STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT
STATE PROJECT NO. C872-4-30

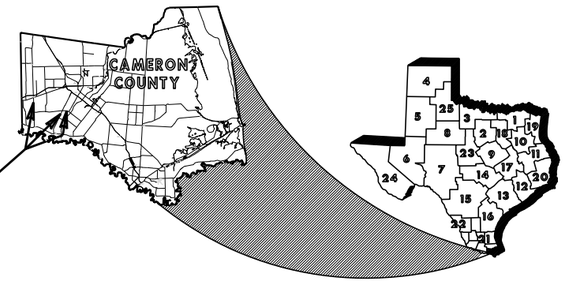
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			1
STATE	DIST.	COUNTY	
TEXAS	PHR	CAMERON	
CONT.	SECT.	JOB	HIGHWAY NO.
0872	04	030, ETC	FM 506

FM 506
CSJ: 0872-04-030
NET LENGTH OF PROJECT = 15,571.76′ = 2.949 MI
LIMITS: FROM: US BUS 83 TO: FM 3067

FM 800
CSJ: 1136-02-053
NET LENGTH OF PROJECT = 8,945.93′ = 1.694 MI
LIMITS: FROM: FM 1479 TO: FM 509

FM 1479
CSJ: 1425-04-023
NET LENGTH OF PROJECT = 8,797.56 = 1.666 MI
LIMITS: FROM: FM 800 TO: FM 675

PROJECT LOCATIONS

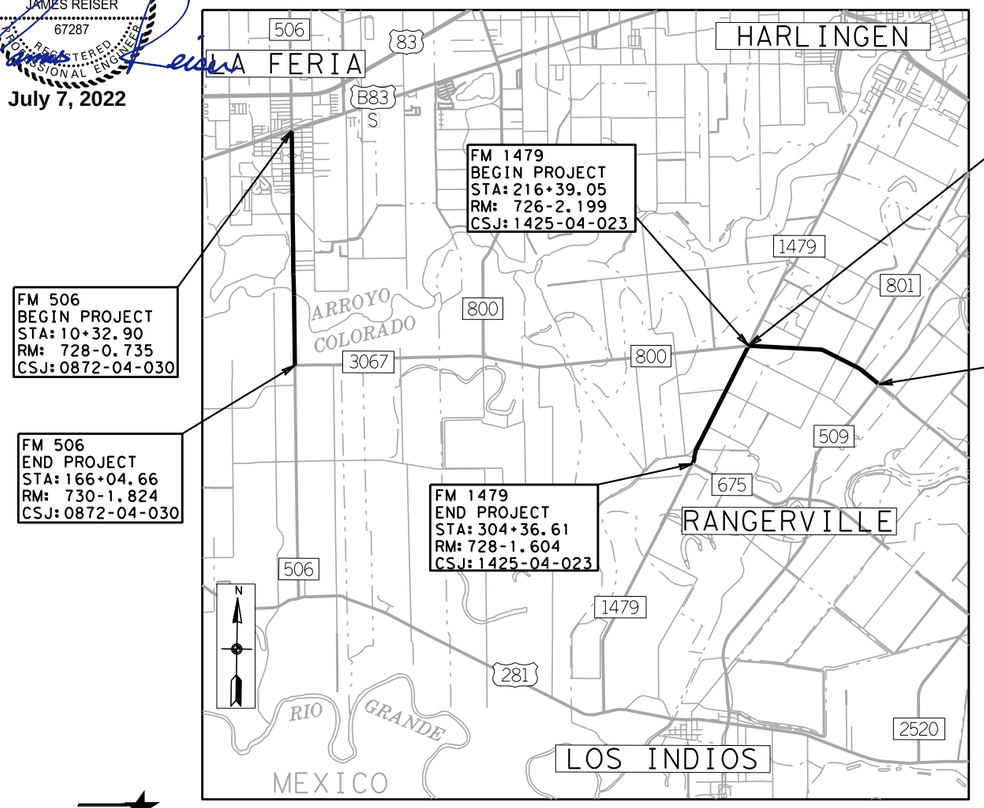


CSJ 0872-04-030, etc
CAMERON COUNTY

REHABILITATION AND WIDENING OF EXISTING ROADWAY CONSISTING OF GRADING, FLEXBASE(LIME STONE), ASPHALTIC CONCRETE PAVEMENT, SIGNING, PAVEMENT MARKINGS REPLACEMENT OF EXISTING CROSS CULVERT DRAINAGE STRUCTURES AND IRRIGATION CROSSINGS.

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER

July 7, 2022



NTS

Texas Department of Transportation ®

LOCAL ENTITIES

CAMERON COUNTY
CONCURRENCE : DATE :
NAME TITLE

CAMERON COUNTY
IRRIGATION DISTRICT NO. 1
CONCURRENCE : DATE :
NAME TITLE

CAMERON COUNTY
IRRIGATION DISTRICT NO. 2
CONCURRENCE : DATE :
NAME TITLE

CAMERON COUNTY
DRAINAGE DISTRICT NO. 3
CONCURRENCE : DATE :
NAME TITLE

CAMERON COUNTY
IRRIGATION DISTRICT NO. 3
CONCURRENCE : DATE :
NAME TITLE

RECOMMENDED FOR LETTING: 7/7/2022

DocuSigned by:
Pedro R. Alvarez
8D395A956F70440...
DISTRICT ENGINEER

SUBMITTED FOR LETTING: 7/7/2022

DocuSigned by:
Romualdo Mena Jr
DISTRICT DESIGN SUPERVISOR

INDEX OF SHEETS
(SEE SHEET NO. 2)

FINAL PLAN DATA :

FINAL CONTRACT PRICE : _____
CONTRACTORS NAME : _____
CONTRACTORS ADDRESS : _____
LETTING DATE : _____
DATE WORK BEGAN : _____
DATE WORK COMPLETED: _____
DATE OF ACCEPTANCE: _____

CHANGE ORDERS & SUPP. AGREEMENTS :

THIS IS TO CERTIFY THAT ALL CONSTRUCTION SUBTANTIAL WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS SPECIFICATIONS AND CONTRACT. ALL PROPOSED CONSTRUCTION WAS COMPLETED UNLESS OTHERWISE NOTED.

ANDRES ESPINOZA, P.E. DATE
SAN BENITO AREA ENGINEER

T.D.L.R. INSPECTION NOT REQUIRED

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON NOVEMBER 1,2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000 - 008).

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

PROJECT DATA - FM 506
DESIGN SPEED: 45 MPH
A.D.T.
YEAR - 2020 A.D.T. = 2026
YEAR - 2040 A.D.T. = 2836
EXCEPTION : NONE
EQUATION : NONE
RAILROAD CROSSING : NONE

PROJECT DATA - FM 800
DESIGN SPEED: 55 MPH
A.D.T.
YEAR - 2018 A.D.T. = 1737
YEAR - 2038 A.D.T. = 2432
EXCEPTION : NONE
EQUATION : NONE
RAILROAD CROSSING : NONE

PROJECT DATA - FM 1479
DESIGN SPEED: 55 MPH
A.D.T.
YEAR - 2018 A.D.T. = 1844
YEAR - 2038 A.D.T. = 2582
EXCEPTION : NONE
EQUATION : NONE
RAILROAD CROSSING : NONE

FM 506, ETC (0872-04-030,ETC)

COUNTY CAMERON PROJ. NO.
HWY. NO. FM 506, ETC LETTING DATE
DATE ACCEPTED

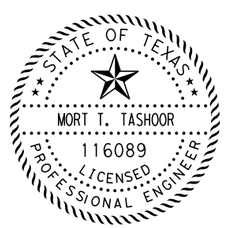
DATE: 7/7/2022 9:56:37 AM
FILE: \\PUSSCSHRFIL01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\0872-04-030\06.04.01 General\506GS01.dgn

INDEX OF SHEETS

& - THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION, AND ARE APPLICABLE TO THIS PROJECT.

10/14/2021

ROBERTO AVILA, P.E. # 112668



> - THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION, AND ARE APPLICABLE TO THIS PROJECT.

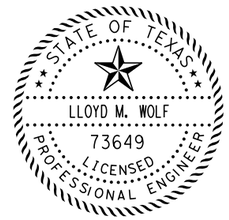
10/14/2021

MORT T. TASHOOR, P.E. # 116089

- THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION, AND ARE APPLICABLE TO THIS PROJECT.

10/14/2021

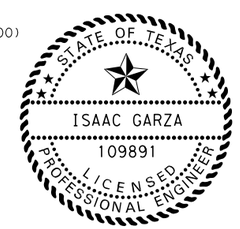
TODD MILBURN, P.E. # 101185



< - THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION, AND ARE APPLICABLE TO THIS PROJECT.

10/14/2021

LLOYD WOLF, P.E. # 73649



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10/14/2021

ISAAC GARZA, P.E. # 109891

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506, ETC

DETAILED INDEX OF SHEETS

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		2
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

5061N01.dgn

INDEX OF SHEETS

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

> - THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION, AND ARE APPLICABLE TO THIS PROJECT.

10/14/2021
MORT T. TASHOOR, P.E. # 116089

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

& - THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION, AND ARE APPLICABLE TO THIS PROJECT.

10/14/2021
ROBERTO AVILA, P.E. # 112668

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

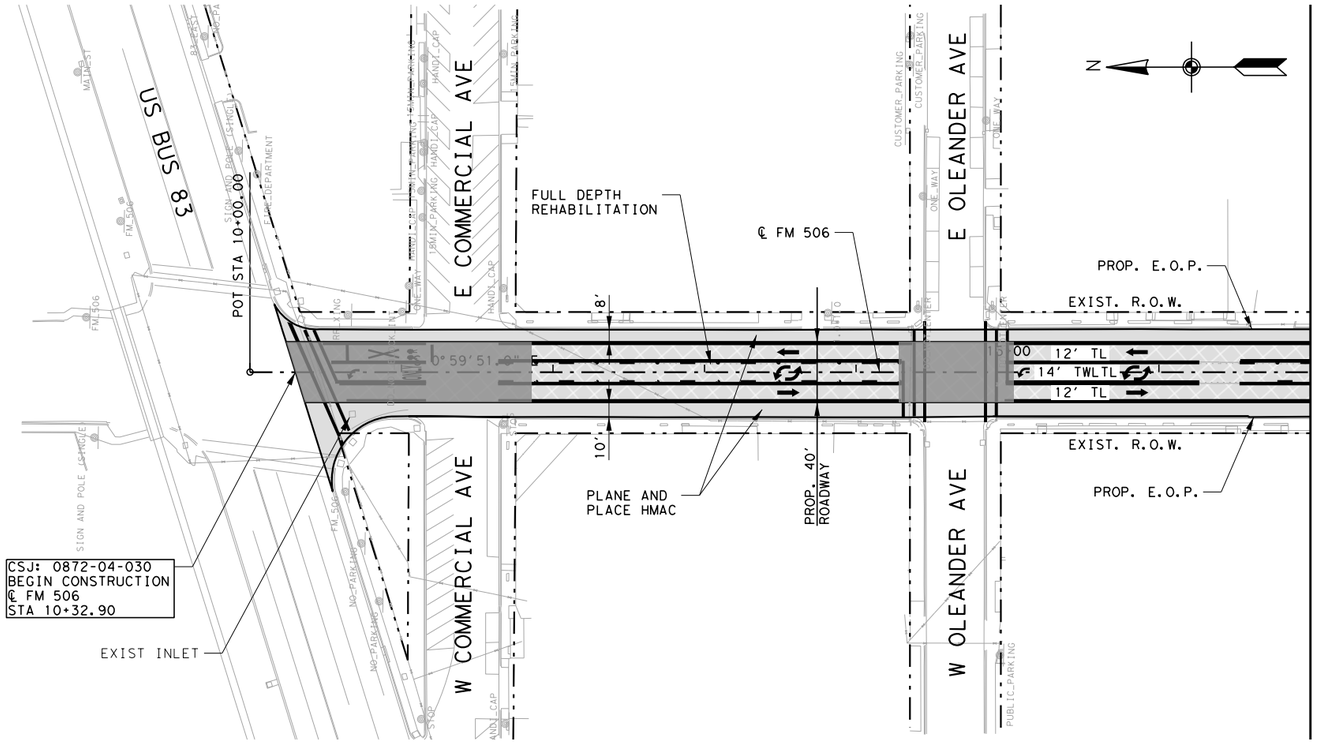
Texas Department of Transportation

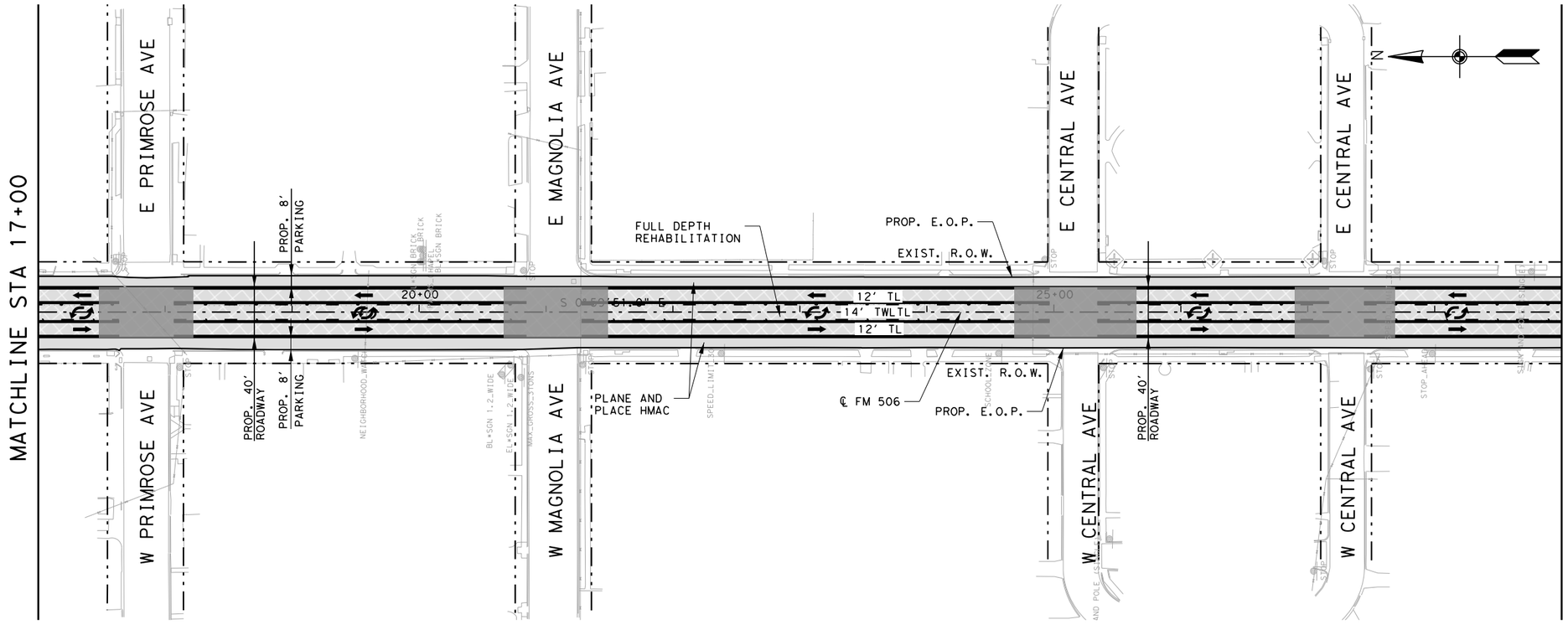
FM 506, ETC

DETAILED INDEX OF SHEETS

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		3
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

5061N02.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PROJECT LAYOUT
BEGIN PROJECT TO STA 29+00

SHEET 1 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		4
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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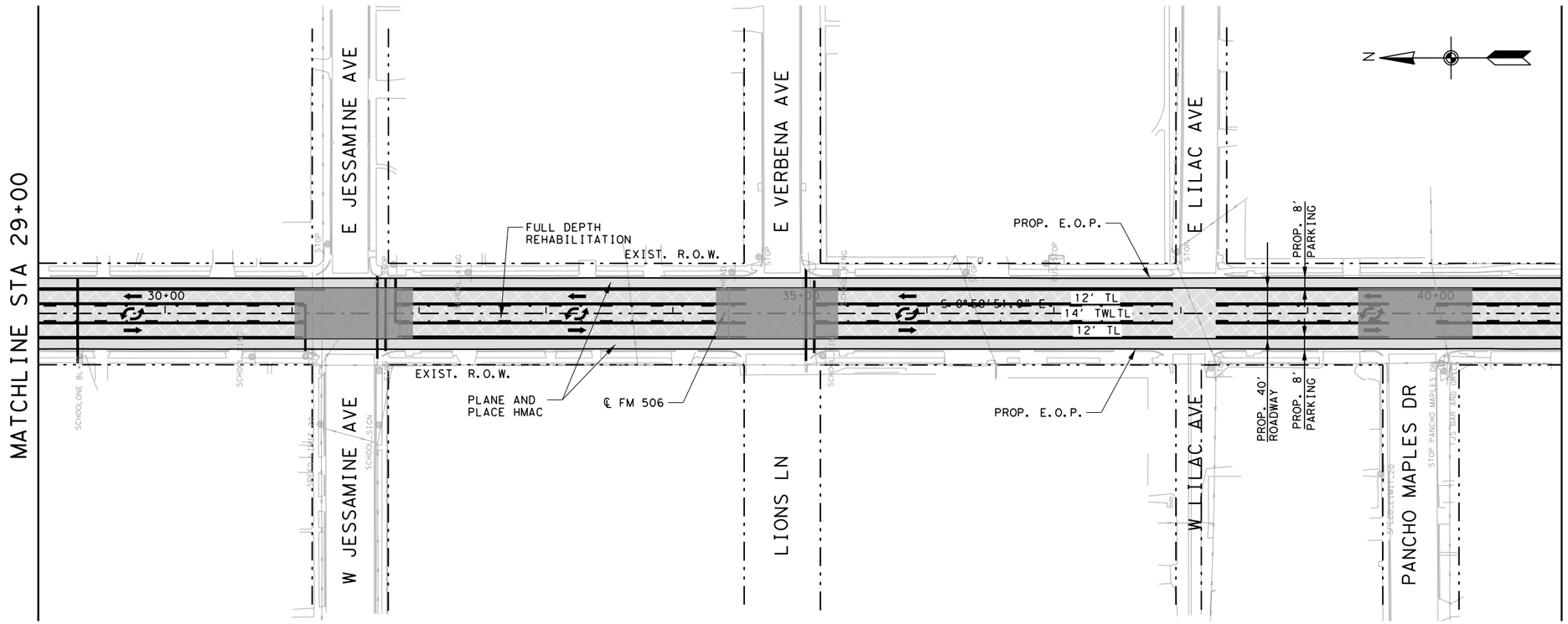

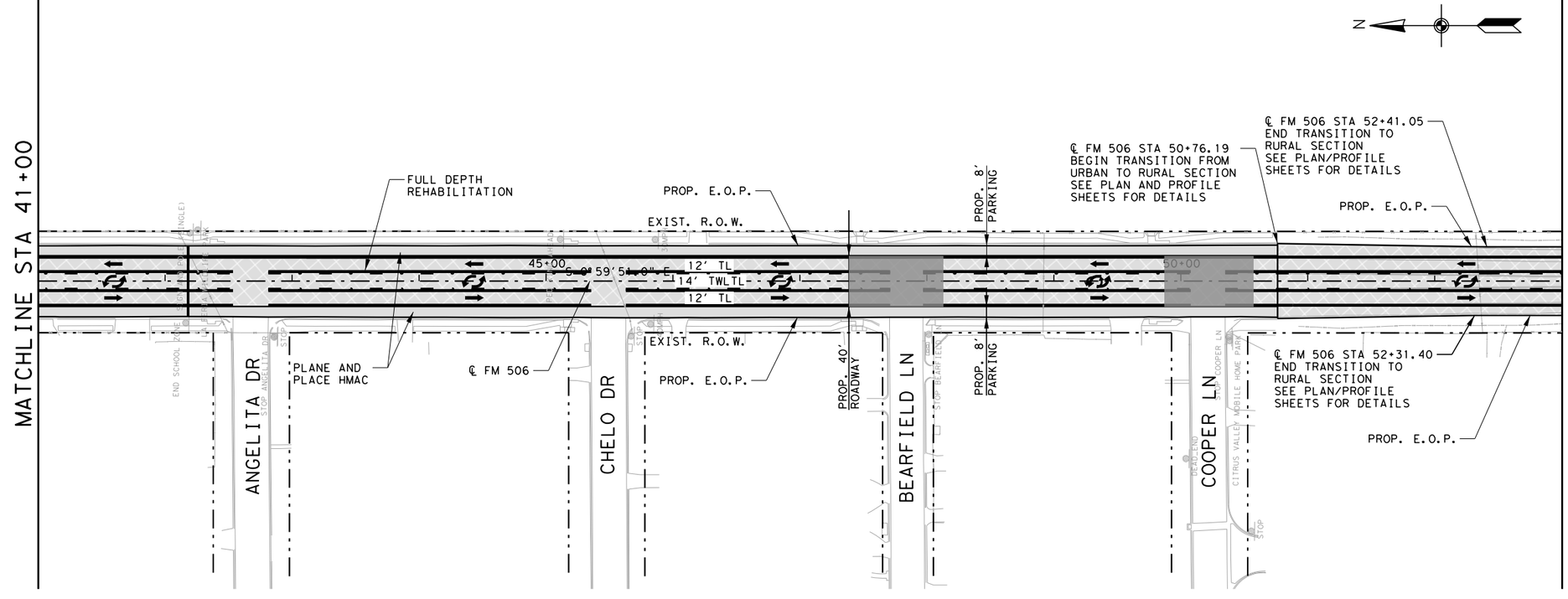

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PROJECT LAYOUT
STA 29+00 TO STA 53+00

SHEET 2 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		5
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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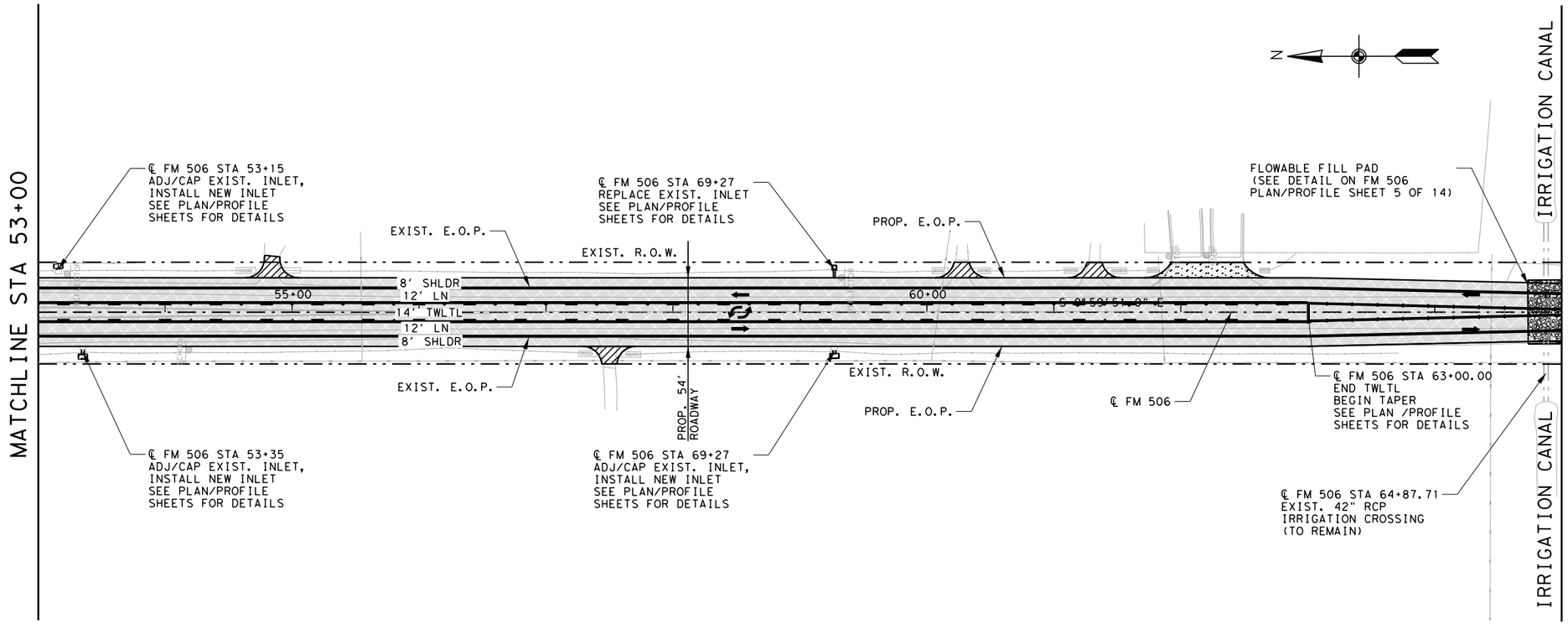

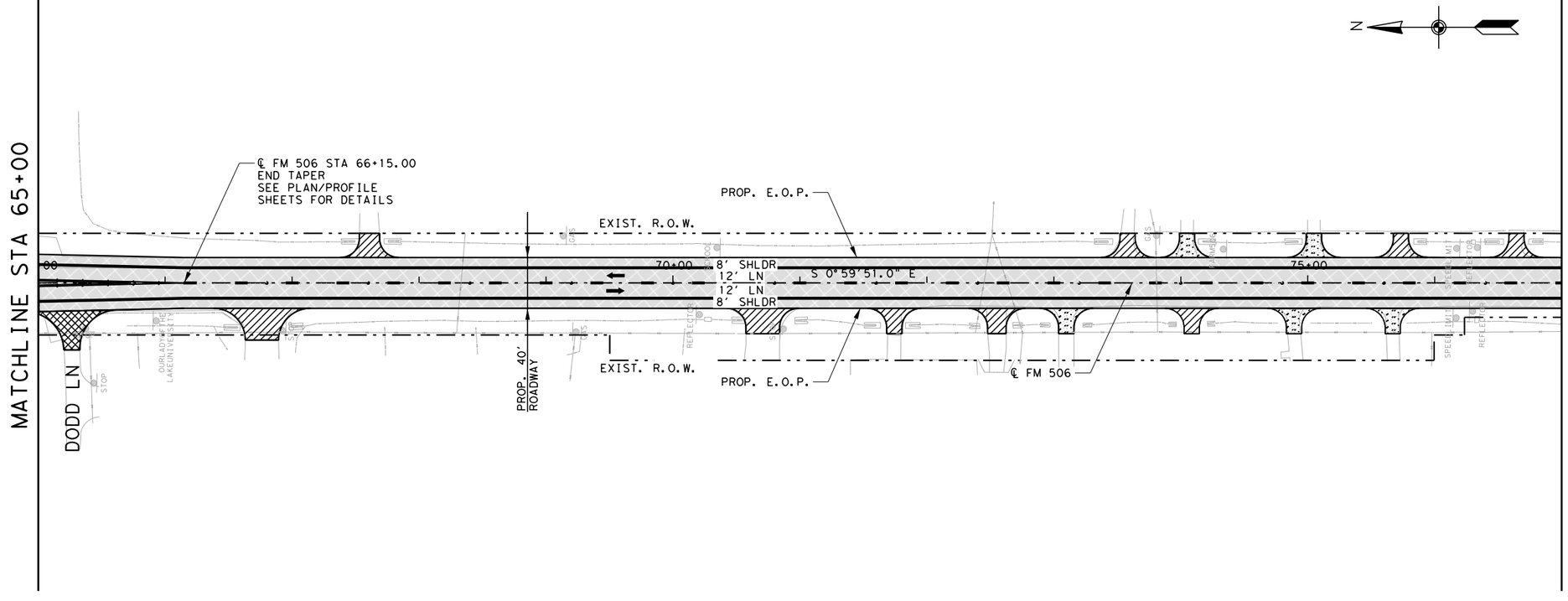

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PROJECT LAYOUT
STA 53+00 TO STA 77+00

SHEET 3 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		6
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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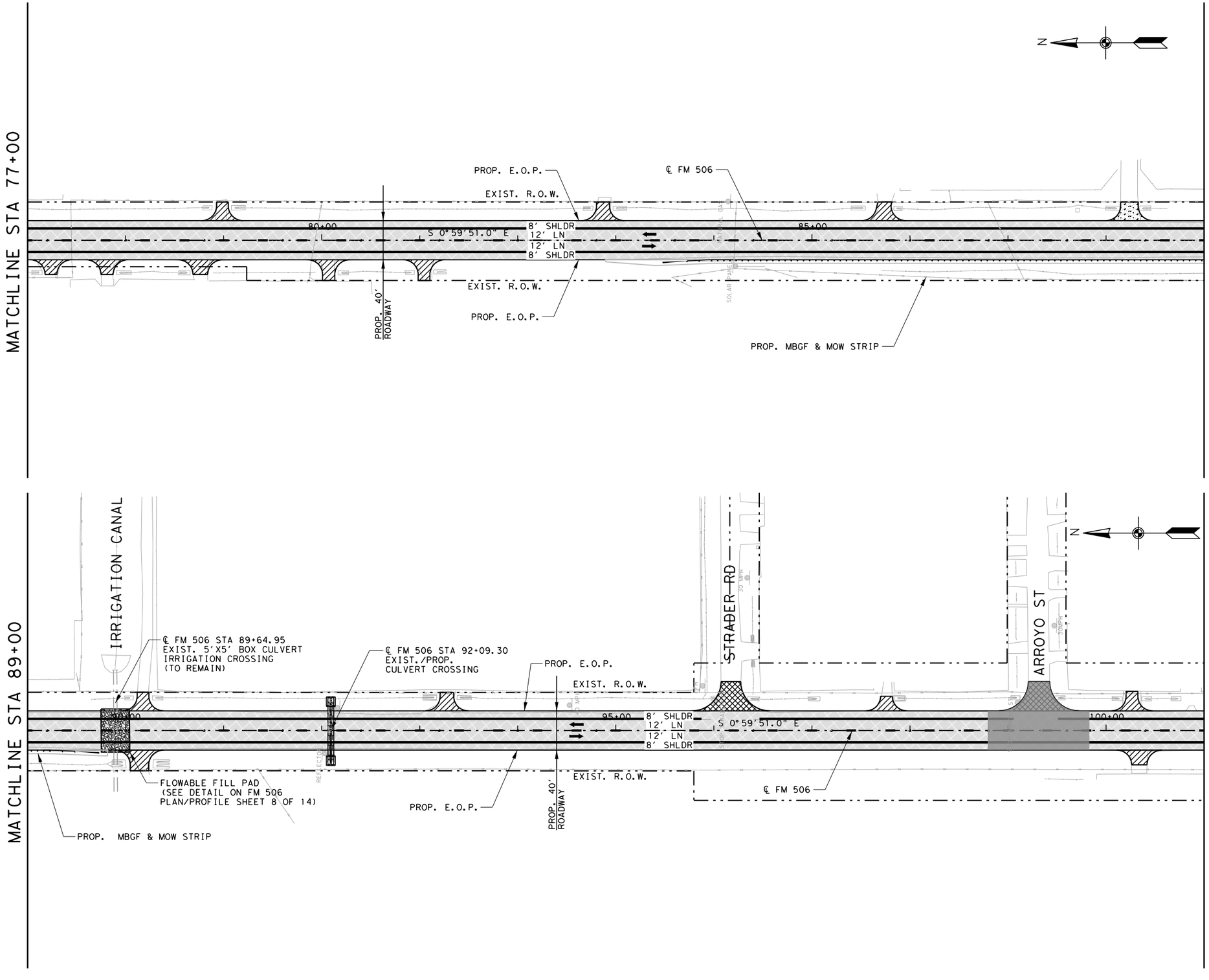

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
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- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PROJECT LAYOUT
STA 77+00 TO STA 101+00

SHEET 4 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		7
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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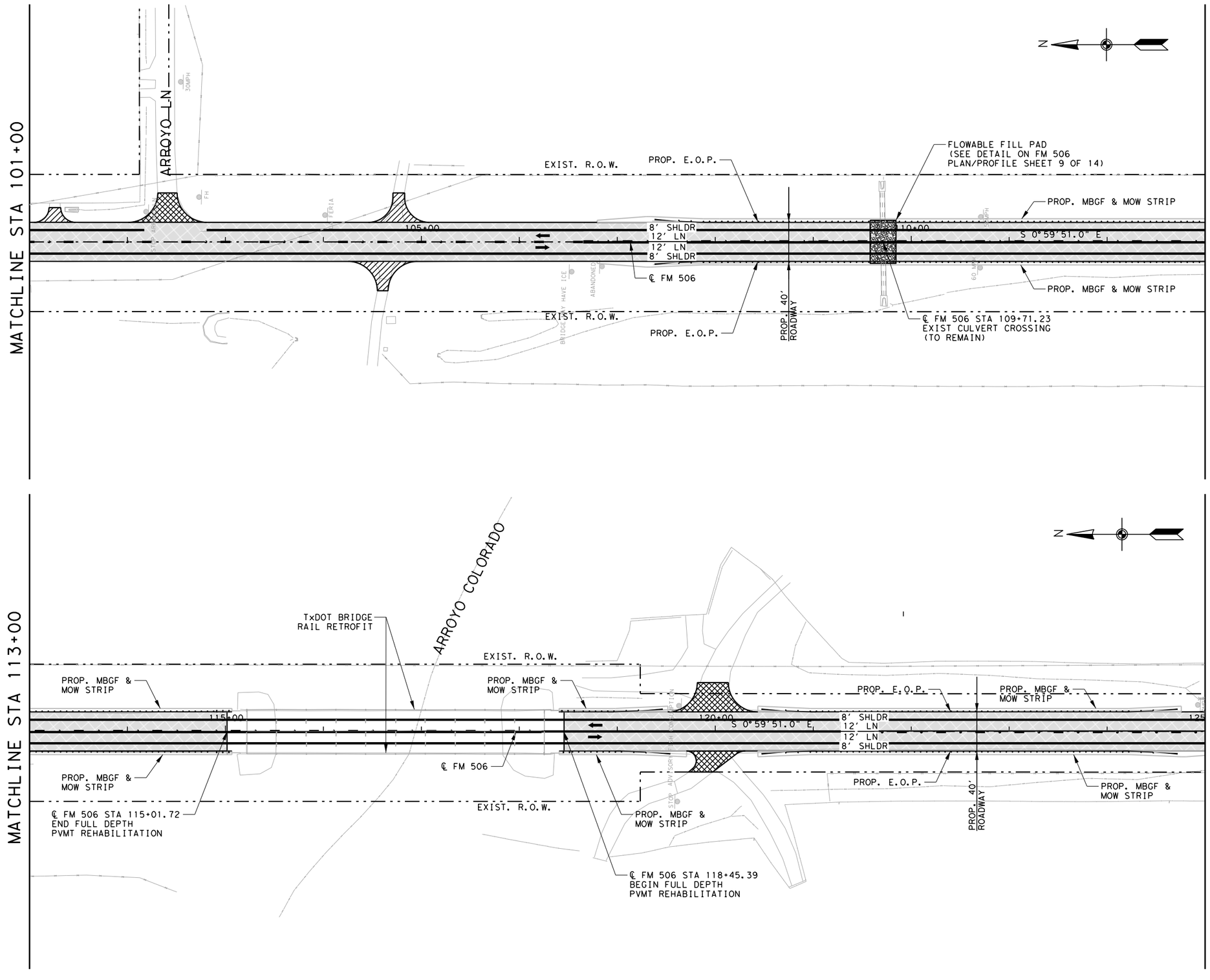

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
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STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PROJECT LAYOUT
STA 101+00 TO STA 125+00

SHEET 5 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		8
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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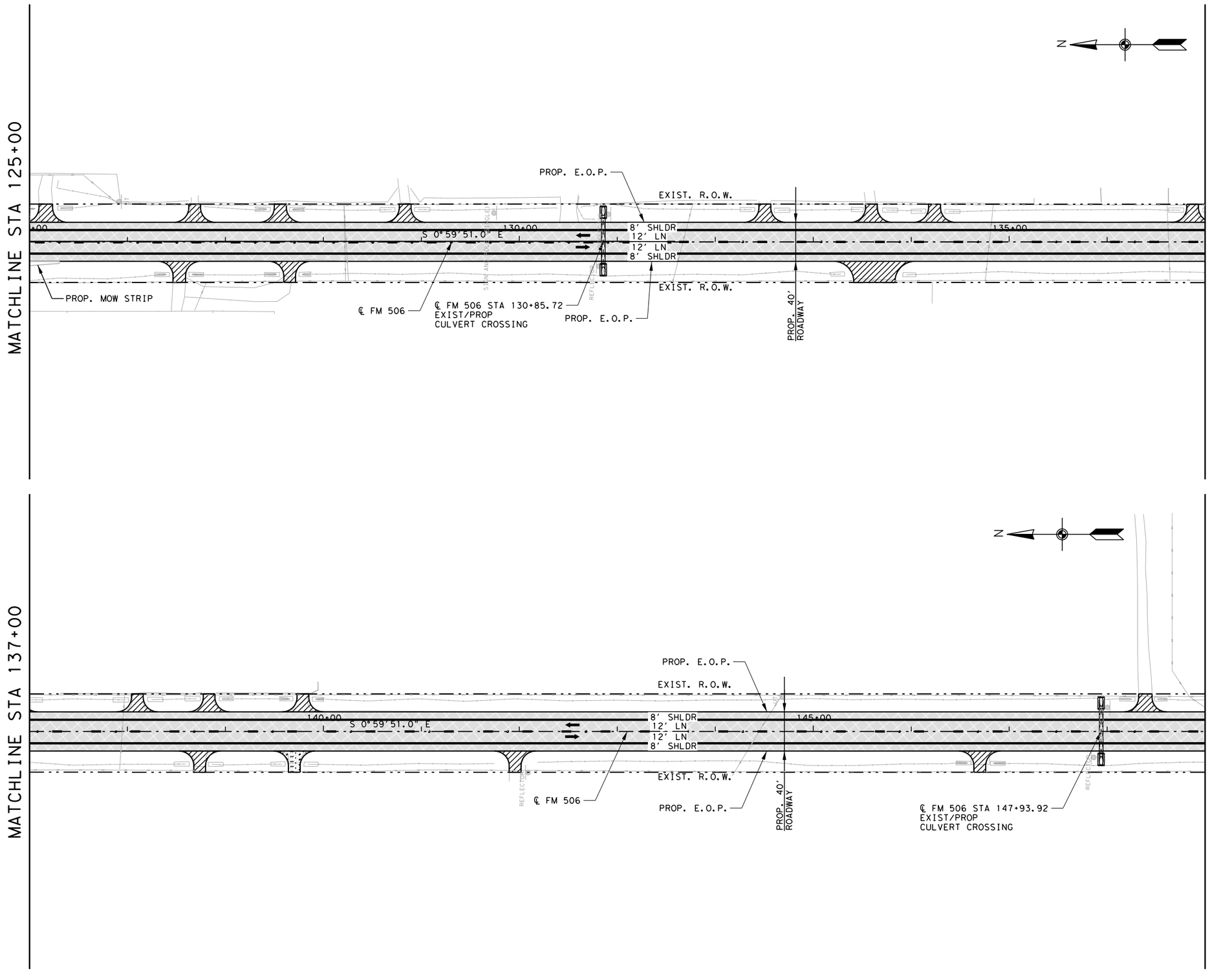

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
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- ℄ CENTER LINE
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- LT LEFT
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- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PROJECT LAYOUT
STA 125+00 TO STA 149+00

SHEET 6 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		9
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PL06.dgn

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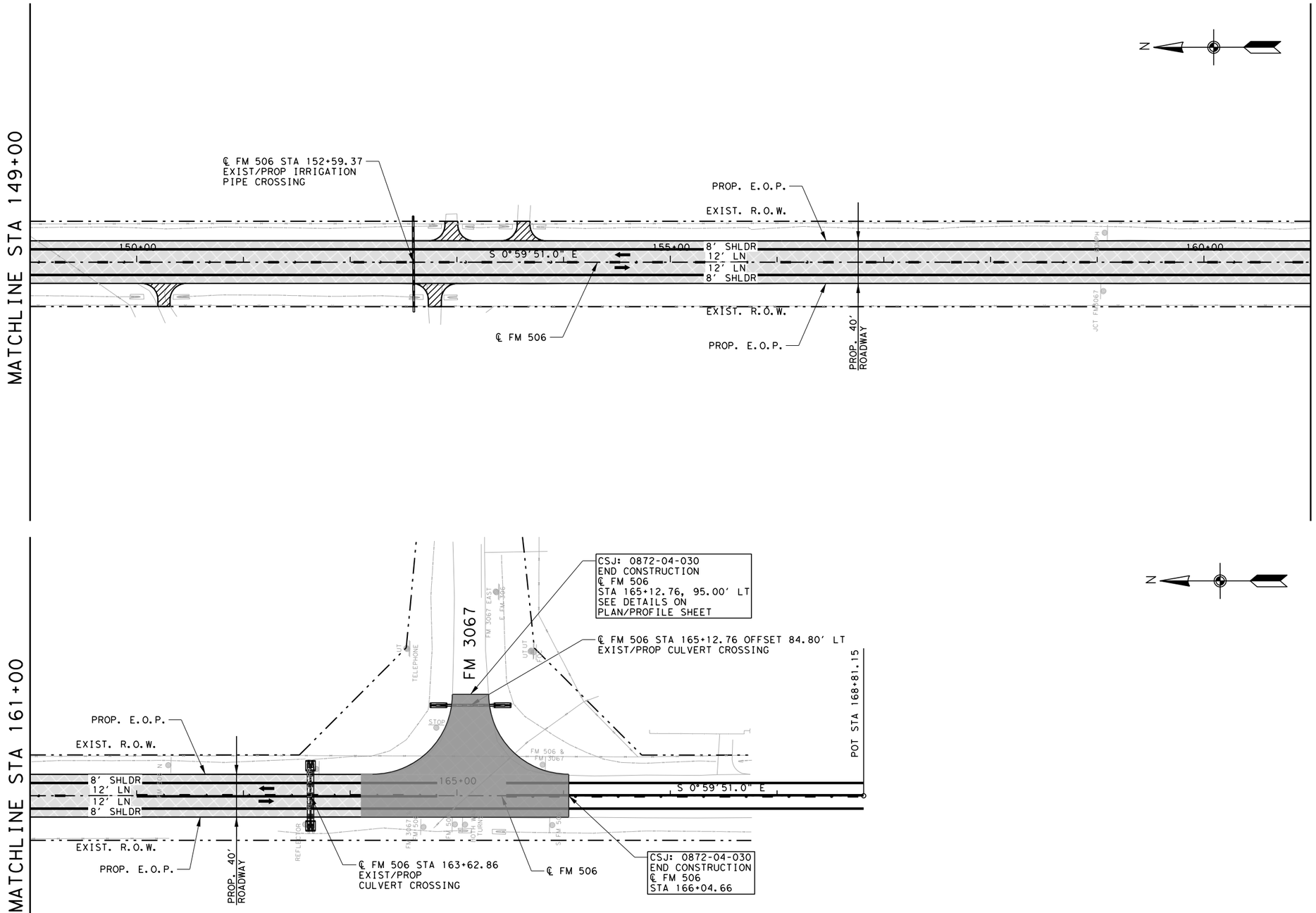

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE — OVERHEAD POWER LINE
- WATER — WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

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3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PROJECT LAYOUT
STA 149+00 TO PROJECT END

SHEET 7 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		10
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PL07.dgn

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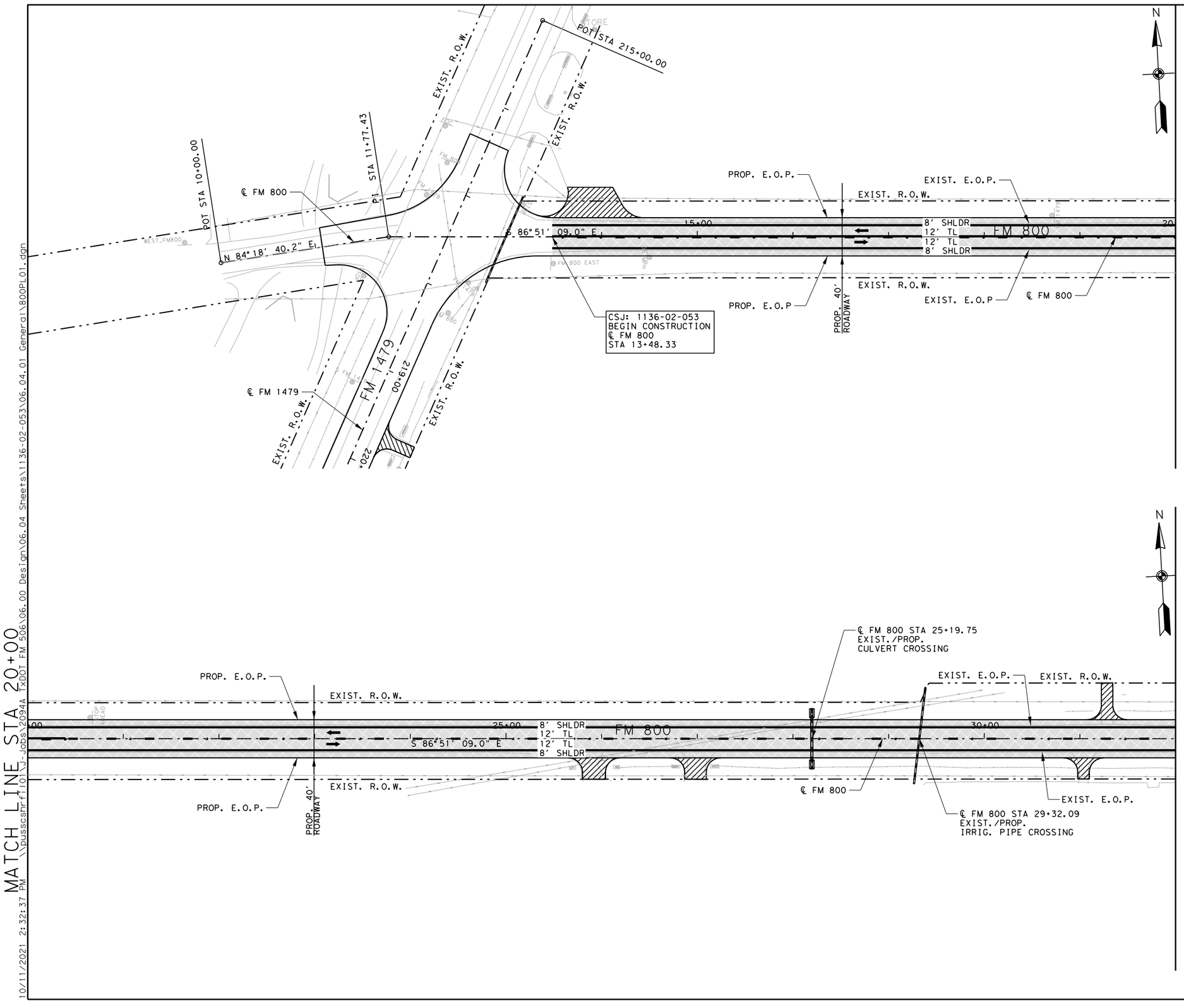

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

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STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

PROJECT LAYOUT
BEGIN PROJECT TO STA 32+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		11
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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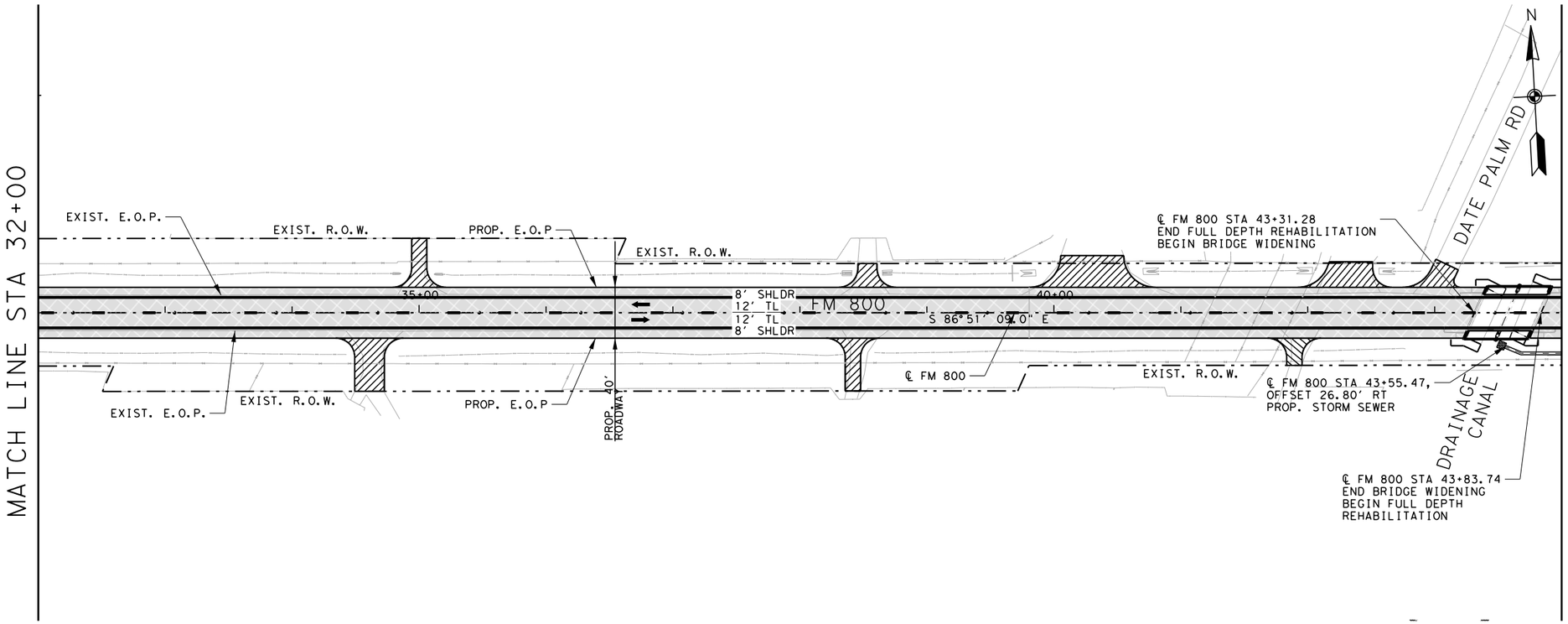

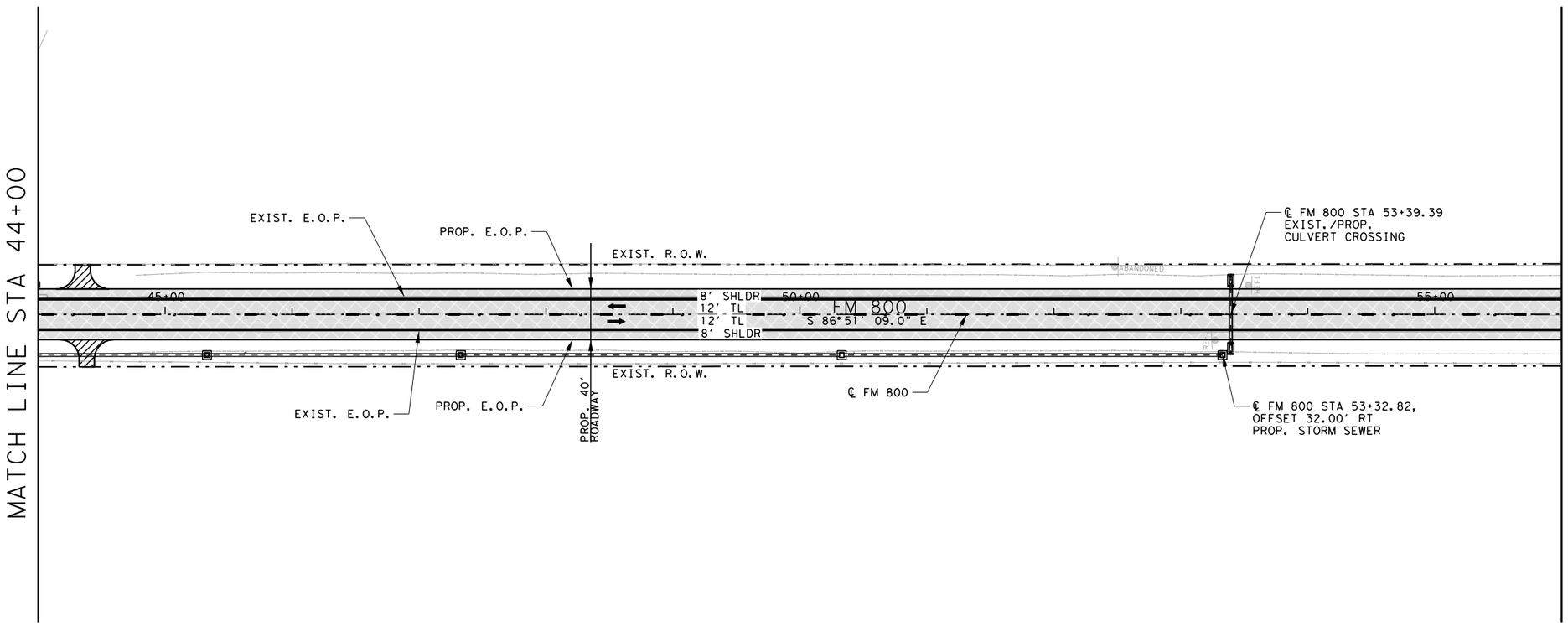

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PROJECT LAYOUT
STA 32+00 TO 56+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		12
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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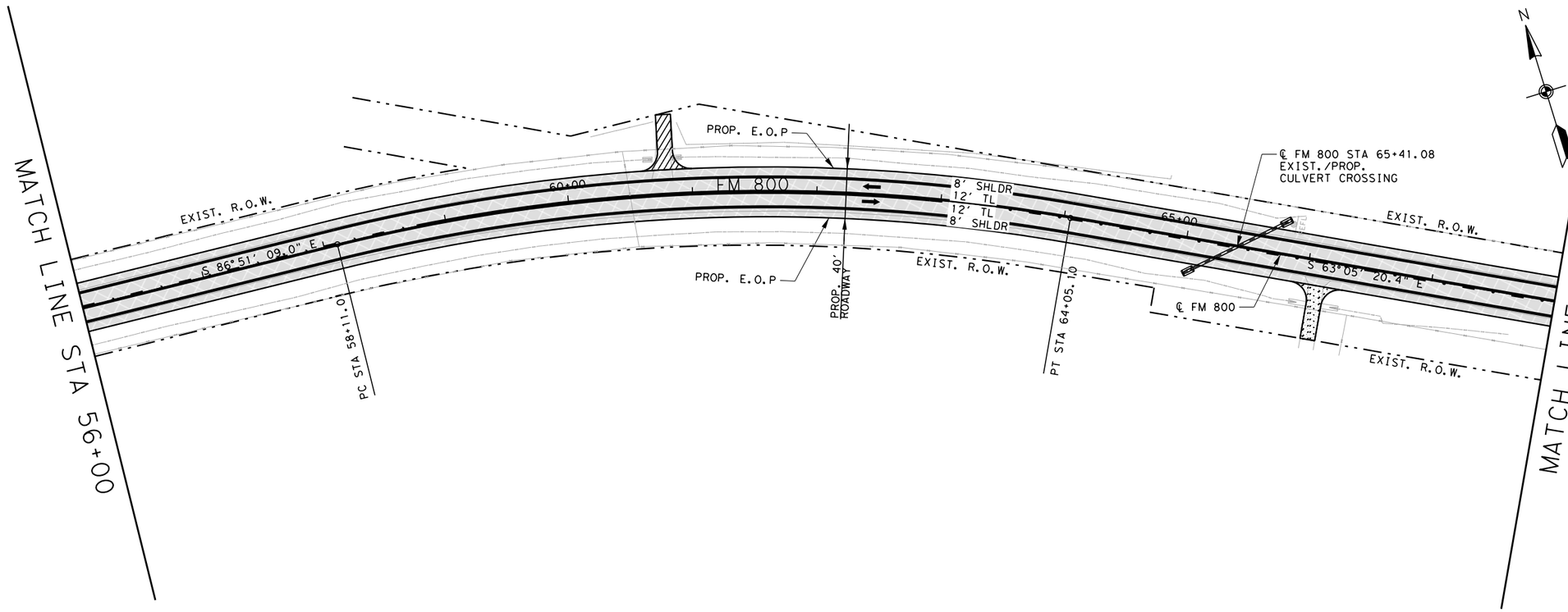

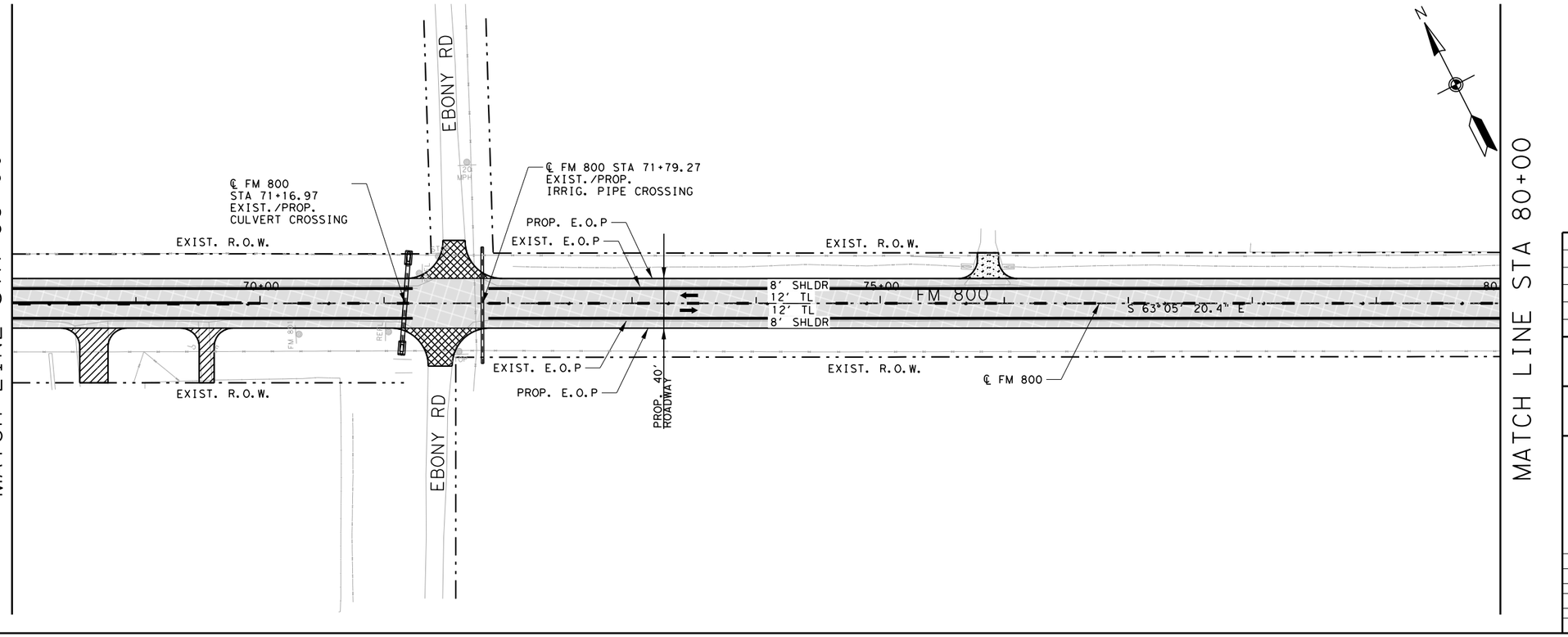

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PROJECT LAYOUT STA 56+00 TO STA 80+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		13
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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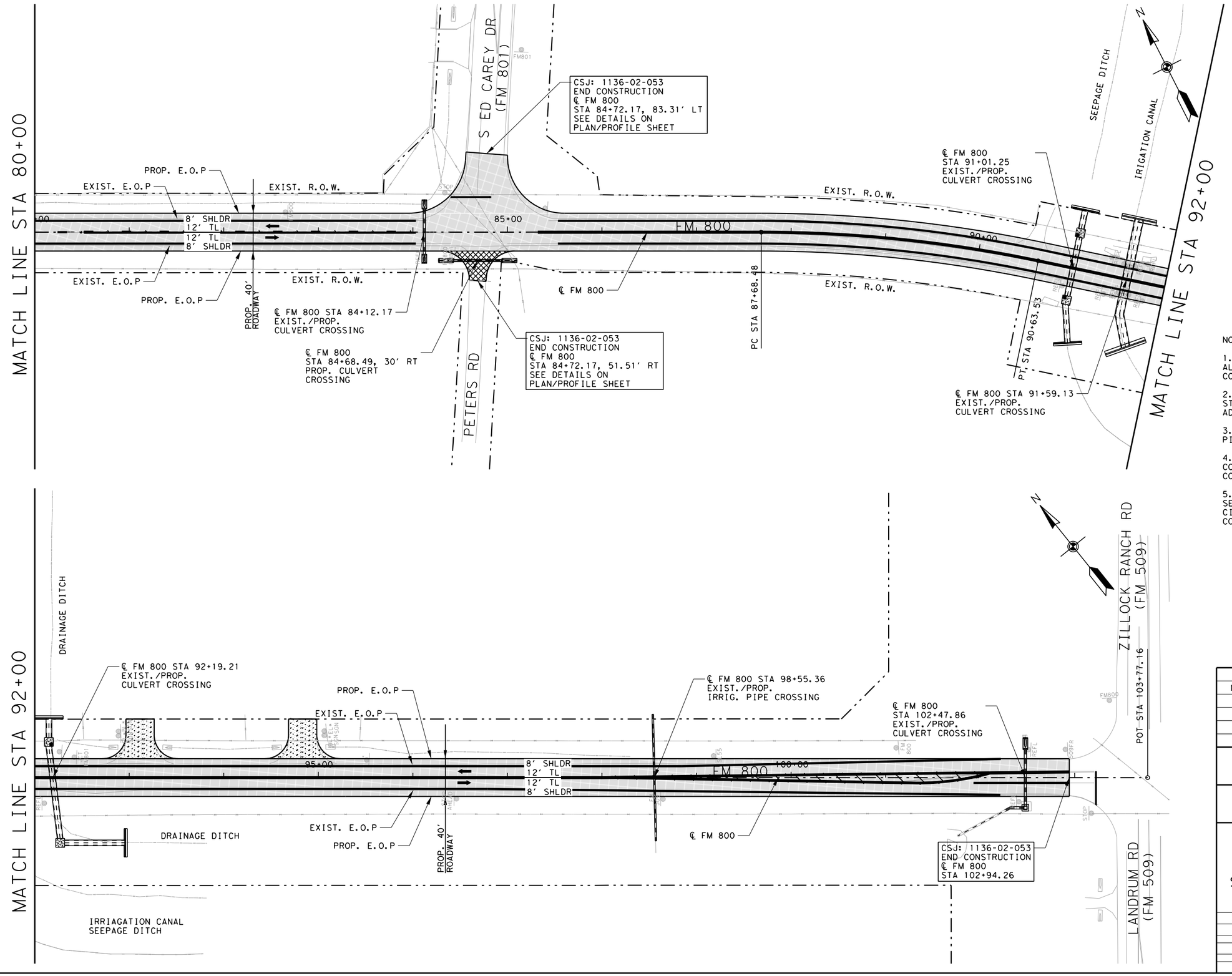

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PROJECT LAYOUT
STA 80+00 TO END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		14
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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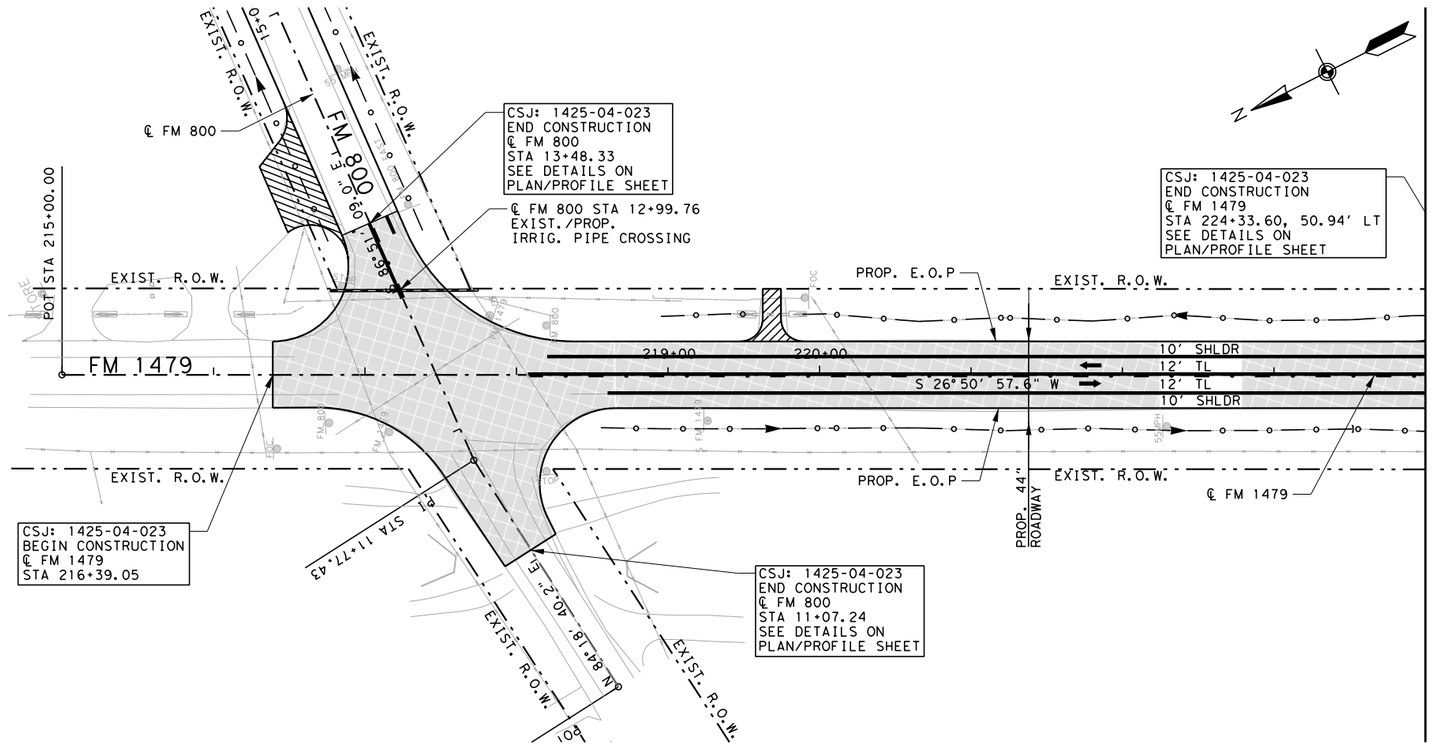

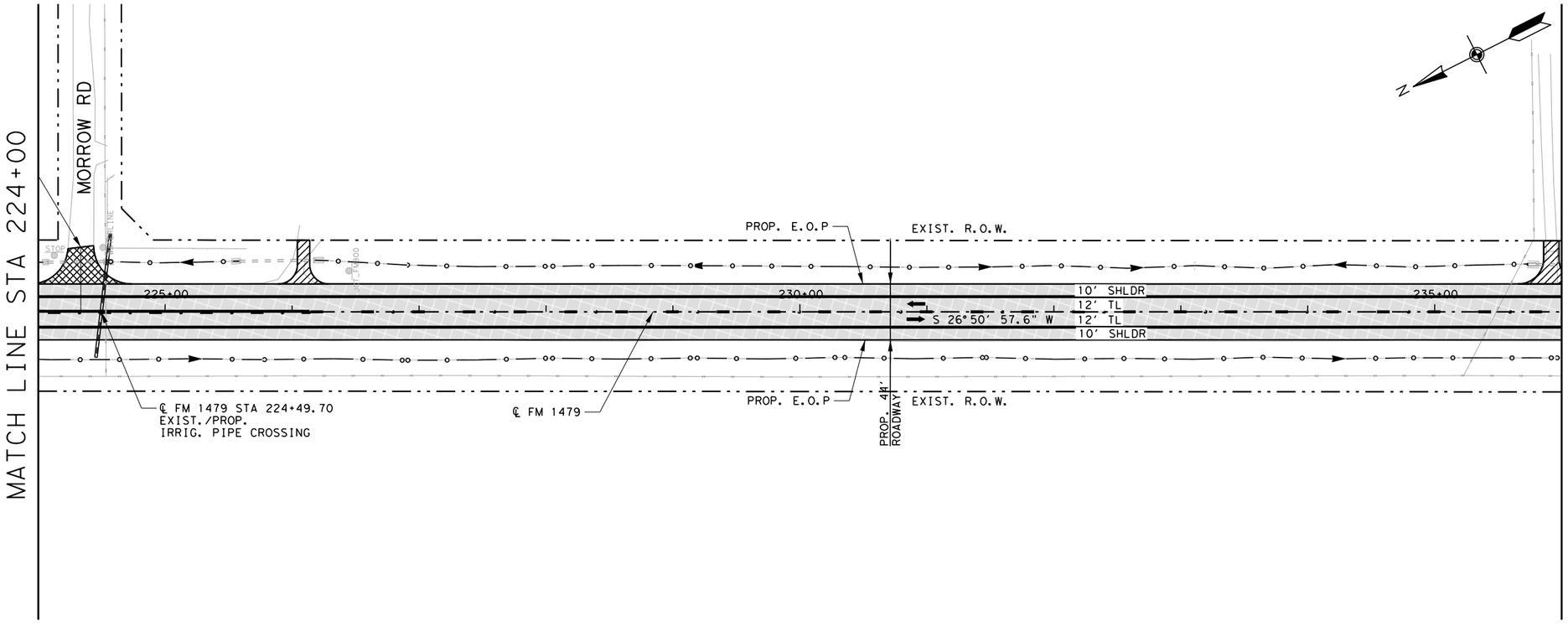

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE — OVERHEAD POWER LINE
- WATER — WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

PROJECT LAYOUT
BEGIN PROJECT TO STA 236+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		15
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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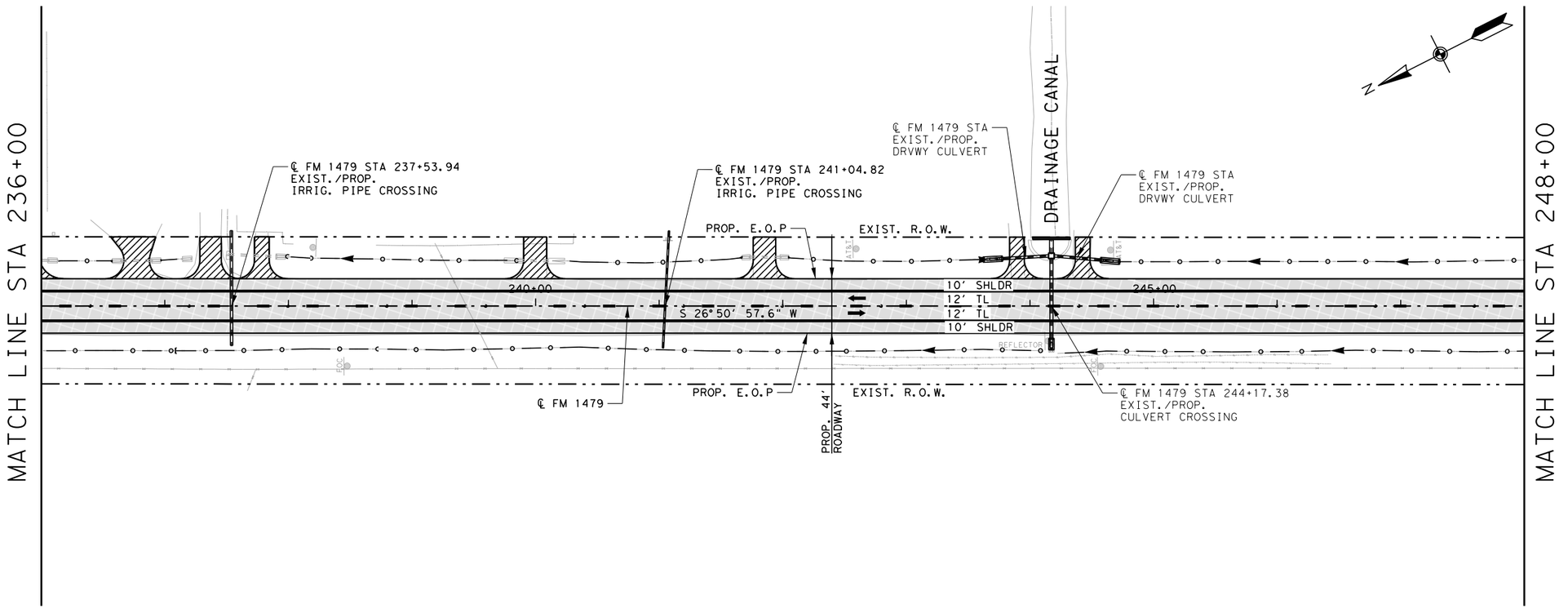

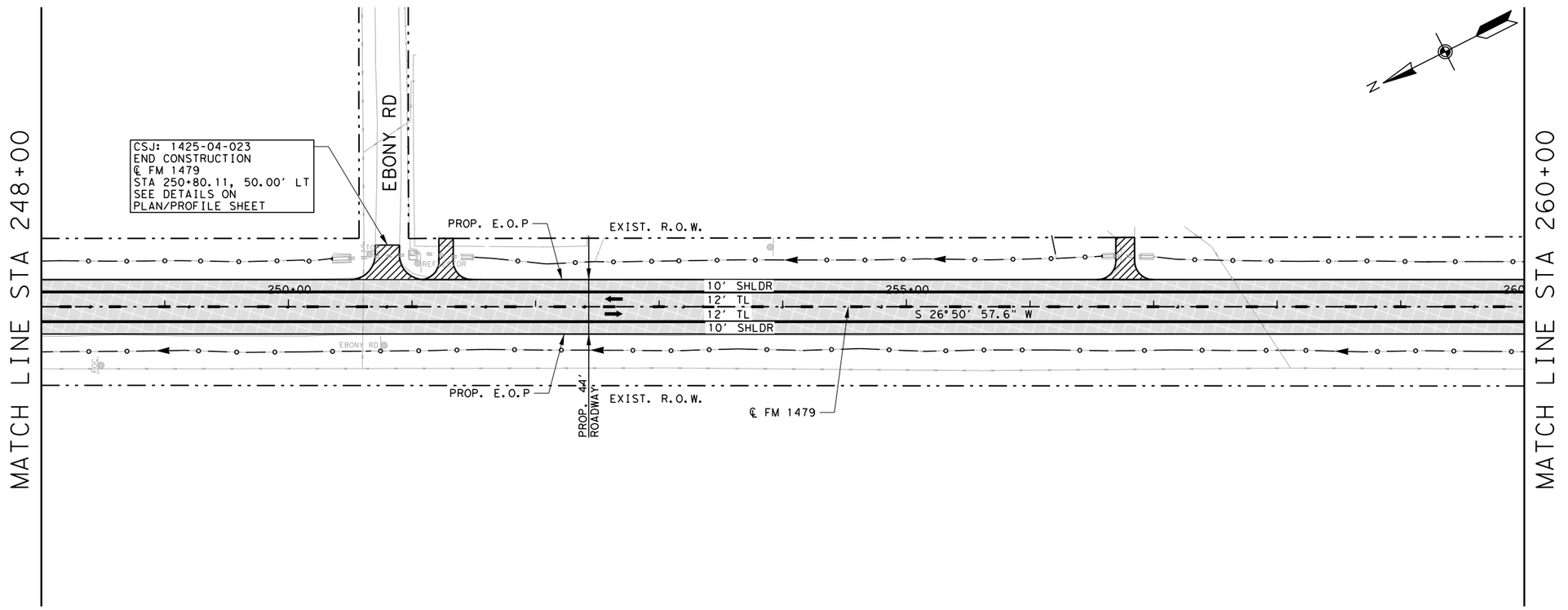

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
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- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 1479

PROJECT LAYOUT
STA 236+00 TO STA 260+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		16
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PL02.dgn

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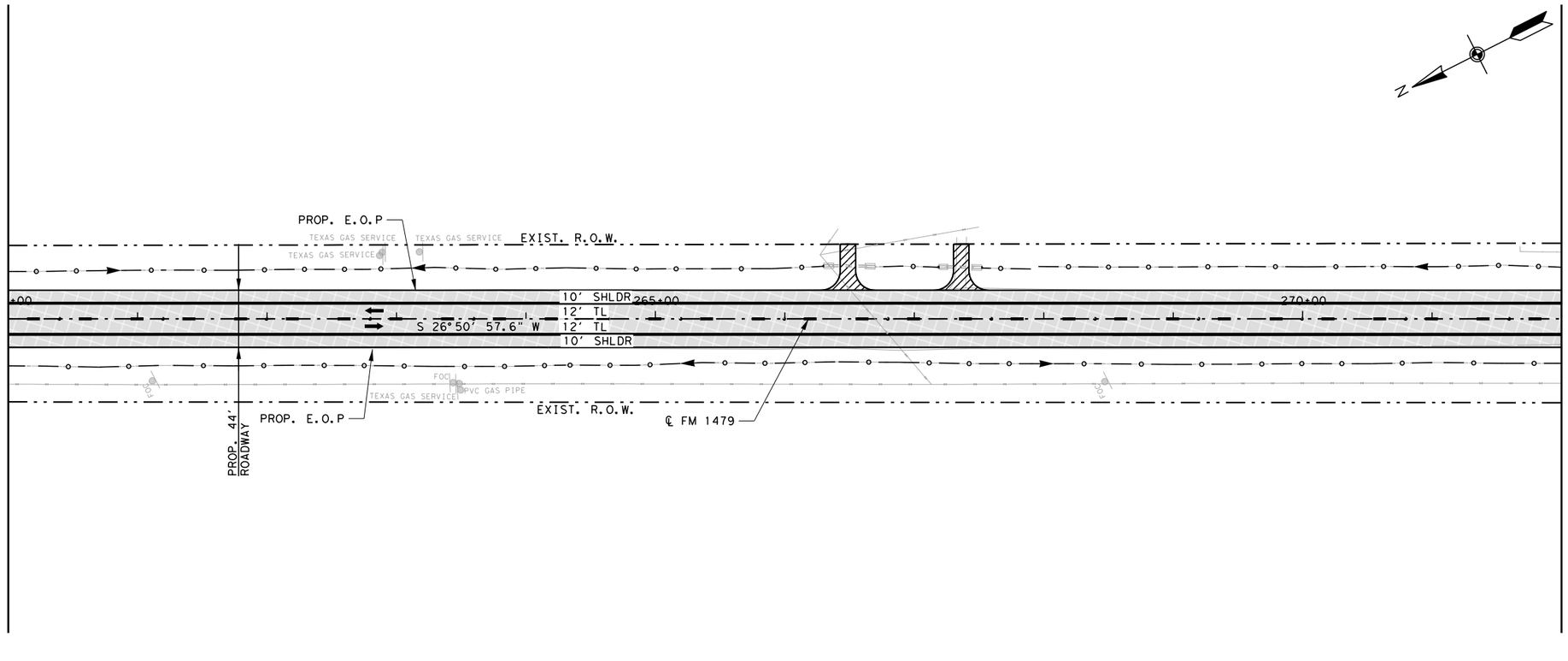

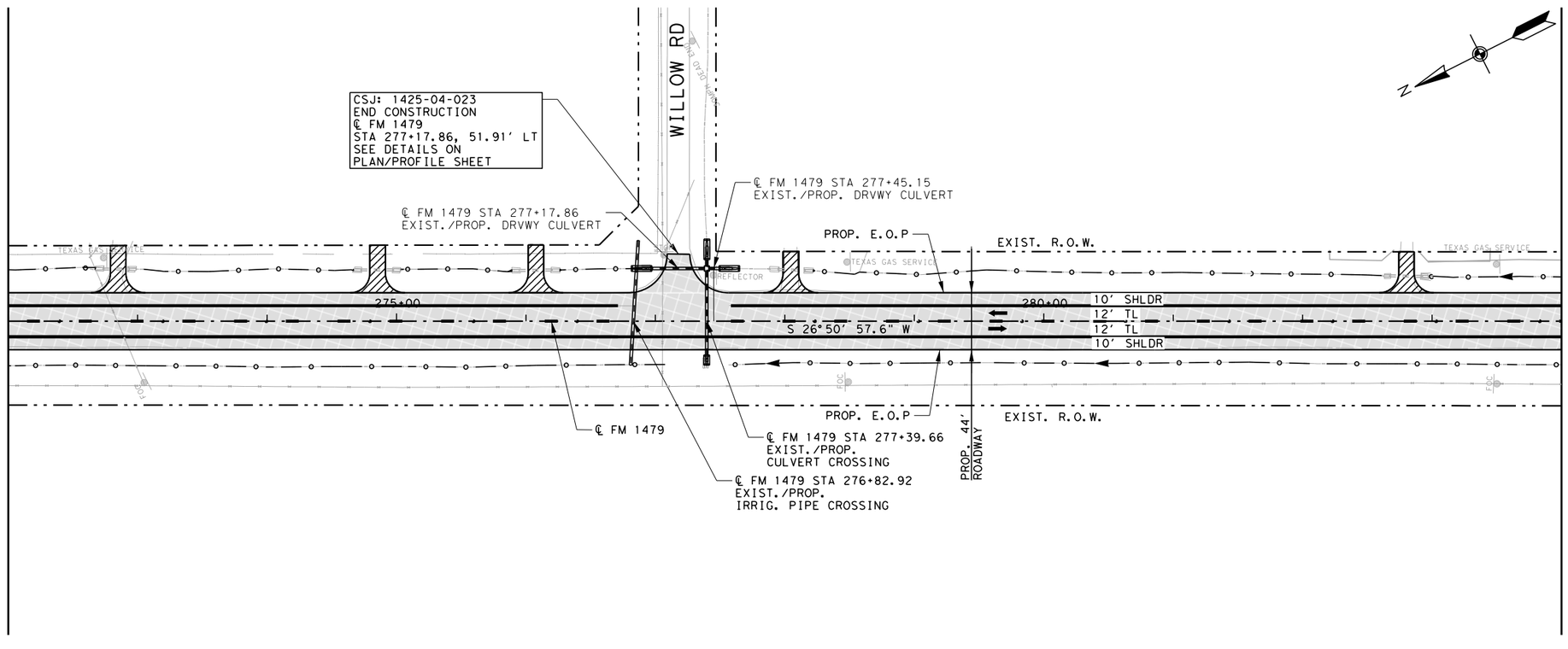

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE — OVERHEAD POWER LINE
- WATER — WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 1479

PROJECT LAYOUT
STA 260+00 TO STA 284+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		17
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PL03.dgn

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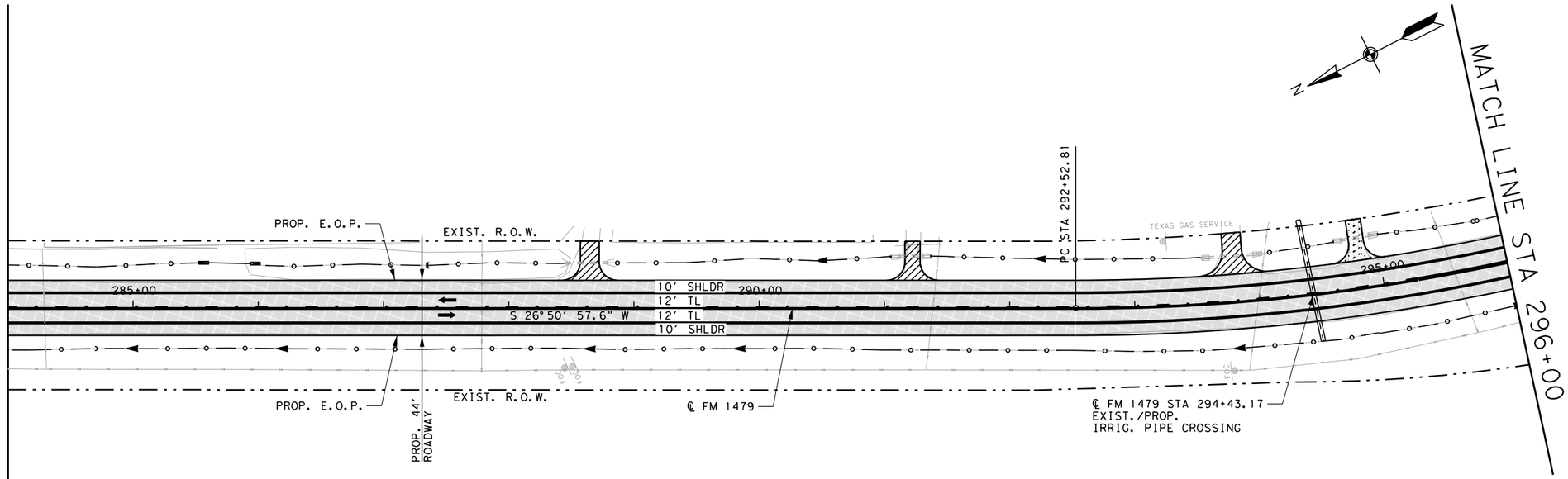

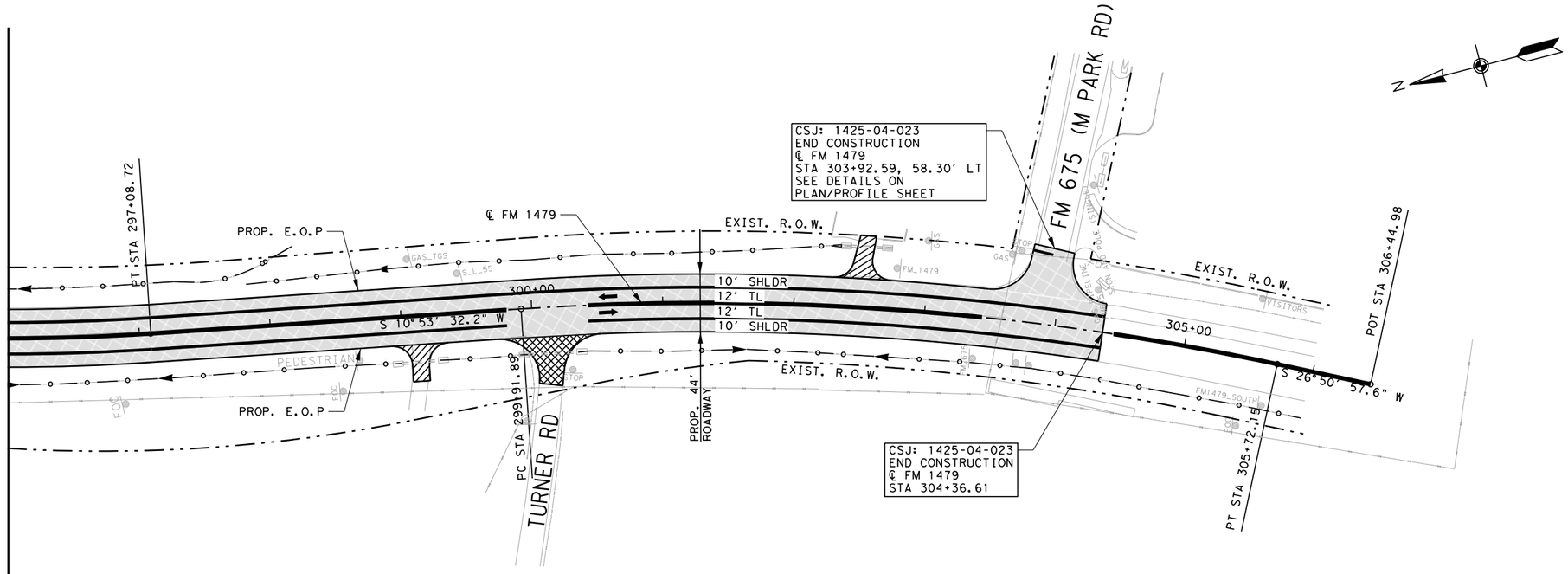

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- PLANE & PLACE HMAC LIMITS
- FULL DEPTH REHABILITATION
- FLOWABLE FILL SLAB
- INTERSECTION PVMT LIMITS
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA" SHEET FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL" SHEET FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 1479

PROJECT LAYOUT
STA 284+00 TO END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	18

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PL04.dgn

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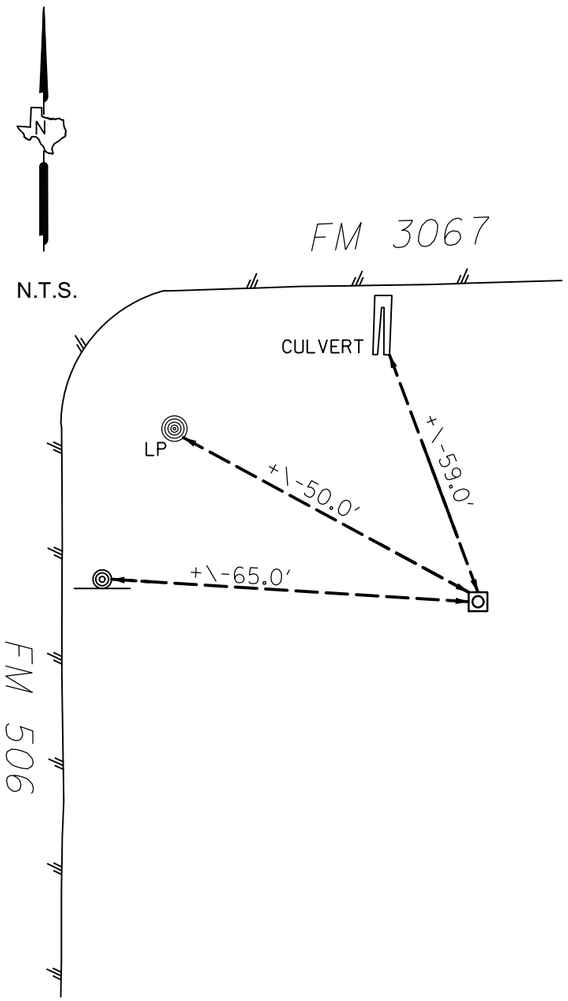

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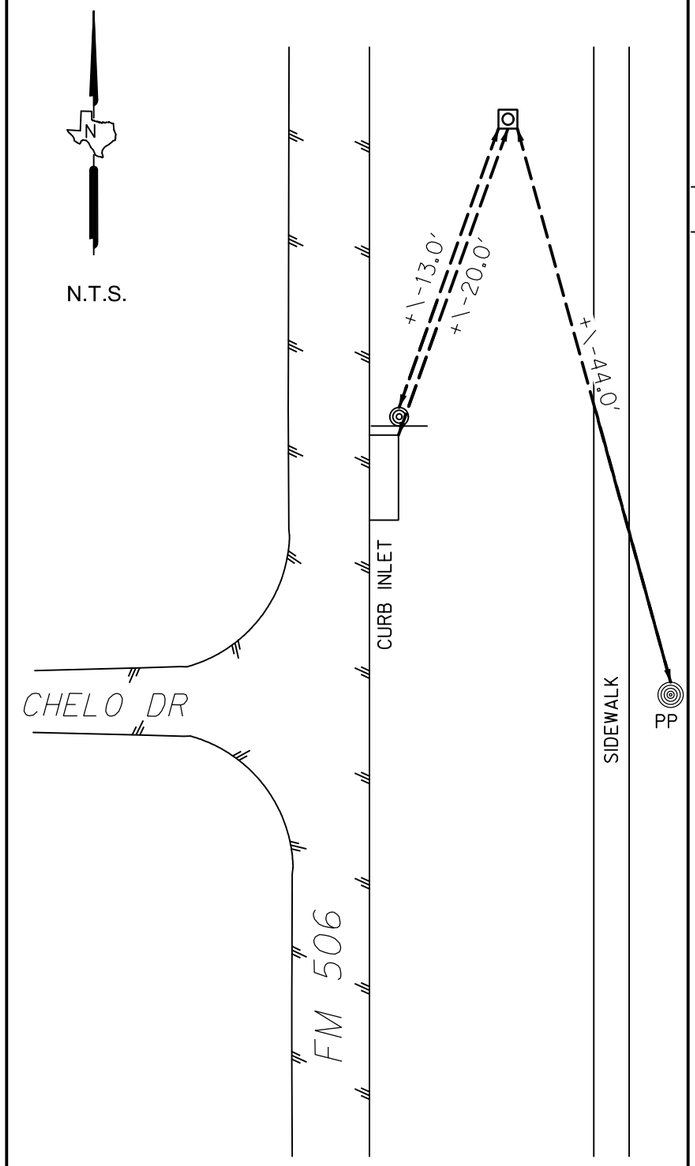

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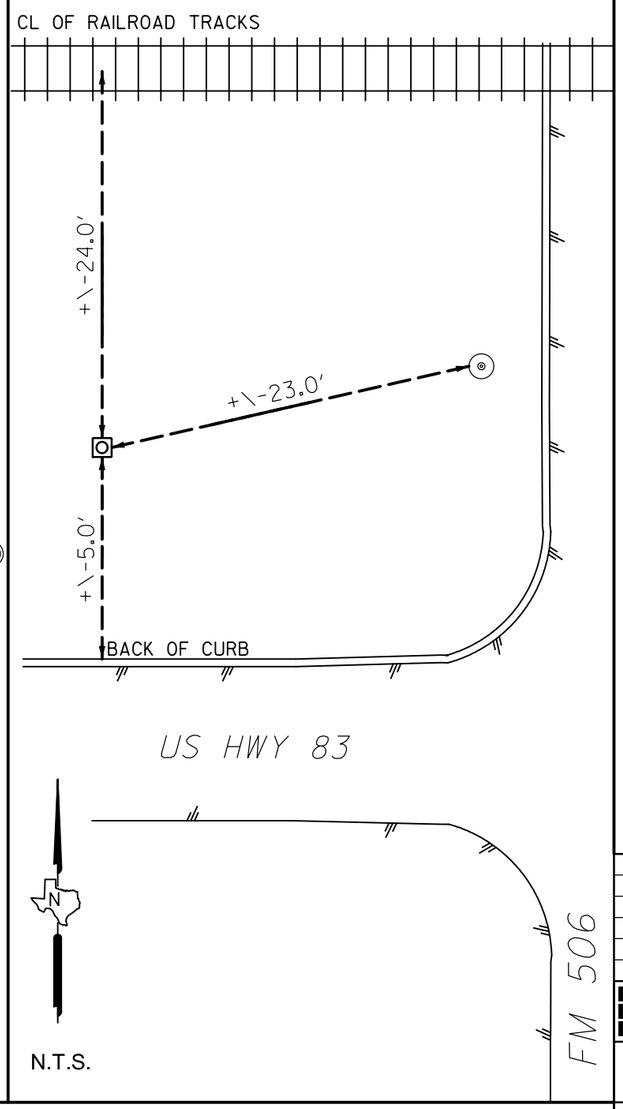


Dan H. Clark

Digitally signed by Dan H. Clark
DN: cn=Dan H. Clark, c=US, email=dan@halff.com
Location: Austin, TX
Date: 2021.10.07 08:19:19 -05'00'

STATE OF TEXAS
REGISTERED
DAN H. CLARK
6011
PROFESSIONAL
LAND SURVEYOR

10-04-2021

DAN H. CLARK — DATE
REGISTERED PROFESSIONAL
LAND SURVEYOR
TEXAS REGISTRATION NO. 6011

- ALUMINUM DISC STAMPED "TEXAS DEPT OF TRANSPORTATION BENCHMARK" SET IN CONCRETE
- FENCE CORNER POST
- FIRE HYDRANT
- SIGN
- MAILBOX
- TRAFFIC SIGNAL POLE
- CONCRETE PIPE
- ELECTRIC BOX
- PP POWERPOLE
- LP LIGHT POLE
- TREE
- EDGE OF PAVMENT

NOTES:
1. BASIS OF BEARINGS IS THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH ZONE 4205 NAD 83/2011. ALL COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, SHOWN IN SURFACE VALUES AND MAY BE CONVERTED TO GRID USING THE SURFACE ADJUSTMENT FACTOR OF 0.99996

2. HORIZONTAL CONTROL WAS ESTABLISHED USING THE TXDOTRTK NETWORK.

3. FIELD SURVEYS WERE CONDUCTED, BY HALFF ASSOCITES, INC. JUNE 2017 - SEPTEMBER 2017.

ISSUE RECORD

NO.	DESCRIPTION	DATE

HALFF
9500 AMBERGLEN BLVD
BLDG. F, STE. 125
AUSTIN, TEXAS 78729
TEL (512) 777-4600
FAX (512) 252-8141
TBPLS FIRM NO. 10029607

Texas Department of Transportation

PRIMARY CONTROL POINT SURFACE COORDINATES

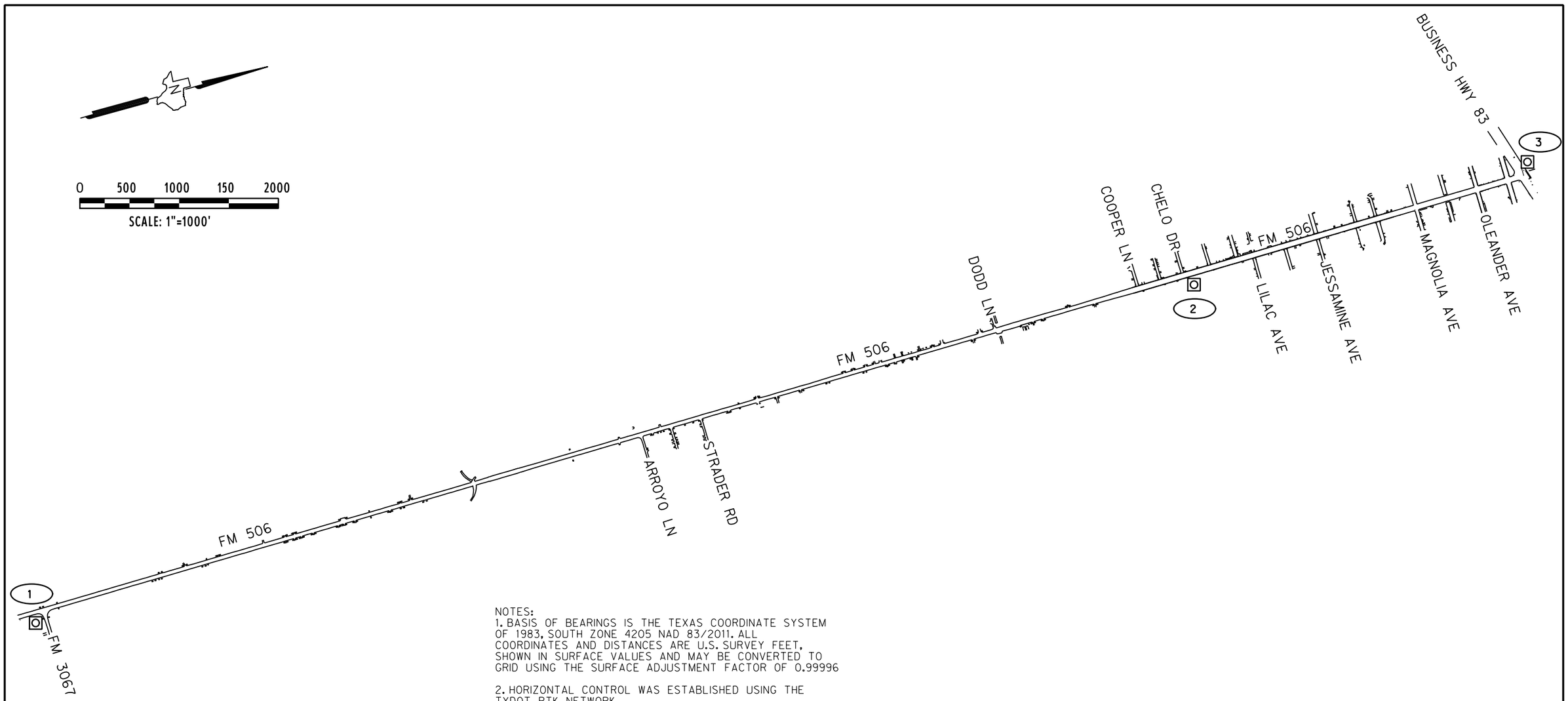
POINT	NORTHING	EASTING	ELEVATION	STATION	ALIGN	OFFSET	LT/RT	DESCRIPTION
1	16567479.797	1206300.308	54.30	165+91.87	FM 506	93.38'	LT	CONTROL POINT 1 IS LOCATED ON THE SOUTHEAST CORNER OF FM 506 AND FM 3067.
2	16579571.581	1206029.038	54.84	44+97.19	FM 506	32.66'	LT	CONTROL POINT 2 IS APPROXIMATELY 50' NORTH OF THE INTERSECTION OF FM 506 AND CHELO DR.
3	16583091.962	1205855.404	56.35	09+74.32	FM 506	79.67'	RT	CONTROL POINT 3 IS LOCATED ON THE NORTHWEST CORNER OF FM 506 AND US HWY 83.

FM 506
HORIZONTAL & VERTICAL CONTROL

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		19
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 9:05:54 AM $FILE$

SV-FM 506-IEA CONTROL-32840-001.dgn



ALUMINUM DISC STAMPED
"TEXAS DEPT OF TRANSPORTATION BENCHMARK"
SET IN CONCRETE

NOTES:
1. BASIS OF BEARINGS IS THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH ZONE 4205 NAD 83/2011. ALL COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, SHOWN IN SURFACE VALUES AND MAY BE CONVERTED TO GRID USING THE SURFACE ADJUSTMENT FACTOR OF 0.99996

2. HORIZONTAL CONTROL WAS ESTABLISHED USING THE TXDOT RTK NETWORK.

3. FIELD SURVEYS WERE CONDUCTED BY HALFF ASSOCIATES, INC., JUNE 2017 - SEPTEMBER 2017.

Dan H. Clark

Digitally signed by Dan H. Clark
DN: cn=Dan H. Clark, c=US, email=dclark@halff.com
Location: Austin, TX
Date: 2021.10.07 08:19:55 -05'00'

10-04-2021

DAN H. CLARK
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 6011

DATE

ISSUE RECORD		
NO.	DESCRIPTION	DATE

HALFF
9500 AMBERGLEN BLVD
BLDG. F, STE. 125
AUSTIN, TEXAS 78729
TEL (512) 777-4600
FAX (512) 252-8141
TBPLS FIRM NO. 10029607

Texas Department of Transportation

FM 506
SURVEY CONTROL LAYOUT

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		20
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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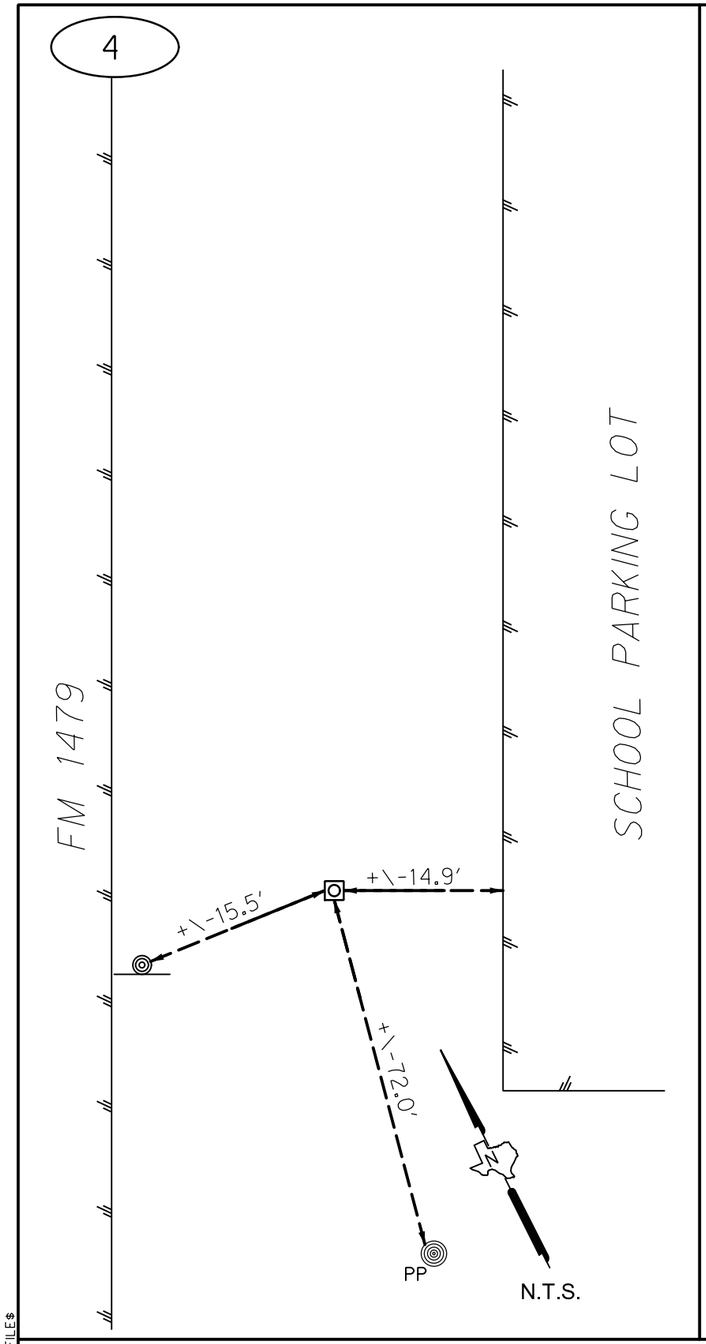

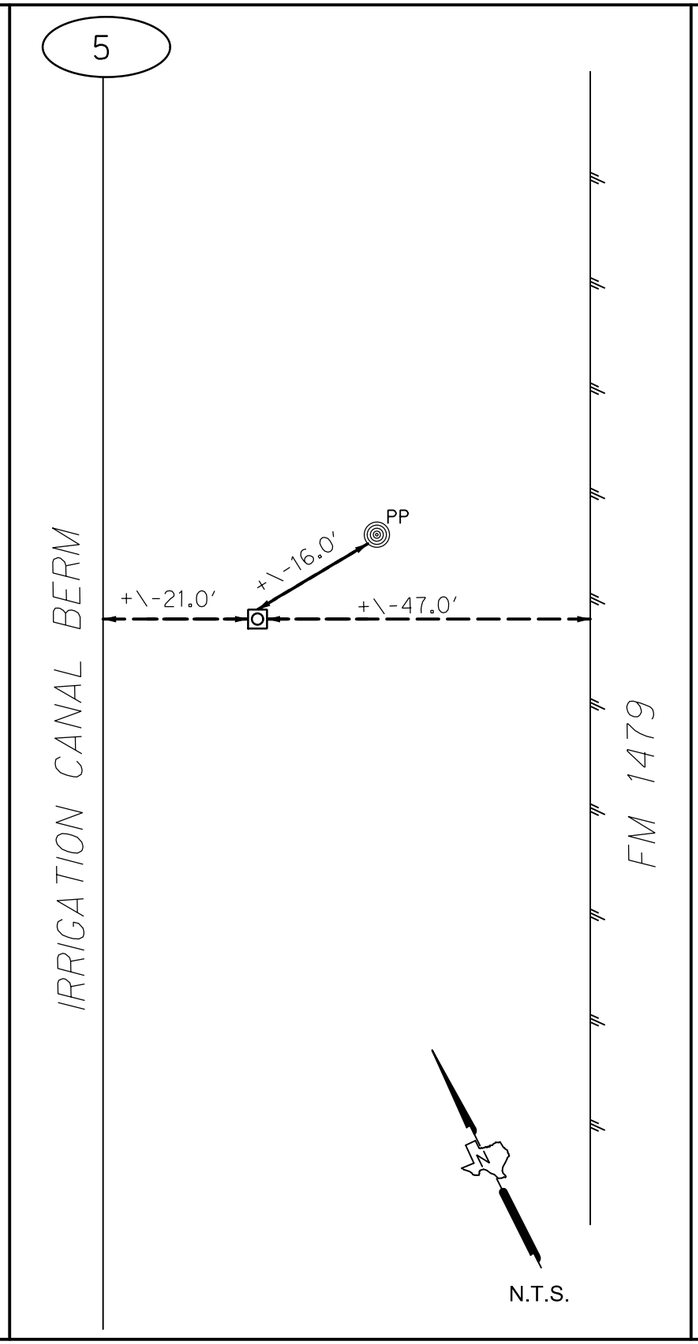

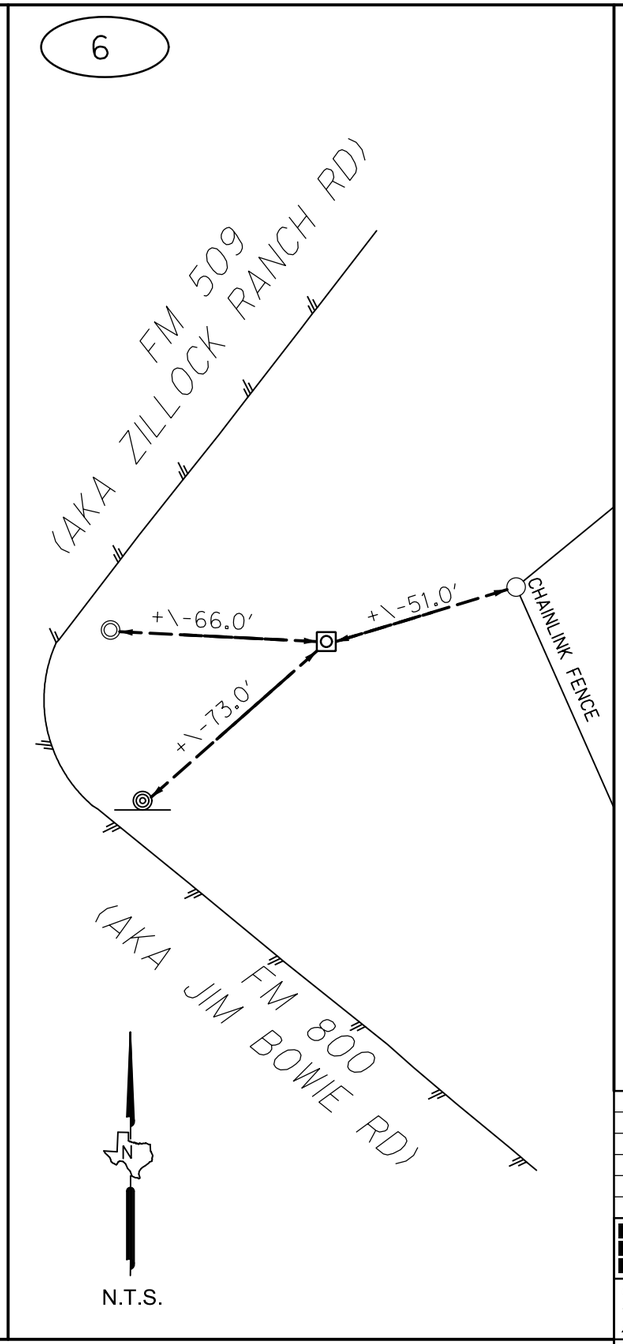

Dan H. Clark

Digitally signed by Dan H. Clark
DN: cn=Dan H. Clark, c=US, email=dclark@halff.com
Location: Austin, TX
Date: 2021.10.07 08:21:00 -05'00'

STATE OF TEXAS
REGISTERED
DAN H. CLARK
6011
PROFESSIONAL
LAND SURVEYOR

10-04-2021

DAN H. CLARK — DATE
REGISTERED PROFESSIONAL
LAND SURVEYOR
TEXAS REGISTRATION NO. 6011

- ALUMINUM DISC STAMPED "TEXAS DEPT OF TRANSPORTATION BENCHMARK" SET IN CONCRETE
- FENCE CORNER POST
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- PP POWERPOLE
- LP LIGHT POLE
- TREE
- EDGE OF PAVMENT

NOTES:
1. BASIS OF BEARINGS IS THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH ZONE 4205 NAD 83/2011. ALL COORDINATES AND DISTANCES ARE U.S. SURVEY FEET, SHOWN IN SURFACE VALUES AND MAY BE CONVERTED TO GRID USING THE SURFACE ADJUSTMENT FACTOR OF 0.99996

2. HORIZONTAL CONTROL WAS ESTABLISHED USING THE TXDOTRTK NETWORK.

3. FIELD SURVEYS WERE CONDUCTED, BY HALFF ASSOCIATES, INC. JUNE 2017 - SEPTEMBER 2017.

ISSUE RECORD

NO.	DESCRIPTION	DATE

HALFF
9500 AMBERGLEN BLVD
BLDG. F, STE. 125
AUSTIN, TEXAS 78729
TEL (512) 777-4600
FAX (512) 252-8141
TBPLS FIRM NO. 10029607

Texas Department of Transportation

PRIMARY CONTROL POINT SURFACE COORDINATES

POINT	NORTHING	EASTING	ELEVATION	STATION	ALIGN	OFFSET	LT/RT	DESCRIPTION
4	16560766.785	1232279.080	52.58	308+33.02	FM 1479	46.53'	LT	CONTROL POINT 4 IS APPROXIMATELY 450' SOUTHEAST OF THE INTERSECTION OF FM 1479 AND FM 675 (AKA LANDRUM PARK RD).
5	16569630.210	1236391.264	52.13	210+43.58	FM 1479	66.51'	RT	CONTROL POINT 5 IS APPROXIMATELY 700' NORTHWEST OF THE INTERSECTION OF FM 1479 AND FM 800 (AKA JIM BOWIE RD).
6	16566533.260	1244783.758	45.03	104+73.59	FM 800	134.06'	LT	CONTROL POINT 6 IS LOCATED ON THE EAST CORNER OF FM 800 (AKA JIM BOWIE RD) AND FM 509 (AKA ZILLOCK RANCH RD).

FM 800
HORIZONTAL & VERTICAL CONTROL

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		21
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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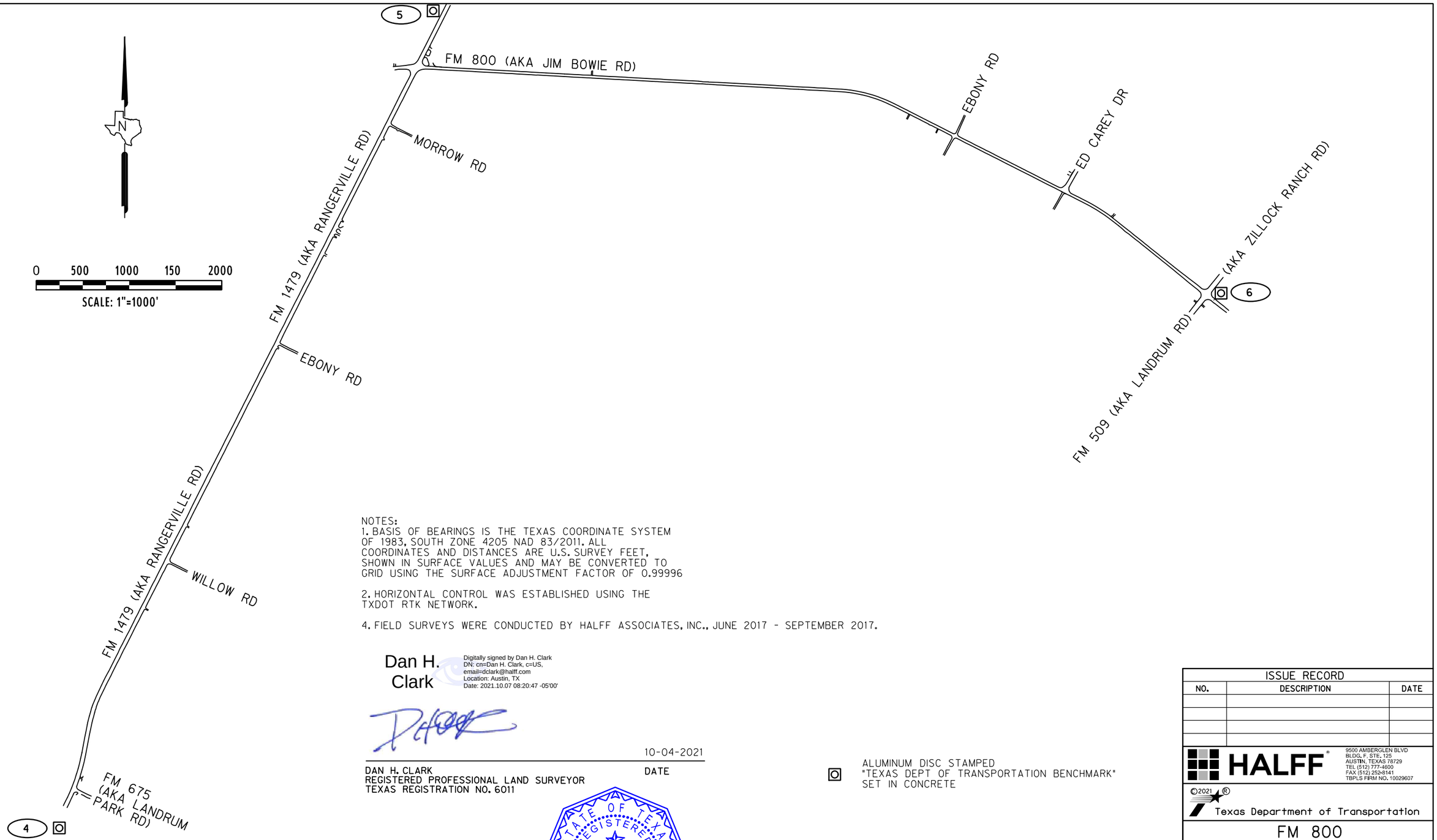
SV-FM 800-IEA CONTROL-32840-001.dgn



NOTES:
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4. FIELD SURVEYS WERE CONDUCTED BY HALFF ASSOCIATES, INC., JUNE 2017 - SEPTEMBER 2017.

Dan H. Clark

Digitally signed by Dan H. Clark
DN: cn=Dan H. Clark, c=US, email=dclark@halff.com
Location: Austin, TX
Date: 2021.10.07 08:20:47 -05'00'

10-04-2021

DAN H. CLARK — DATE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 6011

STATE OF TEXAS
REGISTERED
DAN H. CLARK
6011
PROFESSIONAL
LAND SURVEYOR

▣ ALUMINUM DISC STAMPED "TEXAS DEPT OF TRANSPORTATION BENCHMARK" SET IN CONCRETE

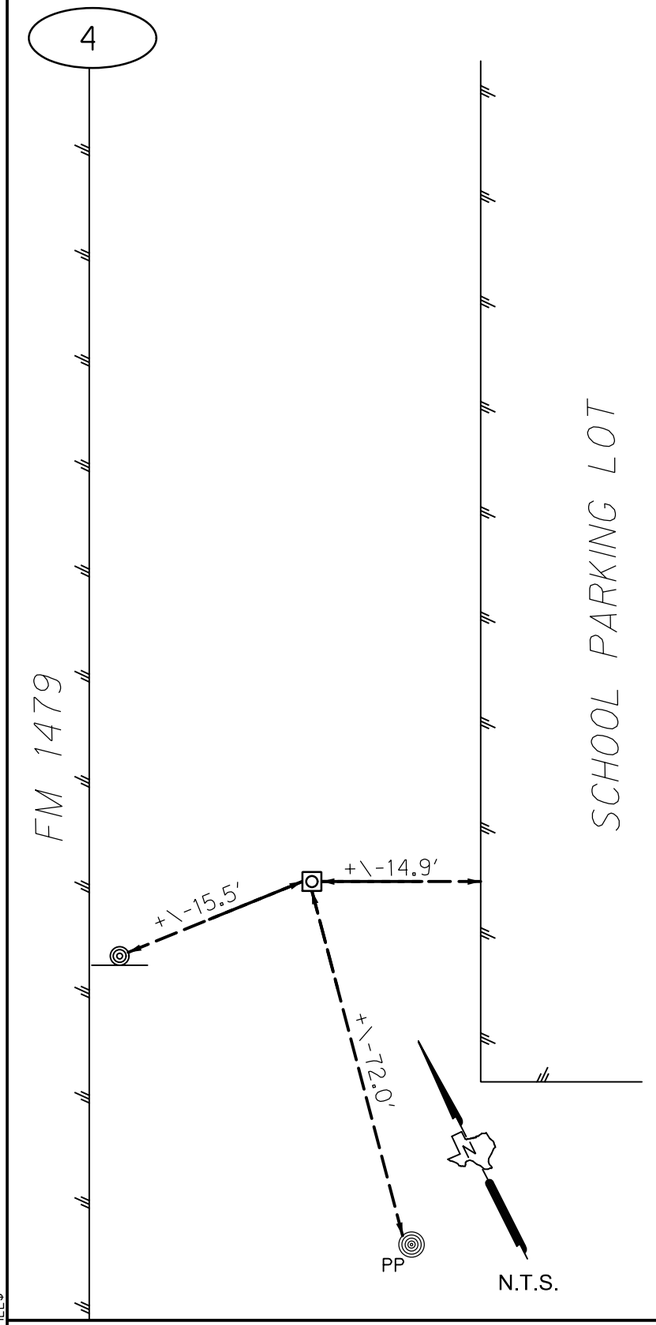
ISSUE RECORD		
NO.	DESCRIPTION	DATE

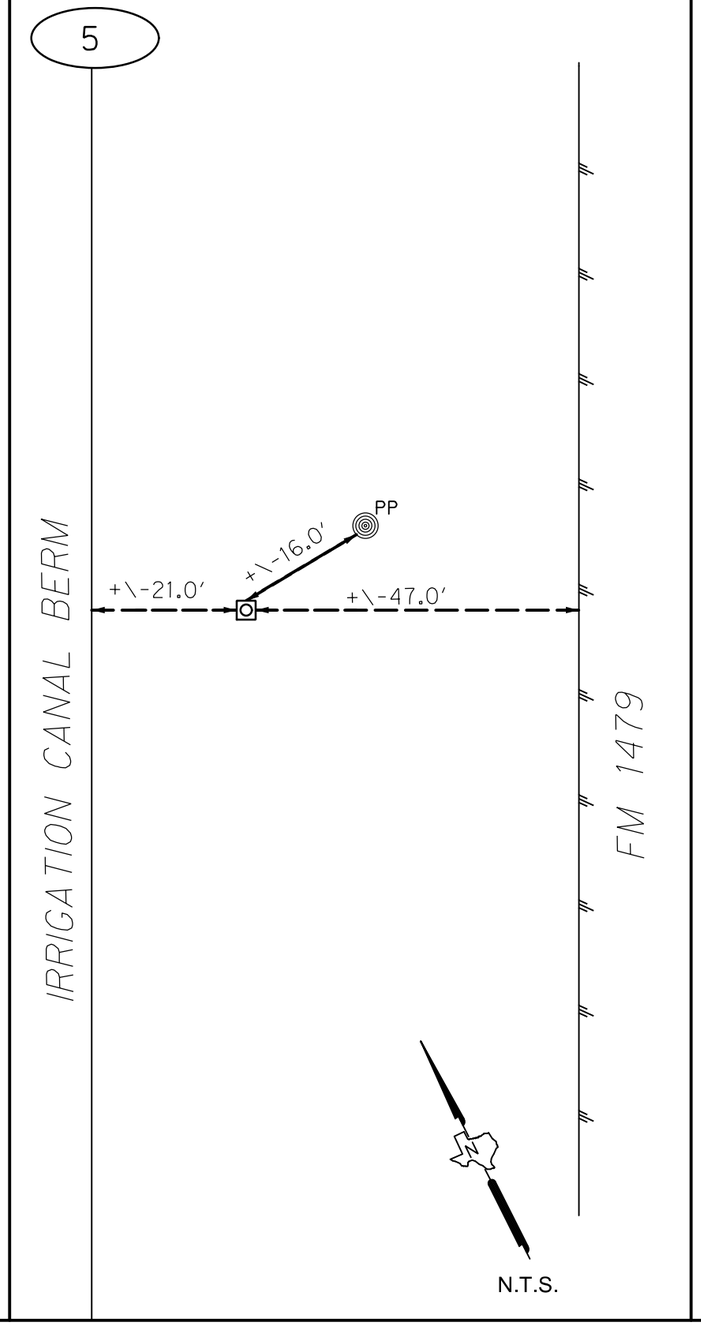
HALFF
9500 AMBERGLEN BLVD
BLDG. F, STE. 125
AUSTIN, TEXAS 78729
TEL (512) 777-4600
FAX (512) 252-8141
TBPLS FIRM NO. 10029607

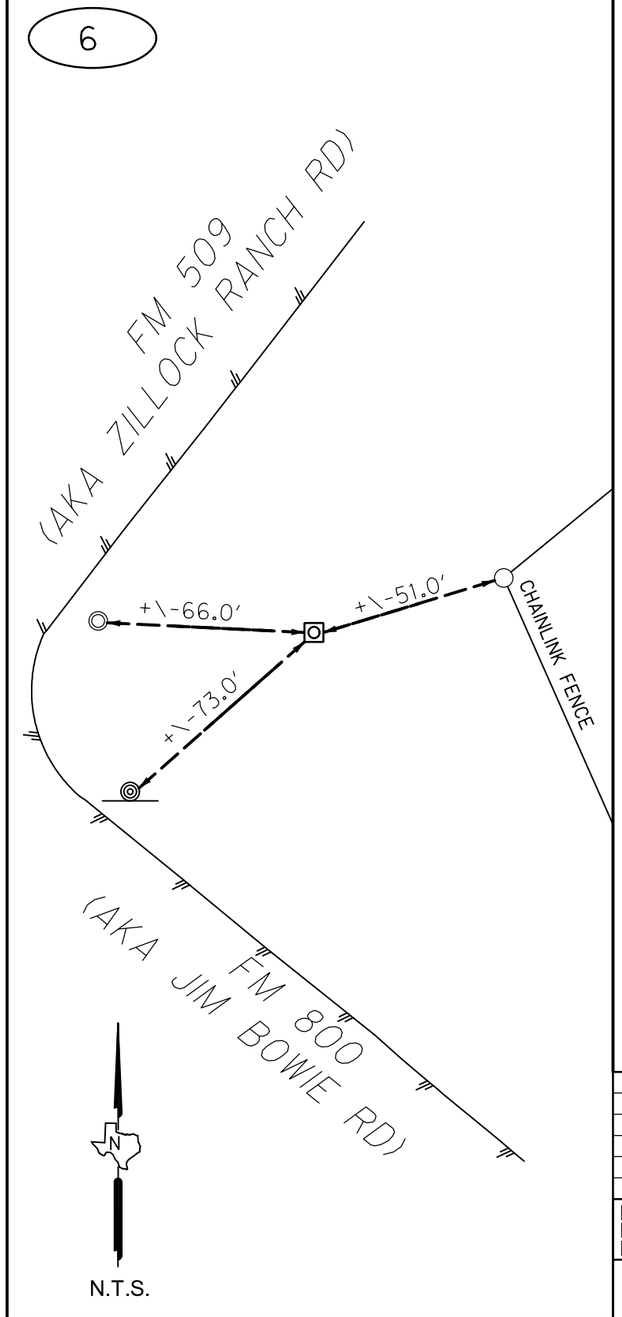
Texas Department of Transportation

FM 800
SURVEY CONTROL LAYOUT

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		22
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800







Dan H. Clark

Digitally signed by Dan H. Clark
DN: cn=Dan H. Clark, c=US, email=dclark@halff.com
Location: Austin, TX
Date: 2021.10.04 08:20:33 -05'00'

STATE OF TEXAS
REGISTERED
DAN H. CLARK
6011
PROFESSIONAL
LAND SURVEYOR

10-04-2021

DAN H. CLARK — DATE
REGISTERED PROFESSIONAL
LAND SURVEYOR
TEXAS REGISTRATION NO. 6011

- ALUMINUM DISC STAMPED "TEXAS DEPT OF TRANSPORTATION BENCHMARK" SET IN CONCRETE
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NOTES:
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2. HORIZONTAL CONTROL WAS ESTABLISHED USING THE TXDOTRTK NETWORK.

3. FIELD SURVEYS WERE CONDUCTED, BY HALFF ASSOCIATES, INC. JUNE 2017 - SEPTEMBER 2017.

ISSUE RECORD

NO.	DESCRIPTION	DATE

HALFF
9500 AMBERGLEN BLVD
BLDG. F, STE. 125
AUSTIN, TEXAS 78729
TEL (512) 777-4600
FAX (512) 252-8141
TBPLS FIRM NO. 10029607

Texas Department of Transportation

FM 1479
HORIZONTAL & VERTICAL CONTROL

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		23
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

PRIMARY CONTROL POINT SURFACE COORDINATES

POINT	NORTHING	EASTING	ELEVATION	STATION	ALIGN	OFFSET	LT/RT	DESCRIPTION
4	16560766.785	1232279.080	52.58	308+33.02	FM 1479	46.53'	LT	CONTROL POINT 4 IS APPROXIMATELY 450' SOUTHEAST OF THE INTERSECTION OF FM 1479 AND FM 675 (AKA LANDRUM PARK RD).
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6	16566533.260	1244783.758	45.03	104+73.59	FM 800	134.06'	LT	CONTROL POINT 6 IS LOCATED ON THE EAST CORNER OF FM 800 (AKA JIM BOWIE RD) AND FM 509 (AKA ZILLOCK RANCH RD).

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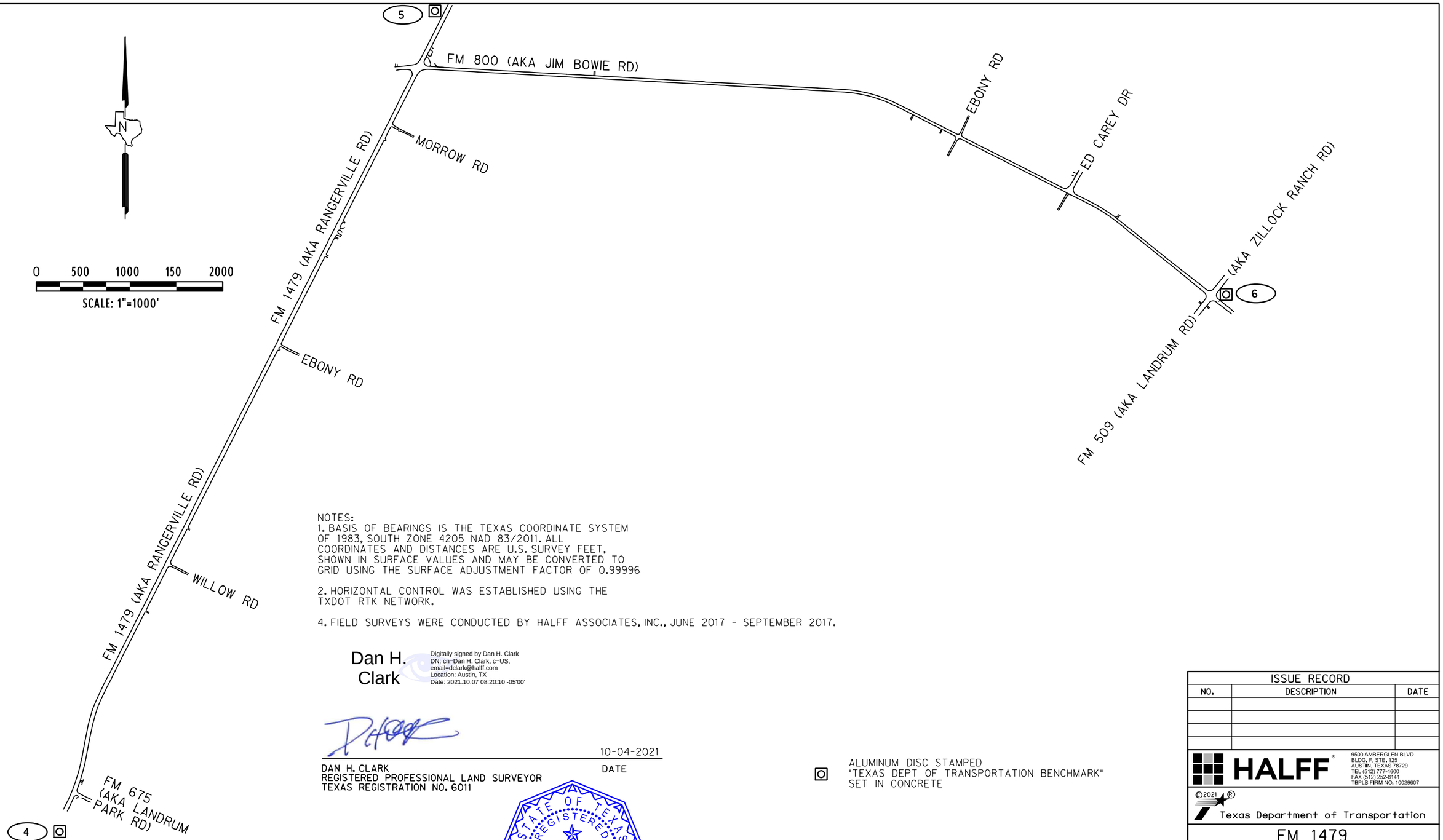

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2. HORIZONTAL CONTROL WAS ESTABLISHED USING THE TXDOT RTK NETWORK.

4. FIELD SURVEYS WERE CONDUCTED BY HALFF ASSOCIATES, INC., JUNE 2017 - SEPTEMBER 2017.

Dan H. Clark

Digitally signed by Dan H. Clark
DN: cn=Dan H. Clark, c=US, email=dclark@halff.com
Location: Austin, TX
Date: 2021.10.07 08:20:10 -05'00'

10-04-2021

DAN H. CLARK — DATE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 6011

STATE OF TEXAS
REGISTERED
DAN H. CLARK
6011
PROFESSIONAL
LAND SURVEYOR

ALUMINUM DISC STAMPED
"TEXAS DEPT OF TRANSPORTATION BENCHMARK"
SET IN CONCRETE

ISSUE RECORD

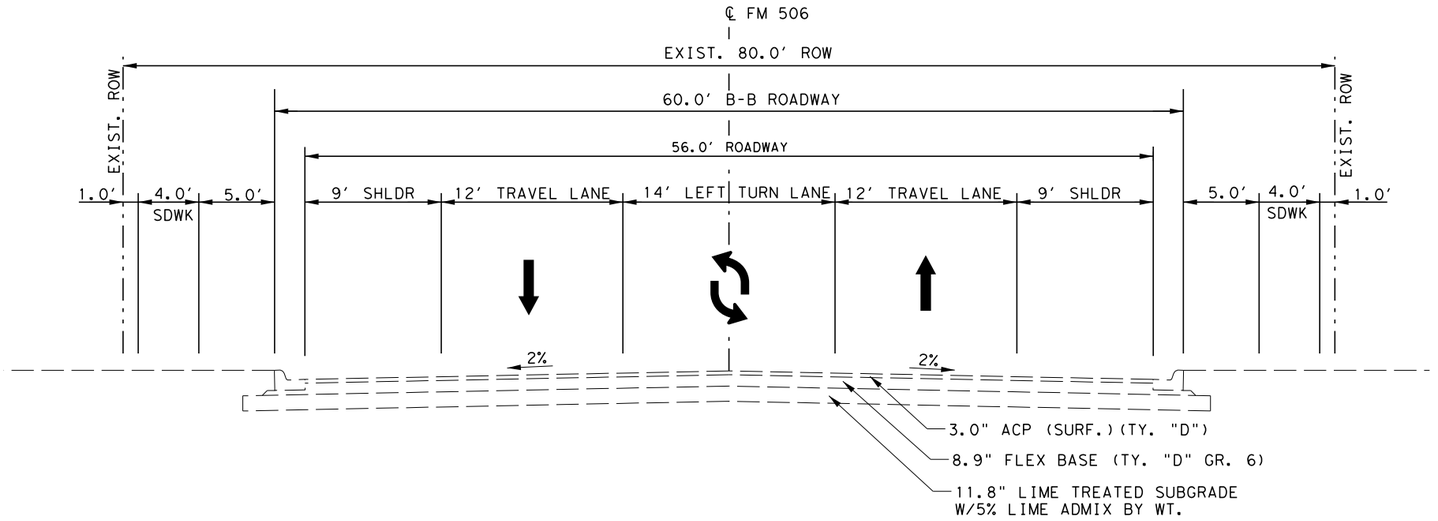
NO.	DESCRIPTION	DATE

HALFF
9500 AMBERGLEN BLVD
BLDG. F, STE. 125
AUSTIN, TEXAS 78729
TEL (512) 777-4600
FAX (512) 252-8141
TBPLS FIRM NO. 10029607

Texas Department of Transportation

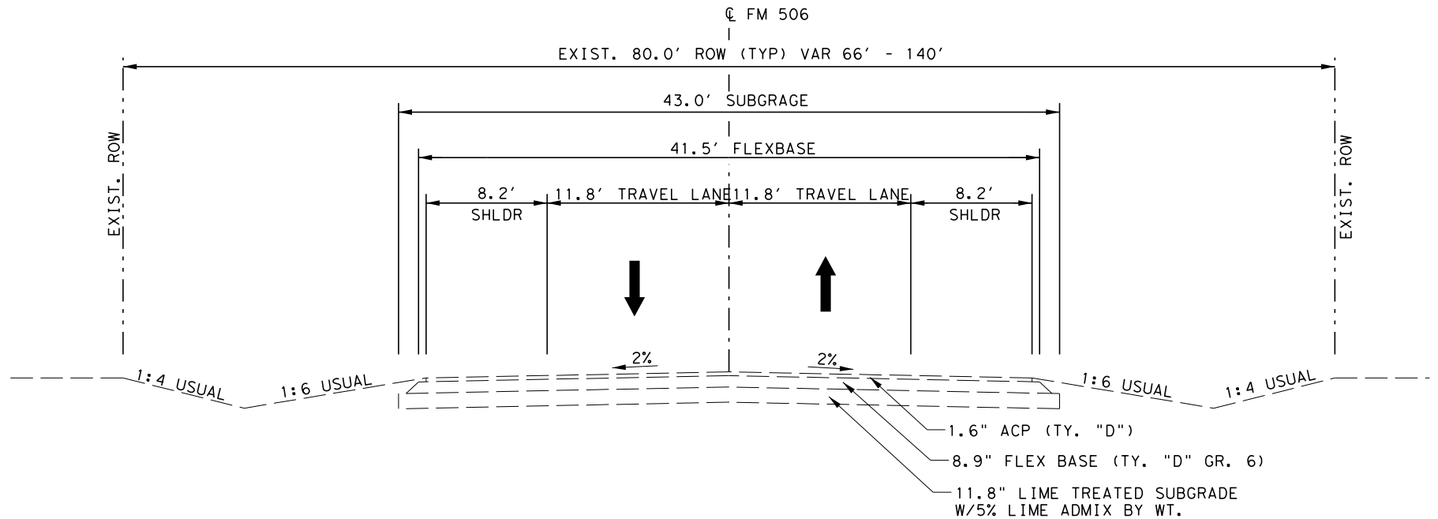
FM 1479
SURVEY CONTROL LAYOUT

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		24
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479



FM 506
EXISTING TYPICAL SECTION

STA 10+32.90 TO STA 50+76.19



FM 506
EXISTING TYPICAL SECTION

STA 50+76.19 TO STA 56+62.33 TRANSITION 60' ROADWAY TO 40' ROADWAY
STA 56+62.33 TO STA 115+01.62
STA 115+01.62 TO STA 115+21.62 (CONC PVMT)
STA 115+21.62 TO STA 118+25.59 (BRIDGE)
STA 118+25.59 TO STA 118+45.59 (CONC PVMT)
STA 118+45.59 TO STA 166+04.62

NOTE:

THE EXISTING BITUMINOUS MATERIAL AND EXISTING BASE IS TO BE REMOVED AND PAID FOR IN ACCORDANCE WITH ITEM 105.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

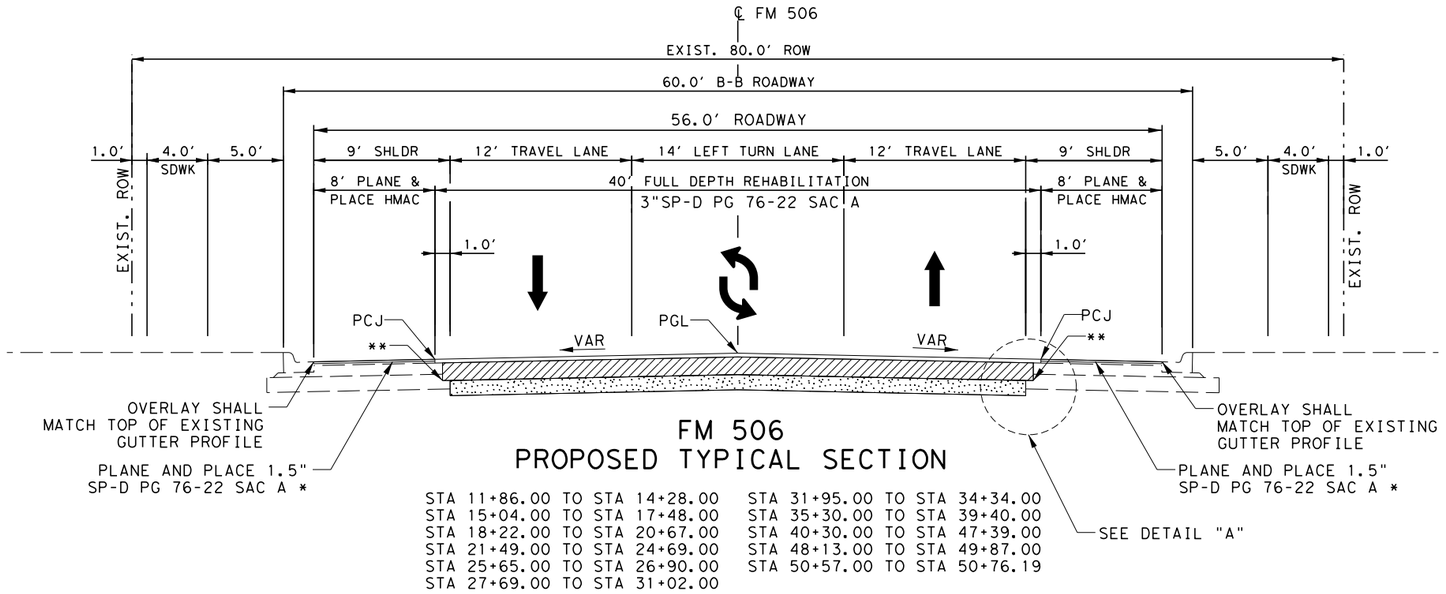
FM 506

TYPICAL SECTIONS

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		25
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

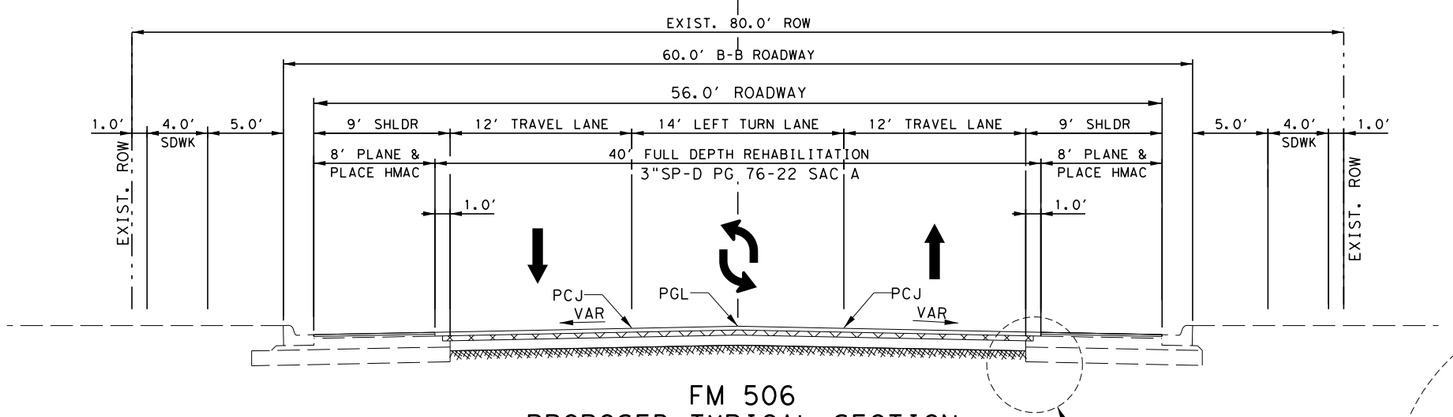
506TS01.dgn



FM 506
PROPOSED TYPICAL SECTION

STA 11+86.00 TO STA 14+28.00
STA 15+04.00 TO STA 17+48.00
STA 18+22.00 TO STA 20+67.00
STA 21+49.00 TO STA 24+69.00
STA 25+65.00 TO STA 26+90.00
STA 27+69.00 TO STA 31+02.00
STA 31+95.00 TO STA 34+34.00
STA 35+30.00 TO STA 39+40.00
STA 40+30.00 TO STA 47+39.00
STA 48+13.00 TO STA 49+87.00
STA 50+57.00 TO STA 50+76.19

* BONDING COURSE: ITEM 3084
** PROPOSED SAWCUT SUBSIDIARY TO PLANING



FM 506
PROPOSED TYPICAL SECTION AT INTERSECTIONS

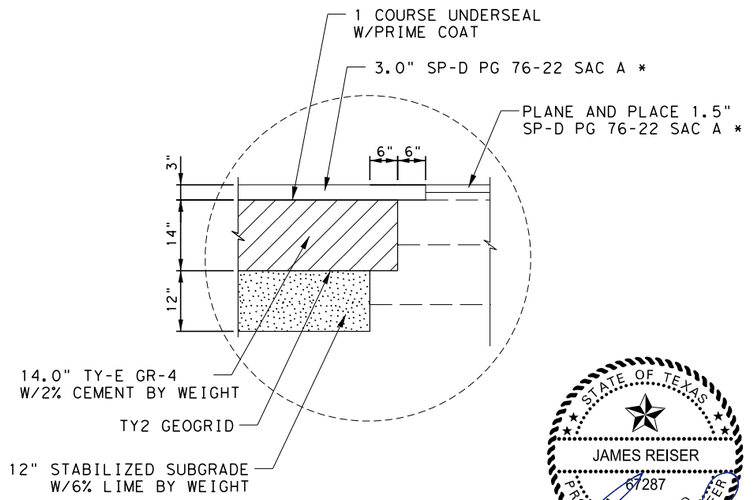
STA 10+30.01 TO STA 11+76.00
STA 14+38.00 TO STA 14+94.00
STA 17+58.00 TO STA 18+12.00
STA 20+77.00 TO STA 21+39.00
STA 24+79.00 TO STA 25+55.00
STA 27+00.00 TO STA 27+59.00
STA 31+12.00 TO STA 31+85.00
STA 34+44.00 TO STA 35+20.00
STA 39+50.00 TO STA 40+20.00
STA 47+49.00 TO STA 48+03.00
STA 49+97.00 TO STA 50+47.00

(STATION BEGIN/END POINTS SHOWN ARE REPRESENTED BY POINT "A" ON TYPICAL PAVEMENT TRANSITION DETAIL ON FM 506 TYPICAL SECTIONS SHEET 4 OF 4)

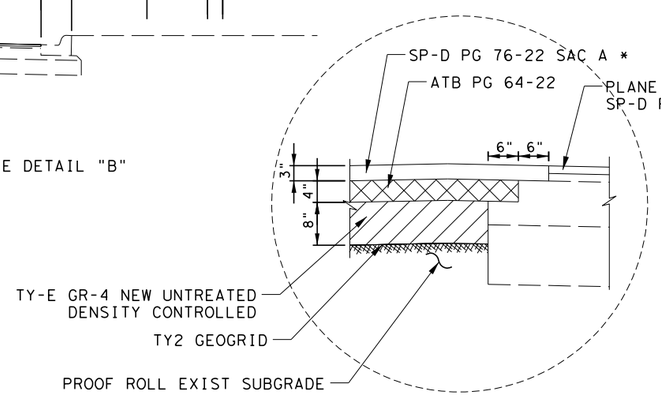
LEGEND

- PROP. TRAVEL LANE
- SP-D PG 76-22 SAC A
- TY-E GR-4 CEMENT TRT SUBGRADE & NEW UNTREATED DENSITY CONTROLLED
- LIME STAB. SUBGRADE
- ATB PG 64-22
- PROOF ROLL EXIST SUBGRADE

DETAIL "A"



DETAIL "B"



PAVEMENT DESIGN FOR INTERSECTIONS

STATE OF TEXAS
JAMES REISER
97287
PROFESSIONAL ENGINEER
REGISTERED

July 7, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

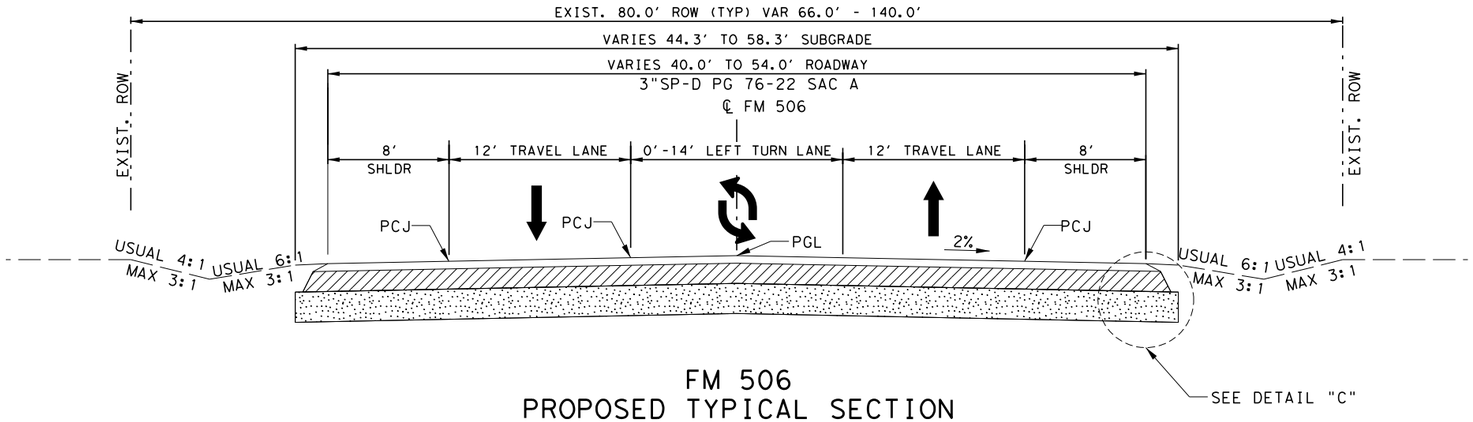
FM 506

TYPICAL SECTIONS

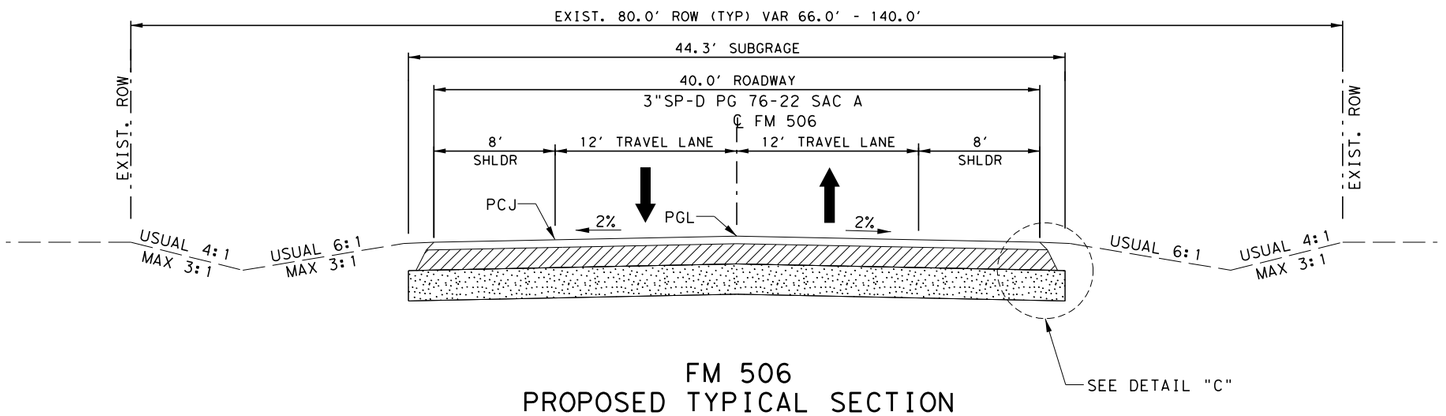
SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		26
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506TS02.dgn



FM 506
PROPOSED TYPICAL SECTION
STA 63+00.00 TO STA 66+15.00



FM 506
PROPOSED TYPICAL SECTION

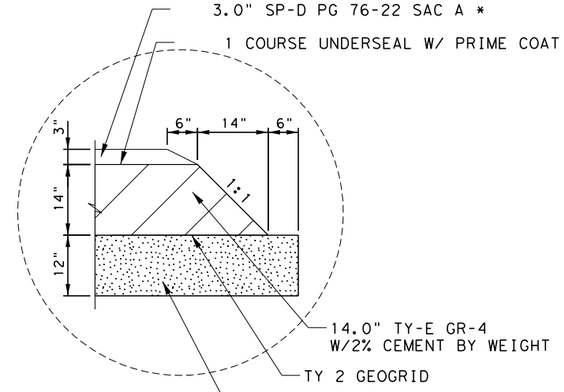
STA 66+15.00 TO STA 98+80.00
STA 99+83.00 TO STA 164+10.00

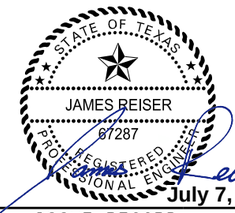
LEGEND

- PROP. TRAVEL LANE
- SP-D PG 76-22 SAC A
- TY-E GR-4 CEMENT TRT SUBGRADE & NEW UNTREATED DENSITY CONTROLLED
- LIME STAB. SUBGRADE
- ATB PG 64-22
- PROOF ROLL EXIST SUBGRADE

DETAIL "C"

* BONDING COURSE: ITEM 3084





ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

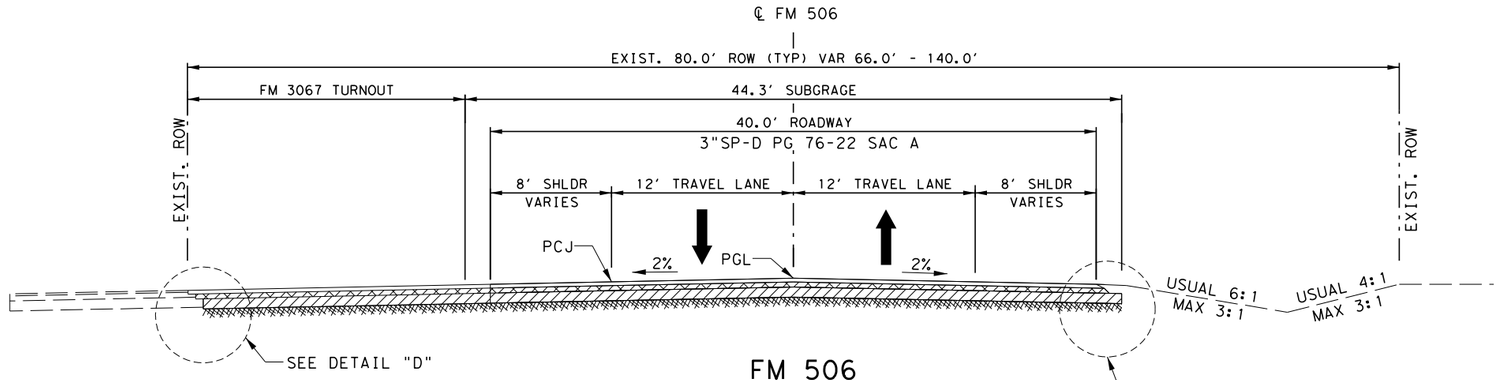
FM 506

TYPICAL SECTIONS

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		27
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506TS03.dgn



FM 506
PROPOSED TYPICAL SECTION AT INTERSECTIONS

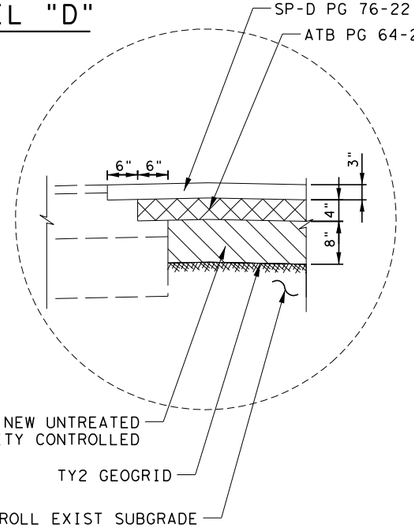
STA 98+80.00 TO STA 99+83.00
STA 164+10.00 TO STA 166+04.62

(STATION BEGIN/END POINTS SHOWN ARE REPRESENTED BY POINT "A" ON TYPICAL PAVEMENT TRANSITION DETAIL THIS SHEET.)

LEGEND

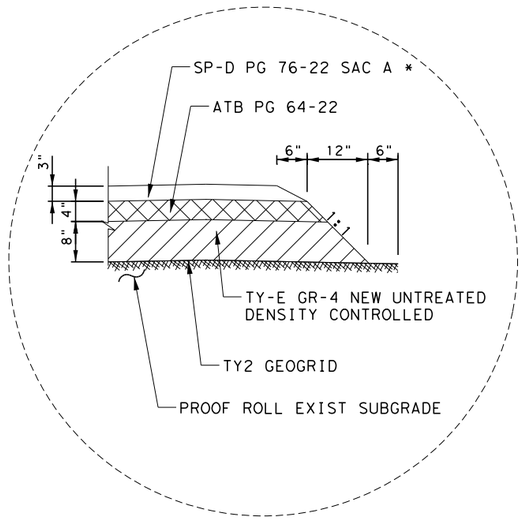
- PROP. TRAVEL LANE
- SP-D PG 76-22 SAC A
- TY-E GR-4 CEMENT TRT SUBGRADE & NEW UNTREATED DENSITY CONTROLLED
- LIME STAB. SUBGRADE
- ATB PG 64-22
- PROOF ROLL EXIST SUBGRADE

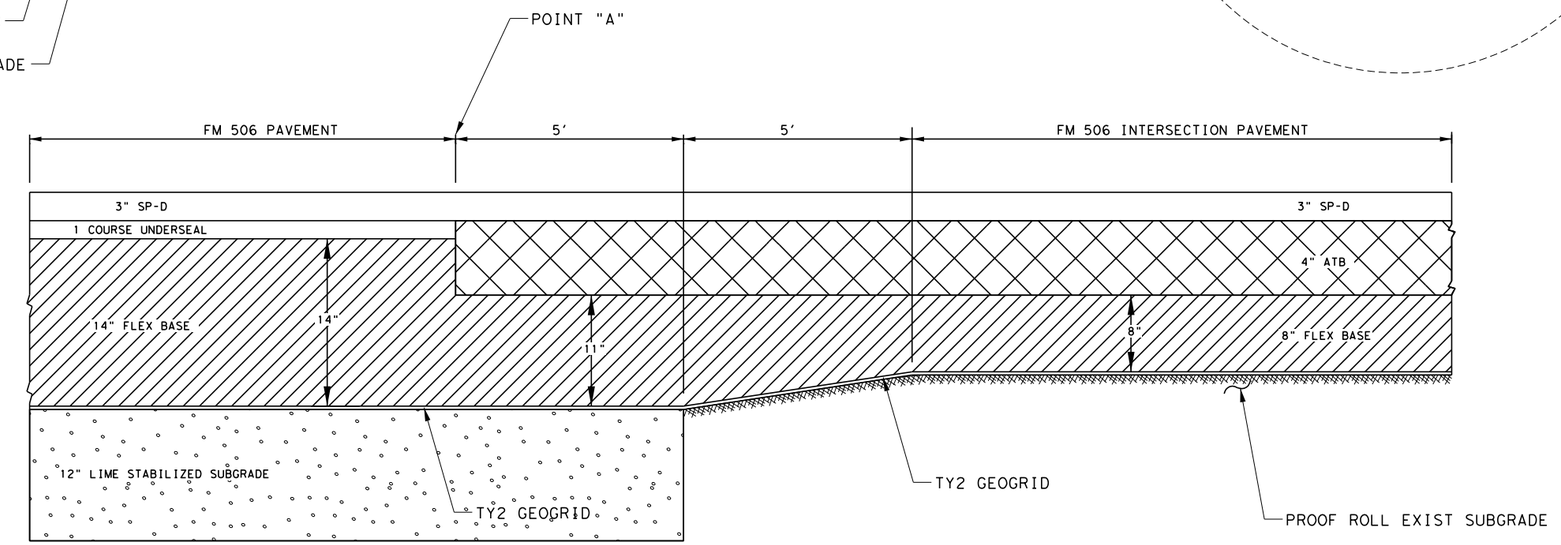
DETAIL "D"



DETAIL "E"

* BONDING COURSE: ITEM 3084





TYPICAL PAVEMENT TRANSITION

N.T.S.

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER

July 7, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

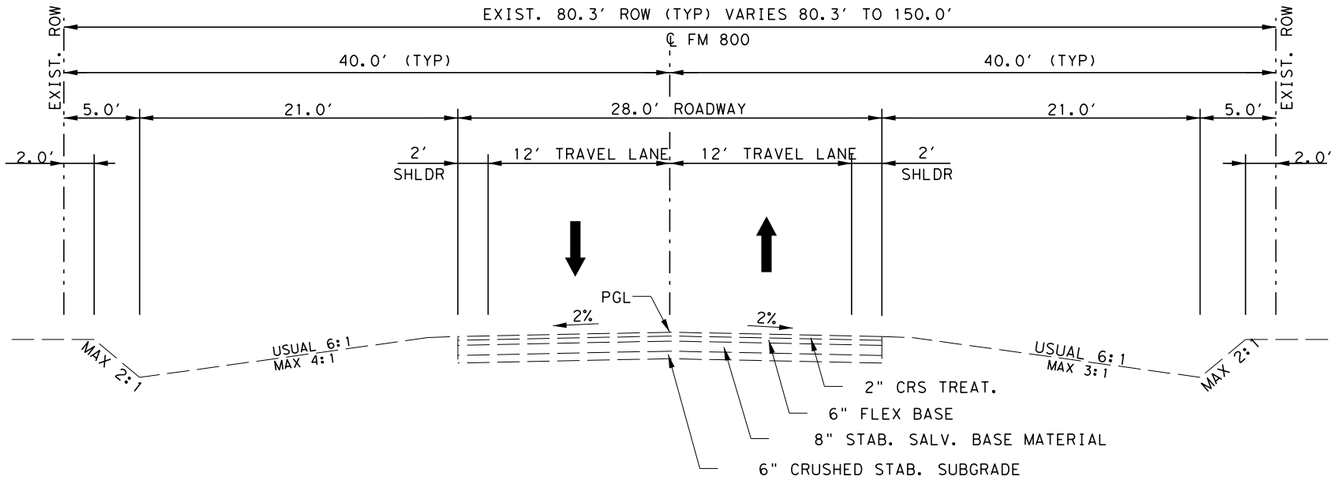
FM 506

TYPICAL SECTIONS

SHEET 4 OF 4

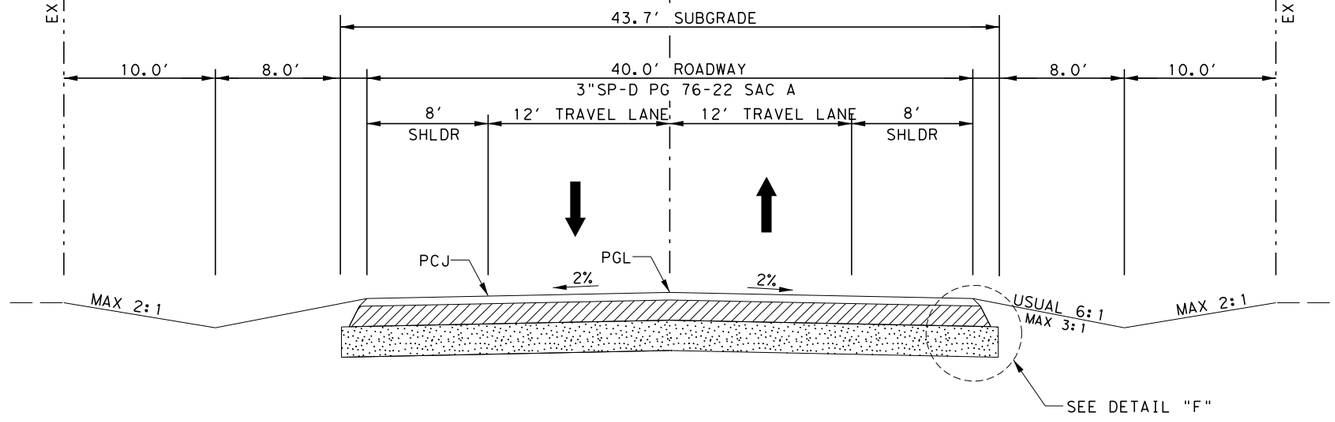
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		28
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506TS04.dgn



FM 800
EXISTING TYPICAL SECTION

STA 13+48.33 TO STA 43+31.28
STA 43+31.28 TO STA 43+83.74 (BRIDGE)
STA 43+83.74 TO STA 102+94.26



FM 800
PROPOSED TYPICAL SECTION

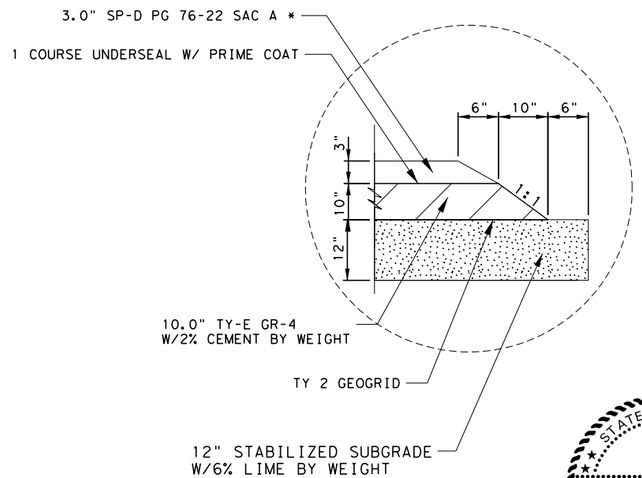
STA 13+48.33 TO STA 43+31.28
STA 43+31.28 TO STA 43+83.74 (BRIDGE)
STA 43+83.74 TO STA 102+94.26

LEGEND

- PROP. TRAVEL LANE
- SP-D PG 76-22 SAC A
- TY-E GR-4 CEMENT TRT SUBGRADE & NEW UNTREATED DENSITY CONTROLLED
- LIME STAB. SUBGRADE
- ATB PG 64-22
- PROOF ROLL EXIST SUBGRADE

DETAIL "F"

* BONDING COURSE: ITEM 3084



NOTE:

THE EXISTING BITUMINOUS MATERIAL AND EXISTING BASE IS TO BE REMOVED AND PAID FOR IN ACCORDANCE WITH ITEM 105.

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER
July 7, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

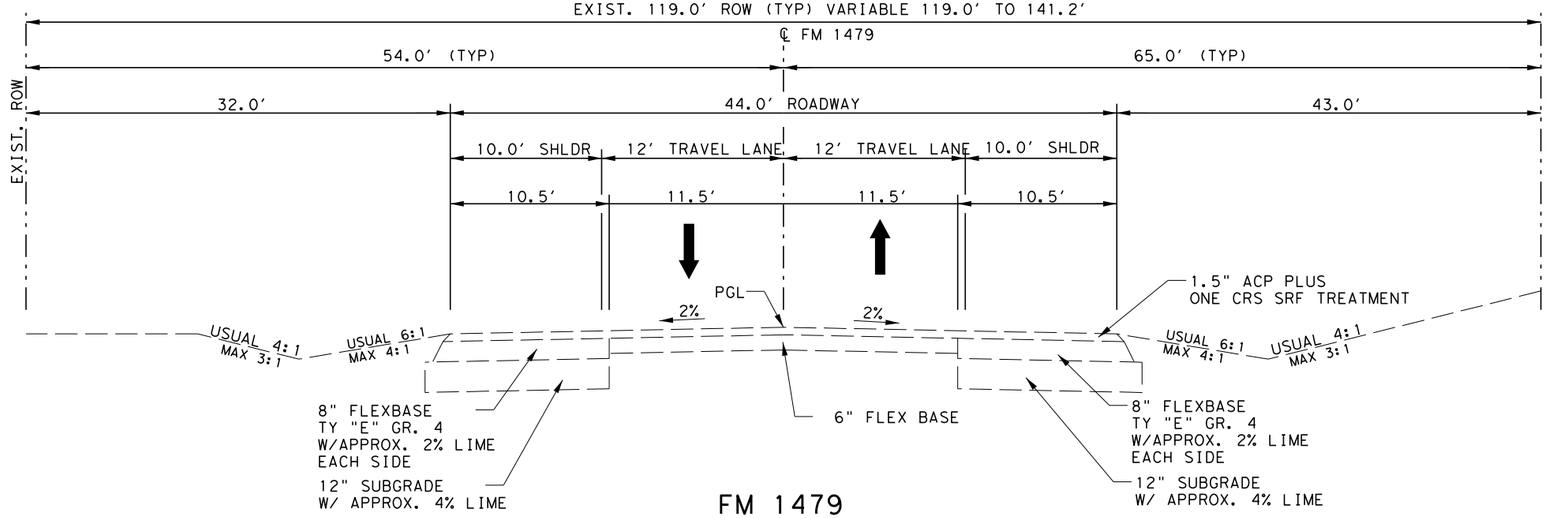
FM 800

TYPICAL SECTIONS

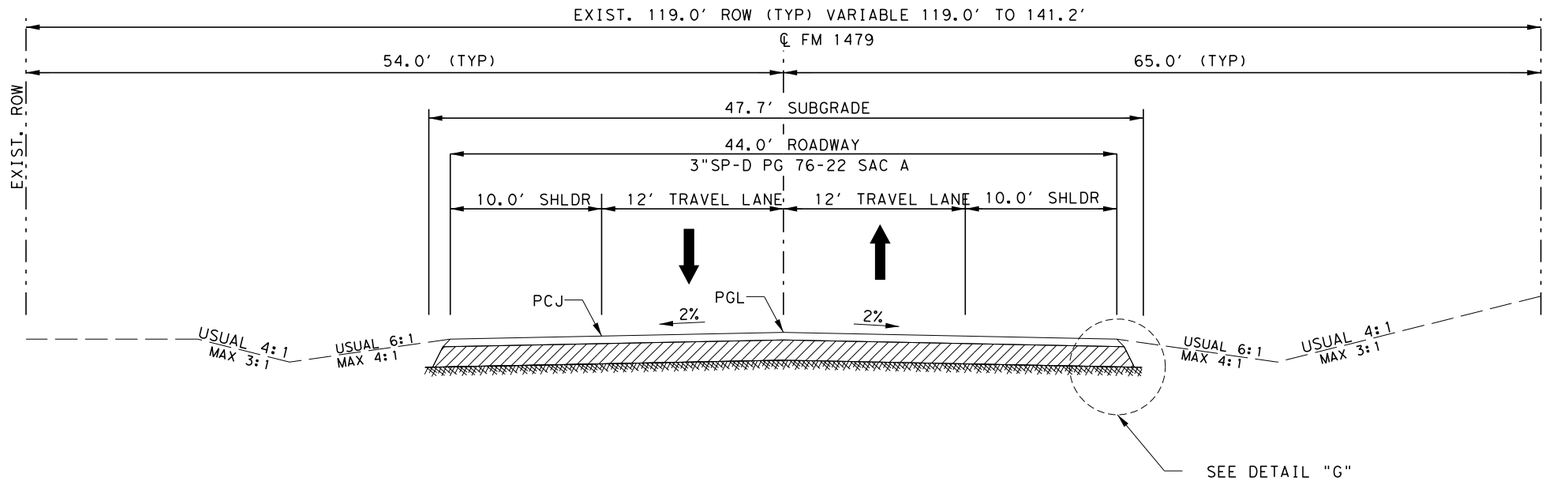
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		29
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

800TS01.dgn



FM 1479
EXISTING TYPICAL SECTION
STA 216+39.05 TO STA 304+36.61



FM 1479
PROPOSED TYPICAL SECTION
STA 216+39.05 TO STA 304+36.61

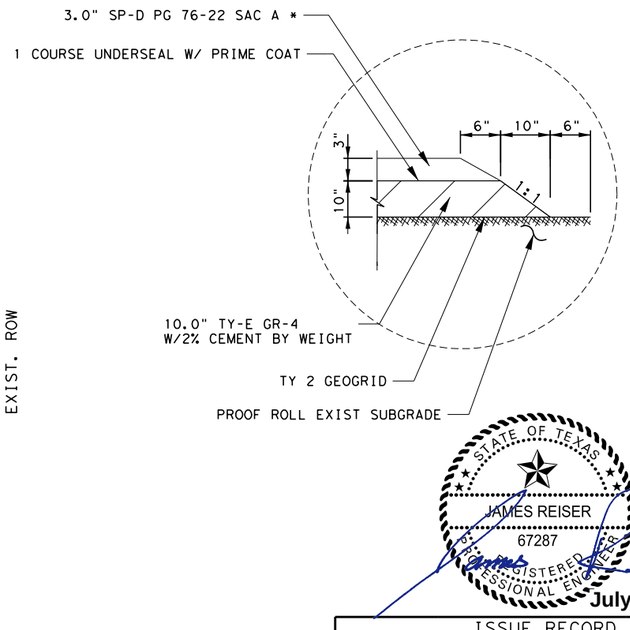
NOTE:

THE EXISTING BITUMINOUS MATERIAL AND EXISTING BASE IS TO BE REMOVED AND PAID FOR IN ACCORDANCE WITH ITEM 105.

LEGEND

- PROP. TRAVEL LANE
- SP-D PG 76-22 SAC A
- TY-E GR-4 CEMENT TRT SUBGRADE & NEW UNTREATED DENSITY CONTROLLED
- LIME STAB. SUBGRADE
- ATB PG 64-22
- PROOF ROLL EXIST SUBGRADE

DETAIL "G"
* BONDING COURSE: ITEM 3084



STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER
July 7, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479
TYPICAL SECTIONS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		30
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479TS01.dgn

General Requirements and Covenants to ITEMS 1 thru 9

For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act."
Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.
The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination regarding TxDOT underground lines.

ITEM 2: Instructions to Bidders
Contractor questions on this project are to be addressed to the following individual(s):
Andres Espinoza, P.E. San Benito Area Engineer; Andres.Espinoza@txdot.gov
Hector Siller, P.E., Assist. Area Engineer; Hector.Siller@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals. All Contractor questions will be reviewed by the Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address:
https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, and CCSJ/Project Name.

ITEM 5: Control of the Work
The responsibility for the construction surveying on this contract will be in accordance with Article 5.9.1., "Method A."
Prior to contract letting, bidders may obtain a free computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the actual cross-sections in additional to, or instead of the electronic files are requested, they will be available at the Engineer's office for borrowing by copying companies for the purpose of making copies for the bidder at the bidder's expense.

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/inside-txdot/forms-publications/consultants-contractors/publications/bridge.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.

ITEM 7: Legal Relations and Responsibilities
Roadway or Lane closures during the following key dates and/or special events are prohibited:

- National Holidays
- The day before a National Holiday
- During emergency events such as natural disasters or as directed by the Engineer
- Local Special Event (list special event and date-to-date duration)

Project Number:

County: Cameron **Control:** 0872-04-030, etc.

Highway: FM 506, etc.

ITEM 8: Prosecution and Progress

Working days will be computed and charged in accordance with Article 8.3.1.4. Standard Workweek.

The road user cost liquidated damages is $641.00 per day for the work performed on FM 506. There are no road user cost liquidated damages for the work performed on FM 800 nor FM 1479.

Where road closures or detours around structures are necessary to accomplish proposed work, the removal of existing structures and/or cutting of existing pavement will not be permitted until all pre-cast members for the proposed structure have been cast, tested and approved for use.

TxDOT is required to provide 10 working days advanced written notice of all proposed bridge widening, rehabilitation or demolition work to the Texas Department of State Health Services (TDSHS) to allow them the opportunity to both verify information provided regarding asbestos containing materials and abatement, and observe the demolition/renovation work. Considering that this notice will be provided to TDSHS at the beginning of the project for all affected bridge work based on start and finish dates included in the Contractor's original submitted work schedule, any schedule changes proposed by the Contractor shall be submitted to TxDOT at least 15 days prior to the revised or original start date to accommodate the required coordination with TDSHS.

Working days will be computed and charged in accordance with Article 8.3.1.6. defined as follows:

Work and time charges will continue until the start of the bird nesting season. Upon the start of the bird nesting season, work and time charges will stop for a maximum period of 120-Working days for the bird nesting season delay to be completed. Time charges in accordance with Article 8.3.1.4. will resume at the end of the 120 day bird nesting season delay or earlier if mutually agreed in writing by the Engineer and Contractor.

Prepare progress schedules using the Critical Path Method (CPM). Also provide a Project Schedule Summary Report (PSSR) in accordance with Article 8.5.5.2.3.1.

ITEM 100: Preparing Right of Way

Preparation of right of way will be done in accordance with the construction phasing shown on the Traffic Control Plans. Performance of this item will not be allowed outside of the project's current construction phase without prior approval by the Engineer.

ITEM 132: Embankment

Embankment (DENS CONT) shall be Type C with a max. PI of 40. Material used as embankment material in the top two feet below the bottom of Flexible Base shall meet the following requirements based on preliminary tests and such other tests found necessary by the Engineer.

1. The material shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

It is the Contractor's responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

ITEM 134: Backfilling Pavement Edges

Areas to be backfilled shall extend approximately 3-ft out from the edges of the proposed overlay. Final slopes shall be uniform and smooth. The 100-foot station payment includes backfilling of both sides.

Backfill Ty A shall not contain particles more than two inches in size and shall have a minimum PI of 10 and a maximum PI of 20.

Any additional backfill material necessary due to pre-existing edge conditions or to replace existing fill removed during blading operations will not be paid for directly. It will be considered subsidiary to this bid item.

ITEM 160: Topsoil

Use topsoil as needed and directed by the Project Engineer for select problem areas. Unless otherwise approved by the Project Engineer, use topsoil from approved sources outside the right of way as per standard specifications. Existing topsoil is to be salvaged and retained for re-use on the project as topsoil.

ITEM 164: Seeding for Erosion Control

During drill seeding operations, application methods shall be in accordance with the method shown in the Standard Specification Book.

SS-1 Tacking Agent shall be a ratio of 2:1, two (Emulsion) to one (water) and applied at a rate of 0.05 gallons per square yard. The SS-1 Tacking Agent required for Drill Seed operations, will not be paid for directly, but will be subsidiary to Item 164 “Drill Seeding.” Watering shall not be used with the Drill Seed Method. A biodegradable tacking agent may be used in lieu of the SS-1 tacking agent in accordance with the manufacturer’s recommendations when approved by the Engineer.

Cool Season or Warm Season Grasses shall be included as part of Item 164 (See Table 3 and/or Table 4 in the Standard Specification Manual for dates and seed type).

Seed mixture shall be as specified under Item 164.

ITEM 166: Fertilizer

Fertilizer rate is based on a rate of 100 Lbs. of Nitrogen per acre. The Nitrogen-Phosphorous-Potassium (NPK) ratio shall include a minimum of 5 percent phosphorous and 5 percent Potassium. Fertilizer shall be homogenized.

ITEM 247: Flexible Base

Flexible Base Type E will be composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand or granular materials when these materials are in situ with the caliche.

Flexible Base (TY E GR 4) caliche shall conform to the following requirements:

Retained on Sq. Sieve	Percent Retained
2”	0
½”	20-60
No. 4	40-75
No. 40	70-90
Max. PI:	15
Max. Wet Ball PI:	15
Wet Ball Mill Max Amount:	50
Min. Comp. Strength PSI:	150 at 15 PSI lateral pressure
Triaxial Test	Tex-117-E

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No. 40 sieve shall be determined (Wet Ball PI).

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

For water added under Item 247, the sulfate content will not exceed 3000-ppm and the chloride content will not exceed 3000-ppm.

Perform base ride quality testing for all base with only one lift of ACP or a seal coat as the final surface in accordance with Item 247. Perform base ride quality testing before placing the ACP or seal coat.

ITEM 251: Reworking Base Courses

Contractor is to stockpile 2,800 CY of salvaged base material at the San Benito maintenance yard. Contractor to coordinate with Hector Siller (956) 399-5102.

San Benito Area Office Lat: 26.130787, Long: -97.617039
1350 E US 77
San Benito, TX 78586

All surplus salvage base not used on the project will remain the property of the Contractor, unless otherwise directed by Engineer.

Proof roll the roadbed in accordance with Item 216, "Proof Rolling." Correct soft spots as directed.

ITEM 260: Lime Treatment (Road-Mixed)

The Contractor's attention is called to the fact that certain existing and/or proposed structures are within the limits of the lime-treated Subgrade. Unless otherwise directed by the Engineer, these structures shall be installed before the final rolling of this Subgrade. It shall be the Contractor's responsibility to perform the proper lime treating operation without damage to these structures.

The slurry method of applying lime will be required, except when the lime is to be added to naturally wet materials as directed by the Engineer.

For this project, the Engineer will direct a random number of lime trucks to be check weighed.

The percent of density as determined by Tex-121-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

In order to avoid damaging the Geogrid, add lime to the first lift of new base and/or salvage base at a central mixing site or mixing plant away from the construction area. The Engineer shall approve the site or plant location and method of mixing.

Proof roll all constructed lime treated subgrade and bases courses in accordance with Item 216, "Proof Rolling." Correct soft spots as directed. Correction of soft spots in the subgrade or base courses will be at the Contractor's expense.

Contractor is to place an underseal and/or pavement course as indicated on plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor's expense.

ITEM 276: Cement Treatment (Plant-Mixed)

The percent of density as determined by Tex-120-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

Proof roll all constructed cement treated base courses in accordance with Item 216, "Proof Rolling." Correct soft spots as directed. Correction of soft spots in the base courses will be at the Contractor's expense.

Contractor is to place an underseal and/or pavement course as indicated on plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor's expense.

ITEM 292: Asphalt Treatment (Plant-Mixed)

Design will be based on Tex- 204-F using the Superpave Gyratory Compactor. Design the mixture at 100 gyrations. (Ndesign) Use a target laboratory-molded density of 96%. Use an asphalt content between 3% and 9%.

Place asphalt treated base in layers between 3 to 4 inches.

Use Flexible Base TY E GR 4 in accordance with Item 247. TY A GR 1 may be used in lieu of TY E GR 4 when approved by the Engineer.

Compact asphalt treated base to 93% in place density.
Perform base ride quality testing before placing ACP in accordance with Item 247.

ITEM 3096: Asphalts, Oils, and Emulsions
Temporary ramps/detours and driveways may use Performance Grade Binder 64-22.

ITEM 301: Asphalts, Antistripping Agents

Hydrated Lime shall be added as an Antistripping additive between the rates of 1 % minimum and 2.0% maximum by weight for Items 292, 346, 3076, 3077, and 3080. If the Hamburg Wheel Test cannot be met within these limits, Liquid Antistripping agents as approved by the Engineer may be used in conjunction with lime for Items 346, 3076, 3077 and 3080.

ITEM 302: Aggregates for Surface Treatments

Loc.	County	CSJ	Highway	Binder	SAC
1	Cameron	0872-04-030	FM 506	SPG 79-13	B
2	Cameron	1136-02-053	FM 800	SPG 79-13	B
3	Cameron	1425-04-023	FM 1479	SPG 79-13	B

The aggregate for the surface treatment shall be surface dry before application unless otherwise directed by the Engineer.

ITEM 310: Prime Coat

The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

All existing Flexible Base, which may become exposed by the milling operation, shall be primed at the rate of 0.2 Gal/SY.

Do not apply subsequent courses over the initial prime coat any earlier than the day after the prime coat was applied, unless otherwise authorized or directed by the Engineer.

ITEM 314: Emulsified Asphalt Treatment

The Contractor shall exercise diligence in the application of emulsified asphalt by the use of flagging to keep from spraying or splattering the traveling public with asphaltic material.

ITEM 316: Seal Coat

In addition to cleaning by brooming of paved surfaces to be sealed as required by this Item, blading may also be necessary to clean dirt and grass from edges of the pavement and/or turnout areas. The cost of this blading will not be paid for directly, but will be considered subsidiary to the various bid Items of the project.

The type and grade of asphalt as shown on the plans and/or as directed by the Engineer, shall be used on these projects. Asphalt cement will be used during the warm season. An emulsified asphalt will be used during the cooler season if permitted in writing by the Engineer. The emulsified asphalt, if used, shall be HFRS 2P. Estimated quantities shown for the bid Item is based on an average of the estimated rates of application for asphaltic cement and emulsified asphalt. These rates should be used for estimating and comparison purposes only.

The one or two-course surface treatment shall be in place for a sufficient period of time in the opinion of the Engineer, for the surface treatment to properly dry and cure before placing the Asphaltic Concrete Pavement.

Traffic will not be permitted on the surface treatment unless authorized by the Engineer.

When emulsified asphalt is used, do not apply subsequent courses over the surface treatment any earlier than the day after the surface treatment was applied, unless otherwise authorized or directed by the Engineer.

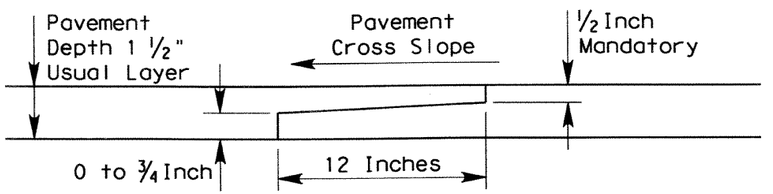
ITEM 3076: Dense-Graded Hot-Mix Asphalt

The Contractor shall exercise diligence in the application of "Tack Coat" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

Blading (not to exceed more than 3-ft from the pavement edge) may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid item. The cost of this blading will not be paid for directly, but shall be considered subsidiary to this bid item.

All surplus RAP from this project will remain the property of the Contractor.
Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

All unconfined longitudinal joints shall be constructed with a joint maker providing a maximum ½-inch vertical edge and a minimum 6:1 edge taper or as approved by the Engineer. The Engineer may waive this requirement when no impacts to the traveling public are foreseen.



NOTCHED WEDGE JOINT

The engineer may allow for variances to the dimensions shown.

The Hamburg Wheel Test requirement for PG 64 binder will be 5,000 passes @ 0.5 inch rut depth.

Design mixture using a Superpave Gyratory Compactor.

Public and private driveways need to have a smooth vertical transition between the edge of pavement and the existing driveways. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 3076.

The use of RAP and RAS (recycled asphalt shingles) will not be allowed as part of the mix design for the final riding surface.

Use a release agent from the Department's MPL to clean and to coat the inside of truck beds for hauling equipment. Hauling equipment shall be cleaned prior to hauling material to job site. Submit a copy of the bill of lading to the Engineer as part of the QCP. Ensure the pavement is free from any spillage of hydraulic oil or diesel from construction equipment. The Department may reject trucks that contain any foreign material and suspend production if the pavement is contaminated by any pollutants mentioned above.

ITEM 354: Planing and Texturing Pavement

Contractor is to place seal coat or ACP layer(s) as indicated on plans within 14-calendar days of planing/milling operation unless otherwise directed by the Engineer.

All planing/milling operation drop offs greater than 1-inch need to have a 3:1 slope taper unless otherwise directed by the Engineer. The cost of the 3:1 slope taper is subsidiary to Item 354.

ITEM 400: Excavation and Backfill for Structures

If the Contractor elects to cut pavement (existing/detour) for structural work beyond that required by the construction phasing shown in the plans and approved by the Engineer, it shall be restored at his expense and backfilled to its original condition or better in accordance with Item 400.

Unless shown otherwise in the plans, use a 1-ft depth for Item 400 Structural Excavation (Special) for gravel bedding needed below drainage structures with unstable material.

Structural Excavation Special (Gravel):

Use durable natural stone when tested in accordance with Tex-411-A, has weight loss of no more than 18% after 5 cycles of magnesium sulfate solution. Provide gravel conforming to an aggregate Grade No. 1 as shown on Table 4 of Article 421.2.

ITEM 420: Concrete Substructures

Pay bent concrete as plan quantity.

ITEM 421: Hydraulic Cement Concrete
Provide Sulfate Resistant Concrete for all concrete piling and drilled shafts.

Provide equipment at the batch plant for determining the free moisture and/or absorption of aggregates in accordance with applicable TXDOT Test.

Provide the following items for concrete batch inspection in accordance with specifications outlined in DMS-10101, "Computer Equipment":

(1) One Desktop Microcomputer or One Laptop Microcomputer
(2) One Integrated Printer/Scanner/Copier/Fax Unit
(3) Contractor-Furnished Software
(4) Hardware

Submit to the Engineer for approval the project locations for all Portland Cement concrete washout areas prior to starting any concrete work.

Use membrane curing, Type 2, for concrete curb, gutter and combined curb and gutter, concrete medians, directional islands and sidewalks.

ITEM 432: Riprap

Provide Class "A" concrete minimum for riprap aprons placed around all box culvert and pipe safety end treatments. Provide ¼-inch thick dummy joints at least every 15-ft for riprap aprons placed around box and pipe culverts.

Do not use fiber reinforced concrete RIPRAP on side slopes equal to or steeper than 6:1 unless approved by the Engineer.

ITEM 462: Concrete Box Culverts and Drains

Provide joints in pre-cast concrete box culverts using any of the methods specified in Item 464, except mortar joints.

Provide pre-cast concrete boxes to expedite traffic handling unless otherwise shown on the plans.

Provide the Area Engineer with the casting schedule of all pre-cast concrete boxes prior to beginning any fabrication.

ITEM 464: Reinforced Concrete Pipe

Use tongue and groove pipe where the RCP extends into the lime treated subgrade. The 4-foot depth restriction for heavy equipment passage over pipe structures is voided. The Contractor will be responsible for any construction damage to these facilities.
Do not use mortar joints.

All reinforced concrete pipe shall include rubber gaskets unless shown otherwise on the plans or directed by the Engineer.

ITEM 465: Junction Boxes, Manholes, and Inlets

For TY PSL with RG, FG, or SFG lid inlets, provide Class B concrete riprap with (6"x6" W3xW3 (No. 6 gauge) welded wire fabric) for any side that is touching the natural ground. The riprap will be 4-in thick and 3-ft wide with an 8-in deep by 6-in wide toe unless otherwise shown in the plans. The cost will be subsidiary to Item 465 unless otherwise shown in the plans.

For all inlet extensions, provide a temporary circular curb/inlet extension opening for drainage during construction. The circular opening will be a 4-in Diameter by 2-in deep slot that matches the statewide PCO standard. Fill curb circular curb/inlet extension opening with epoxy and mortar as per Item 429 Concrete Structure Repair specifications. Epoxy and mortar is subsidiary to Item 465.

ITEM 466: Headwalls and Wingwalls

Do not use pre-cast headwalls/wingwalls.

ITEM 467: Safety End Treatment

All Type II SET's shall have riprap, Class "A" minimum, aprons as shown on the plans. The Contractor may submit an alternate precast SET design for approval by the Engineer.

ITEM 471: Frames, Grates, Rings, and Covers

All grates will be tack welded to the frames in a manner satisfactory to the Engineer.

ITEM 502: Barricades, Signs, and Traffic Handling

Shadow vehicles equipped with Truck-Mounted Attenuators are required for traffic handling. See notes for Item 6185: Truck Mounted Attenuator/Trailer Attenuator, for additional references pertaining to the TMAs.

A pilot car and radio equipped flaggers shall be required for all undivided roadway locations as directed by the Engineer. The pilot car with necessary flaggers and/or radio equipped flaggers and all signs, equipment, labor and incidentals required for this method of traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

Replace/relocate all regulatory signs removed due to construction operations with the same sign on fixed support(s) immediately upon its removal. First obtain Project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

Relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

These signs shall be relocated to a location in accordance with the Latest Version of the "Texas Manual on Uniform Traffic Control Devices". In no case will a sign be removed without a replacement sign and support(s) being readily available and a location established. Removal and relocation of these signs required for traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

From the beginning to the end of the project, all traffic control devices need to be in acceptable condition as per the Texas Quality Guidelines for Work Zone Traffic Control Devices.

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 "Safety Contingency" is not intended to be used in lieu of bid items established by the contract.

ITEM 504: Field Office and Laboratory

Furnish (1) Field Office (Type C).

The Contractor will furnish a Type D Structure (Asphalt Mix Laboratory) modified by the following.

Laboratory room:

The other room of this building will be used as a laboratory and will include access to a bathroom facility from the interior. The laboratory and bathroom facility will have the walls, ceiling and floor insulated such that the air temperature can be maintained at 76 degrees Fahrenheit at all times.

Furnish for the Department's use in the asphalt laboratory one (1) desktop computer.

ITEM 506: Temporary Erosion, Sedimentation, and Environmental Controls

The Contractor shall install the required Best Management Practice (BMP) elements accordingly at the required locations as per the appropriate phasing of the project or as needed or as directed by the Engineer. The Contractor is instructed to follow the SW3P Layouts for the typical BMP for each location. SW3P Erosion Construction Exit locations are to be approved by the Engineer.

The Contractor Force Account "Erosion Control Maintenance" that has been established for this project is intended to be utilized for work zone Best Management Practice (BMP) maintenance, to

improve the effectiveness of the Environmental Controls that may need maintenance attention and/or require replacement while the project is still under the construction stage. These procedures will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent BMP management reviews on the project. The "Erosion Control Maintenance" is not intended to be used in lieu of bid items established by the contract.

ITEM 508: Constructing Detours

Flexible Base, prime coat, and Asphaltic Concrete Pavement used for detours shall meet the requirements of Items 247, 310 and 3076 respectively, except for measurement and payment.

ITEM 512: Portable Traffic Barrier

During the various construction phases, provide drainage slots in every temporary concrete traffic barrier used for traffic control in order to handle temporary drainage. Provide any additional drainage measures needed as directed by the Engineer.

ITEM 529: Concrete Curb, Gutter, and Combined Curb and Gutter

Before final acceptance of the project, remove discoloration caused by tire marks, mud, asphalt, paint or other similar material by any method satisfactory to the Engineer to achieve a uniform color and texture of the finished surface exposed to view.

Curb attached to the MBGF thrie-beam transition section will be subsidiary to the MBGF transition.

ITEM 530: Intersections, Driveways, and Turnouts

Prime coat shall meet the requirements of Item 310.

Daily testing requirements for Hot Mix Asphaltic Concrete Pavements for drives, commercial entrances and/or turnouts may be waived by the Engineer.

Public and private driveways need to have a smooth vertical transition tie-in between the proposed driveway and the existing driveway. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 530.

ITEM 540: Metal Beam Guard Fence

The optional terminal anchor post with the terminal connector will be required as shown on the Metal Beam Guard Fence Standard.

Galvanize the rail elements supplied for this project using a Type II Zinc Coating.

ITEM 542: Removing Metal Beam Guard Fence

Dispose all metal beam guard fence materials unless shown otherwise in the plans.

ITEM 544: Guardrail End Treatments

Label "end treatment type" on backside of unit at time of installation.

ITEM 552: Wire Fence

Contractor is to repair any wire fence that is damaged by the Contractor's construction operations to insure the retention of livestock, if any, in their respective pastures along the project.

ITEM 560: Mailbox Assemblies

Coordinate and verify final mailbox locations with TxDOT and the US Postmaster.

ITEM 585: Ride Quality for Pavement Surfaces

Diamond grinding shall be used to remove localized roughness.

Use Surface Test Type B pay adjustment schedule __1__ to evaluate ride quality of the travel lanes in accordance with Item 585, "Ride Quality for Pavement Surfaces." This includes ramps and service road travel lanes.

ITEMS 636: Signs

Complete sign blanks and panels shall be handled and stored at the job site in such a manner that corners, edges and faces are not damaged. Finished sign blanks shall be stored in either a weatherproof ware-house or outside and off the ground in a vertical position. All paper, cardboard and chemically treated separators and packaging shall be removed prior to outside storage.

ITEM 644: Small Roadside Sign Assemblies

All signs shall be installed as shown in the plans and in accordance with the current edition of the "Texas Manual on Uniform Traffic Control Devices" and the "Sign Crew Field Book" (SCFB).

All signs shall be erected according to the locations shown on the signing layout sheets except that a sign may be shifted in order to secure a more desirable location. All sign locations will be staked as shown in the plans and as approved. It is the intent of the plans to erect all roadside traffic signs with the sign edge a minimum of 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the travel lane. In curb and gutter sections the sign edge shall be a minimum of 2 feet from the face of the curb.

For this project, aluminum type sign blanks as provided for under Item 636 will be required for all proposed signing installed under Item 644. Aluminum sign blanks less than 7.5 square feet shall be 0.08 inch thick, sign blanks 7.5 to 15 square feet shall be 0.100 inch thick and sign blanks greater than 15 square feet shall be 0.125 inch thick.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of these Items.

Sign types which design details are not shown on the plans shall conform with the latest edition of the Department's "Standard Highway Sign Design for Texas" Manual.

Signs shown to be removed shall include the complete sign installation and separate the sign post at the concrete foundation. The concrete foundation shall be disposed in accordance with this Bid Item. Except for concrete foundations, all removed sign panels, sign posts, and hardware shall remain then property of the Department. All removed sign installations shall be completely disassembled. All salvageable sections of sign panels shall be recycled by TxDOT. The removed sign material will be required to be hauled to the maintenance yard closest to the project. No signs shall be removed without prior approval.

Existing signs shown to be removed and relocated within this project shall first be identified in the field before they are removed and relocated to their new installation position as determined in the plans. The complete sign assembly shall be removed and the sign with post shall be separated at the concrete foundation. The concrete foundation shall be disposed off in accordance with this bid Item. No sign shall be removed without prior approval.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of this item.

ITEM 658: Delineator and Object Marker Assemblies

Delineator assemblies shall be installed 8 feet from the edge of the shoulder unless restricted by some obstruction, in which case, the delineator assembly shall be placed between 2 and 8 feet from the edge of the shoulder.

Bi-directional object markers shall be in accordance with the D&OM standard sheets. The Contractor is directed to the standards when instructed where and how to install the object markers.

ITEMS 662 and 666: Work Zone Pavement Markings and Retroreflectorized Pavement Markings

All permanent pavement markings for this project under this Item shall be 0.100 inches (100 mil) thick thermoplastic.

Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity in accordance with the requirements of Tex 828-B, or that fail to meet minimum retro reflectivity requirements for longitudinal pavement markings when required, will be addressed per the requirements of the specification. The roadway will be re-striped at no additional compensation.

Before the roadways are overlaid, the location and configuration of all existing pavement markings shall be recorded for use in installing the final permanent pavement marking. All roadways shall be striped as existing, unless otherwise noted in the plans.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

All permanent pavement markings and work zone pavement markings for this project under these Items shall be 0.100 inches (100 mil) thick thermoplastic.

Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity in accordance with the requirements of Tex 828-B, or that fail to meet minimum retro reflectivity requirements for longitudinal pavement markings when required, will be addressed per the requirements of the specification. The roadway will be re-striped at no additional compensation.

Pavement surface preparation for markings and markers will not be paid for directly, but shall be considered subsidiary to Item 666.

Prior to any striping operations, an on-site coordination meeting between all the parties involved will be required to review striping details and requirements to ensure quality work.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

ITEM 677: Eliminating Existing Pavement Markings and Markers

Asphalt and aggregate types and grades shall be as approved in writing when a surface treatment is used to eliminate existing pavement markings.

ITEM 3084 – Bonding Course
The minimum application rates are listed in Table BC.

The target shear bond strengths are listed in Table BCS. The informational test cores shall be taken once a shift for first 5 lots of placement or a change to placement method of bonding course,

bonding material, or hot mix material. The remaining informational test cores shall be taken once every 3 lots for surface mix. Informational tests are not required for non-surface mix beyond the first 5 lots unless there is a change to placement method of bonding course, bonding material, or hot mix material. Results from these informational tests will not be used for specification compliance.

Table BC

Material	Minimum Application Rate (gal. per square yard)
TRAIL – Emulsified Asphalt	0.06
TRAIL – Hot Asphalt	0.12
Spray Applied Underseal Membrane	0.10

Table BCS (For Informational Tests)

Material
SMA – Stone-Matrix Asphalt
All Other Materials

ITEM 5001: Geogrid Base Reinforcement

Provide a construction plan to the Engineer detailing how the base will be lime treated without damaging the Geogrid Base Reinforcement placed on top of the subgrade.

ITEM 5088: Bird Exclusion Methods

Contractor's attention is directed to the plans EPIC sheets, Bird Exclusion Detail standard sheets and shall refer to the Migratory Bird Treaty Act requirements. Also, refer to the TPWD BMPSs sheets for specific adherence to the environmental requirements of the Best Management Practices.

ITEM 6185: Truck Mounted Attenuator/Trailer Attenuator

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan for the project, provide 2 additional shadow vehicle(s) with TMA
as per TCP (1-1) -18 as detailed on General Note 5 of this standard sheet;
or as per TCP (1-2) -18 as detailed on General Note 6 of this standard sheet;
or as per TCP (1-4) -18 as detailed on General Note 5 of this standard sheet;
or as per TCP (2-1) -18 as detailed on General Note 5 of this standard sheet;
or as per TCP (2-2) -18 as detailed on General Note 7 of this standard sheet;
or as per TCP (2-4) -18 as detailed on General Note 6 of this standard sheet;
or as per TCP (2-5) -18 as detailed on General Note 4 of this standard sheet.

Therefore, 3 total shadow vehicles with TMA will be required on this project for the type of work as shown on the plans. The Contractor will be responsible for determining if one or more of his construction operations will be ongoing at the same time and thus determine the total number of TMAs needed for the project.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0872-04-030 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY FM 1479, FM 506, FM 800

		CONTROL SECTION JOB		**0872-04-030**		**1136-02-053**		**1425-04-023**		TOTAL EST.	TOTAL FINAL
		PROJECT ID		**A00123449**		**A00123450**		**A00123451**			
		COUNTY		**Cameron**		**Cameron**		**Cameron**			
		HIGHWAY		**FM 506**		**FM 800**		**FM 1479**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW	STA	155.720		89.460		87.980		333.160	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	339.000		519.000		47.000		905.000	
	104-6054	REMOVING CONCRETE(MOW STRIP)	LF	3,400.000						3,400.000	
	105-6054	REMOVING STAB BASE & ASPH PAV (18")	SY			29,791.000		45,954.000		75,745.000	
	105-6073	REMOV STAB BASE AND ASPH PAV (22")	SY	71,255.000						71,255.000	
	110-6001	EXCAVATION (ROADWAY)	CY	7,395.000		12,355.000		17,723.000		37,473.000	
	110-6002	EXCAVATION (CHANNEL)	CY			171.000				171.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	2,932.000		4,257.000		335.000		7,524.000	
	164-6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	4,953.000		43,896.000		371.000		49,220.000	
	164-6041	DRILL SEEDING (TEMP) (WARM)	SY	4,953.000		43,896.000		371.000		49,220.000	
	166-6001	FERTILIZER	AC	1.020		9.060		0.070		10.150	
	168-6001	VEGETATIVE WATERING	MG	91.000		801.000		7.000		899.000	
	216-6001	PROOF ROLLING	HR	3.000				11.000		14.000	
	247-6225	FL BS (RDWY DEL)(TY E GR 4)(FNAL POS)	CY	25,860.000		11,616.000		12,894.000		50,370.000	
	260-6012	LIME(HYD,COM OR QK)(SLRY)OR QK(DRY)	TON	1,841.000		1,296.000				3,137.000	
	260-6084	LIME TRT (SUBGRADE)(12")	SY	62,096.000		43,638.000				105,734.000	
	275-6001	CEMENT	TON	836.000		391.000		434.000		1,661.000	
	275-6031	CEMENT TREAT (NEW BASE) (10")	SY			41,824.000		46,408.000		88,232.000	
	275-6054	CEMENT TREAT (NEW BASE 14")	SY	63,669.000						63,669.000	
	292-6017	ASPHALT STAB BASE (GR 4)(PG 64)	TON	1,157.000						1,157.000	
	310-6009	PRIME COAT (MC-30)	GAL	12,734.000		8,199.000		9,117.000		30,050.000	
	316-6029	ASPH (RC-250)	GAL	21,647.000		13,940.000		15,500.000		51,087.000	
	316-6433	AGGR(TY PE,TY-PL,TY-E,TY-L GR-4)(SAC-B)	CY	492.000		315.000		349.000		1,156.000	
	354-6002	PLAN & TEXT ASPH CONC PAV(0" TO 2")	SY	7,190.000						7,190.000	
	354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY			129.000				129.000	
	400-6005	CEM STABIL BKFL	CY	150.300		349.500		321.700		821.500	
	400-6008	CUT & RESTORE ASPH PAVING	SY	304.000		445.000		371.000		1,120.000	
	400-6010	STRUCT EXCAV (SPECIAL)	CY	200.000		200.000		200.000		600.000	
	401-6001	FLOWABLE BACKFILL	CY	210.000						210.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	360.000		1,610.000		560.000		2,530.000	
	409-6001	PRESTR CONC PIL (16 IN SQ)	LF			420.000				420.000	
	420-6019	CL C CONC (ABUT)(EXTEND)	CY			6.100				6.100	
	420-6033	CL C CONC (CAP)(EXTEND)	CY			3.800				3.800	
	422-6003	REINF CONC SLAB (EXTEND SLAB)	SF			687.500				687.500	
	432-6006	RIPRAP (CONC)(CL B)	CY			10.900				10.900	
	432-6026	RIPRAP (STONE COMMON)(DRY)(18 IN)	CY			12.000				12.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	161.000						161.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0872-04-030 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY FM 1479, FM 506, FM 800

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			PROJECT ID	**A00123449**		**A00123450**		**A00123451**			
			COUNTY	**Cameron**		**Cameron**		**Cameron**			
			HIGHWAY	**FM 506**		**FM 800**		**FM 1479**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	450-6006	RAIL (TY T223)	LF			100.000				100.000	
	451-6024	RETROFIT RAIL (TY SSTR)	LF	688.000						688.000	
	462-6020	CONC BOX CULV (8 FT X 5 FT)	LF			137.000				137.000	
	464-6002	RC PIPE (CL III)(15 IN)	LF	6.000						6.000	
	464-6003	RC PIPE (CL III)(18 IN)	LF	49.000		817.000		135.000		1,001.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	211.000		1,312.000		139.000		1,662.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF	80.000		107.000		26.000		213.000	
	464-6008	RC PIPE (CL III)(36 IN)	LF	93.000		176.000		275.000		544.000	
	464-6012	RC PIPE (CL III)(60 IN)	LF			283.000				283.000	
	465-6012	JCTBOX(COMPL)(PJB)(8FTX8FT)	EA			1.000				1.000	
	465-6070	INLET (COMPL)(PSL)(RC)(3FTX3FT)	EA			2.000				2.000	
	465-6126	INLET (COMPL)(PSL)(FG)(3FTX3FT-3FTX3FT)	EA			3.000		1.000		4.000	
	465-6127	INLET (COMPL)(PSL)(FG)(4FTX4FT-3FTX3FT)	EA					1.000		1.000	
	465-6143	INLET (COMPL)(PSL)(FG)(8FTX8FT-3FTX3FT)	EA			3.000				3.000	
	465-6206	INLET (COMPL)(TY C)(1 GRATE)	EA	1.000						1.000	
	465-6273	INLET (COMPL) (TY C) (2 GRATE)	EA	3.000						3.000	
	466-6099	HEADWALL (CH - PW - 0) (DIA= 30 IN)	EA					1.000		1.000	
	466-6105	HEADWALL (CH - PW - 0) (DIA= 60 IN)	EA			4.000				4.000	
	466-6185	WINGWALL (PW - 2) (HW=10 FT)	EA			1.000				1.000	
	466-6197	WINGWALL (PW - 2) (HW=8 FT)	EA			1.000				1.000	
	467-6362	SET (TY II) (18 IN) (RCP) (6: 1) (C)	EA	23.000		38.000		6.000		67.000	
	467-6388	SET (TY II) (24 IN) (RCP) (3: 1) (C)	EA	4.000		10.000		2.000		16.000	
	467-6390	SET (TY II) (24 IN) (RCP) (4: 1) (C)	EA			1.000				1.000	
	467-6394	SET (TY II) (24 IN) (RCP) (6: 1) (C)	EA					1.000		1.000	
	467-6448	SET (TY II) (36 IN) (RCP) (3: 1) (C)	EA	4.000						4.000	
	479-6006	ADJUSTING INLET (CAP)	EA	3.000						3.000	
	496-6002	REMOV STR (INLET)	EA	1.000		1.000		2.000		4.000	
	496-6004	REMOV STR (SET)	EA	12.000		21.000		8.000		41.000	
	496-6006	REMOV STR (HEADWALL)	EA			2.000		1.000		3.000	
	496-6007	REMOV STR (PIPE)	LF	301.000		1,782.000		840.000		2,923.000	
	496-6008	REMOV STR (BOX CULVERT)	LF			30.000				30.000	
	496-6099	REMOVE STR (RAIL)	LF			100.000				100.000	
	500-6001	MOBILIZATION	LS	1.000						1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	7.000		7.000		7.000		21.000	
	506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	81.000		200.000		79.000		360.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	81.000		200.000		79.000		360.000	
	506-6021	CONSTRUCTION EXITS (INSTALL) (TY 2)	SY	468.000		312.000		312.000		1,092.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0872-04-030 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY FM 1479, FM 506, FM 800

			CONTROL SECTION JOB	**0872-04-030**		**1136-02-053**		**1425-04-023**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00123449**		**A00123450**		**A00123451**			
			COUNTY	**Cameron**		**Cameron**		**Cameron**			
			HIGHWAY	**FM 506**		**FM 800**		**FM 1479**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	468.000		312.000		312.000		1,092.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	3,688.000		1,811.000		1,337.000		6,836.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	3,688.000		1,811.000		1,337.000		6,836.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	186.000		44.000		48.000		278.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	690.000		44.000		48.000		782.000	
	506-6045	BIODEG EROSN CONT LOGS (INSTL) (6")	LF	504.000						504.000	
	512-6009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	2,900.000		8,020.000		8,380.000		19,300.000	
	512-6010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	1,200.000		240.000		500.000		1,940.000	
	512-6033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	1,560.000		7,860.000		8,380.000		17,800.000	
	512-6034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	480.000		240.000		60.000		780.000	
	512-6057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	2,900.000		8,020.000		8,380.000		19,300.000	
	512-6058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	1,200.000		240.000		500.000		1,940.000	
	530-6004	DRIVEWAYS (CONC)	SY	366.000		457.000		55.000		878.000	
	530-6005	DRIVEWAYS (ACP)	SY	2,169.000		1,435.000		1,578.000		5,182.000	
	530-6008	TURNOUTS (ACP)	SY	562.000		318.000		227.000		1,107.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	2,663.000						2,663.000	
	540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	4.000						4.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	3,398.000						3,398.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	10.000						10.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	10.000						10.000	
	545-6004	CRASH CUSH ATTEN (STKPL)	EA			4.000				4.000	
	545-6026	CRASH CUSHION ATTEN (INSTALL) (QUAD)(N)	EA			4.000				4.000	
	560-6011	MAILBOX INSTALL-S (TWW-POST) TY 4	EA	13.000		8.000		13.000		34.000	
	560-6012	MAILBOX INSTALL-D (TWW-POST) TY 4	EA	4.000		1.000				5.000	
	560-6013	MAILBOX INSTALL-M (TWW-POST) TY 4	EA			4.000				4.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	1.000						1.000	
	644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	5.000		13.000				18.000	
	658-6047	INSTL OM ASSM (OM-2Y)(WC)GND	EA	10.000		20.000		4.000		34.000	
	662-6004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	14,844.000		8,842.000		8,760.000		32,446.000	
	662-6034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	17,515.000		8,282.000		8,389.000		34,186.000	
	662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	102.000						102.000	
	662-6061	WK ZN PAV MRK REMOV (W)4"(DOT)	LF	49.000						49.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	18,400.000		8,704.000		8,373.000		35,477.000	
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	216.000						216.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	22,425.000		8,282.000		8,511.000		39,218.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA			50.000				50.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	1,641.000		415.000		438.000		2,494.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0872-04-030 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY FM 1479, FM 506, FM 800

			CONTROL SECTION JOB	**0872-04-030**		**1136-02-053**		**1425-04-023**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00123449**		**A00123450**		**A00123451**			
			COUNTY	**Cameron**		**Cameron**		**Cameron**			
			HIGHWAY	**FM 506**		**FM 800**		**FM 1479**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	190.000		101.000				291.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	753.000						753.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	253.000		85.000		30.000		368.000	
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF			122.000				122.000	
	666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	4,950.000		1,690.000		2,000.000		8,640.000	
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	14,087.000		7,298.000		3,530.000		24,915.000	
	666-6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	LF	30,915.000		17,480.000		17,194.000		65,589.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	6.000		1.000				7.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2.000		1.000				3.000	
	668-6089	PREFAB PAV MRK TY C (W) (RR XING)	EA	1.000						1.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	465.000		286.000		173.000		924.000	
	672-6017	TRAFFIC BUTTON TY Y	EA	540.000		1,106.000		703.000		2,349.000	
	672-6018	TRAFFIC BUTTON TY B	EA	3,546.000		2,245.000		2,704.000		8,495.000	
	681-6001	TEMP TRAF SIGNALS	EA	2.000						2.000	
	1008-6001	PRSSR IRRIG PVC PIPE (18")	LF	80.000		107.000				187.000	
	1008-6002	PRSSR IRRIG PVC PIPE (24")	LF			176.000		275.000		451.000	
	3077-6065	SP MIXESSP-DSAC-A PG76-22	TON	12,684.000		6,924.000		7,714.000		27,322.000	
	3084-6001	BONDING COURSE	GAL	4,927.000		2,872.000		3,154.000		10,953.000	
	4024-6005	RC LOW HEAD PRSSR PIPE (CL III)(36")	LF					195.000		195.000	
	4024-6029	RC LOW HEAD PRSSR PIPE (CL III)(48")	LF					90.000		90.000	
	5001-6002	GEOGRID BASE REINFORCEMENT (TY II)	SY	67,047.000		42,649.000		47,229.000		156,925.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	112.000		56.000		56.000		224.000	
	6185-6002	TMA (STATIONARY)	DAY	105.000		100.000				205.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	9.000		25.000		25.000		59.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000						1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000						1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000						1.000	

SUMMARY OF TCP QUANTITIES (FM 506)

SHEET SEQUENCE	ITEM	400	502	512						662								681	6001	6185	6185
	DESC. CODE	6008	6001	6009	6010	6033	6034	6057	6058	6004	6034	6050	6061	6063	6075	6095	6111	6001	6001	6002	6005
	LOCATION (STA TO STA)	CUT & RESTORE ASPH PAVING	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	PORT CTB (MOVE)(LOW PROF)(TY 1)	PORT CTB (MOVE)(LOW PROF)(TY 2)	PORT CTB (REMOVE)(LOW PROF)(TY 1)	PORT CTB (REMOVE)(LOW PROF)(TY 2)	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (W)4"(DOT)	WK ZN PAV MRK REMOV (W)4"(SLD)	WK ZN PAV MRK REMOV (W)24"(SLD)	WK ZN PAV MRK REMOV (Y)4"(SLD)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TEMP TRAF SIGNALS	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
		SY	MO	LF	LF	LF	LF	LF	LF	LF	LF	EA	LF	LF	LF	LF	EA	EA	DAY	DAY	DAY
	PHASE 1																				
SHEET 1 OF 3	BEGIN TO 17+00			440	100			100		542	1,080	14	28		36			1	14		5
	17+00 TO 29+00			780	160			360		940	1,880	24									
SHEET 2 OF 3	29+00 TO 41+00			800	160			300		960	1,890	24			48			1			
	41+00 TO 53+00			880	60			580		940	1,480	26		400	24	400					
SHEET 3 OF 3	53+00 TO 65+00													1,000		1,000					
	65+00 TO 77+00																		14		
	PHASE 1 TOTALS			**2,900**	**480**			**1,340**		**3,382**	**6,330**	**88**	**28**	**1,400**	**108**	**1,400**		**2**	**28**		**5**
	PHASE 2																				
SHEET 1 OF 3	BEGIN TO 17+00					420	100	420	100				21	540	36	1,080	55		14		2
	17+00 TO 29+00					500	320	500	320					940		1,880	94				
SHEET 2 OF 3	29+00 TO 41+00				360	300	60	300	420					960	48	2,260	113				
	41+00 TO 53+00				360	340		340	360					876	24	1,752	88				
SHEET 3 OF 3	53+00 TO 65+00													1,084		1,084					
	65+00 TO 77+00																		14		
	PHASE 2 TOTALS				**720**	**1,560**	**480**	**1,560**	**1,200**				**21**	**4,400**	**108**	**8,056**	**350**		**28**		**2**
	PHASE 3																				
SHEET 1 OF 7	BEGIN TO 17+00																			105	2
	17+00 TO 29+00																				
SHEET 2 OF 7	29+00 TO 41+00																				
	41+00 TO 53+00									224	224			272							
SHEET 3 OF 7	53+00 TO 65+00									1,200	1,200										
	65+00 TO 77+00									1,200	1,200								14		
SHEET 4 OF 7	77+00 TO 89+00	57								1,200	1,200										
	89+00 TO 101+00									1,200	1,200										
SHEET 5 OF 7	101+00 TO 113+00									1,200	1,200										
	113+00 TO 125+00									856	856			344		344					
SHEET 6 OF 7	125+00 TO 137+00	51								1,200	1,200										
	137+00 TO 149+00	51								1,200	1,200										
SHEET 7 OF 7	149+00 TO 161+00	44								1,200	1,200										
	161+00 TO END PROJECT	101								782	505								14		
	PHASE 3 TOTALS	**304**								**11,462**	**11,185**			**616**		**344**			**28**	**105**	**2**
	PHASE 4																				
SHEET 1 OF 7	BEGIN TO 17+00																			34	4
	17+00 TO 29+00																				
SHEET 2 OF 7	29+00 TO 41+00																				
	41+00 TO 53+00													300		295	56				
SHEET 3 OF 7	53+00 TO 65+00													1,200		1,200	291				
	65+00 TO 77+00													1,200		1,200	129		14		
SHEET 4 OF 7	77+00 TO 89+00													1,200		1,200	90				
	89+00 TO 101+00													1,200		1,200	90				
SHEET 5 OF 7	101+00 TO 113+00													1,200		1,200	122				
	113+00 TO 125+00													1,200		1,200	126				
SHEET 6 OF 7	125+00 TO 137+00													1,200		1,200	123				
	137+00 TO 149+00													1,200		1,200	90				
SHEET 7 OF 7	149+00 TO 161+00													1,200		1,200	90				
	161+00 TO END PROJECT											14		884		1,530	85		14		
	PHASE 4 TOTALS											**14**		**11,984**		**12,625**	**1,291**		**28**		
	PROJECT TOTALS	**304**	**7**	**2,900**	**1,200**	**1,560**	**480**	**2,900**	**1,200**	**14,844**	**17,515**	**102**	**49**	**18,400**	**216**	**22,425**	**1,641**	**2**	**112**	**105**	**9**
		*															**				

NOTES:

* TO BE USED PRIOR TO BEGINNING PHASE 3 OF FM 506 RURAL SECTION.

** TO BE USED AFTER PHASE 4 OF FM 506 RURAL SECTION FOR PLACEMENT OF FINAL RIDING SURFACE.

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506

SUMMARY OF TCP QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		32
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

SUMMARY OF REMOVAL QUANTITIES (FM 506)

SHEET SEQUENCE	ITEM	104	104	105	354	479	496			542	544
	DESC. CODE	6017	6054	6073	6002	6006	6002	6004	6007	6001	6003
	LOCATION (STA TO STA)	REMOVING CONC (DRIVEWAYS)	REMOVING CONCRETE (MOW STRIP)	REMOV STAB BASE AND ASPH PAV (22")	PLAN & TEXT ASPH CONC PAV(0" TO 2")	ADJUSTING INLET (CAP)	REMOV STR (INLET)	REMOV STR (SET)	REMOV STR (PIPE)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)
		SY	LF	SY	SY	EA	EA	EA	LF	LF	EA
SHEET 1 OF 7	BEGIN TO 17+00			2,978	1,186						
	17+00 TO 29+00			5,333	2,134						
SHEET 2 OF 7	29+00 TO 41+00			5,333	2,134						
	41+00 TO 53+00			5,720	1,736						
SHEET 3 OF 7	53+00 TO 65+00	143		6,224		3	1				
	65+00 TO 77+00	134		5,820							
SHEET 4 OF 7	77+00 TO 89+00	42	630	5,442						540	2
	89+00 TO 101+00			5,360				4	96		
SHEET 5 OF 7	101+00 TO 113+00		1,150	5,432						1,060	2
	113+00 TO 125+00		1,620	3,886						1,798	6
SHEET 6 OF 7	125+00 TO 137+00			5,670				2	57		
	137+00 TO 149+00	20		5,458				2	48		
SHEET 7 OF 7	149+00 TO 161+00			5,496							
	161+00 TO END			3,103				4	100		
	CSJ TOTALS	**339**	**3,400**	**71,255**	**7,190**	**3**	**1**	**12**	**301**	**3,398**	**10**

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 506

SUMMARY OF REMOVAL QUANTITIES

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		33
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 1:18:26 PM

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SUMMARY OF ROADWAY QUANTITIES (FM 506)

SHEET SEQUENCE	ITEM	216	247	260		275		292	310	316		401	432	451
	DESC. CODE	6001	6225	6012	6084	6001	6054	6017	6009	6029	6433	6001	6045	6024
	LOCATION (STA TO STA)	PROOF ROLLING	FL BS (RDWY DEL) (TY E GR 4) (FNAL POS)	LIME (HYD,COM OR QK) (SLRY) OR QK (DRY) (6%) (2970 LBS/CY)	LIME TRT (SUBGRADE) (12")	CEMENT (2%) (3375 LBS/CY)	CEMENT TREAT (NEW BASE 14")	ASPHALT STAB BASE (GR 4)(PG 64)	PRIME COAT (MC-30) (0 .20 GAL/SY)	OCST ASPH (RC-250) (0.34GAL/SY)	OCST AGGR (TY PE,TY-PL,TY-E,TY-L GR-4) (SAC-B) (1CY/130 SY)	FLOWABLE BACKFILL	RIPRAP (MOW STRIP) (4 IN)	RETROFIT RAIL (TY SSTR)
		HR	CY	TON	SY	TON	SY	TON	GAL	GAL	CY	CY	CY	LF
SHEET 1 OF 14	STA 10+32.90 TO STA 17+00.00	0.5	978	59	1,976	27	2,028	200	406	690	16			
SHEET 2 OF 14	STA 17+00.00 TO STA 29+00.00	0.5	1,835	119	4,007	54	4,112	249	822	1,398	32			
SHEET 3 OF 14	STA 29+00.00 TO STA 41+00.00	0.5	1,859	123	4,142	56	4,251	216	850	1,445	33			
SHEET 4 OF 14	STA 41+00.00 TO STA 53+00.00	0.5	2,098	149	5,021	68	5,143	103	1,029	1,749	40			
SHEET 5 OF 14	STA 53+00.00 TO STA 65+00.00		2,710	203	6,835	91	6,968		1,394	2,369	54	75		
SHEET 6 OF 14	STA 65+00.00 TO STA 77+00.00		2,034	151	5,099	69	5,230		1,046	1,778	40			
SHEET 7 OF 14	STA 77+00.00 TO STA 89+00.00		2,022	150	5,067	68	5,200		1,040	1,768	40		28	
SHEET 8 OF 14	STA 89+00.00 TO STA 101+00.00	0.5	1,960	140	4,716	64	4,840	82	968	1,646	37	70	4	
SHEET 9 OF 14	STA 101+00.00 TO STA 113+00.00		2,022	150	5,067	68	5,200		1,040	1,768	40	65	56	
SHEET 10 OF 14	STA 113+00.00 TO STA 125+00.00		1,443	107	3,614	49	3,710		742	1,261	29		72	688
SHEET 11 OF 14	STA 125+00.00 TO STA 137+00.00		2,022	150	5,067	68	5,200		1,040	1,768	40		1	
SHEET 12 OF 14	STA 137+00.00 TO STA 149+00.00		2,022	150	5,067	68	5,200		1,040	1,768	40			
SHEET 13 OF 14	STA 149+00.00 TO STA 161+00.00		2,022	150	5,067	68	5,200		1,040	1,768	40			
SHEET 14 OF 14	STA 161+00.00 TO STA 166+04.66	0.5	833	40	1,351	18	1,387	307	277	471	11			
PROJECT TOTALS		**3**	**25,860**	**1,841**	**62,096**	**836**	**63,669**	**1,157**	**12,734**	**21,647**	**492**	**210**	**161**	**688**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

SUMMARY OF ROADWAY QUANTITIES

SHEET 1 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		34
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506ES01.dgn

SUMMARY OF ROADWAY QUANTITIES (FM 506)

SHEET SEQUENCE	ITEM	530			540		544	560	560	3077	3084	5001
	DESC. CODE	6004	6005	6008	6001	6006	6001	6011	6012	6065	6075	6002
	LOCATION (STA TO STA)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	TURNOUTS (ACP)	MTL W-BEAM GD FEN (TIM POST)	MTL BEAM GD FEN TRANS (THRIE-BEAM)	GUARDRAIL END TREATMENT (INSTALL)	MAILBOX INSTALL-S (TWW-POST) TY 4	MAILBOX INSTALL-D (TWW-POST) TY 4	SP MIXES SP-D SAC-A PG76-22 (114 LB/SY*IN)	* BONDING COURSE (0.07 GAL/SY)	GEOGRID BASE REINFORCEMENT (TY II)
		SY	SY	SY	LF	EA	EA	EA	EA	TON	GAL	SY
SHEET 1 OF 14	STA 10+32.90 TO STA 17+00.00									629	208	2,829
SHEET 2 OF 14	STA 17+00.00 TO STA 29+00.00									1,099	373	5,067
SHEET 3 OF 14	STA 29+00.00 TO STA 41+00.00									1,093	373	5,067
SHEET 4 OF 14	STA 41+00.00 TO STA 53+00.00									1,131	401	5,460
SHEET 5 OF 14	STA 53+00.00 TO STA 65+00.00	94	115					1		1,214	497	6,835
SHEET 6 OF 14	STA 65+00.00 TO STA 77+00.00	184	443					1	3	918	376	5,099
SHEET 7 OF 14	STA 77+00.00 TO STA 89+00.00	48	293		502		1	5		912	373	5,067
SHEET 8 OF 14	STA 89+00.00 TO STA 101+00.00		236	225	23		1	1		912	373	5,067
SHEET 9 OF 14	STA 101+00.00 TO STA 113+00.00		180	109	1,024		2			912	373	5,067
SHEET 10 OF 14	STA 113+00.00 TO STA 125+00.00			228	1,114	4	6			651	266	3,614
SHEET 11 OF 14	STA 125+00.00 TO STA 137+00.00		490					2	1	912	373	5,067
SHEET 12 OF 14	STA 137+00.00 TO STA 149+00.00	40	263					3		912	373	5,067
SHEET 13 OF 14	STA 149+00.00 TO STA 161+00.00		149							912	373	5,067
SHEET 14 OF 14	STA 161+00.00 TO STA 166+04.66									477	195	2,674
PROJECT TOTALS		**366**	**2,169**	**562**	**2,663**	**4**	**10**	**13**	**4**	**12,684**	**4,927**	**67,047**

* RATE FOR ESTIMATING PURPOSES ONLY, ACTUAL RATE TO BE DETERMINED IN THE FIELD

SUMMARY OF PREP. R.O.W QUANTITIES (FM 506)

ITEM	100		110		110		132	
DESC. CODE	6002		6001		6002		6006	
LOCATION (STA TO STA)	PREPARING ROW		EXCAVATION (ROADWAY)		EXCAVATION (CHANNEL)		EMBANKMENT (FINAL)(DENS CONT)(TY C)	
	STA		CY		CY		CY	
	EST.	FIN.	EST.	FIN.	EST.	FIN.	EST.	FIN.
STA. 10+32.90 TO STA 166+04.66	155.72		7,395		0		2,932	
PROJECT TOTALS	**155.72**		**7,395**		**0**		**2,932**	

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

SUMMARY OF ROADWAY QUANTITIES

SHEET 2 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		35
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506ES02.dgn

SUMMARY OF PARALLEL & CROSS-CULVERT QUANTITIES (FM 506)

ITEM			400	400	402	464				467			1008
DESC. CODE			6005	6010	6001	6003	6005	6007	6008	6362	6388	6448	6001
SHEET NO.	STATION	RT/LT	CEM STABIL BKFL	STRUCT EXCAV (SPECIAL)	TRENCH EXCAVATION PROTECTION	RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	SET (TY II) (18 IN) (RCP) (6: 1) (C)	SET (TY II) (24 IN) (RCP) (3: 1) (C)	SET (TY II) (36 IN) (RCP) (3: 1) (C)	PRSSR IRRIG PVC PIPE (18")
			CY	CY	LF	LF	LF	LF	LF	EA	EA	EA	LF
CULVERT													
1 OF 5	92+09		37.8		50		105				2		
2 OF 5	130+86		23.6		60				47			2	
3 OF 5	147+94		23.6		55				46			2	
4 OF 5	163+63		37.8		55		97				2		
5 OF 5	165+11		11.4			49				2			
IRRIGATION													
1 OF 1	152+59		16.1		80			80					80
DRIVEWAY													
5 OF 14	54+84	LT								2			
5 OF 14	57+50	RT								2			
5 OF 14	60+27	LT								2			
5 OF 14	61+32	LT								2			
5 OF 14	62+21	LT								2			
6 OF 14	66+76	RT								1			
6 OF 14	67+61	LT								1			
6 OF 14	70+71	RT								1			
6 OF 14	74+89	RT								2			
6 OF 14	75+67	RT								2			
7 OF 14	88+24	LT								2			
11 OF 14	130+51	LT								2			
PROJECT TOTALS			**150.3**	**200.0**	**300**	**49**	**202**	**80**	**93**	**23**	**4**	**4**	**80**

REFER TO ROADWAY, IRRIGATION, AND CULVERT PLAN & PROFILE SHEETS.
ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLOVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".
ITEM 400 6010 TO BE USED AS NEEDED AND APPROVED BY ENGINEER, SEE GENERAL NOTES.

SUMMARY OF STORM SEWER QUANTITIES (FM 506)

ITEM		402	464	464	465	
DESC. CODE		6001	6002	6005	6206	6273
ID #	STATION / OFFSET	TRENCH EXCAVATION PROTECTION	RC PIPE (CL III)(15 IN)	RC PIPE (CL III)(24 IN)	INLET (COMPL) (TY C)(1 GRATE)	INLET (COMPL) (TY C)(2 GRATE)
		LF	LF	LF	EA	EA
I1	53+16 / 31.5' LT	15		2		1
I2	53+35 / 28.0' RT	15		4		1
I3	59+27 / 33.3' LT	15	6		1	
I4	59+27 / 28.5' RT	15		3		1
PROJECT TOTALS		**60**	**6**	**9**	**1**	**3**

REFER TO ROADWAY PLAN & PROFILE SHEETS.
ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLOVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

SUMMARY OF PARALLEL & CROSS-CULVERT QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		36
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506ES03.dgn

SUMMARY OF EARTHWORK

MAINLANES

ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM506		
10+00.00	0	0
11+00.00	66	0
12+00.00	67	0
13+00.00	66	0
14+00.00	65	0
15+00.00	67	0
16+00.00	66	0
17+00.00	63	0
18+00.00	63	0
19+00.00	65	0
20+00.00	66	0
21+00.00	66	0
22+00.00	62	0
23+00.00	63	0
24+00.00	70	0
25+00.00	65	0
26+00.00	56	0
27+00.00	53	0
28+00.00	55	0
29+00.00	58	0
30+00.00	62	0
31+00.00	61	0
32+00.00	57	0
33+00.00	61	0
34+00.00	69	0
35+00.00	68	0
36+00.00	68	0
37+00.00	68	0
38+00.00	59	0
39+00.00	56	0
40+00.00	69	0
41+00.00	78	0
42+00.00	76	0
43+00.00	73	0
44+00.00	68	0
45+00.00	69	0
46+00.00	70	0
47+00.00	70	0
48+00.00	70	0
49+00.00	70	0
50+00.00	71	0
51+00.00	53	4
52+00.00	36	20
53+00.00	44	30
54+00.00	61	26
55+00.00	79	26
56+00.00	91	31
57+00.00	101	31
58+00.00	97	40
59+00.00	83	56
60+00.00	71	59
61+00.00	66	54
SUBTOTAL	**3,397**	**377**

SUMMARY OF EARTHWORK

MAINLANES (CONT'D)

ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM506		
62+00.00	101	36
63+00.00	110	16
64+00.00	82	5
65+00.00	71	2
66+00.00	59	2
67+00.00	52	1
68+00.00	38	1
69+00.00	28	4
70+00.00	26	4
71+00.00	21	3
72+00.00	39	1
73+00.00	62	0
74+00.00	99	0
75+00.00	112	13
76+00.00	58	27
77+00.00	22	30
78+00.00	22	23
79+00.00	17	26
80+00.00	20	27
81+00.00	25	15
82+00.00	21	40
83+00.00	19	64
84+00.00	29	59
85+00.00	43	48
86+00.00	46	25
87+00.00	39	25
88+00.00	34	51
89+00.00	37	78
90+00.00	28	133
91+00.00	22	136
92+00.00	29	93
93+00.00	38	69
94+00.00	43	43
95+00.00	50	21
96+00.00	52	31
97+00.00	38	40
98+00.00	30	21
99+00.00	25	25
100+00.00	24	24
101+00.00	38	8
102+00.00	39	17
103+00.00	28	30
104+00.00	24	36
105+00.00	19	51
106+00.00	24	34
107+00.00	33	8
108+00.00	30	11
109+00.00	27	13
110+00.00	31	8
111+00.00	36	5
112+00.00	45	1
113+00.00	46	3
SUBTOTAL	**2,131**	**1,487**

SUMMARY OF EARTHWORK

MAINLANES (CONT'D)

ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM506		
114+00.00	39	11
115+00.00	28	10
116+00.00	10	2
117+00.00	0	0
118+00.00	0	0
119+00.00	12	4
120+00.00	50	4
121+00.00	63	3
122+00.00	56	7
123+00.00	65	6
124+00.00	63	4
125+00.00	51	2
126+00.00	44	3
127+00.00	50	3
128+00.00	53	2
129+00.00	54	2
130+00.00	62	0
131+00.00	62	2
132+00.00	69	3
133+00.00	61	1
134+00.00	64	1
135+00.00	83	0
136+00.00	80	0
137+00.00	59	1
138+00.00	38	2
139+00.00	32	4
140+00.00	24	18
141+00.00	17	30
142+00.00	18	33
143+00.00	22	41
144+00.00	21	55
145+00.00	18	64
146+00.00	21	60
147+00.00	23	58
148+00.00	24	46
149+00.00	23	58
150+00.00	18	84
151+00.00	17	75
152+00.00	17	51
153+00.00	14	40
154+00.00	15	39
155+00.00	18	30
156+00.00	21	28
157+00.00	27	27
158+00.00	27	18
159+00.00	24	10
160+00.00	24	9
161+00.00	22	15
162+00.00	21	24
163+00.00	19	33
164+00.00	22	29
165+00.00	102	16
166+00.00	101	14
166+04.62	1	1
SUBTOTAL	**1,867**	**1,068**

FM506 GRAND TOTALS

ITEM	
110	132
6001	6006
EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
CY	CY
7,395	**2,932**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

SUMMARY OF ROADWAY QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	37

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506EWQ01.dgn

SUMMARY OF PAVEMENT MARKING QUANTITIES (FM 506)

SHEET SEQUENCE	ITEM	658	666						668			672		
	DESC. CODE	6047	6036	6042	6048	6312	6315	6342	6077	6085	6089	6009	6017	6018
	LOCATION (STA TO STA)	INSTL OM ASSM (OM-2Y) (WC) GND	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 12" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REF PROF PAV MRK TY I (W) 4" (SLD) (100MIL)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (RR XING)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
		EA	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA
SHEET 1 OF 7	BEGIN TO 17+00		190	415	178	160	1,000	1,065	2	2	1	26		
	17+00 TO 29+00					560	3,000	3,000	2			53		
SHEET 2 OF 7	29+00 TO 41+00			300	75	560	2,065	2,120				53		
	41+00 TO 53+00			38		580	2,200	2,290	2			56		
SHEET 3 OF 7	53+00 TO 65+00					520	2,840	2,400				95		
	65+00 TO 77+00					290	470	2,400				26		436
SHEET 4 OF 7	77+00 TO 89+00					310		2,400				16		480
	89+00 TO 101+00	2				310		2,295				16		480
SHEET 5 OF 7	101+00 TO 113+00	2				310	635	2,335				24	127	355
	113+00 TO 125+00					300	877	2,400				28	176	315
SHEET 6 OF 7	125+00 TO 137+00					310	660	2,400				26	168	385
	137+00 TO 149+00	2				310		2,400				16		480
SHEET 7 OF 7	149+00 TO 161+00					310		2,400				16		480
	161+00 TO END	4				120	340	1,010				14	69	135
	CSJ TOTALS	**10**	**190**	**753**	**253**	**4,950**	**14,087**	**30,915**	**6**	**2**	**1**	**465**	**540**	**3,546**

* PROFILE PAVEMENT MARKING QUANTITIES ACCOUNT FOR TWO APPLICATIONS OF PAINT AT 100 ML THICKNESS TO PROVIDE MINIMUM 300 MIL IN HEIGHT THAT IS REQUIRED BY STANDARD RS(3)-13.

SUMMARY OF SIGNING ITEMS (FM 506)

SHEET SEQUENCE	ITEM	644	
	DESC. CODE	6027	6070
	LOCATION (STA TO STA)	IN SM RD SN SUP&AM TYS80(1)SA(P)	RELOCATE SM RD SN SUP&AM TY S80
		EA	EA
SHEET 1 OF 7	BEGIN TO 17+00		
	17+00 TO 29+00		
SHEET 2 OF 7	29+00 TO 41+00		
	41+00 TO 53+00		
SHEET 3 OF 7	53+00 TO 65+00		1
	65+00 TO 77+00	1	
SHEET 4 OF 7	77+00 TO 89+00		
	89+00 TO 101+00		2
SHEET 5 OF 7	101+00 TO 113+00		2
	113+00 TO 125+00		
SHEET 6 OF 7	125+00 TO 137+00		
	137+00 TO 149+00		
SHEET 7 OF 7	149+00 TO 161+00		
	161+00 TO END		
	CSJ TOTALS	**1**	**5**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 506
SUMMARY OF SIGNING AND PAVEMENT MARKING QUANTITIES

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	FPN		38
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 12:46:19 PM

$FILES$

SUMMARY OF SW3P QUANTITIES (FM 506)

SHEET SEQUENCE	ITEM	164	164	166	168	506								
	DESC. CODE	6035	6041	6001	6001	6003	6011	6021	6024	6038	6039	6041	6043	6045
	LOCATION (STA TO STA)	DRILL SEEDING (PERM) (RURAL) (CLAY)	DRILL SEEDING (TEMP) (WARM)	FERTILIZER	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 3)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 2)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (6")
		SY	SY	AC	MG	LF	LF	SY	SY	LF	LF	LF	LF	LF
SHEET 1 OF 7	BEGIN TO 17+00							156	156			34	78	44
	17+00 TO 29+00											32	168	136
SHEET 2 OF 7	29+00 TO 41+00												168	168
	41+00 TO 53+00	602	602	0.12	11								156	156
SHEET 3 OF 7	53+00 TO 65+00	3567	3567	0.74	65			156	156	333	333	80	80	
	65+00 TO 77+00	480	480	0.10	9					582	582	20	20	
SHEET 4 OF 7	77+00 TO 89+00	57	57	0.01	1					542	542	20	20	
	89+00 TO 101+00					18	18			480	480			
SHEET 5 OF 7	101+00 TO 113+00					18	18			155	155			
	113+00 TO 125+00									58	58			
SHEET 6 OF 7	125+00 TO 137+00	51	51	0.01	1	15	15			543	543			
	137+00 TO 149+00	51	51	0.01	1	15	15			537	537			
SHEET 7 OF 7	149+00 TO 161+00	44	44	0.01	1			156	156	215	215			
	161+00 TO END PROJECT	101	101	0.02	2	15	15			243	243			
	PROJECT TOTALS	**4,953**	**4,953**	**1.02**	**91**	**81**	**81**	**468**	**468**	**3,688**	**3,688**	**186**	**690**	**504**
		*	*	**	*			***	***					

NOTES:

* AREAS DISTURBED BY INSTALLATION OF PROP CULVERTS OR IRRIGATION LINES

** FOR CONTRACTORS INFORMATION ONLY (NON-PAY)

*** TO BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506

SUMMARY OF SW3P QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		39
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 9:42:43 AM N:\7021-17-101\CADD\DGN\01_GENERAL\FM506_GNSE00_01.dgn

SUMMARY OF TCP QUANTITIES (FM 800)

SHEET SEQUENCE	ITEM	400	502	512						662						6001	6185	6185
	DESC. CODE	6008	6001	6009	6010	6033	6034	6057	6058	6004	6034	6063	6095	6109	6111	6001	6002	6005
	LOCATION (STA TO STA)	CUT & RESTORE ASPH PAVING	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	PORT CTB (MOVE)(LOW PROF)(TY 1)	PORT CTB (MOVE)(LOW PROF)(TY 2)	PORT CTB (REMOVE)(LOW PROF)(TY 1)	PORT CTB (REMOVE)(LOW PROF)(TY 2)	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	WK ZN PAV MRK REMOV (W)4"(SLD)	WK ZN PAV MRK REMOV (Y)4"(SLD)	WK ZN PAV MRK SHT TERM (TAB)TYW	WK ZN PAV MRK SHT TERM (TAB)TYY-2	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
		SY	MO	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	DAY	DAY	DAY
	PHASE 1																	
SHEET 1 OF 4	BEGIN TO 20+00			540	20					652	652					14	50	8
	20+00 TO 32+00	61		1,140	20					1,200	1,170							
SHEET 2 OF 4	32+00 TO 44+00			780	80					1,200	860							
	44+00 TO 56+00	31		1,200						1,200	1,200							
SHEET 3 OF 4	56+00 TO 68+00	54		1,140	20					1,200	1,170							
	68+00 TO 80+00	72		1,020	40					1,130	1,130							
SHEET 4 OF 4	80+00 TO 92+00	115		1,120	20					1,140	1,140							
	92+00 TO END PROJECT	112		920	40					1,120	960					14		
	PHASE 1 TOTALS	**445**		**7,860**	**240**					**8,842**	**8,282**					**28**	**50**	**8**
	PHASE 2																	
SHEET 1 OF 4	BEGIN TO 20+00					660		660				652	652	25	33	14	50	17
	20+00 TO 32+00					980	60	980	60			1,200	1,040		52			
SHEET 2 OF 4	32+00 TO 44+00					980	60	980	60			1,200	1,040		52			
	44+00 TO 56+00					1,200		1,200				1,200	1,200		60			
SHEET 3 OF 4	56+00 TO 68+00					1,140	20	1,140	20			1,200	1,200		60			
	68+00 TO 80+00					960	60	960	60			1,122	1,020		51			
SHEET 4 OF 4	80+00 TO 92+00					1,020	20	1,020	20			1,035	1,035	15	52			
	92+00 TO END PROJECT			160		920	20	1,080	20			1,095	1,095	10	55	14		
	PHASE 2 TOTALS			**160**		**7,860**	**240**	**8,020**	**240**			**8,704**	**8,282**	**50**	**415**	**28**	**50**	**17**
	PROJECT TOTALS	**445**	**12**	**8,020**	**240**	**7,860**	**240**	**8,020**	**240**	**8,842**	**8,282**	**8,704**	**8,282**	**50**	**415**	**56**	**100**	**25**
		*												**	**			

NOTES:

* TO BE USED PRIOR TO BEGINNING PHASE 1.

** TO BE USED AFTER PHASE 2 FOR PLACEMENT OF FINAL RIDING SURFACE.

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 800

SUMMARY OF TCP QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		40
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

SUMMARY OF REMOVAL QUANTITIES (FM 800)

SHEET SEQUENCE	ITEM	104	105	354	496					545
	DESC. CODE	6017	6054	6021	6004	6002	6006	6007	6008	6004
	LOCATION (STA TO STA)	REMOVING CONC (DRIVEWAYS)	REMOVING STAB BASE & ASPH PAV (18")	PLANE ASPH CONC PAV(0" TO 2")	REMOV STR (SET)	REMOV STR (INLET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (BOX CULVERT)	CRASH CUSH ATTEN (STKPL)
		SY	SY	SY	EA	EA	EA	LF	LF	EA
SHEET 1 OF 4	BEGIN TO 20+00		2,266							
	20+00 TO 32+00		3,979		4			299		
SHEET 2 OF 4	32+00 TO 44+00		4,320	129	8			380		4
	44+00 TO 56+00		3,665					86		
SHEET 3 OF 4	56+00 TO 68+00	70	3,768		2			148		
	68+00 TO 80+00	73	4,132		2			218		
SHEET 4 OF 4	80+00 TO 92+00		4,087				2	208	30	
	92+00 TO END	376	3,574		5	1		443		
	CSJ TOTALS	**519**	**29,791**	**129**	**21**	**1**	**2**	**1,782**	**30**	**4**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 800

SUMMARY OF REMOVAL QUANTITIES

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		41
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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SUMMARY OF ROADWAY QUANTITIES (FM800)

SHEET SEQUENCE	ITEM	247	260		275		310	316		530			545
	DESC. CODE	6225	6012	6084	6001	6031	6009	6029	6433	6004	6005	6008	6026
	LOCATION (STA TO STA)	FL BS (RDWY DEL) (TY E GR 4) (FNAL POS)	LIME (HYD,COM OR QK) (SLRY) OR QK (DRY) (6%) (2970 LBS/CY)	LIME TRT (SUBGRADE) (12")	CEMENT (2%) (3375 LBS/CY)	CEMENT TREAT (NEW BASE) (10")	PRIME COAT (MC-30) (0 .20 GAL/SY)	OCST ASPH (RC-250) (0.34GAL/SY)	OCST AGGR (TY PE,TY-PL,TY-E,TY-L GR-4) (SAC-B) (1CY/130 SY)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	TURNOUTS (ACP)	CRASH CUSHION ATTEN (INSTALL) (QUAD)(N)
		CY	TON	SY	TON	SY	GAL	GAL	CY	SY	SY	SY	EA
SHEET 1 OF 8	STA 13+48.33 TO STA 20+00.00	841	94	3,162	28	3,029	594	1,009	23		218		
SHEET 2 OF 8	STA 20+00.00 TO STA 32+00.00	1,549	173	5,822	52	5,578	1,093	1,859	42		239		
SHEET 3 OF 8	STA 32+00.00 TO STA 44+00.00	1,482	165	5,568	50	5,334	1,046	1,777	40		641		4
SHEET 4 OF 8	STA 44+00.00 TO STA 56+00.00	1,549	173	5,822	52	5,578	1,093	1,859	42		75		
SHEET 5 OF 8	STA 56+00.00 TO STA 68+00.00	1,549	173	5,822	52	5,578	1,093	1,859	42	69	70		
SHEET 6 OF 8	STA 68+00.00 TO STA 80+00.00	1,549	173	5,822	52	5,578	1,093	1,859	42	50	192	213	
SHEET 7 OF 8	STA 80+00.00 TO STA 92+00.00	1,684	187	6,311	57	6,063	1,190	2,023	46	338		105	
SHEET 8 OF 8	STA 92+00.00 TO STA 102+94.26	1,413	158	5,309	48	5,086	997	1,695	38				
PROJECT TOTALS		**11,616**	**1,296**	**43,638**	**391**	**41,824**	**8,199**	**13,940**	**315**	**457**	**1,435**	**318**	**4**

SUMMARY OF ROADWAY QUANTITIES (FM800)

SHEET SEQUENCE	ITEM	560			3077		5001
	DESC. CODE	6011	6012	6013	6065	6075	6002
	LOCATION (STA TO STA)	MAILBOX INSTALL-S (TWW-POST) TY 4	MAILBOX INSTALL-D (TWW-POST) TY 4	MAILBOX INSTALL-M (TWW-POST) TY 4	SP MIXES SP-D SAC-A PG76-22 (114 LB/SY*IN)	*TACK COAT (0.07 GAL/SY)	GEOGRID BASE REINFORCEMENT (TY II)
		EA	EA	EA	TON	GAL	SY
SHEET 1 OF 8	STA 13+48.33 TO STA 20+00.00				501	208	3,089
SHEET 2 OF 8	STA 20+00.00 TO STA 32+00.00			1	923	383	5,689
SHEET 3 OF 8	STA 32+00.00 TO STA 44+00.00	1	1	2	883	366	5,440
SHEET 4 OF 8	STA 44+00.00 TO STA 56+00.00				923	383	5,689
SHEET 5 OF 8	STA 56+00.00 TO STA 68+00.00	2			923	383	5,689
SHEET 6 OF 8	STA 68+00.00 TO STA 80+00.00	4		1	923	383	5,689
SHEET 7 OF 8	STA 80+00.00 TO STA 92+00.00				1,006	417	6,176
SHEET 8 OF 8	STA 92+00.00 TO STA 102+94.26	1			842	349	5,188
PROJECT TOTALS		**8**	**1**	**4**	**6,924**	**2,872**	**42,649**

* RATE FOR ESTIMATING PURPOSES ONLY, ACTUAL RATE TO BE DETERMINED IN THE FIELD

SUMMARY OF PREP. R.O.W QUANTITIES (FM 800)

ITEM	100		110				132	
DESC. CODE	6002		6001		6002		6006	
LOCATION (STA TO STA)	PREPARING ROW		EXCAVATION (ROADWAY)		EXCAVATION (CHANNEL)		EMBANKMENT (FINAL)(DENS CONT)(TY C)	
	STA		CY		CY		CY	
	EST.	FIN.	EST.	FIN.	EST.	FIN.	EST.	FIN.
STA. 13+48.33 TO STA 102+94.26	89.46		12,355		171		4,257	
PROJECT TOTALS	**89.46**		**12,355**		**171**		**4,257**	

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

SUMMARY OF ROADWAY QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		42
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

800ES01.dgn

SUMMARY OF PARALLEL & CROSS-CULVERT QUANTITIES (FM 800)

SHEET NO.	ITEM		400	400	402	462	464					465			466			467			1008	
	DESC. CODE		6005	6010	6001	6020	6003	6005	6007	6008	6012	6012	6126	6143	6105	6185	6197	6362	6388	6390	6001	6002
	STATION	RT/LT	CEM STABIL BKFL	STRUCT EXCAV (SPECIAL)	TRENCH EXCAVATION PROTECTION	CONC BOX CULV (8 FT X 5 FT)	RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	RC PIPE (CL III) (60 IN)	JCTBOX (COMPL) (PJB) (8FTX8FT)	INLET (COMPL) (PSL)(FG) (3FTX3FT-3FTX3FT)	INLET (COMPL) (PSL)(FG) (8FTX8FT-3FTX3FT)	HEADWALL (CH - PW - 0) (DIA= 60 IN)	WINGWALL (PW - 2) (HW=10 FT)	WINGWALL (PW - 2) (HW=8 FT)	SET (TY II) (18 IN) (RCP) (6: 1)(C)	SET (TY II) (24 IN) (RCP) (3: 1) (C)	SET (TY II) (24 IN) (RCP) (4: 1)(C)	PRSSR IRRIG PVC PIPE (18")	PRSSR IRRIG PVC PIPE (24")
			CY	CY	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF
CULVERTS																						
1 OF 9	28+20		16.1					46											2			
2 OF 9	53+39		16.1					46											2			
3 OF 9	65+41		27.7					81											2			
4 OF 9	71+17		16.1		60			64											2			
5 OF 9	84+12		16.1					48											2			
6 OF 9	84+69		11.5				56											2				
7 OF 9	91+01		61.8		65						127			2	2							
8 OF 9	92+19		61.8		110						156	1		1	2							
9 OF 9	102+48		16.1		50			60					1							1		
IRRIGATION																						
1 OF 4	29+32		23.5		92					92												92
2 OF 4	71+79		23.5		84					84												84
3 OF 4	91+59		35.6		40	137										1	1					
4 OF 4	98+55		23.5		129				107												107	
DRIVEWAYS																						
2 OF 8	25+92	RT					43											2				
2 OF 8	26+98	RT					43											2				
2 OF 8	31+04	RT					31											2				
2 OF 8	31+28	LT					32											2				
3 OF 8	34+61	RT					42											2				
3 OF 8	35+00	LT					32											2				
3 OF 8	38+42	RT					31											2				
3 OF 8	38+53	LT					35											2				
3 OF 8	40+30	LT					79											2				
3 OF 8	41+89	RT					30											2				
3 OF 8	42+34	LT					68											2				
5 OF 8	60+80	LT					34											2				
5 OF 8	66+09	RT					32											2				
6 OF 8	68+66	RT					43											2				
6 OF 8	69+57	RT					32											2				
6 OF 8	75+87	LT					38											2				
8 OF 8	93+11	LT					54											2				
8 OF 8	94+83	LT					62											2				
PROJECT TOTALS			**349.5**	**200.0**	**630**	**137**	**817**	**345**	**107**	**176**	**283**	**1**	**1**	**3**	**4**	**1**	**1**	**38**	**10**	**1**	**107**	**176**

REFER TO ROADWAY, IRRIGATION, AND CULVERT PLAN & PROFILE SHEETS
ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLOVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".
ITEM 400 6010 TO BE USED AS NEEDED AND APPROVED BY ENGINEER, SEE GENERAL NOTES.

SUMMARY OF STORM SEWER QUANTITIES (FM 800)

ID #	STATION	ITEM	402	432	464	465	
		DESC. CODE	6001	6026	6005	6070	6126
			TRENCH EXCAVATION PROTECTION	RIPRAP (STONE COMMON) (DRY)(18 IN)	RC PIPE (CL III)(24 IN)	INLET (COMPL) (PSL)(RC) (3FTX3FT)	INLET (COMPL) (PSL)(FG) (3FTX3FT-3FTX3FT)
			LF	CY	LF	EA	EA
X1	43+55.47		178	12	176		
M1	45+32.29		200		197	1	
M2	47+32.89		300		297	1	
I1	50+32.89		302		297		1
I2	53+32.89						1
PROJECT TOTALS			**980**	**12**	**967**	**2**	**2**

REFER TO ROADWAY AND STORM SEWER PLAN & PROFILE SHEETS.
ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLOVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

SUMMARY OF PARALLEL & CROSS-CULVERT QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		43
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

800ES02.dgn

SUMMARY OF EARTHWORK		
MAINLANES		
ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM800		
16+00.00	0	0
17+00.00	160	14
18+00.00	154	16
19+00.00	150	18
20+00.00	166	14
21+00.00	181	12
22+00.00	161	15
23+00.00	150	16
24+00.00	164	14
25+00.00	178	11
26+00.00	247	9
27+00.00	262	8
28+00.00	188	14
29+00.00	181	19
30+00.00	180	18
31+00.00	199	9
32+00.00	209	7
33+00.00	175	13
34+00.00	170	13
35+00.00	192	11
36+00.00	171	19
37+00.00	127	29
38+00.00	136	26
39+00.00	151	21
40+00.00	198	13
41+00.00	195	21
42+00.00	209	19
43+00.00	274	7
44+00.00	200	21
45+00.00	130	62
46+00.00	139	100
47+00.00	132	110
48+00.00	122	102
49+00.00	127	78
50+00.00	121	67
51+00.00	117	66
52+00.00	120	59
53+00.00	111	54
54+00.00	130	43
55+00.00	151	35
56+00.00	149	37
57+00.00	143	33
58+00.00	128	34
59+00.00	118	50
60+00.00	109	69
61+00.00	96	69
62+00.00	94	74
63+00.00	88	100
64+00.00	81	135
65+00.00	94	124
66+00.00	157	57
67+00.00	167	33
SUBTOTAL	**7,952**	**2,018**

SUMMARY OF EARTHWORK		
MAINLANES (CONT'D)		
ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM800		
68+00.00	145	46
69+00.00	169	44
70+00.00	183	39
71+00.00	160	33
72+00.00	133	40
73+00.00	128	58
74+00.00	137	43
75+00.00	147	24
76+00.00	154	25
77+00.00	122	38
78+00.00	86	48
79+00.00	89	54
80+00.00	87	60
81+00.00	96	52
82+00.00	103	50
83+00.00	106	46
84+00.00	116	41
85+00.00	106	42
86+00.00	87	68
87+00.00	85	97
88+00.00	64	130
89+00.00	44	153
90+00.00	49	148
91+00.00	59	250
92+00.00	105	191
93+00.00	122	80
94+00.00	76	141
95+00.00	94	104
96+00.00	135	40
97+00.00	164	20
98+00.00	203	11
99+00.00	223	7
100+00.00	223	4
101+00.00	203	4
102+00.00	149	5
103+00.00	51	3
SUBTOTAL	**4,403**	**2,239**

FM800 GRAND TOTALS	
ITEM	
110	132
6001	6006
EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
CY	CY
12,355	**4,257**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

SUMMARY OF ROADWAY QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		44
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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SUMMARY OF PAVEMENT MARKING QUANTITIES (FM 800)

SHEET SEQUENCE	ITEM	658	666						668	668	672		
	DESC. CODE	6047	6036	6048	6141	6312	6315	6342	6077	6085	6009	6017	6018
	LOCATION (STA TO STA)	INSTL OM ASSM (OM-2Y) (WC) GND	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	REFL PAV MRK TY I (Y) 12" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (BRK) (100MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (100MIL)	REF PROF PAV MRK TY I (W) 4" (SLD) (100MIL) *	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (WORD)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
		EA	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA
SHEET 1 OF 4	BEGIN TO 20+00					180	705	1,320			20	143	143
	20+00 TO 32+00	2				290	39	2,400			16	8	472
SHEET 2 OF 4	32+00 TO 44+00					310		2,400			16		480
	44+00 TO 56+00	2				310		2,400			16		480
SHEET 3 OF 4	56+00 TO 68+00	2				200	1,614	2,400			32	325	160
	68+00 TO 80+00	2				300	185	2,280			18	38	418
SHEET 4 OF 4	80+00 TO 92+00	8		45		100	1,740	2,100			48	352	92
	92+00 TO END	4	101	40	122		3,015	2,180	1	1	120	240	
	CSJ TOTALS	**20**	**101**	**85**	**122**	**1,690**	**7,298**	**17,480**	**1**	**1**	**286**	**1,106**	**2,245**

* PROFILE PAVEMENT MARKING QUANTITIES ACCOUNT FOR TWO APPLICATIONS OF PAINT AT 100 ML THICKNESS TO PROVIDE MINIMUM 300 MIL IN HEIGHT THAT IS REQUIRED BY STANDARD RS(3)-13.

SUMMARY OF SIGNING ITEMS (FM 800)

SHEET SEQUENCE	ITEM	644
	DESC. CODE	6070
	LOCATION (STA TO STA)	RELOCATE SM RD SN SUP&AM TY S80
		EA
SHEET 1 OF 4	BEGIN TO 20+00	2
	20+00 TO 32+00	1
SHEET 2 OF 4	32+00 TO 44+00	
	44+00 TO 56+00	
SHEET 3 OF 4	56+00 TO 68+00	
	68+00 TO 80+00	1
SHEET 4 OF 4	80+00 TO 92+00	5
	92+00 TO END	4
	CSJ TOTALS	13

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 800

SUMMARY OF SIGNING AND PAVEMENT MARKING QUANTITIES

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		45
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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SUMMARY OF SW3P QUANTITIES (FM 800)

SHEET SEQUENCE	ITEM	164	164	166	168	506							
	DESC. CODE	6035	6041	6001	6001	6003	6011	6021	6024	6038	6039	6041	6043
	LOCATION (STA TO STA)	DRILL SEEDING (PERM) (RURAL) (CLAY)	DRILL SEEDING (TEMP) (WARM)	FERTILIZER	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 3)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 2)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
		SY	SY	AC	MG	LF	LF	SY	SY	LF	LF	LF	LF
SHEET 1 OF 4	BEGIN TO 20+00	2,983	2,983	0.62	55			156	156	40	40		
	20+00 TO 32+00	5,721	5,721	1.18	104	15	15			258	258		
SHEET 2 OF 4	32+00 TO 44+00	6,992	6,992	1.44	127	40	40			323	323		
	44+00 TO 56+00	5,344	5,344	1.10	97	55	55			478	478		
SHEET 3 OF 4	56+00 TO 68+00	6,857	6,857	1.42	126	15	15			176	176		
	68+00 TO 80+00	5,000	5,000	1.03	91	15	15			235	235		
SHEET 4 OF 4	80+00 TO 92+00	5,573	5,573	1.15	102	60	60			135	135		
	92+00 TO END PROJECT	5,426	5,426	1.12	99			156	156	166	166	44	44
	PROJECT TOTALS	**43,896**	**43,896**	**9.06**	**801**	**200**	**200**	**312**	**312**	**1,811**	**1,811**	**44**	**44**
		*	*	**	*				***	***			

NOTES:

* AREAS DISTURBED BY INSTALLATION OF PROP CULVERTS OR IRRIGATION LINES

** FOR CONTRACTORS INFORMATION ONLY (NON-PAY)

*** TO BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 800

SUMMARY OF SW3P QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		46
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

SUMMARY OF TCP QUANTITIES (FM 1479)

SHEET SEQUENCE	ITEM	400	502	512						662					6001	6185
	DESC. CODE	6008	6001	6009	6010	6033	6034	6057	6058	6004	6034	6063	6095	6111	6001	6005
	LOCATION (STA TO STA)	CUT & RESTORE ASPH PAVING	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	PORT CTB (MOVE)(LOW PROF)(TY 1)	PORT CTB (MOVE)(LOW PROF)(TY 2)	PORT CTB (REMOVE)(LOW PROF)(TY 1)	PORT CTB (REMOVE)(LOW PROF)(TY 2)	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	WK ZN PAV MRK REMOV (W)4"(SLD)	WK ZN PAV MRK REMOV (Y)4"(SLD)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (MOBILE OPERATION)
		SY	MO	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	DAY	DAY
	PHASE 1															
SHEET 1 OF 4	BEGIN TO 224+00	53		480	40					563	563				14	8
	224+00 TO 236+00			1,020	40					1,200	1,127					
SHEET 2 OF 4	236+00 TO 248+00	156		880	120					1,200	1,200					
	248+00 TO 260+00			1,000	40					1,200	1,142					
SHEET 3 OF 4	260+00 TO 272+00			1,060	40					1,200	1,200					
	272+00 TO 284+00	107		760	120					1,200	1,122					
SHEET 4 OF 4	284+00 TO 296+00	55		940	80					1,200	1,200					
	296+00 TO END PROJECT			700	20					997	835				14	
	PHASE 1 TOTALS	**371**		**6,840**	**500**					**8,760**	**8,389**				**28**	**8**
	PHASE 2															
SHEET 1 OF 4	BEGIN TO 224+00			100		580		580	40			563	563	40	14	17
	224+00 TO 236+00			180		1,200		1,200	40			1,200	1,200	60		
SHEET 2 OF 4	236+00 TO 248+00			320		1,200		1,200	120			1,200	1,200	60		
	248+00 TO 260+00			200		1,200		1,200	40			1,140	1,200	60		
SHEET 3 OF 4	260+00 TO 272+00			140		1,200		1,200	40			1,200	1,200	60		
	272+00 TO 284+00			440		1,200		1,200	120			1,122	1,200	60		
SHEET 4 OF 4	284+00 TO 296+00			160		1,200		1,200	40			1,200	1,200	60		
	296+00 TO END PROJECT					600	60	600	60			748	748	38	14	
	PHASE 2 TOTALS			**1,540**		**8,380**	**60**	**8,380**	**500**			**8,373**	**8,511**	**438**	**28**	**17**
	PROJECT TOTALS	**371**	**12**	**8,380**	**500**	**8,380**	**60**	**8,380**	**500**	**8,760**	**8,389**	**8,373**	**8,511**	**438**	**56**	**25**
		*												**		

NOTES:

* TO BE USED PRIOR TO BEGINNING PHASE 1.

** TO BE USED AFTER PHASE 2 FOR PLACEMENT OF FINAL RIDING SURFACE.

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 1479

SUMMARY OF TCP QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		47
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

SUMMARY OF REMOVAL QUANTITIES (FM 1479)

SHEET SEQUENCE	ITEM	104	105	496			
	DESC. CODE	6017	6054	6002	6004	6006	6007
	LOCATION (STA TO STA)	REMOVING CONC (DRIVEWAYS)	REMOVING STAB BASE & ASPH PAV (18")	REMOV STR (INLET)	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)
		SY	SY	EA	EA	EA	LF
SHEET 1 OF 4	BEGIN TO 224+00		5,142				97
	224+00 TO 236+00		6,072				98
SHEET 2 OF 4	236+00 TO 248+00		6,265	1	3	1	319
	248+00 TO 260+00		6,108				
SHEET 3 OF 4	260+00 TO 272+00		6,021				
	272+00 TO 284+00		6,058	1	4		229
SHEET 4 OF 4	284+00 TO 296+00	47	5,888				97
	296+00 TO END		4,400		1		
	CSJ TOTALS	**47**	**45,954**	**2**	**8**	**1**	**840**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 1479

SUMMARY OF REMOVAL QUANTITIES

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		48
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

10/6/2021 3:11:03 PM

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SUMMARY OF ROADWAY QUANTITIES (FM 1479)

SHEET SEQUENCE	ITEM	216	247	275		310	316		530			560	3077		5001
	DESC. CODE	6001	6225	6001	6031	6009	6029	6433	6004	6005	6008	6011	6065	6075	6002
	LOCATION (STA TO STA)	PROOF ROLLING	FL BS (RDWY DEL) (TY E GR 4) (FNAL POS)	CEMENT (2%) (3375 LBS/CY)	CEMENT TREAT (NEW BASE) (10")	PRIME COAT (MC-30) (0 .20 GAL/SY)	OCST ASPH (RC-250) (0.34GAL/SY)	OCST AGGR (TY PE,TY-PL,TY-E,TY-L GR-4) (SAC-B) (1CY/130 SY)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	TURNOUTS (ACP)	MAILBOX INSTALL-S (TWW-POST) TY 4	SP MIXES SP-D SAC-A PG76-22 (114 LB/SY*IN)	*TACK COAT (0.07 GAL/SY)	GEOGRID BASE REINFORCEMENT (TY II)
		HR	CY	TON	SY	GAL	GAL	CY	SY	SY	SY	EA	TON	GAL	SY
SHEET 1 OF 8	STA 216+39.05 TO STA 224+00.00	1.0	1,476	50	5,313	1,047	1,780	40		57			888	363	5,390
SHEET 2 OF 8	STA 224+00.00 TO STA 236+00.00	1.5	1,698	57	6,111	1,200	2,040	46		106	108	2	1,015	415	6,222
SHEET 3 OF 8	STA 236+00.00 TO STA 248+00.00	1.5	1,698	57	6,111	1,200	2,040	46		511		2	1,015	415	6,222
SHEET 4 OF 8	STA 248+00.00 TO STA 260+00.00	1.5	1,698	57	6,111	1,200	2,040	46		202		1	1,015	415	6,222
SHEET 5 OF 8	STA 260+00.00 TO STA 272+00.00	1.5	1,698	57	6,111	1,200	2,040	46		116		1	1,015	415	6,222
SHEET 6 OF 8	STA 272+00.00 TO STA 284+00.00	1.5	1,698	57	6,111	1,200	2,040	46		285		3	1,015	415	6,222
SHEET 7 OF 8	STA 284+00.00 TO STA 296+00.00	1.5	1,697	57	6,110	1,200	2,040	46	55	191		3	1,015	415	6,221
SHEET 8 OF 8	STA 296+00.00 TO STA 304+36.61	1.0	1,231	42	4,430	870	1,480	33		110	119	1	736	301	4,508
PROJECT TOTALS		**11**	**12,894**	**434**	**46,408**	**9,117**	**15,500**	**349**	**55**	**1,578**	**227**	**13**	**7,714**	**3,154**	**47,229**

* RATE FOR ESTIMATING PURPOSES ONLY, ACTUAL RATE TO BE DETERMINED IN THE FIELD

SUMMARY OF PREP. R.O.W. QUANTITIES (FM 1479)

ITEM	100		110				132	
DESC. CODE	6002		6001		6002		6006	
LOCATION (STA TO STA)	PREPARING ROW		EXCAVATION (ROADWAY)		EXCAVATION (CHANNEL)		EMBANKMENT (FINAL)(DENS CONT)(TY C)	
	STA		CY		CY		CY	
	EST.	FIN.	EST.	FIN.	EST.	FIN.	EST.	FIN.
STA. 216+39.05 TO STA 304+36.61	87.98		17,723		0		335	
PROJECT TOTALS	**87.98**		**17,723**		**0**		**335**	

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

SUMMARY OF ROADWAY QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		49
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479ES01.dgn

SUMMARY OF PARALLEL & CROSS-CULVERT QUANTITIES (FM 1479)

ITEM			400	400	402	464				465		466	467			1008	4024	
DESC. CODE			6005	6010	6001	6003	6005	6007	6008	6126	6127	6099	6362	6388	6394	6002	6005	6029
SHEET NO.	STATION	RT/LT	CEM STABIL BKFL	STRUCT EXCAV (SPECIAL)	TRENCH EXCAVATION PROTECTION	RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	INLET (COMPL) (PSL)(FG) (3FTX3FT-3FTX3FT)	INLET (COMPL) (PSL)(FG) (4FTX4FT-3FTX3FT)	HEADWALL (CH - PW - 0) (DIA= 30 IN)	SET (TY II) (18 IN) (RCP) (6: 1) (C)	SET (TY II) (24 IN) (RCP) (3: 1) (C)	SET (TY II) (24 IN) (RCP) (6: 1) (C)	PRSSR IRRIG PVC PIPE (24")	RC LOW HEAD PRSSR PIPE (CL III)(36")	RC LOW HEAD PRSSR PIPE (CL III)(48")
			CY	CY	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	LF	LF
CULVERT																		
1 OF 2	244+17		17.7				66	13			1	1		1				
2 OF 2	277+40		19.8				73			1				1	1			
IRRIGATION																		
1 OF 6	217+23		77.4		105												105	
2 OF 6	224+50		25.9		90				90							90		
3 OF 6	237+54		54.1		90												90	
4 OF 6	241+05		25.9		90				90							90		
5 OF 6	276+82		25.9		95				95							95		
6 OF 6	294+43		68.0		90													90
DRIVEWAYS																		
1 OF 4	244+16	LT				39							1					
2 OF 4	244+19	LT				41							1					
3 OF 4	277+38	LT	7.0			44							1					
4 OF 4	277+41	LT				11							1					
7 OF 8	285+77	LT											2					
PROJECT TOTALS			321.7	200.0	560	135	139	13	275	1	1	1	6	2	1	275	195	90

REFER TO ROADWAY, IRRIGATION, AND CULVERT PLAN & PROFILE SHEETS.
ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLOVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".
ITEM 400 6010 TO BE USED AS NEEDED AND APPROVED BY ENGINEER, SEE GENERAL NOTES.

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

SUMMARY OF PARALLEL & CROSS-CULVERT QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		50
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479ES02.dgn

SUMMARY OF EARTHWORK		
MAINLANES		
ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM1479		
218+50.00	0	0
219+00.00	100	2
220+00.00	188	4
221+00.00	183	5
222+00.00	193	5
223+00.00	194	5
224+00.00	187	6
225+00.00	195	4
226+00.00	221	1
227+00.00	198	4
228+00.00	160	8
229+00.00	160	9
230+00.00	162	7
231+00.00	158	8
232+00.00	162	8
233+00.00	179	7
234+00.00	183	6
235+00.00	183	6
236+00.00	201	4
237+00.00	198	3
238+00.00	192	4
239+00.00	205	3
240+00.00	259	2
241+00.00	276	4
242+00.00	230	3
243+00.00	199	4
244+00.00	184	4
245+00.00	189	6
246+00.00	189	8
247+00.00	194	8
248+00.00	199	7
249+00.00	211	5
250+00.00	218	4
251+00.00	197	5
252+00.00	190	4
253+00.00	186	6
254+00.00	166	8
255+00.00	172	8
256+00.00	178	7
257+00.00	171	4
258+00.00	183	2
259+00.00	204	2
260+00.00	217	1
261+00.00	221	1
262+00.00	210	2
263+00.00	189	3
264+00.00	172	6
265+00.00	158	8
266+00.00	156	9
267+00.00	165	7
268+00.00	180	4
269+00.00	182	4
SUBTOTAL	**9,647**	**255**

SUMMARY OF EARTHWORK		
MAINLANES (CONT'D)		
ITEM NUMBER	110	132
	6001	6006
STATION	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
	CY	CY
FM1479		
270+00.00	181	4
271+00.00	199	2
272+00.00	225	2
273+00.00	233	2
274+00.00	219	1
275+00.00	206	1
276+00.00	204	1
277+00.00	187	3
278+00.00	197	3
279+00.00	205	3
280+00.00	194	2
281+00.00	217	1
282+00.00	240	0
283+00.00	266	0
284+00.00	264	0
285+00.00	249	1
286+00.00	259	1
287+00.00	256	0
288+00.00	237	2
289+00.00	231	3
290+00.00	216	5
291+00.00	197	6
292+00.00	217	5
293+00.00	259	3
294+00.00	265	2
295+00.00	249	4
296+00.00	248	5
297+00.00	247	4
298+00.00	232	5
299+00.00	223	4
300+00.00	253	1
301+00.00	274	0
302+00.00	263	1
303+00.00	252	2
304+00.00	189	1
304+36.00	23	0
SUBTOTAL	**8,076**	**80**

FM1479 GRAND TOTALS	
ITEM	
110	132
6001	6006
EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)(DENS COMP)(TY C)
CY	CY
17,723	**335**

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

SUMMARY OF EARTHWORK QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	51

STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479EWQ01.dgn

SUMMARY OF PAVEMENT MARKING QUANTITIES (FM 1479)

SHEET SEQUENCE	ITEM	658	666				672		
	DESC. CODE	6047	6048	6312	6315	6342	6009	6017	6018
	LOCATION (STA TO STA)	INSTL OM ASSM (OM-2Y)(WC)GND	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL) *	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
		EA	LF	LF	LF	LF	EA	LF	LF
SHEET 1 OF 4	BEGIN TO 224+00			170	650	1,158	18	130	130
	224+00 TO 236+00			310	215	2,400	20	44	458
SHEET 2 OF 4	236+00 TO 248+00	2		310		2,400	16		480
	248+00 TO 260+00			310		2,400	16		480
SHEET 3 OF 4	260+00 TO 272+00			310		2,400	16		480
	272+00 TO 284+00	2		310		2,360	16		450
SHEET 4 OF 4	284+00 TO 296+00			280	1,300	2,400	35	255	226
	296+00 TO END		30		1,365	1,676	36	274	
	CSJ TOTALS	**4**	**30**	**2,000**	**3,530**	**17,194**	**173**	**703**	**2,704**

* PROFILE PAVEMENT MARKING QUANTITIES ACCOUNT FOR TWO APPLICATIONS OF PAINT AT 100 ML THICKNESS TO PROVIDE MINIMUM 300 MIL IN HEIGHT THAT IS REQUIRED BY STANDARD RS(3)-13.

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

SUMMARY OF SIGNING AND PAVEMENT MARKING QUANTITIES

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		52
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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SUMMARY OF SW3P QUANTITIES (FM 1479)

SHEET SEQUENCE	ITEM	164	164	166	168	506							
	DESC. CODE	6035	6041	6001	6001	6003	6011	6021	6024	6038	6039	6041	6043
	LOCATION (STA TO STA)	DRILL SEEDING (PERM) (RURAL) (CLAY)	DRILL SEEDING (TEMP) (WARM)	FERTILIZER	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 3)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 2)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
		SY	SY	AC	MG	LF	LF	SY	SY	LF	LF	LF	LF
SHEET 1 OF 4	BEGIN TO 224+00	53	53	0.01	1			156	156	38	38		
	224+00 TO 236+00									121	121		
SHEET 2 OF 4	236+00 TO 248+00	156	156	0.03	3	45	45			337	337		
	248+00 TO 260+00									100	100	28	28
SHEET 3 OF 4	260+00 TO 272+00									88	88		
	272+00 TO 284+00	107	107	0.02	2	34	34			324	324	20	20
SHEET 4 OF 4	284+00 TO 296+00	55	55	0.01	1					164	164		
	296+00 TO END PROJECT							156	156	165	165		
	PROJECT TOTALS	**371**	**371**	**0.07**	**7**	**79**	**79**	**312**	**312**	**1,337**	**1,337**	**48**	**48**
		*	*	**	*			***	***				

NOTES:

* AREAS DISTURBED BY INSTALLATION OF PROP CULVERTS OR IRRIGATION LINES

** FOR CONTRACTORS INFORMATION ONLY (NON-PAY)

*** TO BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 1479

SUMMARY OF SW3P QUANTITIES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		53
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

10/6/2021 1:30:00 PM N:\7021-17-101\CADD\DGN\01_GENERAL\FM1479_GNSE00_01.dgn

GENERAL NOTES AND SPECIFICATIONS DATA:

USE A POWER-BROOM WHEN CLEANING THE ROADWAY AS NEEDED.

REMOVE & DISPOSE ALL MATERIAL NOT DEEMED SALVAGEABLE BY THE ENGINEER, UNLESS OTHERWISE SHOWN ON THE PLANS.

ON EXISTING PAVEMENT THAT WILL REMAIN IN PLACE, SAND BLAST OR SURFACE TREAT IN ORDER TO REMOVE EXISTING STRIPING.

DO NOT BLOCK DRAINAGE WHEN HANDLING & STOCKPILING EXCAVATED MATERIAL.

MAINTAIN ACCESS TO DRIVEWAYS AND INTERSECTIONS THROUGH ALL PHASES OF CONSTRUCTION.

MAINTAIN POSITIVE DRAINAGE DURING ALL PHASES OF CONSTRUCTION.

ALWAYS COMPLETE THE PROPOSED DRIVEWAYS DURING THEIR TCP PHASE BEFORE SWITCHING TRAFFIC TO A NEW PHASE UNLESS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES:

AT THE COMMENCEMENT OF THE PROJECT, ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCEPTABLE CONDITION, AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AS PER GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES AND FEATURES.

NOTIFY THE AREA ENGINEER(AE) IN WRITING(E-MAIL IS ACCEPTABLE) ONCE THE TRAFFIC CONTROL PLAN(TCP) AND ALL TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED AS PER PLANS ON THE PROJECT SO THAT THE DEPARTMENT'S RESPONSIBLE PERSON ACCOMPANIED BY THE CONTRACTOR'S RESPONSIBLE PERSON CAN CONDUCT A NIGHT INSPECTION ON THE SAID TCP AND TRAFFIC CONTROL DEVICES. COMMENCEMENT OF WORK WILL NOT BE AUTHORIZED NOR ALLOWED UNTIL THE AE NOTIFIES THE CONTRACTOR IN WRITING(E-MAIL IS ACCEPTABLE) TO PROCEED WITH THE WORK.

CONTRACTOR SHALL HAVE A SUFFICIENT AMOUNT OF TRAFFIC CONTROL DEVICES IN ACCEPTABLE CONDITION TO REPLACE ANY DAMAGED TRAFFIC CONTROL DEVICE WITHIN 24 HOURS OF NOTIFICATION.

PROVIDE ADDITIONAL SIGNS AND BARRICADES AS NECESSARY TO ADDRESS FIELD CONSTRUCTIBILITY & VISIBILITY. THESE ADDITIONAL SIGNS WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

REMOVE OR COMPLETELY COVER ALL EXISTING SIGNS WHICH ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN.

ADJUST STOP SIGNS AS NEEDED ON INTERSECTING STREETS DURING THE VARIOUS CONSTRUCTION PHASES. DO NOT REMOVE ANY EXISTING STOP SIGNS UNTIL TEMPORARY SIGNS ARE IN PLACE.

COORDINATE THE TRAFFIC CONTROL PLAN AND THE VARIOUS SEQUENCES OF CONSTRUCTION WITH ADJACENT CONSTRUCTION PROJECTS IF APPLICABLE, TO ENSURE THE UNINTERRUPTED AND SAFE FLOW OF TRAFFIC.

NOTIFY THE ENGINEER IN WRITING WHEN MAJOR TRAFFIC CHANGES ARE TO BE MADE. NOTIFICATIONS MUST BE GIVEN A MINIMUM OF THREE WORKING DAYS PRIOR TO THE CHANGE.

ALL WORK ZONE PAVEMENT MARKINGS FOR THIS PROJECT SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.

SAFETY:

PROTECT EXPOSED PITS THAT MUST REMAIN OPEN DURING NON-WORKING HOURS AS PER OSHA REQUIREMENTS.

PROJECT SPECIFIC NOTES:

THE TRAFFIC CONTROL PLAN AND VARIOUS PHASES AND SEQUENCES OF CONSTRUCTION SERVE AS A GUIDE FOR THE SAFE HANDLING OF TRAFFIC DURING CONSTRUCTION OF THE PROJECT ROADWAYS, UTILITIES AND OTHER RELATED ITEMS. THE TCP DOES NOT ATTEMPT TO ADDRESS EVERY ASPECT OF CONSTRUCTION THAT IS REQUIRED DURING EACH PHASE OF CONSTRUCTION. THE TCP DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF CONSTRUCTING THE COMPLETE ROADWAYS, UTILITIES AND OTHER RELATED ITEMS, AS NOTED ON THE PLANS AND SPECIFICATIONS.

THE CONTRACTOR SHALL NOTIFY THE PROPER CITY, COUNTY, E.M.S., FIRE DEPARTMENT, POLICE DEPARTMENT, TEXAS DEP'T. OF PUBLIC SAFETY AND TEXAS DEP'T OF TRANSPORTATION OFFICIALS WHEN MAJOR TRAFFIC CHANGES ARE TO BE MADE. THE NOTIFICATION MUST BE MADE THREE DAYS PRIOR TO THE CHANGE.

THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) PORTABLE CHANGEABLE MESSAGE SIGNS(PCMS), TO INFORM THE PUBLIC OF ANY CHANGES IN TRAFFIC PATTERNS. THESE SIGNS SHALL BE USED AS DIRECTED BY THE ENGINEER. UPON COMPLETION OF THE PROJECT THE PCMS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. THE PCMS AND ALL RELATED COSTS FOR SETUP, RELOCATION, MAINTENANCE, REMOVAL, AND INCIDENTALS SHALL BE PAID UNDER ITEM 6001 "PORTABLE CHANGEABLE MESSAGE SIGN". THE CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING MESSAGES.

WORK ZONE PAVEMENT MARKING ON-BRIDGES AND THOSE INSTALLED AFTER THE COMPLETION OF WORK ON A CURTAIN PHASE SEQUENCE, AND WHICH ARE TO BE REMOVED ON A SUBSEQUENT SEQUENCE OF WORK, SHALL BE OF THE REMOVABLE TYPE. ALL NON-REMOVABLE WORK ZONE PAVEMENT MARKINGS SHALL BE THERMOPLASTIC (100 MIL THICKNESS).

IF NECESSARY, TEMPORARY LANE CLOSURES SHALL BE DONE DURING OFF-PEAK HOURS, BETWEEN 9:00 A.M. TO 4:00 P.M. AND AT NIGHTTIME, OR AS DIRECTED BY THE ENGINEER. DURING THE PEAK HOURS OF 6:00 A.M. TO 8:30 A.M. AND 4:00 P.M. TO 7:00 P.M., THE CONTRACTOR SHALL MAINTAIN THE NUMBERS OF LANES OPEN TO TRAFFIC AS SHOWN ON THE TRAFFIC CONTROL PLANS.

THE CONTRACTOR SHALL PROTECT THE PAVEMENT FROM ALL DAMAGE AS DIRECTED BY THE ENGINEER WHEN MOVING ANY EQUIPMENT, NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS ANY PAVEMENT.

THE CONTRACTOR SHALL KEEP TRAVELED SURFACES USED IN HAULING OPERATIONS CLEAR AND FREE OF DIRT AND OTHER MATERIAL.

WHEN APPLICABLE, DETOURS MUST BE CONSTRUCTED TO MATCH THE EXISTING ROADWAY CROSS SLOPE AND TO PROVIDE POSITIVE DRAINAGE AT THE POINT OF INTERSECTION BETWEEN PROPOSED DETOUR AND EXISTING ROADWAY.

ALL SIGNS, BARRICADES, BARRIERS, AND CHANNELIZING DEVICES NEEDED TO CONSTRUCT THE DETOUR WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO ITEM 502.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 FX

Texas Department of Transportation

FM 506/FM 800/FM 1479
TRAFFIC CONTROL PLAN GENERAL NOTES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		54
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030, ETC	FM 506, ETC

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FM 506, FM 800, AND FM 1479 MAINLANES SEQUENCE OF CONSTRUCTION

INSTALL PROJECT LIMITS AND ADVANCE WARNING SIGNS, CROSSROADS BARRICADES/SIGNS, AS SHOWN ON THE TRAFFIC CONTROL PLANS (TCP), IN ACCORDANCE WITH TMUTCD AND/OR AS DIRECTED BY THE ENGINEER. THESE SIGNS SHALL BE ERECTED AND PLACED PRIOR TO COMMENCING ANY PROPOSED ROADWAY CONSTRUCTION AND SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT UNTIL COMPLETION AND ACCEPTANCE OF THE PROJECT BY TxDOT.

RELOCATION OF EXISTING UTILITIES CONFLICTING WITH PROPOSED ROADWAY AND DRAINAGE IMPROVEMENTS SHALL BE ADJUSTED PRIOR TO COMMENCING ANY PROPOSED IMPROVEMENTS. ALL UTILITIES ARE SHOWN ON PLANS FOR INFORMATION PURPOSES ONLY AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL INFORMATION, THEREFORE THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO VERIFY UTILITIES PRIOR TO CONSTRUCTION.

THE CONTRACTOR WILL CONSTRUCT ALL DRAINAGE AND IRRIGATION CROSSINGS (CUT & RESTORE) SUCH THAT CONSTRUCTION ON EACH CROSSING INCLUDING ROADWAY RESTORATION WILL BE COMPLETE AND BACK IN SERVICE AT THE END OF EACH WORK DAY. CONTRACTOR SHALL USE THE APPROPRIATE & LATEST TCP STANDARDS TO HANDLE TRAFFIC PRIOR TO DRAINAGE AND IRRIGATION INSTALLATIONS. THE RESTORATION OF ALL-WEATHER SURFACE ROADWAY CROSSINGS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AT ALL TIMES. EROSION CONTROL LOGS AND OTHER SEDIMENT AND STORM WATER POLLUTION CONTROL MEASURES SHALL BE INSTALLED AS SHOWN IN THE SW3P LAYOUTS AND STANDARDS AND/OR AS DIRECTED BY TxDOT.

TO ACCOMMODATE THE VARIOUS PHASES OF CONSTRUCTION, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE TEMPORARY ADJUSTMENTS AND RELOCATION OF EXISTING SIGNAL HEADS, POLES, LOW-PROFILE CONCRETE TRAFFIC BARRIER, PCTB, SIGNING, AND ANY OTHER INCIDENTAL WORK NECESSARY TO PROVIDE FOR PROPER TRAFFIC SIGNAL OPERATION. THE ADJUSTMENTS AND RELOCATIONS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502, "BARRICADES, SIGNS AND TRAFFIC HANDLING."

FM 506 PHASE I CONSTRUCTION (URBAN AREA)

1. INSTALL TEMP SIGNAL AT BUS 83 AND FM 506, PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRIER, WARNING SIGNS AND ETC. SHIFT TWO-WAY TRAFFIC OVER TO SOUTHBOUND SIDE OF FM 506. ELIMINATE ANY EXISTING PAVEMENT STRIPING THAT CONFLICTS WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN PHASE I OF FM 506 TCP PLANS.
2. CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING FIRST LIFT OF THE FINAL RIDING SURFACE FOR NORTHBOUND HALF OF FM 506 AS SHOWN IN PHASE I OF FM 506 TCP PLANS. BEGIN CONSTRUCTION FROM THE US BUS 83 INTERSECTION AND PROCEED SOUTH TOWARDS COOPER LANE.
3. INTERSECTIONS SHALL BE CONSTRUCTED AS SHOWN IN THE TCP CROSS STREET DETAILS. NO TWO ADJOINING INTERSECTIONS SHALL BE UNDER CONSTRUCTION AT THE SAME TIME.CROSS STREET OPENINGS TO THE WORK ZONE CAN BE ADDED OR REMOVED AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.

FM 506 PHASE II CONSTRUCTION (URBAN AREA)

1. ADJUST TEMP SIGNAL AT BUS 83 AND FM 506, PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRIER, WARNING SIGNS AND ETC. SHIFT TWO-WAY TRAFFIC OVER TO NORTHBOUND SIDE OF FM 506. ELIMINATE ANY EXISTING PAVEMENT STRIPING THAT CONFLICTS WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN PHASE II OF FM 506 TCP PLANS.
2. CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING FIRST LIFT OF THE FINAL RIDING SURFACE FOR SOUTHBOUND HALF OF FM 506 AS SHOWN IN PHASE II OF FM 506 TCP PLANS. BEGIN CONSTRUCTION FROM THE US BUS 83 INTERSECTION AND PROCEED SOUTH TOWARDS COOPER LANE.
3. INTERSECTIONS SHALL BE CONSTRUCTED AS SHOWN IN THE TCP CROSS STREET DETAILS. NO TWO ADJOINING INTERSECTIONS SHALL BE UNDER CONSTRUCTION AT THE SAME TIME. CROSS STREET OPENINGS TO THE WORK ZONE CAN BE ADDED OR REMOVED AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.

FM 506 PHASE III CONSTRUCTION (URBAN AREA)

1. INSTALL FINAL RIDING SURFACE AND PAVEMENT MARKINGS FROM THE BUS 83 INTERSECTION TO COOPER LANE.

FM 506 PHASE III CONSTRUCTION (RURAL AREA)

1. THE URBAN SECTION OF FM 506 (STA 10+00 TO STA 50+76) MUST BE SUBSTANTIALLY COMPLETE BEFORE WORK IS TO BEGIN ON THE RURAL SECTION.
2. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES,AND BRIDGE RAIL RETROFIT PRIOR TO BEGINNING CONSTRUCTION OF PROPOSED ROADWAY FOR THE RURAL SEGMENT OF FM 506. LOCATIONS ARE SHOWN ON ROADWAY AND BRIDGE PLANS. UTILIZE ROAD CLOSURES FOR CONSTRUCTING THESE ITEMS. ABOVE. LIMIT THE ROAD CLOSURE TO GENERAL VICINITY OF EACH CROSSING. ONLY ONE CROSSING SHALL BE CONSTRUCTED AT A TIME. INSTALL SIGNAGE SHOWN IN FM 506 ROAD CLOSURE LAYOUT PRIOR TO BEGINNING ANY CONSTRUCTION.
3. AFTER CONSTRUCTING ALL CROSS CULVERTS, IRRIGATION LINES, AND BRIDGE RAIL RETROFIT CONTRACTOR SHALL COMMENCE WORK ON THE NORTHBOUND HALF OF FM 506. BEGIN CONSTRUCTION FROM COOPER LANE AND PROCEED SOUTH TOWARDS FM 3067. CONTRACTOR SHALL SET UP WORK ZONE AS SHOWN IN THE PHASE III ONE LANE TWO-WAY TRAFFIC DAYTIME DETAIL SHEET TO MAINTAIN FM 506 OPEN TO LOCAL TRAFFIC DURING DAYTIME HOURS UTILIZING FLAGGING OPERATIONS. ALL THRU TRAFFIC SHALL BE DETOURED AS SHOWN IN FM 506 ROAD CLOSURE LAYOUT.
4. THE LENGTH OF ROADWAY SECTION UNDER CONSTRUCTION IN THE RURAL SEGMENT SHALL BE COORDINATED IN THE FIELD WITH THE ENGINEER TO MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND SUCH THAT A 3:1 SAFETY SLOPE CAN BE PLACED ALONG THE TEMPORARY EDGE OF PVMT AT THE END OF EACH WORK DAY.
5. THE 3:1 SAFETY SLOPE SHALL BE SUBSIDIARY TO THE VARIOUS CONTRACT ITEMS IN THE PLANS.
6. AT THE END OF EACH WORK DAY, CONTRACTOR SHALL UTILIZE THE PHASE III NIGHTIME DETAIL SHEET TO OPEN FM 506 TO TWO LANES FOR LOCAL TRAFFIC. CONTRACTOR SHALL INSTALL ALL TCP DEVICES AND SIGNS AS SHOWN IN DETAIL SHEET PRIOR TO OPENING TO TWO LANES.
7. CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING FIRST LIFT OF THE FINAL RIDING SURFACE FOR NORTHBOUND HALF OF FM 506 PRIOR TO COMMENCING PHASE IV. CONTRACTOR SHALL ALLOW PROPER CURING OF LIME STABILIZED SUBGRADE PRIOR TO INSTALLING THE NEXT LAYER OF THE PAVEMENT STRUCTURE. CONTRACTOR SHALL CONSTRUCT A PROPER CROSS SLOPE ON SUBGRADE TO ENSURE PROPER DRAINAGE ON THE ROADWAY. RECOMPACT AND REGRADE SUBGRADE AS NECESSARY IF RUTTING OCCURS. THIS WORK SHALL BE SUBSIDIARY TO VARIOUS CONTRCT ITEMS.
8. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.
9. SECTIONS OF ROADWAY SHALL HAVE A PROPER RIDING SURFACE BEFORE BEING OPEN TO TRAFFIC. THIS RIDING SURFACE SHALL BE, AS A MINIMUM, COMPACTED FLEX BASE.

FM 506 PHASE IV CONSTRUCTION (RURAL AREA)

1. CONTRACTOR SHALL COMMENCE WORK ON THE SOUTHBOUND HALF OF FM 506. BEGIN CONSTRUCTION FROM COOPER LANE AND PROCEED SOUTH TOWARDS FM 3067. CONTRACTOR SHALL SET UP WORK ZONE AS SHOWN IN THE PHASE IV ONE LANE TWO-WAY TRAFFIC DAYTIME DETAIL SHEET TO MAINTAIN FM 506 OPEN TO LOCAL TRAFFIC DURING DAYTIME HOURS UTILIZING FLAGGING OPERATIONS. ALL THRU TRAFFIC SHALL BE DETOURED AS SHOWN IN FM 506 ROAD CLOSURE LAYOUT.
2. THE LENGTH OF ROADWAY SECTION UNDER CONSTRUCTION IN THE RURAL SEGMENT SHALL BE COORDINATED IN THE FIELD WITH THE ENGINEER TO MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND SUCH THAT A 3:1 SAFETY SLOPE CAN BE PLACED ALONG THE TEMPORARY EDGE OF PVMT AT THE END OF EACH WORK DAY.
3. THE 3:1 SAFETY SLOPE SHALL BE SUBSIDIARY TO THE VARIOUS CONTRACT ITEMS IN THE PLANS.
4. AT THE END OF EACH WORK DAY, CONTRACTOR SHALL UTILIZE THE PHASE IV NIGHTIME DETAIL SHEET TO OPEN FM 506 TO TWO LANES FOR LOCAL TRAFFIC. CONTRACTOR SHALL INSTALL ALL TCP DEVICES AND SIGNS AS SHOWN IN DETAIL SHEET PRIOR TO OPENING TO TWO LANES.
5. CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING FIRST LIFT OF THE FINAL RIDING SURFACE FOR SOUTHBOUND HALF OF FM 506. CONTRACTOR SHALL ALLOW PROPER CURING OF LIME STABILIZED SUBGRADE PRIOR TO INSTALLING THE NEXT LAYER OF THE PAVEMENT STRUCTURE. CONTRACTOR SHALL CONSTRUCT A PROPER CROSS SLOPE ON SUBGRADE TO ENSURE PROPER DRAINAGE ON THE ROADWAY. RECOMPACT AND REGRADE SUBGRADE AS NECESSARY IF RUTTING OCCURS. THIS WORK SHALL BE SUBSIDIARY TO VARIOUS CONTRCT ITEMS.
8. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.
9. SECTIONS OF ROADWAY SHALL HAVE A PROPER RIDING SURFACE BEFORE BEING OPEN TO TRAFFIC. THIS RIDING SURFACE SHALL BE, AS A MINIMUM, COMPACTED FLEX BASE.
10. INSTALL FINAL RIDING SURFACE AND PAVEMENT MARKINGS UTILIZING TXDOT STANDARD TCP (2-2)-18.
11. PERFORM FINAL CLEAN UP ON FM 506.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506/FM 800/FM 1479
SEQUENCE OF CONSTRUCTION NARRATIVE

SHEET 1 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		55
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030,ETC	FM 506,ETC

FM 800 PHASE 0 CONSTRUCTION-NOT SHOWN IN TCP LAYOUTS

1. CONSTRUCT EASTBOUND AND WESTBOUND BRIDGE WIDENING, CULVERT CROSSINGS AND IRRIGATION LINES PRIOR TO BEGINING CONSTRUCTION OF PROPOSED ROADWAY FOR FM 800.LOCATIONS ARE SHOWN ON TCP PLANS. UTILIZE ROAD CLOSURES FOR CONSTRUCTING THE ITEMS ABOVE. LIMIT THE ROAD CLOSURE TO GENERAL VICINITY OF EACH CROSSING. ONLY ONE CROSSING SHALL BE CONSTRUCTED AT A TIME.

FM 800 PHASE I CONSTRUCTION

1. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRIER, WARNING SIGNS AND ETC. UTILIZE ONE-WAY TRAFFIC DETAIL FOR EASTBOUND SIDE OF FM 800. ELIMINATE ANY EXISTING PAVEMENT STRIPING THAT CONFLICTS WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN PHASE I OF FM 800 TCP PLANS. DETOUR WB TRAFFIC AS SHOWN IN THE FM 800 DETOUR LAYOUTS.
2. CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING FIRST LIFT OF THE FINAL RIDING SURFACE FOR WESTBOUND HALF OF FM 800 AS SHOWN IN PHASE I OF FM 800 TCP PLANS. BEGIN CONSTRUCTION FROM FM 1479 AND PROCEED EAST TOWARDS FM 509.
3. INTERSECTIONS SHALL BE CONSTRUCTED AS SHOWN IN THE TCP CROSS STREET DETAILS. NO TWO CONSECUTIVE INTERSECTIONS SHALL BE UNDER CONSTRUCTION AT THE SAME TIME.
4. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.
5. THE LENGTH OF ROADWAY SECTION UNDER CONSTRUCTION SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND THE CONTRACTOR'S DAILY PROGRESS.
6. SECTIONS OF ROADWAY SHALL HAVE A PROPER RIDING SURFACE BEFORE BEING OPEN TO TRAFFIC. THIS RIDING SURFACE SHALL BE, AS A MINIMUM, COMPACTED FLEX BASE.

FM 800 PHASE II CONSTRUCTION

1. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRIER, WARNING SIGNS AND ETC. UTILIZE ONE-WAY TRAFFIC DETAIL FOR WESTBOUND SIDE OF FM 800. ELIMINATE ANY EXISTING PAVEMENT STRIPING THAT CONFLICTS WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN PHASE II OF FM 800 TCP PLANS. DETOUR EB TRAFFIC AS SHOWN IN THE FM 800 DETOUR LAYOUTS.
2. CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING FIRST LIFT OF THE FINAL RIDING SURFACE FOR EASTBOUND HALF OF FM 800 AS SHOWN IN PHASE II OF FM 800 TCP PLANS. BEGIN CONSTRUCTION FROM FM 1479 AND PROCEED EAST TOWARDS FM 509.
3. INTERSECTIONS SHALL BE CONSTRUCTED AS SHOWN IN THE TCP CROSS STREET DETAILS. NO TWO CONSECUTIVE INTERSECTIONS SHALL BE UNDER CONSTRUCTION AT THE SAME TIME.
4. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.
5. THE LENGTH OF ROADWAY SECTION UNDER CONSTRUCTION SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND THE CONTRACTOR'S DAILY PROGRESS.
6. SECTIONS OF ROADWAY SHALL HAVE A PROPER RIDING SURFACE BEFORE BEING OPEN TO TRAFFIC. THIS RIDING SURFACE SHALL BE, AS A MINIMUM, COMPACTED FLEX BASE.

FM 800 PHASE III CONSTRUCTION-NOT SHOWN IN TCP LAYOUTS

1. INSTALL FINAL RIDING SURFACE AND PAVEMENT MARKINGS FROM FM 1479 TO FM 509.

FM 1479 PHASE 0 CONSTRUCTION

1. CONSTRUCT CROSS CULVERTS AND IRRIGATION LINES PRIOR TO BEGINING CONSTRUCTION OF PROPOSED ROADWAY FOR FM 1479.LOCATIONS ARE SHOWN ON TCP PLANS. UTILIZE ROAD CLOSURES FOR CONSTRUCTING THE ITEMS ABOVE. LIMIT THE ROAD CLOSURE TO GENERAL VICINITY OF EACH CROSSING. ONLY ONE CROSSING SHALL BE CONSTRUCTED AT A TIME.

FM 1479 PHASE I CONSTRUCTION

1. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRIER, WARNING SIGNS AND ETC. UTILIZE ONE-WAY TRAFFIC DETAIL FOR SOUTHBOUND SIDE OF FM 1479. ELIMINATE ANY EXISTING PAVEMENT STRIPING THAT CONFLICTS WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN PHASE I OF FM 1479 TCP PLANS. DETOUR NB TRAFFIC AS SHOWN IN THE FM 1479 DETOUR LAYOUTS.
2. CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING THE FIRST LIFT OF THE FINAL RIDING SURFACE FOR NORTHBOUND HALF OF FM 1479 AS SHOWN IN PHASE I OF FM 1479 TCP PLANS. BEGIN CONSTRUCTION FROM FM 800 AND PROCEED SOUTH TOWARDS FM 675.
3. INTERSECTIONS SHALL BE CONSTRUCTED AS SHOWN IN THE TCP CROSS STREET DETAILS. NO TWO CONSECUTIVE INTERSECTIONS SHALL BE UNDER CONSTRUCTION AT THE SAME TIME.
4. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.
5. THE LENGTH OF ROADWAY SECTION UNDER CONSTRUCTION SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND THE CONTRACTOR'S DAILY PROGRESS.
6. SECTIONS OF ROADWAY SHALL HAVE A PROPER RIDING SURFACE BEFORE BEING OPEN TO TRAFFIC. THIS RIDING SURFACE SHALL BE, AS A MINIMUM, COMPACTED FLEX BASE.

FM 1479 PHASE II CONSTRUCTION

1. PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS, BARRIER, WARNING SIGNS AND ETC. UTILIZE ONE-WAY TRAFFIC DETAIL FOR NORTHBOUND SIDE OF FM 1479. ELIMINATE ANY EXISTING PAVEMENT STRIPING THAT CONFLICTS WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN PHASE II OF FM 1479 TCP PLANS. DETOUR SB TRAFFIC AS SHOWN IN THE FM 1479 DETOUR LAYOUTS.
2. CONSTRUCT PROPOSED PAVEMENT STRUCTURE UP TO/INCLUDING THE FIRST LIFT OF THE FINAL RIDING SURFACE FOR SOUTHBOUND HALF OF FM 1479 AS SHOWN IN PHASE II OF FM 1479 TCP PLANS. BEGIN CONSTRUCTION FROM FM 800 AND PROCEED SOUTH TOWARDS FM 675.
3. INTERSECTIONS SHALL BE CONSTRUCTED AS SHOWN IN THE TCP CROSS STREET DETAILS. NO TWO CONSECUTIVE INTERSECTIONS SHALL BE UNDER CONSTRUCTION AT THE SAME TIME.
4. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS AT ALL TIMES.
5. THE LENGTH OF ROADWAY SECTION UNDER CONSTRUCTION SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND THE CONTRACTOR'S DAILY PROGRESS.
6. SECTIONS OF ROADWAY SHALL HAVE A PROPER RIDING SURFACE BEFORE BEING OPEN TO TRAFFIC. THIS RIDING SURFACE SHALL BE, AS A MINIMUM, COMPACTED FLEX BASE.

FM 1479 PHASE III CONSTRUCTION- NOT SHOWN ON TCP LAYOUTS

1. INSTALL FINAL RIDING SURFACE AND PAVEMENT MARKINGS FROM FM 800 TO FM 675.

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281-945-0081 FX

Texas Department of Transportation

FM 506/FM 800/FM 1479
SEQUENCE OF CONSTRUCTION NARRATIVE

SHEET 2 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		56
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030, ETC	FM 506, ETC

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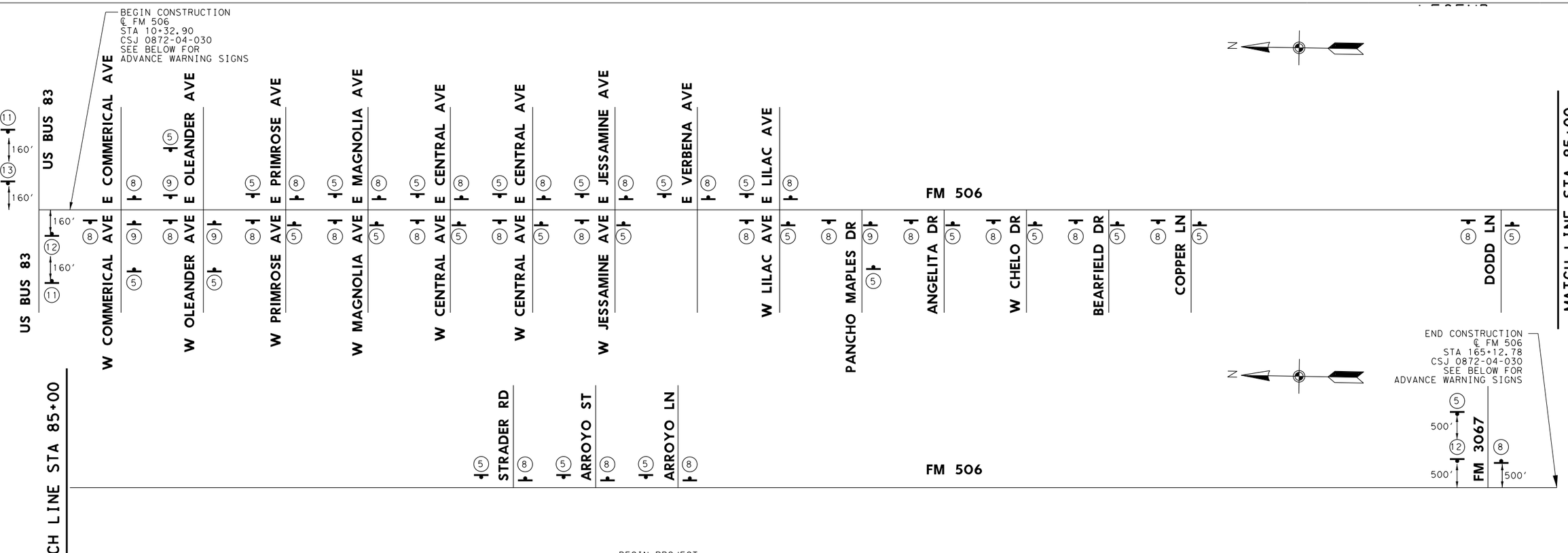
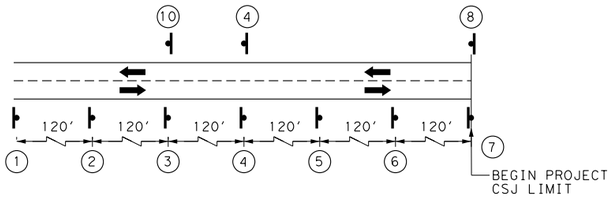
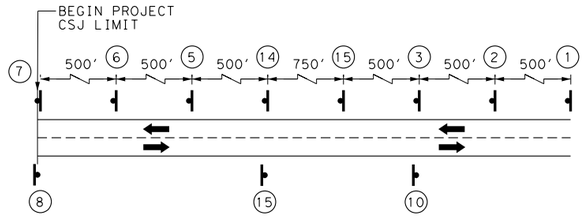
10/6/2021 9:43:03 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCSQ00_02.dgn





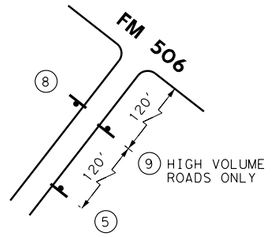
TYPICAL APPROACH SIGN PLACEMENT
FOR NORTH PROJECT LIMIT

(A)

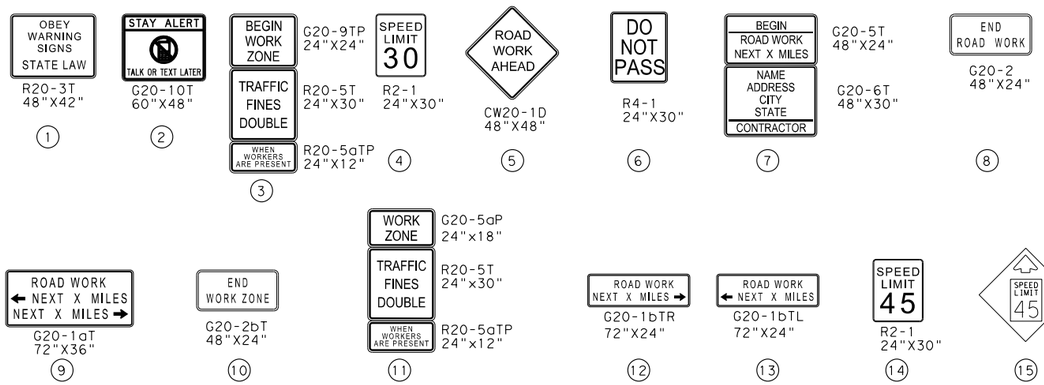


TYPICAL APPROACH SIGN PLACEMENT
FOR SOUTH PROJECT LIMIT

(B)



TYPICAL APPROACH SIGN PLACEMENT
FOR SIDE STREETS



NOTES:

1. FIELD CONDITIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATION. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION OF ANY SIGNS.
2. REFER TO PHASING LAYOUT SHEETS FOR OTHER REGULATORY AND WARNING SIGNS.
3. CONTRACTOR SHALL ADHERE AT ALL TIMES TO TXDOT STANDARDS BC (1)-21 THROUGH BC (12)-21, SHEETS AND TMUTCD FOR SIGN DETAILS, DIMENSIONS AND PLACEMENT.
4. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE ADDED BY THE ENGINEER. ANY SUCH DEVICES SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502.
5. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZING DEVICES AS APPROVED BY THE ENGINEER TO MEET FIELD CONDITIONS TO AVOID BLOCKING DRIVEWAYS OR ACCESS TO PROPERTIES.
6. WHEN CONSTRUCTION WORK IS COMPLETED AND THE FACILITY IS READY TO BE OPENED TO TRAFFIC, CONTRACTOR SHALL REQUEST APPROVAL FROM THE ENGINEER PRIOR TO ERECTING PERMANENT SPEED LIMIT SIGNS.

FM 506 POSTED SPEED LIMIT NORTH: 30 MPH
FM 506 POSTED SPEED LIMIT SOUTH: 55 MPH
NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506

ADVANCED WARNING SIGNS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		57
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 1:29:31 PM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCWS00_01.dgn
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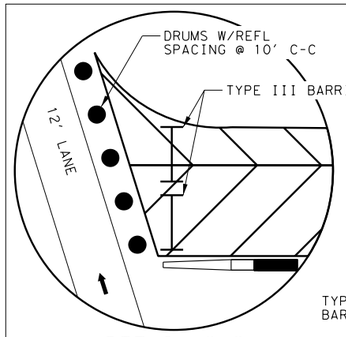
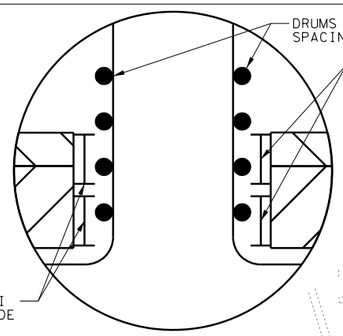
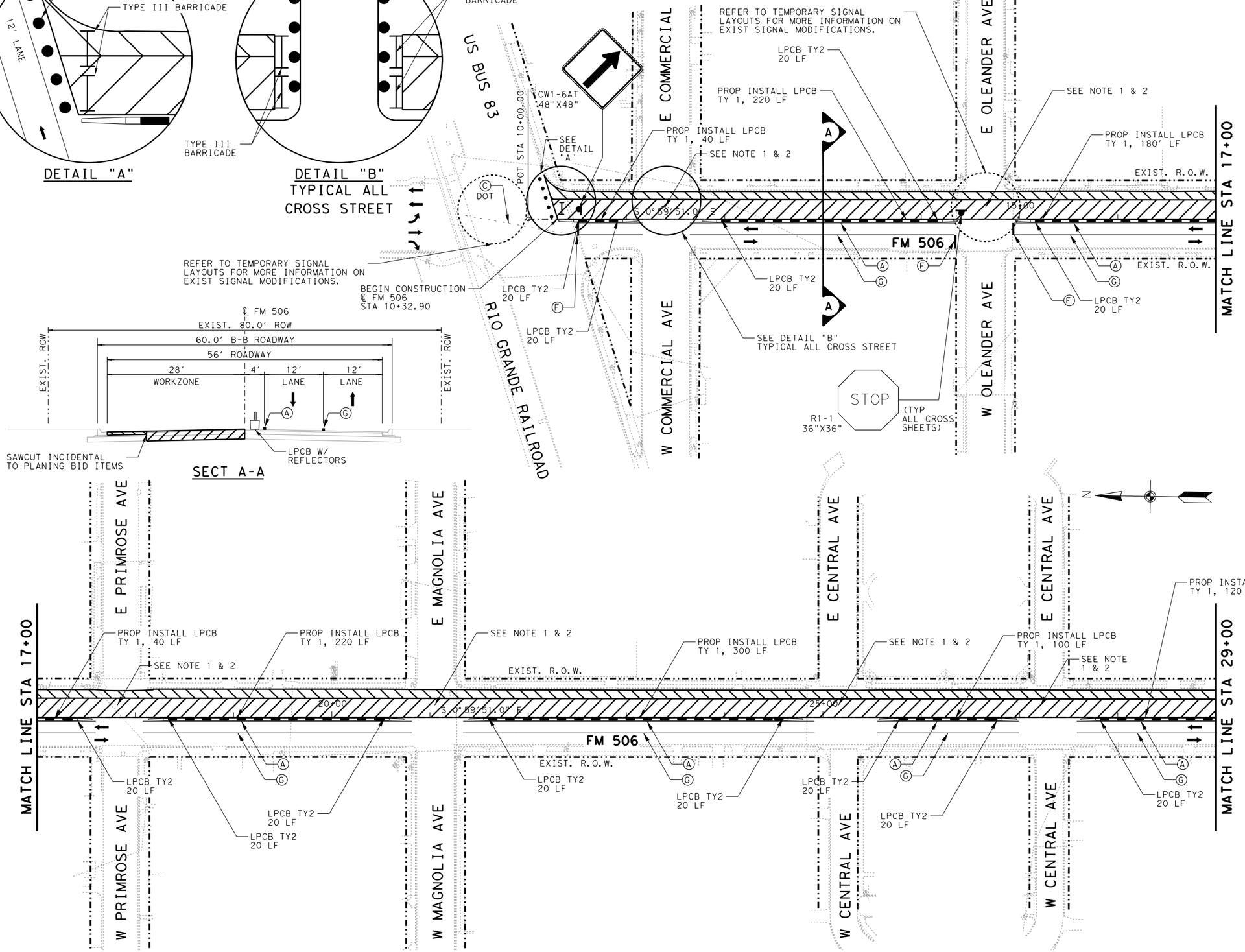


DETAIL "A"



DETAIL "B"
TYPICAL ALL CROSS STREET

SECT A-A



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

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F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE I
BEGIN PROJECT TO STA 29+00

SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		58
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCSH00_PH1_01.dgn

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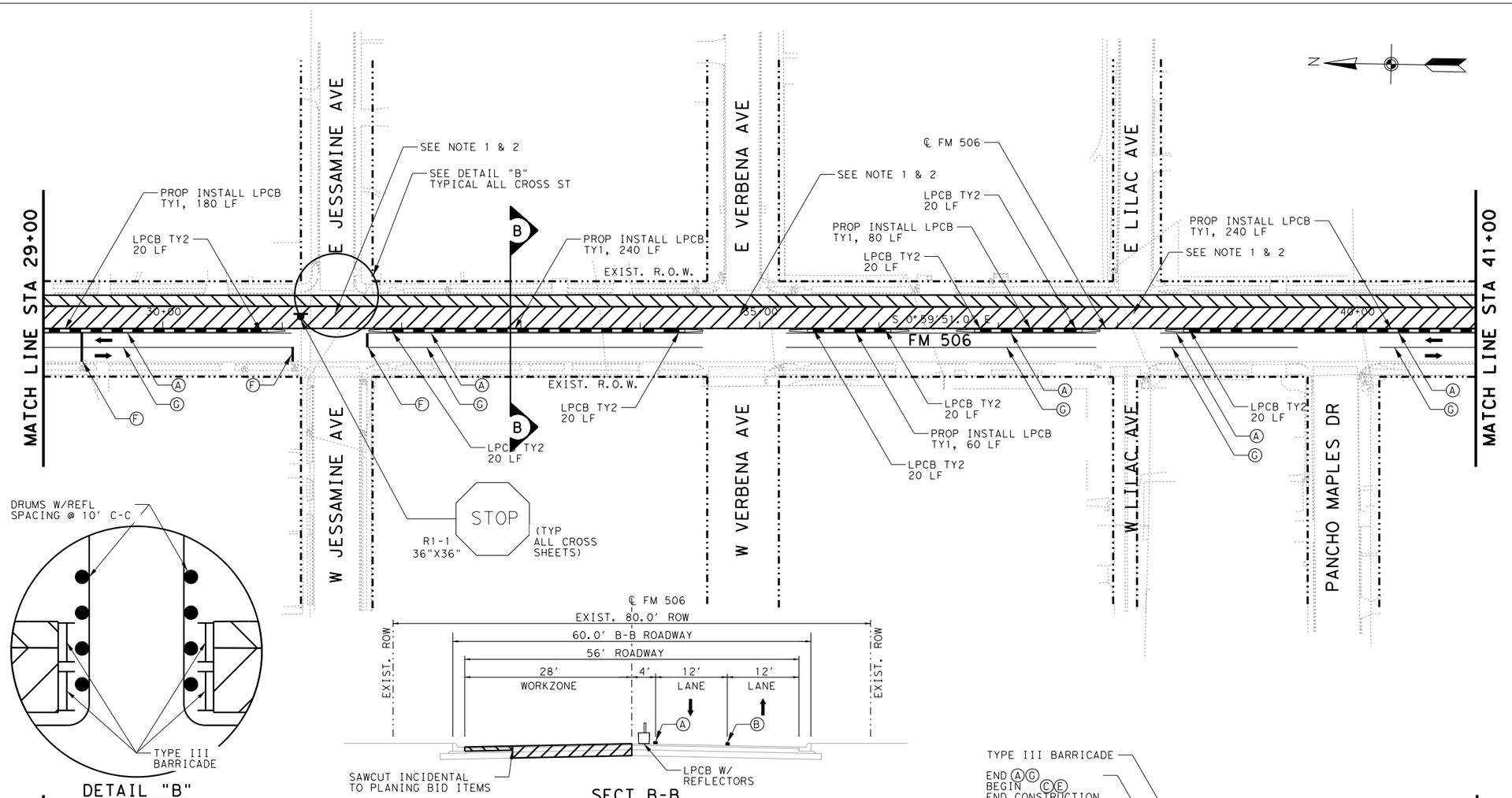

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

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3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
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PROFESSIONAL ENGINEER
LICENSED

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281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE I
STA 29+00 TO STA 53+00

SHEET 2 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		59
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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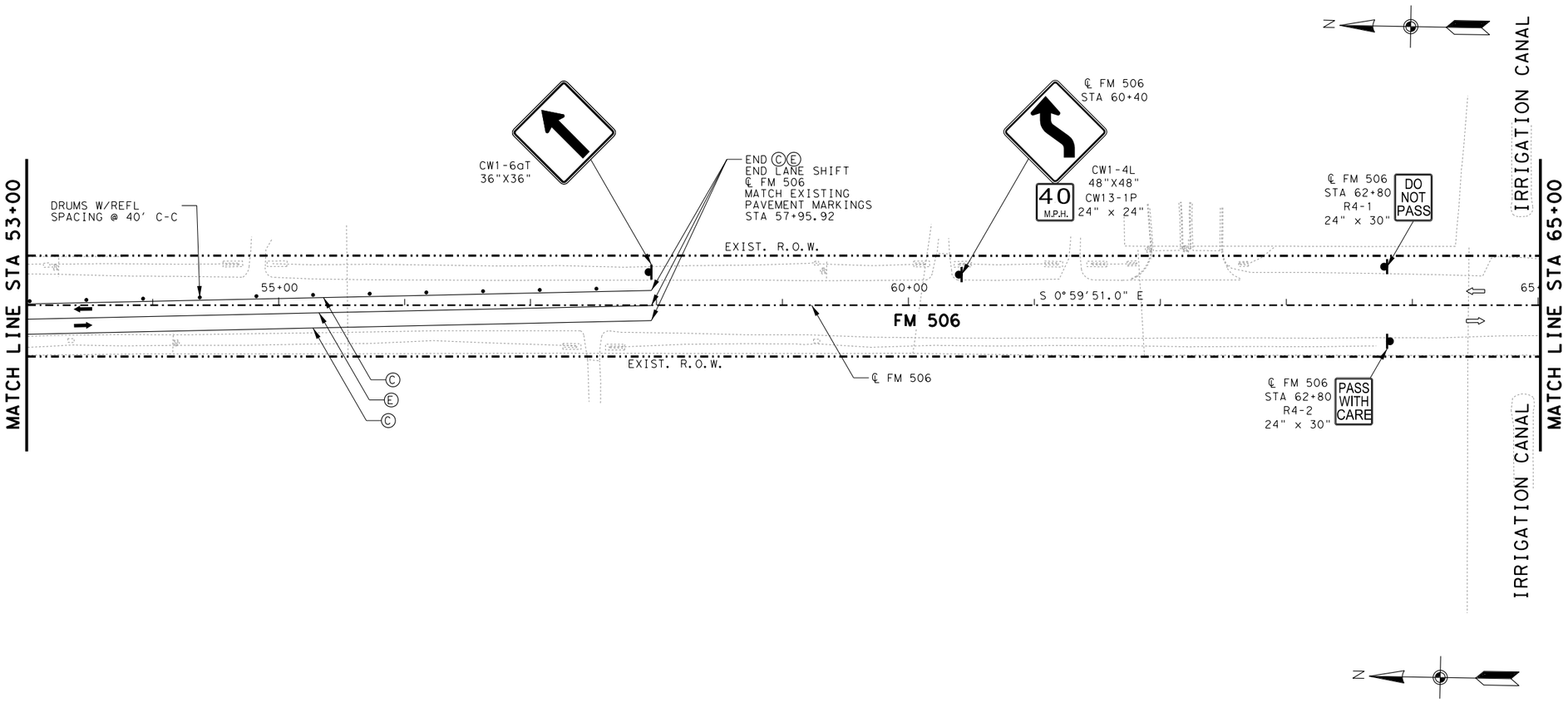

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE I STA 53+00 TO STA 77+00

SHEET 3 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		60
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 9:43:10 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCSH00_PH1_03.dgn
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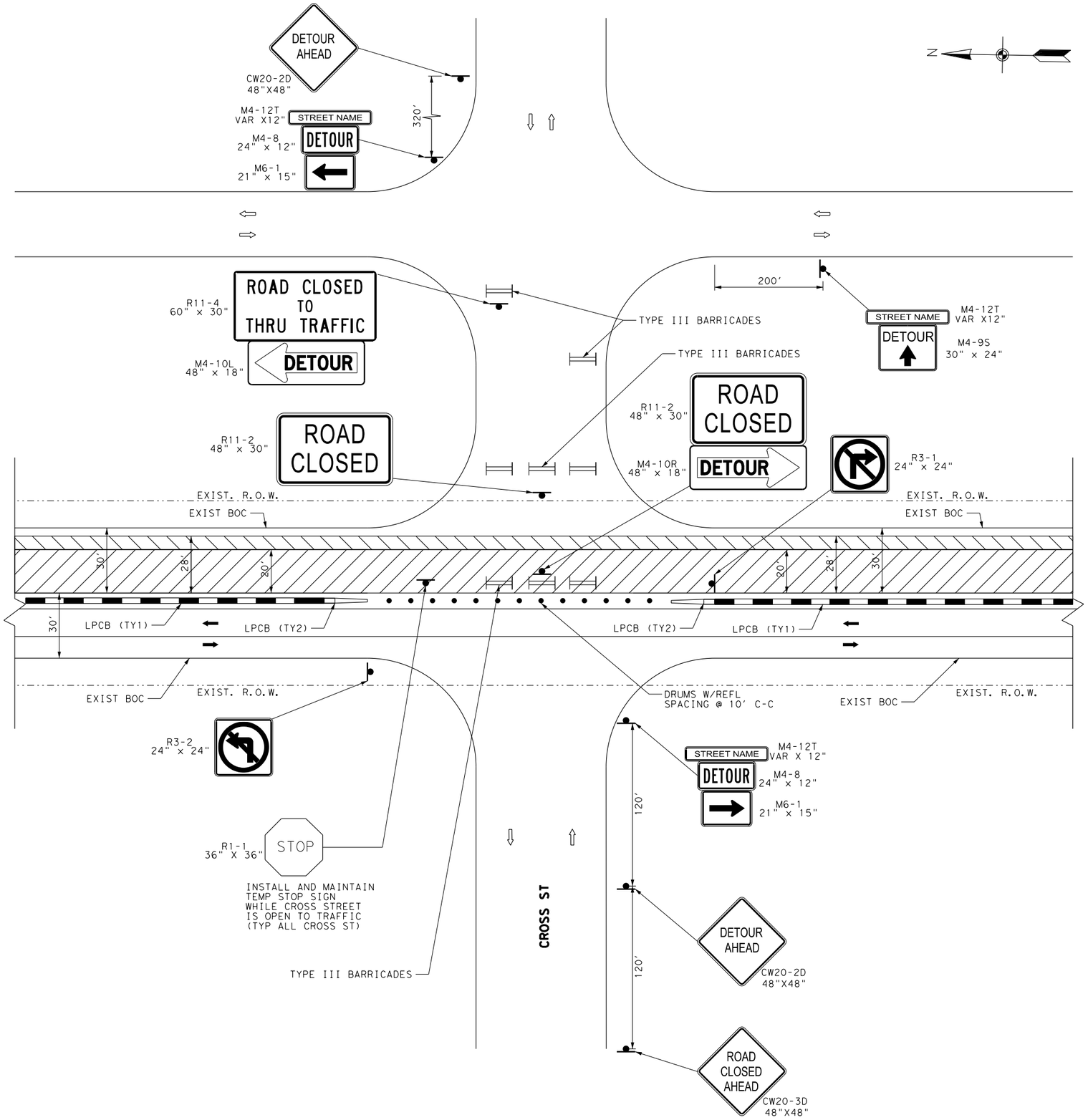

FM 506

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO TCP AND BC STANDARDS FOR CHANNELIZING DEVICES, SIGN SPACING, AND TAPER LENGTH.

2. ALTERNATE CLOSURES OF INTERSECTIONS. DO NOT CLOSE CONSECUTIVE INTERSECTIONS WITHOUT THE APPROVAL OF THE ENGINEER.

3. REFER TO DETOUR LAYOUTS FOR MORE INFORMATION ON DETOUR ROUTES WHEN INTERSECTIONS ARE CLOSED.

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

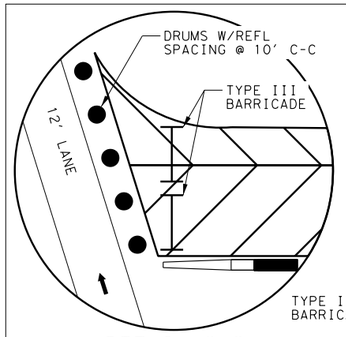
Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN CROSS STREET DETAIL PHASE 1

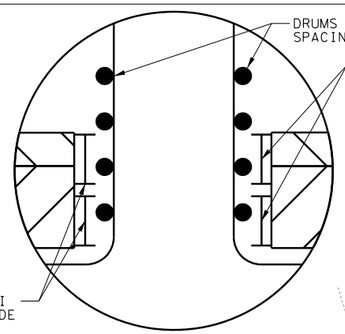
N. T. S. SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		61
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

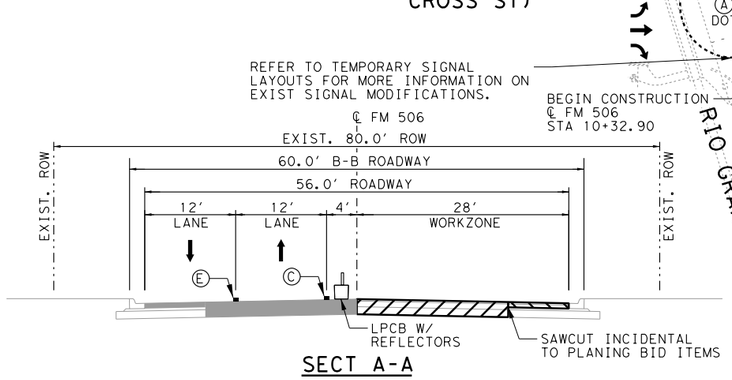
10/6/2021 9:43:11 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCDT00_PH1S1.dgn



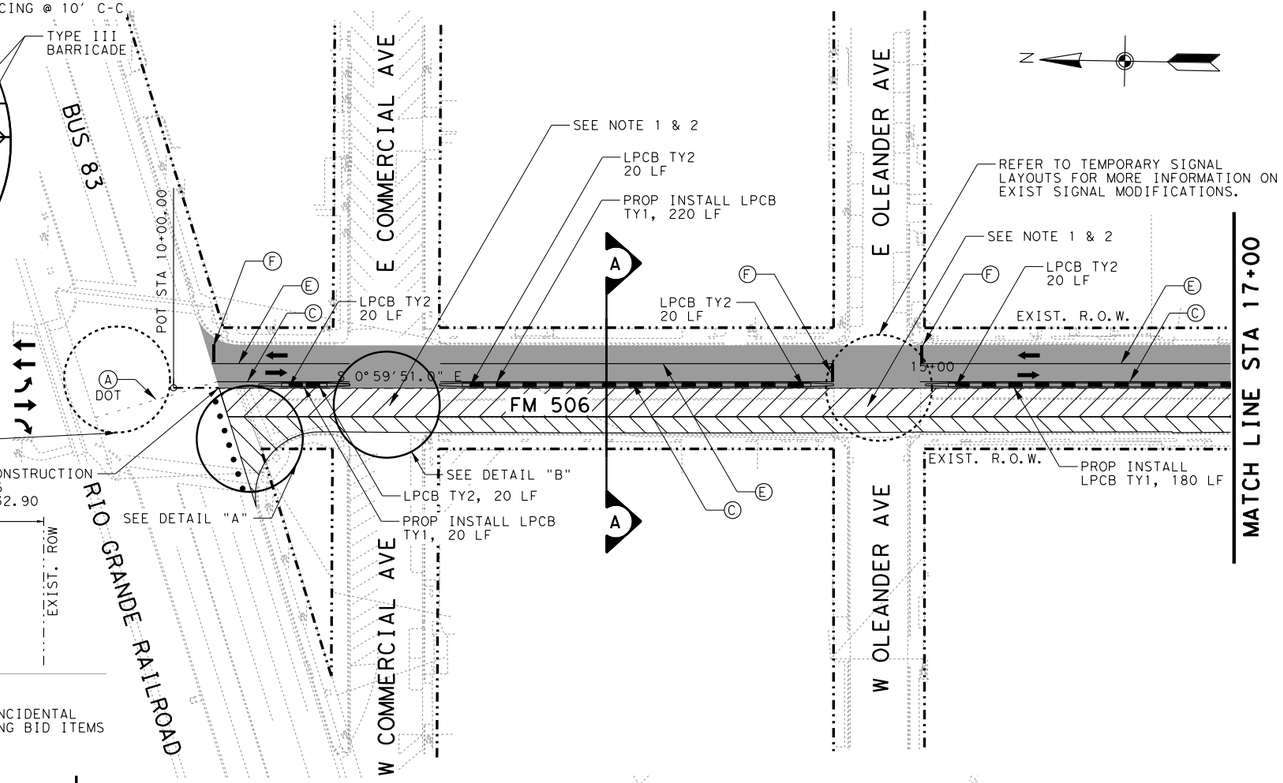
DETAIL "A"

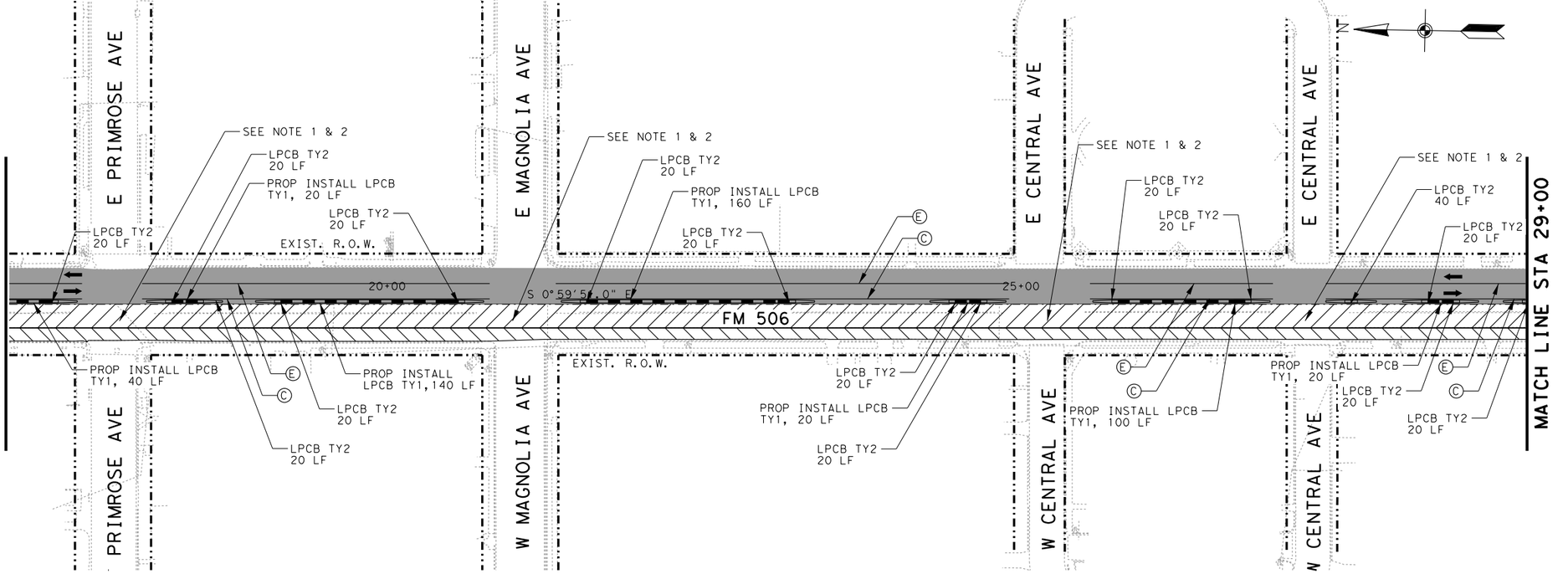


DETAIL "B"
(TYPICAL ALL CROSS ST)



SECT A-A





LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE II
BEGIN PROJECT TO STA 29+00

SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		62
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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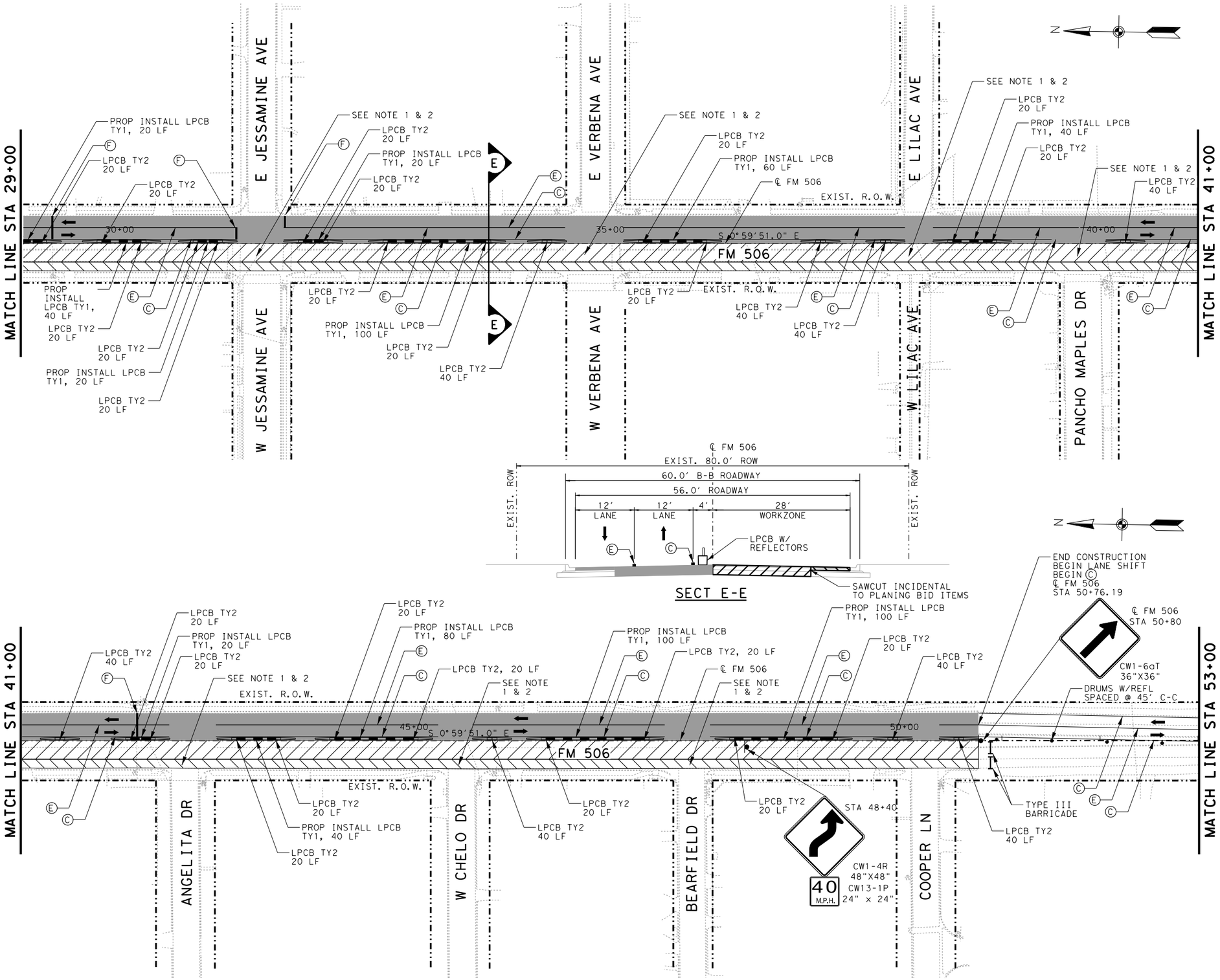

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
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NOTES:

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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
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PROFESSIONAL ENGINEER
LICENSED

10/05/2021

ISSUE RECORD

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15021 Katy Freeway, Suite 500
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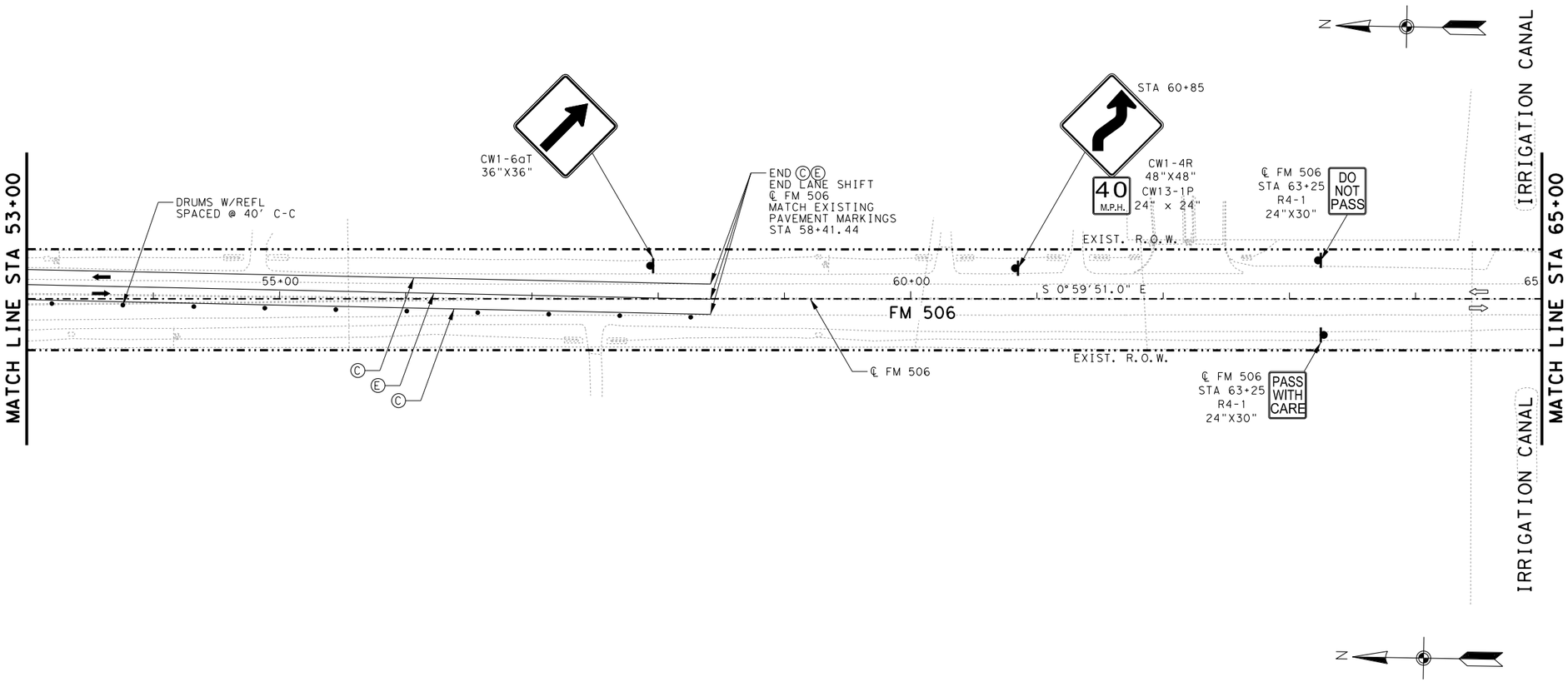
Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE II STA 29+00 TO STA 53+00

SHEET 2 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		63
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
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NOTES:

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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
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FM 506
TRAFFIC CONTROL PLAN PHASE II STA 53+00 TO STA 77+00

SHEET 3 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		64
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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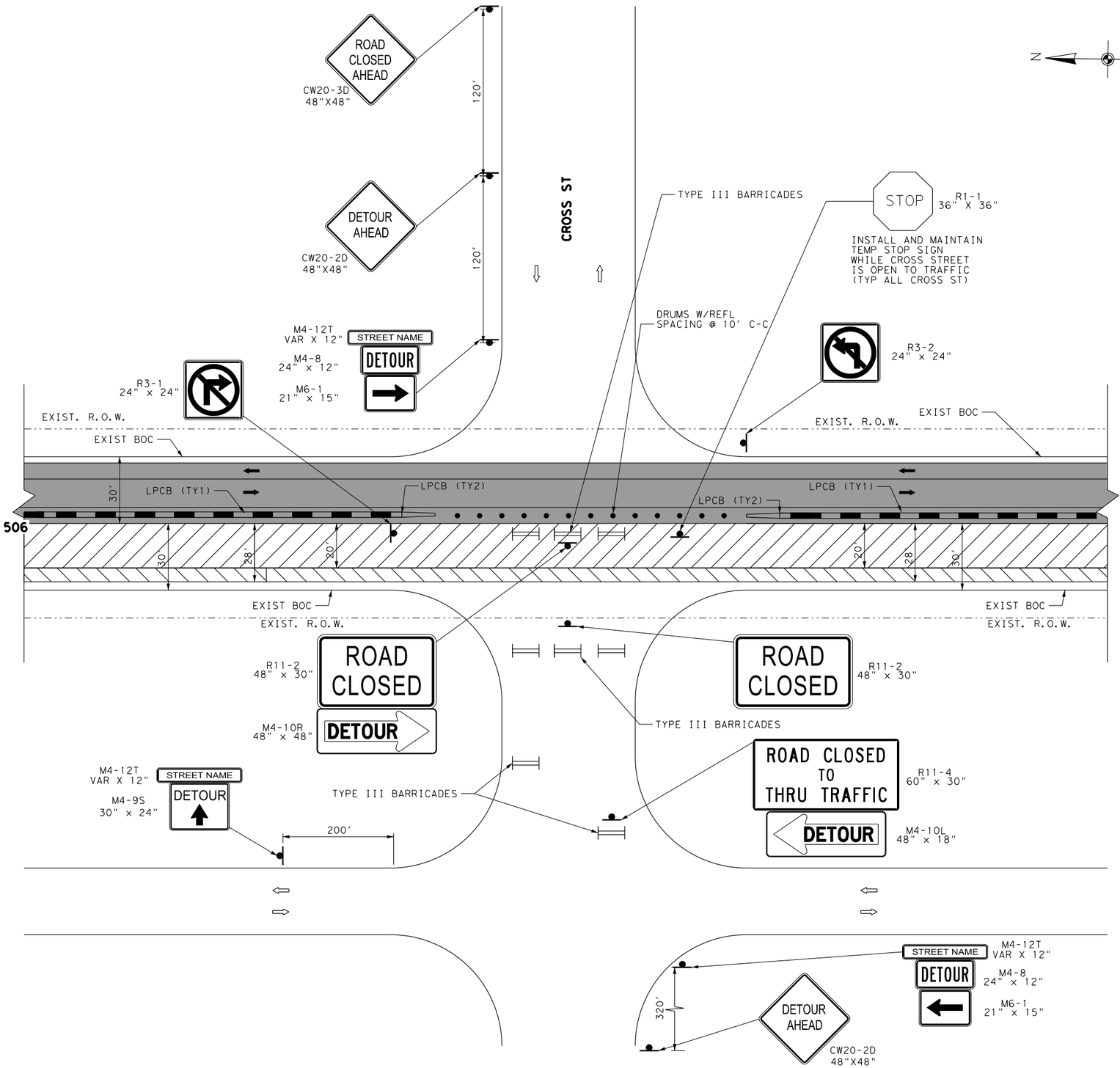


LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO TCP AND BC STANDARDS FOR CHANNELIZING DEVICES, SIGN SPACING, AND TAPER LENGTH.

2. ALTERNATE CLOSURES OF INTERSECTIONS. DO NOT CLOSE CONSECUTIVE INTERSECTIONS WITHOUT THE APPROVAL OF THE ENGINEER.

3. REFER TO DETOUR LAYOUTS FOR MORE INFORMATION ON DETOUR ROUTES WHEN INTERSECTIONS ARE CLOSED.

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

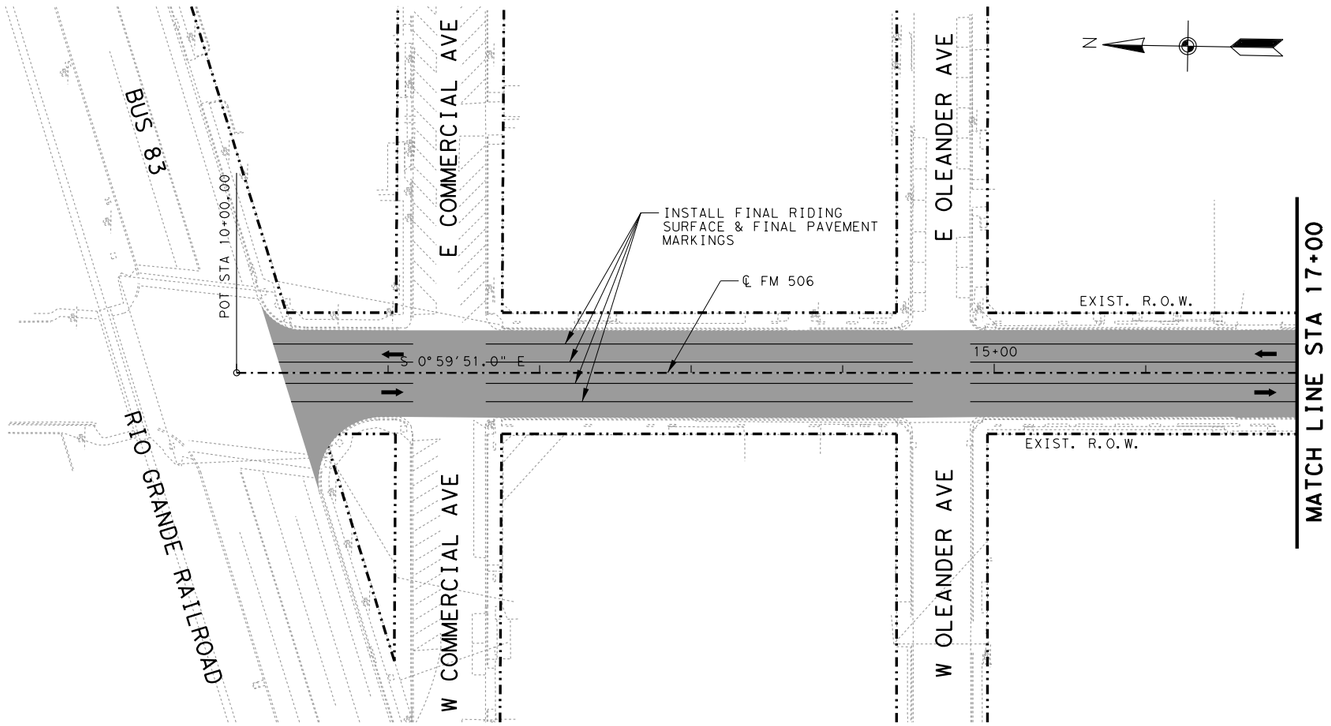
ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

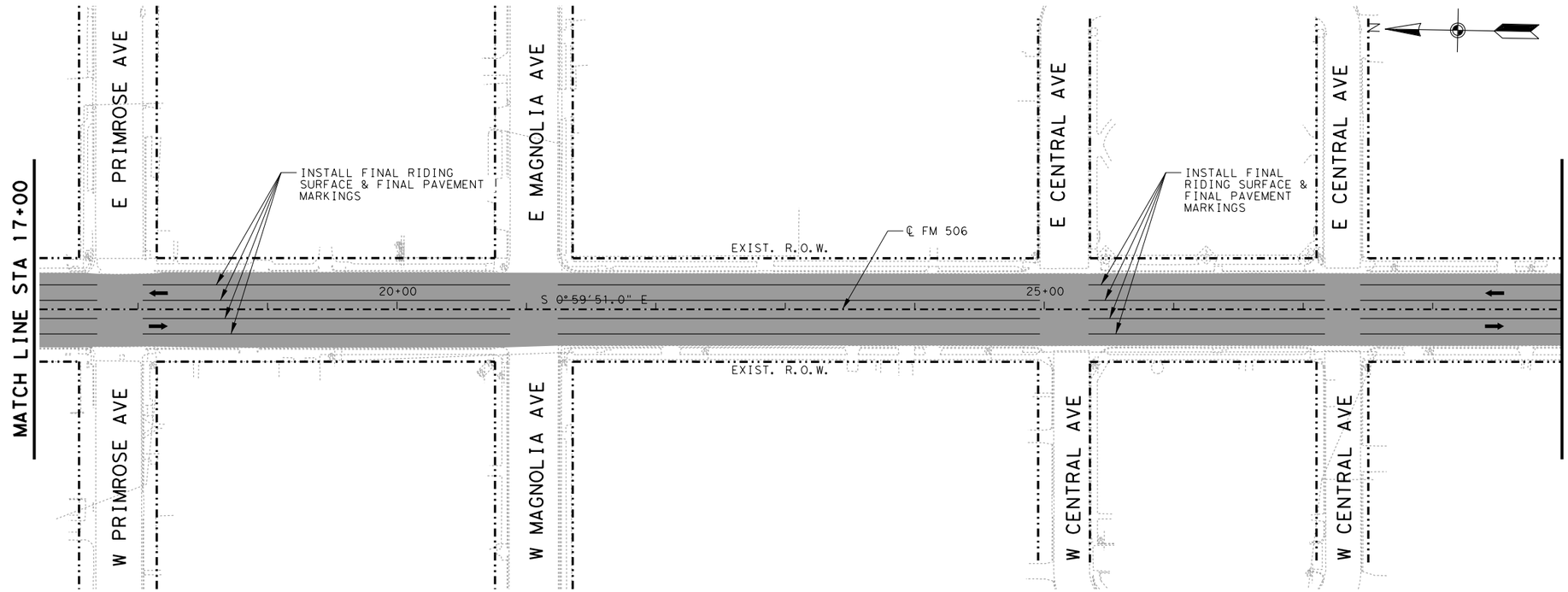
Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN CROSS STREET DETAIL PHASE 2

N. T. S. SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		65
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506





LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE III BEGIN PROJECT TO STA 29+00

SHEET 1 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		66
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCSH00_PH3_01.dgn

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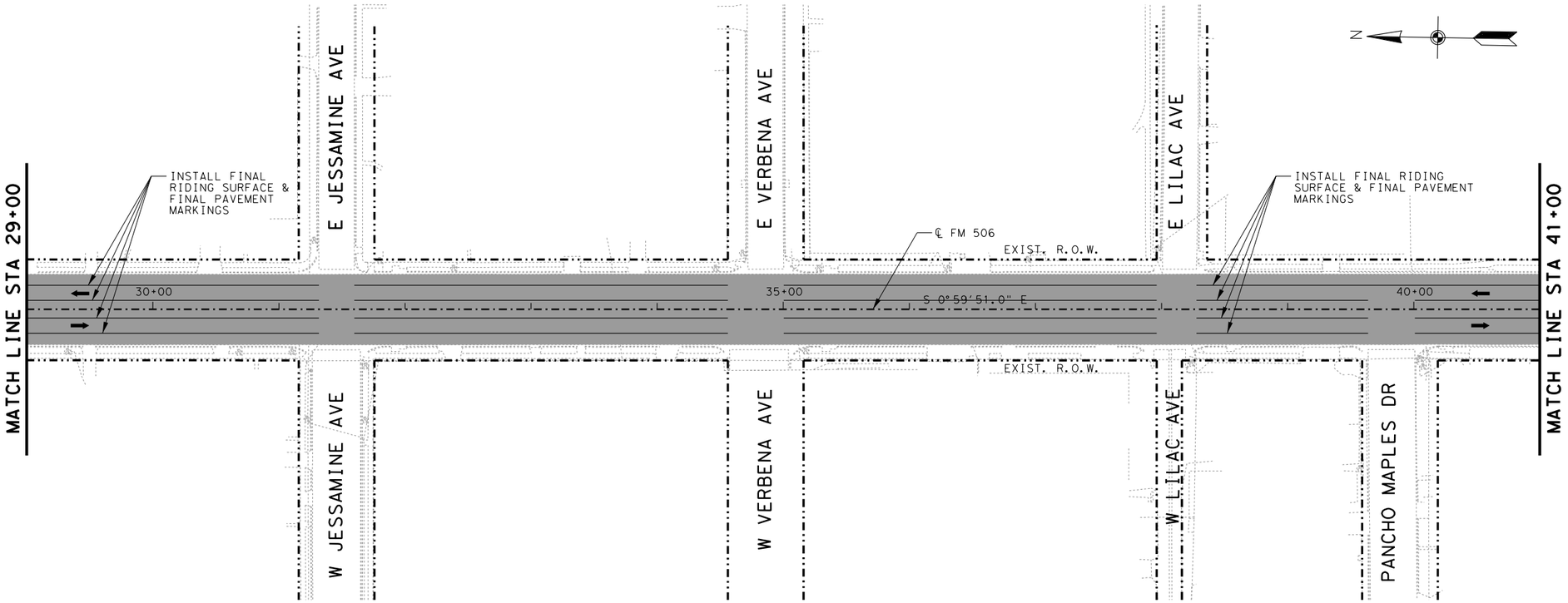

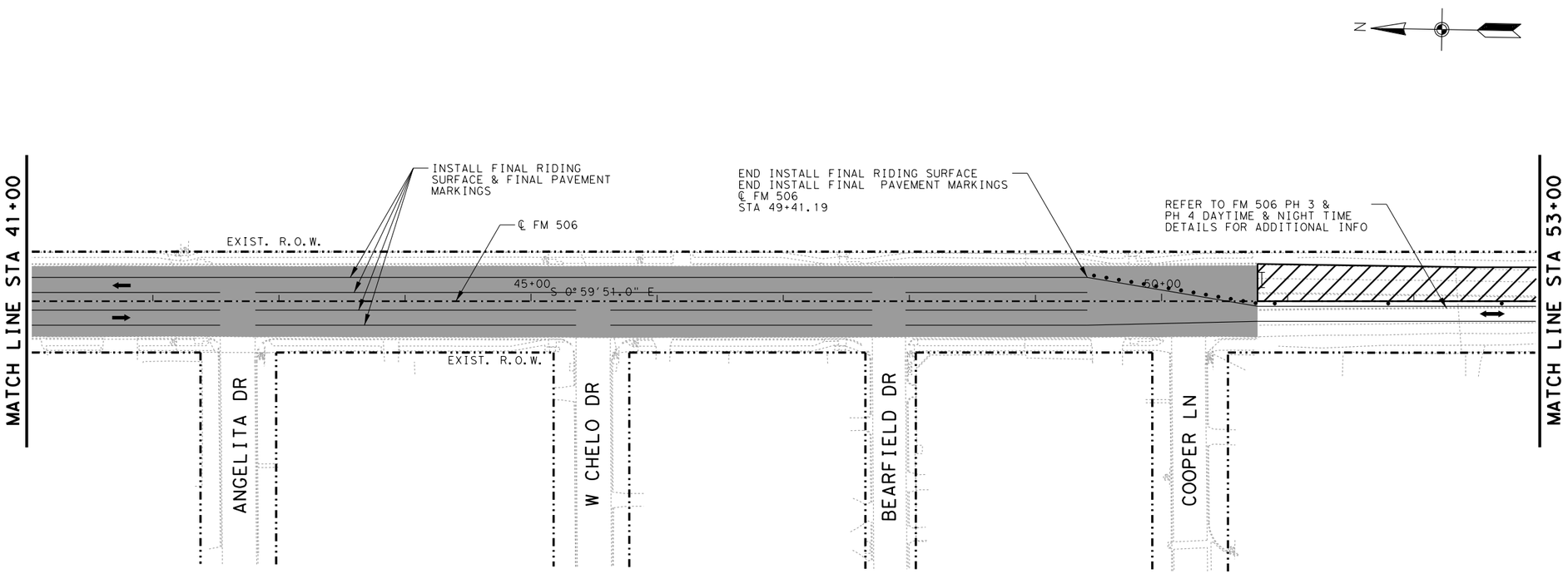

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
TRAFFIC CONTROL PLAN PHASE III STA 29+00 TO STA 53+00

SHEET 2 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		67
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCSH00_PH3_02.dgn

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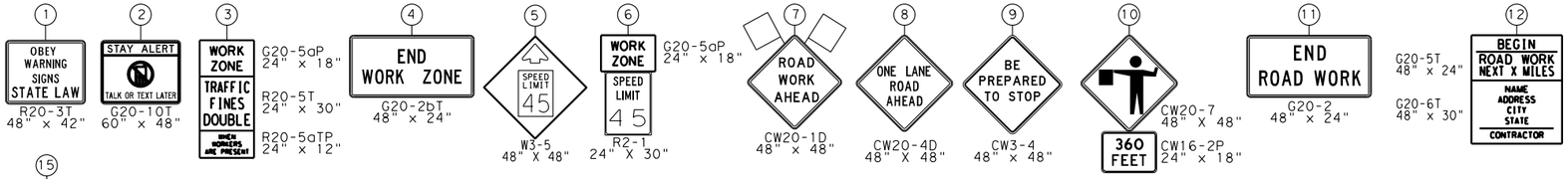
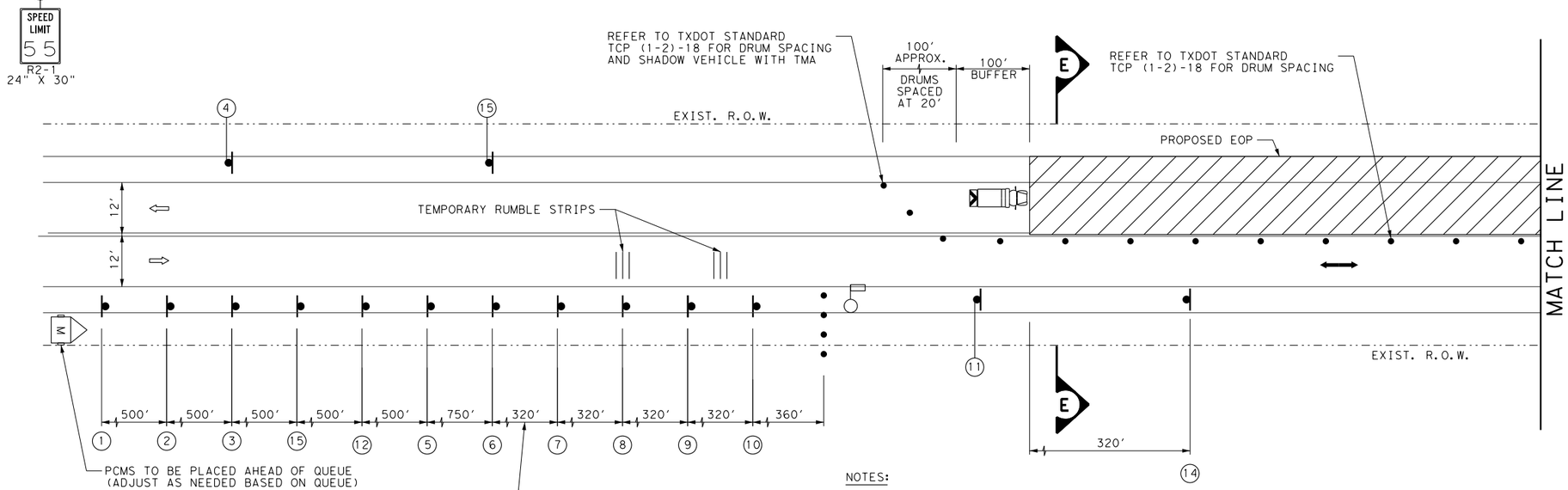
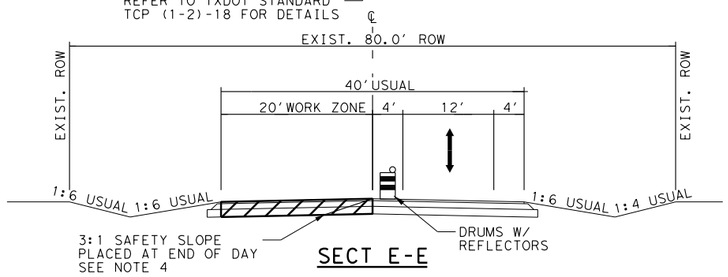
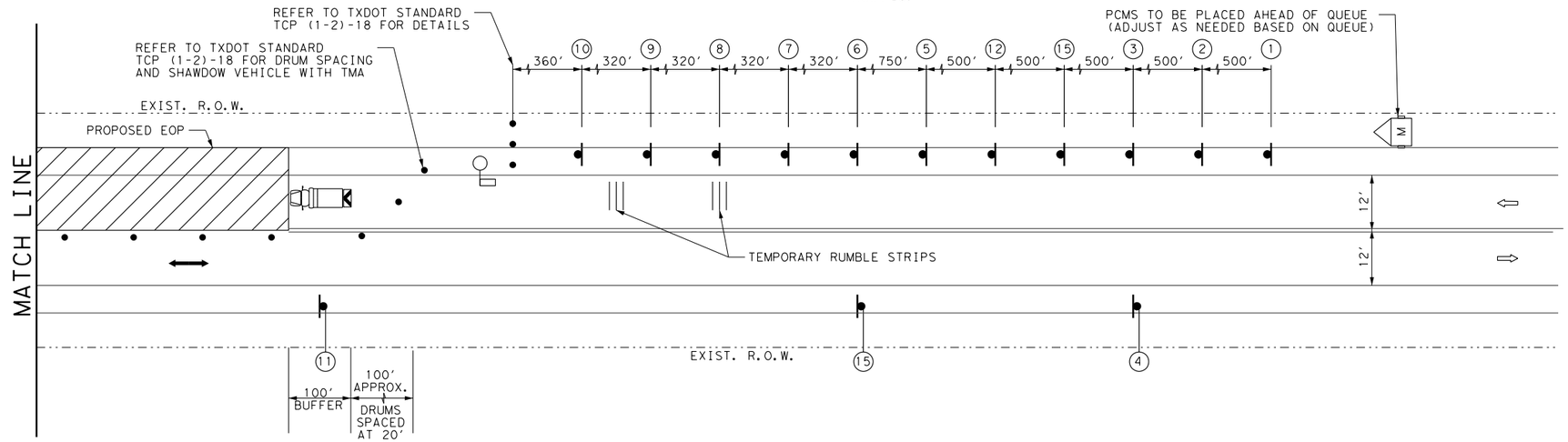






SECT E-E



NOTES:

1. REFER TO TCP (1-2)-18 STANDARD AND USE 45 MPH POSTED SPEED LIMIT CRITERIA.
2. CONTRACTOR SHALL COORDINATE THE LENGTH OF WORK ZONE WITH THE ENGINEER. WORK ZONE LENGTH SHALL TAKE ROADWAY PROFILE AND HORIZONTAL ALIGNMENT INTO CONSIDERATION SO THAT CLEAR LINE OF SIGHT IS MAINTAINED BETWEEN EACH END OF THE WORK ZONE WITHOUT OBSTRUCTION BY TREES OR OTHER ELEMENTS ADJACENT TO RIGHT-OF-WAY. WORK ZONE LENGTH SHALL BE SUFFICIENTLY SHORT SO THAT ROADWAY CRESTS DO NOT IMPACT LINE OF SIGHT.
3. CONTRACTOR SHALL ISOLATE CONSTRUCTION OF INTERSECTIONS FROM ANY ADJACENT CONSTRUCTION. INTERSECTIONS SHALL BE CONSTRUCTED DURING NIGHTS AND WEEKENDS TO MINIMIZE IMPACT ON TRAFFIC.
4. SAFETY SLOPE 3:1 SUBSIDIARY TO VARIOUS CONTRACT ITEMS.
5. NO CLOSURES WILL BE ALLOWED UNTIL ALL MATERIALS, EQUIPMENT, WORK FORCE, ETC. ARE AVAILABLE AND READY TO CONTINUOUSLY PROSECUTE THE WORK AND KEEP LANES OPEN AS LONG AS POSSIBLE.
6. REFER TO DETOUR LAYOUTS FOR MORE INFO.
7. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
8. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAILRETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

NTS

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- FLAGGER
- PCMS
- TMA

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506

TRAFFIC CONTROL PLAN TRAFFIC DETAIL PHASE III DAY TIME

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		68
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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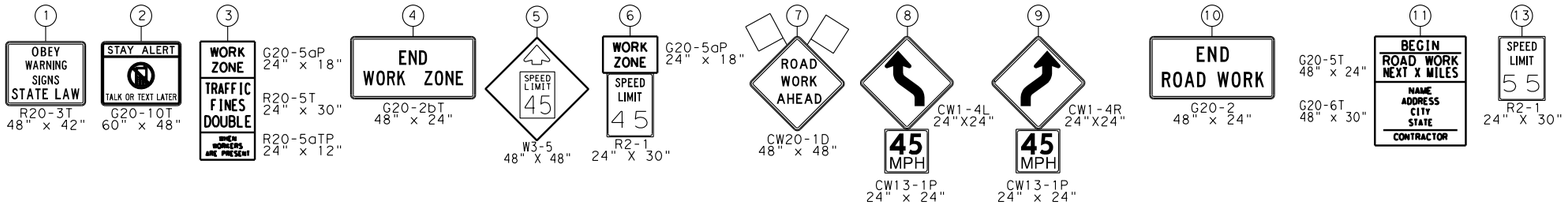
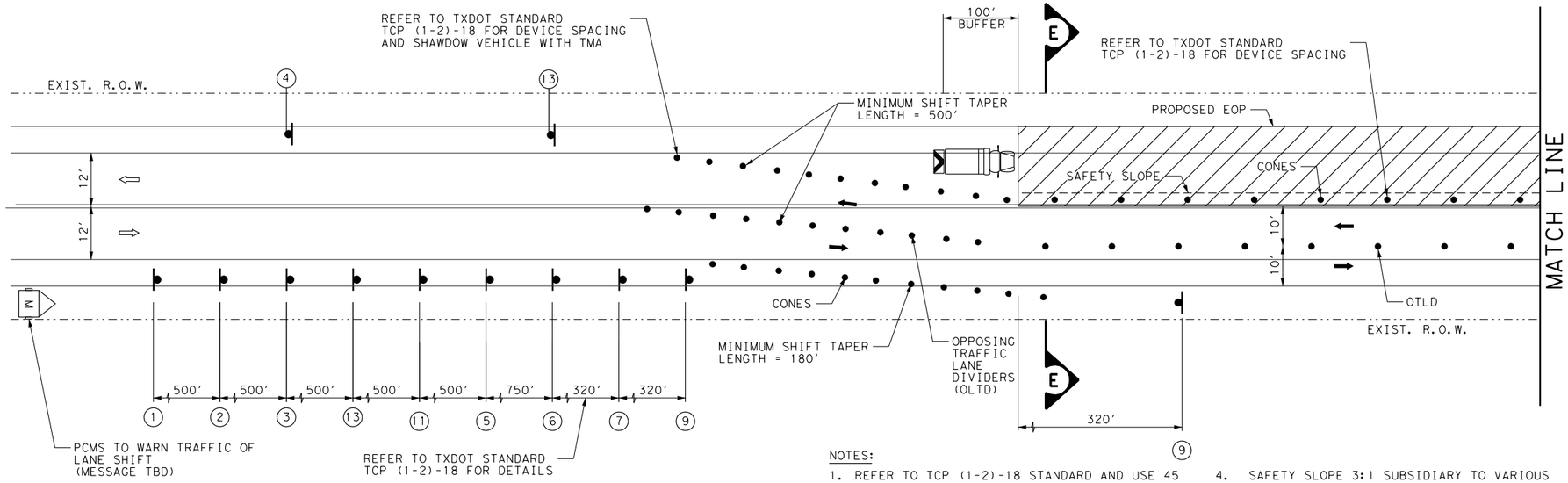
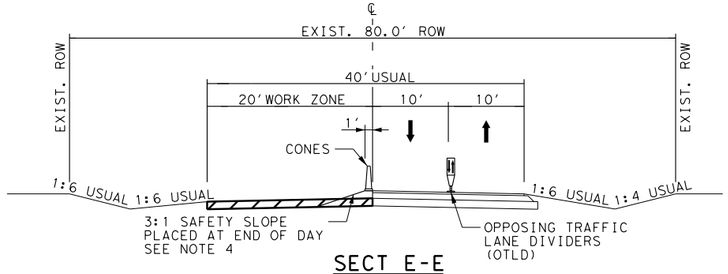
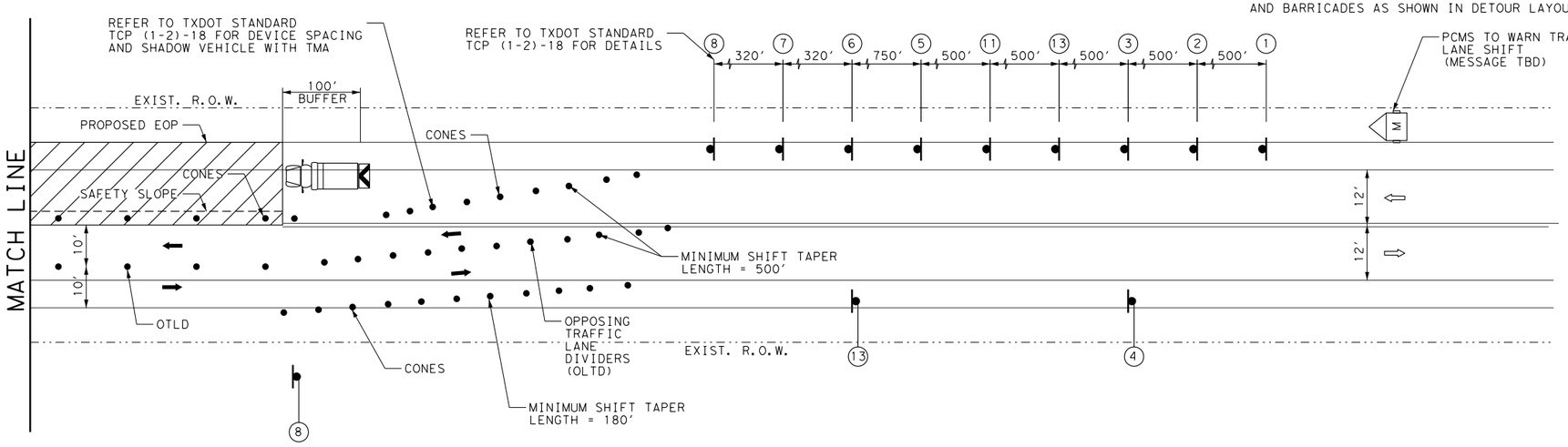






SECT E-E



NOTES:

1. REFER TO TCP (1-2)-18 STANDARD AND USE 45 MPH POSTED SPEED LIMIT CRITERIA.
2. CONTRACTOR SHALL COORDINATE THE LENGTH OF WORK ZONE WITH THE ENGINEER. WORK ZONE LENGTH SHALL TAKE ROADWAY PROFILE AND HORIZONTAL ALIGNMENT INTO CONSIDERATION SO THAT CLEAR LINE OF SIGHT IS MAINTAINED BETWEEN EACH END OF THE WORK ZONE WITHOUT OBSTRUCTION BY TREES OR OTHER ELEMENTS ADJACENT TO RIGHT-OF-WAY. WORK ZONE LENGTH SHALL BE SUFFICIENTLY SHORT SO THAT ROADWAY CRESTS DO NOT IMPACT LINE OF SIGHT.
3. CONTRACTOR SHALL ISOLATE CONSTRUCTION OF INTERSECTIONS FROM ANY ADJACENT CONSTRUCTION. INTERSECTIONS SHALL BE CONSTRUCTED DURING NIGHTS AND WEEKENDS TO MINIMIZE IMPACT ON TRAFFIC.
4. SAFETY SLOPE 3:1 SUBSIDIARY TO VARIOUS CONTRACT ITEMS.
5. NO CLOSURES WILL BE ALLOWED UNTIL ALL MATERIALS, EQUIPMENT, WORK FORCE, ETC. ARE AVAILABLE AND READY TO CONTINUOUSLY PROSECUTE THE WORK AND KEEP LANES OPEN AS LONG AS POSSIBLE.
6. REFER TO DETOUR LAYOUTS FOR MORE INFO.
7. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
8. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- PCMS
- FLAGGER
- TMA

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506

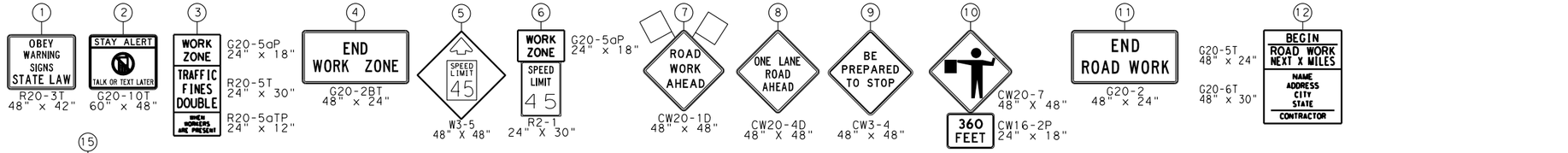
TRAFFIC CONTROL PLAN TRAFFIC DETAIL PHASE III NIGHT TIME

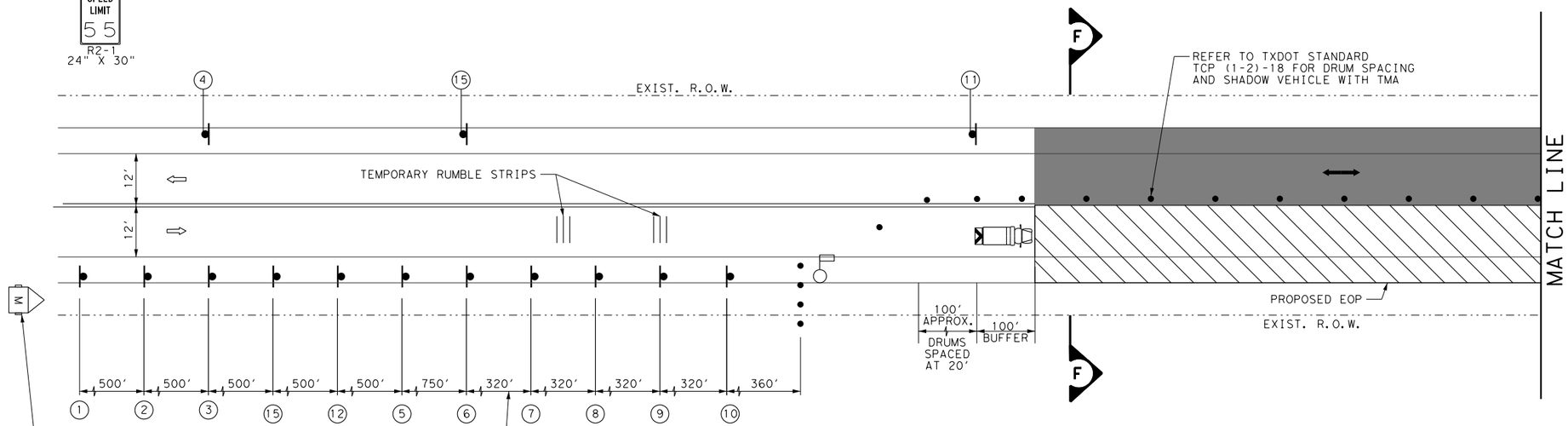
SHEET 1 OF 1

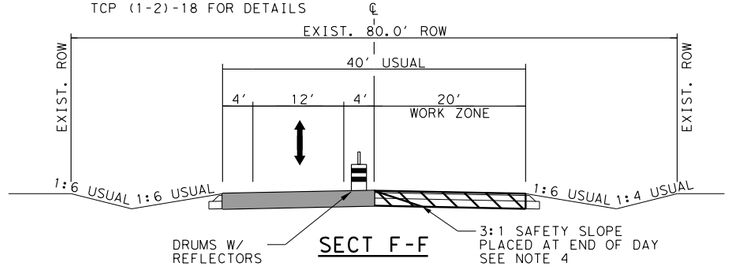
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		69
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCID00_PH1_NIGHT TIME.dgn

10/6/2021 9:43:25 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCID00_PH1_NIGHT TIME.dgn



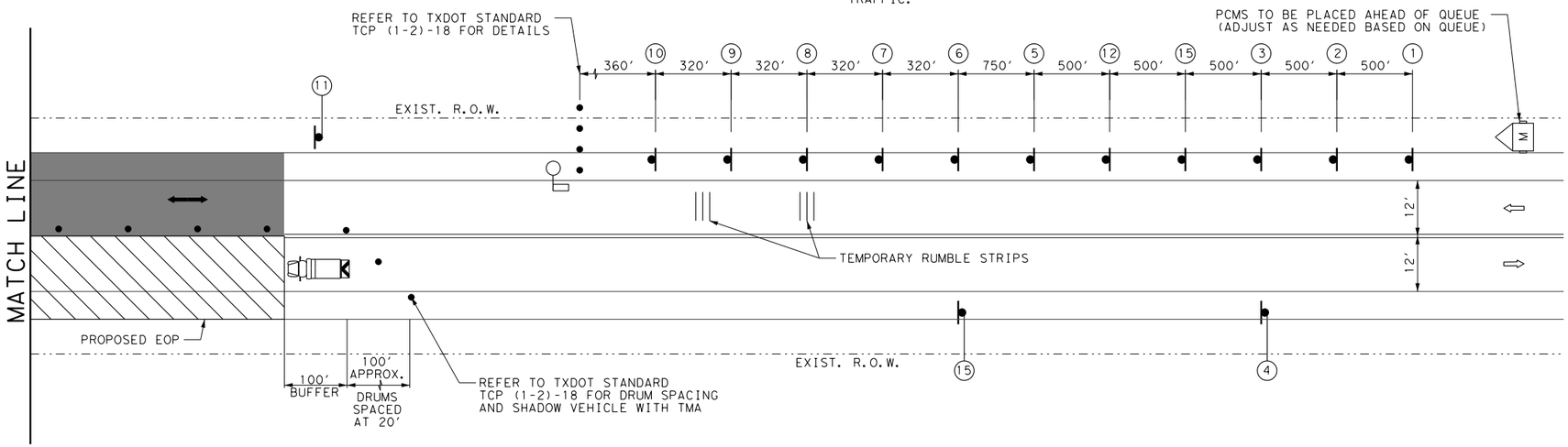




SECT F-F

NOTES:

1. REFER TO TCP (1-2)-18 STANDARD AND USE 45 MPH POSTED SPEED LIMIT CRITERIA.
2. WORK ZONE LEGNTH SHALL TAKE ROADWAY PROFILE AND HORIZONTAL ALIGNMENT INTO CONSIDERATION SO THAT CLEAR LINE OF SIGHT IS MAINTAINED BETWEEN EACH END OF THE WORK ZONE WITHOUT OBSTRUCTION BY TREES OR OTHER ELEMENTS ADJACENT TO RIGHT-OF-WAY. WORK ZONE LENGTH SHALL BE SUFFICIENTLY SHORT SO THAT ROADWAY CRESTS DO NOT IMPACT LINE OF SIGHT. CONTRACTOR SHALL ADJUST SEGMENT LENGHT AS NECESSARY AND AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR SHALL ISOLATE CONSTRUCTION OF INTERSECTIONS FROM ANY ADJACENT CONSTRUCTION. INTERSECTIONS SHALL BE CONSTRUCTED DURING NIGHTS AND WEEKENDS TO MINIMIZE IMPACT ON TRAFFIC.
4. SAFETY SLOPE 3:1 SUBSIDIARY TO VARIOUS CONTRACT ITEMS.
5. NO CLOSURES WILL BE ALLOWED UNTIL ALL MATERIALS, EQUIPMENT, WORK FORCE, ETC. ARE AVAILABLE AND READY TO CONTINUOUSLY PROSECUTE THE WORK AND KEEP LANES OPEN AS LONG AS POSSIBLE.
6. REFER TO DETOUR LAYOUTS FOR MORE INFO.
7. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
8. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING,OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- PCMS
- FLAGGER
- TMA

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

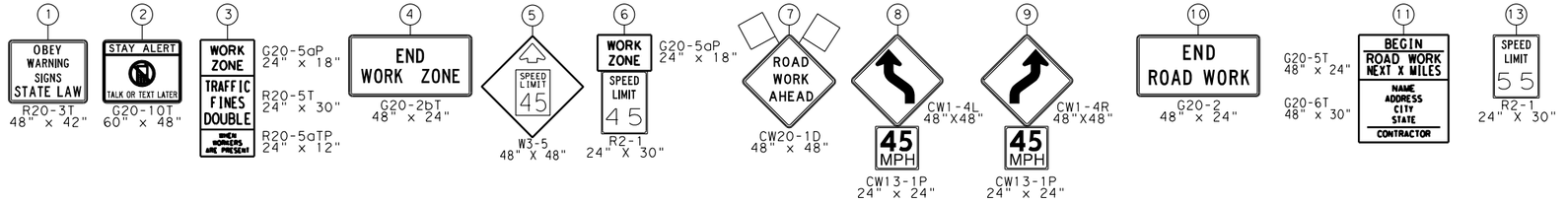
FM 506

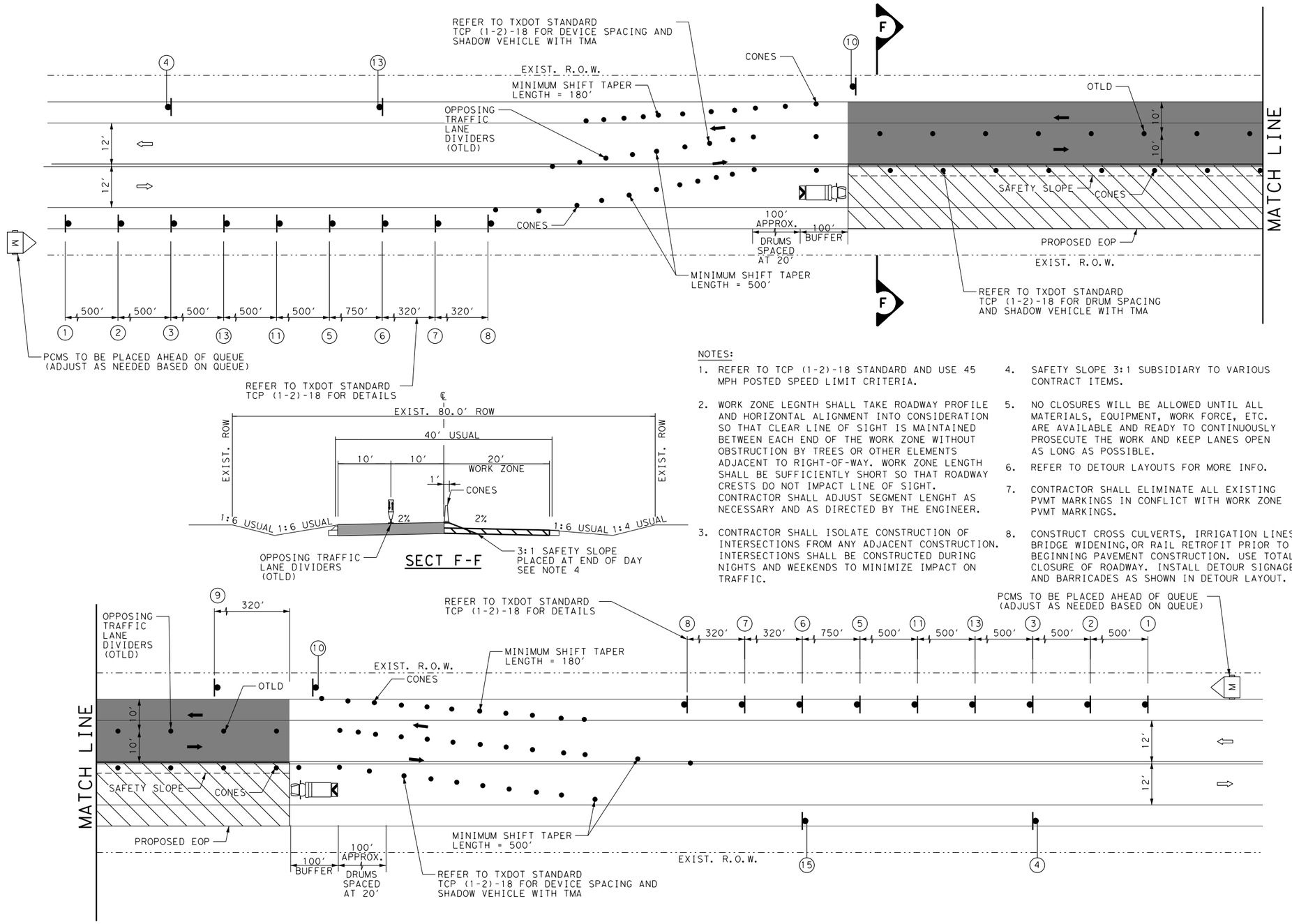
TRAFFIC CONTROL PLAN TRAFFIC DETAIL PHASE IV DAY TIME

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		70
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO.
0872	04	030	FM 506

10/6/2021 9:43:26 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCID00_PH2.dgn
FM506_TCID00_PH2.dgn





SECT F-F

NOTES:

1. REFER TO TCP (1-2)-18 STANDARD AND USE 45 MPH POSTED SPEED LIMIT CRITERIA.
2. WORK ZONE LEGNTH SHALL TAKE ROADWAY PROFILE AND HORIZONTAL ALIGNMENT INTO CONSIDERATION SO THAT CLEAR LINE OF SIGHT IS MAINTAINED BETWEEN EACH END OF THE WORK ZONE WITHOUT OBSTRUCTION BY TREES OR OTHER ELEMENTS ADJACENT TO RIGHT-OF-WAY. WORK ZONE LENGTH SHALL BE SUFFICIENTLY SHORT SO THAT ROADWAY CRESTS DO NOT IMPACT LINE OF SIGHT. CONTRACTOR SHALL ADJUST SEGMENT LENGHT AS NECESSARY AND AS DIRECTED BY THE ENGINEER.
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4. SAFETY SLOPE 3:1 SUBSIDIARY TO VARIOUS CONTRACT ITEMS.
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6. REFER TO DETOUR LAYOUTS FOR MORE INFO.
7. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
8. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING,OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- PCMS
- FLAGGER
- TMA

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
PROFESSIONAL
LICENSED ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506

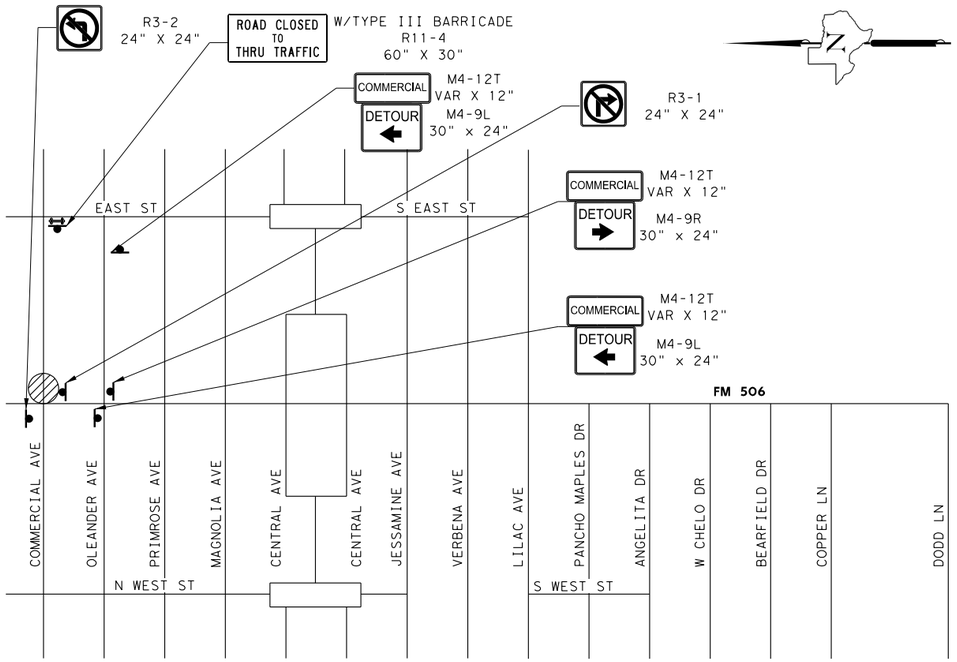
TRAFFIC CONTROL PLAN TRAFFIC DETAIL PHASE IV NIGHT TIME

SHEET 1 OF 1

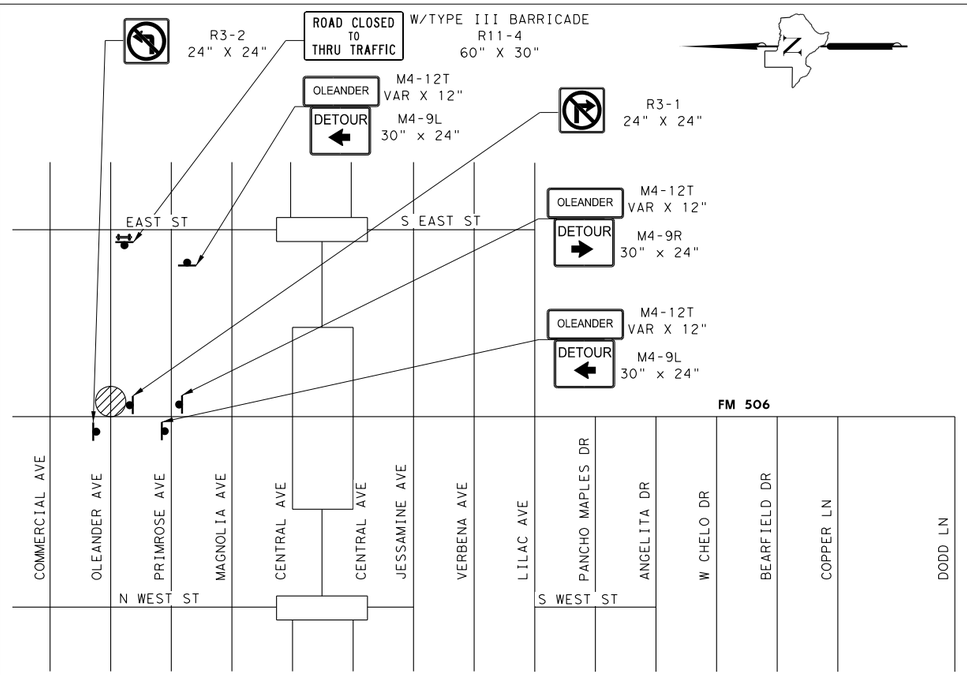
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		71
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO.
0872	04	030	FM 506

FM506_TCID00_PH2_NIGHT TIME.dgn

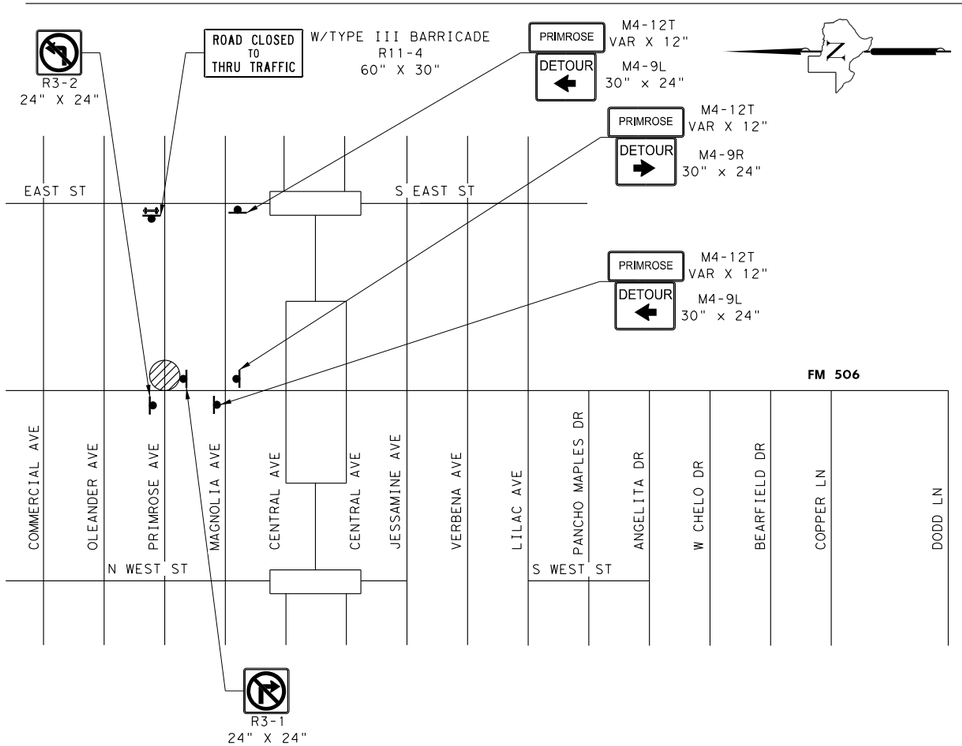
10/6/2021 9:43:27 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TCID00_PH2_NIGHT TIME.dgn



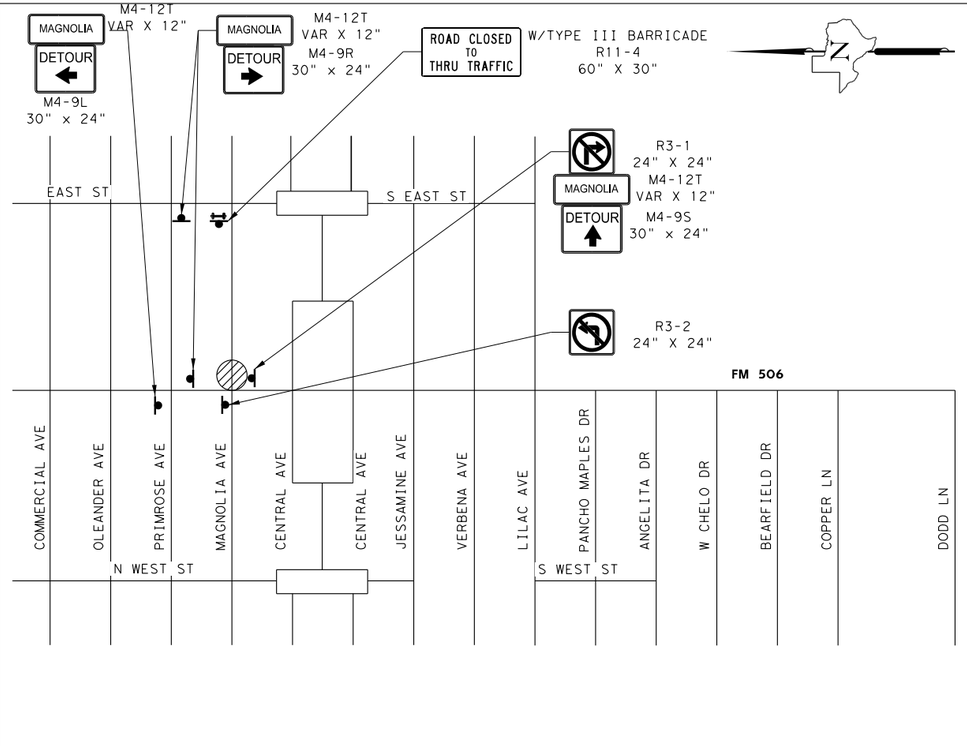
PHASE I COMMERCIAL AVE DETOUR



PHASE I OLEANDER AVE DETOUR



PHASE I PRIMROSE AVE DETOUR



PHASE I MAGNOLIA AVE DETOUR

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY SIGN

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN DETOURS SHEET 6 OF 6 FOR DETAILS ON ADDTIONAL SIGNAGE AND BARRICADES AT THE CLOSED INTERSECTIONS.

N. T. S.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

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ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506

SIDE STREET ROAD CLOSURE DETOUR LAYOUTS

SHEET 1 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		72
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCDETOUR00_01.dgn

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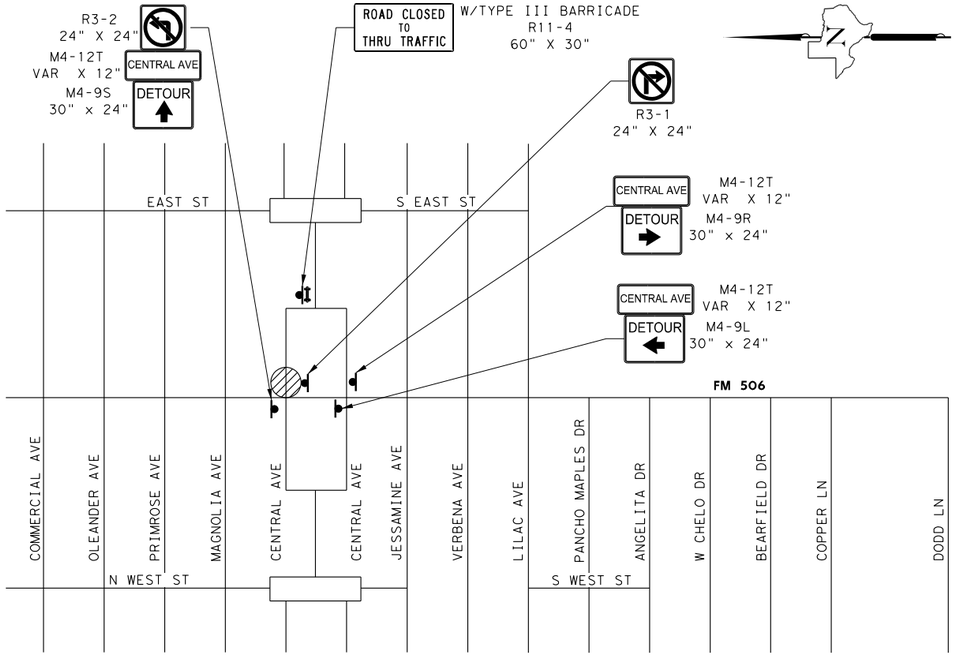

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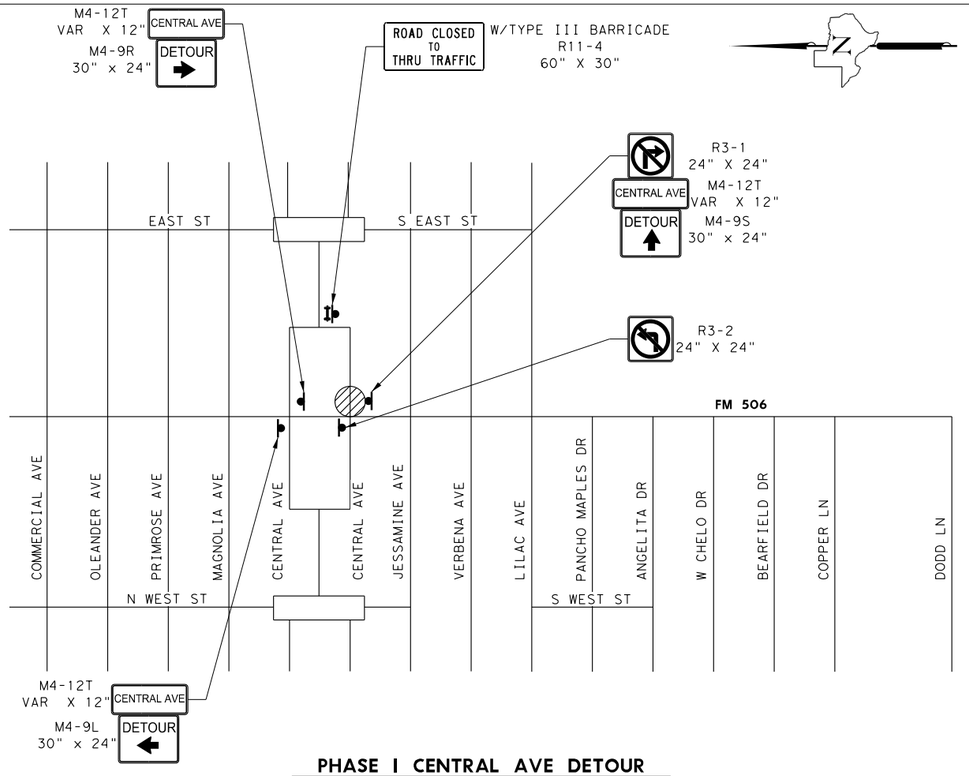

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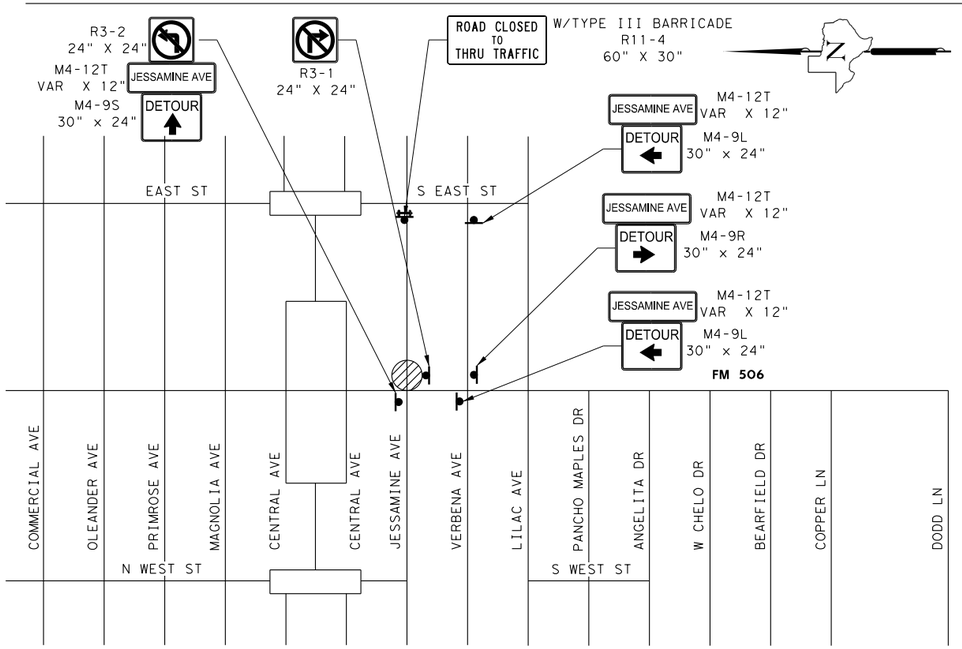
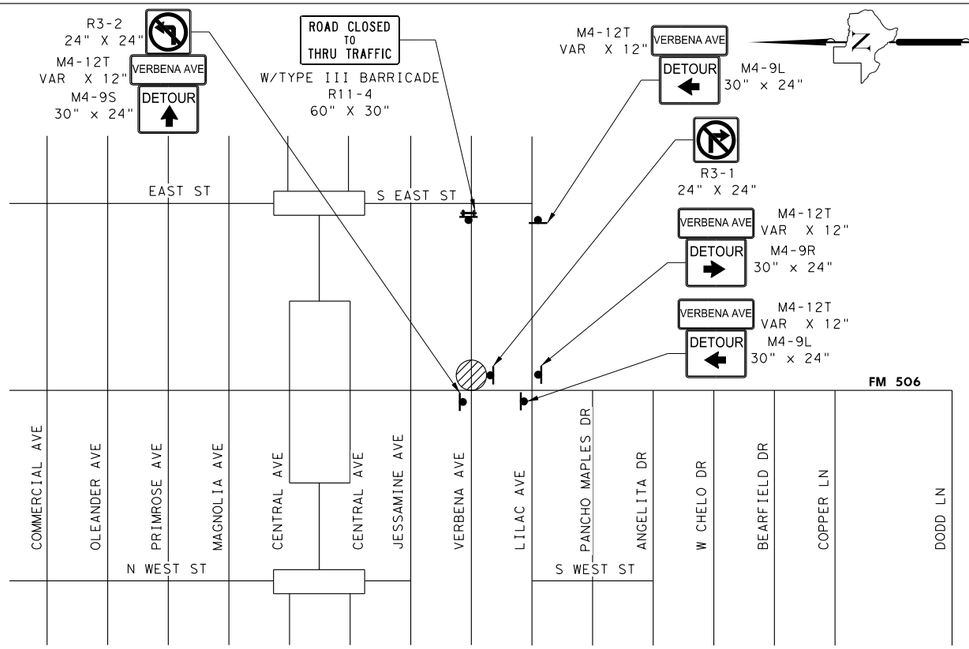


PHASE I JESSAMINE AVE DETOUR



PHASE I VERBENA AVE DETOUR

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY SIGN

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN DETOURS SHEET 6 OF 6 FOR DETAILS ON ADDTIONAL SIGNAGE AND BARRICADES AT THE CLOSED INTERSECTIONS.

N. T. S.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

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ENTECH CIVIL ENGINEERS, INC
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15021 Katy Freeway,
Suite 500
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281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506

SIDE STREET ROAD CLOSURE DETOUR LAYOUTS

SHEET 2 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		73
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCDETOUR00_02.dgn

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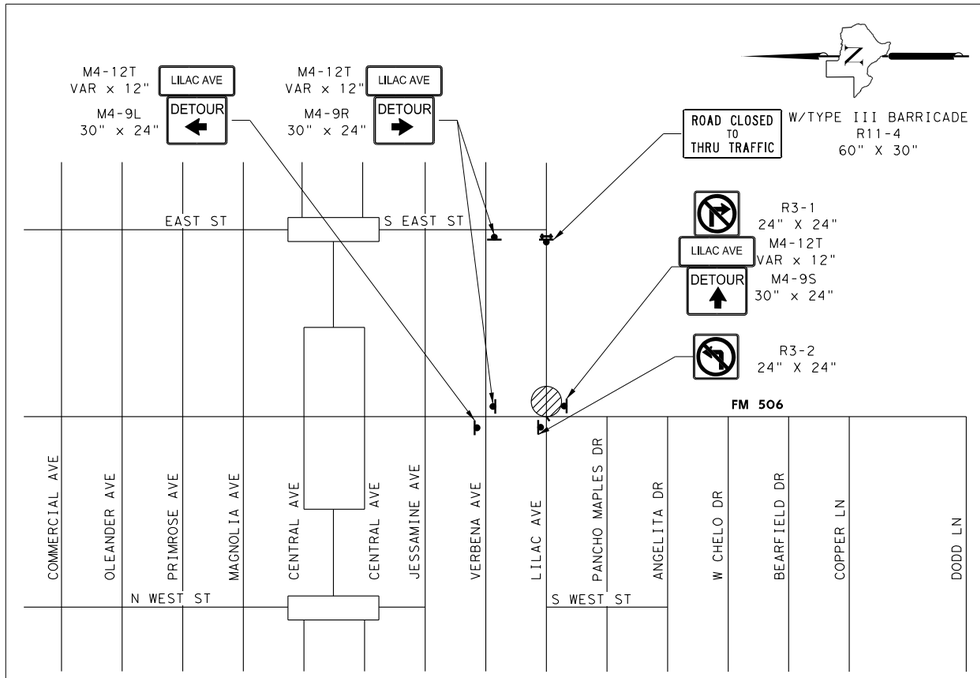
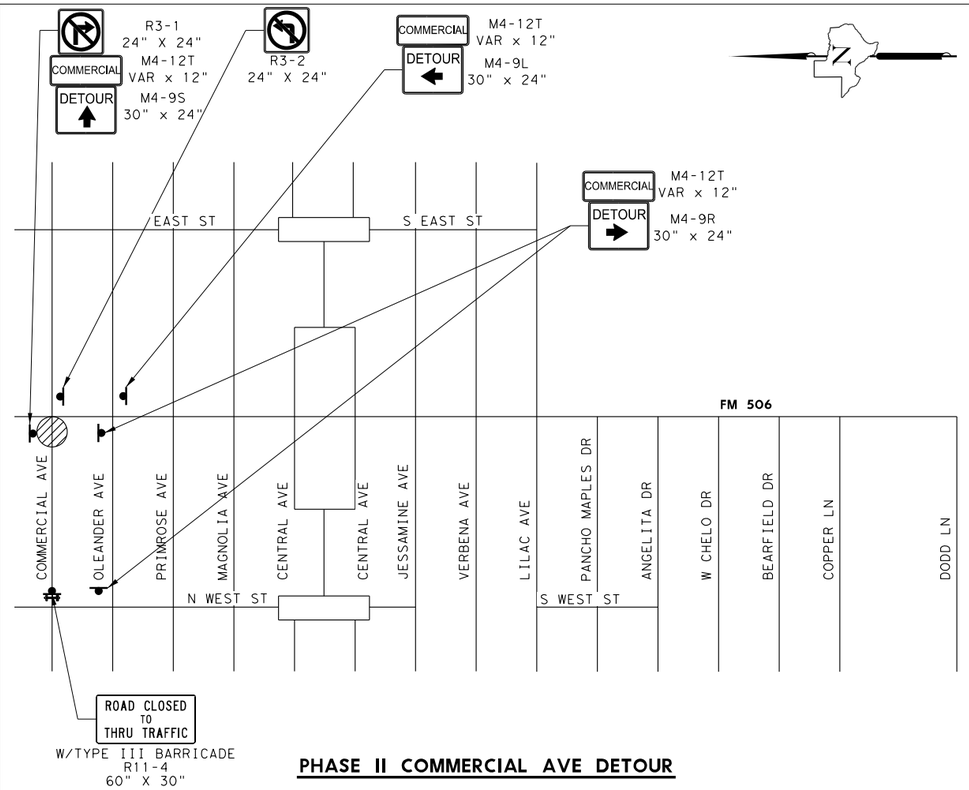
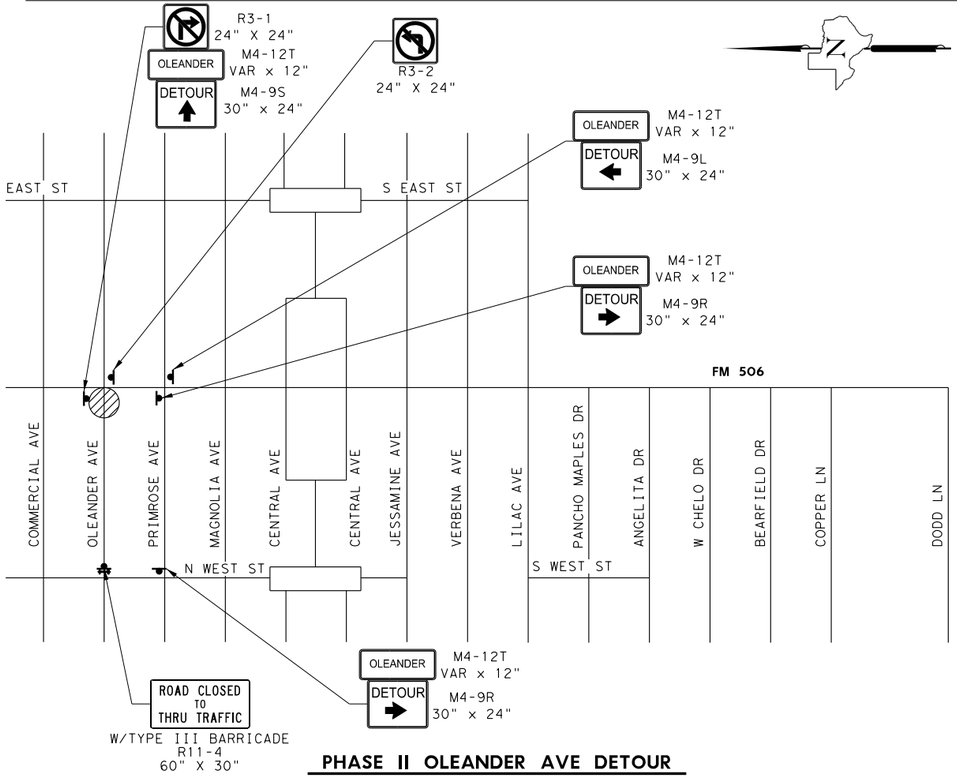


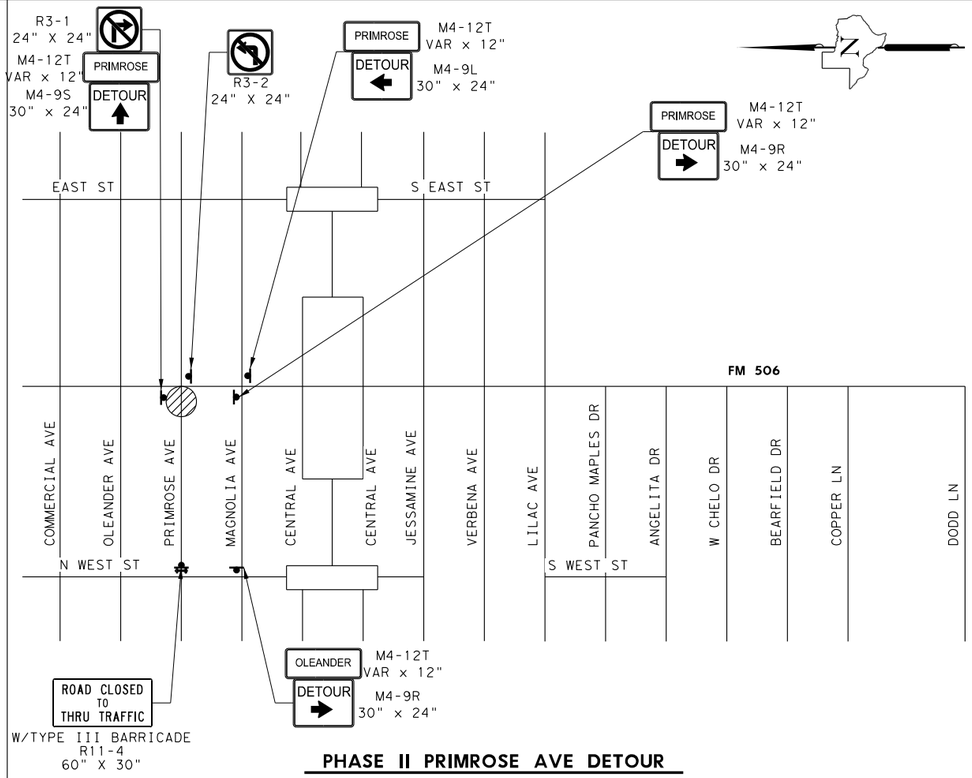
PHASE I LILAC AVE DETOUR



PHASE II COMMERCIAL AVE DETOUR



PHASE II OLEANDER AVE DETOUR



PHASE II PRIMROSE AVE DETOUR

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY SIGN

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN DETOURS SHEET 6 OF 6 FOR DETAILS ON ADDTIONAL SIGNAGE AND BARRICADES AT THE CLOSED INTERSECTIONS.

N. T. S.

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
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Houston, Texas, 77094
281-945-0069 Ph
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Texas Department of Transportation

FM 506

SIDE STREET ROAD CLOSURE DETOUR LAYOUTS

SHEET 3 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		74
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCDETOUR00_03.dgn

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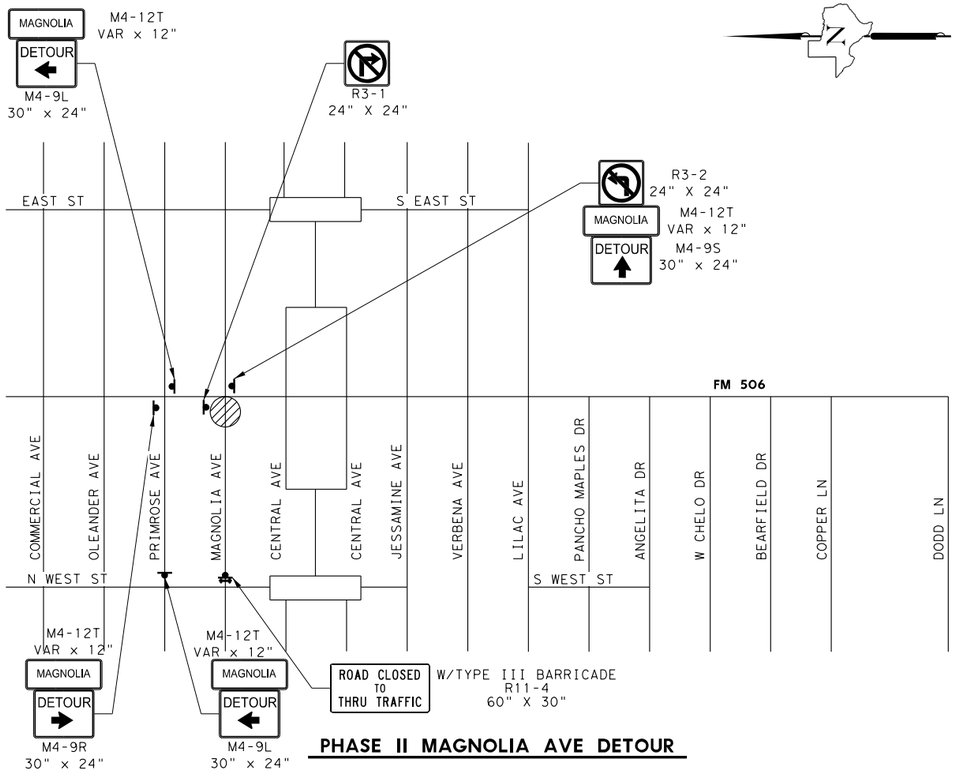
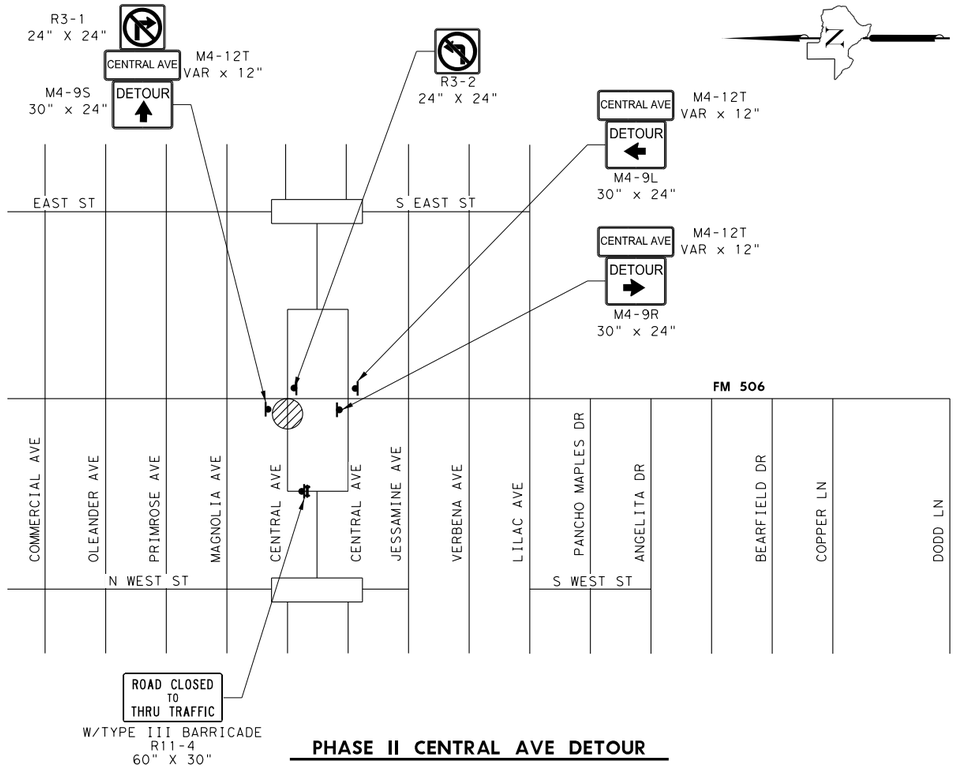
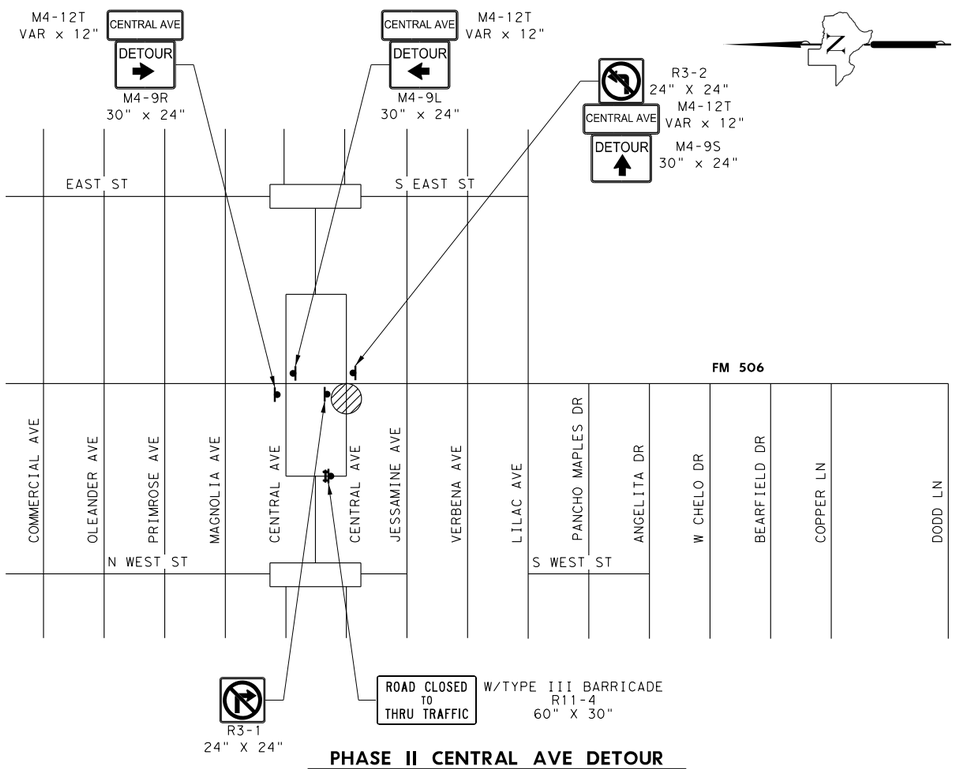


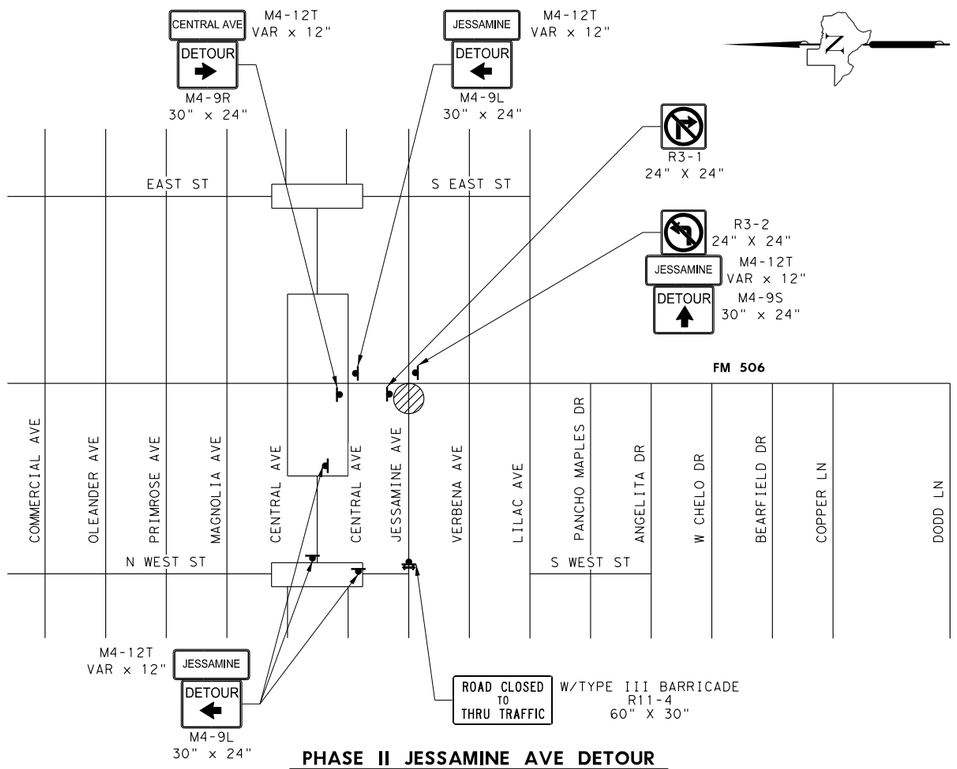
PHASE II MAGNOLIA AVE DETOUR



PHASE II CENTRAL AVE DETOUR



PHASE II CENTRAL AVE DETOUR



PHASE II JESSAMINE AVE DETOUR

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY SIGN

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN DETOURS SHEET 6 OF 6 FOR DETAILS ON ADDTIONAL SIGNAGE AND BARRICADES AT THE CLOSED INTERSECTIONS.

N. T. S.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

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F-6932
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281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506

SIDE STREET ROAD CLOSURE DETOUR LAYOUTS

SHEET 4 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		75
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCDETOUR00_04.dgn

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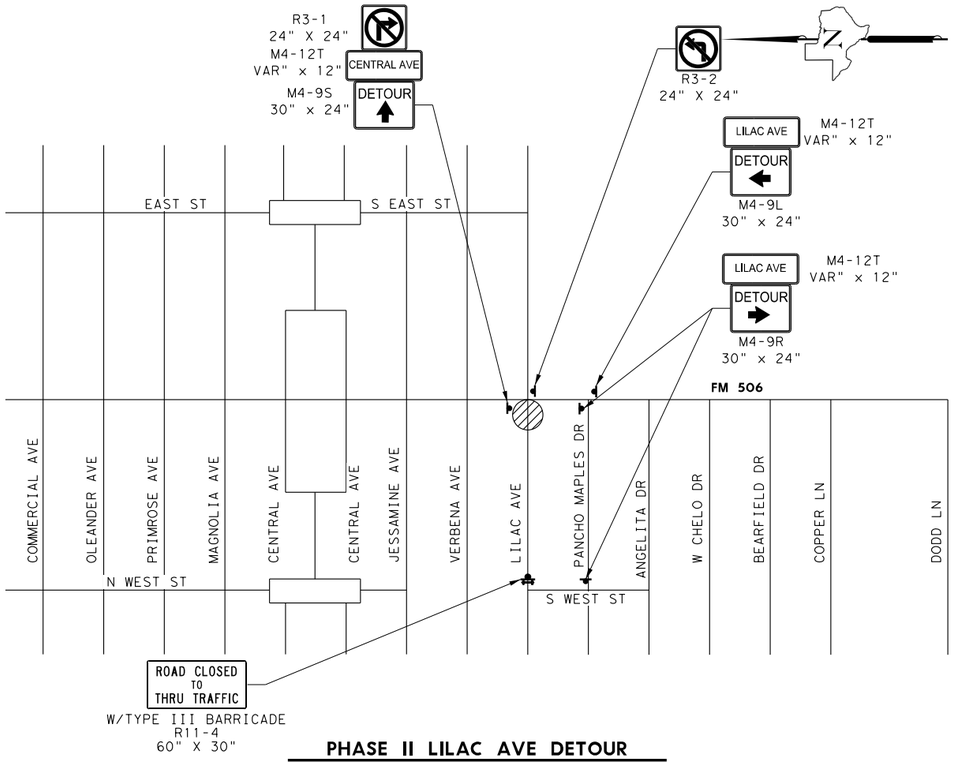
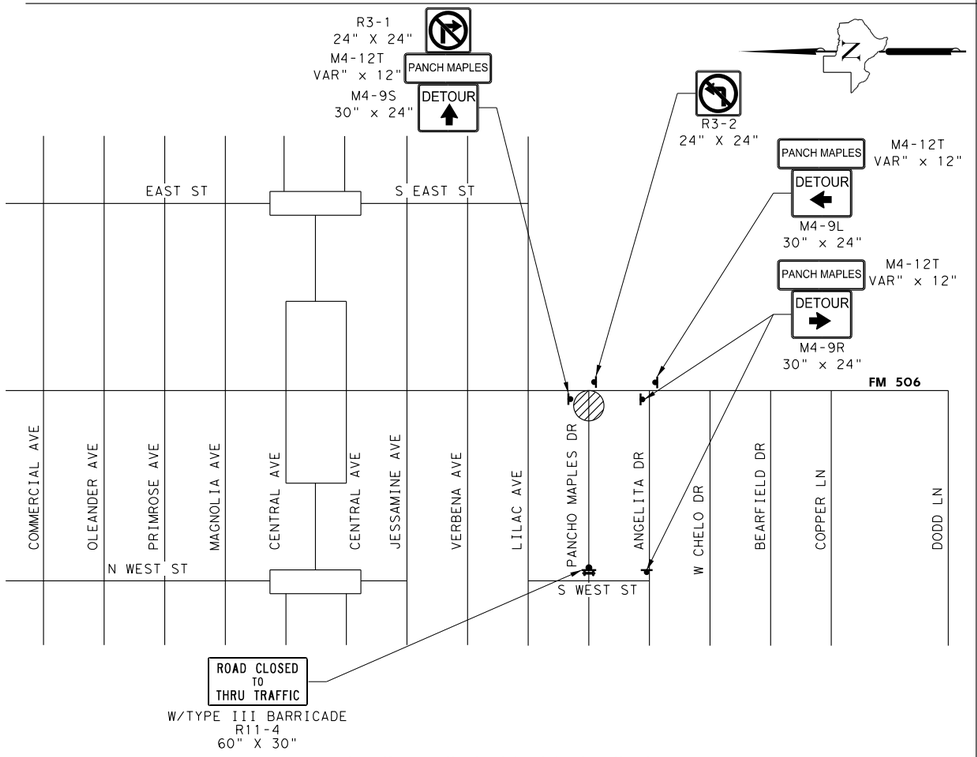
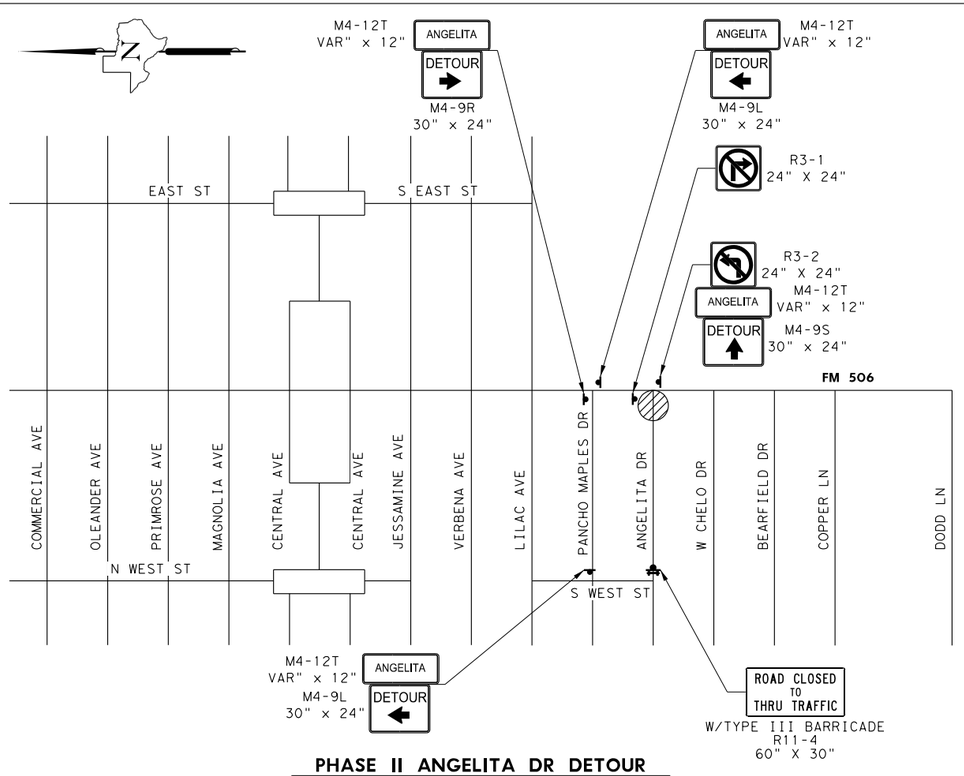


PHASE II LILAC AVE DETOUR



PHASE II S PARK DR DETOUR



PHASE II ANGELITA DR DETOUR

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY SIGN

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN DETOURS SHEET 6 OF 6 FOR DETAILS ON ADDTIONAL SIGNAGE AND BARRICADES AT THE CLOSED INTERSECTIONS.

N. T. S.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506

SIDE STREET ROAD CLOSURE DETOUR LAYOUTS

SHEET 5 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		76
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCDETOUR00_05.dgn

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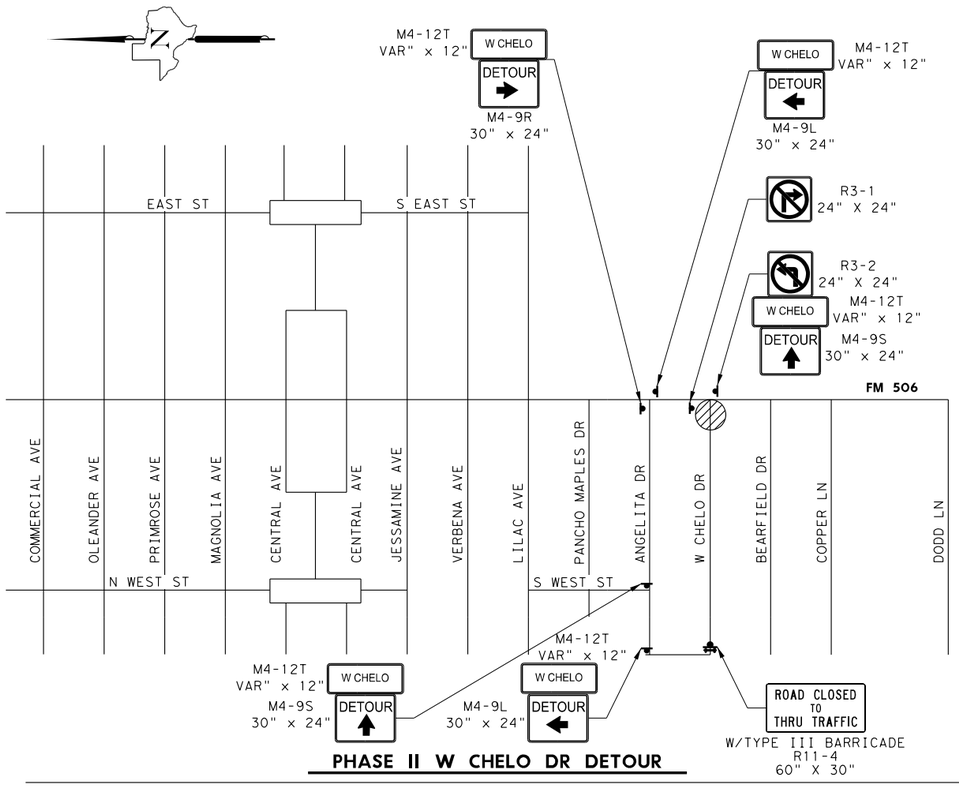
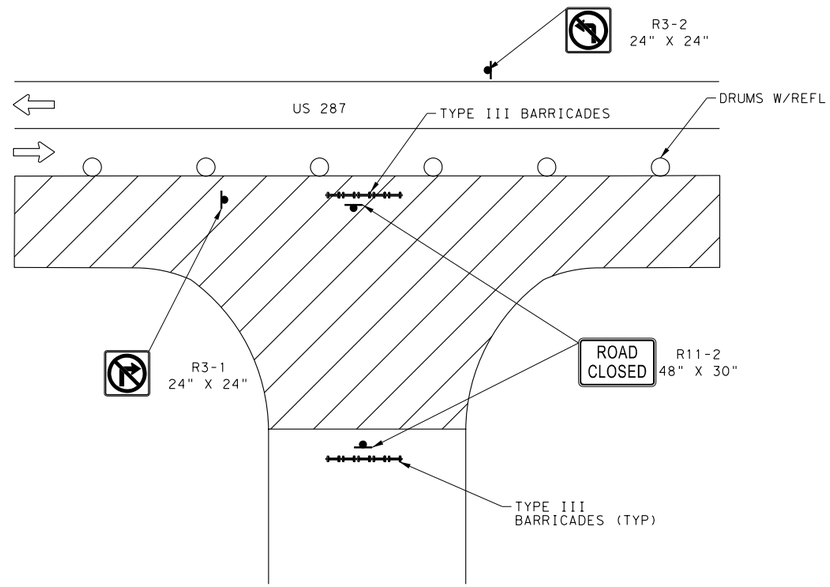


PHASE II W CHELO DR DETOUR



INTERSECTION CLOSURE DETAIL

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY SIGN

N. T. S.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
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Suite 500
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281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506

SIDE STREET ROAD CLOSURE
DETOUR LAYOUTS

SHEET 6 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		77
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TCDETOUR00_06.dgn

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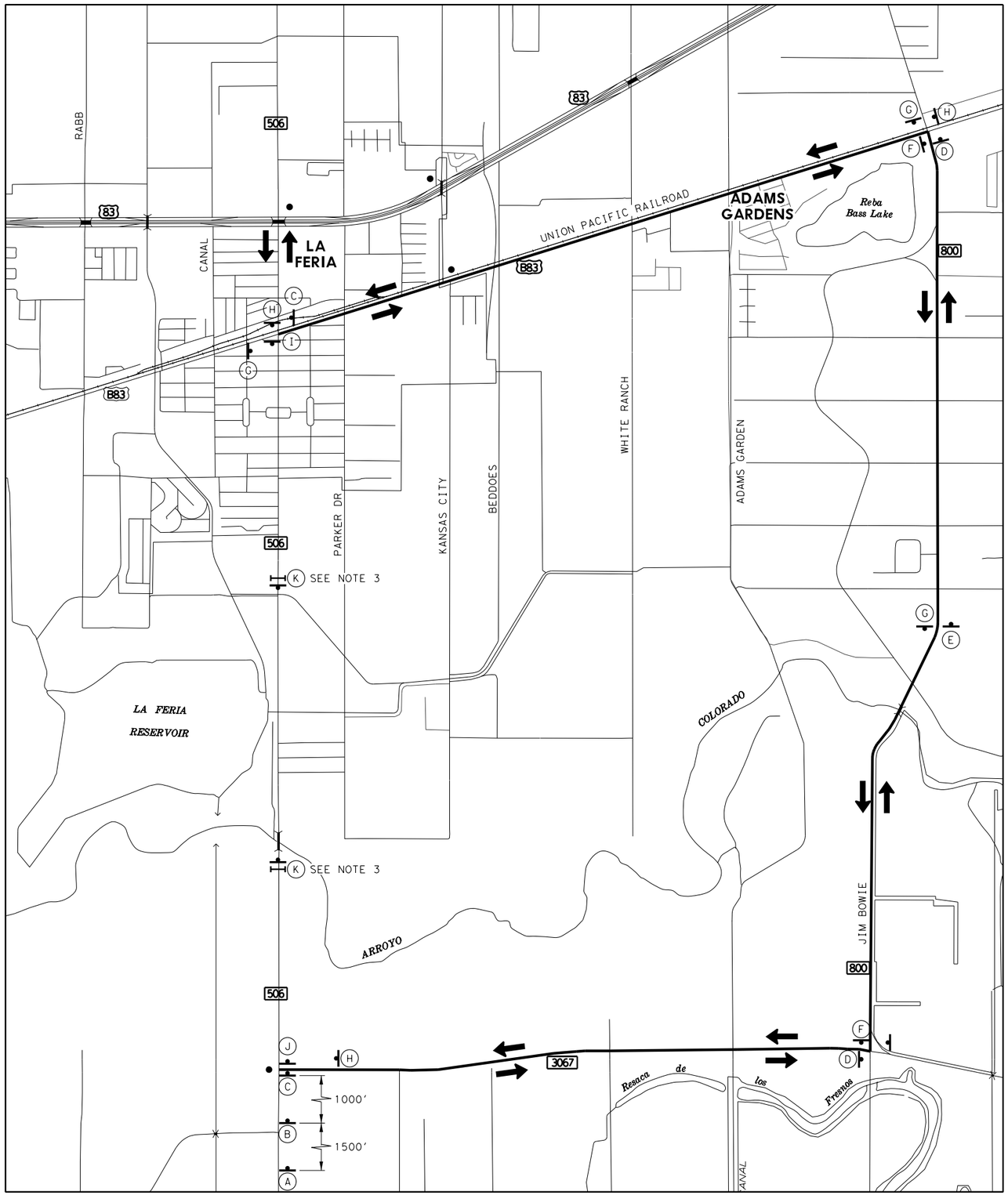

N

DETOUR 1500 FT
CW20-2A
48"X48"
A

DETOUR M4-8 24"X12"
NORTH M3-1 24"X12"
506 FARM ROAD M1-6F 24"X24"
M5-1R 21"X15"
B

DETOUR M4-8 24"X12"
NORTH M3-1 24"X12"
506 FARM ROAD M1-6F 24"X24"
M6-1 21"X15"
C

DETOUR M4-8 24"X12"
NORTH M3-1 24"X12"
506 FARM ROAD M1-6F 24"X24"
M6-1 21"X15"
D

DETOUR M4-8 24"X12"
NORTH M3-1 24"X12"
506 FARM ROAD M1-6F 24"X24"
M6-3 21"X15"
E

DETOUR M4-8 24"X12"
SOUTH M3-3 24"X12"
506 FARM ROAD M1-6F 24"X24"
M6-1 21"X15"
F

DETOUR M4-8 24"X12"
SOUTH M3-3 24"X12"
506 FARM ROAD M1-6F 24"X24"
M6-3 21"X15"
G

DETOUR M4-8 24"X12"
SOUTH M3-3 24"X12"
506 FARM ROAD M1-6F 24"X24"
M6-1 21"X15"
H

ROAD CLOSED TO THRU TRAFFIC R11-4 60" x 30"
DETOUR M4-10L 48"X18"
TYPE III BARRICADE
I

ROAD CLOSED TO THRU TRAFFIC R11-4 60" x 30"
DETOUR M4-10R 48"X18"
TYPE III BARRICADE
J

ROAD CLOSED R11-2 48"X30"
TYPE III BARRICADE
K

NOTES:

1. USE ROADWAY CLOSURE OF FM 506 FOR CONSTRUCTION CROSS CULVERTS, IRRIAGTION LINES, AND BRIDGE RAIL RETROFIT ON FM 506. ENGINEER SHALL APPROVE LIMITS OF CLOSURE WHEN CONSTRUCTING CROSS CULVERTS AND OR IRRIGATION LINES.
2. DETOUR SIGNAGE SHALL BE IN PLACE PRIOR TO COMMENCING ONE WAY OPERATION ON FM 506. ENGINEER SHALL APPROVE LIMITS OF ONE WAY OPERATION PRIOR TO COMMENCING CONSTRUCTION ON EACH PHASE.
3. ADJUST LOCATION OF SIGNAGE INFORMATION TO MATCH ROAD CLOSURE LIMITS.

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD

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ENTECH CIVIL ENGINEERS, INC
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281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

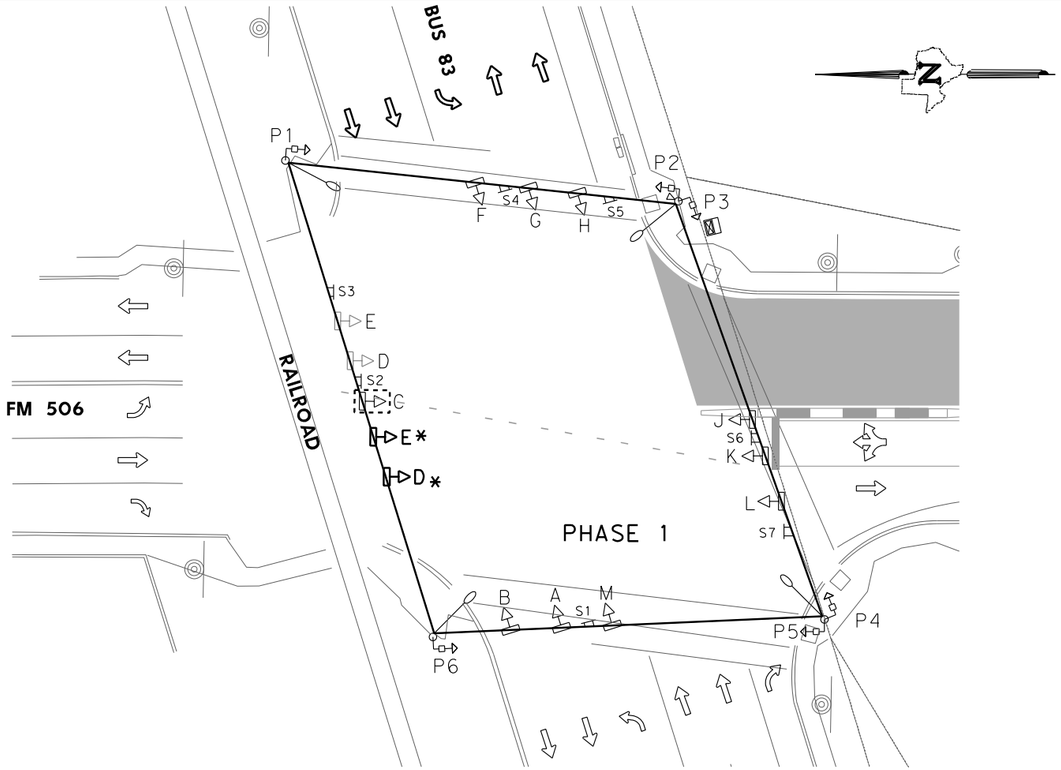
FM 1479
ROAD CLOSURE DETOUR LAYOUT

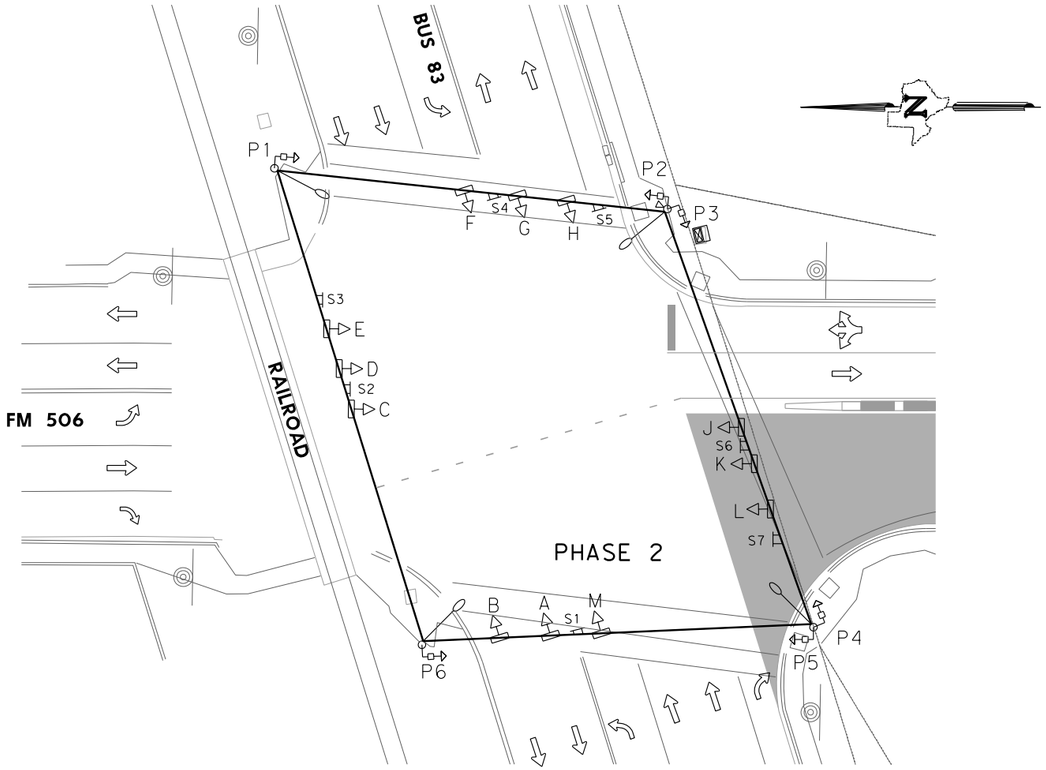
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		78
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_TC_OVERALL_DETOUR00_01.dgn

10/6/2021 9:43:34 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM506_TC_OVERALL_DETOUR00_01.dgn





EXIST SIGNAL, PEDESTRIAN HEADS AND SIGNS

5-SECTION SIGNAL HEAD (R Y ~~Y~~ ~~G~~ G)

C, F, J, M

3-SECTION SIGNAL HEAD (R Y G)

A, B, D, E
G, H, K, L

P1-P6

US BUSINESS 83 S3, S7

MAIN ST (FM 506) S5

LEFT TURN YIELD ON GREEN

S1, S2, S4, S6

PROPOSED SIGNALS AND SIGNS

R3-8cT
(MOD)
30X30

E1, D1
(RELOCATE E AND D)

LEGEND (EXISTING)

- SIGNAL POLE AND MAST ARM
- SIGNAL POLE (STRAIN)
- SPAN WIRE
- SERVICE POLE ASSEMBLY
- TRAFFIC SIGNAL HEAD
- TRAFFIC SIGNAL HEAD (BAGGED)
- PEDESTRIAN SIGNAL HEAD W/ PUSHBUTTON AND SIGN
- LUMINAIRE (LED)
- POLE MOUNTED CONTROLLER
- GROUND MOUNTED CONTROLLER
- OVERHEAD STREET NAME SIGN
- CONSTRUCTION AREA
- DIRECTION OF TRAFFIC FLOW

✱ RELOCATED EXIST SIGNAL HEADS

NOTES:

1. DESIGN IS FOR TEMPORARY TRAFFIC SIGNAL LAYOUT ONLY. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING, STRIPING, AND BARRICADES DURING VARIOUS PHASES OF CONSTRUCTION.
2. REUSE EXISTING CONTROLLER, POLES / MAST ARMS, AND SIGNAL HEADS FOR TEMPORARY SIGNAL. HOWEVER, SIGNAL HEAD LOCATION SHALL BE PROVIDED AS SHOWN ON THIS SHEET. ALL EXISTING SIGNAL HEADS AND SIGNS CONFLICTING WITH THE PROPOSED DESIGN SHALL BE TURNED DOWN AND BAGGED.
3. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING SIGNAL HEADS, WIRING, AND SIGNS AS NECESSARY FOR EACH PHASE OF CONSTRUCTION TO PROVIDE A FULLY FUNCTIONAL SIGNAL DURING CONSTRUCTION. THIS WORK IS CONSIDERED SUBSIDIARY TO ITEM 681.
4. PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES. REFER TO TCP PLANS FOR DETAILS REGARDING PEDESTRIAN ACCESS AT CROSSWALKS. PEDESTRIAN HEADS SERVING CROSSWALKS THAT ARE CLOSED SHALL BE BAGGED.
5. CONTRACTOR MUST COORDINATE WITH TXDOT PERSONNEL FOR SIGNAL HEAD(S) RELOCATION AND TIMING ADJUSTMENTS FOR EACH PHASE AND STEP OF CONSTRUCTION.
6. UPON CONSTRUCTION COMPLETION OF THIS INTERSECTION, TRAFFIC SIGNAL SHALL BE RE-ADJUSTED TO EXISTING CONDITIONS OR AS DIRECTED BY TXDOT PERSONNEL IN THE FIELD.
7. TEMPORARY SIGNALS ADJUSTMENTS AS STATED ABOVE (1-5) WILL BE PAID UNDER ITEM 681 6001 "TEMP TRF SIGNALS".

0 20 40

SCALE: 1"=40'

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

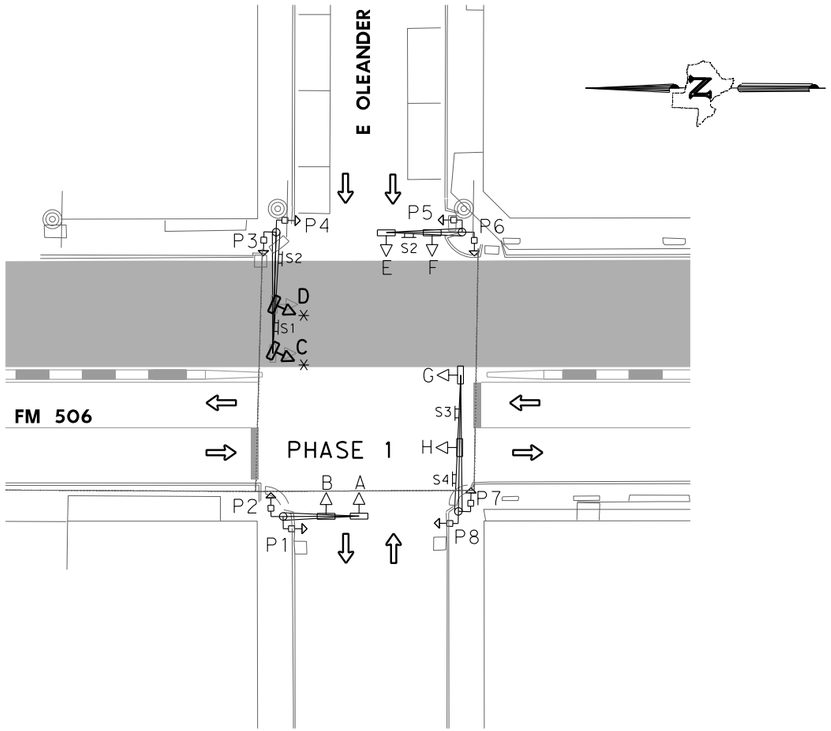
FM 506
TEMPORARY TRAFFIC SIGNAL LAYOUT AT BUS 83

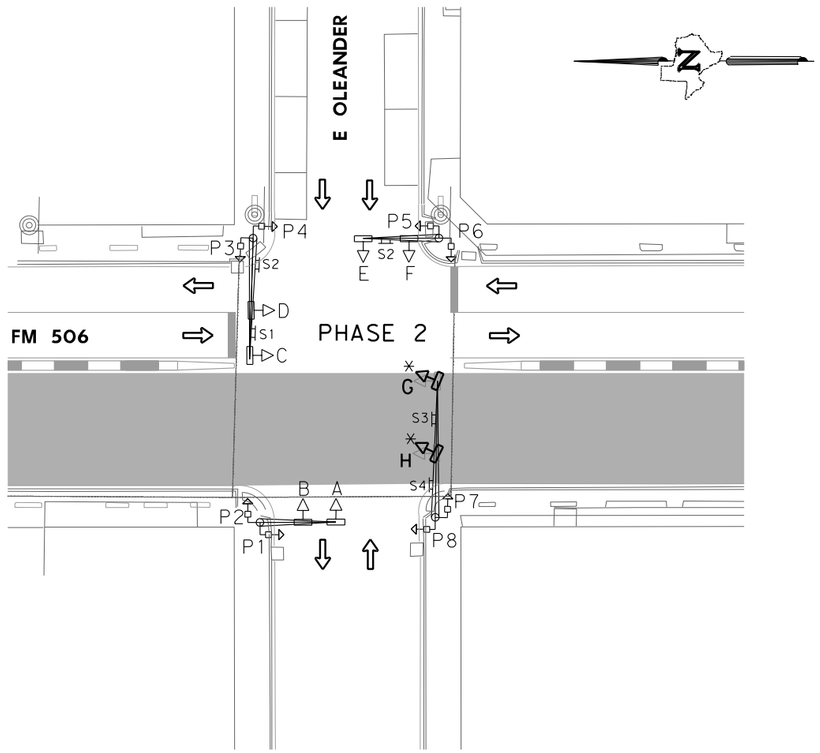
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		79
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

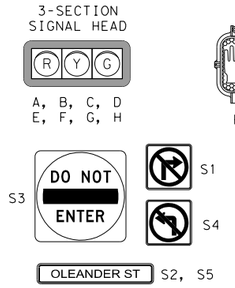
10/6/2021 9:43:36 AM N:\7021-17-101\CADD\DGN\08_TRAFFIC-MT\C_SIGNING\SGLY00.01.dgn

SGLY00.01.dgn





EXIST SIGNAL, PEDESTRIAN HEADS AND SIGNS



LEGEND (EXISTING)

- SIGNAL POLE AND MAST ARM
- SIGNAL POLE (STRAIN)
- SPAN WIRE
- SERVICE POLE ASSEMBLY
- TRAFFIC SIGNAL HEAD
- TRAFFIC SIGNAL HEAD (BAGGED)
- PEDESTRIAN SIGNAL HEAD W/ PUSHBUTTON AND SIGN
- LUMINAIRE (LED)
- POLE MOUNTED CONTROLLER
- GROUND MOUNTED CONTROLLER
- OVERHEAD STREET NAME SIGN
- CONSTRUCTION AREA
- DIRECTION OF TRAFFIC FLOW

✳ ROTATE SIGNAL HEADS D, C, G & H. ROTATION/ALIGNMENT MUST BE COORDINATED WITH THE STATE AND AND APPROVED BY THE FIELD ENGINEER.

NOTES:

1. DESIGN IS FOR TEMPORARY TRAFFIC SIGNAL LAYOUT ONLY. REFER TO TRAFFIC CONTROL PLANS FOR SIGNING, STRIPING, AND BARRICADES DURING VARIOUS PHASES OF CONSTRUCTION.
2. REUSE EXISTING CONTROLLER, POLES / MAST ARMS, AND SIGNAL HEADS FOR TEMPORARY SIGNAL. HOWEVER, SIGNAL HEAD LOCATION SHALL BE PROVIDED AS SHOWN ON THIS SHEET. ALL EXISTING SIGNAL HEADS AND SIGNS CONFLICTING WITH THE PROPOSED DESIGN SHALL BE TURNED DOWN AND BAGGED.
3. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING SIGNAL HEADS, WIRING, AND SIGNS AS NECESSARY FOR EACH PHASE OF CONSTRUCTION TO PROVIDE A FULLY FUNCTIONAL SIGNAL DURING CONSTRUCTION. THIS WORK IS CONSIDERED SUBSIDIARY TO ITEM 681.
4. PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES. REFER TO TCP PLANS FOR DETAILS REGARDING PEDESTRIAN ACCESS AT CROSSWALKS. PEDESTRIAN HEADS SERVING CROSSWALKS THAT ARE CLOSED SHALL BE BAGGED.
5. CONTRACTOR MUST COORDINATE WITH TXDOT PERSONNEL FOR SIGNAL HEAD(S) RELOCATION AND TIMING ADJUSTMENTS FOR EACH PHASE AND STEP OF CONSTRUCTION.
6. UPON CONSTRUCTION COMPLETION OF THIS INTERSECTION, TRAFFIC SIGNAL SHALL BE RE-ADJUSTED TO EXISTING CONDITIONS OR AS DIRECTED BY TXDOT PERSONNEL IN THE FIELD.
7. TEMPORARY SIGNALS ADJUSTMENTS AS STATED ABOVE (1-5) WILL BE PAID UNDER ITEM 681 6001 "TEMP TRF SIGNALS".

0 20 40

SCALE: 1"=40'

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506
TEMPORARY TRAFFIC SIGNAL LAYOUT AT E OLEANDER

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		80
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

SGLY00.02.dgn

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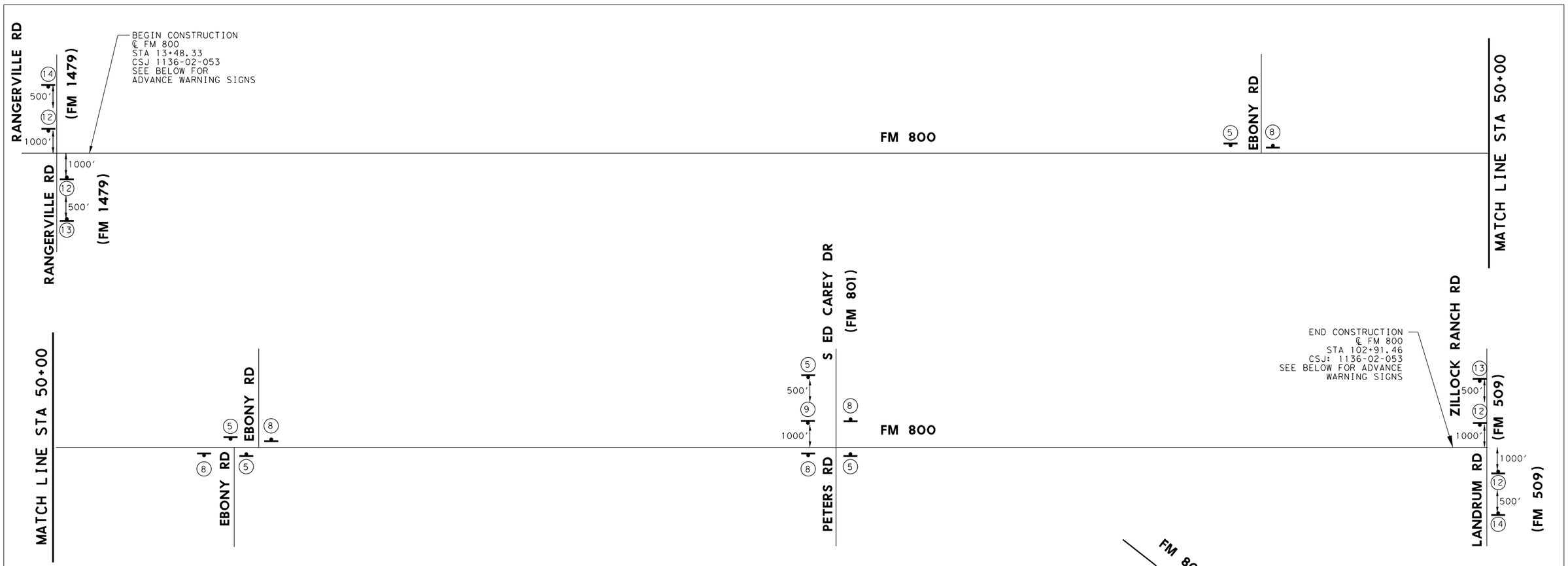
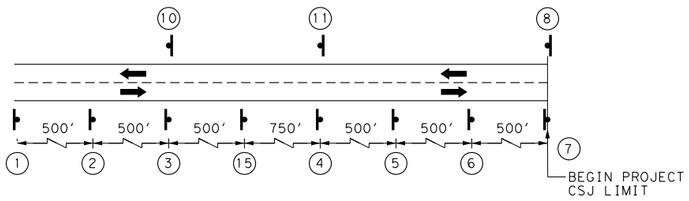
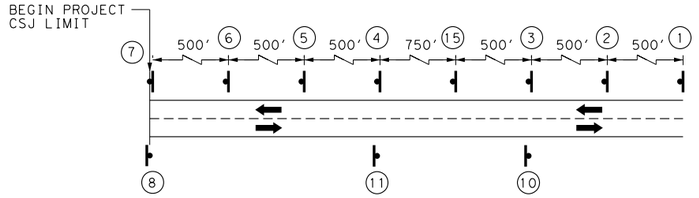
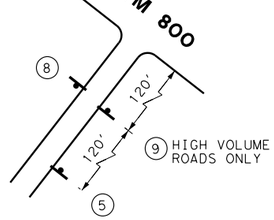




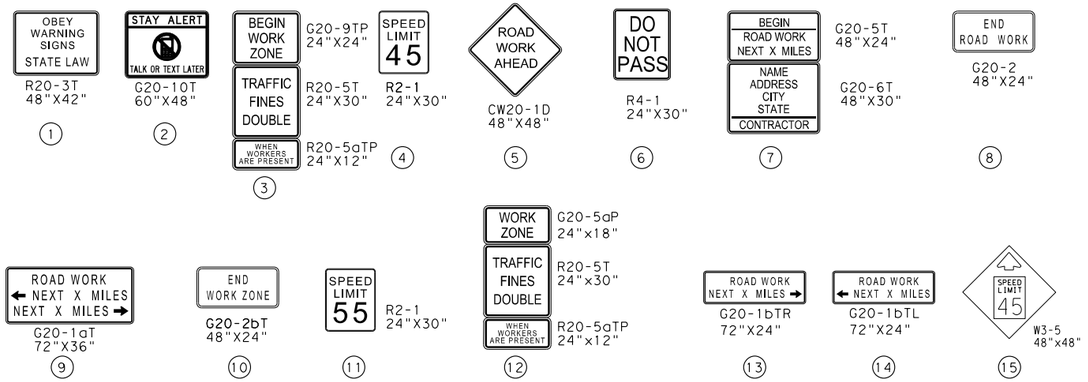
TYPICAL APPROACH SIGN PLACEMENT
FOR WEST PROJECT LIMIT



TYPICAL APPROACH SIGN PLACEMENT
FOR EAST PROJECT LIMIT



TYPICAL APPROACH SIGN PLACEMENT
FOR SIDE STREETS



NOTES:

1. FIELD CONDITIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATION .CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION OF ANY SIGNS.
2. REFER TO PHASING LAYOUT SHEETS FOR OTHER REGULATORY AND WARNING SIGNS.
3. CONTRACTOR SHALL ADHERE AT ALL TIMES TO TXDOT STANDARDS BC (1)-21 THROUGH BC (12)-21, SHEETS AND TMUTCD FOR SIGN DETAILS,DIMENSIONS AND PLACEMENT.
4. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE ADDED BY THE ENGINEER. ANY SUCH DEVICES SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502.
5. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZING DEVICES AS APPROVED BY THE ENGINEER TO MEET FIELD CONDITIONS TO AVOID BLOCKING DRIVEWAYS OR ACCESS TO PROPERTIES.
6. WHEN CONSTRUCTION WORK IS COMPLETED AND THE FACILITY IS READY TO BE OPENED TO TRAFFIC, CONTRACTOR SHALL REQUEST APPROVAL FROM THE ENGINEER PRIOR TO ERECTING PERMANENT SPEED LIMIT SIGNS.

FM 800 POSTED SPEED LIMIT: 55 MPH

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

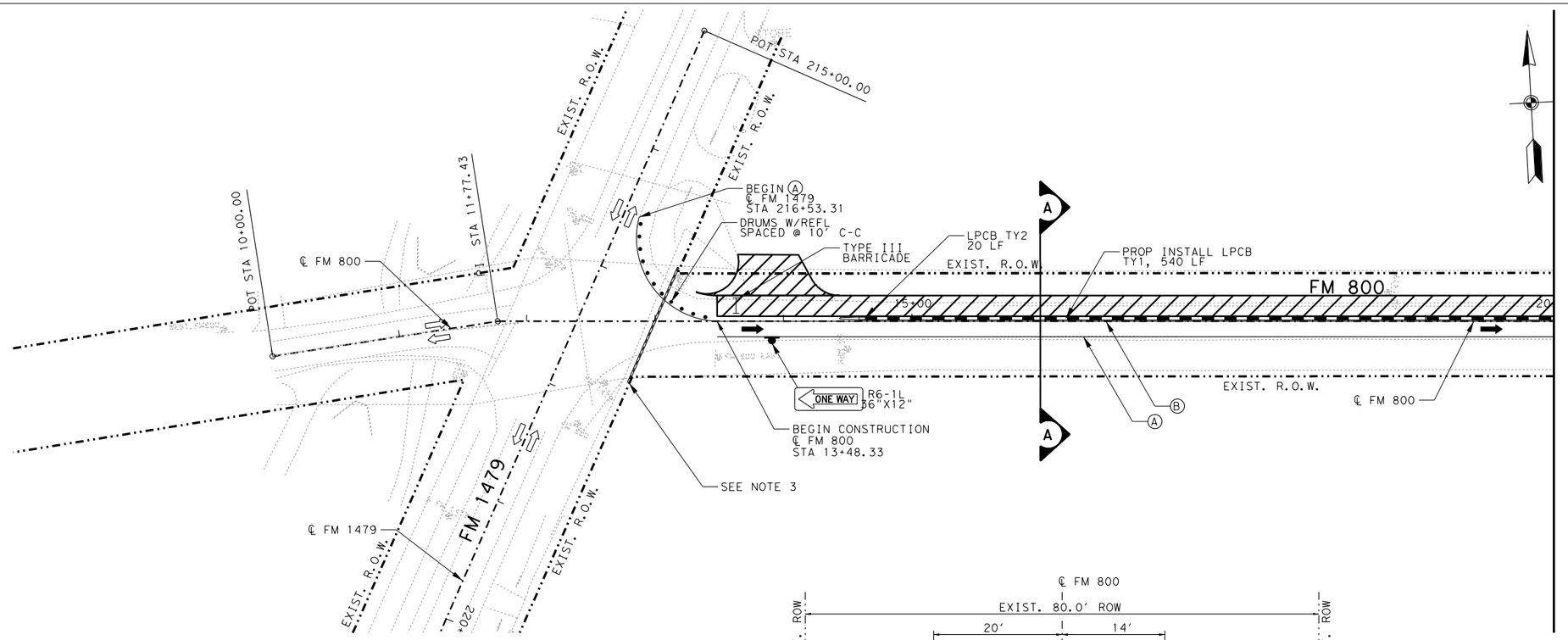
Texas Department of Transportation

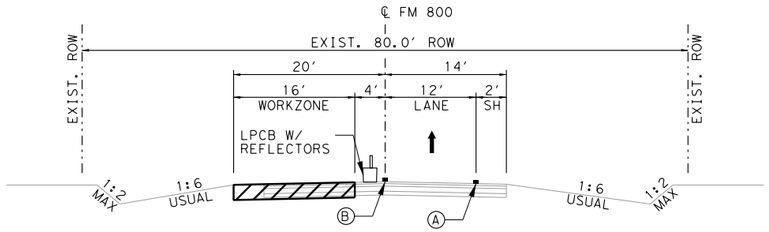
FM 800

ADVANCED WARNING SIGNS

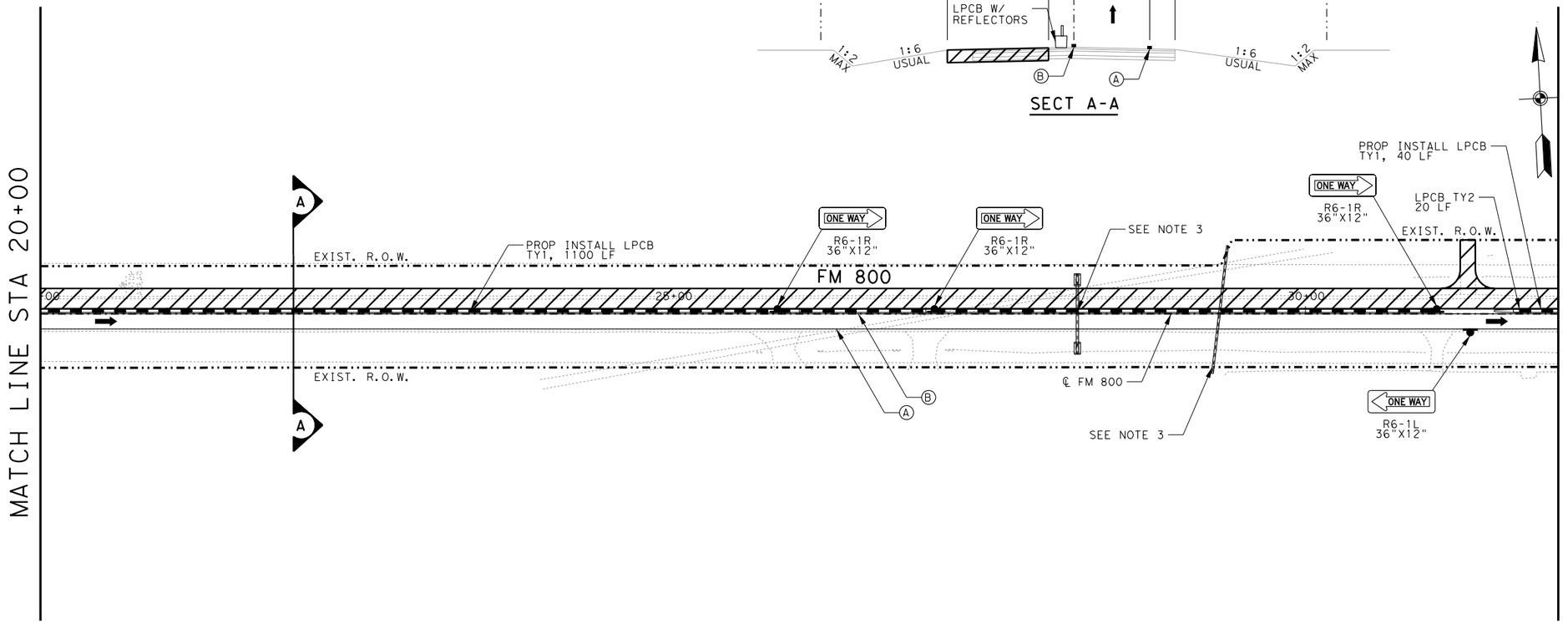
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		81
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800





SECT A-A



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800

TRAFFIC CONTROL PLAN PHASE I BEGIN PROJECT TO STA 32+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		82
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_TCSH00_PH1_01.dgn

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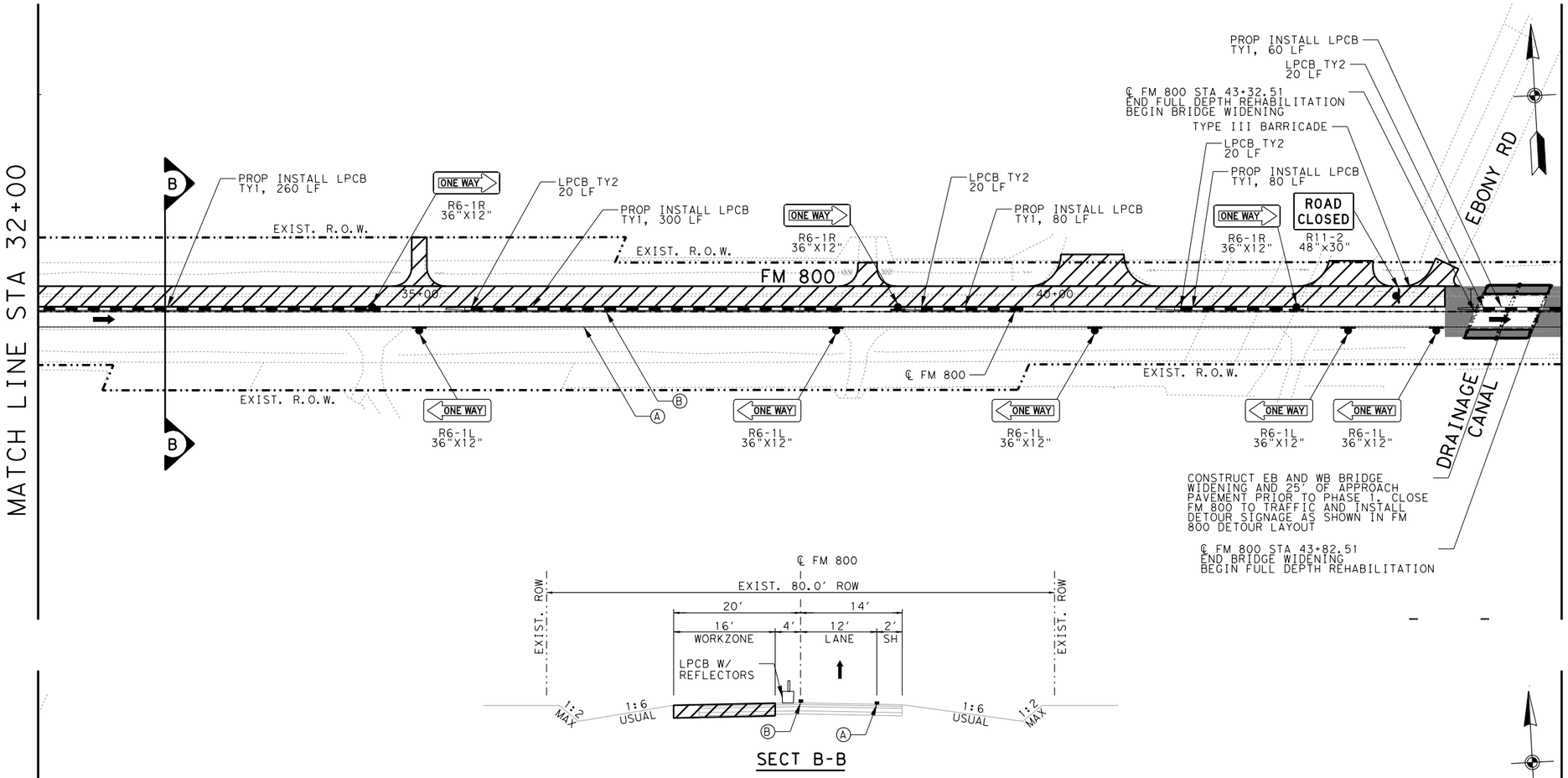
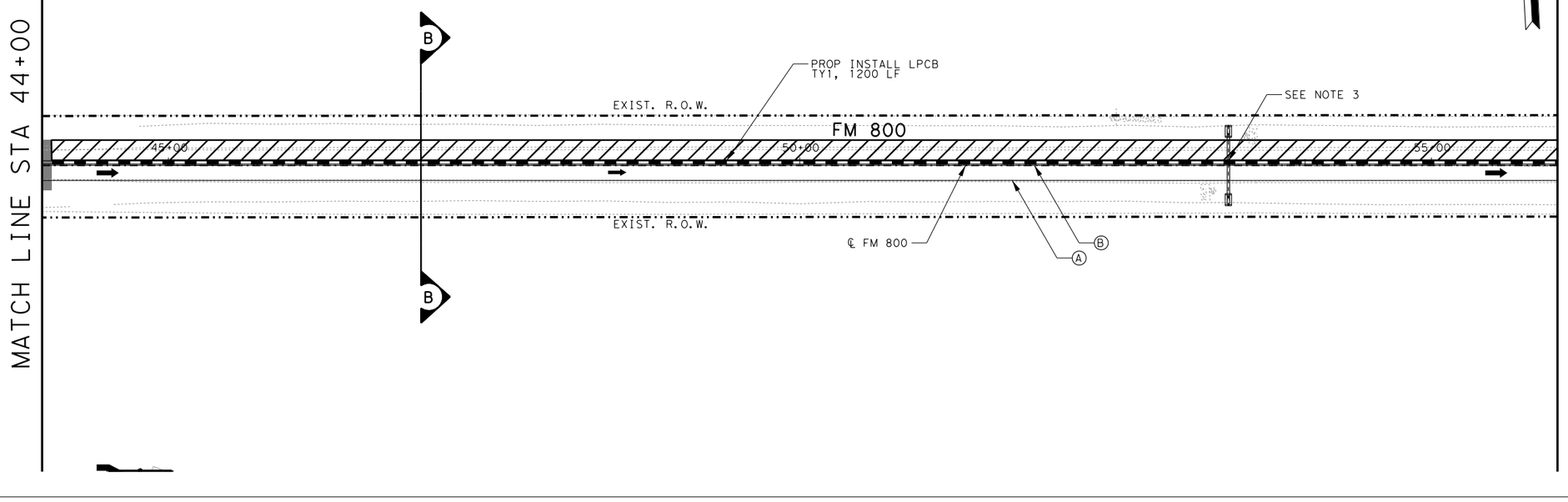


SECT B-B



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
TRAFFIC CONTROL PLAN PHASE I STA 32+00 TO STA 56+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		83
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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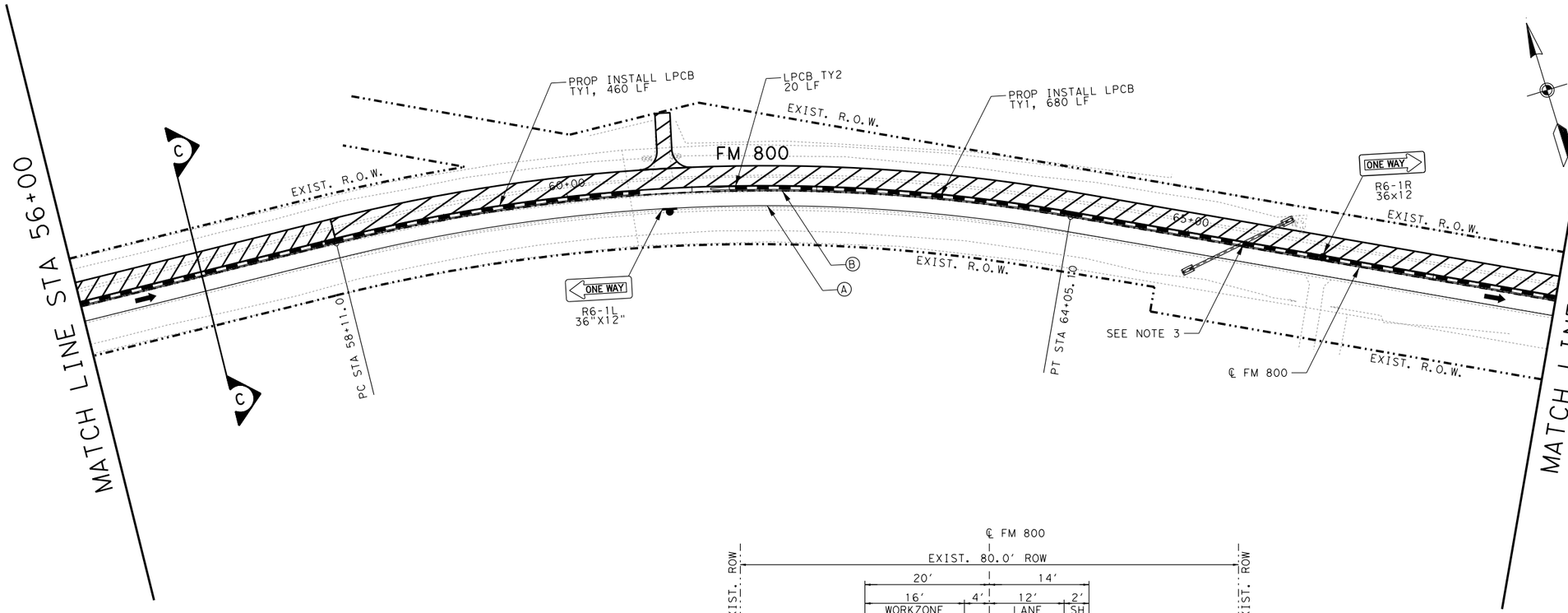

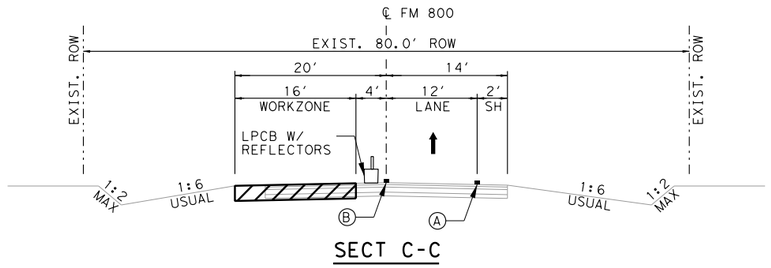

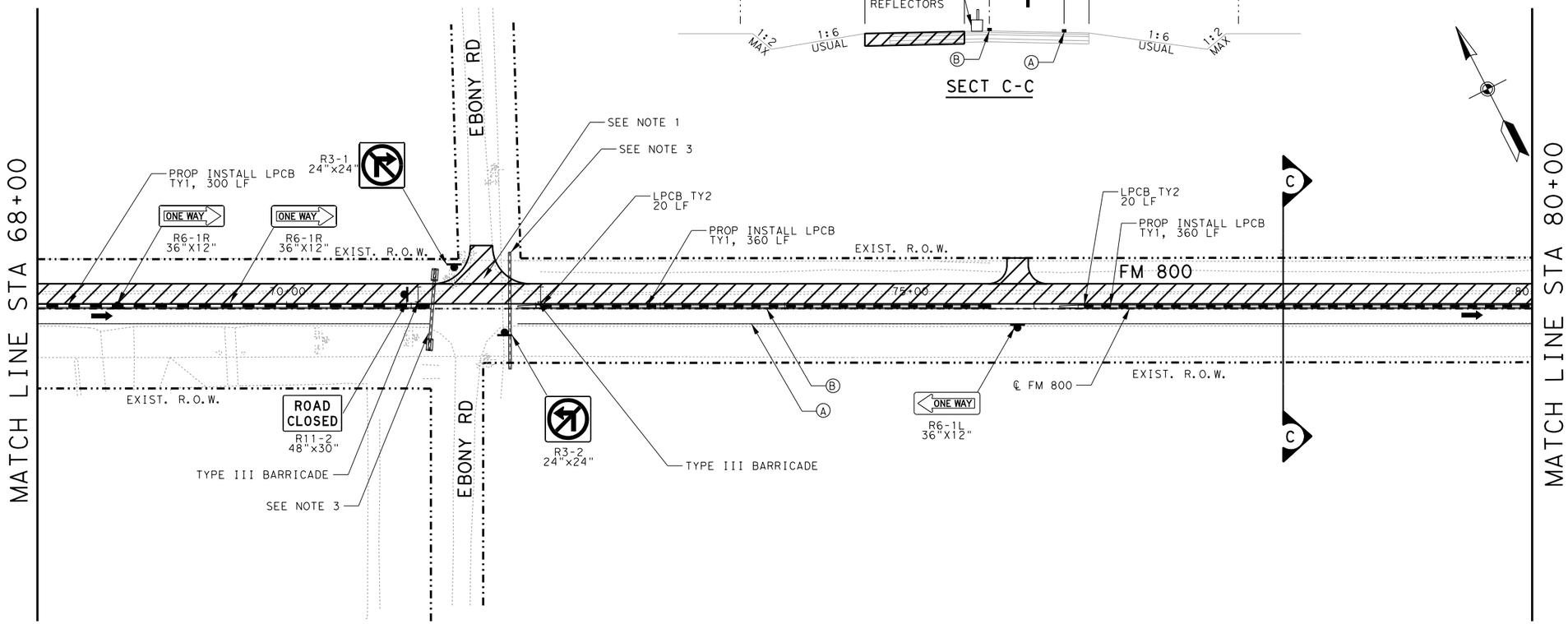

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
TRAFFIC CONTROL PLAN PHASE I STA 56+00 TO STA 80+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		84
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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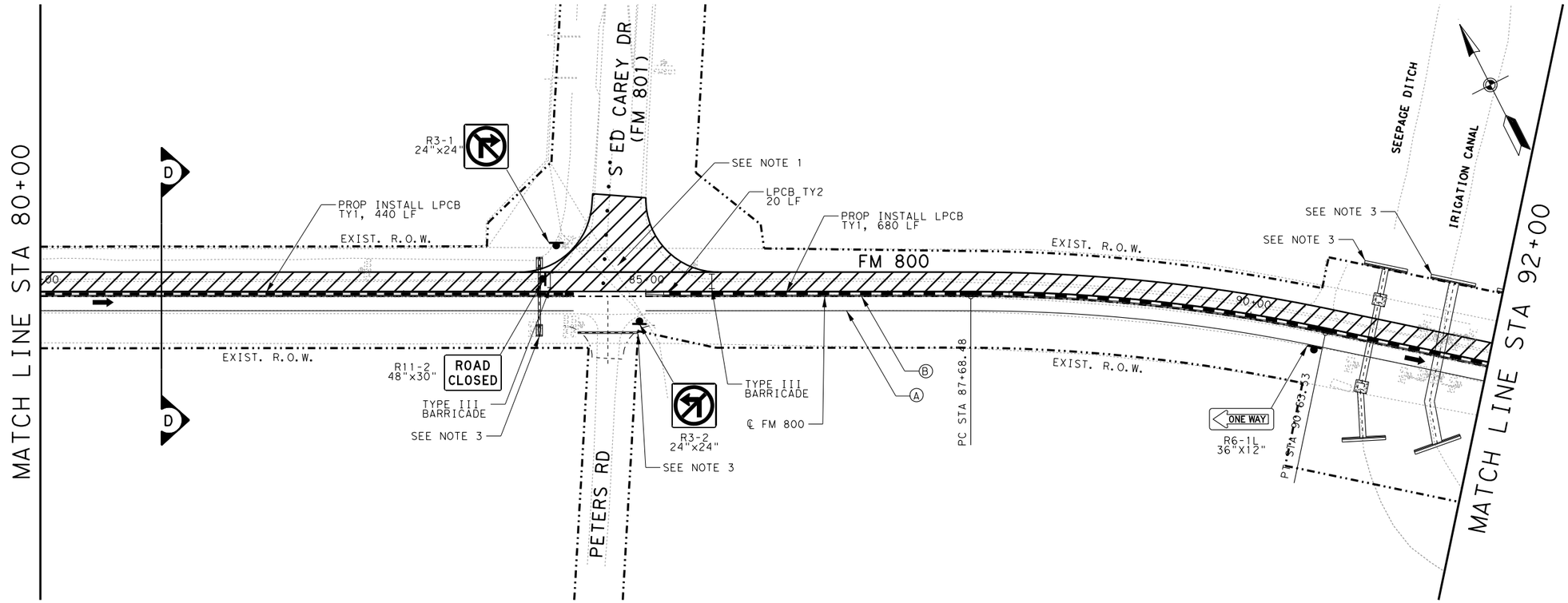

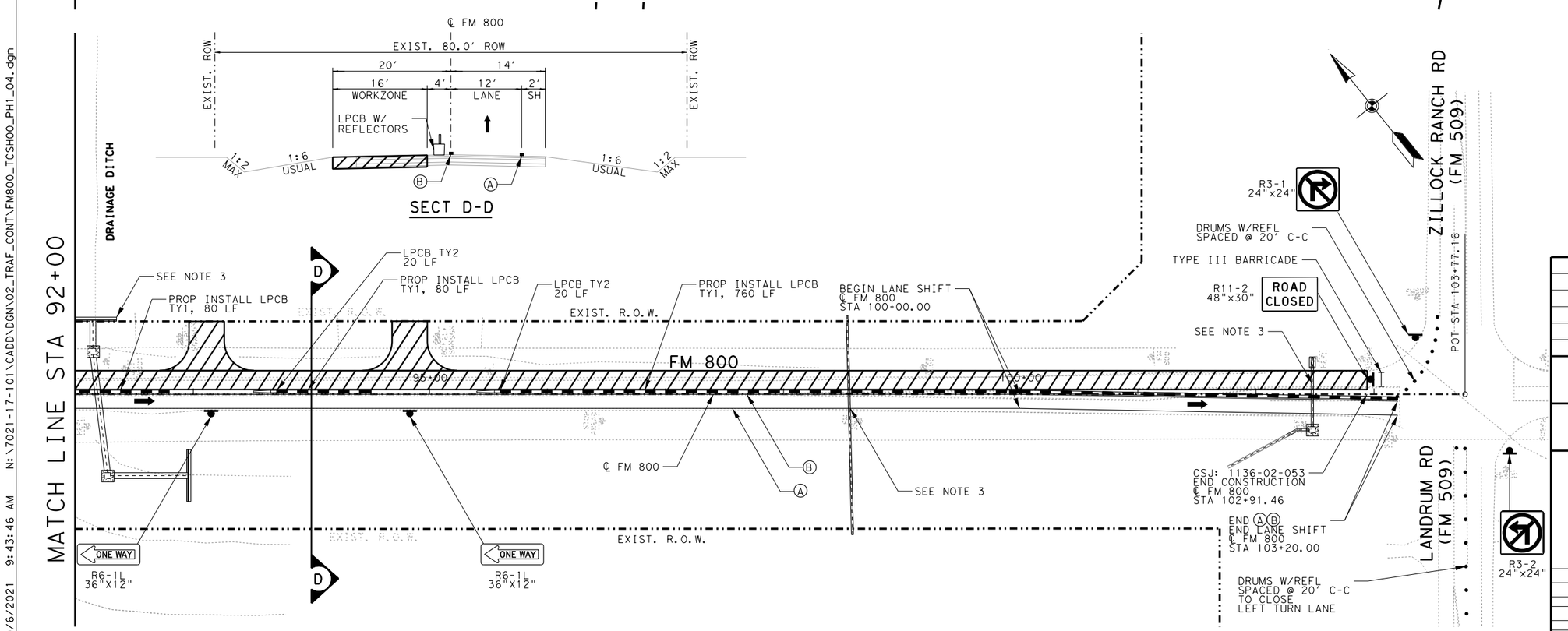

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
TRAFFIC CONTROL PLAN PHASE I
STA 80+00 TO END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		85
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

10/6/2021 9:43:46 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM800_TCSH00_PH1_04.dgn
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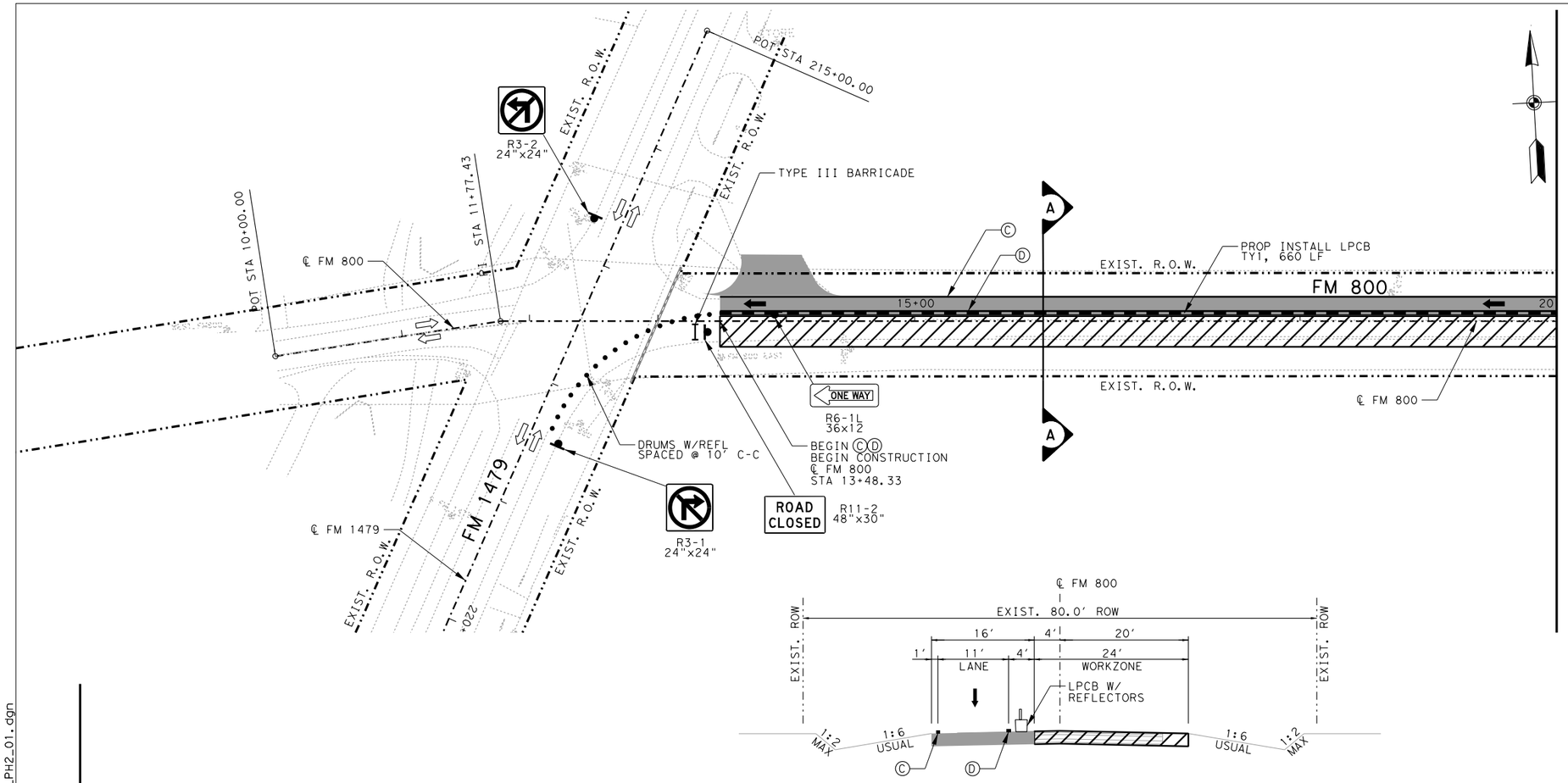
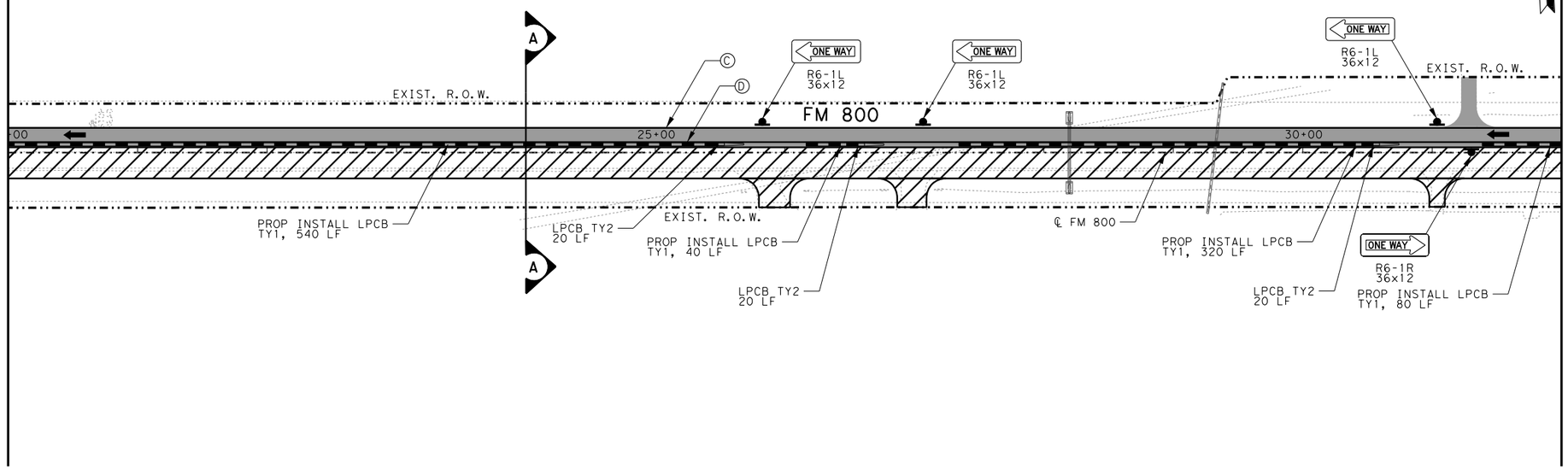


SECT A-A



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

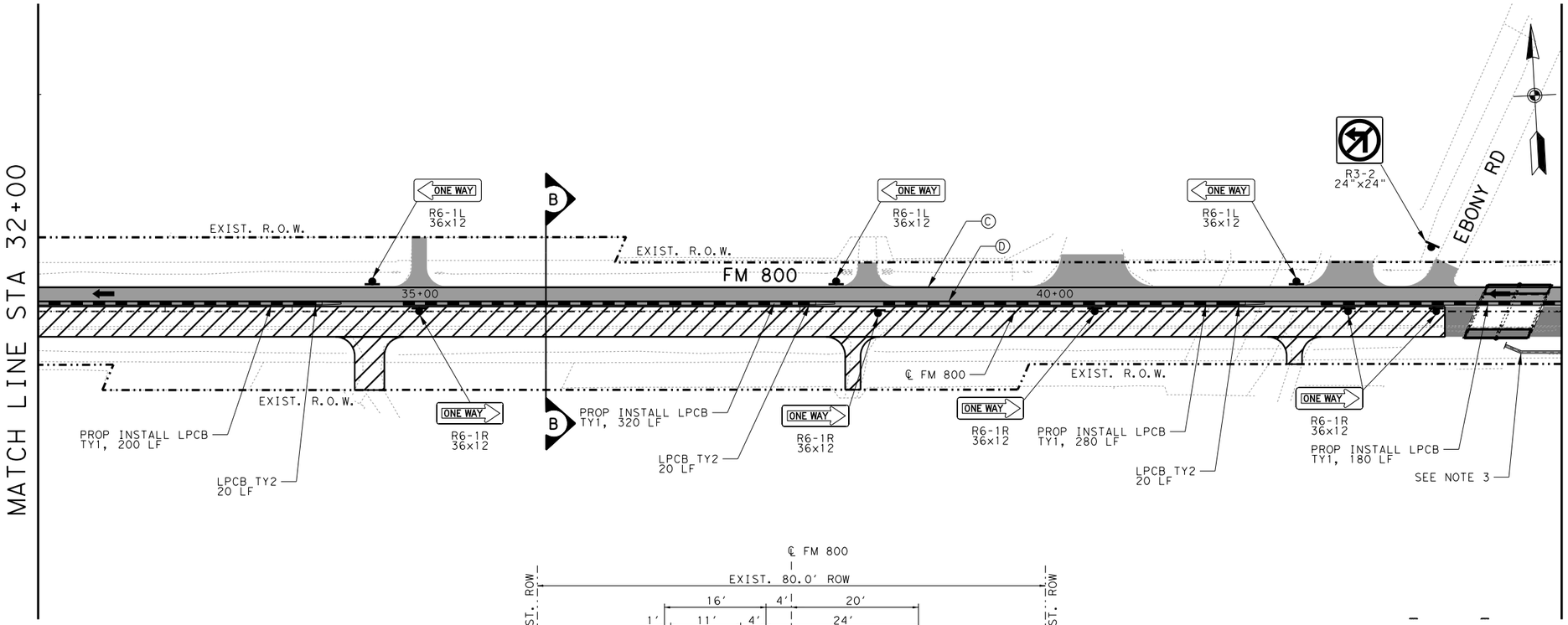
FM 800
TRAFFIC CONTROL PLAN PHASE II
BEGIN PROJECT TO STA 32+00

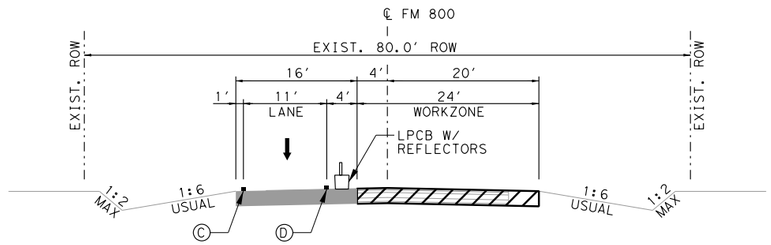
SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		86
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

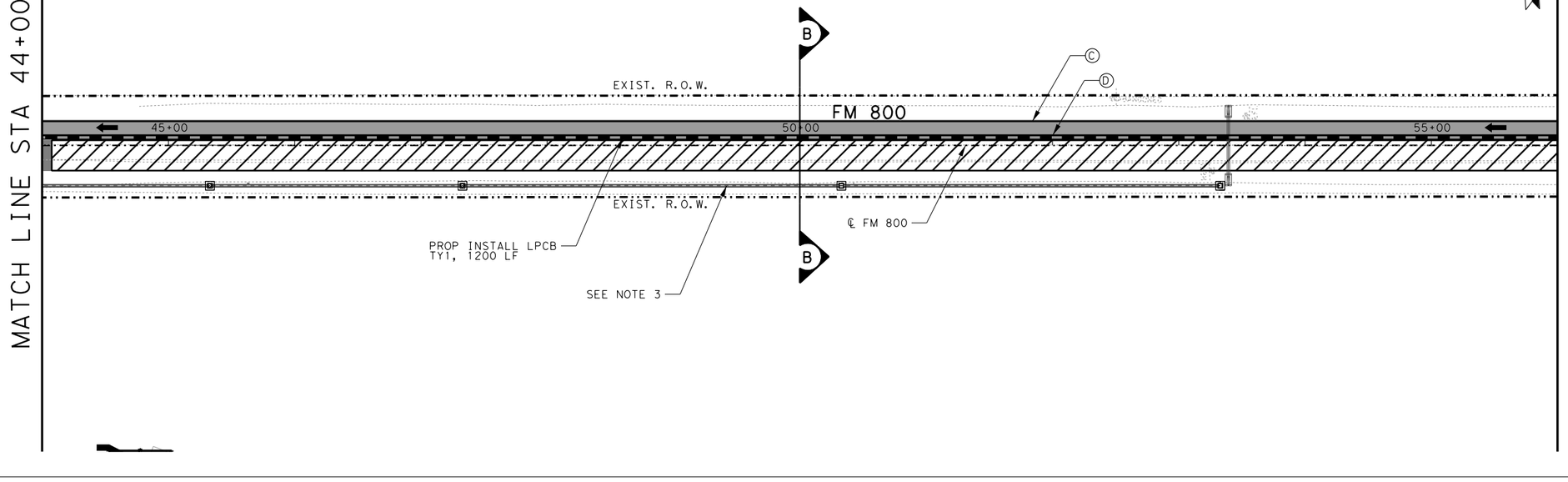
FM800_TCSH00_PH2_01.dgn

10/6/2021 9:43:48 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM800_TCSH00_PH2_01.dgn





SECT B-B



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
TRAFFIC CONTROL PLAN PHASE II STA 32+00 TO STA 56+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		87
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_TCSH00_PH2_02.dgn

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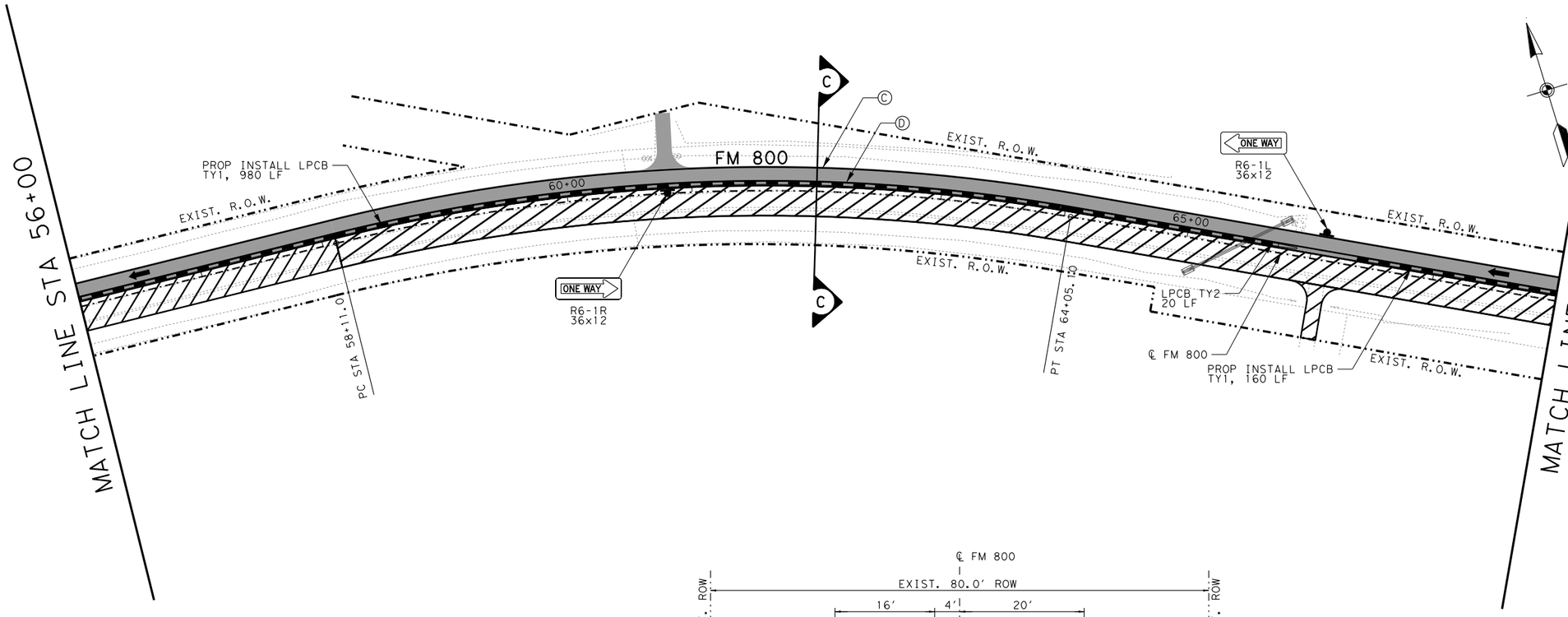
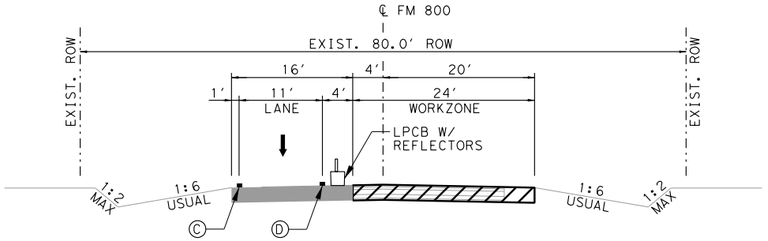
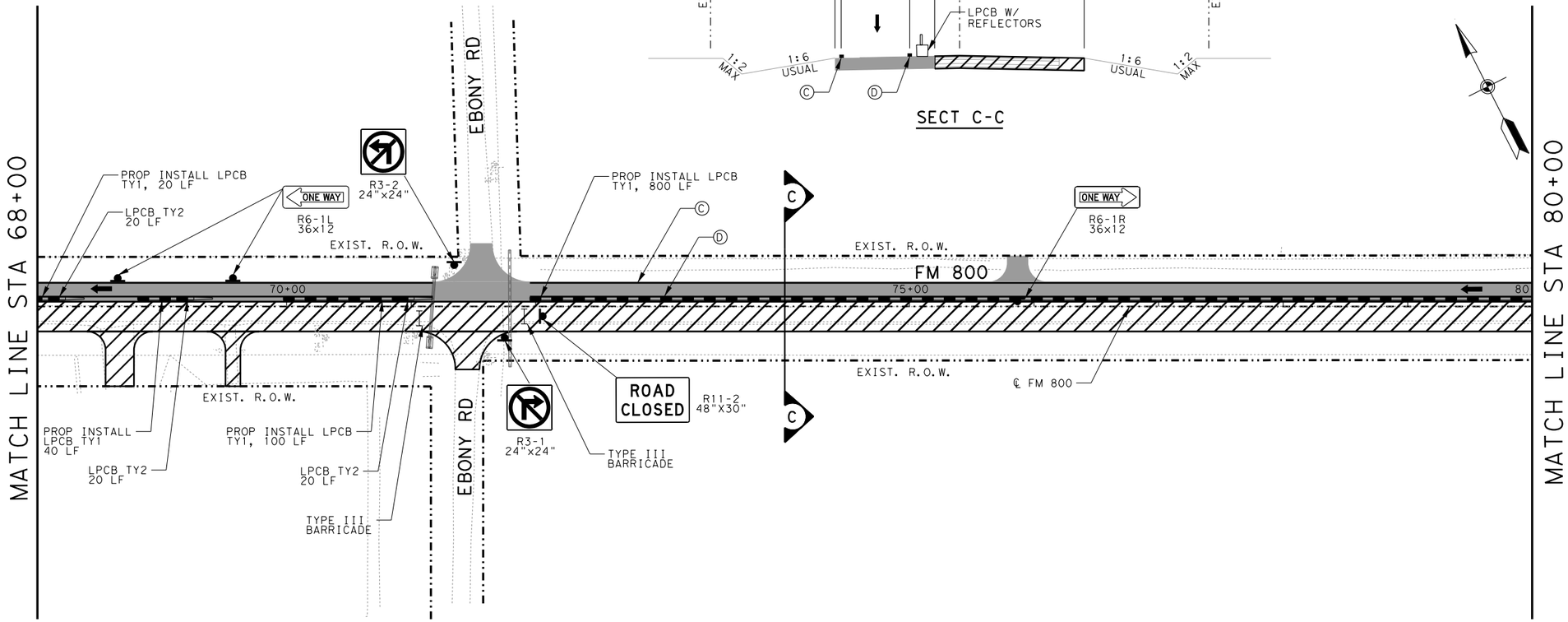




SECT C-C



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
PROFESSIONAL ENGINEER
LICENSED

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
TRAFFIC CONTROL PLAN PHASE II STA 56+00 TO STA 80+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		88
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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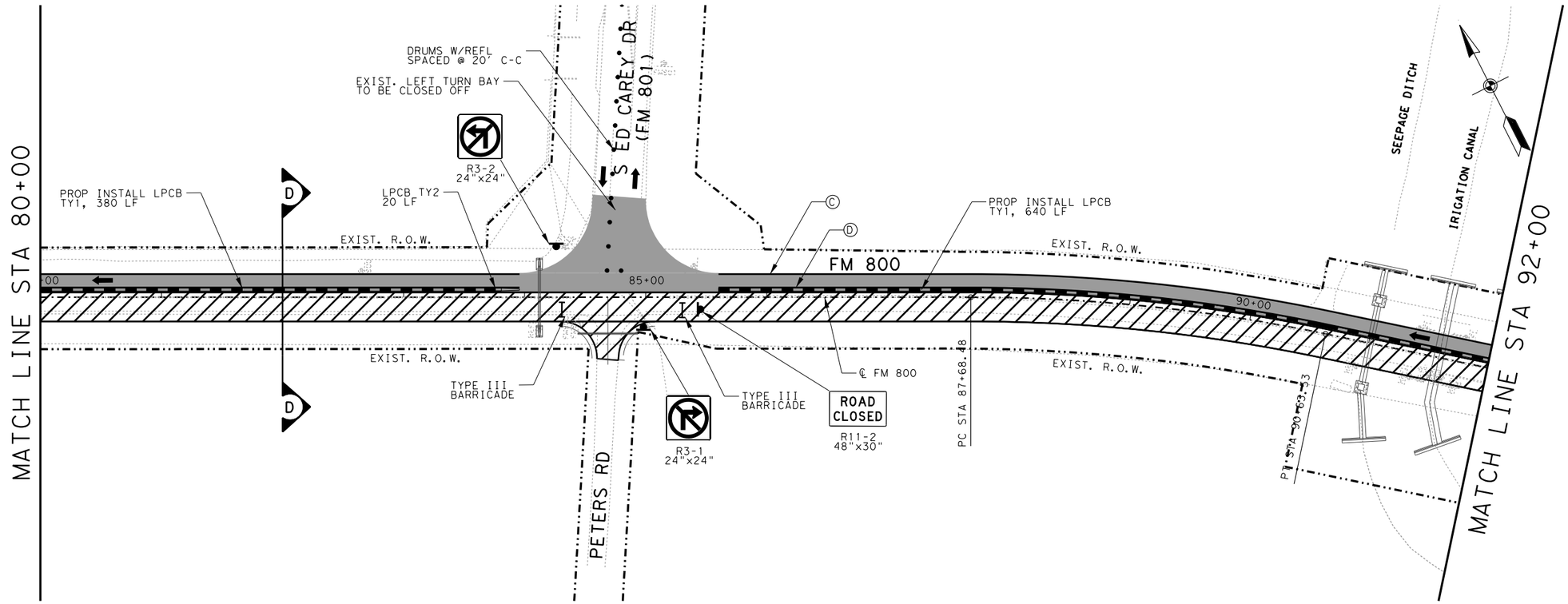

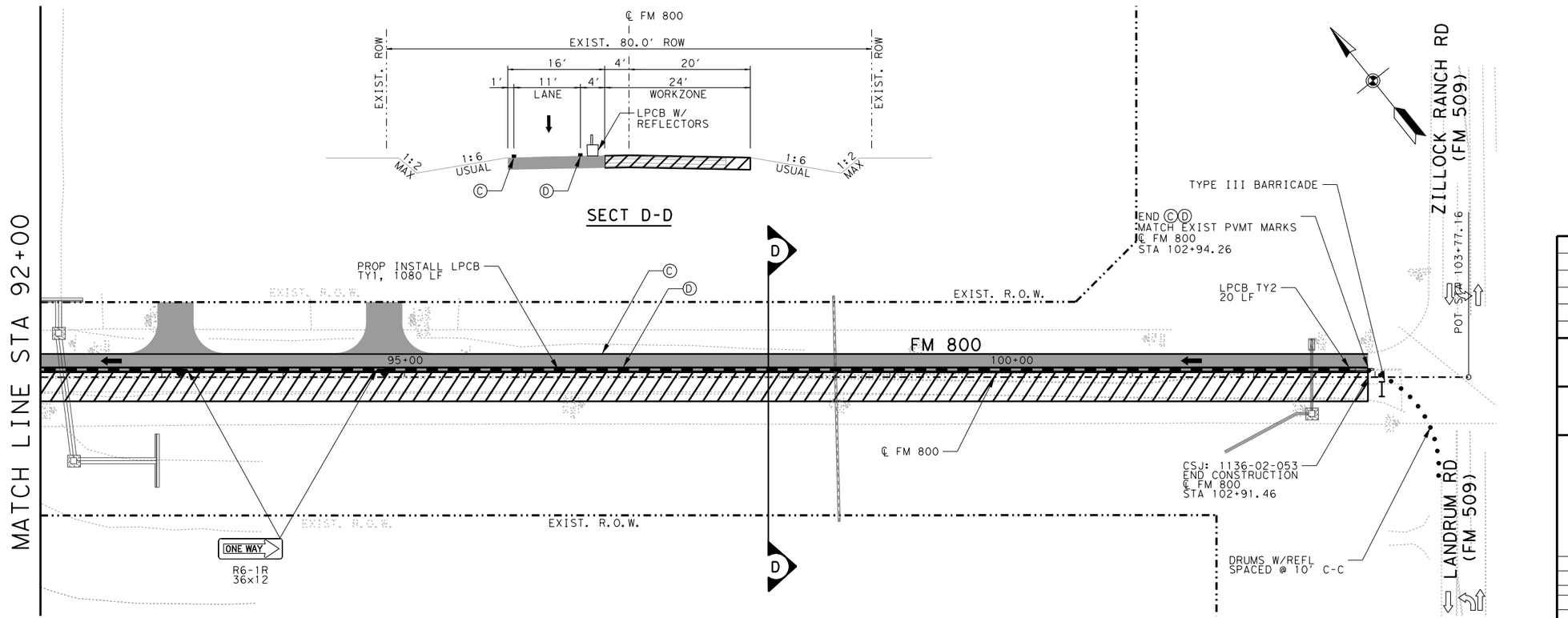

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
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PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 800
TRAFFIC CONTROL PLAN PHASE II STA 80+00 TO END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		89
STATE	DISTRICT	COUNTY	
	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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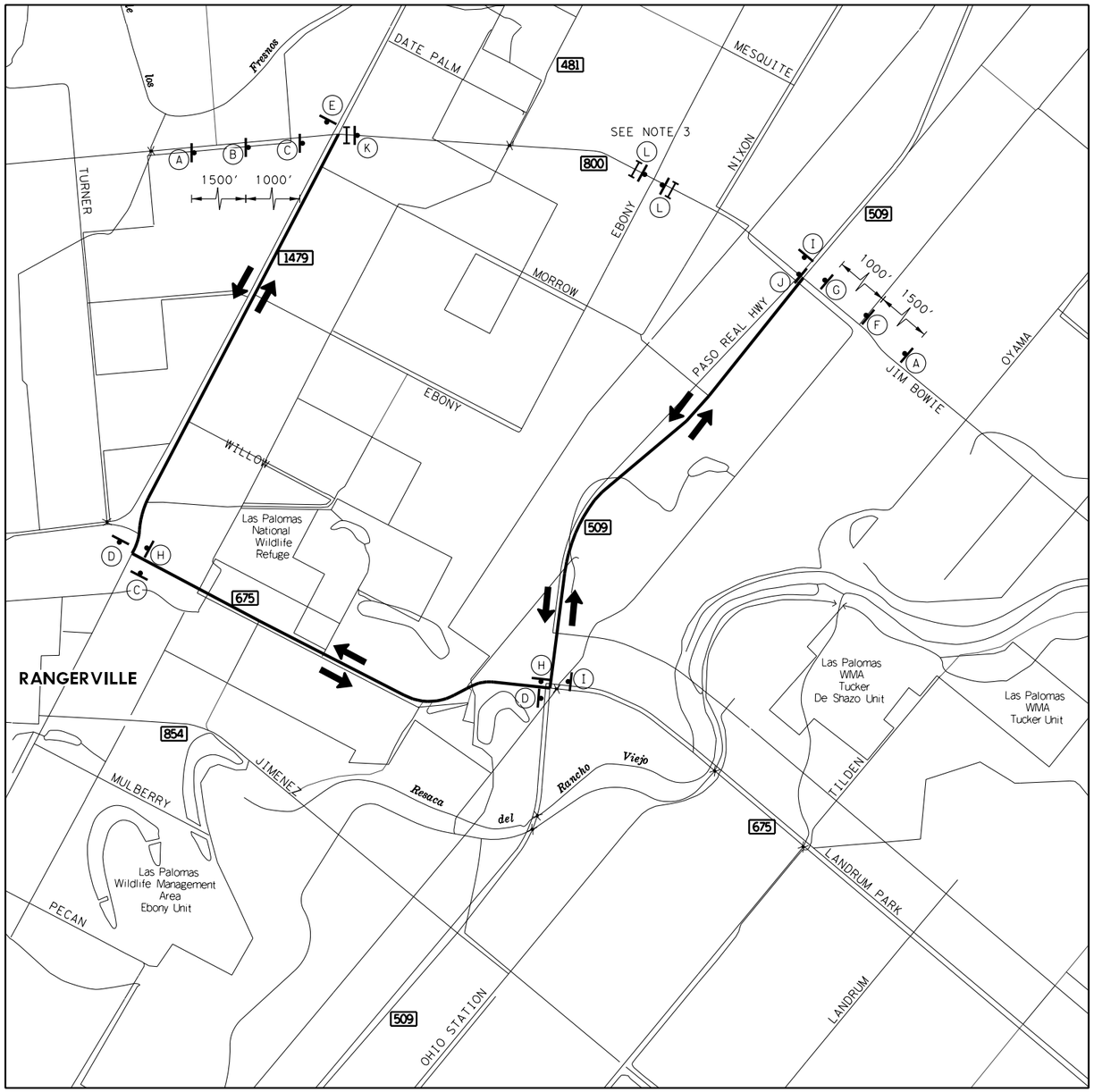

DETOUR
1500 FT
CW20-2A
48"X48"
(A)

DETOUR M4-8 24"X12"
EAST M3-2 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M5-1R 21"X15"
(B)

DETOUR M4-8 24"X12"
EAST M3-2 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M6-1 21"X15"
(C)

DETOUR M4-8 24"X12"
EAST M3-2 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M6-1 21"X15"
(D)

DETOUR M4-8 24"X12"
EAST M3-2 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M6-3 21"X15"
(E)

DETOUR M4-8 24"X12"
WEST M3-4 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M5-1L 21"X15"
(F)

DETOUR M4-8 24"X12"
WEST M3-4 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M6-1 21"X15"
(G)

DETOUR M4-8 24"X12"
WEST M3-4 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M6-1 21"X15"
(H)

DETOUR M4-8 24"X12"
WEST M3-4 24"X12"
FARM 800 ROAD M1-6F 24"X24"
M6-3 21"X15"
(I)

ROAD CLOSED TO THRU TRAFFIC R11-4 60" x 30"
DETOUR M4-10L 48"X18"
TYPE III BARRICADE
(J)

ROAD CLOSED TO THRU TRAFFIC R11-4 60" x 30"
DETOUR M4-10R 48"X18"
TYPE III BARRICADE
(K)

ROAD CLOSED R11-2 48"X30"
TYPE III BARRICADE
(L)

NOTES:

1. USE ROADWAY CLOSURE OF FM 800 FOR CONSTRUCTION CROSS CULVERTS, IRRIGATION LINES, AND BRIDGE WIDENING ON FM 800. ENGINEER SHALL APPROVE LIMITS OF CLOSURE WHEN CONSTRUCTING CROSS CULVERTS, IRRIGATION LINES, AND OR BRIDGE WIDENING.
2. DETOUR SIGNAGE SHALL BE IN PLACE PRIOR TO COMMENCING ONE WAY OPERATION ON FM 800. ENGINEER SHALL APPROVE LIMITS OF ONE WAY OPERATION PRIOR TO COMMENCING CONSTRUCTION ON EACH PHASE.
3. ADJUST LOCATION OF SIGNAGE INFO TO MATCH ROAD CLOSURE LIMITS.

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
ROAD CLOSURE DETOUR LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		90
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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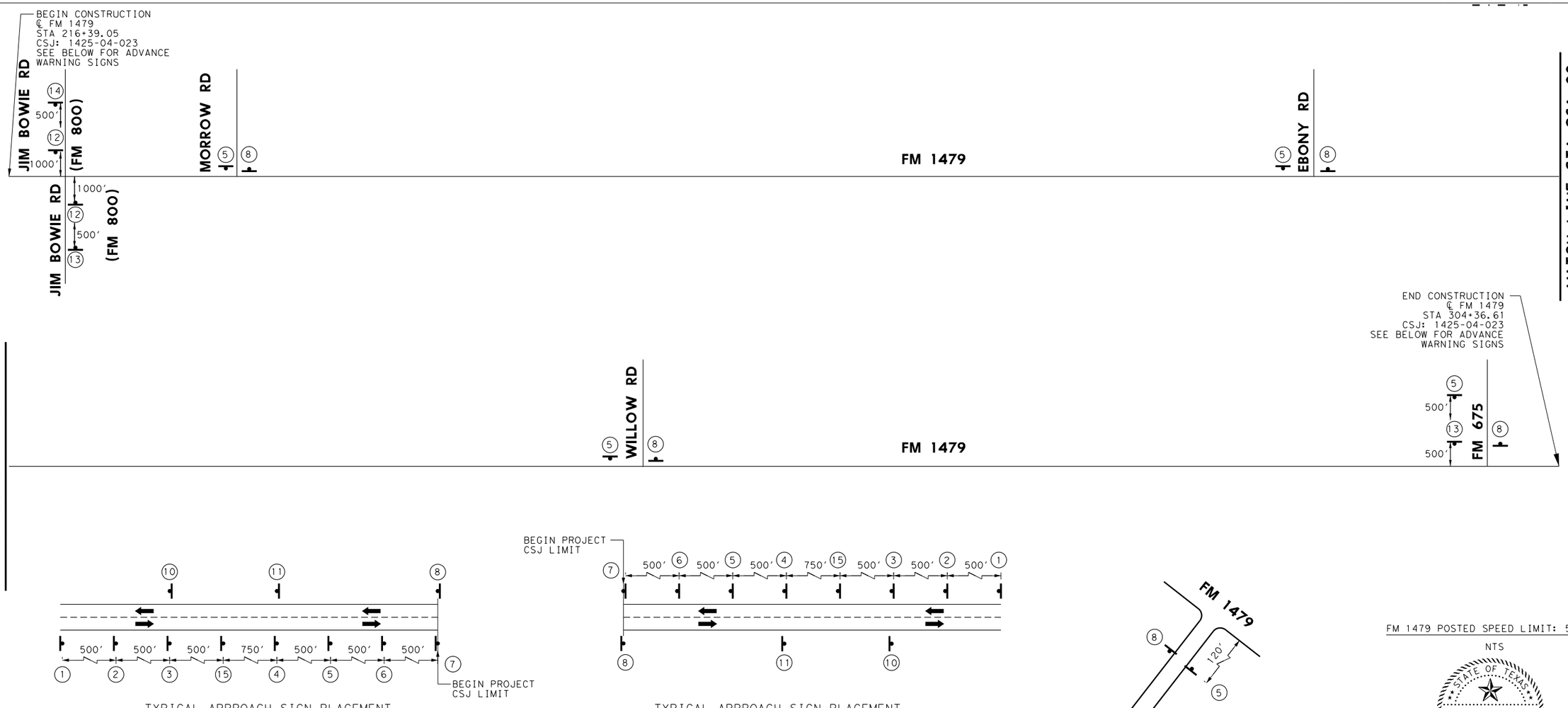
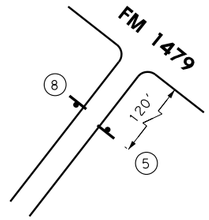
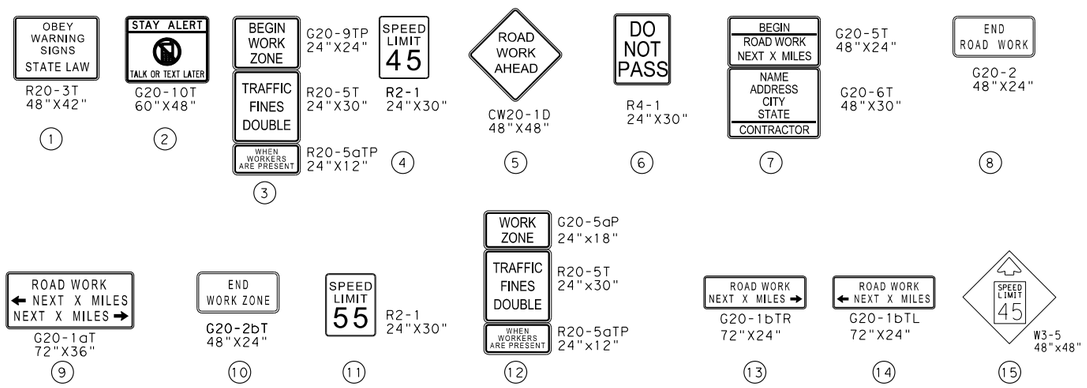


TYPICAL APPROACH SIGN PLACEMENT
FOR WEST PROJECT LIMIT

TYPICAL APPROACH SIGN PLACEMENT
FOR EAST PROJECT LIMIT



TYPICAL APPROACH SIGN PLACEMENT
FOR SIDE STREETS



NOTES:

1. FIELD CONDITIONS MAY DICTATE ADJUSTMENT OF SIGN LOCATION .CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION OF ANY SIGNS.
2. REFER TO PHASING LAYOUT SHEETS FOR OTHER REGULATORY AND WARNING SIGNS.
3. CONTRACTOR SHALL ADHERE AT ALL TIMES TO TXDOT STANDARDS BC (1)-21 THROUGH BC (12)-21, SHEETS AND TMUTCD FOR SIGN DETAILS,DIMENSIONS AND PLACEMENT.
4. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE ADDED BY THE ENGINEER. ANY SUCH DEVICES SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502.
5. CONTRACTOR SHALL LOCATE SIGNS, BARRICADES & CHANNELIZING DEVICES AS APPROVED BY THE ENGINEER TO MEET FIELD CONDITIONS TO AVOID BLOCKING DRIVEWAYS OR ACCESS TO PROPERTIES.
6. WHEN CONSTRUCTION WORK IS COMPLETED AND THE FACILITY IS READY TO BE OPENED TO TRAFFIC, CONTRACTOR SHALL REQUEST APPROVAL FROM THE ENGINEER PRIOR TO ERECTING PERMANENT SPEED LIMIT SIGNS.

FM 1479 POSTED SPEED LIMIT: 55 MPH

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0068 PH
281-945-0081 FX

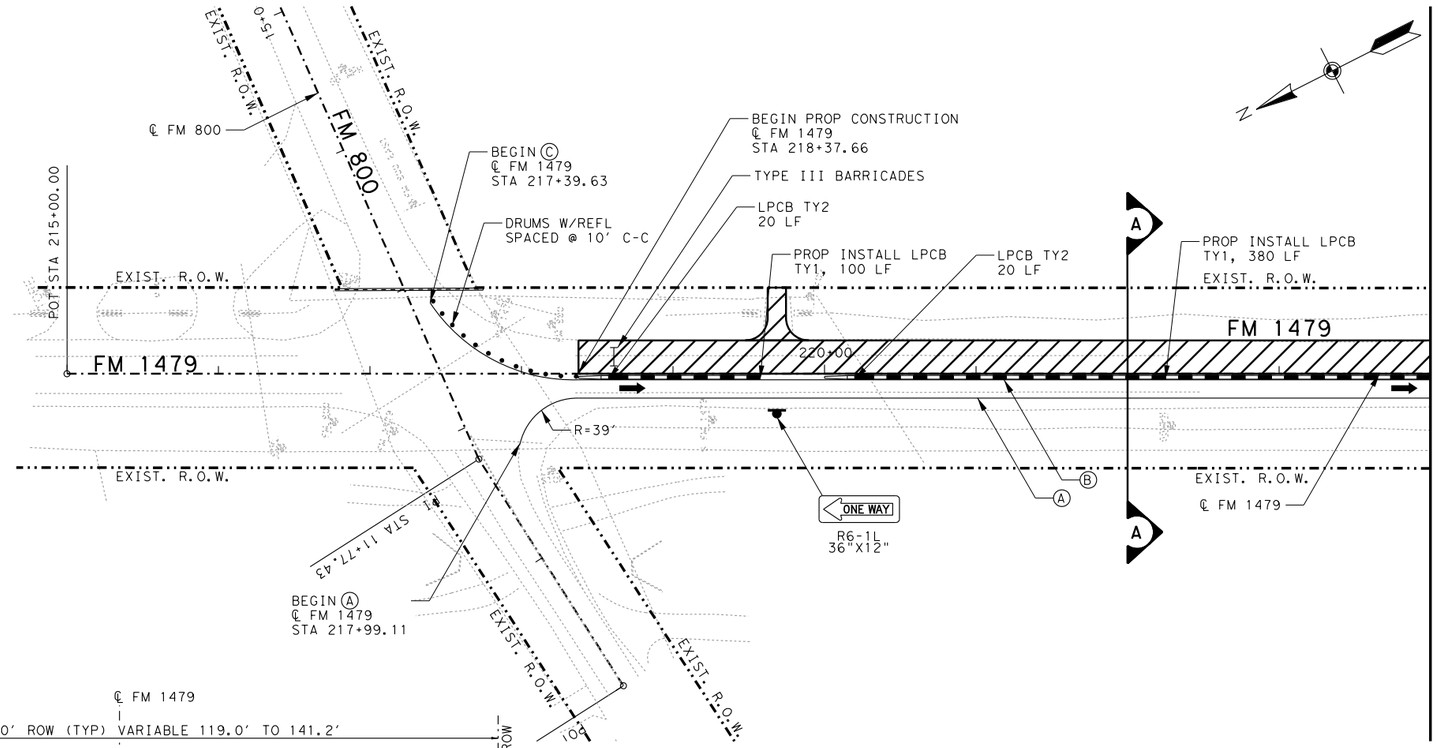
Texas Department of Transportation

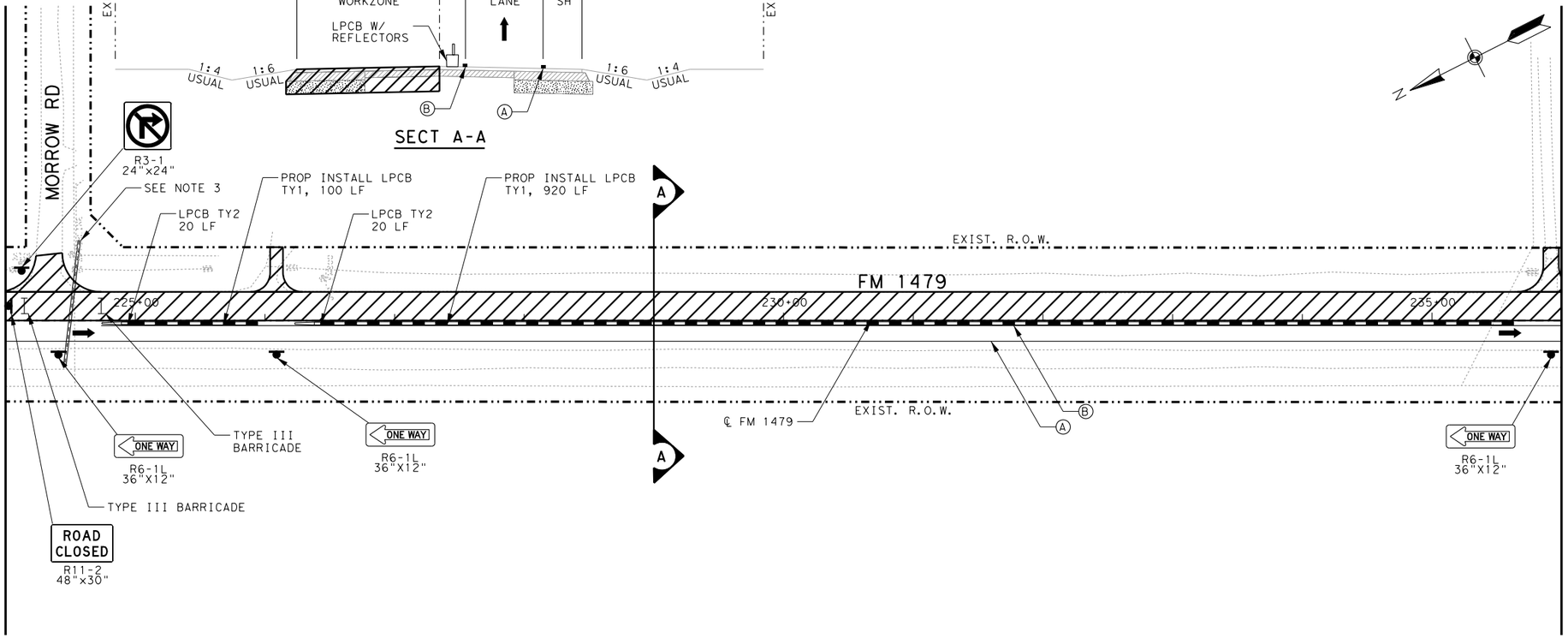
FM 1479

ADVANCED WARNING SIGNS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		91
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479





LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0068 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479

TRAFFIC CONTROL PLAN PHASE I BEGIN PROJECT TO STA 236+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		92
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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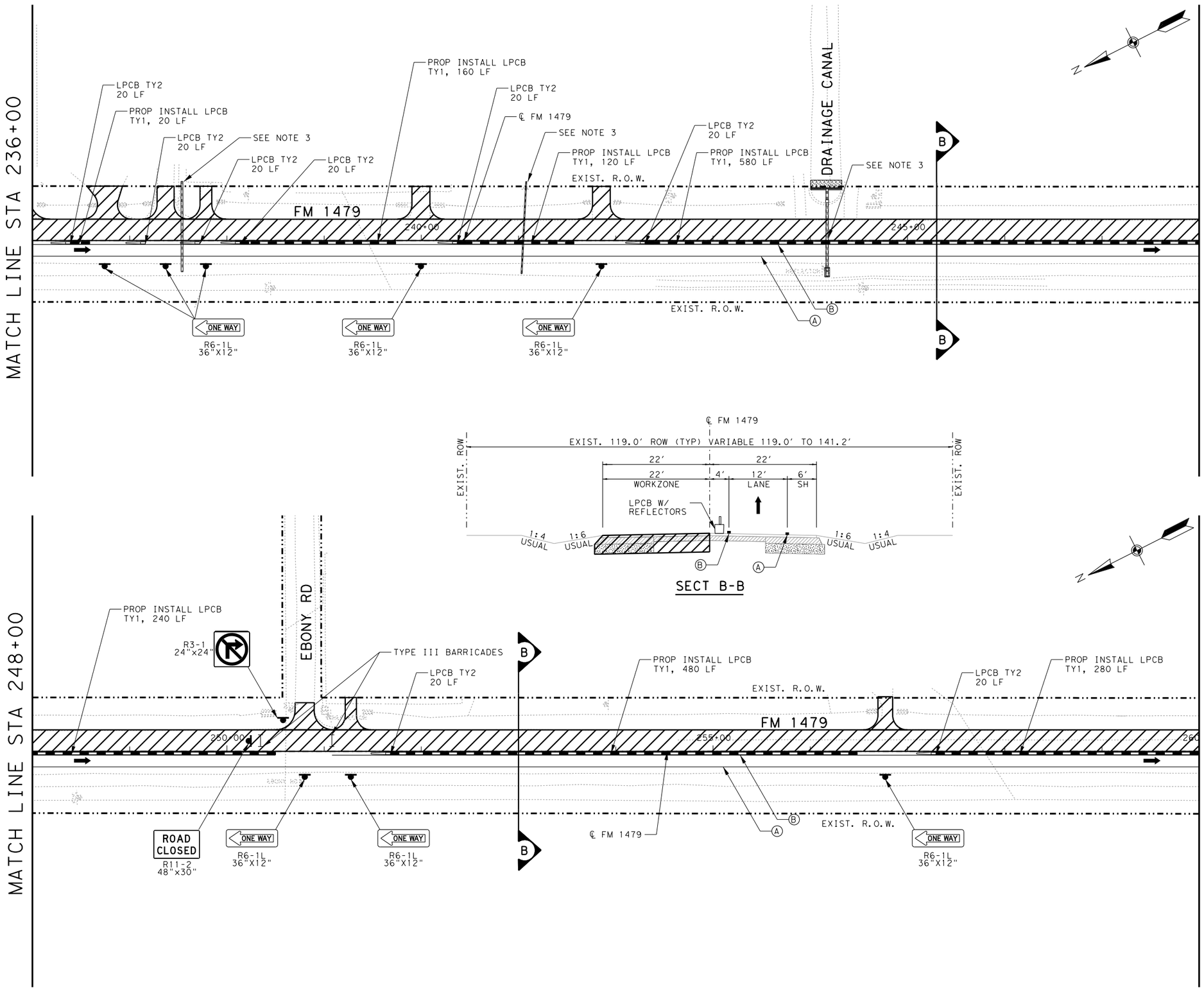

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC.
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479

TRAFFIC CONTROL PLAN PHASE I STA 236+00 TO STA 260+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	93

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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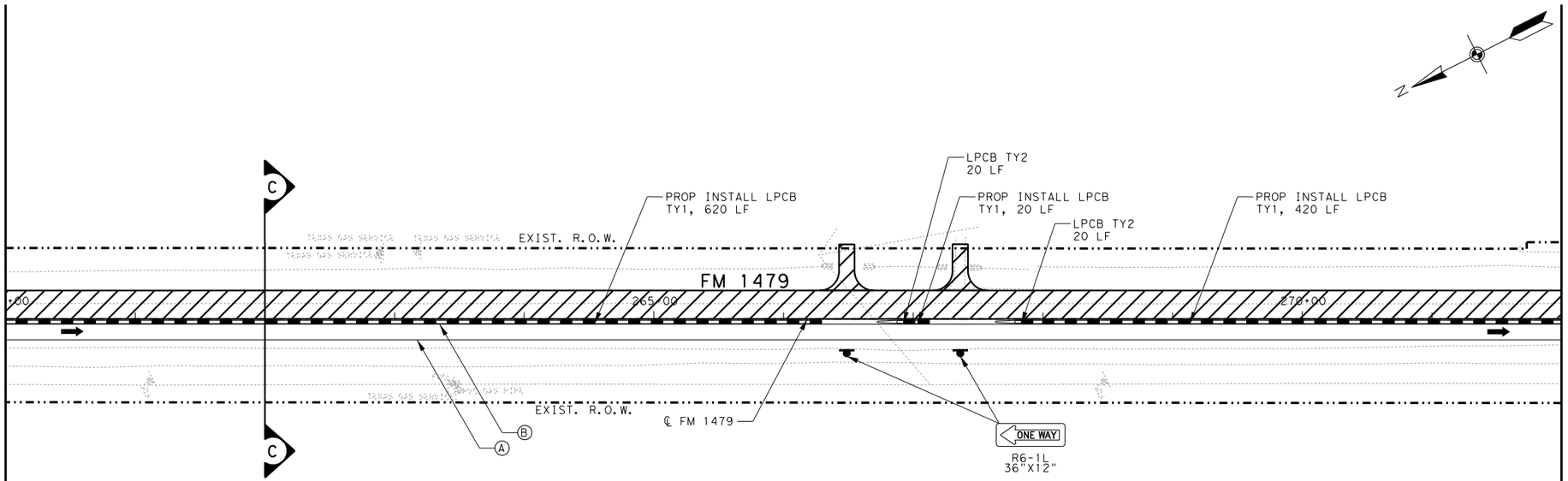
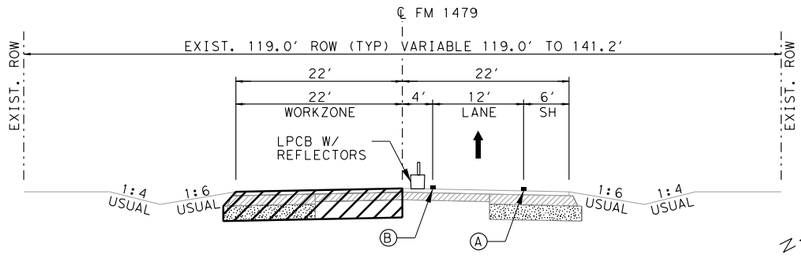
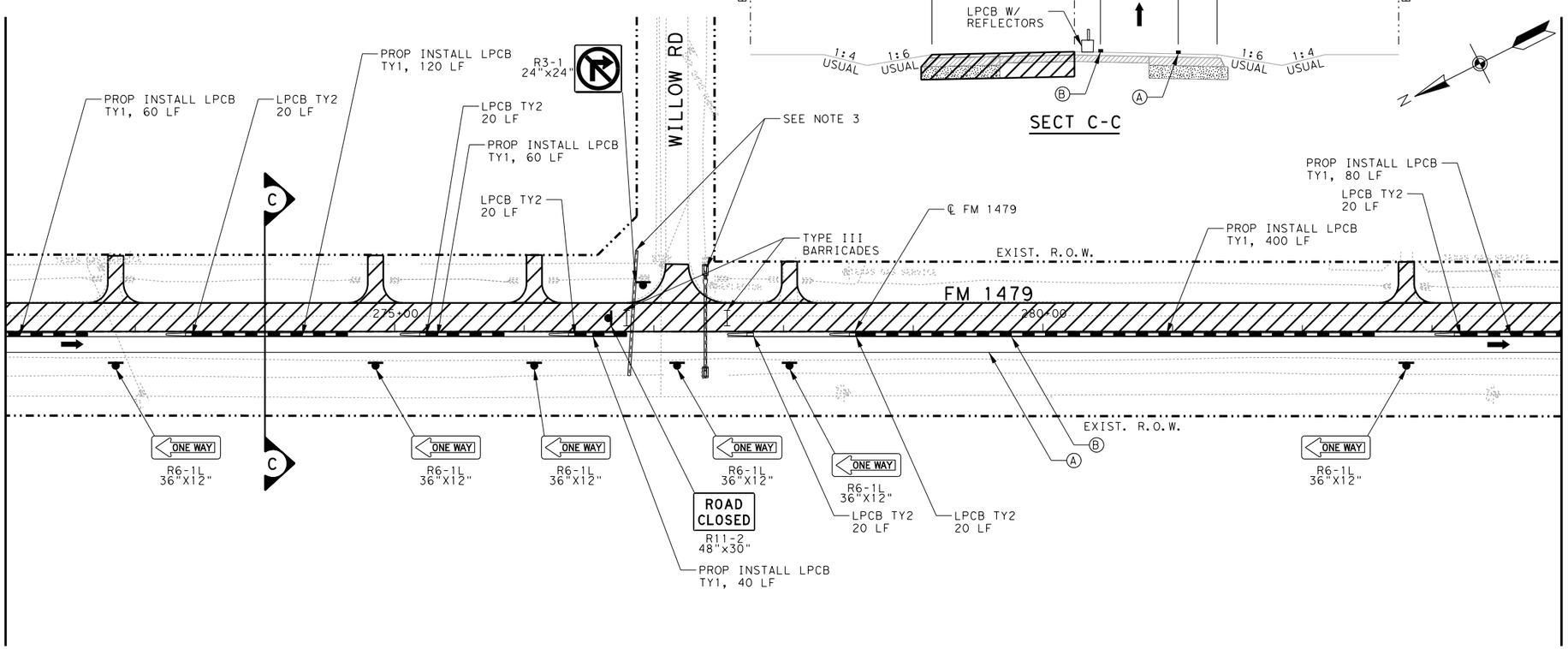




SECT C-C



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
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PROFESSIONAL ENGINEER
10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479
TRAFFIC CONTROL PLAN PHASE I STA 260+00 TO STA 284+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		94
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_TCSH00_PH1_03.dgn

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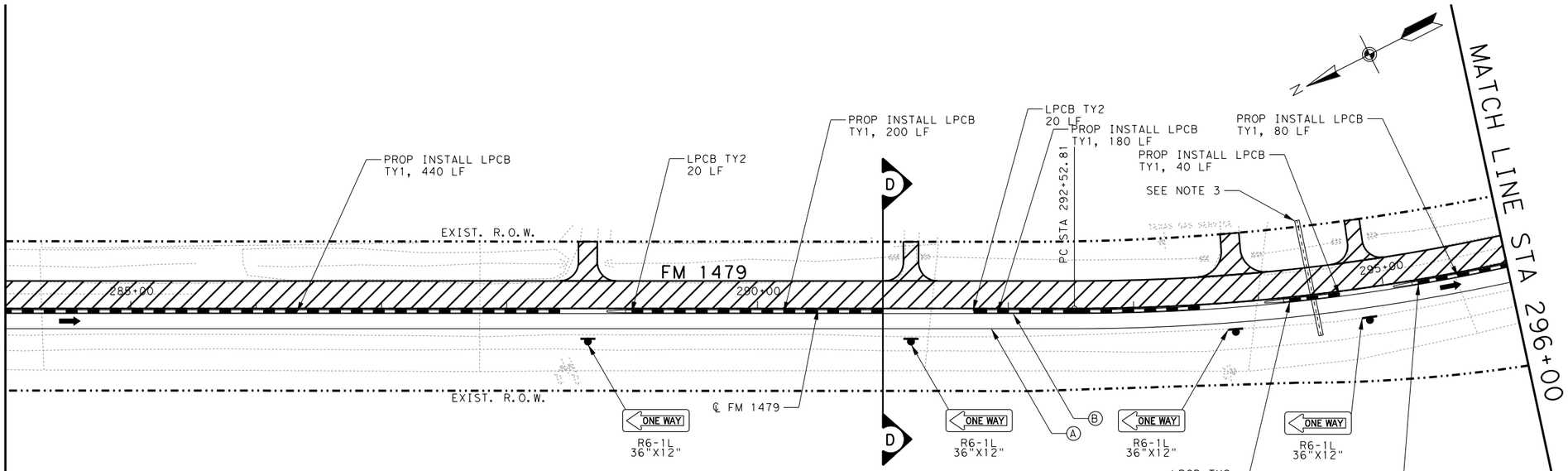
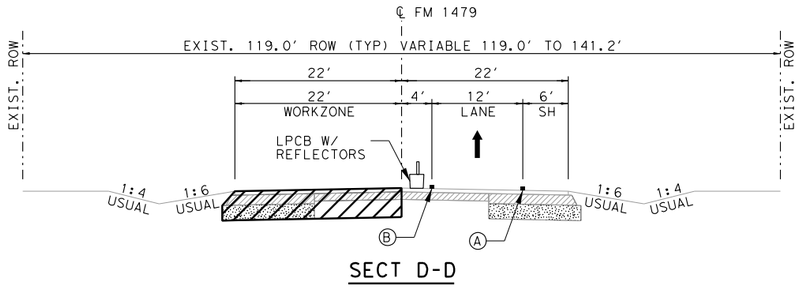
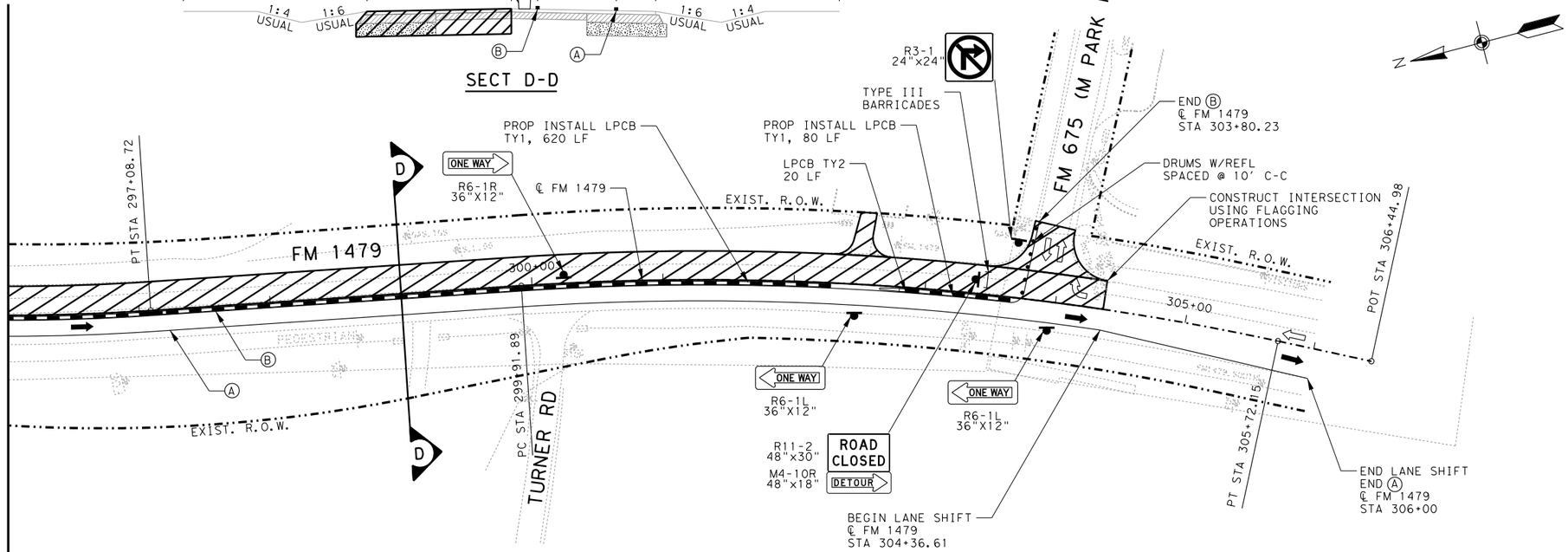




SECT D-D



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479
TRAFFIC CONTROL PLAN PHASE I STA 284+00 END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		95
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

10/6/2021 9:44:04 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM1479_TCSH00_PH1_04.dgn
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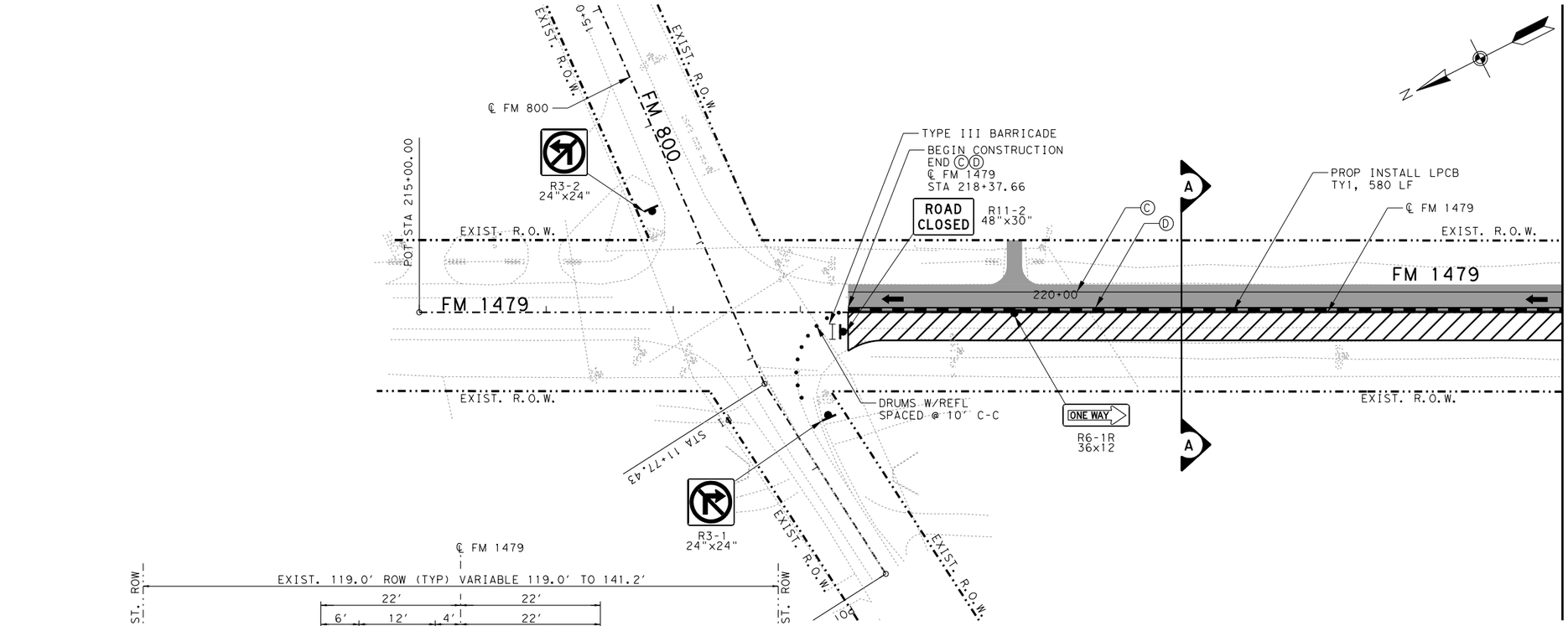
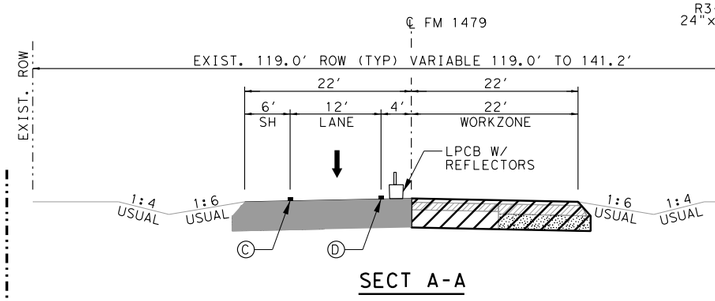
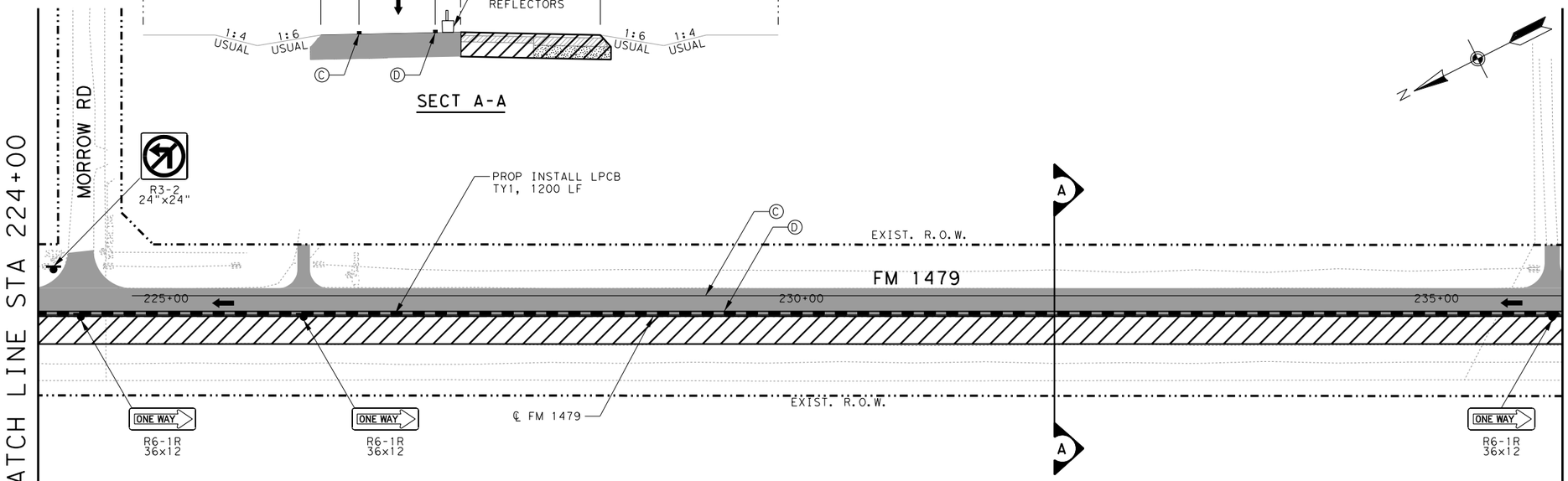




SECT A-A



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
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Suite 500
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281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479

TRAFFIC CONTROL PLAN PHASE II BEGIN PROJECT TO STA 236+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		96
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_TCSH00_PH2_01.dgn

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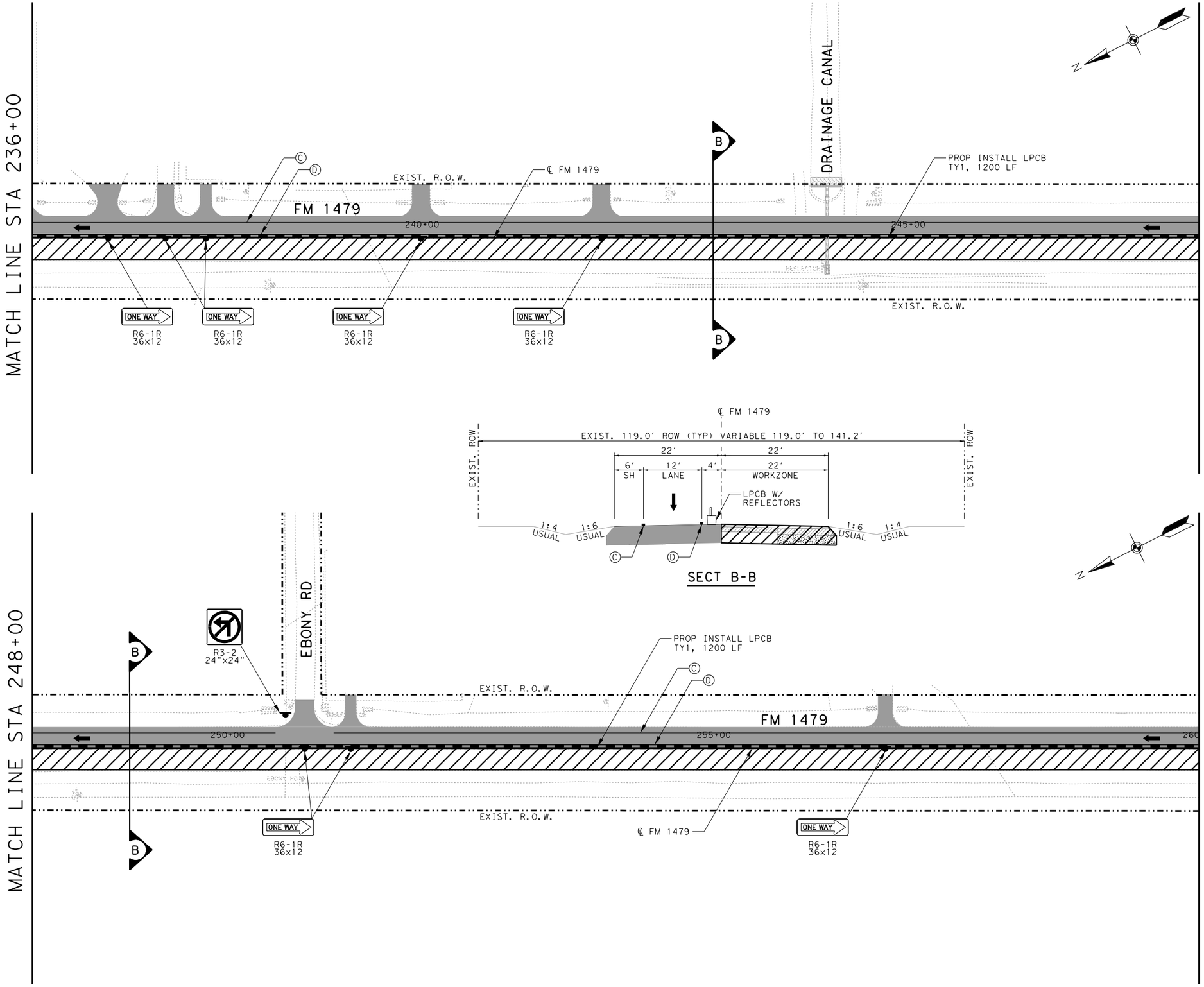

SECT B-B

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40′ C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
- Ⓖ WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40′ C-C

NOTES:

1. REFER TO DETOUR LAYOUTS FOR MORE INFO.
2. CONTRACTOR SHALL ELIMINATE ALL EXISTING PVMT MARKINGS IN CONFLICT WITH WORK ZONE PVMT MARKINGS.
3. CONSTRUCT CROSS CULVERTS, IRRIGATION LINES, BRIDGE WIDENING, OR RAIL RETROFIT PRIOR TO BEGINNING PAVEMENT CONSTRUCTION. USE TOTAL CLOSURE OF ROADWAY. INSTALL DETOUR SIGNAGE AND BARRICADES AS SHOWN IN DETOUR LAYOUT.

0 50 100

SCALE: 1"=100′

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
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281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479

TRAFFIC CONTROL PLAN PHASE II STA 236+00 TO STA 260+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		97
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_TCSH00_PH2_02.dgn

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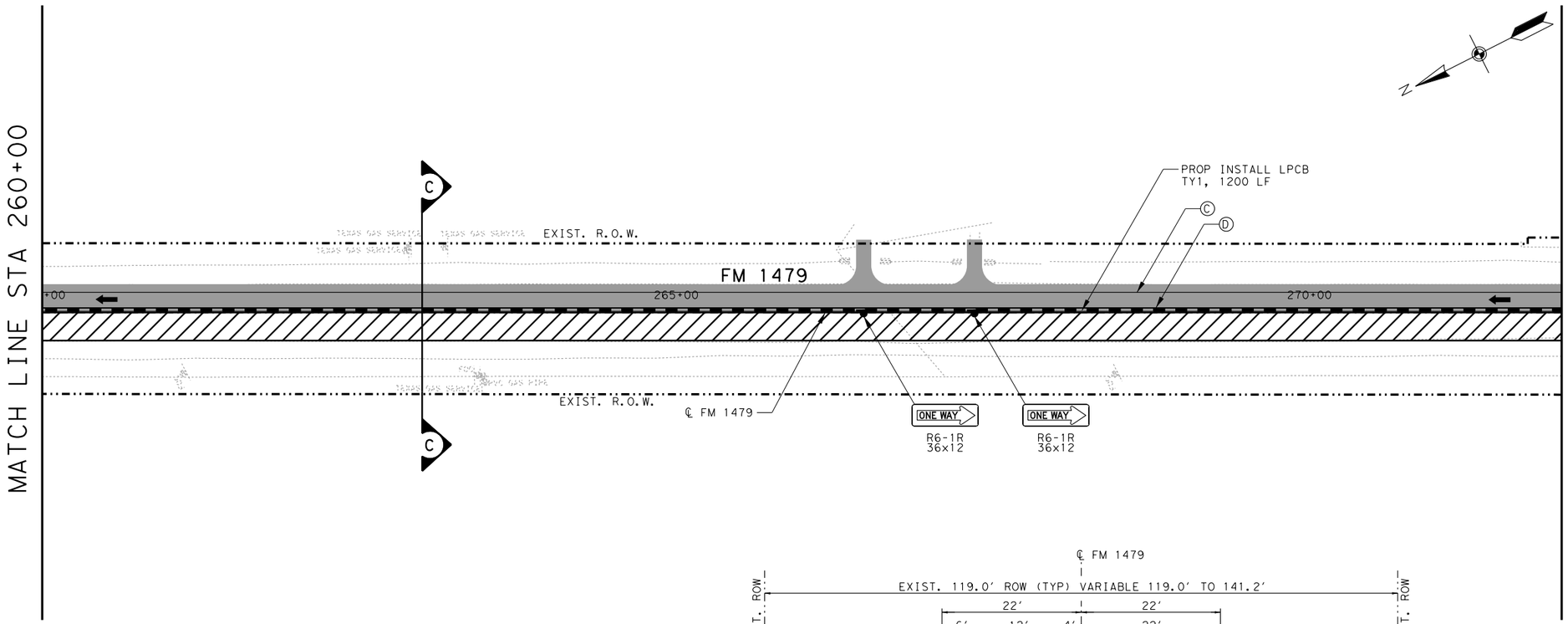
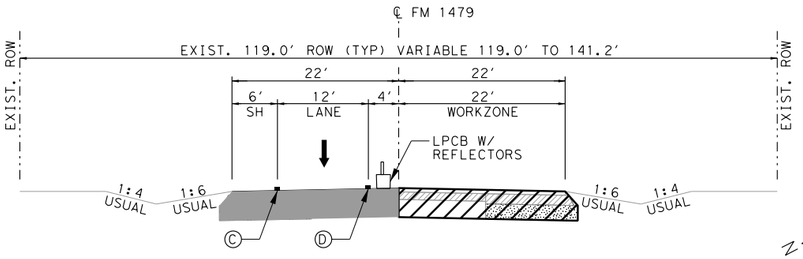
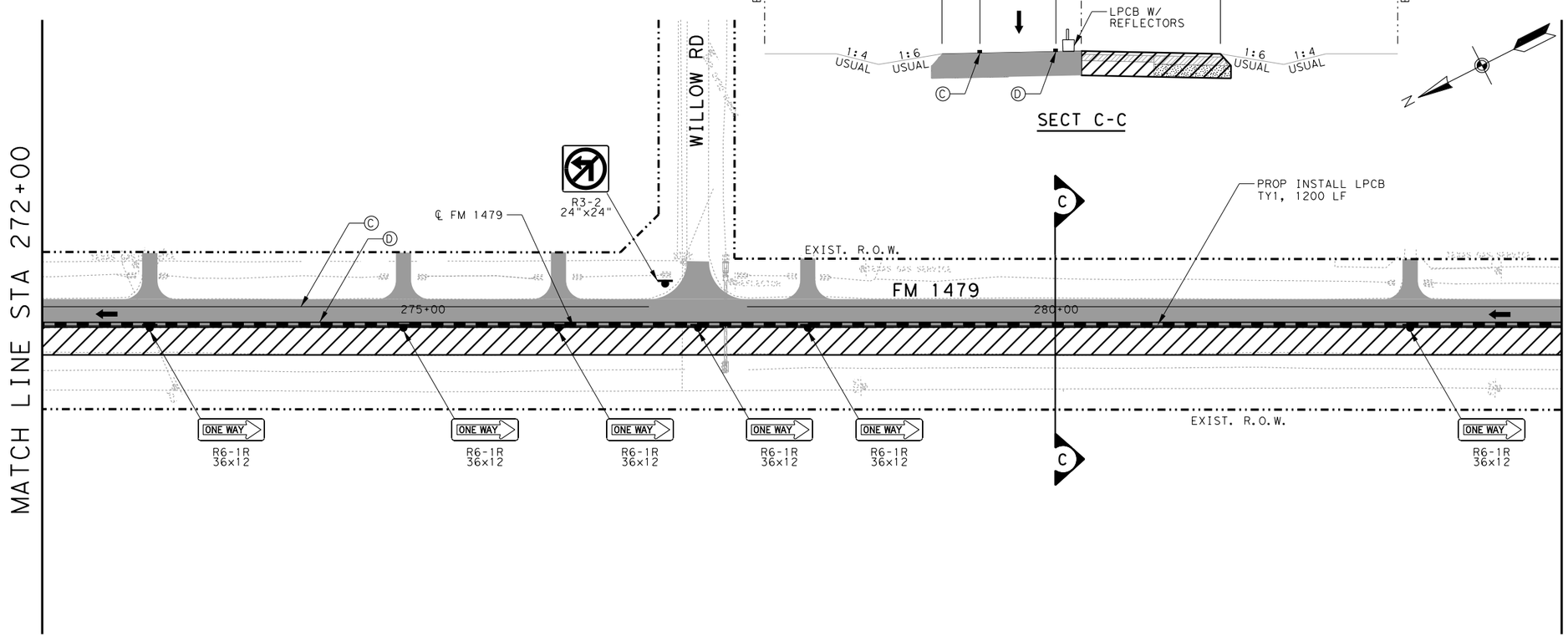




SECT C-C



LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
- DRUMS W/REFLECTORS
- SIGNS
- TYPE III BARRICADE
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY1 WITH REFLECTORS
- LOW-PROFILE CONCRETE BARRIER (LPCB) TY2 WITH REFLECTORS
- TEMPORARY TRAFFIC SIGNAL
- PCMS
- (A) WK ZN PAV MRK NON-REMOV (W)4"SLD
- (B) WK ZN PAV MRK NON-REMOV (Y)4"SLD
- (C) WK ZN PAV MRK REMOV (W)4"SLD
- (D) WK ZN PAV MRK REMOV (Y)4"SLD
- (E) WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C
- (F) WK ZN PAV MRK REMOV (W)24"SLD
- (G) WK ZN PAV NON-REMOV (Y)4"SLD DBL W/TY II-AA @40' C-C

NOTES:

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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479

TRAFFIC CONTROL PLAN PHASE II STA 260+00 TO STA 284+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		98
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_TCSH00_PH2_03.dgn

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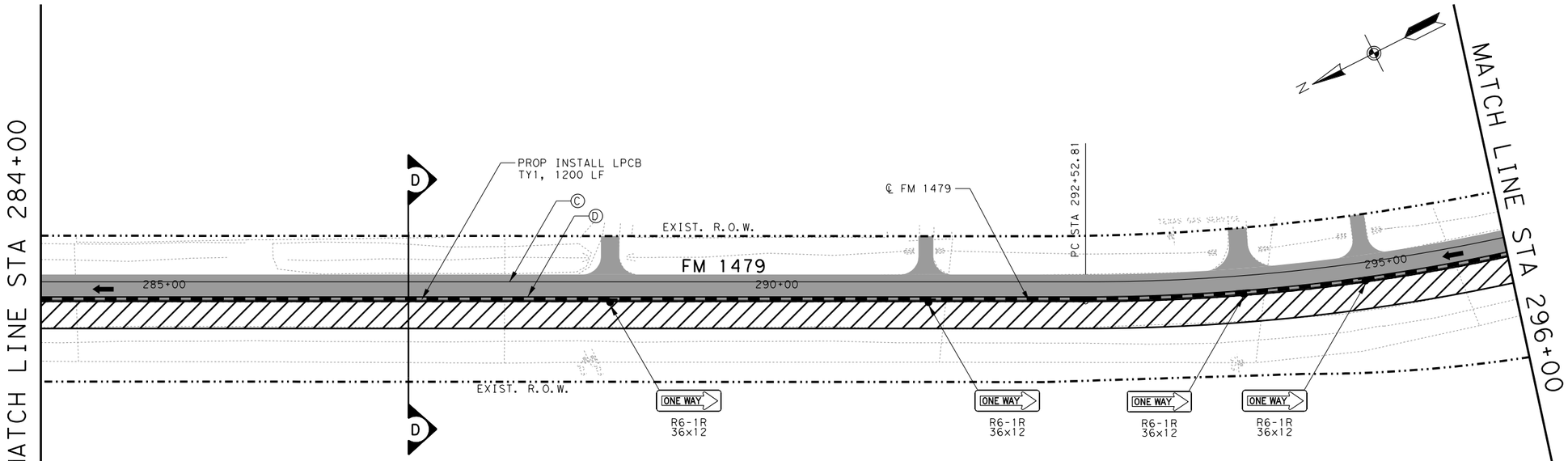

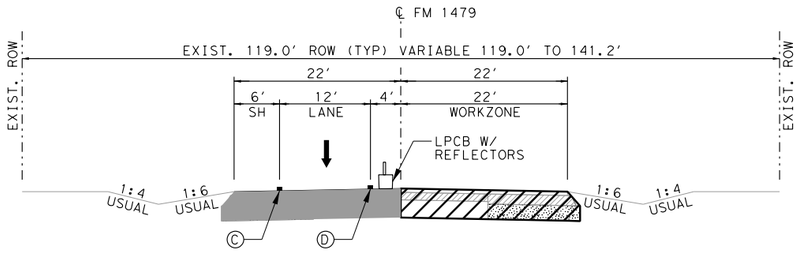

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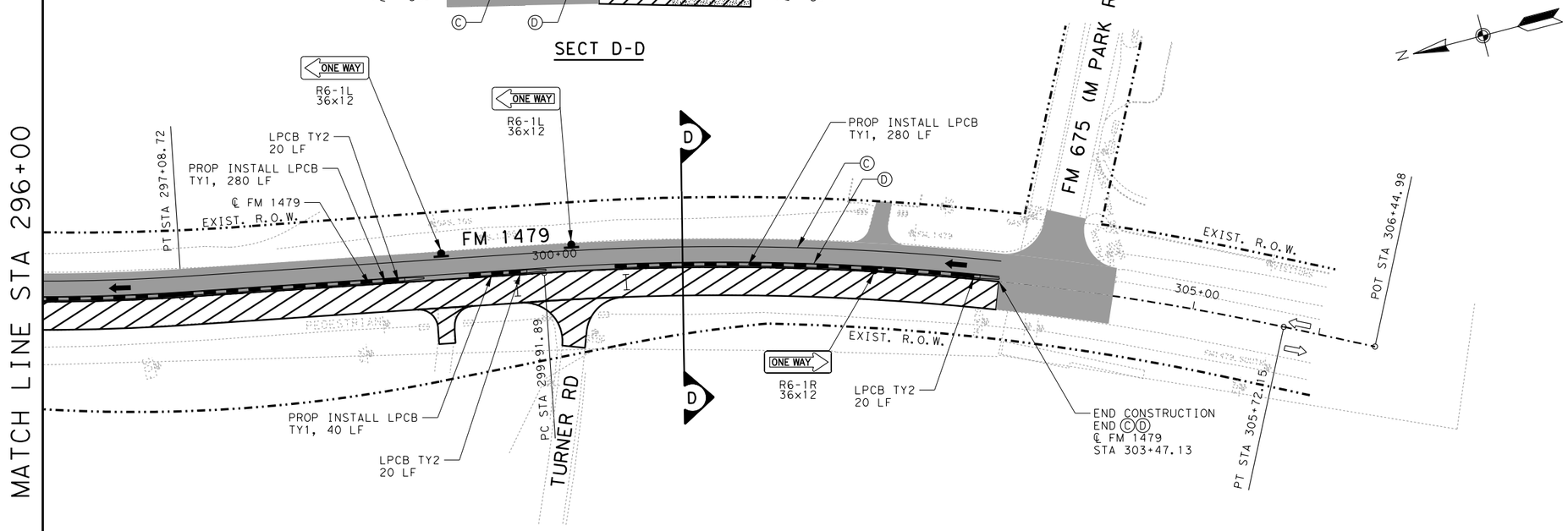

LEGEND

- WORK ZONE (RECONSTRUCTION)
- WORK ZONE (MILL & OVERLAY)
- PAVEMENT PREVIOUSLY BUILT
- PROPOSED TRAFFIC FLOW
- EXISTING TRAFFIC FLOW
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- PCMS
- Ⓐ WK ZN PAV MRK NON-REMOV (W)4"SLD
- Ⓑ WK ZN PAV MRK NON-REMOV (Y)4"SLD
- Ⓒ WK ZN PAV MRK REMOV (W)4"SLD
- Ⓓ WK ZN PAV MRK REMOV (Y)4"SLD
- Ⓔ WK ZN PAV MRK REMOV (Y)4"SLD DBL W/TY II-AA @40′ C-C
- Ⓕ WK ZN PAV MRK REMOV (W)24"SLD
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NOTES:

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0 50 100

SCALE: 1"=100′

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

FM 1479

TRAFFIC CONTROL PLAN PHASE II STA 284+00 END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		99
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

10/6/2021 9:44:11 AM N:\7021-17-101\CADD\DGN\02_TRAF_CONT\FM1479_TCSH00_PH2_04.dgn
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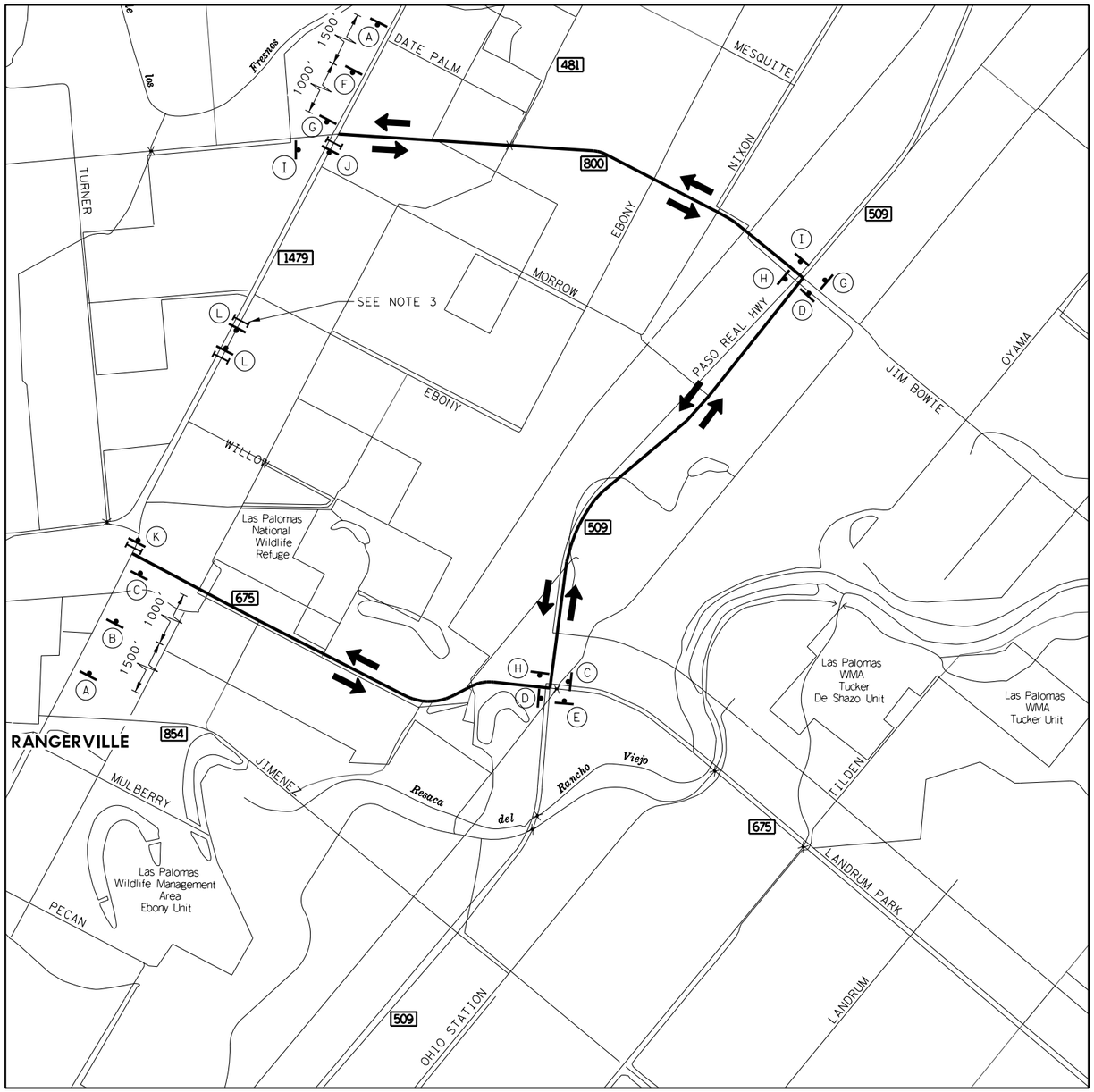
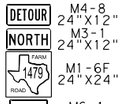


CW20-2A
48"X48"

(A)

M4-8
24"X12"
M3-1
24"X12"
M1-6F
24"X24"
M5-1R
21"X15"

(B)



M4-8
24"X12"
M3-1
24"X12"
M1-6F
24"X24"
M6-1
21"X15"

(C)

M4-8
24"X12"
M3-1
24"X12"
M1-6F
24"X24"
M6-1
21"X15"

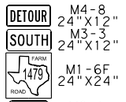
(D)

M4-8
24"X12"
M3-1
24"X12"
M1-6F
24"X24"
M6-3
21"X15"

(E)

M4-8
24"X12"
M3-3
24"X12"
M1-6F
24"X24"
M5-1L
21"X15"

(F)



M4-8
24"X12"
M3-3
24"X12"
M1-6F
24"X24"
M6-1
21"X15"

(G)

M4-8
24"X12"
M3-3
24"X12"
M1-6F
24"X24"
M6-1
21"X15"

(H)

M4-8
24"X12"
M3-3
24"X12"
M1-6F
24"X24"
M6-3
21"X15"

(I)

R11-4
60" x 30"
M4-10L
48"X18"
TYPE III
BARRICADE

(J)

R11-4
60" x 30"
M4-10R
48"X18"
TYPE III
BARRICADE

(K)

R11-2
48"X30"
TYPE III
BARRICADE

(L)

NOTES:

1. USE ROADWAY CLOSURE OF FM 1479 FOR CONSTRUCTION CROSS CULVERTS AND IRRIGATION LINES. ENGINEER SHALL APPROVE LIMITS OF CLOSURE WHEN CONSTRUCTING CROSS CULVERTS, AND OR IRRIGATION LINES.
2. DETOUR SIGNAGE SHALL BE IN PLACE PRIOR TO COMMENCING ONE WAY OPERATION ON FM 1479. ENGINEER SHALL APPROVE LIMITS OF ONE WAY OPERATION PRIOR TO COMMENCING CONSTRUCTION ON EACH PHASE.
3. ADJUST LOCATION OF SIGNAGE INFO TO MATCH ROAD CLOSURE LINES.

NTS

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479
ROAD CLOSURE DETOUR LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		100
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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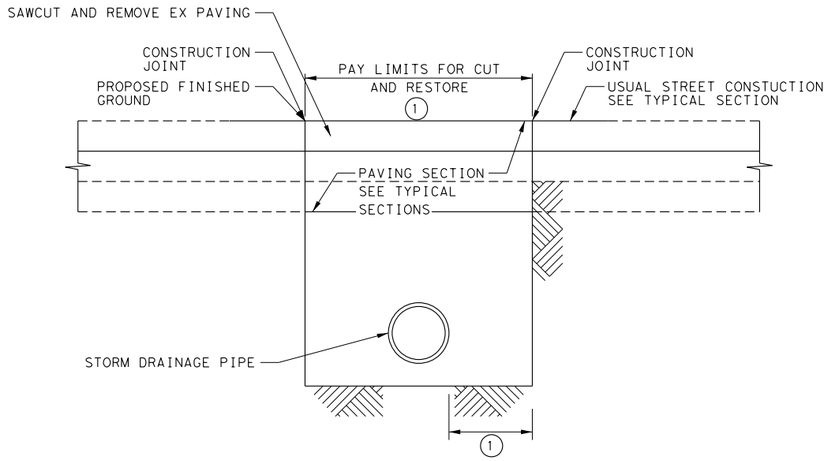
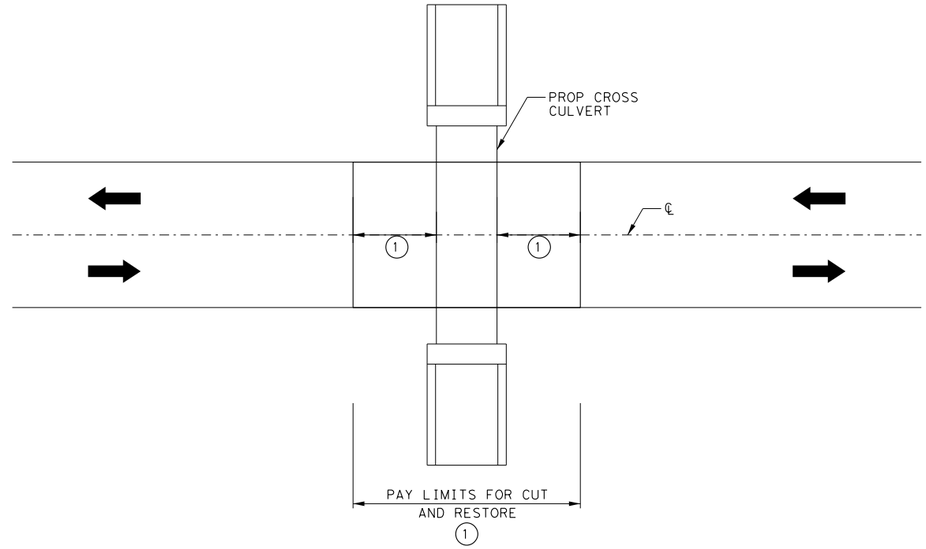


CUT & RESTORE DETAIL
(CONCRETE PAVING)
PROFILE VIEW
N.T.S

(1) REFER TO TXDOT PHARR DISTRICT STD "MISCELLANEOUS PIPE STANDARD" FOR DIMENSION



CUT & RESTORE DETAIL
(CONCRETE PAVING)
PLAN VIEW
N.T.S

(1) REFER TO TXDOT PHARR DISTRICT STD "MISCELLANEOUS PIPE STANDARD" FOR DIMENSION

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

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281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506/FM 800/FM 1479

TCP MISC DETAILS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		101
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030, ETC	FM 506, ETC

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0872	04	030,ETC	FM 506,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
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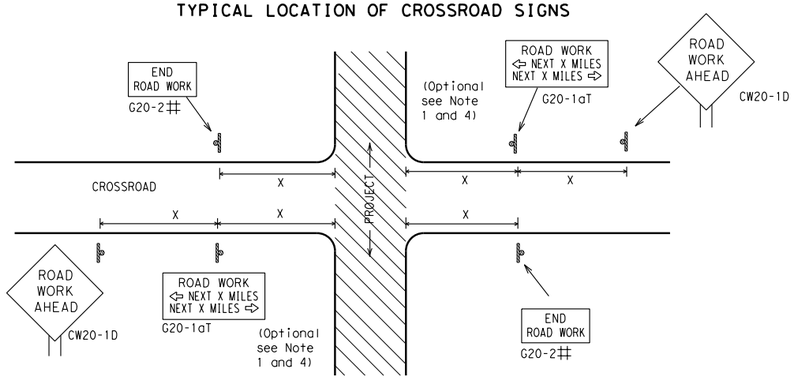
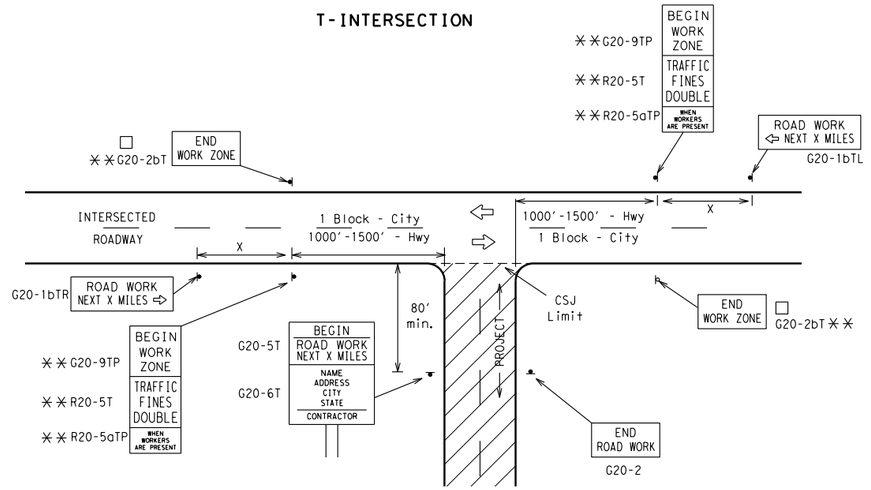
TYPICAL LOCATION OF CROSSROAD SIGNS



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.

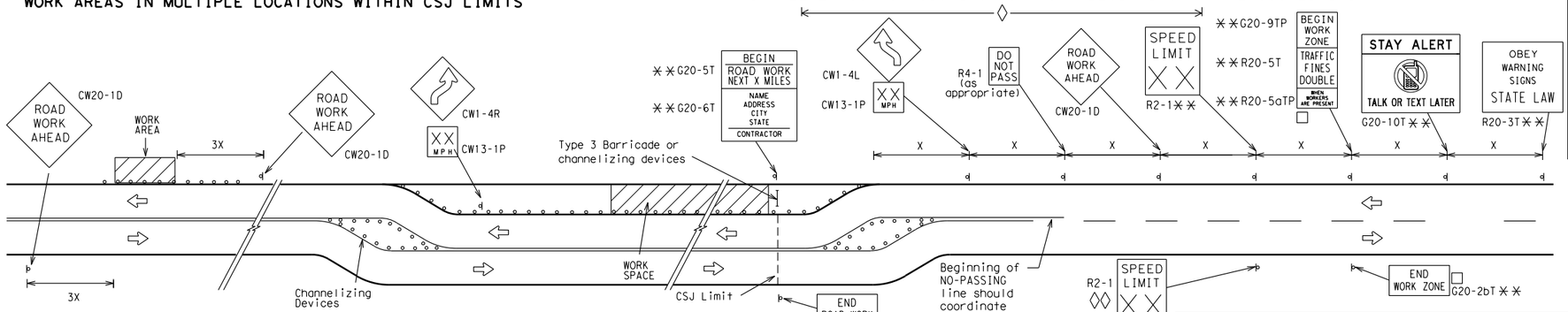
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

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.

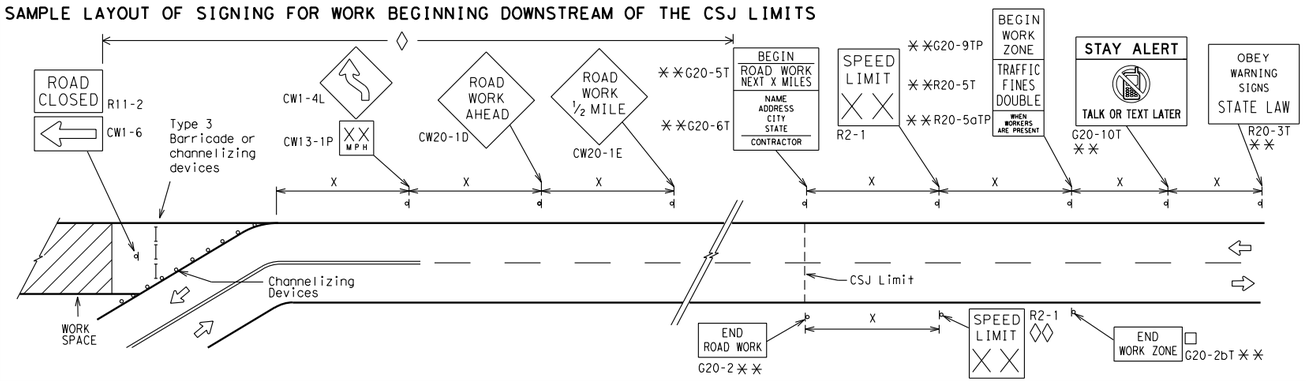
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE 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



NOTES

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

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

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

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

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

LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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REVISIONS	0872	04	030,ETC	FM 506,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		103

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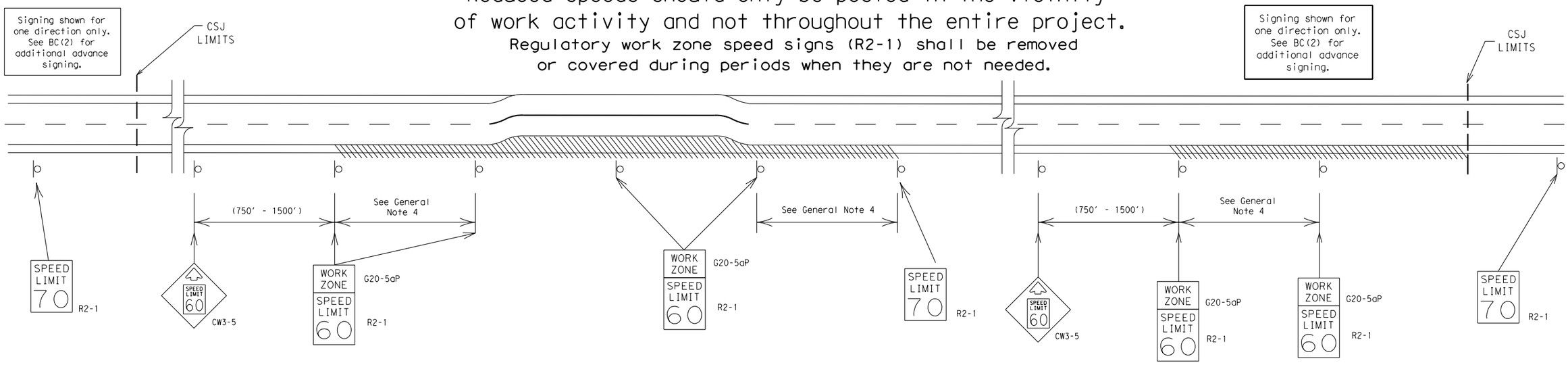
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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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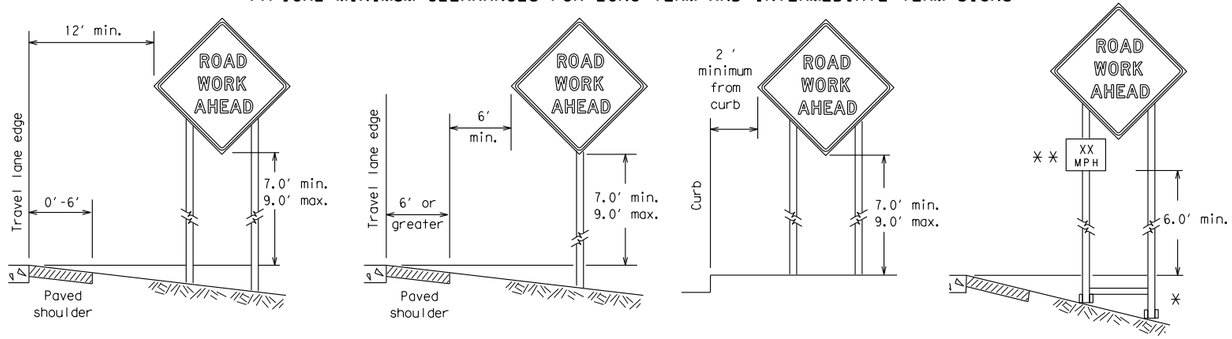
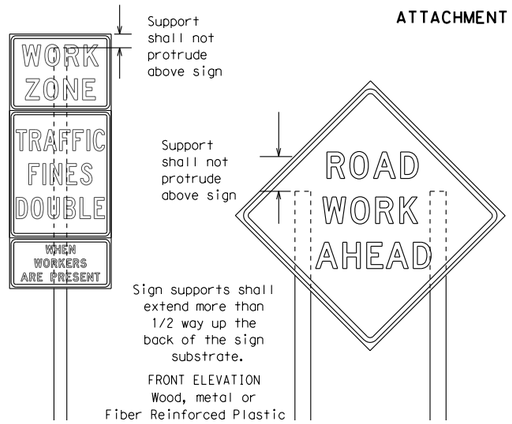
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

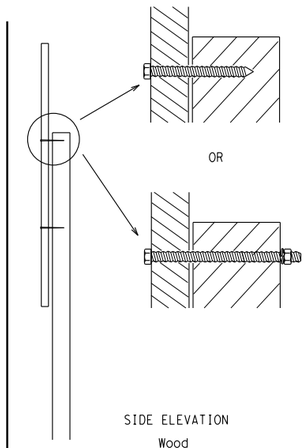


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





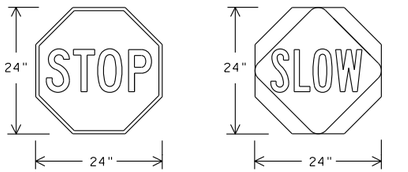
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

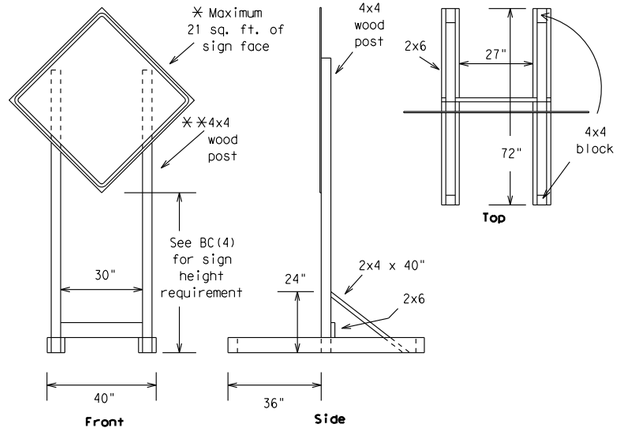
Texas Department of Transportation

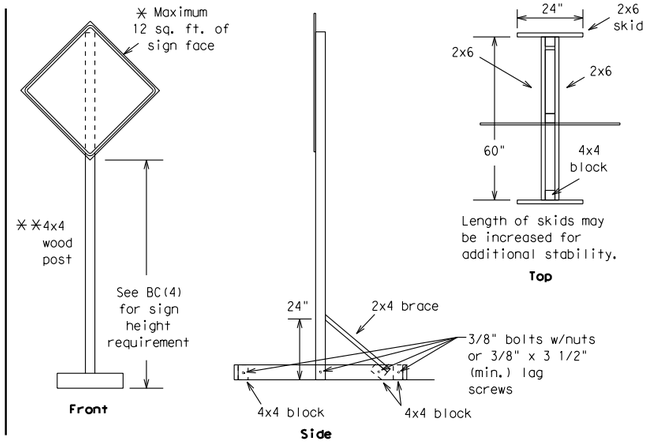
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

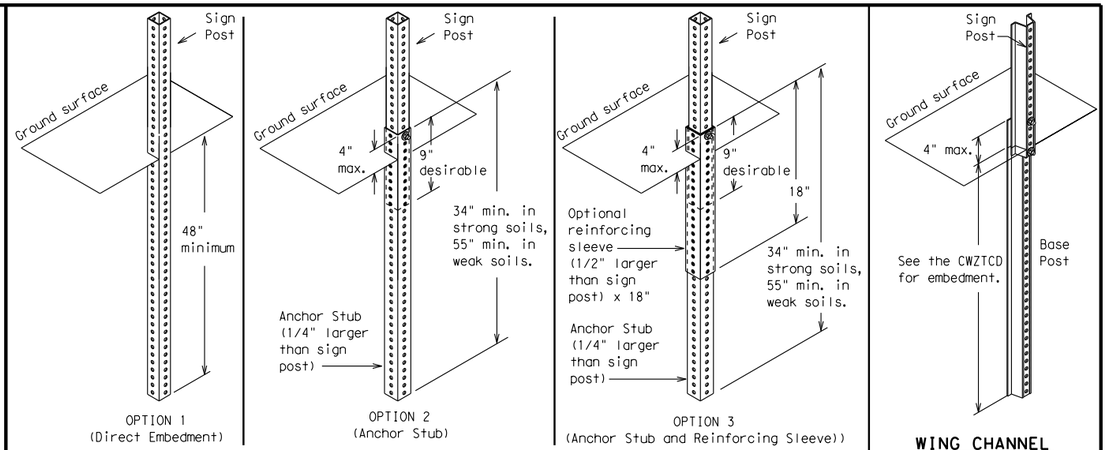
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		105





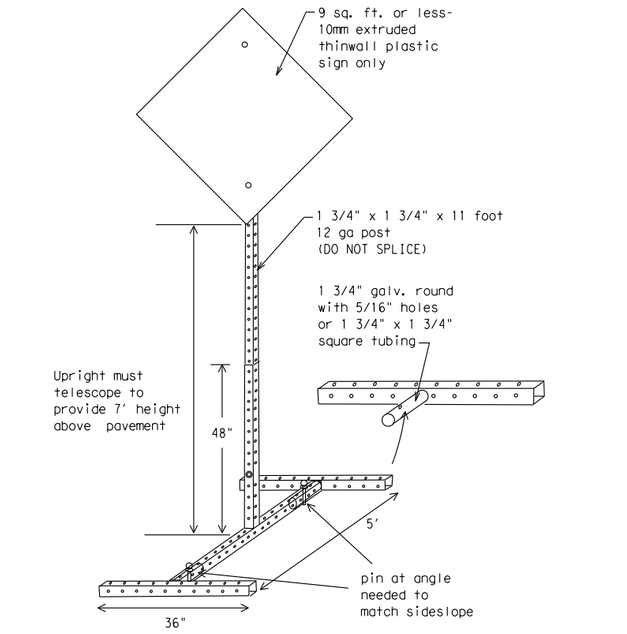
SKID MOUNTED WOOD SIGN SUPPORTS

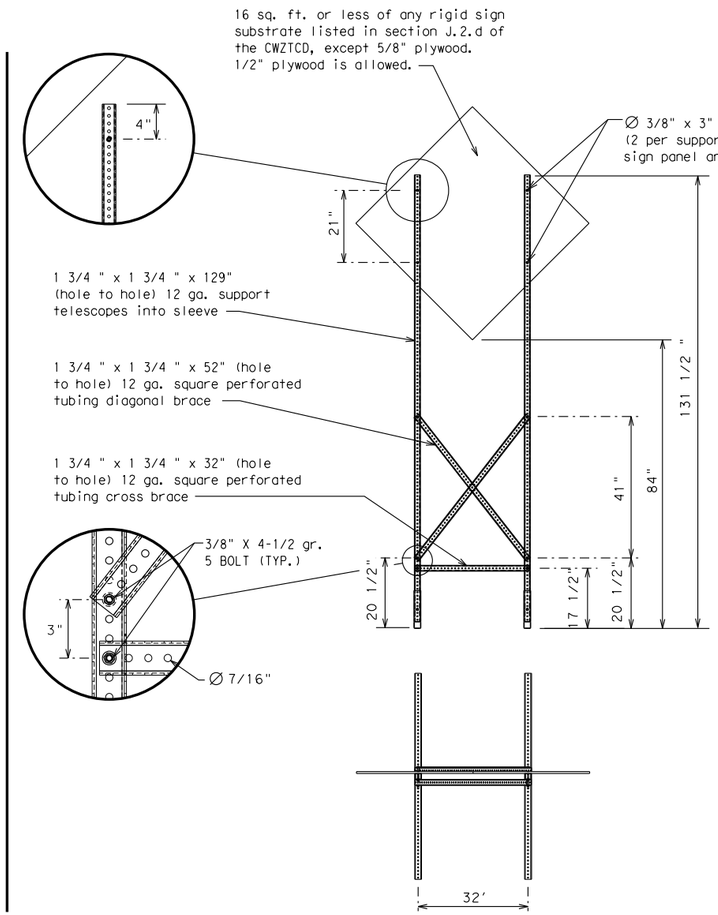
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

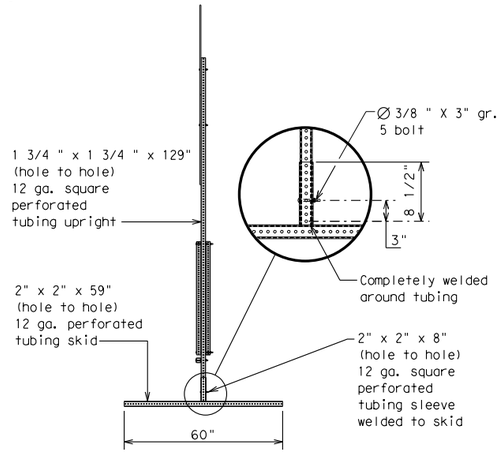


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0872	04	030,ETC	FM 506,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		106

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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

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		107

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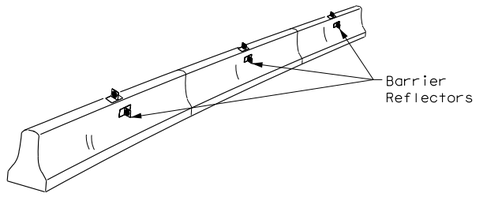
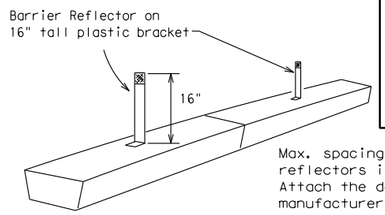
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



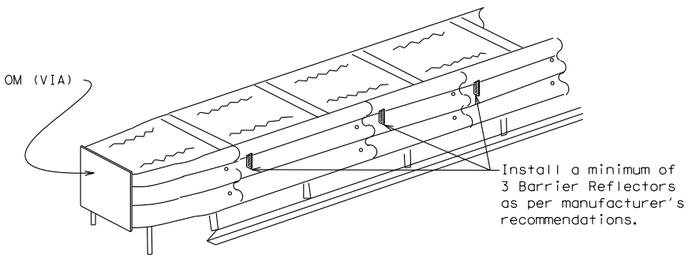
CONCRETE TRAFFIC BARRIER (CTB)

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

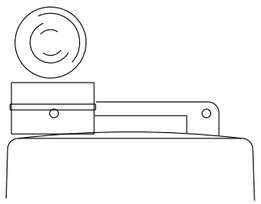
LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the appropriate 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

WARNING LIGHTS

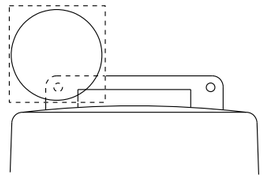


Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



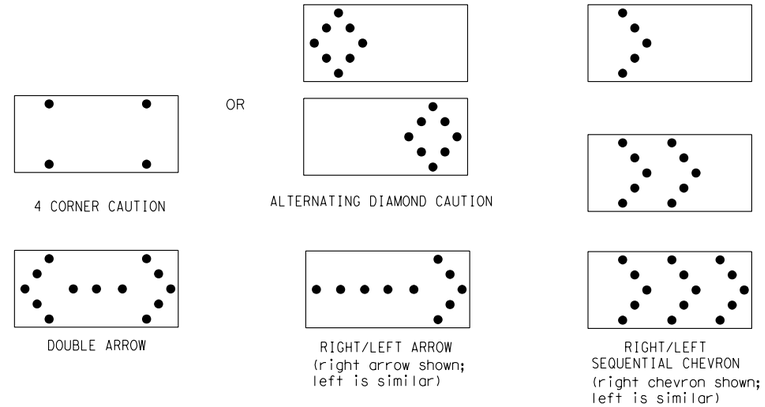
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0872	04	030,ETC	FM 506,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		108

101

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:

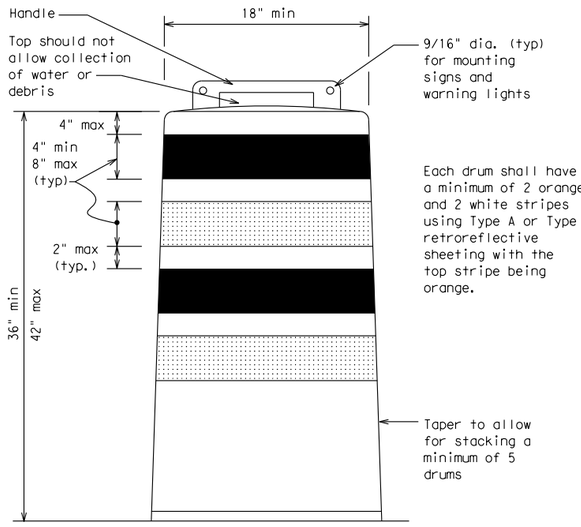
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

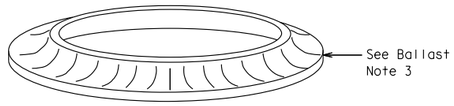
RETROREFLECTIVE SHEETING

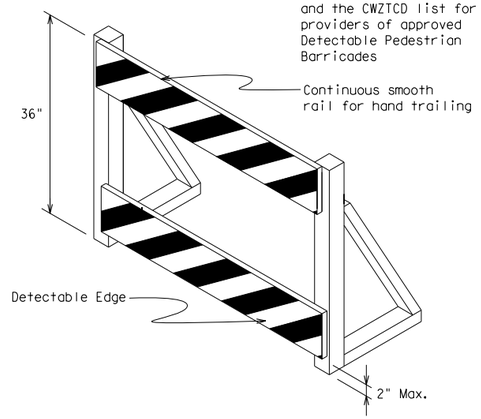
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

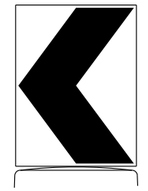




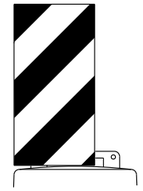


DETECTABLE PEDESTRIAN BARRICADES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 8-14 9-07 5-21 7-13	0872	04	030,ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		109

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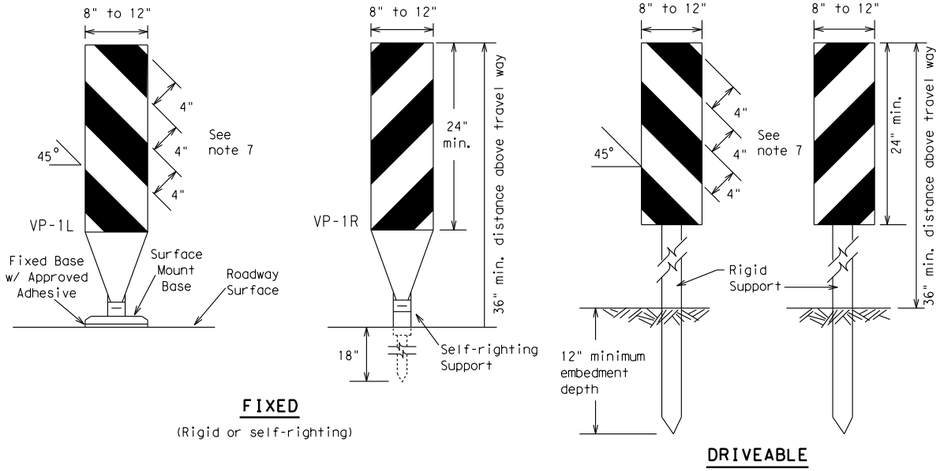
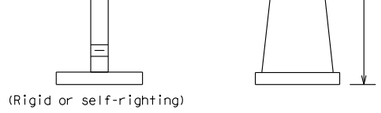


FIXED
(Rigid or self-righting)

DRIVEABLE

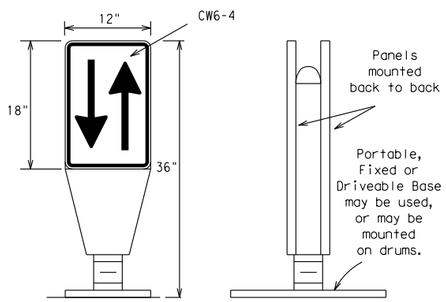


(Rigid or self-righting)

PORTABLE

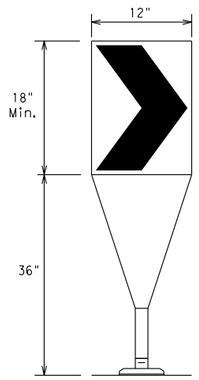
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



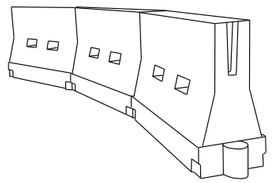
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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REVISIONS	0872	04	030,ETC	FM 506,ETC
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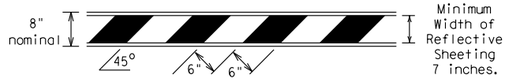
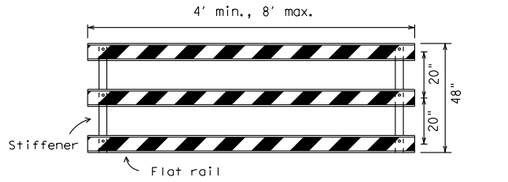
TYPE 3 BARRICADES

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.



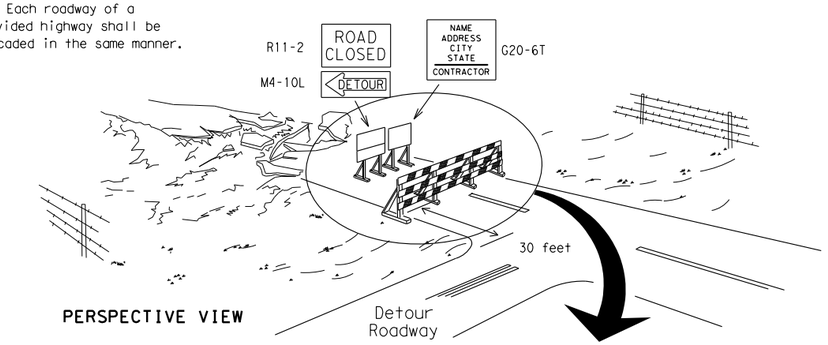
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

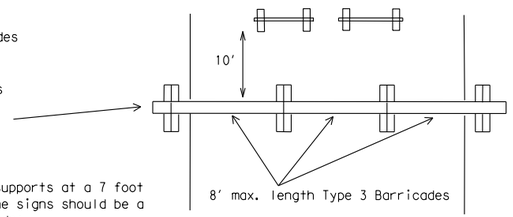
Each roadway of a divided highway shall be barricaded in the same manner.



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.

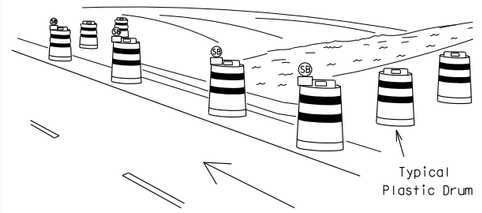
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

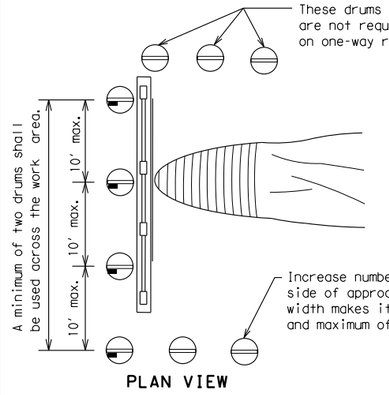
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

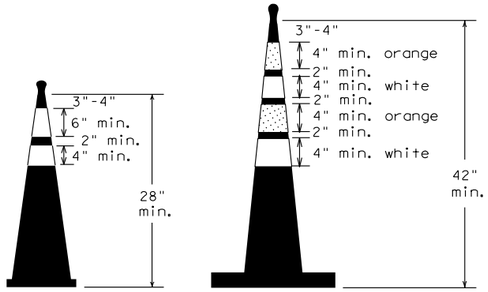
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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

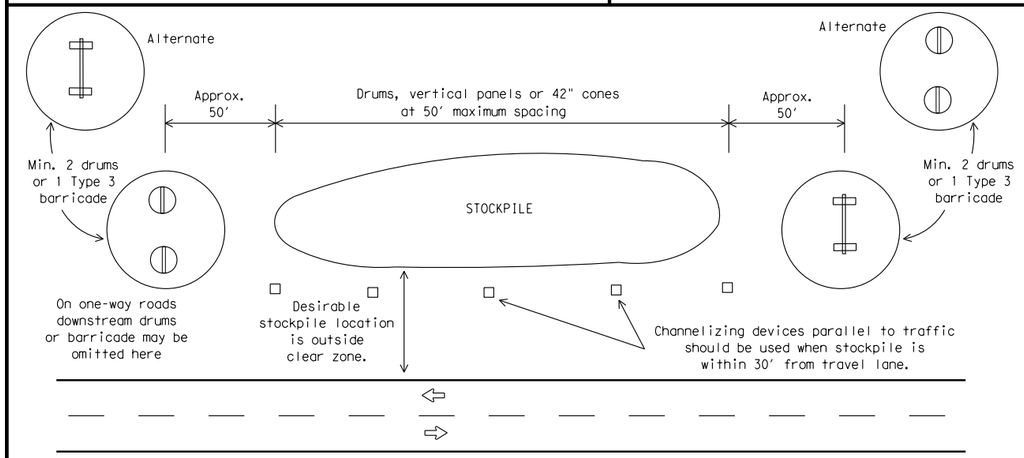
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	0872	04	030,ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		111

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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.

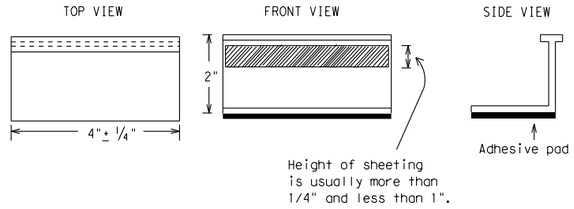
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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).

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	PHR	CAMERON		112
11-02 8-14				

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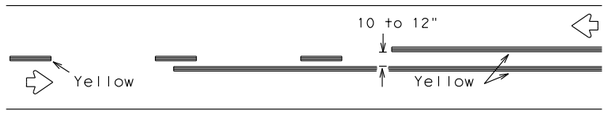
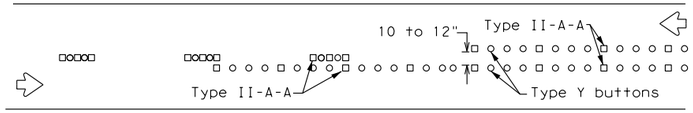
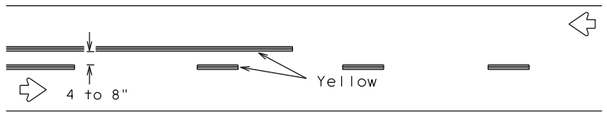
PAVEMENT MARKING PATTERNS



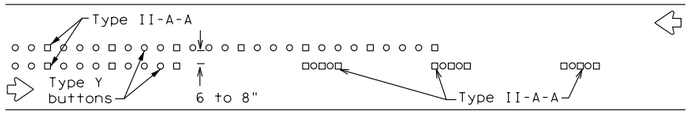
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



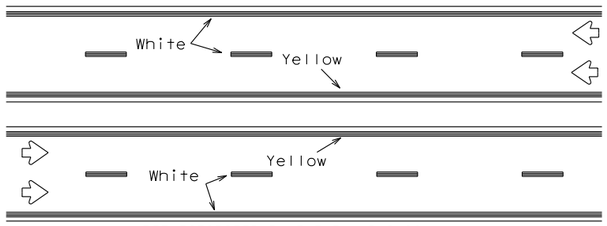
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



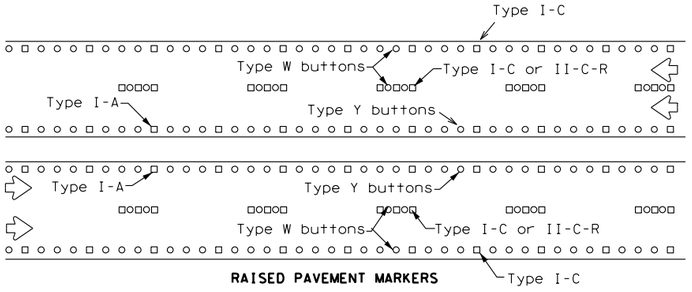
RAISED PAVEMENT MARKERS - PATTERN B

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



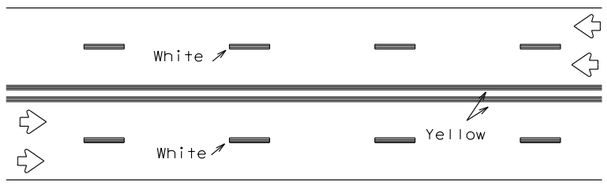
REFLECTORIZED PAVEMENT MARKINGS



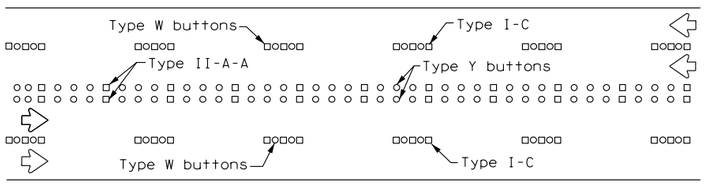
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



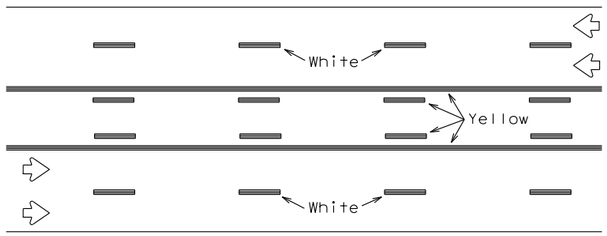
REFLECTORIZED PAVEMENT MARKINGS



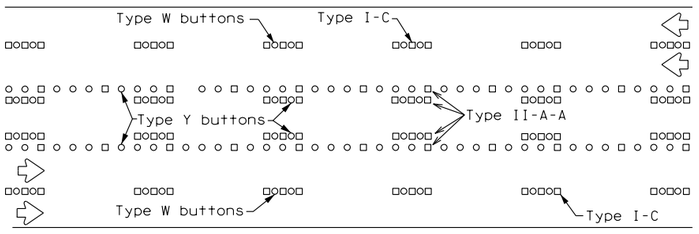
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

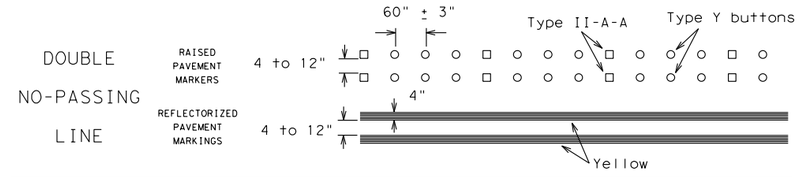
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

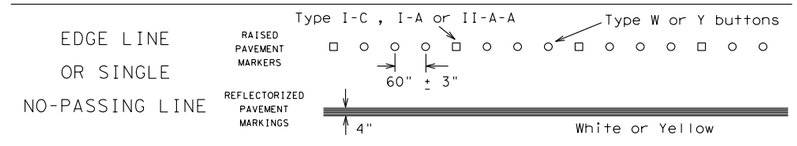
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

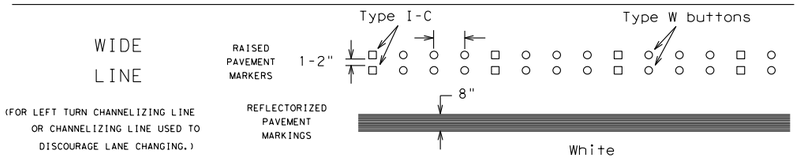


EDGE LINE OR SINGLE NO-PASSING LINE



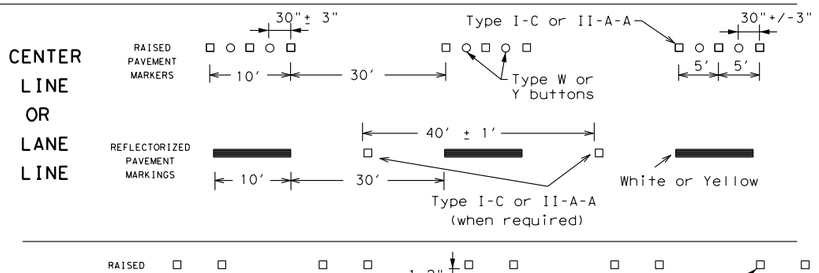
WIDE LINE

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

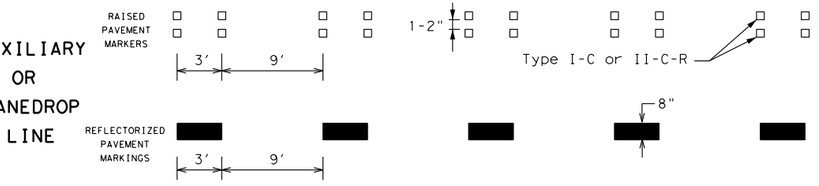


BROKEN LINES

CENTER LINE OR LANE LINE

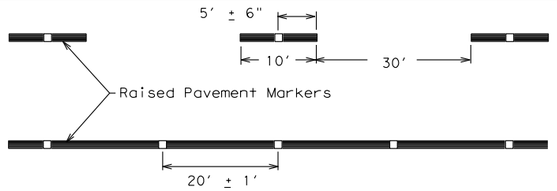


AUXILIARY OR LANEDROP LINE



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
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	PHR	CAMERON		113

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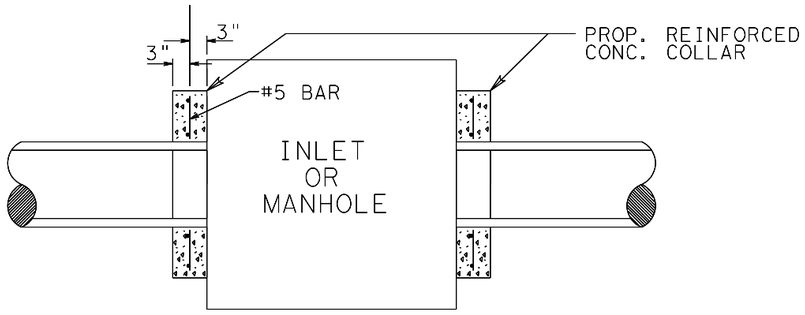
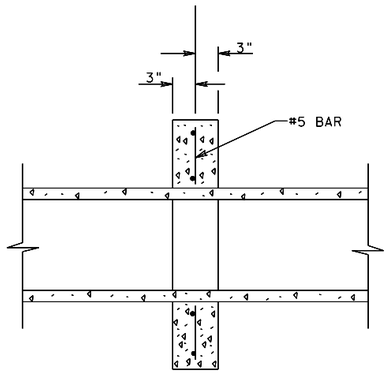
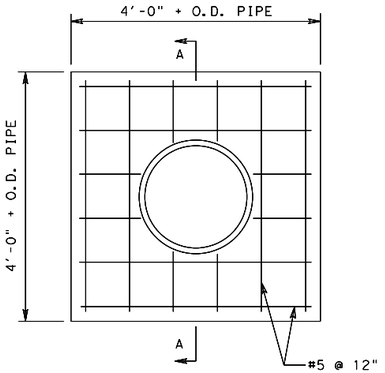


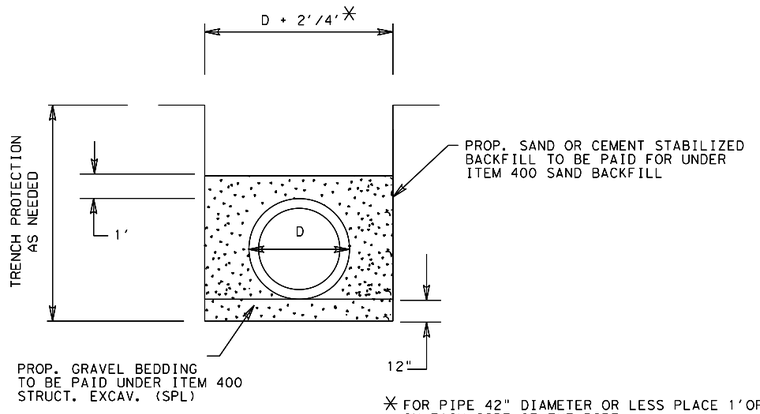
INLET OR MANHOLE CONNECTION
PLAN VIEW





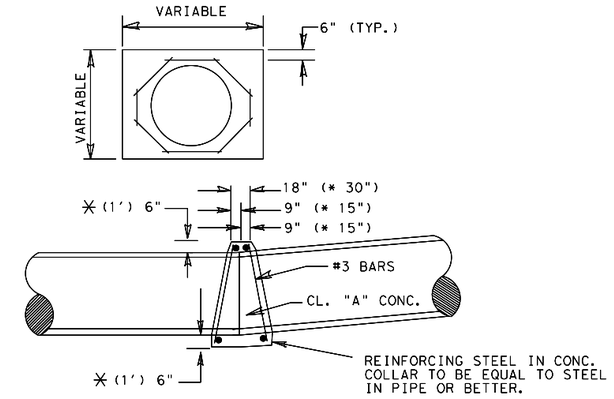
SECTION A-A FRONT ELEVATION

CONCRETE PIPE COLLAR



✳ FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL
ON EACH SIDE OF THE PIPE.
FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL
ON EACH SIDE OF THE PIPE.

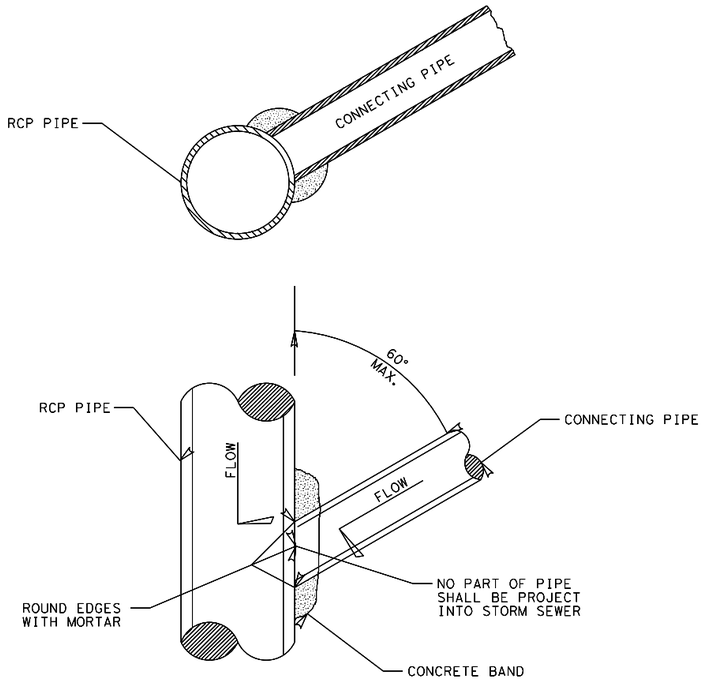
SPIRAL RIB CMP
TYPICAL BACKFILL DETAIL
GRAVEL & SAND



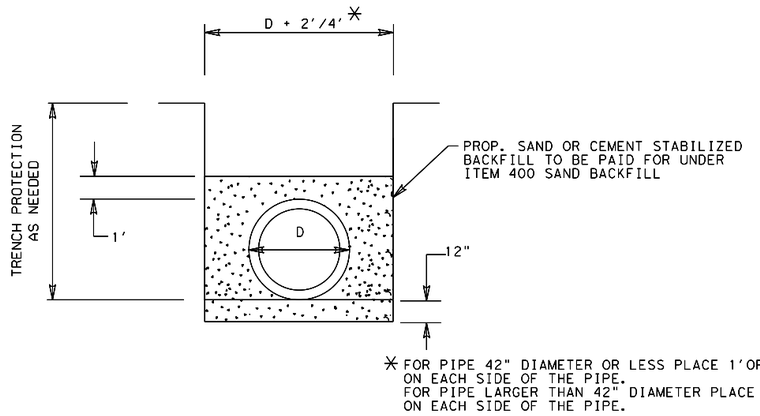
DETAIL FOR CONC. COLLARS
DRAINAGE STRUCTURES AND PIPE
SIPHONS (HORIZ. & VERT. BENDS)

NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.

✳ FOR 42" DIAMETER AND LARGER PIPE



TYPICAL REINFORCED CONC. PIPE
CONNECTION WITHOUT MANHOLE



✳ FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL
ON EACH SIDE OF THE PIPE.
FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL
ON EACH SIDE OF THE PIPE.

REINFORCED CONCRETE PIPE
TYPICAL BACKFILL DETAIL-GRAVEL & SAND

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS PIPE STANDARD

REV. 2/19

MISC.PIPE.DGN

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	FILE NO.	SHEET NO.
6	SEE TITLE SHEET		114

STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	PHR	CAMERON	0872	04	030,ETC	FM 506,ETC

MSCPIPE.dgn

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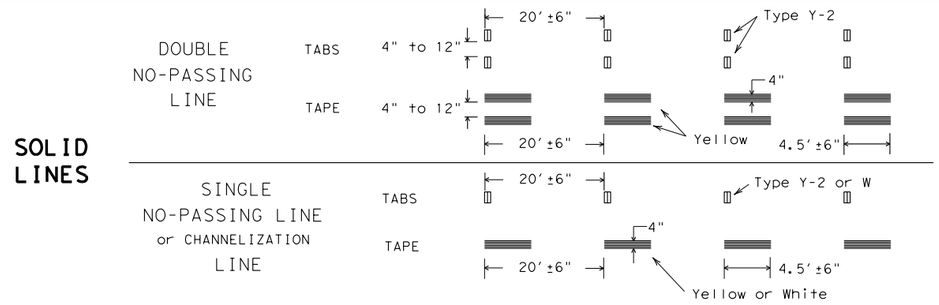
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



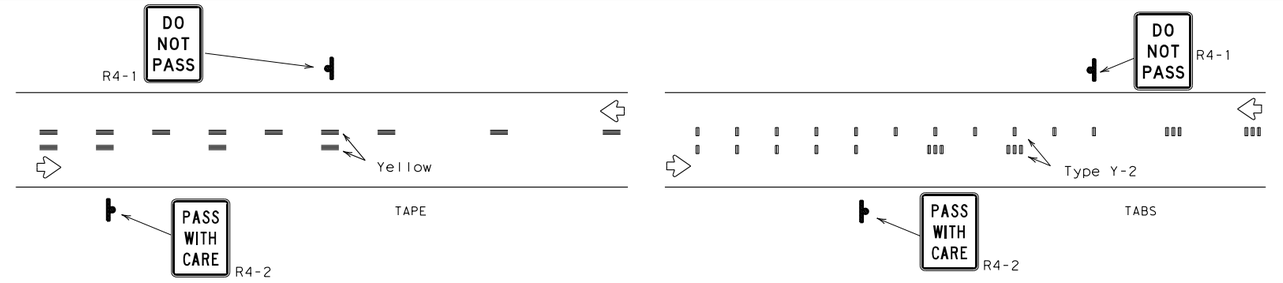
NOTES:

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

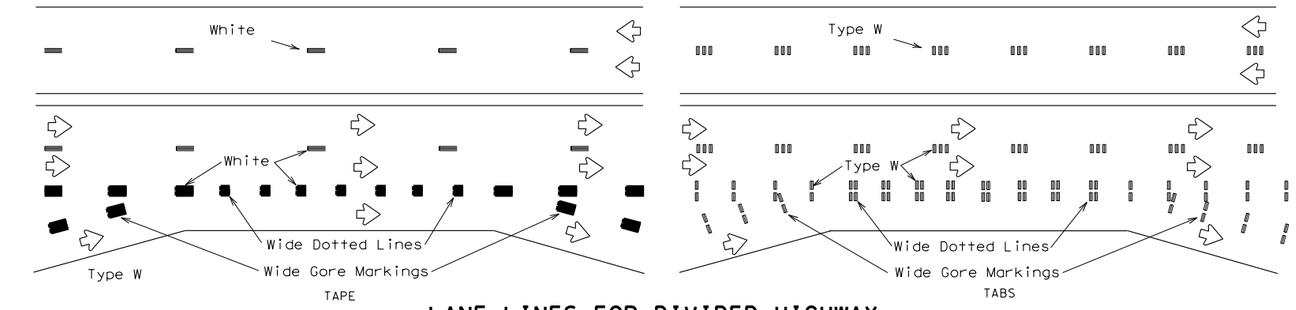
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

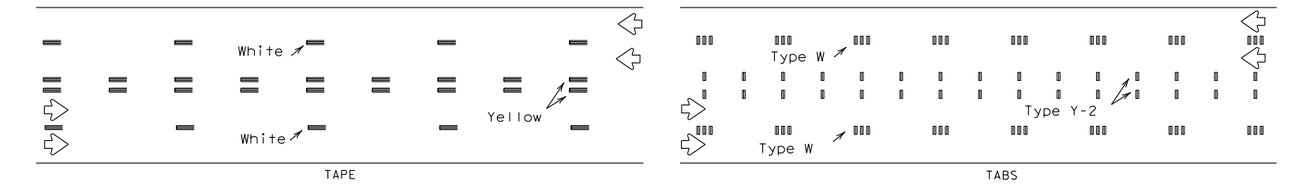
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



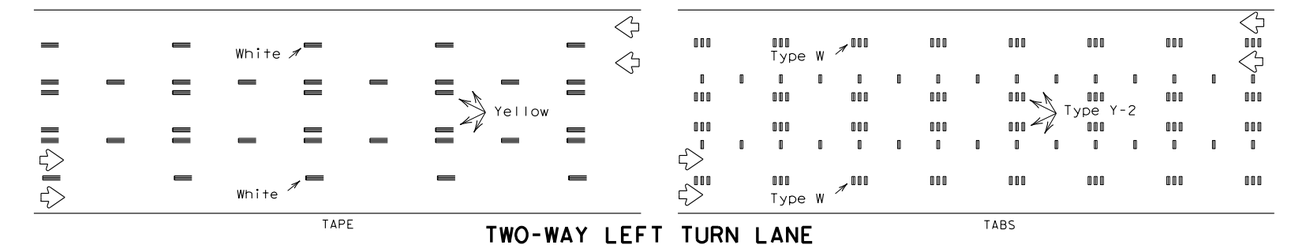
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



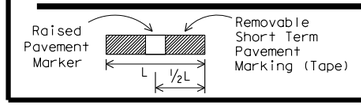
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

FILE:	wzstpm-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS		0872	04	030,ETC	FM 506,ETC
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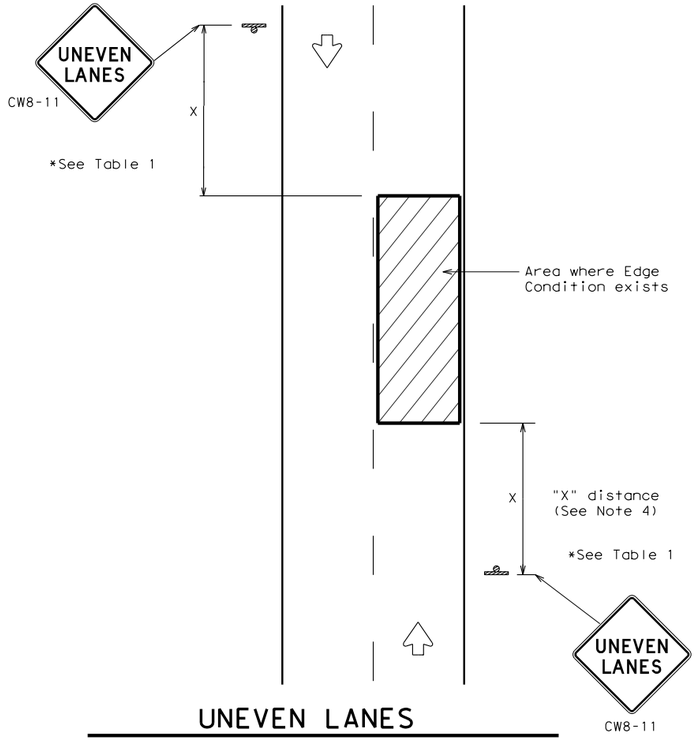
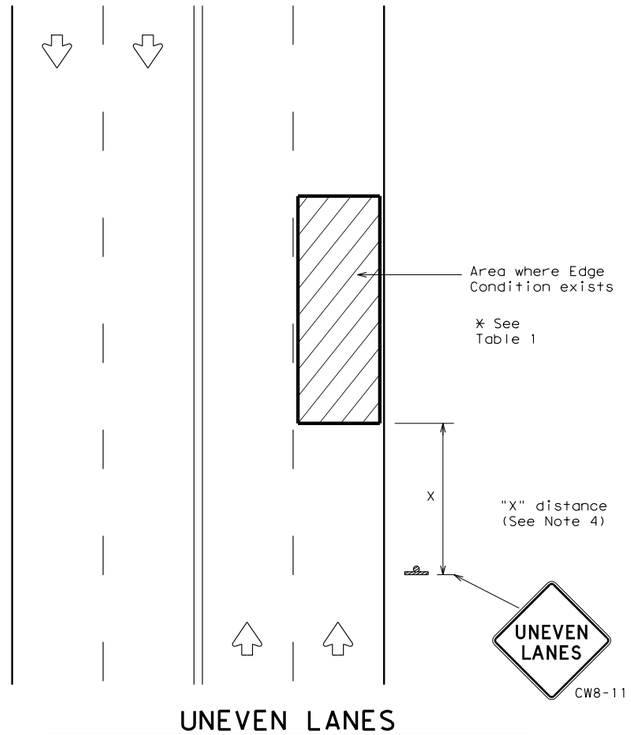
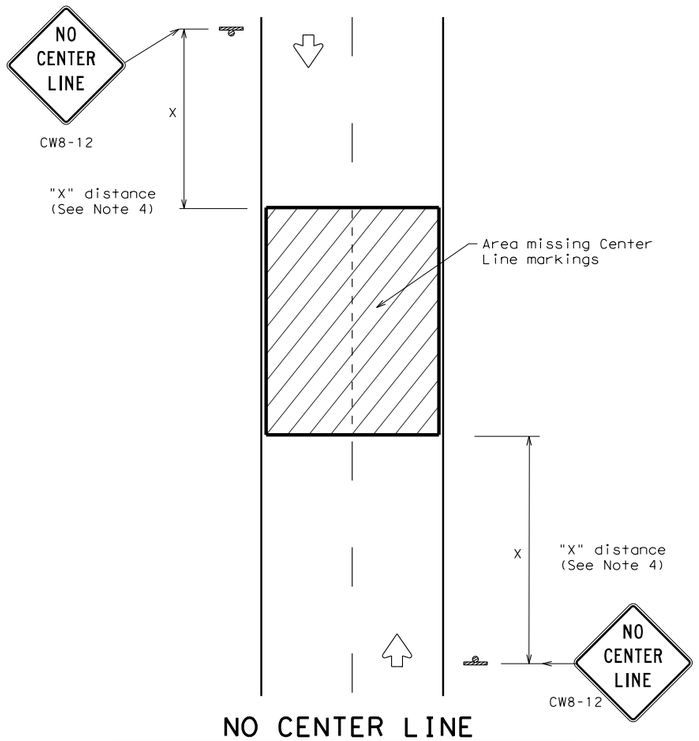


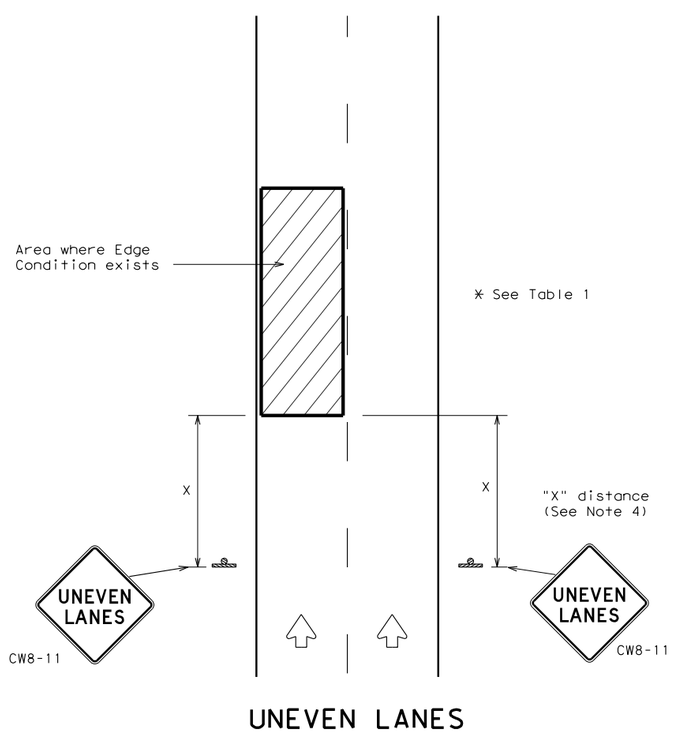
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

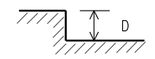
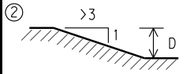
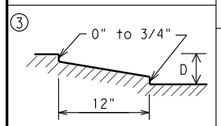
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

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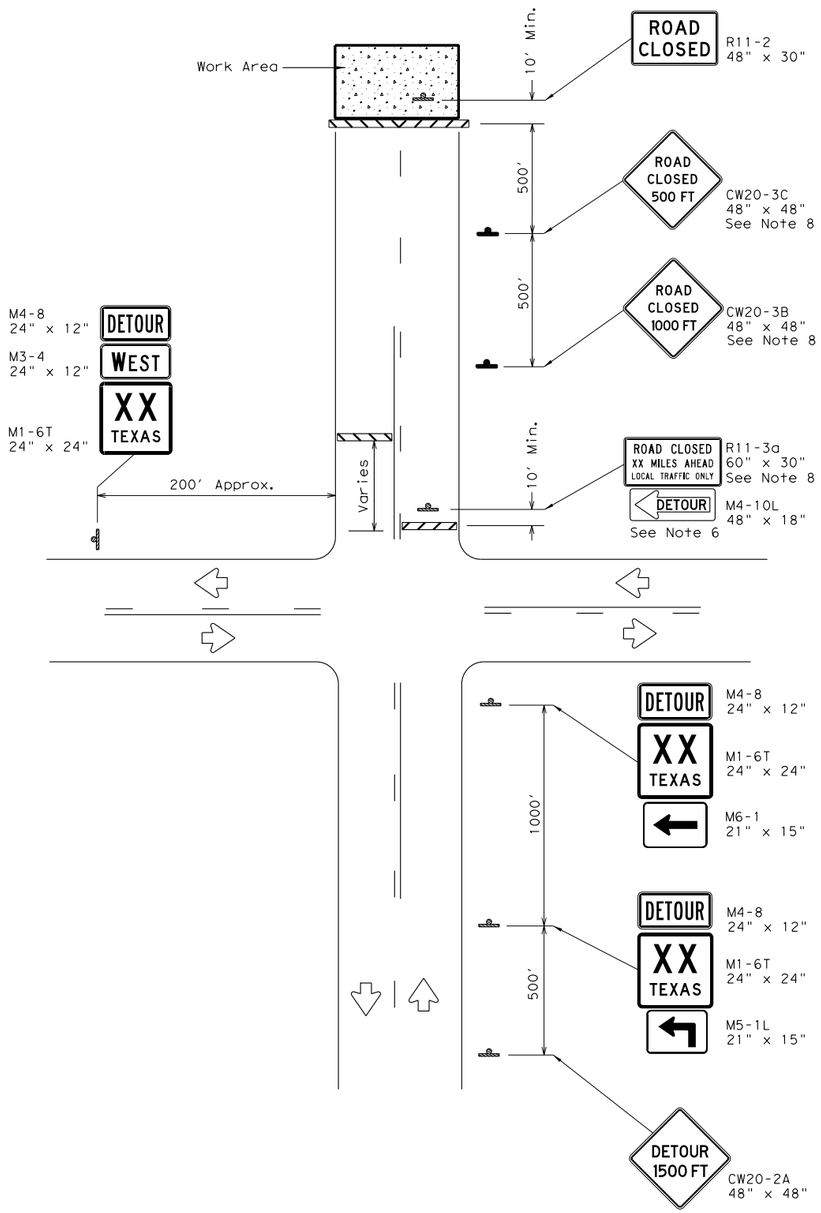
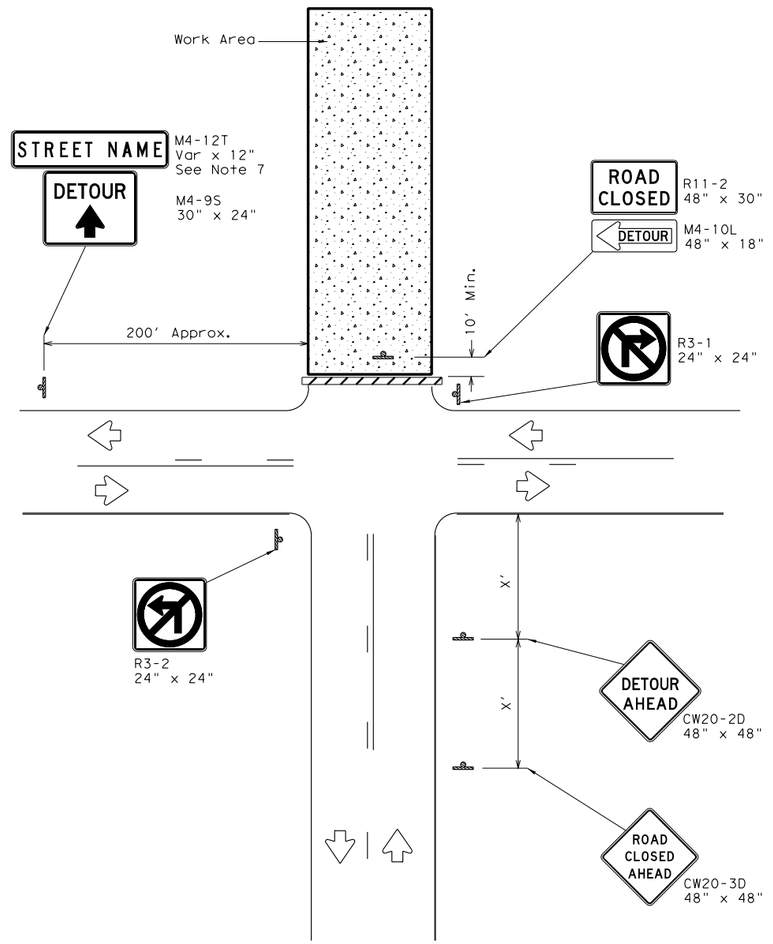


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

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2-98 3-03	PHR	CAMERON		117

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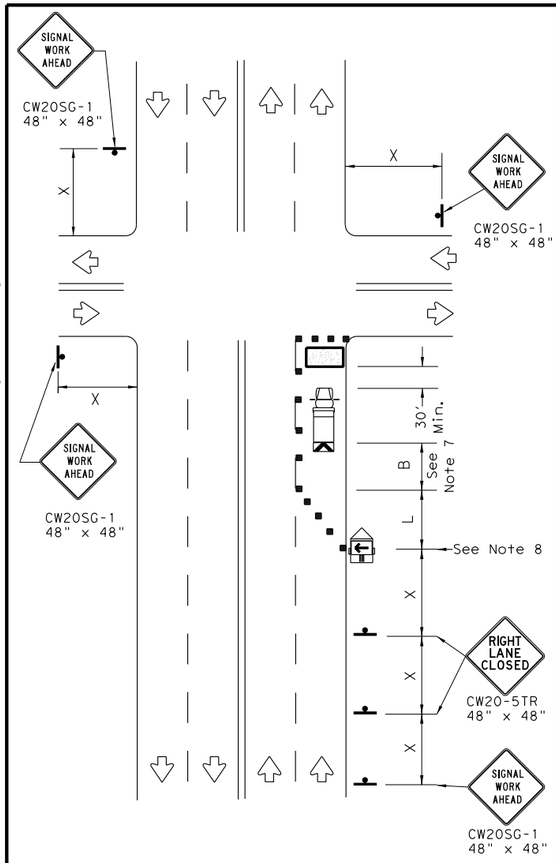
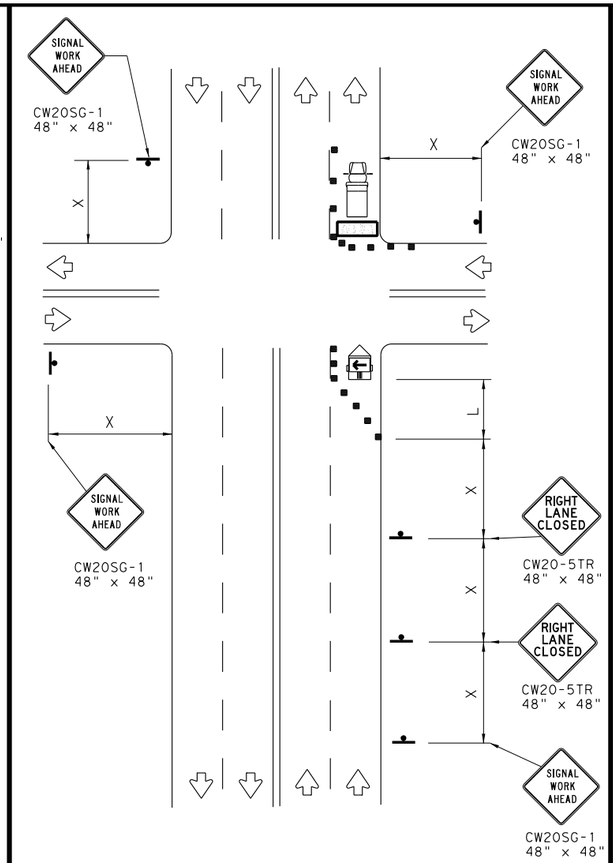


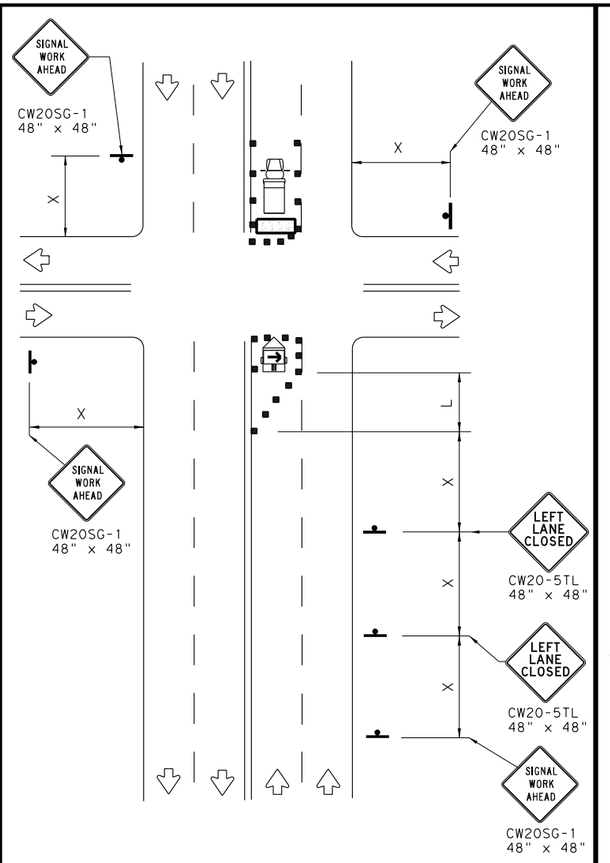
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

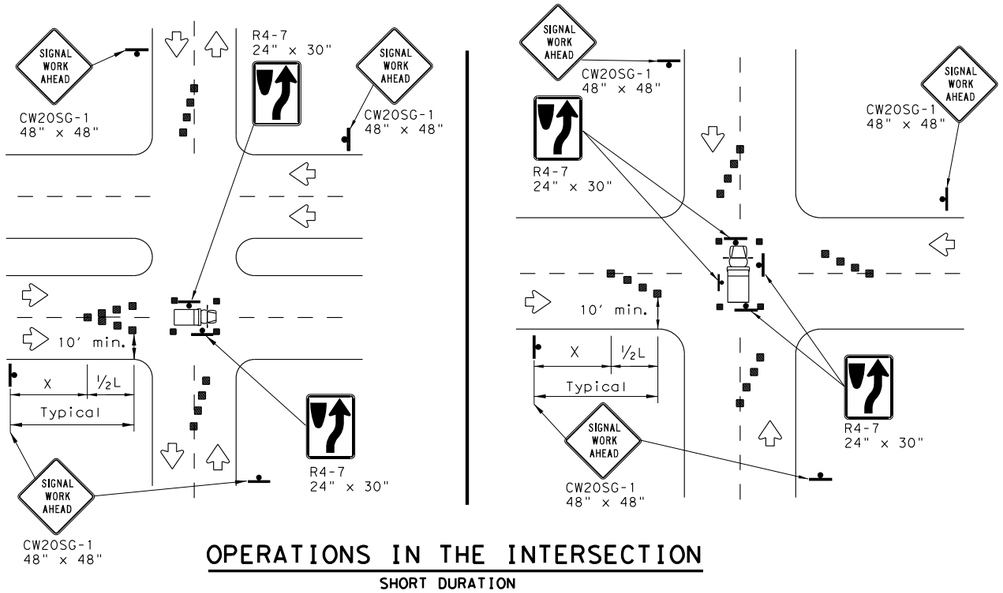
LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.



OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

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Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

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4-98 3-03	PHR	CAMERON		118

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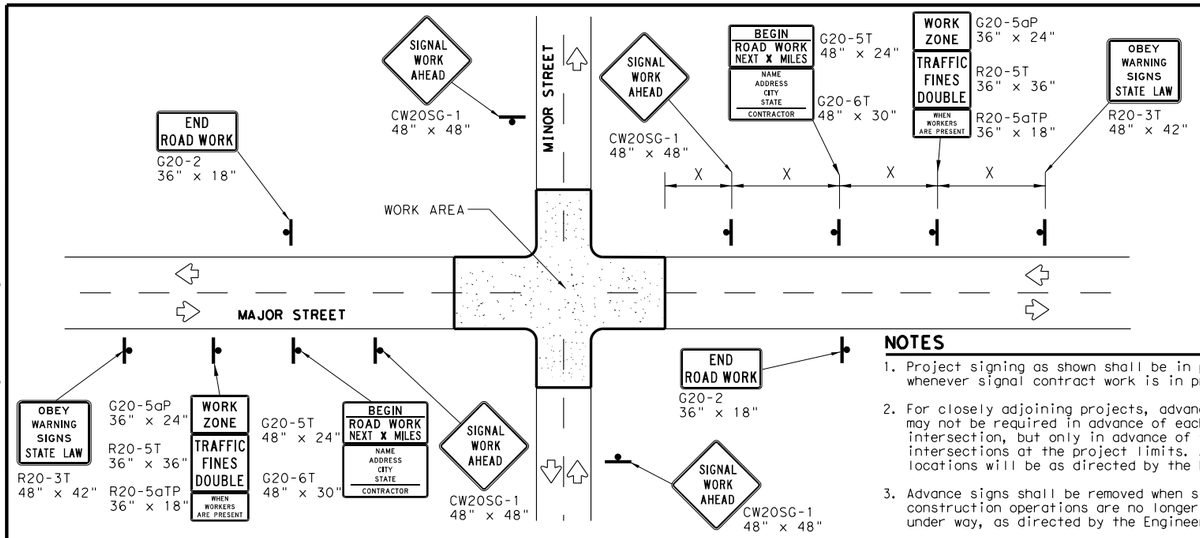


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. 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".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. 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. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

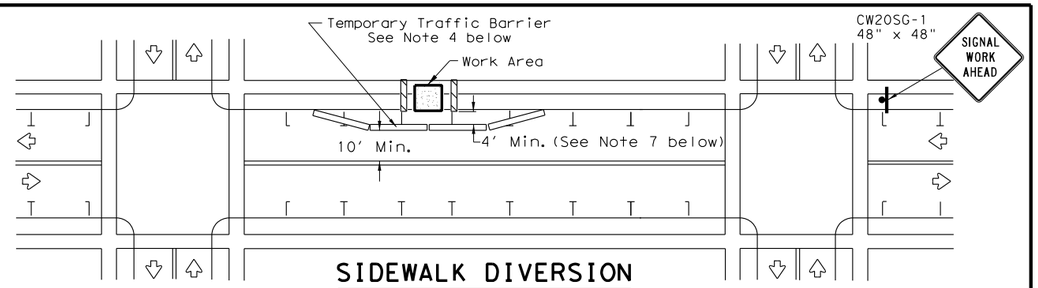
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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 fastners. 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.

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

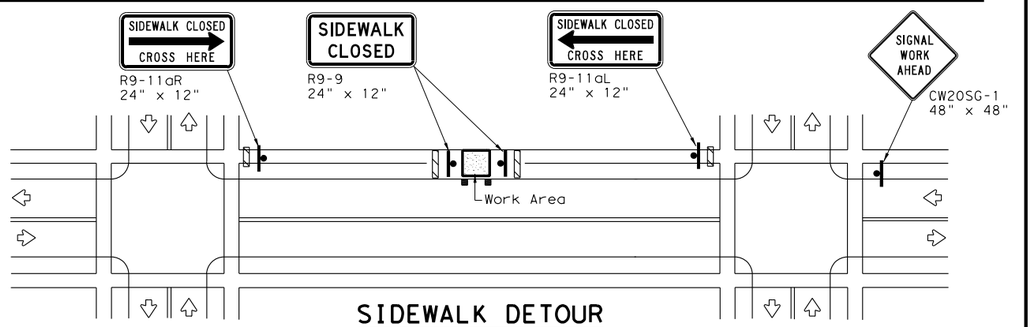
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

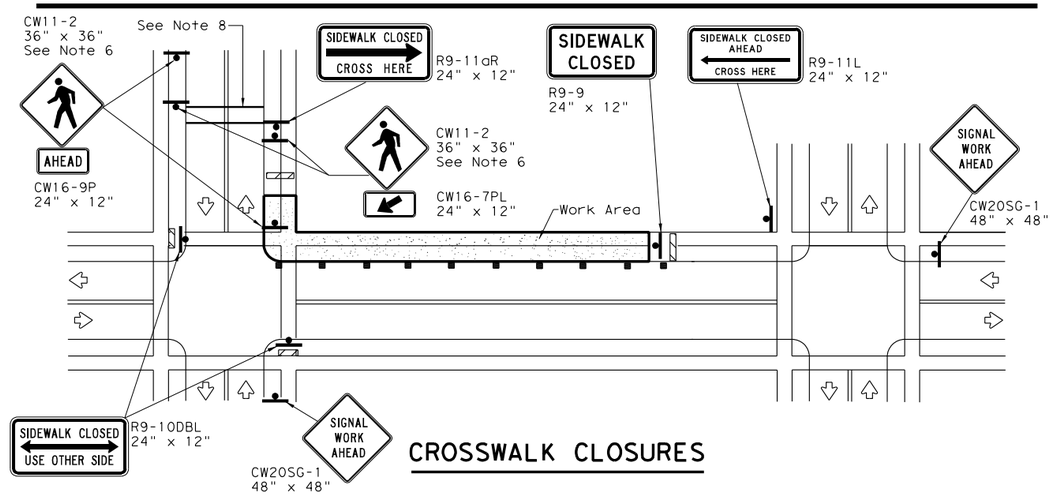
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

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Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

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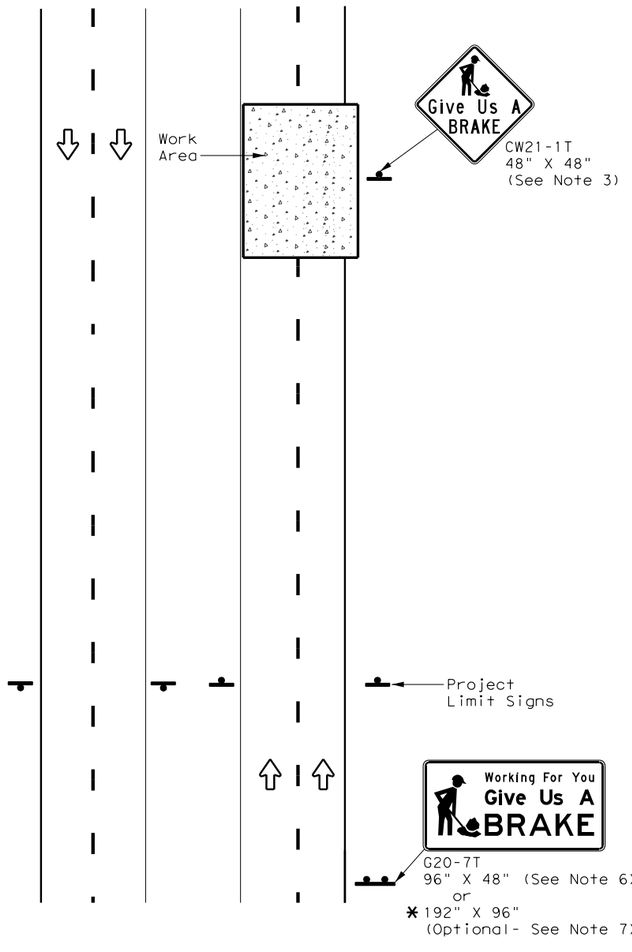
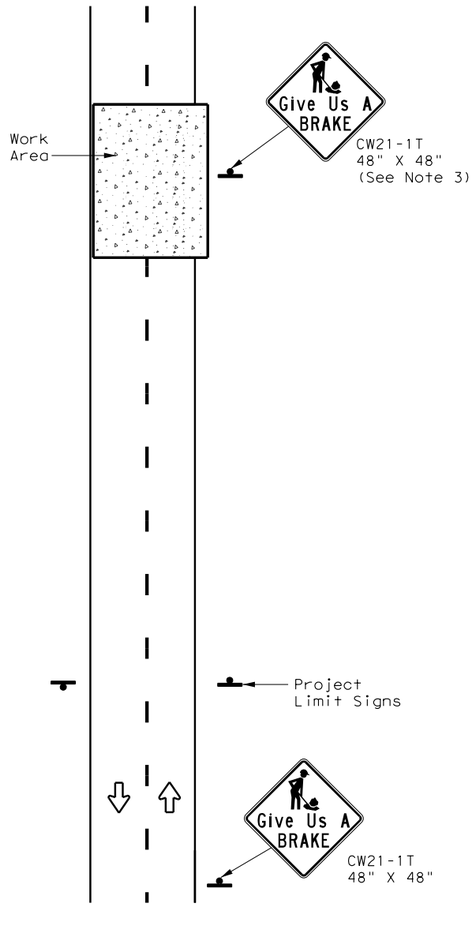
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	PHR	CAMERON		119



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
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.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	PHR	CAMERON		120

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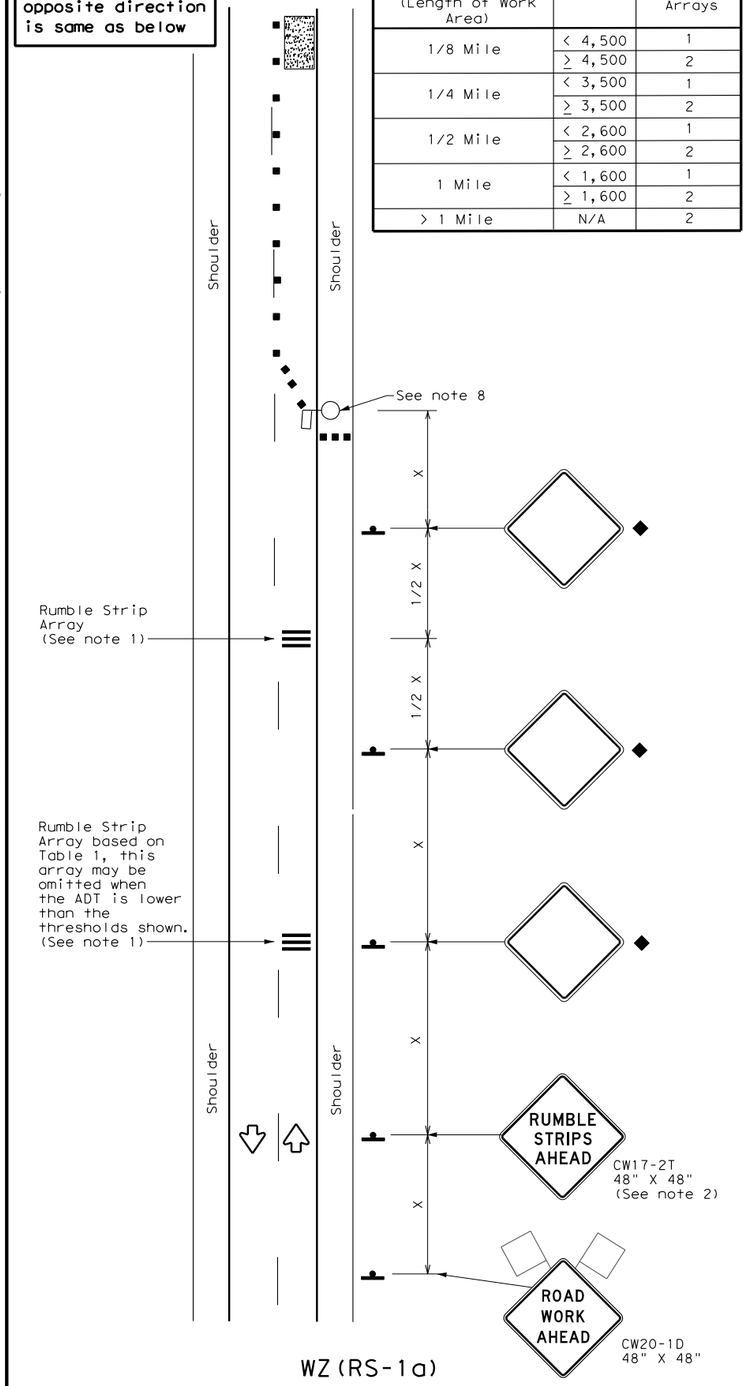
10/6/2021 9:44:25 AM
N:\7021-17-101\CADD\DGN\02*TRAF*CONT\StdDetails\wz(brk)-13.dgn
...\TxDOT-BW-HALF*PDF.pltcfg

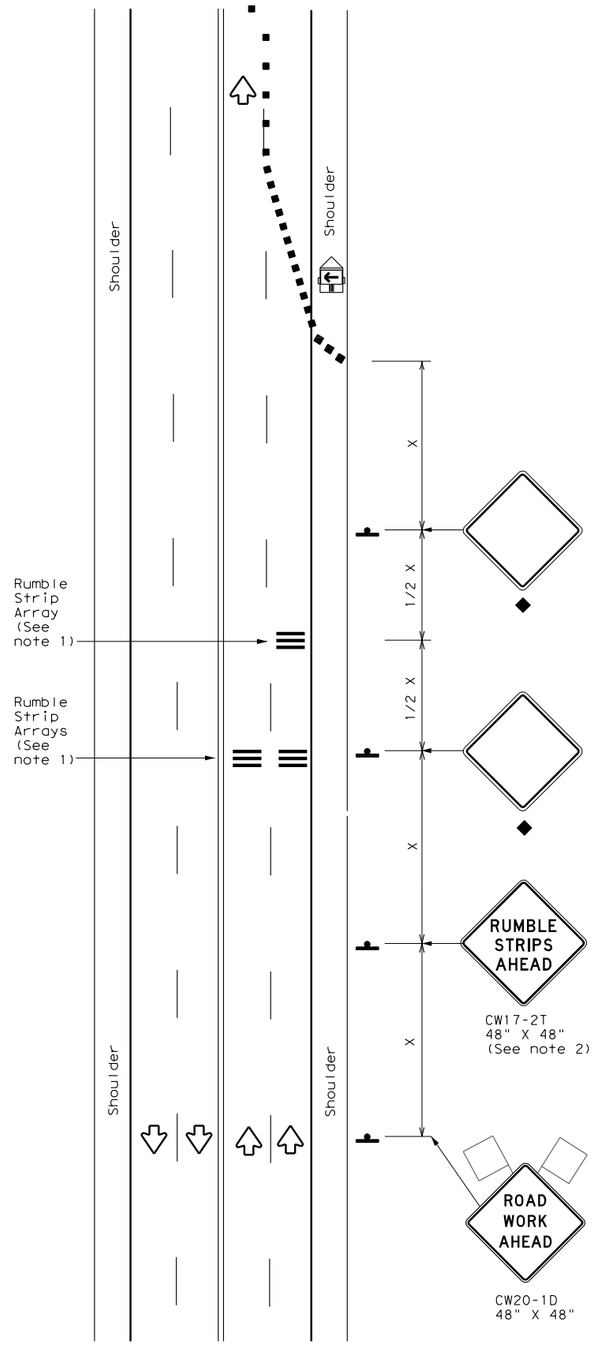
Warning sign and rumble strip sequence in opposite direction is same as below



WZ(RS-1a)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION

TABLE 1		
Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2



WZ(RS-1b)
75 mph or Less

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

1. Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
2. The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
3. Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
4. Removal of the Temporary Rumble Strips should be accomplished before removing the advance warning signs.
5. Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
6. Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
7. This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
8. The one-lane two-way application may utilize a flagger, an AFAD or a portable traffic signal.
9. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment.

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Panel	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
	✓	✓		

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.

TABLE 2	
Speed	Approximate distance between strips in an Array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
> 55 MPH	20'

Texas Department of Transportation

Traffic Operations Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-16

FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
2-14	DIST	COUNTY		SHEET NO.
4-16	PHR	CAMERON		121

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10/6/2021 9:44:26 AM
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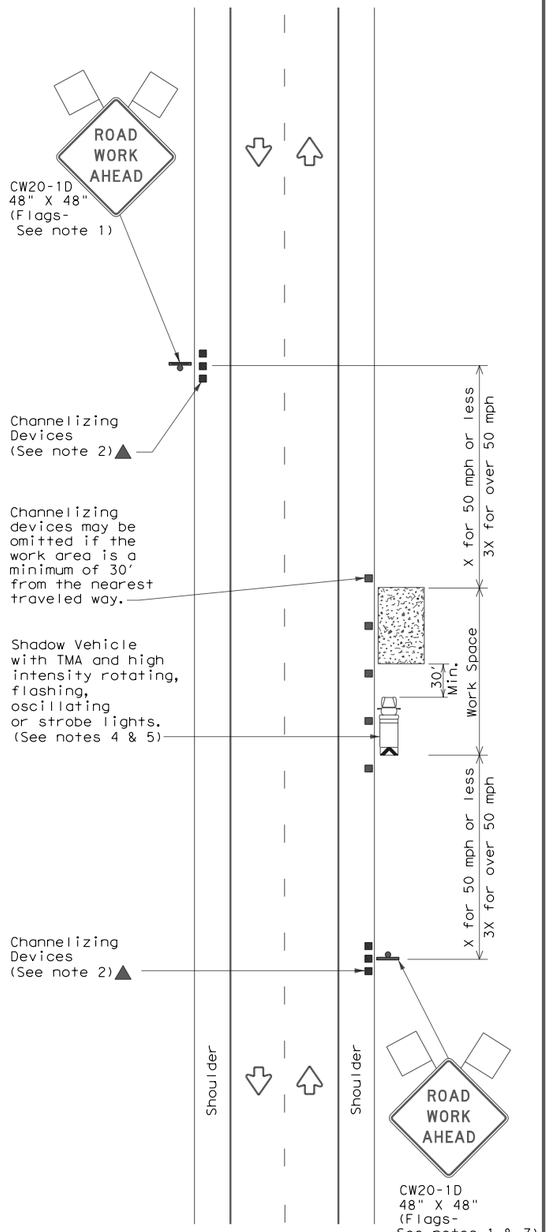
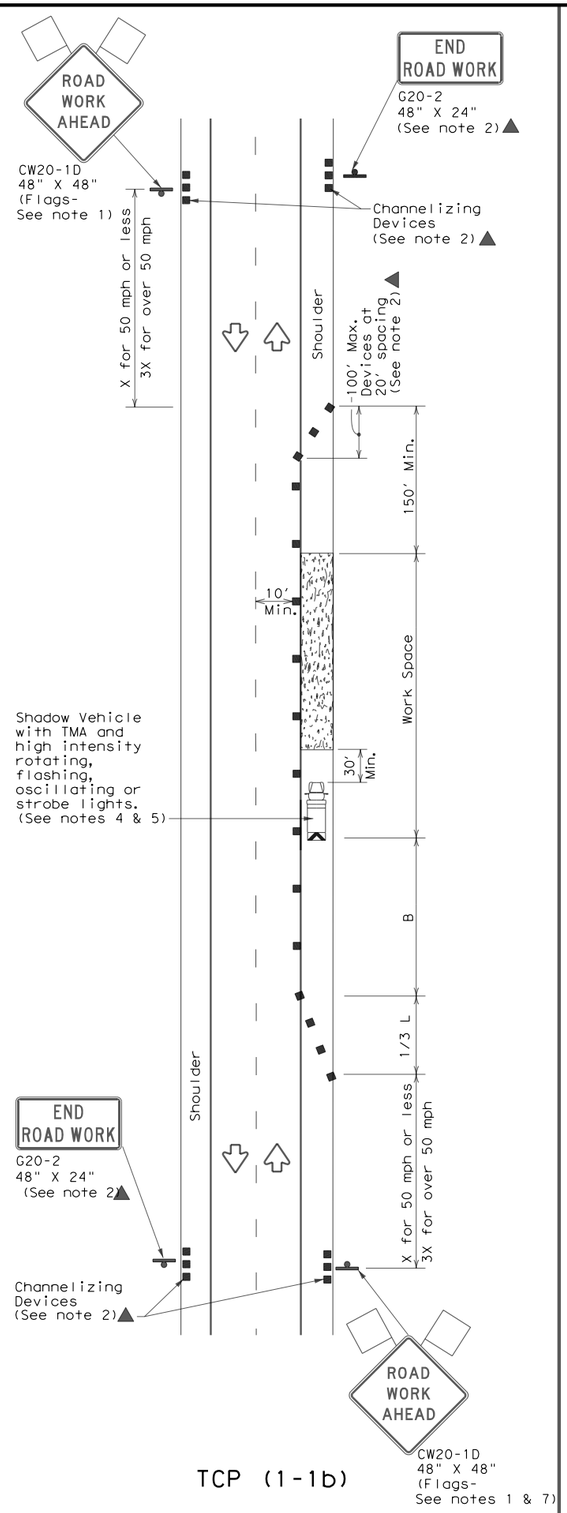


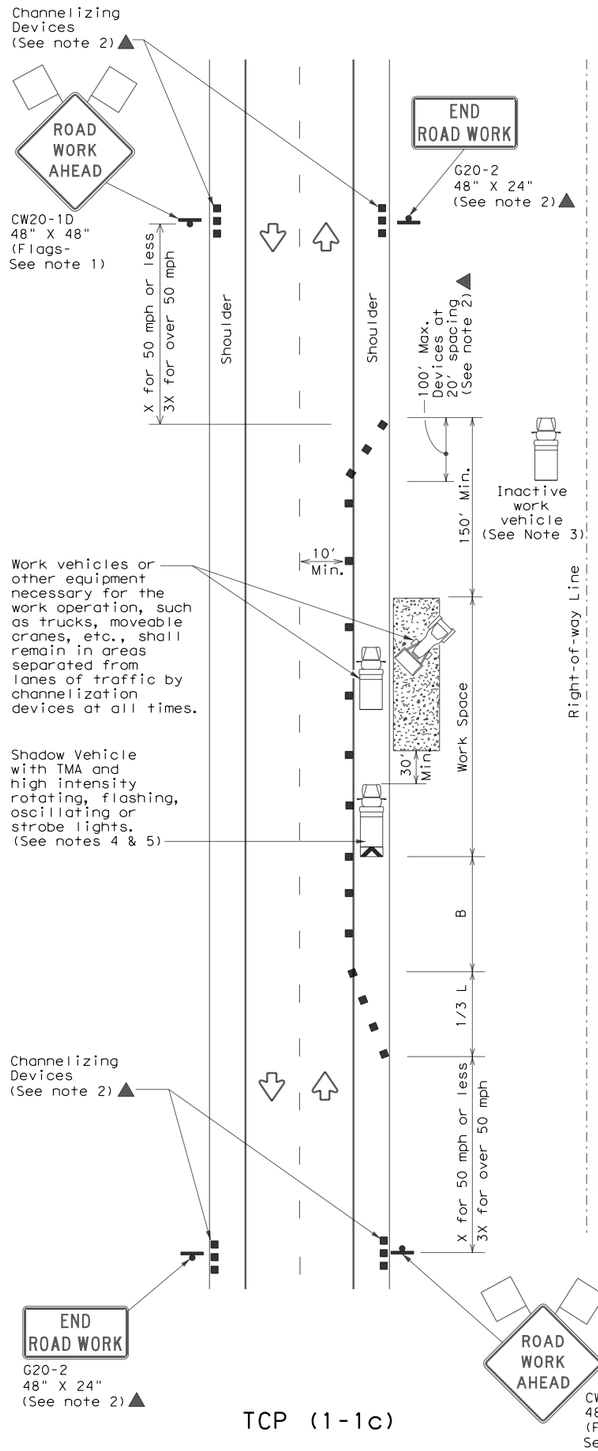
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

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 elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. 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 wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. 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(1-1)-18

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		122

151

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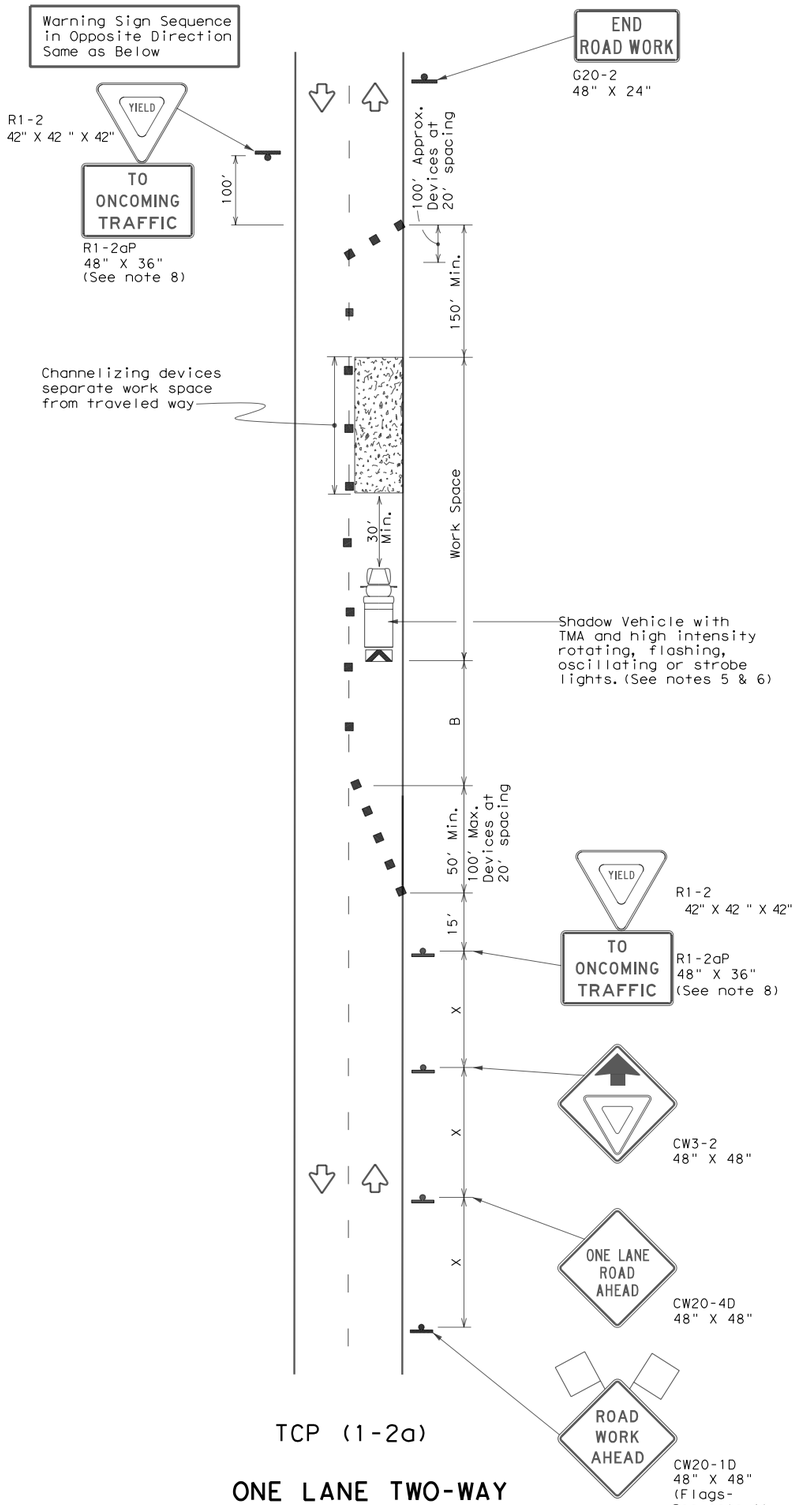
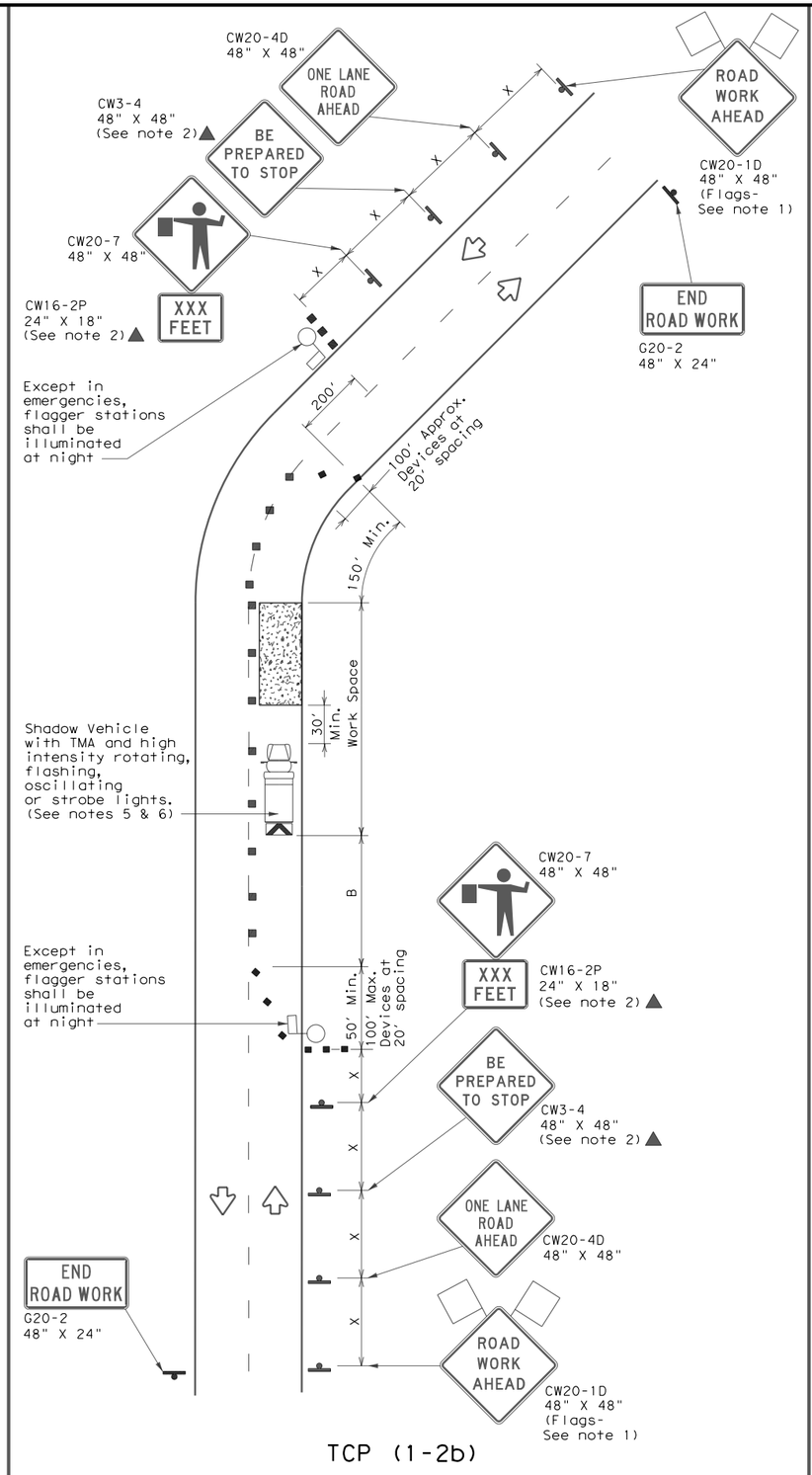


TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98	0872	04	030, ETC	FM 506, ETC
2-94 2-12	DIST	COUNTY		SHEET NO.
1-97 2-18	PHR	CAMERON		123

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10/6/2021 9:44:28 AM
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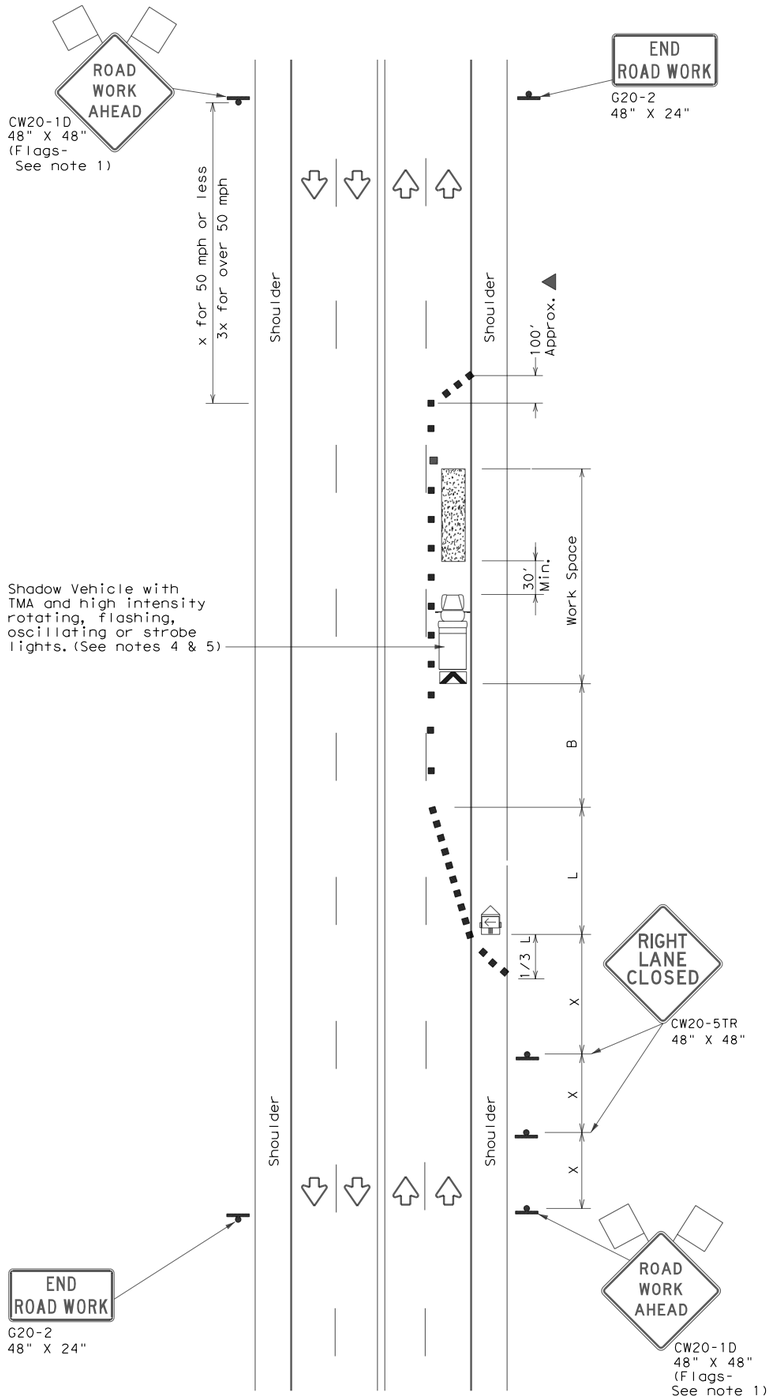
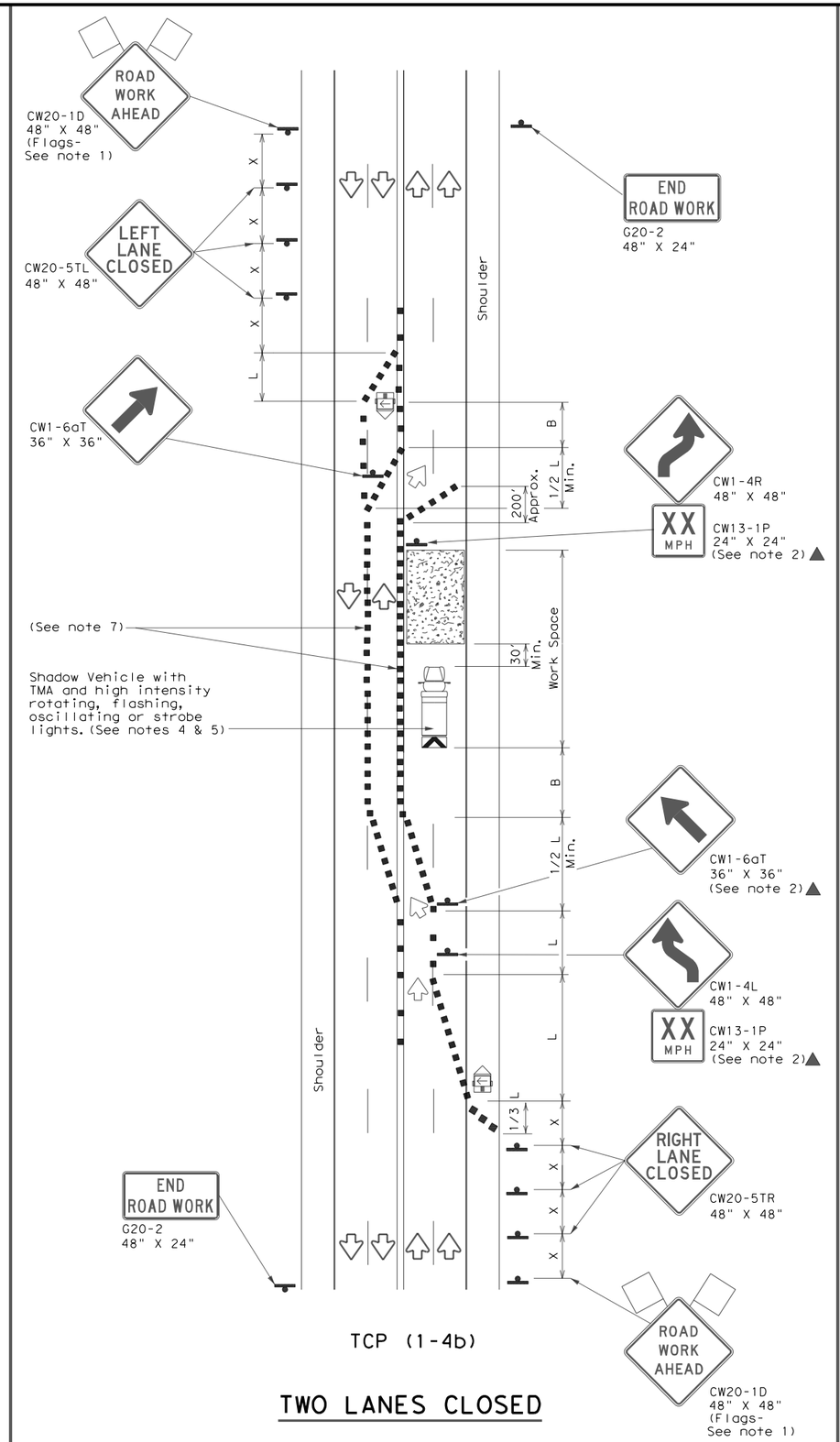


TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. 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 wider work spaces.

TCP (1-4a)

6. If this TCP is used for a left lane closure , CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. 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 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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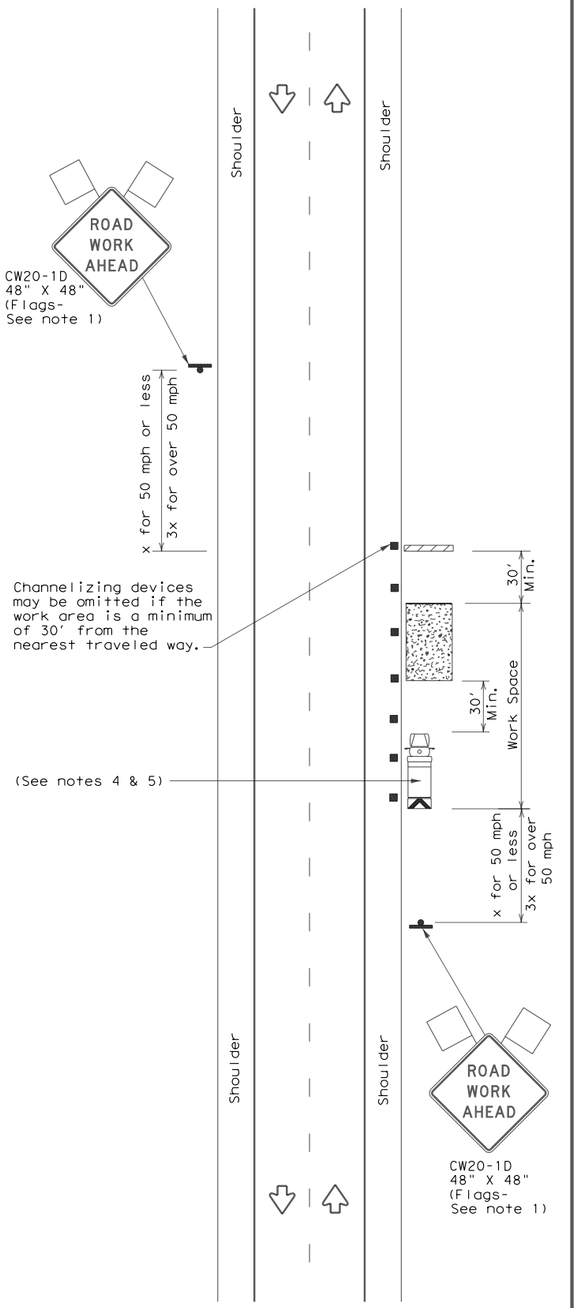
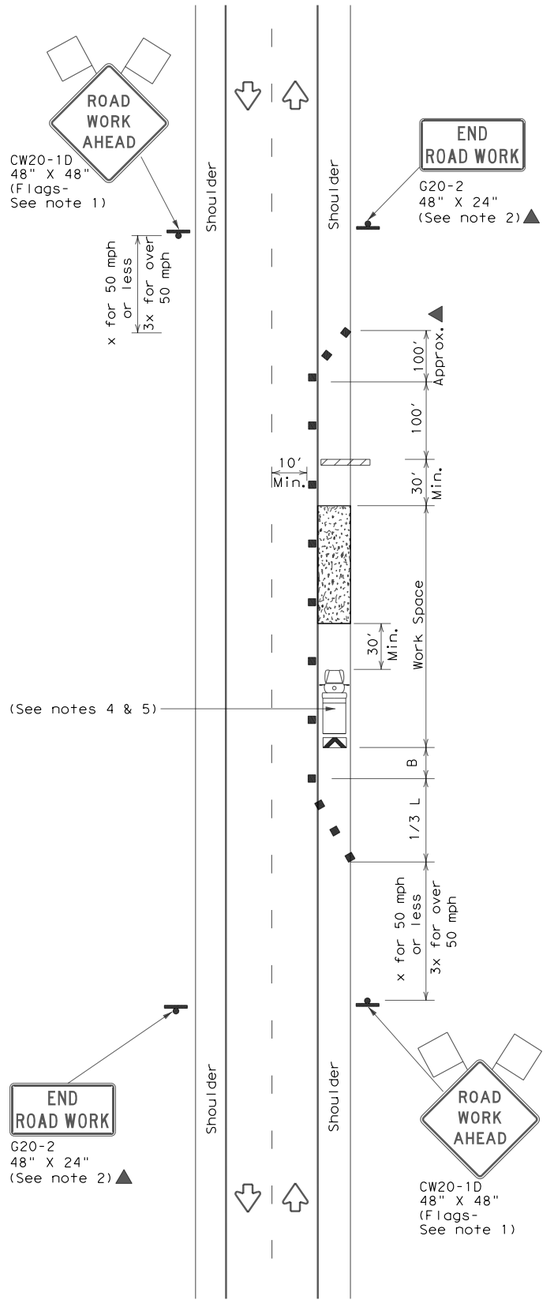
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	PHR	CAMERON		124
1-97 2-18				



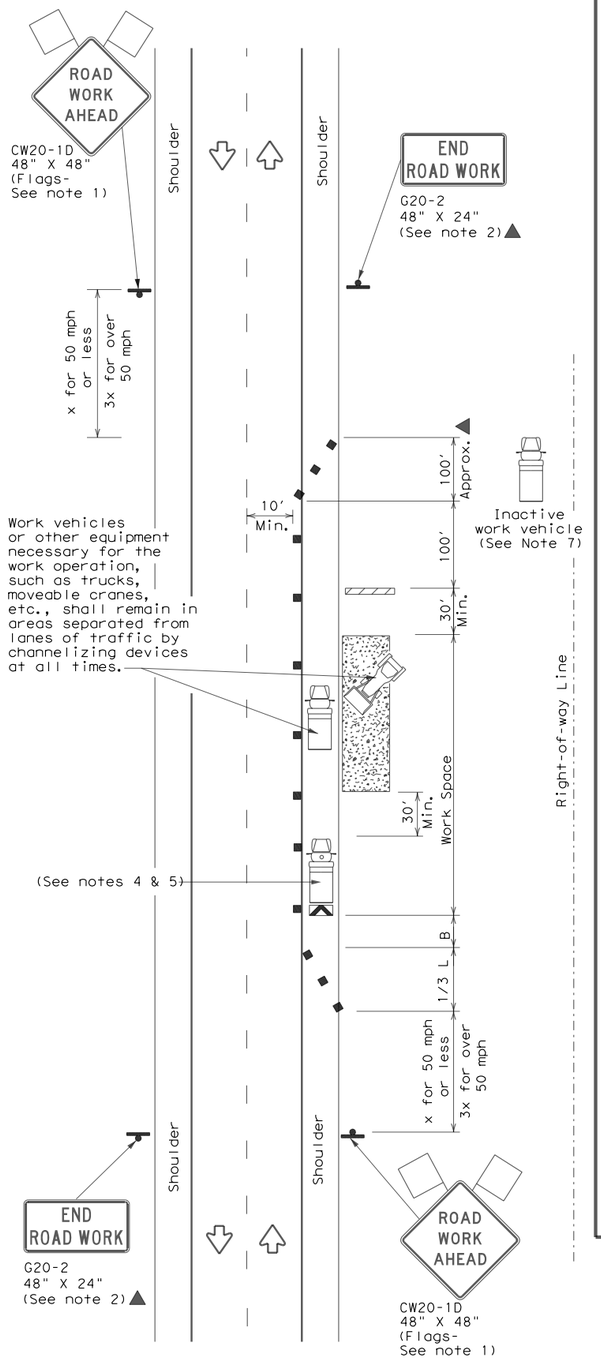
TCP (2-1a)

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	0872	04	030,ETC	FM 506,ETC
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	PHR	CAMERON		125
1-97 2-18				

161

JFlores
10/6/2021 9:44:28 AM
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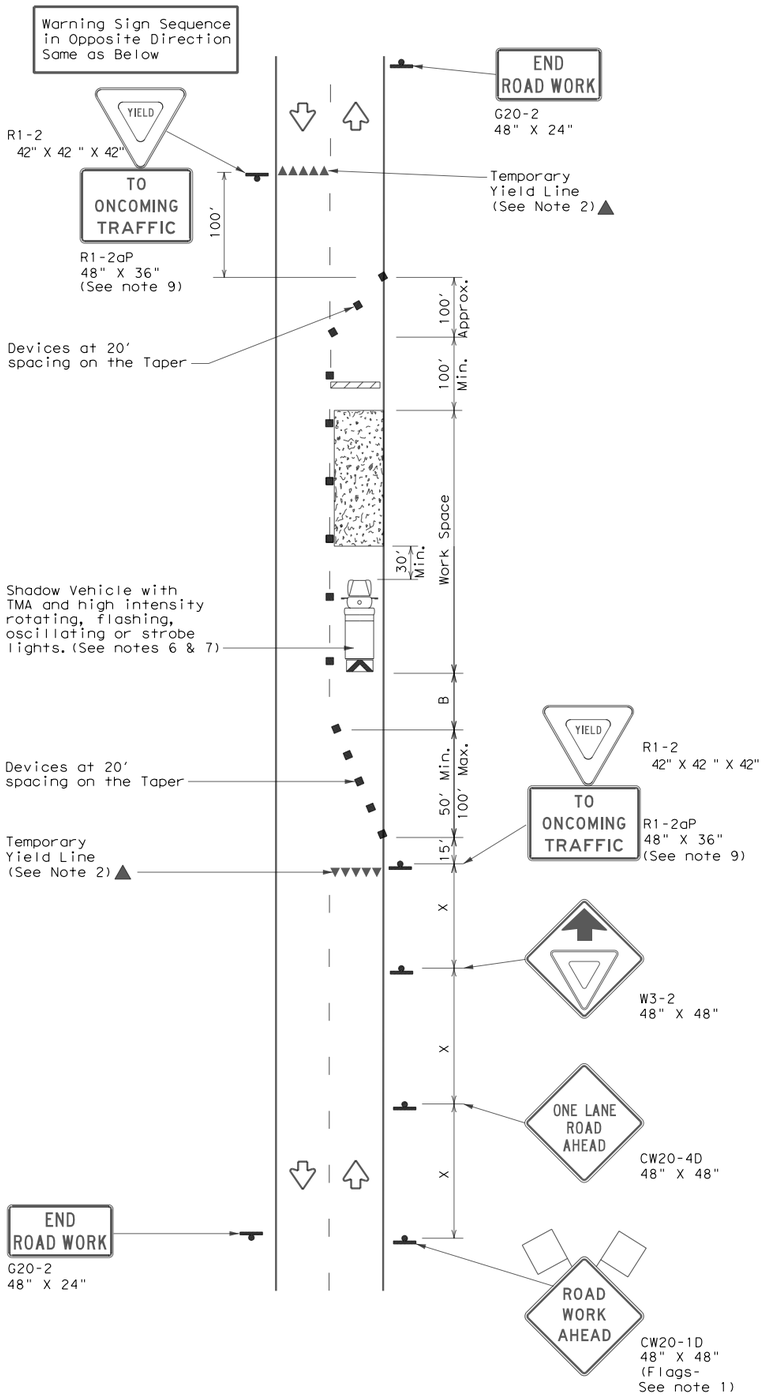
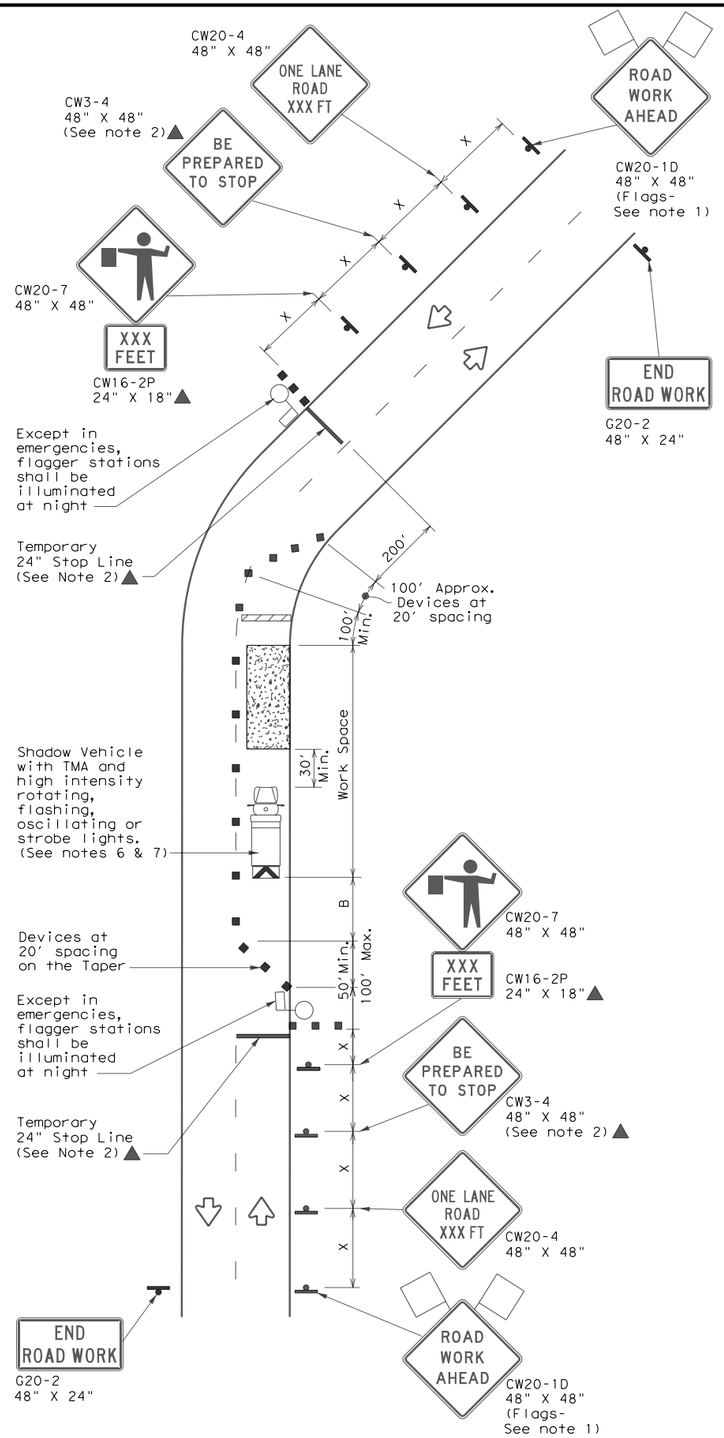


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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	0872	04	030,ETC	FM 506,ETC
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	PHR	CAMERON		126

JFlores
10/6/2021 9:44:29 AM
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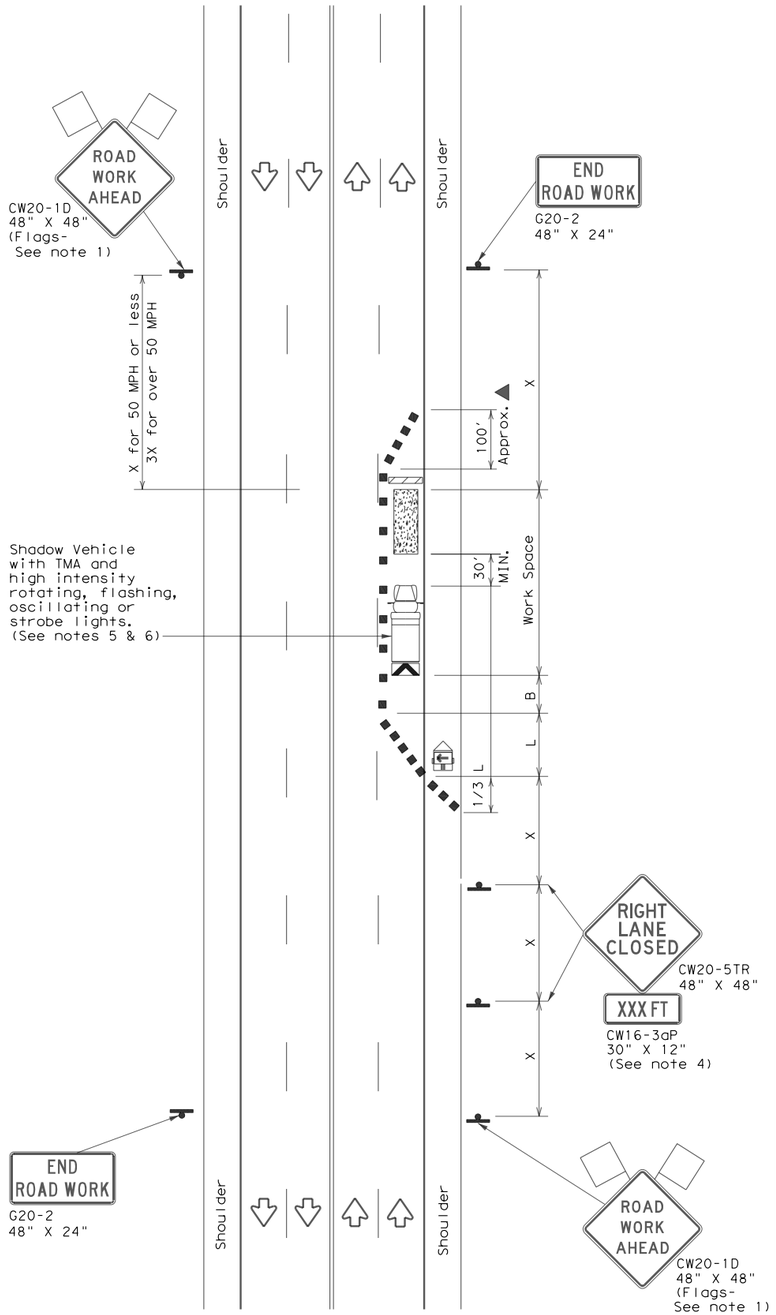
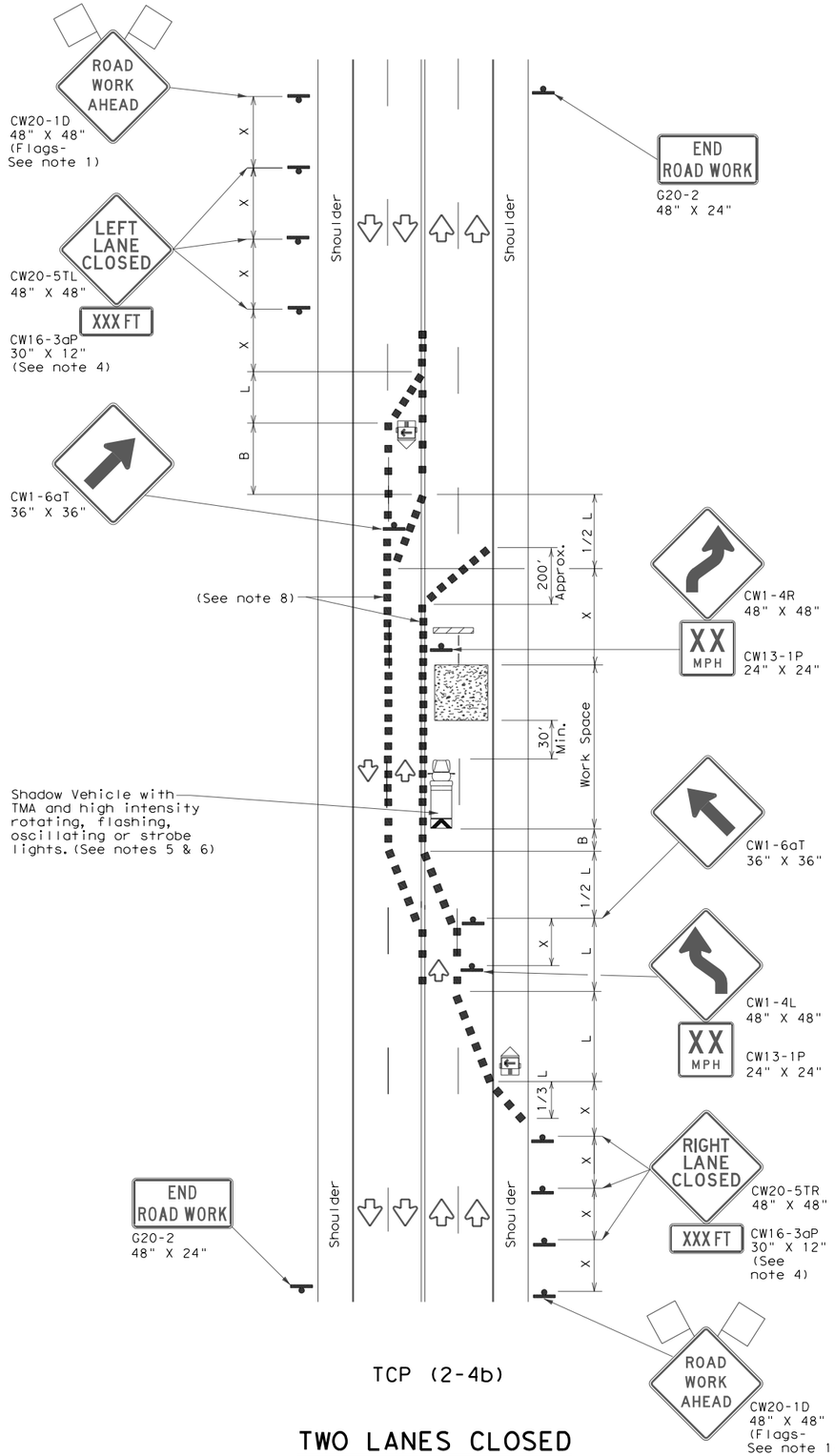
DATE: DATE TIME
FILE: DOCUMENT NAME



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

7. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED"signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-4b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0872	04	030,ETC	FM 506,ETC
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	PHR	CAMERON		127

JFlores
10/6/2021 9:44:30 AM
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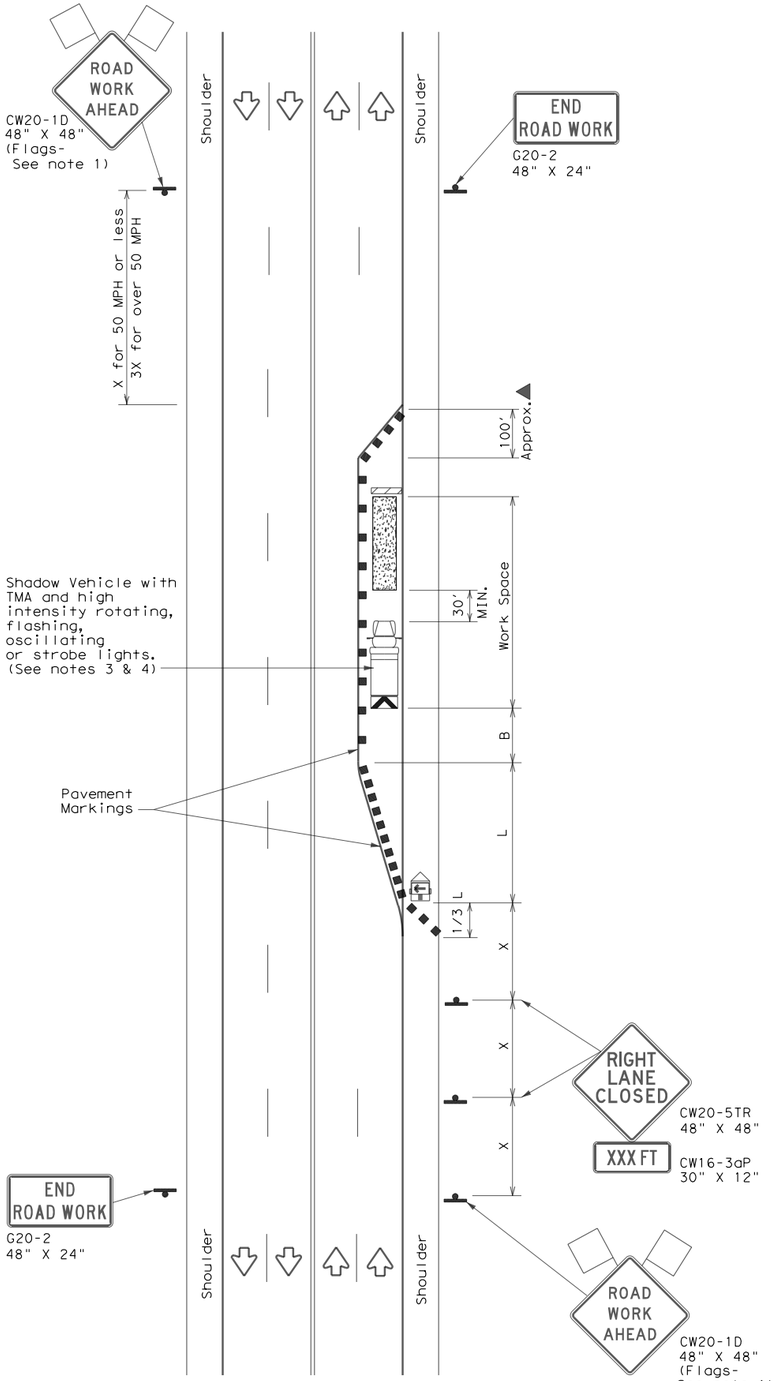
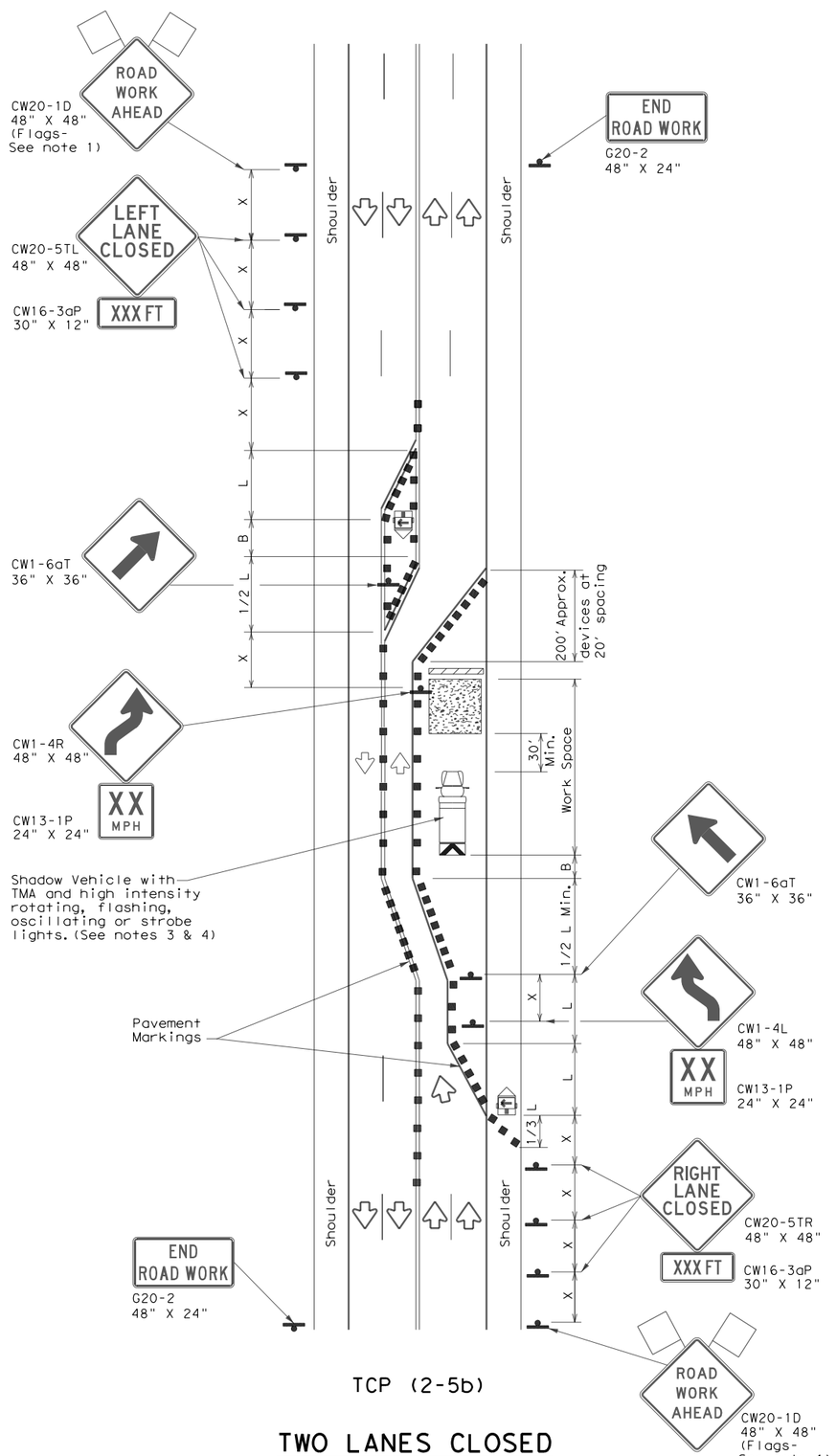


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew eposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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1-97 3-03	DIST	COUNTY		SHEET NO.
4-98 2-18	PHR	CAMERON		128

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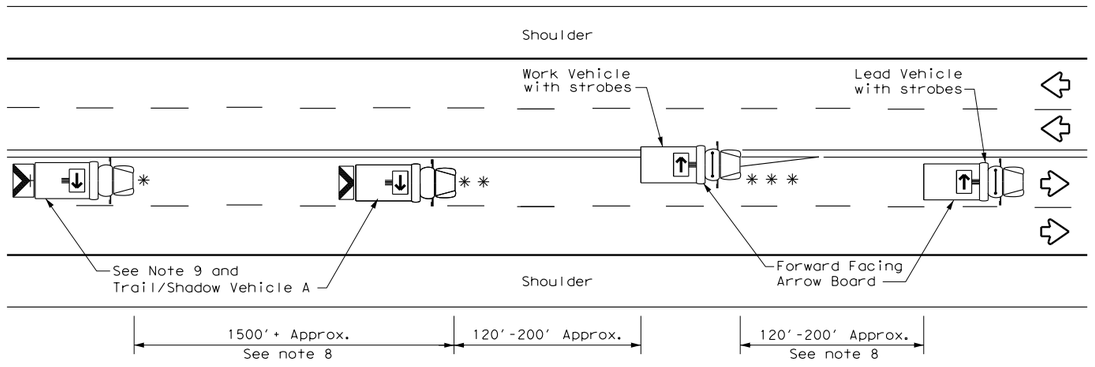
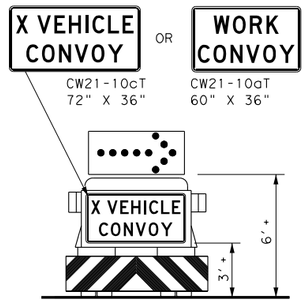


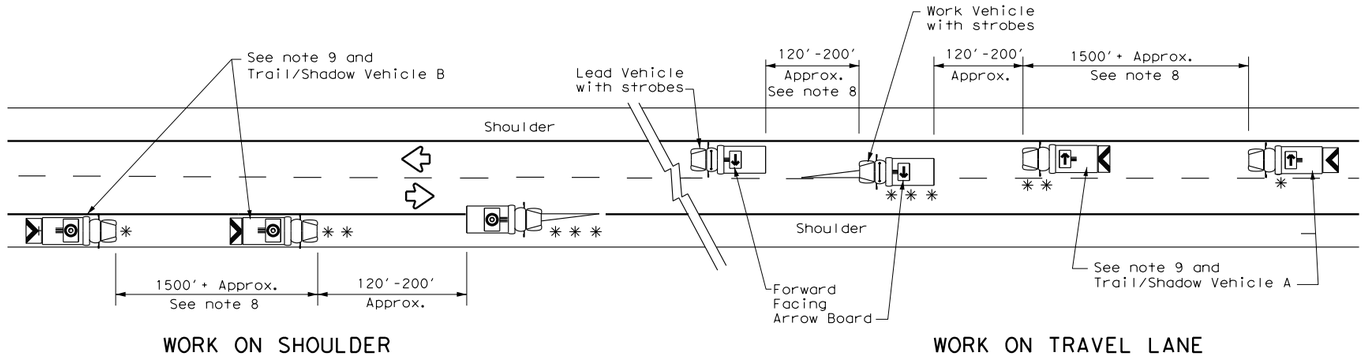
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

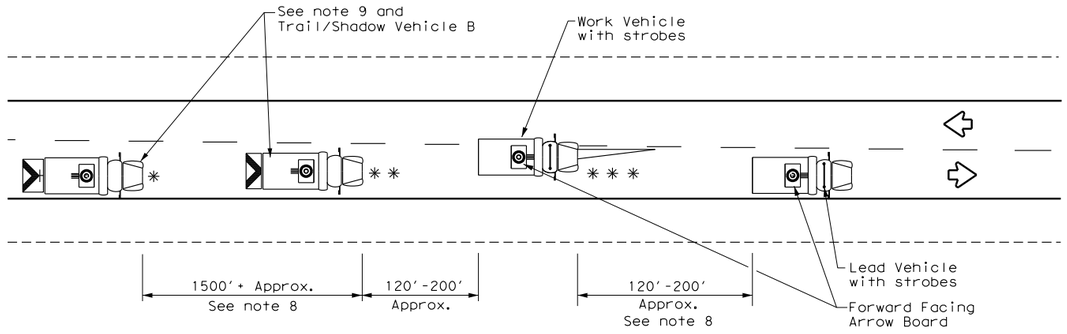


WORK ON SHOULDER

WORK ON TRAVEL LANE

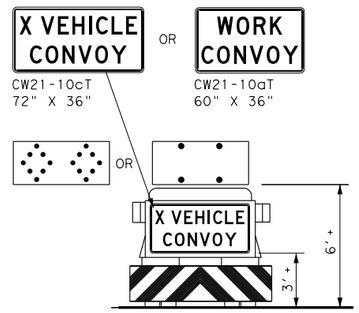
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

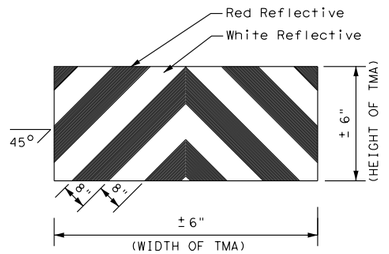
with Flashing Arrow Board in CAUTION display

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
REVISIONS 2-94 4-98 8-95 7-13 1-97	0872	04	030,ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		129

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10/6/2021 9:44:31 AM
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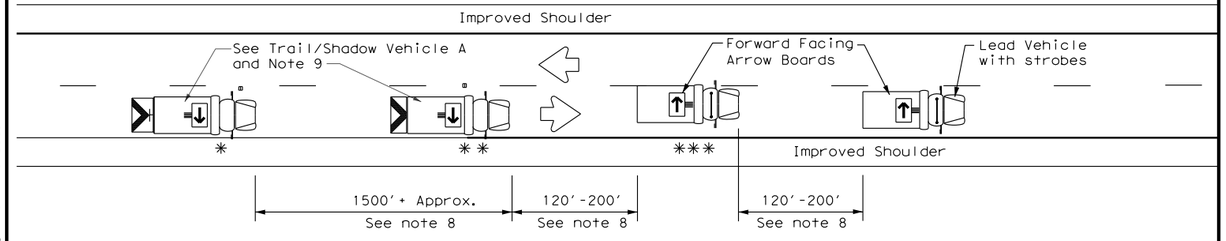
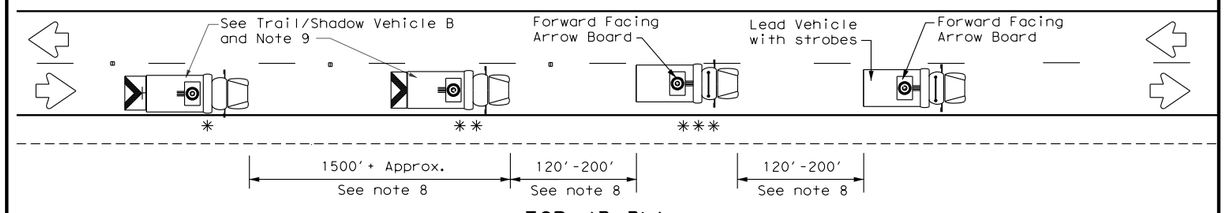


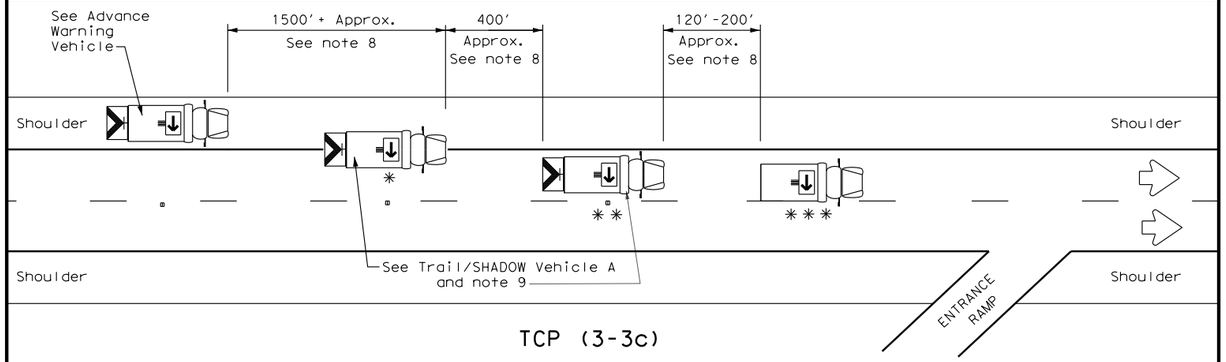
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



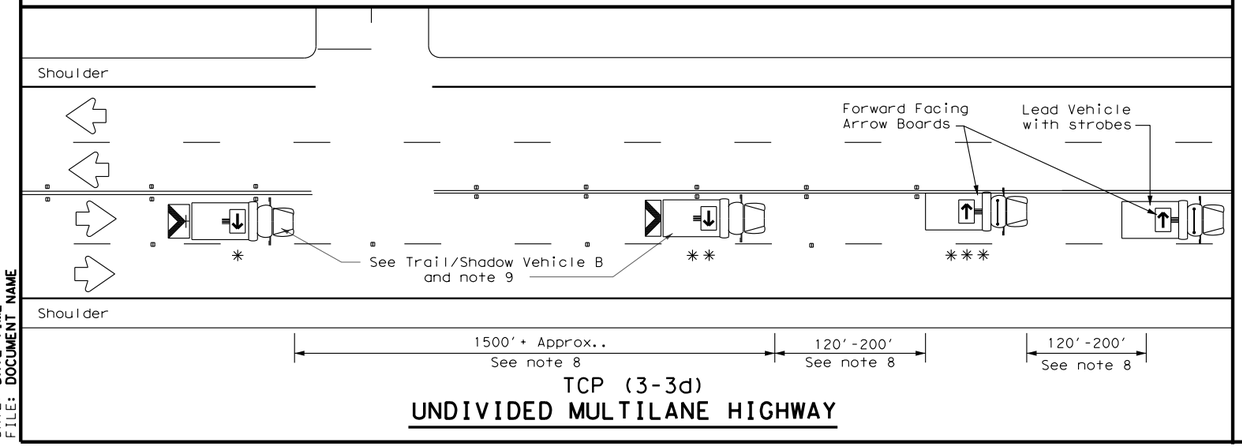
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



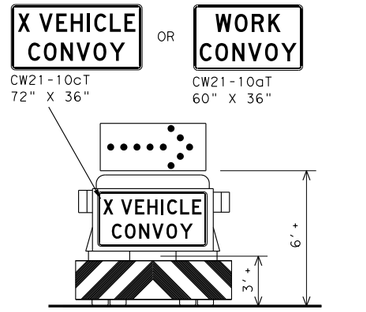
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



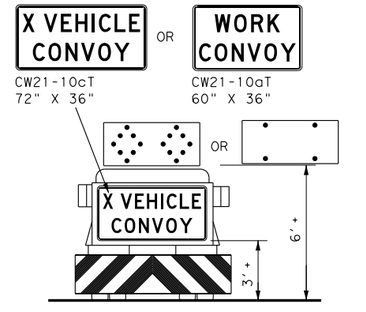
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



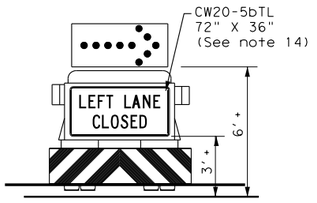
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

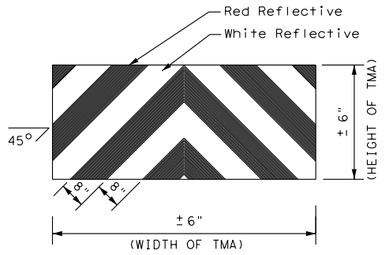


TRAIL/SHADOW VEHICLE B

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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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				
1-97 7-14	PHR	CAMERON		130

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FILE: DOCUMENT NAME

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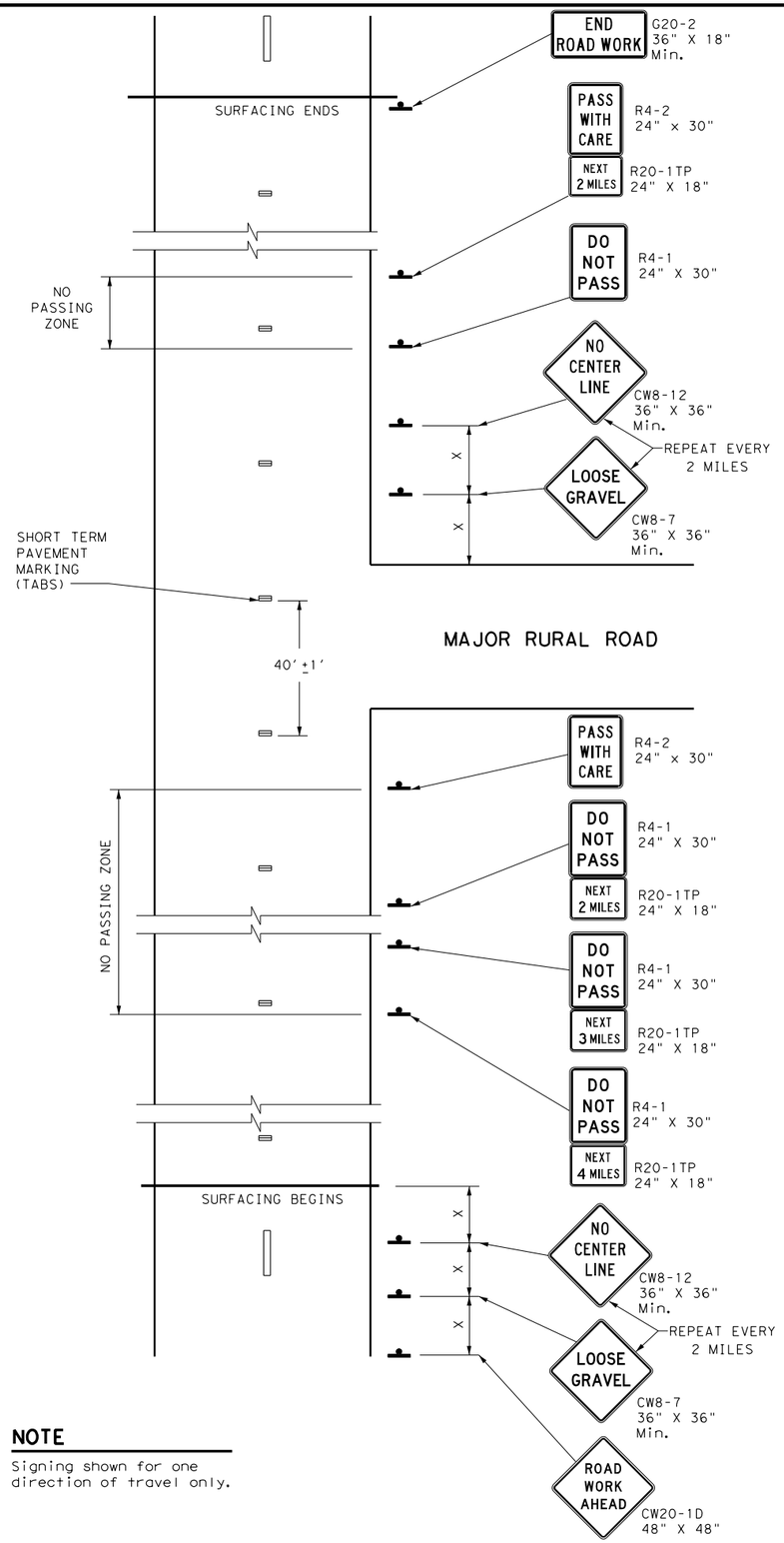
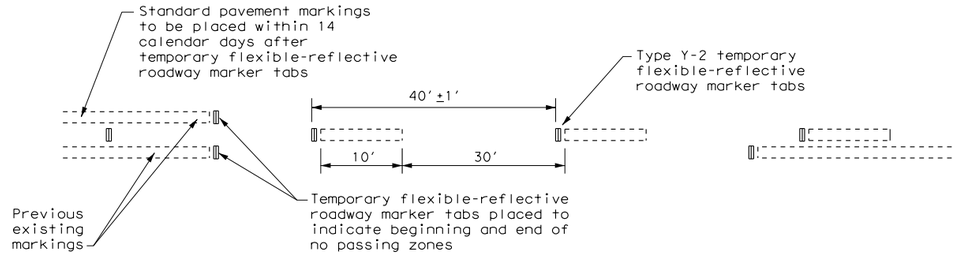


NOTE

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

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1-97 7-13		PHR		CAMERON	131

210

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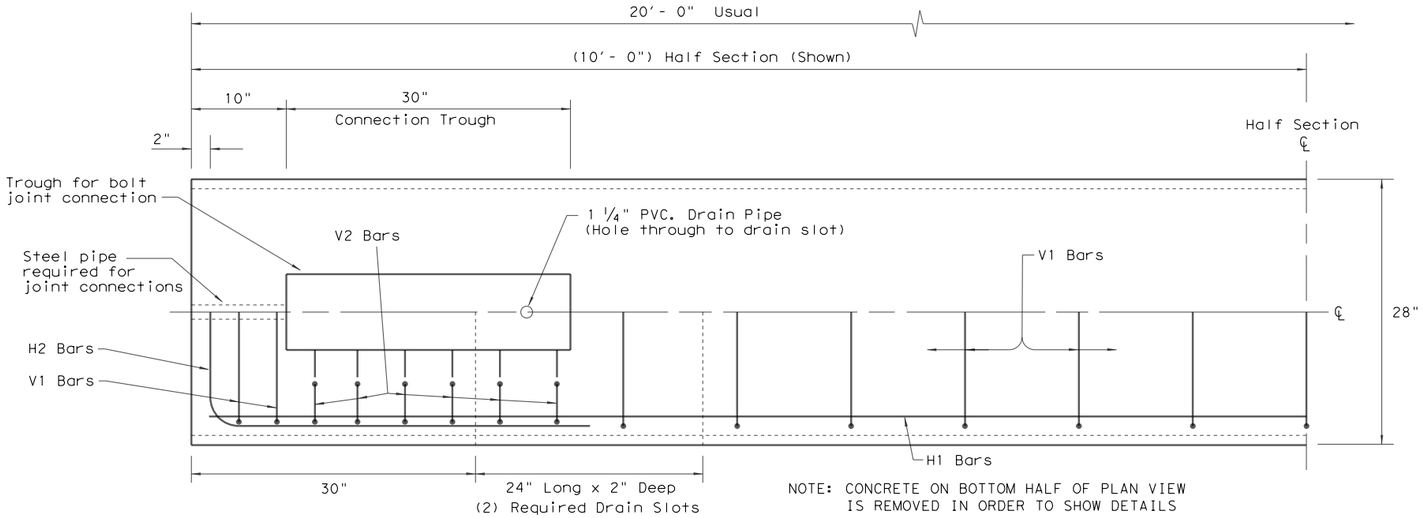
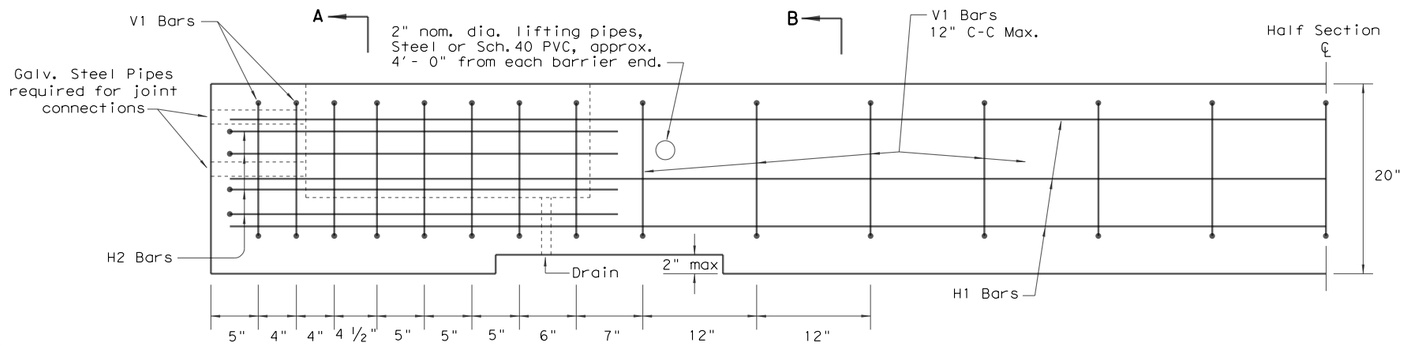
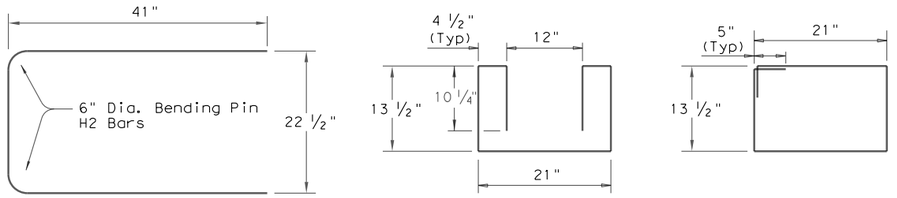


PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



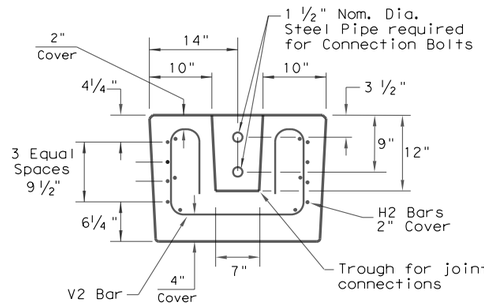
(8)~H2 Bars (#5) Bars

(12)~V2 Bars (#4) Bars

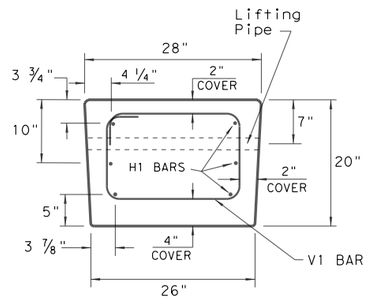
(17)~V1 Bars (#4) Bars

REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A



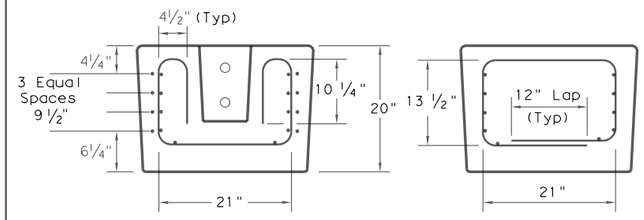
SECTION B-B

GENERAL NOTES

1. Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
2. Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
3. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
4. Precast LPCB barrier length shall be 20 ft.
5. All barrier edges shall have ¾" chamfer or a tooled radius.
6. Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts." and is considered subsidiary.
7. Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445,"Galvanizing."
8. Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

FOR CONTRACTORS INFORMATION ONLY

(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



SECTION A-A SECTION B-B

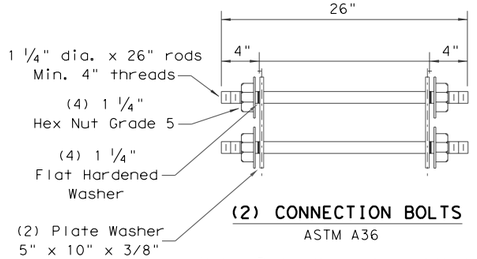
(WWR) GENERAL NOTES

1. Deformed Welded Wire Reinforcement shall conform to ASTM A497.
2. Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
3. Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".

REQUIRED (WWR) WIRE DESIGN

8 ~ (D31) Horizontal Wires (Equally spaced)
10 ~ (D20) Horizontal Wires (Equally spaced)
29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)

WELDED WIRE REINFORCEMENT (WWR)- OPTIONAL REINFORCING



(2) CONNECTION BOLTS
ASTM A36

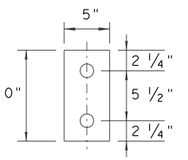


PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 1)
LPCB-13

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	PHR	CAMERON		132

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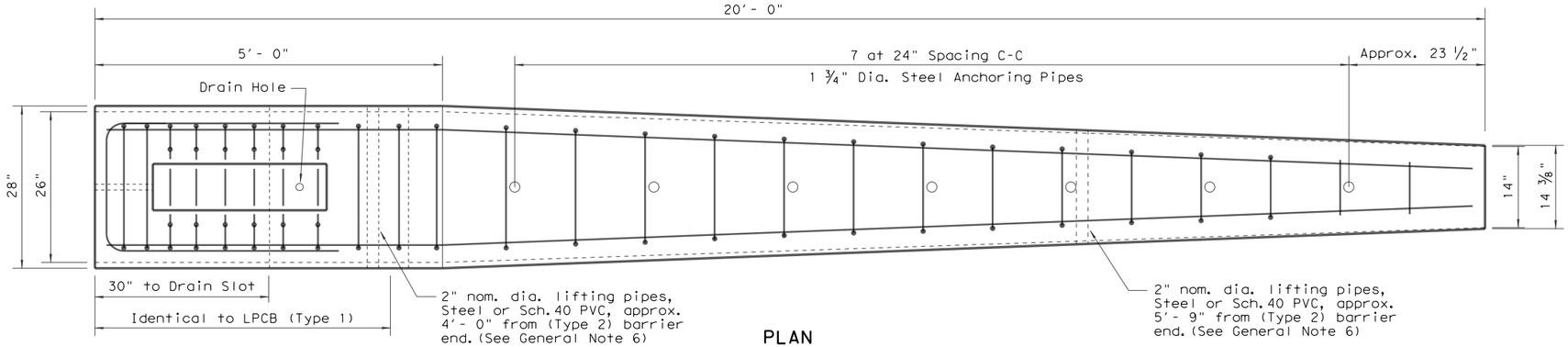
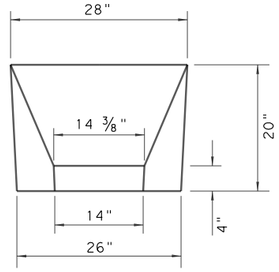
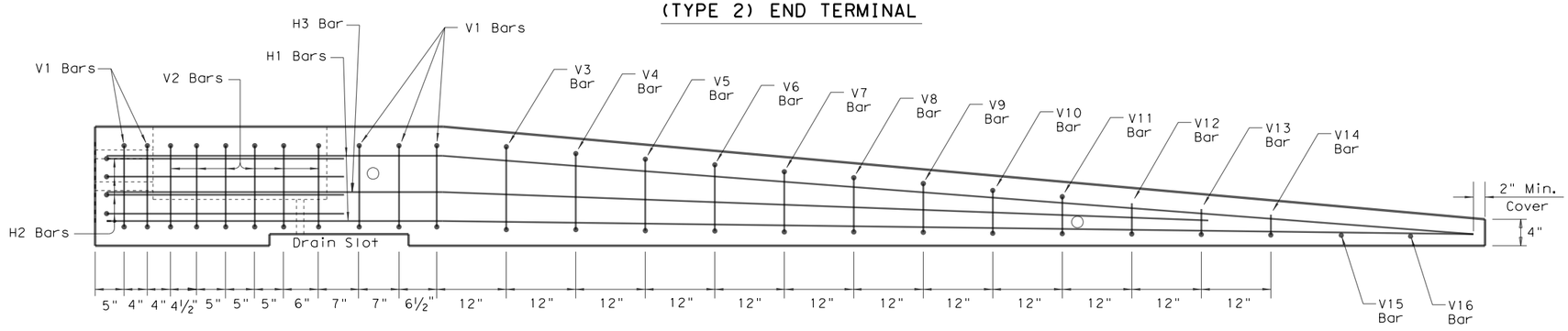


PLAN
(TYPE 2) END TERMINAL



APPROACH VIEW

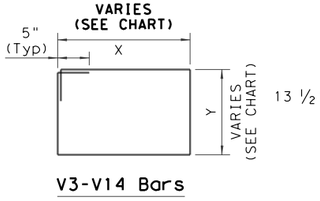


ELEVATION
(TYPE 2) END TERMINAL

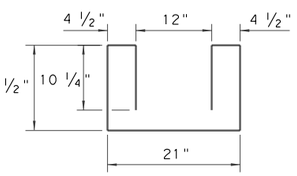
Note:
Anchoring pipes not shown in Elevation View

TYPE 2 - NOTES

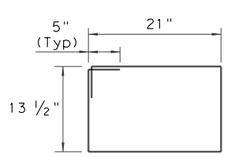
1. Welded wire reinforcment (WWR) is "not" an option for Type 2 Barrier.
2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement of the end treatment. The use of non-pinned end treatment does not affect the performance or the deflection of the Low-Profile barrier system.
4. The anchor pins are all the same length and are to be driven flush with the top of the (Type 2) barrier surface.
5. The bends in the H3 and H1 bars are slight, no formal bend is necessary.
6. The Type 2 barrier segment must be lifted from the rear first, to prevent cracking of sloped section.
7. See LPCB sheet 1 for additional information.



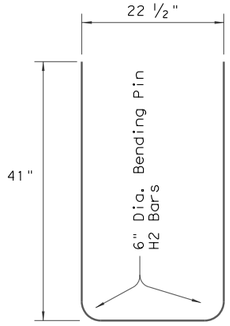
V3-V14 Bars



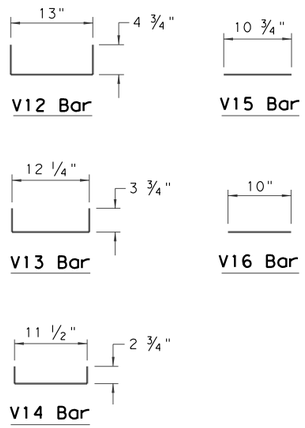
(6)~V2 Bars



(5)~V1 Bars



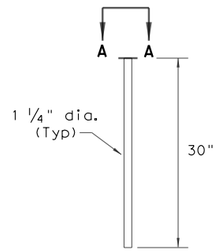
(4)~H2 Bars
(#5) Bars



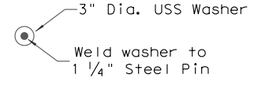
Note: All V Bars are (#4)

BAR (#4)	X (IN.)	Y (IN.)
V3 BAR	20 ¼	14 ½
V4 BAR	19 ½	13 ½
V5 BAR	18 ½	12 ¼
V6 BAR	17 ½	11 ¼
V7 BAR	17	10 ¼
V8 BAR	16 ¼	9
V9 BAR	15 ½	8
V10 BAR	14 ½	7
V11 BAR	13 ¾	6

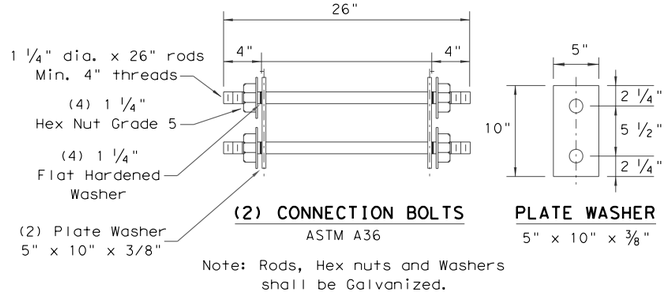
REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



(7) Anchor Pins
ASTM A36 Steel
(See Note 3)



Section A-A
(Head of Anchoring Pin)

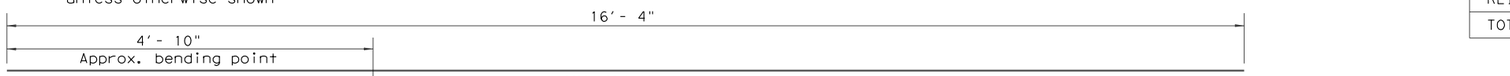


(2) CONNECTION BOLTS
ASTM A36

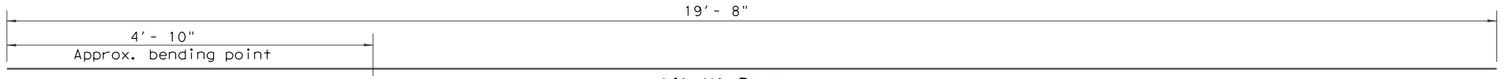
PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

Note: Use 2" Dia. Bending Pin, unless otherwise shown



(2)~H3 Bars
(#5) Bar



Note: Bends on H1 and H3 bars are slight and do not require formal bends.

(4)~H1 Bars
(#5) Bar

FOR CONTRACTORS INFORMATION ONLY

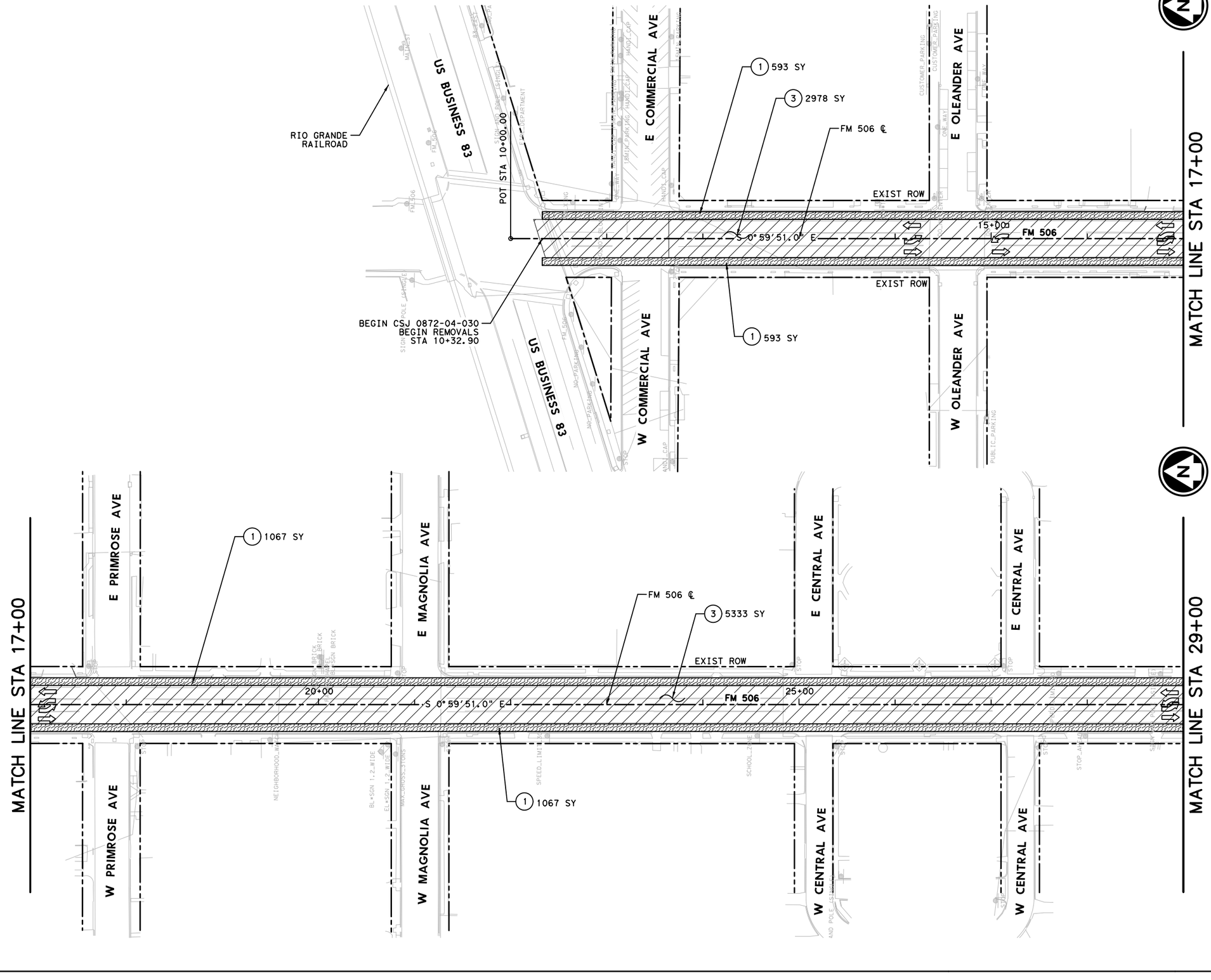
(TYPE 2) APPROX. QUANTITIES	20 FT. SECTION	
CONCRETE	CY	1.65
REINFORCING STEEL	LBS	240
TOTAL BARRIER WT.	LBS	7000

Texas Department of Transportation

Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 2)
LPCB-13

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030, ETC	FM 506, ETC
		COUNTY		SHEET NO.
	PHR	CAMERON		133



N

0′ 50′ 100′

SCALE IN FEET

LEGEND:

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
3. REMOVE STAB BASE AND ASPH PAV (22")
4. REMOVE STR (SET)
5. REMOVE STR (PIPE)
6. REMOVE METAL BEAM GUARD FENCE
7. GUARDRAIL END TREATMENT (REMOVE)
8. REMOVE CONCRETE (DWY)
9. REMOVE STR (INLET)
10. ADJUSTING INLET (CAP)

NOTE:

1. REPAIR OF THE DAMAGES OCCURRED TO THE SIDEWALK AND/OR PAVERS RESULTING FROM REMOVAL OF INLETS OR MANHOLES IS INCIDENTAL TO THE PERTINENT REMOVAL BID ITEM.

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/5/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

REMOVAL LAYOUTS

SHEET 1 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		134
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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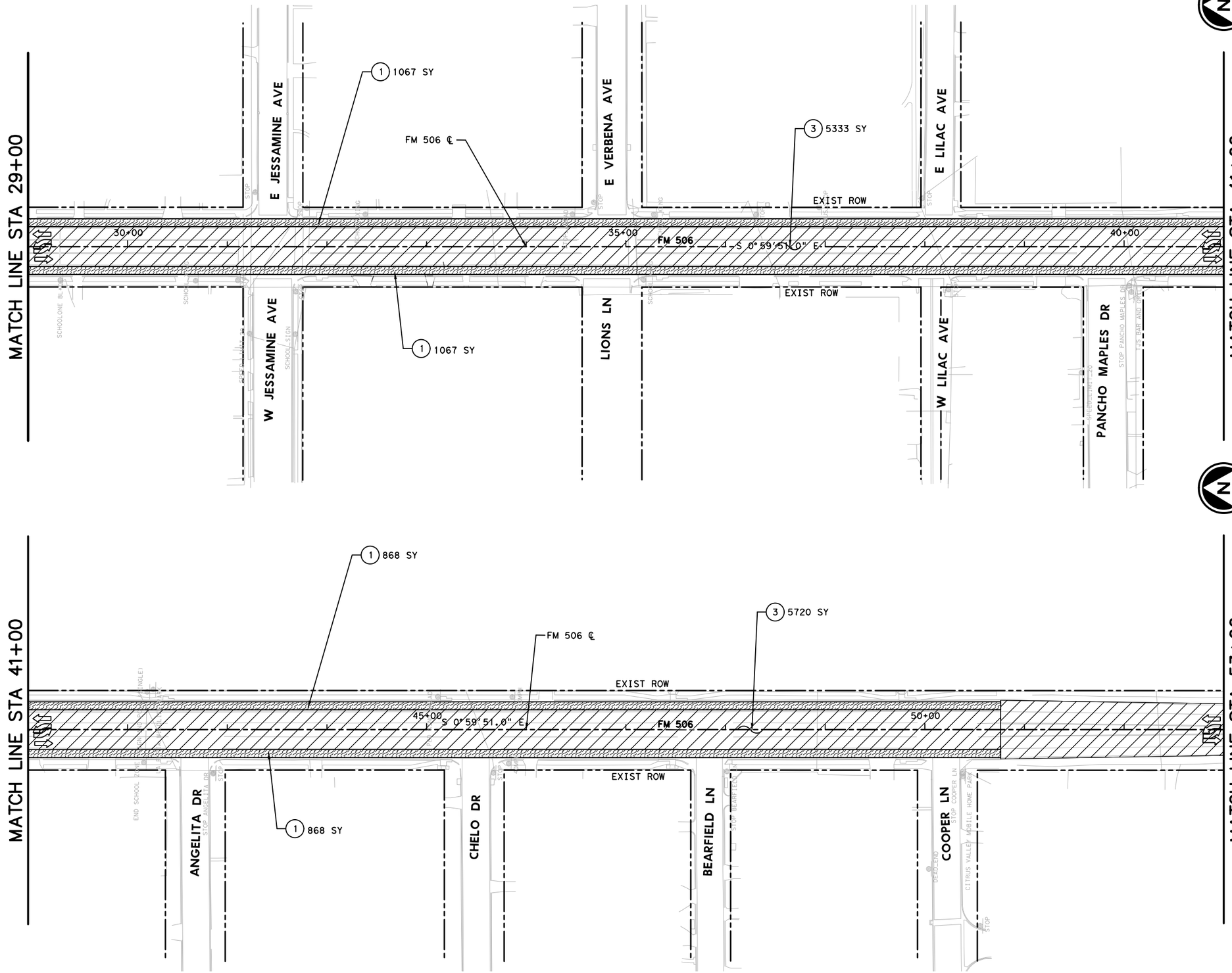

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
3. REMOVE STAB BASE AND ASPH PAV (22")
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5. REMOVE STR (PIPE)
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NOTE:

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STATE OF TEXAS
MORT T. TASHOOR
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PROFESSIONAL ENGINEER

10/5/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 506

REMOVAL LAYOUTS

SHEET 2 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		135
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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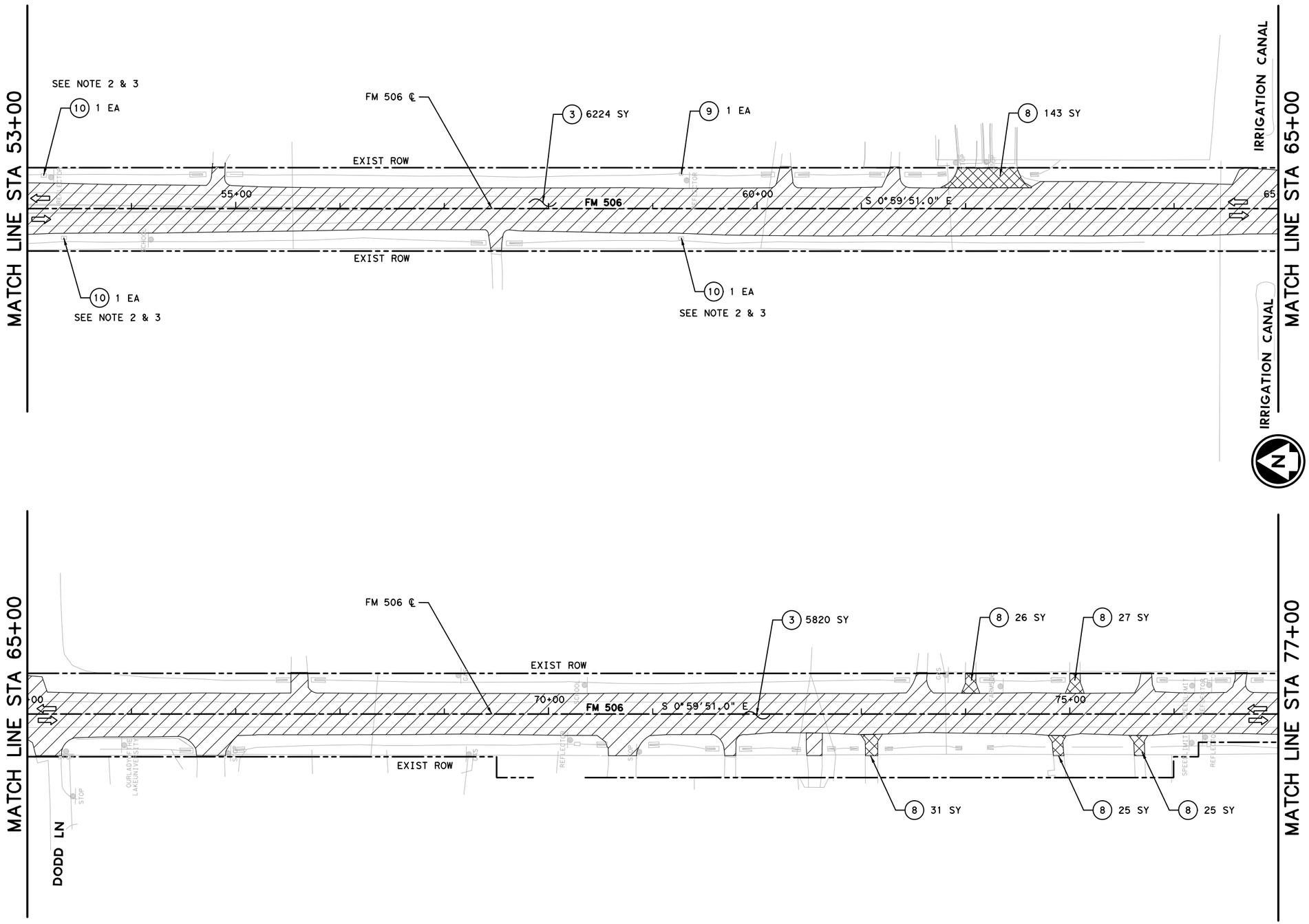

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
3. REMOVE STAB BASE AND ASPH PAV (22")
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7. GUARDRAIL END TREATMENT (REMOVE)
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9. REMOVE STR (INLET)
10. ADJUSTING INLET (CAP)

NOTE:

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2. REFER TO INLET AND MANHOLE CAPPING DETAIL SHEET FOR DETAILS RELATED TO ADJUSTING INLETS.
3. SEE INLET DETAIL (FM 506)

STATE OF TEXAS
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10/5/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

REMOVAL LAYOUTS

SHEET 3 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		136
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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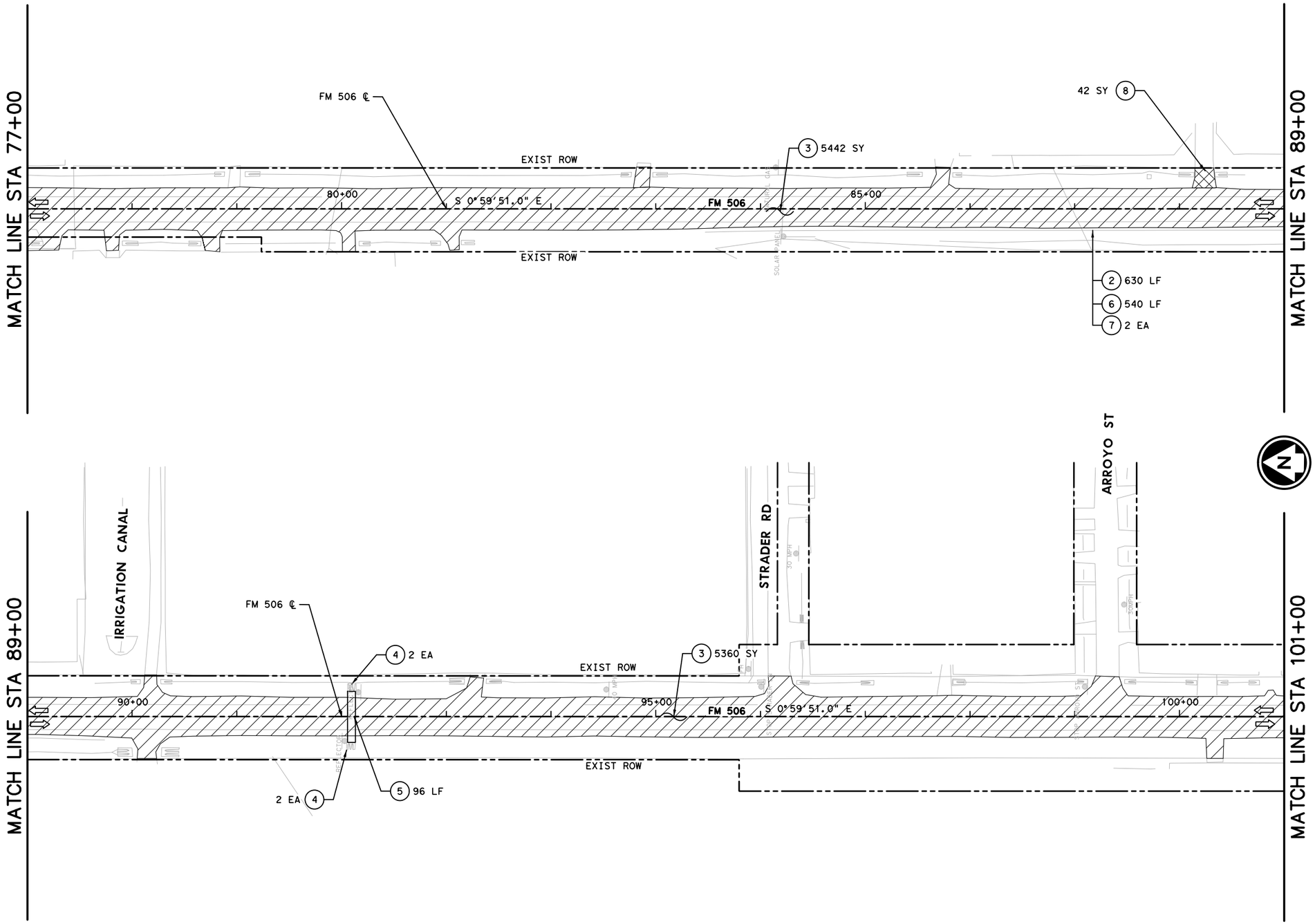

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
3. REMOVE STAB BASE AND ASPH PAV (22")
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STATE OF TEXAS
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10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

REMOVAL LAYOUTS

SHEET 4 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		137
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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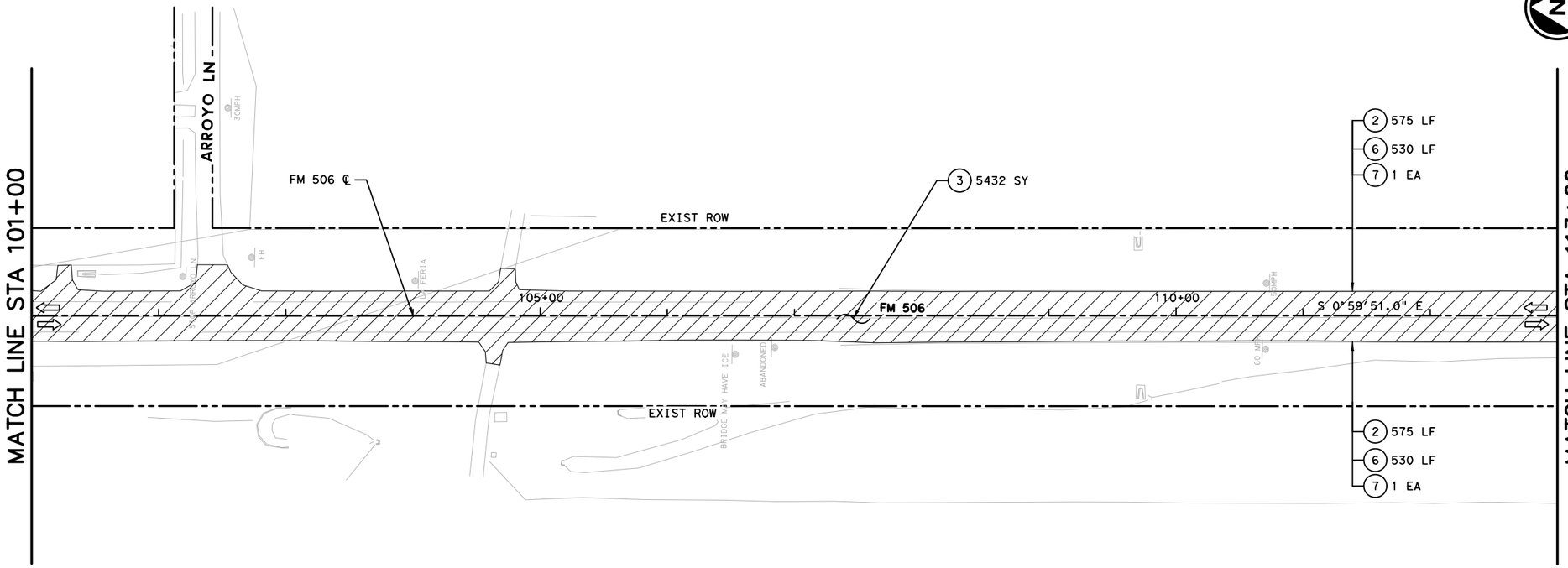

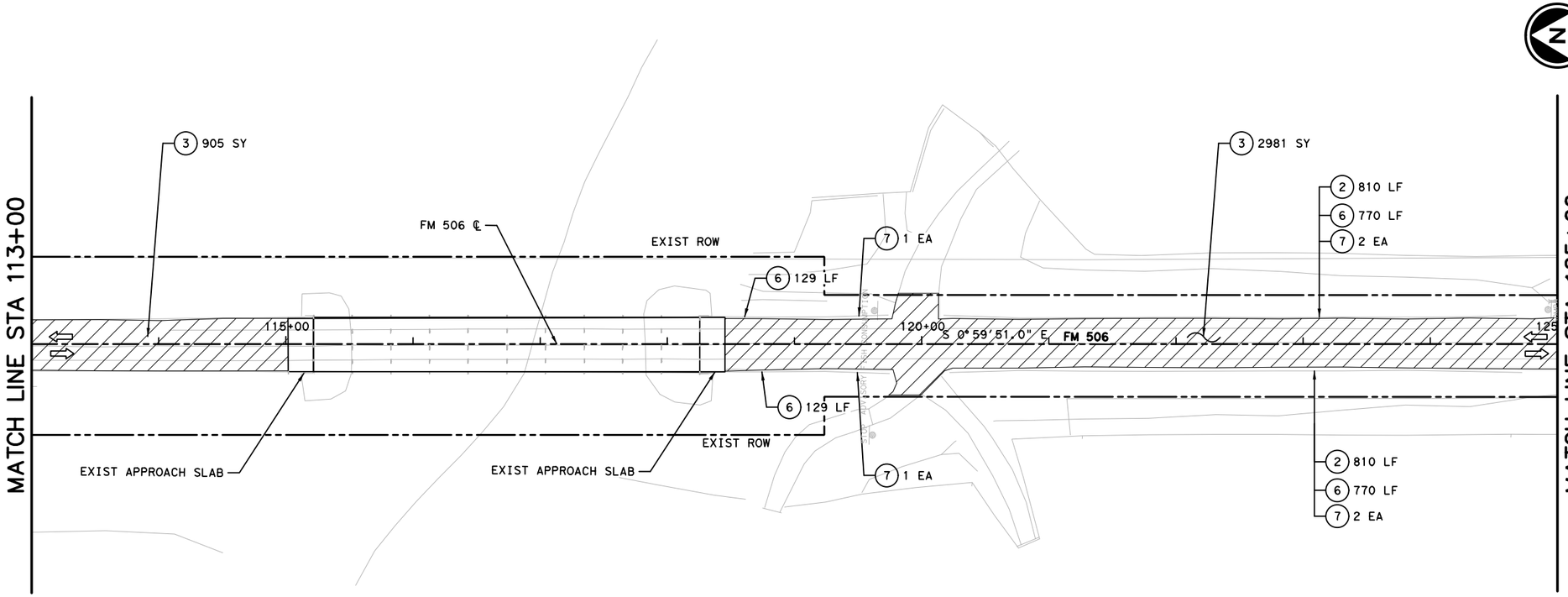

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
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STATE OF TEXAS
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PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

REMOVAL LAYOUTS

SHEET 5 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		138
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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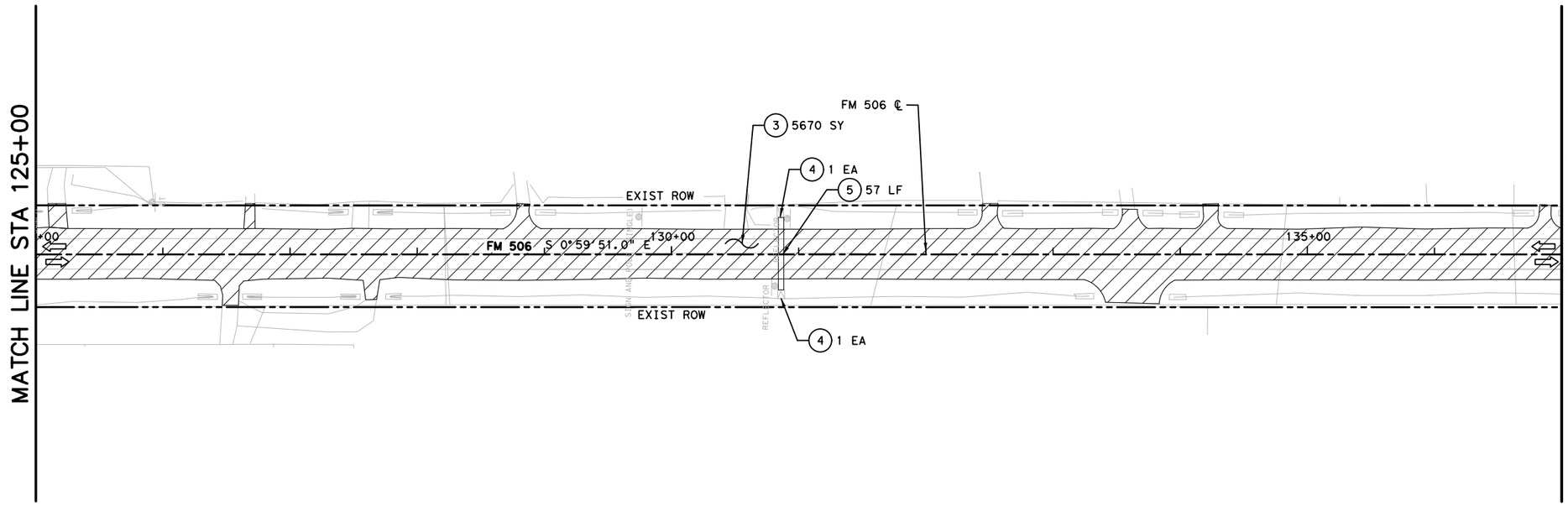

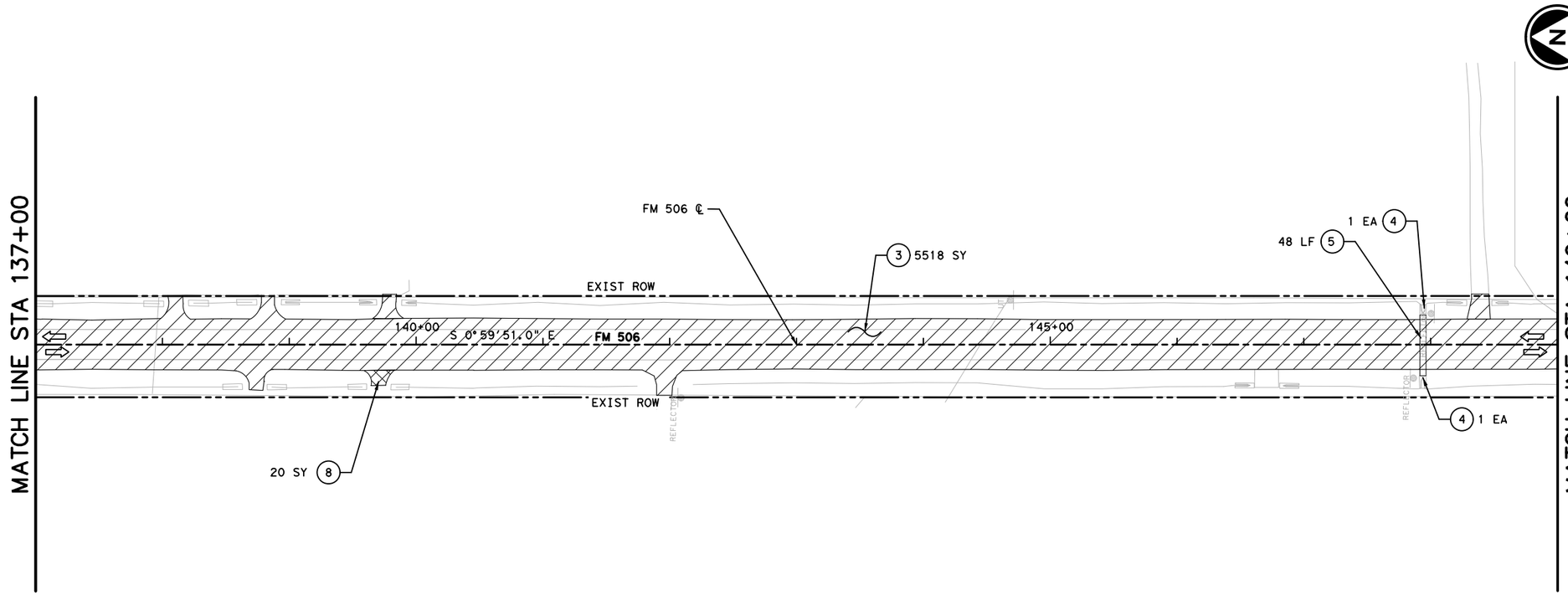

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
3. REMOVE STAB BASE AND ASPH PAV (22")
4. REMOVE STR (SET)
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STATE OF TEXAS
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ISSUE RECORD		
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I. S. ENGINEERS, LLC
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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

REMOVAL LAYOUTS

SHEET 6 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		139
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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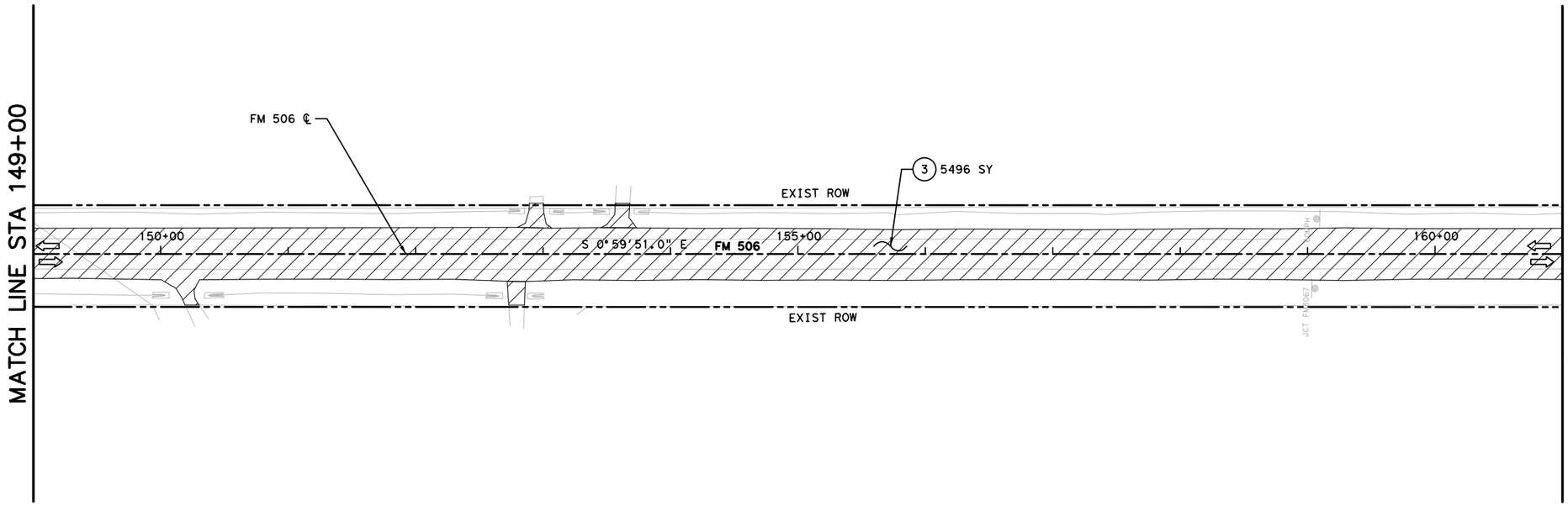

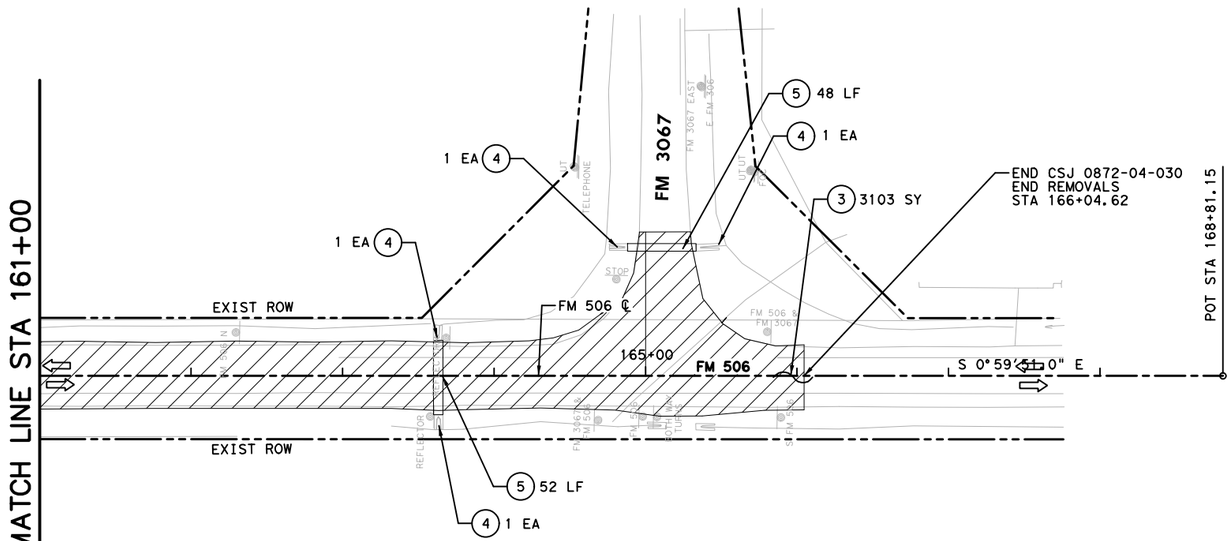

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. PLANE AND TEXTURE EXIST ASPH PVMT
2. REMOVING CONCRETE (MOW STRIP)
3. REMOVE STAB BASE AND ASPH PAV (22")
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STATE OF TEXAS
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ISSUE RECORD		
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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

REMOVAL LAYOUTS

SHEET 7 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		140
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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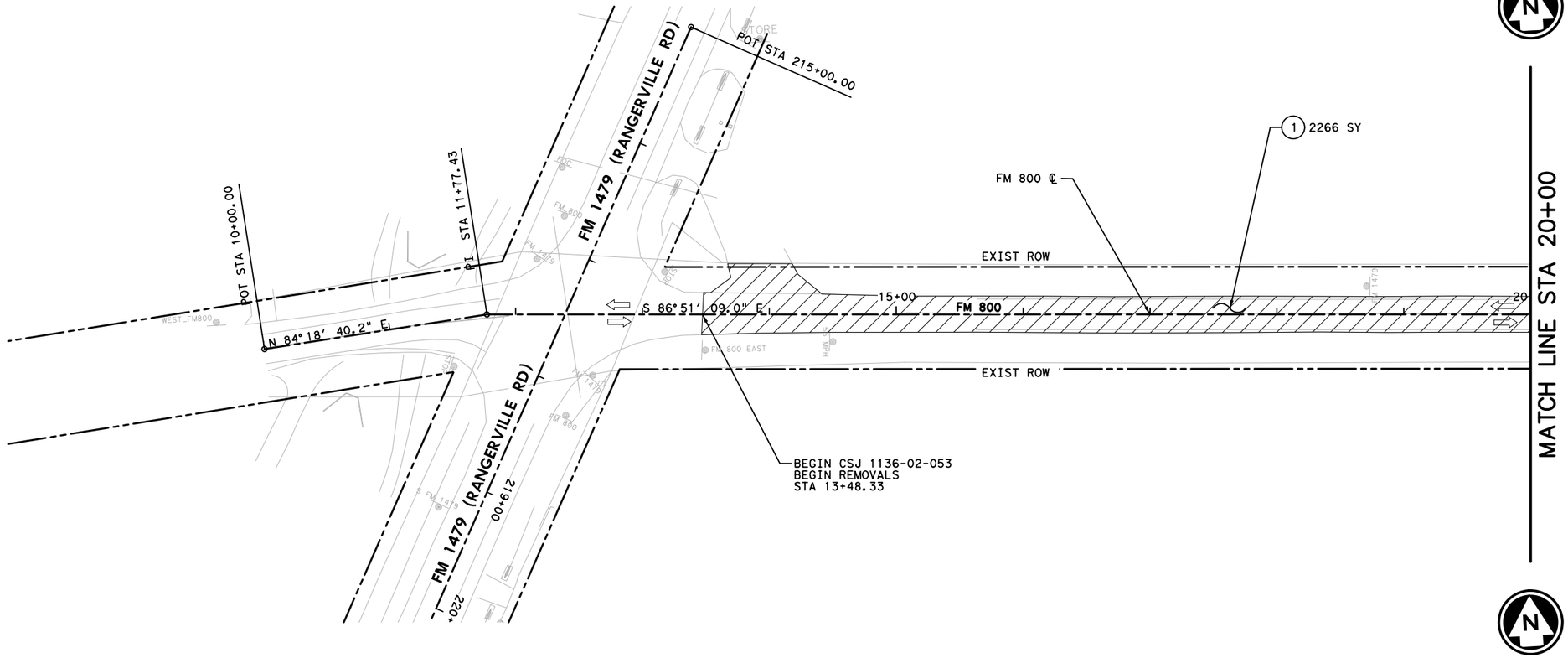

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 800

REMOVAL LAYOUT

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		141
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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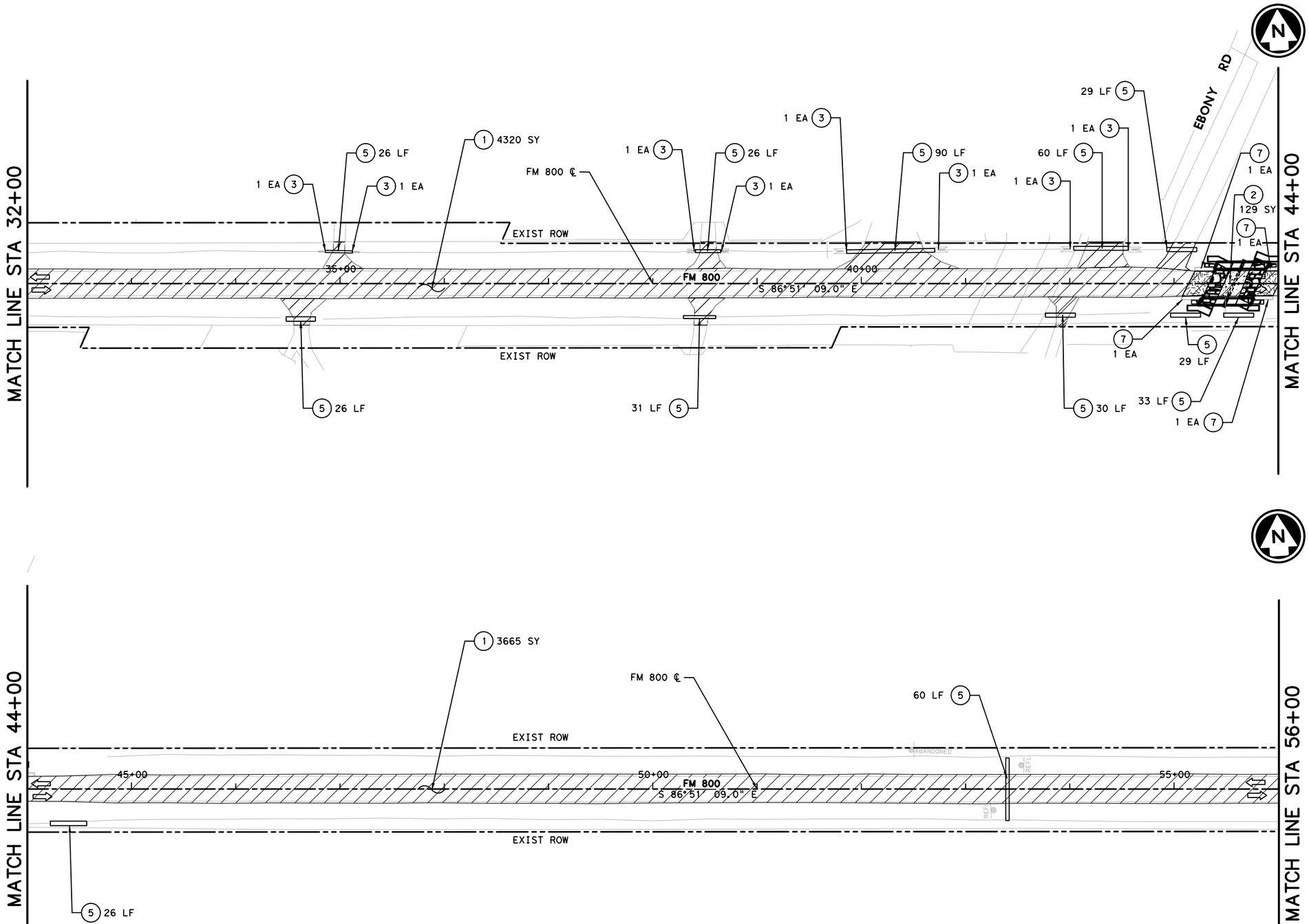

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. REMOVE STAB BASE AND ASPH PAV (18")
2. PLANE ASPH CONC PAV(0" TO 2")
3. REMOVE STR (SET)
4. REMOVING STR (HEADWALL)
5. REMOVE STR (PIPE)
6. REMOVE STR (BOX CULVERT)
7. REMOVE QUADGUARD (N) (TO BE REINSTALLED)
8. REMOVE STR (INLET)
9. REMOVE CONCRETE (DWY)

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 800

REMOVAL LAYOUT

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		142
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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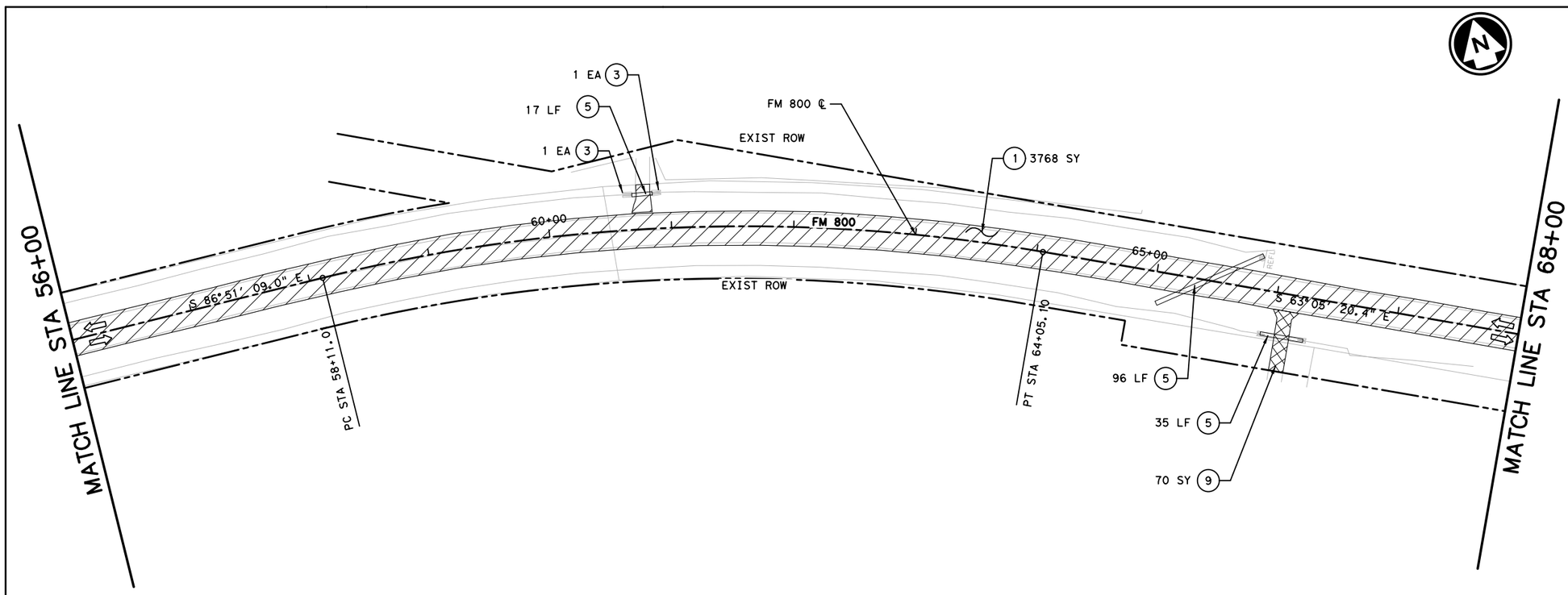

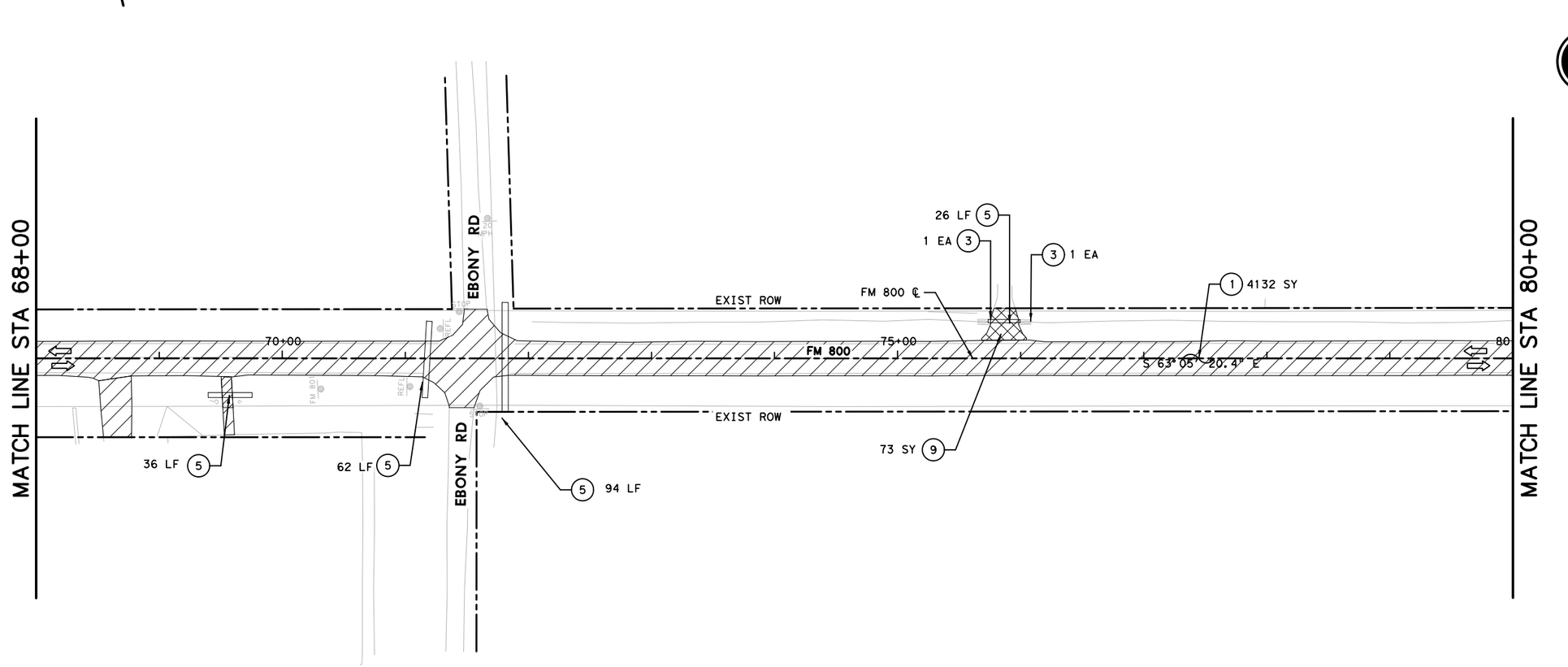

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. REMOVE STAB BASE AND ASPH PAV (18")
2. PLANE ASPH CONC PAV(0" TO 2")
3. REMOVE STR (SET)
4. REMOVING STR (HEADWALL)
5. REMOVE STR (PIPE)
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7. REMOVE QUADGUARD (N) (TO BE REINSTALLED)
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STATE OF TEXAS
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10/5/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 800

REMOVAL LAYOUT

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		143
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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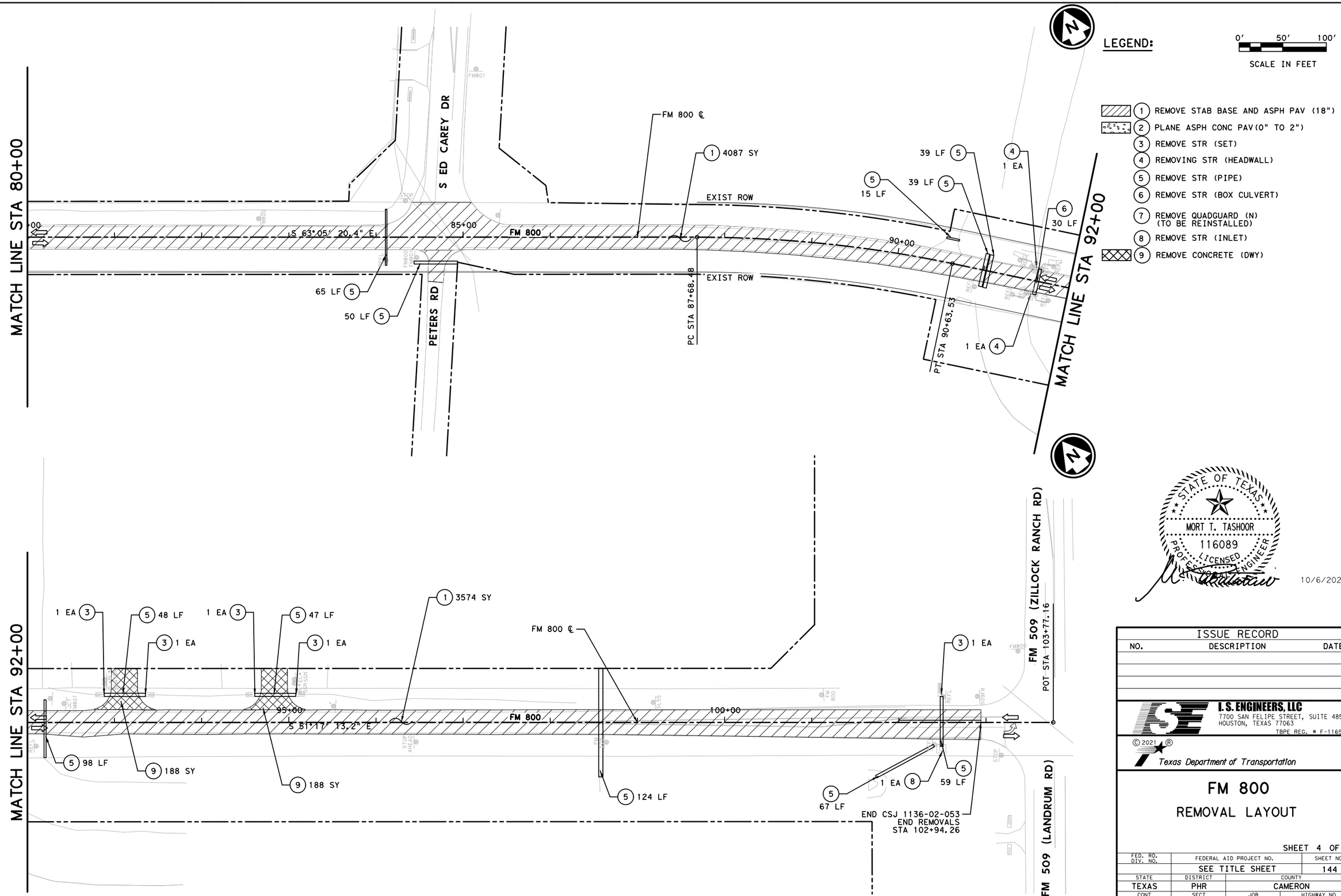

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 800

REMOVAL LAYOUT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		144
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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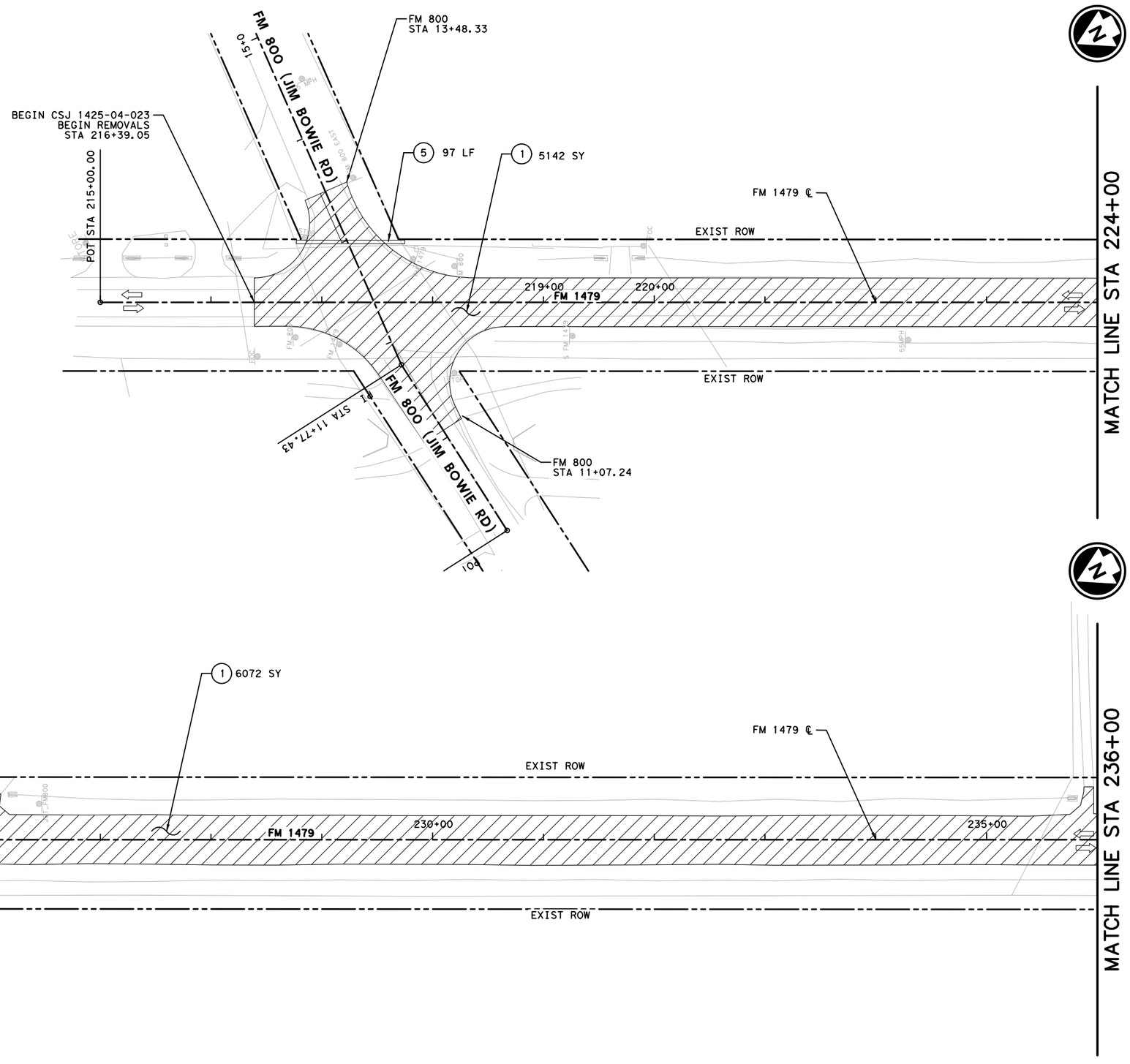

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. REMOVE STAB BASE AND ASPH PAV (18")
2. REMOVE STR (INLET)
3. REMOVE STR (SET)
4. REMOVING STR (HEADWALL)
5. REMOVE STR (PIPE)
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STATE OF TEXAS
MORT T. TASHOOR
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10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

REMOVAL LAYOUTS

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		145
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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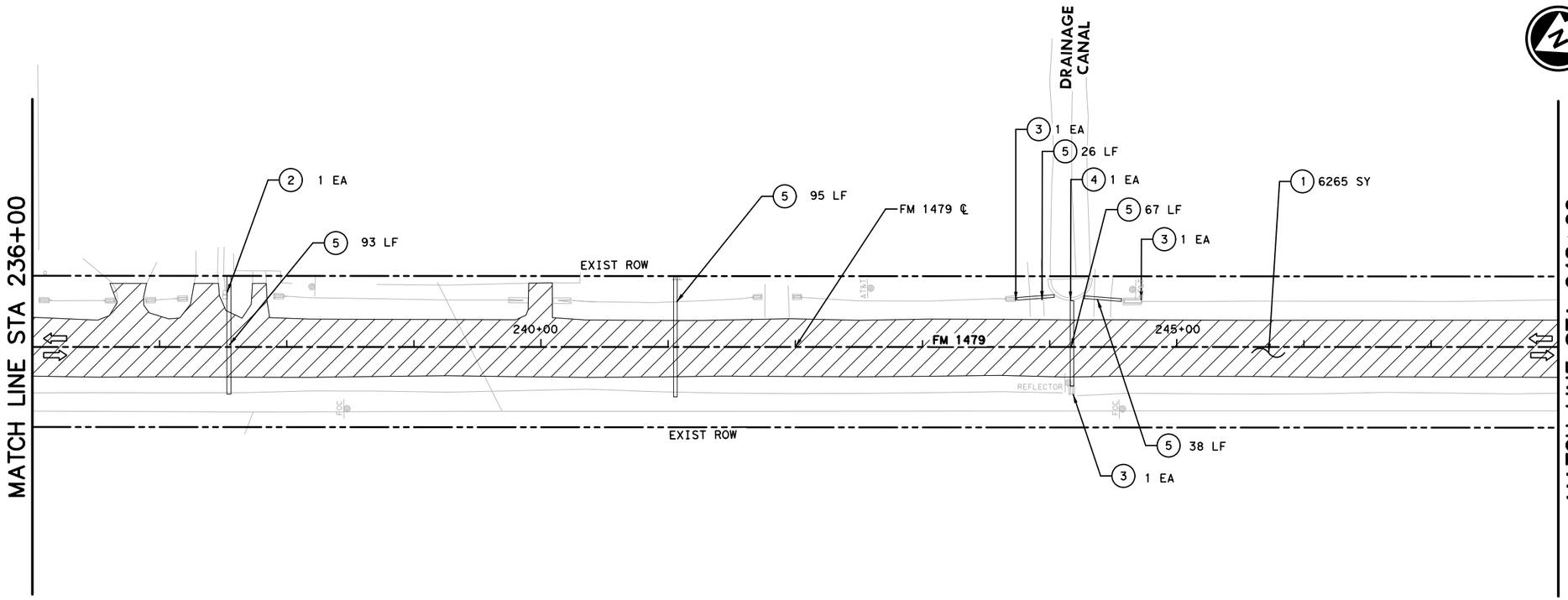

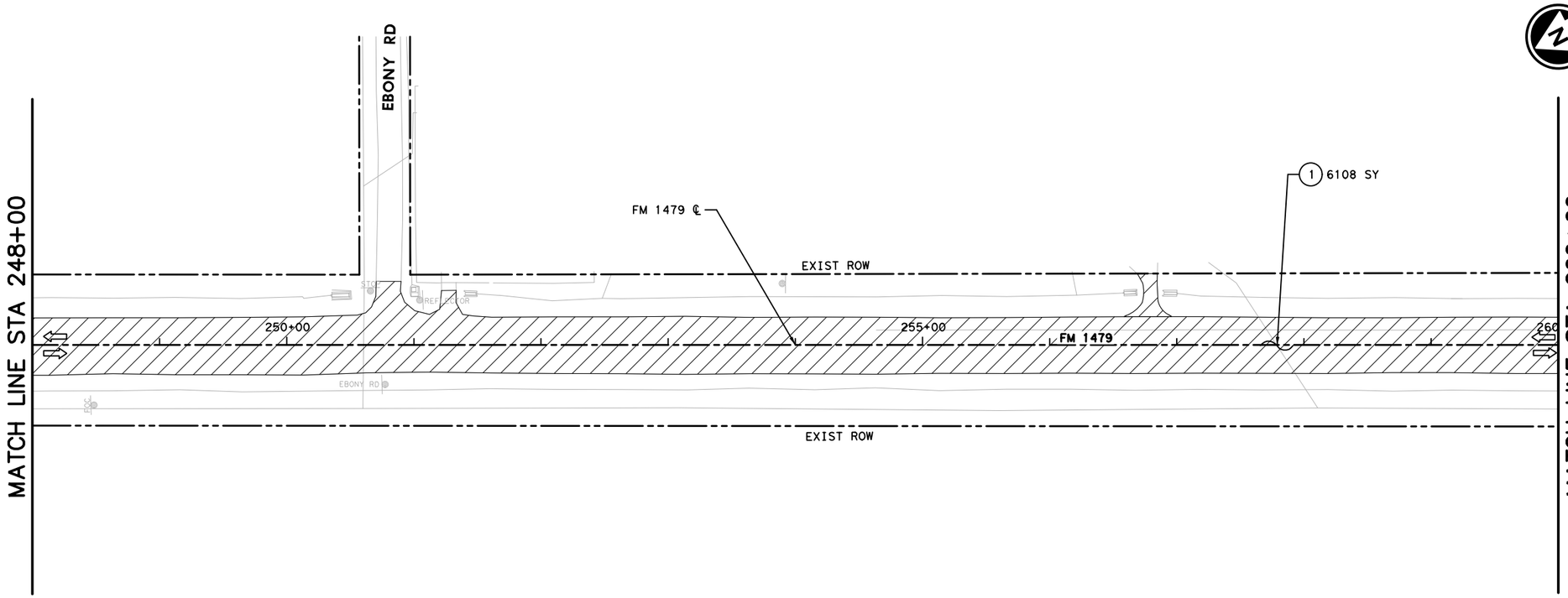

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. REMOVE STAB BASE AND ASPH PAV (18")
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3. REMOVE STR (SET)
4. REMOVING STR (HEADWALL)
5. REMOVE STR (PIPE)
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STATE OF TEXAS
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10/5/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

REMOVAL LAYOUTS

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		146
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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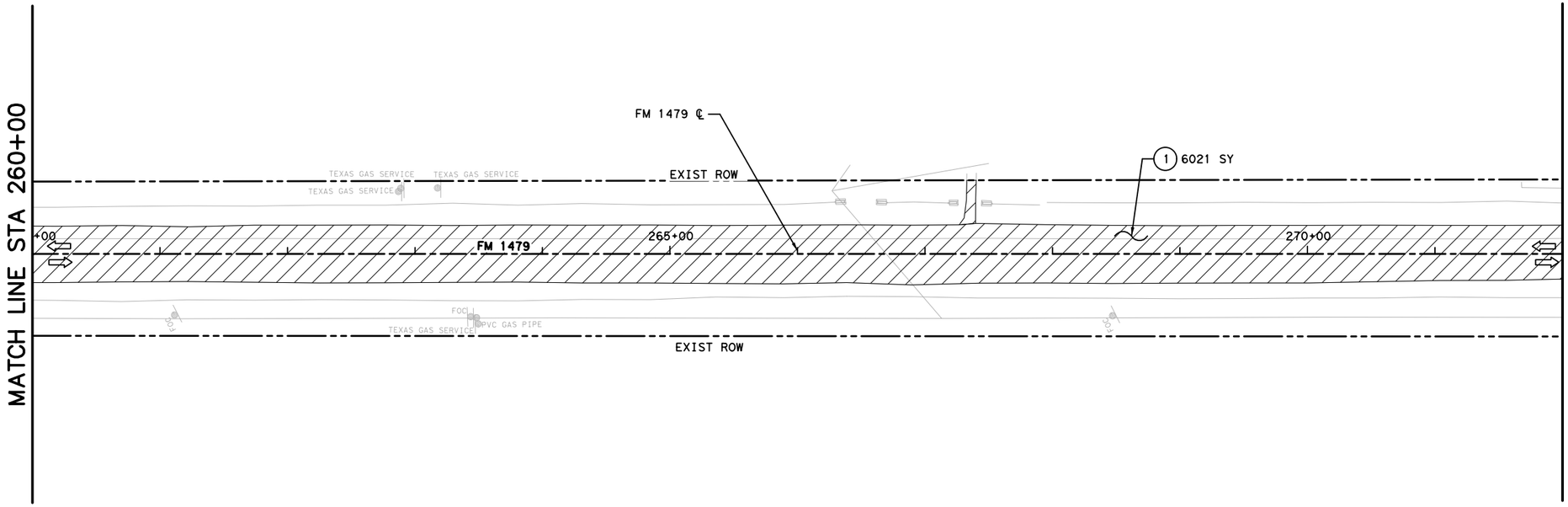

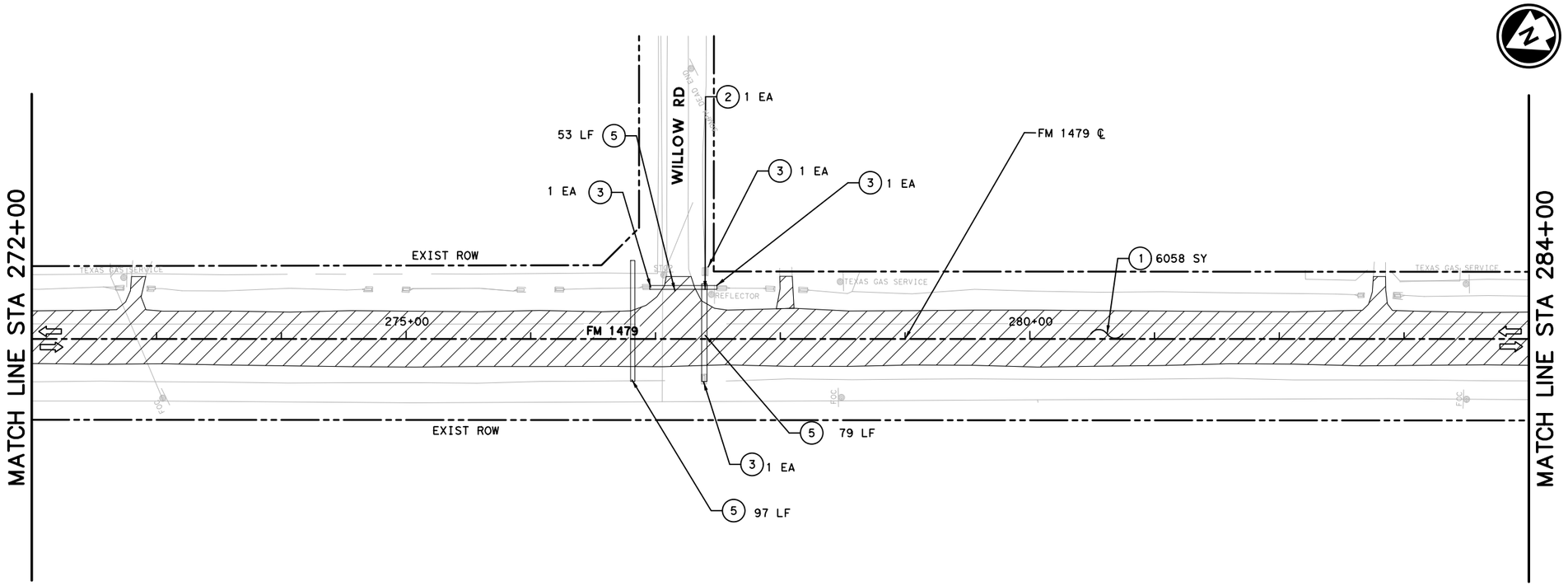

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. REMOVE STAB BASE AND ASPH PAV (18")
2. REMOVE STR (INLET)
3. REMOVE STR (SET)
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10/6/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

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HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

REMOVAL LAYOUTS

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		147
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

10/6/2021 3:19:06 PM

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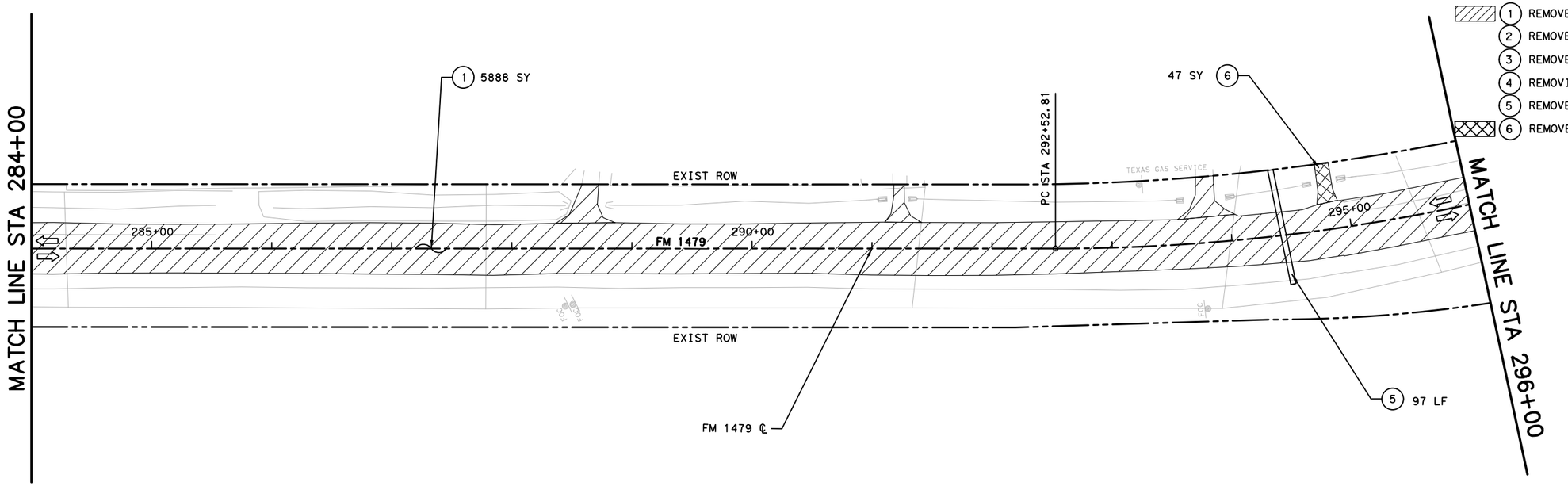

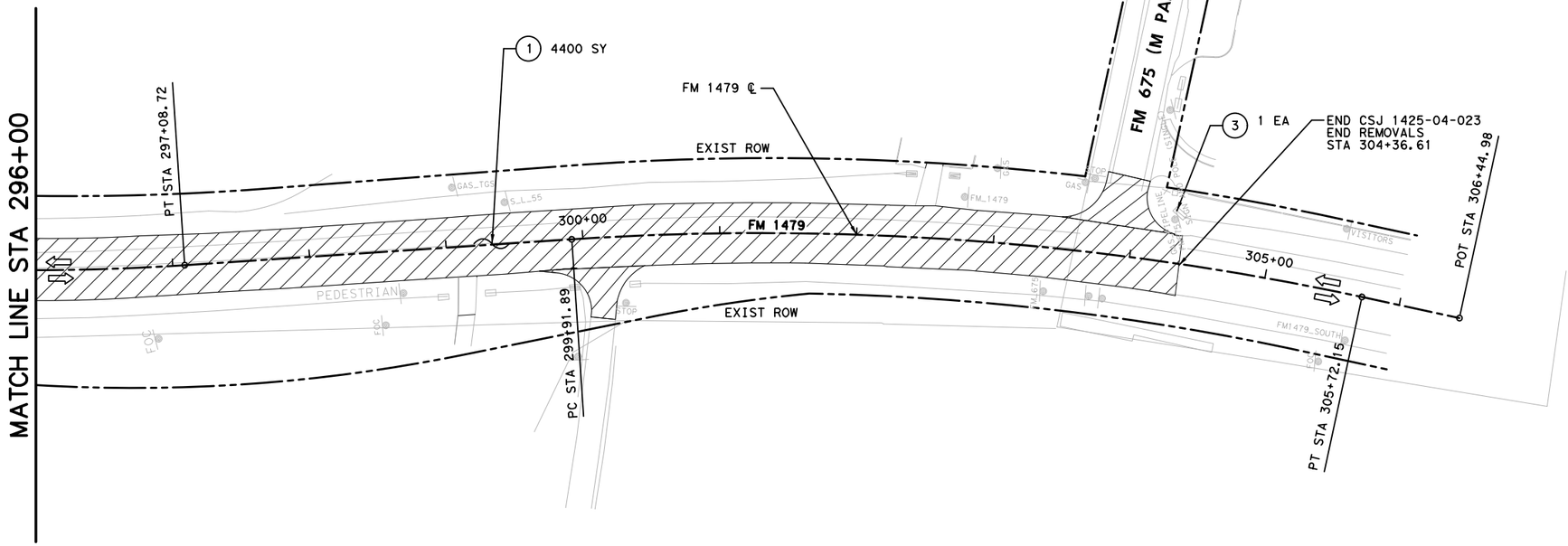

LEGEND:

0′ 50′ 100′

SCALE IN FEET

1. REMOVE STAB BASE AND ASPH PAV (18")
2. REMOVE STR (INLET)
3. REMOVE STR (SET)
4. REMOVING STR (HEADWALL)
5. REMOVE STR (PIPE)
6. REMOVE CONCRETE (DWY)

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

REMOVAL LAYOUTS

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		148
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

10/6/2021 3:19:44 PM

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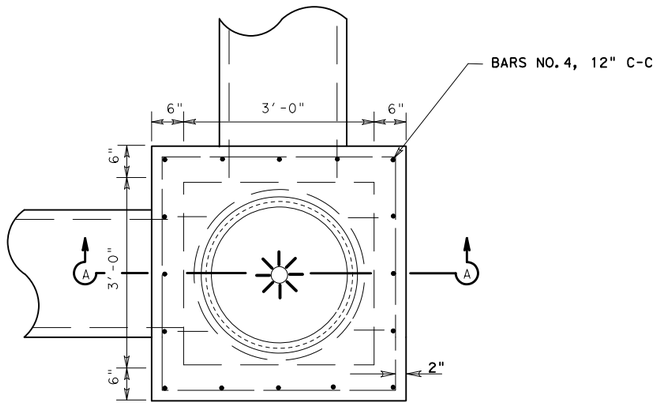
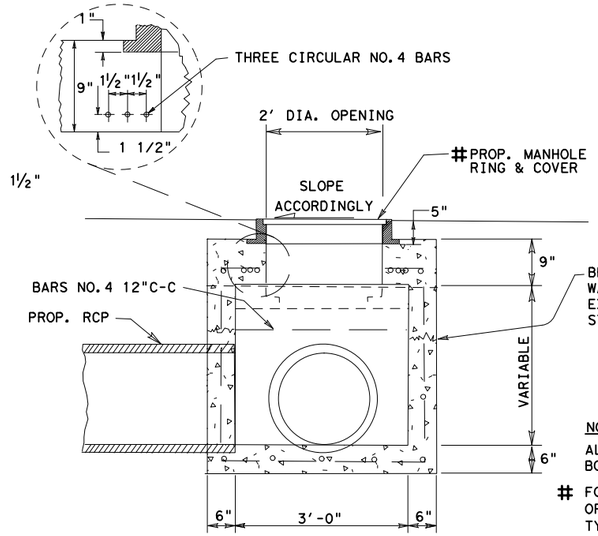


PLAN VIEW

(TO BE PAID UNDER ITEM 479 "ADJUST INLET (JCT BOX)"

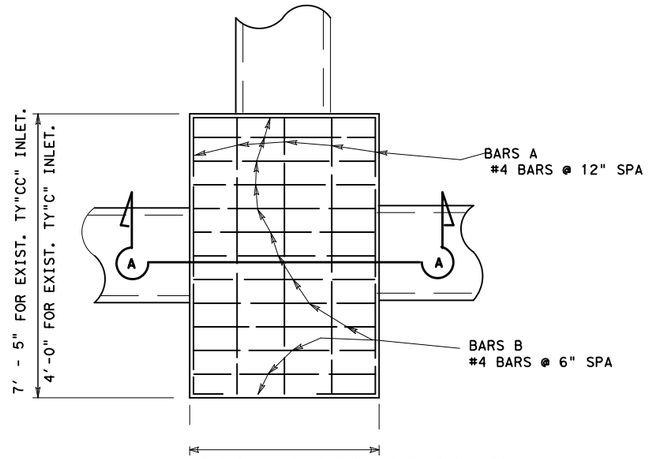


NOTE:

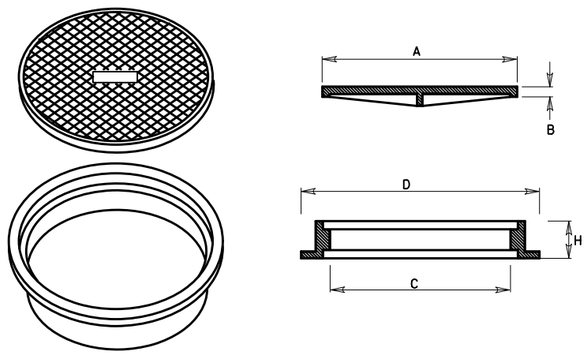
ALL STEEL TO BE NO. 4 BARS, 12" C-C IN BOTH DIRECTIONS.

FOR MANHOLES LOCATED WITHIN PAVED PORTIONS OF THE ROADWAY, THE COVER SHALL BE OF A TYPE THAT CAN BE BOLTED TO THE RING.

SECTION A-A
ADJUST INLET (JUNCT. BOX)



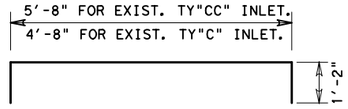
PLAN



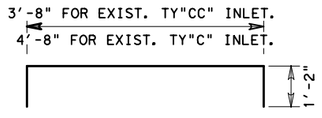
LID			RING		
"A"	"B"	WEIGHT	"C"	"D"	"H"
2'-2"	1"	174 lbs. (min)	2'-0"	2'-7½"	5"

RING & COVER DETAILS
(FOR MANHOLE TY "A" AND "A1")
(NON-PAY)

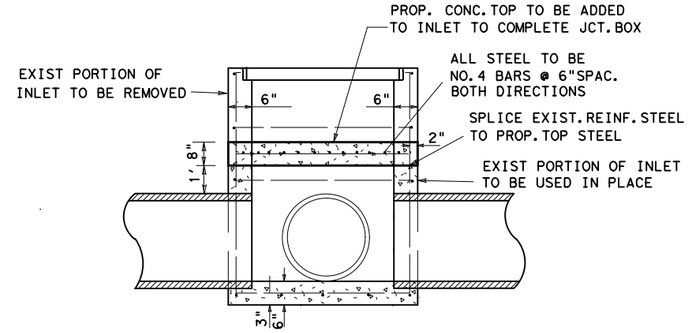
NOTES: RINGS AND COVERS OF SLIGHTLY DIFFERENT DIMENSIONS BUT APPROXIMATELY THE SAME WEIGHT MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



BARS A



BARS B



EXIST TY "C" OR TY "CC" INLET TO BE CONVERTED TO JCT. BOX

SECTION A-A
ADJ. INLET (CAP)

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

INLET AND MANHOLE CAPPING DETAIL

REV. 4/02 CAPDET.DGN

FED.RD. DIV.NO.	FILE NO.		PROJECT NO.			SHEET NO.
6						149
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030	FM 506, ETC

BEGINNING CHAIN FM 506 DESCRIPTION

POB ( ) 10+00.00 R1 N16583067.6765 E1205935.5041
POE ( ) 168+81.15 R1 N16567188.9311 E1206211.9755
Tangential Direction: S 0°59'51.0" E
Tangential Length: 15881.1521

ENDING CHAIN FM 506 DESCRIPTION

ISSUE RECORD		
NO.	DESCRIPTION	DATE

Texas Department of Transportation

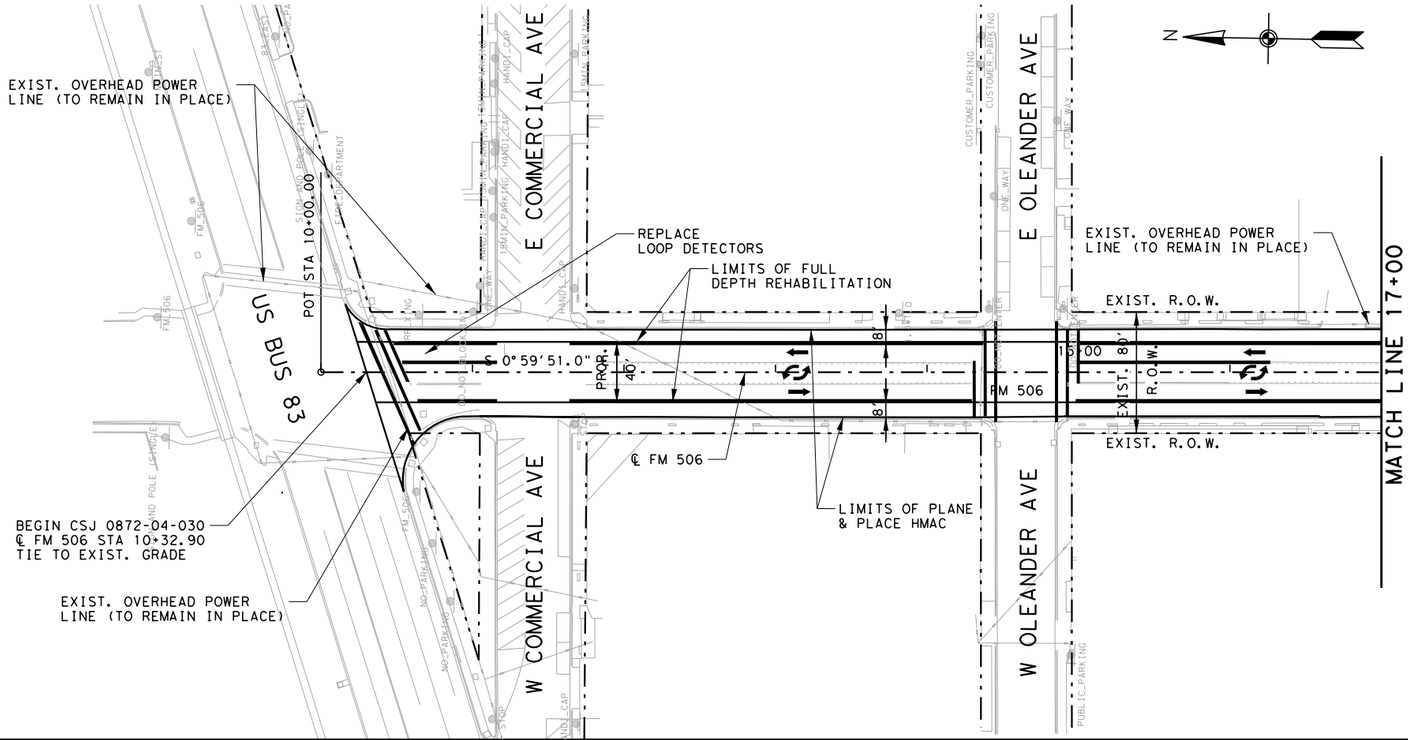
FM 506

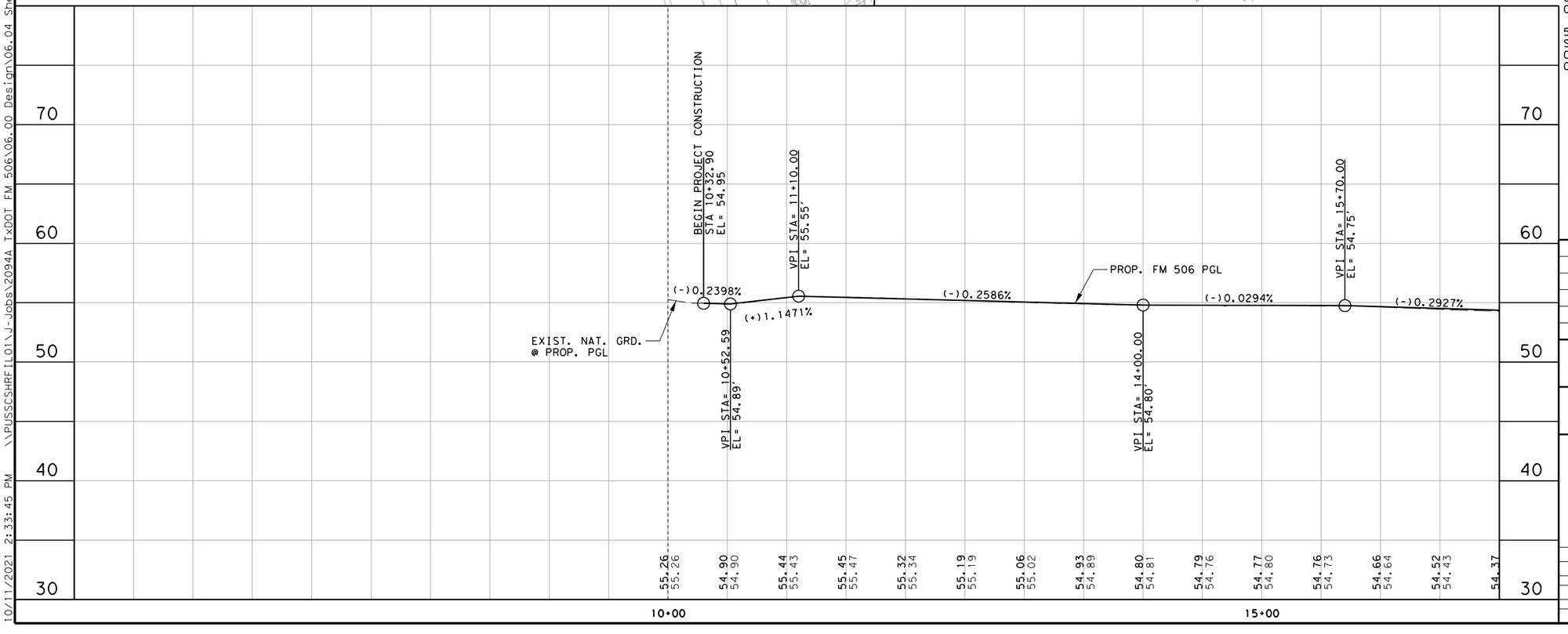
ROADWAY DATA

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		150
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506RD01.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OM-2Z OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

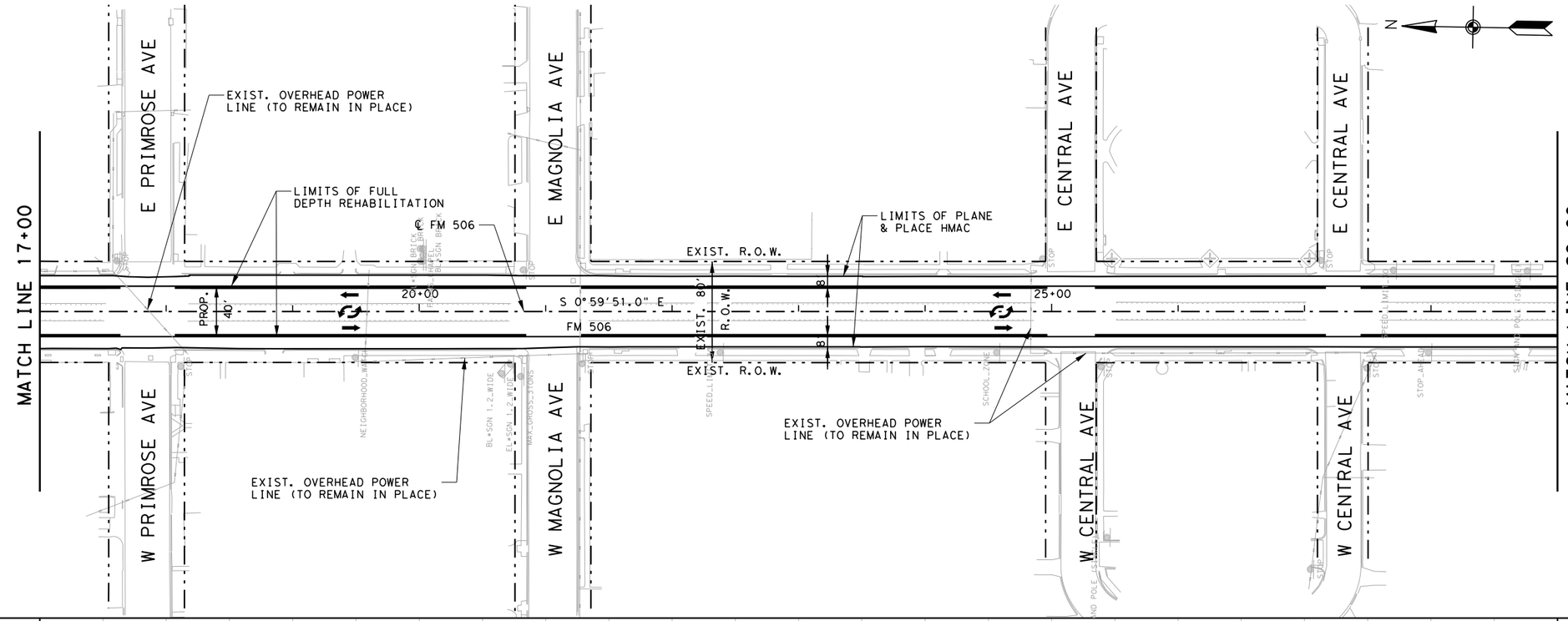
PLAN & PROFILE
BEGIN PROJECT TO STA 17+00

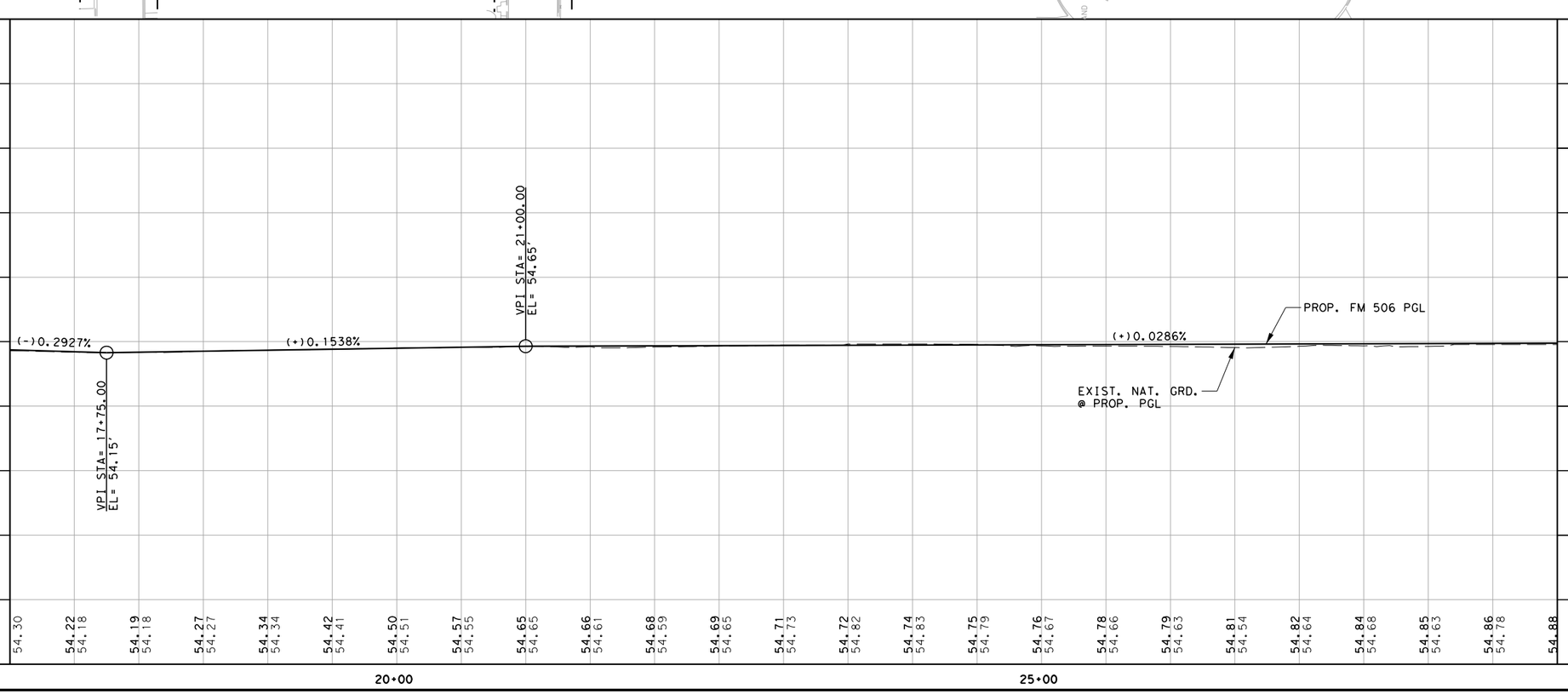
VERT. PROFILE 1"=10' SHEET 1 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	151

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP01.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PLAN & PROFILE STA 17+00 TO STA 29+00

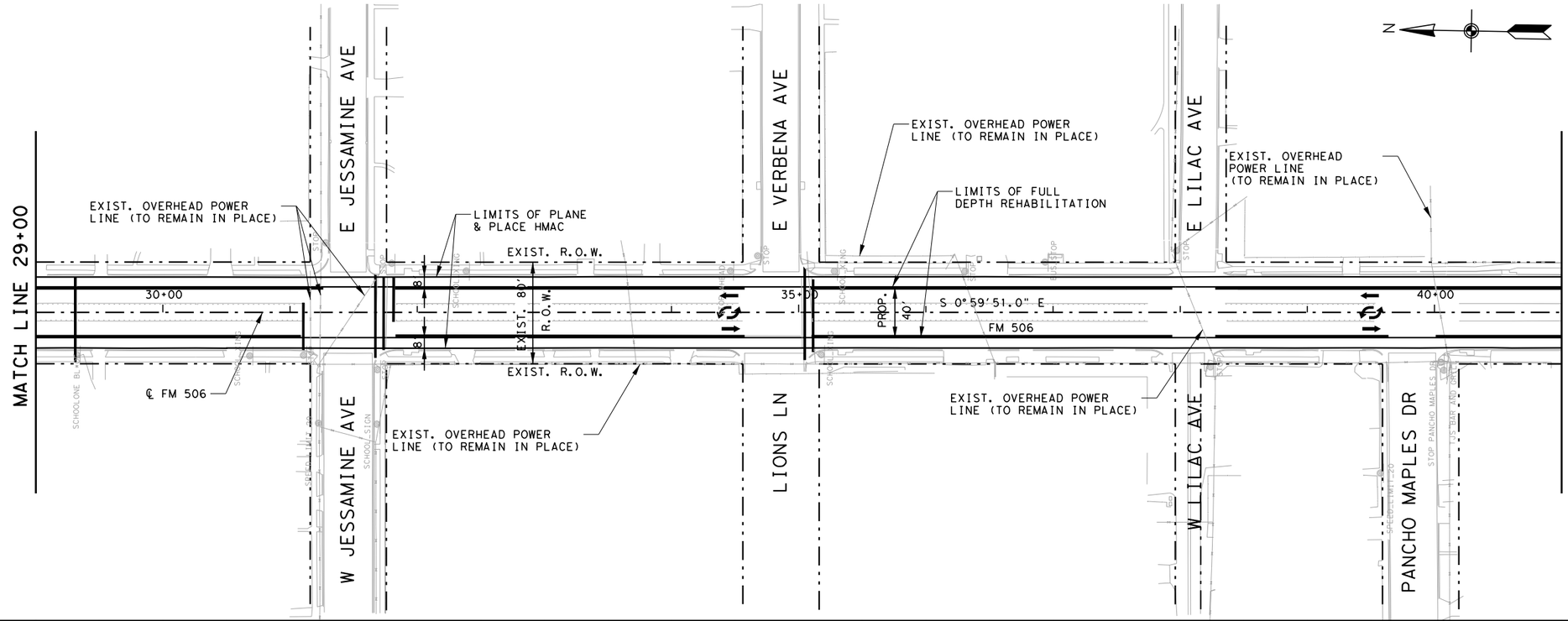
VERT. PROFILE 1"=10' SHEET 2 OF 14

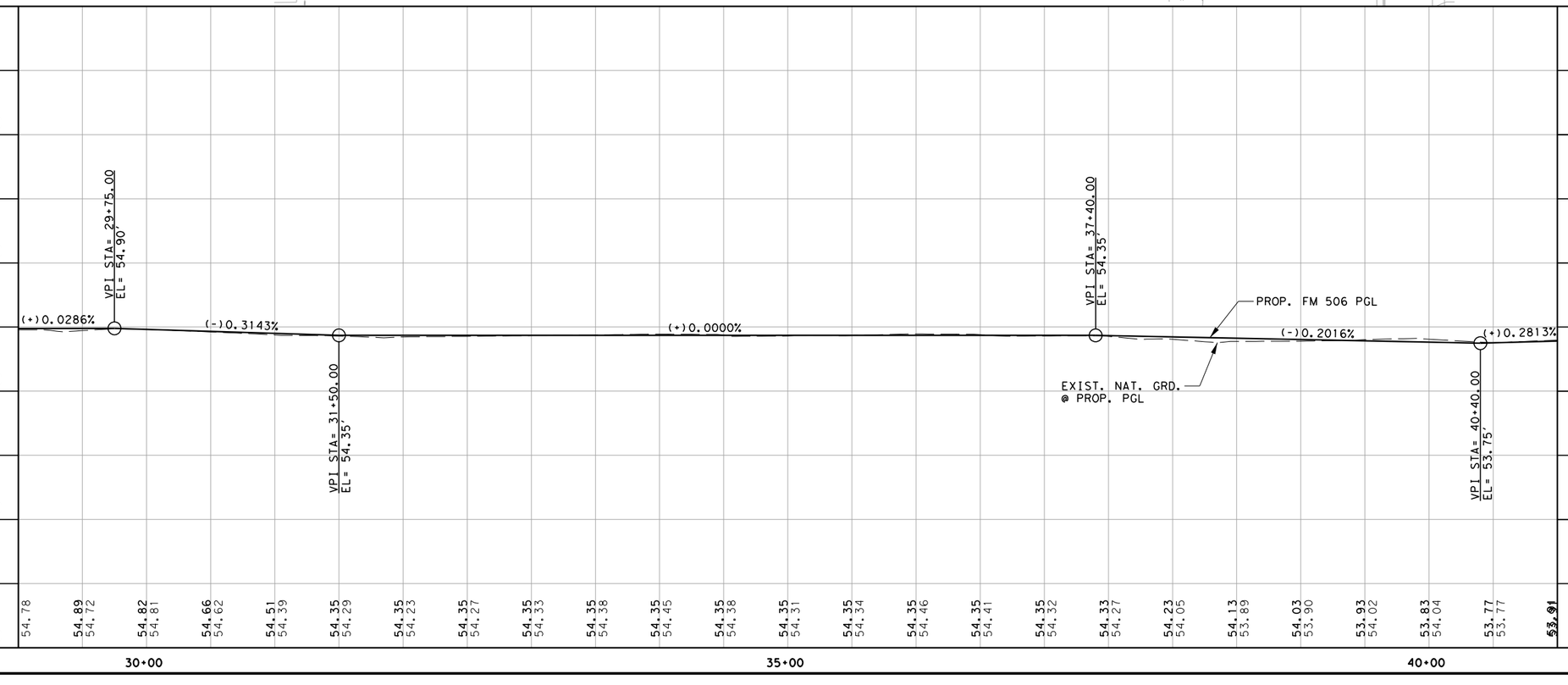
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	152

STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP02.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PLAN & PROFILE STA 29+00 TO STA 41+00

VERT. PROFILE 1"=10' SHEET 3 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	153

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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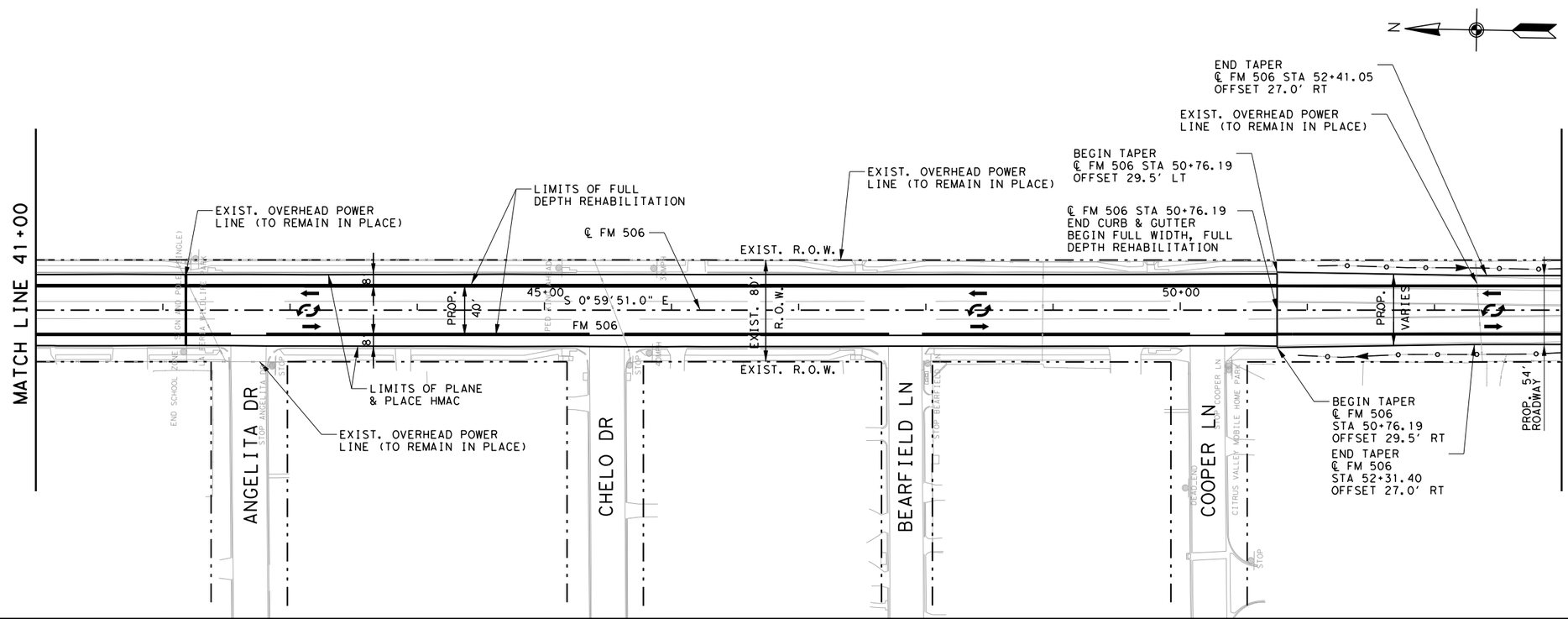

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PLAN & PROFILE STA 41+00 TO STA 53+00

VERT. PROFILE 1"=10' SHEET 4 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	154

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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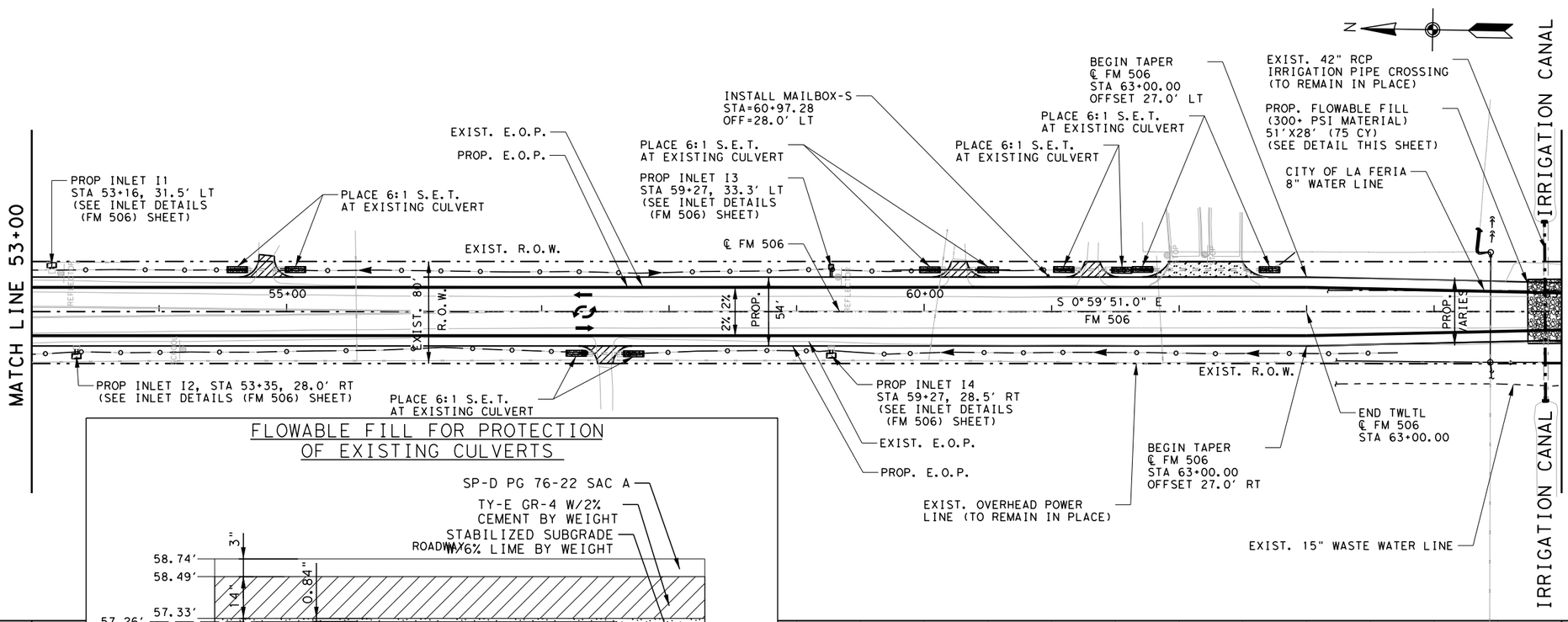
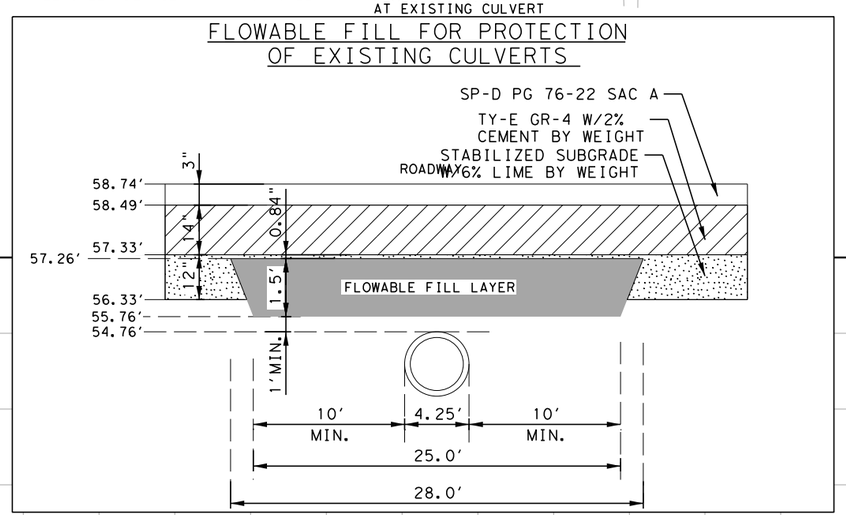
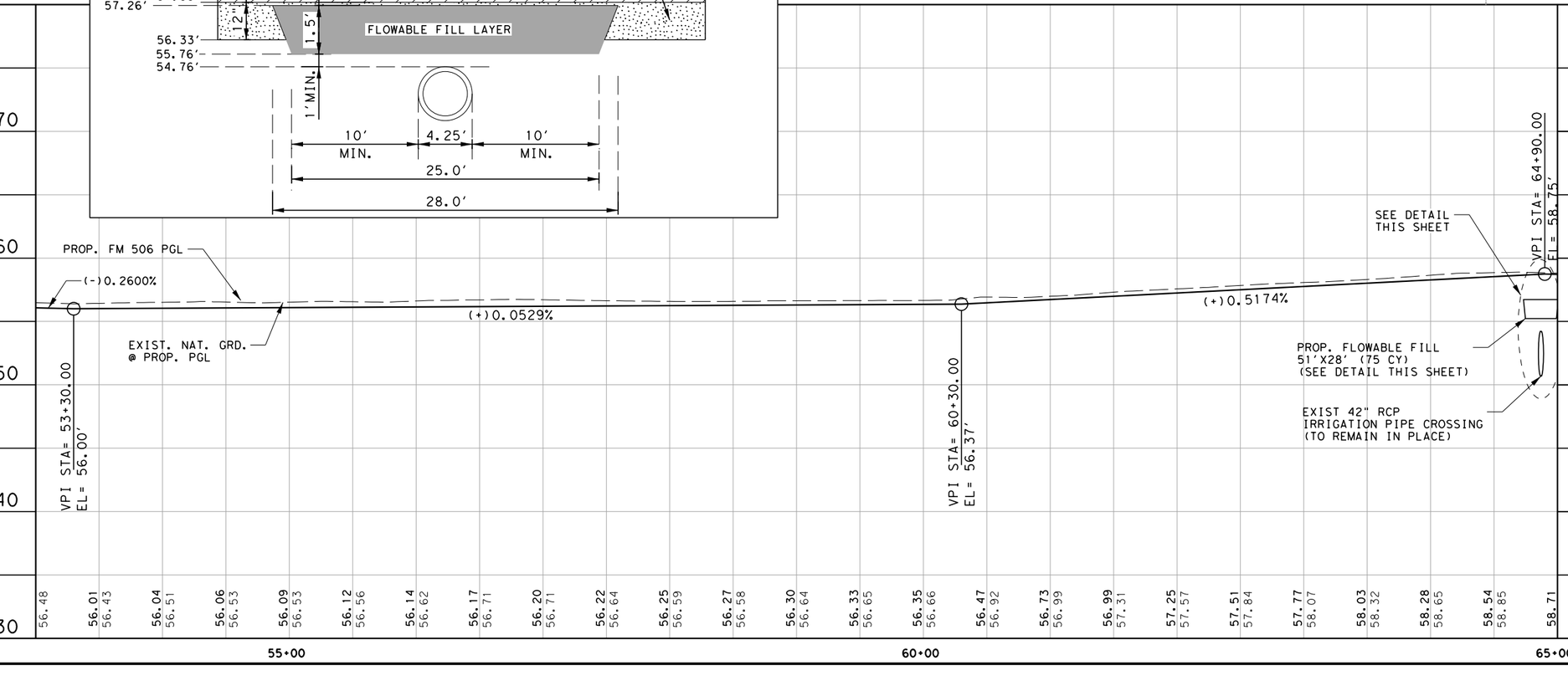


FLOWABLE FILL FOR PROTECTION OF EXISTING CULVERTS





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

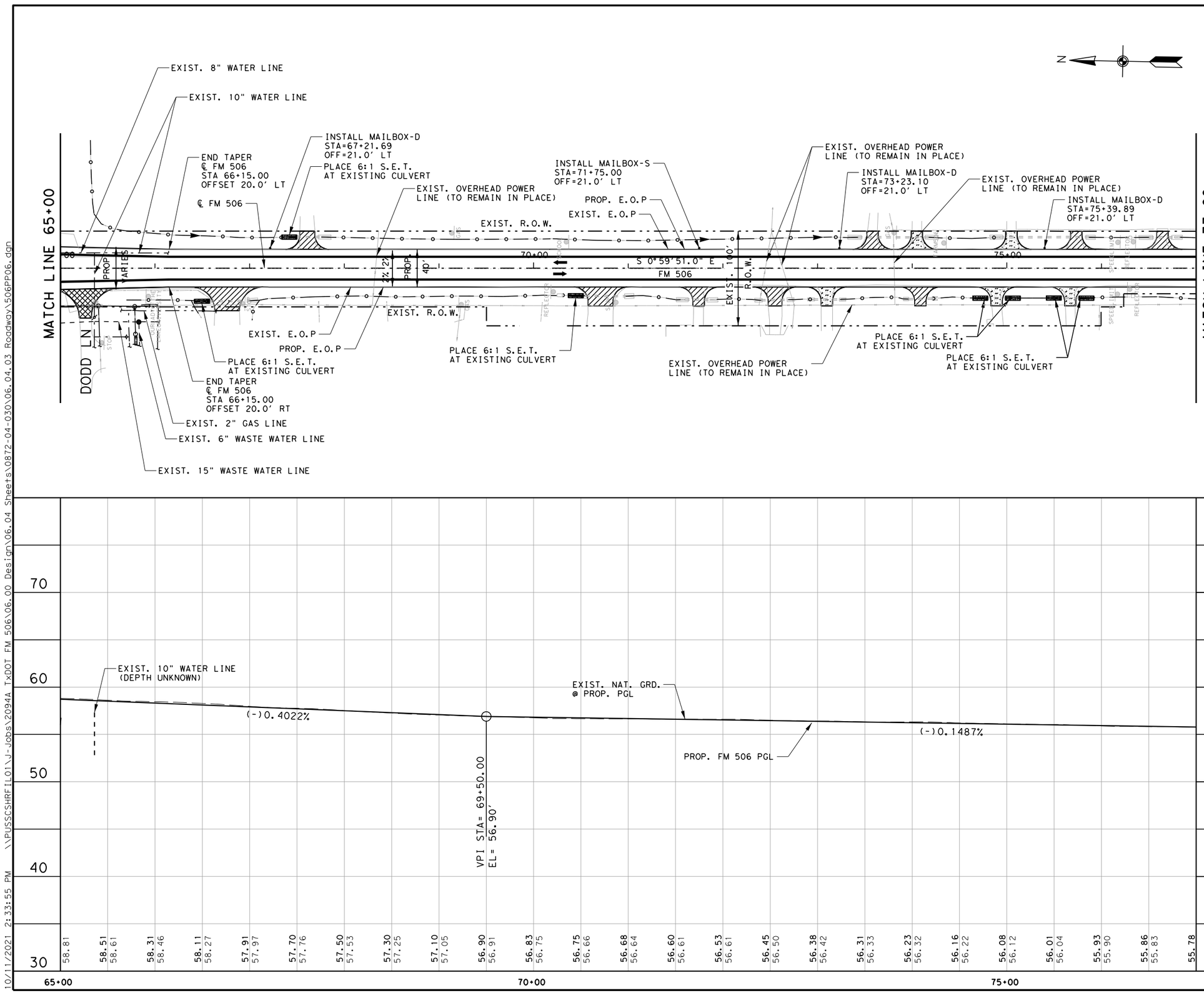
FM 506

PLAN & PROFILE STA 53+00 TO STA 65+00

VERT. PROFILE 1"=10' SHEET 5 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		155
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/11/2021 2:33:53 PM \\PUSSCSHRFIL01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\0872-04-030\06.04.03 Roadway\506PP05.dgn
506PP05.dgn



50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PLAN & PROFILE
STA 65+00 TO STA 77+00

VERT. PROFILE 1"=10' SHEET 6 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	156

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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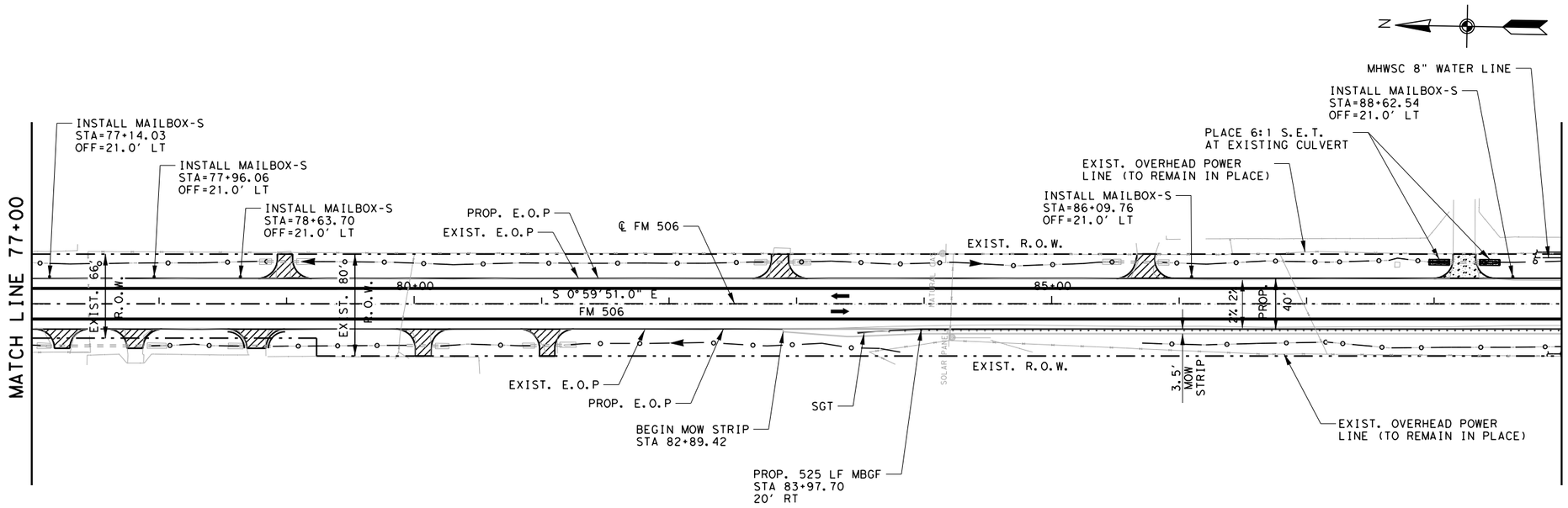


50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

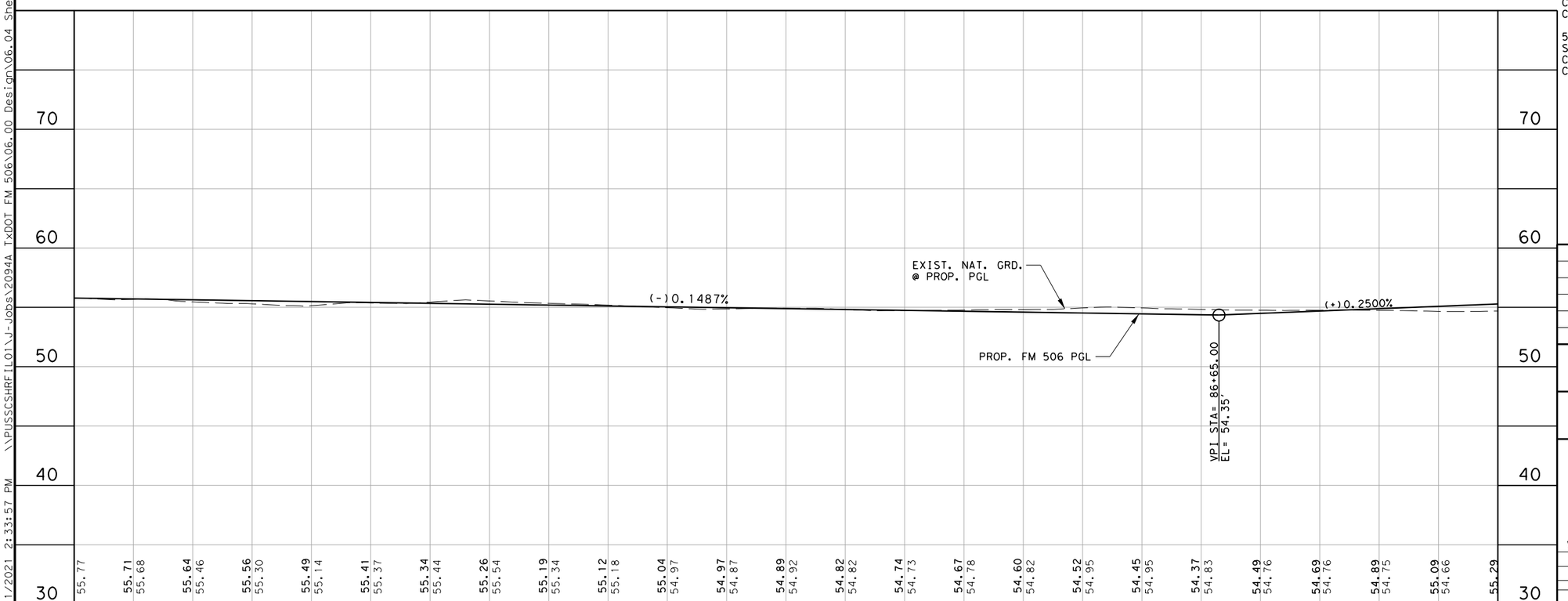
1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.



STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

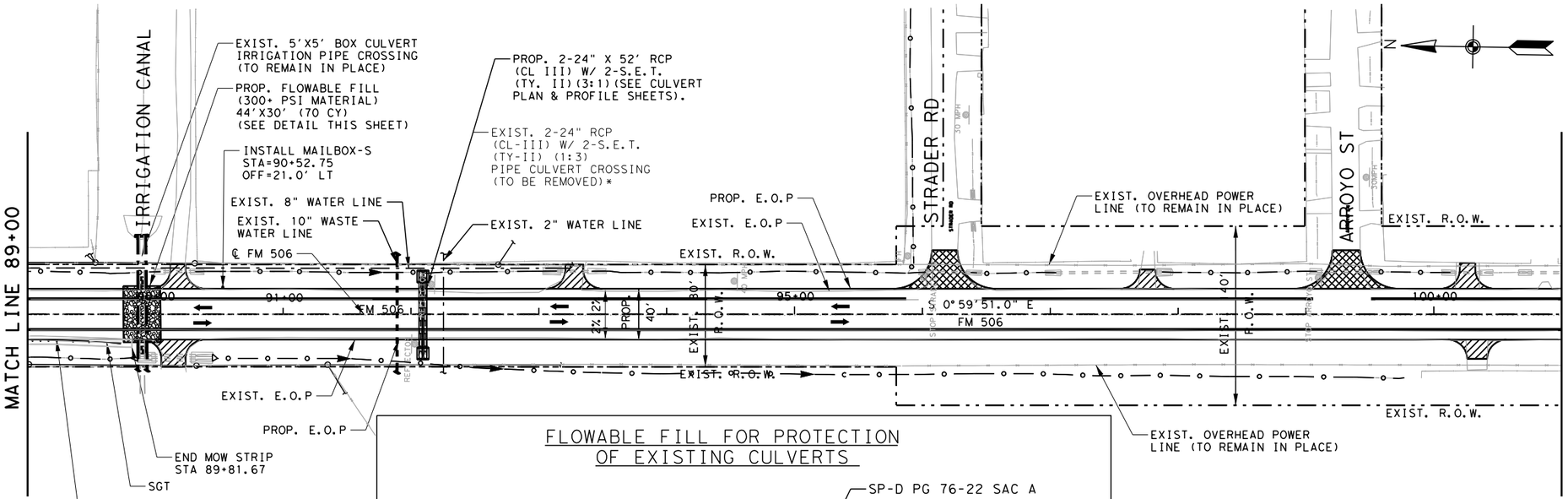
FM 506

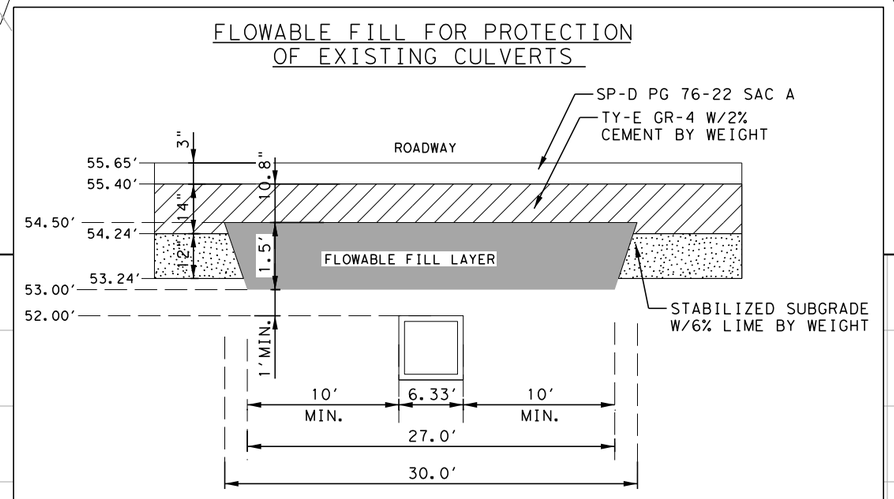
PLAN & PROFILE STA 77+00 TO STA 89+00

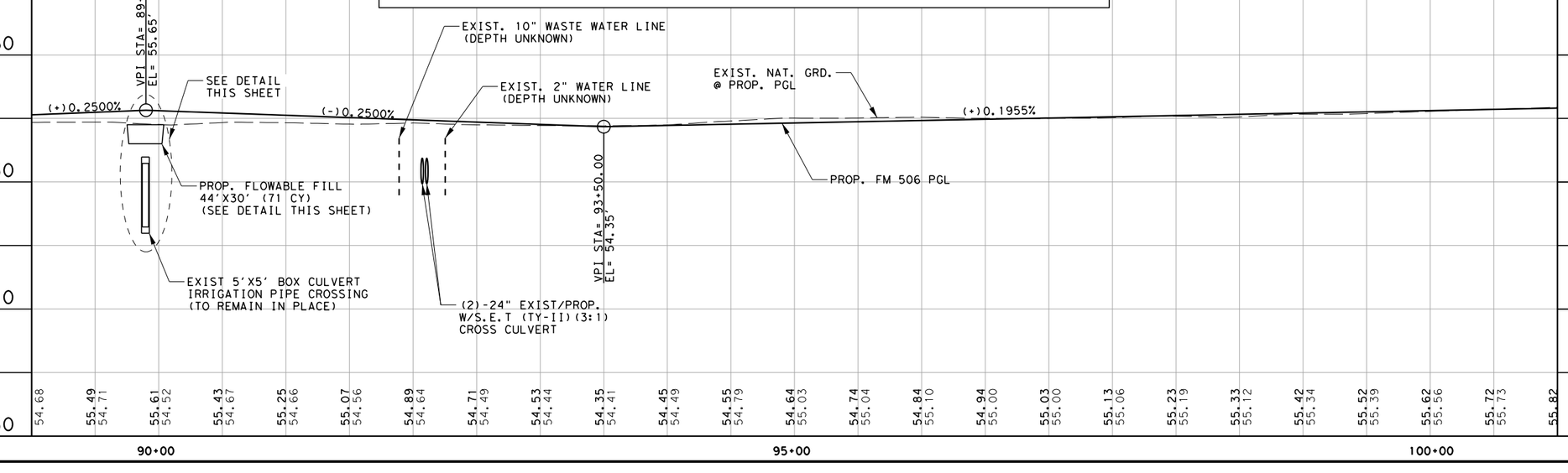
VERT. PROFILE 1"=10' SHEET 7 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		157
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP07.dgn







50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHP OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

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STATE OF TEXAS
TODD M. MILBURN
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LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

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18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
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FM 506

PLAN & PROFILE STA 89+00 TO STA 101+00

VERT. PROFILE 1"=10' SHEET 8 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		158
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP08.dgn

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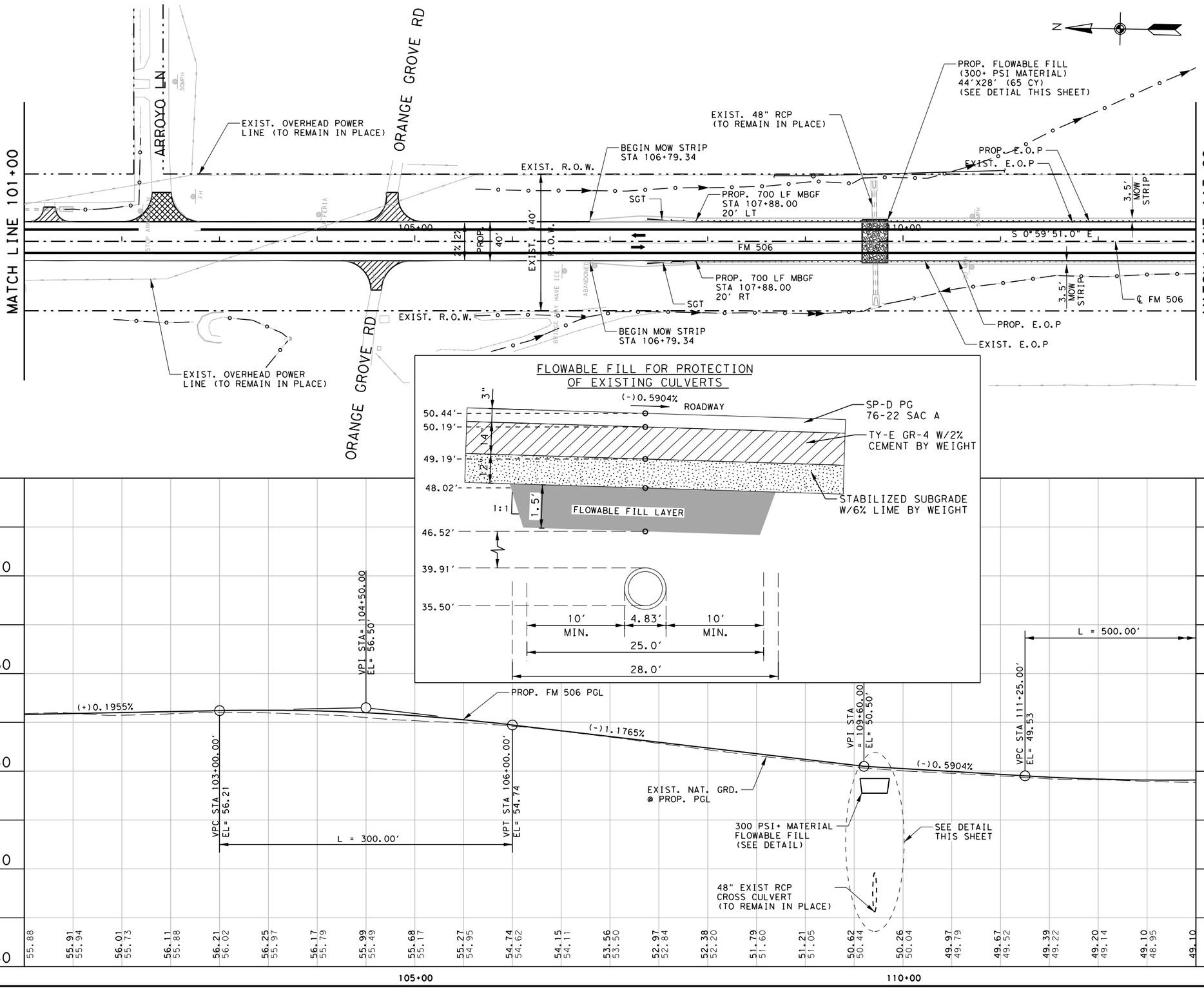

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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STATE OF TEXAS
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10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

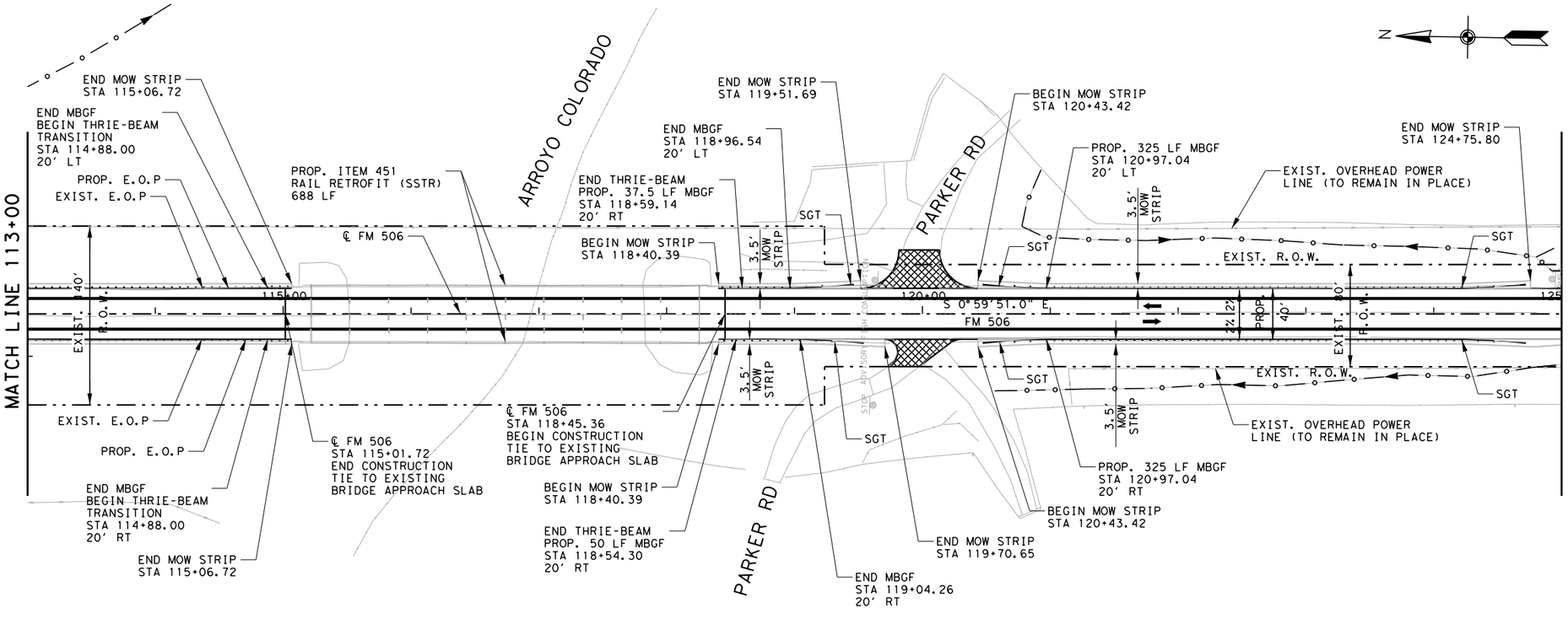
FM 506

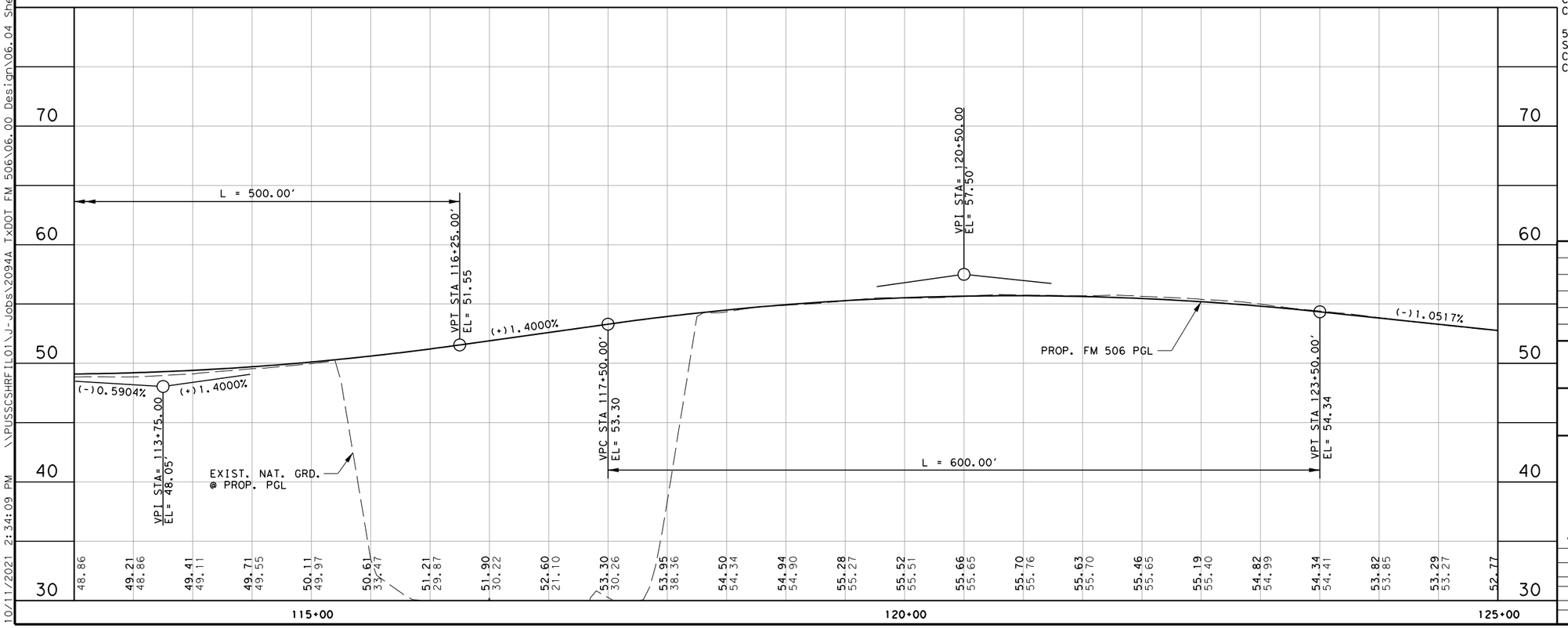
PLAN & PROFILE STA 101+00 TO STA 113+00

VERT. PROFILE 1"=10' SHEET 9 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		159
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/11/2021 2:34:07 PM \\PUSCSHRFIL01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\0872-04-030\06.04.03 Roadway\506PP09.dgn
506PP09.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

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5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

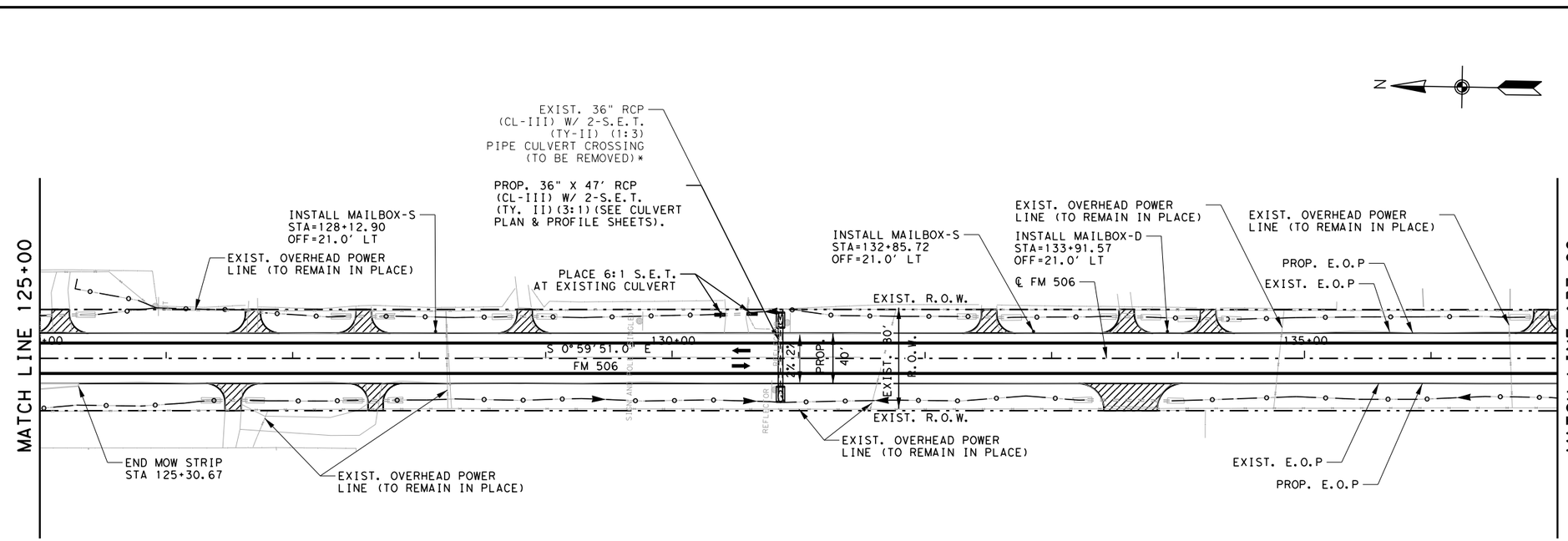
FM 506

PLAN & PROFILE STA 113+00 TO STA 125+00

VERT. PROFILE 1"=10' SHEET 10 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		160
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP10.dgn



50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
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- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
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- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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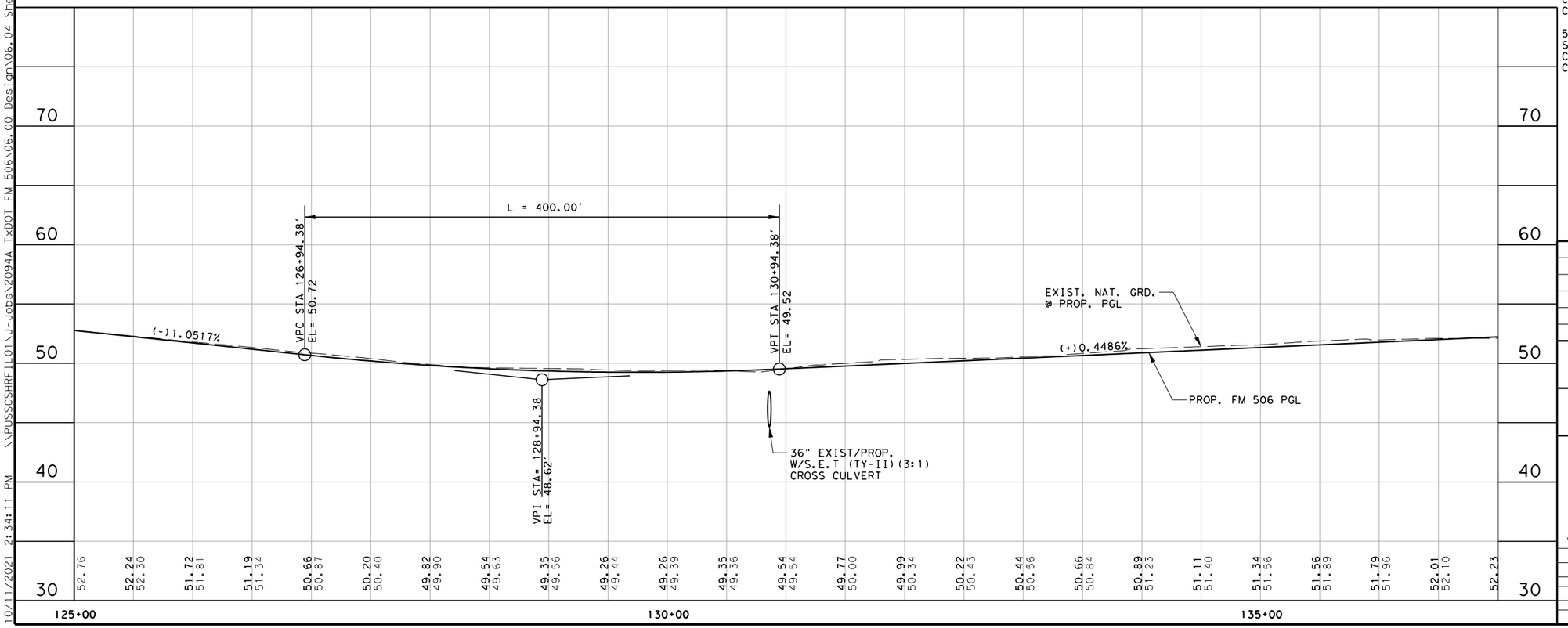


ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

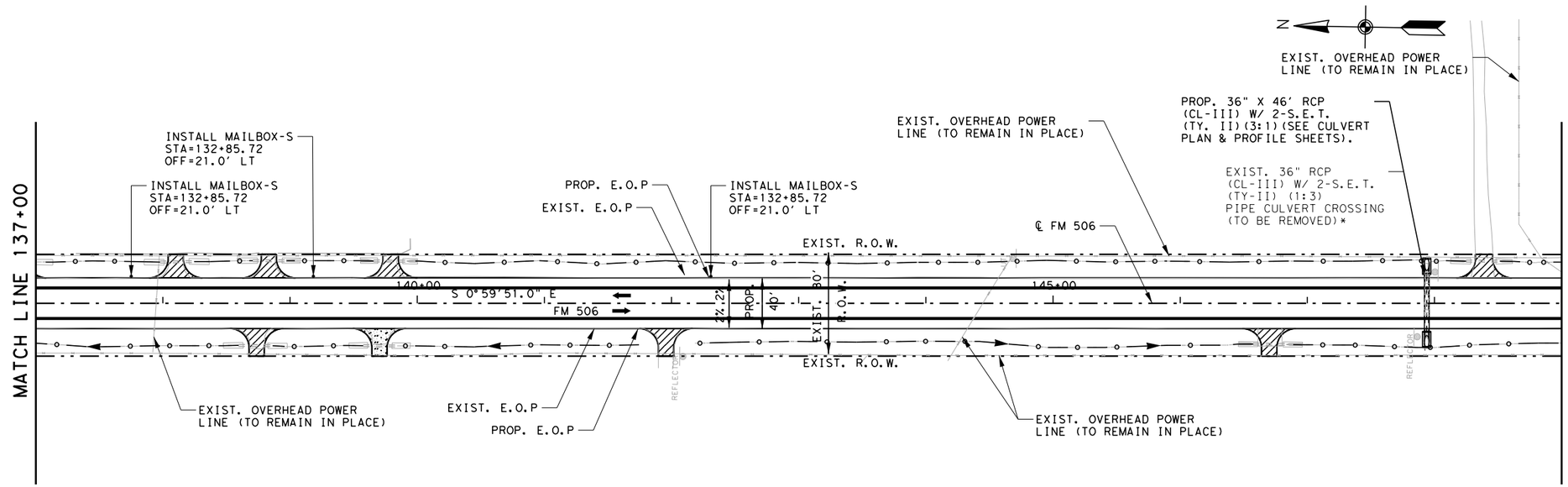
PLAN & PROFILE STA 125+00 TO STA 137+00

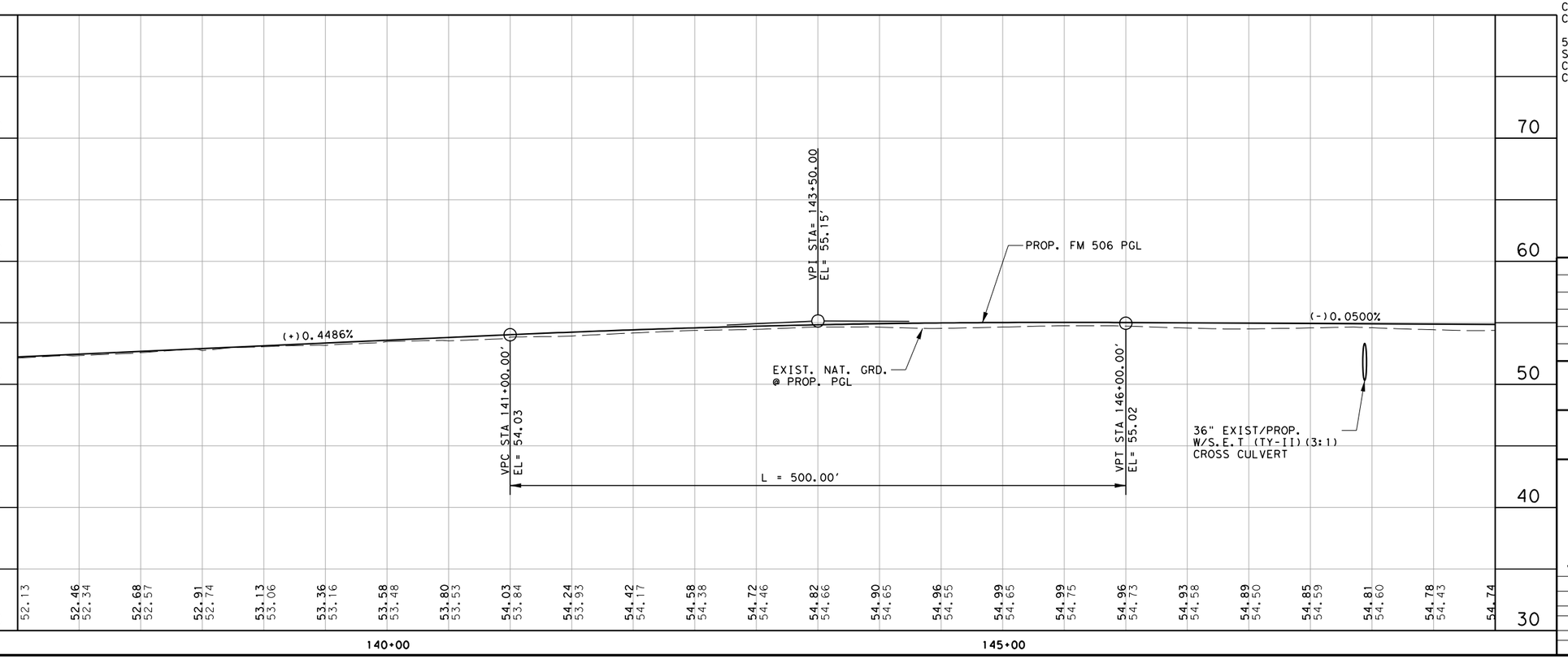
VERT. PROFILE 1"=10' SHEET 11 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	161

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP11.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
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- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PLAN & PROFILE
STA 137+00 TO STA 149+00

VERT. PROFILE 1"=10' SHEET 12 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	162

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP12.dgn

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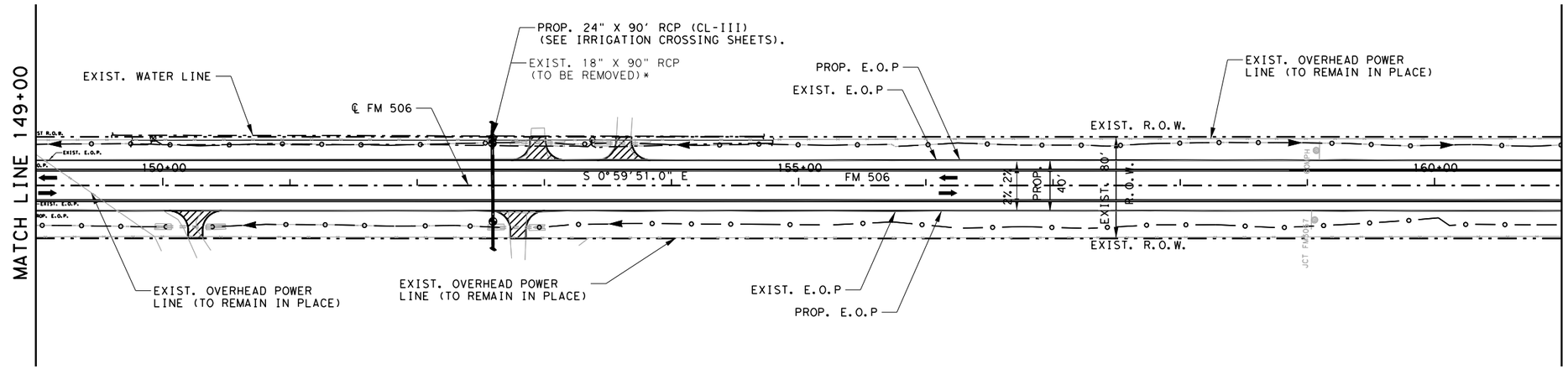

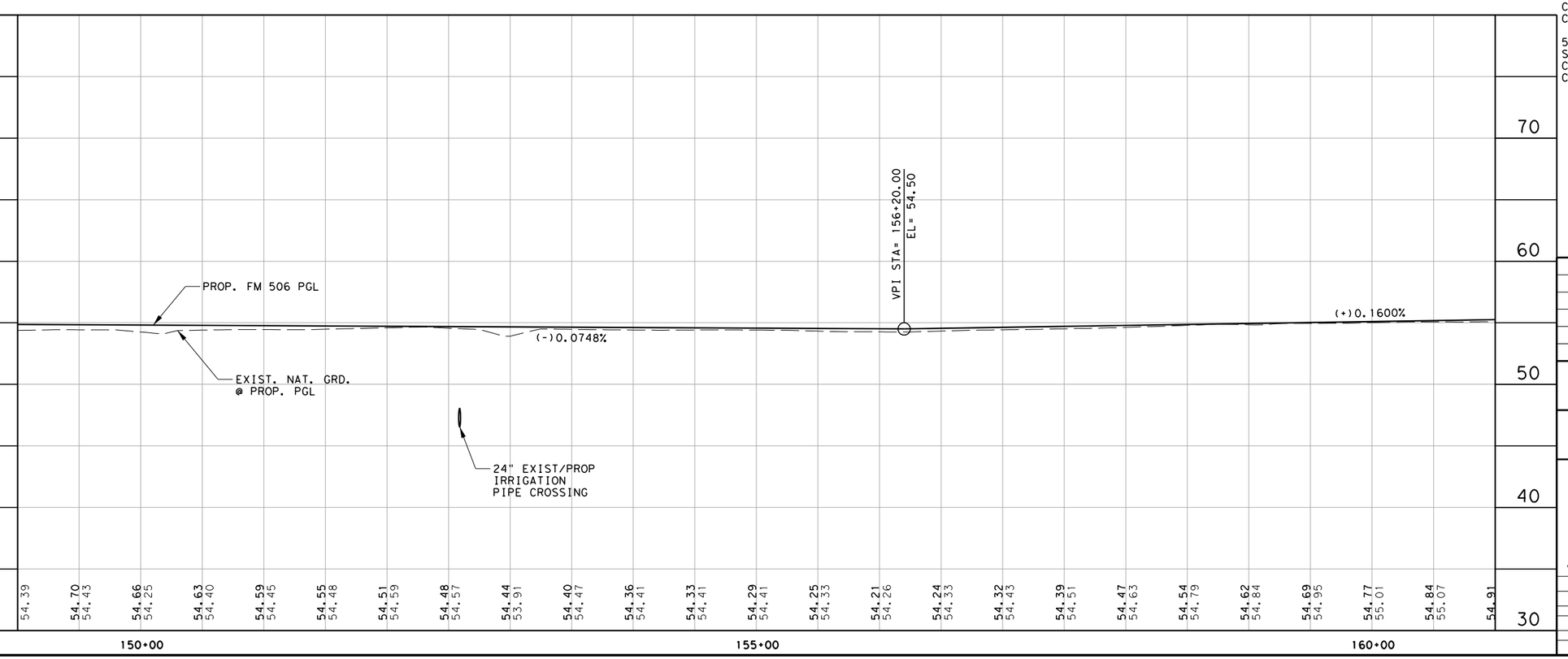

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 506

PLAN & PROFILE
STA 149+00 TO STA 161+00

VERT. PROFILE 1"=10' SHEET 13 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		163
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP13.dgn

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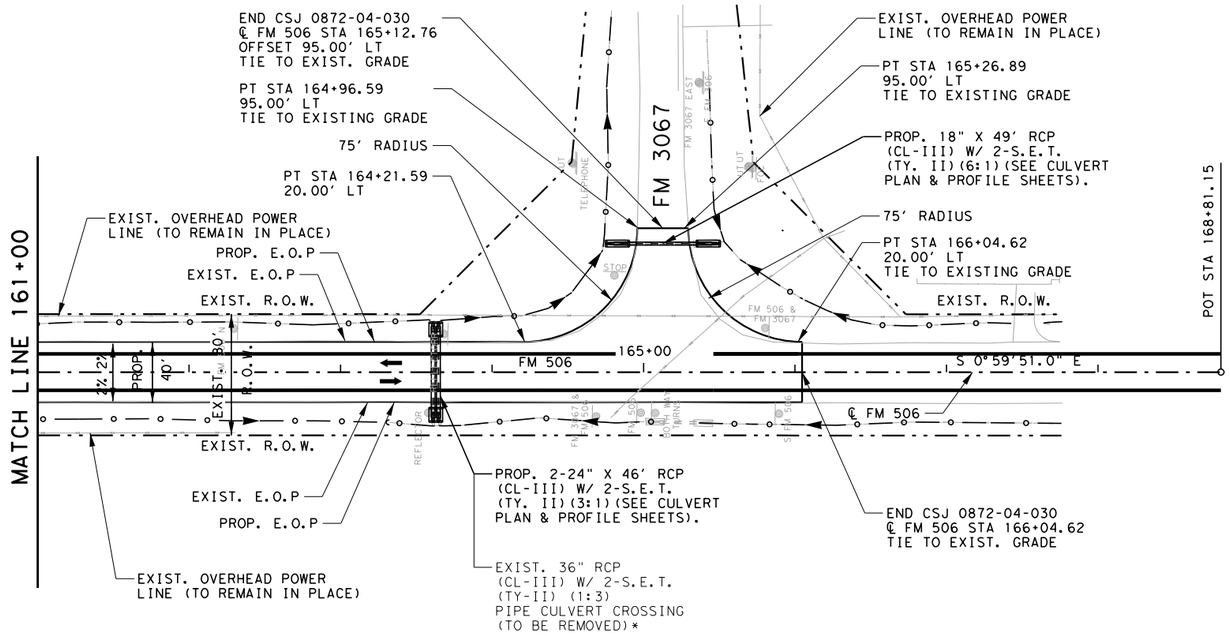

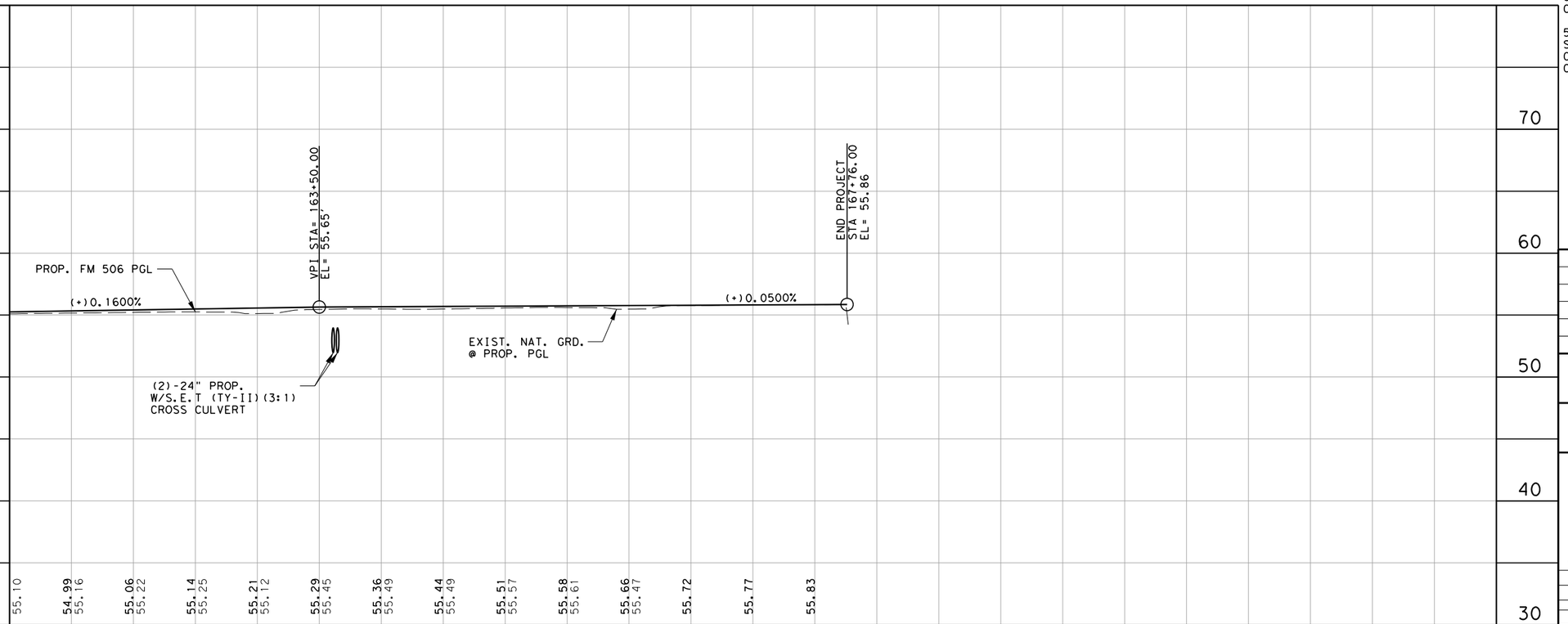

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
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- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
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NOTES:

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STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
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SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

PLAN & PROFILE
STA 161+00 TO END PROJECT

VERT. PROFILE 1"=10' SHEET 14 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	164

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

506PP14.dgn

BEGIN FM 800 DESCRIPTION

Element: Linear
POB ( ) 10+00.00 R1 16568958.2800 1235894.8550
PI ( ) 11+77.43 R1 16568975.8682 1236071.4141
Tangential Direction: N 84°18'40.2" E
Tangential Length: 177.4330

Element: Linear
PI ( ) 11+77.43 R1 16568975.8682 1236071.4141
PC ( ) 58+11.01 R1 16568721.4548 1240698.0017
Tangential Direction: S 86°51'09.0" E
Tangential Length: 4633.5773

Element: Circular
PC ( ) 58+11.01 R1 16568721.4548 1240698.0017
PI ( ) 61+12.39 R1 16568704.9073 1240998.9234
CC ( ) 16567291.2211 1240619.3539
PT ( ) 64+05.10 R1 16568568.5026 1241267.6640
Radius: 1432.3945
Delta: 23°45'48.6" Right
Degree of Curvature (Arc): 4°00'00.0"
Length: 594.0875

Tangent: 301.3764
Chord: 589.8386
Middle Ordinate: 30.6896
External: 31.3615
Tangent Direction: S 86°51'09.0" E
Radial Direction: S 3°08'51.0" W
Chord Direction: S 74°58'14.7" E
Radial Direction: S 26°54'39.6" W
Tangent Direction: S 63°05'20.4" E

Element: Linear
PT ( ) 64+05.10 R1 16568568.5026 1241267.6640
PC ( ) 87+68.48 R1 16567498.8212 1243375.1191
Tangential Direction: S 63°05'20.4" E
Tangential Length: 2363.3843

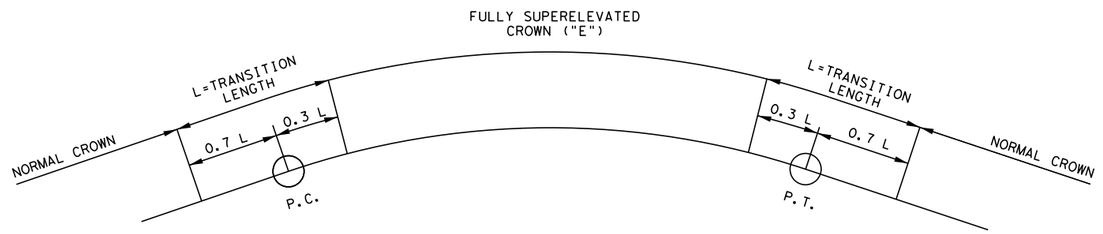
Element: Circular
PC ( ) 87+68.48 R1 16567498.8212 1243375.1191
PI ( ) 89+16.53 R1 16567431.8133 1243507.1360
CC ( ) 16566221.5396 1242726.8090
PT ( ) 90+63.53 R1 16567339.2204 1243622.6570
Radius: 1432.3945
Delta: 11°48'07.3" Right
Degree of Curvature (Arc): 4°00'00.0"
Length: 295.0506

Tangent: 148.0491
Chord: 294.5292
Middle Ordinate: 7.5903
External: 7.6307
Tangent Direction: S 63°05'20.4" E
Radial Direction: S 26°54'39.6" W
Chord Direction: S 57°11'16.8" E
Radial Direction: S 38°42'46.9" W
Tangent Direction: S 51°17'13.1" E

Element: Linear
PT ( ) 90+63.53 R1 16567339.2204 1243622.6570
POE ( ) 103+77.16 R1 16566517.6498 1244647.6675
Tangential Direction: S 51°17'13.1" E
Tangential Length: 1313.6304

END FM 800 DESCRIPTION

SUPERELEVATION DATA



CURVE ID	STATION LIMITS FULL "e"	STATION P.I.	STATION P.C.	STATION P.T.	DEGREE OF CURVE D	"e" %	SLOPE	TRANSITION LENGTH AT PC			TRANSITION LENGTH AT PT		
								BEGIN	END	LENGTH	BEGIN	END	LENGTH
FM 800-1	58+63.00 - 63+53.00	61+12.39	58+11.01	64+05.10	4°00'00.00'	5.2	RT.	56+90.00	58+63.00	173.0	63+53.00	65+26.00	173.0
FM 800-2	88+20.00 - 90+12.00	89+16.53	87+68.48	90+63.53	4°00'00.00'	5.2	RT.	86+47.00	88+20.00	173.0	90+12.00	91+85.00	173.0

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

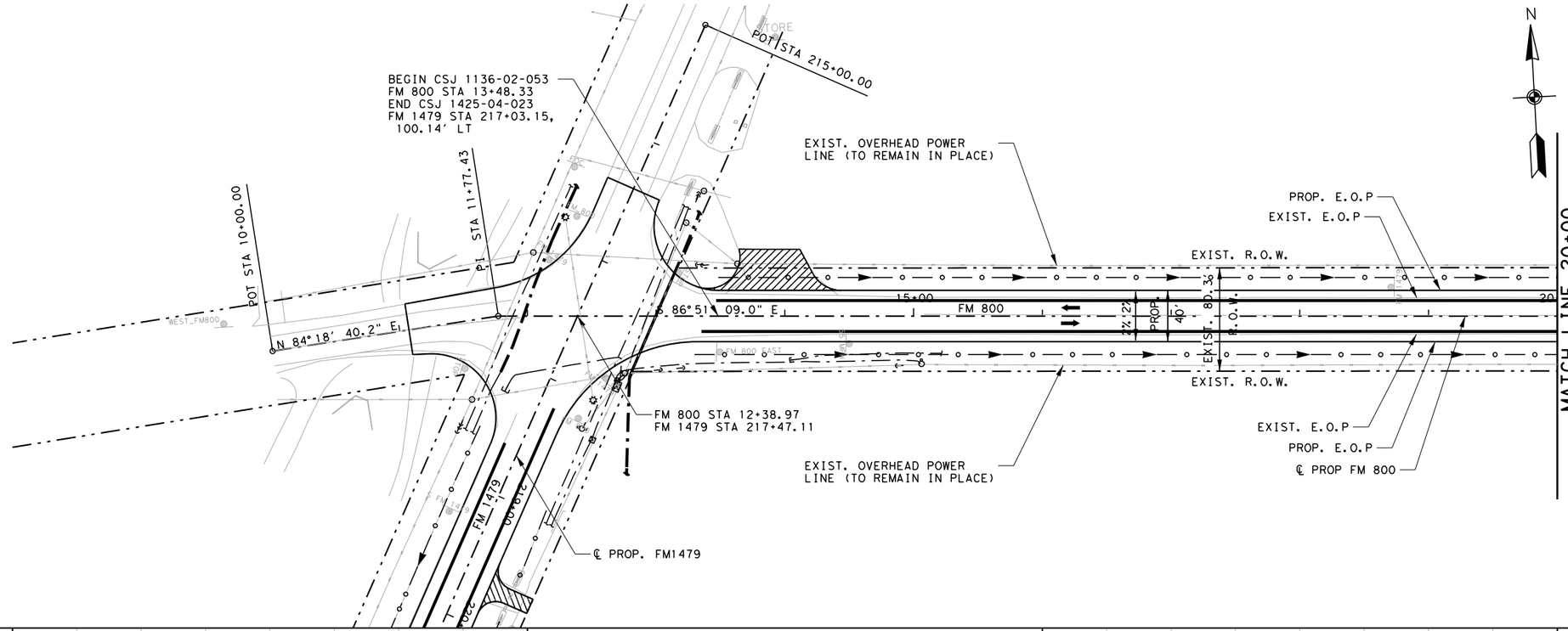
ROADWAY DATA

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	165

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

800RD01.dgn



50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

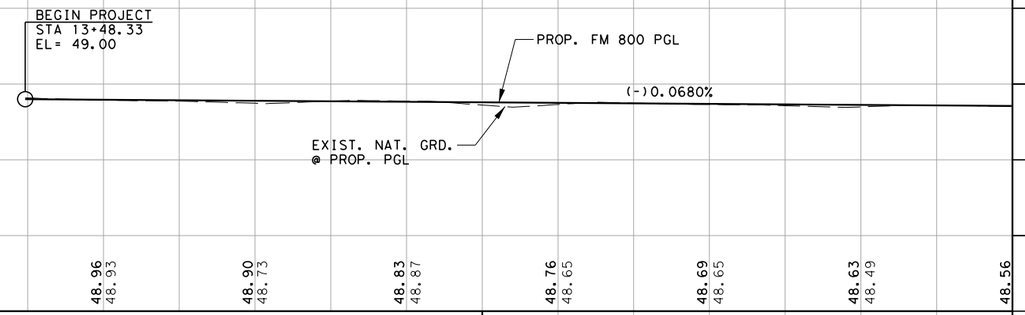
2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

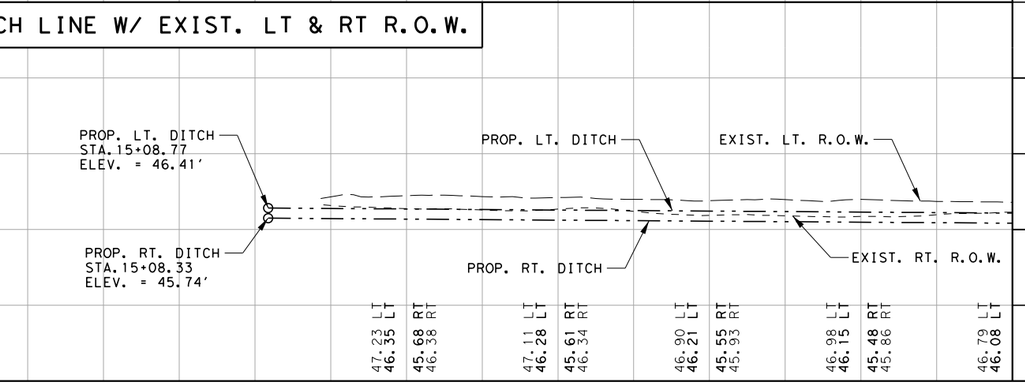
4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

PROP. & EXIST. ROADWAY PGL @ ℄



PROP. LT & RT DITCH LINE W/ EXIST. LT & RT R.O.W.



STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

PLAN & PROFILE
BEGIN PROJECT TO STA 20+00

VERT. PROFILE 1"=10' SHEET 1 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	166

STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

10/11/2021 2:34:36 PM \\PUSCSHRFIL01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1136-02-053\06.04.03 Roadway\800PP01.dgn

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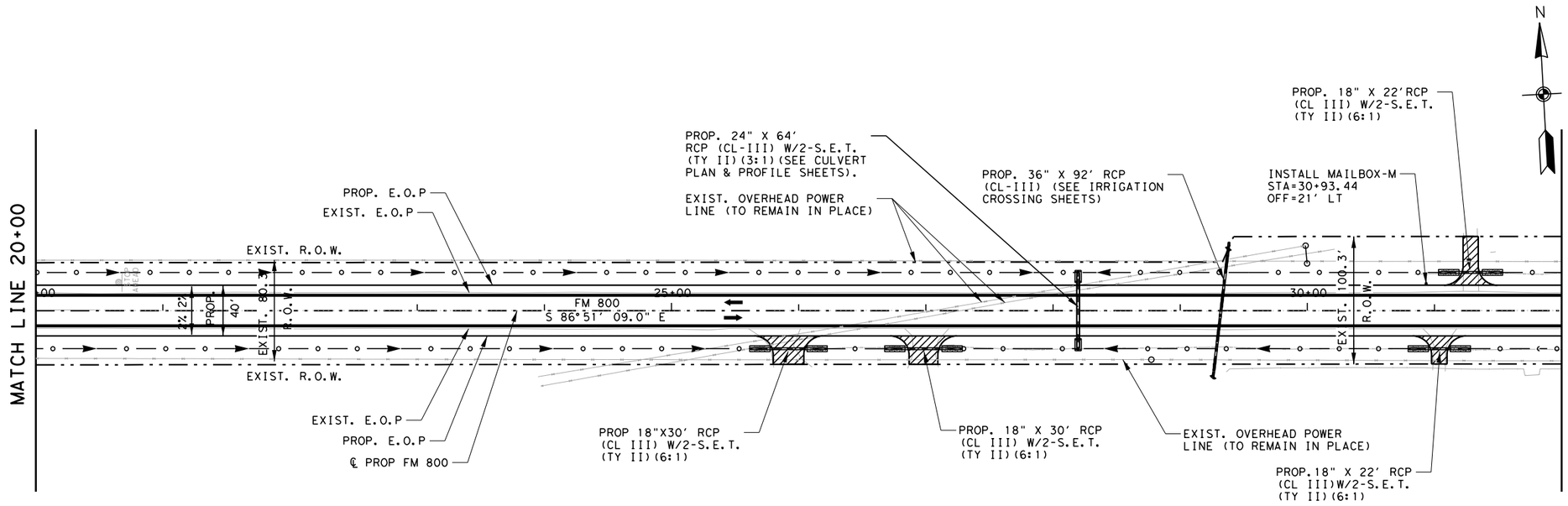

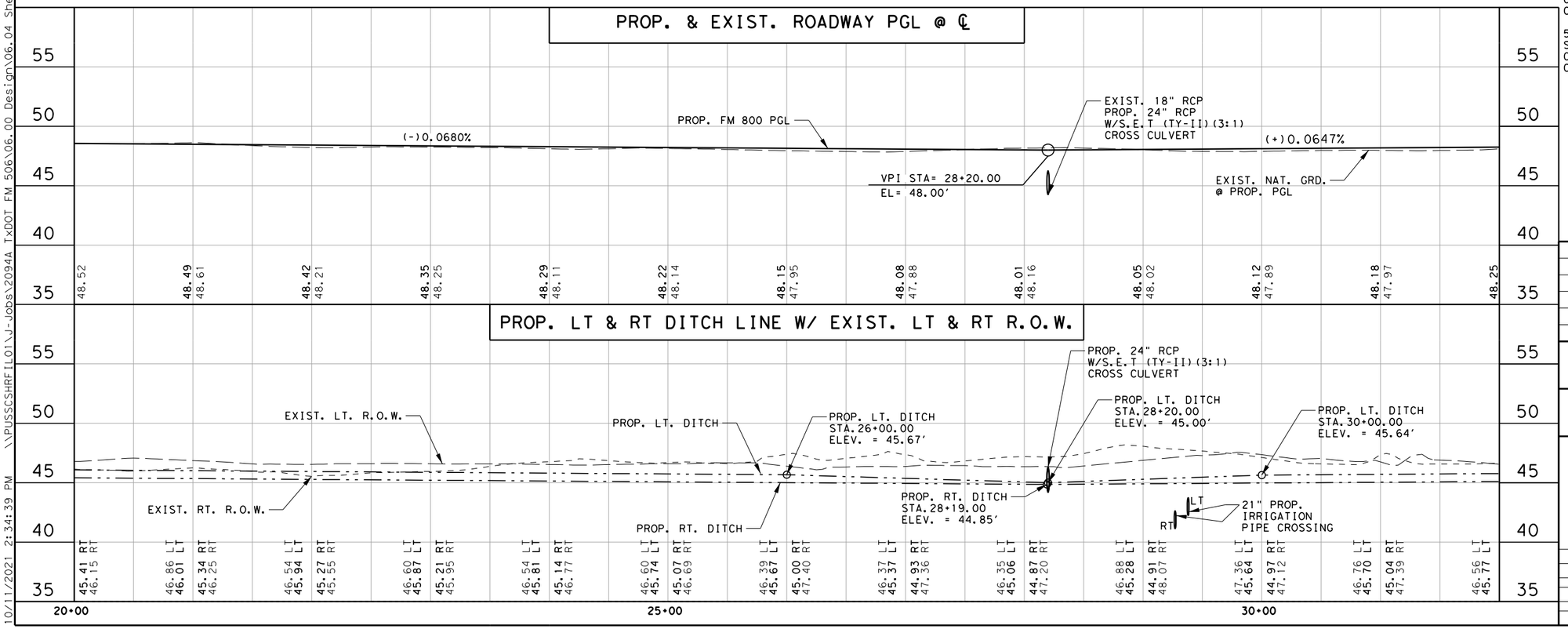

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PLAN & PROFILE STA 20+00 TO STA 32+00

VERT. PROFILE 1"=10' SHEET 2 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	167

STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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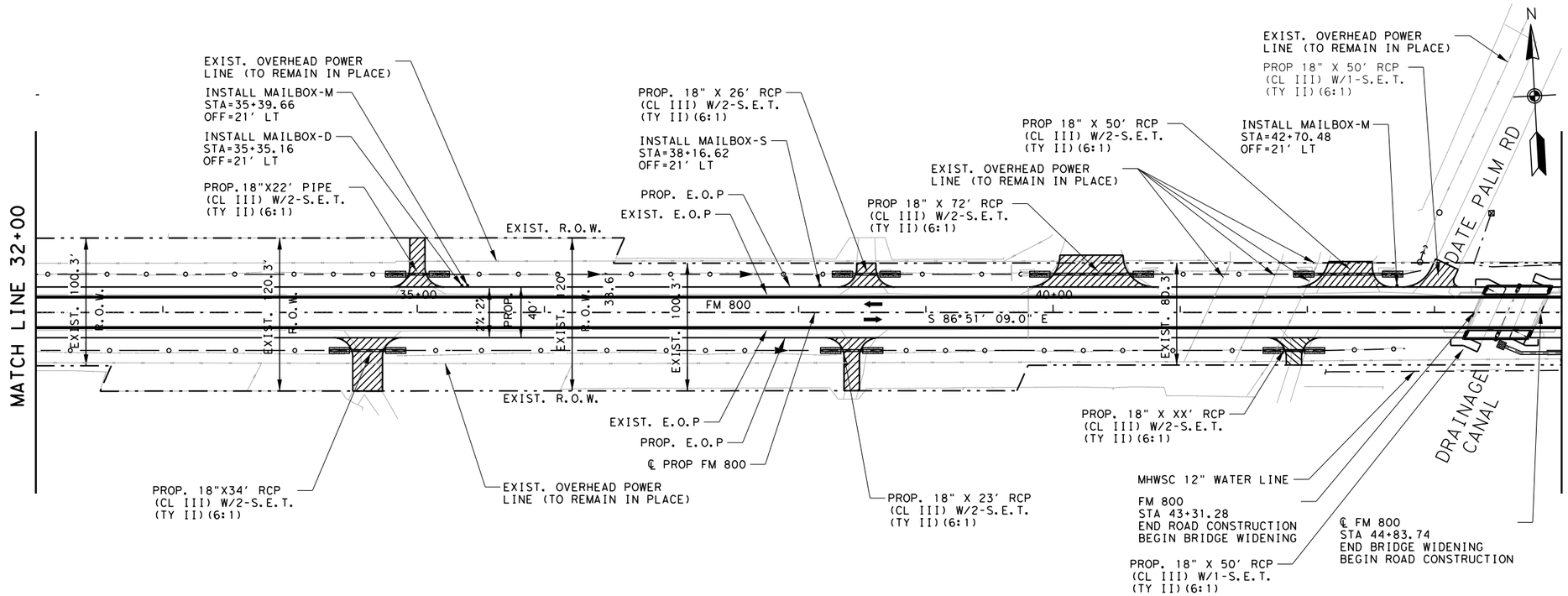

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

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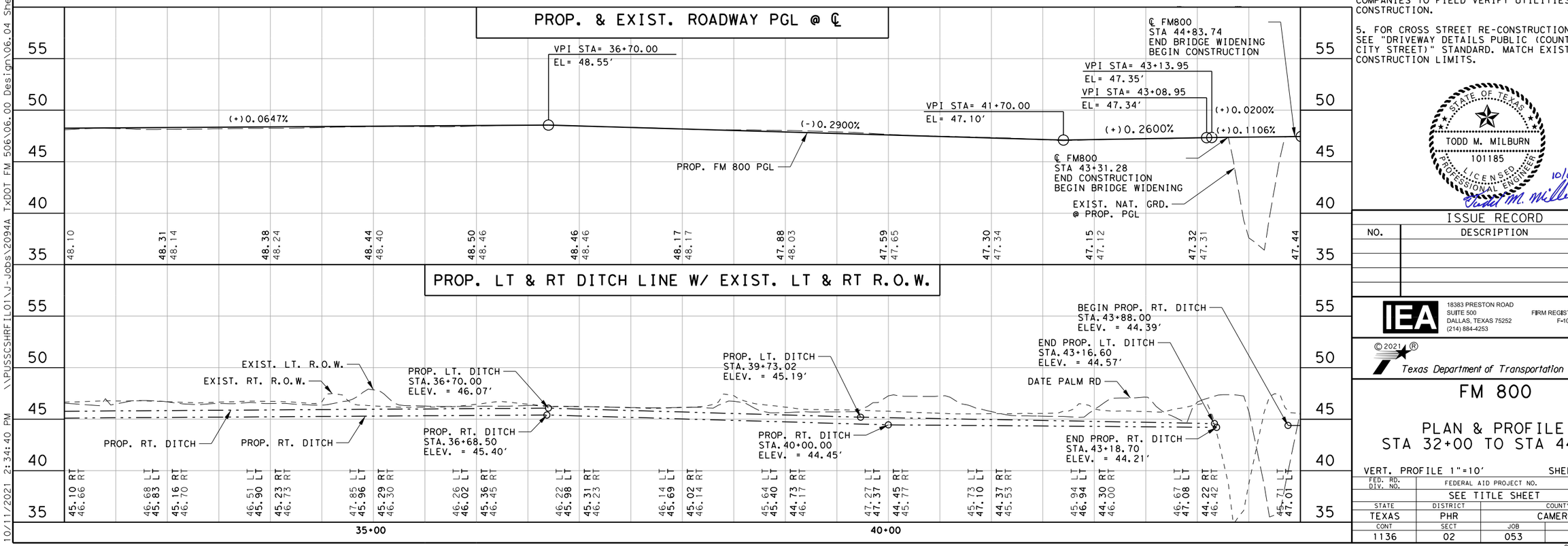

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

PLAN & PROFILE STA 32+00 TO STA 44+00

VERT. PROFILE 1"=10' SHEET 3 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	168

STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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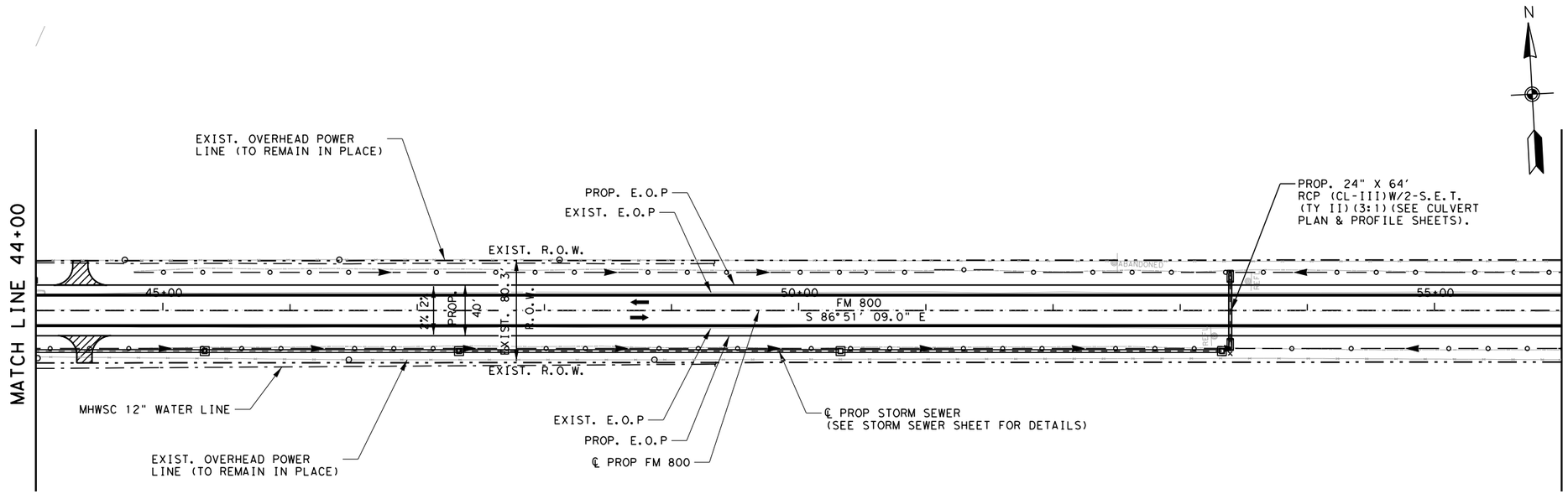

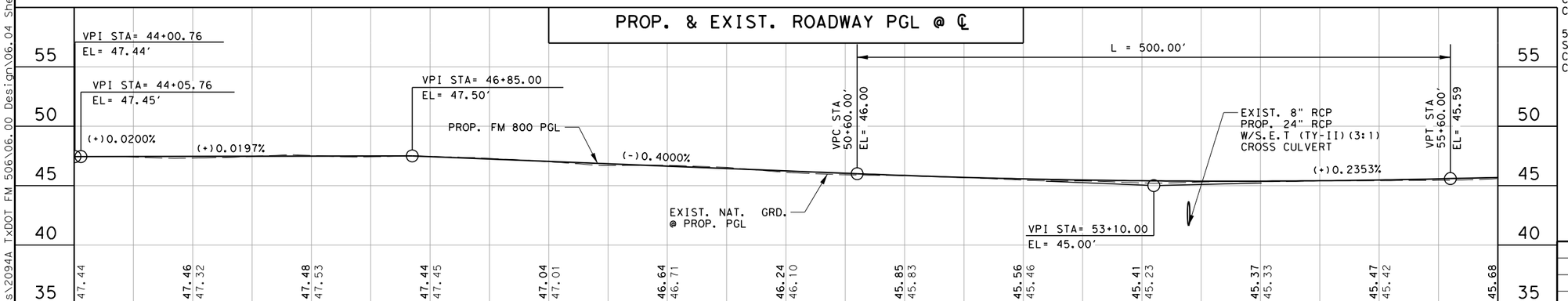

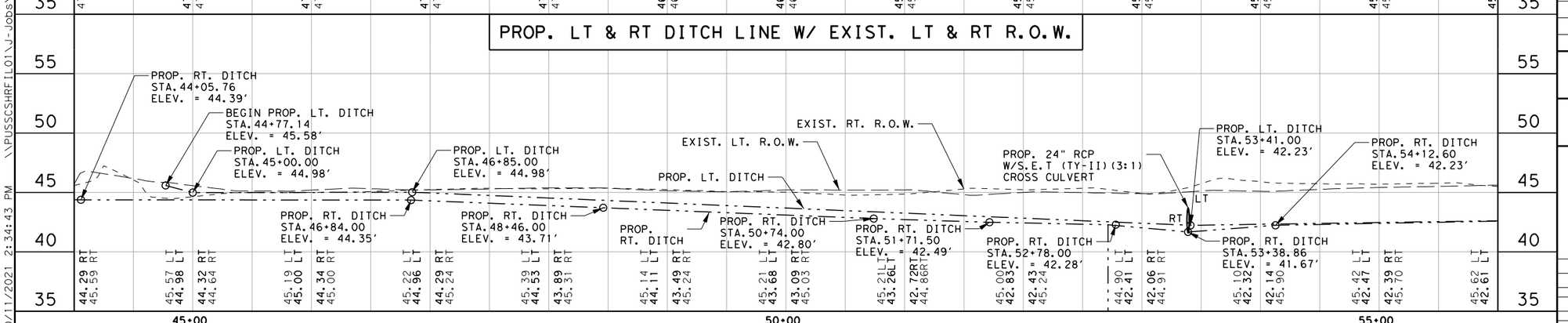

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PLAN & PROFILE STA 44+00 TO STA 56+00

VERT. PROFILE 1"=10' SHEET 4 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	169

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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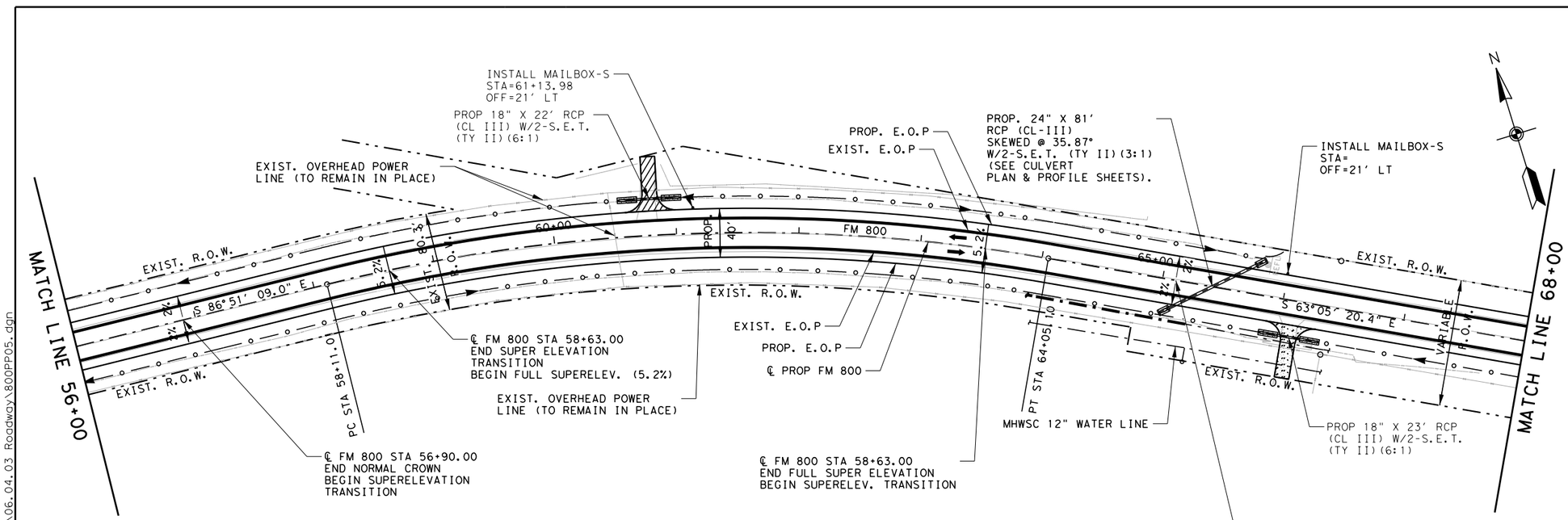

50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

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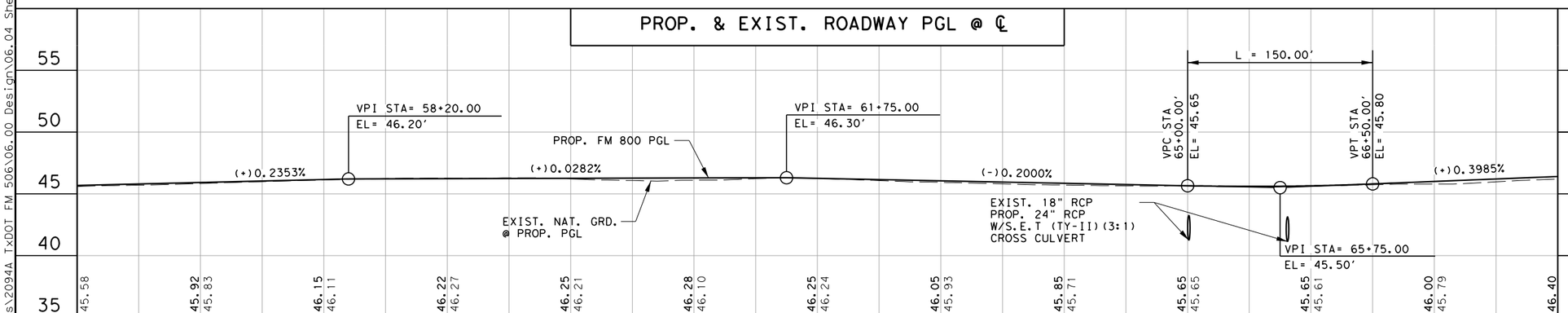
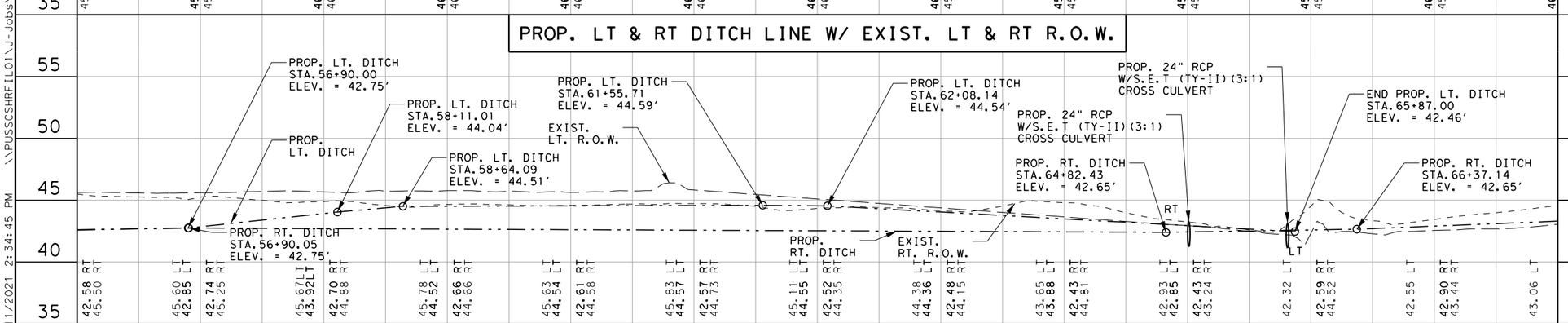
5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.





STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PLAN & PROFILE STA 56+00 TO STA 68+00

VERT. PROFILE 1"=10' SHEET 5 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	170

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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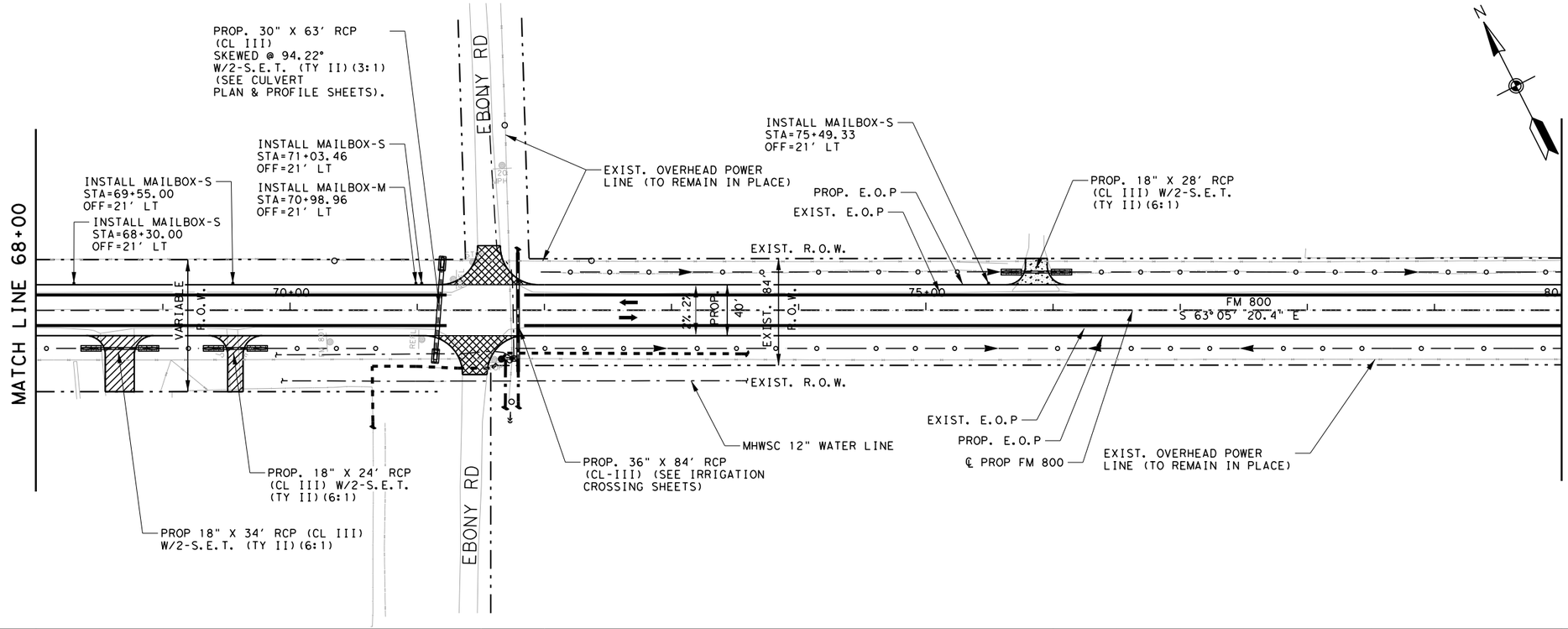
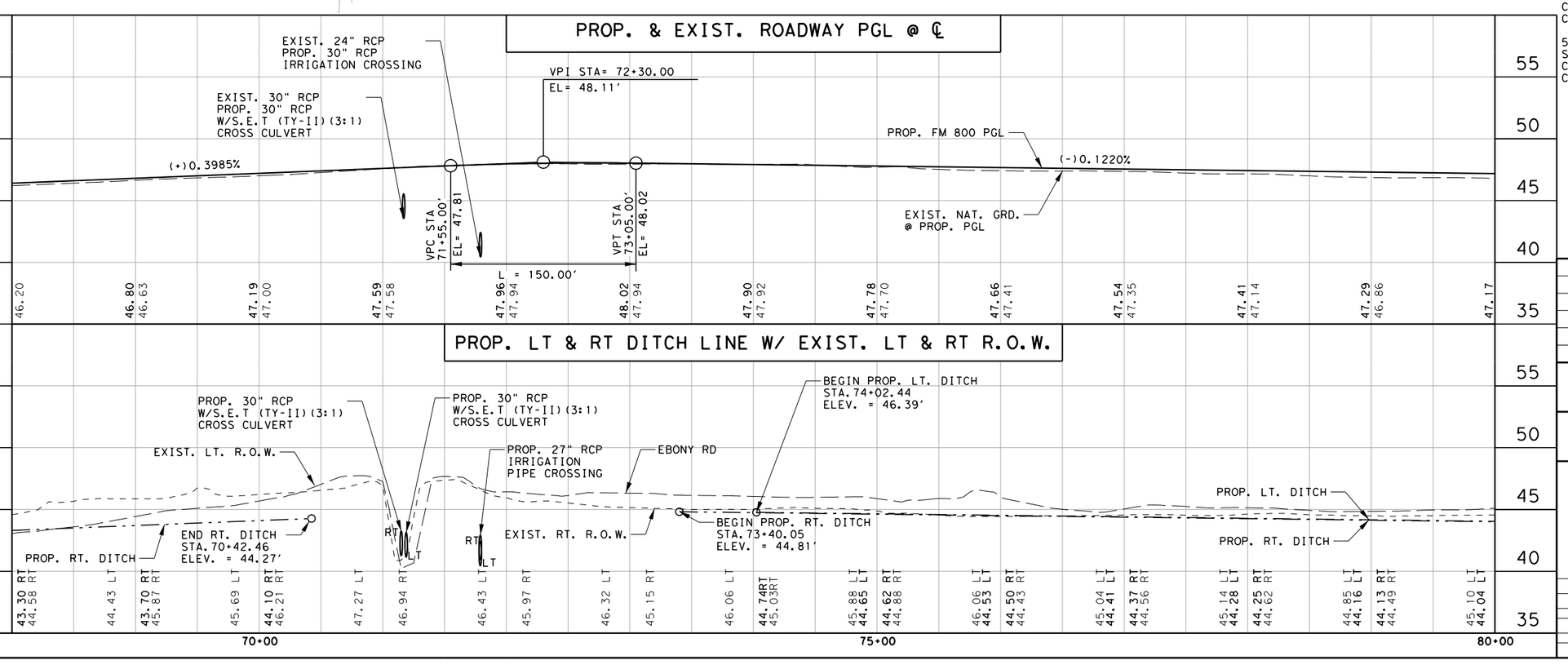




50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

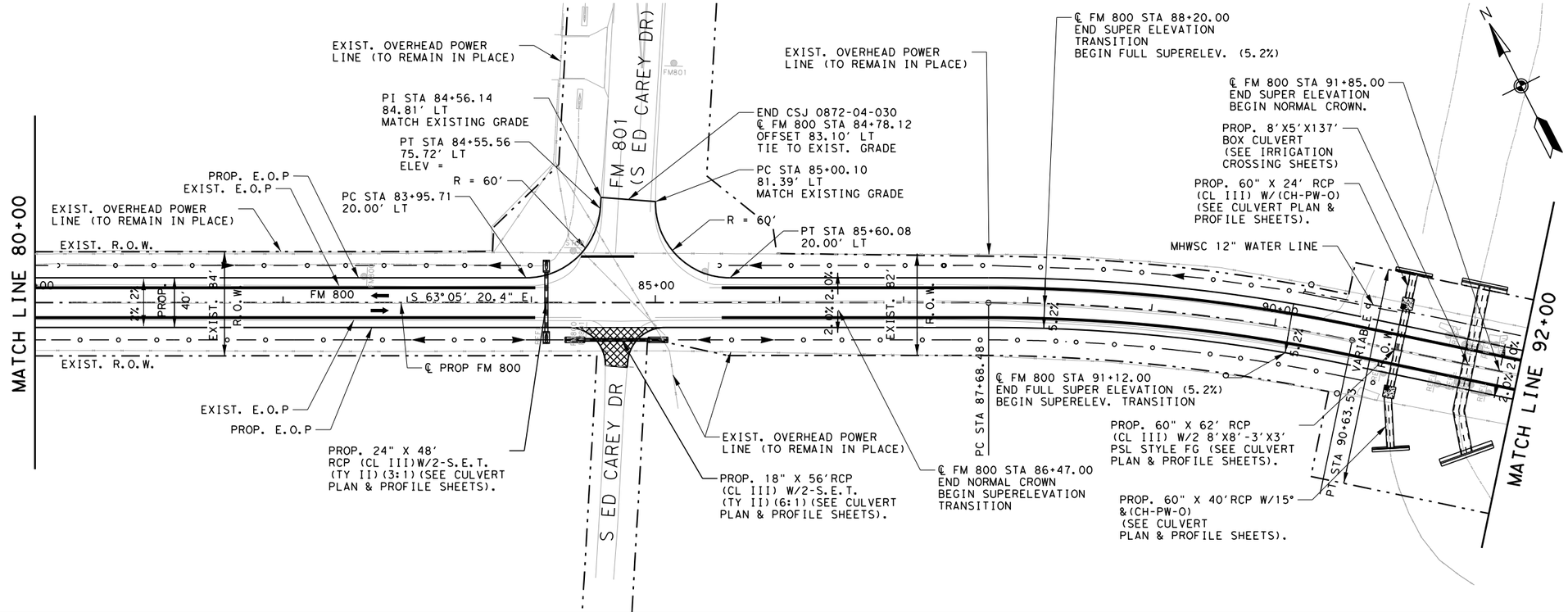
PLAN & PROFILE STA 68+00 TO STA 80+00

VERT. PROFILE 1"=10' SHEET 6 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	171

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

800PP06.dgn



LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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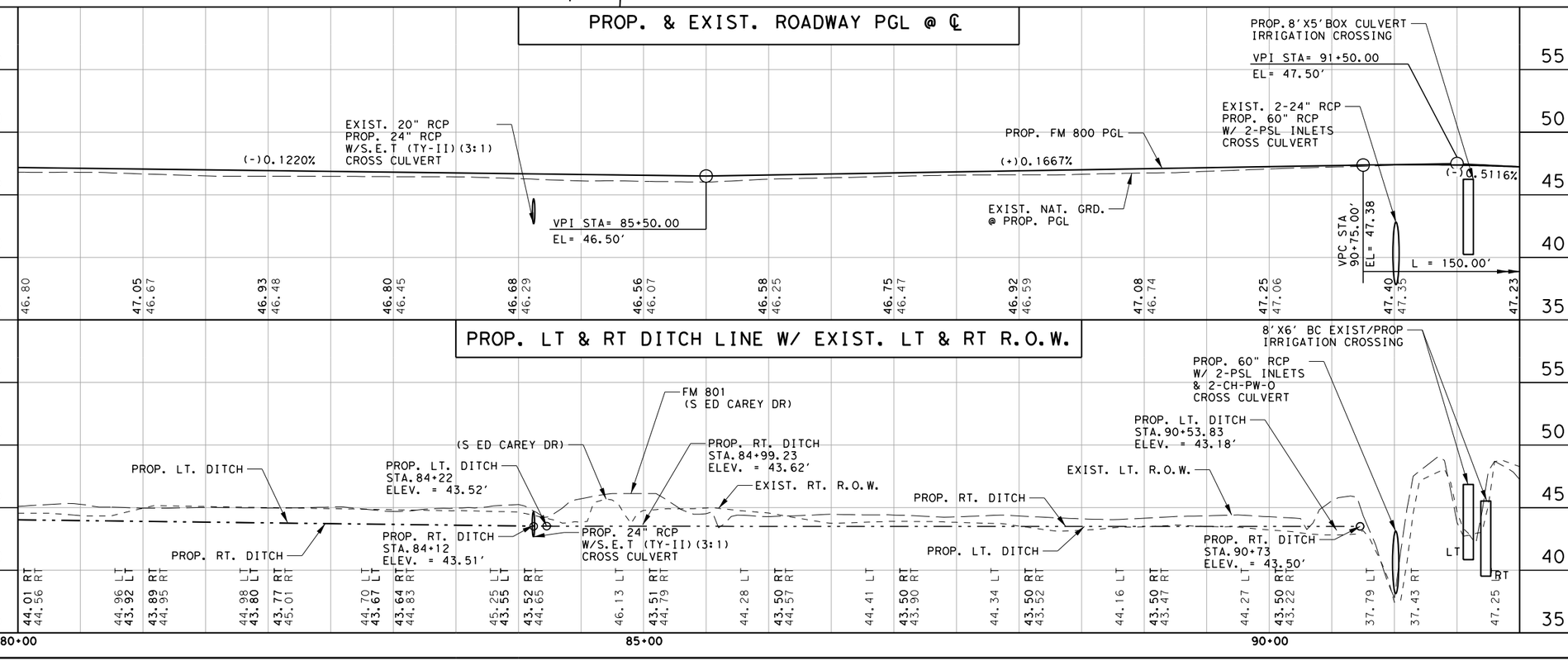
5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.



STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PLAN & PROFILE STA 80+00 TO STA 92+00

VERT. PROFILE 1"=10' SHEET 7 OF 8

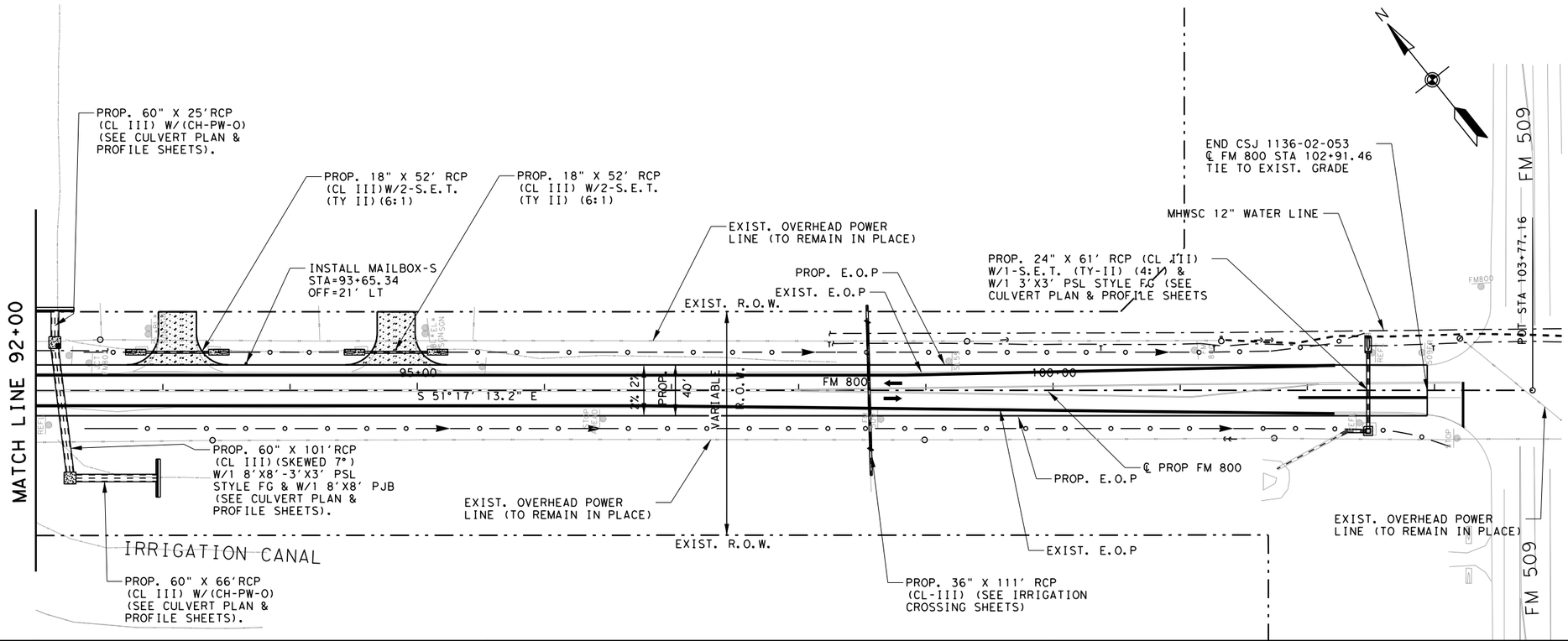
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	172

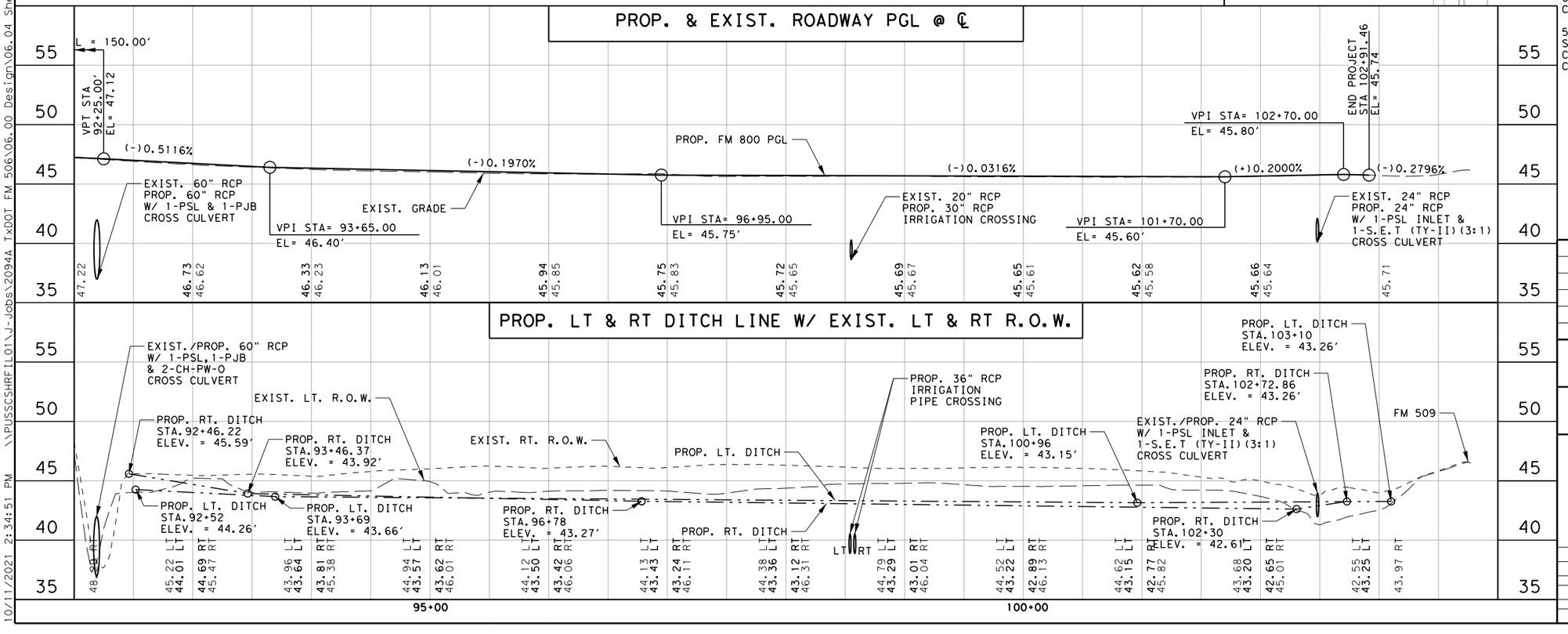
STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

800PP07.dgn

10/11/2021 2:34:49 PM \\PUSSCSHRFIL01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1136-02-053\06.04.03 Roadway\800PP07.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

PLAN & PROFILE STA 92+00 TO END PROJECT

VERT. PROFILE 1"=10' SHEET 8 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	173

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

10/11/2021 2:34:51 PM \\PUSCSCHRFIL01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1136-02-053\06.04.03 Roadway\800PP08.dgn
800PP08.dgn

BEGINNING CHAIN FM 1479 DESCRIPTION

Element: Linear
POB ( ) 215+00.00 R1 16569192.9572 1236244.4631
PC ( ) 292+52.81 R1 16562275.9231 1232742.9407
Tangential Direction: S 26°50'57.6" W
Tangential Length: 7752.8072

Element: Circular
PC ( ) 292+52.81 R1 16562275.9231 1232742.9407
PI ( ) 294+82.25 R1 16562071.2152 1232639.3140
CC ( ) 16561536.5700 1234203.4856
PT ( ) 297+08.72 R1 16561845.9063 1232595.9579
Radius: 1637.0200
Delta: 15°57'25.4" Left
Degree of Curvature (Arc): 3°30'00.0"
Length: 455.9150

Tangent: 229.4425
Chord: 454.4430
Middle Ordinate: 15.8461
External: 16.0010
Tangent Direction: S 26°50'57.6" W
Radial Direction: N 63°09'02.4" W
Chord Direction: S 18°52'14.9" W
Radial Direction: N 79°06'27.8" W
Tangent Direction: S 10°53'32.2" W

Element: Linear
PT ( ) 297+08.72 R1 16561845.9063 1232595.9579
PC ( ) 299+91.89 R1 16561567.8383 1232542.4493
Tangential Direction: S 10°53'32.2" W
Tangential Length: 283.1695

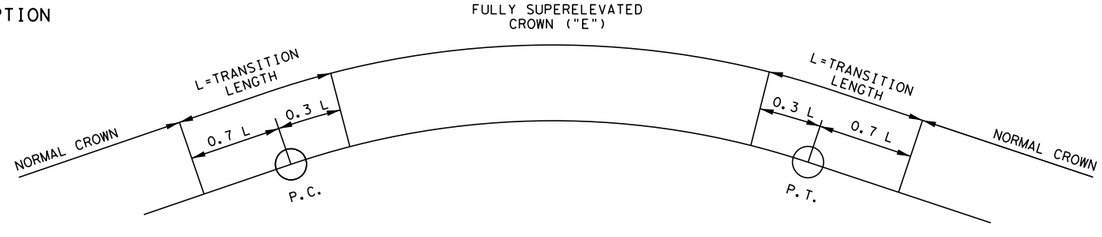
Element: Circular
PC ( ) 299+91.89 R1 16561567.8383 1232542.4493
PI ( ) 302+83.91 R1 16561281.0813 1232487.2687
CC ( ) 16561961.5391 1230496.5049
PT ( ) 305+72.15 R1 16561020.5437 1232355.3799
Radius: 2083.4800
Delta: 15°57'25.4" Right
Degree of Curvature (Arc): 2°45'00.0"
Length: 580.2561

Tangent: 292.0180
Chord: 578.3826
Middle Ordinate: 20.1678
External: 20.3649
Tangent Direction: S 10°53'32.2" W
Radial Direction: N 79°06'27.8" W
Chord Direction: S 18°52'14.9" W
Radial Direction: N 63°09'02.4" W
Tangent Direction: S 26°50'57.6" W

Element: Linear
PT ( ) 305+72.15 R1 16561020.5437 1232355.3799
POE ( ) 306+44.98 R1 16560955.5668 1232322.4875
Tangential Direction: S 26°50'57.6" W
Tangential Length: 72.8

ENDING CHAIN RM 1479 DESCRIPTION

SUPERELEVATION DATA



CURVE ID	STATION LIMITS FULL "e"	STATION P.I.	STATION P.C.	STATION P.T.	DEGREE OF CURVE D	"e" %	SLOPE	TRANSITION LENGTH AT PC			TRANSITION LENGTH AT PT		
								BEGIN	END	LENGTH	BEGIN	END	LENGTH
FM 1479-1	293+03.00 - 296+59.00	294+82.25	292+52.81	297+08.72	3°30'00.00'	4.9	RT.	291+37.00	293+03.00	166.0	296+59.00	298+25.00	166.0
FM 1479-2	300+38.00 - 305+26.00	302+83.91	299+91.89	305+72.15	2°45'00.00'	4.3	LT.	298+56.00	300+38.00	152.0	305+26.00	306+78.00	152.0

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No.
F-10161

Texas Department of Transportation

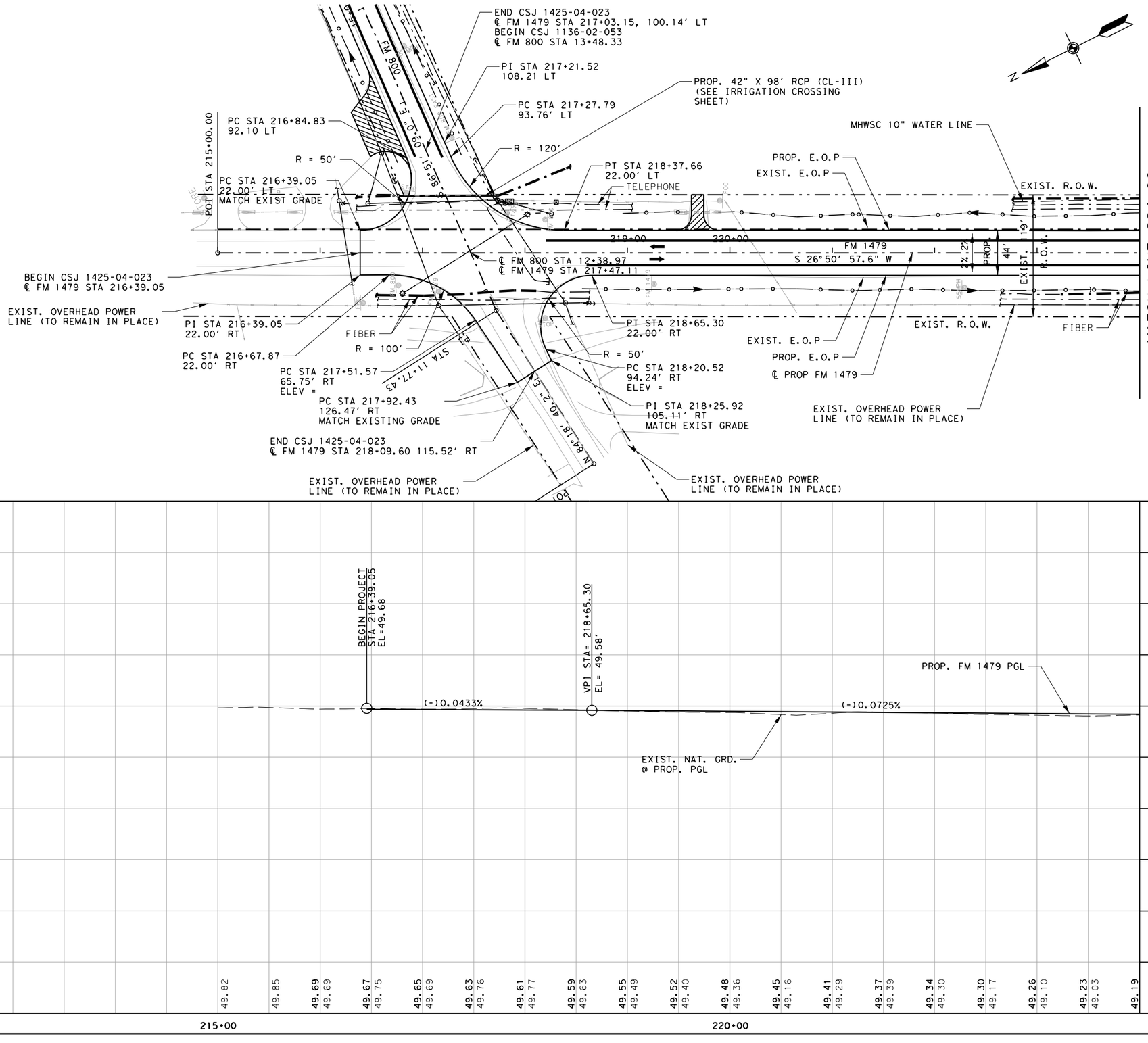
FM 1479

ROADWAY DATA

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		174
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479RD01.dgn



50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

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STATE OF TEXAS
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PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

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18383 PRESTON ROAD
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DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

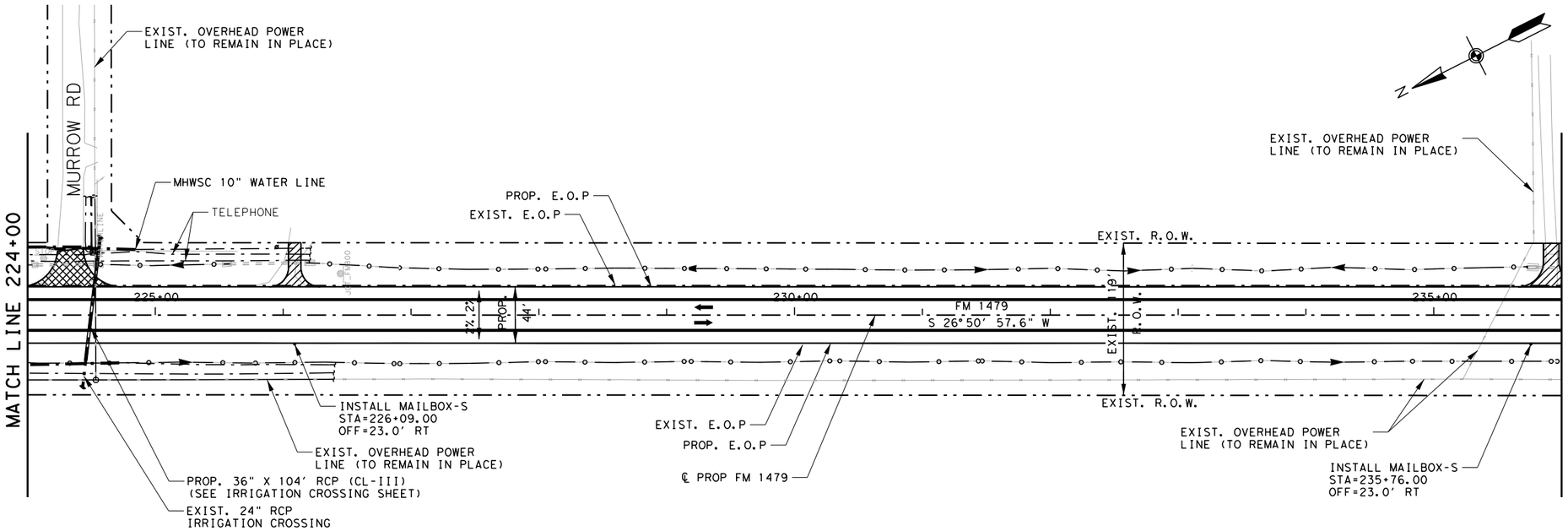
PLAN & PROFILE
BEGIN PROJECT TO STA 224+00

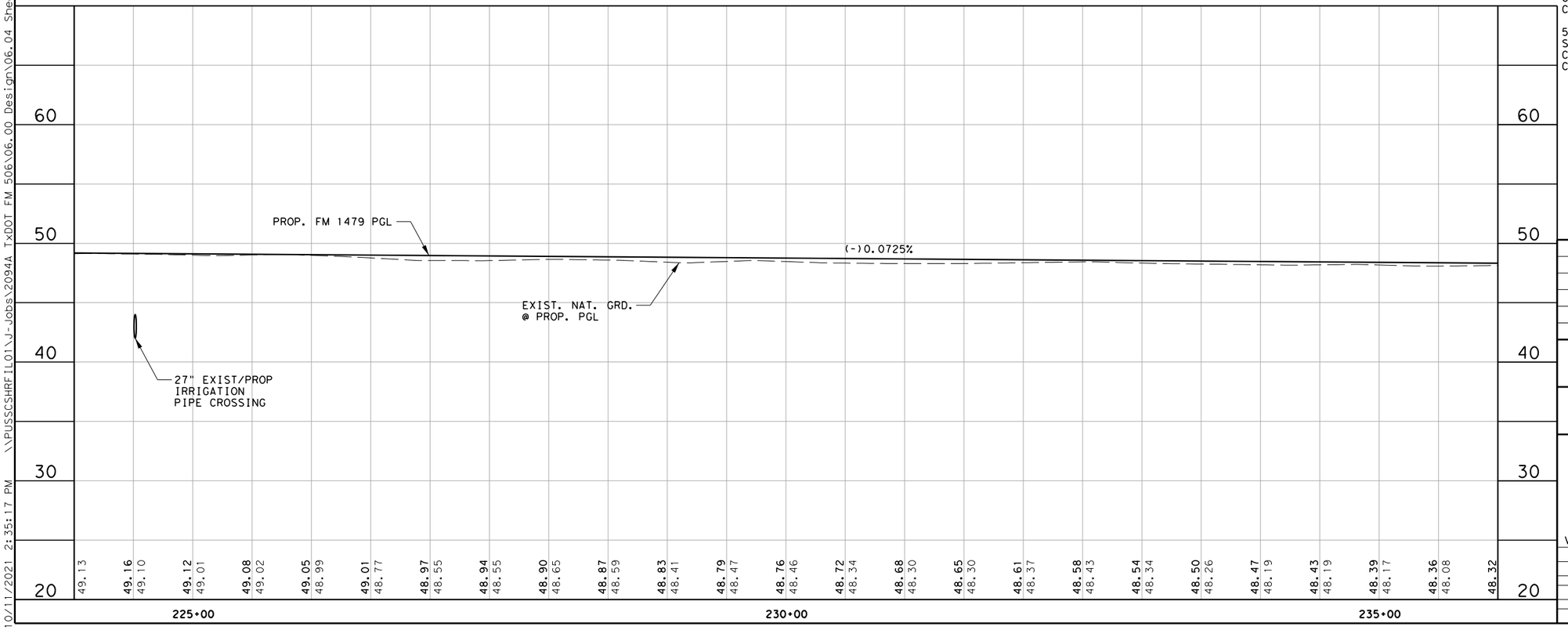
VERT. PROFILE 1"=10' SHEET 1 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	175

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP01.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

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5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

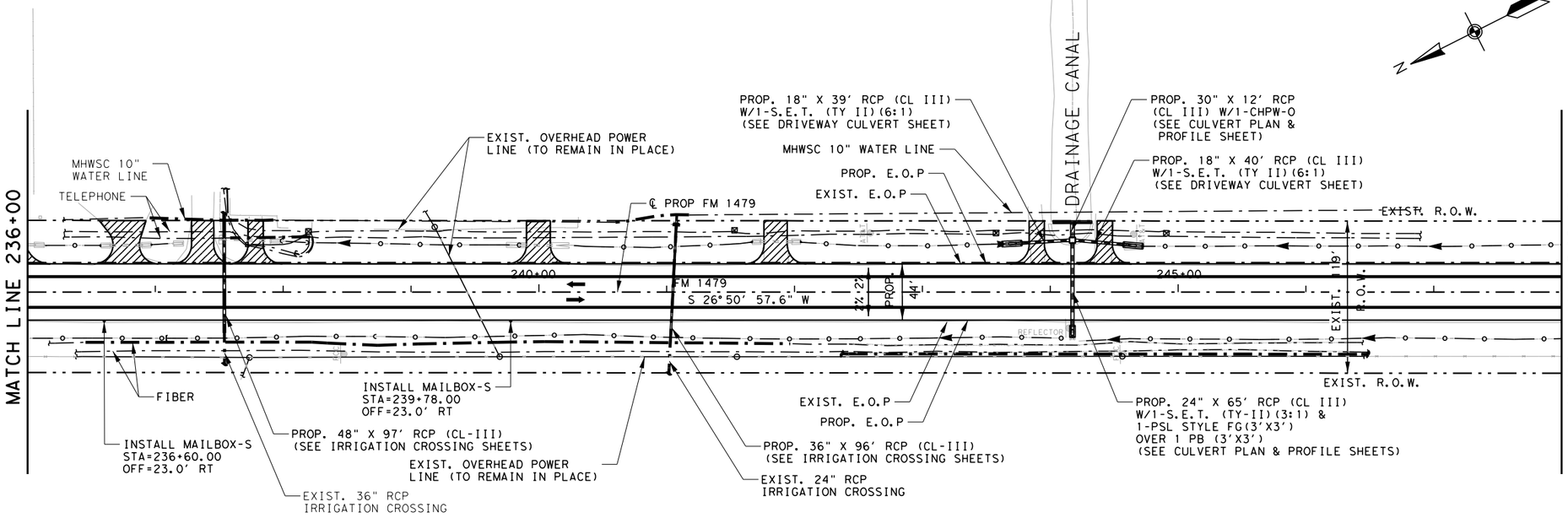
PLAN & PROFILE
STA 224+00 TO STA 236+00

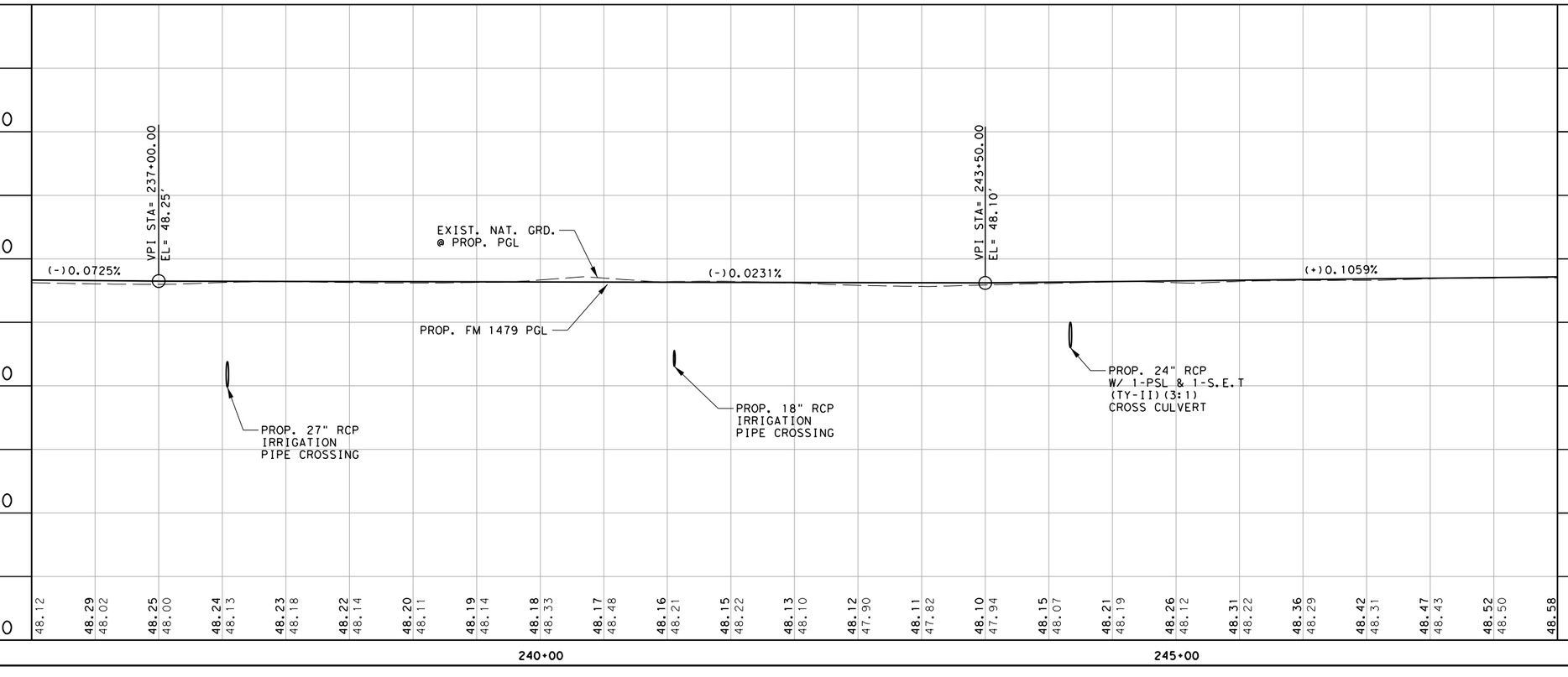
VERT. PROFILE 1"=10' SHEET 2 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
—	SEE TITLE SHEET	176

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP02.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- ONE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

PLAN & PROFILE STA 236+00 TO STA 248+00

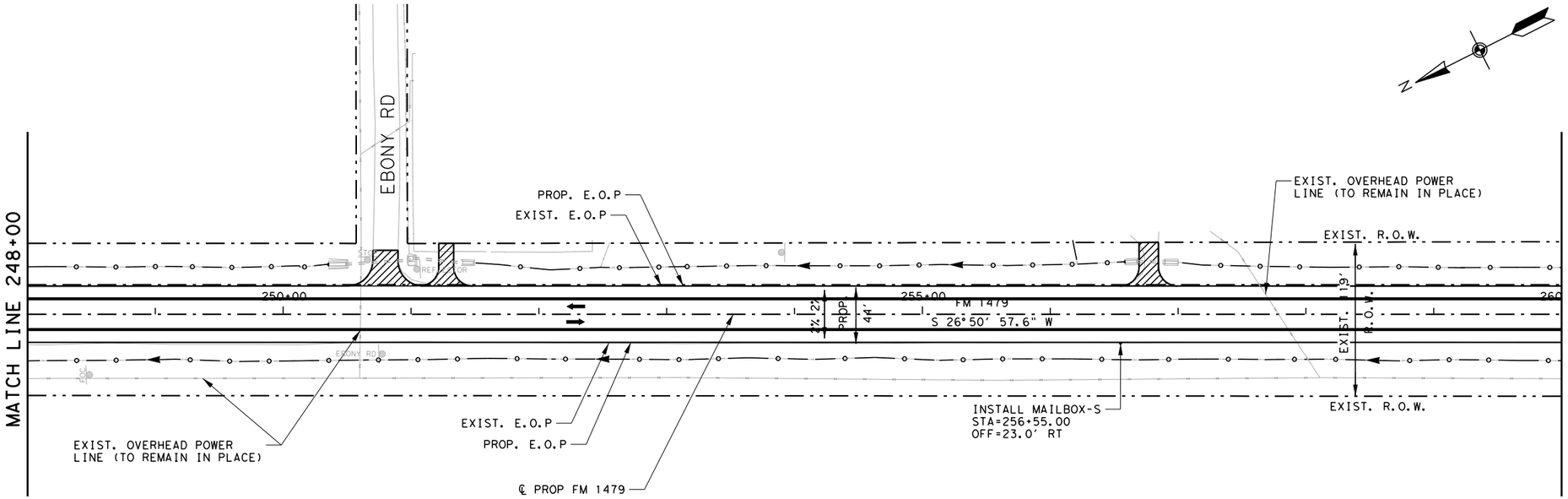
VERT. PROFILE 1"=10' SHEET 3 OF 8

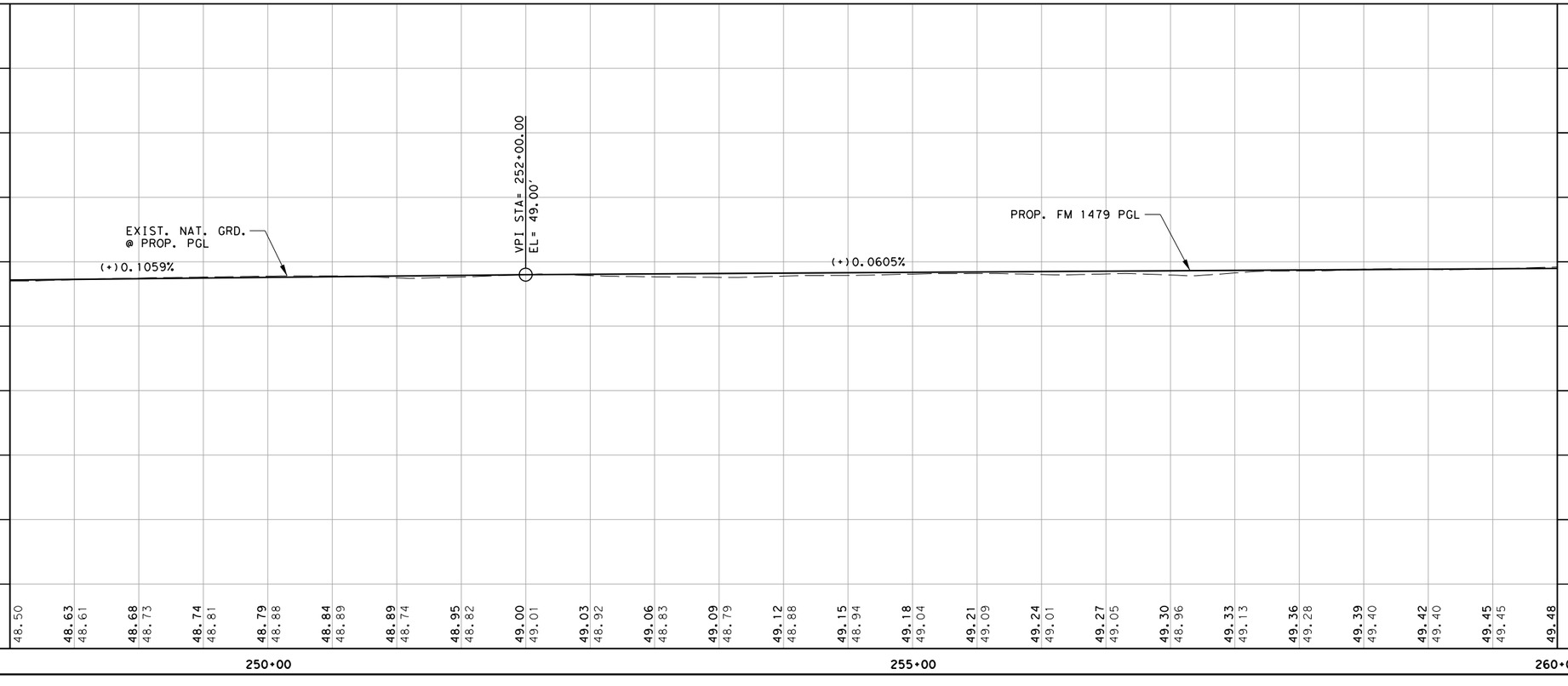
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	177

STATE	DISTRICT	COUNTY
TEXAS	PHR	CAMERON

CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP03.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

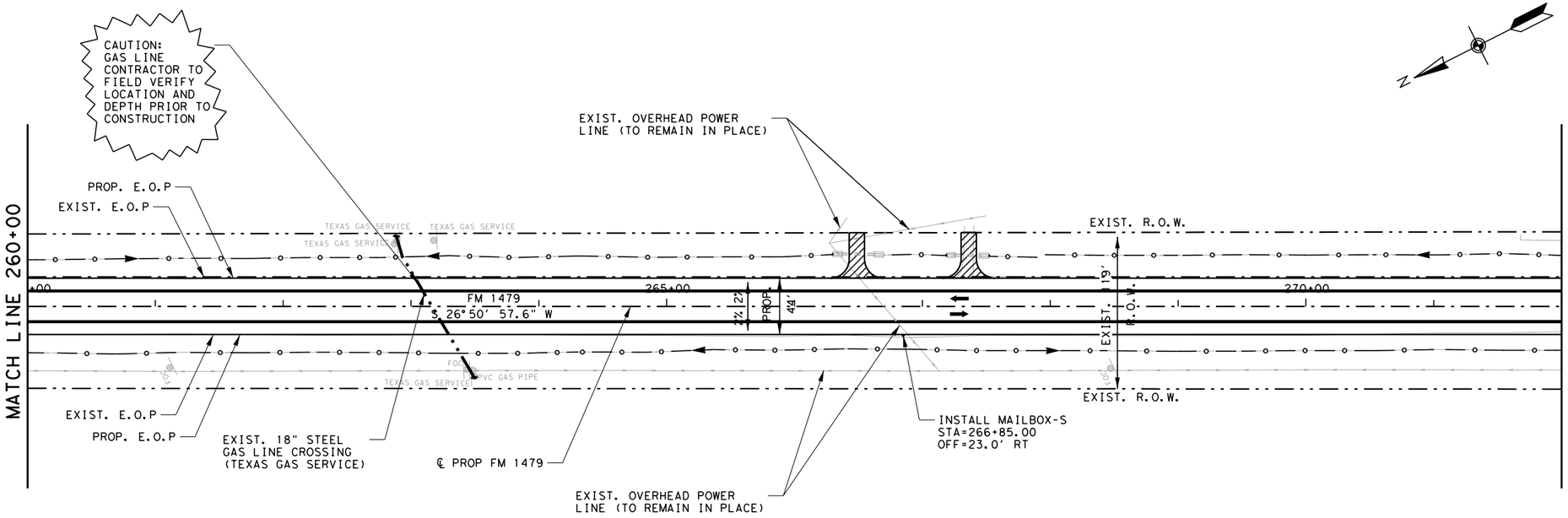
PLAN & PROFILE
STA 248+00 TO STA 260+00

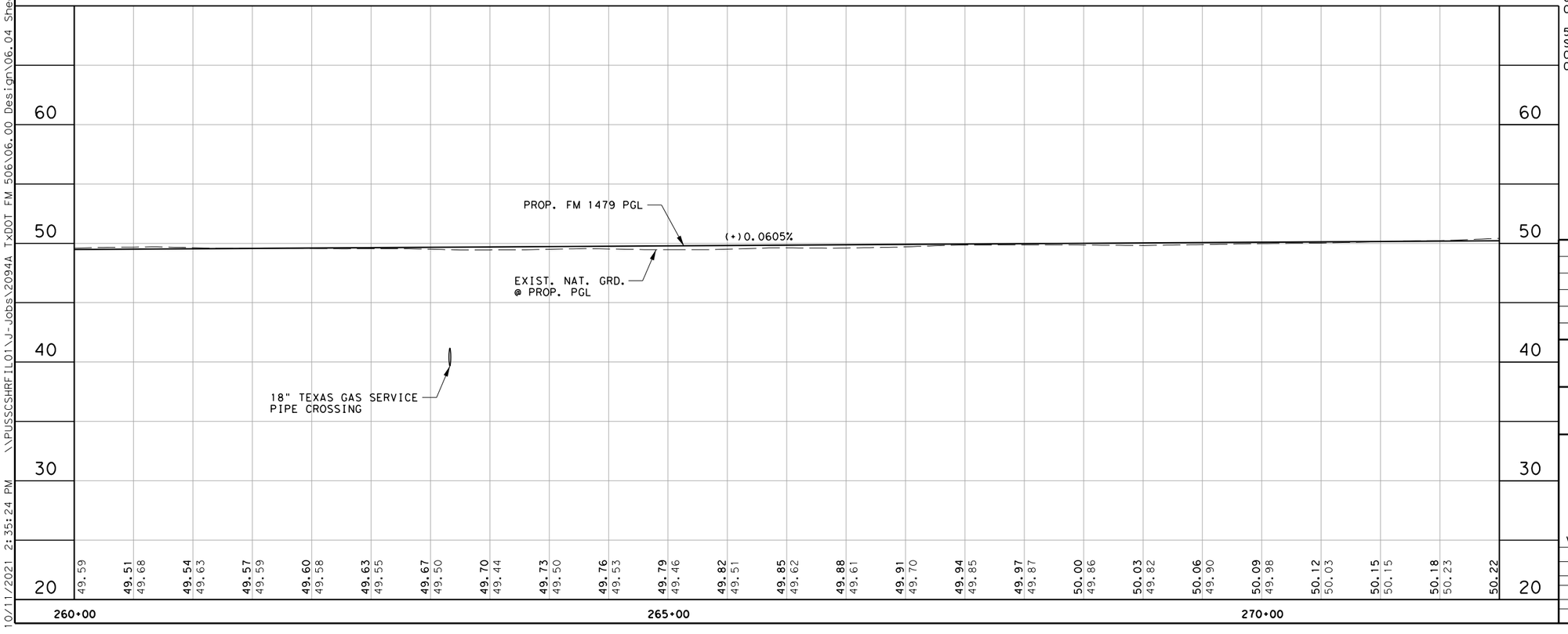
VERT. PROFILE 1"=10' SHEET 4 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	178

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP04.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No.
F-10161

FM 1479

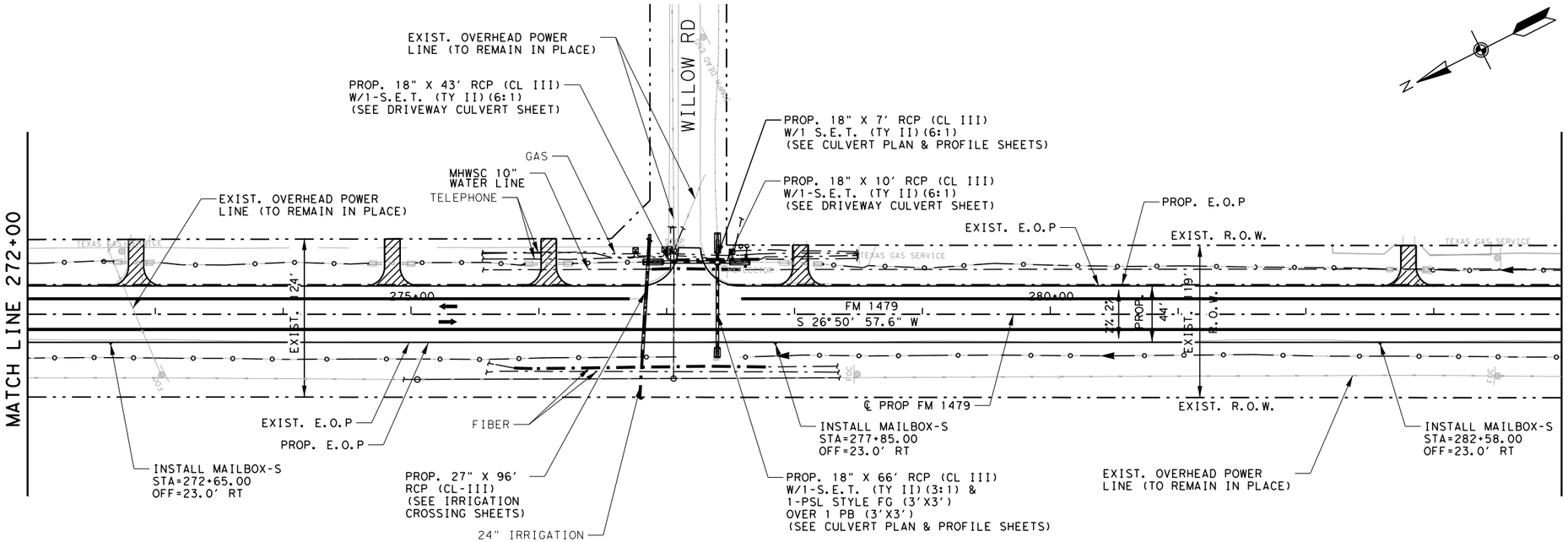
PLAN & PROFILE
STA 260+00 TO STA 272+00

VERT. PROFILE 1"=10' SHEET 5 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	179

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP05.dgn



50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

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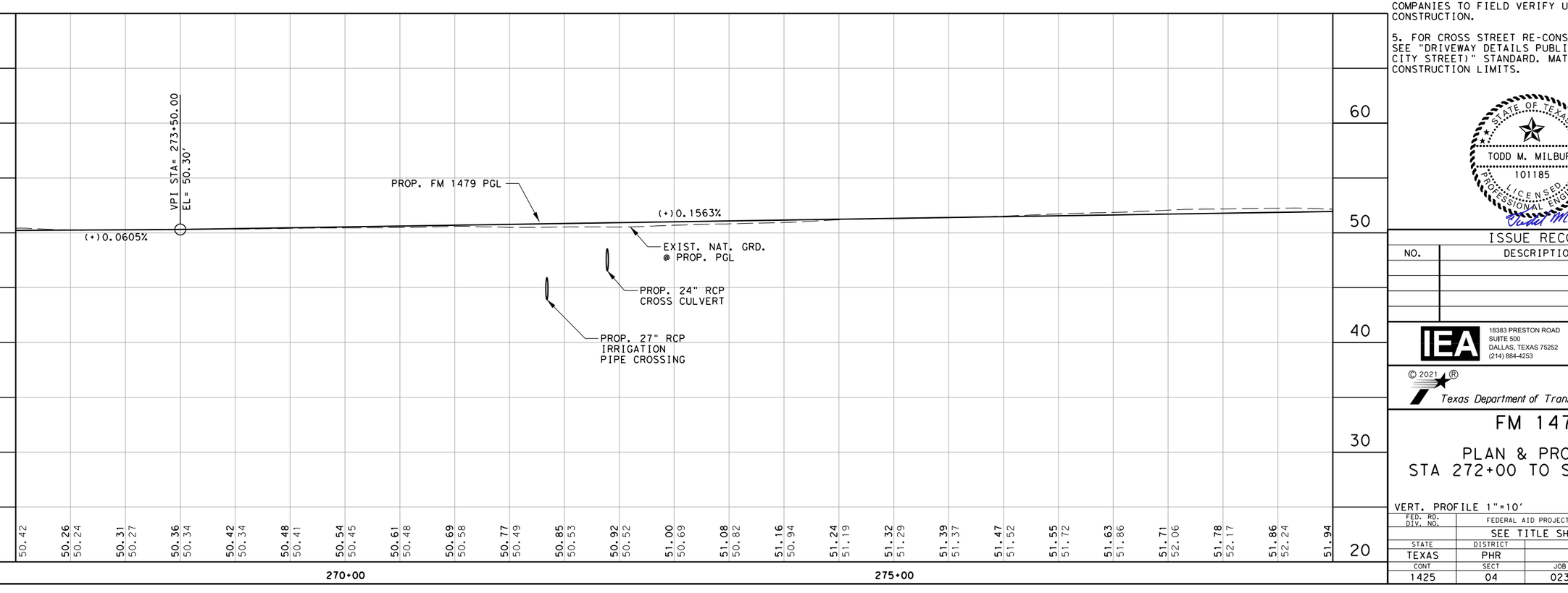
5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.



STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

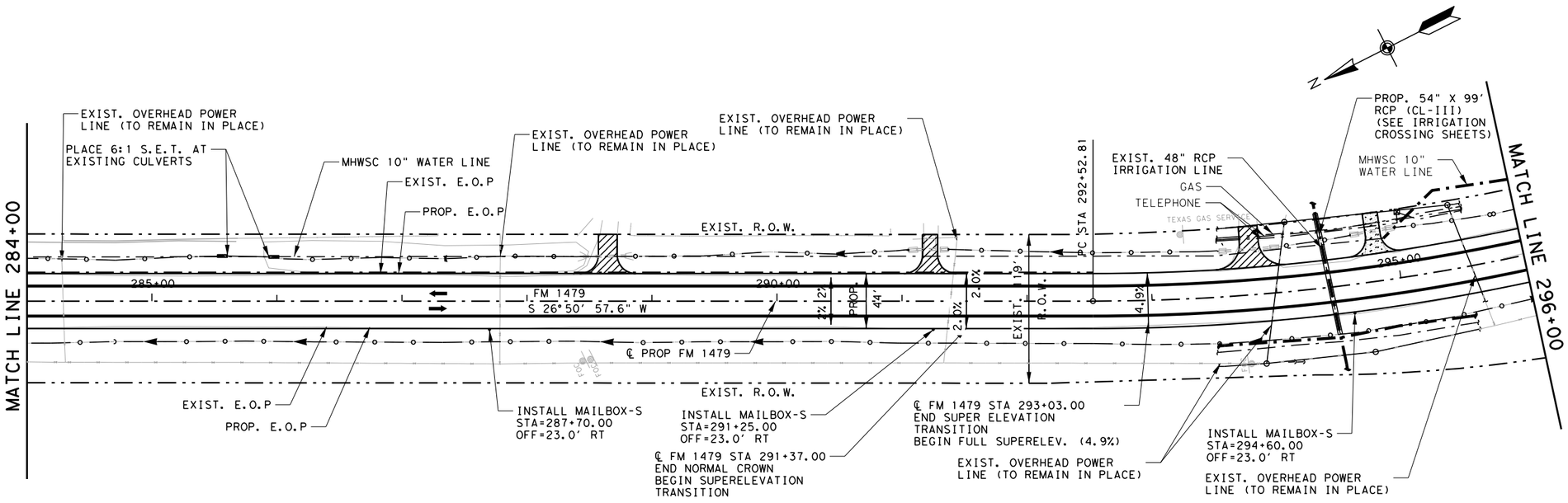
PLAN & PROFILE STA 272+00 TO STA 284+00

VERT. PROFILE 1"=10' SHEET 6 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	180

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP06.dgn



50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

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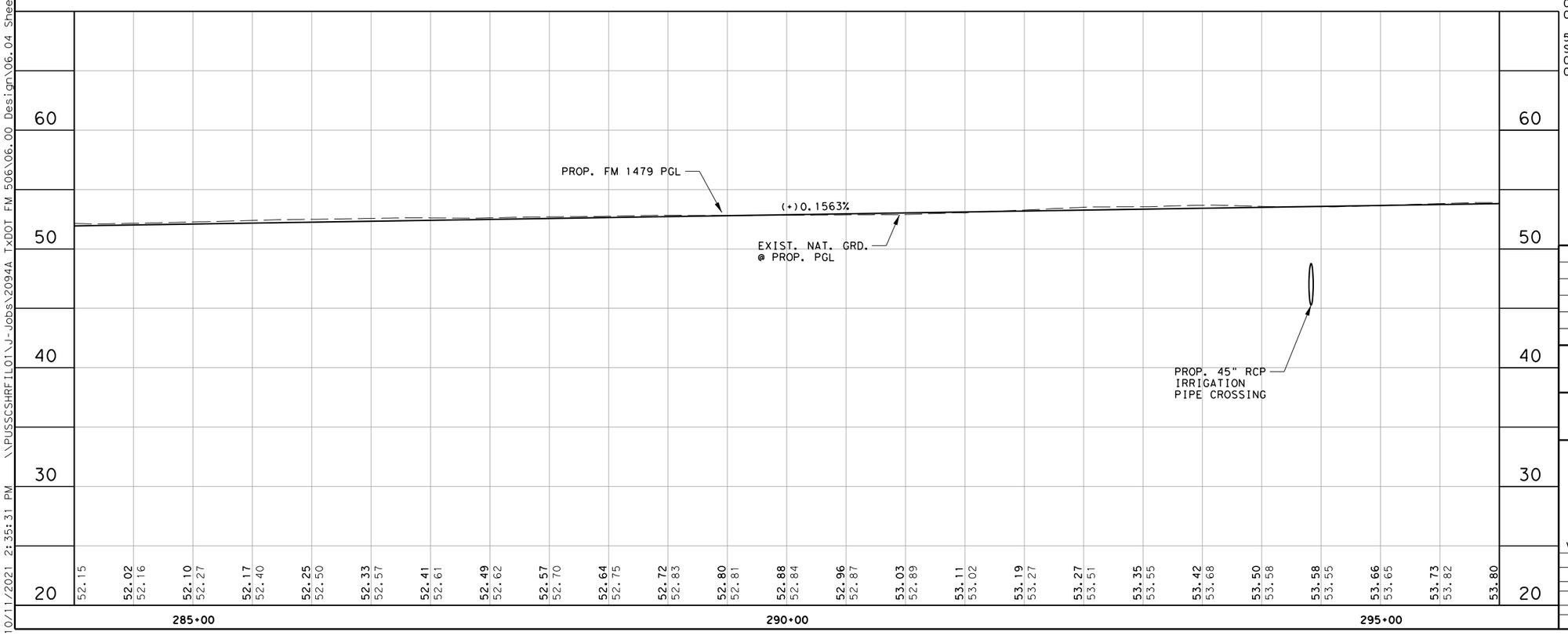


STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

PLAN & PROFILE STA 284+00 TO STA 296+00

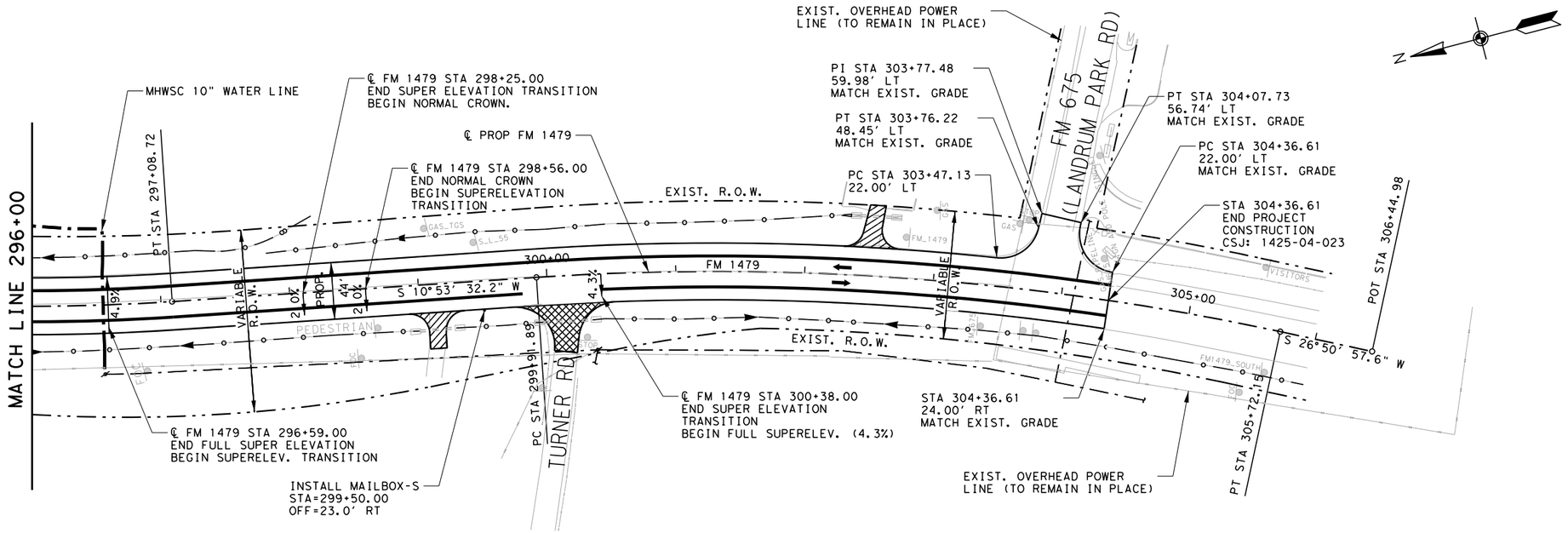
VERT. PROFILE 1"=10' SHEET 7 OF 8

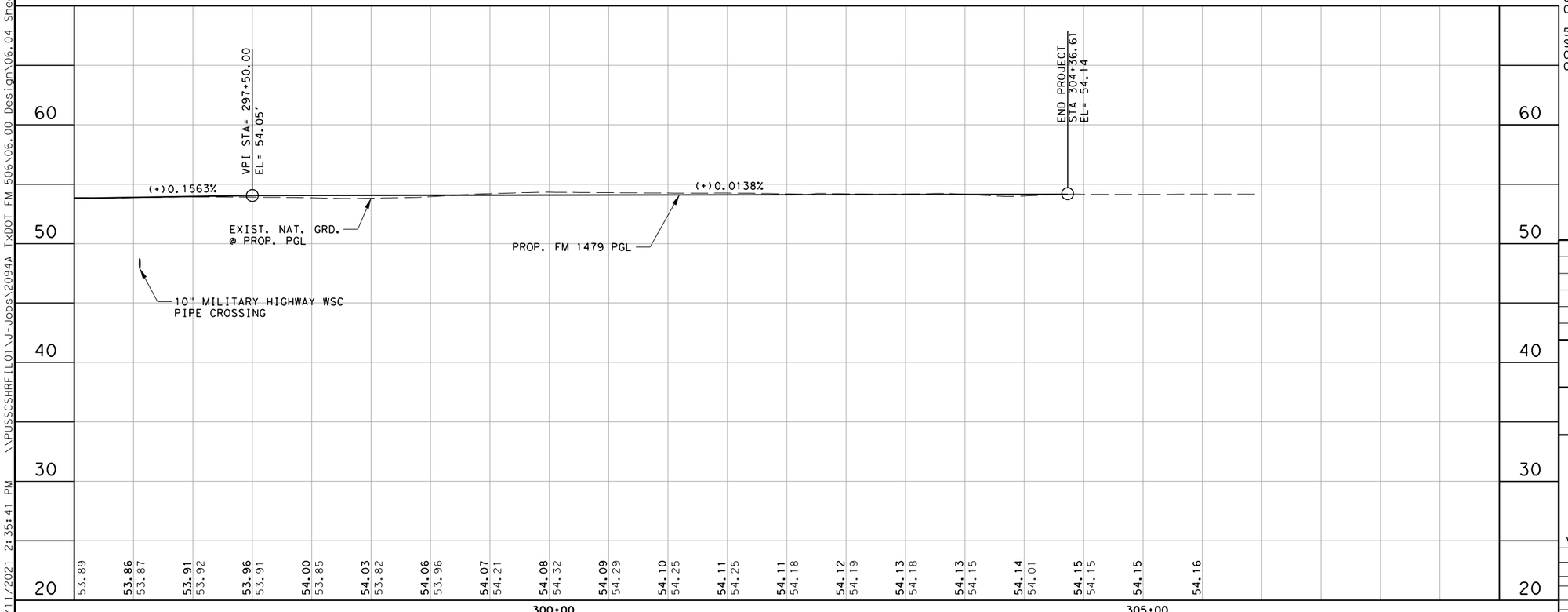
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
—	SEE TITLE SHEET	181

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP07.dgn

10/11/2021 2:35:31 PM \\PUSSCSHRFILO1\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1425-04-023\06.04.03 Roadway\1479PP07.dgn





50 25 0 50 100

HORIZONTAL SCALE: 1"=100'

LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET" FOR ALIGNMENT DATA AND "HORIZONTAL & VERTICAL CONTROL SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. CONTRACTOR SHALL COORDINATE WITH ALL UTIL COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS, SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXIST GRADE AT CONSTRUCTION LIMITS.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

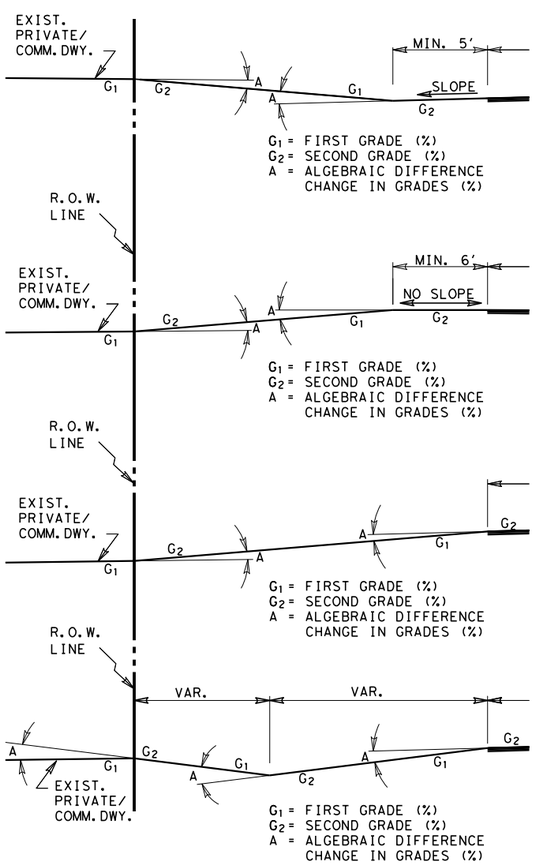
PLAN & PROFILE STA 296+00 TO END PROJECT

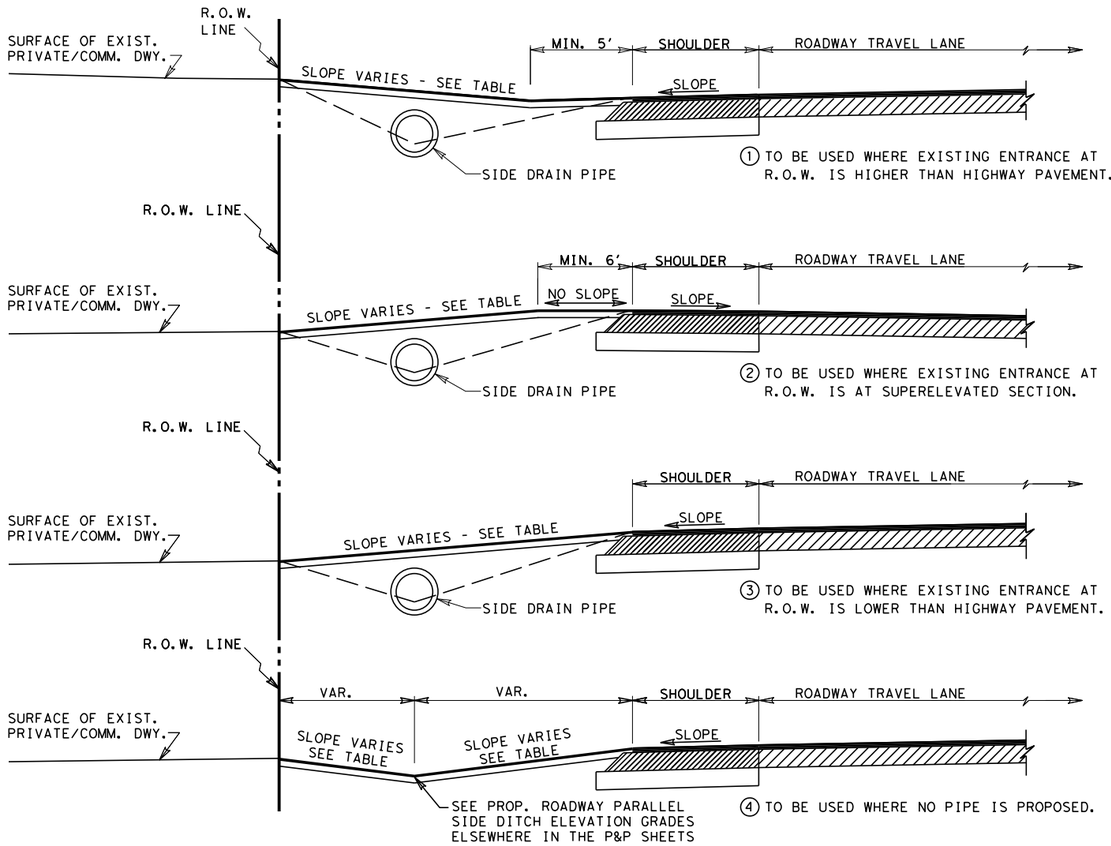
VERT. PROFILE 1"=10' SHEET 8 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	182

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

1479PP08.dgn





NOTES:

ALL ENTRANCES CONSTRUCTED ON THIS PROJECT ARE SUBJECT TO CONCURRENCE WITH EXISTING GOVERNING REGULATIONS AS SET OUT BY THE STATE - TEXAS TRANSPORTATION COMMISSION.

ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING DRIVEWAY GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

ALL FLEXIBLE BASE USED FOR PRIVATE DRIVES & COMMERCIAL DRIVES WILL NOT REQUIRE LIME TREATMENT.

EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER.

PROP. WIDTH OF DRIVEWAYS TO MATCH EXISTING WIDTH AT R.O.W. LINE.

114 #/SY ACP (COMPACTED) IS EQUAL TO 1 IN. DEPTH,
171 #/SY ACP (COMPACTED) IS EQUAL TO 1½ IN. DEPTH.

SIDE DRAIN PIPES TO BE INSTALLED WHERE ROADWAY DITCH DRAINAGE IS NECESSARY, AS INDICATED ON PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SIDE DRAIN PIPES TO BE INSTALLED WITH A MINIMUM OF 12" COVER WITH PROPOSED RESIDENTIAL & COMMERCIAL DRIVEWAY MATERIAL OR 15" COVER WITH PROPOSED COUNTY ROAD & CITY STREET ROADWAY MATERIAL.

AVERAGE DRIVEWAY DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS (ELSEWHERE IN PLANS) ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL DRIVEWAY DIMENSIONS MAY BE CHANGED BY THE ENGINEER BASED ON EXISTING FIELD CONDITIONS.

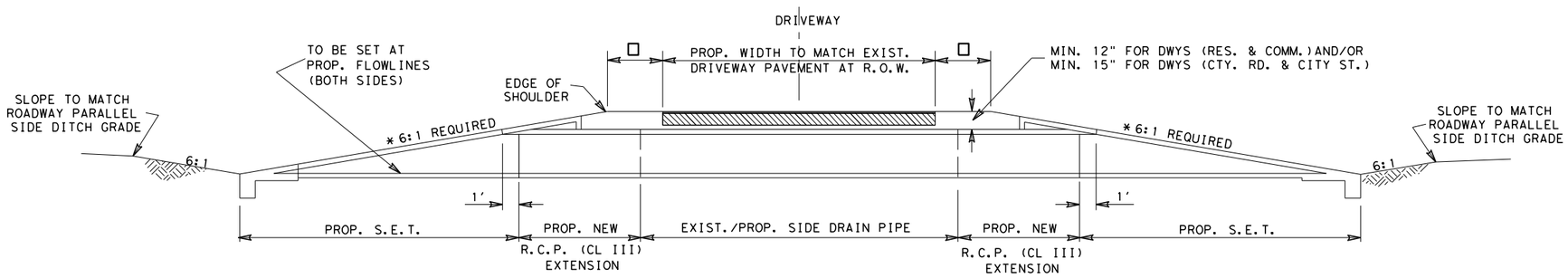
THE RATE OF PRIME COAT SHALL BE 0.10 GAL/SY FOR PRIVATE AND/OR COMMERCIAL DRIVEWAYS AND 0.20 GAL/SY FOR PUBLIC DRIVEWAYS (COUNTY ROADS AND/OR CITY STREETS).

TYPICALLY A CHANGE IN GRADE OF THREE PERCENT (3%) OR LESS AND A DISTANCE BETWEEN CHANGES IN GRADE OF AT LEAST ELEVEN FEET (11') ACCOMMODATES MOST VEHICLES. HOWEVER, LITERATURE SUGGESTS THAT A SIX PERCENT (6%) TO EIGHT PERCENT (8%) CHANGE IN GRADE MAY OPERATE EFFECTIVELY. INDIVIDUAL SITE CONDITIONS SHOULD BE EVALUATED TO ACCOMMODATE THE VEHICLE FLEET USING THE DRIVEWAY.

TYPICAL ENTRANCE PROFILE FOR DRIVEWAYS W/OUT C&G

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX.
RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% DESIRABLE
RESIDENTIAL DRIVEWAYS @ A = 8% DESIRABLE
FORMULA, A=G2-G1



□ - 1' MIN. ON DRIVEWAYS (RES. & COMM.)
2' MIN. ON DRIVEWAYS (COUNTY RD. & CITY ST.)

* - 6:1 SLOPE REQUIRED

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY PROFILE DETAILS

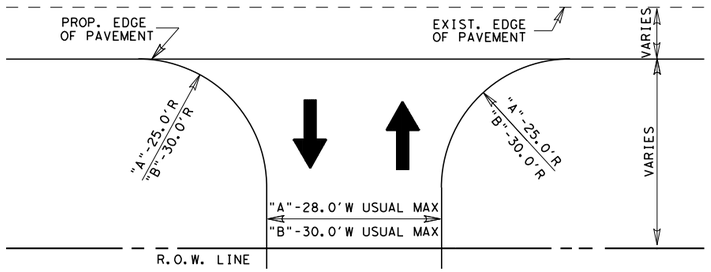
REV. 3/2020

DRIVEWAY1.DGN

FED. RD. DIV. NO.	STATE AID PROJECT NO.	FILE NO.	SHEET NO.
6			183

STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030, ETC	FM 506,ETC

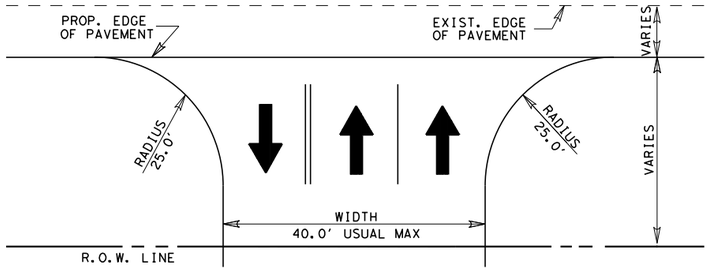
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

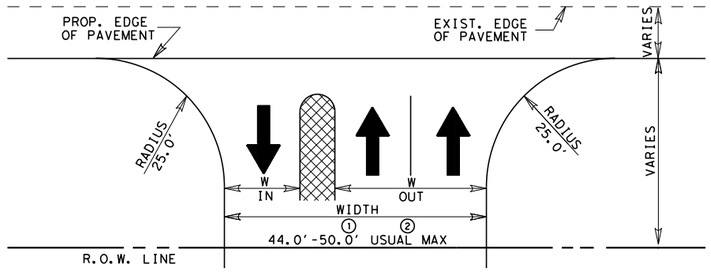
"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES① PER HOUR

① - *DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS*



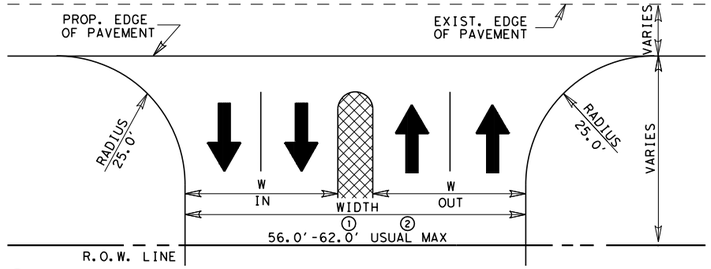
ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)

DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



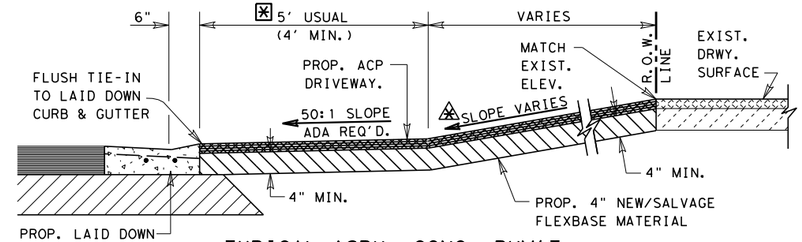
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



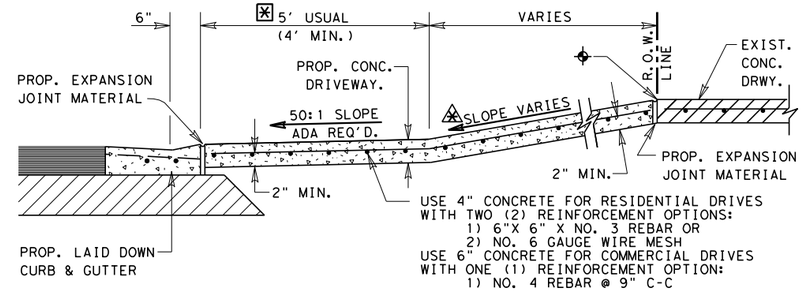
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

⊕ CONCRETE SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

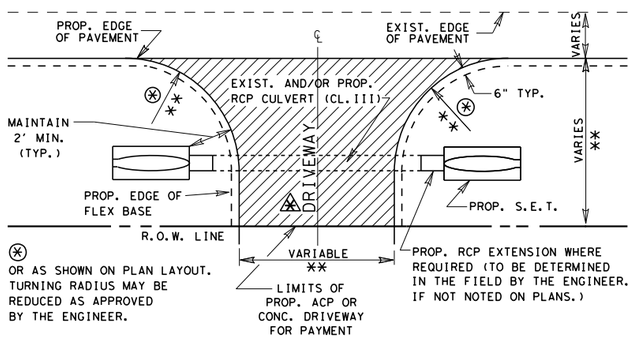
☒ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⚠ ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% MAX. RESIDENTIAL DRIVEWAYS @ A = 8% MAX.

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX. RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



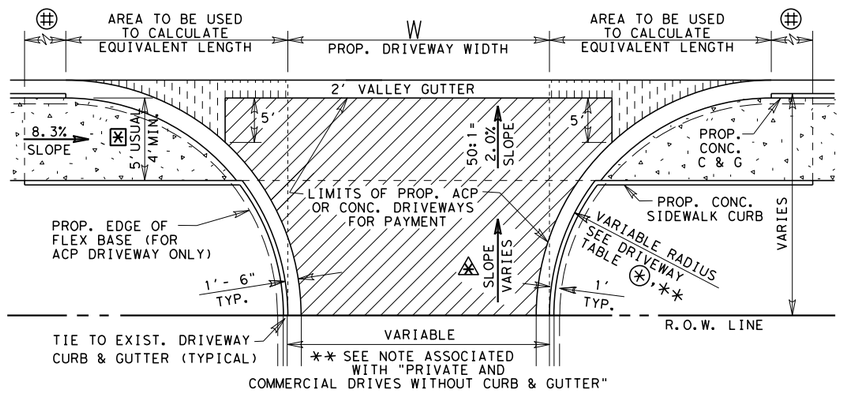
⊛ OR AS SHOWN ON PLAN LAYOUT. TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES

N.T.S.

☒ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⊕ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY PB-1

EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 114#/SY ACP.

CONCRETE (RESIDENTIAL)

EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)

EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

PHARR DISTRICT STANDARD

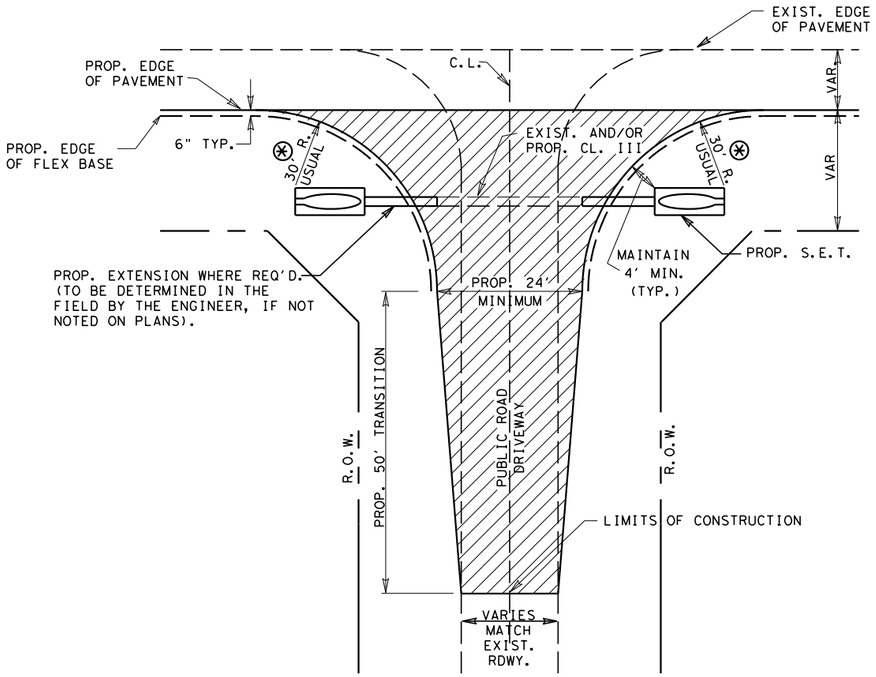
TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

REV. 01/17

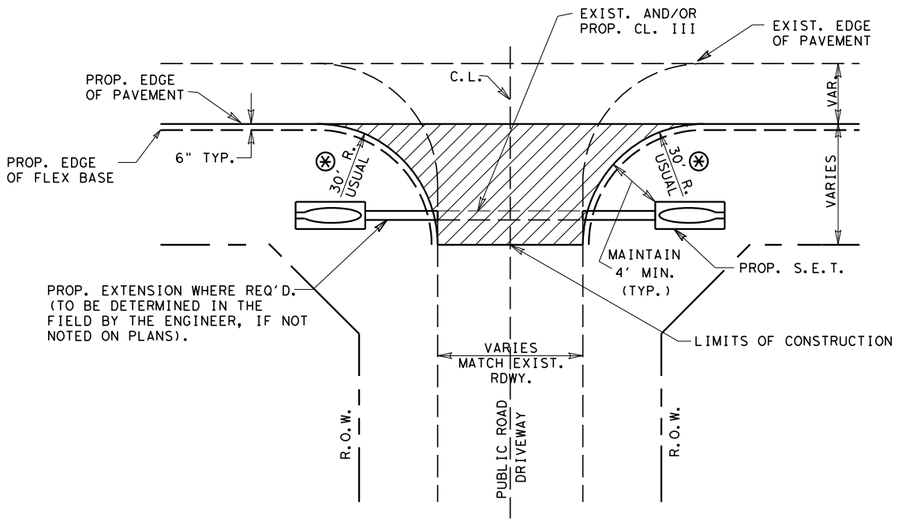
DRIVEWAY2.DGN

FED. RD. DIV. NO.	PROJECT NO.		FILE NO.			SHEET NO.
6						184
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030, ETC	FM 506, ETC



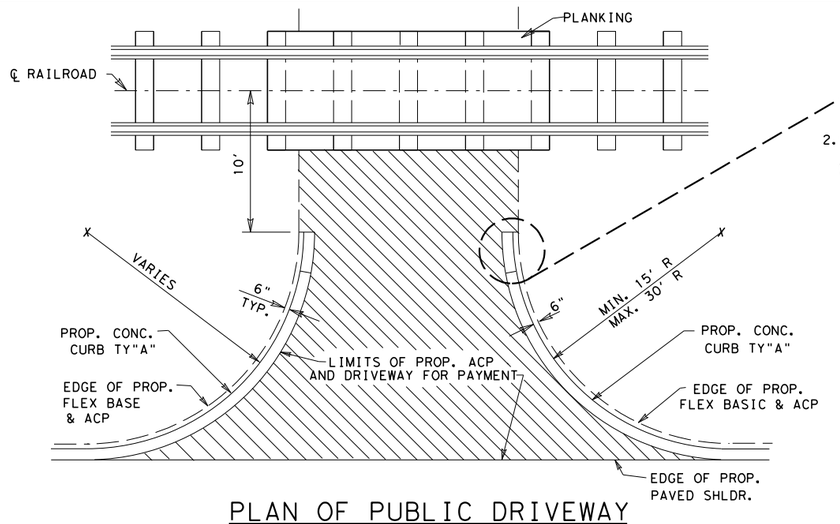
TYPICAL DETAIL

(WHEN EXIST. ROADWAY WIDTH LESS THAN 24'.)

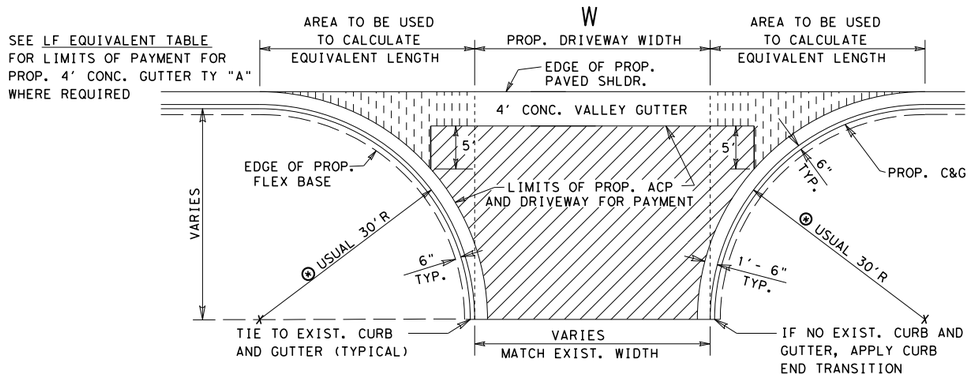


TYPICAL DETAIL

(WHEN EXIST. ROADWAY WIDTH EQUAL TO OR GREATER THAN 24'.)



PLAN OF PUBLIC DRIVEWAY ADJACENT TO R.R. CROSSING



PLAN OF PUBLIC DRIVEWAY

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 4'CONC. GUTTER TY."A"

LF OF VALLEY GUTTER= W + X1 + X2	
WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS	
Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 4') Equivalent LF Length
10	3
15	7
20	12
25	19
30	27
35	37
40	48
45	61
50	75
55	91
60	109
65	127
70	148
75	170

TY PBS1

EXIST. UNPAVED PUBLIC DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 12" LIME TREAT. SUBGRADE, 8" FLEX. BASE 1% LIME, THEN PRIMED AND SURFACED WITH 171#/SY ACP.

TY PBS2

EXIST. DRIVEWAY TO BE CONSTRUCTED SAME AS PROPOSED ROADWAY.

GENERAL NOTES:

AVERAGE DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS ARE FOR ESTIMATING PURPOSES ONLY.

LOCATIONS LISTED ON THE TABLE ARE APPROXIMATE, EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER AS REQUIRED.

⊛ SEE DRIVEWAY TABLE, TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

SEE TABLE OF DRIVEWAYS FOR TOTAL LENGTH OF PROP. 4' CONC. VALLEY GUTTER FOR EACH LOCATION.

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)

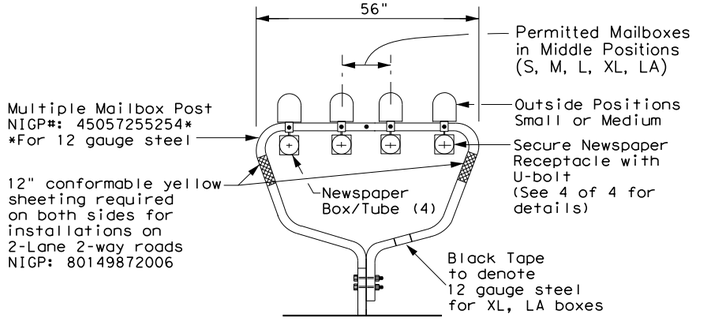
REV. 8/19 DRIVEWAY3.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						185
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030, ETC	FM 506,ETC

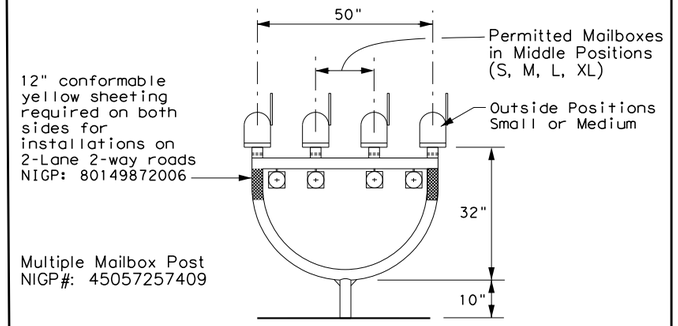
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

TYPE 1 - MULTIPLE



TYPE 4 - MULTIPLE



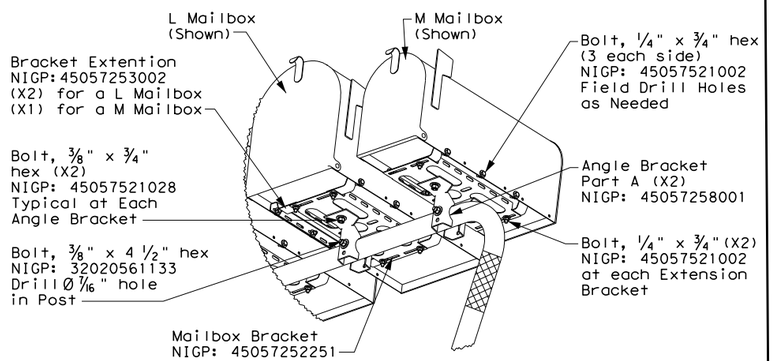
MAILBOX SIZES

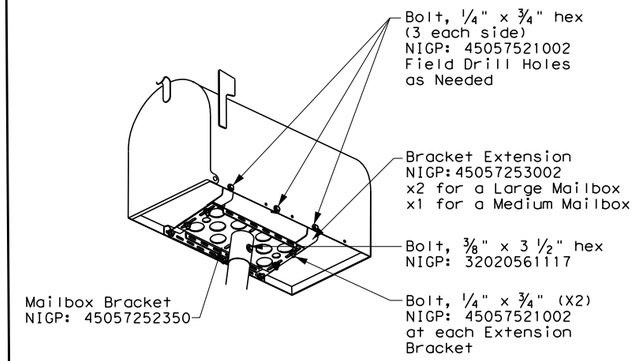
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 ½"	6"	7"	6 LBS
MEDIUM	22 ½" *	8" *	11 ½" *	8 LBS
LARGE	23 ½"	11 ½"	13 ½"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 ½"	15"	23 LBS

* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

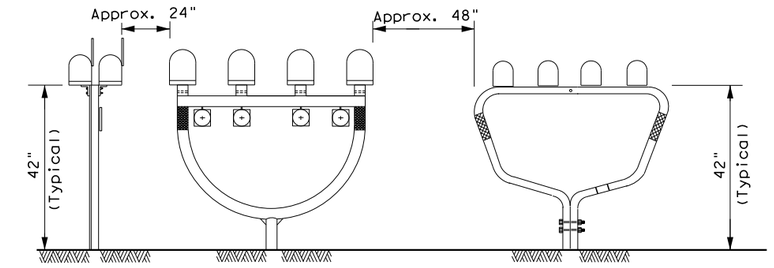
GENERAL NOTES:

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.





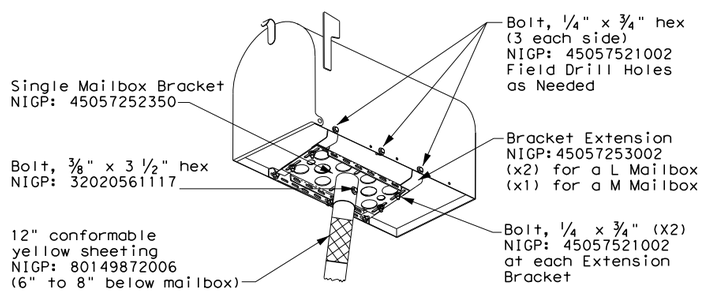
TYPICAL INSTALLATION MEASUREMENTS

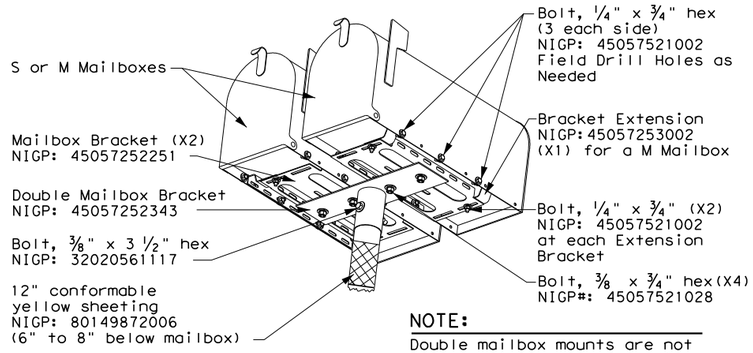


NOTE:

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

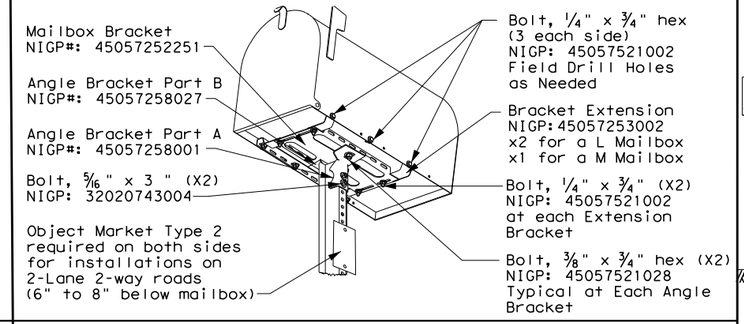


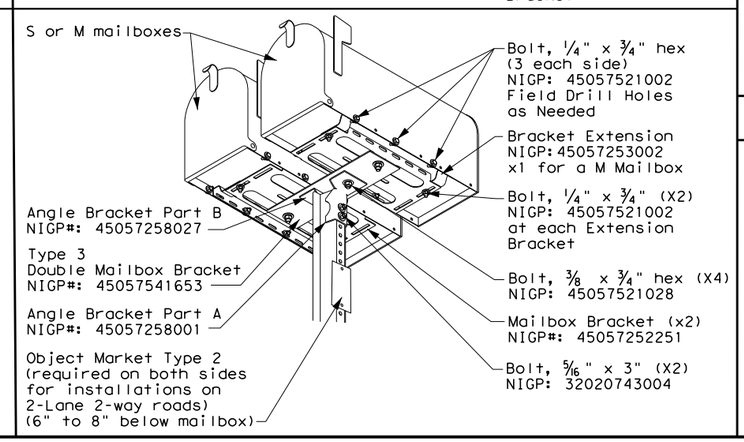


NOTE:

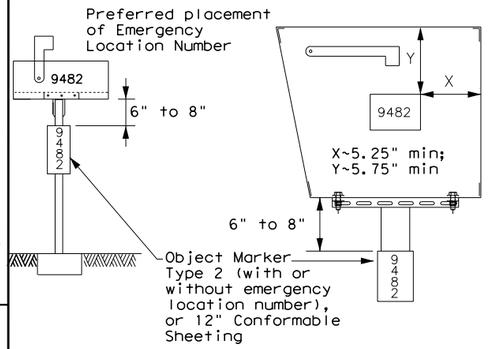
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

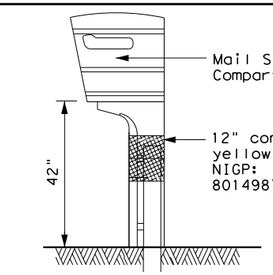


NOTES:

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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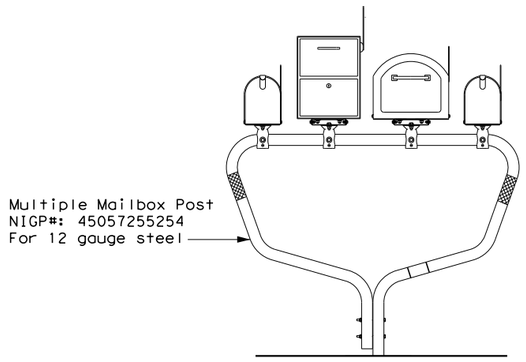
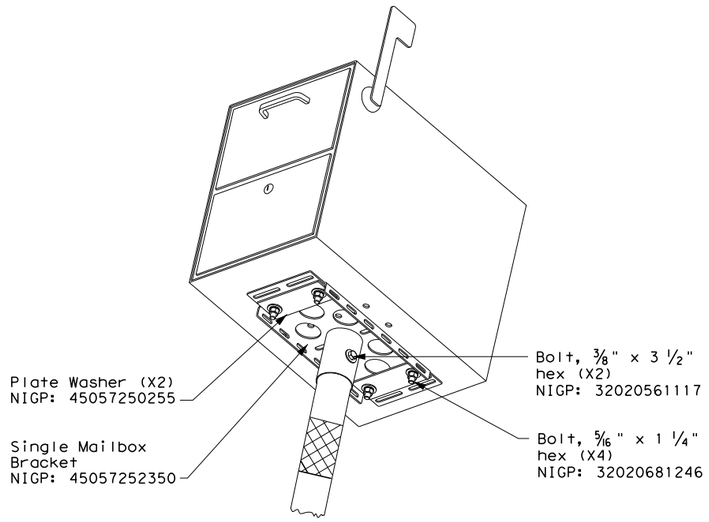
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		186

DATE:
FILE:

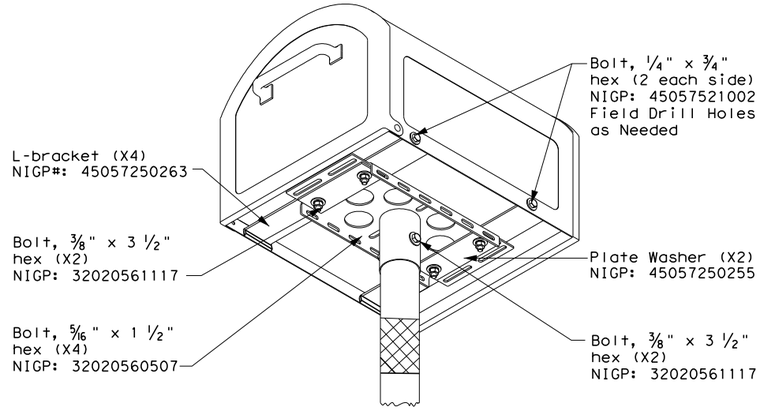
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

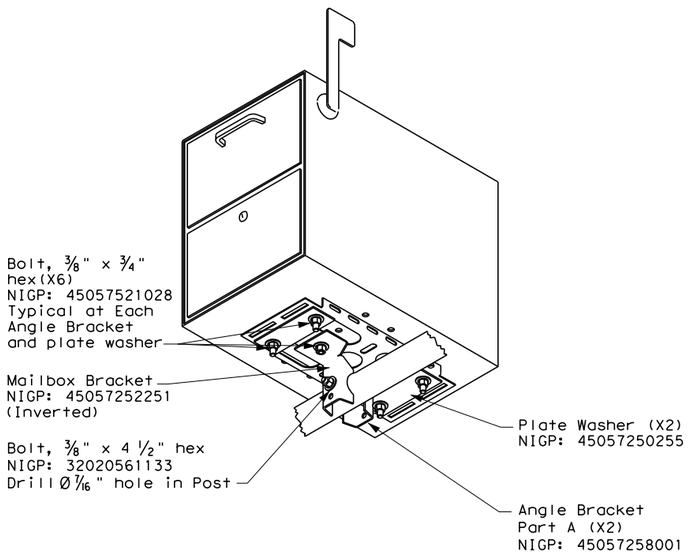


TYPE 2/4 - SINGLE XL MAILBOX

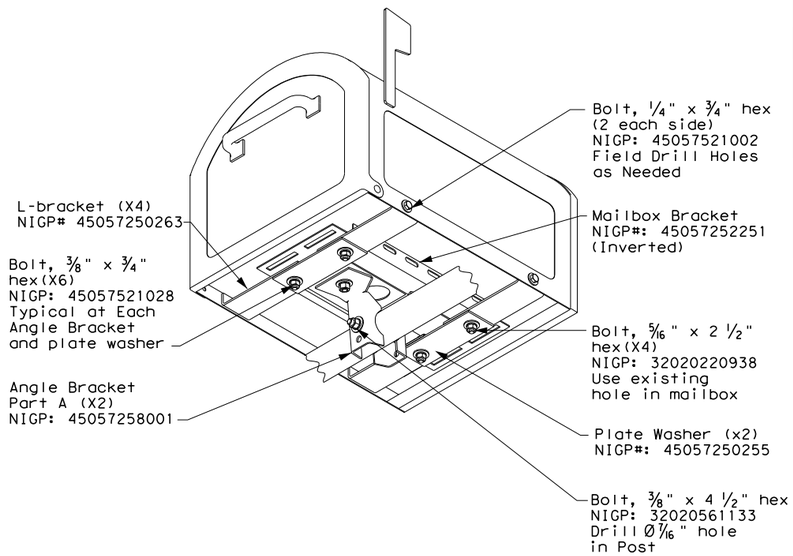


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

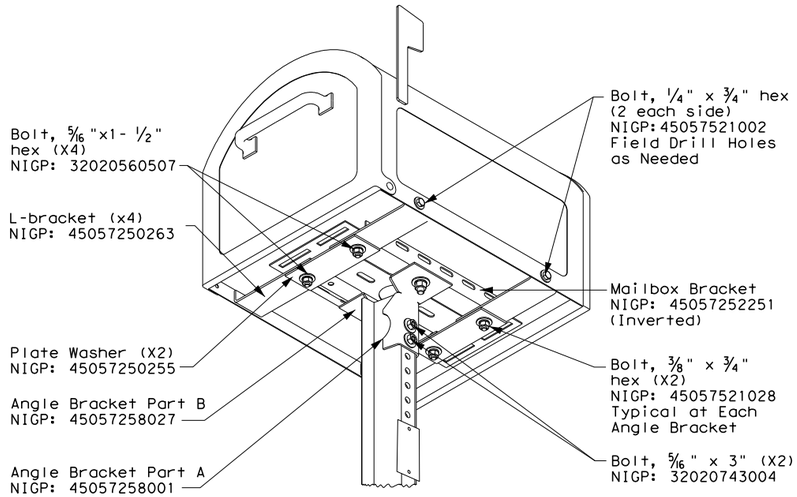
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation

Maintenance Division Standard

XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	PHR	CAMERON		187

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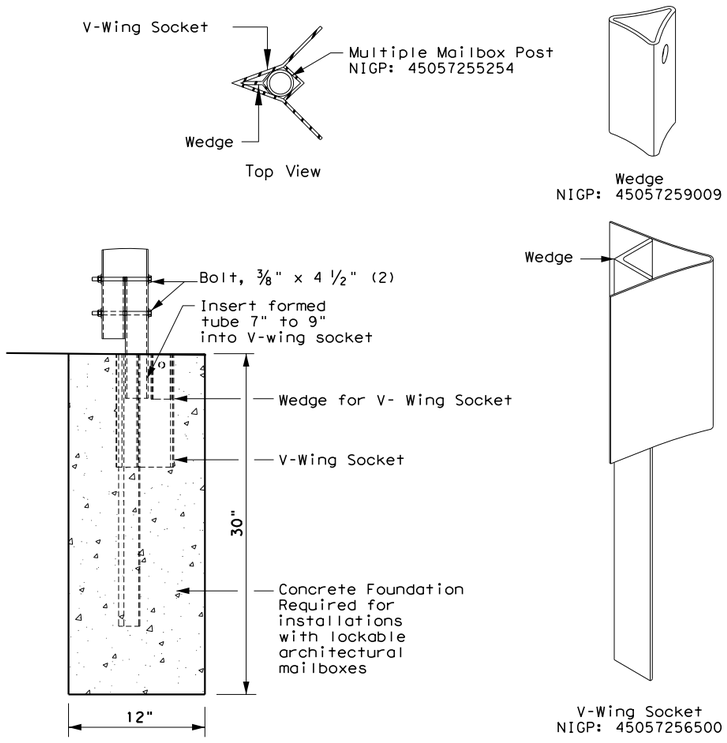
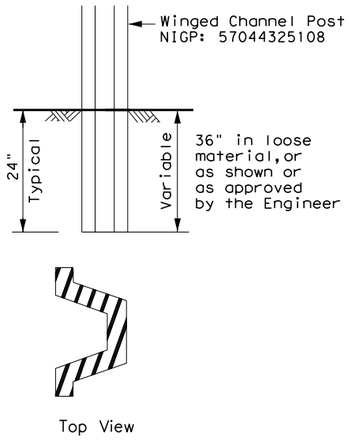
FILE: \\pwssbsrfhm161\01-Jobs\2094\20\94200107\ROADWAY\Sign Details\MB-21.dgn

TYPE 1 - SUPPORT/FOUNDATION
Thin Wall Tube w/ V-LOC Anchorage

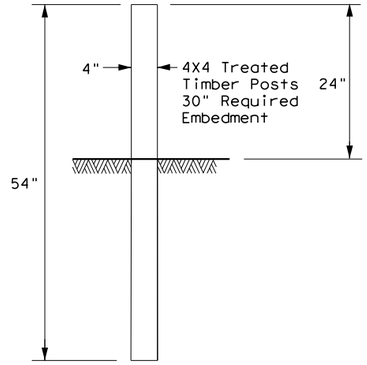


TYPE 3 - SUPPORT/FOUNDATION

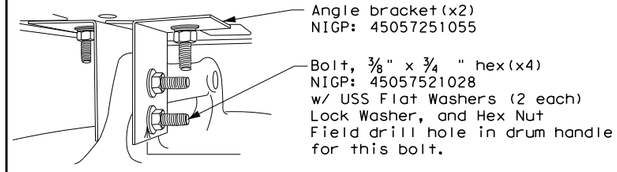


NOTES:
1. Attach Object Marker (OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT

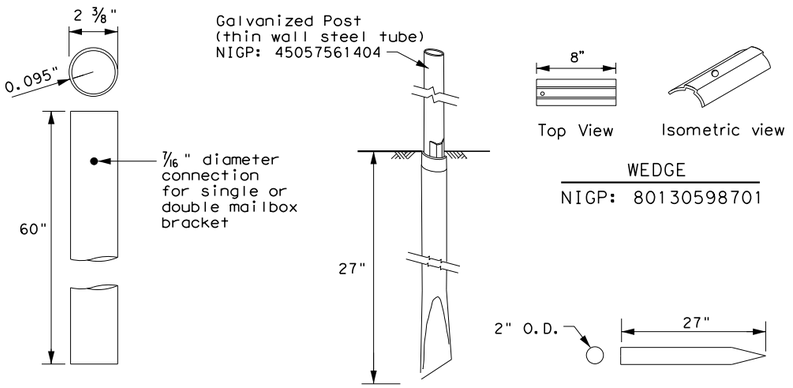


Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

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

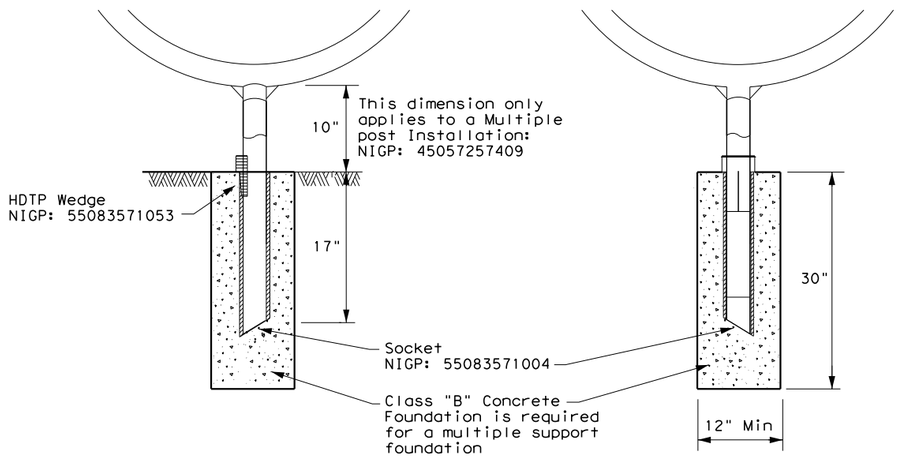
TYPE 2 - SUPPORT/FOUNDATION
Thin Wall Steel Tube w/Wedge Anchor System



MAILBOX POST

WEDGE 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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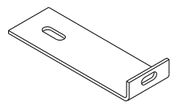
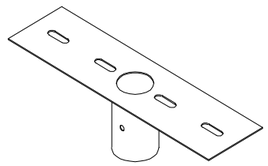
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		188

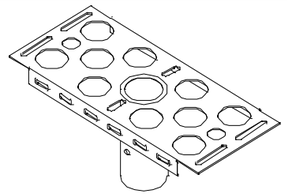
TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: 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



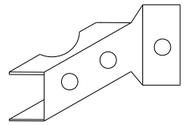
NIGP: 45057250263
L-Bracket x4 for
XL sized mailboxes



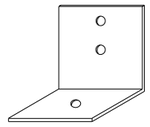
NIGP: 45057252343
Double Mailbox Bracket
For Type 2 and Type 4
double mount



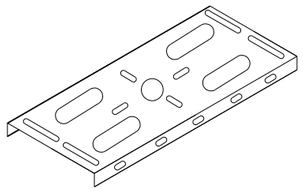
NIGP: 45057252350
Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



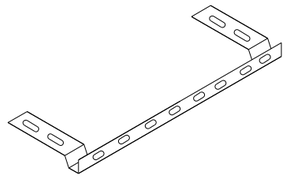
NIGP: 45057258001
Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



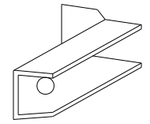
NIGP: 45057251055
Type 6 Angle Bracket
(2 per mailbox)



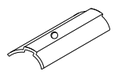
NIGP: 45057252251
Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



NIGP: 45057253002
Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



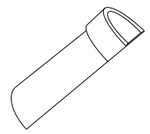
NIGP: 45057258027
Part "B" Angle Bracket
For Type 3 single
and double



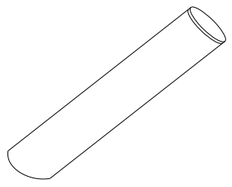
NIGP: 80130598701
Wedge for Type 2

NIGP: 45057250255
Plate Washer for Architecural
and XL Mailboxes

NIGP: 45057541653
Type 3 double mailbox bracket

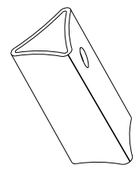


NIGP: 55083571053
Type 4 Mailbox Wedge

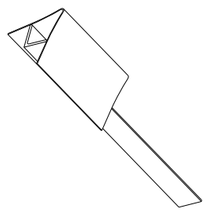


NIGP: 55083571004
Type 4 Mailbox Socket

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

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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
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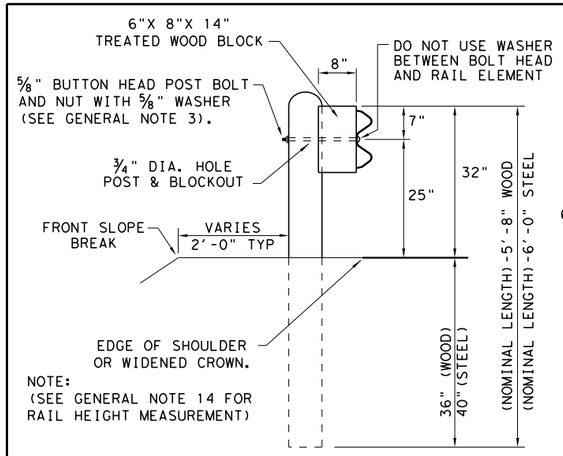
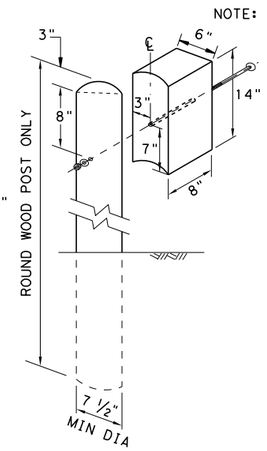
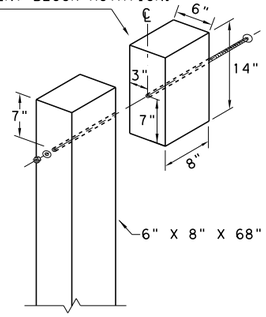


TYPICAL POST PLACEMENT

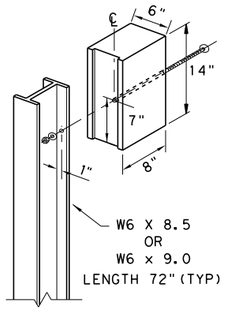


WOOD BLOCK TO ROUND WOOD POST

NOTE: TOENAIL WITH ONE 16D GALV. NAIL TO PREVENT BLOCK ROTATION.

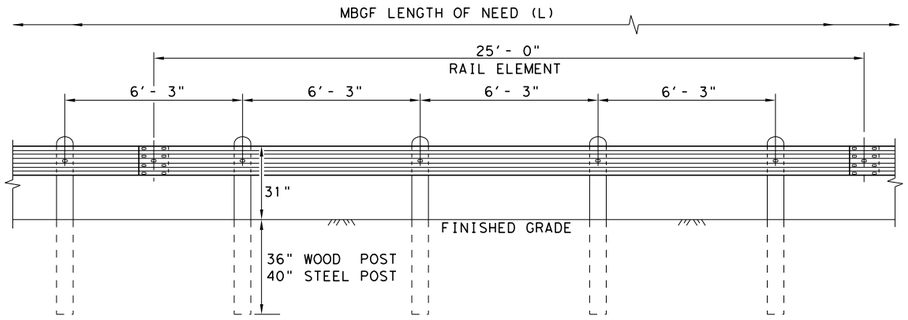


WOOD BLOCK TO RECTANGULAR WOOD POST



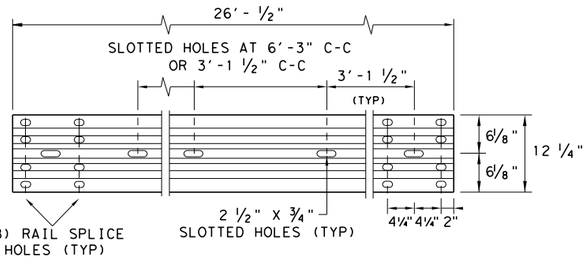
ROUTED WOOD BLOCK TO I-BEAM STEEL POST

NOTE: ** "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



ELEVATION
MID-SPAN RAIL SPLICE

SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



ELEVATION 25'- 0" (NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES.
SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.

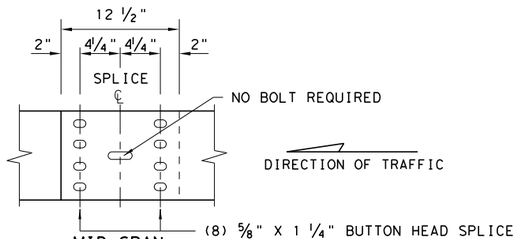
NOTE:
FOUR TYPES OF BUTTON-HEAD GUARD RAIL BOLTS COME WITH A RECCESSED NUT.

SPLICE BOLT LENGTH — VARIES
FBB01 = 1 ¼"
FBB02 = 2"
⅝"

POST & BLOCK LENGTH
FBB03 = 10"
FBB04 = 18"

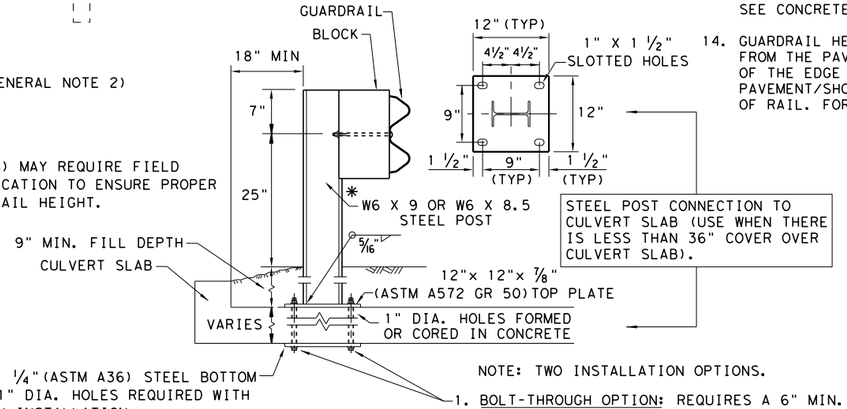
BUTTON HEAD BOLT

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.



* 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. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

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.

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030, ETC	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	21	CAMERON		190

DATE: 10/11/2021
FILE: \\pussscshrfi101\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\IEA STANDARDS\ROADWAY\gf31tr1320.dgn

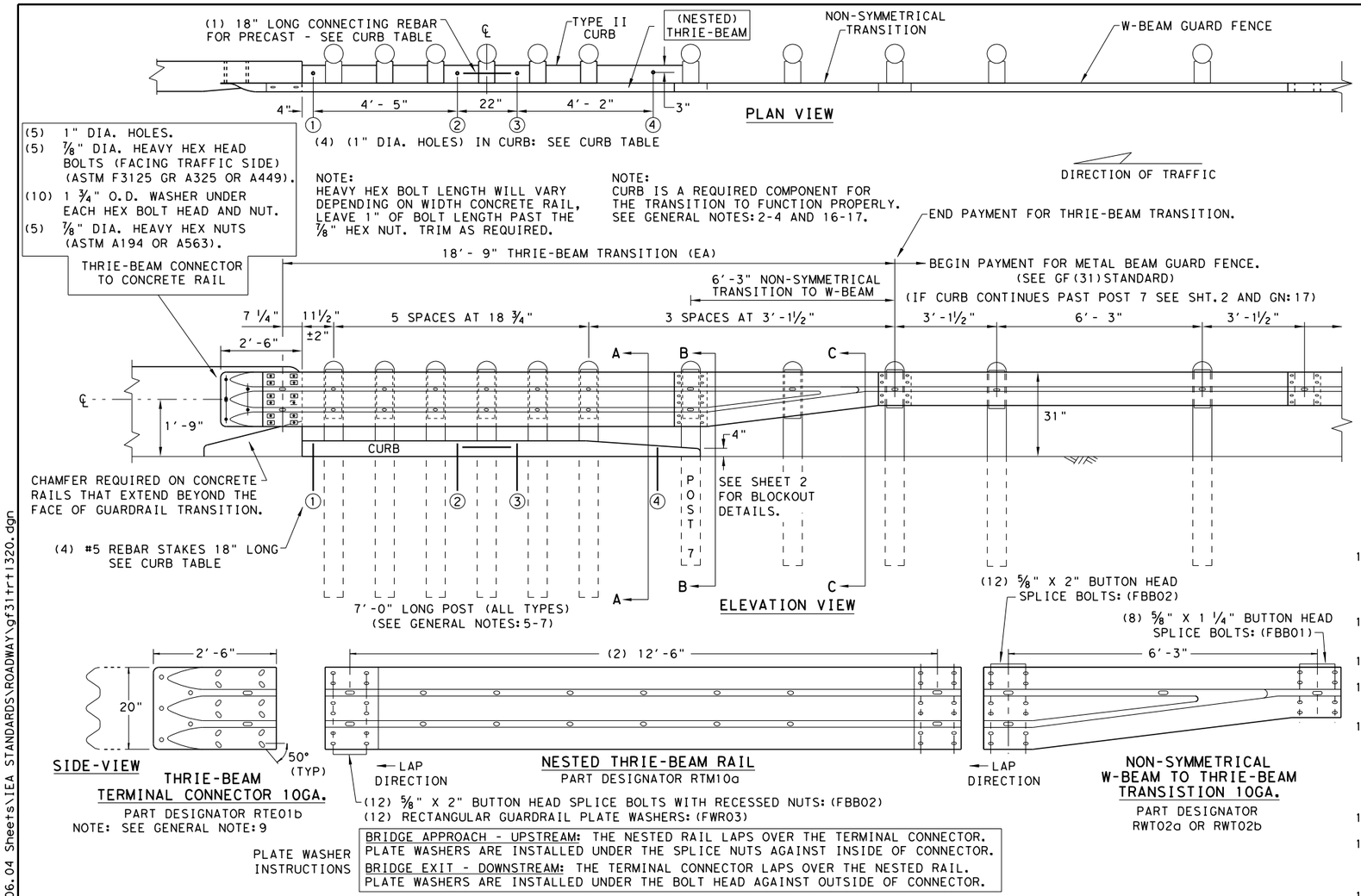
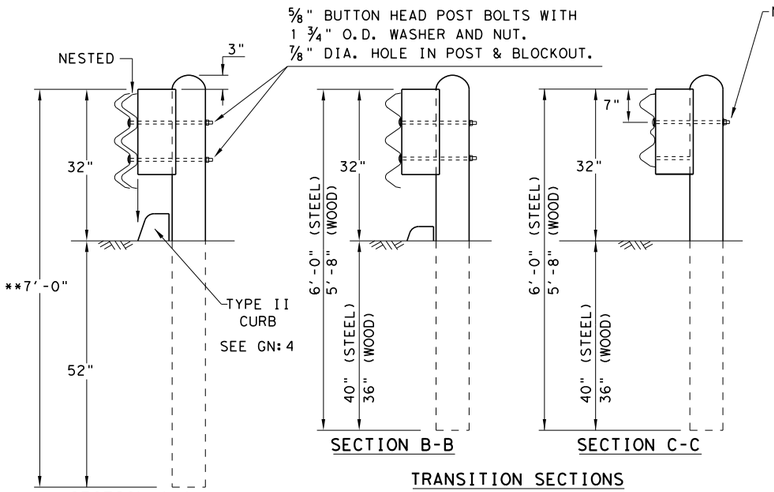


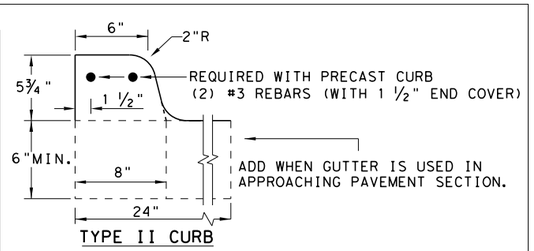
PLATE WASHER INSTRUCTIONS

BRIDGE APPROACH - UPSTREAM: THE NESTED RAIL LAPS OVER THE TERMINAL CONNECTOR. PLATE WASHERS ARE INSTALLED UNDER THE SPLICE NUTS AGAINST INSIDE OF CONNECTOR.

BRIDGE EXIT - DOWNSTREAM: THE TERMINAL CONNECTOR LAPS OVER THE NESTED RAIL. PLATE WASHERS ARE INSTALLED UNDER THE BOLT HEAD AGAINST OUTSIDE OF CONNECTOR.



THRIE-BEAM TERMINAL - CURB TABLE
PRECAST CURB FULL LENGTH EQUALS 12'- 2" THE PRECAST CURB MAY BE FORMED INTO TWO SECTIONS.
CURB (1) LENGTH 5'- 8"
CURB (2) LENGTH 6'- 6"
TAPER CURB (2) TO A HEIGHT OF 4" AT POST 7
CONNECTING PRECAST CURB SECTIONS (1) & (2):
FORM OR CORE 1" DIA. HOLE 9" LONG INTO EACH CURB END. USE (1) #5 GR.60 REBAR 18" LONG TO CONNECT BOTH CURBS.
SECURING PRECAST OR CAST-IN-PLACE TO FINISHED GRADE *:
FORM OR CORE (4) 1" DIA. HOLES, SEE PLAN AND ELEVATION VIEWS FOR HOLE LOCATIONS. DRIVE (4) #5 GR.60 REBAR STAKES 18" LONG INTO THE GROUND AND ½" BELOW TOP OF CURB. FILL HOLES WITH APPROVED GROUT MIXTURE.



NOTE: OPTIONS FOR TYPE II CURB:
1. PRECAST
2. CAST-IN-PLACE

* NOTES: NOT NEEDED FOR CAST-IN-PLACE.
SEE TYPE II CURB DETAIL FOR REBAR AND COVER REQUIREMENTS.
PERCUSSION DRILLING IS NOT PERMITTED WITH:
TYPE II CURB, BRIDGE RAIL OR CONCRETE TRAFFIC RAIL.

TYPE II CURB DETAILS

GENERAL NOTES

1. CONTACT THE DESIGN DIVISION FOR DRAINAGE CUT OUT OPTIONS NEEDED WITHIN THE CURB SECTION OF THE THRIE-BEAM TRANSITION. (512) 416-2678
2. CONCRETE CURB MAY BE CAST-IN-PLACE OR PRECAST AS SHOWN ON THIS SHEET. WHEN USED IN CONJUNCTION WITH THE THRIE-BEAM TRANSITIONS, CURB SHALL BE TYPE II (5- ¾" HEIGHT); SEE CURRENT CCCG STANDARD SHEET FOR FURTHER DETAILS. IF OTHER CURB HEIGHTS ARE SHOWN IN THE PLANS IN CONJUNCTION WITH THE TRANSITION, THE CURB HEIGHT MAY BE FROM 4" TO 8" WITH A RELATIVELY VERTICAL FACE. CONCRETE CURB SHALL BE CONTINUOUS TO THE SEVENTH POST UNLESS OTHERWISE SHOWN IN THE PLANS. SEE GENERAL NOTE: 17 FOR CIRCUMSTANCES WHERE CURB CONTINUES PAST POST 7.
3. CONCRETE CURB TYPE II SUBSIDIARY TO "METAL BEAM GUARD FENCE TRANSITION". IF NO ADDITIONAL CURB IS INDICATED BEYOND THE TRANSITION, THEN ANY CURB HEIGHT GREATER THAN 4" WILL BE TAPERED DOWN BEGINNING AT THE LAST 7 FT. POST TO A MAXIMUM HEIGHT OF 4" AT POST 7. IF SHOWN ELSEWHERE IN THE PLANS, ADDITIONAL CURB UNDERNEATH GUARDRAIL WILL BE PAID FOR BY THE LINEAR FOOT.
4. UNLESS OTHERWISE SHOWN IN THE PLANS, TRANSITIONS SHALL BE PLACED WITH THE BLOCKOUT FACE IN FRONT OF OR DIRECTLY ABOVE THE CURB FACE. SEE SECTION A-A.
5. FOR ROUND WOOD POST SYSTEMS, ALL ROUND WOOD POSTS SHALL BE 7 ½" DIA. MINIMUM THROUGHOUT THE THRIE-BEAM TRANSITION.
6. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. REFER TO GF(31) STANDARD SHEET.
7. THE POST LENGTH SHALL BE MARKED ON ALL 7'- 0" LONG POSTS BY THE MANUFACTURER. THE MARK SHALL BE LOCATED WITHIN THE TOP 1 FT. REGION OF THE POST, AT LEAST ⅝" IN HEIGHT, AND VISIBLE AFTER INSTALLATION. WOODEN POSTS SHALL BE MARKED WITH A BRAND, AND STEEL POSTS WITH A STENCIL BEFORE GALVANIZING.
8. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
9. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE THRIE-BEAM TERMINAL CONNECTOR AND THE THRIE-BEAM TRANSITION TO W-BEAM SHALL BE OF THE SAME MATERIAL, BUT SHALL NOT BE LESS THAN 10 GAUGE. CONTRACTOR SHALL VERIFY THAT THE LOCATIONS OF BOLT HOLES MATCH THOSE IN THE THRIE-BEAM TERMINAL CONNECTOR PRIOR TO ORDERING MATERIALS.
10. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
11. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
12. CROWN SHALL BE WIDENED TO ACCOMMODATE TRANSITIONS.
13. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
14. 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. TXDOT'S MATERIALS AND TESTS DIVISION MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL CAN FURNISH COMPOSITE MATERIAL BLOCKS.
15. REFER TO GF(31) STANDARD SHEET & BRIDGE RAILING DETAILS FOR ADDITIONAL DETAILS.
16. THE INSTALLATION OF THE TYPE II CURB IS CRITICAL FOR THE PERFORMANCE OF THE THRIE-BEAM TRANSITION SYSTEM. THE CURB PREVENTS (VEHICLE WHEEL SNAGGING) AT THE CONCRETE RAIL AND IS REQUIRED TO MEET MASH CRASH TEST CRITERIA.
17. IF CURB EXTENDS BEYOND POST 7, 25' OF NESTED W-BEAM GUARDRAIL SHALL BE INSTALLED BEYOND THE PAY LIMITS OF THRIE-BEAM TRANSITION SECTION, (SEE SHT.2). PAYMENT FOR THIS 25' SECTION WILL BE BY LINEAR FOOT, PAY ITEM "0540 6XXX MTL W-BEAM GD FEN (NESTED)(TIM POST)" OR "540 6XXX MTL W-BEAM GD FEN (NESTED)(STEEL POST)" AS APPLICABLE FOR POST TYPE. SEE SHT.2 FOR ADDITIONAL INFORMATION.

HIGH-SPEED TRANSITION

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

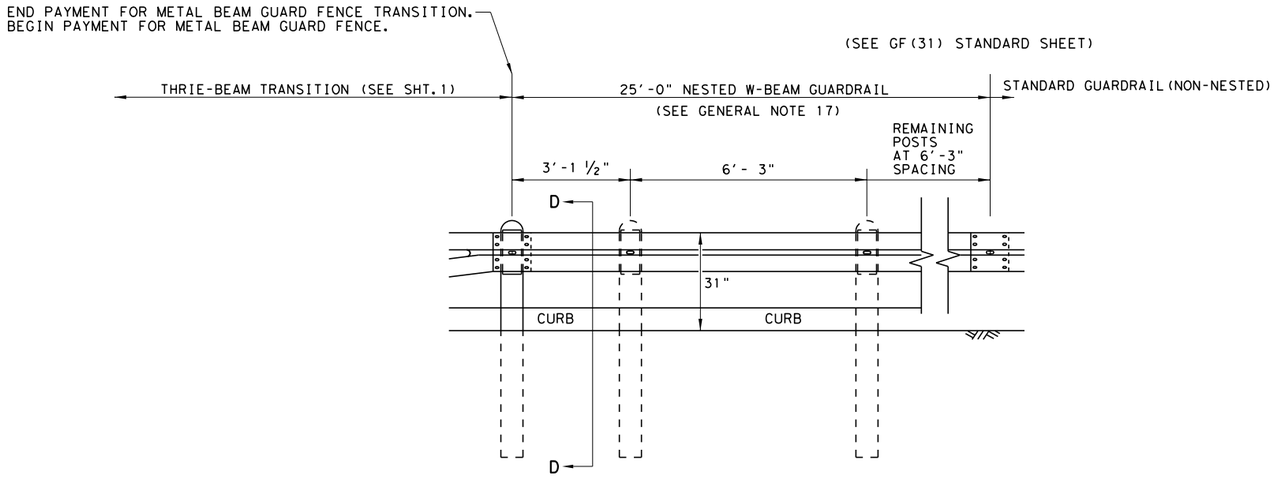
METAL BEAM GUARD FENCE THRIE-BEAM TRANSITION TL-3 MASH COMPLIANT

GF(31)TR TL3-20

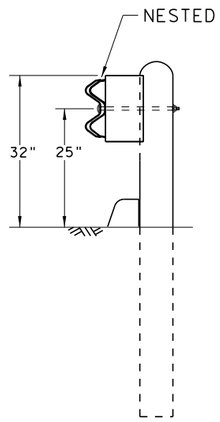
FILE: gf31tr1320.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		191

DATE: 10/11/2021
FILE: \\pussc\shrfil01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\IEA STANDARDS\ROADWAY\gf31tr1320.dgn

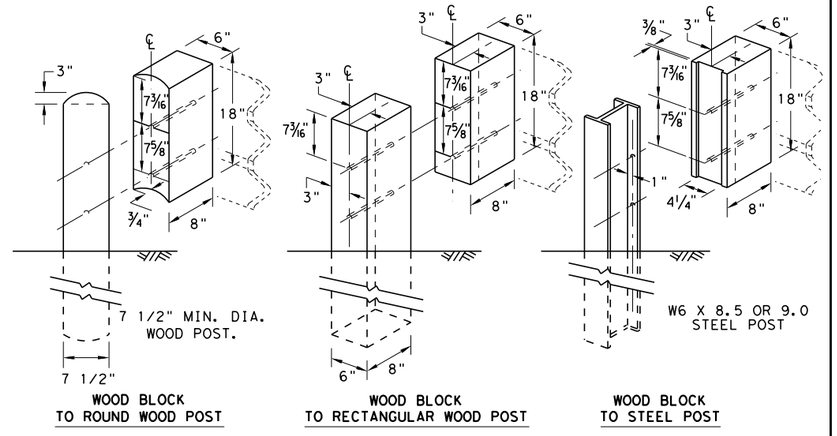
REQUIRED ALTERNATIVE FOR CONTINUOUS CURB EXTENDING PAST POST 7 (SEE SHT. 1 GENERAL NOTE 17)



ELEVATION VIEW



SECTION D-D



THRIE BEAM TRANSITION BLOCKOUT DETAILS

HIGH-SPEED TRANSITION

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE THRIE-BEAM TRANSITION TL-3 MASH COMPLIANT

GF(31)TR TL3-20

FILE: gf31tr1320.dgn	DN: TxDOT	CK: KM	DW: KM	CK: CGL/AG	
©TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY	
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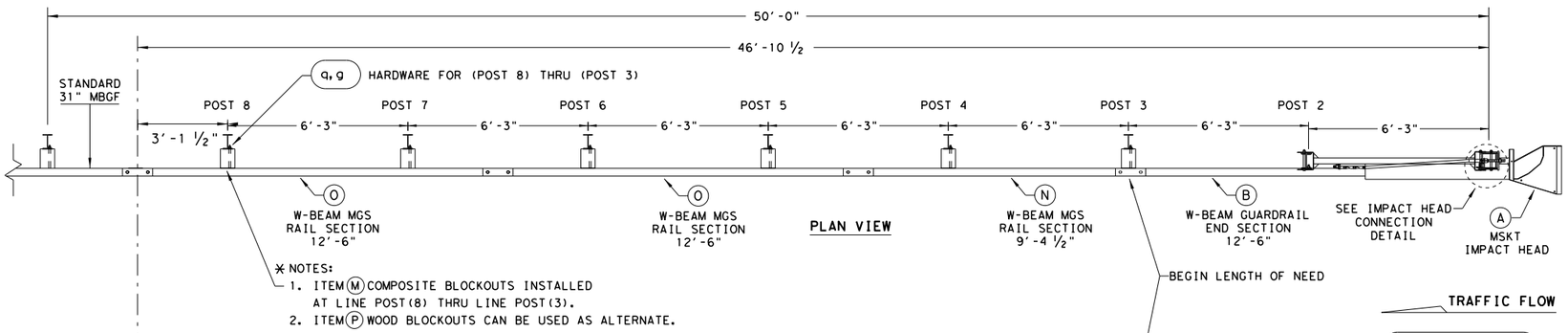
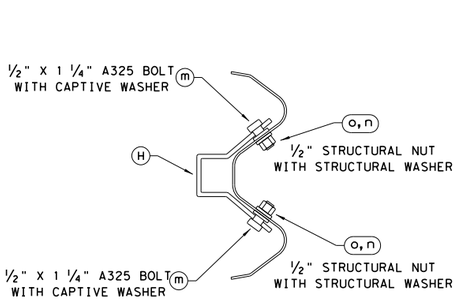
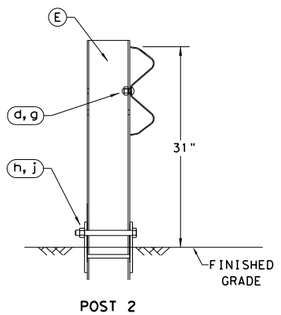
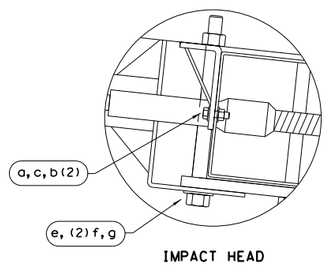
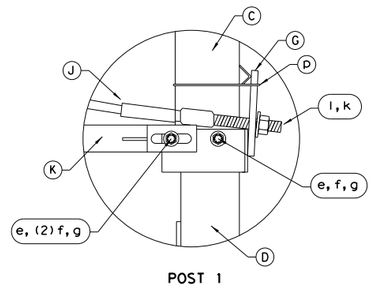


NOTE: SEE (GENERAL NOTE 14) FOR DRIVING CAP INFORMATION.









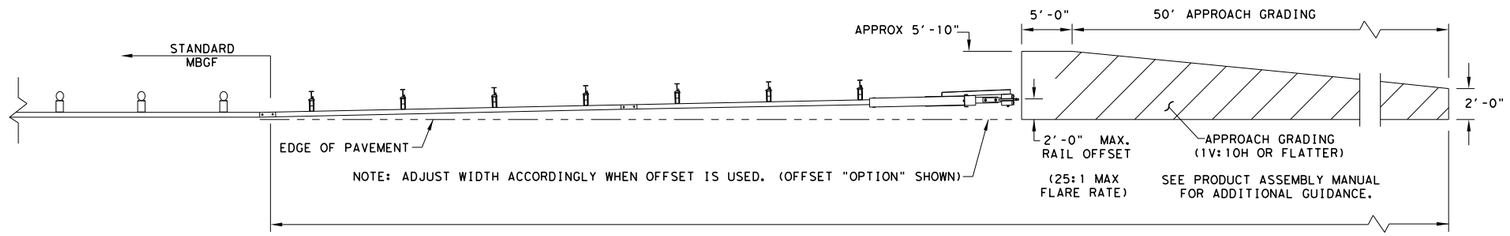
GENERAL NOTES

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.

SEE NOTES: ✳

ALTERNATIVE ITEMS NOT SHOWN. ✳✳
✳ ITEM(P) 8" WOOD-BLOCKOUT
✳✳ ITEM(Q) 25'GUARD FENCE PANEL

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 ⅛" 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 ½")	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	⅝" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	⅝" WASHER	W0516
c	2	⅝" HEX NUT	N0516
d	25	⅝" Dia. x 1 ¼" SPLICE BOLT (POST 2)	B580122
e	2	⅝" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	⅝" WASHER	W050
g	33	⅝" Dia. H.G.R NUT	N050
h	1	¾" Dia. x 8 ½" HEX BOLT (GRD A449)	B340854A
j	1	¾" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	½" x 1 ¼" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	½" 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	⅝" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



APPROACH GRADING AT GUARDRAIL END TREATMENTS

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	0872	04	030		FM506	
	DIST	COUNTY			SHEET NO.	
	21	CAMERON			193	

DATE:
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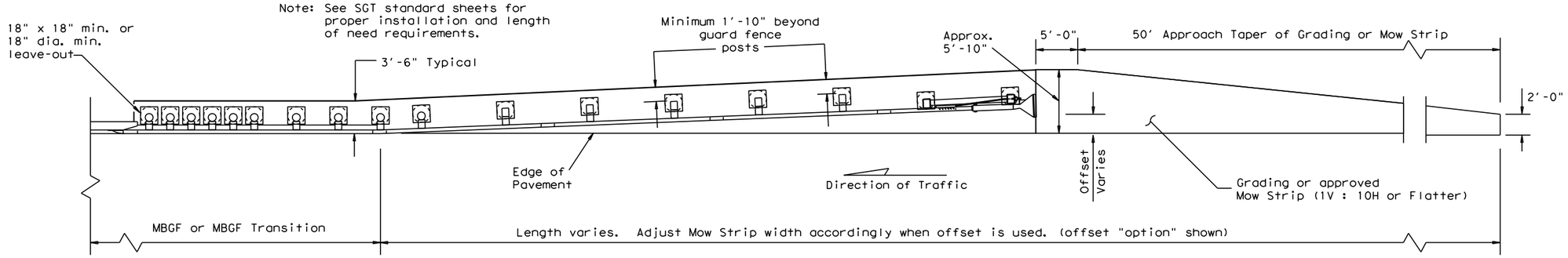
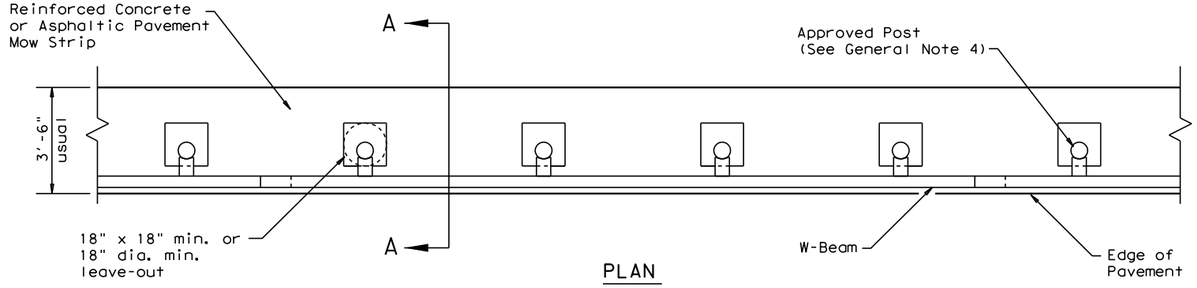
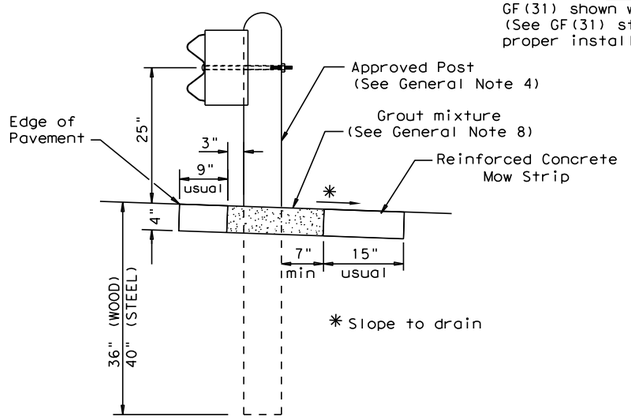


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



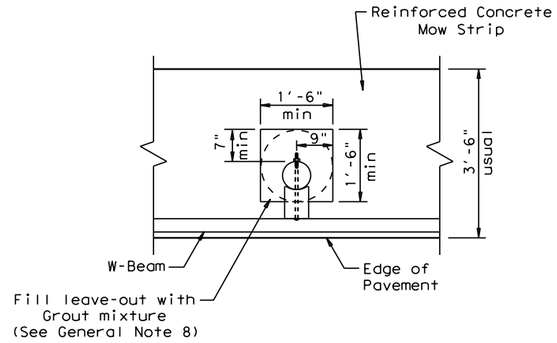
PLAN

GF(31) shown with Mow Strip
(See GF(31) standard sheet for proper installation)



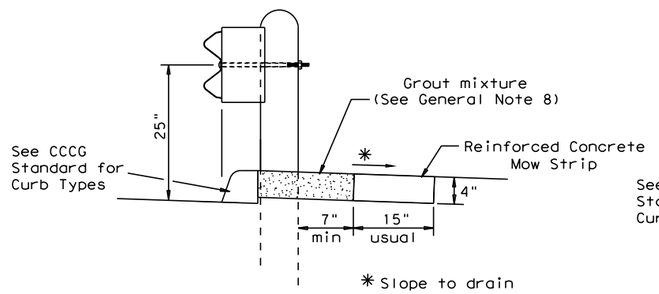
SECTION A-A

Typical



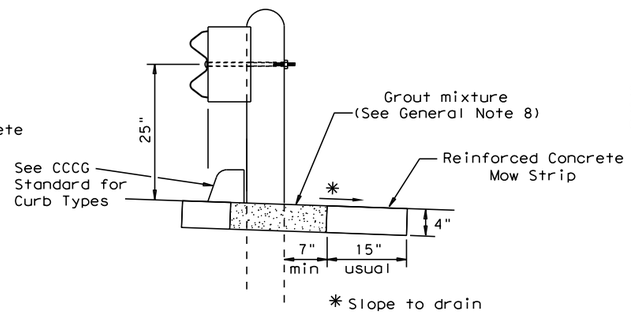
MOW STRIP DETAIL

Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.



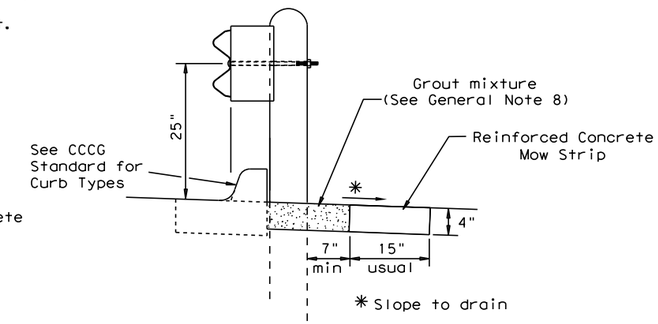
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

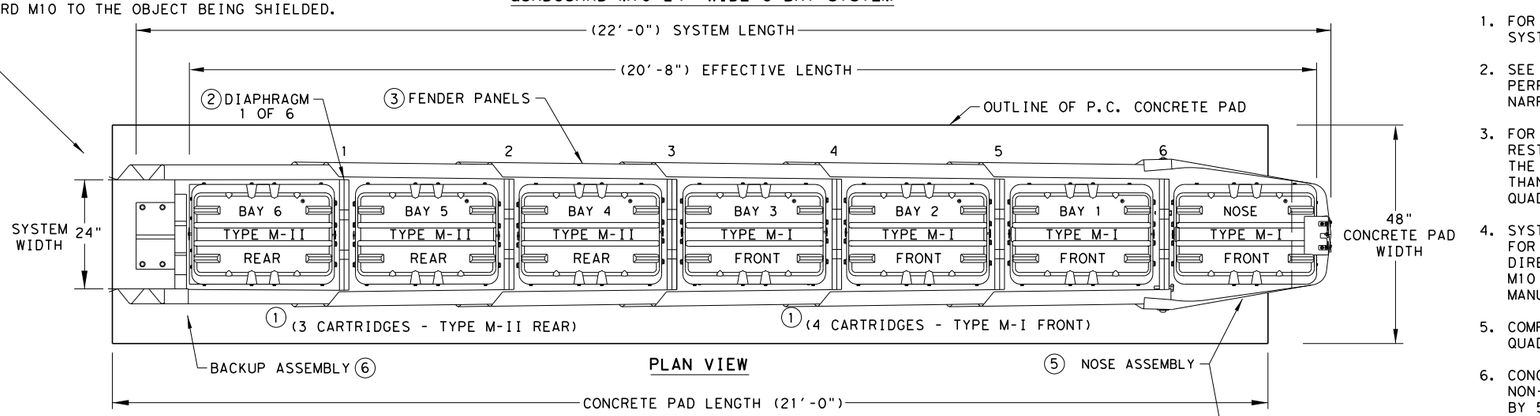
GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG	
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0872	04	030, ETC	FM 506, ETC	
	DIST	COUNTY		SHEET NO.	
	21	CAMERON		194	

DATE:
FILE:

NOTE:
A TRANSITION MAY BE REQUIRED TO INSTALL THE QUADGUARD M10 TO THE OBJECT BEING SHIELDED.

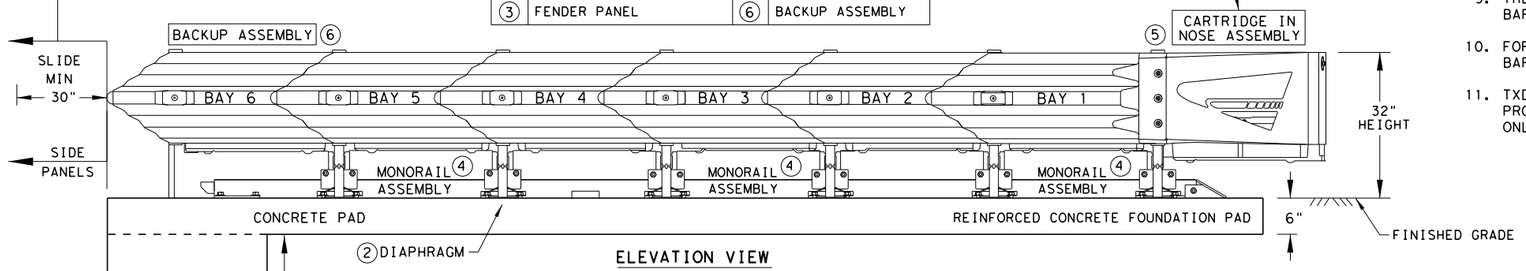
QUADGUARD M10 24" WIDE 6-BAY SYSTEM



PLAN VIEW

KEY		KEY	
(1)	QUADGUARD CARTRIDGE	(4)	MONORAILS
(2)	DIAPHRAGM	(5)	NOSE ASSEMBLY
(3)	FENDER PANEL	(6)	BACKUP ASSEMBLY

NOTE:
PROVISION SHALL BE MADE FOR REAR FENDER SIDE PANELS TO SLIDE REARWARD UPON IMPACT, 30" MIN.



ELEVATION VIEW
LEFT SIDE

NOTES:
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR CONCRETE PAD AND ANCHOR BLOCK INSTALLATION REQUIREMENTS.

A MANUFACTURER'S DRAWING PACKAGE UNIQUE AND SPECIFIC FOR THE QUADGUARD M10 (N) INSTALATION AND DETAILED INFORMATION REGARDING THE TYPE OF BACKUP ASSEMBLY FOR THE REQUIRED TRANSITION WILL BE PROVIDED TO THE ENGINEER AND INSTALLER.

6" REINFORCED CONCRETE PAD REQUIRES THE INSTALLATION OF AN ANCHOR BLOCK AS SHOWN ON THE MANUFACTURER'S DRAWING PACKAGE.

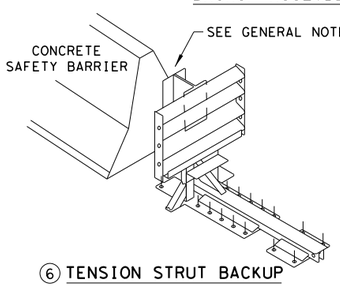
8" NON-REINFORCED CONCRETE PAD MAY NOT REQUIRE AN ANCHOR BLOCK, IF THE PAD IS INSTALLED AGAINST AN IMMOVABLE CONCRETE BACKUP.

CONCRETE PAD AND ANCHOR BLOCK COMBINATIONS SHALL BE CONFIRMED WITH THE MANUFACTURER BASED UPON SITE SPECIFIC DATA (SSD).

NOTE:
THE QUADGUARD M10 24" WIDE 6-BAY - NARROW SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 3.

TL-3 MODEL #	QM10024	CYLINDER TYPES IN BAYS		
BAYS	6	TYPE-MII	TYPE-MI	TYPE-MI
DIAPHRAGMS	6	3	3	1
WIDTH	24"	REAR	FRONT	NOSE

BACKUP ASSEMBLY TYPES FOR SYSTEM TRANSITIONS

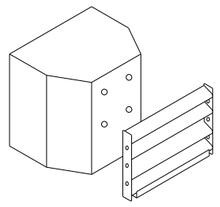


(6) TENSION STRUT BACKUP

SYSTEM TRANSITIONS TYPES	
1	QUAD-BEAM TO CONCRETE SAFETY BARRIER
2	QUAD-BEAM TO CONCRETE BRIDGE RAIL
3	QUAD-BEAM TO CONCRETE END SHOE
4	QUAD-BEAM TO THRIE-BEAM RAIL
5	QUAD-BEAM TO W-BEAM RAIL

NOTE:
TRANSITION ASSEMBLIES FOR THE QUADGUARD M10 TO THRIE-BEAM OR W-BEAM FENCE REQUIRES I-BEAM POSTS:

10 (W6X9) I-BEAM POSTS.
POST 1 THRU 4 (84" LONG)
POST 5 THRU 10 (72" LONG)



(6) CONCRETE BACKUP

NOTES:
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR THE CORRECT BACKUP ASSEMBLY AND TRANSITION PANELS OR SIDE PANELS USED FOR STANDARD AND BI-DIRECTIONAL INSTALLATIONS: AT DIVIDED-HIGHWAY MEDIANS OR UNDIVIDED ROADWAYS WHERE THE SYSTEM IS EXPOSED TO IMPACTS FROM ONE OR TWO DIFFERENT DIRECTIONS OF TRAFFIC FLOW.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY - ENERGY ABSORPTION INC. AT 1(888)323-6374.
2. SEE THE RECENT QUADGUARD M10 PRODUCT DESCRIPTION ASSEMBLY MANAUAL FOR IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITIONS AND THE DRAWING PACKAGE FOR THE NARROW 24" SYSTEM BEFORE INSTALLING THE QUADGUARD M10 SYSTEM AT ANY GIVEN LOCATION.
3. FOR BI-DIRECTIONAL TRAFFIC: THE LOCATION AND OR WIDTH OF THE QUADGUARD M10 IS RESTRICTED. AS BI-DIRECTIONAL TRAFFIC APPROACHES THE REAR OF THE QUADGUARD M10, THE QUADGUARD M10 SHOULD NOT EXTEND FURTHER INTO THE TRAFFIC-SIDE OF THE BARRIER THAN THE OBSTACLE. ANY TRANSITION INSTALLED MUST EITHER BE TANGENT TO BOTH QUADGUARD AND OBSTACLE OR MUST ANGLE TOWARD FIELD SIDE OF THE BARRIER.
4. SYSTEM TRANSITION: APPROPRIATE TRANSITION PANELS OR SIDE PANELS WILL BE REQUIRED FOR PROPER IMPACT PERFORMANCE. THE CORRECT PANEL(S) TO USE WILL DEPEND ON THE DIRECTION OF TRAFFIC FLOW AND WHAT TYPE OF BARRIER OR ROAD FEATURE THE QUADGUARD M10 SYSTEM IS SHIELDING. SEE THE QUADGUARD M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL FOR FURTHER DETAILS.
5. COMPONENTS FOR THE QUADGUARD M10 BACKUP AND REINFORCING DETAILS ARE SHOWN ON THE QUADGUARD M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL.
6. CONCRETE PAD SHALL BE 6" MIN. REINFORCED 28MPa [4,000 PSI] (P.C.) OR 8" MIN. NON-REINFORCED 28MPa [4,000 PSI] CONCRETE ROADWAY MEASURING AT LEAST 12'-0" WIDE BY 50'-0" LONG. ANCHOR BLOCK IS NOT REQUIRED WHEN USING 8" CONCRETE PAD INSTALLED AGAINST AN IMMOVABLE STRUCTURE, E.G. CONCRETE WALL.
7. IF THE CROSS-SLOPE VARIES MORE THAN 2% OVER THE LENGTH OF THE SYSTEM, THE CONCRETE PAD WILL REQUIRE LEVELING. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
8. THE INSTALLATION AREA SHOULD BE FREE OF CURBS, ELEVATED OBJECTS,OR DEPRESSIONS.
9. THE QUADGUARD M10 SYSTEM SHOULD BE INSTALLED APPROXIMATELY PARALLEL WITH THE BARRIER.
10. FOR THE TENSION STRUT BACKUP THE DISTANCE BETWEEN THE BACK OF BACKUP AND THE BARRIER WALL SHOULD NOT EXCEED 7" IN ANY CASE.
11. TXDOT HAS ONLY APPROVED THE 24" WIDE QUADGUARD M10 SYSTEM. THE QUADGUARD M10 PRODUCT DESCRIPTION AND ASSEMBLEY MANUAL INCLUDES SYSTEM WIDTH OF 24". ONLY THE 24" SYSTEM IS ALLOWED TO BE INSTALLED ON TEXAS ROADWAYS.

FOUNDATION & ANCHORING REQUIREMENTS
FOUNDATION TYPES: A, B, C, & D

FOUNDATION TYPE: A	REINFORCED CONCRETE PAD OR ROADWAY
FOUNDATION:	6" MINIMUM DEPTH (P.C.C.)
ANCHORAGE:	7" STUDS EMBEDDED 5 ½" - APPROVED ADHESIVE
FOUNDATION TYPE: B	ASPHALT OVER P.C.C.
FOUNDATION:	3" MIN. (A.C.) OVER 3" MIN. (P.C.C.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 ½"
FOUNDATION TYPE: C	ASPHALT OVER SUBBASE
FOUNDATION:	6" MIN. (A.C.) OVER 6" MIN. (C.S.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 ½" - APPROVED ADHESIVE
FOUNDATION TYPE: D	ASPHALT ONLY
FOUNDATION:	8" MIN. (A.C.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 ½" - APPROVED ADHESIVE

KEY:
ASPHALT CONCRETE (A.C.)
COMPACTED SUBBASE (C.S.)
PORTLAND CEMENT CONCRETE (P.C.C.)

NOTE: SEE TRINITY'S PRODUCT DESCRIPTION ASSEMBLY MANUAL FOR THE APPROVED ADHESIVE.

IF THE UNIT IS ANCHORED TO ASPHALTIC CONCRETE, IT SHOULD BE RELOCATED TO FRESH, UNDISTURBED ASPHALT AND RE-ANCHORED AFTER EACH IMPACT TO ENSURE ADEQUATE FUTURE PERFORMANCE.

TENSION STRUT BACKUP MAY BE USED IN CONSTRUCTION ZONES ON ASPHALT CONCRETE (A.C.) FOR TEMPORARY USE ONLY.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE QUADGUARD M10 SYSTEM AND IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

REUSABLE

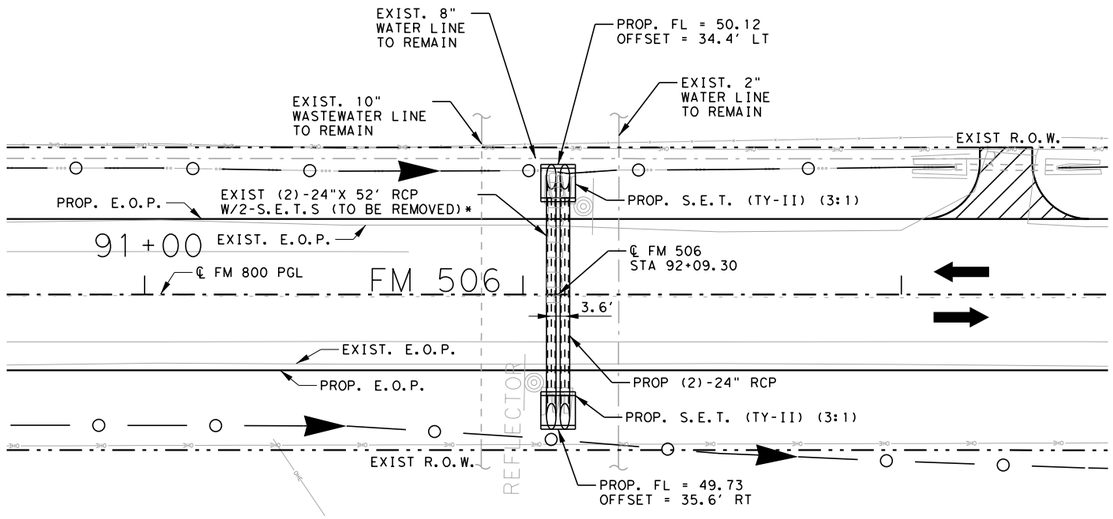
Texas Department of Transportation

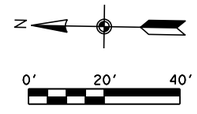
Design Division Standard

TRINITY HIGHWAY ENERGY ABSORPTION QUADGUARD M10 (MASH TL-3 NARROW-24"ONLY)

QGUARD(M10)(N)-20

FILE: qguardm10n20.dgn	DN:TxDOT	CK:KM	DW:VP	CK:AG	
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0872	04	030, ETC	FM 506, ETC	
	DIST	COUNTY		SHEET NO.	
	PHR	CAMERON		195	



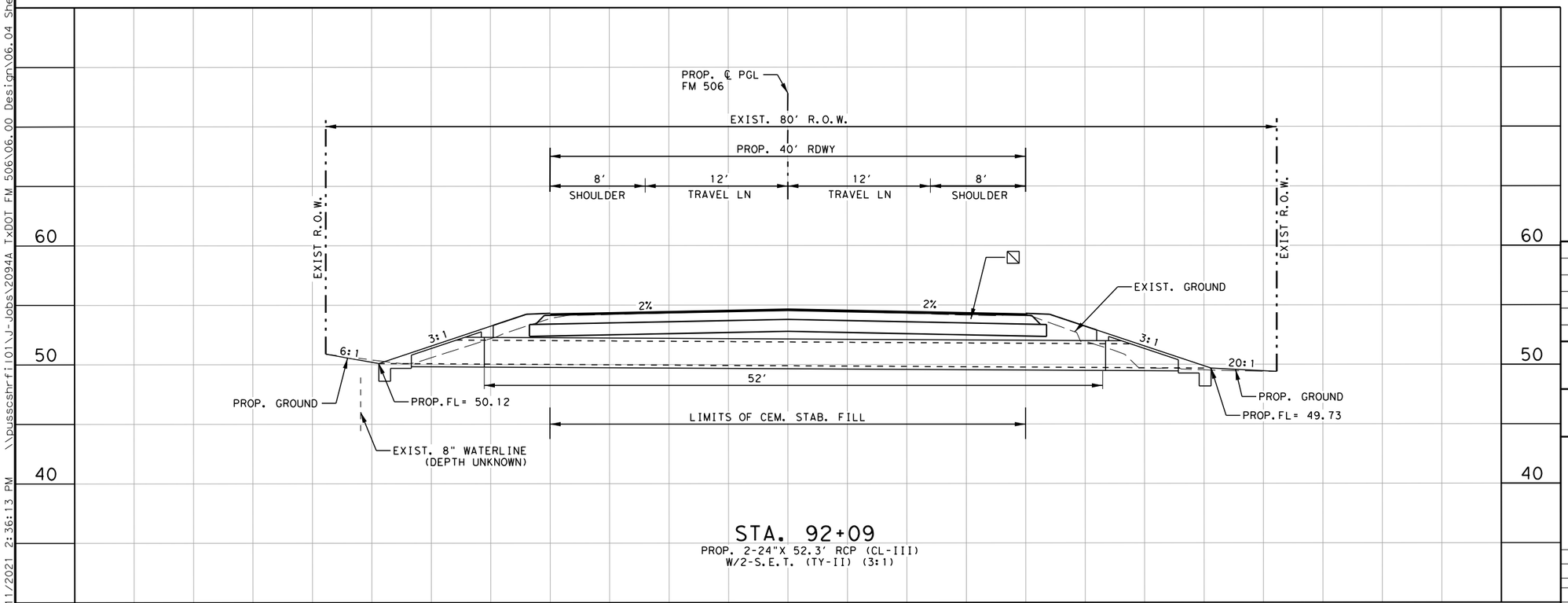


LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 92+09

PROP. 2-24"X 52.3' RCP (CL-III)
W/2-S.E.T. (TY-II) (3:1)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

CULVERT PLAN & PROFILE AT STA 92+09

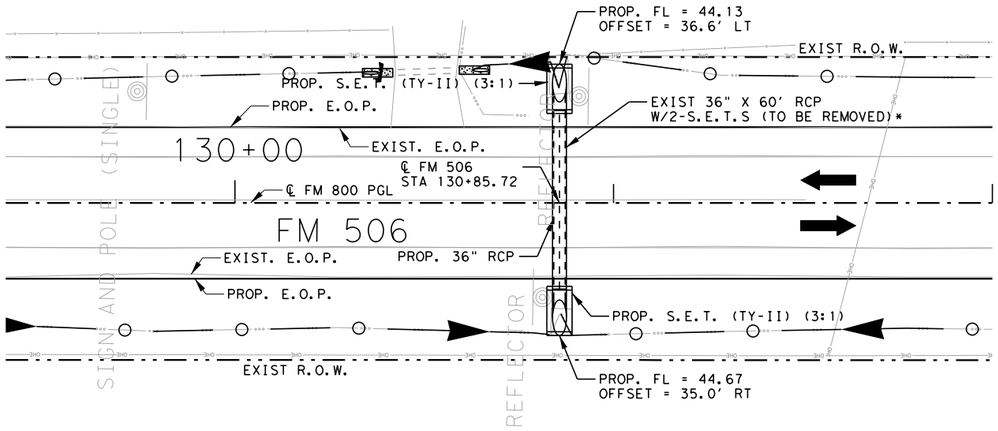
HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

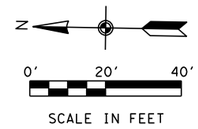
SHEET 1 OF 5

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	196

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_CULV 01.dgn





LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

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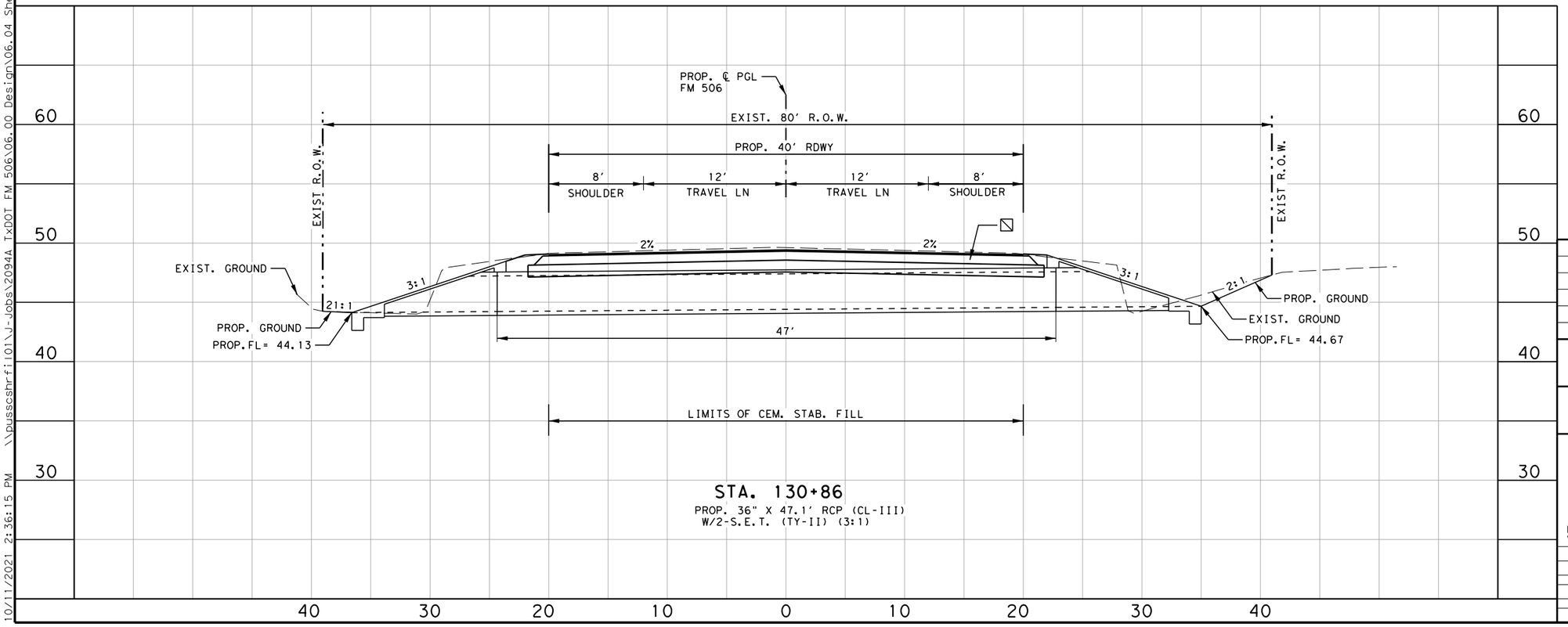


STA. 130+86

PROP. 36" X 47.1' RCP (CL-III)
W/2-S.E.T. (TY-II) (3:1)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

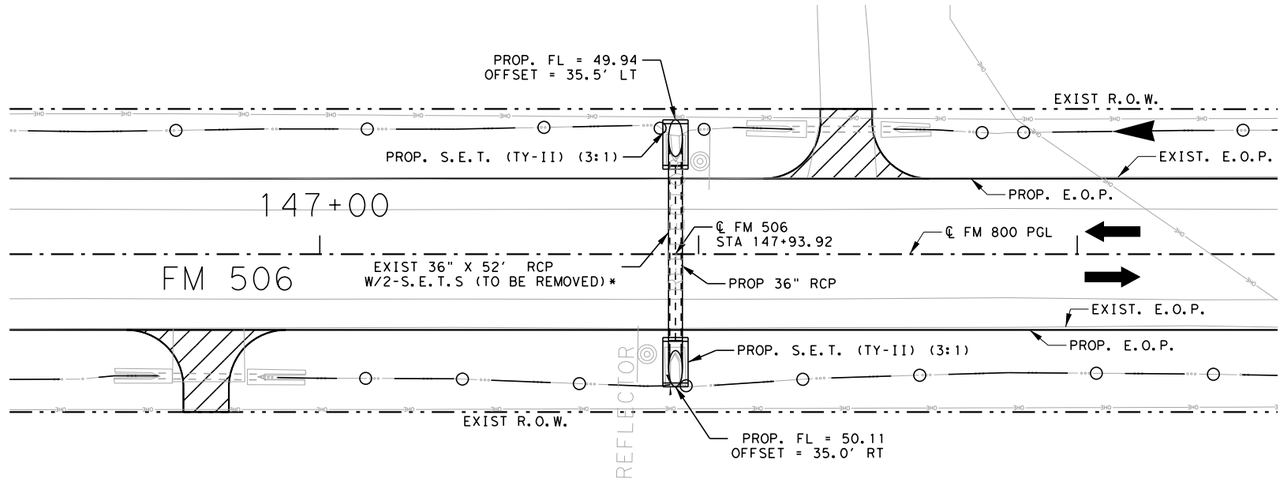
FM 506

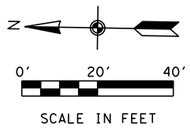
CULVERT PLAN & PROFILE AT STA 130+86

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		197
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_CULV 02.dgn





LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

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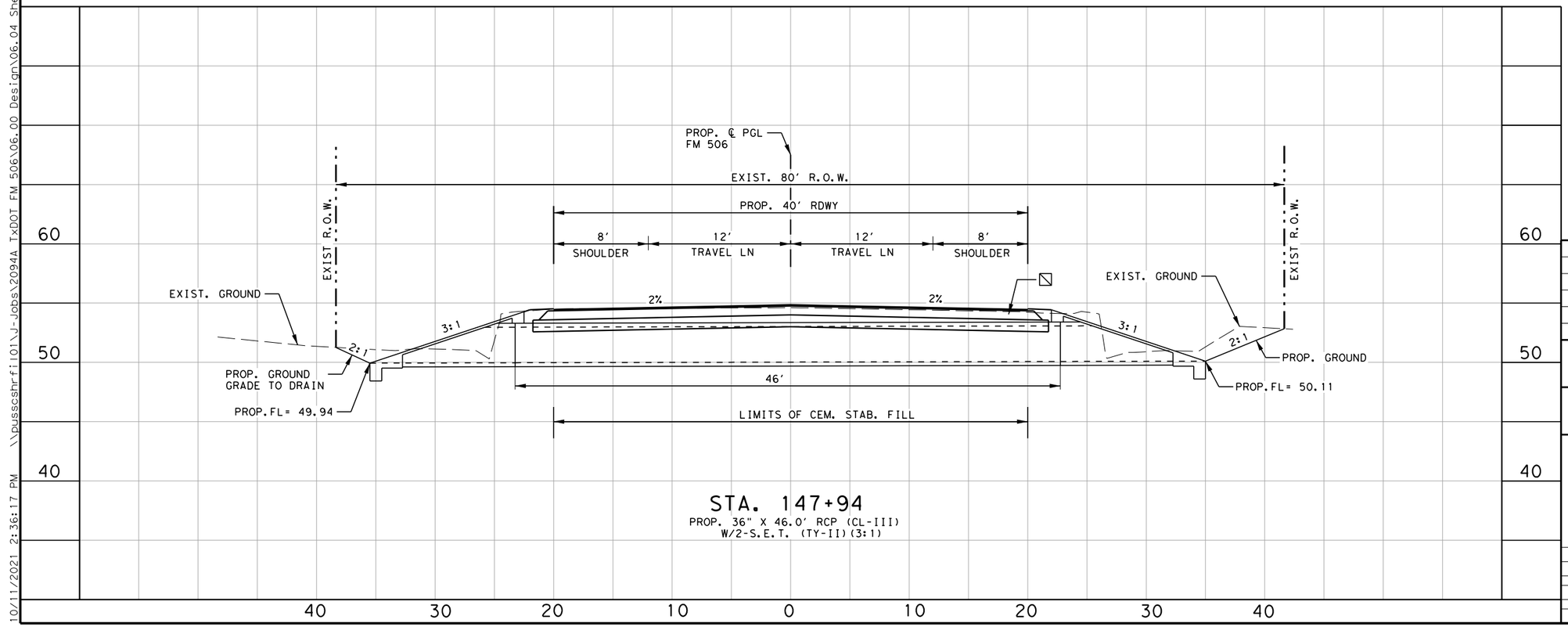

STA. 147+94

PROP. 36" X 46.0' RCP (CL-III)
W/2-S.E.T. (TY-II)(3:1)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

CULVERT PLAN & PROFILE AT STA 147+94

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 3 OF 5

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		198
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_CULV 03.dgn

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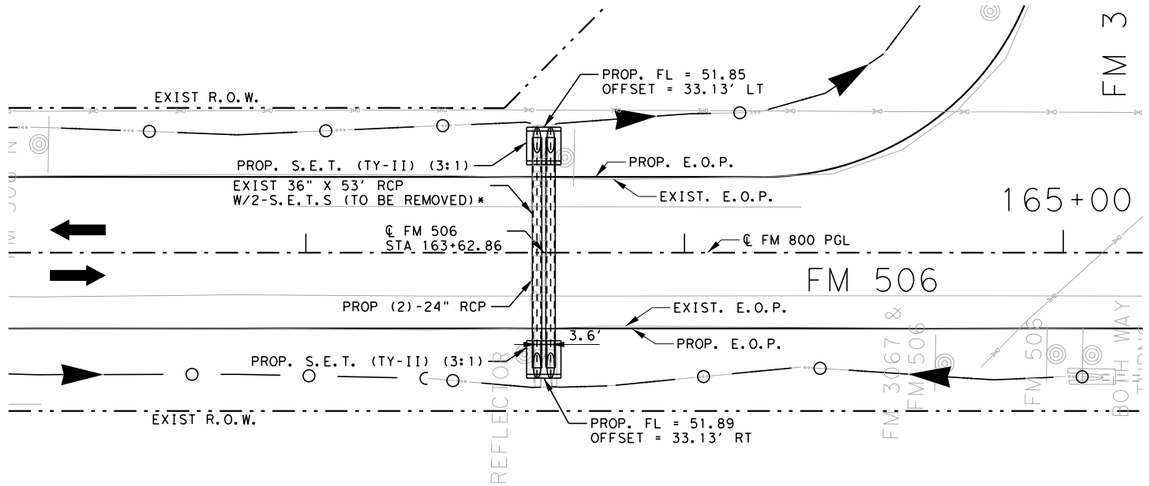
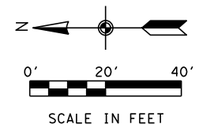




LEGEND

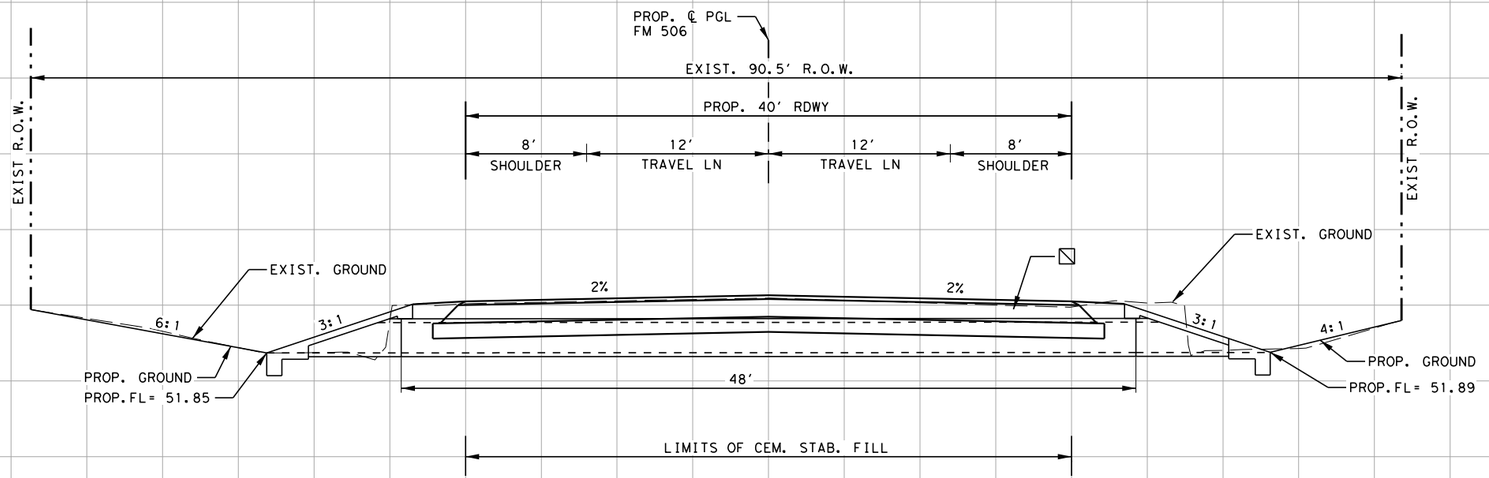
- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 163+63

PROP. (2)-24" X 48.5' RCP (CL-III)
W/2-S.E.T. (TY-II) (3:1)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

CULVERT PLAN & PROFILE AT STA 163+63

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 4 OF 5

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		199
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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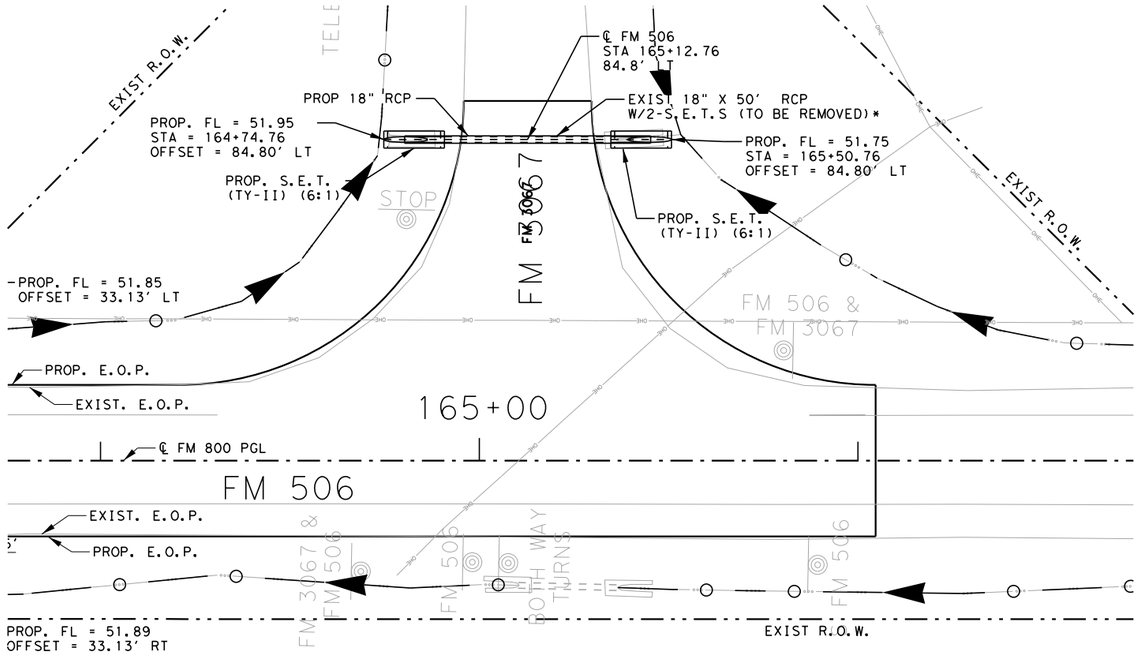
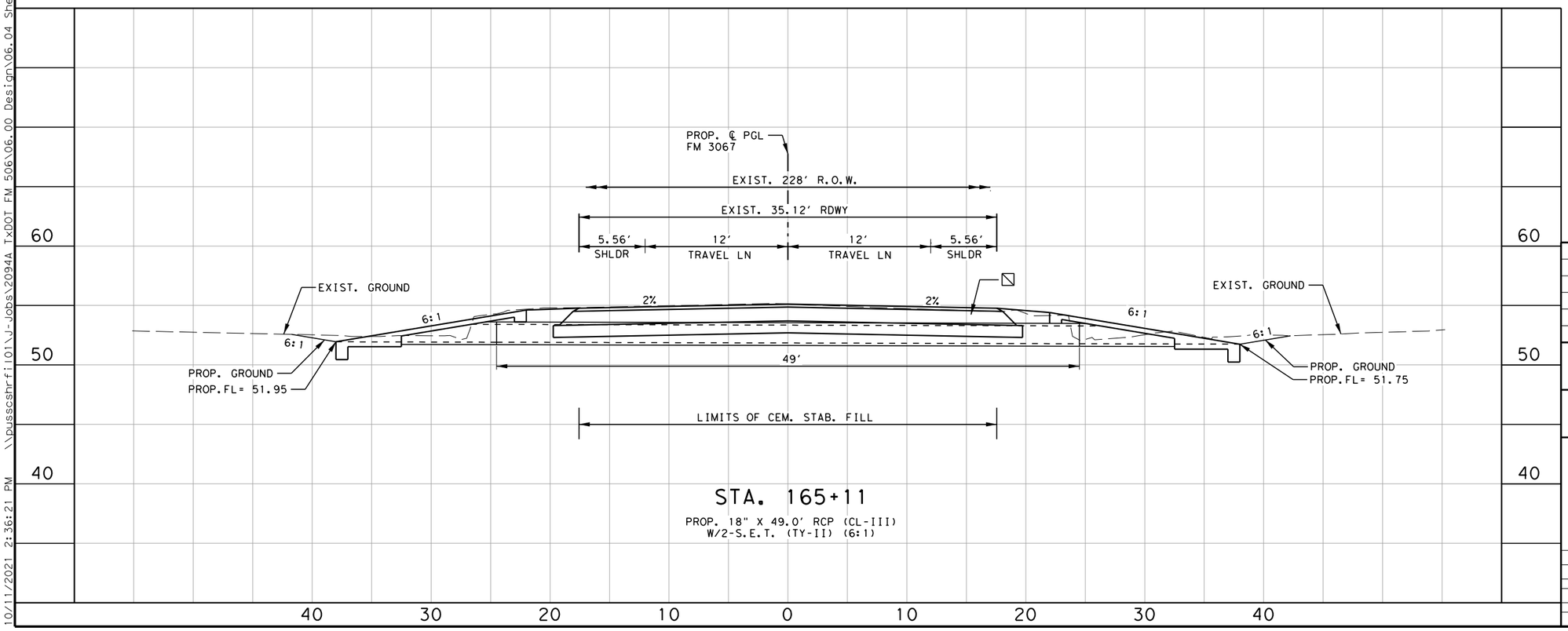
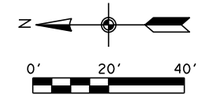
FM506_CULV 04.dgn





STA. 165+11

PROP. 18" X 49.0' RCP (CL-III)
W/2-S.E.T. (TY-II) (6:1)



SCALE IN FEET

LEGEND

*	TO BE REMOVED UNDER ITEM "496"
▨	MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
•—•→	DITCH FLOW
⊞	CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 506

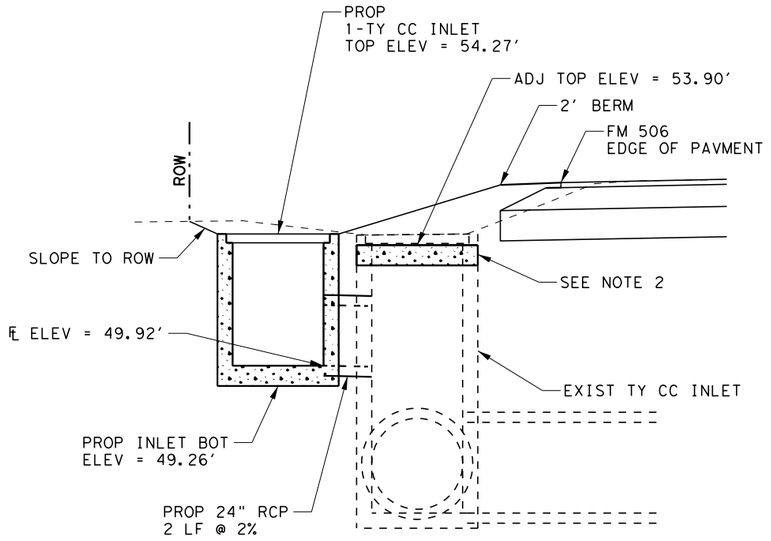
CULVERT PLAN & PROFILE AT STA 165+11

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 5 OF 5

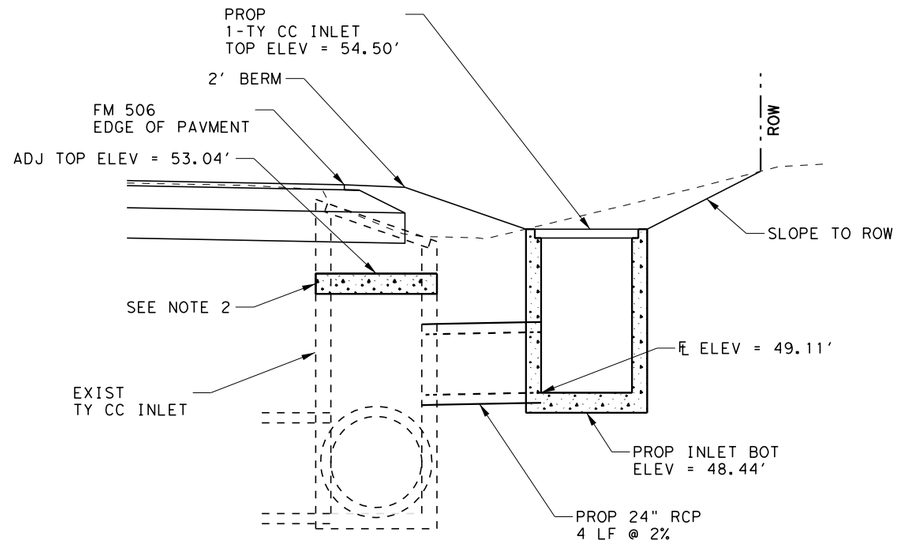
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		200
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_CULV 05.dgn



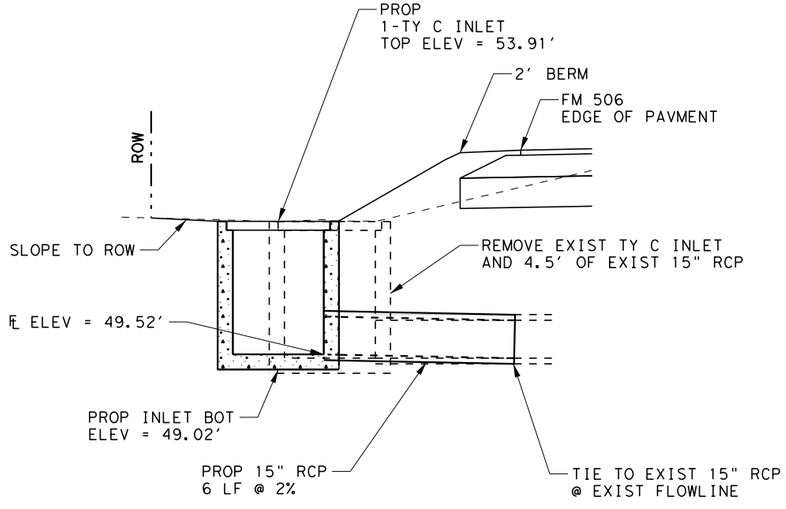
INLET I1

FM 506 STA. 53+16, 32.5' LT



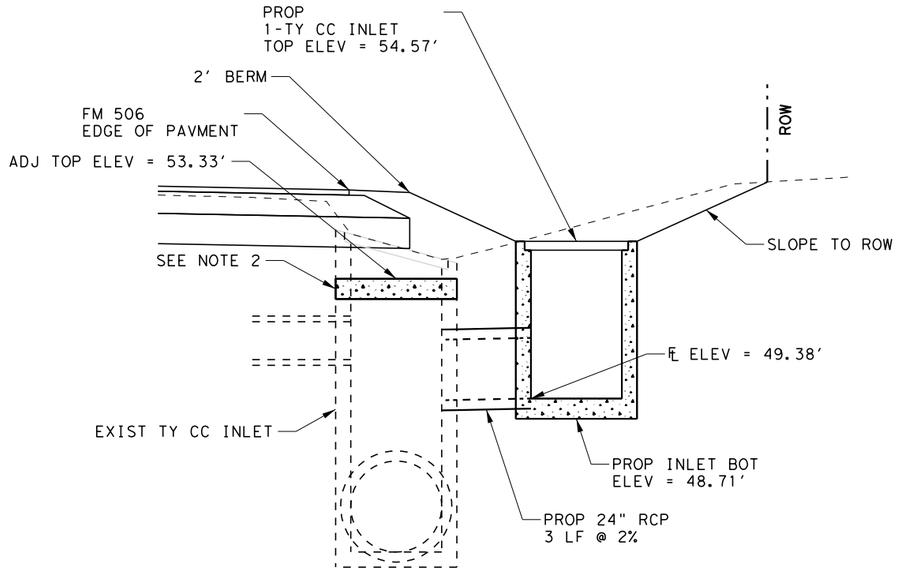
INLET I2

FM 506 STA=53+35, 28.0' RT



INLET I3

FM 506 STA=59+27, 33.3' LT



INLET I4

FM 506 STA. 59+27, 28.5' RT

NOTES:

1. SEE PLAN AND PROFILE SHEETS FOR HORIZONTAL INFORMATION
2. SEE "INLET AND MANHOLE CAPPING DETAIL" STANDARD TO CONVERT INLET TO A JUNCTION BOX.
3. INLET TY CC TO BE PAID FOR AS ITEM 465 6273 INLET (COMPL) (TY C)(2 GRATE).

ISSUE RECORD		
NO.	DESCRIPTION	DATE
55		

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

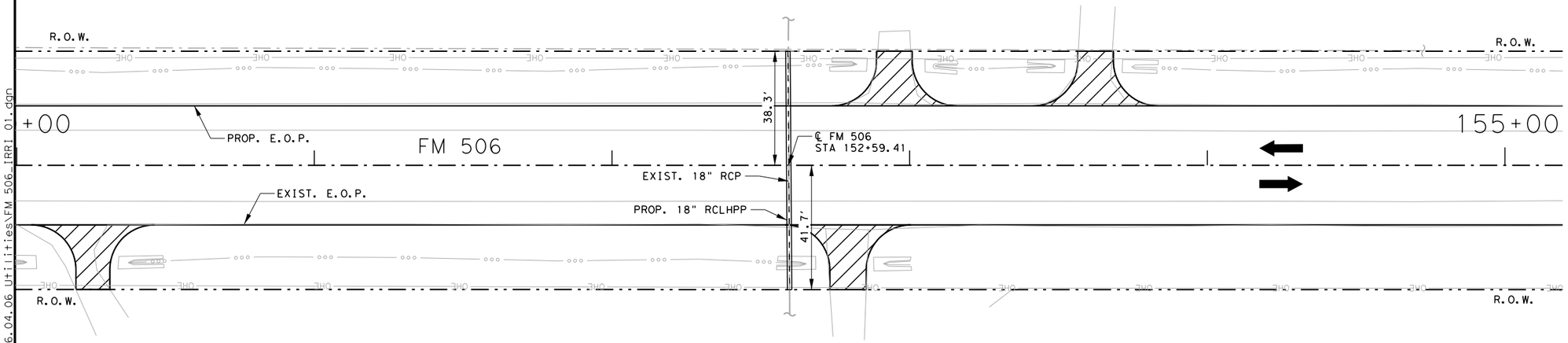
Texas Department of Transportation

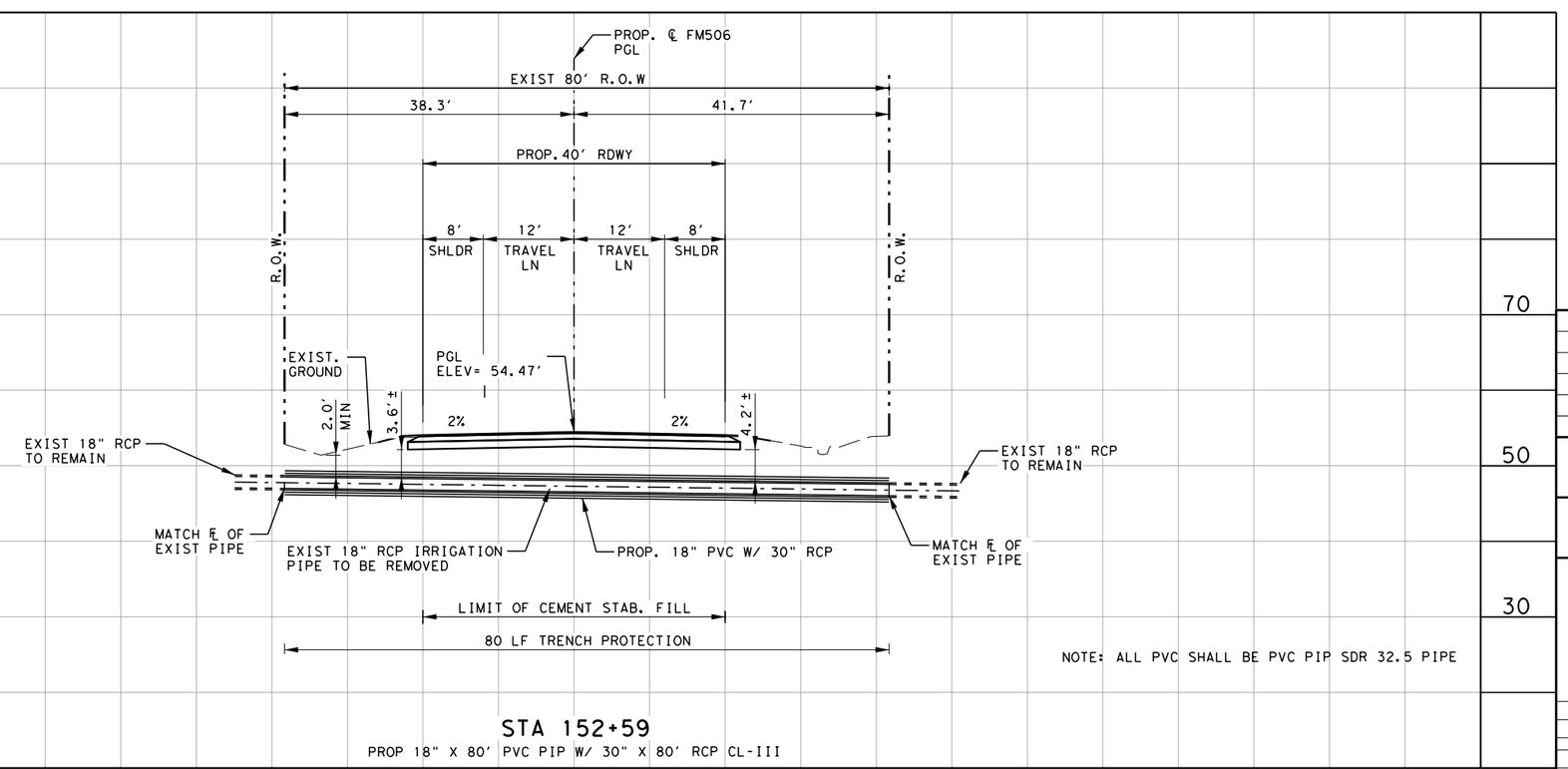
FM 506

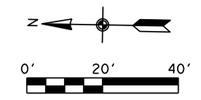
INLET DETAILS (FM 506)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		201
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

INLET2.dgn







LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE IRRIGATION CROSSING DETAIL SHEET)

NOTES:

1. CONTRACTOR TO COORDINATE WITH LA FERIA CAMERON COUNTY IRRIGATION DISTRICT #3 FOR CONNECTION DETAILS TO EXISTING IRRIGATION PIPE TO REMAIN.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

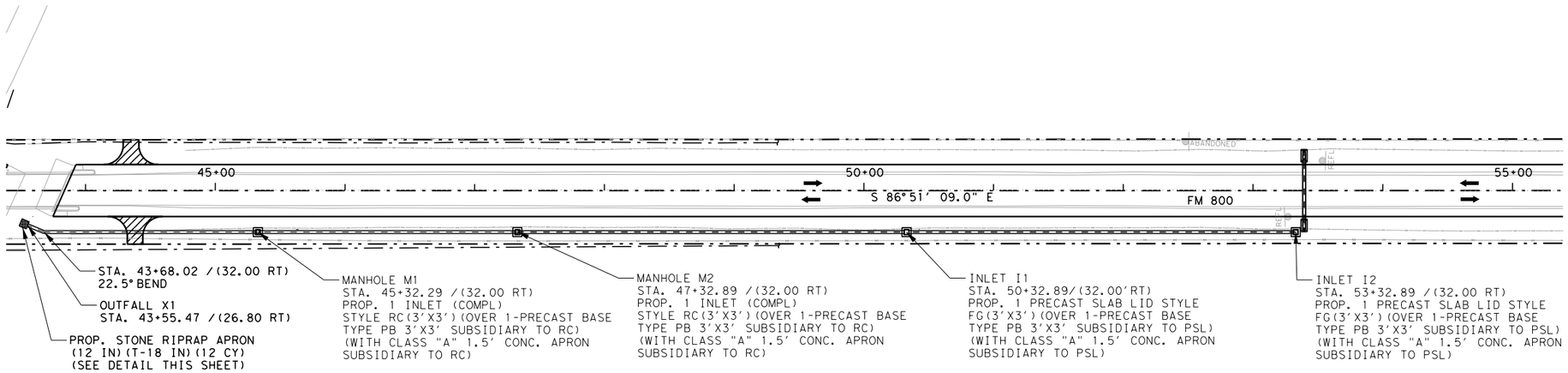
IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

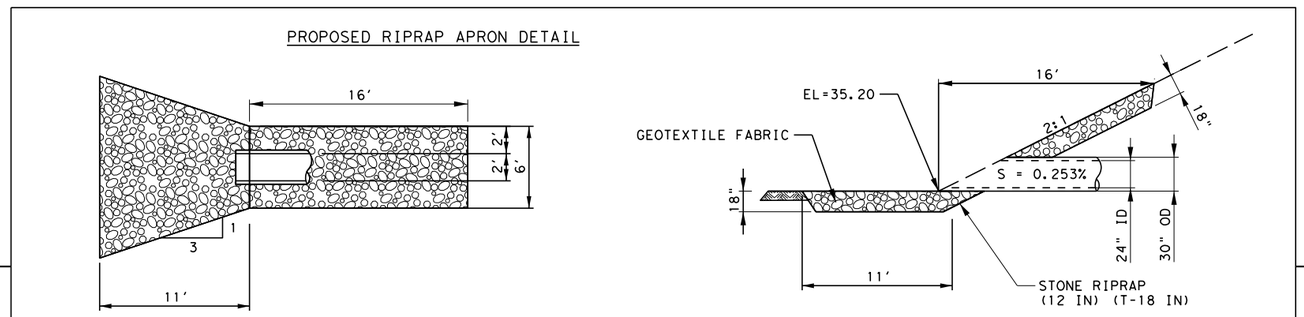
FM 506
IRRIGATION CROSSING
STA 152+59

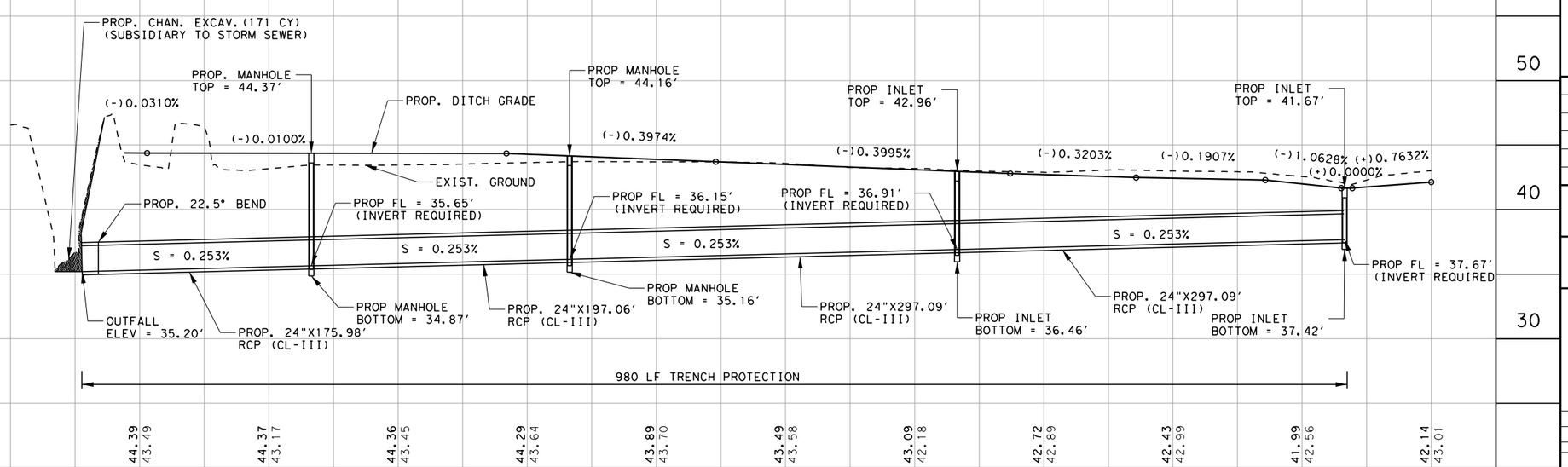
HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'
SHEET 1 OF 1

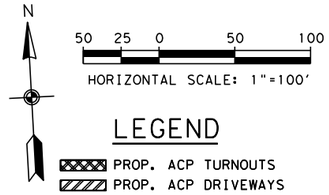
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		202
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM 506_IRRI 01.dgn









LEGEND

- PROP. ACP TURNOUTS
- PROP. ACP DRIVEWAYS
- PROP. CONC DRIVEWAYS
- FLOWABLE FILL SLAB
- DIRECTION OF TRAFFIC
- ℄ CENTER LINE
- PGL PROFILE GRADE LINE
- LT LEFT
- RT RIGHT
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- WV WATER VALVE
- POWER POLE
- UNDERGROUND TELEPHONE
- OHE OVERHEAD POWER LINE
- WATER WATER SUPPLY CORP. LINE
- OBJECT MARKER (OM-2Z)
- DRAINAGE FLOW ARROWS

NOTES:

1. SEE "PROJECT ROADWAY DATA SHEET FOR ALIGNMENT DATA AND "SURVEY CONTROL INDEX & SKETCH SHEETS" FOR BENCHMARK DATA.

2. SEE CROSS SECTION SHEETS FOR DITCH AND STRUCTURES OFFSETS, ELEVATIONS AND ADDITIONAL INFORMATION.

3. SEE SUMMARY TABLES FOR PROP. DRIVEWAYS, PIPE CROSSINGS & S.E.T. INFORMATION.

4. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

5. FOR CROSS STREET RE-CONSTRUCTION DETAILS. SEE "DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)" STANDARD. MATCH EXISTING GRADE AT CONSTRUCTION LIMITS.

6. PROVIDE CHANNEL EXCAVATION /RESHAPING TO LIMITS OF R.O.W.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

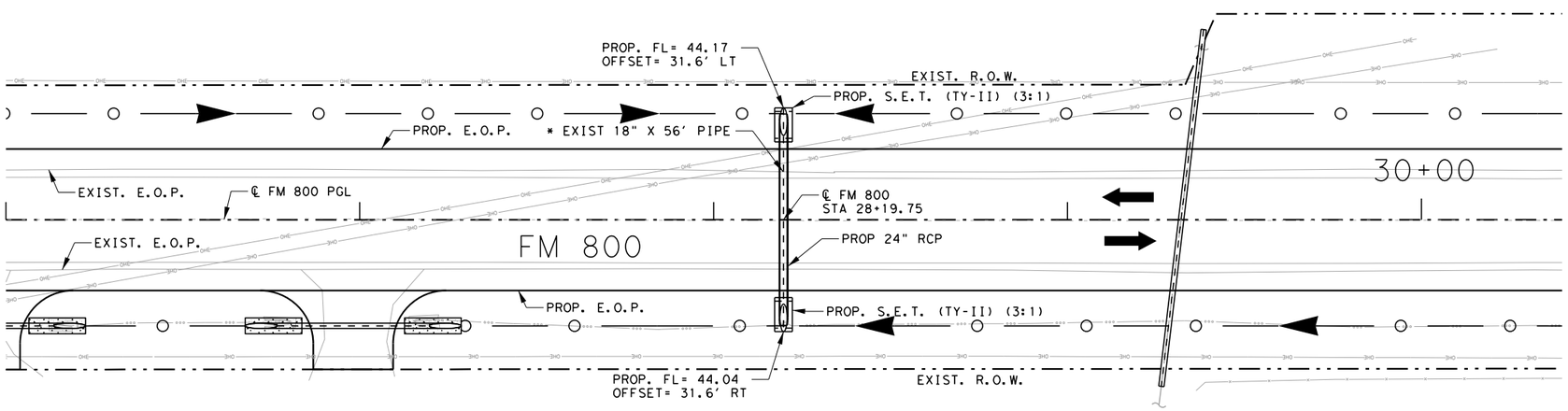
IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

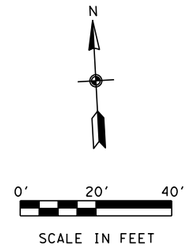
FM 800
STORM SEWER PLAN / PROFILE

VERT. PROFILE 1"=10' SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		203
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

10/11/2021 2:36:55 PM \\pussccshrfi101\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1136-02-053\06.04.05 Drainage\800_DRN_PP01.dgn
800_DRN-PP01.dgn





LEGEND

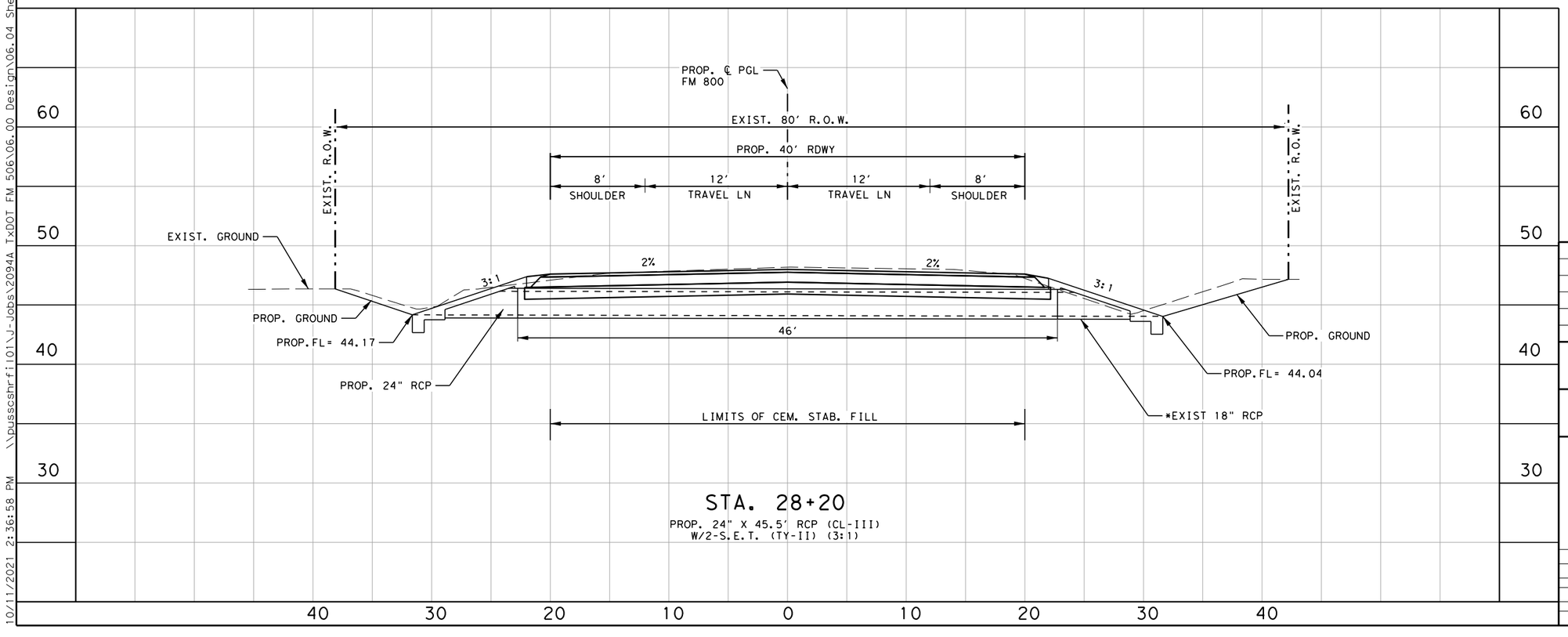
*	TO BE REMOVED UNDER ITEM "496"
▨	MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
•—•→	DITCH FLOW
⊞	CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 28+20

PROP. 24" X 45.5' RCP (CL-III)
W/2-S.E.T. (TY-II) (3:1)

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

FM 800

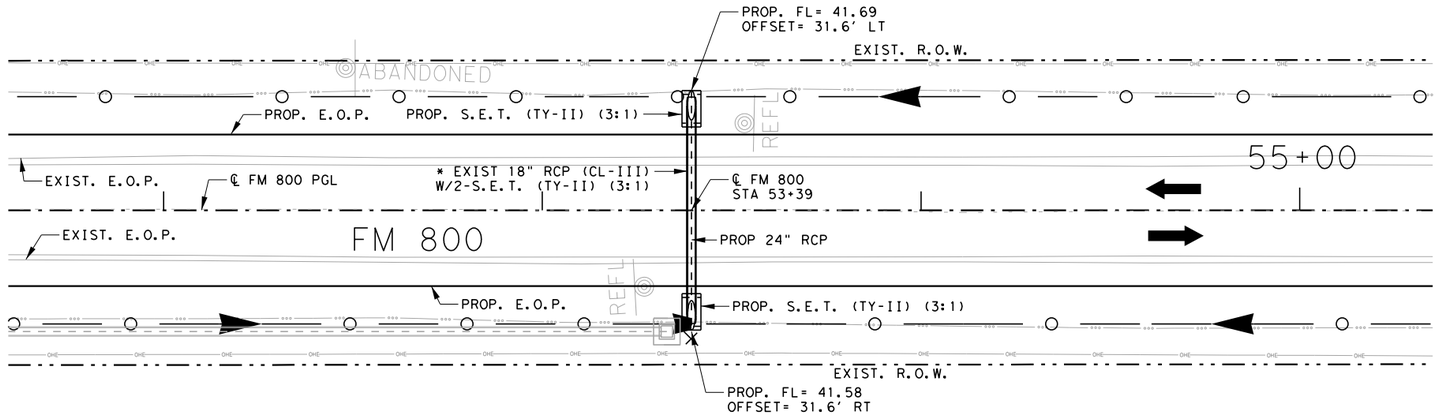
CULVERT PLAN & PROFILE AT STA 28+20

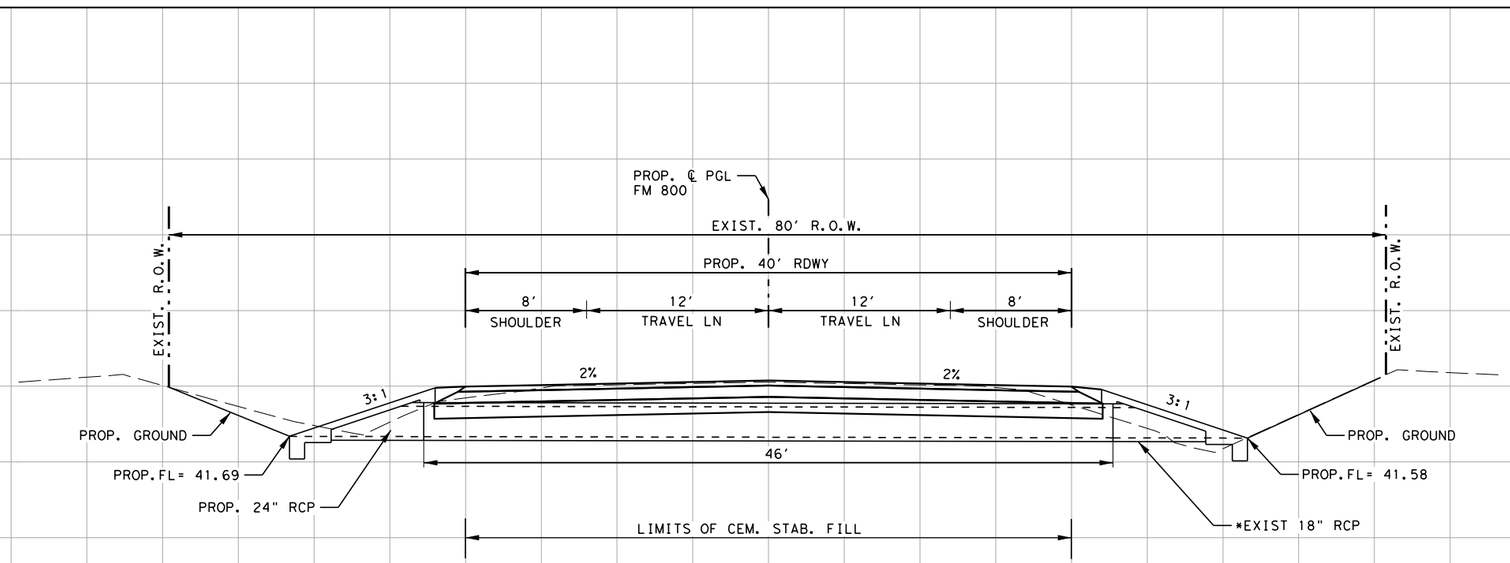
HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 1 OF 9

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		204
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

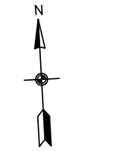
FM800_CULV 01.dgn





STA. 53+39

PROP. 24" X 45.5' RCP (CL-III)
W/2-S.E.T. (TY-II)(3:1)



0' 20' 40'

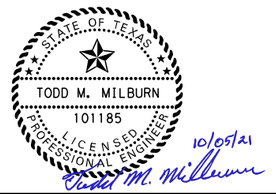
SCALE IN FEET

LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

CULVERT PLAN & PROFILE AT STA 53+39

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		205
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 02.dgn

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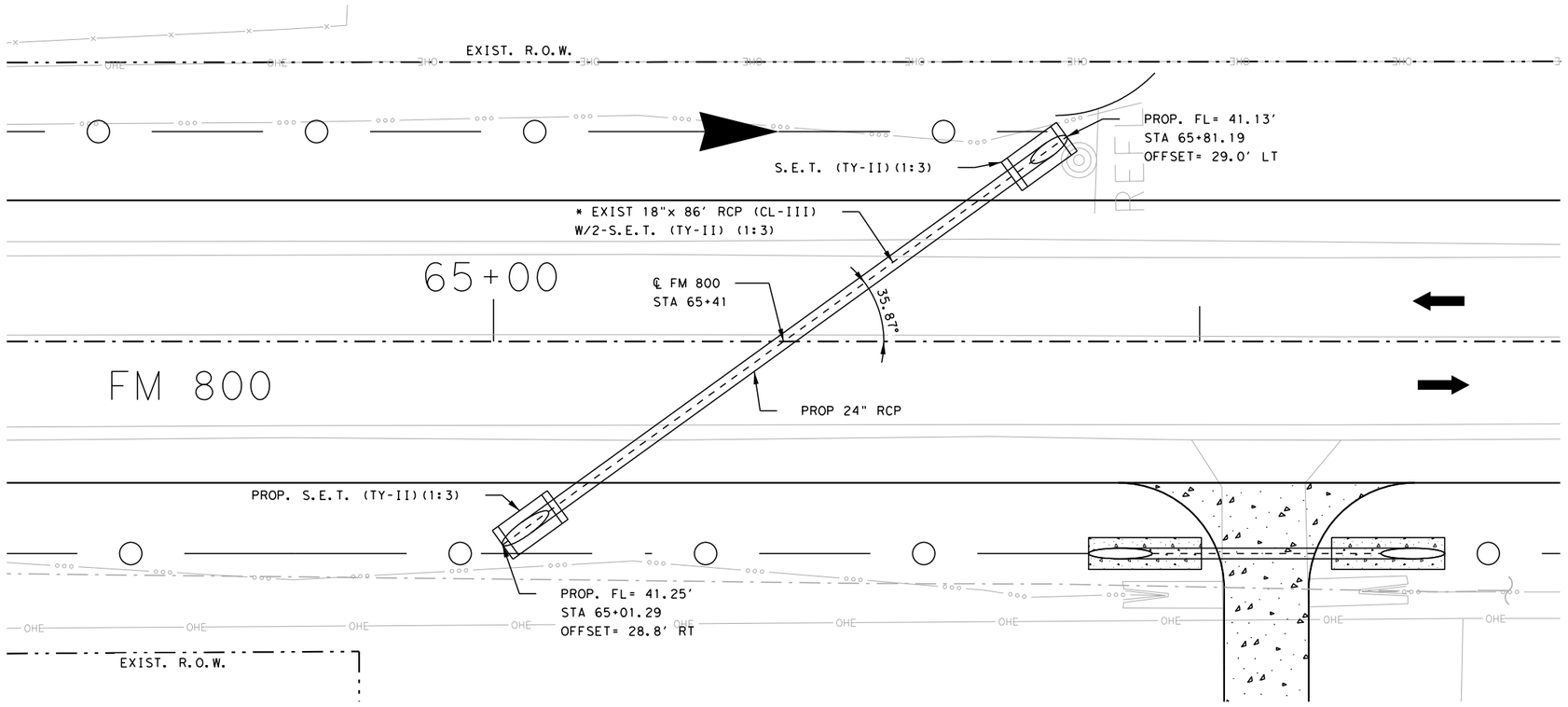
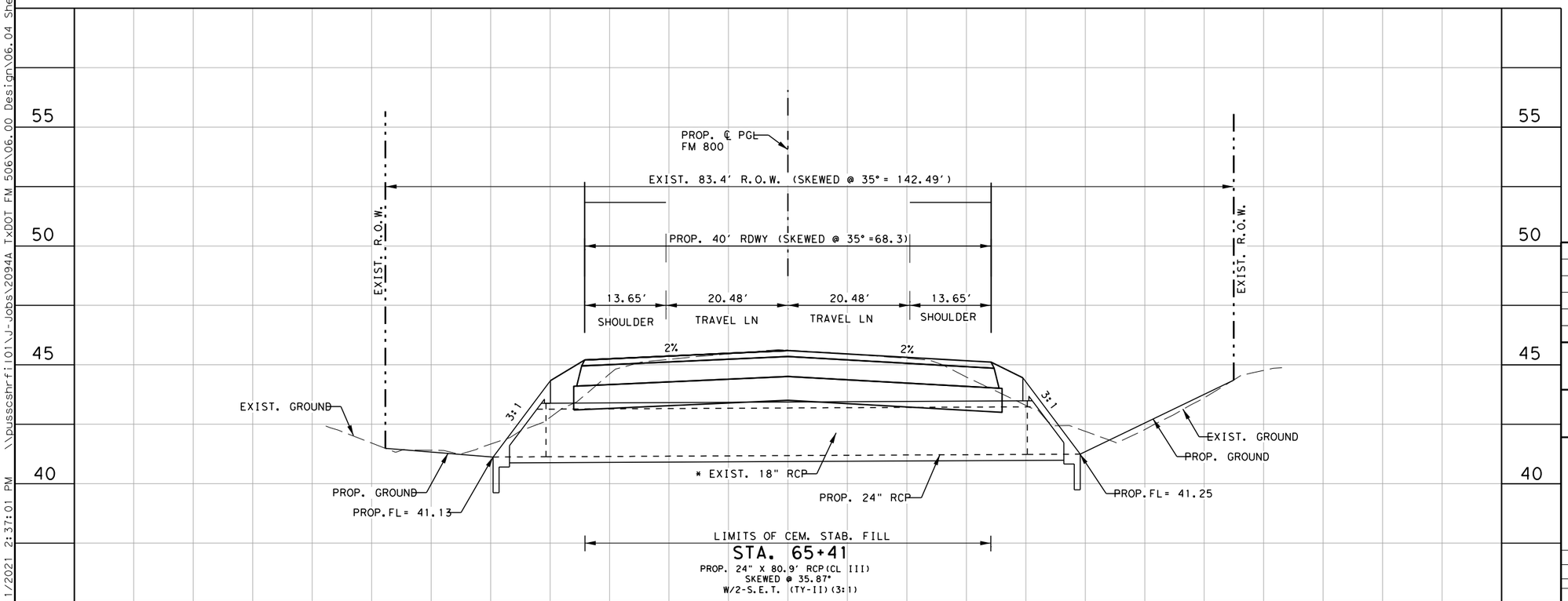
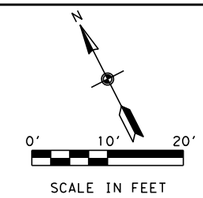






LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

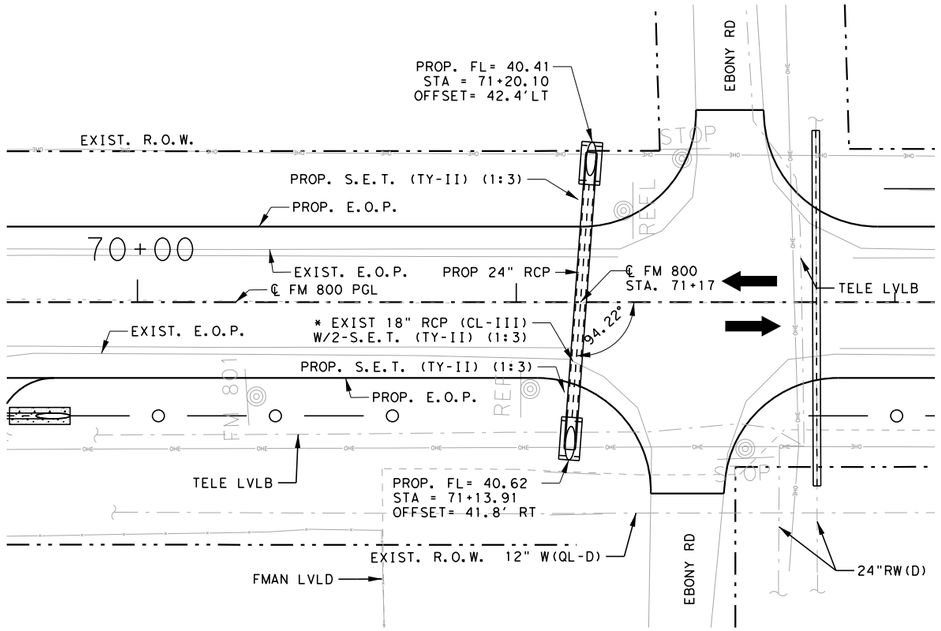
CULVERT PLAN & PROFILE AT STA 65+41

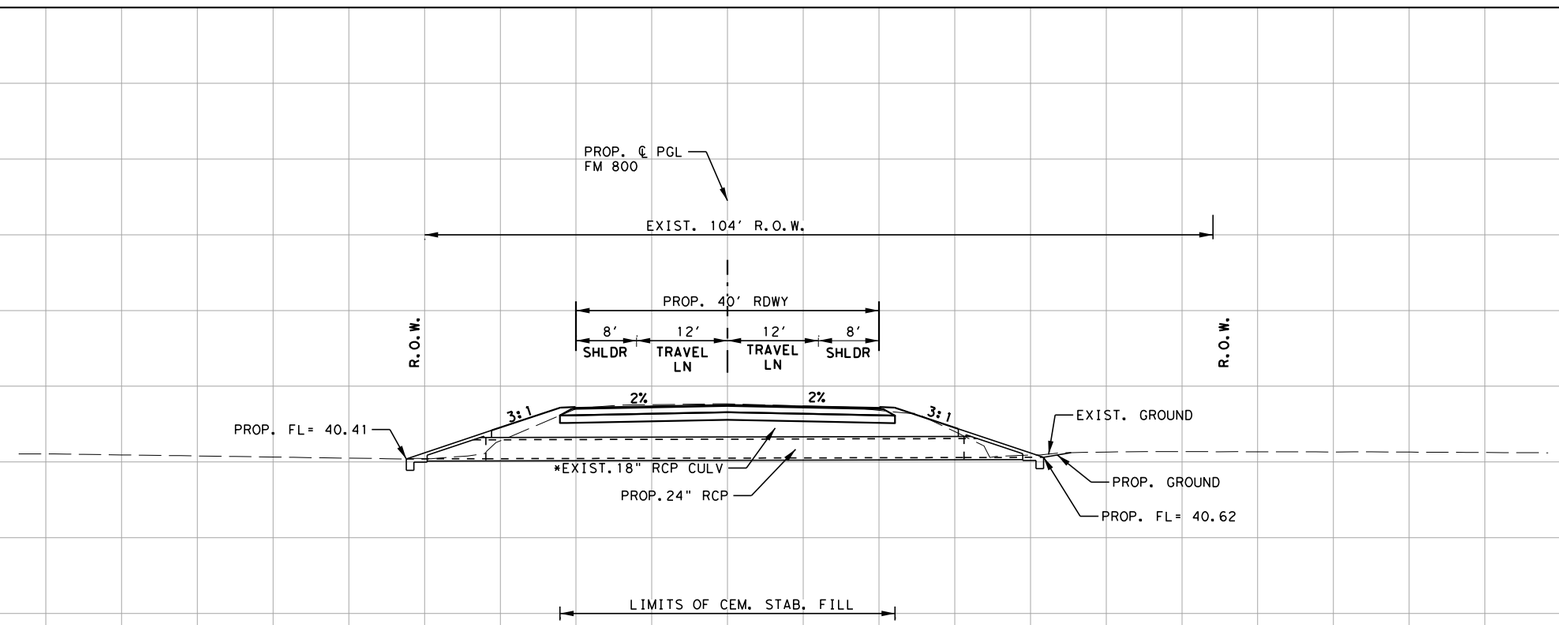
VERT. PROFILE 1"=5'
HORZ. PROFILE 1"=20'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	206

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 03.dgn





STA. 71+17

PROP. 24" X 63.1' RCP (CL-III)
SKEWED @ 94.22°
W/ 2-S.E.T. (TY-II)(3:1)

SCALE IN FEET

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

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2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

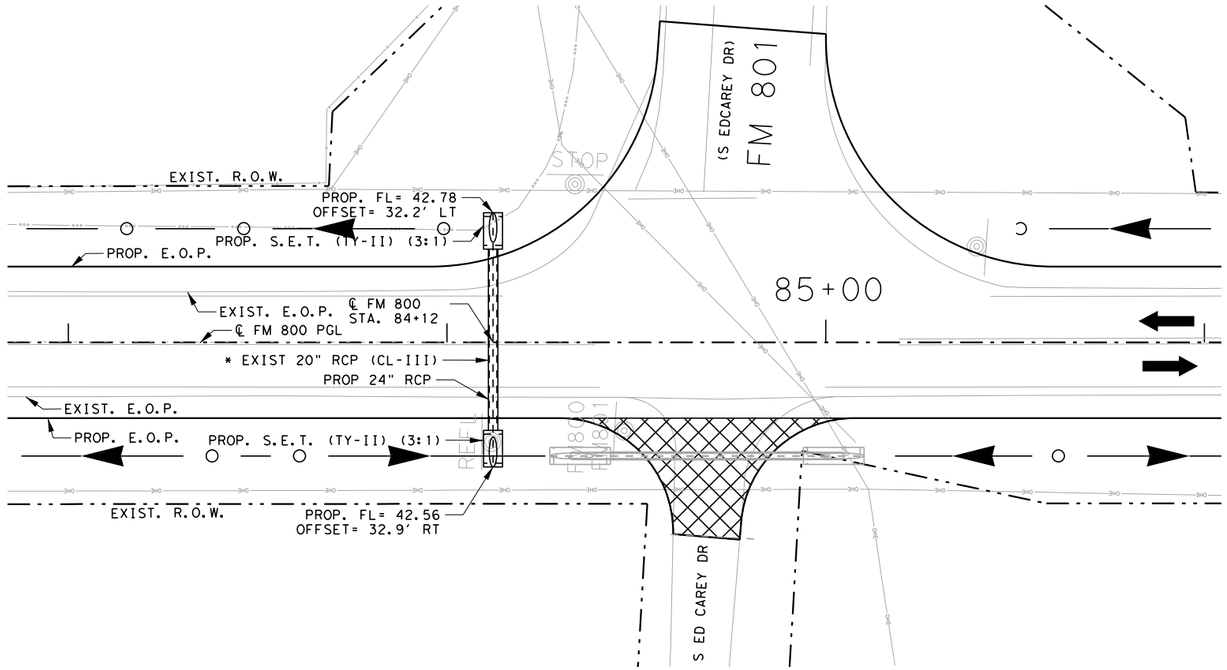
CULVERT PLAN & PROFILE AT STA 71+17

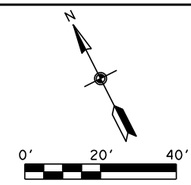
HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

SHEET 4 OF 9

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		207
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 04.dgn





SCALE IN FEET

LEGEND

*	TO BE REMOVED UNDER ITEM "496"
▨	MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
•—•→	DITCH FLOW
⊞	CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

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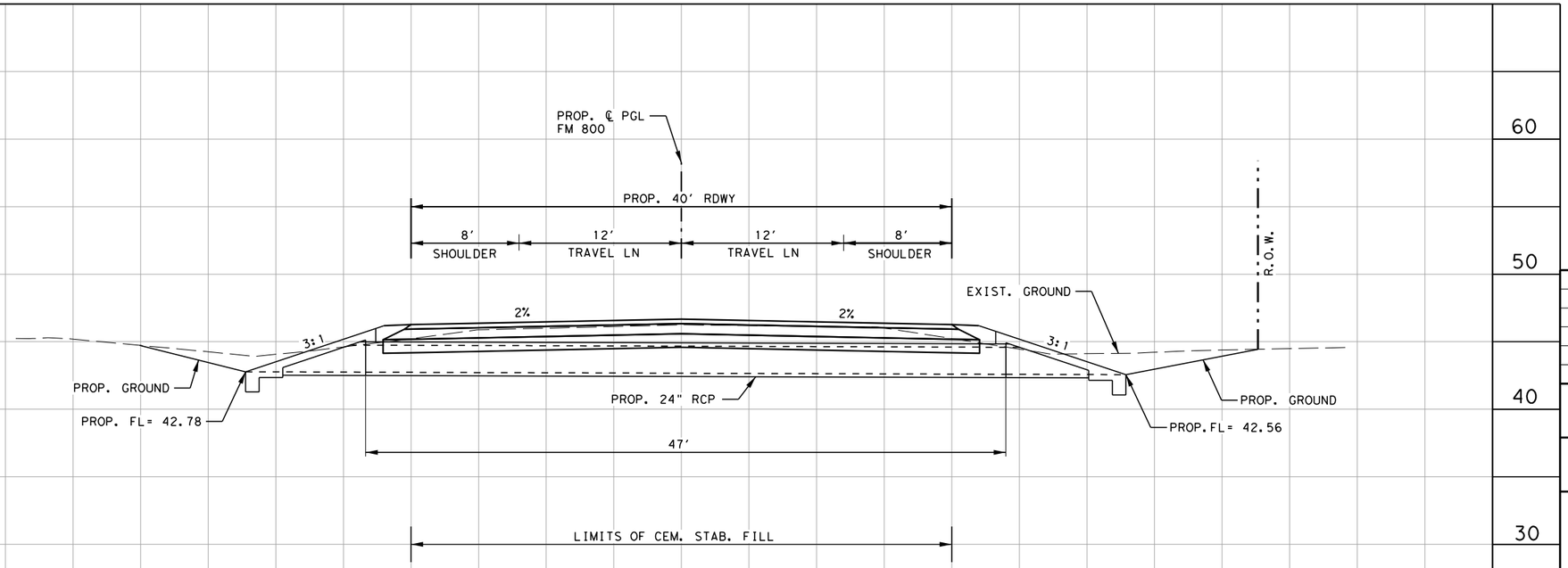
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 84+12

PROP. 24" X 47.9' RCP (CL-III)
W/ 2-S.E.T. (TY-II) (3:1)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

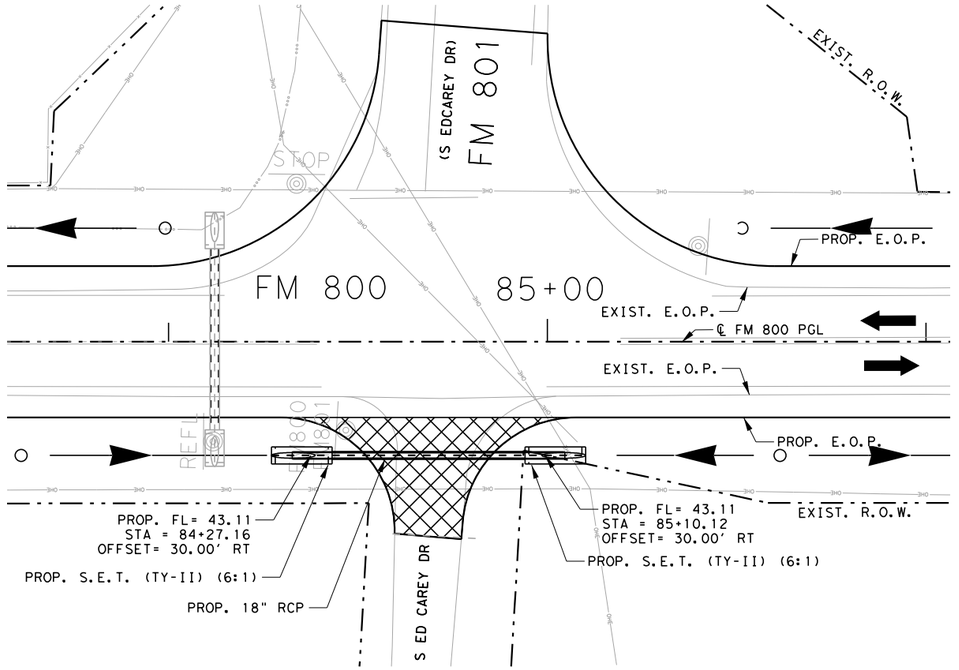
CULVERT PLAN & PROFILE AT STA 84+12

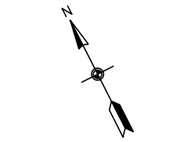
HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 5 OF 9

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		208
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 05.dgn





SCALE IN FEET

LEGEND

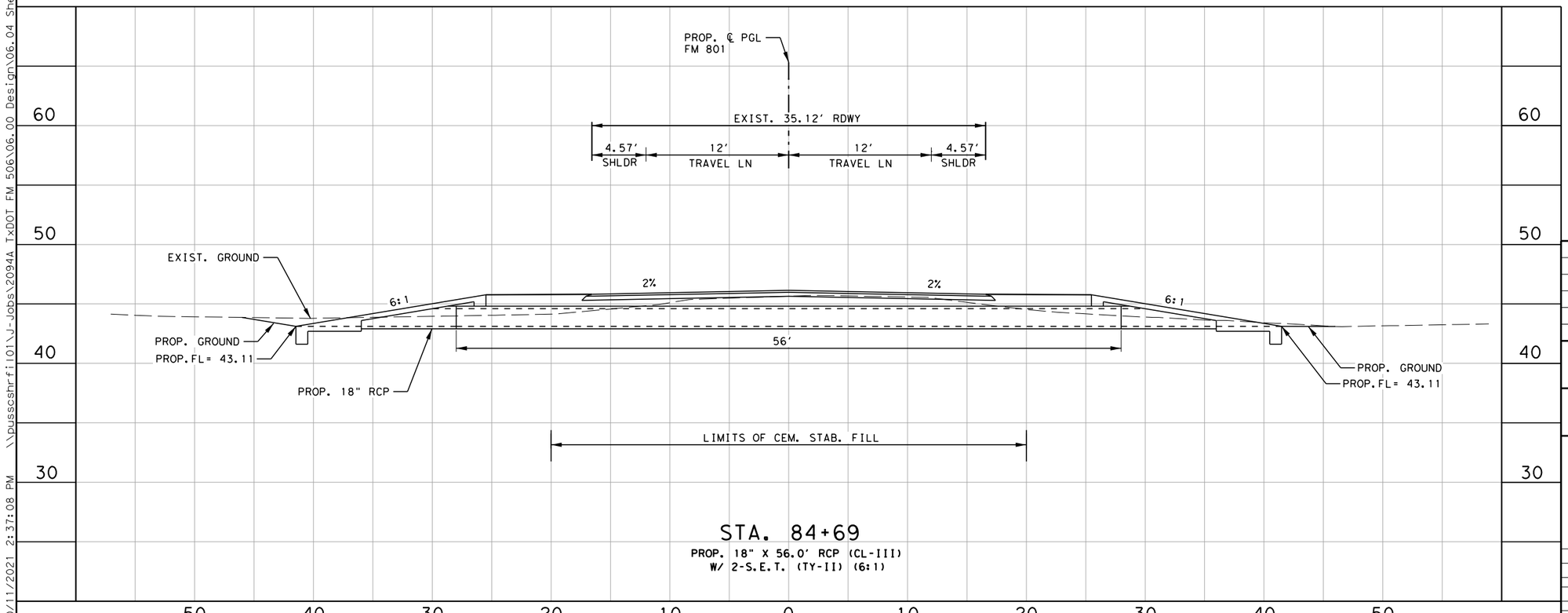
- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 84+69

PROP. 18" X 56.0' RCP (CL-III)
W/ 2-S.E.T. (TY-II) (6:1)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21
Todd M. Milburn

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800

CULVERT PLAN & PROFILE AT STA 84+69

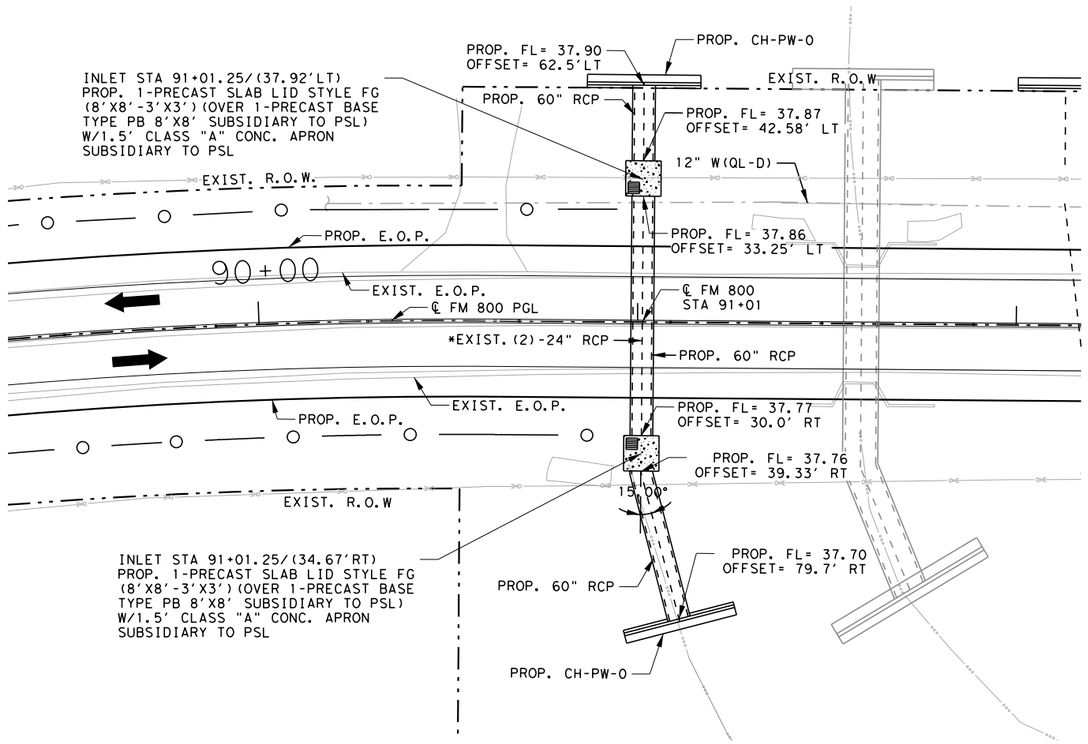
HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

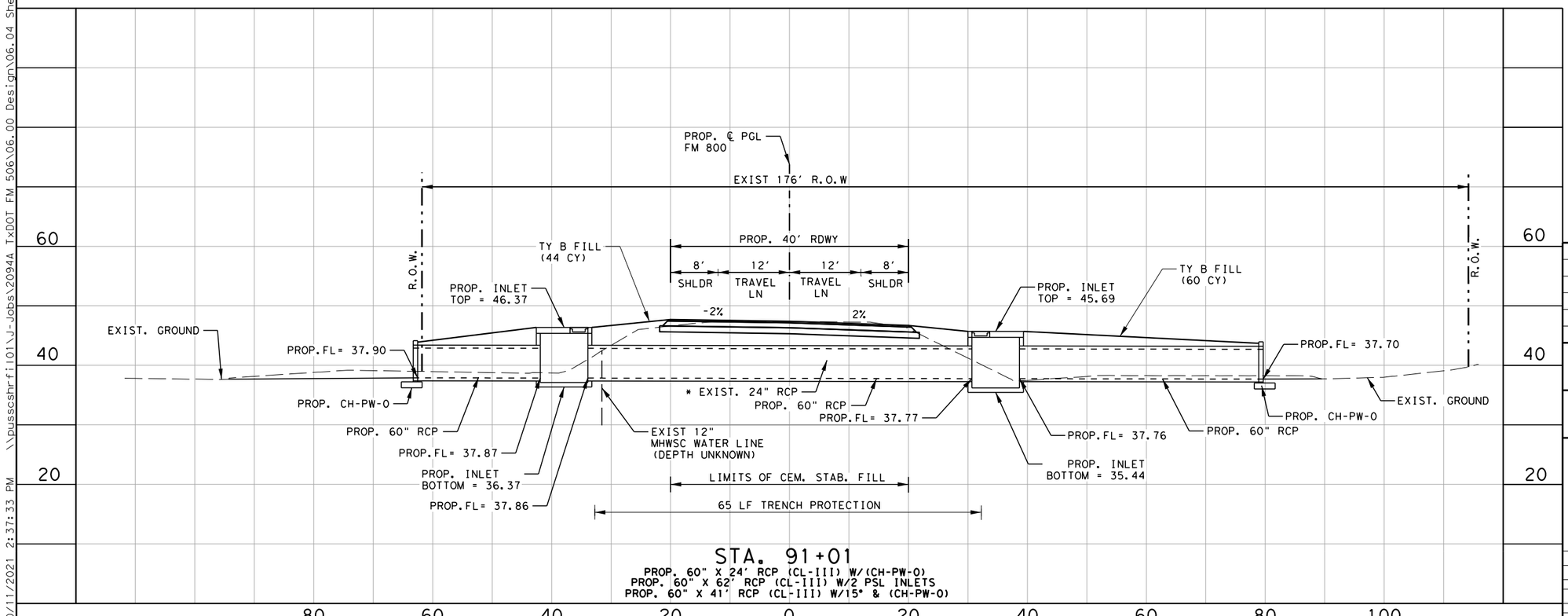
SHEET 6 OF 9

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		209
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 06.dgn

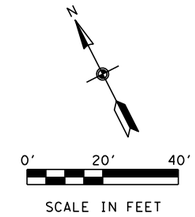
10/11/2021 2:37:08 PM \\pusscshrfi101\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1136-02-053\06.04.05 Drainage\FM800_CULV 06.dgn





STA. 91+01

PROP. 60" X 24' RCP (CL-III) W/(CH-PW-0)
PROP. 60" X 62' RCP (CL-III) W/2 PSL INLETS
PROP. 60" X 41' RCP (CL-III) W/15* & (CH-PW-0)



LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

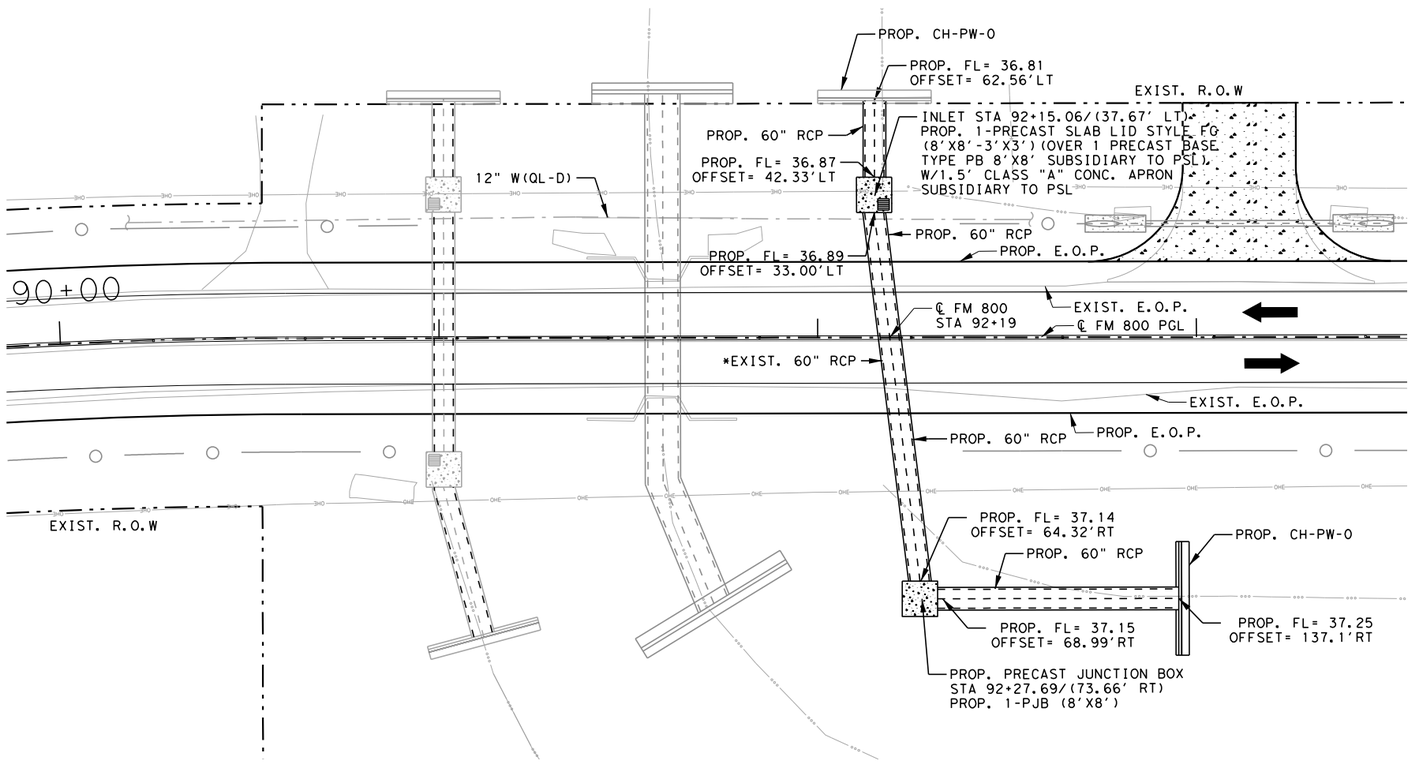
FM 800

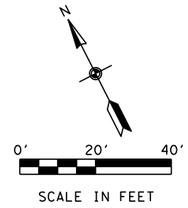
CULVERT PLAN & PROFILE AT STA 91+01

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		210
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 07.dgn



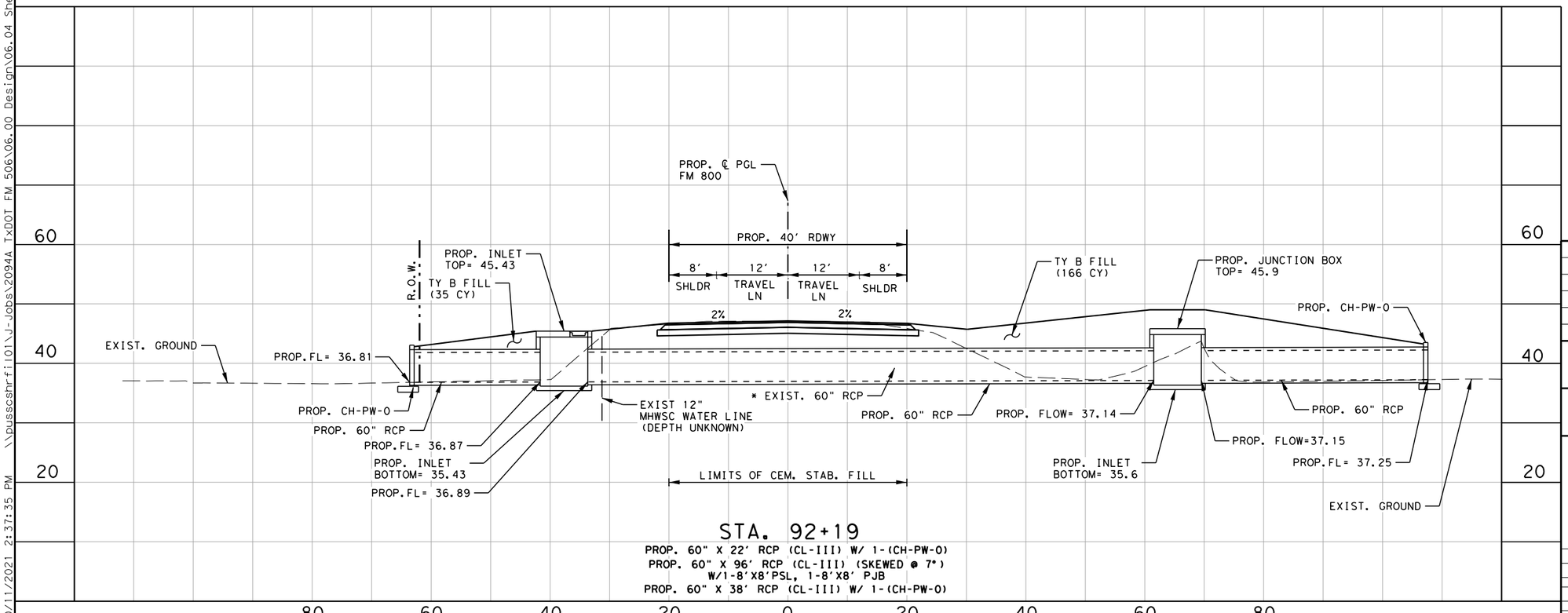


LEGEND

- * TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 92+19

PROP. 60" X 22' RCP (CL-III) W/ 1-(CH-PW-0)
PROP. 60" X 96' RCP (CL-III) (SKEWED @ 7°) W/1-8'X8'PSL, 1-8'X8' PJB
PROP. 60" X 38' RCP (CL-III) W/ 1-(CH-PW-0)

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

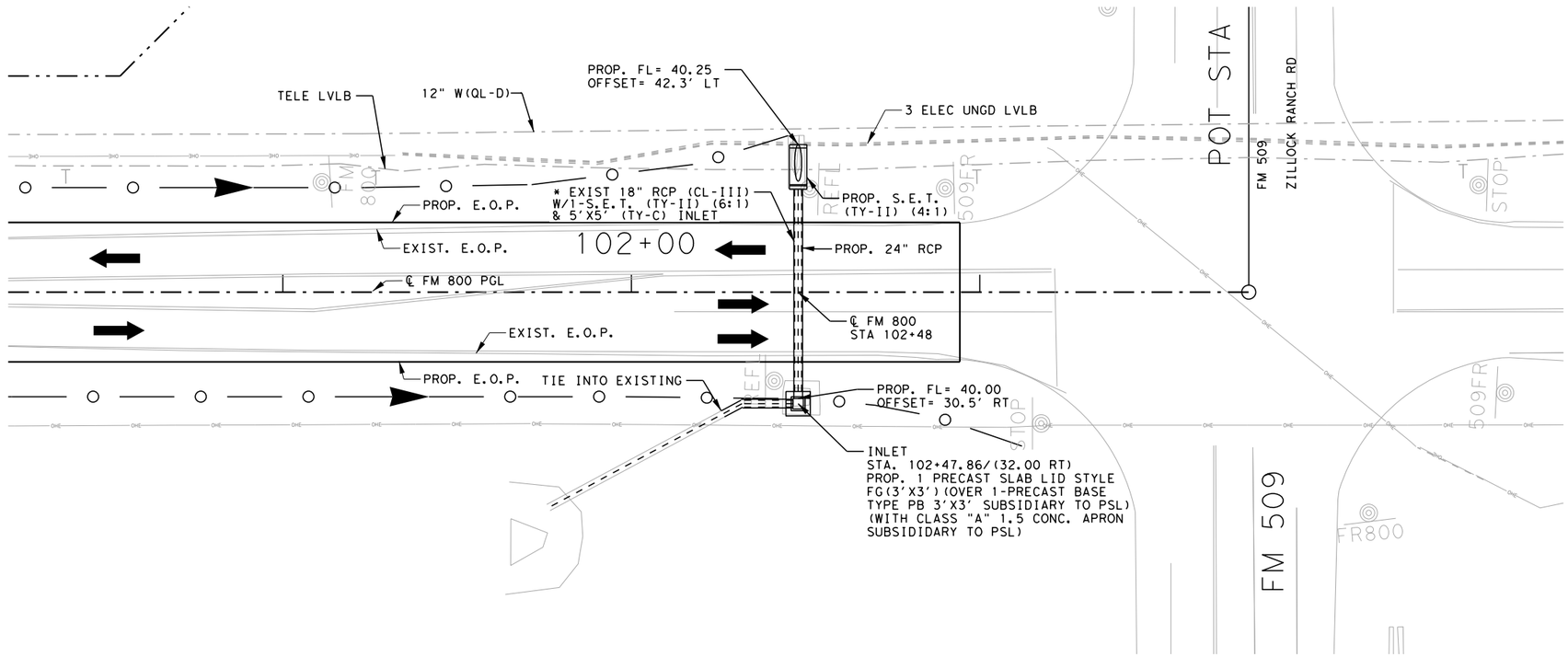
FM 800

CULVERT PLAN & PROFILE AT STA 92+19

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=20'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		211
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 08.dgn



LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
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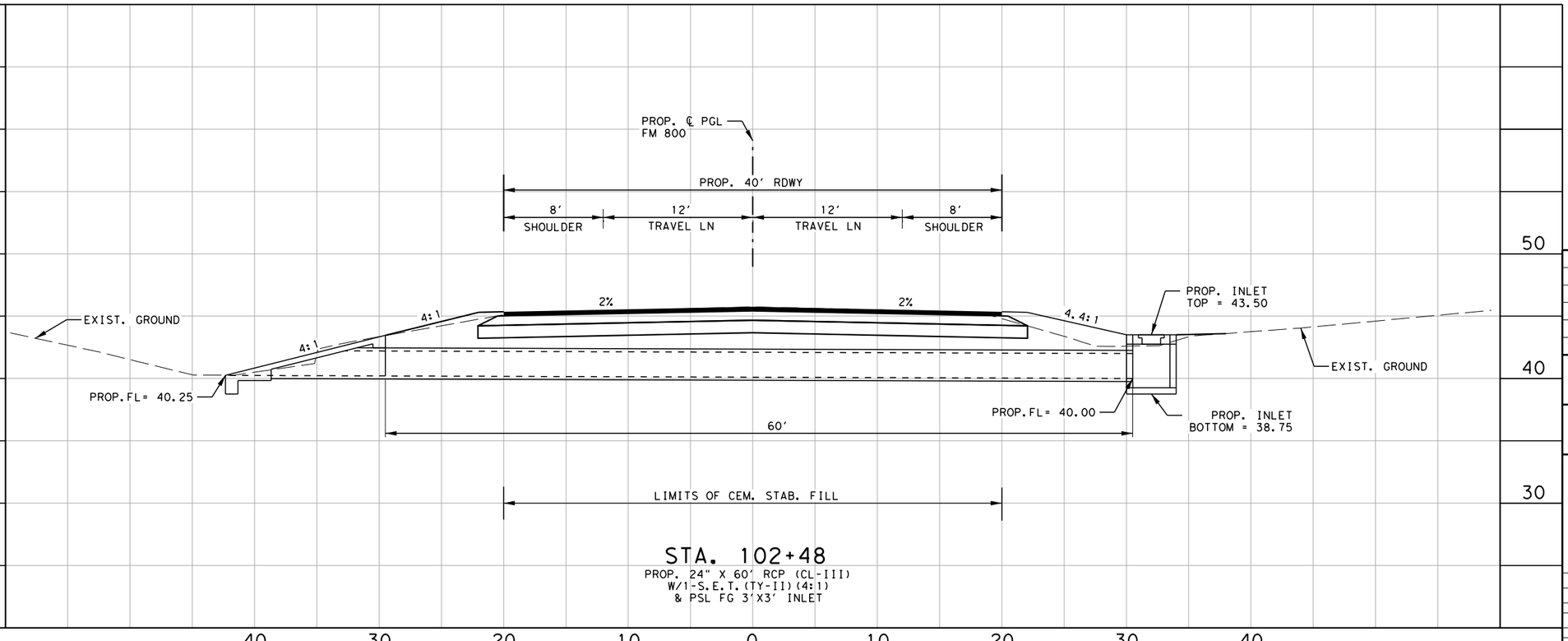


STA. 102+48

PROP. 24" X 60' RCP (CL-III)
W/1-S.E.T. (TY-II) (4:1)
& PSL FG 3'X3' INLET

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

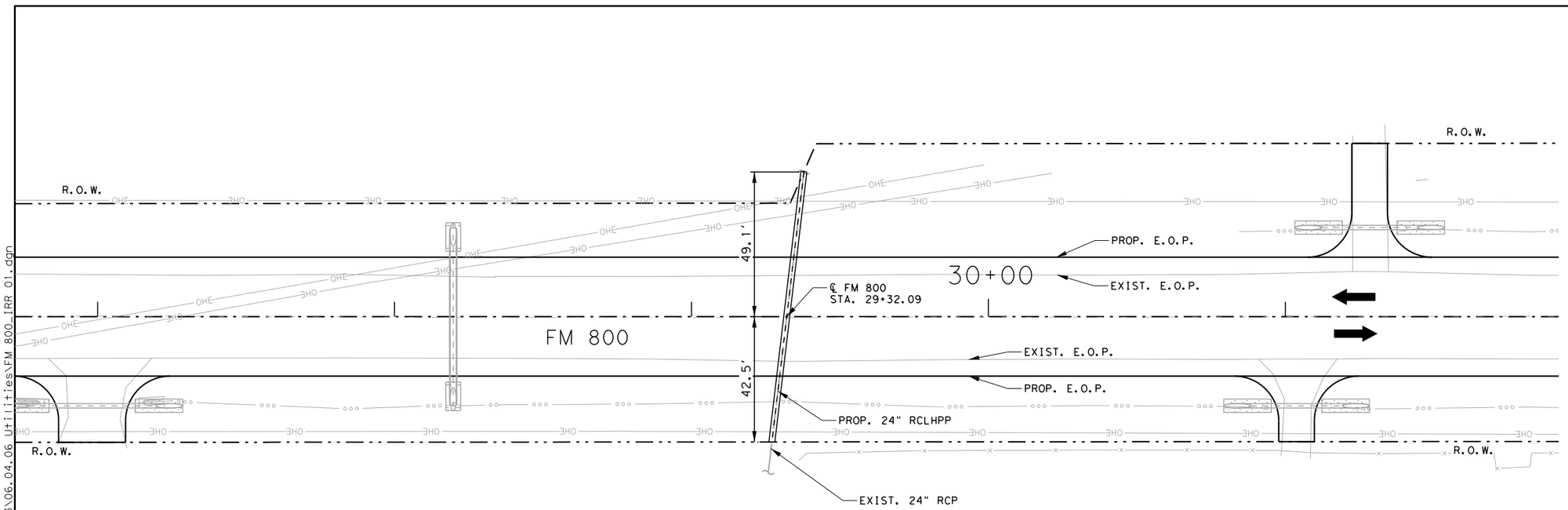
Texas Department of Transportation

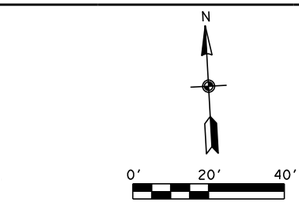
FM 800
CULVERT PLAN & PROFILE AT STA 102+48

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		212
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_CULV 09.dgn



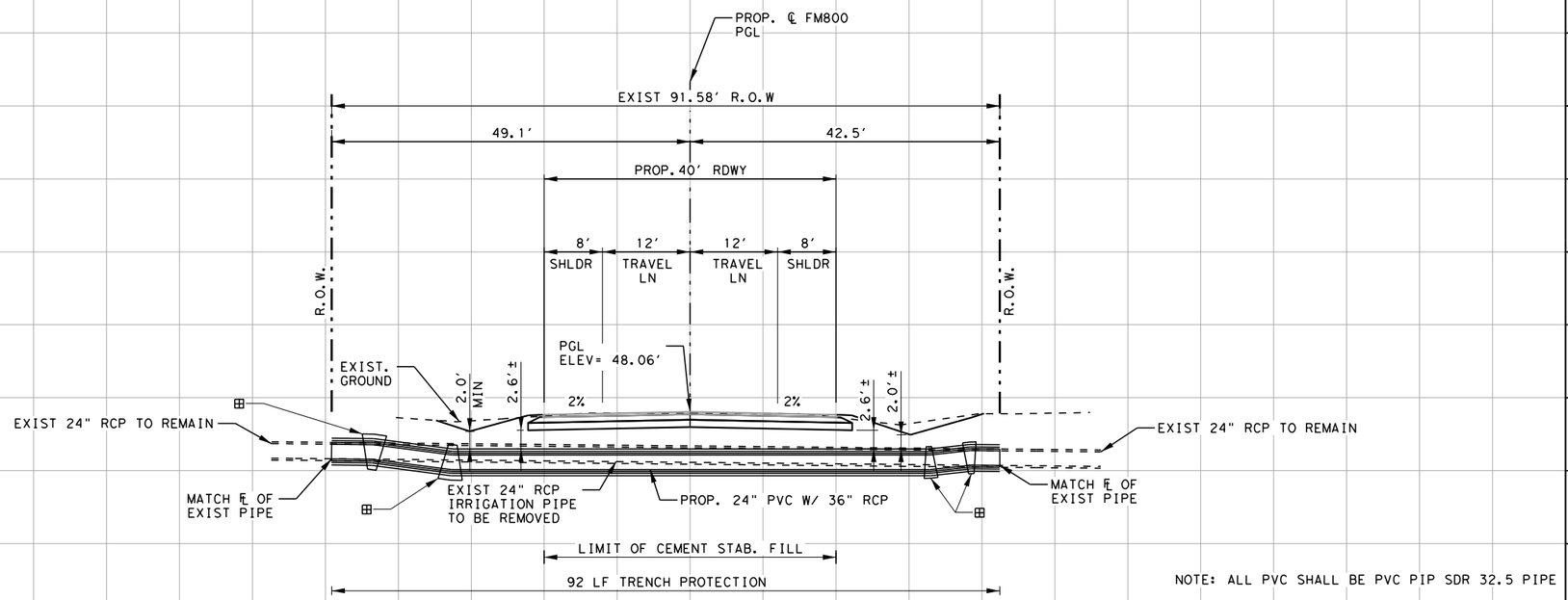


LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



NOTE: ALL PVC SHALL BE PVC PIP SDR 32.5 PIPE

STA 29+32

PROP 24"X 92'PVC PIP W/ 36" X 92' RCP CL-III

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

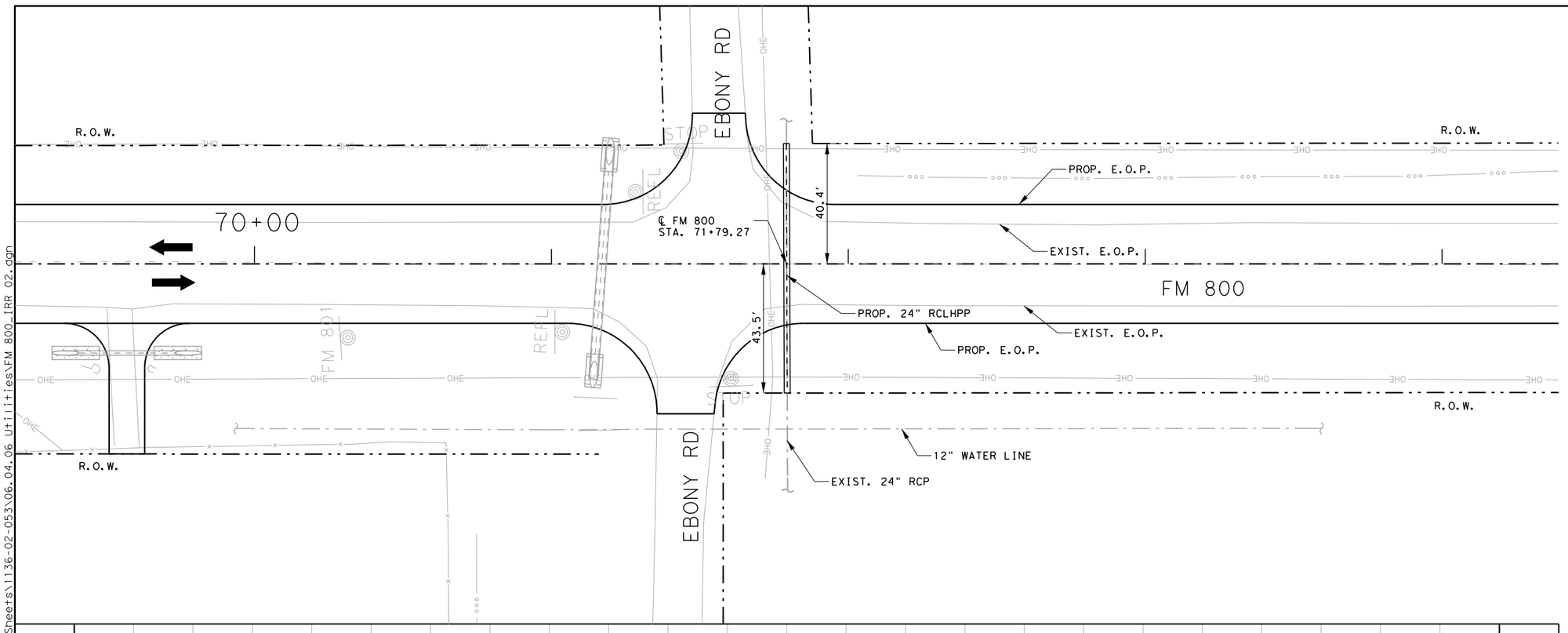
FM 800

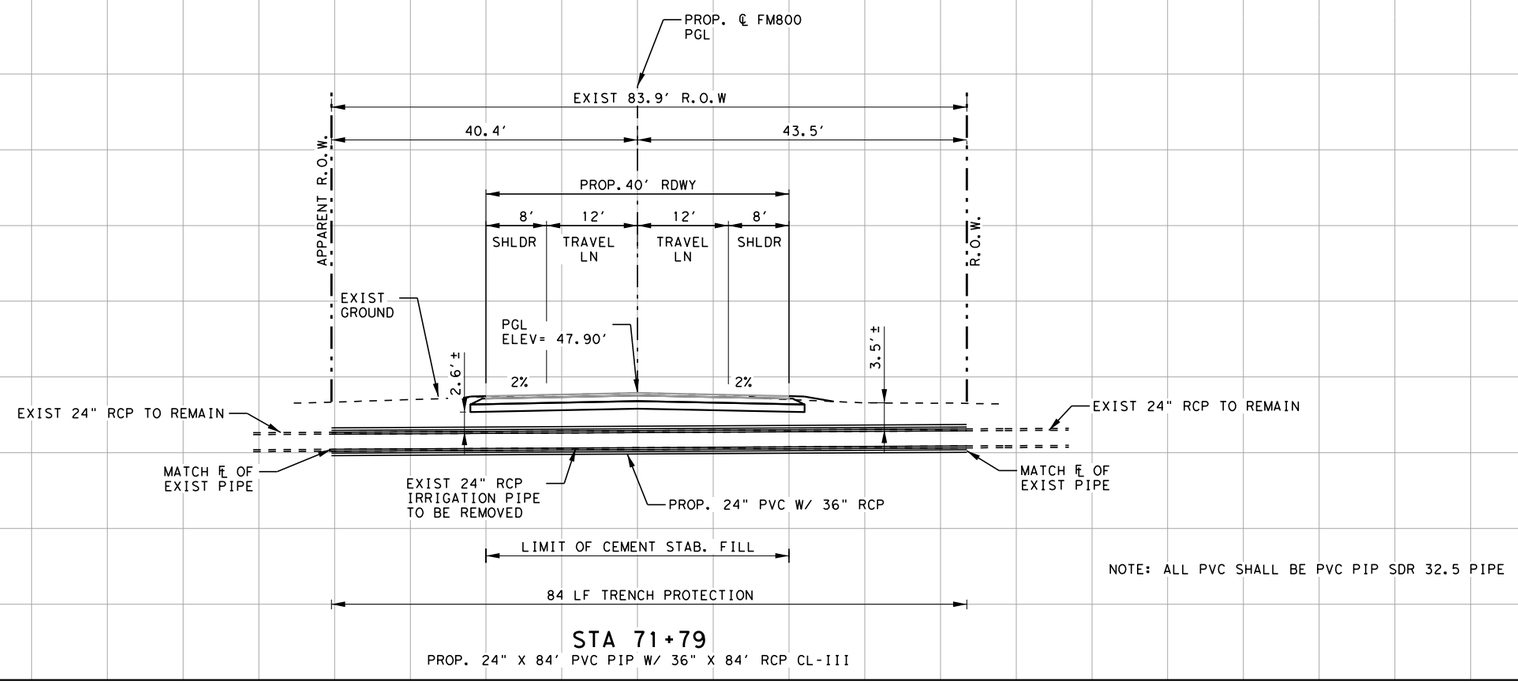
IRRIGATION CROSSING STA 29+32

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'
SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		213
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM 800_IRR 01.dgn





STA 71+79

PROP. 24" X 84' PVC PIP W/ 36" X 84' RCP CL-III

NOTE: ALL PVC SHALL BE PVC PIP SDR 32.5 PIPE

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800
IRRIGATION CROSSING STA 71+79

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'
SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		214
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM 800_IRR 02.dgn

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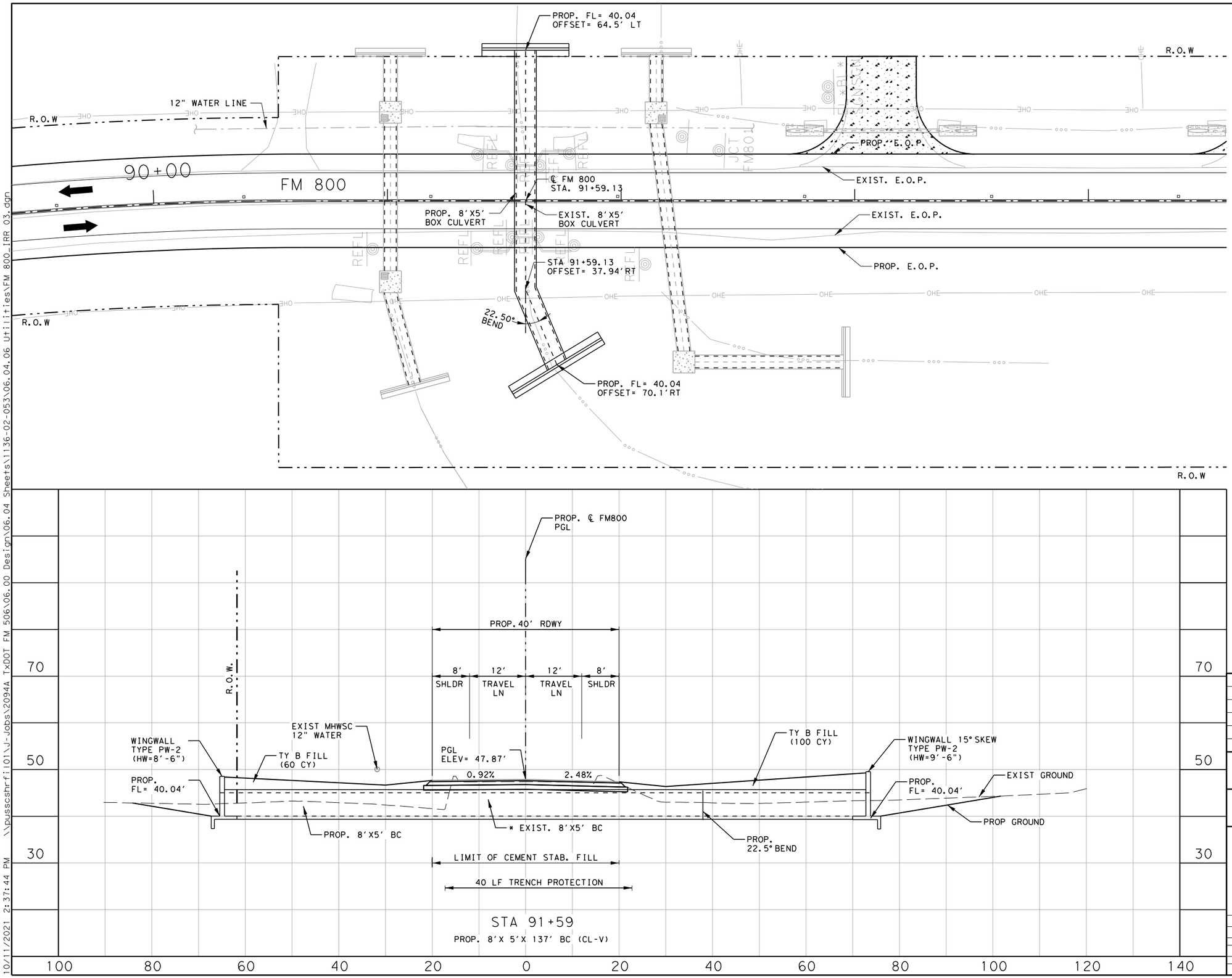


N

0' 20' 40'

SCALE IN FEET

LEGEND

*	TO BE REMOVED UNDER ITEM "496"
	MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
	DITCH FLOW
	CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

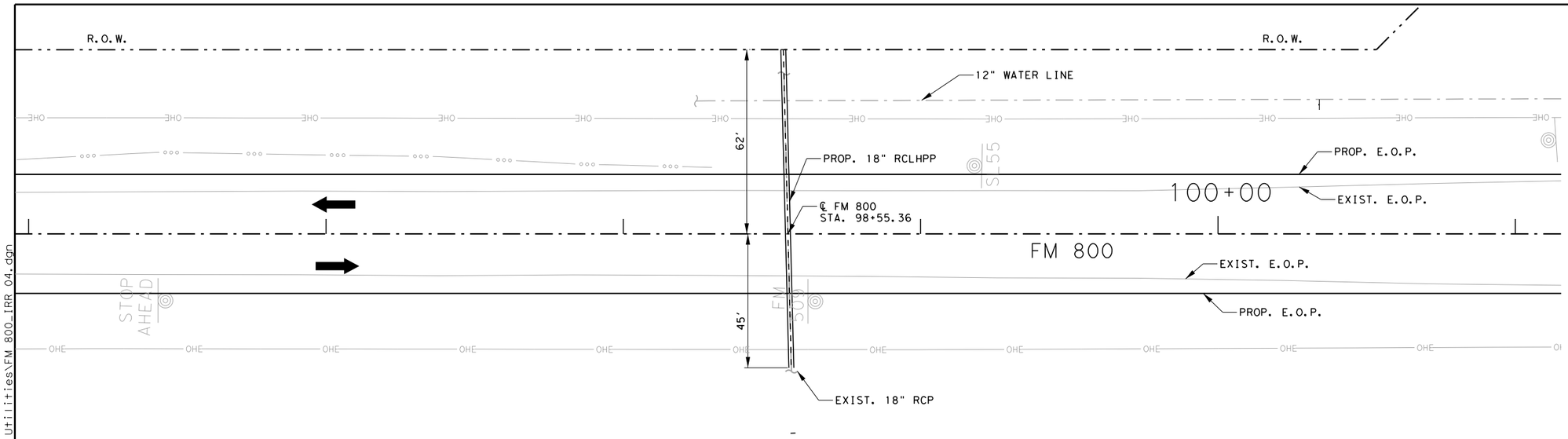
FM 800
IRRIGATION CROSSING
STA 91+59

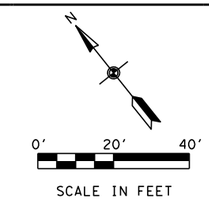
HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		215
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM 800_IRR 03.dgn



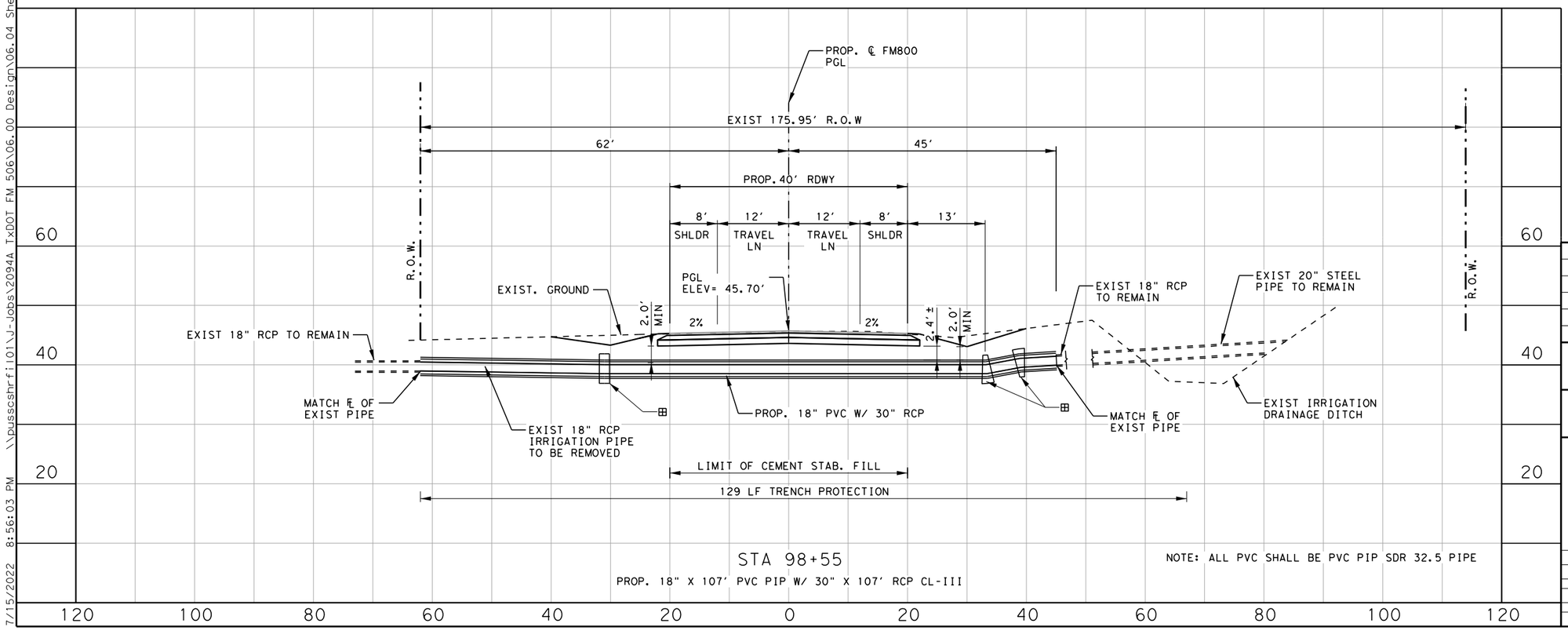


LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA 98+55

PROP. 18" X 107' PVC PIP W/ 30" X 107' RCP CL-III

NOTE: ALL PVC SHALL BE PVC PIP SDR 32.5 PIPE

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

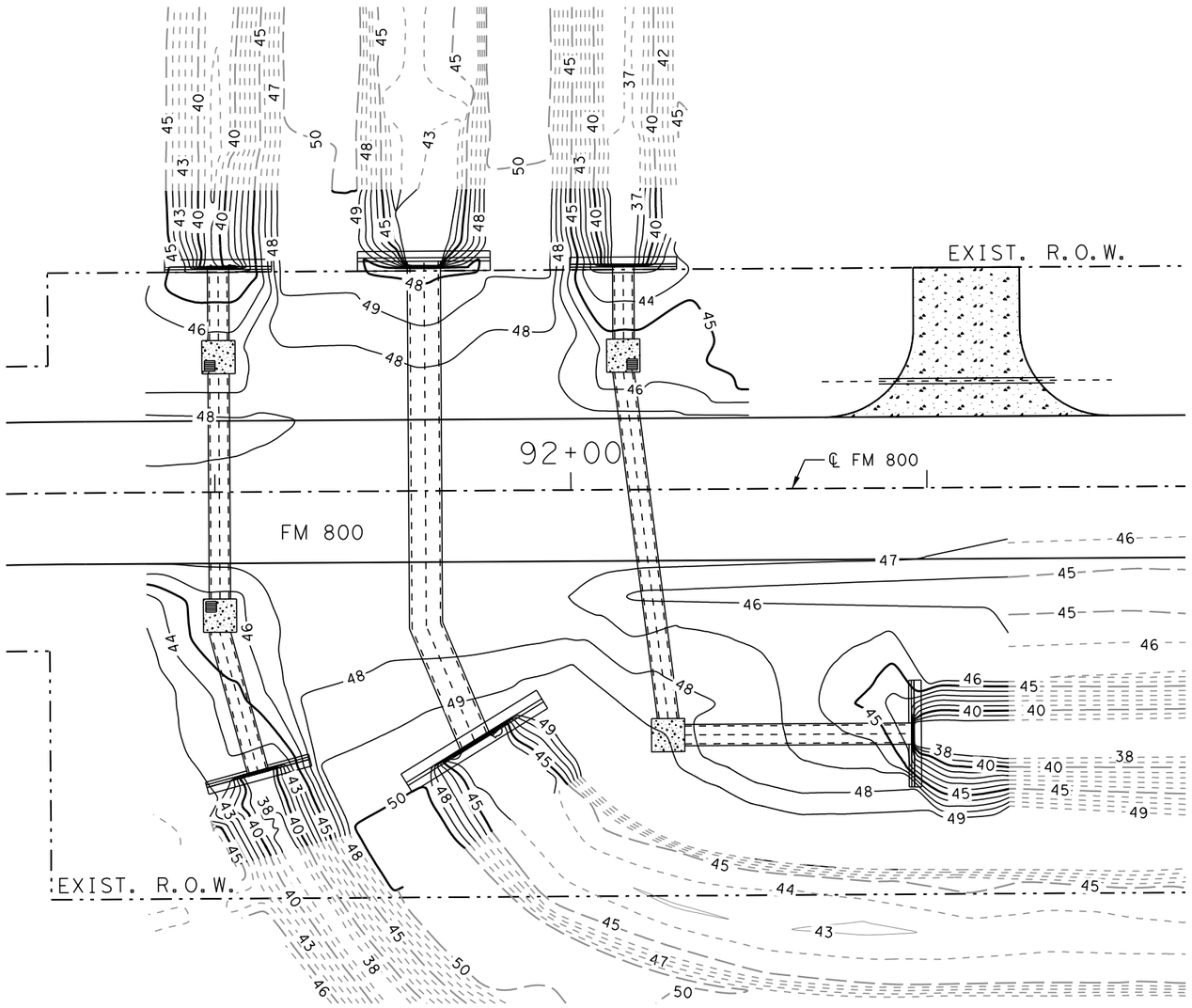
Texas Department of Transportation

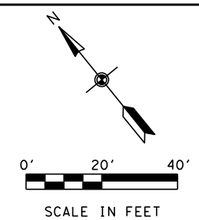
FM 800
IRRIGATION CROSSING STA 98+55

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		216
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM 800_IRR 04.dgn





LEGEND

- EXIST. MAJOR CONTOURS
- EXIST. MINOR CONTOURS
- PROP. MAJOR CONTOURS
- PROP. MINOR CONTOURS

NOTES:

1. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED
PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

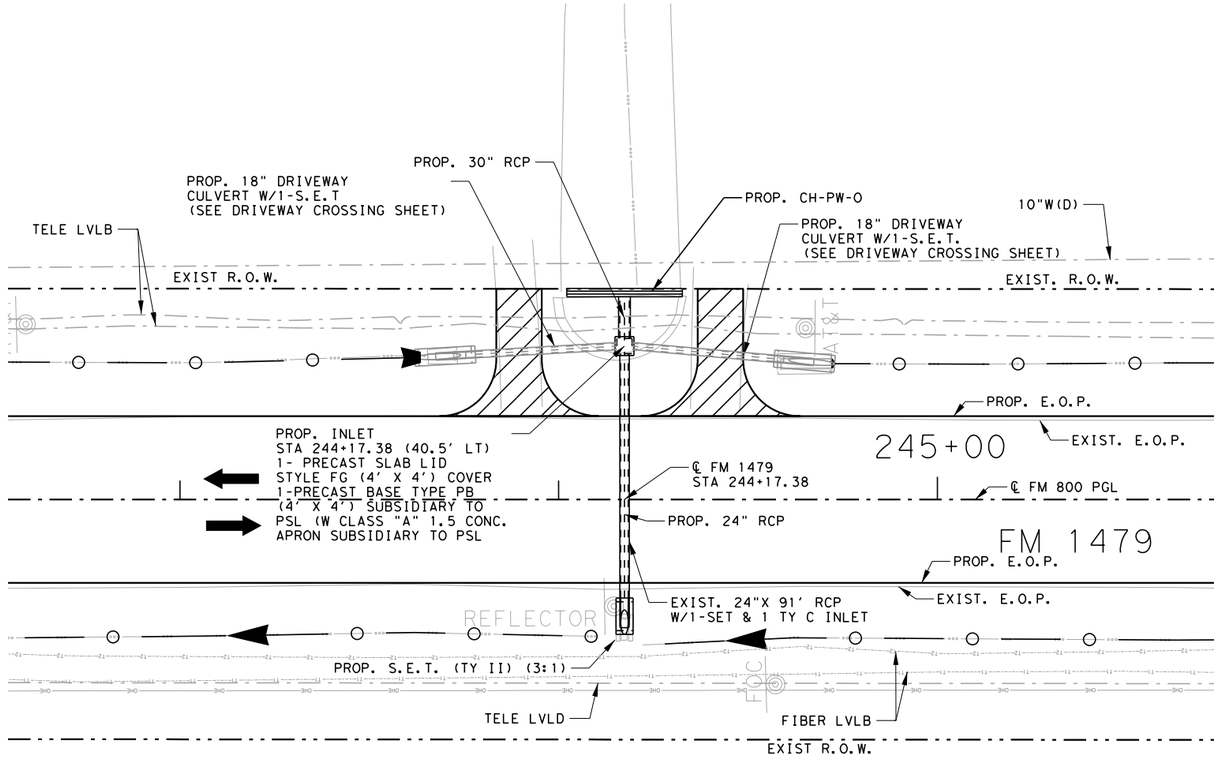
FM 800

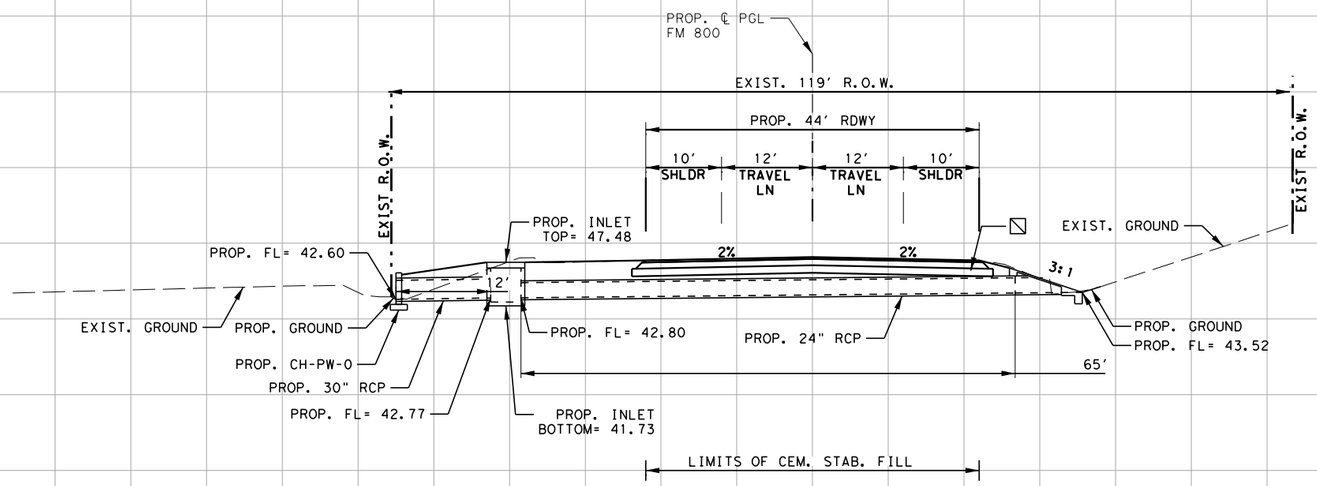
CHANNEL GRADING PLAN

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		217
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM-800

800CONTOURS.dgn





STA. 244+17

PROP. 24" X 65.3' RCP (CL-III)
PROP. 30" X 12.5' RCP (CL-III)
W/1-3:1 S.E.T., 1- (CH-PW-O)
1-3'X3' PSL STYE FG OVER 1-3'X3' PB

0' 20' 40'

SCALE IN FEET

LEGEND

*	TO BE REMOVED UNDER ITEM "496"
▨	MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
•—•→	DITCH FLOW
⊞	CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

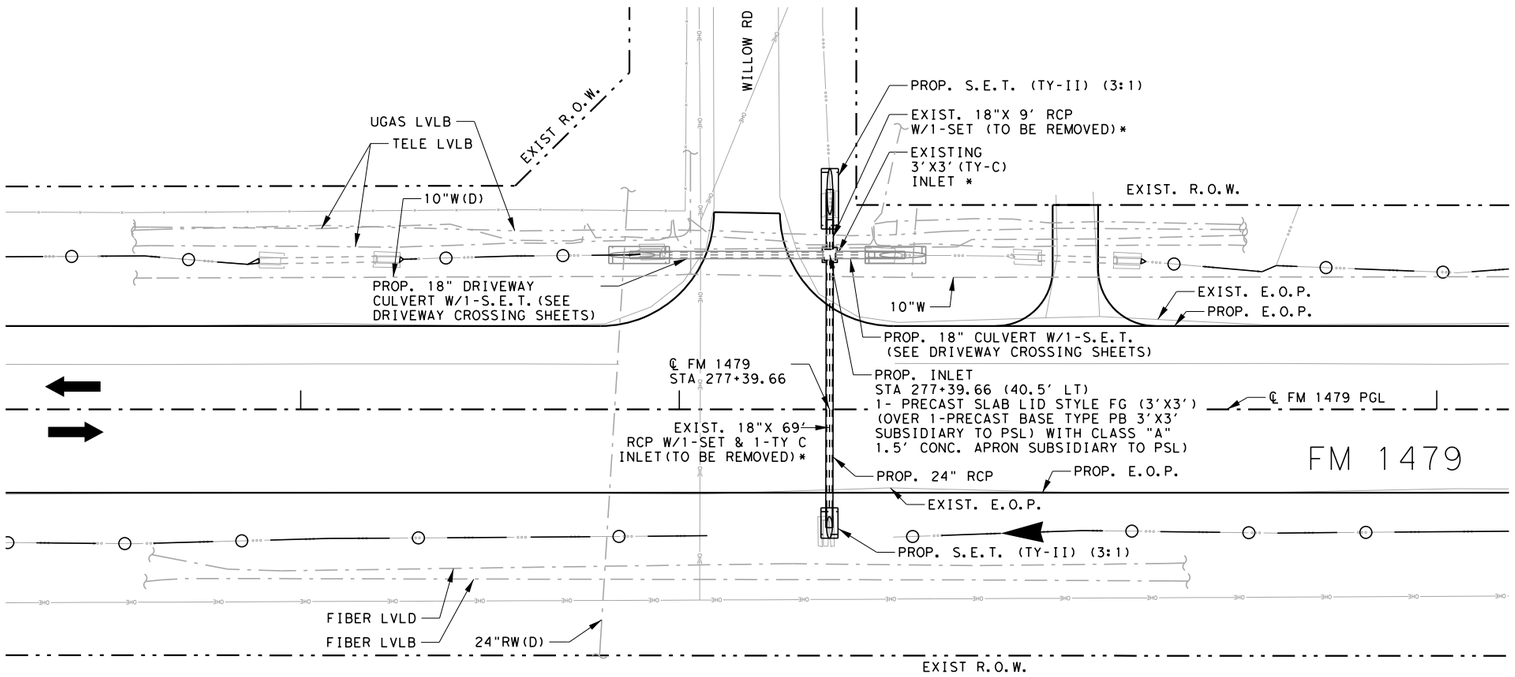
CULVERT PLAN & PROFILE AT STA STA 244+17

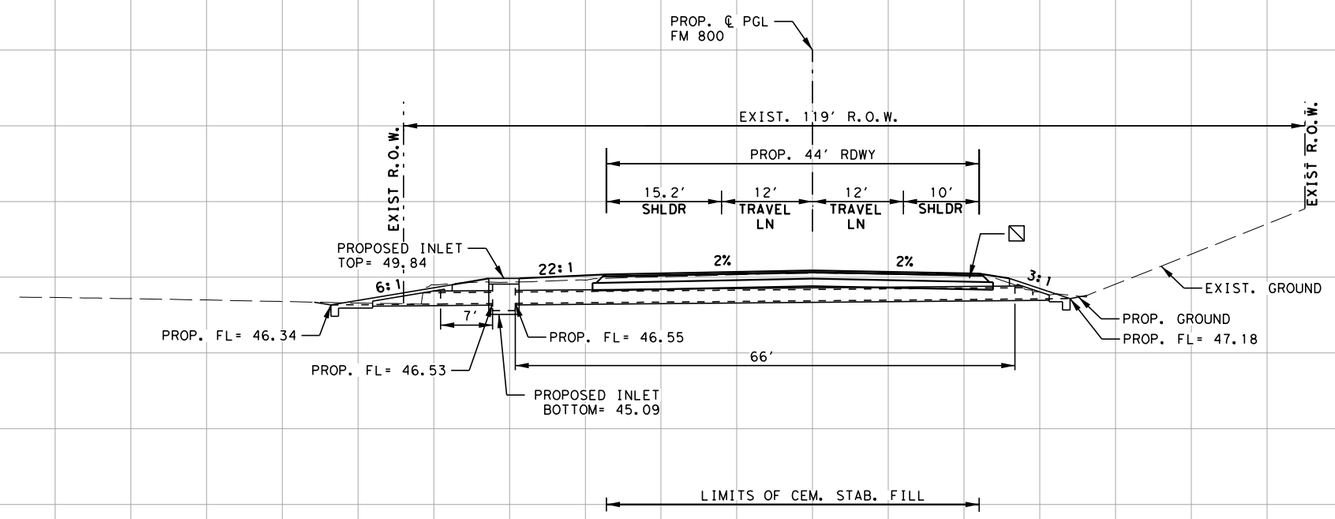
HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

SHEET 1 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		218
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

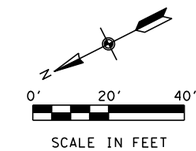
FM1479_CULV 01.dgn





STA. 277+40

PROP. 24" X 66.0' RCP (CL-III)
PROP. 24" X 6.9' RCP (CL-III)
W/1-3:1 S.E.T., 1-6:1 S.E.T.,
& 1-3'X3' PSL STYLE FG OVER 1-3'X3' PB



LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

CULVERT PLAN & PROFILE AT STA STA 277+40

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	219

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_CULV 02.dgn

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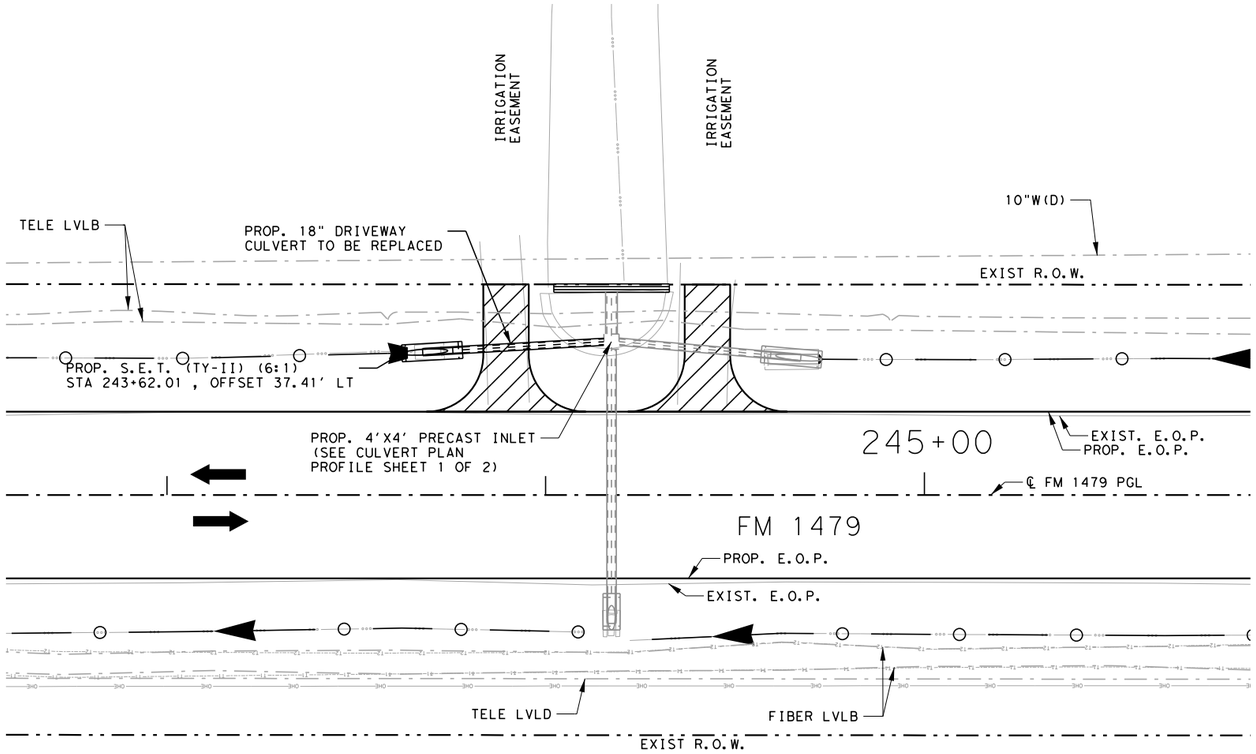
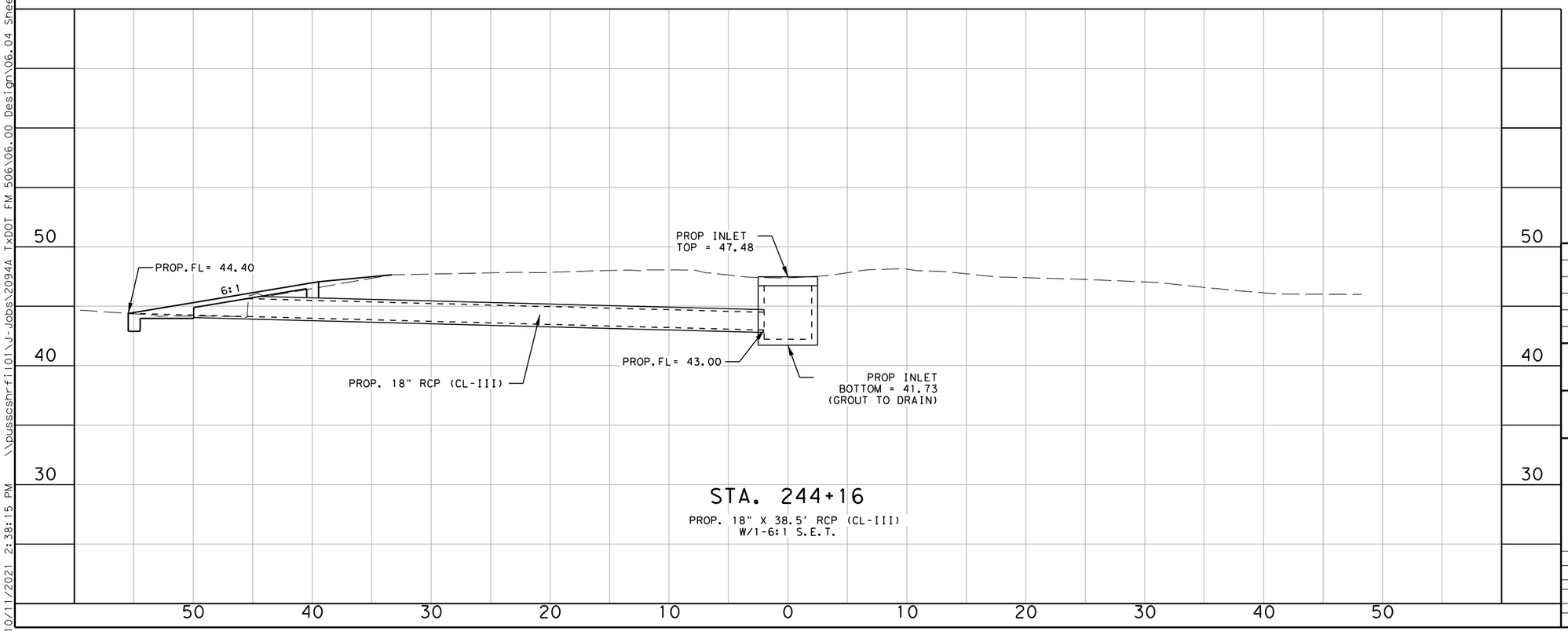
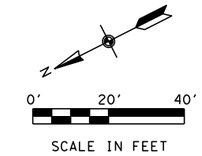




STA. 244+16

PROP. 18" X 38.5' RCP (CL-III)
W/1-6:1 S.E.T.



SCALE IN FEET

LEGEND

- * TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479
CULVERT PLAN & PROFILE DRIVEWAY CROSSING AT STA 244+16

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		220
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_DRWY 01.dgn

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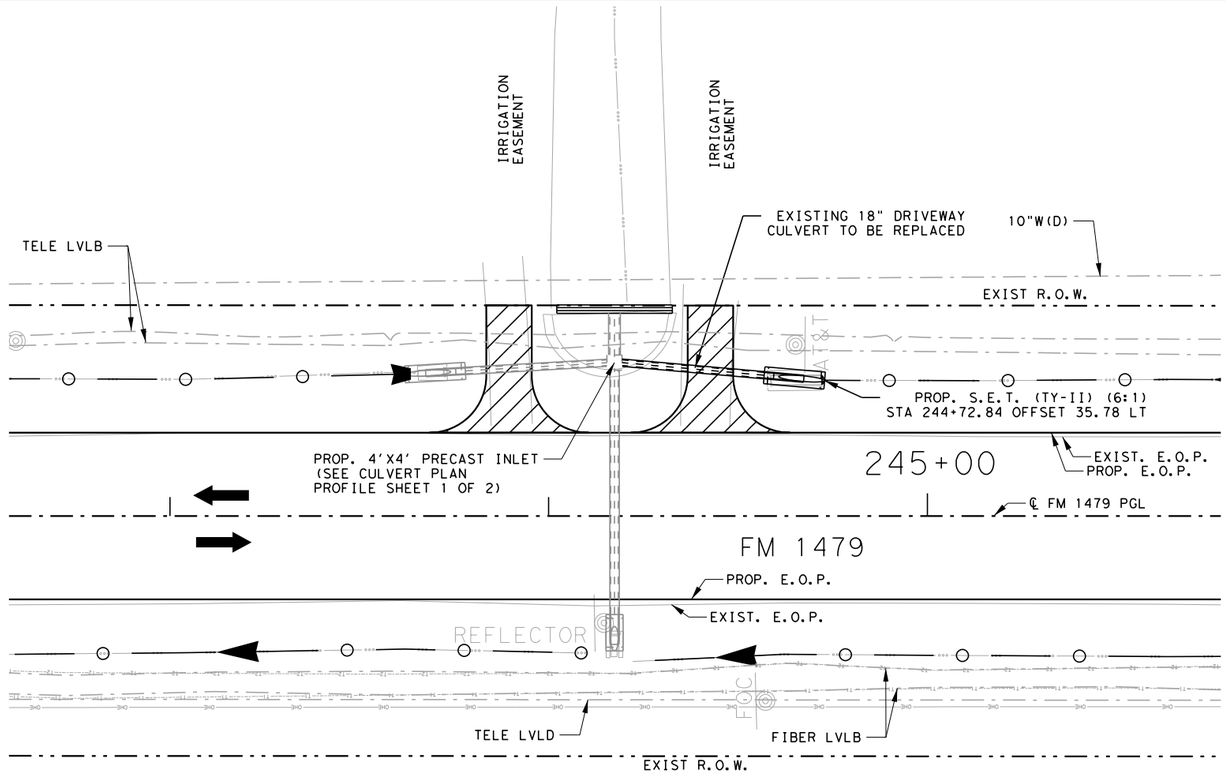
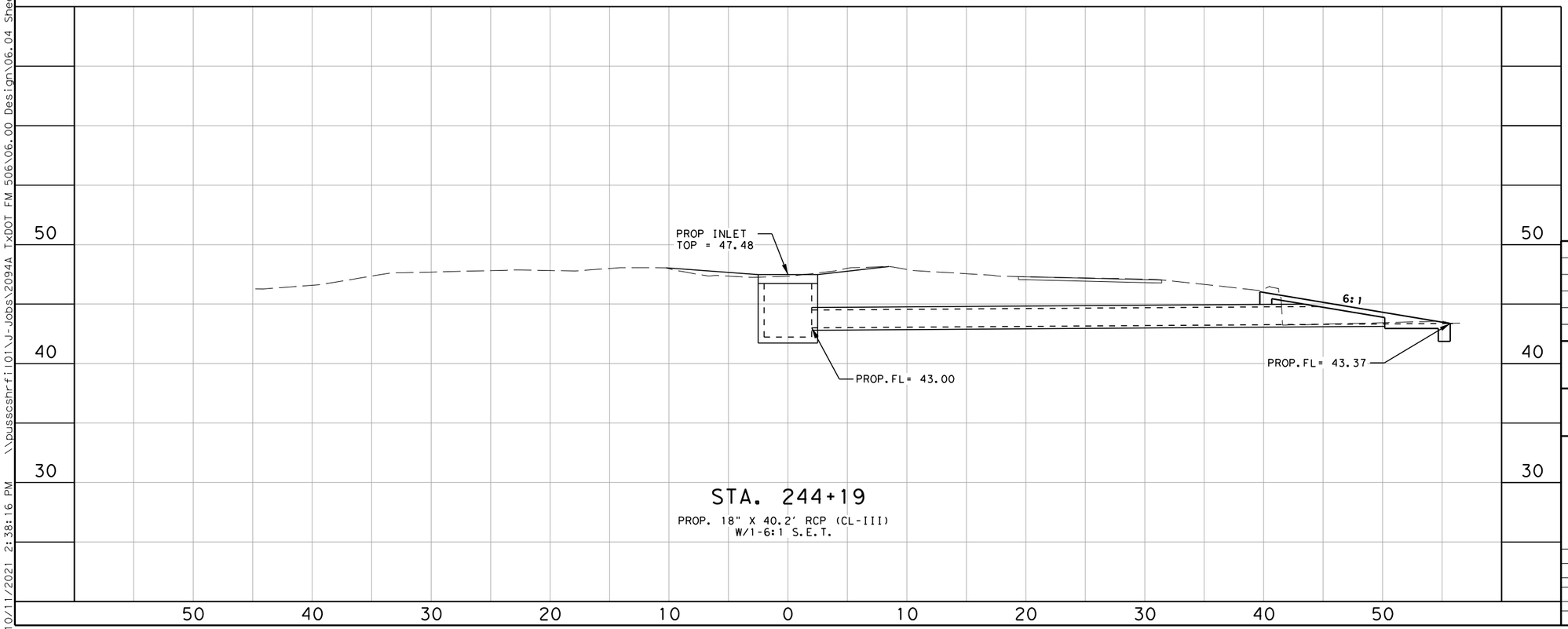




STA. 244+19

PROP. 18" X 40.2' RCP (CL-III)
W/1-6:1 S.E.T.

0' 20' 40'

SCALE IN FEET

LEGEND

- * TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
TODD M. MILBURN
101185
LICENSED PROFESSIONAL ENGINEER
10/05/21

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

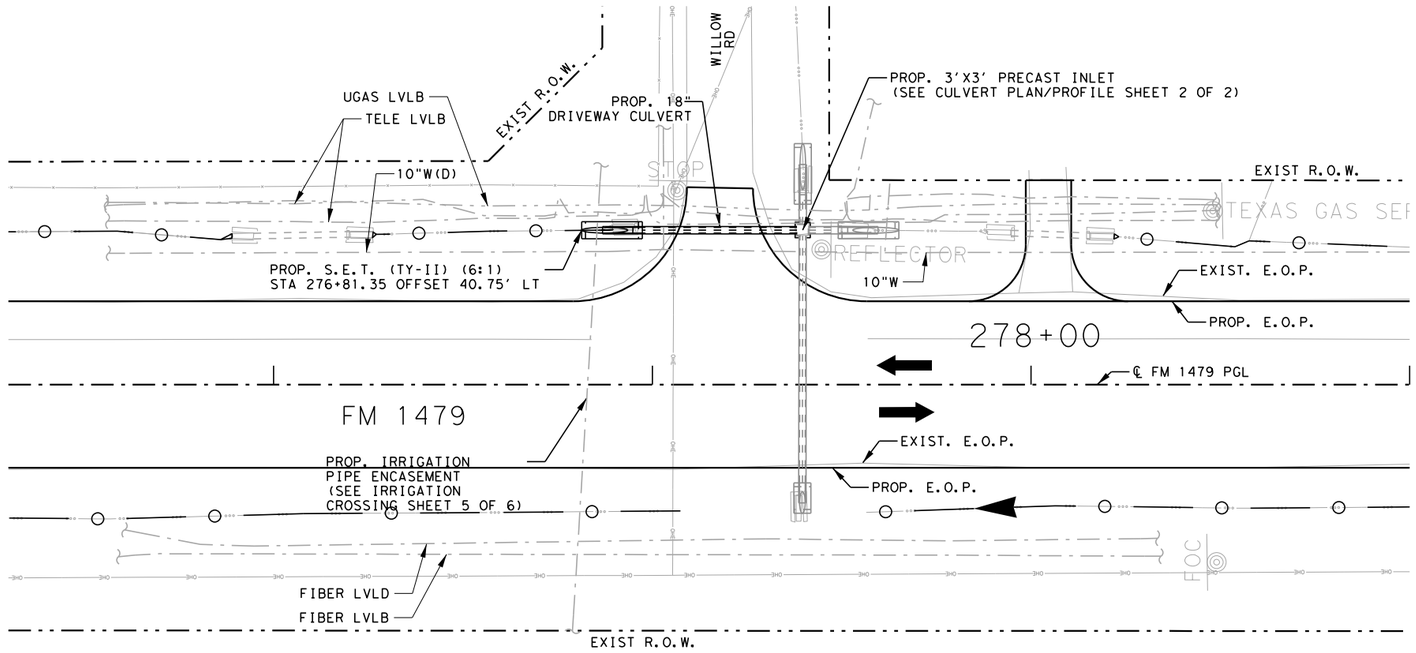
FM 1479
CULVERT PLAN & PROFILE DRIVEWAY CROSSING AT STA 244+19

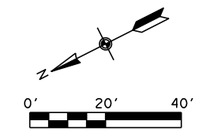
HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	221

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_DRWY 02.dgn



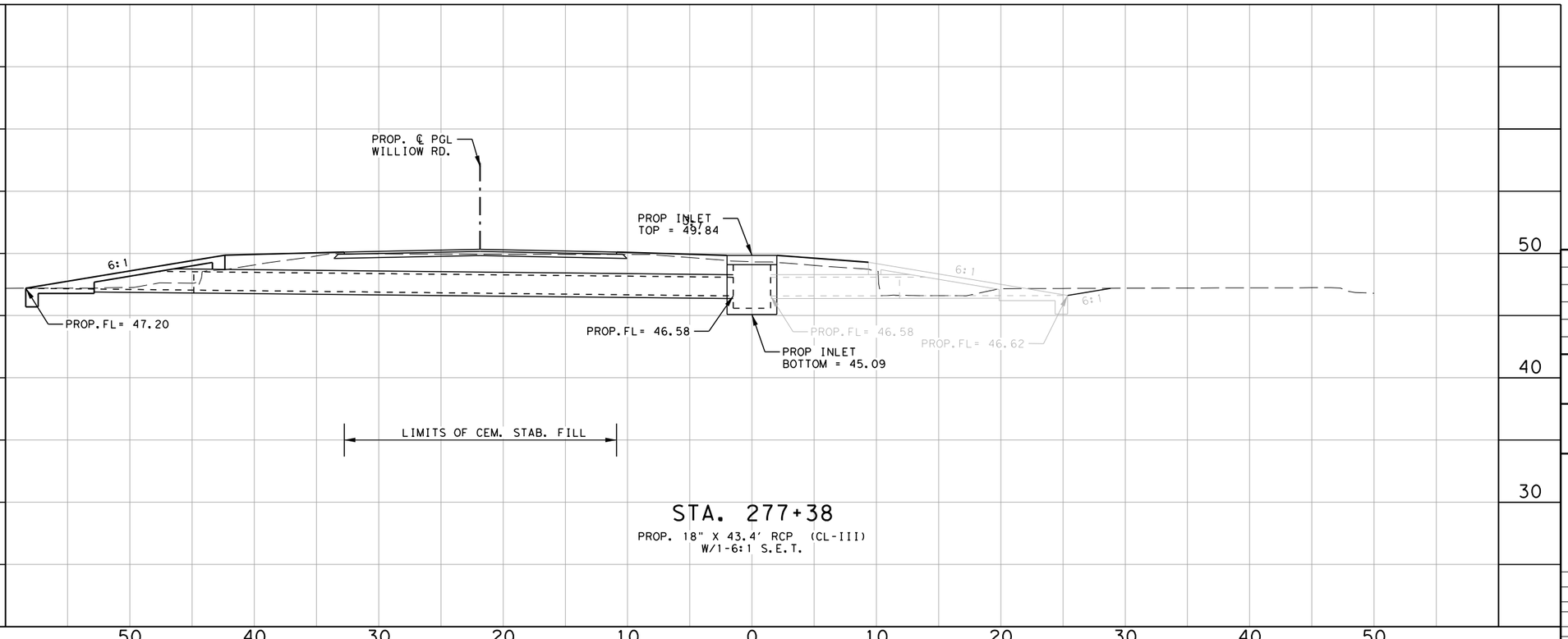


LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

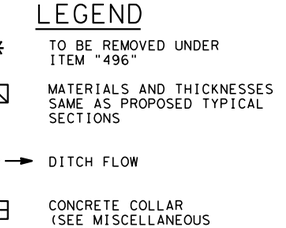
NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.



STA. 277+38

PROP. 18" X 43.4' RCP (CL-III)
W/1-6:1 S.E.T.



ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

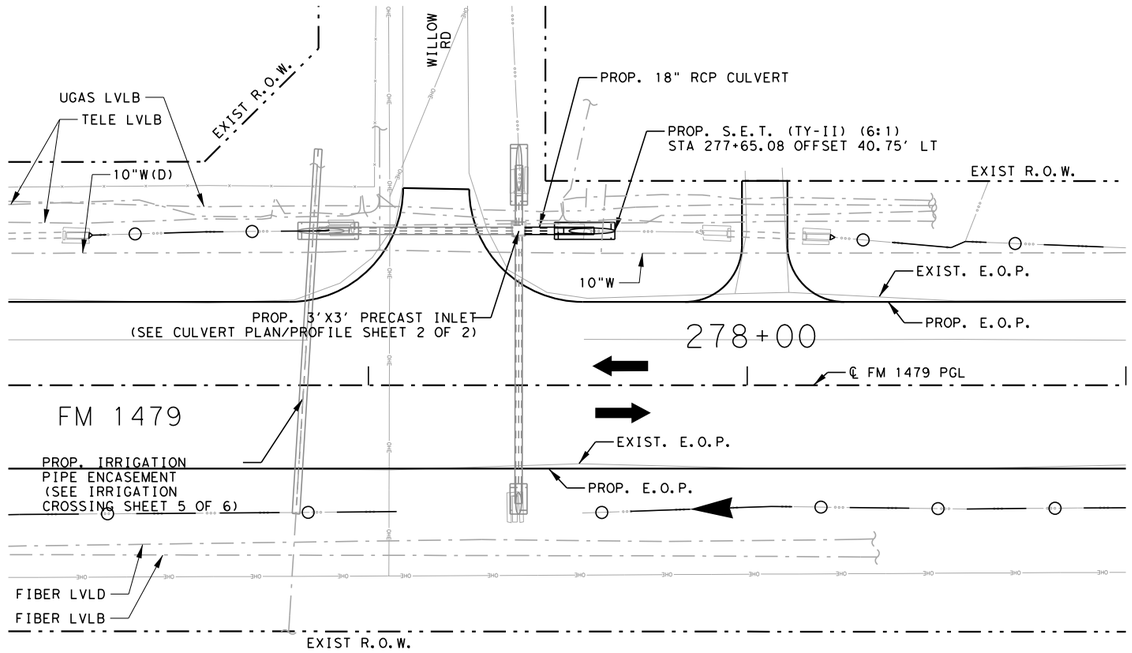
Texas Department of Transportation

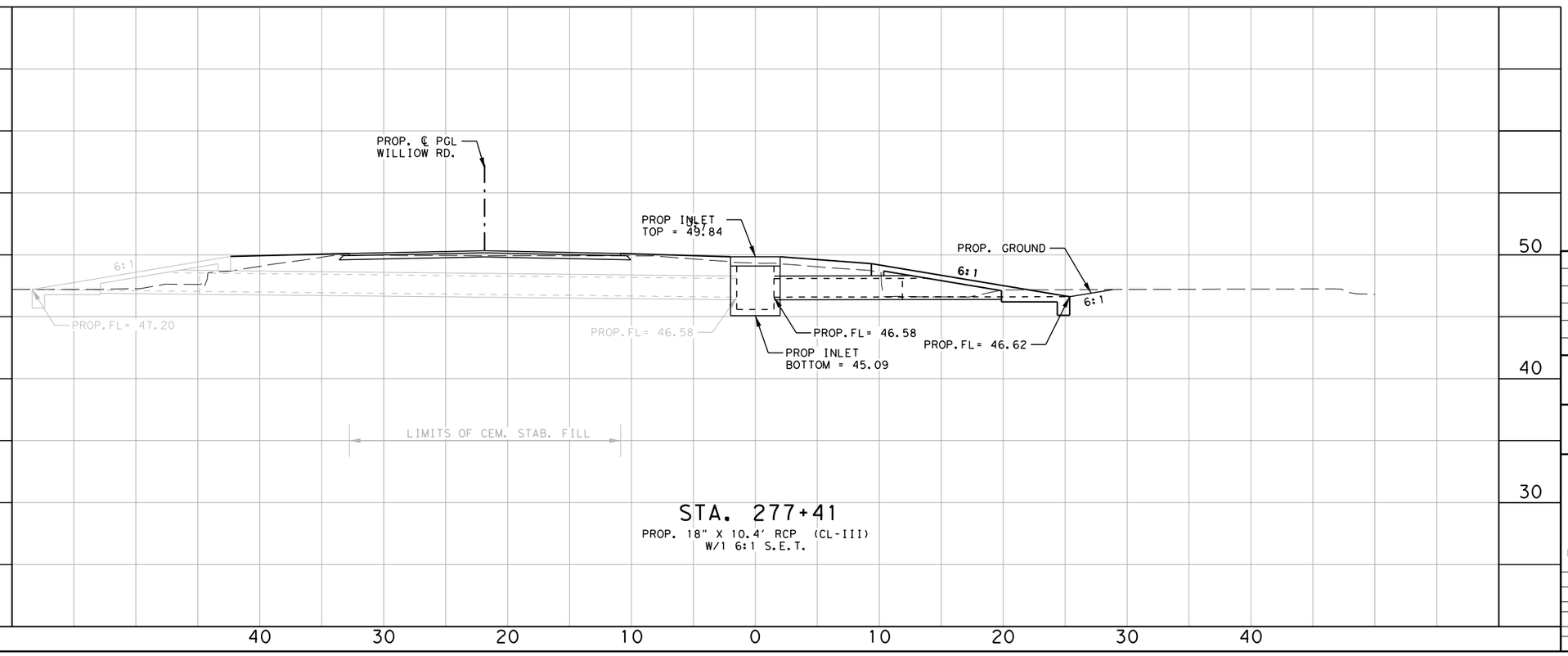
FM 1479
CULVERT PLAN & PROFILE DRIVEWAY CROSSING AT STA 277+38

HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		222
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

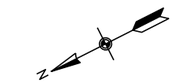
FM1479_DRWY 03.dgn





STA. 277+41

PROP. 18" X 10.4' RCP (CL-III)
W/1 6:1 S.E.T.



SCALE IN FEET

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE MISCELLANEOUS PIPE DETAILS)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.

2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479
CULVERT PLAN & PROFILE DRIVEWAY CROSSING AT STA 277+41

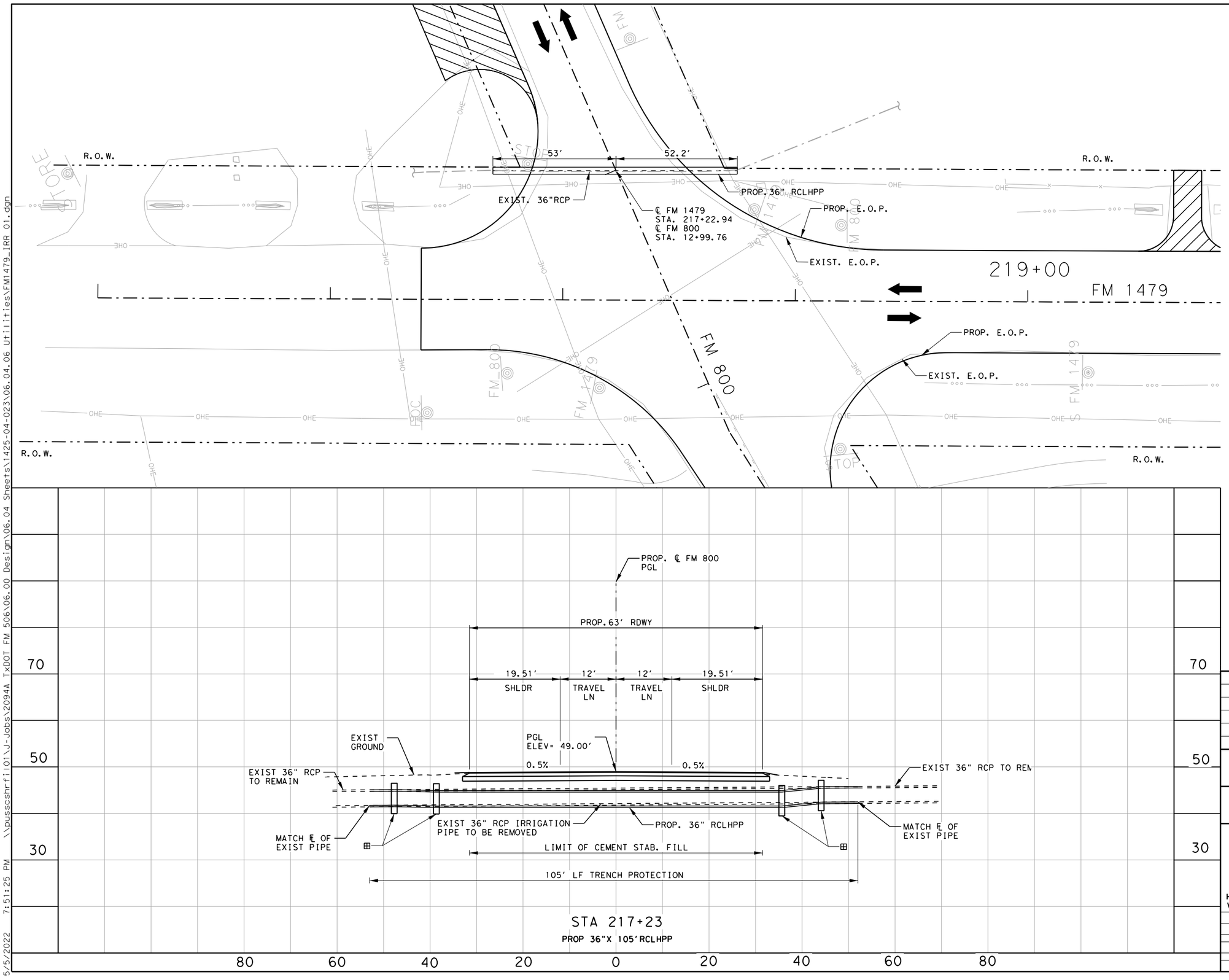
HORZ. PROFILE 1"=10'
VERT. PROFILE 1"=10'

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	223

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_DRWY 04.dgn



STA 217+23

PROP 36"X 105'RCLHPP

0' 20' 40'

SCALE IN FEET

LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
JAMES REISER
67287
REGISTERED PROFESSIONAL ENGINEER

5/5/2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479
IRRIGATION CROSSING
STA 217+23

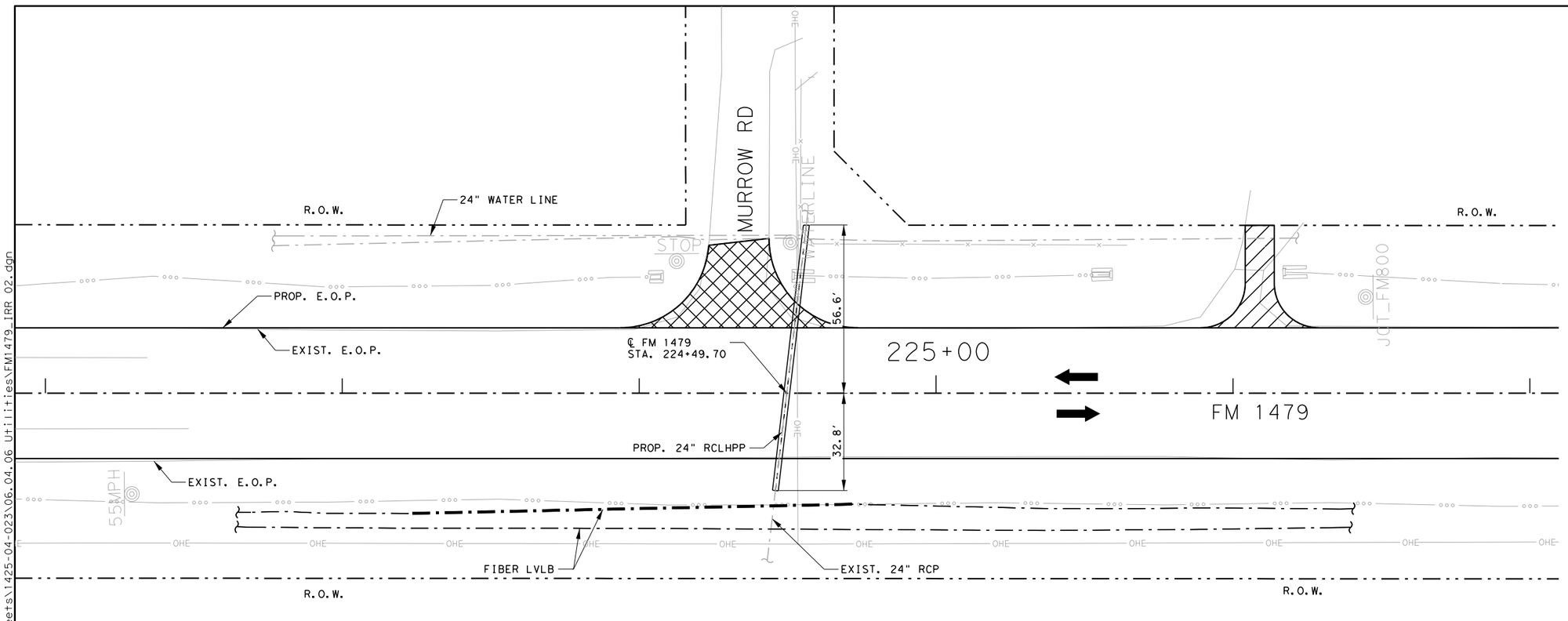
HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

SHEET 1 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	224

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_IRR 01.dgn



0′ 20′ 40′

SCALE IN FEET

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

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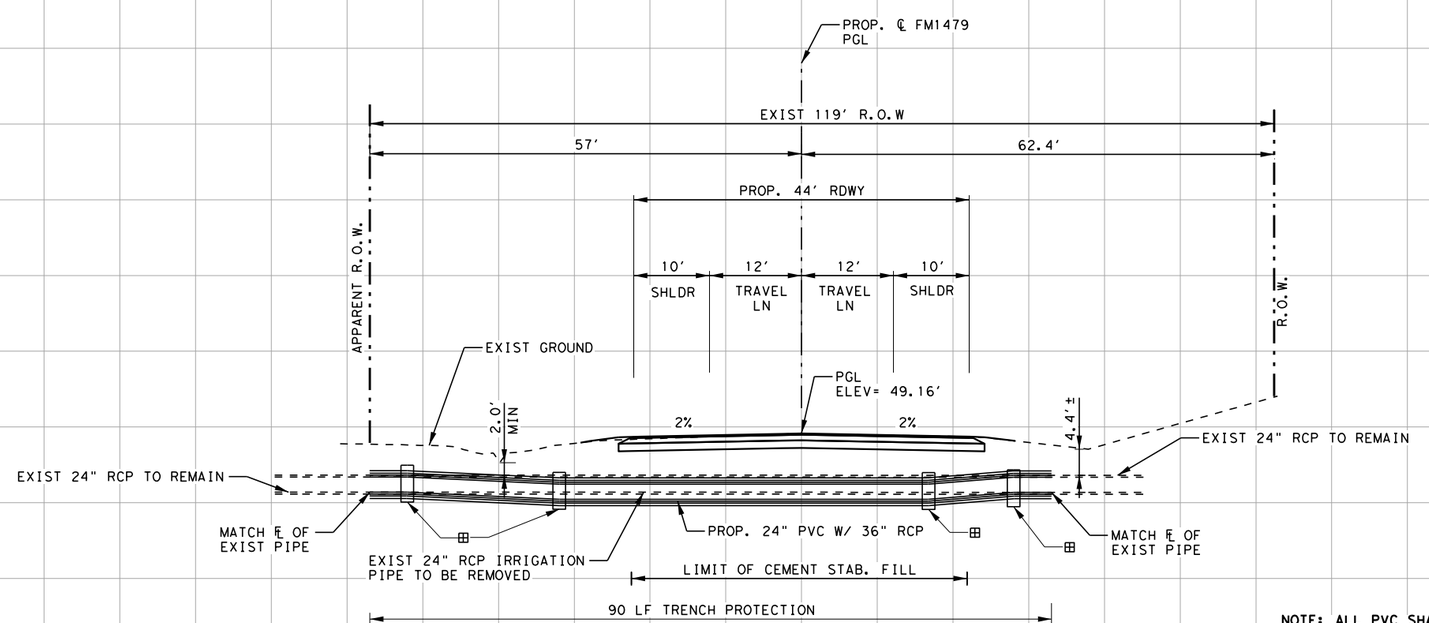

NOTE: ALL PVC SHALL BE PVC PIP SDR 32.5 PIPE

STA 224+50

PROP. 24" X 90' PVC PIP W/ 36" X 90' RCP CL-III

STATE OF TEXAS
JAMES REISER
67287
LICENSED PROFESSIONAL ENGINEER

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479
IRRIGATION CROSSING STA 224+50

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

SHEET 2 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		225
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_IRR 02.dgn

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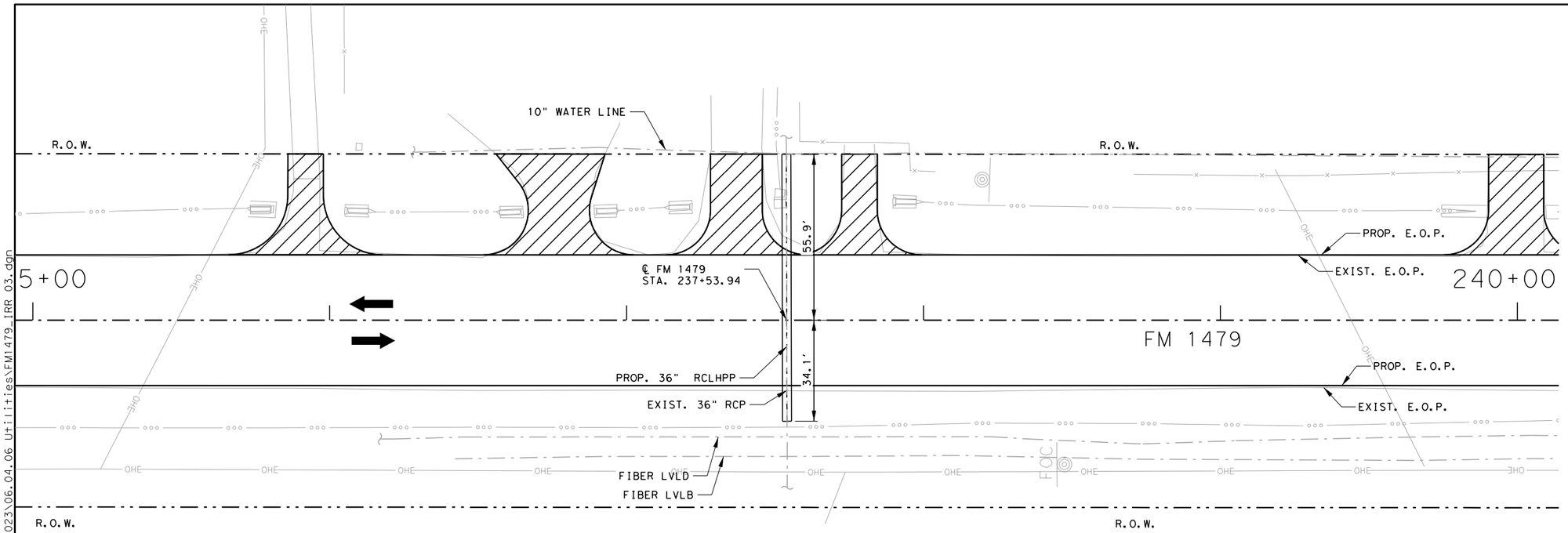

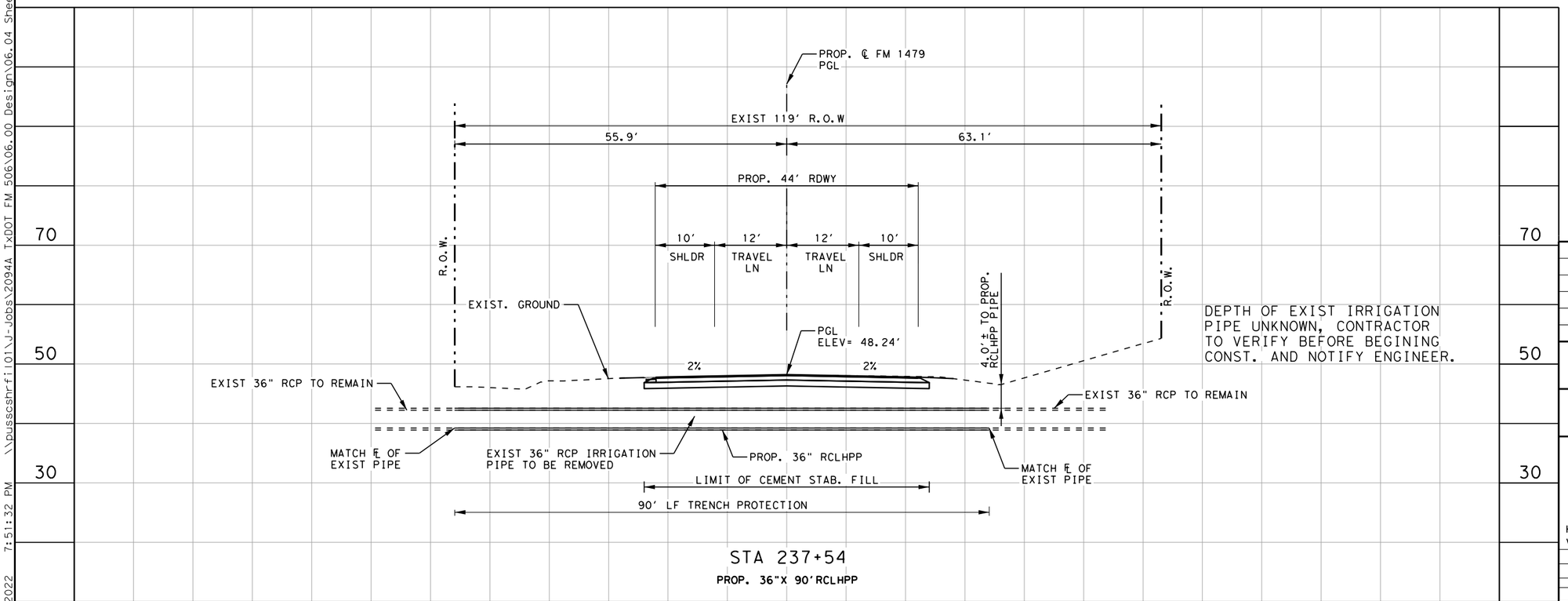

0' 20' 40'

SCALE IN FEET

LEGEND

- * — TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
JAMES REISER
97287
PROFESSIONAL ENGINEER

5/5/2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479
IRRIGATION CROSSING STA 237+54

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'
SHEET 3 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		226
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_IRR 03.dgn

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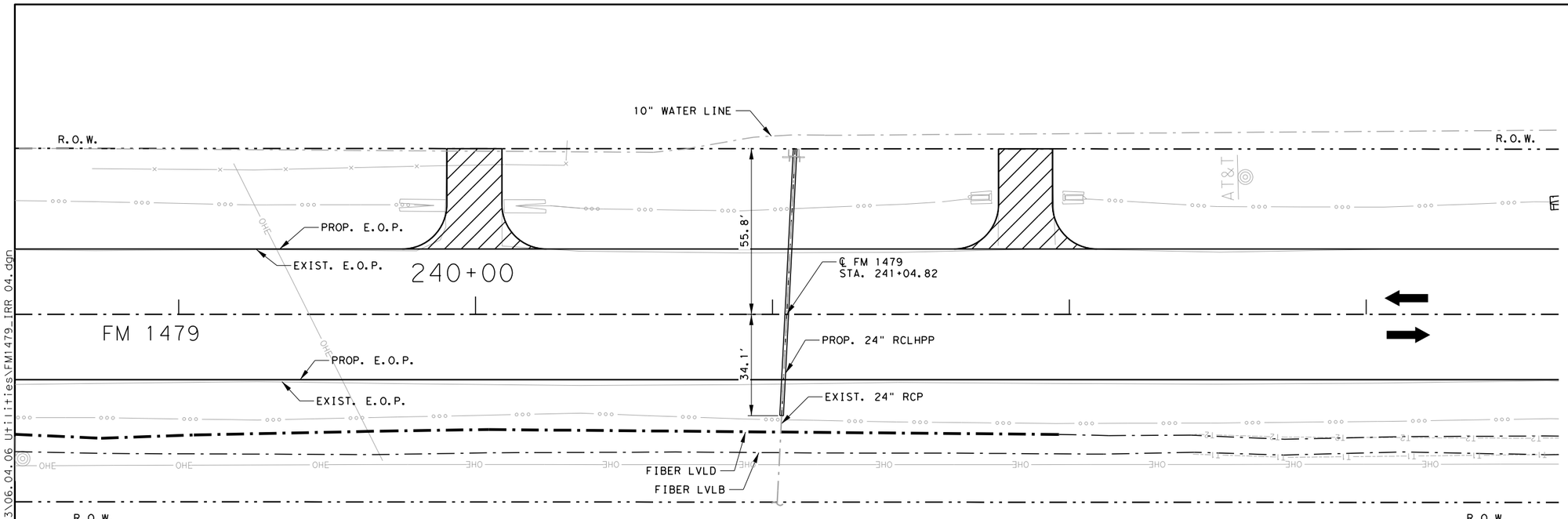

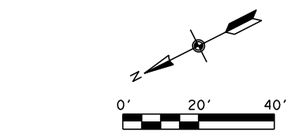

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

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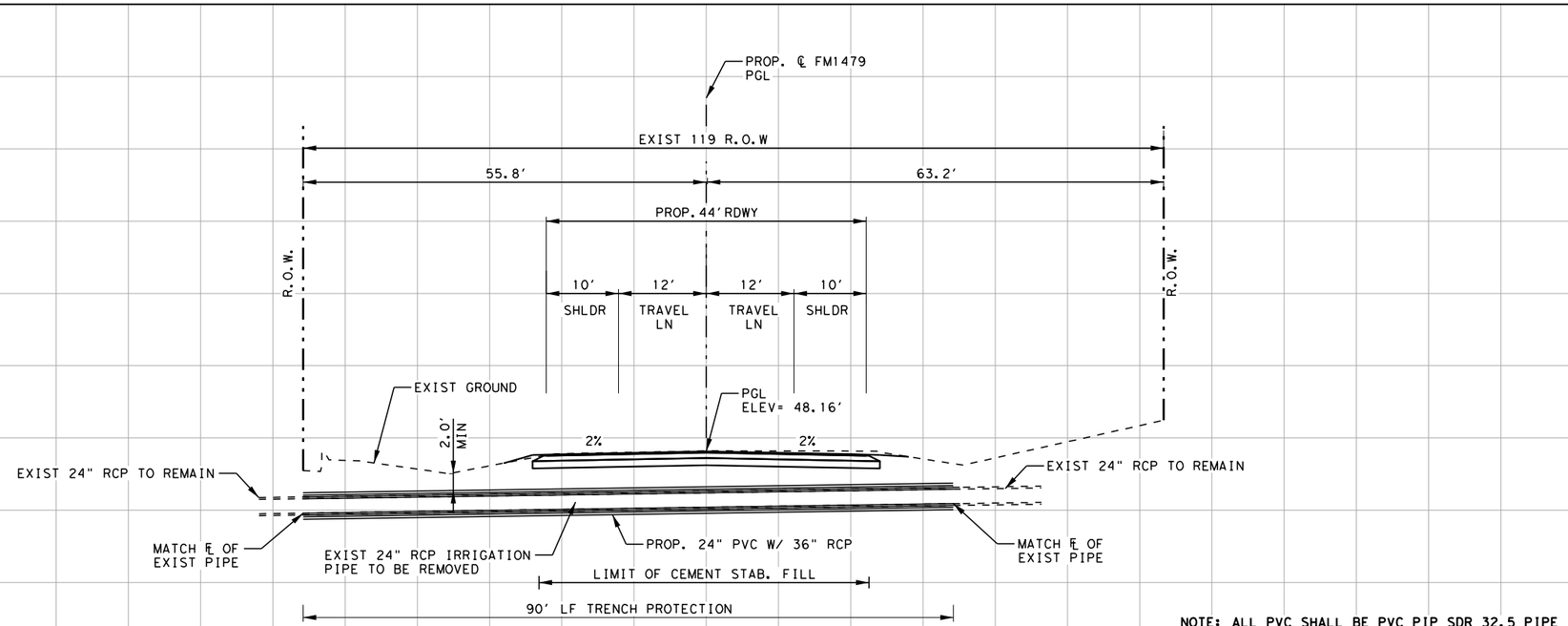


NOTE: ALL PVC SHALL BE PVC PIP SDR 32.5 PIPE

STA 241+05

PROP. 24" X 90' PVC PIP W/ 36" X 90' RCP CL-III

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

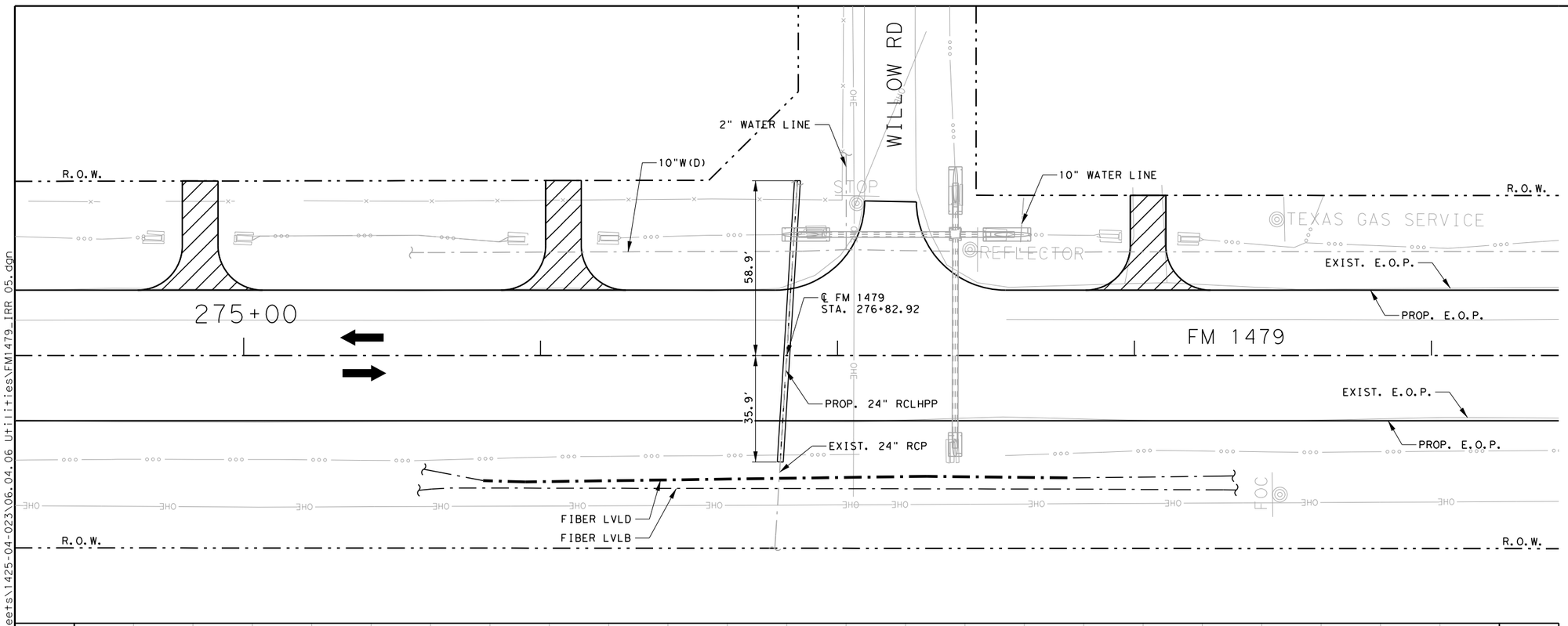
Texas Department of Transportation

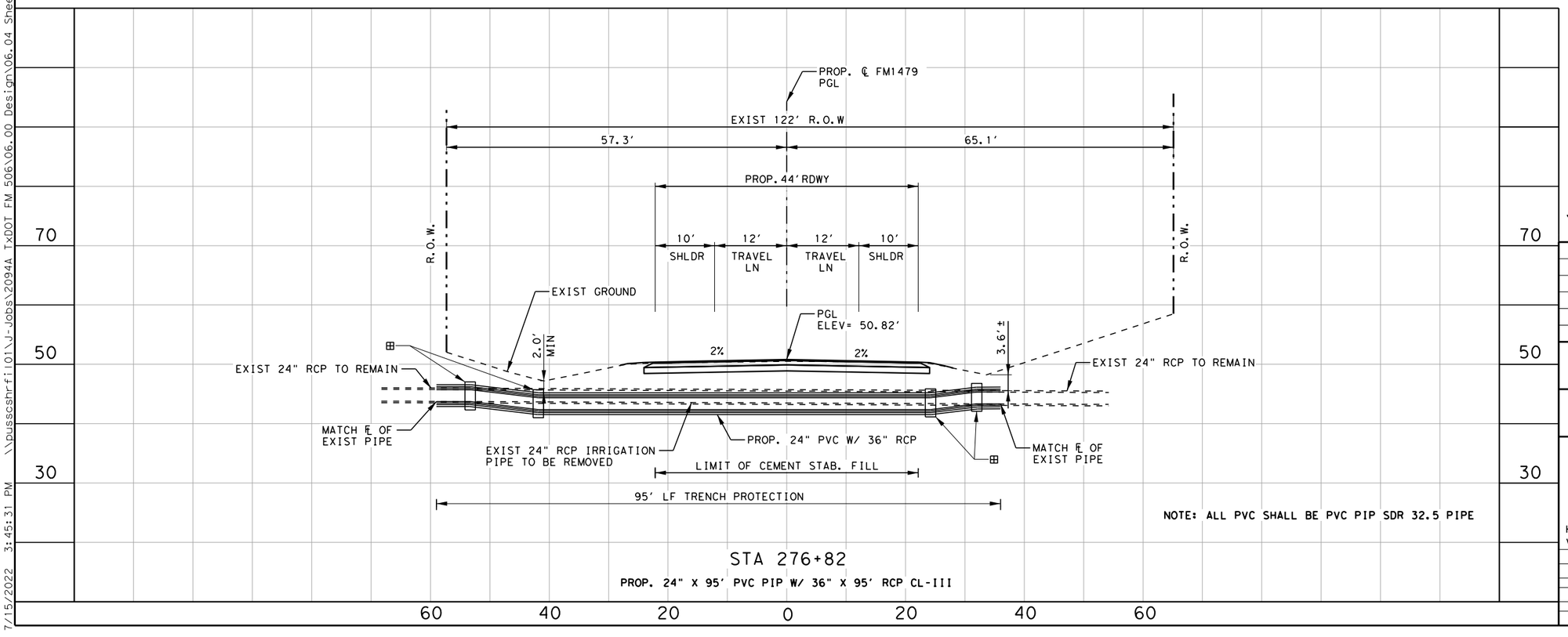
FM 1479
IRRIGATION CROSSING STA 241+05

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'
SHEET 4 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		227
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_IRR 04.dgn

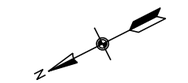




NOTE: ALL PVC SHALL BE PVC PIP SDR 32.5 PIPE

STA 276+82

PROP. 24" X 95' PVC PIP W/ 36" X 95' RCP CL-III



SCALE IN FEET

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- DITCH FLOW
- CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

July 16, 2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

IRRIGATION CROSSING STA 276+82

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'

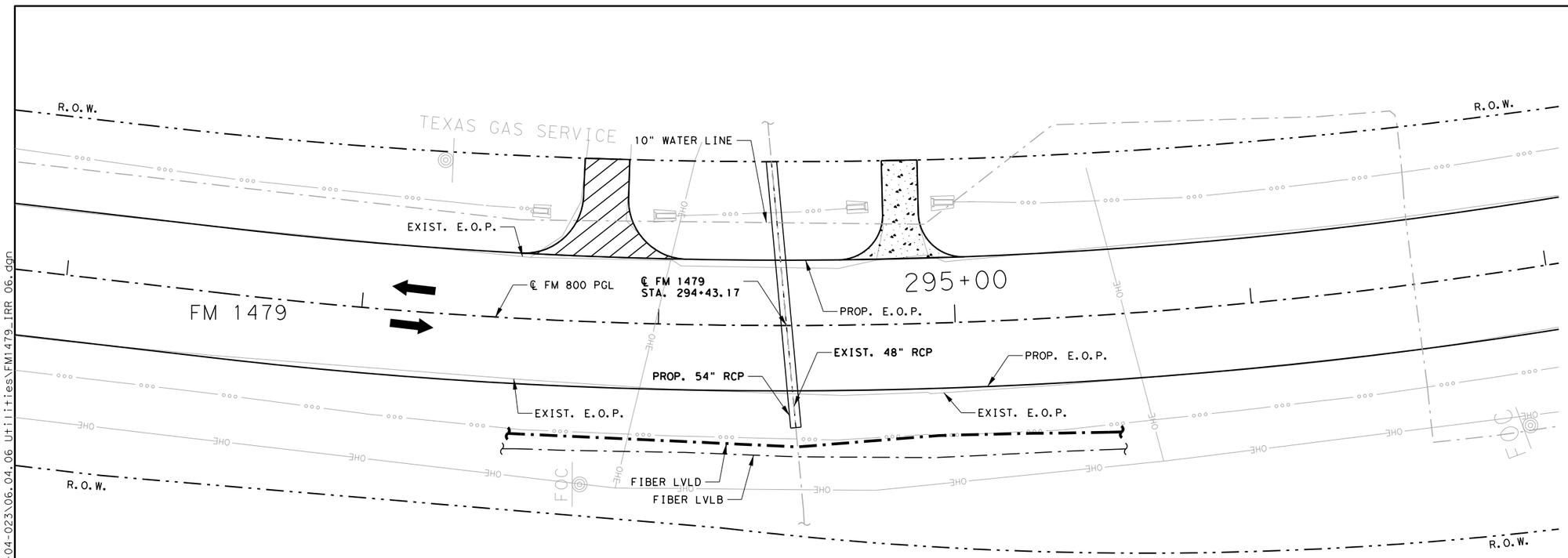
SHEET 5 OF 6

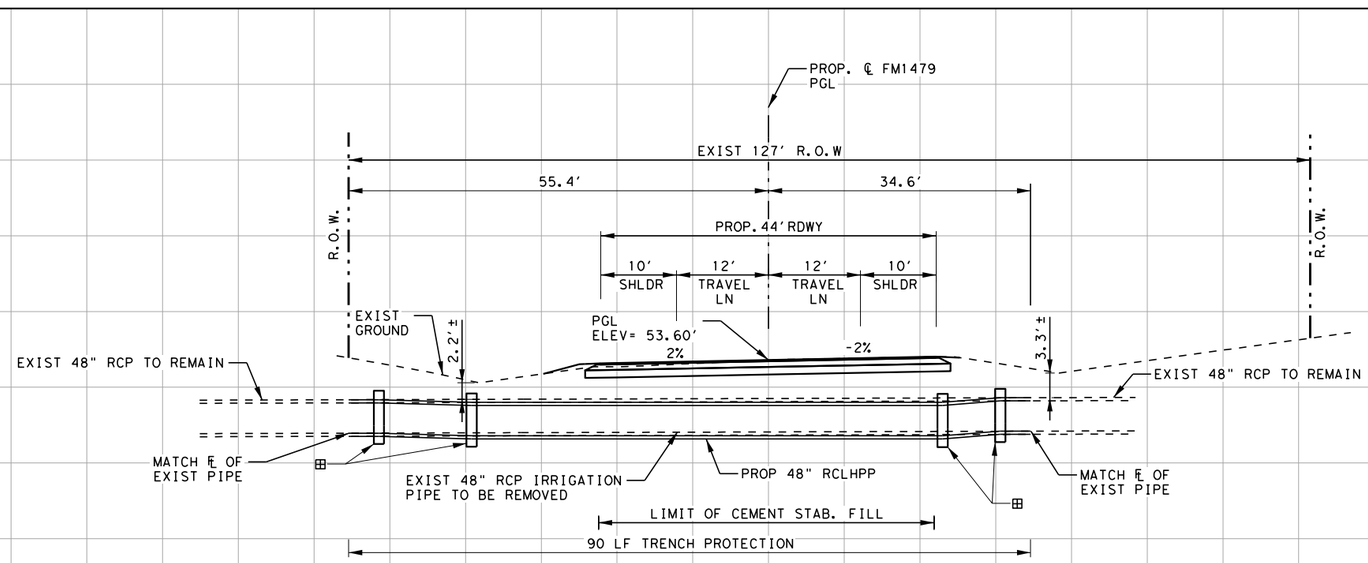
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	228

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_IRR 05.dgn

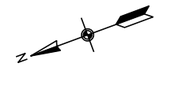
7/15/2022 3:45:31 PM \\pusscshrfil01\J-Jobs\2094A TxDOT FM 506\06.00 Design\06.04 Sheets\1425-04-023\06.04.06 Utilities\FM1479_IRR 05.dgn





STA 294+43

PROP. 48" X 90' RCLHPP



SCALE IN FEET

LEGEND

- ✱ TO BE REMOVED UNDER ITEM "496"
- ▨ MATERIALS AND THICKNESSES SAME AS PROPOSED TYPICAL SECTIONS
- •—•→ DITCH FLOW
- ⊞ CONCRETE COLLAR (SEE IRRIGATION CROSIING DETAIL SHEET)

NOTES:

1. NO NEW HYDRAULICS DATA NEEDED FOR THIS PROJECT. REPLACING EXIST PIPES SAME OR LARGER SIZE AND TYPE.
2. ALL INFORMATION ON PLANS IS FOR "INFORMATION PURPOSE ONLY." CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
JAMES REISER
67287
PROFESSIONAL ENGINEER
5/5/2022

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 1479

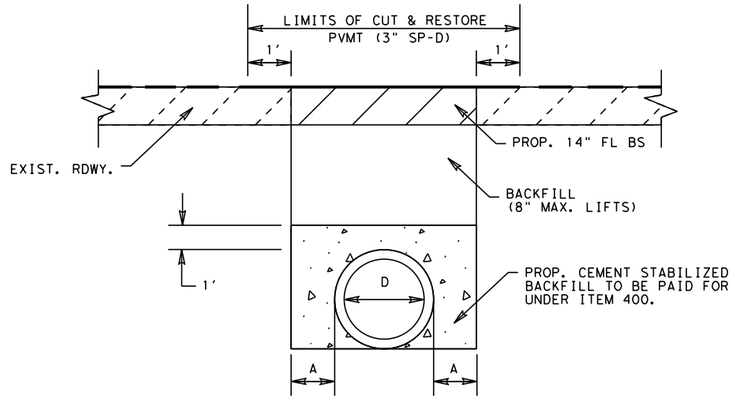
IRRIGATION CROSSING STA 294+43

HORZ. PROFILE 1"=20'
VERT. PROFILE 1"=20'
SHEET 6 OF 6

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	229

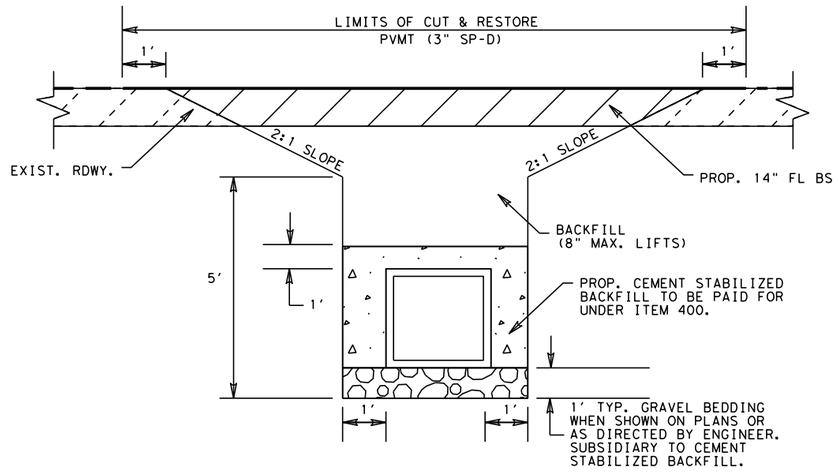
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_IRR 06.dgn



FOR LESS THAN 5' IN DEPTH

SINGLE REINFORCED CONCRETE PIPE
TYPICAL BACKFILL DETAIL

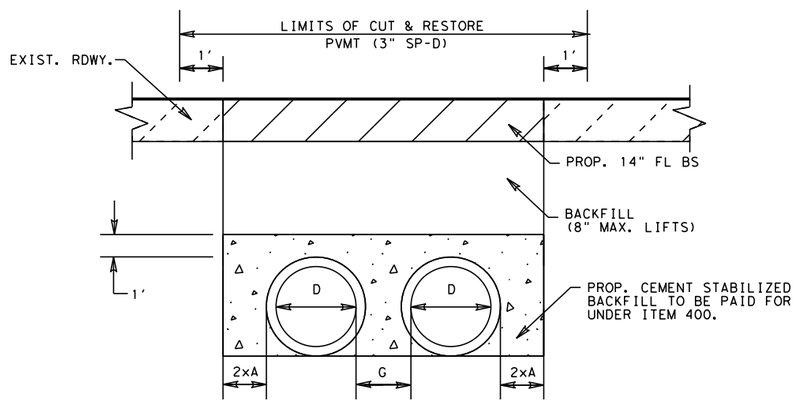


FOR GREATER THAN 5' IN DEPTH

SINGLE BOX CULVERT
TYPICAL BACKFILL DETAIL

NOTE:

1. FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL ON EACH SIDE OF THE PIPE.
2. FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL ON EACH SIDE OF THE PIPE.

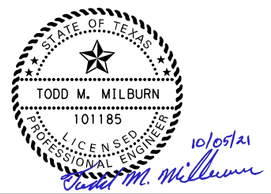


FOR LESS THAN 5' IN DEPTH

MULTIPLE REINFORCED CONCRETE PIPES
TYPICAL BACKFILL DETAIL

D (IN)	A (FT)	WALL THICKNESS (CL-III)	PIPE CULVERT SPACING (G)
18"	1'	2 ½"	1'-2"
24"	1'	3"	1'-7"
36"	1'	4"	2'-1"
42"	1'	4 ½"	2'-4"
48"	2'	5"	2'-7"
60"	2'	6"	3'-3"

REFER TO STANDARD CH-PW-0 FOR PIPE SPACING.



ISSUE RECORD		
NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

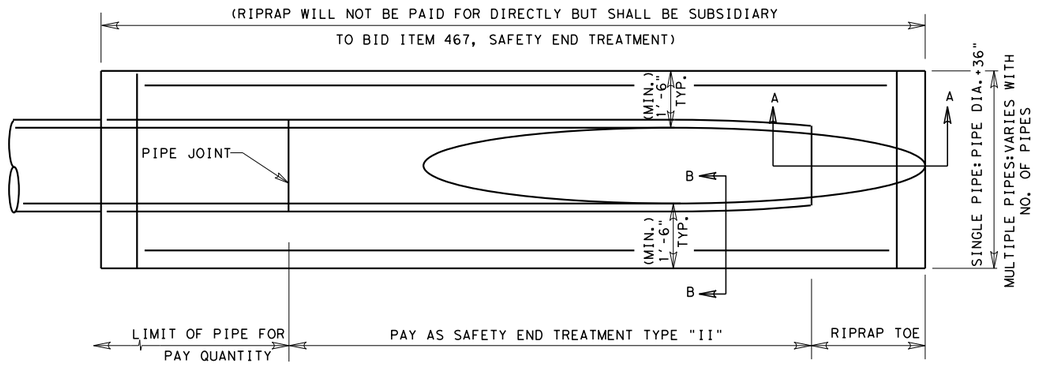
FM 506

CULVERT BACKFILL DETAIL

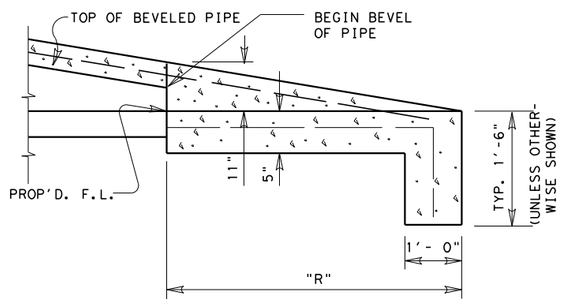
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		230
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

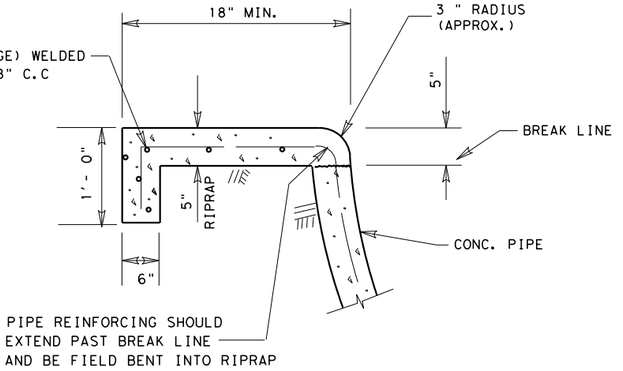
FM506 Culvert Backfill Details.dgn



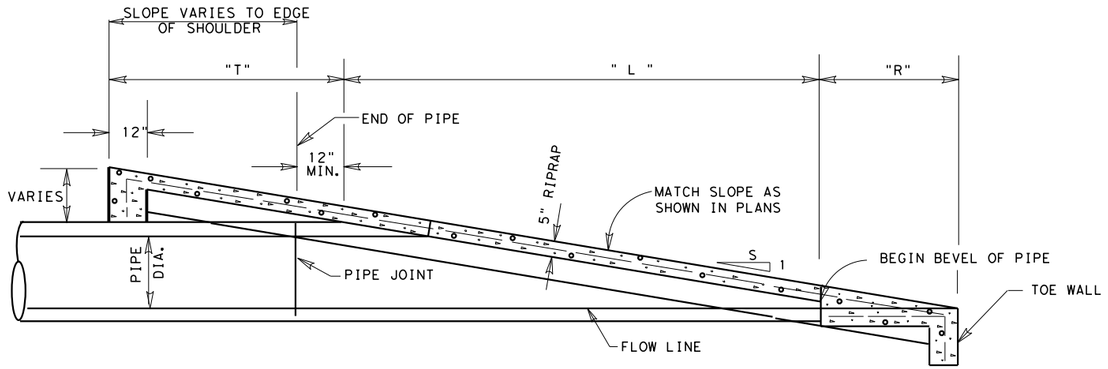
PLAN VIEW



SEC. A-A



SEC. B-B



ELEVATION
SAFETY END TREATMENT

SAFETY END TREATMENT PIPE LENGTHS

PIPE DIA. (IN.)	"L"			
	3:1	4:1	5:1	6:1
12	2'-0"	2'-8"	3'-4"	4'-0"
15	2'-9"	3'-8"	4'-7"	5'-6"
18	3'-6"	4'-8"	5'-10"	7'-0"
24	5'-1½"	6'-10"	8'-6½"	10'-3"
30	6'-9"	9-0"	11'-3"	13'-6"
36	8'-6"	11'-4"	14'-2"	17'-0"
42	10'-1½"	13'-6"	16'-10½"	20'-3"
48	11'-9"	15'-8"	19'-7"	23'-6"

⊗ DRIVEWAYS & TURNOUTS ARE 6:1 ONLY

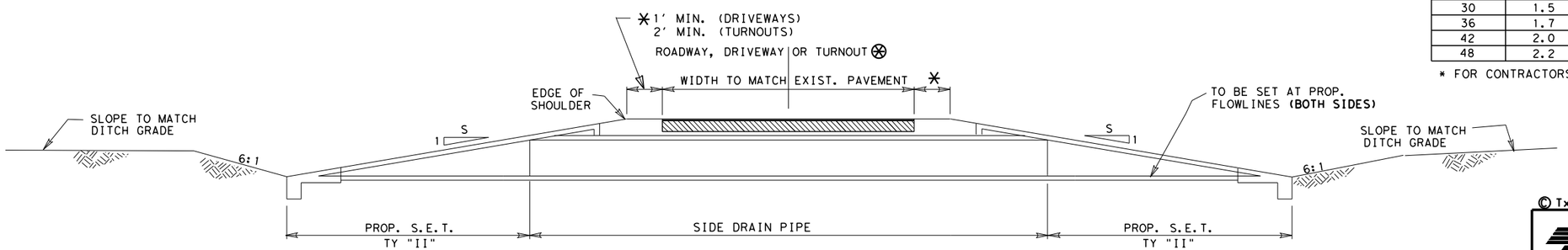
RIPRAP TOE LENGTHS

SLOPE	" R "	"T"
3:1	2'-9"	1'-9"
4:1	3'-8"	2'-4"
5:1	4'-7"	2'-11"
6:1	5'-6"	3'-6"

ESTIMATED RIPRAP VOLUME (CY)

PIPE DIA. (IN.)				
	3:1	4:1	5:1	6:1
12	.9	1.1	1.3	1.6
15	1.0	1.2	1.5	1.8
18	1.1	1.4	1.6	1.9
24	1.3	1.6	2.0	2.3
30	1.5	1.9	2.3	2.7
36	1.7	2.2	2.7	3.2
42	2.0	2.5	3.1	3.6
48	2.2	2.8	3.4	4.1

* FOR CONTRACTORS INFORMATION ONLY (SINGLE PIPE)



TYPICAL SIDEDRAIN SECTION

NOTE:

ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".

PHARR DISTRICT STANDARDS

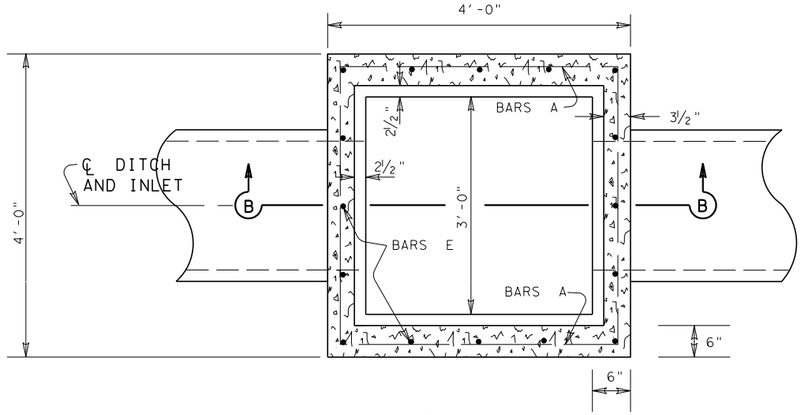
TEXAS DEPARTMENT OF TRANSPORTATION

SAFETY END TREATMENT DETAILS

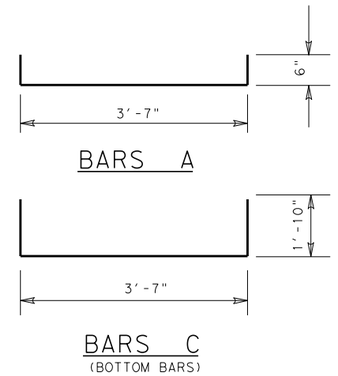
REV. 9/16 SET.DGN

FED.RD. DIV.NO.	STATE AID PROJECT NO.	FILE NO.	SHEET NO.
6	FDN		231

STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030,ETC	FM 506,ETC

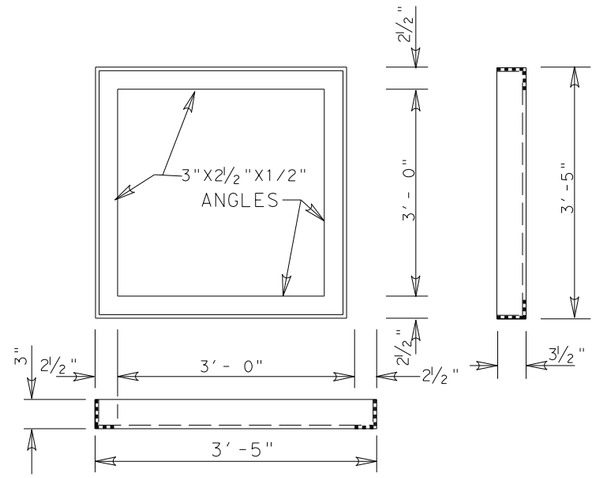


TOP VIEW



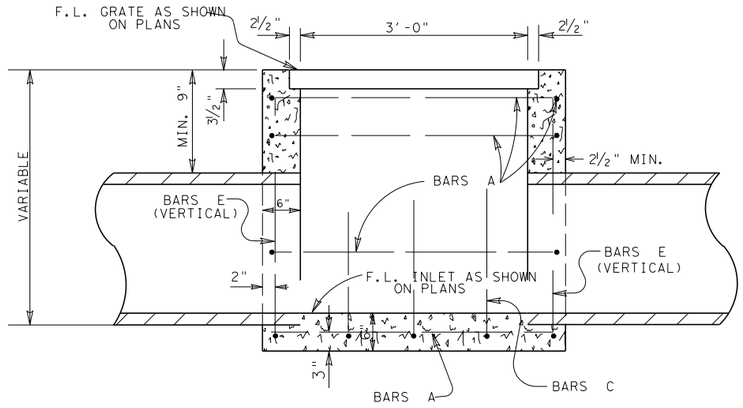
REINFORCING STEEL DETAILS

NOTE: ALL STEEL TO BE NO. 4 BARS ON 12" SPACING IN BOTH DIRECTIONS

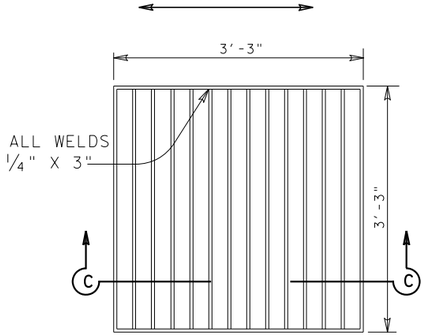


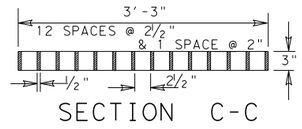
FRAME DETAIL

FRAME INLET GRATE TO BE SUBSIDIARY



SECTION B-B
INLET TY "C"





SECTION C-C

WELDED STEEL INLET GRATE

GENERAL NOTES:
TY "C" INLET TO BE USED
FOR PIPES LESS OR EQUAL TO 24"

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

TY "C" INLET DETAILS

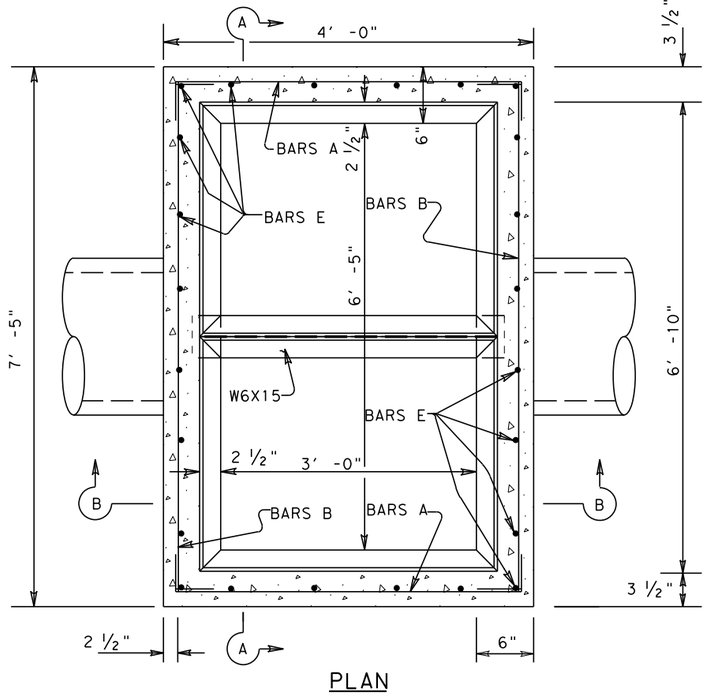
REV. 4/02

INLETC.DGN

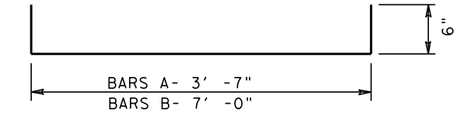
FED.RD/DIV.NO.	FEDERAL AID PROJECT NO.	FILE NO.	SHEET NO.
6			232

STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030	FM 506, ETC

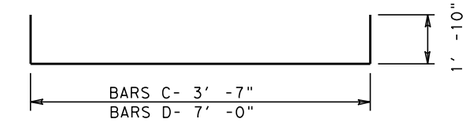
AD-76-0



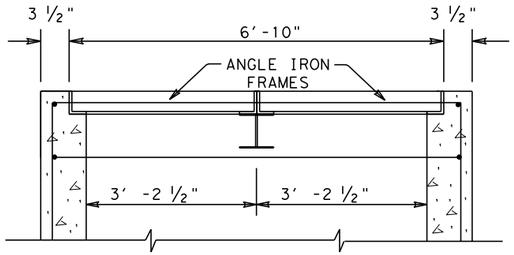
PLAN



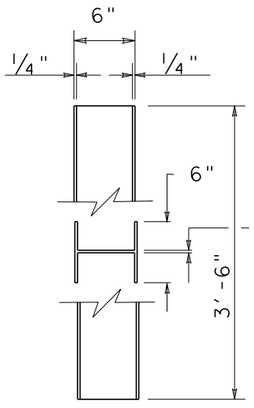
BARS A & B



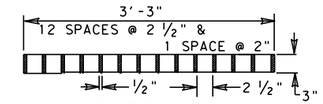
BARS C & D



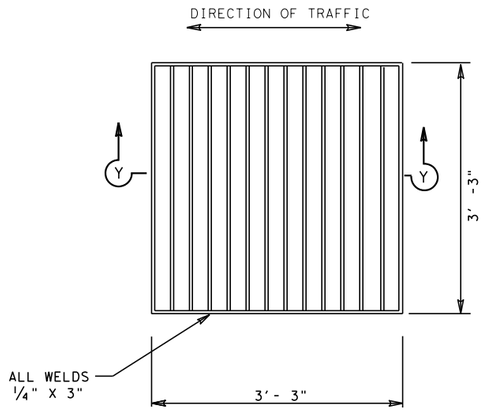
SEC. A-A



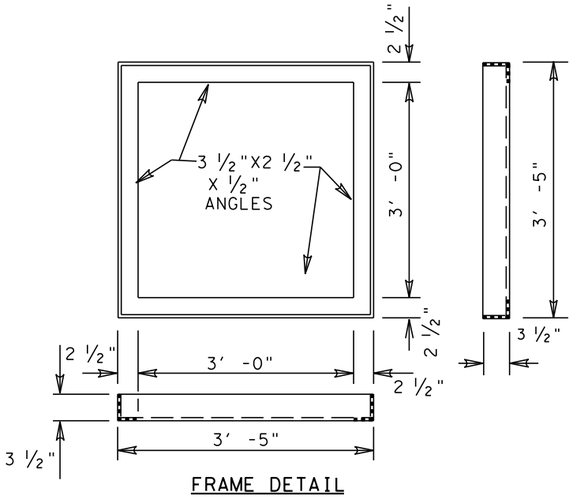
I-BEAM DETAILS
W 6 X 15



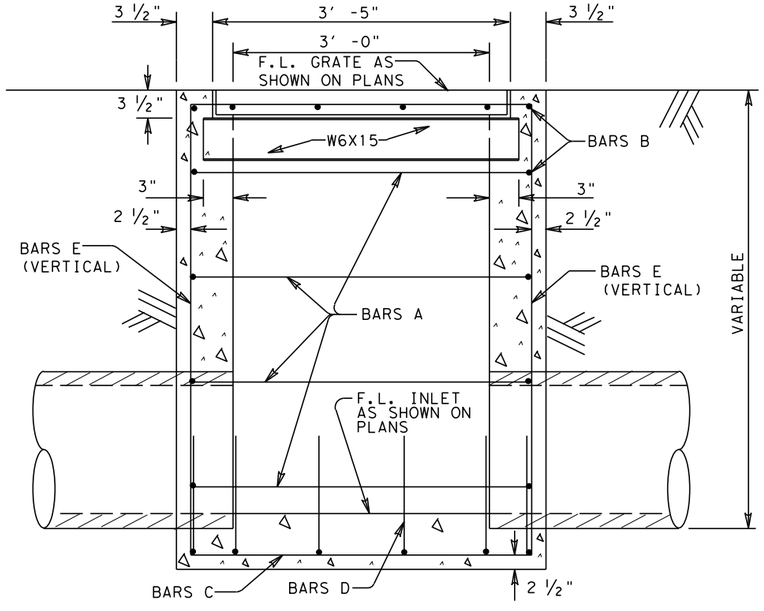
SECTION Y-Y



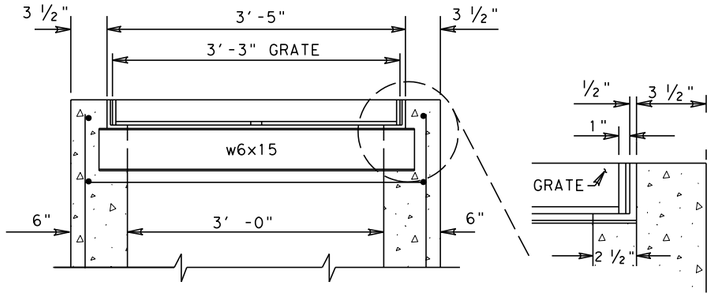
SECTION Y-Y
GRATE DETAILS



FRAME DETAIL
TWO FRAMES PER INLET
TO BE SUBSIDIARY TO INLET ITEM



SEC. B-B



SEC. B-B
(DETAIL W/GRATE)

NOTE: ALL STEEL REINFORCING TO BE NO. 4 BARS ON 1' -0" SPACING IN BOTH DIRECTIONS
ALL STEEL TO BE GR. 60.

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

INLET TY "CC" DETAIL

REV. 03/04

INLETCC.DGN

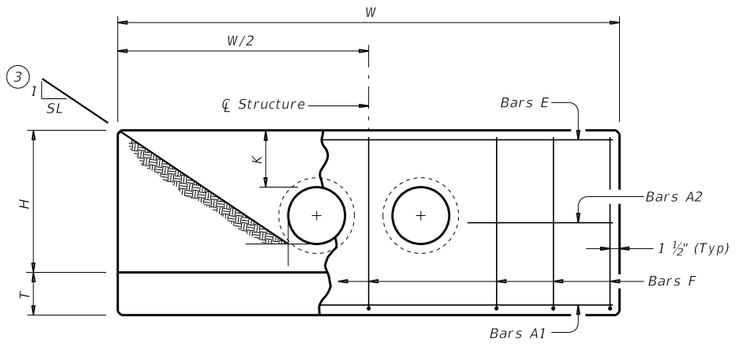
FED. RD. DIV. NO.	FILE NO.	PROJECT NO.	SHEET NO.
6			233

STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	CAMERON	0872	04	030	FM 506, ETC

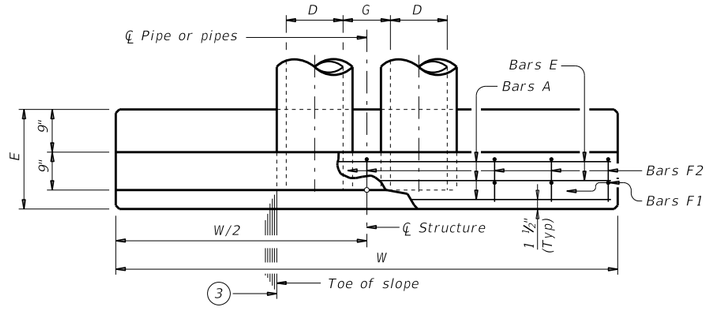
DATE:
FILE:

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

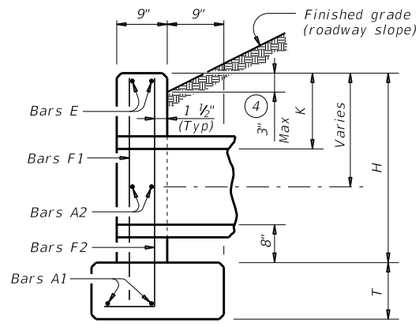
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4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



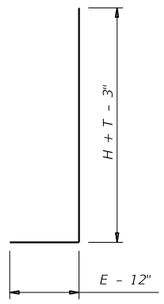
ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

(1) Total quantities include one 3'–1" lap for bars over 60' in length.

(2) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(3) Indicated slope is perpendicular to centerline pipe or pipes.

(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

(6) Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

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

TABLE OF REINFORCING STEEL (6)

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

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

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

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

Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: chpw0ste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030, ETC	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	21	CAMERON		234

DATE:
FILE:

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

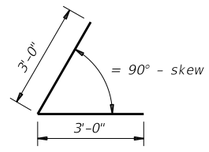
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2~wings) (4)		Estimated Quantities per ft of Toewall (1~toewall)	
					Bars J1		Bars J2					
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

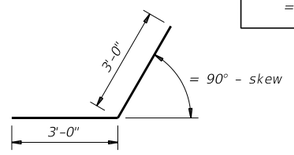
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

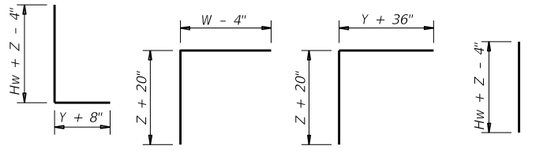
Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2



BARS J1 BARS J2 BARS J3 BARS V

WING DIMENSION FORMULAS:

(All values are in feet.)

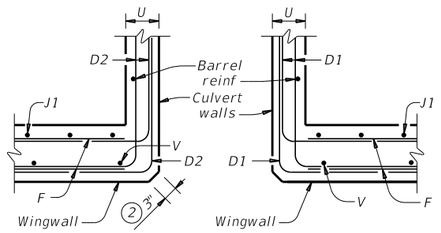
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

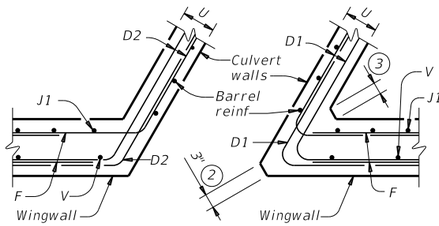
For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.



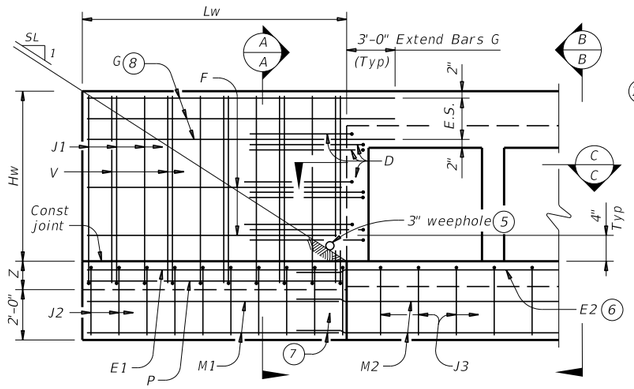
SECTION C-C - PW-1



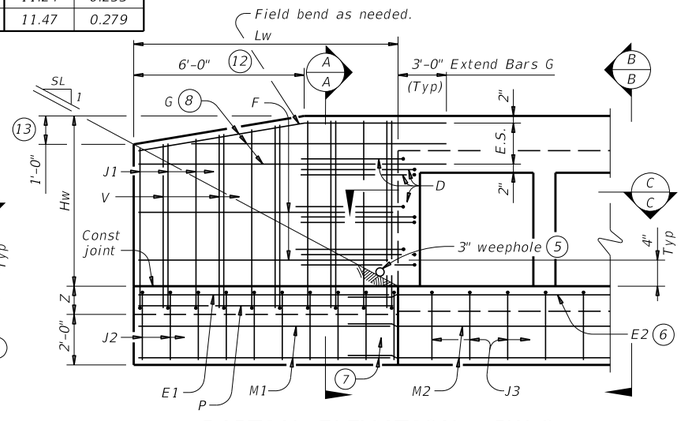
SECTION C-C - PW-2

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

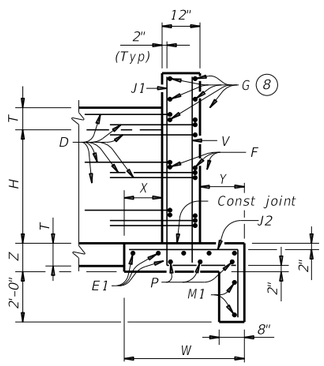
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elswhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.



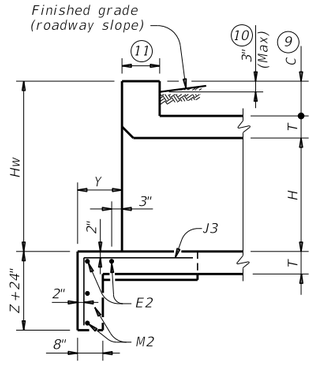
PARTIAL ELEVATION - PW-1



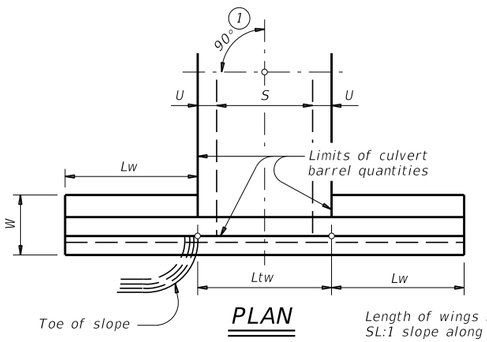
PARTIAL ELEVATION - PW-2



SECTION A-A
(Showing wing reinforcement.)

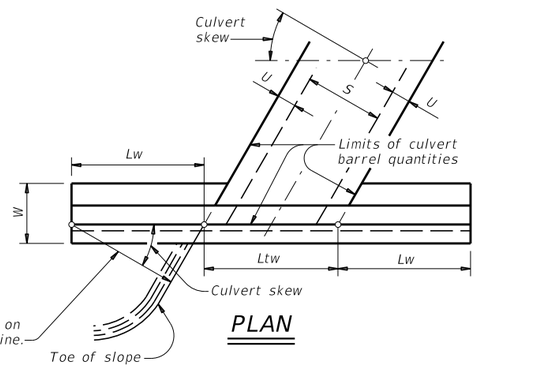


SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

DESIGNER NOTES:

Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforing steel if required elsewhere in the plans.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation

Bridge Division Standard

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

PW

FILE: pwstde01-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030, ETC	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	21	CAMERON		235

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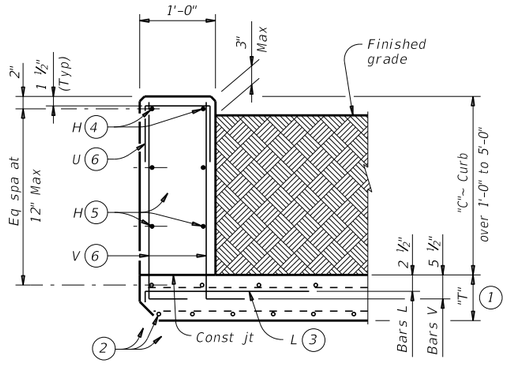
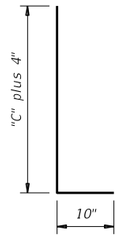
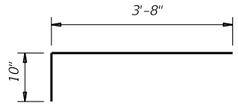


TYPICAL SECTION

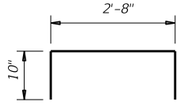
Used for curbs over 1'-0" to 5'-0"



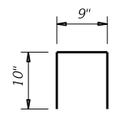
BARS V (#5) (6)
Spaced at 12" Max



BARS L (#5) (3)
Spaced at 12" Max



OPTIONAL BARS L (#5) (3) (7)
Spaced at 12" Max



BARS U (#4) (6)
Spaced at 12" Max

(1) "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.

(2) Adjust normal culvert slab bars as necessary to clear obstructions.

(3) Place bars L as shown. Tilt hook as necessary to maintain cover.

(4) Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

(5) Additional bars H(#4) as required to maintain 12" Max spacing.

(6) Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

(7) Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.

(8) Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

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

CONSTRUCTION NOTES:

Adjust reinforcing steel as necessary to provide 1 ¼" cover.

For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel if required elsewhere in the plans.

Provide Class "C" concrete (f'_c = 3,600 psi) minimum for curbs.

Provide bar laps, where required, as follows:

- Uncoated or galvanized ~ #4 = 1'-8" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.

This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.

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

Texas Department of Transportation

Bridge Division Standard

EXTENDED CURB DETAILS

FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE: ecdstde1-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030, ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
	21	CAMERON		236

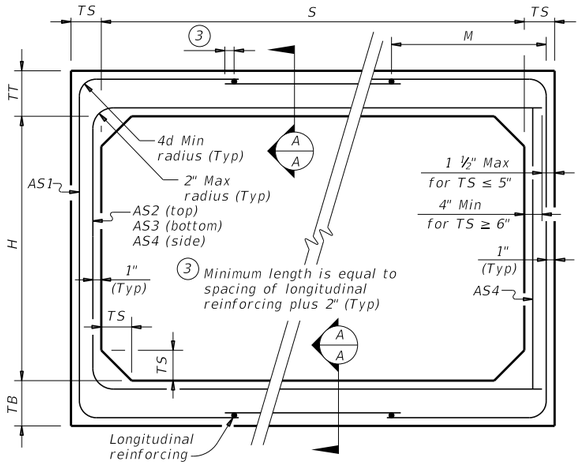
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
8	3	8	8	8	< 2	–	0.31	0.35	0.25	0.19	0.19	0.19	0.19	10.4
8	3	8	8	8	2 < 3	55	0.35	0.29	0.28	0.19	–	–	–	10.4
8	3	8	8	8	3 – 5	50	0.28	0.23	0.24	0.19	–	–	–	10.4
8	3	8	8	8	10	45	0.29	0.25	0.26	0.19	–	–	–	10.4
8	3	8	8	8	15	45	0.39	0.33	0.34	0.19	–	–	–	10.4
8	3	8	8	8	20	45	0.51	0.43	0.44	0.19	–	–	–	10.4
8	3	8	8	8	25	45	0.63	0.53	0.54	0.19	–	–	–	10.4
8	4	8	8	8	< 2	–	0.27	0.38	0.29	0.19	0.19	0.19	0.19	11.2
8	4	8	8	8	2 < 3	50	0.31	0.34	0.32	0.19	–	–	–	11.2
8	4	8	8	8	3 – 5	50	0.25	0.27	0.27	0.19	–	–	–	11.2
8	4	8	8	8	10	45	0.26	0.28	0.29	0.19	–	–	–	11.2
8	4	8	8	8	15	41	0.34	0.37	0.38	0.19	–	–	–	11.2
8	4	8	8	8	20	41	0.44	0.48	0.49	0.19	–	–	–	11.2
8	5	8	8	8	< 2	–	0.24	0.40	0.32	0.19	0.19	0.19	0.19	12.0
8	5	8	8	8	2 < 3	50	0.28	0.37	0.35	0.19	–	–	–	12.0
8	5	8	8	8	3 – 5	45	0.23	0.29	0.30	0.19	–	–	–	12.0
8	5	8	8	8	10	45	0.23	0.31	0.32	0.19	–	–	–	12.0
8	5	8	8	8	15	41	0.30	0.41	0.42	0.19	–	–	–	12.0
8	5	8	8	8	20	41	0.39	0.52	0.54	0.19	–	–	–	12.0
8	6	8	8	8	< 2	–	0.22	0.42	0.35	0.19	0.19	0.19	0.19	12.8
8	6	8	8	8	2 < 3	50	0.25	0.40	0.38	0.19	–	–	–	12.8
8	6	8	8	8	3 – 5	50	0.21	0.32	0.33	0.19	–	–	–	12.8
8	6	8	8	8	10	45	0.22	0.33	0.34	0.19	–	–	–	12.8
8	6	8	8	8	15	41	0.28	0.43	0.45	0.19	–	–	–	12.8
8	6	8	8	8	20	41	0.36	0.55	0.57	0.19	–	–	–	12.8
8	7	8	8	8	< 2	–	0.20	0.44	0.37	0.19	0.19	0.19	0.19	13.6
8	7	8	8	8	2 < 3	55	0.23	0.43	0.41	0.19	–	–	–	13.6
8	7	8	8	8	3 – 5	55	0.19	0.34	0.35	0.19	–	–	–	13.6
8	7	8	8	8	10	50	0.20	0.34	0.36	0.19	–	–	–	13.6
8	7	8	8	8	15	41	0.26	0.45	0.47	0.19	–	–	–	13.6
8	7	8	8	8	20	41	0.33	0.57	0.60	0.19	–	–	–	13.6
8	8	8	8	8	< 2	–	0.20	0.45	0.40	0.19	0.19	0.19	0.19	14.4
8	8	8	8	8	2 < 3	65	0.21	0.45	0.44	0.19	–	–	–	14.4
8	8	8	8	8	3 – 5	65	0.19	0.36	0.38	0.19	–	–	–	14.4
8	8	8	8	8	10	55	0.19	0.35	0.38	0.19	–	–	–	14.4
8	8	8	8	8	15	45	0.24	0.46	0.49	0.19	–	–	–	14.4
8	8	8	8	8	20	45	0.31	0.59	0.62	0.19	–	–	–	14.4

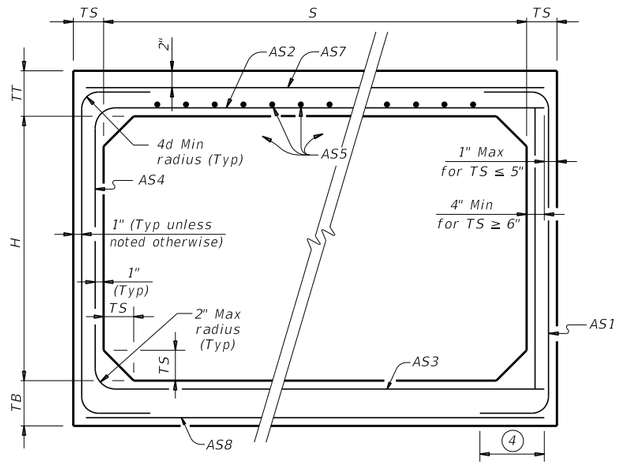
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

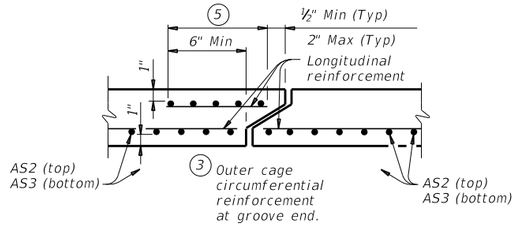
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

8'-0" SPAN

SCP-8

FILE: scp08sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0872	04	030, ETC	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	21	CAMERON		237

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw (1) Height of Wingwall (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
FM 800 STA 91+59.13 (Lt)	1 ~ 8'x 5'	2.1'	SCP-8	PW-2	0°	2:1	8"	8"	2.307'	7.979'	N/A	N/A	13.958'	9.333'	N/A	0.0	0.8	14.1	217
FM 800 STA 91+72.48 (Rt)	1 ~ 8'x 5'	3.6'	SCP-8	PW-2	15°	2:1	8"	8"	3.861'	9.521'	N/A	N/A	17.643'	9.663'	N/A	0.0	1.4	22.7	330

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

DATE:
FILE:

NOTES:
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.

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: bcsstde1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030, ETC	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	21	CAMERON		238

DATE: 10/11/2021 2:38:59 PM
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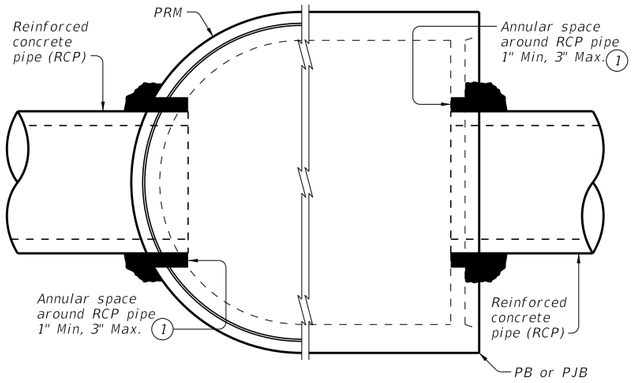
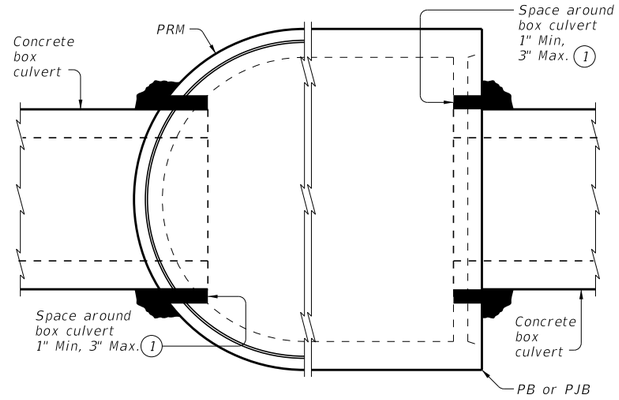


PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

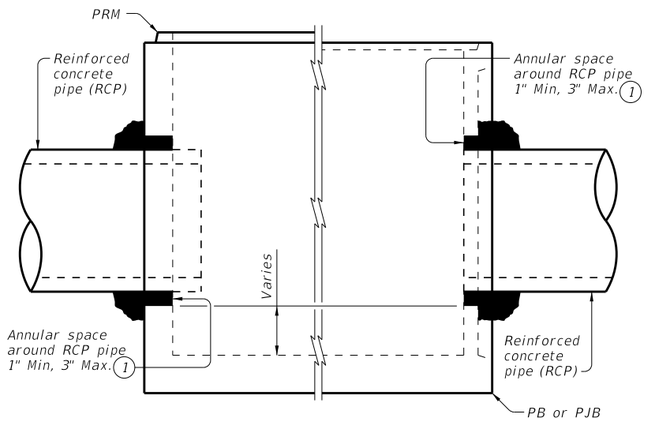
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

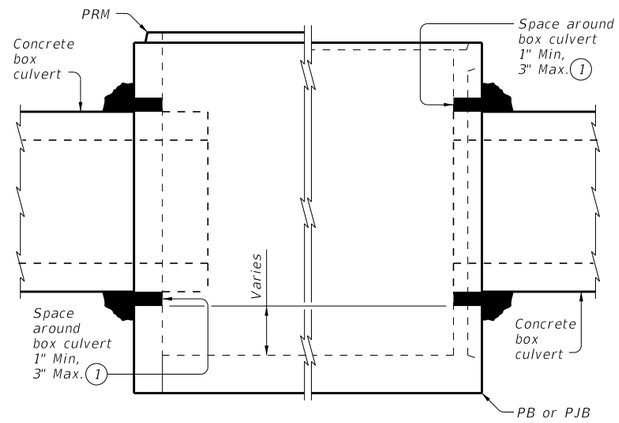
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

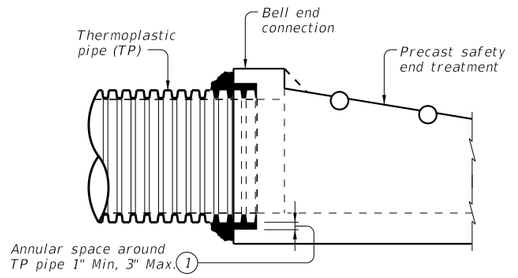
TYPICAL HALF ELEVATION



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: pbgcstd1-20.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
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REVISIONS	0872	04	030	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		239

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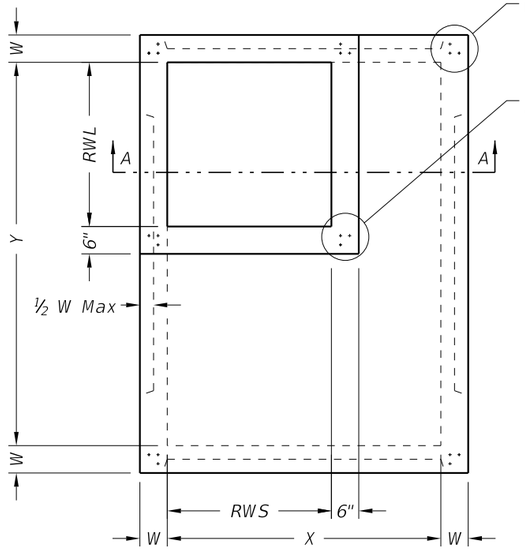
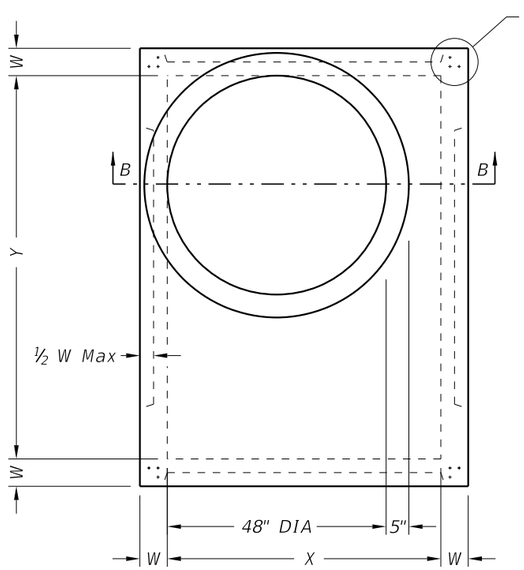


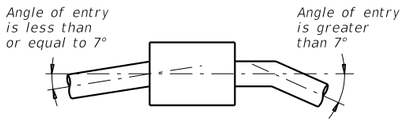
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



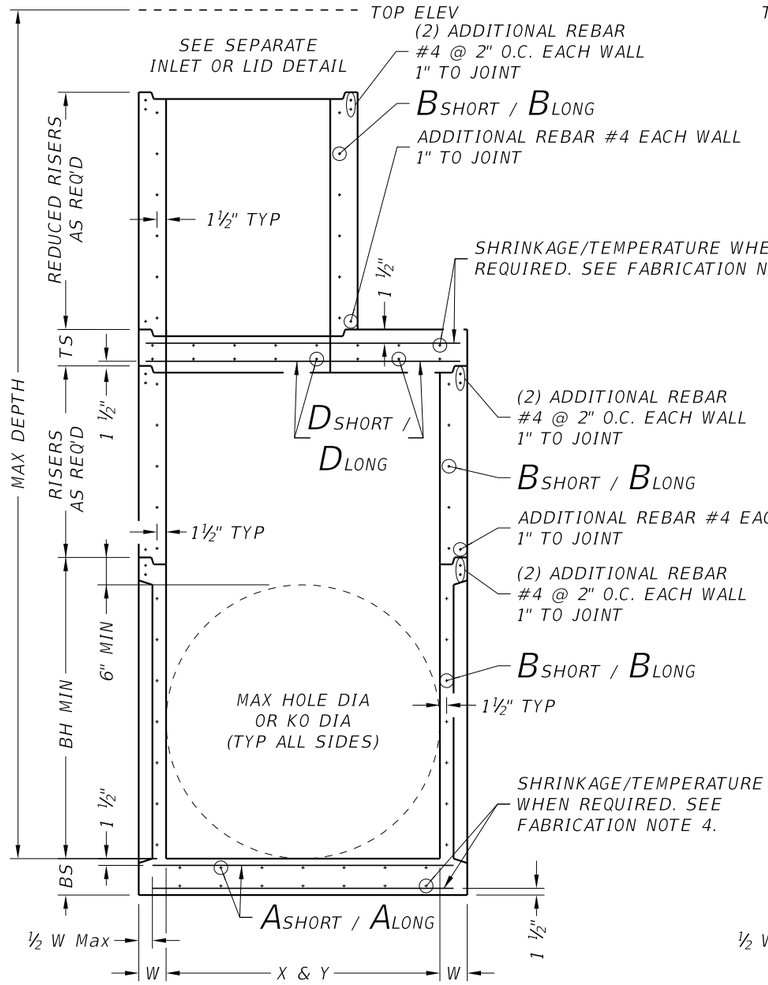
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



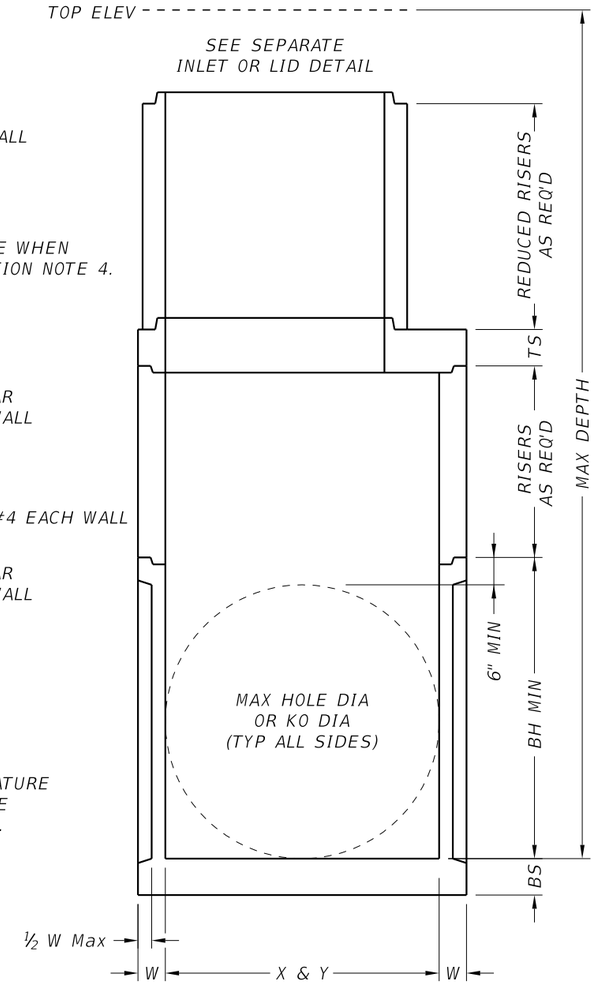
PIPE CONNECTION DETAIL

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

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Bridge Division Standard

PRECAST BASE

PB

FILE: prestd01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0872	04	030	FM 506, ETC
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	PHR	CAMERON		240

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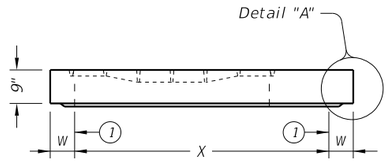
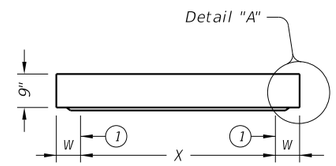
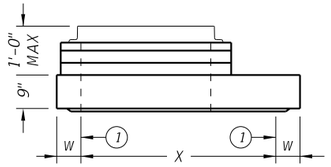


STYLE 'FG'



ELEVATION VIEW



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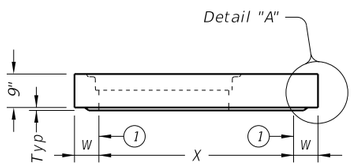
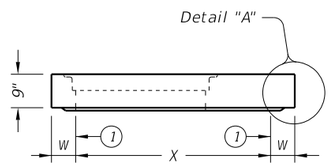
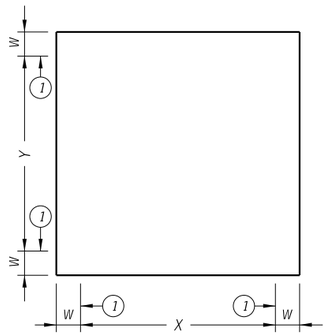


ELEVATION VIEW



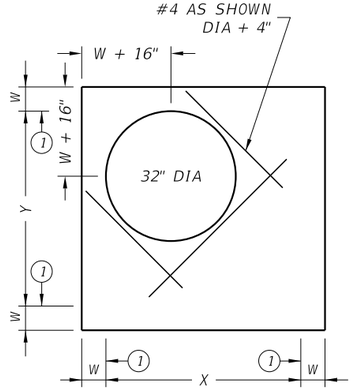
ELEVATION VIEW



PLAN VIEW

NO OPENINGS

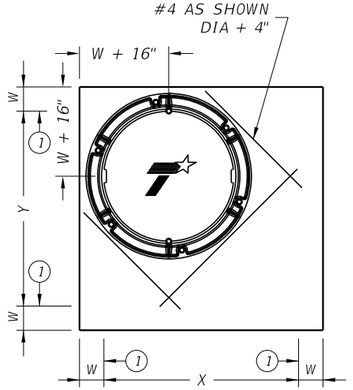
STYLE 'SL'



PLAN VIEW

SHIP LOOSE RING & COVER

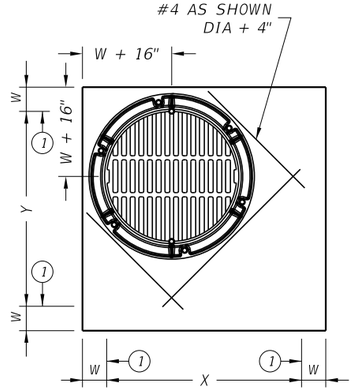
STYLE 'RH'



PLAN VIEW

32" DIA CAST-IN RING & COVER

STYLE 'RC'

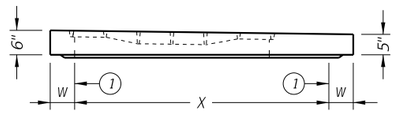


PLAN VIEW

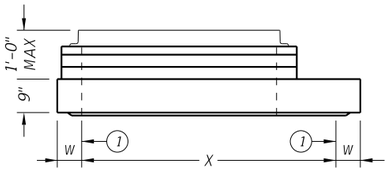
32" DIA CAST-IN RING & GRATE

STYLE 'RG'

ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.



STYLE 'SFG'
ELEVATION VIEW



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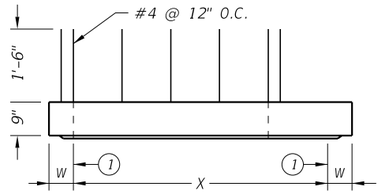
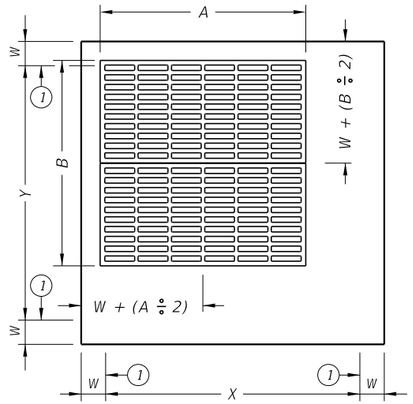


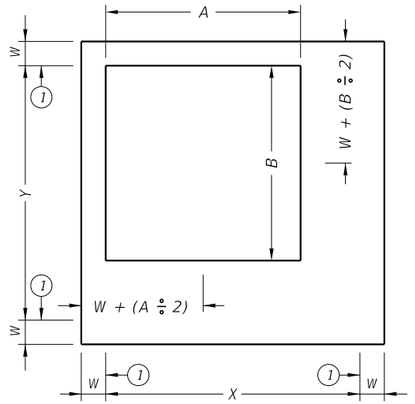
ELEVATION VIEW



PLAN VIEW

CAST-IN FRAME & GRATE

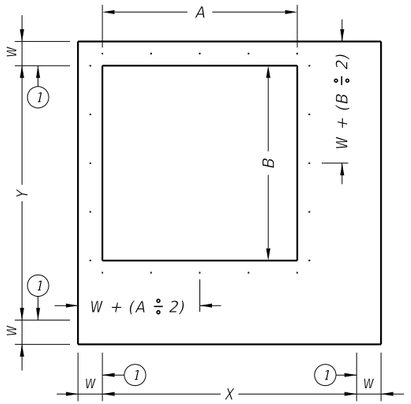
STYLES 'FG' & 'SFG'



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: prestd05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0872	04	030	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		241

DATE: 10/11/2021 2:39:03 PM
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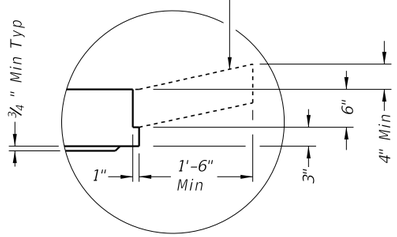
Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in²/ft	0.37 in²/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in²/ft	0.37 in²/ft
SFG	3'x3'	6"	3'x3'	0.32 in²/ft	0.32 in²/ft
SL	4'x4'	6"	n/a	0.34 in²/ft	0.34 in²/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in²/ft	0.41 in²/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in²/ft	0.41 in²/ft
SFG	4'x4'	6"	4'x4'	0.32 in²/ft	0.32 in²/ft
SL	3'x5'	6"	n/a	0.39 in²/ft	0.39 in²/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in²/ft	0.48 in²/ft
SFG	3'x5'	6"	3'x5'	0.32 in²/ft	0.32 in²/ft
SL	4'x5'	6"	n/a	0.42 in²/ft	0.42 in²/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in²/ft	0.42 in²/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in²/ft	0.66 in²/ft
SL	5'x5'	6"	n/a	0.36 in²/ft	0.36 in²/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in²/ft	0.43 in²/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in²/ft	0.63 in²/ft
SL	5'x6'	6"/8"	n/a	0.48 in²/ft	0.48 in²/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in²/ft	0.60 in²/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in²/ft	0.60 in²/ft
SL	6'x6'	6"/8"	n/a	0.43 in²/ft	0.43 in²/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in²/ft	0.59 in²/ft
SL	8'x8'	8"/10"	n/a	0.45 in²/ft	0.45 in²/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in²/ft	0.45 in²/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.

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

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REVISIONS	0872	04	030	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		242

DATE: 10/11/2021 2:39:04 PM
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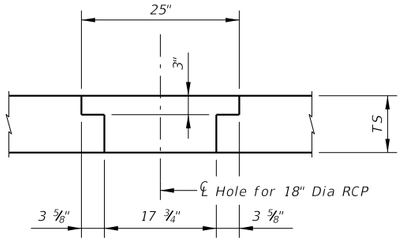
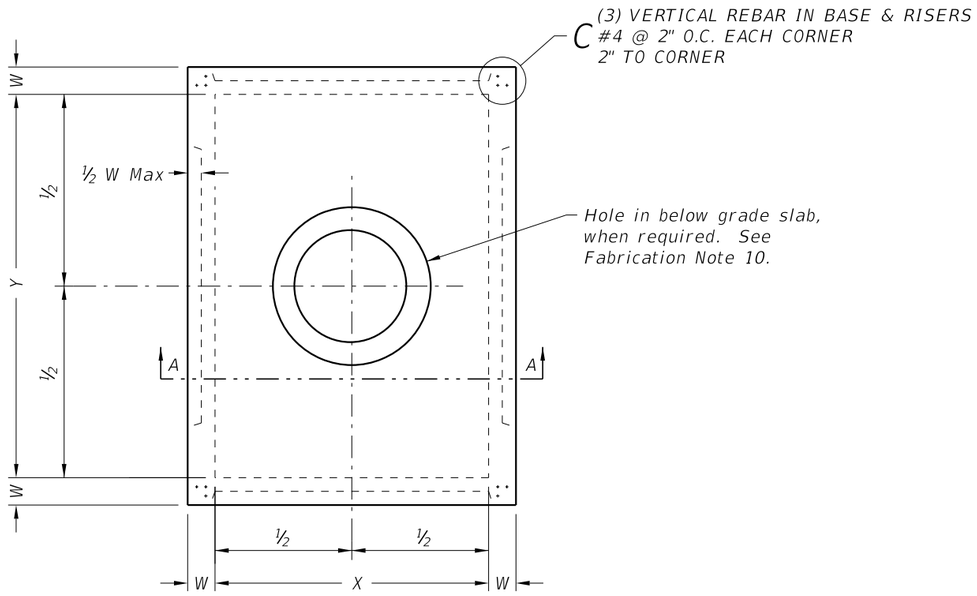
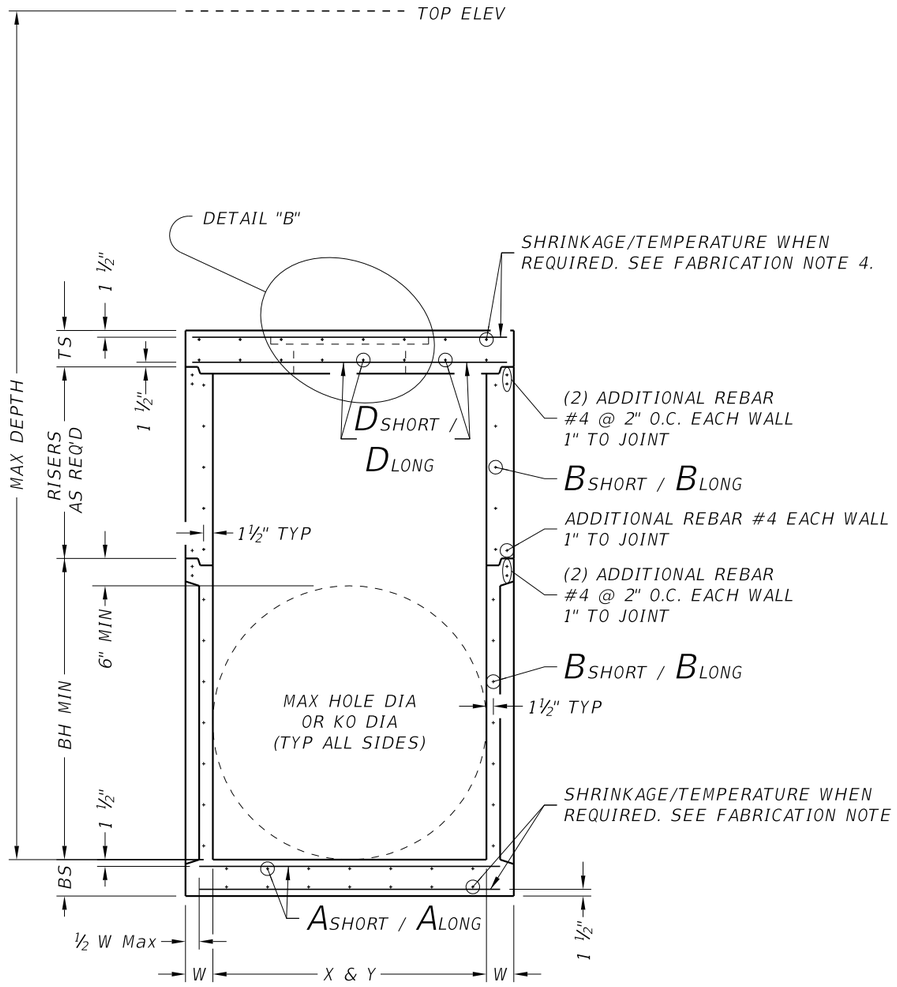


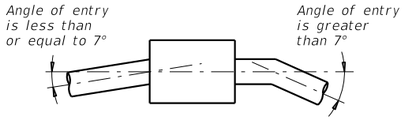
DETAIL "B"



PLAN VIEW



SECTION A-A



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 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.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST JUNCTION BOX

PJB

FILE: prestd09-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0872	04	030	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		243

	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: prestd10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		244

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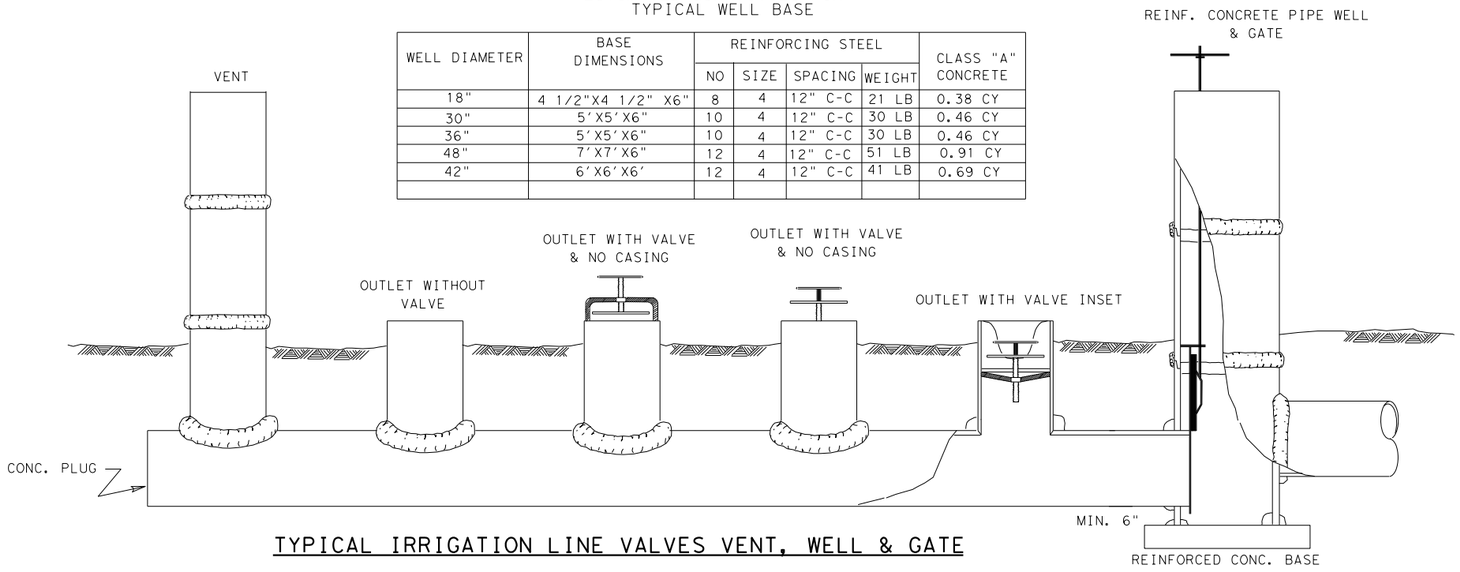
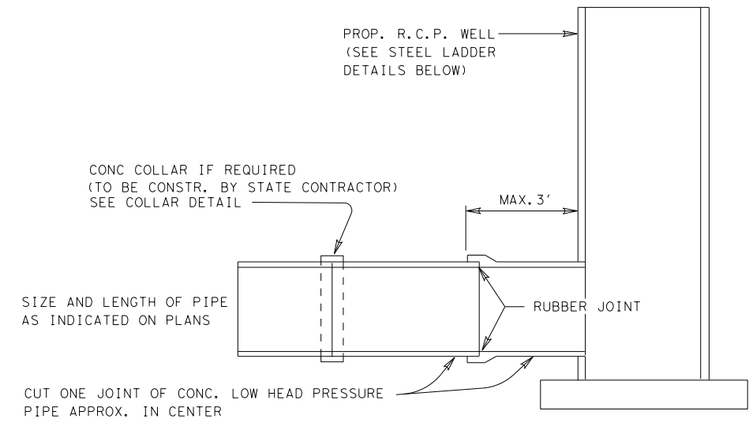
ESTIMATED QUANTITIES FOR
TYPICAL WELL BASE

WELL DIAMETER	BASE DIMENSIONS	REINFORCING STEEL				CLASS "A" CONCRETE
		NO	SIZE	SPACING	WEIGHT	
18"	4 1/2"X4 1/2" X6"	8	4	12" C-C	21 LB	0.38 CY
30"	5'X5'X6"	10	4	12" C-C	30 LB	0.46 CY
36"	5'X5'X6"	10	4	12" C-C	30 LB	0.46 CY
48"	7'X7'X6"	12	4	12" C-C	51 LB	0.91 CY
42"	6'X6'X6'	12	4	12" C-C	41 LB	0.69 CY



TYPICAL IRRIGATION LINE VALVES VENT, WELL & GATE



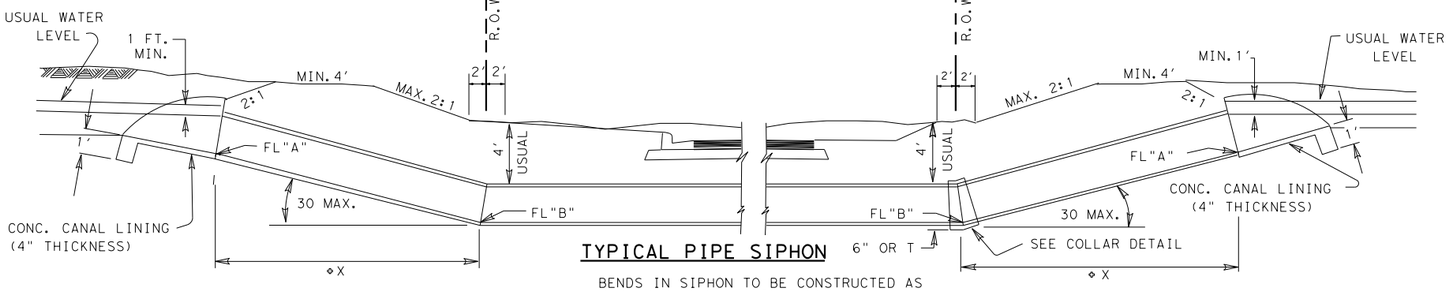
TYPICAL CONC. PIPE WELL DETAILS FOR CONNECTING CONC. LOW HEAD PRESSURE PIPE

GENERAL NOTES

HEIGHT OF RELOCATED WELLS AND VENTS TO BE EQUIVALENT TO THAT OF EXISTING STRUCTURES OR AS REQUIREDFOR PROPER OPERATION.

CONCRETE REQUIRED FOR BASE, PLUGS, OR CAPS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED AS SUB-SIDIARY TO THE VARIOUS BID ITEMS OF THIS CONTRACT.

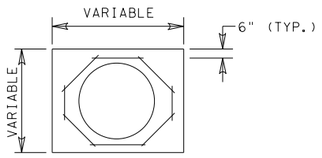
IN GENERAL THE PARTICULAR TYPE OR DESIGN OF THE EXISTING FACILITY TO BE EXTENDED OR RELOCATED SHALL BE DUPLICATED.

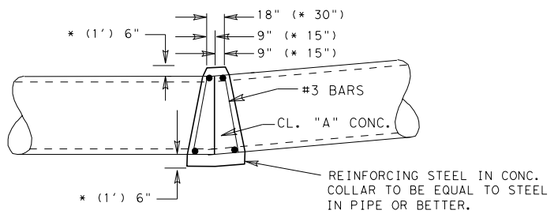


TYPICAL PIPE SIPHON

BENDS IN SIPHON TO BE CONSTRUCTED AS PROVIDED IN SPECIFICATIONS

◇X AND FL "A" AS SHOWN ON PLANS ARE NOMINAL DESIGN DIMENSIONS AND MAY BE VARIED IN FIELD TO FIT EXISTING CONDITIONS.





DETAIL FOR CONC. COLLARS DRAINAGE STRUCTURES AND PIPE SIPHONS (HORIZ. & VERT. BENDS)

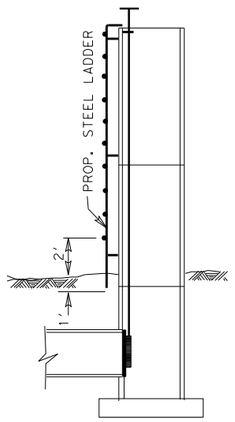
NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.

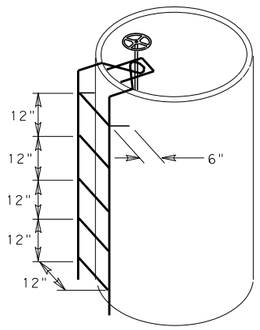
* FOR 42" AND LARGER PIPE

LADDER TO BE CONSTRUCTED OF ¾" DIA. REINF. STEEL. THE PARALLEL SIDEPIECES SPACED 12" APART TO BE HOOKED OVER TOP OF WELL AND STAND-OFFS WELDED AT TOP RUNG, AT THEIR MID-POINT AND BOTTOM. RUNGS TO BE WELDED TO SIDEPIECES AT 12" INTERVALS THE FIRST RUNG TO BE 2' FROM NATURAL GROUND.

STEEL LADDER TO BE PAID FOR AS SUBSIDIARY TO PRICE OF WELL.

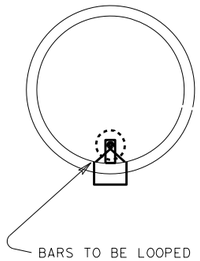
NOTE: COMMERCIAL FABRICATED OR CAST METAL STEPS MAY BE USED IF APPROVED BY THE ENGINEER AND/OR THE WATER DISTRICT INVOLVED.





STEEL LADDER DETAILS

TO BE USED ON ALL WELLS WITH GATES WHEN THE DISTANCE FROM NATURAL GROUND TO TOP OF WELL IS 6 FT. OR MORE.



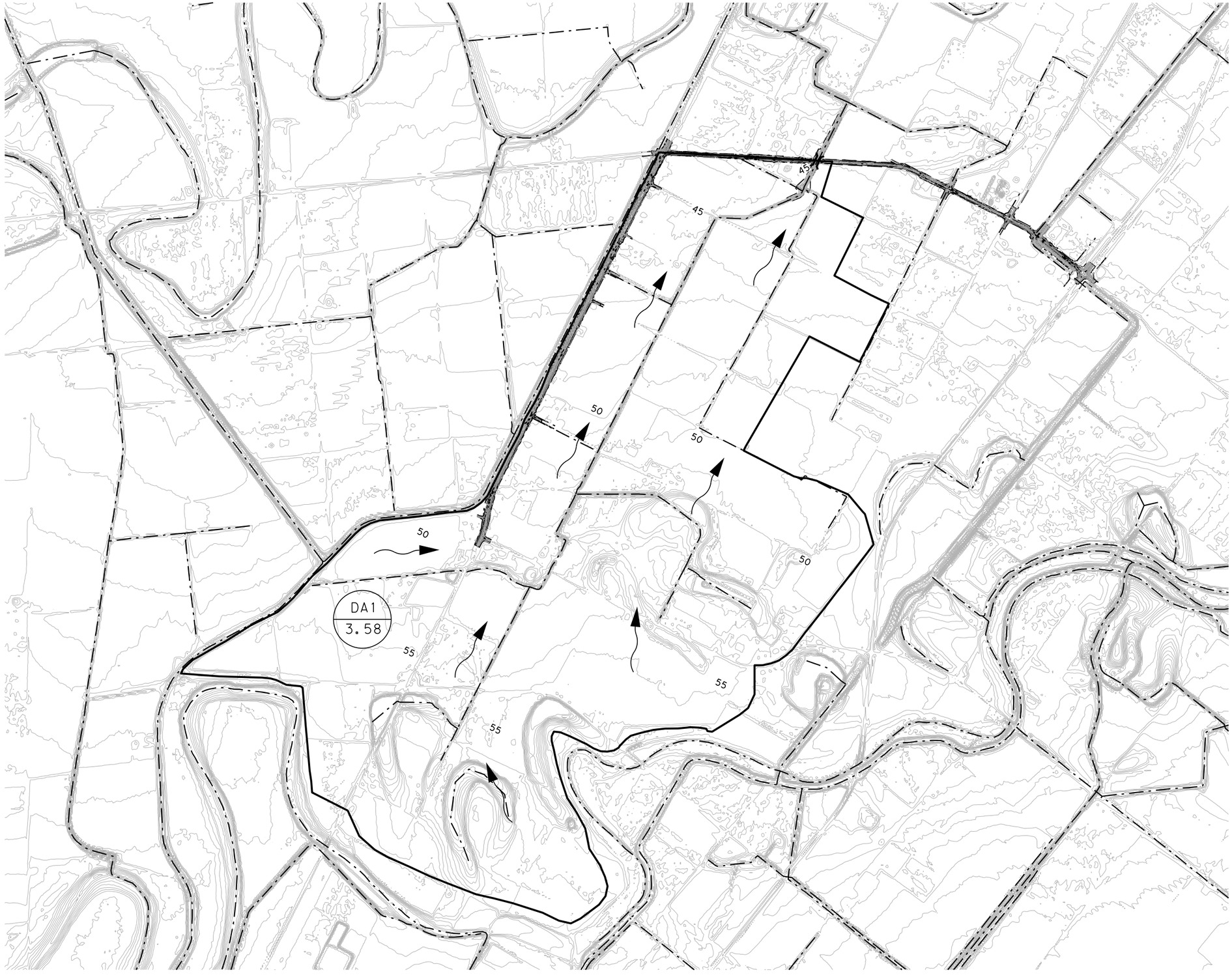
PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

IRRIGATION CROSSING DETAIL

REV. 4/15 IRRIG1.DGN

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						245
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21		0872	04	030	FM 506,ETC



N

LEGEND

- DRAINAGE AREA BOUNDARY
- DIRECTION OF FLOW
- FLOW LINES
- BRIDGE
- ID / 00.00 — DRAINAGE AREA ID / DRAINAGE AREA SQM

STATE OF TEXAS
KYLE P. MOYNIHAN
125696
LICENSED
PROFESSIONAL ENGINEER

10/12/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

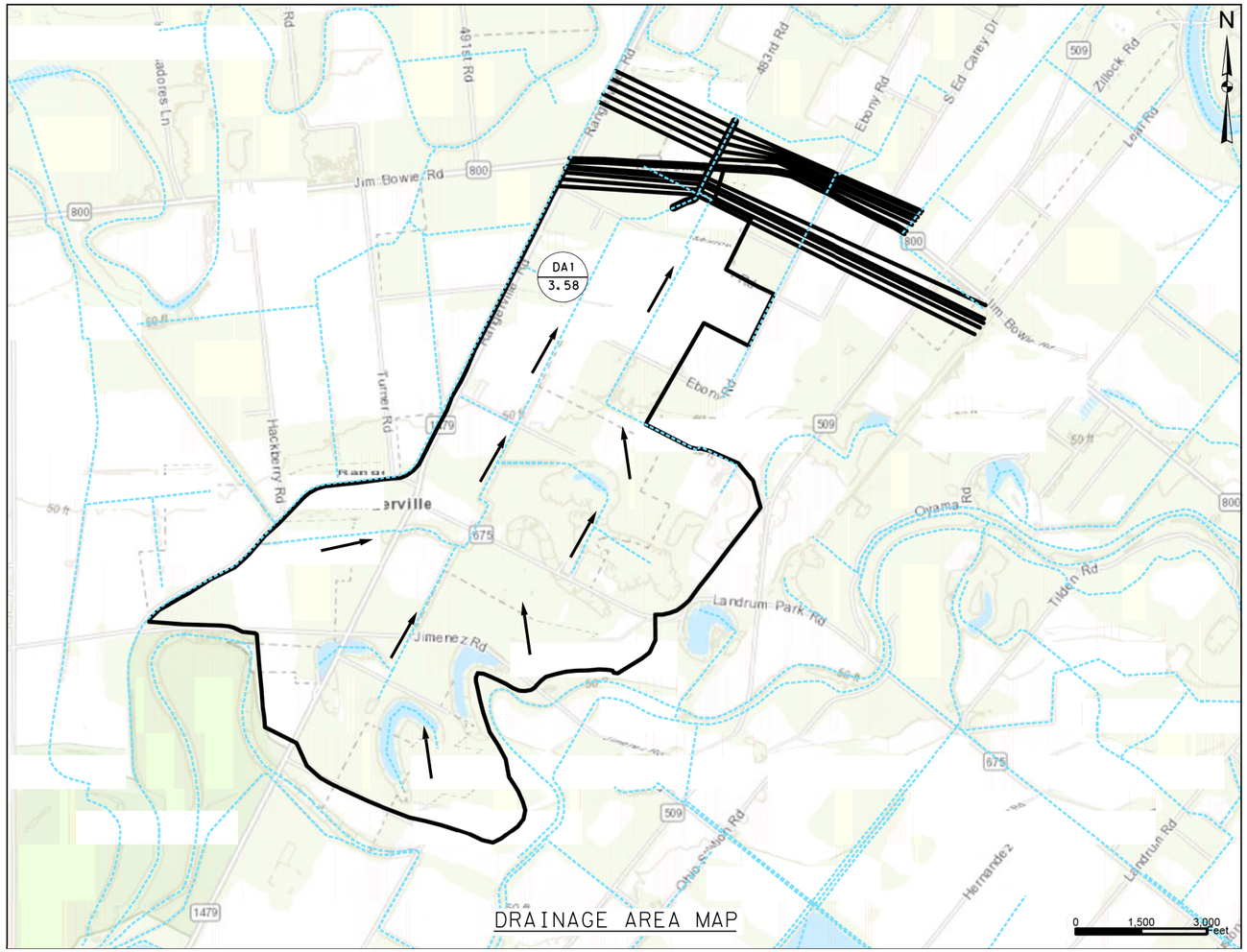
IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No.
F-10161

FM 800
BRIDGE DRAINAGE AREA MAP
CAMERON COUNTY
STA 43+57.51

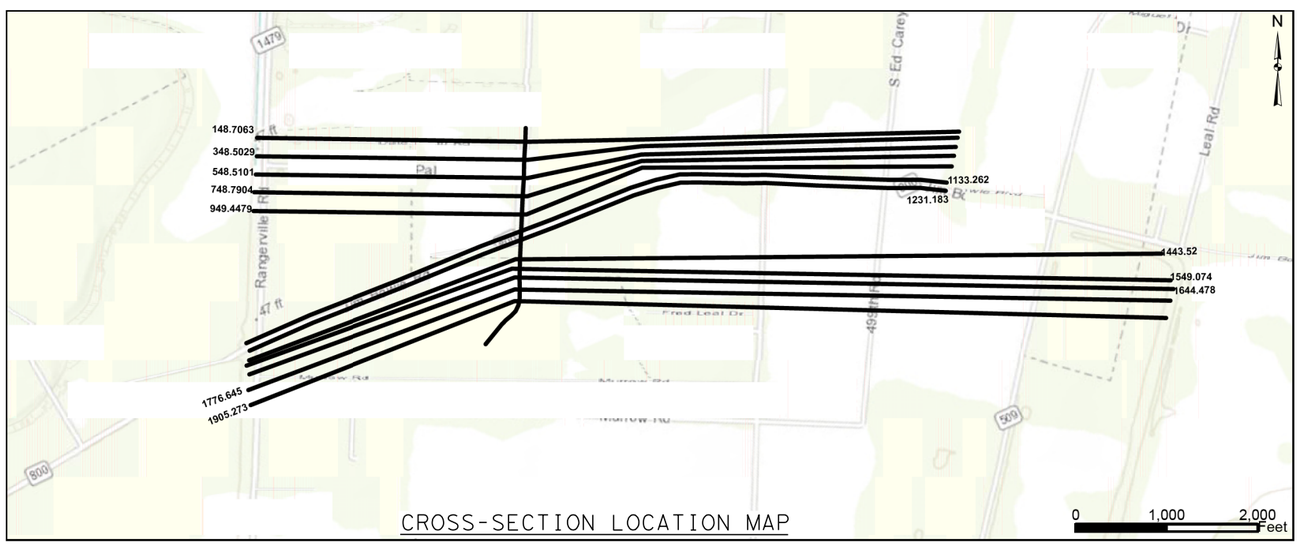
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		246
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_DAM.dgn



DRAINAGE AREA MAP



CROSS-SECTION LOCATION MAP

HYDROLOGIC COMPUTATIONS

NRCS RUNOFF CURVE NUMBER METHOD (HEC-HMS V 4.4)	
CONTRIBUTING DRAINAGE AREA, (SQ.MI.)	3.58
ESTIMATED CURVE NUMBER, CN	81
INITIAL ABSTRACTION	0.47
TIME OF CONCENTRATION, (HR)	4.30
MAIN CHANNEL LENGTH, (MI)	13443.0
MAIN CHANNEL SLOPE, (FT/FT)	0.0007
RAINFALL DISTRIBUTION TYPE	FQ. STRM.
RAINFALL DEPTH (5-YR), (IN)	5.4
RAINFALL DEPTH (10-YR), (IN)	6.6
RAINFALL DEPTH (25-YR), (IN)	8.5
RAINFALL DEPTH (50-YR), (IN)	10.1
RAINFALL DEPTH (100-YR), (IN)	11.9
PEAK FLOWRATE (5-YR), (CFS)	1,640
PEAK FLOWRATE (10-YR), (CFS)	2,142
PEAK FLOWRATE (25-YR), (CFS)	2,874
PEAK FLOWRATE (50-YR), (CFS)	3,422
PEAK FLOWRATE (100-YR), (CFS)	4,070

NOTES:

1. USACE HEC-RAS VERSION 5.0.7 UTILIZED FOR THE ANALYSIS.
2. THIS SITE IS DESIGNATED AS A ZONE "AO" AS SHOWN ON PANEL 48061C0425F.
3. ALL ELEVATIONS BASED ON THE NAVD88 VERTICAL DATUM.
4. THE DOWNSTREAM BOUNDARY CONDITION WAS ESTABLISHED USING NORMAL DEPTH WITH A DOWNSTREAM SLOPE OF 0.00043 FT/FT.

LEGEND

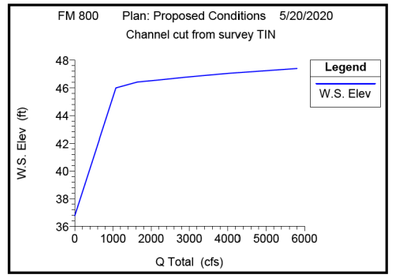
ID / 00.00 — DRAINAGE AREA ID / DRAINAGE AREA SQ.MI.

DRAINAGE AREA BOUNDARY

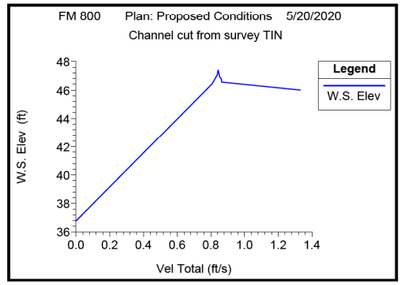
DRAINAGE FLOW ARROW

REFERENCES:

1. TXDOT'S HYDRAULIC DESIGN MANUAL (SEPTEMBER 2019).
2. TOPOGRAPHIC DATA SOURCE (USGS NED 30F DEM)



CONVEYANCE CURVE



VELOCITY CURVE

STATE OF TEXAS
KYLE P. MOYNIHAN
125696
LICENSED PROFESSIONAL ENGINEER

10/12/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800
HYDRAULIC DATA SHEET
CAMERON COUNTY
BRIDGE
STA 43+57.51

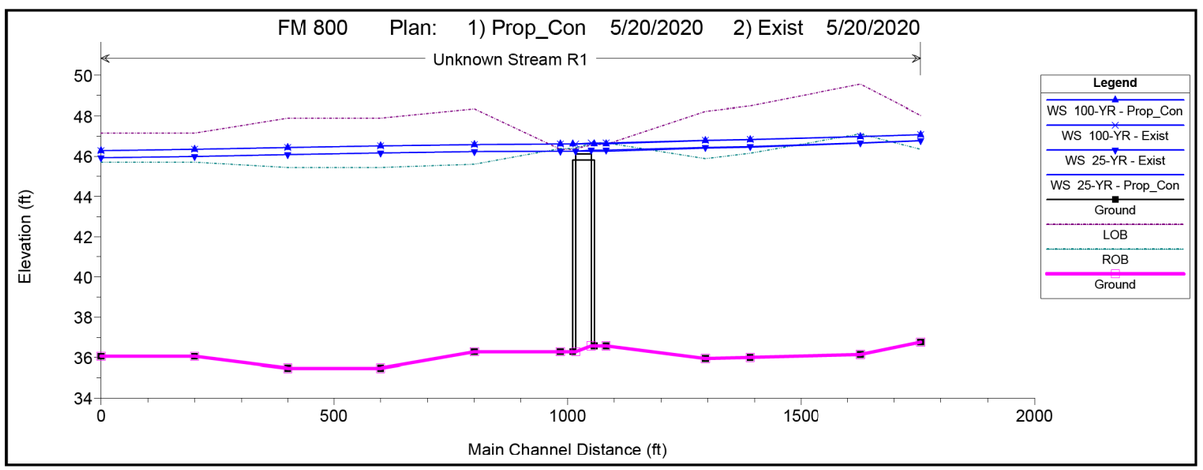
SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		247
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

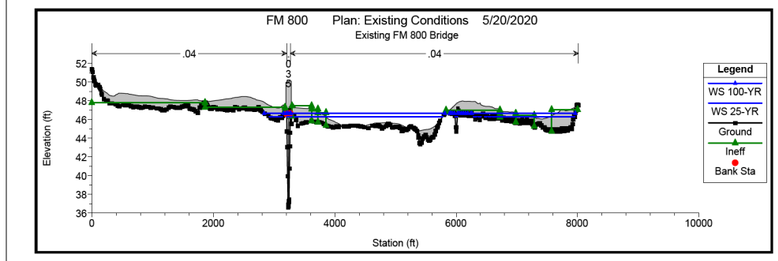
HYDRAULIC COMPUTATIONS

HEC-RAS River: Unknown Stream Reach: R1

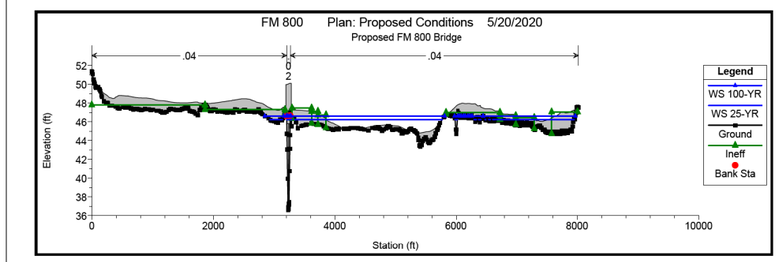
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
R1	1777	25-YR	Prop_Con	2874.00	36.14	46.65		46.72	0.000810	3.57	2433.79	2985.85	0.27
R1	1777	25-YR	Exist	2874.00	36.14	46.66		46.73	0.000771	3.48	2486.13	3006.05	0.26
R1	1777	100-YR	Prop_Con	4070.00	36.14	46.97		47.02	0.000689	3.35	3638.19	4400.66	0.25
R1	1777	100-YR	Exist	4070.00	36.14	46.98		47.03	0.000678	3.33	3663.38	4418.97	0.25
R1	1539.50	25-YR	Prop_Con	2874.00	36.00	46.44	46.10	46.53	0.000779	3.63	2254.94	3017.34	0.26
R1	1539.50	25-YR	Exist	2874.00	36.00	46.48	46.10	46.55	0.000711	3.47	2370.64	3585.24	0.25
R1	1539.50	100-YR	Prop_Con	4070.00	36.00	46.82	46.27	46.87	0.000567	3.19	3714.03	4587.91	0.23
R1	1539.50	100-YR	Exist	4070.00	36.00	46.83	46.27	46.88	0.000555	3.16	3749.50	4608.11	0.22
R1	1444	25-YR	Prop_Con	2874.00	35.94	46.40	44.28	46.46	0.000508	3.12	2593.37	3735.08	0.22
R1	1444	25-YR	Exist	2874.00	35.94	46.44	44.28	46.49	0.000462	2.99	2739.35	3817.28	0.21
R1	1444	100-YR	Prop_Con	4070.00	35.94	46.78	46.05	46.82	0.000426	2.95	4108.50	5249.04	0.20
R1	1444	100-YR	Exist	4070.00	35.94	46.79	46.05	46.83	0.000417	2.92	4150.64	5259.35	0.20
R1	1231	25-YR	Prop_Con	2874.00	36.57	46.24	45.51	46.34	0.000226	3.54	2966.65	4148.56	0.25
R1	1231	25-YR	Exist	2874.00	36.57	46.31	45.11	46.34	0.000298	2.33	3111.80	4282.37	0.17
R1	1231	100-YR	Prop_Con	4070.00	36.57	46.61	45.90	46.68	0.000234	3.68	4071.82	4743.34	0.26
R1	1231	100-YR	Exist	4070.00	36.57	46.65	45.74	46.68	0.000284	2.33	4364.37	4827.69	0.16
R1	1182			Bridge									
R1	1133	25-YR	Prop_Con	2874.00	36.28	46.25	44.88	46.33	0.000205	3.45	3149.15	4332.21	0.24
R1	1133	25-YR	Exist	2874.00	36.28	46.25	44.88	46.33	0.000205	3.45	3149.14	4333.18	0.24
R1	1133	100-YR	Prop_Con	4070.00	36.28	46.60	45.37	46.67	0.000192	3.45	4518.62	5421.24	0.24
R1	1133	100-YR	Exist	4070.00	36.28	46.60	45.36	46.67	0.000192	3.45	4518.31	5421.95	0.24
R1	949	25-YR	Prop_Con	2874.00	36.28	46.23	44.65	46.25	0.000306	2.30	3220.53	4703.29	0.17
R1	949	25-YR	Exist	2874.00	36.28	46.23	44.65	46.25	0.000306	2.30	3220.53	4703.29	0.17
R1	949	100-YR	Prop_Con	4070.00	36.28	46.58	44.96	46.60	0.000318	2.42	4566.20	5397.93	0.17
R1	949	100-YR	Exist	4070.00	36.28	46.58	44.96	46.60	0.000318	2.42	4566.20	5397.93	0.17
R1	749	25-YR	Prop_Con	2874.00	35.47	46.16	44.47	46.20	0.000379	2.64	2871.55	4384.05	0.19
R1	749	25-YR	Exist	2874.00	35.47	46.16	44.47	46.20	0.000379	2.64	2871.55	4384.05	0.19
R1	749	100-YR	Prop_Con	4070.00	35.47	46.51	44.87	46.54	0.000394	2.76	4090.62	5414.06	0.19
R1	749	100-YR	Exist	4070.00	35.47	46.51	44.87	46.54	0.000394	2.76	4090.62	5414.06	0.19
R1	549	25-YR	Prop_Con	2874.00	35.47	46.08	44.64	46.13	0.000490	2.98	2531.78	3906.90	0.21
R1	549	25-YR	Exist	2874.00	35.47	46.08	44.64	46.13	0.000490	2.98	2531.78	3906.90	0.21
R1	549	100-YR	Prop_Con	4070.00	35.47	46.43	45.01	46.48	0.000484	3.04	3670.20	4551.96	0.21
R1	549	100-YR	Exist	4070.00	35.47	46.43	45.01	46.48	0.000484	3.04	3670.20	4551.96	0.21



STREAM PROFILE



EXISTING STREAM CROSS-SECTION @ STRUCTURE



PROPOSED STREAM CROSS-SECTION @ STRUCTURE

BRIDGE FLOW DATA

	5-YR	10-YR	25-YR	50-YR	100-YR
Q (CFS)	1,640	2,142	2,874	3,422	4,070
EXIST	533	167	414	415	388
PROP	350	520	557	551	503

WEIR FLOW DATA

	5-YR	10-YR	25-YR	50-YR	100-YR
Q (CFS)	1,640	2,142	2,874	3,422	4,070
EXIST	1,107	1,975	2,460	3,007	3,682
PROP	1,290	1,622	2,317	2,871	3,567

NOTES:

1. USACE HEC-RAS VERSION 5.0.7 UTILIZED FOR THE ANALYSIS.
2. THIS SITE IS DESIGNATED AS A ZONE "AO" AS SHOWN ON PANEL 48061C0425F.
3. ALL ELEVATIONS BASED ON THE NAVD88 VERTICAL DATUM.
4. THE DOWNSTREAM BOUNDARY CONDITION WAS ESTABLISHED USING NORMAL DEPTH WITH A DOWNSTREAM SLOPE OF 0.00043 FT/FT.

STATE OF TEXAS
KYLE P. MOYNIHAN
125696
LICENSED PROFESSIONAL ENGINEER

10/12/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

IEA
18383 PRESTON ROAD
SUITE 500
DALLAS, TEXAS 75252
(214) 884-4253
FIRM REGISTRATION No. F-10161

Texas Department of Transportation

FM 800
HYDRAULIC DATA SHEET
CAMERON COUNTY
BRIDGE
STA 43+57.51

SHEET 2 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		248
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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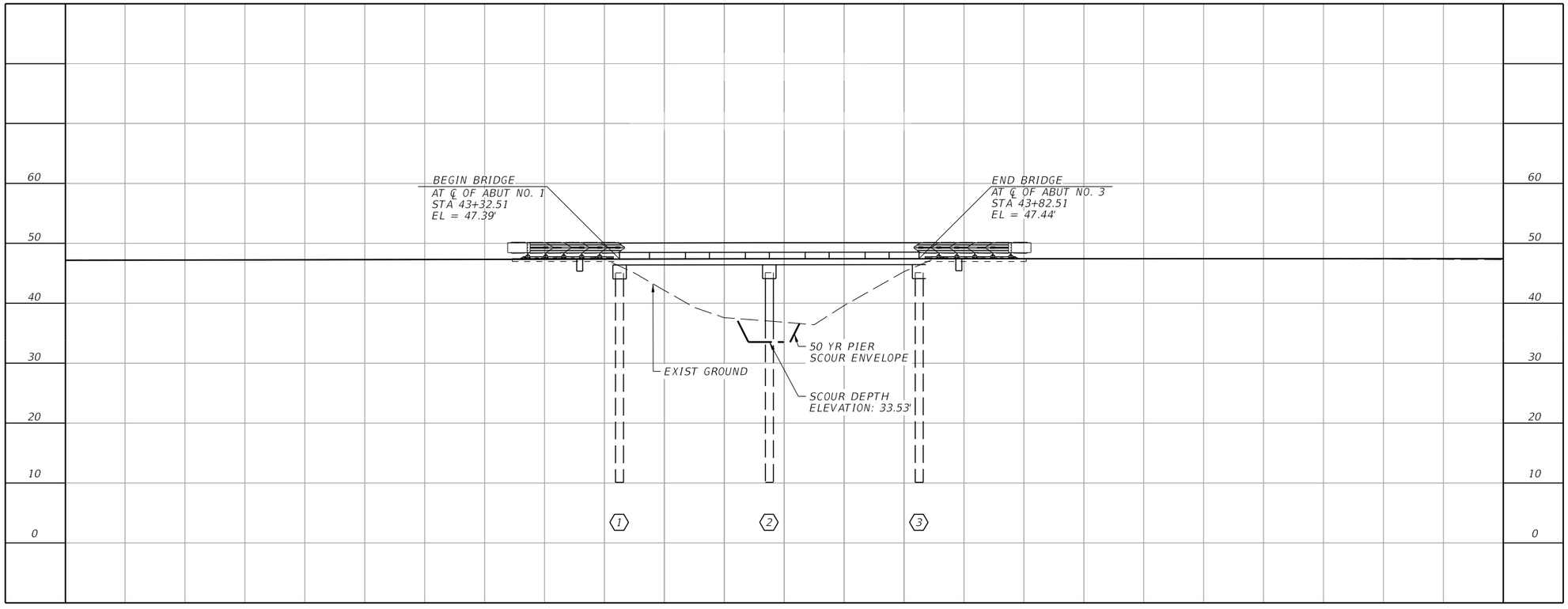
SCOUR ENVELOPE

HORIZ. 0 10 20
VERT. 0 10 20



PREDICTED SCOUR RESULTS

SCOUR ANALYSIS - 50 YR (DESIGN)

SCOUR ANALYSIS DETERMINED BY UTILIZING EQUATIONS FROM HEC-18 MANUAL.

CLEAR-WATER CONTRACTION SCOUR EQUATIONS(EQNS. 6.4 & 6.5)
D50 = 0.2 MM
K1 = 0.69

SCOUR DEPTH Y_s (CHANNEL) =0 FT
SCOUR DEPTH Y_s (RIGHT OVERBANK) =0 FT
SCOUR DEPTH Y_s (LEFT OVERBANK) = 0 FT

PIER SCOUR EQUATIONS(EQNS. 7.1)
D95 = 0.2 MM

SCOUR DEPTH Y_s (PIER 2) = 3.50 FT

SCOUR ANALYSIS - 100 YR (CHECK)

SCOUR ANALYSIS DETERMINED BY UTILIZING EQUATIONS FROM HEC-18 MANUAL.

CLEAR-WATER CONTRACTION SCOUR EQUATIONS EQNS. (6.4 & 6.5)
D50 = 0.2 MM
K1 = 0.69

SCOUR DEPTH Y_s (CHANNEL) =0 FT
SCOUR DEPTH Y_s (RIGHT OVERBANK)=0.53FT
SCOUR DEPTH Y_s (LEFT OVERBANK) = 0 FT

PIER SCOUR EQUATIONS(EQNS. 7.1)
D95 = 0.2 MM

SCOUR DEPTH Y_s (PIER 2) = 3.51 FT

NOTES:

1. USACE HEC-RAS VERSION 5.0.7 UTILIZED FOR THE ANALYSIS.
2. GEOTECHNICAL REPORT DID NOT PROVIDE D50 VALUE. TxDOT MINIMUM D50 (0.2 MM) WAS USED FOR ANALYSIS.

STATE OF TEXAS
KYLE P. MOYNIHAN
125696
LICENSED
PROFESSIONAL ENGINEER
10/12/2021

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IEA
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Texas Department of Transportation

FM 800
HYDRAULIC DATA SHEET
CAMERON COUNTY
BRIDGE
STA 43+57.51

SHEET 3 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		249
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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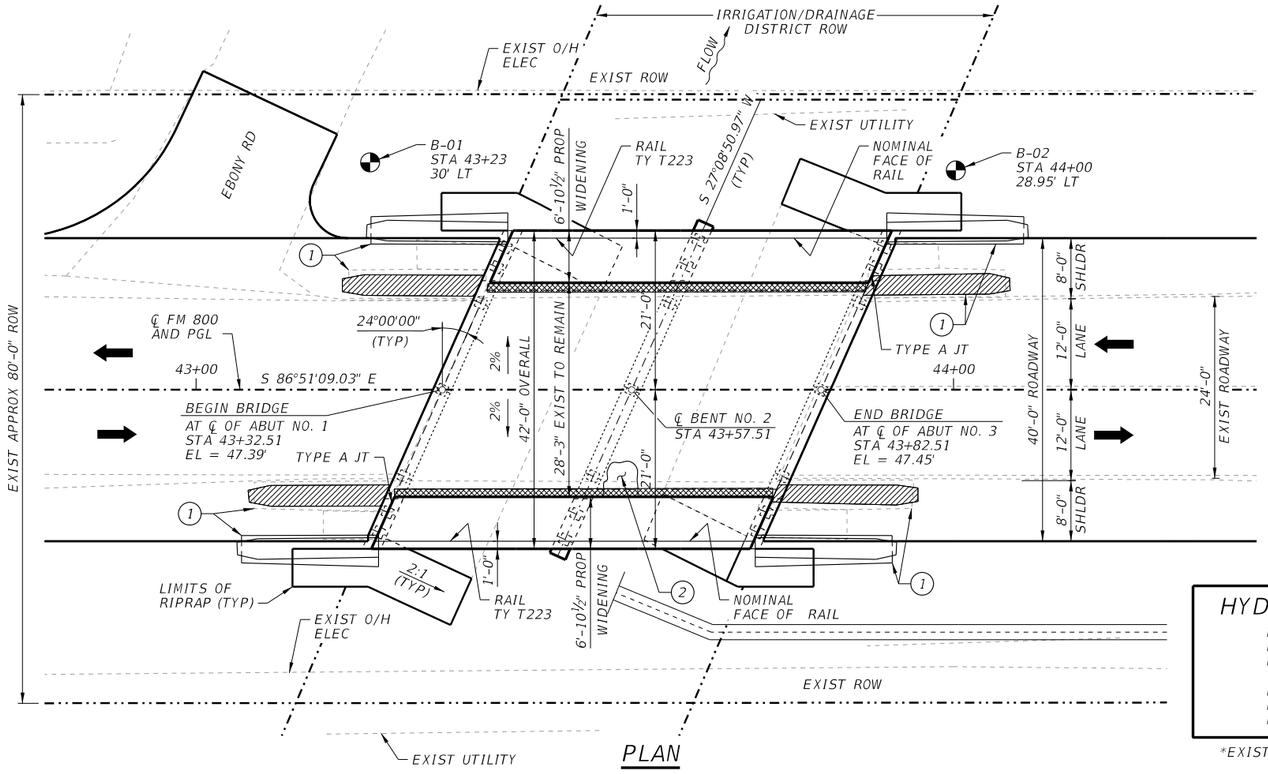
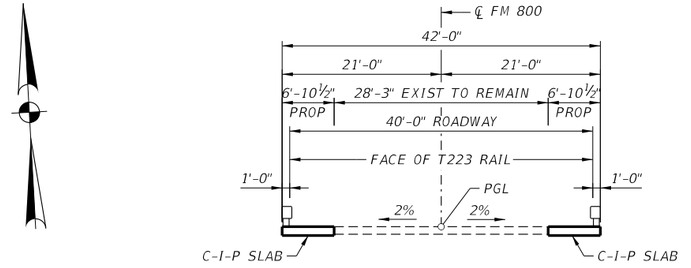


PLAN



TYPICAL TRANSVERSE SECTION

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (HL93 LOADING) AND CURRENT INTERIMS.
2. FIELD VERIFY EXISTING BRIDGE ELEMENTS LOCATION PRIOR TO CONSTRUCTION.
3. SEE CSAB STANDARD FOR CEMENT STABILIZED BACKFILL BEHIND ABUTMENTS.

EXIST NBI NUMBER: 21-031-0-1136-02-010
FUNCTION CLASSIFICATION: MAJOR COLLECTOR
DESIGN SPEED: 50 MPH
EXISTING ADT: 1,737 (2018)
FUTURE ADT: 2,432 (2038)

(1) CONTRACTOR TO REMOVE EXISTING QUAD GUARD CRASH CUSHION AND DELIVER TO THE SAN BENITO AREA OFFICE. SEE ROADWAY SHEETS FOR NEW MASH COMPLIANT CRASH CUSHION.

(2) REMOVE AND REPLACE DETERIORATED EXISTING DECK IN THIS AREA - 30sq ft ASSUMED. IN ACCORDANCE WITH ITEM 429 CONCRETE STRUCTURE REPAIR. PAYMENT QUANTITY INCLUDED IN "REINF CONC SLAB (EXTEND SLAB)" ITEM #0422 6003

LEGEND:

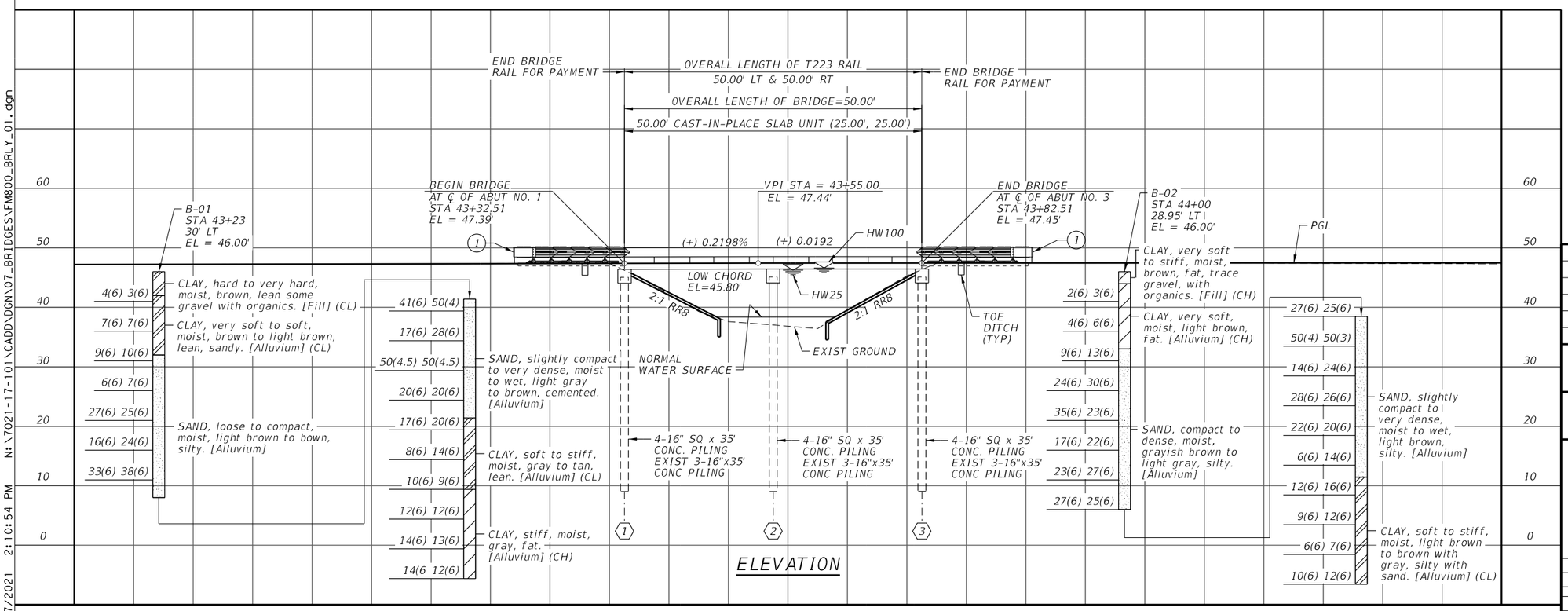
REMOVE T223 RAIL.

REMOVE CRASH CUSHION FOUNDATION.

HYDRAULIC DATA TABLE

PROP HW25	= 46.24
PROP Q25	= 2,874 CFS
PROP V25	= 1.64 FT/S
PROP HW100	= 46.61 FT
PROP Q100	= 4,070 CFS
PROP V100	= 1.57 FT/S

*EXIST HYDRAULIC DATA NOT AVAILABLE



ELEVATION

10/7/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

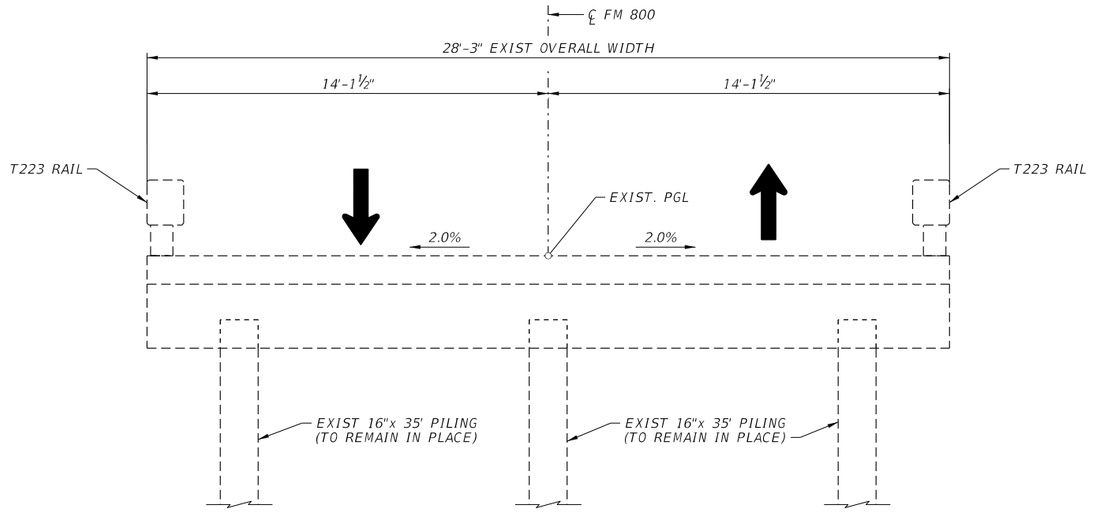
ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

FM 800

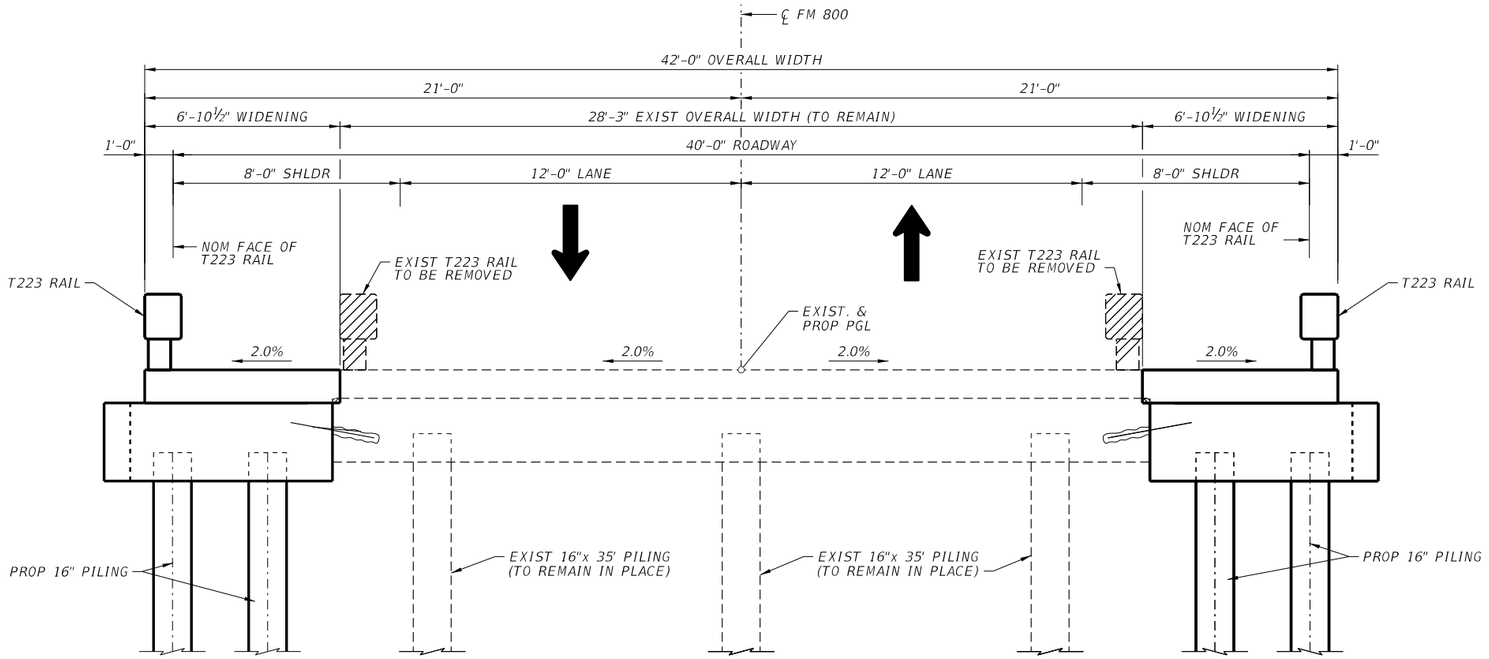
BRIDGE WIDENING LAYOUT FM 800 AT DITCH

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			250
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800



EXISTING BRIDGE TYPICAL SECTION



PROPOSED BRIDGE TYPICAL SECTION

NOTE: SHOWING BENT CAP.

LEGEND

TO BE REMOVED (T223 RAIL)

TRAFFIC

STATE OF TEXAS
LLOYD M. WOLF
73649
REGISTERED PROFESSIONAL ENGINEER

10/7/2021

HS20 LOADING EXISTING
HL93 LOADING WIDENING

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800

BRIDGE
TYPICAL SECTIONS
FM 800 AT DITCH

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			251
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_BRTY_01.dgn

10/7/2021 1:56:44 PM N:\7021-17-101\CADD\DGN\07_BRIDGES\FM800_BRTY_01.dgn

SUMMARY OF ESTIMATED QUANTITIES

ITEM / DESCRIPTION	409 6001	420 6019	420 6033	422 6003	432 6006	450 6006	496 6099
	PRSTR CONC PILE (16" SQ)	CL C CONC (ABUT) (EXTEND)	CL C CONC (CAP) (EXTEND)	REINF CONC SLAB (EXTEND SLAB)	RIPRAP (CONC) (CL B)	RAIL (TY T223)	REMOVE STR (RAIL)
	LF	CY	CY	SF	CY	LF	LF
2 ABUTMENTS	280	6.1					
1 BENT	140		3.8				
1 50.00' CAST-IN-PLACE SLAB UNIT				687.5	10.9	100	100
TOTAL	420	6.1	3.8	687.5	10.9	100	100

STATE OF TEXAS
LLOYD M. WOLF
73649
REGISTERED
PROFESSIONAL ENGINEER

Lloyd M. Wolf

10/7/2021

HS20 LOADING EXISTING
HL93 LOADING WIDENING

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
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Suite 500
Houston, Texas, 77094
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281-945-0081 FX

Texas Department of Transportation

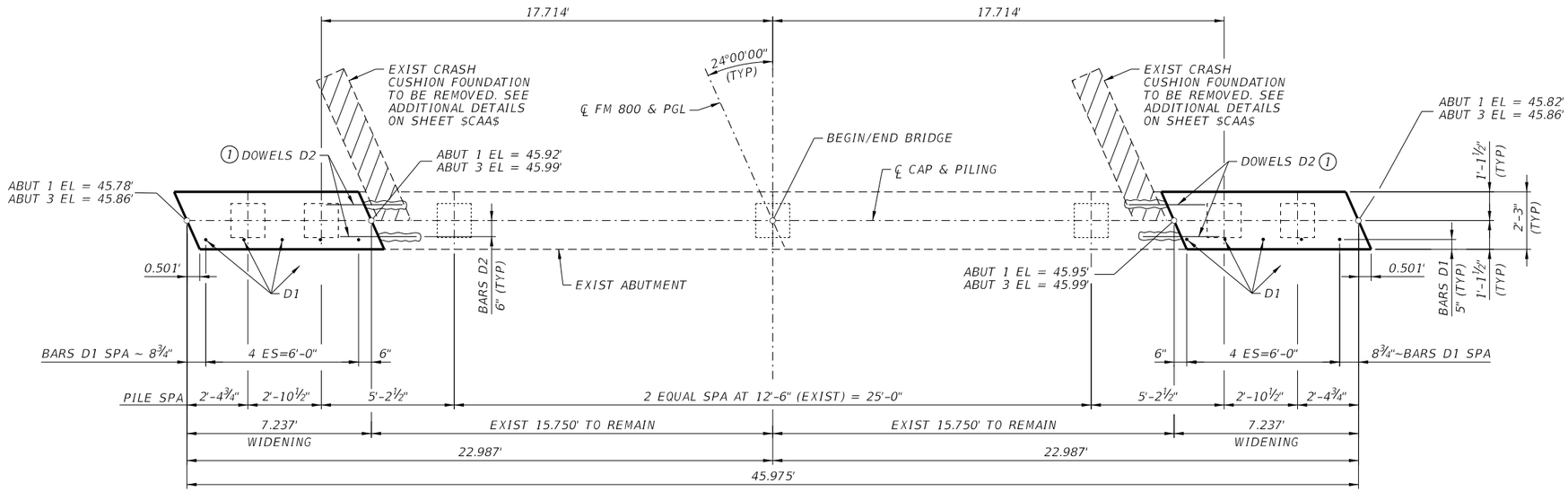
FM 800

ESTIMATED QUANTITIES
FM 800 AT DITCH

SHEET 1 OF 1

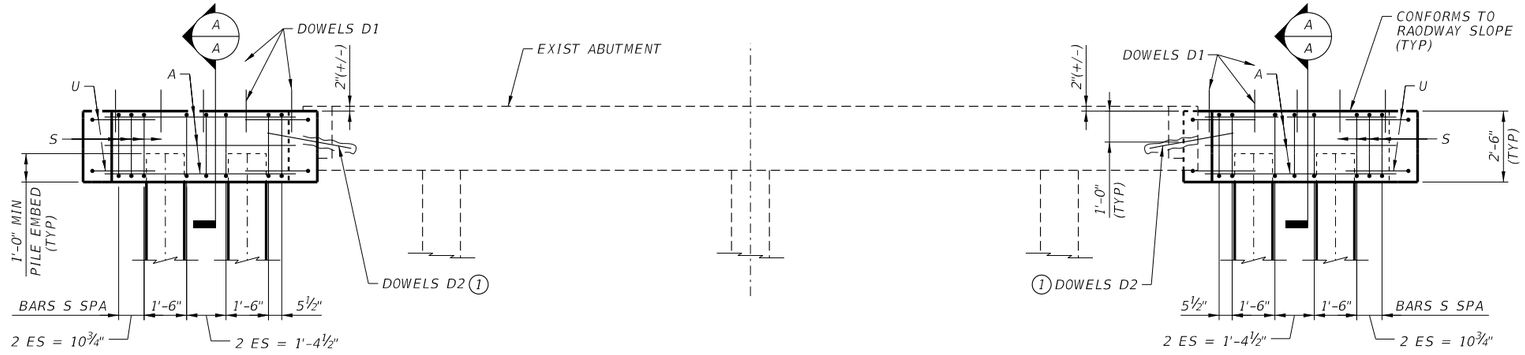
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	---		252
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_BREQ_01.dgn

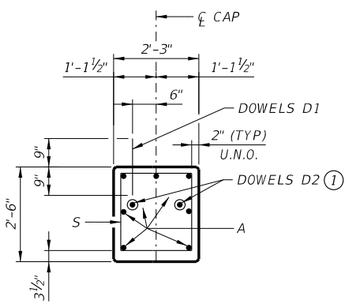


PLAN

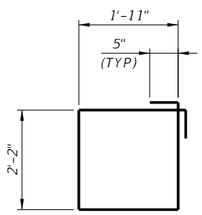
(SHOWING ABUTMENT #1; ABUTMENT #3 IS SYMMETRICAL BY OPPOSITE HAND)



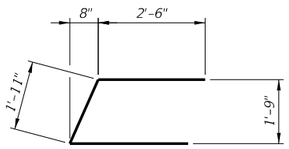
ELEVATION



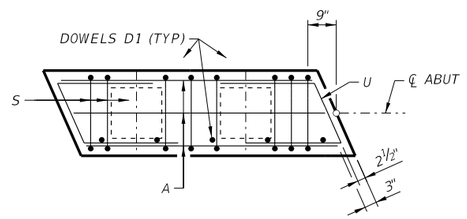
SECTION A-A



BARS S



BARS U



TYPICAL CORNER DETAIL

NOTE: BARS D2 NOT SHOWN FOR CLARITY.

② TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A	14	#9	6'-9"	321
S	16	#4	9'-0"	96
U	4	#6	8'-8"	52
D1	10	#6	1'-6"	23
D2	4	#9	3'-0"	41
REINFORCING STEEL			LB	533
CLASS "C" CONCRETE			CY	2.7

② QUANTITIES SHOWN ARE FOR ONE COMPLETE ABUTMENT WIDENING BOTH SIDES ONLY.

① DRILL & GROUT DOWELS D2 1'-6" INTO EXISTING ABUTMENT CAP.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS.
2. ALL CAP AND WALL REINFORCING SHALL BE GRADE 60.
3. CLASS "C" CONCRETE STRENGTH F'C = 3,600 PSI.
4. SEE LAYOUT FOR FOUNDATION TYPE, SIZE AND LENGTH.
5. SEE STANDARD FD FOR FOUNDATION DETAILS AND NOTES.
6. SEE STANDARD CS-MD FOR JOINT DETAILS AND DETAILS NOT SHOWN.
7. CALCULATED FOUNDATION LOADS: 25 TONS/PILE.

STATE OF TEXAS
LLOYD M. WOLF
73649
REGISTERED
PROFESSIONAL ENGINEER

Lloyd M. Wolf

10/7/2021

HS20 LOADING EXISTING
HL93 LOADING WIDENING

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

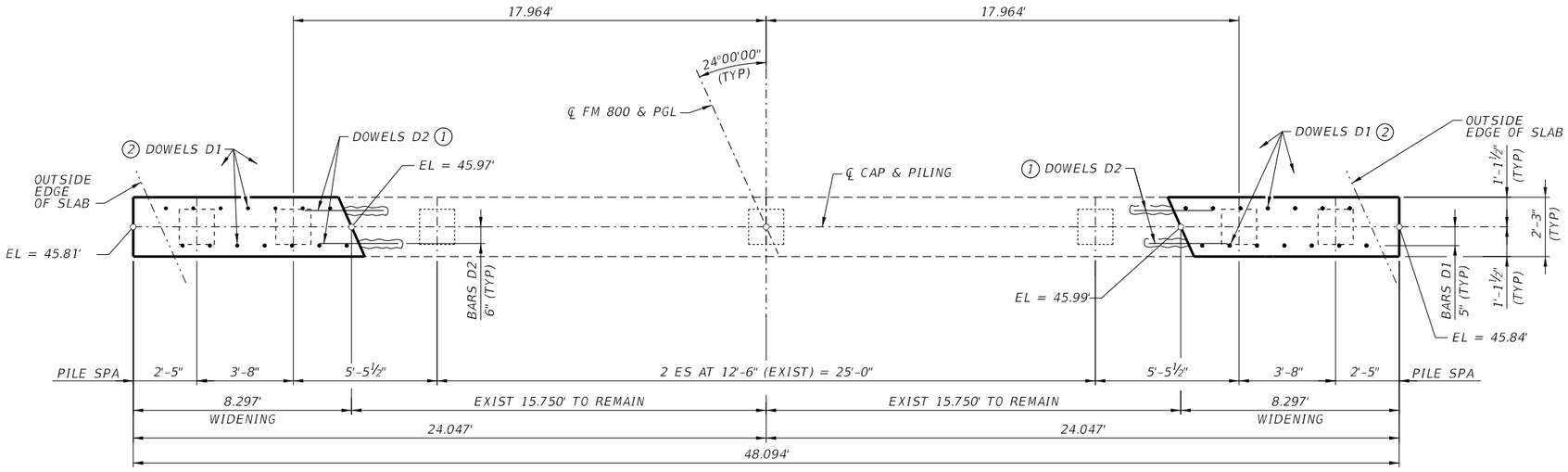
FM 800

ABUTMENT NO. 1 & 3 DETAILS
FM 800 AT DITCH

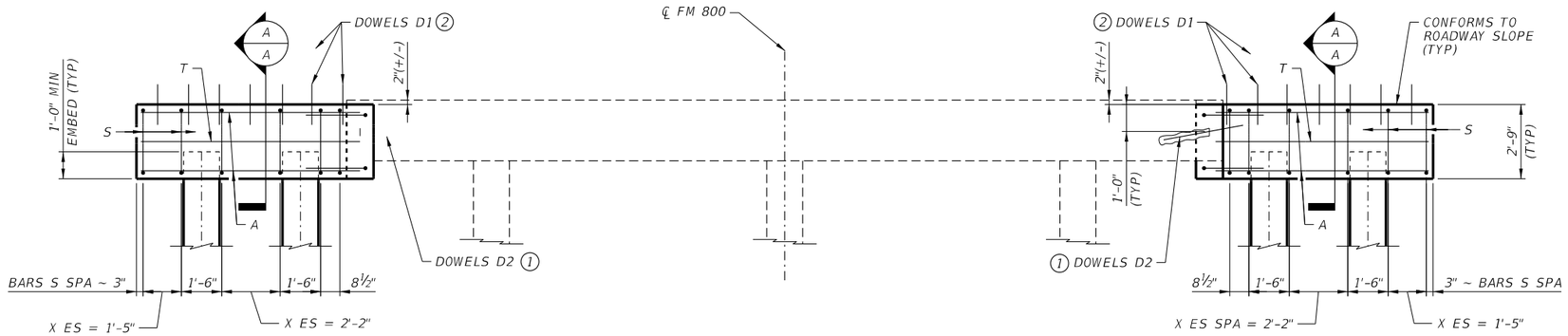
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	---		253
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

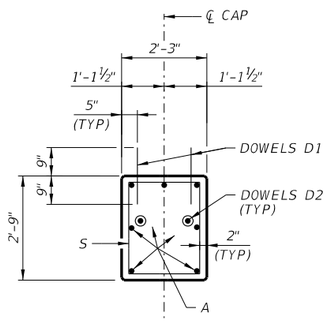
FM800_BRAD_01.dgn



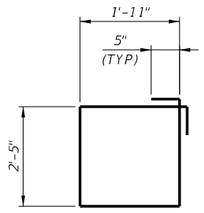
PLAN



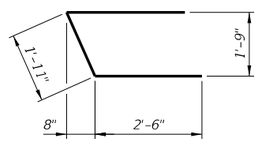
ELEVATION



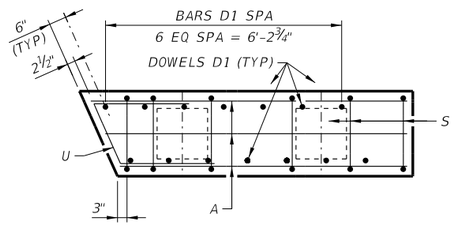
SECTION A-A



BARS S



BARS U



TYPICAL CORNER DETAIL

NOTE: BARS D2 NOT SHOWN FOR CLARITY.

③ TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A	14	#9	8'-0"	381
S	X	#4	9'-5"	X
T	4	#4	8'-0"	21
D1	28	#6	1'-6"	63
D2	4	#9	3'-0"	41
REINFORCING STEEL			LB	X
CLASS "C" CONCRETE			CY	3.8

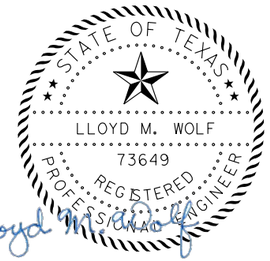
③ QUANTITIES SHOWN ARE FOR ONE COMPLETE BENT WIDENING BOTH SIDES ONLY.

① DRILL & GROUT DOWELS D2 1'-6" INTO EXISTING INTERIOR BENT CAP.

② BARS D1, SEE "TYPICAL CORNER DETAIL" FOR SPACING.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS.
2. ALL CAP REINFORCING SHALL BE GRADE 60.
3. CLASS "C" CONCRETE STRENGTH F'C = 3,600 PSI.
4. SEE LAYOUT FOR FOUNDATION TYPE, SIZE AND LENGTH.
5. SEE STANDARD FD FOR FOUNDATION DETAILS AND NOTES.
6. SEE STANDARD CS-MD FOR DETAILS NOT SHOWN.
7. CALCULATED FOUNDATION LOADS: 65 TONS/PILE.



10/7/2021

HS20 LOADING EXISTING
HL93 LOADING WIDENING

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800

INTERIOR BENT NO. 2 DETAILS FM 800 AT DITCH

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
			254
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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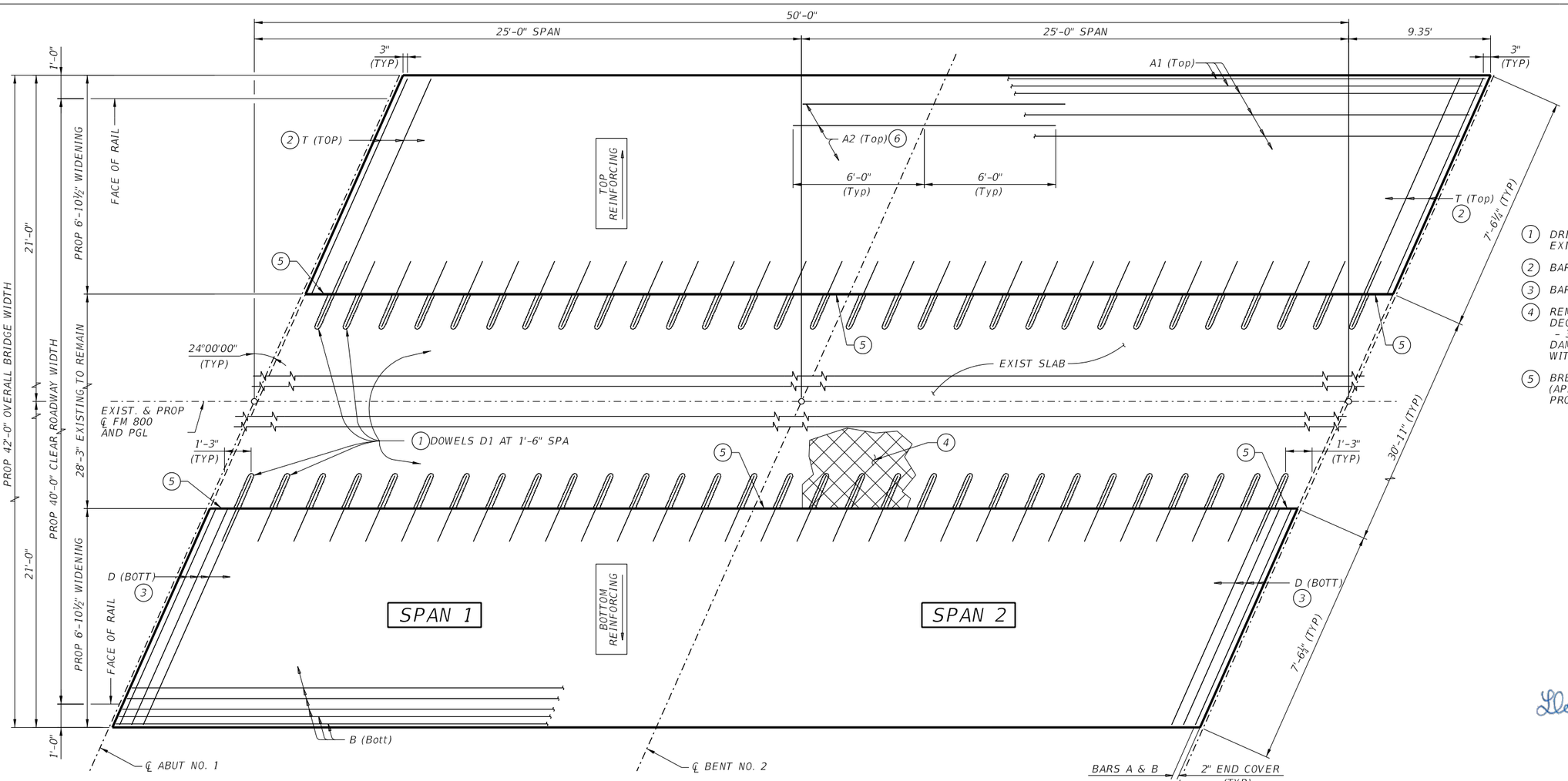
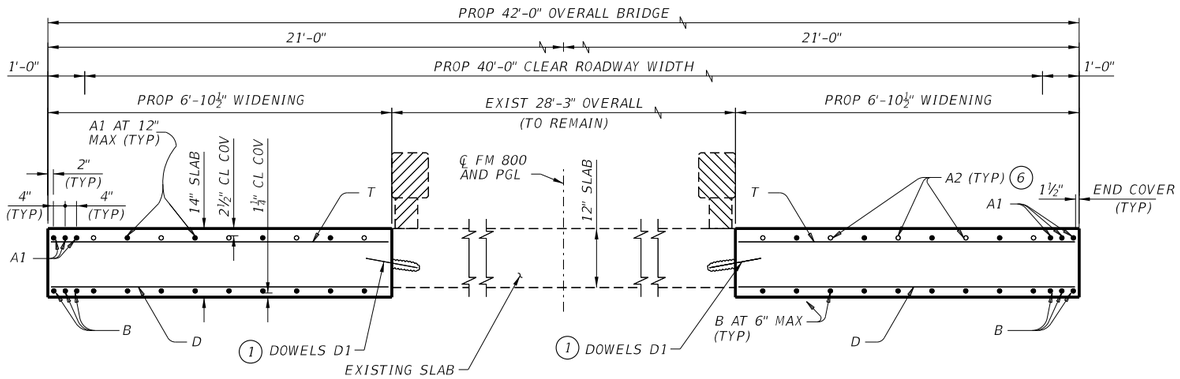


PLAN



TYPICAL TRANSVERSE SECTION

(6) PLACE BARS A2 BETWEEN BARS A1 OVER BENT NO. 2 (SEE PLAN FOR PLACEMENT)

TABLE OF ESTIMATED QUANTITIES

Bar	No.	Size	Length	Weight
A1	18	# 8	49'-8"	2387
A2	14	# 8	12'-0"	449
B	30	# 8	49'-8"	3979
D	200	# 4	7'-3"	968
D1	66	# 6	3'-0"	298
T	102	# 4	7'-3"	494
REINFORCING STEEL			LB	8,575
CLASS "S" CONCRETE			CY	30.3

1. DRILL AND GROUT DOWELS D1 1'-6" INTO EXISTING SLAB.
2. BARS T (TOP) AT 12" MAX SPACING.
3. BARS D (BOTT) AT 6" MAX SPACING.
4. REMOVE AND REPLACE DETERIORATED EXISTING DECK IN THIS AREA SUBSIDIARY TO WIDENING – 30sq ft APPROXIMATE. REPAIR/REPLACE DAMAGED/DETERIORATED REINFORCING STEEL WITH APPROVAL OF THE ENGINEER OF RECORD.
5. BREAKBACK EXISTING ABUTMENT AND BENT CAP (APPROXIMATE 3" WIDE 2" DEEP) TO ALLOW FOR PROPOSED CAST-IN-PLACE SLAB PLACEMENT.

STATE OF TEXAS
LLOYD M. WOLF
73649
REGISTERED PROFESSIONAL ENGINEER

Lloyd M. Wolf

10/7/2021

HS20 LOADING EXISTING
HL93 LOADING WIDENING

LEGEND

TO BE REMOVED (T223 RAIL)

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (HL93 LOADING) AND CURRENT INTERIMS.
2. ALL SLAB CONCRETE SHALL BE CLASS "S" f/c = 4,000PSI.
3. ALL REINFORCING STEEL SHALL BE GRADE 60.
4. FORM SUPPORTS SHALL REMAIN IN PLACE IN EACH SPAN UNTIL ALL SLABS OF THE UNIT HAVE BEEN PLACED. BARS LAPS NOT PERMITTED FOR BARS A AND B.
5. SEE CS-MD STANDARD FOR ADDITIONAL DETAILS.

ISSUE RECORD		
NO.	DESCRIPTION	DATE

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281-945-0069 Ph
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Texas Department of Transportation

FM 800

50' CONTINUOUS SLAB UNIT DETAILS FM 800 AT DITCH

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			255
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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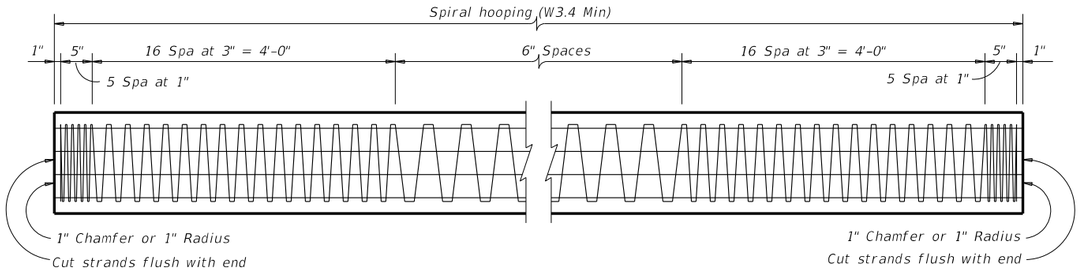
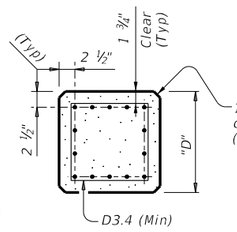
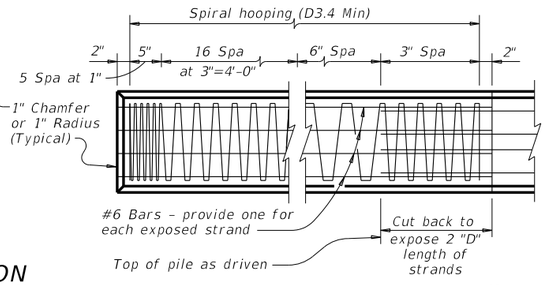
DATE:
FILE:



PILE DETAILS

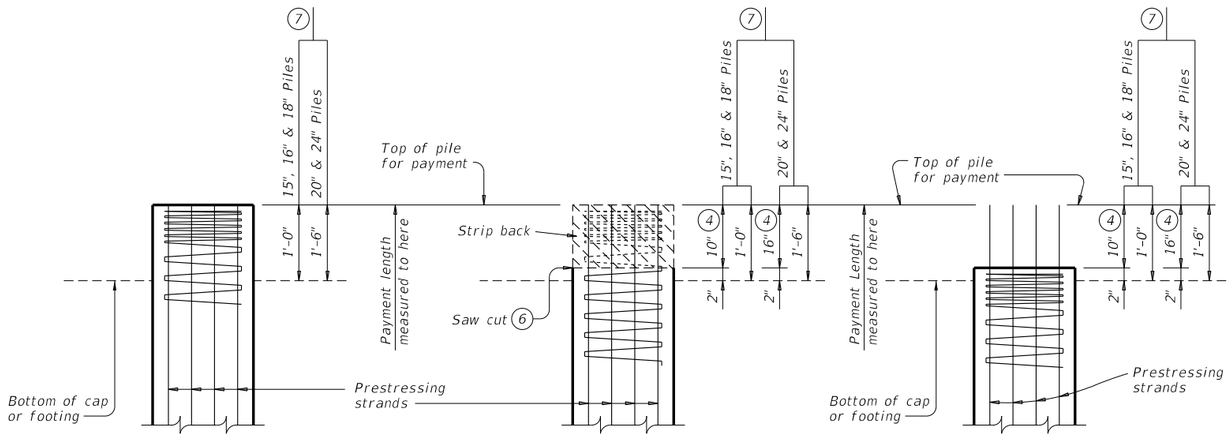


TYPICAL SECTION THRU PILE (1)



PILE BUILD-UP DETAIL (2)

Pile Size "D"	Area of Pile Section	I	Weight	Prestressing (5)		
				No.	Initial Prestress Force	Concrete Final Prestress (15% Loss)
	Sq In	In 4	Lb/Ft		Kips	psi
16"	254	5,340	265	8	231	774
18"	322	8,600	336	10	289	763
20"	398	13,150	415	14	405	864
24"	574	27,380	598	18	520	770

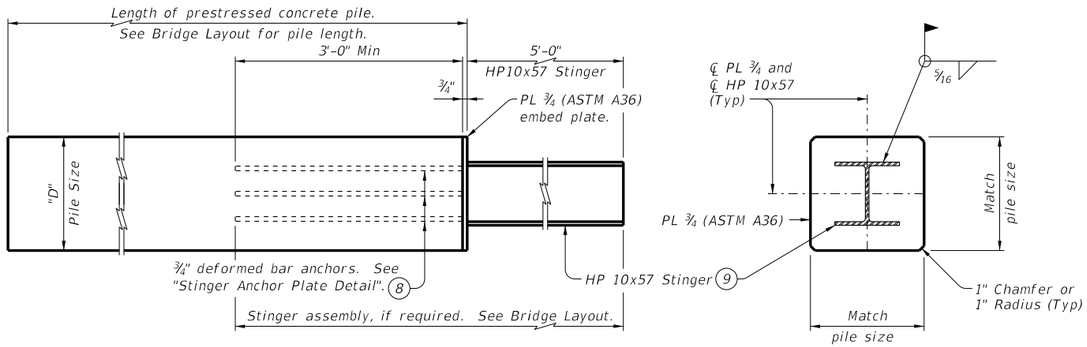


TYPICAL PILE EMBEDMENT

PILE STRIPPED BACK AFTER DRIVING

PILE CAST WITH PRESTRESSING STRANDS PROTRUDING

PILE EMBEDMENT DETAILS (3)

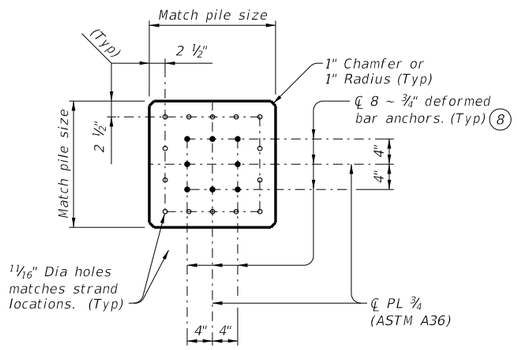


SIDE ELEVATION

STINGER SECTION

TYPICAL PILE AND STINGER ASSEMBLY DETAILS

Pile strands, reinforcing, and holes in stinger anchor plate not shown for clarity.



STINGER ANCHOR PLATE DETAIL

Showing stinger anchor plate for 20" pile, stinger anchor plates for other pile sizes are similar.

1. Locate strands symmetrically about the axis of the pile, with no more than one strand difference between any two adjacent sides.
2. Provide Class S concrete (f'c = 4,000 psi) for pile build-ups.
3. Use typical pile embedment details unless shown otherwise elsewhere in the plans. Payment for piles will be in accordance with the details shown. Strip back piling and extend prestressing strands into substructure when piling conflicts with substructure reinforcing or when the side cover from pile edge to substructure edge is less than 4" after driving.
4. When stripped back piles are required, strip back piling after driving or cast short with strands protruding from top of piling as shown.
5. Provide ½" 270 ksi low relaxation strands tensioned to 28.9 kips each. If an optional design is used, provide a minimum concrete final prestress of 750 psi. Submit optional designs for approval.
6. Saw cut ½" deep around perimeter of pile at the breakback line.
7. Unless shown otherwise.
8. ¾" deformed bar anchors (DBA), electric arc-welded to stinger anchor plate with complete fusion.
9. Place center of stinger within ½" of center of piling.

FABRICATION NOTES:

Provide Class H concrete. Provide sulfate resistant concrete when required.

Minimum release strength, f'ci = 4,000 psi.

Minimum 28-day strength, f'c = 5,000 psi.

All dimensions relating to prestressing steel are to centers of strands.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064.

GENERAL NOTES:

See Bridge Layout for size, number, and length of piling.

See Bridge Layout or elsewhere in the plans for stinger assembly requirements. Stinger assembly is subsidiary to the pile.

Shop drawing submittal and approval is not required if fabrication is in accordance with the details shown on this standard.

For treatment of damaged pile and the lifting loops, see the Concrete Repair Manual.

Cover dimensions are clear dimensions, unless noted otherwise.

Texas Department of Transportation

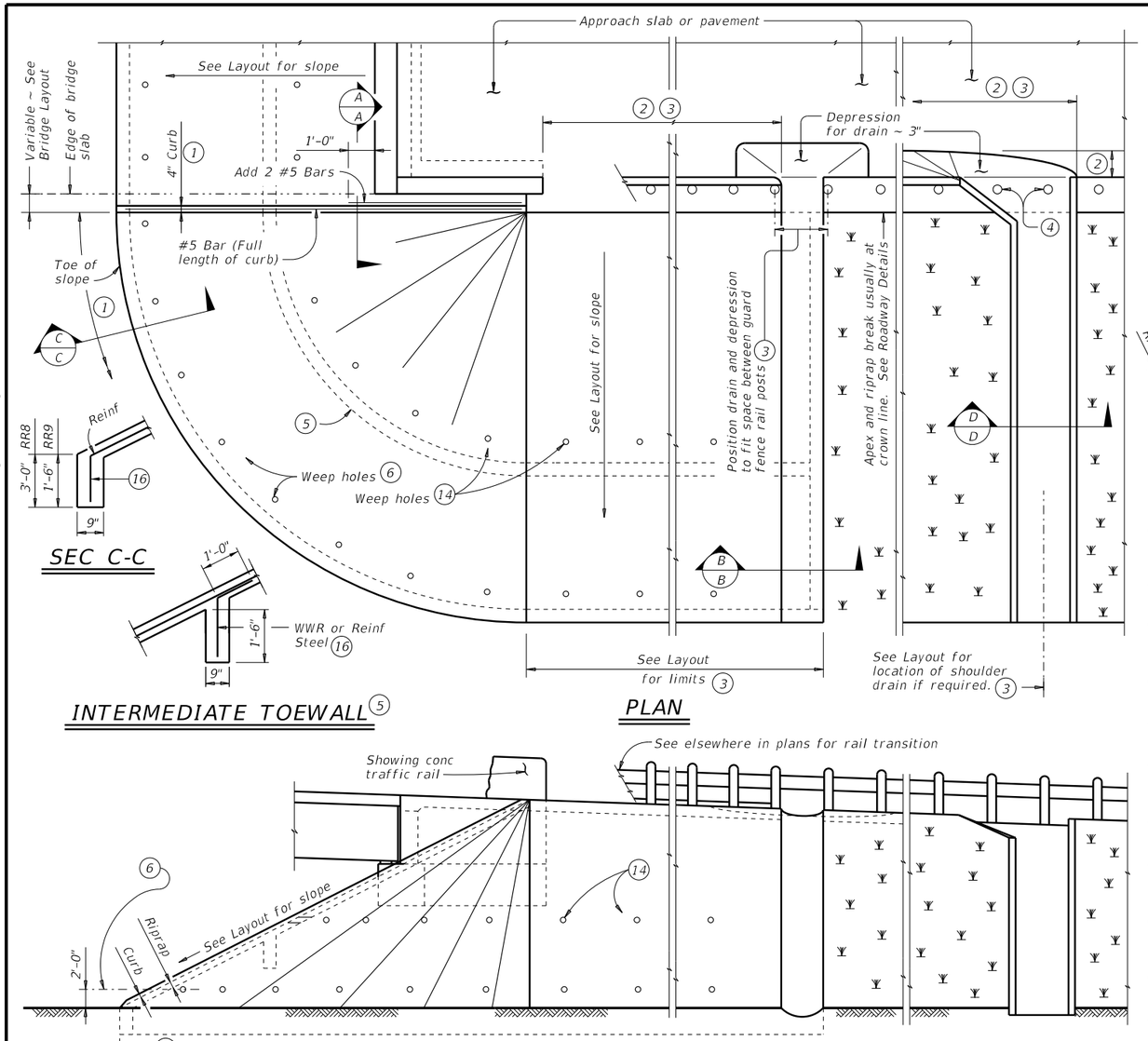
Bridge Division Standard

PRESTRESSED CONCRETE PILING

CP

FILE: cpstde01-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		256

DATE:
FILE:

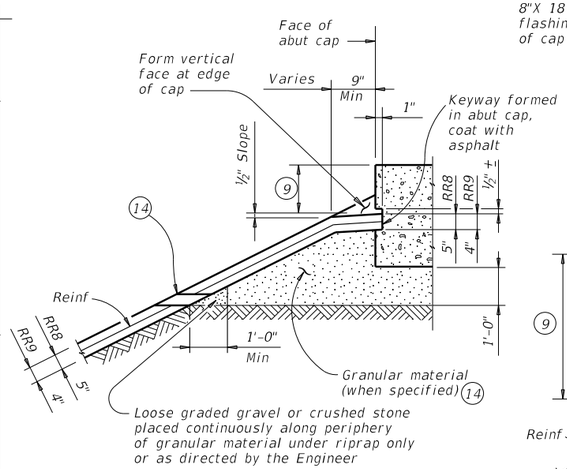


PLAN

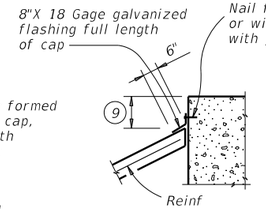
SEC C-C

INTERMEDIATE TOEWALL

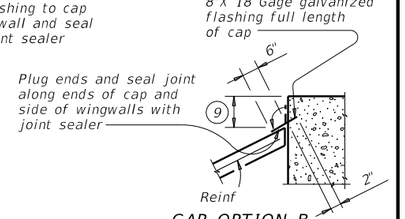
ELEVATION



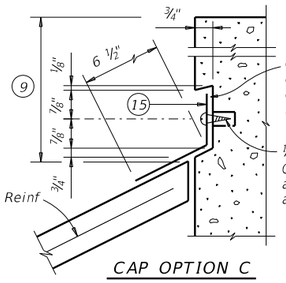
SHOWING KEYWAY OPTION



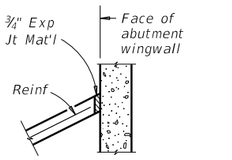
CAP OPTION A



CAP OPTION B

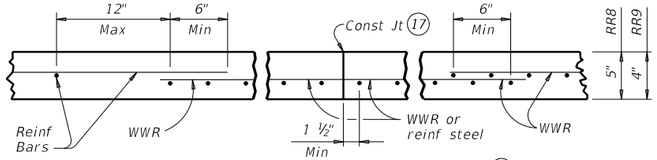


CAP OPTION C



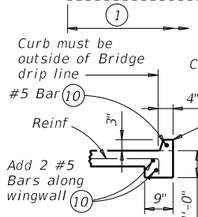
SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)

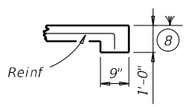


REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

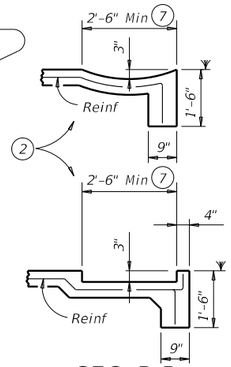


SEC A-A



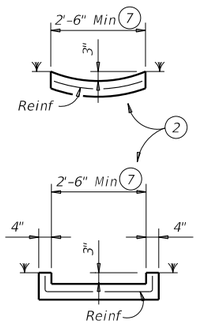
SEC B-B

(No drain)



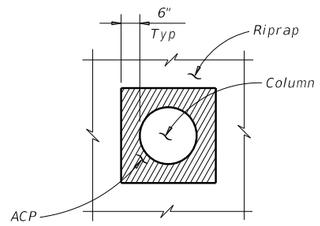
SEC B-B

(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)

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

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

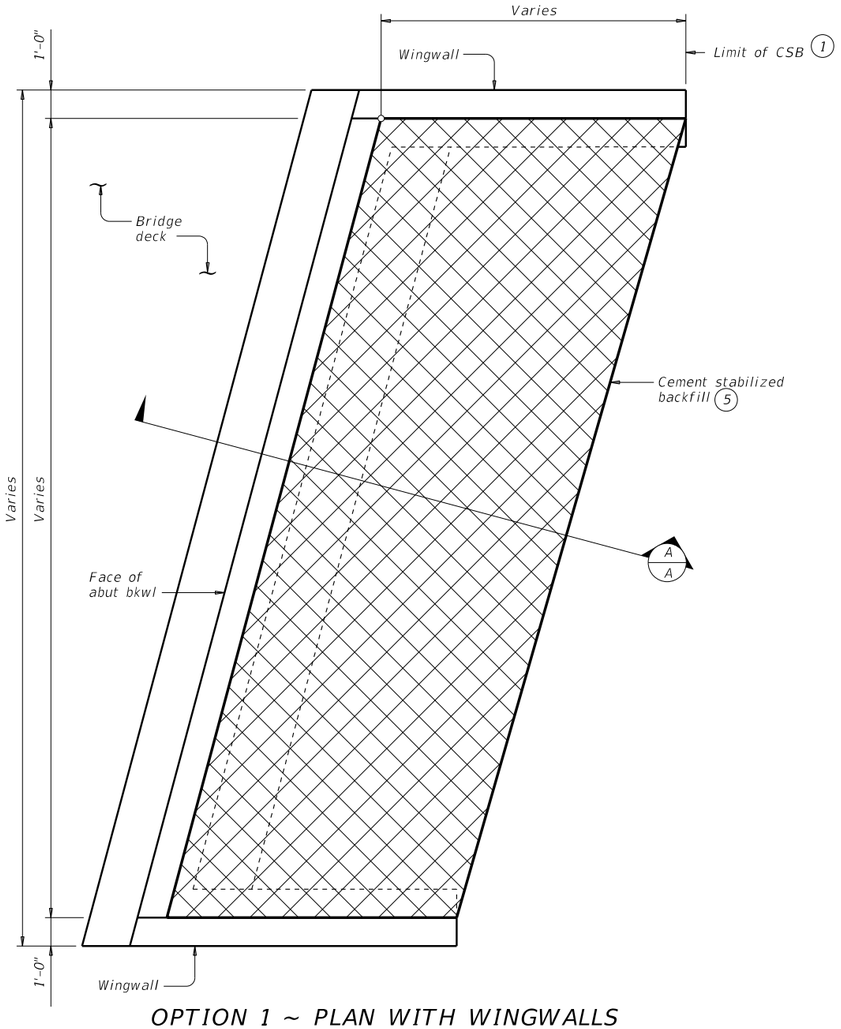
Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

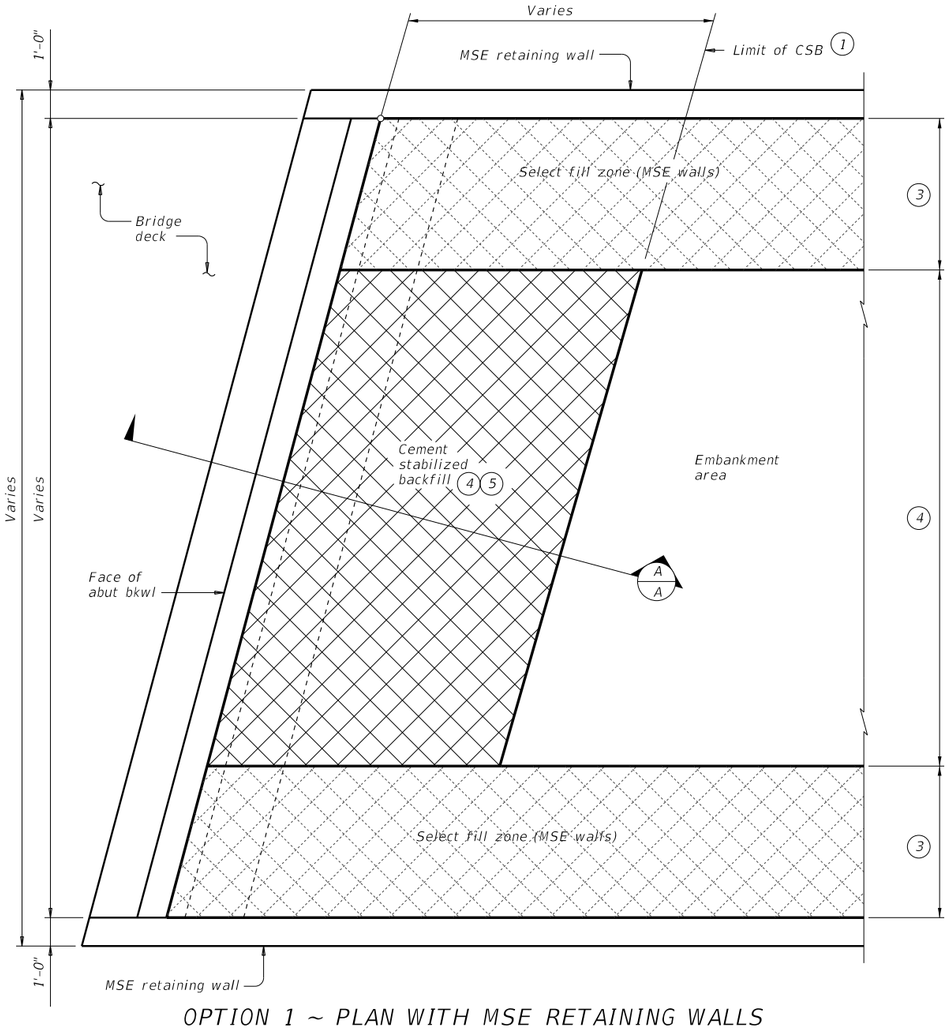
FILE: crrstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		257

DATE:
FILE:

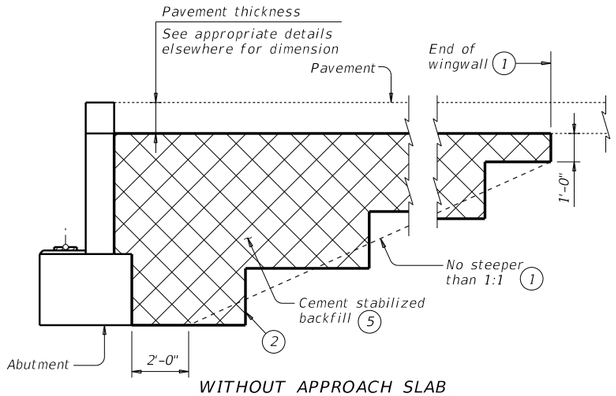


OPTION 1 ~ PLAN WITH WINGWALLS

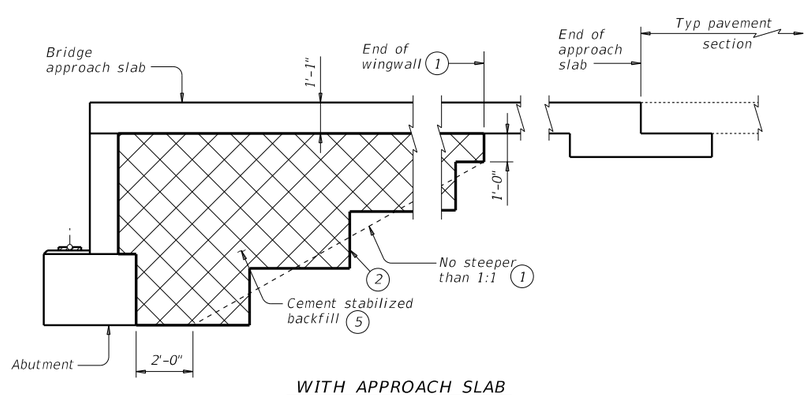
Cast-in-place retaining walls similar.



OPTION 1 ~ PLAN WITH MSE RETAINING WALLS



WITHOUT APPROACH SLAB



WITH APPROACH SLAB

(Showing BAS-C, BAS-A similar.)

SECTION A-A

(1) Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.

(2) Bench backfill as shown with 12" (approximate) bench depths.

(3) Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.

(4) When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.

(5) If shown in the plans flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
a). If flowable backfill is to be placed over MSE backfill then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
b). Place flowable fill in lifts not exceeding 2 feet in height, place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).

GENERAL NOTES:

See the Bridge Layout for selected Option. Option 2 is intended for new construction requiring high plasticity embankment fill with a plasticity index (PI) greater than 30 or pavement built in poor native soil. Poor soils are defined as high plasticity clays or expansive clays. Option 1 is intended for construction only requiring PI controlled embankment fill or excavation in competent soils/rocks in order to construct the abutment.

Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures", to the limits shown at bridge abutments.

If required elsewhere in the plans, provide Flowable Backfill meeting the requirements of Item 401, "Flowable Backfill", to the limits shown at bridge abutments.

Details are drawn showing left forward skew. See Bridge Layout for actual skew direction.

These details do not apply when Concrete Block retaining walls are used in lieu of wingwalls.

Texas Department of Transportation

Bridge Division Standard

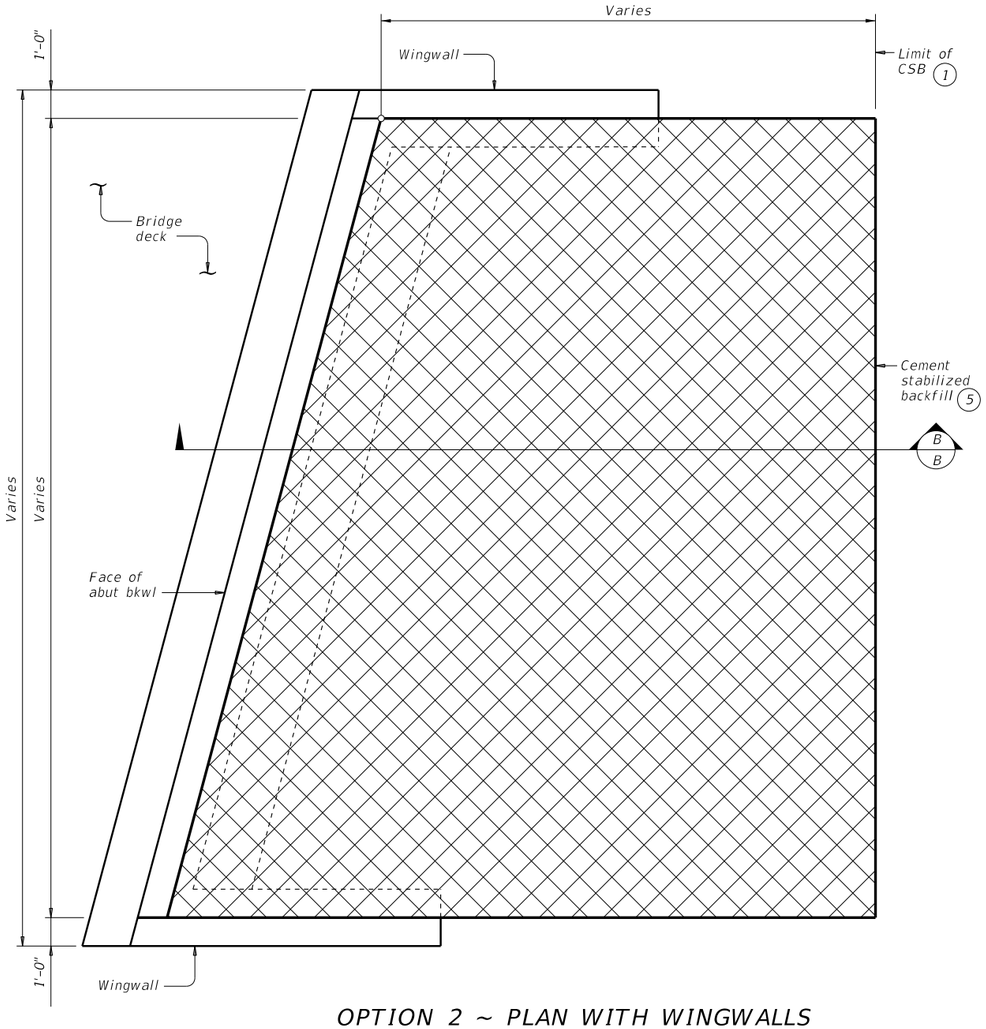
CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

CSAB

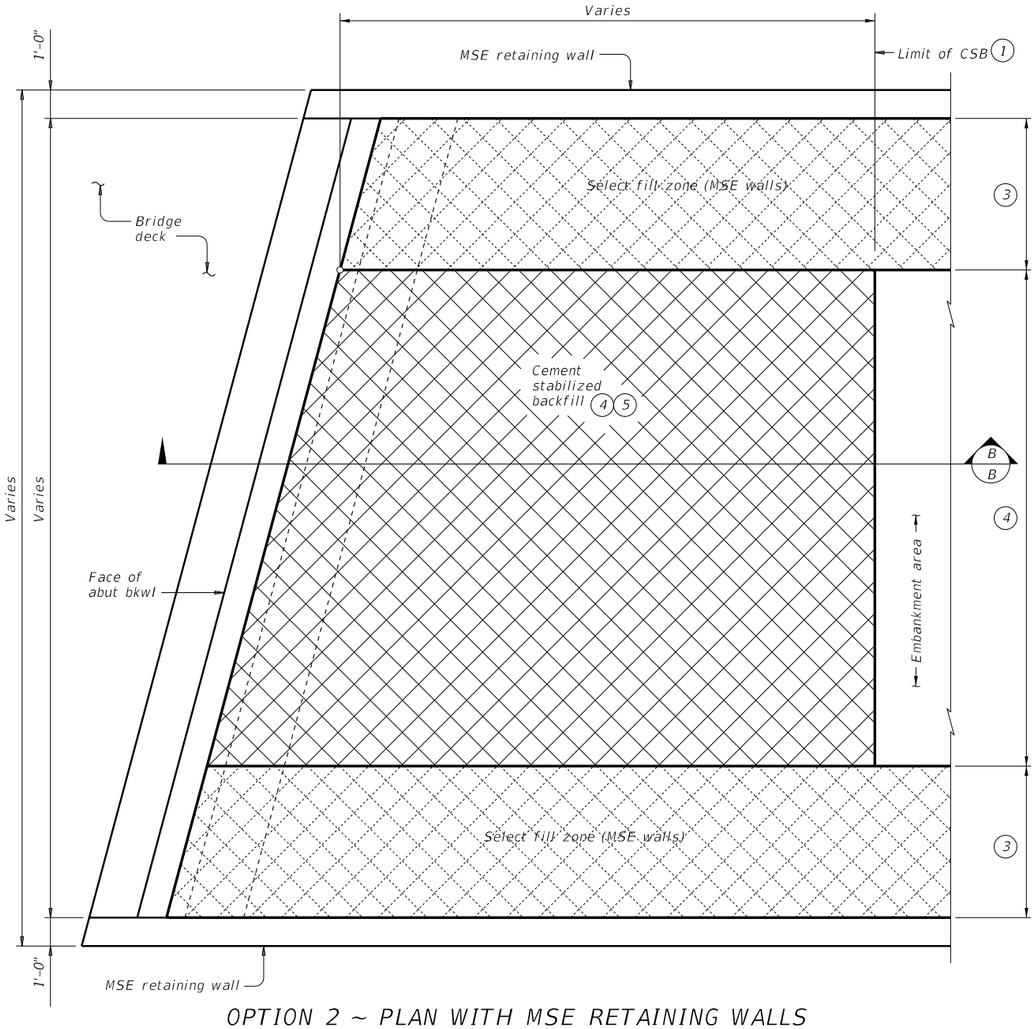
FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		258

DATE:
FILE:



OPTION 2 ~ PLAN WITH WINGWALLS

Cast-in-place retaining walls similar.



OPTION 2 ~ PLAN WITH MSE RETAINING WALLS

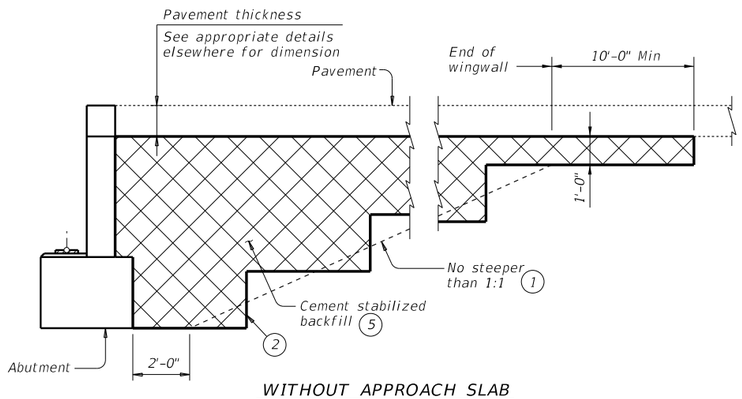
(1) Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.

(2) Bench backfill as shown with 12" (approximate) bench depths.

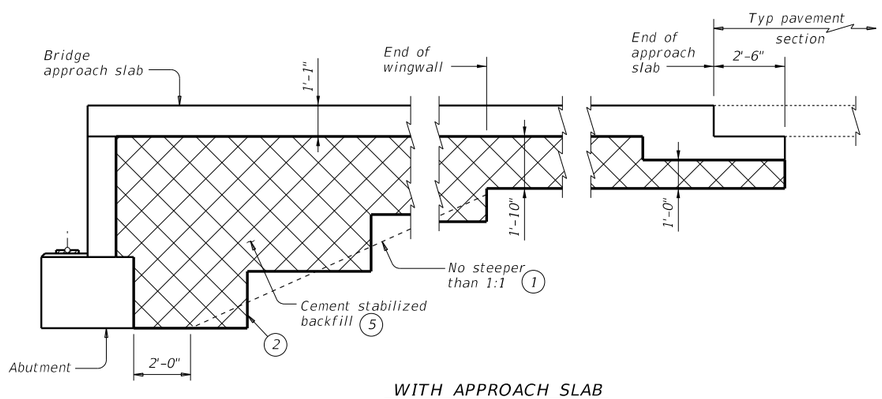
(3) Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.

(4) When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.

(5) If shown in the plans flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
a). If flowable backfill is to be placed over MSE backfill then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
b). Place flowable fill in lifts not exceeding 2 feet in height, place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).



WITHOUT APPROACH SLAB



WITH APPROACH SLAB
(Showing BAS-C, BAS-A similar.)

SECTION B-B

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

CSAB

FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		259

DATE:
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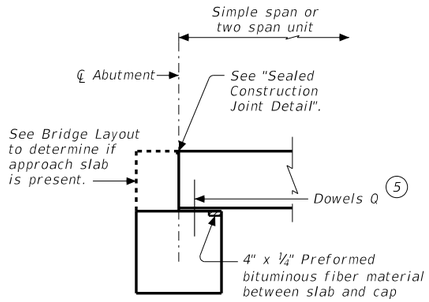
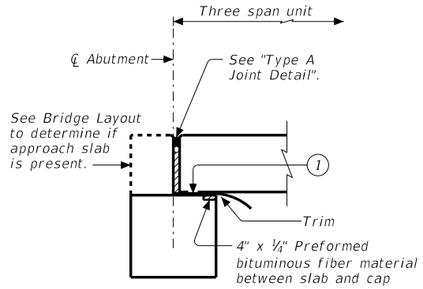
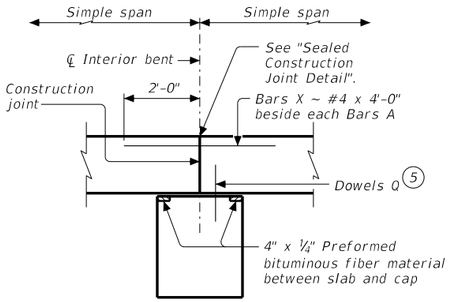


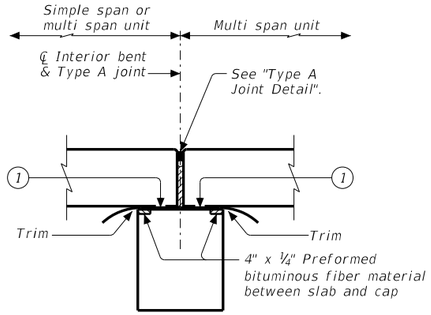
FIXED ABUTMENT



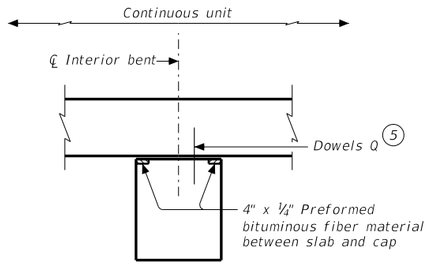
EXPANSION ABUTMENT (9)



FIXED INTERIOR BENT WITH SIMPLE SPANS (8)

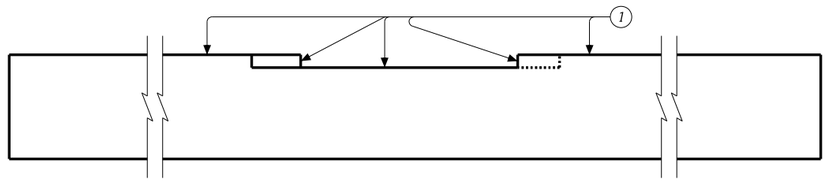


EXPANSION INTERIOR BENT (9)



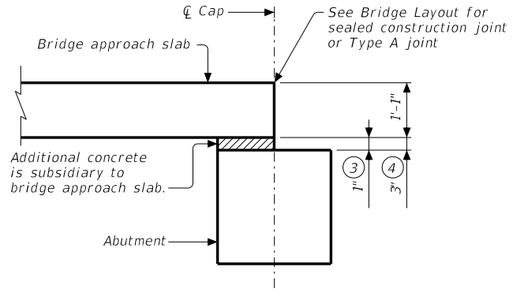
FIXED INTERIOR BENT WITH CONTINUOUS UNIT

ELEVATION AT FIXED OR EXPANSION BENTS (10)

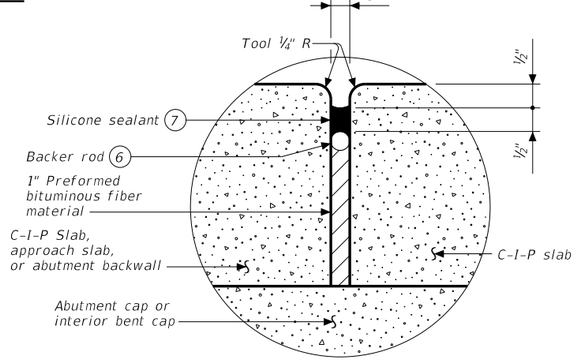


ELEVATION OF CAP

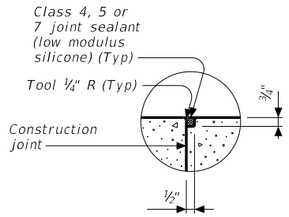
(Showing skewed conditions, non-skewed is similar.)



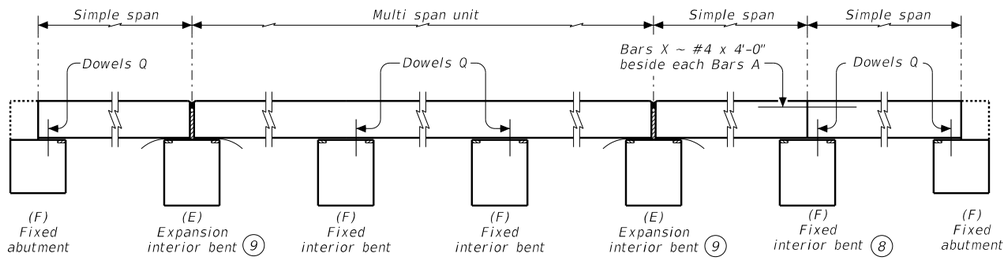
MODIFIED BRIDGE APPROACH SLAB (2)



TYPE A JOINT DETAIL (10)

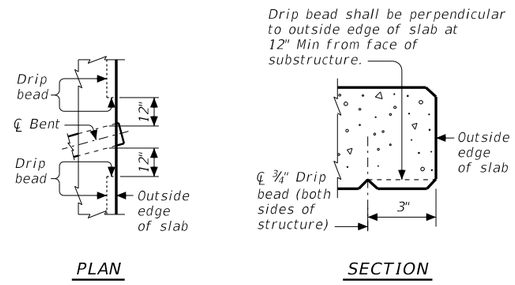


SEALED CONSTRUCTION JOINT DETAIL



EXAMPLE OF FIXED AND EXPANSION BENTS (10)

Showing C-I-P slab span with a 16" slab thickness.



PLAN SECTION

DRIP BEAD DETAILS

ADJUSTMENT IN REINFORCING STEEL QUANTITIES

Rdwy Width	Fixed Condition (8)		Expansion Condition (9)	
	Add Bars X		Deduct Dowel Q	
	Add 2.67 lb/bar		Ded 2.25 lb/bar	
Ft	No.	Weight	No.	Weight
24	30	+80	5	-11
28	34	+91	5	-11
30	36	+96	5	-11
38	44	+118	5	-11
44	50	+134	5	-11

Note: The above quantities are for the fixed or expansion condition over one bent and are for information only.

(1) Smooth trowel finish. Oil top of cap with 60 grade oil and apply heavy coat of powdered graphite. Press down one layer of 30# roofing felt.

(2) See Bridge Layout to determine if approach slab is present.

(3) Use with 14" slab thickness.

(4) Use with 16" slab thickness.

(5) See Abutment or Bent details for location of Dowels Q.

(6) 1 ¼" backer road must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.

(7) Class 7 silicone sealant that conforms to DMS 6310. Install when ambient temperature is between 55°F and 85°F and rising. Engineer to determine allowable hours for sealant application.

(8) Bars X required only when 2 simple spans are used together over a fixed interior bent. The use of 3 consecutive simple spans are not recommended nor supported by this standard.

(9) Omit Dowels Q from expansion bents.

(10) Recommended location of Type A joints are at the ends of 3 span units, ends of 2 span units supported by an interior bent, and no farther than 2 simple spans from an abutment.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Specifications.

Seal slab construction joints at bent locations with Class 4, 5, or 7 joint sealant (low modulus silicone.) See "Sealed Construction Joint Detail.

See Bridge Layout for joint type and location. Provide sealed construction joints or Type A joints.

Payment for Type A joints will be as per item 454, "Bridge Expansion Joints."

Sealed construction joints are subsidiary to the span.

This standard does not support the use of transition bents.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

MISC DETAILS FOR C-I-P CONC SLAB SPANS

CS-MD

FILE: mcs01ste-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		260

DATE:
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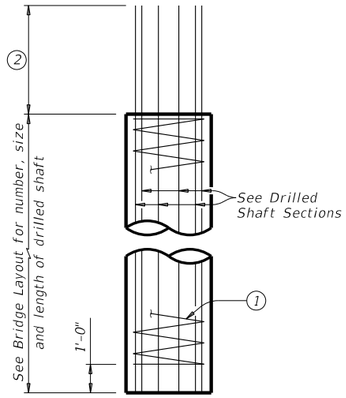
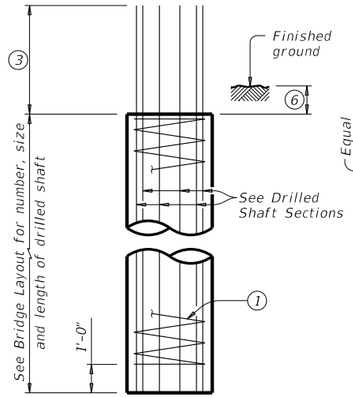
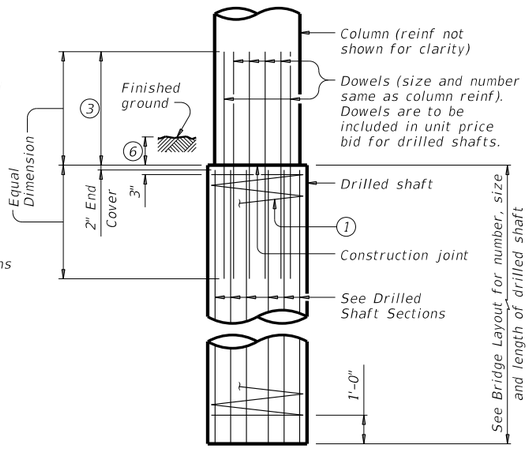


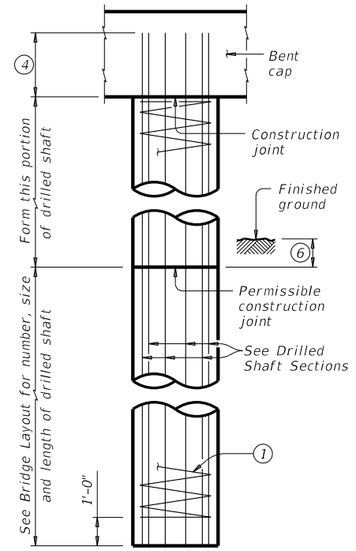
ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS



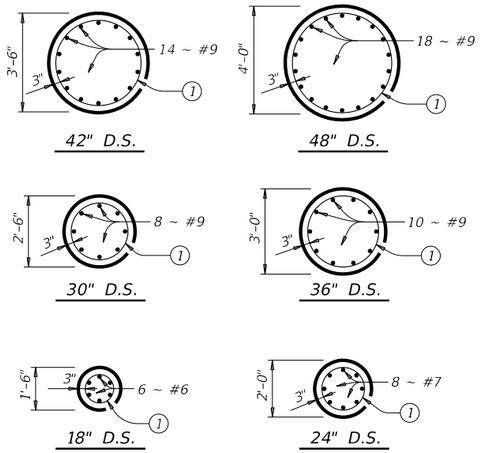
INTERIOR BENTS DRILLED SHAFT DIA EQUAL TO COLUMN DIA



INTERIOR BENTS DRILLED SHAFT DIA GREATER THAN COLUMN DIA



OPTIONAL INTERIOR BENT DRILLED SHAFT DETAIL (5)

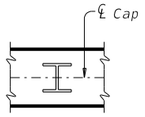


DRILLED SHAFT SECTIONS

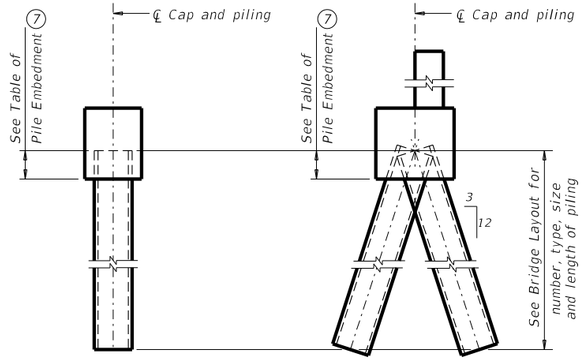
DRILLED SHAFT DETAILS

TABLE OF PILE EMBEDMENT	
Pile Type	Embedment Depth (Ft)
16" Sq Concrete 18" Sq Concrete HP14 Steel HP16 Steel	1'-0"
20" Sq Concrete 24" Sq Concrete HP18 Steel	1'-6"

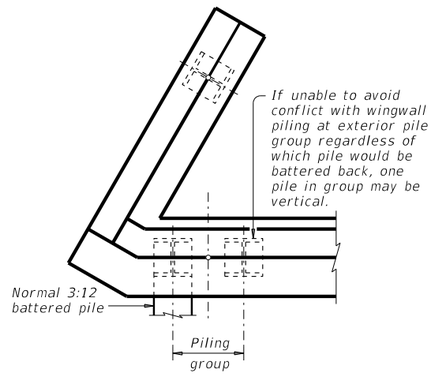
See Prestressed Concrete Piling (CP) standard for additional details on concrete pile embedment.



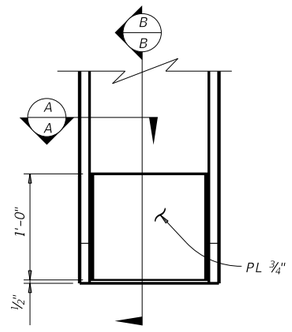
ORIENTATION OF STEEL H-PILING



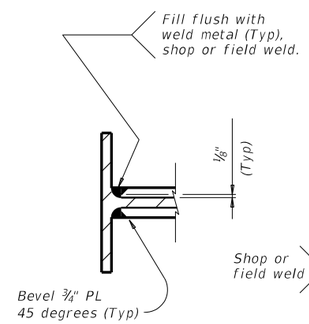
PILING DETAILS
(Concrete or steel H)



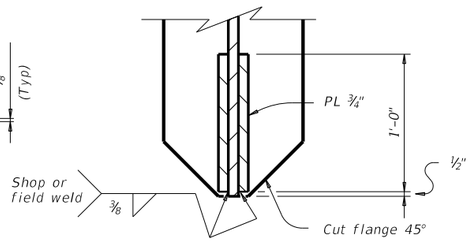
DETAIL "A"
(Showing plan view of a 30° skewed abutment)



ELEVATION



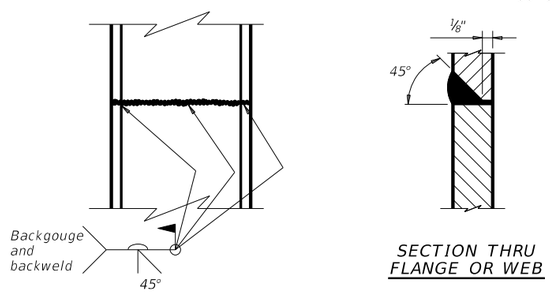
SECTION A-A



SECTION B-B

STEEL H-PILE TIP REINFORCEMENT

See Item 407 "Steel Piling" to determine when tip reinforcement is required and for options to the details shown.



SECTION THRU FLANGE OR WEB

STEEL H-PILE SPLICE DETAIL

Use when required.

(1) #3 spiral at 6" pitch (one and a half flat turns top and bottom).

(2) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-0"
#9 Bars = 2'-3"

(3) Min lap with column reinf:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(4) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-3"
#9 Bars = 2'-9"

(5) Drilled shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the drilled shaft diameter equals the column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.

Texas Department of Transportation

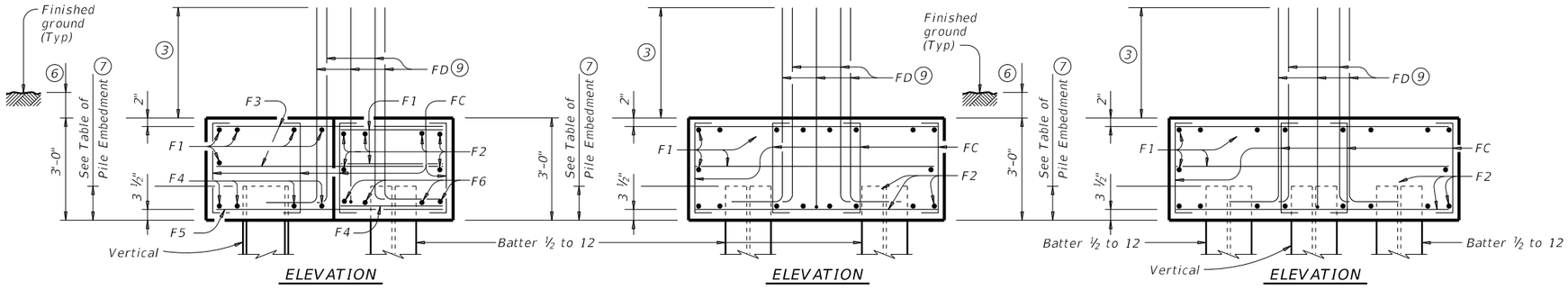
Bridge Division Standard

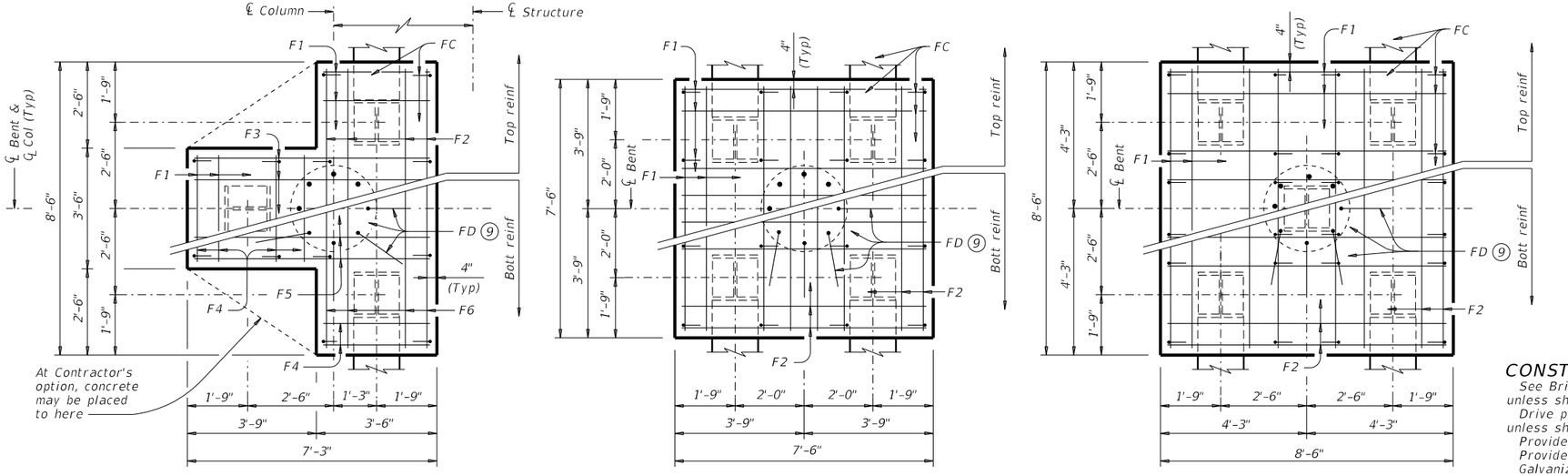
COMMON FOUNDATION DETAILS

FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		261

DATE:
FILE:





THREE PILE FOOTING (8)

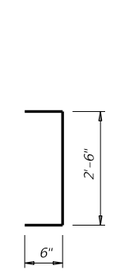
For 36" Dia and smaller columns.

FOUR PILE FOOTING (8)

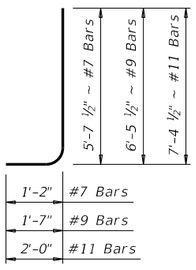
For 42" Dia and smaller columns.

FIVE PILE FOOTING (8)

For 42" Dia and smaller columns.



BARS FC



BARS FD (9)

(3) *Min lap with column reinforcing:*
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(6) *1'-0" Min, unless shown otherwise on plans.*

(7) *Or as shown on plans.*

(8) *See Bridge Layout for type, size and length of piling.*

(9) *Number and size of FD bars must match column reinforcing. Tie FD bars to the top of the bottom reinforcing mat.*

(10) *Adjust FD quantity, size and weight as needed to match column reinforcing.*

TABLE OF FOOTING QUANTITIES FOR 30" COLUMNS

ONE 3 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	11	#4	3'- 2"	23
F2	6	#4	8'- 2"	33
F3	6	#4	6'- 11"	28
F4	8	#9	3'- 2"	86
F5	4	#9	6'- 11"	94
F6	4	#9	8'- 2"	111
FC	12	#4	3'- 6"	28
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	623
Class "C" Concrete			CY	4.8

ONE 4 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	7'- 2"	96
F2	16	#8	7'- 2"	306
FC	16	#4	3'- 6"	37
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	659
Class "C" Concrete			CY	6.3

ONE 5 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	8'- 2"	109
F2	16	#9	8'- 2"	444
FC	24	#4	3'- 6"	56
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	829
Class "C" Concrete			CY	8.0

CONSTRUCTION NOTES:

See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.
Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.
Provide Class C Concrete (f'c = 3,600 psi), unless shown otherwise.
Provide Grade 60 reinforcing steel.
Galvanize reinforcing if shown elsewhere in the plans.
Provide bar laps for drilled shaft reinforcing, where required, as follows:
Uncoated or galvanized (#6) ~ 2'-6"
Uncoated or galvanized (#7) ~ 2'-11"
Uncoated or galvanized (#9) ~ 3'-9"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

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

DESIGNER NOTES:

Do not use the drilled shaft details shown on this standard for retaining wall, noise wall, barrier, or sign foundations without structural evaluation.
Do not use the footings shown on this standard in direct contact with salt water or exposed to salt water spray.
Maximum allowable pile loads for the footings shown are:
72 Tons/Pile with 24" Dia Columns
80 Tons/Pile with 30" Dia Columns
100 Tons/Pile with 36" Dia Columns
120 Tons/Pile with 42" Dia Columns

Texas Department of Transportation

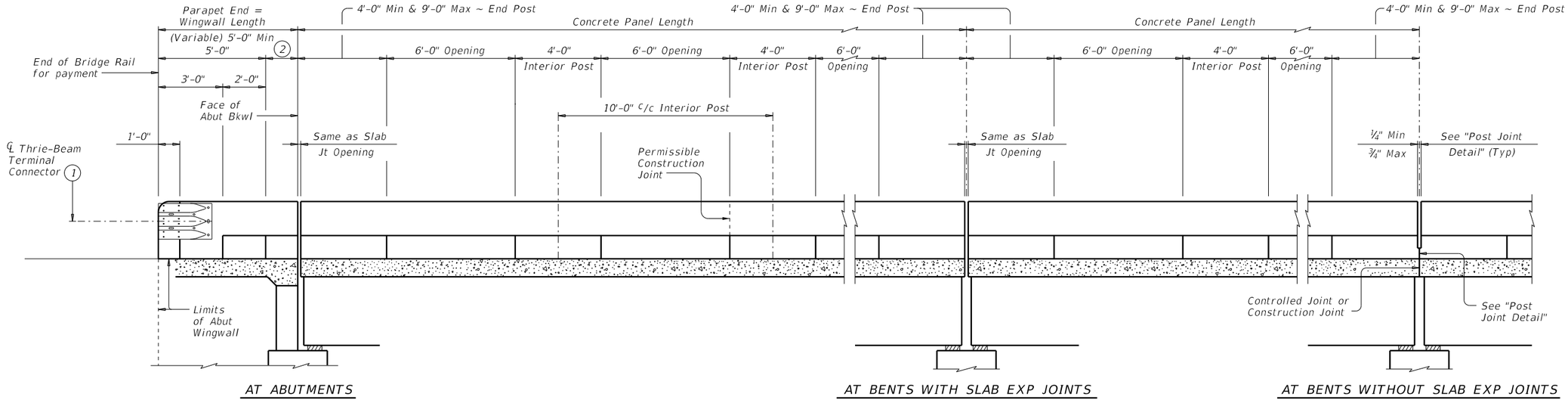
Bridge Division Standard

COMMON FOUNDATION DETAILS

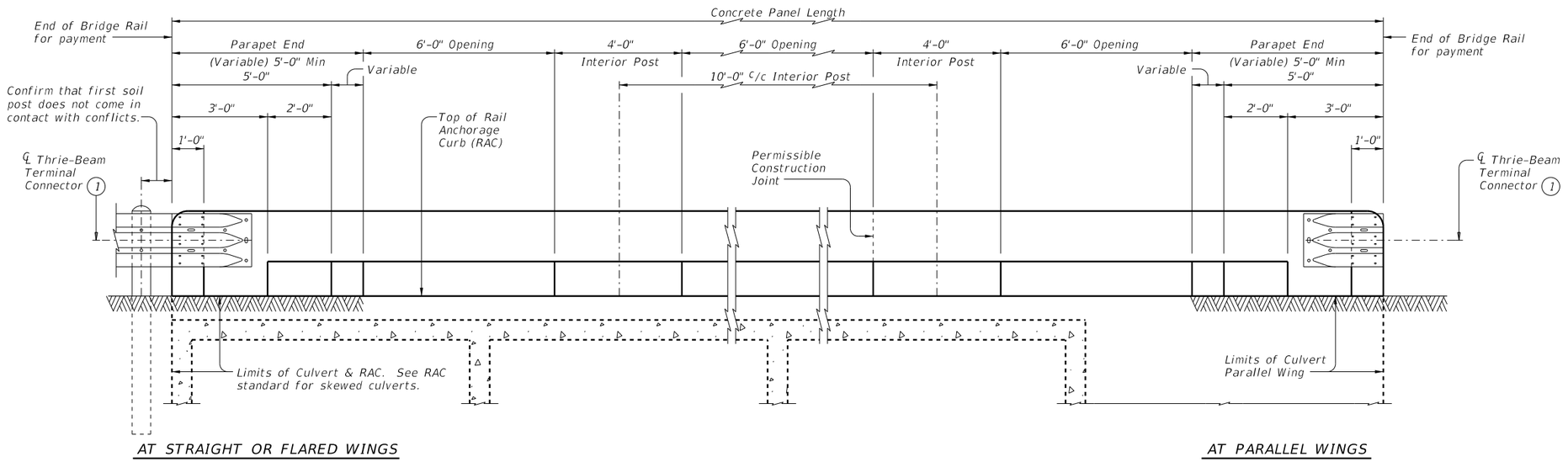
FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		262

DATE:
FILE:



ROADWAY ELEVATION OF RAIL ON BRIDGE



ROADWAY ELEVATION OF RAIL ON BOX CULVERTS

Showing 0° skew culvert. Skewed culverts similar. See RAC standard for details not shown. Vertical joints in concrete rail are not required, unless shown elsewhere.

(1) Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.

(2) Wingwall Length minus 5'-0" (Varies)

Texas Department of Transportation

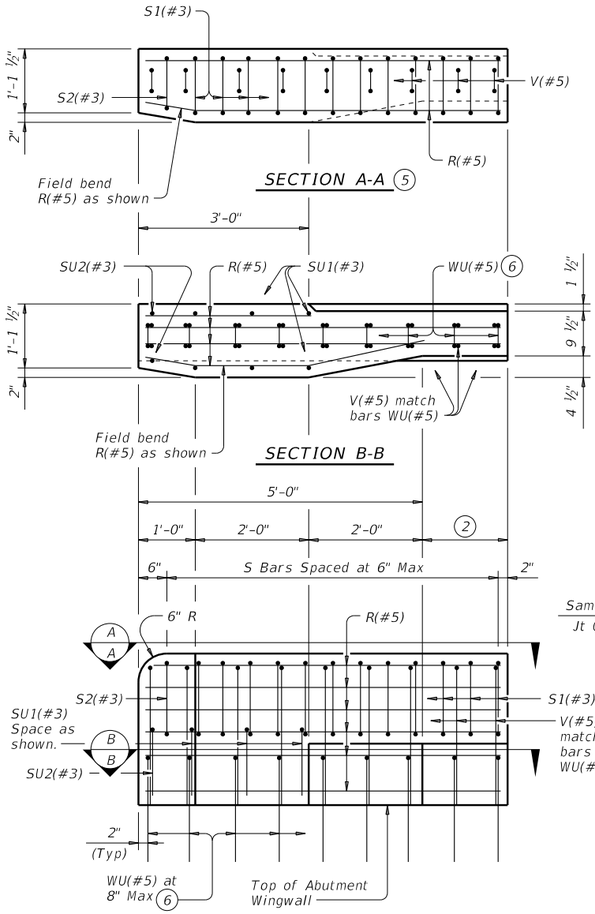
Bridge Division Standard

TRAFFIC RAIL

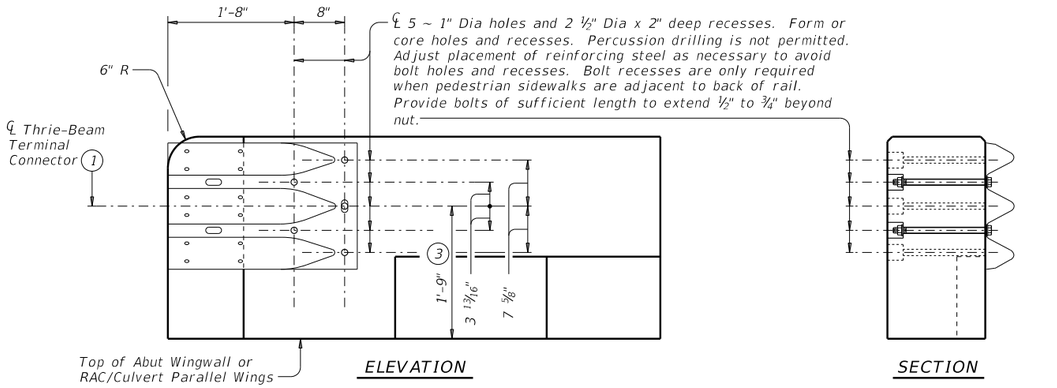
TYPE T223

FILE: rlstd005-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: AES
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		263

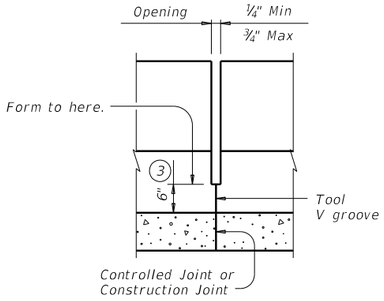
DATE:
FILE:



PARAPET END AT ABUT WINGWALL (6)

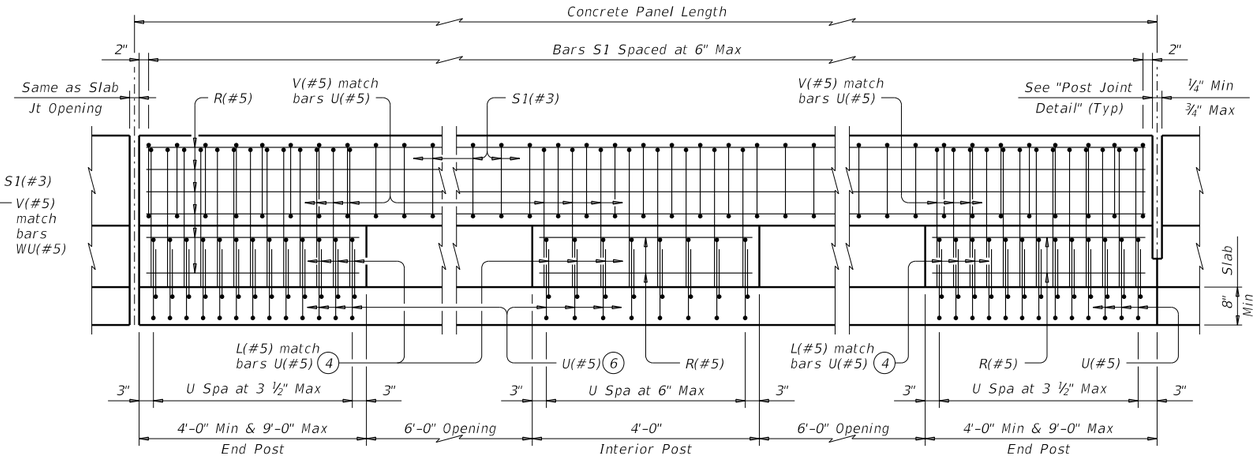


TERMINAL CONNECTION DETAILS



POST JOINT DETAIL

Provide at all interior bents without slab expansion joints.



AT SLAB EXPANSION JOINTS

AT 4' INTERIOR POST

AT BENTS WITHOUT SLAB EXPANSION JOINTS

ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

Showing rail on slab. Rail on box culvert similar.

(1) Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.

(2) Wingwall Length minus 5'-0" (Varies)

(3) Increase 2" for structures with overlay.

(4) Bars L(#5) are part of rail reinforcing and are included in unit price bid for railing. Space with Bars U. Bars L match slab bar cover. Bars L may be bundled with top slab reinforcing if spacing is equivalent.

(5) Bars SU1(#3), SU2(#3) and WU(#5) not shown for clarity.

(6) Substitute Bars U(#5) for Bars WU(#5) when parapet end is located on achorage curb over culvert top slab. Use Bars WU(#5) in culvert parallel wings.

Texas Department of Transportation

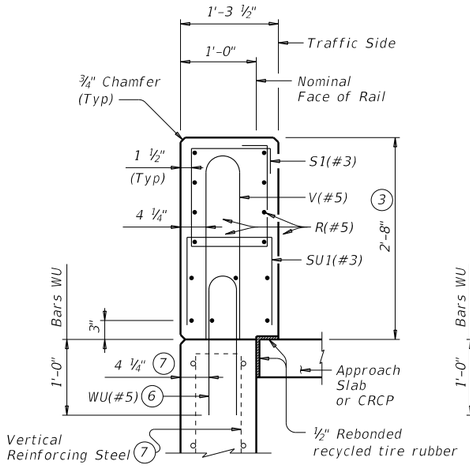
Bridge Division Standard

TRAFFIC RAIL

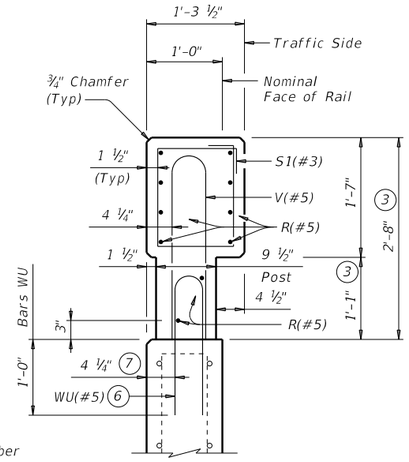
TYPE T223

FILE: rlstd005-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: AES
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		264

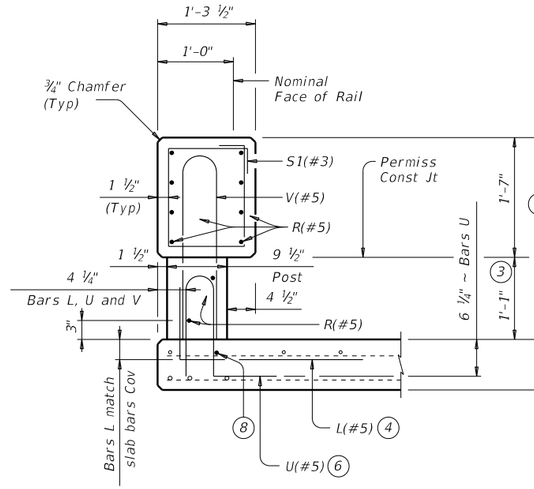
DATE:
FILE:



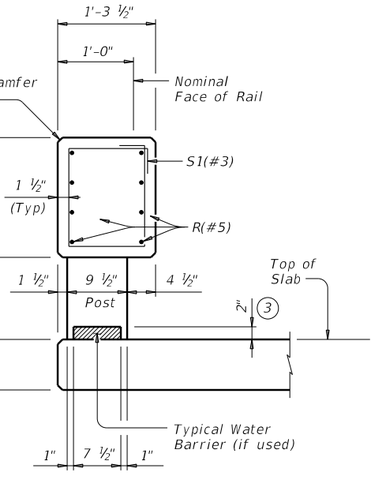
SECTION C-C
ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



SECTION D-D
ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS



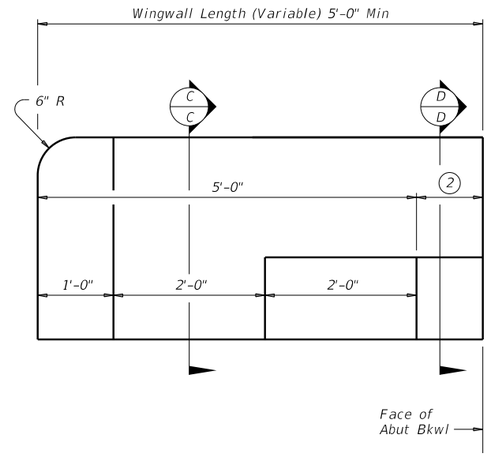
AT POST
ON BRIDGE SLAB



AT OPENING
ON BRIDGE SLAB

SECTIONS THRU RAIL

Sections on box culverts similar.



ELEVATION AT ABUTMENT WINGWALL

Box culvert parallel wings or rail anchorage curb similar.

(2) Wingwall Length minus 5'-0" (Varies)

(3) Increase 2" for structures with overlay.

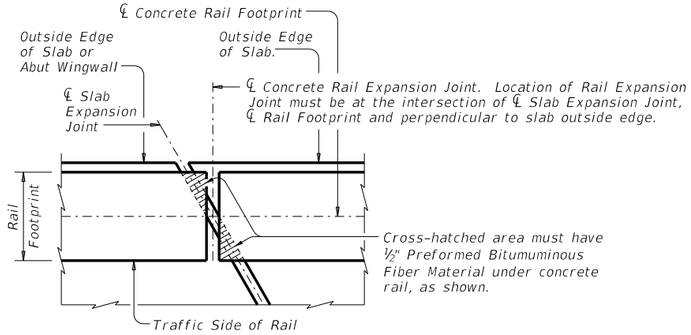
(4) Bars L(#5) are part of rail reinforcing and are included in unit price bid for railing. Space with Bars U. Bars L match slab bar cover. Bars L may be bundled with top slab reinforcing if spacing is equivalent.

(6) Substitute Bars U(#5) for Bars WU(#5) when parapet end is located on anchorage curb over culvert top slab. Use Bars WU(#5) in culvert parallel wings.

(7) When vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls on traffic side of wall, move the horizontal wingwall/retaining wall reinforcing to the inside of Bars WU where bars conflict.

(8) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

(9) At the Contractor's option, Bars V may be replaced by extending Bars U to 2'-5 ¼" above the roadway surface without overlay.



PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.

CONSTRUCTION NOTES:

Face of rail and parapet must be vertical transversely unless otherwise shown in the plans or approved by the Engineer.

Provide water barriers at openings draining onto undercrossing roadways and sidewalks. They may be cast-in-place or precast in convenient lengths and bonded to the bridge deck with an approved epoxy cement.

Chamfer all exposed corners.

MATERIAL NOTES:

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.

Deformed Welded Wire Reinforcing (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U, V, and WU unless noted otherwise. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows:

Uncoated or galvanized ~ #5 = 2'-0"

Epoxy coated ~ #5 = 3'-0"

GENERAL NOTES:

This rail has been evaluated by full-scale crash test to meet MASH TL-3 criteria. This rail can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.

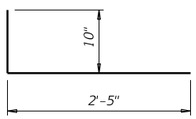
Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

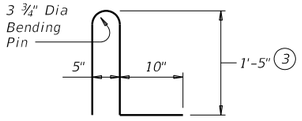
Shop drawings are not required for this rail.

Average weight of railing with no overlay is 358 plf.

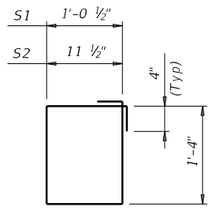
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



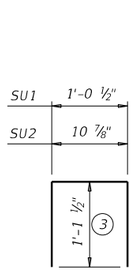
BARS L (#5)



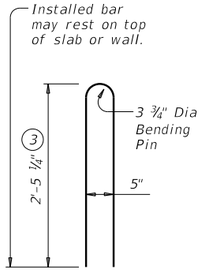
BARS U (#5) (9)



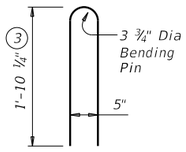
BARS S (#3)



BARS SU (#3)



BARS V (#5) (9)



BARS WU (#5)

SHEET 3 OF 3

Texas Department of Transportation

Bridge Division Standard

TRAFFIC RAIL

TYPE T223

FILE: rlstd005-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: AES
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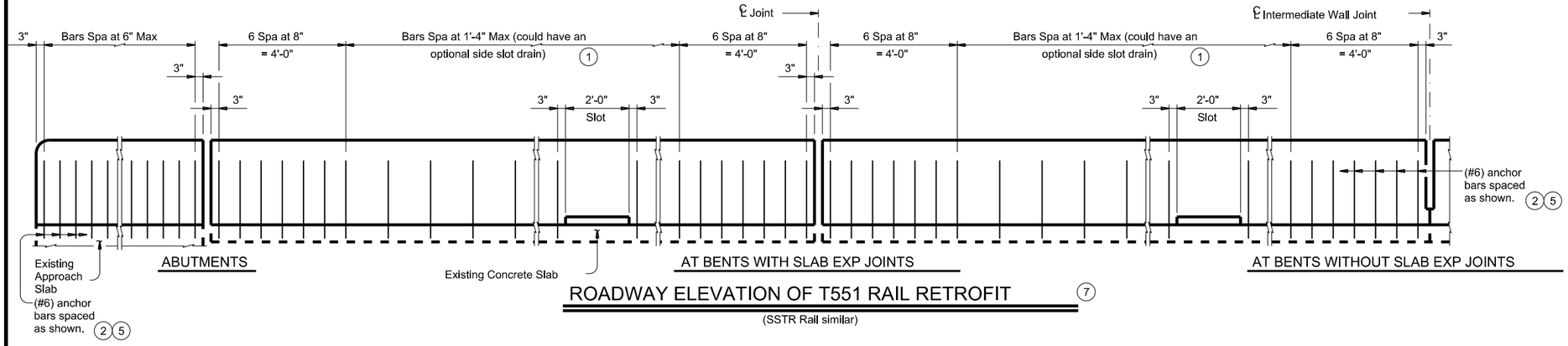
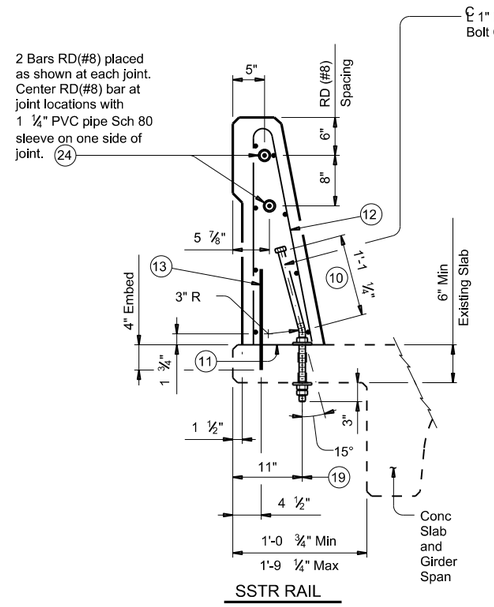
REVISIONS	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		265

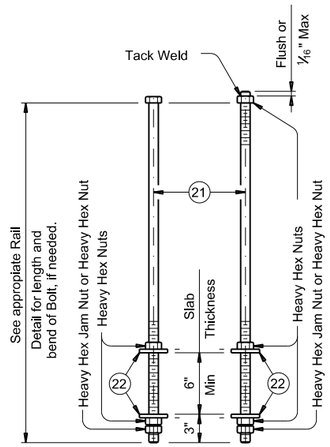


ROADWAY ELEVATION OF T551 RAIL RETROFIT (7)

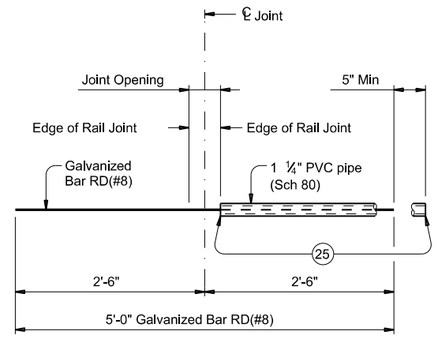
(SSTR Rail similar)



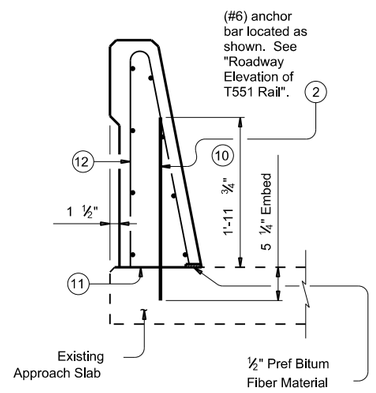
SSTR RAIL



ANCHOR BOLT OPTIONS AND ASSEMBLY DETAILS (23)



BAR RD(#8) ASSEMBLY DETAIL



SSTR RAIL

(1) When side slot drains are used, provide 8'-0" Min clear spacing between drain slots.

(2) Embed (#6) anchor bars with a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 5 ¼". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(5) See T551 or SSTR Rail Sections in "Rail Retrofit Section on Wingwalls using Epoxy Anchor Bars" and/or "Rail Retrofit Section on Concrete Slabs using Epoxy Anchor Bars".

(7) Showing spacing of (#6) anchor bar epoxy anchored in a rail retrofit condition. Secondary (#4) anchor bar epoxy anchored in a rail retrofit not shown for clarity. Reinforcing steel and terminal connections not shown for clarity. See appropriate rail standard for details and notes not shown.

(10) Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over shoulder width to a thickness of 2" or less at toe of rail.

(11) Do not cast rails or parapet walls on top of overlays/seal coats.

(12) See appropriate rail standard for reinforcing steel. Modify length of vertical reinforcing bars as required to fit existing structure. Longitudinal reinforcing bars may be removed only if their position puts them in conflict with un-removed portions of existing structure.

(13) Embed secondary (#4) anchor bars 1'-4" in length with a Type III Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 4". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 10 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". (#4) anchor bars spaced longitudinally along rail at 4 ft Max (Spaced 3" longitudinally from outside edge and edge of side slot drains).

(17) ℄ 1" Dia Anchor Bolt Spaced longitudinally along rail at 24" Max (Spaced 6" longitudinally from outside edge and edge of optional side slot drains, if required).

(19) ℄ 1 1/16" to 1 ¼" Dia holes. Core drill holes through existing deck (percussion drilling not permitted). Concrete spalls in the bottom of the deck exceeding ½" from edge of holes will be patched in accordance with Item 429, "Concrete Structure Repair" at the Contractor's expense.

(23) Galvanize anchor bolts, nuts and plate washers.

(24) See "Bar RD(#8) Assembly Detail".

STATE OF TEXAS
ISAAC GARZA
109891
LICENSED PROFESSIONAL ENGINEER

Isaac Garza, P.E.

10/14/2021

SHEET 1 OF 1

Texas Department of Transportation

Bridge Division Standard

RETROFIT GUIDE FOR CONCRETE RAILS

(SSTR)

C-RAIL-R

FILE: rlstd022-18.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT March 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		266

NOTE:

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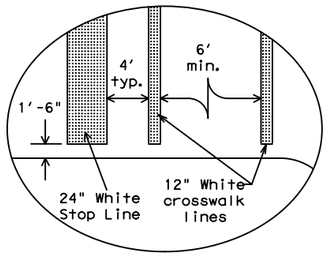
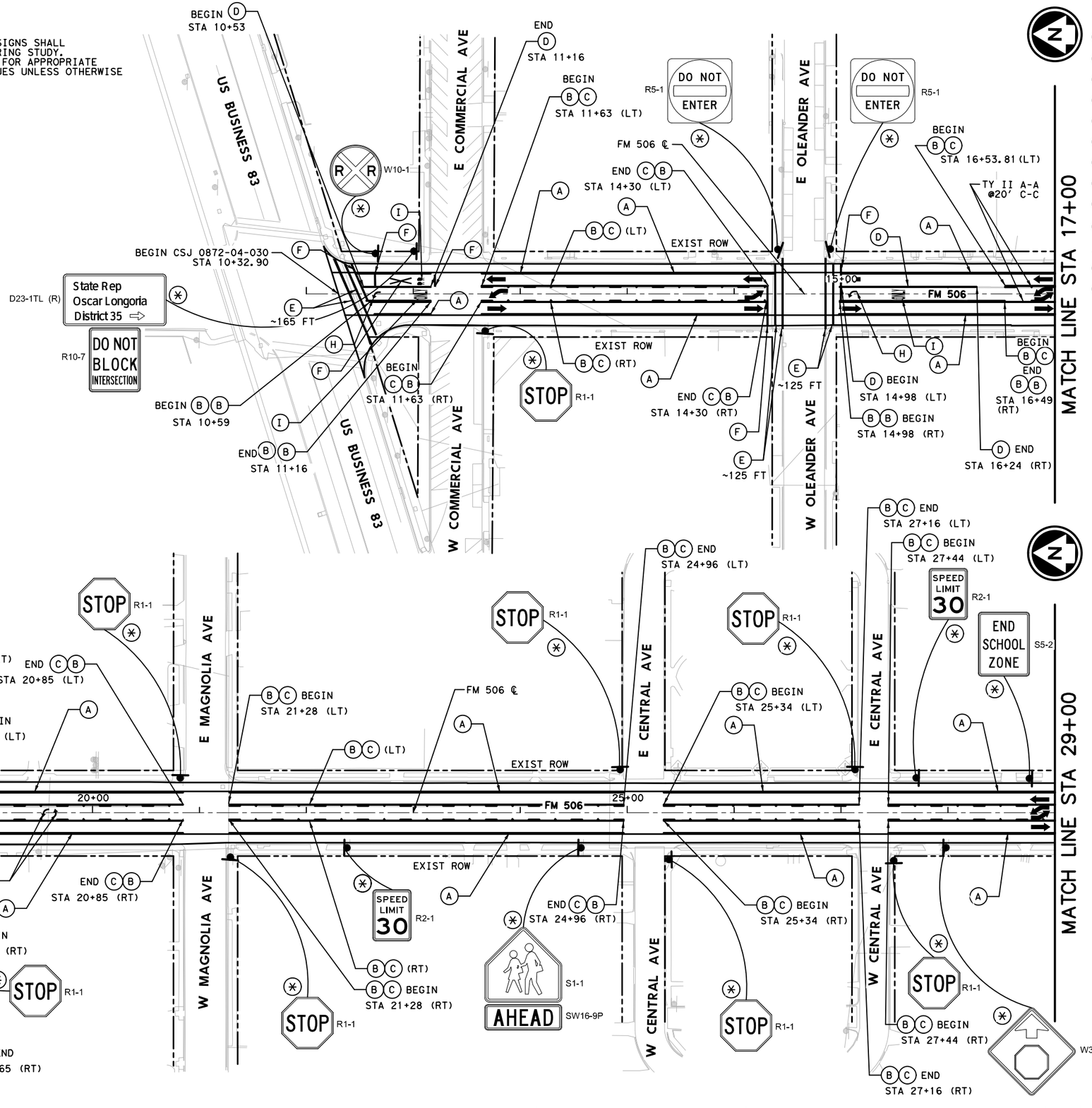


TYPICAL CROSS-WALK STRIPING DETAIL

FINAL PLACEMENT OF STOP BAR AND CROSSWALK SHALL BE APPROVED BY THE ENGINEER IN THE FIELD.



LEGEND:

0' 50' 100'
SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
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STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 1 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		267
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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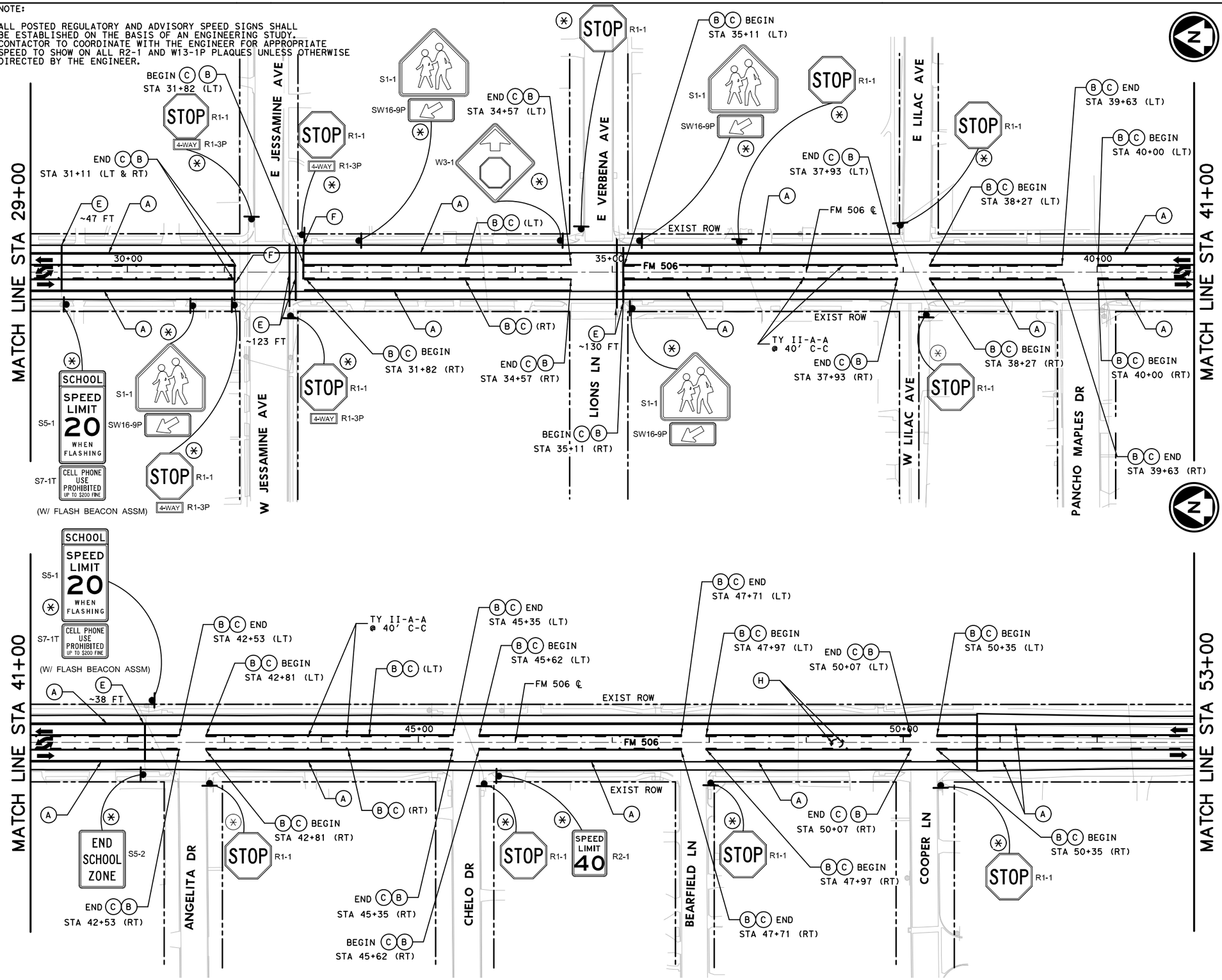

LEGEND:

0′ 50′ 100′ SCALE IN FEET

- (A) 4" WHITE EDGE LINE
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STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 2 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		268
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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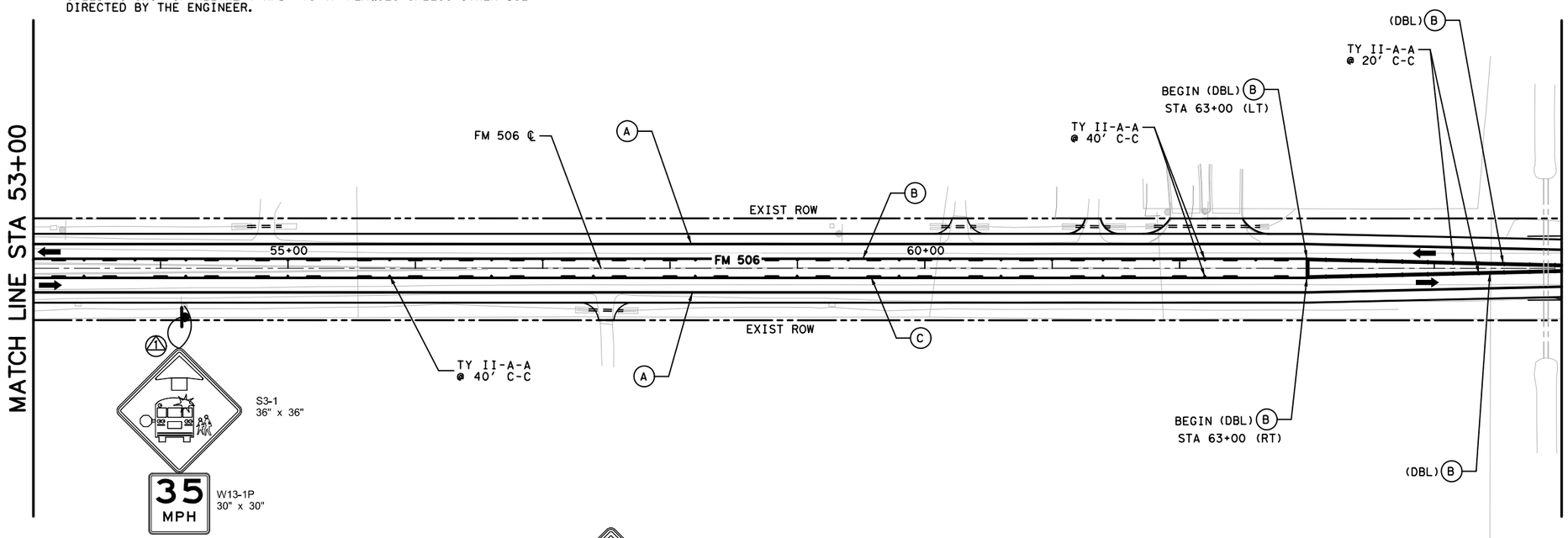

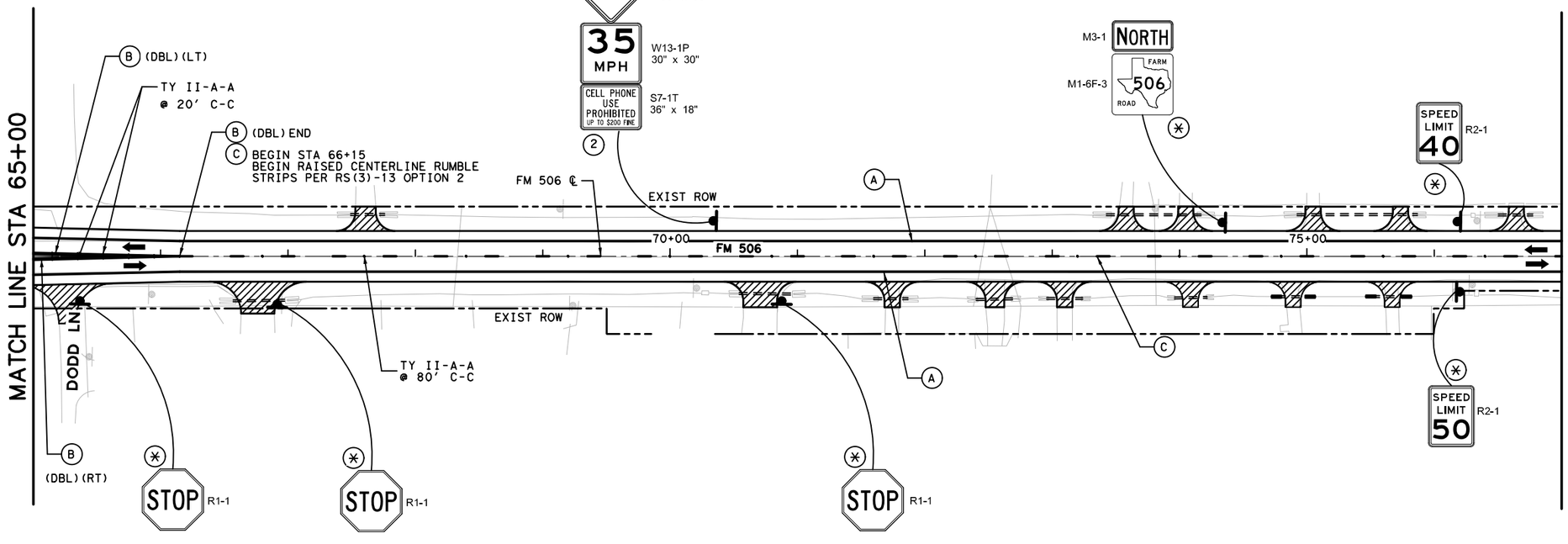

LEGEND:

0' 50' 100'
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Texas Department of Transportation

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 3 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		269
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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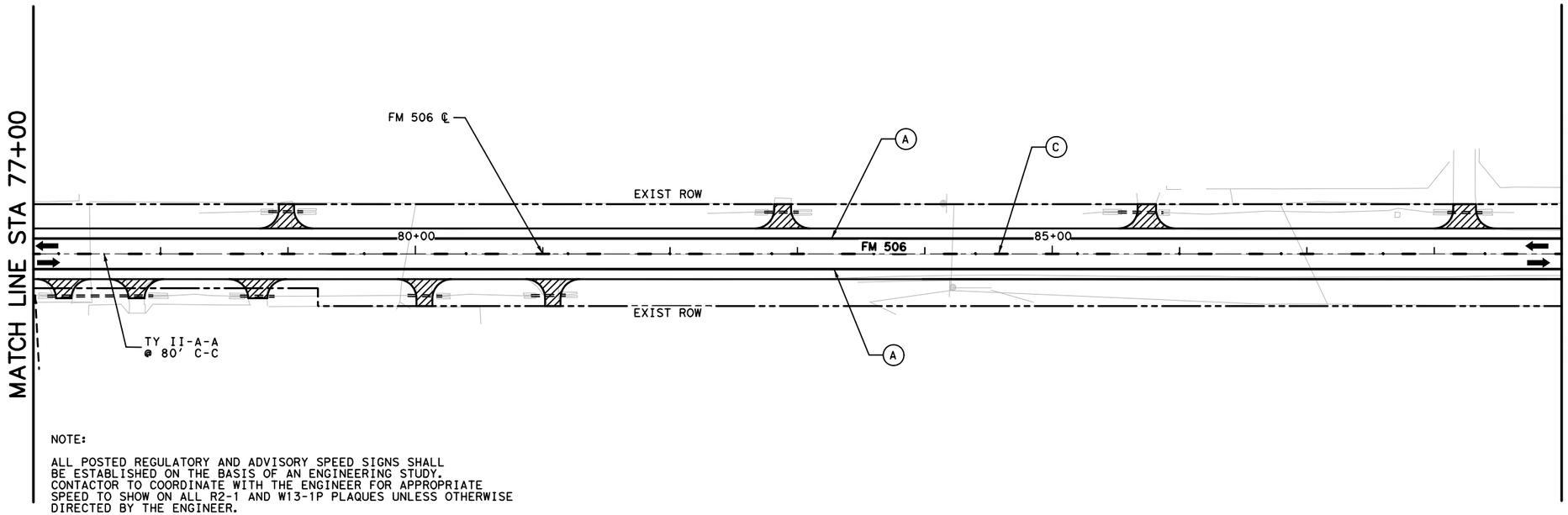

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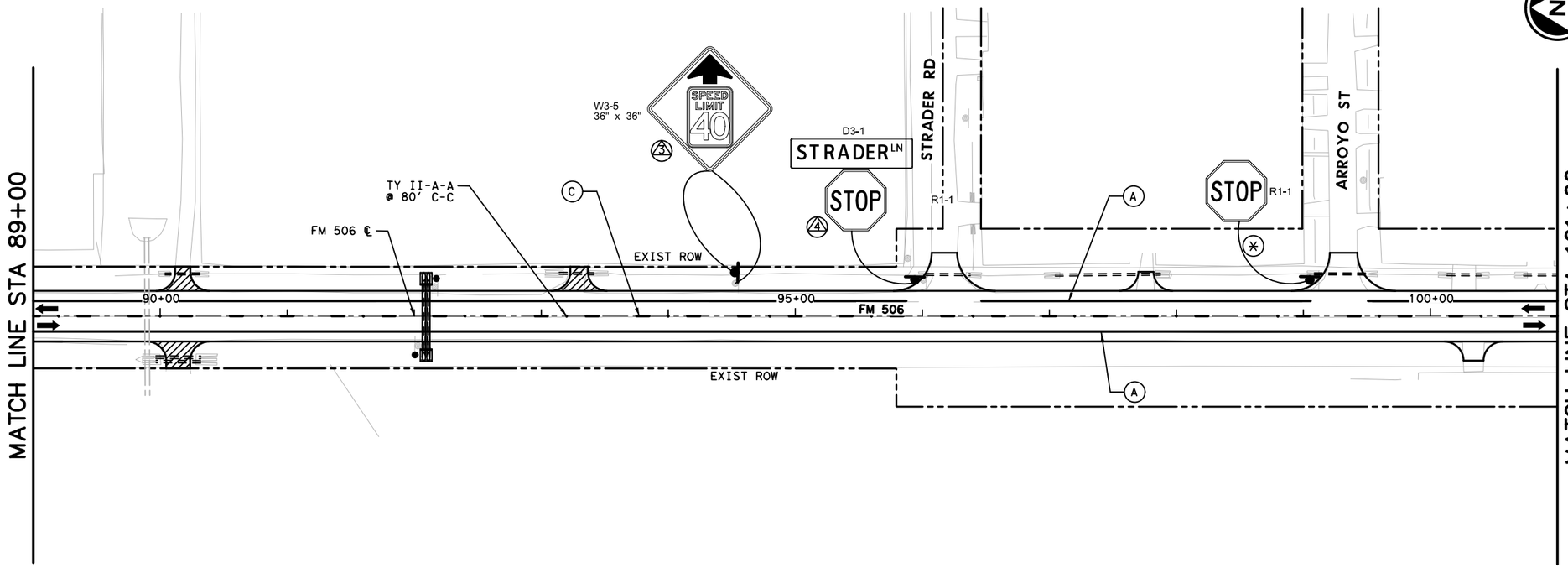

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

ISSUE RECORD		
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Texas Department of Transportation

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 4 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		270
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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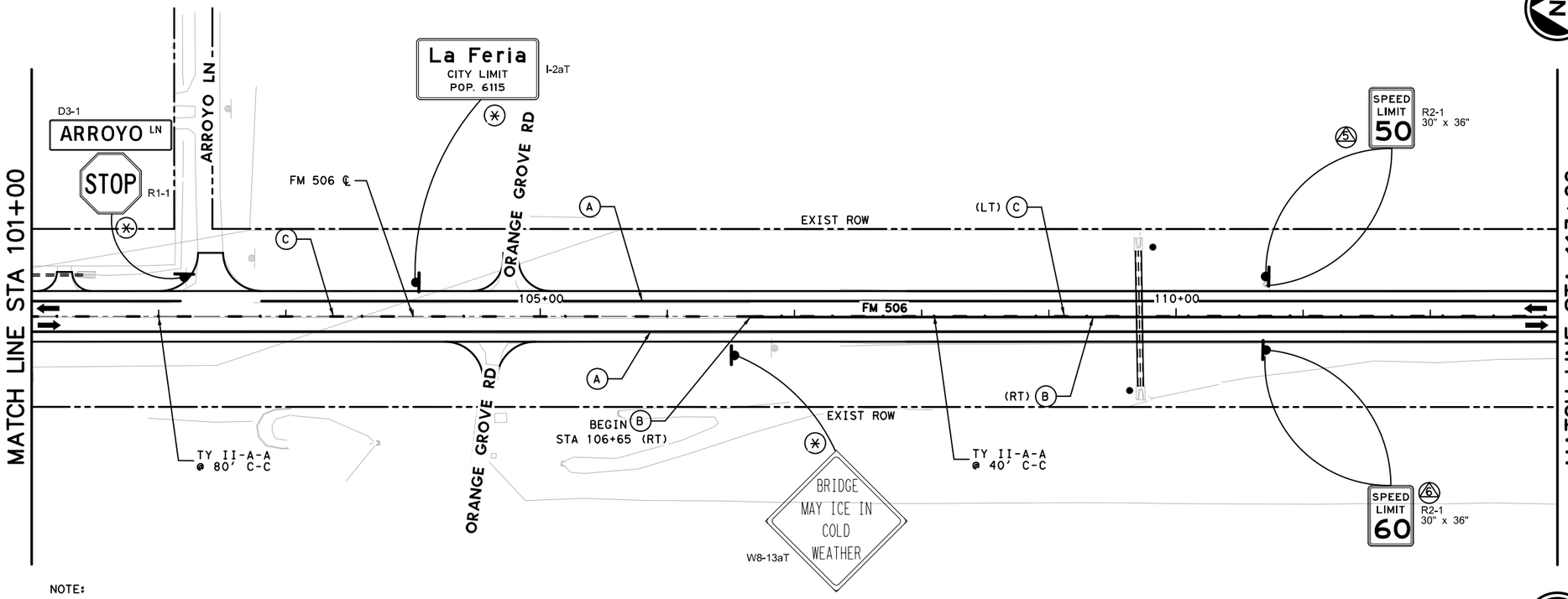

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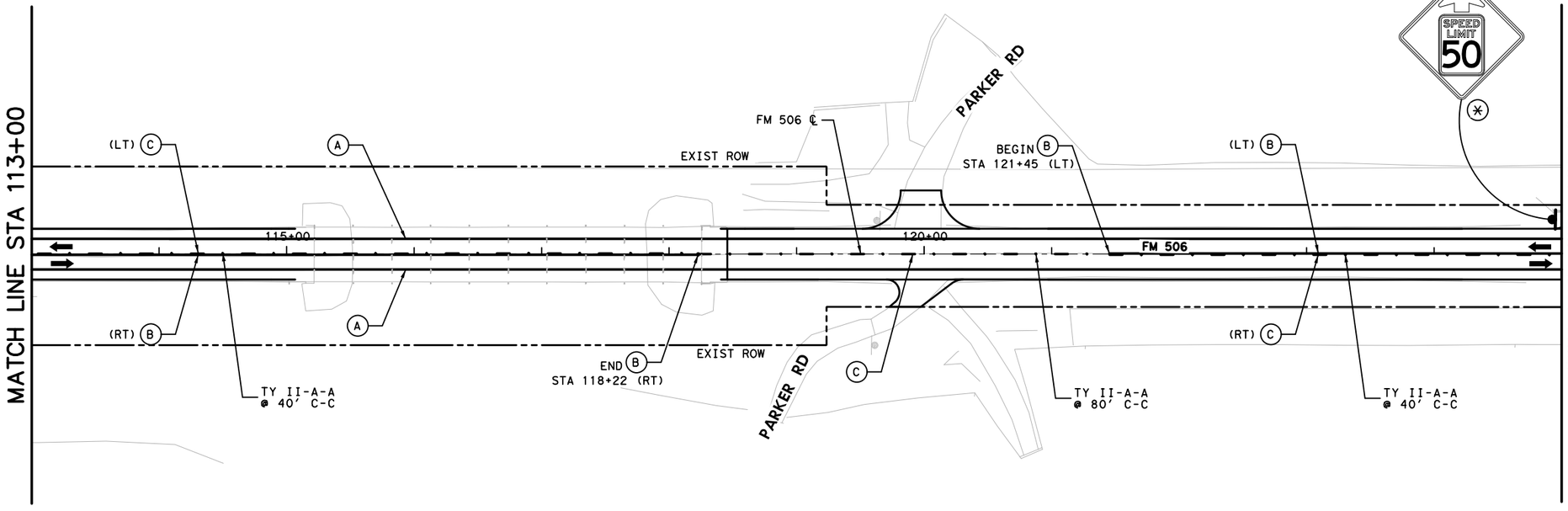

LEGEND:

0' 50' 100'

SCALE IN FEET

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10/6/2021

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TBPE REG. # F-11657

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 5 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		271
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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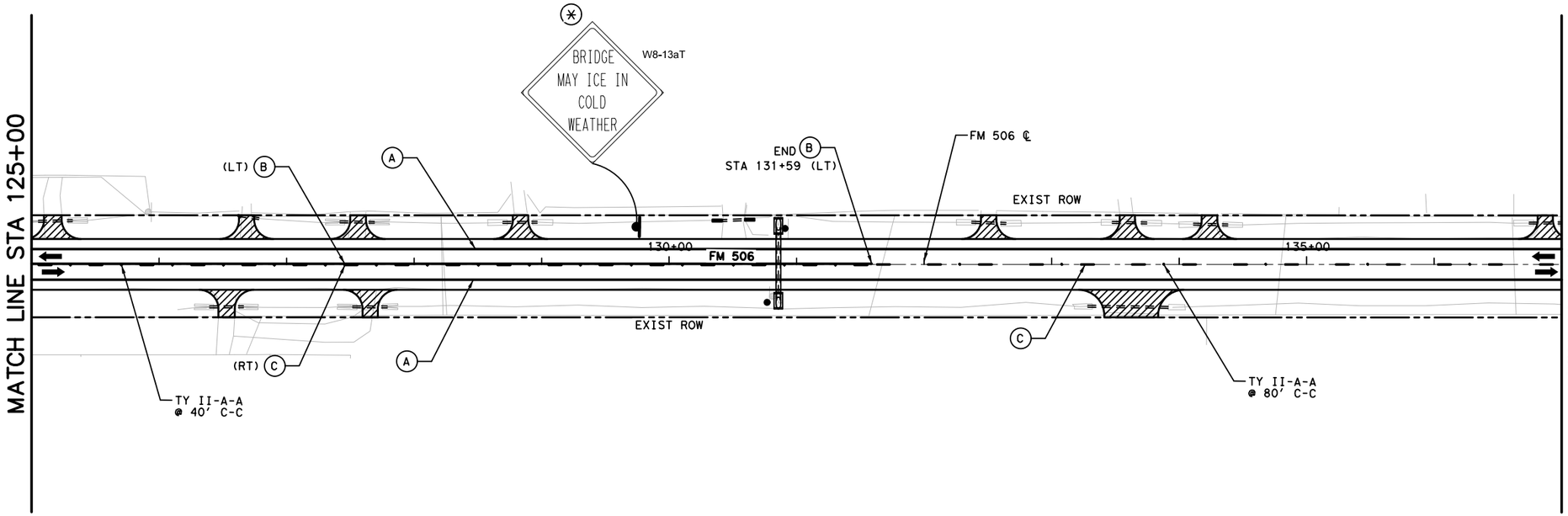

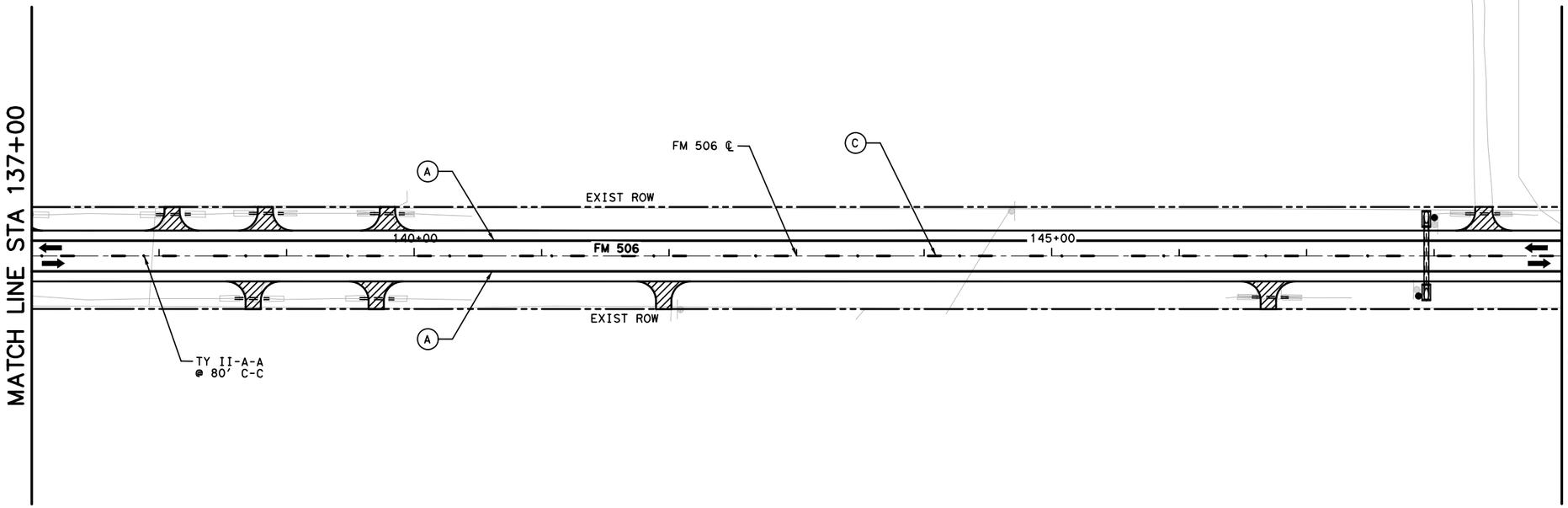

LEGEND:

0' 50' 100'

SCALE IN FEET

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Texas Department of Transportation

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 6 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		272
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO.
0872	04	030	FM 506

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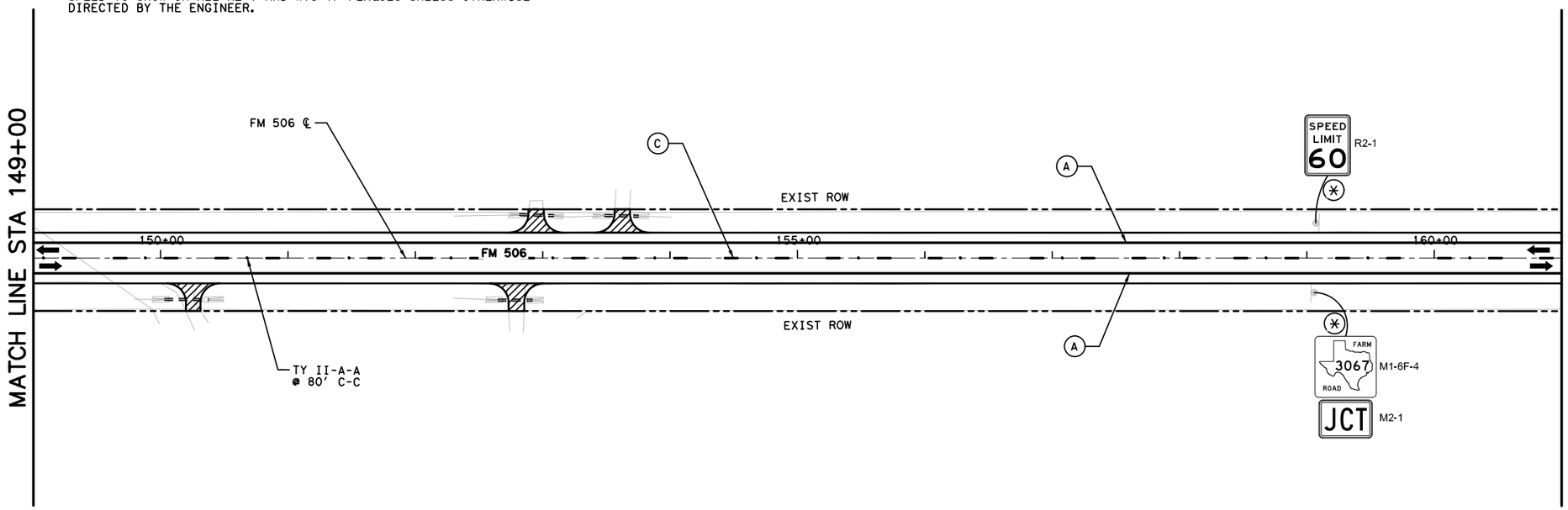

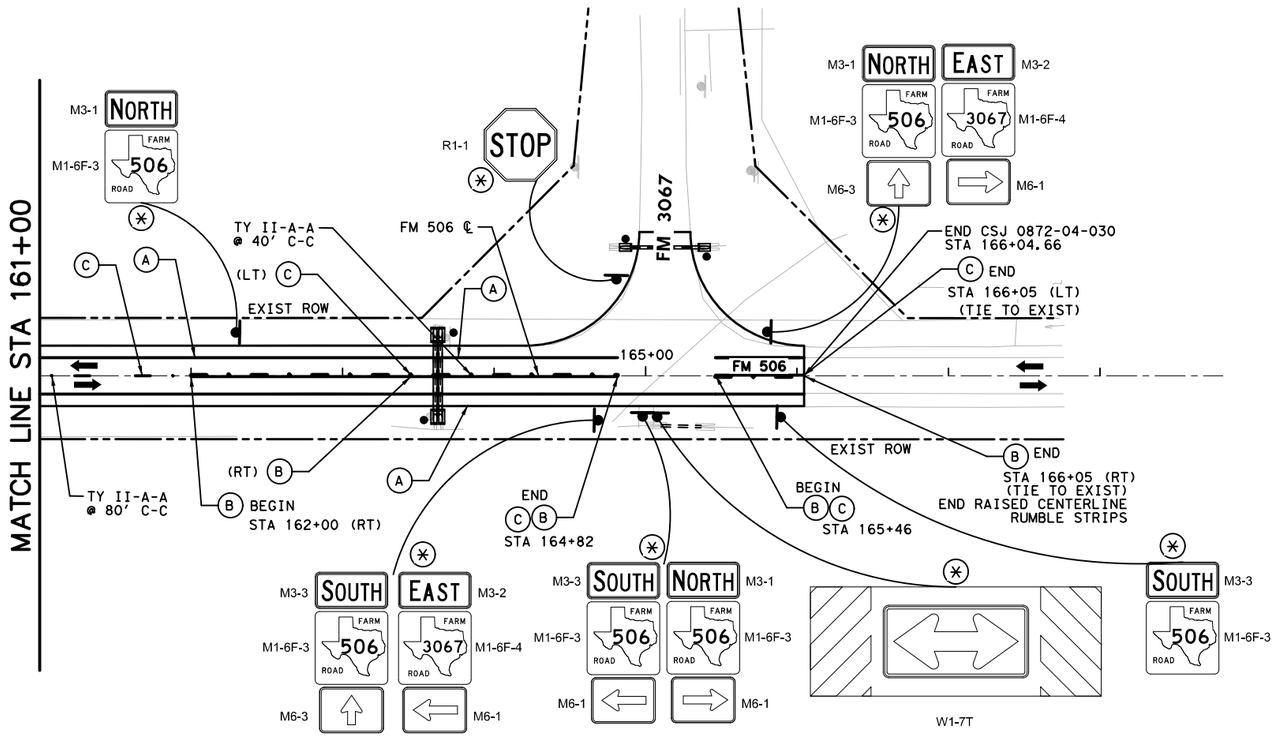

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2. LIMITS OF NO-PASSING ZONES SHALL MATCH THE EXISTING. CONTRACTOR TO VERIFY THE STATIONS AND NOTIFY THE ENGINEER PRIOR TO START OF PERMANENT PAVEMENT MARKING.
3. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED CAN BE REMOVED AND STORED AT THE EDCOUCH MAINTANCE YARD TO PREVENT DAMAGE DURING CONSTRUCTION.
4. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. THE DAMAGED SIGNS WILL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
5. ANY EXISTING SIGN DESIGNATED TO BE RELOCATED CAN BE REPLACED IF DIRECTED BY THE ENGINEER.
6. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO MAKE ANY ADJUSTMENT DUE TO CONFLICTS ON ANY SIGNS THAT ARE TO BE RELOCATED.
7. EXISTING SIGNS THAT ARE PROPOSED TO BE REPLACED, CAN REMAIN IN PLACE IF APPROVED BY THE ENGINEER. A FIELD INSPECTION BEFORE & AFTER THE CONSTRUCTION OF THIS PROJECT SHALL BE DONE.

STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 506

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 7 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		273
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

10/6/2021 3:25:34 PM

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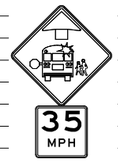
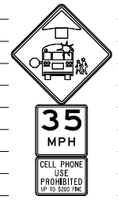
DATE: 10/6/2021 3:27:19 PM
FILE:

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SEE LEGEND FOR CLARIFICATION	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)
3	1	S3-1	(1)		36 x 36	X		S80	1	SA	P		
		W13-1P			30 x 30								
3	2	S3-1	(2)		36 X 36	X		S80	1	SA	P		
		W13-1P			30 X 30								
		S7-1T			36 X 18								
4	3	W3-5	(3)		36 X 36	X		S80	1	SA	P		
		D3-1											
4	4	R1-1	(4)		36 X 36	X		S80	1	SA	P		
5	5	R2-1	(5)		30 X 36	X		S80	1	SA	P		
5	6	R2-1	(6)		30 X 36	X		S80	1	SA	P		

LEGEND:

(#) SIGN TO BE RELOCATED
(#) SIGN TO BE REMOVED
(#) SIGN TO BE INSTALLED

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/

ALUMINUM SIGN BLANKS (TYPE A)

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

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).

FM 506

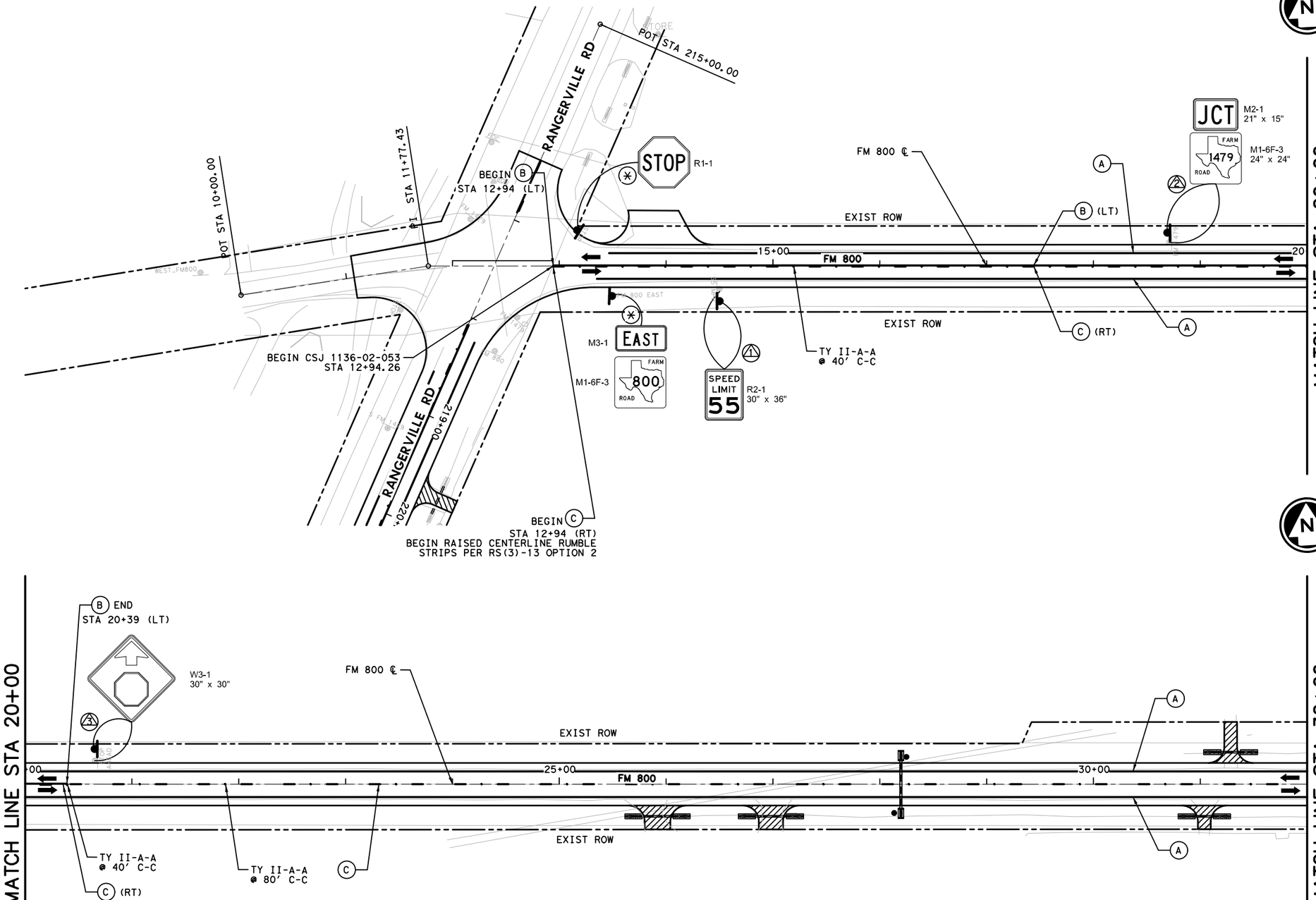
Texas Department of Transportation — Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
4-16	DIST	COUNTY		SHEET NO.
8-16	PHR	CAMERON		274

18



LEGEND:

0′ 50′ 100′ SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) 12" YELLOW SOLID LINE
- (H) REFL PAV MRK TY II (W)(ARROW)
- (I) REFL PAV MRK TY II (W)(WORD)
- SIGN TO BE RELOCATED (ITEM 644)
- SIGN TO BE REMOVED (ITEM 644)
- (#) SIGN TO BE INSTALLED (ITEM 644)
- SIGN TO REMAIN IN PLACE
- ● OBJECT MARKER

NOTE:

1. ALONG THE CENTERLINE OR ALONG THE TWLT LANE LINES, FURNISH TY II-A-A RAISED PAVEMENT MARKERS IN ACCORDANCE WITH PM(2)-20 STANDARD.
2. LIMITS OF NO-PASSING ZONES SHALL MATCH THE EXISTING. CONTRACTOR TO VERIFY THE STATIONS AND NOTIFY THE ENGINEER PRIOR TO START OF PERMANENT PAVEMENT MARKING.
3. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED CAN BE REMOVED AND STORED AT THE EDCOUCH MAINTANCE YARD TO PREVENT DAMAGE DURING CONSTRUCTION.
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STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 800

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		275
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

10/6/2021 3:49:34 PM

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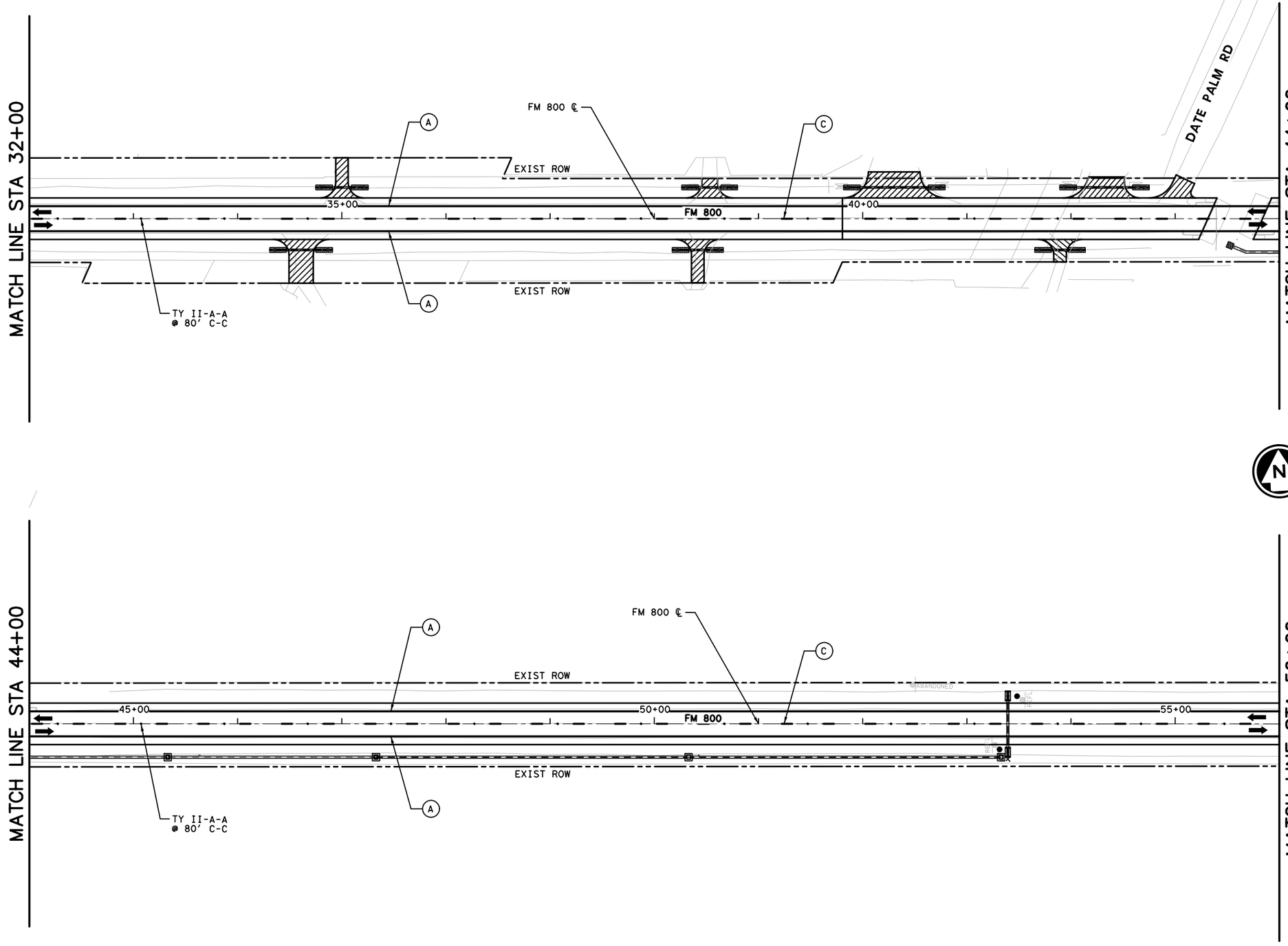

LEGEND:

0' 50' 100'
SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) 12" YELLOW SOLID LINE
- (H) REFL PAV MRK TY II (W)(ARROW)
- (I) REFL PAV MRK TY II (W)(WORD)
- (#) SIGN TO BE RELOCATED (ITEM 644)
- (#) SIGN TO BE REMOVED (ITEM 644)
- (#) SIGN TO BE INSTALLED (ITEM 644)
- (*) SIGN TO REMAIN IN PLACE
- ● OBJECT MARKER

NOTE:

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STATE OF TEXAS
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116089
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10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

Texas Department of Transportation

FM 800

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		276
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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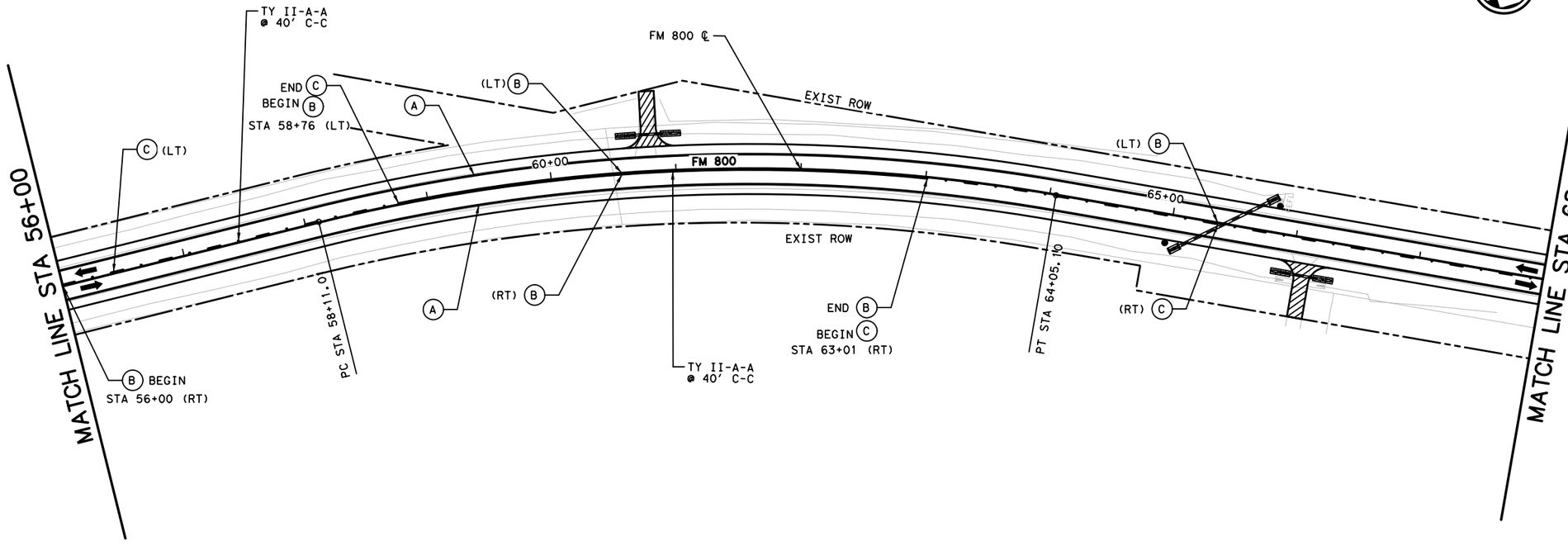

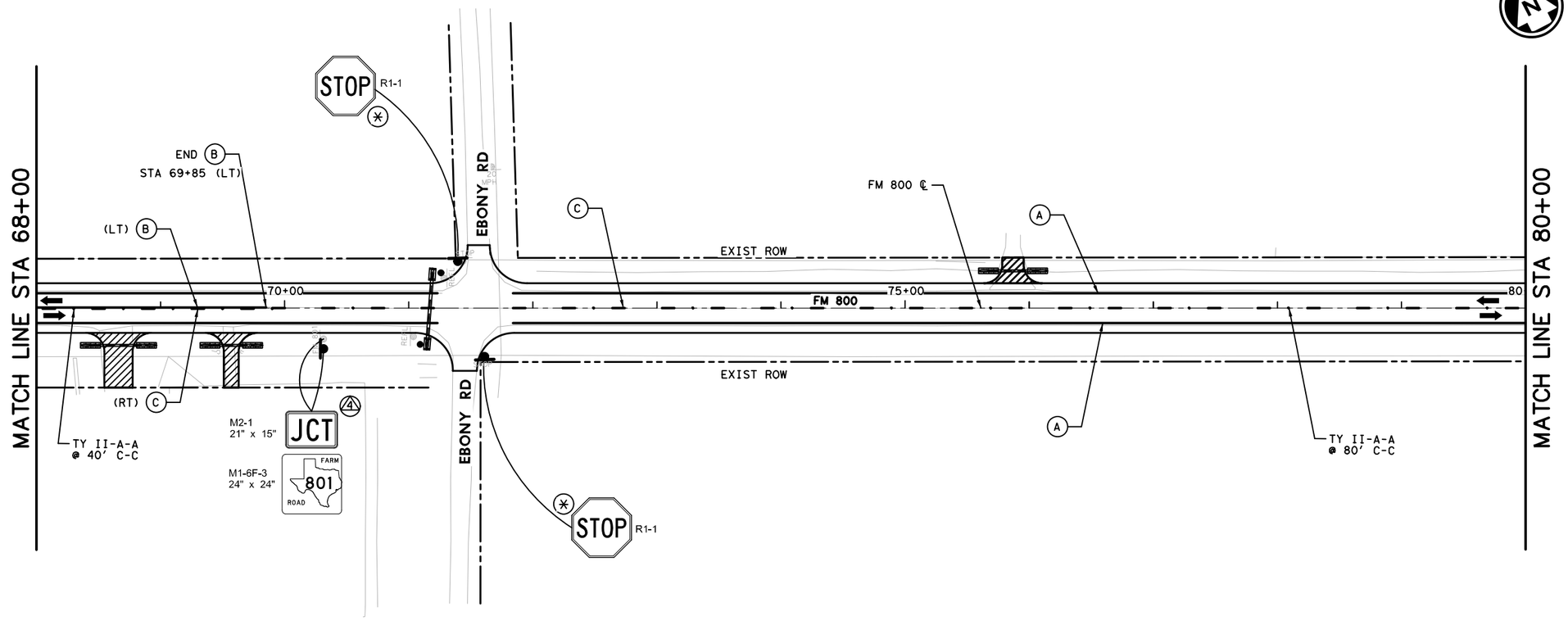

LEGEND:

0' 50' 100'

SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
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NOTE:

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STATE OF TEXAS
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10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 800

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		277
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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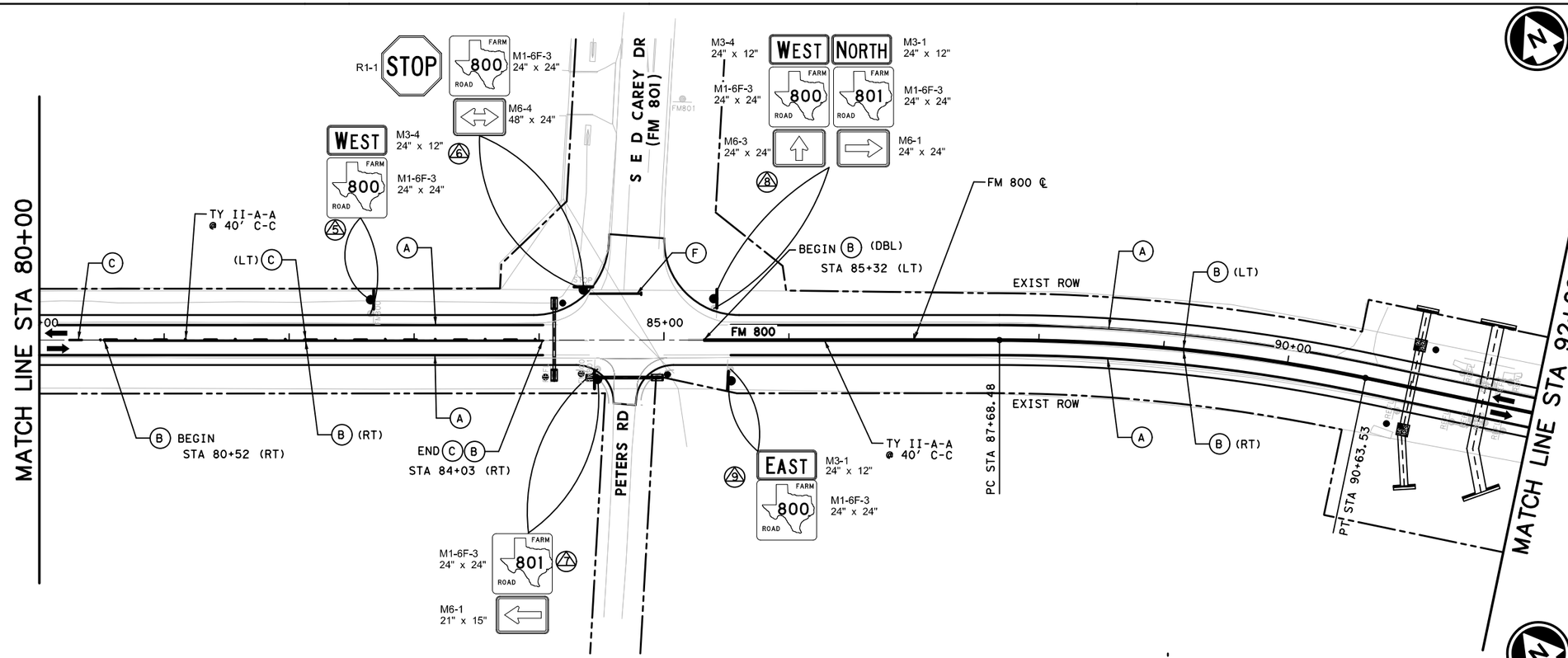

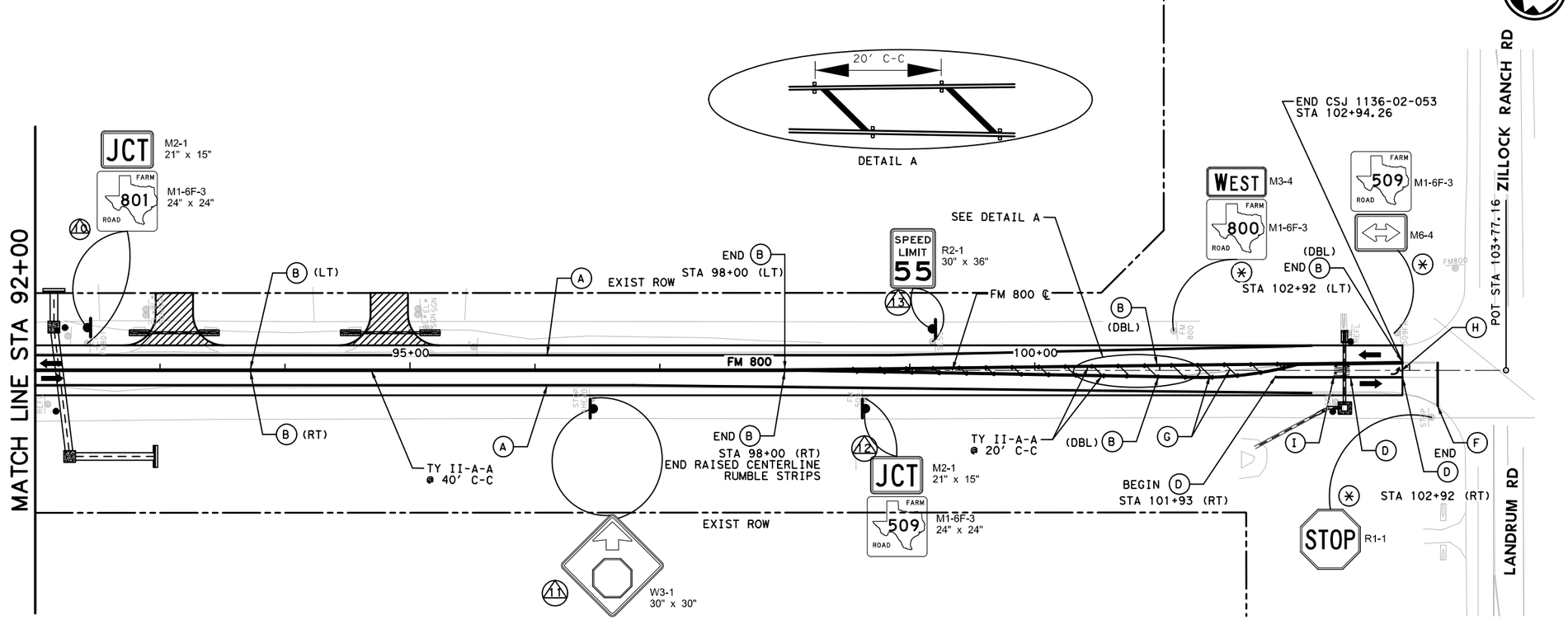

LEGEND:

0' 50' 100'
SCALE IN FEET

- (A) 4" WHITE EDGE LINE
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- (#) SIGN TO BE INSTALLED (ITEM 644)
- (*) SIGN TO REMAIN IN PLACE
- ● OBJECT MARKER

NOTE:

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STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED
PROFESSIONAL ENGINEER

10/6/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 800

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		278
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

10/6/2021 3:51:11 PM

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DATE: 10/6/2021 3:51:56 PM
FILE:

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SEE LEGEND FOR CLARIFICATION	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
1	1	R2-1	1	SPEED LIMIT 55	30 X 36	A		S80	1	SA	P		
1	2	M2-1	2	JCT FARM 1479 ROAD	21 X 15	A		S80	1	SA	P		
		M1-6F-3			24 X 24	A							
1	3	W3-1	3		30 X 30	A		S80	1	SA	T		
3	4	M2-1	4	JCT FARM 801 ROAD	21 X 15	A		S80	1	SA	P		
		M1-6F-3			24 X 24	A							
4	5	M3-4	5	WEST FARM 800 ROAD	24 X 12	A		S80	1	SA	P		
		M1-6F-3			24 X 24	A							
4	6	M1-6F-3	6	FARM 800 ROAD	24 X 24	A		S80	1	SA	P		
		M6-4			48 X 24	A							
4	7	M1-6F-3	7	FARM 801 ROAD	24 X 24	A		S80	1	SA	P		
		M6-1			21 X 15	A							
4	8	M3-4	8	WEST FARM 800 ROAD	24 X 12								
		M1-6F-3			24 X 24								
		M6-3			24 X 24								
		M3-1		NORTH FARM 801 ROAD	24 X 12	A		S80	1	SA	P		
		M1-6F-3			24 X 24								
		M6-1			24 X 24								
4	9	M3-1	9	EAST FARM 800 ROAD	24 X 12	A		S80	1	SA	P		
		M1-6F-3			24 X 24	A							

LEGEND:

- (#) SIGN TO BE RELOCATED
- (#) SIGN TO BE REMOVED
- (#) SIGN TO BE INSTALLED

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/

ALUMINUM SIGN BLANKS (TYPE A)

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

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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FM 800

SHEET 1 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
4-16	DIST	COUNTY		SHEET NO.
8-16	PHR	CAMERON		279

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SEE LEGEND FOR CLARIFICATION	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
		M2-1		JCT / FARM 801 ROAD	21 X 15	A						
4	10		10					S80	1	SA	P	
		M1-6F-3			24 X 24	A						
4	11	W3-1	11		30 X 30	A		S80	1	SA	T	
		M2-1		JCT / FARM 509 ROAD	21 X 15	A						
4	12		12					S80	1	SA	P	
		M1-6F-3			24 X 24	A						
4	13	R2-1	13	SPEED LIMIT 55	30 X 36	A		S80	1	SA	P	

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: 10/6/2021 3:52:47 PM
FILE:

LEGEND:

- SIGN TO BE RELOCATED
- SIGN TO BE REMOVED
- SIGN TO BE INSTALLED

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
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Square Ft.	Min. Thickness
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FM 800

SHEET 2 OF 2

Texas Department of Transportation

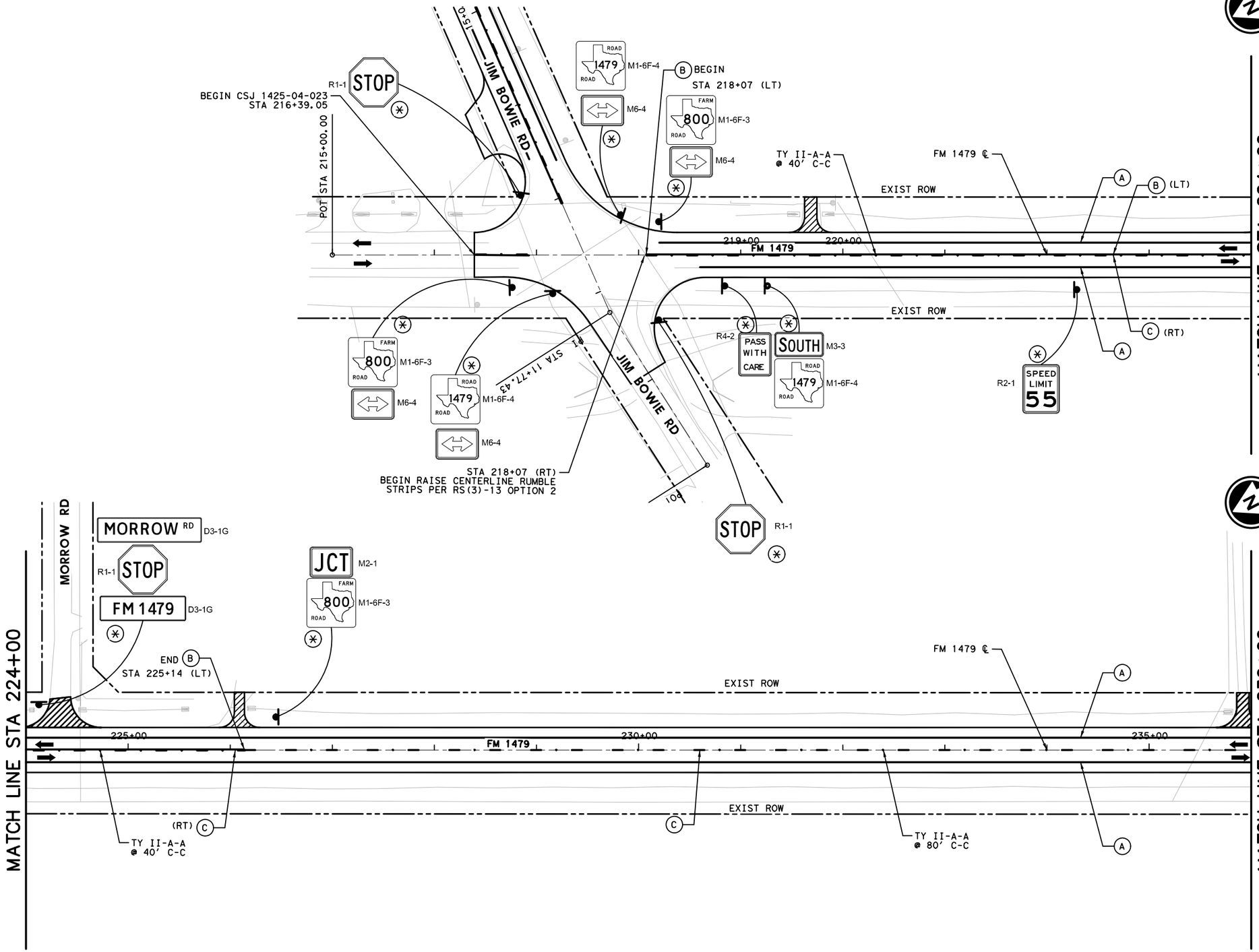
Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 800
4-16	DIST	COUNTY		SHEET NO.
8-16	PHR	CAMERON		280

TB



LEGEND:

0′ 50′ 100′
SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) 12" YELLOW SOLID LINE
- (H) REFL PAV MRK TY II (W)(ARROW)
- (I) REFL PAV MRK TY II (W)(WORD)
- (#) SIGN TO BE RELOCATED (ITEM 644)
- (#) SIGN TO BE REMOVED (ITEM 644)
- (#) SIGN TO BE INSTALLED (ITEM 644)
- (*) SIGN TO REMAIN IN PLACE
- ● OBJECT MARKER

NOTE:

1. ALONG THE CENTERLINE OR ALONG THE TWLT LANE LINES, FURNISH TY II-A-A RAISED PAVEMENT MARKERS IN ACCORDANCE WITH PM(2)-20 STANDARD.
2. LIMITS OF NO-PASSING ZONES SHALL MATCH THE EXISTING. CONTRACTOR TO VERIFY THE STATIONS AND NOTIFY THE ENGINEER PRIOR TO START OF PERMANENT PAVEMENT MARKING.
3. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED CAN BE REMOVED AND STORED AT THE EDCOUCH MAINTANCE YARD TO PREVENT DAMAGE DURING CONSTRUCTION.
4. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. THE DAMAGED SIGNS WILL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
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STATE OF TEXAS
MORT T. TASHOOR
116089
PROFESSIONAL LICENSED ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 1479

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		281
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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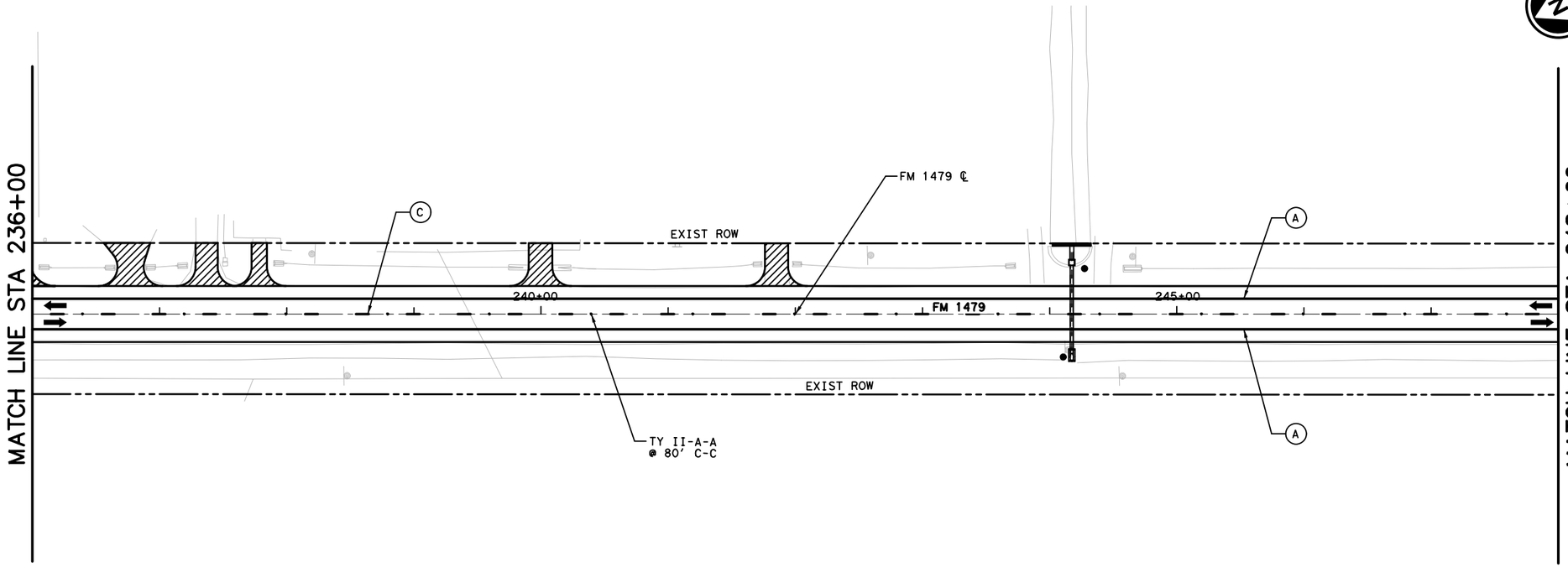

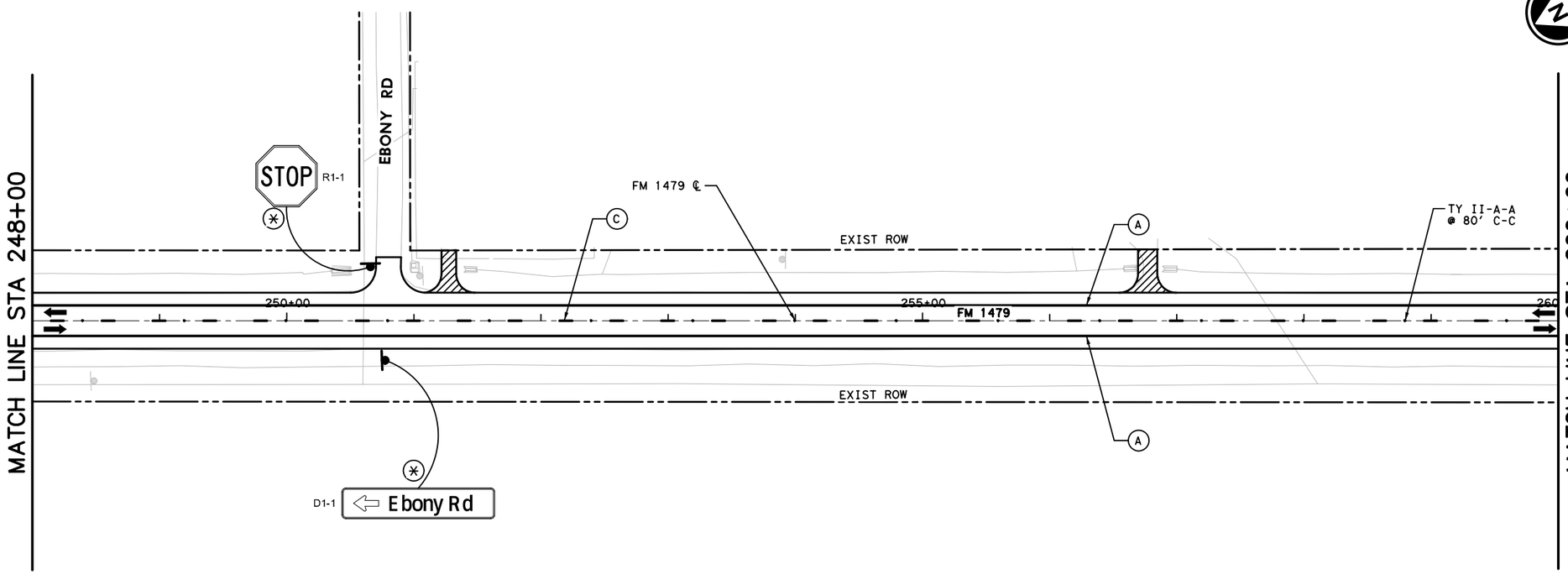

LEGEND:

0' 50' 100'

SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
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- (I) REFL PAV MRK TY II (W)(WORD)
- SIGN TO BE RELOCATED (ITEM 644)
- SIGN TO BE REMOVED (ITEM 644)
- SIGN TO BE INSTALLED (ITEM 644)
- SIGN TO REMAIN IN PLACE
- OBJECT MARKER

NOTE:

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2. LIMITS OF NO-PASSING ZONES SHALL MATCH THE EXISTING. CONTRACTOR TO VERIFY THE STATIONS AND NOTIFY THE ENGINEER PRIOR TO START OF PERMANENT PAVEMENT MARKING.
3. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED CAN BE REMOVED AND STORED AT THE EDCOUCH MAINTANCE YARD TO PREVENT DAMAGE DURING CONSTRUCTION.
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STATE OF TEXAS
MORT T. TASHOOR
116089
PROFESSIONAL LICENSED ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

FM 1479

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		282
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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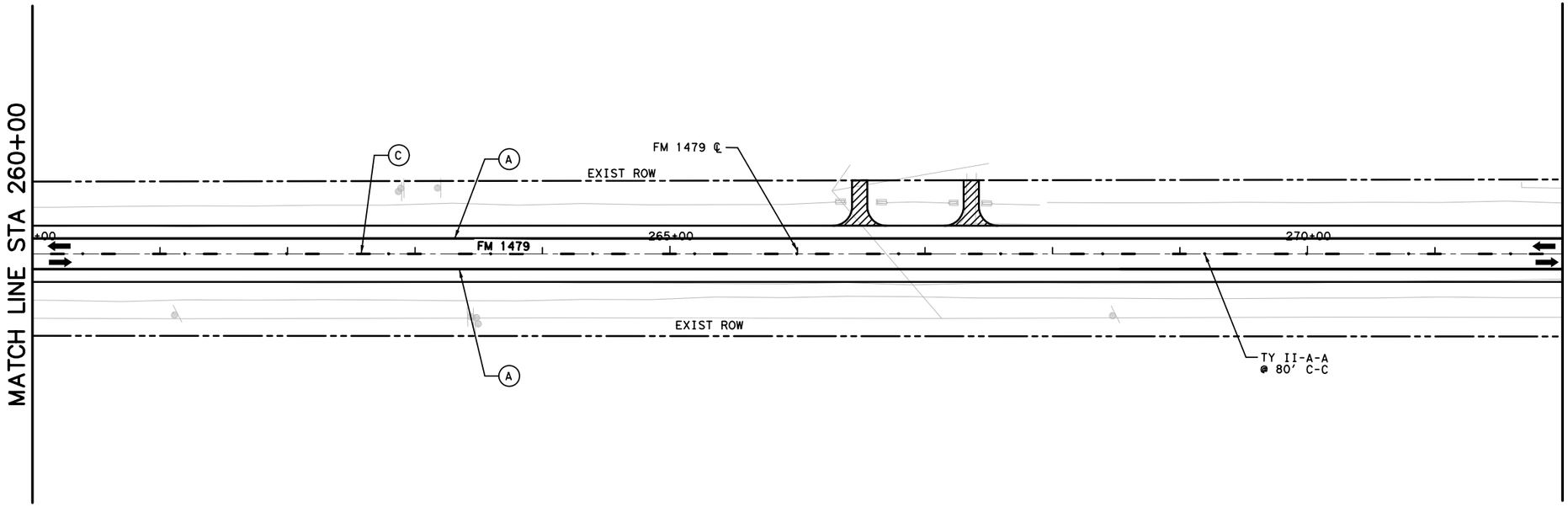

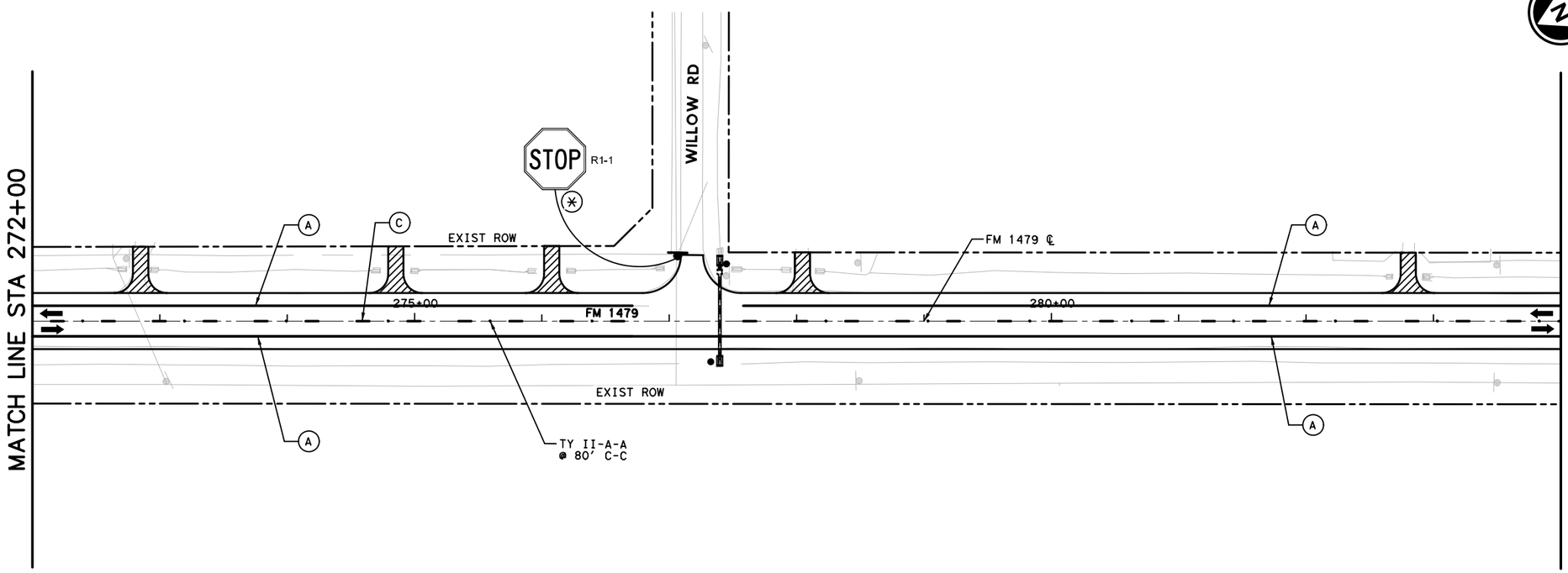

LEGEND:

0' 50' 100'

SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
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- SIGN TO BE RELOCATED (ITEM 644)
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- (#) SIGN TO BE INSTALLED (ITEM 644)
- (*) SIGN TO REMAIN IN PLACE
- ● OBJECT MARKER

NOTE:

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STATE OF TEXAS
MORT T. TASHOOR
116089
LICENSED PROFESSIONAL ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I. S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		283
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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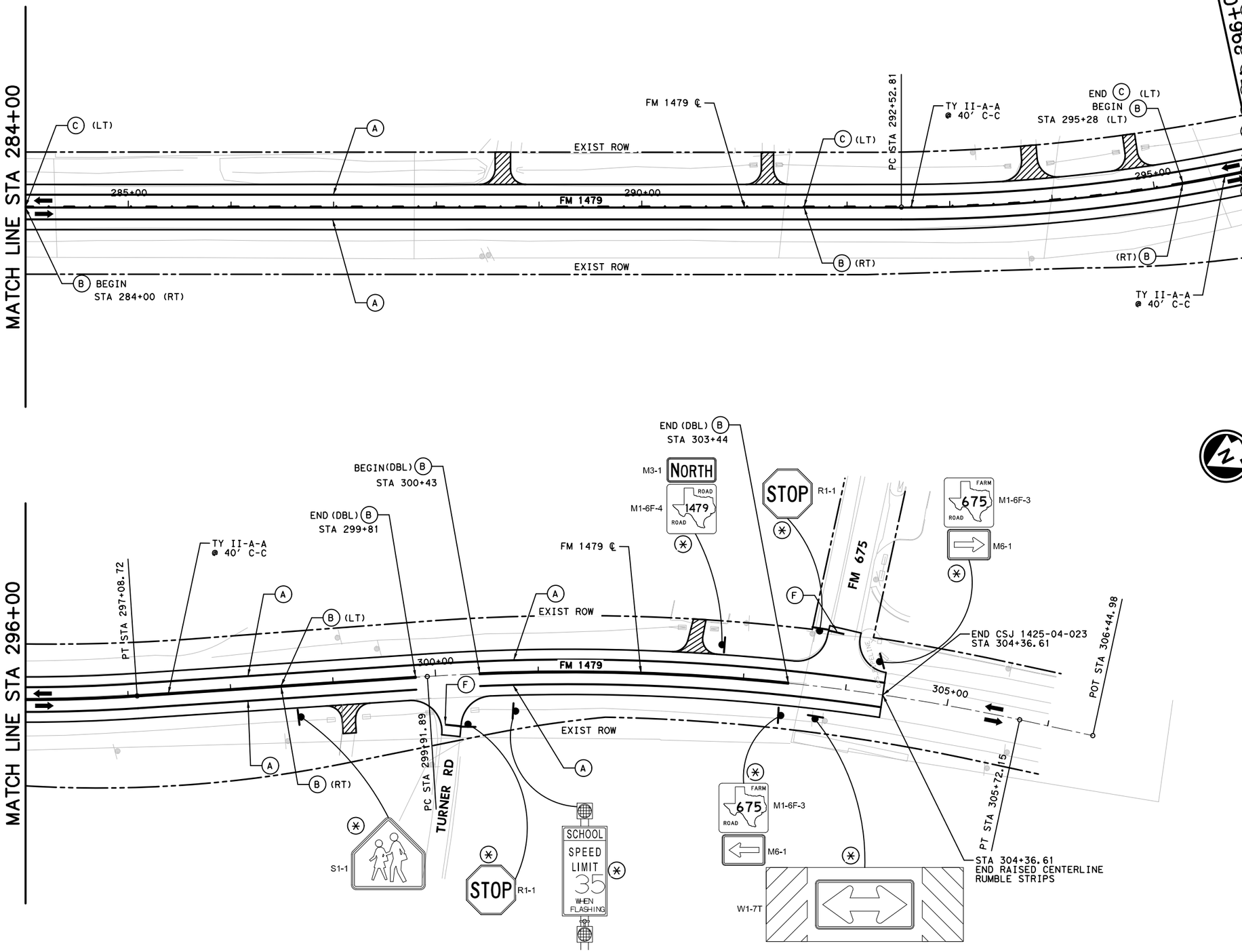

LEGEND:

0′ 50′ 100′ SCALE IN FEET

- (A) 4" WHITE EDGE LINE
- (B) 4" YELLOW SOLID LINE
- (C) 4" YELLOW BROKEN CENTERLINE
- (D) 8" WHITE SOLID LINE
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NOTE:

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STATE OF TEXAS
MORT T. TASHOOR
116089
PROFESSIONAL LICENSED ENGINEER

ISSUE RECORD		
NO.	DESCRIPTION	DATE

I.S. ENGINEERS, LLC
7700 SAN FELIPE STREET, SUITE 485
HOUSTON, TEXAS 77063
TBPE REG. # F-11657

Texas Department of Transportation

FM 1479

SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		284
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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DATE: 10/6/2021 3:56:33 PM
FILE:

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SEE LEGEND FOR CLARIFICATION	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)					BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
								POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		TY = TYPE
								FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY N TY S

NO PROPOSED INSTALLATION
FOR FM 1479

LEGEND:

- (#) SIGN TO BE RELOCATED
- (#) SIGN TO BE REMOVED
- (#) SIGN TO BE INSTALLED

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/

ALUMINUM SIGN BLANKS (TYPE A)

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

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).

FM 1479

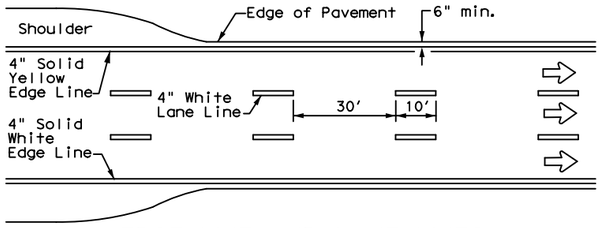
Texas Department of Transportation | Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

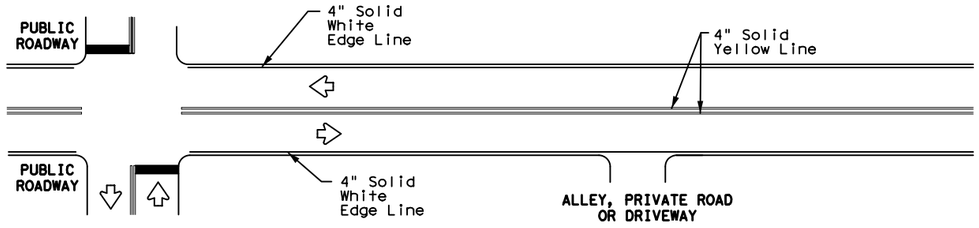
SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	1425	04	023	FM 1479
4-16 8-16	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		285

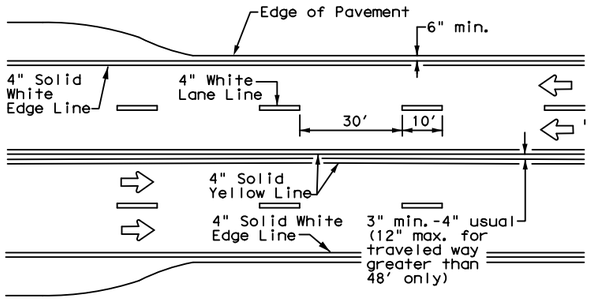
TB



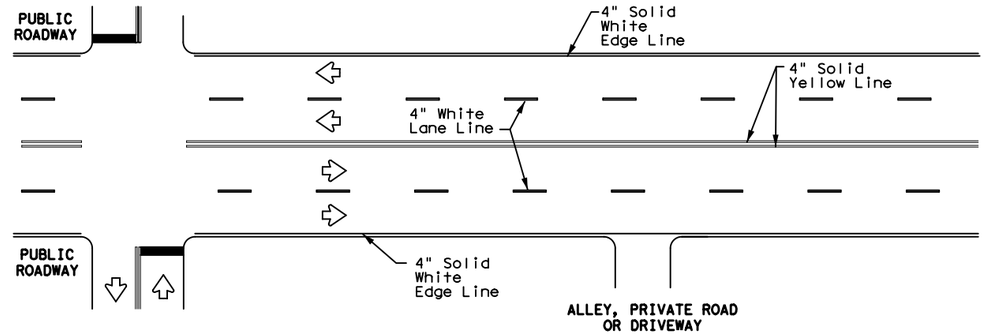
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



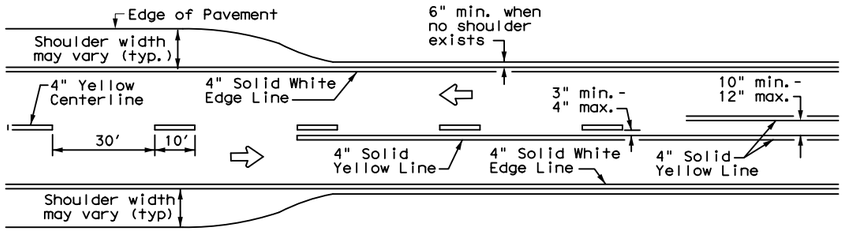
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



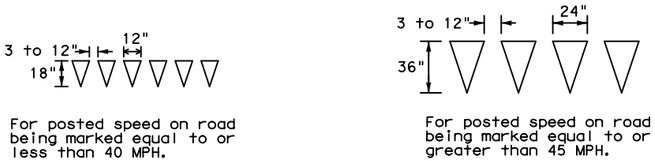
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



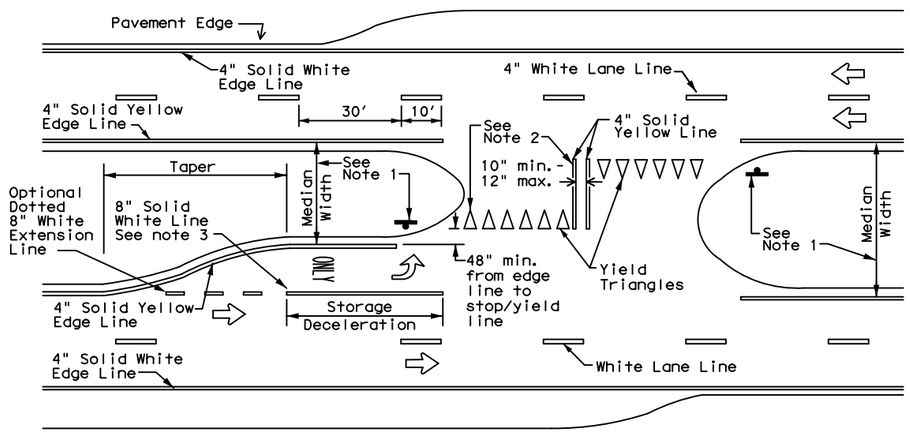
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



YIELD LINES



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 are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles 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.

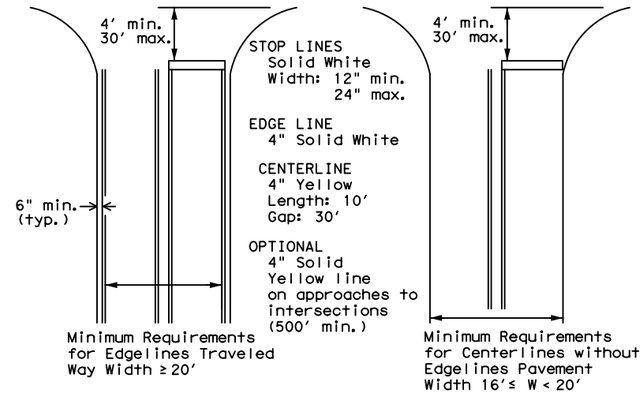
GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines 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 inside of edgeline to the inside of edgeline 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.



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

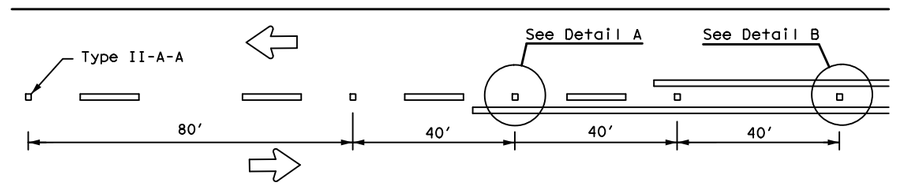
PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	1136	02	053	FM 800
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	PHR	CAMERON		286

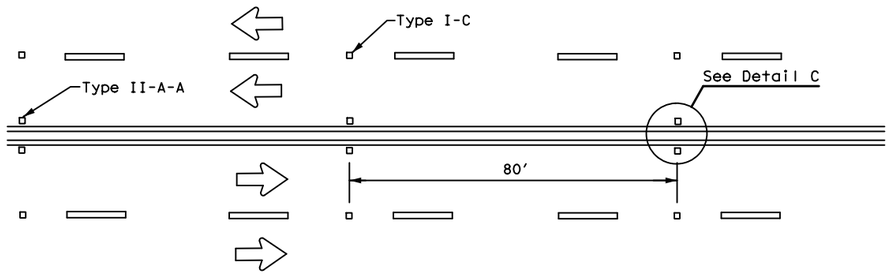
22A

DATE: 10/6/2021 3:57:48 PM
FILE:

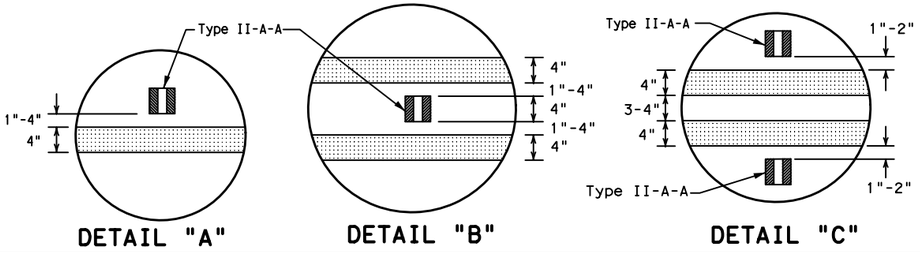
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



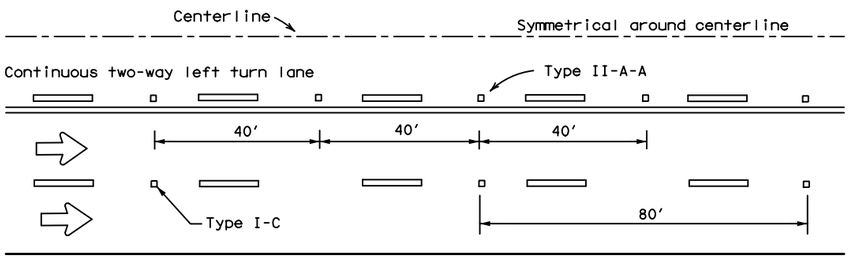
CENTERLINE FOR ALL TWO LANE ROADWAYS



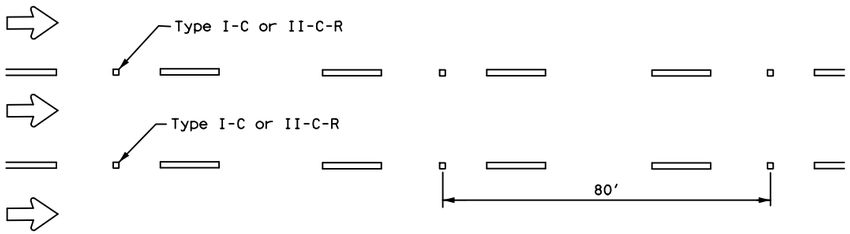
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS



DETAIL "A" **DETAIL "B"** **DETAIL "C"**

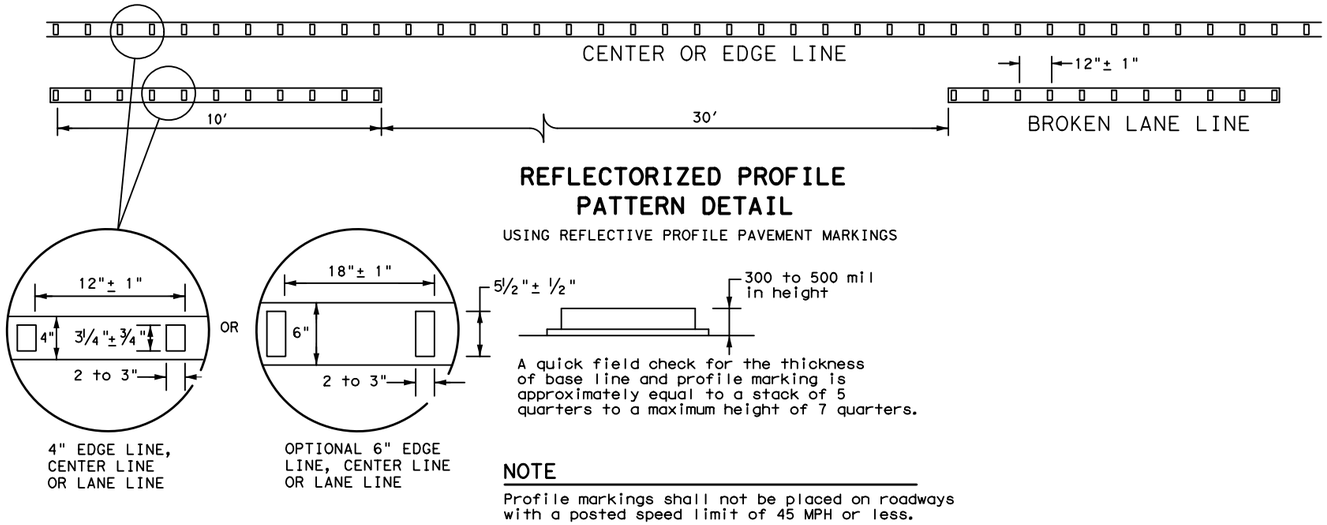


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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.



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.

4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

NOTE

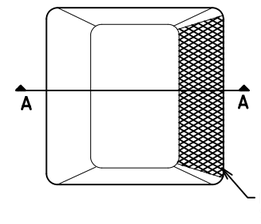
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

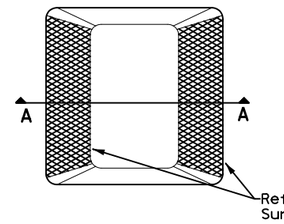
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

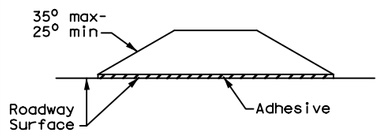
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation

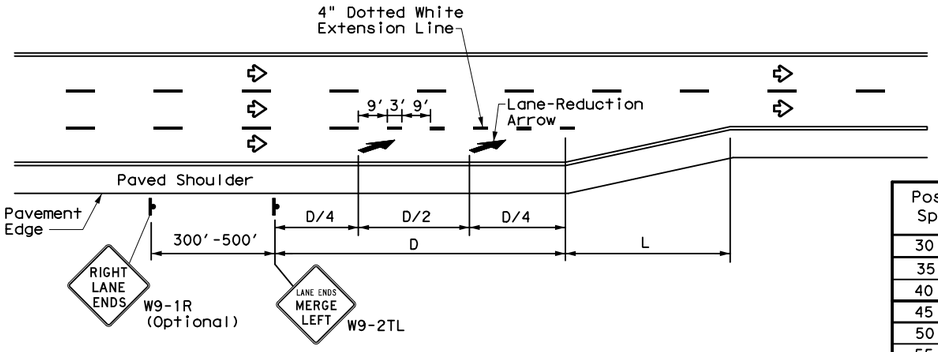
Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 2-10 5-00 2-12 8-00 6-20	1136	02	053	FM 800
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		287

22B

DATE: 10/6/2021 3:58:59 PM
FILE:

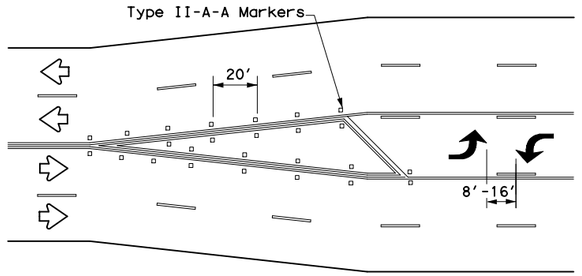


LANE REDUCTION

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	

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 W9-1R "RIGHT LANE ENDS" 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.



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.

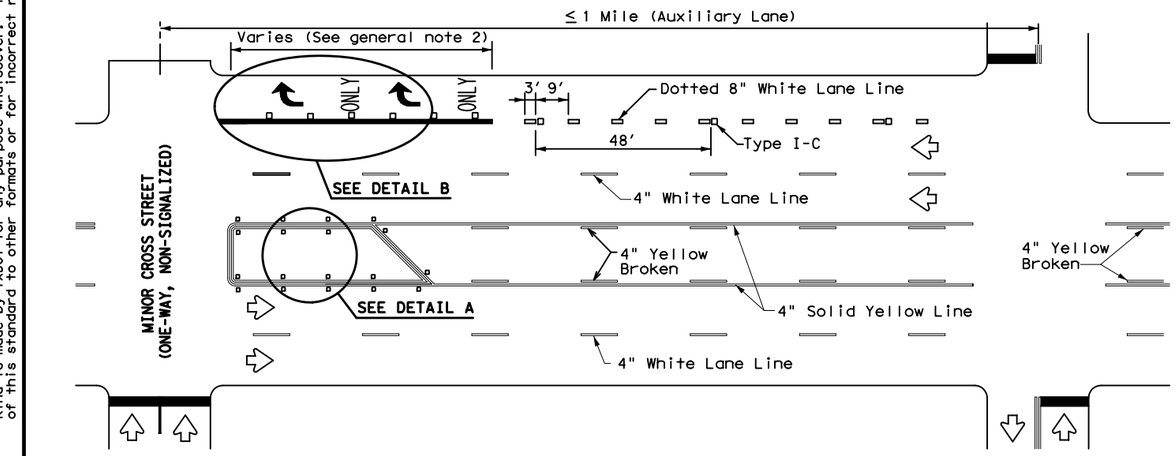
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

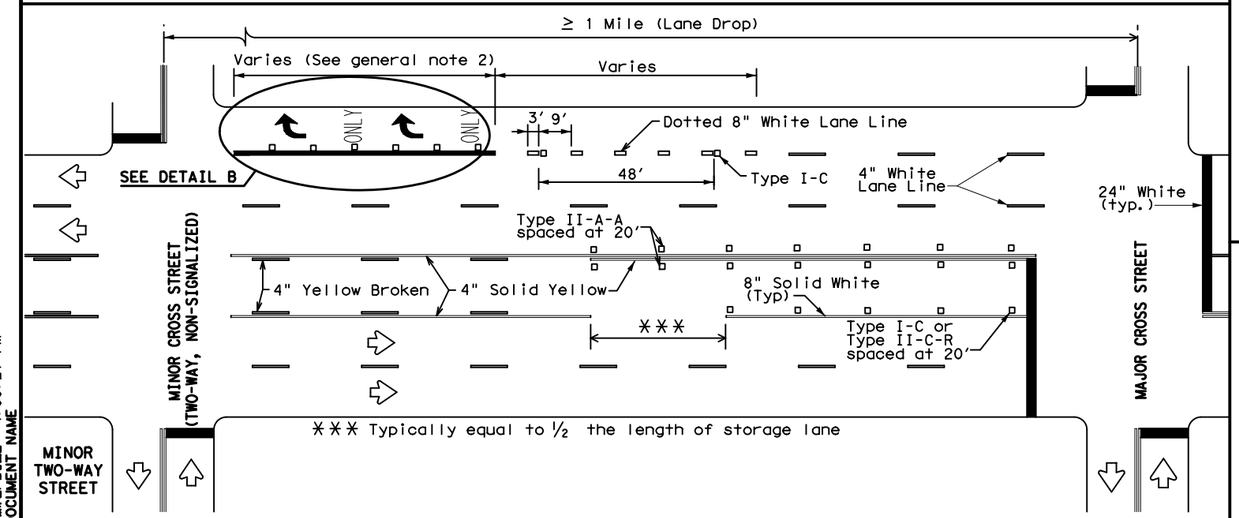
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn 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.

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

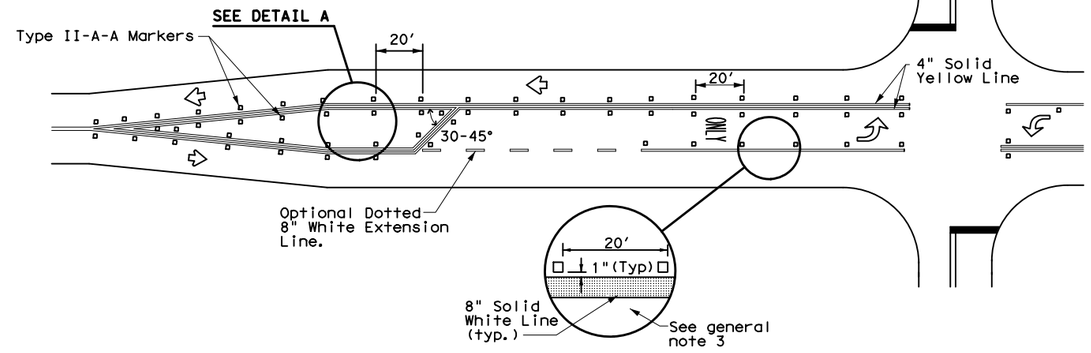
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



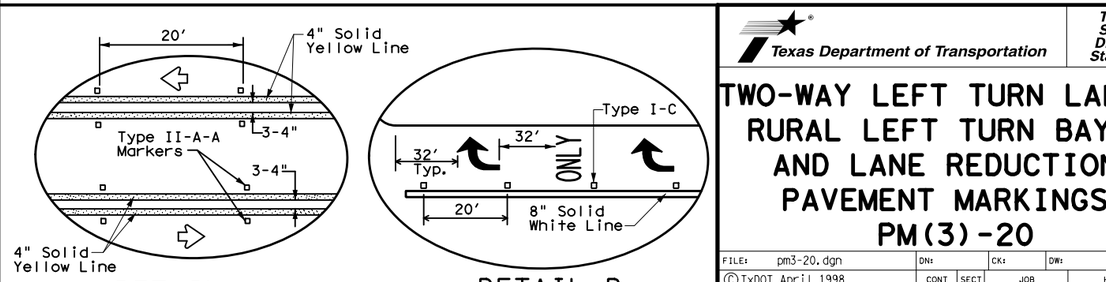
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	1136	02	053	FM 506
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12	PHR	CAMERON		288
3-03 6-20				

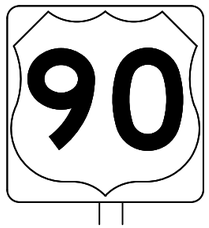
22C

DATE: 04/26/2006 4:00:21 PM
FILE: DOCUMENT NAME

DATE: 10/6/2021 4:02:14 PM
FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

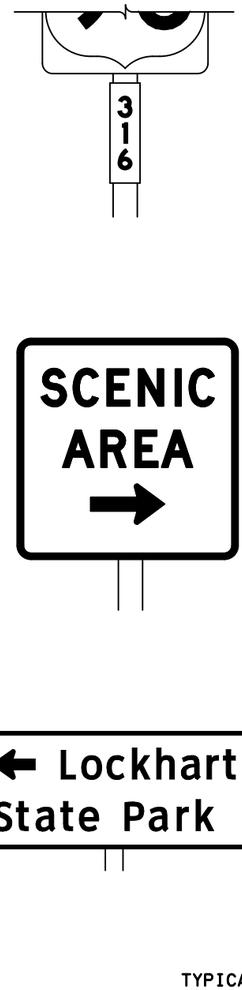
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING

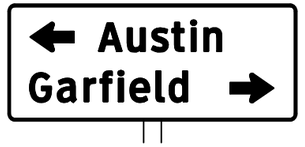


TYPICAL EXAMPLES

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

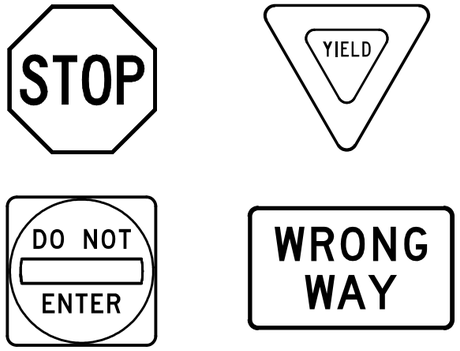
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	PHR	CAMERON		289

DATE: 10/6/2021 4:03:22 PM
FILE:

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

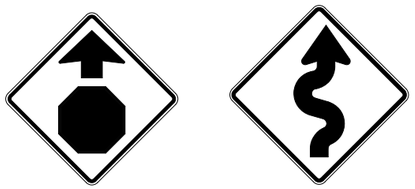
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(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 12-03 7-13 9-08	0872	04	030	FM 506
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		290

4

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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)

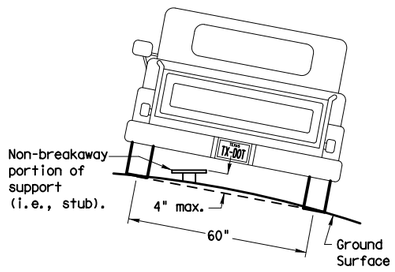
Anchor Type

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))

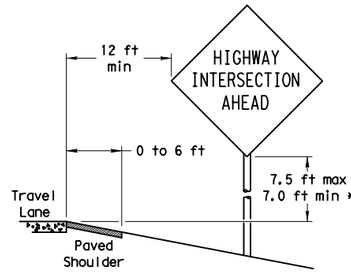
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

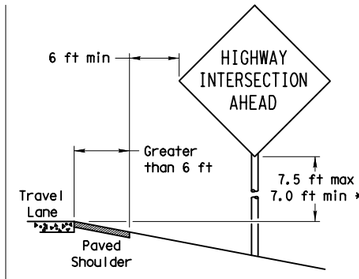
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

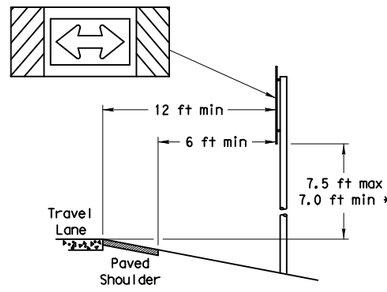
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



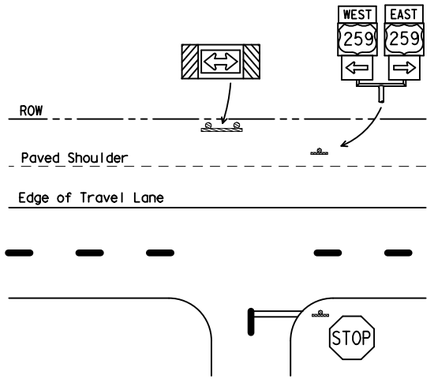
GREATER THAN 6 FT. WIDE

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.

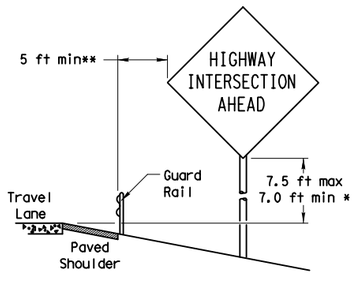
T-INTERSECTION



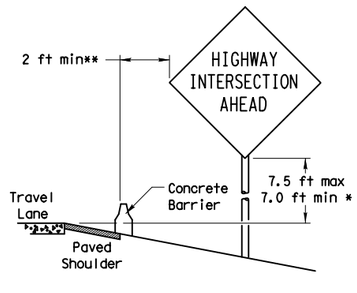
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



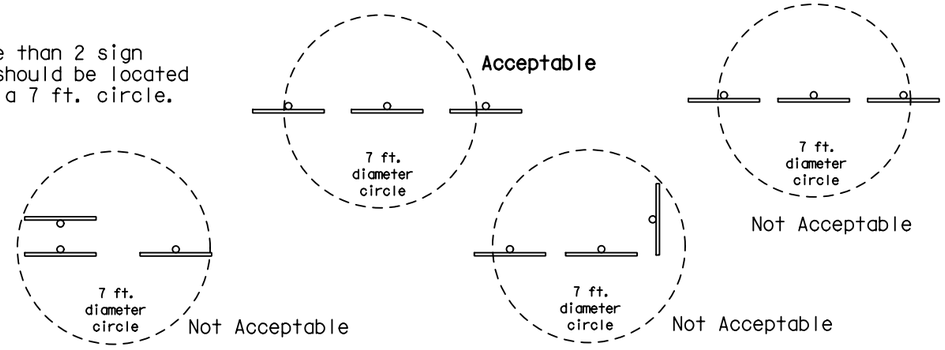
BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

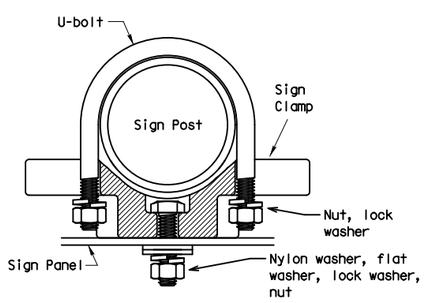
**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

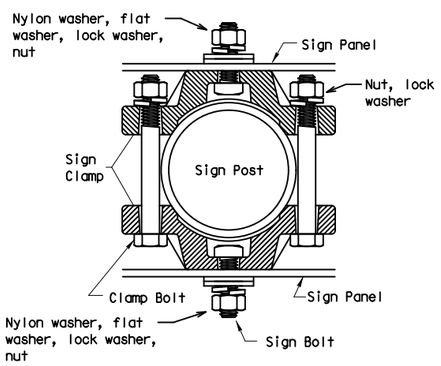


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

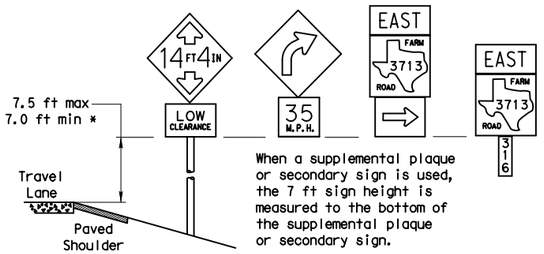
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



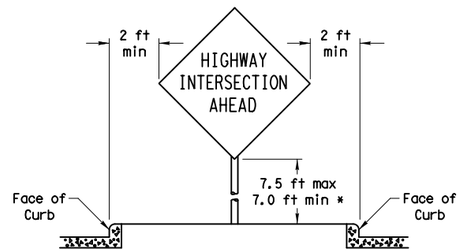
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



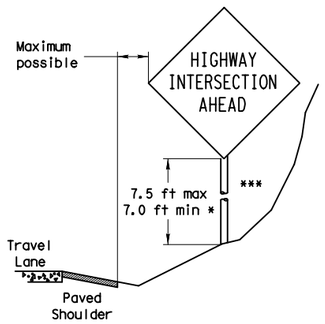
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

* 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

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

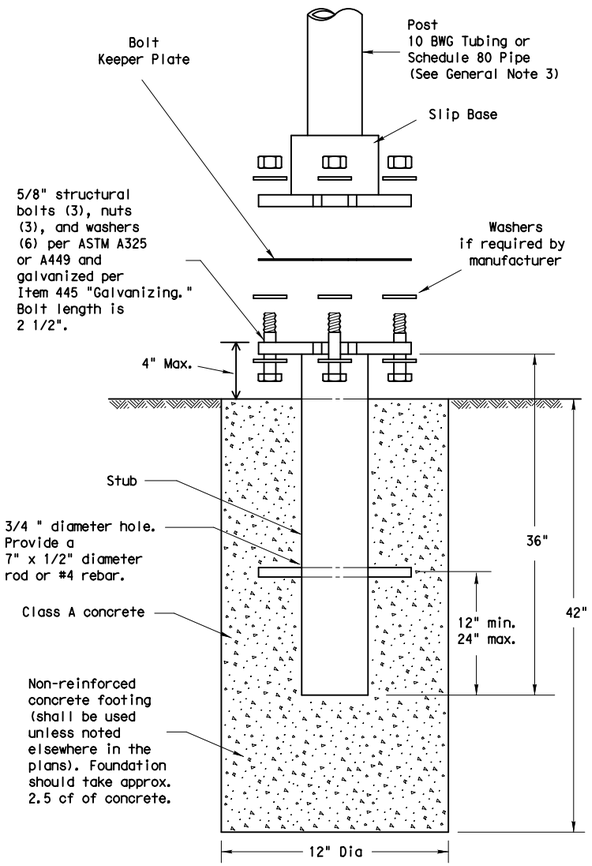
CONT	SECT	JOB	HIGHWAY
0872	04	030	FM 506

DIST	COUNTY	SHEET NO.
PHR	CAMERON	291

26A

DATE: 10/6/2021 4:04:10 PM
FILE:

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.

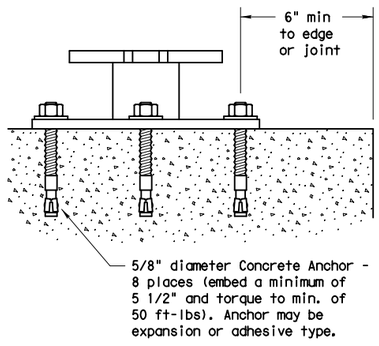
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum 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
0872	04	030	FM 506

DIST	COUNTY	SHEET NO.
PHR	CAMERON	292

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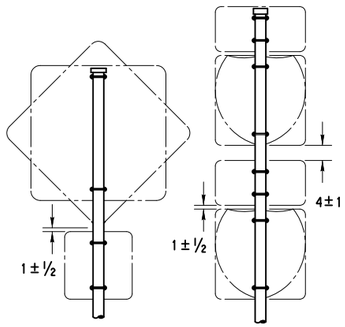
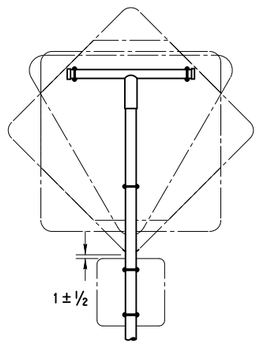


SM RD SGN ASSM TY XXXXX(1)XX(P)



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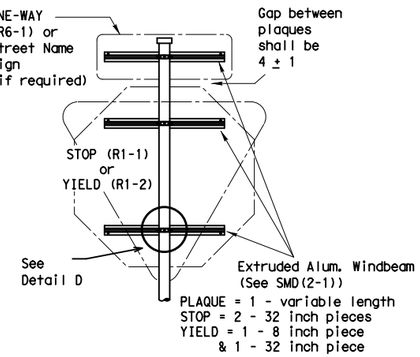

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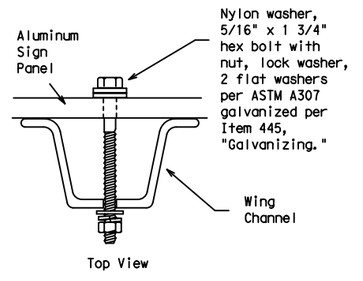
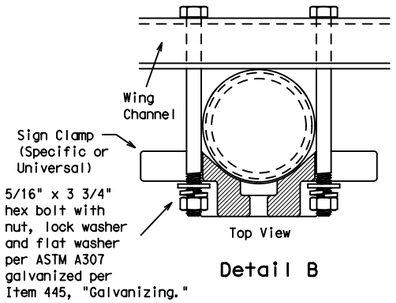
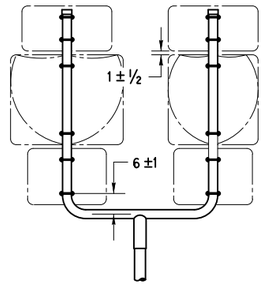


Detail A



Detail B



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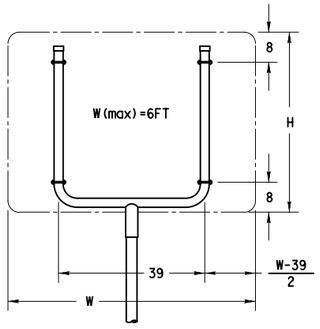

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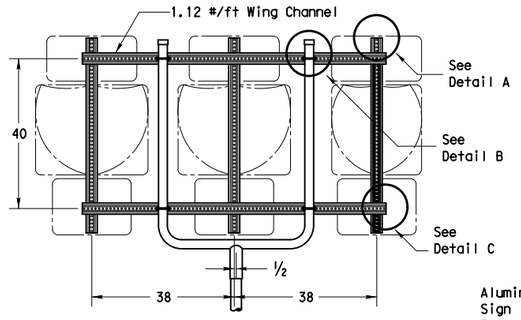
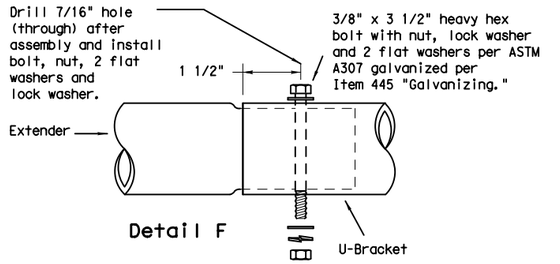
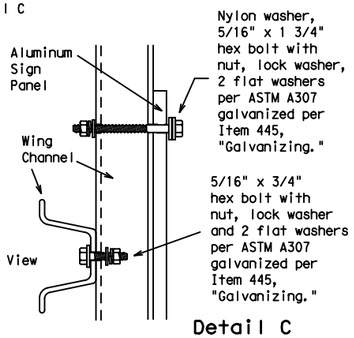


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

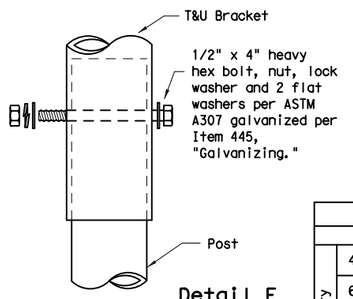


Detail F

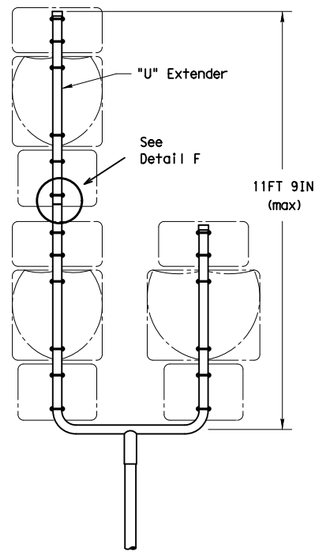
Splices shall only be allowed behind the sign substrate.



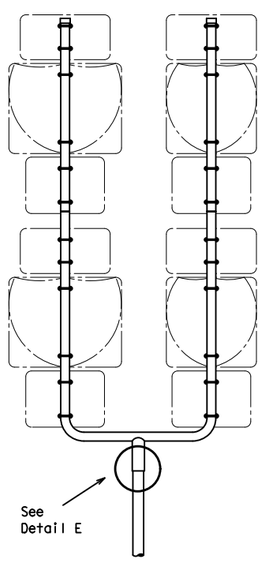
Detail C



Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)



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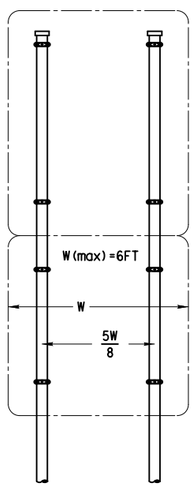
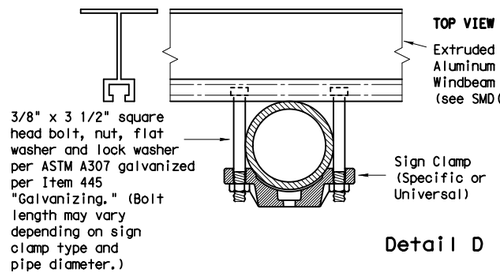
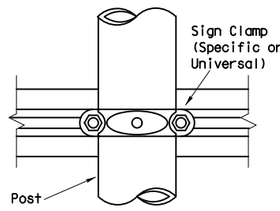


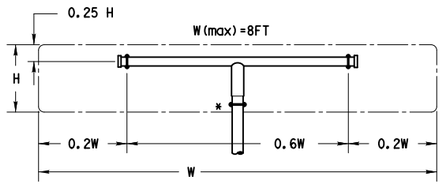
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

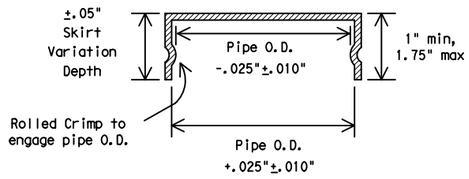




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

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
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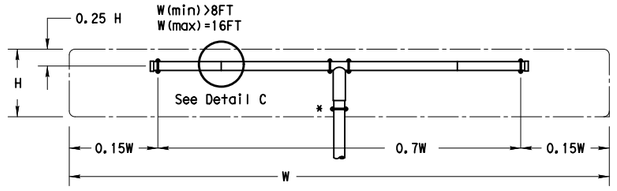
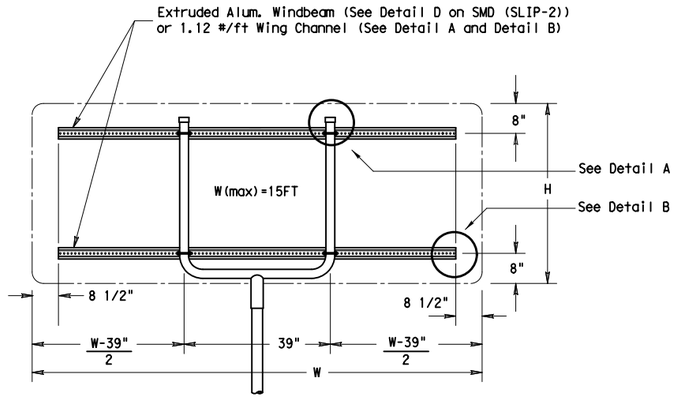


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



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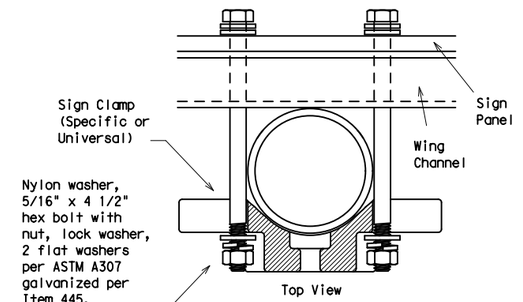
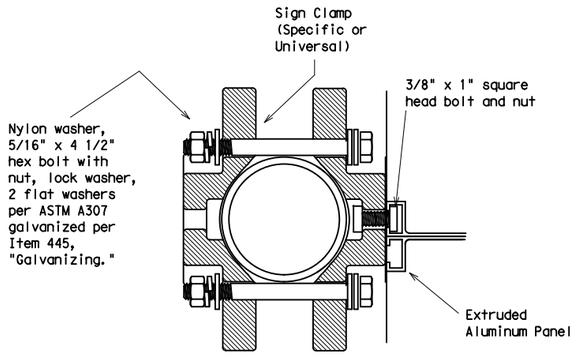
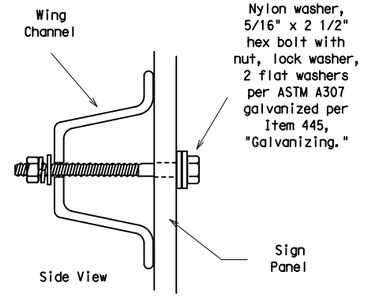


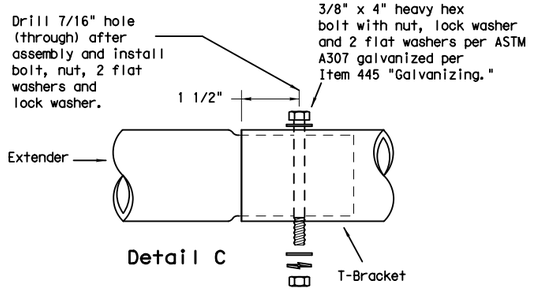
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

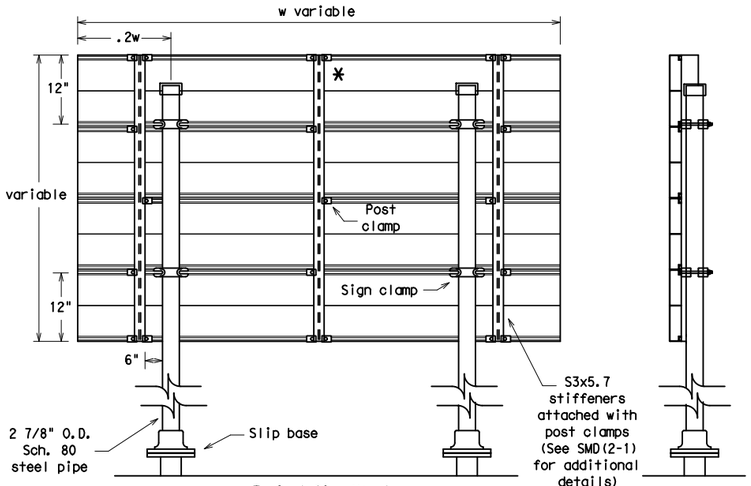


Detail B



Detail C

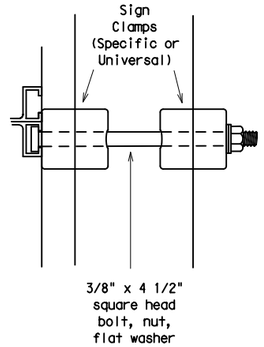
Splices shall only be allowed behind the sign substrate.



Typical Sign Mount

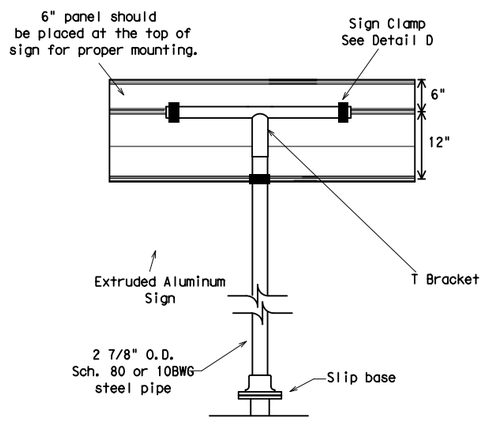
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

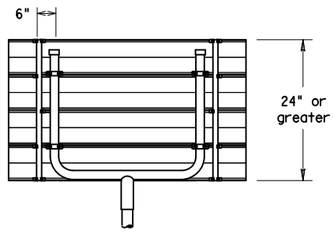


Detail E

See Detail E
for clamp installation



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

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. Sign blanks shall be the sizes and shapes shown on the plans.
11. 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.
12. 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
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	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		294

DATE: 10/6/2021 4:07:47 PM
FILE:

DISCLAIMER:
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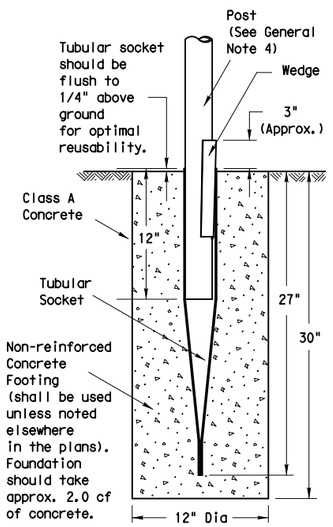
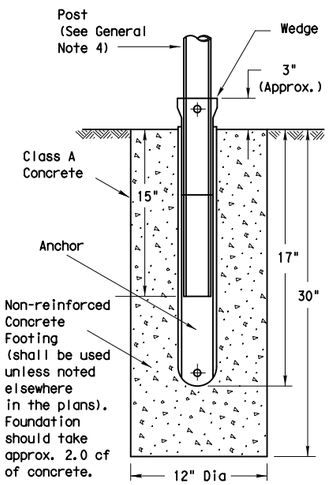
Wedge Anchor Steel System



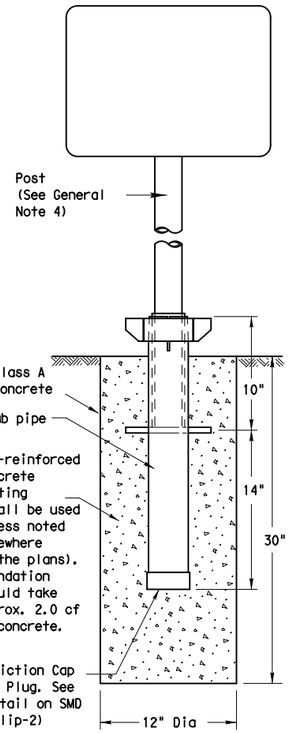
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

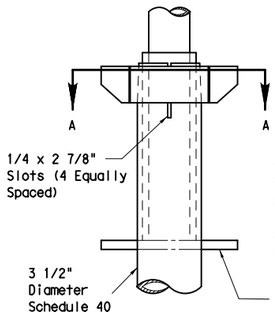


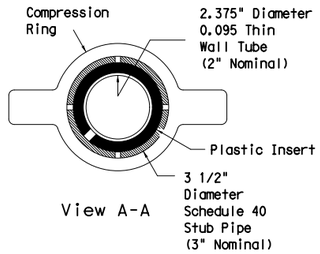
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



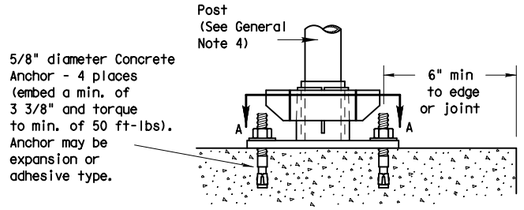
SM RD SGN ASSM TY TWT(X)UA(P)



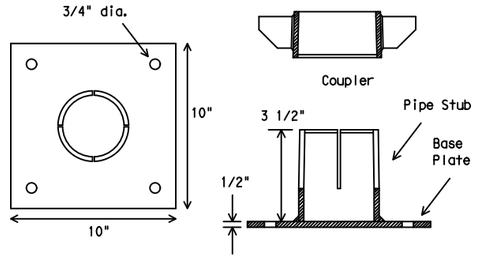


View A-A

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.

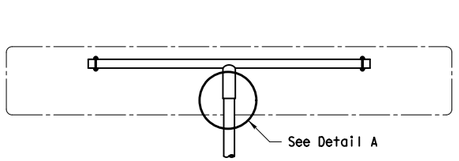


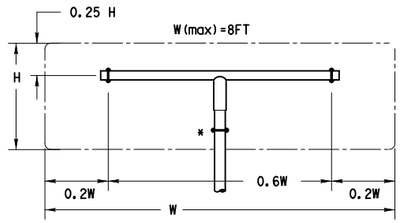
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized 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.



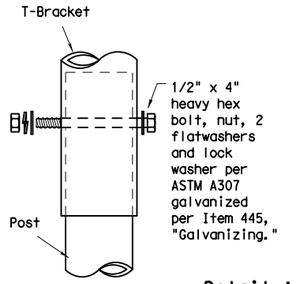
SM RD SGN ASSM TY TWT(X)UB(P)

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

9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0872	04	030	FM 506
DIST	COUNTY		SHEET NO.
PHR	CAMERON		295

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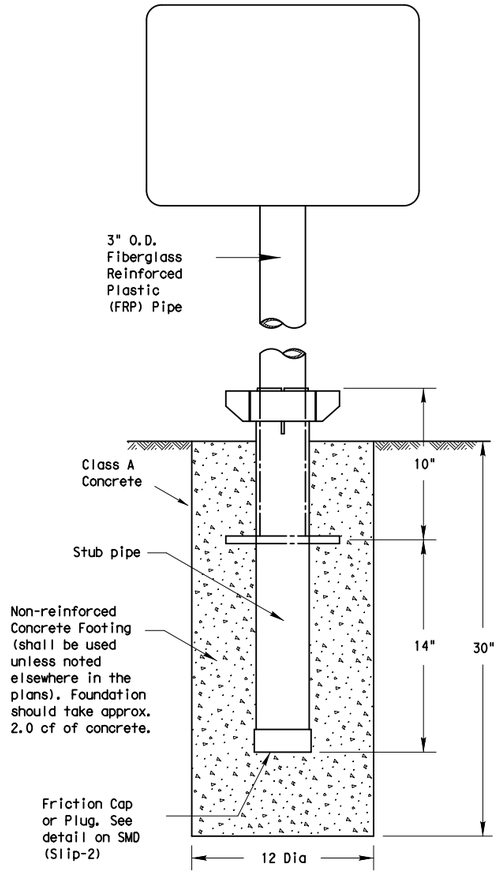
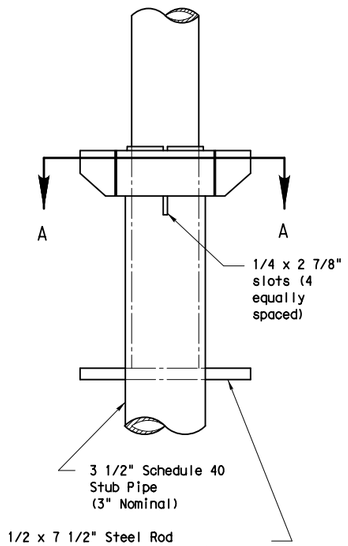
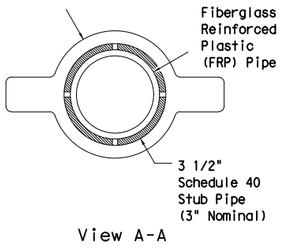
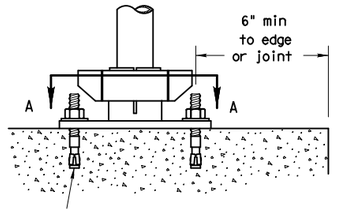
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post







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

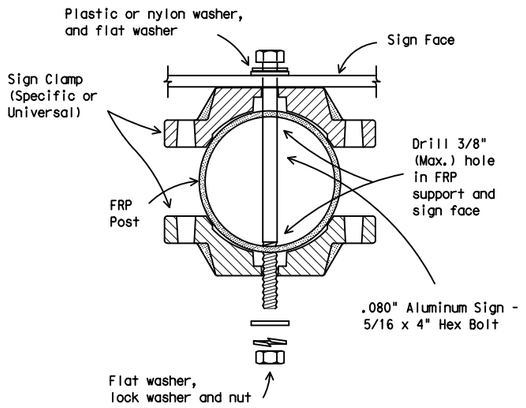
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

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.

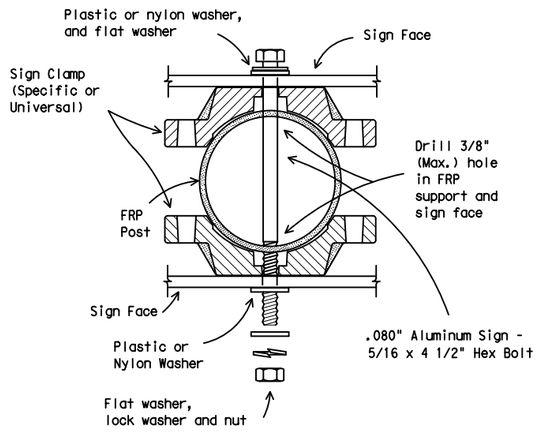
BOLT DOWN SIGN SUPPORT

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

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0872	04	030	FM 506
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		296

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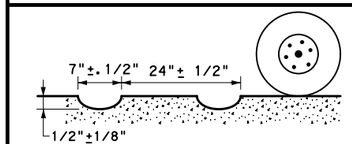
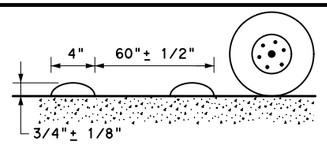
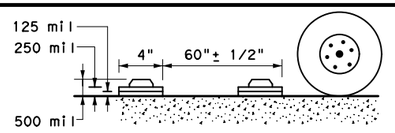
CENTERLINE RUMBLE STRIPS



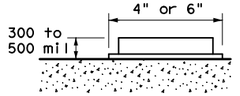
MILLED RUMBLE STRIPS



RAISED TRAFFIC BUTTONS

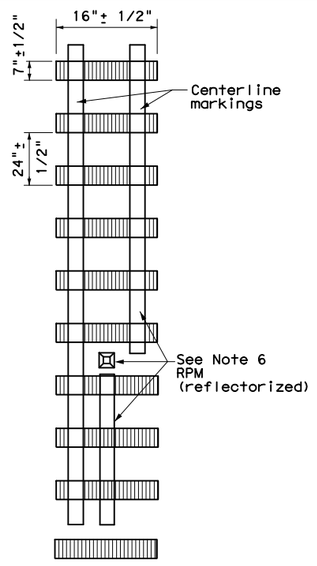


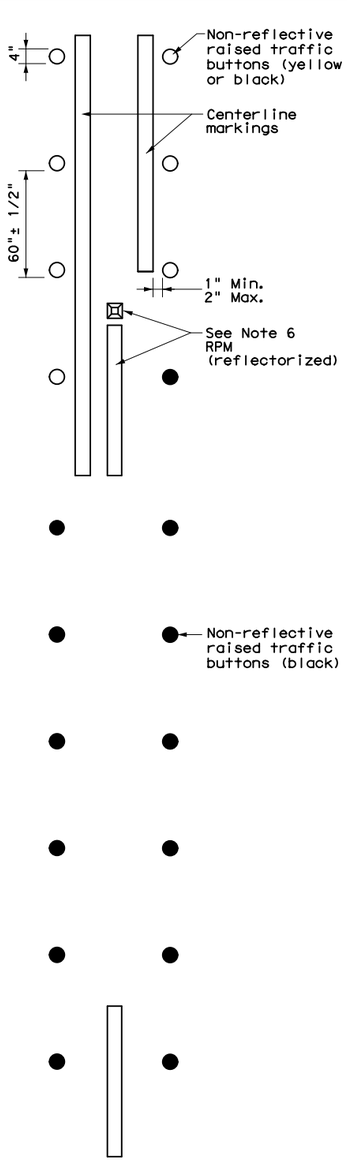
PREFORMED THERMOPLASTIC STRIPS

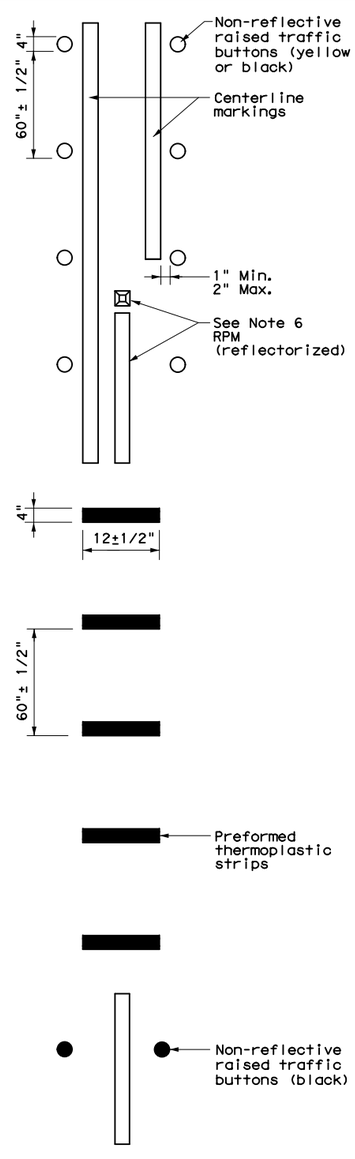


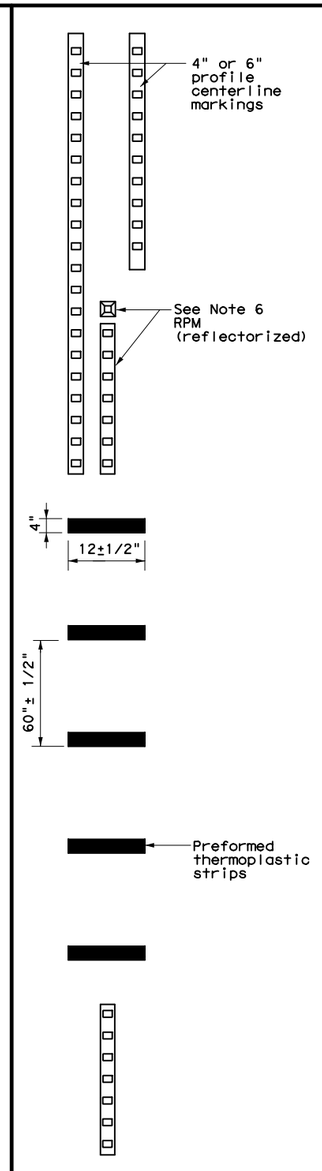
PROFILE MARKINGS

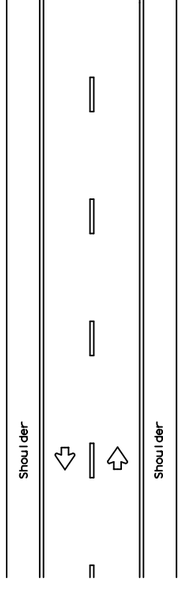
PROFILE VIEW











TWO LANE TWO-WAY ROADWAYS

PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

PLAN VIEW
OPTION 3

RAISED CENTERLINE RUMBLE STRIPS AND PREFORMED THERMOPLASTIC STRIPS

PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS AND PREFORMED THERMOPLASTIC STRIPS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on two-lane highways with or without shoulders.
2. Centerline and edgeline rumble strips or profile markings shall not be placed on 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 be used if approved by the Traffic Operations Division.
5. Breaks in milled centerline rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections and driveways with high usage of large trucks.
6. Use Standard Sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, and dimensions pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are installed near residential areas, schools, churches, etc. A minimum of 3/8 inch depth of milled rumble strip may be considered in these areas.
8. Pavement markings must be applied over milled centerline rumble strips.

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 buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. The color of the button should be yellow for a continuous no passing roadway. Black buttons should be used in areas where passing is allowed.

WHEN INSTALLING EDGELINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

12. See standard sheet RS(4).

Texas Department of Transportation®
Traffic Operations Division Standard

CENTERLINE RUMBLE STRIPS ON TWO LANE TWO-WAY HIGHWAYS

RS(3)-13

FILE: rs(3)-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2013	CONT	SECT	JOB	HIGHWAY
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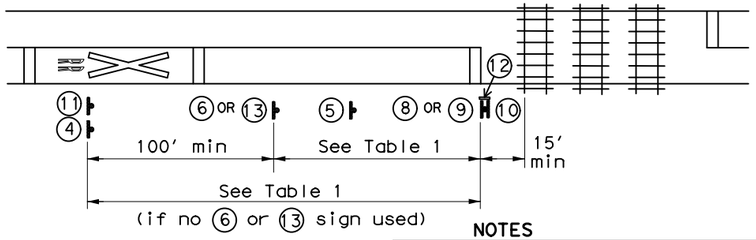
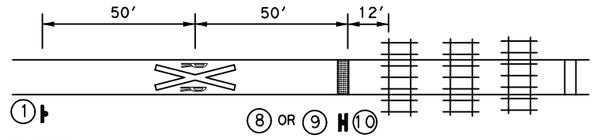
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		297



NOTES

1. Stop or yield sign may also be installed to the left of the crossbuck sign, rather than below it.
2. A 2" white retroreflective strip shall be installed on front and back of crossbuck sign post.

PASSIVE CROSSING



NOTES

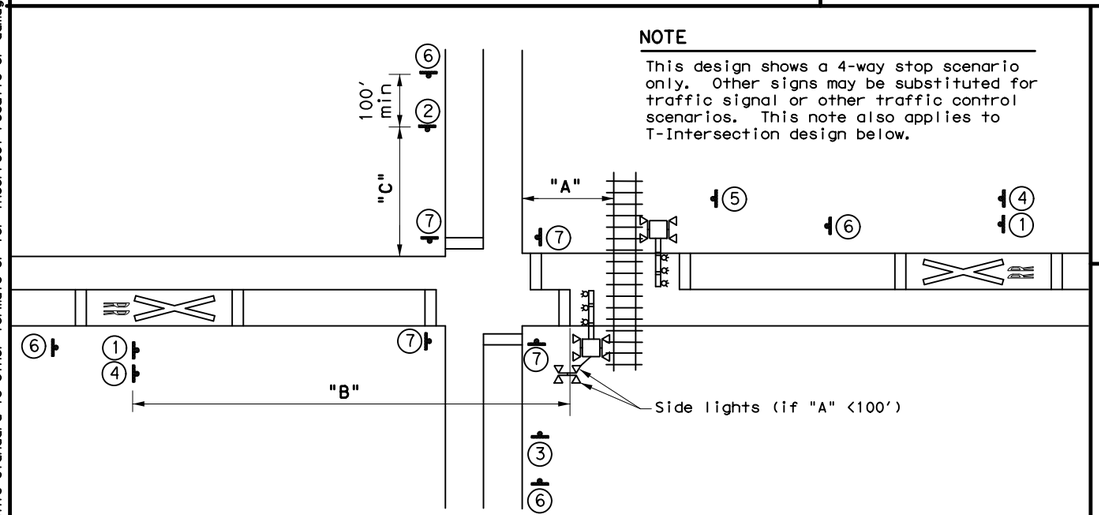
1. A shared use pathway is considered a separate pathway crossing when more than 25' from traveled way of adjacent roadway.
2. Detectable warning used at stop bar.
3. Smaller sign sizes preferred than shown to the right on this sheet.

PATHWAY CROSSING

TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

GENERAL NOTES

1. Railroad company to provide active traffic control devices, CROSSBUCK (R15-1), NUMBER OF TRACKS Plaque (R15-2P) (if more than 1 track), and EMERGENCY NOTIFICATION (I-13) signs.
2. LOW GROUND CLEARANCE (W10-5) signs may be relocated further upstream of crossing to provide advance warning of alternate route.
3. GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2) signs may be modified as needed to fit roadway geometry.
4. Table 1 placement distances may vary per Sect. 2C.05 of the TMUTCD.
5. See Table 1 to determine placement of STOP AHEAD (W3-1) and YIELD AHEAD (W3-2) signs unless shown otherwise.
6. DO NOT STOP ON TRACKS (R8-8) signs installed when potential for vehicles stopping on tracks is significant as determined by sealing engineer. Install so sign does not block view of RR mast.
7. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

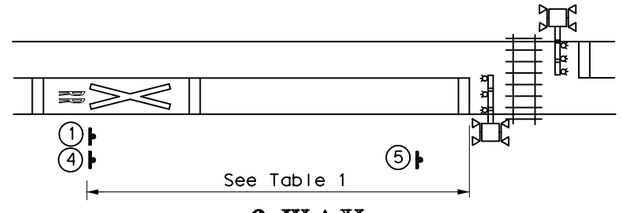


NOTE

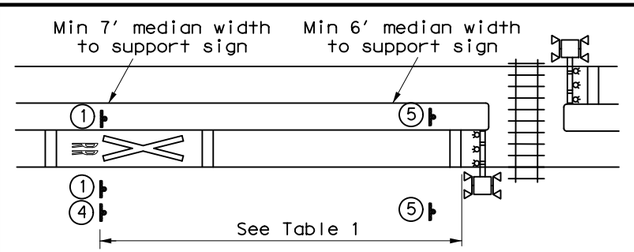
This design shows a 4-way stop scenario only. Other signs may be substituted for traffic signal or other traffic control scenarios. This note also applies to T-Intersection design below.

	"A" <100'	"A" ≥100'
"B"	See Table 1. Place pavement markings and signs on opposite side of intersection from rail if spacing from Table 1 would put markings within intersection.	See Table 1. Place pavement markings and signs between rail and intersection if spacing from Table 1 would put markings within intersection.
"C"	See Table 1.	GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2, W10-3, W10-4) signs should only be installed if W10-1 sign is not between intersection and railroad crossing. If needed, see Table 1.

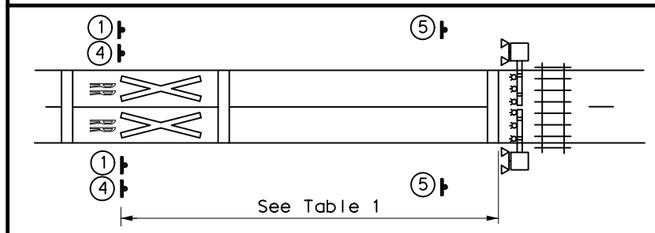
GRADE CROSSING NEAR A PARALLEL STREET



2-WAY



2-WAY WITH MEDIAN



1-WAY

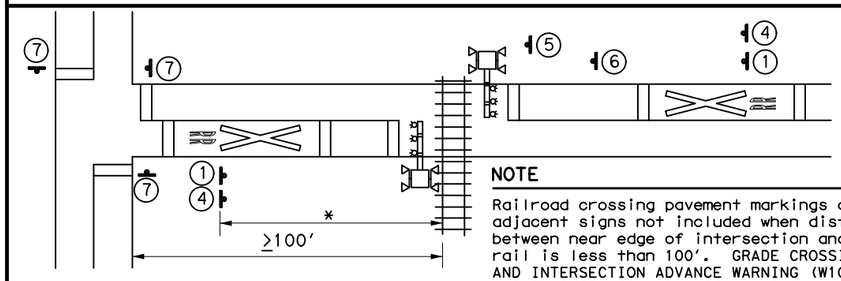
SIGNS

**	**	**	IF NEEDED	
1 W10-1 36"DIA.	2 W10-2L 36"X36"	3 W10-2R 36"X36"	4 W10-5 36"X36" / W10-5P 30"x24" (LOW GROUND CLEARANCE)	
IF NEEDED	IF NEEDED			
5 R8-8 24"X30" (DO NOT STOP ON TRACKS)	6 W3-1 30"X30"	7 R1-1 36"X36" / R1-3P 18"X6" (ALL WAY)	R15-1 48"X9" / R15-2P 27"X18" (RAIL ROAD CROSSING, 3 TRACKS) / R1-1 36"X36" (STOP)	8
R15-1 48"X9" / R15-2P 27"X18" (RAIL ROAD CROSSING, 3 TRACKS) / R1-2 48"X48"X48" (YIELD)		R15-1 48"X9" / R15-2P 27"X18" (RAIL ROAD CROSSING, 3 TRACKS)	W10-1 36"DIA. / W10-13P 30"X24" (NO GATES OR LIGHTS)	REPORT EMERGENCY OR PROBLEM 1-800-555-5555 CROSSING 836 597 H
9		10	11 **	Sign may be placed perpend. to travel lanes. 12 I-13 15"X9"
IF NEEDED				
13 W3-2 30"X30"				

** Includes a NO TRAIN HORN Plaque (W10-9P) if crossing is in a Quiet Zone. LOW GROUND CLEARANCE Plaque (W10-5P) if needed is mounted below W10-2/W10-3/W10-4 signs.

NO TRAIN HORN W10-9P 30"X24"

LOW GROUND CLEARANCE W10-5P 30"X24"

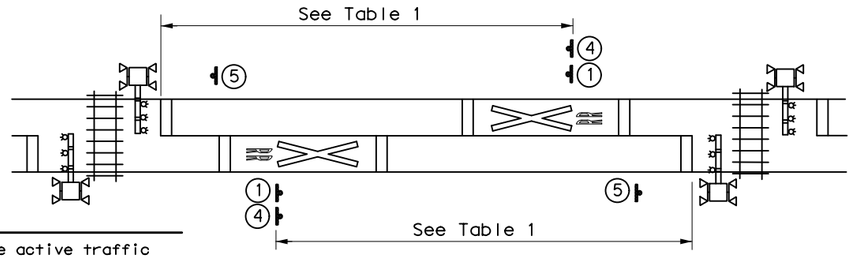


*Use Table 1 if sufficient space exists.

NOTE

Railroad crossing pavement markings and adjacent signs not included when distance between near edge of intersection and near rail is less than 100'. GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-3) signs installed on roadway parallel with rail in this case.

T-INTERSECTION



NOTE

Separate active traffic control devices, railroad crossing pavement markings, and adjacent signs required when tracks are more than 100' apart.

2 ADJACENT CROSSINGS

Texas Department of Transportation

Traffic Operations Division Standard

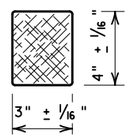
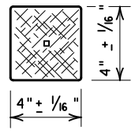
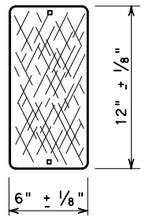
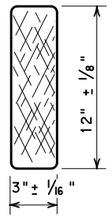
RAILROAD CROSSING DETAILS SIGNING & STRIPING

RCD(2)-16

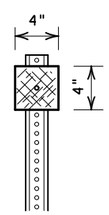
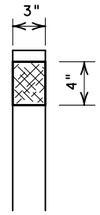
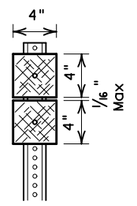
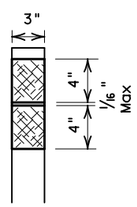
FILE: rcd2-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		298

DATE: 10/6/2021 4:14:29 PM
FILE:

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

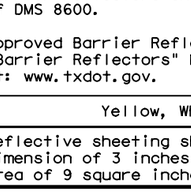
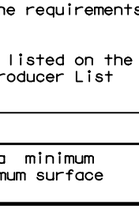
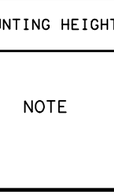
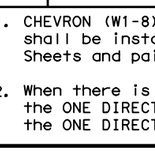
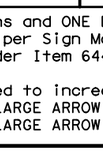
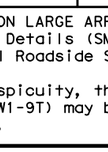
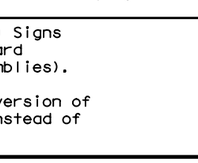
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

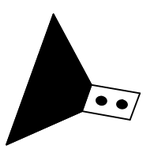
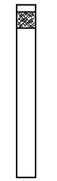
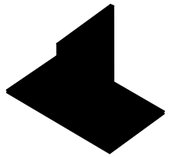
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

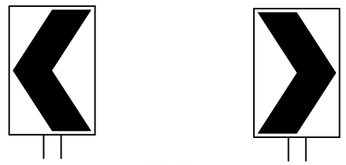
DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 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"	

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	0872	04	030	FM 506
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	PHR	CAMERON		299

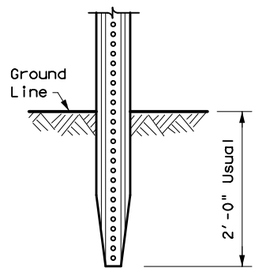
20A

DATE: 10/6/2021 4:15:52 PM
FILE:

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

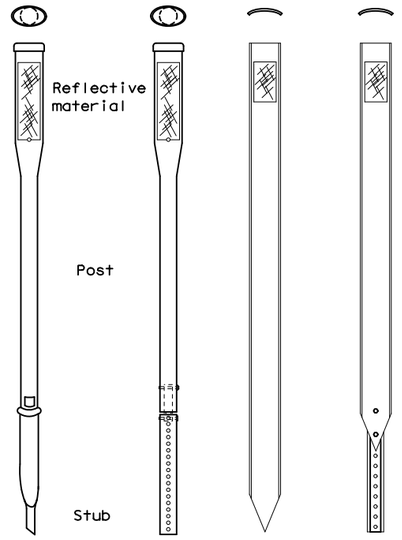


NOTES

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.

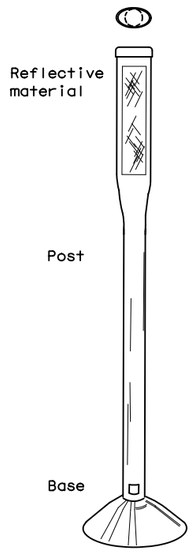
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



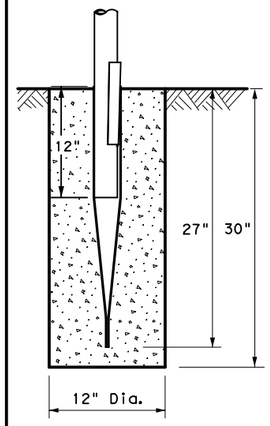
SURFACE MOUNT

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.

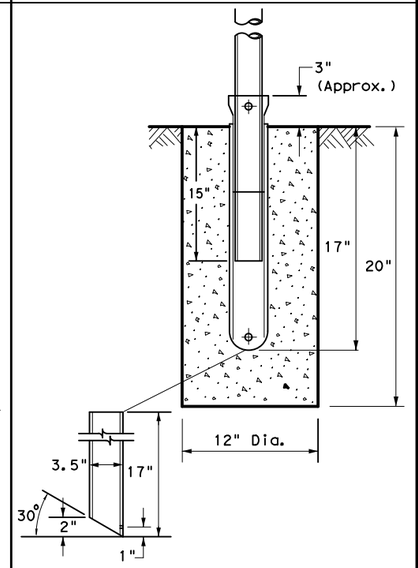
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

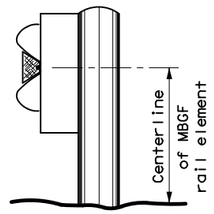
NOTE

1. Install per manufacturer's recommendations.

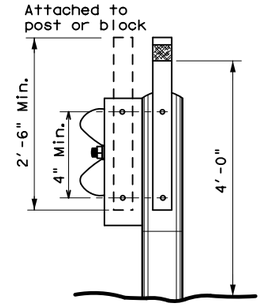
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

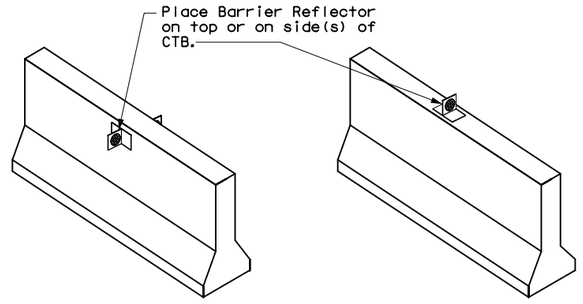
GF1



GF2



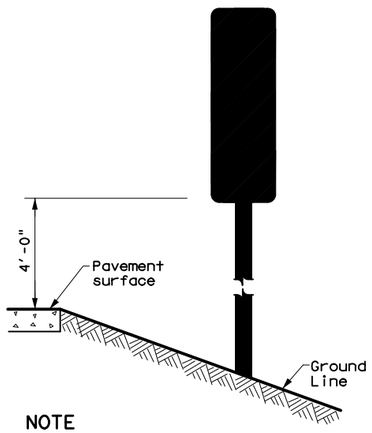
CONCRETE TRAFFIC BARRIER (CTB)



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.

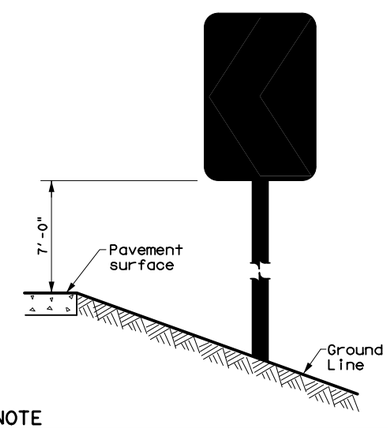
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

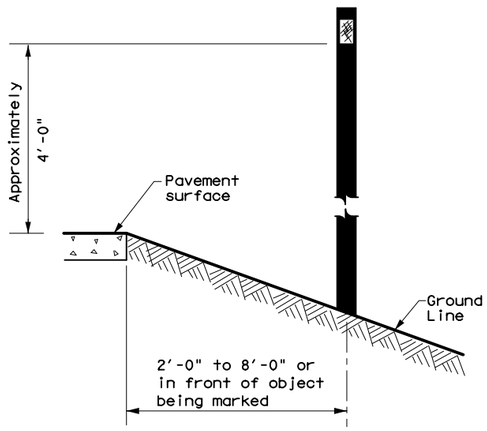
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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	0872	04	030	FM 506
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	PHR	CAMERON		300

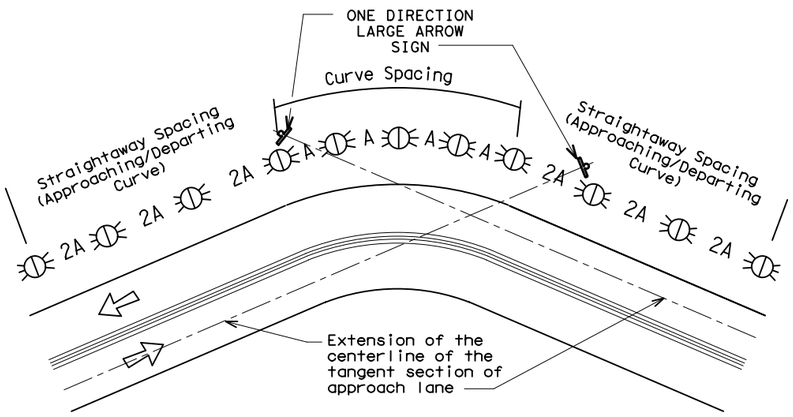
20B

DATE: 10/6/2021 4:16:53 PM
FILE:

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

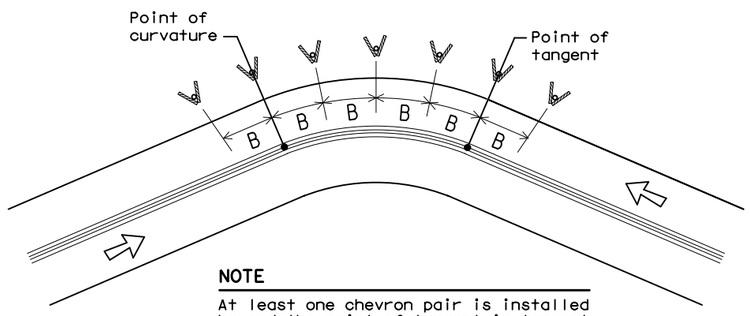
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

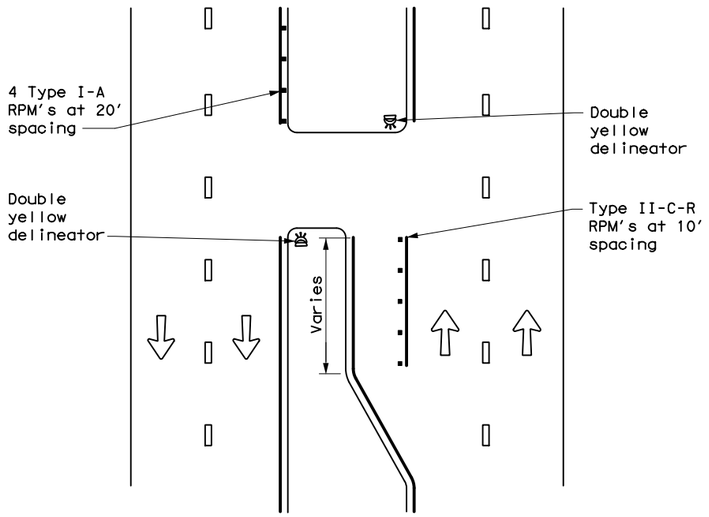
D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	PHR	CAMERON		301

20C

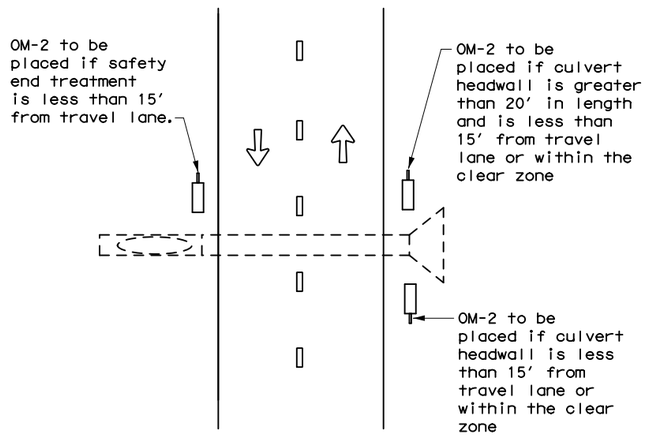
DATE: 10/6/2021 4:17:26 PM
FILE:

CROSSOVERS



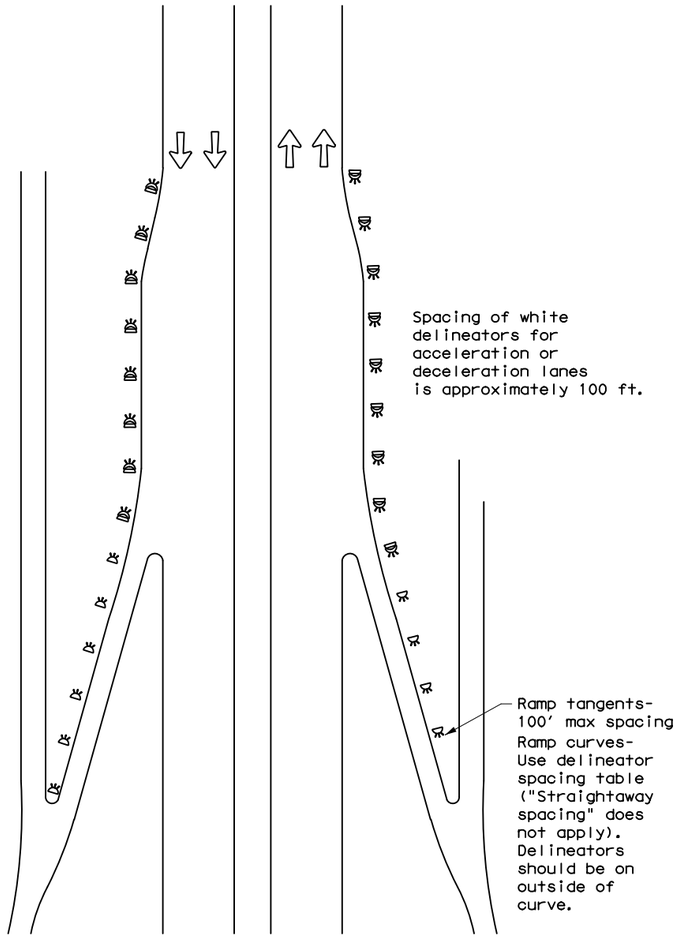
DETAIL 1

FOR CULVERTS WITHOUT MBGF



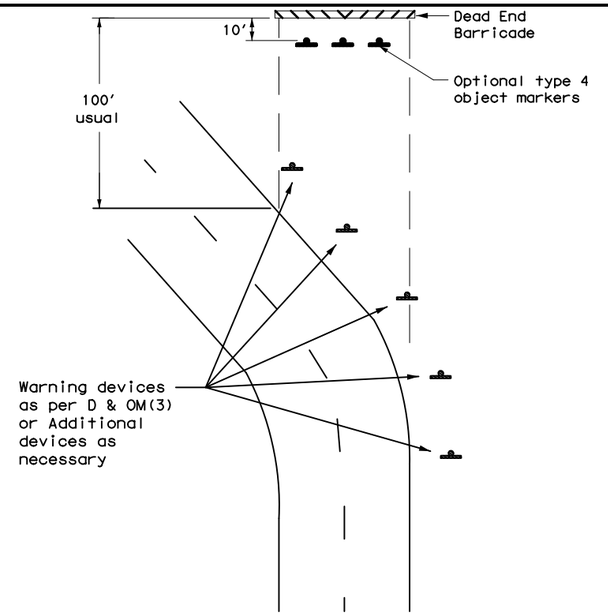
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



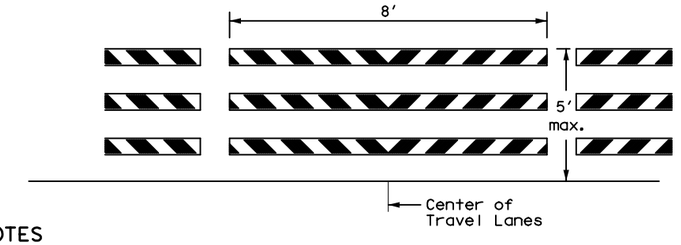
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
3-15	DIST	COUNTY		SHEET NO.
7-20	PHR	CAMERON		302

20D

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FILE:

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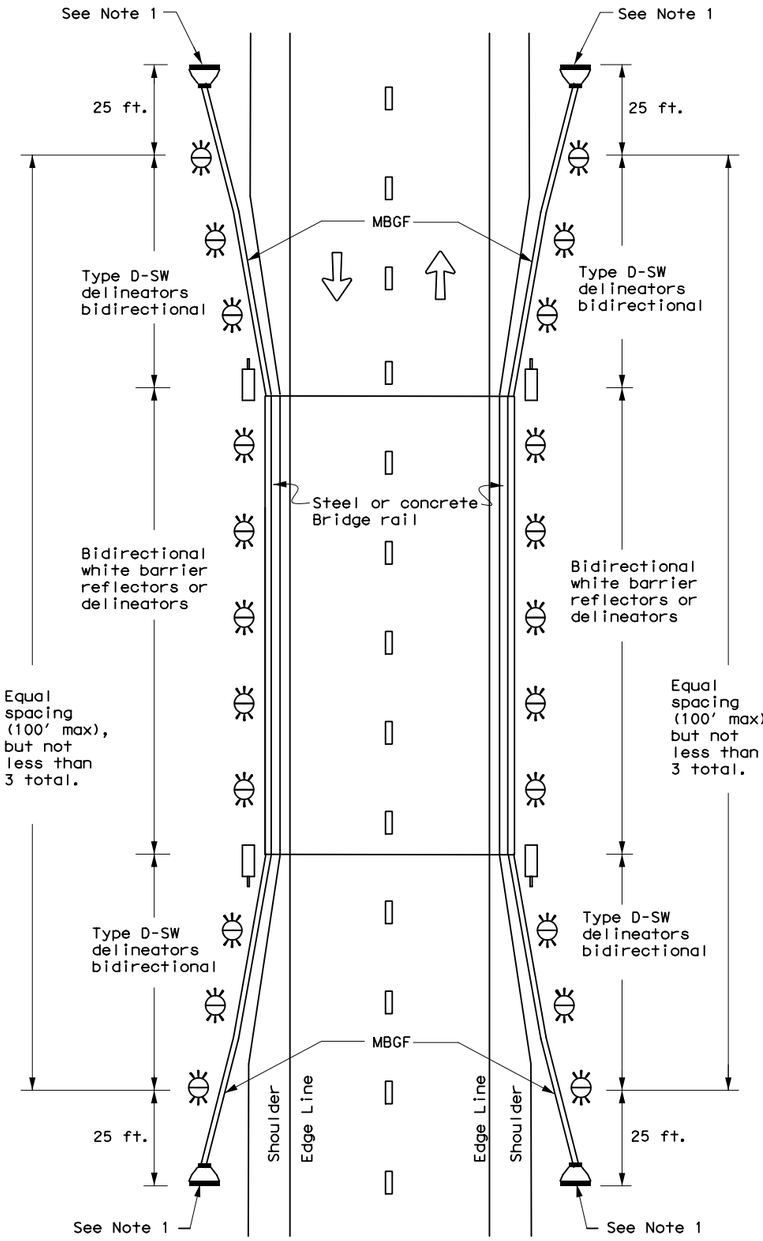
FILE:

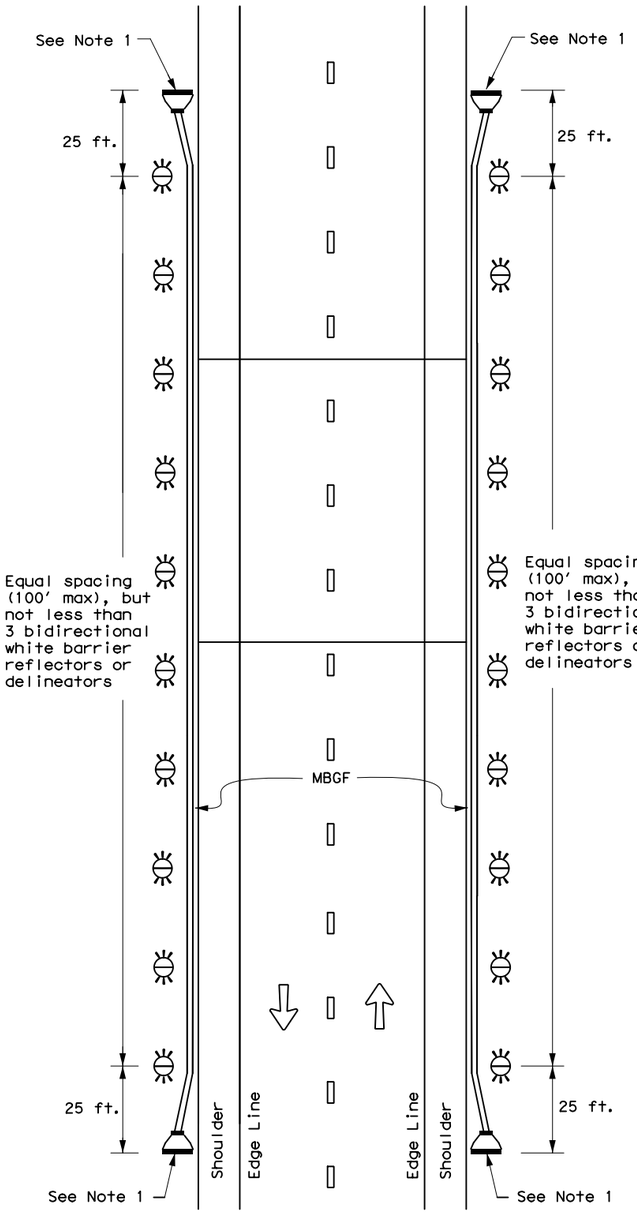
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

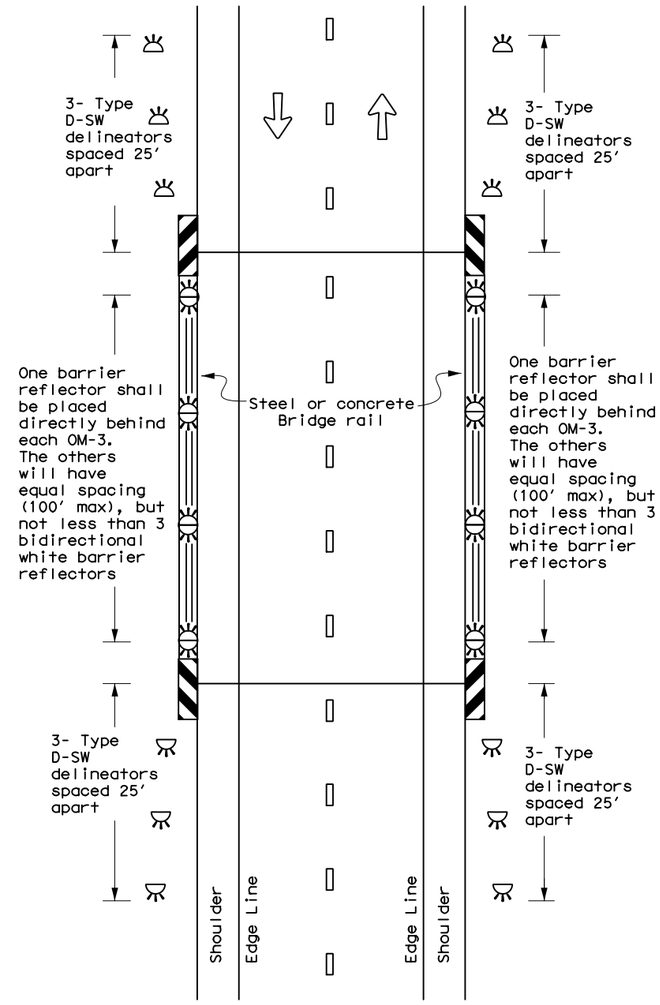
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
7-20	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		303

20E

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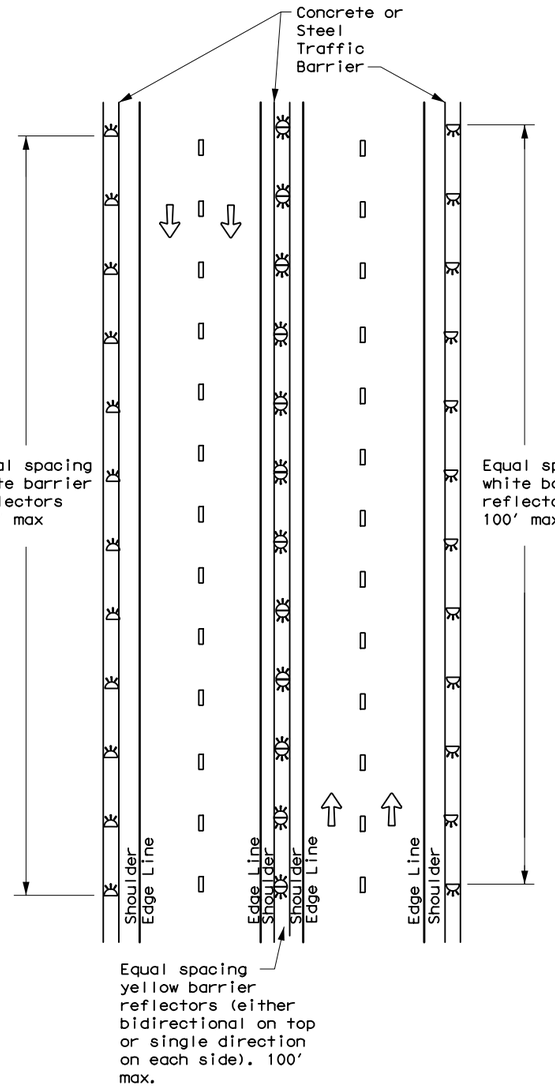
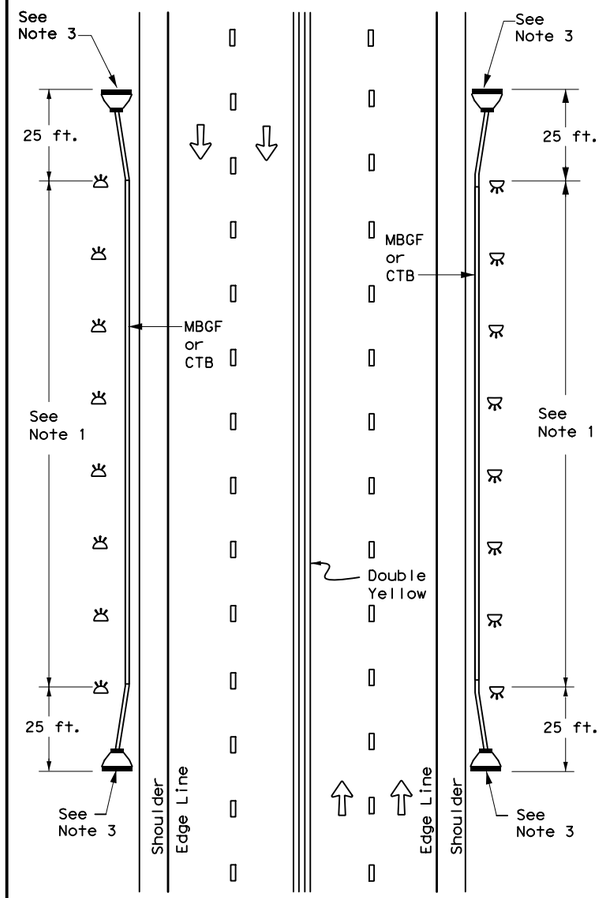
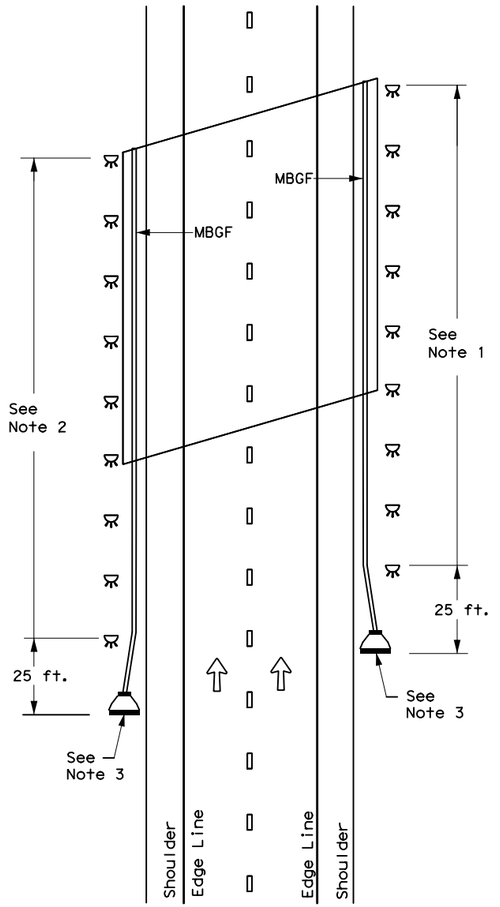
CONTINUOUS CONCRETE OR STEEL BARRIER



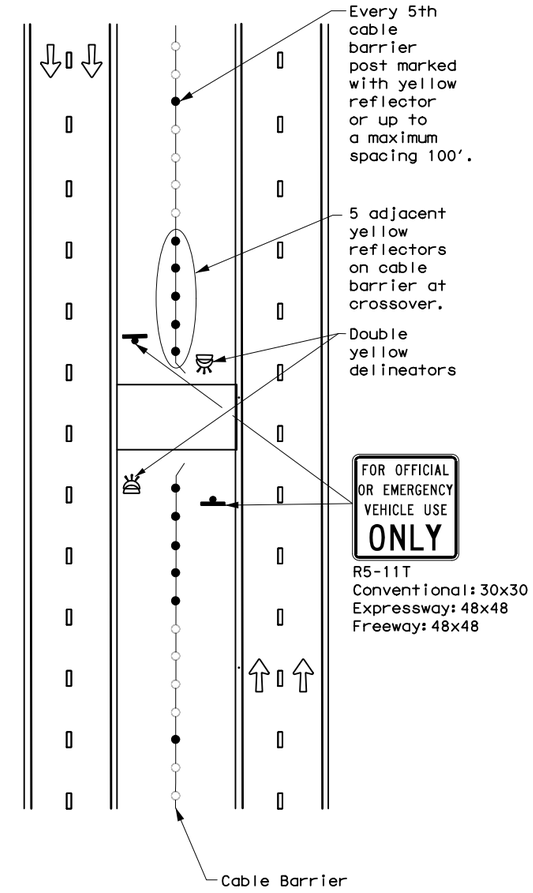
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100′ max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100′ max.)
2. Equal spacing (100′ max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3)in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(6)-20

FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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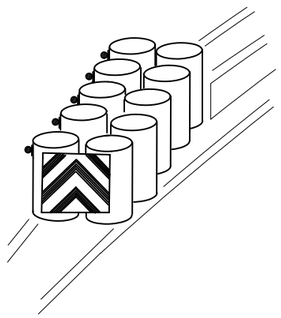
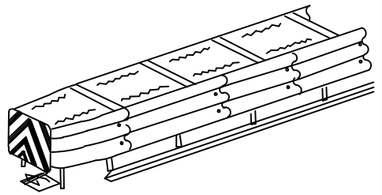
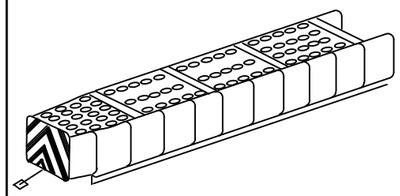
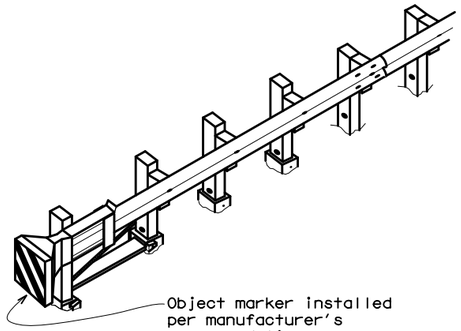
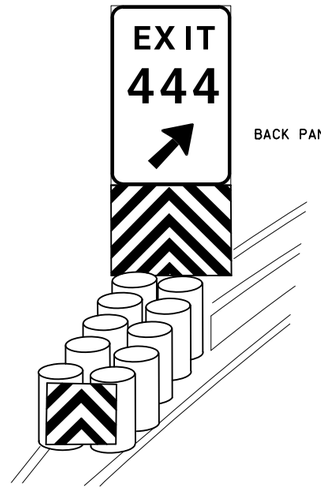
REVISIONS	0872	04	030	FM 506
7-20	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		304

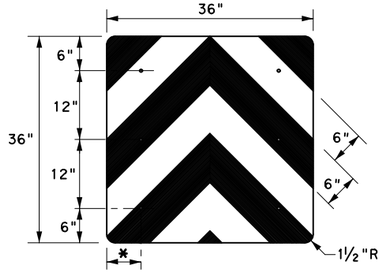


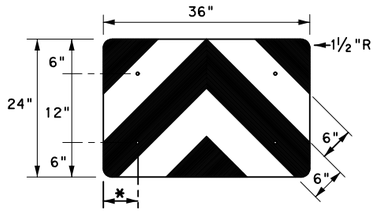




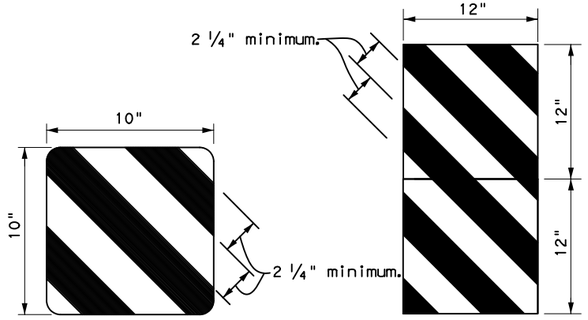




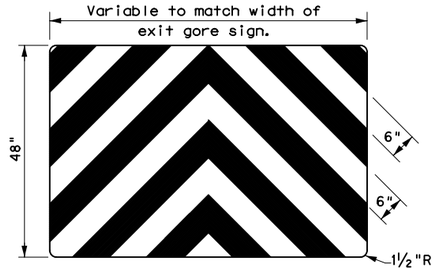


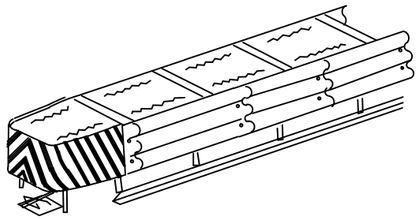


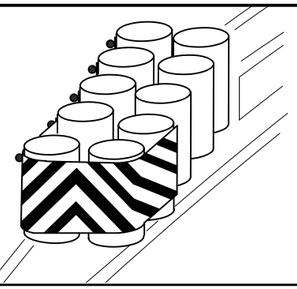
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

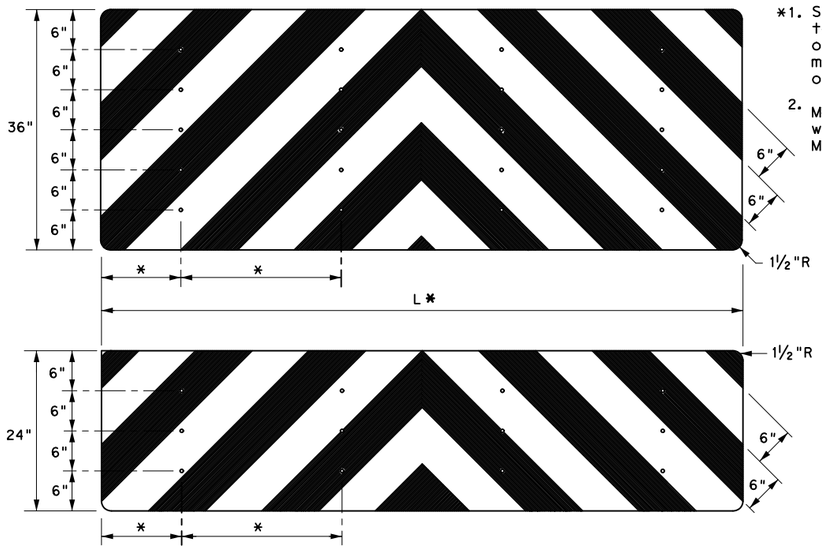


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030	FM 506
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	PHR	CAMERON		305
4-98 7-20				

20G

DATE: 10/6/2021 4:19:34 PM
FILE:

During the planning phase of project development, the following Environmental Permits, Issues and Commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities as additional environmental clearances may be required.

I. Clean Water Act, Section 402; Stormwater Pollution Prevention

Action Items Required : ☐ No Action Required

1. ☒ The contractor must implement the SW3P by installing Best Management Practices (BMPs) as indicated in the construction plans and maintained appropriately throughout construction. BMPs must be in place prior to the start of construction. The SW3P may need to be revised as necessary as construction progresses.

2. ☒ For all construction PSL's off the ROW, the contractor must certify compliance with all applicable laws, rules and regulations pertaining to the preservation of cultural resources, natural resources and the environment.

3. ☒ Based on the acreage of impact, select the appropriate box below:

   ☐ This project will disturb less than 1 acre of soil and is not part of a larger common plan of development; therefore, a NOI and TPDES Site Notice are not required for this project.

   or

   ☐ This project will disturb equal to or more than 1 acre of soil but less than 5 acres; therefore a NOI is not required but a TPDES Site Notice is required. The Construction Site Notice (CSN) is required to be posted at the construction site in a publicly accessible location for review by the public, TCEQ, EPA and other Inspectors.

   or

   ☒ This project will disturb equal to or more than 5 acres of soil and will require a NOI and TPDES Site Notice. The NOI and Site Notice are required to be posted at the construction site in a publicly accessible location.

4. ☒ Need to address MS4 requirements (Cameron & Hidalgo Counties only) ☐ MS4 requirements not needed

II. Clean Water Act, Sections 401 and 404 Compliance

Action Items Rquired : ☐ No Action Required

1. ☒ Filling, dredging or excavating in any water bodies, rivers, creeks, streams, wetlands or wet areas is prohibited unless specified in the USACE permit and approved by the Engineer. The contractor shall adhere to all agreements, mitigation plans, and BMPs required by the NWP as regulated by the USACE.

   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 (1/10th to <1/2 acre, 1/3 in tidal waters)

   ☐ Individual 404 Permit Required

   ☐ Other Nationwide Permit Required: NWP#_____

2. ☒ The contractor is responsible for obtaining new or revised Section 404 permit(s) for Contractor initiated changes in construction methods that change Impacts To Waters Of The U.S., including wetlands. The Contractor will ensure that the water quality of the State will be maintained and not degraded.

3. ☒ Best Management Practices for applicable Section 401 General Conditions:

   General Condition 12 - Categories I and II BMPs required

   Category I (Erosion Control)

☒ Temporary Vegetation	☐ Interceptor Swale	☒ Mulch Filter Berms and/or Socks
☐ Blankets, Matting	☐ Diversion Dike	☐ Compost Filter Berms and/or Socks
☐ Mulch	☐ Erosion Control Compost	☐ Compost Blankets
☐ Sodding		

   Category II (Sedimentation Control)

☒ Silt Fence	☐ Hay (Straw) Bale Dike	☒ Mulch Filter Berms and/or Socks
☒ Rock Berm	☐ Brush Berms	☐ Compost Filter Berms and/or Socks
☐ Triangular Filter Dike	☐ Sediment Basins	☐ Stone Outlet Sediment Traps
☐ Sand Bag Berm	☐ Erosion Control Compost	

   General Condition 21 - Category III BMPs required

   Category III (Post-Construction TSS Control)

☐ Vegetative Filter Strips	☐ Wet Basins	☐ Mulch Filter Berms and/or Socks
☐ Retention/Irrigation	☒ Grassy Swales	☐ Compost Filter Berms and/or Socks
☐ Extended Detention Basin	☐ Vegetation-Lined Ditches	☐ Sand Filter Systems
☐ Constructed Wetlands	☐ Erosion Control Compost	☐ Sedimentation Chambers

II. Clean Water Act, Sections 401 and 404 Compliance - Continued:

4. ☒ The Contractor's designated and qualified Contractor Responsible Person Environmental (CRPe) will monitor the project site daily to ensue compliance with SW3P and TPDES General Permit TXR 150000. Daily Monitoring Reports shall be provided to TxDOT within 48 hours, in accordance with Item 506.3.1.

5. ☒ Other Project Specific Actions:

   Contractor must sweep roadway & remove loose aggregate along C&G upon completed daily operations.

   Contractor shall not place removed aggregate along adjacent grass areas.

III. Cultural Resources

Action Items Required : ☐ No Action Required

1. ☒ Refer to the 2014 TxDOT Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges, Item 7.7.1., 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.

2. ☐ Other Project Specific Actions:

IV. Vegetation Resources

Action Items Required : ☐ No Action Required

1. ☒ In accordance with the 2014 TxDOT Standard Specifications; Item 164 - Seeding For Erosion Control; provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed by the Engineer for all seeding and replanting of right of way where possible. (Required for Urban Settings)

2. ☒ In accordance with Executive Order 13112 on invasive species and the Executive Memorandum on Beneficial Landscaping, native species of plants shall be used for all seeding and replanting of right of way where possible for rural roadways. (Required for Rural Settings)

3. ☒ Preserve vegetation where possible throughout the project and minimize clearing, grubbing and excavation within stream banks, bed and approach sections.

4. ☐ Other Project Specific Actions:

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

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

Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		FM 506, ETC
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	SHEET NO.
CONTROL	SECTION	JOB	
0872	04	030, ETC	306

V. Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species and Migratory Birds

Action Items Required : ☐ No Action Required

1. ☒ Under the Migratory Bird Treaty Act (MBTA) of 1918, codified at 16 U.S.C. § 703-712 and as enforced by the USFWS, the proposed construction work will not remove active nests from bridges, trees, ground and other structures during migratory bird nesting season, (February 1st. through October 1st.). If the Contractor needs to perform work within the right of way during nesting season, a qualified Biologist shall conduct a survey to determine if active nests are present. If present, the Contractor shall maintain a buffer zone around the nest(s) as directed by the Biologist. The buffer zone will be protected from clearing and disturbance until such time as the Biologist has determined that the nest(s) is no longer active. Prior to the nesting season, existing bridges and culverts should be treated against migratory bird nesting by utilizing Bird Exclusion Methods. Bird Exclusion Methods should be monitored and maintained throughout the nesting season. Refer to Standard Bird Exclusion Details.

2. ☒ There is the potential for the presence of state-listed species & species of concern in the project area and state law prohibits the taking (incidental or otherwise) of state-listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or share by any means or devices. If any listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

3. ☐ Other Project Specific Actions:

VI. Hazardous Materials on Contamination Issues

Action Items Required : ☐ No Action Required

General (applies to all projects):

Comply with the Hazard Communication Act (HCA) 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 HCA.

Maintain an adequate supply of on-site spill response materials as indicated in the MSDS. In the event of a spill, take immediate action to mitigate the spill as indicated in the MSDS and in accordance with safe work practices. Contact the TxDOT Pharr 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 (identified as not normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of contaminant substances

Any other evidence indicating possible hazardous materials or contamination discovered on site.

1. ☒ If potentially hazardous material and/or contaminated media (i.e.: soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, assure that such materials and contamination are handled according to applicable federal and state regulations, cease work in the immediate area and contact the Engineer immediately.

VI. Hazardous Materials on Contamination Issues - Continued:

2. 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 required.
   If "Yes", then TxDOT is responsible for completing an asbestos assessment/inspection.

3. Are the results of the asbestos inspection positive (is asbestos present)?

   ☐ Yes ☒ No

   If "Yes", then TxDOT must retain a Texas Department of State Health Services (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 abatement activities and/or demolition.

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

4. ☐ The Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and an Asbestos Consultant in order to minimize construction delays and subsequent claims.

VII. Other Environmental Issues

Action Items Required : ☐ No Action Required

1. ☒ Noise

   Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of equipment mufflers.

2. ☒ Air

   Contractor shall practice common dust control techniques such as surface chemical treatment or watering of unpaved road surfaces and vehicle speed reduction shall be implemented to minimize and prevent airborne dust during construction.

   Contractor should minimize MSAT by utilizing measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increase use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

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Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		FM 506, ETC
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	SHEET NO.
CONTROL	SECTION	JOB	
0872	04	030, ETC	307

SITE DESCRIPTION

PROJECT LIMITS:
FM 506: US BUS 83 to FM 3067
FM 800: FM 1479 to FM 509
FM 1479: FM 800 to FM 675

PROJECT SITE MAPS:

*Project Location Map: Title Sheet (Sheet 1)

PROJECT DESCRIPTION:
Rehabilitation and widening of existing roadway consisting of grading, flexbase (lime stone), asphaltic concrete pavement, signing, pavement markings, replacement of existing cross culvert drainage structures and irrigation crossings.

MAJOR SOIL DISTURBING ACTIVITIES:
The major soil distrubing activites will include cross drainage/irrigation structural construction and widening of existing roadway.

TOTAL PROJECT AREA: FM 506: xx Acres FM 1479: xx Acres
FM 800: xx Acres

TOTAL AREA TO BE DISTURBED: FM 506: 1.02 Acres FM 1479: 0 Acres
FM 800: 9.06 Acres

WEIGHTED RUNOFF COEFFICIENT:

Before Construction: 0.30
After Construction: 0.30

EXISTING CONDITION OF SOIL & VEGETATIVE
FM 506: Predominant soils are Hidalgo Sandy Clay Loam, Hidalgo-Urban Land Complex, and Raymondville Clay Loam
FM 800: Predominantly Harlingen Clay
FM 1479: Predominantly Harlingen Clay

NAME OF RECEIVING WATERS:
FM 506: Arroyo Colorado
FM 800: Irrigation Channel
FM 1479: Resaca Del Rancho Viejo

ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORICAL PROPERTY:

A. No Endangered Species. Designated Critical Habitat or Historic Property has been found on this project site.

TEXAS DEPARTMENT OF TRANSPORTATION
PHARR DISTRICT HEADQUARTERS
ATTN: ENVIRONMENTAL COORDINATOR
600 W. INTERSTATE 2
PHARR, TX 78577
PHONE: 956-702-6130

EROSION AND SEDIMENT CONTROLS

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

- T TEMPORARY SEEDING
- ___ MULCHING (Hay or Straw)
- ___ BUFFER ZONES
- ___ PLANTING
- P SEEDING
- ___ SODDING
- ___ OTHER: (Specifiy Practice)
- P PRESERVATION OF NATURAL RESOURCES
- ___ FLEXIBLE CHANNEL LINER
- ___ RIGID CHANNEL LINER
- ___ SOIL RETENTION BLANKET
- ___ COMPOST MANUFACTURED COMPOST
- T BIODEGRADABLE EROSION CONTROL SOCKS

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

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

STORM WATER MANAGEMENT: (URBAN)
Storm water drainage will be provided by storm sewer networks. This storm drain system will carry drainage within the row to low points in the highway where cross drainage may occur and ultimately to the designated outfall.

(RURAL)
PARALLEL ROADSIDE DITCHES WILL CARRY DRAINAGE WITHIN ROW TO CROSS CULVERTS AND ULTIMATELY THE OUTFALL.

STORM WATER MANAGEMENT ACTIVITIES:

The order of activities will be as follows:
1. Install perimeter controls, clear R.O.W on side where construction will take place and make required utility adjustments
2. Install temporary sediment control fencing, rock berms, and other items as shown on plans prior to any soil disturbing activities
3. Construct replacement of drainage structures, roadway, and perform only necessary excavation, embankment, and grading.
4. Place temporary/permanent seeding as shown in the plans and as directed by the engineer.
5. Remove all remaining SW3P devices once permanent vegetation has established an acceptable growth coverage percentage. 70% of existing coverage.

NON-STORM WATER MANAGEMENT DISCHARGES:
Non-storm water discharges should be filtered, or held in retention basins, before being allowed to mix with storm water. These discharges consist of non-polluted ground water, spring water, foundation and/or footing drain water; and water used for dust control, pavement washing and vehicle wastewater containing no detergents.

OTHER REQUIREMENTS & PRACTICES

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to creeks and drainage ways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: For areas of the construction site that have not been finally stabilized, area used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event 0.5 inches or greater.

WASTE MATERIALS: All waste materials will be collected and stored in a securely lidded dumpster. All trash and construction debris from the site will be deposited as necessary at a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): At a minimum, any products in the following categories to be hazardous: Paints, Acids for cleaning masonry surfaces, Cleaning Solvents, Asphalt products, Chemical additives for soil stabilization, or Concrete curing compounds and additives. In the event of a spill which may be hazardous, the spill Coordinator should be contacted immediately. Emptying of excess concrete should not be allowed on site. Likewise, washout of concrete trucks should not be performed on site. These discharges are considered non-allowable non-storm water discharges. Concrete trucks should never be allowed to dump into storm drains or sanitary sewers.

SANITARY WASTE: All sanitary waste will be collected from the portable units as necessary or as required by local regulation by a licensed sanitary waste management contractor.

OFFSITE VEHICLE TRACKING:

MANAGEMENT PRACTICES:
1. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wet land, water body or stream bed.
2. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.
3. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, or debris or other obstructions placed during construction operations that are not a part of the finished work.

OTHER:
1. Construction Materials List of materials stored on job site to be provided by Contractor.
2. The project SW3P File shall be located at the project field office or within the Contractor's mobile office at all times and shall contain the N.O.I., CGP, Signature Authorization, Certification/Qualification Statements, Inspection Reports, Required Maps, and the TPDES Permit, Part II. This File to be persented to authorized State and Federal Agents upon request.

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER
10/05/2021

Texas Department of Transportation

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

REV. 2-20-14 SW3P.DGN

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	308

STATE	DIST.	COUNTY	
TEXAS	PHARR	CAMERON	
CONT.	SECT.	JOB	HIGHWAY NO.
0872	04	030,ETC	FM 506,ETC

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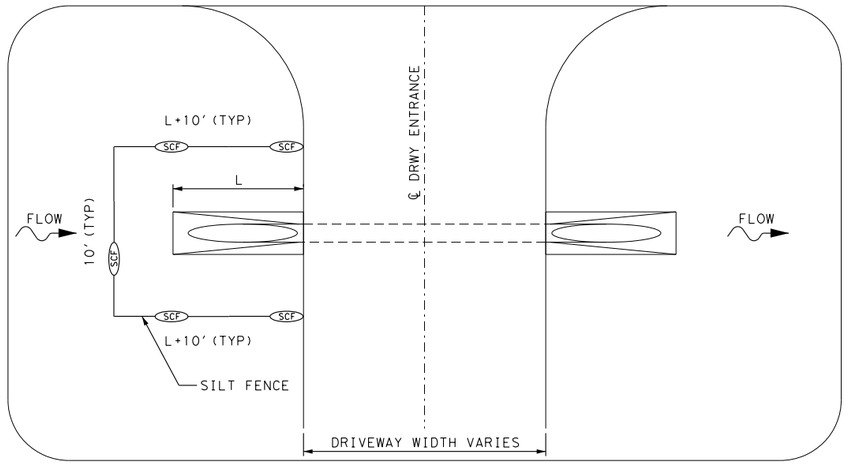
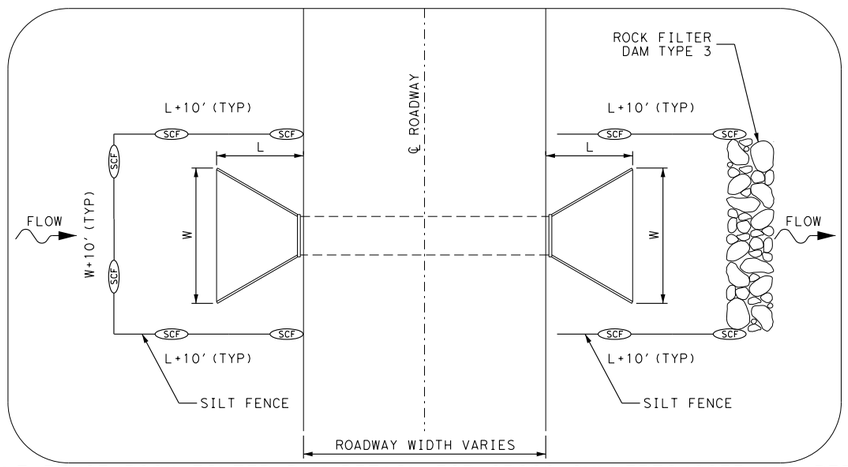


SILT FENCE DETAIL FOR DRIVEWAY PIPE CULVERTS(SCF1 OR SCF2)

NOT TO SCALE



SILT FENCE/ROCK FILTER DAM DETAIL FOR CROSS CULVERTS(SCF3 AND RFD1)

NOT TO SCALE

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STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506/FM 800/FM 1479

SILT FENCE DETAILS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		309
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030, ETC	FM 506, ETC

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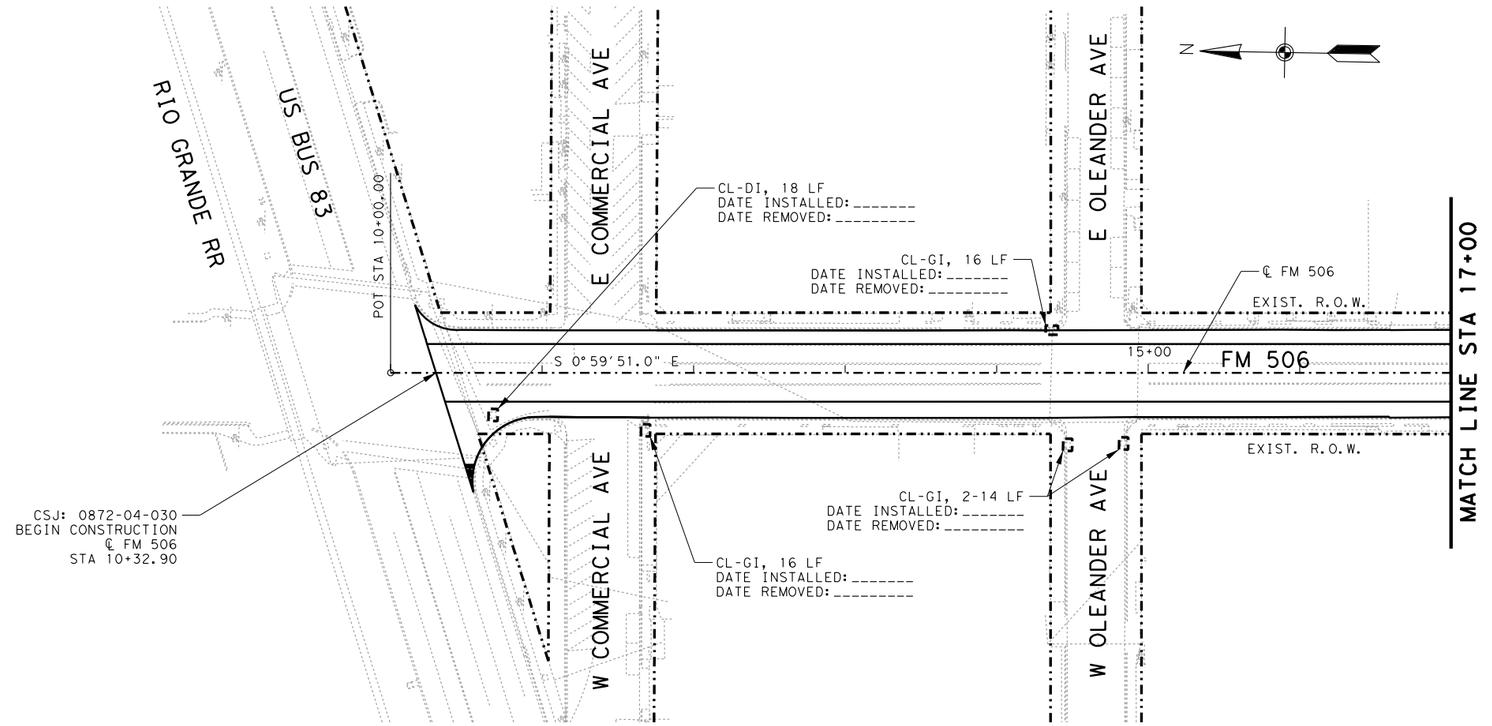

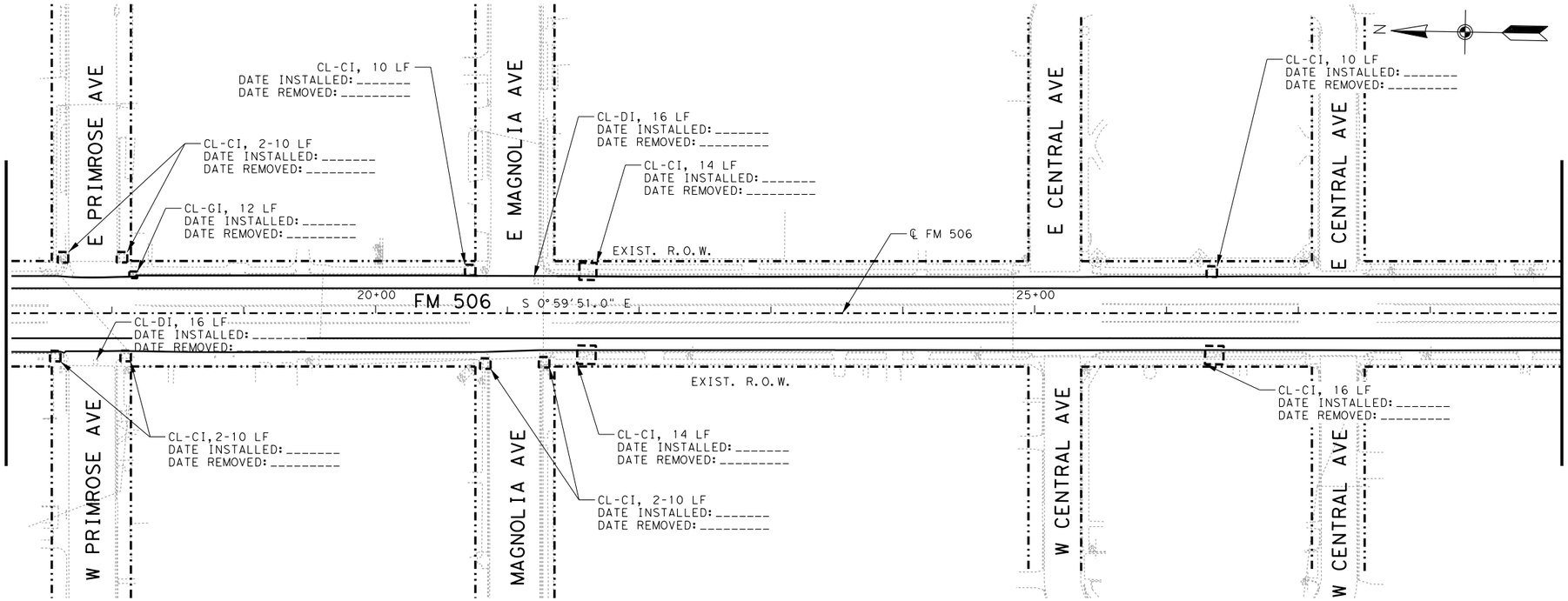

LEGEND:

- SCF — SEDIMENT CONTROL FENCE
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-D — EROSION CONTROL LOG AT DITCHES
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-GI — EROSION CONTROL LOG AT CURB AND GRATE INLET
- RFD3 — ROCK FILTER DAM (TY-3)
- RFD4 — ROCK FILTER DAM (TY-4)
- SEDIMENT CONTROL FENCE AROUND CULVERTS
- EROSION CONTROL LOG (INLET PROTECTION)
- DIRECTION OF FLOW
- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

1. SEE "MISC SW3P DETAILS" SHEET FOR MORE INFO ON PLACEMENT OF SW3P DEVICES.
2. THE CONTRACTOR MUST CONTACT THE THE ENGINEER PRIOR TO PLACEMENT OF ANY EROSION CONTROL DEVICES.
3. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
4. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
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10/05/2021

ISSUE RECORD

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F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506
SW3P LAYOUT

BEGIN PROJECT TO 29+00

SHEET 1 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		310
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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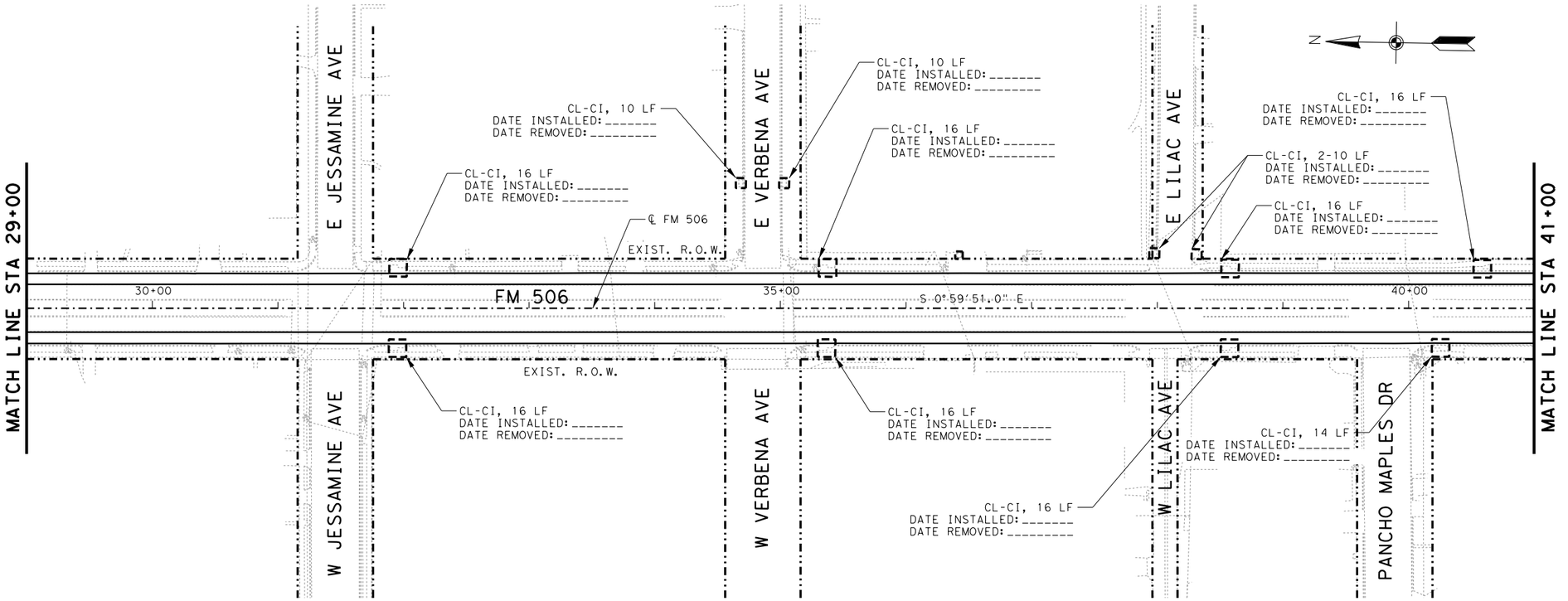

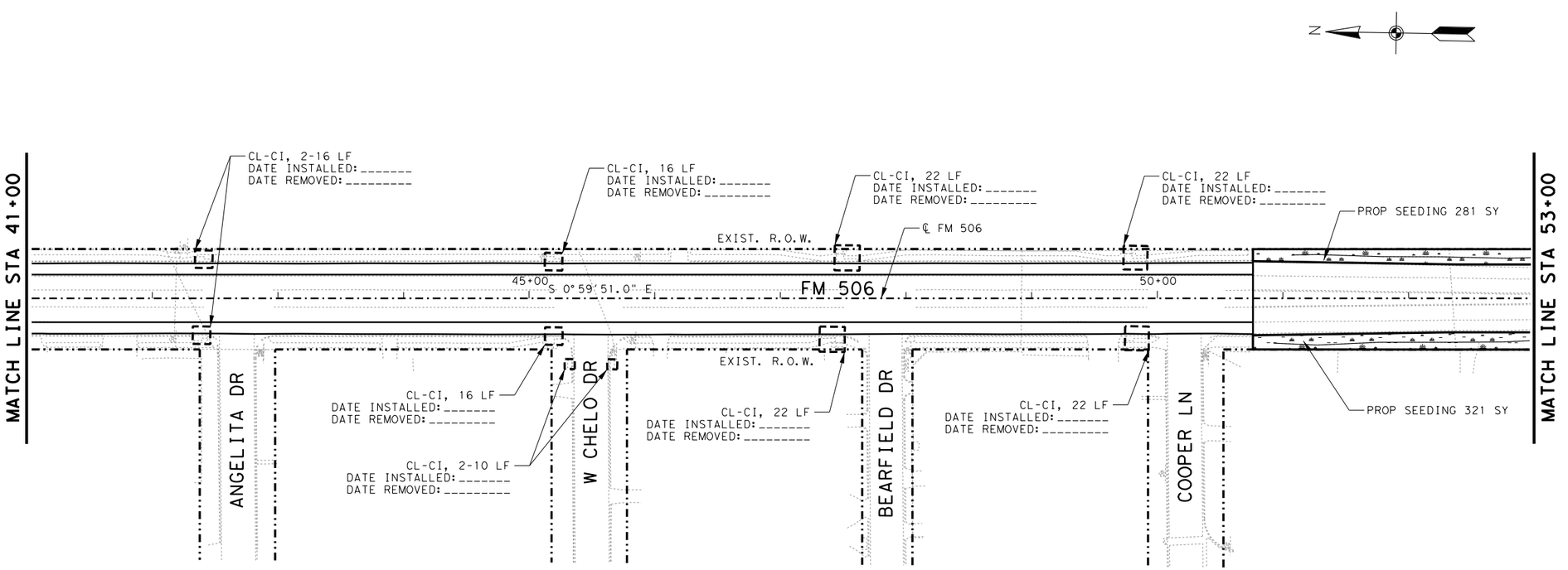

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0 50 100

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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506
SW3P LAYOUT

STA 29+00 TO 53+00

SHEET 2 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		311
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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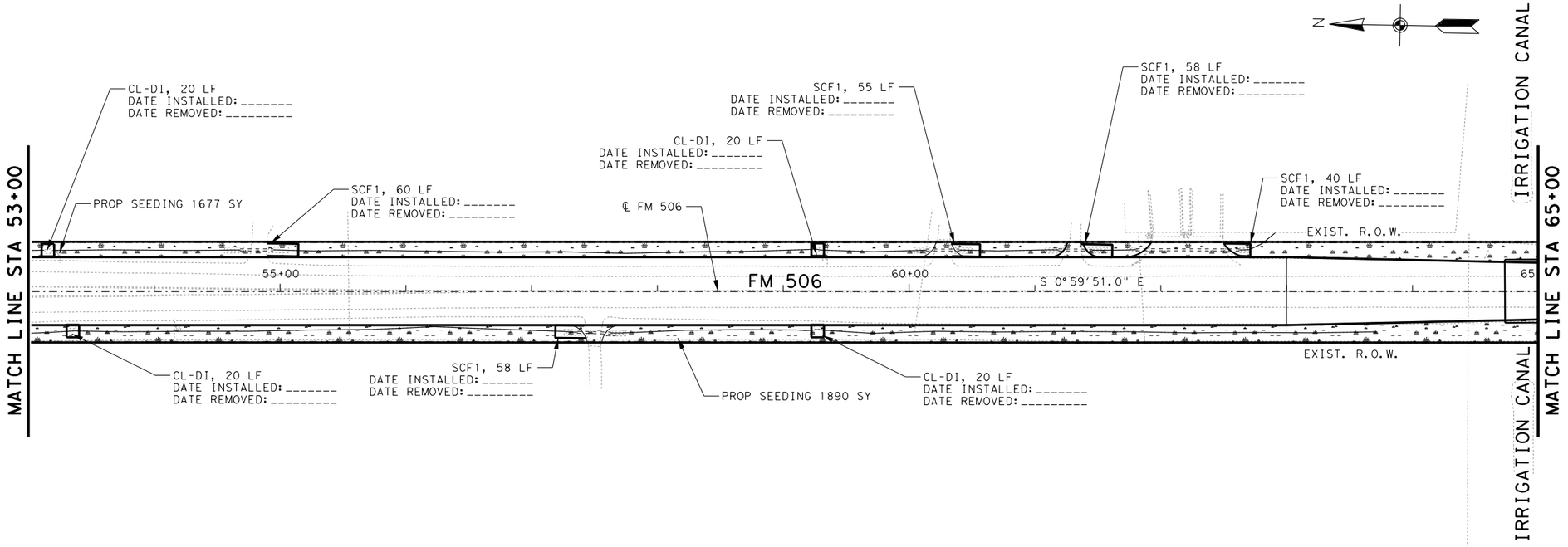

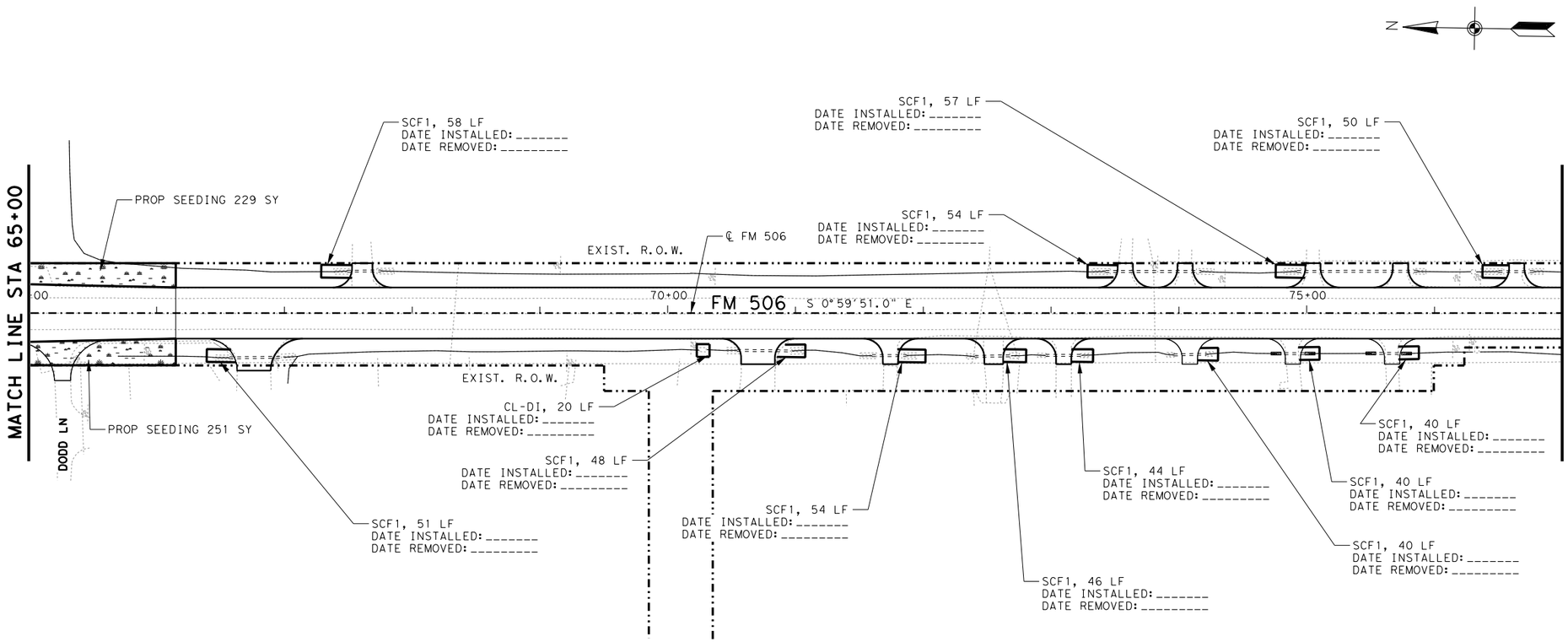

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- PROP SEEDING AREA

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SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 Ph
281-945-0081 Fx

Texas Department of Transportation

FM 506
SW3P LAYOUT
STA 53+00 TO STA 77+00

SHEET 3 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		312
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

FM506_EVSW00_03.dgn

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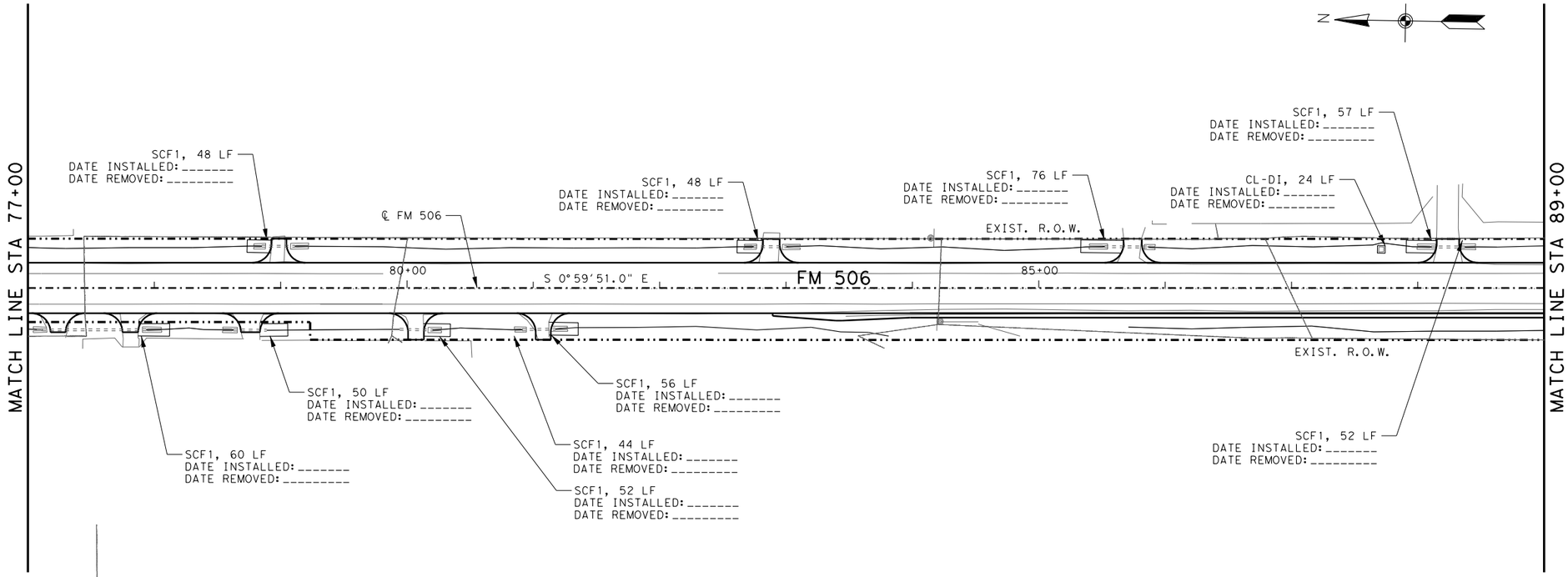

LEGEND:

- SCF — SEDIMENT CONTROL FENCE
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-D — EROSION CONTROL LOG AT DITCHES
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-GI — EROSION CONTROL LOG AT CURB AND GRATE INLET
- RFD3 — ROCK FILTER DAM (TY-3)
- RFD4 — ROCK FILTER DAM (TY-4)
- SEDIMENT CONTROL FENCE AROUND CULVERTS
- EROSION CONTROL LOG (INLET PROTECTION)
- DIRECTION OF FLOW
- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

1. SEE "MISC SW3P DETAILS" SHEET FOR MORE INFO ON PLACEMENT OF SW3P DEVICES.
2. THE CONTRACTOR MUST CONTACT THE THE ENGINEER PRIOR TO PLACEMENT OF ANY EROSION CONTROL DEVICES.
3. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
4. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
SW3P LAYOUT
STA 77+00 TO STA 101+00

SHEET 4 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		313
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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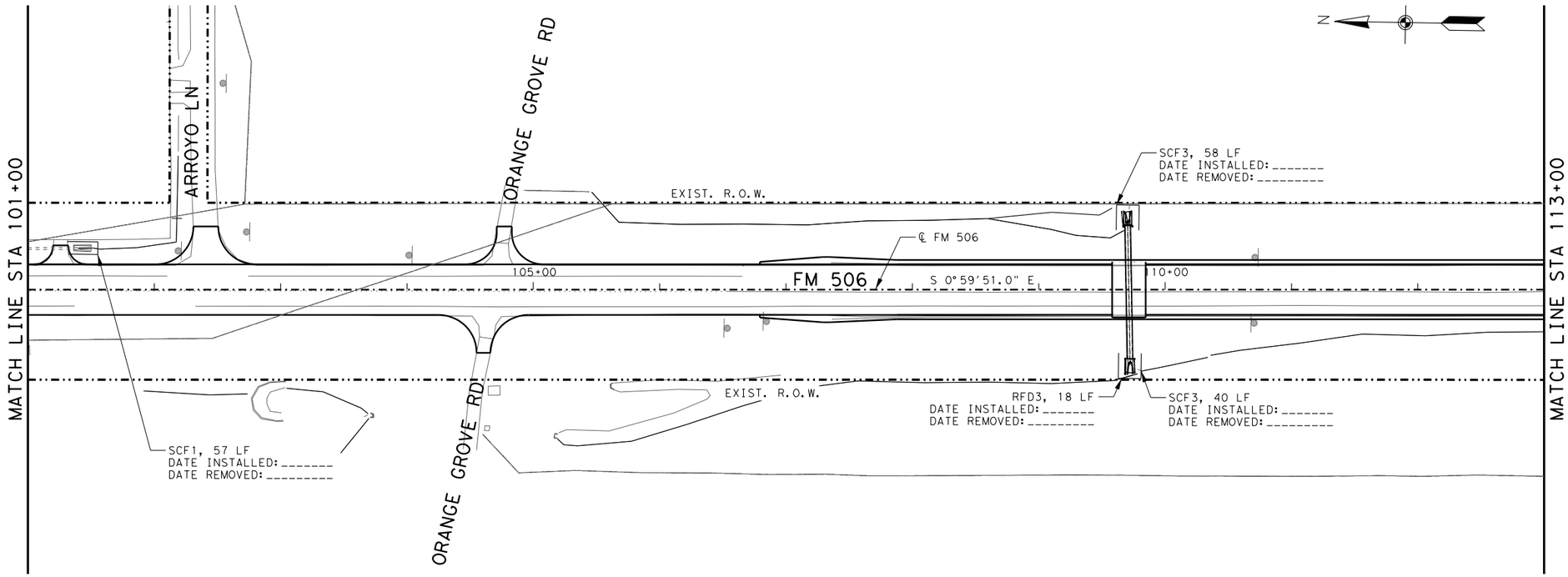

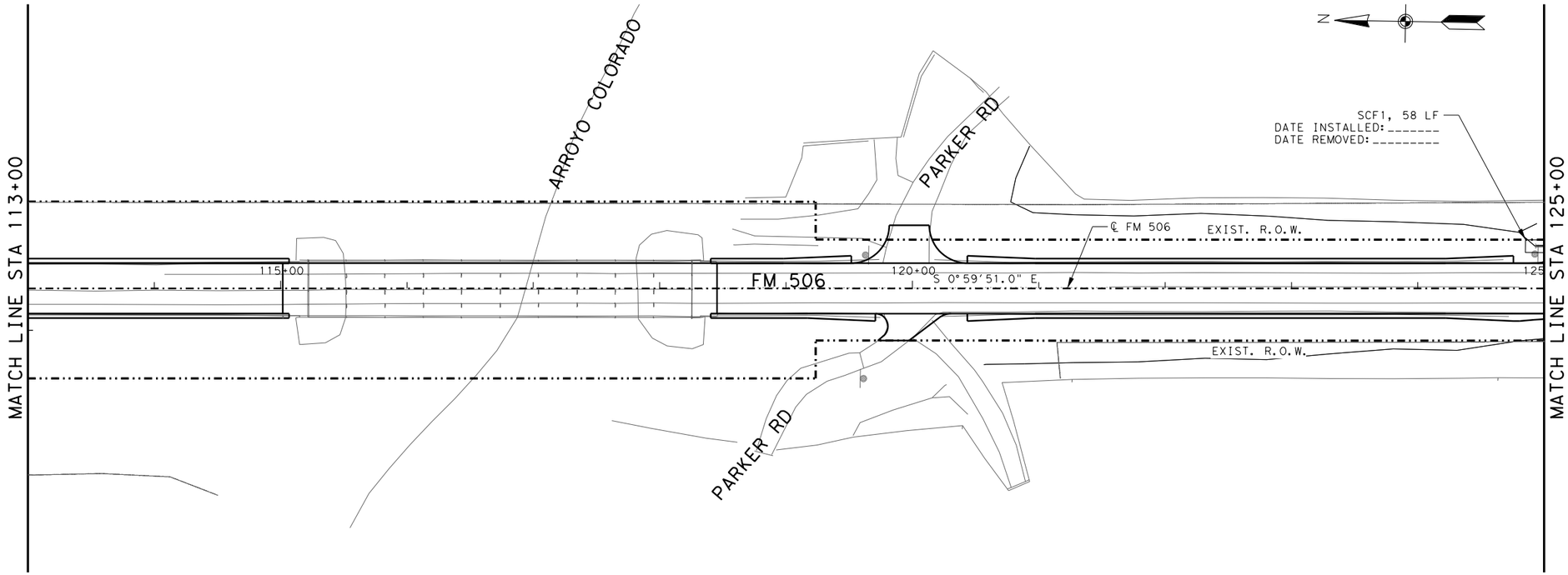

LEGEND:

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- CL-CI — EROSION CONTROL LOG AT CURB INLET
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- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

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SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
SW3P LAYOUT
STA 101+00 TO STA 125+00

SHEET 5 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		314
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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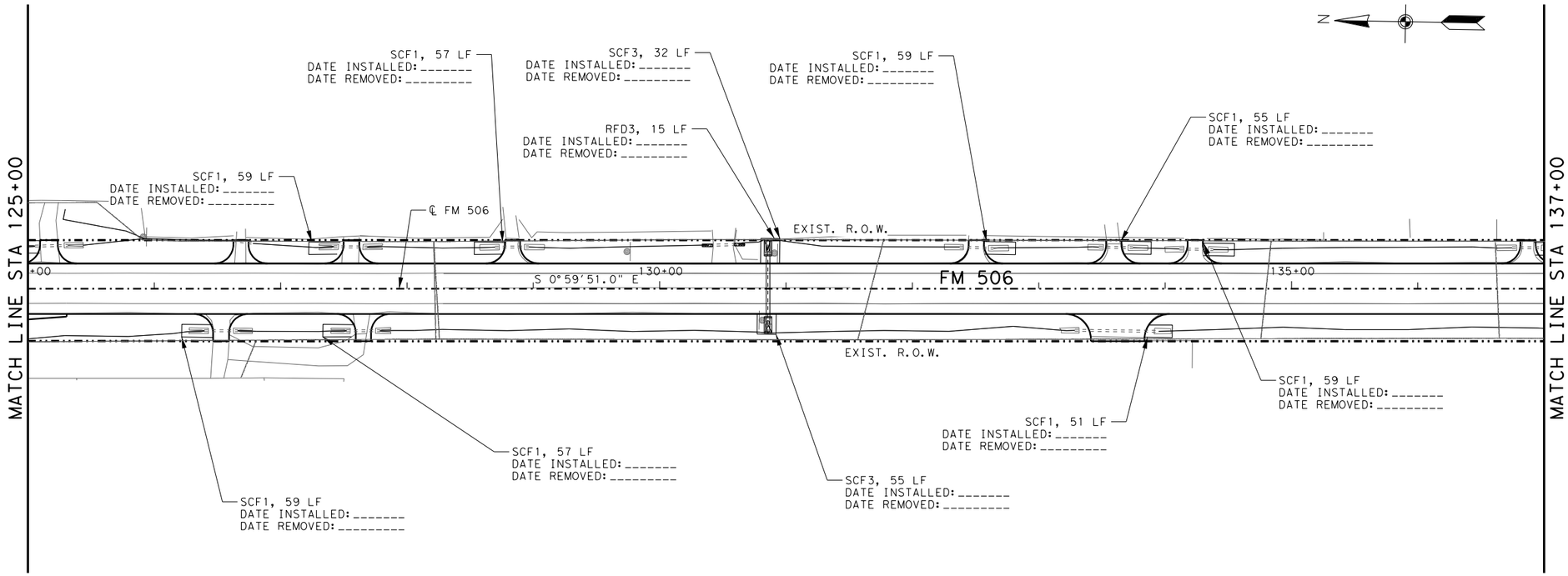

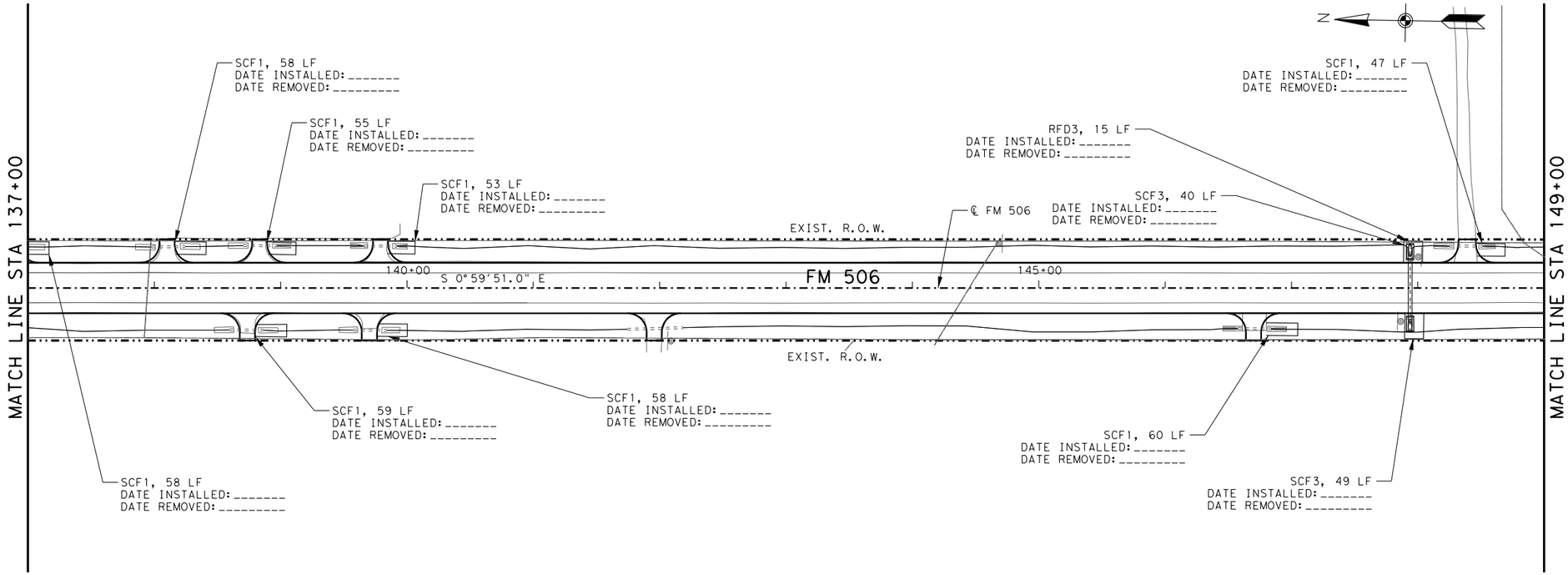

LEGEND:

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- DIRECTION OF FLOW
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SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
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PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

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ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
SW3P LAYOUT
STA 125+00 TO STA 149+00

SHEET 6 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	315

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506

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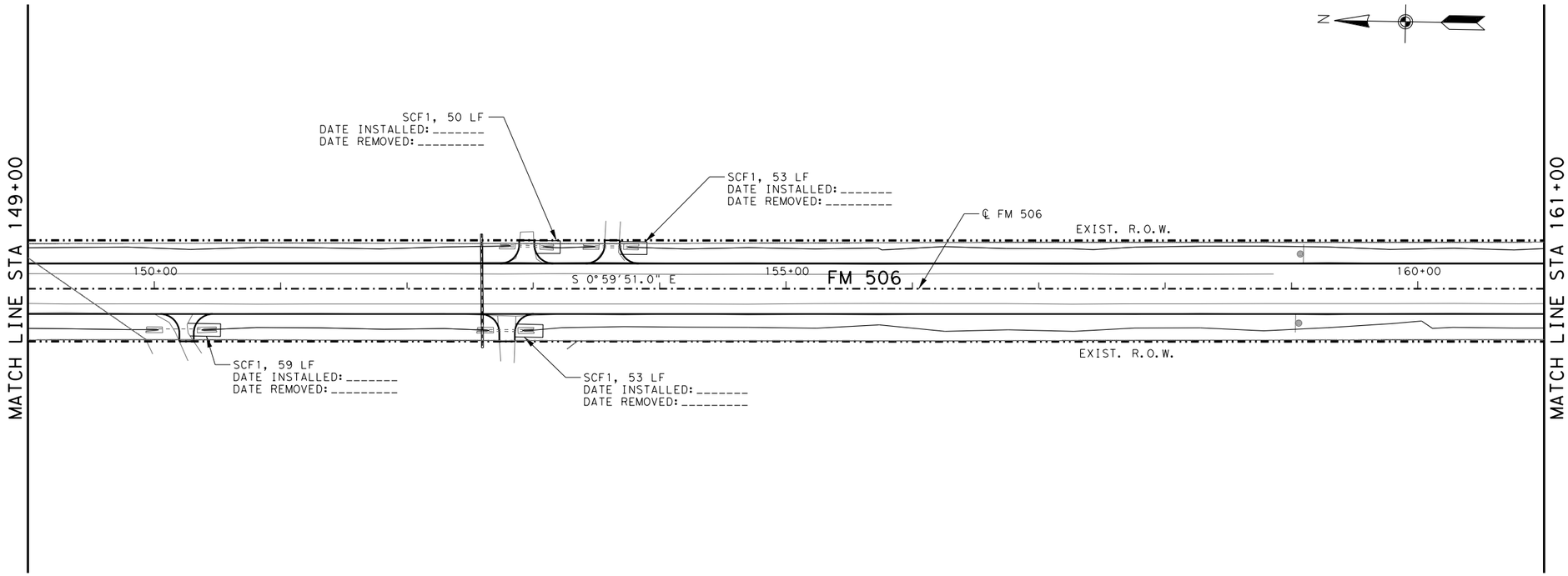

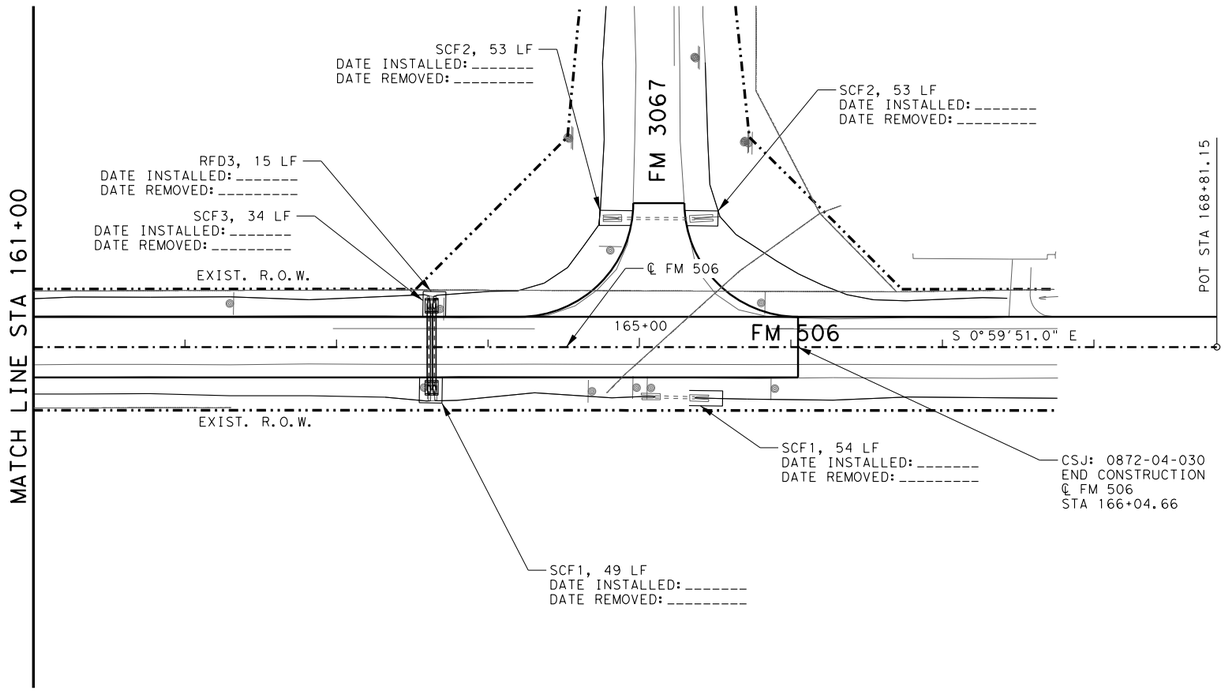

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- DIRECTION OF FLOW
- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

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SCALE: 1"=100'

STATE OF TEXAS
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PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

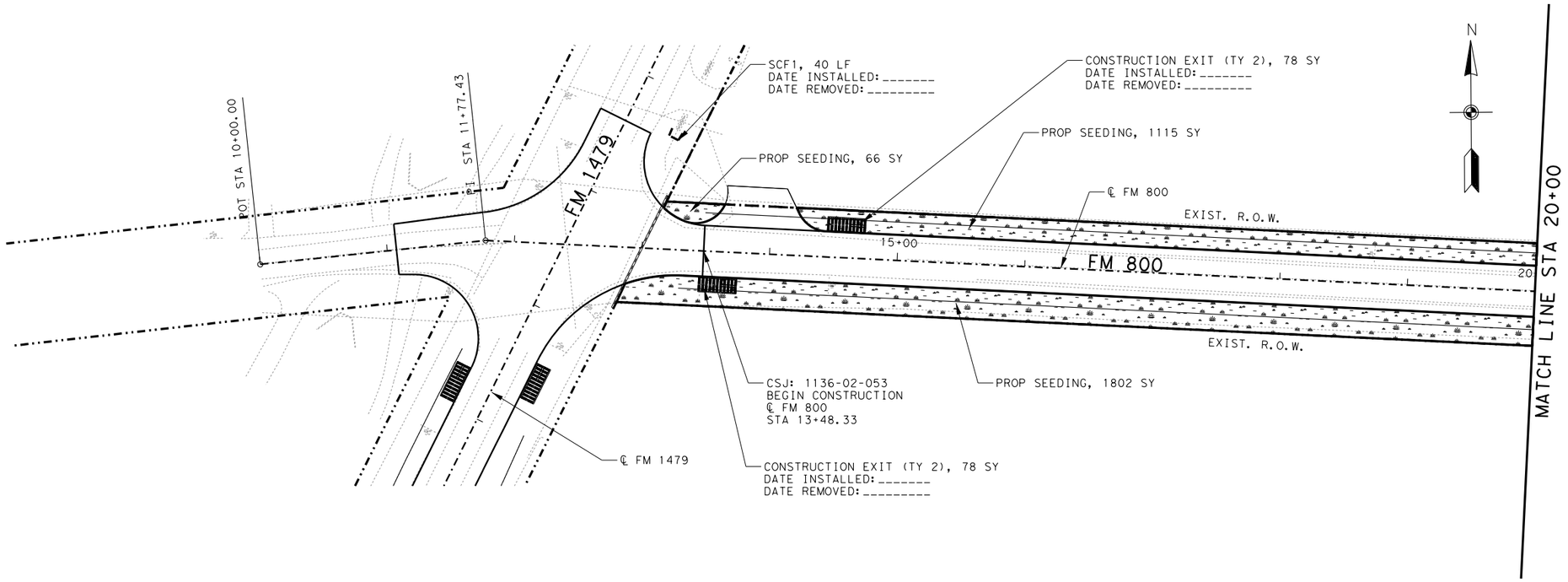
ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 506
SW3P LAYOUT
STA 149+00 TO END PROJECT

SHEET 7 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		316
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
0872	04	030	FM 506



LEGEND:

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- PROP SEEDING AREA

NOTES:

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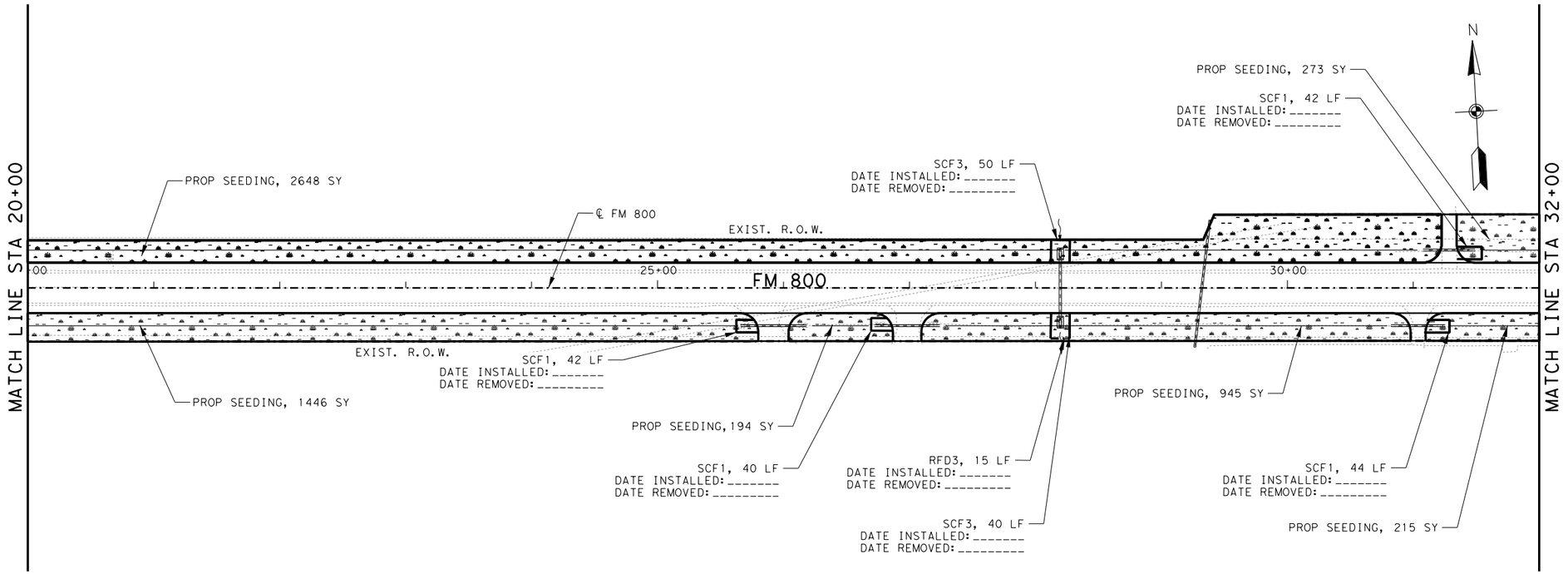

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD		
NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
SW3P LAYOUT
BEGIN PROJECT TO STA 32+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		317
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_EVSW00_01.dgn

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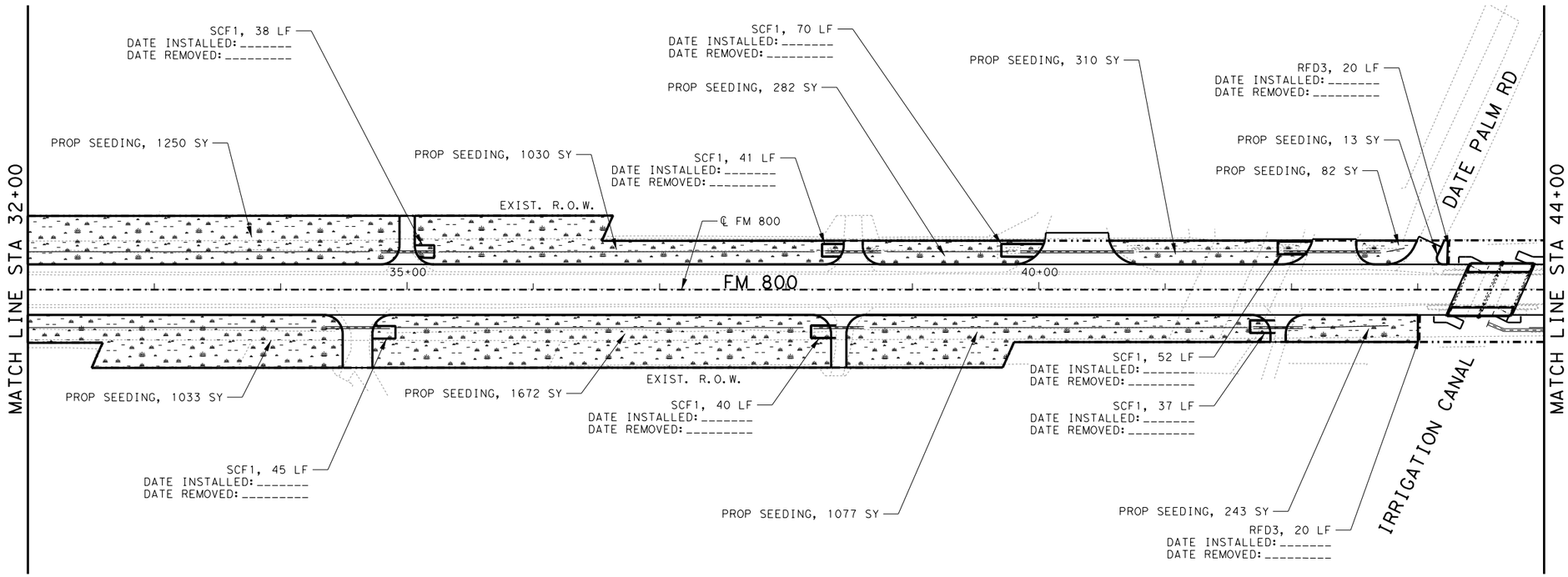

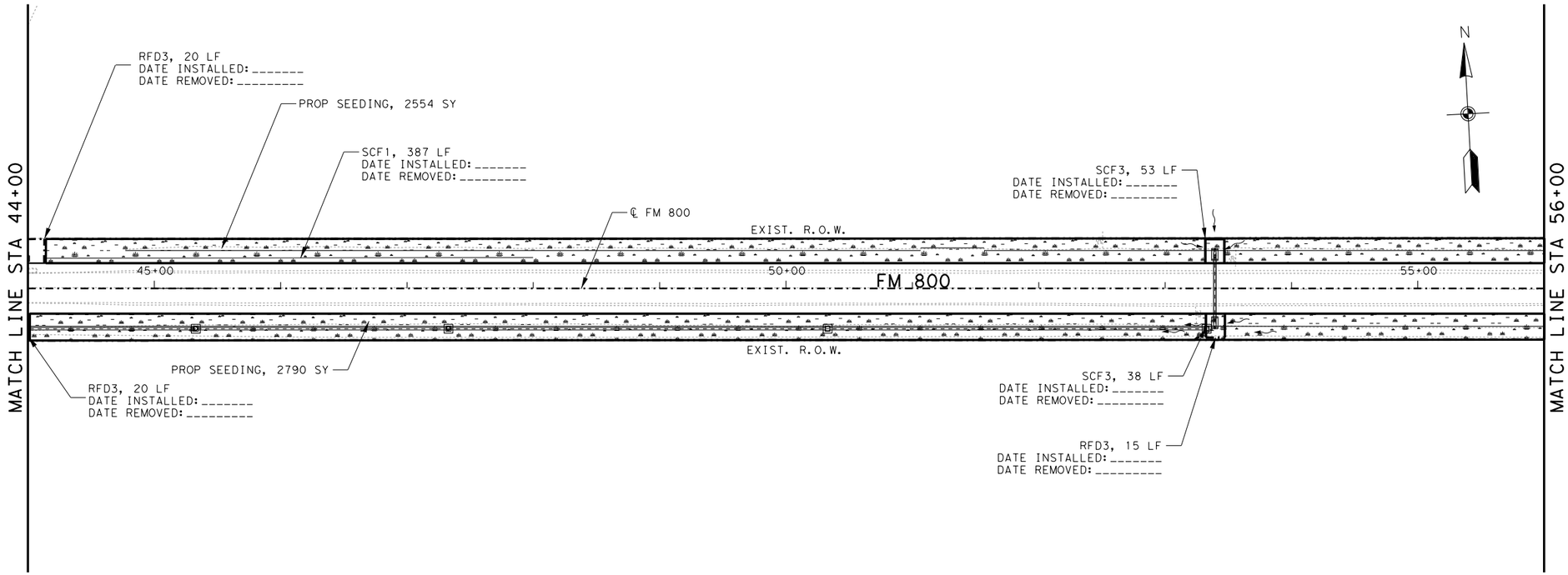

LEGEND:

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- DIRECTION OF FLOW
- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

1. SEE "MISC SW3P DETAILS" SHEET FOR MORE INFO ON PLACEMENT OF SW3P DEVICES.
2. THE CONTRACTOR MUST CONTACT THE THE ENGINEER PRIOR TO PLACEMENT OF ANY EROSION CONTROL DEVICES.
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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
SW3P LAYOUT
STA 32+00 TO STA 56+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		318
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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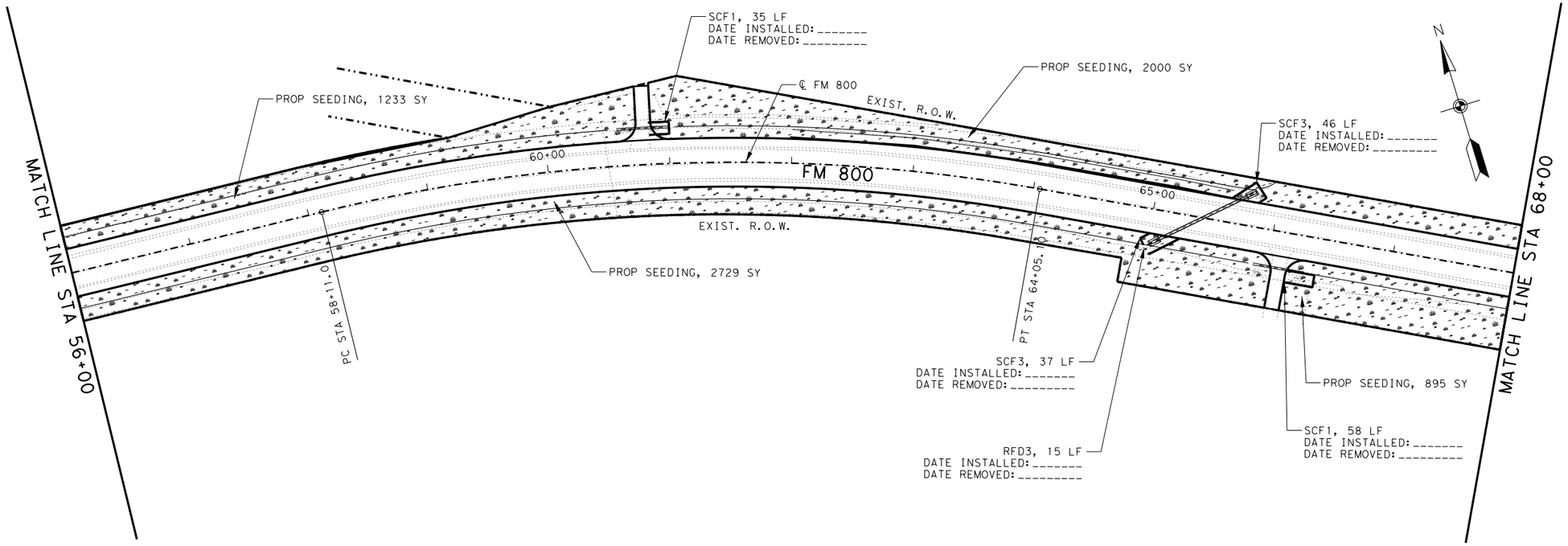

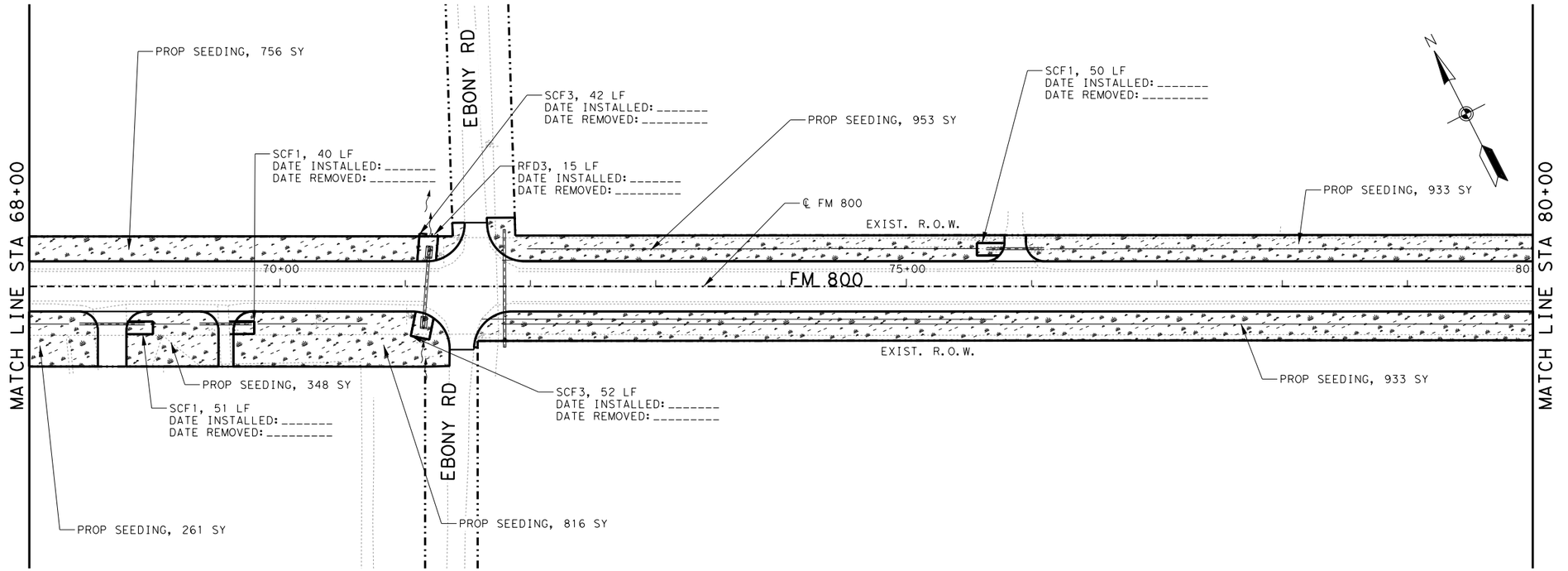

LEGEND:

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- PROP SEEDING AREA

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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 800
SW3P LAYOUT
STA 56+00 TO STA 80+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	319

STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

FM800_EVSW00_03.dgn

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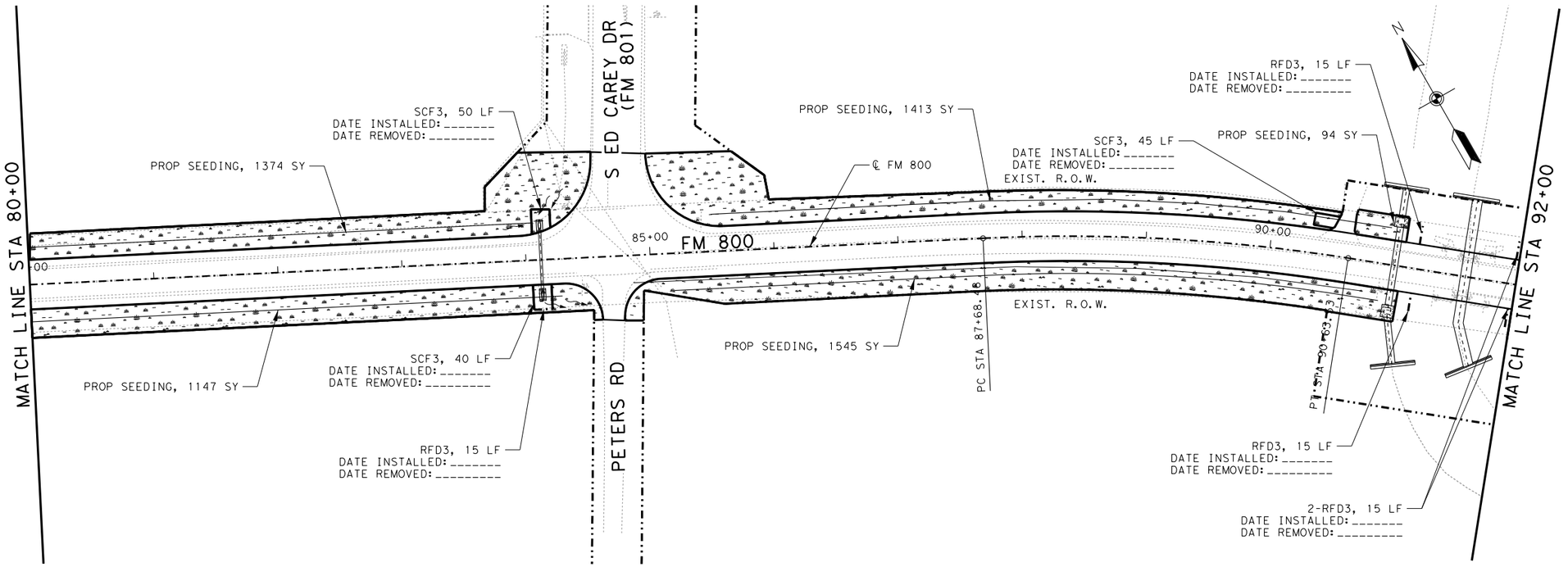

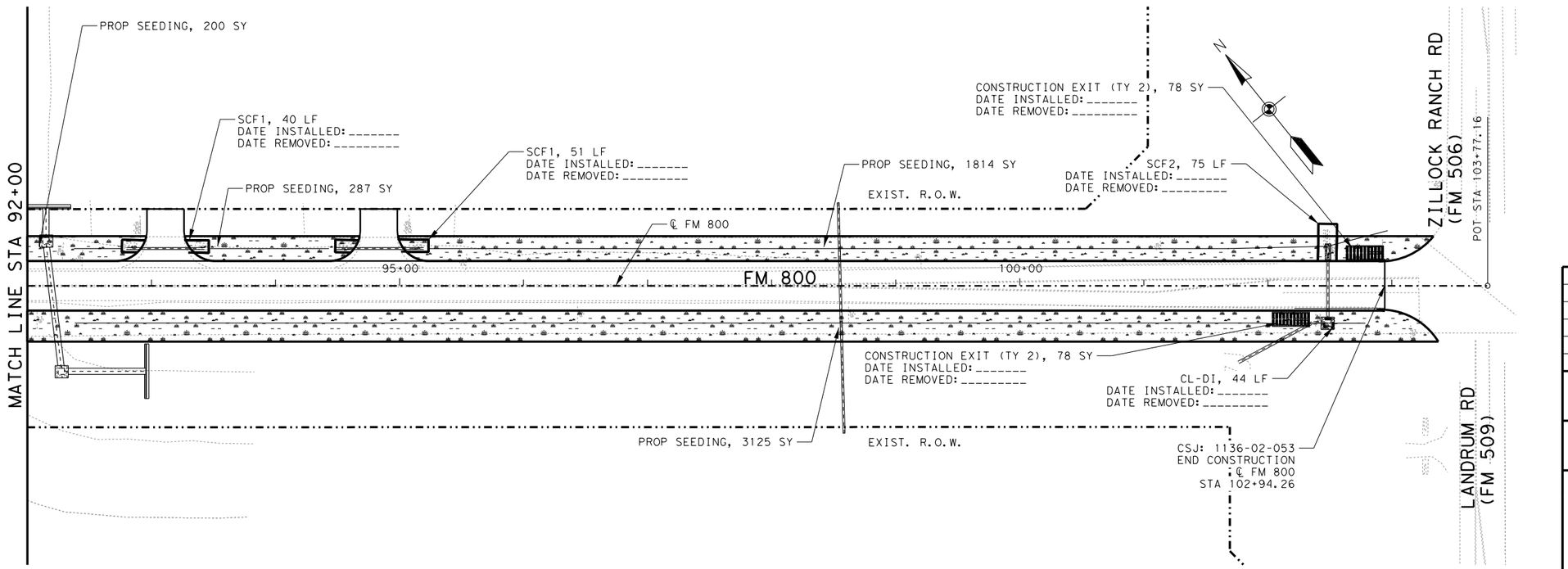

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SCALE: 1"=100'

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

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ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
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Texas Department of Transportation

FM 800
SW3P LAYOUT
STA 80+00 TO END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		320
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1136	02	053	FM 800

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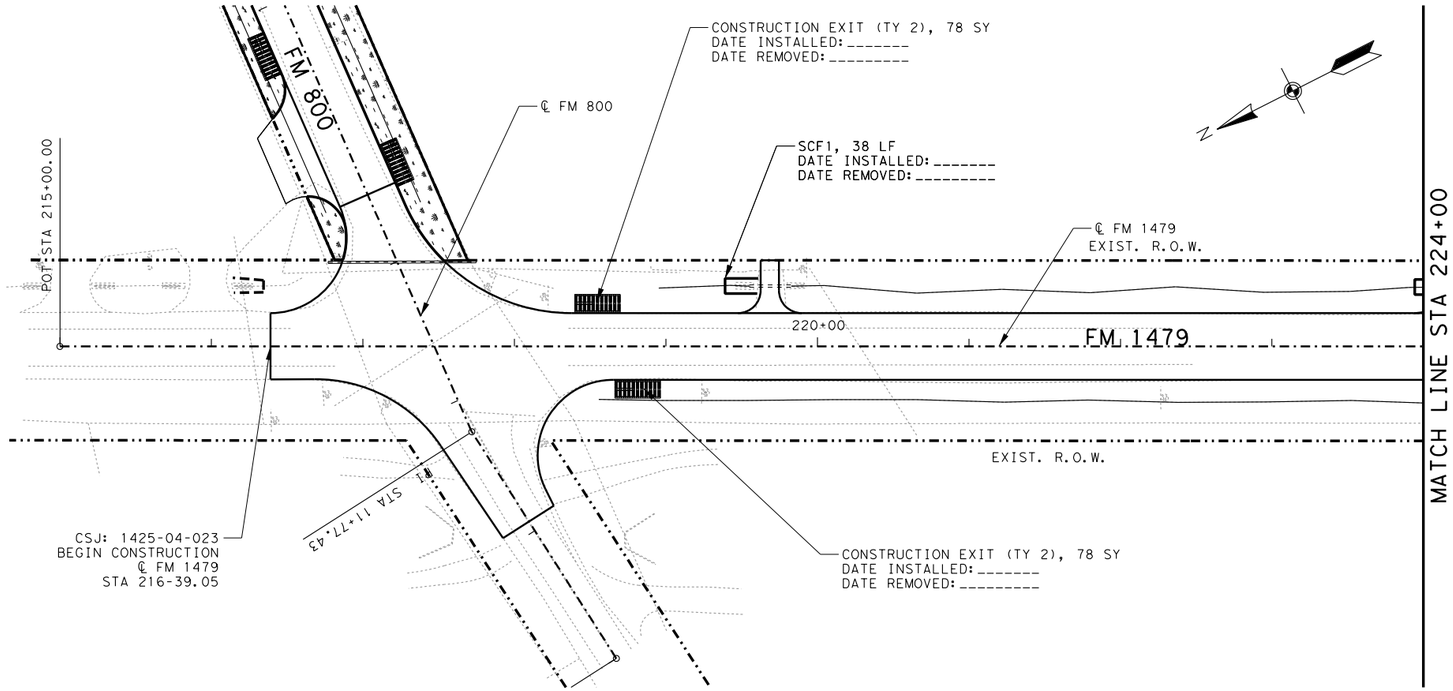

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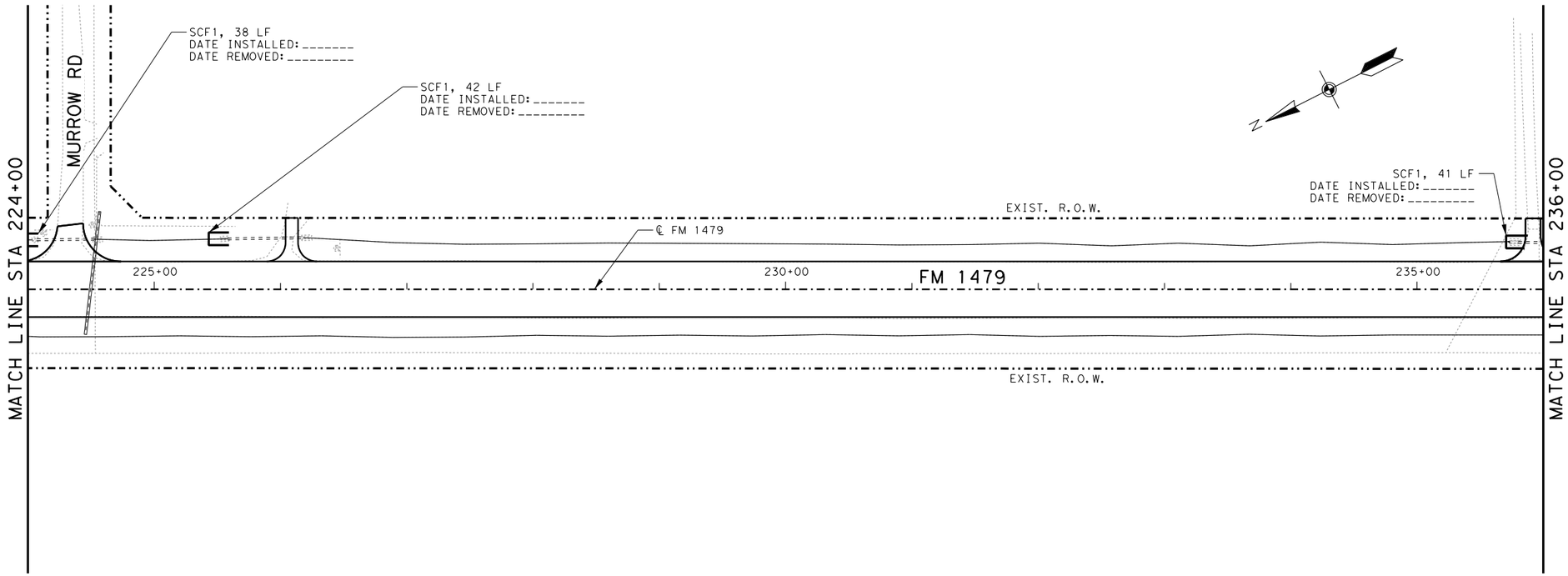

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
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PROFESSIONAL ENGINEER

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281-945-0081 FX

Texas Department of Transportation

FM 1479

SW3P LAYOUT

BEGIN PROJECT TO STA 236+00

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		321
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_EVSW00_01.dgn

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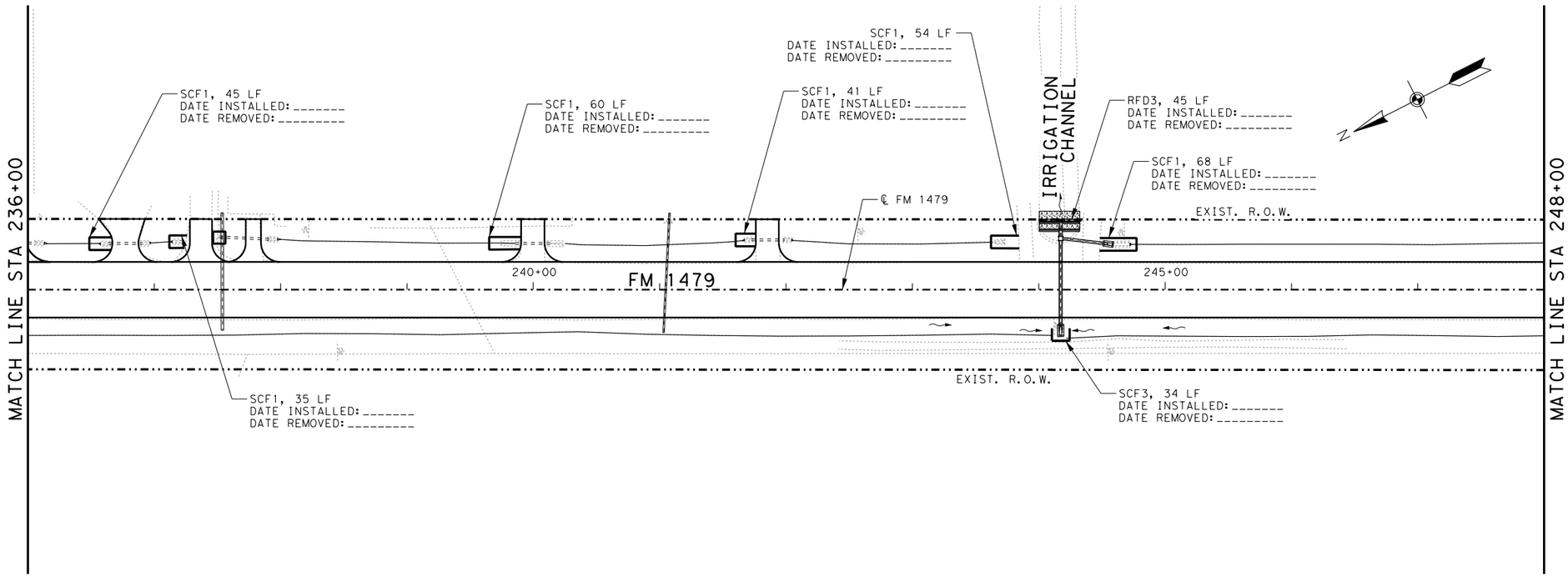

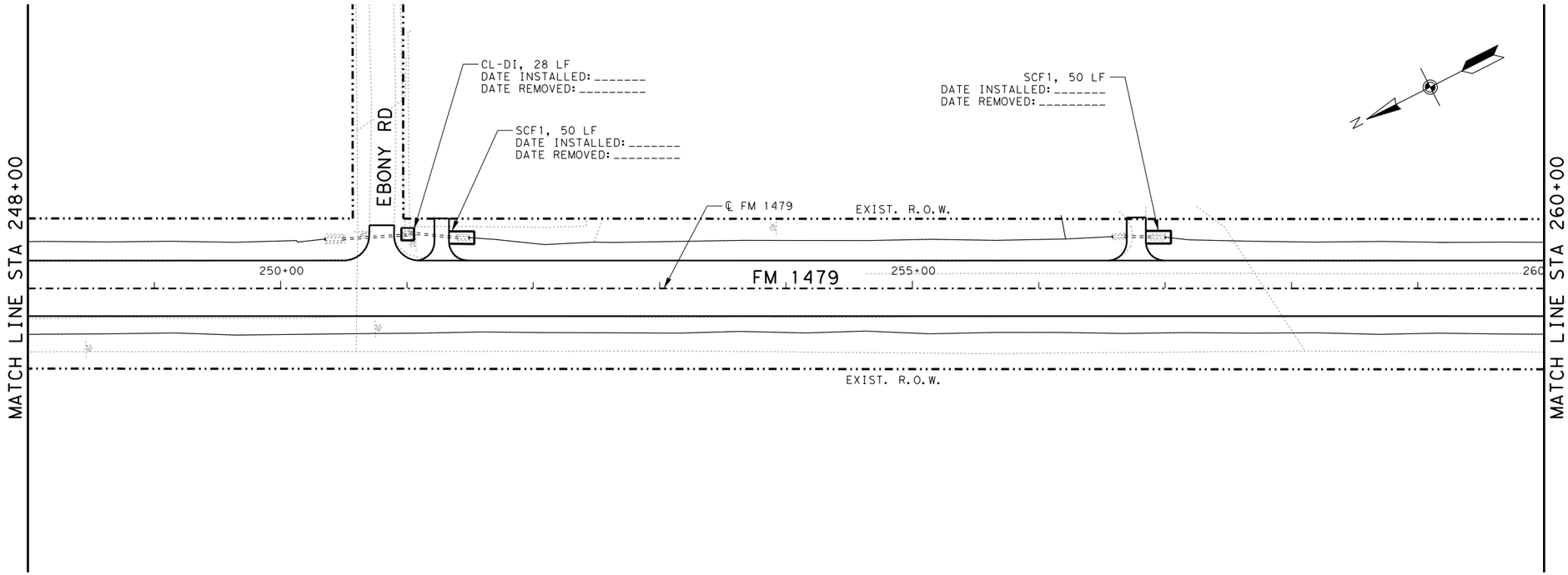

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- CL-GI — EROSION CONTROL LOG AT CURB AND GRATE INLET
- RFD3 — ROCK FILTER DAM (TY-3)
- RFD4 — ROCK FILTER DAM (TY-4)
- SEDIMENT CONTROL FENCE AROUND CULVERTS
- EROSION CONTROL LOG (INLET PROTECTION)
- DIRECTION OF FLOW
- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

1. SEE "MISC SW3P DETAILS" SHEET FOR MORE INFO ON PLACEMENT OF SW3P DEVICES.
2. THE CONTRACTOR MUST CONTACT THE THE ENGINEER PRIOR TO PLACEMENT OF ANY EROSION CONTROL DEVICES.
3. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
4. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER.

0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479
SW3P LAYOUT
STA 236+00 TO STA 260+00

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		322
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

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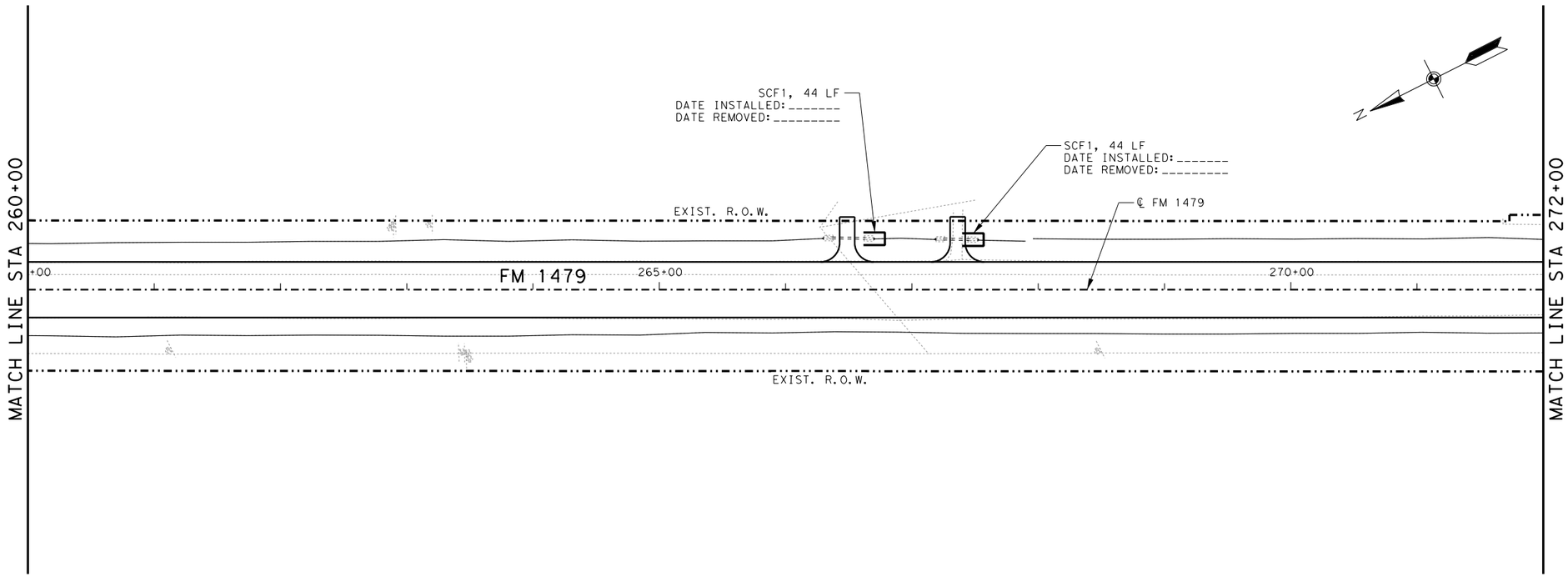

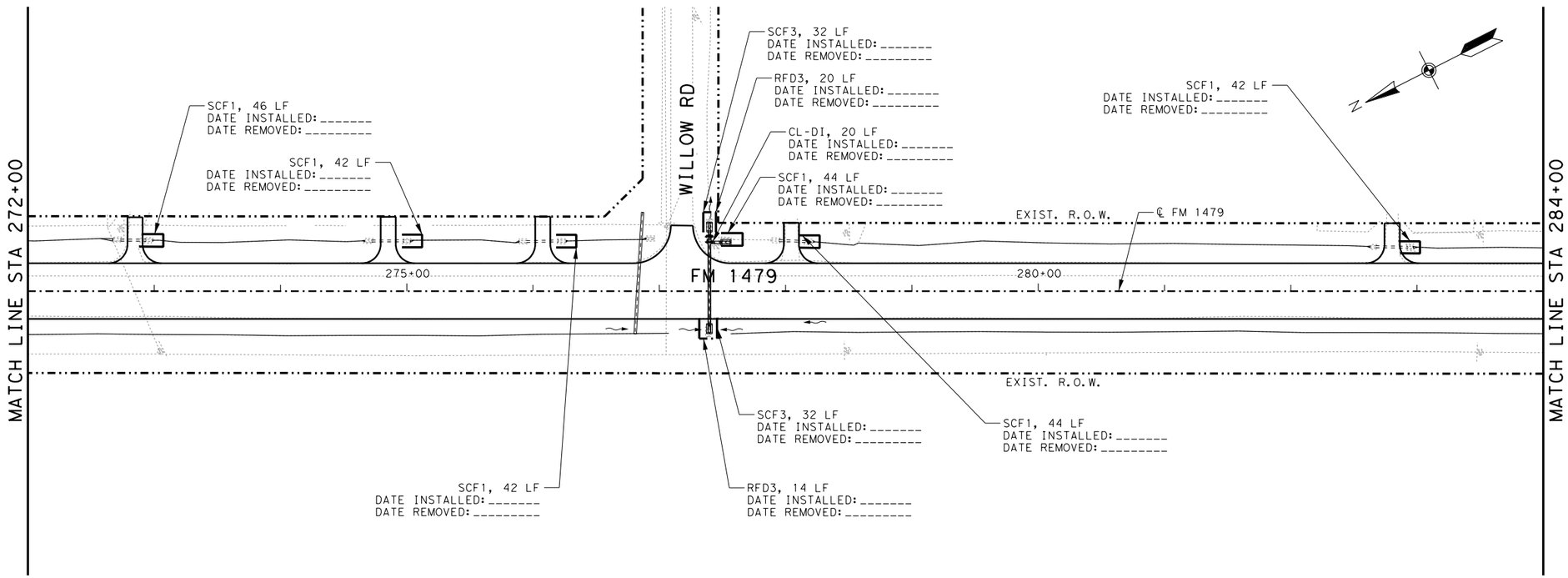

LEGEND:

- SCF — SEDIMENT CONTROL FENCE
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-D — EROSION CONTROL LOG AT DITCHES
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-GI — EROSION CONTROL LOG AT CURB AND GRATE INLET
- RFD3 — ROCK FILTER DAM (TY-3)
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- DIRECTION OF FLOW
- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED
PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479
SW3P LAYOUT
STA 260+00 TO STA 284+00

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		323
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
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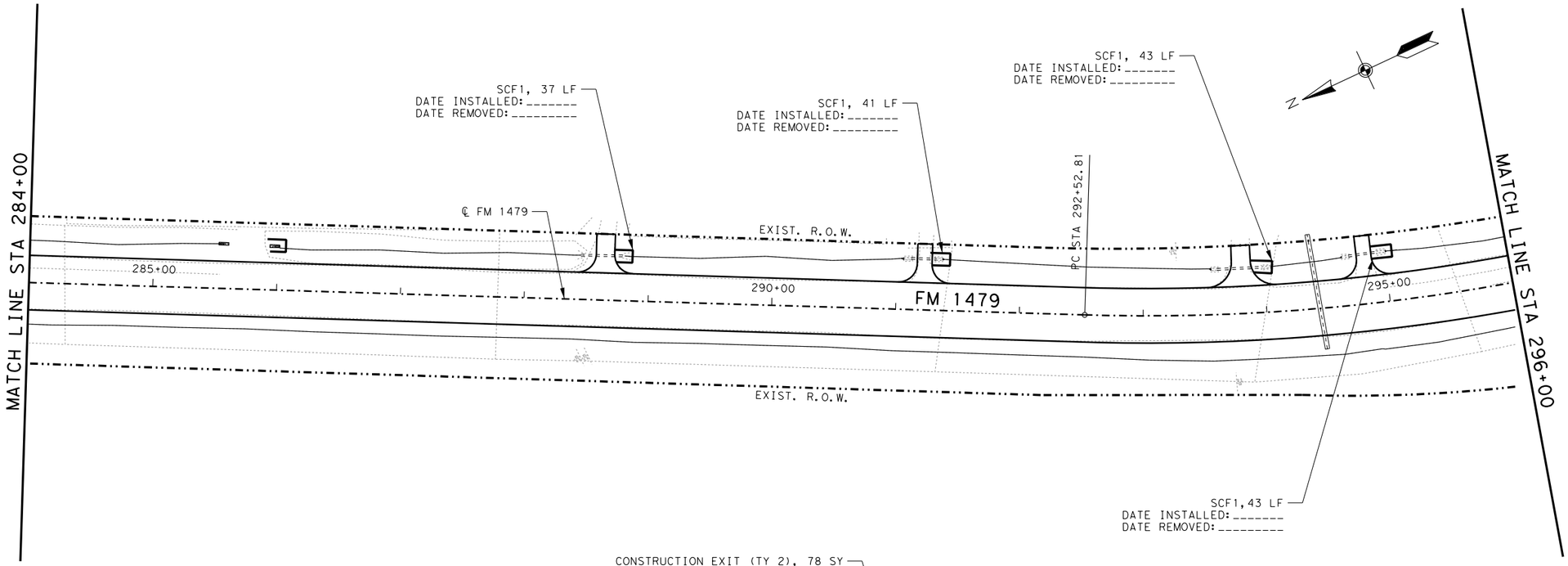

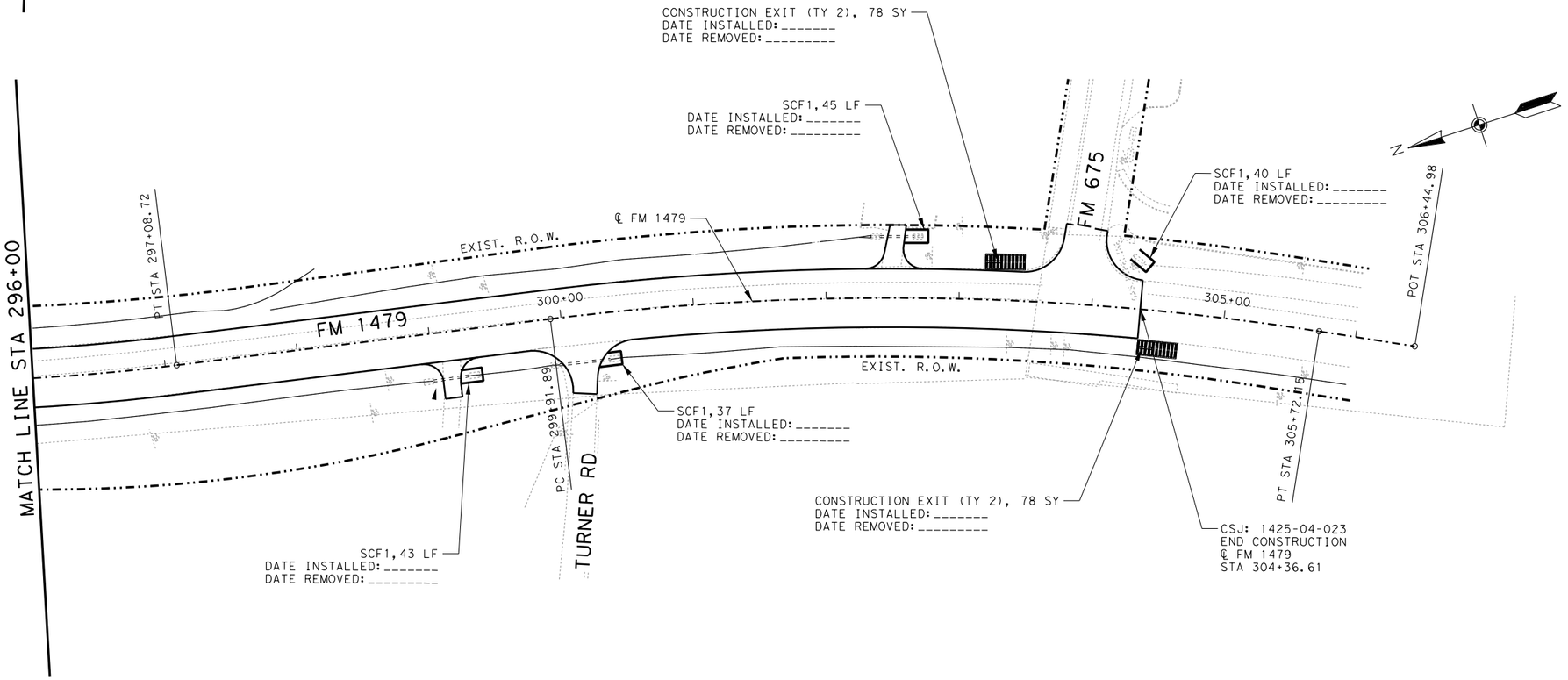

LEGEND:

- SCF — SEDIMENT CONTROL FENCE
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-D — EROSION CONTROL LOG AT DITCHES
- CL-DI — EROSION CONTROL LOG AT DROP INLET
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- PROP CONSTRUCTION EXIT (TY 2)
- PROP SEEDING AREA

NOTES:

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0 50 100

SCALE: 1"=100'

STATE OF TEXAS
ROBERTO AVILA
112668
LICENSED PROFESSIONAL ENGINEER

10/05/2021

ISSUE RECORD

NO.	DESCRIPTION	DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

FM 1479
SW3P LAYOUT
STA 284+00 TO END PROJECT

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		324
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON	
CONT	SECT	JOB	HIGHWAY NO
1425	04	023	FM 1479

FM1479_EVSW00_04.dgn

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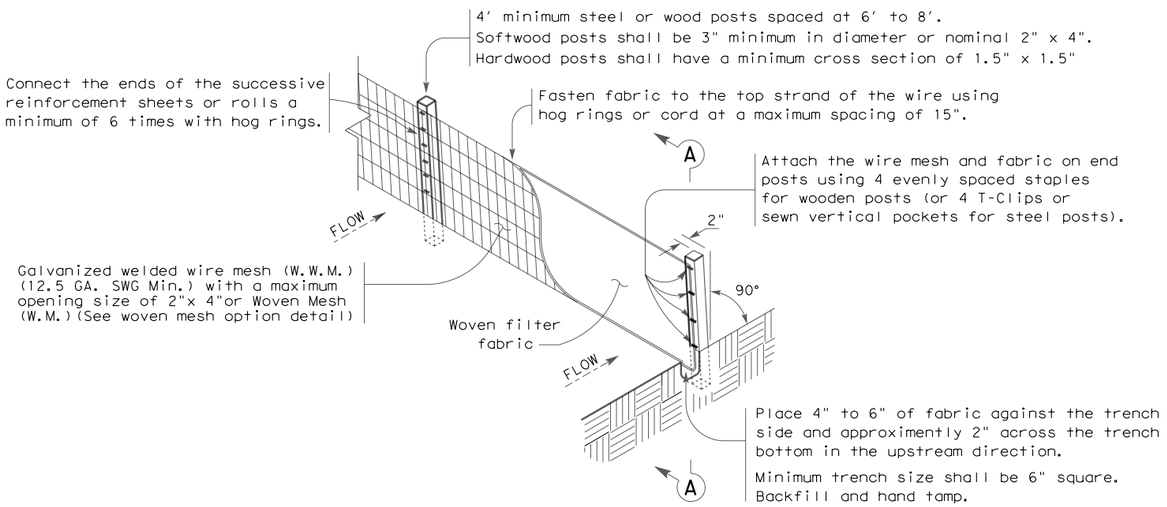
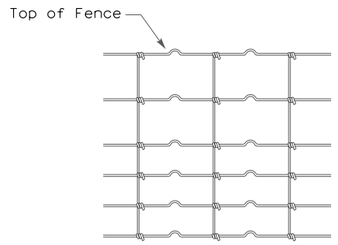
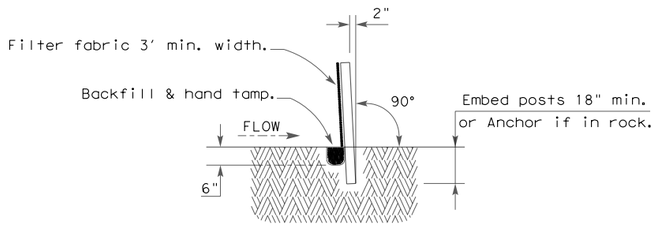


TEMPORARY SEDIMENT CONTROL FENCE

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.

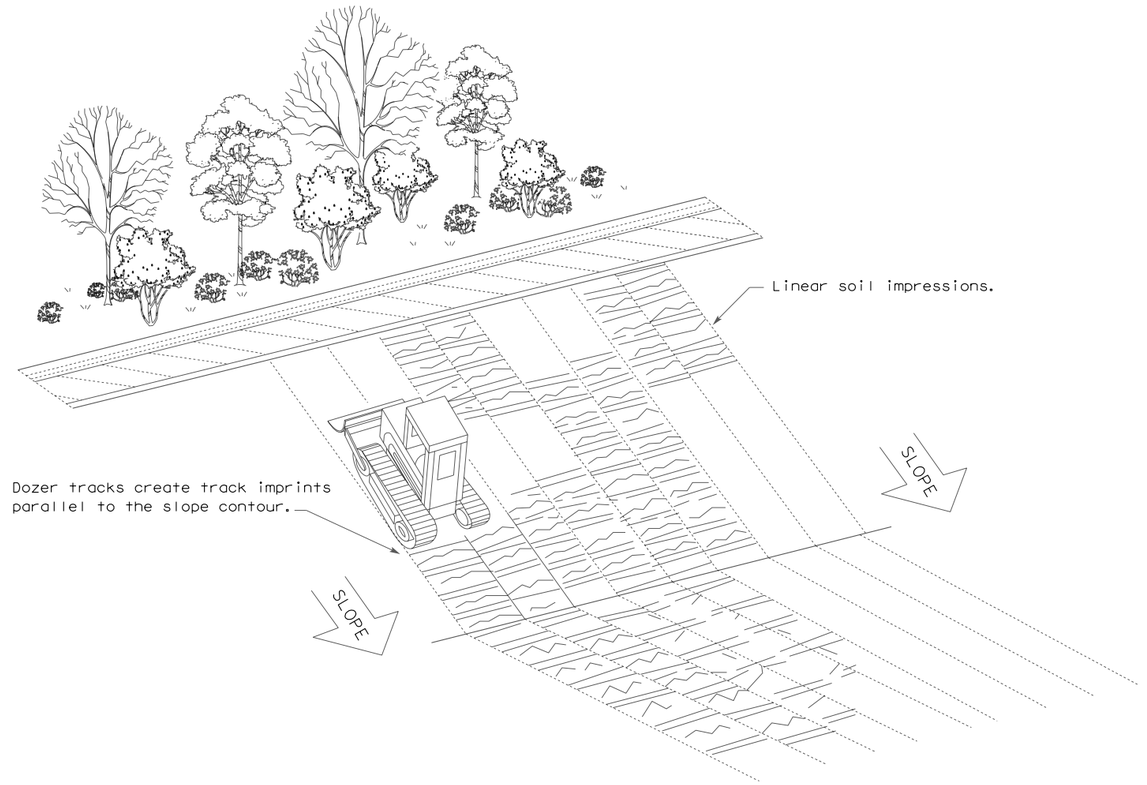
LEGEND

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
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
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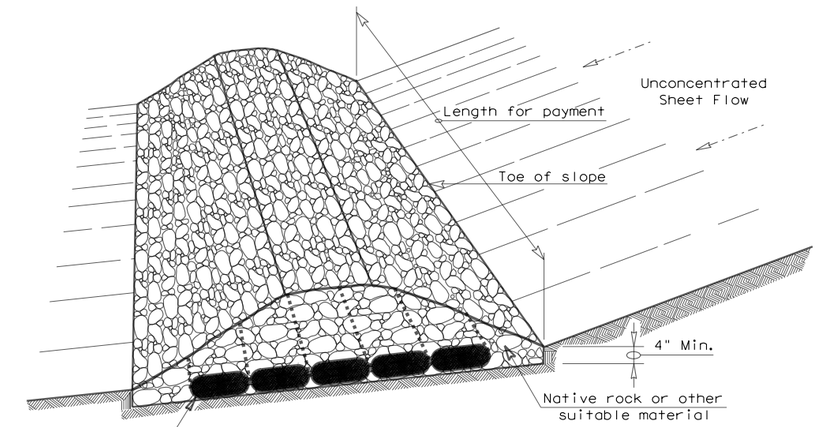
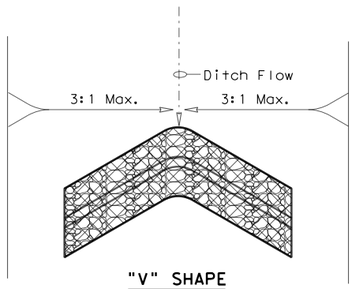
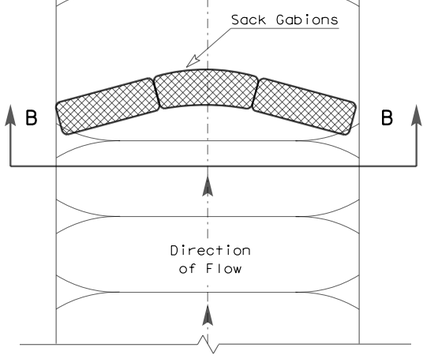


FILTER DAM AT TOE OF SLOPE

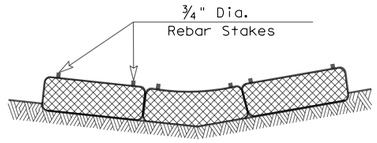
RFD1



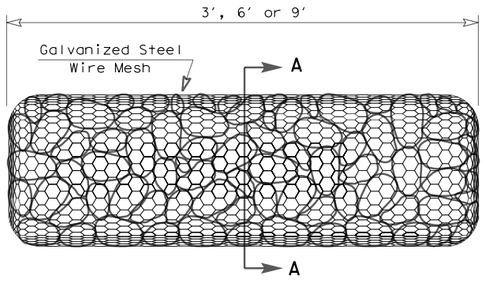
"V" SHAPE PLAN VIEW



PLAN VIEW

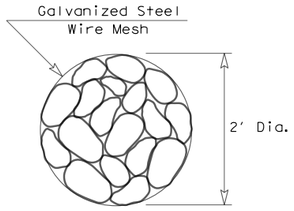


SECTION B-B

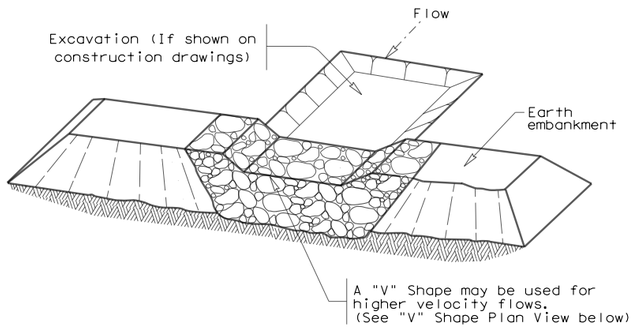


TYPE 4 (SACK GABIONS)

RFD4

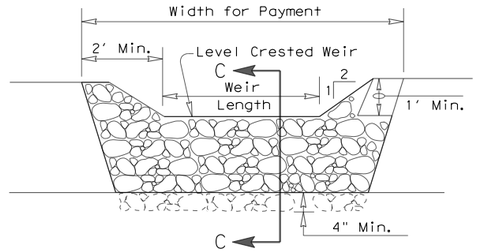


SECTION A-A

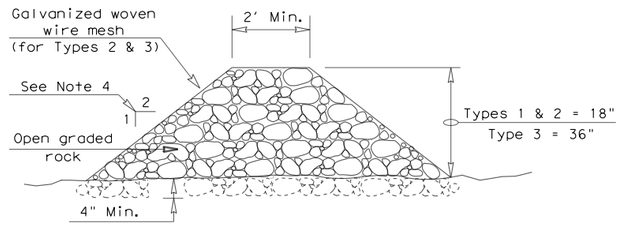


FILTER DAM AT SEDIMENT TRAP

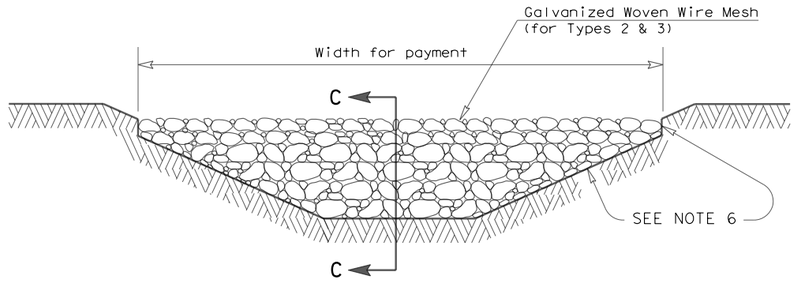
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0872	04	030,ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		326

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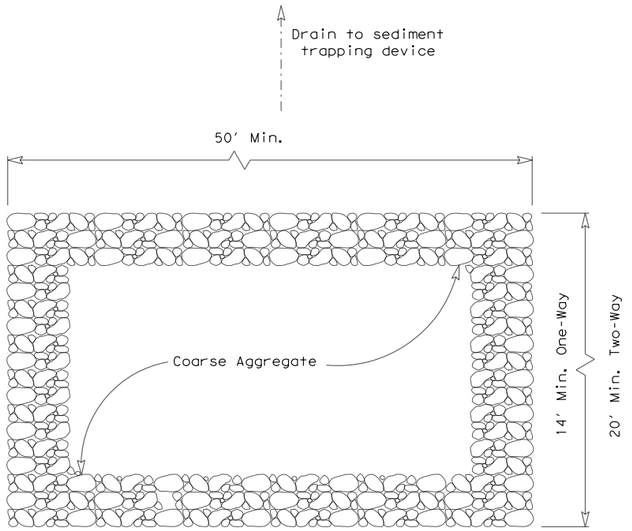
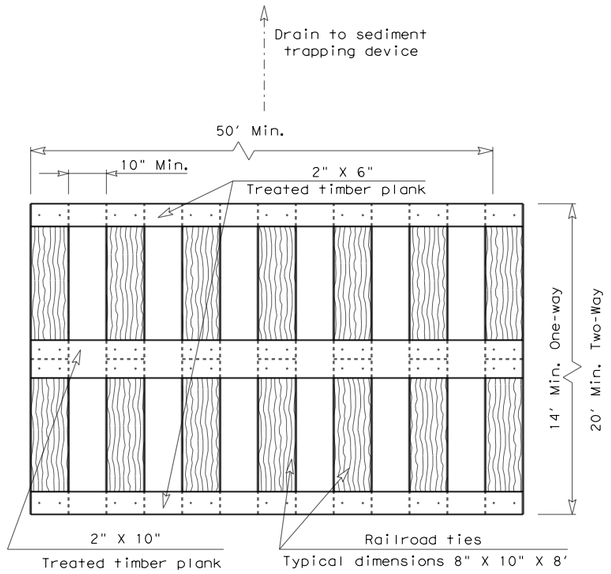


PLAN VIEW



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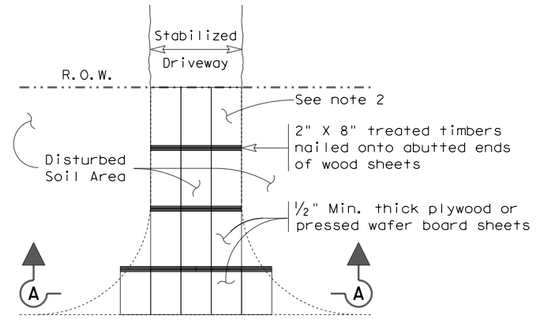

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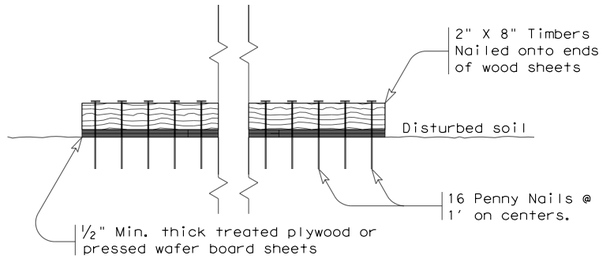
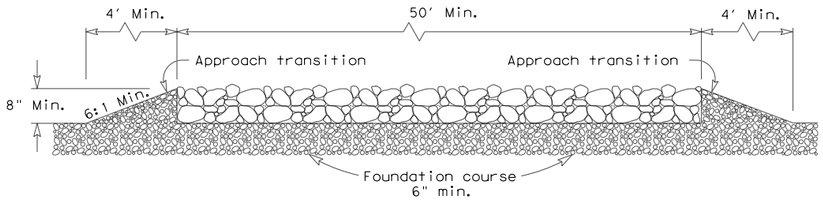


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

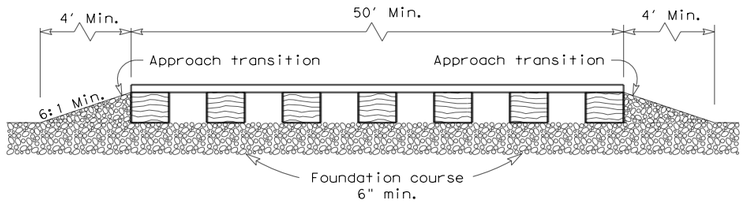
SHORT TERM



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
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	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		327

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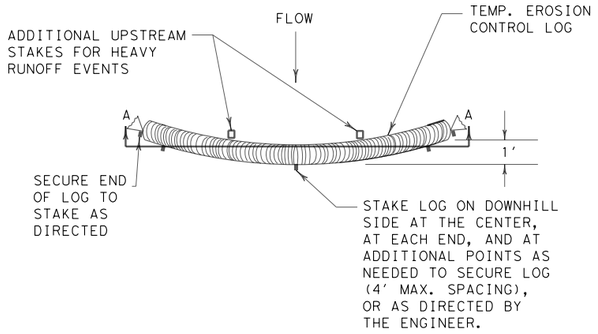

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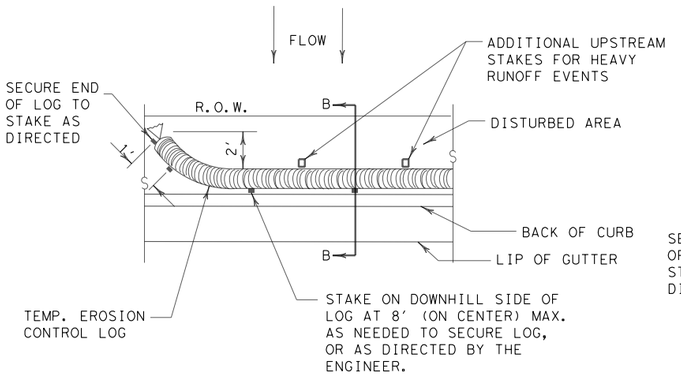

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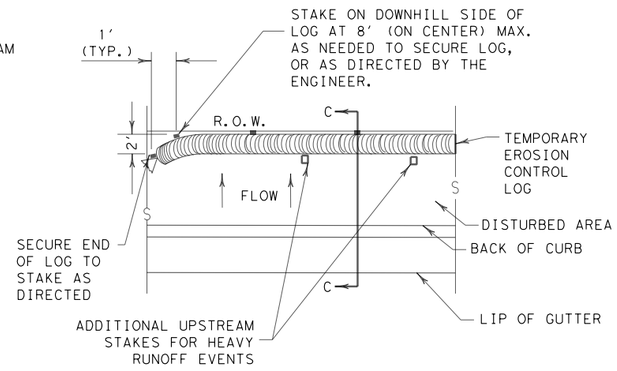

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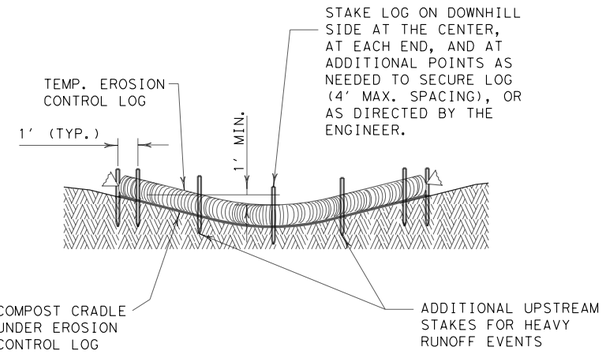
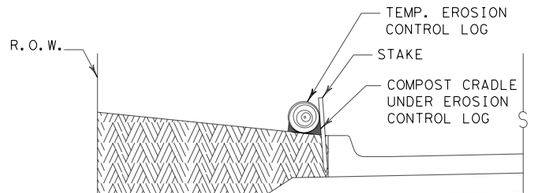


SECTION A-A

EROSION CONTROL LOG DAM

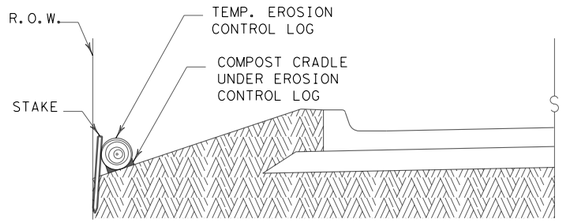
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

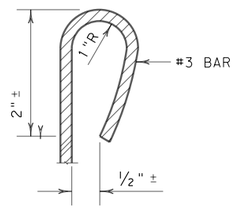
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

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

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.

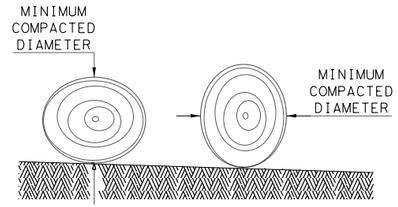
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

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	0872	04	030, ETC	FM 506, ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		328

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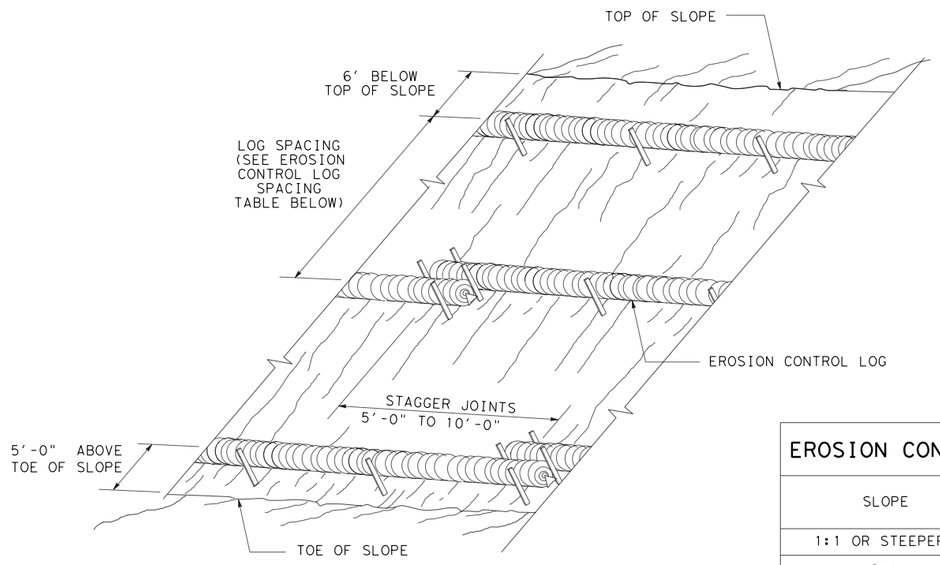
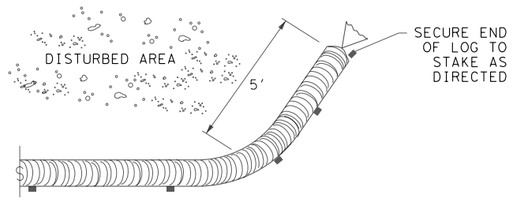


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

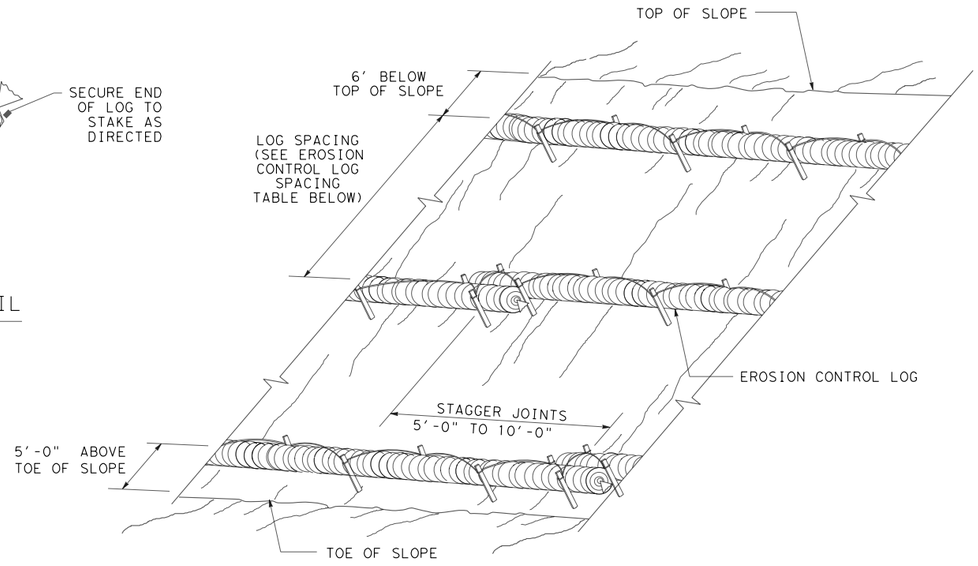
CL-SST



END SECTION RAP DETAIL

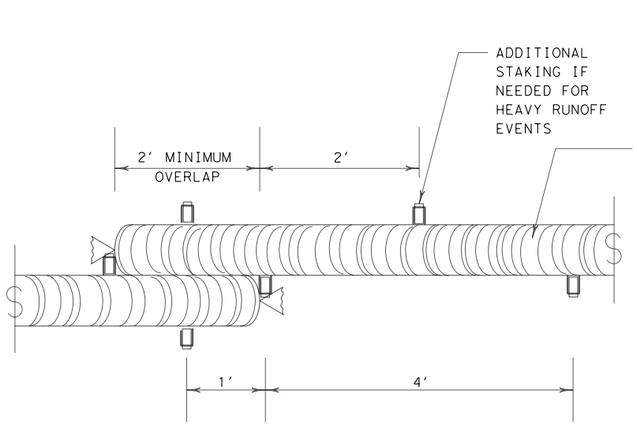
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

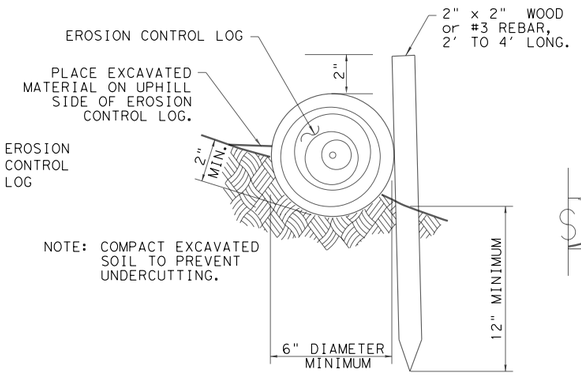
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

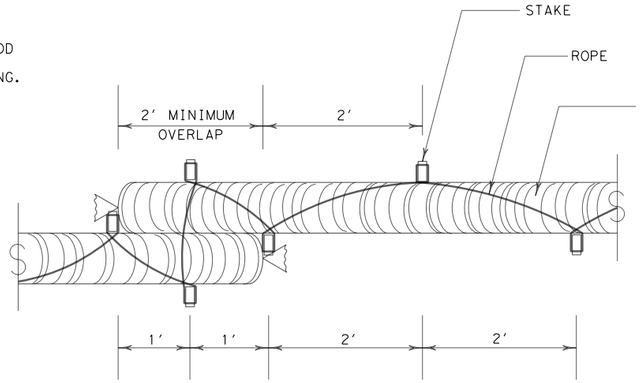




STAKE AND TRENCHING ANCHORING DETAIL

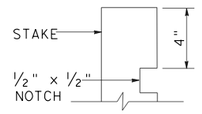
CL-SST

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

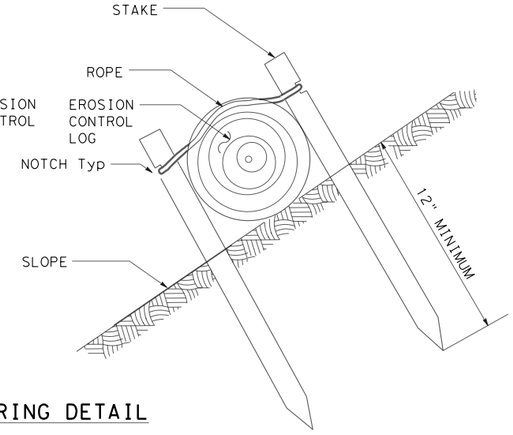


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL



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	0872	04	030,ETC	FM 506,ETC
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		329

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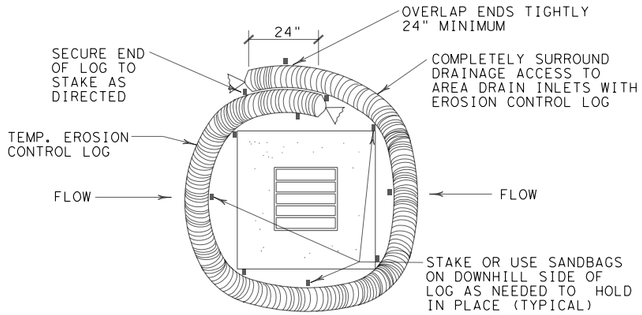
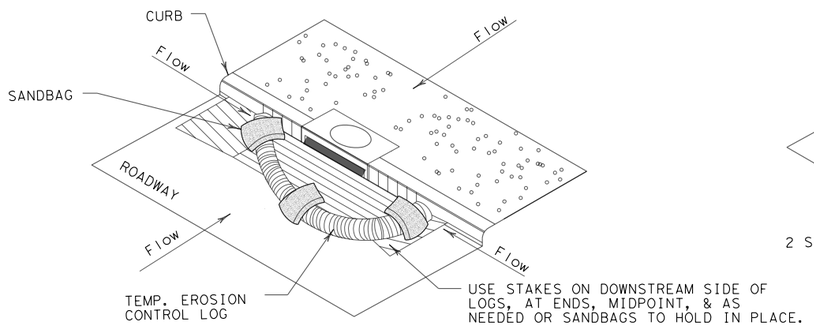


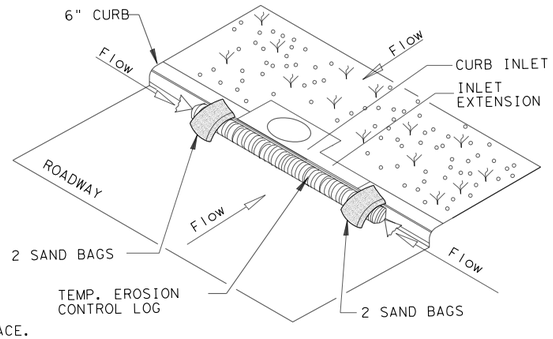
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

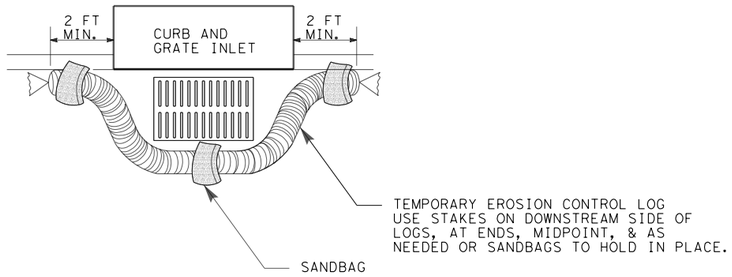
CL-CI



EROSION CONTROL LOG AT CURB INLET

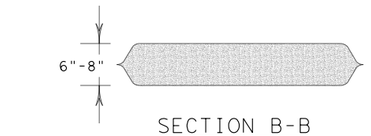
CL-CI

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.

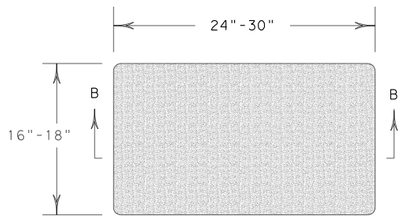


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

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REVISIONS	0872	04	030, ETC		FM 506, ETC		
	DIST	COUNTY			SHEET NO.		
	PHR	CAMERON			330		