FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
	STP 2B24(245)HES, ETC.	SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0338	01	068, ETC.	1

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

DESIGN SPEED: SH 105 = 55 MPH, 70 MPH
FM 362 = 65 MPH

SEE SHEET 2
FOR INDEX OF SHEETS
AND SHEET 3 FOR
PROJECT LOCATION MAP

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FINAL PLANS

CONTRACTOR:

LETTING DATE:

DATE CONTRACTOR BEGAN WORK:

DATE WORK WAS COMPLETED:

DATE WORK WAS ACCEPTED:

FINAL CONTRACT COST: $

JMT TBPE REGISTRATION NO. F-16341

PROJECT NUMBER: STP 2B24(245)HES, ETC.

SH 105
GRIMES COUNTY

TOTAL LENGTH OF PROJECT = 5,343.36 FT = 1.012 MILES

FOR THE CONSTRUCTION OF INTERSECTION IMPROVEMENTS
CONSISTING OF RIGHT AND/OR LEFT TURN LANES AND TWO-WAY LEFT TURN LANES

LOCATION NO.	HIGHWAY	CONTROL NO.	LIMITS	2022/2042 ADT	STATION		REFERENCE MARKERS		TOTAL LENGTH (FT)	BRIDGE LENGTH (FT)	RDWY LENGTH (FT)
					FROM	TO	BEGIN	END			
1	SH 105	0338-01-070	FROM: SH 249 TO: SH 6	15,973/27,474	52+45 196+39 264+23	143+06 234+66 316+55	RM 650-0.132 MI (MP 1)	RM 656+0.124 MI (MP 6.986)	31,606.08	282.66	31,323.42
2	SH 105	0338-01-068	FROM: 0.51 MI W OF CR 410 TO: 0.5 MI E OF CR 410	15,973/27,474	143+06	196+39	RM 650+0.018 MI (MP 2.876)	RM 652+1.03 MI (MP 3.888)	5,343.36	N/A	5,343.36
3	SH 105	0338-01-069	FROM: 0.29 MI W OF CR 314 TO: 0.27 MI E OF CR 314	15,061/25,302	234+66	264+23	RM 652+1.756 MI (MP 4.614)	RM 654+0.31 MI (MP 5.174)	2,951.52	N/A	2,951.52

NO EXCEPTIONS
NO EQUATIONS
NO RAILROAD CROSSINGS

TEXAS DEPARTMENT OF TRANSPORTATION®

SUBMITTED FOR LETTING: 5/7/2024
DocuSigned by: Jeff Miles
589D3E0B31FA414...
DISTRICT DESIGN ENGINEER

RECOMMENDED FOR LETTING: 5/7/2024
DocuSigned by: Doug Maine, P.E.
DAA3B0824EE9419...
DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 5/7/2024
DocuSigned by: Chad Bohne
60E5537715D24EA...
DISTRICT ENGINEER

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

DATE: 5/6/2024 7:01:45 PM
FILE: BRYCEC_TASK02_TITLE.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER

ABDULLAH SBAITI, P.E. — 4/19/2024 DATE

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE($) HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

RYAN G. FRIESENHAHN, P.E. — 4/19/2024 DATE

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

JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		2

DATE: 4/19/2024 9:13:00 AM
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DW: JMT

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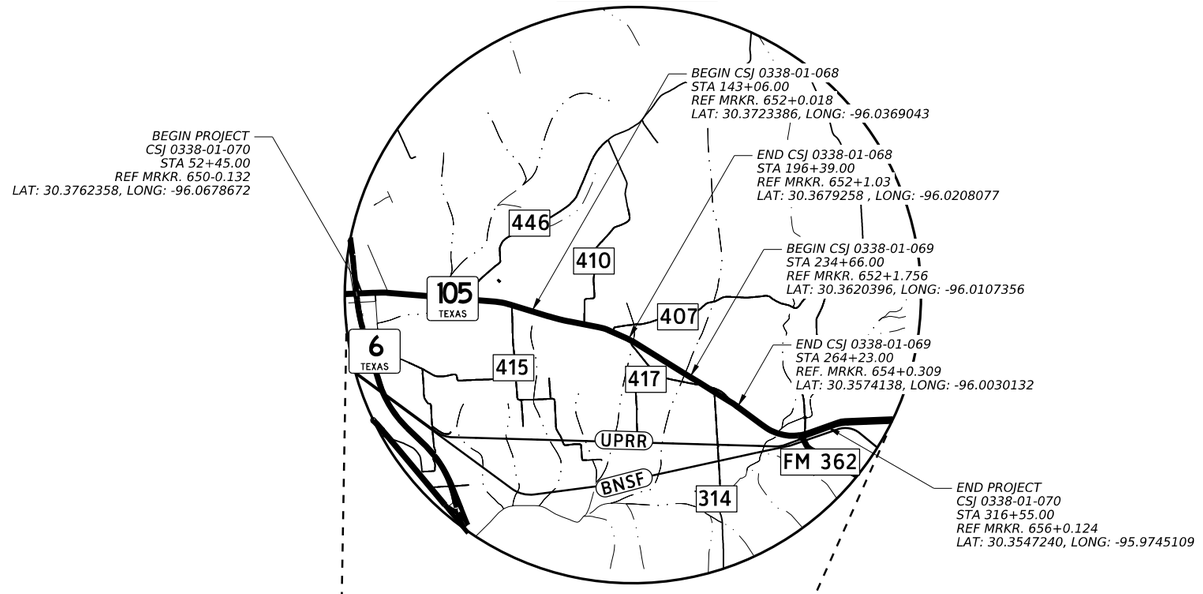

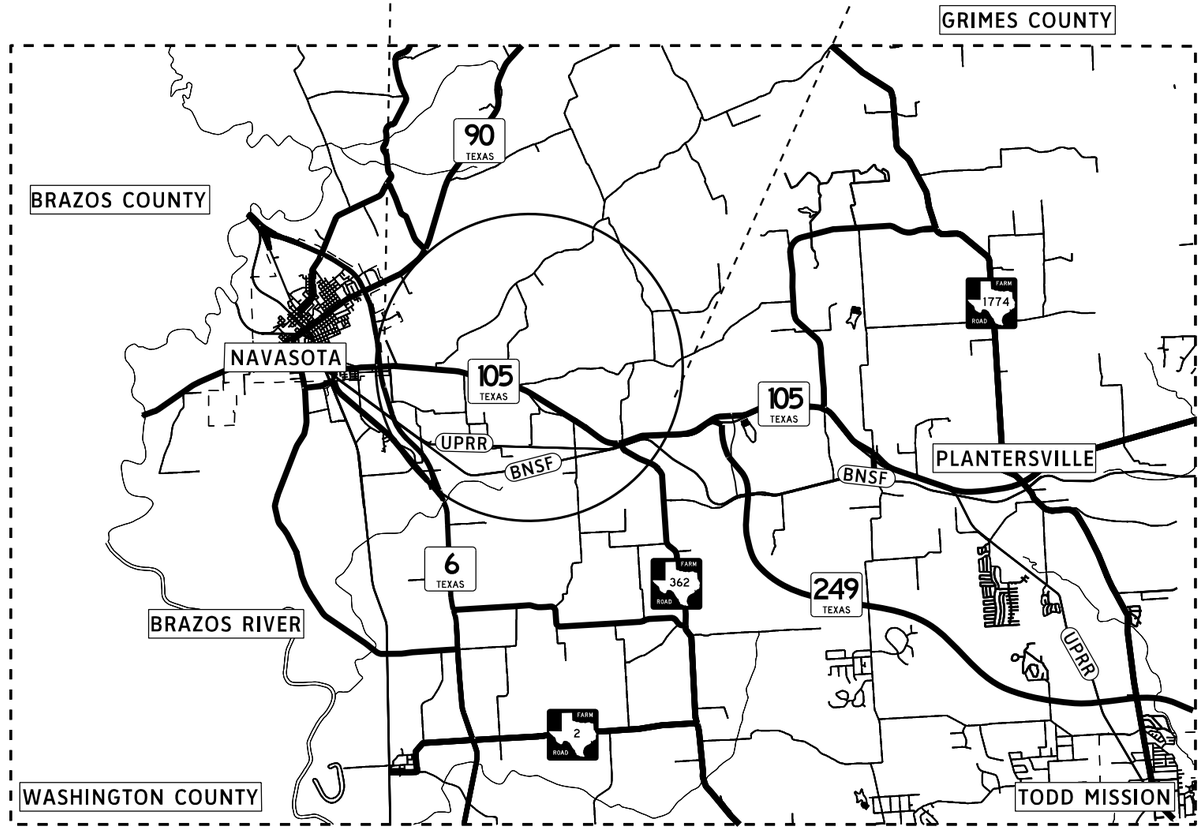

NOT TO SCALE

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PROJECT LOCATION MAP

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		3

DATE: 3/22/2024 9:02:26 AM
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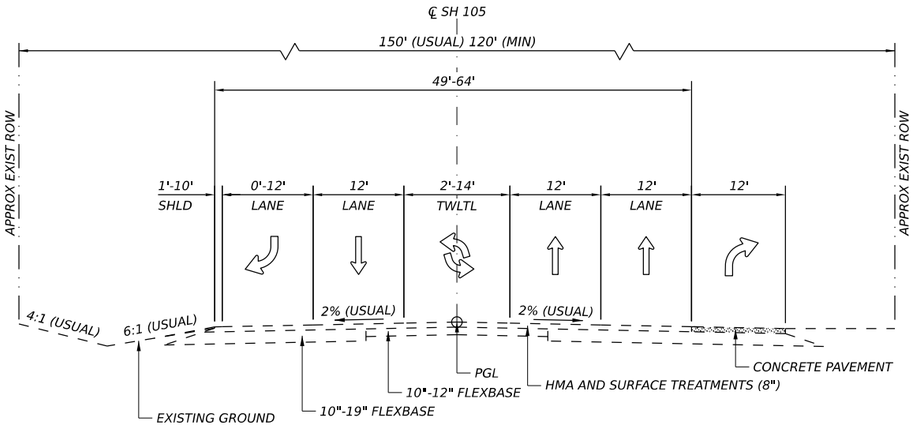
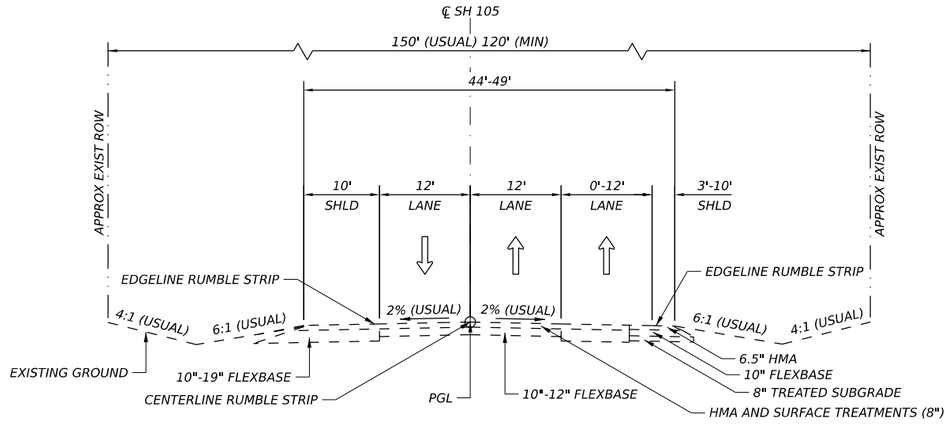


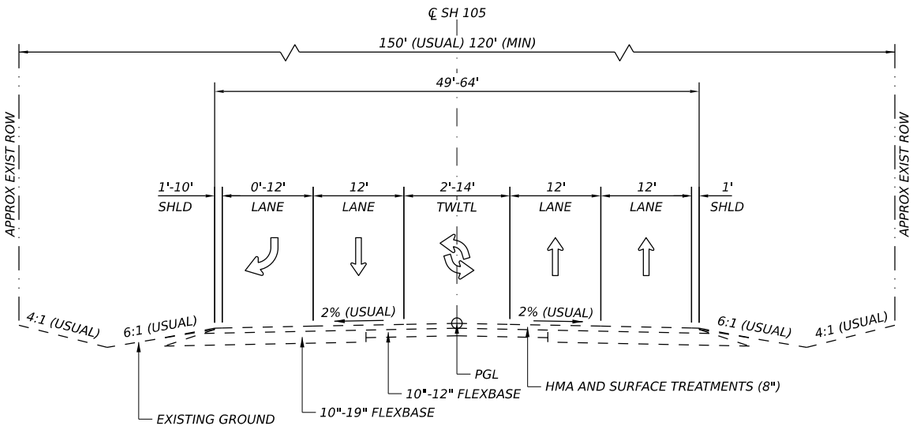
EXISTING TYPICAL SECTION

SH 105
STA 52+45 TO STA 55+89



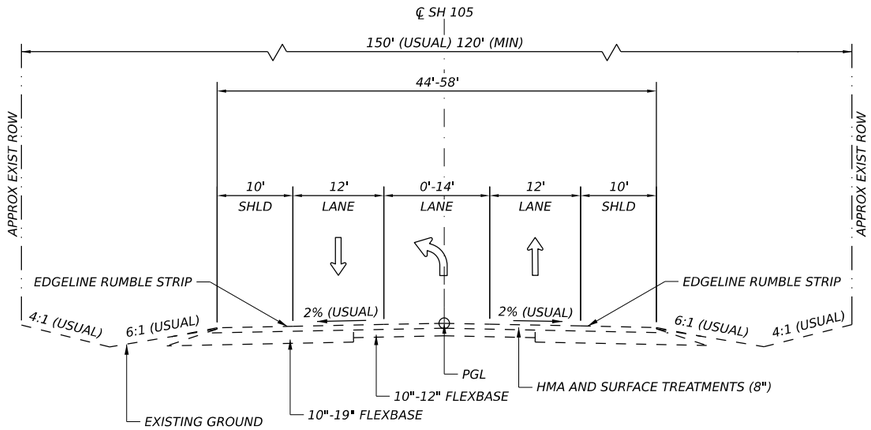
EXISTING TYPICAL SECTION

SH 105
STA 58+48 TO STA 88+80



EXISTING TYPICAL SECTION

SH 105
STA 55+89 TO STA 58+48



EXISTING TYPICAL SECTION

SH 105
STA 88+80 TO STA 102+07.86
STA 157+83.40 TO STA 170+00.00

DATE: 3/22/2024 9:03:20 AM
FILE: BRYCEC_TASK02_EXTYP01.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING TYPICAL SECTIONS

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		4

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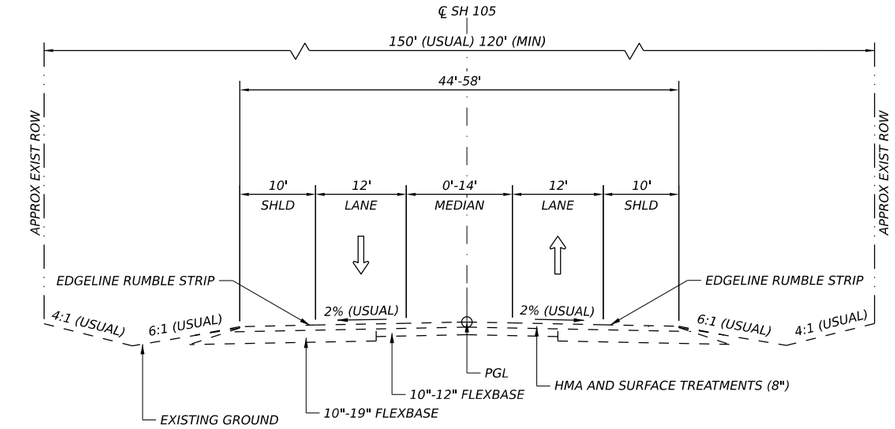
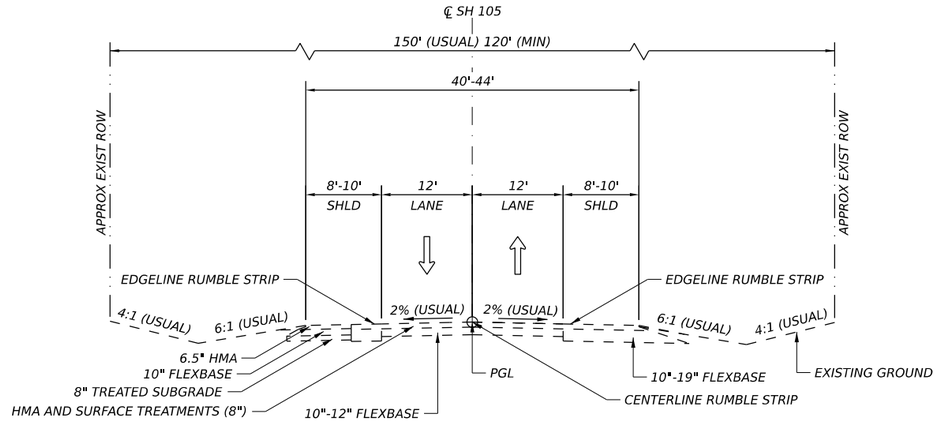
CK: JMT
DW: JMT



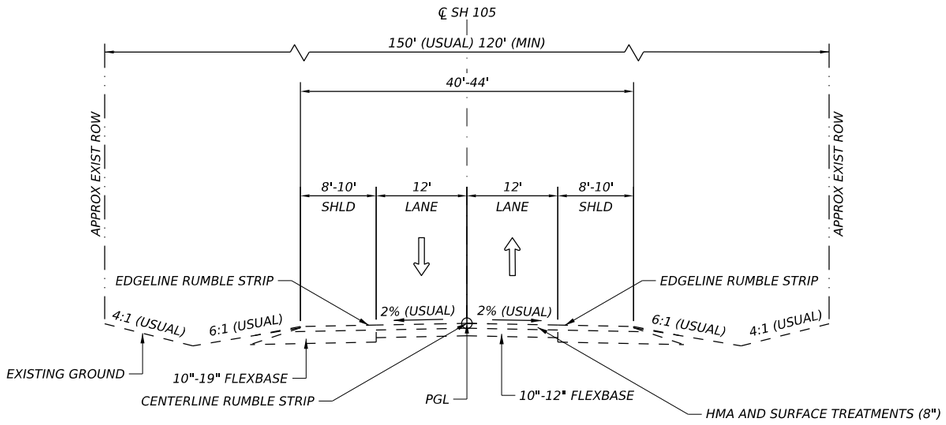
EXISTING TYPICAL SECTION

SH 105
STA 102+07.86 TO STA 107+23.53
STA 170+00.00 TO STA 175+00.00



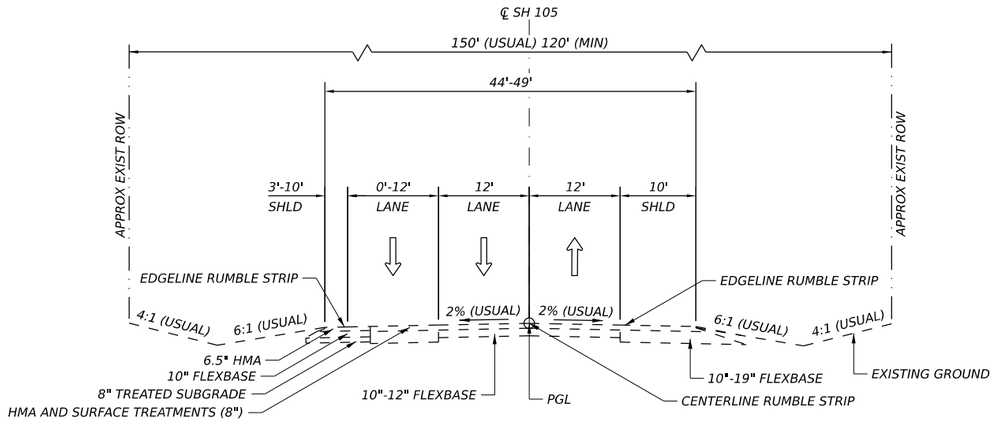
EXISTING TYPICAL SECTION

SH 105
STA 212+20.00 TO STA 216+79.30



EXISTING TYPICAL SECTION

SH 105
STA 107+23.53 TO STA 157+83.40
STA 175+00.00 TO STA 212+20.00



EXISTING TYPICAL SECTION

SH 105
STA 216+79.30 TO STA 281+27.86

DATE: 3/22/2024 9:03:24 AM
FILE: BRYCEC_TASK02_EXTYP02.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

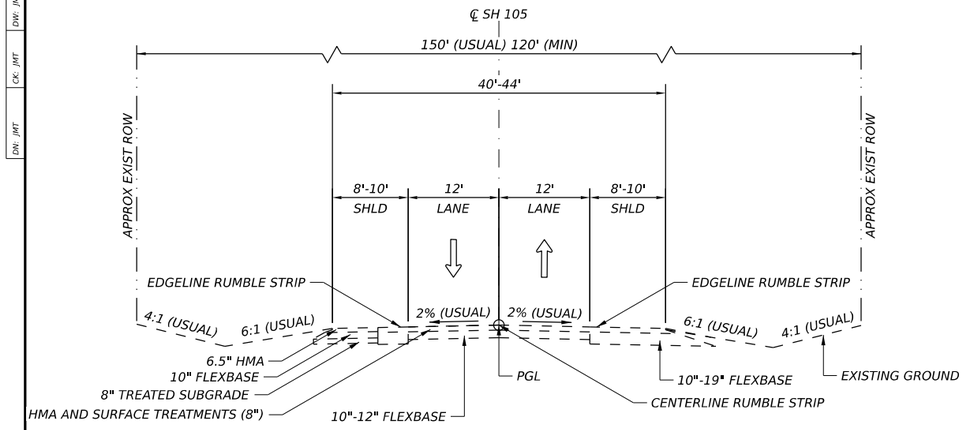
SH 105

EXISTING TYPICAL SECTIONS

SHEET 2 OF 4

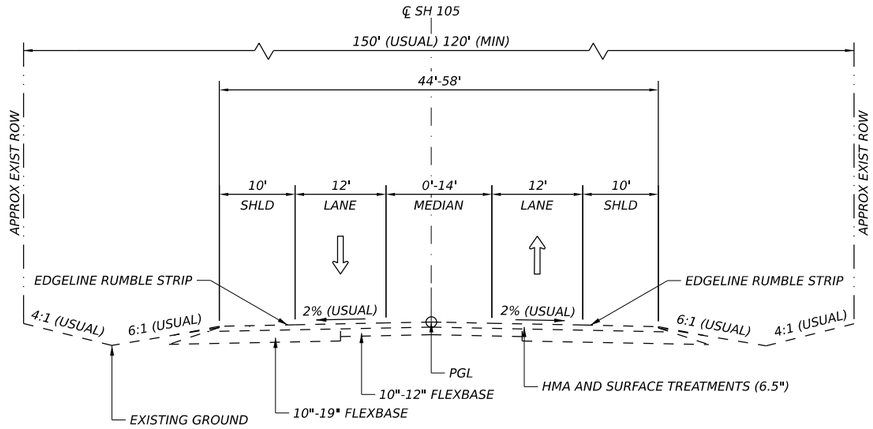
CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		5

CK: JMT
DW: JMT
CK: JMT
DW: JMT



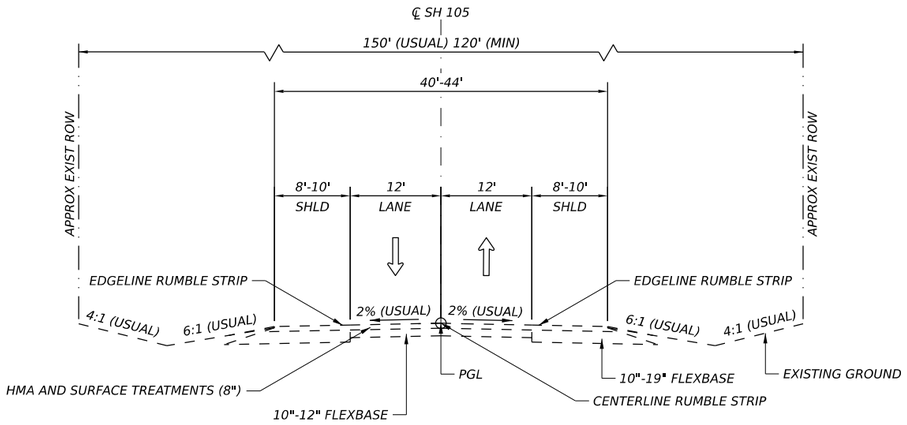
EXISTING TYPICAL SECTION

SH 105
STA 281+27.86 TO STA 286+00.00



EXISTING TYPICAL SECTION

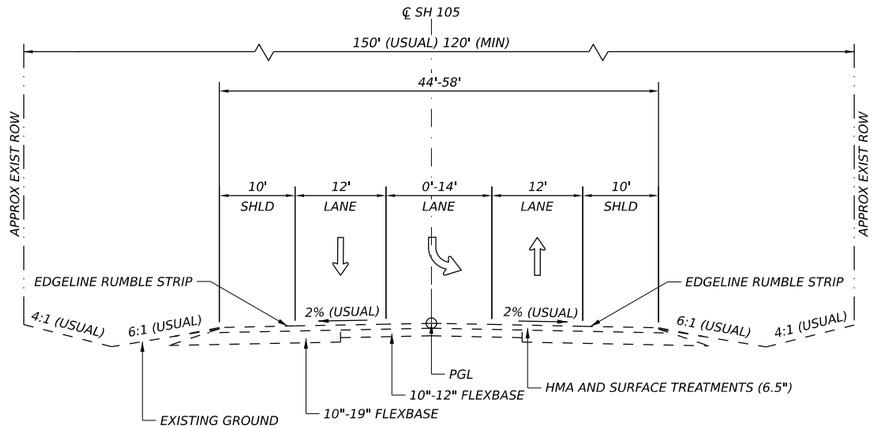
SH 105
STA 296+61.61 TO STA 302+00.00
STA 305+23.09 TO STA 311+60.00



EXISTING TYPICAL SECTION

SH 105
STA 286+00.00 TO STA 296+61.61

BRIDGE EXCEPTION: STA 288+83.60 TO STA 291+66.26



EXISTING TYPICAL SECTION

SH 105
STA 302+00.00 TO STA 305+23.09

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING TYPICAL SECTIONS

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		6

DATE: 3/22/2024 9:03:28 AM
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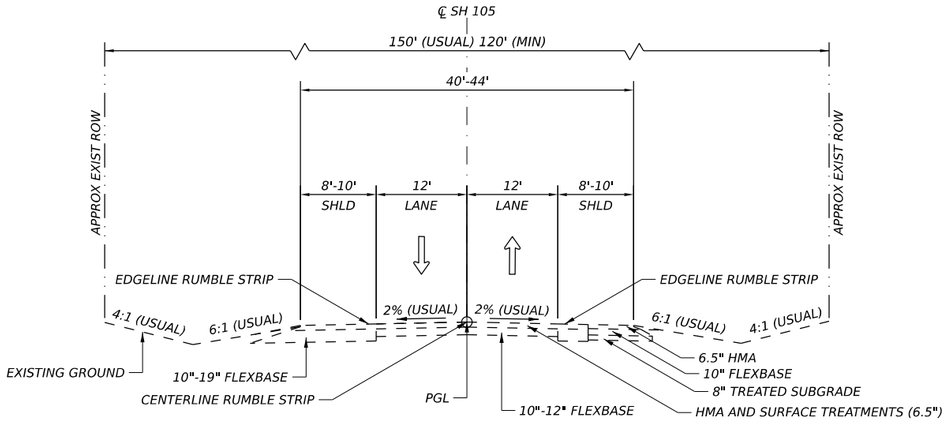

EXISTING TYPICAL SECTION

SH 105
STA 311+60.00 TO STA 316+55.00

DATE: 3/22/2024 9:03:31 AM
FILE: BRYCEC_TASK02_EXTYP04.dgn

DW: JMT
CK: JMT
DW: JMT
CK: JMT

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING TYPICAL SECTIONS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		7

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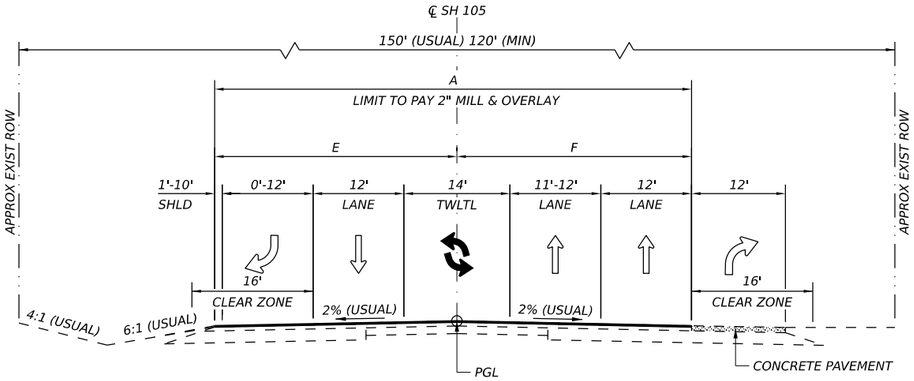
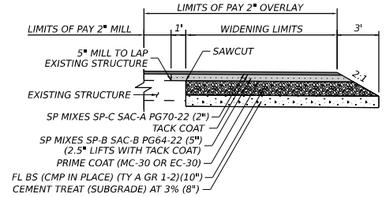
DW: JMT



PROPOSED TYPICAL SECTION

SH 105
STA 52+45.00 TO STA 55+00.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 52+45.00 TO STA 54+53.04							
BEGIN STATION	END STATION	A	B	C	D	E	F
52+45.00	55+00.00	63'-61'	N/A	N/A	N/A	32'-30.5'	31'-30.5'



INSET A

LEGEND:

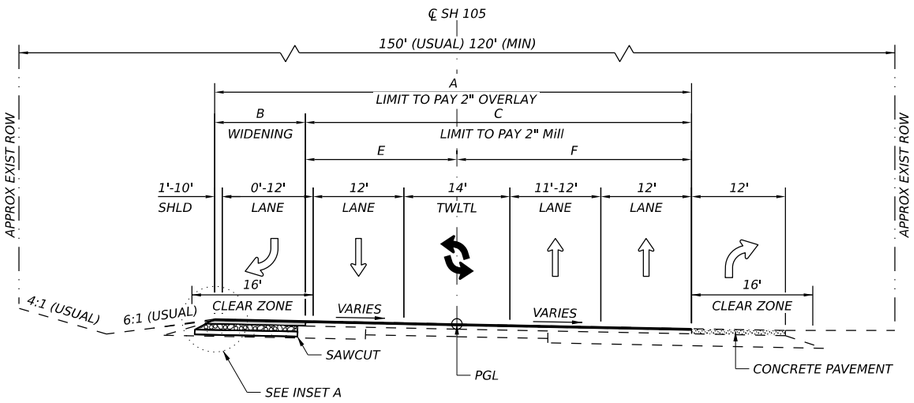
PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*

2. *PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.*



PROPOSED TYPICAL SECTION

SH 105
STA 55+00.00 TO STA 55+65.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 54+53.04 TO STA 55+65.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
55+00.00	55+65.00	59.5'	4'-6.6'	55.5'-52.9'	N/A	25'-22.4'	30.5'

DATE: 3/22/2024 9:03:35 AM
FILE: BRYCEC_TASK02_PRTYP01.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-18341

© 2024 Texas Department of Transportation

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 1 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		8

CK: JMT
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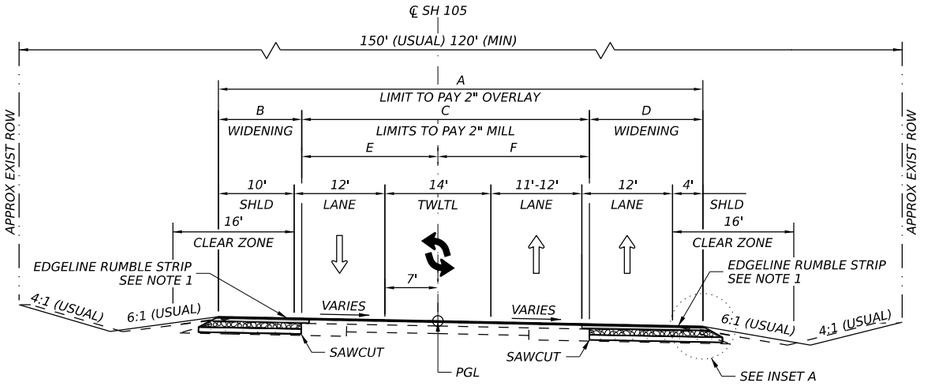
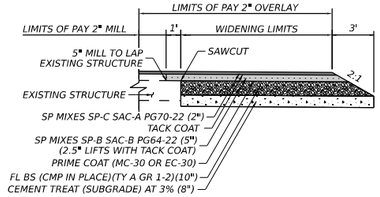
DW: JMT



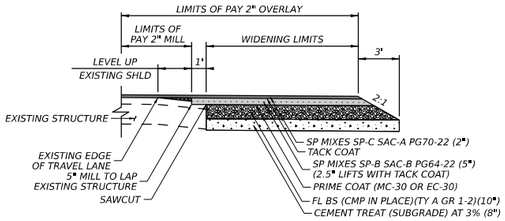
PROPOSED TYPICAL SECTION

SH 105
STA 55+65.00 TO STA 58+48.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 55+65.00 TO STA 58+48.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
55+65.00	55+41.28	59.5'-58.5'	6.6'-8.8'	52.9'-49.7'	N/A	22.4'-20.2'	30.5'-29.5'
55+41.28	56+67.84	90.3'-64'	8.8'-9.3'	49.2'-48.7'	32.3'-6'	20.2'-19.7'	29'
56+67.84	57+80.00	64'	9.3'-10'	42.7'-42'	12'	19.7'-19'	23'
57+80.00	58+48.00	64'	10'	42'	12'	19'	23'



INSET A



INSET B

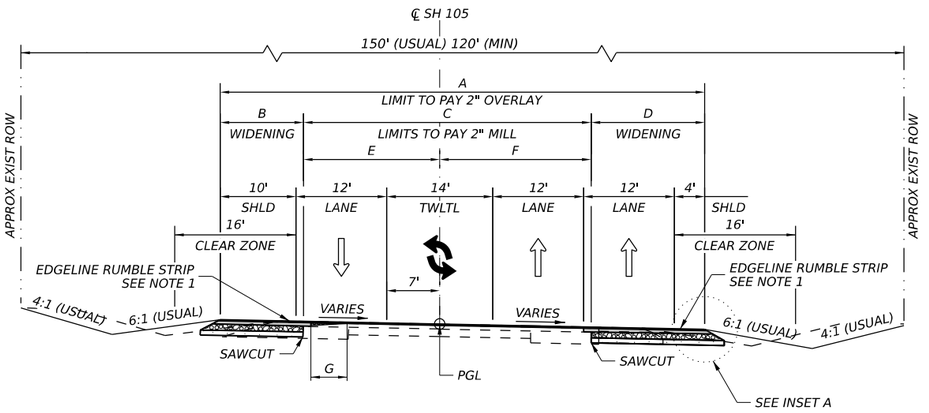
LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*
2. *PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.*



PROPOSED TYPICAL SECTION

SH 105
STA 58+48.00 TO STA 62+34.24

TYPICAL SECTION WIDENING DIMENSIONS - STA 58+48.00 TO STA 62+34.24							
BEGIN STATION	END STATION	A	B	C	D	E	F
58+48.00	62+34.24	64'	10'	42'	12'	19'	23'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
58+90.92	60+07.68	3.5'	0"-1.5"	-	-
61+92.44	62+17.17	4'	0"-1"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP

3/22/2024

0 10' 20'

SCALE IN FEET

TBPE REGISTRATION NO. F-18341

Texas Department of Transportation

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 2 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		9

DATE: 3/22/2024 9:03:38 AM
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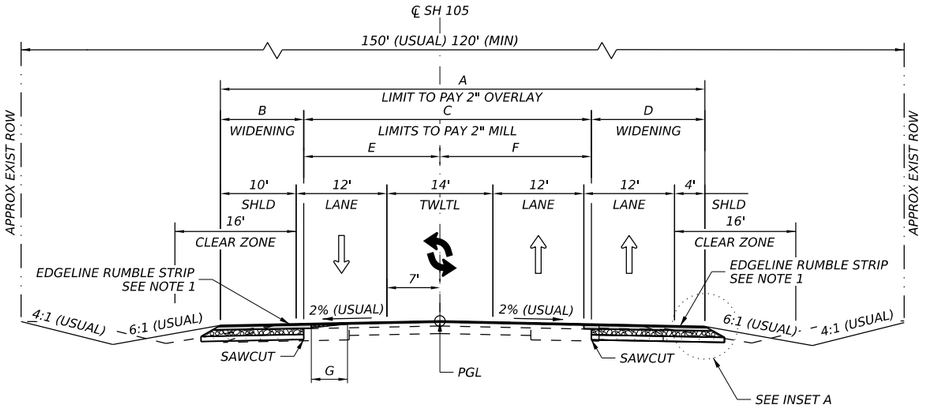


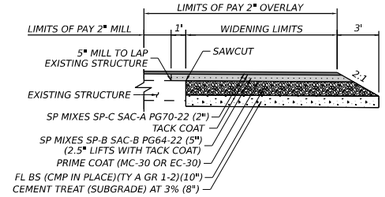
PROPOSED TYPICAL SECTION

SH 105
STA 62+34.24 TO STA 69+60.01

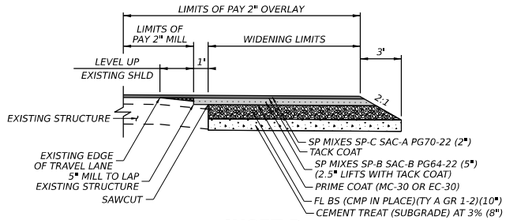
TYPICAL SECTION WIDENING DIMENSIONS - STA 62+34.24 TO STA 69+60.01							
BEGIN STATION	END STATION	A	B	C	D	E	F
62+34.24	69+60.01	64'	10'	42'	12'	19'	23'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
62+50.00	64+67.23	4'-5'	0"-1.75"	-	-
65+80.00	66+00.00	5'	0"-1"	-	-
66+30.00	66+64.73	5'	0"-1"	-	-
67+10.00	69+60.01	5'	0"-3.25"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

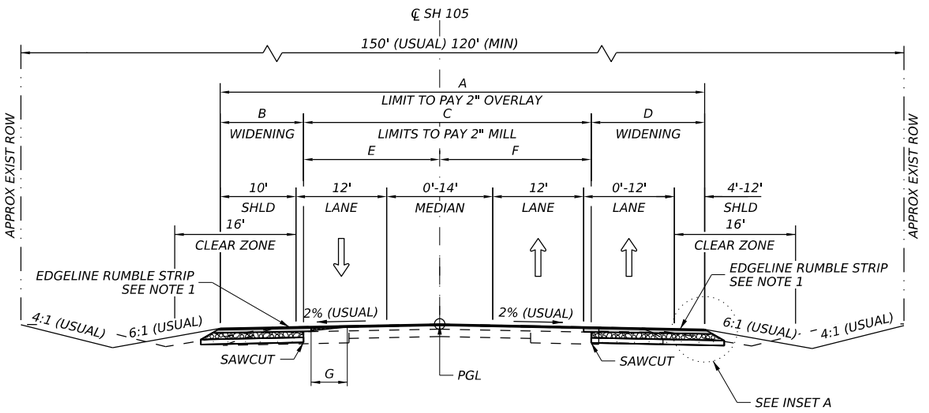
LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*
2. *PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.*



PROPOSED TYPICAL SECTION

SH 105
STA 69+60.01 TO STA 86+57.02

TYPICAL SECTION WIDENING DIMENSIONS - STA 69+60.01 TO STA 86+57.02							
BEGIN STATION	END STATION	A	B	C	D	E	F
69+60.01	70+00.00	64'-63.2'	10'-9.8'	42'	12'-11.4'	19'	23'
70+00.00	74+93.96	63.2'-53.6'	9.8'-7.2'	45.4'-38.4'	8'	19'	26.4'-19.4'
74+93.96	80+65.00	53.6'-48.2'	9.8'-4.2'	46.4'-44'	N/A	19'	27.4'-25'
80+65.00	86+57.02	48.2'-44.2'	N/A	48.2'-44.2'	N/A	23.2'-23.7'	25'-20.5

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
69+60.01	70+44.07	5'	0"-3.5"	-	-
71+30.00	79+39.82	5'-5.5'	0"-2.5"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 3 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		10

DATE: 3/22/2024 9:03:40 AM
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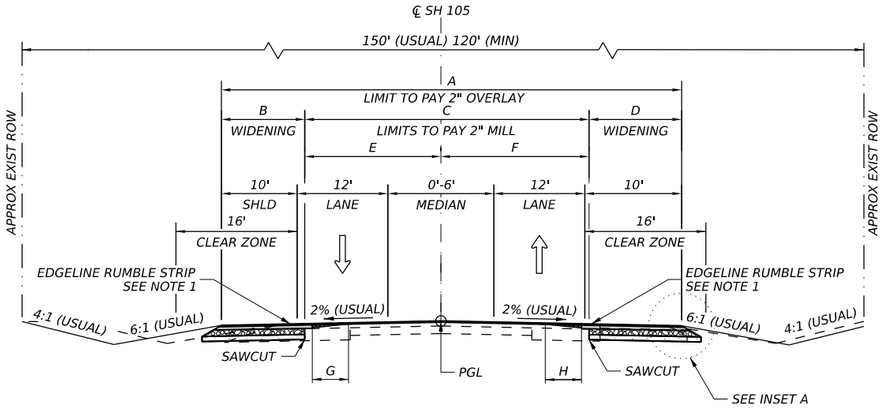
CK: JMT



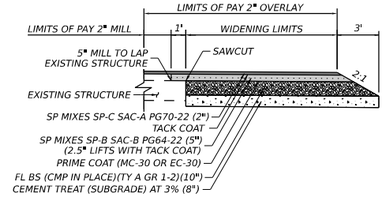
PROPOSED TYPICAL SECTION

SH 105
STA 86+57.02 TO STA 88+80.00

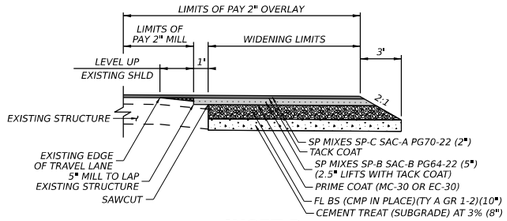
TYPICAL SECTION WIDENING DIMENSIONS - STA 86+57.02 TO STA 88+80.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
86+57.02	87+95.00	45.9'-47.8'	N/A	40.9'-42.8'	5'	23.9'	17'-18.9'
87+95.00	88+80.00	47.8'-50.2'	4'	38.8'-41.2'	5'	19.9'-21.1'	18.9'-20.1'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
87+40.00	88+80.00	-	-	4'-9"	0"-2.75"
87+95.06	88+80.00	5.5'-6'	0"-3"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

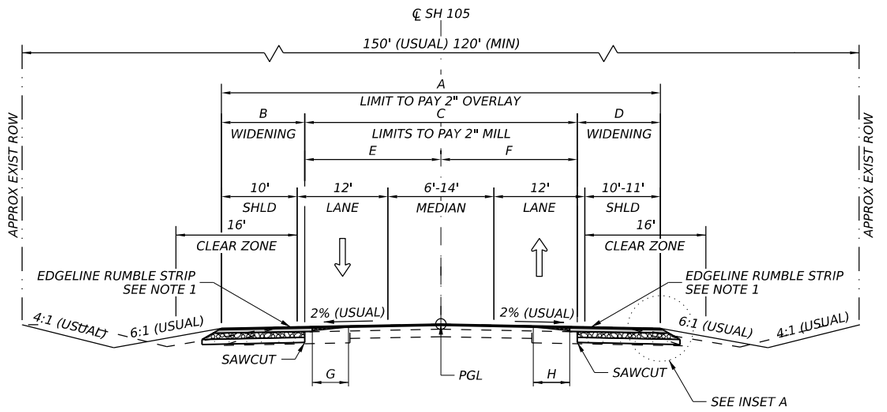
LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS
2. PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.



PROPOSED TYPICAL SECTION

SH 105
STA 88+80.00 TO STA 91+57.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 88+80.000 TO STA 91+57.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
88+80.00	91+57.00	50.2'-58'	4'	41.2'-49'	5'	21.1'-25'	20.1'-24'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
88+80.00	89+60.00	6'	0"-1.5"	-	-
88+80.00	90+50.00	-	-	9'	0"-3"
90+80.00	91+57.00	6'	0"-1.25"	-	-
91+30.00	91+57.00	-	-	9'	0"-1.5"

NOTE: SEE INSET B DETAIL FOR LEVEL UP

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

PROPOSED TYPICAL SECTIONS

SHEET 4 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		11

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CK: JMT
DW: JMT

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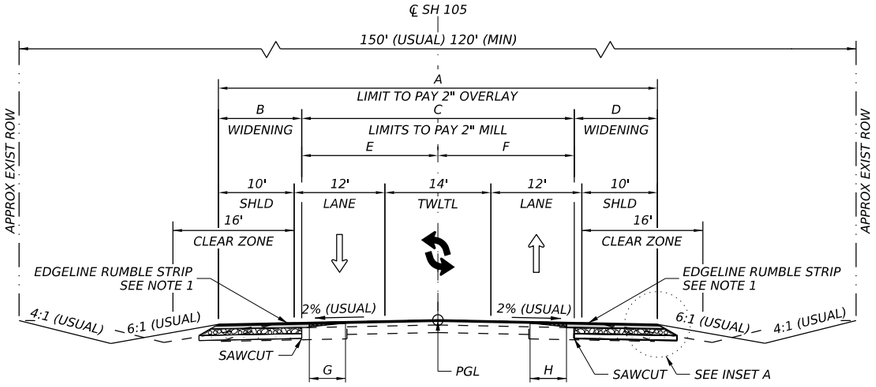


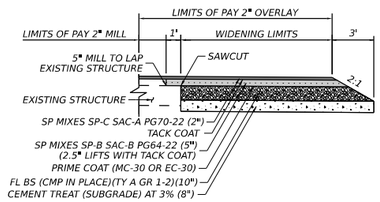
PROPOSED TYPICAL SECTION

SH 105
STA 91+57.00 TO STA 120+35.00
STA 130+13.84 TO STA 185+74.10
STA 198+20.75 TO STA 210+00.00

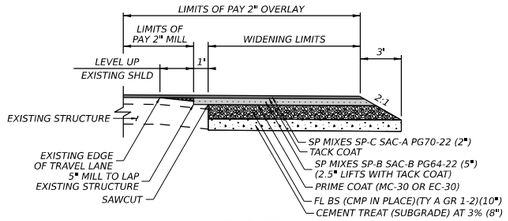
TYPICAL SECTION WIDENING DIMENSIONS - STA 91+57.00 TO STA 120+35.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
91+57.00	92+00.00	58'	4'	49'	5'	25'	24'
92+00.00	103+25.00	58'	N/A	53'	5'	29'	24'
103+25.00	105+85.00	58'	4'-9.1'	49'-43.9'	5'	25'-19.9'	24'
105+85.00	106+33.30	58'	9.1'-10'	34.9'-34'	14'	19.9'-19'	15'
106+33.30	113+50.00	58'	10'	34'	14'	19'	15'
113+50.00	120+35.00	58'	14'	30'	14'	15'	15'
TYPICAL SECTION WIDENING DIMENSIONS - STA 130+13.84 TO STA 185+74.10							
BEGIN STATION	END STATION	A	B	C	D	E	F
130+13.84	143+40.00	58'	14'	30'	14'	15'	15'
143+40.00	158+00.00	58'	14'	34'	10'	15'	19'
158+00.00	159.85+00	58'	10'	38'	10'	19'	19'
159.85+00	162+50.00	58'	10'	41'	7'	19'	22'
162+50.00	170+37.13	58'	5'	46'	7'	24'	22'
170+37.13	173+60.00	58'	5'-9'	46'-42'	7'	24'-20'	22'
173+60.00	174+46.31	58'	9'-10'	35'-34'	14'	20'-19'	15'
174+46.31	178+60.00	58'	10'	34'	14'	19'	15'
178+60.00	185+74.10	58'	14'	30'	14'	15'	15'
TYPICAL SECTION WIDENING DIMENSIONS - STA 98+20.75 TO STA 210+00.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
198+20.75	199+19.81	58'	14'	30'	14'	15'	15'
199+19.81	210+00.00	58'	14'	34'	10'	15'	19'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
91+57.00	91+65.74	6'	0"-1"	-	-
91+57.00	95+60.00	-	-	5'-9'	0"-2"
103+60.01	104+42.33	5'	0"-1.5"	-	-
104+84.36	105+36.79	4.5'	0"-2"	-	-
105+12.95	105+85.00	-	-	8'-9'	0"-2.5"
105+43.74	105+85.00	4'-4.5'	0"-2.5"	-	-
106+49.03	106+78.80	4.5'-5'	0"-1"	-	-
107+00.00	113+58.98	2.5'-5.5'	0"-4.5"	-	-
113+64.67	118+09.79	2'-2.5'	0"-1.75"	-	-
143+46.63	163+00.00	-	-	2'-6.5'	0"-3.5"
158+01.14	159+15.07	3.5'-5.5'	0"-2"	-	-
159+28.30	159+94.06	2.5'-3.5'	0"-1.5"	-	-
162+56.90	164+13.85	3'-3.5'	0"-3.5"	-	-
164+30.00	169+69.47	3'	0"-2.25"	-	-
164+60	168+20	-	-	2'-3'	0"-1.75"
168+25.17	170+23.09	-	-	3'	0"-1.75"
170+36.14	177+00.00	3'-5'	0	-	-
170+74.30	173+60.00	-	-	3.5'-7'	0"-3"
175+05.82	175+60.00	-	-	2.5'-3'	0"-1.25"
198+20.75	198+87.22	4.5'	0"-1.25"	-	-
199+20.00	210+00.00	-	-	4'	0"-2.5"
200+24.21	200+96.57	3.5'	0"-1"	-	-
201+37.77	202+57.88	3.5'	0"-1"	-	-
204+39.61	204+55.24	3.5'	0"-1"	-	-
205+28.71	205+51.63	4'	0"-1"	-	-
206+47.03	206+63.40	4'	0"-1"	-	-
206+74.52	207+03.69	4'	0"-1"	-	-
207+08.42	208+41.00	4'	0"-1"	-	-
208+44.24	208+83.34	4'	0"-1"	-	-
208+92.22	209+57.09	4'	0"-1"	-	-
206+90.20	210+00.00	4'	0"-1"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

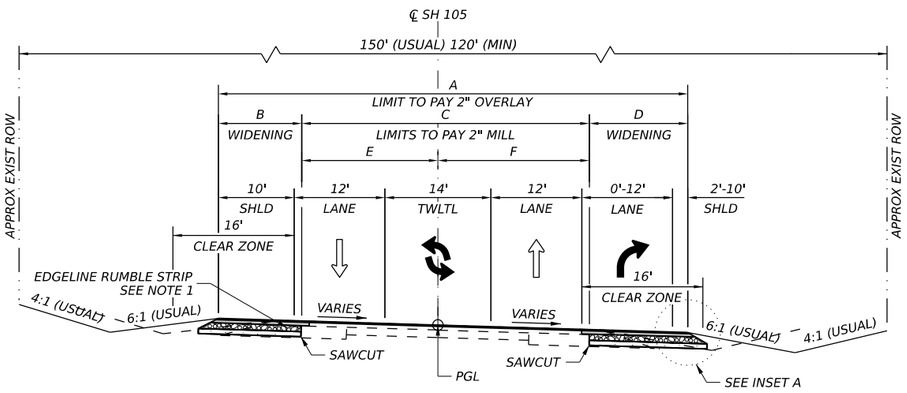
LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*
2. *PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.*



PROPOSED TYPICAL SECTION

SH 105
STA 120+35.00 TO STA 130+13.84

TYPICAL SECTION WIDENING DIMENSIONS - STA 120+35.00 TO STA 130+13.84							
BEGIN STATION	END STATION	A	B	C	D	E	F
120+35.00	121+85.00	58'-62'	14'	30'	14'-18'	15'	15'
121+85.00	129+37.73	62'	14'	30'	18'	15'	15'
129+37.73	130+13.84	58'	14'	30'	14'	15'	15'

0 10' 20'

SCALE IN FEET

TBPE REGISTRATION NO. F-16341

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 5 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		12

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DW: JMT

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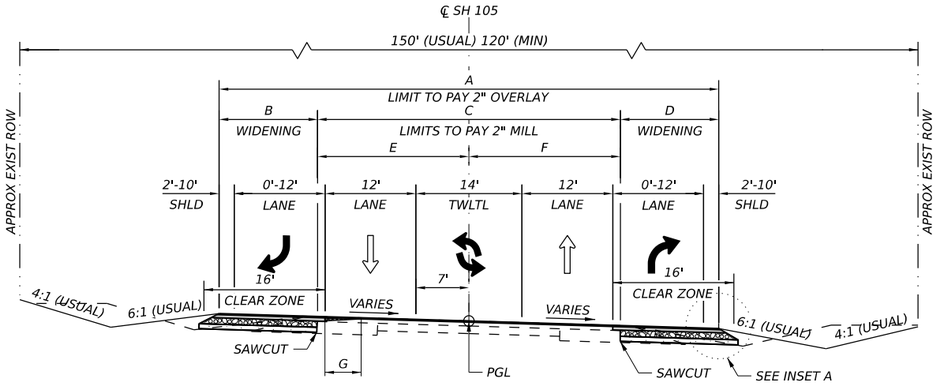


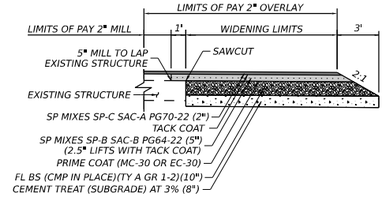
PROPOSED TYPICAL SECTION

SH 105
STA 185+74.10 TO STA 198+20.75

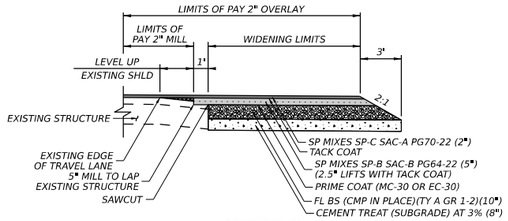
TYPICAL SECTION WIDENING DIMENSIONS - STA 185+74.10 TO STA 198+20.75							
BEGIN STATION	END STATION	A	B	C	D	E	F
185+74.10	186+13.91	58'	14'	30'	14'	15'	15'
186+13.91	188+35.59	62'	18'	30'	14'	15'	15'
188+35.59	189+85.59	62'-66'	18'	30'	14'-18'	15'	15'
189+85.59	193+65.00	66'	18'	30'	18'	15'	15'
193+65.00	195+15.00	66'-62'	18'-14'	30'	18'	15'	15'
195+15.00	197+79.54	62'	14'	30'	18'	15'	15'
197+79.54	198+20.75	58'	14'	30'	14'	15'	15'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
198+15.71	198+20.75	4.5'	0"-1"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*
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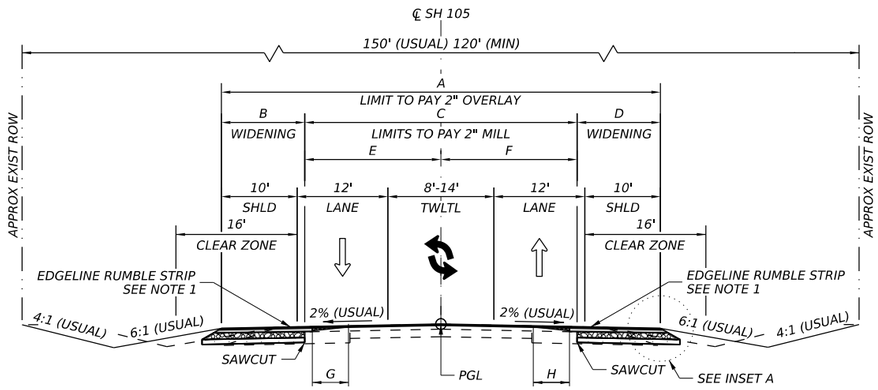

PROPOSED TYPICAL SECTION

SH 105
STA 210+00.00 TO STA 212+20.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 210+00.00 TO STA 212+20.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
210+00.00	212+10.00	58'-52'	14'	34'-28'	10'	15'-12'	19'-16'
212+10.00	212+20.00	52'	10'	32'	10'	16'	16'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
210+00.00	210+16.85	3.5'-4'	0"-1.25"	-	-
210+00.00	210+94.32	-	-	2.5'-4'	0"-1.25"
210+22.24	210+75.24	3'-3.5'	0"-1.25"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

PROPOSED TYPICAL SECTIONS

SHEET 6 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		13

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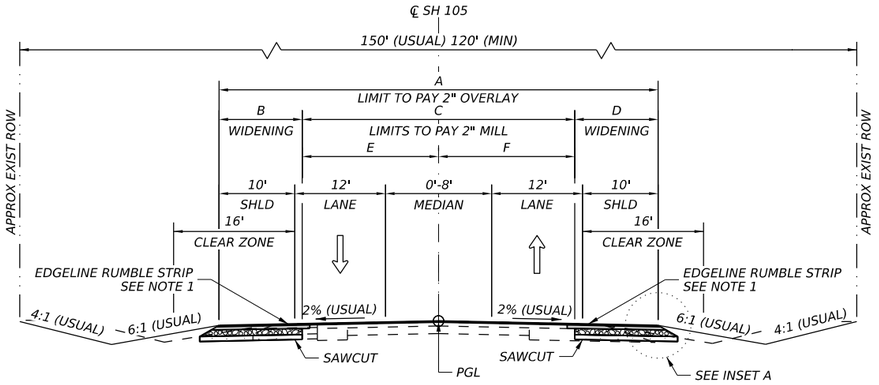
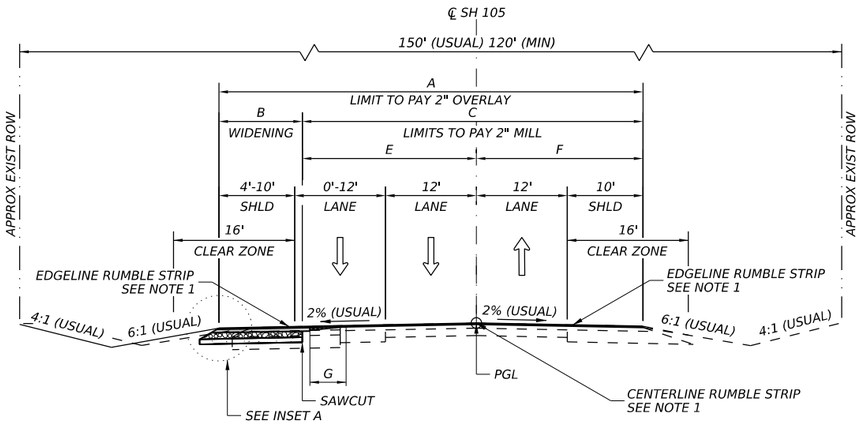


PROPOSED TYPICAL SECTION

SH 105
STA 212+20.00 TO STA 215+00.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 212+20.00 TO STA 215+00.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
212+20.00	214+00.00	52'-46'	10'	32'-25'	10'	16'-13'	16'-13'
214+00.00	215+00.00	46'-44'	5'	31'-29'	10'	18'-17'	13'-12'



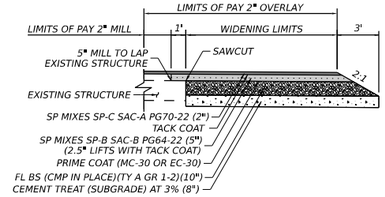
PROPOSED TYPICAL SECTION

SH 105
STA 215+00.00 TO STA 231+00.00

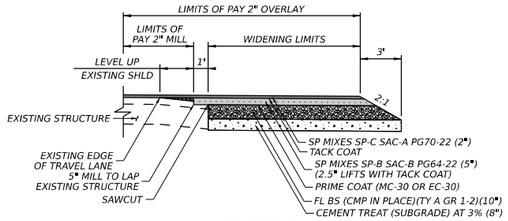
TYPICAL SECTION WIDENING DIMENSIONS - STA 215+00.00 TO STA 231+00.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
215+00.00	217+50.00	44'	5'	39'	N/A	17'	22'
217+50.00	225+90.00	44'-49'	N/A	44'-49'	N/A	22'-27'	22'
225+90.00	231+00.00	50'	4'	46'	N/A	24'	22'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
215+38.98	216+05.30	5.5'	0"-1"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

0 10' 20'
SCALE IN FEET

JMT TBPE REGISTRATION NO. F-16341

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SH 105

PROPOSED TYPICAL SECTIONS

SHEET 7 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		14

DATE: 3/22/2024 9:03:51 AM
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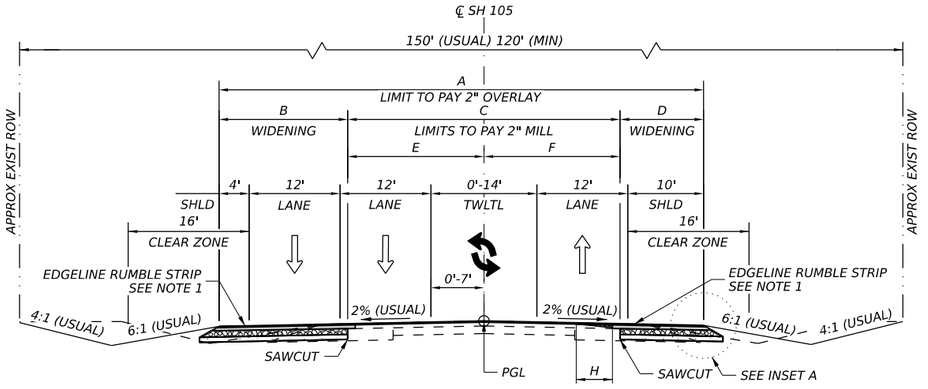
CK: JMT
DW: JMT

CK: JMT
DW: JMT
CK: JMT
DW: JMT



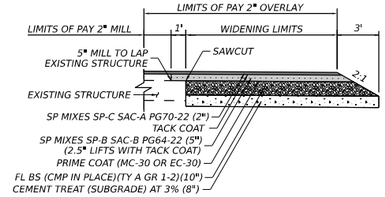
PROPOSED TYPICAL SECTION

SH 105
STA 231+00.00 TO STA 239+56.48

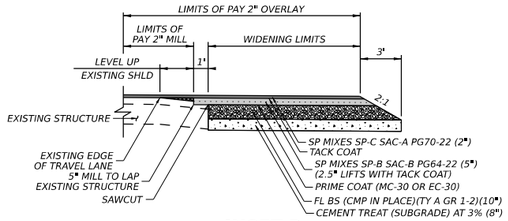
TYPICAL SECTION WIDENING DIMENSIONS - STA 231+00.00 TO STA 239+56.48							
BEGIN STATION	END STATION	A	B	C	D	E	F
231+00.00	231+71.46	50'-52'	4'	42'-44	4'	24'-25'	18'-19'
231+71.46	232+50.00	52'-54.2'	4'	44'-45.1'	4'-5.1'	25'-26.1'	19'
232+50.00	235+28.61	54.2'-62'	10'	39.1'-43'	5.1'-9'	20.1'-24'	19'
235+28.61	236+00.00	62'-64'	10'-11'	43'	9'-10'	24'	19'
236+00.00	239+56.48	64'	11'	43'	10'	24'	19'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
231+00.00	239+35.84	-	-	6'-6.5'	0"-2.75"

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

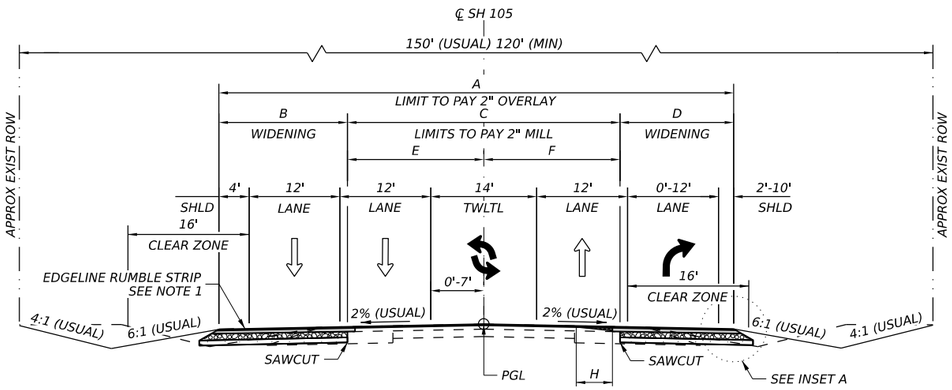
LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS
2. PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.



PROPOSED TYPICAL SECTION

SH 105
STA 239+56.48 TO STA 250+00.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 239+56.48 TO STA 250+00.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
239+56.48	240+35.00	64'	11'	43'	10'	24'	19'
240+35.00	241+85.00	64'-68'	11'	43'	10'-14'	24'	19'
241+85.00	249+50.73	68'	11'	43'	14'	24'	19'
249+50.73	250+00.00	64'	11'	43'	10'	24'	19'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
239+76.25	250+00.00	-	-	6'-6.5'	0'-3"

NOTE: SEE INSET B DETAIL FOR LEVEL UP

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-18341

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SH 105

PROPOSED TYPICAL SECTIONS

SHEET 8 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		15

DATE: 3/22/2024 9:03:53 AM
FILE: BRYCEC_TASK02_PRTYP08.dgn

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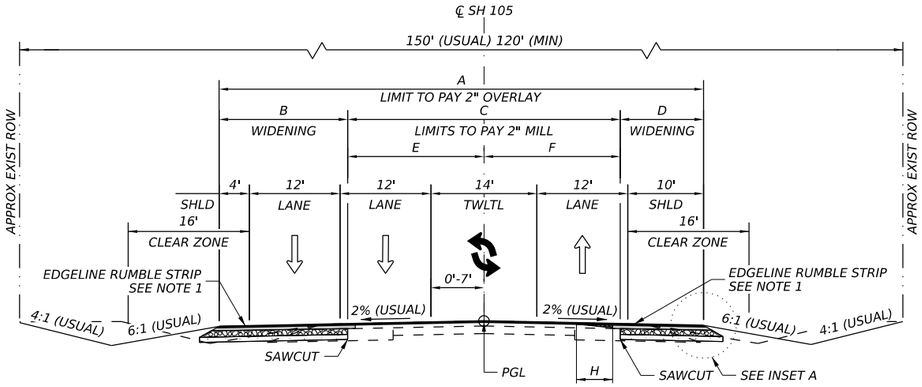
DW: JMT



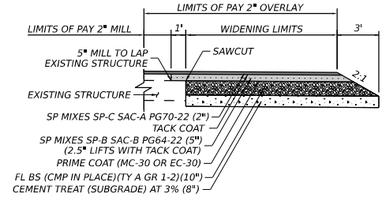
PROPOSED TYPICAL SECTION

SH 105
STA 250+00.00 TO STA 275+33.76

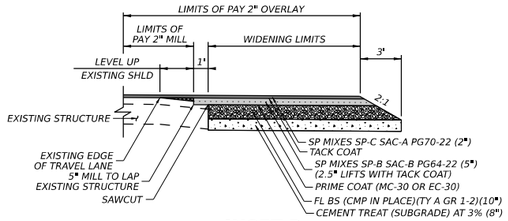
TYPICAL SECTION WIDENING DIMENSIONS - STA 250+00.00 TO STA 275+33.76							
BEGIN STATION	END STATION	A	B	C	D	E	F
250+00.00	275+33.76	64'	11'	43'	10'	24'	19'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
250+00.00	256+06.16	-	-	5.5'-6.5'	0"-2.25"
256+50.00	256+70.74	-	-	5'	0"-1"
262+28.12	262+52.89	-	-	6'	0"-1.5"
263+18.83	275+33.76	-	-	5.5'-6'	0"-3"

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

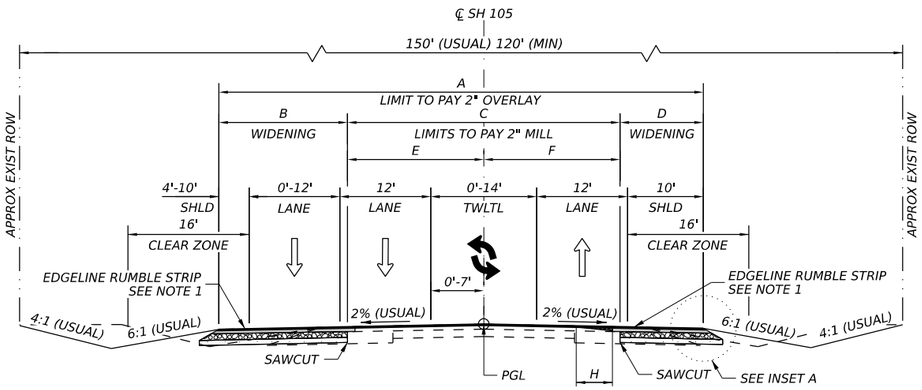
LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. *SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS*
2. *PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.*



PROPOSED TYPICAL SECTION

SH 105
STA 275+33.76 TO STA 280+33.72

TYPICAL SECTION WIDENING DIMENSIONS - STA 275+33.76 TO STA 280+33.72							
BEGIN STATION	END STATION	A	B	C	D	E	F
275+33.76	276+12.64	64'-60.8'	11'-8.9'	43'	10'-8.9'	24'	19'
276+12.64	278+70.00	60.8'-50.5'	8.9'-12'	43'-33.2'	8.9'-5.3'	24'-14.2'	19'
278+70.00	279+62.31	51'-48.5'	N/A	45.7'-44.5'	5.3'-4'	26.7'-25.5'	19'
279+62.31	280+00.00	48.5'-47.8'	N/A	44.5'-43.8'	4	25.5'-25.3'	19'-18.5
280+00.00	280+33.72	47.2'-46.7'	N/A	47.2'-46.7'	N/A	25.3'-25.1'	21.9'-21.6'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
275+33.76	279+16.68	-	-	5'-5.5'	0"-2.75"

NOTE: SEE INSET B DETAIL FOR LEVEL UP

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 9 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		16

DATE: 3/22/2024 9:03:56 AM
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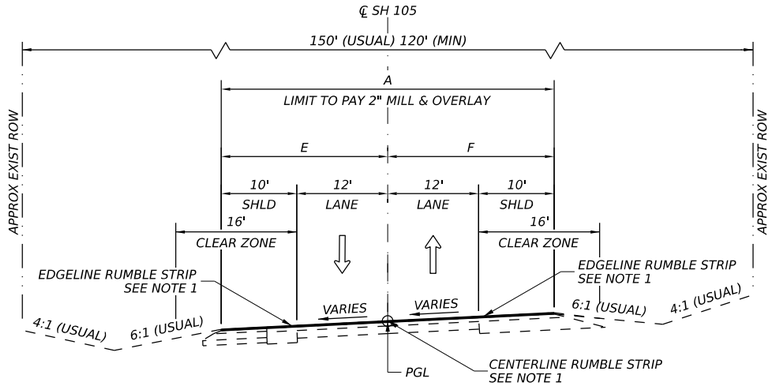
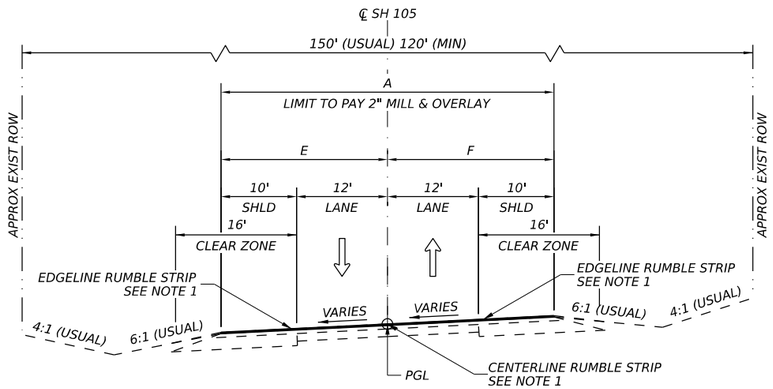


PROPOSED TYPICAL SECTION

SH 105
STA 280+33.72 TO STA 286+00.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 280+33.72 TO STA 286+00.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
280+33.72	286+00.00	46.7'-41.2'	N/A	46.7'-41.2'	N/A	25.1'-19.6'	21.6'



PROPOSED TYPICAL SECTION

SH 105
STA 286+00.00 TO STA 293+60.00

BRIDGE EXCEPTION: STA 288+83.60 TO STA 291+66.26

TYPICAL SECTION WIDENING DIMENSIONS - STA 286+00.00 TO STA 293+60.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
286+00.00	288+83.60	41.2'-43.2	N/A	41.2'-43.2	N/A	19.6'-21.6	21.6'
288+83.60	291+66.26	BRIDGE EXCEPTION					
291+66.26	293+60.00	44.3'-41.4'	N/A	44.3'-41.4'	N/A	21.1'-17.8'	23.2'-23.6

LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

1. SEE SIGNING AND PAVEMENT MARKINGS FOR LOCATIONS
2. PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-18341

Texas Department of Transportation

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 10 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		17

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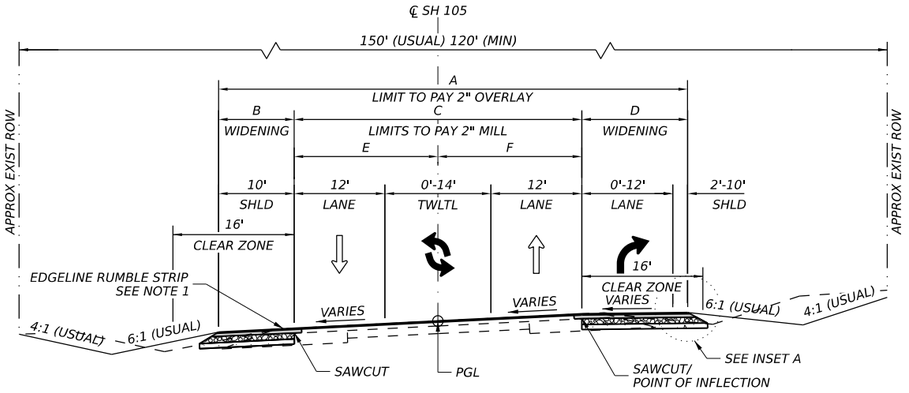
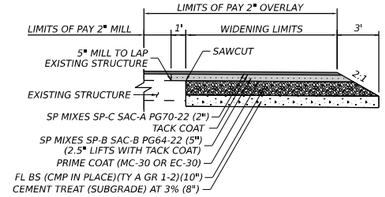


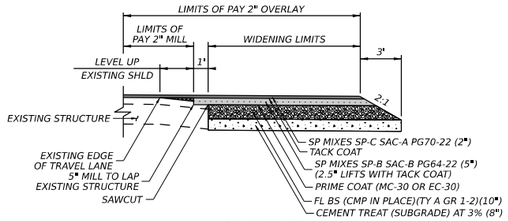
PROPOSED TYPICAL SECTION

SH 105
STA 293+60.00 TO STA 301+17.29

TYPICAL SECTION WIDENING DIMENSIONS - STA 293+60.00 TO STA 302+00.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
293+60.00	293+87.41	48'	10'	24'	14'	12'	12'
293+87.41	295+00.00	48'	10'	24'	14'	12'	12'
295+00.00	295+15.94	48'-48.1'	10'	24'-24.1'	14'	12'	12'-12.1'
295+15.94	295+79.60	48.1'-50.3'	10'	24.1'-26.3'	14'	12'-12.7'	12.1'-13.6
295+79.60	295+80.16	50.3'	10'	26.3'	14'	12.7'	13.6'
295+80.16	296+93.83	50.3'-57.5'	10'	26.3'-33.5'	14'	12.7'-16.2'	13.6'-17.3'
296+93.83	296+94.27	57.5'	10'	33.5'	14'	16.2'	17.3'
296+94.27	298+20.69	57.5'-62'	10'	33.5'-38'	14'	16.2'-19'	17.3'-19'
298+20.69	298+44.24	62'	10'	38'	14'	19'	19
298+44.24	301+17.29	62'	10'	38'	14'	19'	19



INSET A



INSET B

LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

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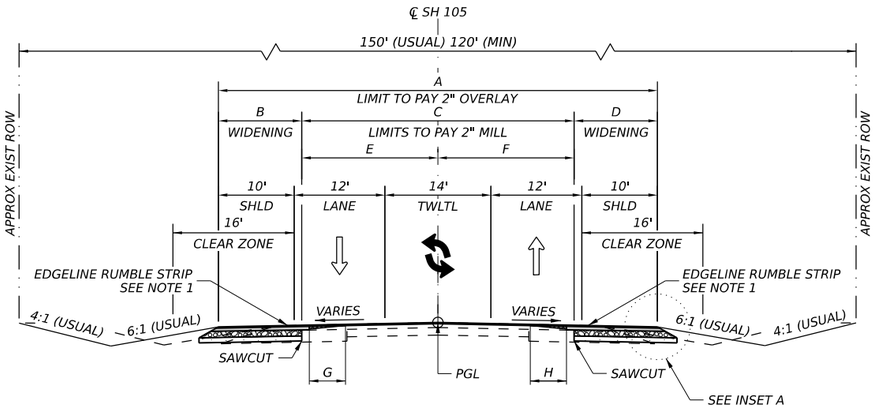

PROPOSED TYPICAL SECTION

SH 105
STA 301+17.29 TO STA 311+60.00

TYPICAL SECTION WIDENING DIMENSIONS - STA 302+00.00 TO STA 311+60.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
301+17.29	302+82.23	58'	10'	44'	4'	19'	25'
302+82.23	309+73.09	58'	10'	38'	10'	19'	19'
309+73.09	311+60.00	58'	10'	34'	14'	19'	15'
311+60.00	302+00.00	58'	10'	44'	4'	19'	25'

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
307+54.94	310+19.08	-	-	3'-6.5'	0"-4.25"
310+52.31	311+60.00	6'	0"-2.5"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-18341

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SH 105

PROPOSED TYPICAL SECTIONS

SHEET 11 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		18

DATE: 3/22/2024 9:04:01 AM
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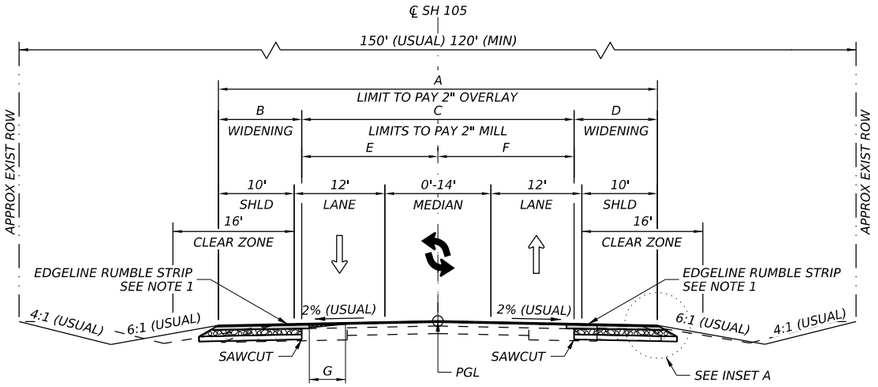


PROPOSED TYPICAL SECTION

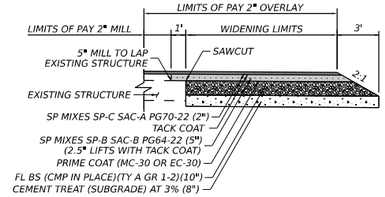
SH 105

STA 311+60.00 TO STA 316+55.00

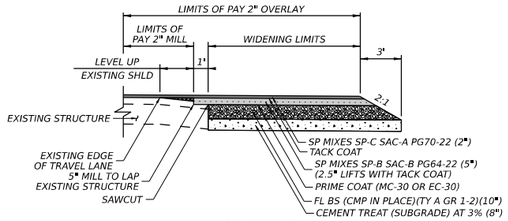
TYPICAL SECTION WIDENING DIMENSIONS - STA 311+60.00 TO STA 316+55.00							
BEGIN STATION	END STATION	A	B	C	D	E	F
311+60.00	311+65.00	58'	10'	34'	14"	19'	15'
311+65.00	313+00.00	58'-54.2'	10'	34'-30.2"	14"	19'-17.1'	15'-13.1"
313+00.00	316+55.00	50.2'-44'	10'	30.2'-24"	10"	17.1'-12'	17.1'-12"

TYPICAL SECTION LEVEL UP DIMENSIONS					
BEGIN STATION	END STATION	G		H	
		WIDTH	Max Depth	WIDTH	Max Depth
311+60.00	314+34.39	6'-2"	0"-2"	-	-

NOTE: SEE INSET B DETAIL FOR LEVEL UP



INSET A



INSET B

LEGEND:

PROPOSED LANE

EXISTING LANE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

0 10' 20'

SCALE IN FEET

TBPE REGISTRATION NO. F-16341

SH 105

PROPOSED TYPICAL SECTIONS

SHEET 12 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		19

DATE: 3/22/2024 9:04:04 AM
FILE: BRYCEC_TASK02_PRTYP12.dgn

DW: JMT
CK: JMT
DW: JMT
CK: JMT

BASIS OF ESTIMATE					
ITEM	DESCRIPTION	COURSE	RATE	AMOUNT	QUANTITY
168	Vegetative Watering		10 GAL/SY	107,464 SY	1,074.7 MG
260	Lime (HYD, COM or SLRY) or QK(DRY)(SUBGRADE) (8")(**3**%)		0.0099 TON/SY	22,754 SY	226 TON
275	Cement (HYD, COM or SLRY) or QK(DRY)(SUBGRADE) (8")(3%)		0.0099 TON/SY	68,269 SY	676 TON
310	Prime Coat (MC 30 or EC-30)	Prime	0.25 GAL/SY	63,966 SY	15,992 GAL
3077	SP-C PG70-22	2"	220 LB/SY	168,339 SY	18,518 TON
3077	SP-B PG64-22	5"	550 LB/SY	62,392 SY	17,158 TON
3077	SP-B PG64-22	LEVEL-UP	VAR.	--	455 TON
3077	TACK COAT		0.10 GAL/SY	301,541 SY	30,155 GAL

Note: Rates are for estimating purposes only. Actual Rates will be determined in the field.

GENERAL:

Contractor questions on this project are to be addressed to the following individuals:
James Robbins, P.E., A.E., James.Robbins@txdot.gov
Joseph Greive, P.E., A.A.E., Joseph.Greive@txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

Sheet: 20
Highway: SH 105 Control: 0338-01-068, ETC
County: GRIMES

Send eligible shop plan submittals with PDF attachments directly to the reviewing office.

ITEM 5 "CONTROL OF THE WORK"

Prior to letting, earthwork construction cross-section data is available at the Area Engineer's office in **Bryan** for inspection by prospective bidders.

Earthwork files will be provided by email or by using TxDOT's FTP Service. These cross-sections are for non-construction purposes only, and it is the responsibility of the prospective bidder to validate the data for this project.

After letting, the Engineer will provide final earthwork construction cross-section data necessary for the contractor to establish and control the work.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at https://www.txdot.gov/business/resources/highway/bridge/bridge-publications.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

After award of the contract, when requested, TxDOT will provide CADD files to the selected Contractor. The recipient acknowledges that the electronic files may not contain all the information and may differ from the Bid Documents or Contract Documents for the construction of the Project. Electronic files are provided for information only and the TxDOT Bryan District shall not be responsible for differences between Electronic Files, the Bid Documents, and Contract Documents. The CADD files provided are a graphical representation of the project; the CADD data may not be 100% accurate and should not be used for dimensional control, shop drawings, or any other similar purpose. Any electronic files provided are strictly for the use of the Recipient in regard to the Project named above and shall not be used for any other purpose or provided by the Recipient to any other entity.

ITEM 6 "CONTROL OF MATERIALS"

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit an original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.
The Buy America Material Classification Sheet is located at the below link.https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html
for clarification on material categorization.

ITEM 7 "LEGAL RELATIONS AND RESPONSIBILITIES"

State contract mowers will mow the right of way during the growing season. The Contractor will be notified by the Engineer one week in advance of the anticipated time when mowers will be in the limits of the project. Clean the right of way to such a condition that allows the mowing contractors to safely mow.

In accordance with Item 7.2.5, Contractor equipment equipped with blue warning lights shall be wired so that operation of blue lights is independent of any other lights.

Whenever bridge construction or milling / paving operations reduces the under clearance of a roadway at a bridge underpass, the Contractor shall be required to inform the Bryan Oversized Permit office a minimum of 2 weeks prior to these operations by email with the specific bridge information including the presumed minimum clearance under the bridge when hanging beams (minus the standard 3 inch buffer), the date(s) which beams are to be hung, the direction(s) of the roadway(s) affected, and the mile point of the bridge where work is being performed. When milling / paving operations increase the elevation of the under passing roadway, the Contractor shall inform the Bryan Oversized Permit office a minimum of 7 days prior to performing milling / paving operations.

This project is on a hurricane evacuation route. Furnish at the pre-construction meeting a written plan outlining procedures to suspend work, secure the job site and safely handle traffic through and across the project in the event of a hurricane evacuation.

During the hurricane season (June 1 through November 30), do not close any travel lanes except when the Contractor can demonstrate that he can provide labor, equipment, material, work plan,

Sheet: 20A

Highway: SH 105 **Control: 0338-01-068, ETC**

County: GRIMES

and quality of work to satisfactorily return all lanes to an open, all-weather travel surface within three days of receiving written or verbal notice but no later than 3 days prior to hurricane landfall. Construction of temporary lanes to an all-weather surface will be paid in accordance with Article 9.7, "Payment for Extra Work and Force Account Method".

In addition to lane closures, cease work 3 days or as directed by the Engineer prior to hurricane landfall on or near the roadway that adversely impacts the flow of traffic and reduces the capacity of the highway during an evacuation. Prohibit the Contractor's, sub-contractors' or material suppliers' vehicles from entering or exiting the stream of traffic including material hauling and delivery, and mobilization or demobilization of equipment. When directed, this prohibition will include a reasonable time period for the evacuees to return to their point of origin.

In the event of the declaration of a hurricane watch, warning, other severe weather warning or national or state emergency that requires the roadways in the vicinity be used as evacuation routes, cease all work that requires the Contractor's, sub-contractors' or material suppliers' vehicles to enter the stream of traffic on these primary or secondary evacuation routes. This work includes material hauling and delivery, and mobilization or demobilization of equipment.

The following roadways are recognized hurricane evacuation routes in the Bryan District:

Primary Evacuation Routes: IH 45, US 77 (S of US 79), US 84 (E of IH 45), US 79, US 287, US 290, SH 6.

Secondary Evacuation Routes: US 190 (E of IH 45), SH 7, SH 21, SH 30 (SH 6 to IH 45), SH 36, SH 105 (E of SH 6).

Other routes may be designated.

- Roadway closures during the following key dates and/or special events are prohibited: And then list the dates and/or events road closures will be prohibited.

Roadway closures during the following key dates and/or special events are prohibited:

- Day before and day of Texas A&M home football games
  - Day before and day of:
    - SH6 in Brazos/Grimes/Robertson County
    - US 190 in Robertson/Brazos County
    - SH 21 in Brazos County
    - SH30 in Brazos County
    - SH40

  - SH47
  - FM2818
  - FM60
  - BS6R (Texas Ave in Bryan/College Station)
  - FM2347
  - FM2154 (north of SH40)
- Day of:
  - FM 1179
  - FM158
  - SH308

- Texas A&M graduation
- Texas A&M Family Weekend

The Engineer may decide to restrict construction operations or lane closures on these key dates and/or special events.

FOR WORK IN PROXIMITY TO THE RAILROAD;

Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. It is the Contractor's responsibility to utilize the contact information provided below to determine if fiber optic cable is buried anywhere on the Railroad's premises to be used by the State. If it is, the Contractor will telephone the telecommunications company(ies) involved, arrange for a cable locator, and make arrangements for relocation or other protection of the fiber optic cable prior to beginning any work on the Railroad's premises.

For 24/7 support of all requests for fiber optic locates along UPRR rights of way:
Web: http://www.up.com/cbud
Phone: 1-800-336-9193 (Emergencies)

It is the Contractor's responsibility to contact, five working days before any work is performed, the RR at the contact information listed below to determine if fiber optic or other type of cable is buried in the general location where work is to be performed. In the event such cable is present, the Contractor then calls the owner of the fiber optic or cable line to determine its exact location. The State shall indemnify and hold harmless the Railroad against any cost or claims arising out of damage to any cable, but only to the extent such damage is caused by negligence of the State and/or its Contractor.

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A Railroad Inspector is required to monitor the ground and track for movement during the jacking process. The installation process and all train movements must be immediately stopped if any movement of ground is detected. The damaged area must be immediately repaired. The installation process must be reviewed and modified as necessary before installation may proceed.

If the project had a Maintenance Consent Letter (MCL) issued for clearance, the contractor at the time the contract is awarded must complete and submit the Contractor Endorsement included with the executed MCL. This form will serve as the contractors right of entry (ROE) onto RR property. The contractor is not responsible for the fee listed on the MCL, TXDOT handles this in coordination with the RR. Additional requirements as outlined on the MCL and in TxDOT Specifications include – insurance, RR flaggers, and RR safety certifications. Further, the contractor shall ensure that adequate insurance is obtained per the Rail Road Scope of Work (SOW) and that documentation of such is provided to the email included on the MCL, where the contractor endorsement is submitted. The contractor must also ensure that RR flaggers are set up with RailPros and that all employees working on the RR ROW have the required safety training per UPRR's requirements.

ITEM 8 "PROSECUTION AND PROGRESS"

The earliest roadway start work date shall be 11/04/2024.

No more than 2 miles of non-surfaced roadway will be allowed at any time. The Engineer may consider extending the 2-mile limit or allow alternating 2-mile sections of concurrent work, only if the Contractor can demonstrate adequate workforce, equipment, material deliveries, work plan, and quality of work sufficient to handle the longer work zones. If the 2 miles of non-surfaced roadway are extended by the Engineer in writing, this will not exempt the Contractor from not exceeding the 5 minute delay and any additional signing/traffic control will be considered subsidiary to Item 502, Barricades, Signs, and Traffic Handling. If, in the opinion of the Engineer, the Contractor fails to adequately progress or protect the work, or minimize disruption to traffic, the 2-mile limit may be reduced, as directed. There will be no additional compensation to the Contractor for the non-surfaced roadway limit being reduced.

At the end of each work day, remove all grade differentials transverse to centerline. See TREATMENT FOR VARIOUS EDGE CONDITIONS sheet for details.

At the end of each work day, provide 100 foot minimum grade tapers longitudinal to the centerline to transition differences in the profile grade line or roadway grade.

By noon of each Wednesday, provide the Engineer a written outline of the daily work schedule for the following week. Include in the outline the times and places for proposed traffic control

changes, lane and shoulder closures, and moving operations or other operations that affect traffic on the roadway. Unless otherwise authorized by the Engineer, prosecute the work on this project as narrated in the TCP Sequence of Work.

Some of these operations may be performed simultaneously.

Prepare Progress Schedule Bar Chart.

Equipment and material may be pre-staged at approved locations. When staging equipment and materials, they shall be marked/protected by type 3 barricades or appropriate TCP standards (includes overnight).

The 90-day delayed start allowed after authorization under SP008-056 is for Contractor time for material acquisition.

ITEM 100 "PREPARING RIGHT OF WAY"

Limits of the Prep ROW to be confirmed in the field by the Engineer.

During burn bans obtain written approval from the respective County Commissioners Court prior to burning brush.

Prevent ashes from burned vegetation to be transported into any stream.

If burning is not allowed, all trees and brush will be disposed of by shredding, logging or other methods approved by the Engineer. Create a windrow, stockpile, or topdress biomass on disturbed areas along the project at locations approved by necessary permits and the Engineer.

ITEM 132 "EMBANKMENT"

Provide Embankment material for areas within the limits of the Pavement Structure that meet one of the following requirements:

- Sources outside the ROW provide material with a plasticity index between 10 and 25 and with less than 30% silt.
- Sources within the ROW provide material with a plasticity index between 10 and 25 and with less than 30% silt.

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Provide Embankment material for areas outside the limits of the Pavement Structure with a plasticity index between 10 and 35.

ITEM 160 "TOPSOIL"

All slopes requiring topsoil will be tracked immediately upon final grading to prevent erosion per standard sheet EC(1)-16. Tracking slopes to prevent erosion will not be measured or paid for directly, but will be subsidiary to pertinent Items.

ITEM 166 "FERTILIZER"

Fertilize all areas of project that are being seeded or sodded.

ITEM 168 "VEGETATIVE WATERING"

Vegetative watering is required for all areas of the project that are being seeded or sodded.

ITEM 247 "FLEXIBLE BASE"

Place flexible base in equal lifts of 4 to 8 in. in depth unless otherwise authorized by the Engineer in writing.

Repair soft spots, surface defects, longitudinal/traverse grade changes, potholes etc. as directed by the Engineer before starting surfacing courses by scarifying the depth of flex base shown in the plans. The area should cover the lane width and a distance of 10 feet in each direction.

ITEM 275 "CEMENT TREATMENT (ROAD MIXED)"

Microcracking is required for this item.

ITEM 301 “ASPHALT ANTISTRIPPING AGENT”

When the Contractor adds lime as an anti-stripping agent (or an equivalent anti-stripping agent) the lime or equivalent shall be added to the asphaltic concrete in the methods specified in this item unless otherwise approved by the Engineer. If an alternate method is proposed, the Engineer’s approval will be based on test method Tex-242-F performed on the asphaltic concrete produced through the plant.

ITEM 310 “PRIME COAT”

Cure MC-30/ EC-30 for up to 7 days before placing subsequent surface courses unless otherwise directed by the Engineer.

ITEM 320 “EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT”

Unless otherwise approved by the Engineer, provide a Material Transfer Device with remixing capabilities as specified in Item 320.2.3.3 Placement and Compaction Equipment for all asphaltic concrete pavement.

ITEM 351 “FLEXIBLE PAVEMENT STRUCTURE REPAIR”

Mixing of cement treated base may be performed on the road or at a stationary mixing plant.

Use of a motor grader will not be permitted to scarify asphalt concrete pavement, or as approved by the Engineer.

ITEM 354 “PLANING AND TEXTURING PAVEMENT”

Take ownership of reclaimed asphalt material.

Existing raised pavement markers in the proposed work area are to be removed prior to planing operations. This work will be considered subsidiary.

Construct a fine milling pattern by adjusting the speed of the drum and the machine, as approved by the Engineer.

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ITEM 420 “CONCRETE SUBSTRUCTURES”

Mass placements are defined as placements with a least dimension greater than or equal to 5 ft., or designated on the plans.

ITEM 432 “RIPRAP”

The fifty foot (50’) approach taper to the MBGF end treatment will be concrete Mow Strip unless otherwise shown in the plans or otherwise directed by the Engineer.

ITEM 462 “CONCRETE BOX CULVERTS AND DRAINS”

Do not use precast box culverts.
Structures are designed and paid for as precast. Cast-in-place structures may be substituted for the precast and shall meet the requirements of this specification and TxDOT culvert standards. Payment and measurement shall be for the unit bid price for precast.

ITEM 464 “REINFORCED CONCRETE PIPE”

Seal joints using cold applied plastic asphalt sewer compound or cold applied preformed plastic gaskets. When cohesionless material is used for backfill, wrap the joints prior to backfilling with sand proof tape following the manufacturer's recommendations or with an equivalent material and method.

ITEM 465 “JUNCTION BOXES, MANHOLES AND INLETS”

When furnishing precast Inlets, Manholes and Extensions, cast elements for specific project locations.

ITEM 467 “SAFETY END TREATMENTS”

All Type II SET’s shall have riprap aprons as shown on the plans. Riprap aprons are considered subsidiary to Type II SET’s.

ITEM 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING"

Where shown on applicable TCP standards, channelizing devices on the centerline are required at all times; including when a pilot vehicle is used to lead traffic. Mount a G20-4 sign at a conspicuous location on the rear of the vehicle. Traffic delays caused by one-lane, two-way traffic control, will not be allowed to exceed 5 minutes unless approved by the Engineer.

One way traffic control operations are required when placing centerline profile markings on all two-lane roadways, unless otherwise approved by the Engineer. Work area is limited to a maximum of 2 miles for this work.

During one-way operations, station flaggers at all county roads and any other locations, such as private businesses, that may have traffic entering the work area.

Removal of ground mounted temporary signs and supports as specified on standard sheet BC(5), shall include the immediate backfilling of support holes with Type B embankment material and the compaction of the backfill material. The signs must also be removed within two weeks once construction ends.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

ITEM 504 "FIELD OFFICE AND LABORATORY"

Furnish a Type D Structure (Asphalt Mix Control Laboratory).

ITEM 506 "TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS"

Prior to starting construction, review the SW3P with the Engineer to confirm the type and placement of the devices. Device locations may be added, deleted, or modified by the Engineer.

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ITEM 540 "METAL BEAM GUARD FENCE"

When the roadway is converted from two-way operation to one-way operation for TCP operations, the appropriate Metal Beam Guard Fence shall be relapped in the direction of travel. This will not be paid for directly but will be considered subsidiary to this Item

Furnish and Install only one type of timber post.

ITEM 560 "MAILBOX ASSEMBLIES"

Notify the postmaster prior to installation for approval of type and temporary and permanent locations.

Retain and re-use newspaper holders removed or relocated during construction for placement on new mailbox assemblies in accordance with mailbox standard sheets.

ITEM 636 "SIGNS"

Salvage and deliver all aluminum sign faces to the local TxDOT maintenance office.

ITEM 644 "SMALL ROADSIDE SIGN ASSEMBLIES"

Prior to taking elevations to determine lengths for fabrication of sign posts, obtain verification of all proposed locations.

Salvage and deliver all aluminum sign faces to the local TxDOT maintenance office.

ITEM 662 "WORK ZONE PAVEMENT MARKINGS"

Paint and beads may be used for non-removable work zone pavement markings.

All striping limits must be approved by the Engineer before striping operations may begin.

ITEM 666 "REFLECTORIZED PAVEMENT MARKINGS"

Unless authorized by the Engineer, the Contractor will not place the pavement markings on the resurfaced roadway until it has cured for 3 days.

All striping limits must be approved by the Engineer before striping operations may begin.

ITEM 672 "RAISED PAVEMENT MARKERS"

Use flexible bituminous adhesive for applications on all pavement types.

ITEM 3077 "SUPERPAVE MIXTURES"

Hydrated lime, commercial lime slurry or an equivalent anti-stripping agent may be used. If hydrated lime or commercial lime slurry is used up to 1.0 percent may be added. If an equivalent anti-stripping agent is used, add according to manufacturer's recommendations. Provide hydrated lime or commercial lime slurry in accordance with DMS-6350, "Lime and Lime Slurry". Add hydrated lime, commercial lime slurry, or an equivalent anti-stripping agent in accordance with Section 301.4.2.

Apply tack coat through a distributor spray bar in accordance with Section 316.3.1. Distributor. If residual from emulsion tack is not tacky, then the Engineer can require the use of PG binder.

RAS is not permitted.

ITEM 6001 "PORTABLE CHANGEABLE MESSAGE SIGN"

Furnish, install, and operate up to 2 Portable Changeable Message Signs (PCMS) for this project. The signs can be used both on the project and within a ten (10) mile radius of the project. Locations, messages, and durations of use will be specified by the Engineer. The primary uses will be to inform the public of special events, lane and road closures, and changes in traffic control. Signs will be paid for only when used as directed by the Engineer.

ITEM 6185 "TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA)"

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan (TCP) for this project,

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provide one (1) shadow vehicle(s) with TMA for TCP(2-1)-18 as detailed on General Note 4 of this standard sheet.

provide one (1) shadow vehicle(s) with TMA for TCP(2-2)-18 as detailed on General Note 6 of this standard sheet.

provide two (2) (shadow and trail) vehicle(s) with TMA for TCP(3-1)-13 as detailed on General Note 3 of this standard sheet.

provide two (2) (shadow and trail) vehicle(s) with TMA for TCP(3-3)-14 as detailed on General Note 3 of this standard sheet.

provide two (2) shadow vehicle(s) with TMA for TCP(3-4)-13 as detailed on General Note 2 of this standard sheet.

Therefore, ten (10) total shadow vehicles with TMA will be required for this type of work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

160 TMA days are provided in the project estimate for stationary operations.
10 TMA days are provided in the project estimate for mobile operations.

TMA's shall meet the requirements of the Compliant Work Zone Traffic Control Device List. http://ftp.txdot.gov/pub/txdot-info/cmd/mpl/cwztcd.pdf

Signs and arrow boards required on truck-mounted attenuators and pilot vehicles are subsidiary to Item 6185.

TMA's will be paid under Item 6185-6002 'TMA (STATIONARY)' and Item 6185-6005 'TMA (MOBILE OPERATION)'.

Submit to the Engineer at or before the pre-construction meeting a letter certifying all TMA devices used on the project meet NCHRP 350 or AASHTO Manual for assessing Safety Hardware (MASH) requirements.

The TMA used for set-up and removal of the Traffic Control Plan is deemed to be the one and the same TMA used during maintenance of the Traffic Control Plan.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0338-01-068 **DISTRICT** Bryan **COUNTY** Grimes
HIGHWAY SH 105

				0338-01-068		0338-01-069		0338-01-070		TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB									
		PROJECT ID		A00192911		A00192912		A00196745			
		COUNTY		Grimes		Grimes		Grimes			
		HIGHWAY		SH 105		SH 105		SH 105			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW	STA	53.000		29.000		179.000		261.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY			99.000		288.000		387.000	
	105-6043	REMOVING STAB BASE & ASPH PAV (0-6")	SY	2,772.000		1,005.000		3,480.000		7,257.000	
	105-6094	REMOVING STAB BASE & ASPH PAV(12"-27")	SY	5,421.000		2,304.000		14,026.000		21,751.000	
	110-6001	EXCAVATION (ROADWAY)	CY	5,958.000		3,379.000		15,692.000		25,029.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	3,773.000		1,462.000		7,657.000		12,892.000	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	25,540.000		10,560.000		71,364.000		107,464.000	
	164-6021	CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	SY	25,540.000		10,560.000		71,364.000		107,464.000	
	164-6029	CELL FBR MLCH SEED(TEMP)(WARM)	SY	12,772.000		5,281.000		35,688.000		53,741.000	
	164-6031	CELL FBR MLCH SEED(TEMP)(COOL)	SY	12,772.000		5,281.000		35,688.000		53,741.000	
	168-6001	VEGETATIVE WATERING	MG	255.400		105.600		713.700		1,074.700	
	247-6231	FL BS (CMP IN PLACE)(TY A GR 1-2)(10")	SY	16,527.000		8,643.000		38,796.000		63,966.000	
	260-6012	LIME(HYD,COM OR QK)(SLRY)OR QK(DRY)	TON	59.000		30.000		137.000		226.000	
	260-6027	LIME TRT (EXST MATL)(8")	SY	5,857.000		3,074.000		13,823.000		22,754.000	
	275-6001	CEMENT	TON	174.000		92.000		410.000		676.000	
	275-6010	CEMENT TREAT (SUBGRADE) (8")	SY	17,573.000		9,223.000		41,473.000		68,269.000	
	310-6028	PRIME COAT (MC-30 OR EC-30)	GAL	4,133.000		2,161.000		9,698.000		15,992.000	
	351-6002	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	SY	140.000		50.000		175.000		365.000	
	351-6011	FLEXIBLE PAVEMENT STRUCTURE REPAIR(18")	SY	270.000		115.000		700.000		1,085.000	
	354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY					3,410.000		3,410.000	
	354-6045	PLANE ASPH CONC PAV (2")	SY	21,044.000		14,316.000		78,669.000		114,029.000	
	354-6100	PLANE ASPH CONC PAV (5")	SY	1,189.000		657.000		3,033.000		4,879.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY					53.000		53.000	
	462-6001	CONC BOX CULV (3 FT X 2 FT)	LF	3.000						3.000	
	464-6003	RC PIPE (CL III)(18 IN)	LF	684.000		310.000		692.000		1,686.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF					124.000		124.000	
	465-6127	INLET (COMPL)(PSL)(FG)(4FTX4FT-3FTX3FT)	EA	1.000						1.000	
	467-6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	45.000		20.000		44.000		109.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA					8.000		8.000	
	496-6002	REMOV STR (INLET)	EA	1.000						1.000	
	496-6004	REMOV STR (SET)	EA	4.000		10.000		10.000		24.000	
	496-6007	REMOV STR (PIPE)	LF	635.000		319.000		584.000		1,538.000	
	496-6008	REMOV STR (BOX CULVERT)	LF	3.000						3.000	
	500-6001	MOBILIZATION	LS					1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO					15.000		15.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	220.000		50.000		720.000		990.000	
	506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	25.000		20.000		60.000		105.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0338-01-068 **DISTRICT** Bryan **COUNTY** Grimes
HIGHWAY SH 105

			CONTROL SECTION JOB		**0338-01-068**		**0338-01-069**		**0338-01-070**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00192911**		**A00192912**		**A00196745**			
			COUNTY		**Grimes**		**Grimes**		**Grimes**			
			HIGHWAY		**SH 105**		**SH 105**		**SH 105**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	506-6011	ROCK FILTER DAMS (REMOVE)		LF	245.000		70.000		780.000		1,095.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)		LF	1,787.000		80.000		6,791.000		8,658.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)		LF	1,787.000		80.000		6,791.000		8,658.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")		LF	654.000		435.000		1,320.000		2,409.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)		LF	654.000		435.000		1,320.000		2,409.000	
	530-6005	DRIVEWAYS (ACP)		SY	3,414.000		1,075.000		4,067.000		8,556.000	
	530-6020	DRIVEWAYS (CONC)(TYPE 1)		SY	92.000		94.000		245.000		431.000	
	530-6028	DRIVEWAYS (CONC)(TYPE 2)		SY					74.000		74.000	
	533-6003	RUMBLE STRIPS (SHOULDER) ASPHALT		LF	9,070.000		5,005.000		33,525.000		47,600.000	
	533-6004	RUMBLE STRIPS (CENTERLINE) ASPHALT		LF					2,830.000		2,830.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)		LF					562.500		562.500	
	540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION		EA					4.000		4.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)		EA					8.000		8.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)		EA					4.000		4.000	
	560-6003	MAILBOX INSTALL-M (TWG-POST) TY 1		EA	8.000				3.000		11.000	
	560-6007	MAILBOX INSTALL-S (WC-POST) TY 3		EA	14.000		4.000		16.000		34.000	
	560-6008	MAILBOX INSTALL-D (WC-POST) TY 3		EA	1.000		2.000		3.000		6.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)		EA	10.000		12.000		47.000		69.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)		EA					9.000		9.000	
	644-6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)		EA			1.000		4.000		5.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)		EA					1.000		1.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG		EA					2.000		2.000	
	644-6076	REMOVE SM RD SN SUP&AM		EA	8.000		9.000		52.000		69.000	
	658-6014	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)		EA					14.000		14.000	
	658-6061	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2		EA					34.000		34.000	
	658-6101	INSTL OM ASSM (OM-2Z)(WFLX)SRF)SRF		EA					16.000		16.000	
	662-6005	WK ZN PAV MRK NON-REMOV (W)6"(BRK)		LF			706.000		312.000		1,018.000	
	662-6008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)		LF	10,534.000		5,313.000		31,021.000		46,868.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)		LF	510.000				1,317.000		1,827.000	
	662-6037	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)		LF	12,518.000		5,574.000		36,858.000		54,950.000	
	662-6049	WK ZN PAV MRK REMOV (REFL) TY I-C		LF	11,044.000		5,313.000		35,972.000		52,329.000	
	662-6051	WK ZN PAV MRK REMOV (REFL) TY II-A-A		LF	12,518.000		5,574.000		41,800.000		59,892.000	
	662-6057	WK ZN PAV MRK REMOV (TRAF BTN) TY W		LF	10,869.000		7,049.000		43,064.000		60,982.000	
	662-6059	WK ZN PAV MRK REMOV (TRAF BTN) TY Y		LF	12,135.000		7,474.000		50,201.000		69,810.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)		LF					1,440.000		1,440.000	
	666-6030	REFL PAV MRK TY I (W)8"(DOT)(100MIL)		LF			30.000		320.000		350.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)		LF	1,410.000		765.000		2,413.000		4,588.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0338-01-068 **DISTRICT** Bryan **COUNTY** Grimes
HIGHWAY SH 105

				0338-01-068		0338-01-069		0338-01-070		TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB									
		PROJECT ID		A00192911		A00192912		A00196745			
		COUNTY		Grimes		Grimes		Grimes			
		HIGHWAY		SH 105		SH 105		SH 105			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	28.000		41.000		157.000		226.000	
	666-6171	REFL PAV MRK TY II (W) 6" (BRK)	LF					70.000		70.000	
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF					1,569.000		1,569.000	
	666-6178	REFL PAV MRK TY II (W) 8" (SLD)	LF					838.000		838.000	
	666-6180	REFL PAV MRK TY II (W) 12" (SLD)	LF					27.000		27.000	
	666-6184	REFL PAV MRK TY II (W) (ARROW)	EA					2.000		2.000	
	666-6192	REFL PAV MRK TY II (W) (WORD)	EA					1.000		1.000	
	666-6208	REFL PAV MRK TY II (Y) 6" (BRK)	LF					290.000		290.000	
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF					1,576.000		1,576.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF			750.000		540.000		1,290.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	10,515.000		5,705.000		37,384.000		53,604.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	2,670.000		1,440.000		5,540.000		9,650.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	10,385.000		5,756.000		41,887.000		58,028.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	8.000		8.000		34.000		50.000	
	668-6083	PREFAB PAV MRK TY C (W) (LNDP ARROW)	EA					4.000		4.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2.000				8.000		10.000	
	672-6007	REFL PAV MRKR TY I-C	EA	74.000		38.000		139.000		251.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	131.000		107.000		972.000		1,210.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF					1,319.000		1,319.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF					100.000		100.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA					4.000		4.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA					2.000		2.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF					4,373.000		4,373.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF					838.000		838.000	
	678-6006	PAV SURF PREP FOR MRK (12")	LF					27.000		27.000	
	3077-6003	SP MIXES SP-B SAC-B PG64-22	TON	4,560.000		2,402.000		10,651.000		17,613.000	
	3077-6022	SP MIXES SP-C SAC-A PG70-22	TON	3,880.000		2,364.000		12,274.000		18,518.000	
	3077-6075	TACK COAT	GAL	6,974.000		3,983.000		19,198.000		30,155.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000						2.000	
	6185-6002	TMA (STATIONARY)	DAY	20.000		20.000		120.000		160.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	2.000		2.000		6.000		10.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS					1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS					1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS					1.000		1.000	

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF TRAFFIC CONTROL ITEMS (PHASE 1)

SH 105 TCP LAYOUT	FROM STATION	TO STATION	354 6021	662 6057	662 6059	677 6001
			PLANE ASPH CONC PAV(0" TO 2")	WK ZN PAV MRK REMOV (TRAF BTN) TY W	WK ZN PAV MRK REMOV (TRAF BTN) TY Y	ELIM EXT PAV MRK & MRKS (4")
			SY	LF	LF	LF
PROJECT NAME						
CSJ 0338-01-070						
PHASE 1 SHEET 1 OF 5	223+00	234+66	539	2,332	2,564	
PHASE 1 SHEET 2 OF 5	264+23	271+00		1,354	1,354	
PHASE 1 SHEET 3 OF 5	271+00	295+00		4,802	4,802	1,130
PHASE 1 SHEET 4 OF 5	295+00	319+00		4,759	7,609	
PHASE 1 SHEET 5 OF 5	319+00	END	550	400	400	
CSJ 0338-01-070 TOTAL			1,089	13,647	16,729	1,130
CSJ 0338-01-069						
PHASE 1 SHEET 1 OF 5	234+66	247+00		2,983	3,197	
PHASE 1 SHEET 2 OF 5	247+00	264+23		4,066	4,277	
CSJ 0338-01-069 TOTAL				7,049	7,474	
PHASE 1 SUB TOTAL			1,089	20,696	24,203	1,130

SUMMARY OF TRAFFIC CONTROL ITEMS (PHASE 2)

SH 105 TCP LAYOUT	FROM STATION	TO STATION	662 6005	662 6008	662 6012	662 6037	662 6049	662 6051	662 6057	662 6059
			WK ZN PAV MRK NON-REMOV (W)6"(BRK)	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	WK ZN PAV MRK REMOV (REFL) TY I-C	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (TRAF BTN) TY W	WK ZN PAV MRK REMOV (TRAF BTN) TY Y
			LF	LF	LF	LF	LF	LF	LF	LF
PROJECT NAME										
CSJ 0338-01-070										
PHASE 2 SHEET 1 OF 5	223+00	234+66		2,332		2,332	2,332	2,332		
PHASE 2 SHEET 2 OF 5	264+23	271+00	169	1,354		1,354	1,354	1,354		
PHASE 2 SHEET 3 OF 5	271+00	295+00	143	3,310		3,306	4,798	4,798	1,488	1,492
PHASE 2 SHEET 4 OF 5	295+00	319+00		3,144	134	6,082	4,634	7,572	1,490	1,490
PHASE 2 SHEET 5 OF 5	319+00	END					400	400	400	400
CSJ 0338-01-070 TOTAL			312	10,140	134	13,074	13,518	16,456	3,378	3,382
CSJ 0338-01-069										
PHASE 2 SHEET 1 OF 5	234+66	247+00	275	2,383		2,298	2,383	2,298		
PHASE 2 SHEET 2 OF 5	247+00	264+23	431	2,930		3,276	2,930	3,276		
CSJ 0338-01-069 TOTAL			706	5,313		5,574	5,313	5,574		
PHASE 2 SUB TOTAL			1,018	15,453	134	18,648	18,831	22,030	3,378	3,382

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TBPE REGISTRATION NO. F-18341

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		22

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF TRAFFIC CONTROL ITEMS (PHASE 3)

SH 105 TCP LAYOUT	FROM STATION	TO STATION	354 6021	662 6057	662 6059
			PLANE ASPH CONC PAV(0" TO 2")	WK ZN PAV MRK REMOV (TRAF BTN) TY W	WK ZN PAV MRK REMOV (TRAF BTN) TY Y
			SY	LF	LF
PROJECT NAME					
CSJ 0338-01-070					
PHASE 3 SHEET 1 OF 7	79+00	103+00	541	5,400	5,970
PHASE 3 SHEET 2 OF 7	103+00	127+00		4,799	5,567
PHASE 3 SHEET 3 OF 7	127+00	143+06		3,127	3,042
PHASE 3 SHEET 5 OF 7	196+39	199+00		432	342
PHASE 3 SHEET 6 OF 7	199+00	223+00		4,800	4,800
PHASE 3 SHEET 7 OF 7	223+00	234+66	539	200	200
CSJ 0338-01-070 TOTAL			1,080	18,758	19,921
CSJ 0338-01-068					
PHASE 3 SHEET 3 OF 7	143+06	151+00		1,588	1,588
PHASE 3 SHEET 4 OF 7	151+00	175+00		5,080	6,421
PHASE 3 SHEET 5 OF 7	175+00	196+39		4,201	4,126
CSJ 0338-01-068 TOTAL				10,869	12,135
PHASE 3 SUB TOTAL			1,080	29,627	32,056

SUMMARY OF TRAFFIC CONTROL ITEMS (PHASE 4)

SH 105 TCP LAYOUT	FROM STATION	TO STATION	662 6008	662 6012	662 6037	662 6049	662 6051
			WK ZN PAV MRK NON-REMOV (W)6"(SLD)	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	WK ZN PAV MRK REMOV (REFL) TY I-C	WK ZN PAV MRK REMOV (REFL) TY II-A-A
			LF	LF	LF	LF	LF
PROJECT NAME							
CSJ 0338-01-070							
PHASE 4 SHEET 1 OF 7	79+00	103+00	4,728	672	5,970	5,400	5,970
PHASE 4 SHEET 2 OF 7	103+00	127+00	4,801		5,569	4,801	5,569
PHASE 4 SHEET 3 OF 7	127+00	143+06	3,128		3,042	3,128	3,042
PHASE 4 SHEET 5 OF 7	196+39	199+00	433		342	433	342
PHASE 4 SHEET 6 OF 7	199+00	223+00	4,800		4,800	4,800	4,800
PHASE 4 SHEET 7 OF 7	223+00	234+66	200		200	200	200
CSJ 0338-01-070 TOTAL			18,090	672	19,923	18,762	19,923
CSJ 0338-01-068							
PHASE 4 SHEET 3 OF 7	143+06	151+00	1,588		1,587	1,588	1,587
PHASE 4 SHEET 4 OF 7	151+00	175+00	4,740	510	6,801	5,250	6,801
PHASE 4 SHEET 5 OF 7	175+00	196+39	4,206		4,130	4,206	4,130
CSJ 0338-01-068 TOTAL			10,534	510	12,518	11,044	12,518
PHASE 4 SUB TOTAL			28,624	1182	32,441	29,806	32,441

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

SHEET 2 OF 16

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		23

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF TRAFFIC CONTROL ITEMS (PHASE 5)

SH 105 TCP LAYOUT	FROM STATION	TO STATION	354 6021	662 6057	662 6059	677 6001	677 6002	677 6008	677 6012
			PLANE ASPH CONC PAV(0" TO 2")	WK ZN PAV MRK REMOV (TRAF BTN) TY W	WK ZN PAV MRK REMOV (TRAF BTN) TY Y	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (6")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)
			SY	LF	LF	LF	LF	EA	EA
PROJECT NAME									
CSJ 0338-01-070									
PHASE 5 SHEET 1 OF 2	BEGIN	67+00	700	3,361	4,739	189	100	4	2
PHASE 5 SHEET 2 OF 2	67+00	91+00	541	3,530	3,870				
CSJ 0338-01-070 TOTAL			1,241	6,891	8,609	189	100	4	2
PHASE 5 SUB TOTAL			1,241	6,891	8,609	189	100	4	2

SUMMARY OF TRAFFIC CONTROL ITEMS (PHASE 6)

SH 105 TCP LAYOUT	FROM STATION	TO STATION	662 6008	662 6012	662 6037	662 6049	662 6051	662 6057	662 6059
			WK ZN PAV MRK NON-REMOV (W)6"(SLD)	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	WK ZN PAV MRK REMOV (REFL) TY I-C	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (TRAF BTN) TY W	WK ZN PAV MRK REMOV (TRAF BTN) TY Y
			LF	LF	LF	LF	LF	LF	LF
PROJECT NAME									
CSJ 0338-01-070									
PHASE 6 SHEET 1 OF 2	BEGIN	67+00	2,451	511	3,181	3,352	4,741	390	1,560
PHASE 6 SHEET 2 OF 2	67+00	91+00	340		680	340	680		
CSJ 0338-01-070 TOTAL			2,791	511	3,861	3,692	5,421	390	1,560
PHASE 6 SUB TOTAL			2,791	511	3,861	3,692	5,421	390	1,560

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

SHEET 3 OF 16

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		24

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF TRAFFIC CONTROL ITEMS (OVERALL)

SH 105 TCP LAYOUT	(1) 351 6002	(1) 351 6011	354 6021	662 6005	662 6008	662 6012	662 6037	662 6049	662 6051
	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	FLEXIBLE PAVEMENT STRUCTURE REPAIR(18")	PLANE ASPH CONC PAV(0" TO 2")	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	WK ZN PAV MRK REMOV (REFL) TY I-C	WK ZN PAV MRK REMOV (REFL) TY II-A-A
	SY	SY	SY	LF	LF	LF	LF	LF	LF
PROJECT NAME									
CSJ 0338-01-070									
PHASE 1			1,089						
PHASE 2				312	10,140	134	13,074	13,518	16,456
PHASE 3			1,080						
PHASE 4					18,090	672	19,923	18,762	19,923
PHASE 5			1,241						
PHASE 6					2,791	511	3,861	3,692	5,421
CSJ 0338-01-070 TOTAL	175	700	3,410	312	31,021	1317	36,858	35,972	41,800
CSJ 0338-01-068									
PHASE 3									
PHASE 4					10,534	510	12,518	11,044	12,518
CSJ 0338-01-068 TOTAL	140	270			10,534	510	12,518	11,044	12,518
CSJ 0338-01-069									
PHASE 1									
PHASE 2				706	5,313		5,574	5,313	5,574
PHASE 3									
PHASE 4									
CSJ 0338-01-069 TOTAL	50	115		706	5,313		5,574	5,313	5,574
PROJECT TOTAL	365	1,085	3,410	1,018	46,868	1827	54,950	52,329	59,892

SUMMARY OF TRAFFIC CONTROL ITEMS (OVERALL)

SH 105 TCP LAYOUT	662 6057	662 6059	677 6001	677 6002	677 6008	677 6012	6001 6002	6185 6002	6185 6005
	WK ZN PAV MRK REMOV (TRAF BTN) TY W	WK ZN PAV MRK REMOV (TRAF BTN) TY Y	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (6")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	LF	LF	LF	LF	EA	EA	EA	DAY	DAY
PROJECT NAME									
CSJ 0338-01-070									
PHASE 1	13,647	16,729	1,130					20	1
PHASE 2	3,378	3,382						20	1
PHASE 3	18,758	19,921						20	1
PHASE 4								20	1
PHASE 5	6,891	8,609	189	100	4	2		20	1
PHASE 6	390	1,560						20	1
CSJ 0338-01-070 TOTAL	43,064	50,201	1,319	100	4	2		120	6
CSJ 0338-01-068									
PHASE 3	10,869	12,135						10	1
PHASE 4								10	1
CSJ 0338-01-068 TOTAL	10,869	12,135					2	20	2
CSJ 0338-01-069									
PHASE 1	7,049	7,474						10	1
PHASE 2								10	1
PHASE 3									
PHASE 4									
CSJ 0338-01-069 TOTAL	7,049	7,474						20	2
PROJECT TOTAL	60,982	69,810	1,319	100	4	2	2	160	10

NOTES:

1. CONTRACTOR TO UTILIZE ITEM 351 AS DIRECTED BY THE ENGINEER.

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TBPE REGISTRATION NO. F-18341

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		25

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF REMOVAL ITEMS

SH 105 REMOVAL LAYOUT	FROM STATION	TO STATION	100 6002	104 6017	105 6043	105 6094	354 6045	354 6100	496 6002	496 6008	496 6004	496 6007	(1) 544 6003
			PREPARING ROW	REMOVING CONC (DRIVEWAYS)	REMOVING STAB BASE & ASPH PAV (0-6")	REMOVING STAB BASE & ASPH PAV(12"-27")	PLANE ASPH CONC PAV (2")	PLANE ASPH CONC PAV (5")	REMOV STR (INLET)	REMOV STR (BOX CULVERT)	REMOV STR (SET)	REMOV STR (PIPE)	GUARDRAIL END TREATMENT (REMOVE)
			STA	SY	SY	SY	SY	SY	EA	LF	EA	LF	EA
PROJECT NAME													
CSJ 0338-01-070													
SHEET 1 OF 12	52+45	67+00	14	20	196	933	7,549	248				20	
SHEET 2 OF 12	67+00	91+00	24		191	1,123	11,711	323			2	74	
SHEET 3 OF 12	91+00	115+00	24	70	513	1,716	12,078	410				85	
SHEET 4 OF 12	115+00	139+00	24	198	809	2,670	8,000	533			2	82	
SHEET 5 OF 12	139+00	143+06	4			428	1,353	90					
SHEET 7 OF 12	196+39	211+00	14		509	1,345	5,379	325				110	
SHEET 8 OF 12	211+00	234+66	23			1,165	11,137	256					
SHEET 10 OF 12	264+23	283+00	19		407	1,452	8,927	336			6	178	
SHEET 11 OF 12	283+00	307+00	24		666	2,218	9,029	299				35	4
SHEET 12 OF 12	307+00	316+55	9		189	976	3,506	213					
CSJ 0338-01-070 TOTAL			179	288	3,480	14,026	78,669	3,033			10	584	4
CSJ 0338-01-068													
SHEET 5 OF 12	143+06	163+00	20		1,235	1,871	7,873	445	1	3	2	321	
SHEET 6 OF 12	163+00	187+00	24		1,183	2,453	10,041	535			2	241	
SHEET 7 OF 12	187+00	196+39	9		354	1,097	3,130	209				73	
CSJ 0338-01-068 TOTAL			53		2,772	5,421	21,044	1,189	1	3	4	635	
CSJ 0338-01-069													
SHEET 8 OF 12	234+66	235+00				28	160	8					
SHEET 9 OF 12	235+00	259+00	24	99	1,005	1,877	11,599	533			10	319	
SHEET 10 OF 12	259+00	264+23	5			399	2,557	116					
CSJ 0338-01-069 TOTAL			29	99	1,005	2,304	14,316	657			10	319	
PROJECT TOTAL			261	387	7,257	21,751	114,029	4,879	1	3	24	1,538	4

NOTES:

1. DISPOSAL SHALL BE DIRECTED BY THE ENGINEER.

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

SHEET 5 OF 16

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		26

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF ROADWAY ITEMS

SH 105 PLAN & PROFILE	FROM STATION	TO STATION	(2) 110 6001	(2) 132 6006	247 6231	(1) 260 6027	(1) 275 6010	(3) 310 6028	432 6045	540 6001	540 6016	544 6001	(3) 3077 6003		(3) 3077 6022	(3) 3077 6075
			EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS CONT)(TY C)	FL BS (CMP IN PLACE)(TY A GR 1-2)(10")	LIME TRT (EXST MATL)(8")	CEMENT TREAT (SUBGRADE) (8")	PRIME COAT (MC-30 OR EC-30)	RIPRAP (MOW STRIP)(4 IN)	MTL W-BEAM GD FEN (TIM POST)	DOWNSTREAM ANCHOR TERMINAL SECTION	GUARDRAIL END TREATMENT (INSTALL)	SP MIXESSP-BSAC-B PG64-22		SP MIXESSP-CSAC-A PG70-22	TACK COAT
			CY	CY	SY	SY	SY	SY	CY	LF	EA	EA	SY	SY	SY	SY
													(5")	LEVEL UP	(2")	
PROJECT NAME																
CSJ 0338-01-070																
SHEET 1 OF 23	52+45	55+00	35	8											1,760	1,760
SHEET 2 OF 23	55+00	67+00	1,733	271	3,183	1,135	3,405	3,183					3,102	197	8,487	14,887
SHEET 3 OF 23	67+00	79+00	1,064	377	2,384	860	2,580	2,384					2,313	642	7,732	12,998
SHEET 4 OF 23	79+00	91+00	293	233	682	257	772	682	1				650	470	6,419	8,186
SHEET 5 OF 23	91+00	103+00	437	234	1,018	382	1,145	1,018	24	237.5	2	2	971	354	7,930	10,224
SHEET 6 OF 23	103+00	115+00	1,296	603	3,410	1,214	3,643	3,410					3,325	625	7,780	15,053
SHEET 7 OF 23	115+00	127+00	1,623	794	4,560	1,598	4,795	4,560					4,474	107	8,042	17,094
SHEET 8 OF 23	127+00	139+00	1,715	546	4,406	1,547	4,642	4,406					4,320		7,889	16,528
SHEET 9 OF 23	139+00	143+06	329	1,220	1,455	511	1,534	1,455					1,425		2,633	5,483
SHEET 13 OF 23	196+39	199+00	288	827	997	350	1,049	997					979	20	1,755	3,731
SHEET 14 OF 23	199+00	211+00	1,389	492	3,772	1,336	4,007	3,772					3,686	808	7,763	15,941
SHEET 15 OF 23	211+00	223+00	806	305	1,269	457	1,372	1,269					1,231	40	6,295	8,796
SHEET 16 OF 23	223+00	234+66	471	185	1,056	393	1,178	1,056	28	325	2	2	1,012	253	6,672	8,947
SHEET 19 OF 23	264+23	271+00	625	250	1,899	677	2,031	1,899					1,850	451	4,841	8,991
SHEET 20 OF 23	271+00	283+00	842	482	2,143	769	2,307	2,143					2,083	499	7,475	12,139
SHEET 21 OF 23	283+00	295+00	166	68	446	158	474	446				4	436		4,481	5,353
SHEET 22 OF 23	295+00	307+00	1,543	406	3,399	1,211	3,634	3,399					3,313		7,814	14,438
SHEET 23 OF 23	307+00	316+55	1,037	356	2,717	968	2,905	2,717					2,649	325	5,810	11,432
CSJ 0338-01-070 TOTAL			15,692	7,657	38,796	13,823	41,473	38,796	53	562.5	4	8	37,819	4,791	111,578	191,981
CSJ 0338-01-068																
SHEET 9 OF 23	143+06	151+00	944	583	2,506	887	2,662	2,506					2,449	519	5,148	10,563
SHEET 10 OF 23	151+00	163+00	1,334	544	3,410	1,215	3,646	3,410					3,324	815	7,780	15,240
SHEET 11 OF 23	163+00	175+00	1,010	255	2,418	884	2,653	2,418					2,331	726	7,780	13,167
SHEET 12 OF 23	175+00	187+00	1,612	882	4,177	1,471	4,412	4,177					4,091	128	7,819	16,127
SHEET 13 OF 23	187+00	196+39	1,058	1,509	4,016	1,400	4,200	4,016					3,949		6,741	14,638
CSJ 0338-01-068 TOTAL			5,958	3,773	16,527	5,857	17,573	16,527					16,144	2,188	35,268	69,735
CSJ 0338-01-069																
SHEET 16 OF 23	234+66	235+00	41	64	86	31	93	86					83	24	231	420
SHEET 17 OF 23	235+00	247+00	1,462	529	3,612	1,283	3,848	3,612					3,526	797	8,828	16,676
SHEET 18 OF 23	247+00	259+00	1,380	367	3,477	1,237	3,712	3,477					3,390	568	8,692	16,040
SHEET 19 OF 23	259+00	264+23	496	502	1,468	523	1,570	1,468					1,430	89	3,742	6,689
CSJ 0338-01-069 TOTAL			3,379	1,462	8,643	3,074	9,223	8,643					8,429	1,478	21,493	39,825
PROJECT TOTAL			25,029	12,892	63,966	22,754	68,269	63,966	53	562.5	4	8	62,392	8,457	168,339	301,541

NOTES:

1. PRIOR TO PERFORMING CEMENT TREATMENT OF SUBGRADE, THE CONTRACTOR SHALL TEST THE PLASTICITY INDEX (PI) OF THE SOIL AT INTERVALS DIRECTED BY THE ENGINEER. WHERE PI IS FOUND GREATER THAN 30, THE CONTRACTOR SHALL PERFORM LIME STABILIZATION AT THE DEPTH AND LIMITS REQUIRED BY THE ENGINEER, INCLUDING MELLOWING, TO BE FOLLOWED BY PERFORMING CEMENT STABILIZATION.

2. REFER TO SUMMARY OF EARTHWORK ITEMS FOR EARTHWORK BREAKDOWN BY HALF STATION. QUANTITY BY LAYOUT IS REFLECTED IN THE SUMMARY OF ROADWAY ITEMS.

3. QUANTITY CALCULATED IN SQUARE YARDS FOR CONTRACTOR INFORMATION ONLY. SEE BASIS OF ESTIMATE FOR CONVERSION OF CALCULATED AREA TO STANDARD PAY ITEM UNIT.

SH 105

SUMMARY OF QUANTITIES

SHEET 6 OF 16

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		27

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CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF DRIVEWAY DETAILS

DRIVEWAY NO.	STATION	EXISTING DRIVEWAY MATERIAL	TYPE	PROPOSED PIPE	(1) L (LENGTH) FT	(1) W (WIDTH) FT	(1) R1/R2 (RADII) FT		464 6003 RC PIPE (CL III)(18 IN) LF	464 6005 RC PIPE (CL III)(24 IN) LF	467 6363 SET (TY II) (18 IN) (RCP) (6: 1) (P) EA	467 6395 SET (TY II) (24 IN) (RCP) (6: 1) (P) EA	(1) 530 6005 DRIVEWAYS (ACP) SY	(1) 530 6020 DRIVEWAYS (CONC)(TYPE 1) SY	(1) 530 6028 DRIVEWAYS (CONC)(TYPE 2) SY	560 6003 MAILBOX INSTALL-M (TWG-POST) TY 1 EA	560 6007 MAILBOX INSTALL-S (WC-POST) TY 3 EA	560 6008 MAILBOX INSTALL-D (WC-POST) TY 3 EA
PROJECT NAME																		
CSJ 0338-01-070																		
DW2-1	56+10.65 LT	ASPHALT	RESIDENTIAL		15	14	15	15					34					
CR 4154	56+20.05 RT	ASPHALT	COMMERCIAL		* SEE NOTE 3 *									35				
DW2-2	59+20.86 LT	ASPHALT	RESIDENTIAL		34	14	15	15					63					
DW2-3	61+99.98 LT	ASPHALT	RESIDENTIAL	18" X 27' RCP	27	14	15	15	27		2		53					
DW2-4	63+00.00 LT	ASPHALT	RESIDENTIAL		27	18	25	25					78			1		
DW3-1	67+55.65 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	62	15	15	15	26		2		106				1	
DW3-2	68+85.56 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	27	14	15	15	26		2		52					
DW3-3	67+55.58 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	29	14	15	15	26		2		55					
DW4-1	87+36.43 LT	GRAVEL	RESIDENTIAL		45	14	15	15					82					
DW5-1	100+73.56 LT	GRAVEL	RESIDENTIAL		26	14	15	15					50					
CR 446	102+08.95 LT	ASPHALT	COMMERCIAL		29	22	25	25					102					
DW6-1	105+27.46 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	51	14	15	15	26		2		91				1	
DW6-2	105+48.70 RT	CONCRETE	RESIDENTIAL		59	10	15	15							74			
DW6-3	108+21.84 LT	ASPHALT	RESIDENTIAL		42	14	15	15					75				1	
DW6-4	109+06.75 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	46	14	15	15	26		2		81					
DW6-5	109+98.24 LT	GRAVEL	RESIDENTIAL		54	15	11	15					96					
DW6-6	110+34.28 LT	GRAVEL	RESIDENTIAL	18" X 65' RCP	59	15	15	11	65		2		105			1	2	
DW7-1	115+68+12 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	116	14	15	15	26		2		191				1	
DW7-2	117+77.39 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	89	14	15	15	26		2		148				1	
DW7-3	121+44.67 LT	ASPHALT	RESIDENTIAL		53	14	15	15					92					1
DW7-4	123+40.00 LT	ASPHALT	RESIDENTIAL		52	15	15	15					91					1
DW8-1	129+54.57 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	48	14	15	15	26		2		85					1
CR 415	130+11.95 RT	ASPHALT	COMMERCIAL		35	20	30	30					134					
DW8-2	131+01.22 LT	CONCRETE	RESIDENTIAL	18" X 36' RCP	75	24	15	15	36		2			210			1	
DW8-3	134+02.17 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	68	14	15	15	26		2		116				1	
CR 417	198+20.94 RT	ASPHALT	COMMERCIAL		41	22	30	40					173					
DW14-1	200+75.83 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	24	14	15	15	26		2		47			1		
DW14-2	200+95.50 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	88	14	15	15	26		2		148					
DW14-3	210+70.45 LT	GRAVEL	RESIDENTIAL	18" X 36' RCP	83	14	15	15	36		2		139					
DW14-4	210+68.66 RT	GRAVEL	RESIDENTIAL	18" X 36' RCP	34	14	15	15	36		2		63					
DW19-1	265+46.07 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	31	14	15	15	26		2		59				1	
DW19-2	269+81.44 LT	ASPHALT	RESIDENTIAL	24" X 26' RCP	43	14	15	15		26		2	79				1	
DW20-1	271+03.72 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	31	14	15	15	26		2		59				1	
DW20-2	271+92.77 LT	ASPHALT	RESIDENTIAL	24" X 36' RCP	45	14	15	15		36		2	80				1	
DW20-3	275+20.66 LT	ASPHALT	RESIDENTIAL	24" X 36' RCP	40	14	15	15		36		2	72				1	
DW20-4	274+68.55 RT	GRAVEL	RESIDENTIAL	2-18" X 26' RCP	35	14	15	15	52		4		65					
DW20-5	278+45.64 LT	GRAVEL	RESIDENTIAL	24" X 26' RCP	33	14	15	15		26		2	61					
DW22-1	299+28.25 RT	ASPHALT	COMMERCIAL	18" X 56' RCP	33	40	25	25	56		2		176					
DW22-2	299+55.88 LT	ASPHALT	RESIDENTIAL		46	28	25	25					173					
DW22-3	301+21.36 LT	ASPHALT	RESIDENTIAL	18" X 46' RCP	25	28	25	25	46		2		110				1	
FM 362	302+09.36 RT	ASPHALT	COMMERCIAL		19	76	115	45					235					
CR 412	304+79.07 LT	ASPHALT	COMMERCIAL		33	20	30	30					118				1	
DW23-1	313+97.56 LT	GRAVEL	RESIDENTIAL		66	14	15	15					113					
DW23-2	315+34.32 LT	GRAVEL	RESIDENTIAL		68	14	15	15					117					
CSJ 0338-01-070 TOTAL									692	124	44	8	4,067	245	74	3	16	3

NOTES:

1. REFER TO DRIVEWAY DETAILS FOR MORE INFORMATION.
2. REFER TO DW10-8 DRAINAGE DETAILS FOR MORE INFORMATION.
3. REFER TO ROADWAY PLAN & PROFILE SHEETS FOR MORE INFORMATION.

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JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		28

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF DRIVEWAY DETAILS

DRIVEWAY NO.	STATION	EXISTING DRIVEWAY MATERIAL	TYPE	PROPOSED PIPE	(1) L (LENGTH)	(1) W (WIDTH)	(1) R1/R2 (RADII)		(2) 462 6001 CONC BOX CULV (3 FT X 2 FT)	464 6003 RC PIPE (CL III)(18 IN)	464 6005 RC PIPE (CL III)(24 IN)	(2) 465 6127 INLET (COMPL)(PSL)(FG)(4FTX4FT-3FTX3FT)	467 6363 SET (TY II) (18 IN) (RCP) (6: 1) (P)	467 6395 SET (TY II) (24 IN) (RCP) (6: 1) (P)	(1) 530 6005 DRIVEWAYS (ACP)	(1) 530 6020 DRIVEWAYS (CONC)(TYPE 1)	(1) 530 6028 DRIVEWAYS (CONC)(TYPE 2)	560 6003 MAILBOX INSTALL-M (TWG-POST) TY 1	560 6007 MAILBOX INSTALL-S (WC-POST) TY 3	560 6008 MAILBOX INSTALL-D (WC-POST) TY 3
					FT	FT	FT		LF	LF	LF	EA	EA	EA	SY	SY	SY	EA	EA	EA
CSJ 0338-01-068																				
DW9-1	145+90.57 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	68	14	15	15		26			2		117				1	
DW9-2	148+65.00 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	65	14	15	15		26			2		112					
DW9-3	149+56.42 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	60	14	15	15		26			2		104			1		
DW9-4	149+16.88 RT	GRAVEL	RESIDENTIAL	18" X 36' RCP	32	28	25	25		36			2		127					
DW10-1	151+11.98 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	59	14	15	15		26			2		103					
DW10-2	152+24.47 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	60	15	15	15		26			2		104			1		
DW10-3	151+48.84 RT	GRAVEL	RESIDENTIAL		32	14	15	15							61					
DW10-4	153+72.70 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	59	14	15	15		26			2		103					
DW10-5	155+09.25 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	59	14	15	15		26			2		103				1	
DW10-6	157+01.92 RT	GRAVEL	RESIDENTIAL		35	24	15	15							104					
DW10-7	157+73.72 LT	GRAVEL	RESIDENTIAL		59	14	15	15							103			1	1	
DW10-8	159+17.79 LT	GRAVEL	RESIDENTIAL	* SEE NOTE 2 *	60	14	15	15	3	36		1	1		103					
DW10-9	159+60.19 RT	GRAVEL	RESIDENTIAL		37	14	15	15							67					
DW10-10	160+24.70 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	60	14	15	15		26			2		103				2	
DW10-11	161+00.14 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	60	14	15	15		26			2		103				2	
DW10-12	161+81.73 RT	GRAVEL	RESIDENTIAL		38	14	15	15							69					
DW10-13	162+25.58 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	60	14	15	15		26					103				1	
DW11-1	163+39.24 RT	GRAVEL	RESIDENTIAL		39	14	15	15							70					
DW11-2	163+51.86 LT	GRAVEL	RESIDENTIAL		60	14	15	15							104				1	
DW11-3	167+65.53 RT	CONCRETE	RESIDENTIAL		41	18	15	15								92			1	1
DW11-4	168+61.44 RT	GRAVEL	RESIDENTIAL		41	14	15	15							74					
CR 410	169+98.99 LT	ASPHALT	COMMERCIAL	18" X 56' RCP	38	20	30	30		56			2		129					
DW11-5	170+65.21 RT	GRAVEL	COMMERCIAL	18" X 36' RCP	42	20	15	15		36			2		104				1	
DW11-6	174+55.79 RT	GRAVEL	RESIDENTIAL	18" X 26' RCP	44	14	15	15		26			2		79					
DW12-1	176+07.73 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	75	14	15	15		26			2		128				1	
DW12-2	176+14.90 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	46	14	15	15		26			2		82				1	
DW12-3	180+91.79 RT	GRAVEL	RESIDENTIAL	18" X 26' RCP	64	14	15	15		26			2		111					
DW12-4	181+60.59 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	24	14	15	15		26			2		48					
DW12-5	182+86.79 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	19	14	15	15		26			2		42			1		
DW12-6	185+12.35 LT	ASPHALT	RESIDENTIAL		69	14	15	15							117					
CR 407	185+71.52 LT	ASPHALT	COMMERCIAL		36	20	30	30							136			2		
DW12-7	186+76.58 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	50	14	15	15		26			2		88					
DW13-1	187+48.28 RT	ASPHALT	RESIDENTIAL		36	14	15	15							66					
DW13-2	187+90.14 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	50	14	15	15		26			2		88				1	
DW13-3	190+31.45 LT	GRAVEL	RESIDENTIAL	18" X 26' RCP	51	14	15	15		26			2		90			1		
DW13-4	190+98.95 LT	ASPHALT	RESIDENTIAL	18" X 26' RCP	53	14	15	15		26			2		93					
DW13-5	191+81.50 RT	ASPHALT	RESIDENTIAL		43	14	15	15							76			1		
CSJ 0338-01-068 TOTAL									3	684		1	45		3,414	92		8	14	1
CSJ 0338-01-069																				
DW17-1	237+00.16 LT	ASPHALT	RESIDENTIAL	18" X 36' RCP	55	14	15	15		36			2		95					1
DW17-2	237+16.54 RT	GRAVEL	RESIDENTIAL	18" X 26' RCP	41	14	15	15		26			2		75					
CR 417	239+60.40 RT	ASPHALT	COMMERCIAL		33	20	30	30							116					
DW17-3	241+62.16 LT	GRAVEL	RESIDENTIAL	18" X 36' RCP	53	14	15	15		36			2		93					
DW17-4	242+62.39 LT	GRAVEL	RESIDENTIAL	18" X 36' RCP	49	14	15	15		36			2		87				1	
DW17-5	243+35.31 LT	ASPHALT	RESIDENTIAL	18" X 36' RCP	50	14	15	15		36			2		89					
DW17-6	244+25.86 LT	CONCRETE	RESIDENTIAL	18" X 36' RCP	54	14	15	15		36			2			94			1	
DW18-1	249+26.00 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	54	14	15	15		26			2		93					
CR 334	250+00.00 LT	ASPHALT	COMMERCIAL		15	16	15	15							38					
CR 314	249+96.99 RT	ASPHALT	COMMERCIAL		54	18	40	40							208					
DW18-2	251+79.29 RT	GRAVEL	RESIDENTIAL	18" X 26' RCP	33	14	15	15		26			2		62					
DW18-3	255+78.84 RT	ASPHALT	RESIDENTIAL	18" X 26' RCP	33	14	15	15		26			2		61				2	1
DW18-4	257+06.67 RT	GRAVEL	RESIDENTIAL	18" X 26' RCP	30	14	15	15		26			2		58					
CSJ 0338-01-069 TOTAL										310			20		1,075	94			4	2
PROJECT TOTAL									3	1,686	124	1	109	8	8,556	431	74	11	34	6

NOTES:

1. REFER TO DRIVEWAY DETAILS FOR MORE INFORMATION.
2. REFER TO DW10-8 DRAINAGE DETAILS FOR MORE INFORMATION.
3. REFER TO ROADWAY PLAN & PROFILE SHEETS FOR MORE INFORMATION.

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JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		29

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY) CY	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C) CY
PROJECT NAME		
CSJ 0338-01-070		
STA 52+45 TO STA 52+50	1	1
STA 52+50 TO STA 53+00	1	1
STA 53+00 TO STA 53+33	1	1
STA 53+33 TO STA 53+50	1	1
STA 53+50 TO STA 53+54	1	1
STA 53+54 TO STA 54+00	1	1
STA 54+00 TO STA 54+50	2	1
STA 54+50 TO STA 55+00	27	1
STA 55+00 TO STA 55+50	44	3
STA 55+50 TO STA 56+00	34	11
STA 56+00 TO STA 56+50	48	10
STA 56+50 TO STA 57+00	97	4
STA 57+00 TO STA 57+50	122	5
STA 57+50 TO STA 58+00	100	5
STA 58+00 TO STA 58+50	75	8
STA 58+50 TO STA 59+00	70	9
STA 59+00 TO STA 59+50	82	8
STA 59+50 TO STA 60+00	78	9
STA 60+00 TO STA 60+50	57	12
STA 60+50 TO STA 61+00	47	20
STA 61+00 TO STA 61+50	50	21
STA 61+50 TO STA 62+00	70	12
STA 62+00 TO STA 62+50	69	13
STA 62+50 TO STA 63+00	74	15
STA 63+00 TO STA 63+50	66	21
STA 63+50 TO STA 64+00	73	23
STA 64+00 TO STA 64+50	106	10
STA 64+50 TO STA 65+00	96	3
STA 65+00 TO STA 65+50	74	7
STA 65+50 TO STA 66+00	56	13
STA 66+00 TO STA 66+50	63	13
STA 66+50 TO STA 67+00	82	16
STA 67+00 TO STA 67+50	92	22
STA 67+50 TO STA 68+00	73	26
STA 68+00 TO STA 68+50	75	33
STA 68+50 TO STA 69+00	69	28
STA 69+00 TO STA 69+50	52	22
STA 69+50 TO STA 70+00	67	22
STA 70+00 TO STA 70+50	60	18
STA 70+50 TO STA 71+00	53	19
STA 71+00 TO STA 71+50	49	14
STA 71+50 TO STA 72+00	53	8
STA 72+00 TO STA 72+50	51	9
STA 72+50 TO STA 73+00	45	13
STA 73+00 TO STA 73+50	45	16
STA 73+50 TO STA 74+00	47	17
STA 74+00 TO STA 74+50	47	17
STA 74+50 TO STA 75+00	31	15
STA 75+00 TO STA 75+50	20	8
STA 75+50 TO STA 76+00	20	9
STA 76+00 TO STA 76+50	18	15
STA 76+50 TO STA 77+00	18	15
STA 77+00 TO STA 77+50	19	10
STA 77+50 TO STA 78+00	22	4
STA 78+00 TO STA 78+50	20	6
STA 78+50 TO STA 79+00	18	11
STA 79+00 TO STA 79+50	18	13
STA 79+50 TO STA 80+00	18	8
STA 80+00 TO STA 80+50	17	6
STA 80+50 TO STA 81+00	10	6
STA 81+00 TO STA 81+50	2	4
STA 81+50 TO STA 82+00	4	4
STA 82+00 TO STA 82+50	4	5
STA 82+50 TO STA 83+00	1	9
STA 83+00 TO STA 83+50	1	7

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY) CY	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C) CY
PROJECT NAME		
CSJ 0338-01-070		
STA 83+50 TO STA 84+00	1	6
STA 84+00 TO STA 84+50	1	9
STA 84+50 TO STA 85+00	3	8
STA 85+00 TO STA 85+50	3	9
STA 85+50 TO STA 86+00	1	13
STA 86+00 TO STA 86+50	1	13
STA 86+50 TO STA 87+00	8	14
STA 87+00 TO STA 87+50	16	15
STA 87+50 TO STA 88+00	20	16
STA 88+00 TO STA 88+50	24	15
STA 88+50 TO STA 89+00	23	16
STA 89+00 TO STA 89+50	23	16
STA 89+50 TO STA 90+00	28	8
STA 90+00 TO STA 90+50	33	4
STA 90+50 TO STA 91+00	33	9
STA 91+00 TO STA 91+50	31	17
STA 91+50 TO STA 92+00	23	19
STA 92+00 TO STA 92+50	18	18
STA 92+50 TO STA 93+00	18	15
STA 93+00 TO STA 93+50	18	11
STA 93+50 TO STA 94+00	20	9
STA 94+00 TO STA 94+50	20	9
STA 94+50 TO STA 95+00	10	4
STA 95+00 TO STA 95+50	18	6
STA 95+50 TO STA 96+00	18	5
STA 96+00 TO STA 96+50	18	5
STA 96+50 TO STA 97+00	17	6
STA 97+00 TO STA 97+50	17	6
STA 97+50 TO STA 98+00	17	7
STA 98+00 TO STA 98+50	17	7
STA 98+50 TO STA 99+00	17	7
STA 99+00 TO STA 99+50	17	6
STA 99+50 TO STA 100+00	17	7
STA 100+00 TO STA 100+50	17	10
STA 100+50 TO STA 101+00	17	12
STA 101+00 TO STA 101+50	17	9
STA 101+50 TO STA 102+00	17	9
STA 102+00 TO STA 102+50	19	12
STA 102+50 TO STA 103+00	19	18
STA 103+00 TO STA 103+50	24	31
STA 103+50 TO STA 104+00	33	40
STA 104+00 TO STA 104+50	34	36
STA 104+50 TO STA 105+00	77	19
STA 105+00 TO STA 105+50	76	4
STA 105+50 TO STA 106+00	57	5
STA 106+00 TO STA 106+50	66	24
STA 106+50 TO STA 107+00	52	43
STA 107+00 TO STA 107+50	51	40
STA 107+50 TO STA 108+00	53	22
STA 108+00 TO STA 108+50	55	13
STA 108+50 TO STA 109+00	56	13
STA 109+00 TO STA 109+50	57	18
STA 109+50 TO STA 110+00	59	16
STA 110+00 TO STA 110+50	57	9
STA 110+50 TO STA 111+00	46	20
STA 111+00 TO STA 111+50	43	29
STA 111+50 TO STA 112+00	44	31
STA 112+00 TO STA 112+50	45	37
STA 112+50 TO STA 113+00	50	39
STA 113+00 TO STA 113+50	53	31
STA 113+50 TO STA 114+00	54	26
STA 114+00 TO STA 114+50	69	27
STA 114+50 TO STA 115+00	85	30
STA 115+00 TO STA 115+50	76	19
STA 115+50 TO STA 116+00	65	21

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY) CY	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C) CY
PROJECT NAME		
CSJ 0338-01-070		
STA 116+00 TO STA 116+50	69	31
STA 116+50 TO STA 117+00	76	25
STA 117+00 TO STA 117+50	71	15
STA 117+50 TO STA 118+00	59	5
STA 118+00 TO STA 118+50	65	11
STA 118+50 TO STA 119+00	68	20
STA 119+00 TO STA 119+50	63	26
STA 119+50 TO STA 120+00	69	27
STA 120+00 TO STA 120+50	77	18
STA 120+50 TO STA 121+00	73	14
STA 121+00 TO STA 121+50	78	14
STA 121+50 TO STA 122+00	87	11
STA 122+00 TO STA 122+50	84	15
STA 122+50 TO STA 123+00	81	23
STA 123+00 TO STA 123+50	69	48
STA 123+50 TO STA 124+00	61	71
STA 124+00 TO STA 124+50	60	75
STA 124+50 TO STA 125+00	55	77
STA 125+00 TO STA 125+50	55	70
STA 125+50 TO STA 126+00	54	61
STA 126+00 TO STA 126+50	52	54
STA 126+50 TO STA 127+00	56	43
STA 127+00 TO STA 127+50	64	30
STA 127+50 TO STA 128+00	63	23
STA 128+00 TO STA 128+50	59	22
STA 128+50 TO STA 129+00	62	20
STA 129+00 TO STA 129+50	69	12
STA 129+50 TO STA 130+00	74	7
STA 130+00 TO STA 130+50	69	14
STA 130+50 TO STA 131+00	68	15
STA 131+00 TO STA 131+50	70	17
STA 131+50 TO STA 132+00	83	21
STA 132+00 TO STA 132+50	93	16
STA 132+50 TO STA 133+00	107	12
STA 133+00 TO STA 133+50	131	12
STA 133+50 TO STA 134+00	98	13
STA 134+00 TO STA 134+50	69	16
STA 134+50 TO STA 135+00	73	20
STA 135+00 TO STA 135+50	71	28
STA 135+50 TO STA 136+00	66	31
STA 136+00 TO STA 136+50	65	28
STA 136+50 TO STA 137+00	61	31
STA 137+00 TO STA 137+50	52	37
STA 137+50 TO STA 138+00	50	37
STA 138+00 TO STA 138+50	50	36
STA 138+50 TO STA 139+00	48	48
STA 139+00 TO STA 139+50	46	73
STA 139+50 TO STA 140+00	44	102
STA 140+00 TO STA 140+50	41	149
STA 140+50 TO STA 141+00	38	191
STA 141+00 TO STA 141+50	37	205
STA 141+50 TO STA 142+00	39	189
STA 142+00 TO STA 142+50	42	160
STA 142+50 TO STA 143+06	42	151
REFER TO CSJ 0338-01-068 FOR EXCLUDED STATIONS		
STA 196+39 TO STA 196+50	39	300
STA 196+50 TO STA 197+00	44	219
STA 197+00 TO STA 197+50	47	135
STA 197+50 TO STA 198+00	52	88
STA 198+00 TO STA 198+50	57	40
STA 198+50 TO STA 199+00	49	45
STA 199+00 TO STA 199+50	41	47
STA 199+50 TO STA 200+00	40	31
STA 200+00 TO STA 200+50	27	13

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

SHEET 9 OF 16

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		30

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY) CY	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C) CY
PROJECT NAME		
CSJ 0338-01-070		
STA 200+50 TO STA 201+00	58	13
STA 201+00 TO STA 201+50	69	8
STA 201+50 TO STA 202+00	66	14
STA 202+00 TO STA 202+50	64	16
STA 202+50 TO STA 203+00	58	18
STA 203+00 TO STA 203+50	61	21
STA 203+50 TO STA 204+00	66	23
STA 204+00 TO STA 204+50	63	20
STA 204+50 TO STA 205+00	67	19
STA 205+00 TO STA 205+50	72	19
STA 205+50 TO STA 206+00	68	17
STA 206+00 TO STA 206+50	54	18
STA 206+50 TO STA 207+00	51	22
STA 207+00 TO STA 207+50	53	27
STA 207+50 TO STA 208+00	54	27
STA 208+00 TO STA 208+50	62	27
STA 208+50 TO STA 209+00	68	27
STA 209+00 TO STA 209+50	65	23
STA 209+50 TO STA 210+00	57	20
STA 210+00 TO STA 210+50	51	11
STA 210+50 TO STA 211+00	54	11
STA 211+00 TO STA 211+50	64	30
STA 211+50 TO STA 212+00	71	40
STA 212+00 TO STA 212+50	65	31
STA 212+50 TO STA 213+00	59	22
STA 213+00 TO STA 213+50	65	23
STA 213+50 TO STA 214+00	64	19
STA 214+00 TO STA 214+50	62	12
STA 214+50 TO STA 215+00	49	5
STA 215+00 TO STA 215+50	32	5
STA 215+50 TO STA 216+00	30	33
STA 216+00 TO STA 216+50	27	34
STA 216+50 TO STA 217+00	30	6
STA 217+00 TO STA 217+50	26	4
STA 217+50 TO STA 218+00	17	4
STA 218+00 TO STA 218+50	16	4
STA 218+50 TO STA 219+00	13	5
STA 219+00 TO STA 219+50	19	3
STA 219+50 TO STA 220+00	17	4
STA 220+00 TO STA 220+50	7	5
STA 220+50 TO STA 221+00	9	7
STA 221+00 TO STA 221+50	11	5
STA 221+50 TO STA 222+00	13	2
STA 222+00 TO STA 222+50	14	1
STA 222+50 TO STA 223+00	26	1
STA 223+00 TO STA 223+50	29	1
STA 223+50 TO STA 224+00	10	1
STA 224+00 TO STA 224+50		2
STA 224+50 TO STA 225+00		3
STA 225+00 TO STA 225+50		4
STA 225+50 TO STA 226+00	8	6
STA 226+00 TO STA 226+50	16	9
STA 226+50 TO STA 227+00	16	10
STA 227+00 TO STA 227+50	15	10
STA 227+50 TO STA 228+00	15	10
STA 228+00 TO STA 228+50	15	9
STA 228+50 TO STA 229+00	15	9
STA 229+00 TO STA 229+50	15	5
STA 229+50 TO STA 230+00	15	
STA 230+00 TO STA 230+50	16	2
STA 230+50 TO STA 231+00	23	3
STA 231+00 TO STA 231+50	29	3
STA 231+50 TO STA 232+00	28	6
STA 232+00 TO STA 232+50	36	8
STA 232+50 TO STA 233+00	43	13

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY) CY	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C) CY
PROJECT NAME		
CSJ 0338-01-070		
STA 233+00 TO STA 233+50	41	19
STA 233+50 TO STA 234+00	41	21
STA 234+00 TO STA 234+66	45	31
REFER TO CSJ 0338-01-069 FOR EXCLUDED STATIONS		
STA 264+23 TO STA 265+00	41	25
STA 265+00 TO STA 265+50	43	14
STA 265+50 TO STA 266+00	42	10
STA 266+00 TO STA 266+50	41	18
STA 266+50 TO STA 267+00	43	17
STA 267+00 TO STA 267+50	43	16
STA 267+50 TO STA 268+00	43	21
STA 268+00 TO STA 268+50	55	17
STA 268+50 TO STA 269+00	61	22
STA 269+00 TO STA 269+50	62	28
STA 269+50 TO STA 270+00	55	17
STA 270+00 TO STA 270+50	46	19
STA 270+50 TO STA 271+00	50	26
STA 271+00 TO STA 271+50	48	42
STA 271+50 TO STA 272+00	50	43
STA 272+00 TO STA 272+50	47	39
STA 272+50 TO STA 273+00	41	54
STA 273+00 TO STA 273+50	39	54
STA 273+50 TO STA 274+00	41	40
STA 274+00 TO STA 274+50	41	32
STA 274+50 TO STA 275+00	45	26
STA 275+00 TO STA 275+50	42	45
STA 275+50 TO STA 276+00	49	50
STA 276+00 TO STA 276+50	62	17
STA 276+50 TO STA 277+00	60	11
STA 277+00 TO STA 277+50	66	8
STA 277+50 TO STA 278+00	72	5
STA 278+00 TO STA 278+50	67	4
STA 278+50 TO STA 279+00	39	5
STA 279+00 TO STA 279+50	17	4
STA 279+50 TO STA 280+00	16	3
STA 280+00 TO STA 280+50	MILL AND OVERLAY	
STA 280+50 TO STA 281+00		
STA 281+00 TO STA 281+50		
STA 281+50 TO STA 282+00		
STA 282+00 TO STA 282+50		
STA 282+50 TO STA 283+00		
STA 283+00 TO STA 283+50		
STA 283+50 TO STA 284+00		
STA 284+00 TO STA 284+50		
STA 284+50 TO STA 285+00		
STA 285+00 TO STA 285+50		
STA 285+50 TO STA 286+00		
STA 286+00 TO STA 286+50		
STA 286+50 TO STA 287+00		
STA 287+00 TO STA 287+50		
STA 287+50 TO STA 288+00		
STA 288+00 TO STA 288+50		
STA 288+50 TO STA 289+00	GRASSY CREEK BRIDGE	
STA 289+00 TO STA 289+50		
STA 289+50 TO STA 290+00		
STA 290+00 TO STA 290+50		
STA 290+50 TO STA 291+00		
STA 291+00 TO STA 291+50		
STA 291+50 TO STA 292+00	MILL AND OVERLAY	
STA 292+00 TO STA 292+50		
STA 292+50 TO STA 293+00		
STA 293+00 TO STA 293+50		
STA 293+50 TO STA 294+00	33	9
STA 294+00 TO STA 294+50	66	22

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY) CY	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C) CY
PROJECT NAME		
CSJ 0338-01-070		
STA 294+50 TO STA 295+00	67	37
STA 295+00 TO STA 295+50	66	43
STA 295+50 TO STA 296+00	66	32
STA 296+00 TO STA 296+50	65	28
STA 296+50 TO STA 297+00	66	31
STA 297+00 TO STA 297+50	66	34
STA 297+50 TO STA 298+00	62	46
STA 298+00 TO STA 298+50	75	37
STA 298+50 TO STA 299+00	75	16
STA 299+00 TO STA 299+50	59	7
STA 299+50 TO STA 300+00	65	7
STA 300+00 TO STA 300+50	75	12
STA 300+50 TO STA 301+00	74	10
STA 301+00 TO STA 301+50	58	5
STA 301+50 TO STA 302+00	55	1
STA 302+00 TO STA 302+50	59	1
STA 302+50 TO STA 303+00	67	2
STA 303+00 TO STA 303+50	71	5
STA 303+50 TO STA 304+00	67	7
STA 304+00 TO STA 304+50	66	7
STA 304+50 TO STA 305+00	64	8
STA 305+00 TO STA 305+50	62	10
STA 305+50 TO STA 306+00	56	16
STA 306+00 TO STA 306+50	53	20
STA 306+50 TO STA 307+00	51	21
STA 307+00 TO STA 307+50	48	23
STA 307+50 TO STA 308+00	42	27
STA 308+00 TO STA 308+50	39	30
STA 308+50 TO STA 309+00	38	36
STA 309+00 TO STA 309+50	39	43
STA 309+50 TO STA 310+00	45	36
STA 310+00 TO STA 310+50	50	24
STA 310+50 TO STA 311+00	48	24
STA 311+00 TO STA 311+50	56	21
STA 311+50 TO STA 312+00	64	16
STA 312+00 TO STA 312+50	60	13
STA 312+50 TO STA 313+00	59	12
STA 313+00 TO STA 313+50	62	9
STA 313+50 TO STA 314+00	62	5
STA 314+00 TO STA 314+50	61	5
STA 314+50 TO STA 315+00	63	7
STA 315+00 TO STA 315+50	62	7
STA 315+50 TO STA 316+00	65	7
STA 316+00 TO STA 316+50	67	10
STA 316+50 TO STA 316+55	7	1
CSJ 0338-01-070 TOTAL	15,692	7,657

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

SHEET 10 OF 16

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		31

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY)	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C)
	CY	CY
PROJECT NAME		
CSJ 0338-01-068		
STA 143+06 TO STA 143+50	39	110
STA 143+50 TO STA 144+00	37	65
STA 144+00 TO STA 144+50	39	53
STA 144+50 TO STA 145+00	53	57
STA 145+00 TO STA 145+50	61	57
STA 145+50 TO STA 146+00	64	34
STA 146+00 TO STA 146+50	67	26
STA 146+50 TO STA 147+00	59	34
STA 147+00 TO STA 147+50	58	34
STA 147+50 TO STA 148+00	64	35
STA 148+00 TO STA 148+50	65	27
STA 148+50 TO STA 149+00	59	14
STA 149+00 TO STA 149+50	62	5
STA 149+50 TO STA 150+00	72	5
STA 150+00 TO STA 150+50	75	15
STA 150+50 TO STA 151+00	70	12
STA 151+00 TO STA 151+50	66	4
STA 151+50 TO STA 152+00	65	7
STA 152+00 TO STA 152+50	59	12
STA 152+50 TO STA 153+00	54	16
STA 153+00 TO STA 153+50	59	14
STA 153+50 TO STA 154+00	57	21
STA 154+00 TO STA 154+50	50	26
STA 154+50 TO STA 155+00	55	16
STA 155+00 TO STA 155+50	58	15
STA 155+50 TO STA 156+00	55	19
STA 156+00 TO STA 156+50	55	19
STA 156+50 TO STA 157+00	57	13
STA 157+00 TO STA 157+50	65	10
STA 157+50 TO STA 158+00	63	34
STA 158+00 TO STA 158+50	48	67
STA 158+50 TO STA 159+00	38	108
STA 159+00 TO STA 159+50	45	74
STA 159+50 TO STA 160+00	49	11
STA 160+00 TO STA 160+50	47	11
STA 160+50 TO STA 161+00	50	7
STA 161+00 TO STA 161+50	48	11
STA 161+50 TO STA 162+00	69	13
STA 162+00 TO STA 162+50	76	7
STA 162+50 TO STA 163+00	46	9
STA 163+00 TO STA 163+50	38	6
STA 163+50 TO STA 164+00	39	5
STA 164+00 TO STA 164+50	35	10
STA 164+50 TO STA 165+00	33	12
STA 165+00 TO STA 165+50	30	14
STA 165+50 TO STA 166+00	30	16
STA 166+00 TO STA 166+50	32	20
STA 166+50 TO STA 167+00	34	18
STA 167+00 TO STA 167+50	37	11
STA 167+50 TO STA 168+00	40	10
STA 168+00 TO STA 168+50	43	9
STA 168+50 TO STA 169+00	43	10
STA 169+00 TO STA 169+50	41	13
STA 169+50 TO STA 170+00	46	9
STA 170+00 TO STA 170+50	45	6
STA 170+50 TO STA 171+00	37	11
STA 171+00 TO STA 171+50	36	15
STA 171+50 TO STA 172+00	28	9
STA 172+00 TO STA 172+50	38	5
STA 172+50 TO STA 173+00	57	6
STA 173+00 TO STA 173+50	55	8
STA 173+50 TO STA 174+00	62	9
STA 174+00 TO STA 174+50	69	8
STA 174+50 TO STA 175+00	62	15
STA 175+00 TO STA 175+50	51	25

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY)	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C)
	CY	CY
PROJECT NAME		
CSJ 0338-01-068		
STA 175+50 TO STA 176+00	53	14
STA 176+00 TO STA 176+50	53	19
STA 176+50 TO STA 177+00	44	39
STA 177+00 TO STA 177+50	39	47
STA 177+50 TO STA 178+00	36	64
STA 178+00 TO STA 178+50	35	79
STA 178+50 TO STA 179+00	38	101
STA 179+00 TO STA 179+50	41	114
STA 179+50 TO STA 180+00	44	92
STA 180+00 TO STA 180+50	50	60
STA 180+50 TO STA 181+00	56	30
STA 181+00 TO STA 181+50	63	13
STA 181+50 TO STA 182+00	66	18
STA 182+00 TO STA 182+50	66	27
STA 182+50 TO STA 183+00	66	24
STA 183+00 TO STA 183+50	70	23
STA 183+50 TO STA 184+00	74	24
STA 184+00 TO STA 184+50	195	20
STA 184+50 TO STA 185+00	190	12
STA 185+00 TO STA 185+50	69	5
STA 185+50 TO STA 186+00	75	4
STA 186+00 TO STA 186+50	69	12
STA 186+50 TO STA 187+00	69	16
STA 187+00 TO STA 187+50	79	17
STA 187+50 TO STA 188+00	77	14
STA 188+00 TO STA 188+50	71	12
STA 188+50 TO STA 189+00	71	18
STA 189+00 TO STA 189+50	75	19
STA 189+50 TO STA 190+00	74	22
STA 190+00 TO STA 190+50	68	17
STA 190+50 TO STA 191+00	68	11
STA 191+00 TO STA 191+50	70	13
STA 191+50 TO STA 192+00	62	36
STA 192+00 TO STA 192+50	50	72
STA 192+50 TO STA 193+00	46	100
STA 193+00 TO STA 193+50	43	128
STA 193+50 TO STA 194+00	41	163
STA 194+00 TO STA 194+50	41	189
STA 194+50 TO STA 195+00	41	198
STA 195+00 TO STA 195+50	41	216
STA 195+50 TO STA 196+39	40	264
CSJ 0338-01-068 TOTAL	5,958	3,773

SUMMARY OF EARTHWORK ITEMS

LOCATION	110 6001 EXCAVATION (ROADWAY)	132 6006 EMBANKMENT (FINAL)(DENS CONT)(TY C)
	CY	CY
PROJECT NAME		
CSJ 0338-01-069		
STA 234+66 TO STA 235+00	41	64
STA 235+00 TO STA 235+50	47	54
STA 235+50 TO STA 236+00	56	17
STA 236+00 TO STA 236+50	58	11
STA 236+50 TO STA 237+00	63	5
STA 237+00 TO STA 237+50	59	14
STA 237+50 TO STA 238+00	56	29
STA 238+00 TO STA 238+50	52	31
STA 238+50 TO STA 239+00	43	38
STA 239+00 TO STA 239+50	47	32
STA 239+50 TO STA 240+00	50	24
STA 240+00 TO STA 240+50	48	26
STA 240+50 TO STA 241+00	50	34
STA 241+00 TO STA 241+50	57	30
STA 241+50 TO STA 242+00	79	22
STA 242+00 TO STA 242+50	77	22
STA 242+50 TO STA 243+00	66	23
STA 243+00 TO STA 243+50	65	24
STA 243+50 TO STA 244+00	71	17
STA 244+00 TO STA 244+50	96	14
STA 244+50 TO STA 245+00	88	15
STA 245+00 TO STA 245+50	64	12
STA 245+50 TO STA 246+00	58	9
STA 246+00 TO STA 246+50	55	13
STA 246+50 TO STA 247+00	57	13
STA 247+00 TO STA 247+50	57	13
STA 247+50 TO STA 248+00	54	14
STA 248+00 TO STA 248+50	52	12
STA 248+50 TO STA 249+00	51	11
STA 249+00 TO STA 249+50	54	12
STA 249+50 TO STA 250+00	58	7
STA 250+00 TO STA 250+50	30	1
STA 250+50 TO STA 251+00	60	8
STA 251+00 TO STA 251+50	64	14
STA 251+50 TO STA 252+00	68	8
STA 252+00 TO STA 252+50	75	6
STA 252+50 TO STA 253+00	81	10
STA 253+00 TO STA 253+50	77	10
STA 253+50 TO STA 254+00	69	12
STA 254+00 TO STA 254+50	60	18
STA 254+50 TO STA 255+00	53	23
STA 255+00 TO STA 255+50	49	27
STA 255+50 TO STA 256+00	52	20
STA 256+00 TO STA 256+50	58	20
STA 256+50 TO STA 257+00	56	27
STA 257+00 TO STA 257+50	52	24
STA 257+50 TO STA 258+00	53	17
STA 258+00 TO STA 258+50	51	22
STA 258+50 TO STA 259+00	46	31
STA 259+00 TO STA 259+50	46	31
STA 259+50 TO STA 260+00	52	24
STA 260+00 TO STA 260+50	57	21
STA 260+50 TO STA 261+00	49	43
STA 261+00 TO STA 261+50	43	54
STA 261+50 TO STA 262+00	42	46
STA 262+00 TO STA 262+50	39	51
STA 262+50 TO STA 263+00	41	48
STA 263+00 TO STA 263+50	46	39
STA 263+50 TO STA 264+00	42	40
STA 264+00 TO STA 264+23	39	35
CSJ 0338-01-069 TOTAL	3,379	1,392

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		32

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF PAVEMENT MARKINGS ITEMS

SH 105 PAVEMENT MARKINGS LAYOUT	FROM STATION	TO STATION	(1) 533 6003	(1) 533 6004	666 6018	666 6030	666 6036	666 6042	666 6171	666 6174	666 6178	666 6180	666 6184	666 6192	666 6208	666 6210
			RUMBLE STRIPS (SHOULDER) ASPHALT	RUMBLE STRIPS (CENTERLINE) ASPHALT	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	REFL PAV MRK TY I (W)8"(DOT)(100MIL)	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)12"(SLD) (100MIL)	REFL PAV MRK TY II (W)6"(BRK)	REFL PAV MRK TY II (W)6"(SLD)	REFL PAV MRK TY II (W)8"(SLD)	REFL PAV MRK TY II (W)12"(SLD)	REFL PAV MRK TY II (W)(ARROW)	REFL PAV MRK TY II (W)(WORD)	REFL PAV MRK TY II (Y)6"(BRK)	REFL PAV MRK TY II (Y)6"(SLD)
			LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LF	LF
PROJECT NAME																
CSJ 0338-01-070																
SHEET 1 OF 12	52+45	67+00	2,520		108	126	873	51	70	1,005	838	27	2	1	290	1,012
SHEET 2 OF 12	67+00	91+00	4,800	460	12											
SHEET 3 OF 12	91+00	115+00	4,750					20								
SHEET 4 OF 12	115+00	139+00	3,935			33	785	16								
SHEET 5 OF 12	139+00	143+06	815													
SHEET 7 OF 12	196+39	211+00	3,585				145	20								
SHEET 8 OF 12	211+00	234+66	4,735	1,600	820											
SHEET 10 OF 12	264+23	283+00	3,760	280	500	126										
SHEET 11 OF 12	283+00	307+00	2,725	490		35		50		564						564
SHEET 12 OF 12	307+00	316+55	1,900				610									
CSJ 0338-01-070 TOTAL			33,525	2,830	1,440	320	2,413	157	70	1,569	838	27	2	1	290	1,576
CSJ 0338-01-068																
SHEET 5 OF 12	143+06	163+00	3,985													
SHEET 6 OF 12	163+00	187+00	4,660				85	28								
SHEET 7 OF 12	187+00	196+39	425				1,325									
CSJ 0338-01-068 TOTAL			9,070				1,410	28								
CSJ 0338-01-069																
SHEET 8 OF 12	234+66	235+00	70													
SHEET 9 OF 12	235+00	259+00	3,885			30	765	41								
SHEET 10 OF 12	259+00	264+23	1,050													
CSJ 0338-01-069 TOTAL			5,005			30	765	41								
PROJECT TOTAL			47,600	2,830	1,440	350	4,588	226	70	1,569	838	27	2	1	290	1,576

NOTES:

1. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE,
   APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.

SUMMARY OF PAVEMENT MARKINGS ITEMS

SH 105 PAVEMENT MARKINGS LAYOUT	FROM STATION	TO STATION	666 6306	666 6309	666 6318	666 6321	668 6077	668 6083	668 6085	672 6007	672 6009	678 6002	678 6004	678 6006
			RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	PREFAB PAV MRK TY C (W)(ARROW)	PREFAB PAV MRK TY C (W)(LNDP ARROW)	PREFAB PAV MRK TY C (W)(WORD)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (12")
			LF	LF	LF	LF	EA	EA	EA	EA	EA	LF	LF	LF
PROJECT NAME														
CSJ 0338-01-070														
SHEET 1 OF 12	52+45	67+00	250	3,855	970	3,784	5	1	4	47	93	3,245	838	27
SHEET 2 OF 12	67+00	91+00		4,800	120	8,400	2	1	2		200			
SHEET 3 OF 12	91+00	115+00		4,750	1,160	4,810	4				69			
SHEET 4 OF 12	115+00	139+00		4,720	1,180	4,640	6		2	40	58			
SHEET 5 OF 12	139+00	143+06		815	200	815					12			
SHEET 7 OF 12	196+39	211+00		2,830	700	2,740	5			6	52			
SHEET 8 OF 12	211+00	234+66	10	4,735		6,264	2	2			170			
SHEET 10 OF 12	264+23	283+00	280	3,760	560	4,360	2			14	126			
SHEET 11 OF 12	283+00	307+00		5,219	360	3,967	4			32	100	1,128		
SHEET 12 OF 12	307+00	316+55		1,900	230	1,910	4				90			
CSJ 0338-01-070 TOTAL			540	37,384	5,480	41,690	34	4	8	139	970	4,373	838	27
CSJ 0338-01-068														
SHEET 5 OF 12	143+06	163+00		3,990	1,040	3,990	2				50			
SHEET 6 OF 12	163+00	187+00		4,645	1,120	4,515	3		2	5	57			
SHEET 7 OF 12	187+00	196+39		1,880	510	1,880	3			69	24			
CSJ 0338-01-068 TOTAL				10,515	2,670	10,385	8		2	74	131			
CSJ 0338-01-069														
SHEET 8 OF 12	234+66	235+00		35		70					4			
SHEET 9 OF 12	235+00	259+00	610	4,620	1,180	4,640	8			31	73			
SHEET 10 OF 12	259+00	264+23	140	1,050	260	1,046				7	30			
CSJ 0338-01-069 TOTAL			750	5,705	1,440	5,756	8			38	107			
PROJECT TOTAL			1,290	53,604	9,590	57,831	50	4	10	251	1,208	4,373	838	27

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
11781 Stonehollow Dr. | Suite 100 | Austin, TX 78758
Phone: 512-821-2081 | Fax: 512-821-2085

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

SHEET 12 OF 16

CONT	SECT	JOB	HIGHWAY
038	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		33

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CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF SIGNING ITEMS

SH 105 SIGNING LAYOUT	FROM STATION	TO STATION	644 6001	644 6004	644 6007	644 6027	644 6068	644 6076	658 6014	658 6061	658 6101
			IN SM RD SN SUP&AM TY 10BWG(1)SA(P)	IN SM RD SN SUP&AM TY 10BWG(1)SA(T)	IN SM RD SN SUP&AM TY 10BWG(1)SA(U)	IN SM RD SN SUP&AM TY S80(1)SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG	REMOVE SM RD SN SUP&AM	INSTL DEL ASSM (D-SW)SZ(BRF)CTB (BI)	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2	INSTL OM ASSM (OM-2Z)(WFLX) SRF)SRF
			EA	EA	EA	EA	EA	EA	EA	EA	EA
PROJECT NAME											
CSJ 0338-01-070											
SHEET 1 OF 12	52+45	67+00	14		1	1	2	17			
SHEET 2 OF 12	67+00	91+00	3	1				2			7
SHEET 3 OF 12	91+00	115+00	6					5		8	
SHEET 4 OF 12	115+00	139+00	4					3			3
SHEET 5 OF 12	139+00	143+06	1		1			2			
SHEET 7 OF 12	196+39	211+00	4					3			
SHEET 8 OF 12	211+00	234+66						1		10	
SHEET 10 OF 12	264+23	283+00	2	3				3			
SHEET 11 OF 12	283+00	307+00	10	5	2			15	14	16	
SHEET 12 OF 12	307+00	316+55	3					1			6
CSJ 0338-01-070 TOTAL			47	9	4	1	2	52	14	34	16
CSJ 0338-01-068											
SHEET 5 OF 12	143+06	163+00									
SHEET 6 OF 12	163+00	187+00	6					7			
SHEET 7 OF 12	187+00	196+39	4					1			
CSJ 0338-01-068 TOTAL			10					8			
CSJ 0338-01-069											
SHEET 8 OF 12	234+66	235+00									
SHEET 9 OF 12	235+00	259+00	12		1			9			
SHEET 10 OF 12	259+00	264+23									
CSJ 0338-01-069 TOTAL			12		1			9			
PROJECT TOTAL			69	9	5	1	2	69	14	34	16

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ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
11781 Stonehollow Dr. Suite 180 Austin, TX 78758
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Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		34

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF EROSION CONTROL ITEMS (PHASE 1)

SH 105 SW3P LAYOUT	FROM STATION	TO STATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6003 ROCK FILTER DAMS (INSTALL) (TY 3)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
			SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF	LF
PROJECT NAME														
CSJ 0338-01-070														
PHASE 1 SHEET 1 OF 5	223+00	234+66	1,882	1,882	941	941	18.8	85		85	130	130	15	15
PHASE 1 SHEET 2 OF 5	264+23	271+00	1,693	1,693	847	847	16.9						45	45
PHASE 1 SHEET 3 OF 5	271+00	295+00	2,681	2,681	1,341	1,341	26.8	60		60	30	30	60	60
PHASE 1 SHEET 4 OF 5	295+00	319+00	4,480	4,480	2,240	2,240	44.8	20	40	60	657	657	90	90
PHASE 1 SHEET 5 OF 5	319+00	END												
CSJ 0338-01-070 TOTAL			10,736	10,736	5,369	5,369	107.3	165	40	205	817	817	210	210
CSJ 0338-01-069														
PHASE 1 SHEET 1 OF 5	234+66	247+00	3,021	3,021	1,511	1,511	30.2						105	105
PHASE 1 SHEET 2 OF 5	247+00	264+23							20	20	80	80	105	105
CSJ 0338-01-069 TOTAL			3,021	3,021	1,511	1,511	30.2		20	20	80	80	210	210
PHASE 1 SUB TOTAL			13,757	13,757	6,880	6,880	137.5	165	60	225	897	897	420	420

SUMMARY OF EROSION CONTROL ITEMS (PHASE 2)

SH 105 SW3P LAYOUT	FROM STATION	TO STATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
			SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF
PROJECT NAME													
CSJ 0338-01-070													
PHASE 2 SHEET 1 OF 5	223+00	234+66	1,250	1,250	625	625	12.5	40	40	575	575		
PHASE 2 SHEET 2 OF 5	264+23	271+00	1,136	1,136	568	568	11.4					30	30
PHASE 2 SHEET 3 OF 5	271+00	295+00	2,270	2,270	1,135	1,135	22.7	40	40			60	60
PHASE 2 SHEET 4 OF 5	295+00	319+00	5,773	5,773	2,887	2,887	57.7	45	45	482	482	90	90
PHASE 2 SHEET 5 OF 5	319+00	END											
CSJ 0338-01-070 TOTAL			10,429	10,429	5,215	5,215	104.3	125	125	1,057	1,057	180	180
CSJ 0338-01-069													
PHASE 2 SHEET 1 OF 5	234+66	247+00	2,880	2,880	1,440	1,440	28.8					105	105
PHASE 2 SHEET 2 OF 5	247+00	264+23	4,531	4,531	2,266	2,266	45.3					120	120
CSJ 0338-01-069 TOTAL			7,411	7,411	3,706	3,706	74.1					225	225
PHASE 2 SUB TOTAL			17,840	17,840	8,921	8,921	178.4	125	125	1,057	1,057	405	405

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TBPE REGISTRATION NO. F-18341

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		35

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF EROSION CONTROL ITEMS (PHASE 3)

SH 105 SW3P LAYOUT	FROM STATION	TO STATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6003 ROCK FILTER DAMS (INSTALL) (TY 3)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
			SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF	LF
PROJECT NAME														
CSJ 0338-01-070														
PHASE 3 SHEET 1 OF 7	91+00	103+00	2,938	2,938	1,469	1,469	29.4	45		45	1,499	1,499	15	15
PHASE 3 SHEET 2 OF 7	103+00	127+00	6,669	6,669	3,335	3,335	66.7		20	20	463	463	120	120
PHASE 3 SHEET 3 OF 7	127+00	143+06	3,813	3,813	1,907	1,907	38.1	60		60	423	423	45	45
PHASE 3 SHEET 5 OF 7	196+39	199+00	858	858	429	429	8.6	50		50	70	70		
PHASE 3 SHEET 6 OF 7	199+00	223+00	7,440	7,440	3,720	3,720	74.4						135	135
PHASE 3 SHEET 7 OF 7	223+00	234+66	510	510	255	255	5.1							
CSJ 0338-01-070 TOTAL			22,228	22,228	11,115	11,115	222.3	155	20	175	2,455	2,455	315	315
CSJ 0338-01-068														
PHASE 3 SHEET 3 OF 7	143+06	151+00	1,444	1,444	722	722	14.4						45	45
PHASE 3 SHEET 4 OF 7	151+00	175+00	6,341	6,341	3,171	3,171	63.4	30		30	39	39	204	204
PHASE 3 SHEET 5 OF 7	175+00	196+39	5,349	5,349	2,675	2,675	53.5	105		105	110	110	90	90
CSJ 0338-01-068 TOTAL			13,134	13,134	6,568	6,568	131.3	135		135	149	149	339	339
CSJ 0338-01-069														
PHASE 3 SHEET 7 OF 7	234+66	235+00	128	128	64	64	1.3	50		50				
CSJ 0338-01-069 TOTAL			128	128	64	64	1.3	50		50				
PHASE 3 SUB TOTAL			35,490	35,490	17,747	17,747	354.9	340	20	360	2,604	2,604	654	654

SUMMARY OF EROSION CONTROL ITEMS (PHASE 4)

SH 105 SW3P LAYOUT	FROM STATION	TO STATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6003 ROCK FILTER DAMS (INSTALL) (TY 3)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
			SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF	LF
PROJECT NAME														
CSJ 0338-01-070														
PHASE 4 SHEET 1 OF 7	91+00	103+00	2,099	2,099	1,050	1,050	21.0	40		40	1,073	1,073	30	30
PHASE 4 SHEET 2 OF 7	103+00	127+00	6,032	6,032	3,016	3,016	60.3	30		30	59	59	150	150
PHASE 4 SHEET 3 OF 7	127+00	143+06	4,917	4,917	2,459	2,459	49.2	30		30	197	197	75	75
PHASE 4 SHEET 5 OF 7	196+39	199+00	859	859	430	430	8.6	40		40	201	201		
PHASE 4 SHEET 6 OF 7	199+00	223+00	5,545	5,545	2,773	2,773	55.5				67	67	135	135
PHASE 4 SHEET 7 OF 7	223+00	234+66	217	217	109	109	2.2	20		20			15	15
CSJ 0338-01-070 TOTAL			19,669	19,669	9,837	9,837	196.8	160		160	1,597	1,597	405	405
CSJ 0338-01-068														
PHASE 4 SHEET 3 OF 7	143+06	151+00	2,985	2,985	1,493	1,493	29.9	30		30	177	177	45	45
PHASE 4 SHEET 4 OF 7	151+00	175+00	3,902	3,902	1,951	1,951	39.0		25	25	1,222	1,222	90	90
PHASE 4 SHEET 5 OF 7	175+00	196+39	5,519	5,519	2,760	2,760	55.2	55		55	239	239	180	180
CSJ 0338-01-068 TOTAL			12,406	12,406	6,204	6,204	124.1	85	25	110	1,638	1,638	315	315
CSJ 0338-01-069														
PHASE 3 SHEET 7 OF 7	234+66	235+00												
CSJ 0338-01-069 TOTAL														
PHASE 4 SUB TOTAL			32,075	32,075	16,041	16,041	320.9	245	25	270	3,235	3,235	720	720

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	36

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUMMARY OF EROSION CONTROL ITEMS (PHASE 5)

SH 105 SW3P LAYOUT	FROM STATION	TO STATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
			SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF
PROJECT NAME													
CSJ 0338-01-070													
PHASE 5 SHEET 1 OF 2	BEGIN	67+00	3,079	3,079	1,540	1,540	30.8	15	15			75	75
PHASE 5 SHEET 2 OF 2	67+00	91+00	3,199	3,199	1,600	1,600	32.0	80	80	38	38	75	75
CSJ 0338-01-070 TOTAL			6,278	6,278	3,140	3,140	62.8	95	95	38	38	150	150
PHASE 5 SUB TOTAL			6,278	6,278	3,140	3,140	62.8	95	95	38	38	150	150

SUMMARY OF EROSION CONTROL ITEMS (PHASE 6)

SH 105 SW3P LAYOUT	FROM STATION	TO STATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
			SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF
PROJECT NAME													
CSJ 0338-01-070													
PHASE 6 SHEET 1 OF 2	BEGIN	67+00	1,110	1,110	555	555	11.1			827	827	15	15
PHASE 6 SHEET 2 OF 2	67+00	91+00	914	914	457	457	9.1	20	20			45	45
CSJ 0338-01-070 TOTAL			2,024	2,024	1,012	1,012	20.2	20	20	827	827	60	60
PHASE 6 SUB TOTAL			2,024	2,024	1,012	1,012	20.2	20	20	827	827	60	60

SUMMARY OF EROSION CONTROL ITEMS (OVERALL)

SH 105 SW3P LAYOUT	160 6003 FURNISHING AND PLACING TOPSOIL (4")	164 6021 CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	164 6029 CELL FBR MLCH SEED(TEMP)(WARM)	164 6031 CELL FBR MLCH SEED(TEMP)(COOL)	168 6001 VEGETATIVE WATERING	506 6002 ROCK FILTER DAMS (INSTALL) (TY 2)	506 6003 ROCK FILTER DAMS (INSTALL) (TY 3)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (INSTL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	SY	SY	MG	LF	LF	LF	LF	LF	LF	LF
PROJECT NAME												
CSJ 0338-01-070												
PHASE 1	10,736	10,736	5,369	5,369	107.3	165	40	205	817	817	210	210
PHASE 2	10,429	10,429	5,215	5,215	104.3	125		125	1,057	1,057	180	180
PHASE 3	22,228	22,228	11,115	11,115	222.3	155	20	175	2,455	2,455	315	315
PHASE 4	19,669	19,669	9,837	9,837	196.8	160		160	1,597	1,597	405	405
PHASE 5	6,278	6,278	3,140	3,140	62.8	95		95	38	38	150	150
PHASE 6	2,024	2,024	1,012	1,012	20.2	20		20	827	827	60	60
CSJ 0338-01-070 TOTAL	71,364	71,364	35,688	35,688	713.7	720	60	780	6,791	6,791	1,320	1,320
CSJ 0338-01-068												
PHASE 3	13,134	13,134	6,568	6,568	131.3	135		135	149	149	339	339
PHASE 4	12,406	12,406	6,204	6,204	124.1	85	25	110	1,638	1,638	315	315
CSJ 0338-01-068 TOTAL	25,540	25,540	12,772	12,772	255.4	220	25	245	1,787	1,787	654	654
CSJ 0338-01-069												
PHASE 1	3,021	3,021	1,511	1,511	30.2		20	20	80	80	210	210
PHASE 2	7,411	7,411	3,706	3,706	74.1						225	225
PHASE 3	128	128	64	64	1.3	50		50				
PHASE 4												
CSJ 0338-01-069 TOTAL	10,560	10,560	5,281	5,281	105.6	50	20	70	80	80	435	435
PROJECT TOTAL	107,464	107,464	53,741	53,741	1,074.7	990	105	1,095	8,658	8,658	2,409	2,409

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		37

CK: JMT
DW: JMT
CK: JMT
DW: JMT

GENERAL GUIDELINES

1. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES THROUGHOUT CONSTRUCTION. FOR PROPERTIES WITH A SINGLE ACCESS POINT, DRIVEWAYS WILL BE CONSTRUCTED IN STEPS.

2. THE CONTRACTOR SHALL ADJUST TEMPORARY SIGNS AS REQUIRED TO FIT FIELD CONDITIONS. SIGNS SHALL NOT BE PLACED IN CONFLICT WITH ADJACENT PROPERTY ACCESS POINTS.

3. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED WHERE SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER.

4. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGHOUT THE PROJECT LIMITS. THE CONTRACTOR SHALL CORRECT DRAINAGE DEFICIENCIES THAT PRESENT A HAZARD TO THE TRAVELING PUBLIC AND/OR ADJACENT PROPERTY.

5. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT IN A LOCATION THAT WILL CONSTITUTE A HAZARD AND COULD ENDANGER THE TRAVELING PUBLIC.

6. THE CONTRACTOR SHALL INSTALL AND MAINTAIN BARRICADES, WARNING AND DIRECTIONAL SIGNS AS INDICATED ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

7. COVER ANY PERMANENT OR EXISTING SIGNS IF NOT USED AND IN CONFLICT WITH TEMPORARY TRAFFIC CONTROL OPERATIONS. THIS IS SUBSIDIARY TO ITEM 502.

8. EXISTING STRIPING IN CONFLICT WITH WORK ZONE PAVEMENT MARKINGS WILL BE REMOVED AND PAID IN ACCORDANCE WITH ITEM 677 ELIM EXT PAV MRK & MRKS.

9. PERMANENT SIGNS NECESSARY FOR THE OPERATION OF ANY ROADWAY WILL BE INSTALLED BY THE CONTRACTOR PRIOR TO OPENING THE ROADWAY TO TRAFFIC.

10. ALL EDGE OF PAVEMENT DROP OFFS NOT PROTECTED BY A POSITIVE BARRIER, SHALL BE TREATED WITH SAFETY SLOPE (3:1 MAX) AS DIRECTED BY THE ENGINEER.

11. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENT. CONTRACTOR SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED/APPROVED BY THE ENGINEER.

WORK ZONE SPEED LIMIT SUMMARY

1.	CSJ: 0338-01-070 (SH 105)	55 MPH
2.	CSJ: 0338-01-068 (SH 105)	55 MPH
3.	CSJ: 0338-01-069 (SH 105)	55 MPH

CONSTRUCTION SPEED ZONING IS TO BE USED IN THE CONSTRUCTION PHASES WHEN WORK IS ACTIVE, TRAFFIC LANES ARE REDUCED, OR WHEN THERE ARE OTHER IMPACTS TO TRAFFIC.

CONSECUTIVE PHASES OF CONSTRUCTION CANNOT BE WORKED ON AT THE SAME TIME. (EX. PHASE 1 AND PHASE 2, PHASE 3 AND PHASE 4, PHASE 5 AND PHASE 6)

PHASE 1

PROPOSED CONSTRUCTION: FROM STA 223+00 TO STA 321+00 (NORTH SIDE)

1. SET ADVANCE WARNING SIGNING AND CHANNELIZING DEVICES. INCLUDE PCMS FOR BOTH EB AND WB APPROACHES TO THE WORK ZONE.

2. PLACE SW3P DEVICES.

3. MILL THE EXISTING PAVEMENT DOWN 2" TO REMOVE THE EXISTING RUMBLE STRIPS AND PAVEMENT MARKINGS. THE FIRST AND LAST 100 FEET OF THIS PHASE ARE TO BE MILLED FROM 0" TO 2". THIS WILL BE DONE TO TRANSITION BACK UP TO THE UNTOUCHED EXISTING PAVEMENT. ELIMINATE THE EXISTING PAVEMENT MARKINGS AT THE BRIDGE. ANY PAVEMENT REPAIR WORK IS TO BE DONE ON AN AS NEEDED BASIS.

4. PLACE WORK ZONE PAVEMENT MARKINGS AS SHOWN IN THE TCP LAYOUTS AND SHIFT TRAFFIC TO THE TCP TRAFFIC PATTERN.

5. SAWCUT THE WB SHOULDER AND MILL AN ADDITIONAL 5" THAT OVERLAPS INTO THE EXISTING WB SH 105 LANES BY 1'. THIS WILL PROVIDE AN HMAC OVERLAP WITH THE EXISTING WB SHOULDER. THE 1' OVERLAP DEPTH WILL VARY DEPENDING ON EXISTING SH 105 THRU LANE CROSS SLOPES. REFER TO PROPOSED TYPICAL SECTIONS FOR MORE INFORMATION.

6. CONSTRUCTION AT INTERSECTIONS AND DRIVEWAYS

CONSTRUCT INTERSECTIONS AND DRIVEWAYS IN HALF WIDTHS.

INSTALL DRAINAGE PIPES.

SEE TCP MISCELLEANOUS DETAILS. THE CONTRACTOR SHALL CONTROL TRAFFIC USING ONE LANE TWO WAY TRAFFIC CONTROL.

PRIOR TO COMMENCING THIS WORK PROVIDE THE ENGINEER WITH A DETAILED PLAN, FOR APPROVAL, SHOWING HOW THE CONTRACTOR WILL HANDLE TRAFFIC AT THIS INTERSECTION DURING WORK HOURS.

SCHEDULE WORK TO NOT HAVE ELEVATION CHANGES ACROSS THE LANES OF TRAVEL DURING NON WORK HOURS.

PROVIDE DURABLE DRIVEABLE TAPERS AT TIES WITH EXISTING PAVEMENT.

IT IS EXPECTED THAT TRAFFIC WILL CROSS THROUGH THE CONSTRUCTION AREA DRIVING ON EXCAVATED FLEX BASE OR PROPOSED FLEX BASE.

THE CONTRACTOR SHALL ENSURE THE TRAFFIC LANES ARE STABLE BEFORE OPENING THE WORK ZONE TO TWO WAY TRAFFIC.

USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) OR OTHER APPROVED LANE SEPARATOR BETWEEN LANES DURING NON WORKING HOURS.

7. CONSTRUCT PAVEMENT STRUCTURE TO LINE AND GRADES AS SHOWN IN THE PLANS.

PHASE 2

PROPOSED CONSTRUCTION: FROM STA 223+00 TO STA 321+00 (SOUTH SIDE)

1. SET ADVANCE WARNING SIGNING AND CHANNELIZING DEVICES. INCLUDE PCMS FOR BOTH EB AND WB APPROACHES TO THE WORK ZONE.

2. PLACE SW3P DEVICES.

3. PLACE WORK ZONE PAVEMENT MARKINGS AS SHOWN IN THE TCP LAYOUTS AND SHIFT TRAFFIC TO THE TCP TRAFFIC PATTERN.

4. SAWCUT THE EB SHOULDER AND MILL AN ADDITIONAL 5" THAT OVERLAPS INTO THE EXISTING EB SH 105 LANES BY 1'. THIS WILL PROVIDE AN HMAC OVERLAP WITH THE EXISTING EB SHOULDER. THE 1' OVERLAP DEPTH WILL VARY DEPENDING ON EXISTING SH 105 THRU LANE CROSS SLOPES. REFER TO PROPOSED TYPICAL SECTIONS FOR MORE INFORMATION.

5. CONSTRUCTION AT INTERSECTIONS AND DRIVEWAYS

CONSTRUCT INTERSECTIONS AND DRIVEWAYS IN HALF WIDTHS.

INSTALL DRAINAGE PIPES.

SEE TCP MISCELLEANOUS DETAILS. THE CONTRACTOR SHALL CONTROL TRAFFIC USING ONE LANE TWO WAY TRAFFIC CONTROL.

PRIOR TO COMMENCING THIS WORK PROVIDE THE ENGINEER WITH A DETAILED PLAN, FOR APPROVAL, SHOWING HOW THE CONTRACTOR WILL HANDLE TRAFFIC AT THIS INTERSECTION DURING WORK HOURS.

SCHEDULE WORK TO NOT HAVE ELEVATION CHANGES ACROSS THE LANES OF TRAVEL DURING NON WORK HOURS.

PROVIDE DURABLE DRIVEABLE TAPERS AT TIES WITH EXISTING PAVEMENT.

IT IS EXPECTED THAT TRAFFIC WILL CROSS THROUGH THE CONSTRUCTION AREA DRIVING ON EXCAVATED FLEX BASE OR PROPOSED FLEX BASE.

THE CONTRACTOR SHALL ENSURE THE TRAFFIC LANES ARE STABLE BEFORE OPENING THE WORK ZONE TO TWO WAY TRAFFIC.

USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) OR OTHER APPROVED LANE SEPARATOR BETWEEN LANES DURING NON WORKING HOURS.

6. CONSTRUCT PAVEMENT STRUCTURE TO LINE AND GRADES AS SHOWN IN THE PLANS.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SEQUENCE OF WORK

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		38

DATE: 3/22/2024 9:12:47 AM
FILE: BRYCEC_TASK02_TCP_SOW.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

PHASE 3

PROPOSED CONSTRUCTION: FROM STA 79+00 TO STA 235+00 (NORTH SIDE)

1. SET ADVANCE WARNING SIGNING AND CHANNELIZING DEVICES. INCLUDE PCMS FOR BOTH EB AND WB APPROACHES TO THE WORK ZONE.

2. PLACE SW3P DEVICES.

3. MILL THE EXISTING PAVEMENT DOWN 2" TO REMOVE THE EXISTING RUMBLE STRIPS AND PAVEMENT MARKINGS. THE FIRST AND LAST 100 FEET OF THIS PHASE ARE TO BE MILLED FROM 0" TO 2". THIS WILL BE DONE TO TRANSITION BACK UP TO THE UNTOUCHED EXISTING PAVEMENT. ANY PAVEMENT REPAIR WORK IS TO BE DONE ON AN AS NEEDED BASIS.

4. PLACE WORK ZONE PAVEMENT MARKINGS AS SHOWN IN THE TCP LAYOUTS AND SHIFT TRAFFIC TO THE TCP TRAFFIC PATTERN.

5. SAWCUT THE WB SHOULDER AND MILL AN ADDITIONAL 5" THAT OVERLAPS INTO THE EXISTING WB SH 105 LANES BY 1'. THIS WILL PROVIDE AN HMAC OVERLAP WITH THE EXISTING WB SHOULDER. THE 1' OVERLAP DEPTH WILL VARY DEPENDING ON EXISTING SH 105 THRU LANE CROSS SLOPES. REFER TO PROPOSED TYPICAL SECTIONS FOR MORE INFORMATION.

6. CONSTRUCTION AT INTERSECTIONS AND DRIVEWAYS

CONSTRUCT INTERSECTIONS AND DRIVEWAYS IN HALF WIDTHS.

INSTALL DRAINAGE PIPES.

SEE TCP MISCELLEANOUS DETAILS. THE CONTRACTOR SHALL CONTROL TRAFFIC USING ONE LANE TWO WAY TRAFFIC CONTROL.

PRIOR TO COMMENCING THIS WORK PROVIDE THE ENGINEER WITH A DETAILED PLAN, FOR APPROVAL, SHOWING HOW THE CONTRACTOR WILL HANDLE TRAFFIC AT THIS INTERSECTION DURING WORK HOURS.

SCHEDULE WORK TO NOT HAVE ELEVATION CHANGES ACROSS THE LANES OF TRAVEL DURING NON WORK HOURS.

PROVIDE DURABLE DRIVEABLE TAPERS AT TIES WITH EXISTING PAVEMENT.

IT IS EXPECTED THAT TRAFFIC WILL CROSS THROUGH THE CONSTRUCTION AREA DRIVING ON EXCAVATED FLEX BASE OR PROPOSED FLEX BASE.

THE CONTRACTOR SHALL ENSURE THE TRAFFIC LANES ARE STABLE BEFORE OPENING THE WORK ZONE TO TWO WAY TRAFFIC.

USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) OR OTHER APPROVED LANE SEPARATOR BETWEEN LANES DURING NON WORKING HOURS.

7. CONSTRUCT PAVEMENT STRUCTURE TO LINE AND GRADES AS SHOWN IN THE PLANS.

PHASE 4

PROPOSED CONSTRUCTION: FROM STA 79+00 TO STA 235+00 (SOUTH SIDE)

1. SET ADVANCE WARNING SIGNING AND CHANNELIZING DEVICES. INCLUDE PCMS FOR BOTH EB AND WB APPROACHES TO THE WORK ZONE.

2. PLACE SW3P DEVICES.

3. PLACE WORK ZONE PAVEMENT MARKINGS AS SHOWN IN THE TCP LAYOUTS AND SHIFT TRAFFIC TO THE TCP TRAFFIC PATTERN.

4. SAWCUT THE EB SHOULDER AND MILL AN ADDITIONAL 5" THAT OVERLAPS INTO THE EXISTING EB SH 105 LANES BY 1'. THIS WILL PROVIDE AN HMAC OVERLAP WITH THE EXISTING EB SHOULDER. THE 1' OVERLAP DEPTH WILL VARY DEPENDING ON EXISTING SH 105 THRU LANE CROSS SLOPES. REFER TO PROPOSED TYPICAL SECTIONS FOR MORE INFORMATION.

5. CONSTRUCTION AT INTERSECTIONS AND DRIVEWAYS

CONSTRUCT INTERSECTIONS AND DRIVEWAYS IN HALF WIDTHS.

INSTALL DRAINAGE PIPES.

SEE TCP MISCELLEANOUS DETAILS. THE CONTRACTOR SHALL CONTROL TRAFFIC USING ONE LANE TWO WAY TRAFFIC CONTROL.

PRIOR TO COMMENCING THIS WORK PROVIDE THE ENGINEER WITH A DETAILED PLAN, FOR APPROVAL, SHOWING HOW THE CONTRACTOR WILL HANDLE TRAFFIC AT THIS INTERSECTION DURING WORK HOURS.

SCHEDULE WORK TO NOT HAVE ELEVATION CHANGES ACROSS THE LANES OF TRAVEL DURING NON WORK HOURS.

PROVIDE DURABLE DRIVEABLE TAPERS AT TIES WITH EXISTING PAVEMENT.

IT IS EXPECTED THAT TRAFFIC WILL CROSS THROUGH THE CONSTRUCTION AREA DRIVING ON EXCAVATED FLEX BASE OR PROPOSED FLEX BASE.

THE CONTRACTOR SHALL ENSURE THE TRAFFIC LANES ARE STABLE BEFORE OPENING THE WORK ZONE TO TWO WAY TRAFFIC.

USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) OR OTHER APPROVED LANE SEPARATOR BETWEEN LANES DURING NON WORKING HOURS.

6. CONSTRUCT PAVEMENT STRUCTURE TO LINE AND GRADES AS SHOWN IN THE PLANS.

PHASE 5

PROPOSED CONSTRUCTION: FROM SH 6 TO STA 91+00 (NORTH SIDE)

1. SET ADVANCE WARNING SIGNING AND CHANNELIZING DEVICES. AT THE SH 6 INTERSECTION, THE CONTRACTOR IS TO COVER OR ADD SIGNS AS DEEMED APPROPRIATE BY THE ENGINEER. INCLUDE PCMS FOR BOTH EB AND WB APPROACHES TO THE WORK ZONE.

2. PLACE SW3P DEVICES.

3. MILL THE EXISTING PAVEMENT DOWN 2" TO REMOVE THE EXISTING RUMBLE STRIPS AND PAVEMENT MARKINGS. THE FIRST AND LAST 100 FEET OF THIS PHASE ARE TO BE MILLED FROM 0" TO 2". THIS WILL BE DONE TO TRANSITION BACK UP TO THE UNTOUCHED EXISTING PAVEMENT. ELIMINATE THE EXISTING PAVEMENT MARKINGS PAST THE OVERLAY LIMITS. ANY PAVEMENT REPAIR WORK IS TO BE DONE ON AN AS NEEDED BASIS.

4. PLACE WORK ZONE PAVEMENT MARKINGS AS SHOWN IN THE TCP LAYOUTS AND SHIFT TRAFFIC TO THE TCP TRAFFIC PATTERN.

5. SAWCUT THE WB SHOULDER AND MILL AN ADDITIONAL 5" THAT OVERLAPS INTO THE EXISTING WB SH 105 LANES BY 1'. THIS WILL PROVIDE AN HMAC OVERLAP WITH THE EXISTING WB SHOULDER. THE 1' OVERLAP DEPTH WILL VARY DEPENDING ON EXISTING SH 105 THRU LANE CROSS SLOPES. REFER TO PROPOSED TYPICAL SECTIONS FOR MORE INFORMATION.

6. CONSTRUCTION AT INTERSECTIONS AND DRIVEWAYS

CONSTRUCT INTERSECTIONS AND DRIVEWAYS IN HALF WIDTHS.

INSTALL DRAINAGE PIPES.

SEE TCP MISCELLEANOUS DETAILS. THE CONTRACTOR SHALL CONTROL TRAFFIC USING ONE LANE TWO WAY TRAFFIC CONTROL.

PRIOR TO COMMENCING THIS WORK PROVIDE THE ENGINEER WITH A DETAILED PLAN, FOR APPROVAL, SHOWING HOW THE CONTRACTOR WILL HANDLE TRAFFIC AT THIS INTERSECTION DURING WORK HOURS.

SCHEDULE WORK TO NOT HAVE ELEVATION CHANGES ACROSS THE LANES OF TRAVEL DURING NON WORK HOURS.

PROVIDE DURABLE DRIVEABLE TAPERS AT TIES WITH EXISTING PAVEMENT.

IT IS EXPECTED THAT TRAFFIC WILL CROSS THROUGH THE CONSTRUCTION AREA DRIVING ON EXCAVATED FLEX BASE OR PROPOSED FLEX BASE.

THE CONTRACTOR SHALL ENSURE THE TRAFFIC LANES ARE STABLE BEFORE OPENING THE WORK ZONE TO TWO WAY TRAFFIC.

USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) OR OTHER APPROVED LANE SEPARATOR BETWEEN LANES DURING NON WORKING HOURS.

7. CONSTRUCT PAVEMENT STRUCTURE TO LINE AND GRADES AS SHOWN IN THE PLANS.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SEQUENCE OF WORK

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		39

DATE: 3/22/2024 9:12:52 AM
FILE: BRYCEC_TASK02_TCP_SOW2.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

PHASE 6

PROPOSED CONSTRUCTION: FROM SH 6 TO STA 91+00 (SOUTH SIDE)

1. SET ADVANCE WARNING SIGNING AND CHANNELIZING DEVICES. AT THE SH 6 INTERSECTION, THE CONTRACTOR IS TO COVER OR ADD SIGNS AS DEEMED APPROPRIATE BY THE ENGINEER. INCLUDE PCMS FOR BOTH EB AND WB APPROACHES TO THE WORK ZONE.

2. PLACE SW3P DEVICES.

3. PLACE WORK ZONE PAVEMENT MARKINGS AS SHOWN IN THE TCP LAYOUTS AND SHIFT TRAFFIC TO THE TCP TRAFFIC PATTERN.

4. SAWCUT THE EB SHOULDER AND MILL AN ADDITIONAL 5" THAT OVERLAPS INTO THE EXISTING EB SH 105 LANES BY 1'. THIS WILL PROVIDE AN HMAC OVERLAP WITH THE EXISTING EB SHOULDER. THE 1' OVERLAP DEPTH WILL VARY DEPENDING ON EXISTING SH 105 THRU LANE CROSS SLOPES. REFER TO PROPOSED TYPICAL SECTIONS FOR MORE INFORMATION.

5. CONSTRUCTION AT INTERSECTIONS AND DRIVEWAYS

CONSTRUCT INTERSECTIONS AND DRIVEWAYS IN HALF WIDTHS.

INSTALL DRAINAGE PIPES.

SEE TCP MISCELLEANOUS DETAILS. THE CONTRACTOR SHALL CONTROL TRAFFIC USING ONE LANE TWO WAY TRAFFIC CONTROL.

PRIOR TO COMMENCING THIS WORK PROVIDE THE ENGINEER WITH A DETAILED PLAN, FOR APPROVAL, SHOWING HOW THE CONTRACTOR WILL HANDLE TRAFFIC AT THIS INTERSECTION DURING WORK HOURS.

SCHEDULE WORK TO NOT HAVE ELEVATION CHANGES ACROSS THE LANES OF TRAVEL DURING NON WORK HOURS.

PROVIDE DURABLE DRIVEABLE TAPERS AT TIES WITH EXISTING PAVEMENT.

IT IS EXPECTED THAT TRAFFIC WILL CROSS THROUGH THE CONSTRUCTION AREA DRIVING ON EXCAVATED FLEX BASE OR PROPOSED FLEX BASE.

THE CONTRACTOR SHALL ENSURE THE TRAFFIC LANES ARE STABLE BEFORE OPENING THE WORK ZONE TO TWO WAY TRAFFIC.

USE OPPOSING TRAFFIC LANE DIVIDERS (OTLD) OR OTHER APPROVED LANE SEPARATOR BETWEEN LANES DURING NON WORKING HOURS.

6. CONSTRUCT PAVEMENT STRUCTURE TO LINE AND GRADES AS SHOWN IN THE PLANS.

AFTER LAST PHASE

1. MILL ANY REMAINING EXISTING HMAC PAVEMENT TO THE LIMITS SHOWN IN THE PLANS.

2. APPLY TACK COAT ACROSS THE FULL WIDTH OF THE MILLED HMAC PAVEMENT AND WIDENING. APPLY THE 2" OF SP-C (1 LIFT). UTILITIZE TCP(2-1)-18 AND TCP(7-1)-13 WHERE APPLICABLE TO FACILITATE THIS OPERATION.

3. PLACE WORK ZONE SHORT TERM TABS AND PAVEMENT MARKINGS. PAYMENT FOR THESE CAN BE FOUND IN THE SUMMARY TABLES OF PHASES 2, 4, AND 6.

4. PLACE SEEDING.

5. REMOVE EXISTING SIGNS. PLACE PROPOSED SIGNS.

6. CONSTRUCT MILLED RUMBLE STRIPS AS SHOWN IN THE PLANS.

7. PLACE PERMANENT PAVEMENT MARKINGS.

8. REMOVE SW3P DEVICES AS APPROVED BY THE ENGINEER.

9. FINAL CLEANUP.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

TBPE REGISTRATION NO. F-18341

Texas Department of Transportation

SH 105

SEQUENCE OF WORK

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		40

DATE: 3/22/2024 9:12:56 AM
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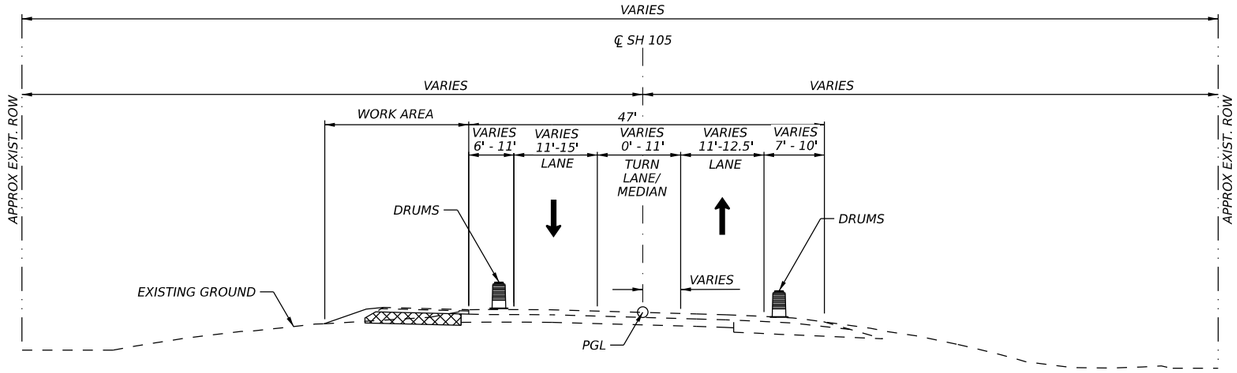
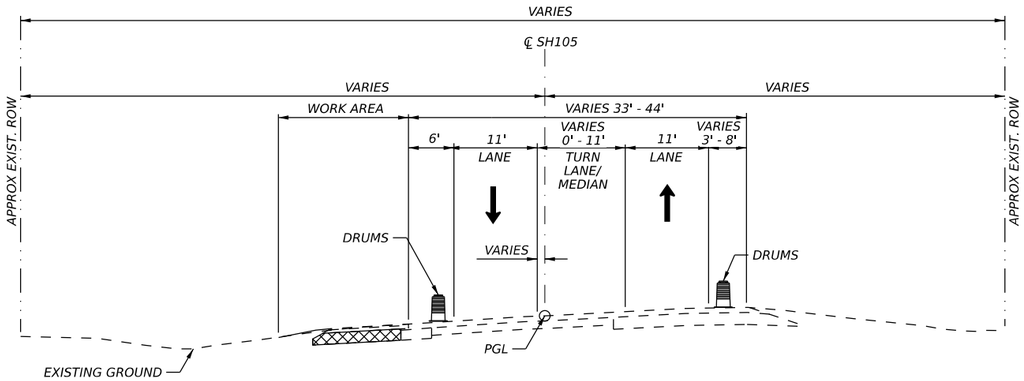
DW: JMT
CK: JMT
DW: JMT



TCP TYPICAL SECTION

SH 105
PHASE 1
STA 223+00.00 TO STA 293+50.00



TCP TYPICAL SECTION

SH 105
PHASE 1
STA 293+50.00 TO STA 321+00.00

DATE: 3/22/2024 6:47:40 PM
FILE: BRYCEC_TASK02_TCP_TYP01.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

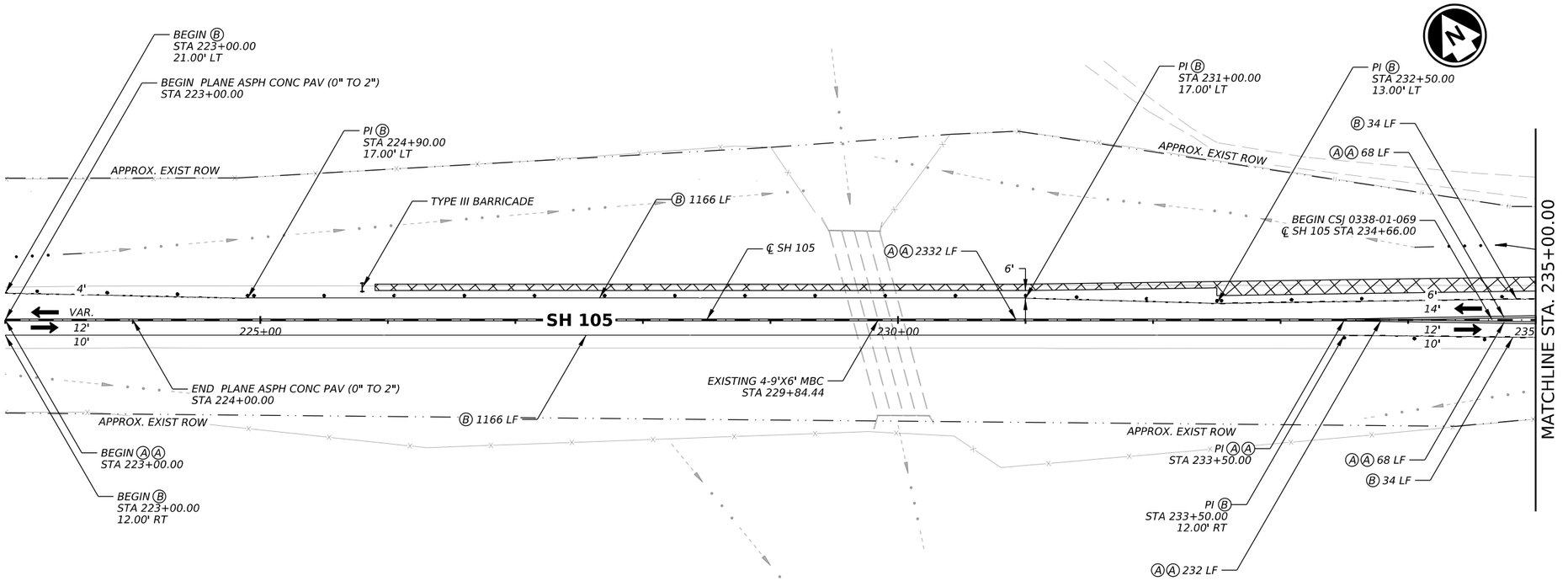
SH 105

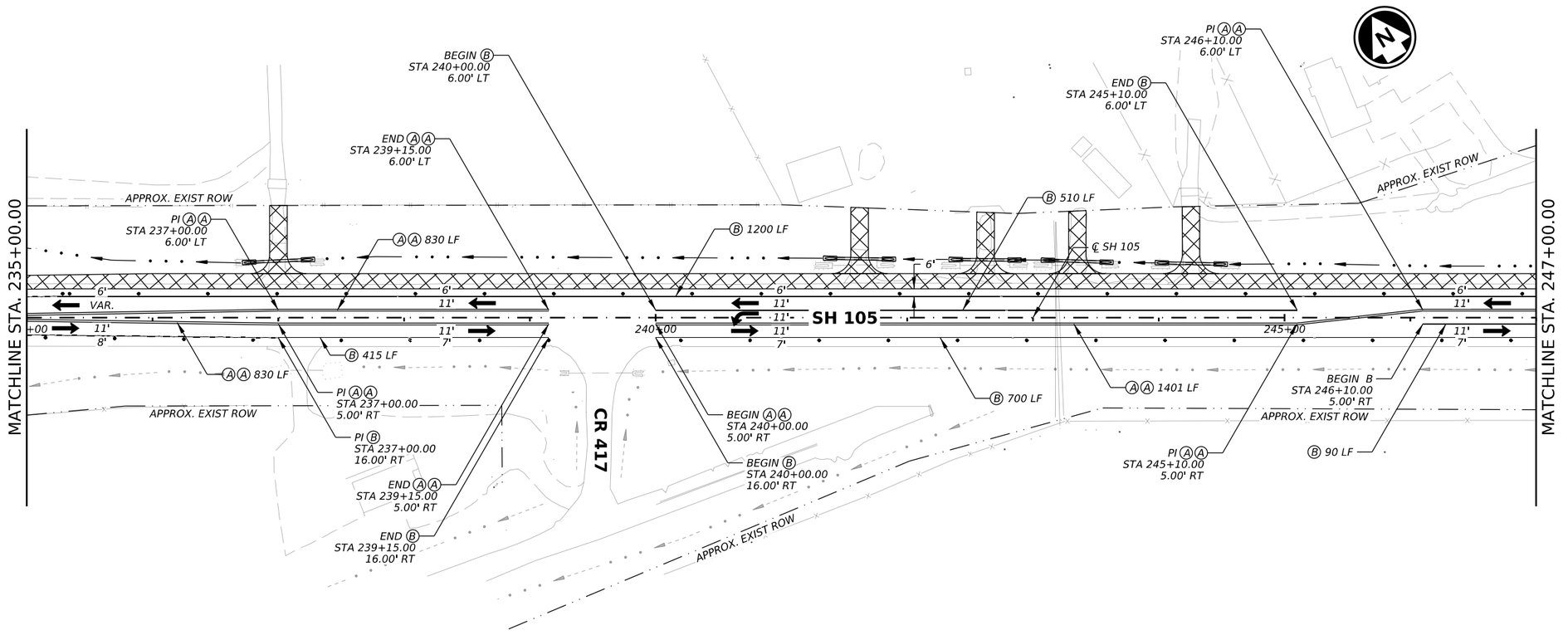
TCP TYPICAL SECTIONS
PHASE 1

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		41

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.
2. ADVANCE WARNING SIGNS AND CHANNELIZING DEVICES SHALL BE SPACED PER TXDOT STANDARDS UNLESS NOTED OTHERWISE ON THE PLANS. ALL DISTANCES SHOWN ARE APPROXIMATE.
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4. SEE TXDOT STANDARDS FOR PLACEMENT OF ALL CONSTRUCTION SIGNS INCLUDING PROJECT LIMIT SIGNING. THE CONTRACTOR IS TO PLACE SIGNS AT THE DIRECTION OF THE ENGINEER.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

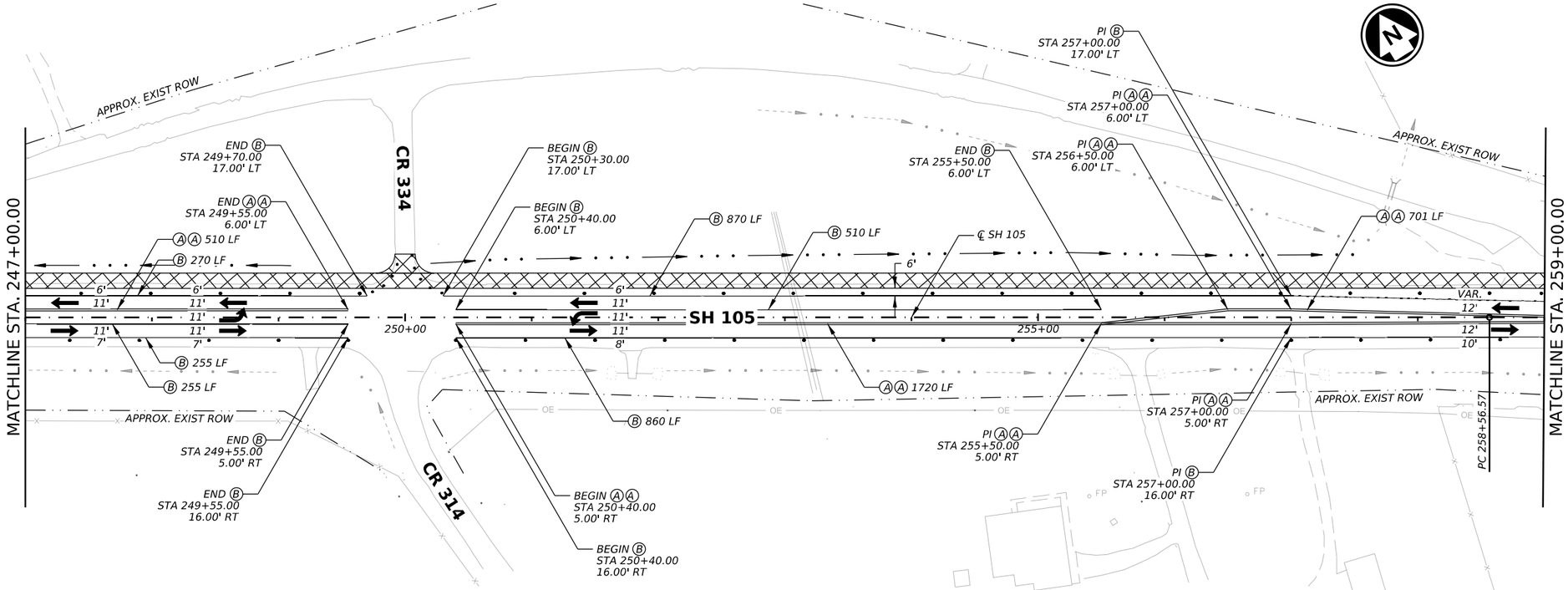
TCP LAYOUT
PHASE 1
STA 223+00 TO STA 247+00

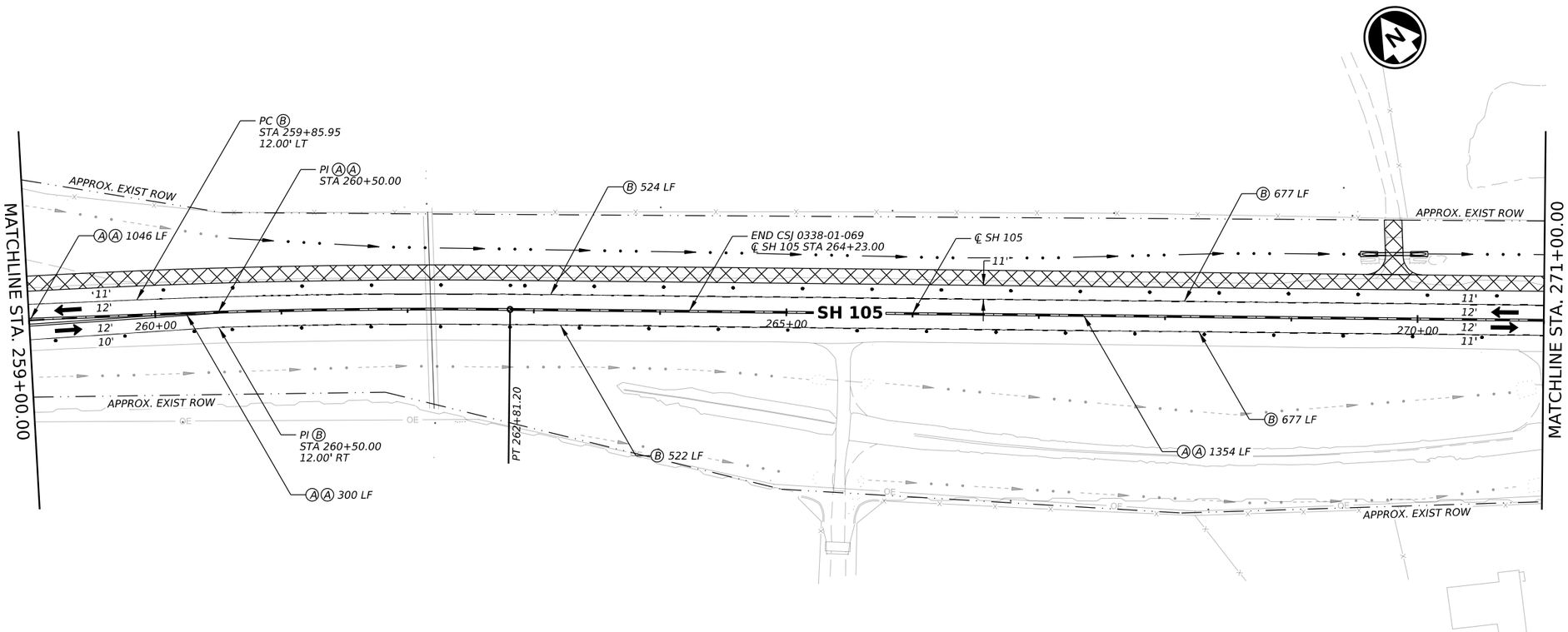
SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		42

DATE: 3/22/2024 11:50:01 PM
FILE: BRYCEC_TASK02_TCP_PH1_01.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

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STATE OF TEXAS
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127743
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

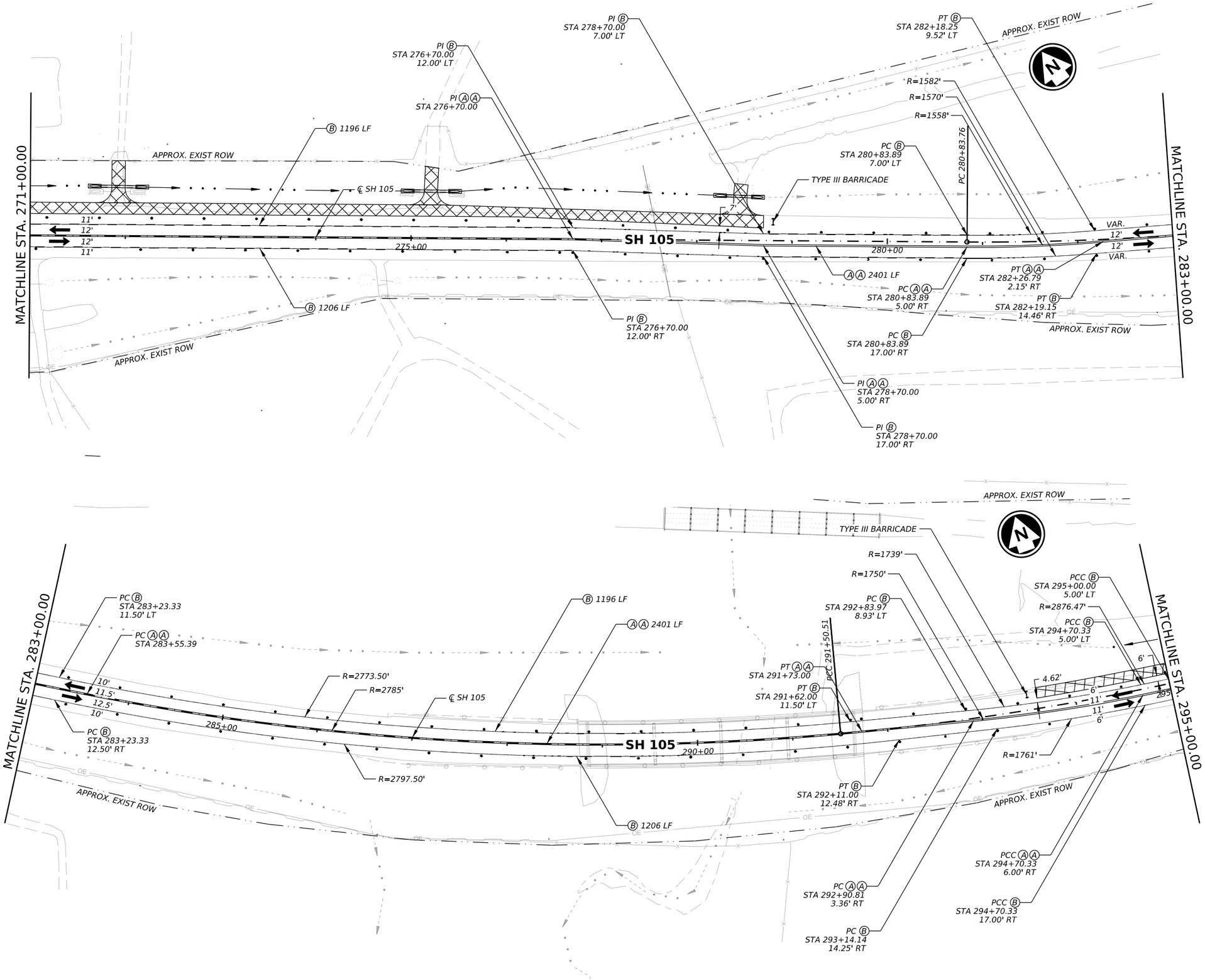
TCP LAYOUT
PHASE 1
STA 247+00 TO STA 271+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		43

DATE: 3/22/2024 9:15:19 AM
FILE: BRYCEC_TASK02_TCP_PH1_02.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 1
STA 271+00 TO STA 295+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		44

DATE: 3/22/2024 9:15:54 AM
FILE: BRYCEC_TASK02_TCP_PH1_03.dgn

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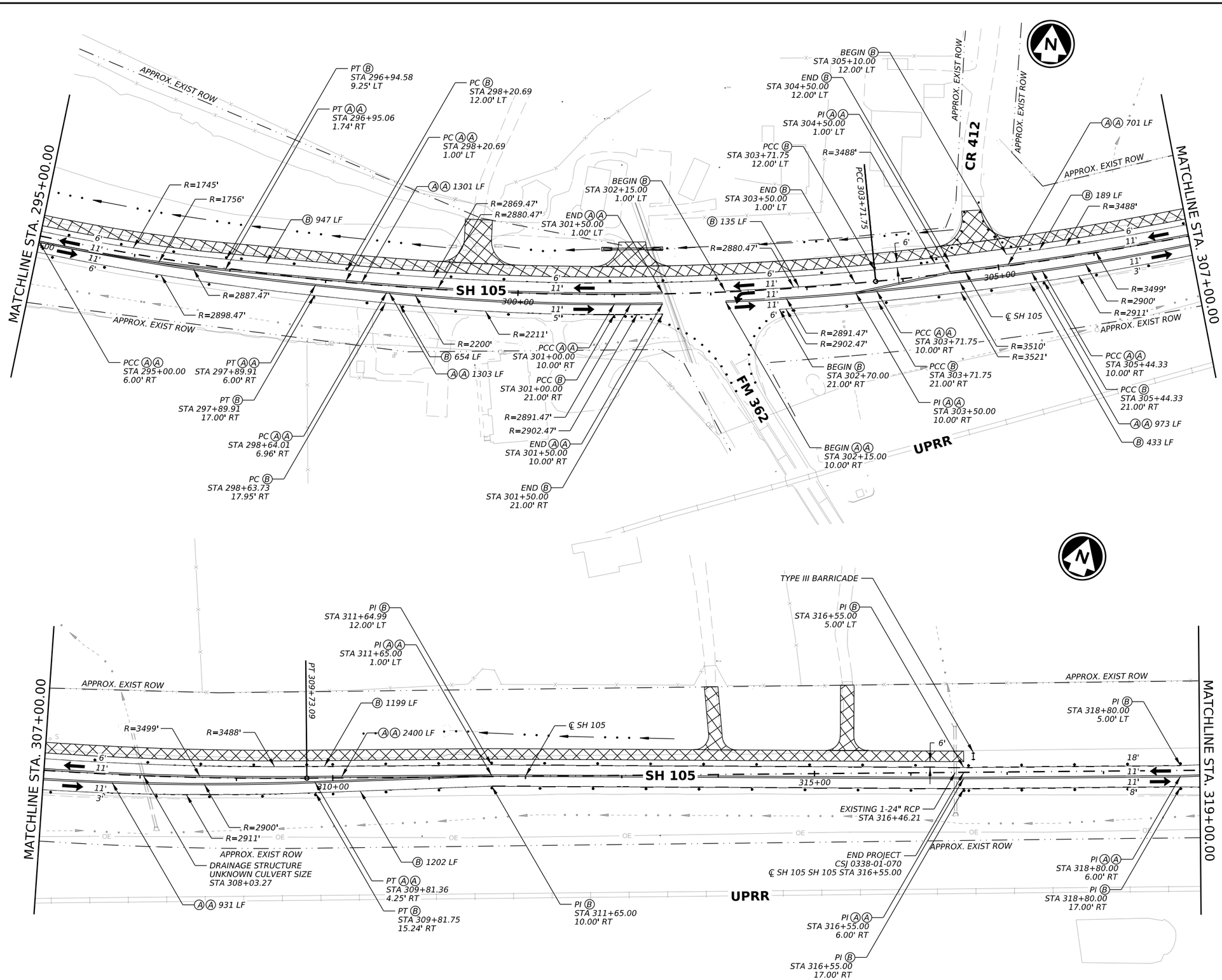
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

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Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 1
STA 295+00 TO STA 319+00

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		45

DATE: 3/22/2024 9:16:27 AM
FILE: BRYCEC_TASK02_TCP_PH1_04.dgn

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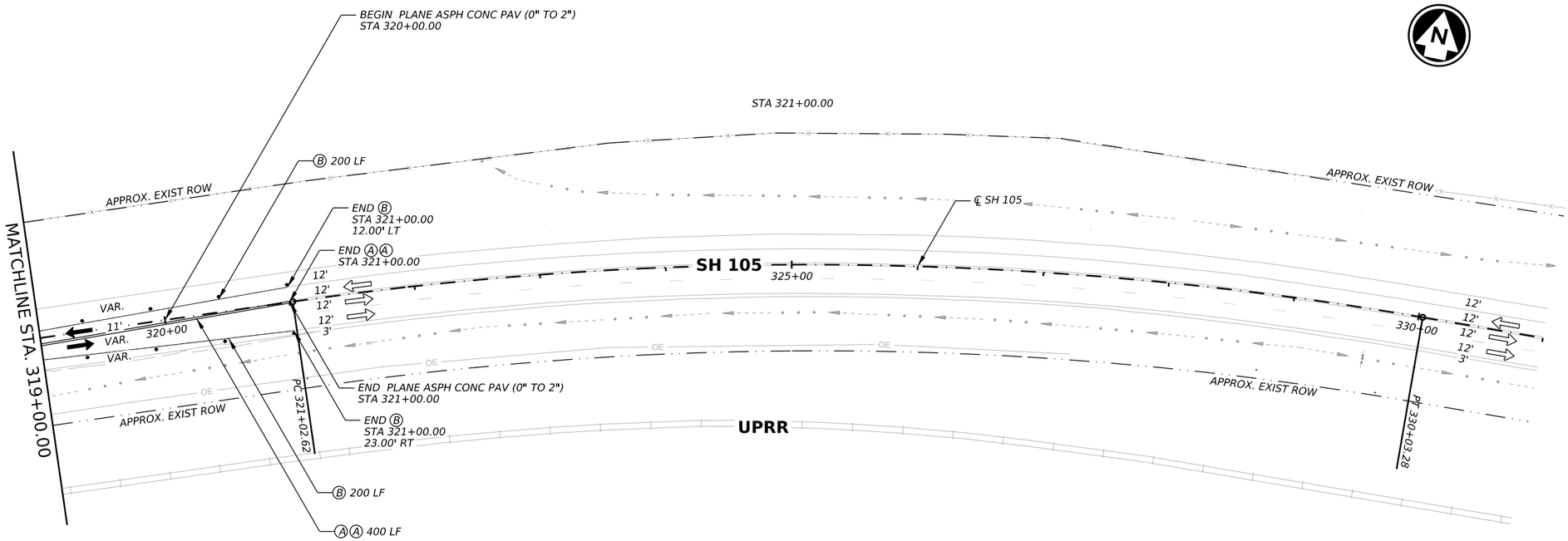
CK: JMT
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

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Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 1
STA 319+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		46

DATE: 3/22/2024 9:17:01 AM
FILE: BRYCEC_TASK02_TCP_PH1_05.dgn

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CK: JMT
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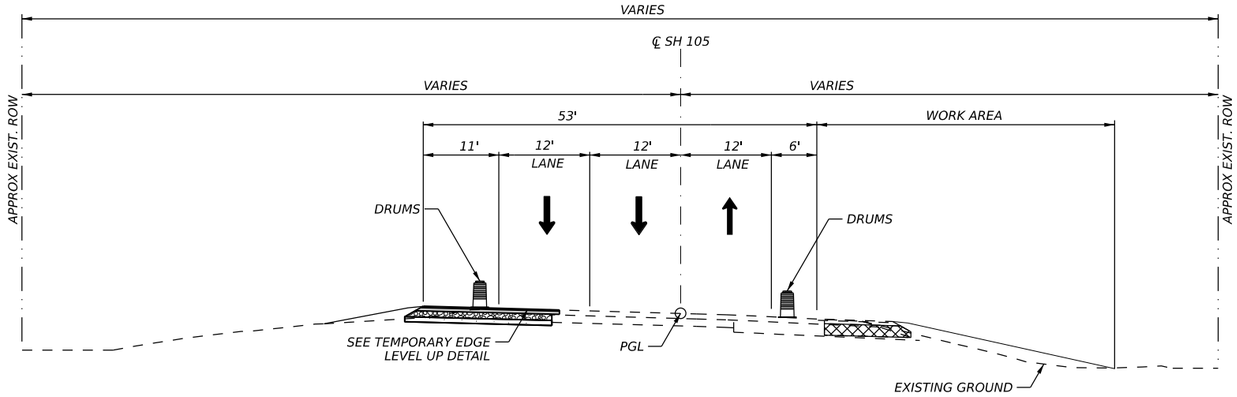
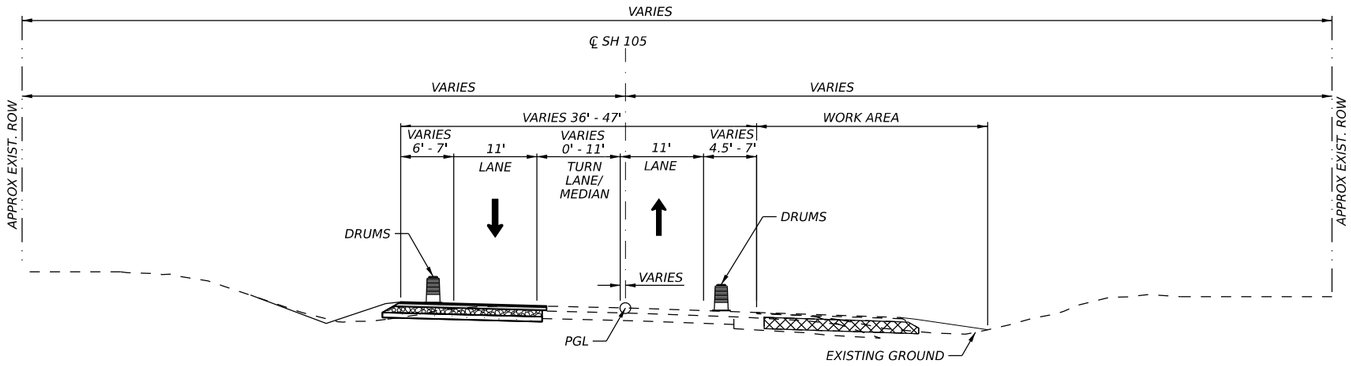


TCP TYPICAL SECTION

SH 105
PHASE 2
STA 223+00.00 TO STA 293+50.00



TCP TYPICAL SECTION

SH 105
PHASE 2
STA 293+50.00 TO STA 321+00.00

DATE: 3/22/2024 6:47:42 PM
FILE: BRYCEC_TASK02_TCP_TYP02.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

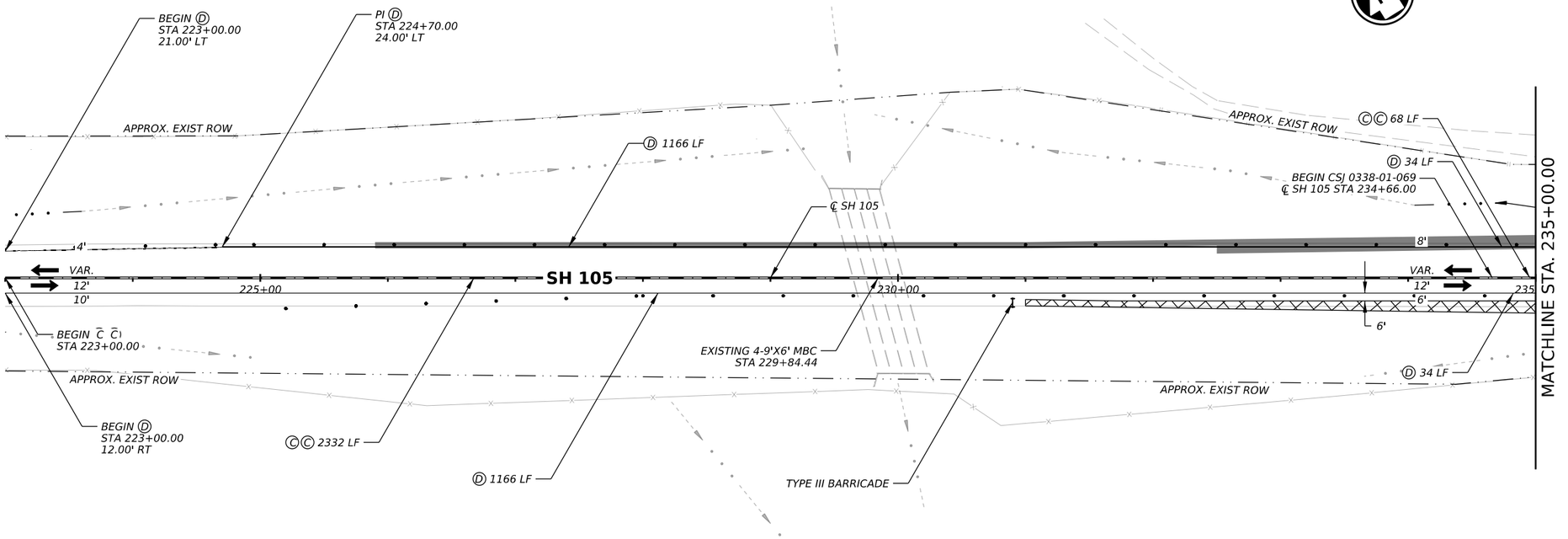
SH 105

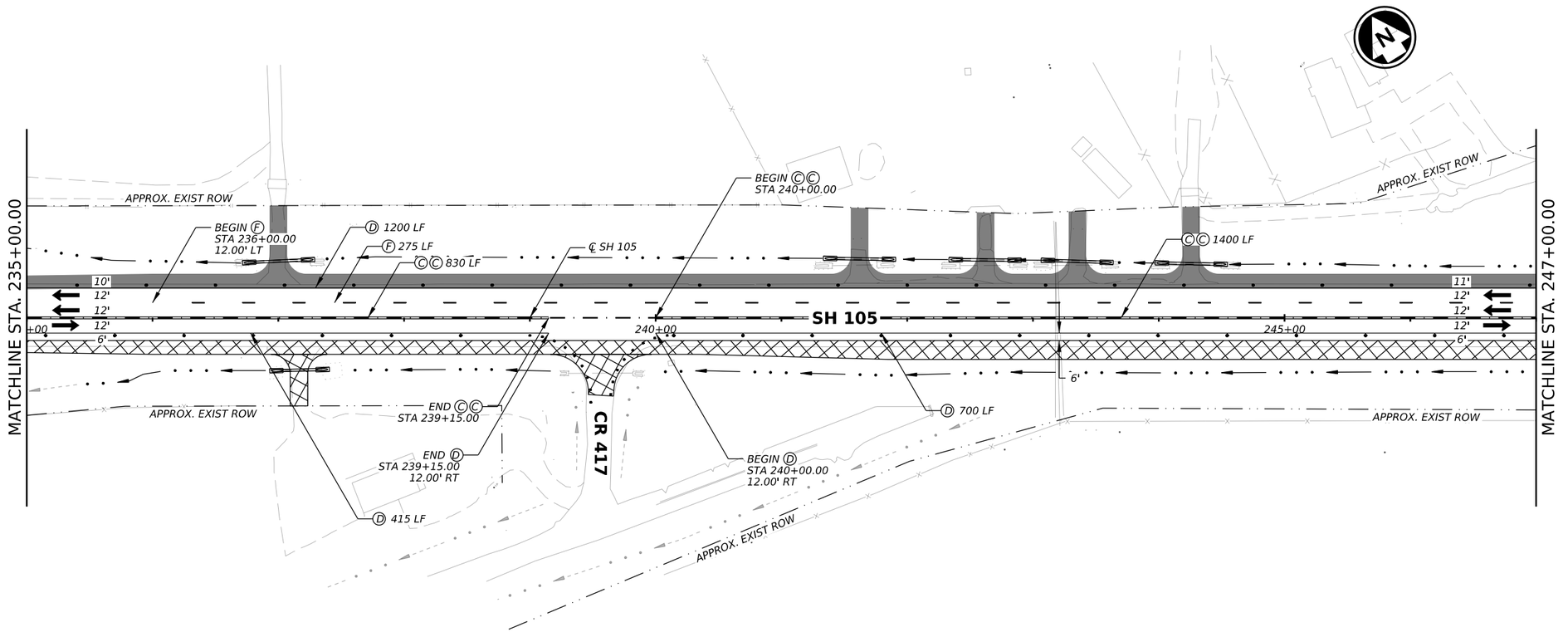
TCP TYPICAL SECTIONS
PHASE 2

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		47

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

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Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 2
STA 223+00 TO STA 247+00

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		48

DATE: 3/22/2024 9:19:22 AM
FILE: BRYCEC_TASK02_TCP_PH2_01.dgn

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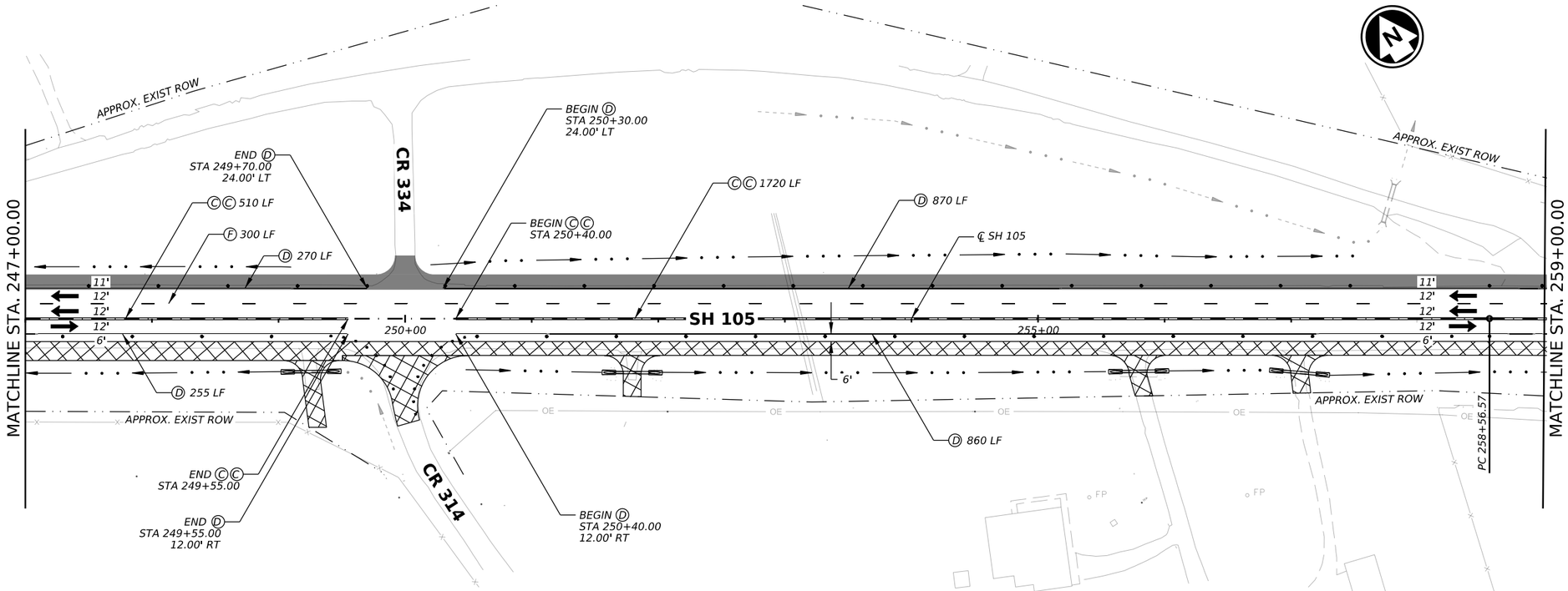
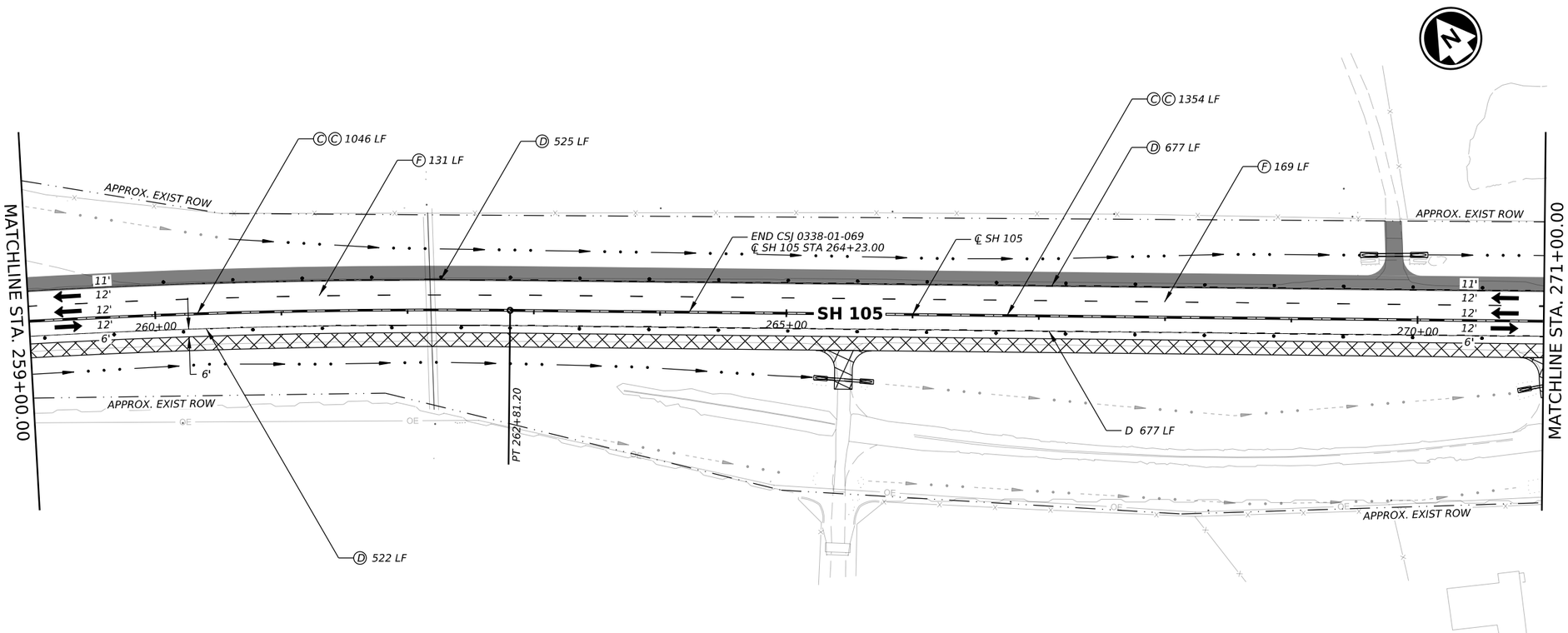
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
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Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 2
STA 247+00 TO STA 271+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		49

DATE: 3/22/2024 9:19:55 AM
FILE: BRYCEC_TASK02_TCP_PH2_02.dgn

CK: JMT
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CK: JMT
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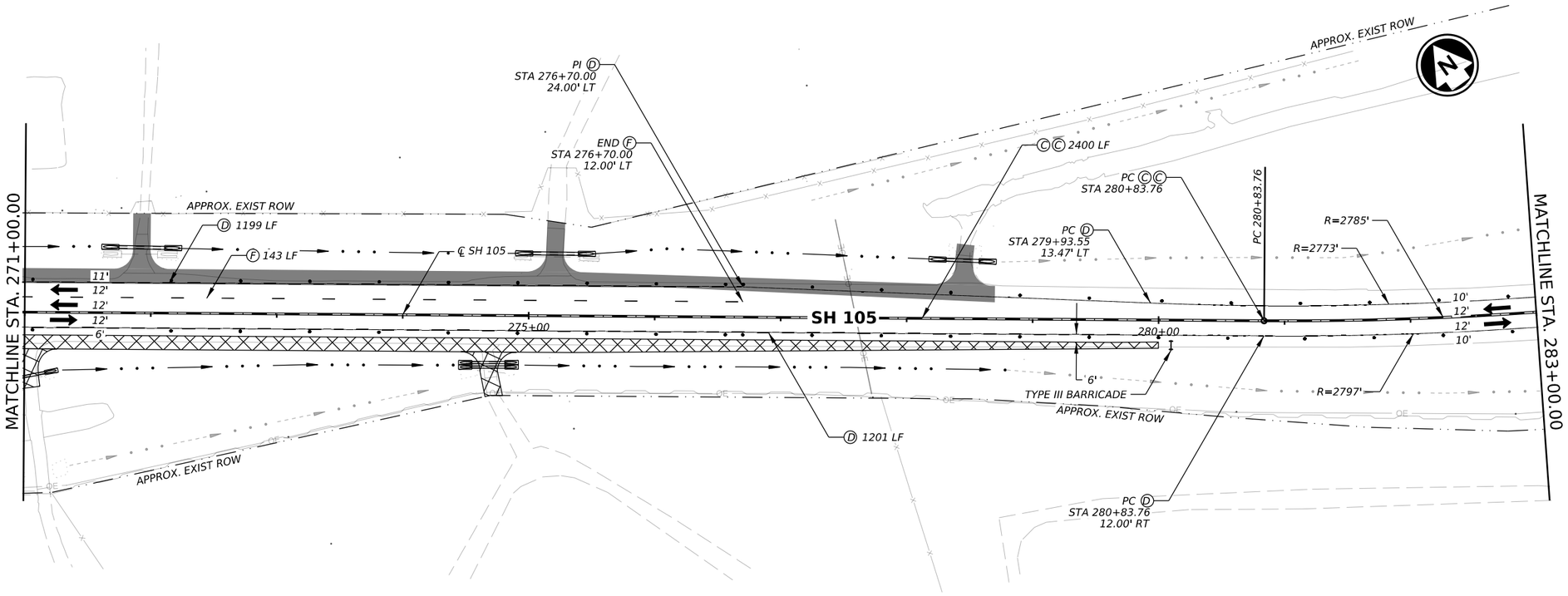

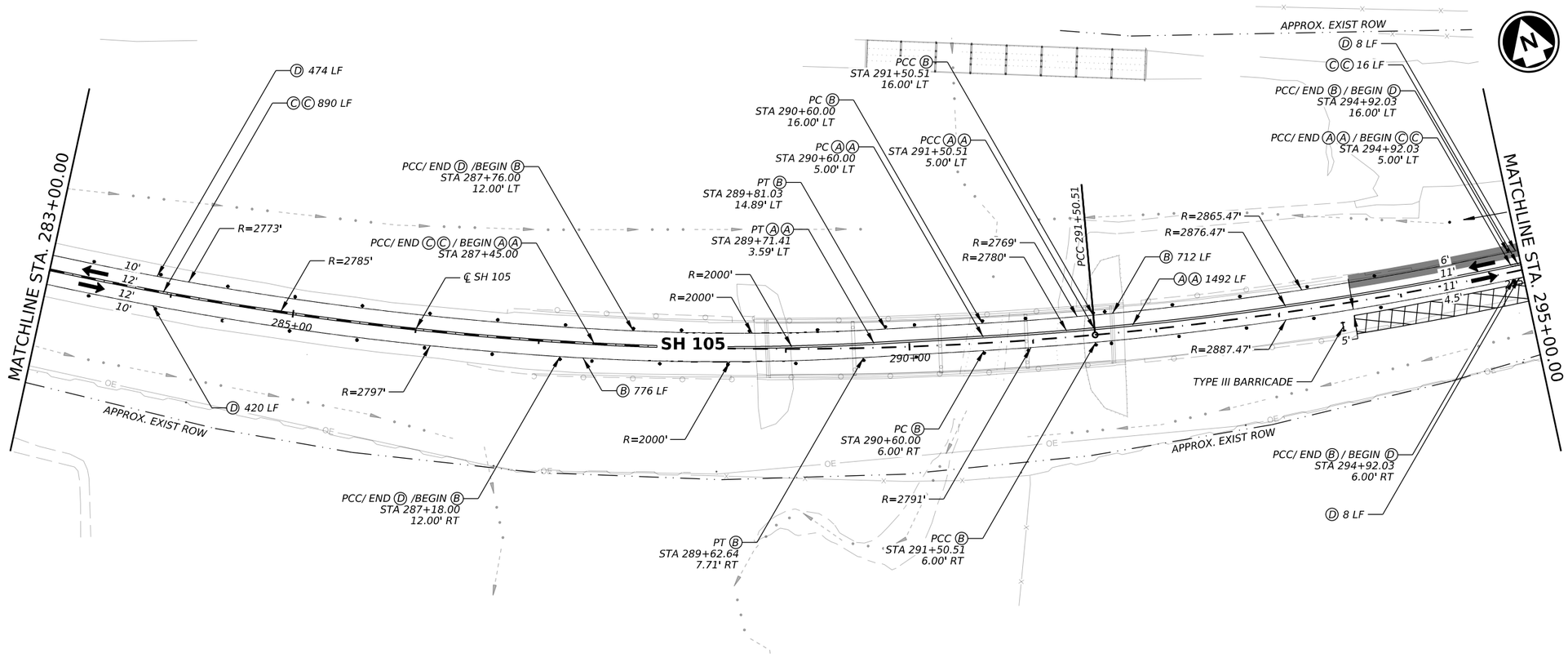

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
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3/22/2024

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Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 2
STA 271+00 TO STA 295+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		50

DATE: 3/22/2024 9:20:29 AM
FILE: BRYCEC_TASK02_TCP_PH2_03.dgn

CK: JMT
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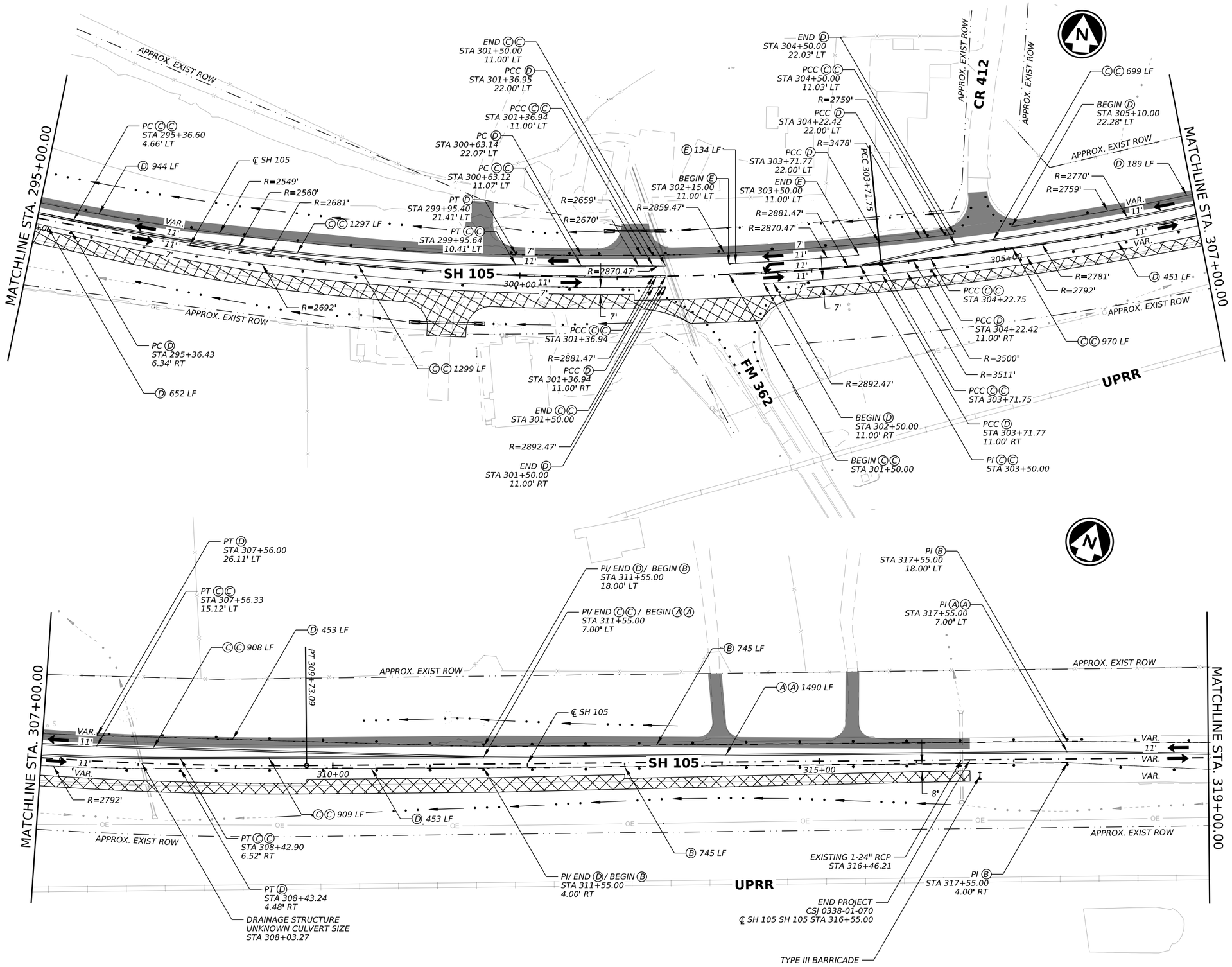
CK: JMT
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
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- CONSTRUCTION SIGN
- TYPE III BARRICADE
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- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
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Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 2
STA 295+00 TO STA 319+00

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		51

DATE: 3/22/2024 9:21:04 AM
FILE: BRYCEC_TASK02_TCP_PH2_04.dgn

CK: JMT
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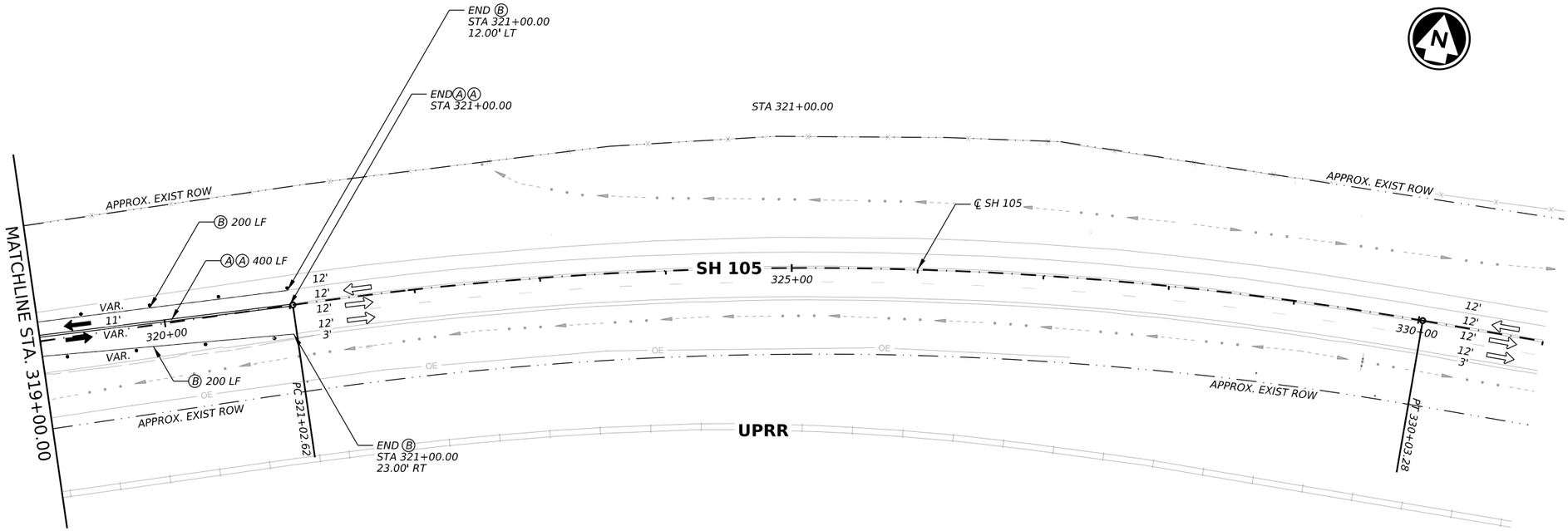
CK: JMT
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.
2. ADVANCE WARNING SIGNS AND CHANNELIZING DEVICES SHALL BE SPACED PER TXDOT STANDARDS UNLESS NOTED OTHERWISE ON THE PLANS. ALL DISTANCES SHOWN ARE APPROXIMATE.
3. REFER TO TCP MISCELLANEOUS DETAILS FOR DRIVEWAY AND CROSS STREET PHASED CONSTRUCTION DETAILS.
4. SEE TXDOT STANDARDS FOR PLACEMENT OF ALL CONSTRUCTION SIGNS INCLUDING PROJECT LIMIT SIGNING. THE CONTRACTOR IS TO PLACE SIGNS AT THE DIRECTION OF THE ENGINEER.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

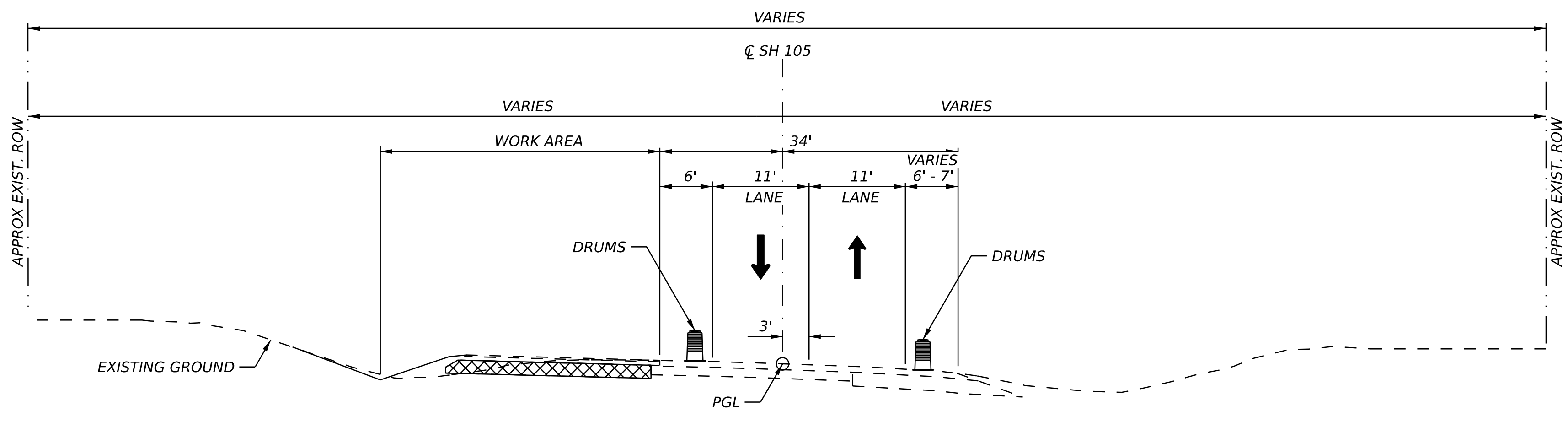
SH 105

TCP LAYOUT
PHASE 2
STA 319+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		52

DATE: 3/22/2024 9:21:36 AM
FILE: BRYCEC_TASK02_TCP_PH2_05.dgn



TCP TYPICAL SECTION

SH 105
PHASE 3
STA 113+50.00 TO STA 158+00.00
STA 178+60.00 TO STA 210+00.00

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP TYPICAL SECTIONS
PHASE 3

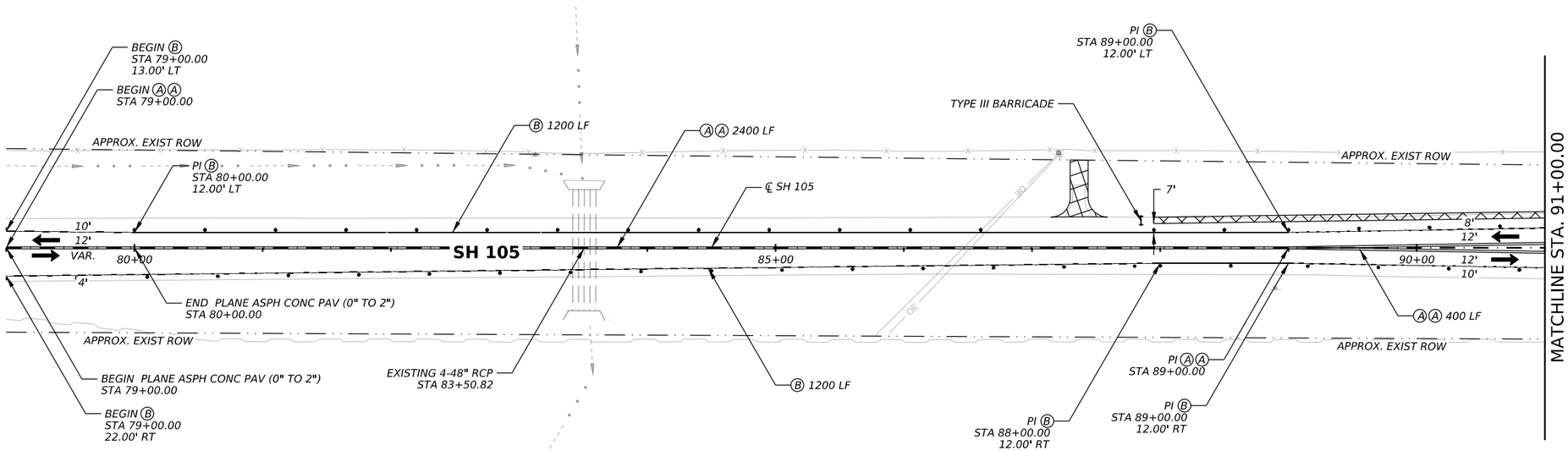
SHEET 1 OF 1

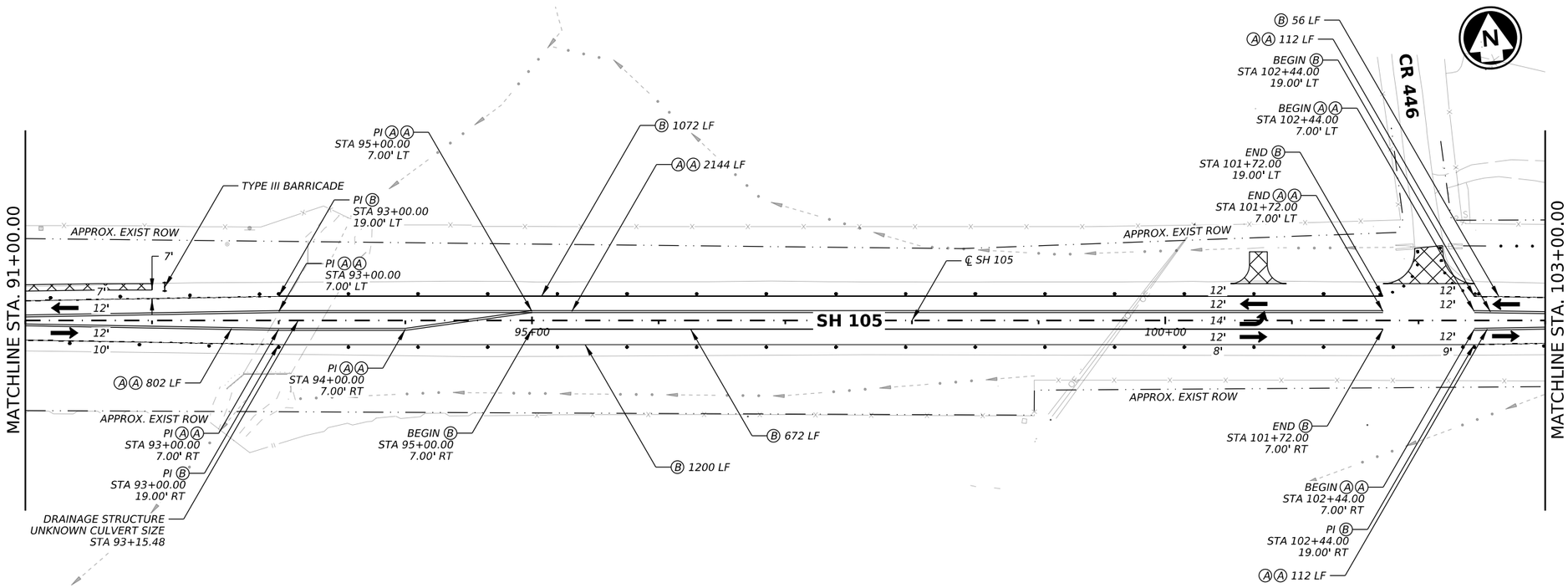
CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		53

DATE: 3/22/2024 6:47:45 PM
FILE: BRYCEC_TASK02_TCP_TYP03.dgn

DN: JMT CK: JMT DW: JMT CK: JMT

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*
2. *ADVANCE WARNING SIGNS AND CHANNELIZING DEVICES SHALL BE SPACED PER TXDOT STANDARDS UNLESS NOTED OTHERWISE ON THE PLANS. ALL DISTANCES SHOWN ARE APPROXIMATE.*
3. *REFER TO TCP MISCELLANEOUS DETAILS FOR DRIVEWAY AND CROSS STREET PHASED CONSTRUCTION DETAILS.*
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 3
STA 79+00 TO STA 103+00

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		54

DATE: 3/22/2024 11:51:45 PM
FILE: BRYCEC_TASK02_TCP_PH3_01.dgn

CK: JMT
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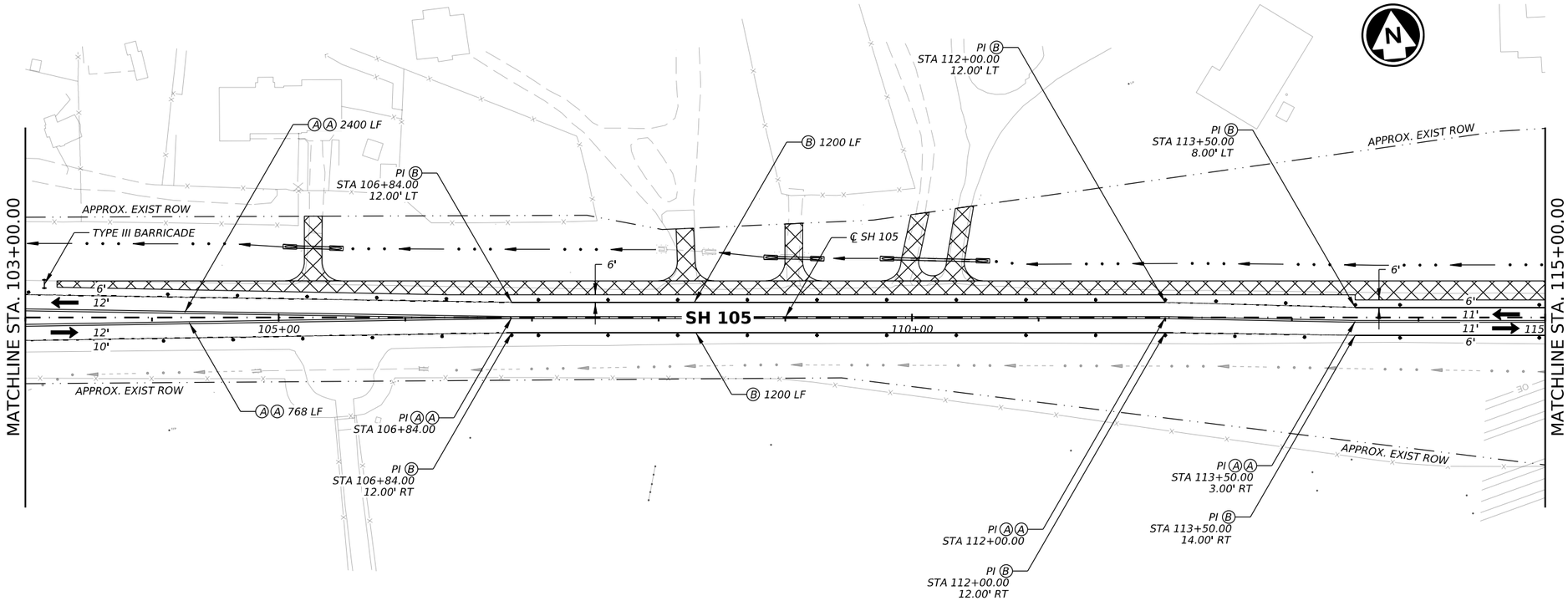
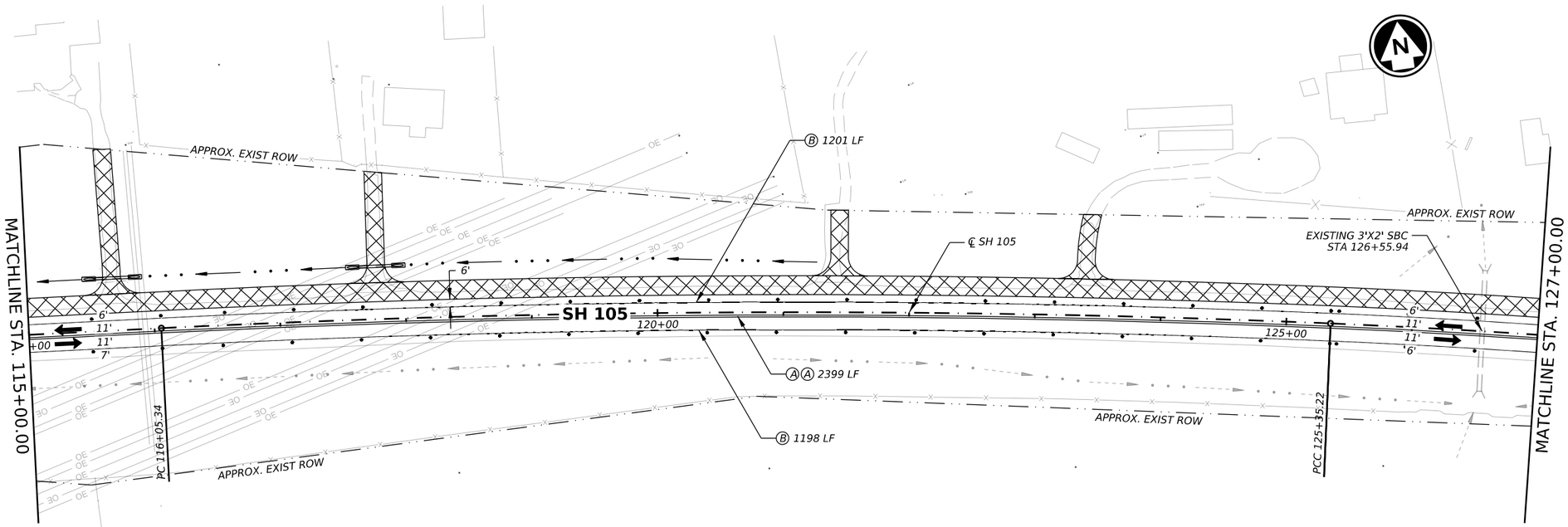
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 3
STA 103+00 TO STA 127+00

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		55

DATE: 3/22/2024 9:24:55 AM
FILE: BRYCEC_TASK02_TCP_PH3_02.dgn

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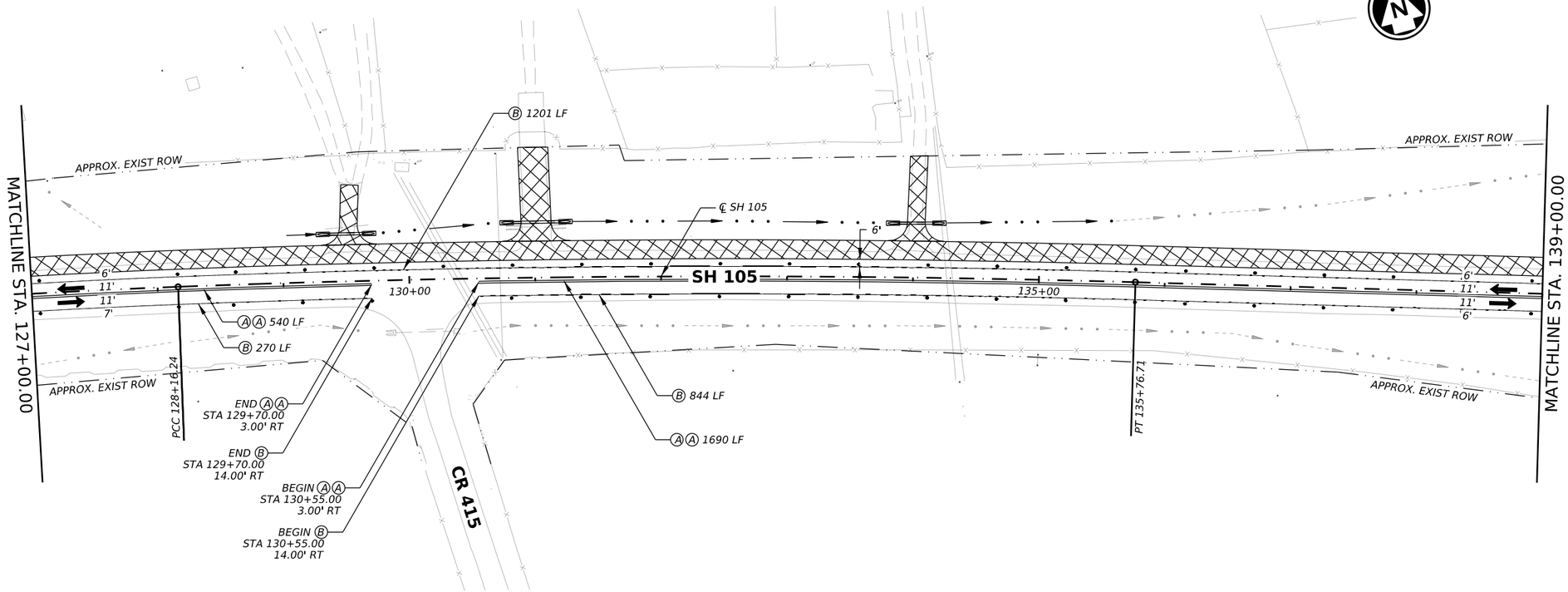
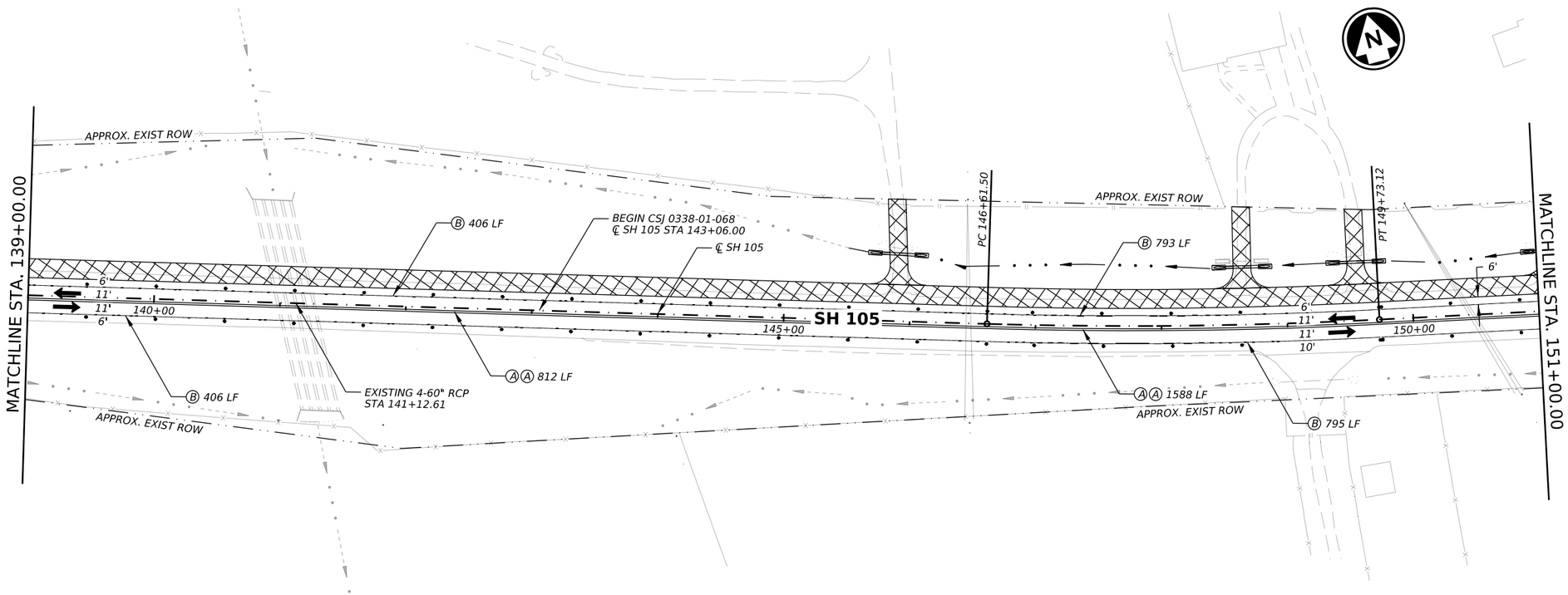
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 3
STA 127+00 TO STA 151+00

SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		56

DATE: 3/22/2024 9:25:29 AM
FILE: BRYCEC_TASK02_TCP_PH3_03.dgn

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CK: JMT
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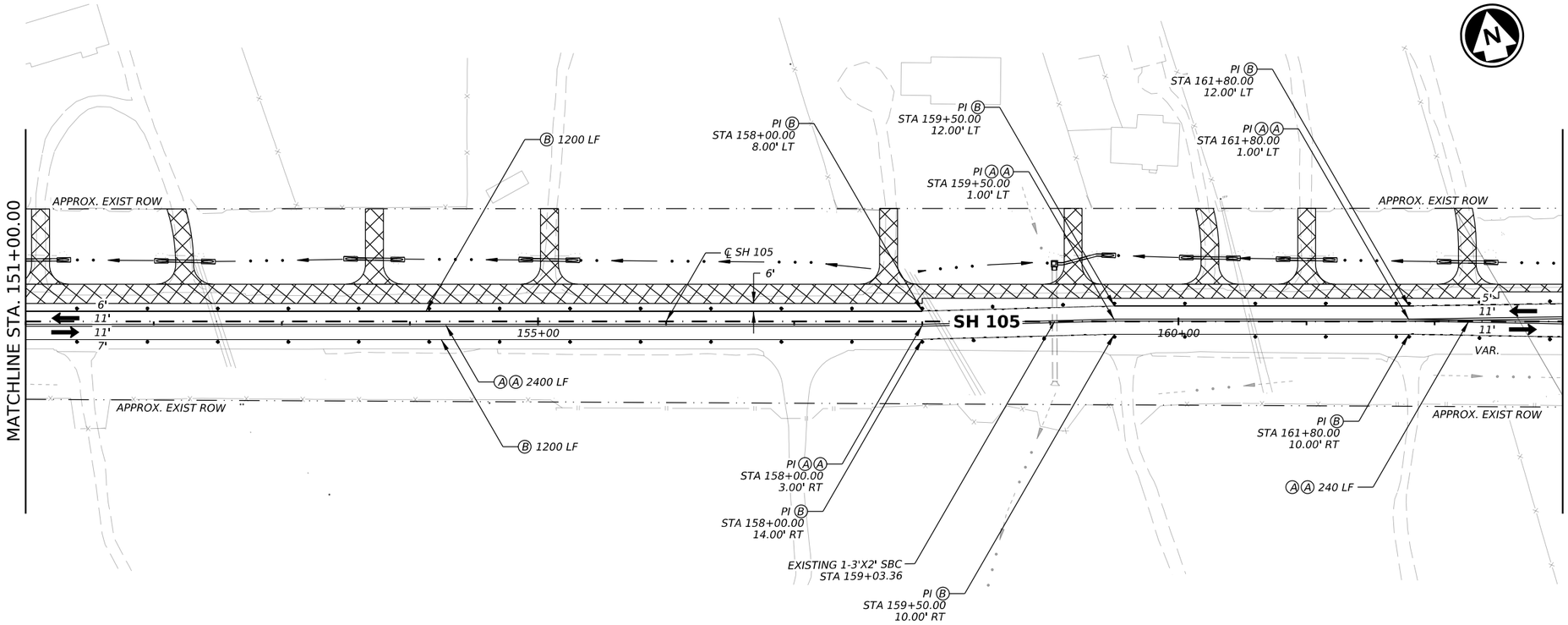

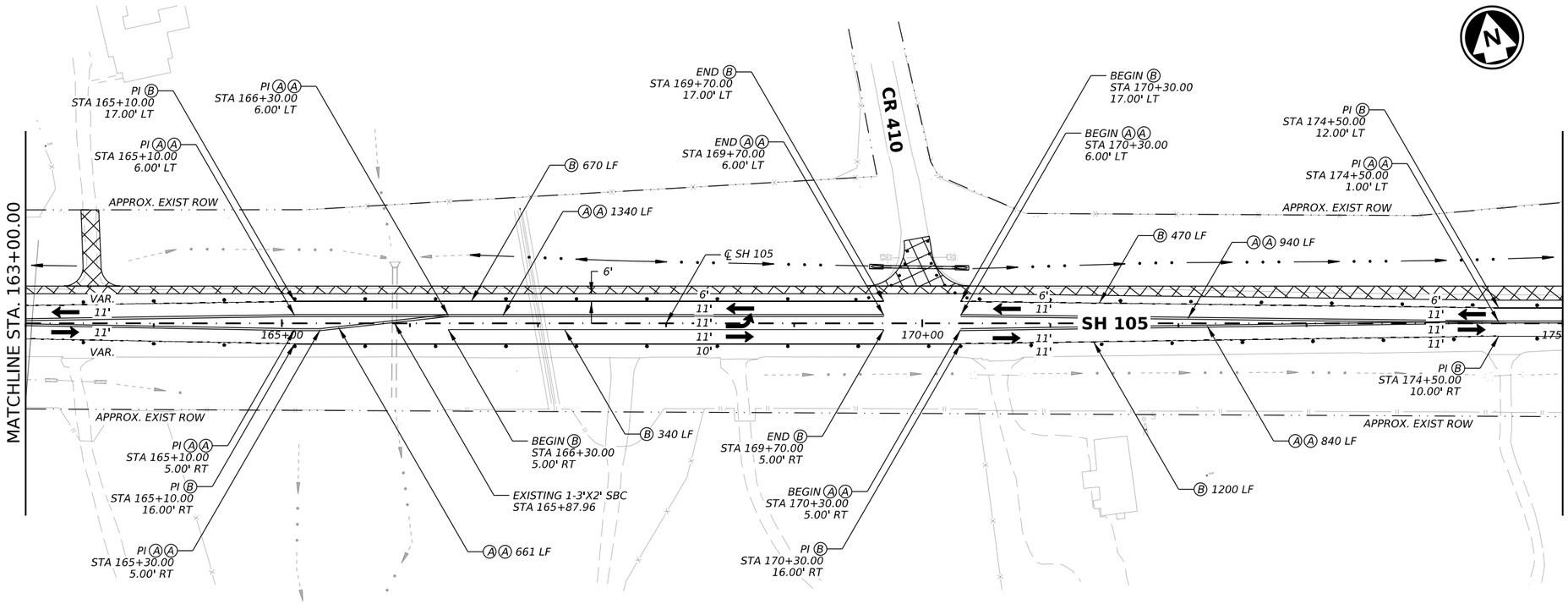

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 3
STA 151+00 TO STA 175+00

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		57

DATE: 3/22/2024 9:26:02 AM
FILE: BRYCEC_TASK02_TCP_PH3_04.dgn

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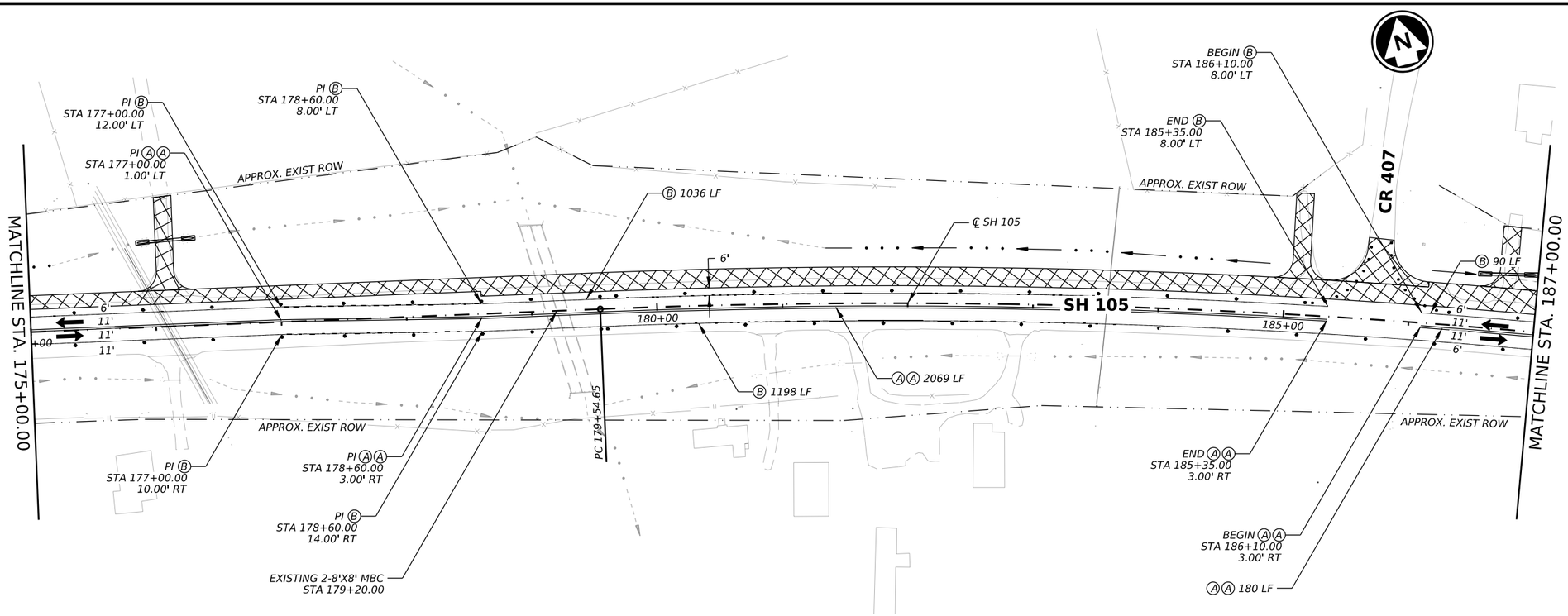
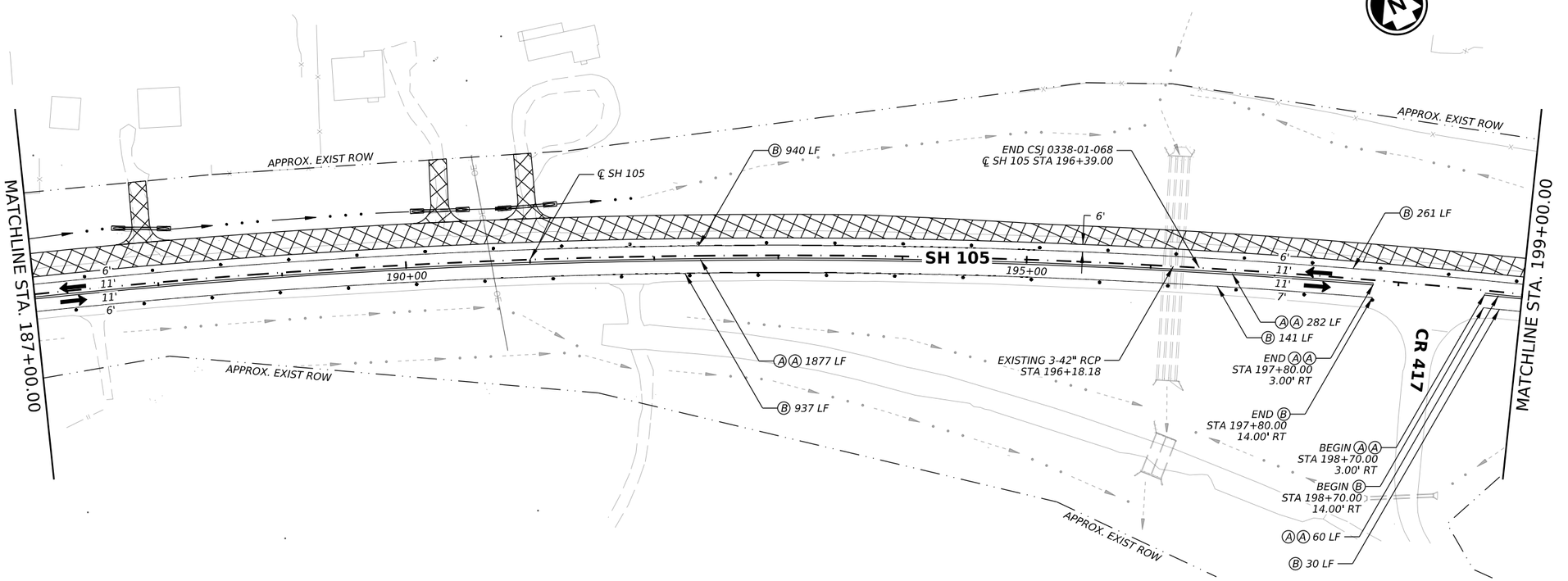
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

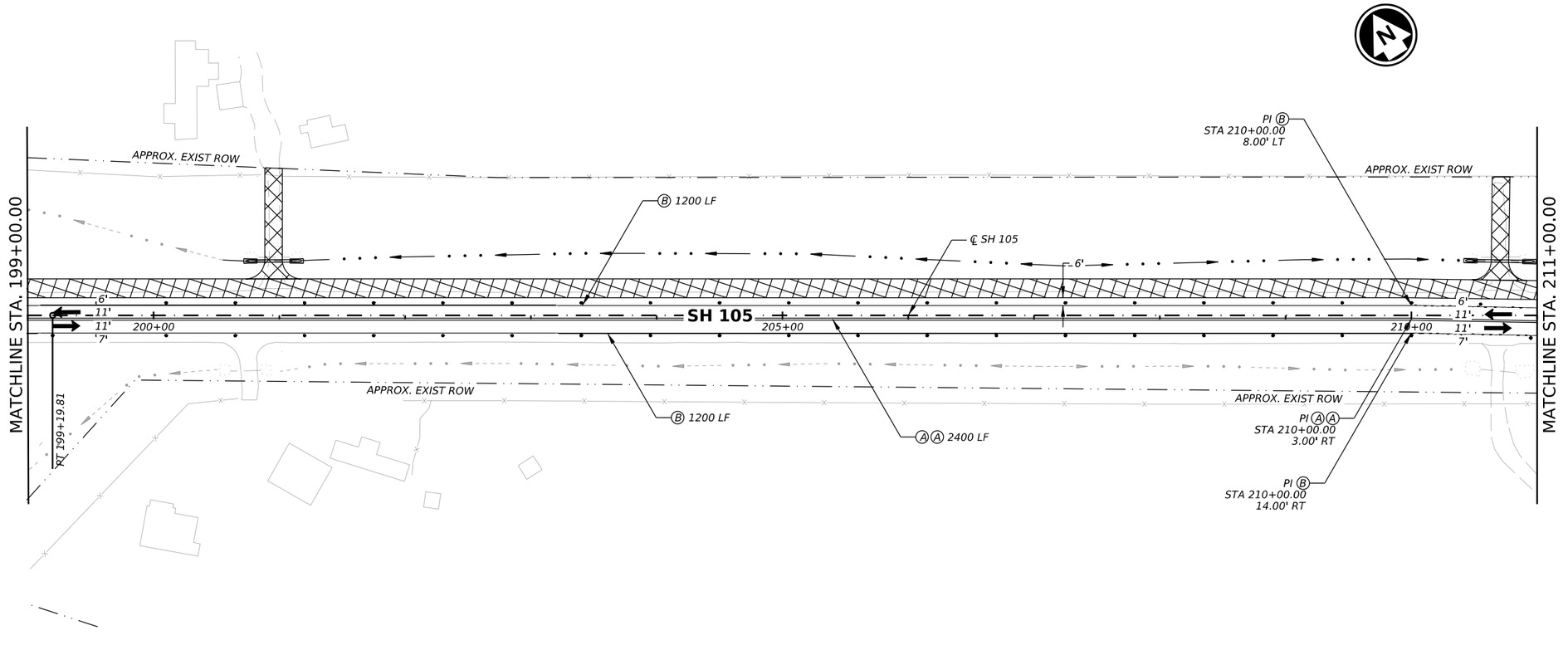
TCP LAYOUT
PHASE 3
STA 175+00 TO STA 199+00

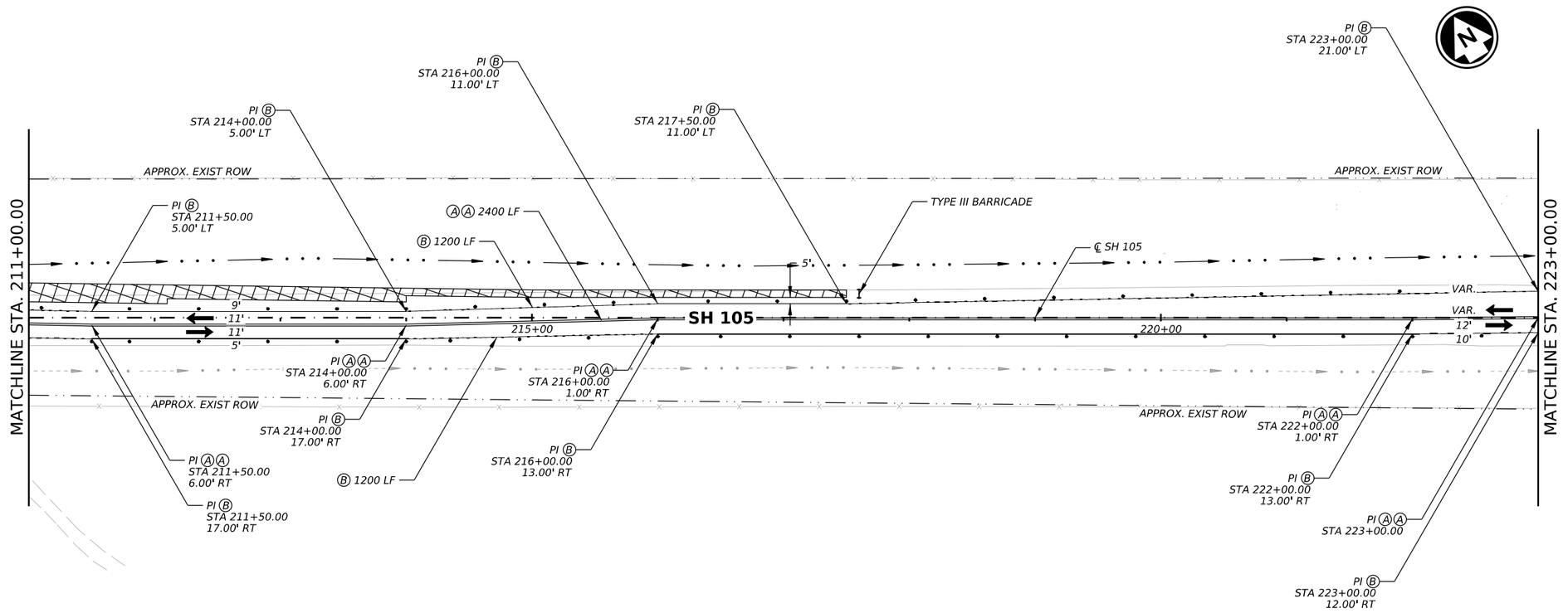
SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		58

DATE: 3/22/2024 9:26:35 AM
FILE: BRYCEC_TASK02_TCP_PH3_05.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 3
STA 199+00 TO STA 223+00

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		59

DATE: 3/22/2024 11:53:18 PM
FILE: BRYCEC_TASK02_TCP_PH3_06.dgn

CK: JMT
DW: JMT
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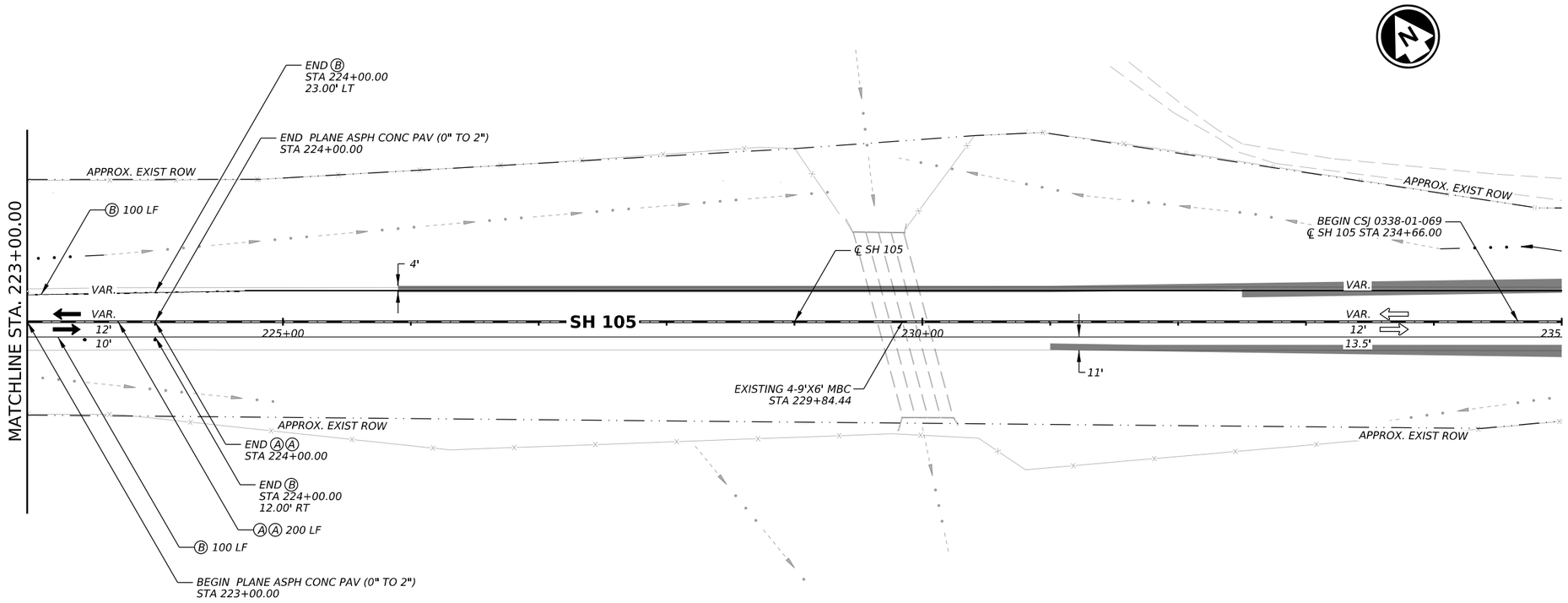
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

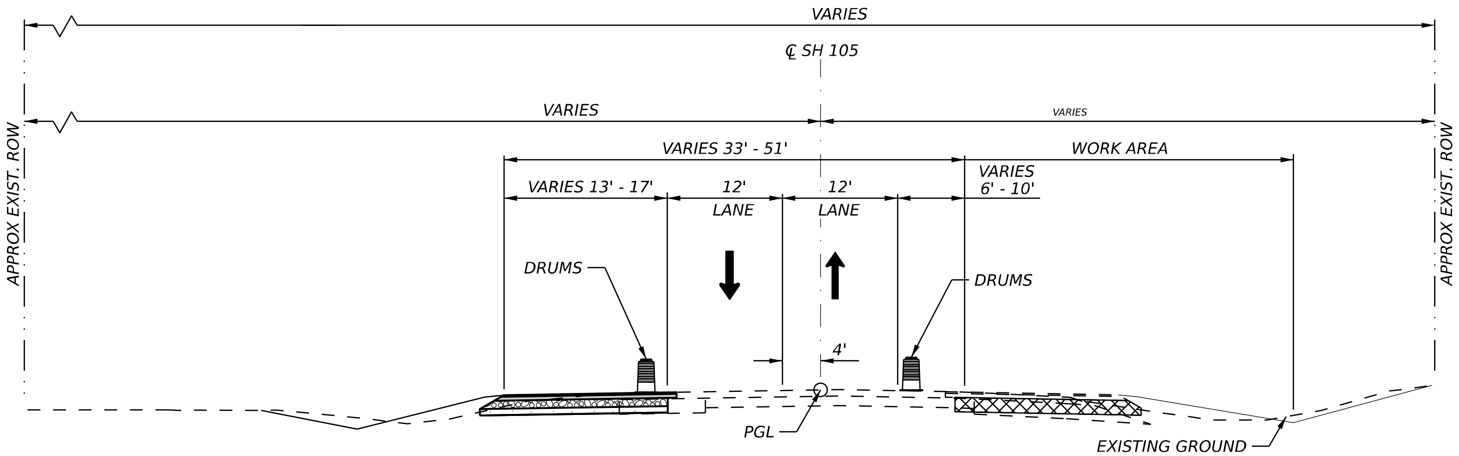
SH 105

TCP LAYOUT
PHASE 3
STA 223+00 TO STA 235+00

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		60

DATE: 3/22/2024 9:27:41 AM
FILE: BRYCEC_TASK02_TCP_PH3_07.dgn



TCP TYPICAL SECTION

SH 105
PHASE 4
STA 107+00.00 TO STA 158+00.00
STA 174+00.00 TO STA 210+00.00

RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

3/22/2024

0 10' 20'
SCALE IN FEET

JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation © 2024

SH 105

TCP TYPICAL SECTIONS
PHASE 4

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		61

DATE: 3/22/2024 6:47:47 PM
FILE: BRYCEC_TASK02_TCP_TYP04.dgn

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CK: JMT
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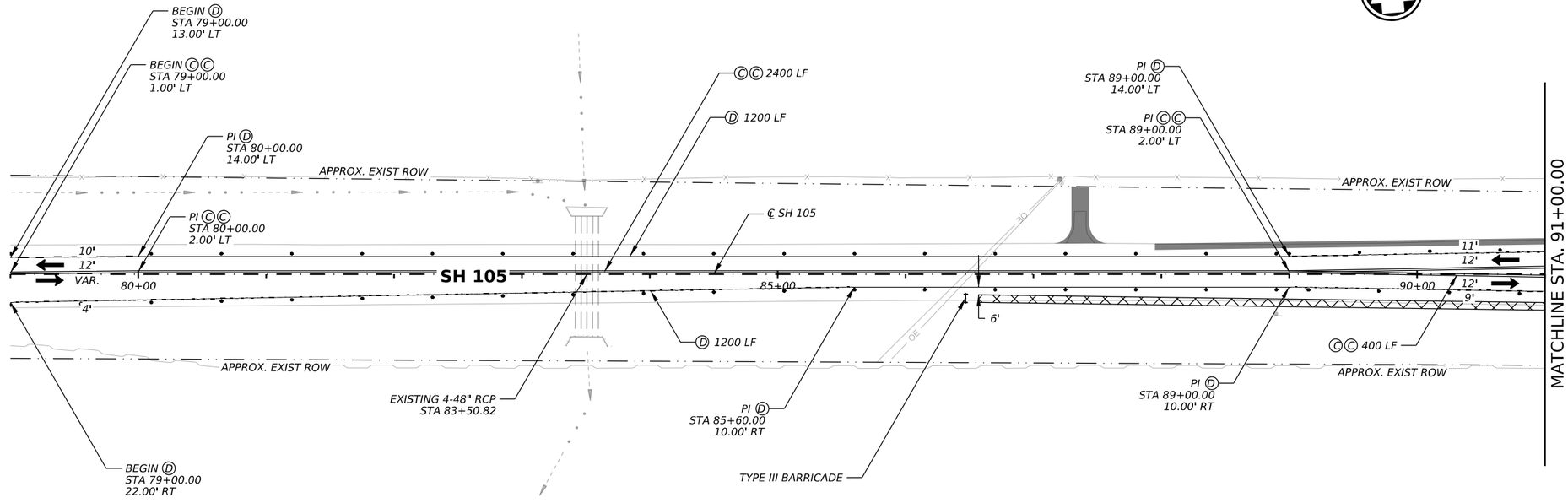
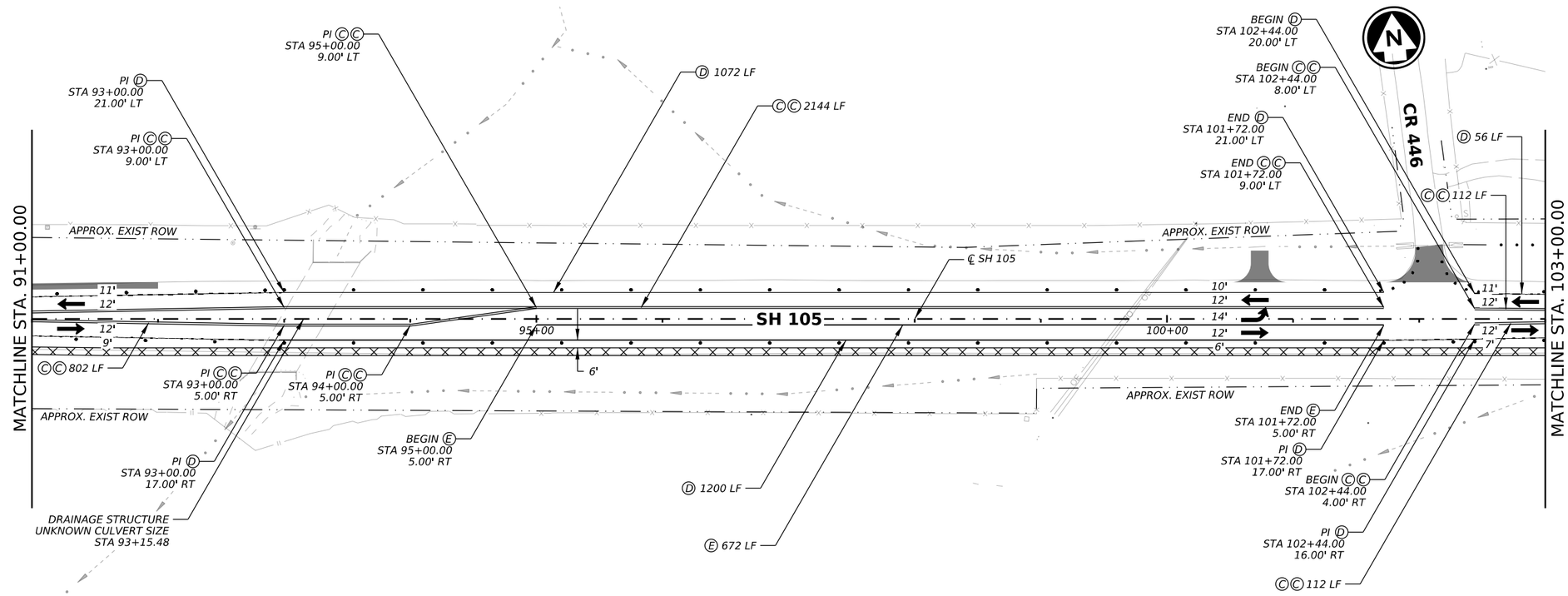
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.
2. ADVANCE WARNING SIGNS AND CHANNELIZING DEVICES SHALL BE SPACED PER TXDOT STANDARDS UNLESS NOTED OTHERWISE ON THE PLANS. ALL DISTANCES SHOWN ARE APPROXIMATE.
3. REFER TO TCP MISCELLANEOUS DETAILS FOR DRIVEWAY AND CROSS STREET PHASED CONSTRUCTION DETAILS.
4. SEE TXDOT STANDARDS FOR PLACEMENT OF ALL CONSTRUCTION SIGNS INCLUDING PROJECT LIMIT SIGNING. THE CONTRACTOR IS TO PLACE SIGNS AT THE DIRECTION OF THE ENGINEER.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

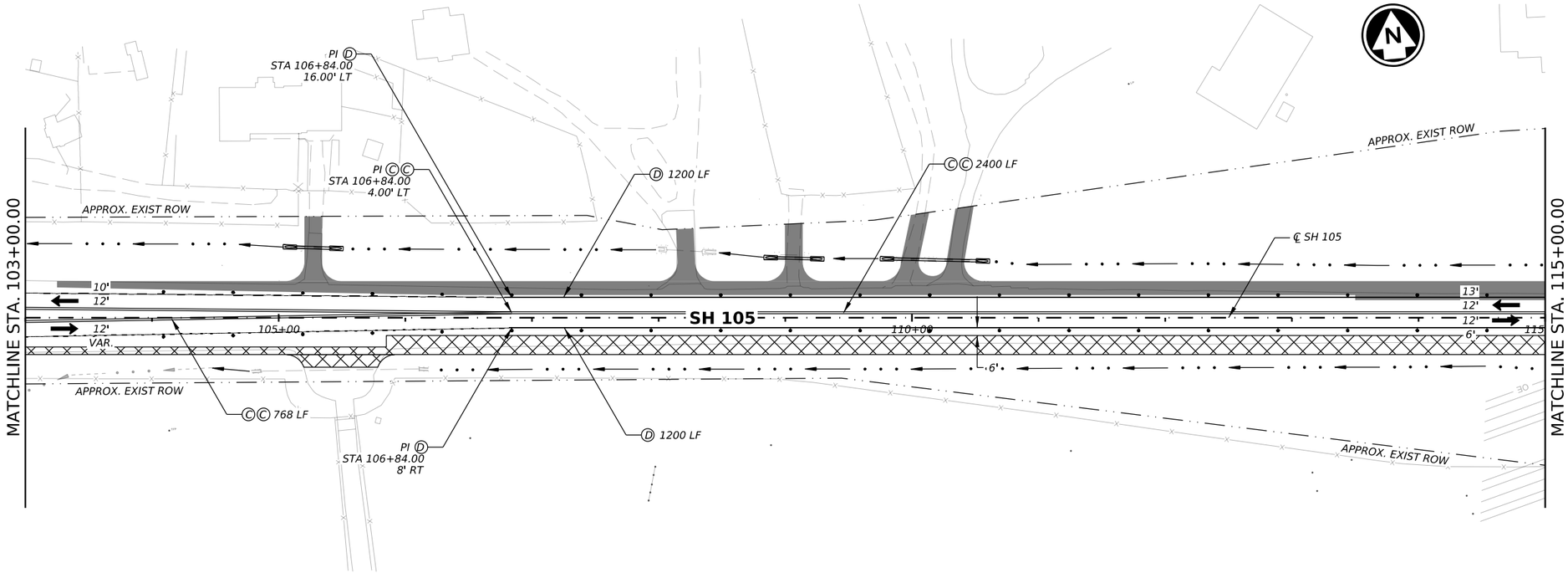
TCP LAYOUT
PHASE 4
STA 79+00 TO STA 103+00

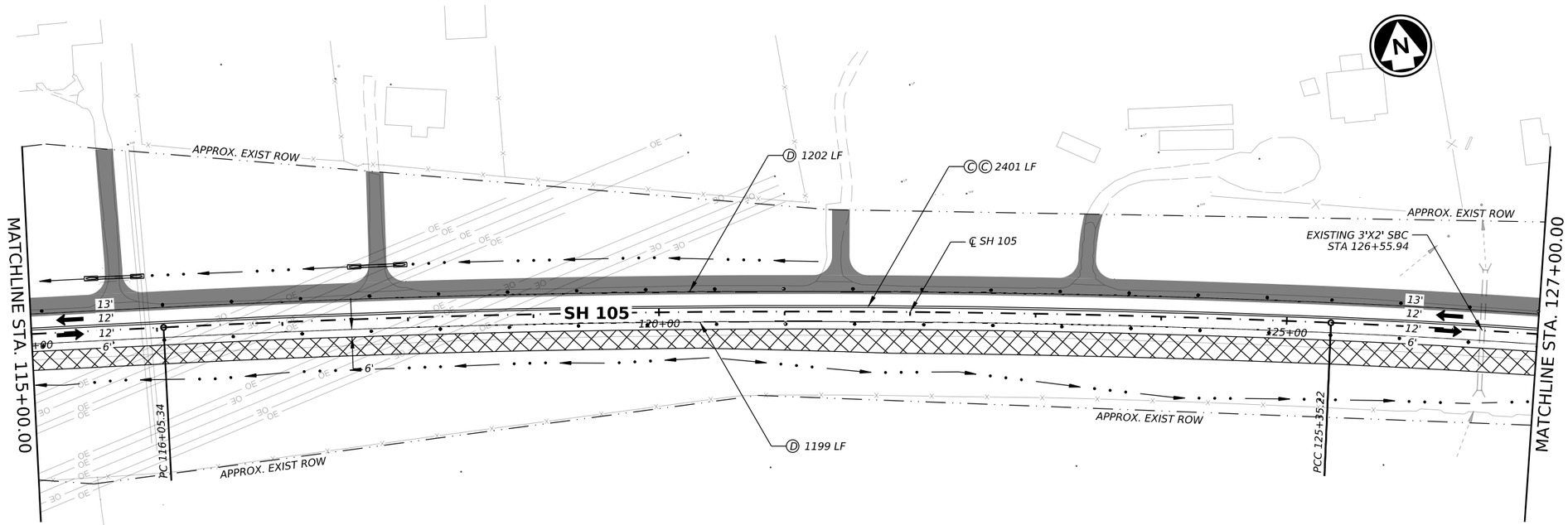
SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		62

DATE: 3/22/2024 9:30:04 AM
FILE: BRYCEC_TASK02_TCP_PH4_01.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

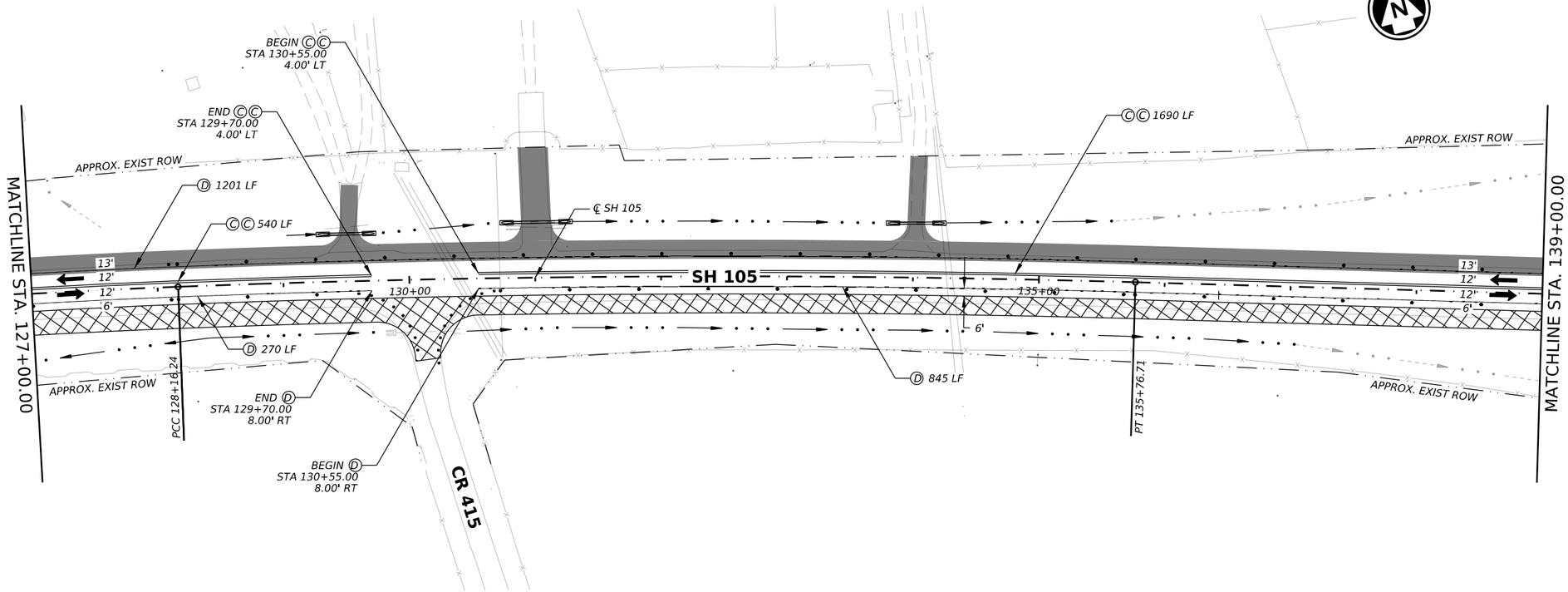
TCP LAYOUT
PHASE 4
STA 103+00 TO STA 127+00

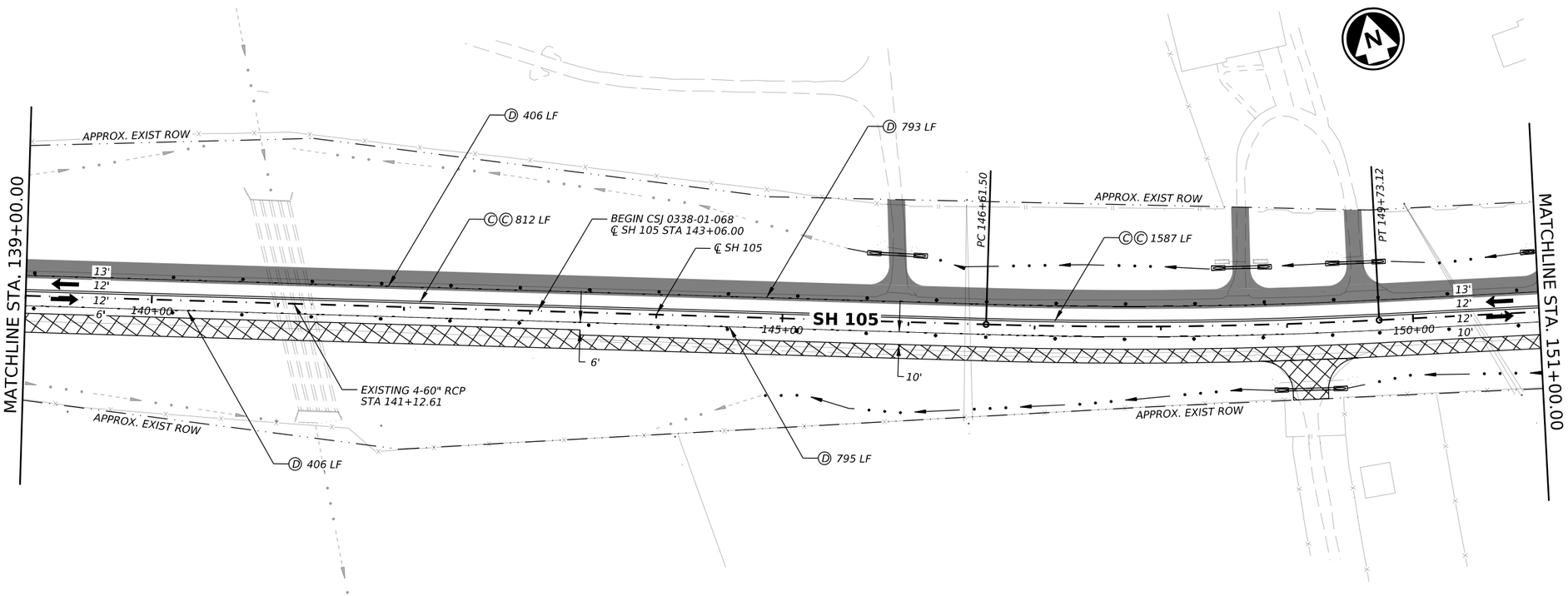
SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		63

DATE: 3/22/2024 9:30:36 AM
FILE: BRYCEC_TASK02_TCP_PH4_02.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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Texas Department of Transportation

SH 105

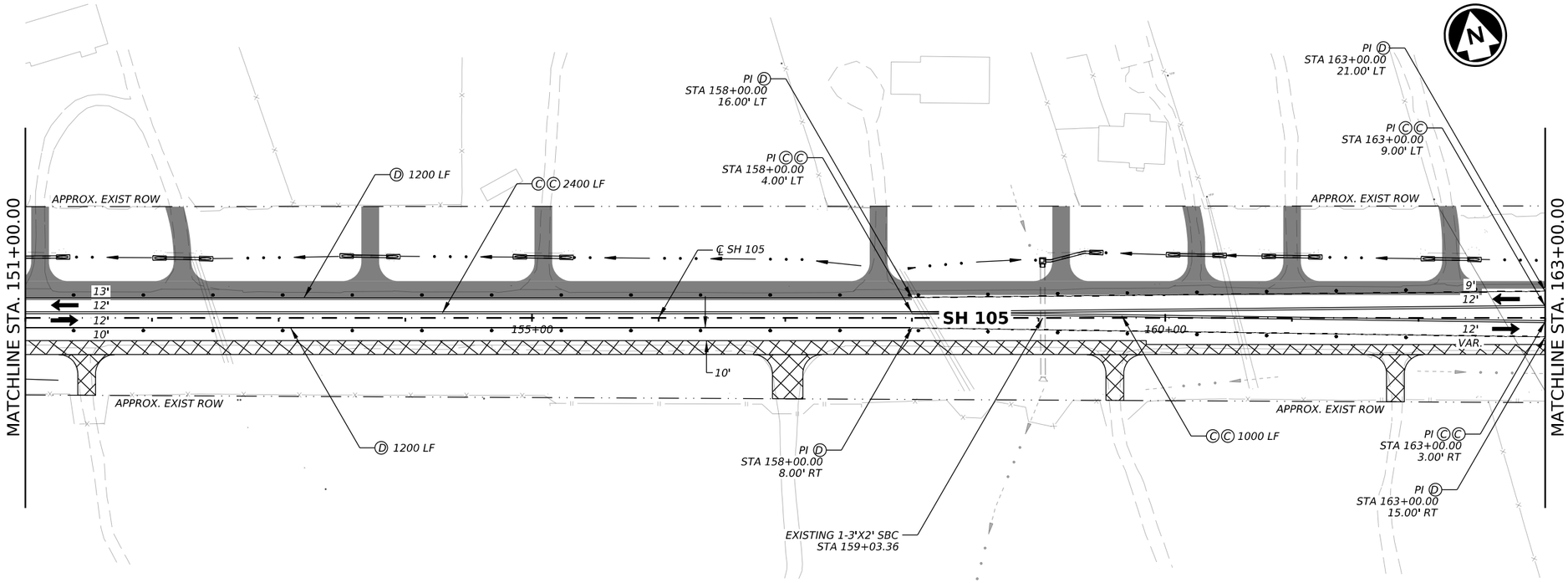
TCP LAYOUT
PHASE 4
STA 127+00 TO STA 151+00

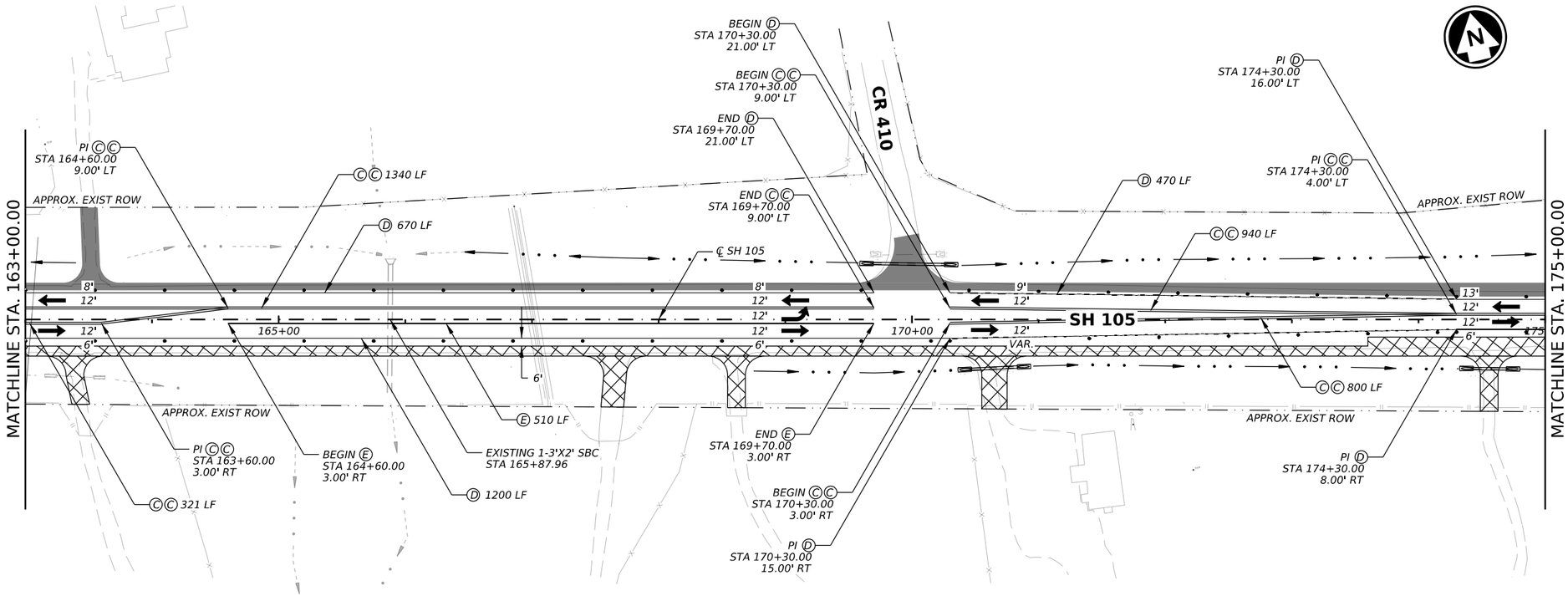
SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		64

DATE: 3/22/2024 9:31:10 AM
FILE: BRYCEC_TASK02_TCP_PH4_03.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

TCP LAYOUT
PHASE 4
STA 151+00 TO STA 175+00

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		65

DATE: 3/22/2024 9:31:43 AM
FILE: BRYCEC_TASK02_TCP_PH4_04.dgn

CK: JMT
DW: JMT
CK: JMT
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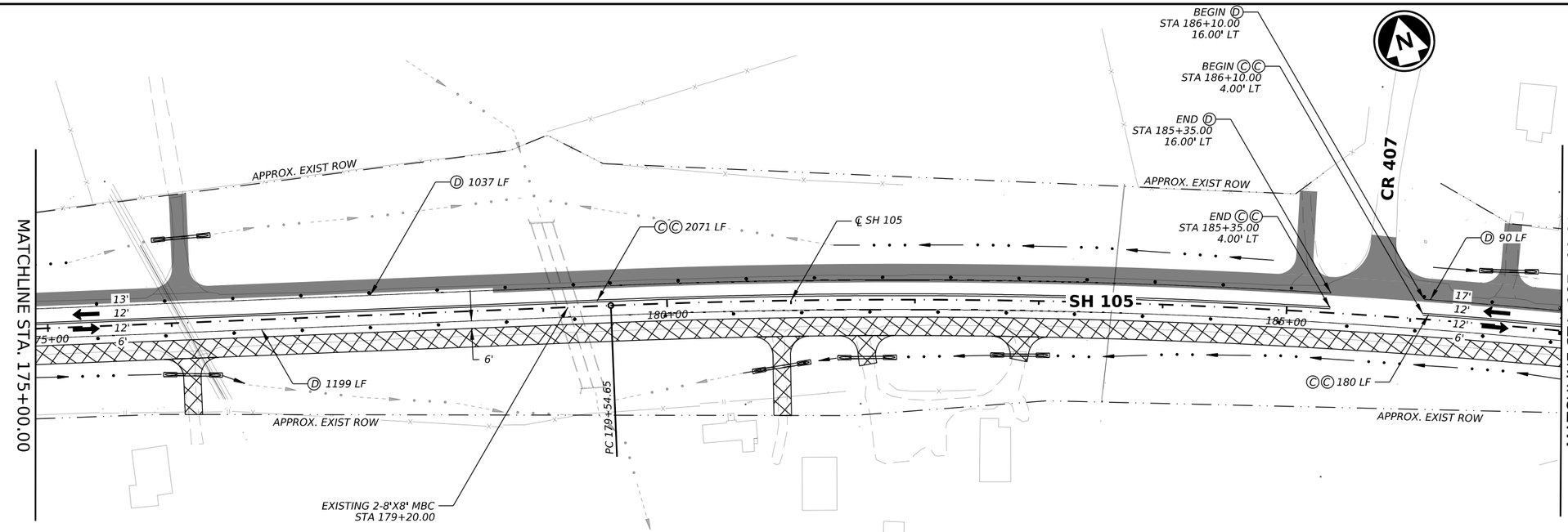

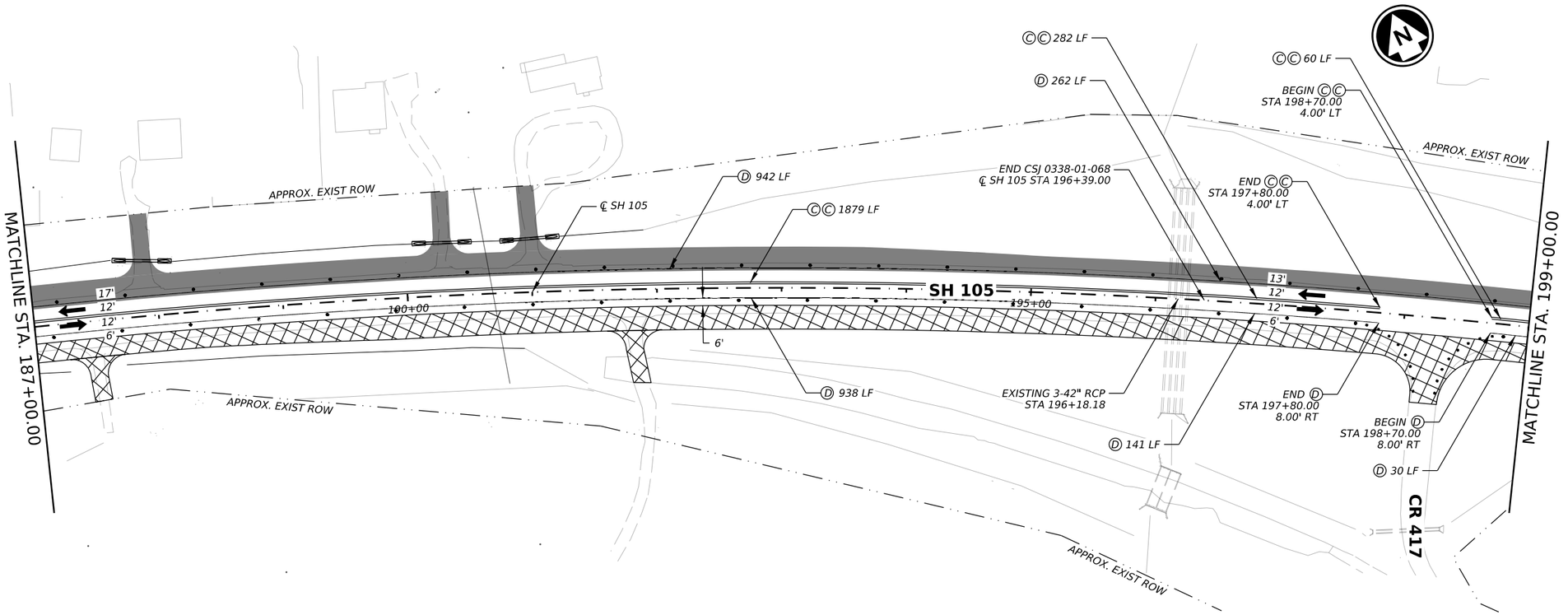

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

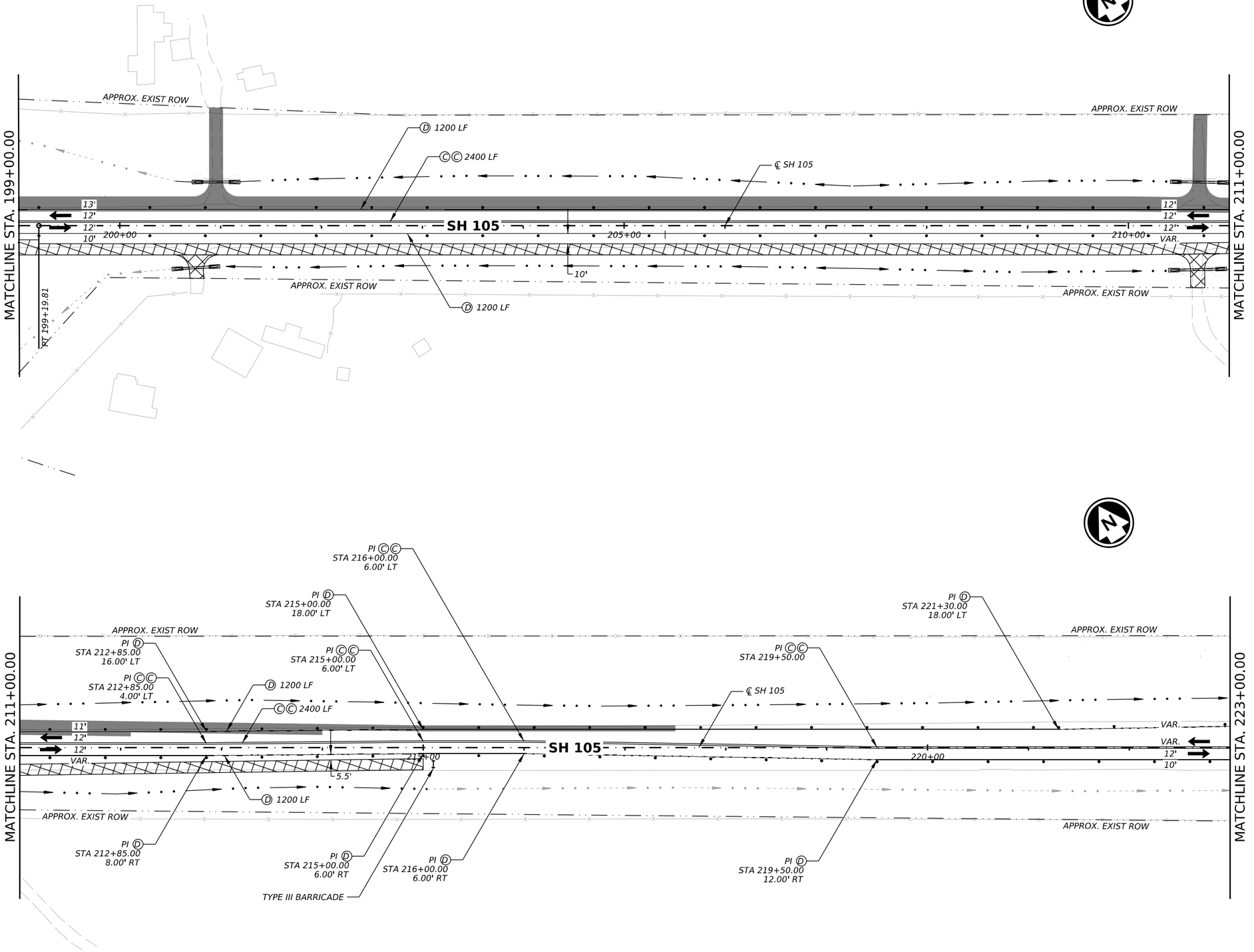
TCP LAYOUT
PHASE 4
STA 175+00 TO STA 199+00

SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		66

DATE: 3/22/2024 9:32:20 AM
FILE: BRYCEC_TASK02_TCP_PH4_05.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

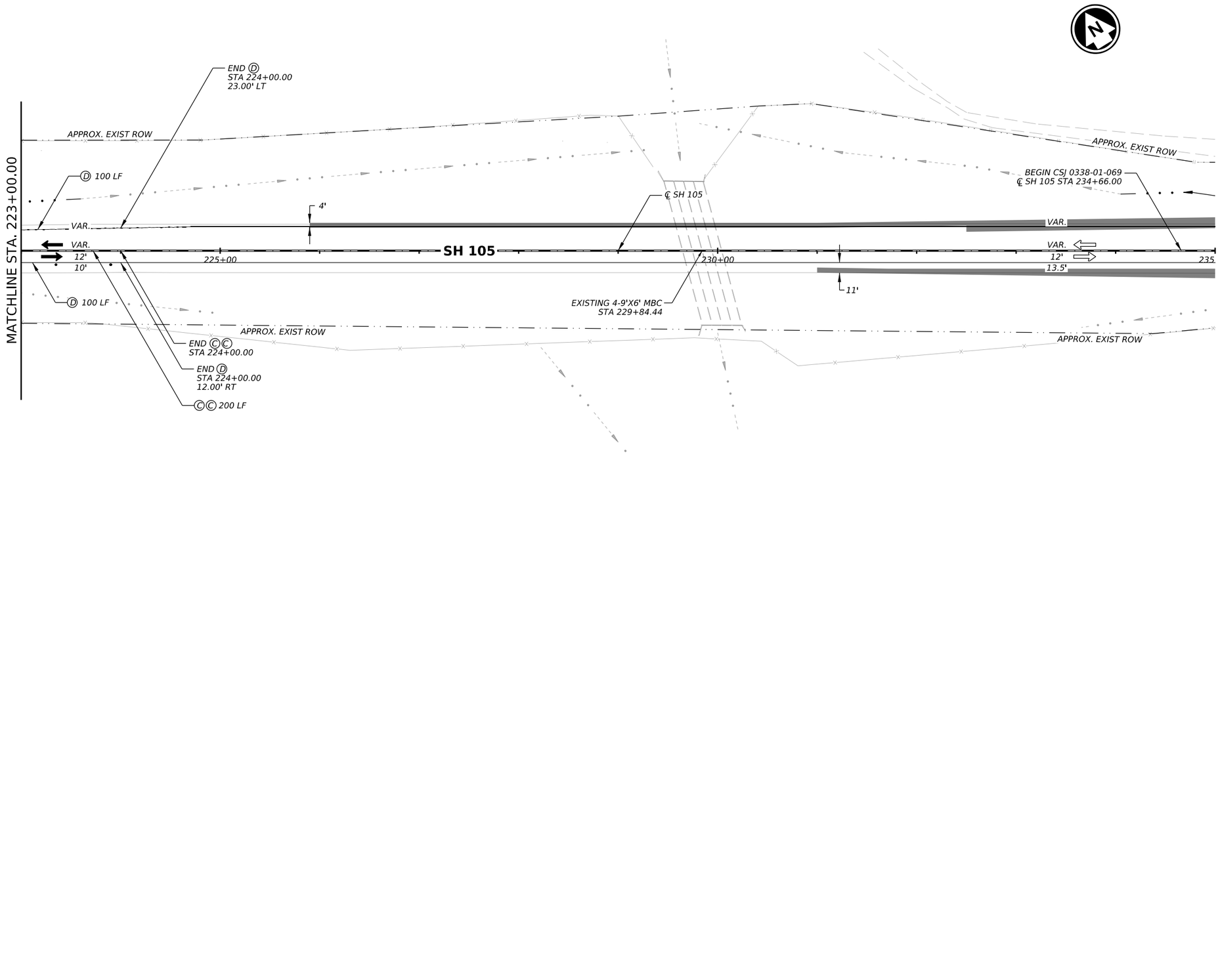
TCP LAYOUT
PHASE 4
STA 199+00 TO STA 223+00

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		67

DATE: 3/22/2024 9:32:53 AM
FILE: BRYCEC_TASK02_TCP_PH4_06.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

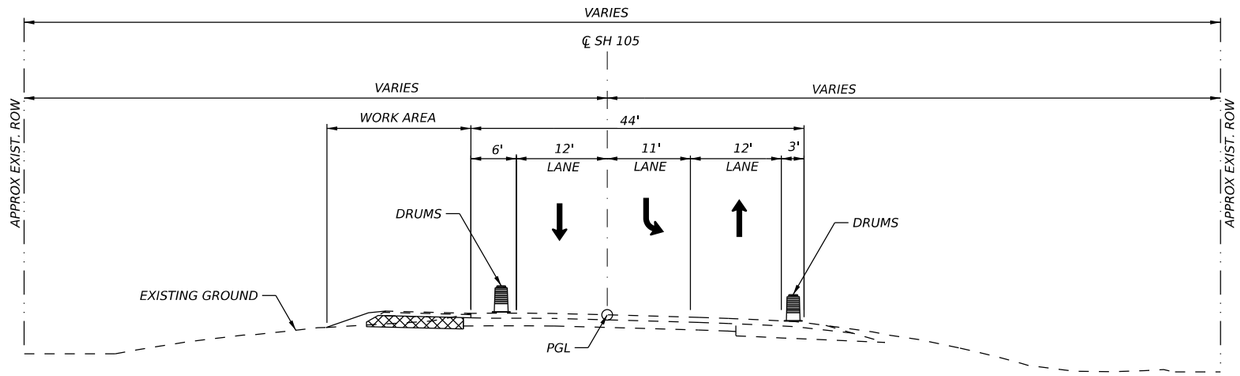
TCP LAYOUT
PHASE 4
STA 223+00 TO STA 235+00

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		68

DATE: 3/22/2024 9:33:26 AM
FILE: BRYCEC_TASK02_TCP_PH4_07.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT



TCP TYPICAL SECTION

SH 105
PHASE 5
STA 56+50.00 TO STA 62+60.00

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

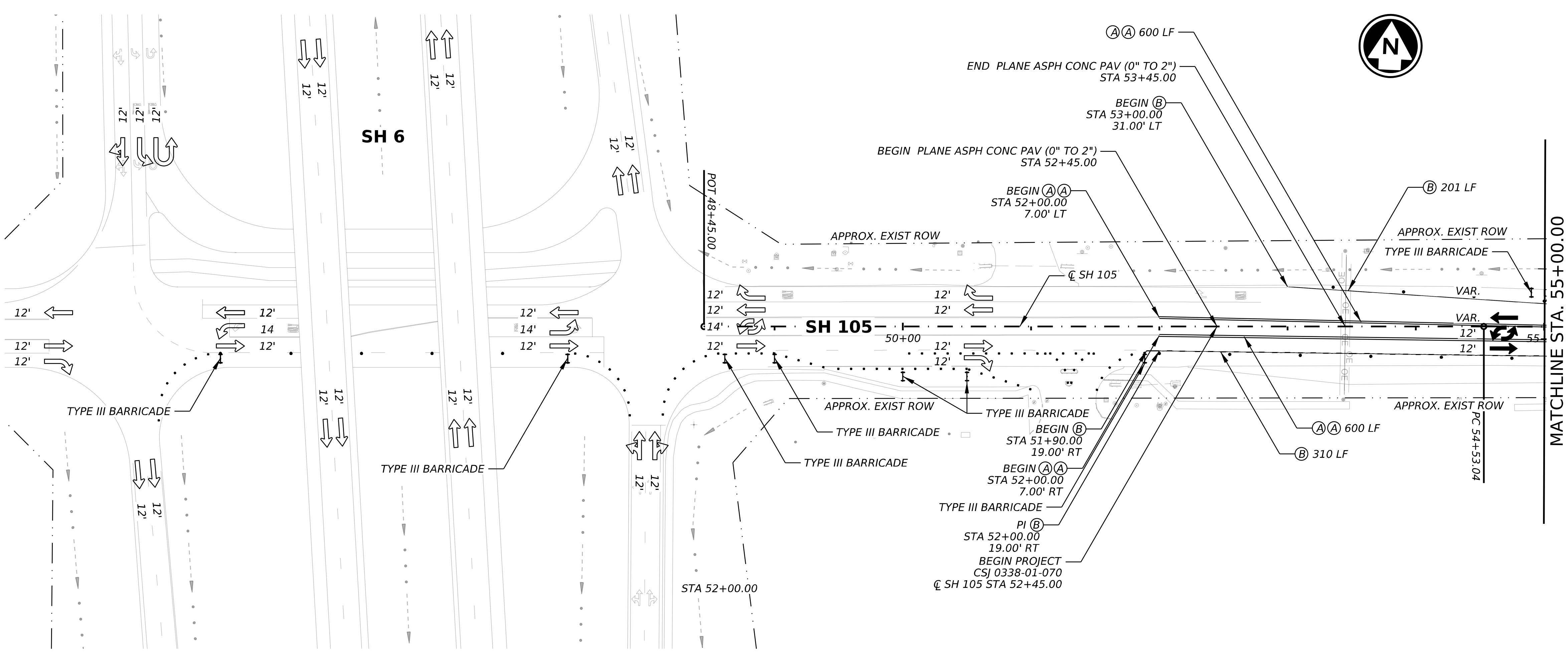
SH 105

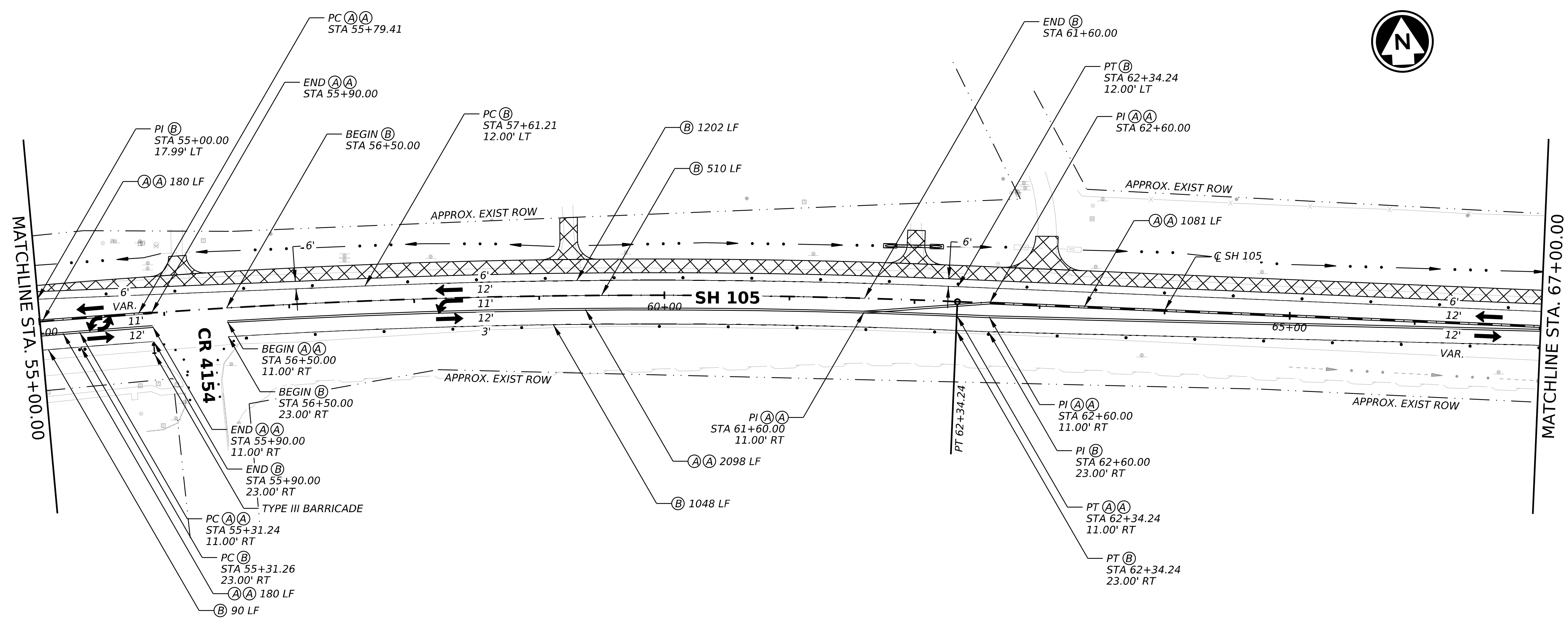
TCP TYPICAL SECTIONS
PHASE 5

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		69

DATE: 3/22/2024 6:47:49 PM
FILE: BRYCEC_TASK02_TCP_TYP05.dgn





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

JMT TBPE REGISTRATION NO. F-16341

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SH 105

TCP LAYOUT
PHASE 5
BEGIN TO STA 67+00

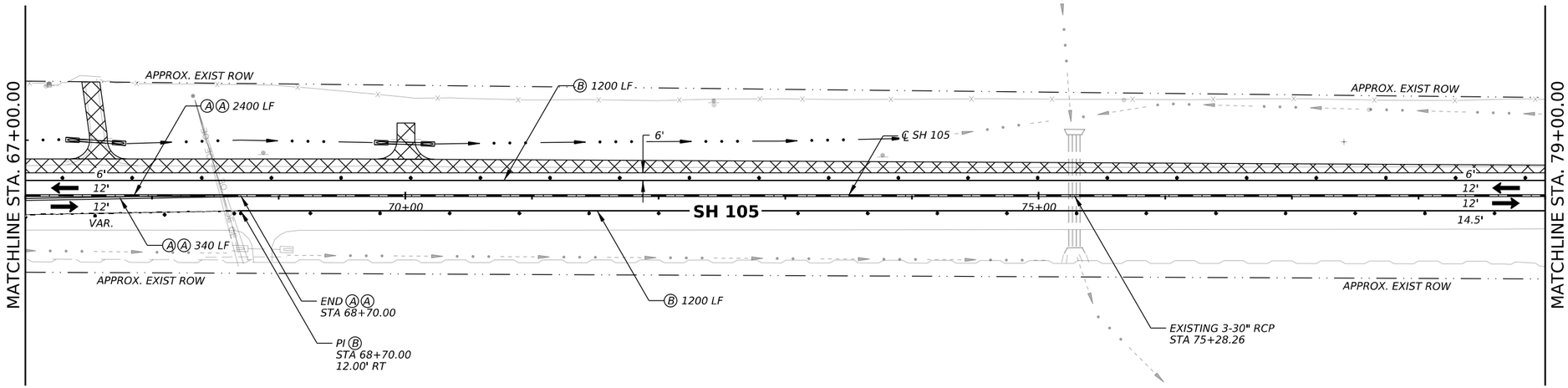
SHEET 1 OF 2

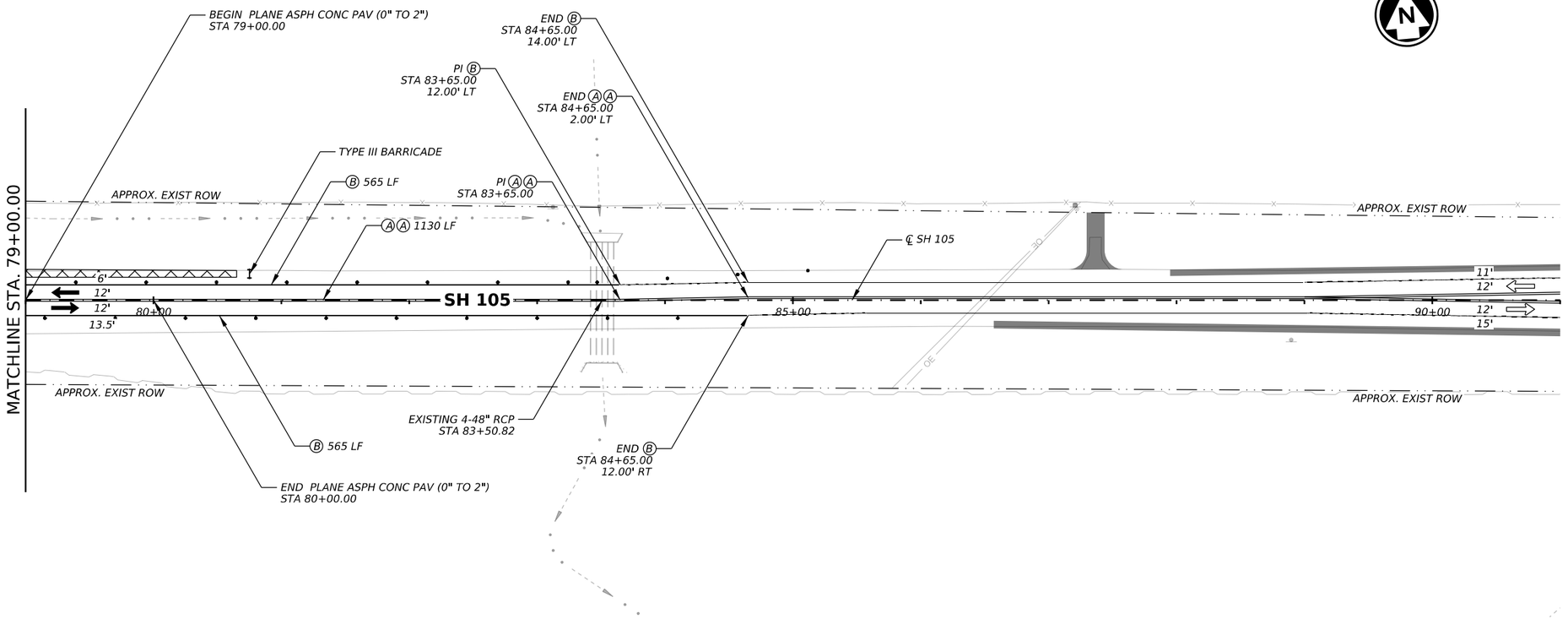
CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST		COUNTY	SHEET NO.
BRY		GRIMES	70

DN: JMT CK: JMT DW: JMT CK: JMT

DATE: 3/22/2024 9:35:46 AM
FILE: BRYCEC_TASK02_TCP_PH5_01.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.
2. ADVANCE WARNING SIGNS AND CHANNELIZING DEVICES SHALL BE SPACED PER TXDOT STANDARDS UNLESS NOTED OTHERWISE ON THE PLANS. ALL DISTANCES SHOWN ARE APPROXIMATE.
3. REFER TO TCP MISCELLANEOUS DETAILS FOR DRIVEWAY AND CROSS STREET PHASED CONSTRUCTION DETAILS.
4. SEE TXDOT STANDARDS FOR PLACEMENT OF ALL CONSTRUCTION SIGNS INCLUDING PROJECT LIMIT SIGNING. THE CONTRACTOR IS TO PLACE SIGNS AT THE DIRECTION OF THE ENGINEER.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

TCP LAYOUT
PHASE 5
STA 67+00 TO STA 91+00

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		71

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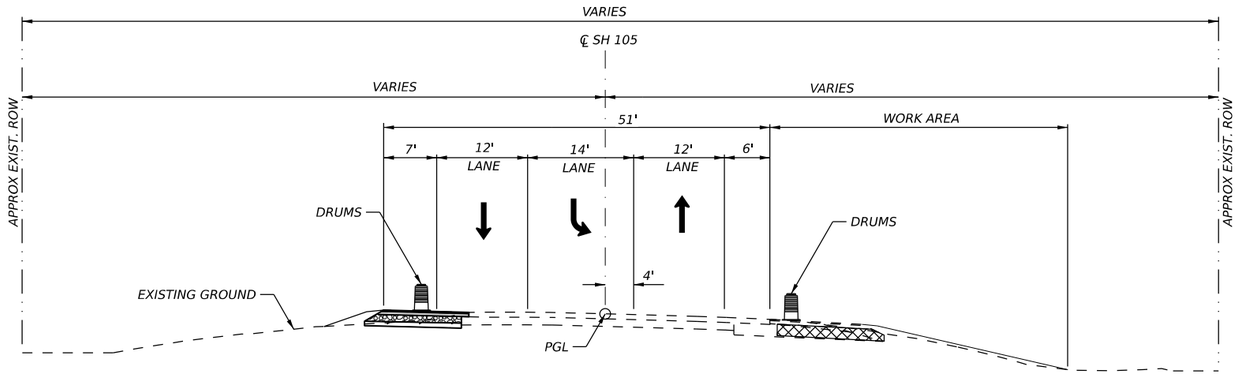

TCP TYPICAL SECTION

SH 105
PHASE 6
STA 56+50.00 TO STA 62+60.00

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

TCP TYPICAL SECTIONS
PHASE 6

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		72

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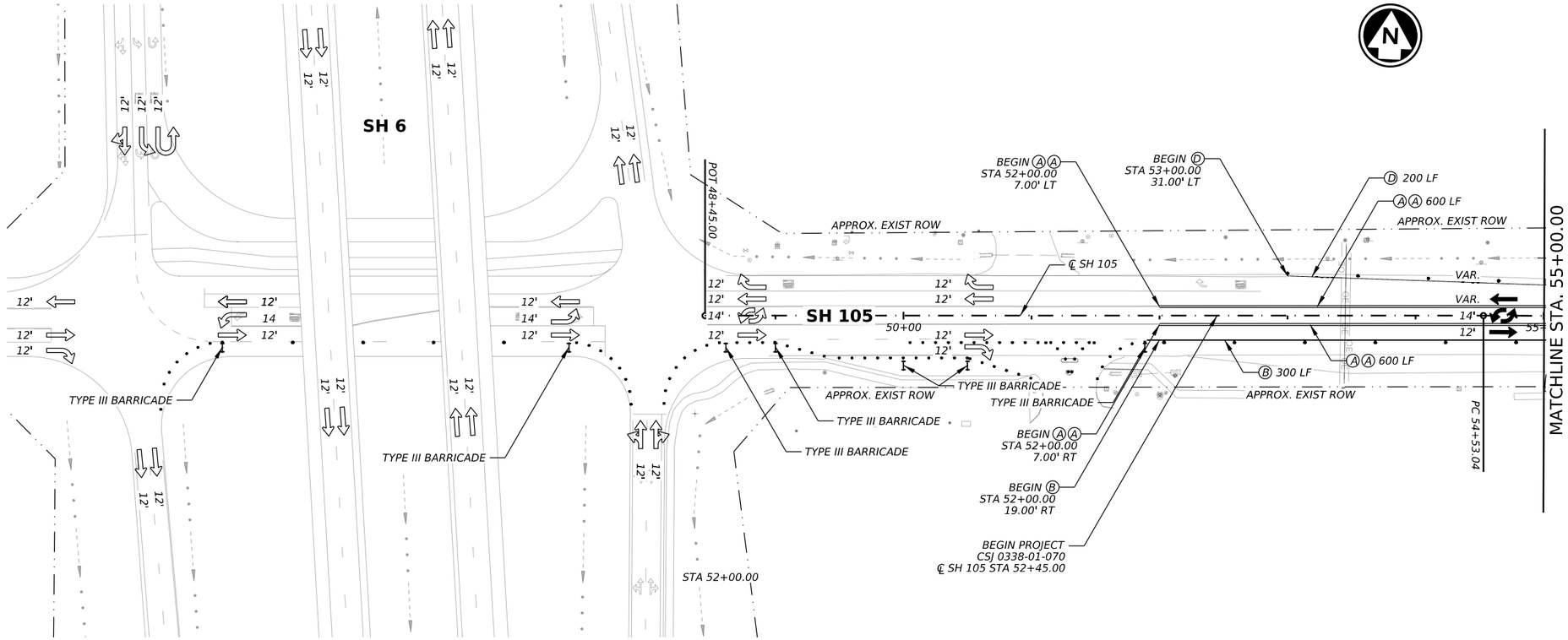

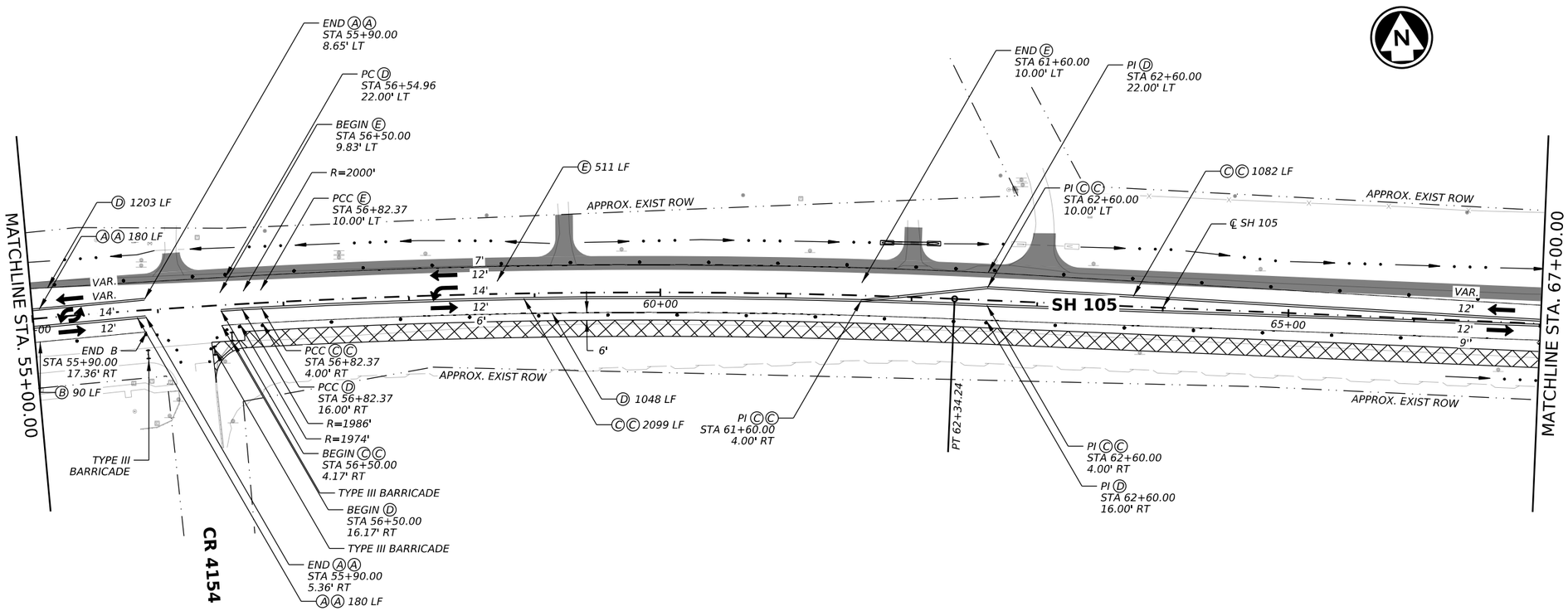

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- Ⓐ WK ZN PAV MRK (TRAF BTN) TY Y
- Ⓑ WK ZN PAV MRK (TRAF BTN) TY W
- Ⓒ WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- Ⓓ WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- Ⓔ WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- Ⓕ WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- Ⓖ WK ZN PAV MRK REMOV (REFL) TY II-A-A
- Ⓗ WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 6
BEGIN TO STA 67+00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		73

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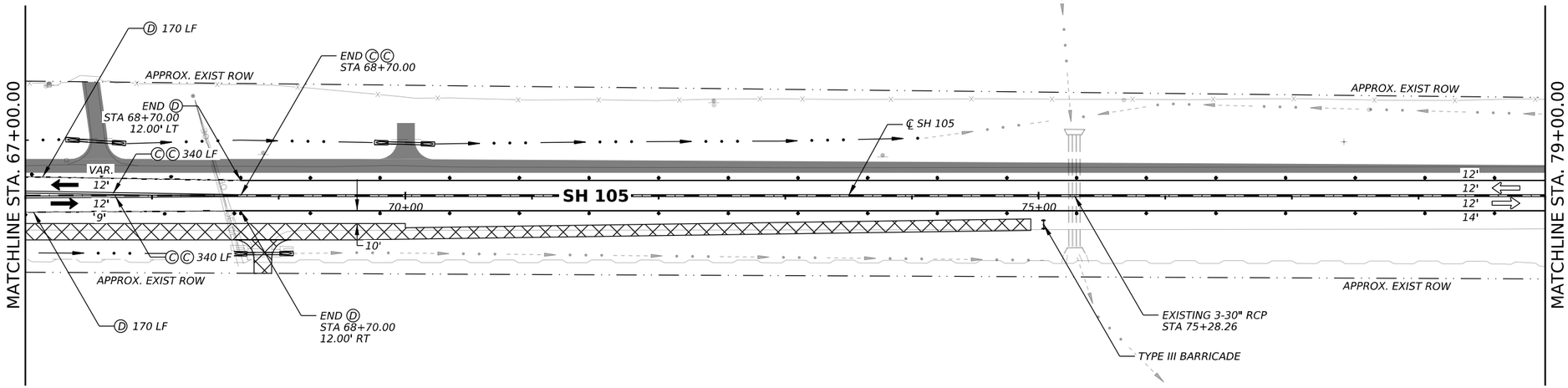

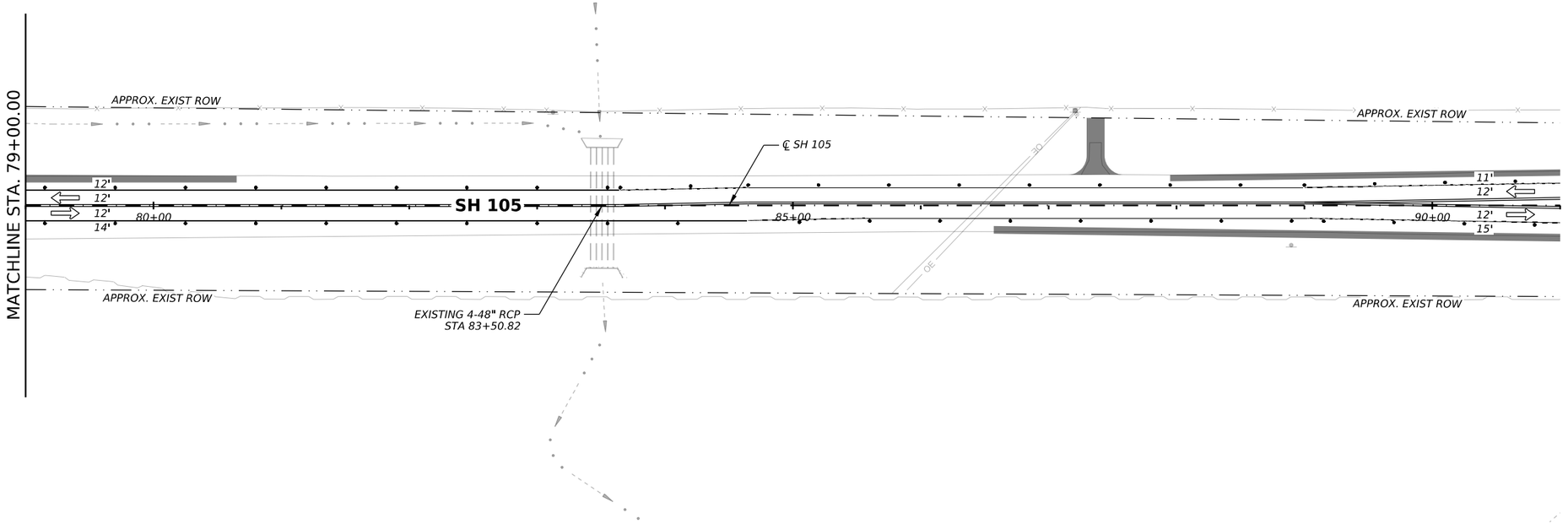

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE
- CHANNELIZING DEVICES
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- (A) WK ZN PAV MRK (TRAF BTN) TY Y
- (B) WK ZN PAV MRK (TRAF BTN) TY W
- (C) WK ZN PAV MRK NON-REMOV (Y)6" (SLD)
- (D) WK ZN PAV MRK NON-REMOV (W)6" (SLD)
- (E) WK ZN PAV MRK NON-REMOV (W)8" (SLD)
- (F) WK ZN PAV MRK NON-REMOV (W)6" (BRK)
- (G) WK ZN PAV MRK REMOV (REFL) TY II-A-A
- (H) WK ZN PAV MRK REMOV (REFL) TY I-C

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP LAYOUT
PHASE 6
STA 67+00 TO STA 91+00

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		74

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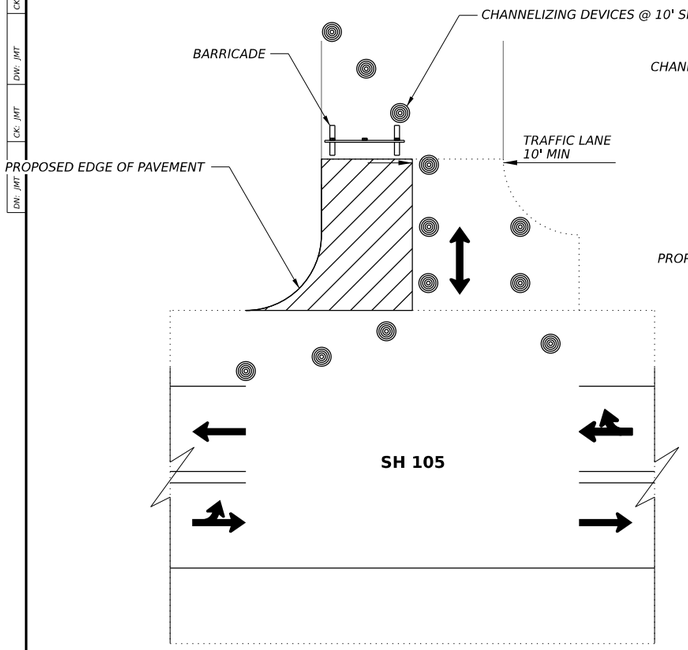
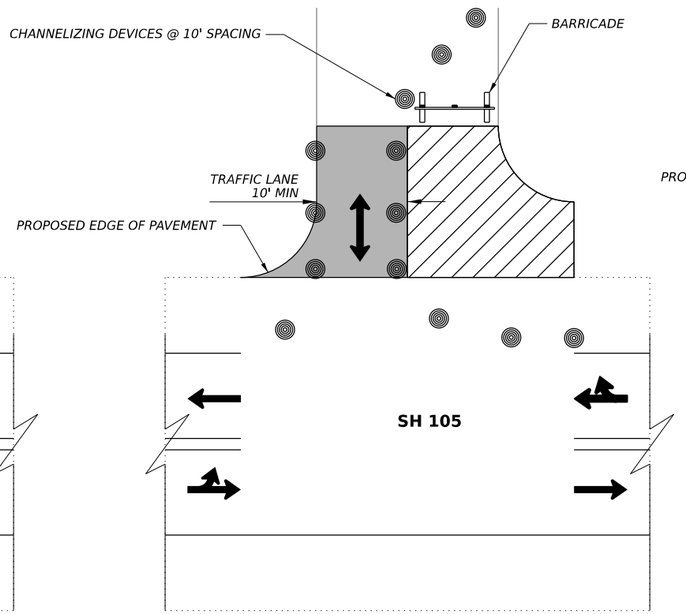
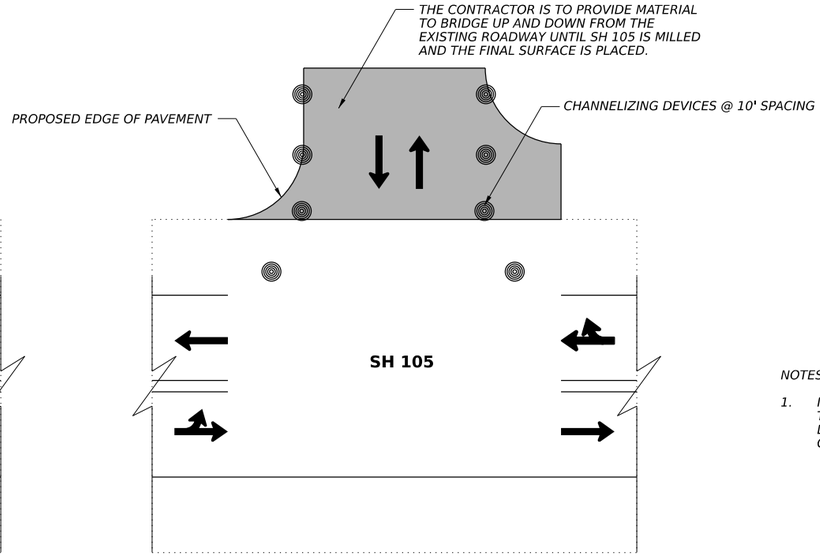


SINGLE ACCESS CONSTRUCTION
STEP 1



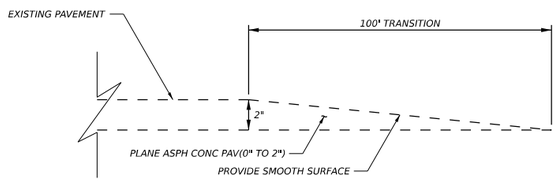
SINGLE ACCESS CONSTRUCTION
STEP 2



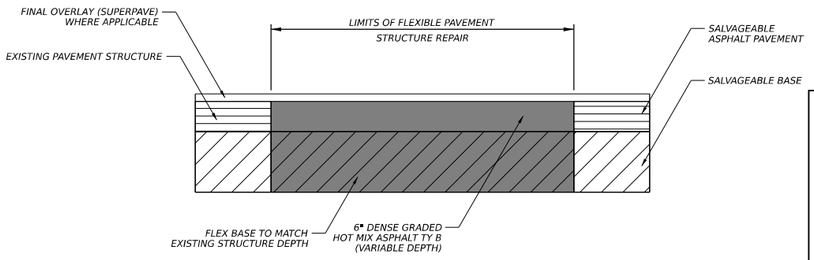
SINGLE ACCESS CONSTRUCTION
STEP 3
NON-WORKING HOURS

NOTES:

1. INTERSECTIONS WILL HAVE A ONE LANE TWO WAY FLAGGING OPERATION DURING THE DAY WITH BOTH LANES OPEN DURING NON-WORKING HOURS.



PAVEMENT TRANSITION PROFILE
NTS



FLEXIBLE PAVEMENT STRUCTURE REPAIR DETAIL
NTS

NOTES:

1. LOCATIONS OF PAVEMENT REPAIR TO VARY AS DIRECTED BY THE ENGINEER.

2. PAVEMENT REPAIR AREA WILL BE A MINIMUM OF 20' IN LENGTH.

3. CONTRACTOR WILL NOT REMOVE MORE MATERIAL THAN CAN BE REPLACED IN A SINGLE WORKING DAY.

4. EXTENDED REPAIR WIDTH TO INCLUDE INTERIOR OF EXISTING PAVEMENT JOINTS, WHERE DIRECTED BY THE ENGINEER. PAVEMENT REPAIR ON OUTSIDE EDGE OF TRAVEL LANE WILL INCLUDE AN OVERLAP OF 12" INTO THE SHOULDER, MATCHING HOT MIX LONGITUDINAL JOINT DETAIL.

5. CONTRACTOR WILL PRIME EXPOSED BASE MATERIAL WITH PRIME COAT PRIOR TO COVERING WITH HMA. PAYMENT WILL BE SUBSIDIARY TO ITEM 351.

6. TACK COAT WILL BE USED FOR ALL PAVEMENT REPAIR LOCATIONS.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/23/2024

0 10' 20'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

TCP
MISCELLANEOUS DETAILS

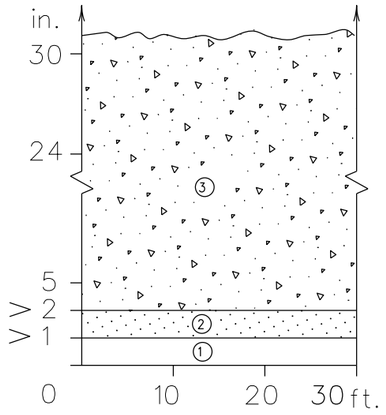
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		75

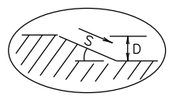
DATE: 3/23/2024 12:12:39 AM
FILE: BRYCEC_TASK02_TCP_MISC_DETAILS_01.dgn

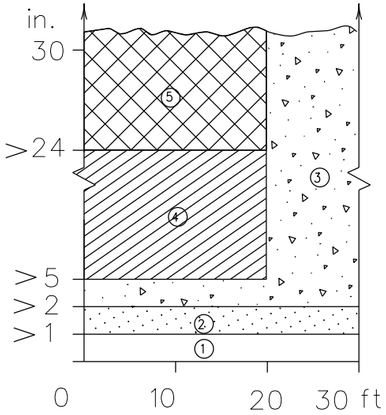
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet

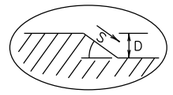


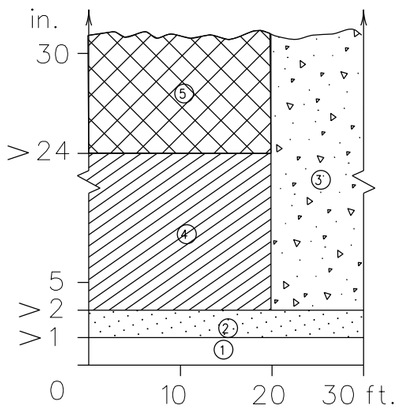
Edge Condition I
S = (3:1) (or flatter)



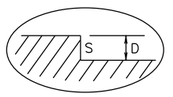


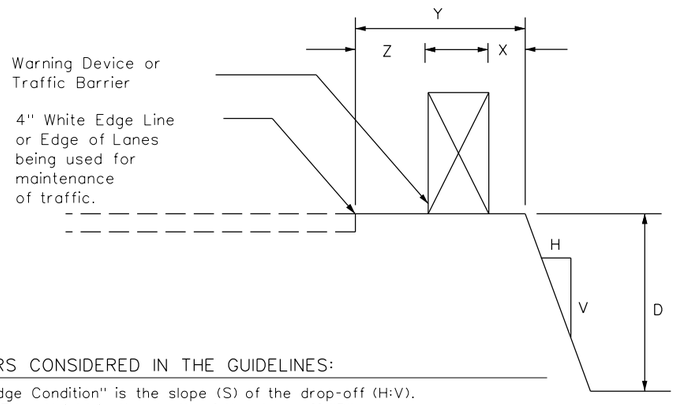
Edge Condition II
S = ((2.99):1) to (1:1)





Edge Condition III
S is steeper than (1:1)





FACTORS CONSIDERED IN THE GUIDELINES:

1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".

2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.

3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.

4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.

5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
⑤	Check indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

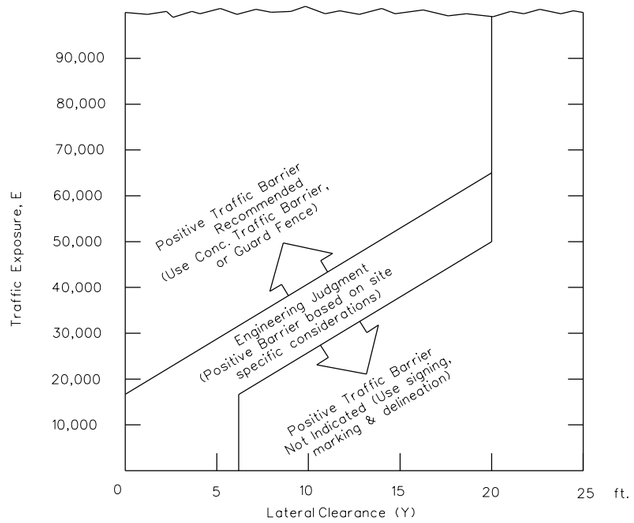
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.

3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.

4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 ( )



1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.

3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

Engineer's Seal

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE: edgecon.dgn	DN:	CK:	DW:	CK:
© TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		76

DATE: 3/22/2024 10:05:08 PM
FILE: edgecon-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

Texas Department of Transportation

Traffic Safety Division Standard

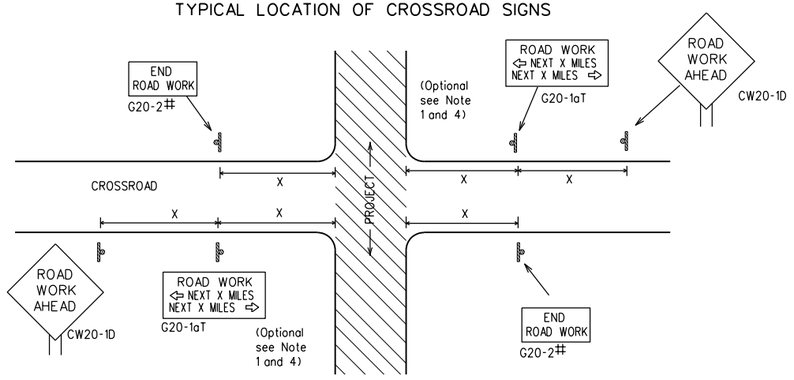
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	BRY	GRIMES		77
5-10 5-21				

DATE: 3/22/2024 9:40:00 AM
FILE: bc-21.dgn

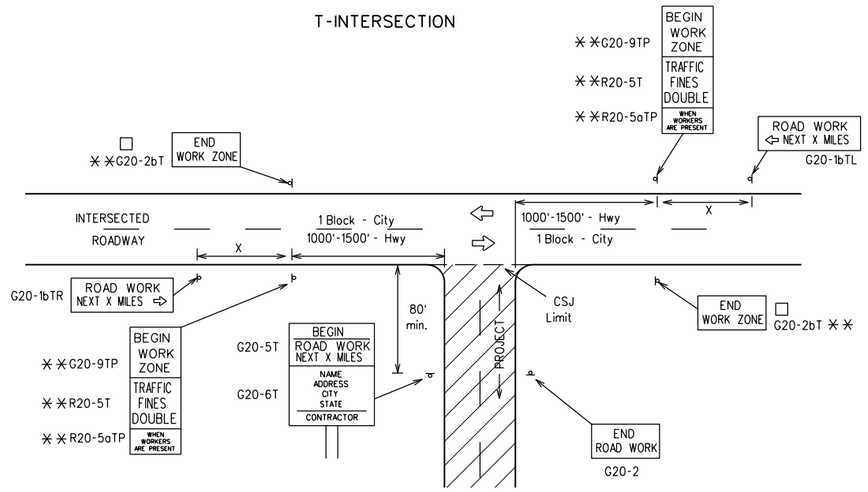
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING 1,5,6

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign * Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500 [2]
60	600 [2]
65	700 [2]
70	800 [2]
75	900 [2]
80	1000 [2]
*	* [3]

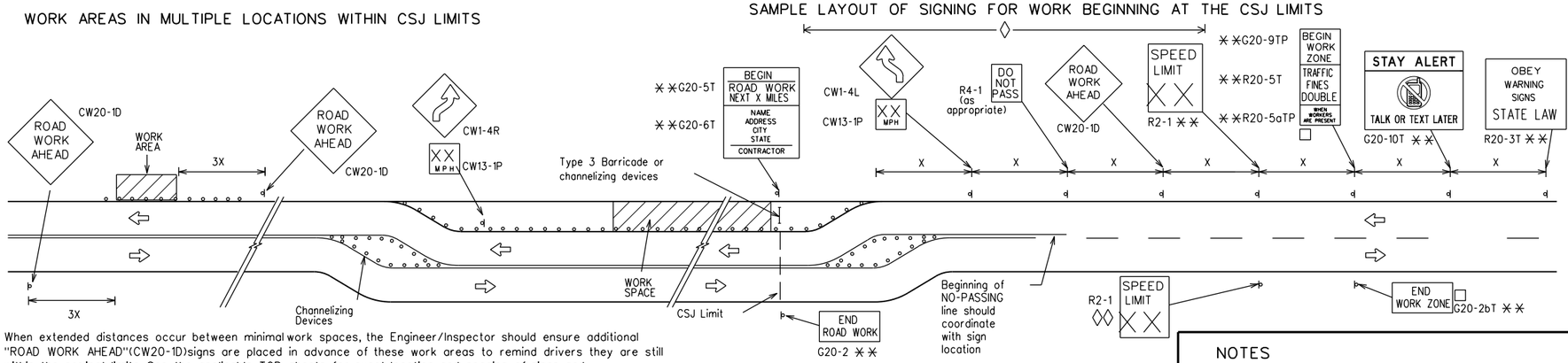
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

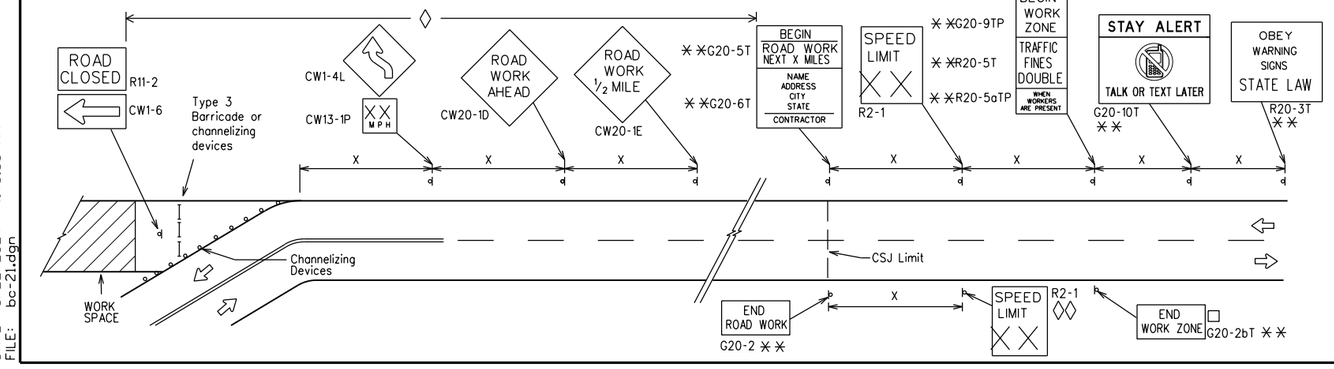
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
⊢⊣	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		78

96

DATE: 3/22/2024 9:40:00 AM
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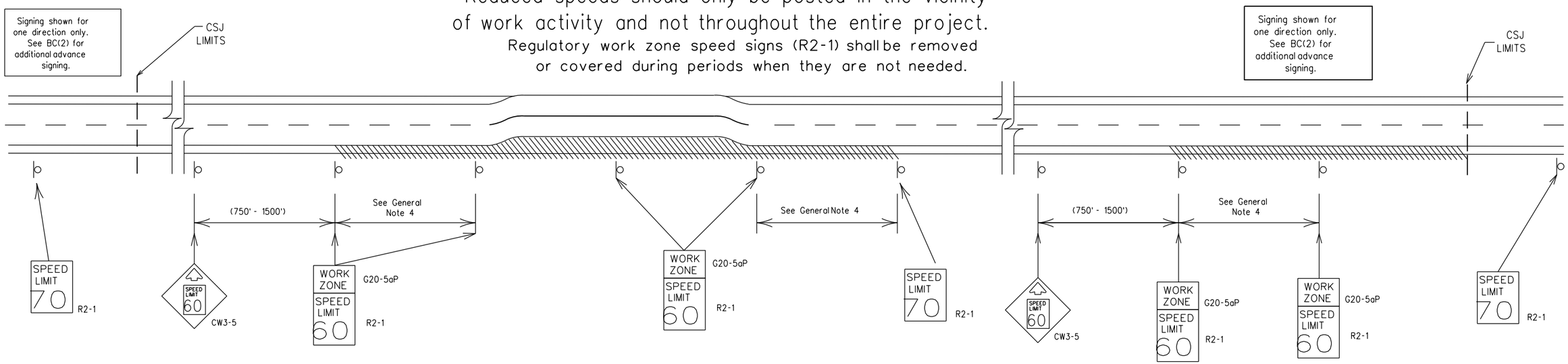
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.
Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only.
   Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form *1204 in the TxDOT e-form system.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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7-13 5-21	BRY	GRIMES		79

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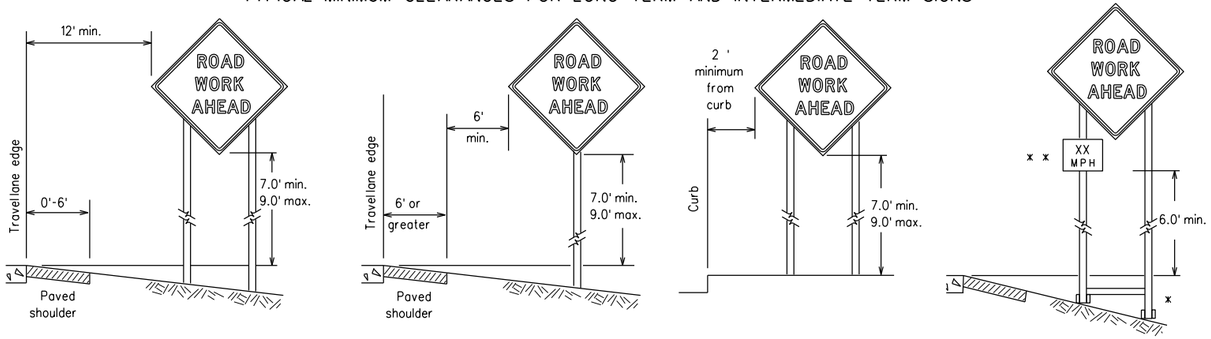
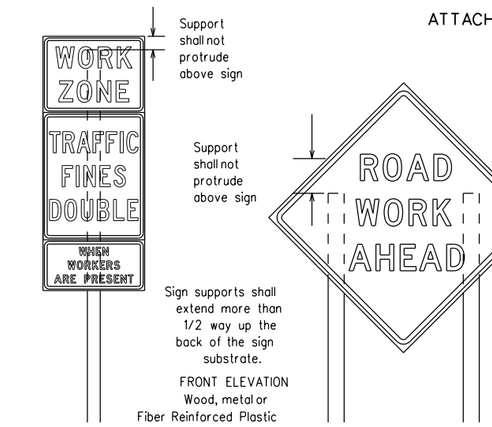
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

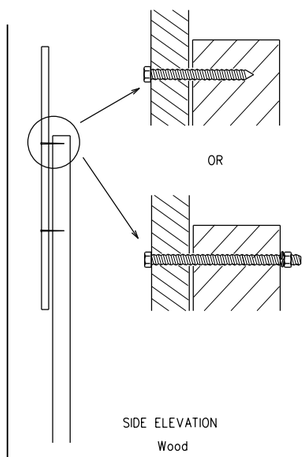


x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

x x When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS





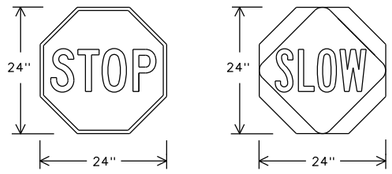
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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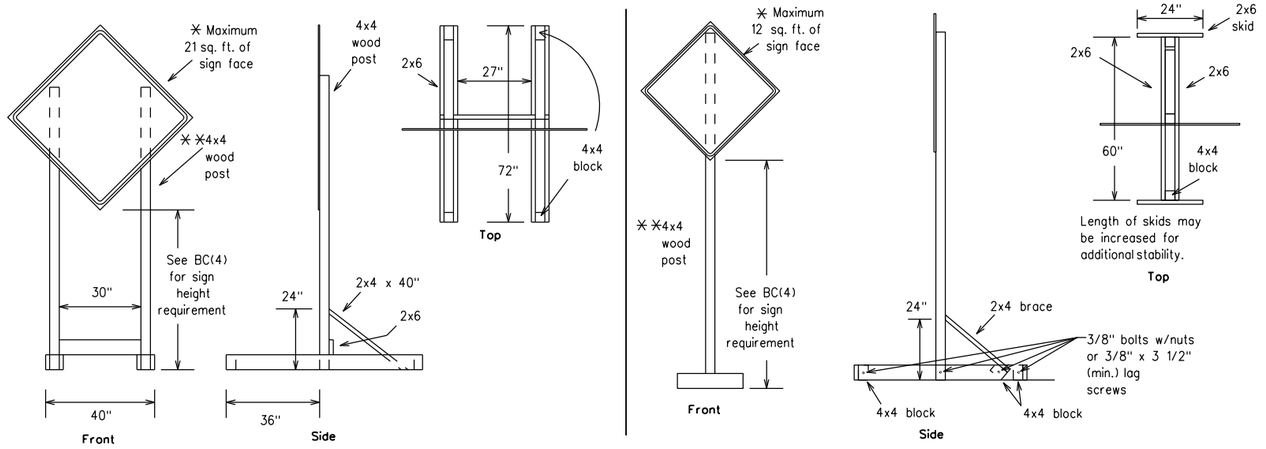
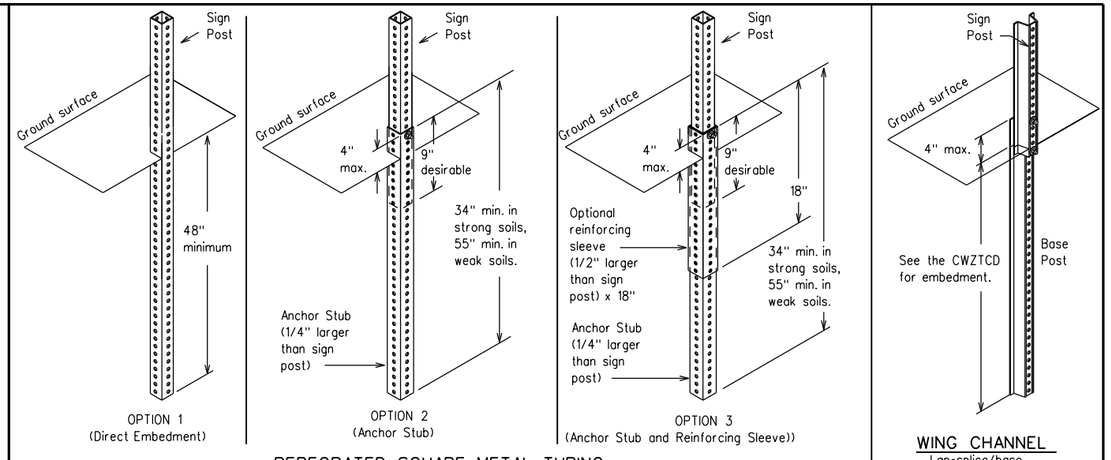


SKID MOUNTED WOOD SIGN SUPPORTS

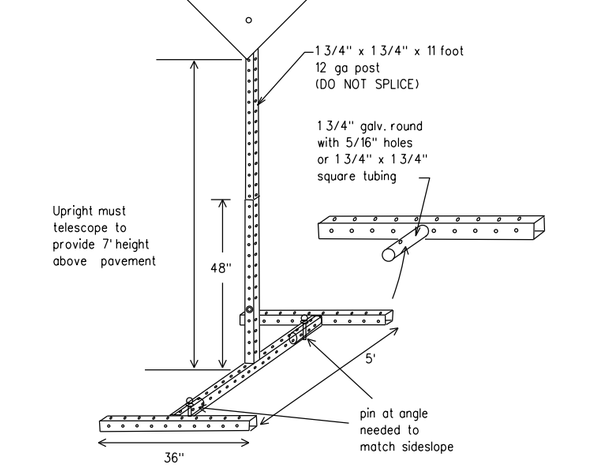
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

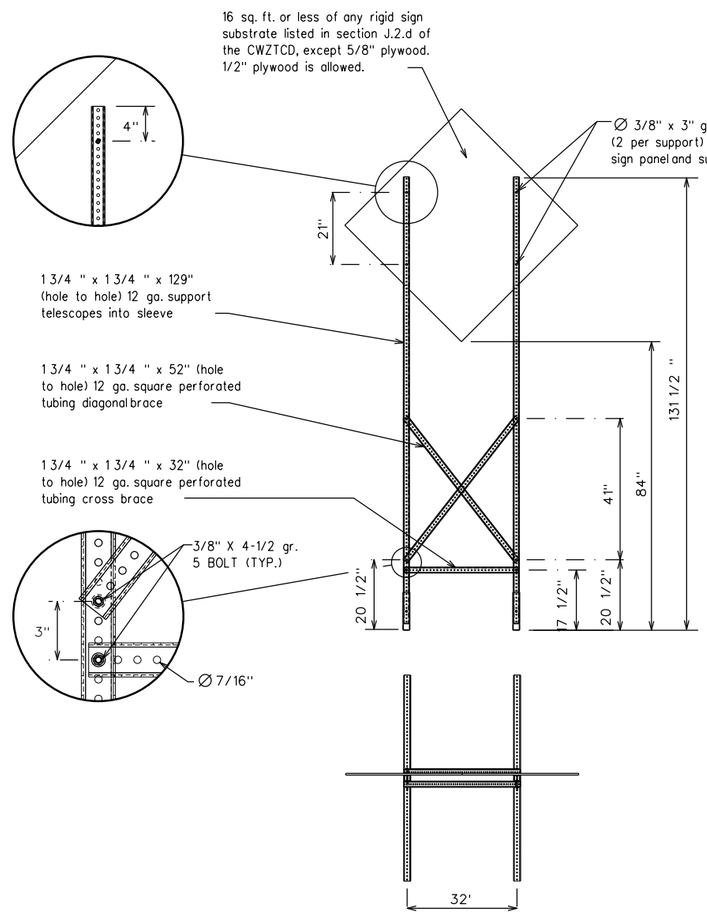


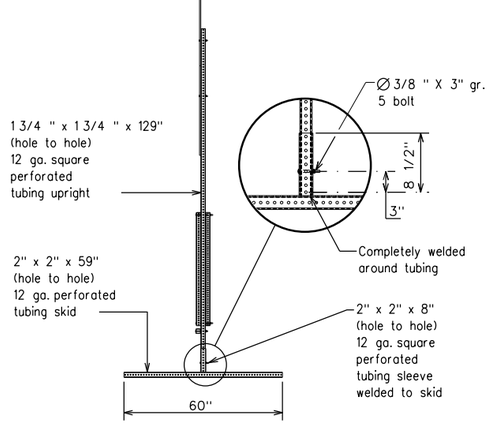
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

☐ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation • IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE
EXIT CLOSED	RIGHT LN TO BE CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXXX BLVD CLOSED	

Other Condition List

ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXXX RD EXIT
USE EXIT XXX	USE EXIT I-XX NORTH
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE *	

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXX TO XXXXXXX
US XXX TO FM XXXX

Warning List

SPEED LIMIT XX MPH
MAXIMUM SPEED XX MPH
MINIMUM SPEED XX MPH
ADVISORY SPEED XX MPH
RIGHT LANE EXIT
USE CAUTION
DRIVE SAFELY
DRIVE WITH CARE

** Advance Notice List

TUE-FRI XX AM- X PM
APR XX-XX X PM-X AM
BEGINS MONDAY
BEGINS MAY XX
MAY X-X XX PM - XX AM
NEXT FRI-SUN
XX AM TO XX PM
NEXT TUE AUG XX
TONIGHT XX PM- XX AM

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

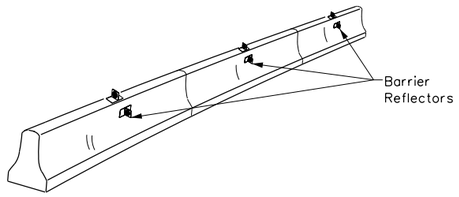
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		82

100

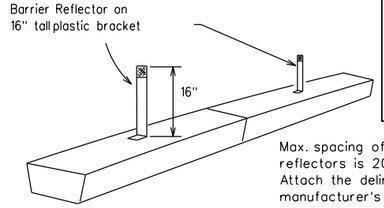
DATE: 3/22/2024 9:40:02 AM
FILE: bc-21.dgn

1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



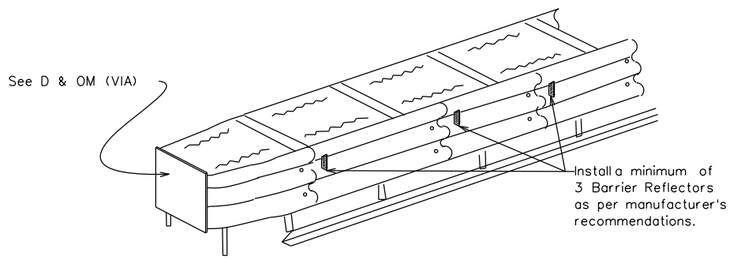
CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

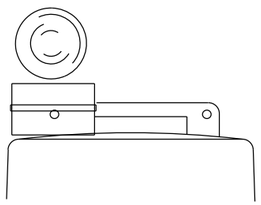
LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

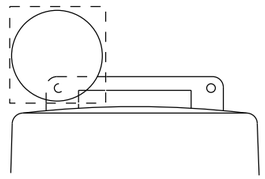
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B or C $_{FL}$Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

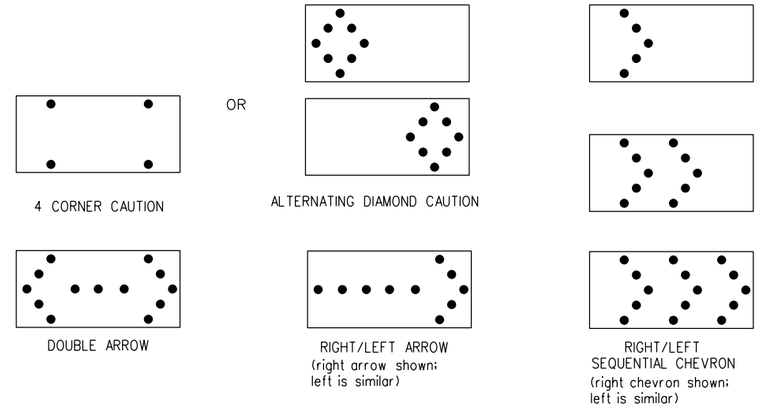
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

RIGHT/LEFT ARROW
(right arrow shown;
left is similar)

RIGHT/LEFT
SEQUENTIAL CHEVRON
(right chevron shown;
left is similar)

5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

SHEET 7 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		83

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

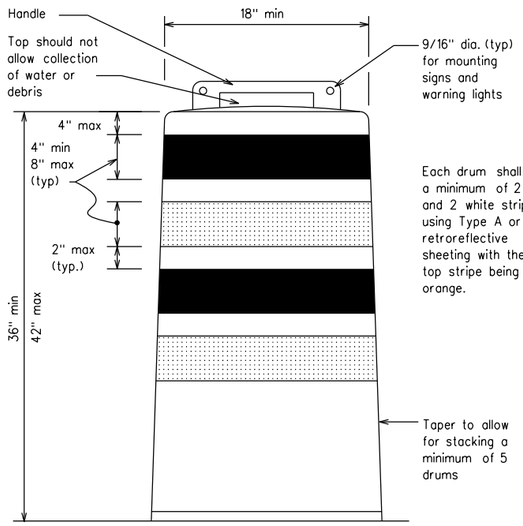
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

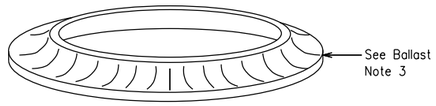
RETROREFLECTIVE SHEETING

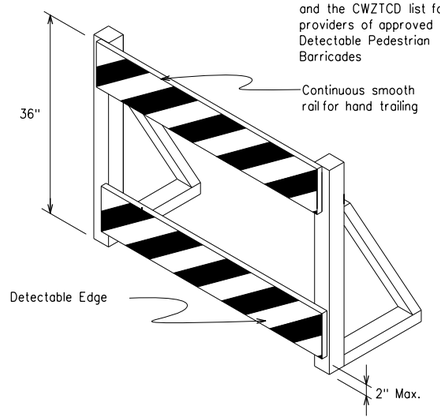
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

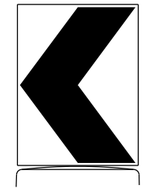




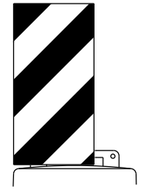


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24"
Vertical Panel
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B or Type C Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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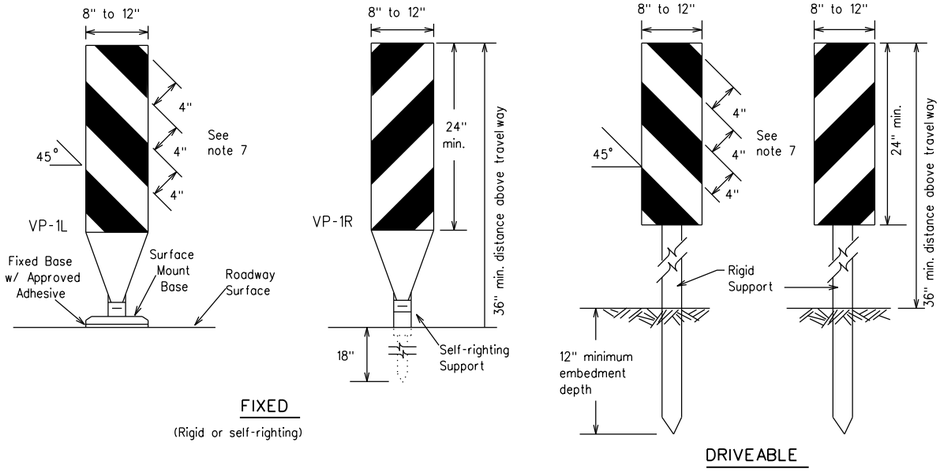
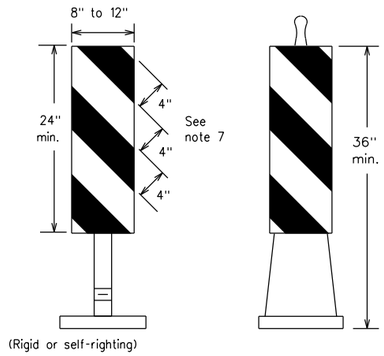


FIXED

(Rigid or self-righting)

DRIVEABLE

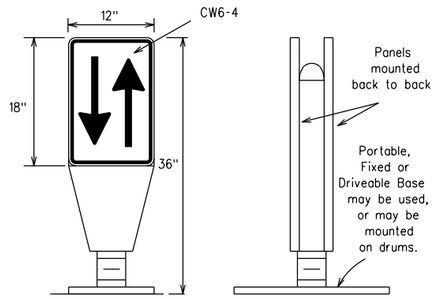


(Rigid or self-righting)

PORTABLE

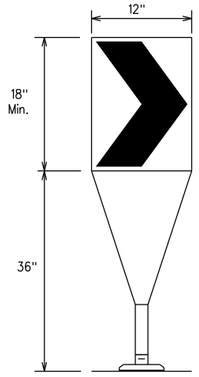
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



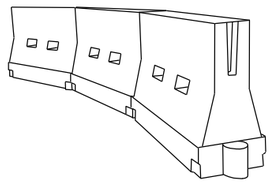
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L=WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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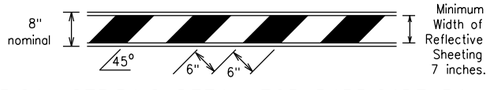
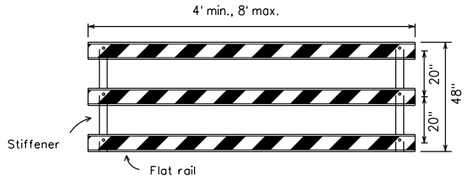
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



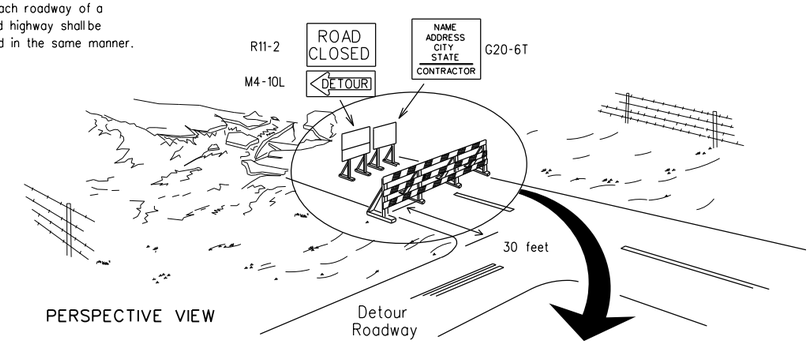
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

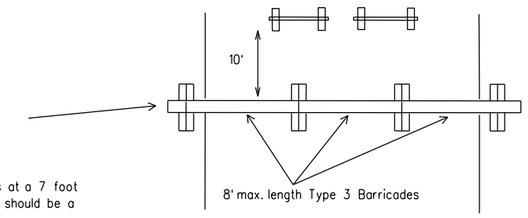
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

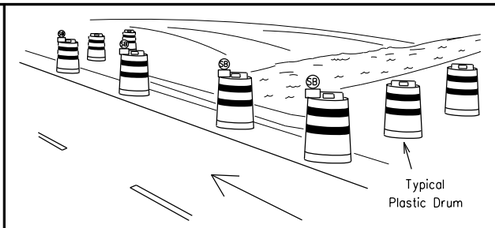
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

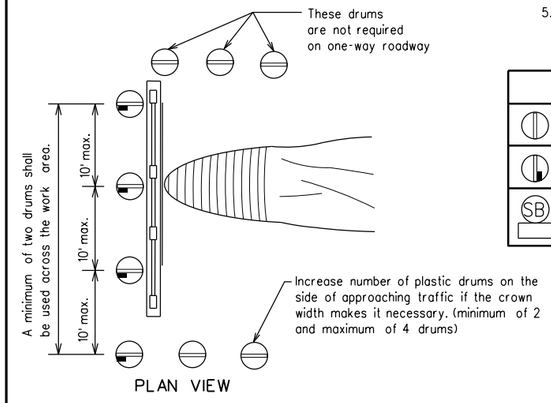
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

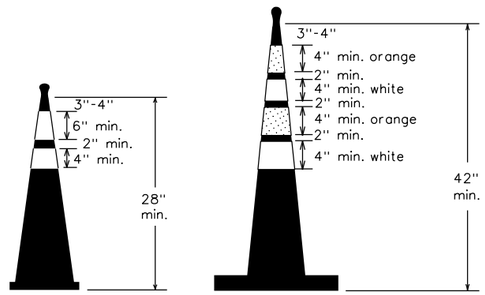
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



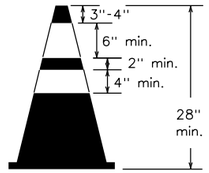
PLAN VIEW

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

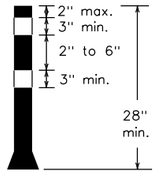
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

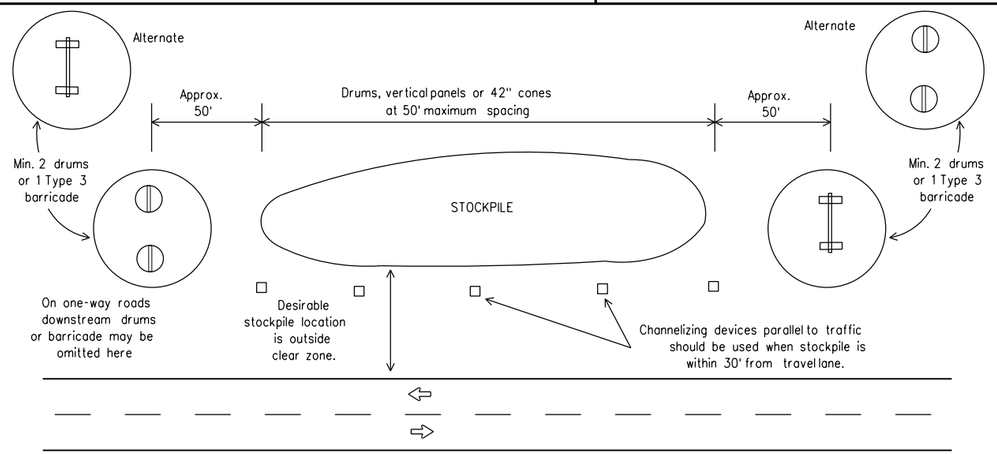


Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

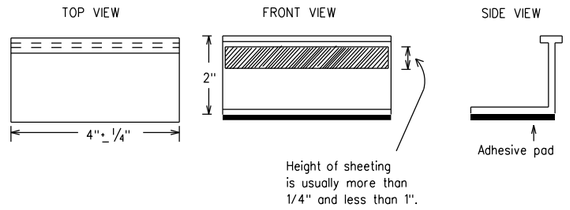
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

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BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

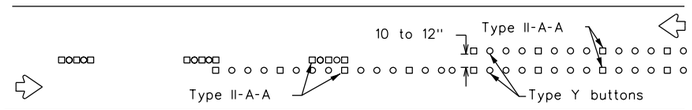
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	BRY	GRIMES		87
11-02 8-14				

105

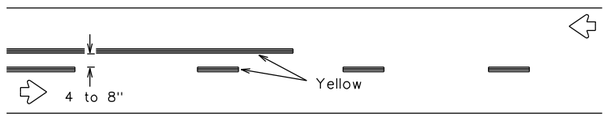
DATE: 3/22/2024 9:40:03 AM
FILE: bc-21.dgn

PAVEMENT MARKING PATTERNS

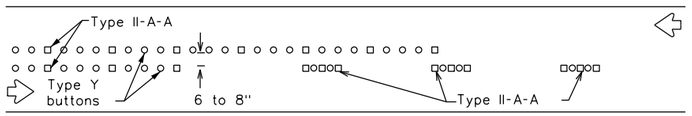
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



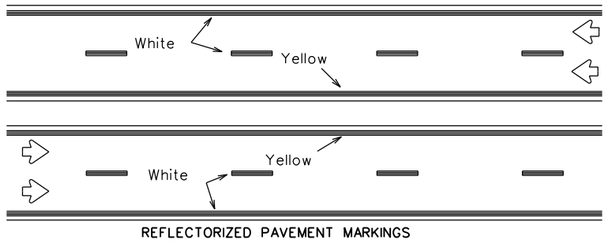
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



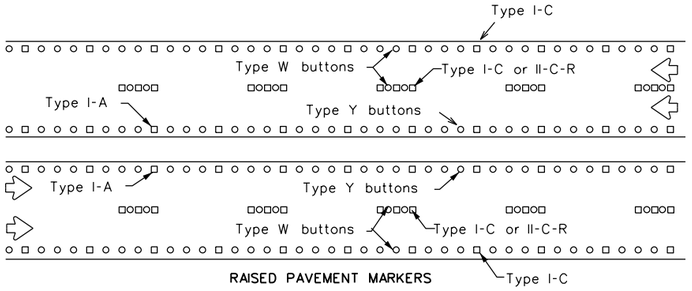
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

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



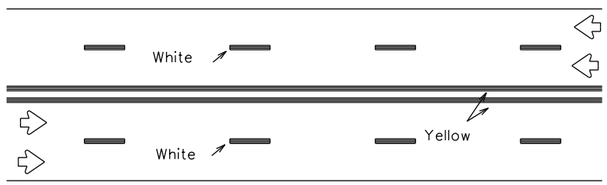
REFLECTORIZED PAVEMENT MARKINGS



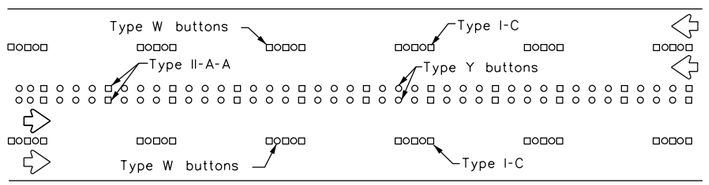
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



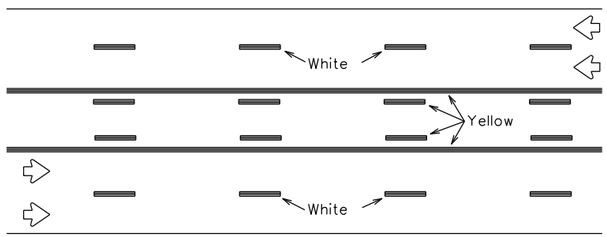
REFLECTORIZED PAVEMENT MARKINGS



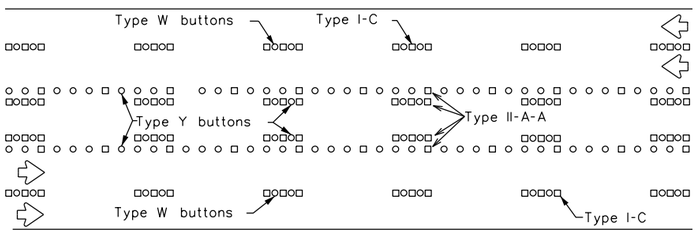
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

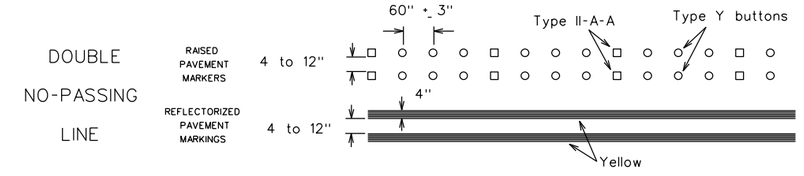
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

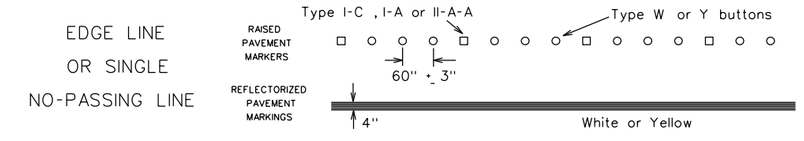
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

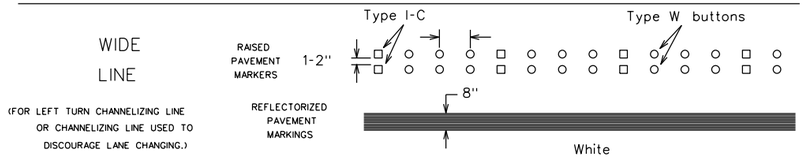


EDGE LINE OR SINGLE NO-PASSING LINE



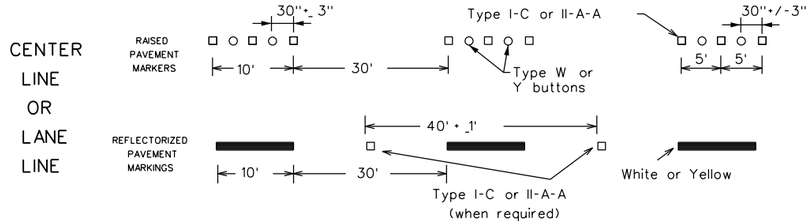
WIDE LINE

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

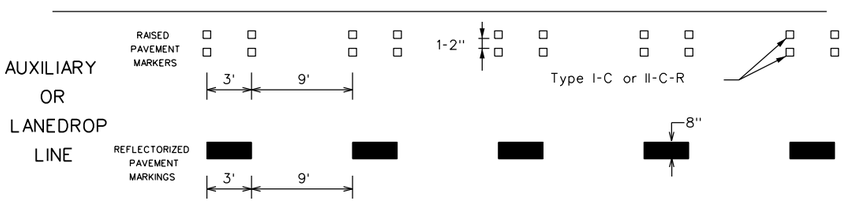


BROKEN LINES

CENTER LINE OR LANE LINE

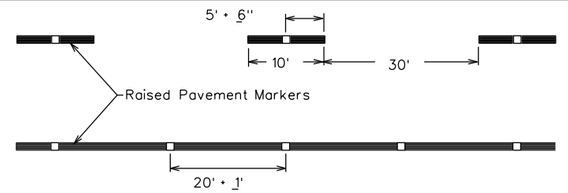


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		88

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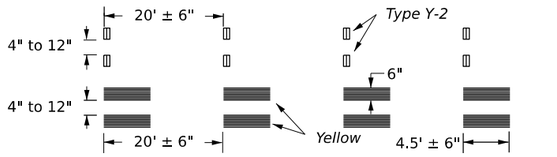
DATE: 3/22/2024 9:40:03 AM
FILE: bc-21.dgn

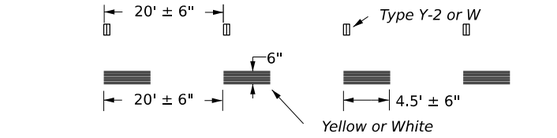
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

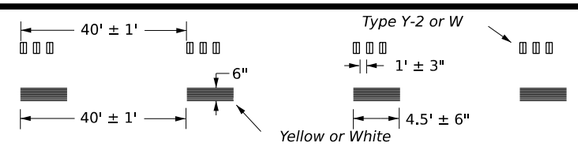


SINGLE NO-PASSING LINE or CHANNELIZATION LINE



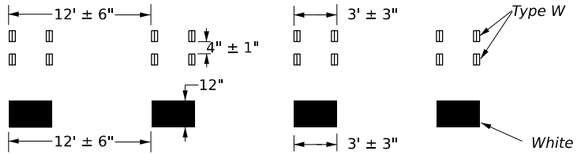
BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

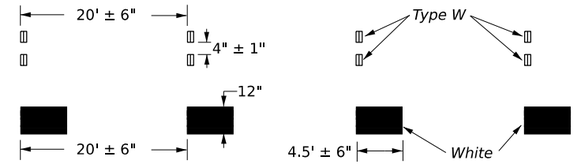


WIDE DOTTED LINES

(FOR LANE DROP LINES)



WIDE GORE MARKINGS



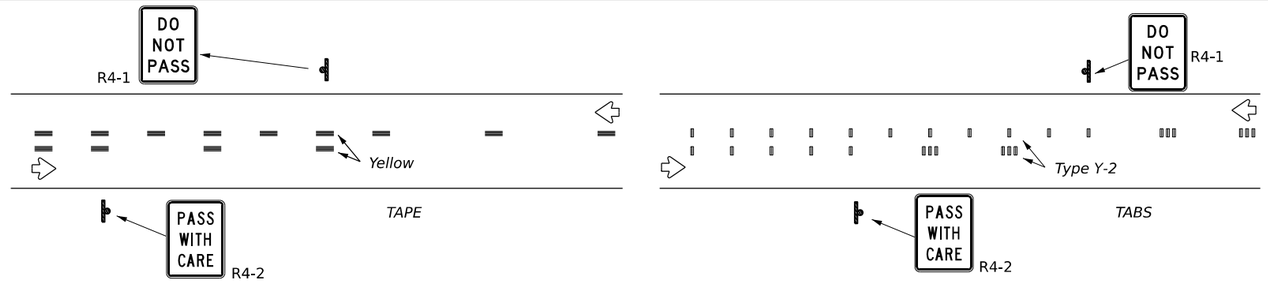
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

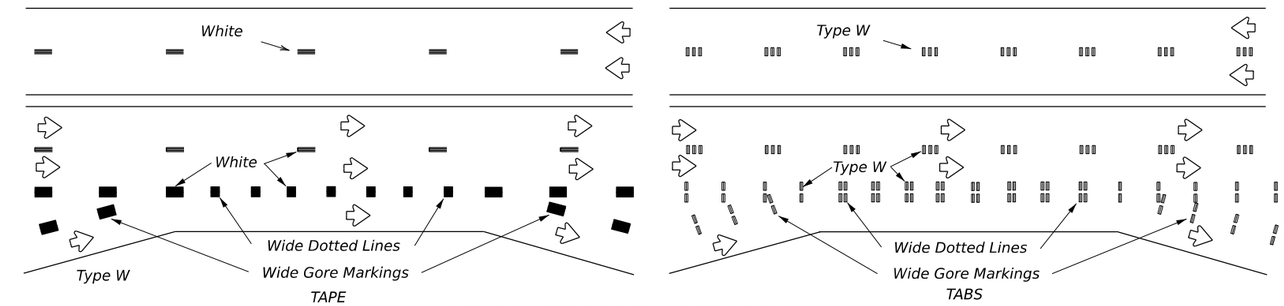
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

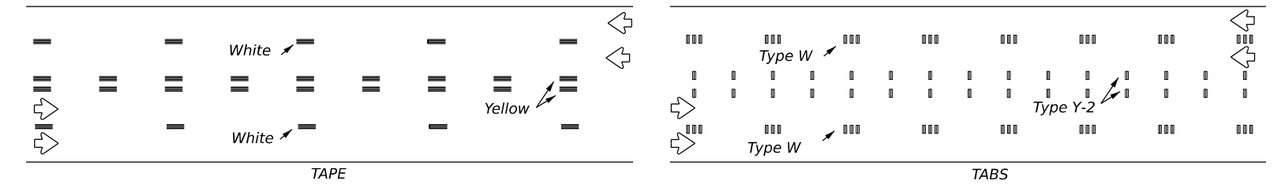
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



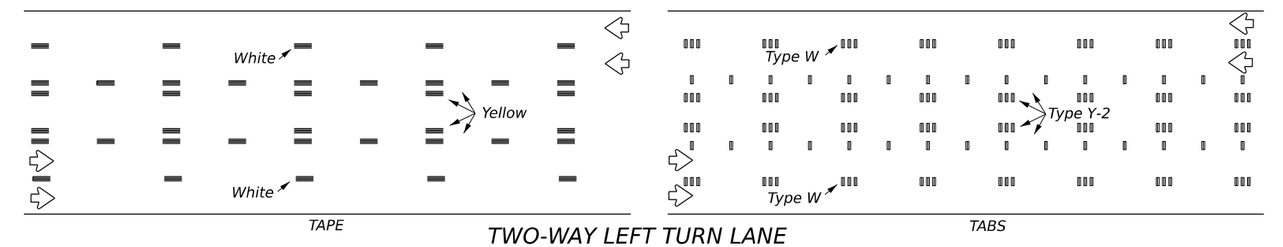
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



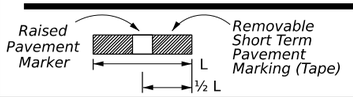
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-92 7-13	DIST	COUNTY		SHEET NO.
1-97 2-23	BRY	GRIMES		89
3-03				

111

DATE: 3/22/2024 9:40:05 AM
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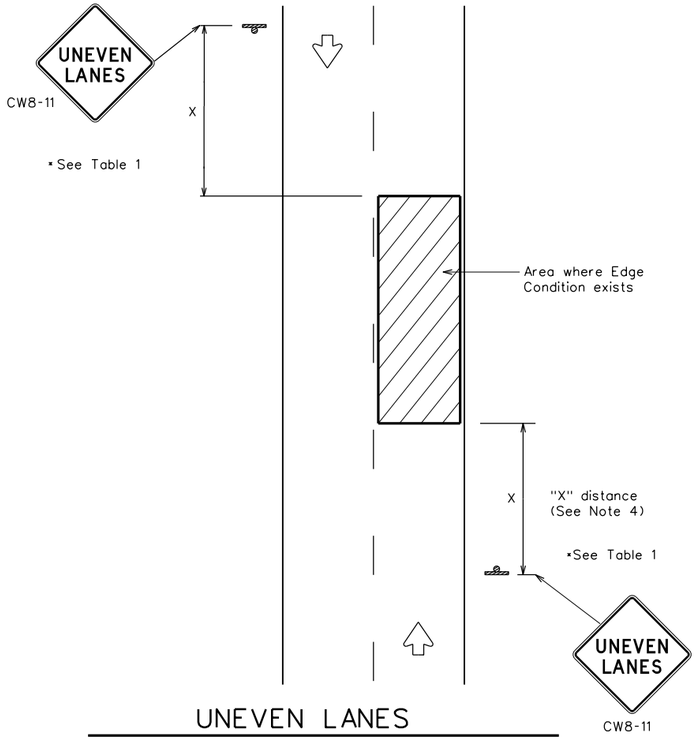
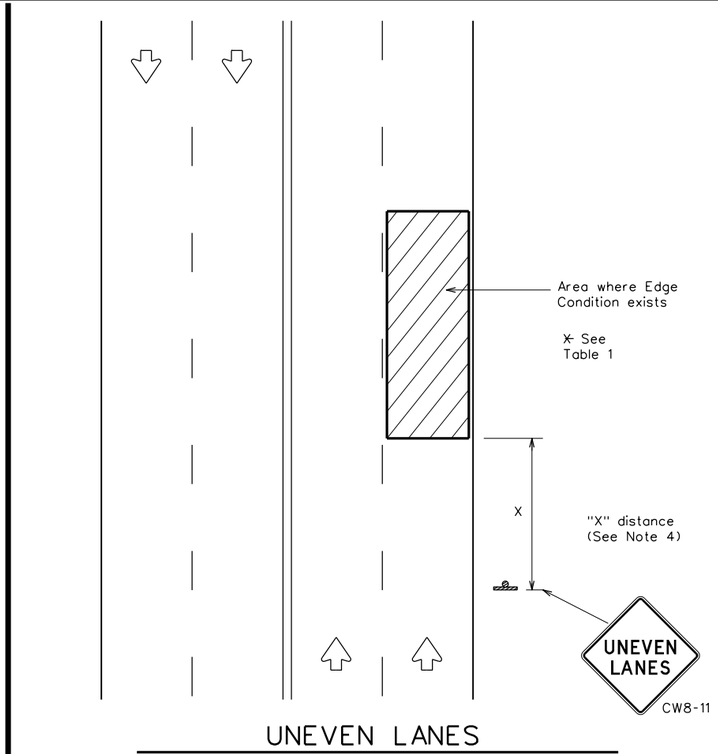
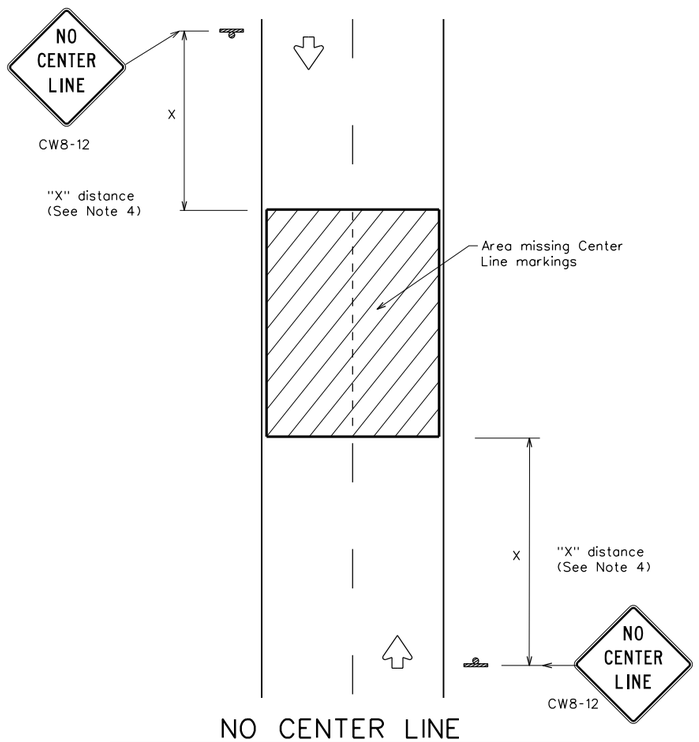


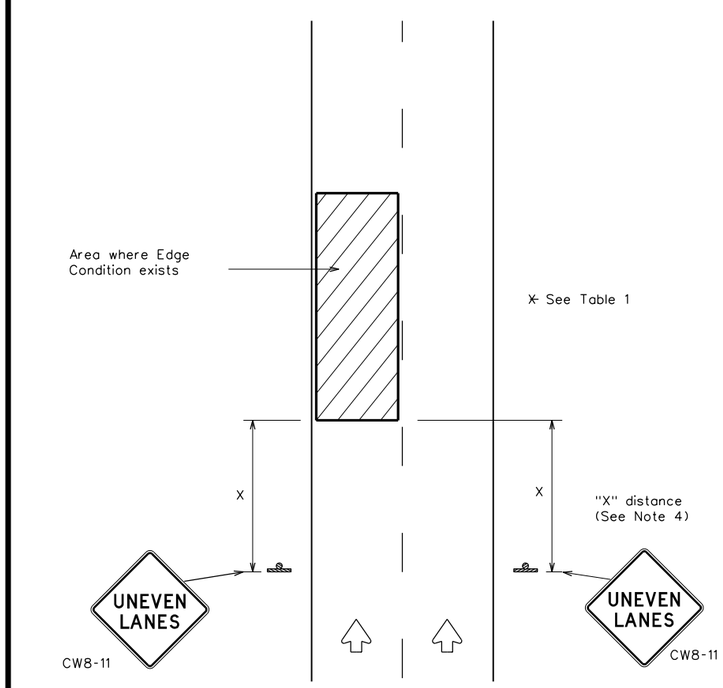
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

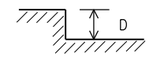
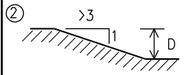
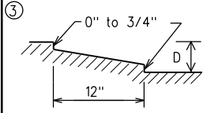
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0338	01	068	SH 105
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	BRY	GRIMES		90

112

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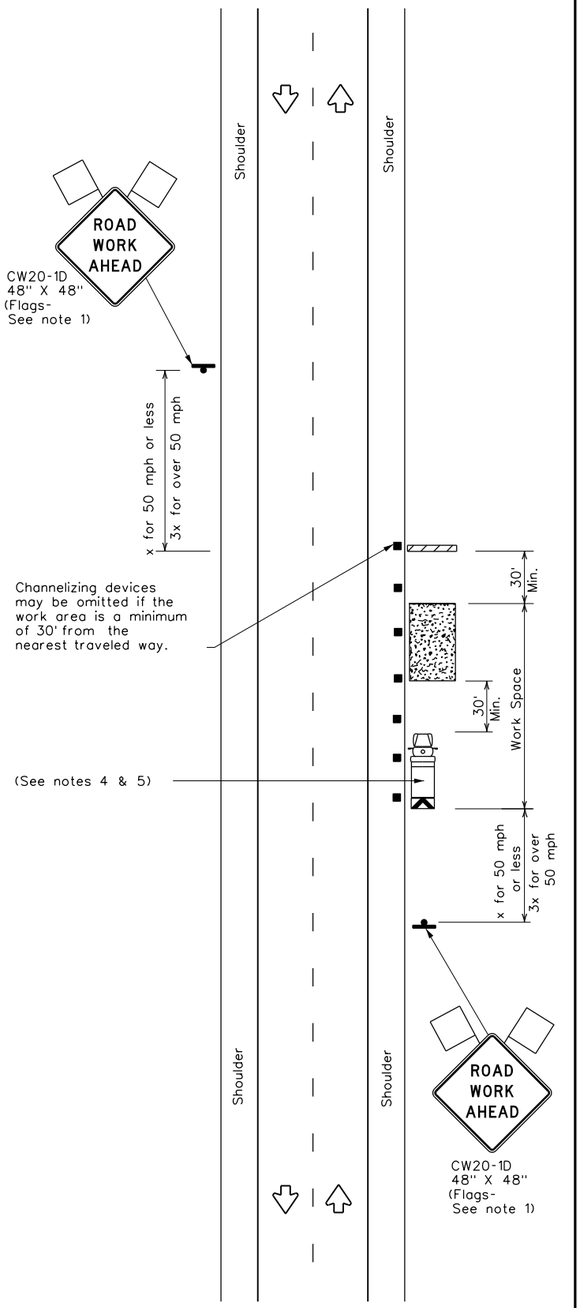
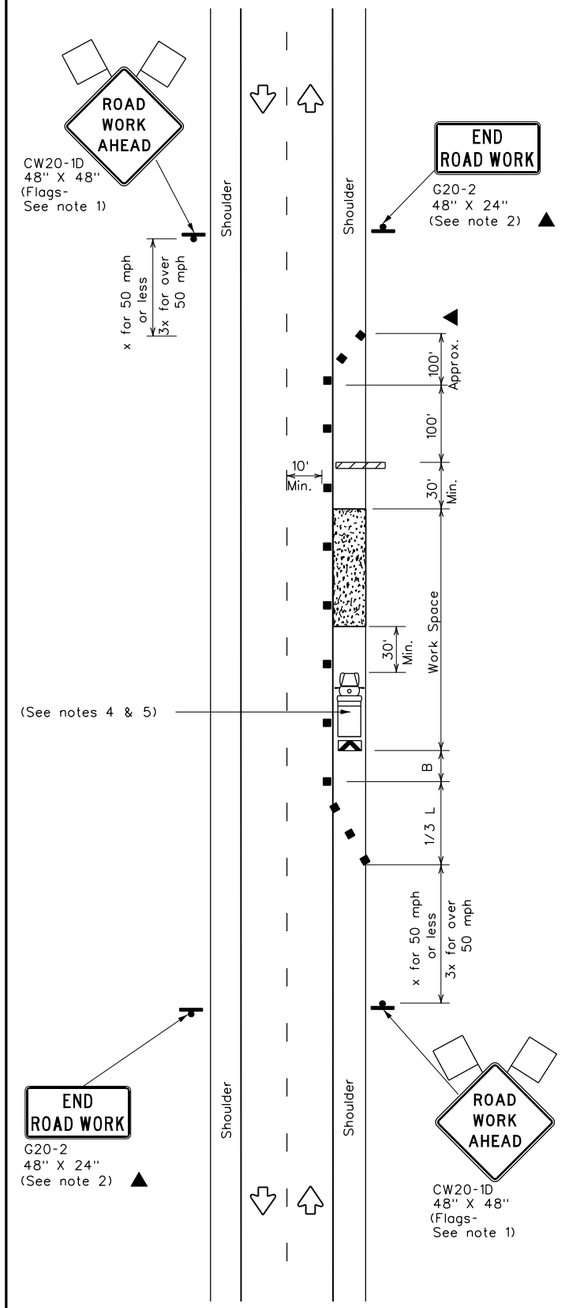


TCP (2-1a)

WORK SPACE NEAR SHOULDER

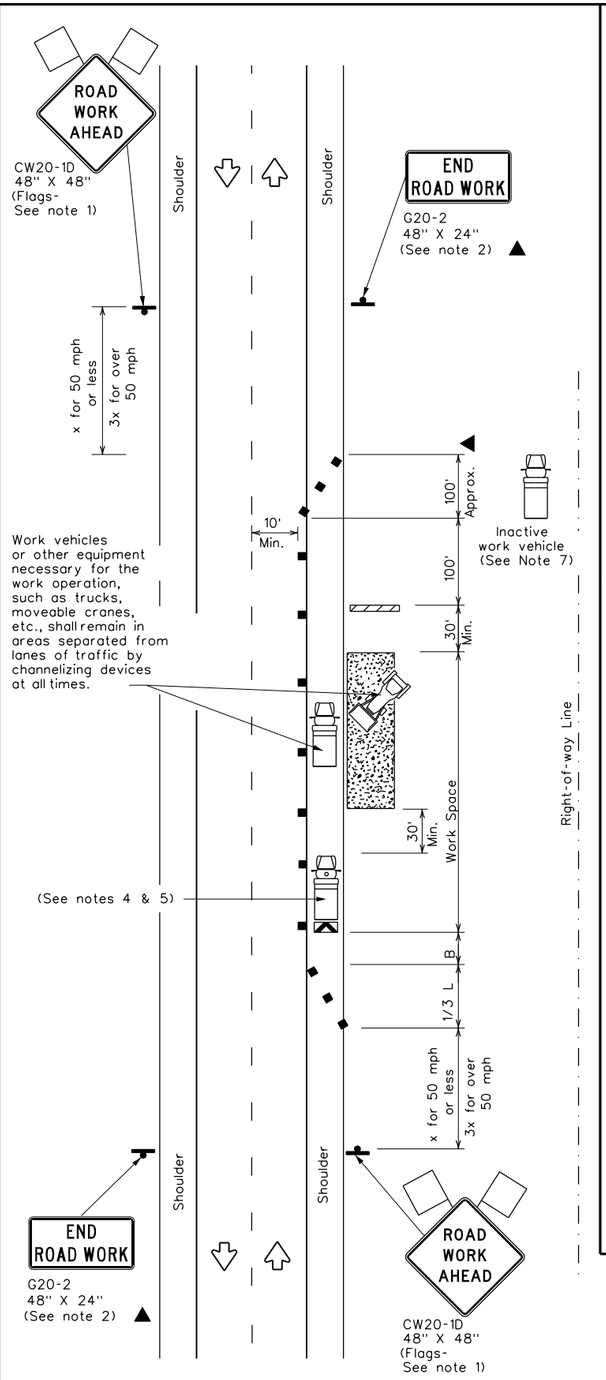
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	BRY	GRIMES		91
1-97 2-18				

161

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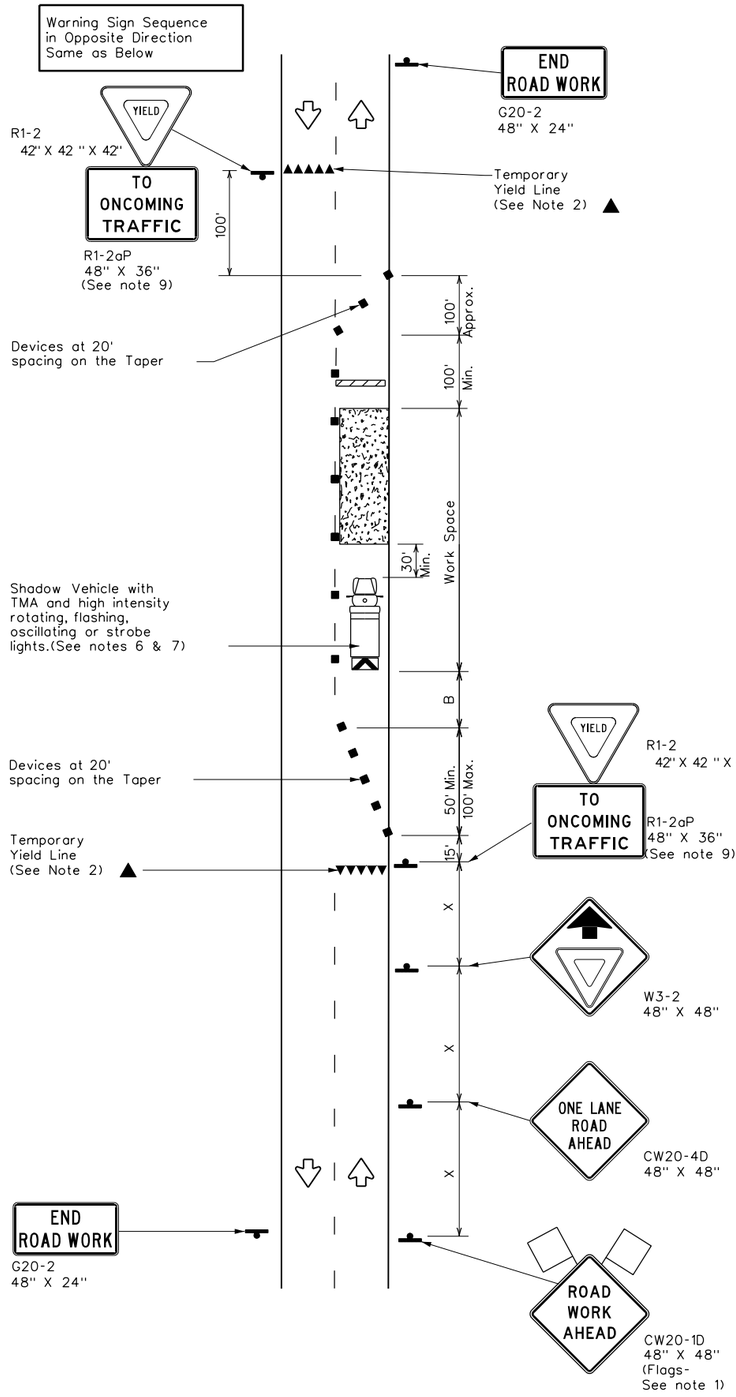
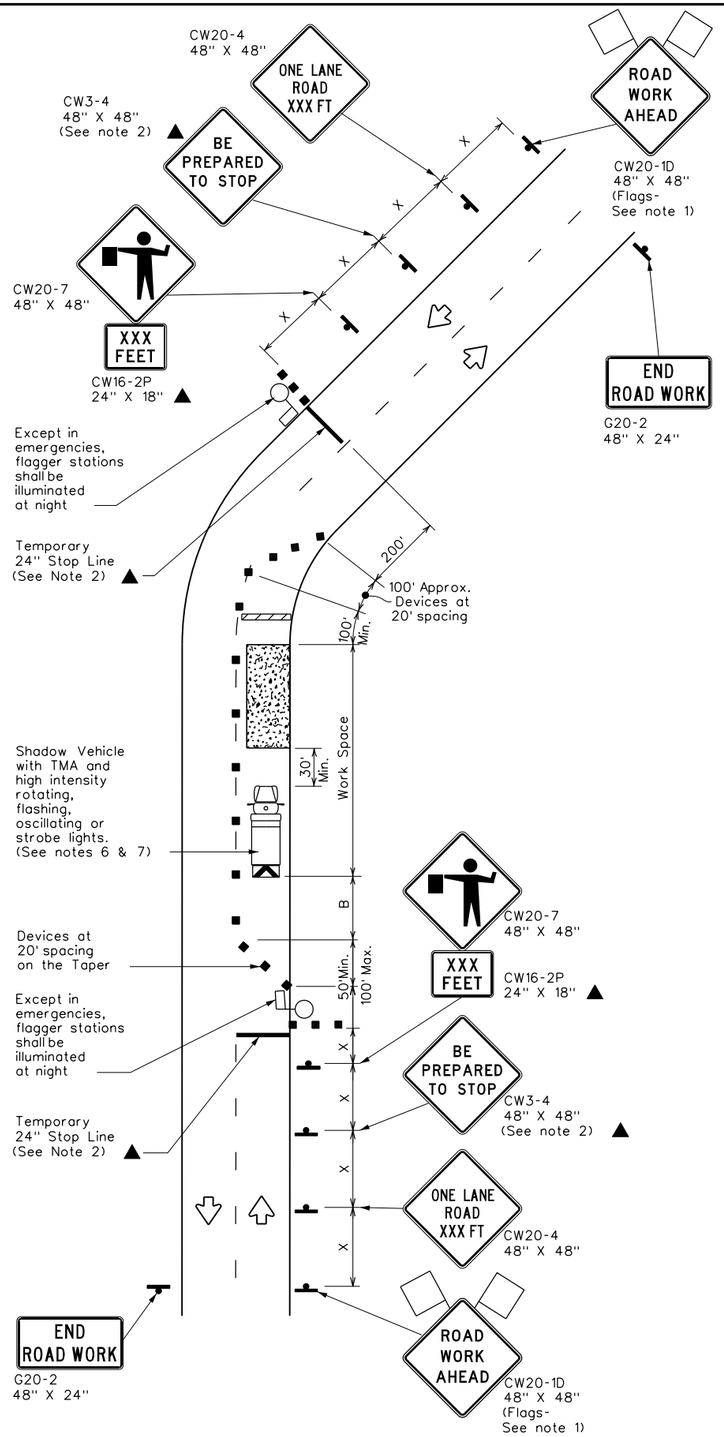


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths * * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
* * Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0338	01	068	SH 105
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	BRY	GRIMES		92

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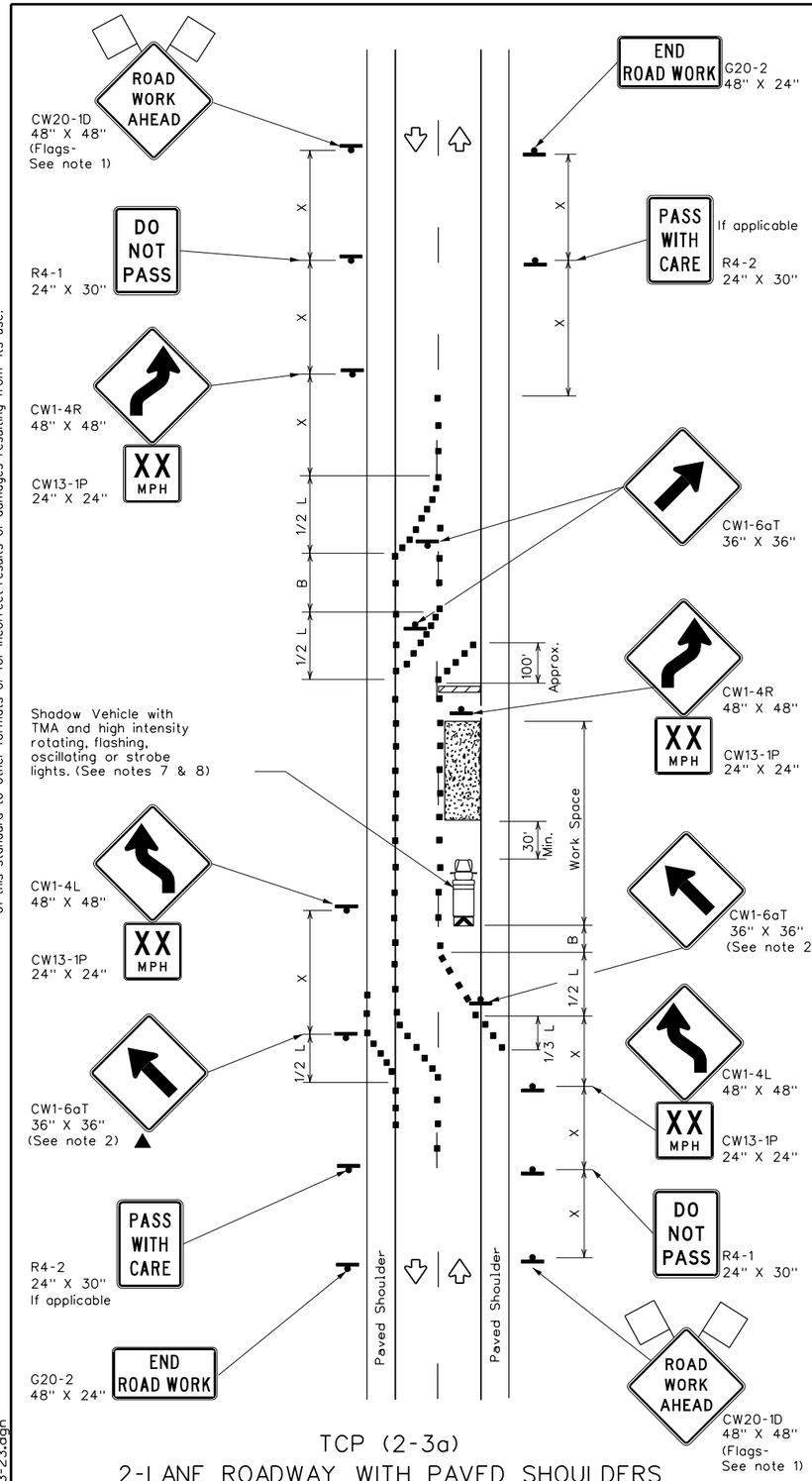
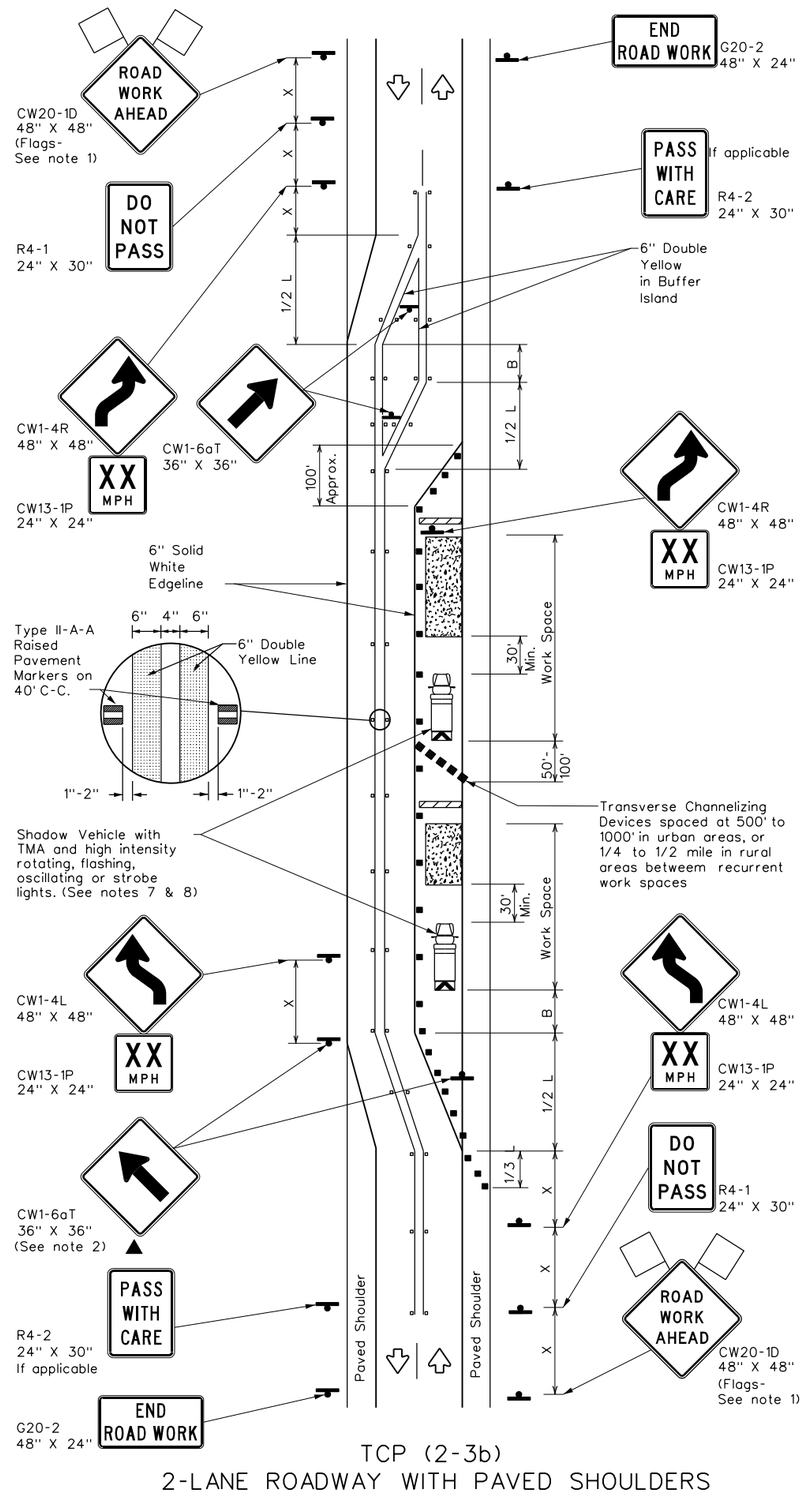


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

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© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
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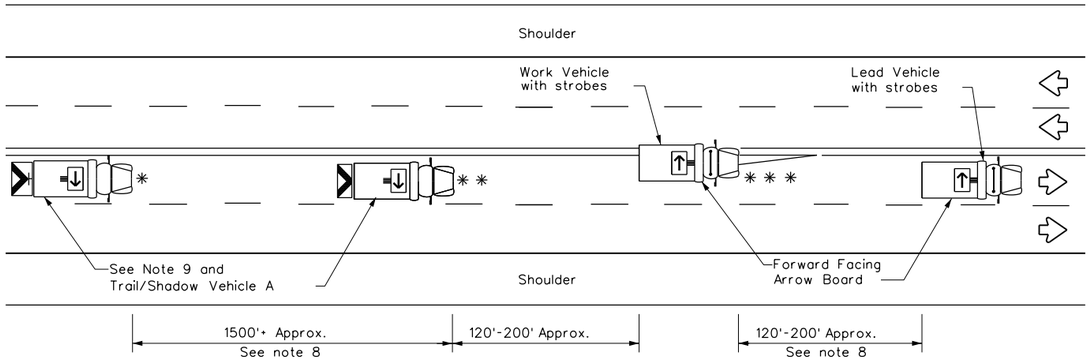
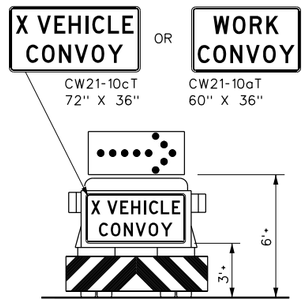
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12	BRY	GRIMES		93

163



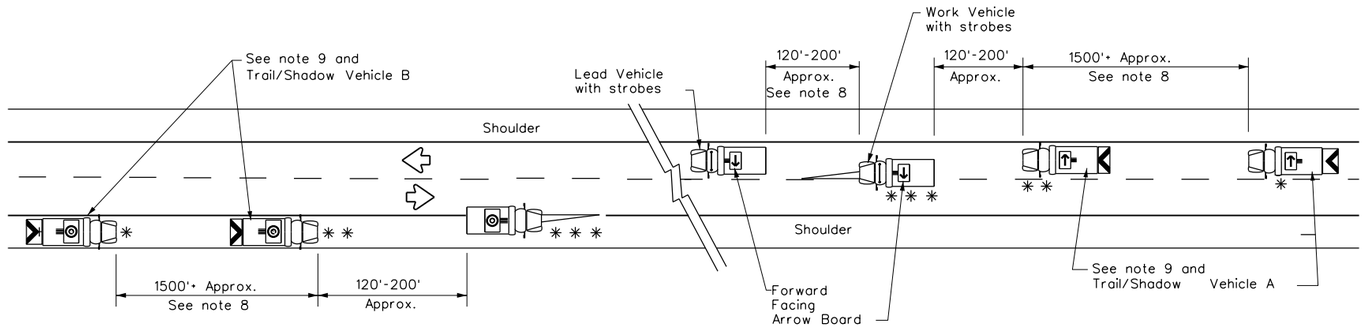
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

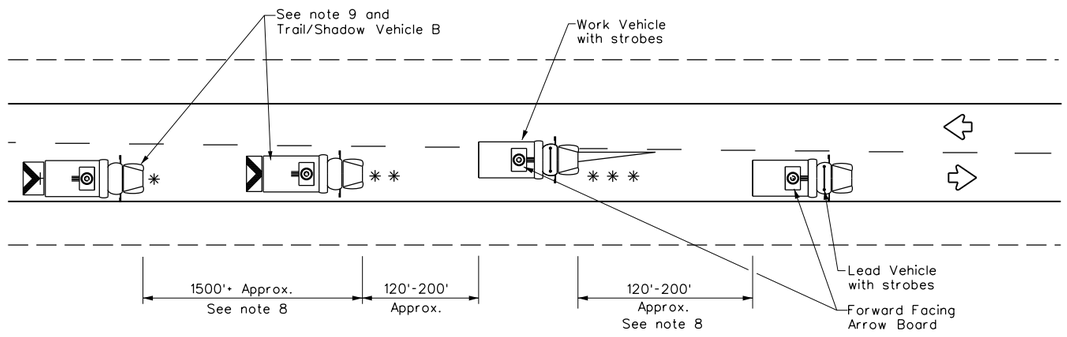


WORK ON SHOULDER

WORK ON TRAVEL LANE

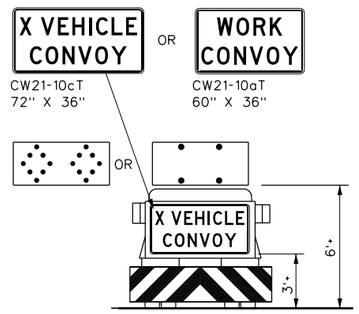
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display

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

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.

2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.

3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.

4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.

5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.

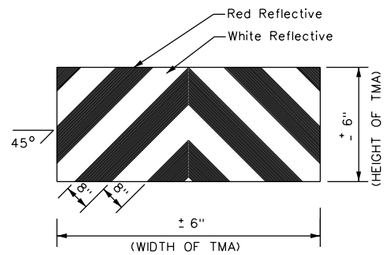
6. Each vehicle shall have two-way radio communication capability.

7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.

8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.

9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.

10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

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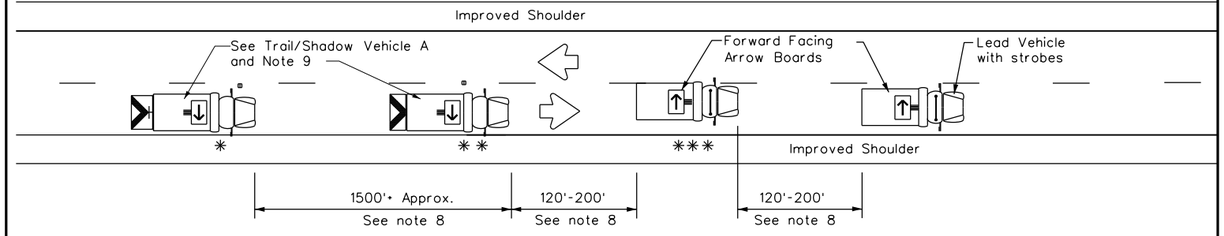
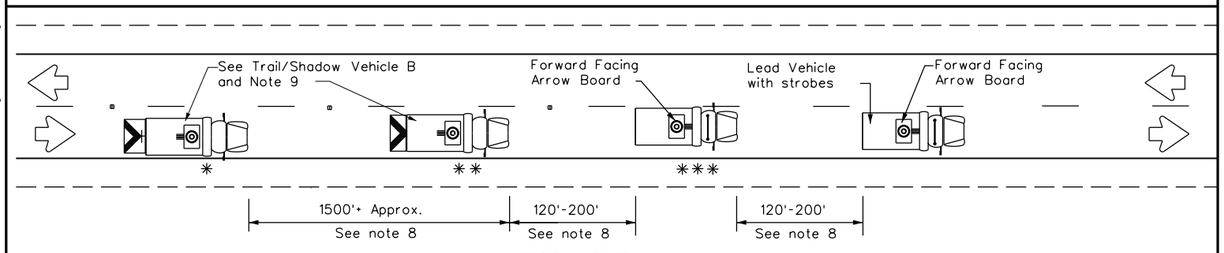


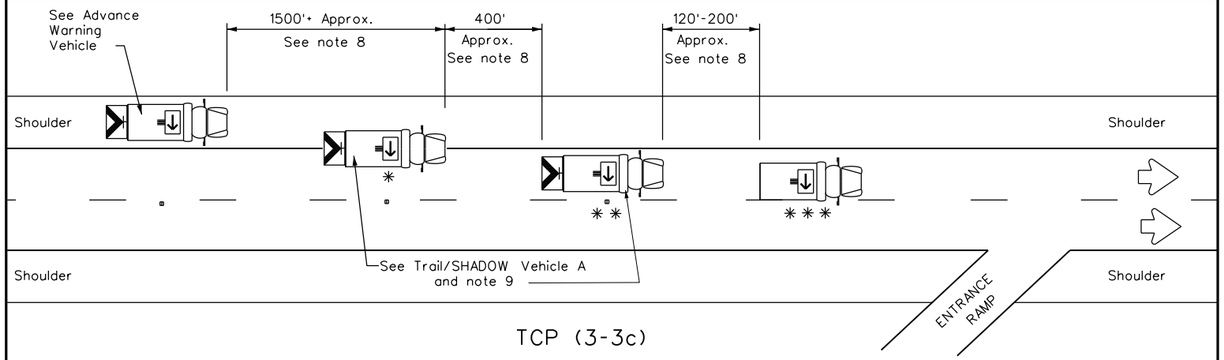
TCP (3-3a)

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



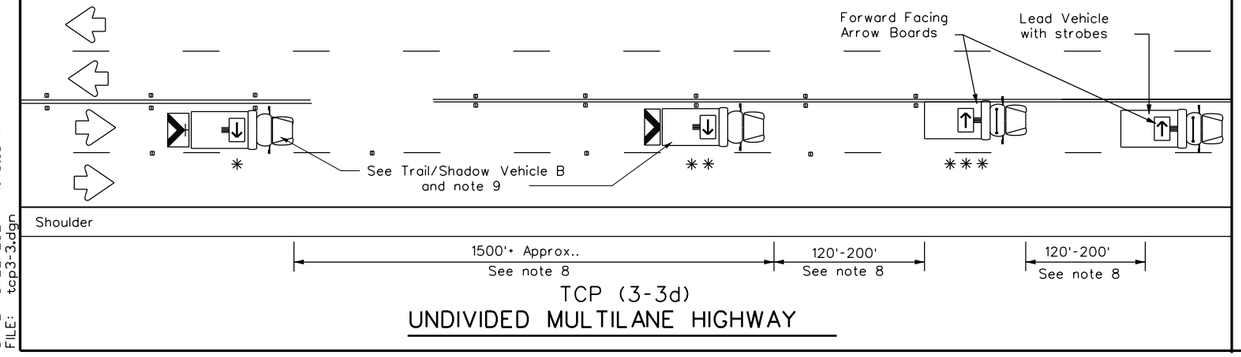
TCP (3-3b)

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



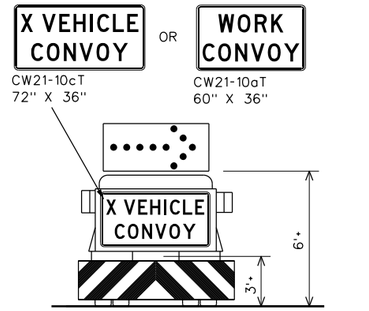
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



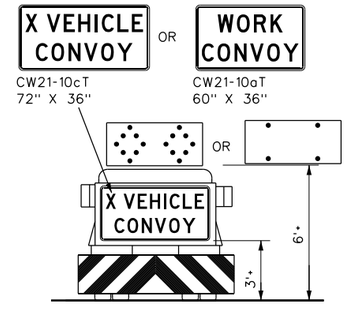
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



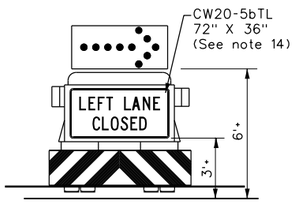
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

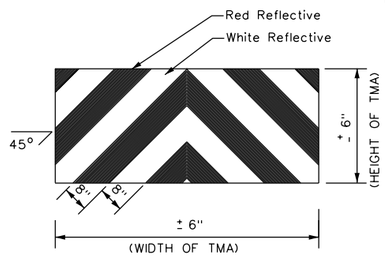


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

TCP(3-3)-14

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177

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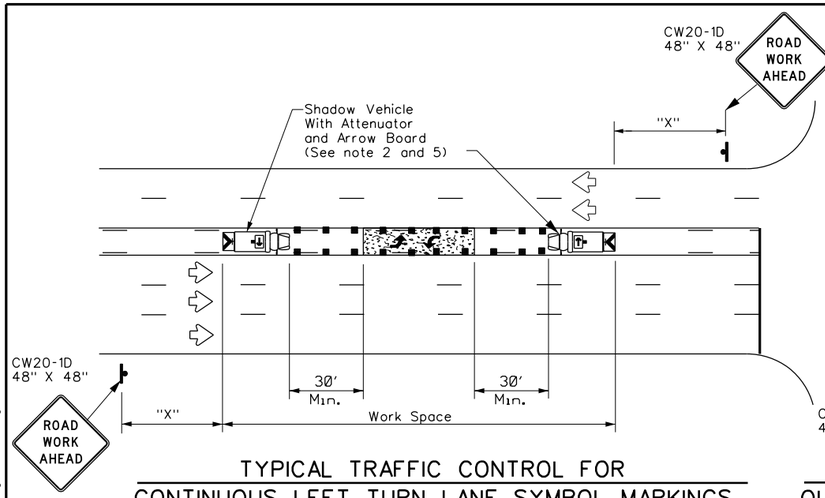
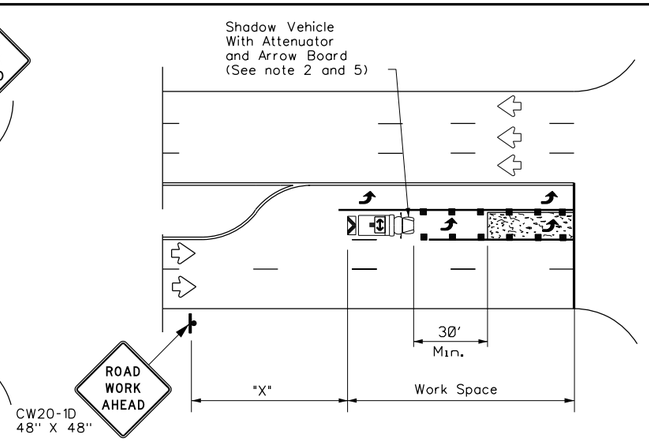
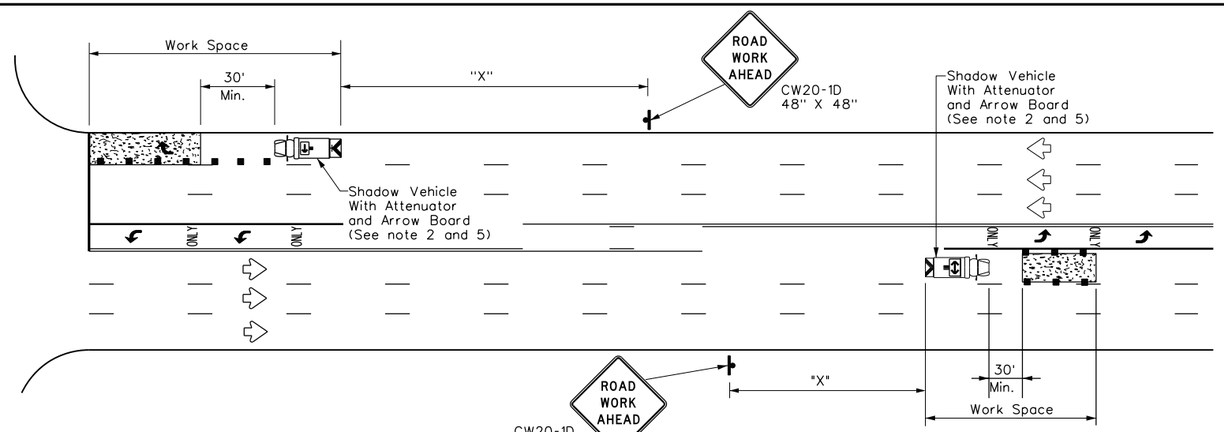


TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

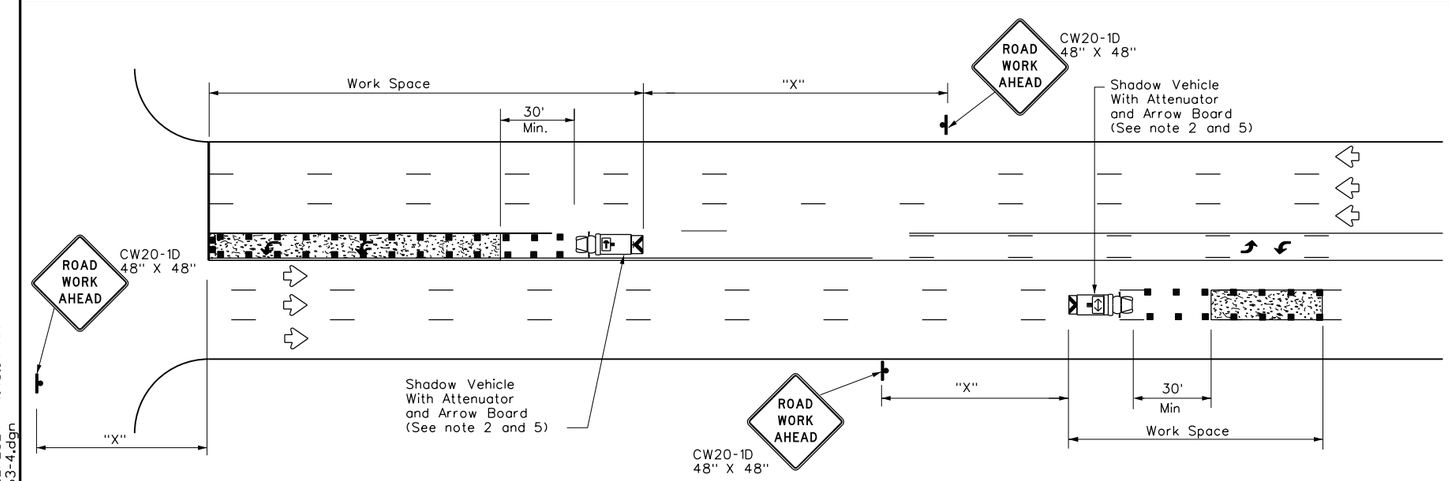


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR
OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR
LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
CENTER LANE MARKINGS

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
* *	Shadow Vehicle		
* * *	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow	■ ■ ■	Channelizing Devices

Posted Speed *	Formula	Minimum Desirable Taper Lengths * * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

* * Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

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

GENERAL NOTES

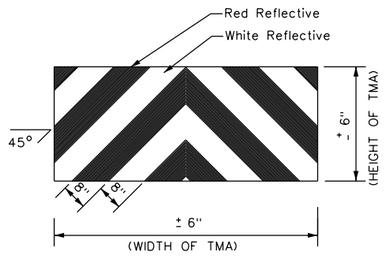
1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.

2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.

3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.

4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.

5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

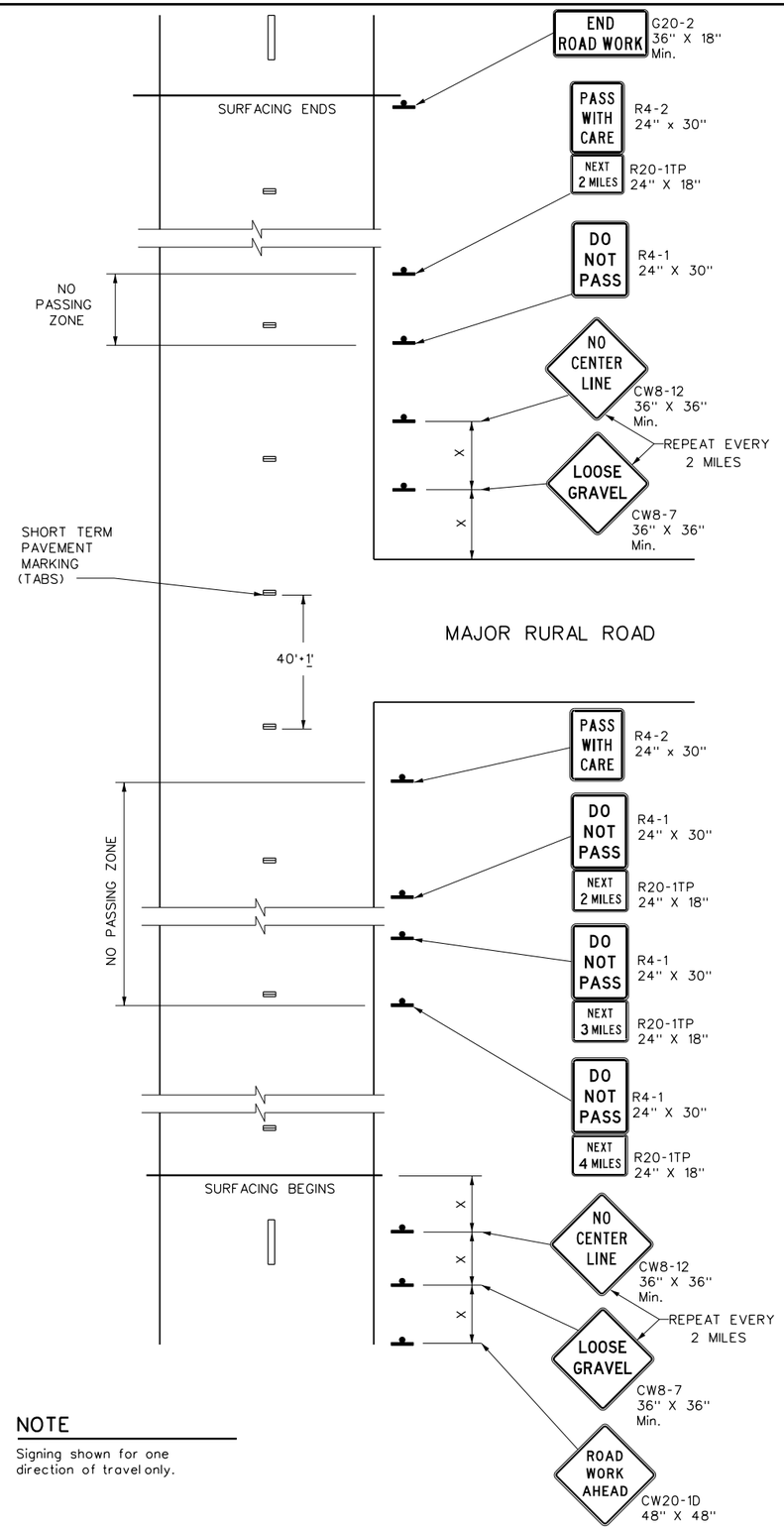
TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

TCP(3-4)-13

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		96

DATE: 3/22/2024 9:40:14 AM
FILE: tcp3-4.dgn

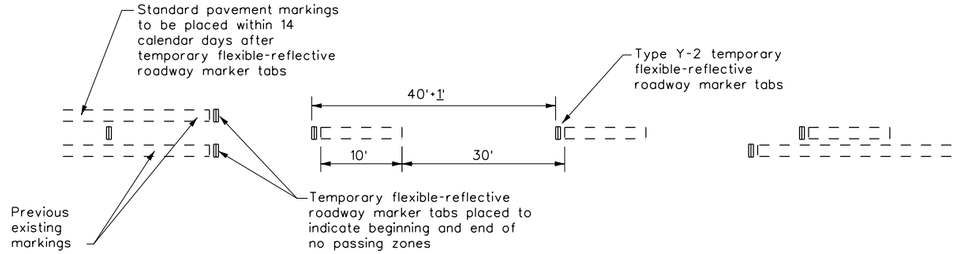
DATE: 3/22/2024 9:40:16 AM
FILE: tcp7-1.dgn



NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

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

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

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

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

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

"NO CENTER LINE" SIGN (CW8-12)

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

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

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

"LOOSE GRAVEL" SIGN (CW8-7)

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

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

PAVEMENT MARKINGS

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

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

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

COORDINATION OF SIGN LOCATIONS

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

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

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.

2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.

3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.

4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".

5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

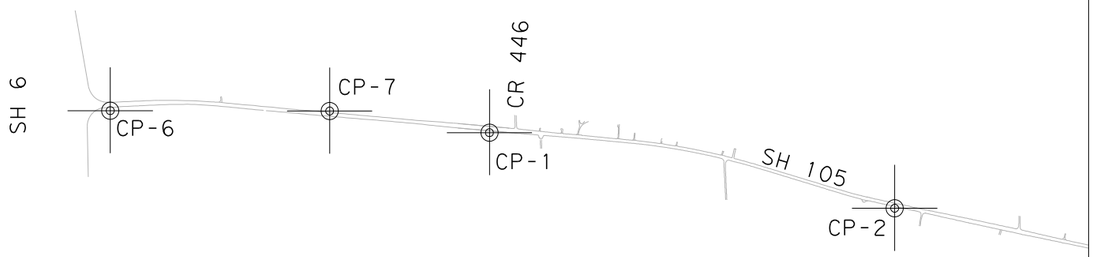
TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP(7-1)-13

FILE: tcp7-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 1991	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-92 4-98	DIST	COUNTY		SHEET NO.
1-97 7-13	BRY	GRIMES		97

210

VICINITY MAP
NOT TO SCALE



MATCH SHEET 2 OF 5

HORIZONTAL / VERTICAL CONTROL - GRID COORDINATES

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
CP-1	10,126,012.19	3,646,756.86	235.57'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-2	10,125,014.21	3,652,104.57	298.37'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-3	10,123,660.05	3,656,298.42	272.70'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-4	10,119,527.17	3,663,208.39	238.74'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-5	10,119,632.25	3,667,967.42	276.61'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-6	10,1263,02.61	3,641,751.05	238.04'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-7	10,126,297.47	3,644,647.29	233.14'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE

HORIZONTAL / VERTICAL CONTROL - SURFACE COORDINATES

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
CP-1	10,127,227.31	3,647,194.47	235.57'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-2	10,126,229.21	3,652,542.82	298.37'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-3	10,124,874.89	3,656,737.17	272.70'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-4	10,120,741.52	3,663,647.98	238.74'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-5	10,120,846.60	3,668,407.57	276.61'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-6	10,127,517.76	3,642,188.06	238.04'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-7	10,127,512.62	3,645,084.65	233.14'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE

NOTES:

1) ALL COORDINATES SHOWN HEREON ARE BASED OFF THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83 / NAVD88, GEOID18. ALL COORDINATES SHOWN HEREON ARE IN SURFACE COORDINATES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A SURFACE ADJUSTMENT FACTOR OF 1.00012.
UNITS: U.S. SURVEY FEET

2) CONTROL POINTS SHOWN HEREON WERE DERIVED BY USING STATIC AND GPS OBSERVATIONS PROCESSED TO CORS STATIONS TXBX, TXCN, AND TXHE.

3) A CALIBRATION SHOULD BE PERFORMED WHEN USING ANY OF THE CONTROL SHOWN HEREON.

1/26/2024

Survey Date: JANUARY, 2024

SAM
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax: (512) 326-3029
Texas Firm Registration No. 10064300

Texas Department of Transportation

S.H. 105
CONTROL LAYOUT SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			1 OF 5

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	HIGHWAY NO.
0338	01	068	98

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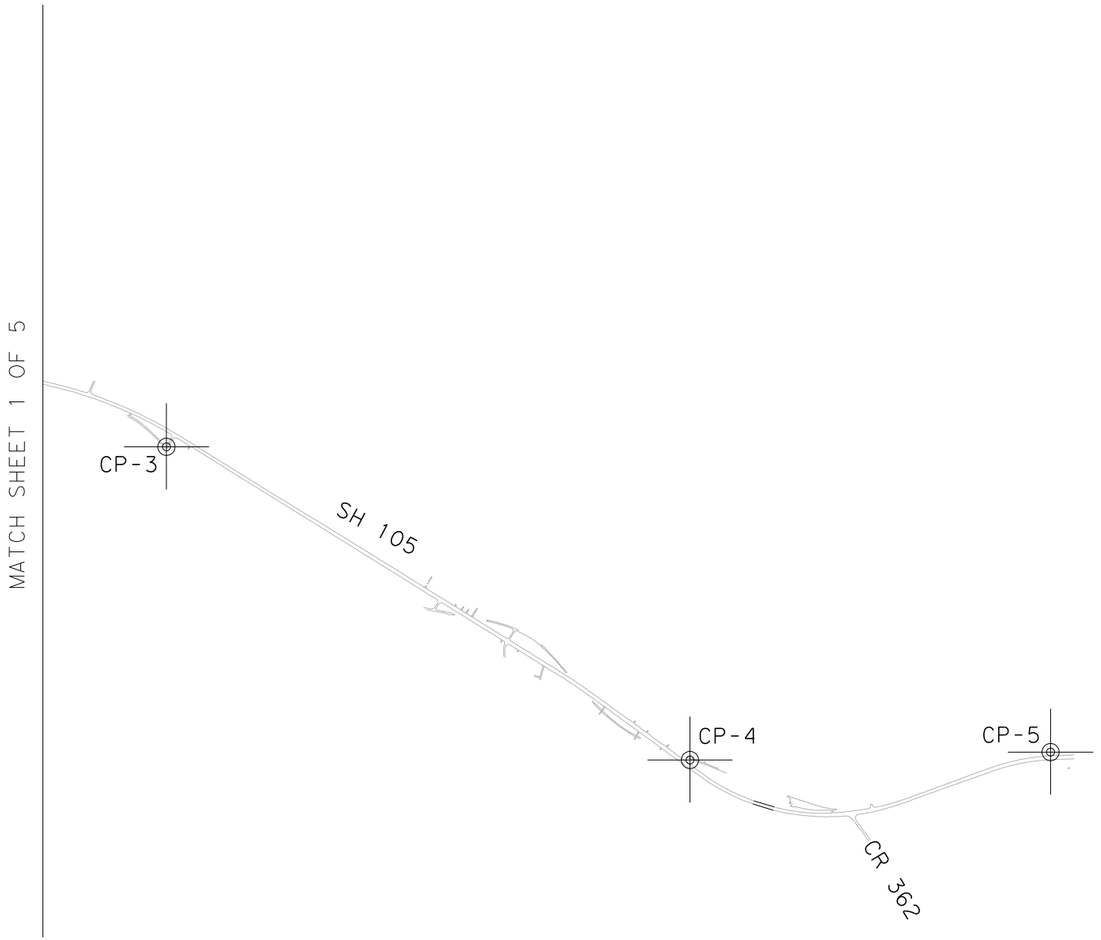

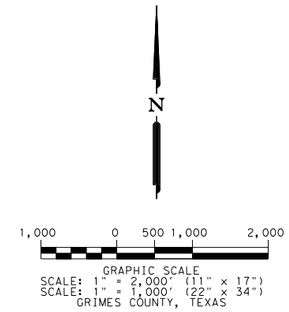

HORIZONTAL / VERTICAL CONTROL - GRID COORDINATES

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
CP-1	10,126,012.19	3,646,756.86	235.57'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-2	10,125,014.21	3,652,104.57	298.37'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-3	10,123,660.05	3,656,298.42	272.70'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-4	10,119,527.17	3,663,208.39	238.74'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-5	10,119,632.25	3,667,967.42	276.61'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-6	10,1263,02.61	3,641,751.05	238.04'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-7	10,126,297.47	3,644,647.29	233.14'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE

HORIZONTAL / VERTICAL CONTROL - SURFACE COORDINATES

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
CP-1	10,127,227.31	3,647,194.47	235.57'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-2	10,126,229.21	3,652,542.82	298.37'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-3	10,124,874.89	3,656,737.17	272.70'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-4	10,120,741.52	3,663,647.98	238.74'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-5	10,120,846.60	3,668,407.57	276.61'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-6	10,127,517.76	3,642,188.06	238.04'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE
CP-7	10,127,512.62	3,645,084.65	233.14'	5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE

NOTES:

1) ALL COORDINATES SHOWN HEREON ARE BASED OFF THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83 / NAVD88, GEOID18. ALL COORDINATES SHOWN HEREON ARE IN SURFACE COORDINATES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A SURFACE ADJUSTMENT FACTOR OF 1.00012.
UNITS: U.S. SURVEY FEET

2) CONTROL POINTS SHOWN HEREON WERE DERIVED BY USING STATIC AND GPS OBSERVATIONS PROCESSED TO CORS STATIONS TXBX, TXCN, AND TXHE.

3) A CALIBRATION SHOULD BE PERFORMED WHEN USING ANY OF THE CONTROL SHOWN HEREON.

Scott C. Brashear

1/26/2024

Survey Date: JANUARY, 2024

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(512) 447-0575
Fax: (512) 326-3029
Texas Firm Registration No. 10064300

Texas Department of Transportation

S.H. 105
CONTROL LAYOUT SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			2 OF 5
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	HIGHWAY NO.
0338	01	068	99

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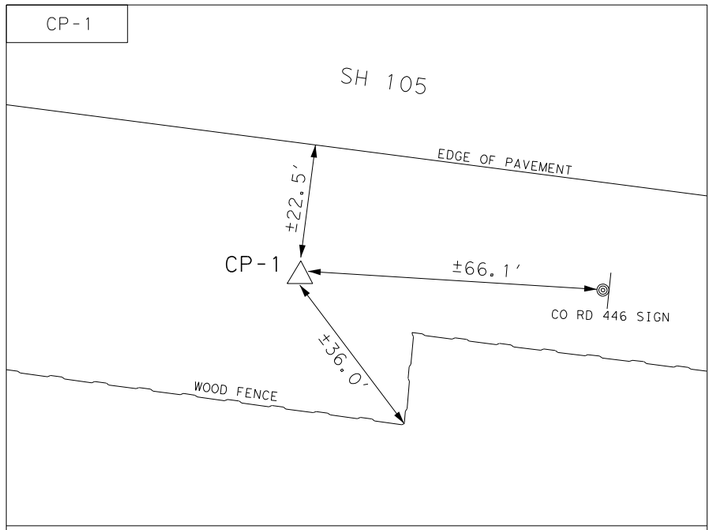
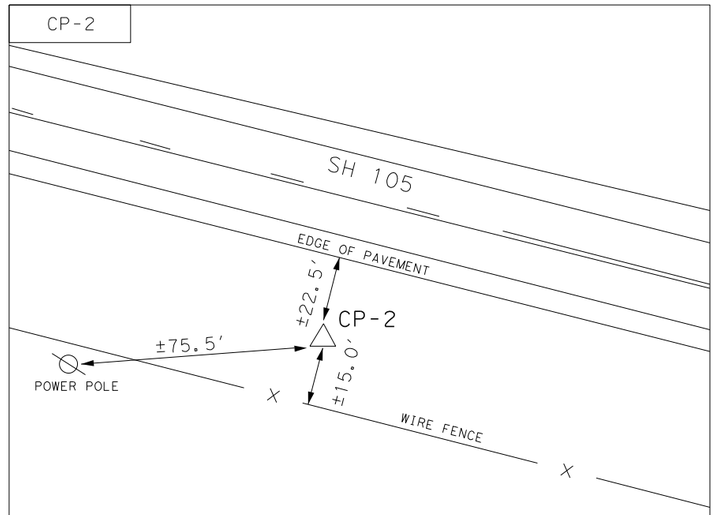
CP-1



CP-1 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE SOUTH RIGHT-OF-WAY OF STATE HIGHWAY 105, ±66.1 FEET WEST OF A "CO RD 446 LEFT" SIGN, ±36.0 FEET NORTHWEST OF A WOOD FENCE CORNER AND ±22.5 FEET SOUTH OF THE EDGE OF PAVEMENT.

SURFACE COORDINATES	GRID COORDINATES
N=10,127,227.31	N=10,126,012.19
E=3,647,194.47	E=3,646,756.86
ELEV.=235.57'	ELEV.=235.57'

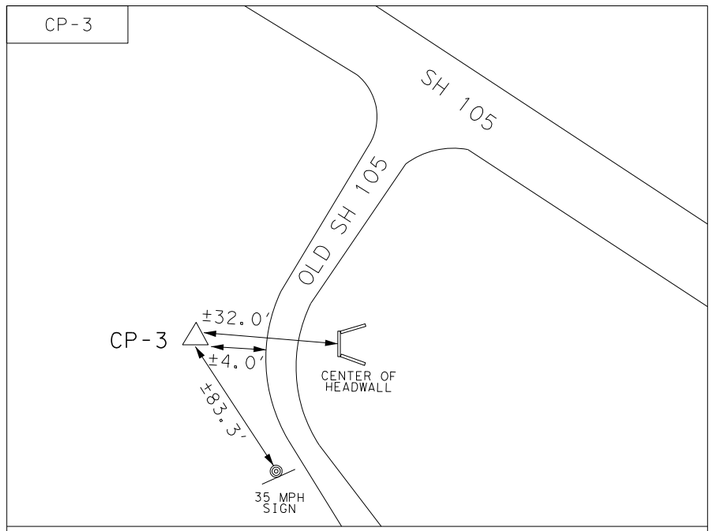
CP-2



CP-2 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE SOUTH RIGHT-OF-WAY OF STATE HIGHWAY 105, ±75.5 FEET NORTHEAST OF A POWER POLE, ±15.0 FEET NORTH OF A WIRE FENCE, AND ±22.5 FEET SOUTH OF THE EDGE OF PAVEMENT.

SURFACE COORDINATES	GRID COORDINATES
N=10,126,229.21	N=10,125,014.21
E=3,652,542.82	E=3,652,104.57
ELEV.=298.37'	ELEV.=298.37'

CP-3



CP-3 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE WEST RIGHT-OF-WAY OF OLD STATE HIGHWAY 105, ±32.0 FEET WEST OF A THE CENTER OF A HEADWALL, ±83.3 FEET NORTHWEST OF A 35 MPH SIGN, AND ±4.0 FEET WEST OF THE EDGE OF PAVEMENT.

SURFACE COORDINATES	GRID COORDINATES
N=10,124,874.89	N=10,123,660.05
E=3,656,737.17	E=3,656,298.42
ELEV.=272.70'	ELEV.=272.70'

NOTES:

1) ALL COORDINATES SHOWN HEREON ARE BASED OFF THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83 / NAVD88, GEOID18. ALL COORDINATES SHOWN HEREON ARE IN SURFACE COORDINATES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A SURFACE ADJUSTMENT FACTOR OF 1.00012.
UNITS: U.S. SURVEY FEET

2) CONTROL POINTS SHOWN HEREON WERE DERIVED BY USING STATIC AND GPS OBSERVATIONS PROCESSED TO CORS STATIONS TXBX, TXCN, AND TXHE.

3) A CALIBRATION SHOULD BE PERFORMED WHEN USING ANY OF THE CONTROL SHOWN HEREON.

N

NOT TO SCALE

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

1/26/2024

Survey Date: JANUARY, 2024

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Texas Firm Registration No. 10064300

Texas Department of Transportation

S.H. 105
HORIZONTAL & VERTICAL CONTROL SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			3 OF 5

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	HIGHWAY NO.
0338	01	068	100

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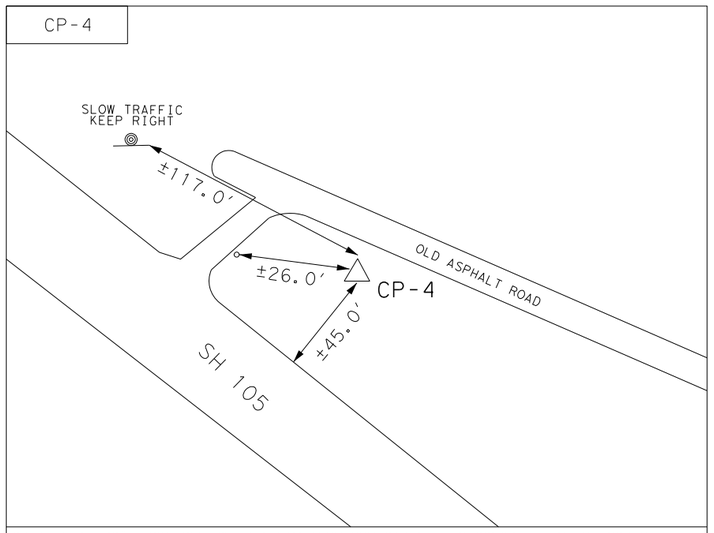
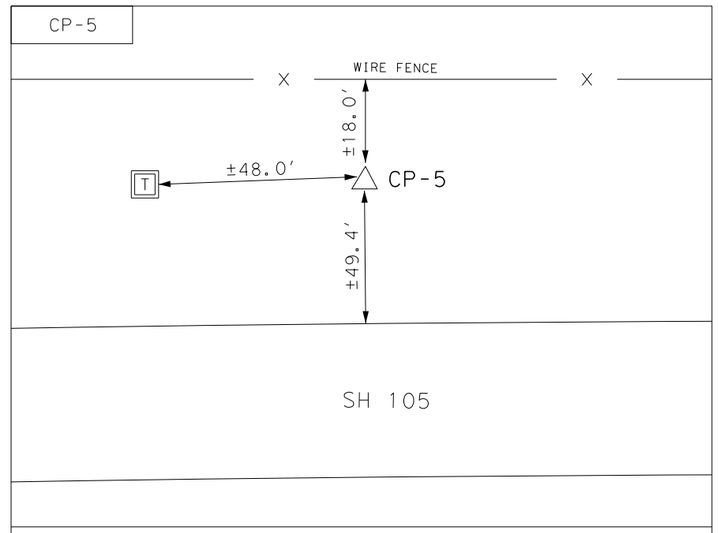
CP-4



CP-4 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE NORTH RIGHT-OF-WAY OF STATE HIGHWAY 105, ±45.0 FEET NORTHEAST OF THE EDGE OF PAVEMENT, ±26.0 FEET EAST OF A CULVERT, AND ±117.0 FEET SOUTHEAST OF A SLOW TRAFFIC KEEP RIGHT SIGN.

SURFACE COORDINATES	GRID COORDINATES
N=10,120,741.52	N=10,119,527.17
E=3,663,647.98	E=3,663,208.39
ELEV.=238.74'	ELEV.=238.74'

CP-5



CP-5 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE NORTH RIGHT-OF-WAY OF STATE HIGHWAY 105, ±49.4 FEET NORTH OF THE EDGE OF PAVEMENT, ±48.0 FEET EAST OF A TELEPHONE PEDESTAL, AND ±18.0 FEET SOUTH OF A WIRE FENCE.

SURFACE COORDINATES	GRID COORDINATES
N=10,120,846.60	N=10,119,632.25
E=3,668,407.57	E=3,667,967.42
ELEV.=276.61'	ELEV.=276.61'

NOTES:

1) ALL COORDINATES SHOWN HEREON ARE BASED OFF THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83 / NAVD88, GEOID18. ALL COORDINATES SHOWN HEREON ARE IN SURFACE COORDINATES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A SURFACE ADJUSTMENT FACTOR OF 1.00012.
UNITS: U.S. SURVEY FEET

2) CONTROL POINTS SHOWN HEREON WERE DERIVED BY USING STATIC AND GPS OBSERVATIONS PROCESSED TO CORS STATIONS TXBX, TXCN, AND TXHE.

3) A CALIBRATION SHOULD BE PERFORMED WHEN USING ANY OF THE CONTROL SHOWN HEREON.

N

NOT TO SCALE

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

1/26/2024

Survey Date: JANUARY, 2024

SAM
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax: (512) 326-3029
Texas Firm Registration No. 10064300

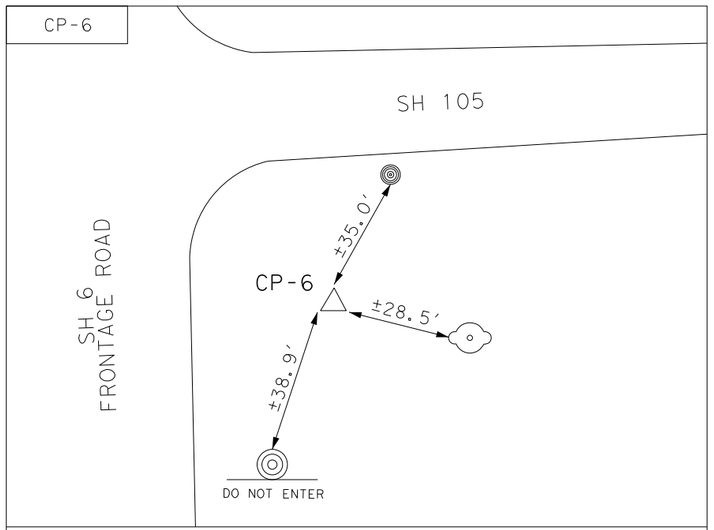
Texas Department of Transportation

S.H. 105
HORIZONTAL & VERTICAL CONTROL SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			4 OF 5

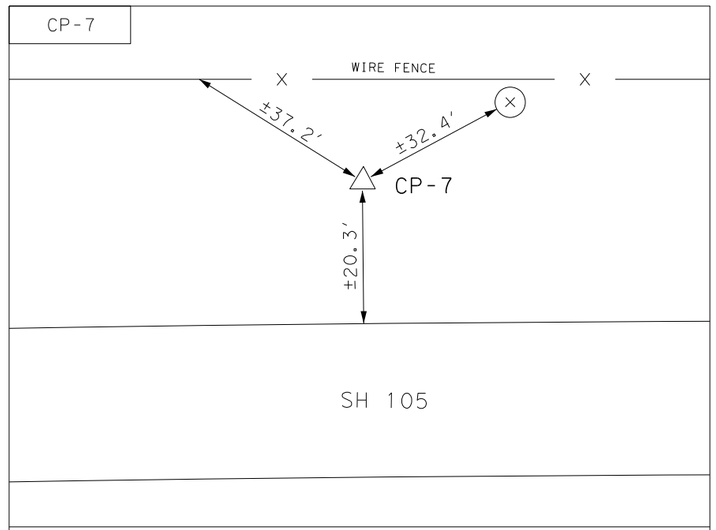
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	HIGHWAY NO.
0338	01	068	101

FILE:C:\Users\Bryant.roy\Desktop\TBC WORKING\SH 105\Control Sheets\75616_SH 105_Control Sheets_SURF_1.00012_2.dgn



CP-6 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE SOUTH RIGHT-OF-WAY OF STATE HIGHWAY 105, ±38.9 FEET NORTH OF A DO NOT ENTER SIGN, ±28.5 FEET WEST OF A FIRE HYDRANT, AND ±35.0 FEET SOUTH OF A TRAFFIC SIGNAL LIGHT POLE.

SURFACE COORDINATES	GRID COORDINATES
N=10,127,517.76	N=10,126,302.61
E=3,642,188.06	E=3,641,751.05
ELEV.=238.04'	ELEV.=238.04'



CP-7 IS A 5/8" IRON ROD WITH A SAM ALUMINUM CAP SET IN CONCRETE IN THE NORTH RIGHT-OF-WAY OF STATE HIGHWAY 105, ±20.3 FEET NORTH OF THE EDGE OF PAVEMENT, ±32.4 FEET SOUTHWEST OF A BURIED CABLE MARKER POST, AND ±37.2 FEET SOUTHEAST OF A WIRE FENCE.

SURFACE COORDINATES	GRID COORDINATES
N=10,127,512.62	N=10,126,297.47
E=3,645,084.65	E=3,644,647.29
ELEV.=233.14'	ELEV.=233.14'

NOTES:

1) ALL COORDINATES SHOWN HEREON ARE BASED OFF THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE (4203), NAD83 / NAVD88, GEOID18. ALL COORDINATES SHOWN HEREON ARE IN SURFACE COORDINATES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A SURFACE ADJUSTMENT FACTOR OF 1.00012.
UNITS: U.S. SURVEY FEET

2) CONTROL POINTS SHOWN HEREON WERE DERIVED BY USING STATIC AND GPS OBSERVATIONS PROCESSED TO CORS STATIONS TXBX, TXCN, AND TXHE.

3) A CALIBRATION SHOULD BE PERFORMED WHEN USING ANY OF THE CONTROL SHOWN HEREON.

N

NOT TO SCALE

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

1/26/2024

Survey Date: JANUARY, 2024

SAM
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax: (512) 326-3029
Texas Firm Registration No. 10064300

Texas Department of Transportation

S.H. 105
HORIZONTAL & VERTICAL CONTROL SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.	SHEET NO.
		5 OF 5

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	HIGHWAY NO.
0338	01	068	102

FILE:C:\Users\Bryant.roy\Desktop\TBC WORKING\SH 105\Control Sheets\75616_SH 105_Control Sheets.SURF_1.00012_2.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

Alignment Name: SH105
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
POT		48+45.00 R1	10127594.71	3642192.31
PC		54+53.04 R1	10127623.06	3642799.69
	Tangential Direction:	N87°19'39.13"E		
	Tangential Length:	608.04		
Element: Circular				
Curve ID:		SH105-1		
PC		54+53.04 R1	10127623.06	3642799.69
PI		58+44.25 R1	10127641.3	3643190.47
CC			10121919.27	3643065.92
PT		62+34.24 R1	10127606.08	3643580.1
	Radius:	5710		
	Delta:	7.84° Right		
	Degree of Curvature (Arc):	1.00°		
	Length:	781.21		
	Tangent:	391.21		
	Chord:	780.6		
	Middle Ordinate:	13.35		
	External:	13.39		
	Back Tangent Direction:	N87°19'39.13"E		
	Back Radial Direction:	S02°40'20.87"E		
	Chord Direction:	S88°45'10.96"E		
	Ahead Radial Direction:	S05°09'58.94"W		
	Ahead Tangent Direction:	S84°50'01.06"E		
Element: Linear				
PT		62+34.24 R1	10127606.08	3643580.1
PC		116+05.34 R1	10127122.42	3648929.38
	Tangential Direction:	S84°50'01.06"E		
	Tangential Length:	5371.1		
Element: Circular				
Curve ID:		SH105-2		
PC		116+05.34 R1	10127122.42	3648929.38
PI		120+70.61 R1	10127080.52	3649392.76
CC			10117108.8	3648023.99
PCC		125+35.22 R1	10126996.01	3649850.28
	Radius:	10054.47		
	Delta:	5.30° Right		
	Degree of Curvature (Arc):	0.57°		
	Length:	929.87		
	Tangent:	465.27		
	Chord:	929.54		
	Middle Ordinate:	10.75		
	External:	10.76		
	Back Tangent Direction:	S84°50'01.06"E		
	Back Radial Direction:	S05°09'58.94"W		
	Chord Direction:	S82°11'03.00"E		
	Ahead Radial Direction:	S10°27'55.05"W		
	Ahead Tangent Direction:	S79°32'04.95"E		
Element: Circular				
Curve ID:		SH105-3		
PCC		125+35.22 R1	10126996.01	3649850.28
PI		126+75.75 R1	10126970.48	3649988.48
CC			10120830.22	3648711.39
PCC		128+16.24 R1	10126938.79	3650125.39
	Radius:	6270.09		
	Delta:	2.57° Right		
	Degree of Curvature (Arc):	0.91°		
	Length:	281.02		
	Tangent:	140.53		
	Chord:	281		
	Middle Ordinate:	1.57		
	External:	1.57		
	Back Tangent Direction:	S79°32'04.95"E		
	Back Radial Direction:	S10°27'55.05"W		
	Chord Direction:	S78°15'02.66"E		
	Ahead Radial Direction:	S13°01'59.63"W		
	Ahead Tangent Direction:	S76°58'00.37"E		
Element: Circular				
Curve ID:		SH105-4		
PCC		128+16.24 R1	10126938.79	3650125.39
PI		131+96.61 R1	10126853.01	3650495.97
CC			10115871.17	3647563.47
PT		135+76.71 R1	10126742.63	3650859.98
	Radius:	11360.27		
	Delta:	3.84° Right		
	Degree of Curvature (Arc):	0.50°		
	Length:	760.47		
	Tangent:	380.38		
	Chord:	760.33		
	Middle Ordinate:	6.36		
	External:	6.37		
	Back Tangent Direction:	S76°58'00.37"E		
	Back Radial Direction:	S13°01'59.63"W		
	Chord Direction:	S75°02'56.57"E		
	Ahead Radial Direction:	S16°52'07.23"W		
	Ahead Tangent Direction:	S73°07'52.77"E		
Element: Linear				
PT		135+76.71 R1	10126742.63	3650859.98
PC		146+61.50 R1	10126427.85	3651898.1
	Tangential Direction:	S73°07'52.77"E		
	Tangential Length:	1084.79		

Alignment Name: SH105
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular				
Curve ID:		SH105-5		
PC		146+61.50 R1	10126427.85	3651898.1
PI		148+17.39 R1	10126382.61	3652047.28
CC			10130083.22	3653006.5
PT		149+73.12 R1	10126349.68	3652199.66
	Radius:	3819.72		
	Delta:	4.67° Left		
	Degree of Curvature (Arc):	1.50°		
	Length:	311.62		
	Tangent:	155.9		
	Chord:	311.53		
	Middle Ordinate:	3.18		
	External:	3.18		
	Back Tangent Direction:	S73°07'52.77"E		
	Back Radial Direction:	S16°52'07.23"W		
	Chord Direction:	S75°28'06.52"E		
	Ahead Radial Direction:	S12°11'39.74"W		
	Ahead Tangent Direction:	S77°48'20.26"E		
Element: Linear				
PT		149+73.12 R1	10126349.68	3652199.66
PC		179+54.65 R1	10125719.9	3655113.92
	Tangential Direction:	S77°48'20.26"E		
	Tangential Length:	2981.53		
Element: Circular				
Curve ID:		SH105-6		
PC		179+54.65 R1	10125719.9	3655113.92
PI		189+46.98 R1	10125510.29	3656083.86
CC			10120119.6	3653903.67
PT		199+19.81 R1	10124986.7	3656926.81
	Radius:	5729.58		
	Delta:	19.65° Right		
	Degree of Curvature (Arc):	1.00°		
	Length:	1965.16		
	Tangent:	992.33		
	Chord:	1955.54		
	Middle Ordinate:	84.05		
	External:	85.3		
	Back Tangent Direction:	S77°48'20.26"E		
	Back Radial Direction:	S12°11'39.74"W		
	Chord Direction:	S67°58'47.39"E		
	Ahead Radial Direction:	S31°50'45.47"W		
	Ahead Tangent Direction:	S58°09'14.53"E		
Element: Linear				
PT		199+19.81 R1	10124986.7	3656926.81
PC		258+56.57 R1	10121854.24	3661969.91
	Tangential Direction:	S58°09'14.53"E		
	Tangential Length:	5936.76		
Element: Circular				
Curve ID:		SH105-7		
PC		258+56.57 R1	10121854.24	3661969.91
PI		260+68.98 R1	10121742.17	3662150.35
CC			10116987.14	3658946.77
PT		262+81.20 R1	10121617.04	3662321.99
	Radius:	5729.58		
	Delta:	4.25° Right		
	Degree of Curvature (Arc):	1.00°		
	Length:	424.63		
	Tangent:	212.41		
	Chord:	424.53		
	Middle Ordinate:	3.93		
	External:	3.94		
	Back Tangent Direction:	S58°09'14.53"E		
	Back Radial Direction:	S31°50'45.47"W		
	Chord Direction:	S56°01'51.25"E		
	Ahead Radial Direction:	S36°05'32.02"W		
	Ahead Tangent Direction:	S53°54'27.98"E		
Element: Linear				
PT		262+81.20 R1	10121617.04	3662321.99
PC		280+83.76 R1	10120555.17	3663778.59
	Tangential Direction:	S53°54'27.98"E		
	Tangential Length:	1802.57		
Element: Circular				
Curve ID:		SH105-8		
PC		280+83.76 R1	10120555.17	3663778.59
PI		286+23.76 R1	10120237.07	3664214.94
CC			10122805.64	3665419.19
PCC		291+50.51 R1	10120105.1	3664738.56
	Radius:	2785		
	Delta:	21.95° Left		
	Degree of Curvature (Arc):	2.06°		
	Length:	1066.75		
	Tangent:	539.99		
	Chord:	1060.24		
	Middle Ordinate:	50.92		
	External:	51.87		
	Back Tangent Direction:	S53°54'27.98"E		
	Back Radial Direction:	S36°05'32.02"W		
	Chord Direction:	S64°52'51.11"E		
	Ahead Radial Direction:	S14°08'45.76"W		
	Ahead Tangent Direction:	S75°51'14.24"E		

NOTES:

1. HORIZONTAL ALIGNMENT DATA FOR SH 105 WAS DEVELOPED AS A BEST FIT ALIGNMENT USING A COMBINATION OF AS-BUILTS AND SURVEY DATA. IT WAS SET FOR DESIGN PURPOSES TO FOLLOW THE EXISTING CENTERLINE STRIPE (USUAL) AND DOES NOT REPRESENT A MAJOR REALIGNMENT OF THE EXISTING SH 105 ROADWAY.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	103

DATE: 3/22/2024 9:45:45 AM
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CK: JMT
DW: JMT
CK: JMT
DW: JMT

Alignment Name: SH105
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular				
Curve ID:	SH105-9			
PCC		291+50.51 R1	10120105.1	3664738.56
PI		297+70.44 R1	10119953.59	3665339.69
CC			10122899.19	3665442.77
PCC		303+71.75 R1	10120062.7	3665949.94
	Radius:	2881.47		
	Delta:	24.28° Left		
	Degree of Curvature (Arc):	1.99°		
	Length:	1221.24		
	Tangent:	619.93		
	Chord:	1212.12		
	Middle Ordinate:	64.46		
	External:	65.93		
	Back Tangent Direction:	S75°51'14.24"E		
	Back Radial Direction:	S14°08'45.76"W		
	Chord Direction:	S87°59'44.44"E		
	Ahead Radial Direction:	S10°08'14.64"E		
	Ahead Tangent Direction:	N79°51'45.36"E		
Element: Circular				
Curve ID:	SH105-10			
PCC		303+71.75 R1	10120062.7	3665949.94
PI		306+73.16 R1	10120115.75	3666246.64
CC			10123508.06	3665333.9
PT		309+73.09 R1	10120218.75	3666529.91
	Radius:	3500		
	Delta:	9.84° Left		
	Degree of Curvature (Arc):	1.64°		
	Length:	601.34		
	Tangent:	301.41		
	Chord:	600.6		
	Middle Ordinate:	12.91		
	External:	12.95		
	Back Tangent Direction:	N79°51'45.36"E		
	Back Radial Direction:	S10°08'14.64"E		
	Chord Direction:	N74°56'26.07"E		
	Ahead Radial Direction:	S19°58'53.22"E		
	Ahead Tangent Direction:	N70°01'06.78"E		
Element: Linear				
PT		309+73.09 R1	10120218.75	3666529.91
PC		321+02.62 R1	10120604.73	3667591.44
	Tangential Direction:	N70°01'06.78"E		
	Tangential Length:	1129.53		
Element: Circular				
Curve ID:	SH105-11			
PC		321+02.62 R1	10120604.73	3667591.44
PI		325+56.70 R1	10120759.89	3668018.19
CC			10117912.39	3668570.39
PT		330+03.28 R1	10120775.49	3668471.99
	Radius:	2864.79		
	Delta:	18.01° Right		
	Degree of Curvature (Arc):	2.00°		
	Length:	900.66		
	Tangent:	454.08		
	Chord:	896.95		
	Middle Ordinate:	35.32		
	External:	35.76		
	Back Tangent Direction:	N70°01'06.78"E		
	Back Radial Direction:	S19°58'53.22"E		
	Chord Direction:	N79°01'30.47"E		
	Ahead Radial Direction:	S01°58'05.85"E		
	Ahead Tangent Direction:	N88°01'54.15"E		
Element: Linear				
PT		330+03.28 R1	10120775.49	3668471.99
POT		363+45.62 R1	10120890.29	3671812.36
	Tangential Direction:	N88°01'54.15"E		
	Tangential Length:	3342.34		

NOTES:

1. HORIZONTAL ALIGNMENT DATA FOR SH 105 WAS DEVELOPED AS A BEST FIT ALIGNMENT USING A COMBINATION OF AS-BUILTS AND SURVEY DATA. IT WAS SET FOR DESIGN PURPOSES TO FOLLOW THE EXISTING CENTERLINE STRIPE (USUAL) AND DOES NOT REPRESENT A MAJOR REALIGNMENT OF THE EXISTING SH 105 ROADWAY.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

HORIZONTAL ALIGNMENT DATA

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	104

DATE: 3/22/2024 9:45:48 AM
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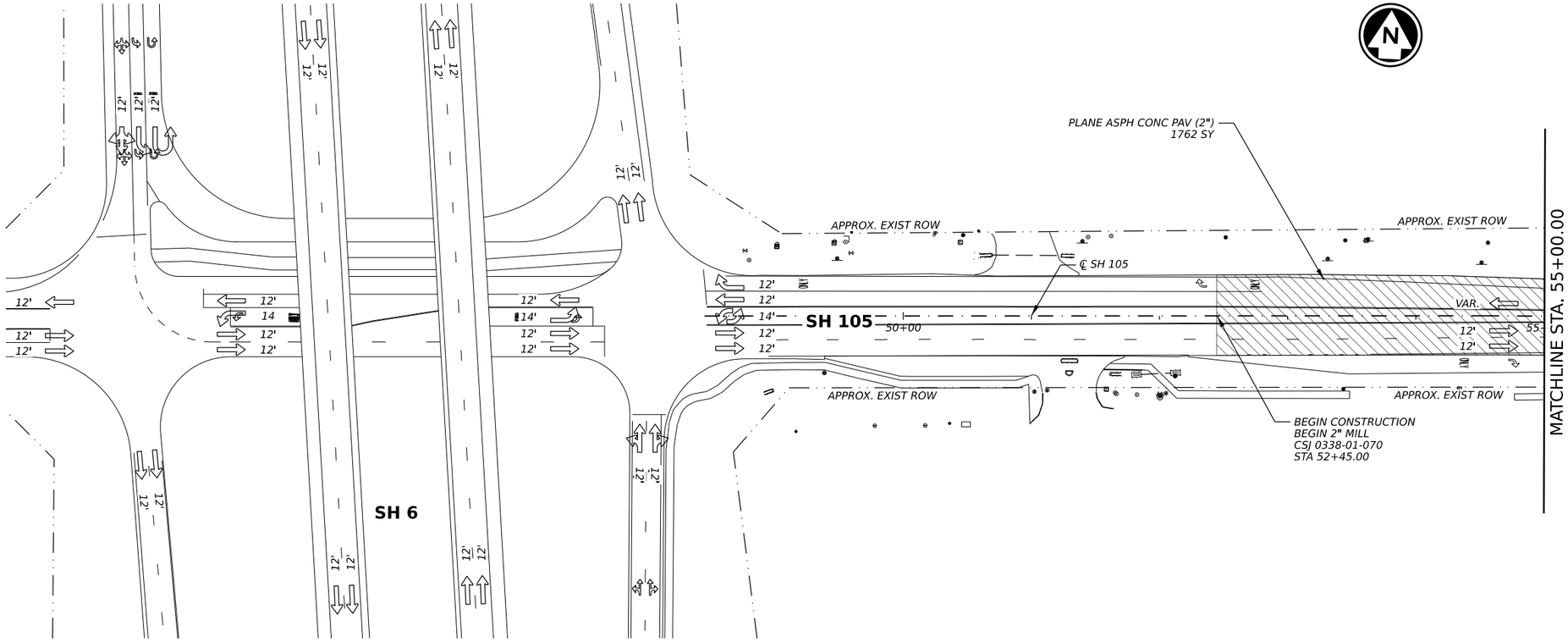
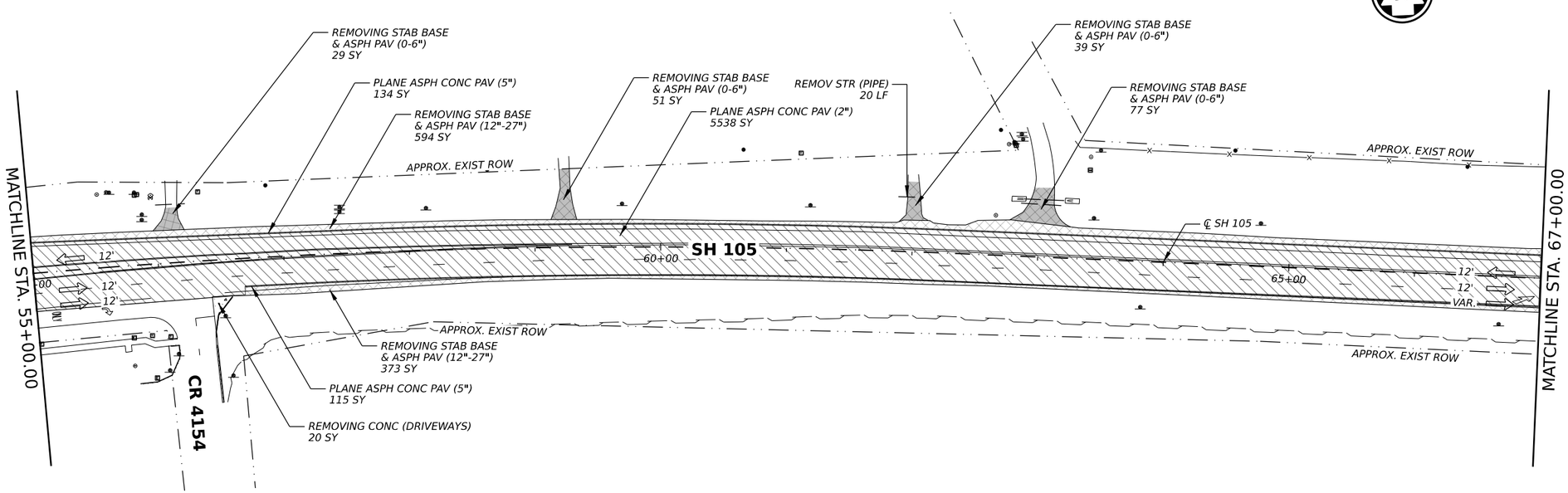
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

BEGIN TO STA STA 67+00

SHEET 1 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		105

DATE: 3/22/2024 9:46:08 AM
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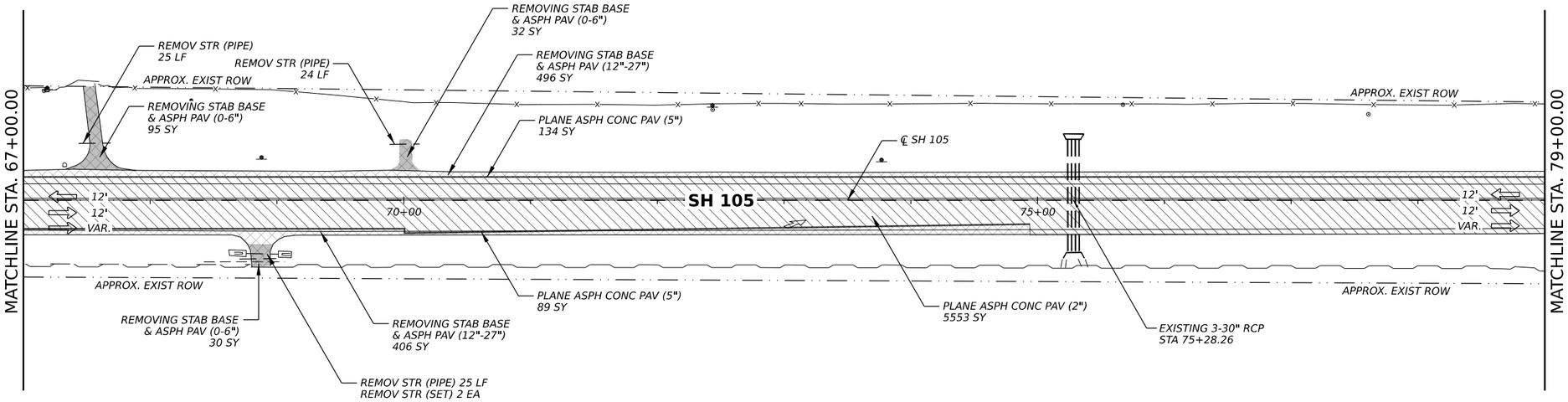
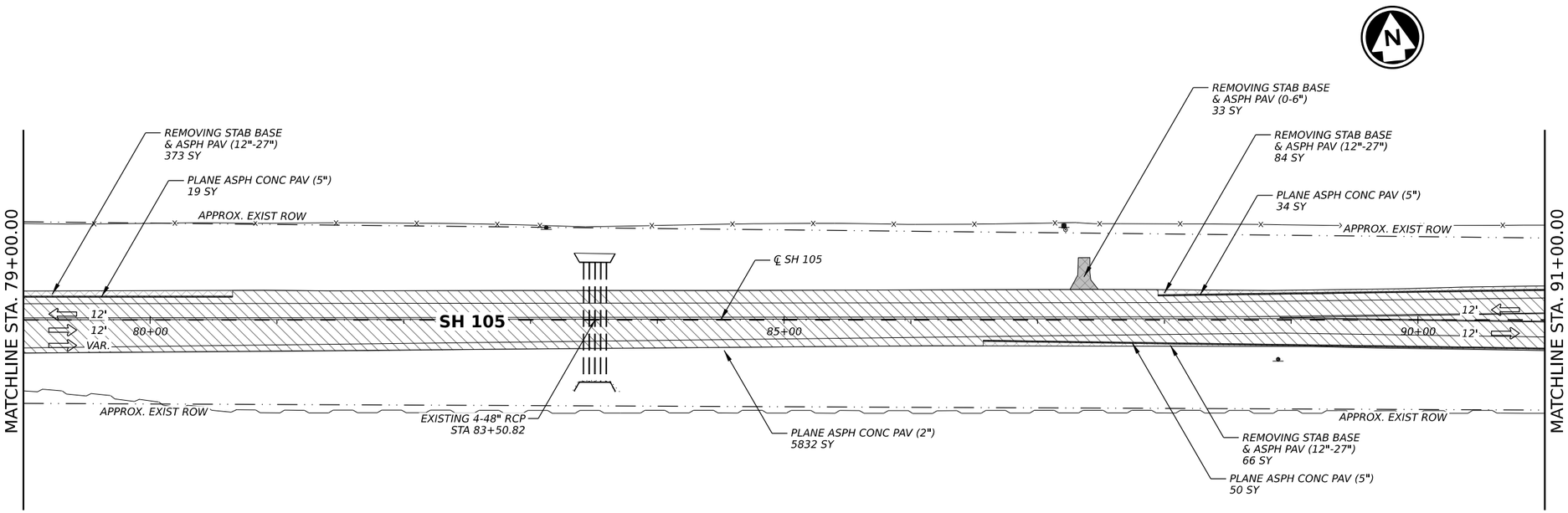
DW: JMT





LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 67+00 TO STA 91+00

SHEET 2 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		106

DATE: 3/22/2024 9:46:12 AM
FILE: BRYCEC_TASK02_REM002.dgn

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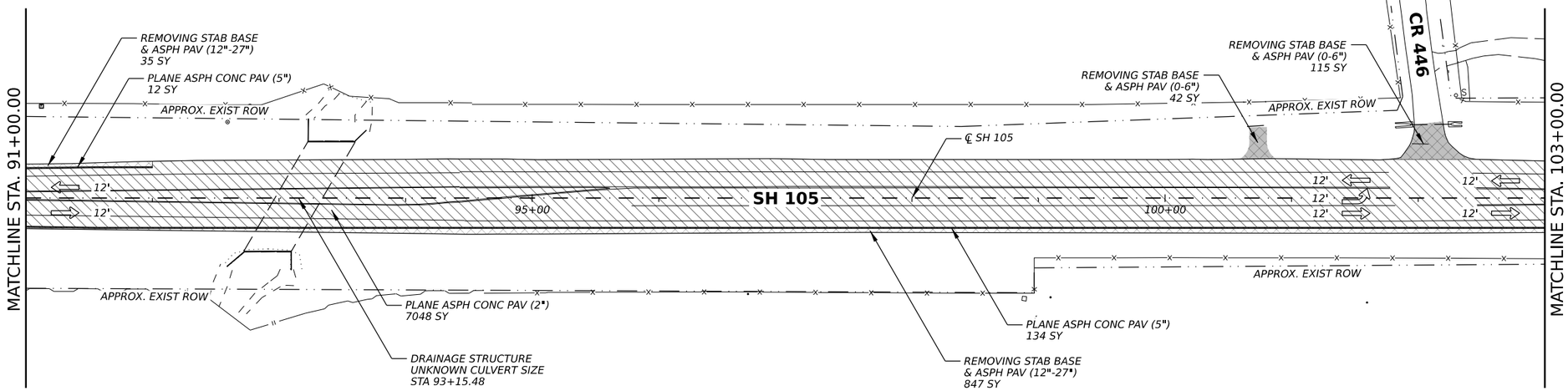
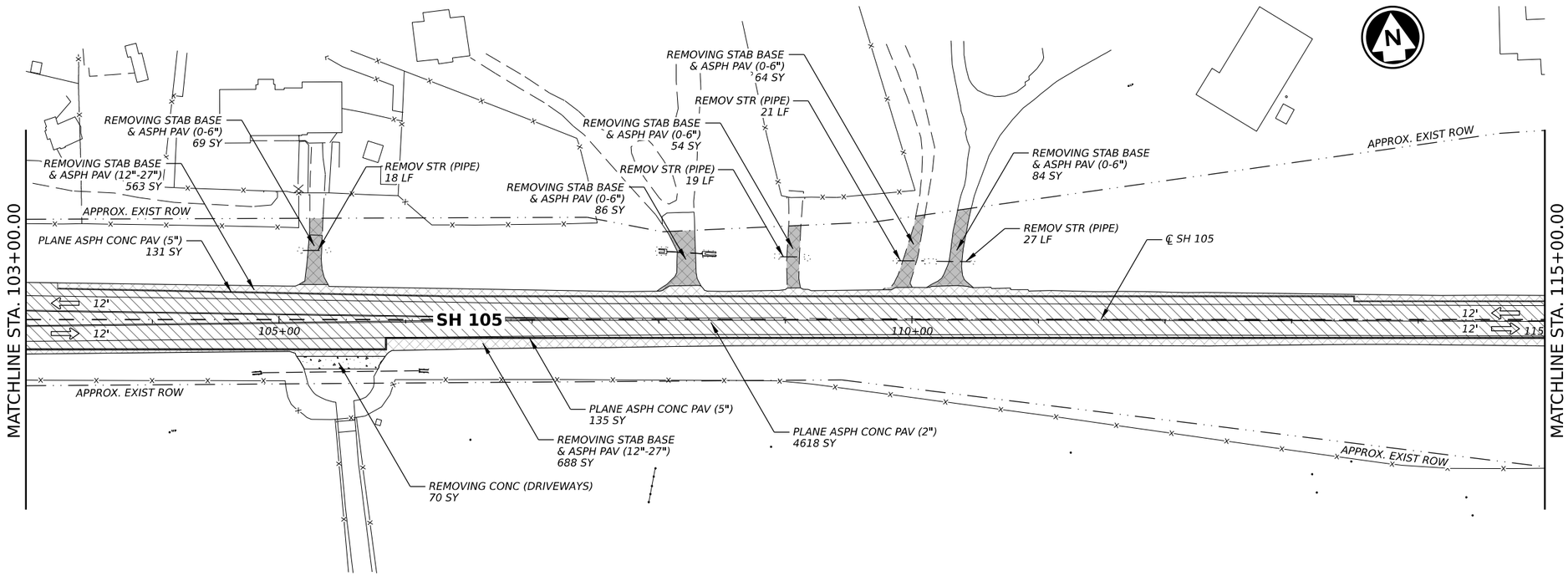
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 91+00 TO STA 115+00

SHEET 3 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		107

DATE: 3/22/2024 9:46:15 AM
FILE: BRYCEC_TASK02_REM003.dgn

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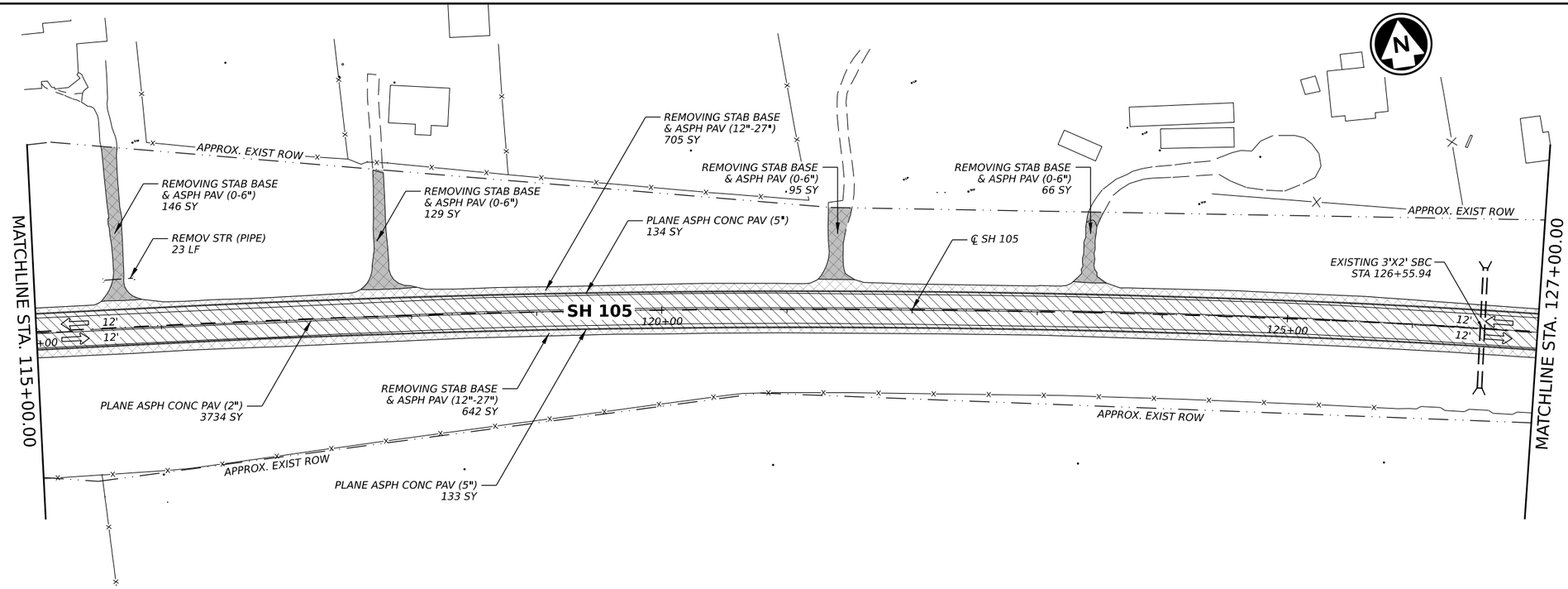
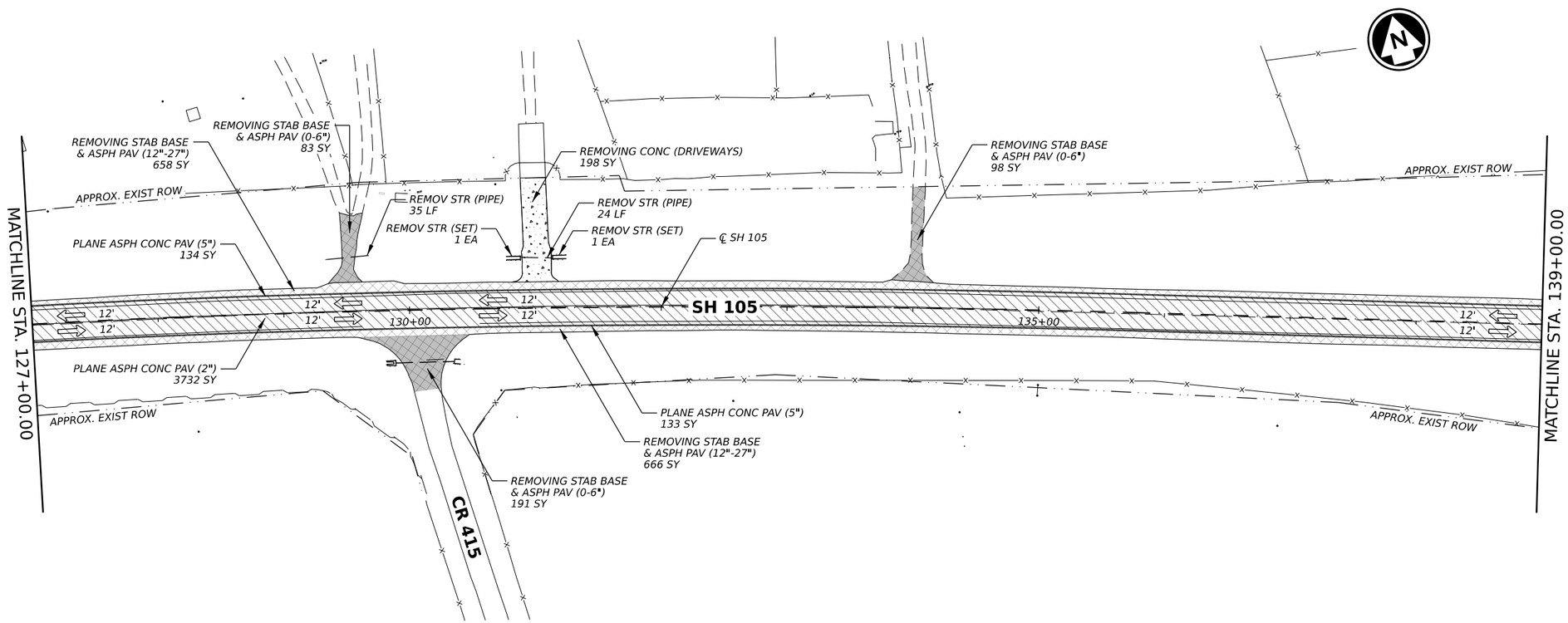
CK: JMT
DW: JMT





LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 115+00 TO STA 139+00

SHEET 4 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		108

DATE: 3/22/2024 9:46:19 AM
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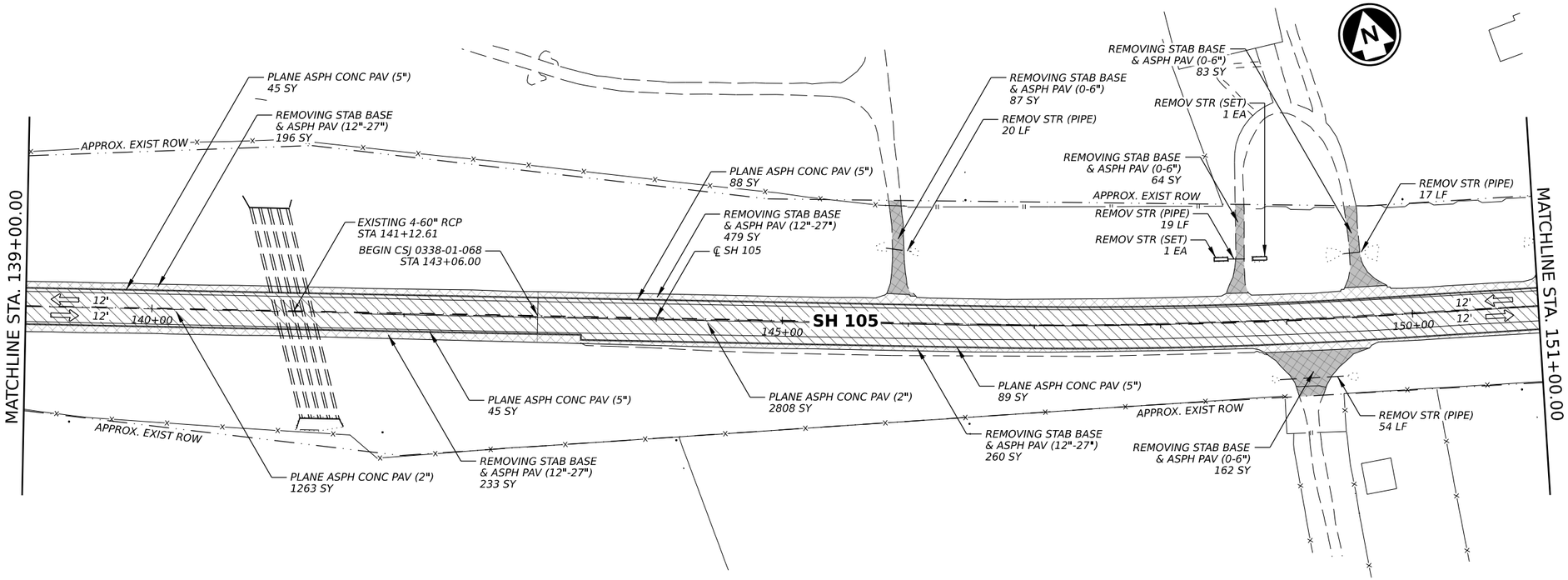

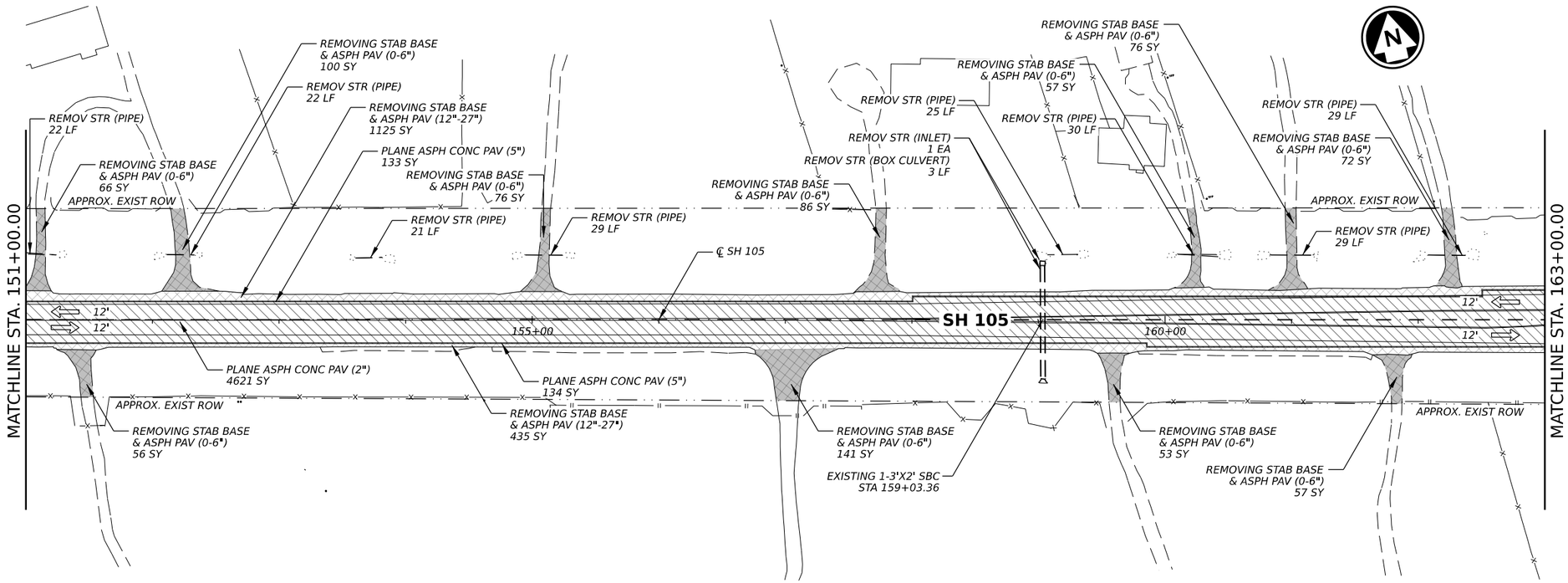

LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 139+00 TO STA 163+00

SHEET 5 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		109

DATE: 3/22/2024 9:46:22 AM
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CK: JMT
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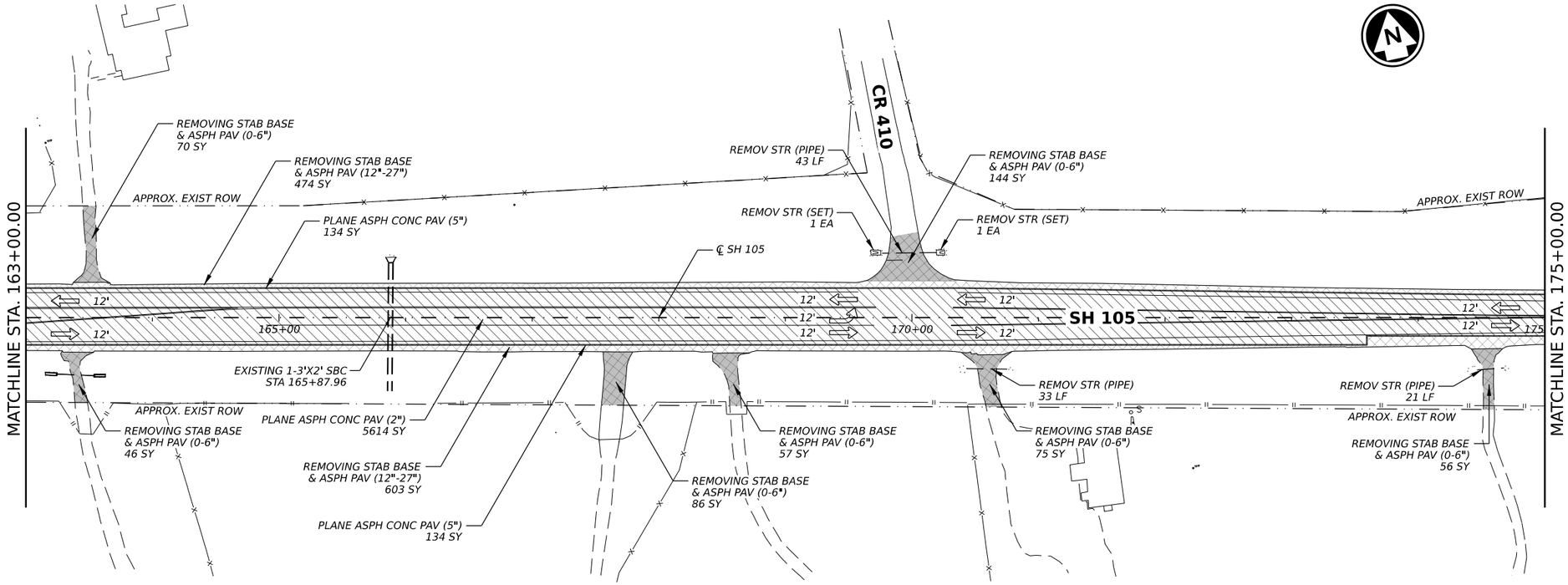

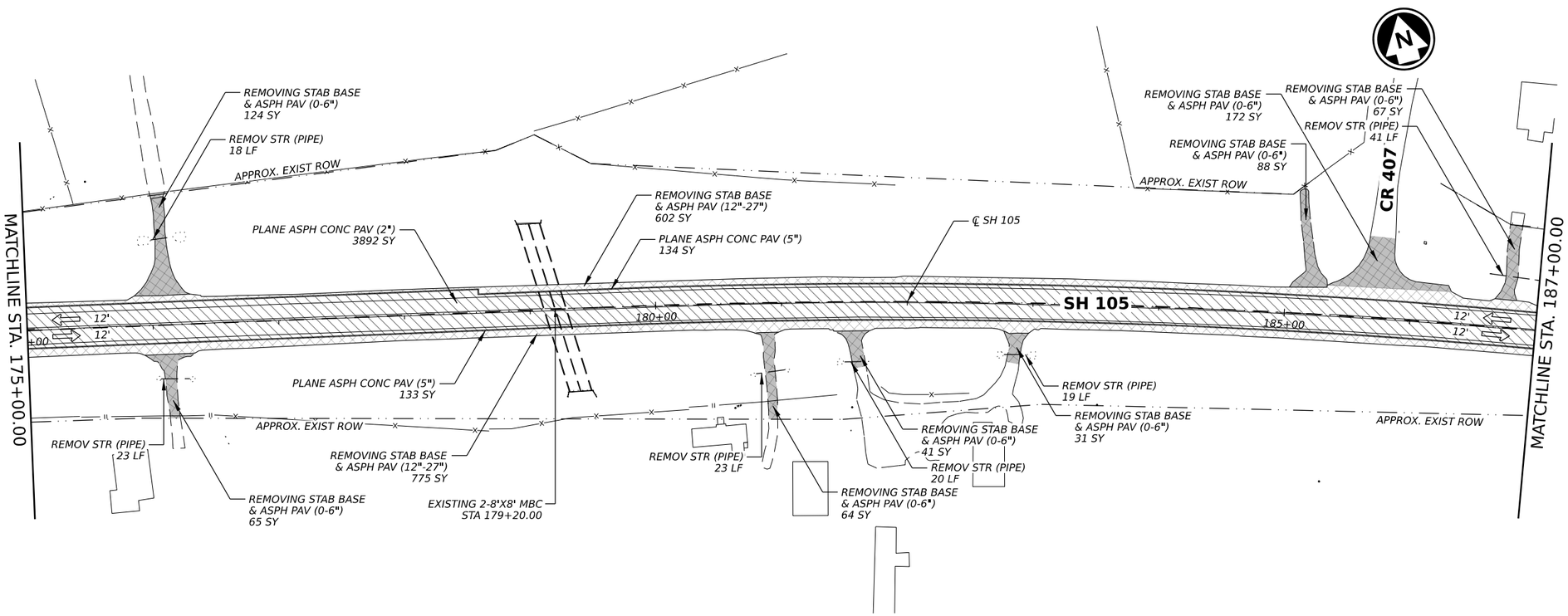

LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 163+00 TO STA 187+00

SHEET 6 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		110

DATE: 3/22/2024 9:46:25 AM
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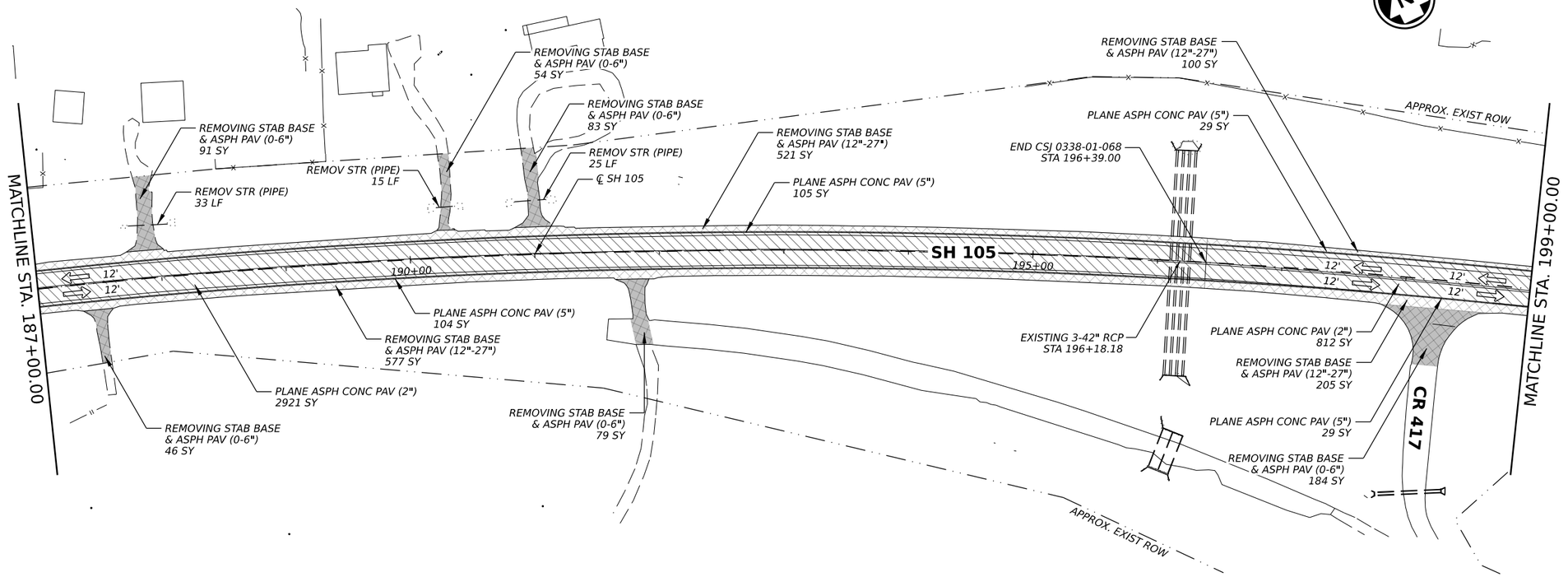
DW: JMT

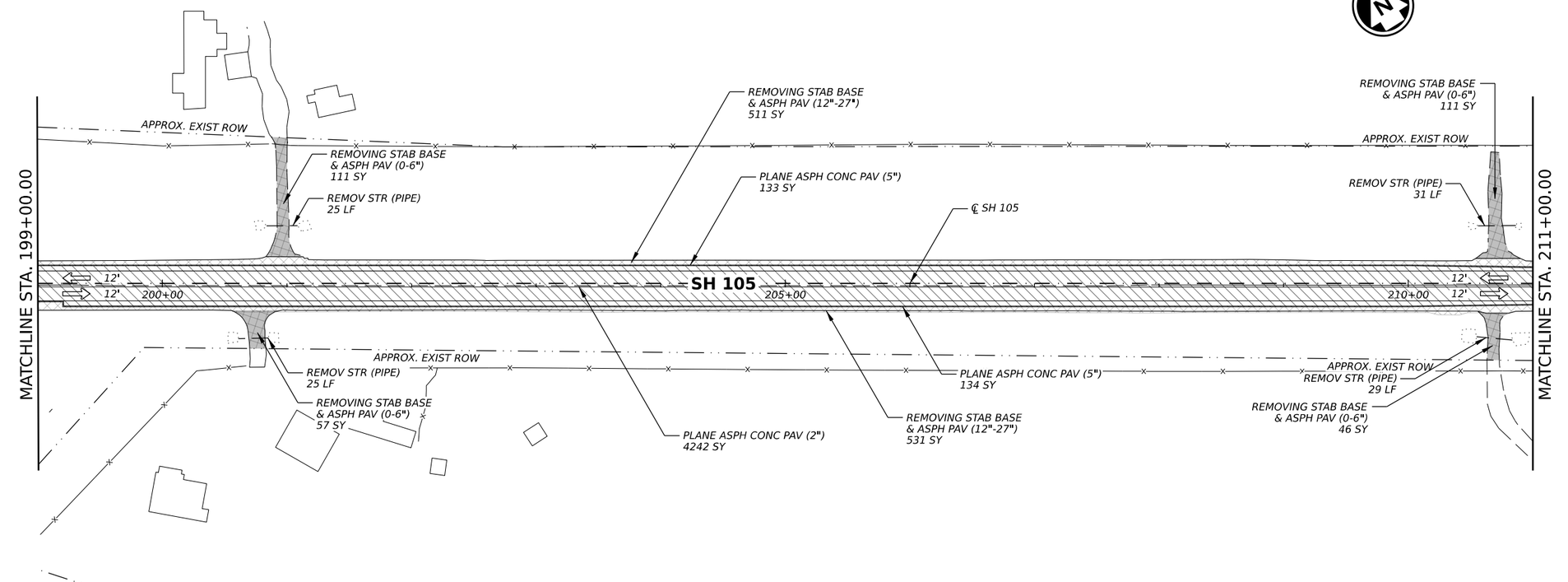


LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 187+00 TO STA 211+00

SHEET 7 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		111

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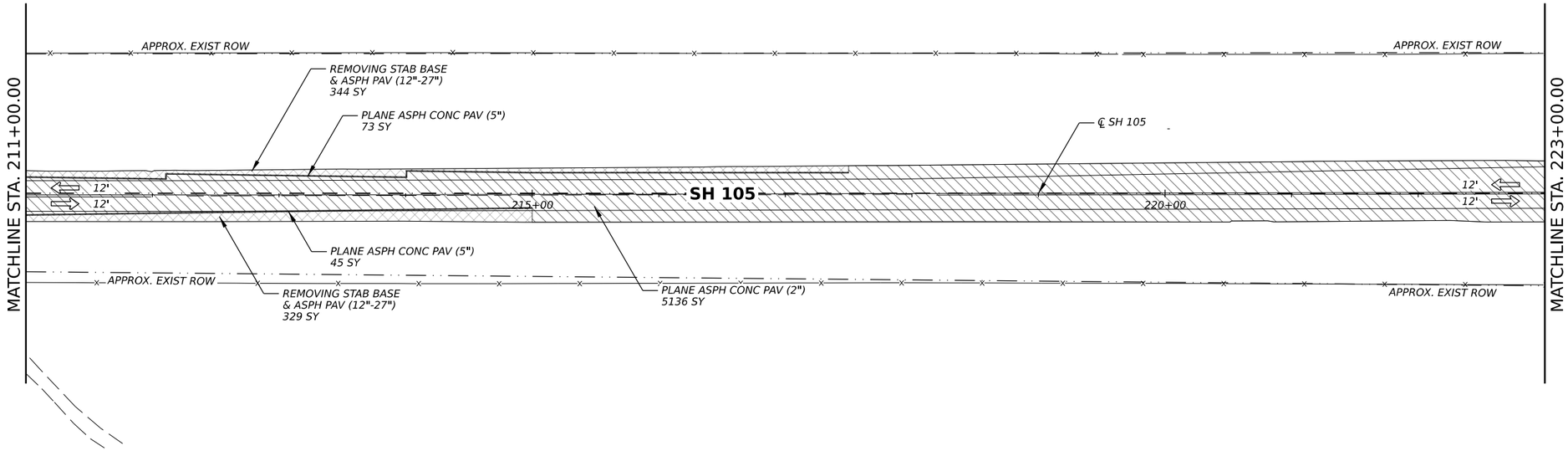
DW: JMT

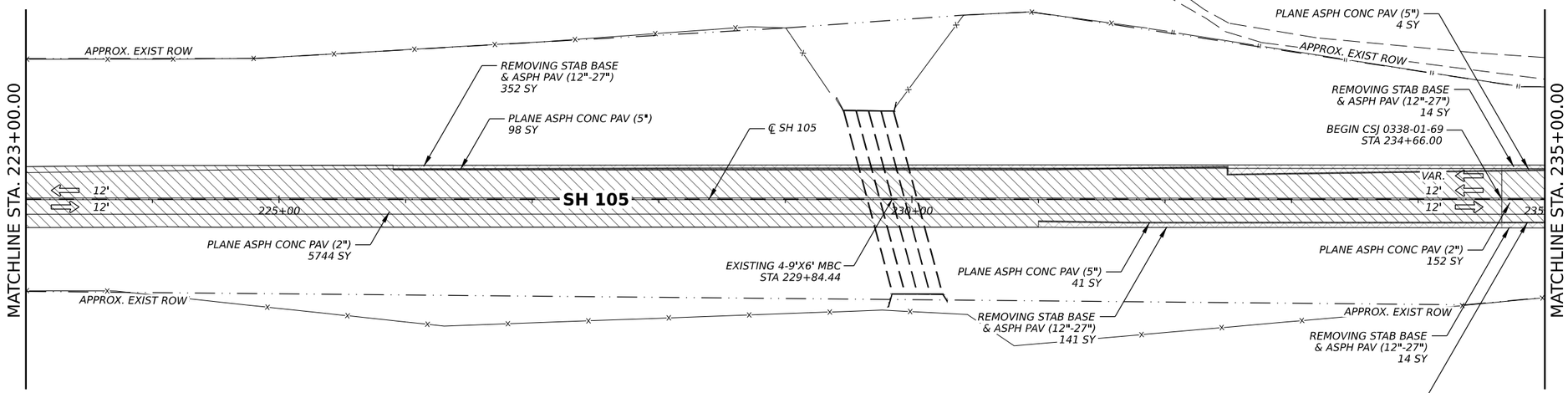


LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 211+00 TO STA 235+00

SHEET 8 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		112

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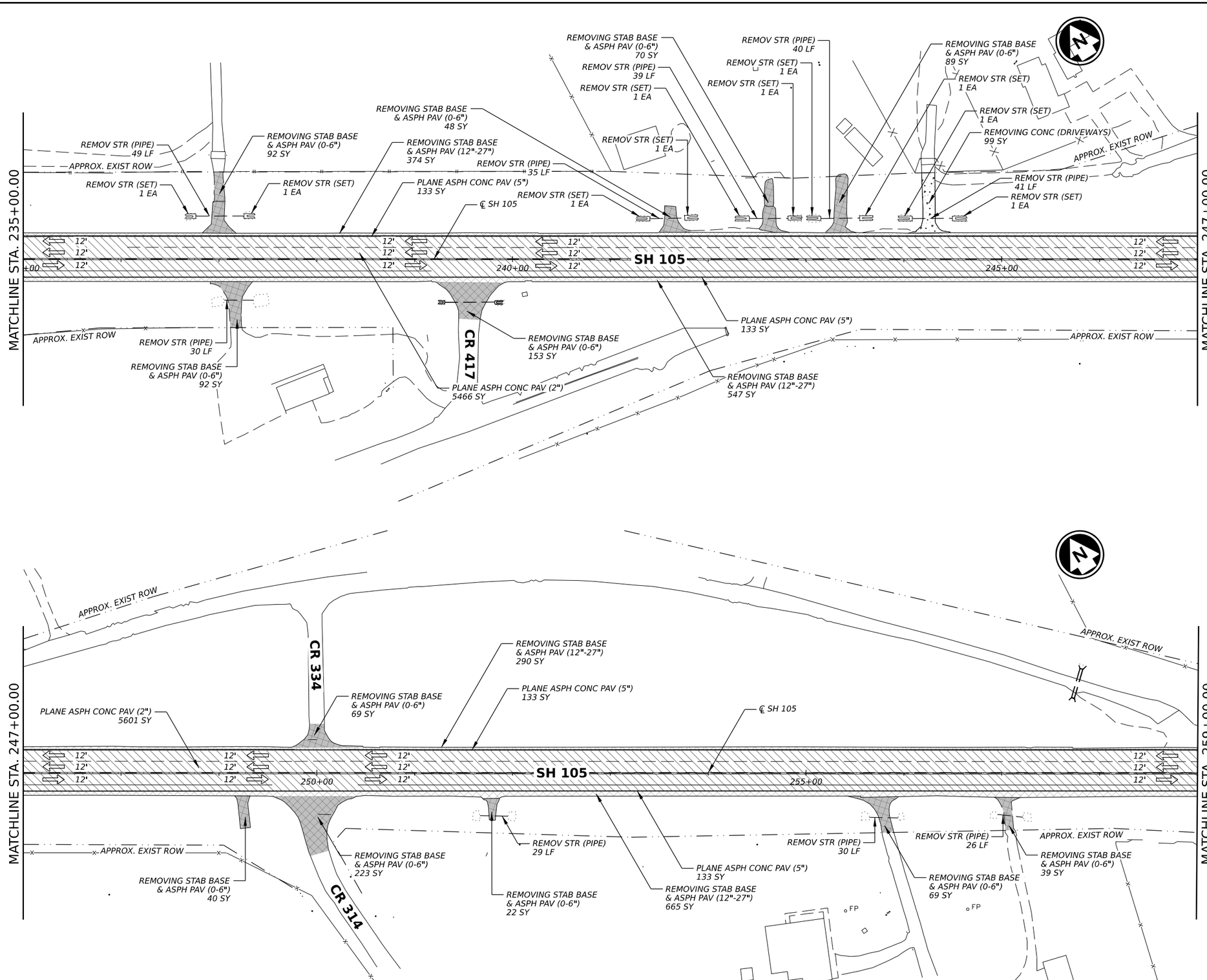
DW: JMT



LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. *ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.*
2. *REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.*
3. *CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

REMOVAL LAYOUT

STA 235+00 TO STA 259+00

SHEET 9 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		113

DATE: 3/22/2024 9:46:35 AM
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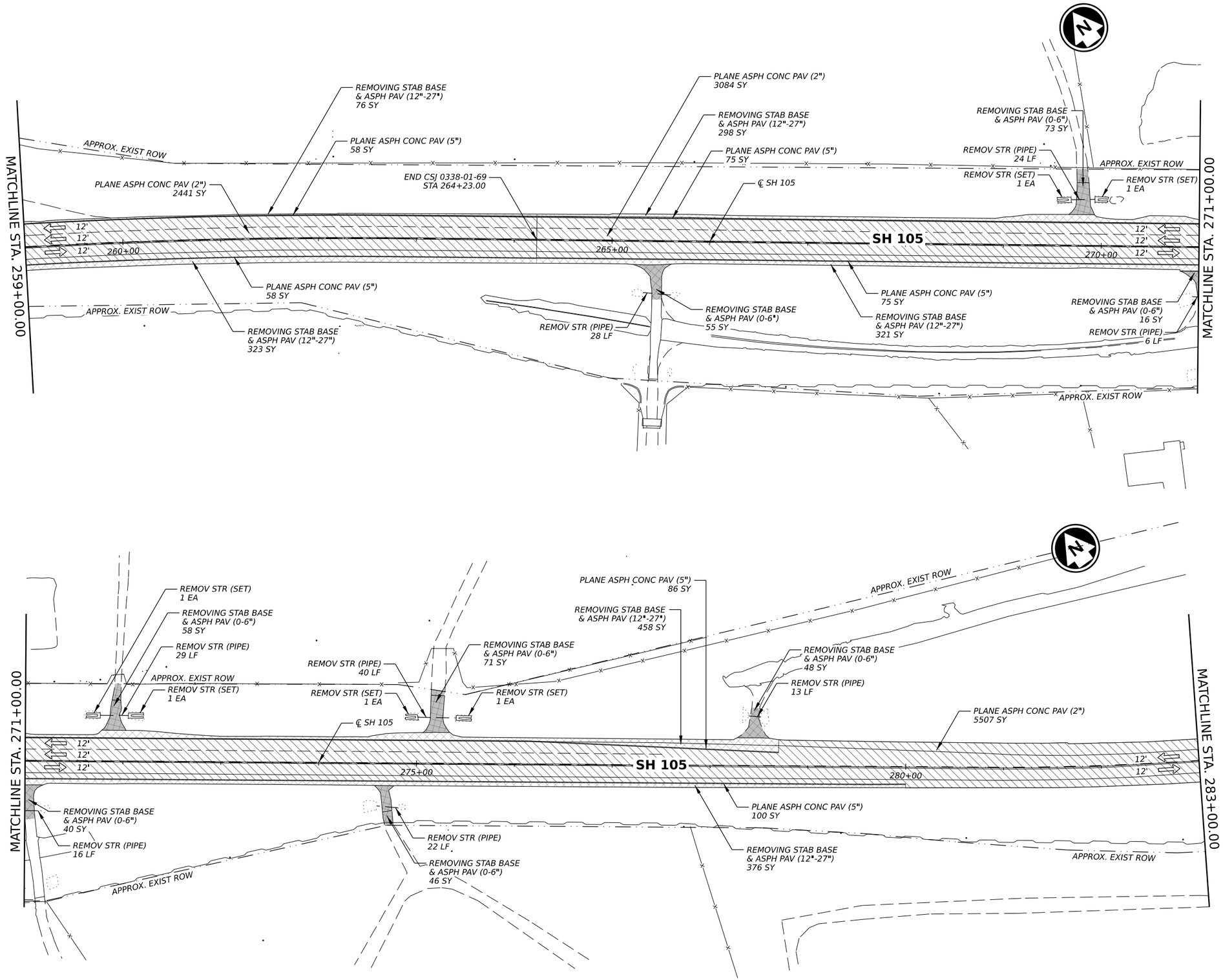
DW: JMT



LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 259+00 TO STA 283+00

SHEET 10 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		114

DATE: 3/22/2024 9:46:38 AM
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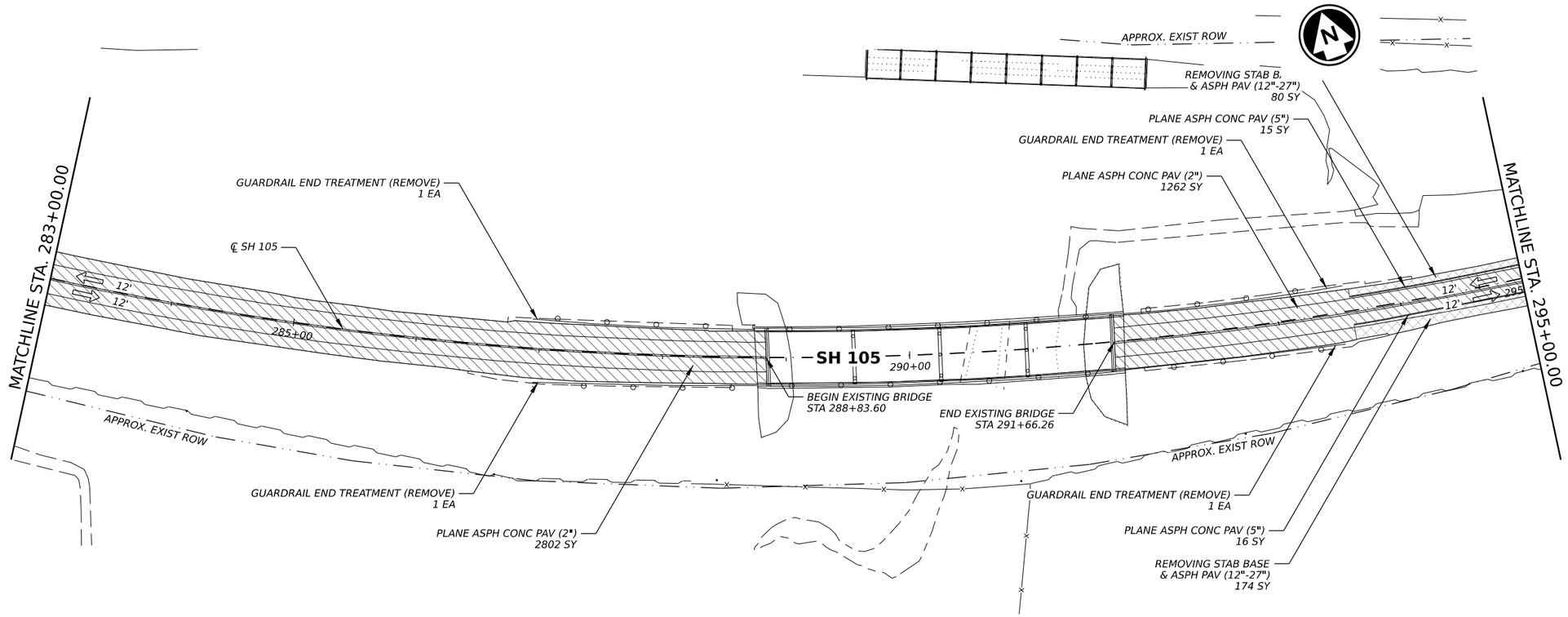

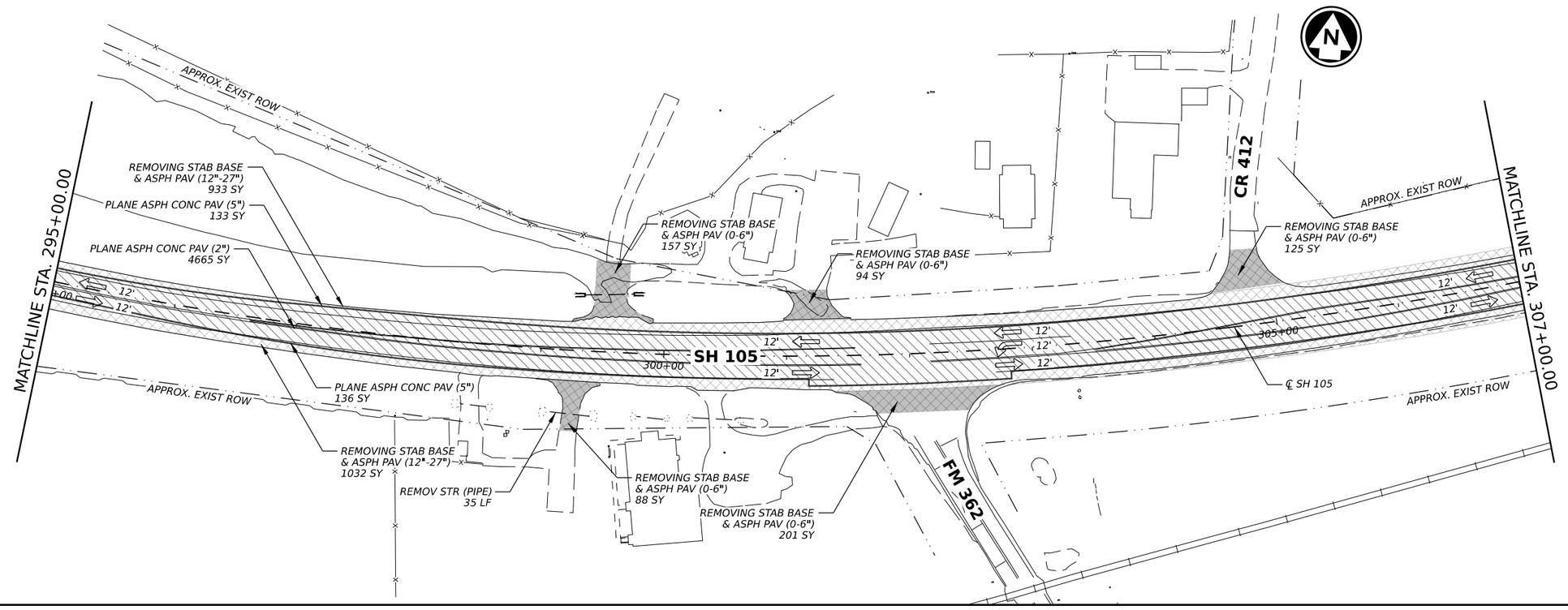

LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.
2. REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

JMT TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 283+00 TO STA 307+00

SHEET 11 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		115

DATE: 3/22/2024 9:46:42 AM
FILE: BRYCEC_TASK02_REM011.dgn

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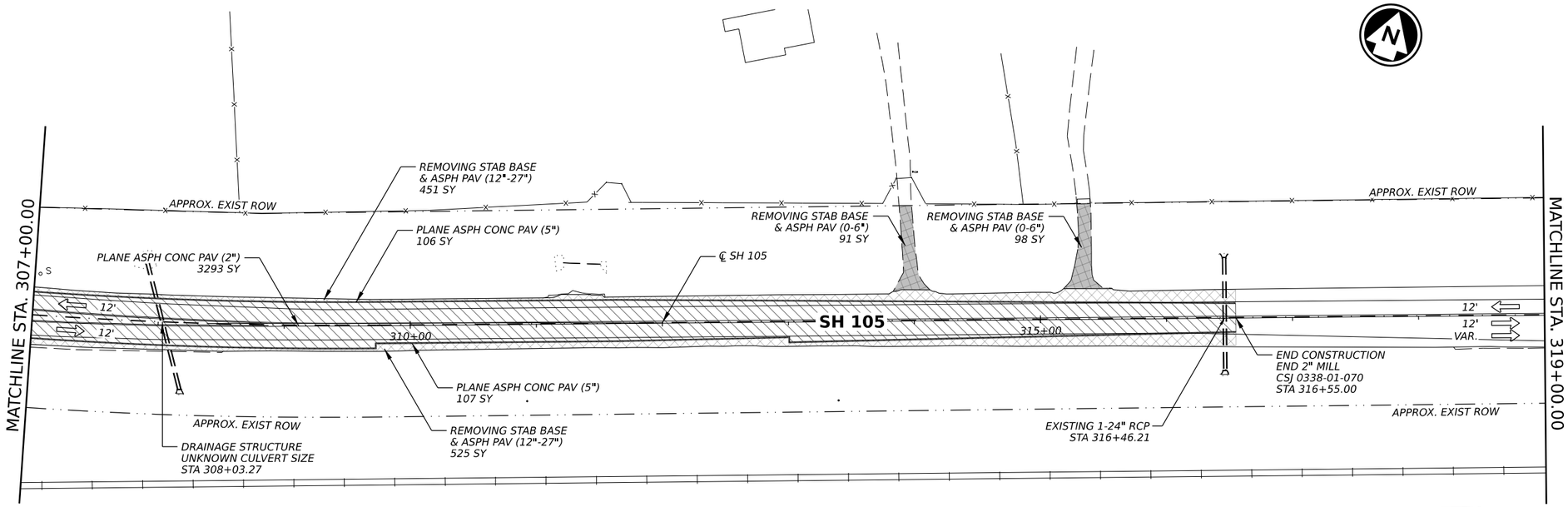
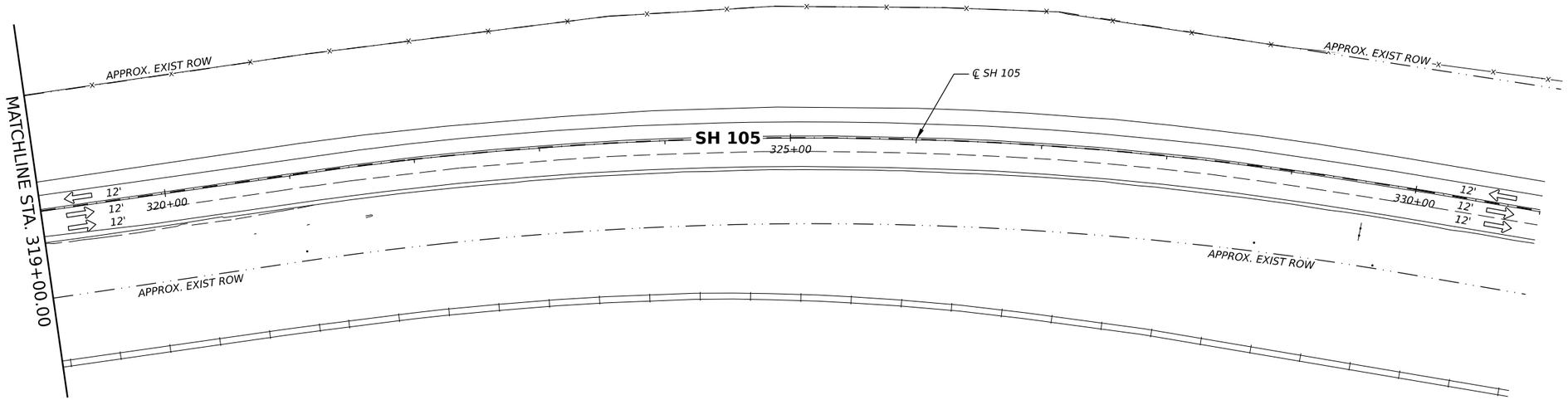


LEGEND:

- REMOVE STAB BASE AND ASPH PAV (12"-27")
- REMOVE STAB BASE AND ASPH PAV (0"-6")
- REMOVE CONC (DRIVEWAYS)
- PLANE ASPH CONC PAV (2")
- PLANE ASPH CONC PAV (5")
- EXISTING LANE

NOTES:

1. *ACCESS TO DRIVEWAYS AND SIDESTREETS TO BE MAINTAINED AT ALL TIMES.*
2. *REMOVED HMA AND BASE MATERIAL SHALL BE TRANSPORTATED TO THE STOCKPILE LOCATION SPECIFIED IN THE PROJECT GENERAL NOTES,OR AS DIRECTED BY THE ENGINEER.*
3. *CONTRACTOR TO PROTECT EXISTING UTILITIES, EXISTING STRUCTURES, EXISTING CULVERTS, AND ANY OTHER EXISTING FEATURE THAT IS TO REMAIN.*



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

REMOVAL LAYOUT

STA 307+00 TO END

SHEET 12 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		116

DATE: 3/22/2024 9:46:45 AM
FILE: BRYCEC_TASK02_REM012.dgn

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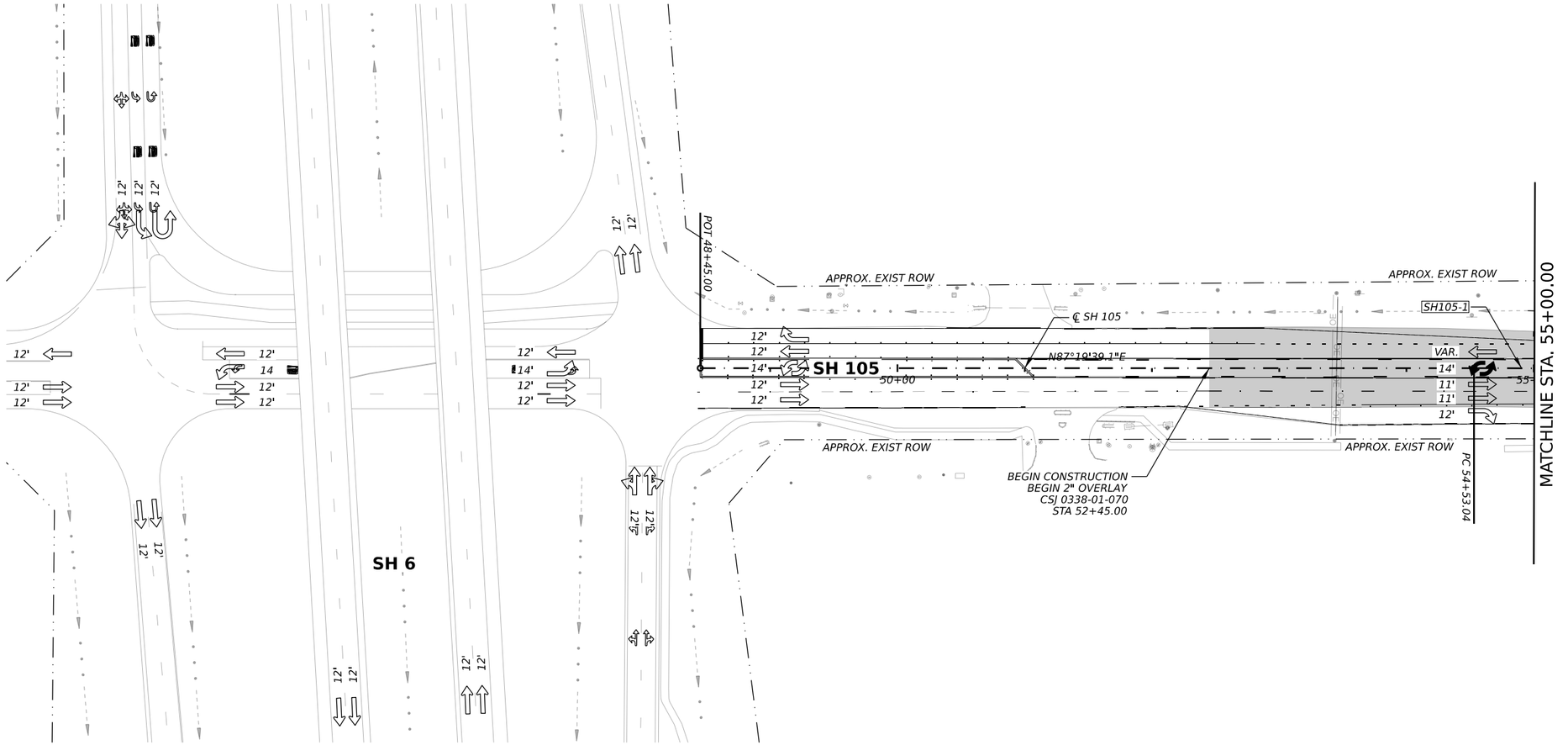
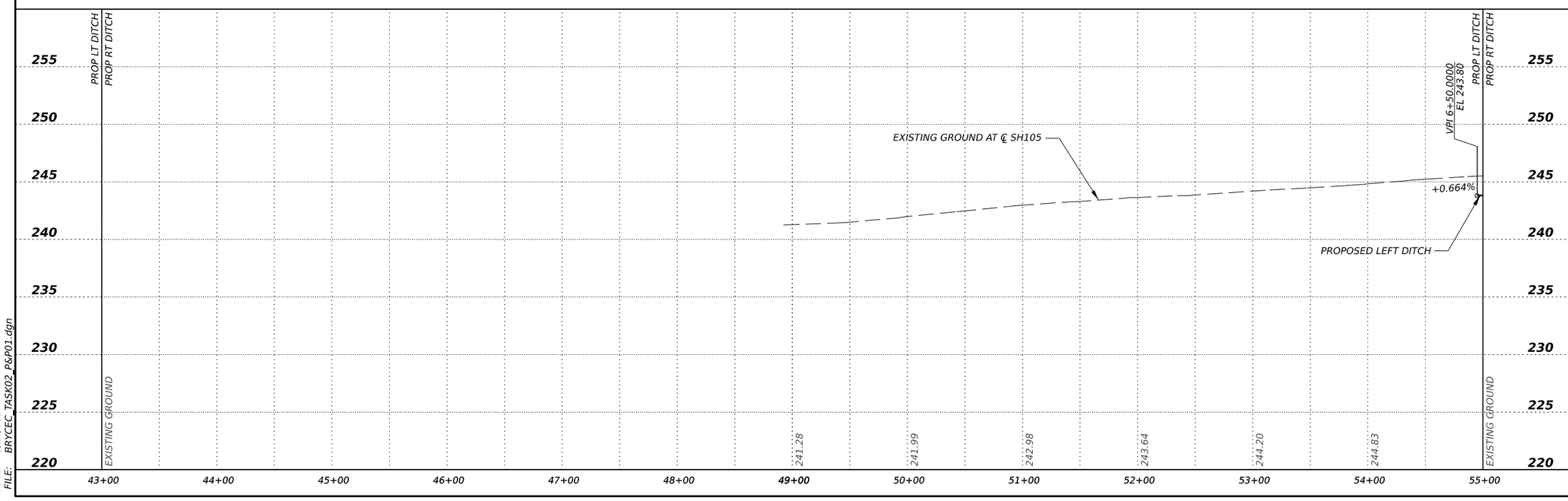
DW: JMT





LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

BEGIN TO STA 55+00

SHEET 1 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		117

DATE: 3/22/2024 9:46:52 AM
FILE: BRYCEC_TASK02_P&P01.dgn

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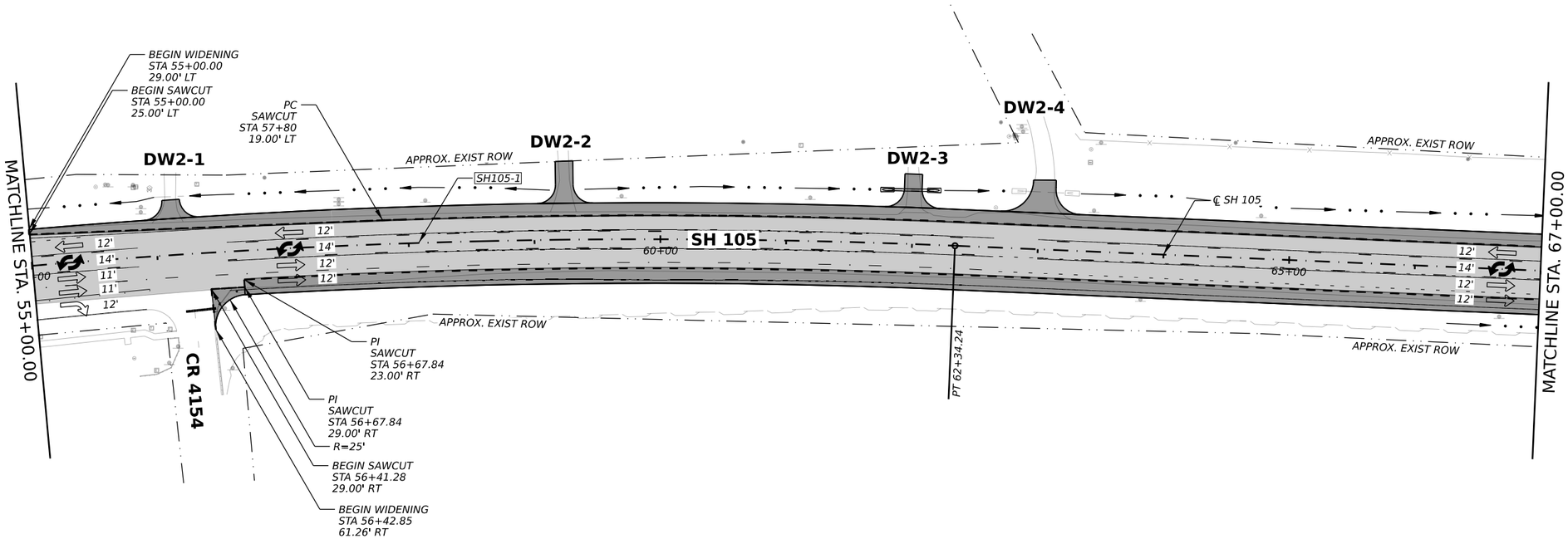
CK: JMT
DW: JMT

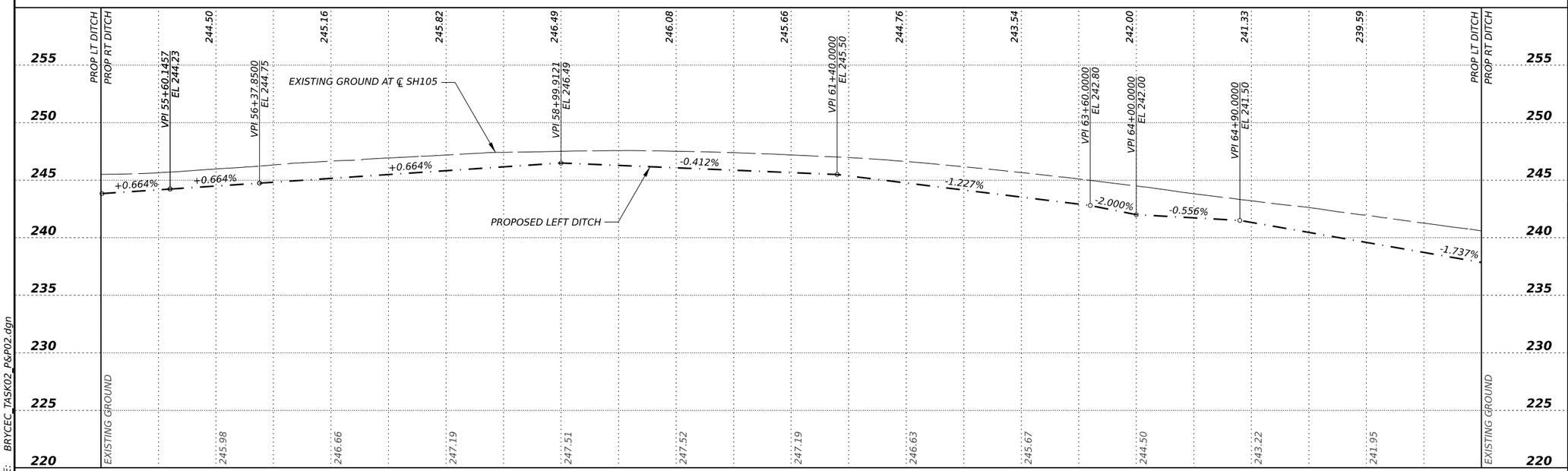


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

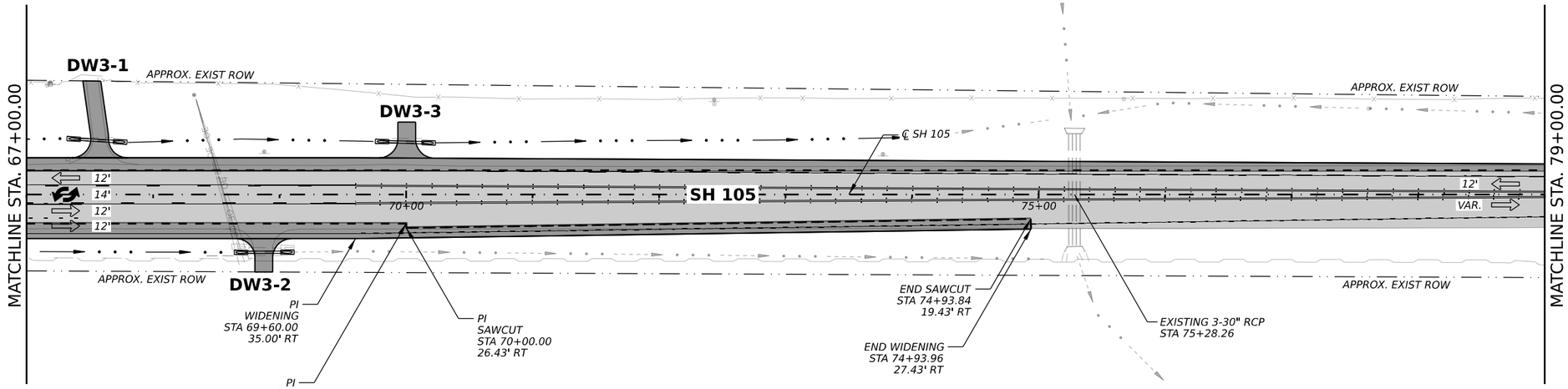
STA 55+00 TO STA 67+00

SHEET 2 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		118

DATE: 3/22/2024 9:46:58 AM
FILE: BRYCEC_TASK02_P&P02.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

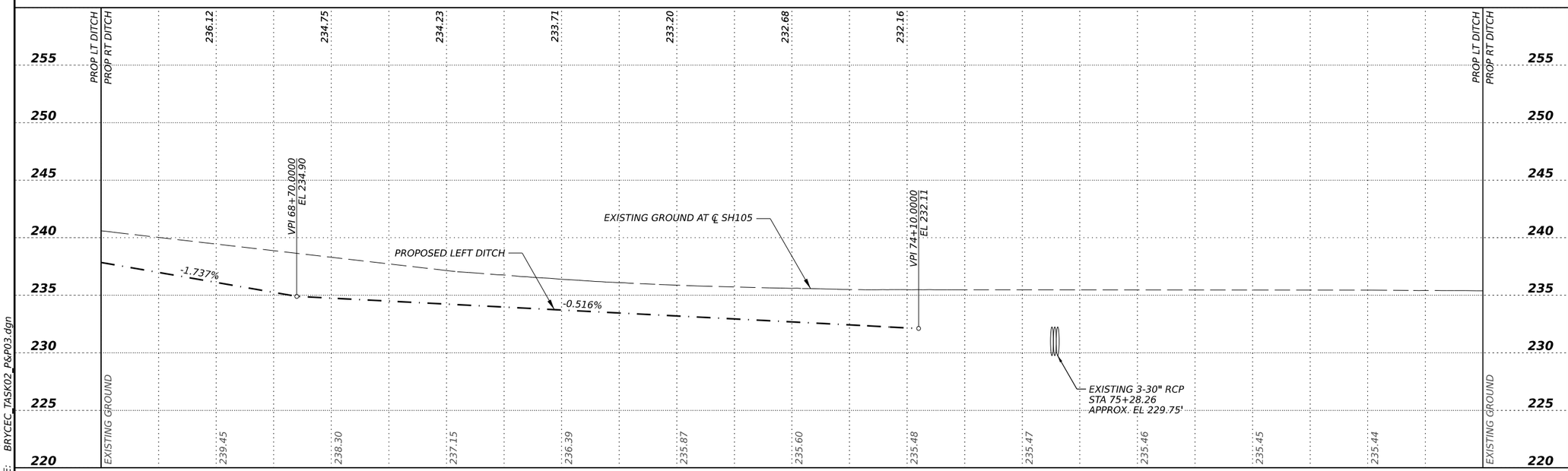


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



DATE: 3/22/2024 9:47:03 AM
FILE: BRYCEC_TASK02_P&P03.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

SH 105

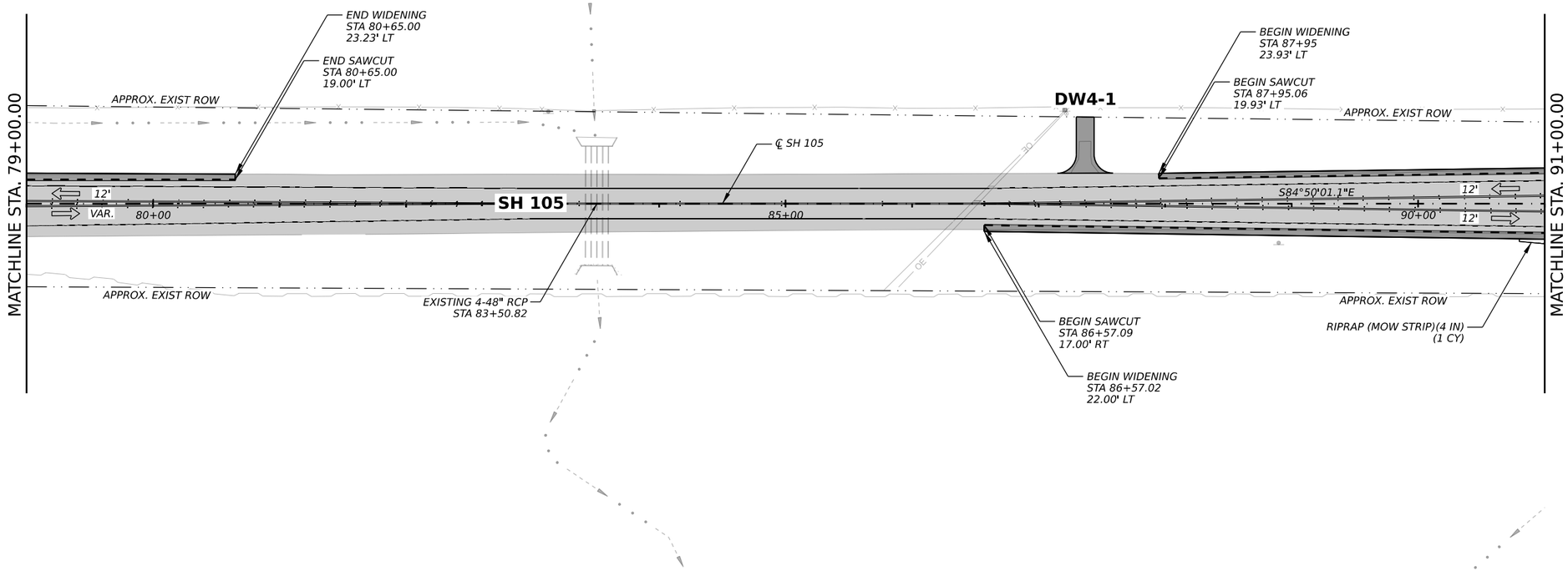
PLAN & PROFILE

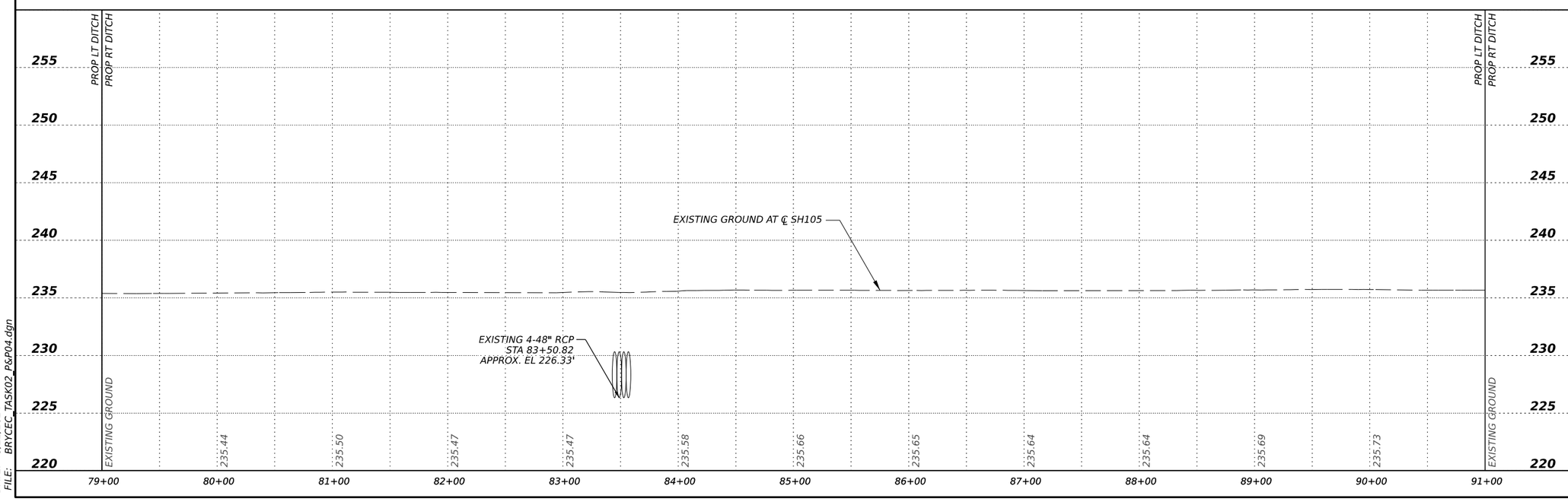
STA 67+00 TO STA 79+00

SHEET 3 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		119

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 79+00 TO STA 91+00

SHEET 4 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		120

DATE: 3/22/2024 9:47:08 AM
FILE: BRYCEC_TASK02_P&P04.dgn

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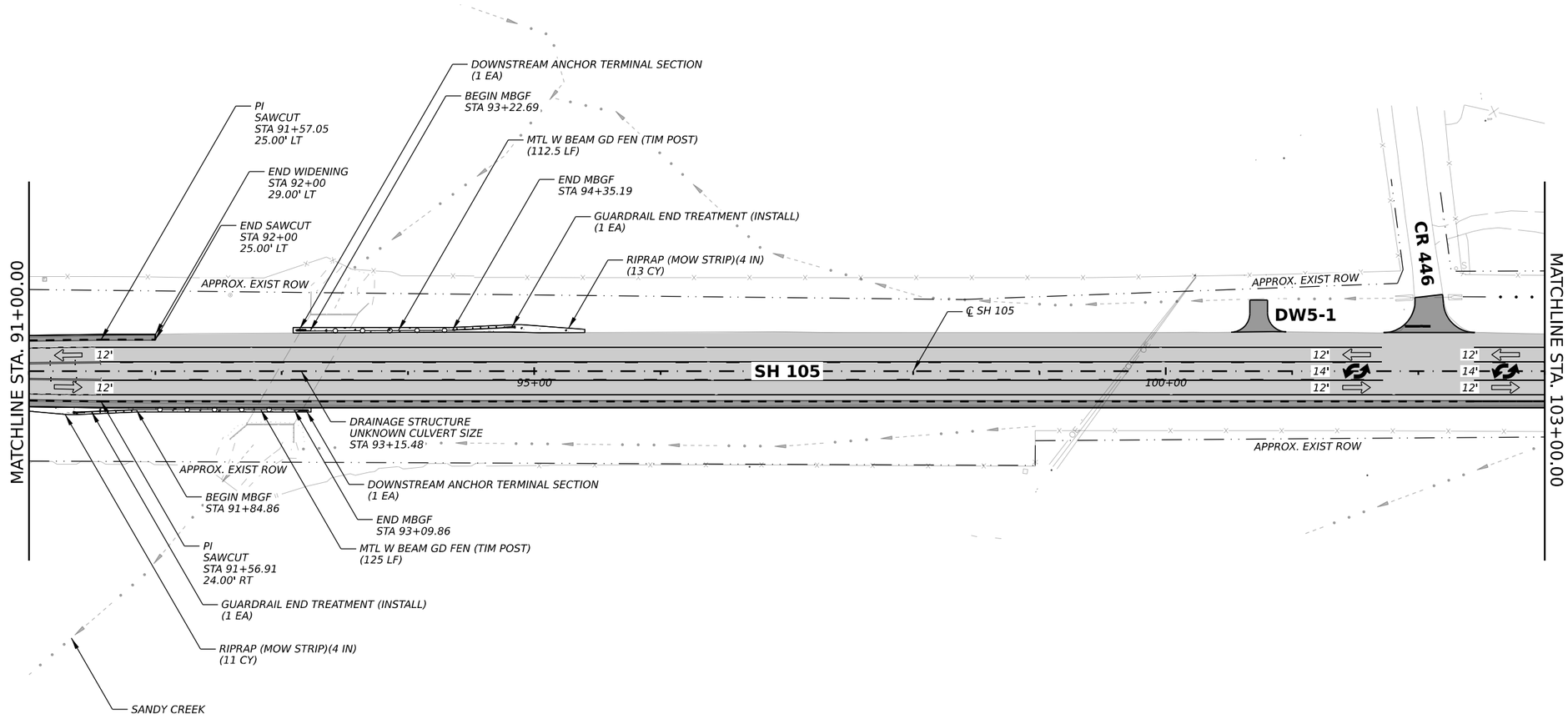
DW: JMT

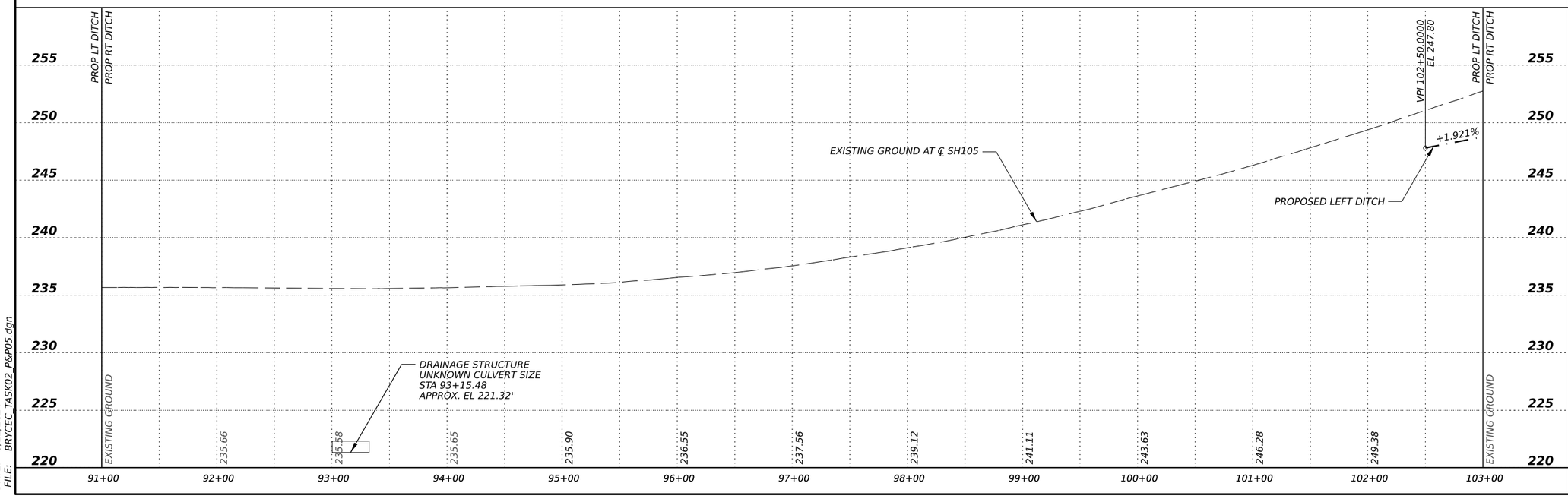


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 91+00 TO STA 103+00

SHEET 5 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		121

DATE: 3/22/2024 9:47:13 AM
FILE: BRYCEC_TASK02_P&P05.dgn

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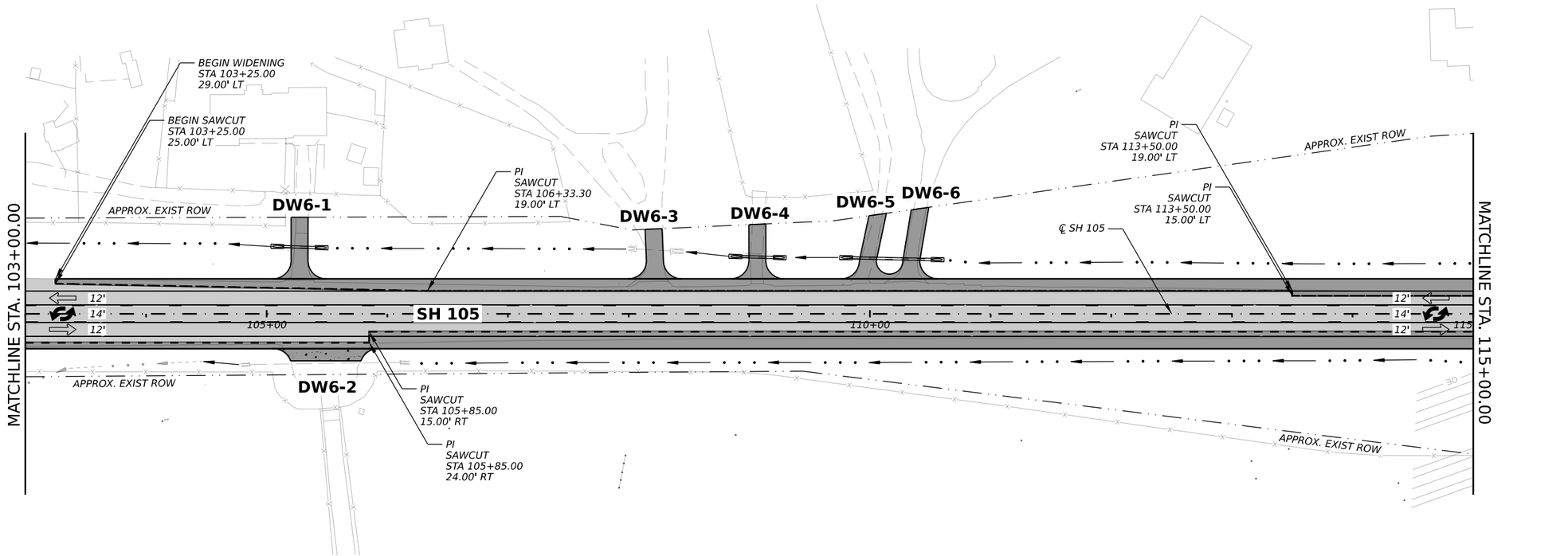
CK: JMT
DW: JMT

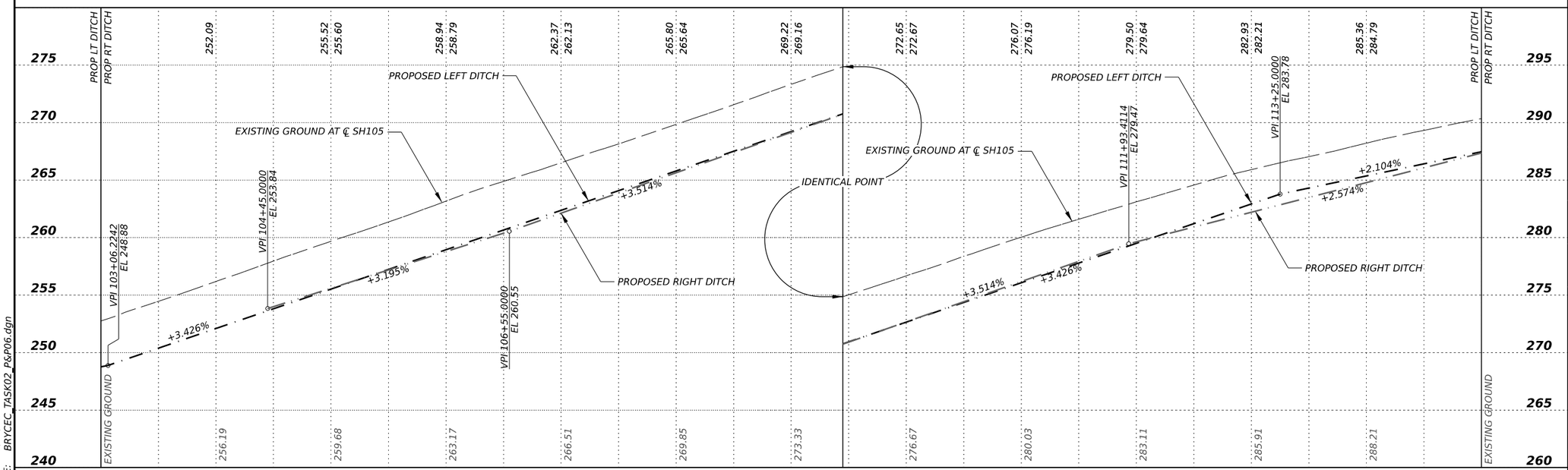


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 103+00 TO STA 115+00

SHEET 6 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		122

DATE: 3/22/2024 9:47:18 AM
FILE: BRYCEC_TASK02_P&P06.dgn

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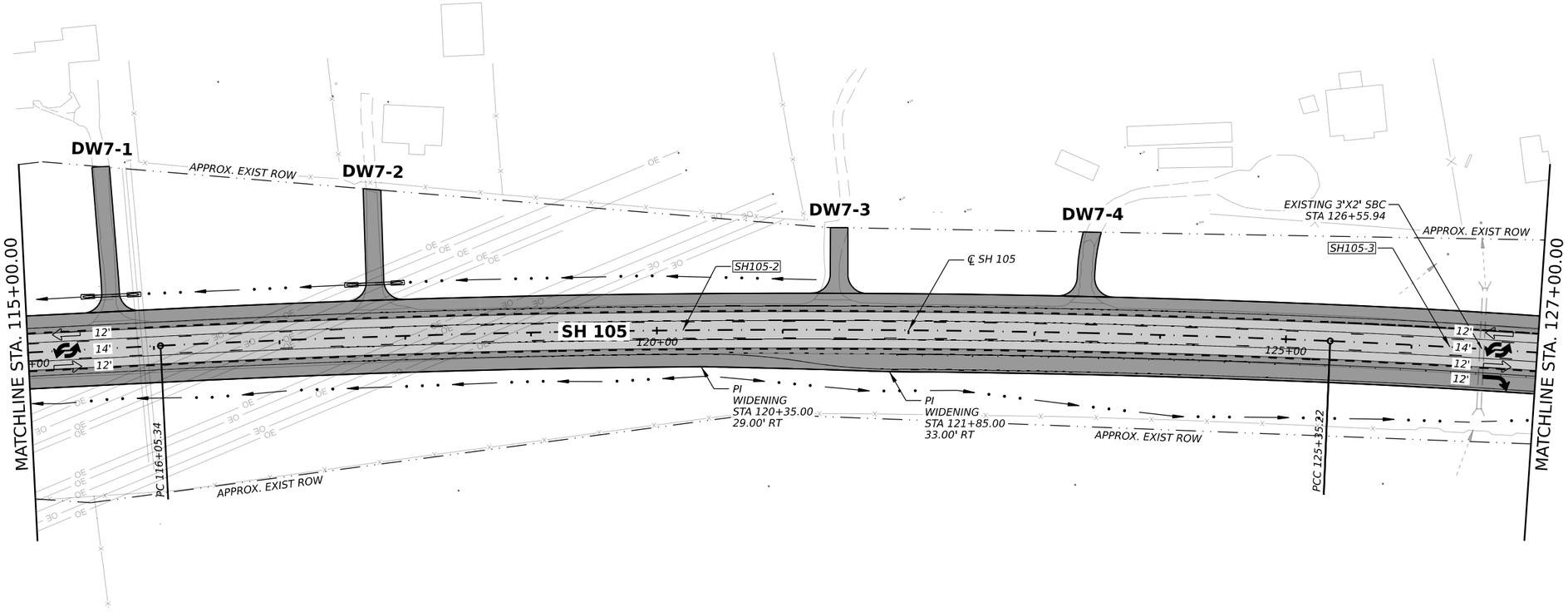
CK: JMT
DW: JMT

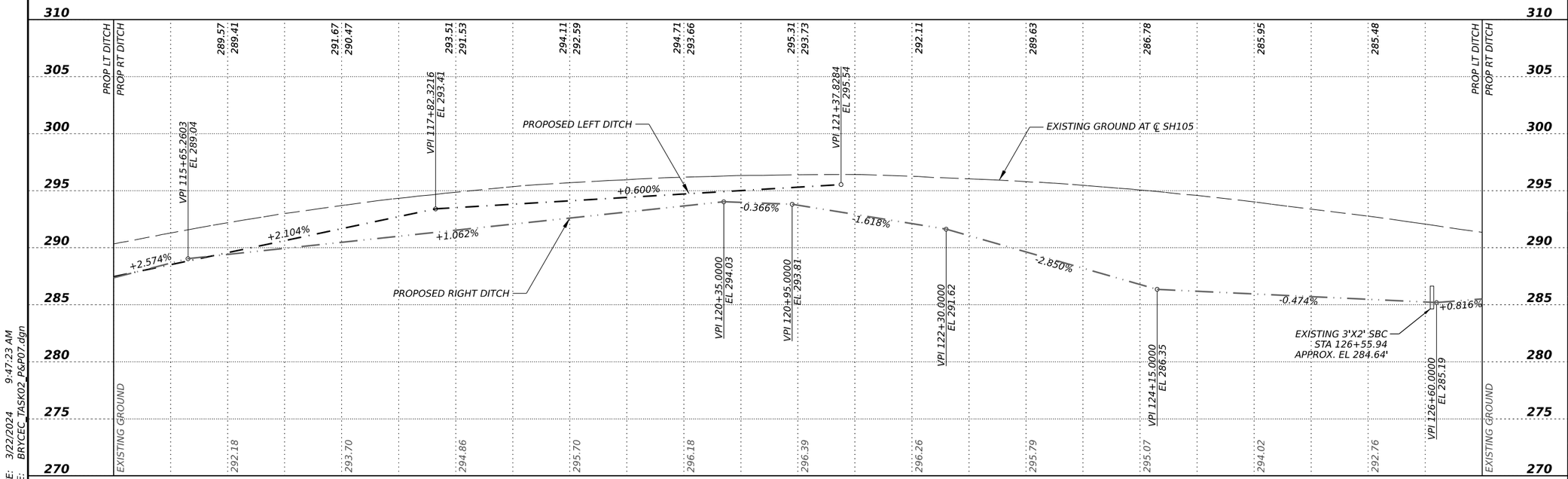


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*



DATE: 3/22/2024 9:47:23 AM
FILE: BRYCEC_TASK02_P&P07.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

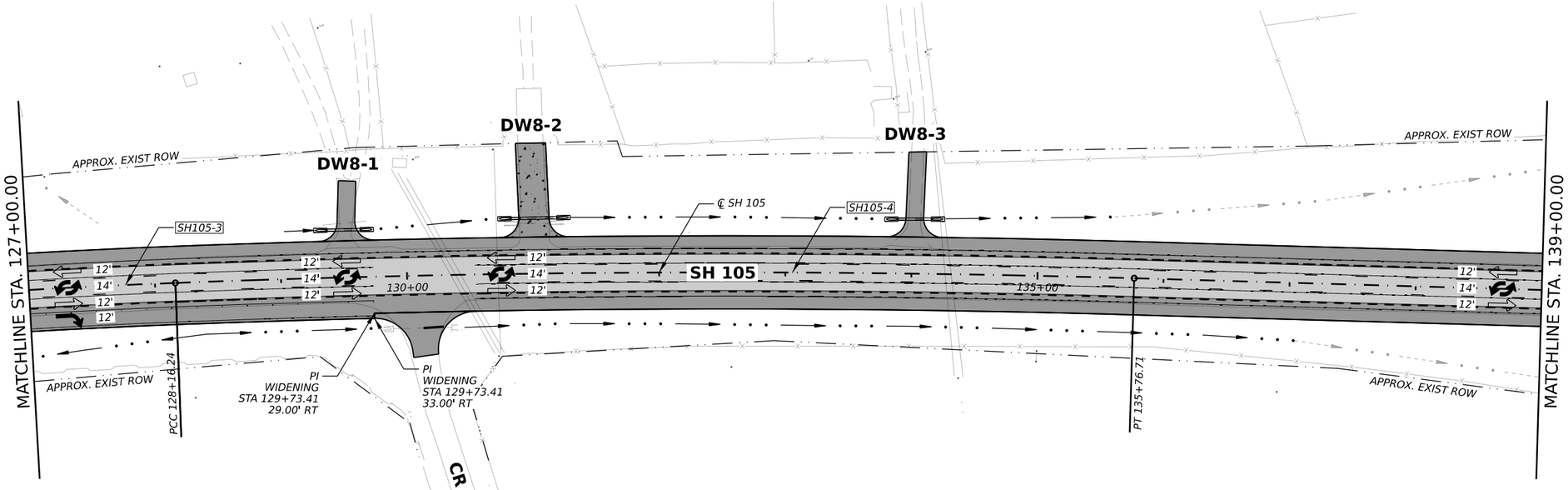
PLAN & PROFILE

STA 115+00 TO STA 127+00

SHEET 7 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		123

CK: JMT
DW: JMT
CK: JMT
DW: JMT

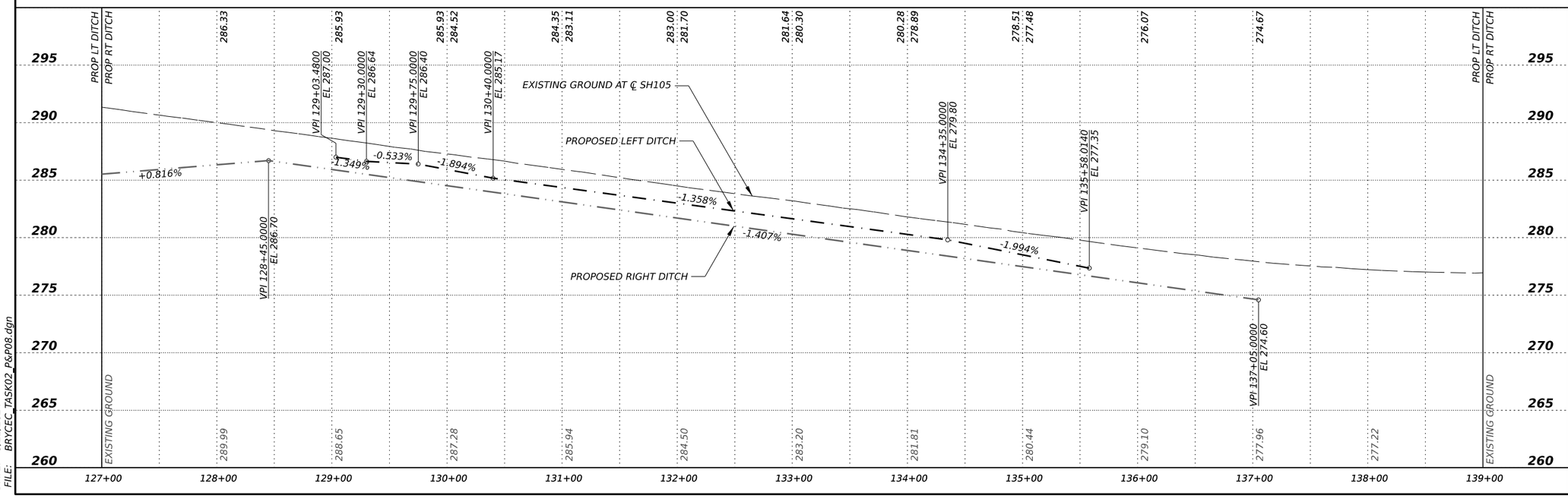


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*



DATE: 3/22/2024 9:47:28 AM
FILE: BRYCEC_TASK02_P&P08.dgn

RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

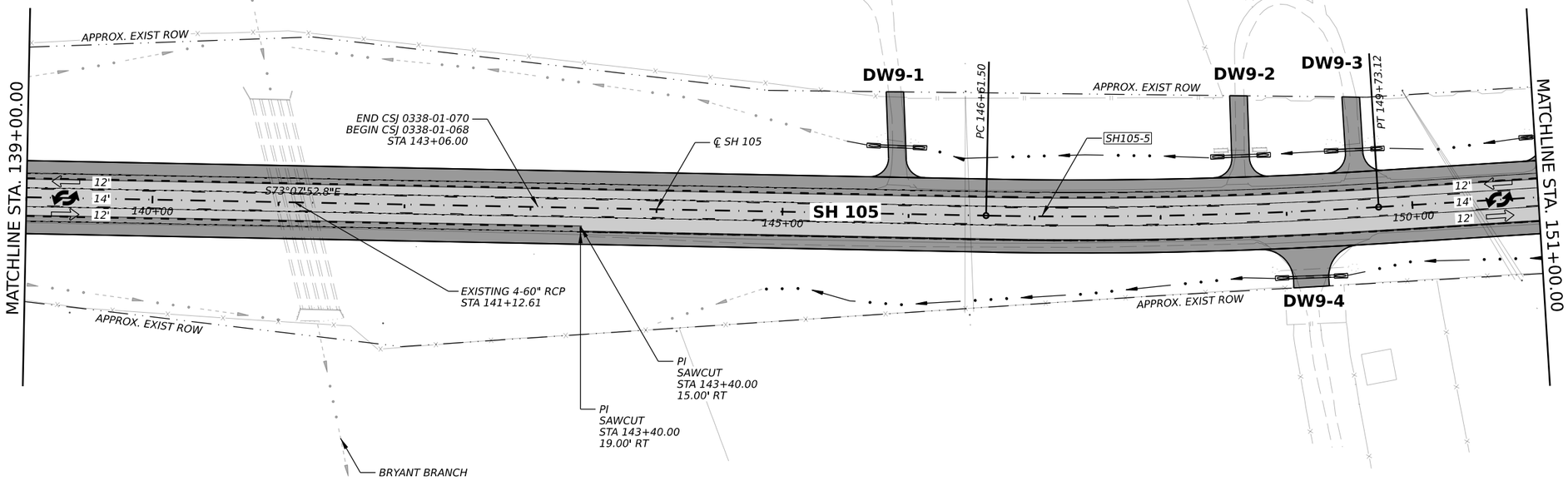
PLAN & PROFILE

STA 127+00 TO STA 139+00

SHEET 8 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		124

CK: JMT
DW: JMT
CK: JMT
DW: JMT

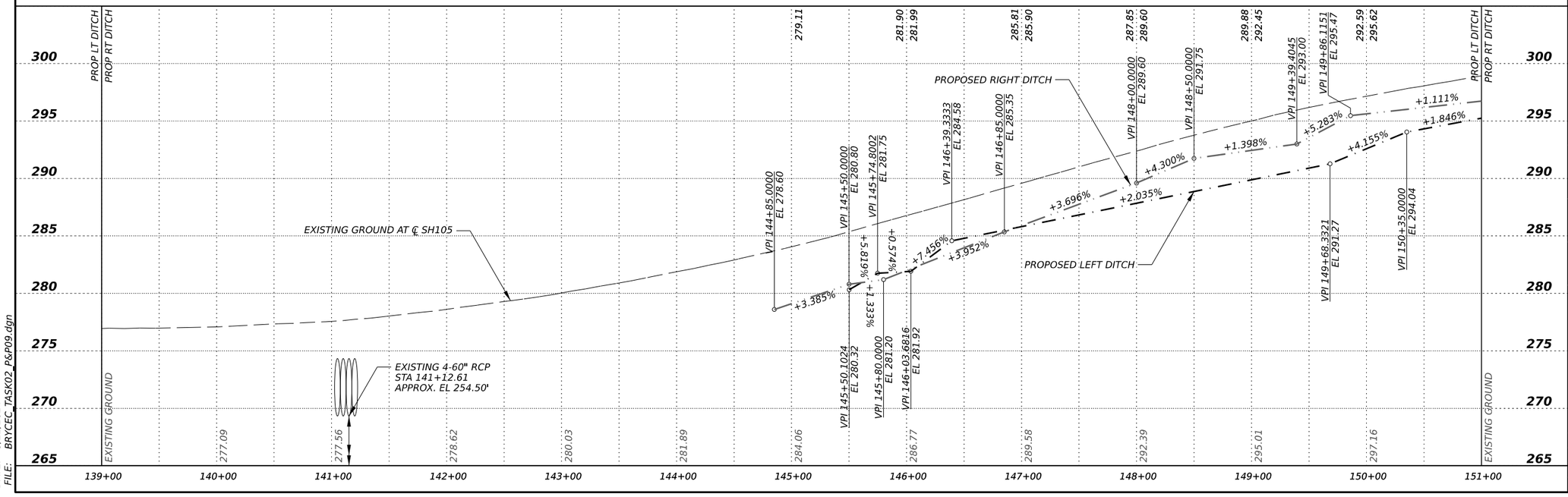


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



DATE: 3/22/2024 9:47:33 AM
FILE: BRYCEC_TASK02_P&P09.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

SH 105

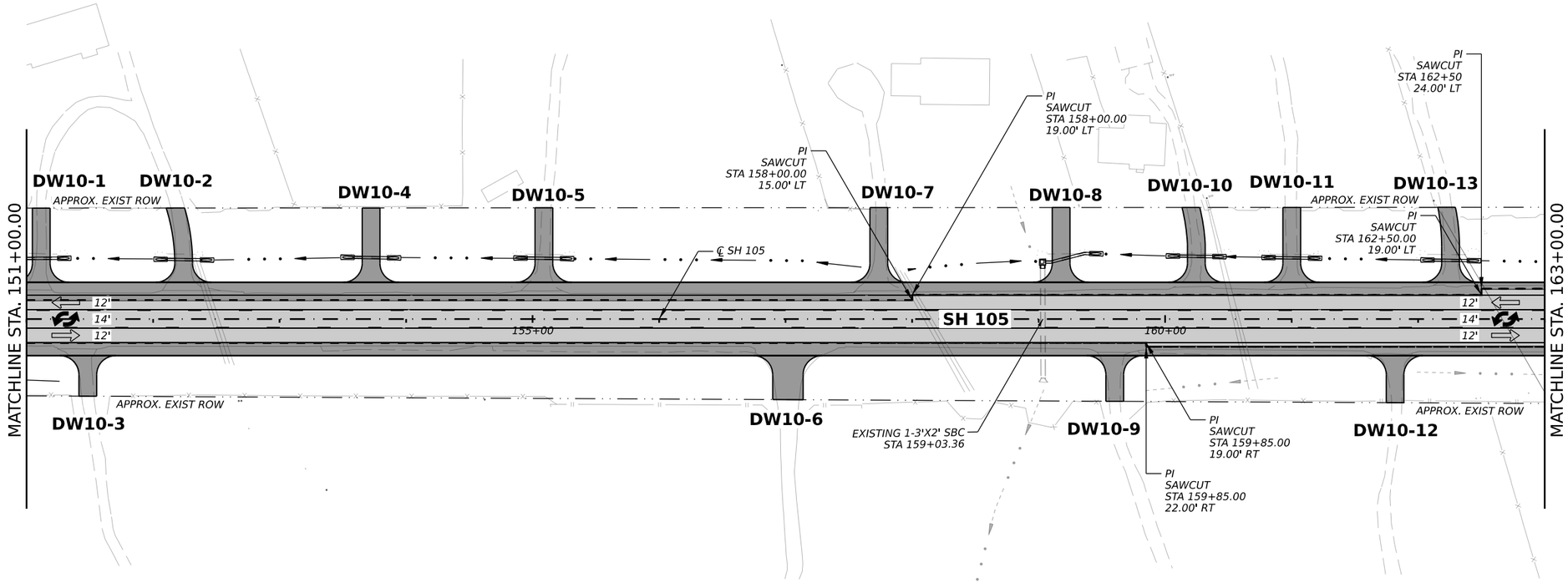
PLAN & PROFILE

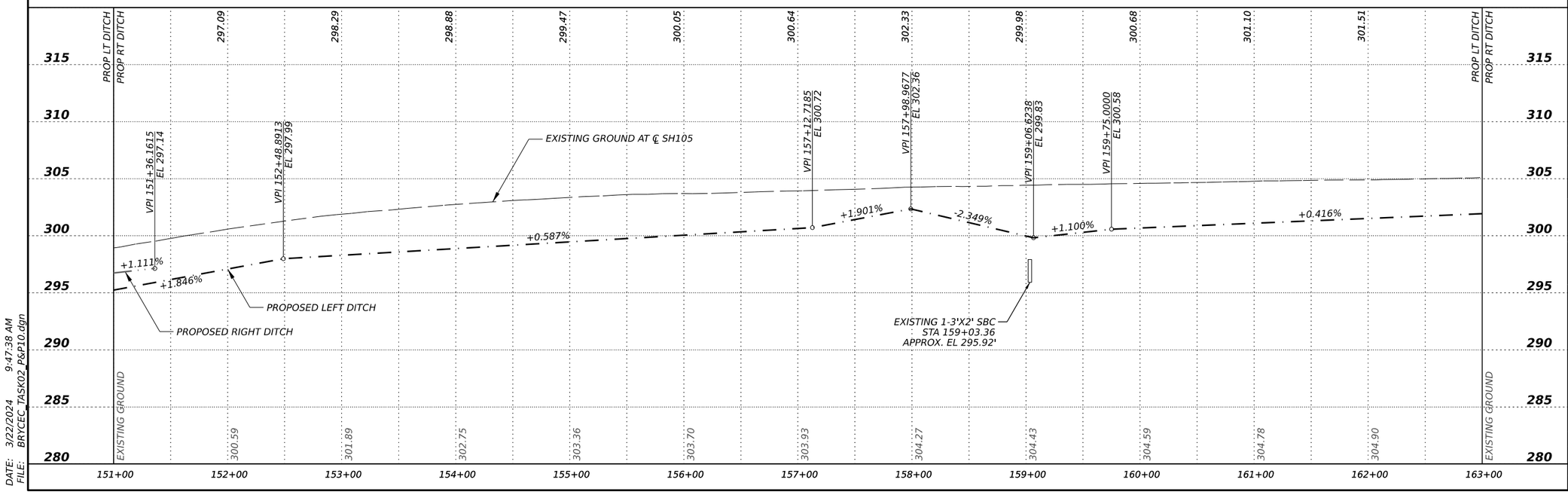
STA 139+00 TO STA 151+00

SHEET 9 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		125

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 151+00 TO STA 163+00

SHEET 10 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		126

DATE: 3/22/2024 9:47:38 AM
FILE: BRYCEC_TASK02_P&P10.dgn

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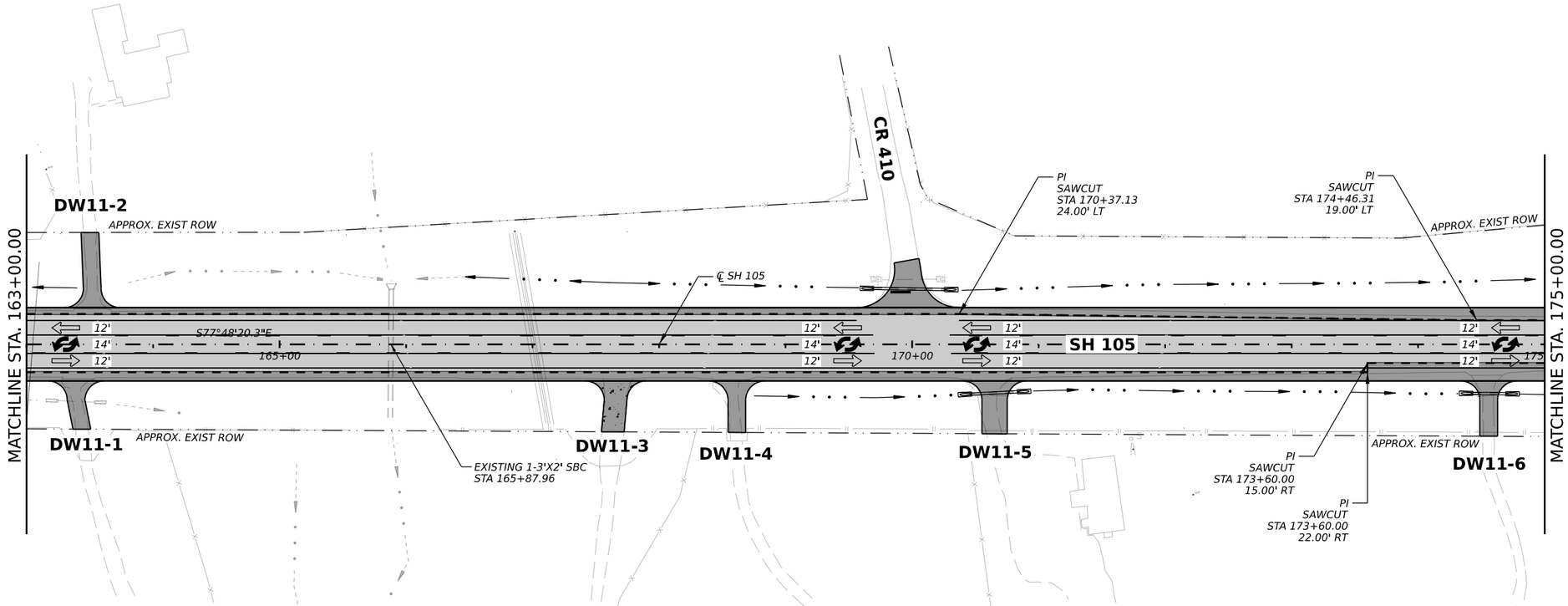
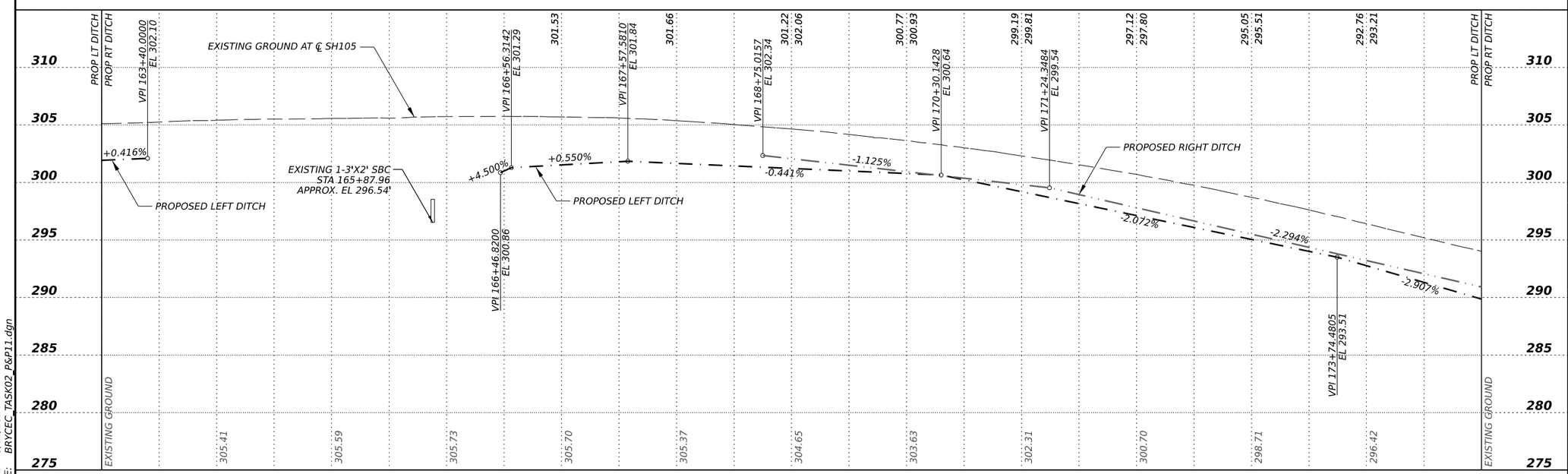
CK: JMT
DW: JMT





LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 163+00 TO STA 175+00

SHEET 11 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		127

DATE: 3/22/2024 9:47:43 AM
FILE: BRYCEC_TASK02_P&P11.dgn

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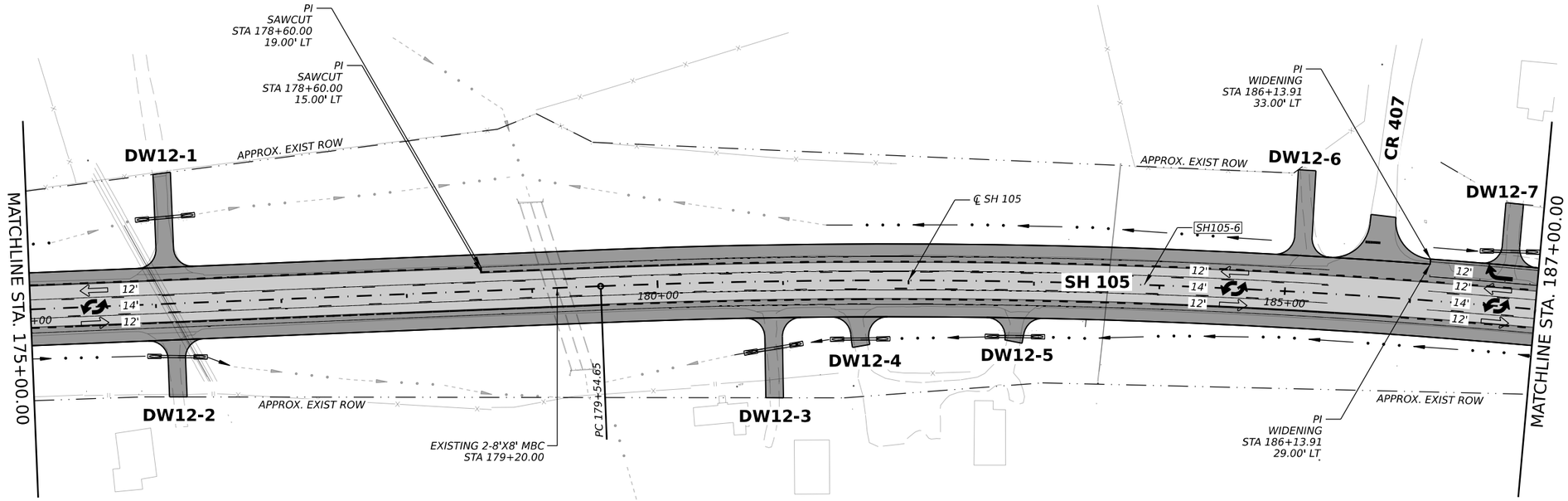
CK: JMT
DW: JMT

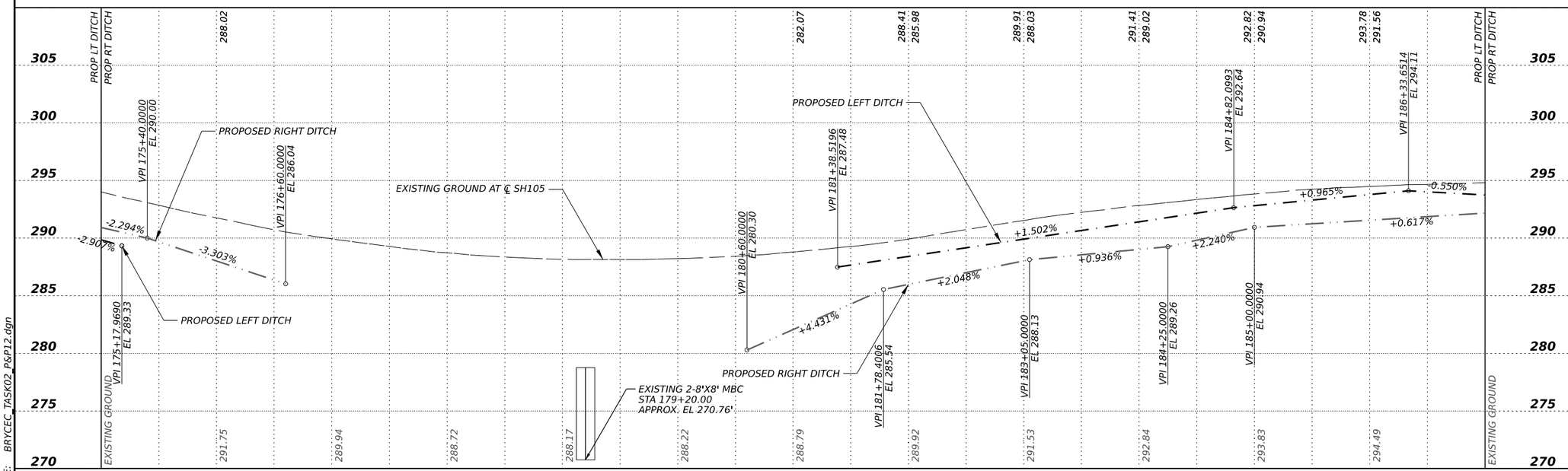


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



DATE: 3/22/2024 9:47:48 AM
FILE: BRYCEC_TASK02_P&P12.dgn

RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

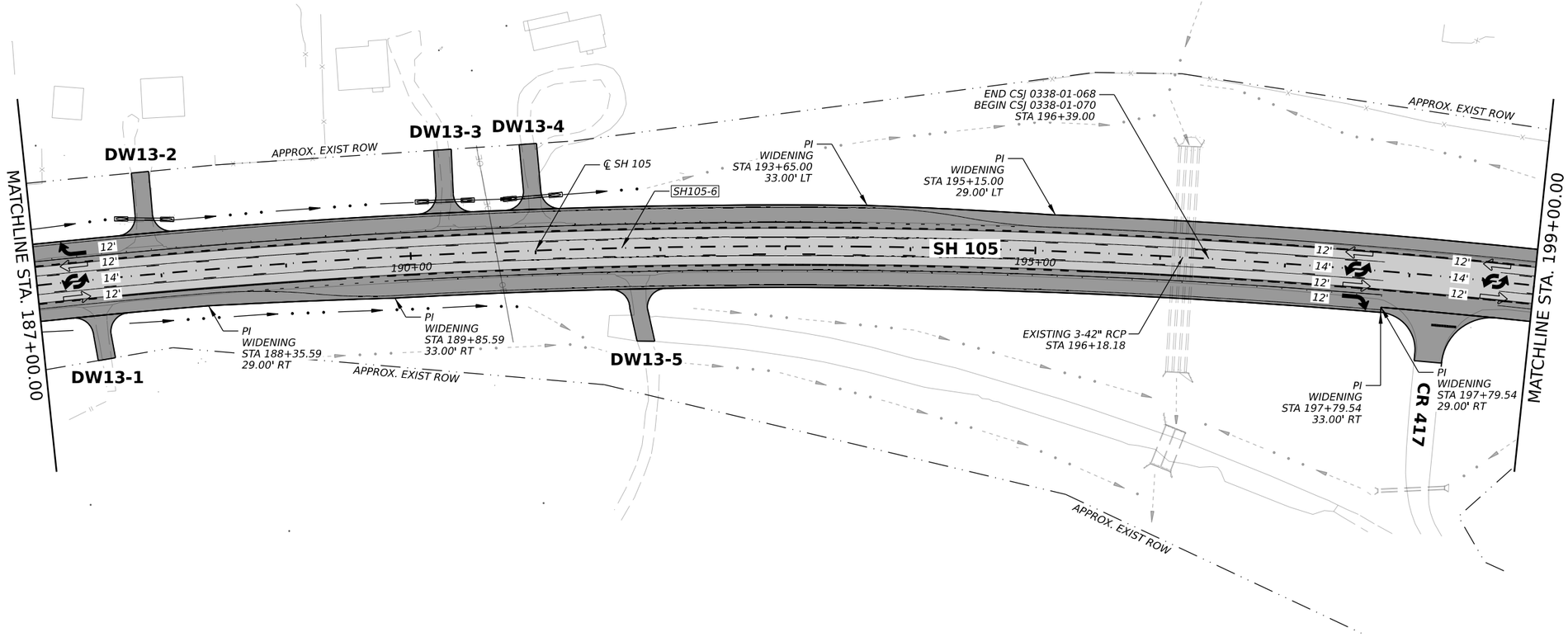
PLAN & PROFILE

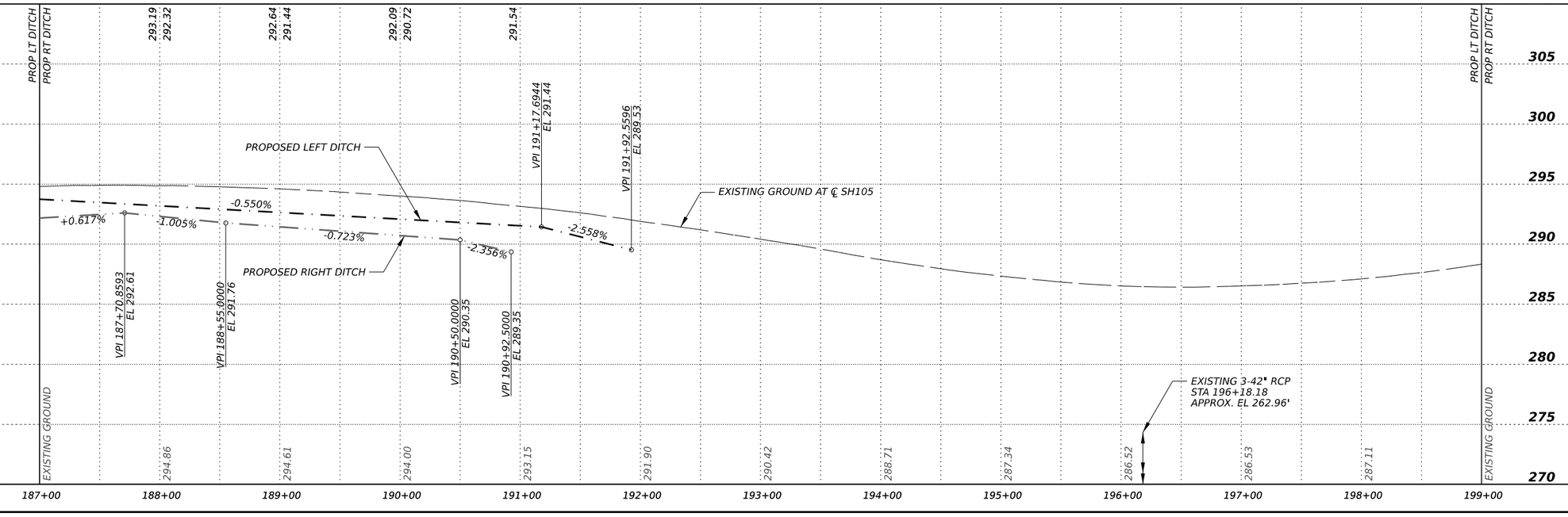
STA 175+00 TO STA 187+00

SHEET 12 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		128

CK: JMT
DW: JMT
CK: JMT
DW: JMT





LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 187+00 TO STA 199+00

SHEET 13 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		129

DATE: 3/22/2024 9:47:53 AM
FILE: BRYCEC_TASK02_P&P13.dgn

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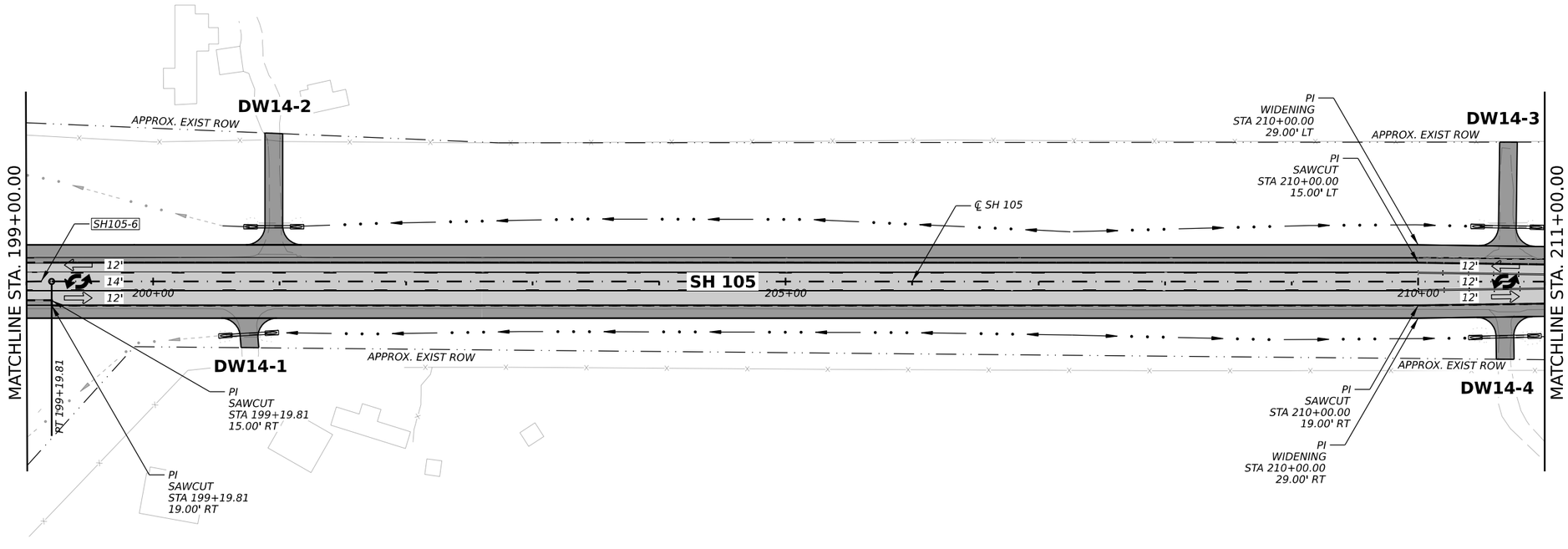
CK: JMT
DW: JMT

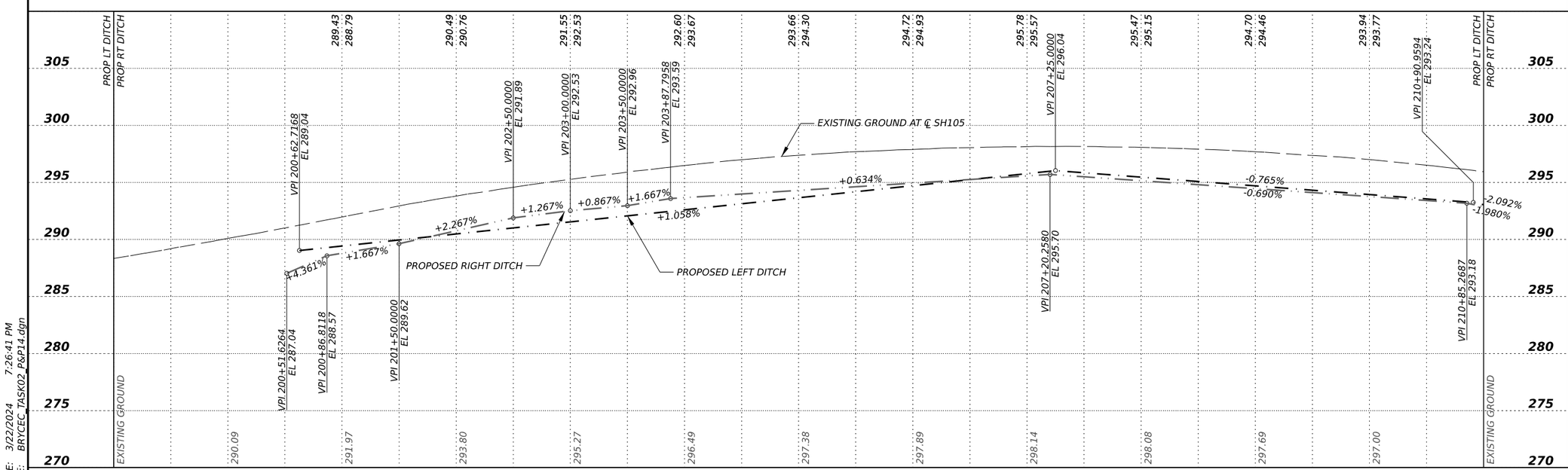


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

PLAN & PROFILE

STA 199+00 TO STA 211+00

SHEET 14 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		130

DATE: 3/22/2024 7:26:41 PM
FILE: BRYCEC_TASK02_P&P14.dgn

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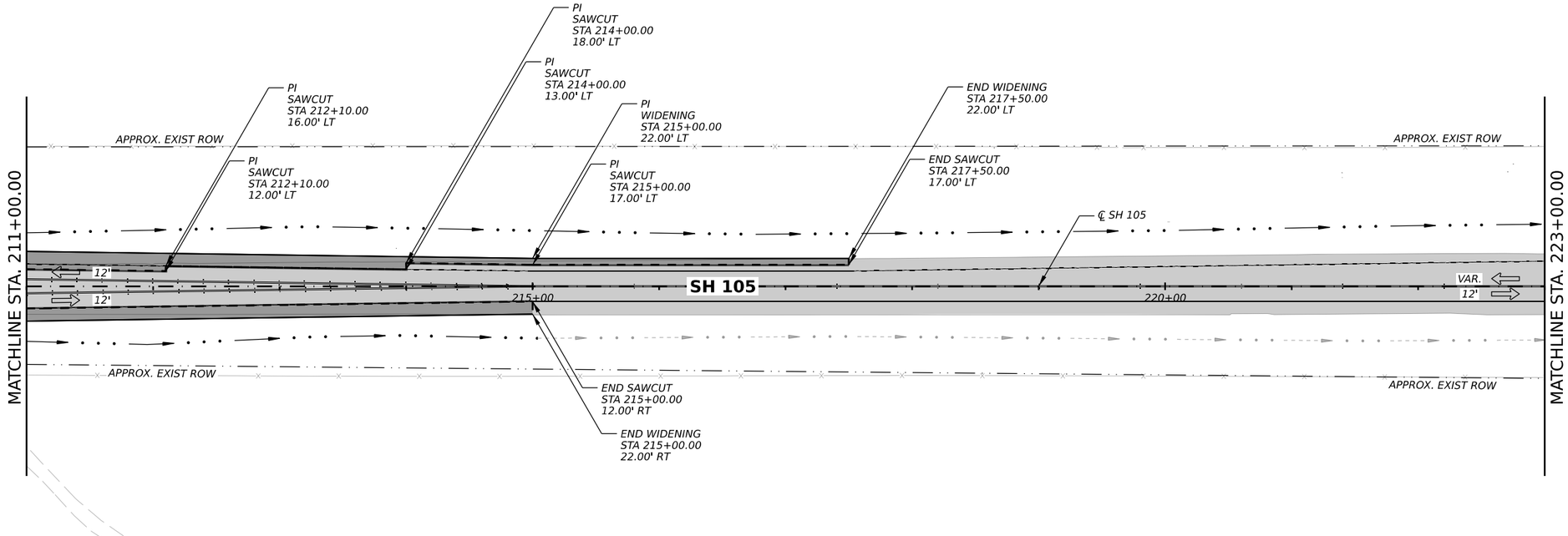
DW: JMT
CK: JMT
DW: JMT

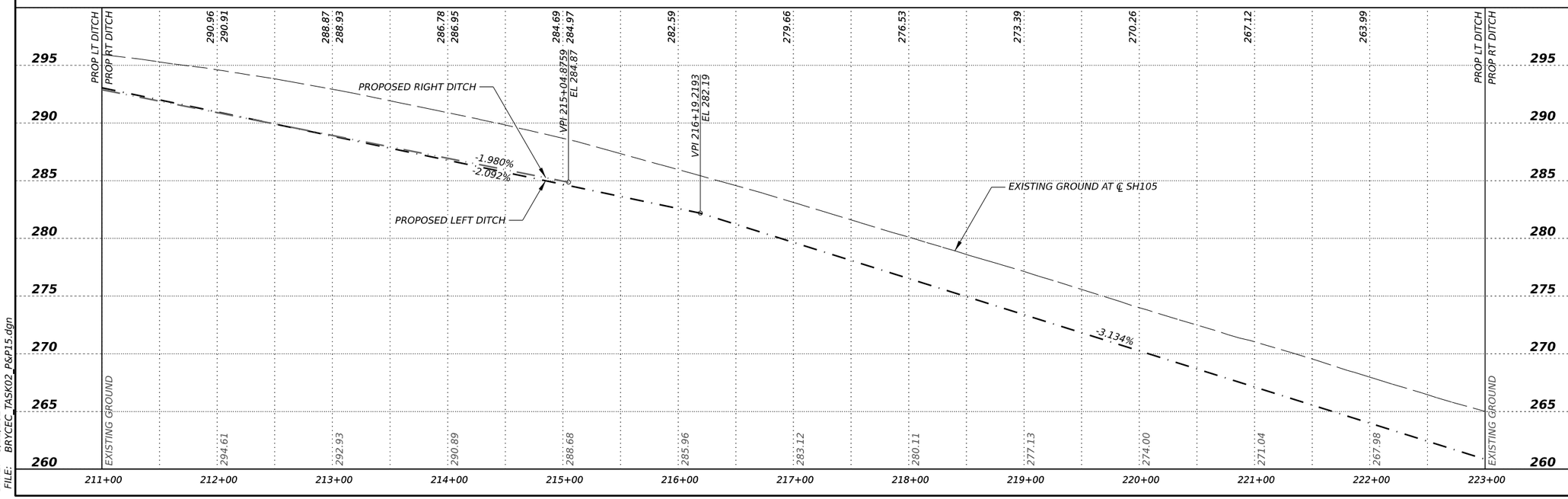


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



DATE: 3/22/2024 9:48:04 AM
FILE: BRYCEC_TASK02_P&P15.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

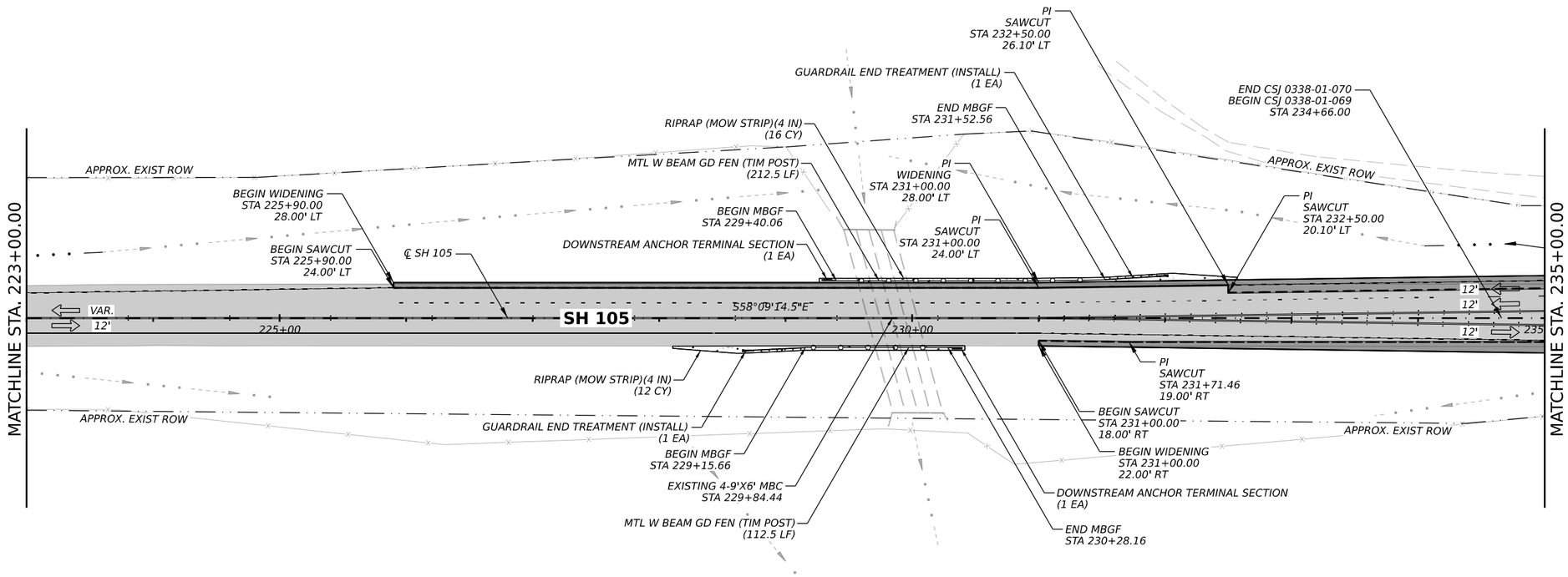
PLAN & PROFILE

STA 211+00 TO STA 223+00

SHEET 15 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		131

CK: JMT
DW: JMT
CK: JMT
DW: JMT

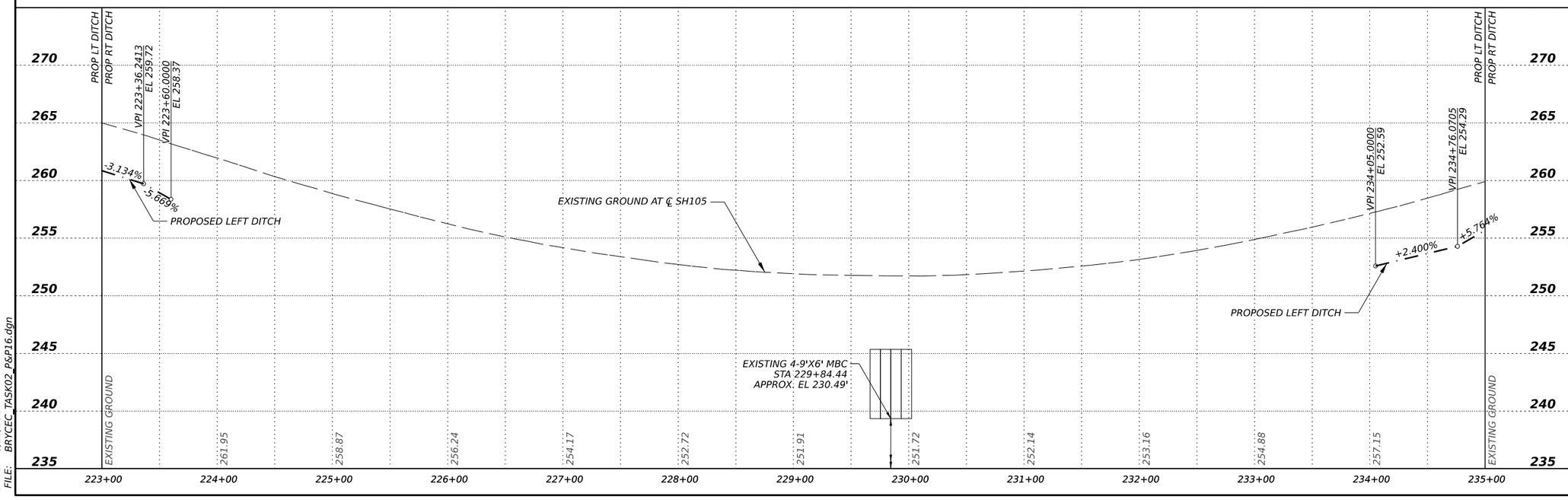


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



DATE: 3/22/2024 9:48:09 AM
FILE: BRYCEC_TASK02_P&P16.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

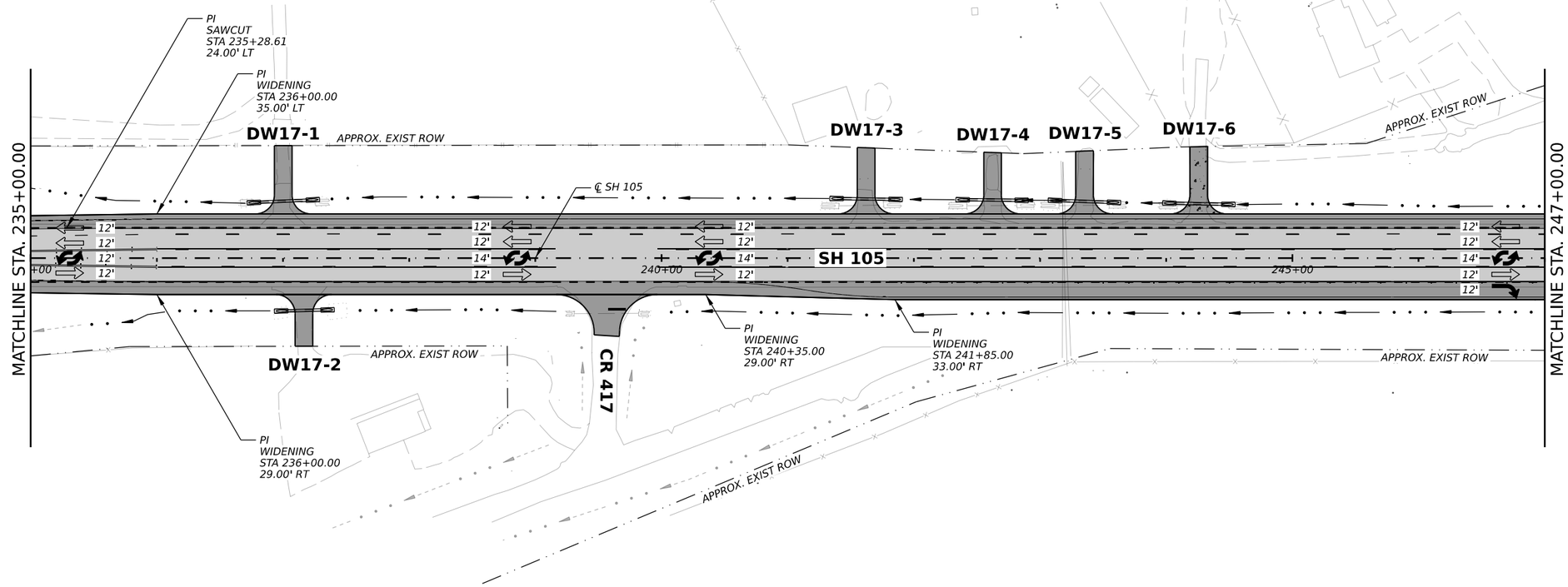
PLAN & PROFILE

STA 223+00 TO STA 235+00

SHEET 16 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		132

CK: JMT
DW: JMT
CK: JMT
DW: JMT

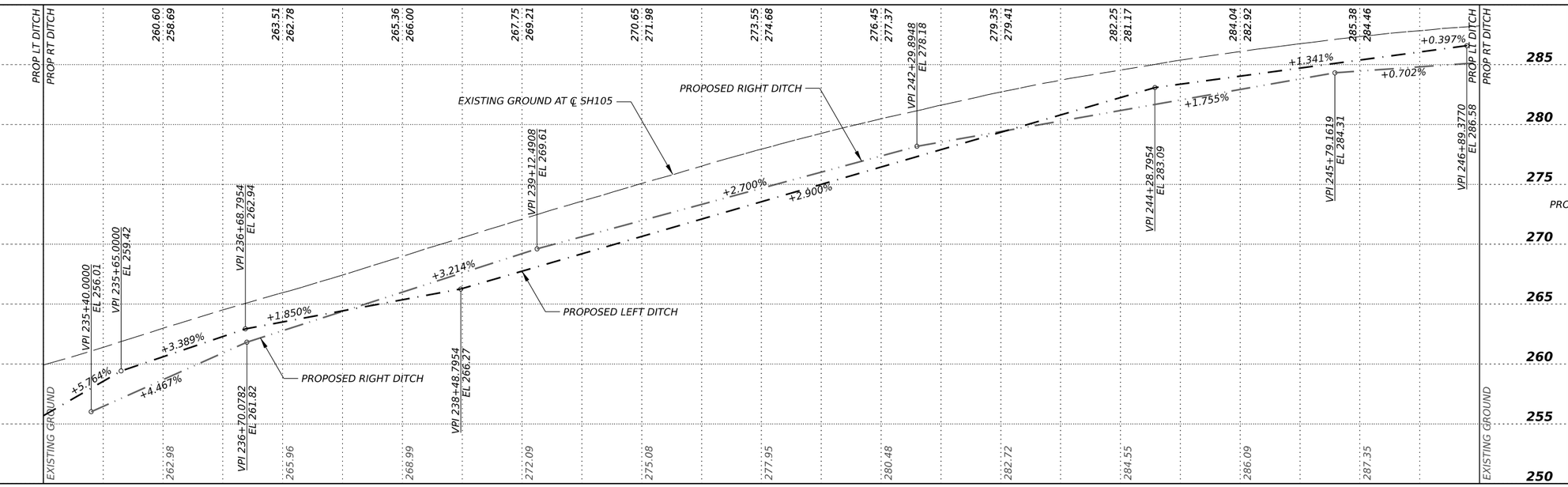


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 235+00 TO STA 247+00

SHEET 17 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		133

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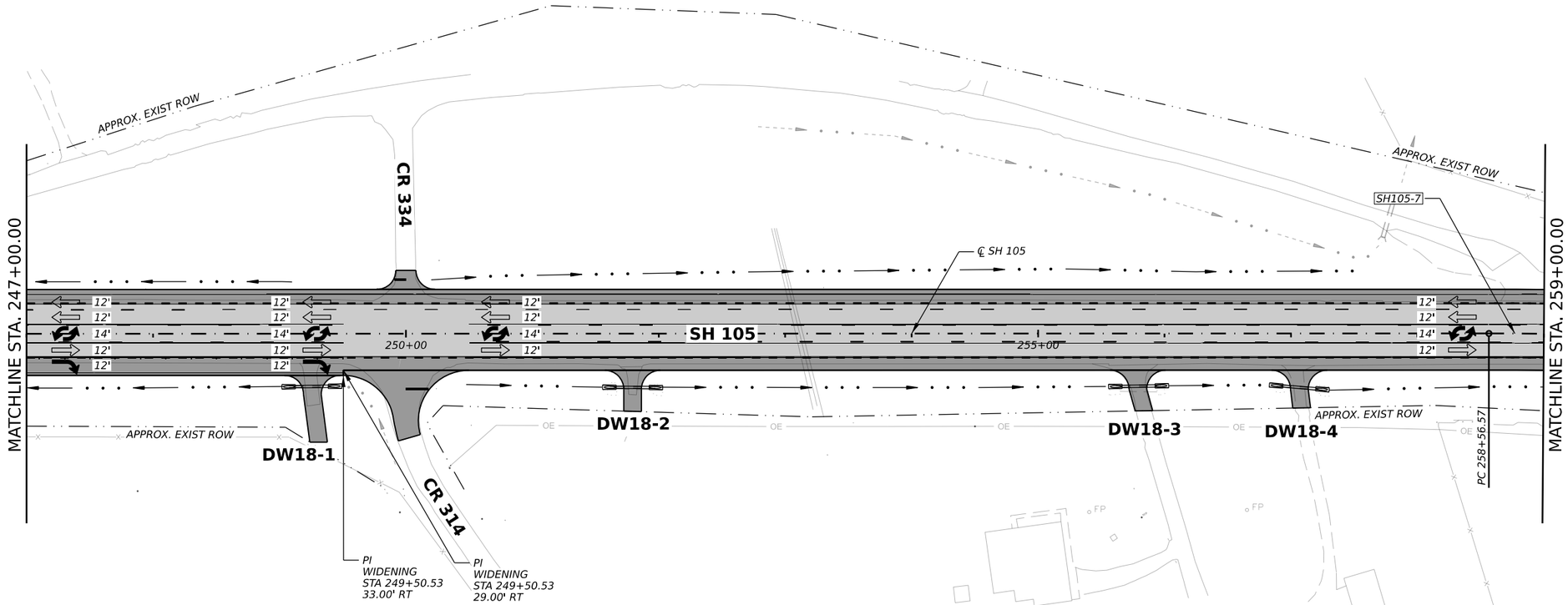
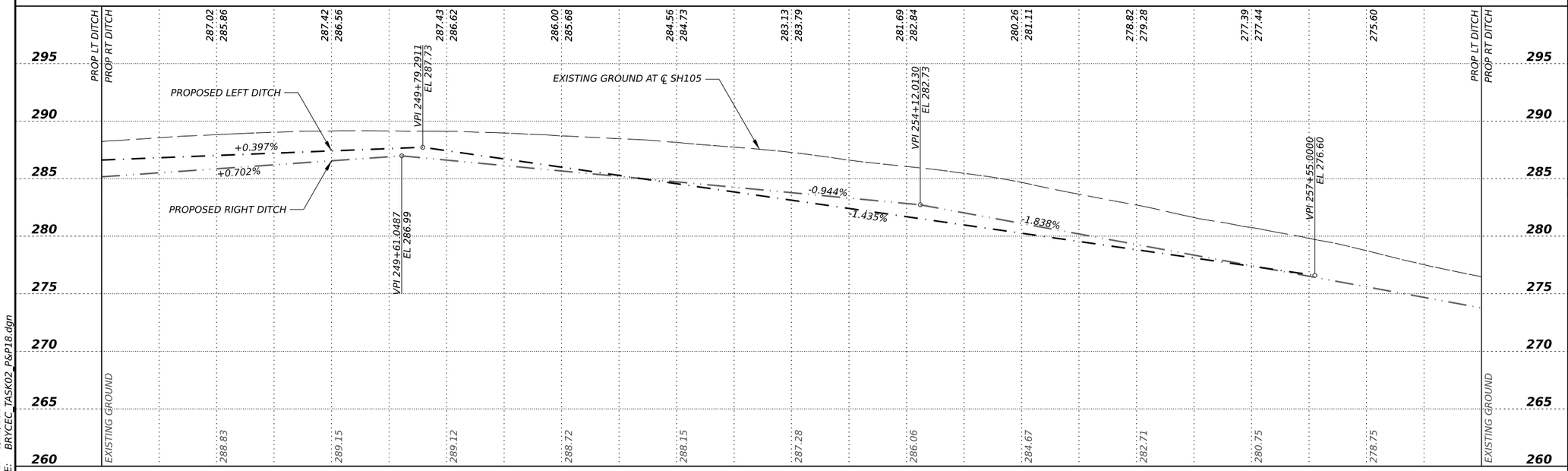


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 247+00 TO STA 259+00

SHEET 18 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		134

DATE: 3/22/2024 9:48:20 AM
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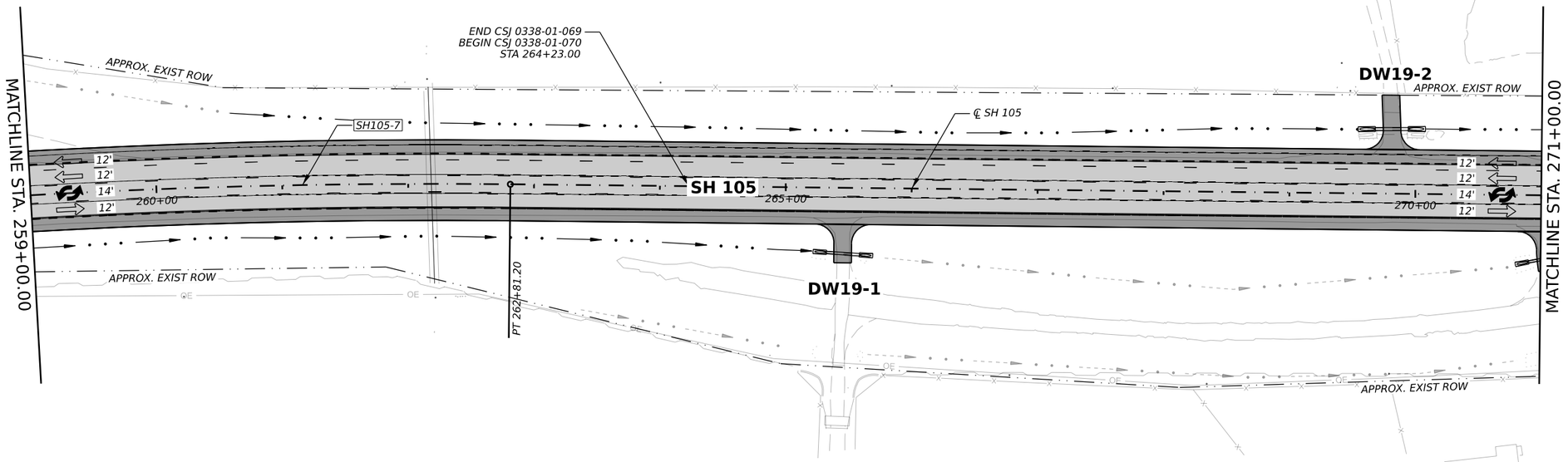
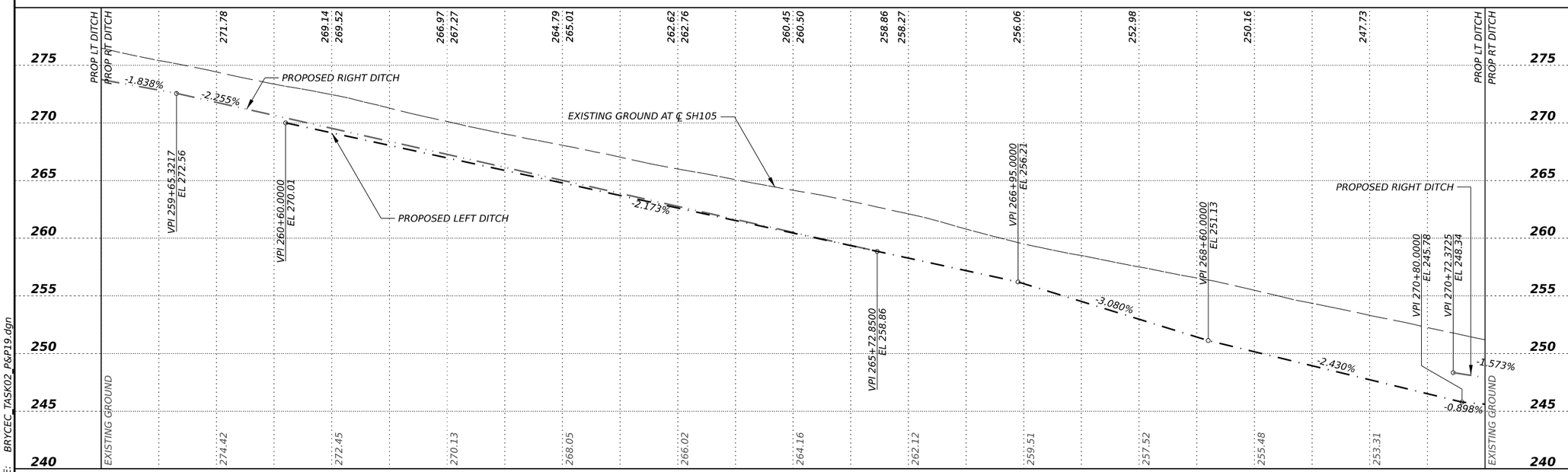


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 259+00 TO STA 271+00

SHEET 19 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		135

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CK: JMT
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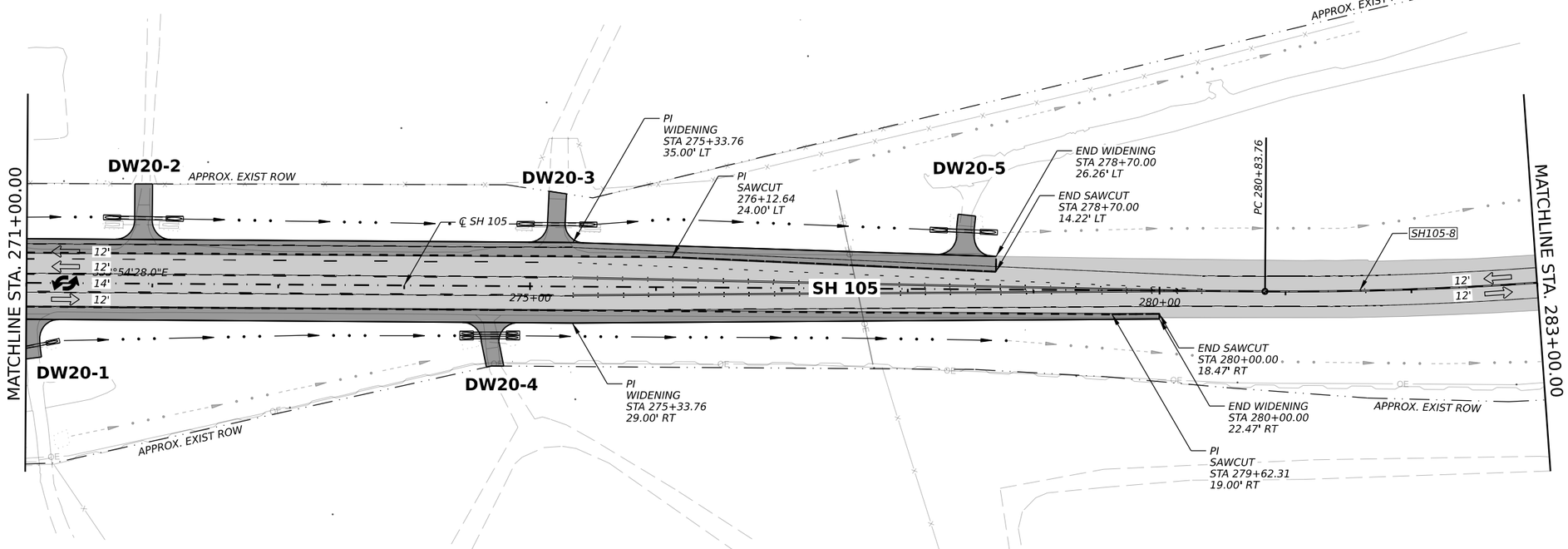
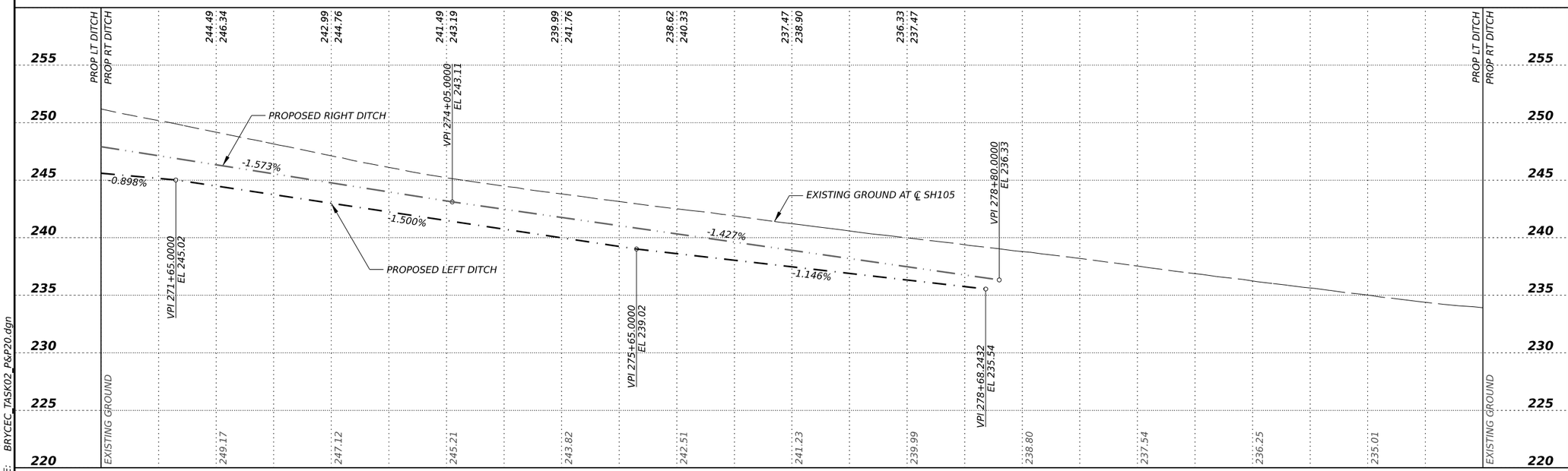


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

SH 105

PLAN & PROFILE

STA 271+00 TO STA 283+00

SHEET 20 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		136

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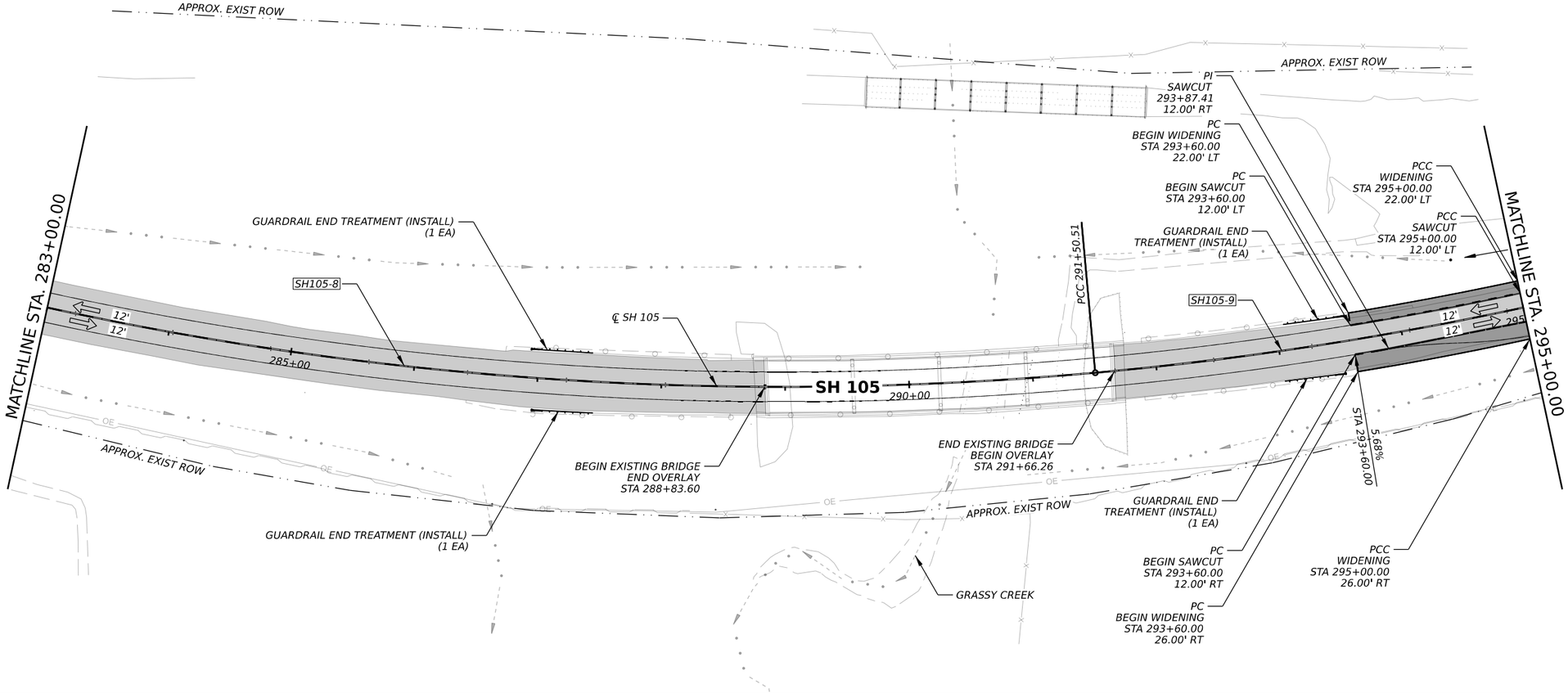
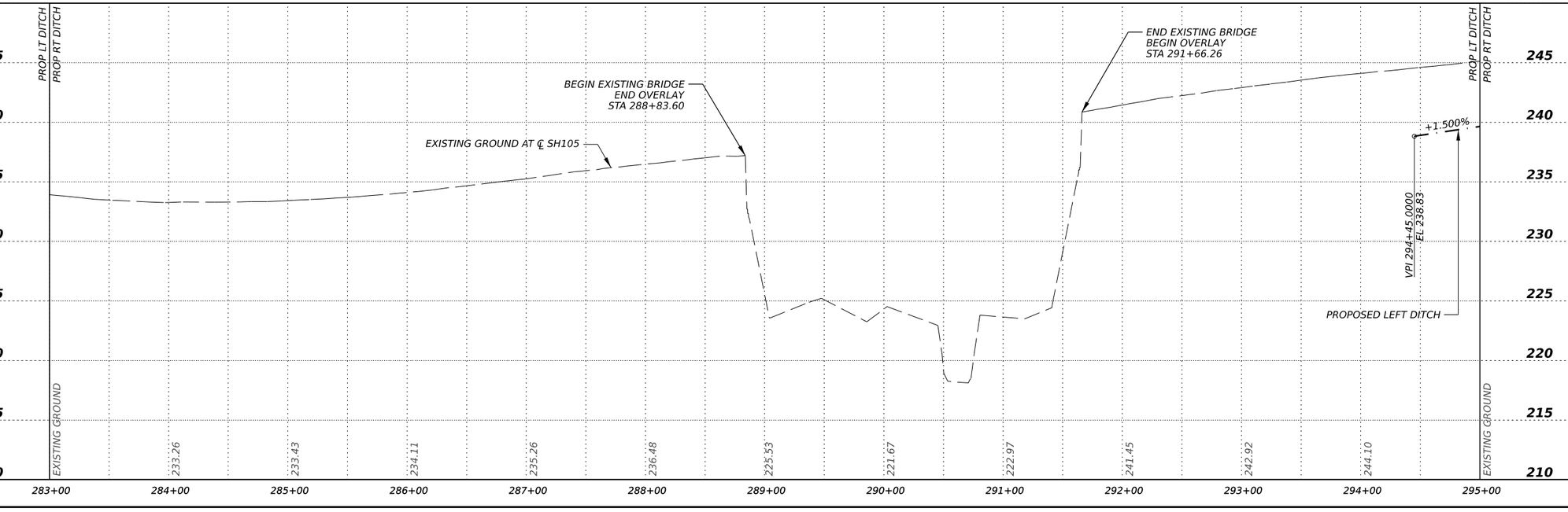


LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*



STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 283+00 TO STA 295+00

SHEET 21 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		137

DATE: 3/22/2024 9:48:35 AM
FILE: BRYCEC_TASK02_P&P21.dgn

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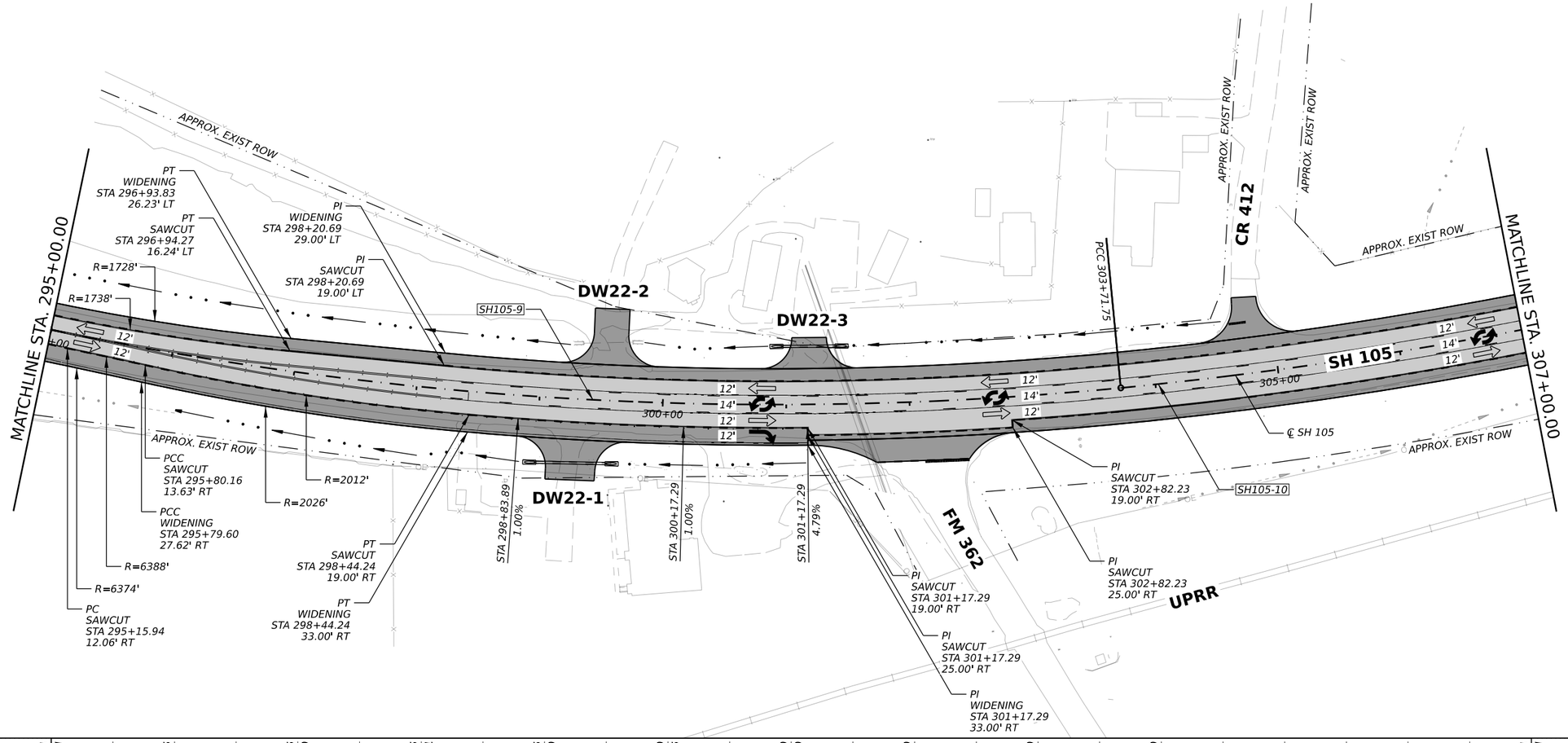

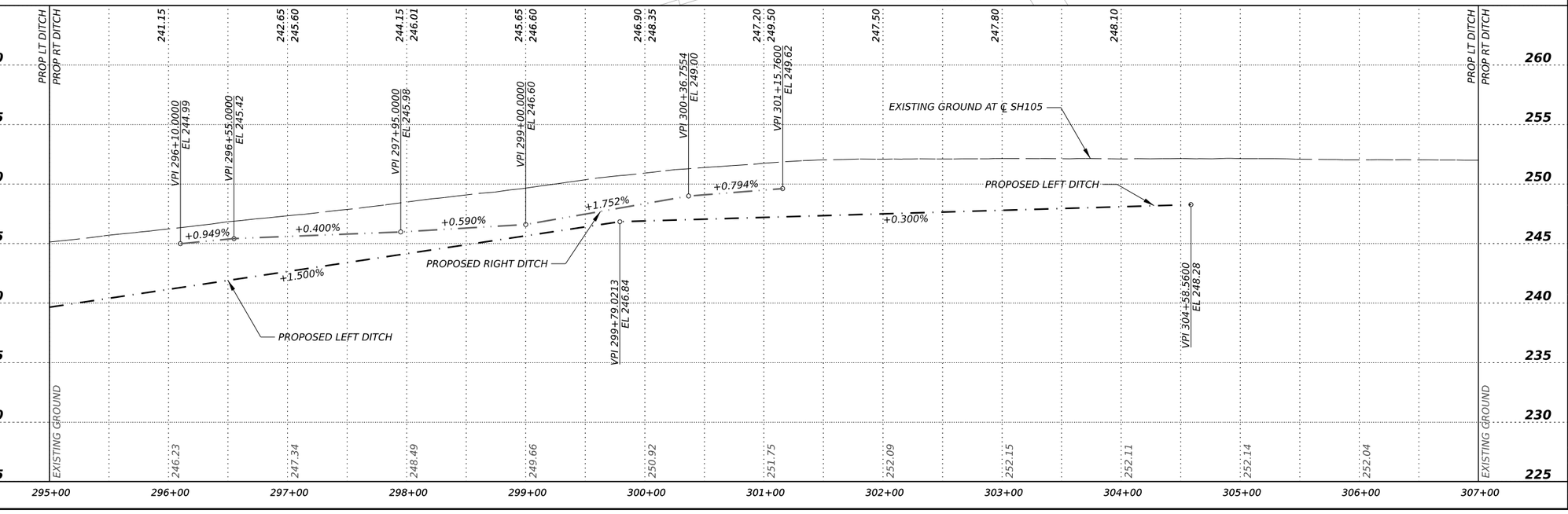

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 295+00 TO STA 307+00

SHEET 22 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		138

DATE: 3/22/2024 9:48:41 AM
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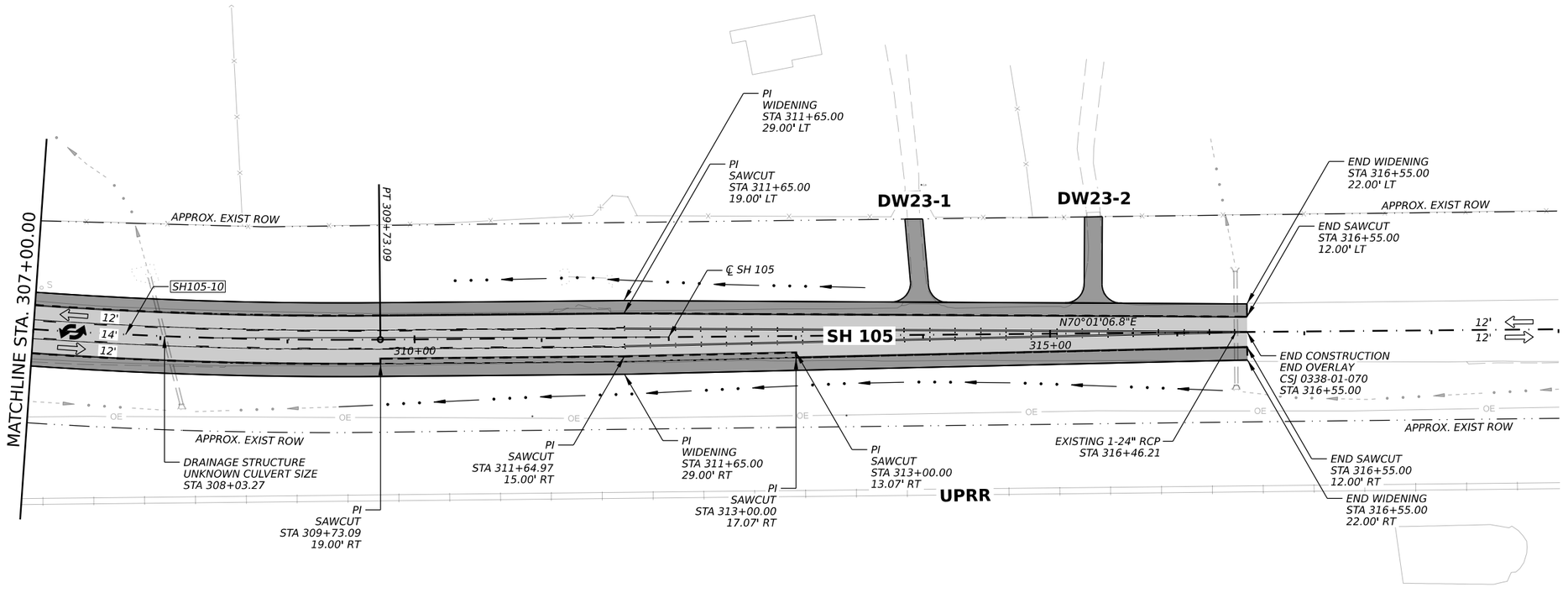

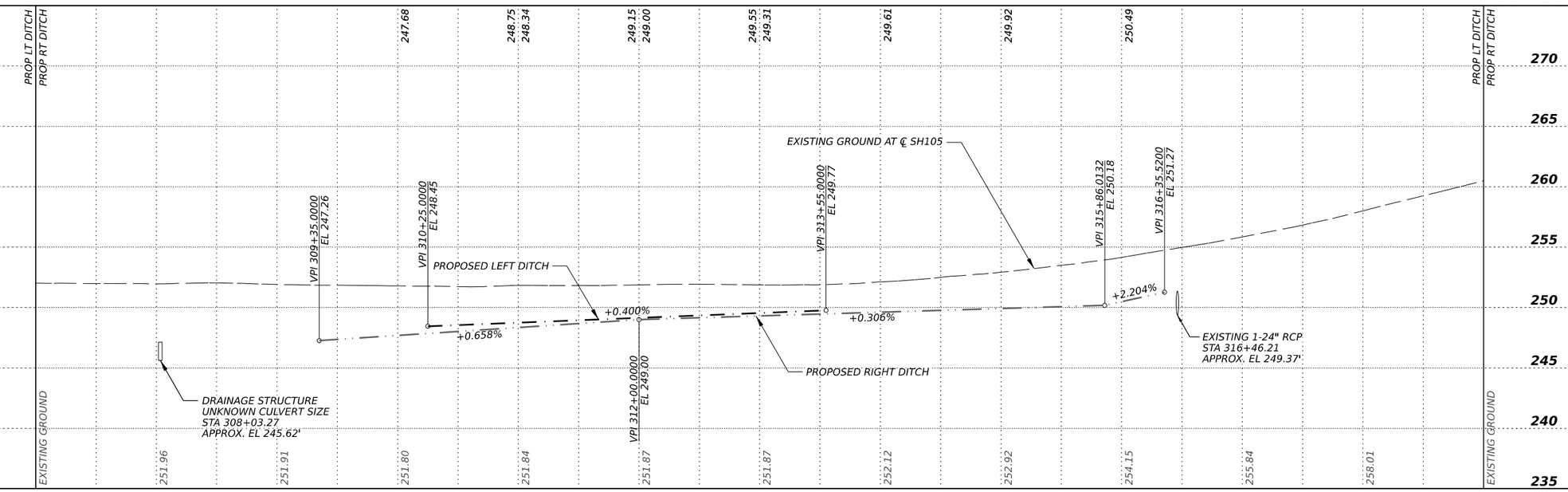

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- XX-X — CURVE ID

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
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LICENSED PROFESSIONAL ENGINEER
3/22/2024

HORZ 0 50' 100'
VERT 0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

PLAN & PROFILE

STA 307+00 TO END

SHEET 23 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		139

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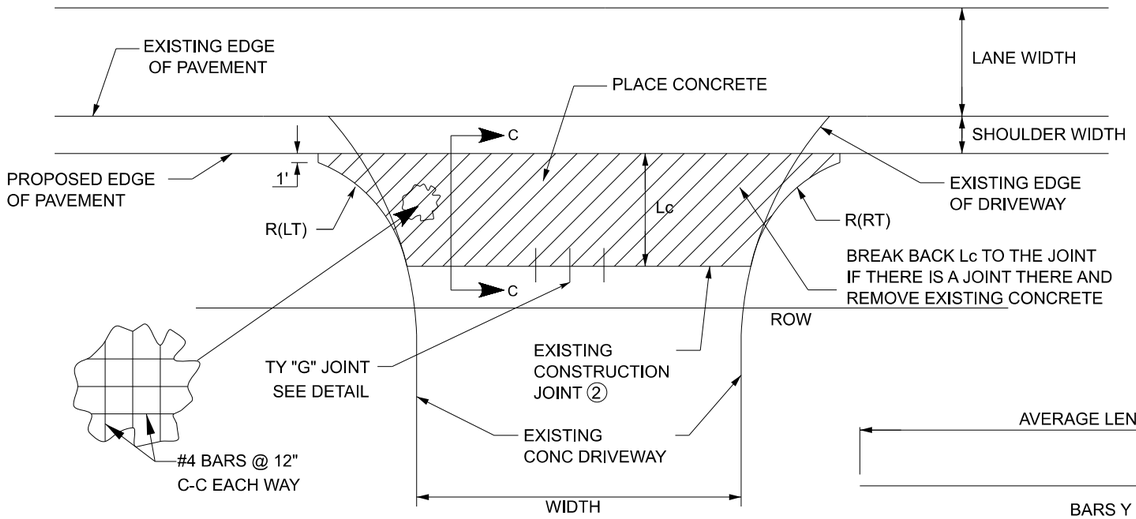
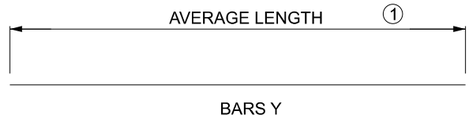
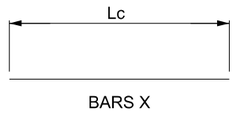
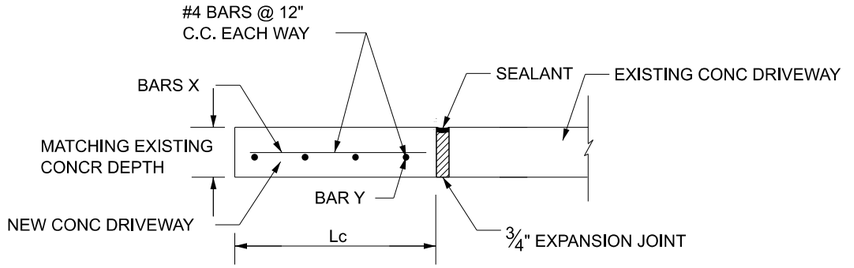


PLAN VIEW
CONCRETE DRIVEWAY
NOT TO SCALE

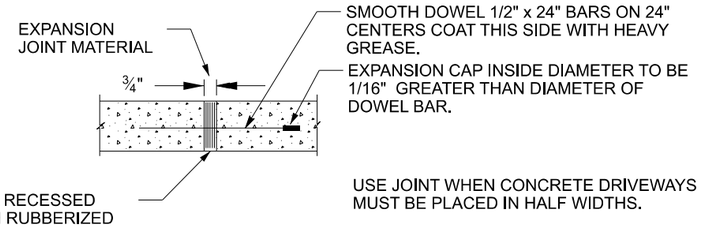




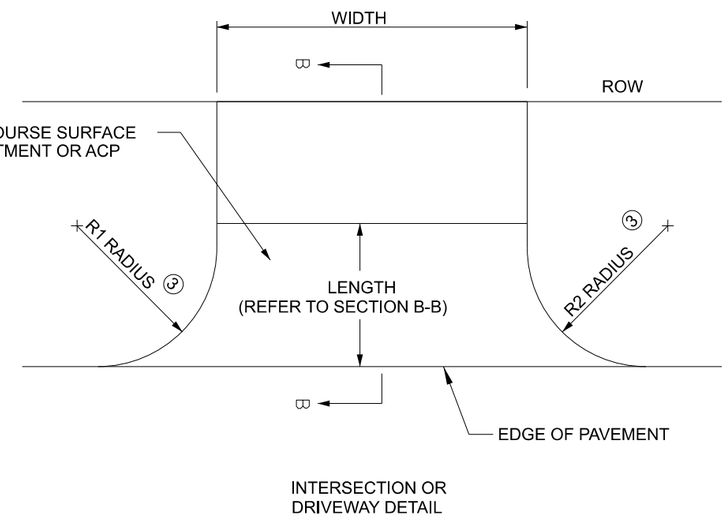
①BARS WILL BE TRIMMED IN THE FIELD TO FIT INTO DRIVEWAY RADIUS.
②IF THERE IS ONE BETWEEN Lc AND ROW.



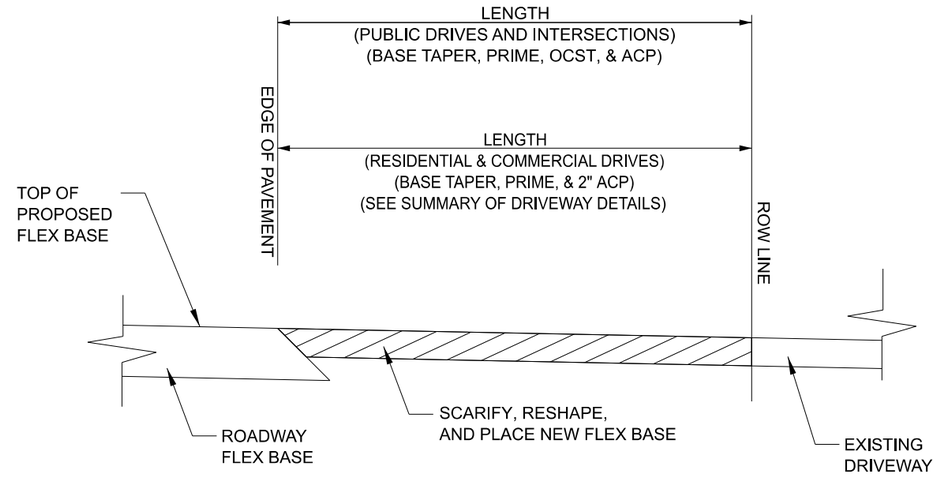
SECTION C-C
CONCRETE DRIVEWAY
NOT TO SCALE



TY "G" JOINT
NOT TO SCALE



INTERSECTION OR DRIVEWAY DETAIL



SECTION B-B

TYPICAL DRIVEWAY AND INTERSECTION DETAILS
NOT TO SCALE

③ MATCH EXISTING RADIUS FOR PUBLIC DRIVES AND INTERSECTIONS. 15 FT MINIMUM AND 30 FT MAXIMUM RADIUS FOR RESIDENTIAL AND COMMERCIAL DRIVES.

DRIVEWAY AND INTERSECTION NOTES

1. FLEX BASE DEPTH IS 6" FOR RESIDENTIAL, 8" FOR COMMERCIAL & PUBLIC INTERSECTIONS

STATE OF TEXAS
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3/22/2024

TBPE REGISTRATION NO. F-16341

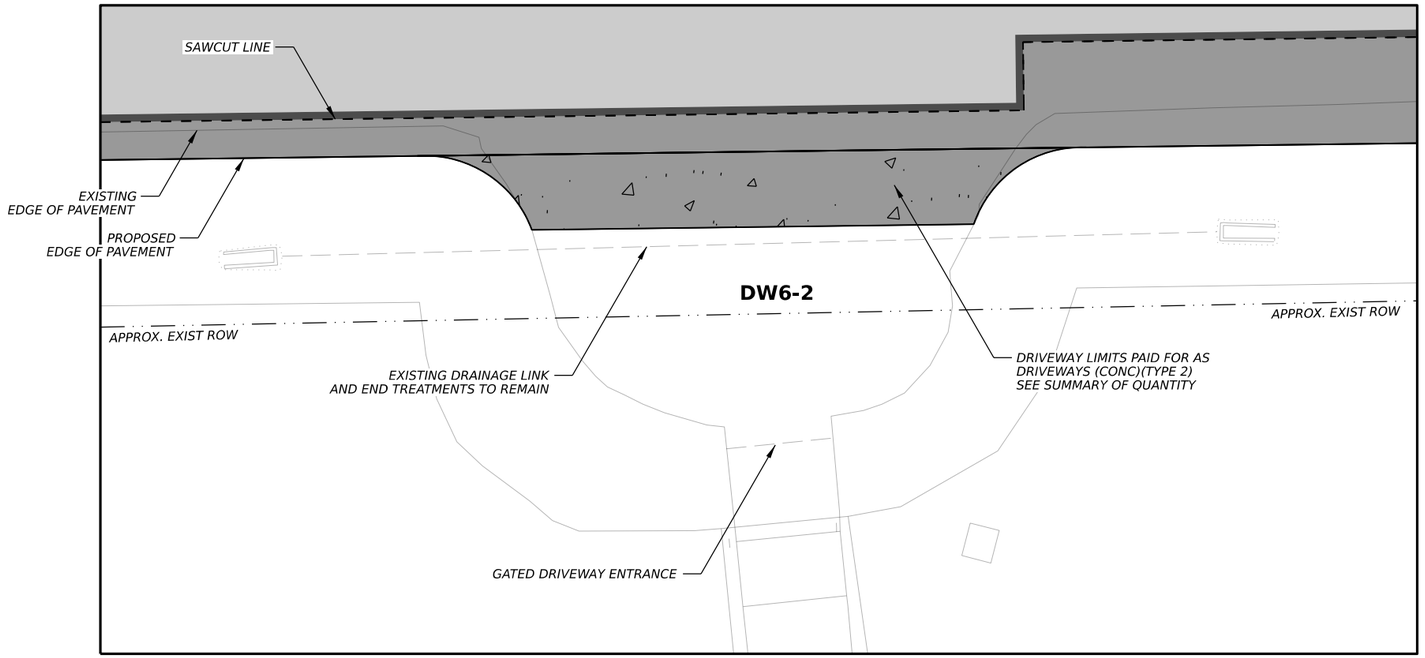
Texas Department of Transportation

SH 105

DRIVEWAY DETAILS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		140



NOTE TO SCALE

NOTES:

1. CONTRACTOR SHALL NOT CONSTRUCT DRIVEWAY UNTIL APPROVED TO DO SO BY THE ENGINEER.

NOTES (CONCRETE DRIVEWAY TYPE 2)

PLACE COLORED TEXTURED CONCRETE USING STAMPS AND POWDER COLOR HARDENERS.

PATTERN DETAILS:
CONTRACTOR SHALL MATCH THE COLOR AND TEXTURE OF THE EXISTING DRIVEWAY BY FIELD VERIFICATION. ENSURE THAT THE NEWLY CONSTRUCTED PORTION SEAMLESSLY INTEGRATES WITH THE EXISTING DRIVEWAY IN BOTH COLOR AND TEXTURE TO MAINTAIN VISUAL CONTINUITY THOUGHOUT.

TEXTURE PATTERNS ARE AVAILABLE FROM:
PROLINE CONCRETE TOOLS: www.prolinestamps.com - 800-795-4750
CADILAC CONCRETE PRODUCTS: www.cadilacconcrete.com - 604-830-1812
BOMANITE CORPORATION: www. bomanite.com - 303-369-1115

SEAL ALL COLORED TEXTURED CONCRETE WITH A CLEAR SEALER APPROVED BY THE COLOR HARDENER MANUFACTURER.

CONSTRUCTION METHODS (CONCRETE DRIVEWAY TYPE 2)

PREPARE THE SUBGRADE, BASE, OR BOTH IN ACCORDANCE WITH THE PLANS AND PERTINENT ITEMS. PLACE AND SCREED CONCRETE TO THE PROPER GRADE. WOOD FLOAT TO A UNIFORM SURFACE IN THE NORMAL MANNER.

WHILE COLORING AND STAMPING, PROTECT ADJACENT UNCOLORED CONCRETE WITH 1 MIL POLYETHYLENE FIL. MARKS LEFT IN THE UNCOLORED CONCRETE FROM CREASES IN THE POLYETHYLENE FILM ARE EXPECTED AND CONSIDERED PART OF THE AESTHETIC TREATMENT.

APPLY DRY SHAKE COLORANT AND RELEASE AGENTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

APPLY DRY SHAKE COLOR HARDENER EVENLY TO THE PLASTIC SURFACE, FOLLOWING THE MANUFACTURER'S DIRECTIONS. USE AT LEAST 65 LB. PER 12 SY. APPLY IN AT LEAST 4 SEPARATE APPLICATIONS AND WOOD-FLOAT AFTER EACH APPLICATION.

FULLY IMPRESS STAMPS INTO COLORED CONCRETE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

APPLY ONLY COLORANT MANUFACTURER APPROVED CURING AND FINISHING COMPOUNDS IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS.

SAMPLES AND SPECIMENS REQUIRE APPROVAL OF THE DISTRICT LANDSCAPE ARCHITECT.

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER
3/22/2024

TBPE REGISTRATION NO. F-16341

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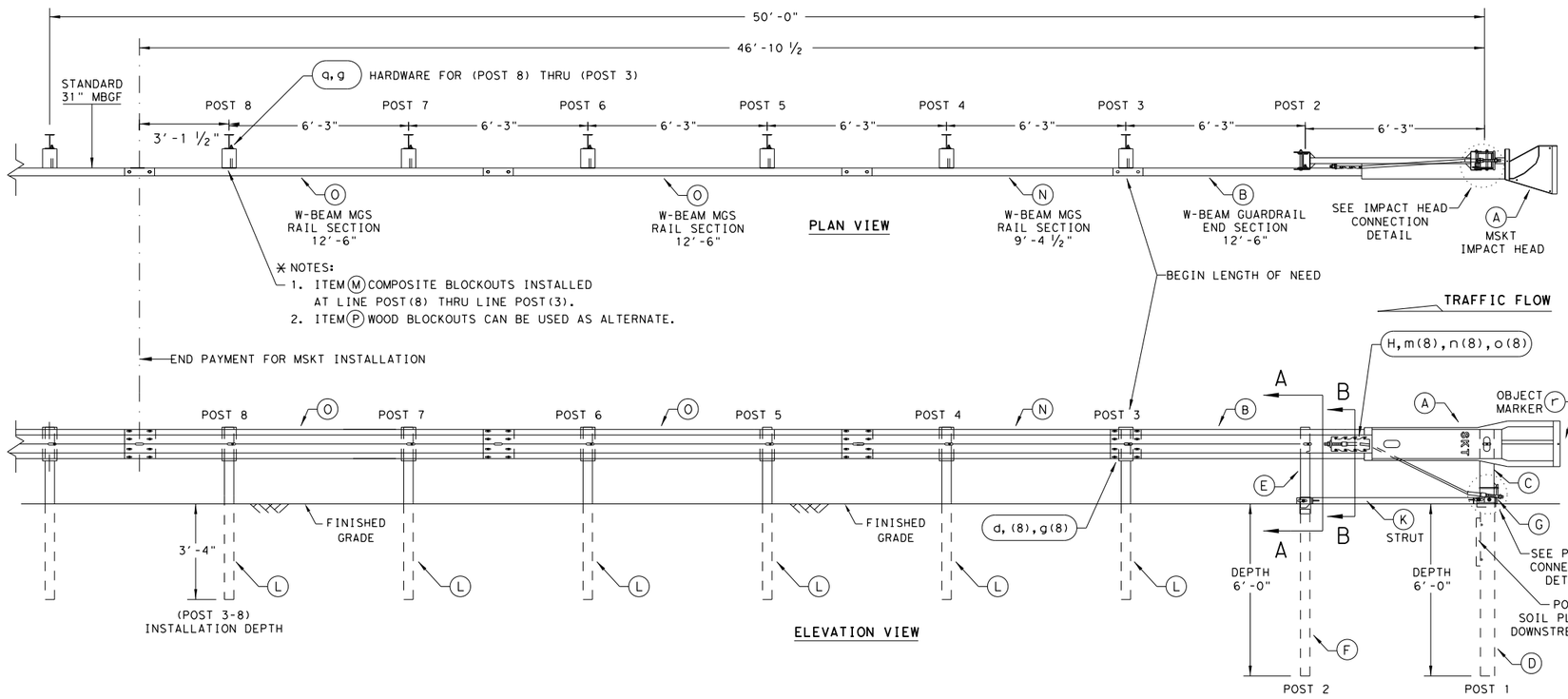
SH 105

DRIVEWAY DETAILS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		141

DATE:
FILE:



NOTE: SEE (GENERAL NOTE 14) FOR DRIVING CAP INFORMATION.

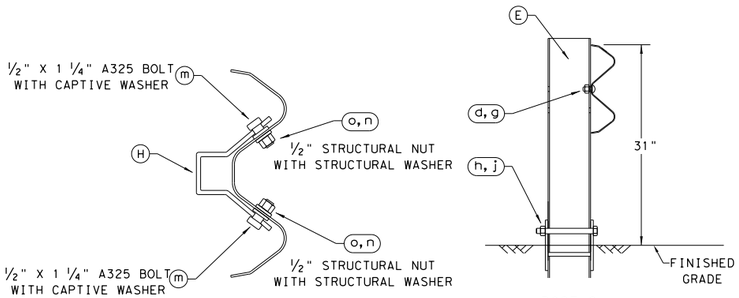
GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
7. A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
8. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
14. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
		SMALL HARDWARE	
a	2	5/8" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/8" WASHER	W0516
c	2	5/8" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" x 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/16" O.D. x 9/16" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151

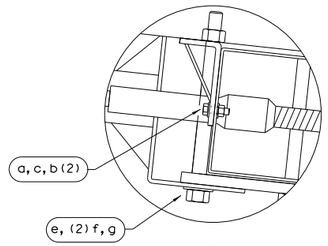
SEE NOTES: ✳

ALTERNATIVE ITEMS NOT SHOWN. ✳✳
✳ ITEM(P) 8" WOOD-BLOCKOUT
✳✳ ITEM(Q) 25'GUARD FENCE PANEL

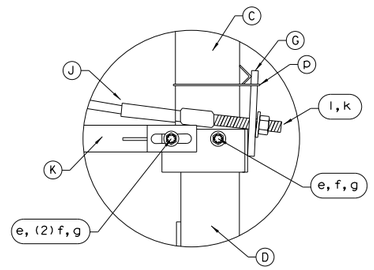


SECTION B-B
ANCHOR BRACKET

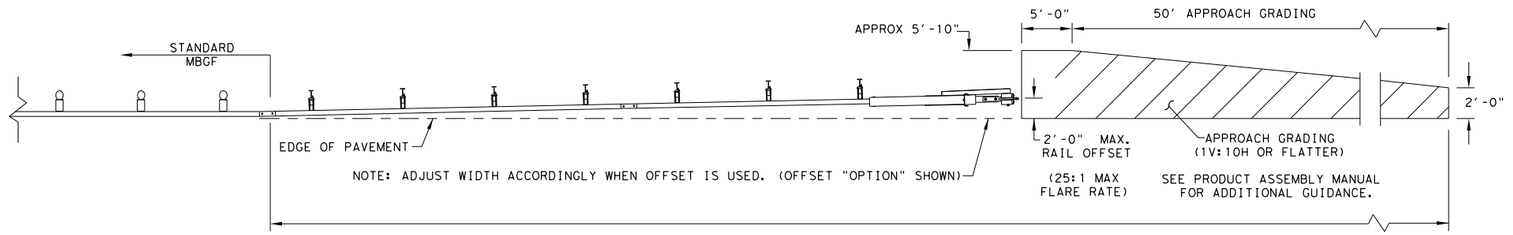
POST 2
SECTION A-A



IMPACT HEAD
CONNECTION DETAIL



POST 1
CONNECTION DETAIL



APPROACH GRADING AT GUARDRAIL END TREATMENTS

TRAFFIC FLOW

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

SINGLE GUARDRAIL TERMINAL

MSKT-MASH-TL-3

SGT(12S)31-18

FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL	
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0338	01	068	SH 105	
	DIST	COUNTY		SHEET NO.	
	BRY	GRIMES		142	

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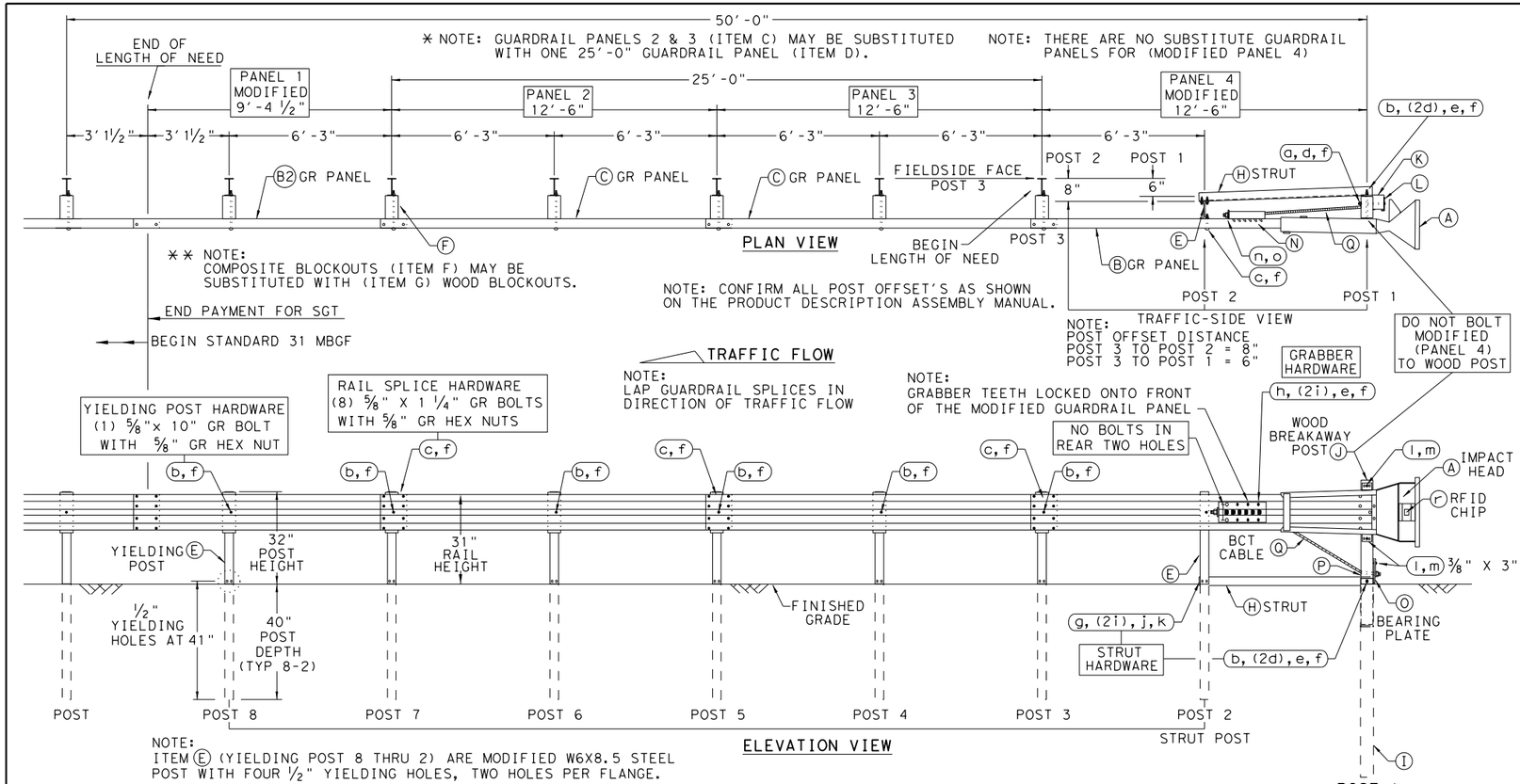
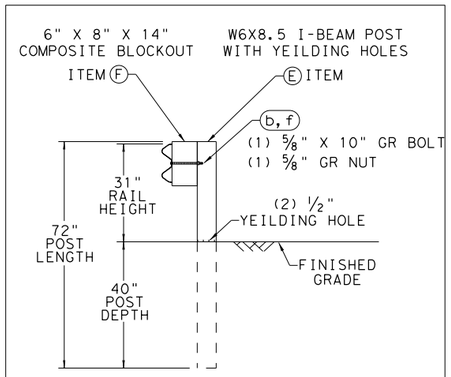


GENERAL NOTES

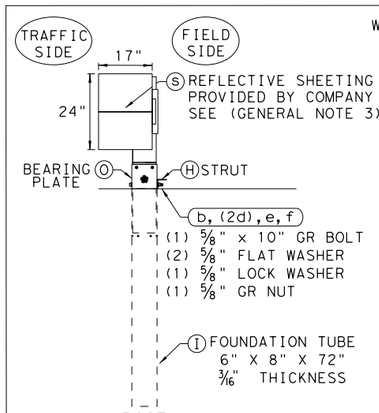
1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
3. MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
5. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
6. (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
9. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
10. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
11. THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" x 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" x 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" x 7 1/2" x 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
		SMALL HARDWARE	
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563DH HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

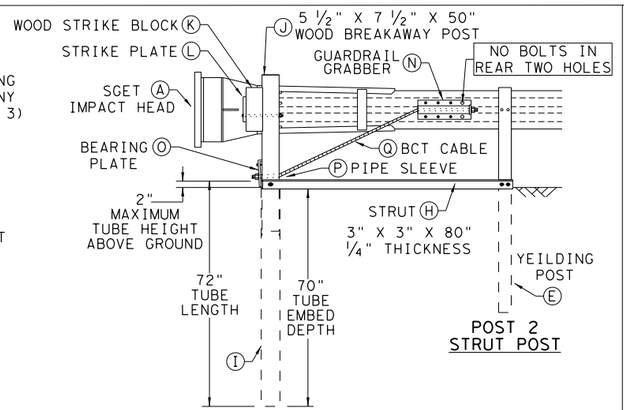
ALTERNATIVE ITEMS
NOTE: SEE PLAN VIEW
* D
** G



SIDE VIEW
POST 8 - POST 3 (TYP)

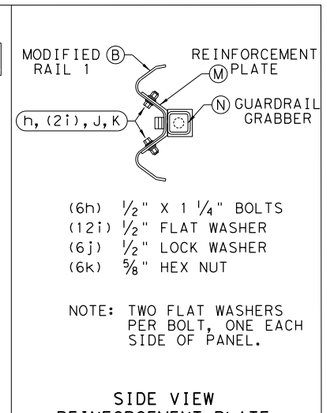


POST 1
FRONT END VIEW

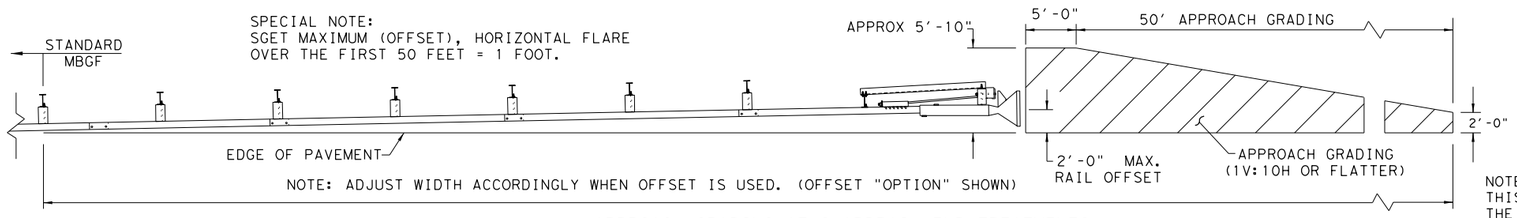


POST 1
FIELD SIDE VIEW

POST 2
STRUT POST



SIDE VIEW
REINFORCEMENT PLATE
WITH GUARDRAIL GRABBER



APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SGET TERMINAL SYSTEM AND IS NOT INTENDED TO REPLACE THE MANUFACTURER'S ASSEMBLY MANUAL.

Texas Department of Transportation
Design Division Standard

SPIG INDUSTRY, LLC
SINGLE GUARDRAIL TERMINAL
SGET - TL-3 - MASH
SGT(15)31-20

FILE: sgt153120.dgn	DN: TxDOT	CK: KM	DW: VP	CK: VP		
© TxDOT: APRIL 2020	CONT	SECT	JOB		HIGHWAY	
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	BRY	GRIMES			143	

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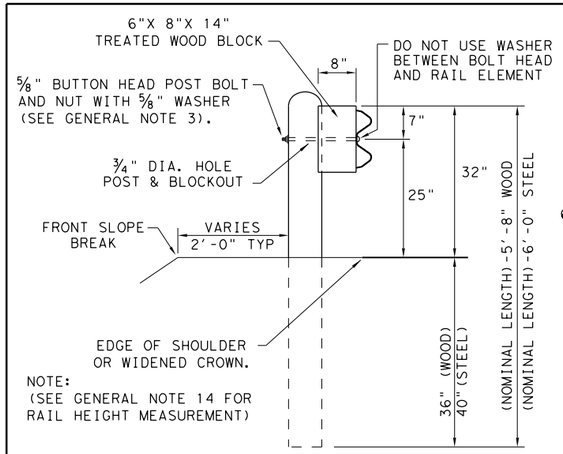
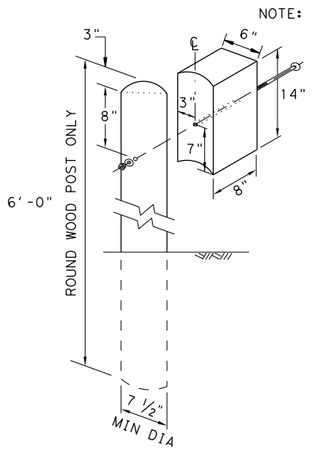
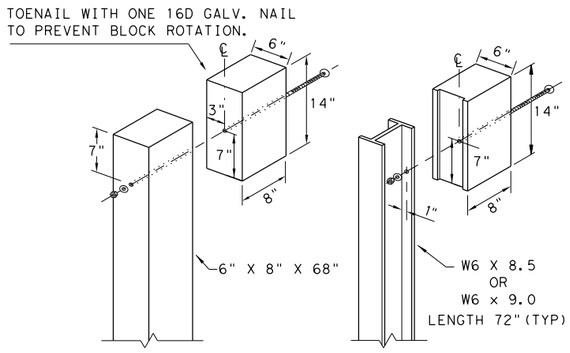


TYPICAL POST PLACEMENT



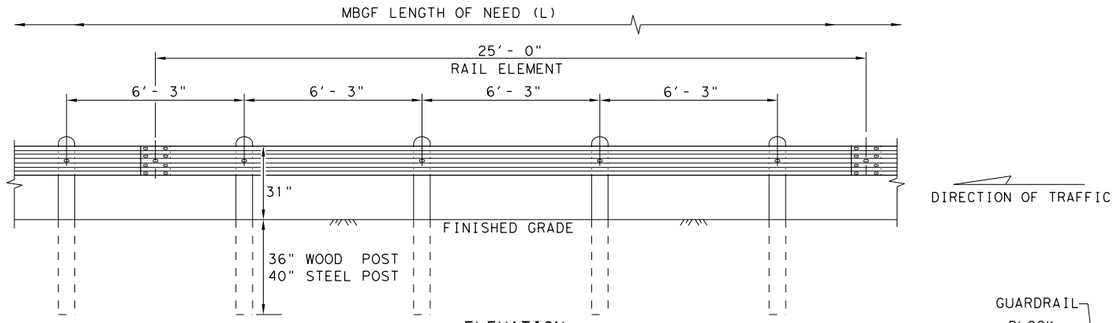
WOOD BLOCK TO
ROUND WOOD POST



WOOD BLOCK TO
RECTANGULAR WOOD POST

ROUTED WOOD BLOCK
TO I-BEAM STEEL POST

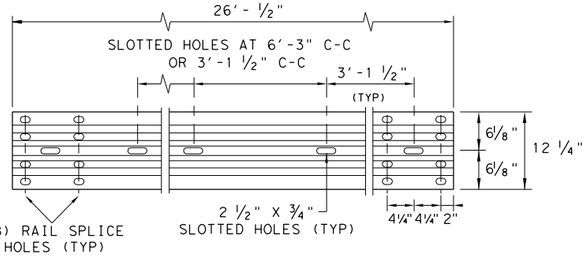
NOTE: ** "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



DIRECTION OF TRAFFIC

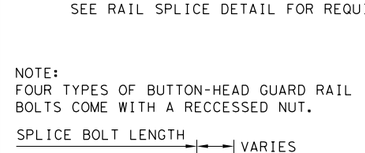
ELEVATION
MID-SPAN RAIL SPLICE

SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



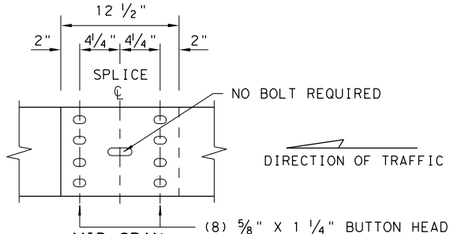
ELEVATION 25'- 0"(NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES.
SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



BUTTON HEAD BOLT

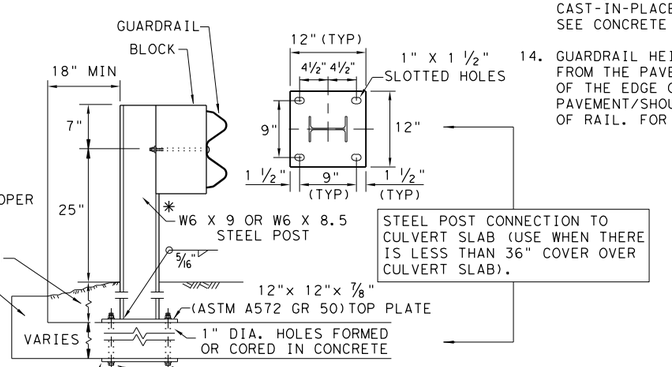
NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



DIRECTION OF TRAFFIC

MID-SPAN
RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.



* POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.

STEEL POST CONNECTION TO CULVERT SLAB (USE WHEN THERE IS LESS THAN 36" COVER OVER CULVERT SLAB).

LOW FILL CULVERT POST

NOTE: TWO INSTALLATION OPTIONS.

1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 7/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS 1/4" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
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	BRY	GRIMES		144

DATE:
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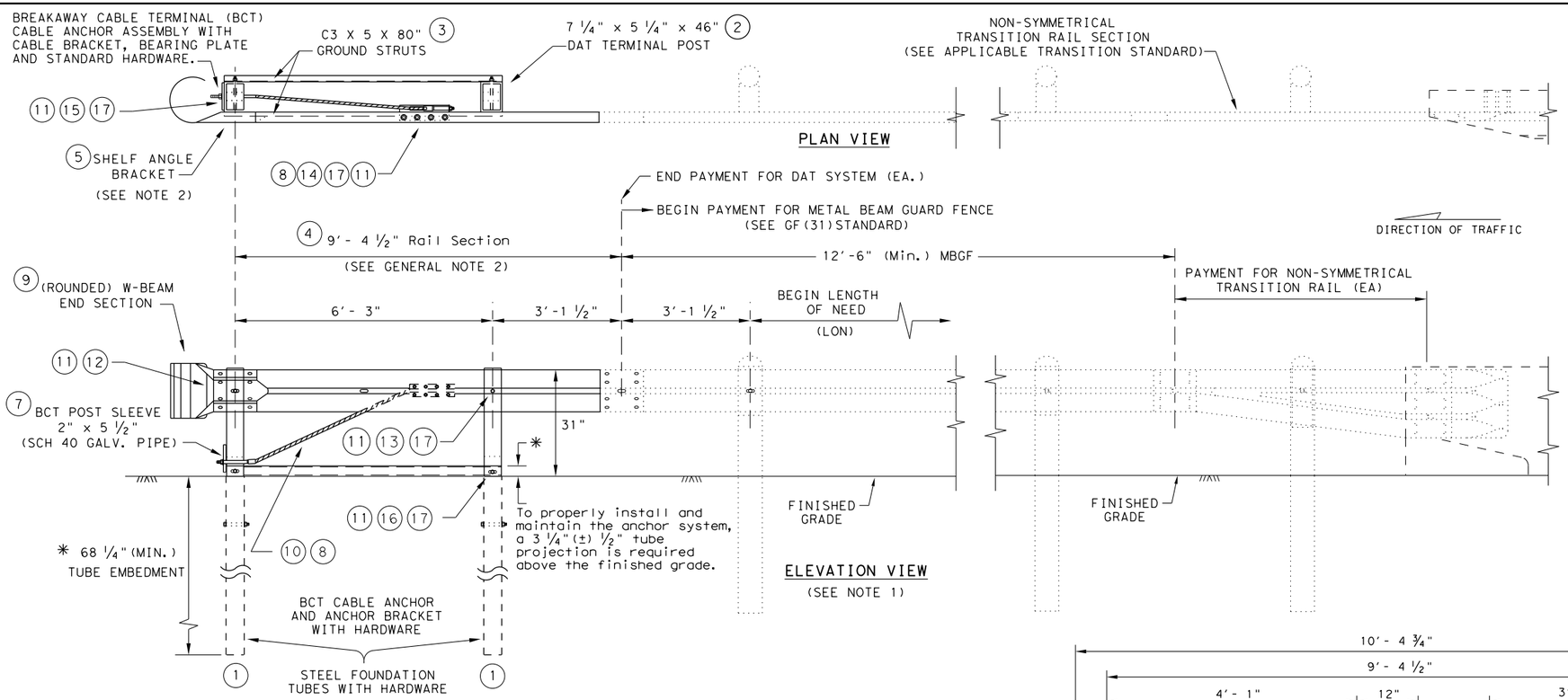


DOWNSTREAM ANCHOR TERMINAL (DAT)

NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.

GENERAL NOTES

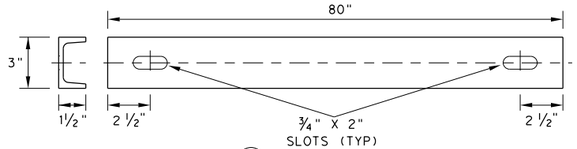
1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN 3 3/4" ABOVE THE FINISHED GRADE.
4. ALL HARDWARE FOR DAT SHALL BE ASTM A307 UNLESS OTHERWISE SHOWN.
5. REFER TO GF(31) SHEET FOR TERMINAL CONNECTION DETAILS.

MOW STRIP INSTALLATION

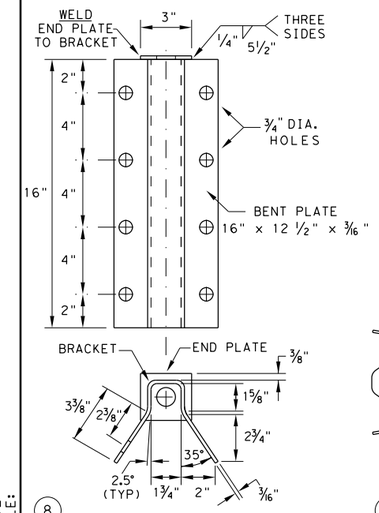
IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

#	(DAT) PARTS LIST	QTY
(1)	STEEL FOUNDATION TUBE	2
(2)	DAT TERMINAL POST	2
(3)	CHANNEL STRUT	2
(4)	TERMINAL RAIL ELEMENT	1
(5)	SHELF ANGLE BRACKET	1
(6)	BCT BEARING PLATE	1
(7)	BCT POST SLEEVE	1
(8)	GUARDRAIL ANCHOR BRACKET	1
(9)	(ROUNDED) W-BEAM END SECTION	1
(10)	BCT CABLE ANCHOR	1
(11)	RECESSED NUT, GUARDRAIL	20
(12)	1 1/4" BUTTON HEAD BOLT	4
(13)	10" BUTTON HEAD BOLT	2
(14)	5/8" X 2" HEX HEAD BOLT	8
(15)	5/8" X 8" HEX HEAD BOLT	4
(16)	5/8" X 10" HEX HEAD BOLT	2
(17)	5/8" FLAT WASHER	18

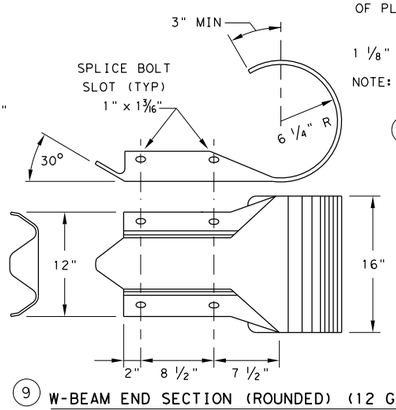
(4) TERMINAL RAIL ELEMENT FOR DAT



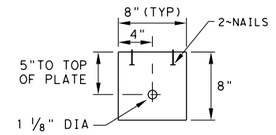
(3) CHANNEL STRUT
C3 X 5 X 80", GRADE A36



(8) GUARDRAIL ANCHOR BRACKET

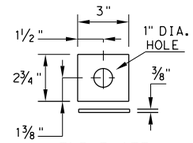


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

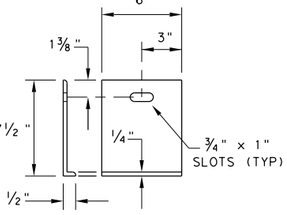


NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

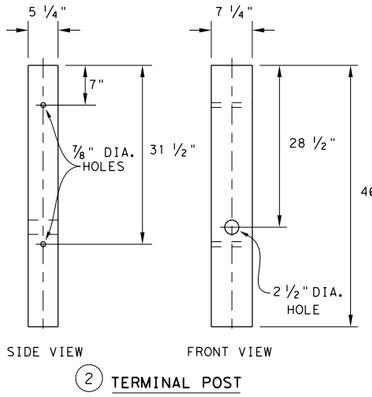
(6) BEARING PLATE
8"x 8"x 5/8" R



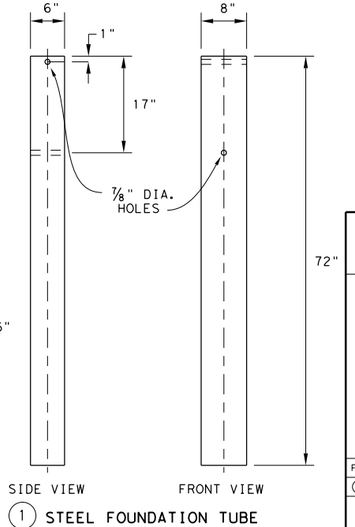
END PLATE



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" WOOD POST



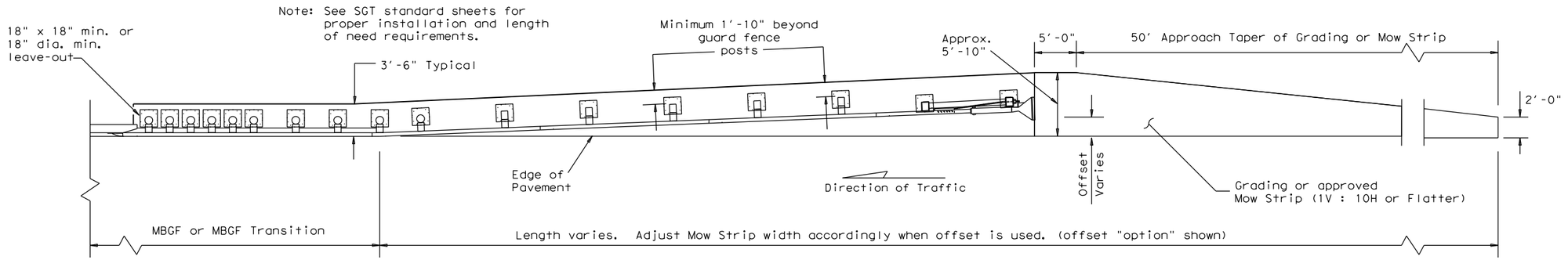
(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" STEEL TUBE

Texas Department of Transportation — Design Division Standard

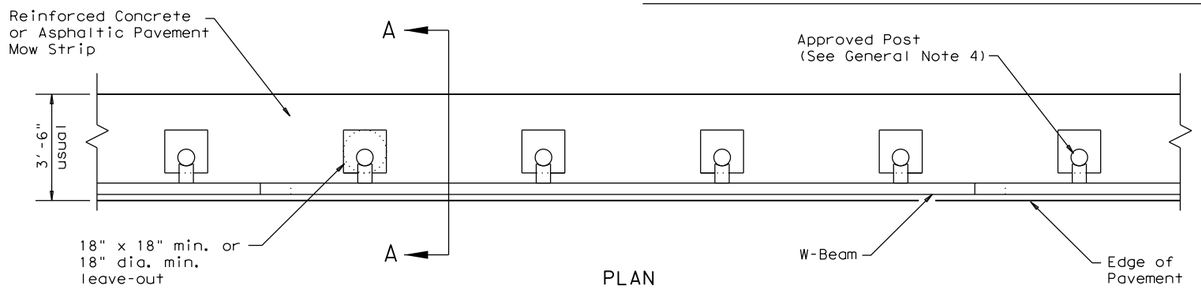
METAL BEAM GUARD FENCE
(DOWNSTREAM ANCHOR TERMINAL)
TL-3 MASH COMPLIANT

GF(31)DAT-19

FILE: gf31dat19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		145

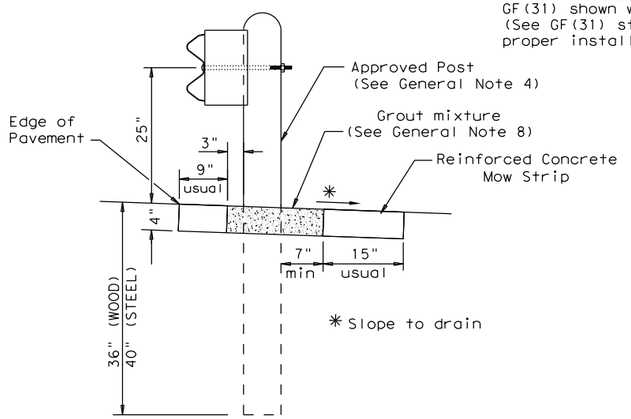


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



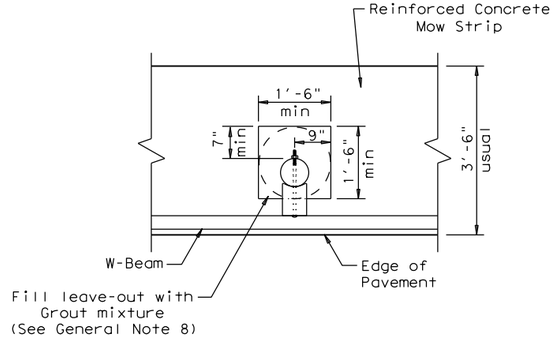
PLAN

GF(31) shown with Mow Strip
(See GF(31) standard sheet for proper installation)



SECTION A-A

Typical



MOW STRIP DETAIL

Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.

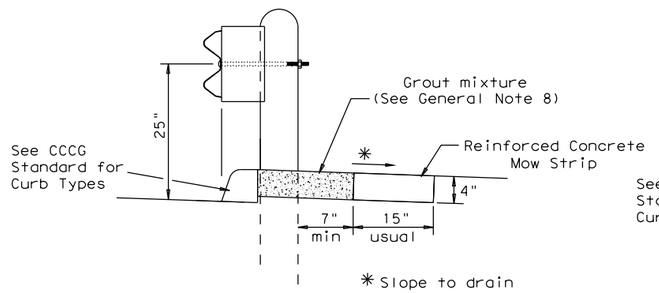
Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

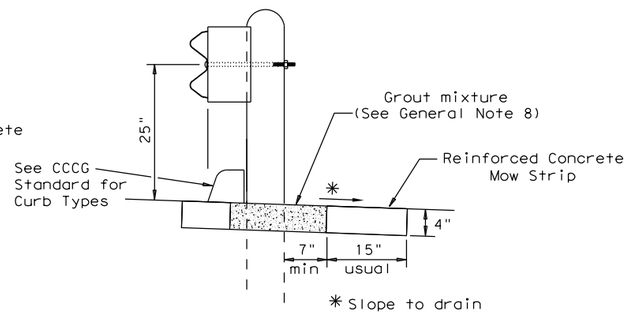
GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.



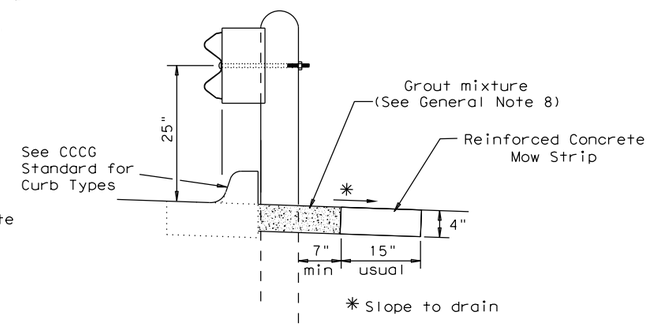
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		146

DATE: 3/22/2024
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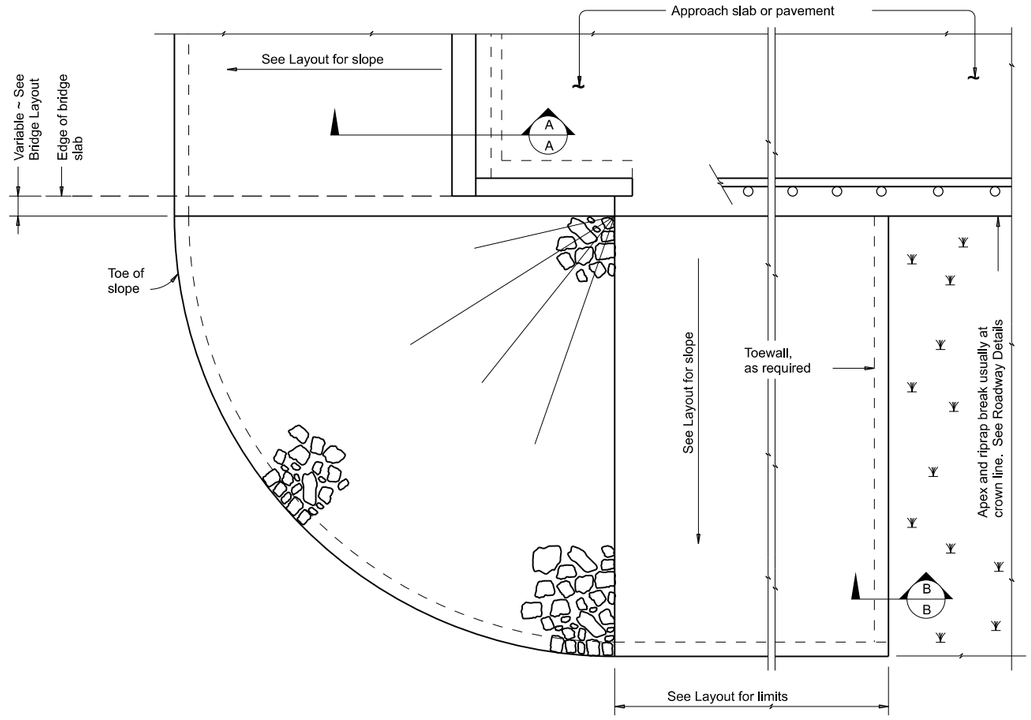
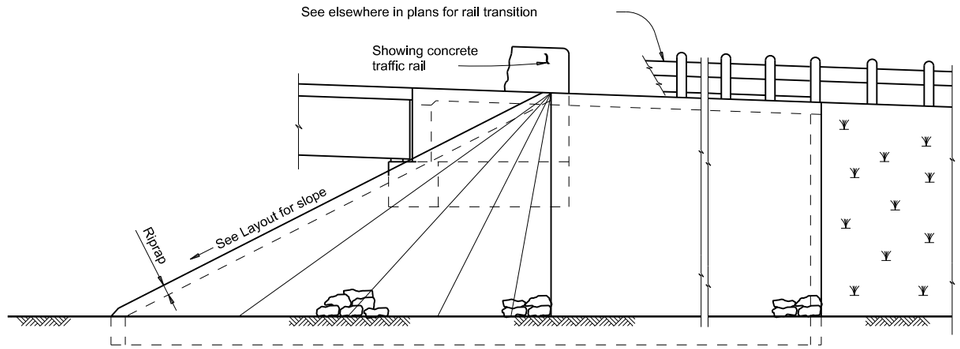
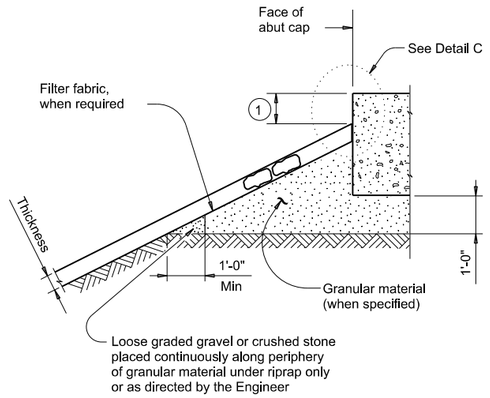


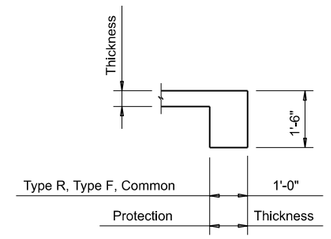
PLAN



ELEVATION

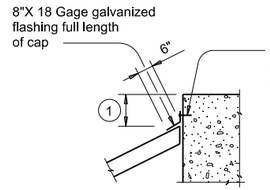


SECTION A-A AT CAP

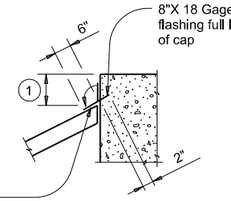


SECTION B-B

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



CAP OPTION A



CAP OPTION B

DETAIL C

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-19 (1).dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
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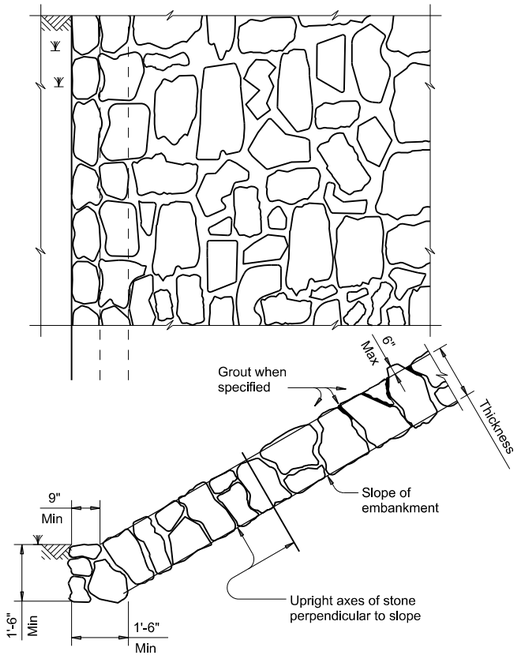


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

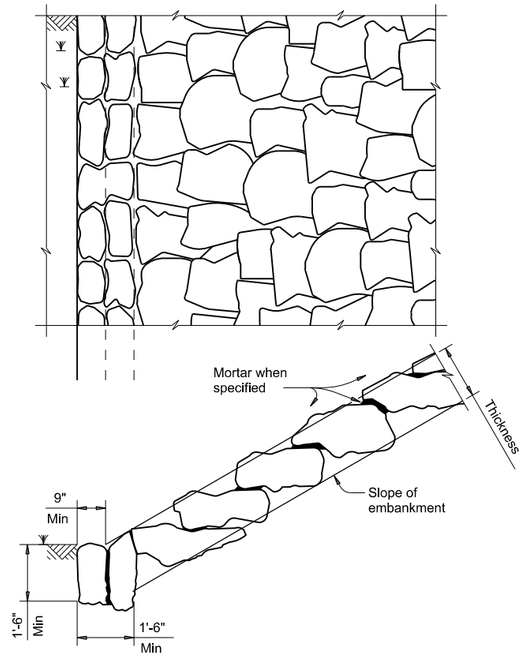


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

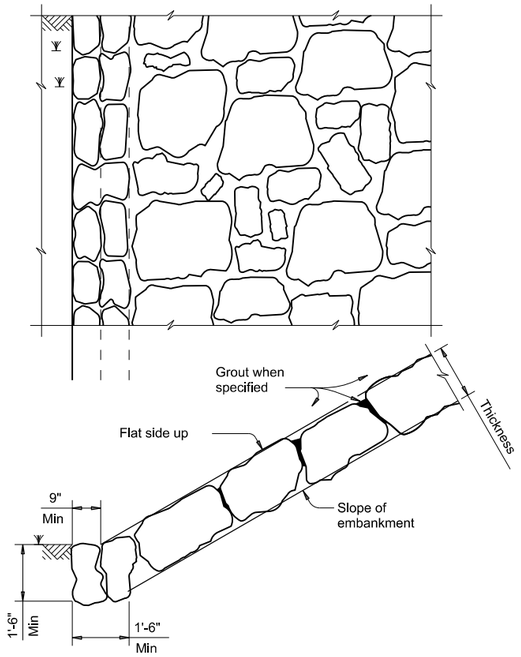


FIGURE 3 ~ TYPE F STONE RIPRAP

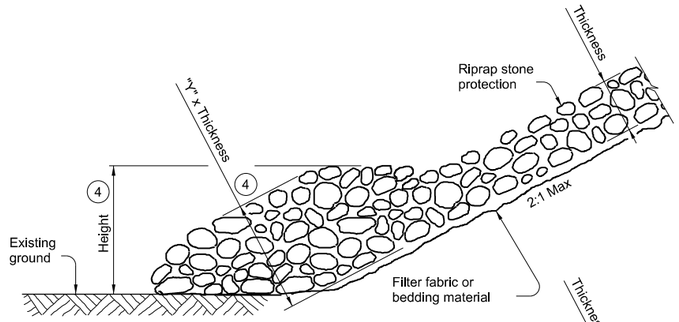
grouted

2 Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.

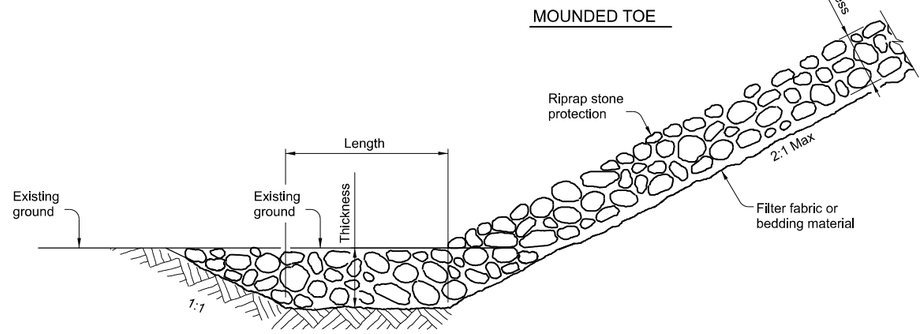
3 Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

4 "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.

5 List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

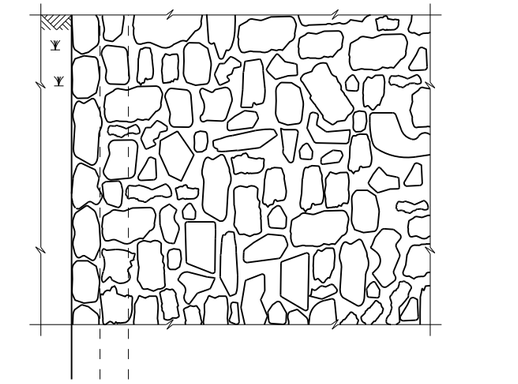


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

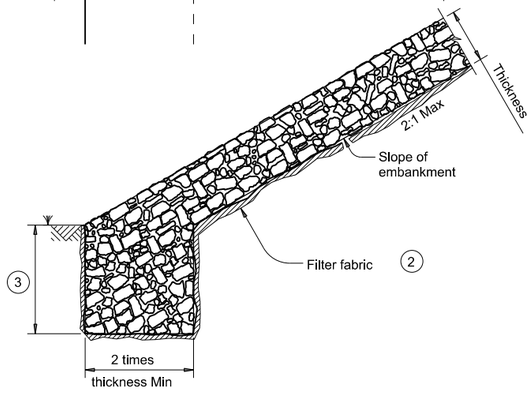


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

STONE RIPRAP

SRR

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©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
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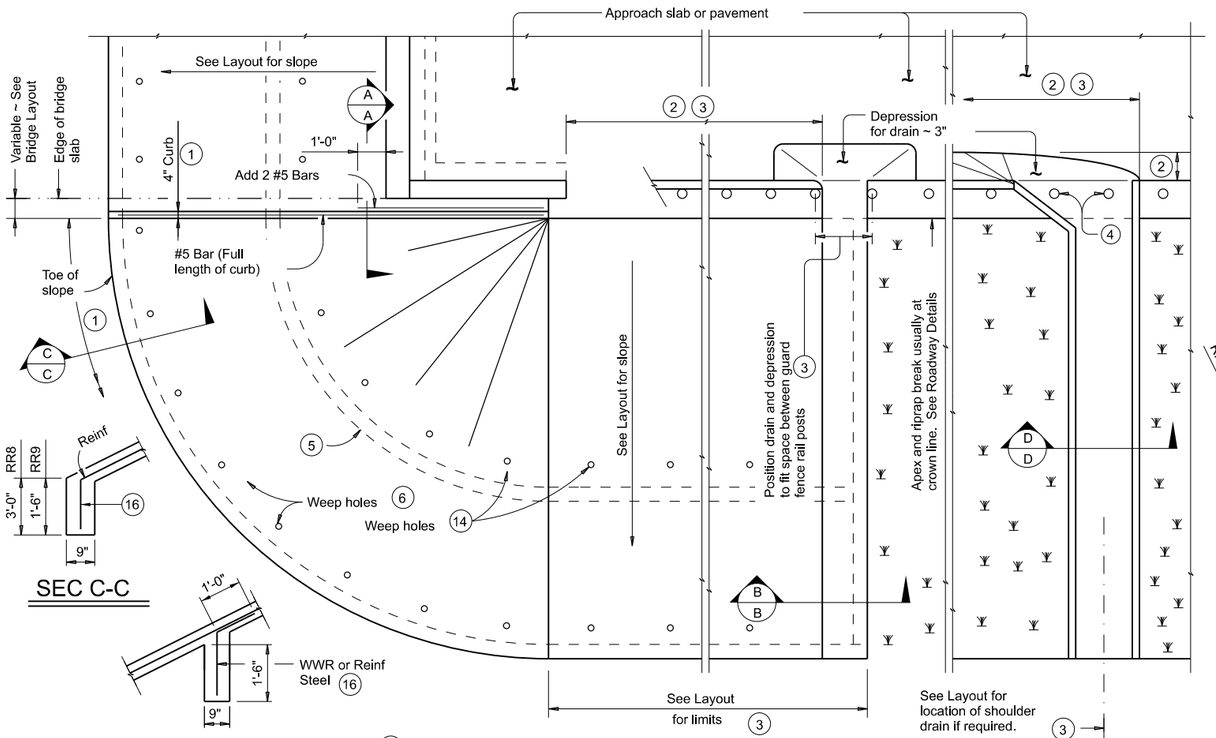
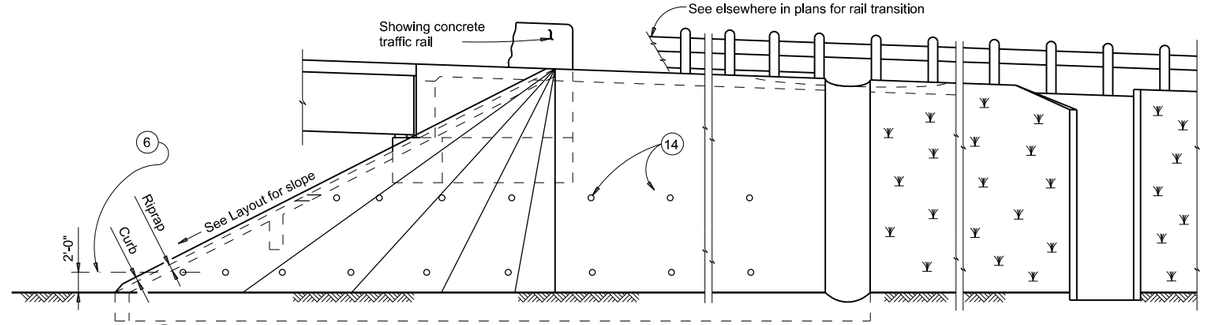
DATE:
FILE:



PLAN

SEC C-C

INTERMEDIATE TOEWALL (5)



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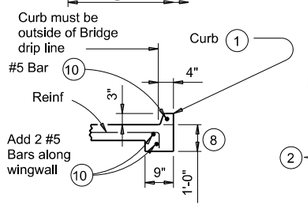
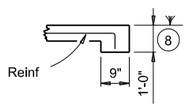
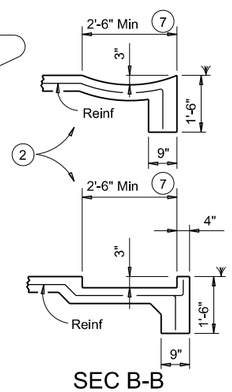


SEC A-A



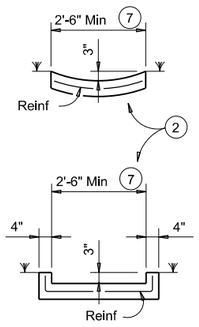
SEC B-B

(No drain)



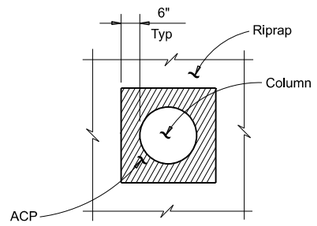
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

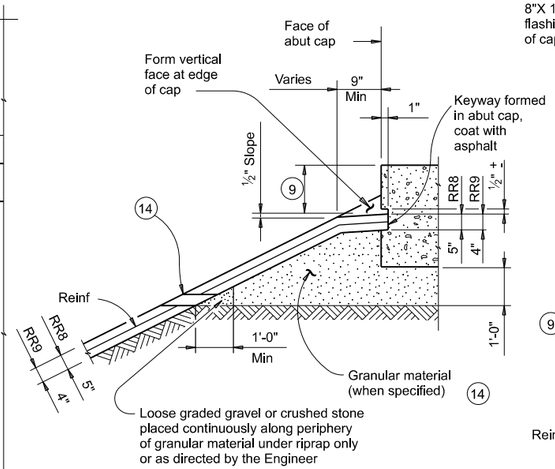
(Shoulder drain)



Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

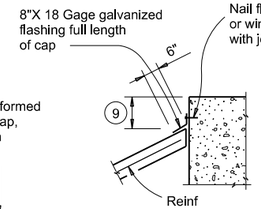
(As directed by the Engineer)



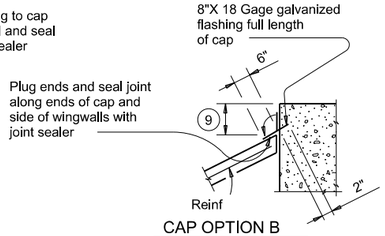
SHOWING KEYWAY OPTION

1. When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.
2. Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.
3. Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.
4. See details elsewhere in plans for installation of guard fence posts through concrete riprap.
5. Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.
6. Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.
7. Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.
8. Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.
9. Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.
10. #5 bars shown are required even when synthetic fiber reinforcing option is selected.
11. Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.
12. Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.
13. Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.
14. If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.
15. 8" x 18 Gage Galv Sheet Metal
16. Provide WWR or #3 bars, with 1'-0" extension into slope.
17. WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic reinforcing fiber is utilized.

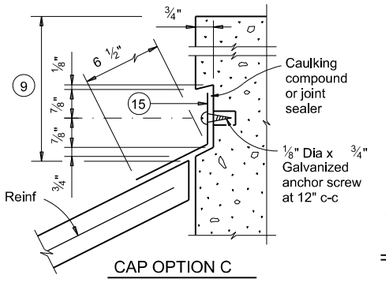
FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF



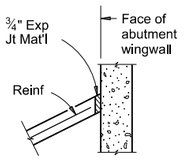
CAP OPTION A



CAP OPTION B

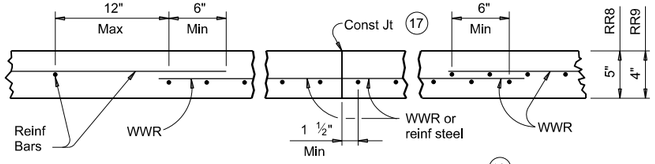


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

GENERAL NOTES:

Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064, unless otherwise shown.

Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

FILE: MS-CRR-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
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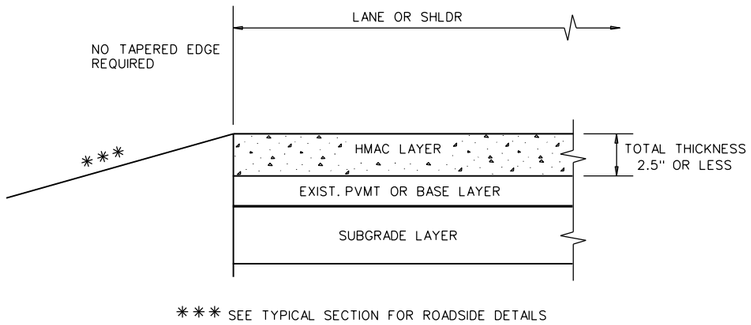
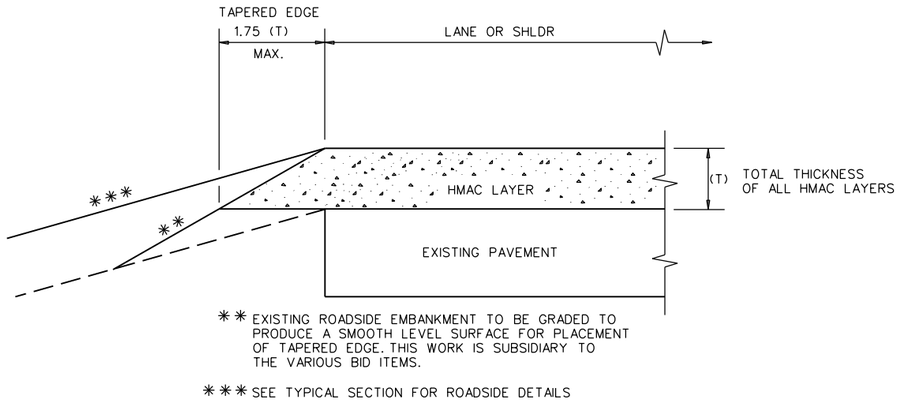
	BRY	GRIMES		149



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 1

THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS

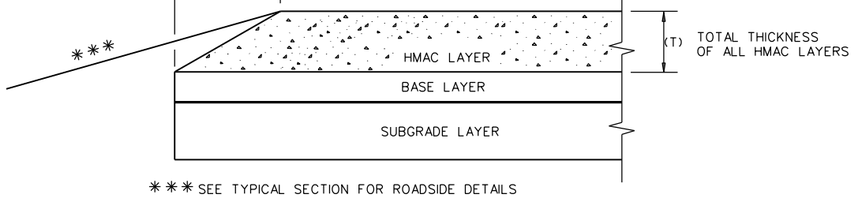


** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2

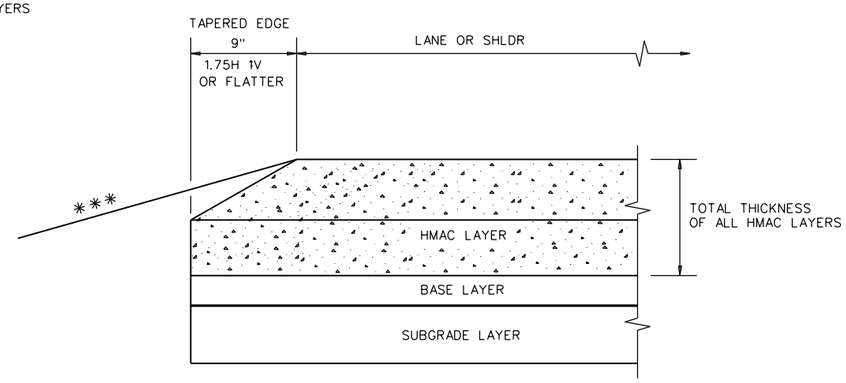
OVERLAY OF EXISTING PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3

NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4

NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 5" OR GREATER

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H 1V: OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

(NOT TO SCALE)

DATE: 3/22/2024
FILE: tehmac11.dgn

Texas Department of Transportation

Design Division Standard

TAPERED EDGE DETAILS HMAC PAVEMENT

TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:
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REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		150

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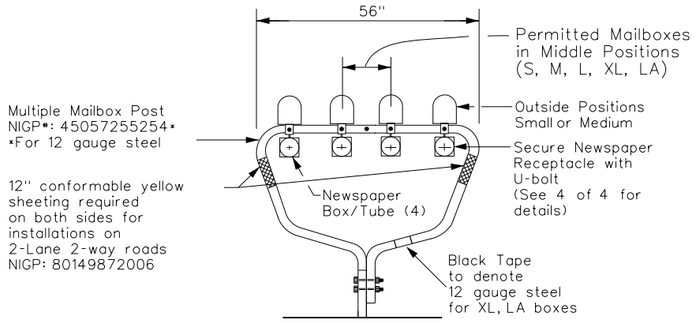
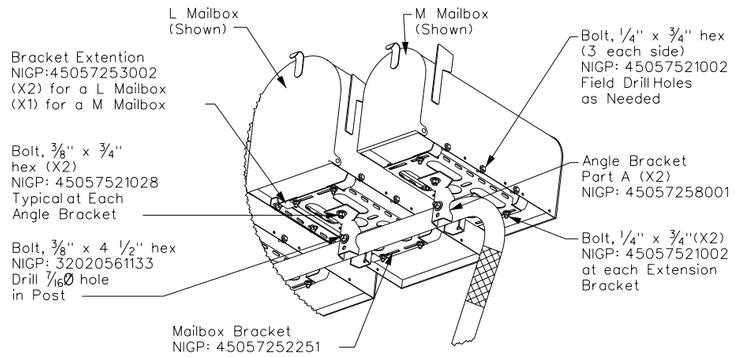
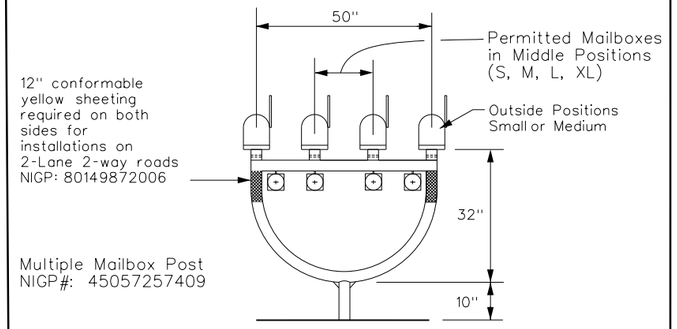
DATE: 3/22/2024 9:53:20 AM
FILE: mb-21(1).dgn

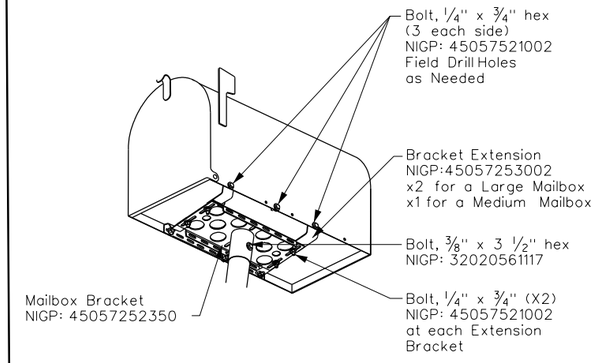
TYPE 1 - MULTIPLE





TYPE 4 - MULTIPLE





MAILBOX SIZES

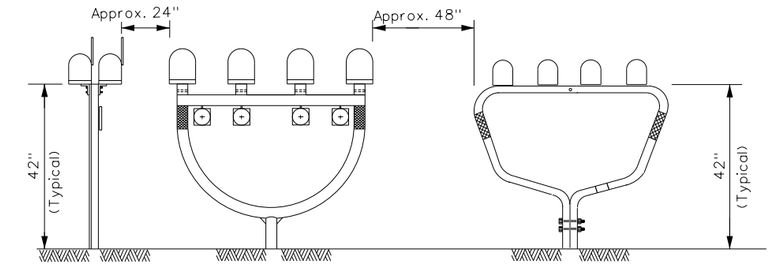
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX ×× WEIGHT
	LENGTH	WIDTH	HEIGHT	
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" ×	8" ×	11 1/2" ×	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

× See Note 1.
×× Excluding Molded Plastic on 4 X 4 Post

GENERAL NOTES:

1. Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
2. Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

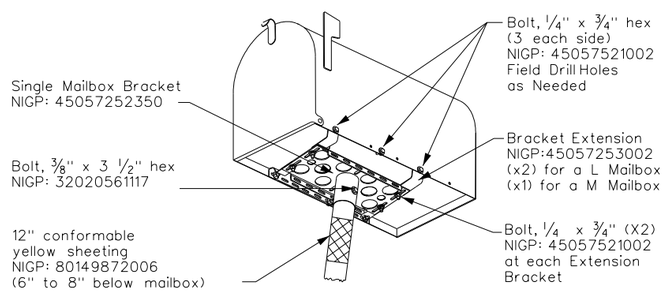
TYPICAL INSTALLATION MEASUREMENTS

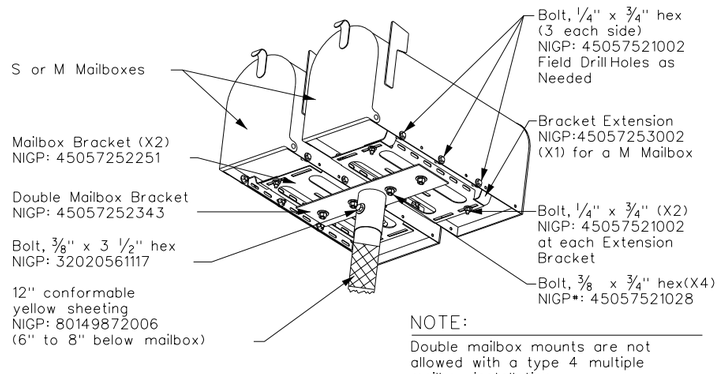


NOTE:

Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

TYPE 2 and 4 - SINGLE/DOUBLE

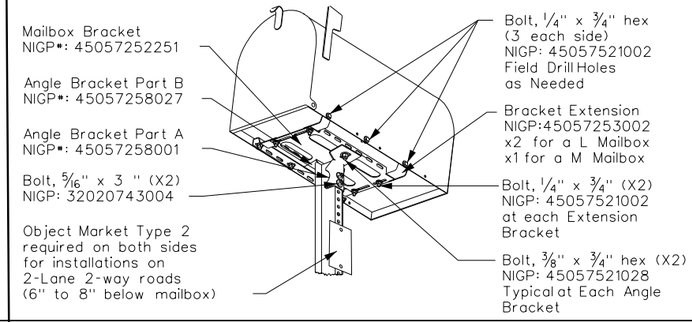


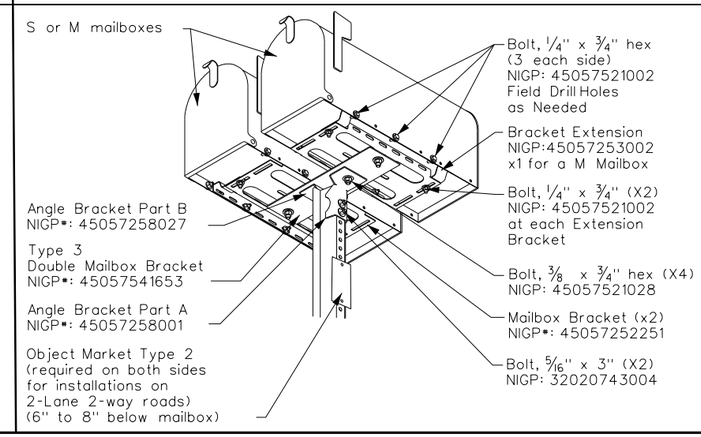


NOTE:

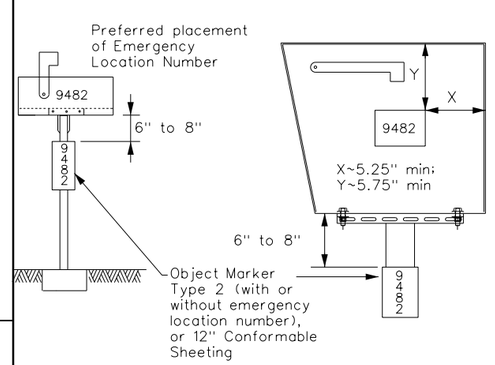
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

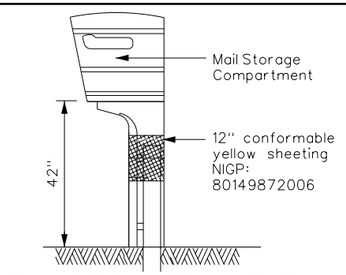


NOTES:

1. Location numbers are provided by homeowner. Minimum size 1" height.
2. Location number is typically placed on the mailbox in a contrasting color.
3. Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
4. Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
5. See 3 of 4 for Foundation details.
6. See 4 of 4 for Hardware details.

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation

Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	BRY	GRIMES		151

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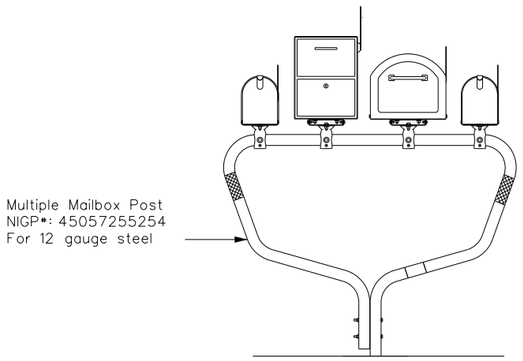
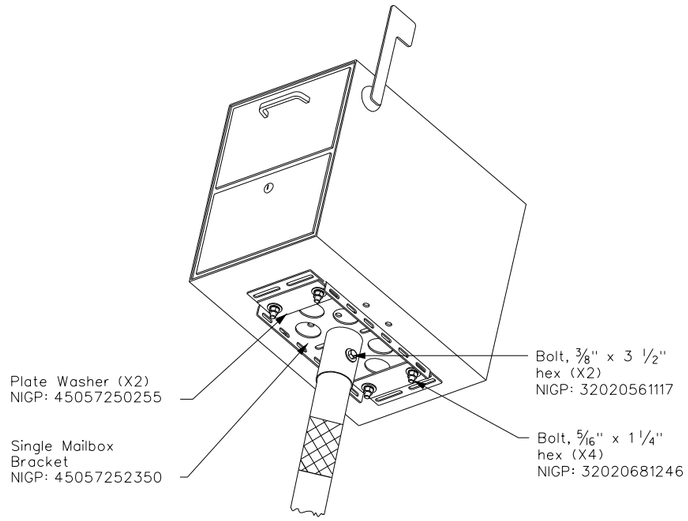
FILE: mb-21(1).dgn

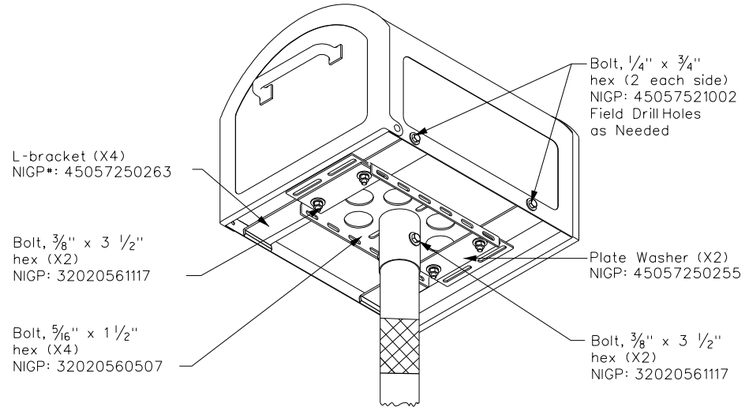
TYPE 1 - MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

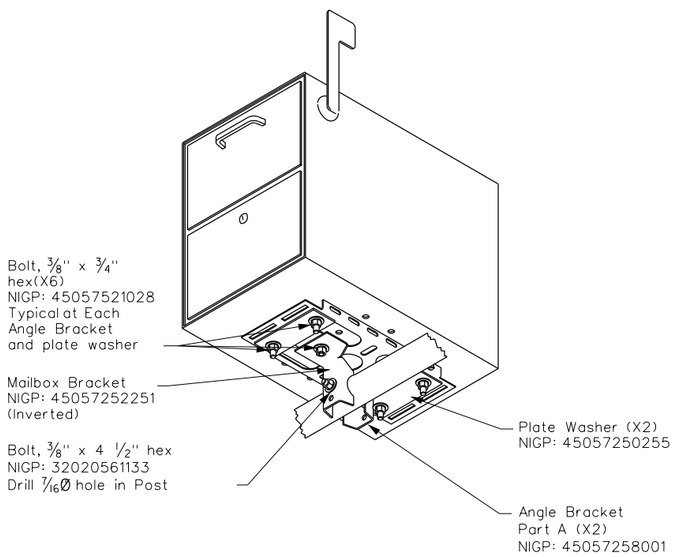


TYPE 2/4 - SINGLE XL MAILBOX

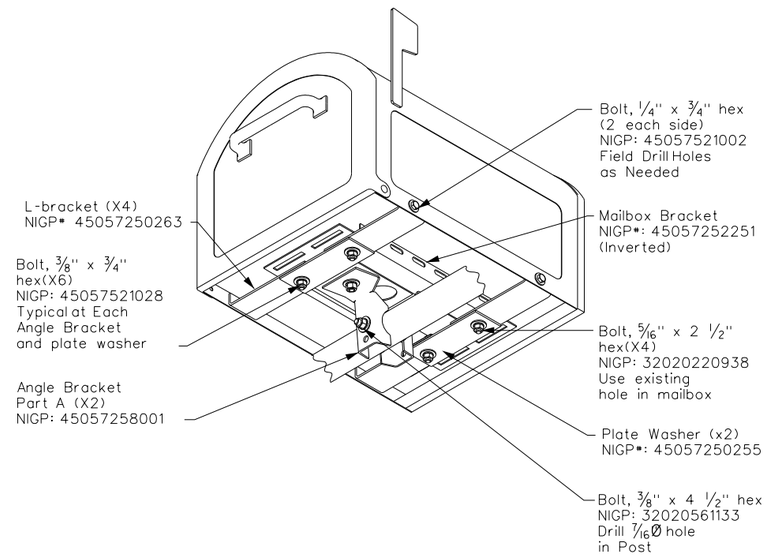


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

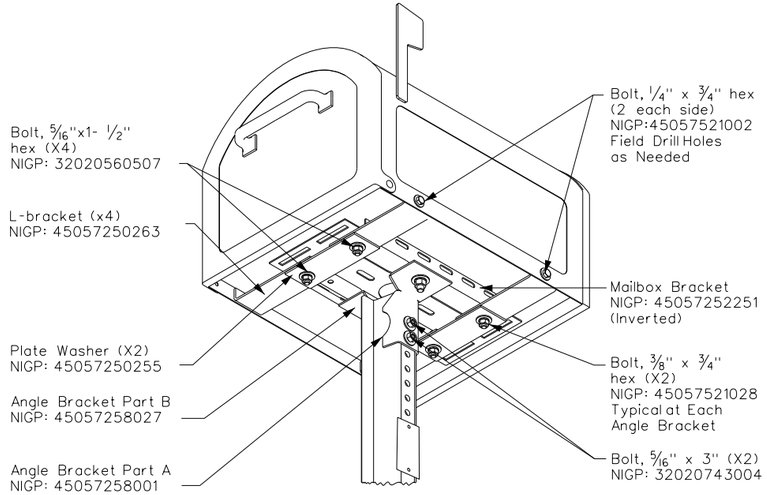
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation — Maintenance Division Standard

XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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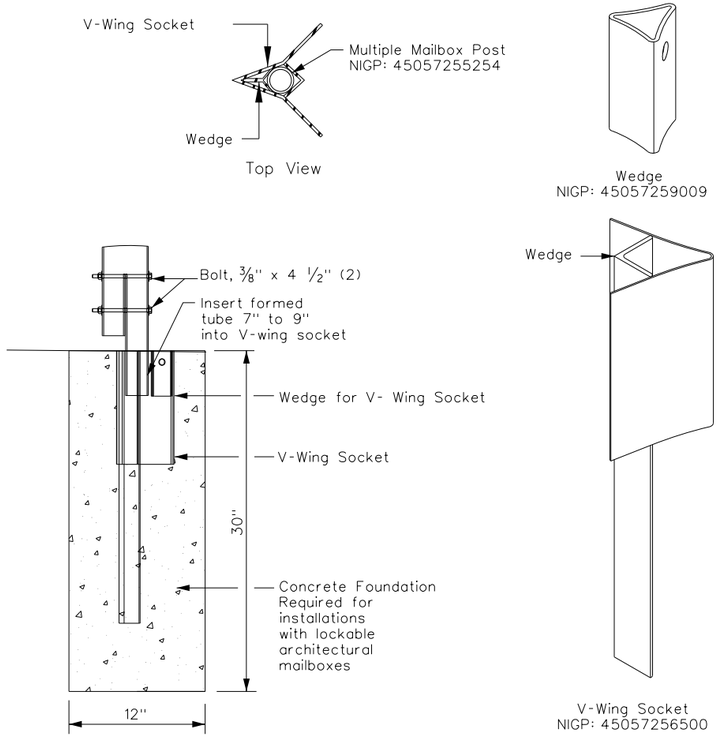
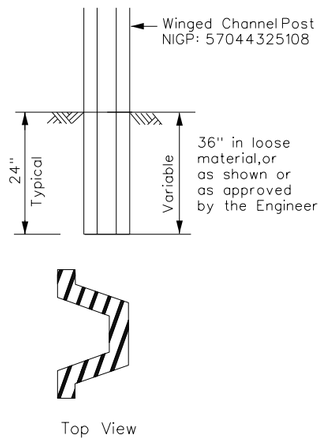
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		152

DATE: 3/22/2024 9:53:20 AM
FILE: mb-21(1).dgn

TYPE 1 - SUPPORT/FOUNDATION
Thin Wall Tube w/ V-LOC Anchorage



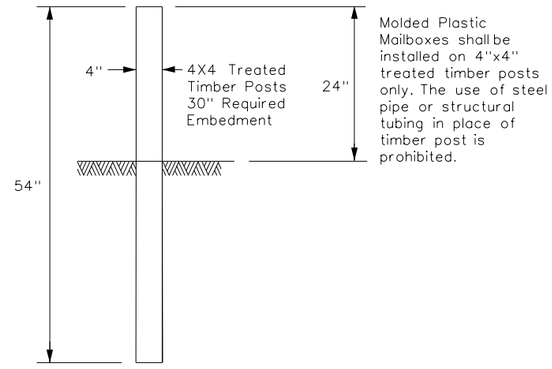
TYPE 3 - SUPPORT/FOUNDATION



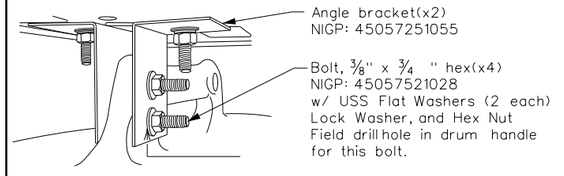
NOTES:

1. Attach Object Marker(OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT



Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

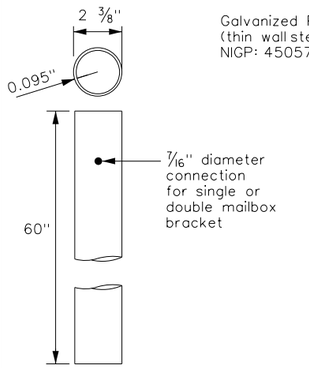
NOTES:

1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

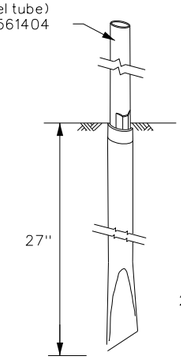
GENERAL NOTES:

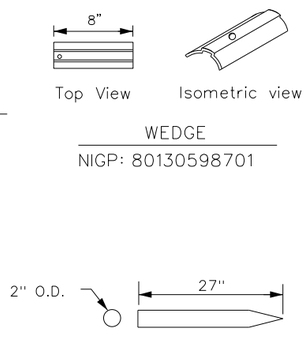
1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition, only on Type 1, Type 2, and Type 4

TYPE 2 - SUPPORT/FOUNDATION
Thin Wall Steel Tube w/Wedge Anchor System



MAILBOX POST

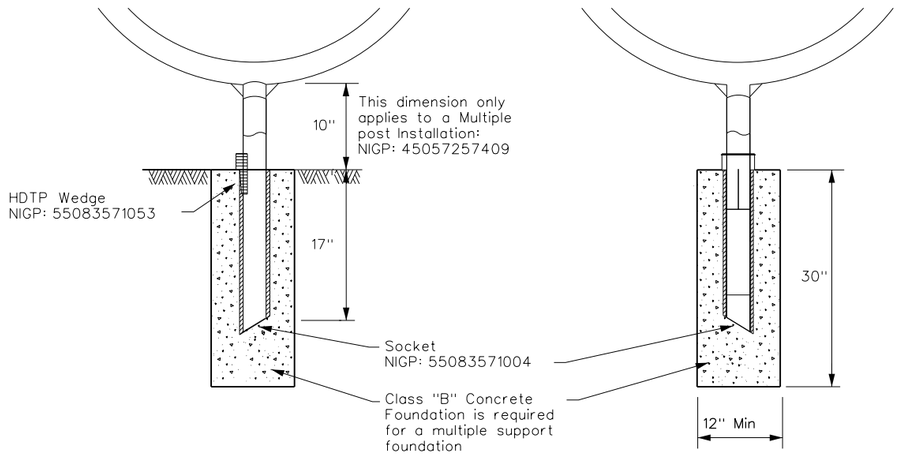




WEDGE
NIGP: 80130598701

WEDGE ANCHOR
NIGP: 80130238407

TYPE 4 - SUPPORT/FOUNDATION
Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



SHEET 3 OF 4

Texas Department of Transportation | Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

MB(3)-21

FILE: MB-21.dgn	DN:	CK:	DW:	CK:
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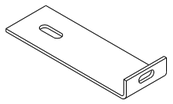
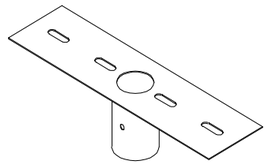
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		153

TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL	Molded Plastic	S, or M
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)	4x4 Timber	Construction Barrel
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket forXL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252343 (Double Mount Bracket) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	None	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete	None	None



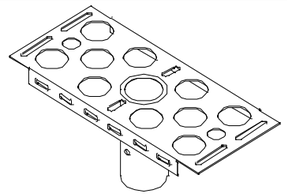
NIGP: 45057250263

L-Bracket x4 for
XL sized mailboxes



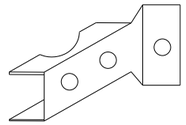
NIGP: 45057252343

Double Mailbox Bracket
For Type 2 and Type 4
double mount



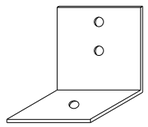
NIGP: 45057252350

Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



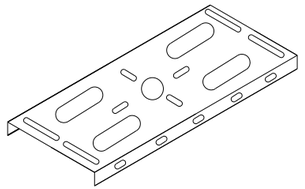
NIGP: 45057258001

Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



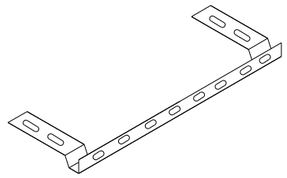
NIGP: 45057251055

Type 6 Angle Bracket
(2 per mailbox)



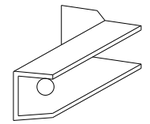
NIGP: 45057252251

Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



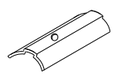
NIGP: 45057253002

Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



NIGP: 45057258027

Part "B" Angle Bracket
For Type 3 single
and double



NIGP: 80130598701

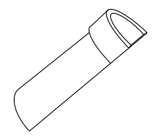
Wedge for Type 2

NIGP: 45057250255

Plate Washer for Architecural
and XL Mailboxes

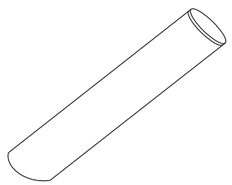
NIGP: 45057541653

Type 3 double mailbox bracket



NIGP: 55083571053

Type 4 Mailbox Wedge

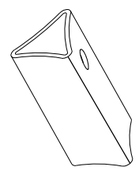


NIGP: 55083571004

Type 4 Mailbox Socket

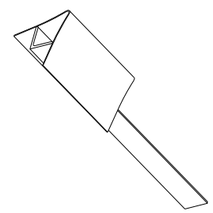
NIGP: 80130238407

Type 2 Wedge Anchor



NIGP: 45057259009

Wedge for Type 1 V-wing Socket



NIGP: 45057256500

V-wing Socket for
Type 1 Foundation

NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

1. Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
2. A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS

MB-(X) ASSM TY (XXX) (X)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- MP = Molded Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

DATE: 3/22/2024 9:53:20 AM
FILE: mb-21(1).dgn

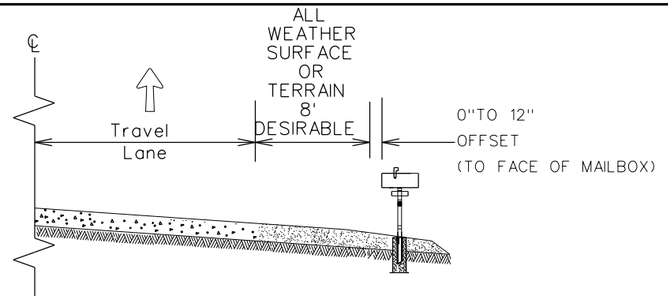
SHEET 4 OF 4

Texas Department of Transportation — Maintenance Division Standard

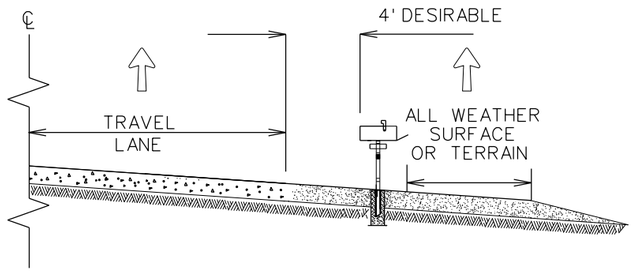
NIGP PARTS LIST AND COMPATIBILITY

MB(4)-21

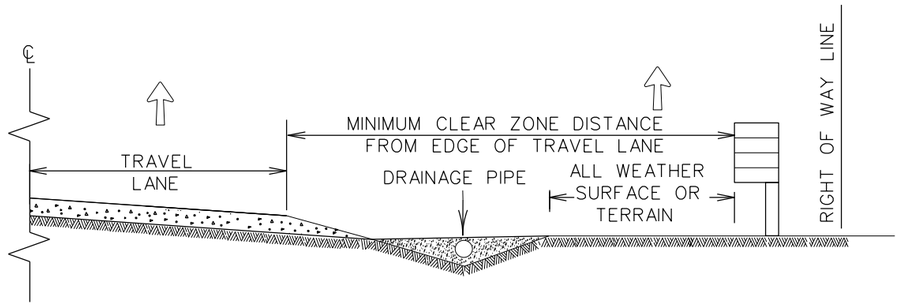
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		154



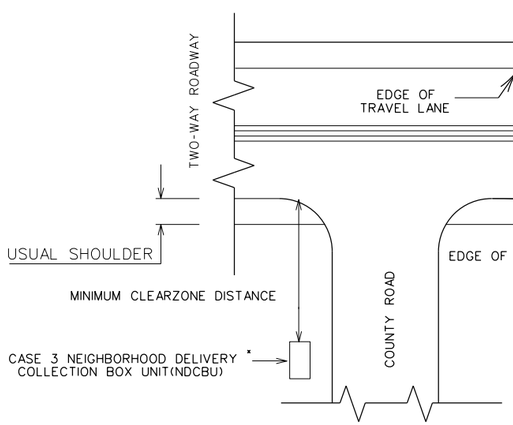
CASE 1. OFF TRAVEL WAY DELIVERY

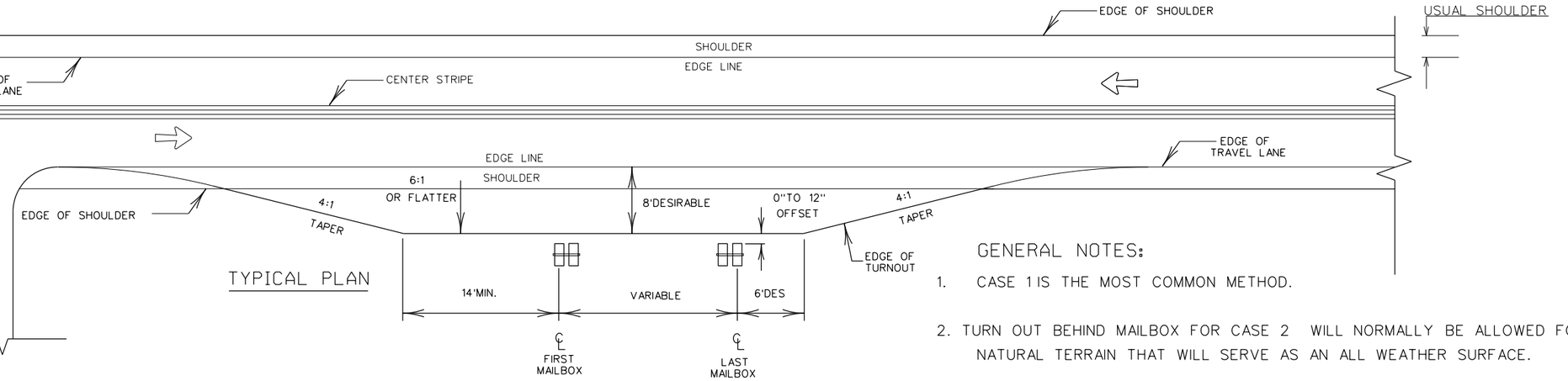


CASE 2. BACK SIDE DELIVERY

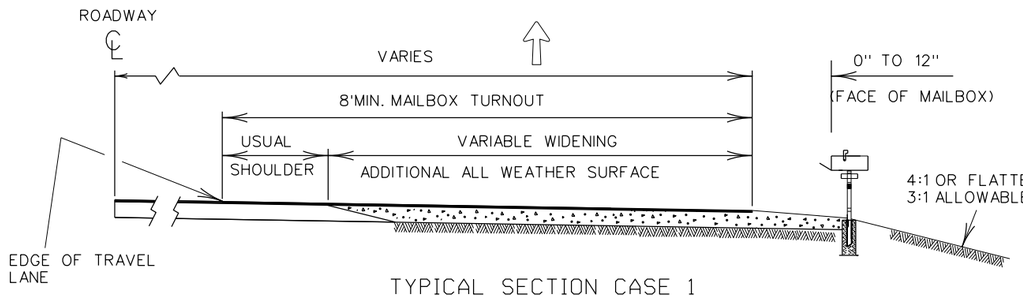


CASE 3. DELIVERY NEAR RIGHT OF WAY LINE





TYPICAL PLAN



TYPICAL SECTION CASE 1

GENERAL NOTES:

1. CASE 1 IS THE MOST COMMON METHOD.
2. TURN OUT BEHIND MAILBOX FOR CASE 2 WILL NORMALLY BE ALLOWED FOR NATURAL TERRAIN THAT WILL SERVE AS AN ALL WEATHER SURFACE.
3. ALL WEATHER DRIVEWAYS FOR CASE 3 MAILBOXES LOCATED AT THE RIGHT OF WAY LINE SHOULD NORMALLY BE PLACED IN CONJUNCTION WITH COUNTY ROADS OR OTHER CONNECTING COMMUNITY ROADS OR STREETS. WHEN 3 OR MORE MULTI-RACKS ARE ANTICIPATED, THE USE OF AN NDCBU IS RECOMMENDED. ONLY RURAL PATRONS LOCATED ON STATE MAINTAINED HIGHWAYS MAY HAVE A MAILBOX OR NDCBU SLOT ON TXDOT RIGHT OF WAY.

* NDCBU MAY BE INSTALLED ON COUNTY ROAD ROW WITH APPROVAL OF COUNTY.

MAIL DELIVERY VEHICLE TRAVEL DIRECTION

SHEET 1 OF 1

Texas Department of Transportation

Maintenance Division Standard

Guideline

MAILBOX SIDE ROAD PLACEMENT AND TURNOUTS

MBP(1)-22

FILE: MBP-22.DGN	DN: VS	CK:	DW: VS	CK:
© TxDOT OCTOBER 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 12/2012 5/2014	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		155

DATE: 3/22/2024 9:53:22 AM
FILE: mbp-22(mer-gedi.dgn

CK: JMT
DW: JMT
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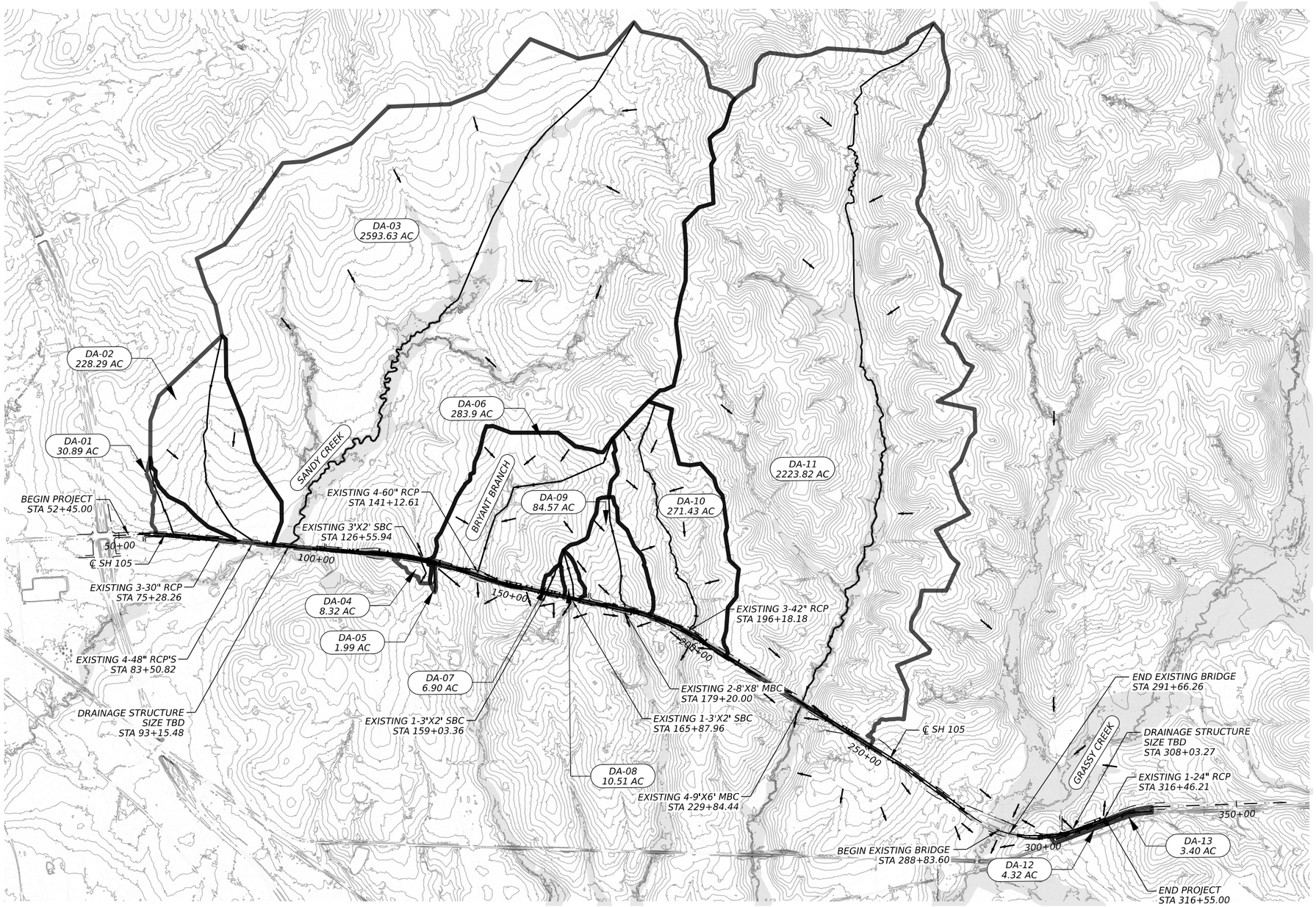
DW: JMT



LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- PROPOSED DRAINAGE AREA
- TC FLOW PATH
- FLOW DIRECTION
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. OFFSITE DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD AND SCS UNIT HYDROGRAPH METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

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Texas Department of Transportation

SH 105

EXTERNAL DRAINAGE AREA MAP

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		156

DATE: 3/22/2024 9:57:41 AM
FILE: BRYCEC_TASK02_Drainage Area Map.dgn

CK: JMT
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CK: JMT
DW: JMT

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP BEGIN TO STA 67+00

SHEET 1 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		157

DATE: 3/22/2024 9:57:50 AM
FILE: BRYCEC_TASK02_PLAN_IDA01.dgn

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DW: JMT

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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INTERNAL DRAINAGE AREA MAP STA 67+00 TO STA 91+00

SHEET 2 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		158

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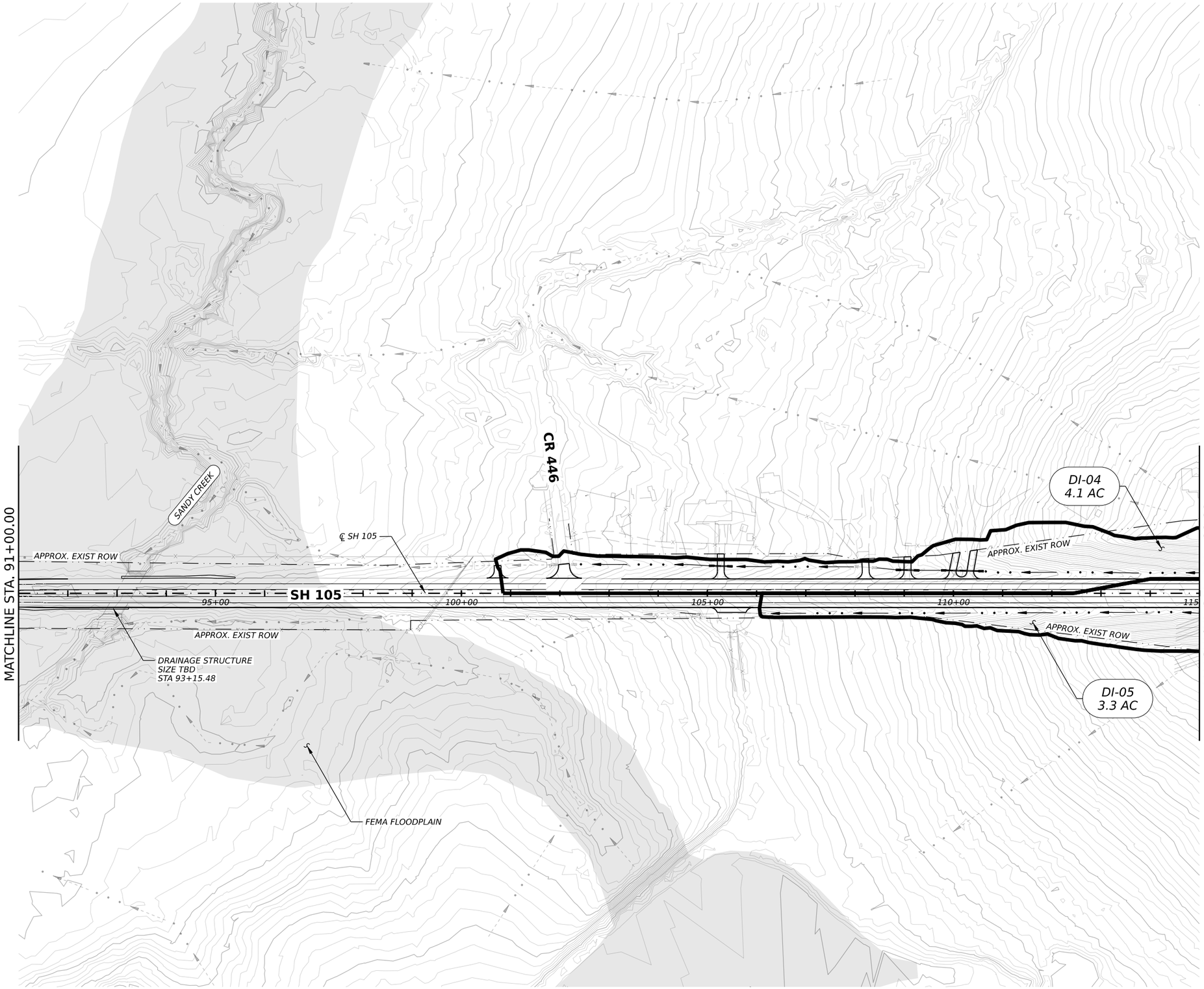

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 91+00 TO STA 115+00

SHEET 3 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		159

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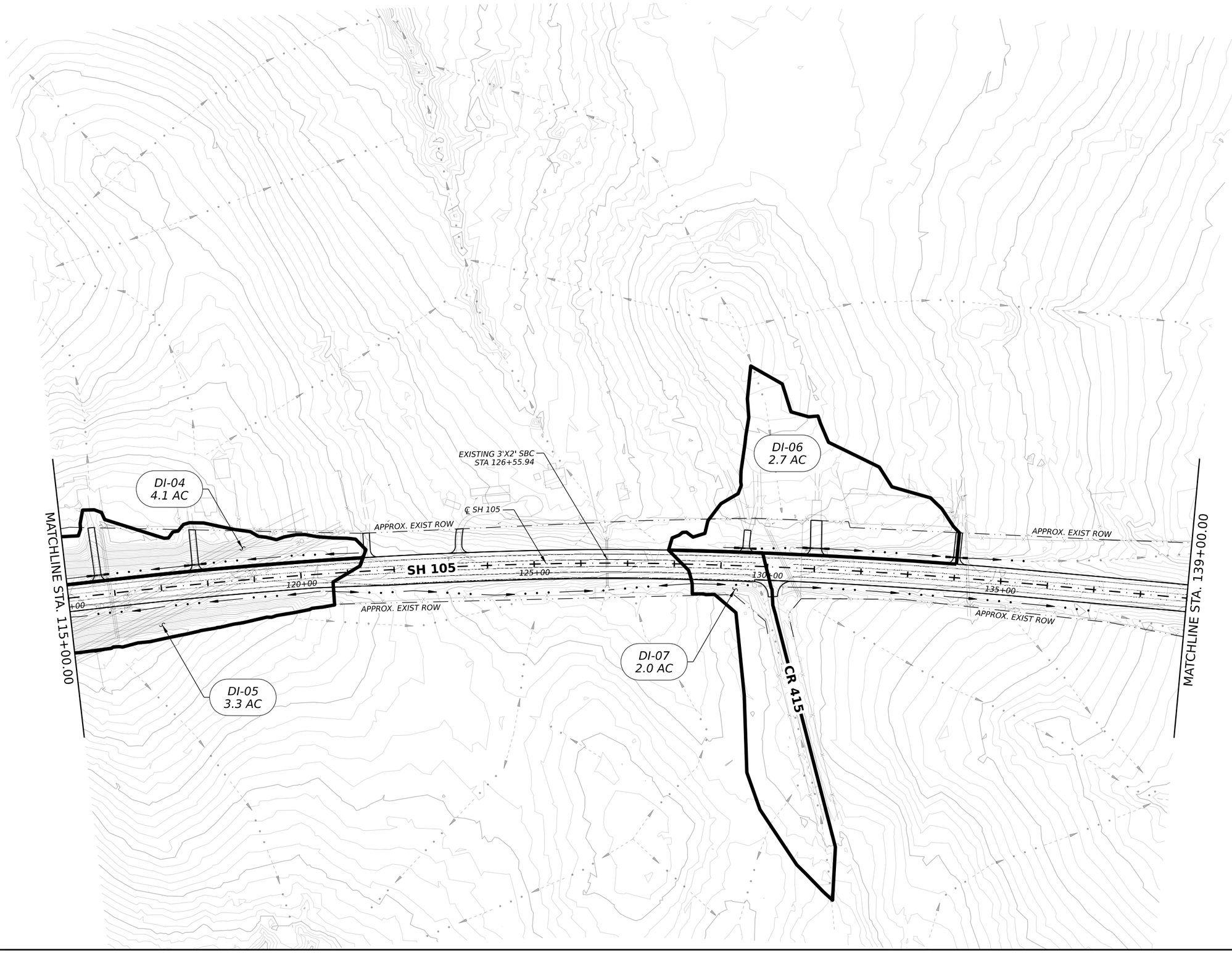

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 115+00 TO STA 139+00

SHEET 4 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		160

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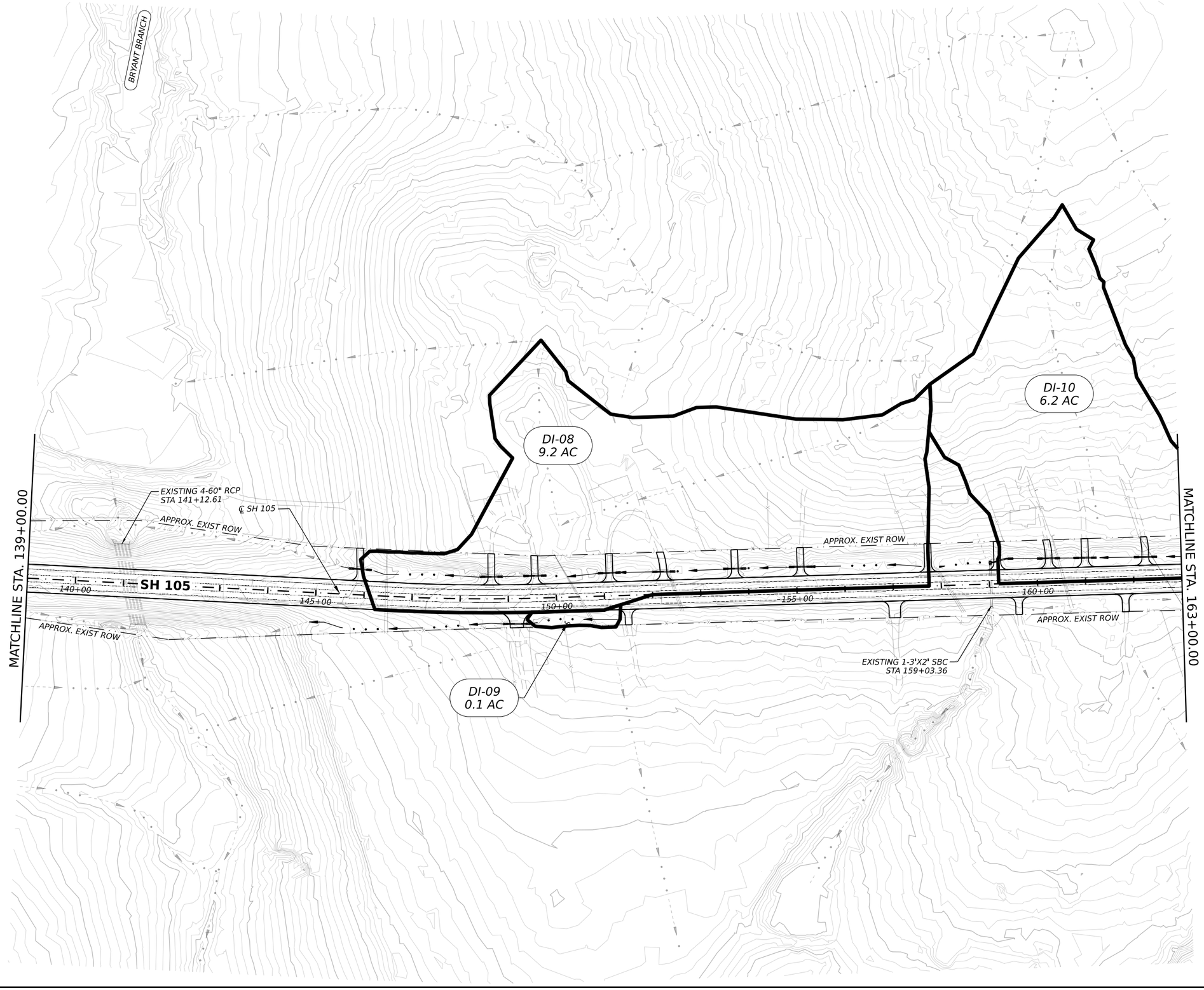

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 139+00 TO STA 163+00

SHEET 5 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		161

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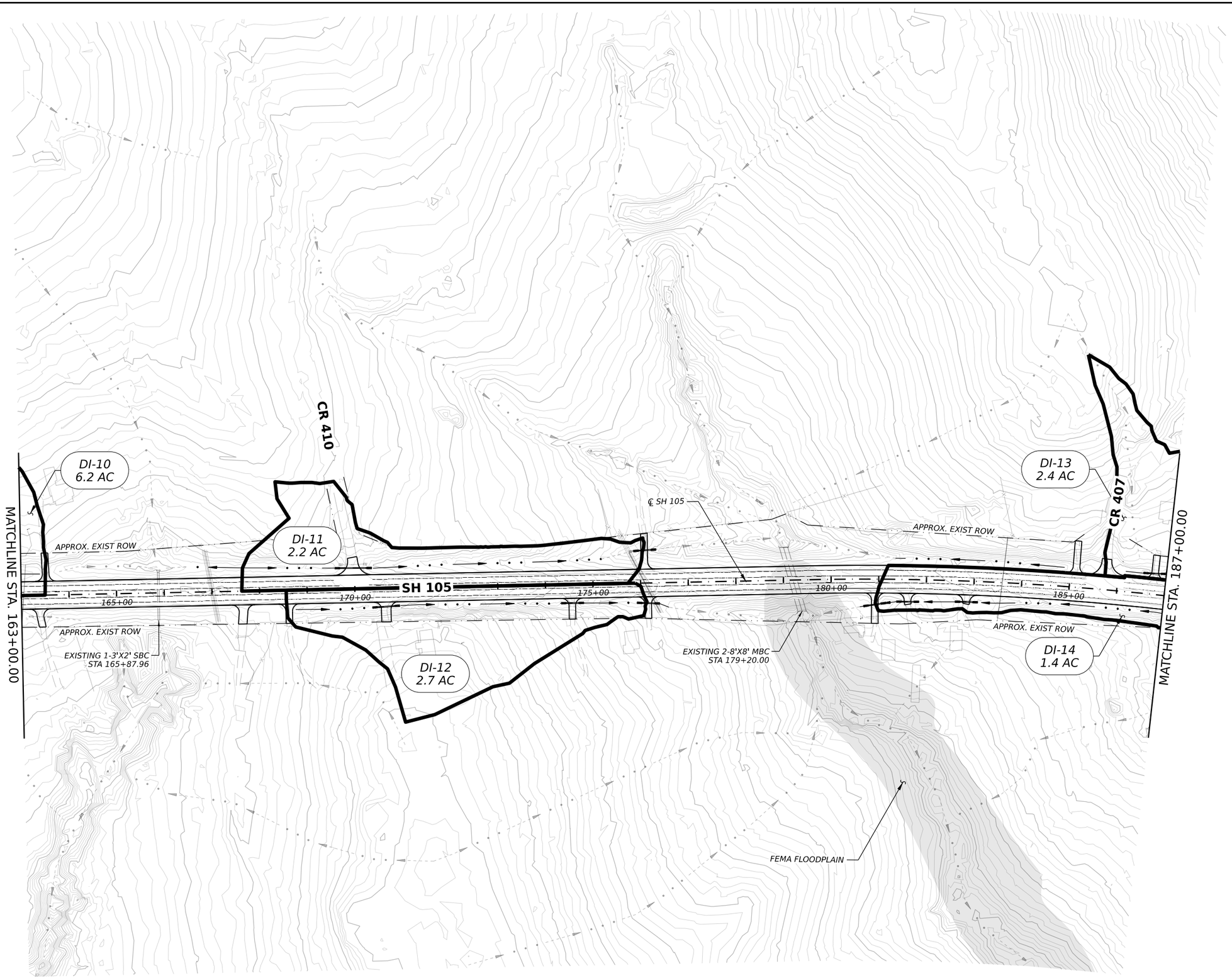

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 163+00 TO STA 187+00

SHEET 6 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		162

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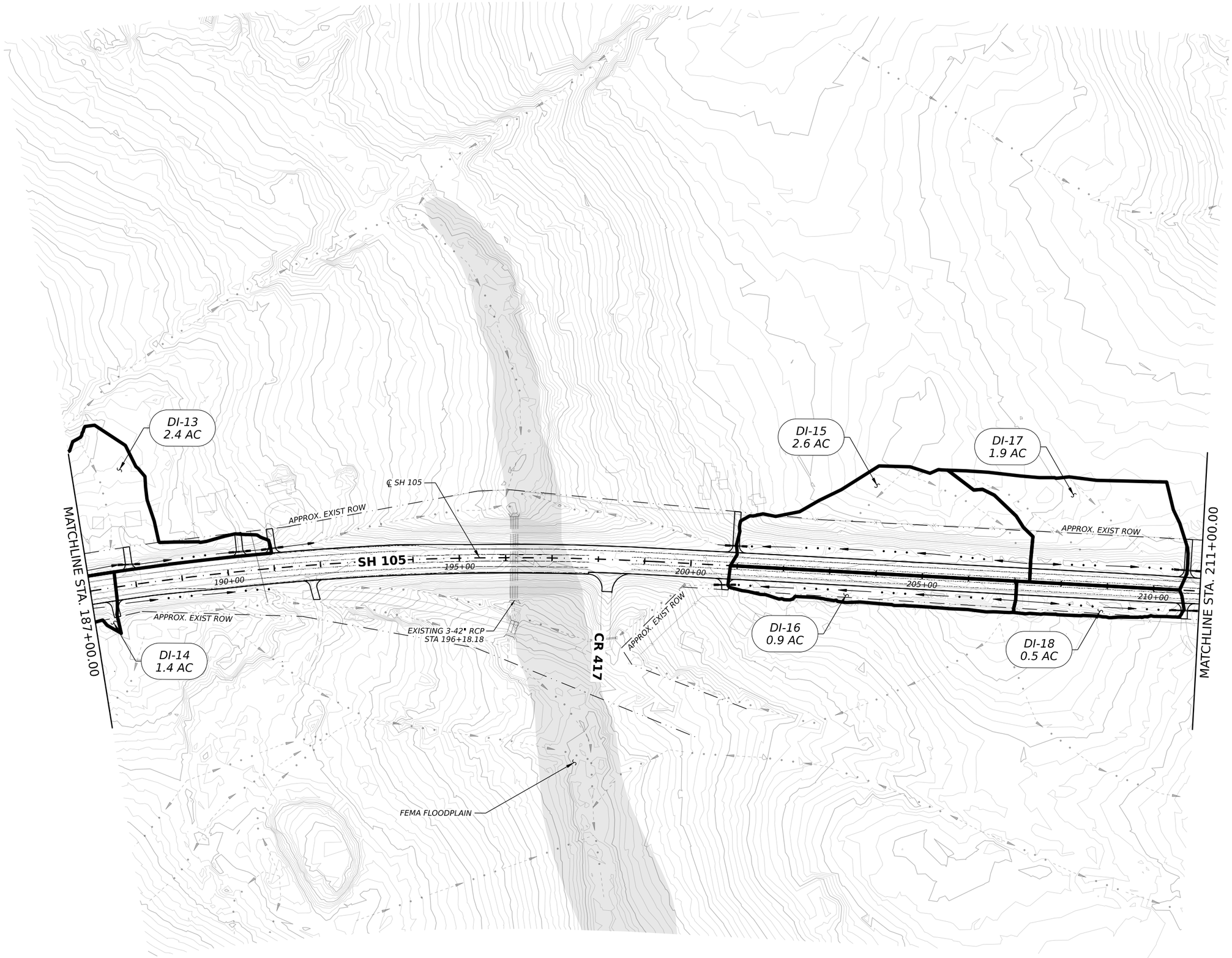

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 187+00 TO STA 211+00

SHEET 7 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		163

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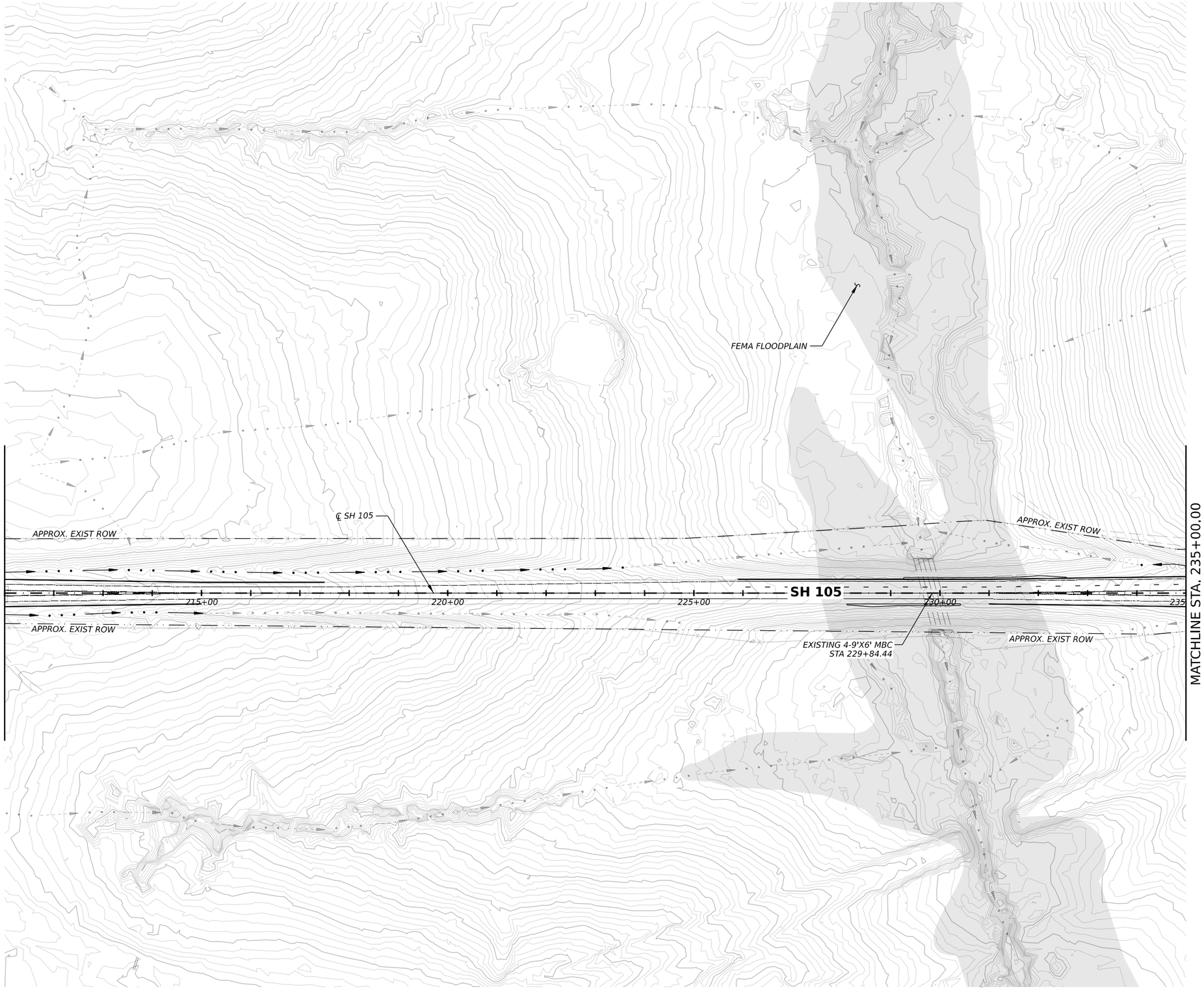

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 211+00 TO STA 235+00

SHEET 8 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		164

DATE: 3/22/2024 9:58:21 AM
FILE: BRYCEC_TASK02_PLAN_IDA08.dgn

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LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

STATE OF TEXAS
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3/22/2024

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Texas Department of Transportation

SH 105

INTERNAL DRAINAGE AREA MAP STA 235+00 TO STA 259+00

SHEET 9 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		165

DATE: 3/22/2024 9:58:25 AM
FILE: BRYCEC_TASK02_PLAN_IDA09.dgn

CK: JMT
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DW: JMT

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
3. RATIONAL METHOD USED FOR HYDROLOGIC ANALYSIS.
4. HYDRAULIC DATA COMPUTATION CALCULATED USING HEC-HMS V4.11

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SH 105

INTERNAL DRAINAGE AREA MAP STA 259+00 TO STA 283+00

SHEET 10 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		166

DATE: 3/22/2024 9:58:30 AM
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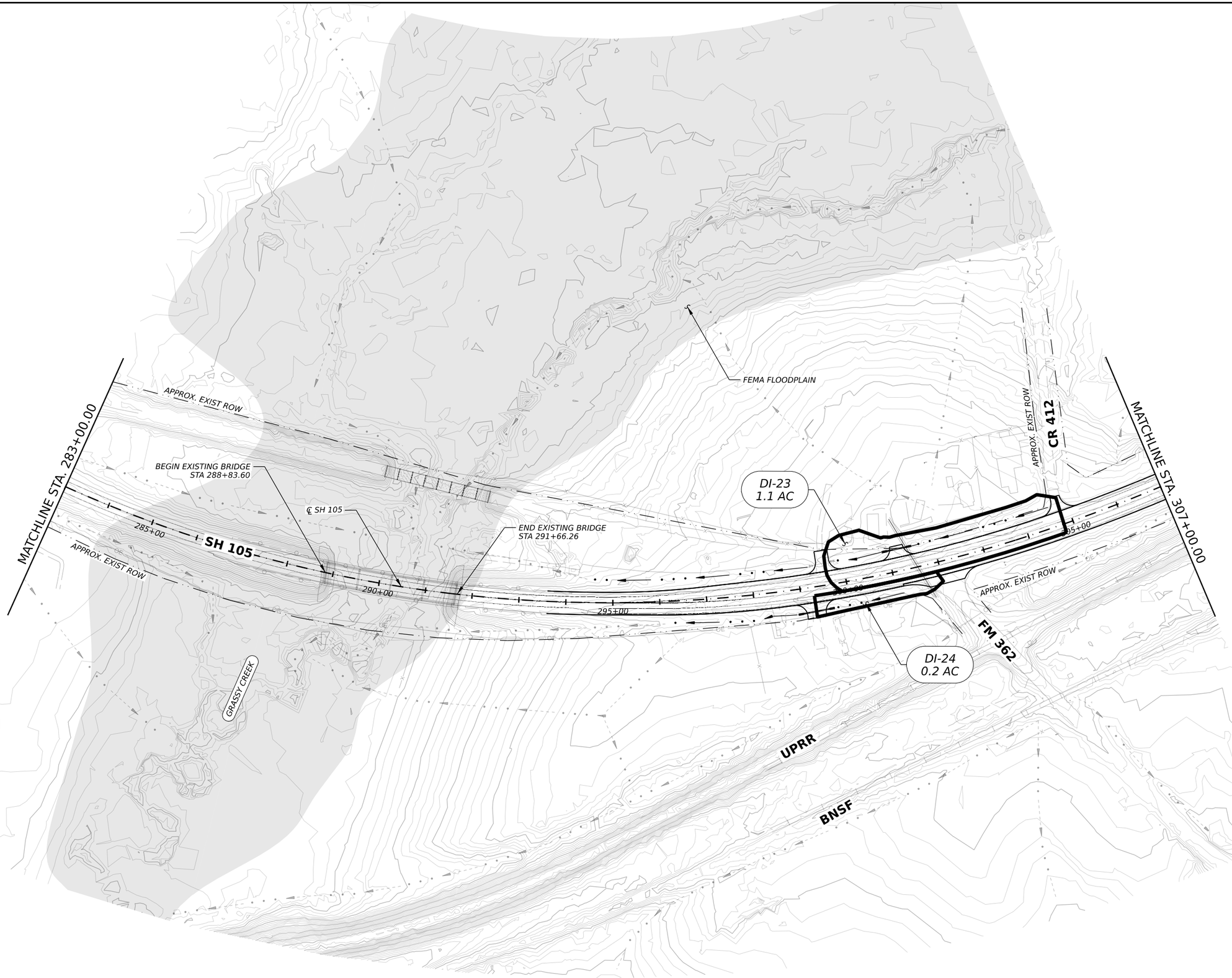

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
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3/22/2024

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

INTERNAL DRAINAGE AREA MAP STA 283+00 TO STA 307+00

SHEET 11 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		167

DATE: 3/22/2024 9:58:34 AM
FILE: BRYCEC_TASK02_PLAN_IDA11.dgn

CK: JMT
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DW: JMT

LEGEND:

- EXISTING 5-FT TNRIS CONTOURS
- EXISTING 1-FT TNRIS CONTOURS
- DITCH DRAINAGE AREA
- PROPOSED FLOW
- EXISTING FLOW
- FEMA FLOODPLAIN ZONE A

NOTES:

1. FLOOD PLAIN DATA BASED ON BEST CURRENT FEMA EFFECTIVE DATA. FEMA FIRM PANELS 48185C0345C, 48185C0435C, AND 48185C0475C.
2. INTERNAL DRAINAGE AREA DELINEATIONS AND LANDUSE BASED ON CURRENT DEVELOPMENT.
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SH 105

INTERNAL DRAINAGE AREA MAP STA 307+00 TO END

SHEET 12 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		168

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EXISTING ULTIMATE SCS HYDROGRAPH METHOD RESULTS (DA > 200 AC)												
Drainage Area ID	Drainage Area (sq. mi.)	Drainage Area (ac)	Weighted Average CN Value	Lag time (min.)	Initial Abstraction (in.)	Impervious Cover (%)	2-YR Peak Discharge (cfs)	5-YR Peak Discharge (cfs)	10-YR Peak Discharge (cfs)	25-YR Peak Discharge (cfs)	50-YR Peak Discharge (cfs)	100-YR Peak Discharge (cfs)
DA-02	0.357	228.3	81	35.9	0.47	0.21	308	438	548	699	811	926
DA-03	4.053	2593.6	76	126.5	0.62	0.06	1258	1934	2581	3545	4332	5218
DA-06	0.444	283.9	58	18.7	1.46	0.45	146	305	465	706	906	1125
DA-10	0.424	271.4	39	23.8	3.12	0.11	5	33	91	224	360	523
DA-11	3.475	2223.8	60	80.1	1.35	0.11	585	1152	1763	2729	3546	4481

EXISTING CONDITIONS - RATIONAL METHOD RESULTS (DA < 200 ACRES)														
Drainage Area ID	Drainage Area (ac)	Runoff Coefficient	Time of Concentration (min.)	2-YR Intensity (in./hr.)	2-YR Discharge (cfs)	5-YR Intensity (in./hr.)	5-YR Discharge (cfs)	10-YR Intensity (in./hr.)	10-YR Discharge (cfs)	25-YR Intensity (in./hr.)	25-YR Discharge (cfs)	50-YR Intensity (in./hr.)	50-YR Discharge (cfs)	100-YR Intensity (in./hr.)	100-YR Discharge (cfs)
DA-01	30.9	0.30	24.5	3.537	33	4.331	40	4.976	46	5.843	54	6.482	60	7.127	66
DA-04	8.3	0.30	14.6	4.409	11	5.415	14	6.238	16	7.346	18	8.172	20	8.998	23
DA-05	2.0	0.31	11.0	5.018	3	6.193	4	7.148	4	8.447	5	9.434	6	10.422	6
DA-07	6.9	0.33	11.4	4.950	11	6.106	14	7.046	16	8.324	19	9.293	21	10.262	24
DA-08	10.5	0.30	16.9	4.187	13	5.137	16	5.914	19	6.959	22	7.735	24	8.512	27
DA-09	84.6	0.29	23.6	3.613	89	4.424	109	5.084	125	5.973	147	6.627	163	7.288	179
DA-12	4.3	0.36	10.0	5.180	8	6.400	10	7.390	12	8.740	14	9.770	15	10.800	17
DA-13	3.4	0.39	10.0	5.180	7	6.400	9	7.390	10	8.740	12	9.770	13	10.800	14

ULTIMATE SCS HYDROGRAPH METHOD RESULTS (DA > 200 AC)												
Drainage Area ID	Drainage Area (sq. mi.)	Drainage Area (ac)	Weighted Average CN Value	Lag time (min.)	Initial Abstraction (in.)	Impervious Cover (%)	2-YR Peak Discharge (cfs)	5-YR Peak Discharge (cfs)	10-YR Peak Discharge (cfs)	25-YR Peak Discharge (cfs)	50-YR Peak Discharge (cfs)	100-YR Peak Discharge (cfs)
DA-02	0.357	228.3	81	35.9	0.47	0.23	308	438	548	699	811	926
DA-03	4.053	2593.6	76	126.5	0.62	0.07	1258	1934	2581	3545	4332	5218
DA-06	0.444	283.9	58	18.7	1.46	0.68	148	307	467	708	908	1127
DA-10	0.424	271.4	39	23.8	3.12	0.22	5	33	91	225	361	524
DA-11	3.475	2223.8	60	80.1	1.35	0.14	585	1152	1763	2729	3546	4481

PROPOSED CONDITIONS - RATIONAL METHOD RESULTS (DA < 200 ACRES)														
Drainage Area ID	Drainage Area (ac)	Runoff Coefficient	Time of Concentration (min.)	2-YR Intensity (in./hr.)	2-YR Discharge (cfs)	5-YR Intensity (in./hr.)	5-YR Discharge (cfs)	10-YR Intensity (in./hr.)	10-YR Discharge (cfs)	25-YR Intensity (in./hr.)	25-YR Discharge (cfs)	50-YR Intensity (in./hr.)	50-YR Discharge (cfs)	100-YR Intensity (in./hr.)	100-YR Discharge (cfs)
DA-01	30.9	0.31	24.5	3.537	34	4.331	41	4.976	47	5.843	55	6.482	61	7.127	68
DA-04	8.3	0.33	14.6	4.409	12	5.415	15	6.238	17	7.346	20	8.172	22	8.998	25
DA-05	2.0	0.33	11.0	5.018	3	6.193	4	7.148	5	8.447	6	9.434	6	10.422	7
DA-07	6.9	0.35	11.4	4.950	12	6.106	15	7.046	17	8.324	20	9.293	22	10.262	25
DA-08	10.5	0.30	16.9	4.187	13	5.137	16	5.914	19	6.959	22	7.735	24	8.512	27
DA-09	84.6	0.29	23.6	3.613	89	4.424	110	5.084	126	5.973	148	6.627	164	7.288	180
DA-12	4.3	0.39	10.0	5.180	9	6.400	11	7.390	13	8.740	15	9.770	17	10.800	18
DA-13	3.4	0.40	10.0	5.180	7	6.400	9	7.390	10	8.740	12	9.770	13	10.800	15

PROPOSED CONDITIONS - RATIONAL METHOD RESULTS (DA < 200 ACRES)														
Drainage Area ID	Drainage Area (ac)	Runoff Coefficient	Time of Concentration (min.)	2-YR Intensity (in./hr.)	2-YR Discharge (cfs)	5-YR Intensity (in./hr.)	5-YR Discharge (cfs)	10-YR Intensity (in./hr.)	10-YR Discharge (cfs)	25-YR Intensity (in./hr.)	25-YR Discharge (cfs)	50-YR Intensity (in./hr.)	50-YR Discharge (cfs)	100-YR Intensity (in./hr.)	100-YR Discharge (cfs)
DI-01	3.1	0.30	11.3	4.961	5	6.120	6	7.063	7	8.344	8	9.316	9	10.288	10
DI-02	19.2	0.30	22.3	3.730	22	4.570	26	5.254	30	6.174	36	6.853	40	7.537	44
DI-03	0.5	0.67	10.0	5.180	2	6.400	2	7.390	3	8.740	3	9.770	3	10.800	4
DI-04	4.1	0.41	10.0	5.180	9	6.400	11	7.390	12	8.740	15	9.770	16	10.800	18
DI-05	3.3	0.54	10.0	5.180	9	6.400	12	7.390	13	8.740	16	9.770	18	10.800	20
DI-06	2.7	0.29	10.6	5.084	4	6.277	5	7.246	6	8.566	7	9.570	7	10.575	8
DI-07	2.0	0.33	11.0	5.018	3	6.193	4	7.148	5	8.447	6	9.434	6	10.422	7
DI-08	9.2	0.36	10.2	5.152	17	6.364	21	7.347	24	8.689	29	9.711	32	10.733	35
DI-09	0.1	0.25	10.0	5.180	0	6.400	0	7.390	0	8.740	0	9.770	0	10.800	0
DI-10	6.2	0.34	11.9	4.859	10	5.990	12	6.910	14	8.159	17	9.104	19	10.049	21
DI-11	2.2	0.44	10.0	5.180	5	6.400	6	7.390	7	8.740	8	9.770	9	10.800	10
DI-12	2.7	0.38	10.0	5.180	5	6.400	7	7.390	8	8.740	9	9.770	10	10.800	11
DI-13	2.4	0.24	10.0	5.180	3	6.400	4	7.390	4	8.740	5	9.770	6	10.800	6
DI-14	1.4	0.68	10.0	5.180	5	6.400	6	7.390	7	8.740	8	9.770	9	10.800	10
DI-15	2.6	0.34	13.6	4.583	4	5.638	5	6.499	6	7.662	7	8.533	7	9.405	8
DI-16	0.9	0.55	10.0	5.180	3	6.400	3	7.390	4	8.740	4	9.770	5	10.800	5
DI-17	1.9	0.30	15.7	4.292	2	5.268	3	6.067	3	7.141	4	7.939	5	8.737	5
DI-18	0.5	0.54	10.0	5.180	2	6.400	2	7.390	2	8.740	3	9.770	3	10.800	3
DI-19	12.4	0.31	18.1	4.089	16	5.016	19	5.773	22	6.792	26	7.547	29	8.304	32
DI-20	2.7	0.49	10.0	5.180	7	6.400	8	7.390	10	8.740	11	9.770	13	10.800	14
DI-21	28.1	0.28	10.0	5.180	41	6.400	50	7.390	58	8.740	69	9.770	77	10.800	85
DI-22	16.6	0.36	20.4	3.891	23	4.770	28	5.487	33	6.451	38	7.164	42	7.881	47
DI-23	1.1	0.60	10.0	5.180	4	6.400	4	7.390	5	8.740	6	9.770	7	10.800	7
DI-24	0.2	0.56	10.0	5.180	1	6.400	1	7.390	1	8.740	1	9.770	1	10.800	2
DI-25	0.9	0.39	10.0	5.180	2	6.400	2	7.390	3	8.740	3	9.770	3	10.800	4

NOTES:

1. *SCS UNIT HYDROGRAPH AND RATIONAL METHOD WERE USED FOR RUNOFF CALCULATIONS.*
2. *LAND USE VALUES WERE DEVELOPED PER AERIAL IMAGERY.*
3. *CURVE NUMBER VALUES BASED ON TXDOT HYDRAULICS MANUAL TABLES 4-18 & 4-21.*
4. *TIME OF CONCENTRATION COMPUTED FOLLOWING THE NRCS METHOD. (TXDOT HYDRAULICS MANUAL TABLES 4-6 THROUGH 4-9).*
5. *RAINFALL DATA PER TXDOT NOAA ATLAS 14.*
6. *SOILS DATA RETRIEVED FROM THE USDA SOIL SURVEY.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

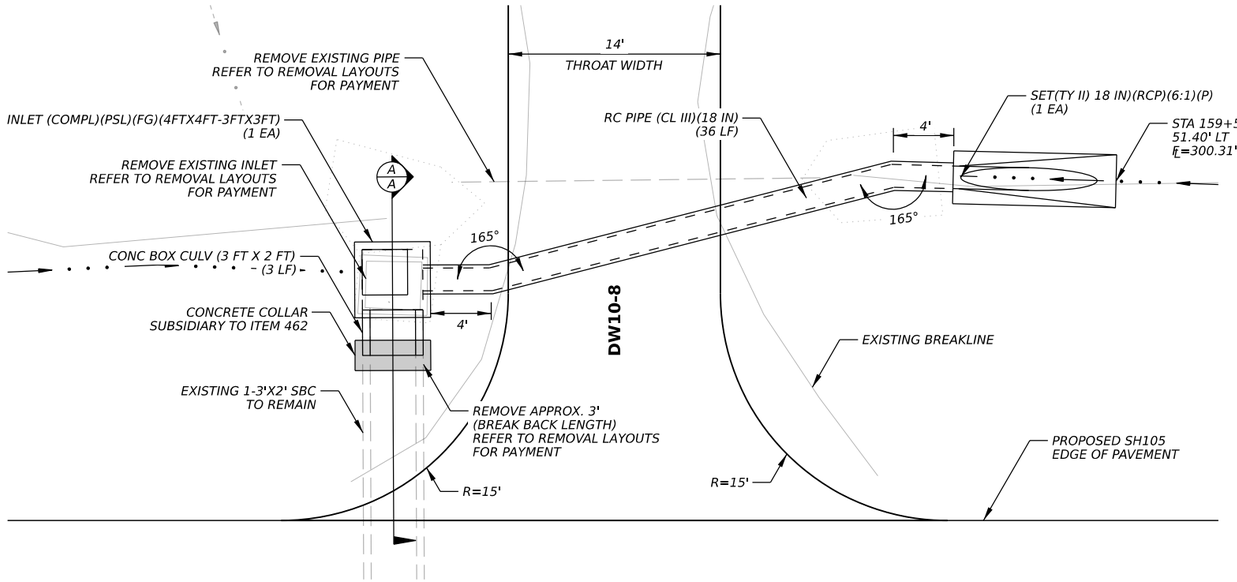
SH 105

DRAINAGE AREA CALCULATIONS

SHEET 1 OF 1

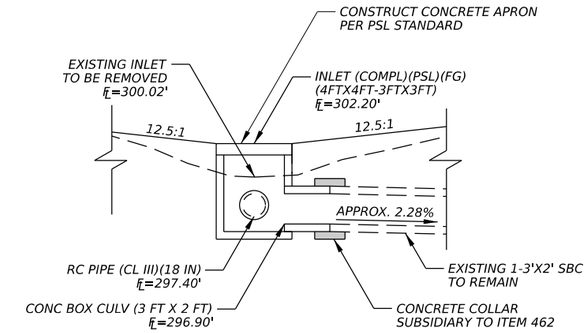
CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		169

CK: JMT
DW: JMT
CK: JMT
DW: JMT



DW10-8 PLAN

℄ SH105 STA 159+17.79



SECTION A-A

℄ SH105 STA 159+03.36
EXTEND 3 LF W/1 - 3'X2' SBC
ADD INLET (COMPL)(PSL)(FG)(4FTX4FT-3FTX3FT)

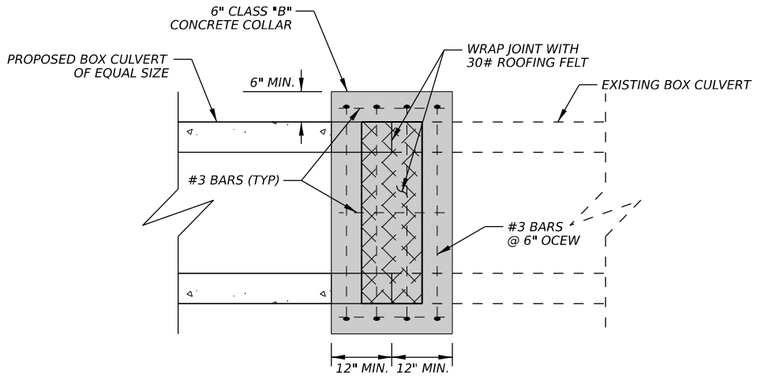
LEGEND:

PROPOSED DITCH FLOWLINE

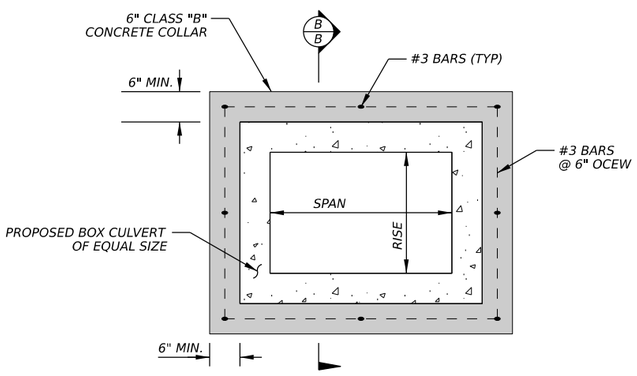
EXISTING DITCH FLOWLINE

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*



SECTION B-B



ELEVATION VIEW

BOX CULVERT CONCRETE COLLAR

NOT TO SCALE
CONCRETE COLLAR IS SUBSIDIARY TO ITEM 462

DATE: 3/22/2024 7:38:51 PM
FILE: BRYCEC_TASK02_DRNDETS01.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER

3/22/2024

0 5' 10'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

DW10-8 DRAINAGE DETAILS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		170

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw Height of Wingwall (1) (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
STA 159+03.36 (LT)	1 ~ 3'x2'	30'	SCC-3&4	NONE	0°	12:1	8"	7"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

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

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

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

C = Curb height

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

Hw = Height of wingwall

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

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

Lw = Length of longest wingwall.

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

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

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

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

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

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

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3/22/2024

SPECIAL NOTE:

This sheet is a supplement to the box culvert standards. It is to be filled out by the culvert specifier and provides dimensions for the construction of the box culvert wingwalls and safety end treatments.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

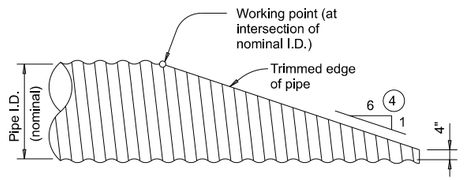
Texas Department of Transportation

Bridge Division Standard

BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

BCS

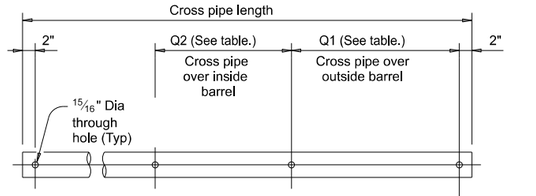
FILE: CD-BCS-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		171



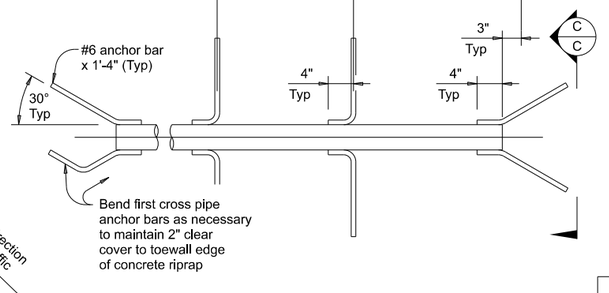
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

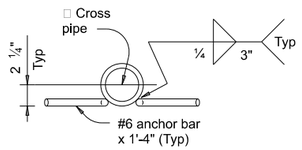
(Showing corrugated metal pipe (CMP) culvert Details at reinforced concrete pipe (RCP) culvert are similar.)



PIPE WITH BOLTED ANCHOR

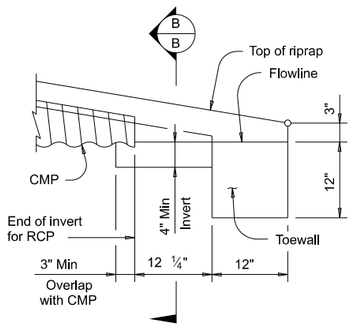


PIPE WITH ANCHOR BARS



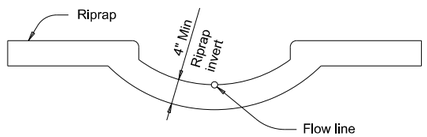
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



SECTION B-B

(Cross pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' - 9"	N/A	2' - 1"	1' - 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' - 11"	N/A	2' - 5"	2' - 2"		
18"	0.8	1' - 2"	N/A	2' - 10"	2' - 8"		
21"	0.9	1' - 4"	N/A	3' - 2"	3' - 1"		
24"	0.9	1' - 7"	N/A	3' - 6"	3' - 7"		
27"	1.0	1' - 8"	N/A	3' - 10"	3' - 11"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1' - 10"	N/A	4' - 2"	4' - 4"	2 or more pipe culverts	
33"	1.2	1' - 11"	4' - 2"	4' - 5"	4' - 8"	All pipe culverts	
36"	1.3	2' - 1"	4' - 5"	4' - 9"	5' - 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' - 4"	4' - 11"	5' - 5"	5' - 10"		
48"	1.7	2' - 7"	5' - 5"	6' - 0"	6' - 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' - 0"	5' - 11"	6' - 9"	7' - 6"		
60"	2.2	3' - 3"	6' - 5"	7' - 4"	8' - 3"		
66"	2.4	3' - 3"	6' - 11"	7' - 10"	8' - 9"		
72"	2.7	3' - 4"	7' - 5"	8' - 5"	9' - 4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

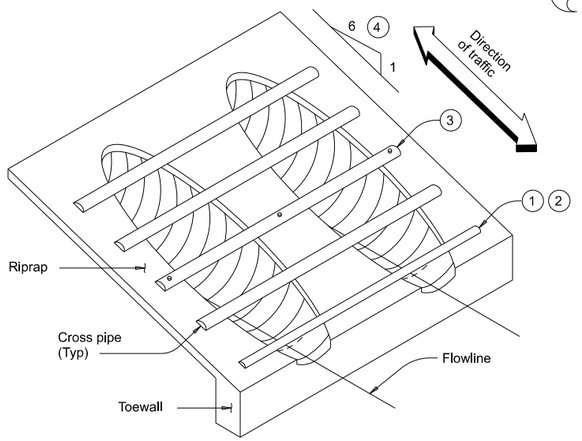
GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

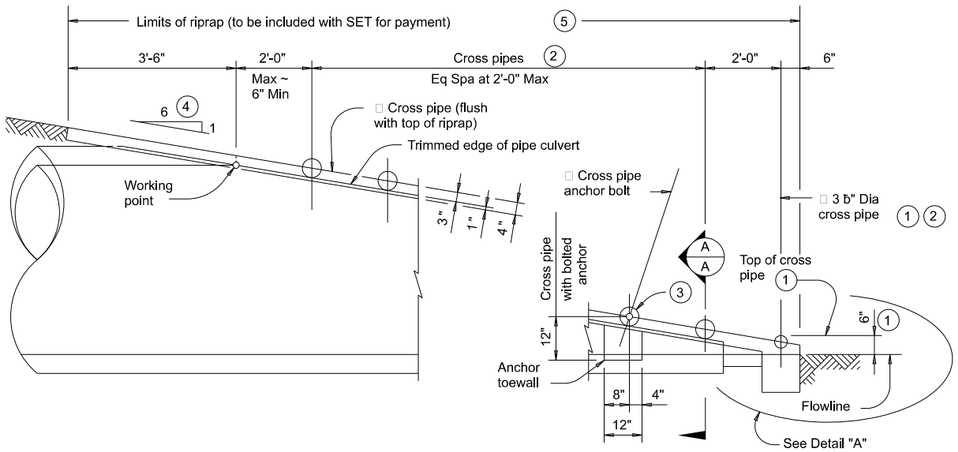
Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

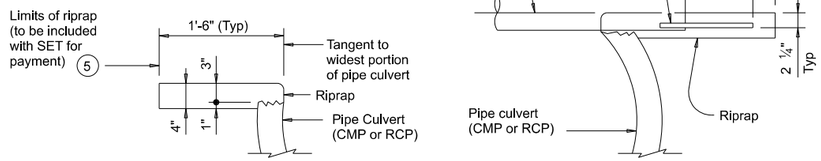


ISOMETRIC VIEW OF TYPICAL INSTALLATION

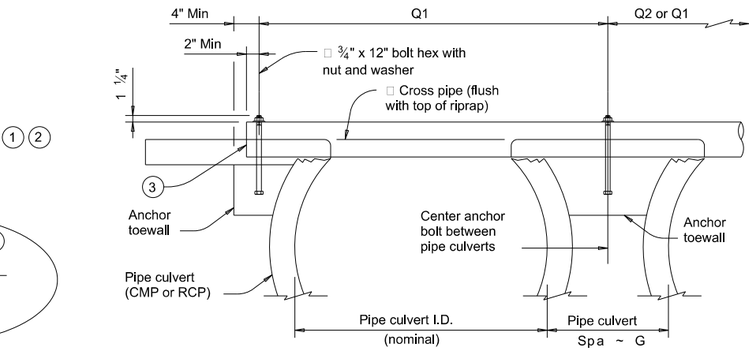


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING CROSS PIPE WITH ANCHOR BAR



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A

Texas Department of Transportation

Bridge Division Standard

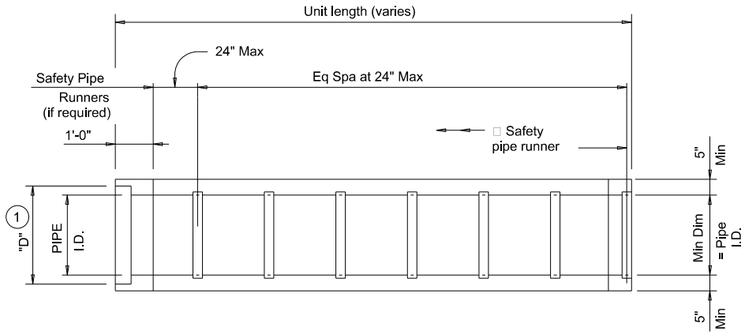
SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

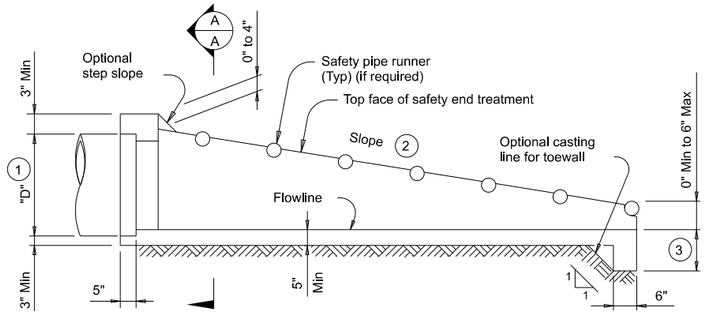
FILE: setppdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		172

DATE: 3/22/2024 9:58:54 AM
FILE: setppdse-20 (Parallel Drainage for 12-60in).dgn



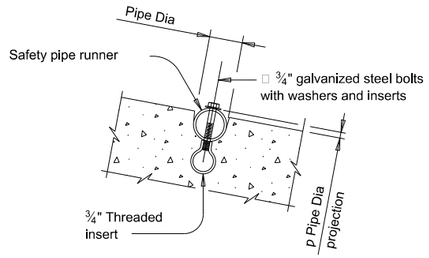
PLAN

(Showing bell end connection.)



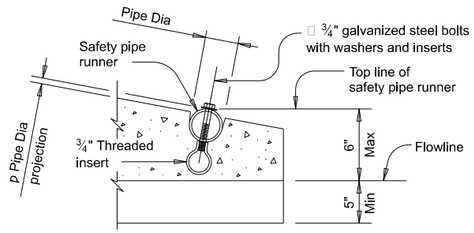
LONGITUDINAL ELEVATION

(Showing bell end connection.)

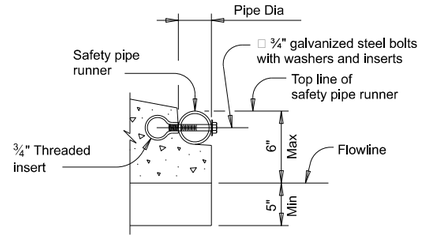


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



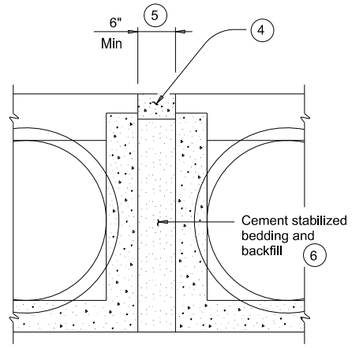
OPTION A



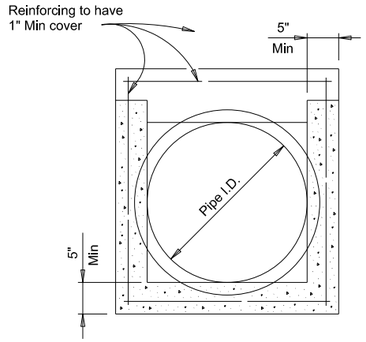
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

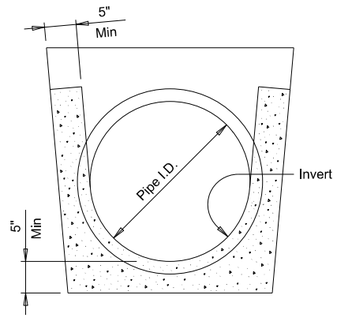
(If required)



MULTIPLE PIPE INSTALLATION

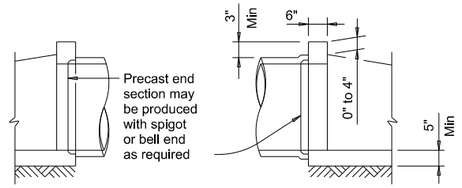


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' - 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	1.30"	20.50"	6:1	6' - 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8' - 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' - 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14' - 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' - 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	2.7"	52.50"	6:1	21' - 2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe". Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation

Bridge Division Standard

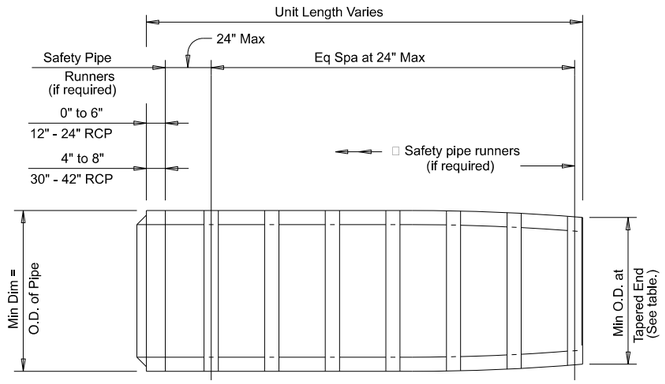
PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-SP

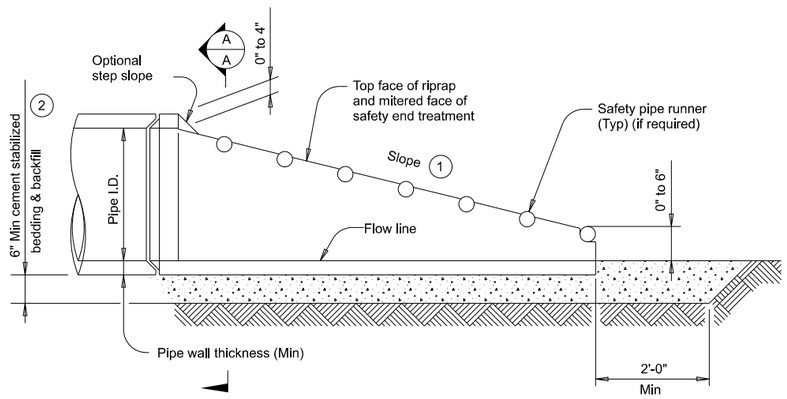
FILE: psetspss-21.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		173

DATE: 3/22/2024 9:58:56 AM
FILE: psetspss-21 (Precast End Treatment Parallel Square).dgn



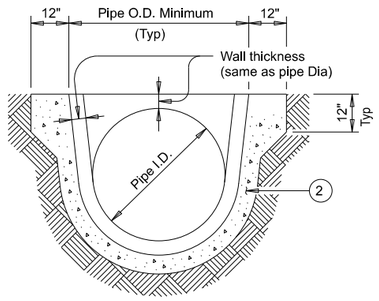
PLAN VIEW - 12" THRU 24"

(Showing spigot end connection.)

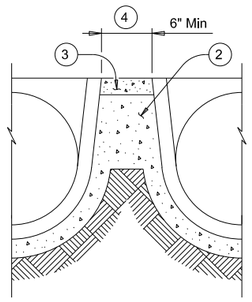


LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)

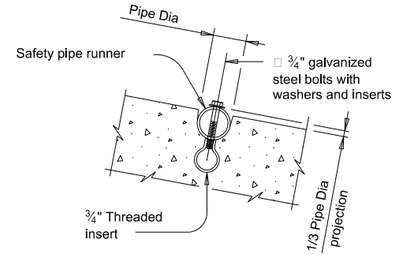


SECTION A-A



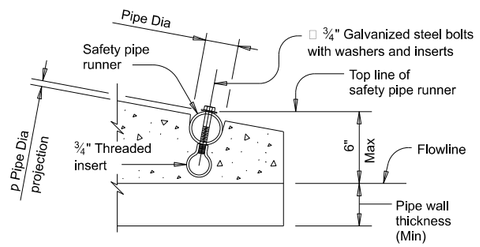
MULTIPLE PIPE INSTALLATION

1. Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
2. Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
3. Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".
4. Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
5. Safety pipe runners are required for multiple pipe culverts with more than two pipes.

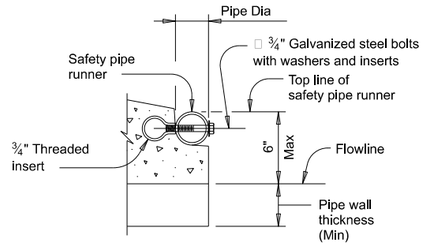


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



OPTION A



OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4' - 0"	No	(5)	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 Circ.	6:1	5' - 8"	No	(5)	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 Circ.	6:1	7' - 3"	No	(5)	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10' - 6"	No	(5)	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 Circ.	6:1	12' - 1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15' - 4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 Ellip.	6:1	18' - 7"	Yes	Yes	4" STD	4.500"	4.026"

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

DATE: 3/22/2024 9:58:58 AM
FILE: psetrpss-20 (Precast End Treatment Parallel Round).dgn

Texas Department of Transportation

Bridge Division Standard

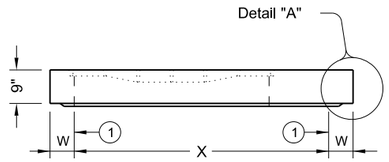
PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

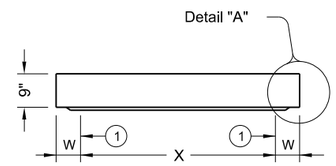
PSET-RP

FILE: psetrpss-20.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		174

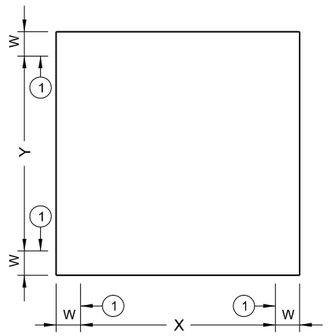
DATE:
FILE:



STYLE 'FG'



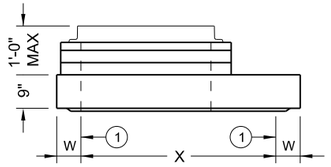
ELEVATION VIEW



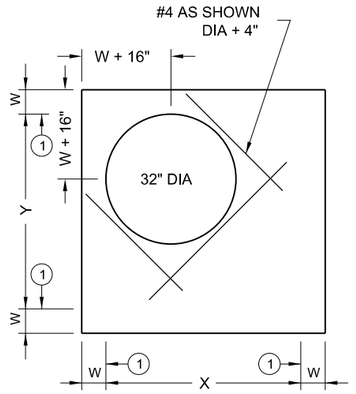
PLAN VIEW

NO OPENINGS

STYLE 'SL'



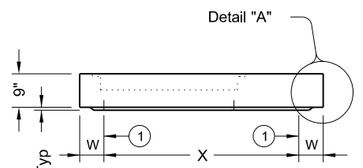
ELEVATION VIEW



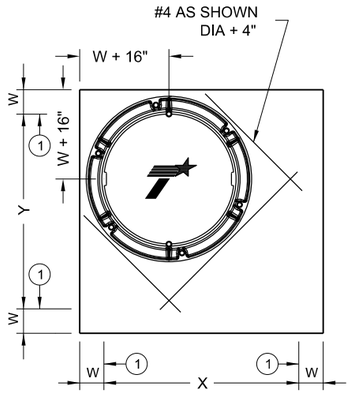
PLAN VIEW

SHIP LOOSE RING & COVER

STYLE 'RH'



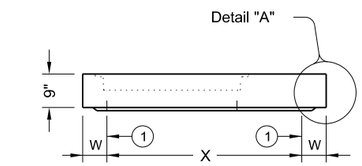
ELEVATION VIEW



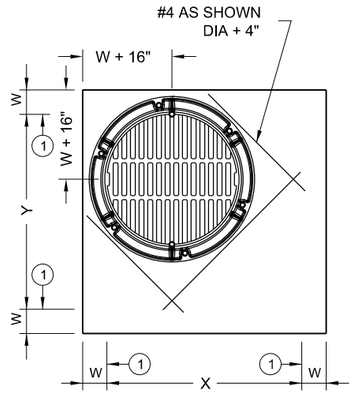
PLAN VIEW

32" DIA CAST-IN RING & COVER

STYLE 'RC'



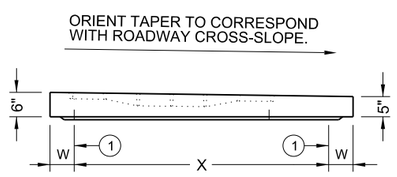
ELEVATION VIEW



PLAN VIEW

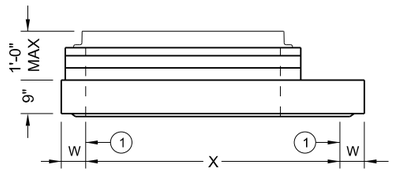
32" DIA CAST-IN RING & GRATE

STYLE 'RG'

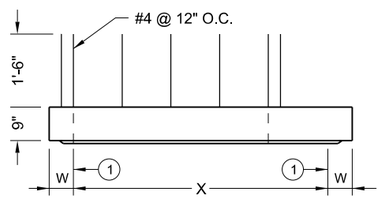


STYLE 'SFG'

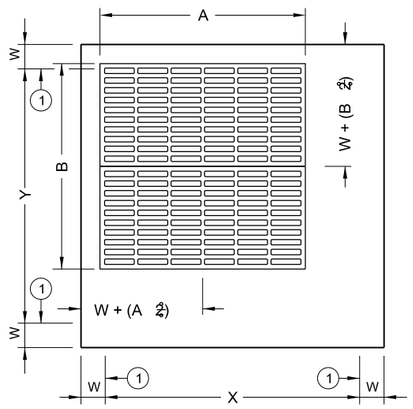
ELEVATION VIEW



ELEVATION VIEW



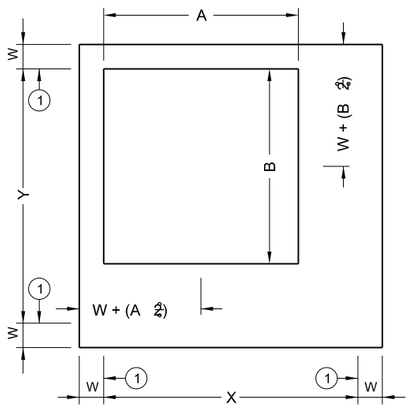
ELEVATION VIEW



PLAN VIEW

CAST-IN FRAME & GRATE

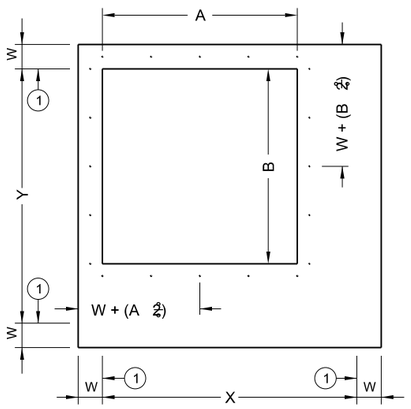
STYLES 'FG' & 'SFG'



PLAN VIEW

SHIP LOOSE FRAME & GRATE

STYLE 'SH'



PLAN VIEW

EXPOSED REBAR

STYLE 'S1'

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

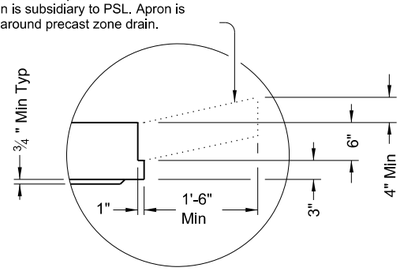
FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		175

DATE:
FILE:

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

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

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



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of ¾" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING SHEET 2 OF 2

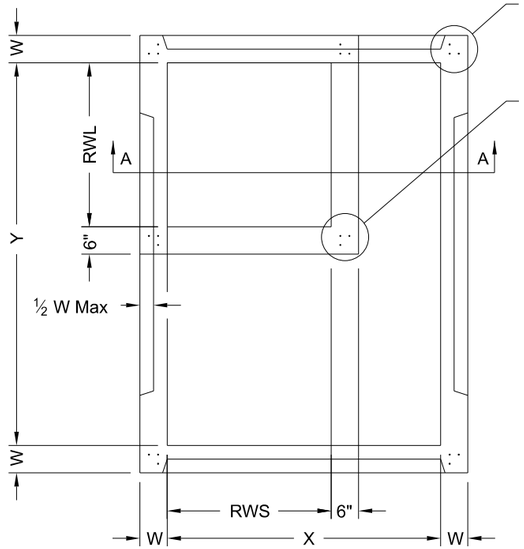
Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

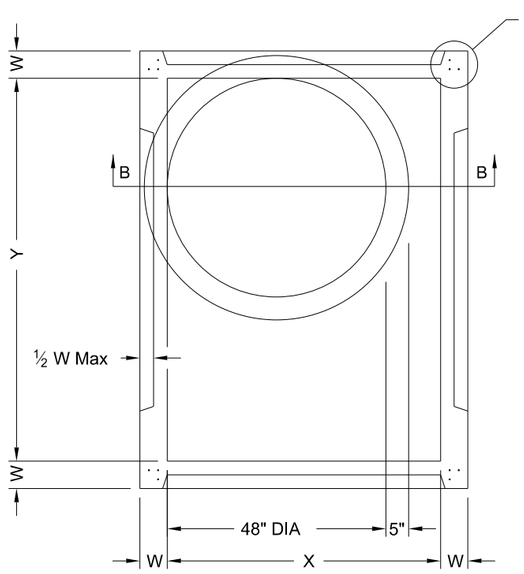
PSL

FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		176



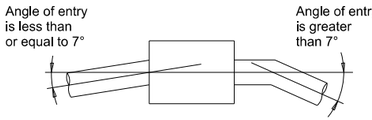
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



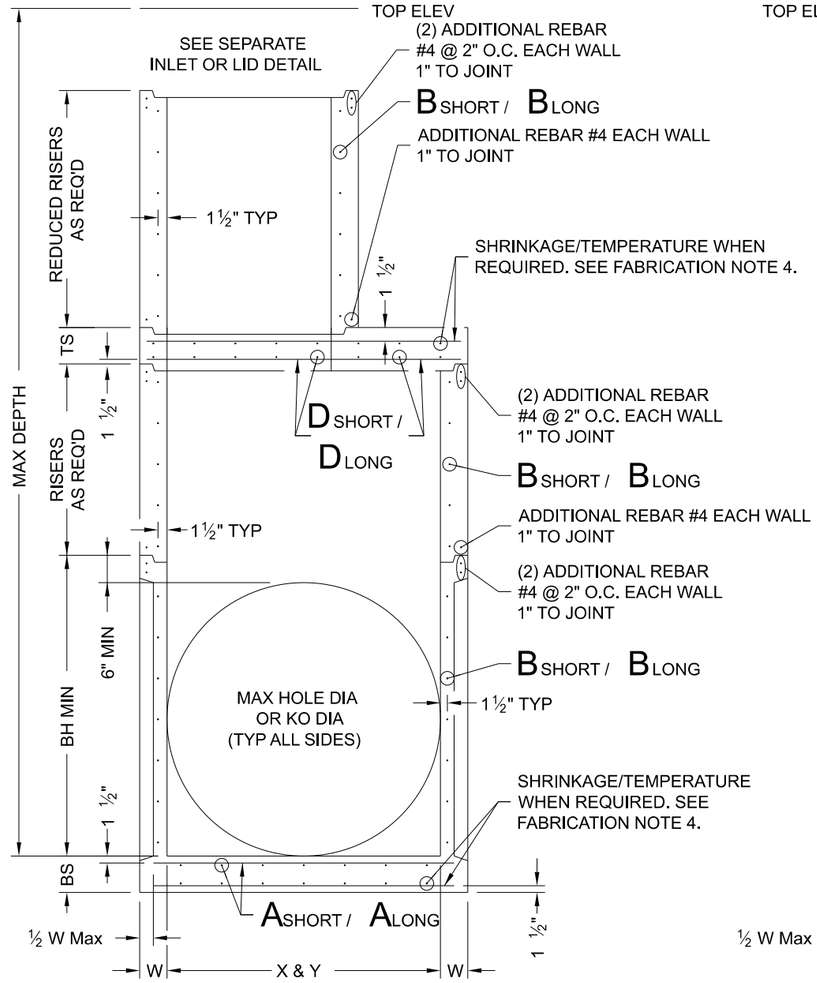
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



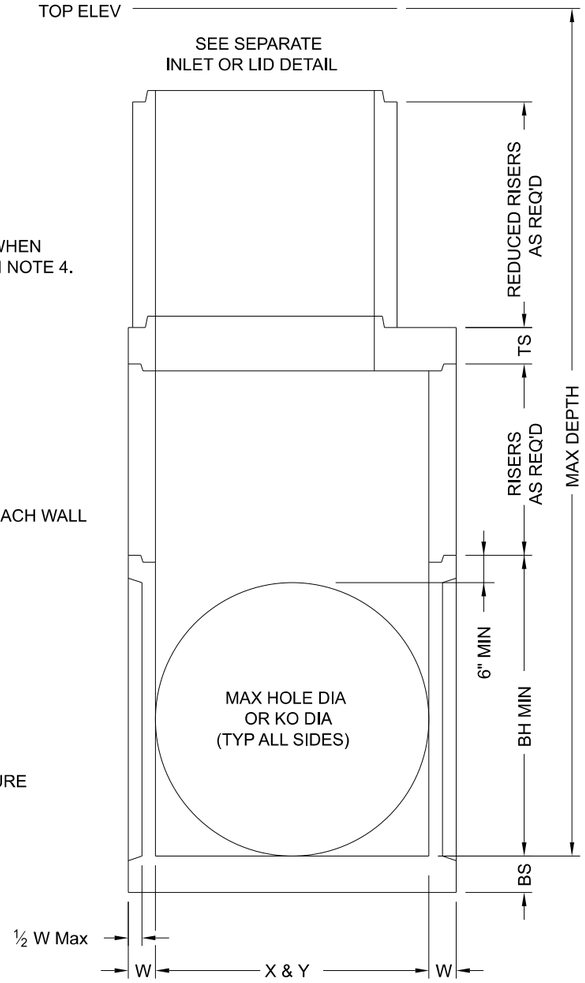
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

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

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

FILE: CD-PB-20-NEW.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		177

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

FILE: CD-PDD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		178

DATE:
FILE:

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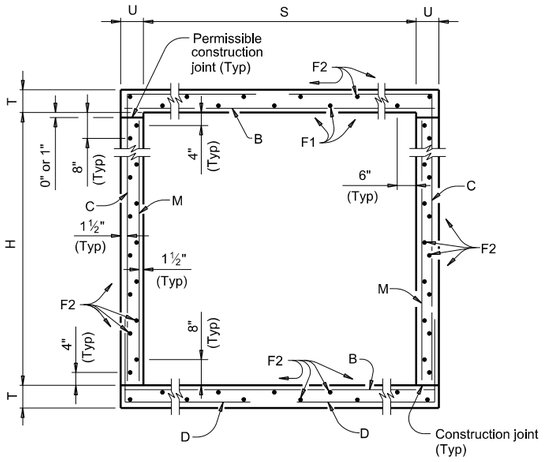
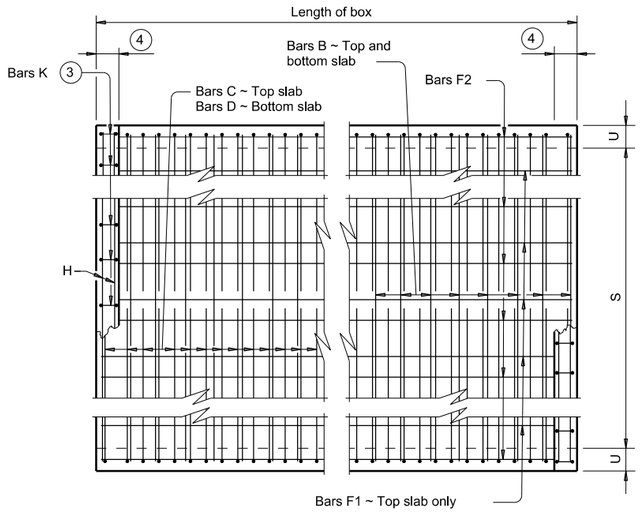


TYPICAL SECTION



PLAN OF REINF STEEL

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

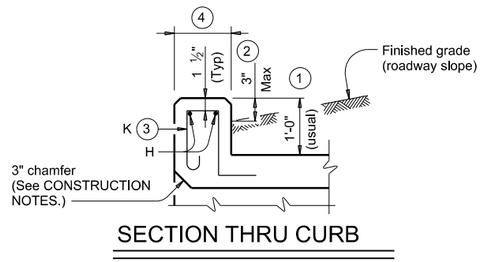
2. For vehicle safety, the following requirements must be met:
   · For structures without bridge rail, construct curbs no more than 3" above finished grade.
   · For structures with bridge rail, construct curbs flush with finished grade.
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

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

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

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



SECTION THRU CURB

CONSTRUCTION NOTES:

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

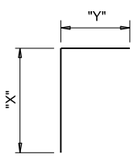
MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
· culverts with overlay,
· culverts with 1-to-2 course surface treatment, or
· culverts with the top slab as the final riding surface.
Provide bar laps, where required, as follows:
· Uncoated or galvanized ~ #4 = 1'-8" Min
· Uncoated or galvanized ~ #5 = 2'-1" Min

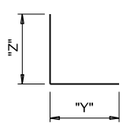
GENERAL NOTES:

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

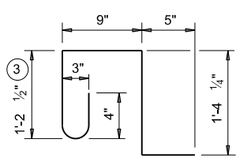
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE

0' TO 30' FILL

SCC-3 & 4

FILE: CD-SCC34-21.dgn	DN: TBE		CK: BMP	DW: TxDOT		CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0338	01	068		SH 105	
04/2021 Updated X values.	DIST	COUNTY			SHEET NO.	
	BRY	GRIMES			179	

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

DATE:
FILE:

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

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

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE

0' TO 30' FILL

SCC-3 & 4

FILE: CD-SCC34-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
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REVISIONS	0338	01	068	SH 105
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		180

DATE: 3/22/2024 10:03:33 AM
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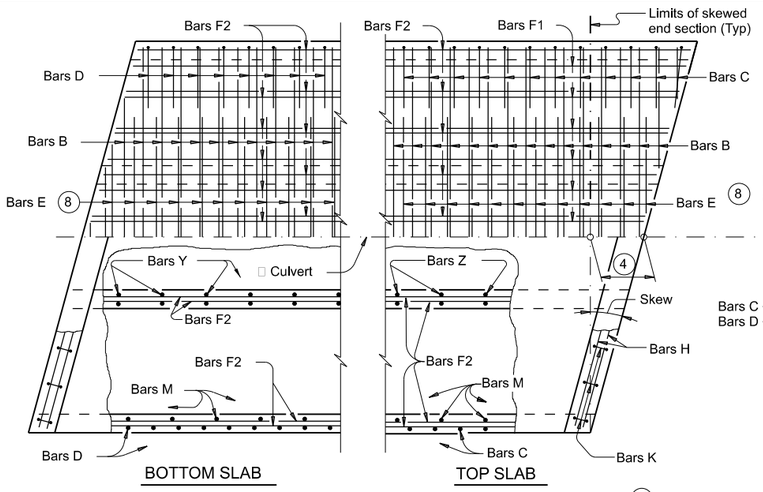
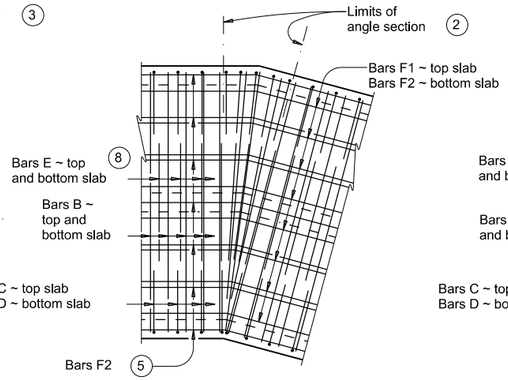
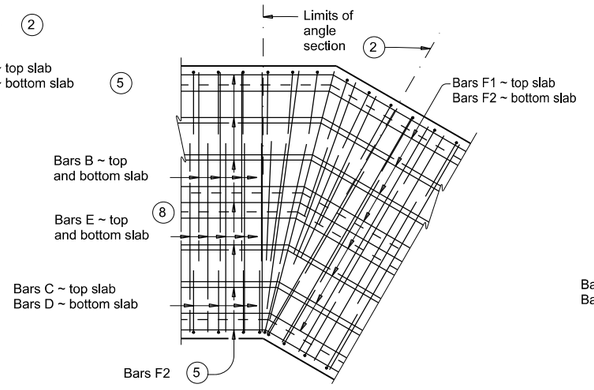


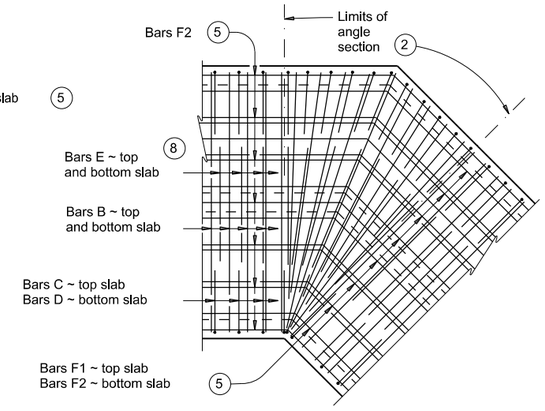
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

PLAN OF SKEWED ENDS ~ OVER 15° TO 30°

PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

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

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

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

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

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

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

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

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

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

(8) Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

LENGTHENING DETAIL (1)

CONSTRUCTION NOTES:

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

MATERIAL NOTES:

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

GENERAL NOTES:

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

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

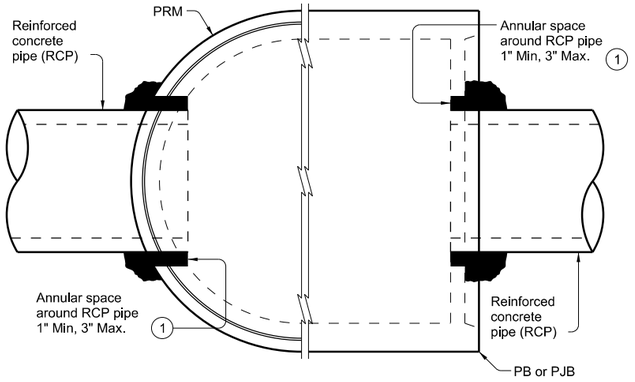
Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

FILE: CD-MC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		181

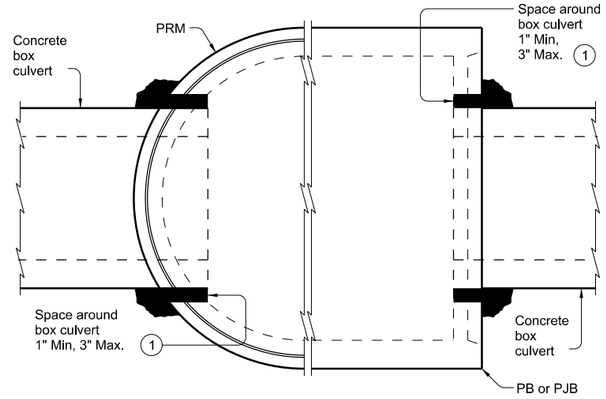
DATE:
FILE:



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

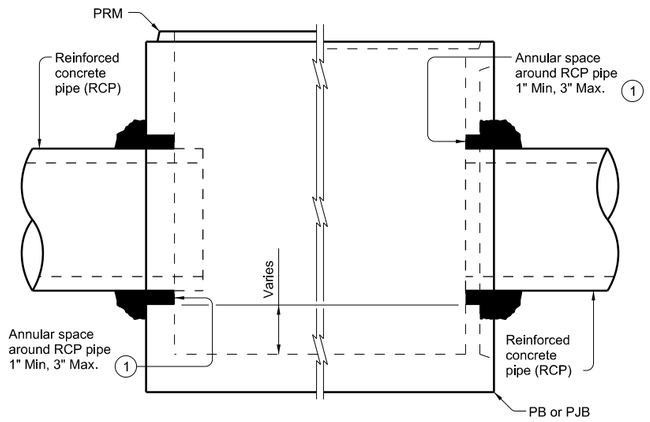
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

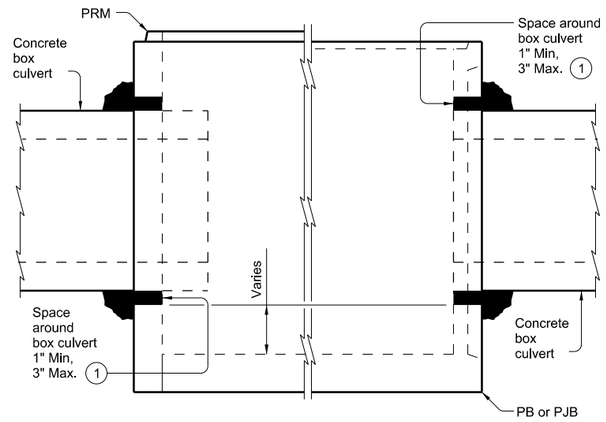
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

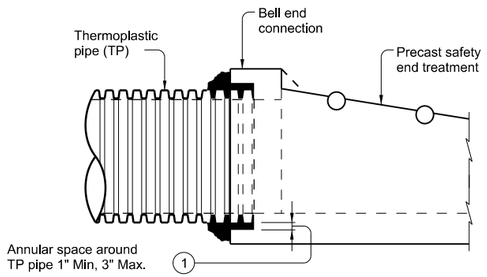
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

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

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

CONSTRUCTION NOTES:

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

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

MATERIAL NOTES:

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

GENERAL NOTES:

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

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

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

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

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

Texas Department of Transportation

Bridge Division Standard

PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

FILE: CD-PBGC-20.dgn	DN: TxDOT		CK: TAR	DW: JTR		CK: TAR	
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0338	01	068		SH 105		
	DIST	COUNTY				SHEET NO.	
	BRY	GRIMES				182	

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

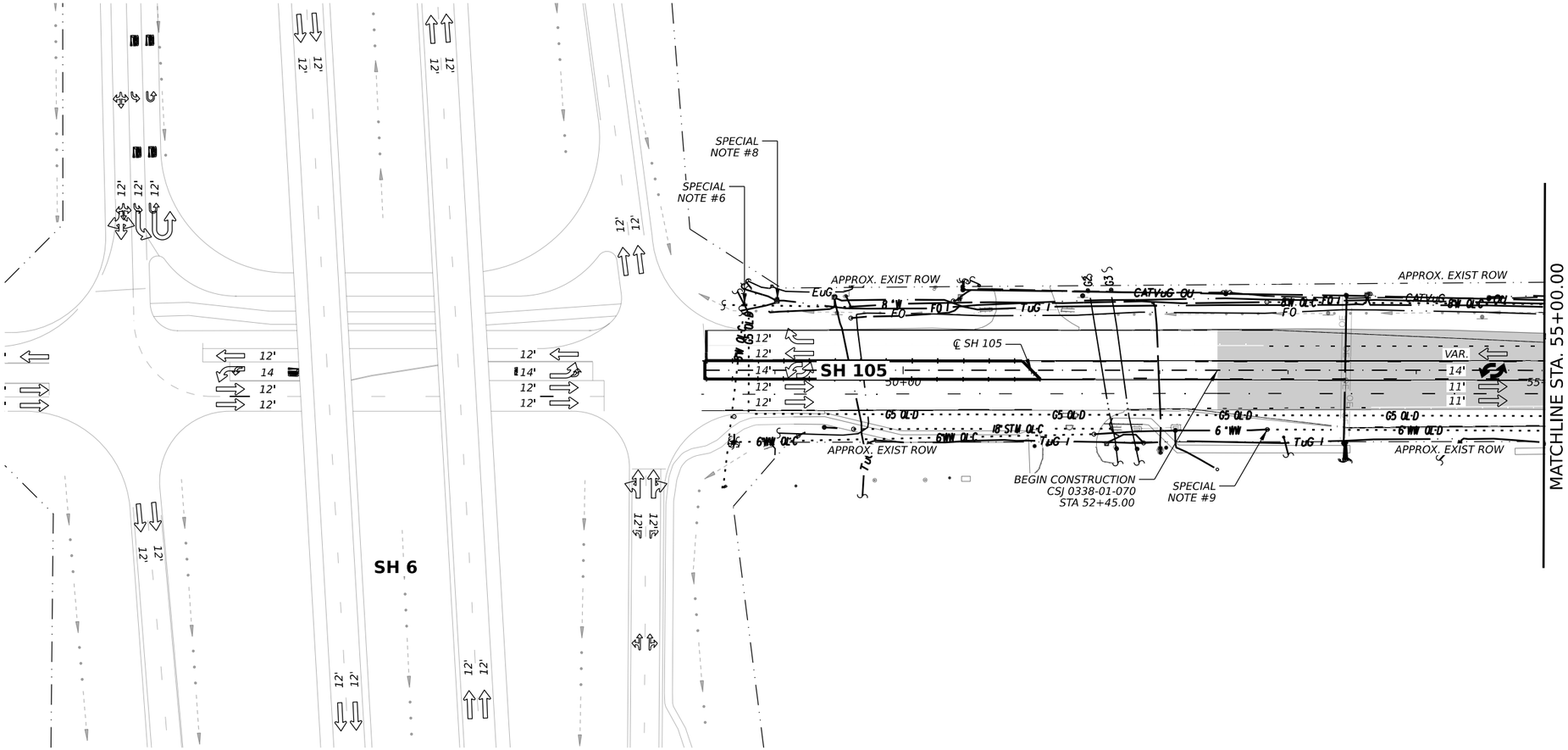
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*

GENERAL NOTES:

1. *THE HORIZONTAL LOCATION OF UTILITIES SHOWN ON THESE DRAWINGS IS ARRIVED AT BY THE USE OF DESIGNATING EQUIPMENT. THESE LINES WERE NOT UNCOVERED TO VERIFY EXACT HORIZONTAL LOCATIONS.*
2. *THE ACCURACY OF THE HORIZONTAL LOCATION OF UTILITY LINES SHOWN ON THESE PLANS CAN BE INFLUENCED BY FACTORS BEYOND SAM, LLC. CONTROL, SUCH AS CONDUCTIVITY OF MATERIALS AND THEIR SURROUNDINGS, SOIL MOISTURE CONTENT, PROXIMITY OF OTHER UNDERGROUND UTILITIES OR STRUCTURES, DEPTH OF UTILITY, ETC. THEREFORE, ONLY THE ACCURACY OBTAINED BY ACTUAL EXCAVATION CAN BE GUARANTEED TO APPLICABLE ENGINEERING AND/OR SURVEYING STANDARDS.*
3. *AS-BUILT DRAWINGS WERE USED TO COMPARE DESIGNATED LOCATIONS TO CONSTRUCTION AS-BUILT LOCATIONS.*
4. *THE USE OF THE HORIZONTAL LOCATIONS OF THE UTILITIES SHOWN ON THESE PLANS DOES NOT RELIEVE THE CONTRACTOR FROM THE DUTY TO COMPLY WITH APPLICABLE UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNER'S "ONE-CALL" CENTERS BEFORE EXCAVATION.*
5. *HORIZONTAL DATUM: UNITED STATES/STATE PLANE 1983, TEXAS CENTRAL 4203, U.S. SURVEY FEET. UTILIZING TRIMBLE R10 GN RECEIVERS AND TRIMBLE BUSINESS CENTER SOFTWARE. VERTICAL DATUM: NAVD 88, GEOID 18, U.S. SURVEY FEET.*
6. *ELECTROMAGNETIC DEPTHS (IF SHOWN) WERE TAKEN BY ELECTRONIC MEANS AND ARE APPROXIMATE. THE DEPTHS REPRESENT DISTANCE FROM GROUND SURFACE TO CENTER OF PIPE/CABLE. SAM, LLC. CANNOT WARRANT THE ACCURACY OF ELECTRONIC DEPTH READINGS SHOWN HEREON.*

SPECIAL NOTES:

1. *SAM LLC DISCOVERED MULTIPLE WATER STRUCTURES, HOWEVER WAS UNABLE TO OBTAIN A SIGNAL ON THEM. SAM LLC BELIEVES THE WATER LINES ASSOCIATED WITH THESE STRUCTURES ARE MADE FROM NON CONDUCTIVE MATERIALS.*
2. *SAM LLC DISCOVERED TWO UNKNOWN RISERS, HOWEVER WERE UNABLE TO OBTAIN A USABLE SIGNAL ON THEM. BASED ON FIELD INVESTIGATION, IT IS POSSIBLE THE RISERS ARE RELATED TO A NEARBY TELEPHONE POLE, HOWEVER SAM LLC CREWS WERE UNABLE TO VERIFY.*
3. *SAM LLC WAS ABLE TO LOCATE THE SPRINT FIBER LINE UP TO THIS POINT BEFORE LOSING THE SIGNAL. SAM LLC PERFORMED SWEEPS IN THIS AREA, AS WELL AS GOING EAST TO THE HANDHOLE, HOWEVER WERE UNABLE TO LOCATE IT. THE LINE WAS ALSO NOT FOUND WITHIN THE HANDHOLE. BASED ON THE FINDINGS, SAM LLC BELIEVES THE LINE WAS EITHER CUT OR REMOVED.*
4. *SAM LLC DISCOVERED 2 CUT TELEPHONE LINES WITHIN THE PEDESTAL. BOTH LINES WERE ABLE TO BE LOCATED, HOWEVER THE LINE GOING SOUTH LOST SIGNAL AT THIS POINT.*
5. *SAM LLC BELIEVES THESE TWO FIBER OPTIC LINES ARE THE SAME LINE. HOWEVER, DUE TO SIGNAL INTERFERENCE CAUSED BY THE UNKNOWN LINE, SAM LLC WAS UNABLE TO VERIFY.*
6. *SAM LLC DISCOVERED A WATER VALVE WITH NO TRACER WIRE AND FILLED WITH WATER. FIELD CREWS ATTEMPTED TO DIRECT CONNECT TO THE STEEL PIPE, HOWEVER WERE UNABLE TO OBTAIN A SIGNAL.*
7. *SAM LLC DISCOVERED A GAS METER WITH NO TRACER WIRE, FIELD CREWS ATTEMPTED TO CONNECT TO THE STEEL PIPE, HOWEVER WERE UNABLE TO OBTAIN A SIGNAL.*
8. *SAM LLC IDENTIFIED 3 NON-CONDUCTIVE LINES AND 1 CUT LINE WITHIN THIS HAND HOLE. AS A RESULT, THESE FOUR LINES WERE UNABLE TO BE LOCATED.*
9. *SAM LLC WAS UNABLE TO LOCATE THE NEXT CORRESPONDING STRUCTURE RELATED TO THIS WASTEWATER LINE. SAM LLC NOTES THE CLAY PIPE WAS DRY AND DIDN'T APPEAR TO BE IN USE, LEADING TO BELIEVE THE LINE HAS ABANDONED.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS BEGIN TO STA 55+00

SHEET 1 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		183

DATE: 3/22/2024 10:09:06 AM
FILE: BRYCEC_TASK02_Utility01.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

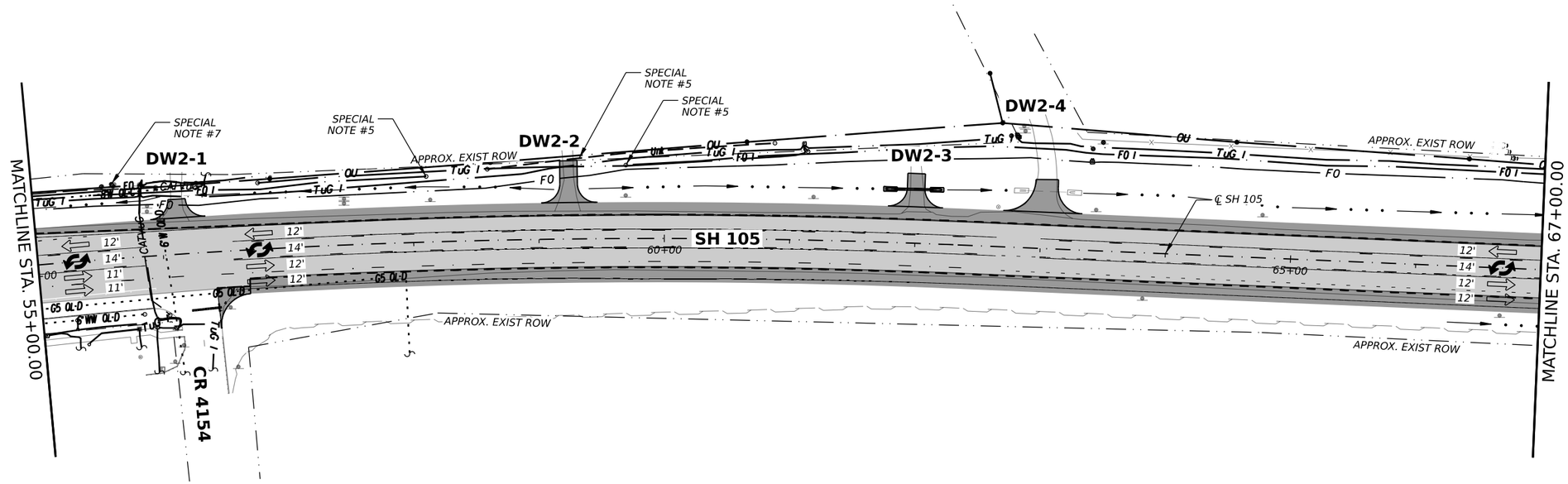
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

1. *STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.*

GENERAL NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS STA 55+00 TO STA 67+00

SHEET 2 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		184

DATE: 3/22/2024 10:09:13 AM
FILE: BRYCEC_TASK02_Utility02.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
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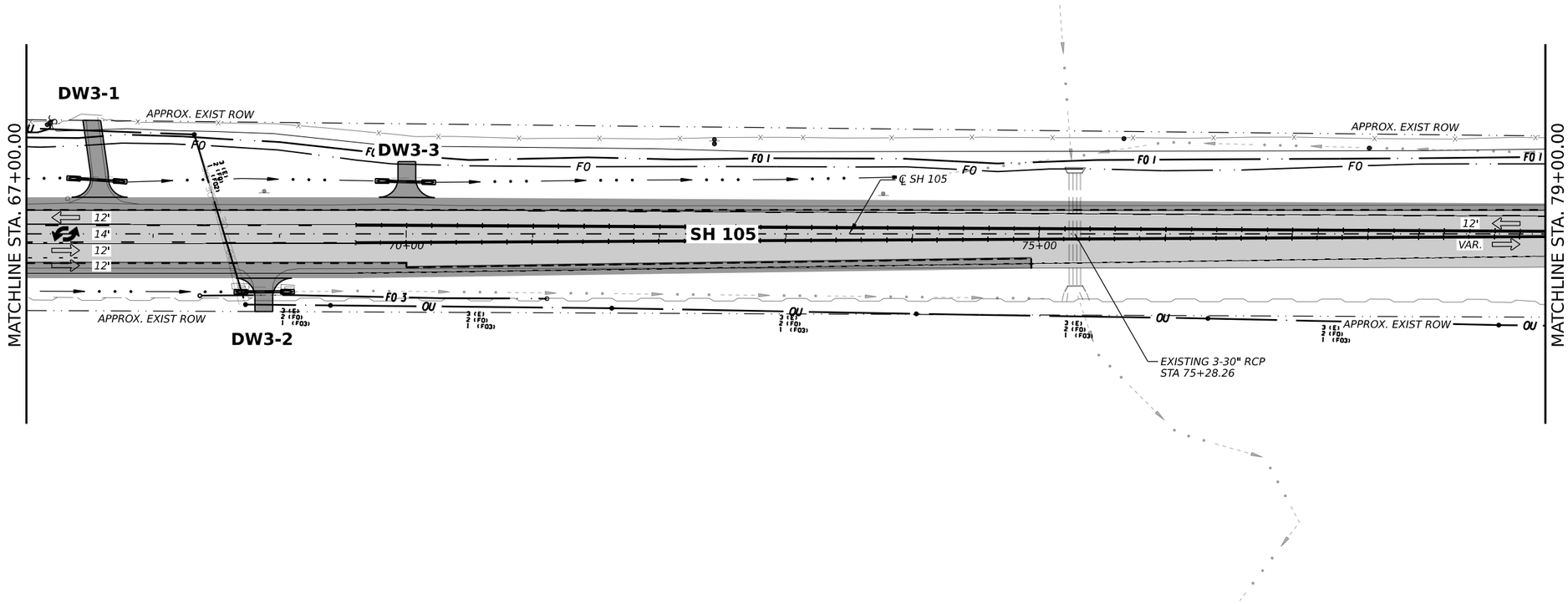

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS
STA 67+00 TO STA 79+00

SHEET 3 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		185

DATE: 3/22/2024 10:09:18 AM
FILE: BRYCEC_TASK02_Utility03.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
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SUE LEGEND CONT'D

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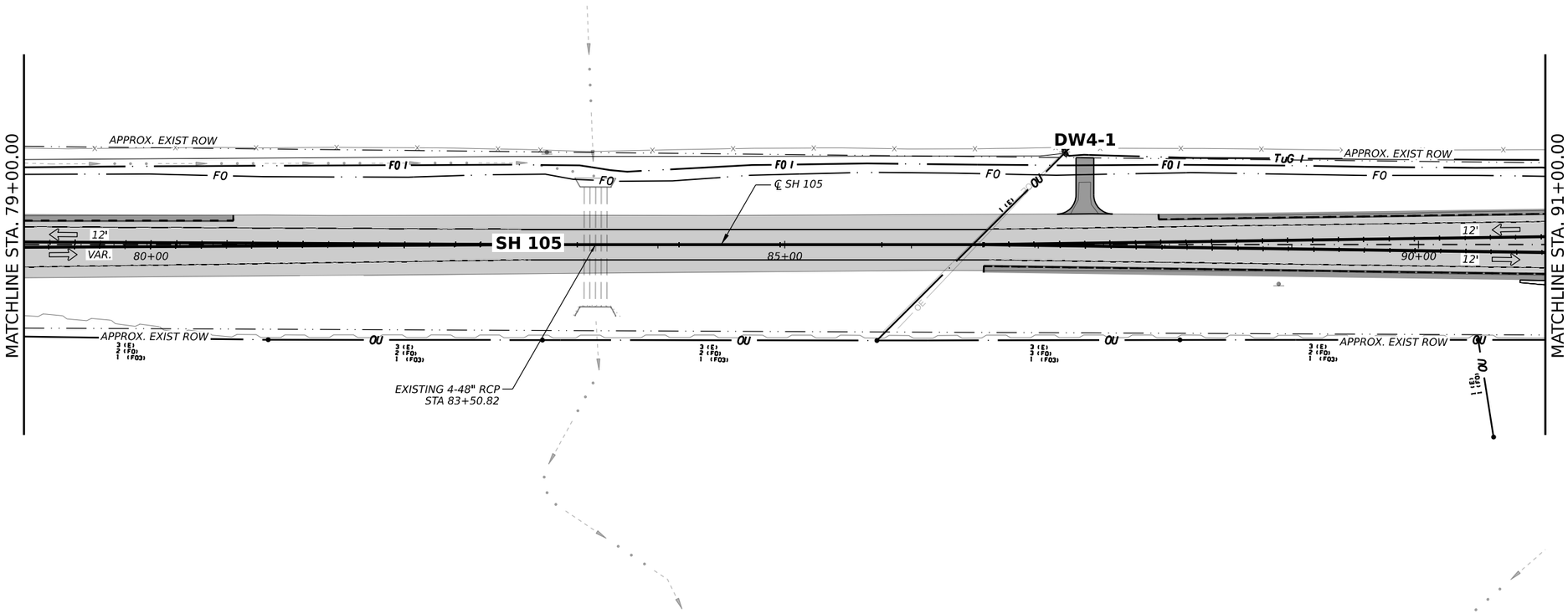

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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

SH 105

EXISTING UTILITY LAYOUTS STA 79+00 TO STA 91+00

SHEET 4 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		186

DATE: 3/22/2024 10:09:24 AM
FILE: BRYCEC_TASK02_Utility04.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
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FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
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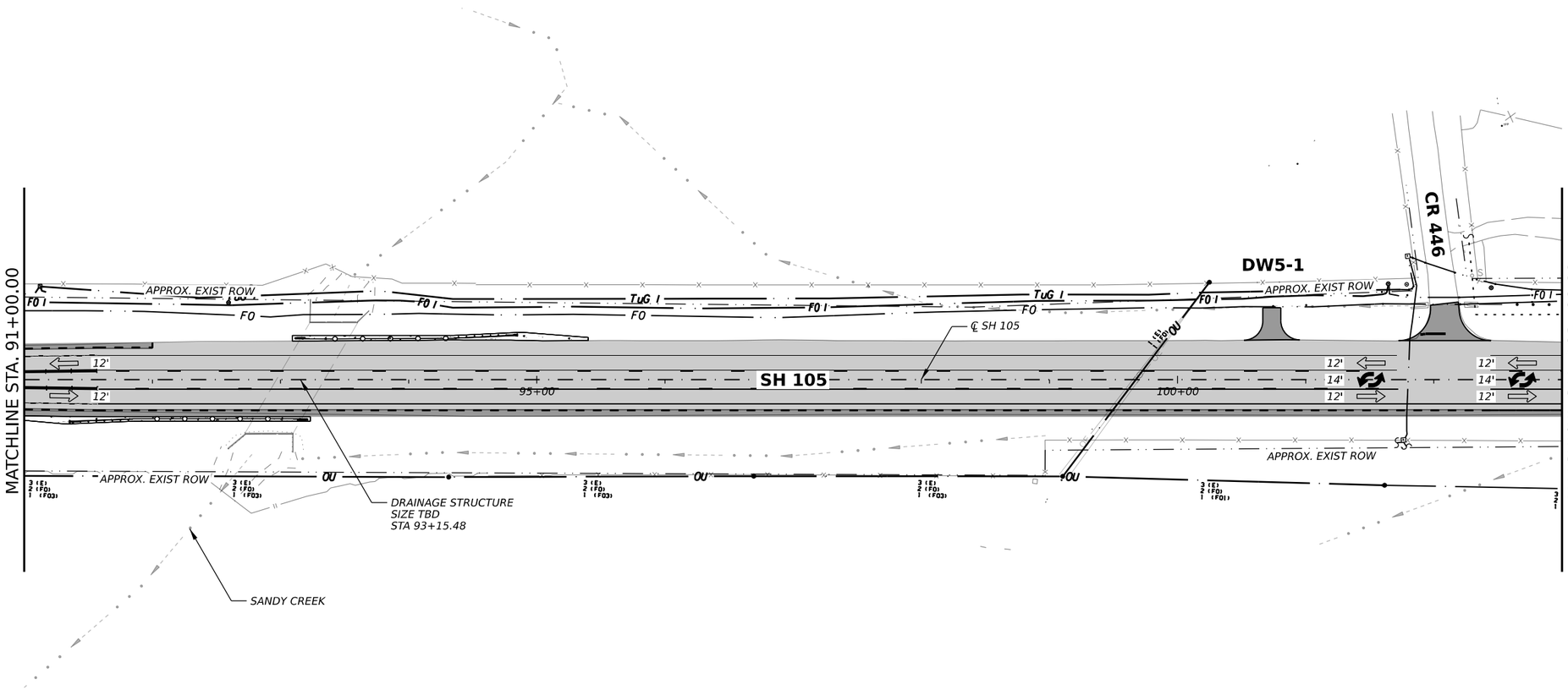
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
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0 50' 100'
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SH 105

EXISTING UTILITY LAYOUTS STA 91+00 TO STA 103+00

SHEET 5 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		187

DATE: 3/22/2024 10:09:30 AM
FILE: BRYCEC_TASK02_Utility05.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
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W	WATER	CITY OF NAVASOTA
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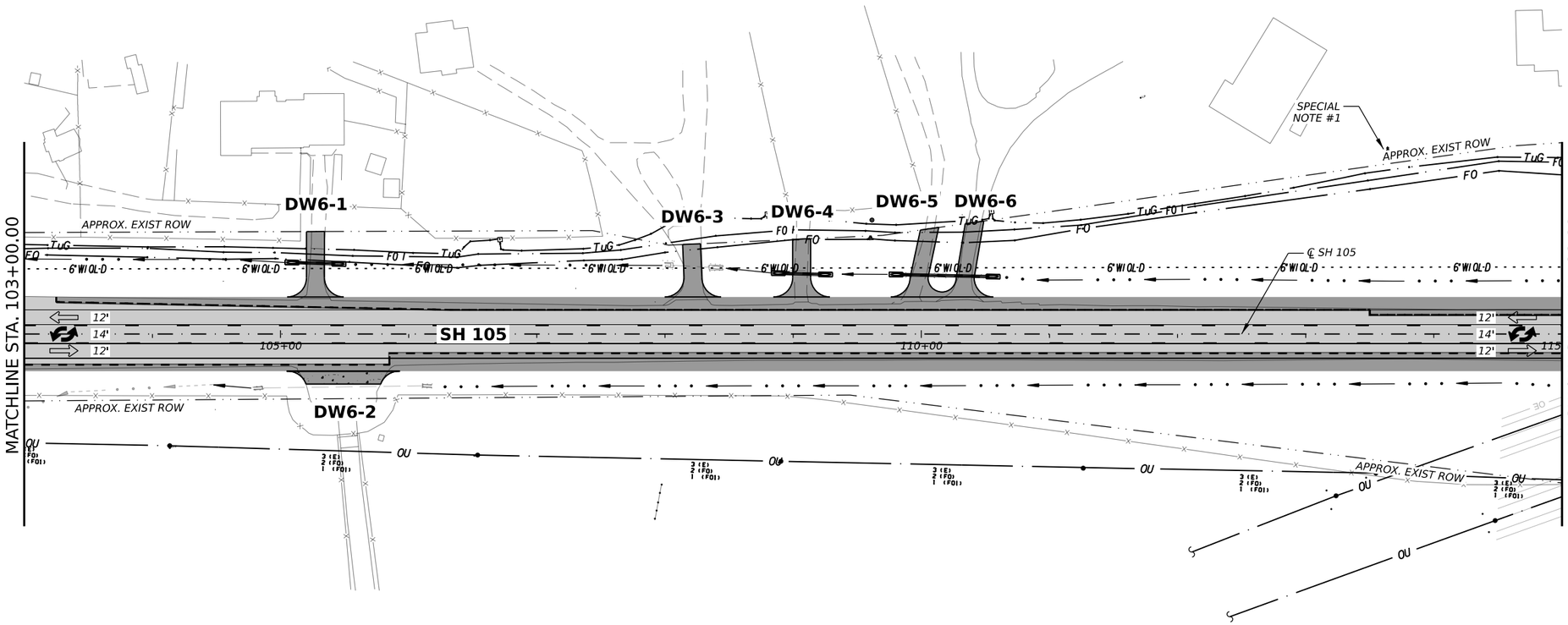
SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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GENERAL NOTES:

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2. THE ACCURACY OF THE HORIZONTAL LOCATION OF UTILITY LINES SHOWN ON THESE PLANS CAN BE INFLUENCED BY FACTORS BEYOND SAM, LLC. CONTROL, SUCH AS CONDUCTIVITY OF MATERIALS AND THEIR SURROUNDINGS, SOIL MOISTURE CONTENT, PROXIMITY OF OTHER UNDERGROUND UTILITIES OR STRUCTURES, DEPTH OF UTILITY, ETC. THEREFORE, ONLY THE ACCURACY OBTAINED BY ACTUAL EXCAVATION CAN BE GUARANTEED TO APPLICABLE ENGINEERING AND/OR SURVEYING STANDARDS.
3. AS-BUILT DRAWINGS WERE USED TO COMPARE DESIGNATED LOCATIONS TO CONSTRUCTION AS-BUILT LOCATIONS.
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5. HORIZONTAL DATUM: UNITED STATES/STATE PLANE 1983, TEXAS CENTRAL 4203, U.S. SURVEY FEET. UTILIZING TRIMBLE R10 GN RECEIVERS AND TRIMBLE BUSINESS CENTER SOFTWARE. VERTICAL DATUM: NAVD 88, GEOID 18, U.S. SURVEY FEET.
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SPECIAL NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-18341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 103+00 TO STA 115+00

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		188

DATE: 3/22/2024 10:09:35 AM
FILE: BRYCEC_TASK02_Utility06.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
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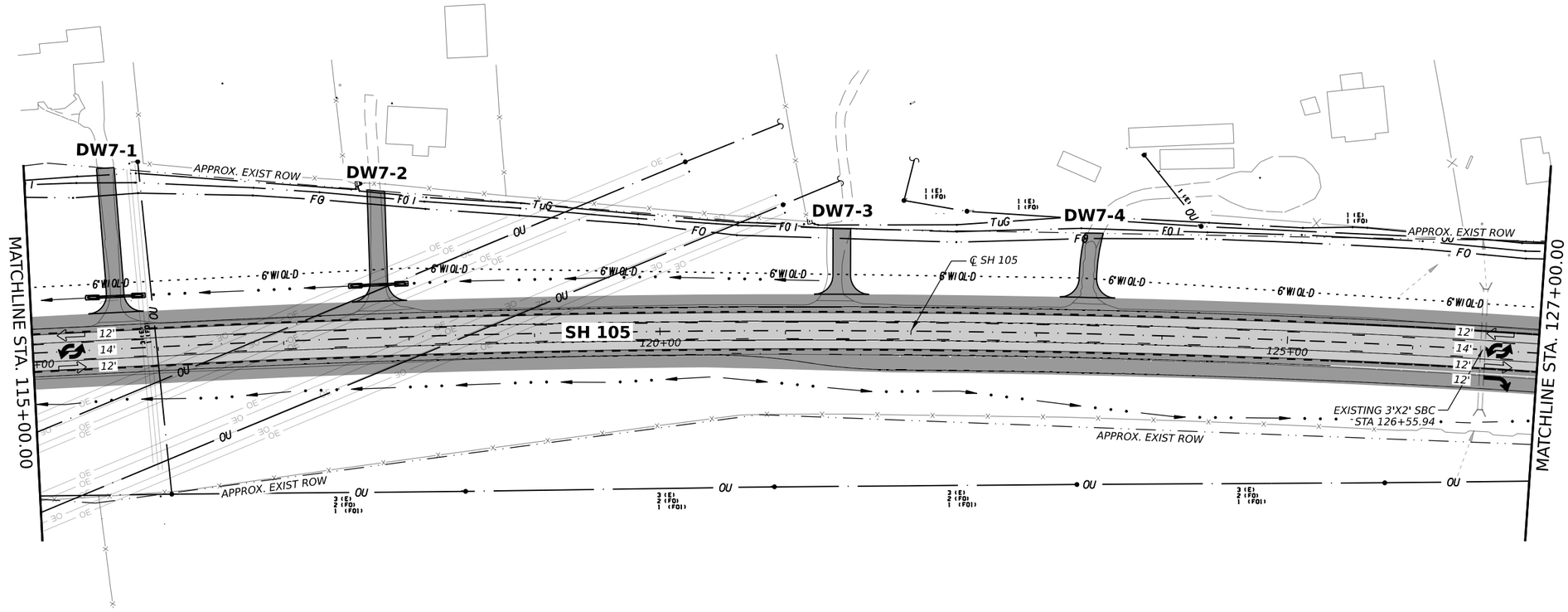

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

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LICENSED
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS STA 115+00 TO STA 127+00

SHEET 7 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		189

DATE: 3/22/2024 10:09:41 AM
FILE: BRYCEC_TASK02_Utility07.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

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	MIDSOUTH ELECTRIC COOP / E
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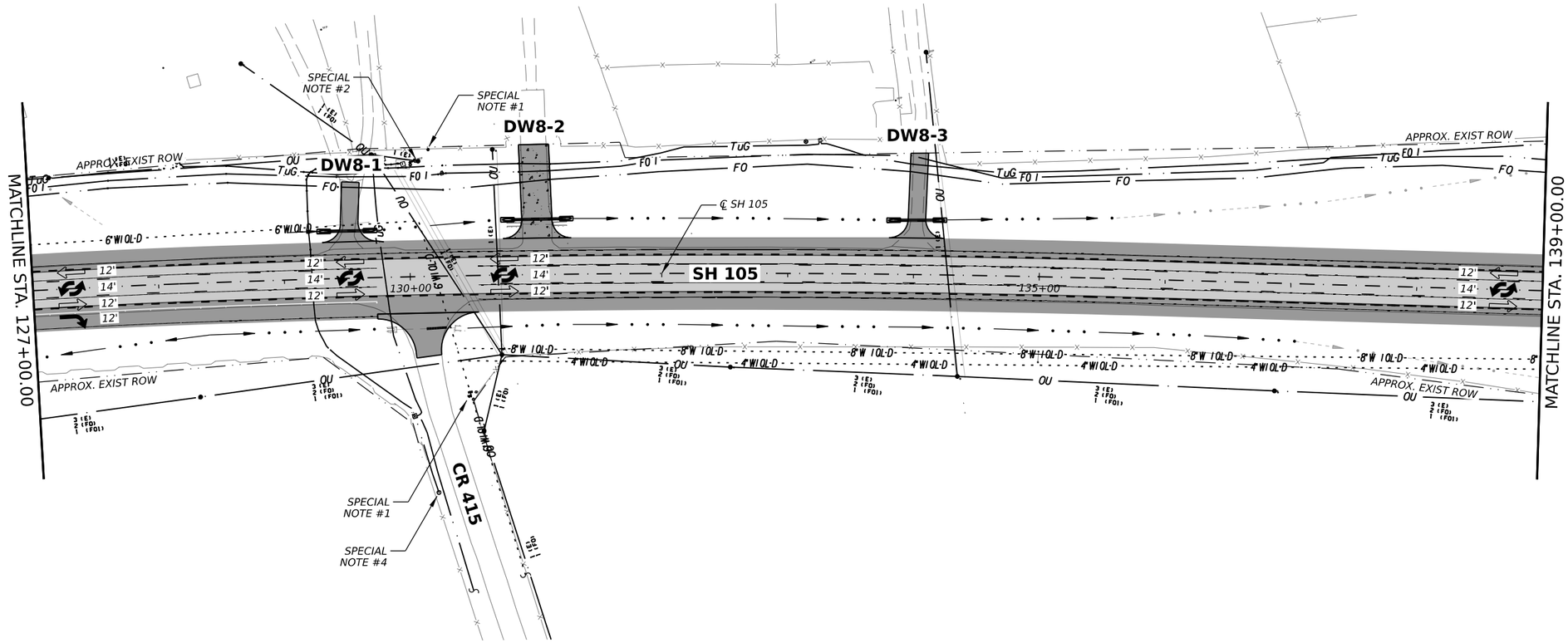

LEGEND:

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- PROPOSED LANE
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 127+00 TO STA 139+00

SHEET 8 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		190

DATE: 3/22/2024 10:09:47 AM
FILE: BRYCEC_TASK02_Utility08.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
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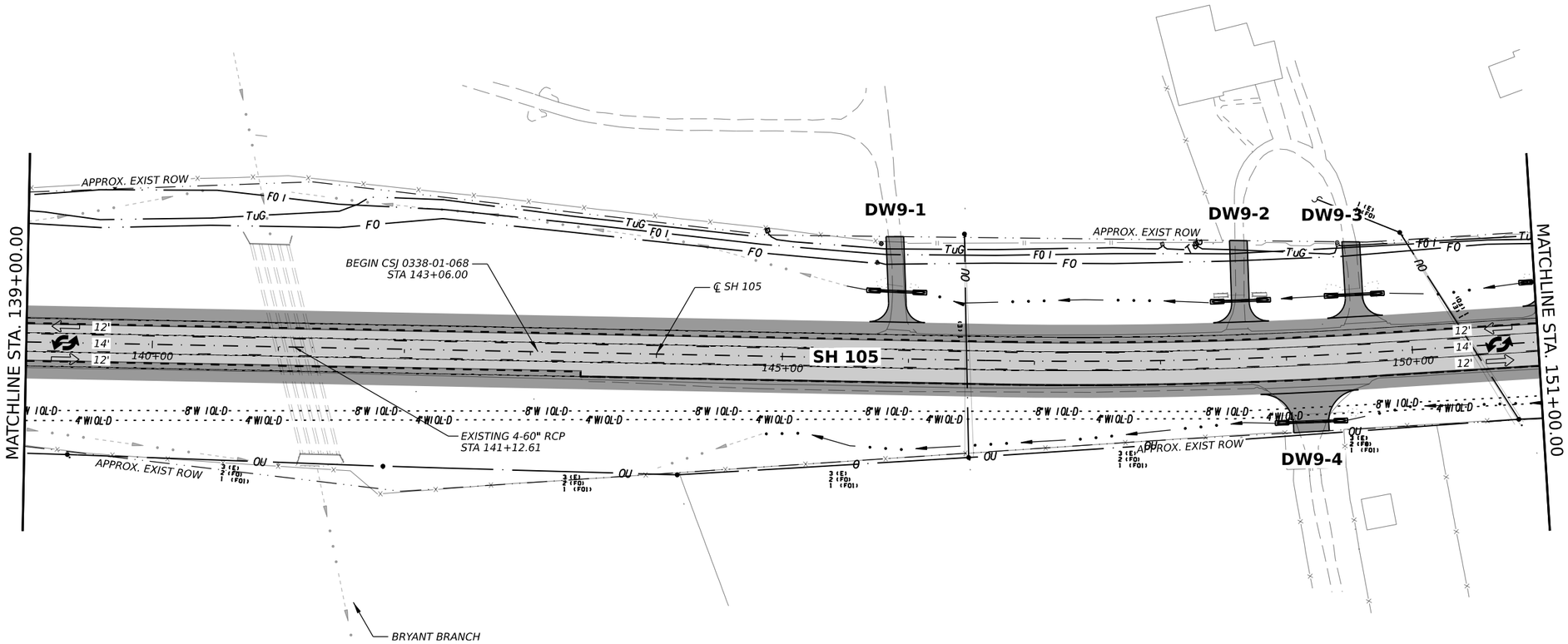
	UNKOWNN / FO3



LEGEND:

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0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS STA 139+00 TO STA 151+00

SHEET 9 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		191

DATE: 3/22/2024 10:09:52 AM
FILE: BRYCEC_TASK02_Utility09.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
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EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
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FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

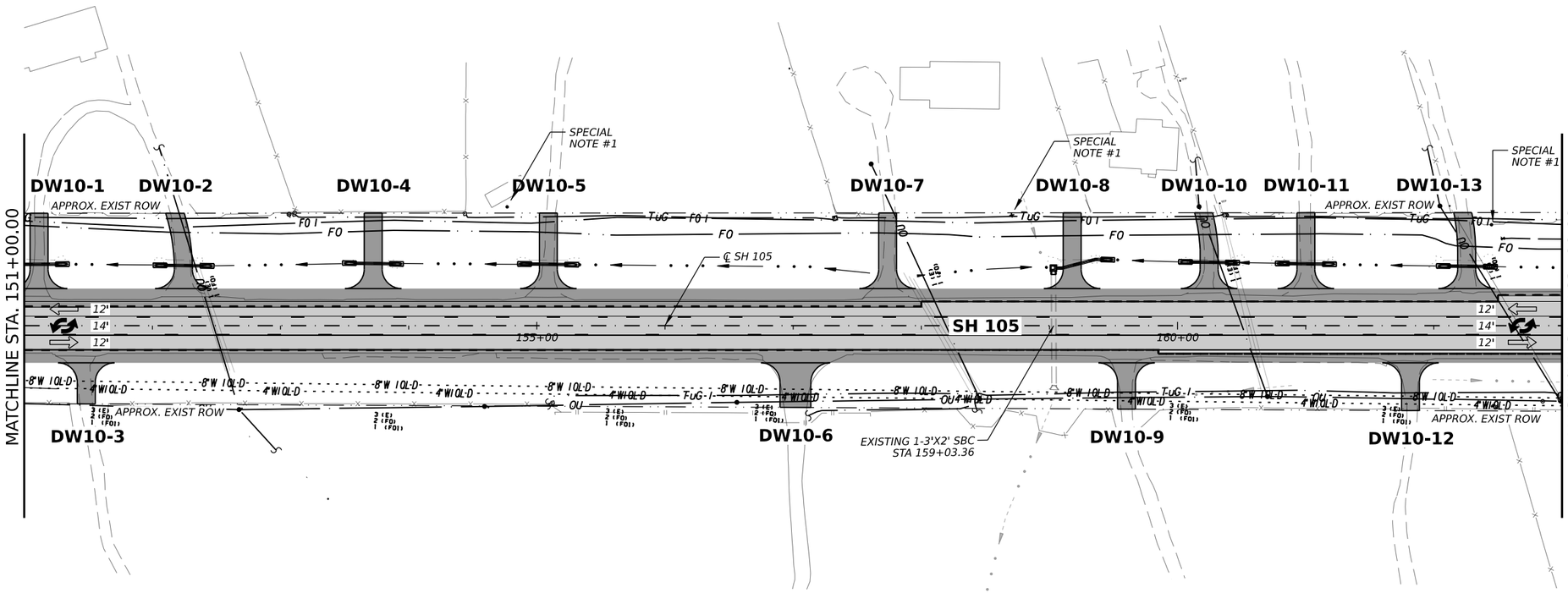
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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GENERAL NOTES:

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SPECIAL NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 151+00 TO STA 163+00

SHEET 10 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		192

DATE: 3/22/2024 10:09:59 AM
FILE: BRYCEC_TASK02_Utility10.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
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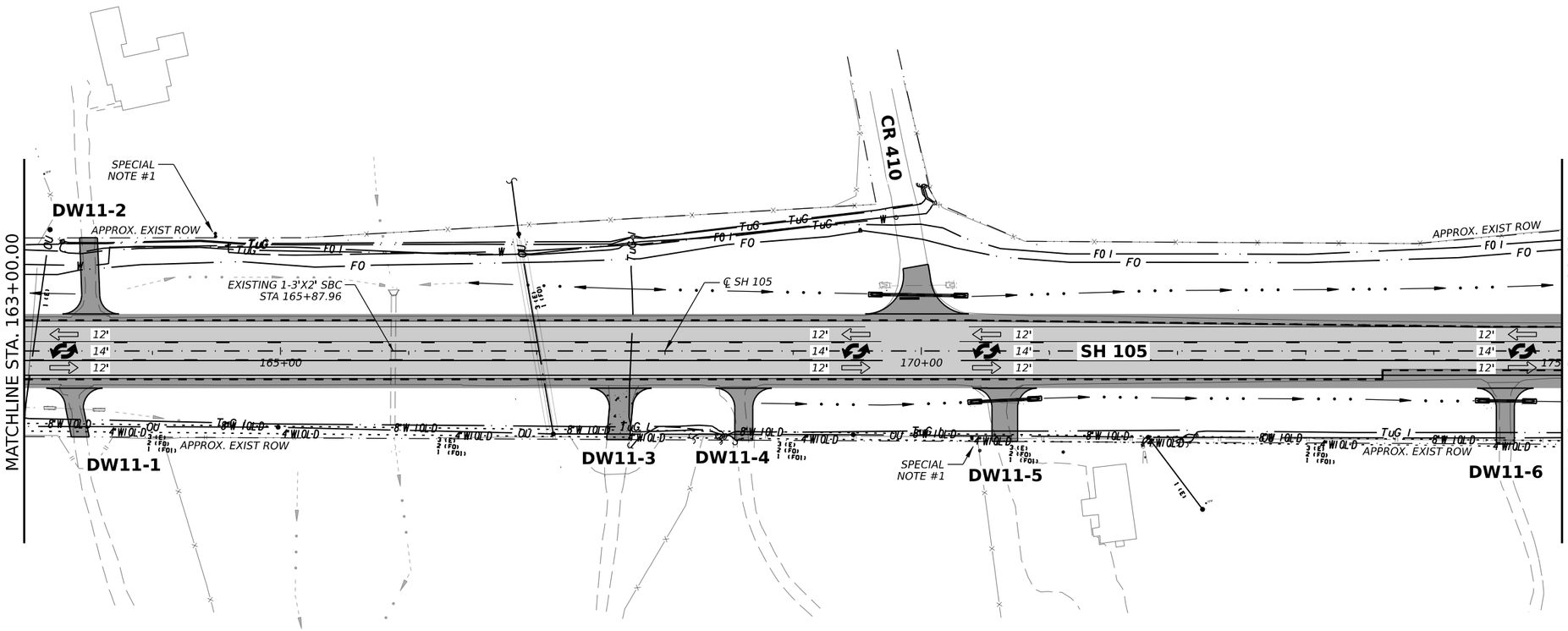

LEGEND:

- PROPOSED WIDENING
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- EXISTING LANE
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127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS STA 163+00 TO STA 175+00

SHEET 11 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		193

DATE: 3/22/2024 10:10:04 AM
FILE: BRYCEC_TASK02_Utility11.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
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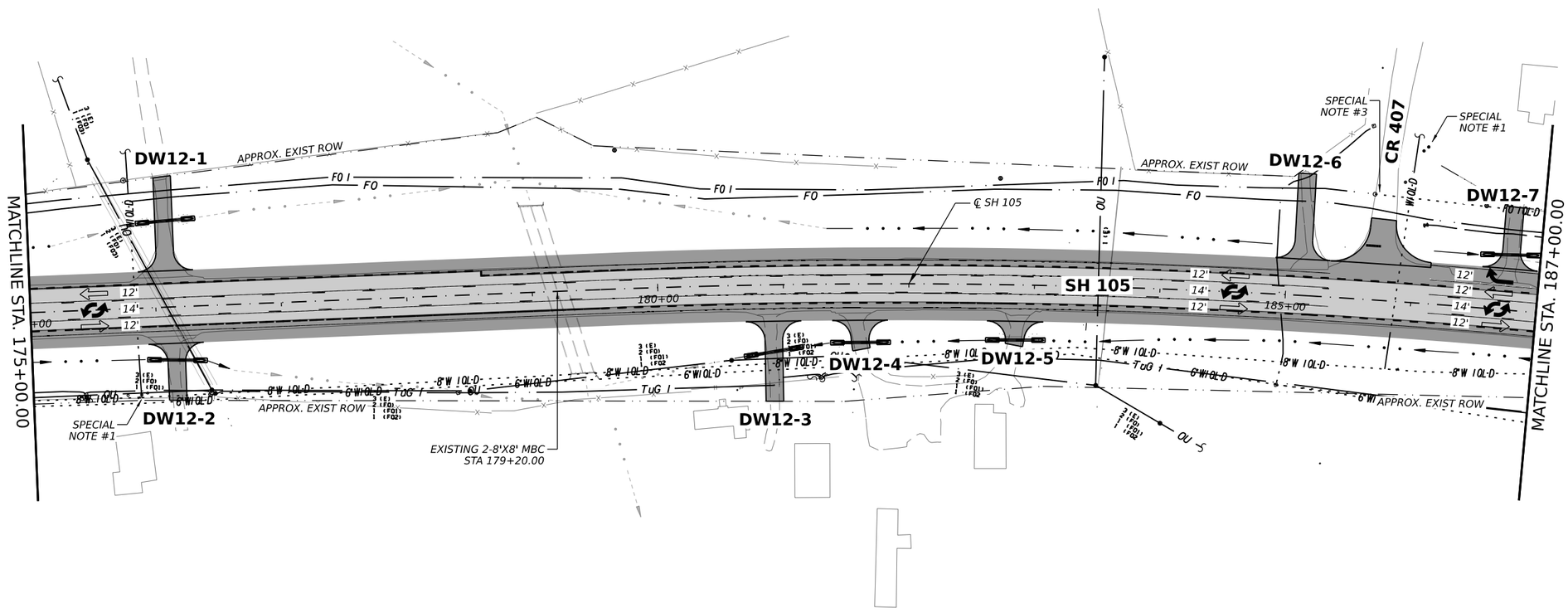

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
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127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 175+00 TO STA 187+00

SHEET 12 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		194

DATE: 3/22/2024 10:10:10 AM
FILE: BRYCEC_TASK02_Utility12.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
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SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
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TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
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SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
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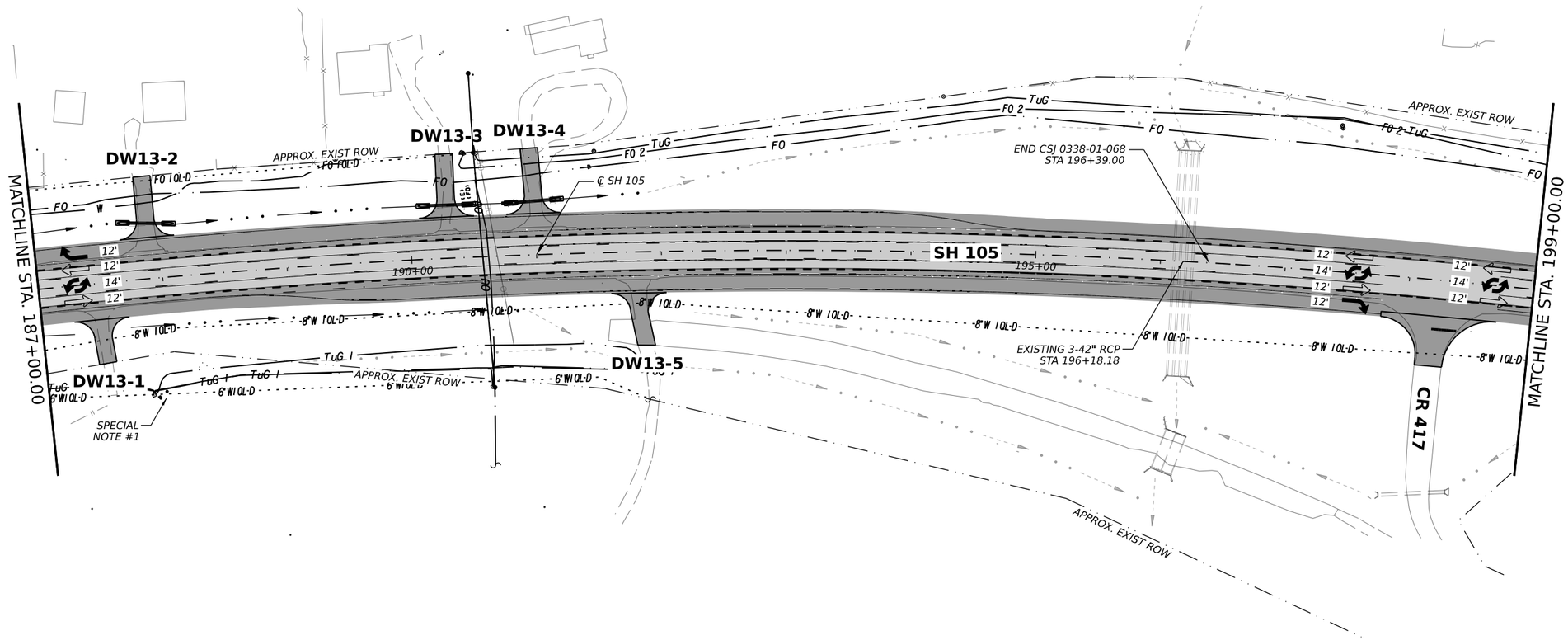

LEGEND:

- PROPOSED WIDENING
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0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS STA 187+00 TO STA 199+00

SHEET 13 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		195

DATE: 3/22/2024 10:10:16 AM
FILE: BRYCEC_TASK02_Utility13.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

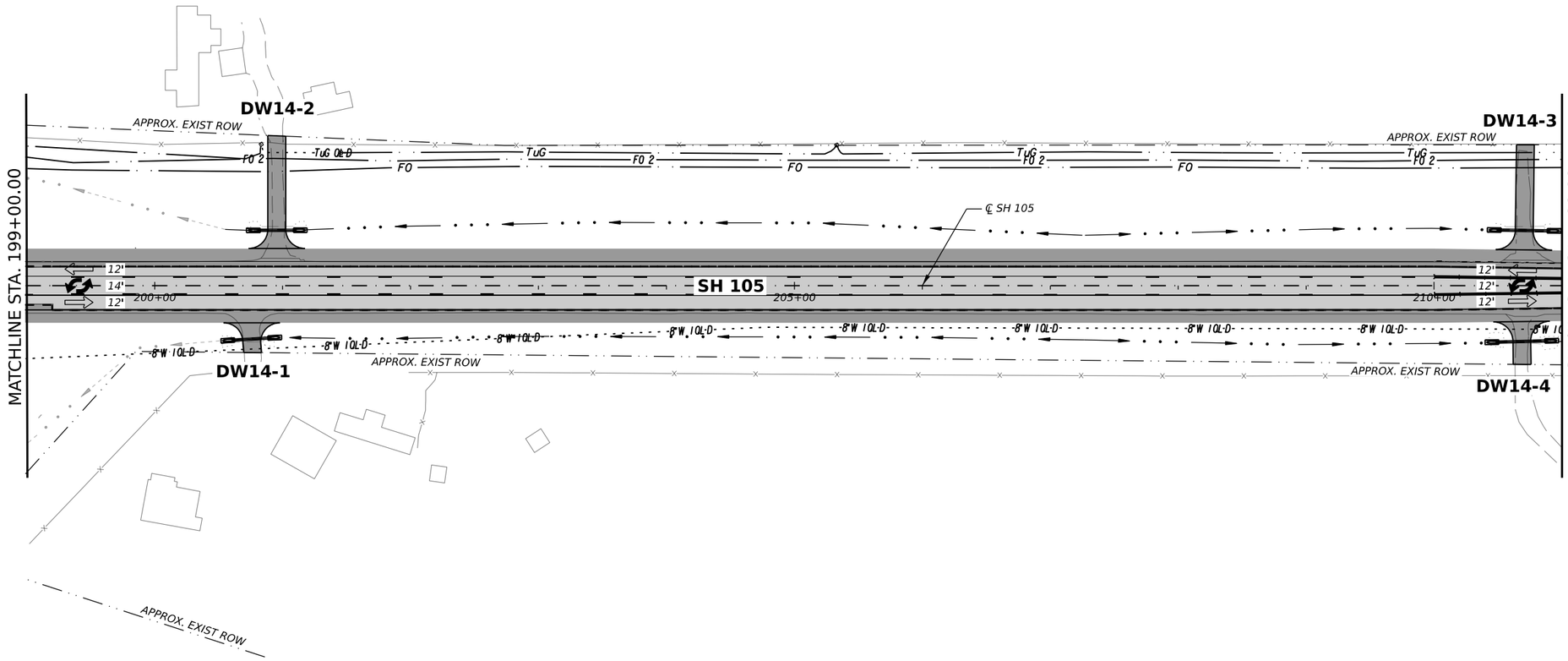
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

GENERAL NOTES:

1. THE HORIZONTAL LOCATION OF UTILITIES SHOWN ON THESE DRAWINGS IS ARRIVED AT BY THE USE OF DESIGNATING EQUIPMENT. THESE LINES WERE NOT UNCOVERED TO VERIFY EXACT HORIZONTAL LOCATIONS.
2. THE ACCURACY OF THE HORIZONTAL LOCATION OF UTILITY LINES SHOWN ON THESE PLANS CAN BE INFLUENCED BY FACTORS BEYOND SAM, LLC. CONTROL, SUCH AS CONDUCTIVITY OF MATERIALS AND THEIR SURROUNDINGS, SOIL MOISTURE CONTENT, PROXIMITY OF OTHER UNDERGROUND UTILITIES OR STRUCTURES, DEPTH OF UTILITY, ETC. THEREFORE, ONLY THE ACCURACY OBTAINED BY ACTUAL EXCAVATION CAN BE GUARANTEED TO APPLICABLE ENGINEERING AND/OR SURVEYING STANDARDS.
3. AS-BUILT DRAWINGS WERE USED TO COMPARE DESIGNATED LOCATIONS TO CONSTRUCTION AS-BUILT LOCATIONS.
4. THE USE OF THE HORIZONTAL LOCATIONS OF THE UTILITIES SHOWN ON THESE PLANS DOES NOT RELIEVE THE CONTRACTOR FROM THE DUTY TO COMPLY WITH APPLICABLE UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNER'S "ONE-CALL" CENTERS BEFORE EXCAVATION.
5. HORIZONTAL DATUM: UNITED STATES/STATE PLANE 1983, TEXAS CENTRAL 4203, U.S. SURVEY FEET. UTILIZING TRIMBLE R10 GN RECEIVERS AND TRIMBLE BUSINESS CENTER SOFTWARE. VERTICAL DATUM: NAVD 88, GEOID 18, U.S. SURVEY FEET.
6. ELECTROMAGNETIC DEPTHS (IF SHOWN) WERE TAKEN BY ELECTRONIC MEANS AND ARE APPROXIMATE. THE DEPTHS REPRESENT DISTANCE FROM GROUND SURFACE TO CENTER OF PIPE/CABLE. SAM, LLC. CANNOT WARRANT THE ACCURACY OF ELECTRONIC DEPTH READINGS SHOWN HEREON.

SPECIAL NOTES:

1. SAM LLC DISCOVERED MULTIPLE WATER STRUCTURES, HOWEVER WAS UNABLE TO OBTAIN A SIGNAL ON THEM. SAM LLC BELIEVES THE WATER LINES ASSOCIATED WITH THESE STRUCTURES ARE MADE FROM NON CONDUCTIVE MATERIALS.
2. SAM LLC DISCOVERED TWO UNKNOWN RISERS, HOWEVER WERE UNABLE TO OBTAIN A USABLE SIGNAL ON THEM. BASED ON FIELD INVESTIGATION, IT IS POSSIBLE THE RISERS ARE RELATED TO A NEARBY TELEPHONE POLE, HOWEVER SAM LLC CREWS WERE UNABLE TO VERIFY.
3. SAM LLC WAS ABLE TO LOCATE THE SPRINT FIBER LINE UP TO THIS POINT BEFORE LOSING THE SIGNAL. SAM LLC PERFORMED SWEEPS IN THIS AREA, AS WELL AS GOING EAST TO THE HANDHOLE, HOWEVER WERE UNABLE TO LOCATE IT. THE LINE WAS ALSO NOT FOUND WITHIN THE HANDHOLE. BASED ON THE FINDINGS, SAM LLC BELIEVES THE LINE WAS EITHER CUT OR REMOVED.
4. SAM LLC DISCOVERED 2 CUT TELEPHONE LINES WITHIN THE PEDESTAL. BOTH LINES WERE ABLE TO BE LOCATED, HOWEVER THE LINE GOING SOUTH LOST SIGNAL AT THIS POINT.
5. SAM LLC BELIEVES THESE TWO FIBER OPTIC LINES ARE THE SAME LINE. HOWEVER, DUE TO SIGNAL INTERFERENCE CAUSED BY THE UNKNOWN LINE, SAM LLC WAS UNABLE TO VERIFY.
6. SAM LLC DISCOVERED A WATER VALVE WITH NO TRACER WIRE AND FILLED WITH WATER. FIELD CREWS ATTEMPTED TO DIRECT CONNECT TO THE STEEL PIPE, HOWEVER WERE UNABLE TO OBTAIN A SIGNAL.
7. SAM LLC DISCOVERED A GAS METER WITH NO TRACER WIRE, FIELD CREWS ATTEMPTED TO CONNECT TO THE STEEL PIPE, HOWEVER WERE UNABLE TO OBTAIN A SIGNAL.
8. SAM LLC IDENTIFIED 3 NON-CONDUCTIVE LINES AND 1 CUT LINE WITHIN THIS HAND HOLE. AS A RESULT, THESE FOUR LINES WERE UNABLE TO BE LOCATED.
9. SAM LLC WAS UNABLE TO LOCATE THE NEXT CORRESPONDING STRUCTURE RELATED TO THIS WASTEWATER LINE. SAM LLC NOTES THE CLAY PIPE WAS DRY AND DIDN'T APPEAR TO BE IN USE, LEADING TO BELIEVE THE LINE HAS ABANDONED.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

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SH 105

EXISTING UTILITY LAYOUTS STA 199+00 TO STA 211+00

SHEET 14 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		196

DATE: 3/22/2024 10:10:22 AM
FILE: BRYCEC_TASK02_Utility14.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

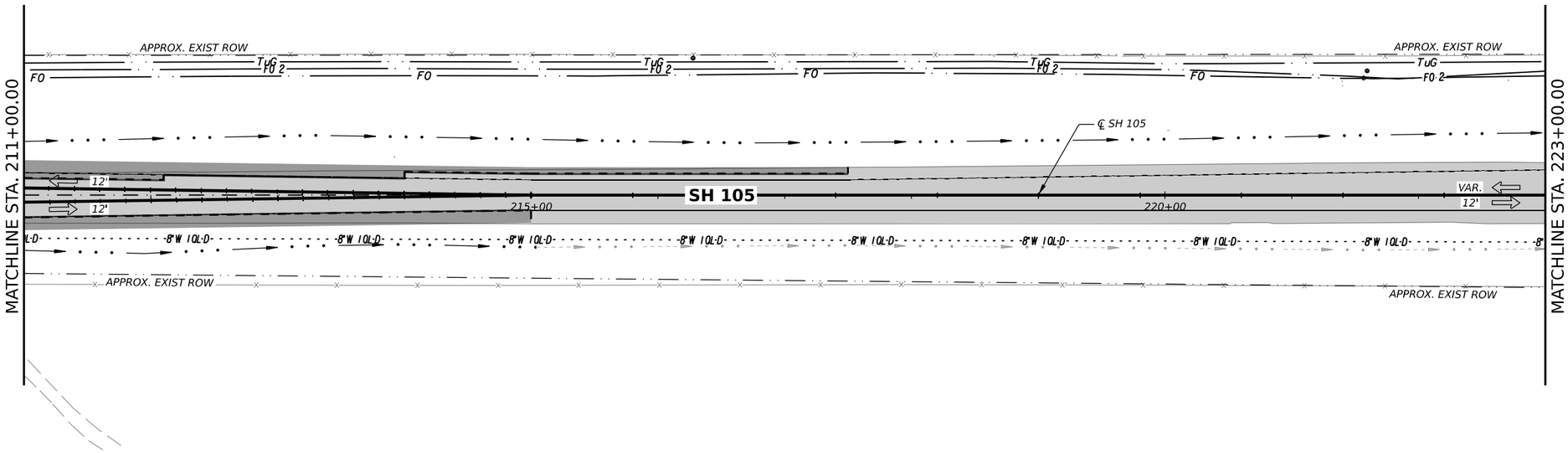
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 211+00 TO STA 223+00

SHEET 15 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		197

DATE: 3/22/2024 10:10:28 AM
FILE: BRYCEC_TASK02_Utility15.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
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FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
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G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
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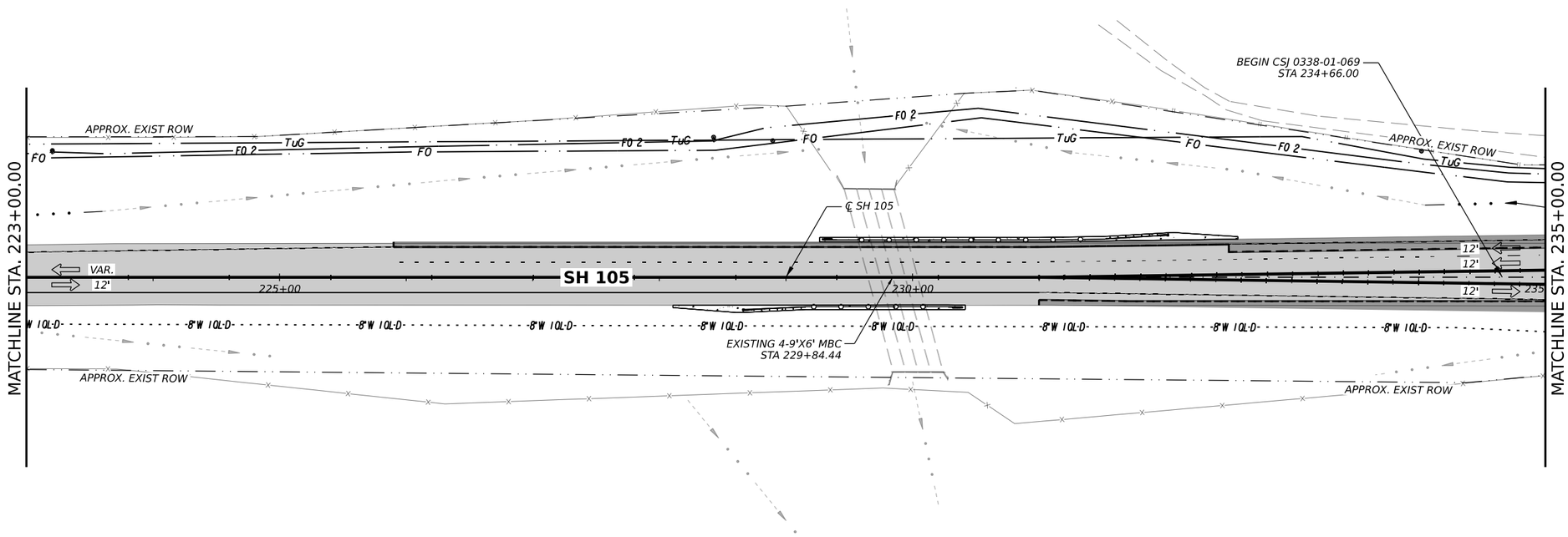
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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DATE: 3/22/2024 10:10:33 AM
FILE: BRYCEC_TASK02_Utility16.dgn

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-18341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 223+00 TO STA 235+00

SHEET 16 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		198

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
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FO2	FIBER OPTIC	CENTURYLINK
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G	GAS	ATMOS
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G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
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WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
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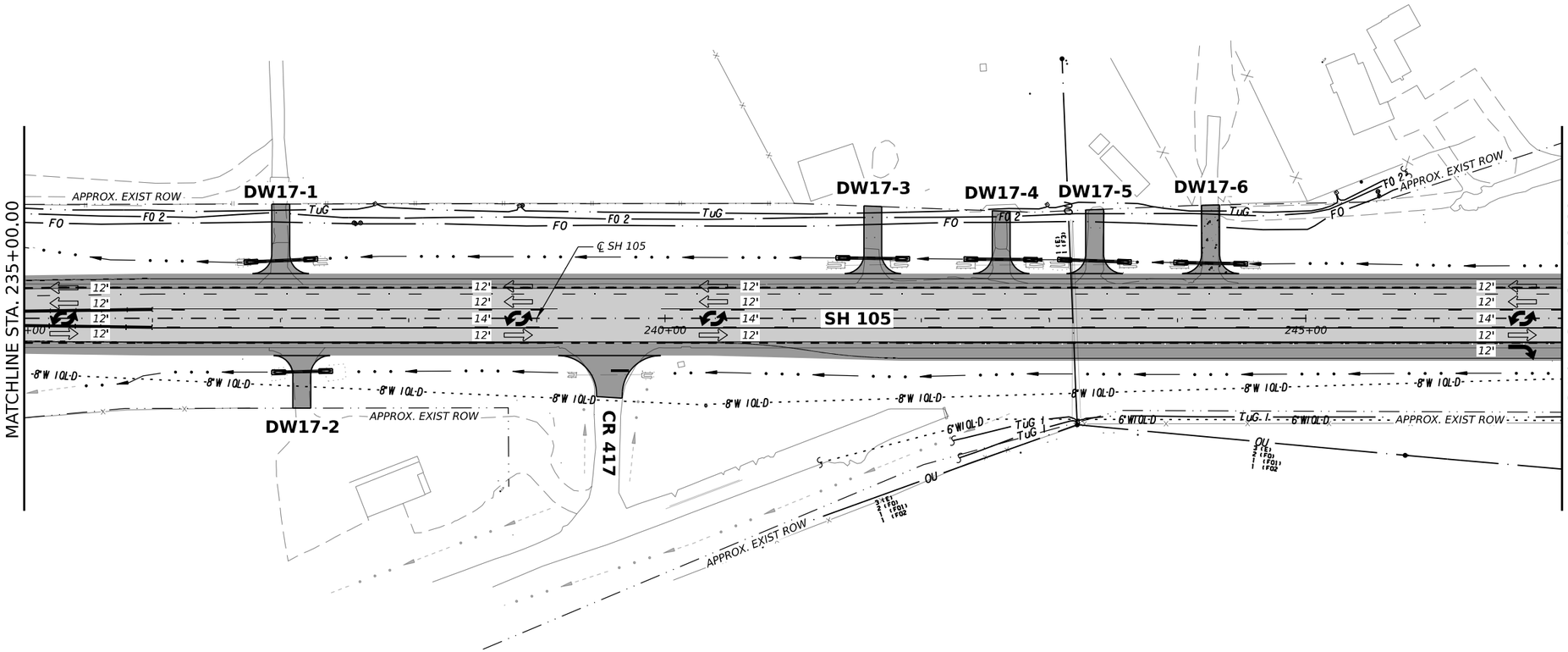

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 235+00 TO STA 247+00

SHEET 17 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		199

DATE: 3/22/2024 10:10:40 AM
FILE: BRYCEC_TASK02_Utility17.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

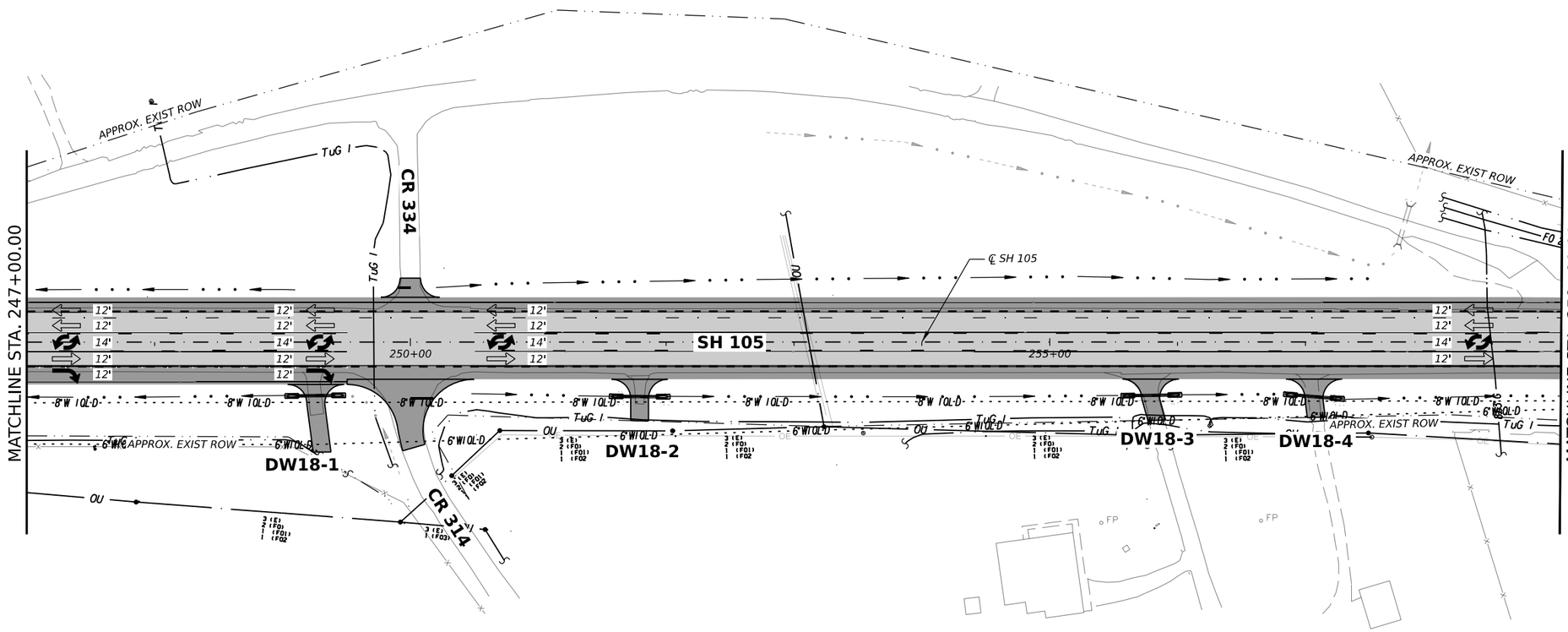
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

GENERAL NOTES:

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3. AS-BUILT DRAWINGS WERE USED TO COMPARE DESIGNATED LOCATIONS TO CONSTRUCTION AS-BUILT LOCATIONS.
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6. ELECTROMAGNETIC DEPTHS (IF SHOWN) WERE TAKEN BY ELECTRONIC MEANS AND ARE APPROXIMATE. THE DEPTHS REPRESENT DISTANCE FROM GROUND SURFACE TO CENTER OF PIPE/CABLE. SAM, LLC. CANNOT WARRANT THE ACCURACY OF ELECTRONIC DEPTH READINGS SHOWN HEREON.

SPECIAL NOTES:

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Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 247+00 TO STA 259+00

SHEET 18 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		200

DATE: 3/22/2024 10:10:46 AM
FILE: BRYCEC_TASK02_Utility18.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

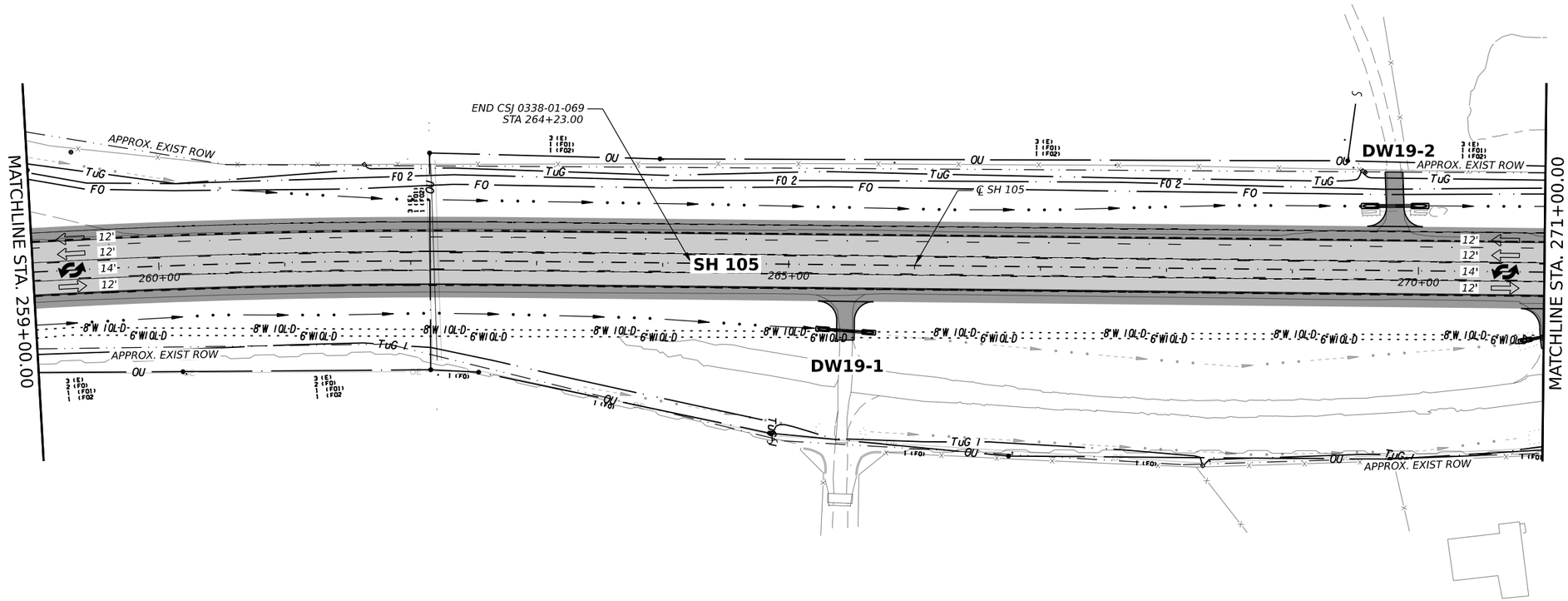
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 259+00 TO STA 271+00

SHEET 19 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		201

DATE: 3/22/2024 10:10:51 AM
FILE: BRYCEC_TASK02_Utility19.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

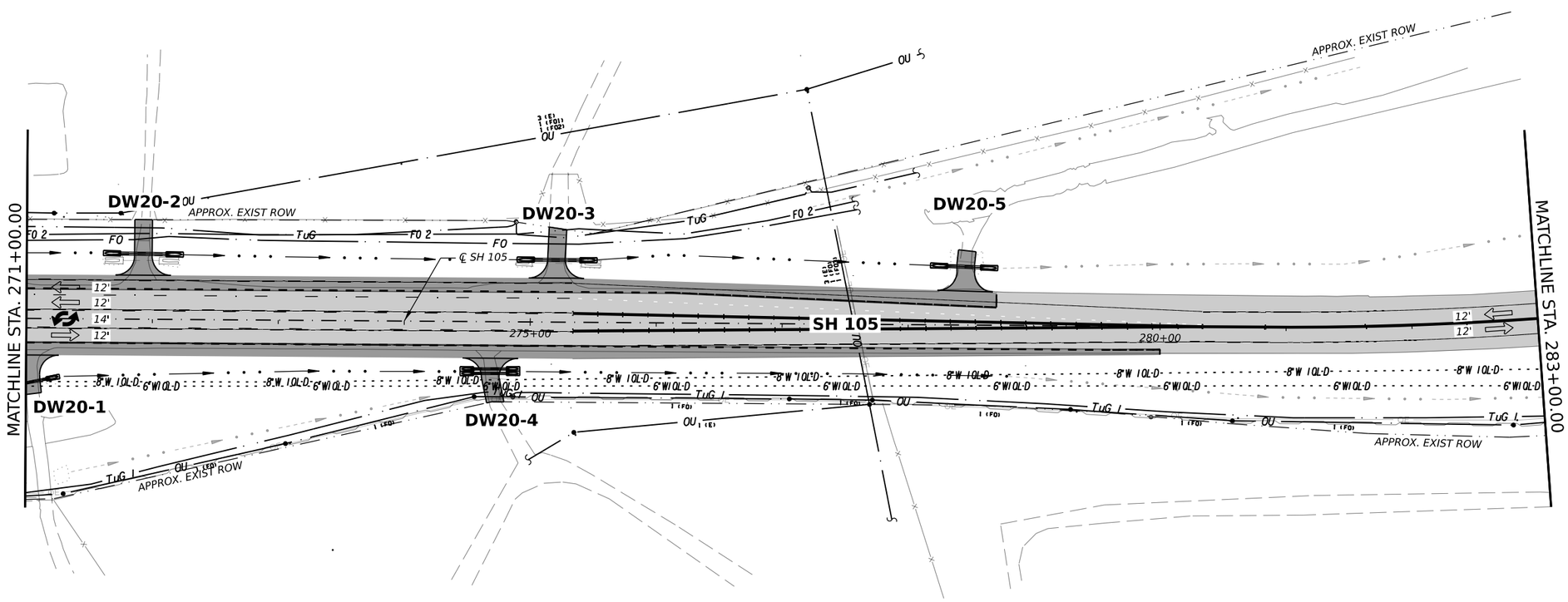
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

© 2024 Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 271+00 TO STA 283+00

SHEET 20 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		202

DATE: 3/22/2024 10:10:58 AM
FILE: BRYCEC_TASK02_Utility20.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
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G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
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G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
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TUG1	TELEPHONE	CENTURYLINK
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W	WATER	CITY OF NAVASOTA
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SUE LEGEND CONT'D

OVERHEAD UTILITIES

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1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
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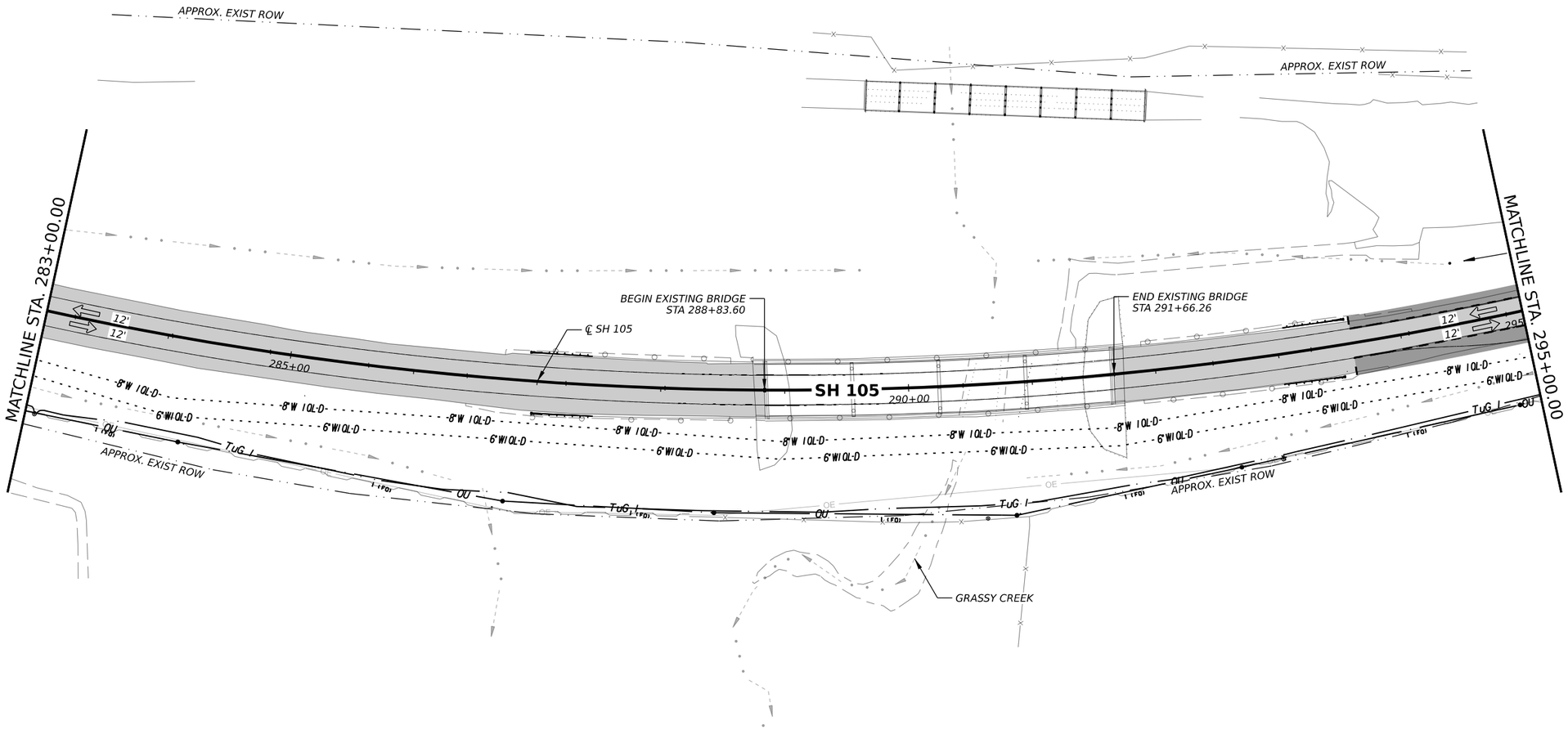

LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

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1. *SAM LLC DISCOVERED MULTIPLE WATER STRUCTURES, HOWEVER WAS UNABLE TO OBTAIN A SIGNAL ON THEM. SAM LLC BELIEVES THE WATER LINES ASSOCIATED WITH THESE STRUCTURES ARE MADE FROM NON CONDUCTIVE MATERIALS.*
2. *SAM LLC DISCOVERED TWO UNKNOWN RISERS, HOWEVER WERE UNABLE TO OBTAIN A USABLE SIGNAL ON THEM. BASED ON FIELD INVESTIGATION, IT IS POSSIBLE THE RISERS ARE RELATED TO A NEARBY TELEPHONE POLE, HOWEVER SAM LLC CREWS WERE UNABLE TO VERIFY.*
3. *SAM LLC WAS ABLE TO LOCATE THE SPRINT FIBER LINE UP TO THIS POINT BEFORE LOSING THE SIGNAL. SAM LLC PERFORMED SWEEPS IN THIS AREA, AS WELL AS GOING EAST TO THE HANDHOLE, HOWEVER WERE UNABLE TO LOCATE IT. THE LINE WAS ALSO NOT FOUND WITHIN THE HANDHOLE. BASED ON THE FINDINGS, SAM LLC BELIEVES THE LINE WAS EITHER CUT OR REMOVED.*
4. *SAM LLC DISCOVERED 2 CUT TELEPHONE LINES WITHIN THE PEDESTAL. BOTH LINES WERE ABLE TO BE LOCATED, HOWEVER THE LINE GOING SOUTH LOST SIGNAL AT THIS POINT.*
5. *SAM LLC BELIEVES THESE TWO FIBER OPTIC LINES ARE THE SAME LINE. HOWEVER, DUE TO SIGNAL INTERFERENCE CAUSED BY THE UNKNOWN LINE, SAM LLC WAS UNABLE TO VERIFY.*
6. *SAM LLC DISCOVERED A WATER VALVE WITH NO TRACER WIRE AND FILLED WITH WATER. FIELD CREWS ATTEMPTED TO DIRECT CONNECT TO THE STEEL PIPE, HOWEVER WERE UNABLE TO OBTAIN A SIGNAL.*
7. *SAM LLC DISCOVERED A GAS METER WITH NO TRACER WIRE, FIELD CREWS ATTEMPTED TO CONNECT TO THE STEEL PIPE, HOWEVER WERE UNABLE TO OBTAIN A SIGNAL.*
8. *SAM LLC IDENTIFIED 3 NON-CONDUCTIVE LINES AND 1 CUT LINE WITHIN THIS HAND HOLE. AS A RESULT, THESE FOUR LINES WERE UNABLE TO BE LOCATED.*
9. *SAM LLC WAS UNABLE TO LOCATE THE NEXT CORRESPONDING STRUCTURE RELATED TO THIS WASTEWATER LINE. SAM LLC NOTES THE CLAY PIPE WAS DRY AND DIDN'T APPEAR TO BE IN USE, LEADING TO BELIEVE THE LINE HAS ABANDONED.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

© 2024 Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 283+00 TO STA 295+00

SHEET 21 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		203

DATE: 3/22/2024 10:11:04 AM
FILE: BRYCEC_TASK02_Utility21.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

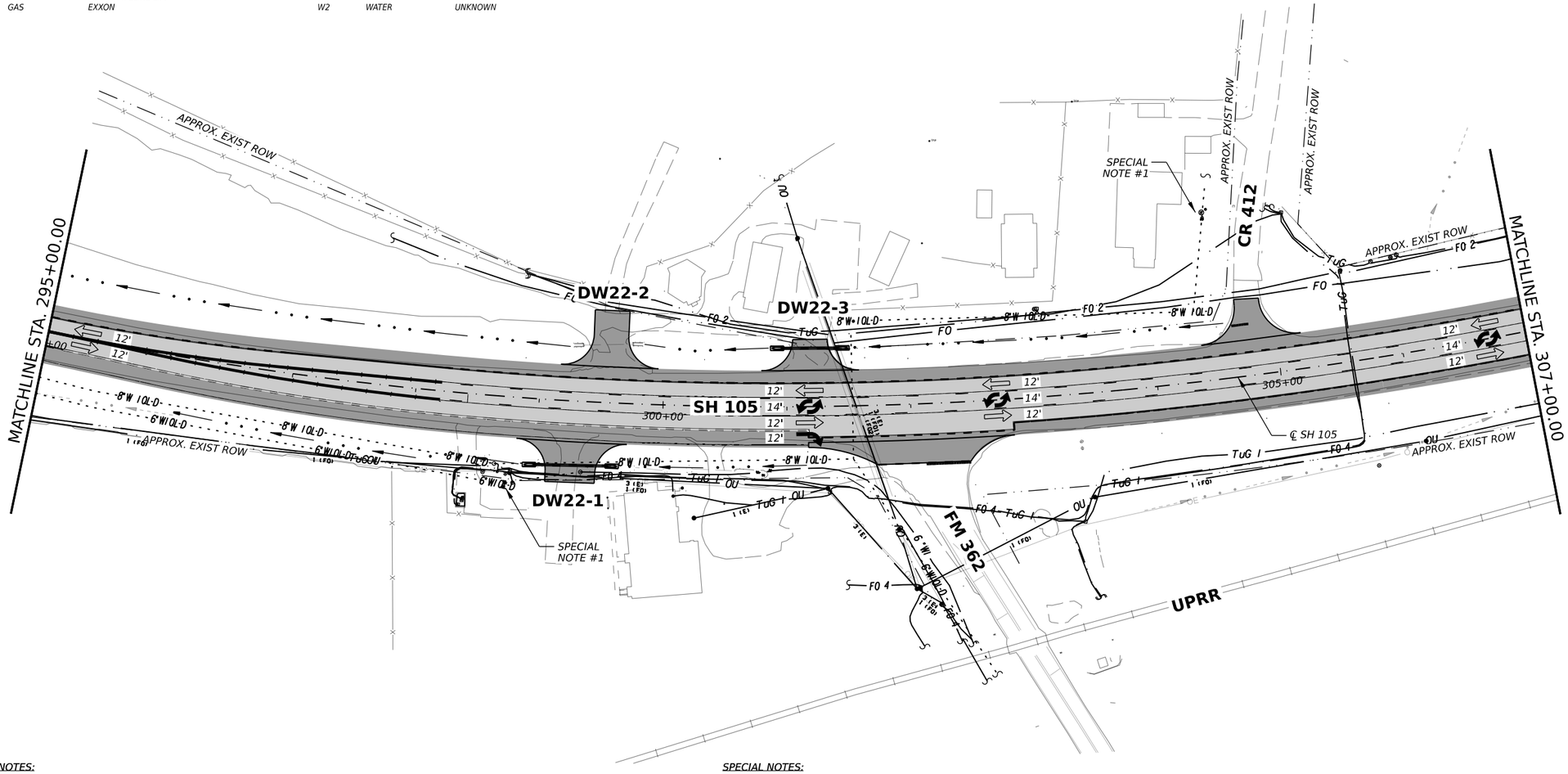
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM CENTERLINE OF ROADWAY UNLESS NOTED OTHERWISE.

GENERAL NOTES:

1. THE HORIZONTAL LOCATION OF UTILITIES SHOWN ON THESE DRAWINGS IS ARRIVED AT BY THE USE OF DESIGNATING EQUIPMENT. THESE LINES WERE NOT UNCOVERED TO VERIFY EXACT HORIZONTAL LOCATIONS.
2. THE ACCURACY OF THE HORIZONTAL LOCATION OF UTILITY LINES SHOWN ON THESE PLANS CAN BE INFLUENCED BY FACTORS BEYOND SAM, LLC. CONTROL, SUCH AS CONDUCTIVITY OF MATERIALS AND THEIR SURROUNDINGS, SOIL MOISTURE CONTENT, PROXIMITY OF OTHER UNDERGROUND UTILITIES OR STRUCTURES, DEPTH OF UTILITY, ETC. THEREFORE, ONLY THE ACCURACY OBTAINED BY ACTUAL EXCAVATION CAN BE GUARANTEED TO APPLICABLE ENGINEERING AND/OR SURVEYING STANDARDS.
3. AS-BUILT DRAWINGS WERE USED TO COMPARE DESIGNATED LOCATIONS TO CONSTRUCTION AS-BUILT LOCATIONS.
4. THE USE OF THE HORIZONTAL LOCATIONS OF THE UTILITIES SHOWN ON THESE PLANS DOES NOT RELIEVE THE CONTRACTOR FROM THE DUTY TO COMPLY WITH APPLICABLE UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNER'S "ONE-CALL" CENTERS BEFORE EXCAVATION.
5. HORIZONTAL DATUM: UNITED STATES/STATE PLANE 1983, TEXAS CENTRAL 4203, U.S. SURVEY FEET. UTILIZING TRIMBLE R10 GN RECEIVERS AND TRIMBLE BUSINESS CENTER SOFTWARE. VERTICAL DATUM: NAVD 88, GEOID 18, U.S. SURVEY FEET.
6. ELECTROMAGNETIC DEPTHS (IF SHOWN) WERE TAKEN BY ELECTRONIC MEANS AND ARE APPROXIMATE. THE DEPTHS REPRESENT DISTANCE FROM GROUND SURFACE TO CENTER OF PIPE/CABLE. SAM, LLC. CANNOT WARRANT THE ACCURACY OF ELECTRONIC DEPTH READINGS SHOWN HEREON.

SPECIAL NOTES:

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3. SAM LLC WAS ABLE TO LOCATE THE SPRINT FIBER LINE UP TO THIS POINT BEFORE LOSING THE SIGNAL. SAM LLC PERFORMED SWEEPS IN THIS AREA, AS WELL AS GOING EAST TO THE HANDHOLE, HOWEVER WERE UNABLE TO LOCATE IT. THE LINE WAS ALSO NOT FOUND WITHIN THE HANDHOLE. BASED ON THE FINDINGS, SAM LLC BELIEVES THE LINE WAS EITHER CUT OR REMOVED.
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 295+00 TO STA 307+00

SHEET 22 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		204

DATE: 3/22/2024 10:11:09 AM
FILE: BRYCEC_TASK02_Utility22.dgn

CK: JMT
DW: JMT
CK: JMT
DW: JMT

SUE LEGEND

UNDERGROUND UTILITIES

LINE	TYPE	OWNER
CATV	CABLE	UNKNOWN/ABANDONED
EUG	ELECTRIC	PRIVATE
EUG1	ELECTRIC	MIDSOUTH ELECTRIC COOP
FO	FIBER OPTIC	FIBERLIGHT
FO1	FIBER OPTIC	SPRINT
FO2	FIBER OPTIC	CENTURYLINK
FO3	FIBER OPTIC	UNKNOWN
FO4	FIBER OPTIC	MIDSOUTH ELECTRIC COOP
FO5	FIBER OPTIC	SERVICE DROP
G	GAS	ATMOS
G1	GAS	PLAINS PIPELINE L.P.
G2	GAS	EXXON

SUE LEGEND CONT'D

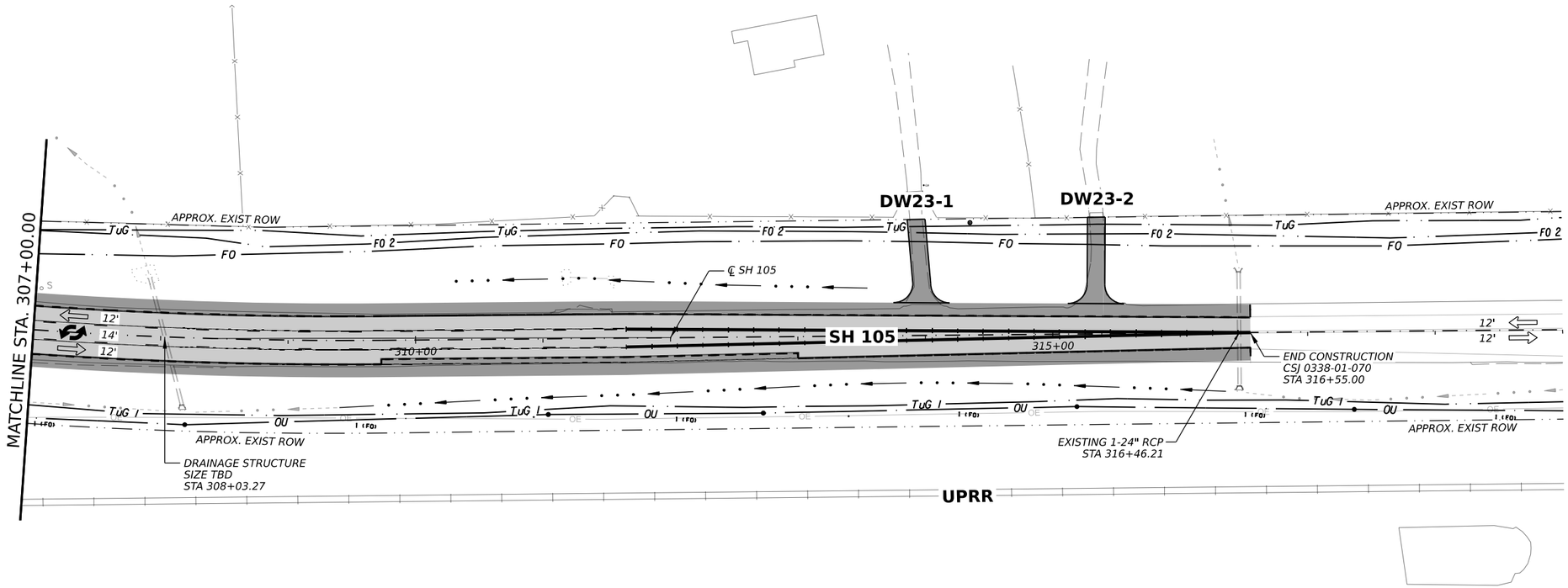
UNDERGROUND UTILITIES

LINE	TYPE	OWNER
G3	GAS	BLACKHAWK
G4	GAS	UNKNOWN
G5	GAS	CITY OF NAVASOTA
STM	STORM	CITY OF NAVASOTA
TUG	TELEPHONE	SPRINT
TUG1	TELEPHONE	CENTURYLINK
TUG2	TELEPHONE	UNKNOWN
UNK	UNKNOWN	UNKNOWN
WW	WASTEWATER	CITY OF NAVASOTA
W	WATER	CITY OF NAVASOTA
W1	WATER	G&W WSC
W2	WATER	UNKNOWN

SUE LEGEND CONT'D

OVERHEAD UTILITIES

	OWNER/TYPE
	MIDSOUTH ELECTRIC COOP / E
1 (E) - SINGLE PHASE ELECTRIC	MIDSOUTH ELECTRIC COOP / FO
3 (E) - THREE PHASE ELECTRIC	SYNERGY / FO1
1 (F) - FIBER	ALTICE / FO2
	UNKOWNN / FO3



LEGEND:

- PROPOSED WIDENING
- PROPOSED OVERLAY
- EXISTING LANE
- PROPOSED LANE
- SAWCUT
- PROPOSED DITCH FLOWLINE
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NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

EXISTING UTILITY LAYOUTS STA 307+00 TO END

SHEET 23 OF 23

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		205

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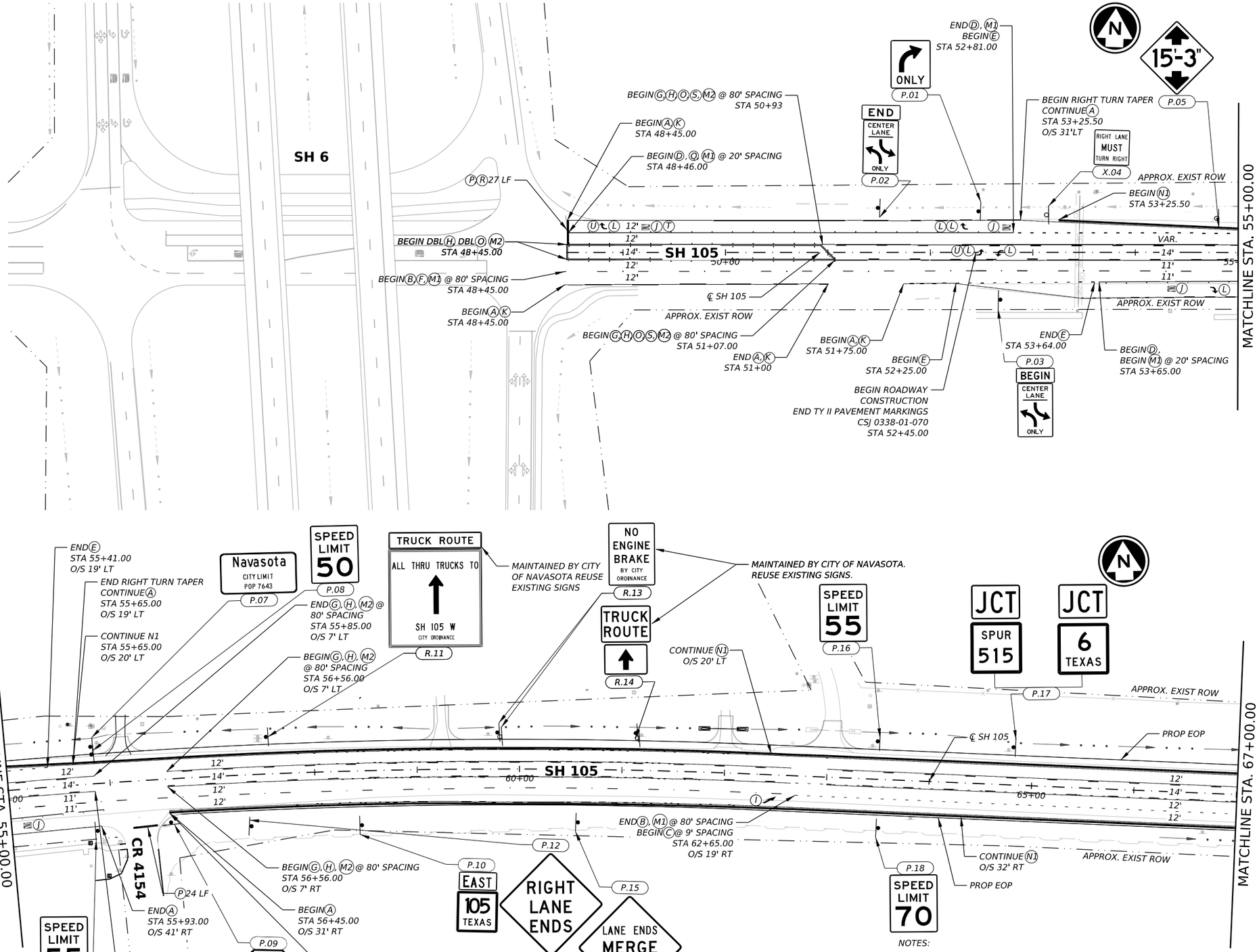

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY II-A-A
- (M2) REFL PAV MRK TY I-C
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER
3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1781 Stonehollow Dr. Suite 100 Austin, TX 78758
Phone 512-821-2081 Fax 512-821-2085

SH 105

SIGNING & PAVEMENT MARKINGS

BEGIN TO STA 67+00

SHEET 1 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		206

DATE: 3/20/2024 3:02:04 PM
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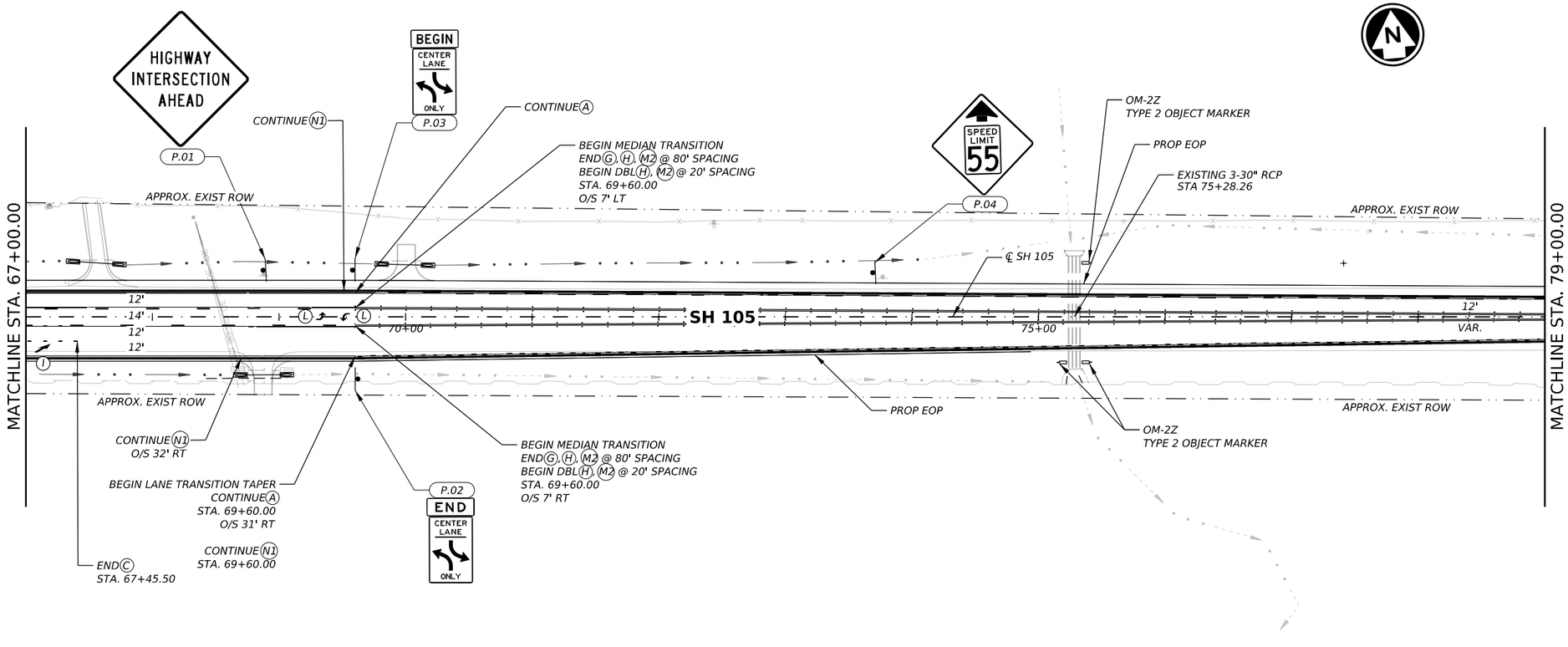

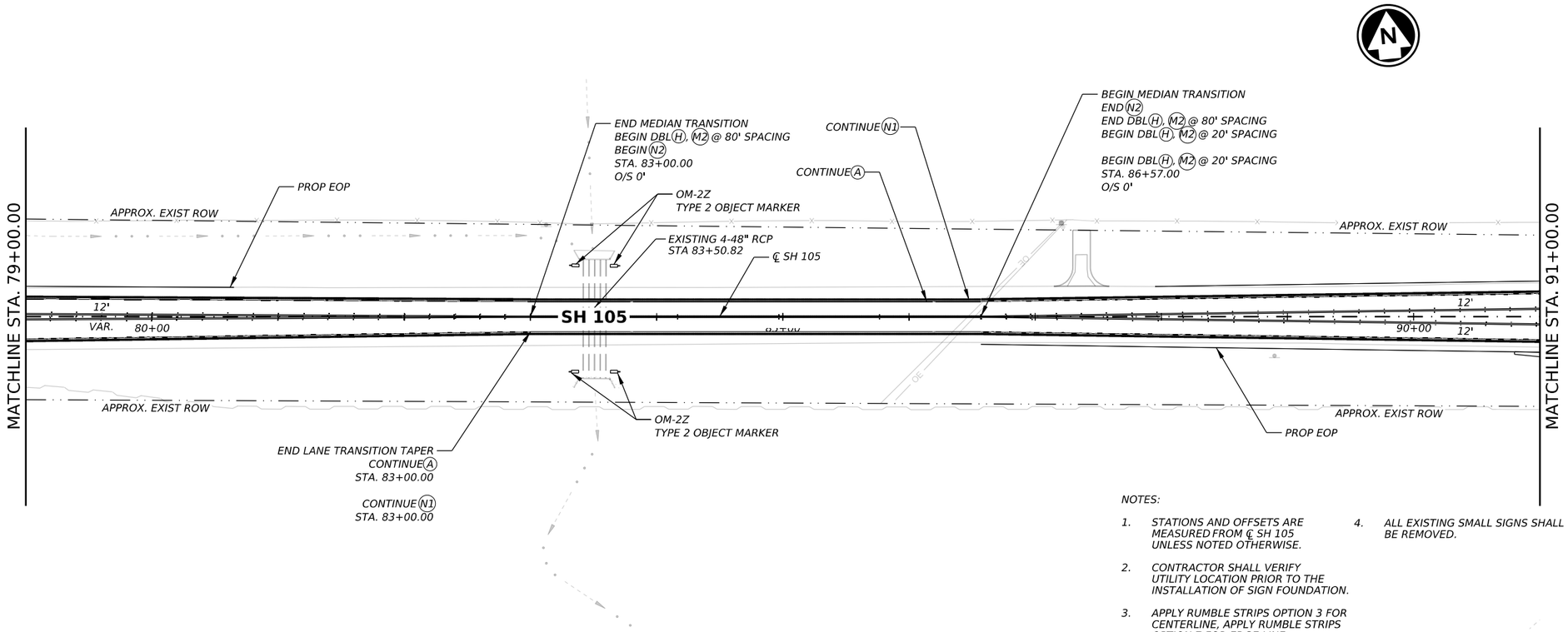

NOTES:

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LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
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- (M2) REFL PAV MRK TY II-A-A
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- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
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- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
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- PROP SIGN (DOUBLE FACE) (P)
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- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER

3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1701 Steinbeck Dr · Suite 100 · Austin, TX 78758
Phone: 512-821-2081 · Fax: 512-821-2085

SH 105

SIGNING & PAVEMENT MARKINGS

STA 67+00 TO STA 91+00

SHEET 2 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		207

DATE: 3/20/2024 3:02:36 PM
FILE: BRYCEC_TASK02_SPM02.dgn

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DW: ATG

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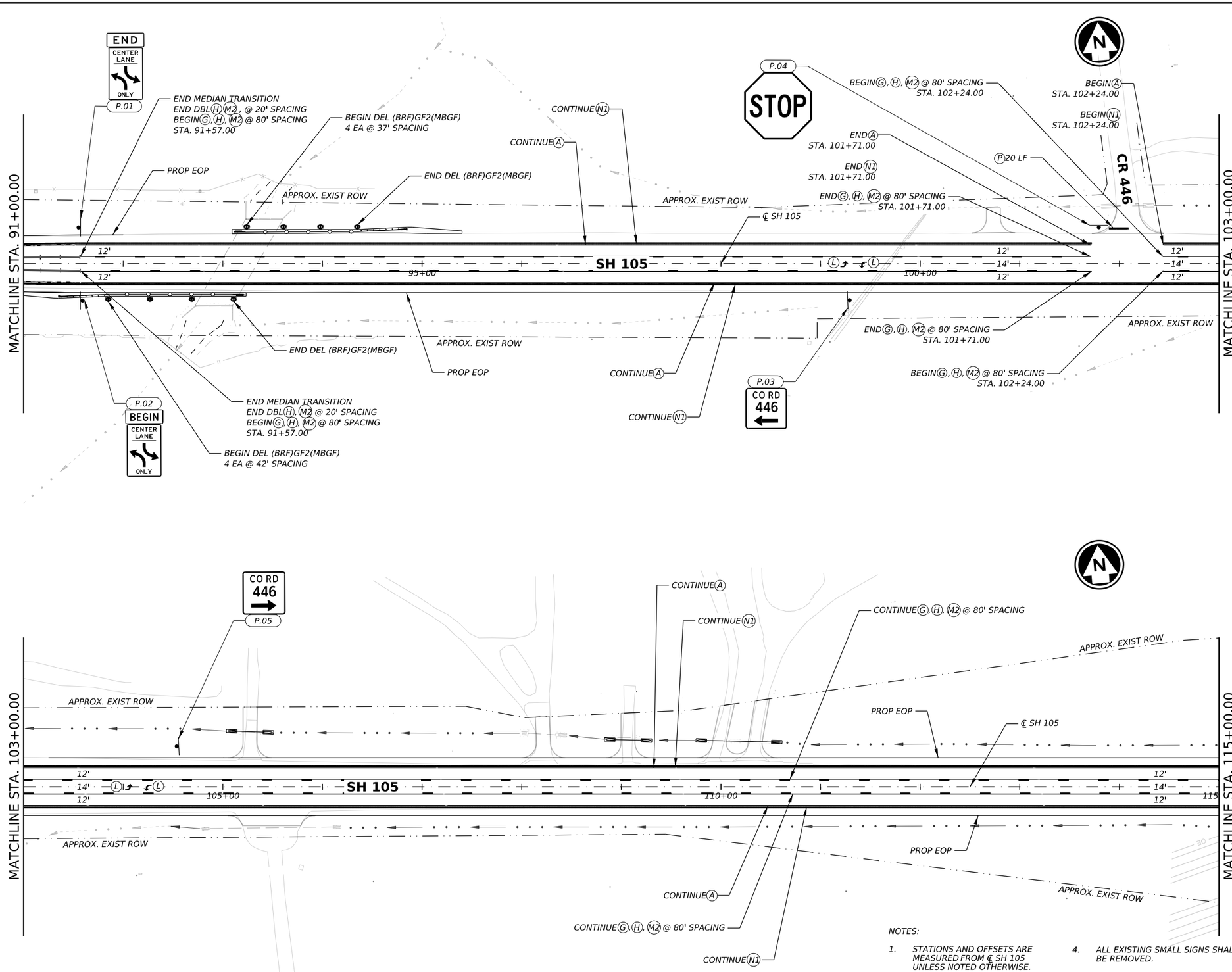

NOTES:

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- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER
4/4/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1701 Stonehollow Dr. Suite 100 Austin, TX 78758
Phone: 512-821-2081 Fax: 512-821-2085

Texas Department of Transportation

SH 105

SIGNING & PAVEMENT MARKINGS

STA 91+00 TO STA 115+00

SHEET 3 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		208

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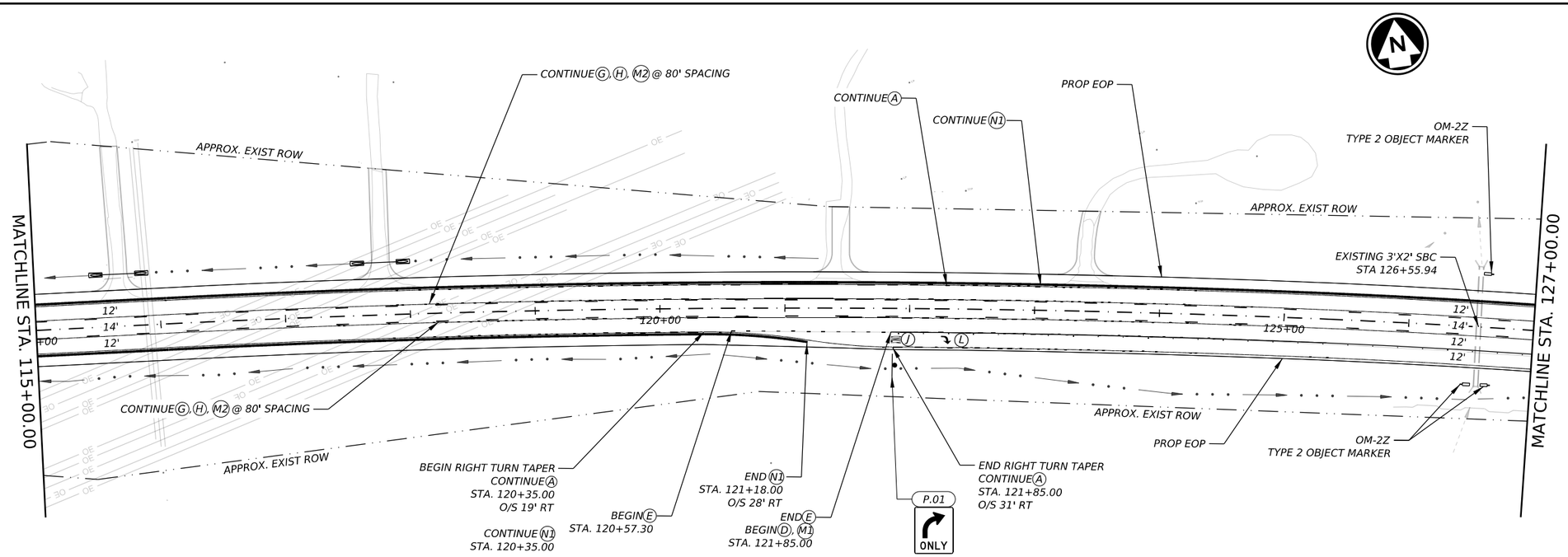
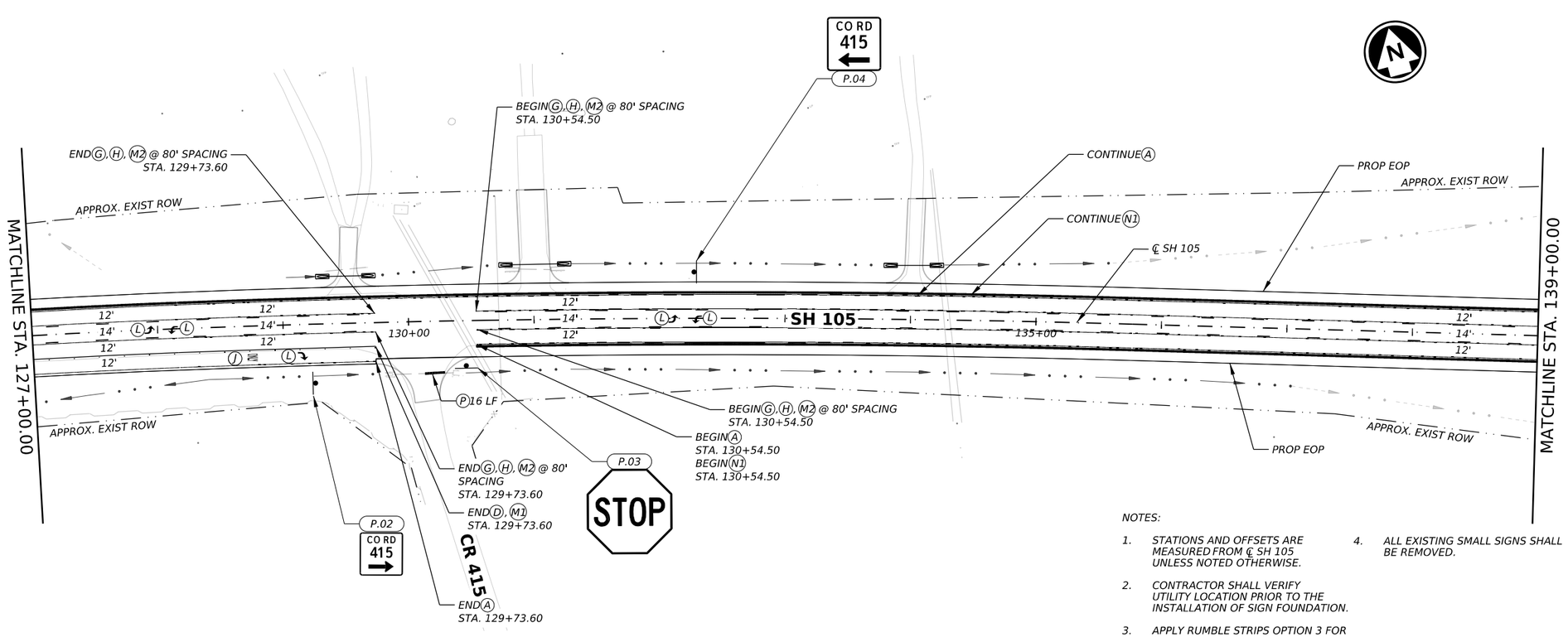
DW: ATG





NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER

3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1701 Stonehollow Dr. Suite 100 · Austin, TX 78758
Phone: 512-821-2081 · Fax: 512-821-2085

SH 105

SIGNING & PAVEMENT MARKINGS

STA 115+00 TO STA 139+00

SHEET 4 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		209

DATE: 3/20/2024 3:03:42 PM
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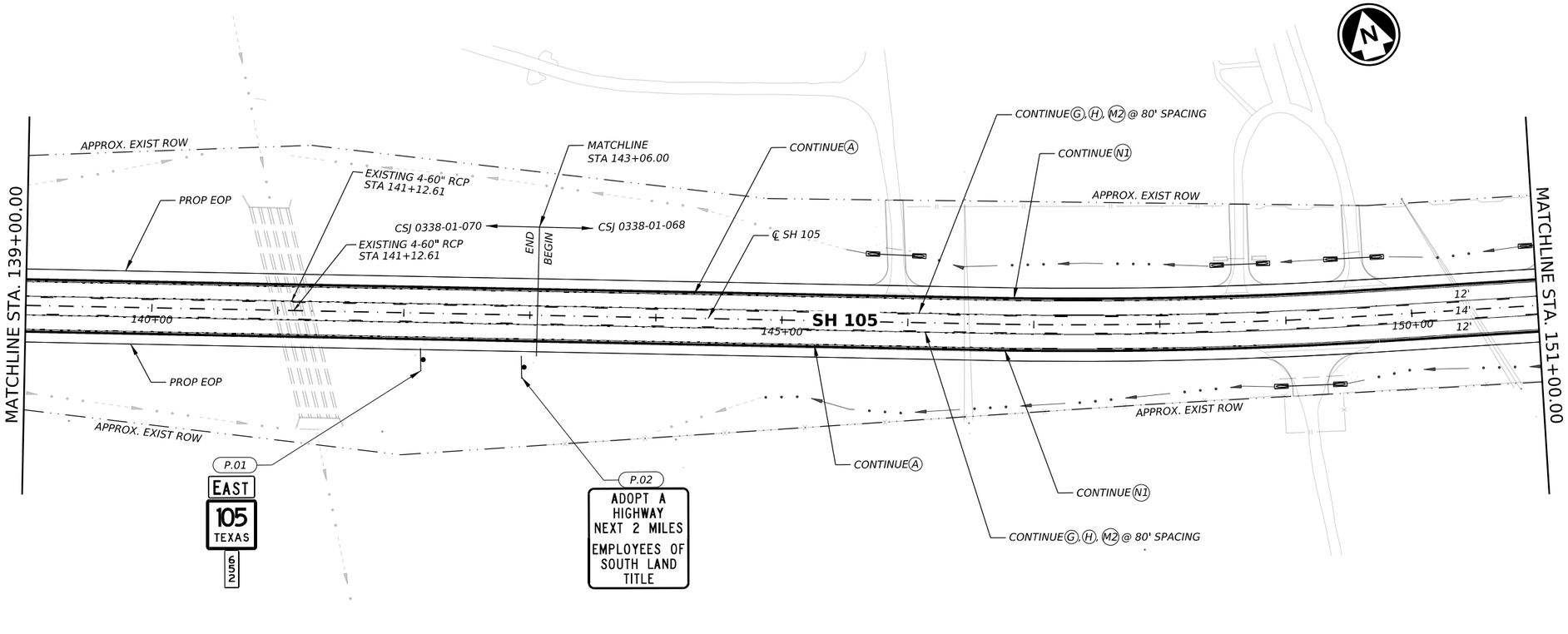

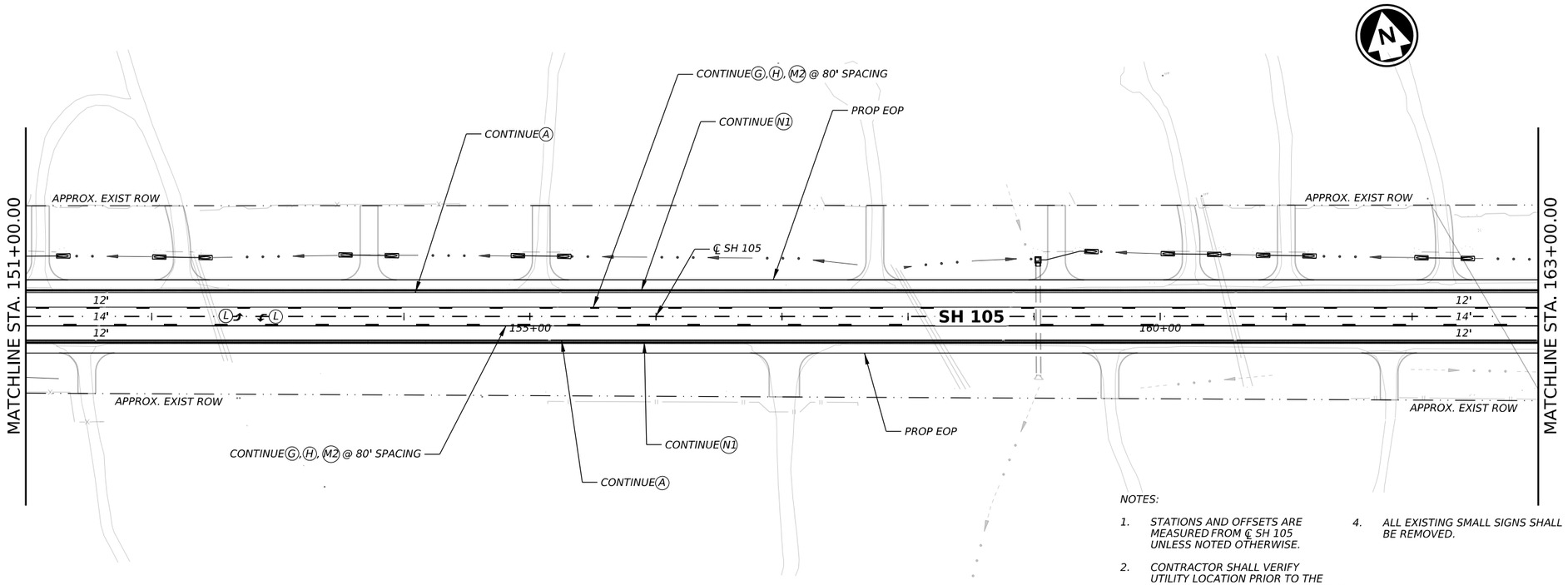

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- (P.01) SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED
PROFESSIONAL ENGINEER

3/20/2024

0 50' 100'
SCALE IN FEET

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TBPE Firm Registration No. F-812
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Phone: 512-821-2081 Fax: 512-821-2085

Texas Department of Transportation

SH 105

SIGNING & PAVEMENT MARKINGS

STA 139+00 TO STA 163+00

SHEET 5 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		210

DATE: 3/20/2024 3:04:18 PM
FILE: BRYCEC_TASK02_SPM05.dgn

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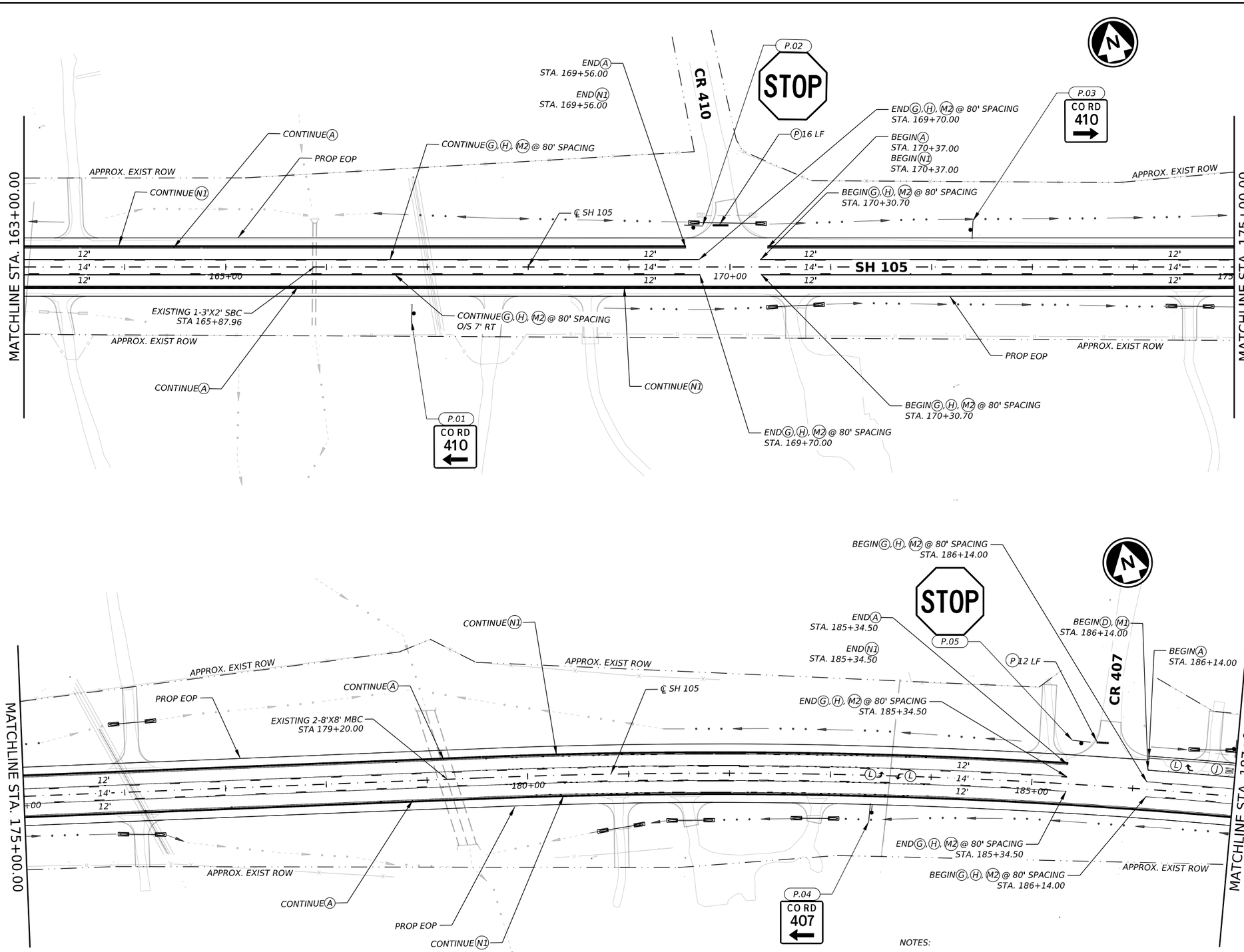
DW: ATG

CK: JMT
DW: JMT
CK: JMT
DW: ATG



LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER
3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1701 Directors Dr · Suite 100 · Austin, TX 78758
Phone: 512-821-2081 · Fax: 512-821-2085

SH 105

SIGNING & PAVEMENT MARKINGS

STA 163+00 TO STA 187+00

SHEET 6 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		211

DATE: 3/20/2024 4:29:49 PM
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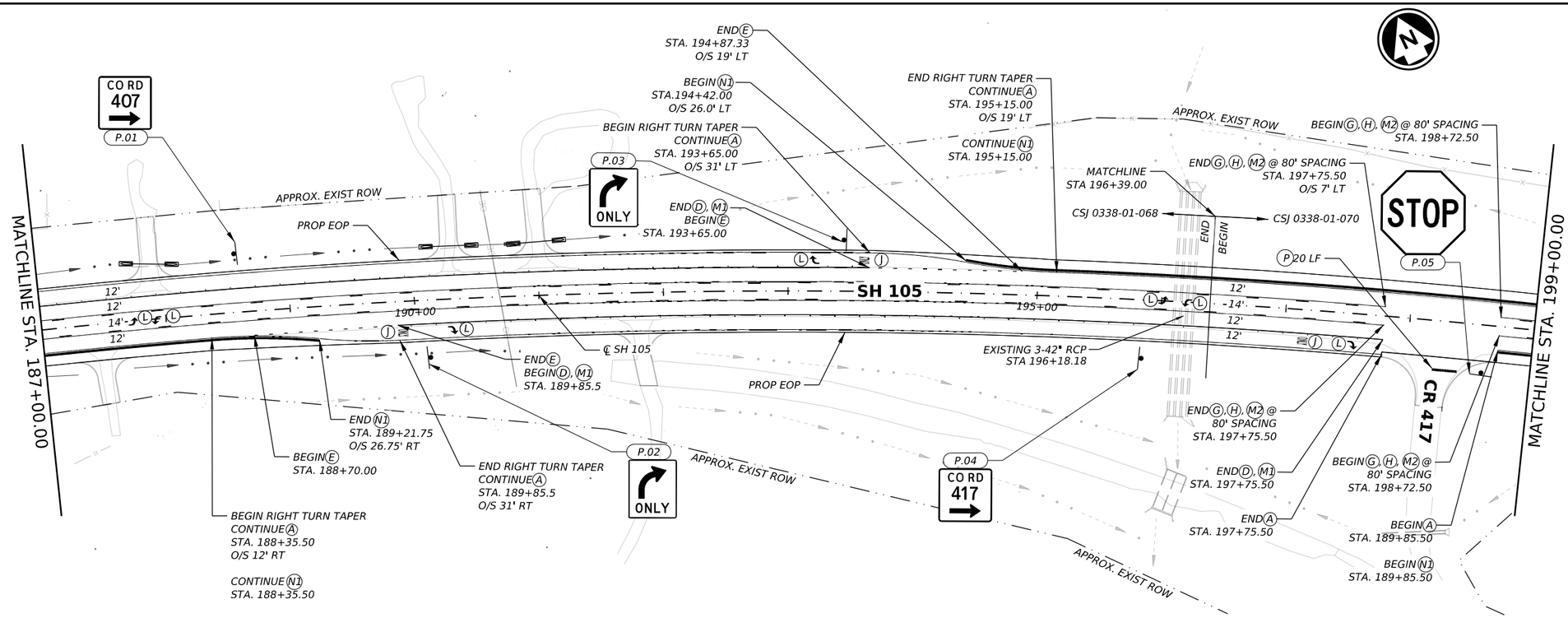
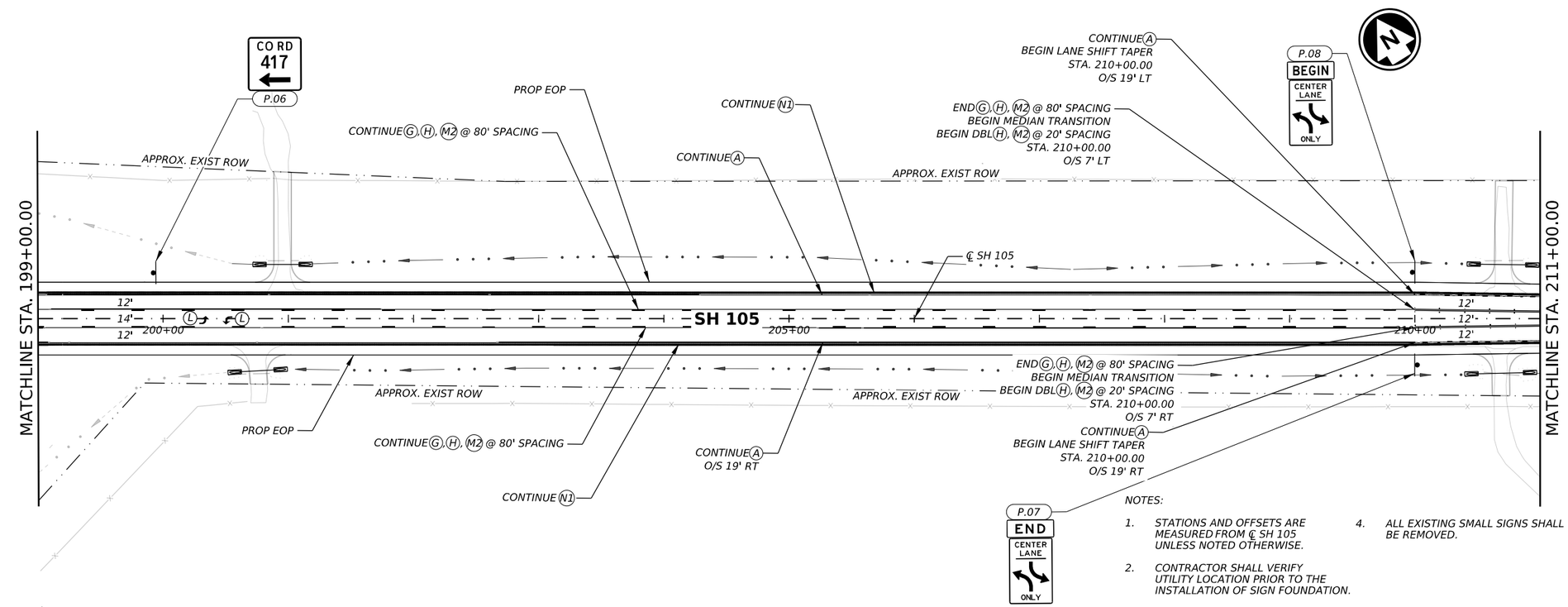
DW: ATG





LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER

3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1701 Stonehollow Dr. Suite 100 · Austin, TX 78758
Phone: 512-821-2081 · Fax: 512-821-2085

Texas Department of Transportation

SH 105

SIGNING & PAVEMENT MARKINGS

STA 187+00 TO STA 211+00

SHEET 7 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		212

DATE: 3/20/2024 3:05:26 PM
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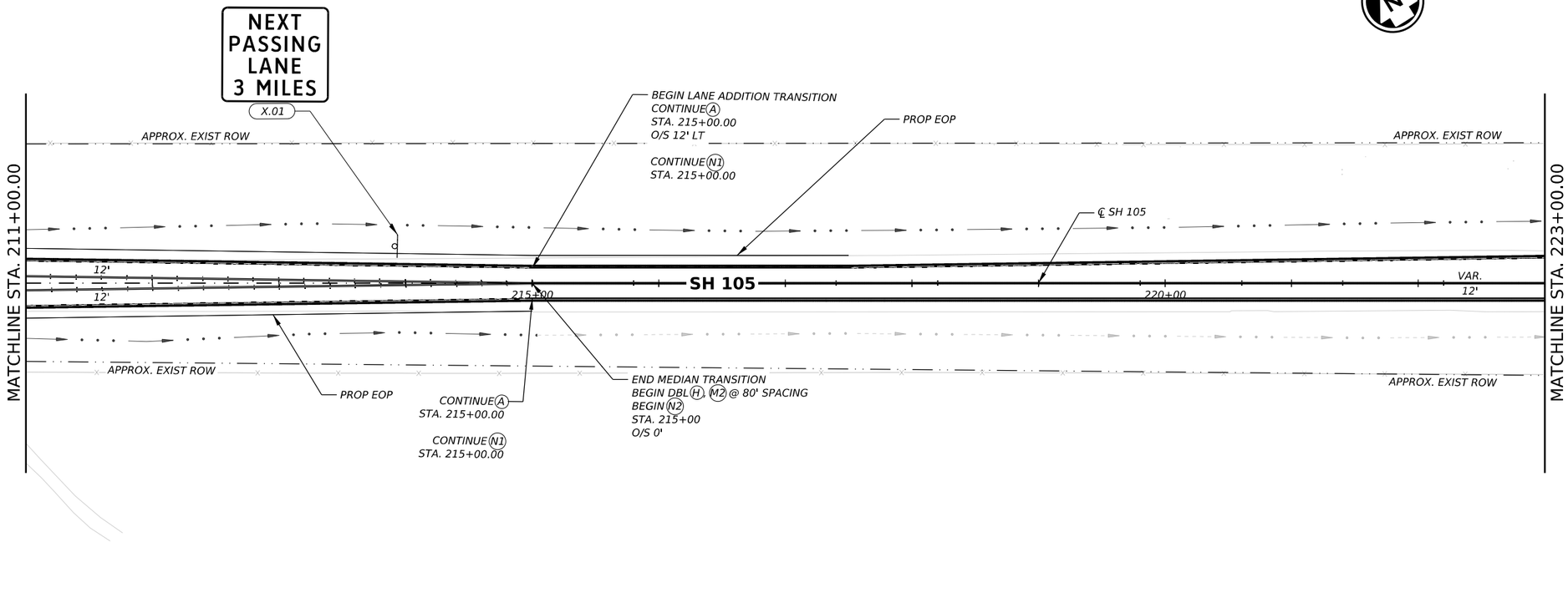
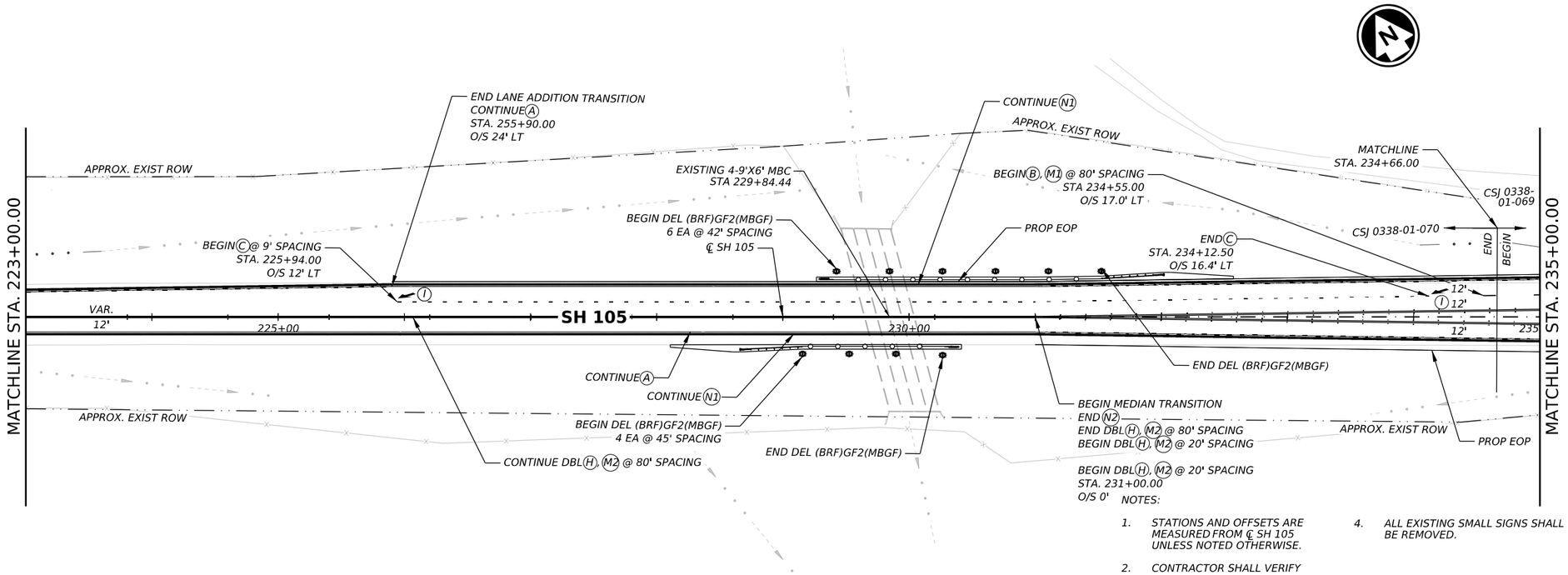
DW: ATG





NOTES:

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2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
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- PROP SIGN (SINGLE POST) (P)
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- EXIST SIGN TO REMAIN (E)
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STATE OF TEXAS
ABDULLAH SBAITI
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LICENSED PROFESSIONAL ENGINEER

4/4/2024

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SCALE IN FEET

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Texas Department of Transportation

SH 105

SIGNING & PAVEMENT MARKINGS

STA 211+00 TO STA 235+00

SHEET 8 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		213

DATE: 4/4/2024 6:19:15 PM
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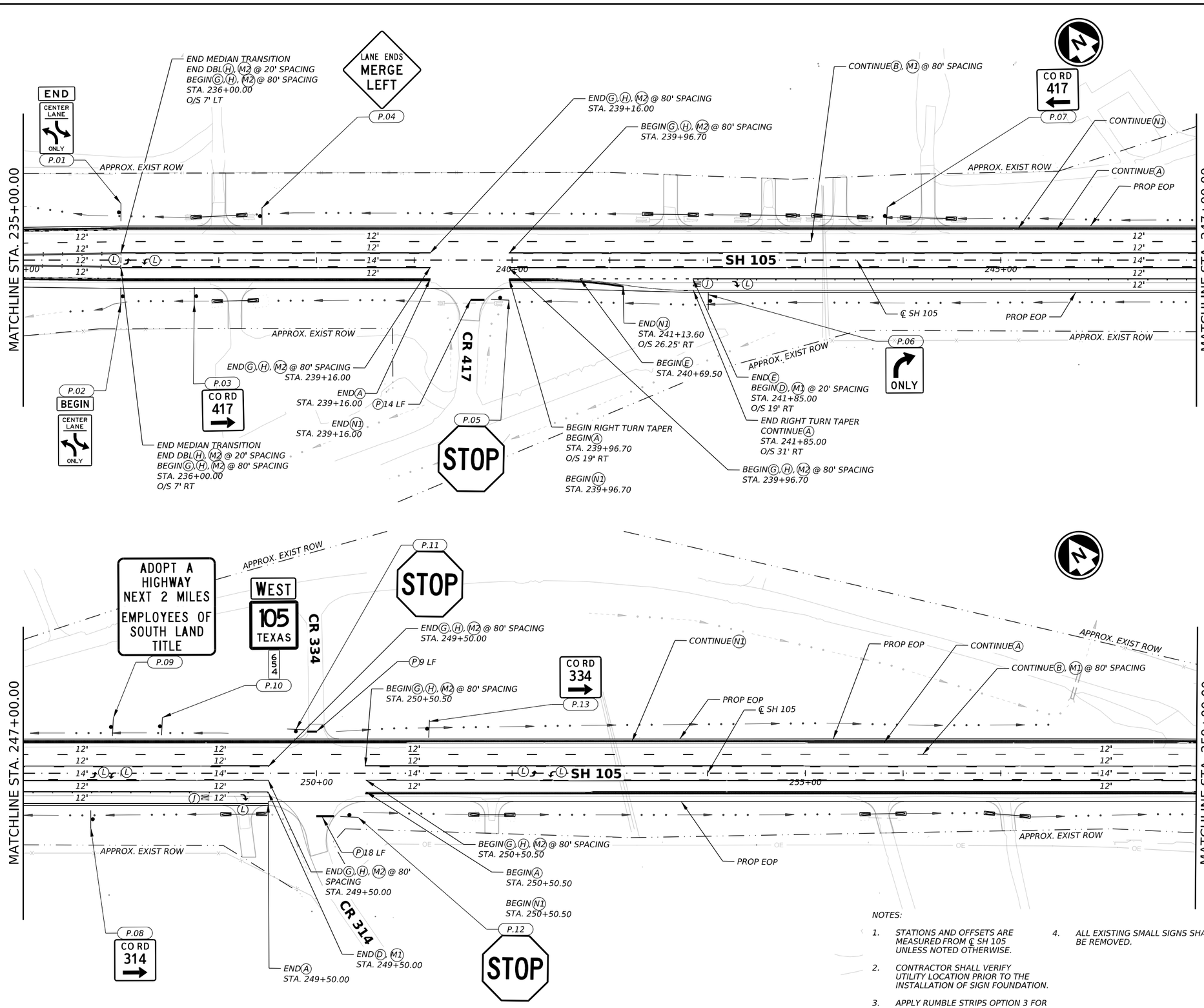

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
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STATE OF TEXAS
ABDULLAH SBAITI
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LICENSED PROFESSIONAL ENGINEER
3/20/2024

0 50' 100'
SCALE IN FEET

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Phone: 512-821-2081 Fax: 512-821-2085

SH 105

SIGNING & PAVEMENT MARKINGS

STA 235+00 TO STA 259+00

SHEET 9 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		214

DATE: 3/20/2024 3:06:31 PM
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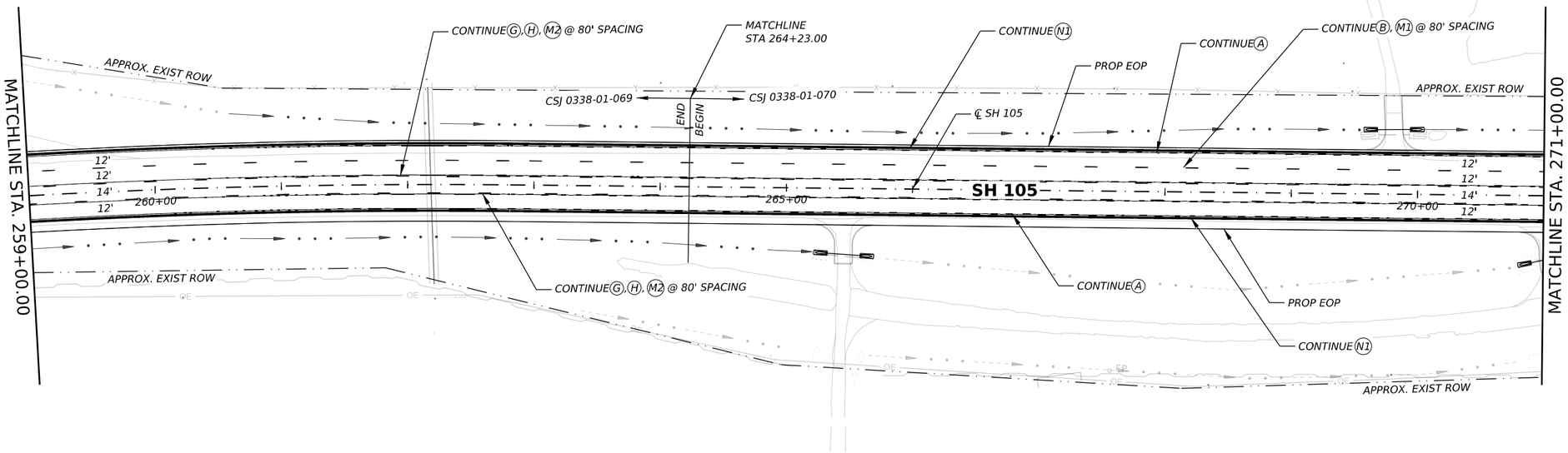
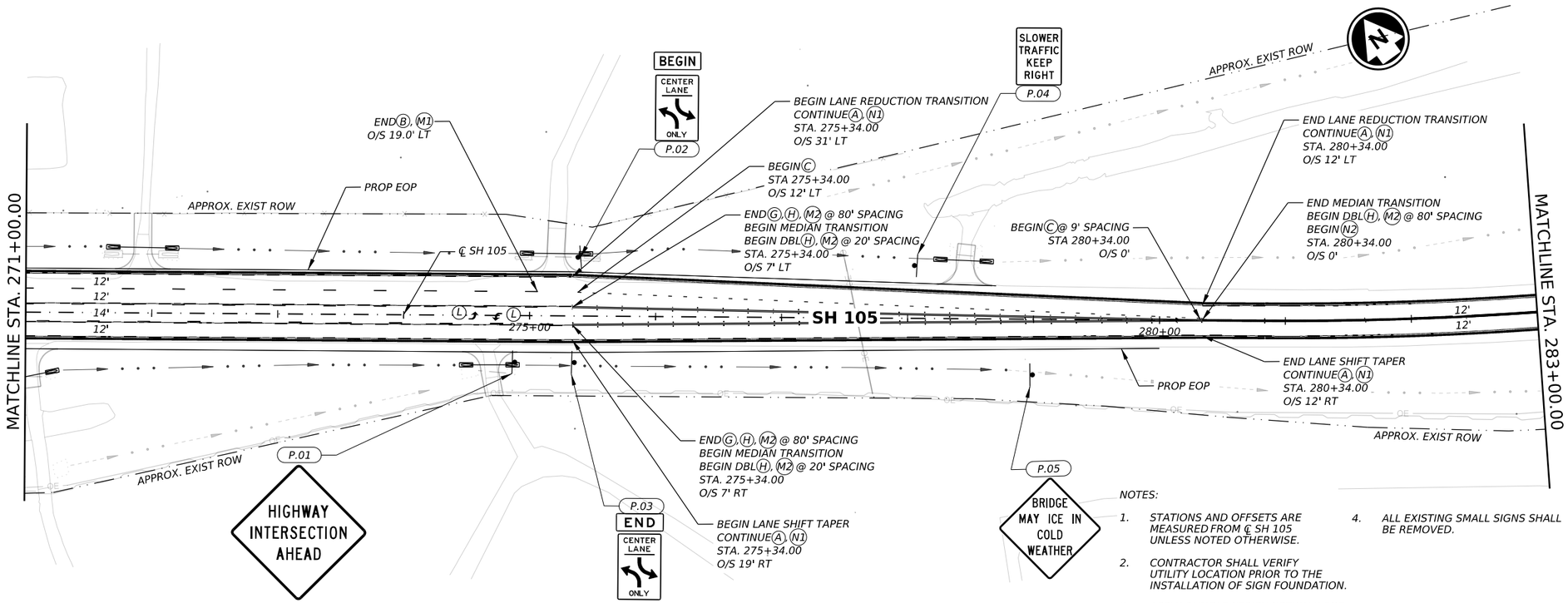
DW: JMT
CK: JMT
DW: ATG

CK: JMT
DW: JMT
CK: JMT
DW: ATG





LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED
PROFESSIONAL ENGINEER
3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1701 Stonehollow Dr. Suite 100 · Austin, TX 78758
Phone: 512-821-2081 · Fax: 512-821-2085

Texas Department of Transportation

SH 105

SIGNING & PAVEMENT MARKINGS

STA 259+00 TO STA 283+00

SHEET 10 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		215

DATE: 3/20/2024 3:07:01 PM
FILE: BRYCEC_TASK02_SPM10.dgn

CK: JMT
DW: JMT
CK: JMT
DW: ATG

MATCHLINE STA. 283+00.00
MATCHLINE STA. 295+00.00
MATCHLINE STA. 295+00.00
MATCHLINE STA. 307+00.00
SH 105
℄ SH 105
285+00
290+00
295+00
300+00
305+00
12'
14'
APPROX. EXIST ROW
PROP EOP
CONTINUE DBL (H), (M2) @ 80' SPACING
CONTINUE (N2)
CONTINUE (A), (N1)
END (N1) STA. 287+83.60
END (N2) STA. 287+83.60
CONTINUE (A)
BEGIN BI-DIRECTIONAL DEL(CTB) 12 EA @ 45' SPACING
END BI-DIRECTIONAL DEL(CTB)
CONTINUE (A) BEGIN (K) STA 288+83.70
CONTINUE DBL (H), (M2) @ 80' SPACING BEGIN (O) STA 288+83.70
CONTINUE (A) END (K) STA. 291+66.00
CONTINUE DBL (H), (M2) @ 80' SPACING BEGIN (O) STA. 291+66.00
END DEL (BRF)GF2(MBGF)
BEGIN (N1) STA. 292+66.00
Grassy Creek
P.03
BEGIN DEL (BRF)GF2(MBGF) 8 EA @ 45' SPACING
END (N1) STA. 287+83.60
END DEL (BRF)GF2(MBGF)
CONTINUE (A) END (K) STA. 291+66.00
BEGIN (N2) STA. 292+66.00
BEGIN (N1) STA. 292+66.00
BEGIN RIGHT TURN TAPER
CONTINUE (A) STA. 293+63.00 O/S 12' RT
BEGIN (E) STA. 294+01.00 O/S 12' RT
END (N1) STA. 294+40.00 O/S 18.3' RT
P.01
JCT
FARM 362 ROAD
P.02
Grassy Creek
P.04
Whitehall
BEGIN MEDIAN TRANSITION
END DBL (H), (M2) @ 80' SPACING
BEGIN DBL (H), (M2) @ 20' SPACING
BEGIN DBL (H), (M2) @ 20' SPACING STA. 295+00.00 O/S 0'
END (N2) STA. 295+20.00
WEST 105 TEXAS
P.06
END MEDIAN TRANSITION
END DBL (H), (M2) @ 20' SPACING
BEGIN (G), (H), (M2) @ 80' SPACING STA. 298+20.50
P.07
END
CENTER LANE ONLY
BRIDGE MAY ICE IN COLD WEATHER
P.09
FACING EAST
FACING SOUTH
P.11
105 TEXAS
FARM 362 ROAD
P.12
BEGIN (G), (H), (M2) @ 80' SPACING STA. 302+44
STOP
P.18
END (A) STA. 304+38.00
END (N1) STA. 304+38.00
CR 412
P.14
STOP
P.14 LF
BEGIN (A) STA. 305+15.00
BEGIN (N1) STA. 305+15.00
END (E) BEGIN (D), (M1) @ 20' SPACING STA. 295+14.00
P.05
ONLY
END RIGHT TURN TAPER
CONTINUE (A) STA. 295+14.00 O/S 24' RT
END MEDIAN TRANSITION
END DBL (H), (M2) @ 20' SPACING
BEGIN (G), (H), (M2) @ 80' SPACING STA. 298+20.50
P.08
BEGIN
CENTER LANE ONLY
END (D), (M1) @ 20' SPACING STA. 301+17.30
P.10
FARM 362 ROAD
END (A) STA. 301+17.30 O/S 31' RT
END (G), (H), (M2) @ 80' SPACING STA. 301+46
BEGIN (A) STA. 302+82.40
P.36 LF
BEGIN (N1) STA. 304+82.40
E.13
SOUTH TEXAS 249 EXIT 1 MILE LEFT EXIT
P.15
EAST 105 TEXAS
FM 362
UPRR
P.16
CO RD 412
P.17
Stoneham 5
Conroe 35

NOTES:
1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.
5. CONTRACTOR TO UTILIZE TY II PAVEMENT MARKINGS WHERE RESTRIPING IS TAKING PLACE ON THE BRIDGE OVER GRASSY CREEK FROM STA. 288+83.70 TO STA. 291+66.00.

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER
4/18/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1781 Stonehollow Dr. Suite 180 Austin, Tx 78758
Phone 512-821-2081 Fax 512-821-2085

Texas Department of Transportation

SH 105

SIGNING & PAVEMENT MARKINGS

STA 283+00 TO STA 307+00

SHEET 11 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		216

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FILE: $FILE$

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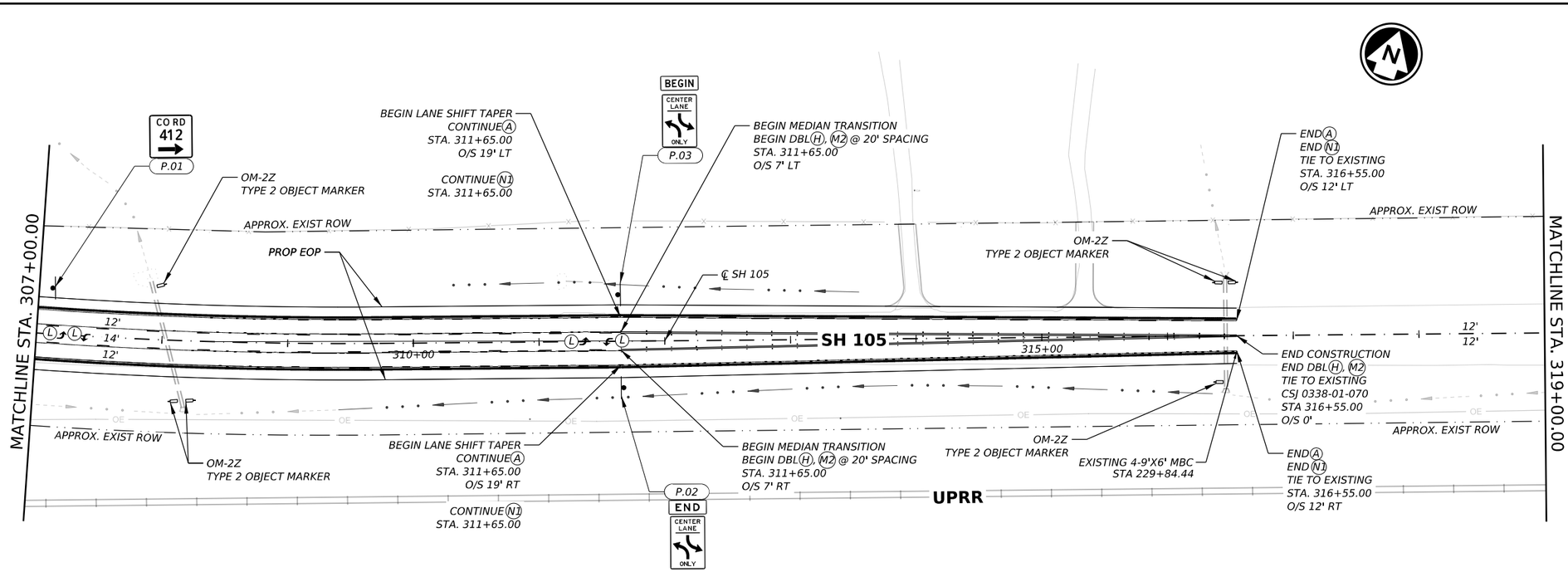
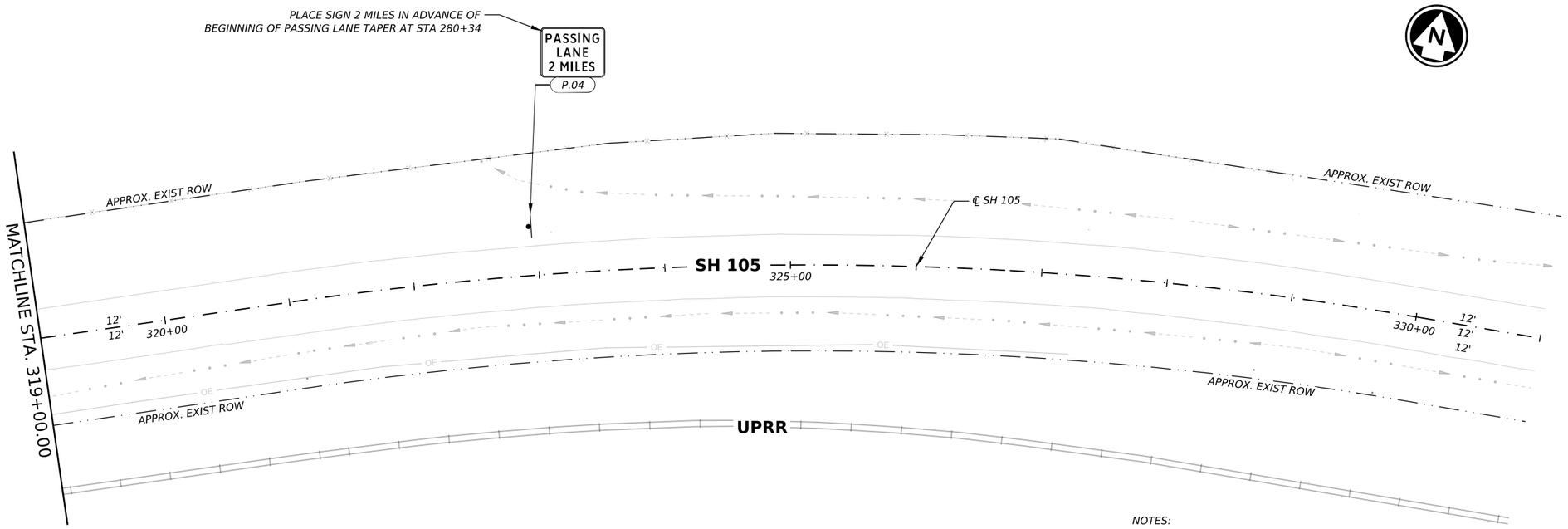
DW: JMT
CK: JMT
DW: ATG





NOTES:

1. STATIONS AND OFFSETS ARE MEASURED FROM ℄ SH 105 UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY UTILITY LOCATION PRIOR TO THE INSTALLATION OF SIGN FOUNDATION.
3. APPLY RUMBLE STRIPS OPTION 3 FOR CENTERLINE, APPLY RUMBLE STRIPS OPTION 7 FOR EDGE LINE.
4. ALL EXISTING SMALL SIGNS SHALL BE REMOVED.

LEGEND

- (A) RE PM W/RET REQ TY I (W) (6") (SLD)
- (B) RE PM W/RET REQ TY I (W) (6") (BRK)
- (C) REFL PAV MRK TY I (W) (6") (DOT)
- (D) REFL PAV MRK TY I (W) (8") (SLD)
- (E) REFL PAV MRK TY I (W) (8") (DOT)
- (F) REFL PAV MRK TY II (W) (6") (BRK)
- (G) RE PM W/RET REQ TY I (Y) (6") (BRK)
- (H) RE PM W/RET REQ TY I (Y) (6") (SLD)
- (I) PREFAB PAV MRK TY C (W) (LNDP ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) REFL PAV MRK TY II (W) (6") (SLD)
- (L) PREFAB PAV MRK TY C (W) (ARROW)
- (M1) REFL PAV MRK TY I-C
- (M2) REFL PAV MRK TY II-A-A
- (N1) OPT 7 CONT 16" RS(2)-23 RUMBLE STRIPS
- (N2) OPT 3 CNTR LINE RS(3)-23 RUMBLE STRIPS
- (O) REFL PAV MRK TY II (Y) (6") (SLD)
- (P) REFL PAV MRK TY II (W) (12") (SLD)
- (Q) REFL PAVMRK TY II (W) (8") (SLD)
- (R) REFL PAVMRK TY II (W) (24") (SLD)
- (S) REFL PAVMRK TY II (Y) (6") (BRK)
- (T) REFL PAVMRK TY II (W) (WORD)
- (U) REFL PAVMRK TY II (W) (ARROW)
- PROP SIGN (SINGLE POST) (P)
- PROP SIGN (DOUBLE FACE) (P)
- EXIST SIGN TO REMAIN (E)
- EXIST SIGN TO BE RELOCATED (R)
- EXIST SIGN TO BE REMOVED (X)
- P.01 SIGN ID: P.01, R.01, E.01, X.01
- PROP OBJECT MARKER OM-2Z
- PROP BI-DIRECTIONAL DEL (CTB)
- PROP DEL (MBGF)

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER
3/20/2024

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
1781 Stonehollow Dr. Suite 100 Austin, TX 78758
Phone: 512-821-2081 Fax: 512-821-2085

SH 105

SIGNING & PAVEMENT MARKINGS

STA 307+00 TO END

SHEET 12 OF 12

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		217

DATE: 3/20/2024 4:48:02 PM
FILE: BRYCEC_TASK02_SPM12.dgn

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DATE: 3/20/2024 3:08:34 PM
FILE: BRYCEC_TASK02_SOSS001_TRAFFIC.dgn

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
SH 105												
1 OF 12	P.01	R3-5R	ONLY	30 X 36	X		10 BWG	1	SA	P		
		R3-9dP	END	30 X 12	X							
1 OF 12	P.02		CENTER LANE ONLY				10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
		R3-9cP	BEGIN	30 X 12	X							
1 OF 12	P.03		CENTER LANE ONLY				10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
1 OF 12	P.05	W12-2	15'-3"	36 X 36	X		10 BWG	1	SA	P		
1 OF 12	P.06	R2-1	SPEED LIMIT 55	30 X 36	X		10 BWG	1	SA	P		
1 OF 13	P.07	1-2aT	Navasota CITY LIMIT POP 7643	30 X 18	X		10 BWG	1	SA	P		
1 OF 12	P.08	R2-1	SPEED LIMIT 50	30 X 36	X		10 BWG	1	SA	P		
1 OF 12	P.09	R1-1	STOP	30 X 30	X		10 BWG	1	SA	P		
		M3-2	EAST	24 X 12								
1 OF 12	P.10	M1-6T	105 TEXAS	24 X 24	X		10 BWG	1	SA	P		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. 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.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 1 OF 9

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		0338	01	068	SH 105
4-16		DIST	COUNTY		SHEET NO.
8-16		BRY	GRIMES		218

18

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
		R14-1(CUSTOM)	TRUCK ROUTE / ALL THRU TRUCKS TO ↑ SH 105 W / CITY ORDINANCE — *MAINTAINED BY CITY OF NAVASOTA REUSE EXISTING SIGN*	84 X 18	X							
1 OF 12	R.11						S80	2	SA	P	EXAL	
		R13-1T(CUSTOM)		84 X 84	X							
1 OF 12	P.12	W9-14R	RIGHT LANE ENDS	36 X 36	X		10 BWG	1	SA	P		
1 OF 12	R.13	R5-4aT	NO ENGINE BRAKE / BY CITY ORDINANCE — *MAINTAINED BY CITY OF NAVASOTA REUSE EXISTING SIGNS*	36 X 48	X		10 BWG	1	SA	P		
		R14-1	TRUCK ROUTE ↑	24 X 18	X							
1 OF 12	R.14						10 BWG	1	SA	P		
		M6-3		21 X 15	X							
1 OF 12	P.15	W9-2TL	LANE ENDS MERGE LEFT	36 X 36	X		10 BWG	1	SA	P		
1 OF 12	P.16	R2-1	SPEED LIMIT 55	30 X 36	X		10 BWG	1	SA	P		
		M2-1	JCT SPUR 515 / JCT 6 TEXAS	24 X 15								
1 OF 12	P.17				X		10 BWG	1	SA	U		
		M1-6S/M1-6T		24 X 24								
1 OF 12	P.18	R2-1	SPEED LIMIT 70	30 X 36	X		10 BWG	1	SA	P		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. 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.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 2 OF 9

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-16	DIST	COUNTY		SHEET NO.
8-16	BRY	GRIMES		219

18

DATE: 3/20/2024 3:09:00 PM
BRYCEC TASK02_SOSS02_TRAFFIC.dgn

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
2 OF 12	P.01	W2-1aT	HIGHWAY INTERSECTION AHEAD	48 X 48	X		10 BWG	1	SA	T		
		R3-9dP	END CENTER LANE ONLY	30 X 12	X							
2 OF 12	P.02						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
		R3-9cP	BEGIN CENTER LANE ONLY	30 X 12	X							
2 OF 12	P.03						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
2 OF 12	P.04	W3-5	SPEED LIMIT 55	36 X 36	X		10 BWG	1	SA	P		
		R3-9dP	END CENTER LANE ONLY	30 X 12	X							
3 OF 12	P.01						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
		R3-9cP	BEGIN CENTER LANE ONLY	30 X 12	X							
3 OF 12	P.02						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
3 OF 12	P.03	D20-1TL	CO RD 446 ←	24 X 24	X		10 BWG	1	SA	P		
3 OF 12	P.04	R1-1	STOP	30 X 30	X		10 BWG	1	SA	P		
3 OF 12	P.05	D20-1TR	CO RD 446 →	24 X 24	X		10 BWG	1	SA	P		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. 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.
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS SHEET 3 OF 9

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-16 8-16	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		220

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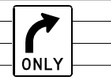
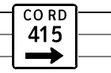
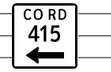
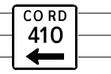
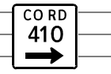
SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
4 OF 12	P.01	R3-5R		30 X 36	X		10 BWG	1	SA	P		
4 OF 12	P.02	D20-1TR		24 X 24	X		10 BWG	1	SA	P		
4 OF 12	P.03	R1-1		30 X 30	X		10 BWG	1	SA	P		
4 OF 12	P.04	D20-1TL		24 X 24	X		10 BWG	1	SA	P		
5 OF 12	P.01	M3-2		24 X 12	X		10 BWG	1	SA	P		
		M1-6T		24 X 24								
		D10-7aT		3 X 10								
5 OF 12	P.02	D14-4T		48 X 48	X		10 BWG	1	SA	U		
6 OF 12	P.01	D20-1TL		24 X 24	X		10 BWG	1	SA	P		
6 OF 12	P.02	R1-1		30 X 30	X		10 BWG	1	SA	P		
6 OF 12	P.03	D20-1TR		24 X 24	X		10 BWG	1	SA	P		

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

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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 4 OF 9

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		0338	01	068	SH 105
4-16		DIST	COUNTY		SHEET NO.
8-16		BRY	GRIMES		221

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
6 OF 12	P.04	D20-1TL		24 X 24	X		10 BWG	1	SA	P		
6 OF 12	P.05	R1-1		30 X 30	X		10 BWG	1	SA	P		
7 OF 12	P.01	D20-1TR		24 X 24	X		10 BWG	1	SA	P		
7 OF 12	P.02	R3-5R		30 X 36	X		10 BWG	1	SA	P		
7 OF 12	P.03	R3-5R		30 X 36	X		10 BWG	1	SA	P		
7 OF 12	P.04	D20-1TR		24 X 24	X		10 BWG	1	SA	P		
7 OF 12	P.05	R1-1		30 X 30	X		10 BWG	1	SA	P		
7 OF 12	P.06	D20-1TL		24 X 24	X		10 BWG	1	SA	P		
7 OF 12	P.07	R3-9dP		30 X 12	X		10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
7 OF 12	P.08	R3-9cP		30 X 12	X		10 BWG	1	SA	P		
		R3-9B		24 X 36	X							

ALUMINUM SIGN BLANKS THICKNESS	
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Less than 7.5	0.080"
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS SHEET 5 OF 9

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-16	DIST	COUNTY		SHEET NO.
8-16	BRY	GRIMES		222

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED (P = "Plain", T = "T", U = "U")	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
		R3-9dP	END / CENTER LANE / ONLY	30 X 12	X							
9 OF 12	P.01						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
		R3-9cP	BEGIN / CENTER LANE / ONLY	30 X 12	X							
9 OF 12	P.02						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
9 OF 12	P.03	D20-1TR	CO RD 417 →	24 X 24	X		10 BWG	1	SA	P		
9 OF 12	P.04	W9-2TL	LANE ENDS MERGE LEFT	36 X 36	X		10 BWG	1	SA	P		
9 OF 12	P.05	R1-1	STOP	30 X 30	X		10 BWG	1	SA	P		
9 OF 12	P.06	R3-5R	↱ ONLY	30 X 36	X		10 BWG	1	SA	P		
9 OF 12	P.07	D20-1TL	CO RD 417 ←	24 X 24	X		10 BWG	1	SA	P		
9 OF 12	P.08	D20-1TR	CO RD 314 →	24 X 24	X		10 BWG	1	SA	P		
9 OF 12	P.09	D14-4	ADOPT A HIGHWAY NEXT 2 MILES / EMPLOYEES OF SOUTH LAND TITLE	48 X 48	X		10 BWG	1	SA	U		
		M3-4	WEST	24 X 12								
9 OF 12	P.10				X		10 BWG	1	SA	P		
		M1-6T	105 / TEXAS	24 X 24								
		D10-7aT	6 5 4	3 X 10								

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 6 OF 9

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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4-16		DIST	COUNTY		SHEET NO.
8-16		BRY	GRIMES		223

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SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED (P = "Plain", T = "T", U = "U")	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
9 OF 12	P.11	R1-1	STOP	30 X 30	X		10 BWG	1	SA	P		
9 OF 12	P.12	R1-1	STOP	30 X 30	X		10 BWG	1	SA	P		
9 OF 12	P.13	D20-1TR	CO RD 334	24 X 24	X		10 BWG	1	SA	P		
10 OF 12	P.01	W2-1aT	HIGHWAY INTERSECTION AHEAD	48 X 48	X		10 BWG	1	SA	T		
		R3-9cP	BEGIN CENTER LANE ONLY	30 X 12	X							
10 OF 12	P.02						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
		R3-9dP	END CENTER LANE ONLY	30 X 12	X							
10 OF 12	P.03						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
10 OF 12	P.04	R4-3	SLOWER TRAFFIC KEEP RIGHT	24 X 30	X		10 BWG	1	SA	T		
10 OF 12	P.05	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	48 X 48	X		10 BWG	1	SA	T		
		M2-1	JCT	21 X 15	X							
11 OF 12	P.01						10 BWG	1	SA	P		
		M1-6F	FARM 362 ROAD	24 X 24	X							
11 OF 12	P.02	I-3	Grassy Creek	33 X 18	X		10 BWG	1	SA	T		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 7 OF 9

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-16 8-16	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		224

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SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
11 OF 12	P.03	I-3	Grassy Creek	33 X 18	X		10 BWG	1	SA	T		
11 OF 12	P.04	D21-1TR	Whitehall ➔	66 X 12	X		10 BWG	1	SA	T		
11 OF 12	P.05	R3-5R	ONLY	30 X 36	X		10 BWG	1	SA	P		
		M3-4	WEST	24 X 12								
11 OF 12	P.06	M1-6T	105 TEXAS	24 X 24	X		10 BWG	1	SA	P		
		R3-9dP	END CENTER LANE ONLY	30 X 12	X							
11 OF 12	P.07	R3-9B		24 X 36	X		10 BWG	1	SA	P		
		R3-9cP	BEGIN CENTER LANE ONLY	30 X 12	X							
11 OF 12	P.08	R3-9B		24 X 36	X		10 BWG	1	SA	P		
11 OF 12	P.09	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	48 X 48	X		10 BWG	1	SA	T		
		M1-6F	FARM 362 ROAD	24 X 24	X							
11 OF 12	P.10	M6-1	➔	21 X 15	X		10 BWG	1	SA	P		
11 OF 12	P.11	W1-7		48 X 24	X		10 BWG	1	SA	T		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 8 OF 9

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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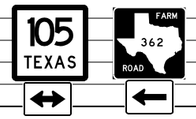
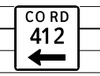
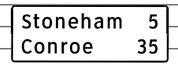
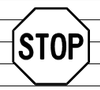
SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
		M1-6T , M1-6F		24 X 24 , 24 X 24	X							
11 OF 12	P.12						10 BWG	1	SA	U		
		M6-4 , M6-1		21 X 15 , 21 X 15	X							
11 OF 12	P.14	R1-1		30 X 30	X		10 BWG	1	SA	P		
		M3-2		24 X 12								
11 OF 12	P.15				X		10 BWG	1	SA	P		
		M1-6T		24 X 24								
11 OF 12	P.16	D20-1TL		24 X 24	X		10 BWG	1	SA	P		
11 OF 12	P.17	D2-2		66 X 30			10 BWG	1	SA	U		
11 OF 12	P.18	R1-1		30 X 30	X		10 BWG	1	SA	P		
12 OF 12	P.01	D20-1TR		24 X 24	X		10 BWG	1	SA	P		
		R3-9dP		30 X 12	X							
12 OF 12	P.02						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
		R3-9cP		30 X 12	X							
12 OF 12	P.03						10 BWG	1	SA	P		
		R3-9B		24 X 36	X							
12 OF 12	P.03	R3-9cP		54 X 48	X		10 BWG	1	SA	T		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

SHEET 9 OF 9

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
4-16	DIST	COUNTY		SHEET NO.
8-16	BRY	GRIMES		226

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D2-2 6in;

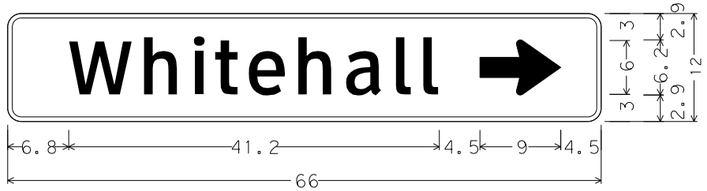
1.5" Radius, 0.8" Border, White on, Green;
"Stoneham", ClearviewHwy-3-W; "5", ClearviewHwy-3-W;

1.5" Radius, 0.8" Border, White on, Green;
"Conroe", ClearviewHwy-3-W; "35", ClearviewHwy-3-W;

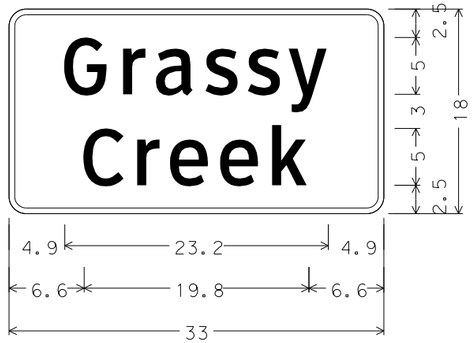
D14-4T-3_48x48;

3.0" Radius, 1.0" Border, White on, Blue;
"ADOPT A", C; "HIGHWAY", C;
"NEXT 2 MILES", C;

3.0" Radius, 1.0" Border, White on, Blue;
"EMPLOYEES OF", C specified length;
"SOUTH LAND", C; "TITLE", C;



D21-1TR_VARx12;
1.5" Radius, 0.5" Border, White on, Green;
"Whitehall", ClearviewHwy-3-W;
Standard Arrow Custom 9.0" X 6.1" 0';



I-3 5in;
1.5" Radius, 0.5" Border, White on, Green;
"Grassy", ClearviewHwy-3-W;
"Creek", ClearviewHwy-3-W;

STATE OF TEXAS
ABDULLAH SBAITI
139401
LICENSED PROFESSIONAL ENGINEER

0 50' 100'
SCALE IN FEET

ATG ALLIANCE TRANSPORTATION GROUP
TBPE Firm Registration No. F-812
11781 Stonehollow Dr. Suite 180 Austin, TX 78758
Phone: 512-821-2081 Fax: 512-821-2085

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SH 105

SIGN DETAILS

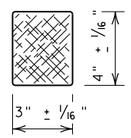
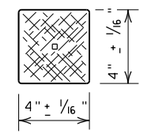
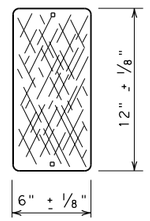
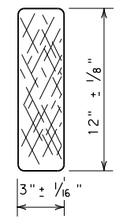
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		227

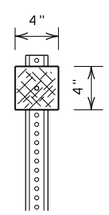
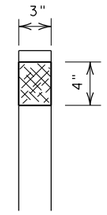
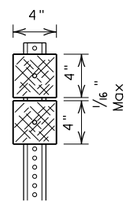
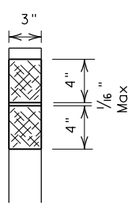
DATE: 3/20/2024 4:06:11 PM
FILE: BRYCEC_TASK02_SGNDET_TRAFFIC.dgn

DW: ATG CK: JMT DW: JMT CK: JMT

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
- S = Single
- D = Double

COLOR OF REFLECTORS
- W = White
- Y = Yellow
- R = Red

REFLECTOR UNIT SIZE
- 1 or 2

TYPE OF POST OR DELINEATOR
- WC = Wing Channel Post
- YFLX = Yellow Flexible Post
- WFLX = White Flexible Post
- BRF = Barrier Reflector

TYPE OF MOUNT
- GND = Embedded (drivable or set in concrete)
- CTB = Concrete Barrier Mount
- GF1 or GF2 = Guard Fence Attachment
- SRF = Surface Mount

DIRECTION
If Required
- BI = Bi-Directional
- BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
- 1, 2, 3, or 4

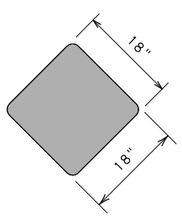
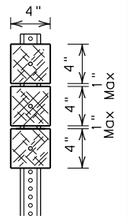
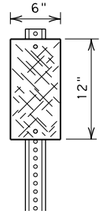
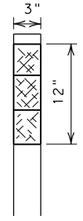
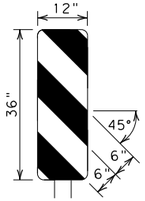
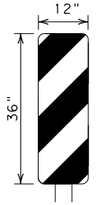
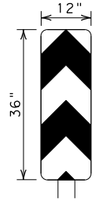
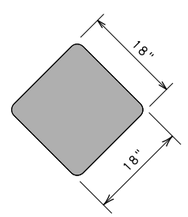
NUMBER OF REFLECTORS OR DIRECTION
- X = 3-Size 2 reflector units (Type 2 only)
- Y = 1-Size 3 reflector unit (Type 2 only)
- Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
- L = Left Side (Type 3 Object Marker only)
- R = Right Side (Type 3 Object Marker only)
- C = Center (Type 3 Object Marker only)

TYPE OF POST
- WC = Wing Channel Post
- WFLX = White Flexible Post
- TWT = Thin Walled Tubing

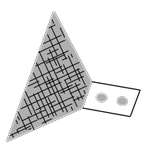
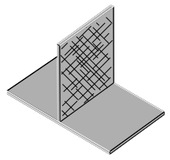
TYPE OF MOUNT
- GND = Embedded (drivable)
- SRF = Surface Mount
- WAS = Wedge Anchor Steel
- WAP = Wedge Anchor Plastic

DIRECTION
If Required
- BI = Bi-Directional

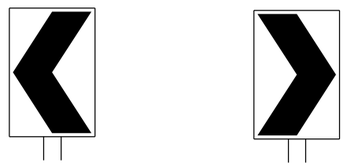
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

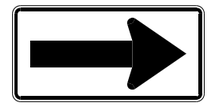
BARRIER REFLECTORS (BRF)

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

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

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

DEPARTMENTAL MATERIAL SPECIFICATIONS

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

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	BRY	GRIMES		228

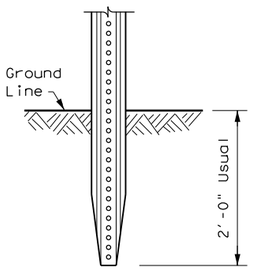
20A

DATE: 3/20/2024 3:13:28 PM
FILE: dom1-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

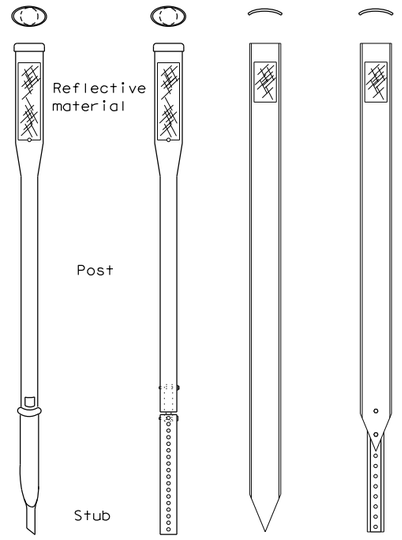


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

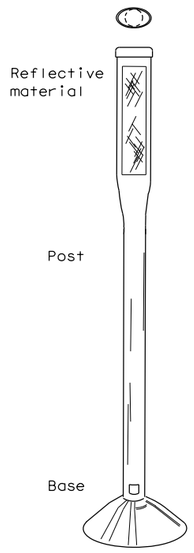
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



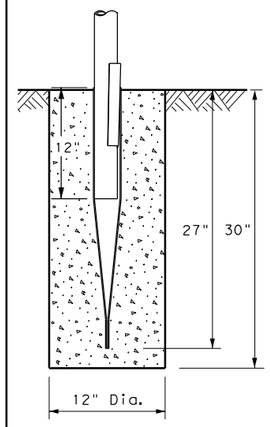
SURFACE MOUNT

NOTES

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

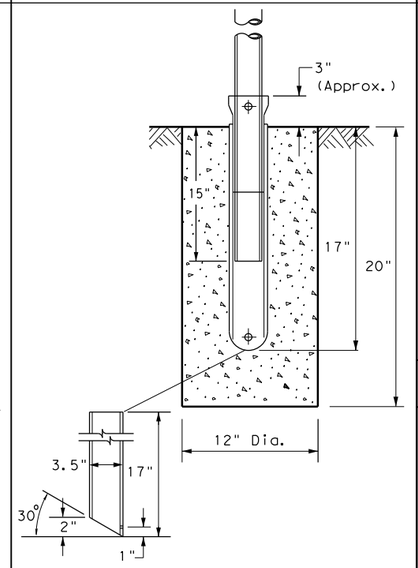
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

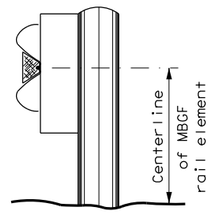
NOTE

1. Install per manufacturer's recommendations.

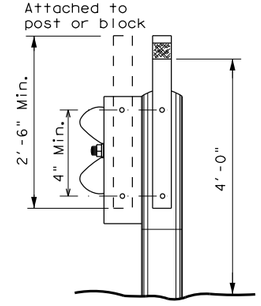
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

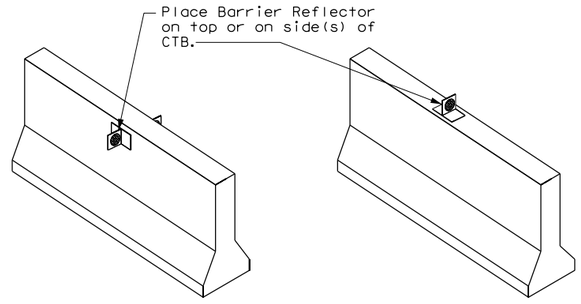
GF1



GF2



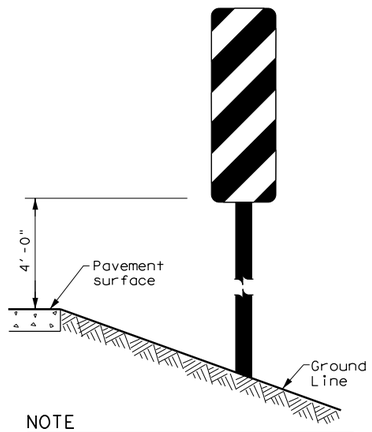
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

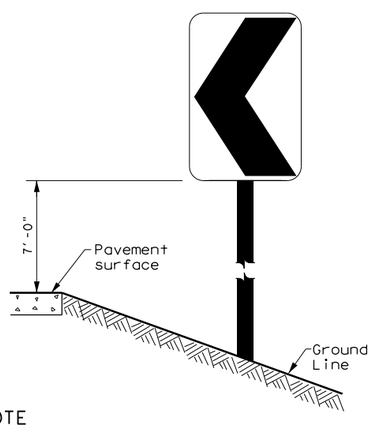
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

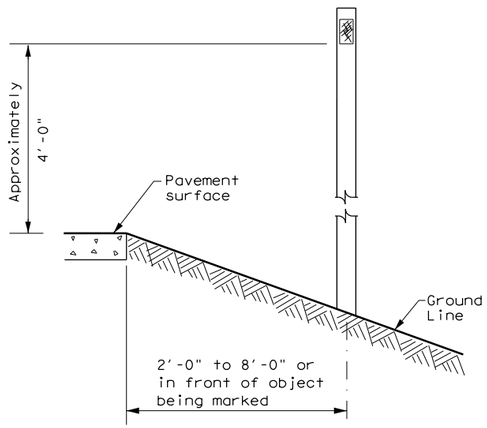
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

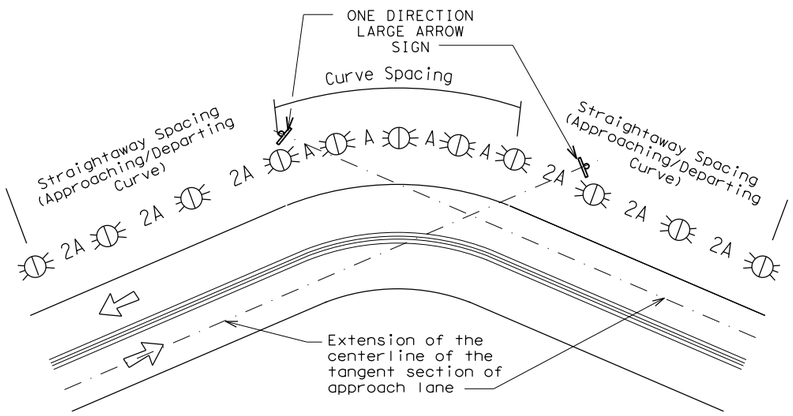
FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	BRY	GRIMES		229
20B				

DATE: 3/20/2024 3:13:57 PM
FILE: dom2-20.dgn

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

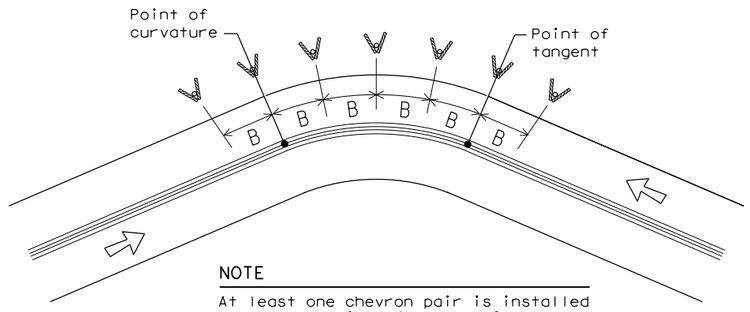
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND	
	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS	0338	01	068	SH 105
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	BRY	GRIMES		230

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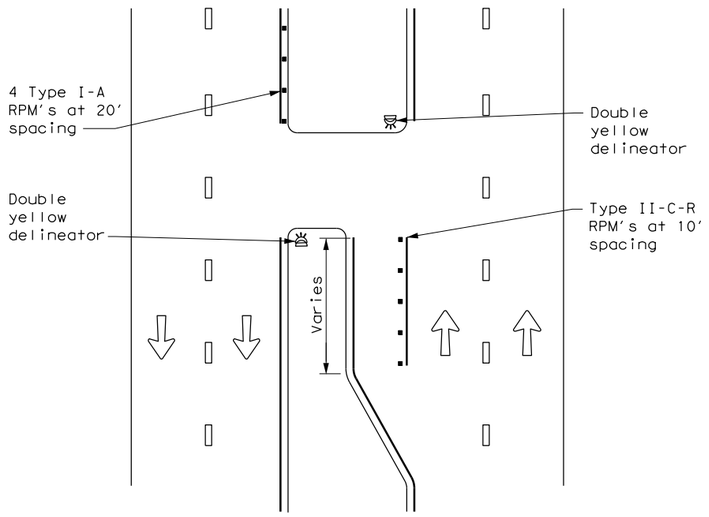
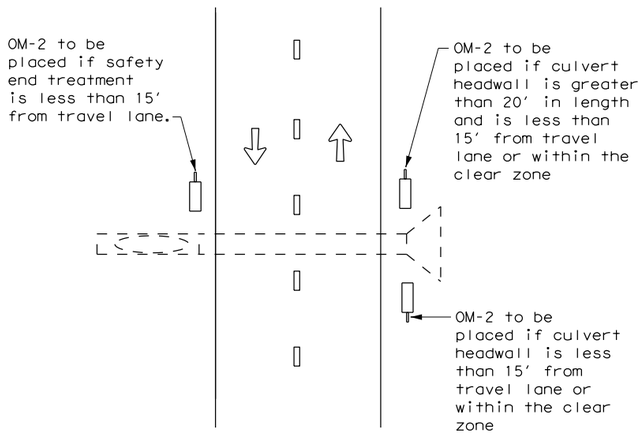
CROSSOVERS



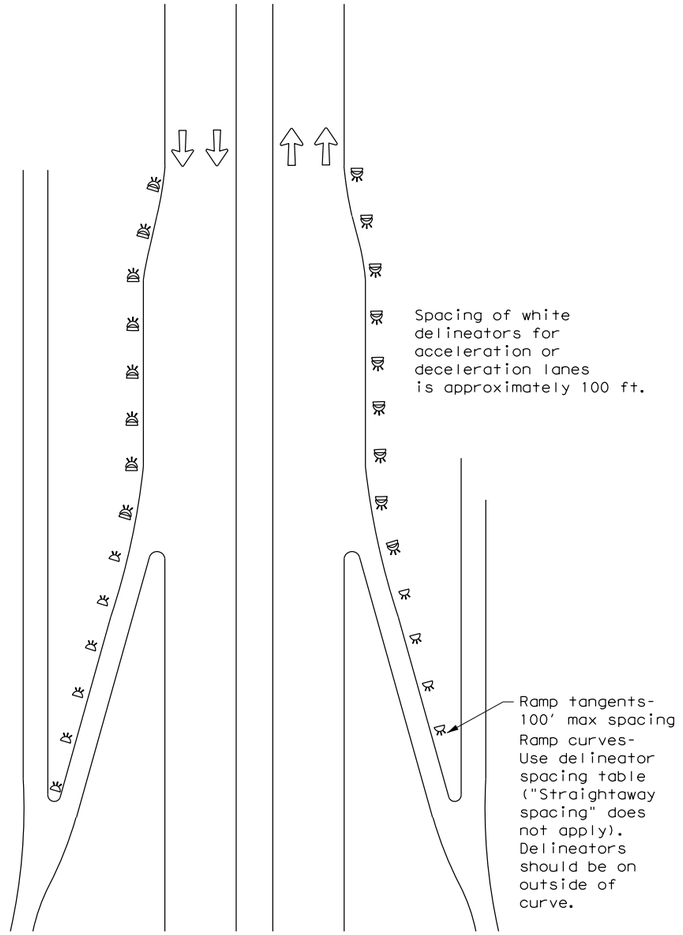
DETAIL 1

FOR CULVERTS WITHOUT MBGF



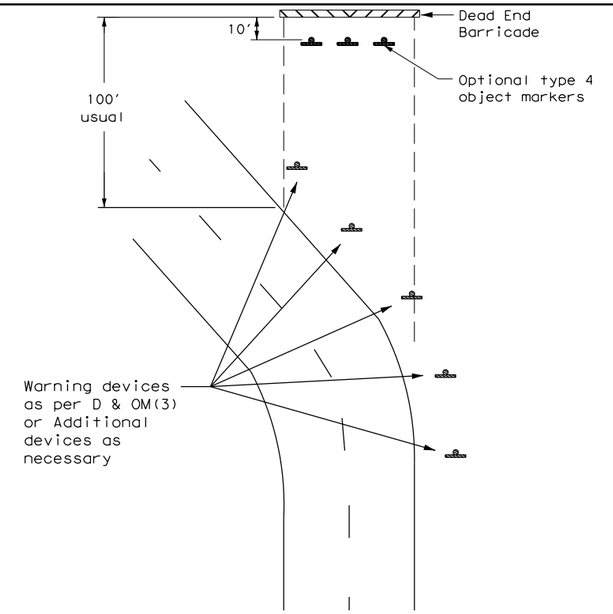
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



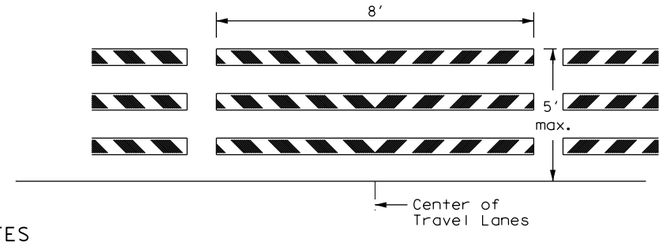
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

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

DETAIL 5

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

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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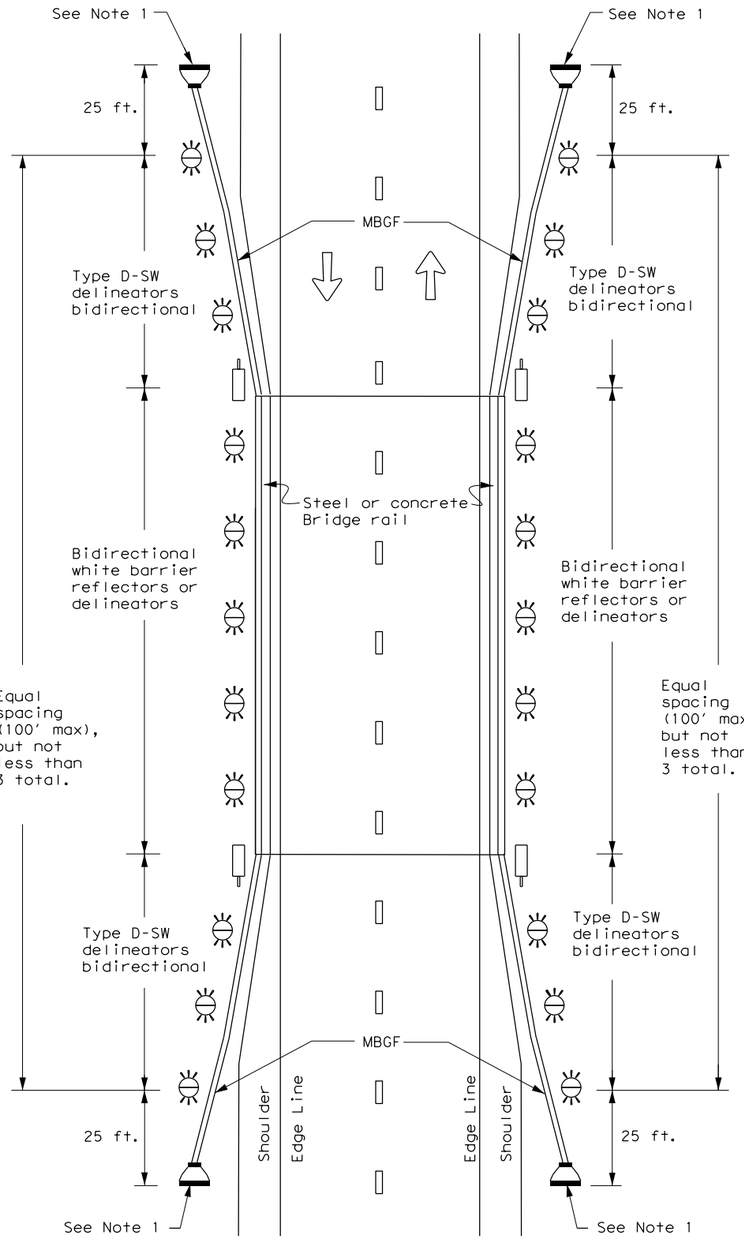
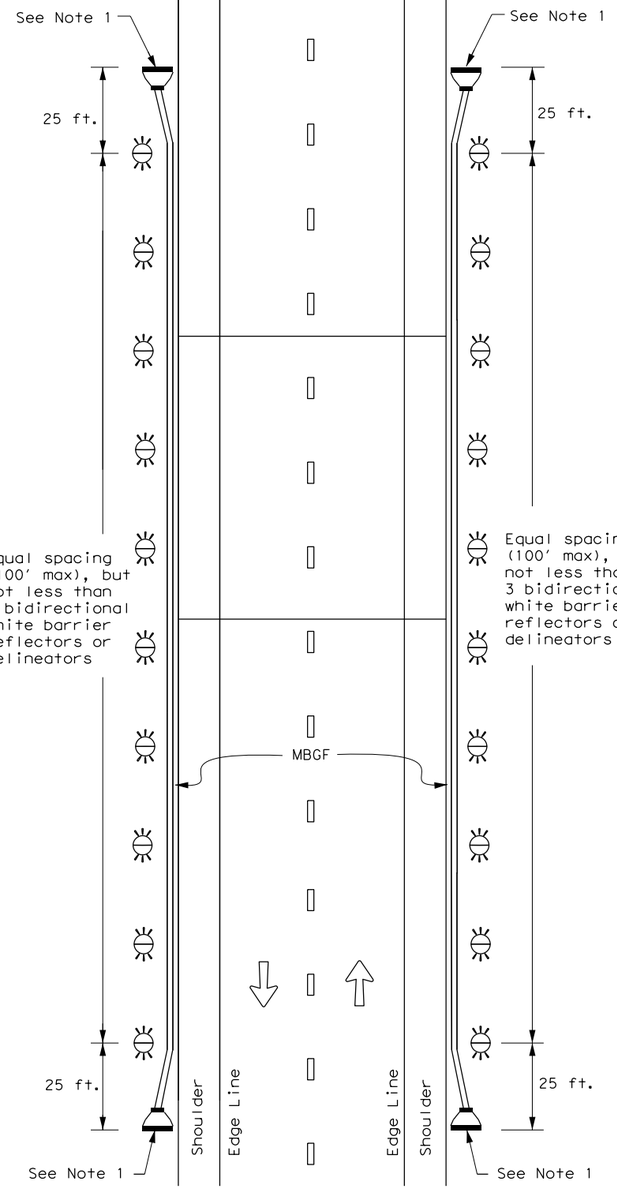
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

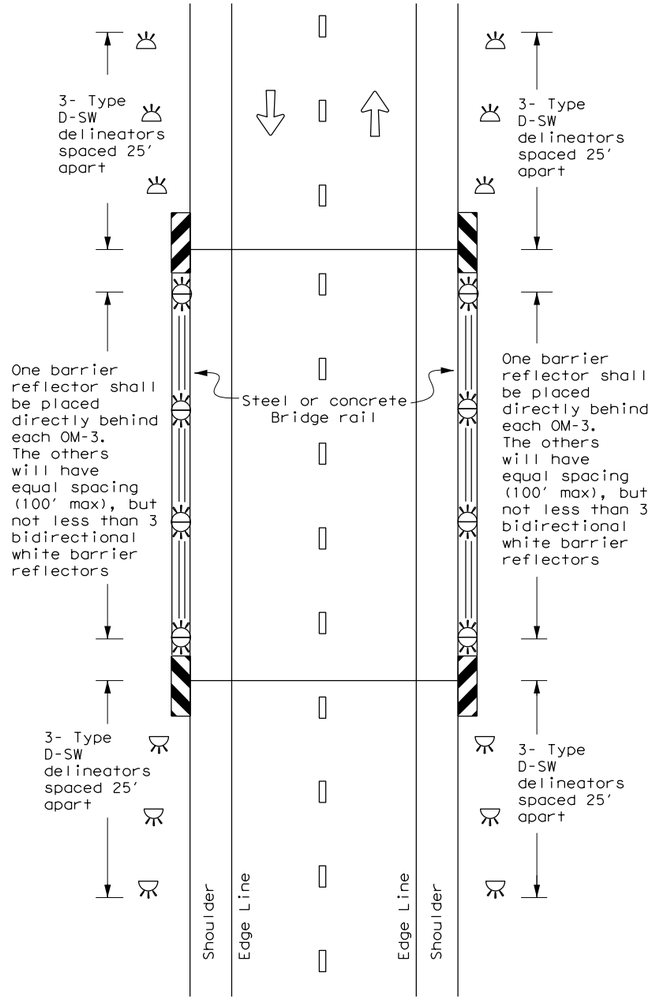
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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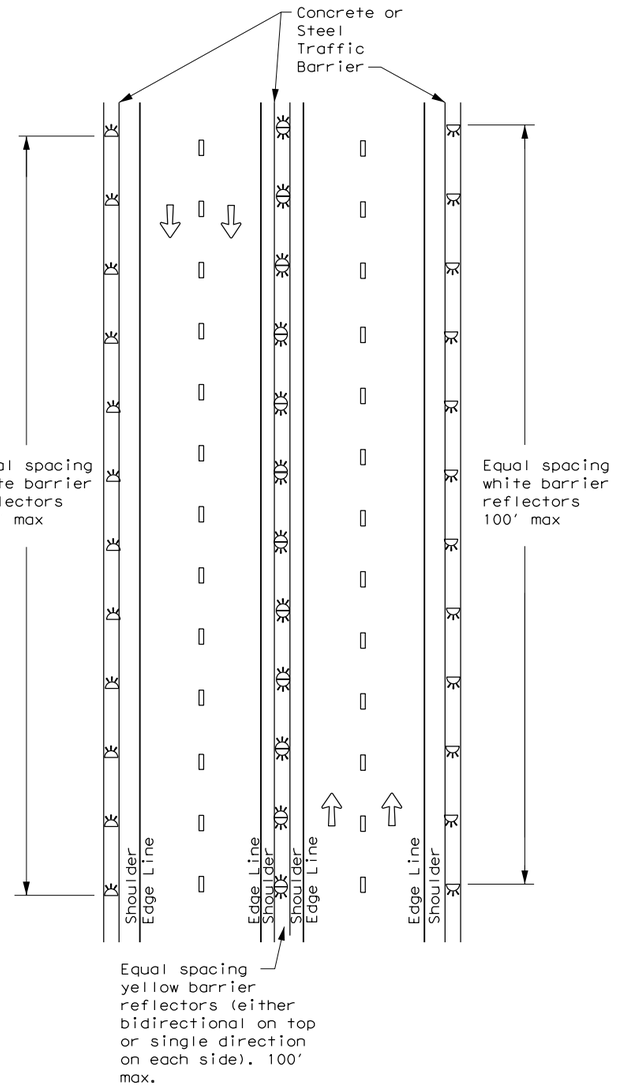
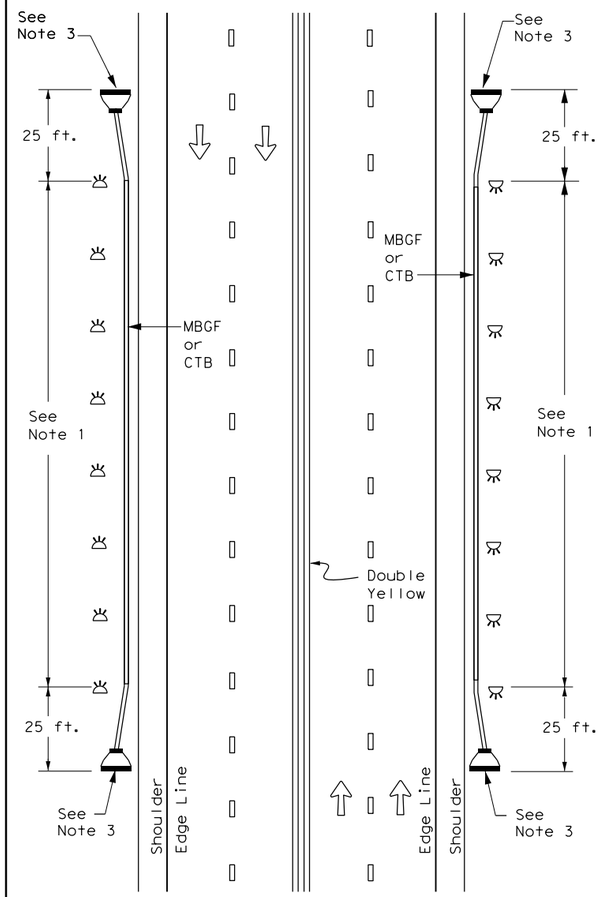
	BRY	GRIMES		232

20E

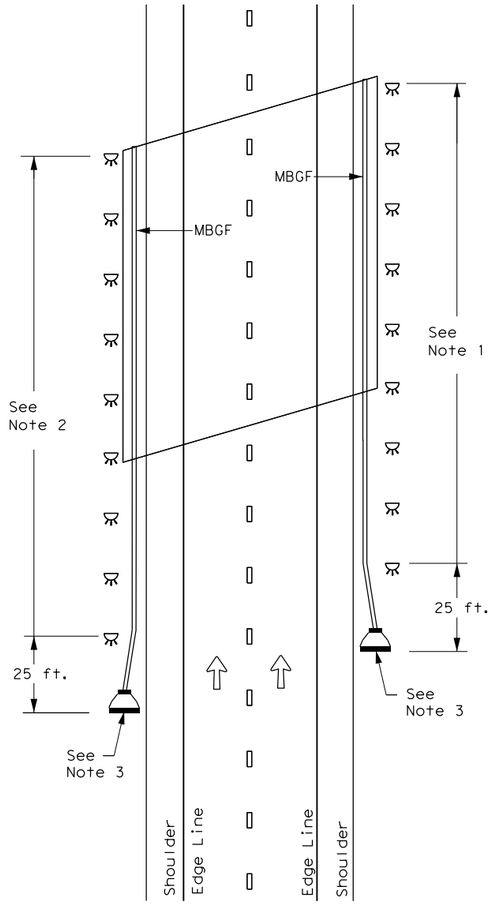
CONTINUOUS CONCRETE OR STEEL BARRIER



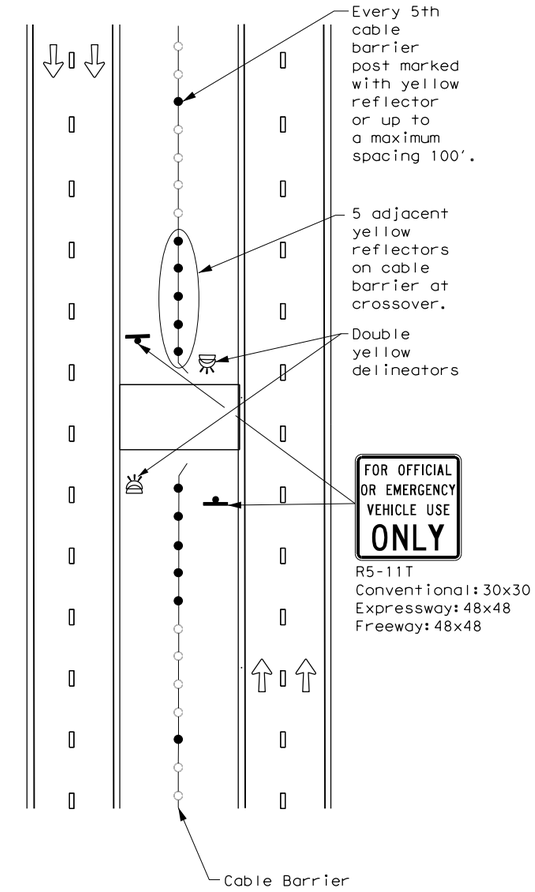
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100′ max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100′ max.)
2. Equal spacing (100′ max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3)in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(6)-20

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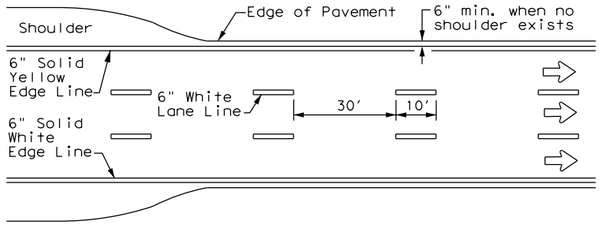
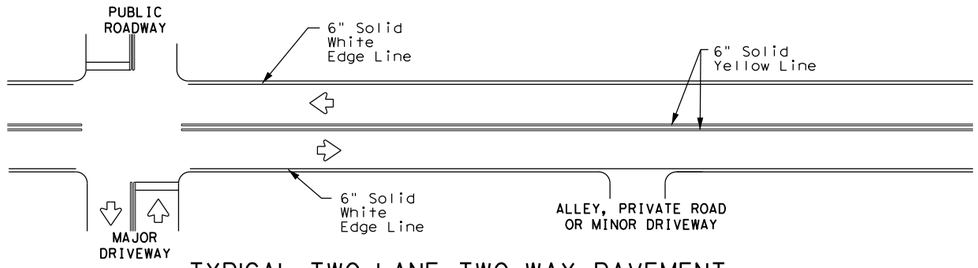
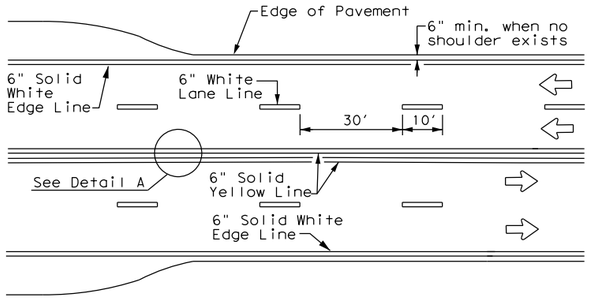
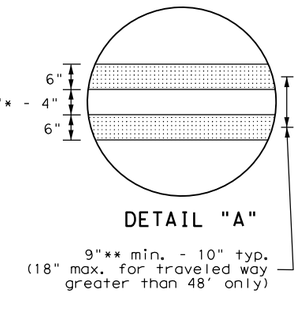


EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



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

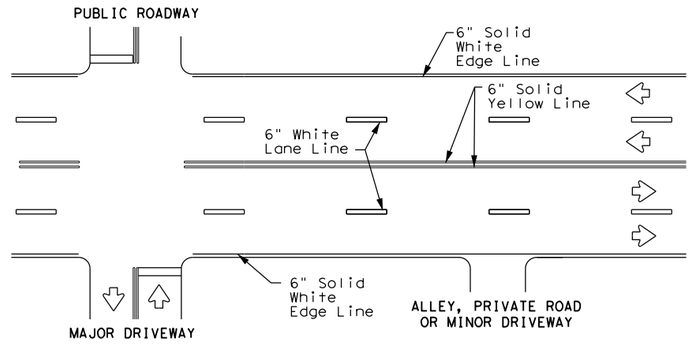




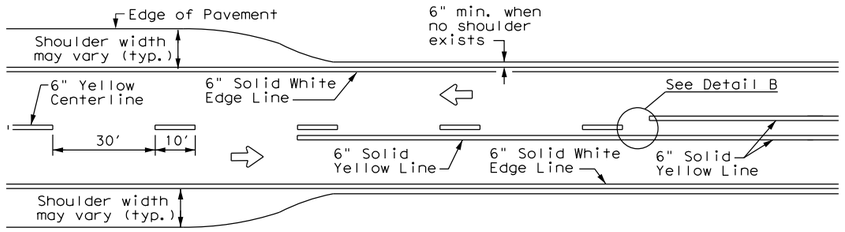
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

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

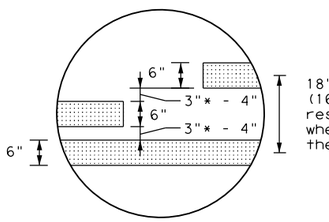
** 8" minimum for restripe projects when approved by the Engineer.



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

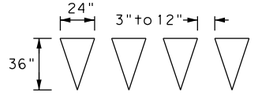


TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



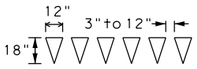
DETAIL "B"

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

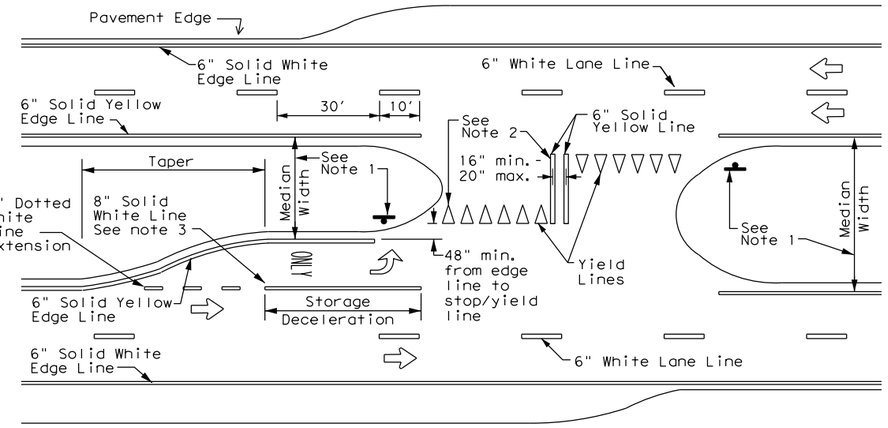


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

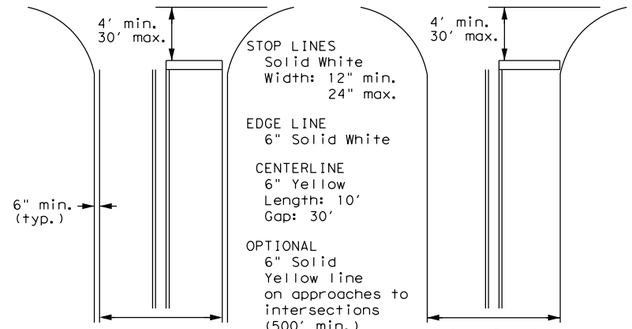
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths
for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
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REVISIONS 11-78 8-00 6-20	0338	01	068	SH 105
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	BRY	GRIMES		234

22A

DATE: 3/20/2024 3:16:16 PM
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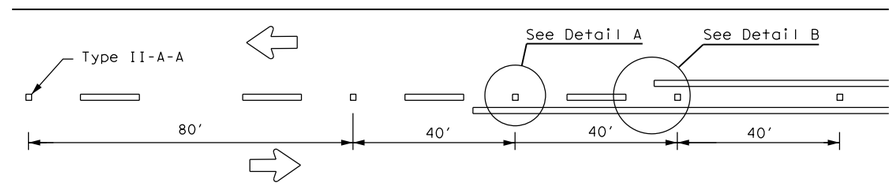
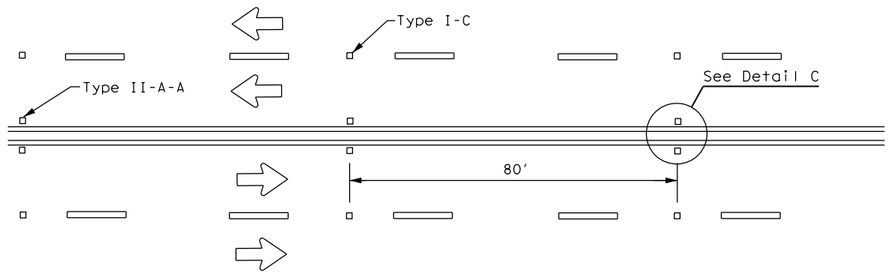
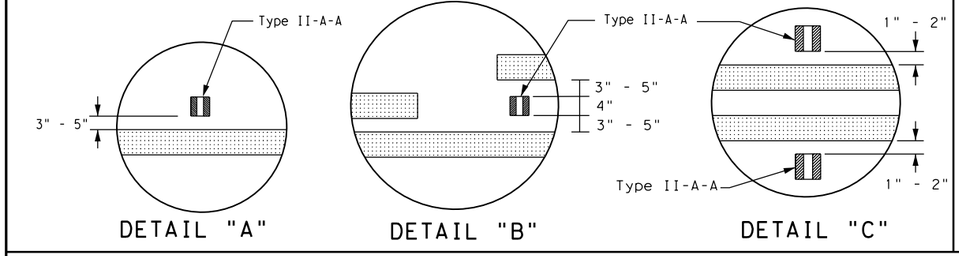
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

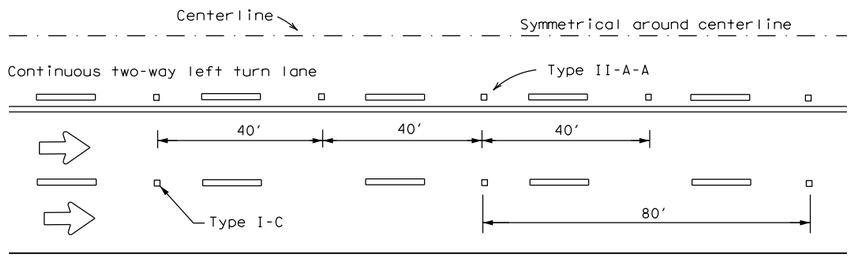


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

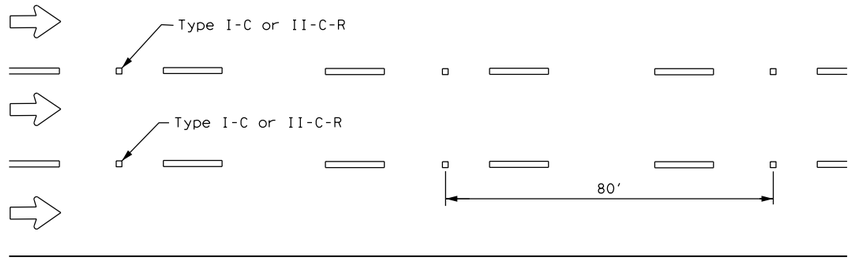


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



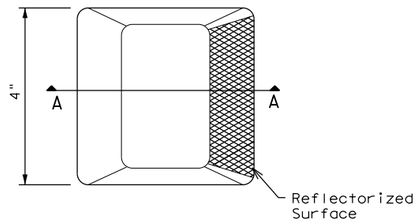
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

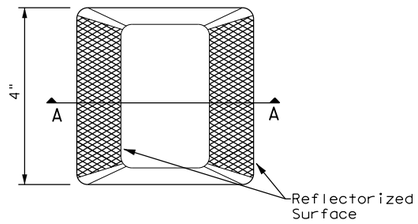
See Note 3.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

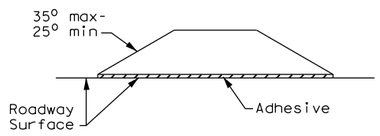
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

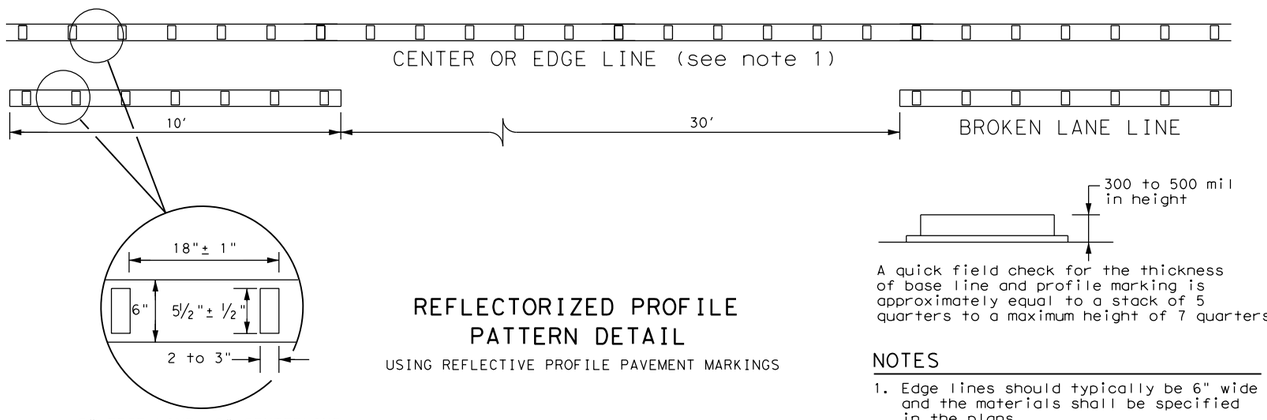


Type II (Top View)



SECTION A

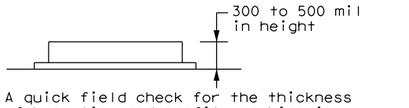
RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

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

GENERAL NOTES

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

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

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
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4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22	BRY	GRIMES		235
5-00 2-12				

22B

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DATE: 3/20/2024 3:16:43 PM
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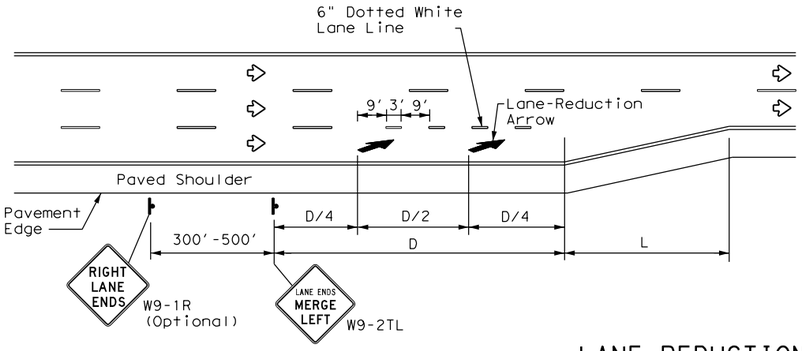


LANE REDUCTION

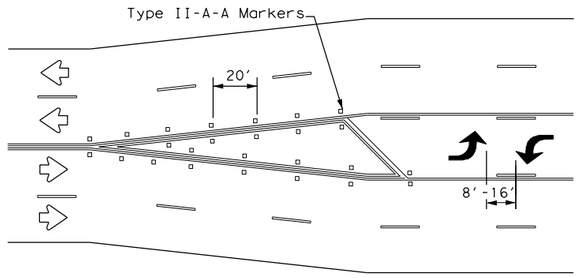
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

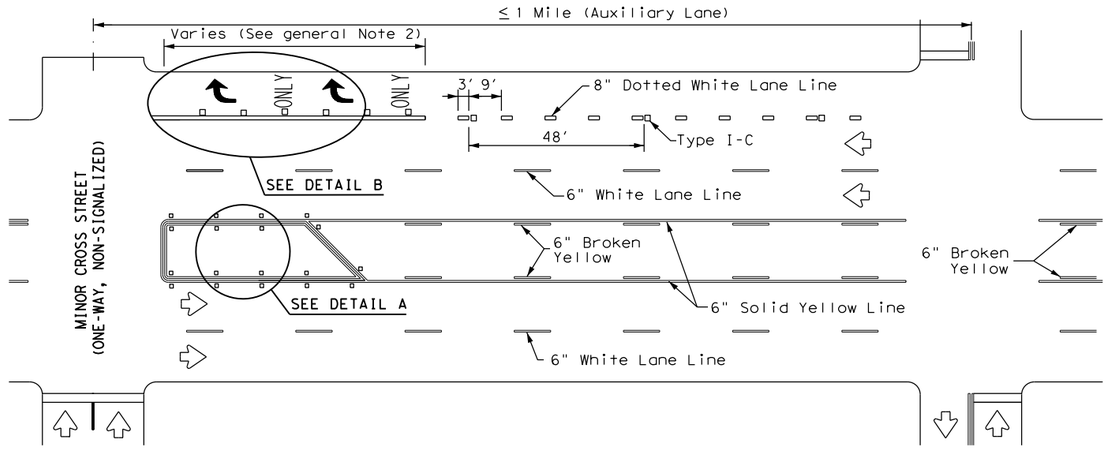


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

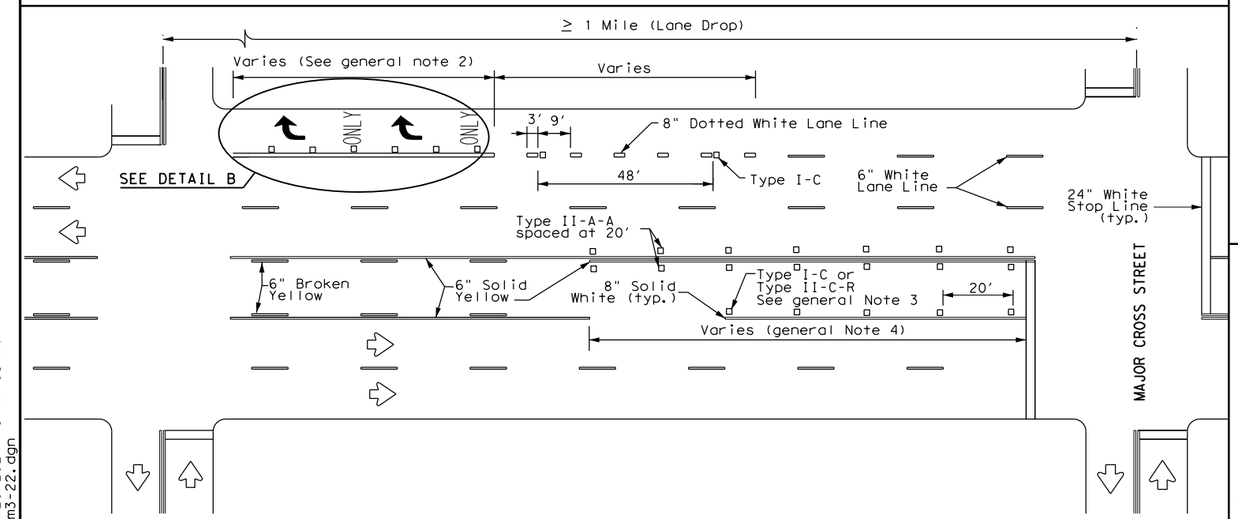
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

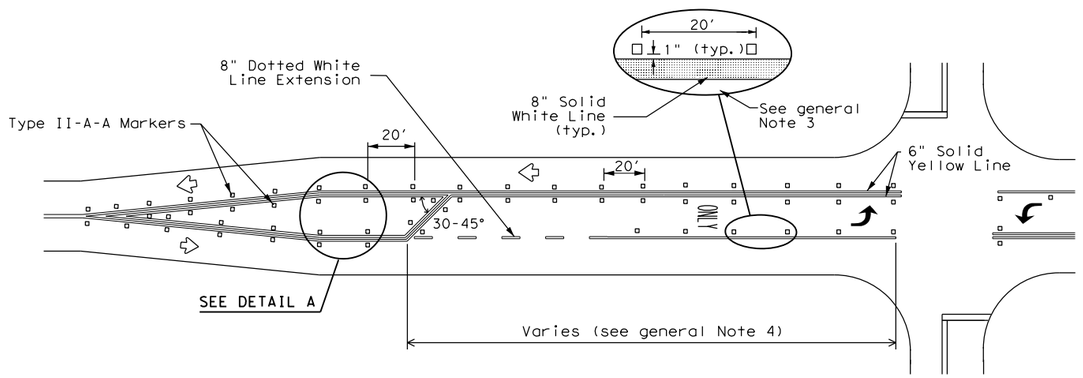
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



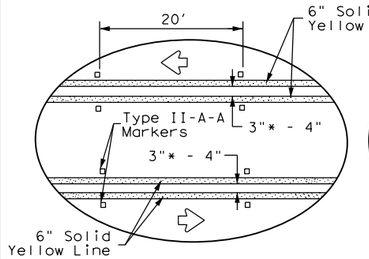
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



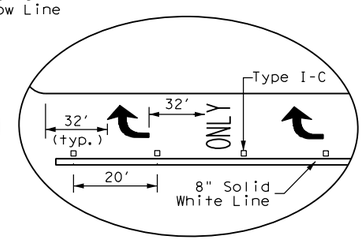
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		236

22C

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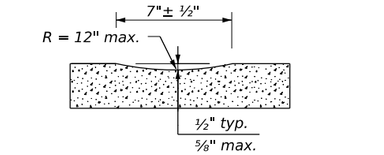
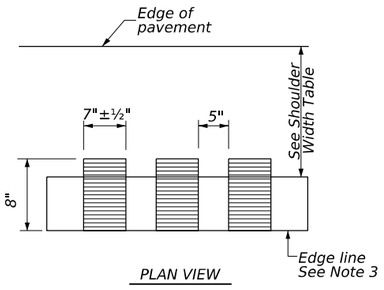
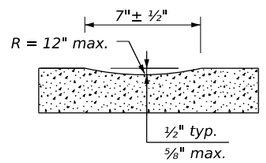


PROFILE VIEW
OPTION 1

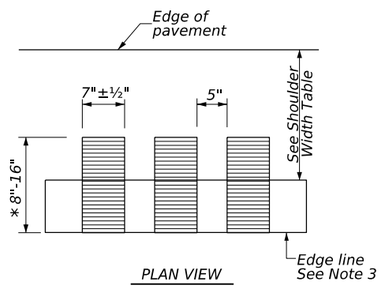


PLAN VIEW

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



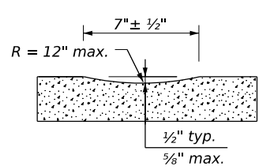
PROFILE VIEW
OPTION 2



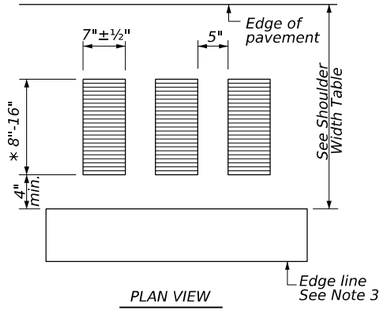
PLAN VIEW

∗ This distance may vary based on width of shoulder

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



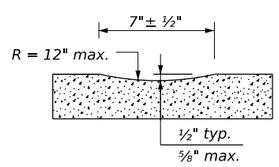
PROFILE VIEW
OPTION 3



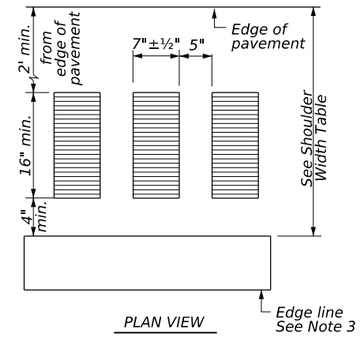
PLAN VIEW

∗ This distance may vary based on width of shoulder

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)

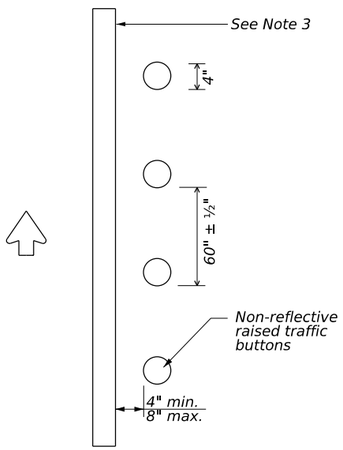


PROFILE VIEW
OPTION 4



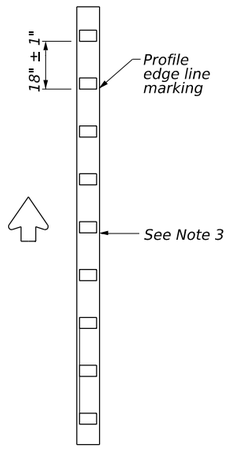
PLAN VIEW

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



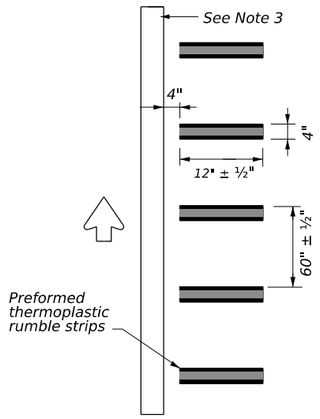
PLAN VIEW
OPTION 5

RAISED EDGE LINE (Rumble Strips)



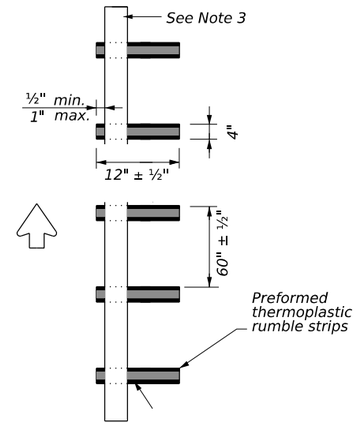
PLAN VIEW
OPTION 6

PROFILE EDGE LINE MARKINGS (Rumble Strips)



PLAN VIEW
OPTION 7

PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)



PLAN VIEW
OPTION 8

PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)

SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5, 6 or 8	Option 1, 2, 3 5, 6 or 7	Option 2, 4, 5 6 or 7

GENERAL NOTES

1. Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
2. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
3. Use Standard Sheet PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
4. See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
5. Breaks in edge line rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections, or driveways with high usage of large trucks when installed on conventional highways.
6. Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
7. Consideration should be given to noise levels when edgeline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:

9. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
10. Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble strip.

WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:

11. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
12. Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edge line when used as a rumble strip. The color of the button should match the color of the adjacent edge line marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
13. Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
14. The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
15. Raised profile thermoplastic markings used as edge lines may substitute for buttons.

Texas Department of Transportation

Traffic Safety Division Standard

EDGE LINE RUMBLE STRIPS ON UNDIVIDED OR TWO LANE HIGHWAYS RS(2)-23

FILE: rs(2)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
10-13 1-23	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		237

DATE: 3/20/2024 3:17:37 PM
FILE: rs2-23.dgn

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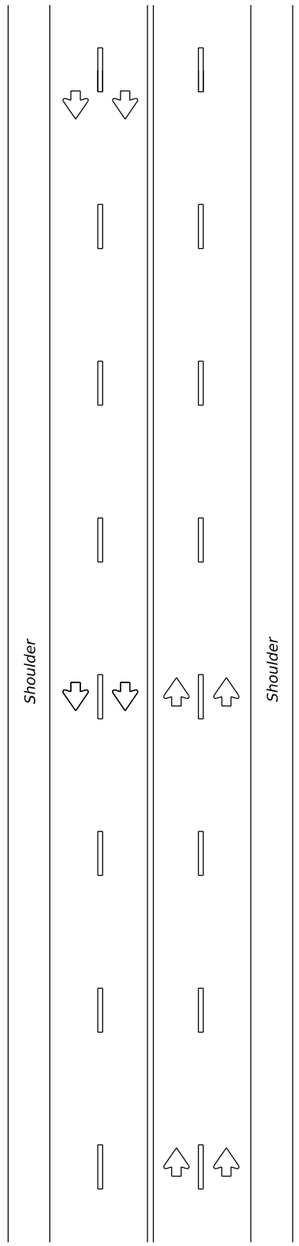
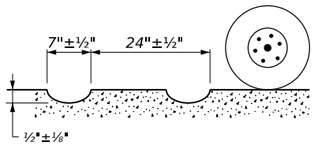
DATE: 3/20/2024 3:18:05 PM
FILE: rs(3)-23.dgn

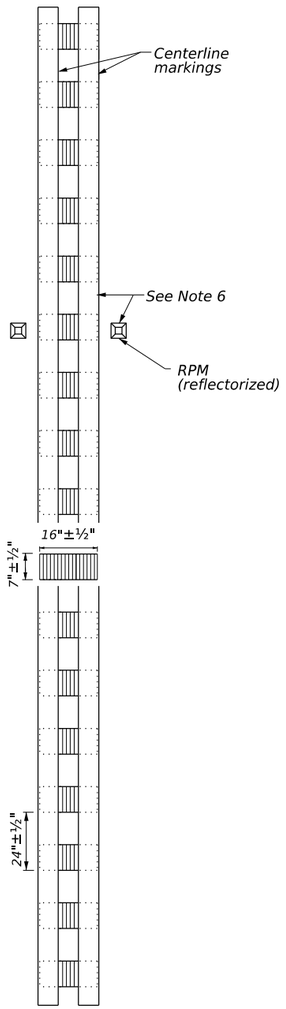
CENTERLINE RUMBLE STRIPS



MULTILANE UNDIVIDED HIGHWAY WITH SHOULDER

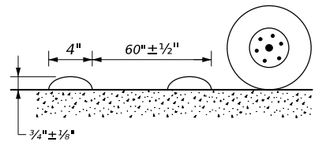


PROFILE VIEW

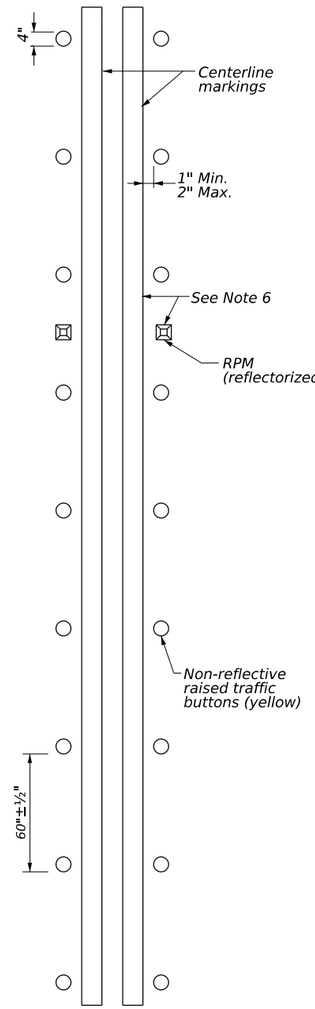


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

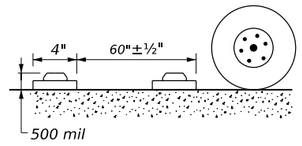


PROFILE VIEW

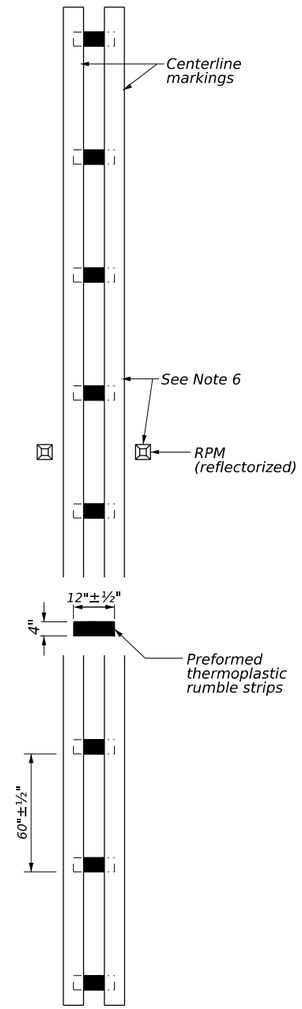


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

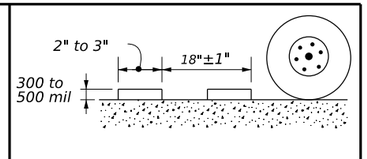


PROFILE VIEW

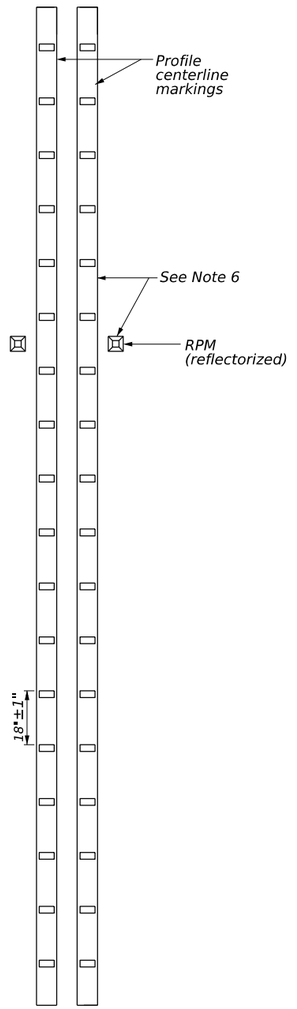


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on multilane undivided highways.
2. Centerline and edge line rumble strips or profile markings shall not be placedon roadways with a posted speed limit of 45 MPH or less.
3. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
4. See dimensions for milled rumble strips. Other shapes and dimensions may beused if approved by the Traffic Safety Division.
5. Breaks in milled centerline rumble strips shall occur at least 50 feet and nomore than 150 feet in advance of bridges, railroad crossing, intersections ordriveways with high usage of large trucks.
6. Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Pavement markings must be applied over milled centerline rumble strips for normal centerline spacing. For wider medians, specify in the plans the exact placement of the rumble strips. Place the rumble strips under each centerline marking or centered in the middle of the median.

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per manufacturer's recommendations.
10. When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The color of the button should be yellow for a continuous no passing roadway. The button will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

12. See standard sheet RS(2).

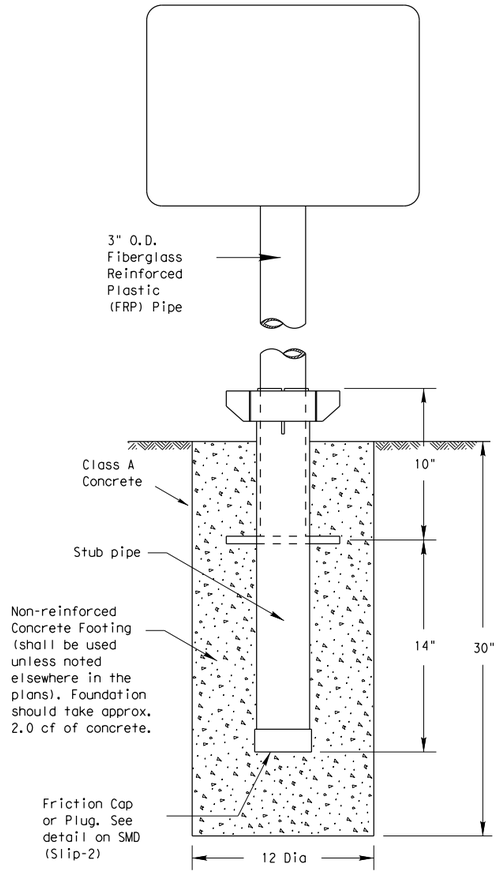
Texas Department of Transportation

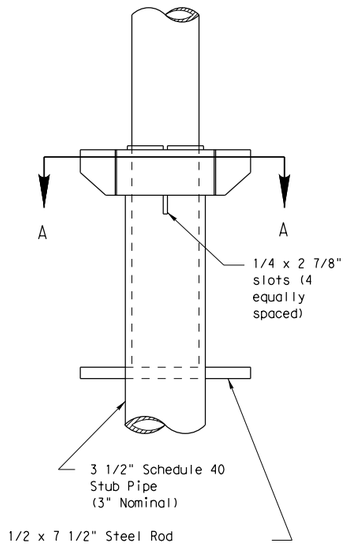
Traffic Safety Division Standard

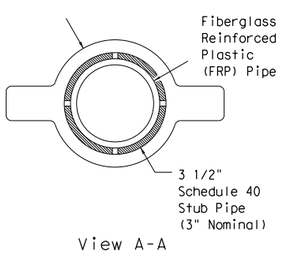
CENTERLINE RUMBLE STRIPS ON MULTILANE UNDIVIDED HIGHWAYS RS(3)-23

FILE: rs(3)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
10-13 1-23	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		238

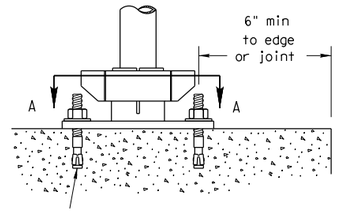
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post





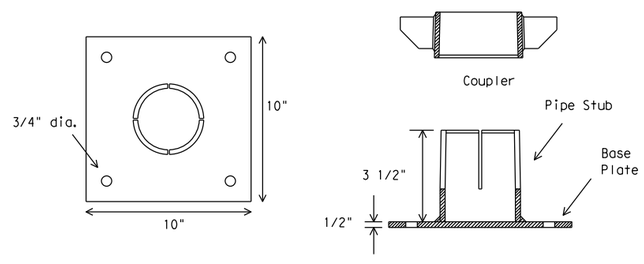


SM RD SGN ASSM TY FRP(X)UA(P)



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS



SM RD SGN ASSM TY FRP(X)UB(P)

GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

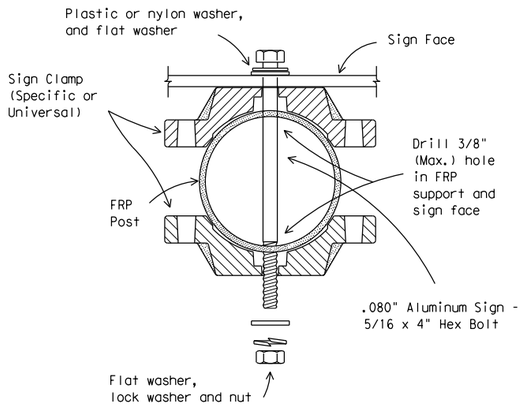
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

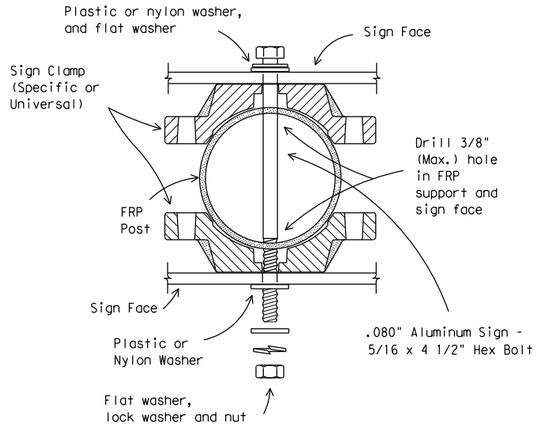
BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS UNIVERSAL ANCHOR SYSTEM WITH FRP POST

SMD(FRP)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		239

26F

DATE: 3/20/2024 3:18:32 PM
FILE: smdfrp.dgn

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

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

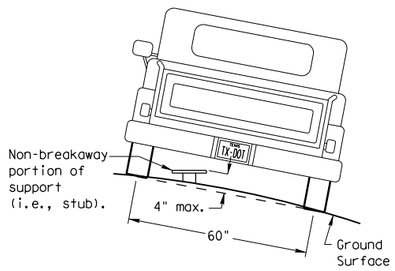
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

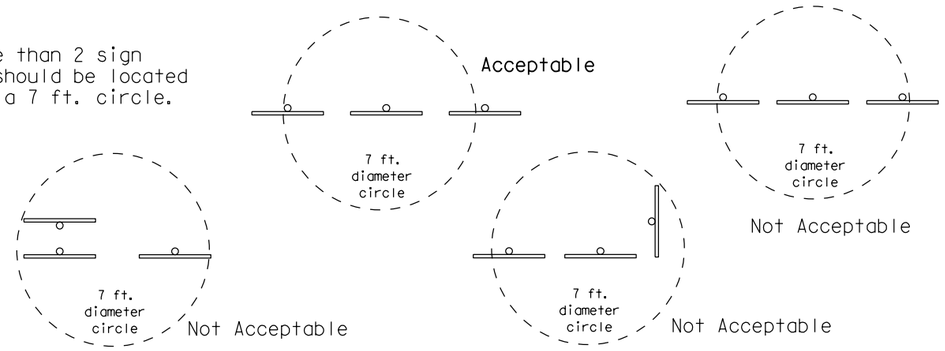
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



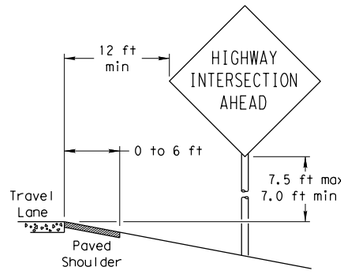
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



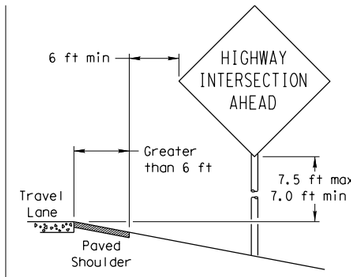
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

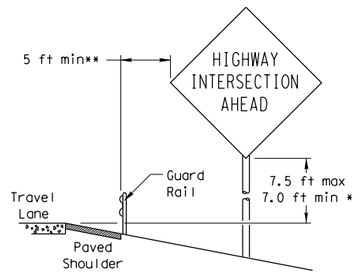
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



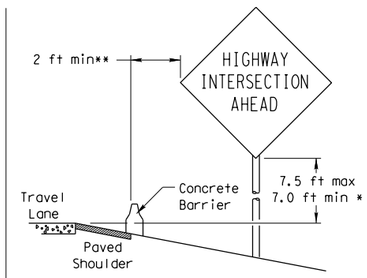
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



BEHIND GUARDRAIL

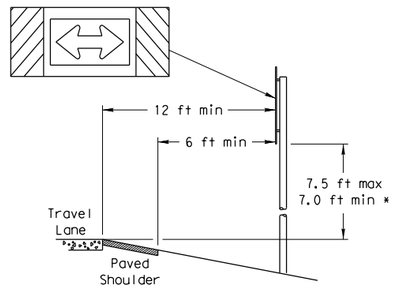


BEHIND CONCRETE BARRIER

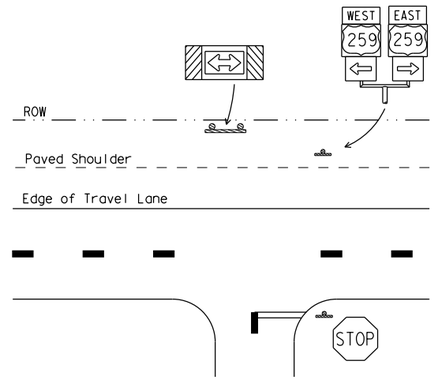
**BEHIND GUARDRAIL

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

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

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

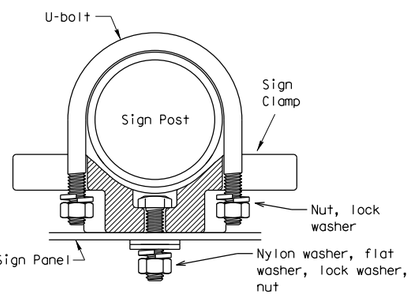
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

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

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

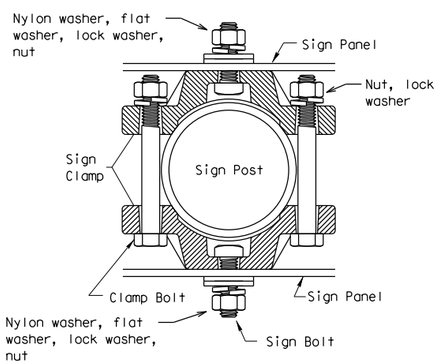


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

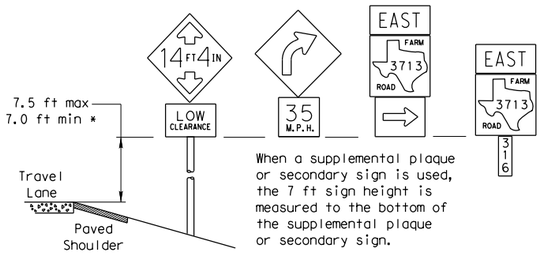
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



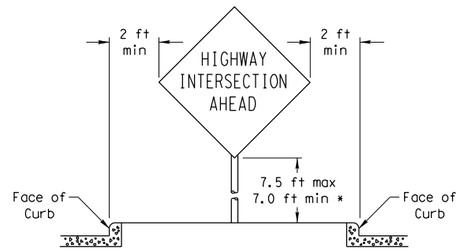
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



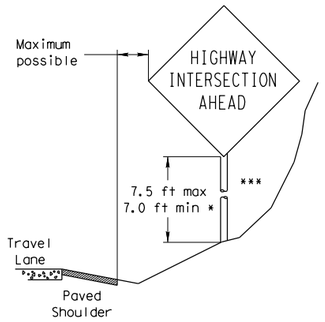
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS
9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	240

26A

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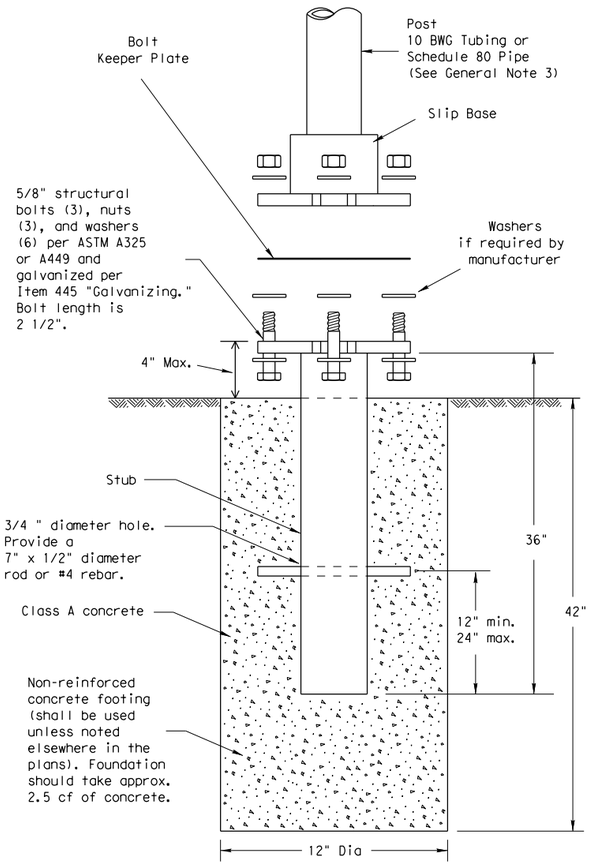
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

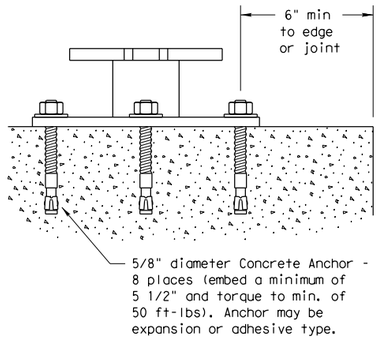
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



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

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	241

26B

DATE: 3/20/2024 3:19:28 PM
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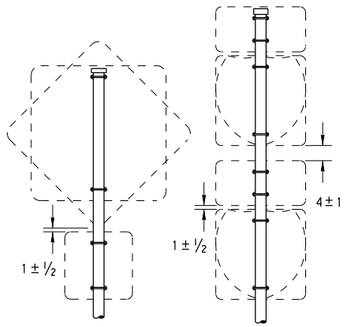
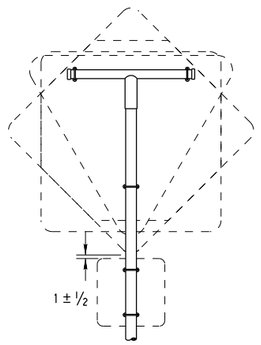


SM RD SGN ASSM TY XXXXX(1)XX(P)



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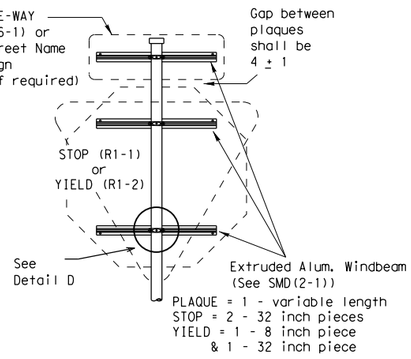

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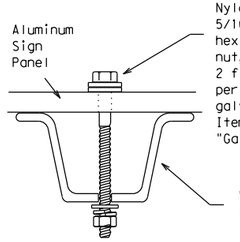
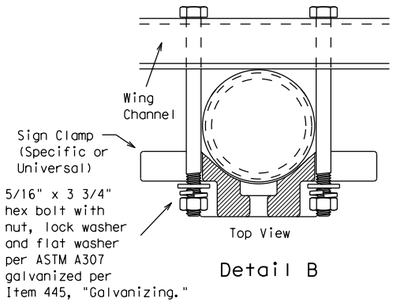
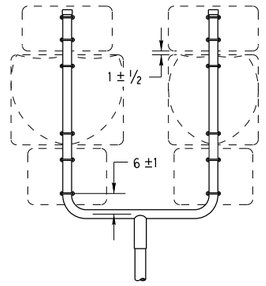


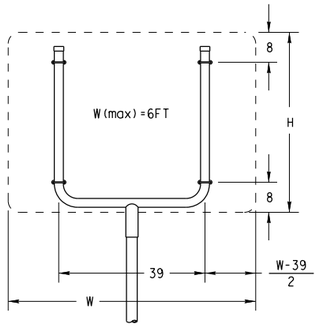
Detail A



Detail B



SM RD SGN ASSM TY XXXXX(1)XX(U)



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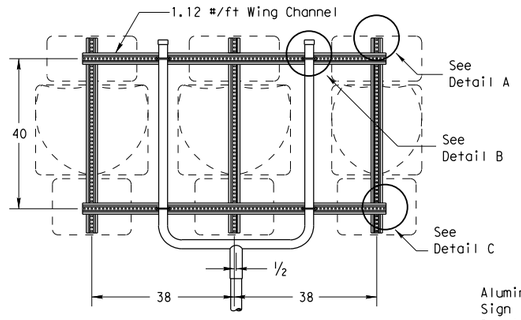
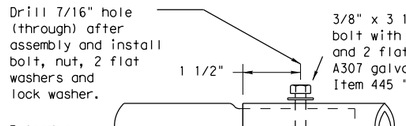
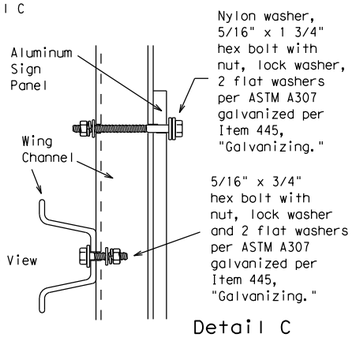


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

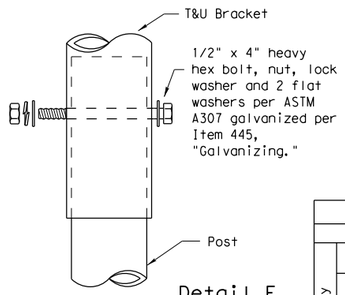


Detail F

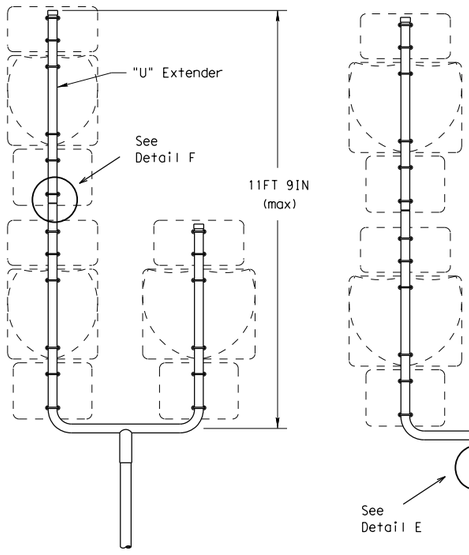
Splices shall only be allowed behind the sign substrate.



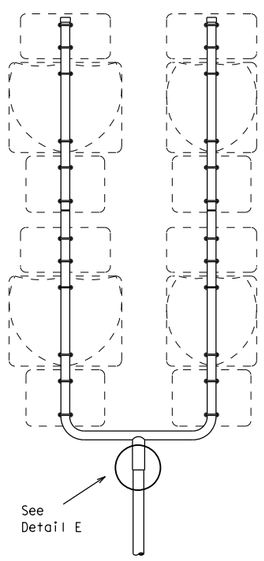
Detail C



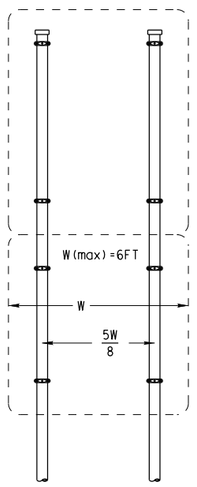
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

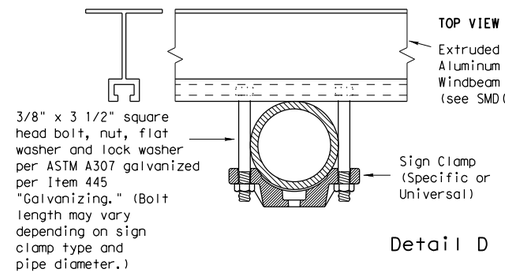


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

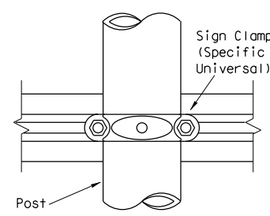


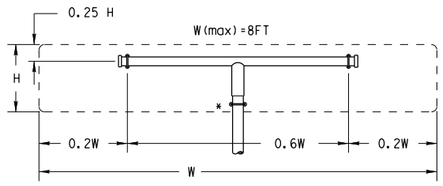
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

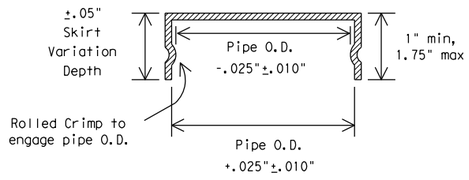




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

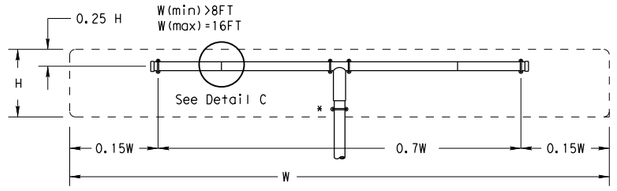
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		242

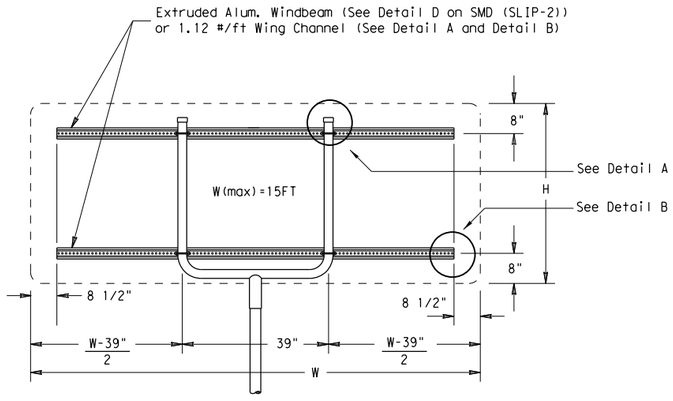
26C

DATE: 3/20/2024 3:19:54 PM
FILE: smds2.dgn



SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

(* - See Note 12)



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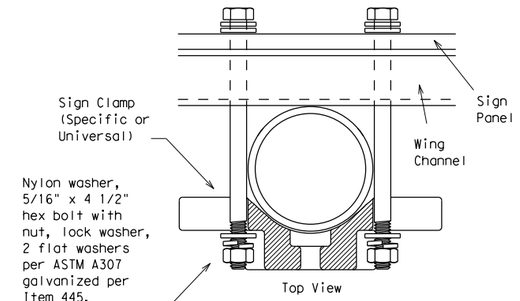
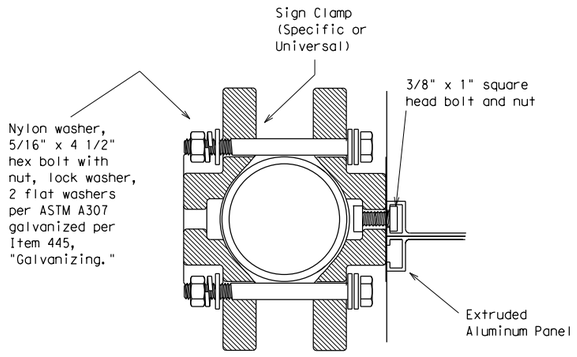
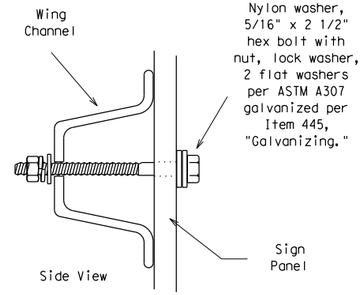


Detail A

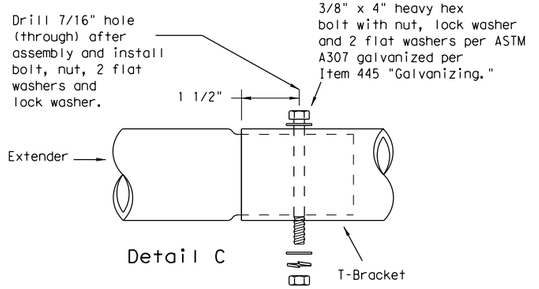


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET

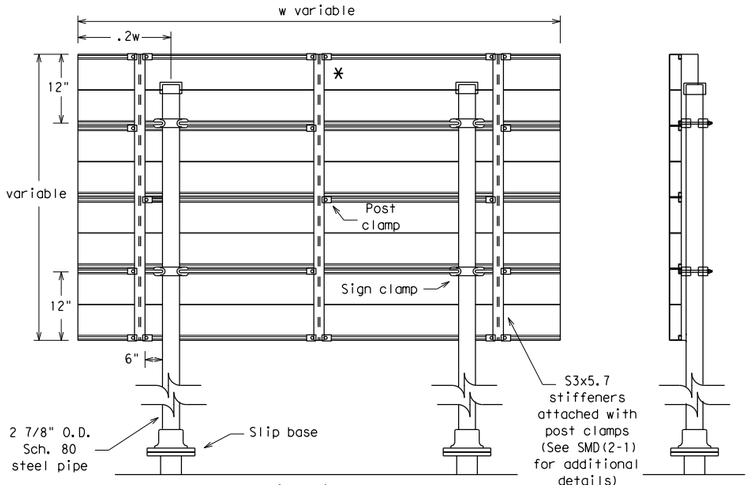


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

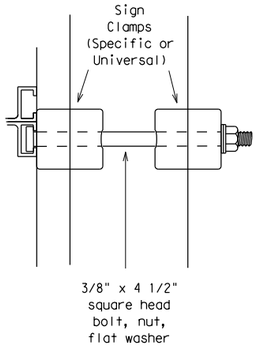


Typical Sign Mount

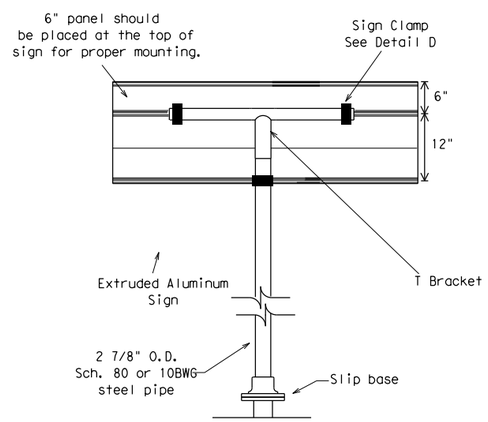
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

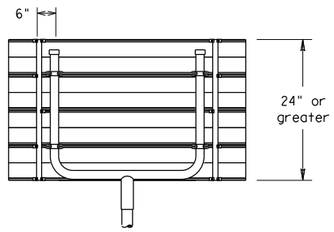
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

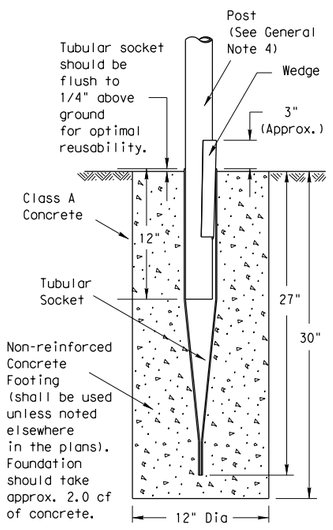
SMD(SLIP-3)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		243

26D

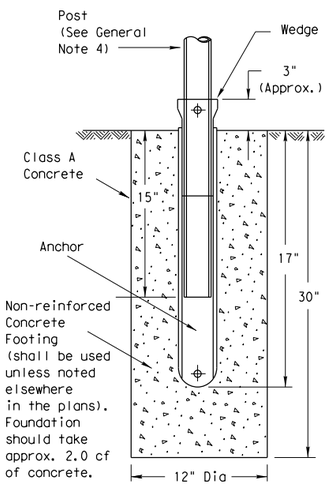
DATE: 3/20/2024 3:20:23 PM
FILE: smds3.dgn

Wedge Anchor Steel System



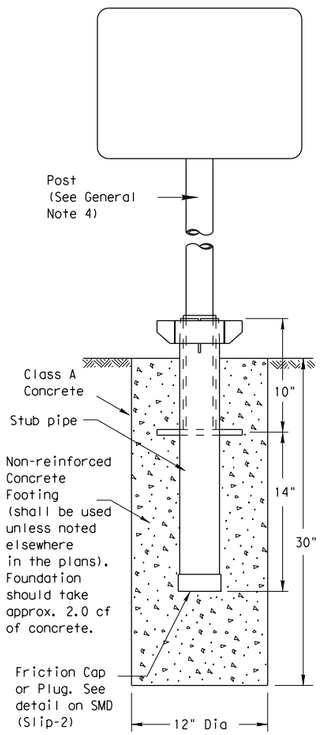
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

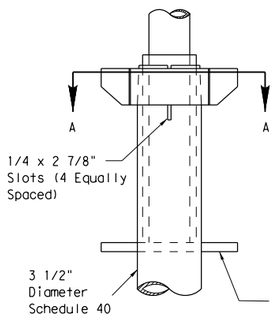


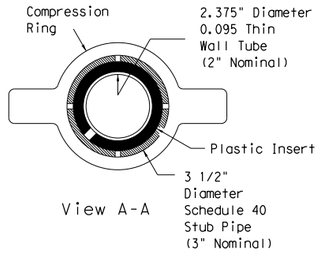
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



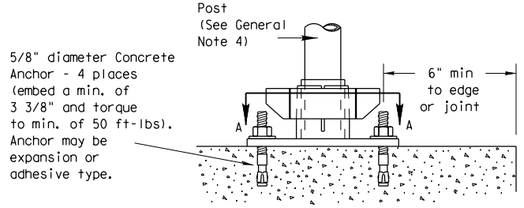
SM RD SGN ASSM TY TWT(X)UA(P)



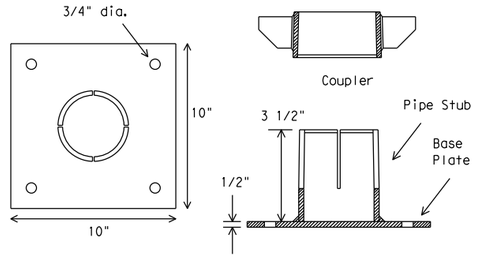


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

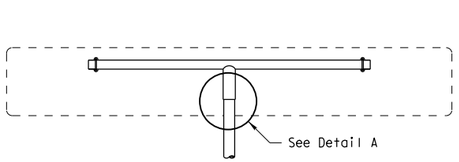


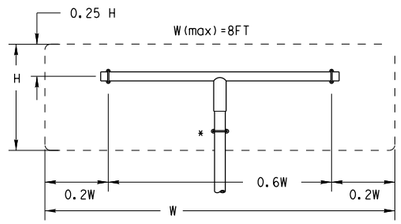
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



SM RD SGN ASSM TY TWT(X)UB(P)

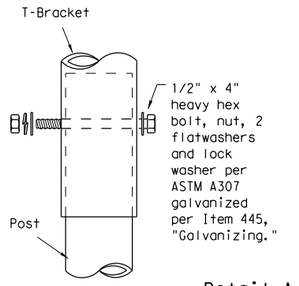
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)

(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	244

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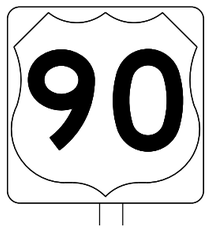
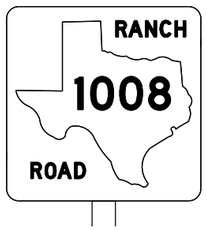
REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING

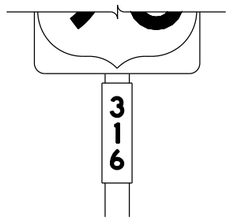


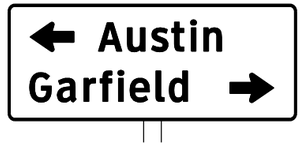


TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING





TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

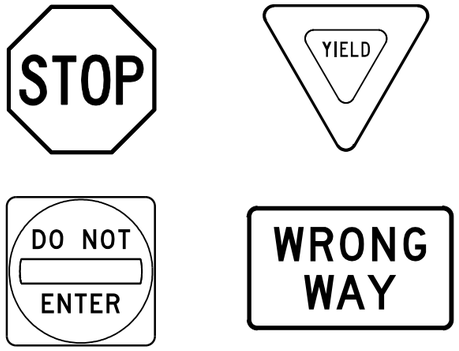
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	BRY	GRIMES		245

3

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

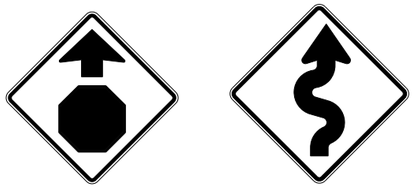
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

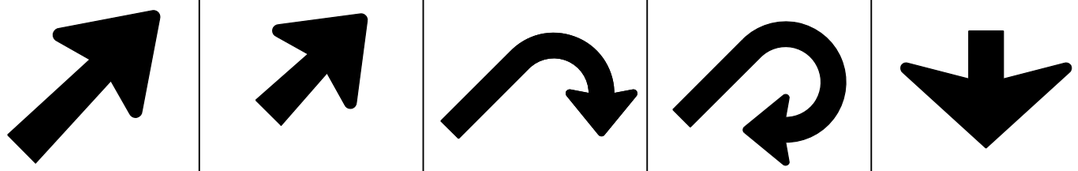
TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		246

DATE: 3/20/2024 3:21:48 PM
FILE: tsr4-13.dgn

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



Type A | Type B | E-3 | E-4 | Down Arrow

TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

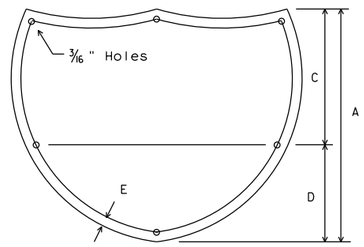
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

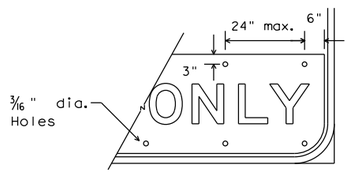
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

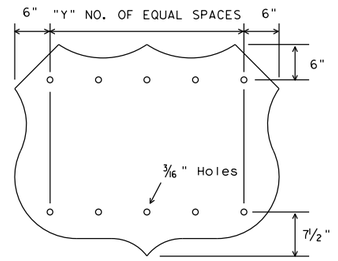


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	11/2
48	28	20	13/4

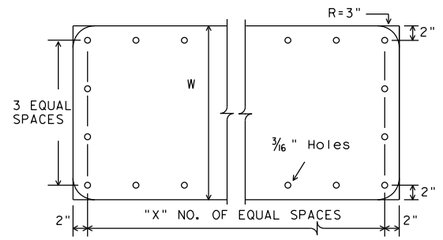


EXIT ONLY PANEL



U.S. ROUTE MARKERS

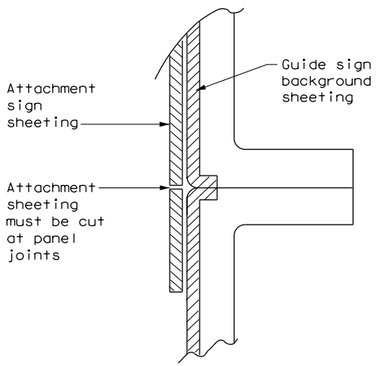
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



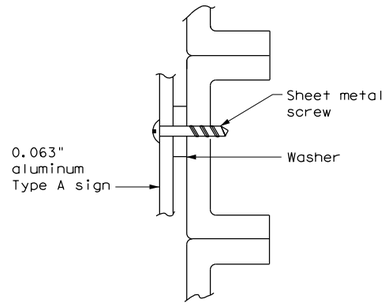
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

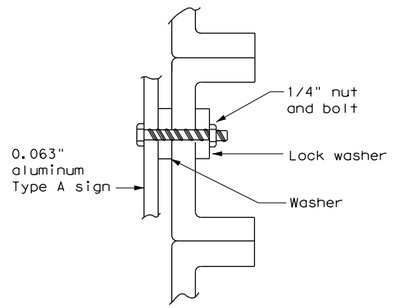
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT



NUT/BOLT ATTACHMENT

NOTE:

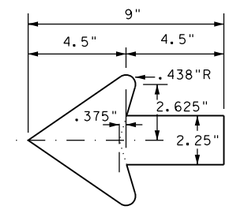
1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

NOTE:

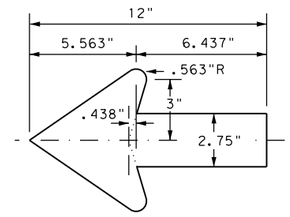
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	BRY	GRIMES		247

5

DATE: 3/20/2024 3:22:15 PM
FILE: tsr5-13.dgn

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 430124E
Crossing Type: Public
RR Company Operating Track at Crossing: UPRR
RR Company Owning Track at Crossing: UPRR
RR MP: 0041.820
RR Subdivision: Navasota Sub
City: Navasota
County: Grimes
CSJ at this Crossing: 0338-01-070
Latitude: 30.3524639
Longitude: -95.9923209

Scope of Work, including any TCP, to be performed by State Contractor:

All proposed roadway widening, parallel grading, and restoration will be contained within TXDOT ROW. TCP through the at grade crossing will strictly consist of advanced warning signs.

Scope of Work to be performed by Railroad Company:

N/a

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 10

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☐ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: UPRR
Railroad Emergency Line at: 800-848-8715
Location: DOT 430124E
RR Milepost: 0041.820
Subdivision: Navasota Sub

RRD Review Only
Initials: KS
Date: 1-22-24

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS	6/2023	0338	01	068		SH 105	
		DIST	COUNTY			SHEET NO.	
		BRY	GRIMES			248	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 024304J
Crossing Type: Public
RR Company Operating Track at Crossing: BNSF
RR Company Owning Track at Crossing: BNSF
RR MP: 0035.061
RR Subdivision: Conroe
City: Navasota
County: Grimes
CSJ at this Crossing: 0338-01-070
Latitude: 30.3520771
Longitude: -95.992007

Scope of Work, including any TCP, to be performed by State Contractor:

All proposed roadway widening, parallel grading, and restoration will be contained within TXDOT ROW. TCP through the at grade crossing will strictly consist of advanced warning signs.

Scope of Work to be performed by Railroad Company:

N/a

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 10

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

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Contact Information for Flagging:

☐ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☑ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

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Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☐ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☐ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☑ Required: Contractor to obtain
- ☑ BNSF: Temporary Occupancy Permit
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

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Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: BNSF
Railroad Emergency Line at: 800-832-5452
Location: DOT 024304J
RR Milepost: 0035.061
Subdivision: Conroe

RRD Review Only
Initials: KS
Date: 01/22/2024

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS	6/2023	0338	01	068		SH 105	
		DIST	COUNTY			SHEET NO.	
		BRY	GRIMES			249	

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

A. Complete the railroad course "Orientation for Contractor's Safety",and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR,BNSF,KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF)(UPRR)and 14'-0" (KCS) horizontal from centerline of track
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		250

DATE: DATE/TIME
FILE: DGNName.jects.dgn

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
1. Pre-construction meetings.
2. Pile driving/drilling of caissons or drilled shafts.
3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
4. Erection of precast concrete or steel bridge superstructure.
5. Placement of waterproofing (prior to placing ballast on bridge deck).
6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

UPRR 1-800-336-9193
7:00 AM to 9:00 PM CST Monday-Friday except holidays,
staffed 24 hrs/day for emergencies
48 hrs notice required

BNSF 1-800-533-2891
24 hour number
5 working days notice required

KCS 1-800-344-8377
Texas One Call, a 24 hour number
48 hrs notice required, excluding weekends and holidays

If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

SHEET 2 OF 2

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
	CONT	SECT	JOB	HIGHWAY	
REVISIONS March 2020	0338	01	068	SH 105	
	DIST	COUNTY		SHEET NO.	
	BRY	GRIMES		251	

DATE: DATE/TIME
FILE: DOCUMENT NAME

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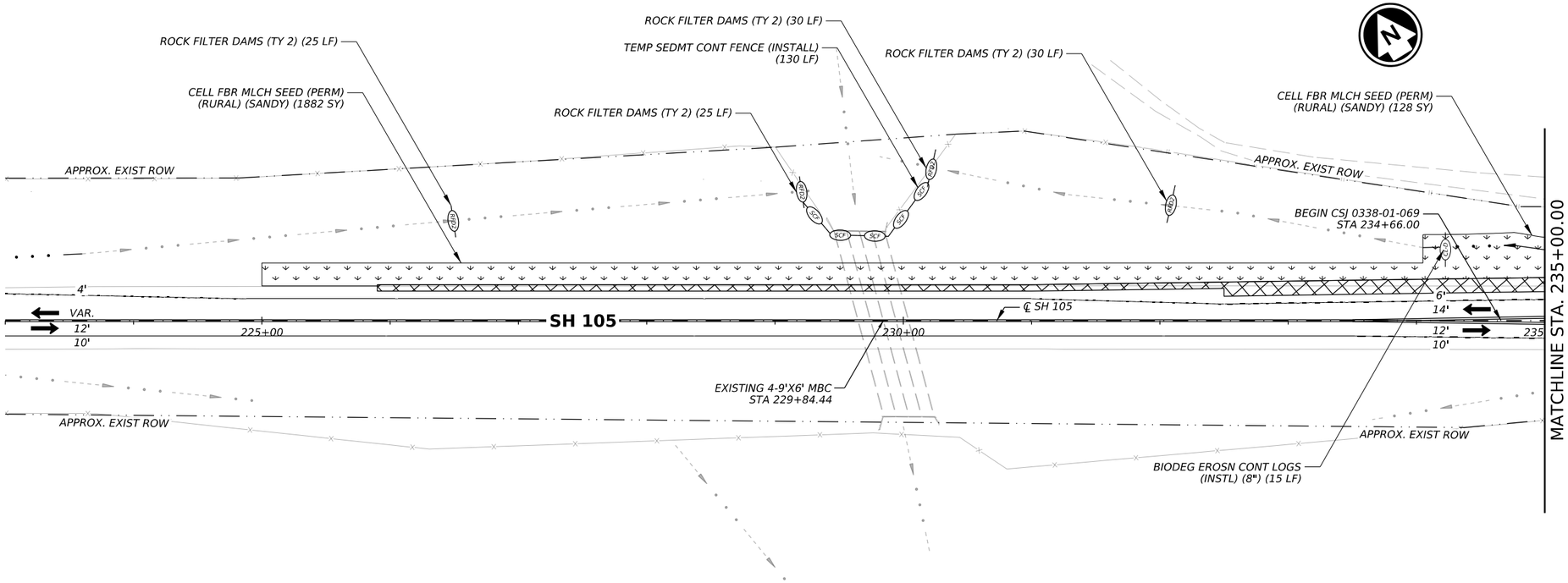
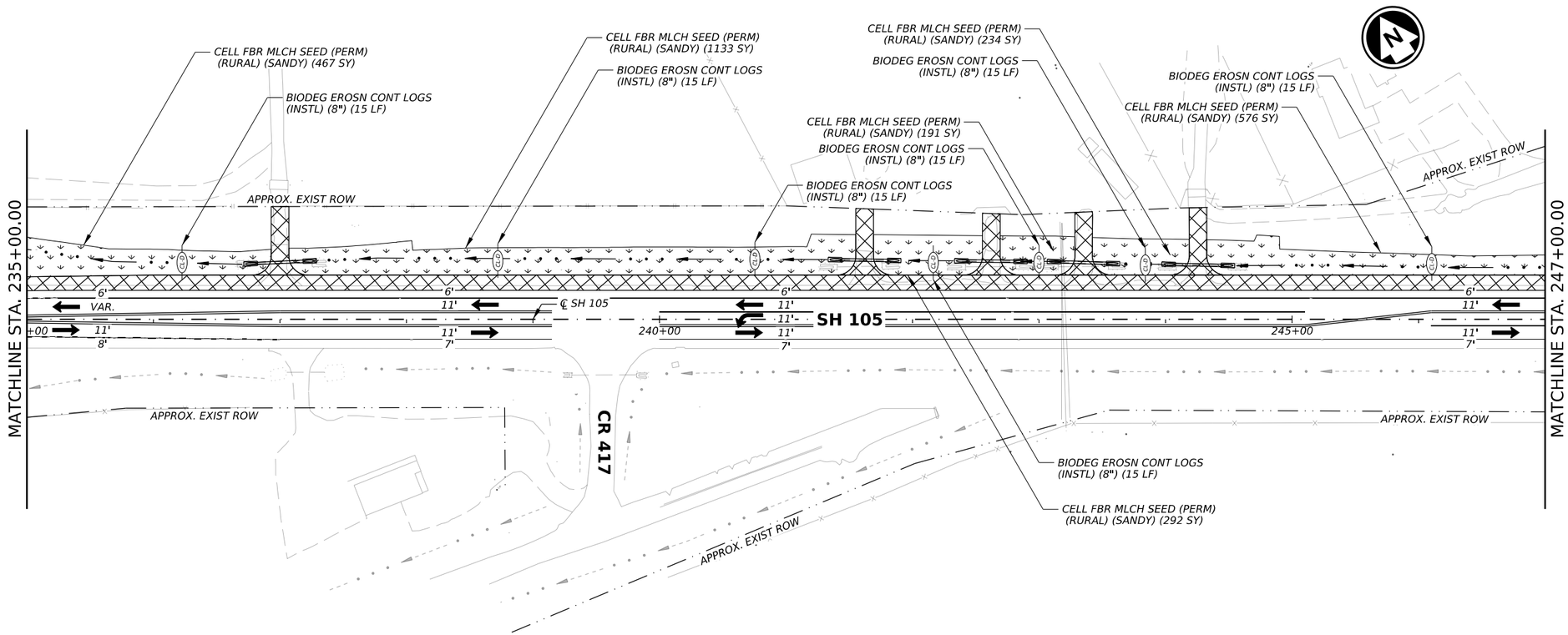
CK: JMT
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.
2. EROSION CONTROL QUANITITES AND LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER. SYMBOLS ARE NOT DRAWN TO SCALE.
3. CONTRACTOR SHALL RECORD THE DATE OF INSTALLATION AND REMOVAL OF THE SW3P CONTROL MEASURES.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 1
STA 223+00 TO STA 247+00

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		252

DATE: 3/22/2024 8:11:57 PM
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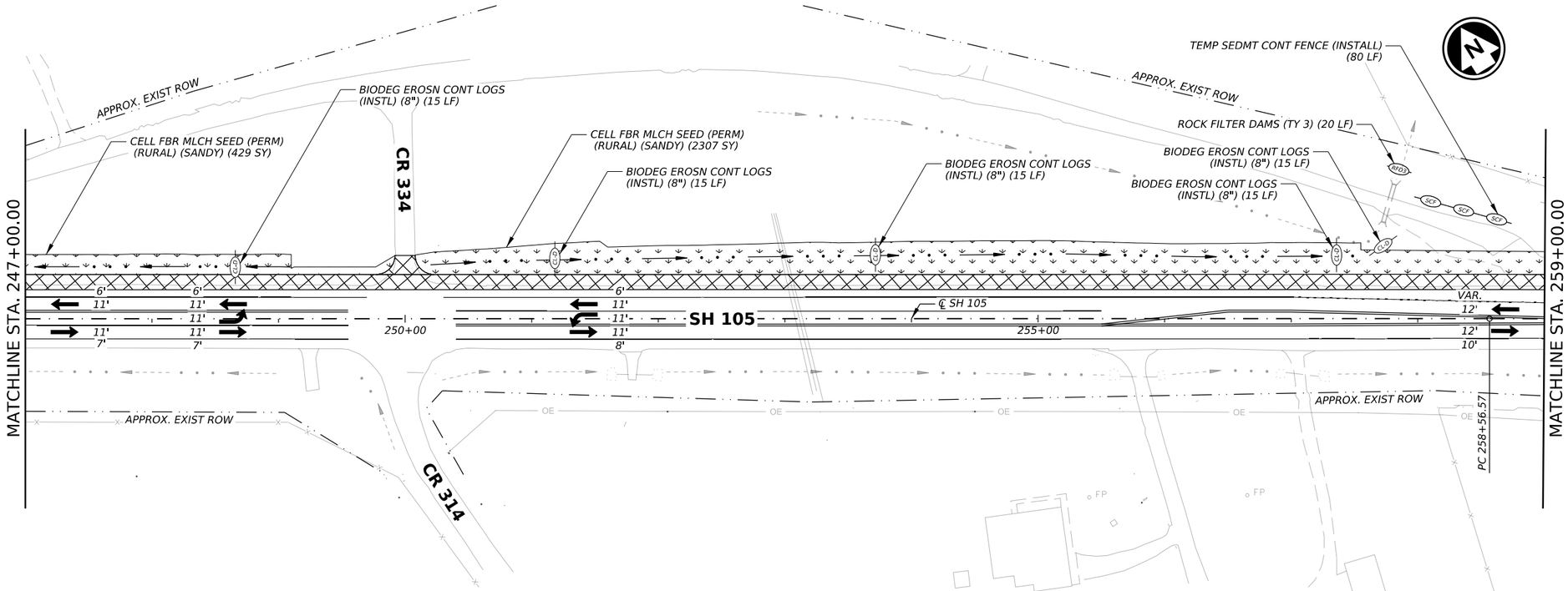
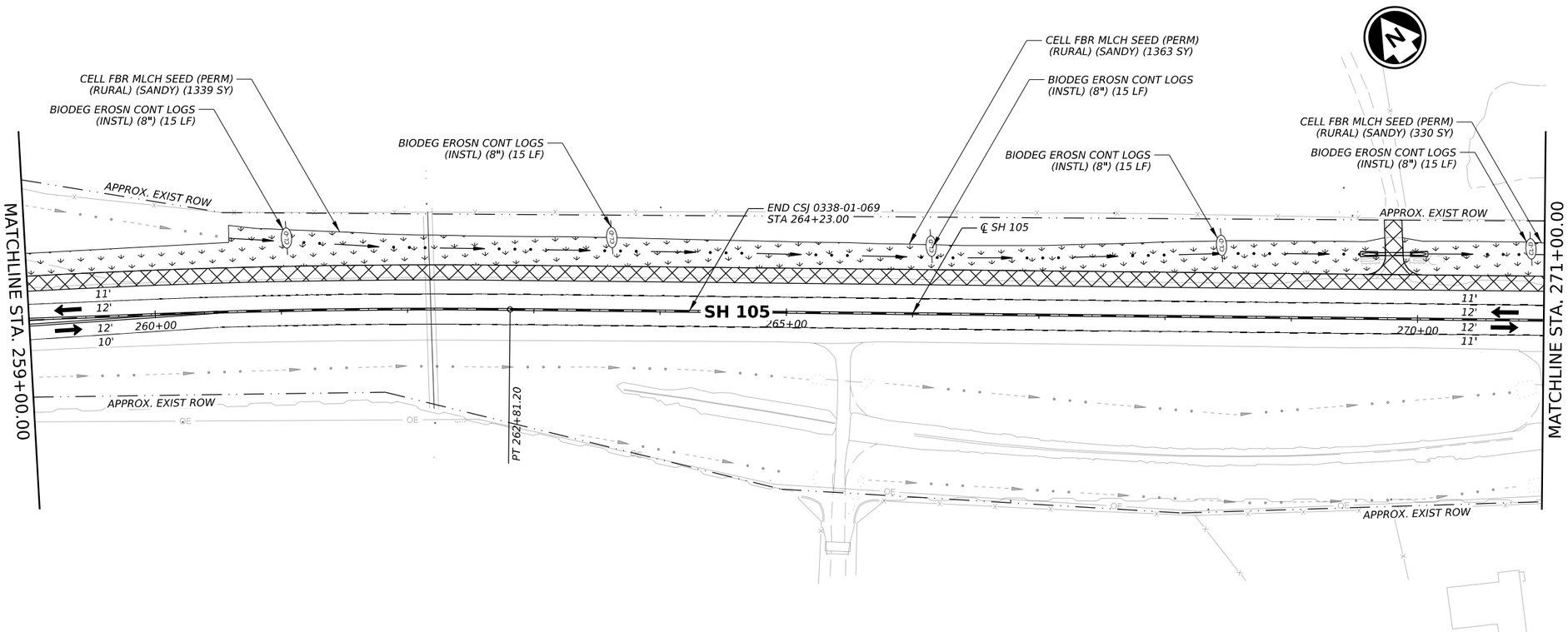
DW: JMT





LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT PHASE 1 STA 247+00 TO STA 271+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		253

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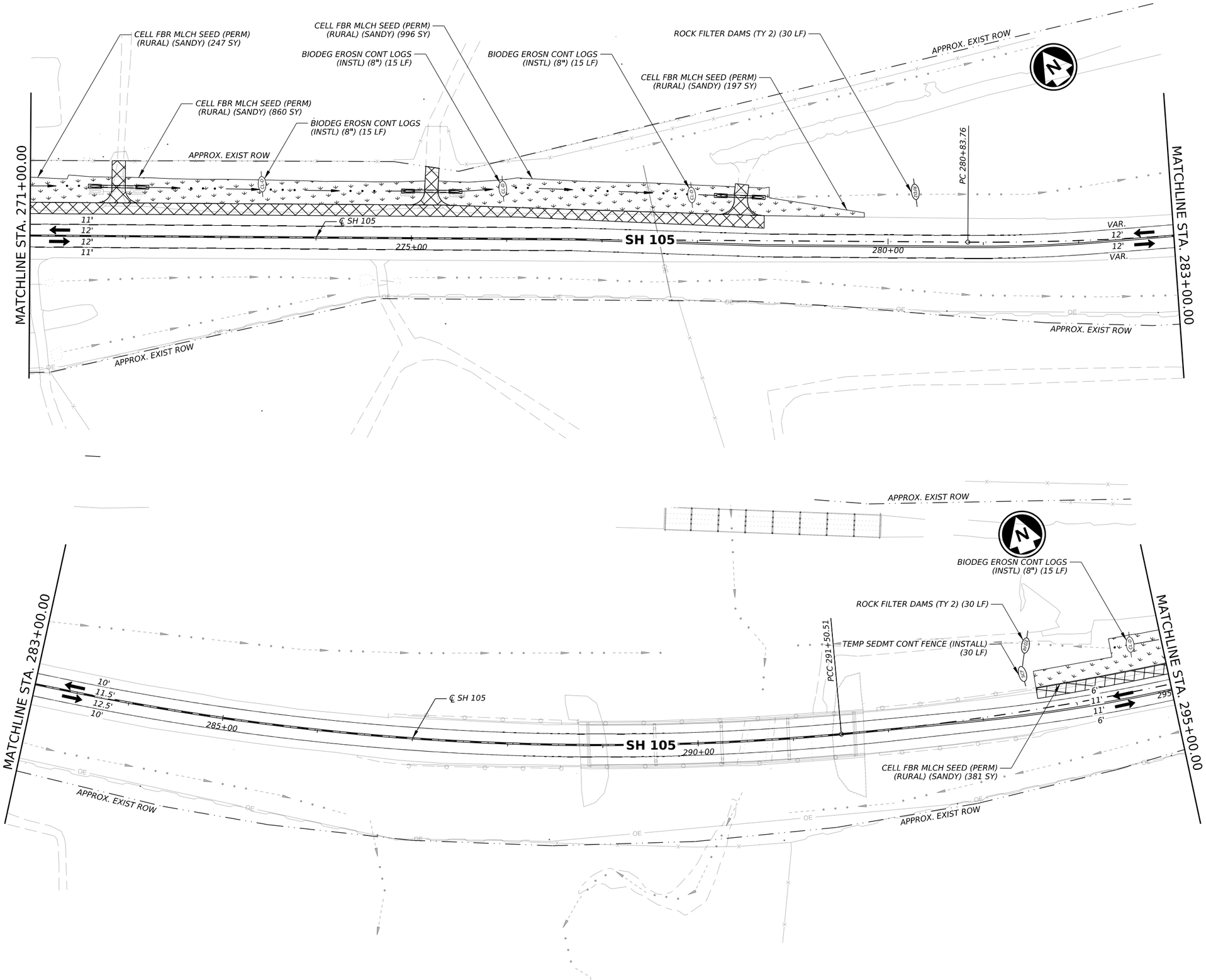
DW: JMT



LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 1
STA 271+00 TO STA 295+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		254

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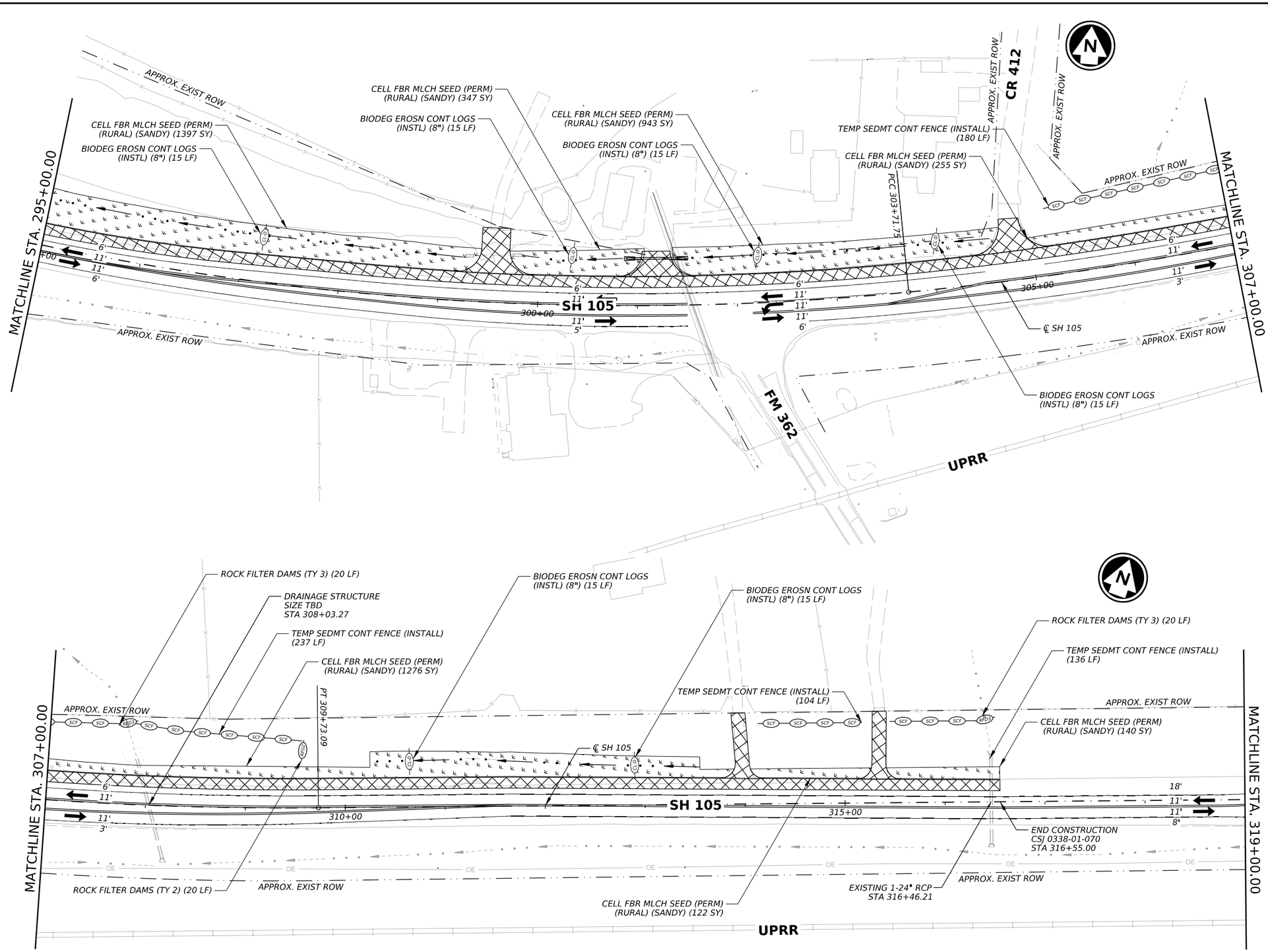

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT PHASE 1 STA 295+00 TO STA 319+00

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		255

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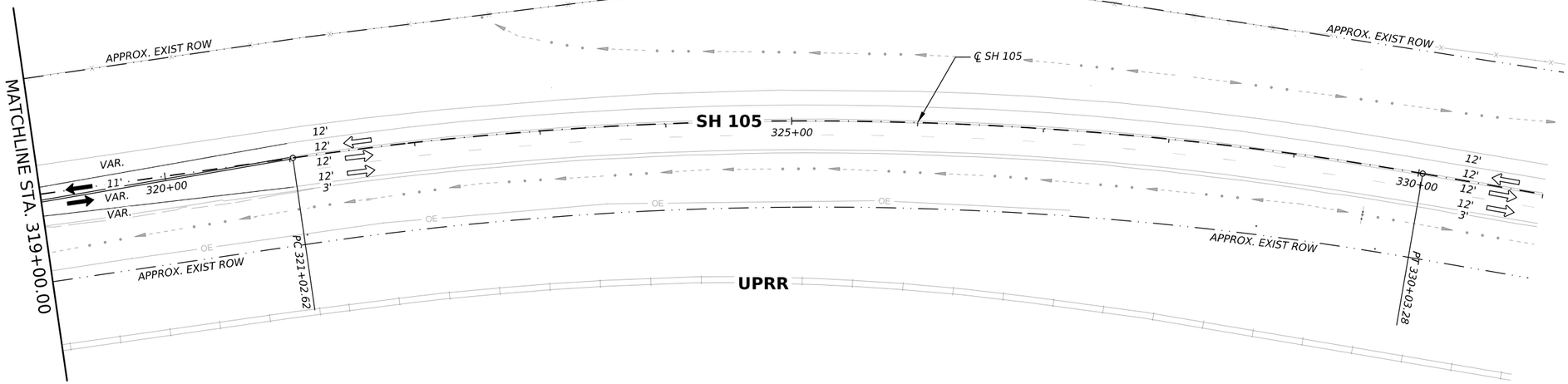

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. *ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.*
2. *EROSION CONTROL QUANITITES AND LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER. SYMBOLS ARE NOT DRAWN TO SCALE.*
3. *CONTRACTOR SHALL RECORD THE DATE OF INSTALLATION AND REMOVAL OF THE SW3P CONTROL MEASURES.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER

3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 1
STA 319+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		256

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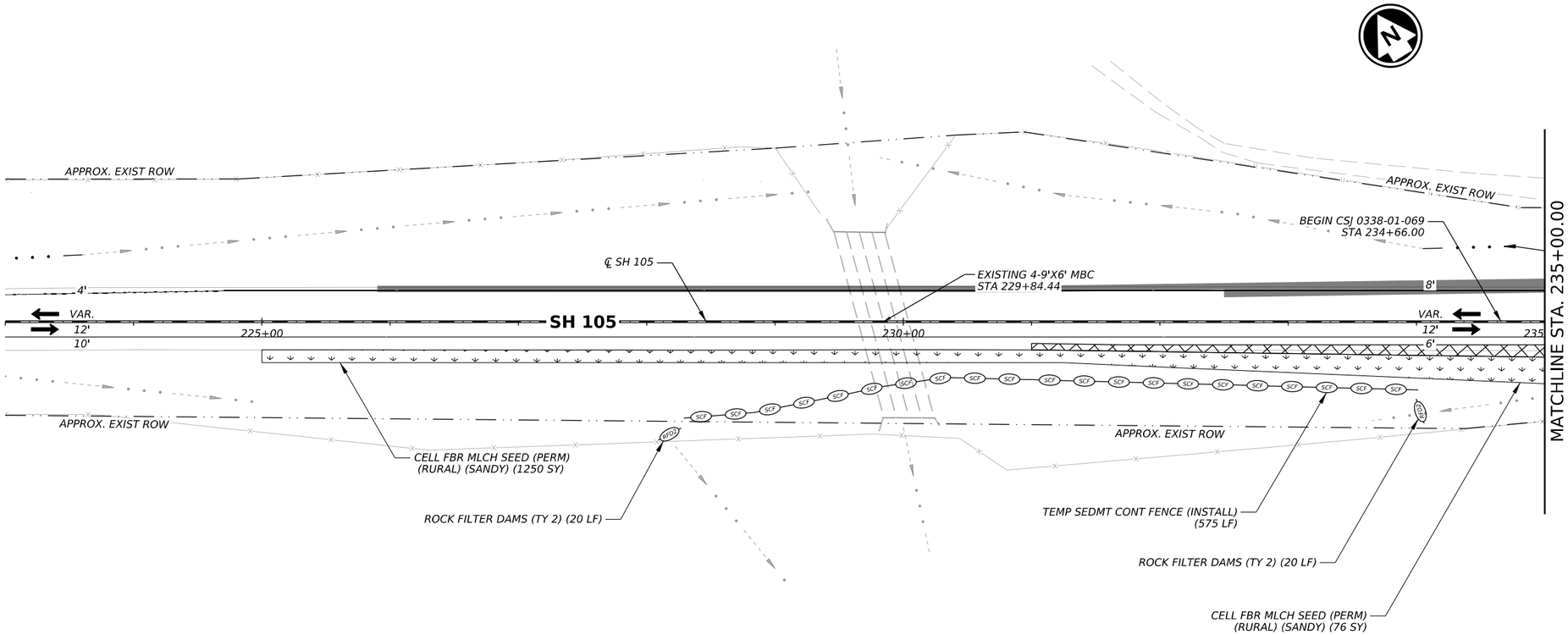

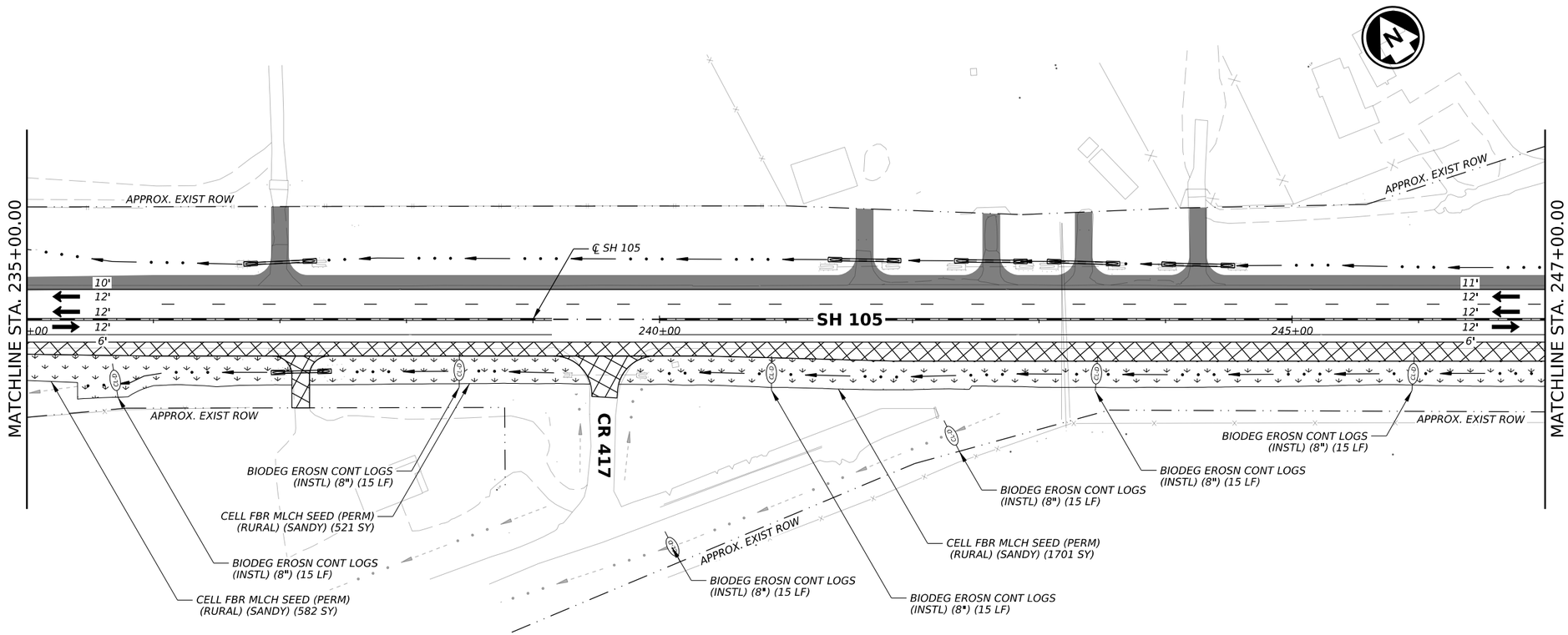

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
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LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 2
STA 223+00 TO STA 247+00

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		257

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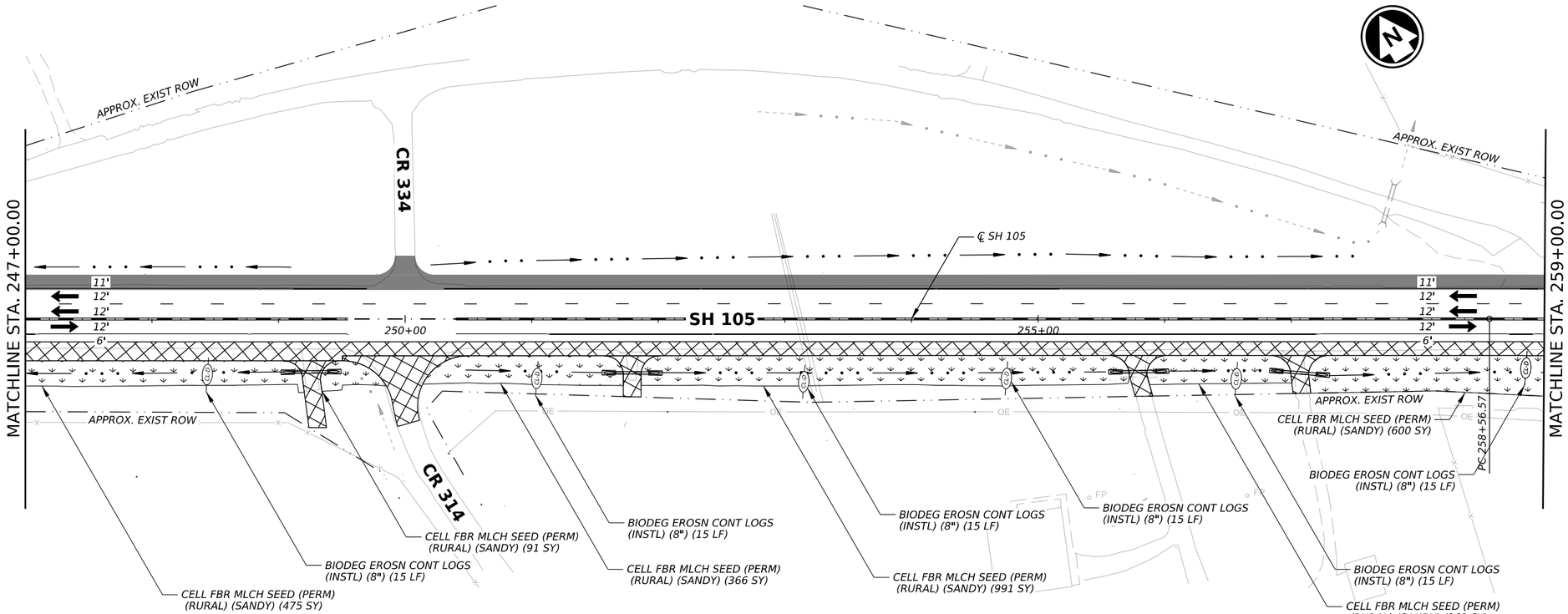

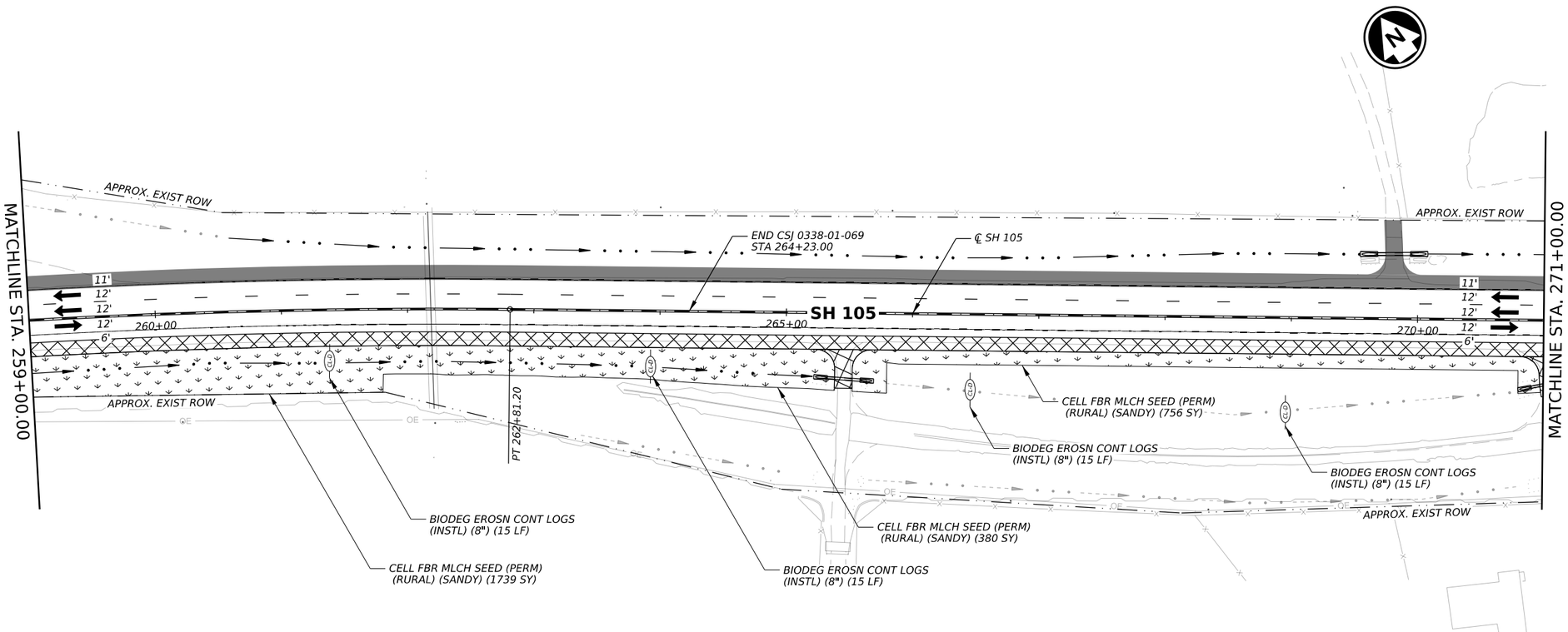

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2) (RFD2)
- ROCK FILTER DAMS (TY 3) (RFD3)
- EROSION CONTROL LOGS 8" (CL-D)
- SEDIMENT CONTROL FENCE (SCF)
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 2
STA 247+00 TO STA 271+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		258

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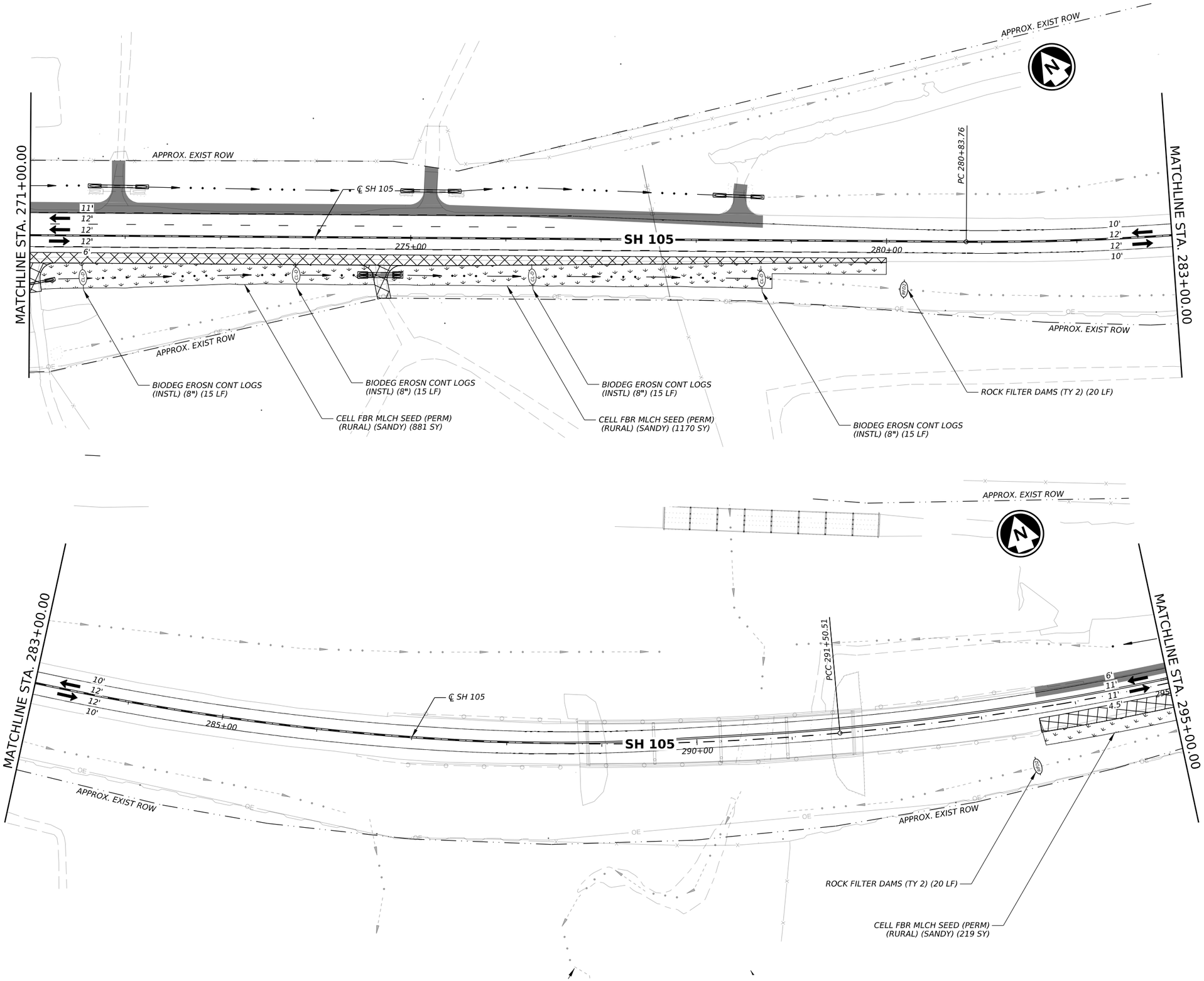

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.
2. EROSION CONTROL QUANITITES AND LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER. SYMBOLS ARE NOT DRAWN TO SCALE.
3. CONTRACTOR SHALL RECORD THE DATE OF INSTALLATION AND REMOVAL OF THE SW3P CONTROL MEASURES.

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT PHASE 2 STA 271+00 TO STA 295+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		259

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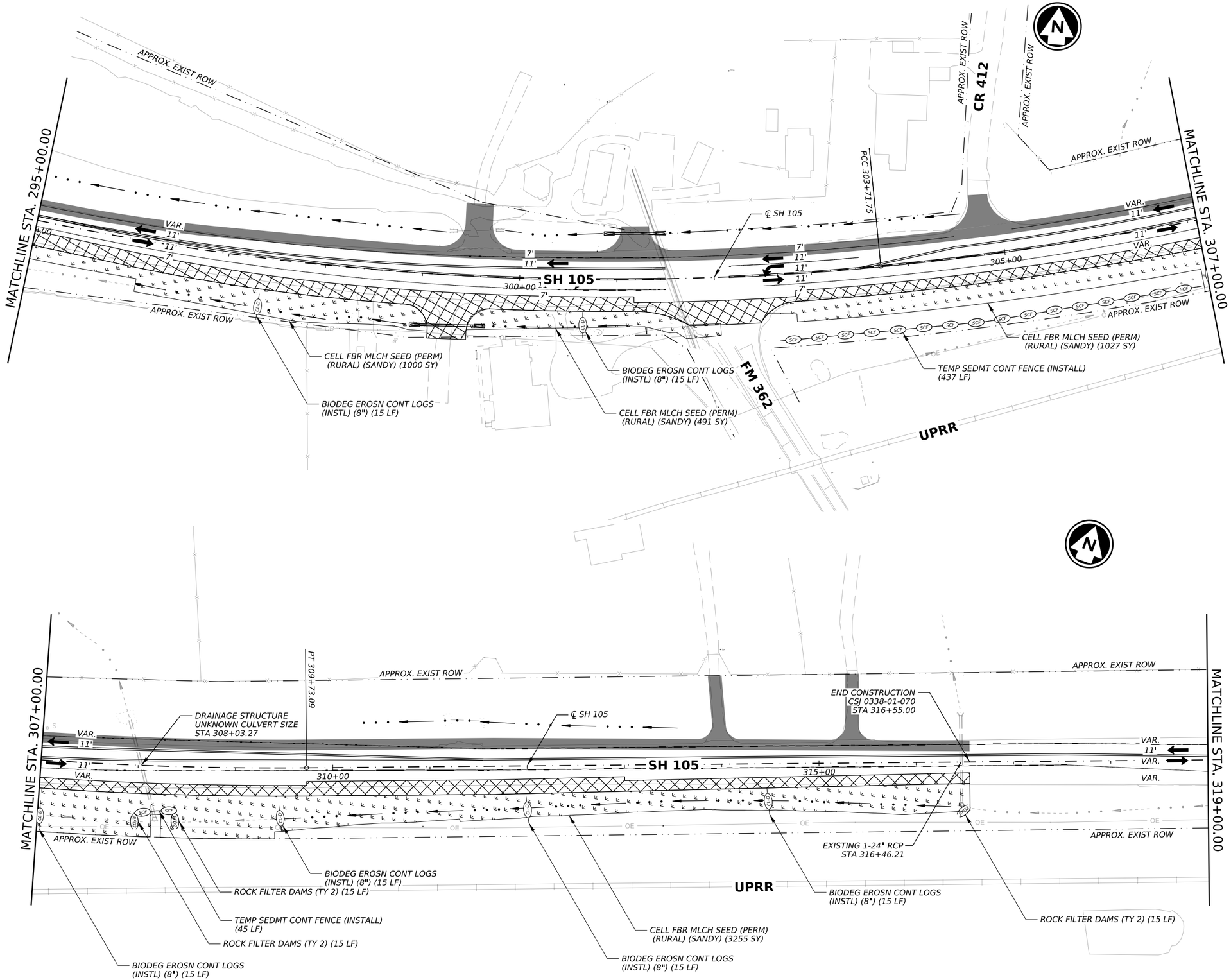

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.
2. EROSION CONTROL QUANITITES AND LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER. SYMBOLS ARE NOT DRAWN TO SCALE.
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT PHASE 2 STA 295+00 TO STA 319+00

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		260

DATE: 3/22/2024 8:16:12 PM
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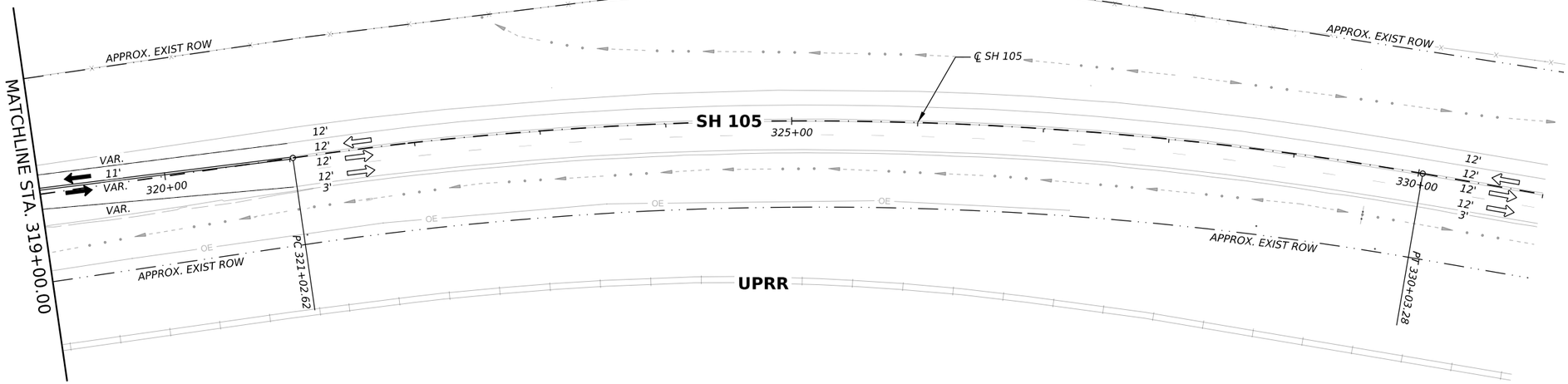

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. *ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.*
2. *EROSION CONTROL QUANITITES AND LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER. SYMBOLS ARE NOT DRAWN TO SCALE.*
3. *CONTRACTOR SHALL RECORD THE DATE OF INSTALLATION AND REMOVAL OF THE SW3P CONTROL MEASURES.*

STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 2
STA 319+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		261

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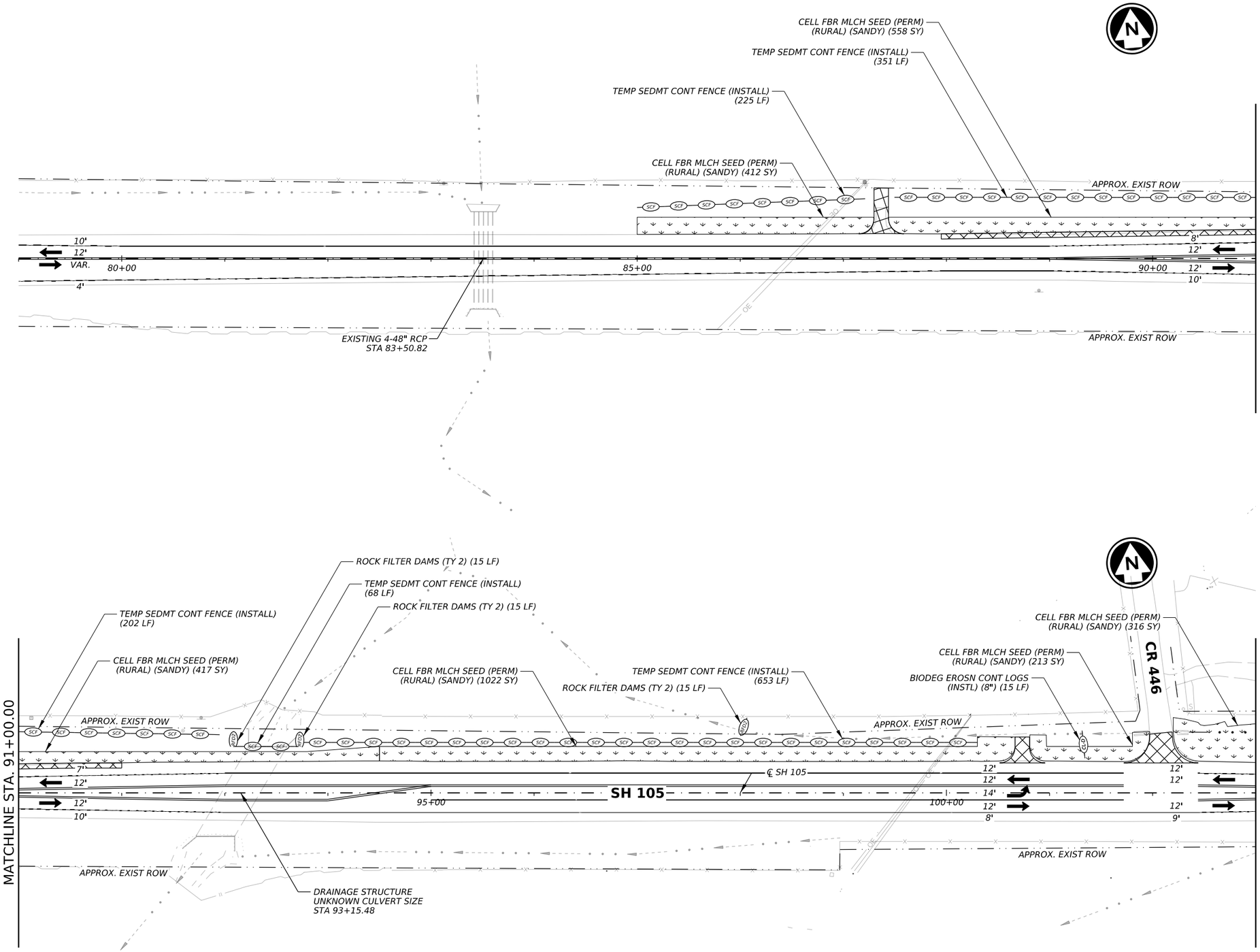

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 3
STA 79+00 TO STA 103+00

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		262

DATE: 3/22/2024 8:17:15 PM
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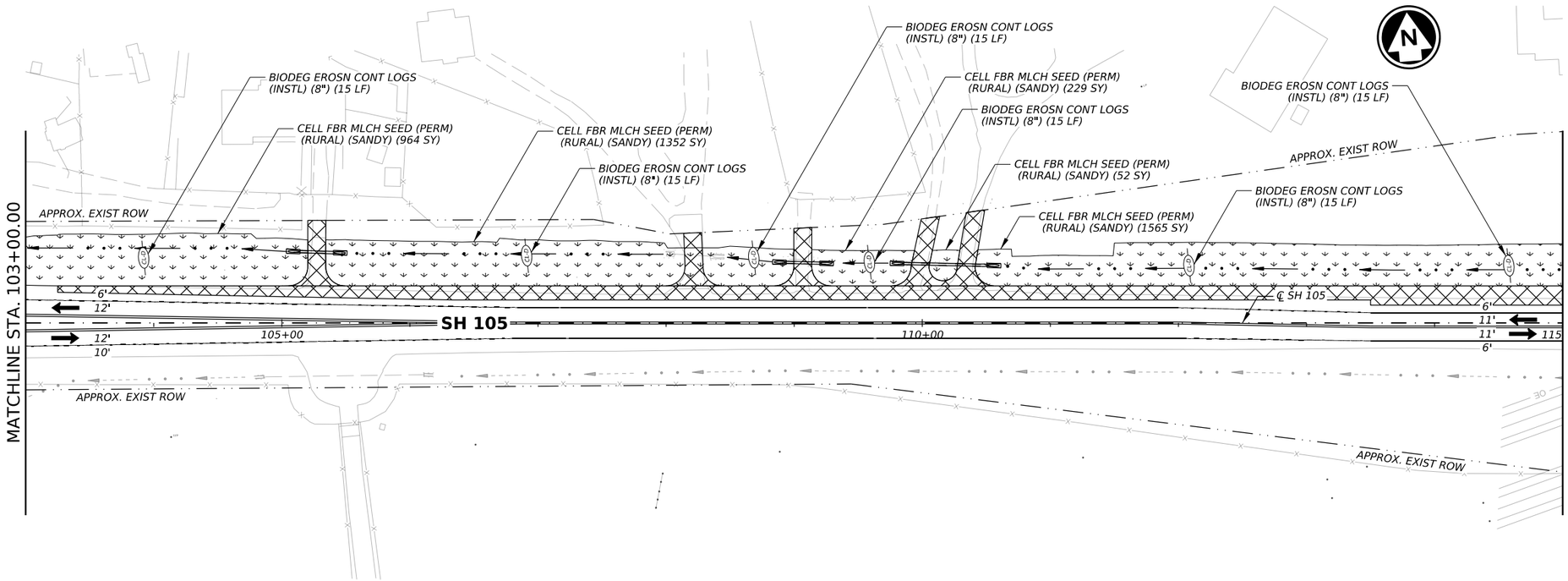

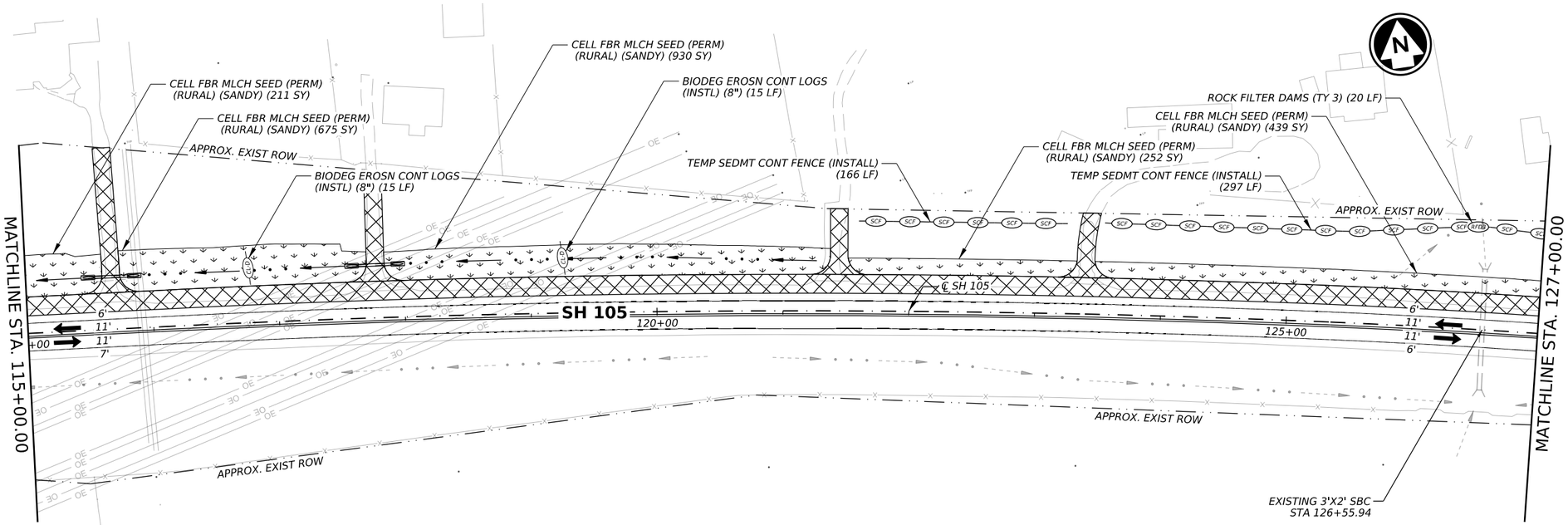

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 3
STA 103+00 TO STA 127+00

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		263

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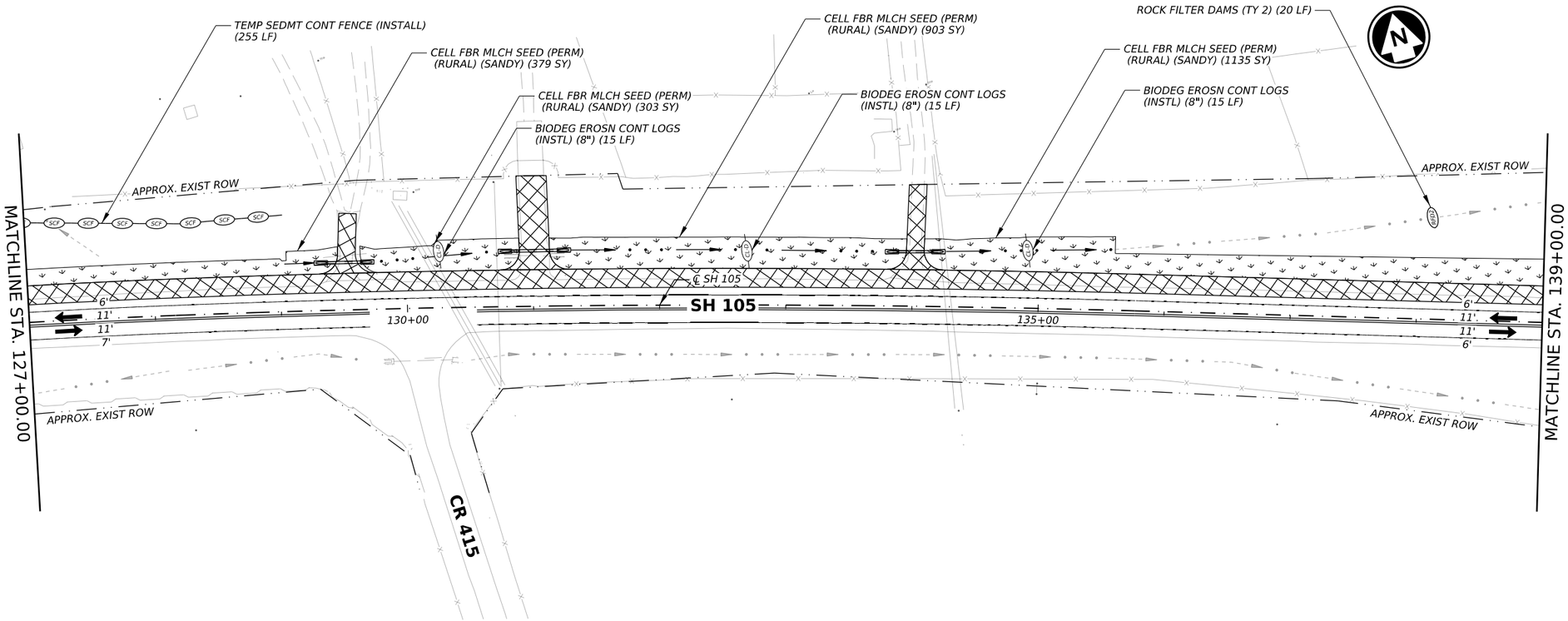

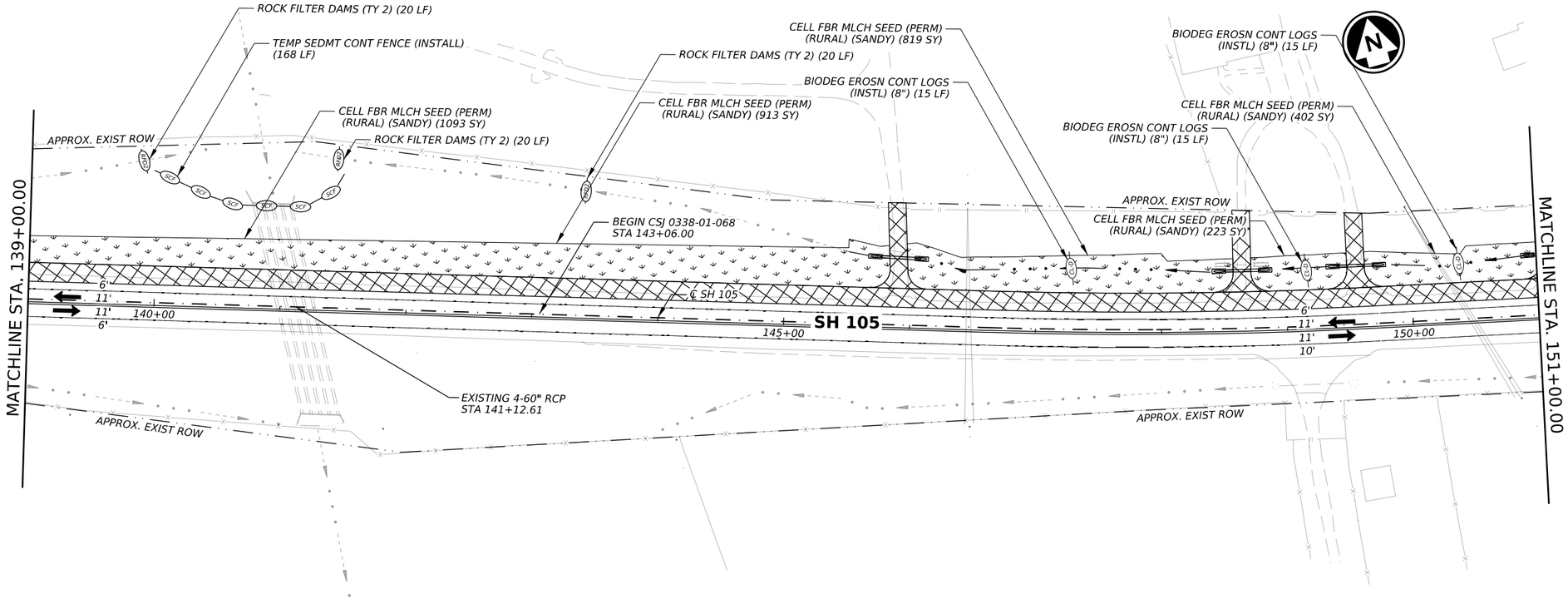

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 3
STA 127+00 TO STA 151+00

SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		264

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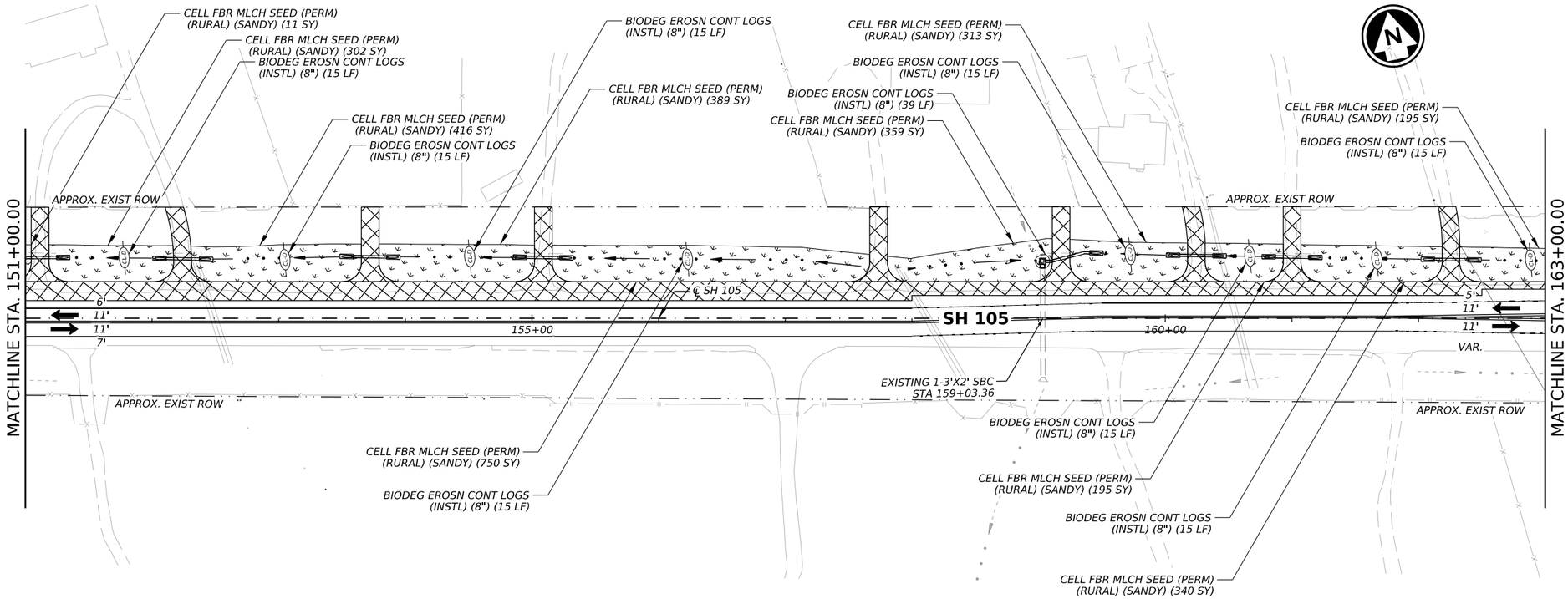

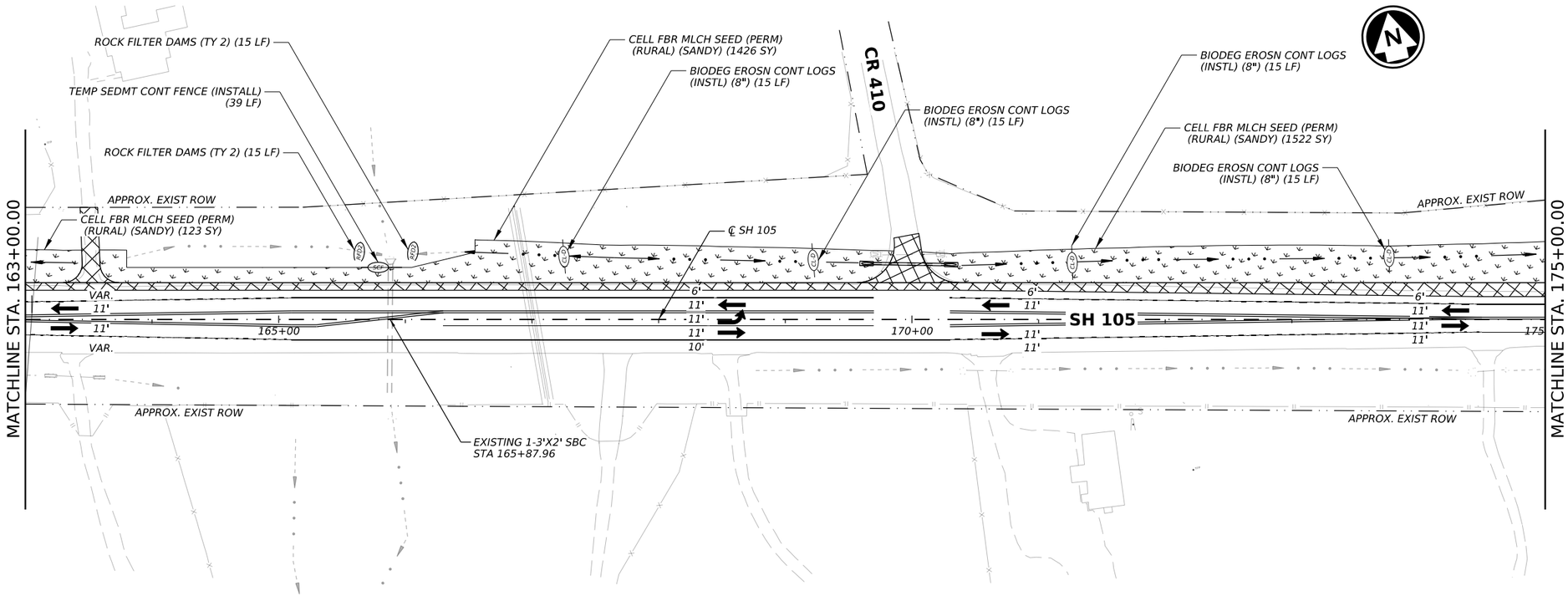

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 3
STA 151+00 TO STA 175+00

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		265

DATE: 3/22/2024 8:18:44 PM
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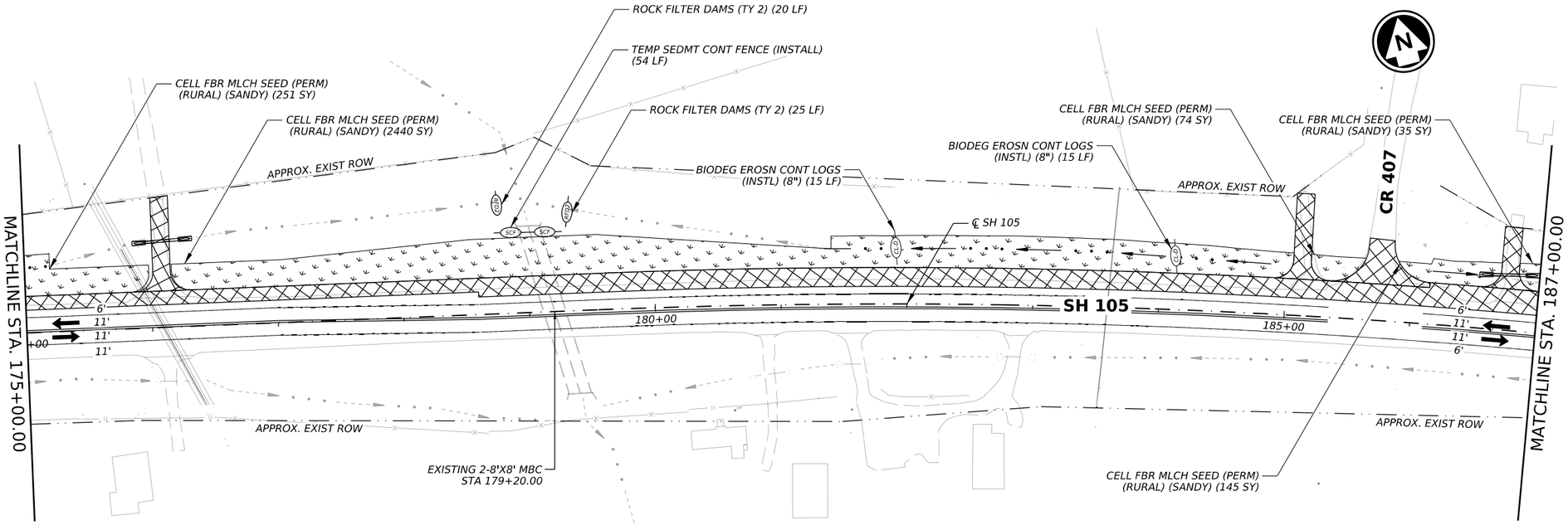

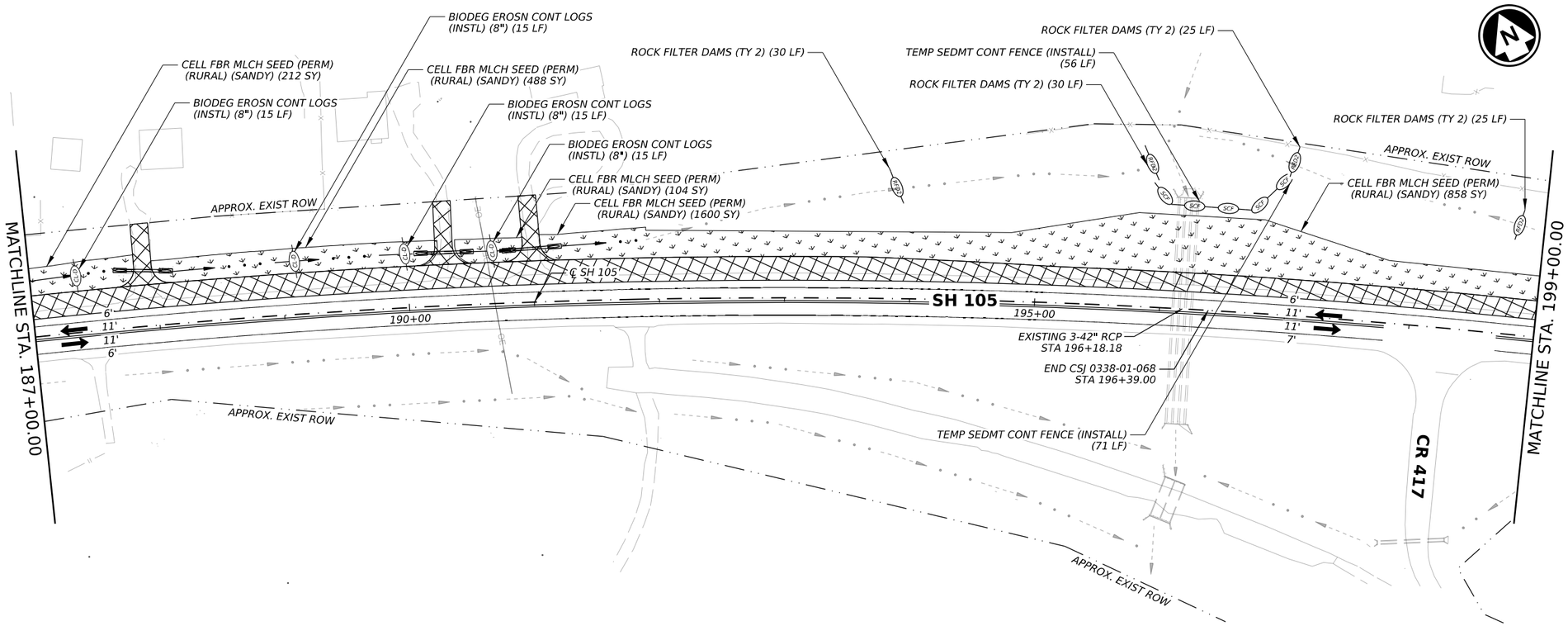

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT PHASE 3 STA 175+00 TO STA 199+00

SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		266

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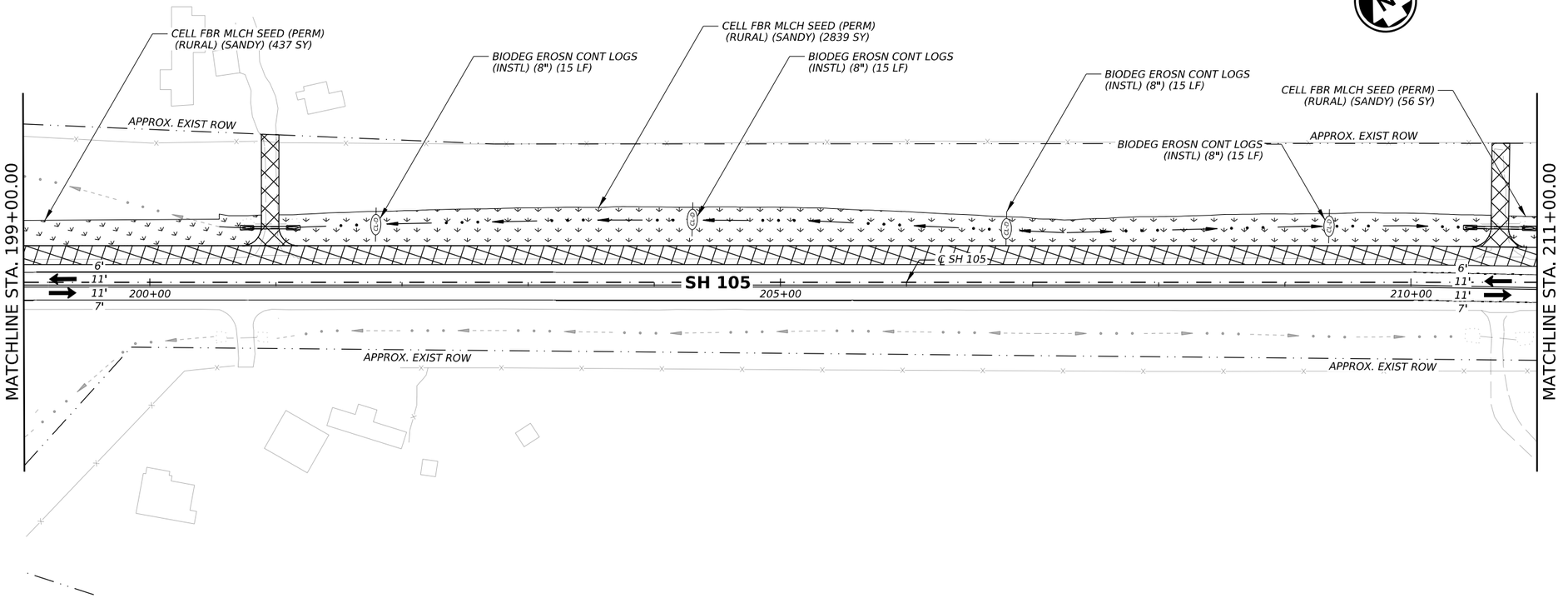

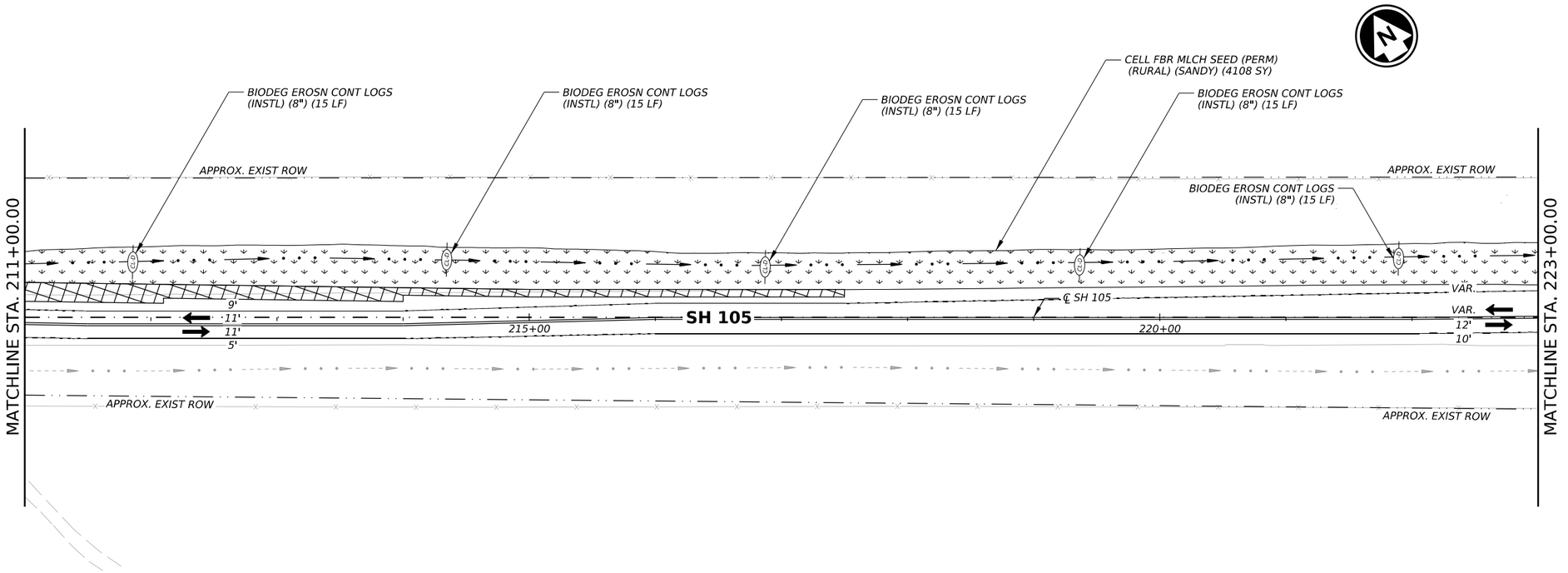

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 3
STA 199+00 TO STA 223+00

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		267

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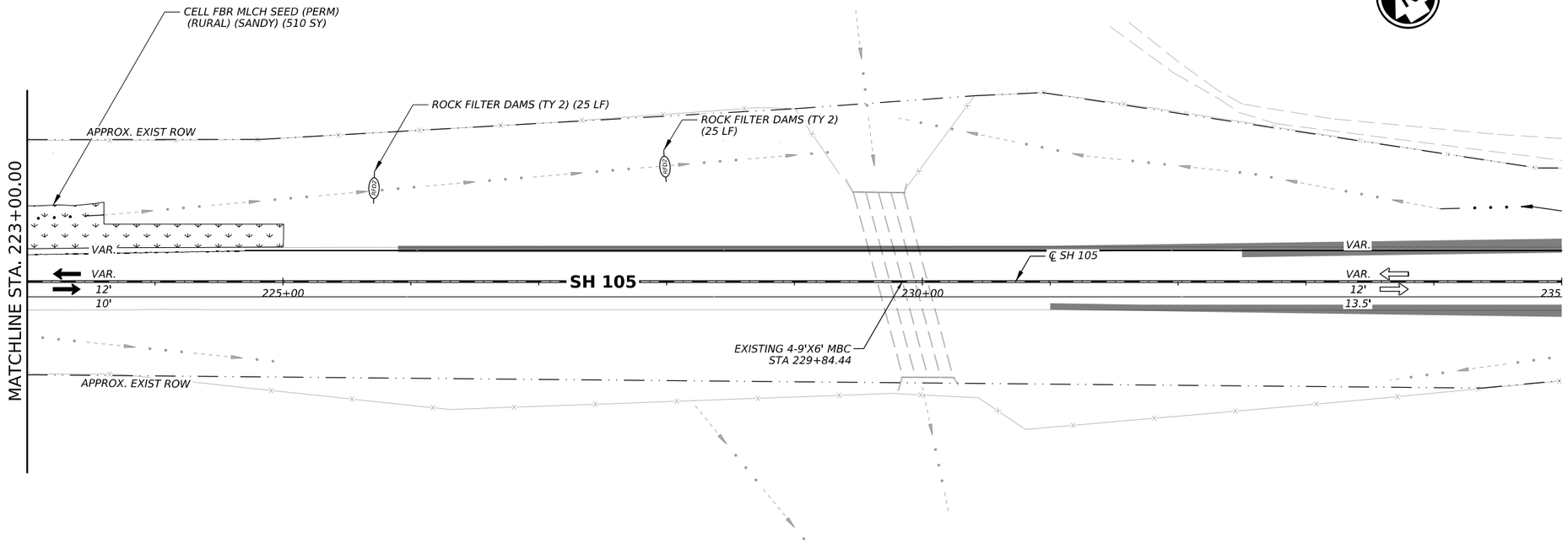

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 3
STA 223+00 TO STA 235+00

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		268

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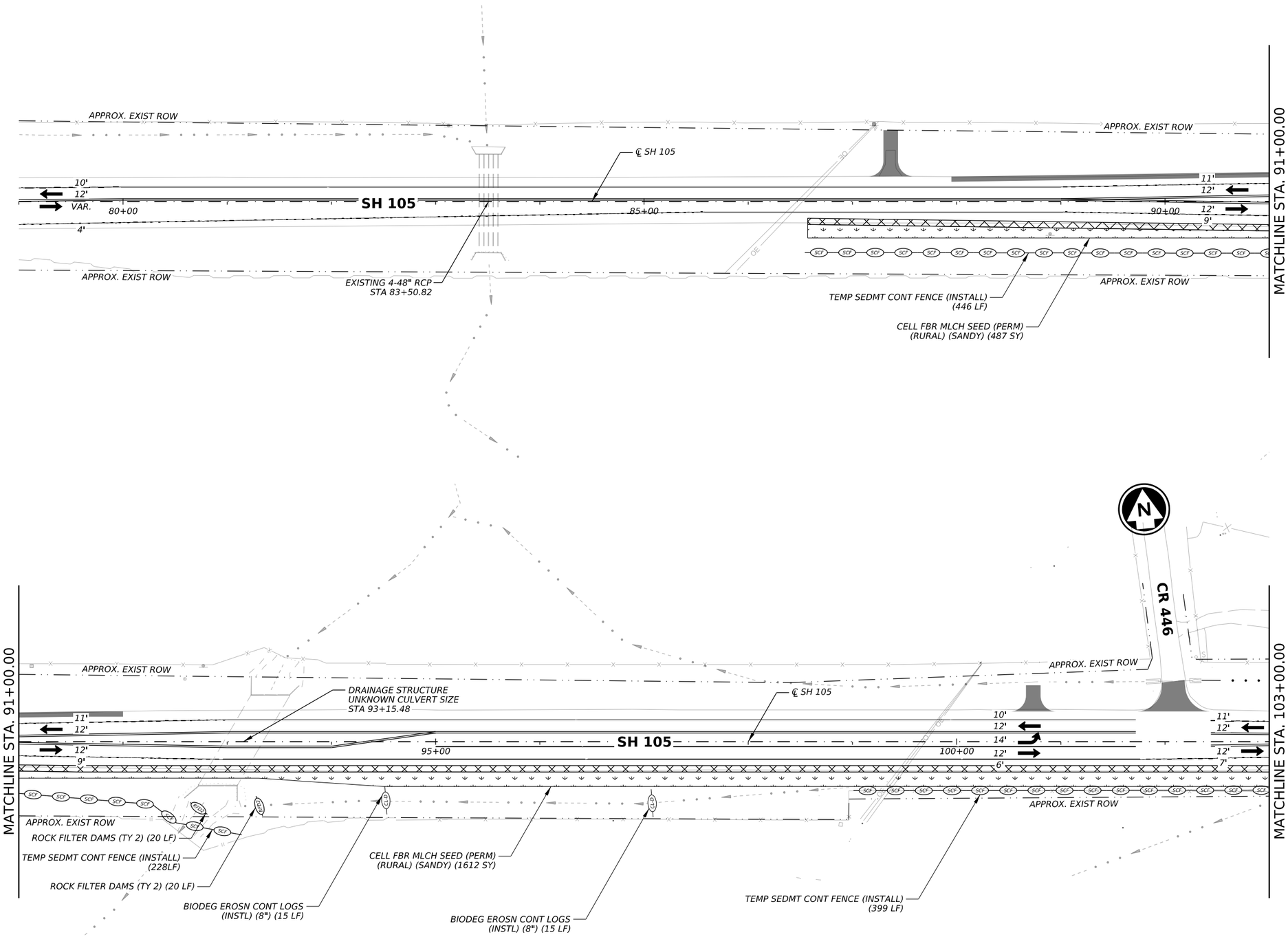

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 79+00 TO STA 103+00

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		269

DATE: 3/22/2024 8:20:49 PM
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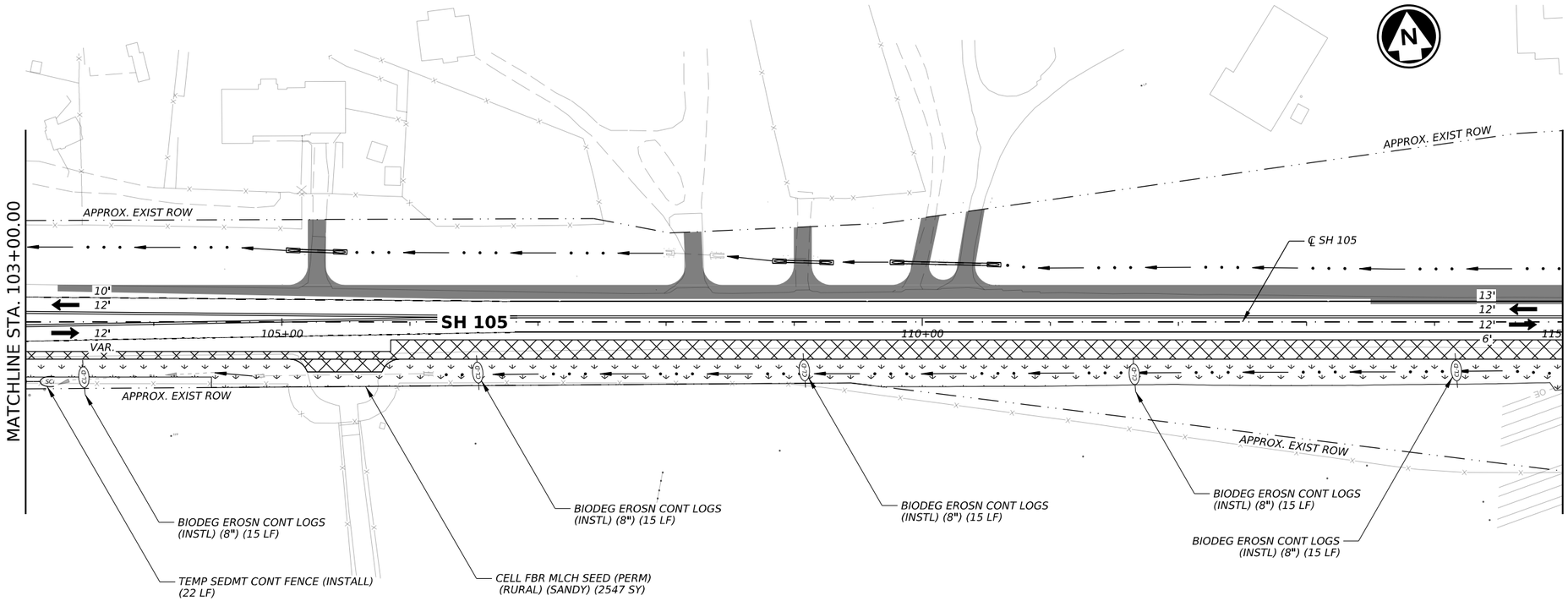

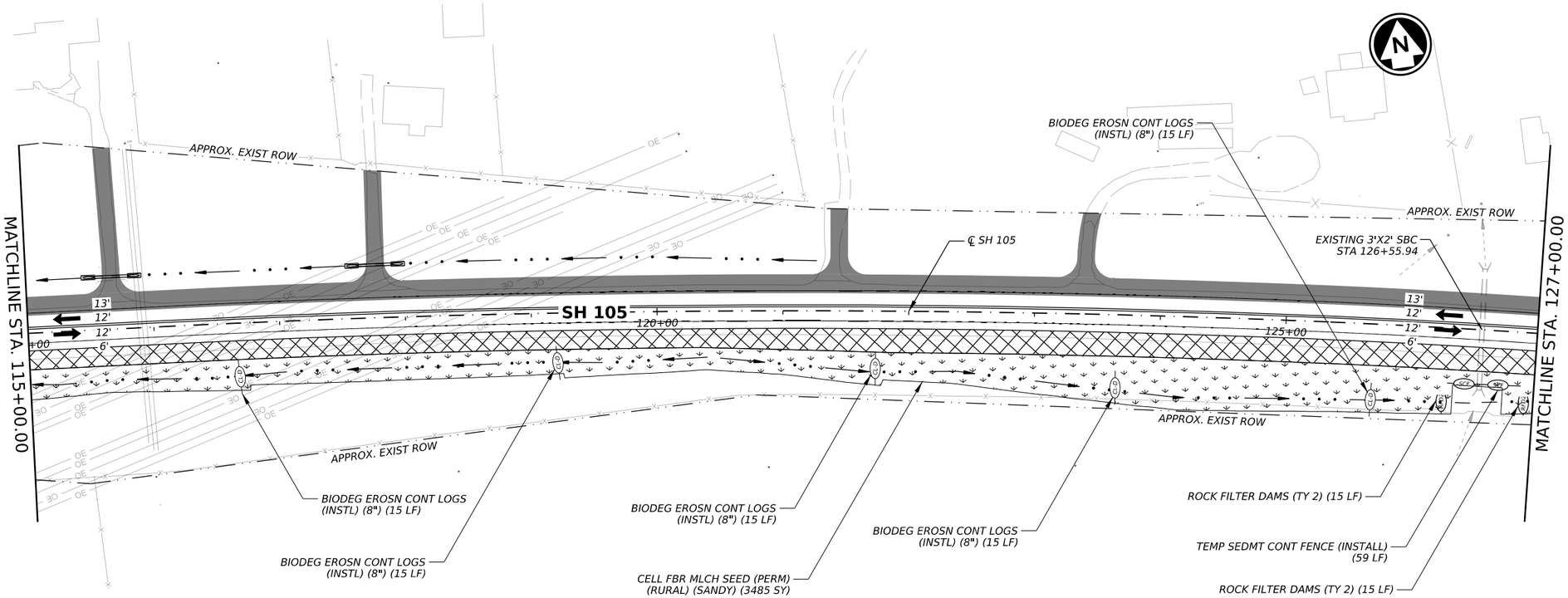

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 103+00 TO STA 127+00

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		270

DATE: 3/22/2024 8:21:18 PM
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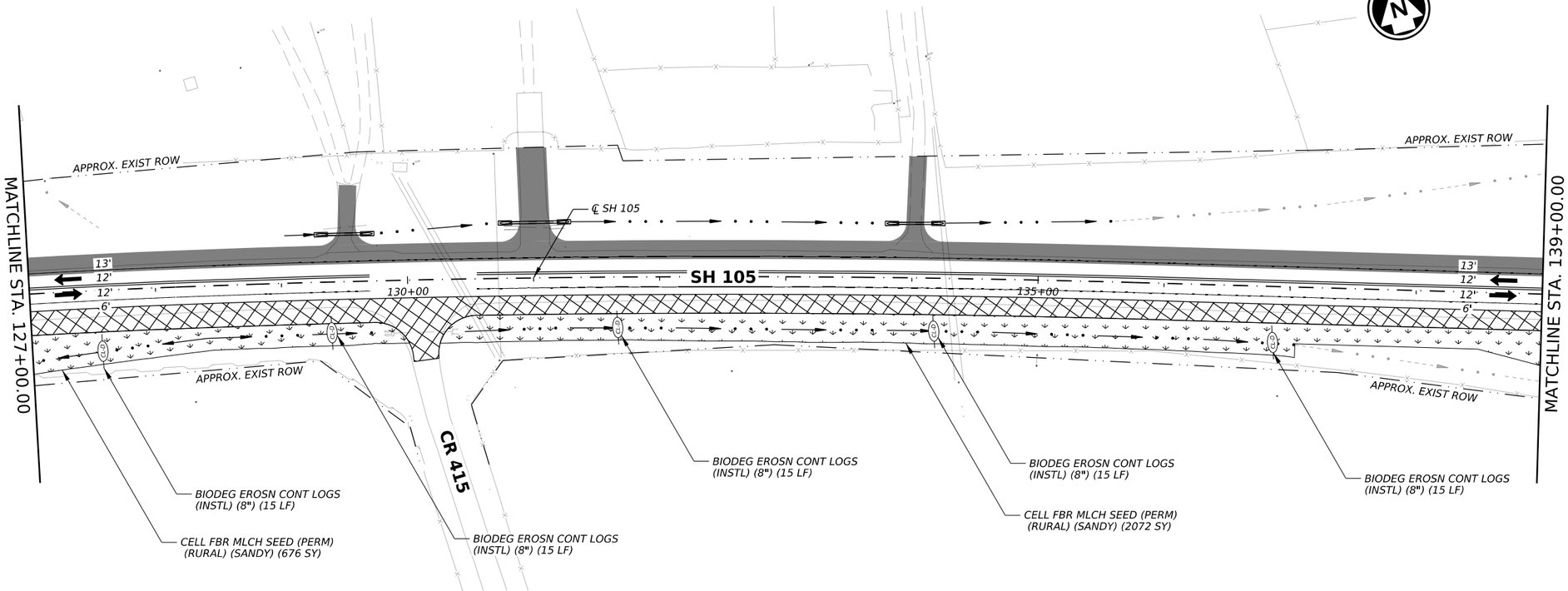

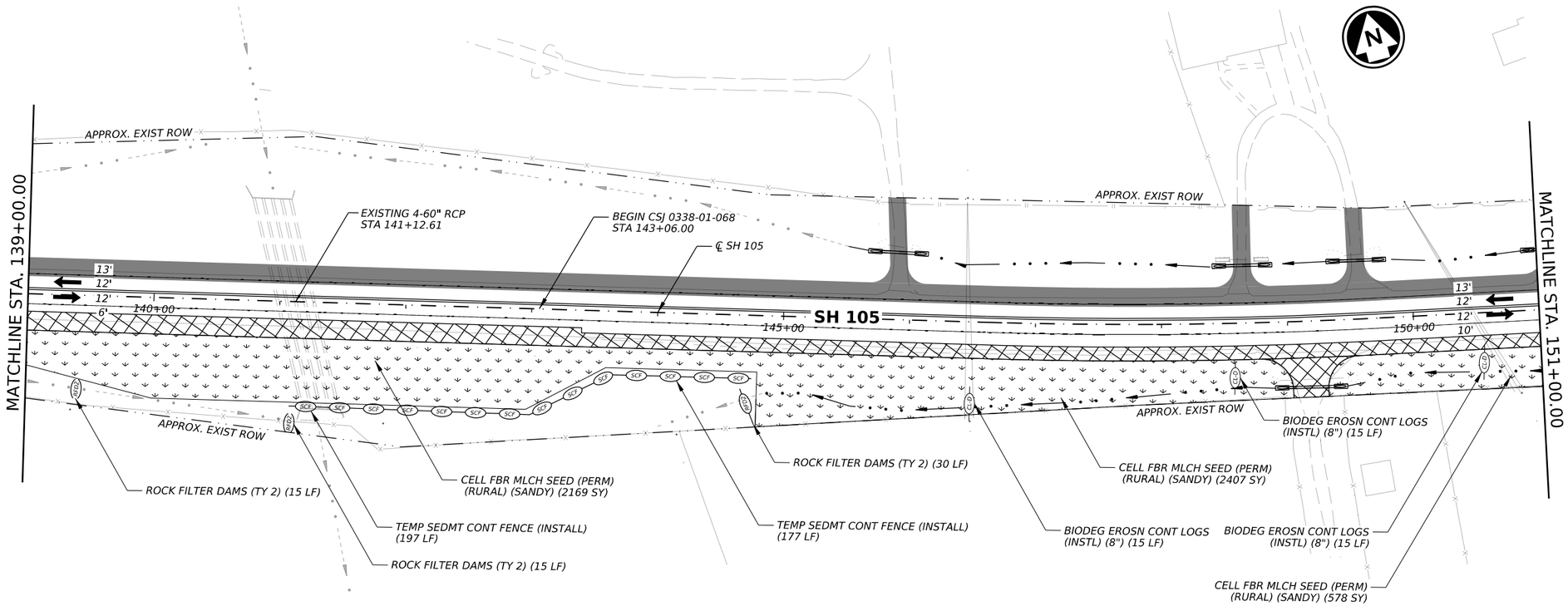

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

1. ALL SW3P CONTROL MEASURES SHALL BE PLACED WITHIN TXDOT RIGHT-OF-WAY DURING CONSTRUCTION.
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STATE OF TEXAS
RYAN G. FRIESENHAHN
127743
LICENSED PROFESSIONAL ENGINEER
3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 127+00 TO STA 151+00

SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		271

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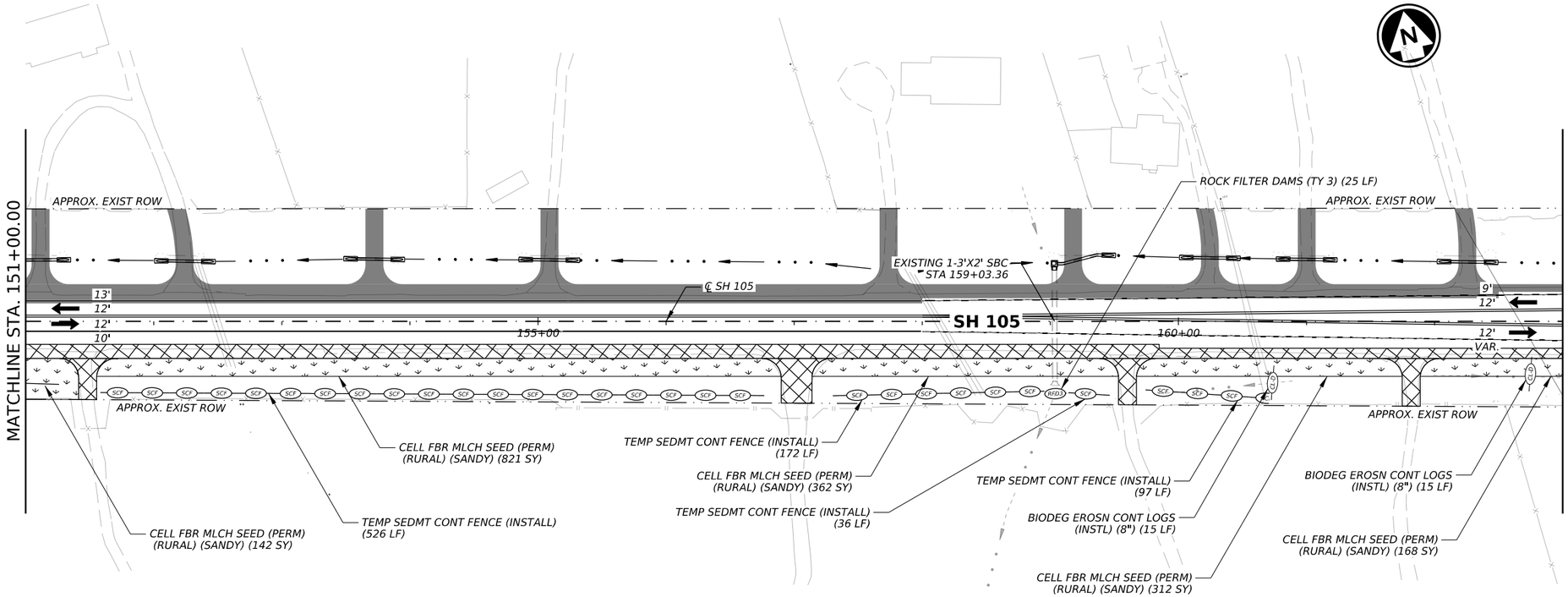

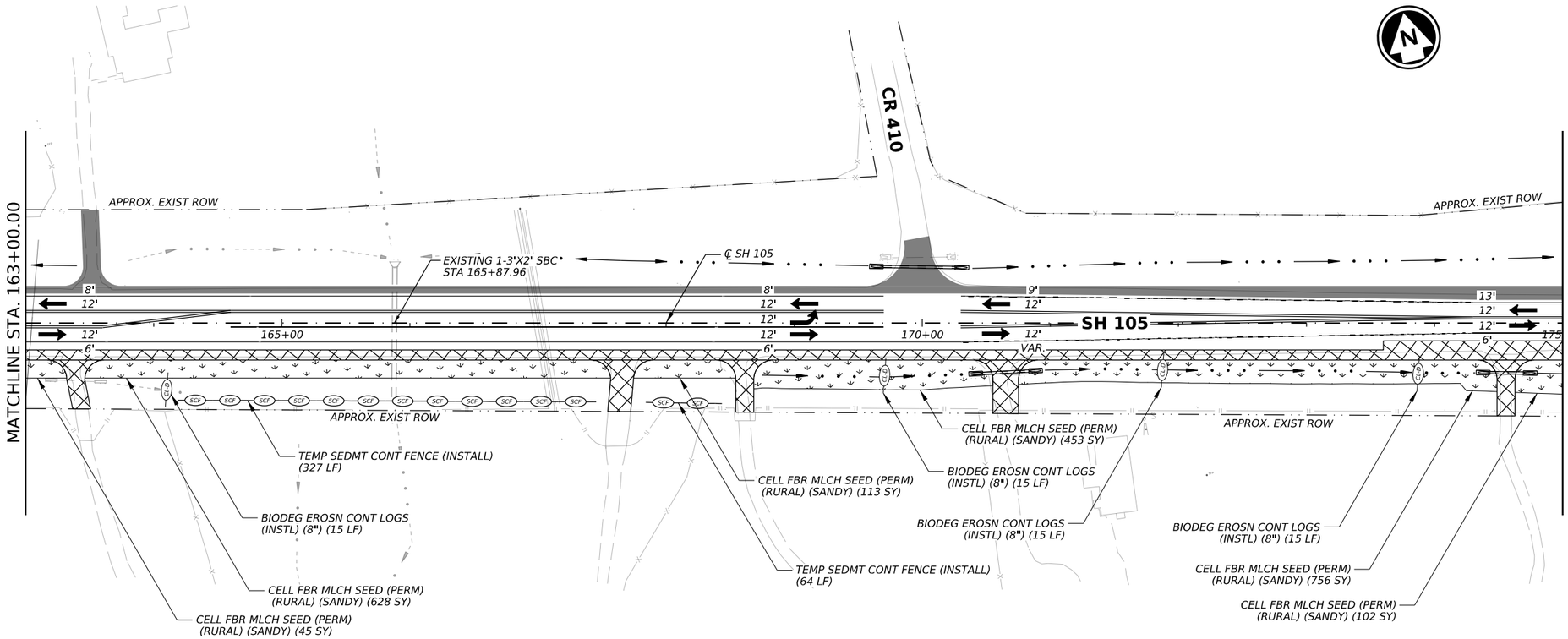

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

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TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 151+00 TO STA 175+00

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		272

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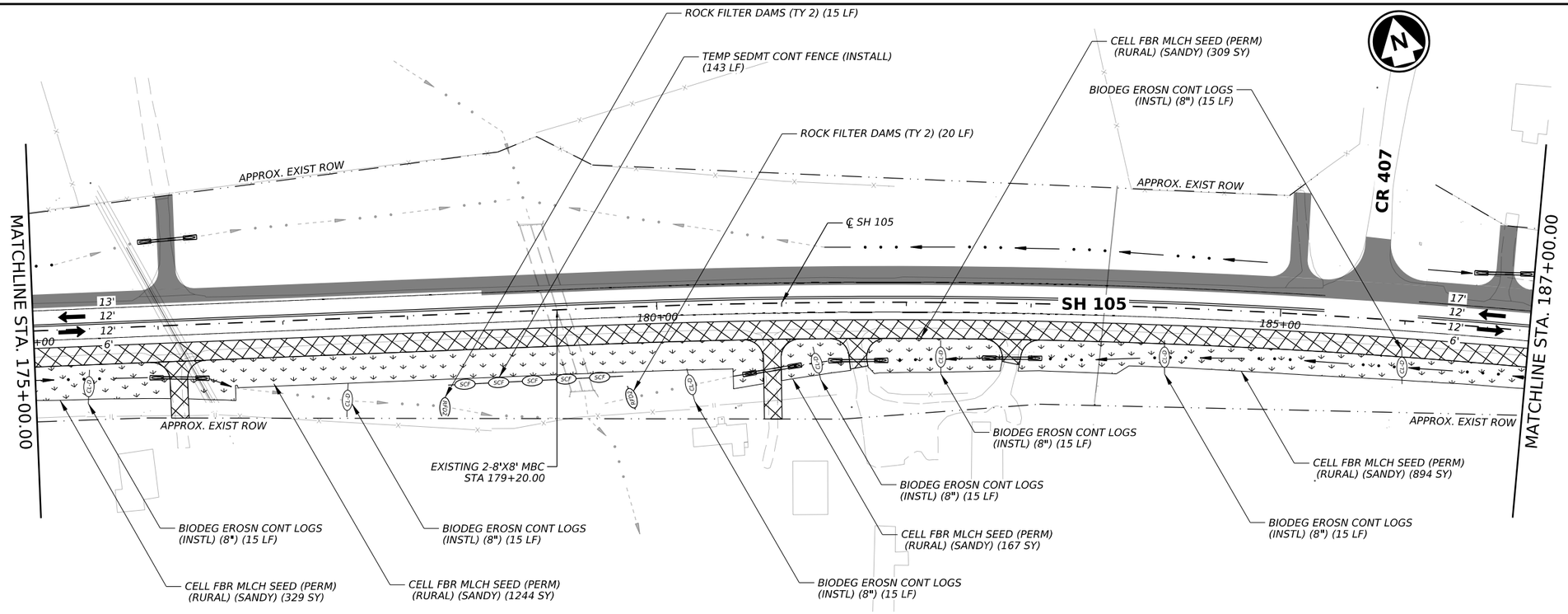

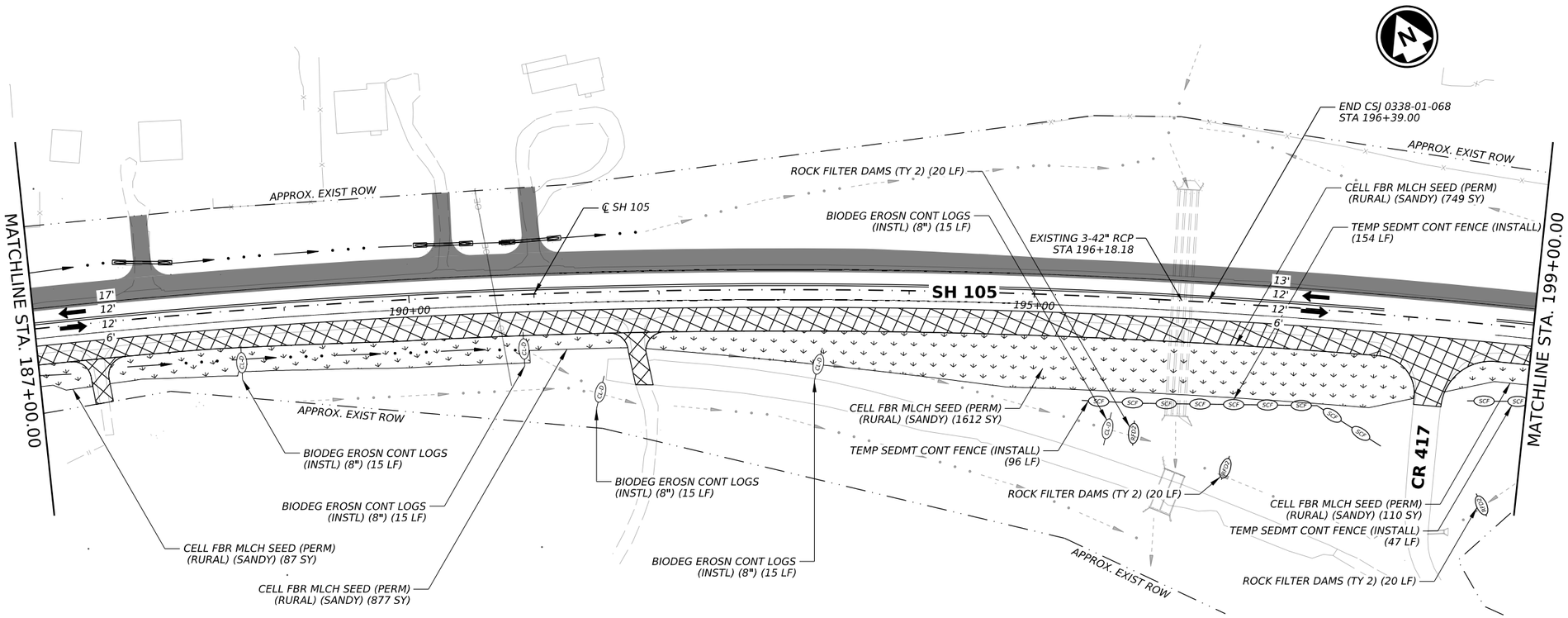

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 175+00 TO STA 199+00

SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		273

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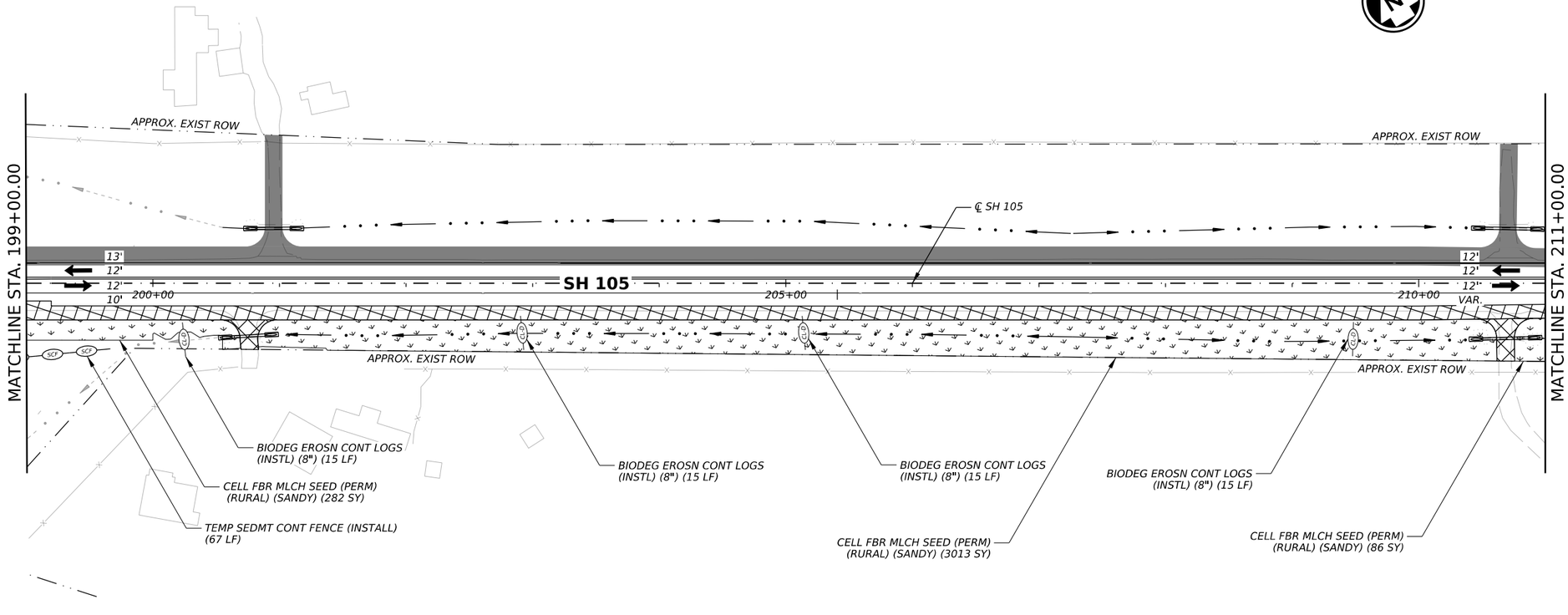

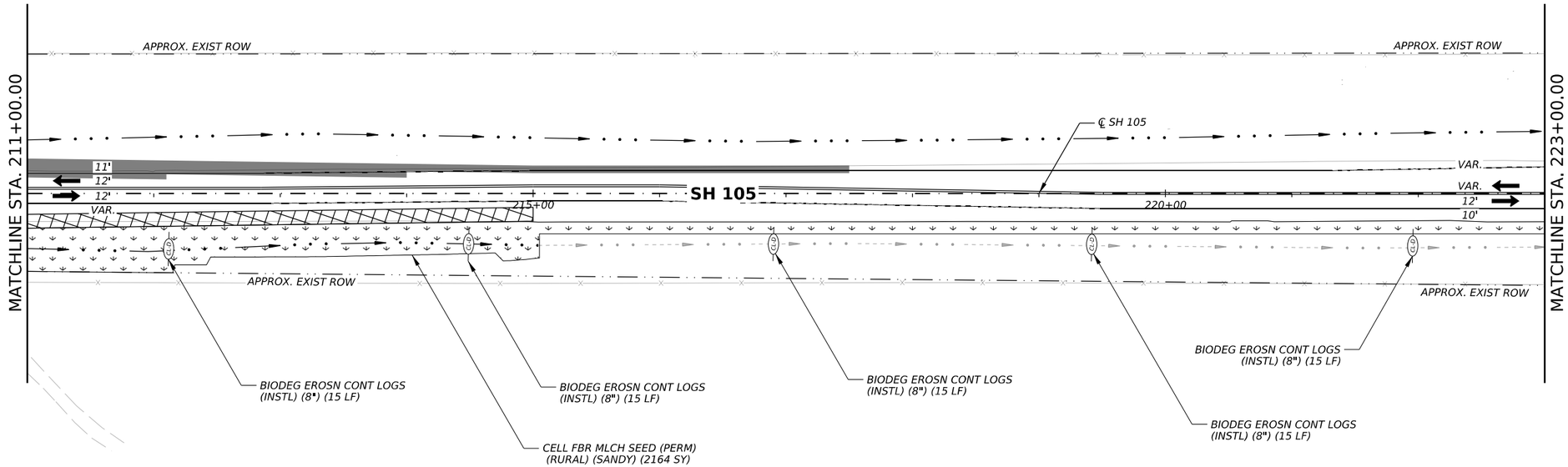

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 199+00 TO STA 223+00

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		274

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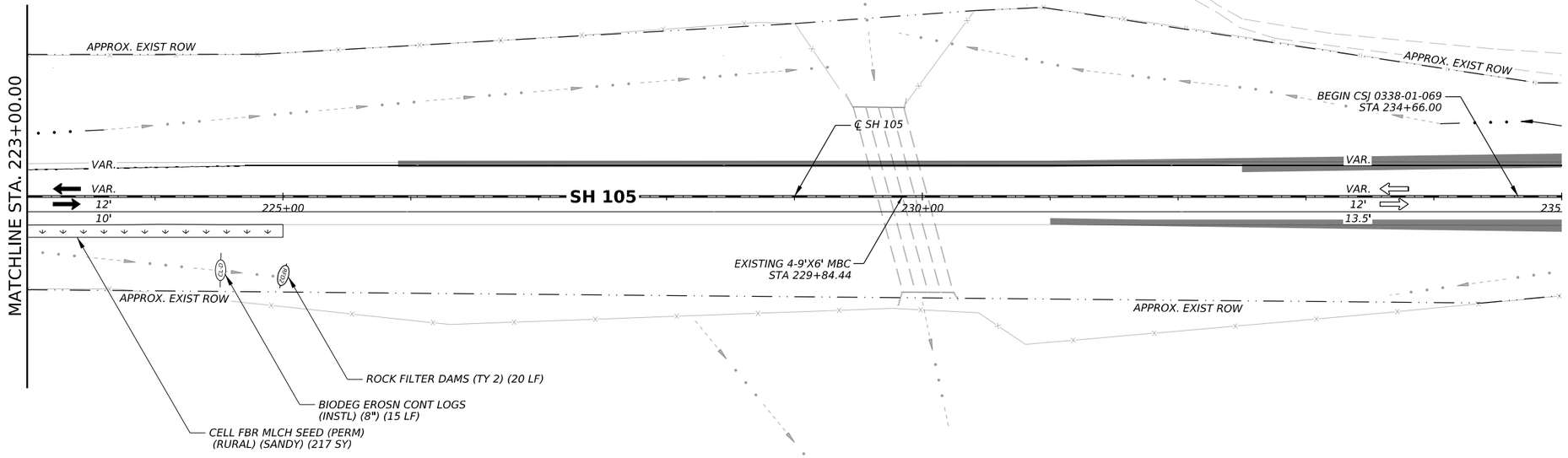

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 4
STA 223+00 TO STA 235+00

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		275

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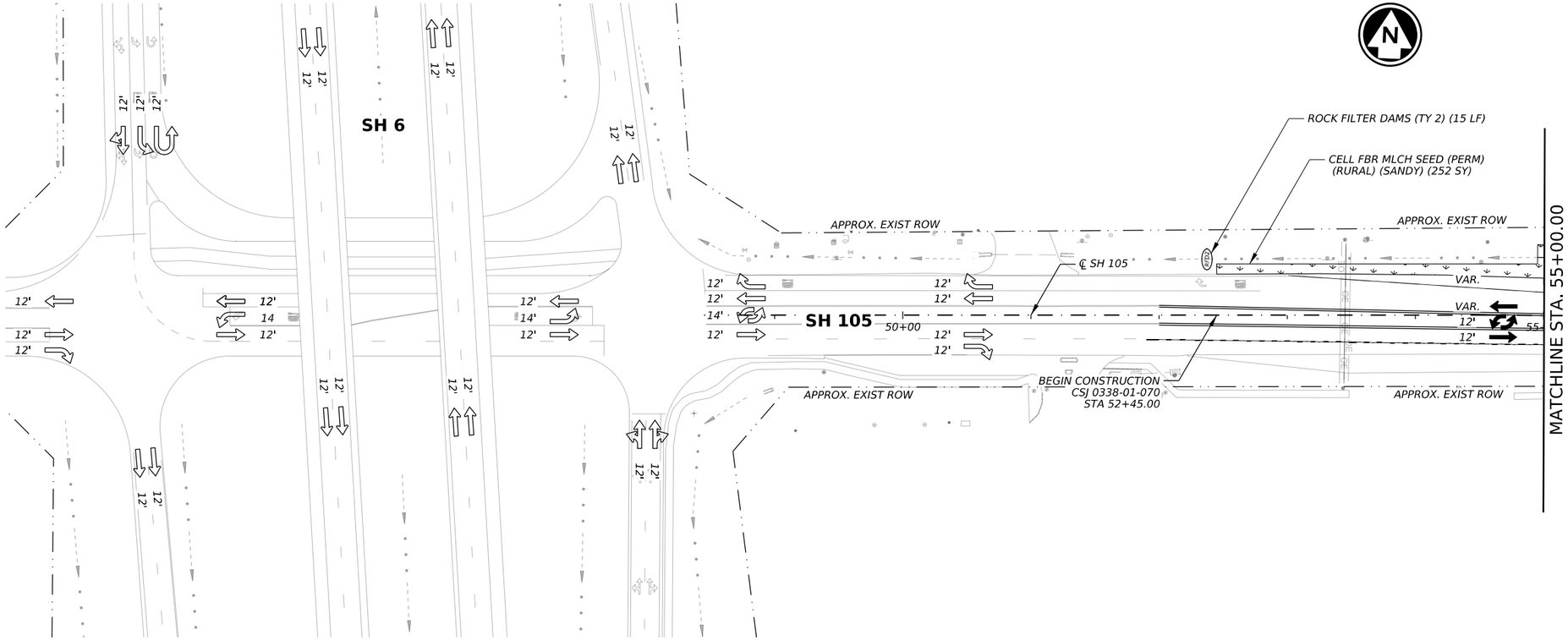

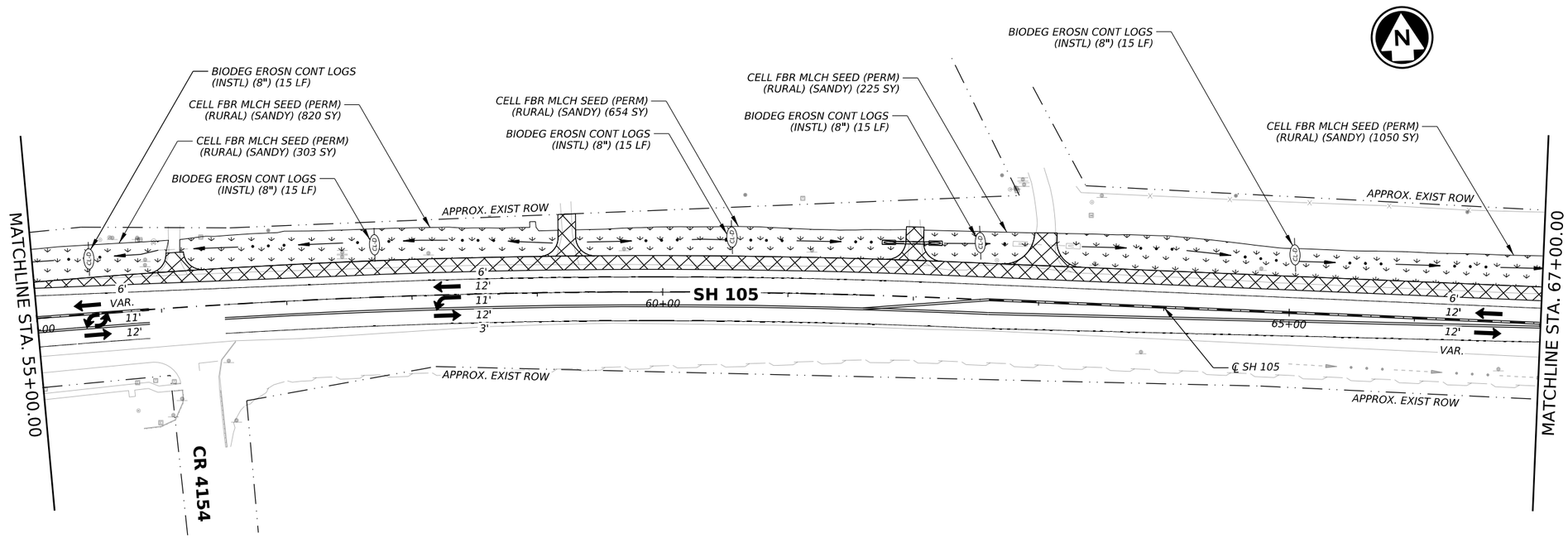

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
RYAN G. FRIESENHAHN
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 5
BEGIN TO STA 67+00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		276

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JMT DWG
JMT SC
JMT NO

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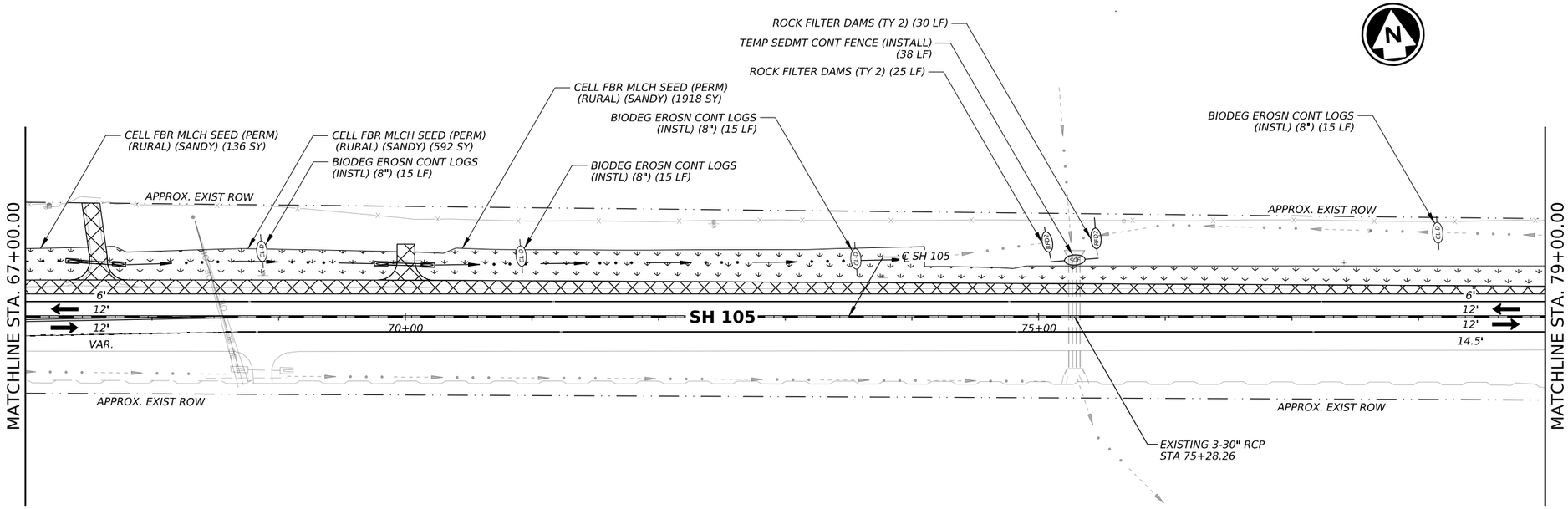

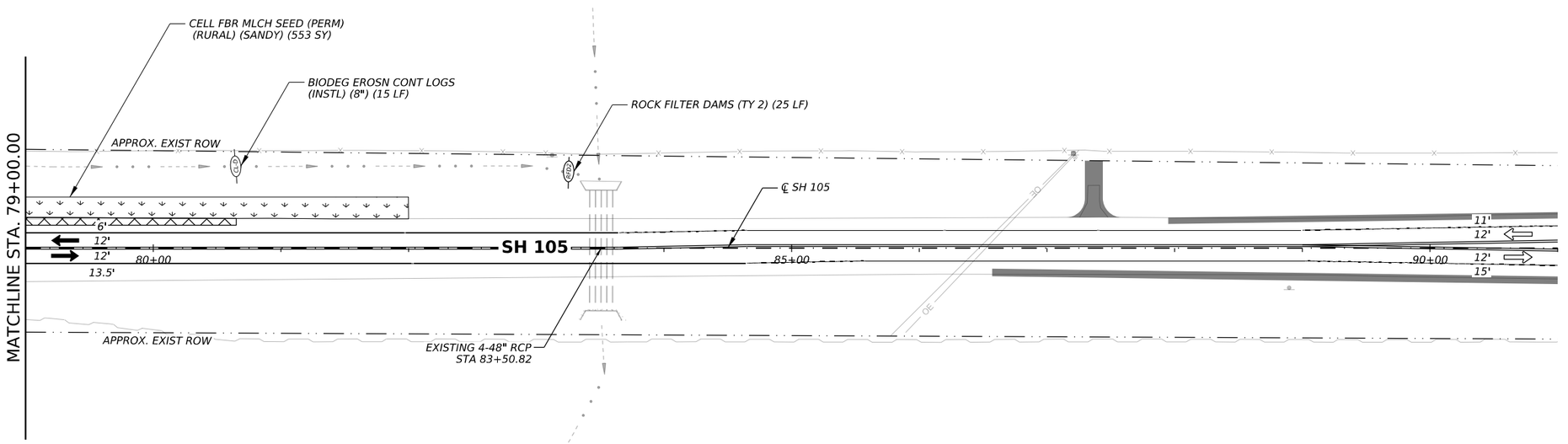

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2)
- ROCK FILTER DAMS (TY 3)
- EROSION CONTROL LOGS 8"
- SEDIMENT CONTROL FENCE
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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STATE OF TEXAS
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127743
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3/22/2024

0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 5
STA 67+00 TO STA 91+00

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		277

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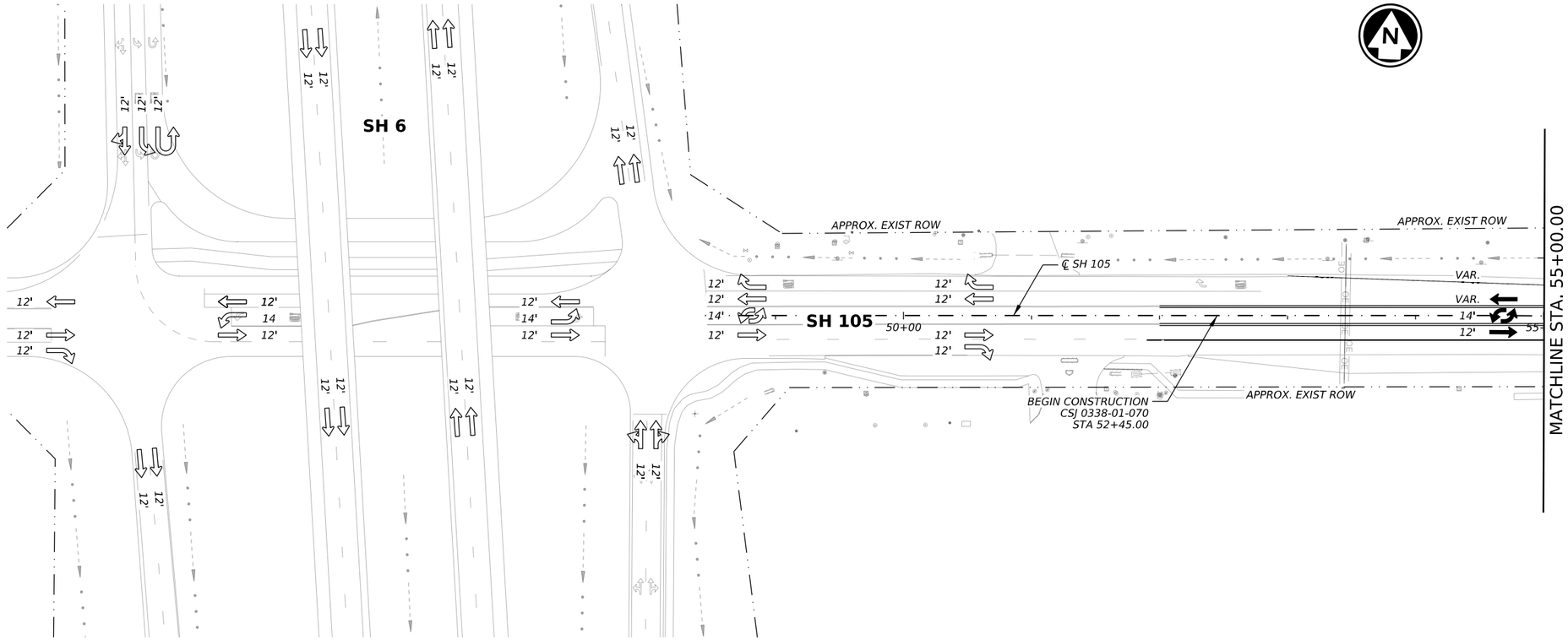

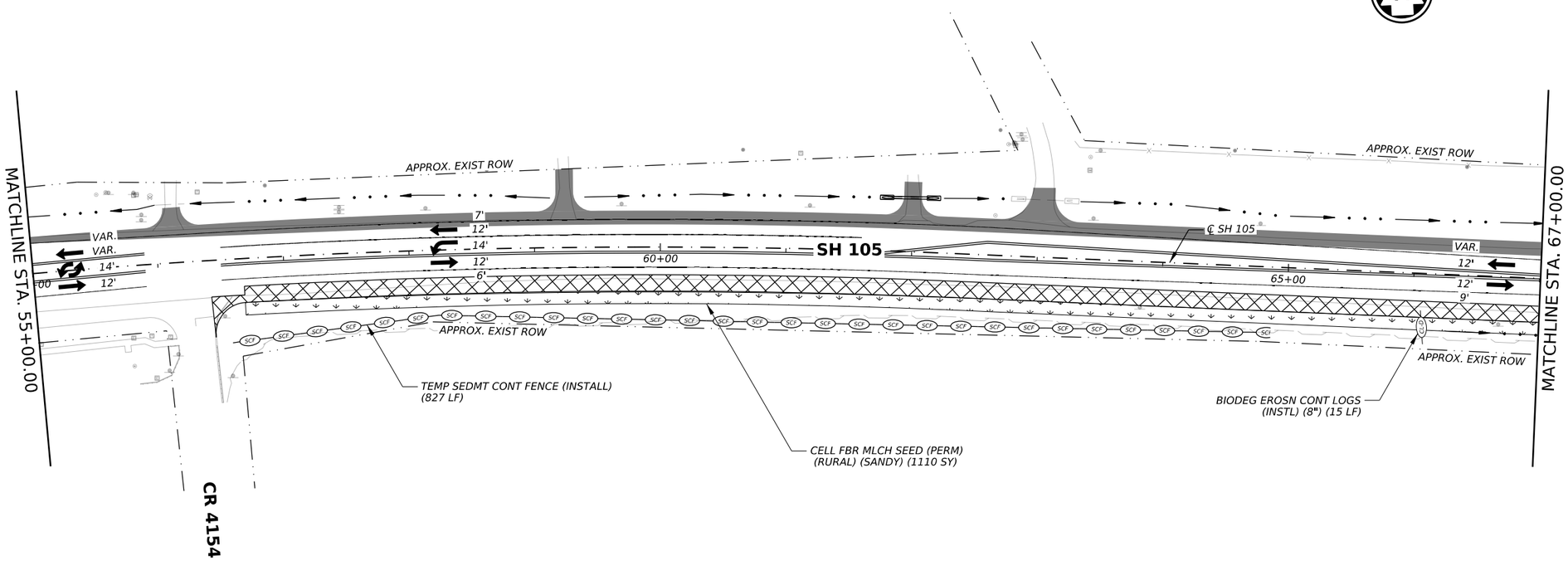

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- ROCK FILTER DAMS (TY 2) (RFD2)
- ROCK FILTER DAMS (TY 3) (RFD3)
- EROSION CONTROL LOGS 8" (CL-D)
- SEDIMENT CONTROL FENCE (SCF)
- PROPOSED DITCH FLOWLINE
- EXISTING DITCH FLOWLINE
- LANE THIS PHASE
- LANE PREVIOUS PHASE

NOTES:

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0 50' 100'
SCALE IN FEET

TBPE REGISTRATION NO. F-16341

Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 6
BEGIN TO STA 67+00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		278

DATE: 3/22/2024 8:25:21 PM
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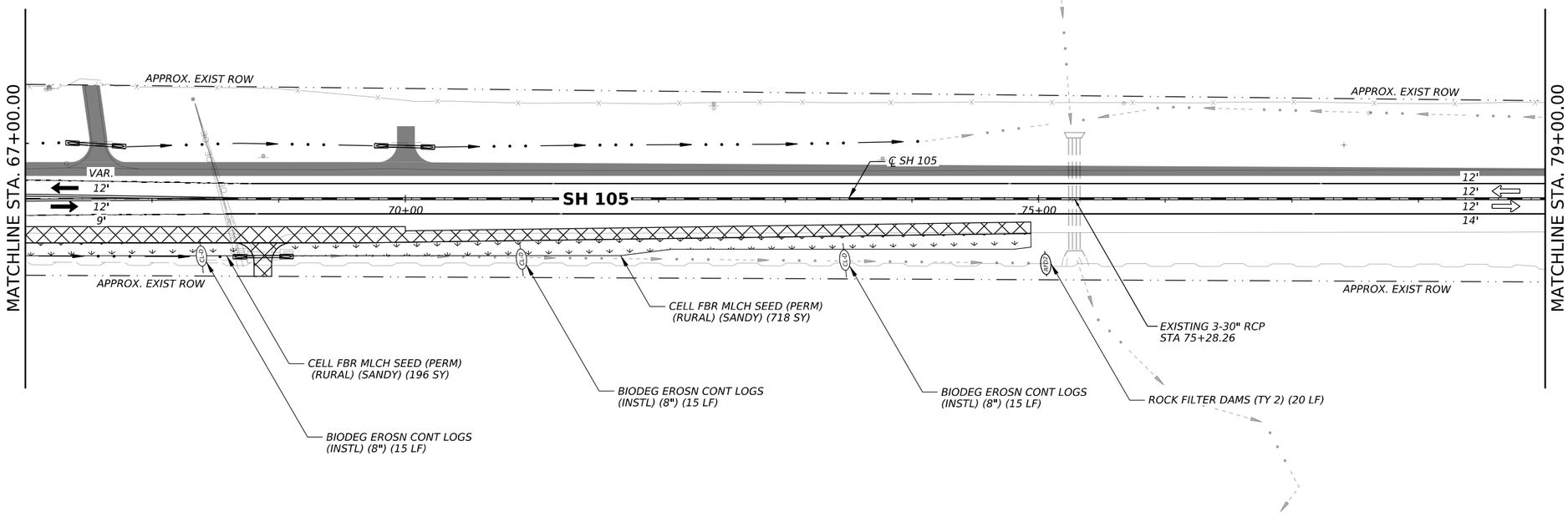

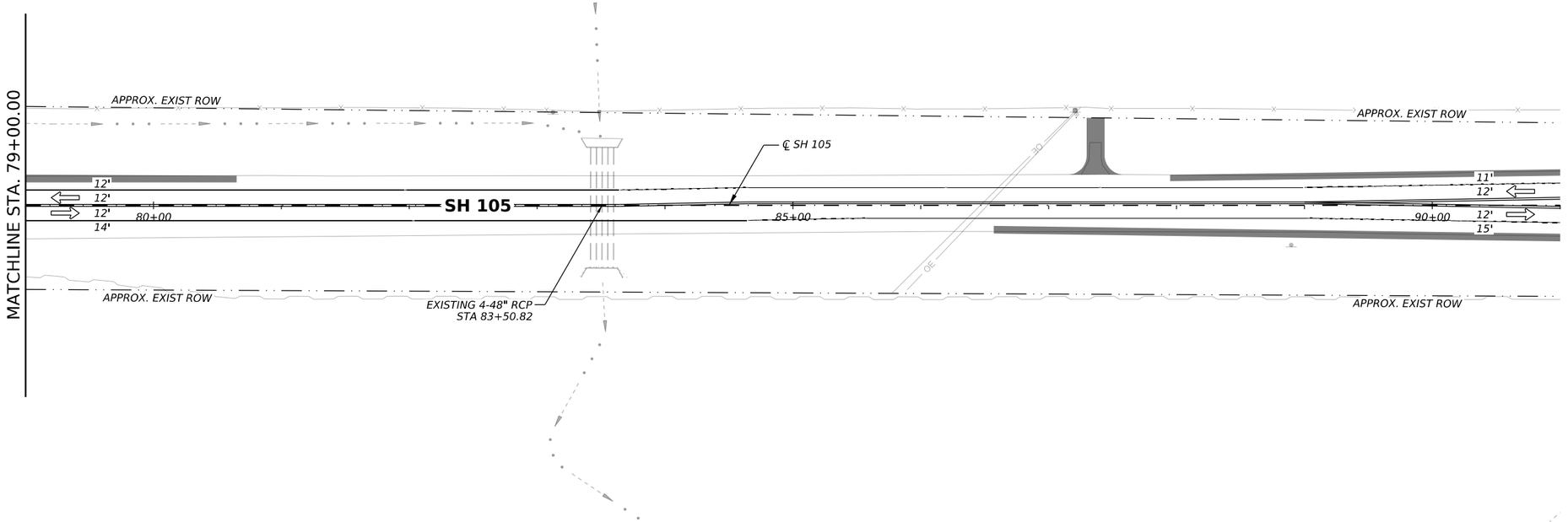

LEGEND:

- CONSTRUCTION THIS PHASE
- CONSTRUCTION PREV PHASE
- CELL FBR MLCH SEED
- RFD2 — ROCK FILTER DAMS (TY 2)
- RFD3 — ROCK FILTER DAMS (TY 3)
- CL-D — EROSION CONTROL LOGS 8"
- SCF — SEDIMENT CONTROL FENCE
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- EXISTING DITCH FLOWLINE
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3/22/2024

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Texas Department of Transportation

SH 105

SW3P LAYOUT
PHASE 6
STA 67+00 TO STA 91+00

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0338	01	068	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		279

DATE: 3/22/2024 8:25:53 PM
FILE: BRYCEC_TASK02_SW3P_PH6_02.dgn

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0338-01-068, 0338-01-069, 0338-01-070

1.2 PROJECT LIMITS:
From: SH 6

To: SH 249

1.3 PROJECT COORDINATES:

BEGIN: (Lat) **30.37623582** ,(Long) **-96.06786727**

END: (Lat) **30.35469792** ,(Long) **-95.80569799**

1.4 TOTAL PROJECT AREA (Acres): 83

1.5 TOTAL AREA TO BE DISTURBED (Acres): 15

1.6 NATURE OF CONSTRUCTION ACTIVITY:
Construction of Intersection Improvements consisting of right and/or left turn lanes and two-way left turn lanes.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
SH 105	Fine sandy loam, Loamy fine sand, Clays (Tinn, Gowker, Frelsburg)

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):
PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

☐ PSLs determined during preconstruction meeting
☒ PSLs determined during construction
☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

☒ Mobilization
☒ Install sediment and erosion controls
☒ Blade existing topsoil into windrows, prep ROW, clear and grub
☒ Remove existing pavement
☒ Grading operations, excavation, and embankment
☒ Excavate and prepare subgrade for proposed pavement widening
☒ Remove existing culverts, safety end treatments (SETs)
☐ Remove existing metal beam guard fence (MBGF), bridge rail
☒ Install proposed pavement per plans
☒ Install culverts, culvert extensions, SETs
☐ Install mow strip, MBGF, bridge rail
☒ Place flex base
☒ Rework slopes, grade ditches
☒ Blade windrowed material back across slopes
☒ Revegetation of unpaved areas
☒ Achieve site stabilization and remove sediment and erosion control measures
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

☒ Sediment laden stormwater from stormwater conveyance over disturbed area
☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
☒ Solvents, paints, adhesives, etc. from various construction activities
☒ Transported soils from offsite vehicle tracking
☒ Construction debris and waste from various construction activities
☒ Contaminated water from excavation or dewatering pump-out water
☒ Sanitary waste from onsite restroom facilities
☒ Trash from various construction activities/receptacles
☐ Long-term stockpiles of material and waste
☒ Discharges from concrete washout activities, runoff from concrete cutting activities, and other concrete related activities.
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.11 RECEIVING WATERS:
Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
Sandy Creek	SEG ID 1202 "BRAZOS RIVER BELOW NAVASOTA RIVER"
Bryant Branch	
Grassy Creek	

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

☒ Development of plans and specifications
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notice
☐ Submit NOI/CSN to local MS4
☒ Perform SWP3 inspections
☒ Maintain SWP3 records and update to reflect daily operations
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

☒ Day To Day Operational Control
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notice
☐ Submit NOI/CSN to local MS4
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
N/A

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			280
STATE	STATE DIST.	COUNTY	
TEXAS	BRY	GRIMES	
CONT.	SECT.	JOB	HIGHWAY NO.
0338	01	068	SH 105

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☒ ☐ Temporary Seeding
- ☐ ☒ Permanent Planting, Sodding or Seeding
- ☒ ☐ Biodegradable Erosion Control Logs
- ☒ ☐ Rock Filter Dams/ Rock Check Dams
- ☒ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☒ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☒ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- ☒ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☒ ☐ Sediment Control Fence
- ☒ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☐ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
SEE SW3P LAYOUTS FOR LIMITS		

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☒ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☒ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☒ Chemical Management
- ☒ Concrete and Materials Waste Management
- ☒ Debris and Trash Management
- ☒ Dust Control
- ☒ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			281
STATE	STATE DIST.	COUNTY	
TEXAS	BRY	GRIMES	
CONT.	SECT.	JOB	HIGHWAY NO.
0338	01	068	SH 105

DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-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 MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☒ Required Action

Action No.

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. The Contractor is to 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.

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• _____

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.

1.

2.

3.

4.

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:

Erosion	Sedimentation	Post-Construction TSS
☒ 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 No.

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

Contractor must adhere to Construction Specification Requirements Specs 160, 161, 162, 164, 166, 168, 169, 170, 180, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

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

☐ No Action Required ☒ Required Action

Action No.

1. Do not kill snakes or other animals.

2. Do not destroy nests on structures within the project limits.

Temporarily prevent the building of nests on any structures that require work within the project limits during the construction timeframe.

This can be accomplished by application of bird repellant gel, netting, or removal by hand every 3-4 days.

The nesting/breeding season for migratory birds is March 1 - September 1.

Under the Migratory Bird Treaty Act (MBTA), it is unlawful by any means or manner, to pursue, hunt, take, capture, [or] kill any migratory birds except as permitted by regulation (16 U.S.C. 703-704). Neither the statute nor its implementing regulations (Title 50, Code of Federal Regulations, Parts 10, 13, 21) exempt unintentional take of migratory birds. The unauthorized take (e.g. killing, capturing, or collecting) of migratory birds is a strict liability criminal offense that does not require knowledge or specific intent on the part of the offender. Even when engaged in an otherwise lawful activity for which the intent is not the killing of migratory birds, a violation may be committed.

3. If caves or sinkholes are discovered, cease work in the immediate area to verify the presence or absence of wildlife.

The Bryan District Environmental Section can be contacted at (979) 778-9766 to assist with the removal of wildlife that will not leave on their own with gentle persuasion.

Refer to 2014 TxDOT Standard Specification Items 7.7.6 Project Specific Locations.

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 Environmental 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 Corps 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 appropriate 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, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (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 notify 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 No.

1. The Clean Water Act, in part, requires that any spill of oil that could enter a waterway, as defined by the Act, and that violates applicable water quality standards or causes a film or sheen on water require reporting to TCEQ and local authorities.

Contact the Bryan District Environmental Section at 979-778-9766.

If potentially hazardous material and/or contaminated media (i.e. soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, immediately cease work in the vicinity and contact the Engineer.

Refer to 2014 TxDOT Standard Specification Items 6.10 (Hazardous Materials) & 7.12 Responsibility for Hazardous Materials.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1. Refer to 2014 TxDOT Standard Specification Items 7.7.6 Project Specific Locations and 751.

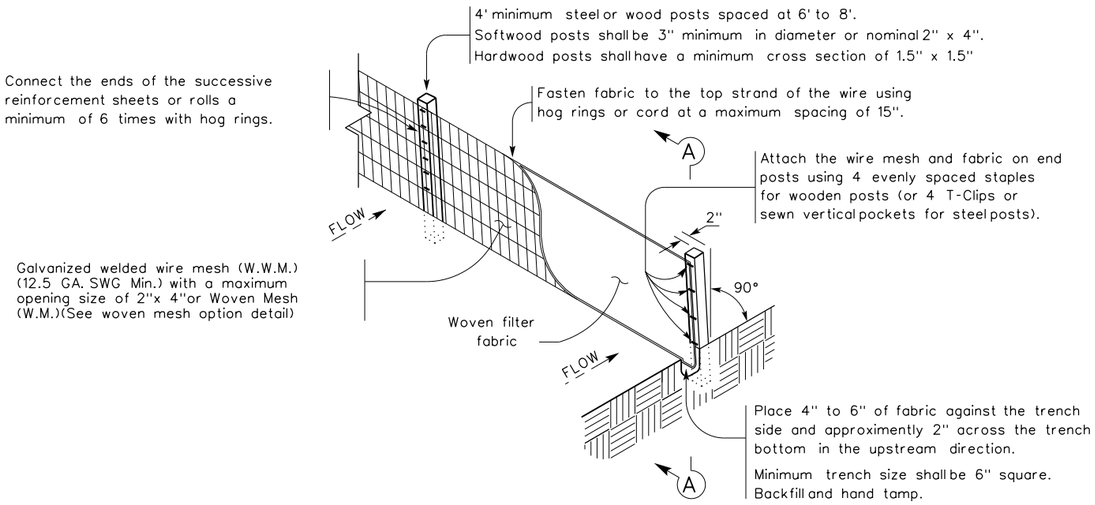
Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

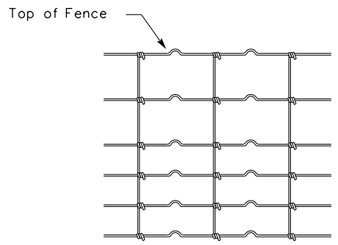
EPIC

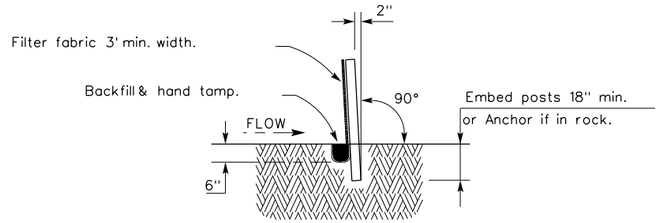
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0338	01	068	SH 105	
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.	
05-07-14 ADDED NOTE SECTION IV.	BRY	GRIMES		282	
01-23-2015 SECTION I CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.					



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT ^{2}. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

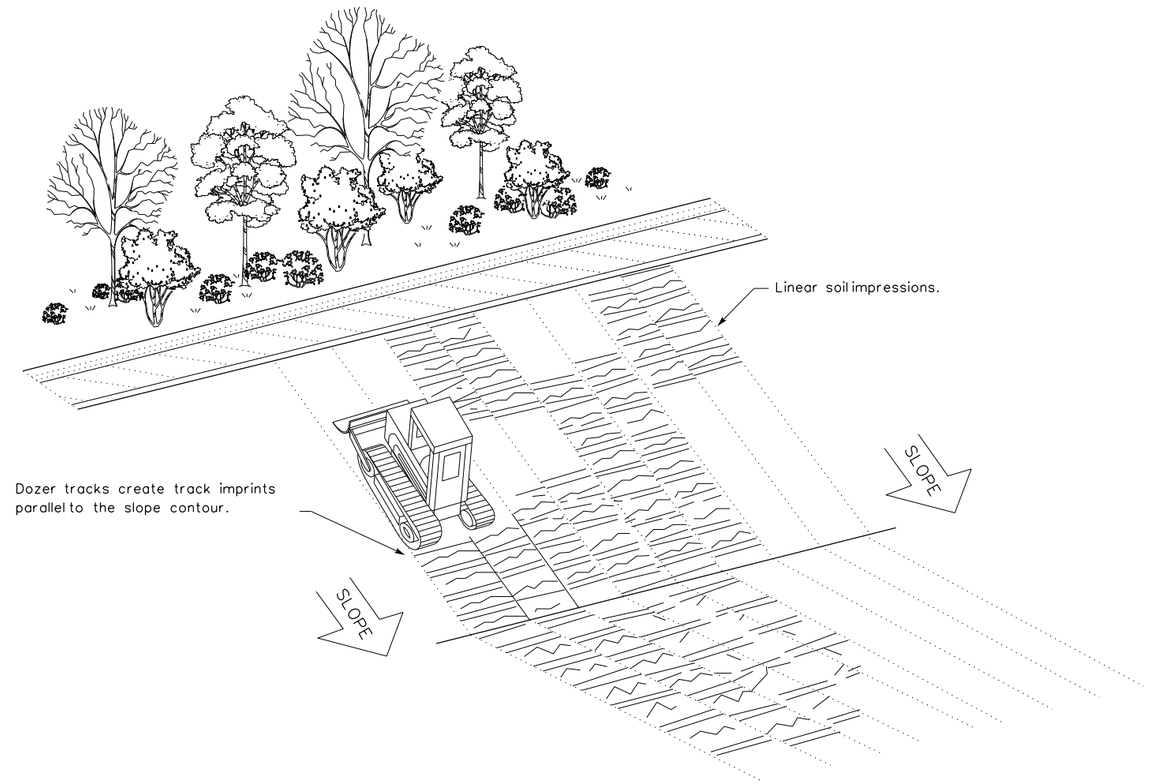
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
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	BRY	GRIMES					283

DATE 3/22/2024
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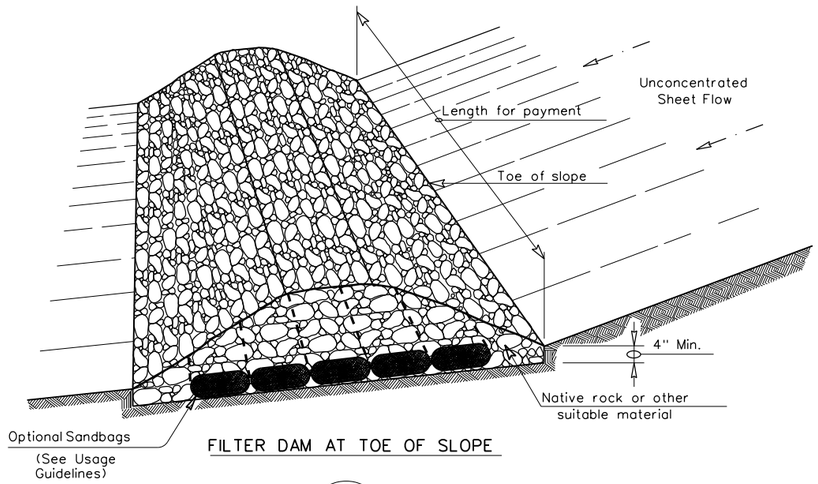
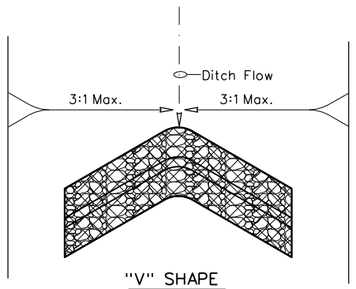
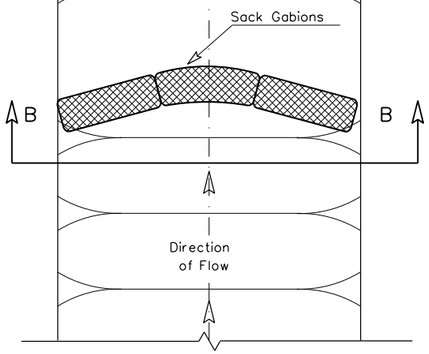


FILTER DAM AT TOE OF SLOPE

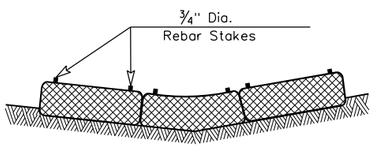
RFD1



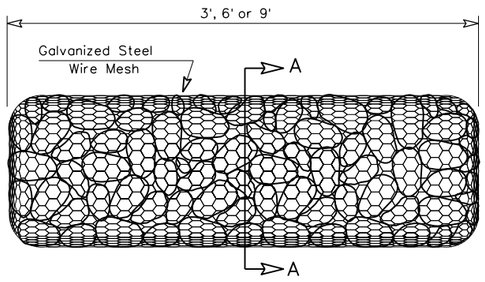
"V" SHAPE
PLAN VIEW



PLAN VIEW

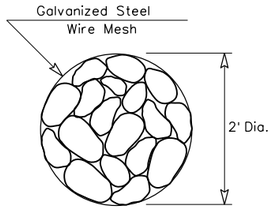


SECTION B-B

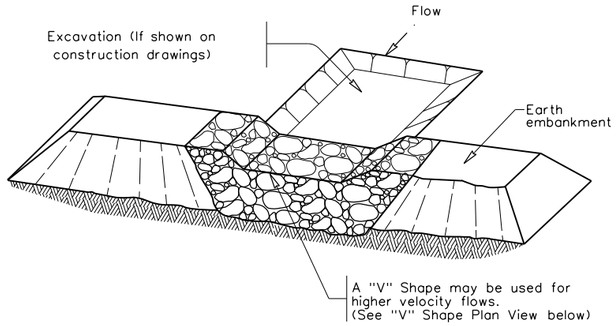


TYPE 4 (SACK GABIONS)

RFD4

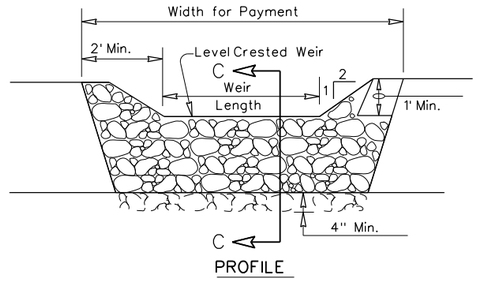


SECTION A-A

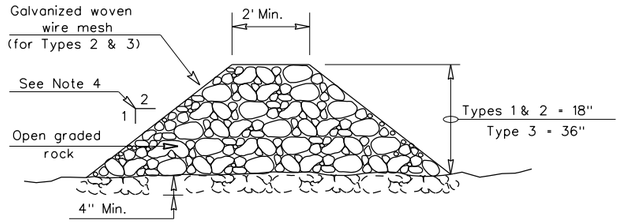


FILTER DAM AT SEDIMENT TRAP

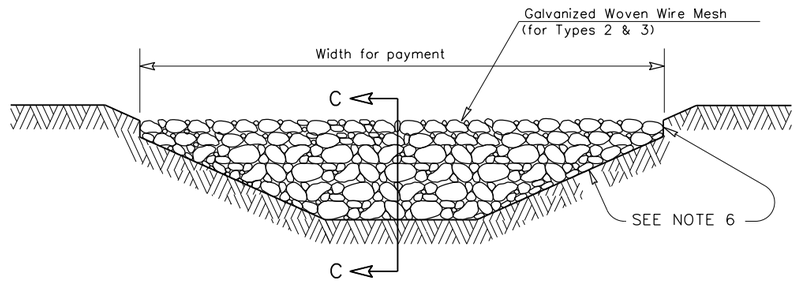
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
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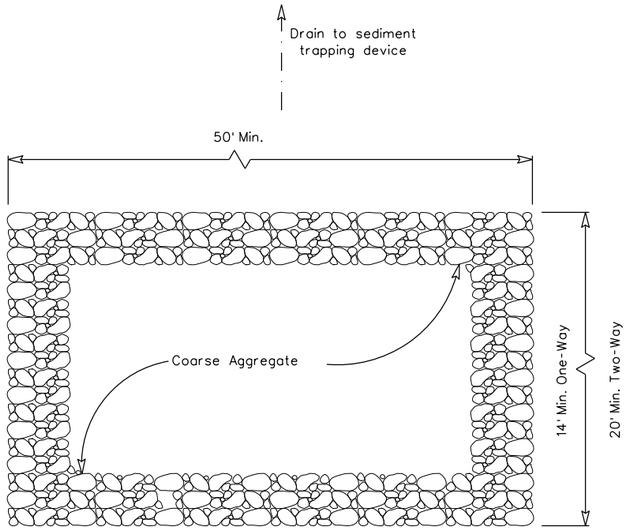
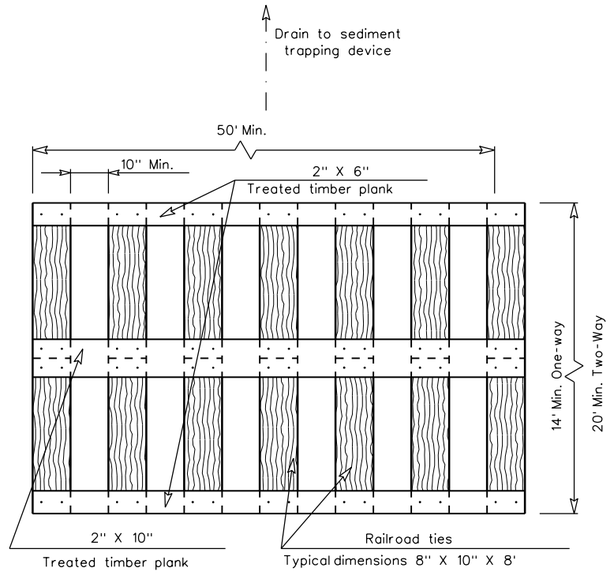
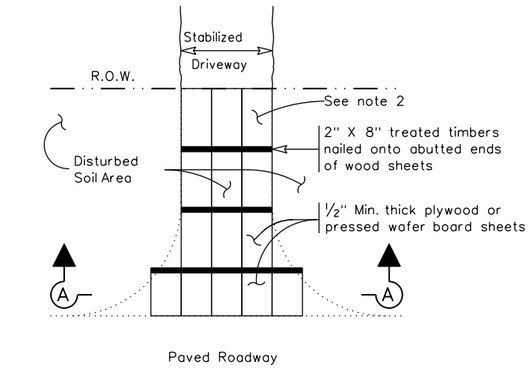


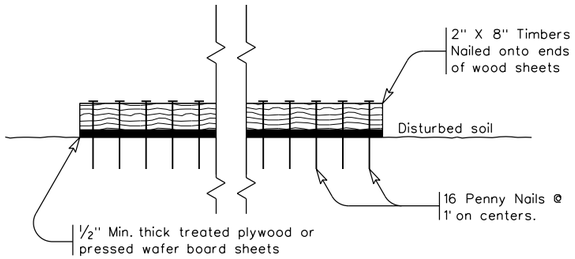
PLAN VIEW



PLAN VIEW



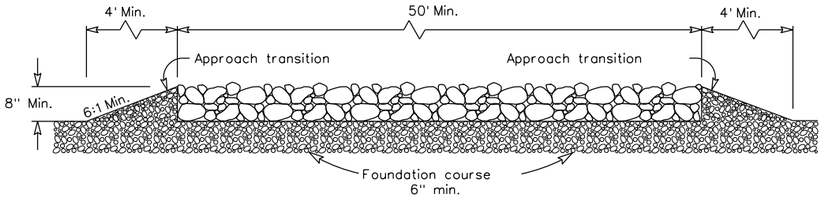
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

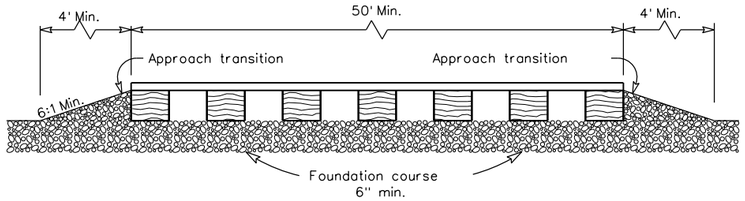
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

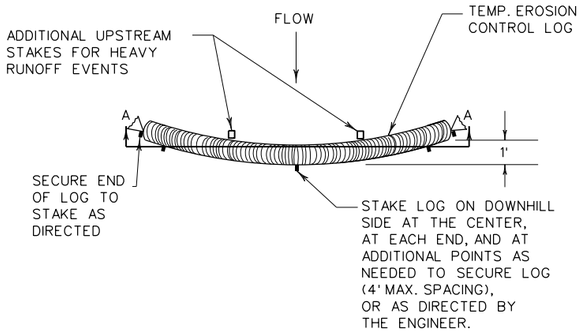
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

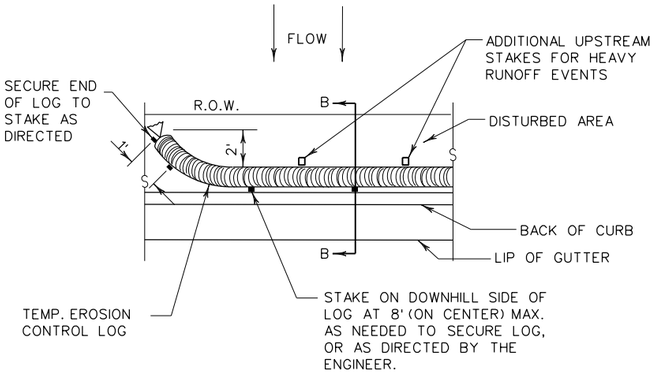
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		285

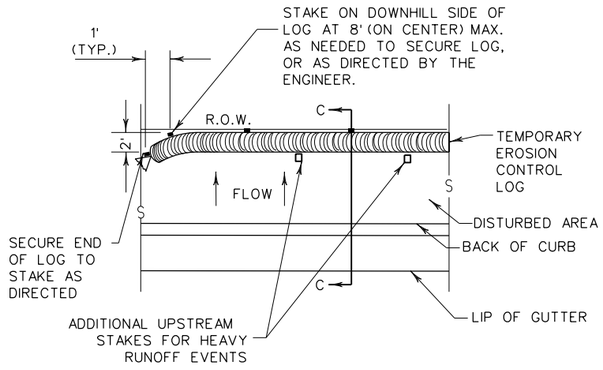
DATE: 3/22/2024
FILE: ec316.dgn



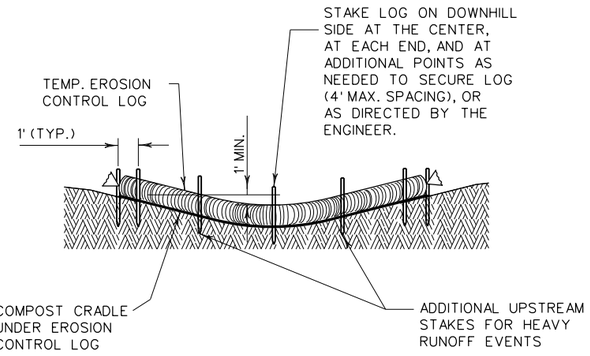
PLAN VIEW



PLAN VIEW



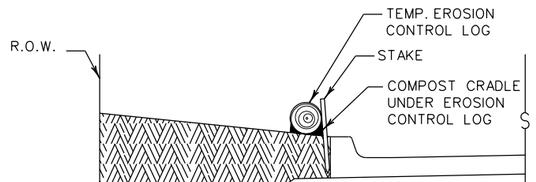
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

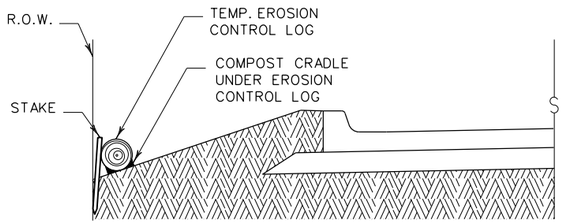
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



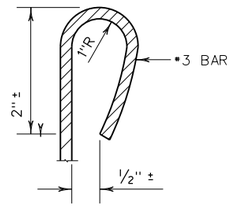
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR •3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

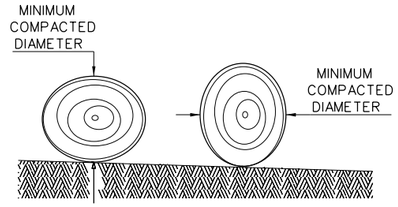
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		286

DATE: 3/22/2024 8:27:00 PM
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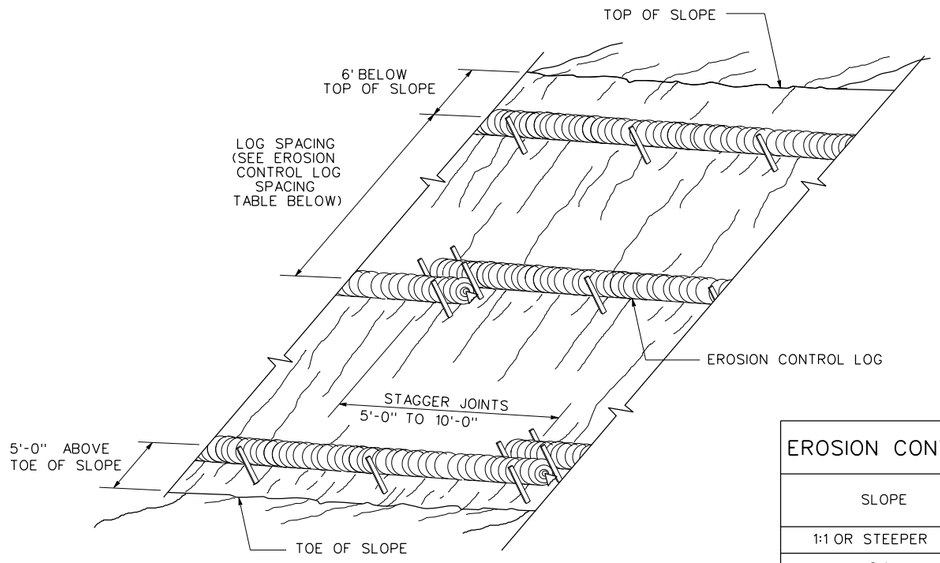
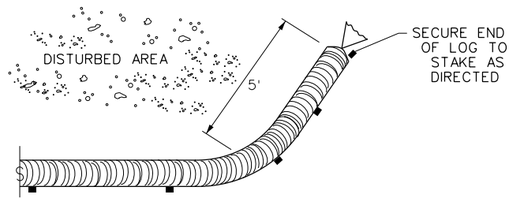


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

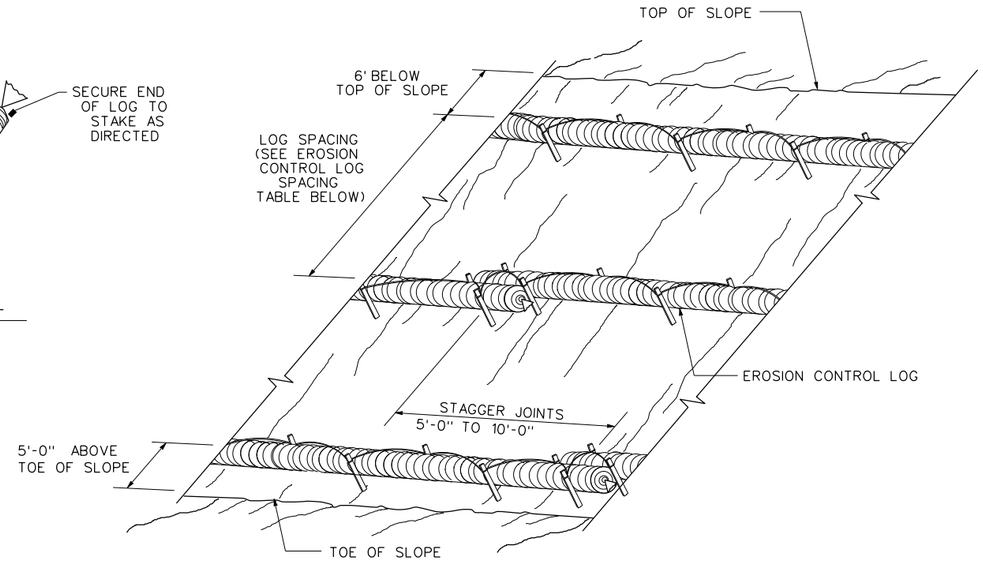
CL-SST



END SECTION RAP DETAIL

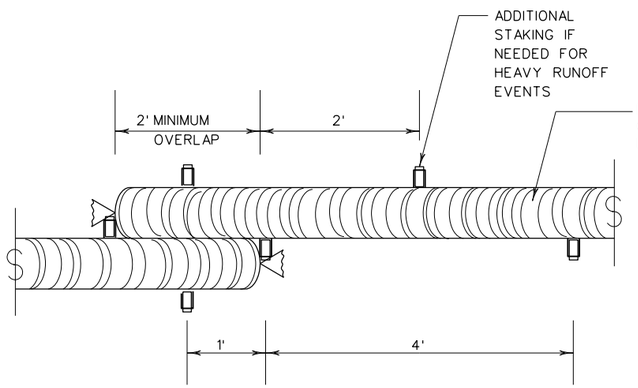
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

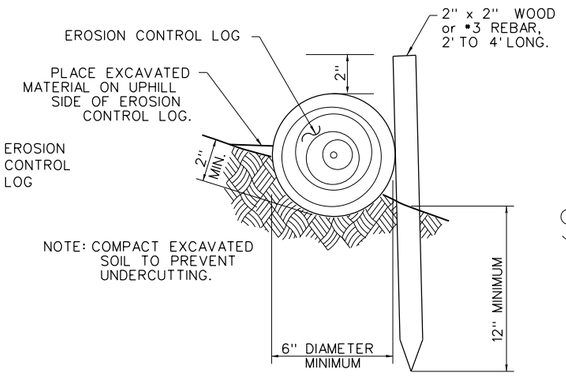
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

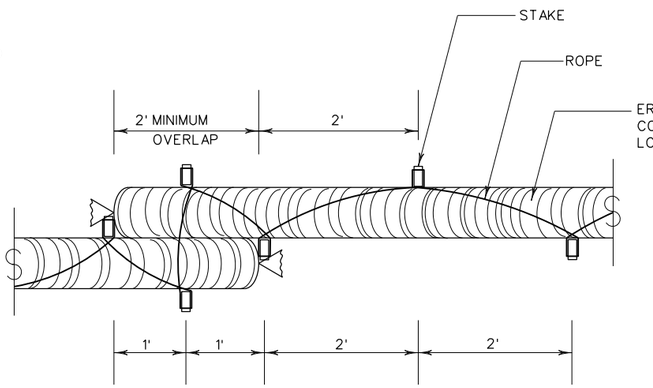


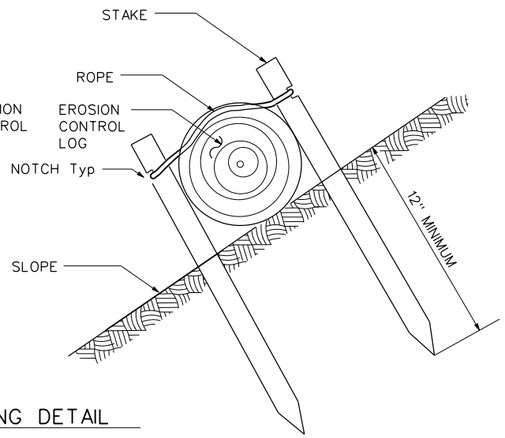


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

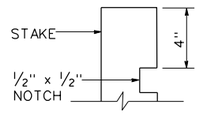
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0338	01	068	SH 105	
	DIST	COUNTY		SHEET NO.	
	BRY	GRIMES		287	

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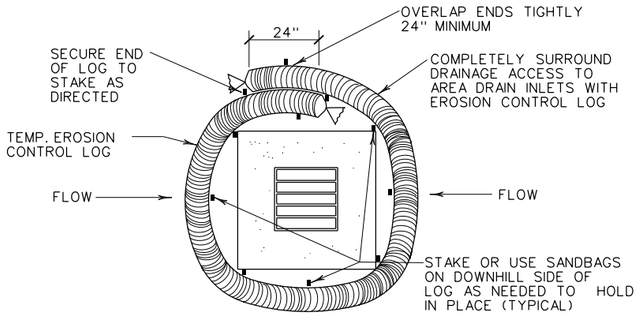
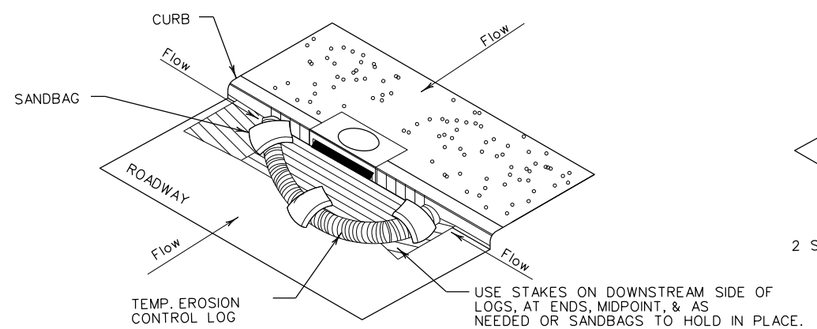


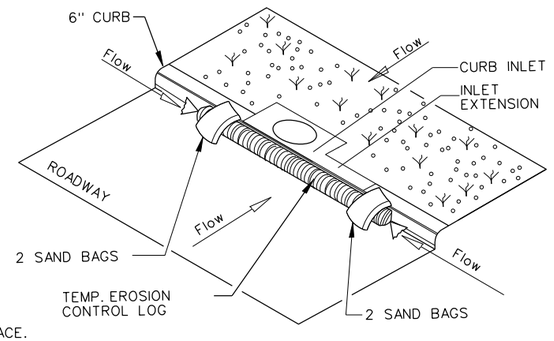
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

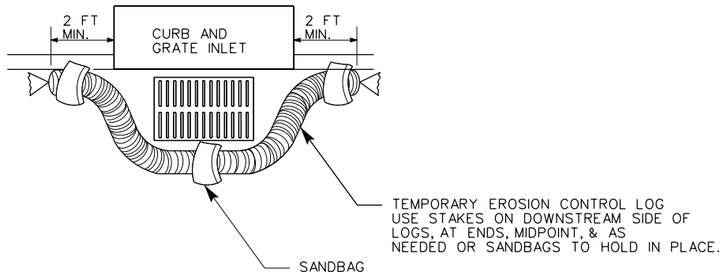
CL-CI



EROSION CONTROL LOG AT CURB INLET

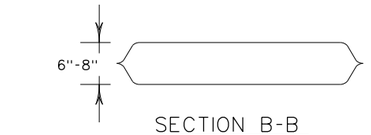
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

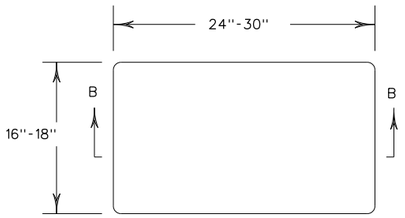


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0338	01	068	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		288