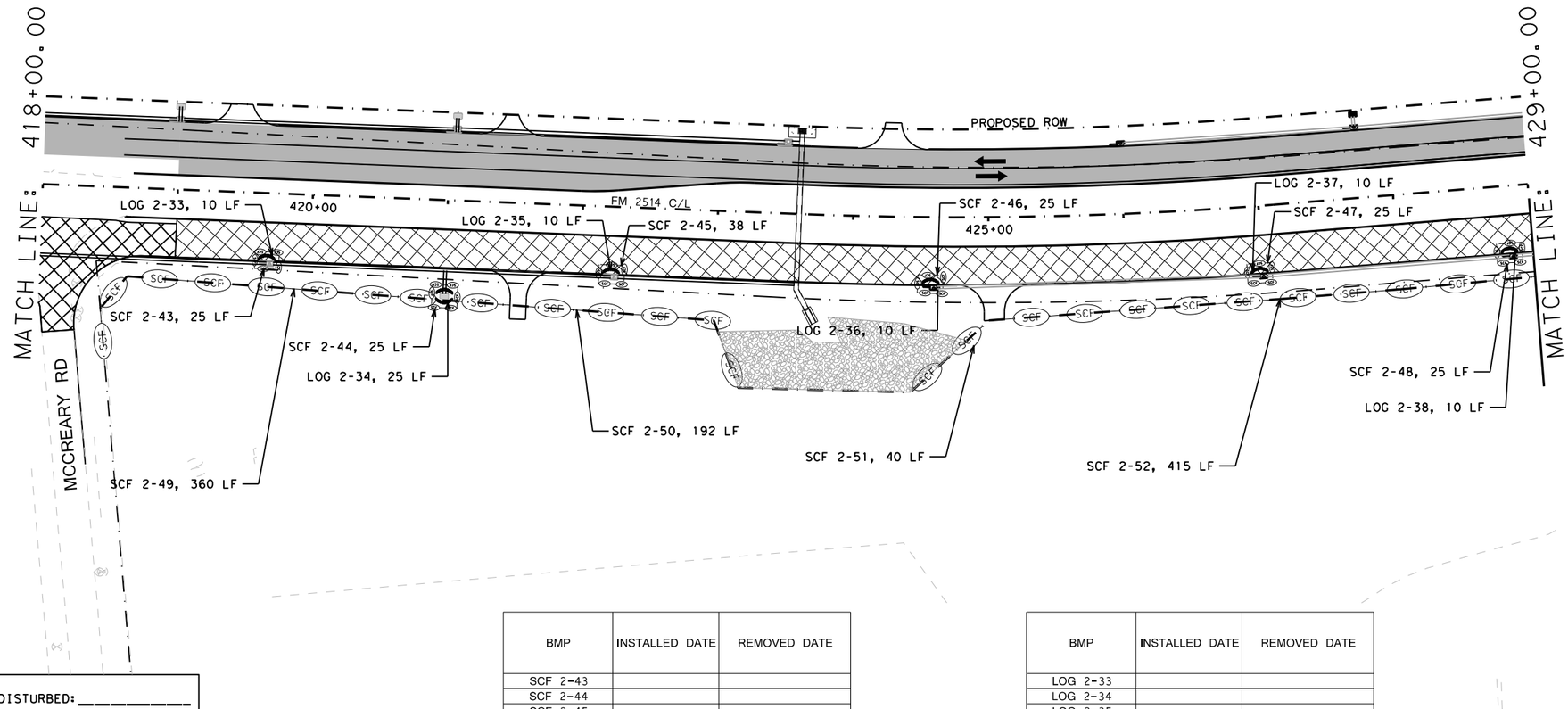
TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

CE 2-2

INSTALLED:_____

REMOVED:_____

CONSTRUCTION EXIT
EST. 50 FT X 14 FT MIN



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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-43		
SCF 2-44		
SCF 2-45		
SCF 2-46		
SCF 2-47		
SCF 2-48		
SCF 2-49		
SCF 2-50		
SCF 2-51		
SCF 2-52		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-33		
LOG 2-34		
LOG 2-35		
LOG 2-36		
LOG 2-37		
LOG 2-38		

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 6 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	430
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:41 PM
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SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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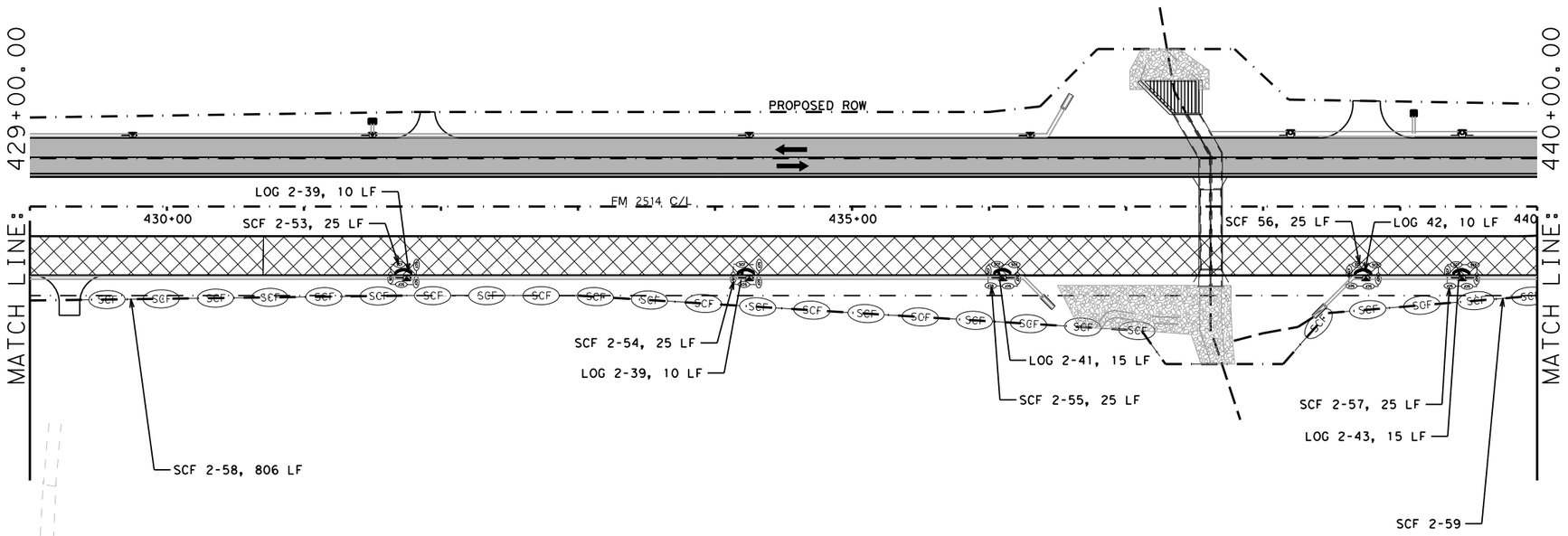
ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.



DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-53		
SCF 2-54		
SCF 2-55		
SCF 2-56		
SCF 2-57		
SCF 2-58		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-39		
LOG 2-40		
LOG 2-41		
LOG 2-42		
LOG 2-43		

PRELIMINARY

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 7 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	431
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:49 PM
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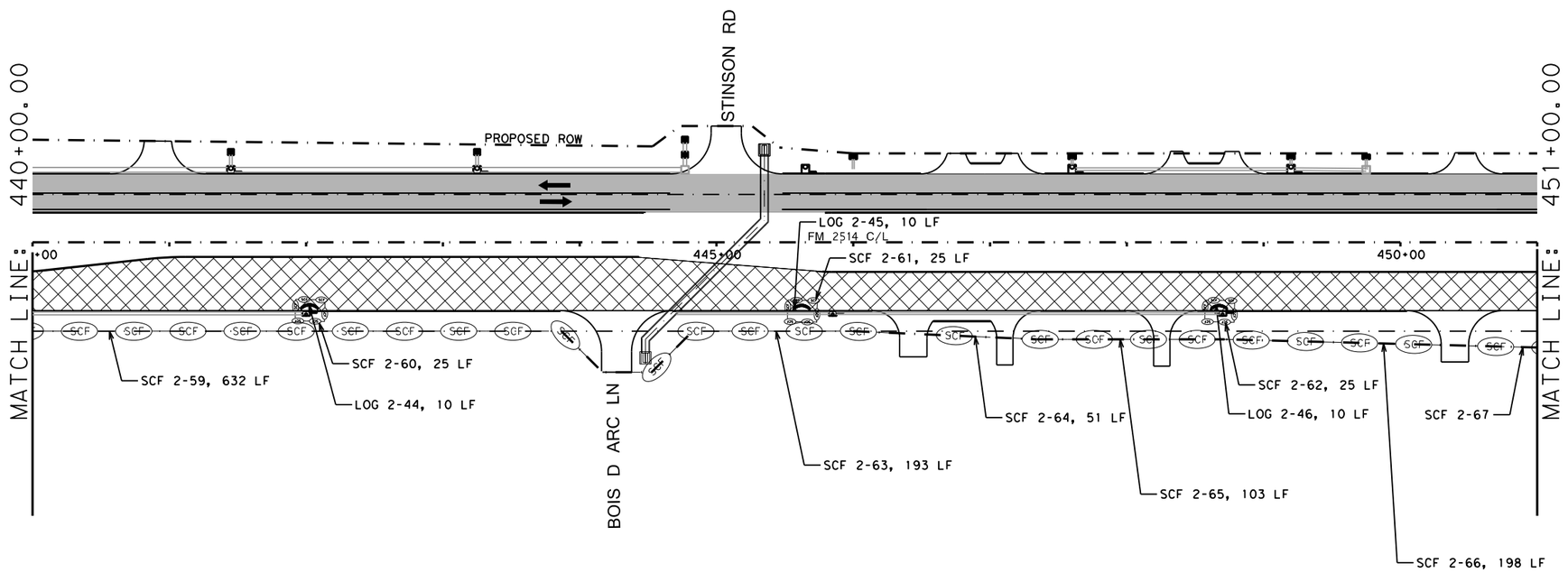

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-59		
SCF 2-60		
SCF 2-61		
SCF 2-62		
SCF 2-63		
SCF 2-64		
SCF 2-65		
SCF 2-66		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-44		
LOG 2-45		
LOG 2-46		

PRELIMINARY

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 8 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
	6	SEE TITLE SHEET		FM2514
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	432
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:55:57 PM
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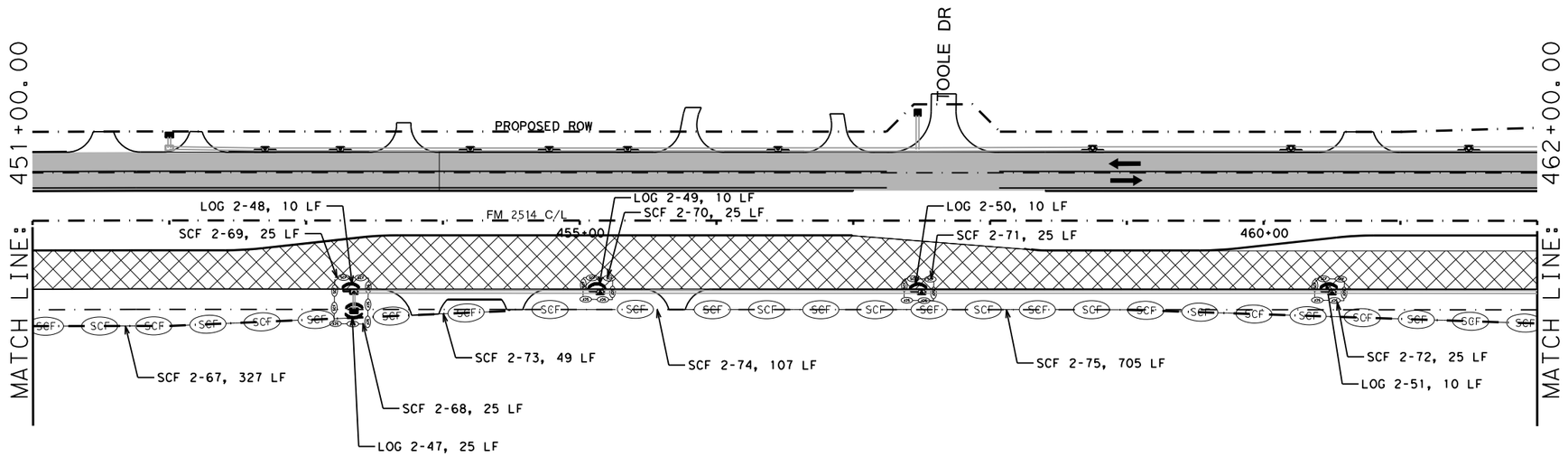

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

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BMP	INSTALLED DATE	REMOVED DATE
SCF 2-67		
SCF 2-68		
SCF 2-69		
SCF 2-70		
SCF 2-71		
SCF 2-72		
SCF 2-73		
SCF 2-74		
SCF 2-75		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-47		
LOG 2-48		
LOG 2-49		
LOG 2-50		
LOG 2-51		

DATE DISTURBED:_____

DATE STABILIZED:_____

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 9 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	433
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:56:05 PM
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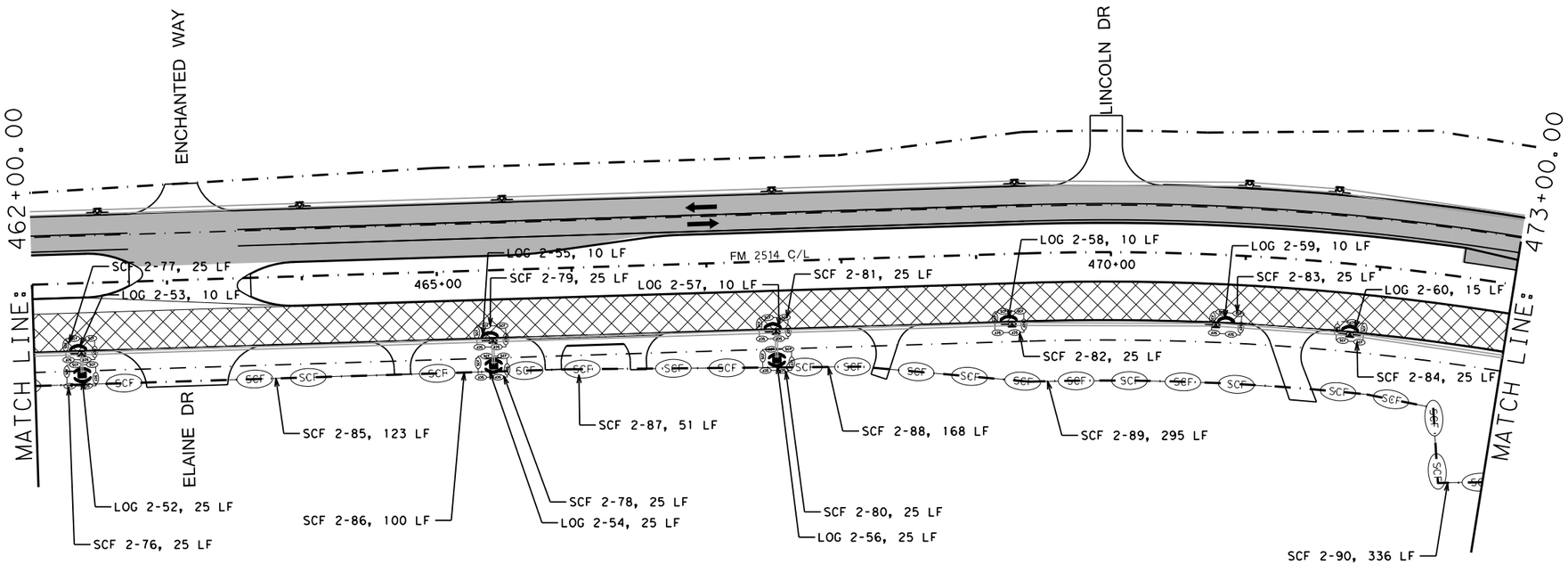

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED

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DATE DISTURBED:_____

DATE STABILIZED:_____

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BMP	INSTALLED DATE	REMOVED DATE
SCF 2-76		
SCF 2-77		
SCF 2-78		
SCF 2-79		
SCF 2-80		
SCF 2-81		
SCF 2-82		
SCF 2-83		
SCF 2-84		
SCF 2-85		
SCF 2-86		
SCF 2-87		
SCF 2-88		
SCF 2-89		
SCF 2-90		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-52		
LOG 2-53		
LOG 2-54		
LOG 2-55		
LOG 2-56		
LOG 2-57		
LOG 2-58		
LOG 2-59		
LOG 2-60		

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 10 OF 12

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	434
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:56:14 PM
FILE:c:\txdot\pw*online\txdot5\rachael.twiggs\d0120022\SW3P PH 2A LAYOUT 10.dgn

CE 2-3

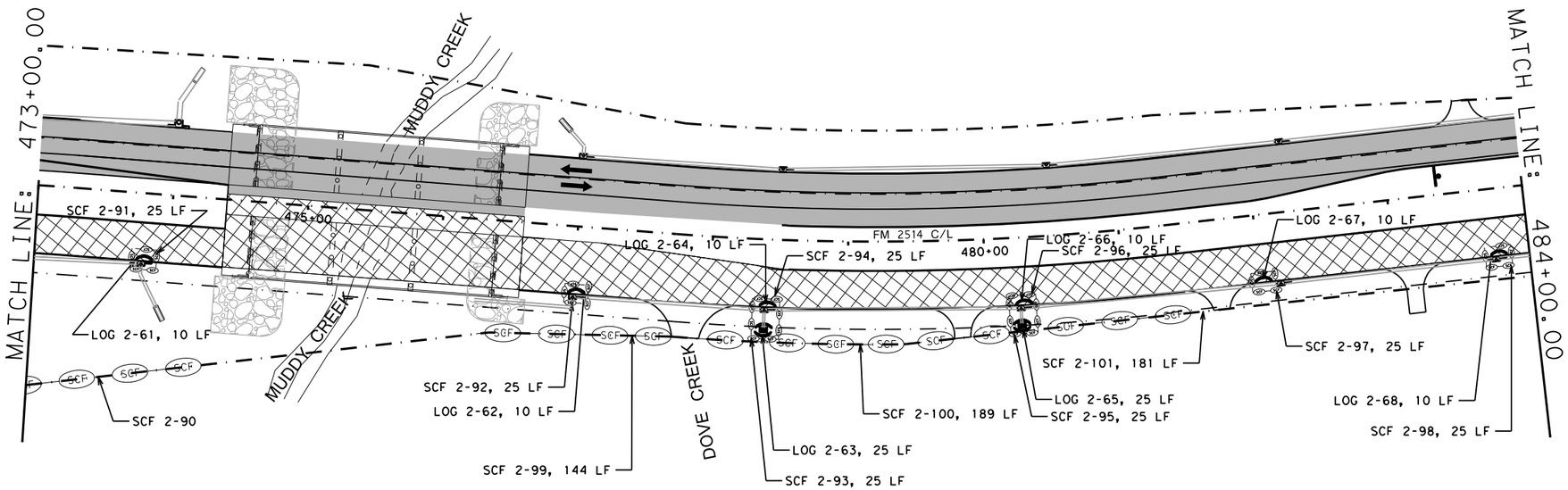
INSTALLED:_____

REMOVED:_____

CONSTRUCTION EXIT
EST. 50 FT X 14 FT MIN

SW3P LEGEND	
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
	BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND	
	PAVEMENT THIS PHASE
	PAVEMENT PREVIOUSLY CONSTRUCTED



NOTES:

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ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-91		
SCF 2-92		
SCF 2-93		
SCF 2-94		
SCF 2-95		
SCF 2-96		
SCF 2-97		
SCF 2-98		
SCF 2-99		
SCF 2-100		
SCF 2-101		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-61		
LOG 2-62		
LOG 2-63		
LOG 2-64		
LOG 2-65		
LOG 2-66		
LOG 2-67		
LOG 2-68		

PRELIMINARY

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Texas Department of Transportation

FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 11 OF 12

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	435
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:5:56:22 PM
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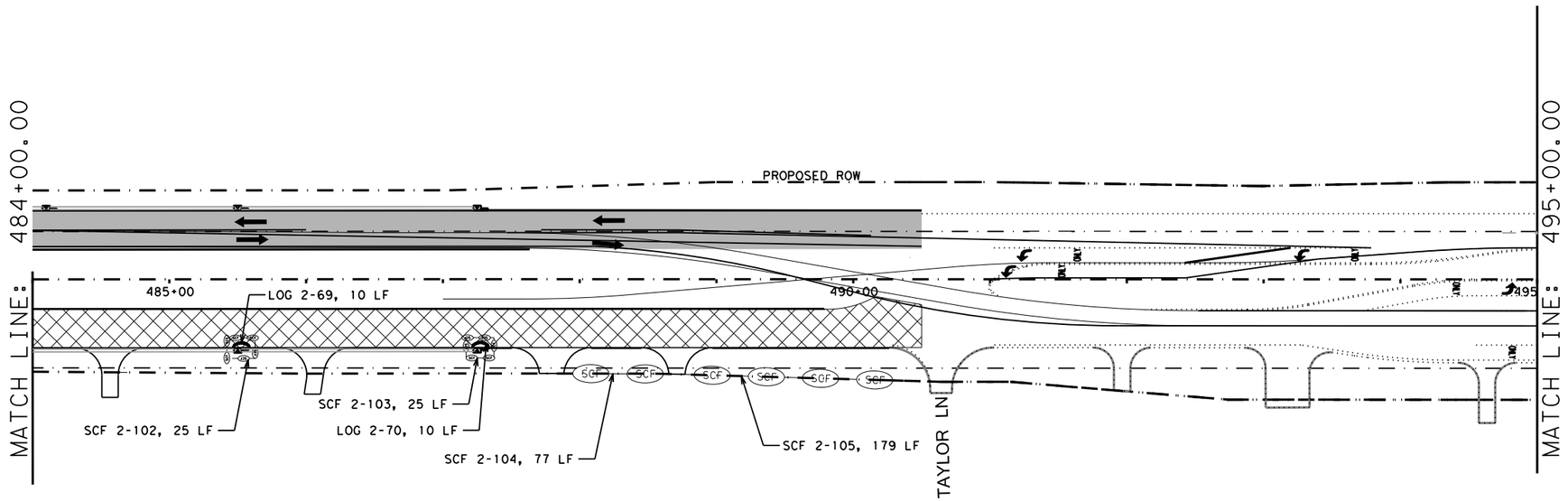

SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- BIODGRD EROSION CONTROL LOG (12")

TCP LEGEND

- PAVEMENT THIS PHASE
- PAVEMENT PREVIOUSLY CONSTRUCTED

NOTES:

SEDIMENT CONTROL FENCE AROUND INLETS ARE FOR INTERMEDIATE USE ONLY. UPON COMPLETION OF CURB INLETS, COMPOST LOGS SHALL BE PLACED AROUND INLETS FOR PROTECTION. COMPOST LOGS SHALL BE REMOVED PRIOR TO OPENING TRAFFIC.

ROCK FILTER DAMS TY 2 ESTIMATED AT 20 FT EACH UNLESS NOTED OTHERWISE.

SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

BMP	INSTALLED DATE	REMOVED DATE
SCF 2-102		
SCF 2-103		
SCF 2-104		
SCF 2-105		

BMP	INSTALLED DATE	REMOVED DATE
LOG 2-69		
LOG 2-70		

DATE DISTURBED:_____

DATE STABILIZED:_____

ONLY NEW DEVICES ARE SHOWN. MAINTAIN SW3P DEVICES FROM PREVIOUS PHASES THAT DO NOT CONFLICT WITH CURRENT WORK UNTIL VEGETATION HAS BEEN ESTABLISHED.

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RACHAEL D. TWIGGS
P.E. 119291

ON: 3/16/2017

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FM 2514
SW3P PHASE 2

SCALE: 1"=100'

SHEET 12 OF 12

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	436
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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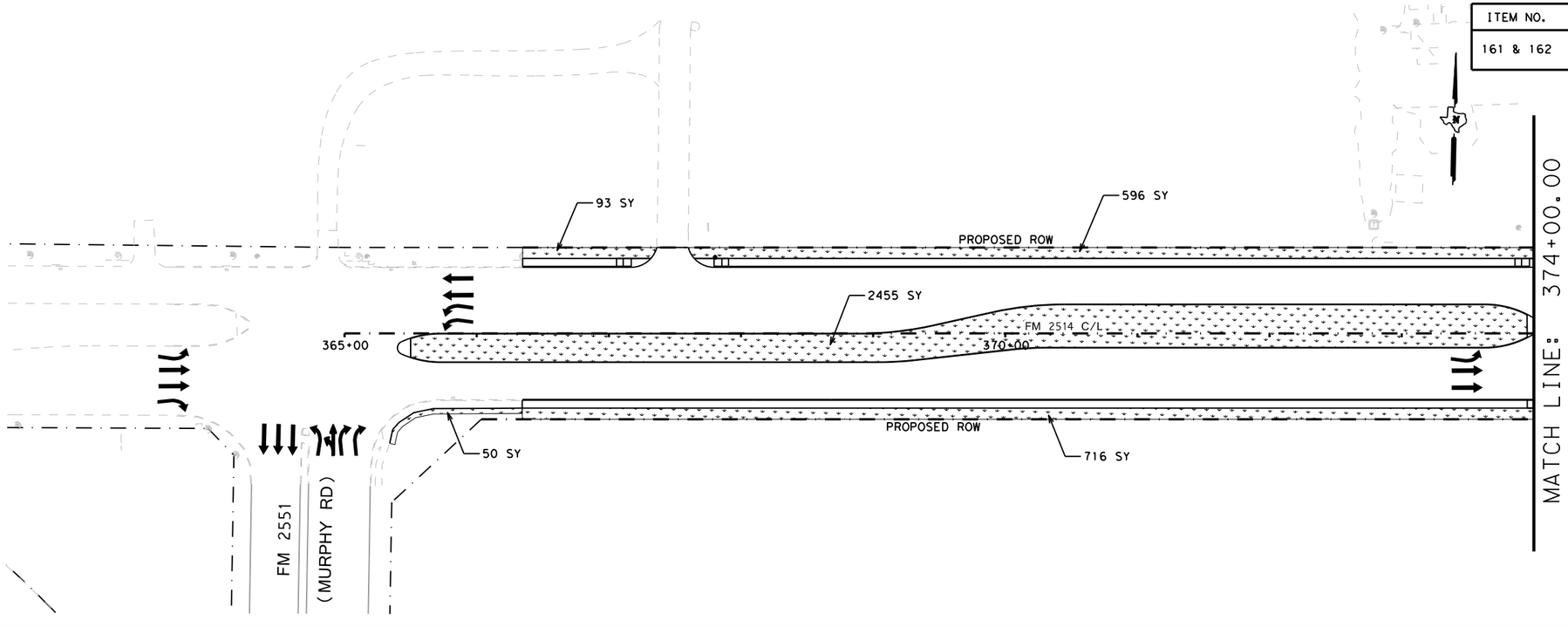
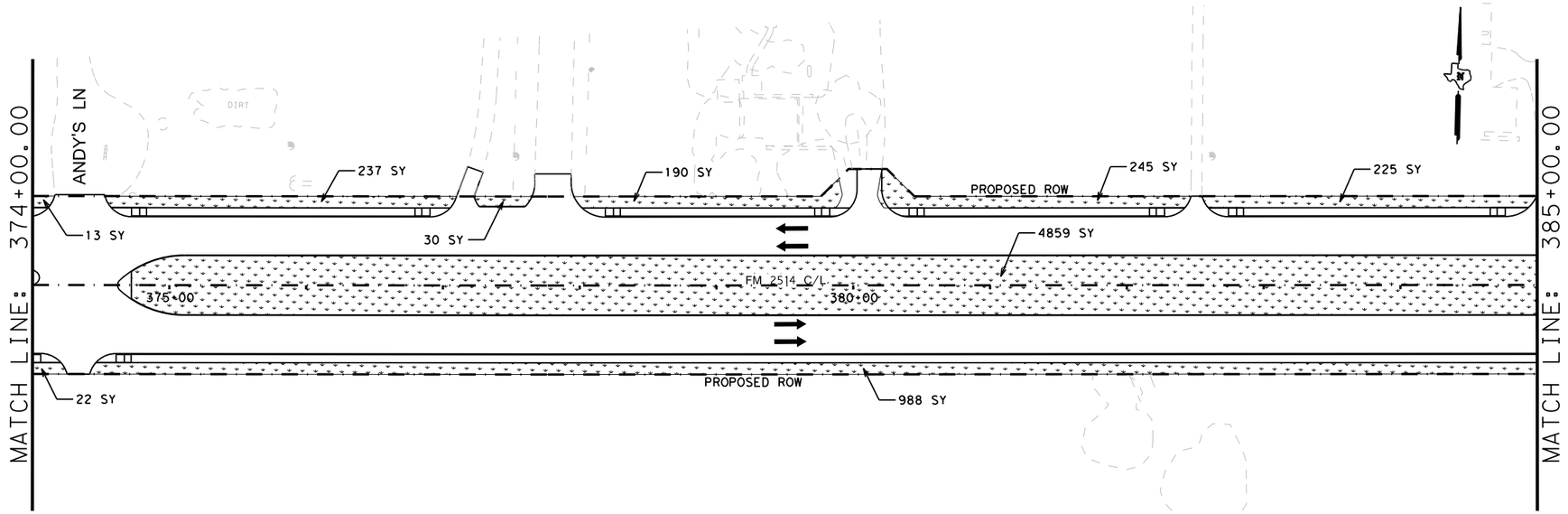
SHEET SUMMARY

ITEM NO.	SYMBOL	DESCRIPTION	EST. QUANTITY
161 & 162		FURNISH COMPOST & SODDING	10,719 SY





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FM 2514

SOD LAYOUT

SHEET 1 OF 6

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	437
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

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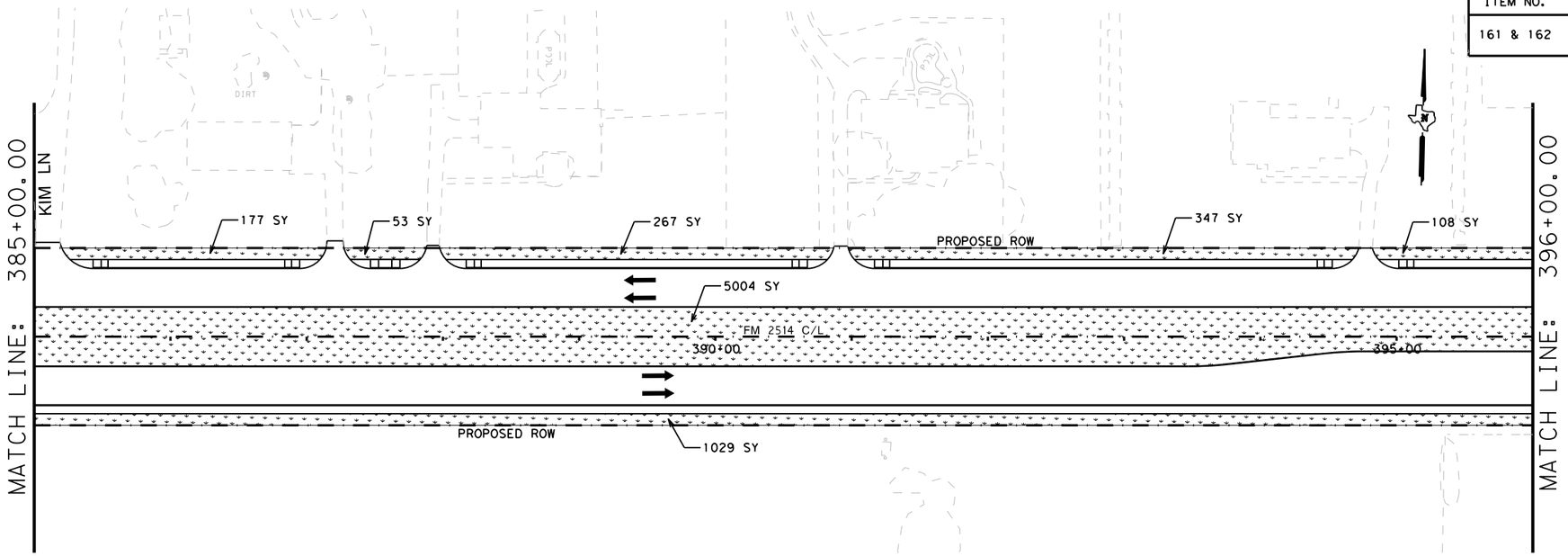
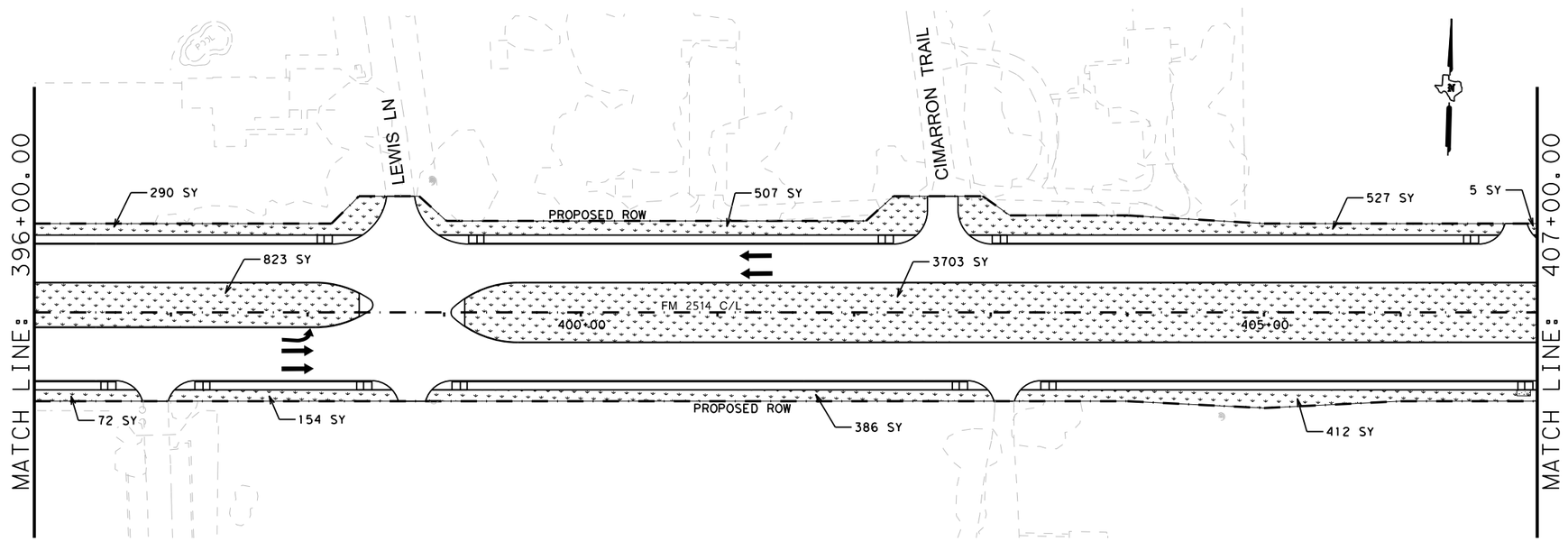
SHEET SUMMARY

ITEM NO.	SYMBOL	DESCRIPTION	EST. QUANTITY
161 & 162		FURNISH COMPOST & SODDING	13,864 SY





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SOD LAYOUT

SHEET 2 OF 6

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	438
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:4:50:51 PM
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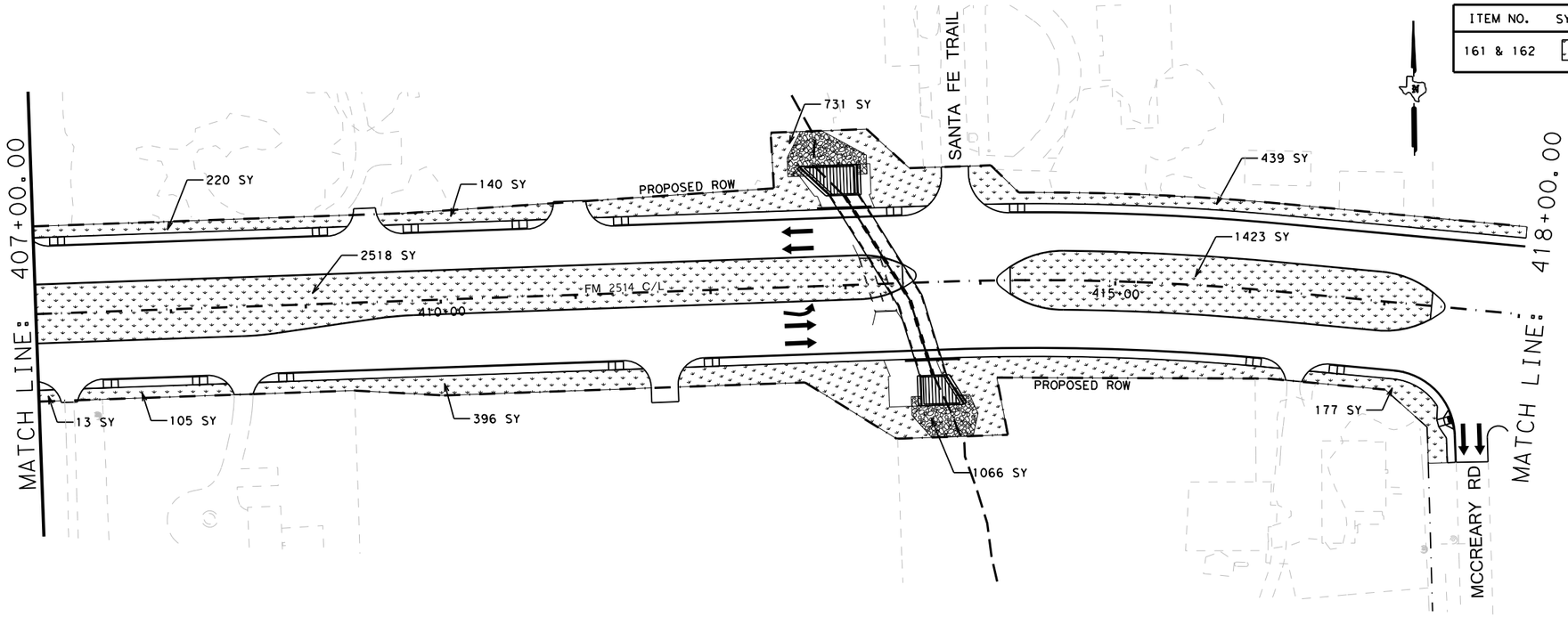
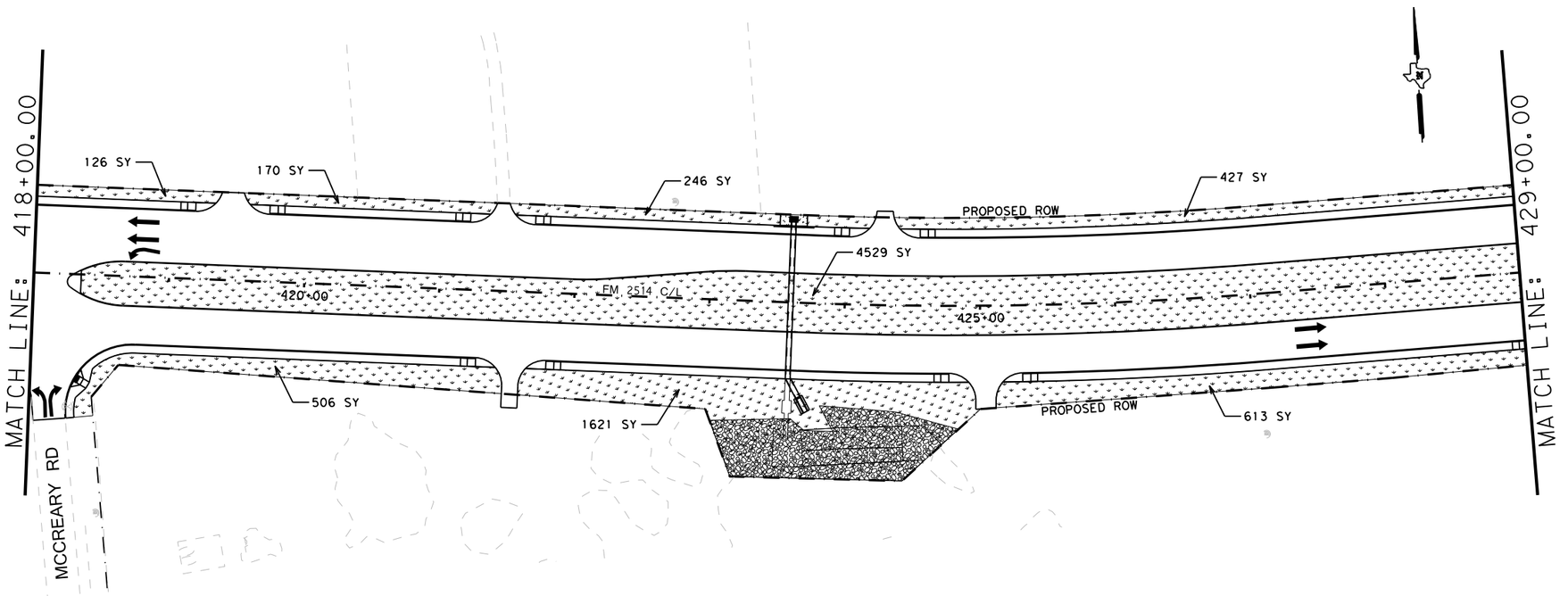
SHEET SUMMARY

ITEM NO.	SYMBOL	DESCRIPTION	EST. QUANTITY
161 & 162		FURNISH COMPOST & SODDING	15,466 SY





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SOD LAYOUT

SHEET 3 OF 6

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	439
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:4:51:00 PM
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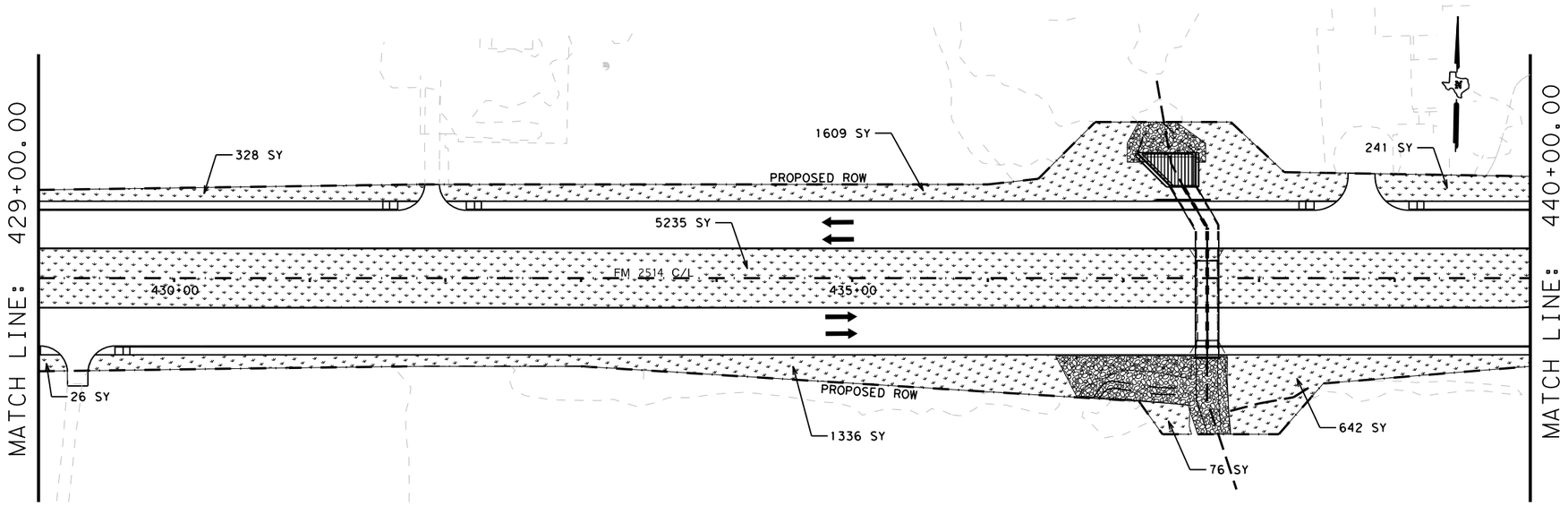
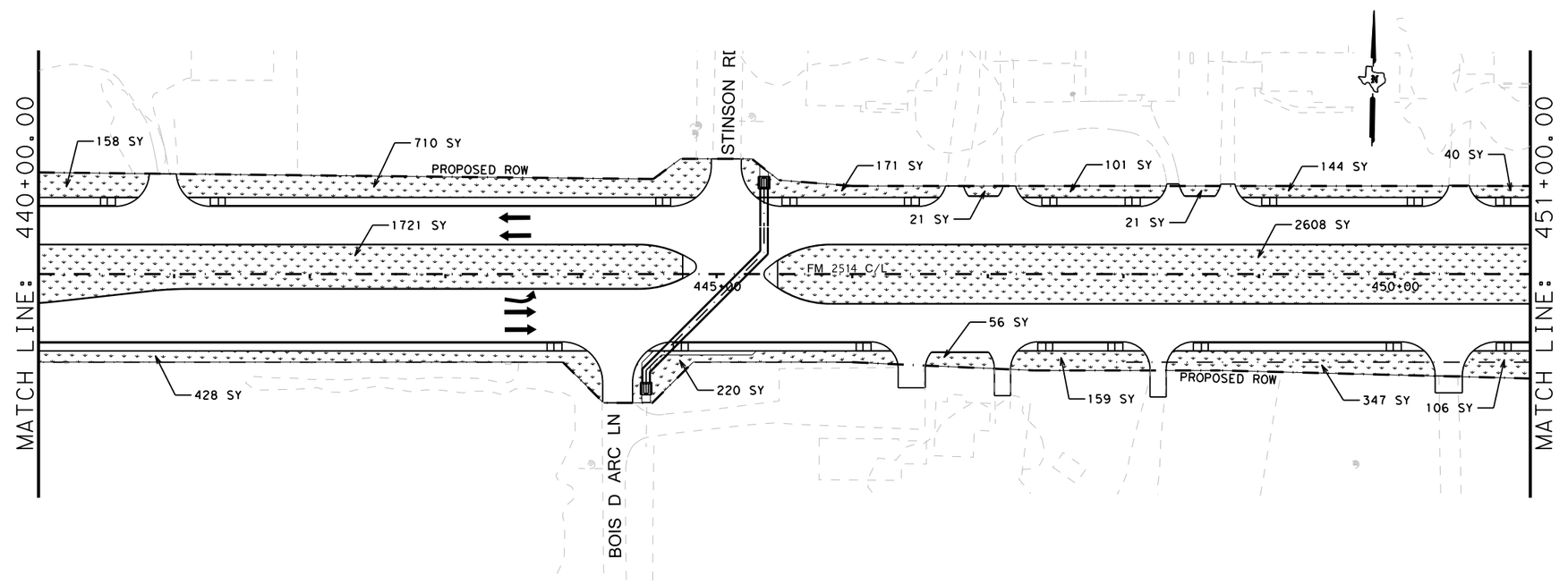
SHEET SUMMARY

ITEM NO.	SYMBOL	DESCRIPTION	EST. QUANTITY
161 & 162		FURNISH COMPOST & SODDING	16,504 SY





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SOD LAYOUT

SHEET 4 OF 6

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	440
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:4:51:10 PM
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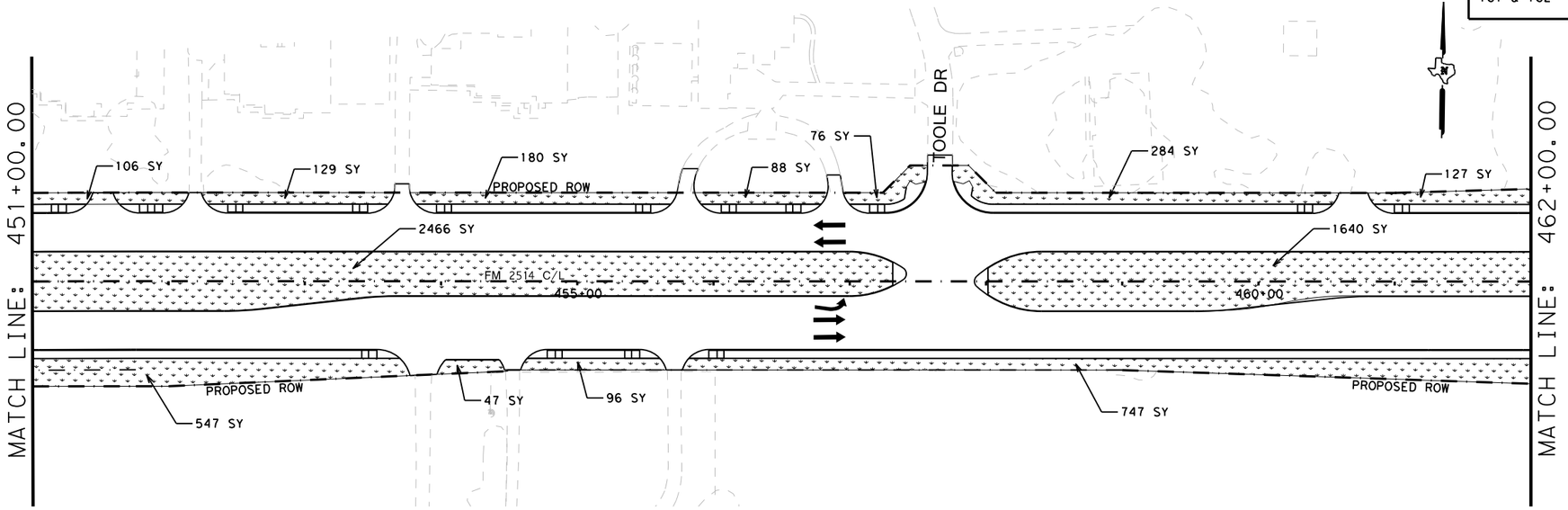
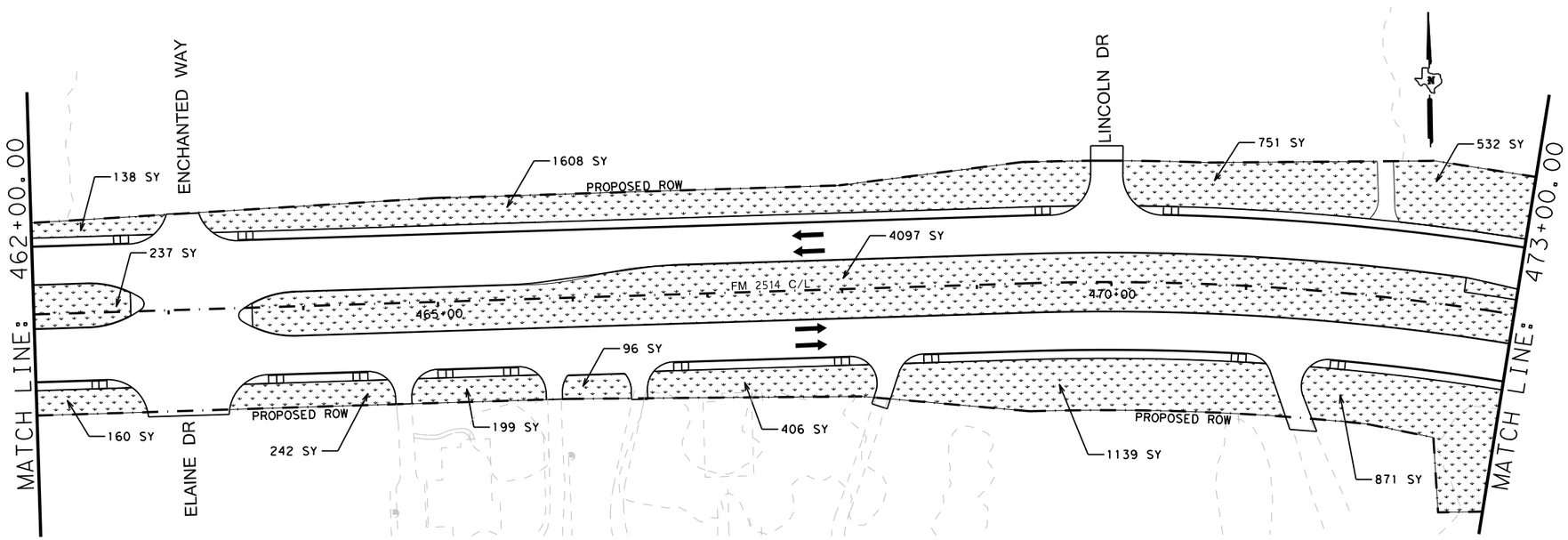
SHEET SUMMARY

ITEM NO.	SYMBOL	DESCRIPTION	EST. QUANTITY
161 & 162		FURNISH COMPOST & SODDING	17,009 SY





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SHEET 5 OF 6

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	441
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:4:51:19 PM
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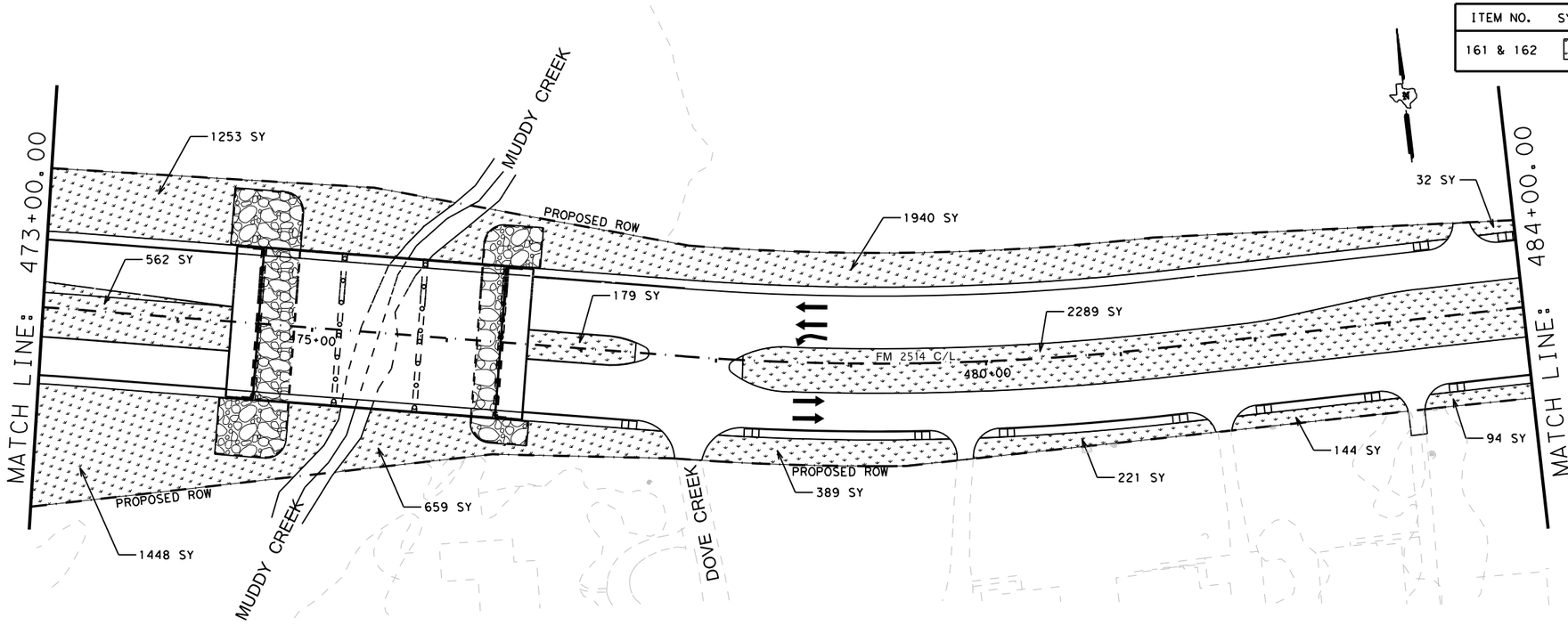
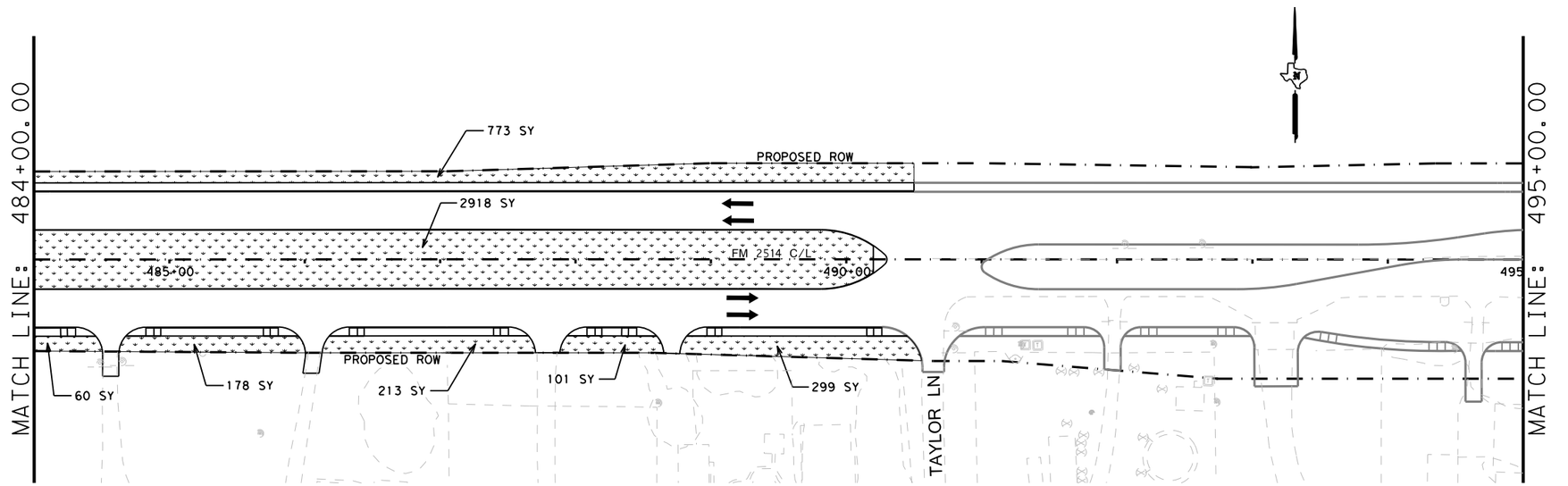
SHEET SUMMARY

ITEM NO.	SYMBOL	DESCRIPTION	EST. QUANTITY
161 & 162		FURNISH COMPOST & SODDING	13,752 SY





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SHEET 6 OF 6

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	SEE TITLE SHEET		FM2514
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	442
CHECK	CONTROL	SECTION	JOB	
	2679	02	008	

DATE:3/16/2017 TIME:4:51:35 PM
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